

GE Healthcare

LOGIQ P7/P8/P9/P10

Service Manual

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Document Number: 5604324
Revision: 18



Important Precautions

Translation policy

WARNING

- English
(EN)
- This Service Manual is available in English only.
- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
 - Do not attempt to service the equipment unless this Service Manual has been consulted and is understood.
 - Failure to heed this Warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

AVERTISSEMENT

- Français
(FR)
- Ce manuel de maintenance est disponible en anglais uniquement.
- Si un client de la personne responsable de la maintenance demande une langue autre que l'anglais, il est de la responsabilité du client de fournir les services de traduction.
 - N'essayez pas d'effectuer vous-même la maintenance de l'équipement avant d'avoir préalablement lu et compris le manuel de maintenance.
 - Le non-respect cet avertissement peut entraîner des blessures dues à un choc électrique, une défaillance mécanique ou à d'autres éléments dangereux chez la personne en charge de la maintenance, l'opérateur ou le patient.

ADVERTENCIA

- Español
(ES)
- Este Manual de servicio está disponible en idioma inglés únicamente.
- Si un proveedor de servicio del cliente requiere un idioma distinto, es responsabilidad del cliente ofrecer servicios de traducción.
 - No intente reparar el equipo a menos que haya consultado y comprendido este Manual de servicio.
 - Si no presta atención a esta Advertencia, se pueden ocasionar lesiones al proveedor de servicio, al operador o al paciente por descarga eléctrica, por riesgos mecánicos o de otra índole.

WARNUNG

(DE) Deutsch

Dieses Wartungshandbuch ist nur auf Englisch verfügbar.

- Wenn der Kundendiensttechniker eines Kunden eine andere Sprache als Englisch benötigt, unterliegt es der Verantwortung des Kunden eine Übersetzung anfertigen zu lassen.
- Warten Sie das Gerät nur, wenn Sie dieses Wartungshandbuch gelesen und verstanden haben.
- Die Nichtbeachtung dieses Warnhinweises kann zu Verletzungen des Kundendiensttechnikers, Anwenders oder Patienten durch Stromschläge, mechanische oder andere Gefahren führen.

AVVERTENZA

(IT) italiano

Il presente Manuale di assistenza è disponibile solo in inglese.

- Se il fornitore di servizi di un cliente ne richiede una copia in una lingua diversa dall'inglese, è responsabilità del cliente fornire il servizio di traduzione.
- Non tentare di riparare l'apparecchio se questo Manuale di assistenza non è stato letto e compreso.
- Il mancato rispetto di questa avvertenza può comportare il rischio di lesioni al fornitore di servizi, all'operatore o al paziente causate da scosse elettriche o da pericoli di origine meccanica o di altro tipo.

WAARSCHUWING

(NL) Nederlands

Deze servicehandleiding is alleen beschikbaar in het Engels.

- Als de serviceleverancier van een klant vraagt om een andere taal dan Engels, is het de verantwoordelijkheid van de klant om een vertaalde versie te bieden.
- Probeer geen onderhoud aan de apparatuur uit te voeren tenzij deze servicehandleiding is geraadpleegd en begrepen.
- Het niet opvolgen van deze waarschuwing kan bij de serviceleverancier, de operator of de patiënt leiden tot letsel door elektrische schokken, mechanische of andere gevaren.

ADVERTÊNCIA

- Português
(PT-BR)
- Este Manual de Manutenção está disponível apenas em Inglês.
- Caso um prestador de serviços do cliente solicite o manual em idioma diferente do inglês, é de responsabilidade do cliente o fornecimento de serviços de tradução.
 - Não tente realizar a manutenção do equipamento antes de ler e compreender este Manual de manutenção.
 - O não cumprimento desta advertência pode resultar em danos por choque elétrico e riscos mecânicos para o prestador de serviços, operador ou paciente.

VIÐVÖRUN

- Íslenska
(IS)
- Þessi þjónustuhandbók er aðeins fánleg á ensku.
- Ef þjónustuaðili viðskiptavinar þarf annað tungumál en ensku er það á ábyrgð viðskiptavinarins að veita þýðingarþjónustu.
 - Ekki reyna að þjónusta búnaðinn nema þessir þjónustuhandbækur hafi verið skoðaðir og skilið.
 - Ef ekki er gætt að þessari viðvörðun getur það valdið meiðslum á þjónustuaðila, stjórnanda eða sjúklingi vegna raflosts, vélrænni hættu eða annarri hættu.

HOIATUS!

- Eesti
(ET)
- Service Manual (Hooldusjuhend) on saadaval ainult ingliskeelsena.
- Kui kliendi teenusepakkuja nõue on, et juhend oleks mõnes muus keeles, korraldab juhendi tõlkimise klient.
 - Tutvuge enne seadme hooldustööde tegemist kindlasti juhendiga Service Manual (Hooldusjuhend).
 - Selle nõude eiramise korral võib teenindaja, kasutaja või patsient saada elektrilöögi, samuti võivad kaasneda muud ohud.

OPOZORILO

Slovensčina
(SL)

- Ta servisni priročnik je na voljo samo v angleščini.
- Če ponudnik servisnih storitev za stranko potrebuje navodila v drugem jeziku, mora stranka sama poskrbeti za prevajanje.
 - Ne poskušajte servisirati opreme, ne da bi prej prebrali in razumeli servisni priročnik.
 - Če tega opozorila ne upoštevate, obstaja nevarnost električnega udara, mehanskih ali drugih nevarnosti in posledičnih poškodb ponudnika servisnih storitev, uporabnika opreme ali pacienta.

警告

日本語
(JA)

- このサービスマニュアルは英語版のみ提供されています。
- お客様の保守担当者が英語以外のマニュアルを必要とされる場合は、お客様の負担にて翻訳サービスをご利用ください。
 - 装置の保守を行う前に、必ずサービスマニュアルを読み、内容を理解してください。
 - この警告に注意を払わない場合、保守担当者やオペレータ、患者に対して、電気ショック、機械またはその他の危険による傷害が発生する恐れがあります。

警告

简体中文
(ZH-CN)

- 本维修手册仅提供英文版。
- 如果客户需要其它语种版本，请自行翻译。
 - 在维修机器前，请务必阅读并完全理解本维修手册。
 - 若违反本警告，有可能会给维修提供商、操作员或患者带来电击伤害、机械损伤或其它危害。

VARNING

Den här servicehandboken finns endast på engelska.

(Sv)
Svenska

- Om en kunds servicetekniker kräver ett annat språk än engelska är det kundens ansvar att tillhandahålla en översatt version.
- Försök inte att utföra service på utrustningen om du inte har läst igenom och förstått den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan serviceteknikern, operatören eller patienten utsättas för elektriska stötar eller mekaniska eller andra faror, vilket kan leda till personskador.

警告

(ZH-TW)
繁體中文

此服務手冊僅推出英文版。

- 若客戶的維修人員需要英文以外的其他語言版本，客戶需自行負責提供翻譯服務。
- 在詳閱此服務手冊並充分理解其內容之前，請勿試圖開始維修設備。
- 若忽視此警告，可能導致維修人員、操作人員或病患因為觸電、機械問題或其他危險而受傷。

경고

(KO)
한국어

이 서비스 설명서는 영어로만 제공됩니다.

- 고객의 서비스 공급자가 영어 이외의 언어를 요구하는 경우 번역 서비스를 제공할 책임은 고객에게 있습니다.
- 이 서비스 설명서를 참조 및 이해하지 못한 경우 장비를 만지지 마십시오.
- 이 경고를 무시한 경우 서비스 공급자, 오퍼레이터 또는 환자가 감전, 기계적 위험 또는 기타 위험으로 인한 부상을 입을 수 있습니다.

ΠΡΕΔΥΠΡΕΥΔΕΝΕ

Δανννε ρυκωδστυν πε οβσλυσυννυ δστυπνυ τυλκυ νλ ανγλνσκμ ρσυκμ.

Νλ ρυκωδστυν ρσυκμ
(RU)

- Εσλν σπενανλστυ πε τυκννκμ οβσλυσυννυ κλνεντλ τυρμυεσλ τυ δστυμεντλννλ νλ κλμ-λνβυ δρυγμ ρσυκμ, αντυστυννυτυε τυ ανυπνννε περυνυδλ νυλνλγλτλ νλ κλνεντλ.
- Πρυστυπλντε κ οβσλυσυννυ οβσρυνυδννλ τυλκυ πσλε τυγμ, κλ ανυκντε δανννε ρυκωδστυν πε οβσλυσυννυ νλ πνλνστυπν τεμνετε εγμ σσδερυννε.
- Νεσολυννε δανννε τυρμυεσλ μμκε τυ πρυνεστν κ τυρμυννυννυ σπενανλστυ πε τυκννκμ οβσλυσυννυ, πνλνυδντερλ νλν πλνεντλ νλστυδννε πνρλκεννλ ελεκτρνκμ τυκμ, μεκννκμσκν νλ πρυνκν πνρμυεννλ.

OSTRZEŻENIE

Nlnenjszy podręcznik serwisowy jest dostępny wyłącznie w języku angielskim.

PolSKI
(PL)

- Jeżeli dostawca usług klienta posługuje się językiem innym niż angielski, za zapewnienie usług tłumaczeniowych odpowiada klient.
- Przed przystąpieniem do czynności serwisowych należy zapoznać się z informacjami zawartymi w niniejszym podręczniku serwisowym i je zrozumieć.
- W przeciwnym wypadku dostawca usług, operator lub pacjent mogą odnieść obrażenia spowodowane porażeniem prądem elektrycznym, działaniem elementów mechanicznych lub innymi zagrożeniami.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

Το παρὸν Εγχειρίδιο σέρβνς δνλτνθετλ μὸνυ στλ Αγγλνκλ.

Ελληννκλ
(EL)

- Εάν ο πάροχος σέρβνς τυ πελλτη απλντεν γλᵱσσα εκτὸς των Αγγλνκν, η πλρὸκμ μετλφρλστυκνν νπηρεσννν απντελεν ενθύνη τυ πελλτη.
- Μην επνκννρησετε νλ επνσκευλσετε τον εξοπλνσμ ενν πρᵱτλ δεν σνμβνυλευτεντε κλ κλτλννεησετε τυ παρὸν Εγχειρνδνιο σέρβνς.
- Σε περνπτυση μν τήρυνσησ τυς πλρὸυσλς προενδνπονννσησ, ενδένκετλ νλ πρὸκλνθεν τραυμλτυσμὸς στον πλρὸκμ σέρβνς, τυ κνννρνστυ ή τον ασθενή ενλντυλνς ηλεκτρνπληξνς κλθᵱς κλ μνκνννκνν ή λλλων κννδύνων.

FIGYELMEZTETÉS

Magyar
(HU)

- A szervizkézikönyv kizárólag angol nyelven érhető el.
- Amennyiben az ügyfél szolgáltatójának nem felel meg az angol nyelvű dokumentáció, úgy a fordításról az ügyfélnek kell gondoskodnia.
 - Kizárólag úgy lásson hozzá a berendezés karbantartásához, hogy elolvasta és megértette a szervizkézikönyvben foglaltakat.
 - Ezen figyelmeztetés figyelmen kívül hagyása esetén a szolgáltató, a kezelő vagy a páciens áramütést, mechanikus sérülést vagy más veszély által okozott személyi sérülést szenvedhet.

VAROVANIE

Slovenčina
(SK)

- Táto servisná príručka je dostupná iba v anglickom jazyku.
- Ak poskytovateľ služieb zákazníkovi vyžaduje iný jazyk ako anglický jazyk, jeho povinnosťou je zabezpečiť prekladateľské služby.
 - Zariadenie nepoužívajte bez prečítania a porozumenia tejto servisnej príručky.
 - Nedodržanie tejto výstrahy môže viesť k zraneniu poskytovateľa služieb, operátora alebo pacienta spôsobeného elektrickým šokom, mechanickým alebo iným nebezpečenstvom.

VÝSTRAHA

česky
(CZ)

- Tato servisní příručka je k dispozici pouze v angličtině.
- Pokud poskytovatel služby zákazníkovi požaduje jiný jazyk než angličtinu, je odpovědností zákazníka poskytnout služby překladu.
 - Nepokoušejte se provádět servis zařízení, dokud si neprostudujete a neporozumíte servisní příručce.
 - Nevěnování pozornosti této výstraze může způsobit poskytovateli služeb, obsluze nebo pacientovi úraz elektrickým proudem, mechanická nebo jiná nebezpečí.

UYARI

Türkçe
(TR)

Servis Kılavuzu yalnızca İngilizce olarak mevcuttur.

- Müşterinin servis sağlayıcısı için kılavuzun İngilizce dışında başka bir dile çevrilmesi gerekiyorsa çeviri hizmeti sağlamak müşterinin sorumluluğudur.
- Bu Servis Kılavuzu'na bakıp talimatları anlamadan ekipmanı kullanmaya çalışmayın.
- Bu Uyarının göz ardı edilmesi servis sağlayıcısının, operatörün veya hastanın, elektrik çarpması, mekanik arıza ya da diğer tehlikeler nedeniyle yaralanmasına neden olabilir.

ADVARSEL

Dansk
(DA)

Denne servicemanual fås kun på engelsk.

- Hvis en kundes tjenesteudbyder kræver et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelsesydelse.
- Forsøg ikke at udføre service på udstyret, medmindre denne servicemanual er læst og forstået.
- Manglende overholdelse af denne advarsel kan medføre skade på serviceudbyderen, operatøren eller patienten som følge af elektrisk stød, mekaniske eller andre farer.

ADVARSEL

Norsk
(NO)

Denne servicehåndboken er bare tilgjengelig på engelsk.

- Hvis en kundes tjenestetilbyder krever et annet språk enn engelsk, er det kundens ansvar å tilby oversettelsestjenester.
- Ikke forsøk å utføre service på utstyret før denne servicehåndboken er lest og forstått.
- Dersom det ikke tas hensyn til denne advarselen, kan det føre til skader på tjenestetilbyderen, operatøren eller pasienten fra elektrisk støt, mekaniske eller andre farer.

VAKAVA VAROITUS

- Suomi**
(FI)
- Tämä huolto-opas on saatavana vain englanniksi.
- Jos asiakkaan palveluntarjoaja tarvitsee oppaan jollain muulla kielellä, käännöspalveluiden hankkiminen on asiakkaan vastuulla.
 - Laitetta ei saa huoltaa ellei huolto-oppaaseen ole sitä ennen tutustuttu huolellisesti.
 - Jos tätä varoitusta ei noudateta, palveluntarjoaja, käyttäjä tai potilas saattaa saada sähköiskun, ja saattaa aiheutua mekaanisia tai muita vaurioita.

ПРЕДУПРЕЖДЕНИЕ

- Български**
(BG)
- Настоящото Сервизно ръководство се предлага само на английски език.
- Ако доставчикът на сервизни услуги на клиента изисква ръководство на език, който се различава от английския, клиентът има отговорност да осигури адекватен превод.
 - Не правете опити за сервиз на оборудването, без да проверите и да разберете съветите в Сервизното ръководство.
 - Неспазването на това предупреждение може да доведе до нараняване на доставчика на сервизни услуги, оператора или пациента вследствие на токов удар, механична или други опасности.

AVERTISMENT

- Română**
(RO)
- Acest manual de service este disponibil doar în engleză.
- Dacă furnizorul de servicii al unui client solicită altă limbă decât engleza, este responsabilitatea clientului să ofere servicii de traducere.
 - Nu încercați să efectuați lucrări de service asupra echipamentului, în afară de cazul când ați consultat acest manual de service și l-ați înțeles.
 - Nerespectarea acestui avertisment poate avea ca rezultat rănirea furnizorului de servicii, a operatorului sau a pacientului ca urmare a electrocutării, pericolelor mecanice sau a altor pericole.

UPOZORENJE

Hrvatski
(HR)

Ovaj servisni priručnik dostupan je samo na engleskom jeziku.

- Ako klijentov serviser zahtijeva jezik koji nije engleski, odgovornost klijenta je pružiti usluge prijevoda.
- Nemojte pokušavati servisirati opremu ako niste pročitali i razumjeli servisni priručnik.
- Ako ne poštujete ovo upozorenje, može doći do ozljede serviser, operatera ili pacijenta prouzročene strujnim udarom, mehaničkim i drugim opasnostima.

ĮSPĖJIMAS

Lietuvių k.
(LT)

Šis priežiūros vadovas galimas tik anglų kalba.

- Jei kliento paslaugų teikėjas reikalauja kitos kalbos nei anglų, klientas atsako už vertimo paslaugos teikimą.
- Atlikite įrangos priežiūrą tik gerai susipažinę su priežiūros vadovu ir jį supratę.
- Nesilaikant šio įspėjimo galimas paslaugos teikėjo, operatoriaus ar paciento sužeidimas dėl elektros šoko, mechaninio ar kito pavojaus.

BRĪDINĀJUMS

Latviski
(LV)

Šī apkalpes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta pakalpojumu sniedzējam ir nepieciešama cita valoda, kas nav angļu valoda, klienta pienākums ir nodrošināt tulkojumu.
- Nemēģiniet apkalpot aprīkojumu, ja apkalpes rokasgrāmata nav izlasīta un izprasta.
- Ja šis brīdinājums netiek ievērots, pakalpojumu sniedzējs, operators vai pacients var gūt traumas no elektrošoka vai var rasties mehānisks vai cita veida apdraudējums.

UPOZORENJE

(SR) Srpski

- Ovaj priručnik za servisiranje dostupan je samo na engleskom jeziku.
- Ako klijentov serviser zahteva jezik koji nije engleski, odgovornost je na klijentu da pruži usluge prevođenja.
 - Nemojte da pokušavate da servisirate opremu ako prethodno niste pročitali i razumeli ovaj priručnik.
 - Ako ne poštujete ovo upozorenje, može doći do povređivanja servisera, operatera ili pacijenta uzrokovanog električnim udarom, mehaničkim i drugim opasnostima.

AVISO

(PT-PT) Português
(Portugal)

- Este manual de assistência está disponível apenas em inglês.
- Se o prestador de serviços de assistência do cliente necessitar do manual noutro idioma, a disponibilização dos serviços de tradução é da responsabilidade do cliente.
 - Não tente reparar o equipamento se não tiver consultado e compreendido este manual de assistência.
 - O não cumprimento das instruções constantes neste aviso pode resultar em ferimentos no prestador de serviços de assistência, no operador ou no paciente devido a choques eléctricos, perigos mecânicos ou outros problemas.

ПОПЕРЕДЖЕННЯ

(UK) Українська

- Цей посібник із технічного обслуговування доступний лише англійською мовою.
- Якщо постачальнику послуг із технічного обслуговування потрібна інформація мовою, відмінною від англійської, відповідальність за надання послуг перекладу несе користувач.
 - Технічне обслуговування обладнання можна виконувати лише після ознайомлення з посібником із технічного обслуговування та усвідомлення його змісту.
 - Недотримання цього попередження може призвести до травм постачальника послуг, оператора або пацієнта, спричинених дією електричного струму, механічних або інших пошкоджень.

PERINGATAN

Bahasa
Indonesia
(ID)

Panduan Servis ini hanya tersedia dalam Bahasa Inggris.

- Jika penyedia layanan pelanggan memerlukan bahasa di luar Bahasa Inggris, maka pelanggan bertanggung jawab untuk memberikan layanan tersebut.
- Jangan mencoba menyervis peralatan ini, kecuali Panduan Servis ini telah dijadikan rujukan dan dipahami dengan baik.
- Kelalaian memperhatikan Peringatan ini dapat menyebabkan cedera terhadap penyedia layanan, operator, atau pasien akibat bahaya kejutan listrik, mekanik, dan bahaya lainnya.

คำเตือน

ไทย
(TH)

คู่มือซ่อมบำรุงนี้มีเฉพาะภาษาอังกฤษเท่านั้น

- หากผู้ให้บริการของลูกค้าต้องการฉบับภาษาอื่นนอกเหนือจากภาษาอังกฤษ ลูกค้าต้องเป็นผู้รับผิดชอบในการจัดเตรียมคู่มือซ่อมบำรุงฉบับแปล
- โปรดอย่าซ่อมบำรุงอุปกรณ์โดยไม่ศึกษา และทำความเข้าใจคู่มือซ่อมบำรุงนี้
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CẢNH BÁO

Tiếng Việt
(VI)

Hướng dẫn sử dụng dịch vụ này chỉ sẵn dùng bằng tiếng Anh.

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(ҚҚ)
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BABALA

- Tagalog
(T)
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 - Huwag subukan na iserbisyo ang mga kasangkapan maliban kung nakonsulta ang nauunawaan itong Manwal ng Serbisyo.
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SERVICE SAFETY CONSIDERATIONS

-  **DANGER** **DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.**
-  **WARNING** *Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.*
-  **WARNING** *Beware of possible sharp edges of all mechanical parts. If sharp edges are encountered, the appropriate PPE (ex.cut resistant gloves) should be used to reduce the risk of injury.*
-  **NOTICE** *Several hand pictures do not have cut resistant gloves on in the service manuals but the purpose of the picture is to address the location of the parts and process steps. Therefore, field engineers should wear cut resistant gloves to reduce the risk of injury.*

For a complete review of all safety requirements, see the Chapter 1, Safety Considerations section of the latest version of LOGIQ P7/P8/P9/P10 Proprietary Service Manual, Direction 5599028.

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Revision History

| Revision | Date | Reason for change |
|----------|----------------|--------------------------|
| 1 | October 2014 | Initial release |
| 2 | December 2014 | Enhancement feedback |
| 3 | May 2015 | Enhancement feedback |
| 4 | March 2016 | Initial release for R2 |
| 5 | August 2016 | Correction |
| 6 | November 2016 | Initial release for R2.5 |
| 7 | July 2017 | Enhancement feedback |
| 8 | June 2018 | Enhancement feedback |
| 9 | August 2018 | Enhancement feedback |
| 10 | October 2018 | Enhancement feedback |
| 11 | January 2019 | Enhancement feedback |
| 12 | January 2020 | Enhancement feedback |
| 13 | May 2020 | Enhancement feedback |
| 14 | July 2020 | Adding LP8P9P10 R4 |
| 15 | January 2021 | Enhancement feedback |
| 16 | June 2021 | Enhancement feedback |
| 17 | September 2021 | Adding LP8P9P10 R4.5 |
| 18 | May 2022 | Enhancement feedback |

List of Effected Pages (LOEP)7

| Pages | Revision | Pages | Revision | Pages | Revision |
|----------------------|----------|--------------|----------|---------------|----------|
| Title Page | 18 | 3-1 to 3-78 | 18 | 8-1 to 8-206 | 18 |
| Warnings i to ii-xvi | 18 | 4-1 to 4-44 | 18 | 9-1 to 9-32 | 18 |
| TOC | 18 | 5-1 to 5-152 | 18 | 10-1 to 10-36 | 18 |
| 1-1 to 1-17 | 18 | 6-1 to 6-8 | 18 | Back Cover | N/A |
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CHAPTER 10

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Chapter 1

Introduction

Section 1-1 Overview

1-1-1 Purpose of Chapter 1

This chapter describes important issues related to safely servicing the **LOGIQ P7/P8/P9/P10** ultrasound system. The service provider must read and understand all the information presented in this manual before installing or servicing a unit.

Table 1-1 Contents in Chapter 1

| Section | Description | Page Number |
|---------|-------------------------------------|-------------|
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1-1-2 Purpose of Service Manual



NOTICE *This Service Manual is valid for **LOGIQ P7/P8/P9/P10** ultrasound systems.*

This Service Manual provides installation and service information for LOGIQ P7/P8/P9/P10 Ultrasound Scanning System and contains the following chapters:

- 1) **Chapter 1 - Introduction:** Contains a content summary and warnings.
- 2) **Chapter 2 - Site Preparation:** Contains pre-installation requirements.
- 3) **Chapter 3 - Setup Instructions:** Contains setup and installation procedures.
- 4) **Chapter 4 - Functional Checks:** Contains functional checks that are recommended as part of the installation, or as required during servicing and care and maintenance.
- 5) **Chapter 5 - Components and Functions (Theory):** Contains block diagrams and functional explanations of the electronics.
- 6) **Chapter 6 - Service Adjustments:** Contains instructions on how to make available adjustments.
- 7) **Chapter 7 - Diagnostics/Troubleshooting:** Provides procedures for running diagnostic or related routines.
- 8) **Chapter 8 - Replacement Procedures:** Provides disassembly procedures and reassembly procedures for all changeable Field Replaceable Units (FRU).
- 9) **Chapter 9 - Renewal Parts:** Contains a complete list of field replaceable parts.
- 10) **Chapter 10 - Care & Maintenance:** Provides care and maintenance procedures.

1-1-3 Typical Users of the Basic Service Manual

- GE Service Personnel (installation, maintenance, etc.)
- Hospital's Service Personnel
- Contractors (Some parts of Chapter 2 - Pre-Installation)

1-1-4 Models Covered by this Manual

Table 1-2 LOGIQ P7/P8/P9/P10 - Model Designations

| Part Number | Description |
|-------------|---|
| 5560941 | LOGIQ P7 Standard |
| 5560939 | LOGIQ P7 Tall |
| 5560938 | LOGIQ P9 |
| 5641296 | LOGIQ P7 with High Cabinet |
| 5641037 | LOGIQ P9 with Articulating Monitor Arm |
| 5724885 | LOGIQ P7 R2 with High Cabinet |
| 5724886 | LOGIQ P9 R2 with Articulating Monitor Arm |
| 5759916 | LOGIQ P7 R2.5 |
| 5759915 | LOGIQ P9 R2.5 |
| 5794264 | LOGIQ P9 R3 |
| 5795196 | LOGIQ P7 R3 |
| 5842858 | LOGIQ P8 R4 |
| 5842859 | LOGIQ P9 R4 |
| 5842860 | LOGIQ P10 R4 |
| 5858143 | LOGIQ P10 R4 HD |
| 5877532 | LOGIQ P8 R4.5 |
| 5877533 | LOGIQ P9 R4.5 |
| 5877534 | LOGIQ P10 R4.5 |
| 5877535 | LOGIQ P10 R4.5 HD |

NOTE: For LP9/P7 R3, the color of the system that is shown in this manual could look different from the real system.

1-1-5 Purpose of Operator Manual(s)

The Operator Manual(s) should be fully read and understood before operating the LOGIQ P7/P8/P9/P10 and also kept near the unit for quick reference.

Section 1-2 Important Conventions

1-2-1 Conventions Used in this Manual

Model Designations

This manual covers the LOGIQ P7/P8/P9/P10 ultrasound units listed on [page 1-2](#).

Icons

Pictures, or icons, are used wherever they reinforce the printed message. The icons, labels and conventions used on the product and in the service information are described in this chapter.

Safety Precaution Messages

Various levels of safety precaution messages may be found on the equipment and in the service information. The different levels of concern are identified by a flag word that precedes the precautionary message. Known or potential hazards are labeled in one of following ways:



DANGER INDICATES THE PRESENCE OF A HAZARD THAT WILL CAUSE SEVERE PERSONAL INJURY OR DEATH IF THE INSTRUCTIONS ARE IGNORED.



WARNING INDICATES THE PRESENCE OF A HAZARD THAT CAN CAUSE SEVERE PERSONAL INJURY AND PROPERTY DAMAGE IF INSTRUCTIONS ARE IGNORED.



CAUTION Indicates the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored.



NOTICE Equipment Damage Possible

Notice is used when a hazard is present that can cause property damage but has absolutely no personal injury risk.

Example: Disk drive will crash.

NOTE: Notes provide important information about an item or a procedure. Information contained in a NOTE can often save you time or effort.

1-2-2 Standard Hazard Icons

Important information will always be preceded by the exclamation point contained within a triangle, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could cause harm. Even if a symbol isn't used in this manual, it is included for your reference.



Table 1-3 Standard Hazard Icons

| ELECTRICAL | MECHANICAL | RADIATION |
|------------|------------|-----------|
| | | |
| LASER | HEAT | PINCH |
| | | |

Other hazard icons make you aware of specific procedures that should be followed.

Table 1-4 Standard Icons Indicating a Special Procedure be Used

| AVOID STATIC ELECTRICITY | TAG AND LOCK OUT | WEAR EYE PROTECTION |
|--------------------------|----------------------|--|
| | | |
| WEAR HAND PROTECTION | WEAR FOOT PROTECTION | EYE PROTECTION or |
| | | |

1-2-3 Product Icons

The following table describes the purpose and location of safety labels and other important information provided on the equipment.

Table 1-5 Product Icons






| LABEL/SYMBOL | PURPOSE/MEANING | LOCATION |
|--|--|---|
| Identification and Rating Plate | Manufacturer's name and address Model and serial numbers Electrical ratings | Rear side of the unit on each probe |
| Device Listing/Certification Labels | Laboratory logo or labels denoting conformance with industry safety standards such as UL or IEC. | Rear side of the unit |
|  | Council Directive 93/42/EEC concerning medical devices: The CE mark affixed to the equipment testifies compliance to the directive. Regulation (EU) 2017/745 concerning medical devices: The CE mark affixed to the equipment testifies compliance to the Regulation. | Rear side of the unit on the plug of each probe |
| Type/Class Label | Used to indicate the degree of safety or protection. | |
| IP Code (IPX 1) IP Code (IPX 7) | Indicates the degree of protection provided by the enclosure per IEC 60529. IPX 1 - protected against dripping water IPX 7 - protected against the effects of immersion | Footswitch Probes |
|  | Equipment Type BF (man in the box, symbol IEC 60878-5333) indicates B Type equipment having even more electrical isolation than standard Type B equipment because it is intended for intimate patient contact. | Probe connectors Main label on rear of system |
|  | To identify a defibrillation-proof type CF (heart in box with "electrodes", symbol IEC 60878-5336) applied part complying with IEC 60601-1. | Front side of the ECG-preamplifier |
| "CAUTION This unit weighs... Special care must be used to avoid..."  | This precaution is intended to prevent injury that may result if one person attempt to move the unit considerable distances or on an incline due to the weight of the unit. | Used in the Service and User Manual which should be adjacent to equipment at all times for quick reference. |
| "DANGER - Risk of explosion used in..." | The system is not designed for use with flammable anesthetic gases. | Indicated in the Service Manual. |
|  | "CAUTION" The equilateral triangle is usually used in combination with other symbols to advise or warn the user. | various |

Table 1-5 Product Icons (Continued)






| LABEL/SYMBOL | PURPOSE/MEANING | LOCATION |
|---|---|---|
|  | "ATTENTION - Consult accompanying documents " is intended to alert the user to refer to the operator manual or other instructions when complete information cannot be provided on the label. | Rear side of Power Supply |
|  | "CAUTION - Dangerous voltage" (the lightning flash with arrowhead in equilateral triangle) is used to indicate electric shock hazards. | various |
|  | "Mains OFF" Indicates the power off position of the mains power switch. | rear of system at mains switch |
|  | "OFF/Standby" Indicates the power off/standby position of the power switch. CAUTION This Power Switch DOES NOT ISOLATE Mains Supply | Adjacent to On-Off/Standby switch left below the Control panel. |
|  | "Mains ON" Indicates the power on position of the mains power switch. | rear of system at mains switch |
|  | "Protective Earth" Indicates the protective earth (grounding) terminal. | rear of system at mains switch (on primary power supply - RTN) |
|  | "Equipotentiality" Indicates the terminal to be used for connecting equipotential conductors when interconnecting (grounding) with other equipment. | rear of system at mains switch (on primary power supply - RTN) |
|  | Waste Electrical and Electronic Equipment (WEEE) Disposal. This symbol indicates that waste electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment. | Rear side of the unit on the plug of each probe |
|  | These symbols indicate that at least one of the six hazardous substances of the China RoHS Labeling Standard is above the RoHS limitation. The number inside the circle is referred to as the Environmental Friendly Use Period (EFUP). It indicates the number of years that the product, under normal use, will remain harmless to health of humans or the environment. EFUP = 10 for Short Use Products EFUP = 20 for Medium Use Products | Rear side of the unit on the plug of each probe |

Table 1-5 Product Icons (Continued)

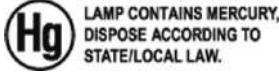

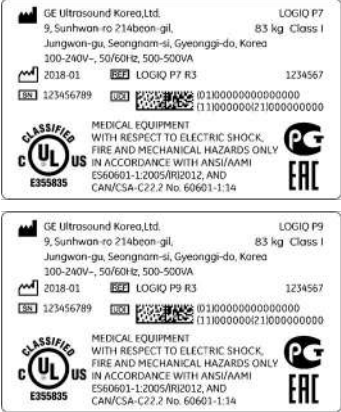



| LABEL/SYMBOL | PURPOSE/MEANING | LOCATION |
|---|--|---|
|  | <p>This product consists of devices that may contain mercury, which must be recycled or disposed of in accordance with local, state, or country laws. (Within this system, the backlight lamps in the monitor and the Touch Panel display, contain mercury.)</p> | <p>Rear side of the unit not visible: - below the cover on read side of Monitor - on rear side of the Touch Panel</p> |
|  | <p>Loading prohibited</p> | <p>at top cover of the system</p> |
|  | <p>Every system has a unique marking for identification, the Unique Device Identification (UDI) Label. The UDI label consists of a series of alpha-numeric characters and barcode, which uniquely identify the LOGIQ P7/P9 system as a medical device manufactured by General Electric. Scan or enter the UDI information into the patient health record as required by country-specific laws.</p> | <p>Rating Plate</p> |
|  | | <p>Upgraded LOGIQ P9 systems, adjacent to the Rating Plate</p> |

Table 1-5 Product Icons (Continued)

| LABEL/SYMBOL | PURPOSE/MEANING | LOCATION |
|--------------|---|--|
| | <p>Every system has a unique marking for identification, the Unique Device Identification (UDI) Label. The UDI label consists of a series of alpha-numeric characters and barcode, which uniquely identify the LOGIQ P8/P9/P10 R4 system as a medical device manufactured by General Electric. Scan or enter the UDI information into the patient health record as required by country-specific laws.</p> | <p>Rating Plate</p> |
| | | <p>Upgraded LOGIQ P9 systems, adjacent to the Rating Plate</p> |

Table 1-5 Product Icons (Continued)

| LABEL/SYMBOL | PURPOSE/MEANING | LOCATION |
|---|---|---|
|  <p>GE Ultrasound Korea, Ltd. LOGIQ P8 9, Sunhwan-ro 214beon-gil, Jungwan-gu, 83 kg Seongnam-si, Gyeonggi-do, 13204 Republic of Korea 5877532 100-240V~, 50/60Hz, 500-500VA GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC France 2021-01 2021-01 LOGIQ P8 RA.5 CE 0197 123456789 123456789 011000000000000000 1110000000211000000000 CLASSIFIED UL US E355835 MEDICAL - ULTRASOUND EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY III ACCORDANCE WITH ANSI/AAMI ES60601-1:2005/RR2012 AND A2:2012, C1:2009/RR2012 AND A2:2010/RR2012 CSA CAN/CSA-C22.2 NO. 60601-1-14</p> <p>GE Ultrasound Korea, Ltd. LOGIQ P9 9, Sunhwan-ro 214beon-gil, Jungwan-gu, 83 kg Seongnam-si, Gyeonggi-do, 13204 Republic of Korea 5877533 100-240V~, 50/60Hz, 500-500VA GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC France 2021-01 2021-01 LOGIQ P9 RA.5 CE 0197 123456789 123456789 011000000000000000 1110000000211000000000 CLASSIFIED UL US E355835 MEDICAL - ULTRASOUND EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY III ACCORDANCE WITH ANSI/AAMI ES60601-1:2005/RR2012 AND A2:2012, C1:2009/RR2012 AND A2:2010/RR2012 CSA CAN/CSA-C22.2 NO. 60601-1-14</p> <p>GE Ultrasound Korea, Ltd. LOGIQ P10 9, Sunhwan-ro 214beon-gil, Jungwan-gu, 83 kg Seongnam-si, Gyeonggi-do, 13204 Republic of Korea 5877534 100-240V~, 50/60Hz, 500-500VA GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC France 2021-01 2021-01 LOGIQ P10 RA.5 CE 0197 123456789 123456789 011000000000000000 1110000000211000000000 CLASSIFIED UL US E355835 MEDICAL - ULTRASOUND EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY III ACCORDANCE WITH ANSI/AAMI ES60601-1:2005/RR2012 AND A2:2012, C1:2009/RR2012 AND A2:2010/RR2012 CSA CAN/CSA-C22.2 NO. 60601-1-14</p> <p>GE Ultrasound Korea, Ltd. LOGIQ P10 9, Sunhwan-ro 214beon-gil, Jungwan-gu, 83 kg Seongnam-si, Gyeonggi-do, 13204 Republic of Korea 5877535 100-240V~, 50/60Hz, 500-500VA GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC France 2021-01 2021-01 LOGIQ P10 RA.5 HD CE 0197 123456789 123456789 011000000000000000 1110000000211000000000 CLASSIFIED UL US E355835 MEDICAL - ULTRASOUND EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY III ACCORDANCE WITH ANSI/AAMI ES60601-1:2005/RR2012 AND A2:2012, C1:2009/RR2012 AND A2:2010/RR2012 CSA CAN/CSA-C22.2 NO. 60601-1-14</p> | <p>Every system has a unique marking for identification, the Unique Device Identification (UDI) Label. The UDI label consists of a series of alpha-numeric characters and barcode, which uniquely identify the LOGIQ P8/P9/P10 R4.5 system as a medical device manufactured by General Electric. Scan or enter the UDI information into the patient health record as required by country-specific laws.</p> | <p>Rating Plate</p> |
|  <p>LOGIQ P8/P9 to RA.5 UFG 880913_2 01100000000000000000 1110000000211000000000 GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France 2021-01 2021-01 LOGIQ P8/P9 to RA.5 UFG 123456789 123456789 011000000000000000 1110000000211000000000 P/N: 5880945 GE ULTRASOUND KOREA, Ltd. 9, Sunhwan-ro 214beon-gil, Jungwan-gu, SEONGNAM-SI, GYEONGGI-DO, Republic of Korea</p> <p>LOGIQ P9 RA to RA.5 UFG 880913_2 01100000000000000000 1110000000211000000000 GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France 2021-01 2021-01 LOGIQ P9 RA to RA.5 UFG 123456789 123456789 011000000000000000 1110000000211000000000 P/N: 5880945 GE ULTRASOUND KOREA, Ltd. 9, Sunhwan-ro 214beon-gil, Jungwan-gu, SEONGNAM-SI, GYEONGGI-DO, Republic of Korea</p> <p>LOGIQ P8/P9 to RA.5 UFG 880913_2 01100000000000000000 1110000000211000000000 GE Medical Systems (Schweiz) AG, Europastrasse 31, 8152 Glattbrugg, Switzerland GE Medical Systems SCS 283 rue de la Minière, 78530 BUC, France 2021-01 2021-01 LOGIQ P8/P9 to RA.5 UFG 123456789 123456789 011000000000000000 1110000000211000000000 P/N: 5880945 GE ULTRASOUND KOREA, Ltd. 9, Sunhwan-ro 214beon-gil, Jungwan-gu, SEONGNAM-SI, GYEONGGI-DO, Republic of Korea</p> | | <p>Upgraded LOGIQ P8/P9/P10 systems, adjacent to the Rating Plate</p> |

Section 1-3 Safety Considerations

1-3-1 Introduction


The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture and intended use of the equipment.

1-3-2 Human Safety

Operating personnel must not remove the system covers, except for removing front cover to clean air filter.

Servicing should be performed by authorized personnel only. Only personnel who have participated in a LOGIQ P7/P8/P9/P10 Training are authorized to service the equipment.

1-3-3 Mechanical Safety

 **CAUTION** The LOGIQ P7/P8/P9/P10 weighs 60 kg or more, depending on installed peripherals, (133 lbs or more) when ready for use.





Care must be used when moving it or replacing its parts. Failure to follow the precautions listed could result in injury, uncontrolled motion and costly damage.

ALWAYS:

- Use the handle to move the system.
- Be sure the pathway is clear.
- Use slow, careful motions.
- Do not let the system strike walls or door frames.


Two people are required when moving on inclines or lifting more than 16 kg (35 lbs).

 **WARNING** ***USE EXTREME CAUTION WHEN ELEVATING THE UNIT, OR IF IT IS RAISED FOR A REPAIR OR MOVED ALONG ANY INCLINE. THE LOGIQ P7/P8/P9/P10 SYSTEM MAY BECOME UNSTABLE WHICH COULD CAUSE A TIP OVER.***

 **WARNING** ***ULTRASOUND PROBES ARE HIGHLY SENSITIVE MEDICAL INSTRUMENTS THAT CAN EASILY BE DAMAGED BY IMPROPER HANDLING. USE CARE WHEN HANDLING AND PROTECT FROM DAMAGE WHEN NOT IN USE. DO NOT USE A DAMAGED OR DEFECTIVE PROBE. FAILURE TO FOLLOW THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY AND EQUIPMENT DAMAGE.***

 **WARNING** ***NEVER USE A PROBE THAT HAS FALLEN TO THE FLOOR. EVEN IF IT LOOKS OK, IT MAY BE DAMAGED.***

 **CAUTION** Always lower and center the Operator I/O Panel before moving the scanner.

 **CAUTION** Before you move or transport the system, make sure to lock the LCD monitor firmly and flip down the monitor to prevent damage to the system.

NOTE: *Special care should be taken when transporting the unit in a vehicle:*

- *Eject any DVD/CD from the drive.*
- *Place the probes in their carrying cases.*
- *DO NOT use the Control Panel as an anchor point.*
- *Secure the systems with straps in an upright position and lock the caster wheels (brake).*
- *Ensure that the LOGIQ P7/P8/P9/P10 system is firmly secured while inside the vehicle.*
- *Prevent vibration damage by driving cautiously. Avoid unpaved roads, excessive speeds, and erratic stops or starts.*

1-3-4 Electrical Safety

1-3-4-1 Safe Practices

To minimize shock hazard, the equipment chassis must be connected to an electrical ground. The system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground. If an extension cord is used with the system, make sure that the total current rating of the system does not exceed the extension cord rating.

The power outlet used for this equipment should not be shared with other types of equipment. Both the system power cable and the power connector meet international electrical standards.

This product is classified as Class I and INTERNALLY POWERED ME EQUIPMENT according to the IEC/EN 60601-1.

1-3-4-2 Probes


All the probes for the LOGIQ P7/P8/P9/P10 are designed and manufactured to provide trouble-free, reliable service. To ensure this, correct handling of probes is important and the following points should be noted:

- Do not drop a probe or strike it against a hard surface, as this may damage the transducer elements, acoustic lens, or housing.
- Inspect the probe prior to each use for damage or degradation to the Housing, Cable strain relief, Lens and Seal.
- Do not use a cracked or damaged probe. In this event, call your field service representative immediately to obtain a replacement.
- Avoid pulling, pinching or kinking the probe cable, since a damaged cable may compromise the electrical safety of the probe.
- To avoid the risk of a probe accidentally falling, do not allow the probe cables to become entangled, or to be caught in the machine's wheels.
- Never immerse the probe connector or adapter into any liquid.

NOTE: *For detailed information on handling probes, refer to the LOGIQ P7/P8/P9/P10 Basic User Manual and the care card supplied with the probe.*

1-3-5 Auxiliary Devices Safety

 **WARNING** *Power Supplies for additional equipment **MUST** comply with IEC 60601-1.*

 **WARNING** ***DO NOT attempt to use different peripherals and accessories (brand and model; connected via USB ports) other than approved and provided by GE Healthcare! The ultrasound system is an extremely sensitive and complex medical system. Any unauthorized peripherals may cause system failure or damage!***

The LOGIQ P7/P8/P9/P10 may be used with an isolation transformer to provide the required separation from mains for both, the system and the auxiliary devices.

One AUX main outlet is located at the primary power supply. It is used for connecting the two-fold splitter whose outlets are led to the shelves intend for auxiliary devices (e.g., printers) and the AUX main outlet that is accessible on the back of the control console.

The IEC 60601-1-1 standard provides a guideline for safely interconnecting medical devices in systems. "Equipment connected to the analog or digital interface must comply with the respective IEC/UL standards (e.g. IEC 60950 / UL 60950 for data processing equipment and IEC 60601-1 / ANSI/AAMI ES60601-1 for medical equipment).


Everybody who connects additional equipment to the signal input portion or signal output portion configures a medical system, and is therefore responsible that the system complies with the requirements of the system standard IEC 60601-1-1.

Special care has to be taken, if the device is connected to computer network (e.g., Ethernet), because other devices could be connected without any control. There could be a potential difference between the protective earth and any line of the computer network including the shield.


In this case the only way to operate the system safely is to use an isolated signal link with minimum 4mm creepage distance, 2.5mm air clearance of the isolation device. For computer networks there are media converters available which convert the electrical to optical signals. Please consider that this converter has to comply with IEC xxx standards* and is battery operated or connected to the isolation mains output of the LOGIQ P7/P8/P9/P10 ultrasound system.

* IEC xxx stands for standards such as:

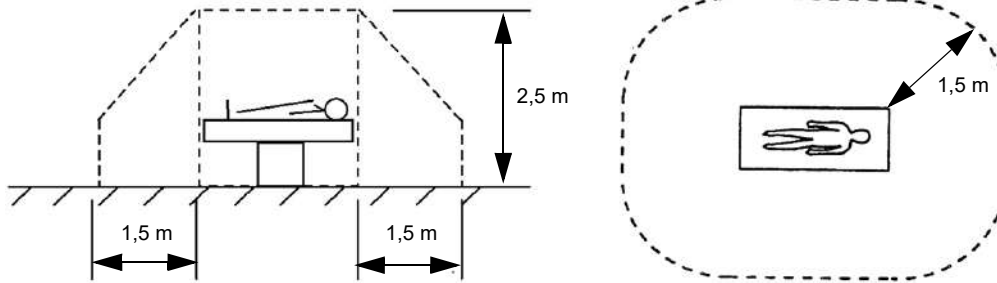
- IEC 60601 for medical devices
- IEC 60950 for information technology equipment etc.

 **NOTICE** **The system integrator** (any person connecting the medical device to other devices) **is responsible that the connections are safe.**

If in doubt, consult the technical service department or your local representative.

 **CAUTION** **The leakage current of the entire system including any / all auxiliary equipment must not exceed the limit values as per IEC 60601-1 / EN 60601-1 respectively other valid national or international standards. All equipment must comply with UL, CSA and IEC requirements.**

CAUTION Please observe that some printers may not be medical devices! If the Bluetooth Printer and/or Line Printers are no medical devices, they have to be located outside of the patient environment (according to IEC 60601-1 / ANSI/AAMI ES60601-1).



CAUTION Auxiliary equipment must only be connected to the main console with the special main outlet provided for the electrical safety of the system.

CAUTION Auxiliary equipment with direct main connection requires galvanic separation of the signal and/or control leads.

For hardware installation procedures see: [Chapter 3 - Connection of Auxiliary Devices, on page 3-12.](#)

WARNING After each installation, the leakage currents have to be measured according to IEC 60601-1 respectively ANSI/AAMI ES60601-1.


NOTICE All peripherals mounted on the LOGIQ P7/P8/P9/P10 system chassis must be firmly secured in position.


1-3-6 Battery Safety

NOTE: *The LOGIQ P7/P8/P9/P10 ultrasound system is supplied with a lithium ion battery in the power supply module, as option.*

The lithium ion technology used in the system's battery is significantly less hazardous to the environment than the lithium metal technology used in some other batteries (such as watch batteries). Used batteries should not be placed with common household waste products. Contact local authorities for the location of a chemical waste collection program nearest you.

NOTE: *Regulations vary for different countries. Dispose of a used battery in accordance with local regulations.*

 **CAUTION USE ONLY BATTERIES APPROVED BY GE HEALTHCARE AS SUITABLE FOR USE WITH THE LOGIQ P7/P8/P9/P10 ULTRASOUND SYSTEM.**

 **WARNING THE LOGIQ P7/P8/P9/P10 BATTERY HAS A SAFETY DEVICE. DO NOT ATTEMPT TO DIS-ASSEMBLE OR ALTER THE BATTERY! ALWAYS OBSERVE THE FOLLOWING PRECAUTIONS:**

- DO NOT short-circuit the battery by directly connecting the negative terminals with metal objects.
- DO NOT heat the battery or discard it in a fire.
- DO NOT expose the battery to temperatures over 50 °C. Keep the battery away from fire and other heat sources.
- DO NOT charge the battery near a heat source, such as, a fire or heater.
- DO NOT leave the battery in direct sunlight.
- DO NOT pierce the battery with a sharp object, hit it, or step on it.
- DO NOT use a damaged battery.
- DO NOT apply solder to a battery.
- DO NOT connect the battery to an electrical power outlet.

 **CAUTION TO PREVENT THE BATTERY BURSTING, IGNITING, OR FUMES FROM THE BATTERY CAUSING EQUIPMENT DAMAGE, ALWAYS OBSERVE THE FOLLOWING PRECAUTIONS:**

- DO NOT immerse the battery in water or allow it to get wet.
- DO NOT place the battery into a microwave oven or pressurized container.
- If the battery leaks or emits an odor, remove it from all possible flammable sources.
- If the battery emits an odor or heat, is deformed or discolored, or in a way appears abnormal during use, recharging or storage, immediately remove it and stop using it.

NOTE: *If you have any questions about the battery, consult your local GE representative.*

- Storage of the battery pack:
Short-term (less than 1 month): between 0 °C (32 °F) and 50 °C(122 °F)
Long-term (more than 3 months): between 10 °C (50 °F) and 35 °C (95 °F)

When charging the battery for the first time after long-term storage, recover the battery pack to original performance through repeating several cycles of full charging and discharging.

1-3-7 Labels Locations

The LOGIQ P9/P7 ultrasound system comes equipped with product labels and icons. These labels and icons represent pertinent information regarding the operation of the unit.

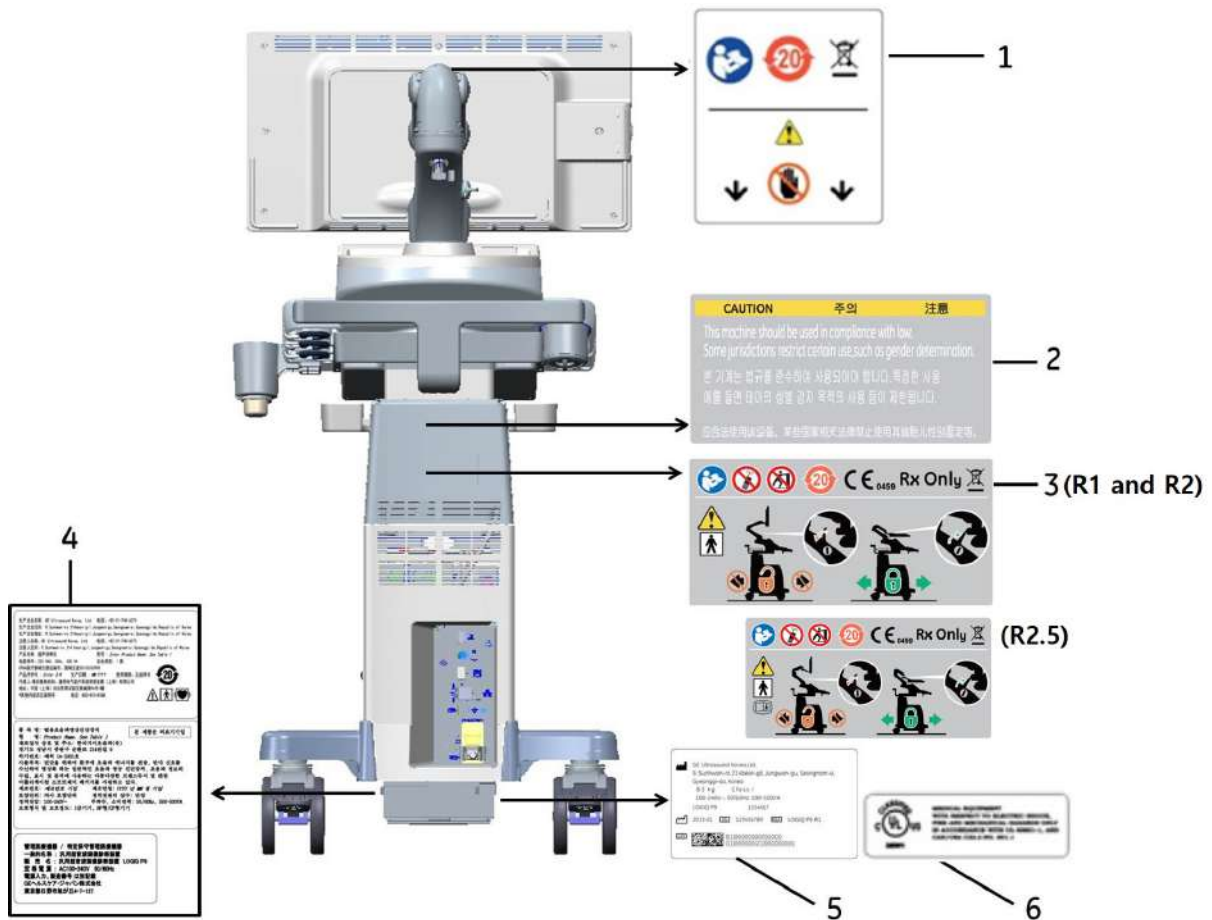


Figure 1-1 Label Location (R1, R2 and R2.5)

* Required for Asia.

- 1) LCD Caution Label
- 2) Gender Caution Label (Only for India, China, Korea)
- 3) Multi Caution Label
- 4) LOGIQ P9/P7 Rating Label (For China, Korea, Japan)
- 5) LOGIQ P9/P7 Rating Label
- 6) UL Label



Figure 1-2 Label Location (R3)

* Required for Asia.

- 1) LCD Caution Label
- 2) Gender Caution Label (Only for India, China, Korea)
- 3) Multi Caution Label
- 4) LOGIQ P9/P7 Rating Label (For China, Korea, Japan)
- 5) LOGIQ P9/P7 Rating Label

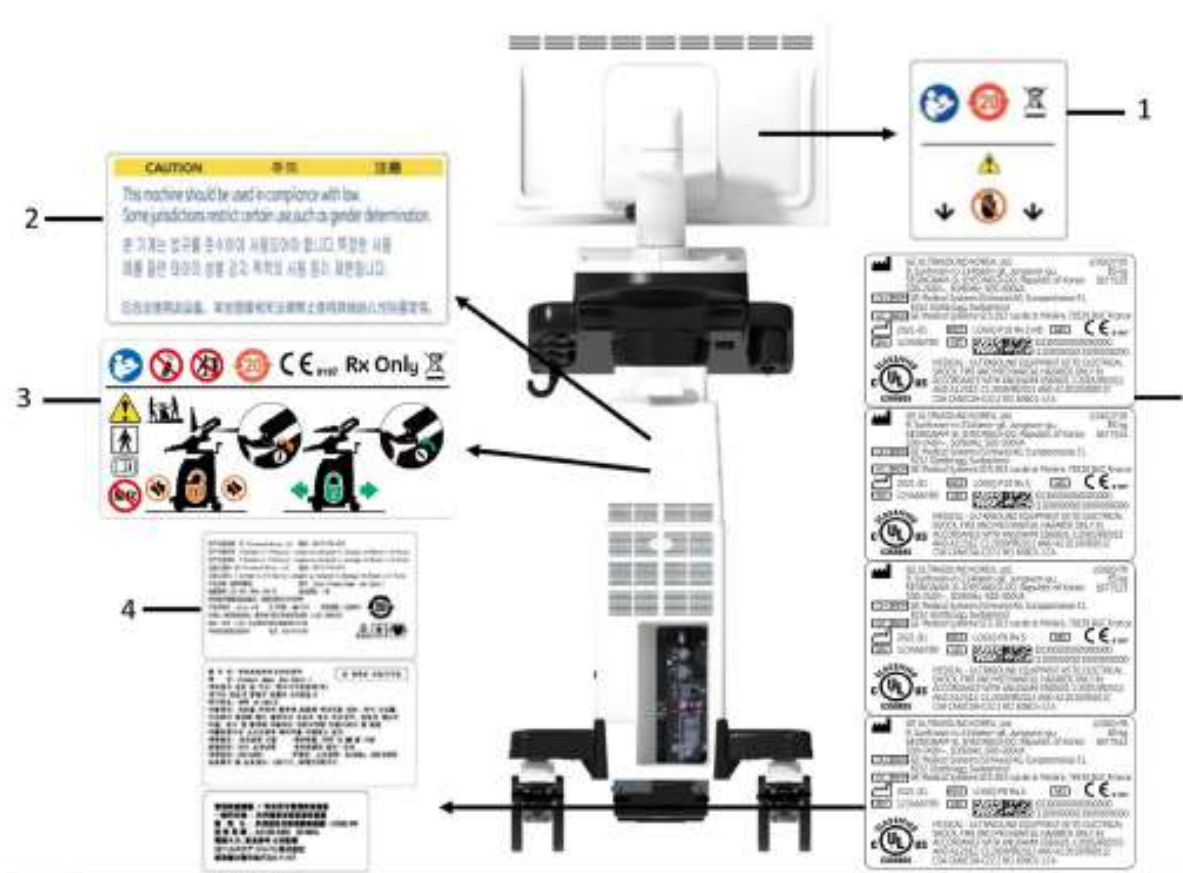


Figure 1-3 Label Location (R4)

- 1) LCD Caution Label
- 2) Gender Caution Label (Only for India, China, Korea)
- 3) Multi Caution Label
- 4) LOGIQ P8/P9/P10 Rating Label (For China, Korea, Japan)
- 5) LOGIQ P8/P9/P10 Rating Label

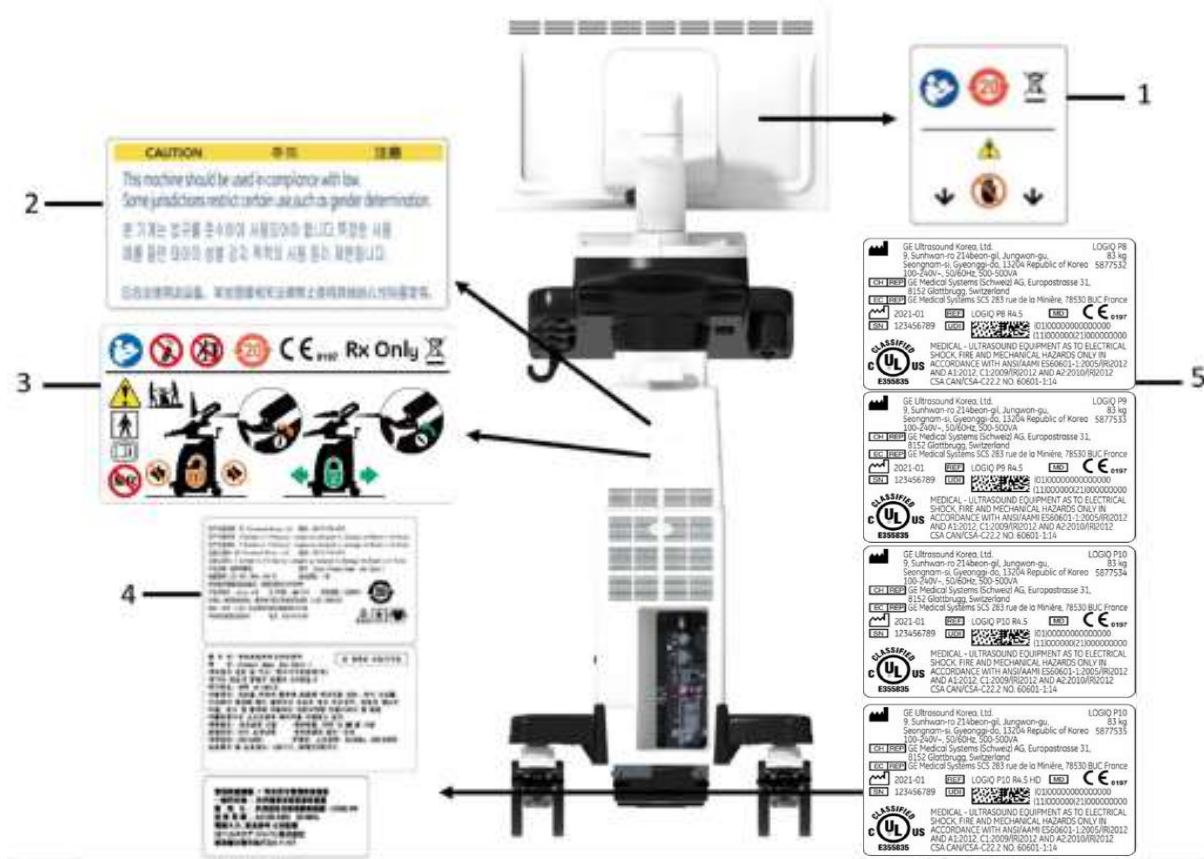


Figure 1-4 Label Location (R4.5)

- 1) LCD Caution Label
- 2) Gender Caution Label (Only for India, China, Korea)
- 3) Multi Caution Label
- 4) LOGIQ P8/P9/P10 Rating Label (For China, Korea, Japan)
- 5) LOGIQ P8/P9/P10 Rating Label

1-3-8 Dangerous Procedure Warnings

Warnings, such as the examples below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.



DANGER DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT.



USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



WARNING EXPLOSION WARNING

DO NOT OPERATE THE EQUIPMENT IN AN EXPLOSIVE ATMOSPHERE. OPERATION OF ANY ELECTRICAL EQUIPMENT IN SUCH AN ENVIRONMENT CONSTITUTES A DEFINITE SAFETY HAZARD.



WARNING DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT

BECAUSE OF THE DANGER OF INTRODUCING ADDITIONAL HAZARDS, DO NOT INSTALL SUBSTITUTE PARTS OR PERFORM ANY UNAUTHORIZED MODIFICATION OF THE EQUIPMENT.

1-3-9 Lockout/Tagout Requirements (For USA Only)

Follow OSHA Lockout/Tagout requirements to protect service personnel from injuries caused by unexpected energizing or start-up of equipment during service, repair, or maintenance.



NOTICE Energy Control and Power Lockout for LOGIQ P7/P8/P9/P10.



When servicing parts of the system where there is exposure to voltage greater than 30 Volts:
Unplug the system.

Maintain control of the system power plug.

There are no test points to verify isolation, you must wait for at least 20 seconds for capacitors to discharge.

Beware that the Power Supply, Front End Processor and Back End Processor may be energized even if the power is turned off when the cord is still plugged into the AC Outlet.

1-3-10 Returning/Shipping System, Probes and Repair Parts

When returning or shipping the LOGIQ P7/P8/P9/P10 system in the original packaging:

- system must be lowered to its minimum height with monitor flapped down (see Figure on [page 3-7](#))
- the Control Console has to be centered and locked in “unextended” position.

Equipment being returned must be clean and free of blood and other infectious substances.

GEHC policy states that body fluids must be properly removed from any part or equipment prior to shipment. GEHC employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or and ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

1-3-10 Returning/Shipping System, Probes and Repair Parts (cont?)

NOTE: *The US Department of Transportation (DOT) has ruled that “items what were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purpose and must be transported as a hazardous material.*

Section 1-4 Electromagnetic Compatibility (EMC)

1-4-1 What is EMC?

Electromagnetic compatibility describes a level of performance of a device within its electromagnetic environment. This environment consists of the device itself and its surroundings including other equipment, power sources and persons with which the device must interface. Inadequate compatibility results when a susceptible device fails to perform as intended due interference from its environment or when the device produces unacceptable levels of emission to its environment. This interference is often referred to as radio-frequency or electromagnetic interference (RFI/EMI) and can be radiated through space or conducted over interconnecting power or signal cables. In addition to electromagnetic energy, EMC also includes possible effects from electrical fields, magnetic fields, electrostatic discharge and disturbances in the electrical power supply.

For applicable standards please refer to Chapter 2 in the Basic User Manual of the LOGIQ P7/P8/P9/P10 ultrasound system.

1-4-2 Compliance

The LOGIQ P7/P8/P9/P10 unit conforms to all applicable conducted and radiated emission limits and to immunity from electrostatic discharge, radiated and conducted RF fields, magnetic fields and power line transient requirements as mentioned in IEC 60601-1-2.


NOTE: *For CE Compliance, it is critical that all covers, screws, shielding, gaskets, mesh, clamps, are in good condition, installed tightly without skew or stress. Proper installation following all comments noted in this service manual is required in order to achieve full EMC performance.*

1-4-3 Electrostatic Discharge (ESD) Prevention

 **WARNING** *DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions:*



- 1.) When installing boards, ESD may cause damage to a board.
ALWAYS connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the system (to the right of the power connector).*
- 2.) Follow general guidelines for handling of electrostatic sensitive equipment.*

 **WARNING** *Risk of electrical shock: System must be turned off.
Avoid all contact with electrical contacts, conductors and components.
Always use non-conductive handles designed for the removal and replacement of ESD sensitive parts. All parts that have the potential for storing energy must be discharged or isolated before making contact.*

Section 1-5 Customer Assistance

1-5-1 Contact Information

If this equipment does not work as indicated in this service manual or in the Basic User Manual, or if you require additional assistance, please contact the local distributor or appropriate support resource, as listed below.

NOTE: Prepare vital system information (see: [Section 7-2 on page 7-2](#)) before you call:

- System Type
- System Serial number (also visible on label on back of the system)
- Application Software version
- Backup version
- additional information about installed software

Table 1-6 Phone Numbers for Customer Assistance

| Location | Phone Number | |
|---|---|---|
| USA GE Healthcare Ultrasound Service Engineering 9900 Innovation Drive (RP-2123) Wauwatosa, WI 53226, USA | Service On-site | 1-800-437-1171 |
| | Service: Parts | 1-800-558-2040 |
| | Applications support | 1-800-682-5327 or 1-262-524-5698 |
| Canada | | 1-800-668-0732 |
| Latin America | Service | 1-800-321-7937 |
| | Applications support | 1-262-524-5698 |
| Europe GE Ultraschall Deutschland GmbH Beethovenstraße 239 Postfach 11 05 60, D-42655 Solingen Germany | OLC - EMEA (Europe, Middle East & Africa) | |
| | Phone: | +49 (0) 212 2802 - 652 (-OLC) +33 1 3083 1300 (English/German all segments incl. training) |
| | Fax: | +49 (0) 212 2802 - 431 |
| Online Services Ultrasound Asia Australia China India Japan Korea Singapore | Phone: | +(61) 1-800-647-855 +(86) 800-810-8188 +(91) 1-800-11-4567 +(81) 42-648-2924 +(82) 2-6201-3585 +(95) 6277-3444 |

1-5-2 System Manufacturer

Table 1-7 System Manufacturer

| Manufacturer | FAX Number |
|---|---------------------|
| GE Ultrasound Korea, Ltd. 9, Sunhwan-ro 214beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea | +82 (0) 31-740-6436 |

Chapter 2

Site Preparation

Section 2-1 Overview

2-1-1 Purpose of Chapter 2

This chapter provides the information required to plan and prepare for the installation of a LOGIQ P7/P8/P9/P10 ultrasound unit. Included are descriptions of the facility and electrical needs to be met by the purchaser.

Table 2-1 Contents in Chapter 2


| Section | Description | Page Number |
|---------|--|-------------|
| 2-1 | Overview | 2-1 |
| 2-2 | General Console Requirements | 2-2 |
| 2-3 | Facility Needs | 2-7 |

Section 2-2 General Console Requirements

2-2-1 Environmental Requirements

Table 2-2 System Environmental Requirements

| | Operational (with probe) | Storage (LOGIQ P7/P8/P9/P10) | Transport (LOGIQ P7/P8/P9/P10) |
|-------------|--|---------------------------------|-----------------------------------|
| Temperature | 10 - 35 °C (50 - 95 °F) with 2D probe 18- 30 °C (64.4 - 86°F) with 4D probe | -10 - 50 °C (14 - 122 °F) | -10 - 50 °C (14 - 122 °F) |
| Humidity | 10 - 80% (non-condensing) | 10 - 90% (non-condensing) | 10 - 90% (non-condensing) |
| Pressure | 700 - 1060hPa | 700 - 1060hPa | 700 - 1060hPa |

 **CAUTION** If the system has been in storage or has been transported, please see the acclimation requirements before powering ON and/or using the system (see: [Section 3-2-2 "Installation Warnings" on page 3-3](#)).

2-2-1-1 Cooling

The cooling requirement for the LOGIQ P7/P8/P9/P10 is 680 BTU/hr. This figure does not include cooling needed for lights, people, or other equipment in the room.

NOTE: Each person in the room places an additional 300 BTU/hr. demand on the cooling system.

2-2-1-2 Lighting

Bright light is needed for system installation, updates and repairs. However, operator and patient comfort may be optimized if the room light is subdued and indirect. Therefore a combination lighting system (dim/bright) is recommended. Keep in mind that lighting controls and dimmers can be a source of EMI which could degrade image quality. These controls should be selected to minimize possible interference.

2-2-2 Electrical Requirements

NOTE: GE Healthcare requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the system.

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size Ground wire from the distribution panel to the Ultrasound outlet.

NOTE: Please note that image artifacts can occur, if at any time within the facility, the Ground from the main facility's incoming power source to the Ultrasound unit is only a conduit.

2-2-2-1 LOGIQ P7/P8/P9/P10 Power Requirements

Table 2-3 Electrical Specifications for LOGIQ P7/P8/P9/P10

| Voltage | Tolerances | Current | Frequency |
|---------------|------------|---------------|-----------------|
| 100 - 120 VAC | ±10% | 5.0 ... 4.1 A | 50, 60 Hz (±2%) |
| 220 - 240 VAC | ±10% | 2.2 ... 2.0 A | 50, 60 Hz (±2%) |

Power Consumption nominal 500 VA including all on-board peripherals.

2-2-2-2 Inrush Current

Inrush current is not a factor to consider due to the inrush current limiting properties of the power supplies.

2-2-2-3 Site Circuit Breaker

It is recommended that the branch circuit breaker for the machine be readily accessible.

CAUTION POWER OUTAGE MAY OCCUR.

The LOGIQ P7/P8/P9/P10 requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you DO NOT have any other equipment operating on the same circuit.

2-2-2-4 Site Power Outlets


A dedicated AC power outlet must be within reach of the unit without extension cords. Other adequate outlets for the external peripherals, medical and test equipment needed to support this unit must also be present within 1 m (3.2 ft.) of the unit. Electrical installation must meet all current local, state, and national electrical codes.

2-2-2-5 Main Power Plug

The LOGIQ P7/P8/P9/P10 ultrasound system is supplied with a main power plug, as standard. In the event that the unit arrives without a power plug, or with the wrong plug, contact your GE dealer. When necessary, the installation engineer will supply the appropriate power plug to meet the applicable local regulations.

2-2-3 EMI Limitations

Ultrasound systems are susceptible to Electromagnetic Interference (EMI) from radio frequencies, magnetic fields, and transients in the air or wiring. Ultrasound machines also generate EMI. The LOGIQ P7/P8/P9/P10 complies with limits as stated on the EMC label. However, there is no guarantee that interference will not occur in a particular installation.

 **NOTICE** Possible EMI sources should be identified before the unit is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of a defect. Sources of EMI include the following:

- medical lasers
- scanners
- cauterizing guns
- computers
- monitors
- fans
- gel warmers
- microwave oven
- light dimmers
- portable phones
- broadcast stations and mobile broadcasting machines

Table 2-4 EMI Prevention/Abatement

| EMI Rule | Details |
|---|---|
| Be aware of RF sources. | Keep the unit at least 5 meters (16.4 feet) away from other EMI sources. Special shielding may be required to eliminate interference problems caused by high frequency, high powered radio or video broadcast signals. |
| Ground the unit. | Poor grounding is the most likely reason a unit will have noisy images. Check grounding of the power cord and power outlet. |
| Replace and/or reassemble all screws, RF gaskets, covers and cores. | After you finish repairing or updating the system, replace all covers and tighten all screws. Any cable with an external connection requires a magnet wrap at each end. Install the shield over the front of card cage. Loose or missing covers or RF gaskets allow radio frequencies to interfere with the ultrasound signals. |
| Replace broken RF gaskets. | If more than 20% or a pair of the fingers on an RF gasket are broken, replace the gasket. Do not turn ON the unit until any loose metallic part is removed and replaced, if required. |
| Do not place labels where RF gaskets touch metal. | Never place a label where RF gaskets meet the unit. Otherwise, the gap created will permit RF leakage. In case a label has been found in such a location, move the label to a different, appropriate location. |
| Use GE- specified harnesses and peripherals. | The interconnect cables are grounded and require ferrite beads and other shielding. Cable length, material, and routing are all important; do not make any changes that do not meet all specifications. |
| Take care with cellular phones. | Cellular phones may transmit a 5 V/m signal that causes image artifacts. |
| Properly dress peripheral cables. | Do not allow cables to lie across the top of the card cage or hang out of the peripheral bays. Loop the excess length for peripheral cables inside the peripheral bays. Attach the monitor cables to the frame. |

2-2-4 Probe Environmental Requirements

Table 2-5 2D/4D Probe Environmental Requirements

| | Operational |
|-------------|--|
| Temperature | 10 ° - 35 °C for 2D probe 18° - 30°C for 4D probe |
| Humidity | 10 - 80% (non-condensing) for 2D probe 30 - 80% (non-condensing) for 4D probe |
| Pressure | 700 - 1060hPa |



NOTICE SYSTEMS AND ELECTRONIC PROBES ARE DESIGNED FOR STORAGE TEMPERATURES OF 0 TO + 55 degrees C. WHEN EXPOSED TO LARGE TEMPERATURE VARIATIONS, THE PRODUCT SHOULD BE KEPT IN ROOM TEMPERATURE FOR 10 HOURS BEFORE USE.

2-2-5 Time and Manpower Requirements

Site preparation takes time. Begin Pre-installation checks as soon as possible. If possible, allow six weeks before delivery, for enough time to make necessary changes.



CAUTION Have two people available to deliver and unpack the LOGIQ P7/P8/P9/P10 Ultrasound System. Attempts to move the unit considerable distances (or on an incline) by one person alone, could result in personal injury and/or damage to the system.



2-2-6 System Specifications

2-2-6-1 Physical Dimensions of LOGIQ P7/P8/P9/P10

The physical dimensions and weight (without Peripherals) of the LOGIQ P7/P8/P9/P10 unit are summarized in [Table 2-6](#).

NOTE: *Physical dimensions (especially height and depth) depend on control console and monitor positioning. For more details refer to [Chapter 5 - OPIO Positioning, on page 5-25](#).*

Table 2-6 Physical Dimensions and Weight (without Peripherals) (R1 to R3)

| Height | Width | Depth | Weight |
|----------------------------------|---|--------|--------|
| 1570 mm (max) 1375 mm (min) * | 530 mm (console) 430 mm (Operator Panel) | 740 mm | 60 kg |

* with low cabinet option

Table 2-7 Physical Dimensions and Weight (R4 and R4.5)

| Height | Width | Depth | Weight |
|---|--|--------|---------------------------------|
| P8/P9/P10: 1595 mm (max) 1345 mm (min) P10 HD: 1640 mm (max) 1390 mm (min) | 545 mm (23.8 inch monitor) 545 mm (23.8 inch HD monitor) 430 mm (Operator Panel) | 740 mm | P8/P9/P10: 67kg P10 HD: 69kg |

2-2-6-2 Acoustic Noise Output

max. 50 dB(A)

2-2-6-3 Electrical Specifications

Please refer to [Section 2-2-2-1 "LOGIQ P7/P8/P9/P10 Power Requirements" on page 2-3](#).

Section 2-3 Facility Needs

2-3-1 Purchaser Responsibilities

The work and materials needed to prepare the site is the responsibility of the purchaser. Delay, confusion, and waste of manpower can be avoided by completing pre installation work before delivery.

Use the Pre-installation checklist (provided in [Table 2-8](#)) to verify that all needed steps have been taken.

Table 2-8 LOGIQ P7/P8/P9/P10 Pre-Installation Check List

| Action | Yes | No |
|---|-----|----|
| Schedule at least 3 hours for installation of the system. | | |
| Notify installation team of the existence of any variances from the basic installation. | | |
| Make sure system and probes have been subject to acclimation period. | | |
| Environmental cooling is sufficient. | | |
| Lighting is adjustable to adapt to varying operational conditions of the scanner. | | |
| Electrical facilities meet system requirements. | | |
| EMI precautions have been taken and all possible sources of interference have been removed. | | |
| Mandatory site requirements have been met. | | |
| If a network is used, IP address has been set for the system and a dedicated network outlet is available. | | |

Purchaser responsibility includes:

- Procuring the materials required.
- Completing the preparations before delivery of the ultrasound system.
- Paying the costs for any alterations and modifications not specifically provided in the sales contract.

NOTE: *All electrical installations that are preliminary to the positioning of the equipment at the site prepared for the equipment must be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations, and testing must also be performed by qualified personnel. The products involved (and the accompanying electrical installations) are highly sophisticated and special engineering competence is required. All electrical work on these products must comply with the requirements of applicable electrical codes. The purchaser of GE equipment must only utilize qualified personnel to perform electrical servicing on the equipment.*

The desire to use a non-listed or customer provided product or to place an approved product further from the system than the interface kit allows presents challenges to the installation team. To avoid delays during installation, such variances should be made known to the individuals or group performing the installation at the earliest possible date (preferably prior to the purchase).

The ultrasound suite must be clean prior to delivery of the machine. Carpet is not recommended because it collects dust and creates static. Potential sources of EMI (electromagnetic interference) should also be investigated before delivery. Dirt, static, and EMI can negatively impact system reliability.

2-3-2 Mandatory Site Requirements

The following are mandatory site requirements. Additional (optional) recommendations, as well as a recommended ultrasound room layout, are provided in [Section 2-3-3 "Site Recommendations"](#) .

- A dedicated single branch power outlet of adequate amperage (see [Table 2-3 on page 2-3](#)) that meets all local and national codes and is located less than 2.5 m (8.2 ft) from the unit's proposed location. Refer to: [Section 2-2-2 "Electrical Requirements" on page 2-2](#).
- A door opening of at least 76 cm (2.5 ft) in width.
- The proposed location for the unit is at least 0.2 m (0.67 ft) from the walls, to enable cooling.
- Clean and protected space for storage of probes (either in their case or on a rack).
- Material to safely clean probes (performed using a plastic container, never metal).
- Power outlet and place for any external peripheral are within 2 m (6.5 ft.) of each other with peripheral within 1 m of the unit to connect cables.

NOTE: *The LOGIQ P7/P8/P9/P10 has one outlet for on board peripherals.*

In case of network option:

- An active network outlet in the vicinity of the ultrasound unit.
- A network cable of appropriate length (regular Pin-to-Pin network cable).
- An IT administrator who will assist in configuring the unit to work with your local network. A fixed IP address is required. Refer to the form provided in [Figure 3-59 on page 3-81](#) for network details that are required.

NOTE: *All relevant preliminary network port installations at the prepared site must be performed by authorized contractors. The purchaser of GE equipment must utilize only qualified personnel to perform servicing of the equipment.*

2-3-3 Site Recommendations

The following are (optional) site recommendations. Mandatory site requirements are provided in the [Mandatory Site Requirements](#) section, above.

- Door opening of 90 cm (3 ft) in width.
- Accessible circuit breaker for a dedicated power outlet.
- Sink with hot and cold running water.
- Receptacle for bio-hazardous waste, for example, used probe sheaths.
- Emergency oxygen supply.
- Storage area for linens and equipment.
- Nearby waiting room, lavatory, and dressing room.
- Dual level lighting (bright and dim).
- Lockable cabinet for software and manuals.

2-3-3-1 Recommended Ultrasound Room Layout

Figure 2-1 below shows a floor plan illustrating the recommended layout of the Ultrasound Room and depicting the minimal room layout requirements.

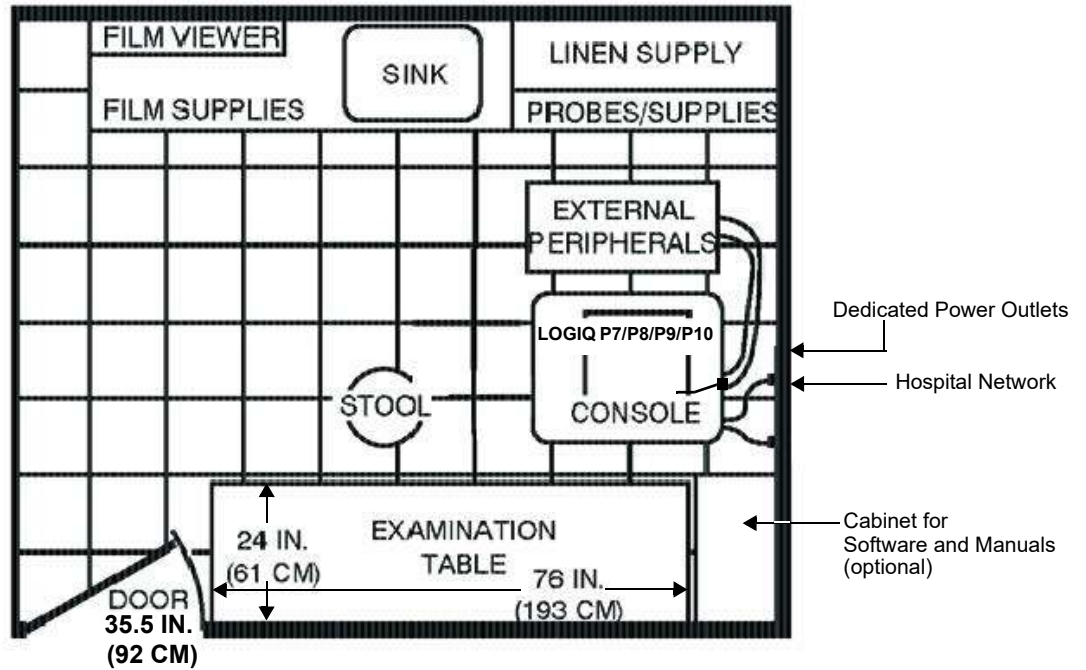


Figure 2-1 Recommended Floor Plan 4.3m x 5.2m (14ft x 17ft)

2-3-4 Networking Setup Requirements

2-3-4-1 Stand-alone Unit (without Network Connection)

None

2-3-4-2 Unit Connected to Hospital's Network

Supported networks:

- Ethernet network connection
- Up to 900 Mbps WLAN (optional)

2-3-4-3 Purpose of the DICOM Network Function

DICOM (**D**igital **I**maging and **C**ommunications in **M**edicine) services provide the operator with clinically useful features for moving images and patient information over a hospital network.

Examples of DICOM services include the transfer of images to workstations for viewing or transferring images to remote printers. As an added benefit, transferring images in this manner frees up the on-board monitor and peripherals, enabling viewing to be done while scanning continues.

With DICOM, images can be archived, stored, and retrieved faster, easier, and at a lower cost.

2-3-4-4 DICOM Option Pre-installation Requirements

To configure the LOGIQ P7/P8/P9/P10 ultrasound unit to work with other network connections, the network administrator must provide some necessary information.

Use the [Agent Configuration \(R3, R4 and R4.5\) on page 3-75](#) to record required information that must include:

- **LOGIQ P7/P8/P9/P10 Details:** DICOM network details for the LOGIQ P7/P8/P9/P10 unit, including the host name, local port, IP address, AE title and net mask.
- **Routing Information:** IP addresses for default gateway and other routers in use at site.
- **DICOM Application Information:** Details of DICOM devices in use at the site, including the DICOM host name, AE title, DICOM port number and IP addresses.

Installation see: [Section 3-13 "Configuring Connectivity" on page 3-65](#).

Chapter 3

Setup Instructions

Section 3-1 Overview

3-1-1 The Purpose of Chapter 3

This chapter contains information needed to setup the LOGIQ P7/P8/P9/P10 Ultrasound System. Included are procedures to receive, unpack and configure the equipment. A worksheet is provided (see: [page 3-75](#) to [page 3-81](#)) to help ensure that all the required information is available, prior to setup the system.

Table 3-1 Contents in Chapter 3

| Section | Description | Page Number |
|---------|---|-------------|
| 3-1 | Overview | 3-1 |
| 3-2 | Set Up Reminders | 3-2 |
| 3-3 | Receiving and Unpacking the Equipment | 3-6 |
| 3-4 | Packing materials - recycling information | 3-9 |
| 3-5 | Preparing for Set Up | 3-10 |
| 3-6 | Connection of Auxiliary Devices | 3-12 |
| 3-7 | Completing the Set Up | 3-21 |
| 3-8 | Printer Installation | 3-35 |
| 3-9 | System Configuration | 3-47 |
| 3-10 | Available Probes | 3-53 |
| 3-11 | Software/Option Configuration | 3-60 |
| 3-12 | Connectivity Setup | 3-61 |
| 3-13 | Configuring Connectivity | 3-65 |
| 3-14 | Connectivity Setup Worksheet | 3-80 |
| 3-15 | Paperwork | 3-82 |

Section 3-2 Set Up Reminders

3-2-1 Average Installation Time

Once the site has been prepared, the average installation time required is shown in [Table 3-2](#) below.

Table 3-2 Average Installation Time

| Description | Average Installation Time | Comments |
|---|---------------------------|-----------------------------------|
| Unpacking the scanner | 0.5 hours | |
| Installing the scanner / options / printers | 0.5 to 1.5 hours | depends on required configuration |
| DICOM Option (connectivity) | 0.5 - 1.5 hours | depends on configuration amount |

3-2-2 Installation Warnings

- 1) Since the LOGIQ P7/P8/P9/P10 weighs approximately 90 kg (200 lbs.) without peripherals, two people are required to unpack it.
- 2) There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord.
Only qualified service personnel should carry out servicing and troubleshooting.

3-2-2-1 Moving/Lifting the System



Figure 3-1 moving or lifting the system

3-2-2-2 System Acclimation Time

After being transported, the LOGIQ P7/P8/P9/P10 system may be very cold or hot. It requires one hour for each 2.5°C increment if its temperature is below 10°C or above 40°C.

CAUTION Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.

Table 3-3 Acclimation Time

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| °C | 60 | 55 | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 0 | -5 | -10 | -15 | -20 | -25 | -30 | -35 | -40 |
| °F | 140 | 131 | 122 | 113 | 104 | 96 | 86 | 77 | 68 | 59 | 50 | 41 | 32 | 23 | 14 | 5 | -4 | -13 | -22 | -31 | -40 |
| hrs | 10 | 8 | 6 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |

3-2-2-3 OPIO Position

If weight is placed on the OPIO (User Interface) in its extended position the console could tip over.

WARNING The system should NOT be moved with the OPIO (User Interface) extended. Move the OPIO to its centered and locked position.


WARNING Monitor mounting mechanism may break if not properly supported (e.g., with packing foam) during transportation.

3-2-2-4 Brake Pedal Operation


 **WARNING** *REMEMBER: If the front wheel brakes are engaged for transportation, release brake pedals (brakes on front wheels under the foot rest) to disengage the lock.*

3-2-3 Safety Reminders

 **DANGER** **WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DO NOT TOUCH THE UNIT!**


 **CAUTION** Two people should unpack the unit because of its weight. Two people are required whenever a part weighing 16kg (35 lb.) or more must be lifted.


 **CAUTION** If the unit is very cold or hot, do NOT turn on its power until it has had sufficient time to acclimate to its operating environment.

 **CAUTION** To prevent electrical shock, connect the unit to a properly grounded power outlet. DO NOT use a three to two prong adapter. This defeats safety grounding.

 **CAUTION** DO NOT wear the ESD wrist strap when you work on live circuits and more than 30 V peak is present.

 **CAUTION** DO NOT use a 20 Amp to 15 Amp adapter on the 120 Vac unit's power cord. This unit requires a dedicated 16 A circuit.

 **CAUTION** DO NOT operate this unit unless all board covers and frame panels are securely in place, to ensure optimal system performance and cooling. (When covers are removed, EMI may be present).

 **CAUTION** **OPERATOR MANUAL(S)**
The User Manual(s) should be fully read and understood before operating the LOGIQ P7/P8/P9/P10. Keep manuals near the unit for reference.


 **CAUTION** **ACOUSTIC OUTPUT HAZARD**
Although the ultrasound energy transmitted from the LOGIQ P7/P8/P9/P10 LOGIQ P9/P7 ultrasound system system is within FDA limitations, avoid unnecessary exposure. Ultrasound energy can produce heat and mechanical damage.



Figure 3-2 Environmental Labels (R1-R4)



Figure 3-3 Environmental Labels (R4.5)

Section 3-3 Receiving and Unpacking the Equipment

CAUTION Please read this section carefully before unpacking the LOGIQ P7/P8/P9/P10 LOGIQ P9/P7 ultrasound system and its (optional) peripherals.

The LOGIQ P7/P8/P9/P10 ultrasound system, together with peripherals, probes and accessories are shipped from the factory in a single durable shipping crate which is mounted on a raised wooden platform base.

CAUTION Transport only with forklift or stacker truck.
During transport pay attention to the point of gravity (“tilt and drop” indicator)!
Have two people available to unpack the LOGIQ P7/P8/P9/P10.
Attempts to move the unit considerable distances (or on an incline) by one person alone, could result in personal injury, and/or damage to the system.



Table 3-4 Shipping Carton - Dimensions and Weight

| Description | Height | Width | Depth | Weight* |
|---|-------------------|--------------------|--------------------|------------------|
| LOGIQ P7/P8/P9/P10 incl. peripherals and accessories | 1550 mm / 61 inch | 706 mm / 27.7 inch | 904 mm / 35.6 inch | 120 kg / 267 lbs |

* Weight is approximate and will vary depending upon the supplied peripherals

Before unpacking the unit:

- Inspect the crate for visible damage.
- Inspect the Drop and Tilt Indicator for evidence of accidental shock or tilting during transit (damage incident, see: [Figure 3-4](#) below).

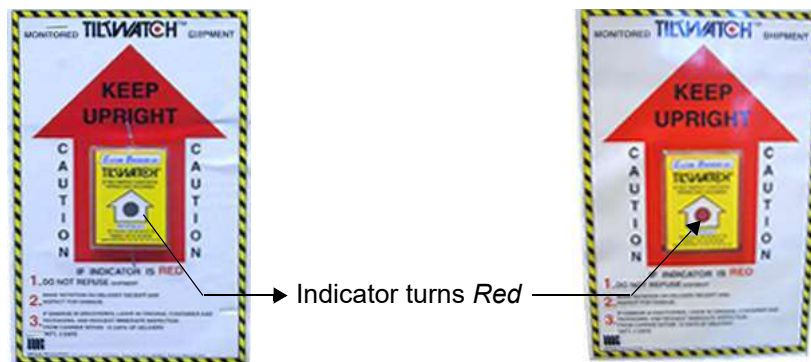
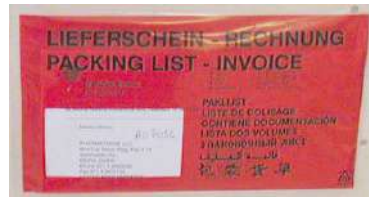


Figure 3-4 Drop and Tilt Indicator

NOTICE The device must only be transported in the original packaging!
Each shipping crate is composed of wooden base, cardboard box, re-usable plastic caps and cushions inside. It is recommended to keep and store the shipping crate and all other packing materials (including the support foams, anti-static plastic cover, etc.), in case the unit has to be moved to a different location. Unpack the devices such a way that packaging can be reused.
For warranty purposes, storage of the above is required for one year from date of purchase.

NOTICE If the shipping crate is damaged, please inform the GE sales representative immediately.



The envelope with delivery address, packing list and invoice is located on the front panel of the crate.




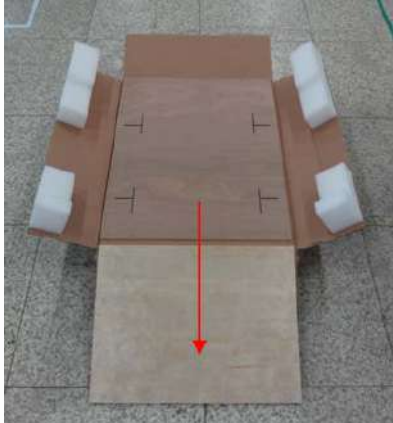
Check whether delivery is complete (according to packing list) and check visual damage!

Figure 3-5 envelope at front panel of the crate

Table 3-5 Unpacking Procedure

| Step | Task |
|------|--|
| 1. | <p>Remove the top cover, then remove the out sleeve.</p> <div style="display: flex; justify-content: space-around;"> <div> </div> <div> </div> </div> |
| 2. | <p>Remove the option box on front of the system.</p> <div style="display: flex; justify-content: center;"> <div> </div> </div> |

Table 3-5 Unpacking Procedure

| Step | Task |
|---|---|
| 3. | <p>Remove the monitor pads from the monitor and remove the 4 pads of the box bottom assy.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;">monitor pad</div>  </div> |
| 4. | <p>Carefully remove foam packing material and plastic bag from the ultrasound unit and monitor.</p> |
| <p>Caution: Two people are needed in the next step due to the weight of the equipment.</p> | |
| 5. | <p>Unlock the casters and place the 4 caster's direction like the picture below and then using the incline plane of the box bottom assy, slowly move the system from the box.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> |
| <p>Note: Packing crate and material should be stored for future use.</p> | |

Section 3-4 Packing materials - recycling information


The packing materials for LOGIQ P7/P8/P9/P10 are recyclable:

- The Transportation Box is made of cardboard.
- The inner reinforcements are made of Ethafoam (Polyethylene foam).
- The plastic foil is made of LDPE (Low Density Polyethylene).

Section 3-5 Preparing for Set Up

3-5-1 Verify Customer Order

- 1) After unpacking the equipment, it is important to verify that all items ordered by the customer have been received. Compare all items listed on the packing slip (delivery note) with those received.

 **NOTICE** It is recommended to keep and store the shipping carton and all other packing materials (including the support foams, anti-static plastic cover, etc.), in case the unit has to be moved to a different location. Unpack the devices such a way that packaging can be reused. For warranty purposes, storage of the above is required for one year from date of purchase.

- 2) Visually inspect the system components using the following checklist.

Table 3-6 Damage Inspection Checklist - LOGIQ P7/P8/P9/P10 System

| Step | Item | Recommended Procedure |
|------|-----------------|---|
| 1 | Main label | Enter Serial Number: _____ (printed on main label, see: Figure 1-1 on page 1-15) |
| 2 | Console | Verify that the system is switched OFF and unplugged. Clean the console and control panel. |
| 3 | Control Console | Physically inspect the control console for missing or damaged items. After switching on the system, verify the proper illumination of all the control panel buttons. |
| 4 | Probes | Check all probes for wear and tear on the lens, cable, and connector. Look for bent or damaged pins on the connector and in the connector socket on the unit. Verify that the EMI fingers around the probe connector socket housing are intact. Check the probe locking mechanism and probe switch. |
| 5 | LCD Display | Clean the LCD display by gently wiping with a dry, soft, lint-free non-abrasive folded cloth. Inspect the monitor for scratches and raster burn. |
| 6 | Fans | Verify that the system's cooling fans and peripheral fans are operating. |
| 7 | Rear Panel | Check the rear panel connectors for bent pins, loose connections and loose or missing hardware. Screw all the cable connectors tightly to the connector sockets on the panel. Verify that the labeling is in good condition. |
| 8 | Covers | Check that all screws are tightly secured in place, that there are no dents or scratches and that no internal parts are exposed. |
| 9 | Peripherals | Check and clean the peripherals in accordance with the manufacturer's directions. To prevent EMI or system overheating, dress the peripheral cables inside the peripheral cover. |
| 10 | Power Cord | Check the power cord for cuts, loose hardware, tire marks, exposed insulation, or any deterioration. Verify continuity. Replace the power cord, as required. |

NOTE: Report any items that are missing, back-ordered, or damaged, to your GE sales representative. The contact address is shown in [Contact Information on page 1-21](#).

3-5-2 EMI Protection

This unit has been designed to minimize the effects of Electro-Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

Ensure that the system is protected from electromagnetic interference (EMI), as follows:

- Operate the system at least 15 feet away from equipment that emits strong electromagnetic radiation.
- Operate the system in an area enclosed by walls, floors and ceilings comprised of wood, plaster or concrete, which help prevent EMI.
- Shield the system when operating it in the vicinity of radio broadcast equipment, if necessary.
- Do not operate mobile phones or other EMI emitting devices in the ultrasound room.
- Verify that all EMI rules listed in the following table are followed:

The LOGIQ P7/P8/P9/P10 ultrasound unit is approved for use in hospitals, clinics and other environmentally qualified facilities, in terms of the prevention of radio wave interference. Operation of the ultrasound unit in an inappropriate environment can cause electronic interference to radios and television sets situated near the medical equipment.

For further details and EMI Prevention/Abatement refer to [Section 2-2-3 "EMI Limitations" on page 2-4](#).

Section 3-6 Connection of Auxiliary Devices

NOTE: Normally auxiliary devices and peripherals come pre-installed with the system.

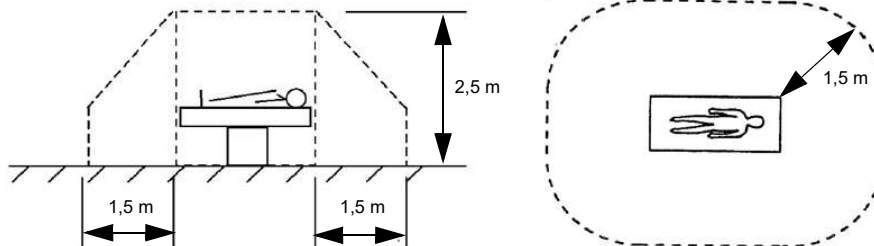
Table 3-7 below outlines hardware installation procedures described in the sub-sections.

Table 3-7 Connection Procedures

| Sub-section | Description | Page Number |
|-------------|---|-------------|
| 3-6-1 | Connecting the Black & White Printer | 3-13 |
| 3-6-2 | Connecting the Secondary "Patient" LCD Monitor | 3-16 |
| 3-6-3 | Connecting the Footswitch | 3-18 |
| 3-6-4 | Connecting the USB Flash Memory Stick | 3-19 |
| 3-6-5 | Connecting the external USB Hard disk (Handydrive) | 3-19 |
| 3-6-6 | General Remarks and Hints when using external USB-Devices | 3-20 |

WARNING After each installation, the leakage currents have to be measured according to IEC 60601-1 respectively ANSI/AAMI ES60601-1.

CAUTION Please observe that some printers may not be medical devices! If the Bluetooth Printer and/or Line Printers are not medical devices, they have to be located outside of the patient environment (according to IEC 60601-1 / ANSI/AAMI ES60601-1).



NOTE: For more detailed Safety Considerations when connecting auxiliary devices to the LOGIQ P7/P8/P9/P10 system, please review: [Chapter 1 - Auxiliary Devices Safety, on page 1-12.](#)

3-6-1 Connecting the Black & White Printer

- 1) Power OFF/Shutdown the system as described in: [Section 3-7-3 on page 3-27](#).
- 2) Connect the Black & White printer according to correct connection scheme as described in [Figure 3-6 on page 3-14](#).

NOTE: *There are three USB ports (stack) on rear panel. The BW printer may be connected to any of the 3x USB stack connector.*

- 3) When all the cables are connected, press the Power ON switch on the Black & White printer.
- 4) Power ON/Boot up the LOGIQ P7/P8/P9/P10 system as described in [Section 3-7-2 on page 3-22](#). All software drivers are pre-installed for the designated Black & White printer only.
- 5) Verify the correct settings in the printer "Properties", see: [Section 3-8-5 "Adjustment of Printer Settings" on page 3-40](#).



WARNING *After each installation, the leakage currents have to be measured according to IEC 60601-1 respectively ANSI/AAMI ES60601-1.*

3-6-1-1 Connection Scheme: B&W Printer (R1 to R3)

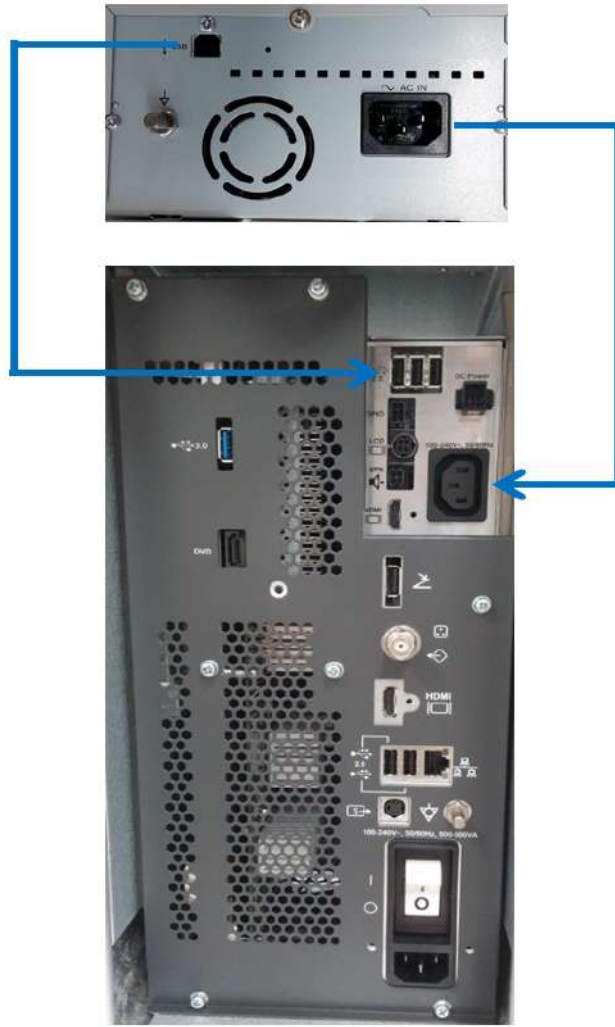


Figure 3-6 B&W Printer connection (R1 to R3)

3-6-1-2 Connection Scheme: B&W Printer (R4 and R4.5)

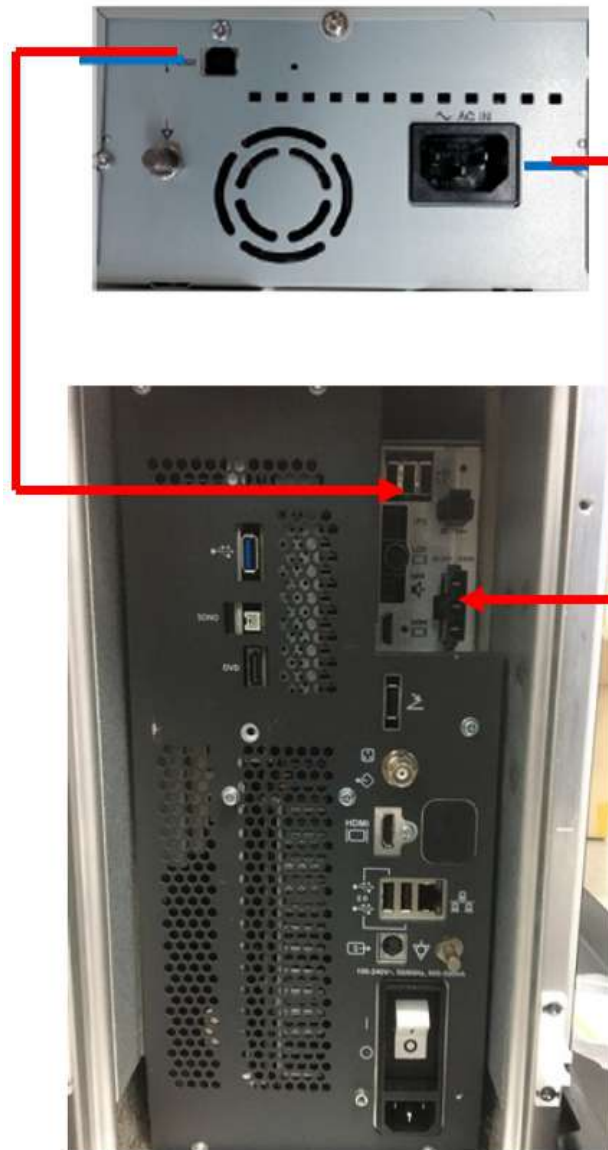





Figure 3-7 Connection Scheme: B&W Printer (R4 and R4.5)

3-6-2 Connecting the Secondary “Patient” LCD Monitor

 **CAUTION** Secondary LCD “Patient” Monitor **MUST NEVER** be connected to the LOGIQ P9/P7 ultrasound systems mains supply directly!
Always connect it to the supplied Isolation Transformer!
The Secondary Monitor is the only item to be connected to the Transformer.

 **NOTICE** Secondary Monitor is **NOT intended for diagnostic use.**
It is an additional device used to allow the patient to watch the proceedings.
Take your time to think about the best position of the monitor in your facilities.
Patients should be able to view the monitor easily and without having to bend or turn around.

 **NOTICE** Connection to Secondary Monitor is via HDMI cable, but HDMI connector output does NOT carry audio signal (R1/R2/R2.5/R3/R4) except for R4.5

- 1) Power OFF/Shutdown the system as described in: [Section 3-7-3 on page 3-27](#).
- 2) Connect the Secondary Monitor according to connection scheme (see: [Figure 3-8 on page 3-17](#)).

*appropriate
Transformer*



 **CAUTION**

A Secondary "Patient" Monitor **MUST NEVER** be connected to the LOGIQ P9/P7 ultrasound systems mains supply directly!
Always connect it to an appropriate **Isolation Transformer**

Figure 3-8 Connection Scheme - Secondary LCD Monitor

3-6-3 Connecting the Footswitch


The footswitch should be directly connected to any accessible USB-port on the LOGIQ P7/P8/P9/P10 (e.g., on rear of the system).

NOTE: Connection of the Footswitch is always the same (no differences between PC-Motherboard version of the system).



Figure 3-9 Connection Scheme - Footswitch


3-6-4 Connecting the USB Flash Memory Stick

 **NOTICE** Before connecting an USB device, please read [General Remarks and Hints when using external USB-Devices](#) on page 3-20.


The USB Flash Memory Stick may be connected to an accessible USB port of the LOGIQ P7/P8/P9/P10 system. Refer to [Section 3-9-2 "External I/O Connectors"](#) .

An external USB Flash Memory Stick can be connected once the system is powered ON, or after shutdown. The LOGIQ P7/P8/P9/P10, Windows detects the device and automatically installs a driver. During this process several dialogs may pop up, starting with the „Found New Hardware“ dialog.

NOTE: *Memory drives or sticks may be sensitive to EMC interference.
This may affect system performance and/or image quality.*

 **NOTICE** Before disconnecting an external USB-device (e.g., [USB Stick](#)), the system has to be informed about the removal of the device! For this purpose press the **EJECT** button on the keyboard. For further details refer to: [Section 3-6-6-2 "External USB-Devices - Disconnection"](#) on page 3-20.


3-6-5 Connecting the external USB Hard disk (Handydrive)

 **NOTICE** Before connecting an USB device, please read [General Remarks and Hints when using external USB-Devices](#) on page 3-20.


The external “Handydrive” HDD may be connected to an accessible USB port of the LOGIQ P7/P8/P9/P10 system. Refer to [Section 3-9-2 "External I/O Connectors"](#) .

An external USB Hard Disk Drive can be connected once the system is powered ON, or after shutdown. The LOGIQ P7/P8/P9/P10, Windows detects the device and automatically installs a driver. During this process several dialogs may pop up, starting with the „Found New Hardware“ dialog.

NOTE: *Memory drives, sticks or HDD drives may be sensitive to EMC interference.
This may affect system performance and/or image quality.*

 **NOTICE** Before disconnecting an external USB-device (e.g., [USB Hard disk](#)), the system has to be informed about the removal of the device! For this purpose press the **EJECT** button on the keyboard. For further details refer to: [Section 3-6-6-2 "External USB-Devices - Disconnection"](#) on page 3-20.


3-6-6 General Remarks and Hints when using external USB-Devices

 **WARNING** *Do not connect or disconnect any external USB-devices to or from the system while scanning a patient! The appearing dialogs could distract you from the scan!*

3-6-6-1 External USB-Devices - Connection

When an external USB-storage device (such as a USB-memory stick or an external hard disk) is connected to the LOGIQ P7/P8/P9/P10, Windows detects the device and automatically installs a driver. During this process, several dialogs may pop up, starting with the “Found New Hardware“ dialog.

The device is then accessible using the drive letter the system assigned to it.

 **NOTICE** When connecting external USB devices, be sure to execute Safety Directions found in the LOGIQ P7/P8/P9/P10 Basic User Manual.

3-6-6-2 External USB-Devices - Disconnection

 **CAUTION** **Unplugging or ejecting USB devices without first stopping them can often cause the system to crash and possibly result in loss of valuable data.**

To stop the external device, press F3 EJECT button.

Section 3-7 Completing the Set Up

3-7-1 Connecting the Unit to a Power Source

The connection of the LOGIQ P7/P8/P9/P10 ultrasound unit to a power source should be performed by a qualified person who has completed basic LOGIQ P7/P8/P9/P10 System User Training. Use only the power cords, cables and plugs provided by or designated by GE to connect the unit to the power source.



CAUTION Prior to connect the LOGIQ P7/P8/P9/P10 unit to a power source, verify compliance with all electrical and safety requirements. Check the power cord to verify that it is intact and of hospital-grade. Products equipped with a power source (wall outlet) plug should be connected to the fixed power socket that has a protective grounding conductor. Never use an adapter or converter to connect with a power source plug (for example, a three-prong to two-prong converter).



WARNING *The unit's power must be supplied from a separate, properly rated outlet to avoid risk of fire. Refer to [Section 2-2-2-1 "LOGIQ P7/P8/P9/P10 Power Requirements"](#) on page 2-3 for rating information. The power cord should not, under any circumstances, be altered to a configuration rated less than that specified for the current.*



CAUTION Whenever disconnecting the LOGIQ P7/P8/P9/P10 system from the electrical outlet, always observe the safety precautions. First unplug the main power cable from the wall outlet socket, then from the unit itself. Remove by pulling on the cable connector - DO NOT pull on the cable.



CAUTION The LOGIQ P7/P8/P9/P10 requires all covers!
Operate this system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good system performance and cooling purposes.

3-7-2 Power On / Boot Up

3-7-2-1 Scanner Power On

- 1) Ensure that the wall outlet is of appropriate type, and that the Circuit Breaker is turned off.
- 2) Uncoil the power cable, allowing sufficient slack so that the unit can be moved slightly.
- 3) Verify that the power cable is without any visible scratches or any sign of damage.
- 4) Verify that the on-site mains voltage is within the limits indicated on the rating label on the right side of the rear panel.
- 5) Connect the Main Power Cable to the back of the system.
- 6) Connect the Main Power Cable to a hospital grade power outlet with the proper rated voltage. Never use an adapter that would defeat the safety ground.
- 7) Switch ON the Circuit at the rear of the system.

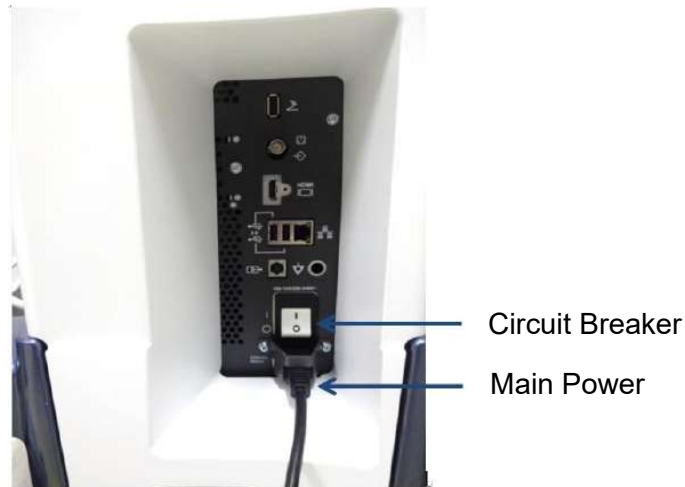



Figure 3-10 Circuit and main power cable at rear of system

3-7-2-2 Back End Processor Boot Up

 **NOTICE** When AC power is applied to the scanner, the **ON/OFF** button on the control panel illuminates blue, indicating that the System (including the Back-end Processor) is in *Standby* mode.

8) Hold down the **On/Off** button (see: [Figure 3-11](#)) on the control panel for ~3 seconds.

NOTE: *The mains outlet of the system for peripheral auxiliary equipment are commonly switched with the **ON/OFF** button. The power switch of any attached printer(s) needs to be in ON position before starting the system. However, be aware some auxiliary equipment may switch itself to standby mode (e.g., Color video printer) and must therefore be switched on separately.*

When the **ON/OFF** button on the control panel is pressed, the System (including the Back-end Processor) starts and the operating system is loaded which then leads the application software to activate the scanner.

The system automatically performs an initialization sequence which includes the following:

- Loading the operating system.
- Running a quick diagnostic check of the system.
- Detecting connected probes



Figure 3-11 On/Off Button on Control Panel

As soon as the software has been loaded, the system enters 2D-Mode with the probe connected to port nearest to a user.

NOTE: *Total time used for start-up is about 2 minutes.*

9) Adjust Height and position of control console.

3-7-2-3 During a normal boot, you may observe

- A) Power is distributed to Peripherals, Operator Panel (control panel), Monitor, Front-End and Back-End Processor.
- B) The Back-End Processor and rest of the scanner starts with the sequence listed in following steps:
 - 1) “Boot Screen” is displayed.
 - 2) Back-End Processor is turned ON and starts to load the software.
 - 3) The Start Screen (LOGIQ?) is displayed on the monitor.
 - 4) Start-up progress bars indicating software loading procedures, are displayed on the monitor, as shown in [Figure 3-12](#) below. Start-up progress bars indicating software loading procedures,



Figure 3-12 GE Healthcare wallpaper with progress bar (R1.x.x)



Figure 3-13 GE Healthcare wallpaper with progress bar (R2.x.x and later)



Figure 3-14 GE Healthcare wallpaper with progress bar (R3.x.x and later)

f



Figure 3-15 GE Healthcare wallpaper with progress bar (R4.x.x and later)

5) *Startup GE*

NOTE: Startup GE Healthcare wallpaper with progress bar may differ depending on product type and release.

- 6) The software initiates and sets up the Front-End electronics and the rest of the scanner (incl. the clicking sound of the relays on the PIL board).
- 7) The Keyboard backlight is lit.
- 8) As soon as the software has been loaded, the 2D screen is displayed on the monitor.

3-7-3 Power Off / Shutdown

When you power off the unit, the system performs an automatic shutdown sequence



Figure 3-16 System Exit Window (R2 and R2.5)

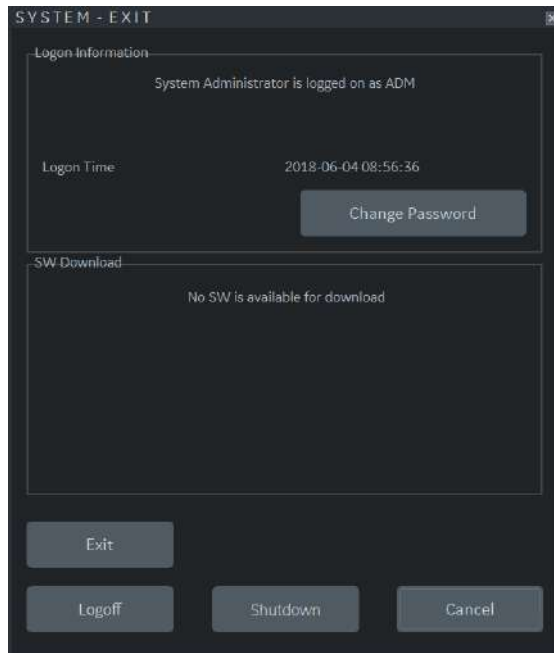


Figure 3-17 System Exit Window (R3, R4 and R4.5)

The SYSTEM - EXIT menu, used when power off the unit, gives you these choices:

- **Logoff**
Use this button to log off the current user. The system remains ON and ready for a new user to log on. If the Logoff button is dimmed, it indicates that no user is logged on to the unit at the moment.
- **Shutdown**
Use this button to shut down the system. The entire system will shut down. It is recommended to perform a full shutdown at least once a week.

If the Shutdown button is dimmed, press the power button or Alt F10 to shut down the unit.
- **Cancel**
Use this button to exit from the System-Exit menu and return to the previous operation.
- **Exit** (Only available when logged in as GE Service with Service Dongle)
Select this button when you want to exit to the Windows Desktop.
- **Sleep (R2 and R2.5 Only)**
Use Sleep Mode when you do a portable exam in order to reduce the time to start up the system. When you use Sleep Mode, it takes ~90 seconds to start up the system versus 2-3 minutes.
- **Change Password**
Use this button to change User Password.



NOTICE After turning off a system, wait at least 10 seconds before turning it on again. The system may not be able to boot if power is recycled too quickly.

3-7-3-1 Scanner Shutdown

- 1) If not already in read mode, freeze the image.
- 2) Press the **ON/OFF** button (see: Figure 3-11) on the control panel. Following dialog appears.



Figure 3-18 System - Exit (R2 and R2.5)

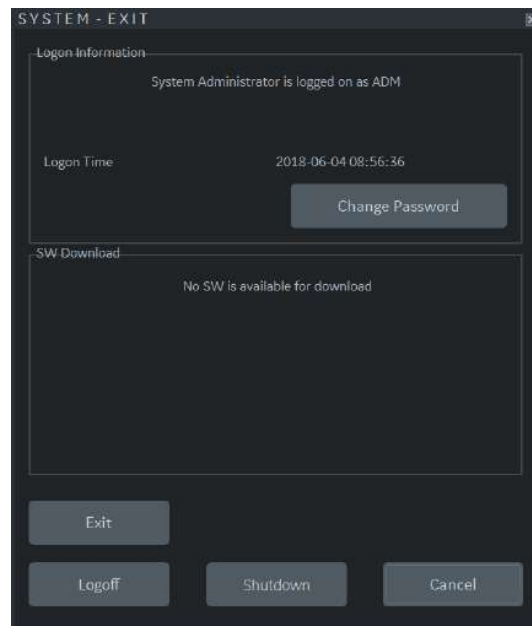


Figure 3-19 System - Exit (R3)

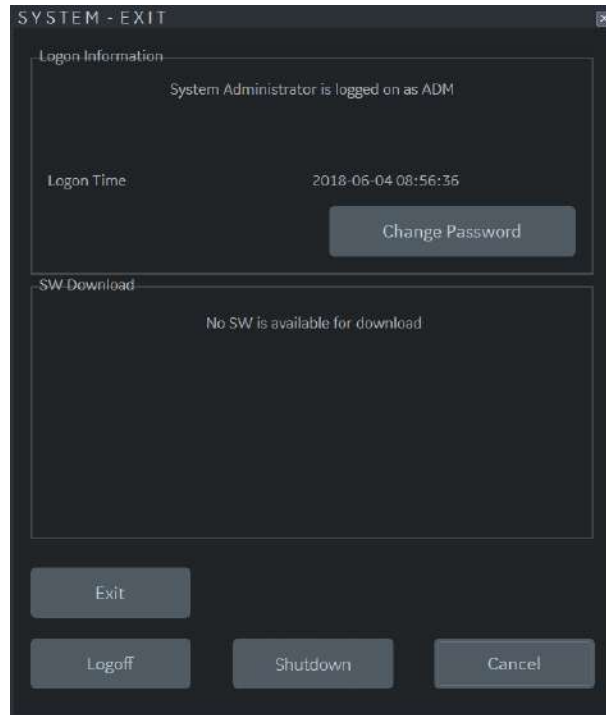


Figure 3-20 System - Exit (R4 and R4.5)

- 3) Select the SHUTDOWN button. The system performs an automatic full shutdown sequence.
- 4) Switch OFF the Circuit at the rear of the system.

NOTE: *The mains outlet of the system for peripheral auxiliary equipment are commonly switched with the ON/OFF button. So the auxiliary equipment need not to be switched ON/OFF separately.*



WARNING *Disconnection of the Main Power Cable is necessary!
For Example: When repairing the system.*

- 5) After complete power down, disconnect the main power cable from the system or unplug it from the AC wall outlet socket.

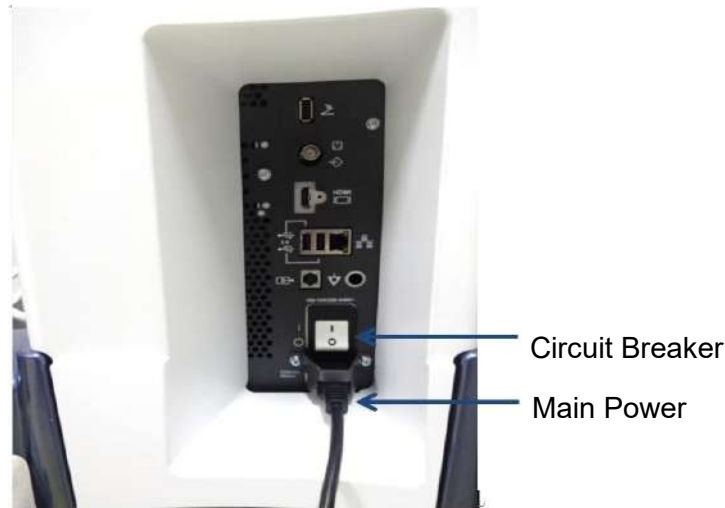


Figure 3-21 Circuit and main power at rear of system




- 6) Press on the brakes to block the front caster wheels.
- 7) Disconnect probes. (Turn the probe locking handle counterclockwise and then pull the connector straight out of the probe port.)



**CAUTION DO NOT disconnect a probe while running (Live Scan “Write” mode)!
A software error may occur. In this case switch the unit OFF (perform a reset).**

3-7-4 Transducer Connection

3-7-4-1 Connecting the Probe

-  **CAUTION** Inspect the probe before and after each use for damage or degradation to the housing, strain relief, lens, seal, cable and connector. **DO NOT** use a transducer which appears damaged until functional and safe performance is verified. A thorough inspection should be conducted during the cleaning process.
-  **CAUTION** Remove any dust or foam rests from the probe pins.
-  **CAUTION** Fault conditions can result in electric shock hazard. Do not touch the surface of probe connectors which are exposed when the probe is removed. **DO NOT** touch the patient when connecting or disconnecting a probe.

Probes can be connected at any time, regardless of whether the console is powered on or off. To ensure that the ports are not active, place the system in the image freeze condition.

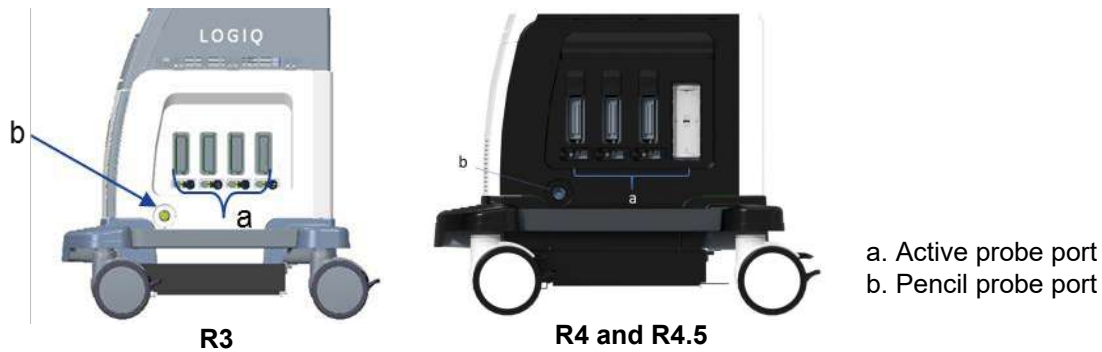



Figure 3-22 Probe port

To connect a probe:

- 1) Place the probe's carrying case on a stable surface and open the case.
- 2) Carefully remove the probe and unwrap the probe cord.
- 3) Put the probe in the probe holder.

-  **CAUTION** **DO NOT** allow the probe head to hang free. Impact to the probe head could result in irreparable damage. Use the integrated cable management hook to wrap the cord.



- 4) Hold the probe connector vertically with the cable pointing upward.
- 5) Turn the connector locking handle to the left.
- 6) Align the connector with the probe port and carefully push into place.
- 7) Turn the connector locking handle to the right to secure the probe connector.

8) Carefully position the probe cord so it is free to move and is not resting on the floor.

3-7-4-2 Connecting the CW Pencil Probe

Insert the probe connector into the probe port all the way seated in. Carefully position the probe cord so it is free to move and is not resting on the floor.

3-7-4-3 Cable Handling


Take the following precautions with probe cables:

- Keep free from wheels
- Do not bend the cable acutely
- Avoid crossing cables between probes.

3-7-4-4 Activating the Probe

To activate the probe, select the appropriate probe from the probe indicators on the touch panel.

The probe's default settings for the mode and selected exam are used automatically.

 **CAUTION** Make sure that the probe and application names displayed on the screen correspond to the actual probe and application selection.

3-7-4-5 Deactivating the Probe

When deactivating the probe, the probe is automatically placed in standby mode.

To deactivate a probe:

- 1) Ensure the LOGIQ™ P7/P8/P9/P10 is in freeze mode. If necessary, press the **Freeze** key.
- 2) Gently wipe the excess gel from the face of the probe.
- 3) Ensure that the probe is placed gently in the probe holder.

3-7-4-6 Disconnecting the Probe

Probes can be disconnected at any time. However, the probe should not be active when disconnecting the probe.

- 1) Ensure the probe is deactivated. Deactivate by selecting another probe or pressing Freeze.
- 2) Move the probe locking handle to the left.
- 3) Pull the probe connector straight out of the probe port carefully.

 **CAUTION** DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage. Use the integrated cable management hook to wrap the cord.

- 4) Ensure the cable is free.
- 5) Be sure that the probe head is clean before placing the probe in its storage box.

Section 3-8 Printer Installation

NOTE: For Connection schemes refer to [Section 3-6 "Connection of Auxiliary Devices" on page 3-12](#).

For further installation instructions see:

- [Section 3-8-1 "Installing Digital Black & White Printer Sony UP-D898" on page 3-35](#)
- [Section 3-8-2 "Digital Color Printer Sony UP-D25MD" on page 3-36](#)
- [Section 3-8-5 "Adjustment of Printer Settings" on page 3-40](#)

3-8-1 Installing Digital Black & White Printer Sony UP-D898

- 1) Power off/Shutdown the system as described in: [Section 3-7-3 on page 3-27](#).
- 2) Physically connect the printer cables as described on [Section 3-6-1 on page 3-13](#).



NOTICE After boot up of the system, verify the correct settings in the printer "Properties", see: [Section 3-8-4 "Adding Printer to the system"](#) for assigning the Printer to the remote keys P1, P2, P3, P4, P5 and/or P6, and see: [Section 3-8-5 "Adjustment of Printer Settings"](#) .

3-8-2 Digital Color Printer Sony UP-D25MD

- 1) Power off/Shutdown the system as described in: [Section 3-7-3 on page 3-27](#).
- 2) Connect USB cable into the available USB port on the rear of the system. There are three available USB ports on rear of the system. : [Section 3-9-2 "External I/O Connectors"](#)

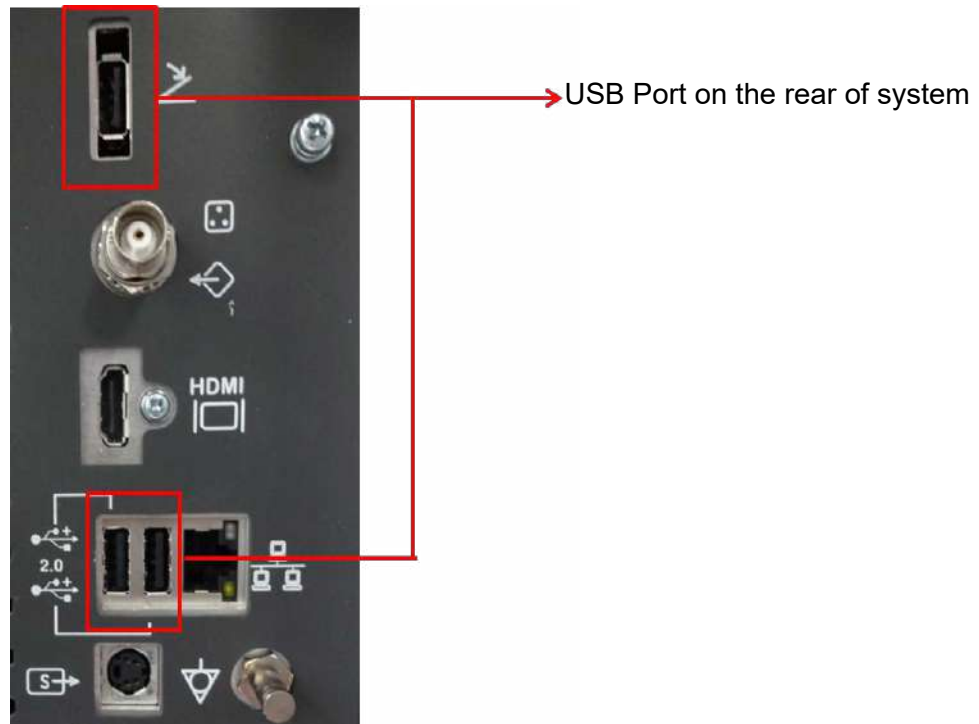


Figure 3-23 External I/O Connectors - on Rear of System

⚠ NOTICE After boot up of the system, verify the correct settings in the printer “Properties”, see: [Section 3-8-4 "Adding Printer to the system"](#) for assigning the Printer to the remote keys P1, P2, P3, P4, P5 and/or P6, and see: [Section 3-8-5 "Adjustment of Printer Settings"](#)

3-8-3 Installing the Bluetooth Deskjet Printer (R2 and R2.5)

- 1) Power off/Shutdown the system as described in: [Section 3-7-3 on page 3-27](#).
- 2) Physically connect the Bluetooth dongle as described on [Section 3-8-3-1 on page 3-37](#).

NOTICE After boot up of the system, verify the correct connection of Bluetooth device driver on the maintenance mode, see: [Section 3-8-3-2 "Verifying Bluetooth device driver"](#) and, see: [Section 3-8-3-3 "Prepare the Printer and connect the Bluetooth Printer Adapter"](#) for Bluetooth pairing between the system and printer.

3-8-3-1 Connecting the Bluetooth Dongle into the System

- 1) Connect Bluetooth Dongle into the available USB port. There are three available USB ports on the system. : [Section 3-9-2 "External I/O Connectors"](#) .



Figure 3-24 External I/O Connectors - on Rear of System

USB 2.0 port: Two hub ports for service and user



Figure 3-25 External I/O Connector

3-8-3-2 Verifying Bluetooth device driver

- 1) Turn on the system.
- 2) Enter maintenance mode by using service dongle.
- 3) Go to Device Manager by pressing shortcut on the taskbar
- 4) Check that there is “Bluetooth Radios” category.

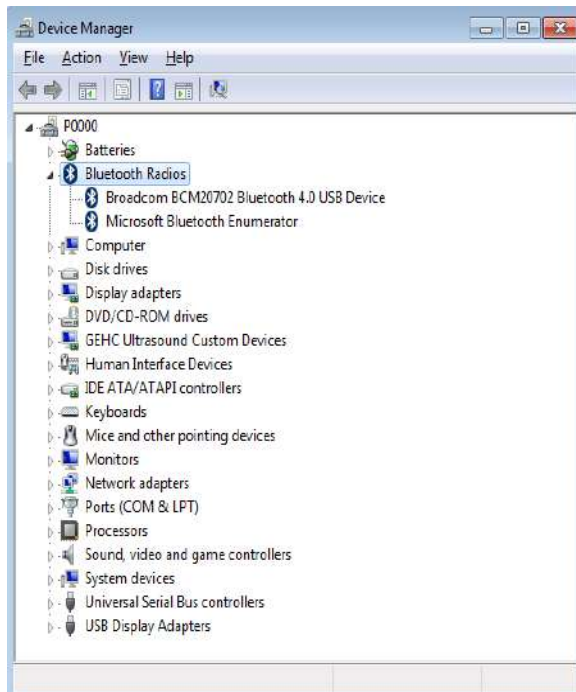


Figure 3-26 Bluetooth Radios

- 5) Check that there are no any “Unknown Device” messages. If there are unknown devices, check again after reboot the system.

3-8-3-3 Prepare the Printer and connect the Bluetooth Printer Adapter

3-8-3-3-1 HP Officejet 100

- 1) Connect the power cord to a wall outlet socket.
- 2) Turn on the printer.
- 3) Install ink tanks in the correct order.
- 4) Load paper in the auto sheet feeder.
- 5) Turn on Bluetooth radio.



Figure 3-27 Connection of Bluetooth Printer Adapter (HP Officejet 100)

3-8-3-3-2 Bluetooth Pairing

- 1) Press [CTRL + ESC] to open windows start menu.
- 2) Select "Devices and Printers."
- 3) Press "Add a printer" button on the top menu.
- 4) Select "Add a network, wireless or Bluetooth printer."
- 5) Searching for available printers.
- 6) Select a printer.

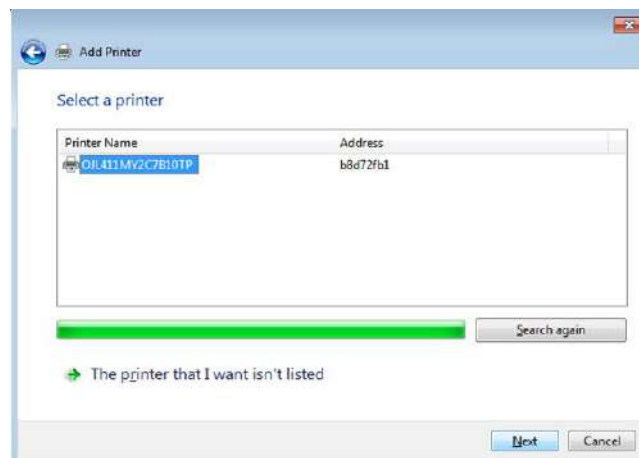


Figure 3-28 Selecting a Printer

- 7) Press "Next" button to install device driver, and then device driver software installed successfully.
- 8) Press "Next" button after confirming the printer name.
- 9) Check "Do not share this printer" option, and press "Next" button.
- 10) Press "Printer a test page" button to check if the printer is working properly.
- 11) Press "Finish" button.
- 12) The printer is listed in the "Device and Faxes" category.
- 13) Bluetooth pairing is completed.

3-8-4 Adding Printer to the system

- 1) Select Utility -> Connectivity -> Service.
- 2) Add the Standard Print.
- 3) Highlight Standard Print in the Service list.
- 4) Select the printer from the Printer pull-down Properties menu. For the UP-D898 printer, select "Portrait" as orientation.
- 5) Type the printer name in the Name field. This name is used on the Button screen. After you select the printer from the Printer pull-down Properties menu again, it turns white.
- 6) Press Save.
- 7) Select Button.
- 8) Select the appropriate print key (Print1, Print2...) from the Physical Print Buttons section.
- 9) Select the printer from the MyComputer column and press >> to move it to the Printflow View column.
- 10) Press Save.

3-8-5 Adjustment of Printer Settings

- 1) Press Utility ->System ->Peripherals. Select the printer to adjust (UP-D25MD or UP-D898) from the pull-down menu under Standard Printer Properties. Click Properties.
- 2) Select Properties from Printer pull-down menu.
- 3) Click Printing Preferences at the bottom of Properties Window.

To adjust the UP-D898 printer see: [Section 3-8-5-1 "UP-D898 - Printer Settings"](#) .

To adjust the UP-D25MD Printer see: [Section 3-8-5-2 "UP-D25MD - Printer Settings"](#) .



WARNING *After each printer installation, the leakage currents have to be measured acc. IEC 60601-1 resp. ANSI/AAMI ES60601-1.*

3-8-5-1 UP-D898 - Printer Settings

- 1) Call up the '**Printer Preferences**'; operation see: [Section 3-8-5 "Adjustment of Printer Settings"](#) .
- 2) Select the **MAIN** page (see: [Figure 3-29](#) below) and select:
 - Paper: **1920x1280**
 - Orientation: **Landscape**
 - Interpolation Method: **Bilinear**

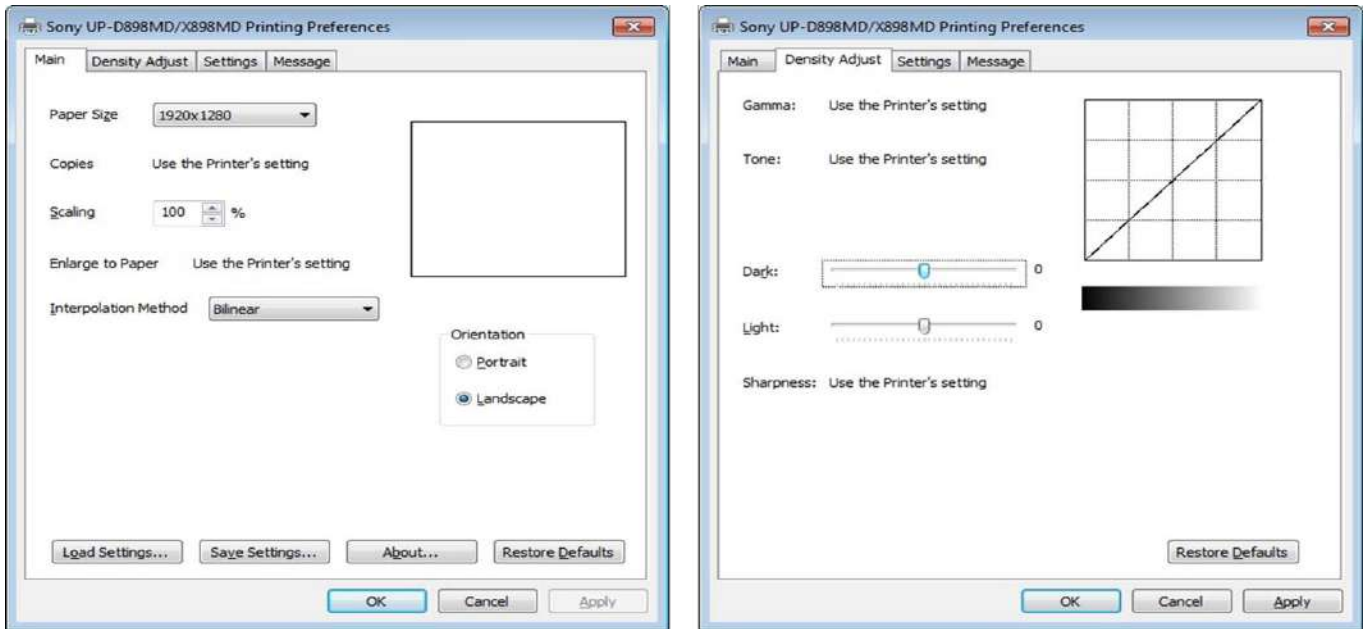



Figure 3-29 Layout + Density Adjust page

- 3) Select the **DENSITY ADJUST** page (see: [Figure 3-29](#) above) and select:
 - Dark = **0**; Light = **0**
- 4) For saving the adjusted printer settings click **APPLY** and then **OK**.
Finally close the 'Printers' -window with the close button and exit System Setup with **SAVE&EXIT**.

3-8-5-2 UP-D25MD - Printer Settings

1) Call up the 'Printer Preferences'; operation see: [Section 3-8-5 "Adjustment of Printer Settings"](#) .

 **NOTICE** Settings for Paper Size MUST match with the used Paper (large/small) and also the right color ink cartridge has to be used. Otherwise you will get an error message at printing.

2) Select the PAPER page and select:
- Recommended Paper: **UPC-24LA** (large) / UPC-24SA (small)

NOTE: Paper UPC-21L and UPC-21S are also acceptable paper to use.

- Orientation: **Landscape** (recommended when using large paper size)
- **High Speed** (check mark on)

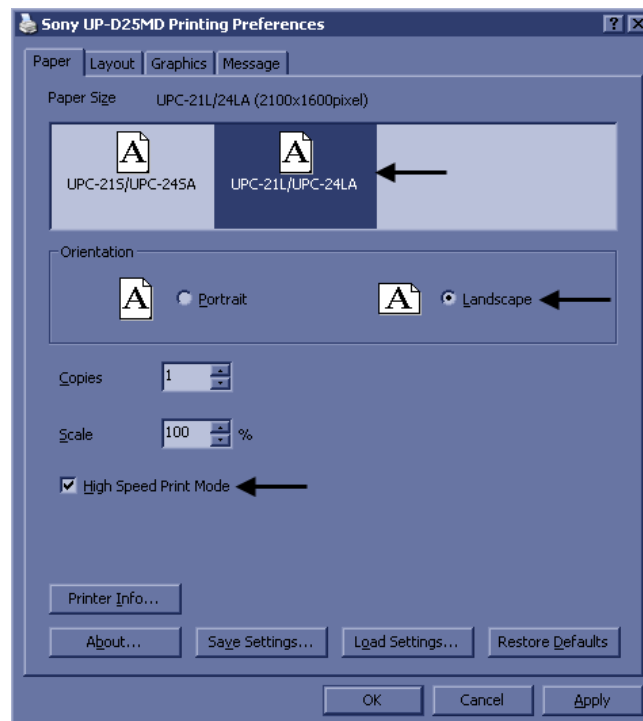


Figure 3-30 Paper page

3) Select the GRAPHICS page. From the "Color Adjust" pop-up menu select:
a) Color Balance: Cyan = 0; Magenta = 0; Yellow = 0

b) Color Correction: set Printer Hardware Color Correction1



Figure 3-31 Graphics page (Color Balance + Color Correction)

- c) Lightness: Sharpness = 7; Dark = 0; Gamma = 14; Light = 0
- d) Lightness: Gamma Curve = Curve 1



Figure 3-32 Graphics page (Lightness + Gamma Select)

- 4) For saving the adjusted printer settings click APPLY and then OK.
Finally close the 'Printers'-window with the close button and exit System Setup with SAVE&EXIT.

3-8-6 Installing Network Printer (R3, R4 and R4.5)

- 1) Confirm that your HP Network Printer is listed on HP Universal Print Driver (UPD) supported printers from https://support.hp.com/us-en/document/ish_4952109-2831856-16.
- 2) Note IPv4 Address of your HP Network Printer (i.e 192.168.1.3).



Figure 3-33

- 3) Open 'Properties' and 'Printing Preferences...' of 'HP Universal Printing PCL6'.
- 4) Enter IP Address of your HP Network Printer.

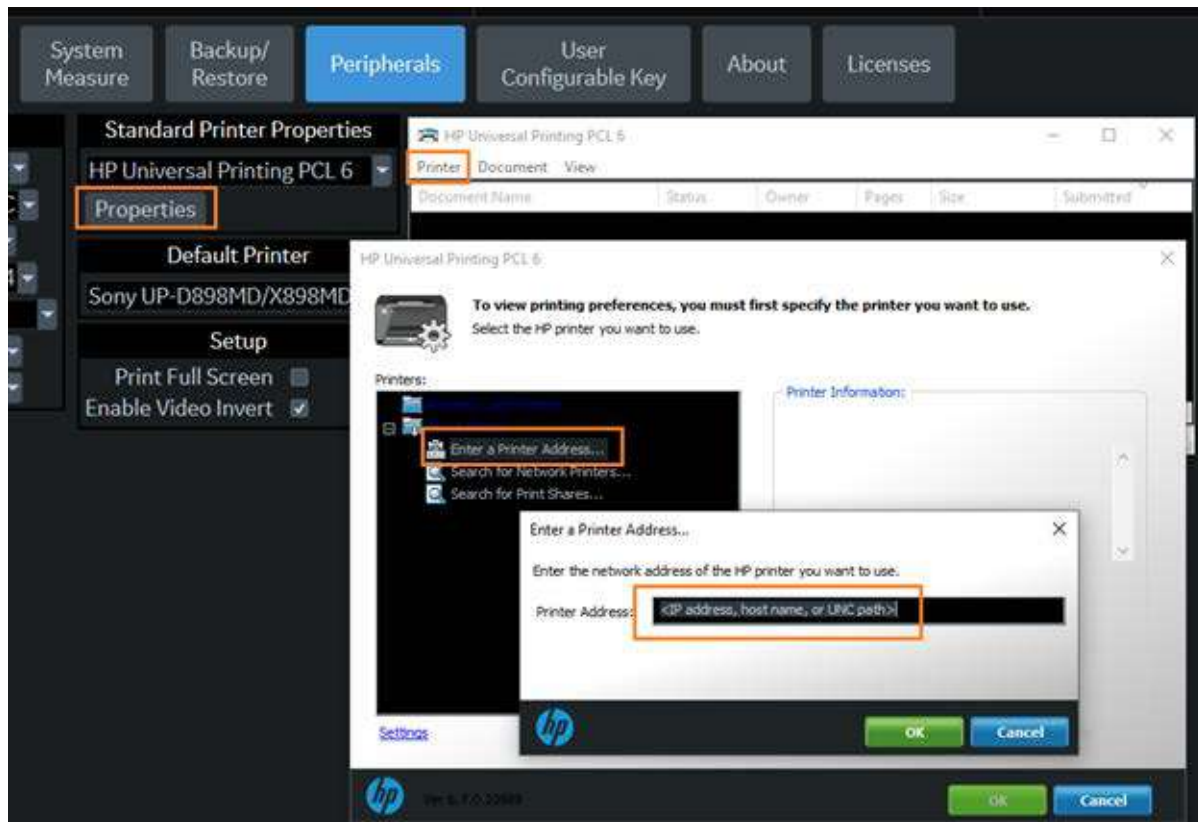


Figure 3-34

5) Select your HP Network Printer and Click 'OK'.

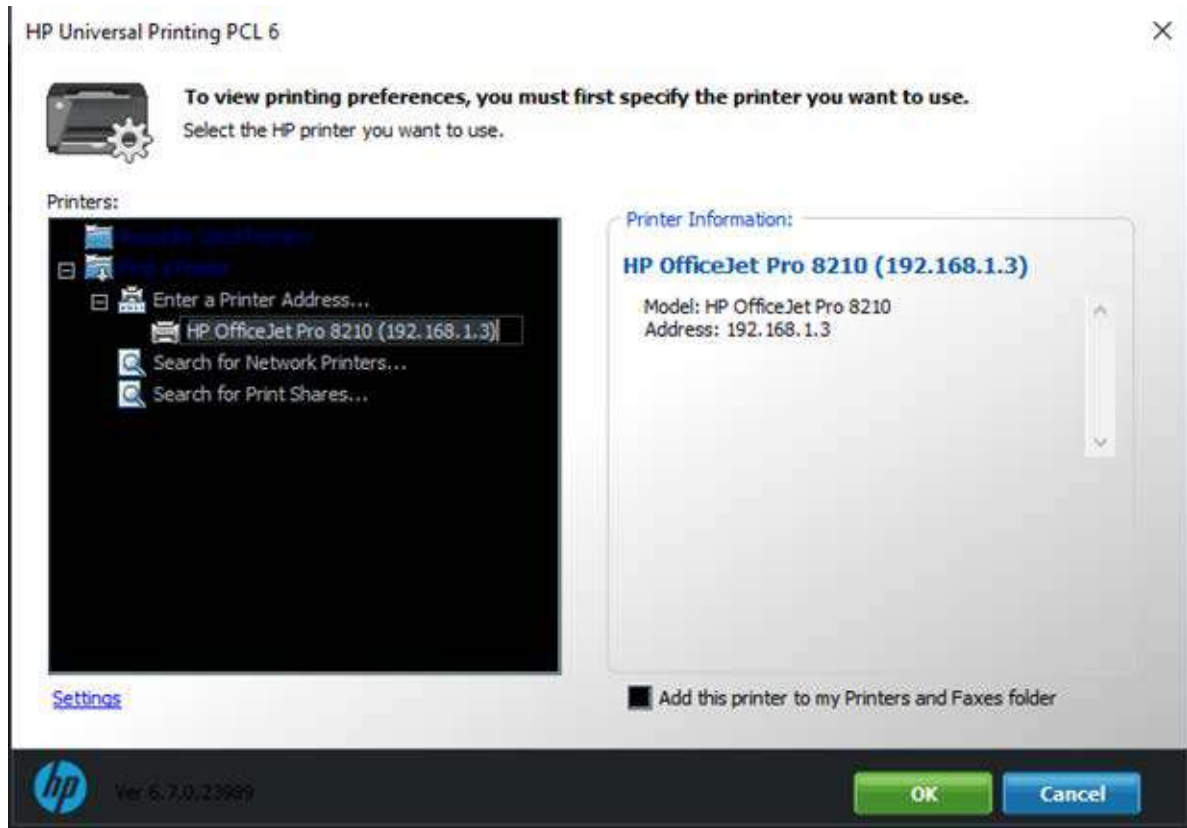


Figure 3-35

3-8-7 Setting Printer to Print Reports

3-8-7-1 Setting up the Printer to Print Reports

To set up the Off-Line Printer to print reports,

- 1) Press Utility -> System -> Peripherals.
- 2) Select the printer from Default Printer pull-down menu.

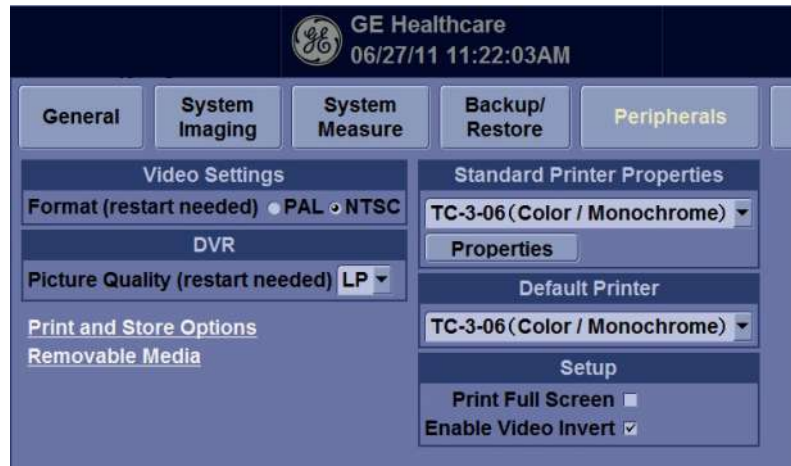


Figure 3-36 Report Printer Setup (R1.x.x - R2.x.x)

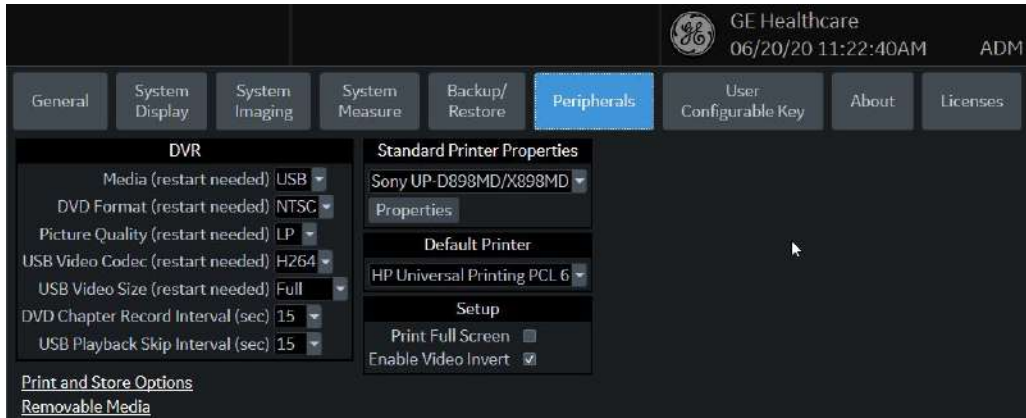


Figure 3-37 Report Printer Setup (R3.x.x - R4.5.x)

- 3) Press Save.
- 4) Press Print on the Report screen to print the report.

Section 3-9 System Configuration

3-9-1 System/General Preset Menu

The System/General screen allows you to specify hospital name and system date and time.

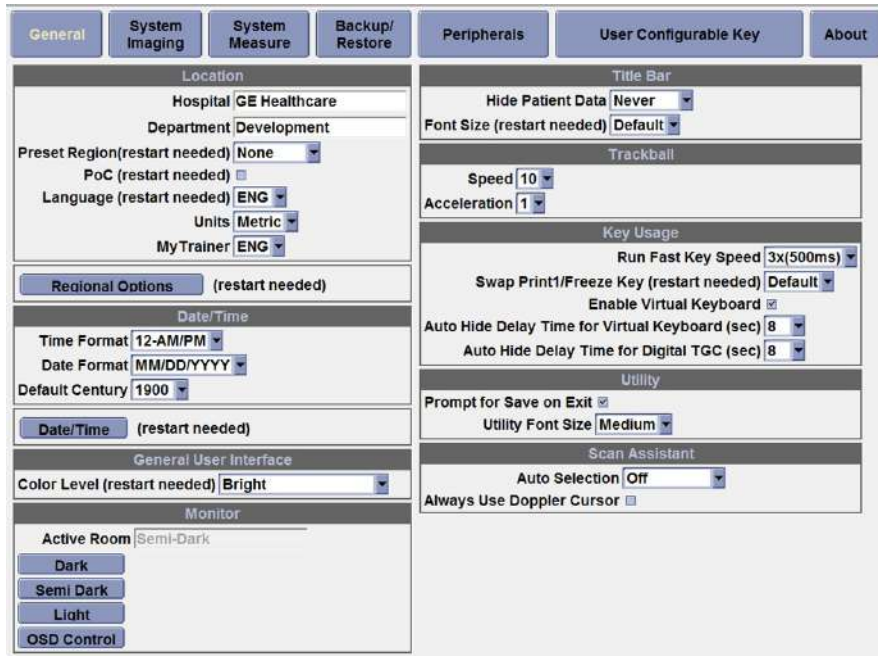


Figure 3-38 System/General Preset Menu (R1.x.x)



Figure 3-39 System/General Preset Menu (R2.x.x)

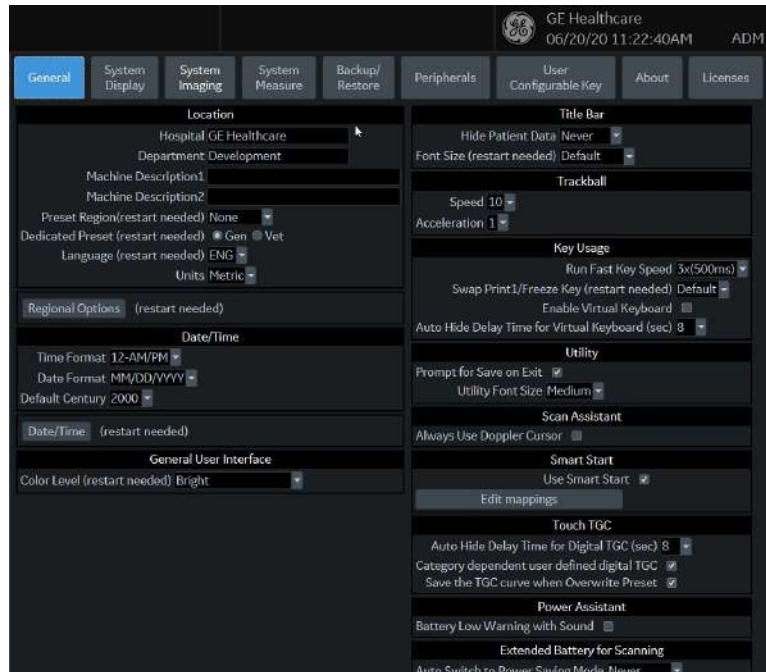


Figure 3-40 System/General Preset Menu (R3, R4 and R4.5)

Table 3-8 Location

| Preset Parameter | Description |
|--------------------------------|---|
| Hospital | Type the institution's name. |
| Department | Type the institution's department name. |
| Preset Region (restart needed) | Select region (None, Americas, Asia, Europe or Japan). |
| Language (restart needed) | Select the appropriate language from the drop-down list. Note: If you select Japanese (JPN), only the warning and status messages are displayed in Japanese. You can not type in Japanese. |
| Units | Select metric or US units of measurement. |
| Regional Options | Select to set up the keyboard. |

Table 3-9 Date and Time

| Preset Parameter | Description |
|------------------|---|
| Time Format | Select the time format: 12 Hr. AM/PM or 24 Hr. |
| Date Format | Select the date format: dd/mm/yyyy, mm/dd/yyyy, or yyyy/mm/dd. |
| Default Century | Select the default century for the system to use. |
| Date/Time | Select to display the Date/Time Properties window, to specify the system date, time, time zone, and to auto adjust for daylight savings time. |

Table 3-10 General User Interface

| Preset Parameter | Description |
|------------------------------|---|
| Color Level (restart needed) | Select System Color according to the condition of the room. |

Table 3-11 Title Bar

| Preset Parameter | Description |
|----------------------------|--|
| Hide Patient Data | When set to Always, patient information is removed from the scanning screen Title bar and when storing images; or you can set this to remove patient information only when storing the image (On Store); or Never. Note: Upon recall of images with measurements, Dual image, the DICOM image is recalled. In this case, there is no patient data burned into the DICOM image. If you DO NOT want this to occur, set this to Never. |
| Font Size (restart needed) | Select to display patient information in the title bar using a small, medium, or large font size. You need to reboot the system for this change to take effect. |

Table 3-12 Trackball

| Preset Parameter | Description |
|------------------|--|
| Speed | Set how fast you want the Trackball to move while performing actions such as tracing the anatomy. 0=Slow; 20=Very Fast |
| Acceleration | Set how fast you want to trackball to move across the display. 0, 1, and 2 with 0 being the slowest acceleration. |

Table 3-13 Key Usage

| Preset Parameter | Description |
|--|---|
| Run Fast Key speed | Select the maximum value of the key interval when running Fast Key. |
| Swap Print1/Freeze Key (restart needed) | Swap the control between Print 1 and Freeze key. |
| Enable Virtual Keyboard | If checked, the Virtual Keyboard appears automatically when cursor is prompted in Patient screen. |
| Auto Hide Delay Time for Virtual Keyboard(sec) | Select the delay time to Virtual Keyboard auto-hide. |
| Auto Hide Delay Time for Digital TGC(sec) | Select the delay time to Digital TGC auto-hide. |

Table 3-14 Utility

| Preset Parameter | Description |
|-------------------------|--|
| Prompt for Save on Exit | If selected, the system prompts you to save data when you select exit without saving. |
| Utility Font Size | Select the font size you want to use to view the Utility menus: Small, Medium, or Large. |

Table 3-15 Scan Assistant

| Preset Parameter | Description |
|---------------------------|--|
| Auto Selection | <p>Off, Category, or Description.</p> <ul style="list-style-type: none"> Off. The Scan Assistant selection on the Patient screen is completely manual. It will say "None" when starting a new patient and you can make a selection manually if desired. Category. Scan Assistant uses the combination of exam category (Abd, OB, etc.) and the currently-selected user to automatically select a Scan Assistant program. It chooses the same program that was used the last time this combination of exam category and user. The user can manually override this auto selection. Description. Scan Assistant uses the combination of the exam description (often auto fills in if the patient was selected from the worklist) and the currently selected user to automatically select a Scan Assistant program. It will choose the same program that was used the last time this combination of exam description and user was selected. The user can manually override this auto selection. If the exam description is blank then it will do the auto selection based on Category as described in the previous paragraph. |
| Always Use Doppler Cursor | Use the Doppler Cursor when you activate Scan Assistant. |

Table 3-16 Monitor (R1.x.x)

| Preset Parameter | Description |
|------------------|--|
| Dark | Pre-defined monitor settings for Dark Room |
| Semi Dark | Pre-defined monitor settings for Semi-Dark Room |
| Light | Pre-defined monitor settings for Light Room |
| OSD Control | The monitor can also be adjusted in brightness and contrast. For detailed adjustment press the [OSD controls] buttons on the screen. The OSD menu will appear on the screen. Brightness, Contrast, Backlight and Sharpness can be adjusted in General tab. Monitor colors can be adjusted in RGB tab. |

Table 3-17 Power Assistant (R2.x.x)

| Preset Parameter | Description |
|---|---|
| Allow offline scanning (restarted needed) | Allow users to scan without AC power if battery option is installed. User need to reboot the system to activate offline scanning. |
| Battery Low Warning with Sound | Make beep sound when the installed battery is running out. |

Table 3-18 Smart Start

| Preset Parameter | Description |
|------------------|-----------------------------|
| Use Smart Start | Check to enable Smart Start |
| Edit mappings | Smart Start mapping editor |

3-9-2 External I/O Connectors

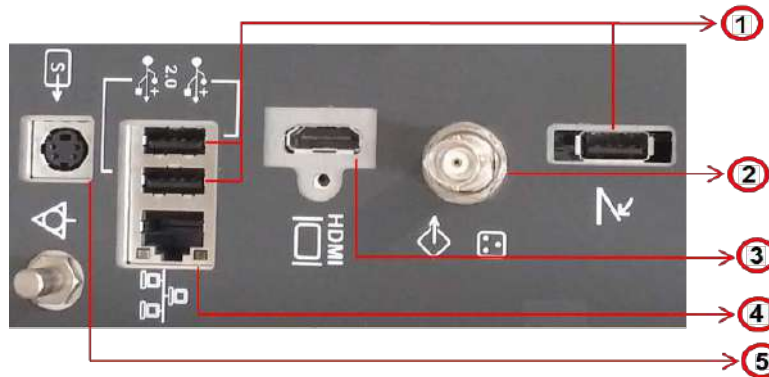
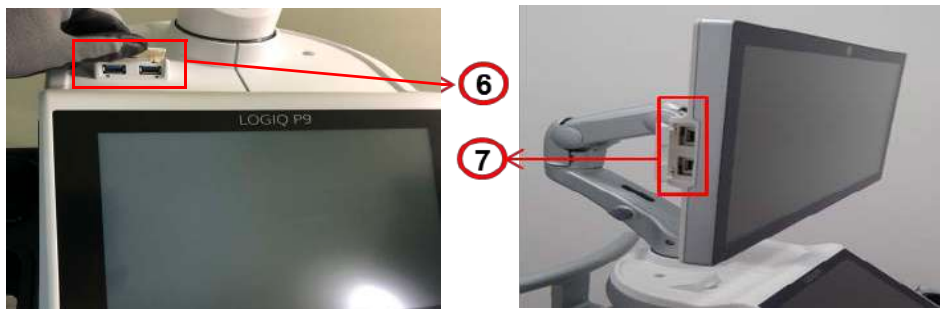


Figure 3-41 External I/O Connectors - on Rear of System

Table 3-19 External I/O Connector - Description

| Item | Connector Name | Table Number | Description |
|------|----------------|------------------------|---|
| 1 | USB | Table 5-2 Table 5-4 | USB port. Refer to Section 5-2-4 for details. |
| 2 | Composite | Table 5-6 | Composite(BNC) Connector for external Monitor. TV-out signal. Resolution :PAL(720x576), NTSC(720x480) |
| 3 | HDMI | Table 5-5 | Connector for external Monitor. No audio output (R1/R2/R2.5/R3/R4). Resolution: FHD(1920x1080) |
| 4 | NETWORK | Table 5-4 | DICOM input/output, twisted pair RJ-45 10/100/1000 megabit/s |
| 5 | S-Video | Table 5-6 | S-Video Connector for external Monitor. TV-out signal. Resolution: PAL(720x576), NTSC(720x480) |

[R1, R2, R2.5, R3]



[R4 and R4.5]



Figure 3-42 External I/O Connector

Table 3-20 External I/O Connector - Description (R1/R2/R2.5)

| Item | Connector Name | Table Number | Description |
|------|----------------|--------------|--|
| 6 | USB | Table 5-2 | Connected to IO Box via USB HUB. Refer to Section 5-2-4 for details. |
| 7 | USB | Table 5-2 | Connected to MCB via USB HUB. Refer to Section 5-2-4 for details. |

Table 3-21 External I/O Connector - Description (R3)

| Item | Connector Name | Table Number | Description |
|------|----------------|--------------|---|
| 6 | USB | Table 5-3 | Connected to MCB via USB HUB. Refer to Section 5-2-4 for details. |
| 7 | USB | Table 5-2 | Connected to Touch panel via USB HUB. Refer to Section 5-2-4 for details. |

Table 3-22 External I/O Connector - Description (R4 and R4.5)

| Item | Connector Name | Table Number | Description |
|------|----------------|--------------|---|
| 6 | USB | Table 5-3 | Connected to MCB via USB HUB. Refer to Section 5-2-4 for details. |

Section 3-10 Available Probes

3-10-1 Supported probes

The LOGIQ P7/P8/P9/P10 supports the following types of probes:

- Sector Phased Array
- Linear Array
- Convex Array
- Micro convex Array
- Matrix Array
- Split Array
- Volume Probes (4D)
 - Convex Array
 - Micro Convex Array

NOTE: Not all probes described in this document may be available or cleared for sale in all markets.



3-10-1-1 Probe Naming Conventions

Table 3-23 Probe Naming Convention

| Type | Application | Frequency | Connector Type |
|--|---|-----------|----------------|
| C=Convex L=Linear M=Matrix S=Sector R=Real time 4D | AB=Abdominal IC=Intracavitary NA=Neonatal SP=Small Parts | "1-5" | RS D=DLP |

3-10-1-2 Probe Description

Table 3-24 Probe Description




| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|-----------|---|--|---|-------------|------------|-----|-----|
| C1-5-RS |  | Abdomen (incl. Pleural), Vascular (No transcranial), OB/GYN, Urology | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Contrast, Elastography, Shearwave Elastography, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5499608 | Convex | 1 | 1 |
| 9L-RS |  | Abdomen (incl. Pleural), Small Parts, Vascular (No transcranial), Pediatric, Neonatal, OB, Breast, Musculoskeletal | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5499511 | Linear | 1 | 1 |

| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|-----------|---|--|---|-------------|---------------------------------|-----|-----|
| 4C-RS |  | Abdomen, OB/GYN, Urology, Vascular (No transcranial) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, Elastography, Shearwave Elastography, B Steer+, Contrast | 5488477 | Convex | 1 | 1 |
| ML6-15-RS |  | Abdomen (incl. Pleural), Small Parts, Vascular (No transcranial), Pediatric, Neonatal, Musculoskeletal, Breast | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5499610 | Linear (Matrix) | 1 | 1 |
| E8C-RS |  | OB/GYN, Urology, Transvaginal, Transrectal | B, CHI, CF, PDI, M, PW, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy | 5499516 | Convex | 1 | 1 |
| L3-12-RS |  | Abdomen (incl. Pleural), Vascular (No transcranial), Small Parts, Pediatric, Neonatal, OB, Breast, Musculoskeletal | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+, Shear Wave Elastography | 5785912 | Linear | 1 | 1 |
| L8-18i-RS |  | Small Parts, Vascular (No transcranial), Neonatal, Pediatrics, Intraoperative (Not for China) Musculoskeletal | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D | 5499609 | Linear | 1 | 1 |
| P8D |  | Cardiac, Vascular (No transcranial) | CW, ASO | 5504447 | Pencil Probe (CW Split Crystal) | 1 | 1 |

| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|-----------|---|---|---|-------------|--|-----|-----|
| RAB2-6-RS |  | Abdomen, OB/ GYN, Urology | B, CHI, CF, PDI, M, PW, CrossXBeam, LOGIQView, ATO/ASO,CTO, SRI-HD, 3D/4D real-time imaging, Biopsy, Advanced 3D, B Steer+ | KTZ303982 | Volume (Real Time 4D, Convex) | 1 | 1 |
| 12L-RS |  | Abdomen (incl. Pleural), Small Parts, Vascular (No transcranial), Pediatric, Neonatal, Musculoskeletal, Breast | B, CHI, CF, PDI, M, PW, B-Flow, B- Flow Color, Elastography, Shearwave Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5499501 | Linear | 1 | 1 |
| 3Sc-RS |  | Cardiac, Abdomen (incl. Pleural), Transcranial | B, CHI, CF, M, MCF, Anatomical M, PW, CW, TVI, TVD, Virtual Convex, LOGIQView, ATO/ASO, CTO, Stress Echo, SRI-HD, Advanced 3D, Biopsy, Contrast | 5433833 | Sector | 1 | 1 |
| 8C-RS |  | Pediatrics, Neonatal | B, CHI, CF, PDI, M, PW, B-Flow, B- Flow Color, CrossXBeam, LOGIQView, ATO/ ASO, CTO, SRI-HD, Advanced 3D, B Steer+ | 5499508 | Convex | 1 | 1 |
| L6-12-RS |  | Abdomen (incl. Pleural), Vascular (No transcranial), Small Parts, Pediatric, Neonatal | B, CHI, CF, PDI, M, PW, B-Flow, B- Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ ASO, CTO, SRI-HD, Advanced3D, Biopsy, B Steer+ | 5454332 | Linear | 1 | 1 |
| 6S-RS |  | Abdomen (incl. Pleural), Cardiac, Pediatrics, Neonatal, OB | B, CHI, CF, PDI, M, MCF, Anatomical M, PW, CW, TVI, TVD, Virtual Convex, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D | 5499316 | Sector | 1 | 1 |
| L4-12t-RS |  | Abdomen (incl. Pleural), Small Parts, Vascular (No transcranial), Pediatric, Neonatal, Musculoskeletal | B, CHI, CF, PDI, M, PW, B-Flow, B- Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5435010 | Linear | 1 | 1 |

| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|------------|---|--|---|-------------|-------------------------------|-----|-----|
| L10-22-RS |  | Small Parts, Musculoskeletal, Neonatal | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D | 5459953 | Linear | 1 | 1 |
| L12n-RS |  | Small Parts, Vascular(No transcranial), Pediatric, Neonatal, Musculoskeletal | B, CHI, GT, CF, PDI, M, PW, B-Flow, B-Flow Color, Elastography, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Biopsy, B Steer+ | 5505771 | Linear | 1 | 1 |
| 12S-RS |  | Abdomen (incl. Pleural), Pediatrics, Neonatal | B, CHI, CF, PDI, M, MCF, Anatomical M, PW, CW, TVI, TVD, Virtual Convex, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D | 5499321 | Sector | 1 | 1 |
| E8CS-RS |  | OB/GYN (Transvaginal), Urology (Transrectal) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Elastography, Biopsy | 5670375 | Convex | 1 | 1 |
| BE9CS-RS |  | Urology (Transrectal) | B, CHI, CF, PDI, B-Flow, B-Flow Color, M, PW, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Elastography, Contrast, Biopsy | 5589323 | Convex | 1 | 1 |
| IC9-RS |  | OB/GYN, Urology, (Transvaginal, Transrectal) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Elastography, Shearwave Elastography, Biopsy, Contrast, Max Angle | 5722023 | Convex | 1 | 1 |
| RIC5-9A-RS |  | OB/GYN (Transvaginal), Urology (Transrectal) | B, CHI, CF, PDI, M, PW, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D, 3D/4D, Biopsy. Max Angle | KTZ304128 | Volume (Real Time 4D, Convex) | 1 | 1 |

| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|-----------|---|---|---|-------------|---------------------------------|-----|-----|
| P6D |  | Cardiac, Vascular(No transcranial) | CW, ASO | 5729437 | Pencil Probe (CW Split Crystal) | 1 | 1 |
| P2D |  | Cardiac, Vascular(No transcranial) | CW, ASO | TE100024 | Pencil Probe | 1 | 1 |
| L3-9i-RS |  | Small Parts, Vascular, Musculoskeletal, Neonatal, Intraoperatives (Not for China) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Virtual Convex, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D | 5721640 | Linear | 1 | 1 |
| 6Tc-RS |  | Cardiac (Transesophageal) | B, CHI, CF, PDI, M, MCF, Anatomical M, PW, B-Flow, B-Flow Color, CW, TVI, TVD, Virtual Convex, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D Note: 6Tc-RS probe requires special handling. Refer to the TEE Probe User Manual enclosed with 6Tc-RS probe. | 5729431 | TEE | 1 | 1 |
| C1-6-D |  | Abdomen (incl. Pleural), OB, Gynecology, Vascular (No transcranial), Urology | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Contrast, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D, Elastography, Shearwave Elastography, Biopsy, B Steer+, UGAP | 5499606 | Convex | 1 | 1 |
| C2-7-D |  | Abdomen (incl. Pleural) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, Contrast, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D, Biopsy, B Steer+ | 5505700 | Convex | 1 | 1 |
| C3-10-D |  | Abdomen (incl. Pleural), Neonatal, Pediatric, Vascular (No transcranial) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, B Steer+ | 5493012 | Convex | 1 | 1 |

| Part Name | Illustration | Application | Feature | Part Number | Probe Type | Qty | FRU |
|--|---|--|---|-------------|------------|-----|-----|
| 10C-D |  | Neonatal, Pediatric, Vascular, (No transcranial) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced3D, Elastography, Shearwave Elastography, B Steer+ | 5476030 | Convex | 1 | 1 |
| M5Sc-RS |  | Cardiac, Transcranial, Abdomen (incl. Pleural) | B, CHI, CF, PDI, M, MCF, Anatomical M, PW, CW, TVI, TVD, Contrast, Virtual Convex, LOGIQView, ATO/ASO, CTO, Stress Echo, SRI-HD, Advanced 3D, Biopsy | 5718483 | Sector | 1 | 1 |
| E7C8L-RS (-C: Convex Transducer & -L: Linear Transducer) |  | Urology (Transrectal) | B, CHI, CF, PDI, M, PW, B-Flow, B-Flow Color, CrossXBeam, LOGIQView, ATO/ASO, CTO, SRI-HD, Advanced 3D, Contrast, B Steer+(only E7C8L-L),Max Angle(only E7C8L-C), Biopsy, Virtual Convex (only E7C8L-L) | 5817485 | Bi-plane | 1 | 1 |

| Probes | LP9 R1 (RS type) | LP7 R1 (RS type) | LP9 R2 (RS type) | LP7 R2 (RS type) | LP9 R2.5 (RS type) | LP7 R2.5 (RS type) | LP9 R3 (RS type) | LP7 R3 (RS type) | LP8 R4 (RS/DLP type) | LP9 R4 (RS/DLP type) | LP10 R4 (RS/DLP type) | LP8 R4.5 (RS/DLP type) | LP9 R4.5 (RS/DLP type) | LP10 R4.5 (RS/DLP type) |
|----------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|------------------|------------------|----------------------|----------------------|-----------------------|------------------------|------------------------|-------------------------|
| <u>Matrix</u> | | | | | | | | | | | | | | |
| ML6-15-RS | X | | X | | X | | X | | X | X | X | X | X | X |
| <u>4D</u> | | | | | | | | | | | | | | |
| RIC5-9A-RS | | | X | X | X | X | X | X | X | X | X | X | X | X |
| RAB2-6-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| <u>Convex</u> | | | | | | | | | | | | | | |
| 4C-RS | | X | | X | | X | | X | | | | | | |
| E8CS-RS | | | X | X | X | X | X | X | X | X | X | X | X | X |
| E8C-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 8C-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| BE9CS-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| C1-5-RS | X | | X | | X | | X | | X | X | X | X | X | X |
| IC9-RS | | | | | | | X | X | X | X | X | X | X | X |
| C1-6-D | | | | | | | | | | X | X | | X | X |
| C2-7-D | | | | | | | | | X | X | X | X | X | X |


| Probes | LP9 R1 (RS type) | LP7 R1 (RS type) | LP9 R2 (RS type) | LP7 R2 (RS type) | LP9 R2.5 (RS type) | LP7 R2.5 (RS type) | LP9 R3 (RS type) | LP7 R3 (RS type) | LP8 R4 (RS/DLP type) | LP9 R4 (RS/DLP type) | LP10 R4 (RS/DLP type) | LP8 R4.5 (RS/DLP type) | LP9 R4.5 (RS/DLP type) | LP10 R4.5 (RS/DLP type) |
|--|------------------|------------------|------------------|------------------|--------------------|--------------------|------------------|------------------|----------------------|----------------------|-----------------------|------------------------|------------------------|-------------------------|
| C3-10-D | | | | | | | | | | | X | | | X |
| 10C-D | | | | | | | | | X | X | X | X | X | X |
| <u>Sector</u> | | | | | | | | | | | | | | |
| 3Sc-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 6S-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 12S-RS | | | X | X | X | X | X | X | X | X | X | X | X | X |
| M5Sc-RS | | | | | | | | | | | X | | | X |
| <u>Linear</u> | | | | | | | | | | | | | | |
| L6-12-RS | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 9L-RS | X | | X | X | X | X | X | X | X | X | X | X | X | X |
| 12L-RS | X | | X | | X | | X | | X | X | X | X | X | X |
| L8-18i-RS | X | | X | | X | | X | | X | X | X | X | X | X |
| L3-9i-RS | | | X | | X | | X | | | X | X | | X | X |
| L4-12i-RS | | | X | X | X | X | X | X | X | X | X | X | X | X |
| L10-22-RS | | | X | | X | | X | | | X | X | | X | X |
| L3-12-RS | | | | | | | X | X | X | X | X | X | X | X |
| <u>Pencil</u> | | | | | | | | | | | | | | |
| P8D | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| P6D | | | | | X | X | X | X | X | X | X | X | X | X |
| P2D | | | | | | | X | X | X | X | X | X | X | X |
| <u>Haystack</u> | | | | | | | | | | | | | | |
| L12n-RS | | | | | X | X | X | X | | | | | | |
| <u>TEE</u> | | | | | | | | | | | | | | |
| 6Tc-RS | | | | | | | X | | | X | X | | X | X |
| <u>Bi-plane</u> | | | | | | | | | | | | | | |
| E7C8L-RS (-C: Convex Transducer & -L: Linear Transducer) | | | | | | | | | | | | X | X | X |

NOTE: "X" means the probe supports the system.

Section 3-11 Software/Option Configuration

For description refer to:

- [Section 3-9-1 "System/General Preset Menu" on page 3-47](#)

 **NOTICE** More detailed information pertaining System Setup and Measure Setup adjustments is found in the LOGIQ P7/P8/P9/P10 Basic User Manual, which is available in different languages.

Section 3-12 Connectivity Setup

The LOGIQ™ P7/P8/P9/P10 ultrasound system can be connected to various connectivity devices. The following sections describe how to connect the system to a remote archive/work station or a DICOM service, using a TCP/IP connection.

3-12-1 Connectivity Introduction

This section describes communication and connection options between the LOGIQ P7/P8/P9/P10 ultrasound unit and other devices in the hospital information system.

The following scenarios are covered:

- stand-alone LOGIQ P7/P8/P9/P10 scanner; see: [Section 3-12-1-3 on page 3-63](#).
- LOGIQ P7/P8/P9/P10 and one or several PC workstations within a “Sneaker Net” environment. (“Sneaker Net” means that you use a DVD/CD to move data because no network is available); see: [Section 3-12-1-4 on page 3-63](#).
- LOGIQ P7/P8/P9/P10 and DICOM server in a network; see: [Section 3-12-1-5 on page 3-63](#).

3-12-1-1 The Dataflow Concept

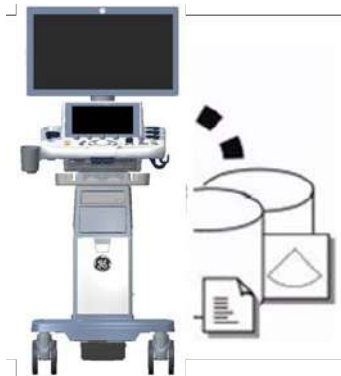
Communication between the LOGIQ P7/P8/P9/P10 ultrasound unit and other information providers on the network takes the form of data flows. Each dataflow defines the transfer of patient information from either an input source to the unit, or from the unit to an output source (see examples in [Figure 3-43 on page 3-62](#)).

Patient information can include demographic data and images, as well as reports and Measurement and Analysis (M&A) data.

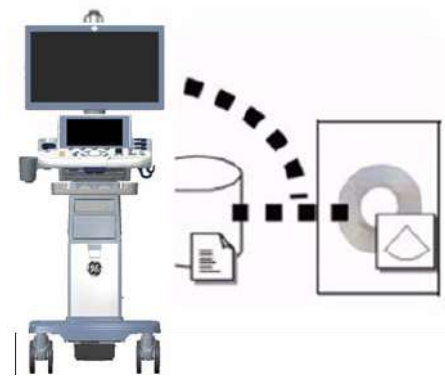
A dataflow is a set of pre-configured services. Selecting a dataflow will automatically customize the ultrasound unit to work according to the services associated with this dataflow.

By utilizing data flows, the user can configure the LOGIQ P7/P8/P9/P10 ultrasound unit to optimally meet the needs of the facility, while keeping the user interface unchanged. Once the dataflow is selected, the actual location of the database is entirely transparent.

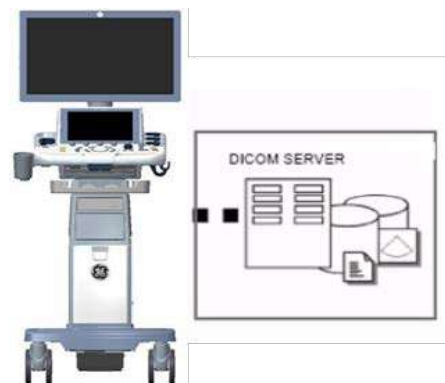
3-12-1-2 Dataflow Examples



The local database is used for patient archiving. Images are stored to internal hard drive.



The local database is used for patient archiving. Afterwards images are stored to a DVD/CD or external USB device, etc.



Search in the DICOM Modality Worklist, the patient found is copied into local database. The patient information and the examination results are stored to the local database. Images are stored to a DICOM server and to an image network volume on the local hard drive.

Figure 3-43 Examples of Dataflows

3-12-1-3 Stand-alone LOGIQ P7/P8/P9/P10

If digital images or 3D/4D data sets (if available) are stored, they should be saved in the Archive (Image Management System software).

For Image Management functionality refer to the Basic User Manual of the LOGIQ P7/P8/P9/P10.



NOTICE To avoid loss of essential data, it is highly recommended to **export/backup patient data** as well as measurements **at least once a month**.

Physical Connection:

No network connection needed.

3-12-1-4 LOGIQ? + PC within a “Sneaker Net”

A PC is used for review and work on studies acquired on one or more LOGIQ P7/P8/P9/P10 scanners without being connected in a network.

The images are first stored on the LOGIQ P7/P8/P9/P10 scanner's hard drive (Archive) and then exported from the scanner's hard drive to a sneaker device (e.g., DVD/CD), and finally imported from the sneaker device to the PC's internal hard drive.

For Image Management functionality refer to the Basic User Manual of the LOGIQ P7/P8/P9/P10.



NOTICE To avoid loss of essential data, it is highly recommended to **export/backup patient data** as well as measurements **at least once a month**.

Physical Connection:

No network connection needed.

3-12-1-5 Connection between LOGIQ? and DICOM Server

In this configuration, the LOGIQ P7/P8/P9/P10 is configured to work with a DICOM server in a network environment. Usually, this will be the hospital network. Images are first saved on the local image buffer on the scanner. At the end of the examination, the images are sent to the DICOM server via a DICOM spooler. This scenario requires that the scanner is configured to be connected to the DICOM server.

Physical Connection:

You will need one network cable.

- 1) Connect one end of the cable to the Ethernet connector on the LOGIQ P7/P8/P9/P10.
- 2) Connect the other end of the cable to the wall outlet.

NOTE: *If a Peer-to-Peer Network is connected to the hospital's network, you may connect the LOGIQ P7/P8/P9/P10 to the Peer-to-Peer Network.*

For more details refer to [Section 3-13 "Configuring Connectivity" on page 3-65](#).

3-12-2 Wired Ethernet from LOGIQ P7/P8/P9/P10 to a Workstation

3-12-2-1 Direct Cable Connection from the LOGIQ P7/P8/P9/P10 to a Workstation via a Crossover Cable.

You will only need a Crossover Cable for network use to connect the two units this way.

- 1) Connect one end of the crossed network cable to the network connector on the LOGIQ P7/P8/P9/P10.
- 2) Connect the other end to the network connector to the Workstation, see the Workstation Service Manual.

3-12-2-2 Connection via a Peer-to-Peer Network

You will need a network switch and one network cable for each unit connected to the switch.

3-12-2-3 Connection via Hospital Network

3-12-2-4 You will need one network cable to connect the LOGIQ P7/P8/P9/P10 to a wall outlet on the hospital's network.

3-12-3 Connection using Wireless Option

Refer to:

- Chapter 5 for theory.
- LOGIQ P7/P8/P9/P10 Basic User Manual: Chapter 16 Configuring Connectivity.

NOTE: *In R4.x.x, CISCO EAP authentication methods for wireless connectivity are not available. If the hospital wireless network supports PEAP authentication, use the Microsoft PEAP authentication methods for wireless connectivity.*

Section 3-13 Configuring Connectivity

3-13-1 Overview

You use Connectivity functionality to set up the connection and communication protocols for the ultrasound system. This page gives an overview of each of the Connectivity functions. Each function is described in detail in the following pages.

3-13-2 Structured Reporting

DICOM Structured Reporting provides the results of a procedure as structured data elements (well-defined fields) as opposed to unstructured data (large amounts of text undifferentiated by individual fields). This greatly improves query capability. DICOM Structured Reporting creates coded clinical data that can be used for clinical research, outcomes analysis, and disease management.

DICOM Structured Reporting is a standardized format for medical results. LOGIQ P7/P8/P9/P10 supports the following templates:

- OB-GYN REPORT TEMPLATES
- VASCULAR ULTRASOUND REPORT TEMPLATES
- The system supports selectable vessels with their locations for B-Mode measurements.
- For Vascular studies (Bypass Graft, UEV Map, LEV Map, LEA/UEA, and Carotid), additional measurement locations were added. For instance, for a Bypass Graft, there are now measurements at Inflow, Anast, Thigh, Knee, Calf, Ankle, Graft, RunOff, Pre-Sent, Stent, Post-Stent, and Outflow locations.
- ECHOCARDIOGRAPHY PROCEDURE REPORT TEMPLATES

These templates do not support all M&A results for the LOGIQ P7/P8/P9/P10.

3-13-2-1 Supported parameters

The DICOM supported parameters are listed in the DICOM Conformance Statement at the following web site under DICOM - Ultrasound:

<http://www3.gehealthcare.com/en/Products/Interoperability/DICOM>


3-13-3 Connectivity Functions

To set up your institution's connectivity, you must login with administrator privileges.

- 1) **TCPIP:** allows you to configure the Internet Protocol.
- 2) **Device.** allows you to set up devices.
- 3) **Service:** allows you to configure a service (for example, DICOM services such as printers, worklist, and other services such as video print and standard print) from the list of supported services. This means that the user can configure a device with the DICOM service(s) that particular device supports.
- 4) **Dataflow:** allows you to adjust the settings of the selected dataflow and associated services. Selecting a dataflow customizes the ultrasound system to work according to the services associated with the selected dataflow.
- 5) **Button:** allows you to assign a pre-configured output service (or a set of output services) to the Print keys on the control panel.
- 6) **Removable Media:** enables formatting (DICOM, database, or blank formatting) and DICOM verification of removable media.
- 7) **Miscellaneous:** allows you to set up the patient exam menu options, print and store options, and the order of the columns in the examination list on the Patient menu.

Configure these screens from left to right, starting with the Tcpiip tab first.

NOTE: The ultrasound system is pre-configured for many services, with default settings selected. You can change these services and settings as needed.

 **CAUTION** You must restart the LOGIQ P7/P8/P9/P10 (shutdown) after making any changes to connectivity settings in the Utility menus. This includes any changes on the TCPIP or dataflow setup screens.

3-13-4 TCPIP

This configuration category enables users with administrative rights to set the TCPIP for the system and connected remote archive.

- 1) Type the name of the Ultrasound system in the Computer Name field.
- 2) Identify the ultrasound system to the rest of the network by one of the following:
 - DO NOT enable DHCP in the Wired Network Configuration Section..
 - In the Wired Connection Section, Type the IP-Address (acquire unique static IP address from hospital network administrator), Subnet Mask, and Default Gateway (if applicable).

NOTE: Do not set up the system with DHCP. The IP address MUST BE static for the diagnostic and DICOM to function correctly.

- 3) Select Save settings.
- 4) Re-boot the ultrasound system.

NOTE: TCPIP settings do not get restored when restoring backups. This is per system design. The LOGIQ P7/P8/P9/P10 IP address MUST BE unique.

The screenshot shows a configuration window with several tabs: TCP/IP, Device, Service, Dataflow, and Button. The 'TCP/IP' tab is selected. Below the tabs, there is a 'Computer Name' field containing 'TPCOM01'. The 'Wired Network Configuration' section includes a checked 'Enable DHCP' checkbox and a 'Network Speed' dropdown menu set to 'Auto Detect'. The 'Wired Connection' section contains several input fields: IP-Address (3.245.75.175), Subnet Mask (255.255.255.0), Default Gateway (3.245.75.254), MAC Address (00-13-95-15-AE-8B), Speed (Mbps) (100), Connected (min) (24), and Status (Operational). At the bottom of the window, a message reads: 'Restart the system to activate any changes saved from this page!'.

Figure 3-44 Connectivity TCPIP Preset Menu (R1, R2, R2.5)

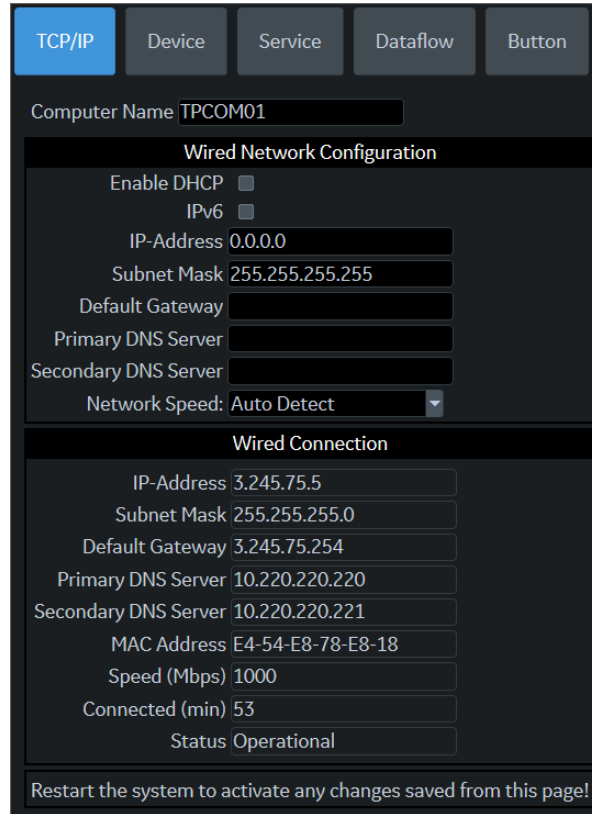


Figure 3-45 Connectivity TCP/IP Preset Menu (R3, R4 and R4.5)

Table 3-25 Computer Name

| Preset Parameter | Description |
|------------------|---|
| Computer Name | Type the unique name for the Ultrasound system (no spaces in name). |

Table 3-26 Wired Network Configuration

| Preset Parameter | Description |
|------------------------------------|---|
| Enable DHCP | Select this box to enable dynamic IP Address selection. NOTE: The system shall disable IP-Address, Subnet Mask, and Default Gateway when the user chooses to use DHCP. |
| IP-Address | Type the IP Address of the Ultrasound system. NOTE: IP stands for Internet Protocol. Every device on the network has a unique IP address. |
| Subnet Mask | Type the subnet mask address. NOTE: The Subnet Mask is an IP address filter that eliminates communication/messages from network devices of no interest to your system. |
| Default Gateway | Type the default gateway address. |
| Network Speed | Select the network speed (Auto Detect, 10Mbps/Half/Full Duplex, or 100 Mbps/Half/Full Duplex/1000Mbps/Auto-negotiate) |
| IPv6 (R3.0 or above) | Select this box if your network system support and you want to use IPv6 |
| IPv6 Address (R3.0 or above) | Type IPv6 Address of the Ultrasound system |
| IPv6 Prefix Length (R3.0 or above) | Type IPv6 Prefix Length |

Table 3-26 Wired Network Configuration

| Preset Parameter | Description |
|--------------------------------------|-----------------------------------|
| Default IPv6 Gateway (R3.0 or above) | Type IPv6 Gateway address |
| Primary DNS Server (R3.0 or above) | Type Primary DNS Server address |
| Secondary DNS Server (R3.0 or above) | Type Secondary DNS Server address |

Table 3-27 Wired Connection

| Preset Parameter | Description |
|--------------------------------------|--|
| IP-Address | Displays currently configured IP address |
| Subnet Mask | Displays currently configured subnet mask address |
| Default Gateway | Displays currently configured default gateway address |
| MAC Address | Unique network card address of the system. |
| Speed (Mbps) | The performance of a network connection. |
| Connected (min) | The connection time with network. |
| Status | Current network status. |
| IPv6 Address (R3.0 or above) | Displays currently configured IPv6 address |
| IPv6 Prefix Length (R3.0 or above) | Displays currently configured IPv6 Prefix Length |
| Default IPv6 Gateway (R3.0 or above) | Displays currently configured Gateway address |
| Primary DNS Server (R3.0 or above) | Displays currently configured Primary DNS Server address |
| Secondary DNS Server (R3.0 or above) | Displays currently configured Secondary DNS Server address |

NOTE: *Reboot the system to activate any changes saved from this page.*

3-13-5 Device

To add a new device,

- 1) Press **Add**.
- 2) Type the device name in the Name field.
- 3) Type the device's IP address in the IP Address field.



Figure 3-46 Connectivity Device Preset Menu (R1, R2, R2.5)

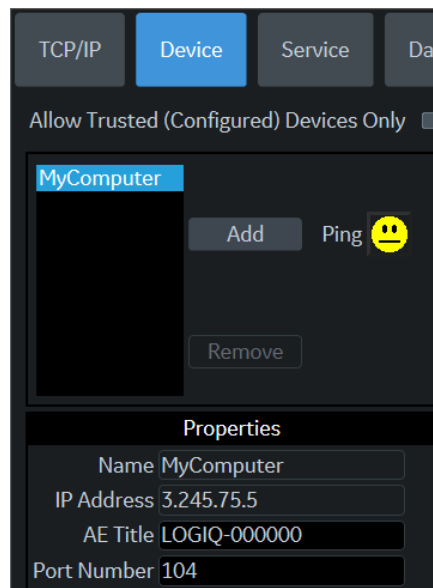


Figure 3-47 Connectivity Device Preset Menu (R3)

Table 3-28 Device

| Preset Parameter | Description |
|-------------------------|--|
| Add/Remove | Press Add to add a new device; press Remove to delete a device. |
| Ping | Press Ping to confirm that a device is connected. |
| Properties: Name | Type the name of the device. |
| Properties: IP Address | Type the device's IP address. |
| Properties: AE Title | AE Title of the LOGIQ P7/P8/P9/P10. NOTE: Only available for MyComputer. |
| Properties: Port Number | IP Port Number Used for DICOM, set by default to 104. NOTE: Only available for MyComputer. |
| Properties: MAC Address | Unique network card address. NOTE: Only available for MyComputer. |

To ping a device,

- 1) Select the device.
- 2) Press **Ping**. If the smiley face smiles, then the connection has been confirmed. If the smiley face frowns, then the connection has not been made. Check the device name and IP address.

3-13-6 Service

For each Device that you added to the system, you need to set up the service(s) that device supports (you must be an administrator to update these screens).

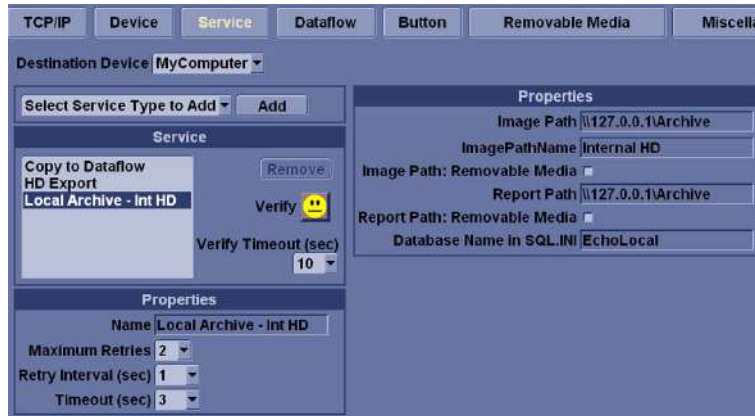


Figure 3-48 Connectivity Services Preset Menu, My Computer (R1, R2, R2.5)

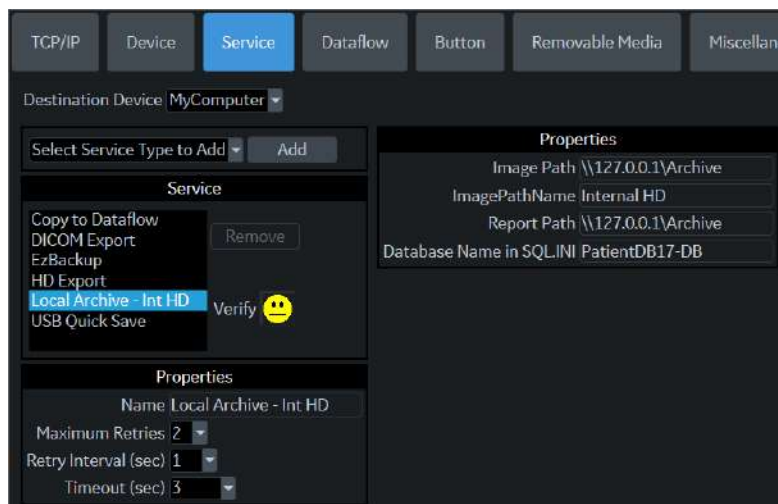


Figure 3-49 Connectivity Services Preset Menu, My Computer(R3, R4 and R4.5)



Figure 3-50 Connectivity Services Preset Menu, New Device (R1, R2 and R2.5)

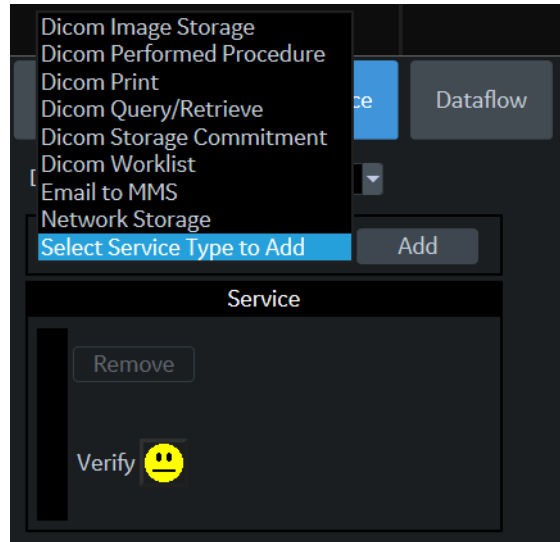


Figure 3-51 Connectivity Services Preset Menu, New Device (R3, R4 and R4.5)

The Services screen has the following sections of information:

- 1) Destination Device - lists information about destination devices. You can select from a list of currently existing devices.
- 2) Service Type to Add - lists information about services for the destination device. You can add services, select from a list of currently existing services, and remove services.
- 3) Service Parameters - lists parameters for the service currently selected in the Services section. The name and parameters in this section change, depending on what service is currently selected. In the above figure, this section shows DICOM Print parameters.

3-13-6-1 Adding a service to a destination device

- 1) Select the service from the pull-down menu. Press **Add**.
- 2) Specify the properties for this service. Press **Save**.
- 3) Verify the service.

3-13-6-2 Removing a service

- 1) Select the service. Press **Remove**.
- 2) Press **Save**.

3-13-6-3 Changing parameters for a service

There are certain parameters that may need to be set up for each service:

Table 3-29 Service Parameters: Common Service Parameters

| Preset Parameter | Description |
|----------------------|--|
| Name | Free text: give a descriptive name to the device. |
| AE Title | The Application Entity Title for the service. |
| Port Number | The port number of the service. |
| Maximum Retries | Max # - the maximum number of times to try establishing a connection to the service. |
| Retry Interval (sec) | Specify how often (in seconds) the system should try to establish a connection to the service. |

Table 3-29 Service Parameters: Common Service Parameters

| Preset Parameter | Description |
|------------------|--|
| Timeout | The amount of time after which the system will stop trying to establish a connection to the service. |

Many service parameters are specific to each type of service. The parameters are described on the following pages:

- DICOM Image Storage
- DICOM Performed Procedure
- DICOM Print
- DICOM Query/Retrieve
- DICOM Storage Commitment
- DICOM Worklist
- Standard Print
- Video Capture
- Save As
- Network storage
- USB Quick Save

Section 3-14 Agent Configuration (R3, R4 and R4.5)

3-14-1 Agent Configuration (R3, R4 and R4.5)

Overview

System may be configured to connect to the back office server (FFA Site), which enables GE Service Personnel to connect to the system to monitor health of the system, perform diagnostics, exchange files, or view console desktop.

3-14-1-1 Agent Configuration

- 1) Select [Utility] from touch panel
- 2) Select [Service] to open Common Service Desktop
- 3) Select [Agent Configuration] menu

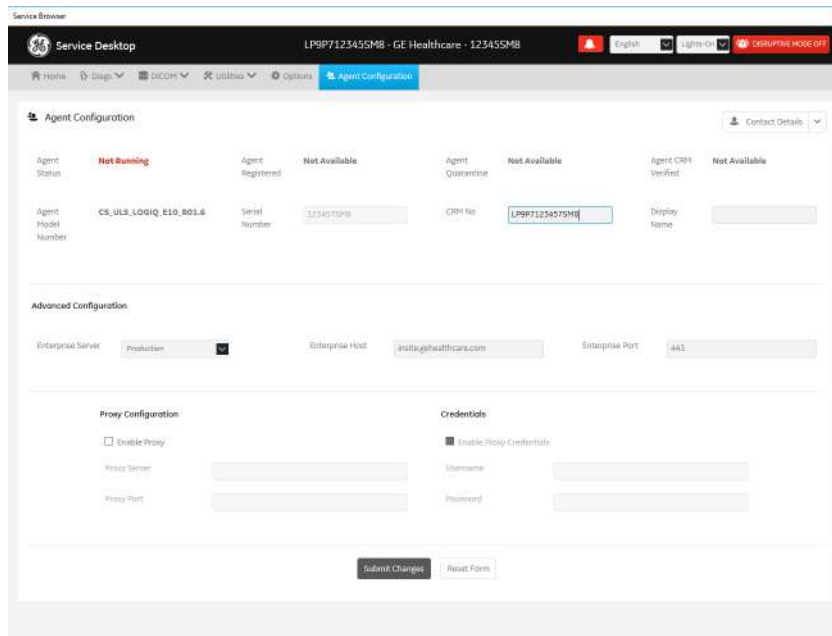



Figure 3-52 Agent Configuration (R3)

Figure 3-53 Agent Configuration (R4 and R4.5)

Use Agent Configuration to:

- Edit and configure the following:
 - Enterprise server, Select “Production” for install base. Select “Staging” for test purpose
 - Enterprise host name in the agent
 - Enterprise port number in the agent
 - Proxy server, Proxy port in the agent, Consult institutions’ IT personnel for Proxy settings
 - CRM number in the agent. The default CRM Number is same as the serial number prefixed with "LP9P7". (R3)
 - CRM number in the agent. The default CRM number is same as the capital serial number. (R4 and R4.5)
 - For software download URL, address where software will be downloaded from to the LOGIQ P8P9P10.(R4 and R4.5)

 **NOTICE** If you want to activate Request for Service (RFS), you need the verified CRM Number. The Serial Number must be registered with only one CRM Number.

- Display name in the agent
 - Enter the user name and password for the proxy
 - Reset the edited unsaved value
 - Update contact details

For more information, see: "[Agent Configuration \(R3, R4 and R4.5\)](#)" on page 3-75

3-14-1-2 Verifying Back Office Connection - CSD

- 1) Login to FFA Site from Remote PC using Chrome web browser
As of 2018, FFA Site address is <https://ffa.am.health.ge.com>
- 2) In System ID field, type the CRM Number of the machine and select [Get Started]

The screenshot shows a web form titled "Enter System or Service ID". It has two main sections. The first section, "System ID", is selected with a radio button. It contains a text input field for the System ID, a "Service Request ID (Optional)" field, and a "Country of System" dropdown menu with a search icon. The second section, "Service Request ID", is unselected. Below the form is a "Get Started" button.

Figure 3-54 FFA Site

- 3) At CONNECT mode, Select [Connect] of the “**Service Desktop**” on Remote Console

The screenshot shows the "Remote Console" interface. It features four panels: "Service Desktop", "RDP", "SSH", and "Virtual Console". Each panel displays the word "Ready" and a "Connect" button.

Figure 3-55 Remote Console

- 4) After selecting [Connect] button, operator may need to wait long time to launch the remote service desktop
- 5) Verify Service Desktop appears on remote PC

3-14-1-3 Verifying Back Office Connection – VOC

- 1) On Console, invoke “Disruptive Mode” and “VCO” by left click “GE ICON” and select “Connect Clinical Lifeline

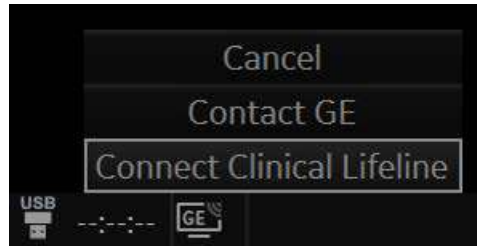


Figure 3-56 Connecting Clinical Lifeline

- 2) Login to FFA Site from Remote PC using Chrome web browser
As of 2018, FFA Site address is <https://ffa.am.health.ge.com>
- 3) In System ID field, type the CRM Number of the machine and select [Get Started]

A screenshot of a web form titled "Enter System or Service ID". The form has two main sections. The first section is titled "System ID" and contains a text input field, a "Service Request ID (Optional)" field, and a link for "Advanced Search". The second section is titled "Service Request ID" and contains a text input field and a "Country of System" field with a search icon. A "Get Started" button is located at the bottom right of the form.

Figure 3-57 FFA Site

- 4) At CONNECT mode, Select [Connect] of the “**Virtual Console**” on Remote Console

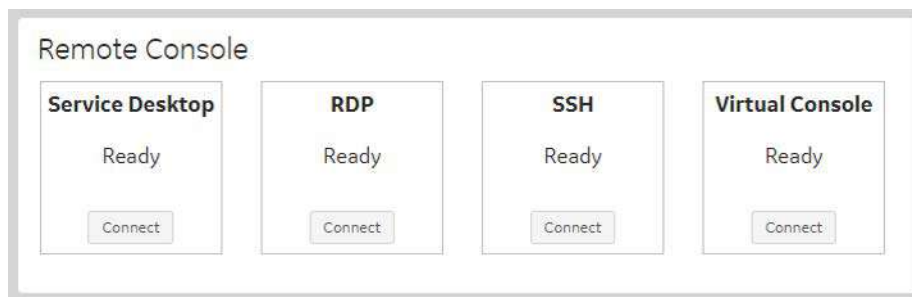


Figure 3-58 Remote Console

- 5) After selecting [Connect] button, operator may need to wait long time to launch the remote service desktop
- 6) Verify console desktop can be viewed from Remote PC

Section 3-15 Connectivity Setup Worksheet

| Site System Information | | | |
|---|---|--|--|
| Site: <input style="width: 90%;" type="text"/> | Floor: <input style="width: 90%;" type="text"/> | Comments: <div style="border: 1px solid black; height: 60px; width: 100%;"></div> | |
| Dept: <input style="width: 90%;" type="text"/> | Room: <input style="width: 90%;" type="text"/> | | |
| LOGIQ P7/ P8/P9/P10 <input style="width: 40%;" type="text"/> | Type: <input style="width: 40%;" type="text"/> | REV: <input style="width: 40%;" type="text"/> | |
| CONTACT INFORMATION | | | |
| Name | Title | Phone | E-Mail Address |
| <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |

| TCP/IP Settings | Remote Archive Setup |
|--|--|
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> System IP Settings Name - AE Title: <input style="width: 90%;" type="text"/> IP Address: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> Subnet Mask: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> Default Gateway: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> </div> | Name - AE Title: <input style="width: 90%;" type="text"/> IP Address: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> Subnet Mask: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> Default Gateway: <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> Server Name: <input style="width: 90%;" type="text"/> Remote DB User Name: <input style="width: 90%;" type="text"/> |

| Services (Destination Devices) | | | | | | |
|--------------------------------|--|--|--|---|--|--|
| | Device Type | Manufacturer | Name | IP Address | Port | AE Title |
| 1 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 2 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 3 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 4 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 5 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 6 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 7 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 8 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 9 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 10 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 11 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |
| 12 | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> <input style="width: 20%;" type="text"/> | <input style="width: 95%;" type="text"/> | <input style="width: 95%;" type="text"/> |

LOGIQ P7/P8/
P9/P10

Host Name Local Port IP Address . . .

AE Title Net Mask . . .

ROUTING INFORMATION

| | Destination IP Addresses | | | | GATEWAY IP Addresses | | | | |
|---------|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | | Default | | | | |
| ROUTER1 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ROUTER2 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ROUTER3 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

DICOM APPLICATION INFORMATION

| | NAME | MAKE/REVISION | AE TITLE | IP ADDRESSES | PORT |
|----------------------|----------------------|----------------------|----------------------|---|----------------------|
| Store 1 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Store 2 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Store 3D_1 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Store 3D_2 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Print | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Worklist | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Structured Reporting | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| Storage Commit | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |
| MPPS | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> | <input type="text"/> |

Figure 3-59 Worksheet for DICOM Network Information

Section 3-16 Paperwork

NOTE: During and after installation, the documentation (i.e. User Manual, Installation Manual,...) for the peripheral units must be kept as part of the original system documentation. This will ensure that all relevant safety and user information is available during the operation and service of the complete system.

3-16-1 Product Locator Installation

NOTE: The Product Locator Installation Card shown may not be same as the provided Product Locator card.


| | | | | | |
|---|--|---|------|--------------|-----------------|
|  | | Mailing Address GE Medical Systems Product Locator File P.O. Box 414 Milwaukee, WI 53201-0414 | | | |
| | | DESCRIPTION | FDA | MODEL | REV |
| PREPARE FOR ORDERS THAT DO NOT HAVE A LOCATOR INSTALLATION REPORT | | OCP | BS | ORD | DATE (MO-DA-YR) |
| | | DIST.-COUNTRY | ROOM | EMPLOYEE NO. | |
| SYSTEM ID NUMBER | | CUSTOMER NO. | | | |
| PRINTED IN USA INSTALLATION INSTALLATION | | DESTINATION - NAME AND ADDRESS _____ _____ _____ _____ | | | |
| | | ZIP CODE _____ | | | |
| | | _____ | | | |
| | | _____ | | | |

Figure 3-60 Product Locator Installation Card

3-16-2 User Manual(s)

Check that the correct User Manual(s) for the system and software revision, is included with the installation. Specific language versions of the User Manual may also be available. Check with your GE Sales Representative for availability.

Chapter 4

Functional Checks

Section 4-1 Overview

4-1-1 Purpose of Chapter 4

This chapter provides procedures for quickly checking major functions of the LOGIQ P7/P8/P9/P10 scanner diagnostics by using the built-in service software, and power supply adjustments.

Table 4-1 Contents in Chapter 4

| Section | Description | Page Number |
|---------|---|-------------|
| 4-1 | Overview | 4-1 |
| 4-1-1 | Purpose of Chapter 4 | 4-1 |
| 4-2 | Required Equipment | 4-2 |
| 4-3 | General Procedure | 4-3 |
| 4-3-1 | System Exterior Visual Check | 4-4 |
| 4-3-2 | Mechanical Parts Functional Check | 4-9 |
| 4-3-3 | Power On/Off | 4-17 |
| 4-3-4 | System Information | 4-23 |
| 4-3-5 | System Integration Checks | 4-27 |
| 4-3-7 | Peripheral Checks | 4-32 |
| 4-3-8 | Mode Transition Checks | 4-33 |
| 4-3-9 | OPIO Interface Check (R1, R2, R2.5 only) | 4-46 |
| 4-3-10 | OPIO Interface Check (R3, R4 and R4.5) | 4-49 |
| 4-3-11 | Touch Panel Calibration (R3, R4 and R4.5) | 4-53 |
| 4-4 | Board Diagnostics | 4-58 |



NOTICE Most of the information pertaining to this Functional Checks chapter is found in the LOGIQ P7/P8/P9/P10 Basic User Manual;

Section 4-2 Required Equipment

- An empty (blank) CD-R, DVD-R, and/or external USB devices (stick or hard disk drive for data storage/backup. A DVD+RW disc for DVR recording)
- At least one transducer. See [Chapter 9 - Probes, on page 9-52](#) for an overview.
(normally you should check all the transducers used on the system)

Section 4-3 General Procedure



CAUTION

SYSTEM REQUIRES ALL COVERS

Operate this unit only when all board covers and frame panels are securely in place. The covers are required for safe operation, good system performance and cooling purposes.



NOTICE

Lockout/Tagout Requirements (For USA only)

Follow OSHA Lockout/Tagout requirements by ensuring you are in total control of the Power Cable on the system.



4-3-1 System Exterior Visual Check

4-3-1-1 Physical Abnormalities

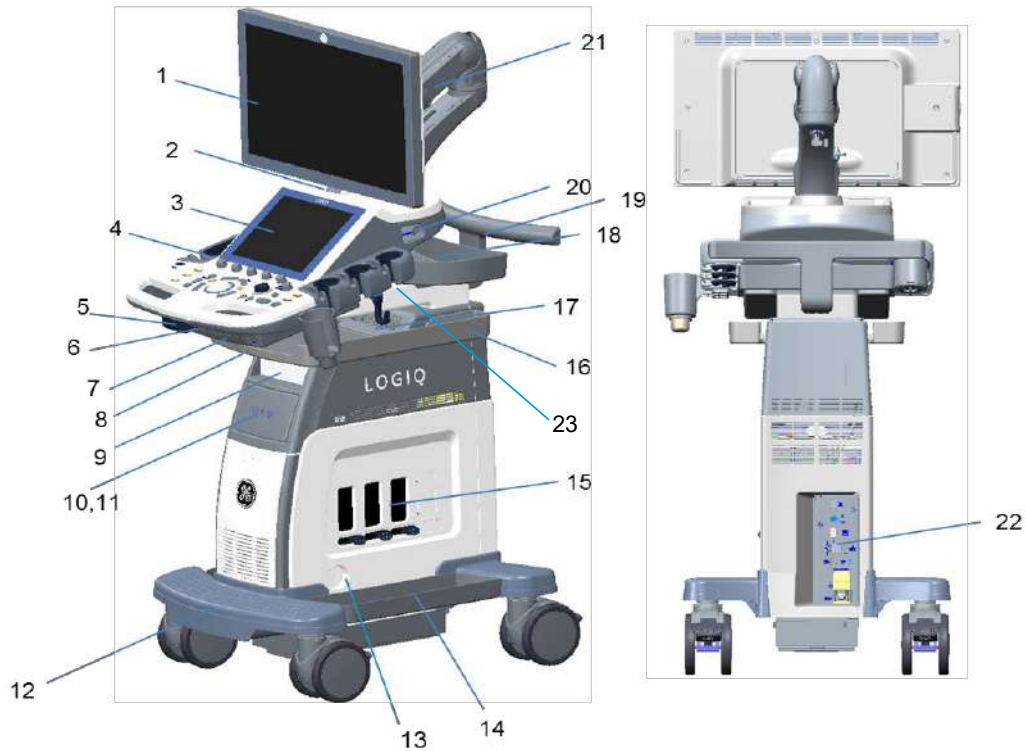


Figure 4-1 System Exterior (R1 to R3)

| | | |
|----------------------------------|---|-------------------------------|
| 1. LCD MONITOR | 10. BW printer | 18. OPIO tray (option) |
| 2. USB Port | 11. Drawer | 19. Rear Handle (option) |
| 3. Touch Panel | 12. Foot rest | 20. ECG connector (option) |
| 4. Probe Holder | 13. CW pencil probe port (option) | 21. Articulating arm (option) |
| 5. Control Panel Swivel button | 14. SIDE tray (option) | 22. External I/O panel |
| 6. Control Panel Up_down button | 15. Probe ports - 3 active probe ports 4 active probe ports (option) | |
| 7. A/N keyboard (option) | | |
| 8. Multi Purpose Holder (option) | 16. Paper tray (option) | |
| 9. DVD Drive | 17. Audio speaker | |

- 1) Check for no loose or cracked parts on above locations.

4-3-1-2 Physical Abnormalities (R4 and R4.5)

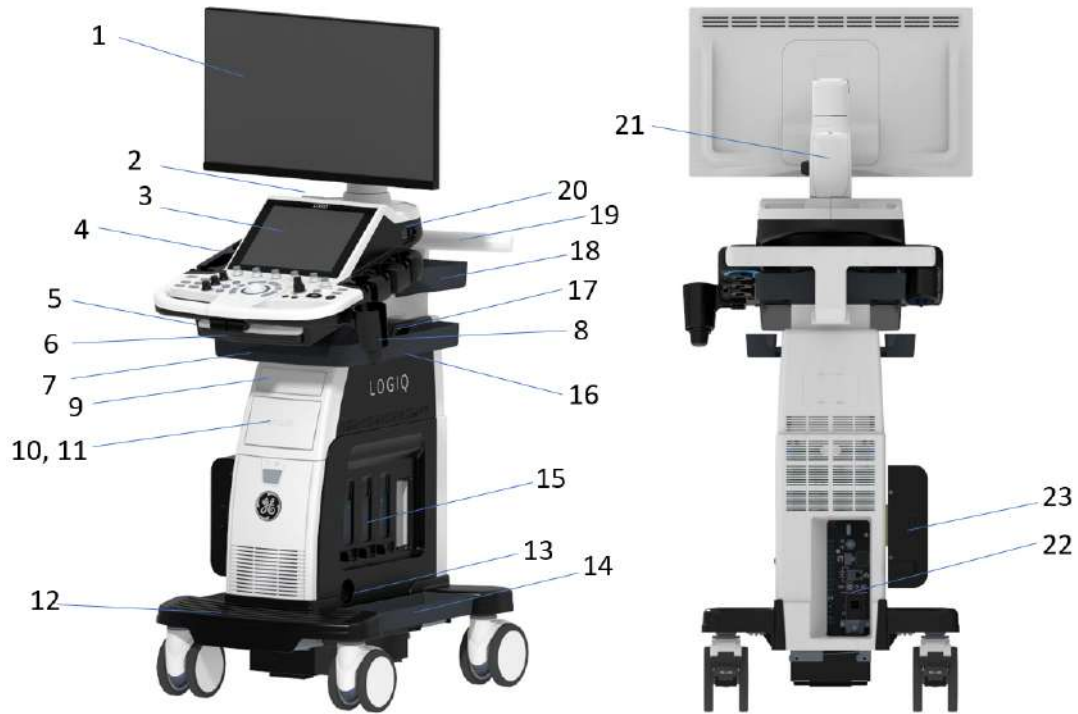


Figure 4-2 System Exterior (R4 and R4.5)

| | | |
|----------------------------------|---|----------------------------|
| 1. LCD MONITOR | 10. BW printer (option) | 19. Rear Handle |
| 2. USB port | 11. Drawer (option) | 20. ECG connector (option) |
| 3. Touch panel | 12. Foot rest | 21. Articulating arm |
| 4. Probe Holder | 13. CW pencil probe port (option) | 22. External I/O panel |
| 5. Control Panel Swivel button | 14. Side tray | 23. Battery (option) |
| 6. Control Panel Up_down button | 15. Probe ports (3 RS ports, 1DLP port) | |
| 7. A/N Keyboard (option) | 16. Paper tray (option) | |
| 8. Multi Purpose Holder (option) | 17. Audio speaker | |
| 9. DVD Drive (option) | 18. OPIO tray (option) | |

4-3-1-3 Appearance Inspection

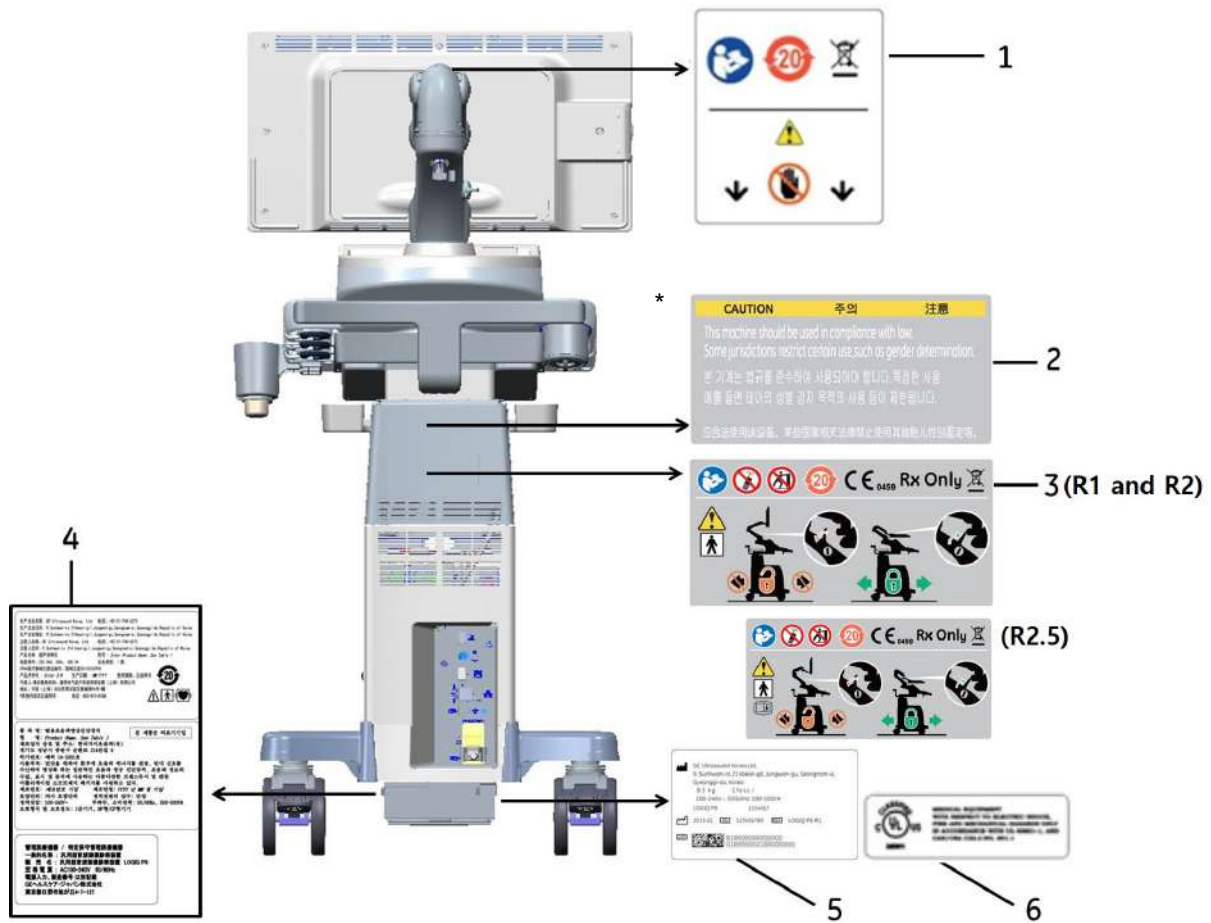


Figure 4-3 Label Location (R1, R2, and R2.5)

* Required for Asia.

1. LCD CAUTION LABEL
2. GENDER CAUTION LABEL (ONLY FOR INDIA, CHINA, KOREA)
3. MULTI CAUTION LABEL
4. LOGIQ P9/P7 RATING LABEL (FOR CHINA, FOR KOREA, FOR JAPAN)
5. LOGIQ P9/P7 RATING LABEL
6. UL LABEL

- 1) Check presence of LCD Caution Label.
- 2) Check presence of Gender Caution Label.

NOTE: Some countries may not have "gender determination" label.

- 3) Check presence of Multi Caution Label.
- 4) Check presence of Rating Plate.

NOTE: Rating Plate design slightly differ depending on Console destination. At minimum simply check Console number, manufacturing date and serial Number.

- 5) Check presence of UL Label

4-3-1-4 Appearance Inspection (R3)

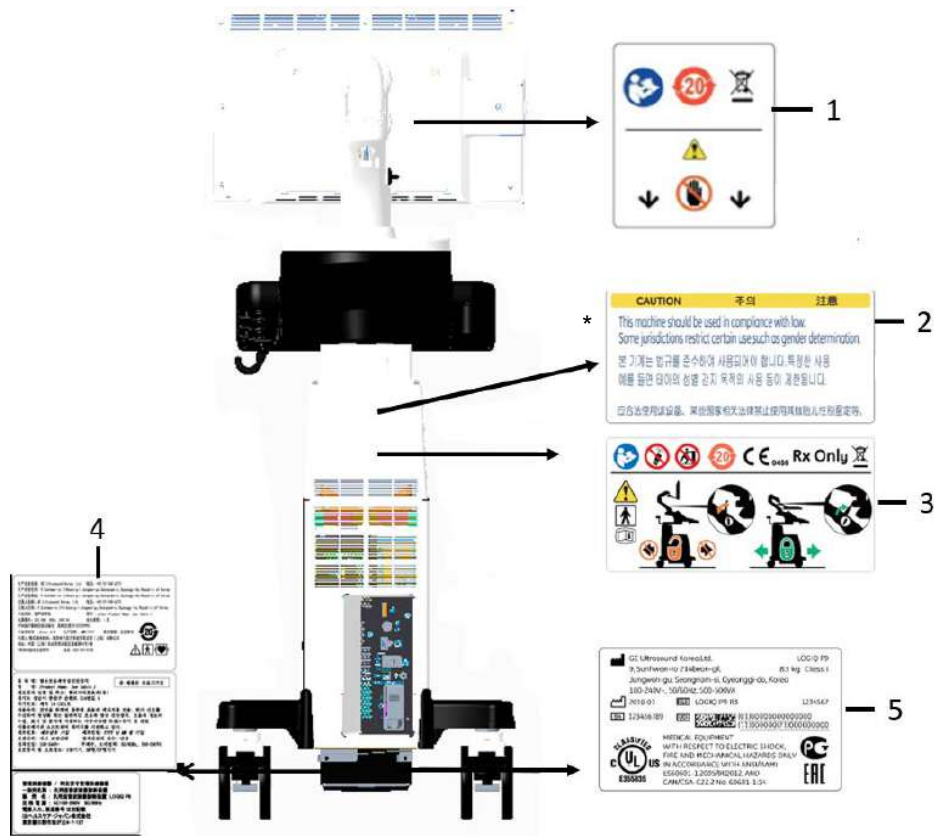


Figure 4-4 Label Location (R3)

* Required for Asia.

1. LCD CAUTION LABEL
2. GENDER CAUTION LABEL (ONLY FOR INDIA, CHINA, KOREA)
3. MULTI CAUTION LABEL
4. LOGIQ P9/P7 RATING LABEL (FOR CHINA, FOR KOREA, FOR JAPAN)
5. LOGIQ P9/P7 RATING LABEL

- 1) Check presence of LCD Caution Label.
- 2) Check presence of Gender Caution Label.

NOTE: Some countries may not have "gender determination" label.

- 3) Check presence of Multi Caution Label.
- 4) Check presence of Rating Plate.

NOTE: Rating Plate design slightly differ depending on Console destination. At minimum simply check Console number, manufacturing date and serial Number.

- 5) Check presence of UL Label. (But R3 system have UL symbol in LOGIQ P9/P7 RATING LABEL)

4-3-1-5 Appearance Inspection (R4 and R4.5)

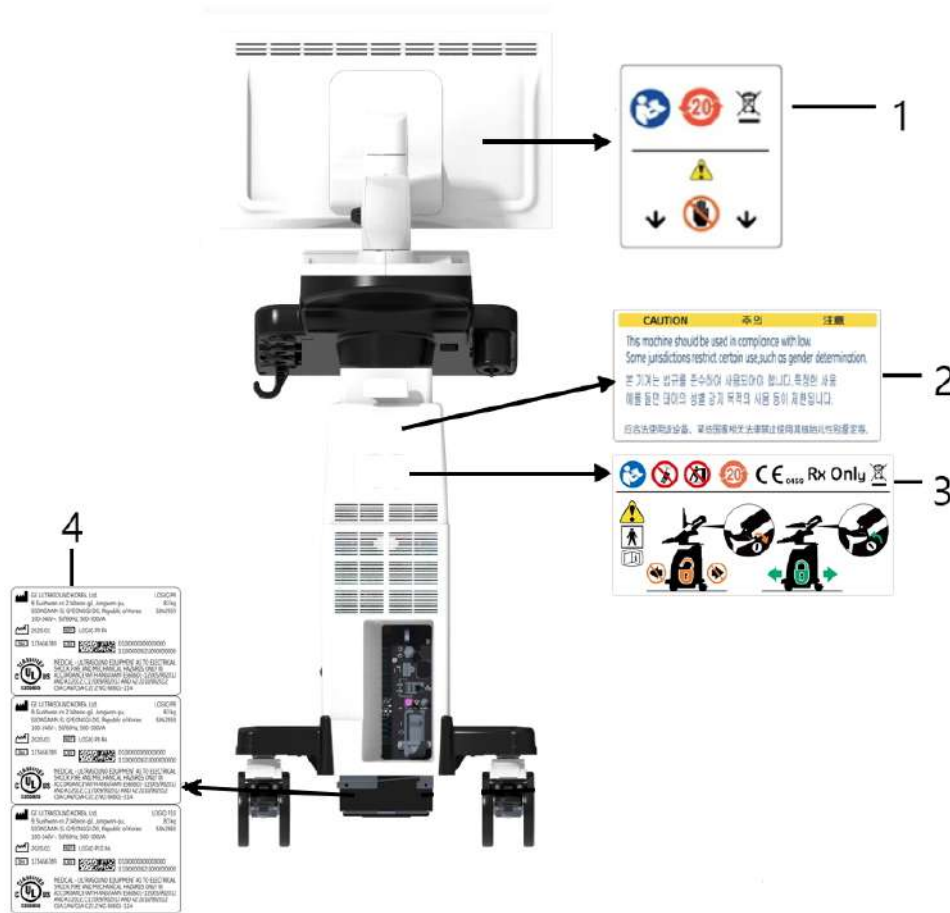


Figure 4-5 Label Location (R4 and R4.5)

* Required for Asia.

1. LCD CAUTION LABEL
2. GENDER CAUTION LABEL (ONLY FOR INDIA, CHINA, KOREA)
3. MULTI CAUTION LABEL
4. LOGIQ P8/P9/P10 RATING LABEL

- 1) Check presence of LCD Caution Label.
- 2) Check presence of Gender Caution Label.

NOTE: Some countries may not have "gender determination" label.

- 3) Check presence of Multi Caution Label.
- 4) Check presence of Rating Plate.

NOTE: Rating Plate design slightly differ depending on Console destination. At minimum simply check Console number, manufacturing date and serial Number.

- 5) Check presence of UL Label. (But R4 system have UL symbol in LOGIQ P8/P9/P10 RATING LABEL)

4-3-2 Mechanical Parts Functional Check



CAUTION Pay attention to moving parts and pinch point when performing mechanical parts functional check.



[R1, R2, R2.5 and R3]



[R4 and R4.5]

Figure 4-6 System Mechanical Checkpoint

| | Location |
|---|--------------------|
| 1 | Main LCD |
| 2 | OPIO Swivel Lock |
| 3 | OPIO UP_DOWN Lock |
| 4 | Total Lock Caster |
| 5 | Swivel-Lock Caster |
| 6 | LCD Arm |

4-3-2-1 Main LCD

- 1) Tilt LCD Monitor forward
- 2) Verify can be tilted.



Figure 4-7 Main LCD (R1, R2, R2.5 and R3)



Figure 4-8 Main LCD (R4 and R4.5)

4-3-2-2 LCD ARM

- 1) Loosen LCD Arm LOCK.

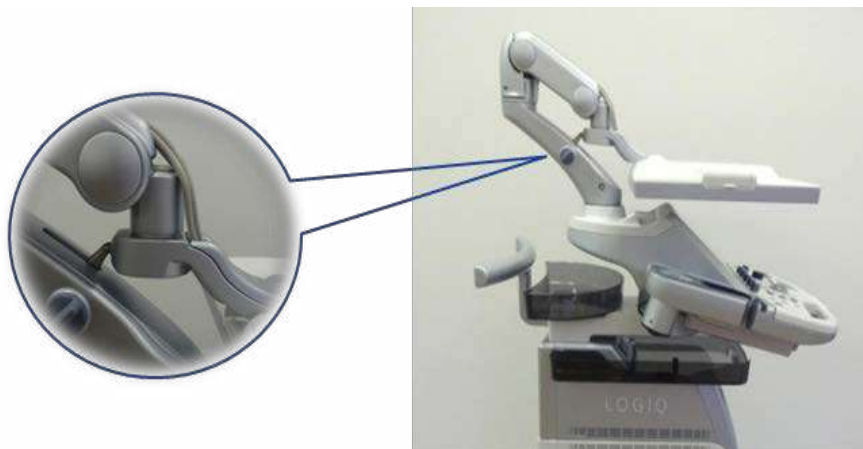


Figure 4-9 LCD ARM Lock (R1, R2, R2.5 and R3)

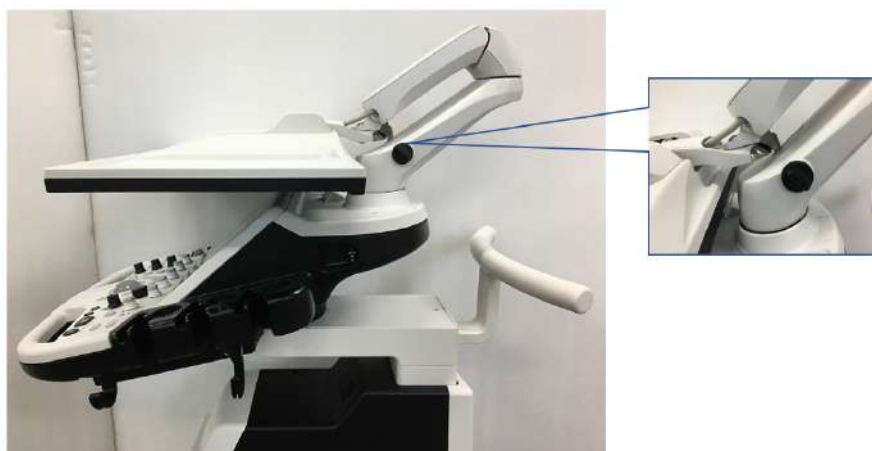


Figure 4-10 LCD ARM Lock (R4 and R4.5)

- 2) Verify LCD Monitor can move up/down (vertically) and left/right (horizontally).

NOTE: LCD Monitor can move approximately 150mm vertically and 250mm horizontally.

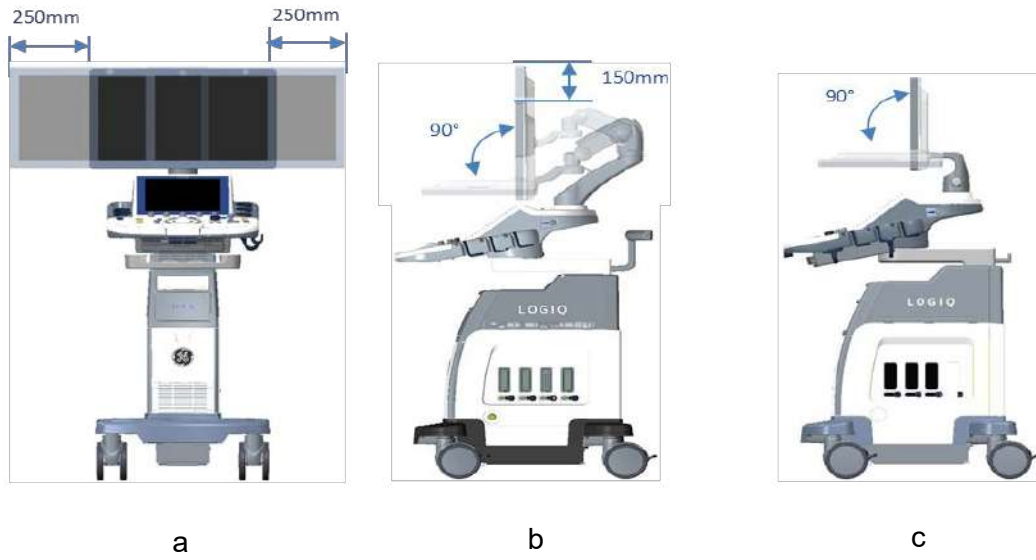


Figure 4-11 LCD Movement (R1, R2, R2.5 and R3)

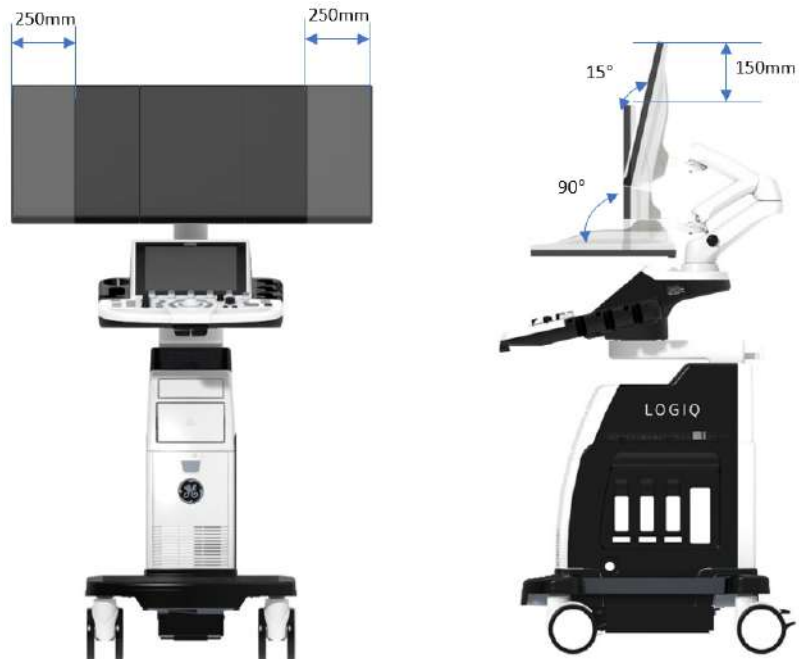


Figure 4-12 LCD Movement (R4 and R4.5)

- a, b : LOGIQ P7/P9 with Flexible Arm
- c : LOGIQ P7/P9 with Fixed Arm

- 3) Engage LCD Arm LOCK.
- 4) Align LCD Arm along center line of the system.
- 5) Verify LCD Panel is locked to position and LCD ARM does not move.

4-3-2-3 OPIO Swivel Lock

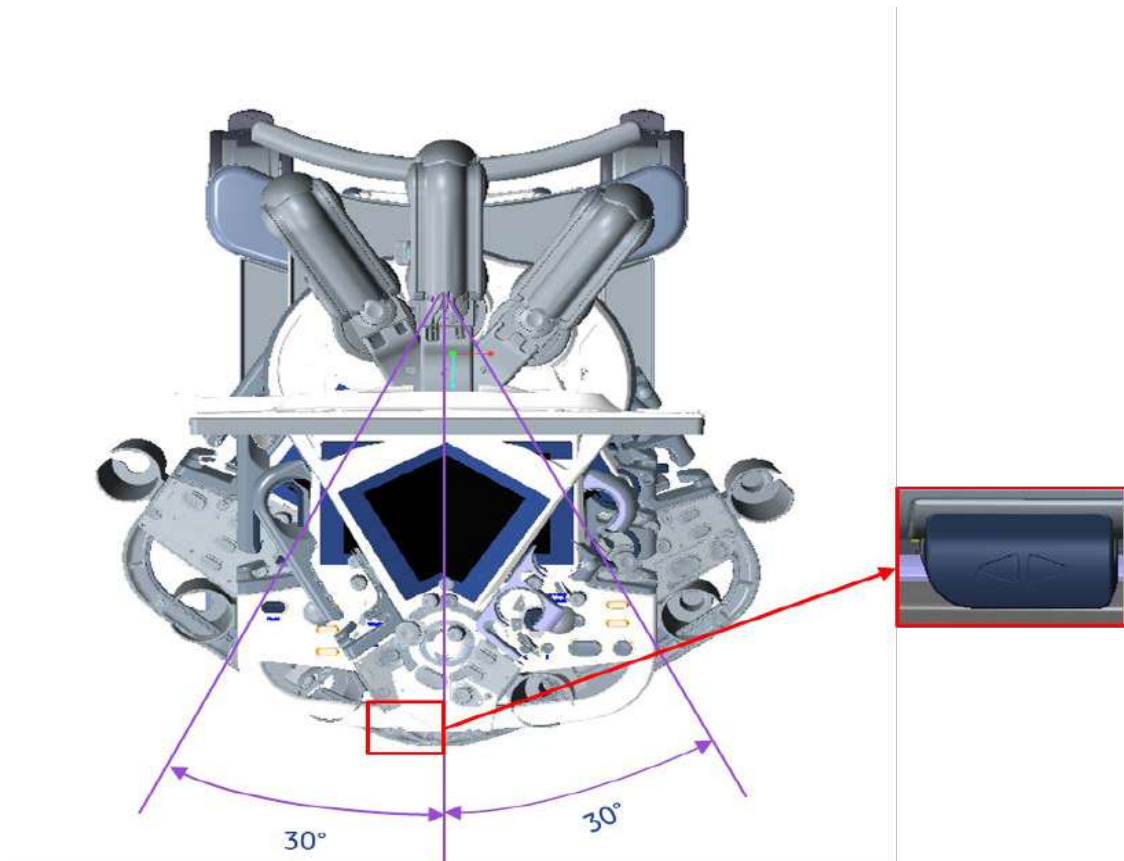


Figure 4-13 OPIO Swivel (R1, R2, R2.5 and R3)

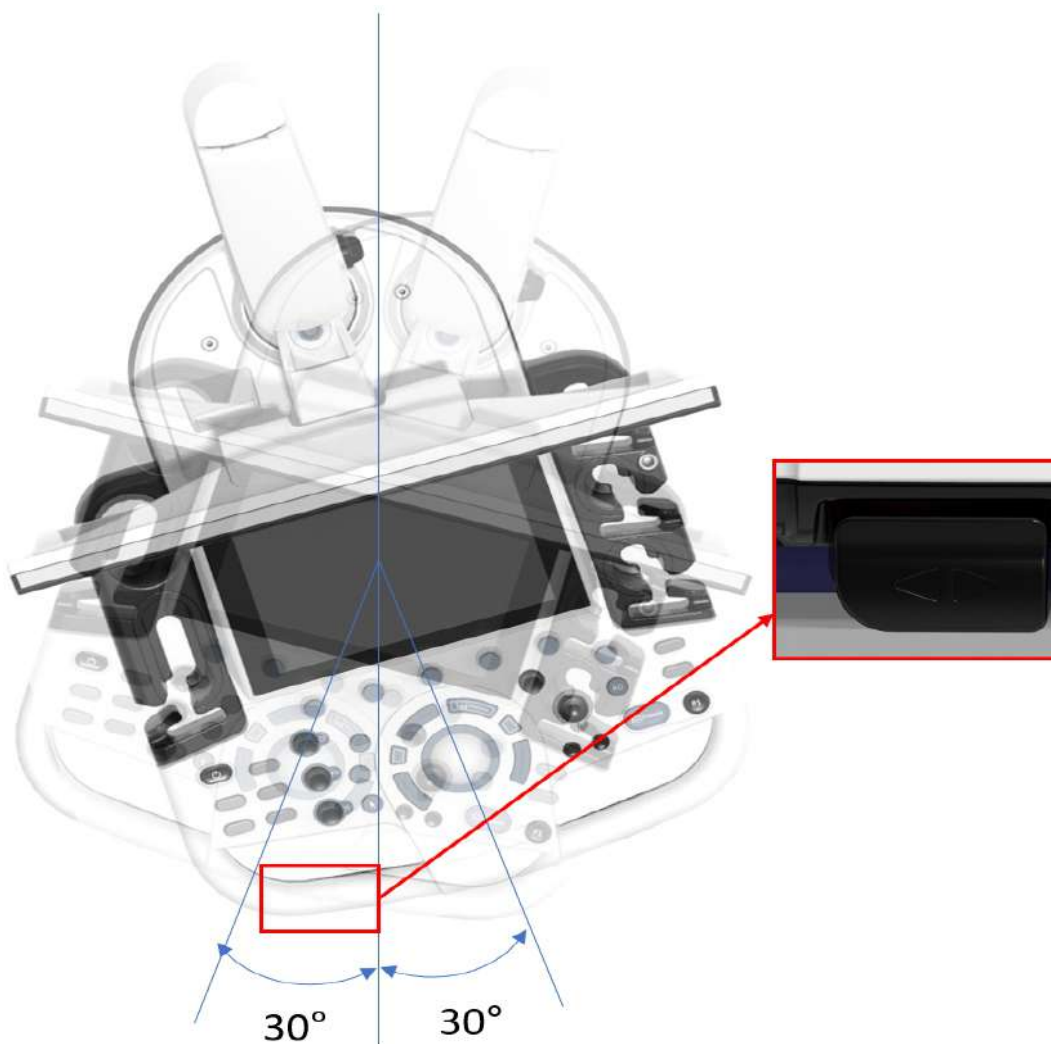


Figure 4-14 OPIO Swivel (R4 and R4.5)

- 1) Push the swivel button and hold it.
- 2) Rotate OPIO (while holding button).
- 3) Verify OPIO is free to rotate.

NOTE: OPIO can rotate approximately 30 degrees to each side.

- 4) Let go of Swivel Lock button (disengage).
- 5) Verify OPIO does not rotate.



NOTICE Do NOT attempt to apply excessive rotating force to OPIO. OPIO Swivel brake is designed to hold OPIO in desired position during normal use, and not meant to completely fix the OPIO position.

4-3-2-4 Swivel/Brake Lock Caster



CAUTION System weighs approximately 60kg. Pay attention for system stability when working with the casters

NOTE: This procedure applies to RIGHT REAR Caster only.

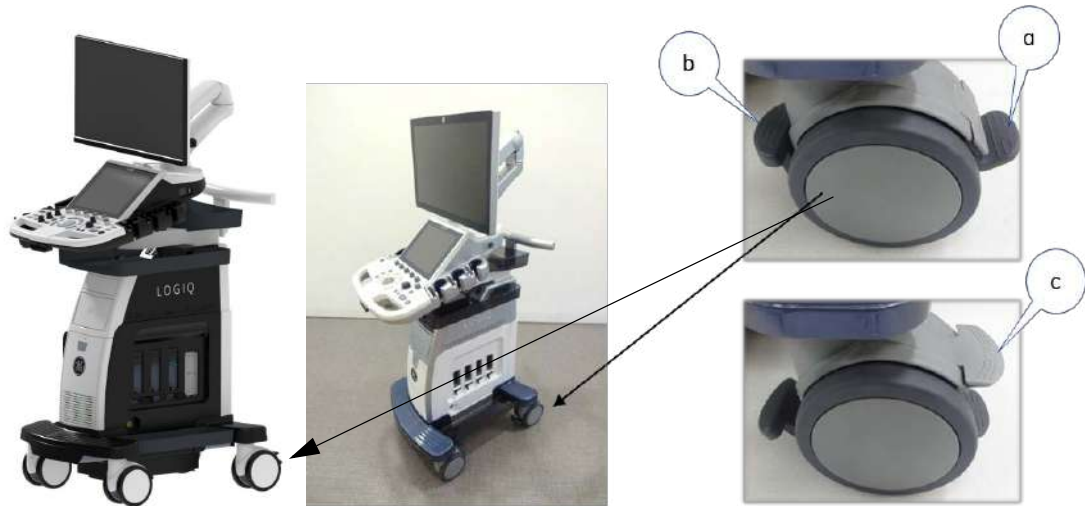


Figure 4-15 Right Rear Caster

- 1) Press 'a'.
- 2) Rotate wheel until it locks (only one lock position in 360deg turn).
- 3) Verify Swivel Lock engages.
- 4) Press 'b' downward.
- 5) Verify Brake is applied to the wheel. (i.e. Wheel does not rotate)
- 6) Press 'b' upward.
- 7) Verify Brake is released.
- 8) Press 'c'.
- 9) Verify Swivel is released.

4-3-2-5 Swivel/Brake Lock Caster

 **CAUTION** System weighs approximately 90kg. Pay attention for system stability when working with the casters.

NOTE: This procedure applies to casters other than RIGHT REAR Caster.

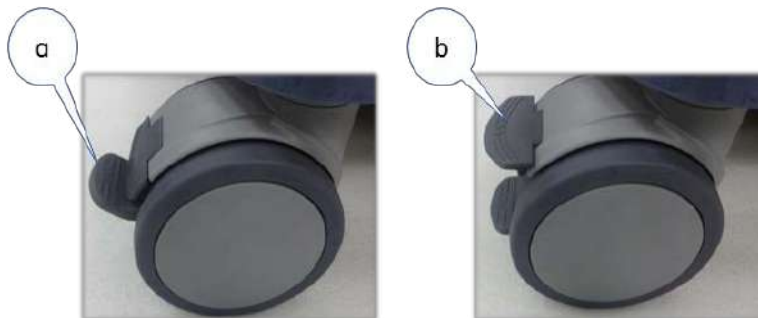


Figure 4-16 Total Lock Casters

- 1) Press 'a'.
- 2) Rotate wheel until it locks (several locations where caster engages).
- 3) Verify Swivel Lock engages and Brake is ON.
- 4) Press 'b'.
- 5) Verify wheel is free to move.

4-3-3 Power On/Off

NOTICE After turning off a system, wait at least 10 seconds before turning it on again. The system may not be able to boot if power is recycled too quickly.

4-3-3-1 Scanner Power On

- 1) Connect the Main Power Cable to the back of the system.
- 2) If not already done, screw on the pull-out protection of the mains power cable with the 2 screws.
- 3) Connect the Main Power Cable to a hospital grade power outlet with the proper rated voltage. Never use an adapter that would defeat the safety ground.
- 4) Switch ON the Circuit Breaker at the rear of the system.

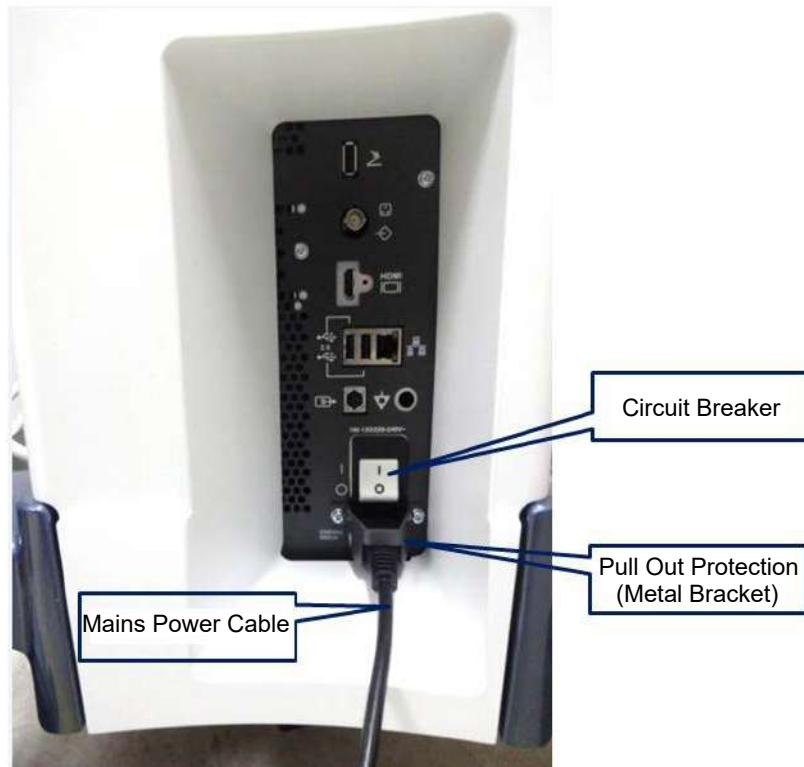


Figure 4-17 Circuit Breaker, pull-out protection and main power cable at rear of system.

NOTICE When AC power is applied to the scanner, the **On/Off** button on the control panel illuminates BLUE indicating that the system (including back-end processor) is in Standby Mode.

5) Hold down the **On/Off** button on the control panel for ~3 seconds.

NOTE: *The power for on-board peripheral auxiliary equipments are commonly switched with the **ON/OFF** button. The power switch of any attached printer(s) needs to be in ON position before starting the system. However, be aware some auxiliary equipment may switch itself to standby mode (e.g., Color video printer) and must therefore be switched on separately.*




Figure 4-18 On/Off Button on Control Panel and indicator color

- 6) Verify **On/Off** button color changes to GREEN.
- 7) Verify on-board peripherals power is also turned ON.

As soon as the software is loaded, the system enters 2D-Mode with the probe and application that were used before the system was shut down. Total time used for start-up is about 2 minutes.

*NOTE: The power for on-board peripheral auxiliary equipments are commonly switched with the **ON/OFF** button. So the auxiliary equipment need not to be switched ON/OFF separately.*

4-3-3-2 Complete power down

 **NOTICE** After turning off a system, wait at least 10 seconds before turning it on again. The system may not be able to boot if power is recycled too quickly.

- 1) If not already in read mode, freeze the image.
- 2) When you shutdown the system, enter the scan screen and lightly press the Power On/Off switch once. The System-Exit window is displayed.

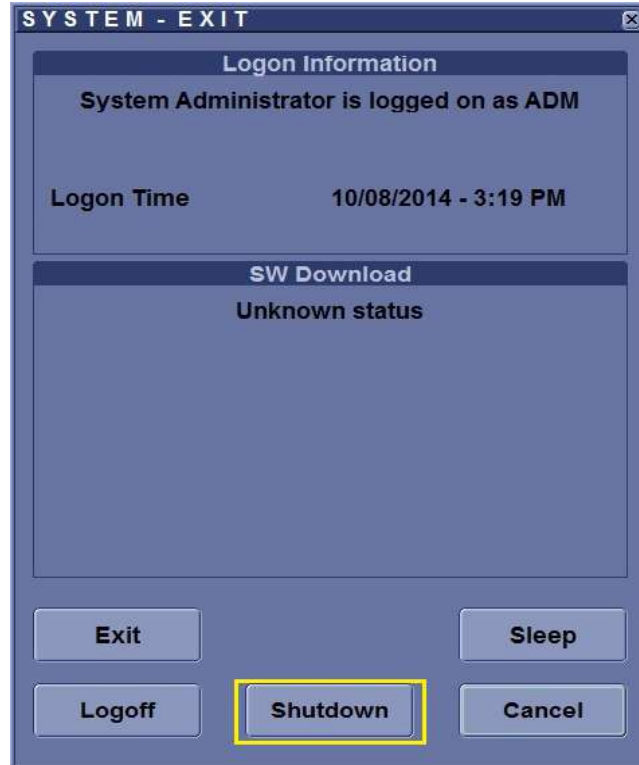


Figure 4-19 Power OFF User Interface (R2 and R2.5)

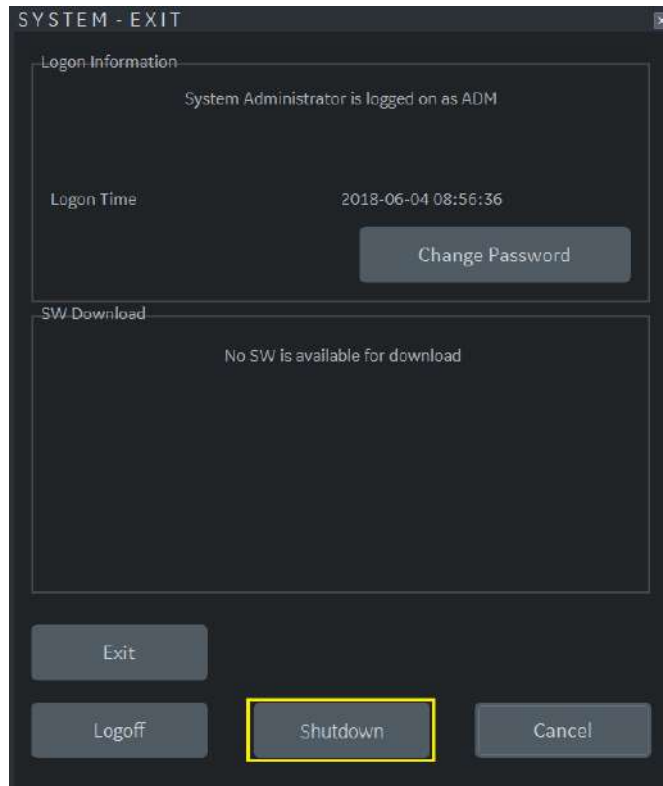




Figure 4-20 Power OFF User Interface (R3, R4 and R4.5)

- 3) Select the SHUTDOWN button. The system performs an automatic full shutdown sequence.
- 4) Switch OFF the Circuit Breaker at the rear of the system.

NOTE: *The mains outlet of the system for peripheral auxiliary equipment are commonly switched with the **ON/OFF** button. So the auxiliary equipment need not to be switched ON/OFF separately.*

 **WARNING** ***Disconnection of the Main Power Cable is necessary!**
For Example: When repairing the system.*

- 5) After complete power down, unscrew the 2 screws and remove the pull-out protection to disconnect the main power cable from the system or unplug it from the AC wall outlet socket.
- 6) Press on the brakes to block the front caster wheels.
- 7) Disconnect probes.

 **NOTICE** Be sure to follow probe handling instruction and caution outlined in Basic User Manual.

4-3-3-3 Power Off / Shutdown Check

- 1) When you shut down the system, enter the scan screen and lightly press the Power On/Off switch once. The System-Exit window is displayed.
- 2) The SYSTEM - EXIT menu, used when power off the unit, gives you these choices:
 - **Logoff**
Use this button to log off the current user. The system remains ON and ready for a new user to log on. If the Logoff button is dimmed, it indicates that no user is logged on to the unit at the moment.
 - **Shutdown**
Use this button to shut down the system. The entire system will shut down. It is recommended to perform a full shutdown at least once a week.

If the Shutdown button is dimmed, press the power button or Alt F10 to shut down the unit.
 - **Cancel**
Use this button to exit from the System-Exit menu and return to the previous operation.
 - **Exit** (Only available when logged in as GE Service with Service Dongle)
Select this button when you want to exit to the Windows Desktop.

4-3-4 System Information

4-3-4-1 Software Version

- 1) From the touch panel, select Utility -> System -> About.
- 2) Note "Software Version" in Software Group.
- 3) Note "Software Revision" in Software Group.
- 4) Note "Image Part Number" in System Image.

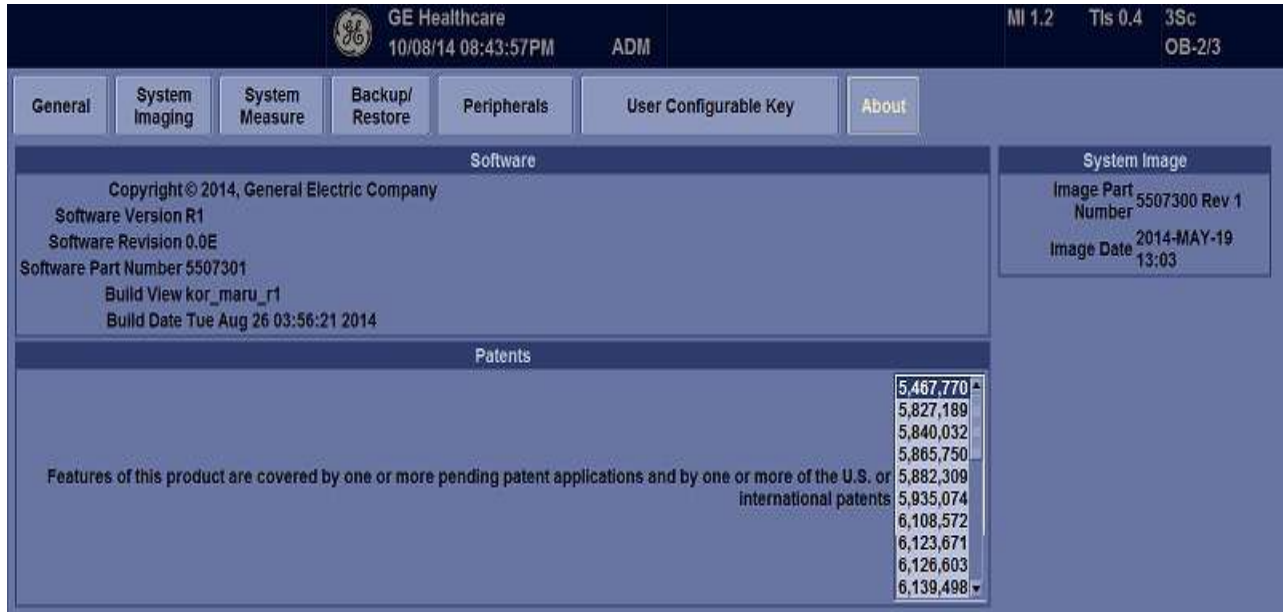


Figure 4-21 Software version (R2 and R2.5)

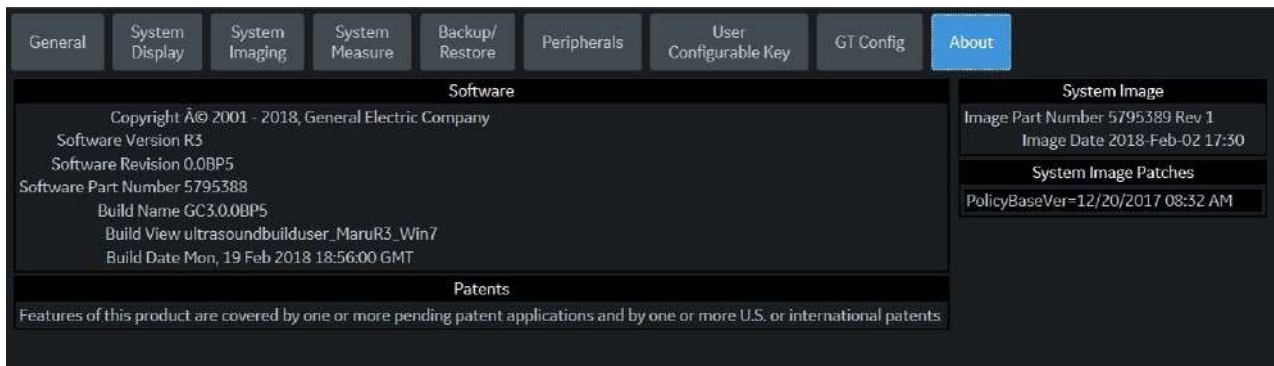


Figure 4-22 Software version (R3)

The screenshot shows a software interface with a top navigation bar containing the following tabs: General, System Display, System Imaging, System Measure, Backup/Restore, Peripherals, User Configurable Key, About (highlighted in blue), and Licenses. Below the navigation bar is a section titled "Installed Software Packages" containing a table with the following data:

| Package Type | Release Information | Part Number |
|----------------------|--|-------------|
| Application Software | Software Version: R4 Software Revision: 0.0P2 | 5835768 |
| Online Help | OLH_2.0 | N/A |
| Service Platform | 2.0 | 5857022 |
| Security Package | 2.0 | 5857023 |
| Base Image | 5835767 | 5835767 |
| Base Image Update | 2.0 | 5857024 |

Below the table, the text reads: "Copyright © 2001 - 2020, General Electric Company" and "Features of this product are covered by one or more pending patent applications and by one or more U.S. or international patents".

Figure 4-23 Software version (R4 and R4.5)

4-3-4-2 Service Platform Confirmation (R1, R2, R2.5 only)

- 1) From the touch panel, select Utility -> Service.
- 2) On Service Browser, select GE Service, and enter the password.
- 3) Note "SvcPform" version.

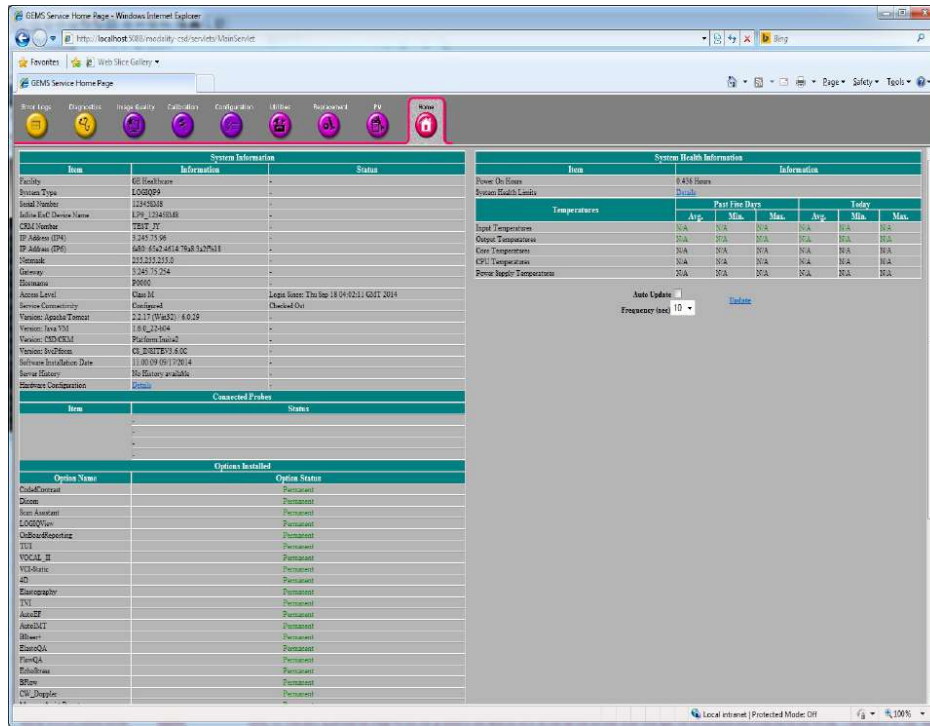


Figure 4-24 Software Platform version

4-3-4-3 USB Port Test

Required Equipment : Service Dongle

External Port Test

- 1) Plug service dongle to the following locations. Refer to [Section 3-9-2](#) for locations.
 - Front USB Port in OPIO
 - USB Port in LCD Monitor
 - Rear USB Access Port
- 2) Verify service dongle LED.

4-3-5 System Integration Checks

4-3-5-1 OPIO Test

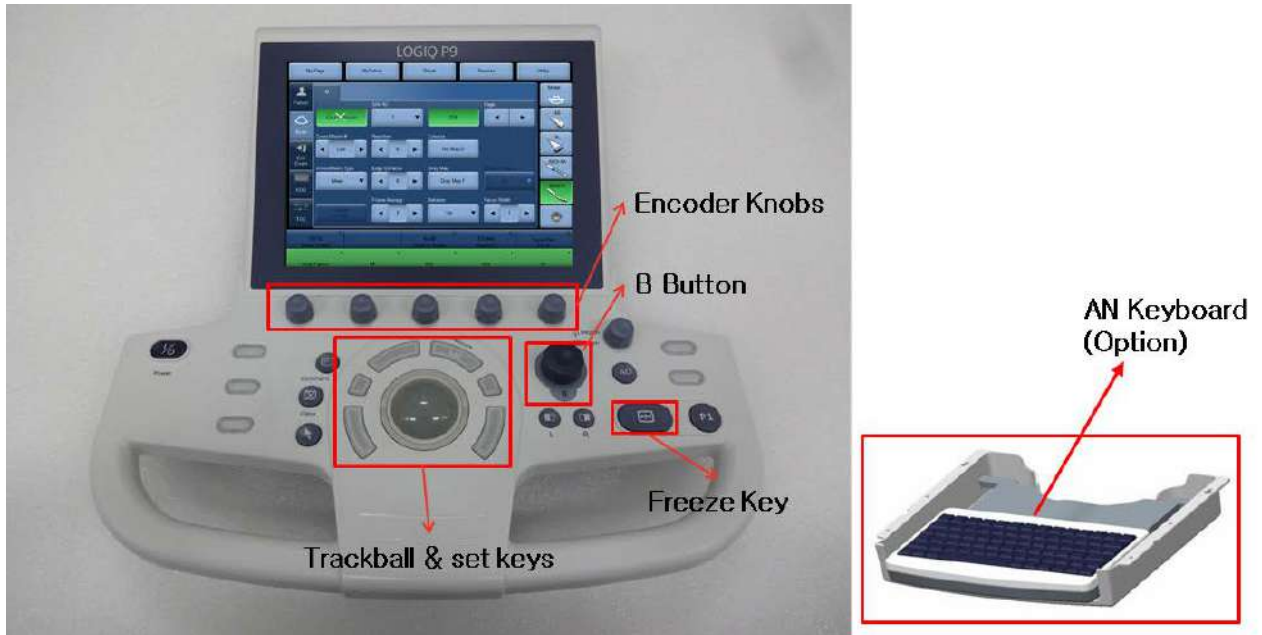


Figure 4-25 OPIO (R1, R2, R2.5 and R3)



Figure 4-26 OPIO (R4 and R4.5)

- 1) Power ON the system.
- 2) Check backlight on AN Keyboard, B Buttons, Freeze Key.
- 3) Select **UTILITY** in touch panel.
- 4) Turn encoder knobs as shown in [Figure 4-25](#).

- Verify backlight luminance (intensity) changes when knobs are turned.



Figure 4-27 Utility



Figure 4-28

- Connect any probe. (if not connected)
- Go to Live CF Mode. (Mode Rotary Line Area in touch panel, Press “CF” Mode button, unfreezes.)
- Turn “GAIN” encoder around CF Mode button and verify ROI gain change.
- Operate TGC sliders(Select TGC in touch panel) and verify B image gain change.

- 10) Press "COMMENT" key.
- 11) Select 'KBD' in touch panel and Type in arbitrary strings. Verify keyboard is functional
- 12) Type in arbitrary strings from A/N Keyboard(If installed). Verify keyboard is functional.

4-3-5-2 DVD Drive Test

- 1) Insert Blank CD-R or DVD-R Media into Optical Drive.
- 2) Select **UTILITY -> SYSTEM -> Backup Restore.**
- 3) Select "CD/DVD" in "MEDIA" list.
- 4) Select "User Define Configuration checkbox" in Backup and Press "Backup".
- 5) Start backup into Media by pressing "OK" Button.
- 6) Verify "Finished OK" message appears.

4-3-5-3 LAN Port Test

- 1) Plug the Ethernet Cable to connect local area network.
- 2) Verify that Local area network connection is recognized.

4-3-6 System Integration Checks (R4 and R4.5 only)

4-3-6-1 OPIO Test



Figure 4-29 OPIO

- 1) Power ON the system.
- 2) Check backlight on AN Keyboard, B Buttons, Freeze key.
- 3) Select UTILITY in touch panel.

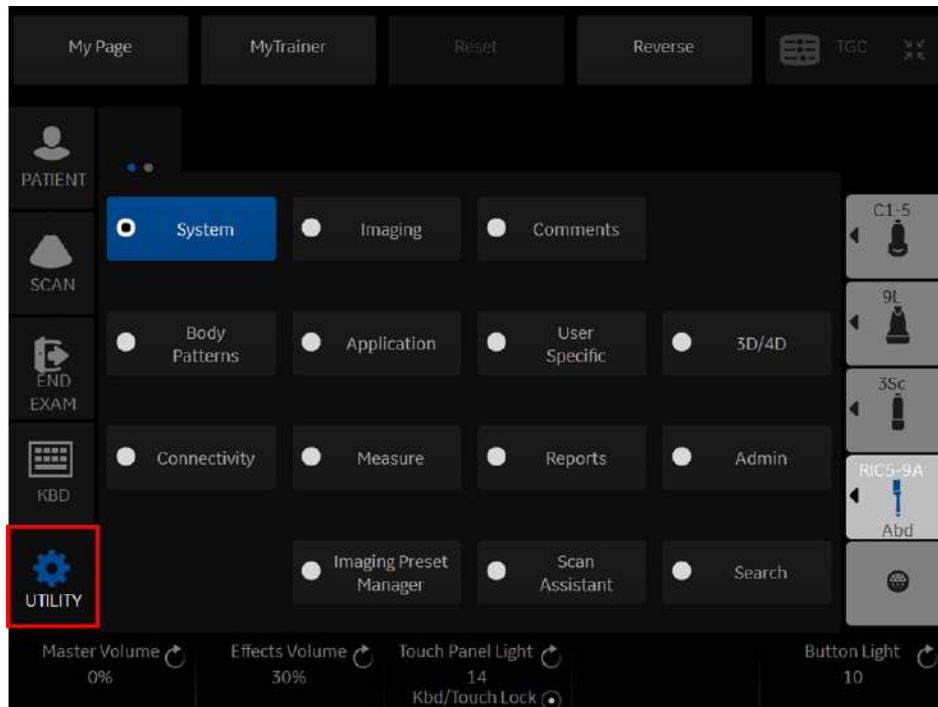


Figure 4-30 Utility



Figure 4-31

- 4) Connect any probe. (if not connected)
- 5) Go to Live CF Mode. (Press “CF” Mode button, unfreezes.)
- 6) Turn “GAIN” encoder around CF Mode button and verify ROI gain change.
- 7) Operate TGC sliders (Select TGC in touch panel) and verify B image gain change.
- 8) Press “COMMENT” key.
- 9) Select ‘KBD’ in touch panel and Type in arbitrary strings. Verify keyboard is functional.
- 10) Type in arbitrary strings from A/N Keyboard (if installed). Verify keyboard is functional.

4-3-6-2 DVD Drive Test

- 1) Insert Blank CD-R or DVD-R Media into Optical Drive.
- 2) Select UTILITY -> SYSTEM -> Backup Restore.
- 3) Select “CD/DVD” in “MEDIA” list.
- 4) Select “User Define Configuration checkbox” in Backup and Press “Backup”.
- 5) Start backup into Media by pressing “OK” Button.
- 6) Verify “Finished OK” message appears.

4-3-6-3 LAN Port Test

- 1) Plug the Ethernet Cable to connect local area network.
- 2) Verify that Local area network connection is recognized.

4-3-7 Peripheral Checks

4-3-7-1 DVR Test (if equipped)

Required: Blank [DVD+RW] media.

- 1) Make sure the tab menu of "Video" is found on the right-most touch panel tab. If not found, go to "Utility" -> "Application" -> "Setting" and check "Show video Tab".
- 2) Insert DVD+RW. Go to DVR Touch Panel menu.
- 3) Press "REC-Standby" to go stand-by.
- 4) Start Recording. Perform image scanning including Doppler sound.
- 5) Stop Recording.
- 6) Exit from stand-by.
- 7) Play.
- 8) Verify that Recorded image and sound can be played back.

NOTE: LOGIQ P7/P8/P9/P10 support USBHDD file capture. and this menu can select in "Utility" "System" "Peripherals" tab. The recorded data can play on your target PC. The support video format mpeg-2 and h.264 and it depend on codec on your PC of operation system. If you cannot play in window media player, you should be download video codec or recommend use VLC media player (<http://www.videolan.org/>).

4-3-7-2 Black and White Printer Test

- 1) Print an image by pressing P button associated with BW Printer. (P key should be configured correctly.)
- 2) Verify that image can be printed.
- 3) Verify that printed image has no distortion as compared the image on screen.

4-3-7-3 Color Printer Test

- 1) Print an image by pressing P button associated with Color Printer. (P key should be configured correctly.)
- 2) Verify that image can be printed.
- 3) Verify that printed image has no distortion as compared the image on screen.

4-3-7-4 CD/DVD Read/WriteTest

- 1) Insert Blank CD/DVD Media into Optical Drive.
- 2) Go to Utility -> System -> Backup Restore. Select "CD/DVD" in "Media" list.
- 3) Select "User Define Configuration checkbox" in Backup and Press "Backup".
- 4) Start backup into Media by pressing "OK" Button.
- 5) Verify that "Finished OK" message appears.

4-3-7-5 ECG Test

- 1) Connect a any probe. Select cardiac application like "Adult". And start scan.
- 2) Verify that ECG timeline gets displayed on image area.
- 3) Enter CSD.
- 4) Select DIAGNOSTICS - Service Diag - ECG Test.
- 5) Verify diagnostics exhibit "PASS".

4-3-7-6 Gel Warmer Test

- 1) Insert Gel Bottle into Gel Warmer.
- 2) Power ON the warmer.
- 3) Verify Gel gets warm.

NOTE: Depending on environment, Gel requires 30 minute or more to warm up.

4-3-7-7 Single CWD

- 1) Connect P8D probe. Select vascular application like "Carotid". And start scan.
- 2) Verify that CW timeline image appears.

4-3-8 Mode Transition Checks

4-3-8-1 General Information

- 1) [R1.X.X] Select UTILITY -> SYSTEM -> User Configurable Key.
[R2.X.X and R3.X.X] Select UTILITY -> APPLICATION -> Settings.
- 2) [R1.X.X] Select "M" in 2 list of "Mode Rotary Line Key".
[R2.X.X and R3.X.X] Select ""M"" in 2 list of ""User Configurable Mode Rotary".
- 3) [R1.X.X] Select "PW" in 3 list of "Mode Rotary Line Key".
[R2.X.X and R3.X.X] Select ""PW"" in 3 list of ""User Configurable Mode Rotary".
- 4) [R1.X.X] Select "CF" in 5 list of "Mode Rotary Line Key".
[R2.X.X and R3.X.X] Select ""CF"" in 5 list of ""User Configurable Mode Rotary".
- 5) Press "Save".
- 6) Select UTILITY -> SYSTEM -> User Configurable Key.
- 7) Select "B-Flow" in 4 list of "User Defined Hard Key".
- 8) Select "Reset" in 3 list of "User Defined Touch Button".

9) Press "Save" and restart the system into Question window by pressing "OK" Button.

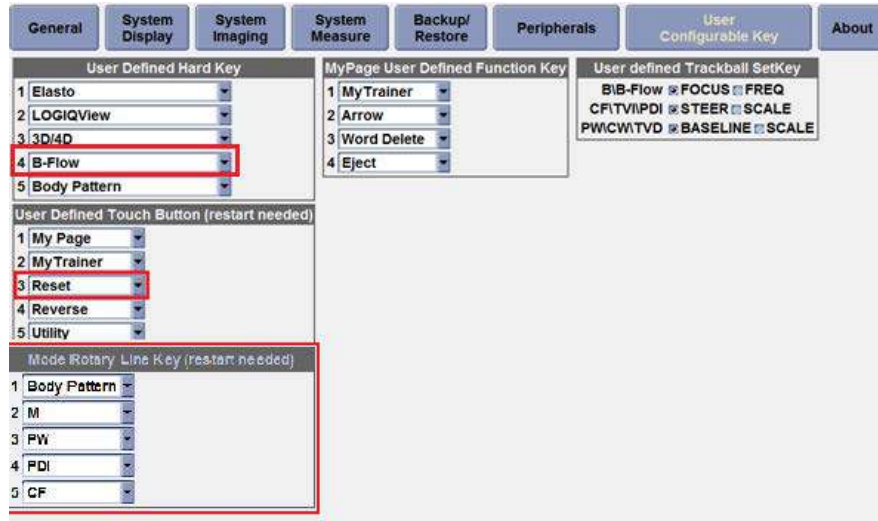


Figure 4-32 User Configurable Key Page (R1.x.x)

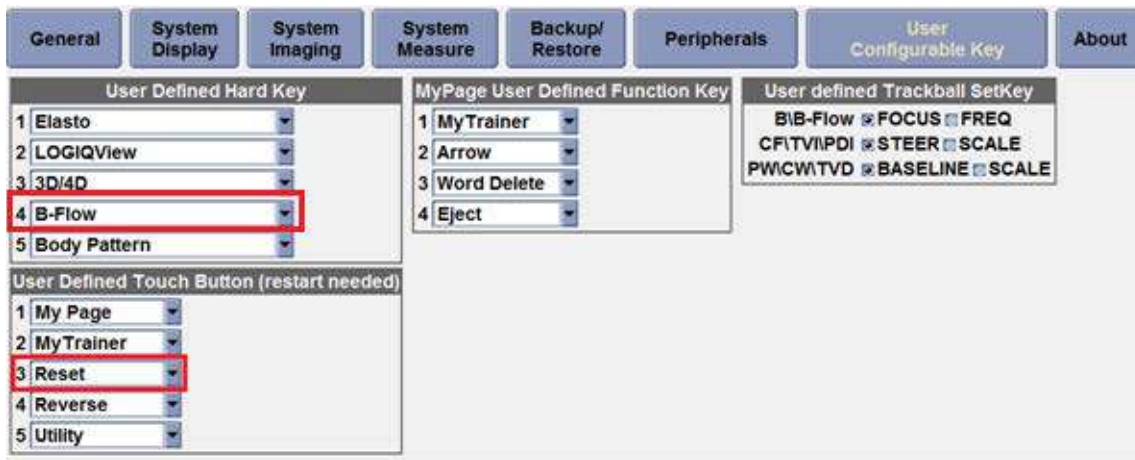


Figure 4-33 User Configurable Key Page (R2.x.x)

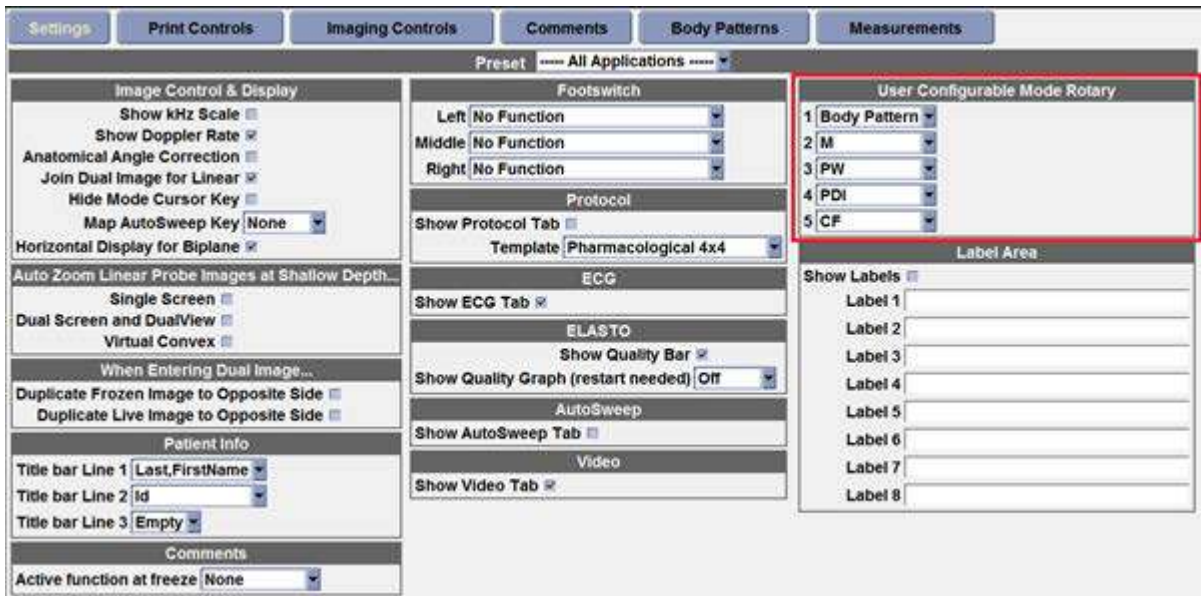


Figure 4-34 User Configurable Key Page (R2.x.x)

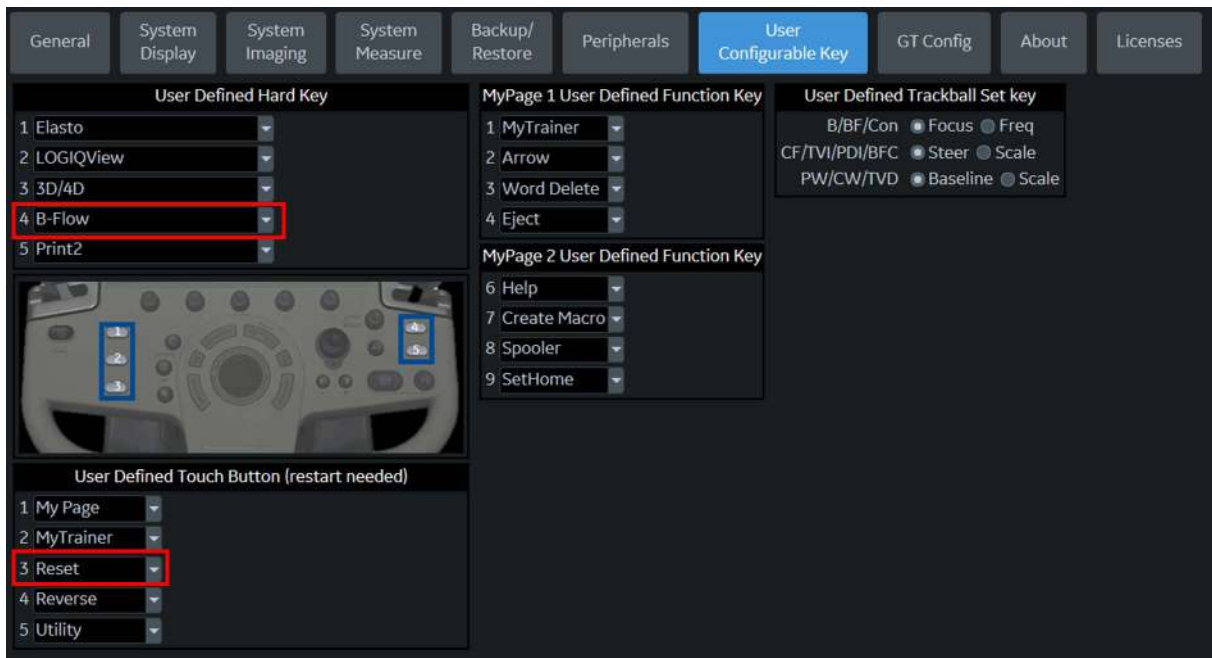


Figure 4-35 User Configurable Key page (R3.x.x)

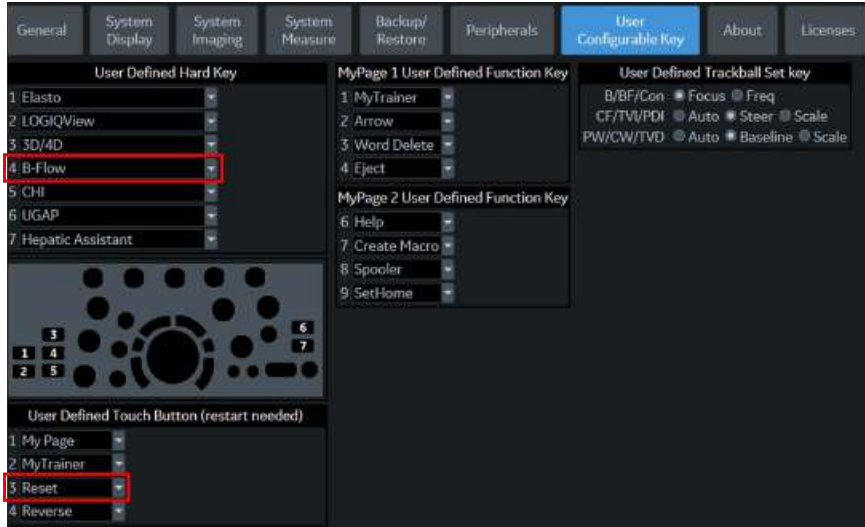


Figure 4-36 User Configurable Key Page (R4.x.x or later)

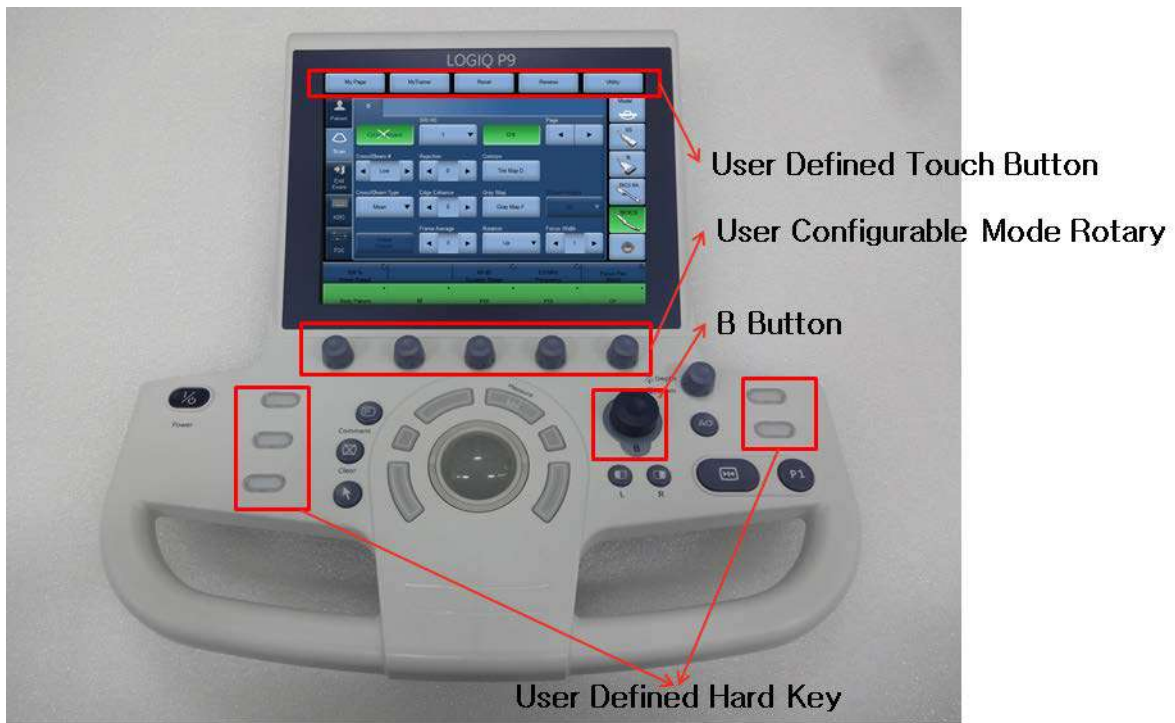


Figure 4-37 Hard key and Touch Panel for User interaction (R2.x.x or R3.x.x)

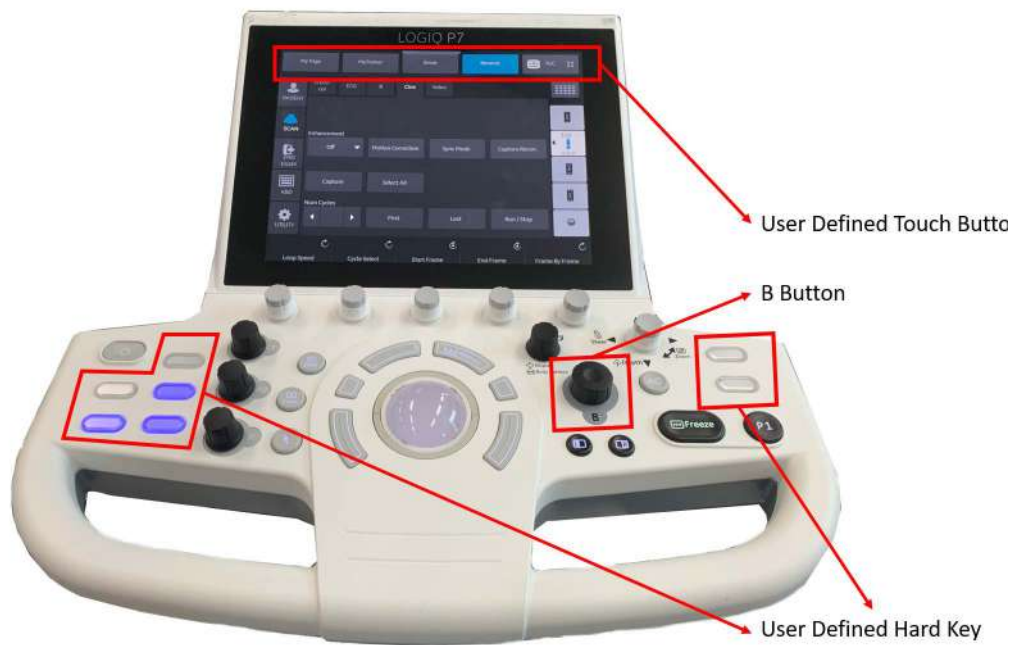


Figure 4-38 Hard key and Touch Panel for User interaction (R4.x.x or later)

4-3-8-2 B-Mode

- 1) Press B Mode button.
- 2) Verify that system scan with the activated probe.
- 3) Verify probe name is displayed on upper right hand corner of main monitor (scan screen).

4-3-8-3 Color Flow-Mode

- 1) Press CF Mode button. (Active CF Mode button on "User Configurable Mode Rotary".(R1-R3 only))
- 2) Increase CF Gain until noise floor shows up.
- 3) Verify no vertical "streaks" of color that significantly contrasts the surrounding color.

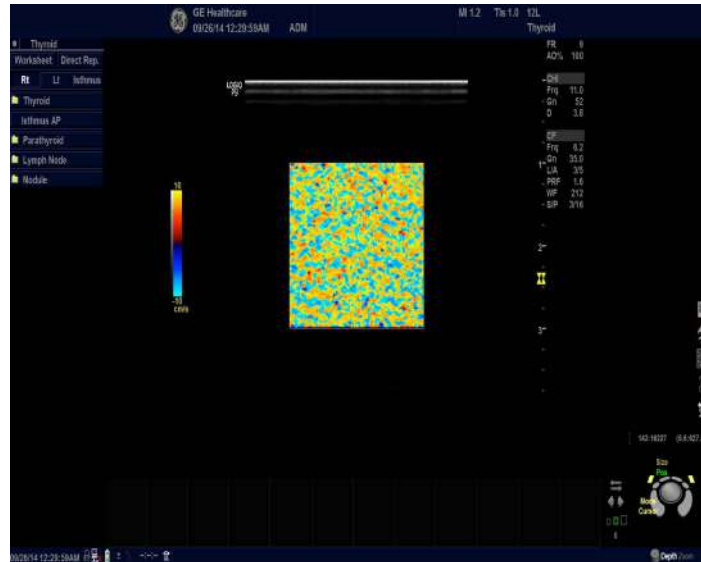


Figure 4-39 Color Flow-Mode

4-3-8-4 Pulse Doppler Mode

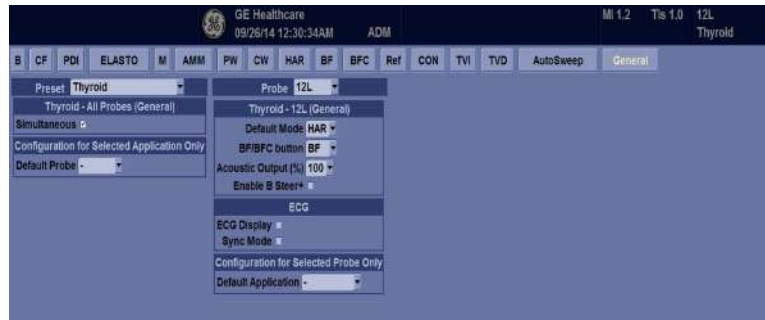


Figure 4-40 (R2.x.x or R3.x.x)



Figure 4-41 (R4.x.x or later)

- 1) From Utility -> Imaging -> General, verify check on “Simultaneous”.
- 2) Press B Mode button.
- 3) Press PW Mode button. (Active PW Mode button on "User Configurable Mode Rotary".(R1-R3 only))
- 4) Verify that system scan B/PW duplex with the activated probe.
- 5) Revert to original setting in Utility -> Imaging -> General “Simultaneous”.

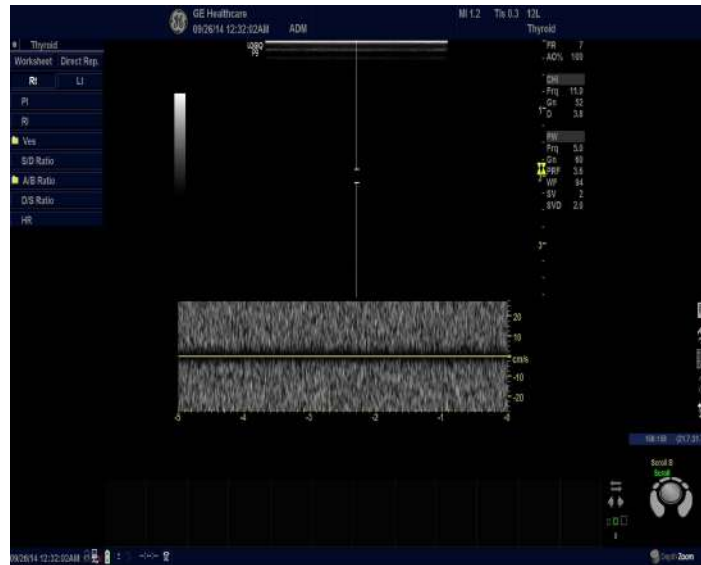


Figure 4-42 Pulse Doppler Mode

4-3-8-5 B/CF/PW Mode

- 1) Press B Mode button.
- 2) Press PW Mode Button.
- 3) Press CF Mode Button.

4) Verify that system scan with B/CFM/PWD Modes.

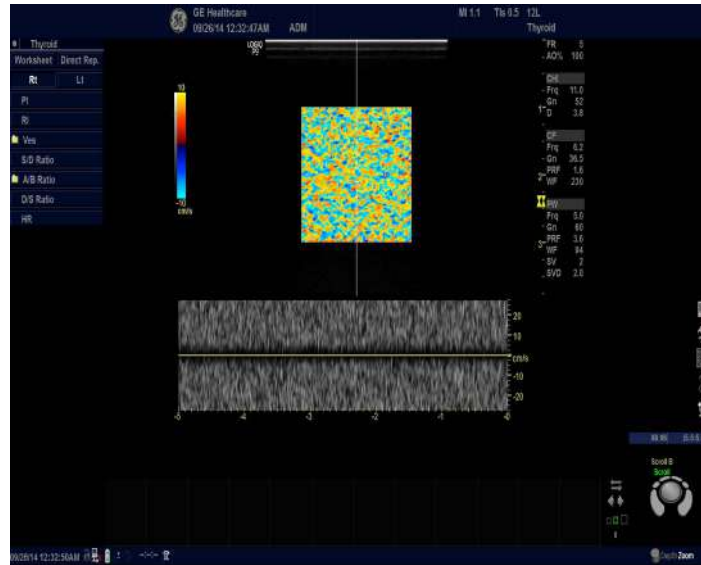


Figure 4-43 B/CF/PW Mode

4-3-8-6 M-Mode

- 1) Press B Mode Button.
- 2) Press M Mode Button. (If not R4.X.X, active M Mode button on "User Configurable Mode Rotary".(R1-R3 only))
- 3) Verify that system scan B/M with the activated probe.



Figure 4-44 M-Mode

4-3-8-7 B-Flow Mode

NOTE: Make sure to select probe which supports B-flow

- 1) From the touch panel, select Utility -> Imaging -> General.
- 2) Change BF/BFC Button to "BF"



Figure 4-45 BF Setting (R2.x.x or R3.x.x)



Figure 4-46 BF Setting (R4.x.x or later)

- 3) Press B-Flow Button. (If not R4.X.X, active M Mode button on "User Defined Hard Key".(R1-R3 only))

- 4) Verify BF Mode.

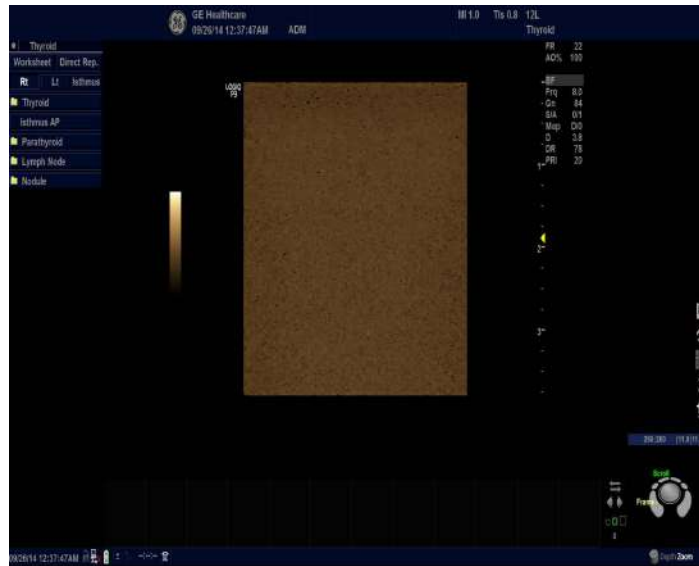


Figure 4-47 B-Flow Mode

- 5) From the touch panel, select “COLOR”
- 6) Verify B-Flow Color is shown.

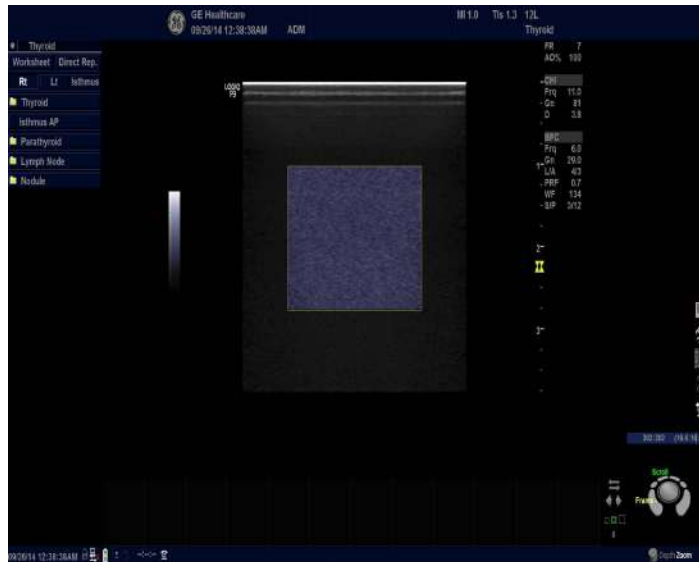


Figure 4-48 B-Flow Color Mode

4-3-8-8 CW Mode (Optional)

NOTE: Make sure to select probe which supports CWD

- 1) Press B Mode button.
- 2) Press CW Mode button.
- 3) Verify that system CW scan with the activated probe.

4-3-8-9 WLAN (Optional)

NOTE: This test is only applied if the WLAN option has been installed

- 1) Connect a service dongle to USB port and press a power button on console panel.
- 2) Select Exit and enter the user name and password. Choose Maintenance > Exit to Windows. The Windows desktop will appear.
- 3) Click the Device Manager icon on the status bar. A Device Manager window will open.



- 4) Open a sub node of Network adapters.
- 5) Verify that NETGEAR WNDA4100 N900 Wireless Dual Band USB Adapter is listed.

4-3-8-10 4D Mode (Optional)

NOTE: This test is only applied if the 4D options (both hardware and software) have been installed.

- 1) Prepare a 4D probe that the version of software has supported.
- 2) Make sure that the probe is connected properly.
- 3) Select the probe on the touch panel.
- 4) Press 3D/4D key.
- 5) [R1.X.X or R2.X.X or R4.X.X] Press Static 3D / [R3.X.X] Press 3D tab
- 6) Press Start Set key.
- 7) Verify that Static 3D image is acquired.

4-3-8-11 Power Assistant (Optional)

NOTE: This test is only applied if the Battery option has been installed

- 1) Make sure that the Power Assistant option is installed.
- 2) Verify that Battery icon is displayed in status bar and the color is green or yellow, not orange
- 3) Make sure battery icon in status bar is green. If it is yellow, wait for the battery is charged and turned to green.
- 4) Unplug the AC power cable.
- 5) Verify that the system is not turned off.
- 6) Verify that the main display gets dark and the touch panel turn off.
- 7) Plug the AC power cable .
- 8) Verify that Brightness of main display and touch panel be gets normal.

4-3-9 OPIO Interface Check (R1, R2, R2.5 only)

NOTE: In above example, key "Alt" is pressed.

NOTE: Alternatively, OP Panel Interface test may be executed from Common Service Desktop.

However, performance / response of the diagnostics may be degraded when executed with scanner software still active.

It is located under Diagnostics -> OP Panel Interface in the Diagnostics page.

Before OP Panel Interface test execute from Common Service Desktop, you have to enable the Disruptive Mode in Diagnostics -> Common diagnostics -> Utilities -> Disruptive Mode

To perform OPIO Interface Check using Diagnostics

- 1) Enter Common Service Desktop
- 2) Select Diagnostics -> Common diagnostics -> Utilities -> Disruptive Mode

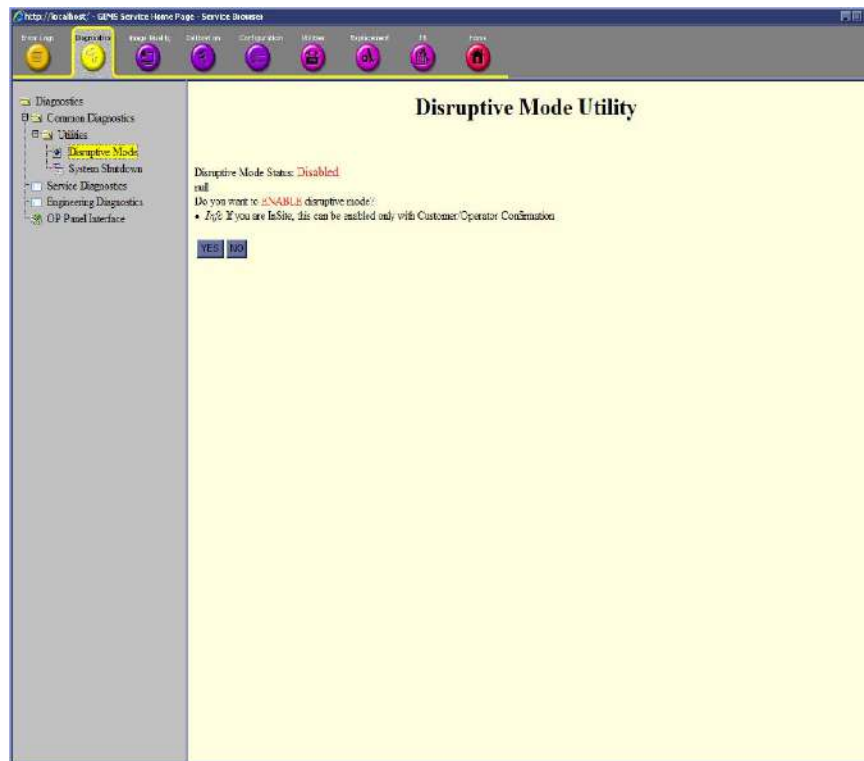


Figure 4-49 Diagnostic Mode page screen

3) Click the "YES" on Diagnostic Mode page

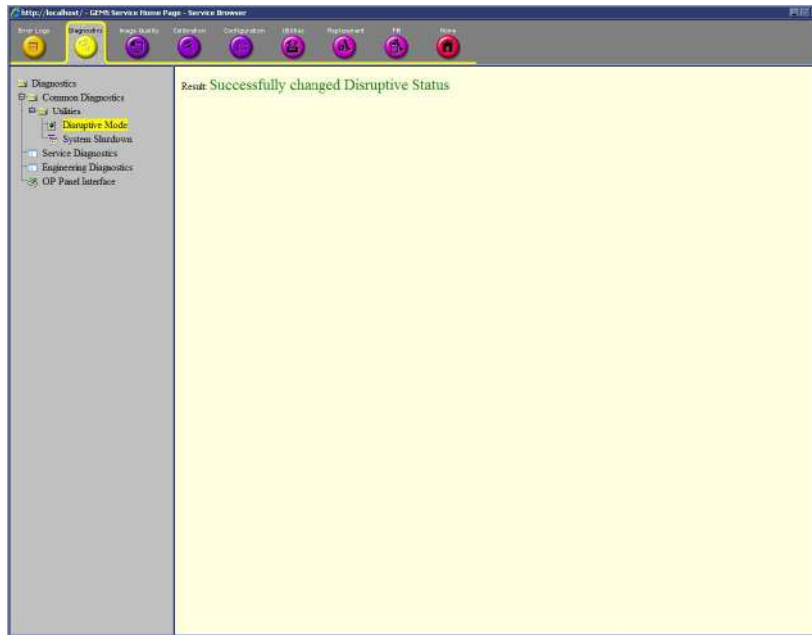


Figure 4-50 Diagnostic Mode page screen after enable the Disruptive mode

4) Select Diagnostics -> OP Panel Interface

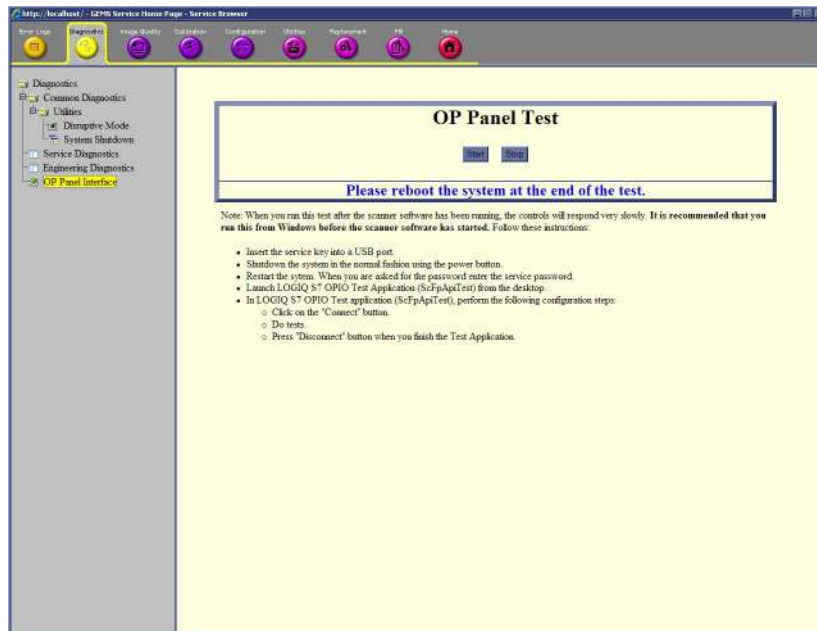


Figure 4-51 OP Panel Interface page screen

- 5) Click the "Start" on OP Panel Interface page

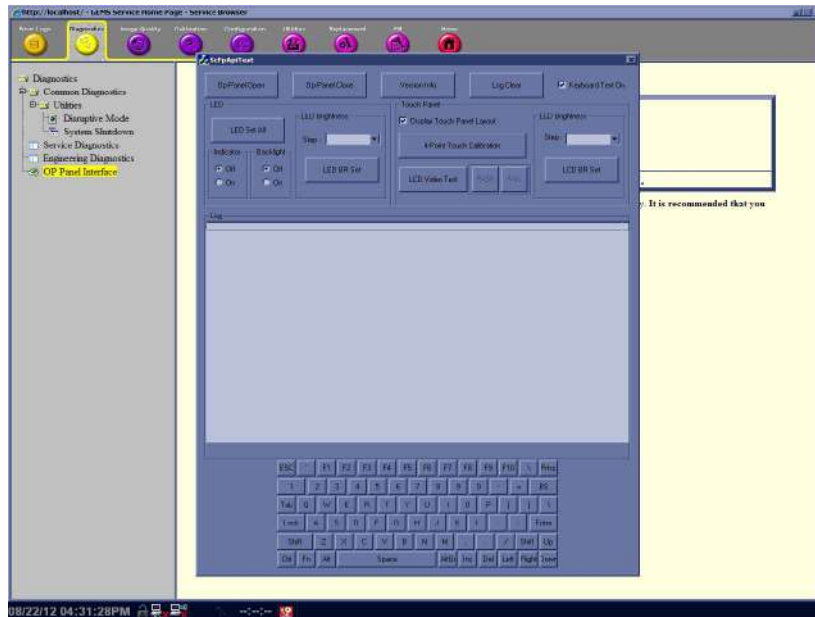


Figure 4-52 OP Panel Interface page screen

- 6) Select "Op-Panel Open"
- 7) Verify OP Panel button operation is reflected on diag window.
- 8) Check the "Display Touch Panel Layout" and Press the four Points in Touch Panel. The four Points is (80, 80), (720, 80), (80, 520) and (720, 520) points.
- 9) Verify that 4 touch points have the almost same position between appeared log points and touch points. The possible error range of touch points is plus or minus 20 points. If this step is failed, Please execute section 4-3-11

NOTE: If four touch points are out of possible error range, repeat these 8-9 steps three times.

4-3-10 OPIO Interface Check (R3, R4 and R4.5)

NOTE: Alternatively, OP Panel Interface test may be executed from Common Service Desktop.

However, performance / response of the diagnostics may be degraded when executed with scanner software still active.

It is located under Diags -> Run Diags -> Service Menu -> OpPanel -> OpPanel Test in the Diagnostics page.

Before OP Panel Interface test execute from Common Service Desktop, you have to enable the Disruptive Mode in Utilities -> Disruptive Mode Utility

To perform OPIO Interface Check using Diagnostics

- 1) Enter Common Service Desktop
- 2) Select Utilities -> Disruptive Mode Utility

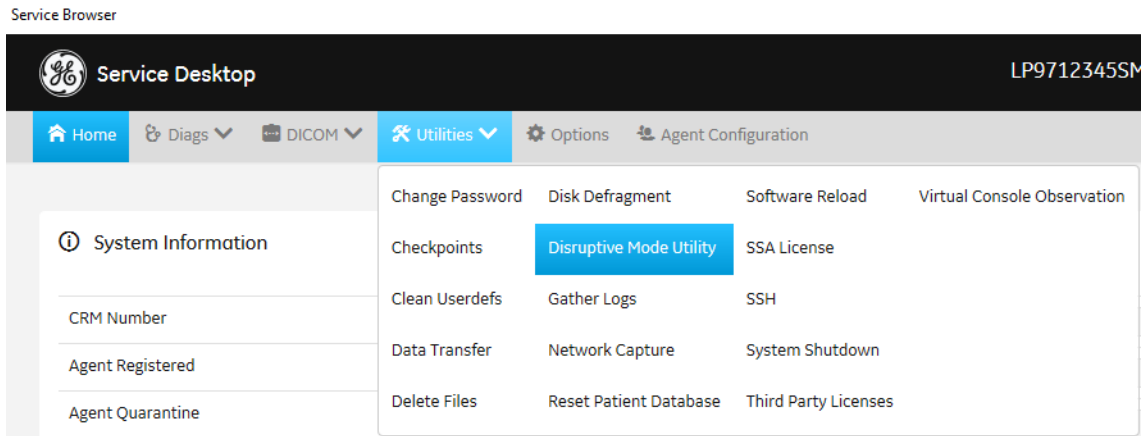


Figure 4-53 Disruptive Mode Utility (R3)

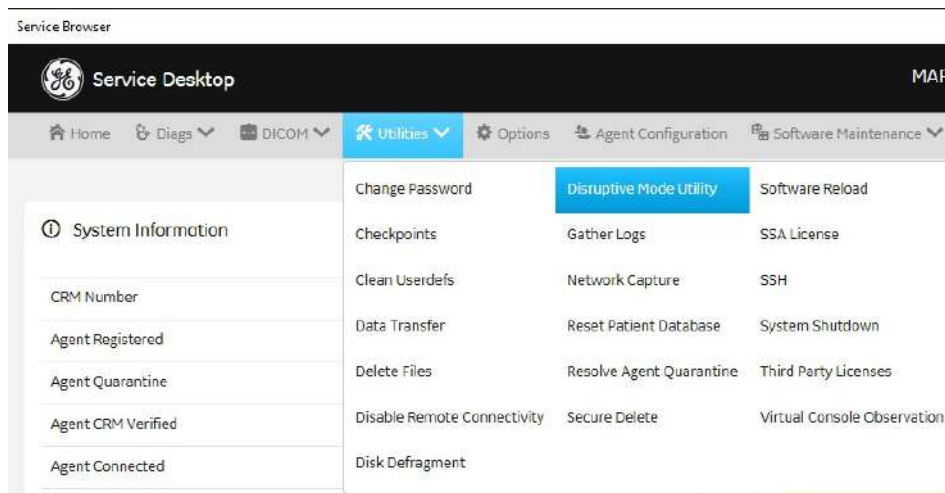


Figure 4-54 Disruptive Mode Utility (R4 and R4.5)

3) Click the "Enable" on Diagnostic Mode Utility page

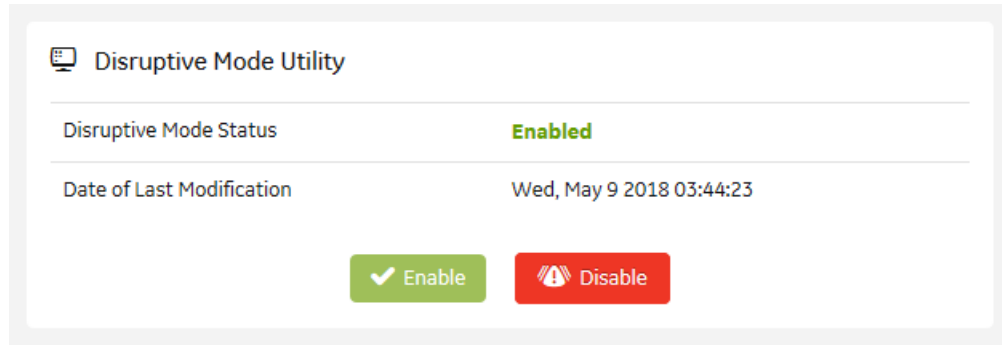


Figure 4-55 Diagnostic Mode page screen after enable the Disruptive mode (R3)

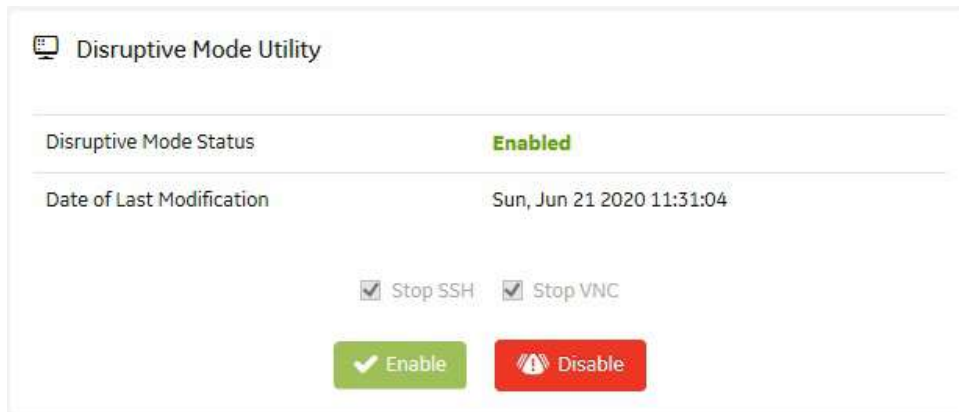


Figure 4-56 Diagnostic Mode page screen after enable the Disruptive mode (R4 and R4.5)

4) Select Diags -> Run Diags -> Service Menu -> OpPanel -> OpPanel Test

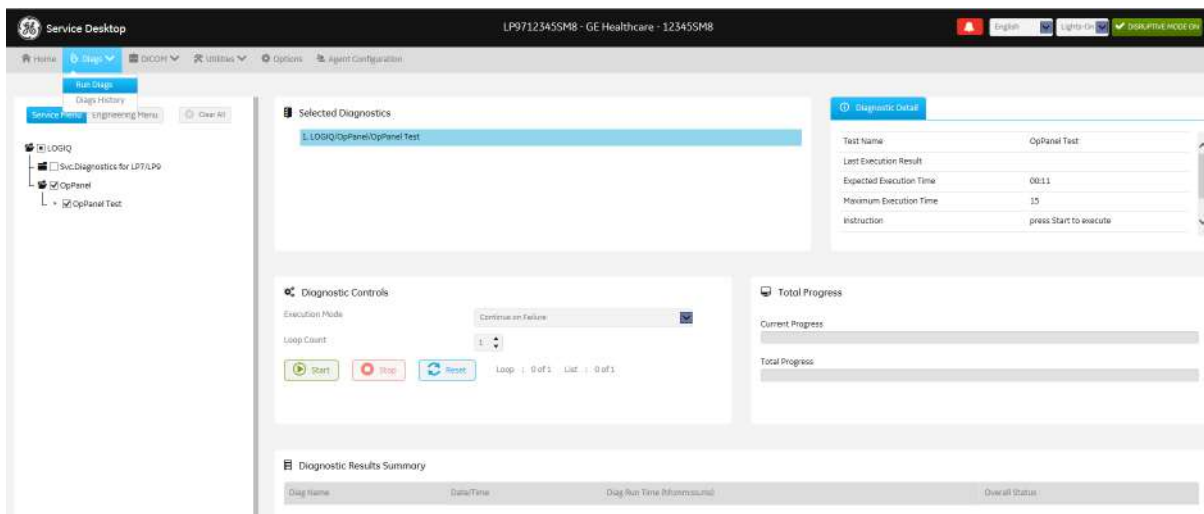


Figure 4-57 OP Panel Interface page screen (R3)

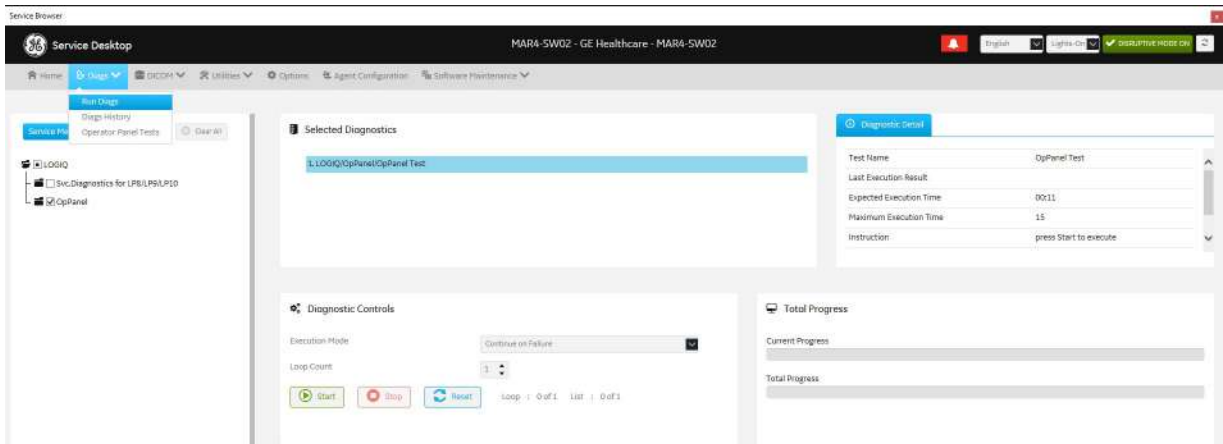


Figure 4-58 OP Panel Interface page screen (R4 and R4.5)

- 5) On “Maintenance Access” dialog,
 - 1.) enter the password (R3 only)
 - 2.) click [Maintenance] button. On “System halted” dialog, click [Maintenance] button. (R4 and R4.5)

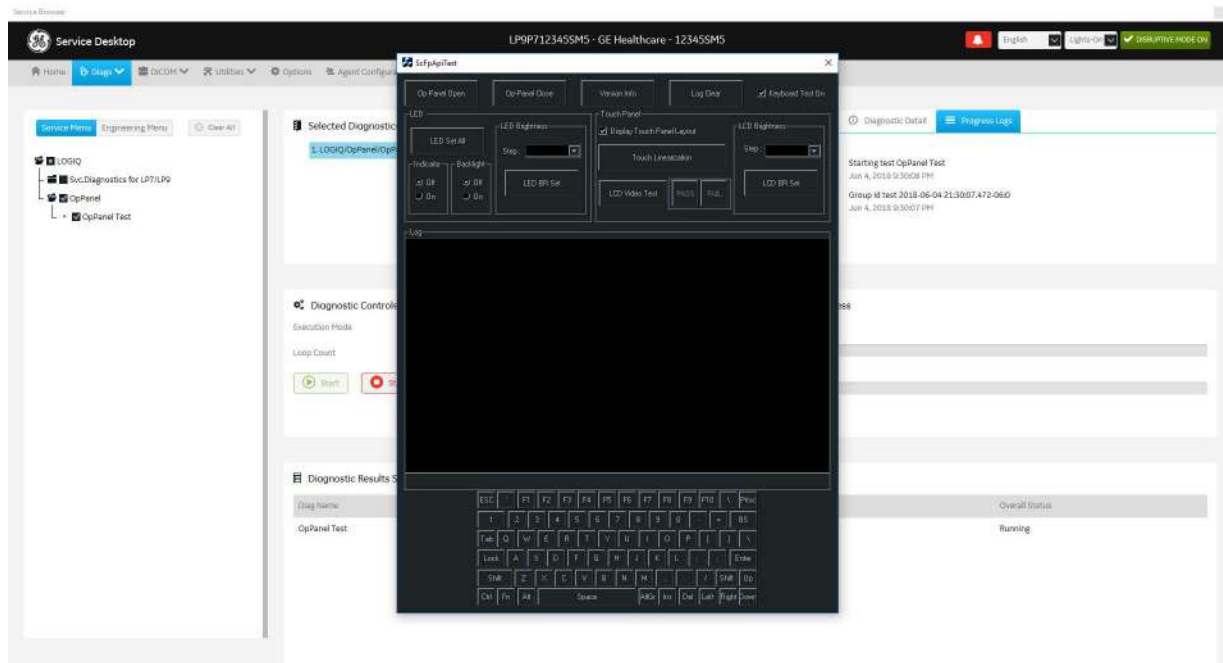


Figure 4-59 OP Panel Interface page screen (R3)

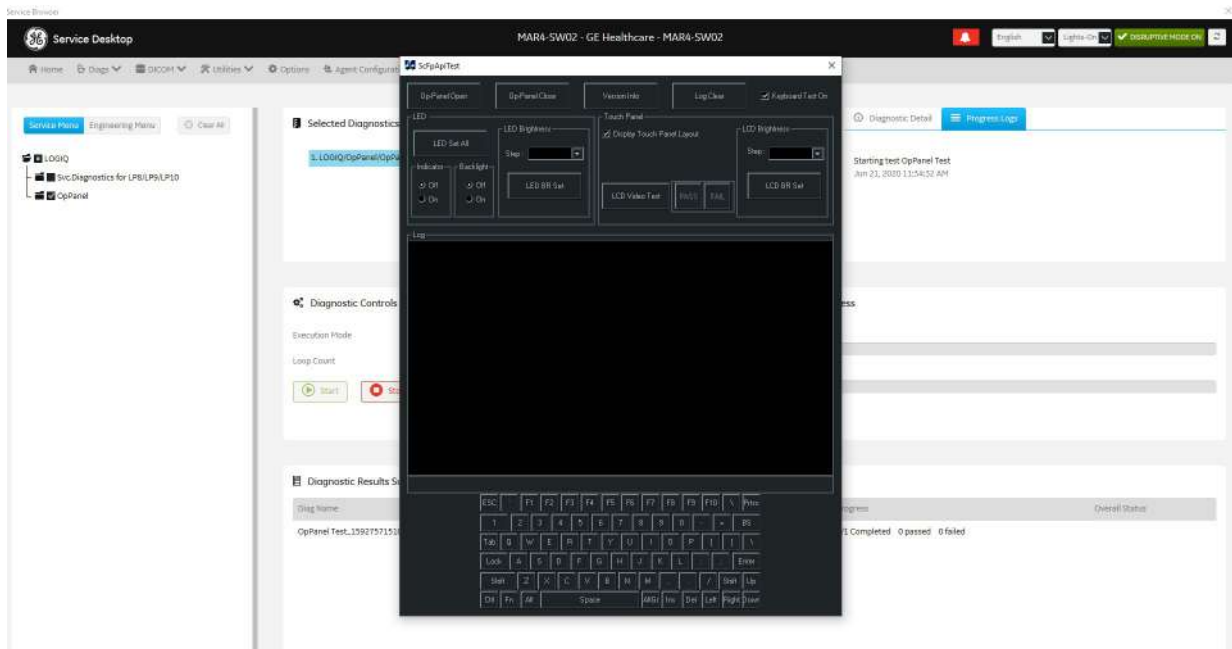


Figure 4-60 OP Panel Interface page screen (R4 and R4.5)

- 6) Select "Op-Panel Open"
- 7) Verify OP Panel button operation is reflected on diag window.
- 8) Check the "Display Touch Panel Layout" and Press the four Points in Touch Panel. The four Points is (80, 80), (720, 80), (80, 520) and (720, 520) points.
- 9) Verify that 4 touch points have the almost same position between appeared log points and touch points. The possible error range of touch points is plus or minus 20 points. If this step is failed, Please execute section 4-3-11

NOTE: If four touch points are out of possible error range, repeat these 8-9 steps three times.

NOTE: For LCD Video Test, press the 'PASS' button as the touch panel displays according to the following screens:



4-3-11 Touch Panel Calibration (R3, R4 and R4.5)

- 1) Power ON the scanner, and wait until the main screen comes up.
- 2) Insert the service dong to the front USB port.
- 3) Press Power button on the operator panel once.
- 4) Click [Exit] button on the SYSTEM EXIT dialog.
- 5) On "Maintenance Access" dialog,
 - 1.) enter the password (R3 only)
 - 2.) click [Maintenance] button. On "System halted" dialog, Click [Maintenance] button. (R4/R4.5 only)
- 6) Click [Exit to Windows] on Maintenance dialog. The system will exit to the Windows desktop.
- 7) Click [Start] button, select "Control Panel", and then select "Tablet PC settings". Tablet PC settings dialog appears.
- 8) Select the "3. Displaylink" in Display tab -> Display options -> Display

9) Press the Reset button in Display tab -> Display options -> Details

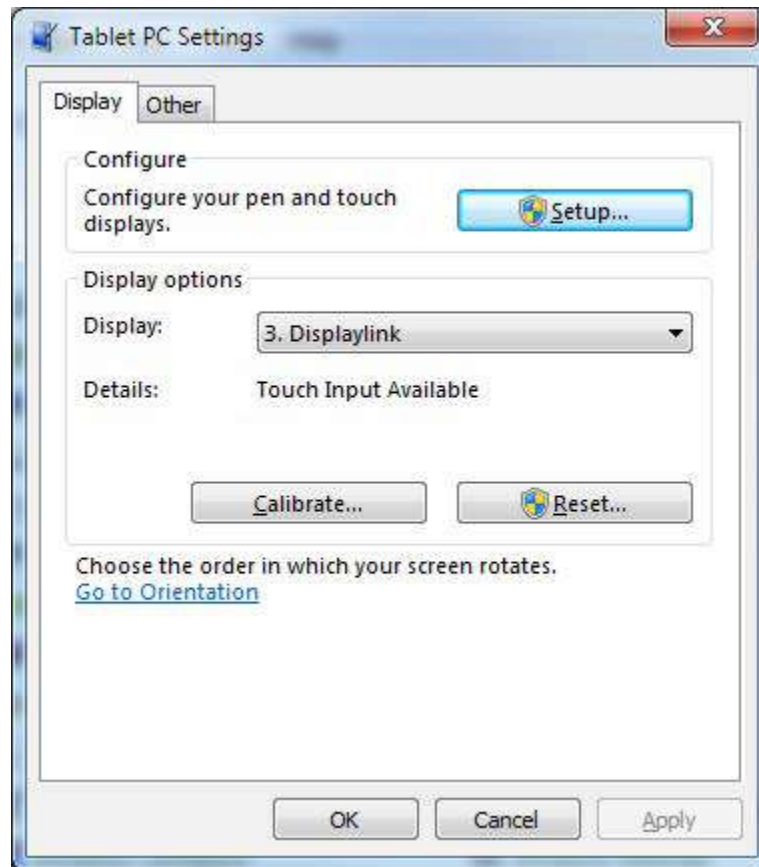


Figure 4-61 Tablet PC Settings dialog

10) Press the OK when pop-up the window.

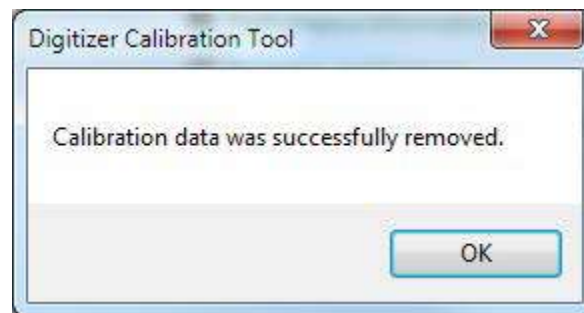


Figure 4-62 Digitizer Calibration Tool

11) Press "Calibrate..." in Display tab -> Display options -> Details

12) Calibrated carefully 16 calibration points in touch panel.



Figure 4-63 Calibration Layout

NOTE: Figure 4-35 is intended to be shown upside-down.

13) Press the Yes when pop-up the window.

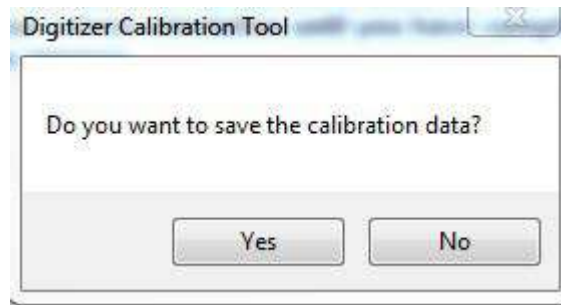


Figure 4-64 Digitizer Calibration Tool

14) Functional Check in section 4-3-9

4-3-12 Monitor sound setting (R4.5)

- 1) Power On the scanner and wait until the main screen comes up.
- 2) Insert the service dongle to the front USB port
- 3) Press Power button on the operator panel once.
- 4) Click [Exit] button on the SYSTEM EXIT dialog.
- 5) On “Maintenance Access” dialog, Click [Maintenance] button.
- 6) On “System halted”, Click [Maintenance] button.
- 7) Click [Exit to Windows] on Maintenance dialog. The system will exit to the Windows desktop.
- 8) Click [Start] Button, Select “Control Panel” and then select “Sound”. Sound setting dialog appears.
- 9) Verify two “FW23****” devices are included in the “Playback”. The last four alphabets can be changed.
- 10) Verify “FW23****(NA)” is disabled with the down arrow.
- 11) Verify “FW23****” is enabled.



Figure 4-65 Playback tab

12) Select Stereo Mix on “Recording” menu.

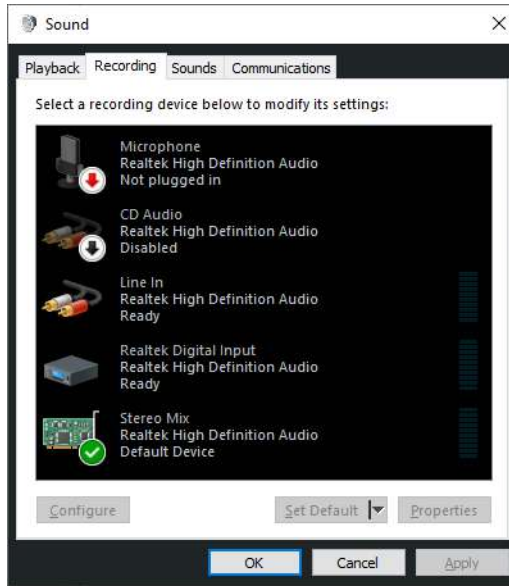


Figure 4-66 Recording tab

13) Verify “Listen to this device” is checked and “Playback through this device” is “FW23****”.

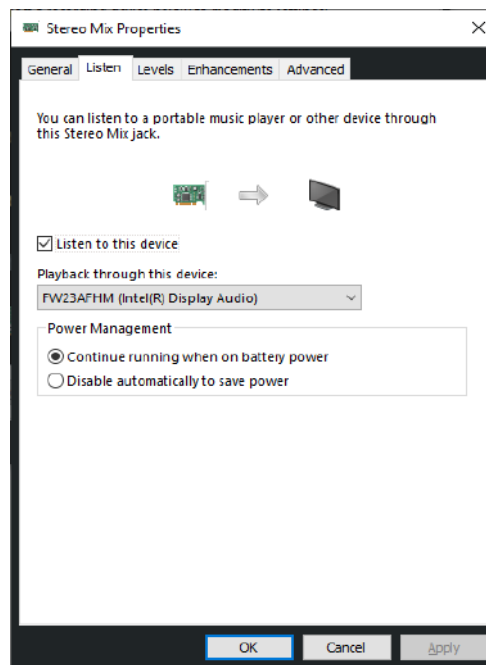


Figure 4-67 Listen tab

Section 4-4 Board Diagnostics

| Category | Item | MCB | MDC | MPI | MIO | Battery Module | ECG | DC4D | Other |
|-----------------|------------------------------------|-----|-----|-----|-----|----------------|-----|------|-------|
| MCB | MCB Swept Demodulator Test | X | | | | | | | |
| | MCB Front End Interface Test | X | | | | | | | |
| | MCB Analog Test | X | | | | | | | |
| | MCB Memory Access Test | X | | | | | | | |
| | MCB Front End Interface FPGA Test | X | | | | | | | |
| | DSP Master Clock Check | X | | | | | | | |
| | MCB Temperature Test | X | | | | | | | |
| | CPU Temperature Test | X | | | | | | | |
| | MCB Voltage Test | X | | | | | | | |
| | FPGA Version Test | X | | | | | | | |
| | HV_STOP Test | X | X | | | | | | |
| MDC | MDC Temperature Test | | X | | | | | | |
| | MDC Voltage Test | | X | | | | | | |
| Battery | Battery Status Test | | | | | X | | | |
| | Battery Charge/ Discharge Test | | | | | X | | | |
| System | Rack Temperature Test | X | X | | | X | | | |
| | Rack Voltage Test | X | X | | | X | | | |
| Memory | Callisto Internal Memory Test | X | | | | | | | |
| Digital Receive | AFE IF Test | X | | | | | | | |
| | Complex Mixer Test | X | | | | | | | |
| | CE Decoder Test | X | | | | | | | |
| Analog Receive | Noise Floor Test | X | | | | | | | |
| | BF Analog Rx Gain Test (High Gain) | X | | | | | | | |
| | BF Analog Rx Gain Test (Med Gain) | X | | | | | | | |
| | BF Analog Rx Gain Test (Low Gain) | X | | | | | | | |
| | aCW Pedof | X | | | | | | | |
| | aCW Beamforming | X | | | | | | | |
| | aCW IQ Symmetry | X | | | | | | | |
| ECG | ECG Module Test | | | | | | X | | |
| DC4D | DC4D Presence Test | | | | | | | X | |
| | DC4D Version Test | | | | | | | X | |
| | Static 3D Test | | | | | | | X | |
| | 4D Test | | | | | | | X | |

| | | | | | | | | | |
|---------------|------------------------------------|--|--|--|---|--|--|--|------------------------------|
| COMEXP | Essential Test | | | | | | | | COMEXP |
| | HD Test Long | | | | | | | | HDD |
| | HD Test Short | | | | | | | | HDD |
| | Memory | | | | | | | | COMEXP |
| | Network Interface | | | | | | | | COMEXP/ EthernetPort |
| | Network Interface Reliability Test | | | | X | | | | COMEXP/ EthernetPort |
| | RTC Clock | | | | X | | | | COMEXP |
| | Video cards | | | | | | | | COMEXP |
| | AVI Playback | | | | | | | | COMEXP |
| | CDR | | | | | | | | ODD |
| | CDRW | | | | | | | | ODD |
| | DVD-R | | | | | | | | ODD |
| | DVD-R Double Layer | | | | | | | | ODD |
| | DVD-RW | | | | | | | | ODD |
| | DVD+R | | | | | | | | ODD |
| | DVD+R Double Layer | | | | | | | | ODD |
| | DVD+RW | | | | | | | | ODD |
| | DVD RAM | | | | | | | | ODD |
| | DVD Readonly | | | | | | | | ODD |
| | Keybaord | | | | | | | | COMEXP/ AN Keyboard |
| | Microphone | | | | | | | | |
| | Monitor | | | | | | | | COMEXP |
| | Mouse | | | | | | | | COMEXP/ OPIO Trackball |
| | Sound | | | | | | | | COMEXP |
| | USB Ports | | | | | | | | COMEXP/ MIO/ USB Ports |

Chapter 5

Components and Functions (Theory)

Section 5-1 Overview

5-1-1 Purpose of Chapter 5

This chapter explains LOGIQ P7/P8/P9/P10's system concepts, component arrangement, and subsystem function. It also describes the Power Distribution scheme and probes.

Table 5-1 Contents in Chapter 5

| Section | Description | Page Number |
|---------|--|-------------|
| 5-1 | Overview | 5-1 |
| 5-2 | General Information | 5-2 |
| 5-3 | Power ON/DOWN Sequence | 5-16 |
| 5-4 | Software Options | 5-17 |
| 5-5 | Hardware Options | 5-21 |
| 5-6 | Regional and Peripheral Options | 5-23 |
| 5-7 | Mechanical Descriptions | 5-24 |
| 5-8 | Exiting to Windows Desktop | 5-28 |
| 5-9 | Service Platform | 5-31 |
| 5-10 | Common Service Desktop (CSD) (R1, R2, R2.5 only) | 5-33 |
| 5-11 | Common Service Desktop (R3, R4 and R4.5) | 5-43 |

Section 5-2 General Information

LOGIQ P7/P8/P9/P10 is a digital beamforming curved-, linear- and phased array ultrasound imaging system. The system supports various operating mode such as

- B-Mode, M-Mode, Color Flow (CFM)
- Power Doppler Imaging (PDI), PW Doppler, CW Doppler
- Volume Mode (3D)

Refer to Basic User Manual for full range of operating mode.

5-2-1 System Exterior

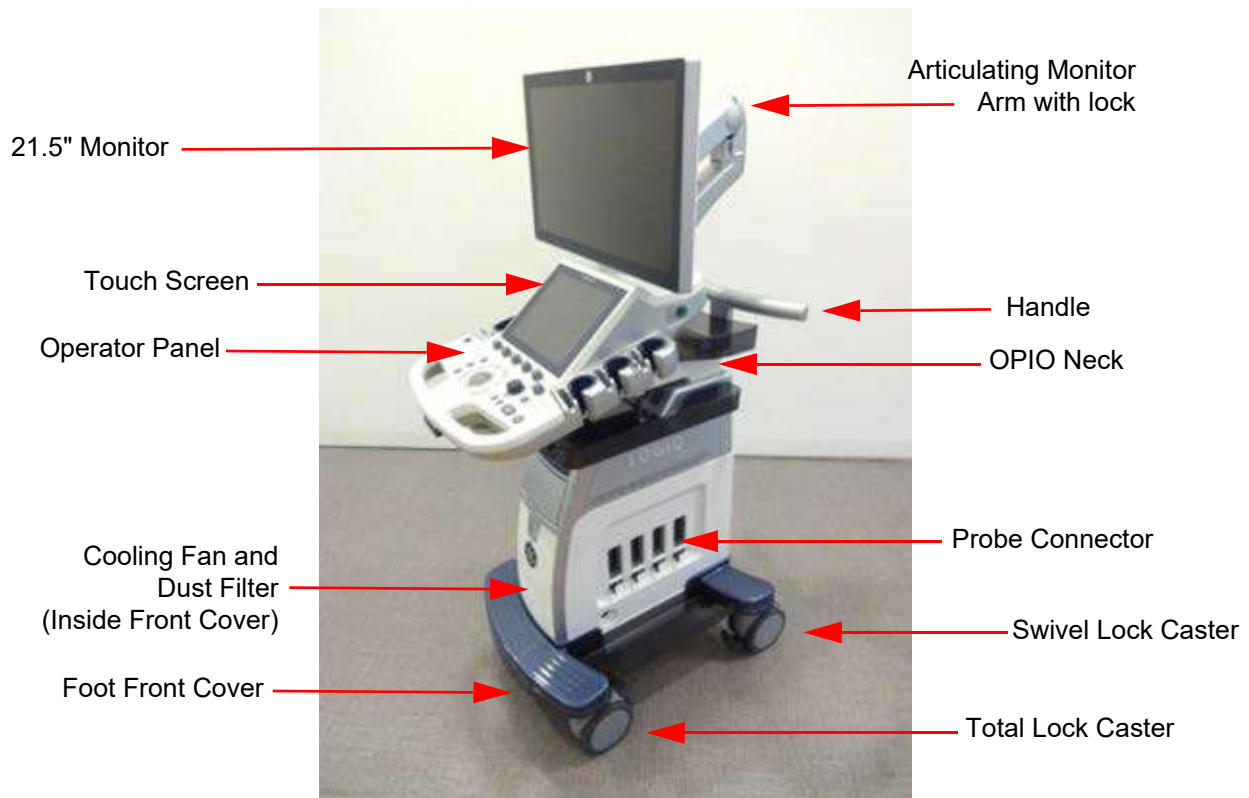


Figure 5-1 System Exterior (R1, R2, R2.5 and R3)



Figure 5-2 System Exterior (R4 and R4.5)

5-2-2 Operator Panel

5-2-2-1 Basic Block Diagram R1 to R4.5

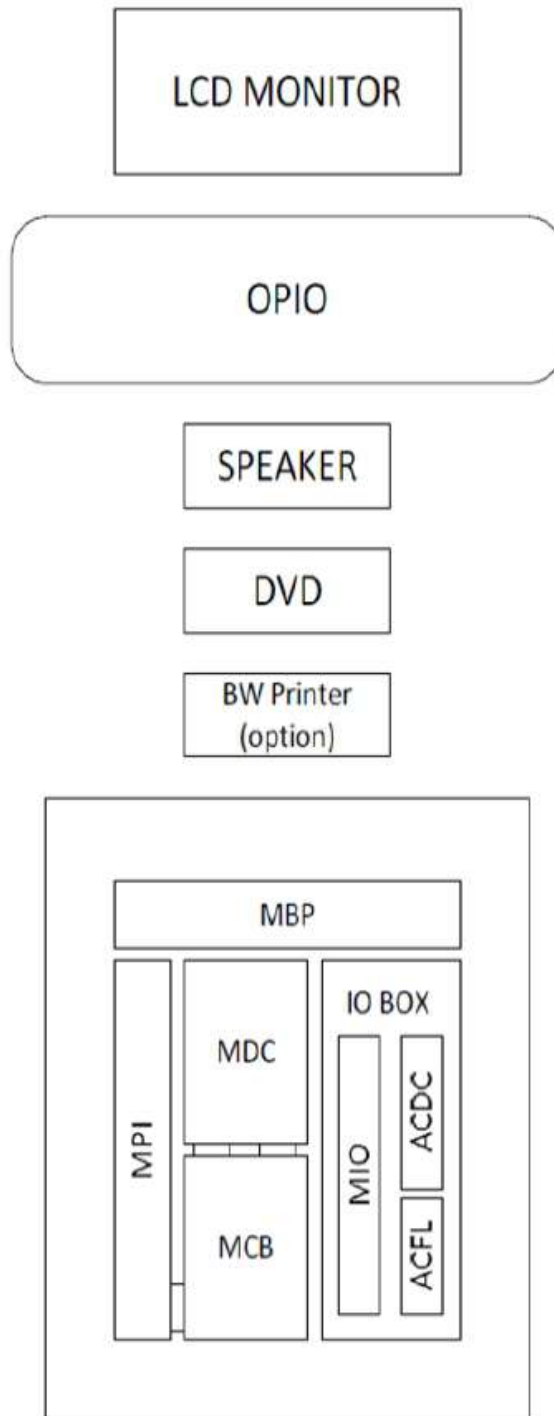


Figure 5-3 Basic block diagram of LOGIQ P7/P8/P9/P10 R1 to R4

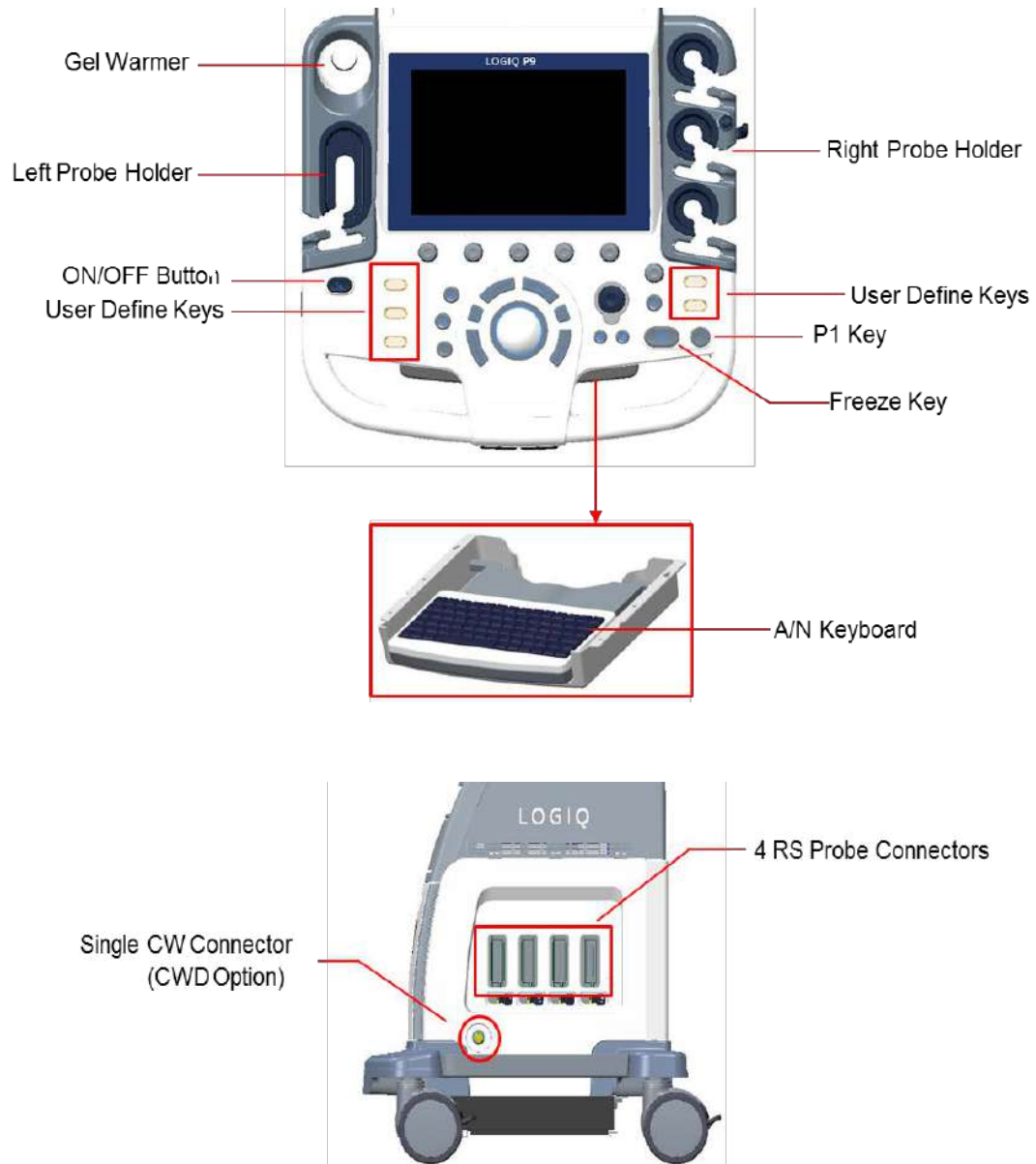


Figure 5-4 Operator Panel and Probe connector (R1, R2, R2.5 and R3)



Figure 5-5 Operator Panel and Probe connector (R4 and R4.5)

5-2-3 System Options

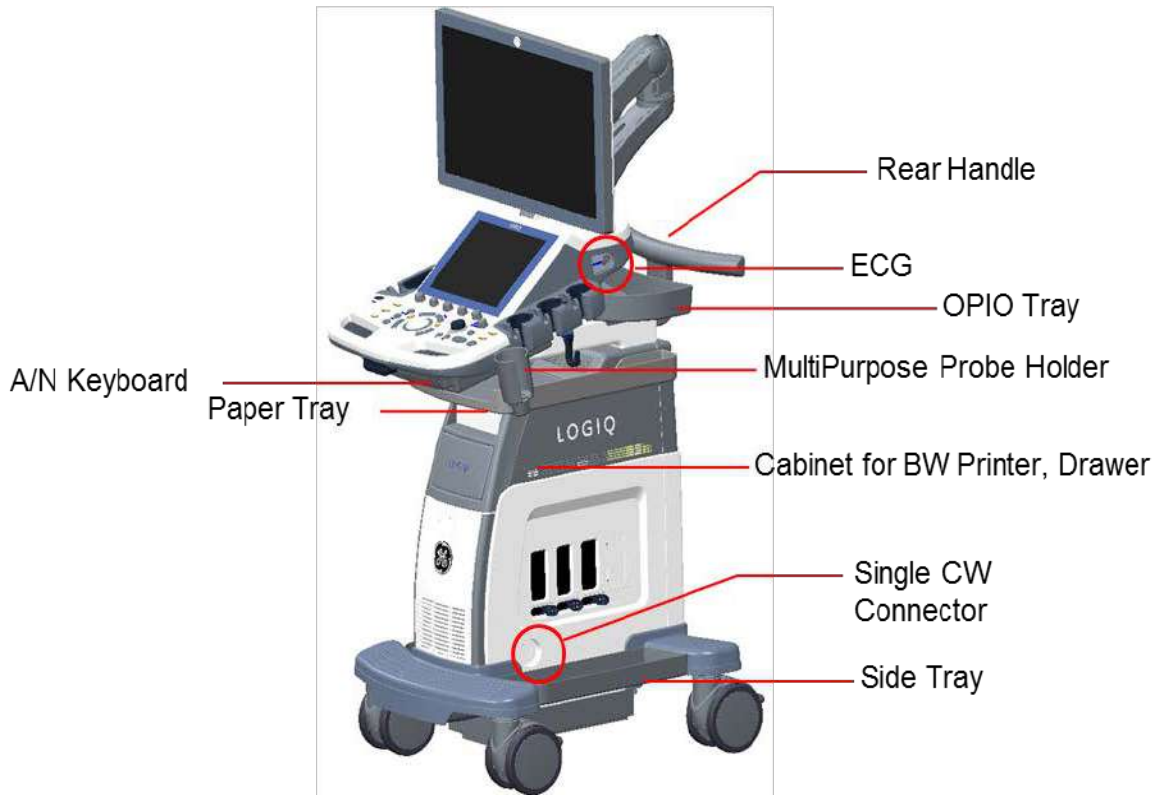


Figure 5-6 System Options



Figure 5-7 System Options (R4 and R4.5)

5-2-4 System Ports



Figure 5-8 System Ports (R1, R2, R2.5 and R3)

System is equipped with 4 USB ports in front. These are customer use and Service port connected to USB controller via USB Hub.

The Rear panel contains following ports.

- 3 USB ports for peripherals such as printers and footswitch
- HDMI for monitor output (without sound)
- S-Video & Composite for monitor output
- RJ45 for LAN connection
- AC Inlet for power



Figure 5-9 System Ports (R4 and R4.5)

System is equipped with 2 USB ports in front. These are customer used and service port connected to USB controller via USB Hub.

The Rear panel contains following ports.

- 3 USB ports for peripherals such as printers and footswitch
- HDMI for monitor output (R4 : without sound, R4.5 : with sound if the external monitor supports HDMI audio)
- S-Video & Composite for monitor output
- RJ45 for LAN connection
- AC Inlet for power

5-2-4-1 Front USB

Customer use and Service port connected to USB controller via USB Hub.

NOTE: Front USBs are non-isolated port and not fit to connect external powered USB Devices.

Table 5-2 USB Connectors(on OPIO for R1 to R2.5)

| Pin No | Output Signal | Description |
|--------|---------------|------------------|
| 1 | VCC | USB Power Supply |
| 2 | - Data | USB Data (-) |
| 3 | + Data | USB Data (+) |
| 4 | GND | USB Power Ground |

Table 5-3 USB Connectors(on OPIO for R3)

| Pin No | Output Signal | Description |
|--------|---------------|---|
| 1 | VCC | USB Power Supply |
| 2 | - Data | USB Data (-) |
| 3 | + Data | USB Data (+) |
| 4 | GND | USB Power Ground |
| 5 | USB_SSRX- | Receive signal differential pairs for the Super speed USB data |
| 6 | USB_SSRX+ | |
| 7 | GND | USB signal Ground |
| 8 | USB_SSTX- | Transmit signal differential pairs for the Super speed USB data |
| 9 | USB_SSTX+ | |

Table 5-4 USB Connectors (on LCD monitor)

| Pin No | Output Signal | Description |
|--------|---------------|--|
| 1 | VCC | USB Power Supply |
| 2 | - Data | USB Data (-) |
| 3 | + Data | USB Data (+) |
| 4 | GND | USB Power Ground |
| 5 | USB_SSRX- | Receive signal differential pairs for the Super speed USB data, Not supported |
| 6 | USB_SSRX+ | |
| 7 | GND | USB signal Ground |
| 8 | USB_SSTX- | Transmit signal differential pairs for the Super speed USB data, Not supported |
| 9 | USB_SSTX+ | |

5-2-4-2 Rear USB and LAN

2 USB ports and a LAN port are integrated in a connector

LAN : 1000Base-T, 100Base-T, 10Base-T

USB : USB 2.0, 480Mbps, 5V 500mA.

NOTE: Rear USBs are non-isolated port and not fit to connect external powered USB Devices.

NOTE: Maximum allowable current through USB port is 500mA. Devices connected to port should not consume more than rated limit.

Table 5-5 USB and LAN integrated Connector

| Pin No | Output Signal | Description |
|--------|---------------|----------------------------|
| A1 | VCC | USB Power supply |
| A2 | Data - | USB Data (-) |
| A3 | Data + | USB Data (+) |
| A4 | GND | Ground |
| B1 | VCC | USB Power supply |
| B2 | Data - | USB Data (-) |
| B3 | Data + | USB Data (+) |
| B4 | GND | Ground |
| 1 | VCC | Ethernet reference voltage |
| 2 | MD0+ | Ethernet MDI data 0 (+) |
| 3 | MD0- | Ethernet MDI data 0 (-) |
| 4 | MD1+ | Ethernet MDI data 1 (+) |
| 5 | MD1- | Ethernet MDI data 1 (-) |
| 6 | MD2+ | Ethernet MDI data 2 (+) |
| 7 | MD2- | Ethernet MDI data 2 (-) |
| 8 | MD3+ | Ethernet MDI data 3 (+) |
| 9 | MD3- | Ethernet MDI data 3 (-) |
| 10 | GND | Ground |

5-2-4-3 HDMI

NOTE: HDMI for external monitor

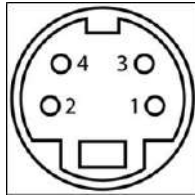


Table 5-6 Pin Out

| Pin number | Signal name |
|------------|--------------------|
| 1 | TMDS Data 2+ |
| 2 | TMDS Data 2 Shield |
| 3 | TMDS Data 2- |
| 4 | TMDS Data 1+ |
| 5 | TMDS Data 1 Shield |
| 6 | TMDS Data 1- |
| 7 | TMDS Data 0+ |
| 8 | TMDS Data 0 Shield |
| 9 | TMDS Data 0- |
| 10 | TMDS CLK+ |
| 11 | TMDS CLK Shield |
| 12 | TMDS CLK- |
| 13 | NC |
| 14 | NC |
| 15 | NC |
| 16 | NC |
| 17 | GND |
| 18 | +5V |
| 19 | NC |

5-2-4-4 S-Video / Composite

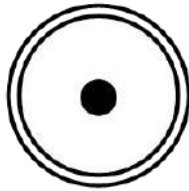
There are S-video / Composite port for external display



<S-Video 4Pin Mini-DIN Female>

Table 5-7 S-Video 4Pin Mini-DIN Female

| Pin number | Signal name |
|------------|----------------------------|
| 1 | GND / Ground (Y) |
| 2 | GND / Ground (C) |
| 3 | Y / Intensity (Luminance)- |
| 4 | C / Color (Chrominance) |

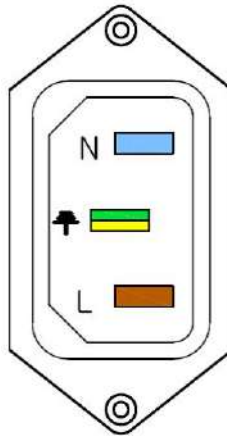


<Composite Connector>

| Pin number | Signal name |
|------------|---------------|
| 1 | 1 plus screen |

<Composite Output Port Signal Assignment>

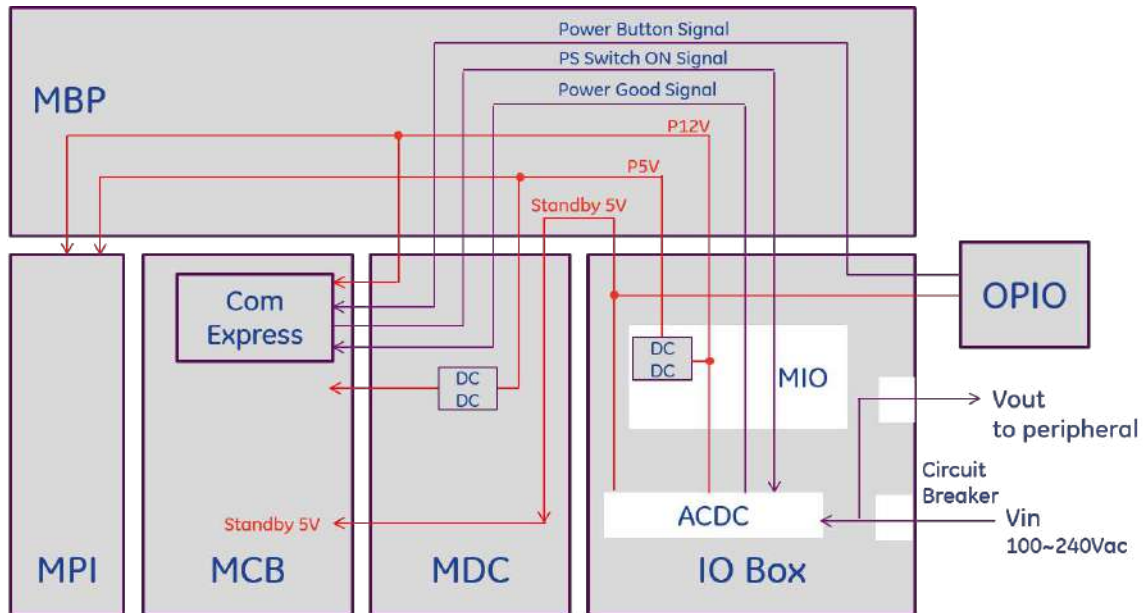
5-2-4-5 AC Inlet



100-120V/220-240V AC


Figure 5-10 AC Inlet

Section 5-3 Power ON/DOWN Sequence



5-3-1 Power On Sequence

- 1) Circuit breaker ON
- 2) AC/DC in IOBOX generates standby 5V
- 3) Standby 5V is supplied to OPIO, COM Express and each board
- 4) OPIO generates Button signal
- 5) COM Express receives the Button signal and generates Power Switch On signal
- 6) ACDC generates P12V after receiving Power Switch On signal from COM Express.
- 7) AC/DC route P12V to each board
 - AC Power is supplied to BW Printer, after generating P12V
 - MIO generates P5V and routes to each board
- 8) MDC generates LV, HV, SHV to MCB and MPI.

 **NOTICE** Power-ON using Battery is NOT allowed.

5-3-2 Power Down Sequence

- 1) Press shutdown on application.
- 2) COM Express generates power down signal.
- 3) ACDC 12V down.

Section 5-4 Software Options

5-4-1 Options

Following options are offered for LOGIQ P7/P8/P9/P10.

Table 5-8 Software Options

| Software Options | Description |
|-------------------------------|---|
| Auto IMT | automatically measures the thickness of the Intima Media on the far and near vessel walls. Near Wall IMT is the distance between the trailing edges of the adventitia and intima; the Far Wall IMT is the distance between the leading edges of the adventitia and intima. |
| B-Flow | intended to provide a more intuitive representation of non-quantitative hemodynamics in vascular structures. All B-Mode measurements are available with B-Flow active: depth, distance along a straight line, % stenosis, volume, trace, circumference, and enclosed area. |
| Coded Contrast Imaging | LOGIQ P9 only (R1 or R2 or R2.5): Provides contrast imaging capability |
| CW Doppler | Allows examination of blood flow data all along the Doppler Mode cursor rather than from any specific depth. Gather samples along the entire Doppler beam for rapid scanning of the heart. Range gated CW allows information to be gathered at higher velocities. |
| DICOM | To enable DICOM connection to network device |
| Elastography | Elastography shows the spatial distribution of tissue elasticity properties in a region of interest by estimating the strain before and after tissue distortion caused by external or internal forces. The strain estimation is filtered and scaled to provide a smooth presentation when displayed. |
| Elasto QA | Provides QAnalysis function in Elastography |
| Flow QA | Provides QAnalysis function in Flow |
| LOGIQView | provides the ability to construct and view a static 2D image which is wider than the field of view of a given transducer. This feature allows viewing and measurements of anatomy that is larger than what would fit in a single image. Examples include scanning of vascular structures and connective tissues in the arms and legs. |
| Report Writer | Provides output to external printers |
| Scan Assistant | provides an automated exam script that moves you through an exam step-by-step. This allows you to focus on performing the exam rather than on controlling the system and can help you to increase consistency while reducing keystrokes. |
| Stress Echo | provides an integrated stress echo package, with the ability to perform image acquisition, review, image optimization, and wall segment scoring and reporting for a complete, efficient stress echo examination. |
| TVI (Tissue Velocity Imaging) | calculates and color-codes the velocities in tissue. The tissue velocity information is acquired by sampling of tissue Doppler velocity values at discrete points |
| B Steer+ | The user can enhance detectability of biopsy in the tissue without slanting whole B mode image. |
| VOCALII | You use VOCAL(Virtual Organ Computer-aided Analysis) to visualize and calculate the volume of anatomical structures, such as a tumor lesion, cysts, and the prostate. |
| VCI Static | VCI (Volume Contrast Enhanced Ultrasound) allows you to sweep smaller slices of data with a higher volume rate. |
| TUI | Tomographic Ultrasound Imaging (TUI) is a visualization mode which presents data as parallel slices (planes) through the dataset. |
| 4D | 4D provides continuous, high volume acquisition of 3D images. 4D adds the dimension of "movement" to a 3D image by providing continuous, real-time displays. |

Table 5-8 Software Options

| Software Options | Description |
|-------------------------------------|---|
| Auto EF | Automated Ejection Fraction (AutoEF) is a semi-automatic measurement tool used for measurement of the global EF (Ejection fraction). |
| Measure Assist Breast | Allows automatic contour and measurement of breast lesions. |
| Measure Assist OB | Allows automatic contour and measurement of BPD, HC, FL and AC. |
| Breast Productivity | Allows automatic contour and measurement of breast lesions. |
| Thyroid Productivity | Worksheet summary includes measurements and locations for nodule, parathyroid and lymph node. |
| Compare Assistant | Allows side-by-side comparison of previous ultrasound and other modality exams during live scanning. |
| DVR | Software Digital Video Recorder provides cine recording function to DVD or USB storage media. |
| AFI | Automated Function Imaging (AFI) is a semi-automatic measurement tool used for measurement of the regional functions of the left ventricle. The AFI tool is used as an optional decision support tool. The AFI tool is derived from 2D speckle tracking algorithm, which tracks and calculates the myocardial tissue deformation based on feature tracking on 2D grey scale loops. |
| Omniview | Displays non-orthogonal view along any drawn plane. Sub-menu on Sectional Visualization of 3D/4D mode. |
| STIC | Spatio-temporal image correlation (STIC) is a new approach for clinical assessment of the fetal heart. STIC offers an easy to use technique to acquire data from the fetal heart and to aid in visualization with both two dimensional and three-dimensional (3D) cine sequences. |
| Advanced3D | Designed for rendering B Mode and Color Flow Mode images, e.g., vessel trees. |
| LP7 MSK Korea (R2 or R2.5 or R3) | Support the ML6-15 probe on LP7. (Korea only) |
| GT (R2.5 or R3) | Displays the needle's position in real-time graphics that are overlaid on the image of the scan plane. The trajectory can then be monitored as it progresses toward the target. |
| Shear Wave Elastography | A type of Elastography using force generated from a high intensity ultrasound pulse to generate a laterally travelling shear wave that is then observed and tracked using ultrasound. The velocity of the shear wave is used to generate an elasticity image. |
| HRes Contrast Upgrade (R2 or later) | LOGIQ P9 only (R2 or R2.5): Provides additional high resolution contrast imaging modes. |
| Tablet Tools | LOGIQApps are available for Android devices via Bluetooth: Remote Control App and Photo/Barcode Reader App. Bluetooth dongle can be inserted to any of the USB ports in the system. |
| HDLive | HDLive is an extraordinary rendering method generating amazingly realistic images of the human fetus from sonographic data. Through the use of an advanced illumination model, HDlive supports shadows, a virtual light source and advanced skin rendering techniques. |
| SW DBV Basic (R3 or later) | Software Digital Video Recorder provides cine recording function to DVD or USB storage media. It's DVD Title production is not supported. |
| Sono NT/IT (R4 or later) | Sonography-based Nuchal/Intracranial Translucency (SonoNT/IT) is a semi-automated tool to help provide quantifiable NT/IT measurements. With SonoNT/IT, clinicians can achieve the reproducible results that are crucial for diagnostic confidence. With its intuitively designed user interface, SonoNT/IT is easy to use and can integrate easily into user workflow. |

Table 5-8 Software Options

| Software Options | Description |
|-----------------------------|--|
| UGAP (R4 or later) | UGAP(Ultrasound-Guided Attenuation Parameter) calculates attenuation coefficient for the quantification of liver steatosis. |
| SonoAVC (R4 or later) | A method for volume calculation available on 3D/4D mode. The volumes are generated by segmentation, computed manually or automatically. |
| KOIOS (R4 or later) | Breast Assistant, Powered by Koios DS is a Breast Lesion Analysis Option. Koios is configured similar to a DICOM Service. The user can accept/reject analysis results. |
| KOIOS Thyroid (R4 or later) | Thyroid Assistant, Powered by Koios DS is a Thyroid Nodule Analysis Option. Koios is configured similar to a DICOM Service. The user can accept/reject analysis results. |

NOTE: *In case the user scans any other barcodes in the manual below apart from “USB Serial” then the barcode reader might be unable to scan the QR Code on the Pinpoint Needle or Patient or worklist. In this case, please re-scan the “USB Serial” barcode.*

USB Serial

Scan the following code to program the scanner to emulate a regular RS232-based COM Port. If you are using a Microsoft® Windows® PC, you will need to download a driver from the Honeywell website (www.honeywellaidc.com). The driver will use the next available COM Port number. Apple® Macintosh computers recognize the scanner as a USB CDC class device and automatically use a class driver.



Note: No extra configuration (e.g., baud rate) is necessary.

Figure 5-11 USB Serial

5-4-2 Smart Devices Applications (LOGIQ Apps)

The Smart Devices Applications are available for Android via Bluetooth:

- Remote Control App
- Camera App

To link to the device:

- 1.) Insert Bluetooth dongle into USB slot
- 2.) Connect the device to the LP7/9 via dongle.
- 3.) Scan for devices.
- 4.) Connect to the device.

Remote Control App

Via the Remote Control App, you will be able to adjust the following controls:

- Depth
- PW Gain
- CF Gain
- B-Mode Gain
- Left/Right
- Measure
- Comment
- Clear
- Trackball
- Freeze
- Store
- Color Flow Scale
- Cursor

Camera App

You can use the camera to capture images that will go to the patient's exam.

Section 5-5 Hardware Options

5-5-1 Options

Following options are offered for LOGIQ P7/P8/P9/P10.

Table 5-9 Hardware Options

| Hardware Options | Description |
|--|---|
| ECG Option | |
| LP7/P8/P9/P10 ECG Module without ECG cables | Provides interface to ECG cable |
| ECG Cable - AHA | For US (AHA) color codes |
| ECG cables - IEC | Right Hand = Red, Left Hand = Yellow, Left Foot=Green |
| Peripheral Device Cabinet | |
| High Cabinet for LOGIQ | Provides additional 2 on-board devices |
| Low Cabinet for LOGIQ | Provides lowest OPIO position |
| Drawer (for High Cabinet) | Installed on Color printer position |
| Peripheral Devices & Misc | |
| Card Reader Mounting Kit | LP7/P8/P9/P10 CR Mounting Kit |
| LP9 and LP7 Articulating Monitor Arm | LP9 and LP7 Articulating Monitor Arm |
| LP7/P8/P9/P10 Pencil Probe CW HW Kit | LP9 and LP7 Pencil CW HW Kit |
| LP9 and LP7 Side Tray | Maru Side Tray |
| LP7/P8/P9/P10 4D Kit | LP9 and LP7 4D Kit |
| USB 3 Pedal Foot Switch | USB 3 Pedal Foot Switch |
| LP7/P8/P9/P10 Paper tray | LP7/P8/P9/P10 Paper tray |
| LP7/P8/P9/P10 Rear handle | LP7/P8/P9/P10 Rear handle |
| LP7/P8/P9/P10 OPIO tray | LP7/P8/P9/P10 OPIO tray |
| LP7/P8/P9/P10 Battery Kit | LP7/P8/P9/P10 Battery Kit |
| LP7/P8/P9/P10 Battery Pack (=power assiat) | Solo Battery |
| LP9 and LP7 4 RS Connector MPI | LP9 and LP7 4 RS Connector MPI |
| LP7/P8/P9/P10 Wireless LAN | LP7/P8/P9/P10 Wireless LAN |
| LP7/P8/P9/P10 Gel Warmer | LP7/P8/P9/P10 Gel Warmer |
| LP7/P8/P9/P10 Universal Video Converter | LP7/P8/P9/P10 Universal Video Converter |
| Isolation Transformer | Isolation Transformer for external patient monitor AC input |
| MCWD | CW Piggy board for CW option |
| EMI filter (AC filter) | EMI filter (AC filter) |
| Optional Probe Holders | |
| LP7/P8/P9/P10 Endocavity vertical probe holder | LP7/P8/P9/P10 Vert Endo Prb Holder |
| LP7/P8/P9/P10 Probe holder adapter for small probe | LP7/P8/P9/P10 Small Probe Holder |

Table 5-9 Hardware Options (Continued)

| Hardware Options | Description |
|--|--|
| LP7/P8/P9/P10 Probe Cable Hanger - Front | LP7/P8/P9/P10 Front Probe Cable Hanger |
| LP7/P8/P9/P10 Probe Cable Hanger - Rear | LP7/P8/P9/P10 Rear Probe Cable Hanger |

Section 5-6 Regional and Peripheral Options

5-6-1 Regional Options

Following options are offered for LOGIQ P7/P8/P9/P10.

Table 5-10 Regional Option

| Optional Power Cables |
|--|
| Destination Set - <i>UK</i> |
| Destination Set - <i>South Africa</i> |
| Destination Set - <i>Argentina</i> |
| Destination Set - <i>Israel</i> |
| Destination Set - <i>Switzerland</i> |
| Destination Set - <i>Denmark</i> |
| Destination Set - <i>US</i> |
| <i>Destination Set - Japan</i> |
| Destination Set - <i>Australia/New Zealand</i> |
| Destination Set - <i>China</i> |
| Destination Set - <i>India</i> |
| <i>Destination Set - Italy</i> |
| Destination Set - <i>Brazil</i> |
| Power Cord Fix Bracket 220V |
| <i>Power Cord Fix Bracket 110V</i> |
| Optional Language Keyboards |
| LOGIQ P7/P8/P9/P10 Greek Keyboard |
| LOGIQ P7/P8/P9/P10 Norwegian/Danish Keyboard |
| LOGIQ P7/P8/P9/P10 Russian Keyboard |
| LOGIQ P7/P8/P9/P10 Swedish Keyboard |
| LOGIQ P7/P8/P9/P10 French Keyboard |

5-6-2 Peripheral Options

Following options are offered for LOGIQ P7/P8/P9/P10.

Table 5-11 Peripheral Option

| Printers | Description |
|---|------------------------------|
| LOGIQ P7/P8/P9/P10 Sony UP-D898 Digital B/W Printer Kit | B/W Printer Kit |
| LOGIQ P7/P8/P9/P10 Sony UP-D25MD Digital Color A6 Printer Kit | Digital Color A6 Printer Kit |
| LOGIQ P7/P8/P9/P10 Color Inkjet Printer (Off-board) | Inkjet Printer |

Section 5-7 Mechanical Descriptions

5-7-1 Physical Dimensions

5-7-1-1 Dimensions and Weight - R1, R2, R2.5 and R3

- Height: 1,375mm (Minimum), 1,570mm (Max.)
- Width: 530mm (Monitor), 430mm (Operator Panel)
- Depth: 740mm
- Weight: 60kg (133 lbs)

5-7-1-2 Dimensions and Weight - R4 and R4.5

- Height: 1,345mm (Minimum), 1,595mm (Maximum)
- Width: 545mm (Monitor), 430mm (Operator Panel)
- Depth: 740mm
- Weight: 67kg (148 lb)

5-7-1-3 Dimensions and Weight - R4 and R4.5 HD

- Height: 1,390mm (Minimum), 1640mm (Maximum)
- Width: 545mm (HD Monitor)
- Depth: 740mm
- Weight: 69kg (152 lb)

5-7-2 LCD Monitor

The LOGIQ P7/P8/P9/P10 has a free adjustable LCD monitor in relation to the user interface.

- position up/down: +/- 7.5 cm
- position left/right: +/- 18cm
- rotation up/down: +90°/-15°
- rotation left/right: +/- 90°

5-7-3 OPIO Positioning

The control console can be rotated, translated and adjusted in height.

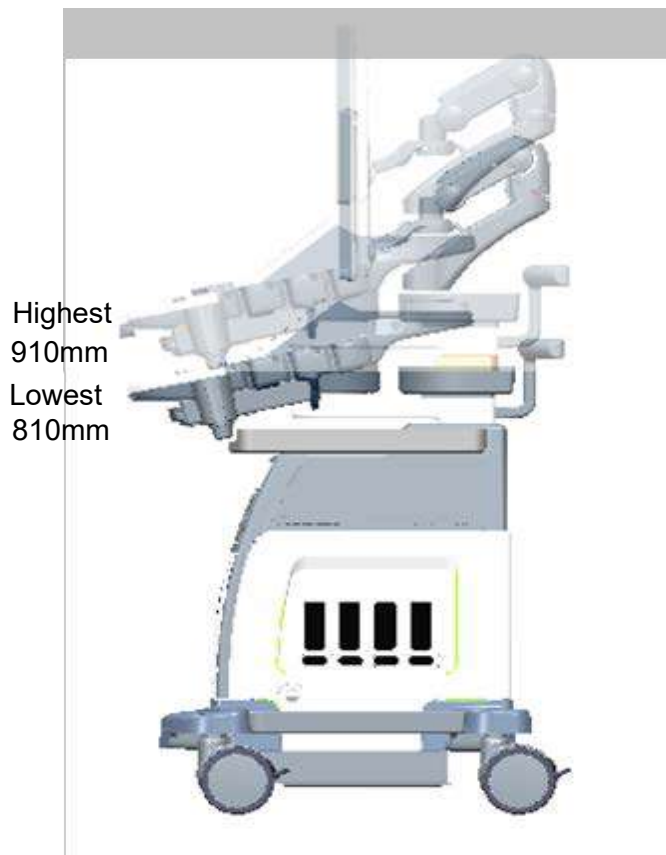


Figure 5-12 Adjustable Control Console (R1, R2, R2.5 and R3)

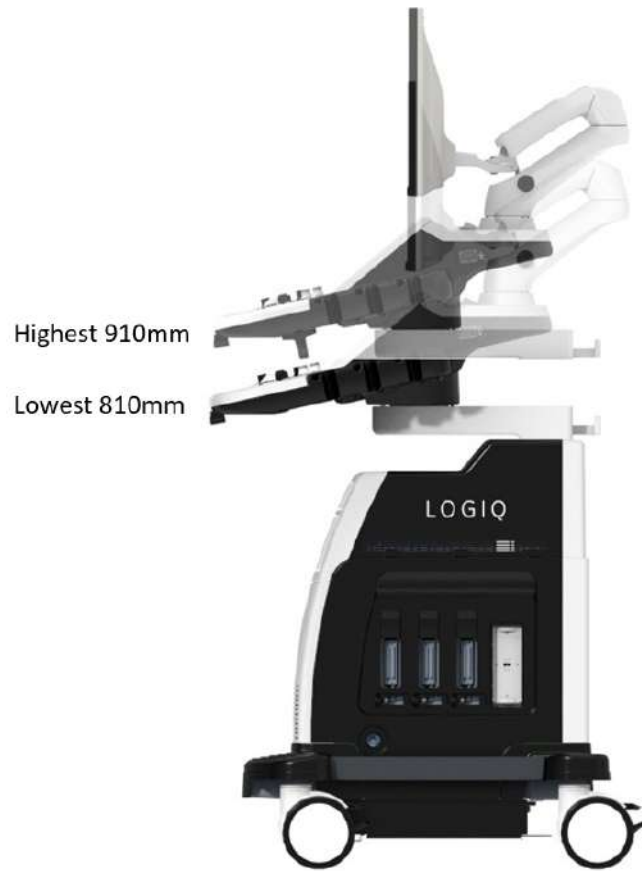


Figure 5-13 Adjustable Control Console (R4 and R4.5)

5-7-4 Air Flow Distribution

NOTE: Clean the Air Filter periodically.

Through the filter grid on the front of the system, air flow into the LOGIQ P7/P8/P9/P10 scanner. By means of the 2 FAN, air is blown through the nest-box, and the warm air exits the scanner through holes in the left side panel and rear of the system.

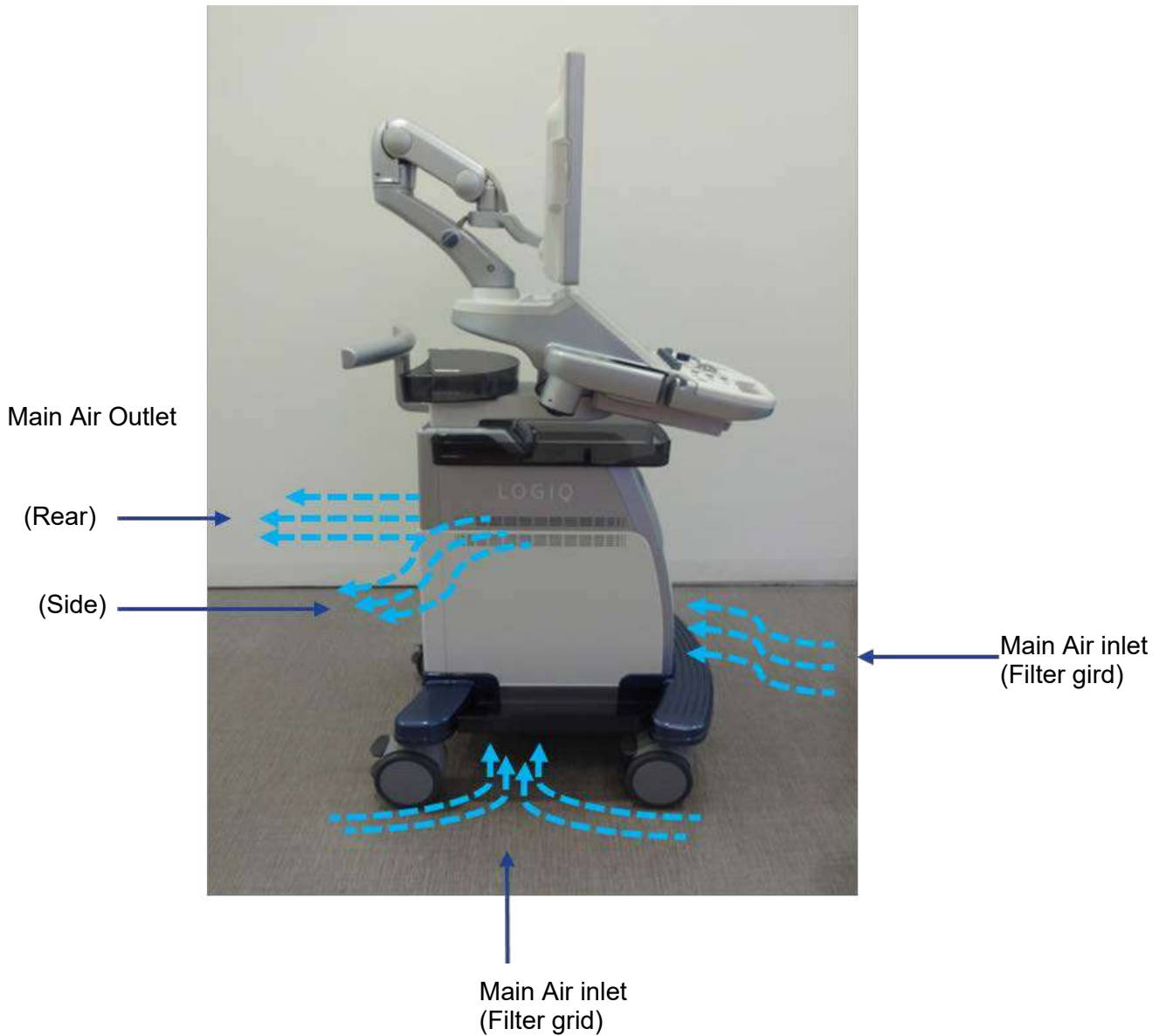


Figure 5-14 Air Inlet/Outlet at LOGIQ P7/P8/P9/P10

Section 5-8 Exiting to Windows Desktop

LOGIQ P7/P8/P9/P10 backend software operates on embedded version of Windows 7® operating system (R2 and R2.5) or version of Windows 10 Enterprise® operating system (R3, R4 and R4.5). To access some of the functions, service personnel occasionally require to enter Windows desktop to access files, folders or applications.

5-8-1 Exiting to Windows Desktop

Tools Required: Service Dongle

- 1) Wait for system to boot.
- 2) Connect Service Dongle to any of the USB ports available.
- 3) Tap power button once.
- 4) If Service Dongle is correctly recognized by the system, U/I popup window provides selection "EXIT".



Figure 5-15 SYSTEM - EXIT (R2 and R2.5)

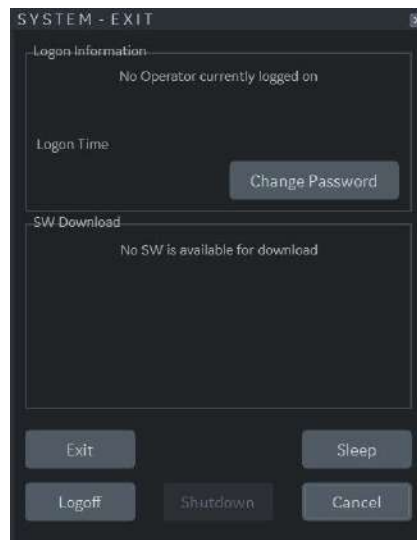


Figure 5-16 SYSTEM - EXIT (R3, R4 and R4.5)

5) On "Maintenance Access" window, type in service password (user name not required).

NOTE: *Service Password is rotating password that changes on 6 months period. Only the GE service personnel or GE authorized dealers have access to maintenance password.*

NOTE: *Maintenance Password is function of date/time. Therefore, if BIOS settings differ from actual date/time, then the maintenance password may not be recognized.*

6) When entering Windows Desktop, press "Ctrl" and "Esc" at the same time to make windows menu bar to appear.



Figure 5-17 Windows Desktop (R2 and R2.5)



Figure 5-18 Windows Desktop (R3)



Figure 5-19 Windows Desktop (R4 and R4.5)

Section 5-9 Service Platform

5-9-1 Introduction

The Service Platform will increase service productivity and reduce training and service costs.

5-9-2 Access / Security

The Service Platform has different access and security user levels. Each user is only granted access to the tools that are authorized for their use.

- **Local Access:** via Utility - SERVICE button

5-9-2-1 Local Access

- 1) If not already in read mode, FREEZE the image.
- 2) Press the UTILITIES key on the control panel and touch SERVICE to invoke setup desktop.
- 3) As soon as the GEHC Service Home Page appears, select "Operator" from the pull-down menu, enter the password `uls` and then click [Okay] (R1, R2, R2.5 only)

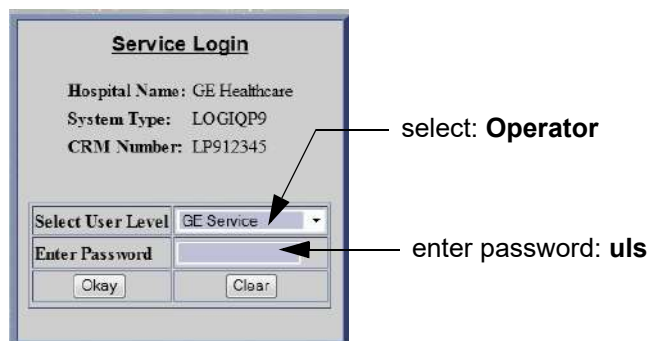


Figure 5-20 Service Login (R1, R2, R2.5 only)

The Common Service Desktop (CSD) is started and the [Home] page - containing basic System Information - appears. The navigation bar at the top of the screen allows to select different tools.

For more detailed information and description refer to [Section Section 5-10 on page 5-33](#) (R1, R2, R2.5 only) or [Section Section 5-11 on page 5-43](#) (R3 only).

5-9-2-2 How the Customer enables/disables Disruptive Mode and VCO

- 1) If not already in read mode, FREEZE the image.
- 2) Move the cursor to the GE icon and press the right trackball key (= right-click).
- 3) Select **Connect Clinical Lifeline**.

This activates “Disruptive Mode” and “VCO” for the application OLC to quickly assist the customer.

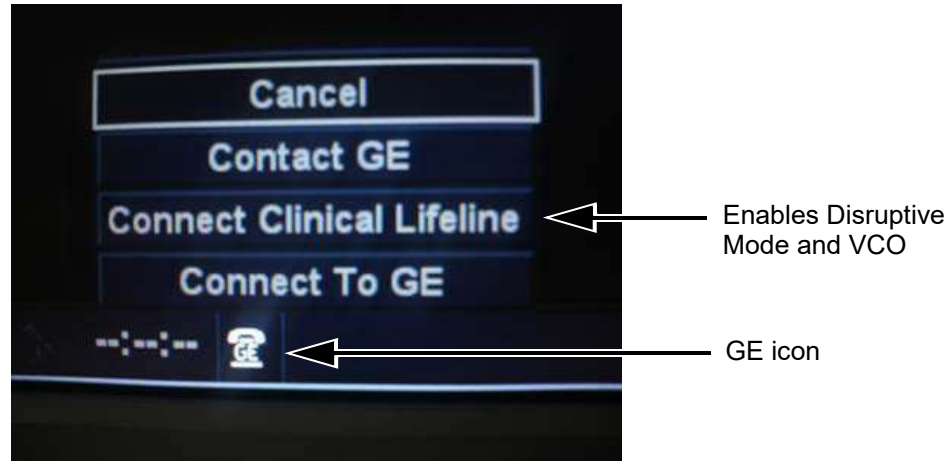


Figure 5-21 Connect Clinical Lifeline (R1, R2, R2.5 only)

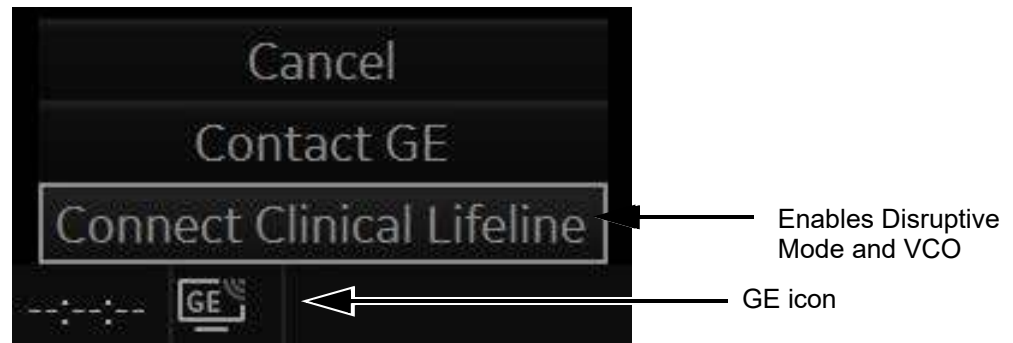


Figure 5-22 Connect Clinical Lifeline (R3 only)

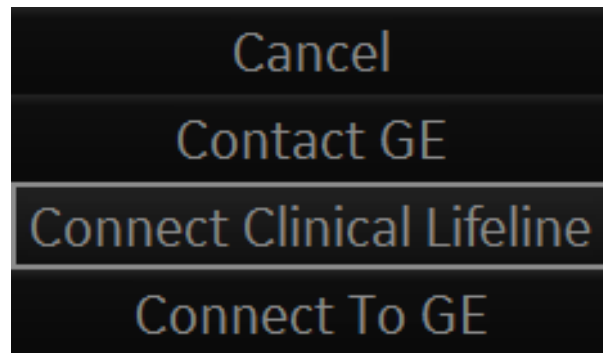


Figure 5-23 Connect Clinical Lifeline (R4 and R4.5)

NOTE: To disable disruptive mode, select "CANCEL".

Section 5-10 Common Service Desktop (CSD) (R1, R2, R2.5 only)

5-10-1 Internationalization

The user interface provided by the service platform is designed for GE personnel and as such is in English only. There is no multi-lingual capability built into the Service Interface.

There are different possibilities to access the Common Service Desktop and its available features:

- 1) [Local Access](#) via System Setup - Administration - **SERVICE** page

As soon as the Common Service Desktop (CSD) is started, the Service **[Home]** Page appears.



Figure 5-24 Common Service Desktop - Home

The navigation bar at the top of the screen allows to select from following tools:

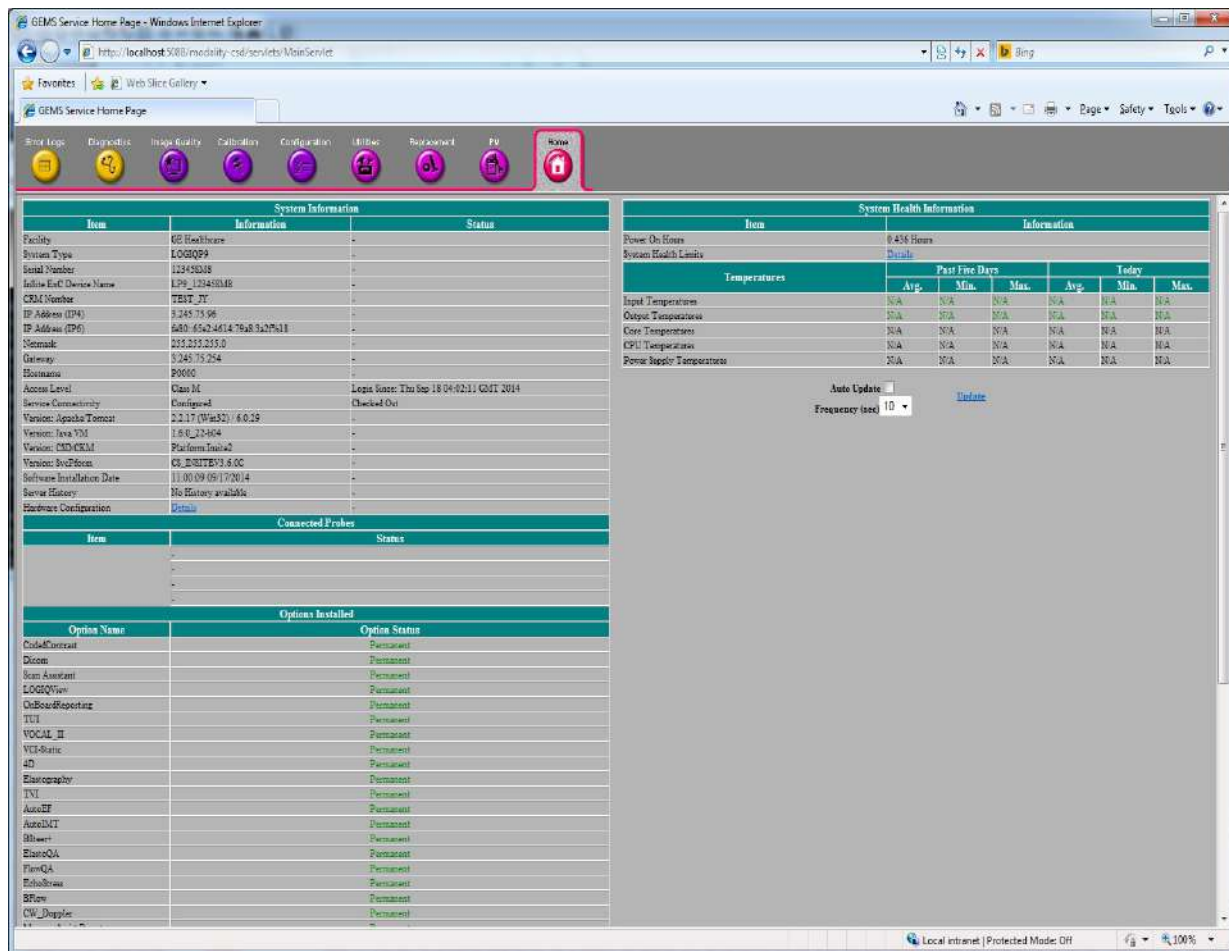
- [Error Logs](#) on page 5-37
- [Diagnostics](#) on page 5-37
- [Image Quality](#) on page 5-38
- [Configuration](#) on page 5-39
- [Configuration](#) on page 5-39
- [Utilities](#) on page 5-40
- [Replacement](#) on page 5-42
- [PM](#) on page 5-42

5-10-2 CSD Top Page

5-10-2-1 General Layout

Table 5-12

| | | |
|---|-------------------------|--|
| 1 | System Information | System ID, Serial, IP Address, InSite Status, etc. |
| 2 | Connected Probes | Connected and System recognized probe listed |
| 3 | Option | Enabled Options and its expiration date |
| 4 | Peripheral | Connected and system recognized peripheral listed |
| 5 | System Status | System Date, Time, etc. |
| 6 | Power On Hours | System Power ON hours. Health Limit link should not be referenced. |
| 7 | Temperature and Voltage | Details on the following section |



5-10-2-2 Decoding System Temperature and Voltage

NOTE: These are reference only values and therefore, parameters are not constant. Some parameters may be added/deleted depending on the system configuration, type, and variation.

In general, the first parameter defines data source (board).

"P" in the second parameter denotes "Plus" or "positive" in voltage.

"M" in the second parameter denotes "Minus" or "negative" in voltage.

"V" in the second parameter denotes "decimal point". i.e. 1V5 is 1.5.

Some Example Shown below.

Table 5-13

| Parameter | Description |
|---------------------|--|
| BEP_CPU_TEMPERATURE | Temperature at CPU core. This parameter used for system temperature monitoring |
| GFS_LM83 | Additional temperature sensor at LM83 chip on GFS. |
| GFS_GFE | Additional temperature sensor on GFS. |
| GFS_SDEM | Additional temperature sensor on GFS. |
| GFS_BOT | Additional temperature sensor on GFS. |
| GFS_M5V | GFS Voltage. Minus 5.0Volt (-5V) |
| GFS_P3V3_VIDEO | GFS Voltage. Positive 3.3Volt (+3.3V) for video signal |
| GFS_P1V5_PCIE | GFS Voltage. Positive 1.5Volt (+1.5V) for PCI-E |
| GFS_P2V5 | GFS Voltage. +2.5V |
| GFS_P3V3 | GFS Voltage. +3.3V |
| ~ | |
| BF_DVDD_1V8_1 | BF Voltage. 1.8V for AFE Analog/Digital Conversion (group 1) |
| BF_DVDD_1V8_2 | BF Voltage. 1.8V for AFE Analog/Digital Conversion (group 2) |
| BF_DVDD_1V8_3 | BF Voltage. 1.8V for AFE Analog/Digital Conversion (group 3) |
| BF_AVDD_3V3_1 | BF Voltage. 3.3V for AFE chip LNA/VCA (group 1) |
| ~ | |
| BF_2V5_CLK | BF Voltage. 2.5V for clock |
| BF_PHVA | BF Voltage. Positive HVA |
| BF_MHVA | BF Voltage. Negative HVA |
| ~ | |
| PI_3V3_PRB | Probe Interface, 3.3V powering Probe |

| System Health Information | | | | | | |
|---------------------------|--------------|-------|-------|-------|-------|-------|
| Item | Information | | | | | |
| Power On Hours | 0:11:5 Hours | | | | | |
| Bypass Health Limits | Default | | | | | |
| Temperature and Power | History | | | Today | | |
| | Avg. | Min. | Max. | Avg. | Min. | Max. |
| BEP_CPU_TEMPERATURE | 40.82 | 40.00 | 42.00 | 40.82 | 40.00 | 42.00 |
| GPS_LIN83 | 32.53 | 32 | 33 | 32.53 | 32 | 33 |
| GPS_GPE | 31.09 | 31 | 32 | 31.09 | 31 | 32 |
| GPS_SDEM1 | 41.00 | 41 | 41 | 41.00 | 41 | 41 |
| GPS_BOI | 39.84 | 39 | 41 | 39.84 | 39 | 41 |
| GPS_M5V | 3.21 | 3.21 | 3.30 | 3.21 | 3.21 | 3.30 |
| GPS_PS13_VIDEO | 3.28 | 3.28 | 3.28 | 3.28 | 3.28 | 3.28 |
| GPS_PS12_PCIE | 1.48 | 1.48 | 1.48 | 1.48 | 1.48 | 1.48 |
| GPS_PS12 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 | 2.30 |
| GPS_PS13 | 3.24 | 3.24 | 3.24 | 3.24 | 3.24 | 3.24 |
| GPS_PS1 | 3.10 | 3.09 | 3.10 | 3.10 | 3.09 | 3.10 |
| GPS_DSPCORE | 1.25 | 1.25 | 1.26 | 1.25 | 1.25 | 1.26 |
| BF_DS18 | 32.38 | 32 | 33 | 32.38 | 32 | 33 |
| BF_DVDD_1V3_1 | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 |
| BF_DVDD_1V3_2 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 |
| BF_DVDD_1V3_3 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 |
| BF_AVDD_1V3_1 | 3.58 | 3.58 | 3.59 | 3.58 | 3.58 | 3.59 |
| BF_AVDD_1V3_2 | 3.57 | 3.57 | 3.57 | 3.57 | 3.57 | 3.57 |
| BF_AVDD_1V3_3 | 3.57 | 3.57 | 3.57 | 3.57 | 3.57 | 3.57 |
| BF_F2V1VLL | 2.79 | 2.79 | 2.79 | 2.79 | 2.79 | 2.79 |
| BF_F2V3 | 2.44 | 2.44 | 2.44 | 2.44 | 2.44 | 2.44 |
| BF_1V1_1 | 1.08 | 1.07 | 1.08 | 1.08 | 1.07 | 1.08 |
| BF_1V1_2 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| BF_1V1_3 | 1.07 | 1.08 | 1.07 | 1.07 | 1.08 | 1.07 |
| BF_1V1_4 | 1.07 | 1.08 | 1.07 | 1.07 | 1.08 | 1.07 |
| BF_1V1_5 | 1.07 | 1.08 | 1.07 | 1.07 | 1.08 | 1.07 |
| BF_1V1_6 | 1.07 | 1.08 | 1.07 | 1.07 | 1.08 | 1.07 |
| BF_1V3_CLK | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 |
| BF_1V3_CLK | 3.41 | 3.41 | 3.41 | 3.41 | 3.41 | 3.41 |
| BF_P1V4 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| BF_P1V4 | -0.92 | -0.93 | -0.90 | -0.92 | -0.93 | -0.90 |
| BF_P1V8 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| BF_P1V8 | 0.09 | -0.10 | -0.08 | -0.09 | -0.10 | -0.08 |
| BF_P1V8LUN | 98.58 | 98.57 | 98.59 | 98.58 | 98.57 | 98.59 |
| BF_P1V8LUN | 97.58 | 97.58 | 97.58 | 97.58 | 97.58 | 97.58 |
| PL_S1_P1B | 5.03 | 5.03 | 5.04 | 5.03 | 5.03 | 5.04 |
| PL_S1V | 11.72 | 11.74 | 11.76 | 11.72 | 11.74 | 11.76 |
| PL_S1V_P1B | 3.32 | 3.32 | 3.32 | 3.32 | 3.32 | 3.32 |
| PL_S1V2 | 1.22 | 1.22 | 1.22 | 1.22 | 1.22 | 1.22 |
| PL_S1V5 | 2.51 | 2.51 | 2.51 | 2.51 | 2.51 | 2.51 |
| PL_HVALEVEL | 98.58 | 98.58 | 98.61 | 98.58 | 98.58 | 98.61 |
| PL_HVBLEVEL | 91.23 | 91.21 | 91.26 | 91.23 | 91.21 | 91.26 |
| GPS_HVA | 1.09 | 1.09 | 1.12 | 1.09 | 1.09 | 1.12 |
| GPS_HVB | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| GPS_PCWD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

5-10-3 Error Logs

When the **Error Logs** page is selected, different log viewing options are available. Log Viewer is displayed in a separate window.

5-10-4 Diagnostics

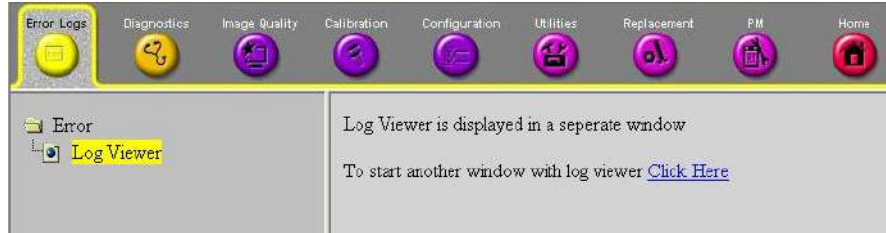


Figure 5-25 Common Service Desktop - Error Logs

The **Diagnostic** page uses a web-controlled user interface to provide access to common service components and perform diagnostics.

The left frame shows the list of diagnostics items. The user can select diagnostics item as necessary and can perform the test with Execute button at the bottom.

The user can extend hierarchy menu and each folder contains several items. The user can select multiple items and execute selected items automatically.

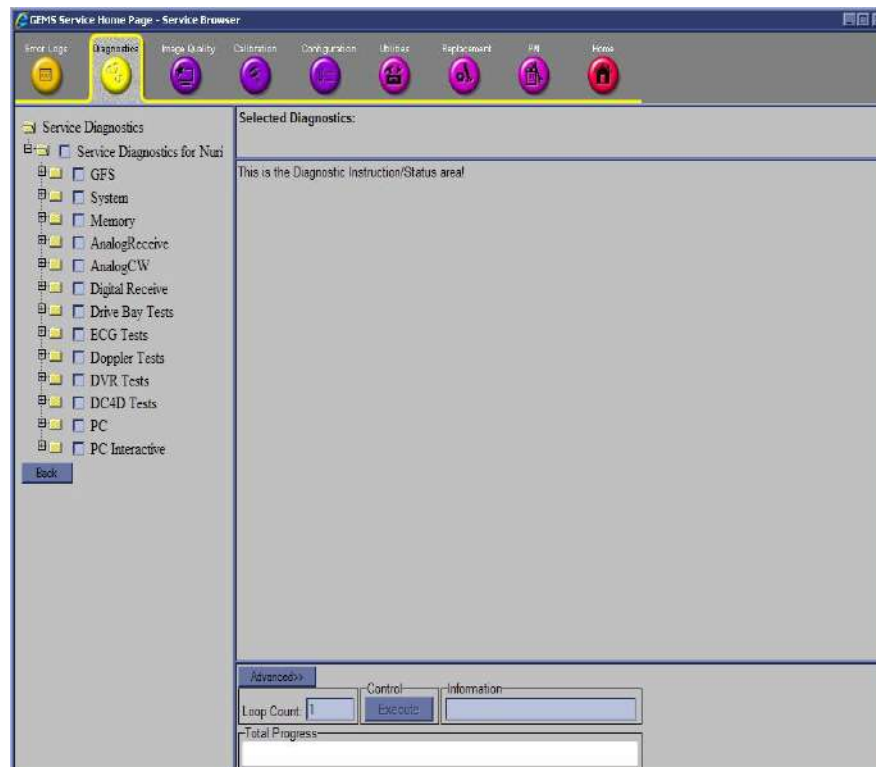


Figure 5-26 Common Service Desktop - Diagnostics

5-10-5 Image Quality

In the **Image Quality** page, you can verify image quality.



Figure 5-27 Common Service Desktop - Image Quality

NOTE: This page is not populated in this version.

5-10-6 Configuration

In the **Configuration** page, you can view and modify different device informations and configurations. in the “InsiteExC Agent Configuration” option field.

The screenshot shows the 'InSite ExC Agent Configuration' page. The top navigation bar includes icons for Error Logs, Diagnostics, Image Quality, Calibration, Configuration (highlighted), Utilize, Replacement, PM, and Home. The left sidebar shows a tree view with 'Configuration' and 'InSite ExC Agent Configuration' selected. The main content area is titled 'Agent Configuration' and contains the following fields:

- Device Name: KE810026, CRM No.: KE810026
- Display Name: [empty], Description: [empty]
- Continent: EUROPE, Country: AUSTRIA
- Addr Line1: [empty], Addr Line2: [empty]
- City: ZIFF, State (Prov): TIEFENBACH, Postal Code: [empty]
- Latitude: [empty], Longitude: [empty]
- Institution: GE, Department: [empty]
- Building: [empty], Floor: [empty], Room: [empty]

The 'Advanced Configuration' section includes:

- Enterprise Server: PILOT2, Service Center: EURO, Log Level: WARN
- Enterprise Server URL: https://pil2-us1-ws.service.gehealthcare.com:443
- Enterprise Tunnel URL: https://pil2-us1-td.service.gehealthcare.com:443
- File Repository: D:\InSite2Data\etc
- File Watcher: Enable, Dir: D:\export, Filter: *.zip

The 'Proxy Configuration' section includes:

- Proxy: Enable, IP Addr: 3.243.134.45, Port: 88
- Proxy Authentication: Disable, Scheme: NONE
- Proxy User: [empty], Password: [empty]

Buttons for 'Submit Changes' and 'Reset Form' are located at the bottom of the form.

Figure 5-28 Common Service Desktop - Configuration



NOTICE Remote access is **ONLY possible if the service platform is properly configured** (either by the user or a GE technician at site). Operation see: [Section 7-5-6 "CSD: Configuration" on page 7-21](#).

5-10-7 Utilities

The **Utilities** page contains a variety of Windows utility tools to indicate the status of the system, in addition to various other tools.

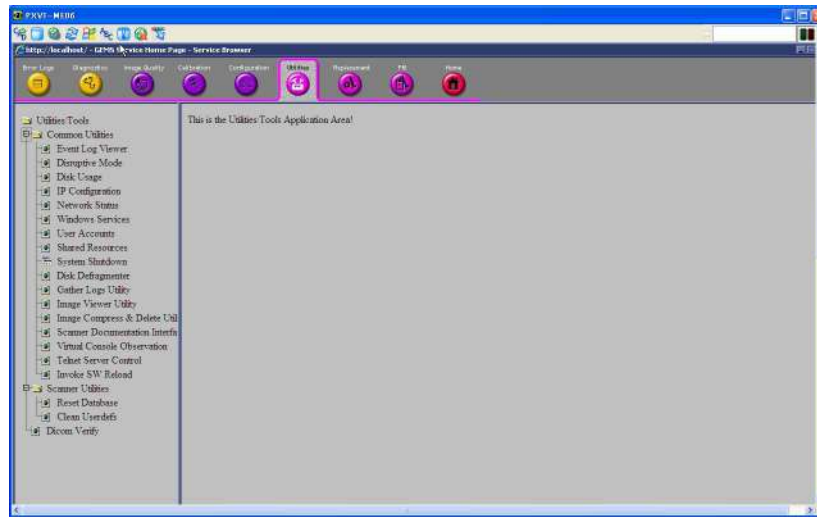


Figure 5-29

Note on Utilities:

One of the menu selections "Disk Defragmenter" invokes Windows® application executed in separate window. Because CSD window is set to be "always on top", new window is forced to appear on behind CSD, and hence, not viewable.

In order to invoke this functionality, exit to desktop first, and select Windows® application for disk defragmentation.

5-10-7-1 Disk Defragmenter

- 1) Exit to Windows
- 2) Select Start -> Programs -> Administrative Tools -> Computer Management

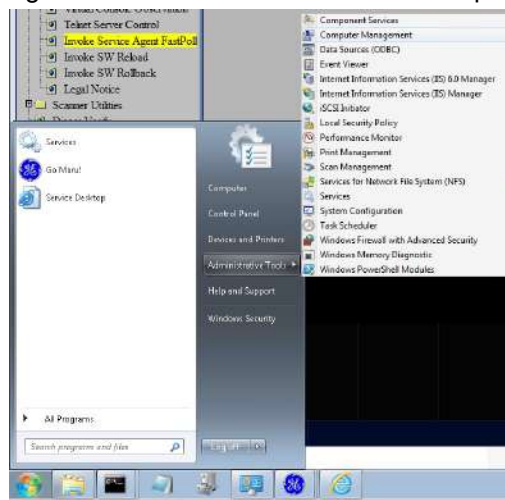


Figure 5-30

3) Select “Disk Defragmenter” from left pane

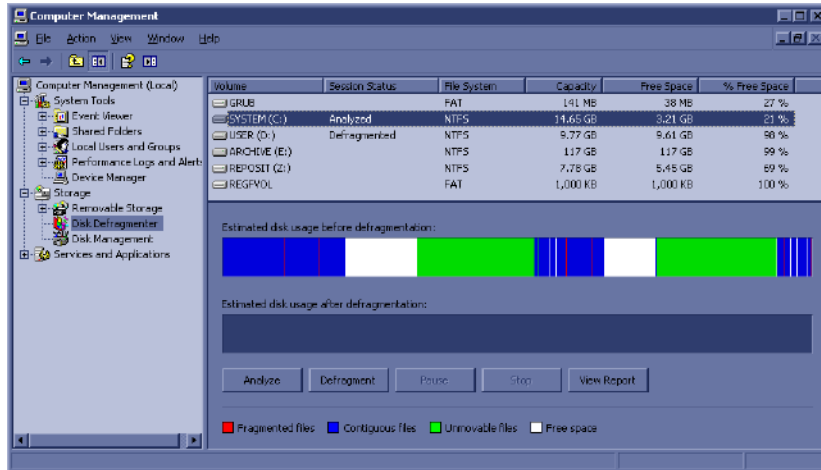


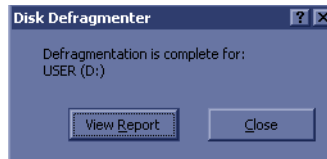
Figure 5-31

- 4) Select Disk Drive to defragment on right (upper) pane
- 5) Press “Defragment” to execute defragmentation of the selected disk

NOTE: Press “Analyze” button to see current status of the disk

6) Wait until process completes and report as such.

NOTE: Disk defragmentation - depending on status - may take hours to complete



5-10-8 Replacement

There is no accessible parameters in Replacement page.

5-10-9 PM

In the **PM** page, information about planned, proactive and preventive maintenance is displayed, as described in [Chapter 10 - Care & Maintenance, on page 10-1](#).



Figure 5-32 Common Service Desktop - PM

NOTE: This **page is not populated** in this version.

Section 5-11 Common Service Desktop (R3, R4 and R4.5)

5-11-1 Purpose of this section

This section describes the features of the Service desktop. These are the different levels of access to the Service desktop:

- Service Basic access (Class A) – a user locally logged into the machine with Local Service Access privilege. This level provides limited access to Service desktop widgets and utilities.
- Service Advanced access (Class C) Local – Depending on the purchase level, includes an option string to control access.
- GE Service access (Class M) and an SSA key. For users with local Service Access privileges, this level provides unrestricted access to all Service desktop widgets and utilities.
- Remote access – a user remotely accessing the LOGIQ P7/P8/P9/P10. This level provides unrestricted access to all Service desktop widgets and utilities. Disruptive mode is limited to the user access privileges to Remote Service Access.

5-11-2 Disruptive mode

Disruptive mode is a way to control interruptions to operation of the LOGIQ P7/P8/P9/P10. Disruptive mode is required whenever service performs a function that may disrupt a normal scan. Activating Disruptive mode results in a red message displayed on the task bar. This message indicates that the LOGIQ P7/P8/P9/P10 needs to be restarted once the service activity is complete. The message remains until the LOGIQ P7/P8/P9/P10 is restarted. This prevents patient scanning while the LOGIQ P7/P8/P9/P10 is not operating at an optimal status.

For example, running a diagnostic may leave the LOGIQ P7/P8/P9/P10 in a state that is not good for imaging.

Specifically, Disruptive mode is required to run diagnostics, clean presets, and reset the patient database, and turn on Virtual Console Observation (VCO).

- When Disruptive mode is On, all service functionality on the Service desktop is allowed but user operation of the LOGIQ P7/P8/P9/P10 may be limited.
- When Disruptive mode is Off, some service functionality on the Service desktop is not available and user operation of the LOGIQ P7/P8/P9/P10 is normal. Additionally, the ability to enable Disruptive mode depends on the logged in user.
- Local user – a user locally logged into the machine will be able to set the LOGIQ P7/P8/P9/P10 to Disruptive mode or allow a Disruptive mode request from a remote user through the Service desktop. The local user must have Authorize Remote Service Access to allow Disruptive mode. If the local user does not have this right, the remote user's request will be automatically denied.
- Remote user – a user remotely accessing the LOGIQ P7/P8/P9/P10 will not be able to automatically switch Disruptive mode to On. The logged in user (User actually logged on to the LOGIQ P7/P8/P9/P10) needs to have the ability to grant remote access. The logged in user will be notified through a dialog box and asked to allow Disruptive mode

NOTE: *Change Password and Disk Defragment are not available for the remote user whether Disruptive mode is On or Off.*
For more information, see [Section 5-11-2 "Disruptive mode" on page 5-43](#)

5-11-3 Color statuses

Throughout the Service desktop, colors indicate the following:

- Green – Status is normal
- Orange – Status is a warning
- Red – Status is an error

5-11-4 Licenses

With Service Basic Access (Class A), these are the available options:

- HOME
- Utilities
- Change Password
- Data Transfer
- Delete Files
- Gather Logs
- Network Capture
- SSA License
- Third Party Licenses
- Resolve Agent Quarantine
- Options
- Agent Configuration

With Service Advanced (Class C), these are the available options:

- HOME
- Diags
 - Run Diags
 - Diags History
- DICOM
 - DICOM Service Status
 - DICOM Spooler
- Utilities
 - Change Password
 - Checkpoints
 - Clean Userdefs
 - Data Transfer
 - Delete Files
 - Disk Defragment
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - Third Party Licenses
 - Resolve Agent Quarantine
- Options
- Agent Configuration

With GE Service access (Class M) and an SSA key, these are the available options:

- HOME
- Diags
 - Run Diags
 - Diags History
- DICOM
 - DICOM Service Status
 - DICOM Spooler
- Utilities
 - Change Password
 - Checkpoints
 - Clean Userdefs
 - Data Transfer
 - Delete Files
 - Disable Remote Connectivity
 - Disk Defragment
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - SSH
 - System Shutdown
 - Third Party Licenses
 - Virtual Console Observation
 - Resolve Agent Quarantine
- Options
 - Agent Configuration

With Remote access (Back office server), these are the available options:

- HOME
- Diags
 - Run Diags
 - Diags History
- DICOM
 - DICOM Service Status
 - DICOM Spooler
- Utilities
 - Checkpoints
 - Clean Userdefs
 - Data Transfer
 - Delete Files
 - Disable Remote Connectivity
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - SSH
 - System Shutdown
 - Third Party Licenses
 - Virtual Console Observation
 - Resolve Agent Quarantine
- Options
- Agent Configuration

5-11-5 Advanced Information - Service Desktop and SSA (Secure Service Access)

SSA Key

The SSA key provides secure access for GE service personnel to advanced tools to service the system

- Access to all service features
- Access to Windows Desktop
- Key must be renewed every 30 days
- Tied to SSO
- Password locked via key pad

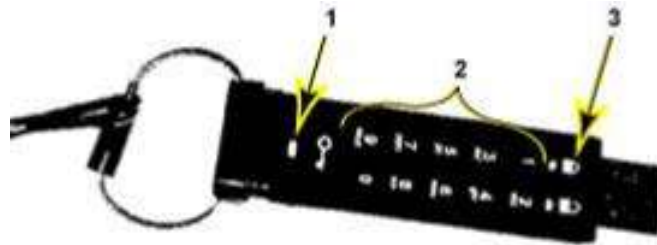


Figure 5-33 SSA Key

| Item | Description |
|------|-----------------|
| 1. | Blue LED |
| 2. | Key Pad |
| 3. | Lock Indicators |

5-11-6 Home

Home configurations vary depending upon the purchased service level.

Figure 5-34 Home with Class C and Class M Access (R3 only)

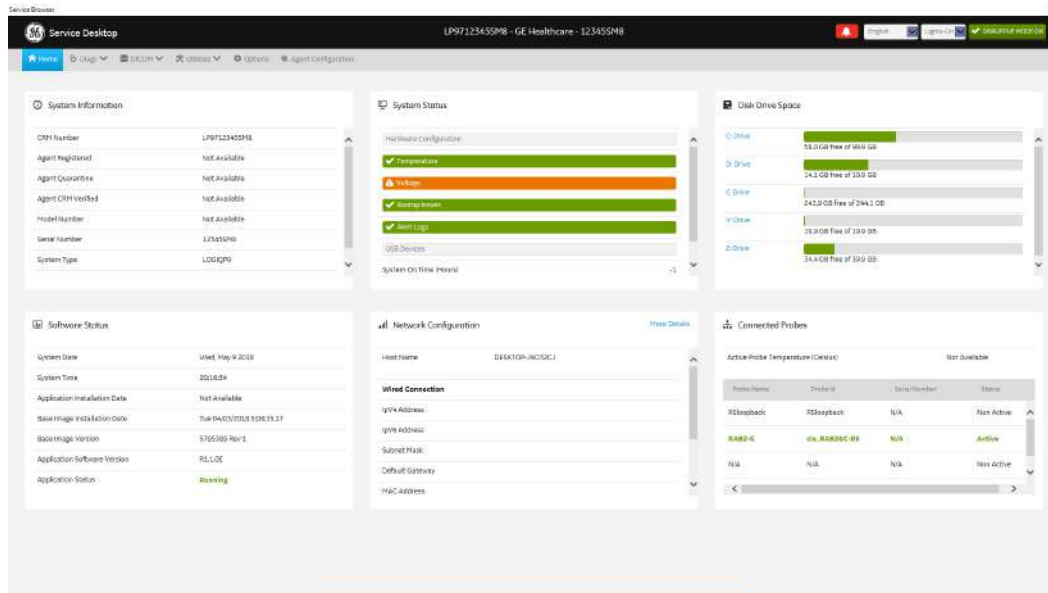


Figure 5-35 Home with Class C and Class M Access (R4 and R4.5 only)

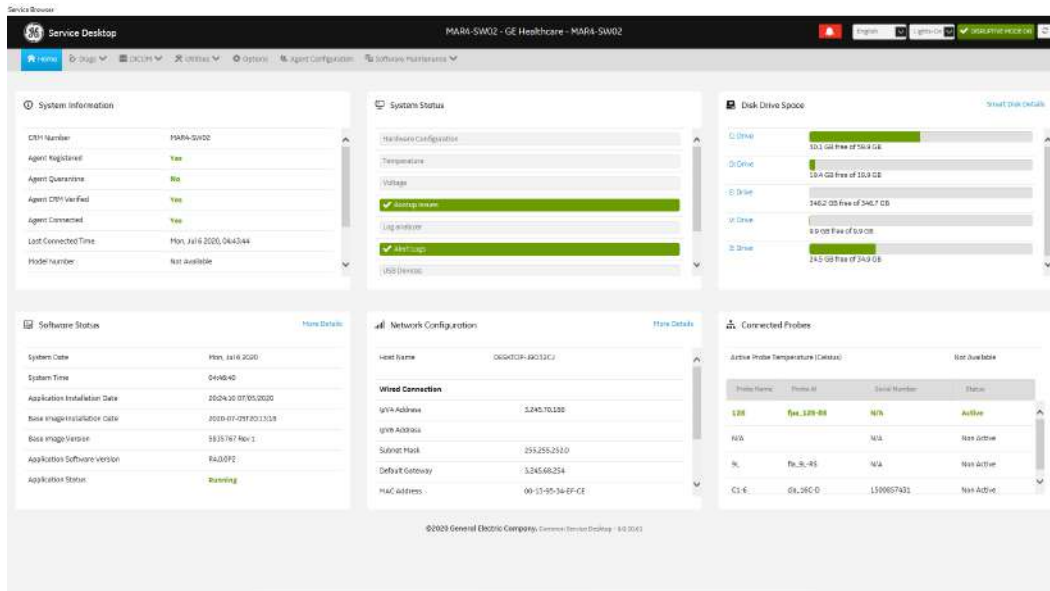


Figure 5-36 Home with Class A Access (R3 only)

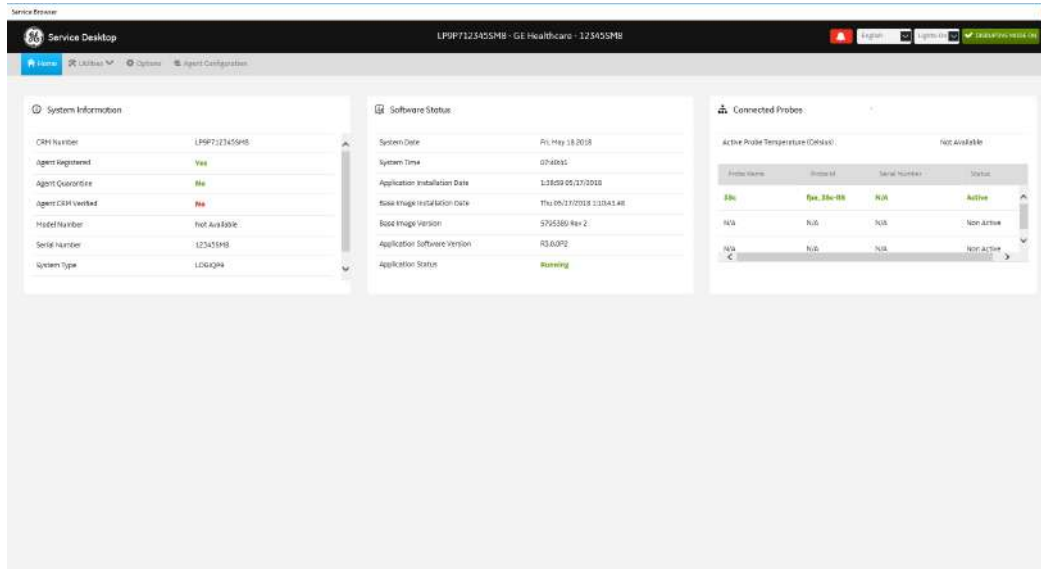
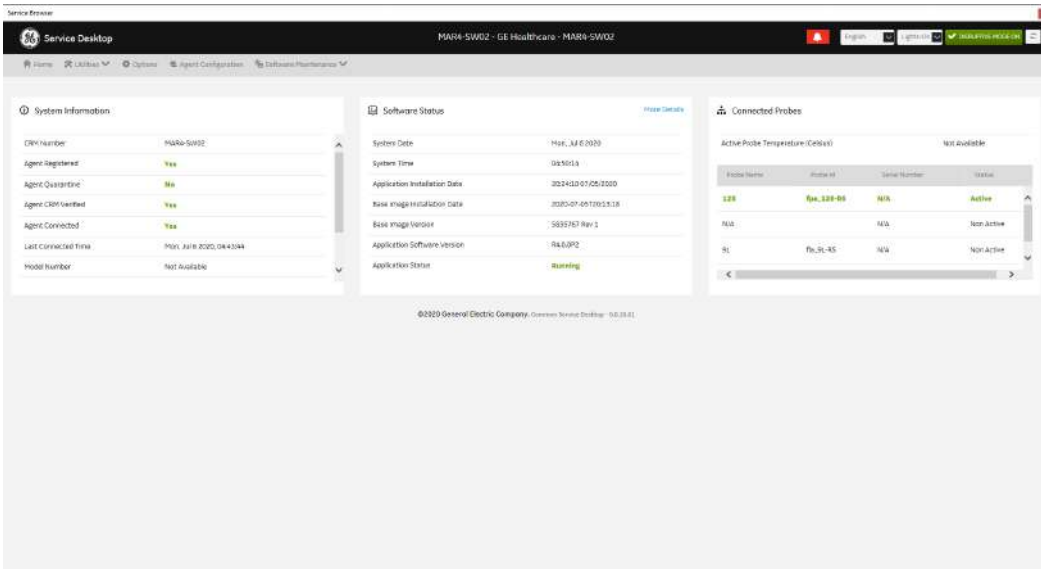


Figure 5-37 Home with Class A Access (R4 and R4.5 only)



For more information, see:

- [System Information on page 5-51](#)
- [Software Status on page 5-53](#)
- [System Status on page 5-55](#)
- [Disk Drive Space on page 5-67](#)
- [Network Configuration on page 5-70](#)
- [Connected Probes on page 5-72](#)

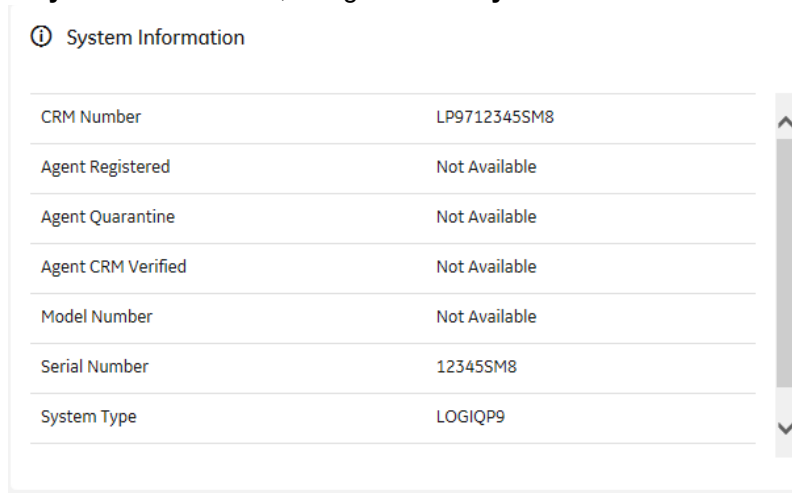
System Information

System Information displays general information about the LOGIQ P7/P8/P9/P10. When the LOGIQ P7/P8/P9/P10 has been successfully configured with the back office, these elements will have the corresponding values:

- **Agent Registered** will be **Yes**
- **Agent Quarantine** will be **No**
- **Agent CRM Verified** will be **Yes**

The information on **System Information** is available to all service class licenses.

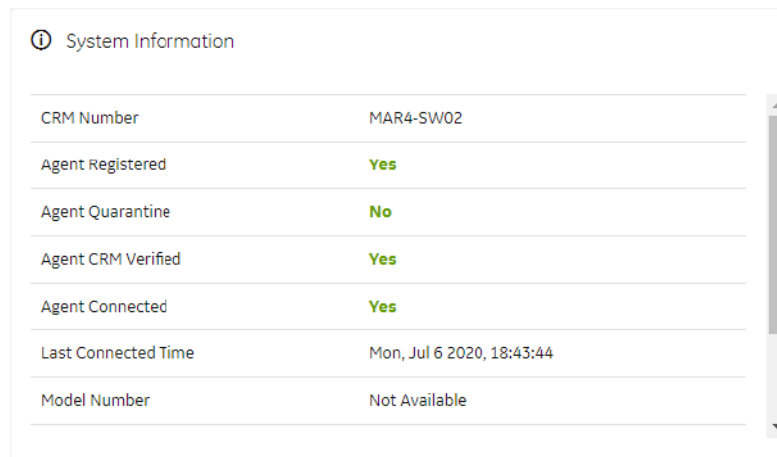
To access **System Information**, navigate to **Utility > Service > Home**.



A screenshot of the 'System Information' interface for R3. It features a title bar with an information icon and the text 'System Information'. Below is a table with seven rows, each representing a different system attribute and its value. A vertical scrollbar is visible on the right side of the table.

| System Information | |
|--------------------|---------------|
| CRM Number | LP9712345SM8 |
| Agent Registered | Not Available |
| Agent Quarantine | Not Available |
| Agent CRM Verified | Not Available |
| Model Number | Not Available |
| Serial Number | 12345SM8 |
| System Type | LOGIQP9 |

Figure 5-38 System Information (R3 only)



A screenshot of the 'System Information' interface for R4 and R4.5. It features a title bar with an information icon and the text 'System Information'. Below is a table with seven rows, each representing a different system attribute and its value. The values for 'Agent Registered', 'Agent Quarantine', and 'Agent CRM Verified' are highlighted in green. A vertical scrollbar is visible on the right side of the table.

| System Information | |
|---------------------|---------------------------|
| CRM Number | MAR4-SW02 |
| Agent Registered | Yes |
| Agent Quarantine | No |
| Agent CRM Verified | Yes |
| Agent Connected | Yes |
| Last Connected Time | Mon, Jul 6 2020, 18:43:44 |
| Model Number | Not Available |

Figure 5-39 System Information (R4 and R4.5 only)

This table shows all the elements available on **System Information** with descriptions.

Table 5-14 System Information

| Element | DESCRIPTION |
|--------------------|---|
| CRM Number | Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region. |
| Agent Registered | Registered status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent is registered in the back office. • No – The agent is not registered in the back office. • Not Available – The agent is not running or has not been configured. |
| Agent Quarantine | Quarantine status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent has more than one device registered with the same CRM Number in the back office. • No – The agent has one device registered with the listed CRM Number in the back office. • Not Available – The agent is not running or has not been configured. |
| Agent CRM Verified | CRM verified status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent is verified in the back office. • No – The agent is not verified in the back office. • Not Available – The agent is not running or has not been configured. |
| Model Number | GE part number for the LOGIQ P7/P8/P9/P10. The same number as listed on the rating plate. |
| Serial Number | Serial number of the LOGIQ P7/P8/P9/P10. The same number as listed on the rating plate. |
| System Type | Product name of the LOGIQ P7/P8/P9/P10. |
| Facility | Name of the hospital or facility where the LOGIQ P7/P8/P9/P10 is installed. |

For more information, see:

- [Home on page 5-49](#)

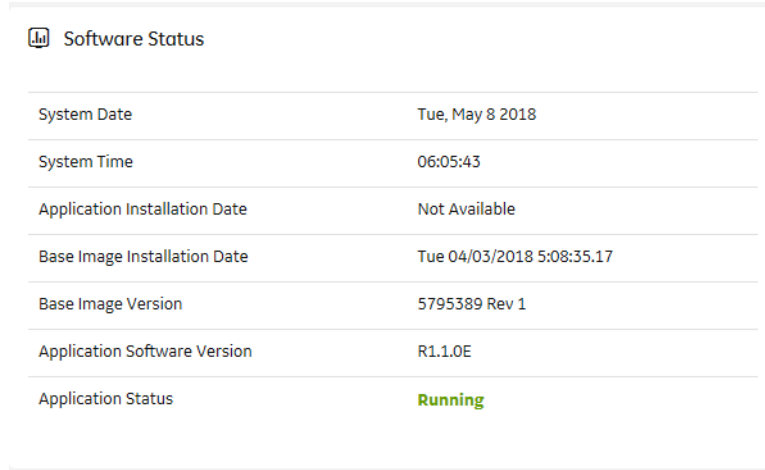
Software Status

Use **Software Status** to view general information about the software installed on the LOGIQ P7/P8/P9/P10.

The information on **Software Status** is available to all service class licenses.

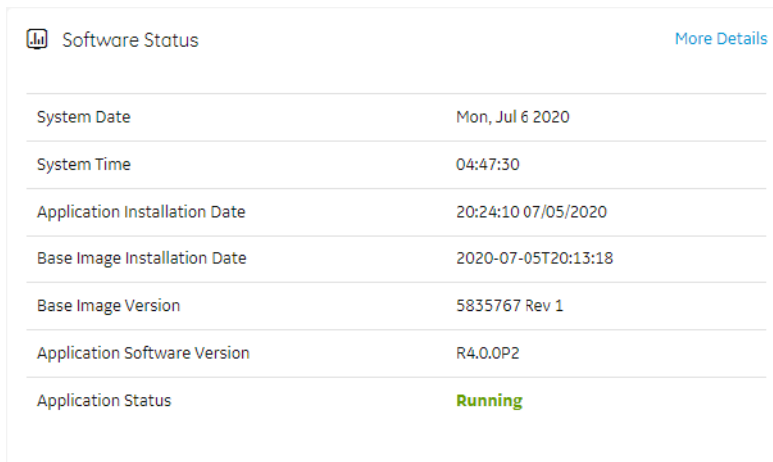
To access **Software Status**, navigate to **Utility > Service > Home**.

Figure 5-40 Software Status (R3 only)



| Software Status | |
|-------------------------------|---------------------------|
| System Date | Tue, May 8 2018 |
| System Time | 06:05:43 |
| Application Installation Date | Not Available |
| Base Image Installation Date | Tue 04/03/2018 5:08:35.17 |
| Base Image Version | 5795389 Rev 1 |
| Application Software Version | R1.1.0E |
| Application Status | Running |

Figure 5-41 Software Status (R4 and R4.5 only)



| Software Status | | More Details |
|-------------------------------|---------------------|------------------------------|
| System Date | Mon, Jul 6 2020 | |
| System Time | 04:47:30 | |
| Application Installation Date | 20:24:10 07/05/2020 | |
| Base Image Installation Date | 2020-07-05T20:13:18 | |
| Base Image Version | 5835767 Rev 1 | |
| Application Software Version | R4.0.0P2 | |
| Application Status | Running | |

This table shows all the elements available on **Software Status** with descriptions.

Table 5-15 Software Status

| Element | DESCRIPTION |
|-------------------------------|--|
| System Date | Current date in the format <day>, <month> <date> <year>. |
| System Time | Local time based on the last time the system desktop was refreshed in the format <hh:mm:ss>. |
| Application Installation Date | Date the application software was installed. The application software includes the LOGIQ P7/P8/P9/P10 product-specific software. |

Table 5-15 Software Status

| Element | DESCRIPTION |
|------------------------------|--|
| Base Image Installation Date | Date the base image software was installed. The base image software includes the Windows operating system and other supporting software. |
| Base Image Version | Version number of the base image software. |
| Application Software Version | Version number of the application software. |
| Application Status | Status of the application. Valid values are: <ul style="list-style-type: none">• Running• Stopped |

For more information, see:

- [Home on page 5-49](#)
- **Software Reload on page 5-91**

System Status

Use **System Status** to view status information on the LOGIQ P7/P8/P9/P10. Specifically, do the following:

- View the hardware configuration file
- View temperatures for FRUs, fans, and a graphical representation of the monitored temperatures
- View voltages for FRUs
- View issues with the boot process
- View alert logs
- View USB devices connected to the LOGIQ P7/P8/P9/P10
- View the amount of time the LOGIQ P7/P8/P9/P10 has been running
- View the amount of time since the LOGIQ P7/P8/P9/P10 has last been rebooted

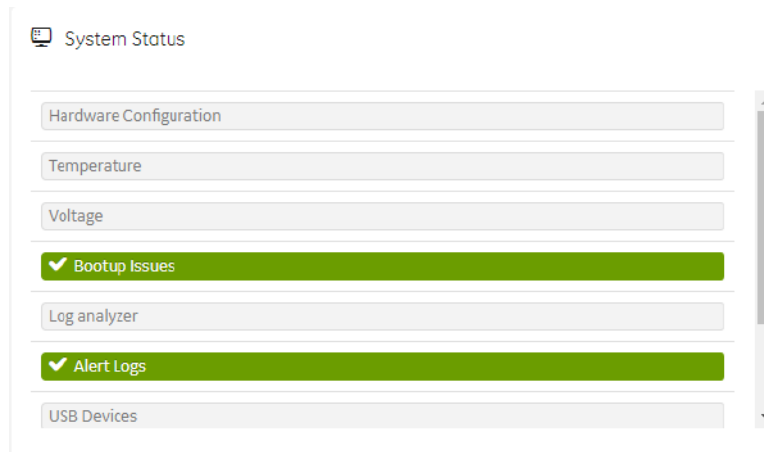
The information on **System Status** is available to Class C and Class M licenses.

To access **System Status**, navigate to **Utility > Service > Home**.

Figure 5-42 System Status (R3 only)



Figure 5-43 System Status (R4 and R4.5 only)



This table shows all the elements available on **System Status** with descriptions.

Table 5-16 System Status

| Element | DESCRIPTION |
|------------------------|--|
| Hardware Configuration | Displays the contents of the hardware configuration file. |
| Temperature | Displays the temperature monitoring of the LOGIQ P7/P8/P9/P10 as normal, warning, or error using the standard colors and icons. Includes temperature out-of-spec events including an overall count of event warnings and errors for the last 30 days or the last status checkpoint whichever is sooner. Temperature displays temperature a graph for the configured monitoring points. |
| Voltage | Displays the voltage monitoring of the LOGIQ P7/P8/P9/P10 as normal, warning or error using the standard colors and icons. Includes voltage out-of-spec events including an overall count of the event warnings and errors for the last 30 days or last status checkpoint whichever is sooner. |
| Bootup Issues | Based on the latest occurrence, displays all abnormal boots of the LOGIQ P7/P8/P9/P10 for either the past 30 days or the latest check point. |
| Alert Logs | Based on the latest occurrence, displays all alerts generated by the LOGIQ P7/P8/P9/P10 for either the past 30 days or the latest check point. |
| USB Devices | Displays the USB connected devices and their status. |
| System On Time | Displays the time the LOGIQ P7/P8/P9/P10 was turned on. |
| Time Since Last Reboot | Displays the time the LOGIQ P7/P8/P9/P10 was last rebooted. |

For more information, see:

- [Hardware Configuration on page 5-57](#)
- [Temperature on page 5-58](#)
- [Voltage on page 5-61](#)
- [Bootup Issues on page 5-63](#)
- [Alert Logs on page 5-65](#)
- [USB Devices on page 5-66](#)
- [Home on page 5-49](#)

Hardware Configuration

Hardware Configuration displays the contents of the hardware configuration file which includes all the vital product data (VPD).

To access **Hardware Configuration**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Hardware Configuration**.

Figure 5-44 Hardware Configuration

| Component | Item | Value |
|-----------|--------------------------------------|------------------|
| BEP | COMPUTERNAME | DESKTOP-J9032CJ |
| BF FPGA | Version | 0x2023 |
| COMEXP | VPD revision field | 5 |
| COMEXP | Pole that owns the design | kor |
| COMEXP | Functional revision | 4B |
| COMEXP | System Platform | Manu |
| COMEXP | Part number (GE format) | 6324558-4_FNRV4B |
| COMEXP | Bar code serial number | > |
| COMEXP | Serial number | N/A |
| COMEXP | GE manufacturing location | invalid |
| COMEXP | Date of manufacture | 14.07.17 |
| COMEXP | Assembly revision | 3 |
| COMEXP | Prototype flag (1 = prototype board) | 0 |

This table shows all the elements available on **Hardware Configuration** with descriptions.

Table 5-17 Hardware Configuration

| Element | DESCRIPTION |
|-----------|--|
| Component | Hardware component. |
| Item | Parameter with the vital product data (VPD). |
| Value | Actual value of the Item. |

For more information, see:

- **System Status** on page 5-55
- [Home](#) on page 5-49

Temperature

Use **Temperature** to troubleshoot problems with monitored FRUs and the fans. Specifically, use these pages:

- FRU Status
- Graphs

To access **Temperature**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Temperature**.

For more information, see:

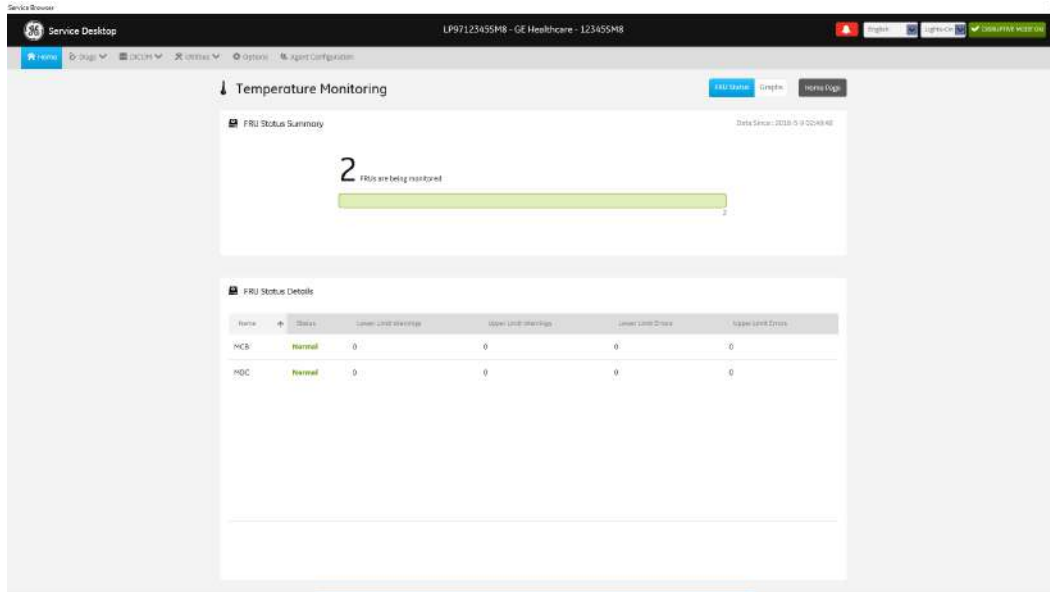
- **FRU Status** [on page 5-59](#)
- **Graphs** [on page 5-60](#)
- **System Status** [on page 5-55](#)
- [Home](#) [on page 5-49](#)

FRU Status

FRU Status displays a summary of the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Temperature** and then select **FRU Status**.

Figure 5-45 FRU Status



This table shows all the elements available on **FRU Status** with descriptions.

Table 5-18 FRU Status

| Element | DESCRIPTION |
|---------------------------|---|
| FRU Status Summary | Number of the FRUs being monitored. |
| FRU Status Details | |
| Name | Name of the FRU. <ul style="list-style-type: none"> ETX3 – Represents the ETX 64 transmitter board. ETX4 – Represents the ETX 128 transmitter board. |
| Status | Status of the FRU. Valid values are: <ul style="list-style-type: none"> Normal – Indicates that the FRU is operating within the allowable range. Warning – Indicates that the FRU is operating close to the limit of the allowable range. Error – Indicates that the FRU is operating outside the allowable range. |
| Low Level Warning | Number of low temperature warnings. |
| High Level Warning | Number of high temperature warnings. |
| Low Level Errors | Number of low temperature errors. |
| High Level Errors | Number of high temperature errors. |

For more information, see:

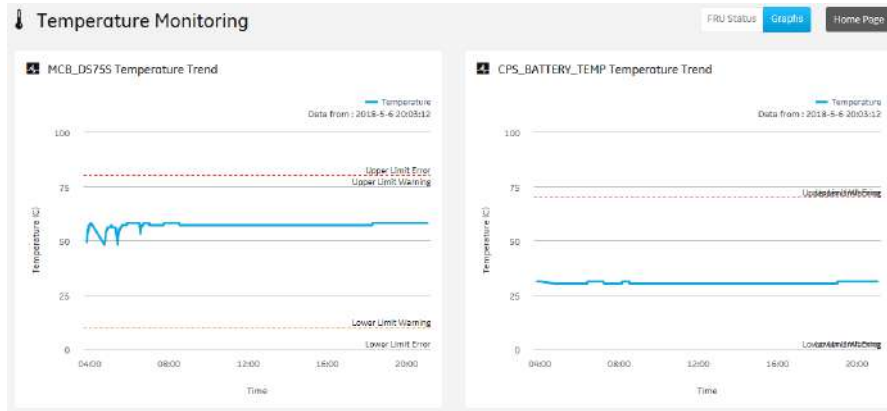
- [Temperature on page 5-58](#)
- [Home on page 5-49](#)

Graphs

Graphs displays trend graphs for selected elements which have been selected as key indicators of overall temperature status inside the card rack.

To access this page, under **System Status**, select **Temperature** and then select **Graphs**.

Figure 5-46 Graphs



For more information, see:

- [Temperature on page 5-58](#)
- [Home on page 5-49](#)

Voltage

Use **Voltage** to troubleshoot problems with monitored FRUs of the LOGIQ P7/P8/P9/P10.

Specifically, use these pages:

- FRU Status

To access **Voltage**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Voltage**.

For more information, see:

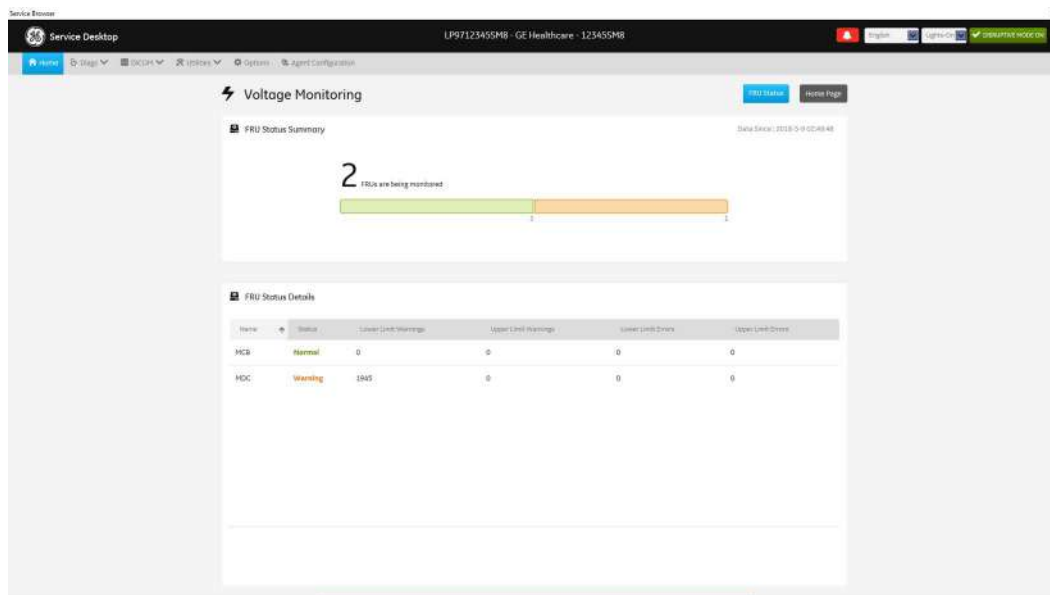
- **FRU Status** on page 5-61
- **System Status** on page 5-55
- **Home** on page 5-49

FRU Status

FRU Status displays a summary of the voltages for the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Voltage** and then select **FRU Status**.

Figure 5-47 FRU Status



This table shows all the elements available on **FRU Status** with descriptions.

Table 5-19 FRU Status

| Element | DESCRIPTION |
|----------------------|---|
| Name | Name of the FRU. |
| Status | Status of the voltage for the FRU. Valid values are: <ul style="list-style-type: none">• Normal – Indicates that the voltage is within the allowable range.• Warning – Indicates that the voltage is close to the limit of the allowable range.• Error – Indicates that the voltage is outside the allowable range. |
| Lower Limit Warnings | Number of low limit voltage warnings. |
| Upper Limit Warnings | Number of high limit voltage warnings. |
| Lower Limit Errors | Number of low limit voltage errors. |
| Upper Limit Errors | Number of high limit voltage errors. |

For more information, see:

- [Voltage on page 5-61](#)
- [Home on page 5-49](#)

Bootup Issues

Bootup Issues displays a summary of bootup issues detected by the system that prevented normal scanning, shutdowns, or abnormal statuses.

To access this page, under **System Status**, select **Bootup Issues**.

Figure 5-48 Bootup Issues



The screenshot shows the 'Bootup Issues' page with a table of issues. The table has columns for ID, Description, Date Occurred, Priority, Status, and Action. Three issues are listed:

| ID | Description | Date Occurred | Priority | Status | Action |
|----|-----------------------------------|---------------|----------|--------|------------|
| 1 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | Restart CD |
| 2 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | Restart CD |
| 3 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | Restart CD |

Figure 5-49 Bootup Issues with Missing Devices



The screenshot shows the 'Bootup Issues' page with a table of issues. A red box highlights the 'Missing Device' column. The table has columns for ID, Description, Date Occurred, Priority, Status, Missing Device, Action, and Action Result. Three issues are listed:

| ID | Description | Date Occurred | Priority | Status | Missing Device | Action | Action Result |
|----|-----------------------------------|---------------|----------|--------|----------------|--------|---------------|
| 1 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | SP | 0 | 0 |
| 2 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | CD | 0 | 0 |
| 3 | 2021-12-08 08:02:24 (480000-0000) | 08 | High | Open | CD | 0 | 0 |

This table shows all the elements available on **Bootup Issues** with descriptions.

Table 5-20 Bootup Issues

| Element | DESCRIPTION |
|--------------------------|--|
| ID | Identifier for the system software boot. For example, 10 for the tenth boot and so on. |
| Timestamp | Date and time that the associated issue for the boot occurred. |
| Cycle Count | Number of times EchoLoader was restarted during the associated boot. <ul style="list-style-type: none"> • 0 - Normal. EchoLoader started without attempting a restart. • 1 or more - Indicates the number of times EchoLoader attempted to restart. |
| Missing Devices | Displays the devices that were missing during the boot. |
| Incompatible Board | Displays whether an incompatible board exists. |
| Battery State ID | Type of battery detected. For example, EPS or PA . Invalid displays if no battery was detected. |
| Previous Boot Crash Dump | Displays whether a crash dump has occurred. Valid values are: <ul style="list-style-type: none"> • 1 - Indicates a crash dump has occurred in the previous boot. • 0 - Normal. No crash dump has occurred. |
| Warm Boot | Displays whether a warm boot has occurred. Valid values are: <ul style="list-style-type: none"> • 1 - The system was rebooted. • 0 - The system was started after a shutdown. |
| AC Fail | Displays whether an AC failure occurred during the boot. Valid values are: <ul style="list-style-type: none"> • 1 - There was an AC failure in the boot. • 0 - Normal. No AC failure has occurred. |
| Abnormal Context | Displays whether the software has booted to a stable state (Interface manager successfully initiated). Valid values are: <ul style="list-style-type: none"> • 1 - The system has not booted to a stable state. Only abnormal logs display. • 0 - Normal. The system initialized to a stable state. |
| Exit Requested | Displays the type of exit that has been requested. For example, 4 displays the operating system was restarted. |
| Echoloader Exit Code | Displays the exit code generated by EchoLoader. 0 indicates that Echoloader exited without any issues. |
| Echoloader Exit String | Displays the type of exit requested by EchoLoader. For example, restart the operating system or exit the application software. |

For more information, see:

- [System Status on page 5-55](#)
- [Home on page 5-49](#)

Alert Logs

Alert Logs displays the details for each alert. Alerts are status logs typically reported as a result of an error. Alerts are sent to the back office to be managed and reported to service.

To access this page, under **System Status**, select **Alert Logs**.

Figure 5-50 Alert Logs

This table shows all the elements available on **Alert Logs** with descriptions.

Table 5-21 Alert Logs

| Element | DESCRIPTION |
|-----------------------|---|
| Alert ID | Identifier for the alert log that has been sent to the back office. |
| Sub System | Hardware component. |
| Rule | Code for the alert. Alerts are filtered in the back office using rule codes. |
| Description | Description of the alert log. |
| Value | Current value read for the associated hardware component. |
| Lower Limit | Value for the lower limit for the associated hardware component. |
| Upper Limit | Value for the upper limit for the associated hardware component. |
| Severity | Severity of the alert. These are the valid values: <ul style="list-style-type: none"> • 1 - Error. Out of specification • 2 - Warning • 3 - Normal |
| First Alert Time | Time the alert first occurred. |
| Last Alert Time | Time the alert last occurred. |
| Last Alert Local Time | Time (local) the alert last occurred. |
| Last Alert Sent Time | Time the alert was last sent to the back office. |
| Count | Number of times that the alert has occurred. |

For more information, see:

- **System Status on page 5-55**
- [Home on page 5-49](#)

USB Devices

USB Devices displays the details for each USB device.

To access this page, under **System Status**, select **USB Devices**.

Figure 5-51 USB Devices

| Name | Serial Number | Speed | HW Version | SW Version | Status |
|---------------------------|----------------|---------------|------------|------------|---------------|
| MS USB Console | NA | USB FullSpeed | NA | NA | Connected |
| REDC PFC Motor Controller | NA | USB FullSpeed | NA | NA | Connected |
| Generic Bulk Device | 04C1:0B12:0001 | USB FullSpeed | NA | NA | Connected |
| USB Composite Device | NA | USB HighSpeed | NA | NA | Connected |
| USB Composite Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Input Device | 00000002 | USB HighSpeed | NA | NA | Connected |
| USB Input Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Input Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Input Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Input Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Input Device | NA | USB FullSpeed | NA | NA | Connected |
| USB Mass Storage Device | 000000000000 | USB HighSpeed | NA | NA | Connected |
| USB Mass Storage Device | 000000000000 | USB HighSpeed | NA | NA | Not Connected |

This table shows all the elements available on **USB Devices** with descriptions.

Table 5-22 USB Devices

| Element | DESCRIPTION |
|---------------|--|
| Name | Name of the USB device. |
| Serial Number | Serial number of the USB device. |
| Speed | Speed of the USB device. For example, USB 3.0. |
| HW Version | Hardware version of the USB device. |
| SW Version | Software version of the USB device. |
| Status | Status of the USB device. |

For more information, see:

- [System Status on page 5-55](#)
- [Home on page 5-49](#)

Disk Drive Space

Use **Disk Drive Space** to view the hard drive partitions including total size and available free space in GB. Includes the overall health of the drive in one of these colors:

- Red – Available free space is less than 10% of the total size.
- Orange – Available free space is more than 10% and less than 20% of the total size.
- Green – Available free space is more than 20% of the total size.

Each partition displays these encryption statuses:

- Conversion status
- Percentage encrypted
- Encryption method
- Protection status
- Lock status

The information on **Disk Drive Space** is available to Class C and Class M licenses.

To access **Disk Drive Space**, navigate to **Utility > Service > Home**.

Figure 5-52 Disk Drive Space

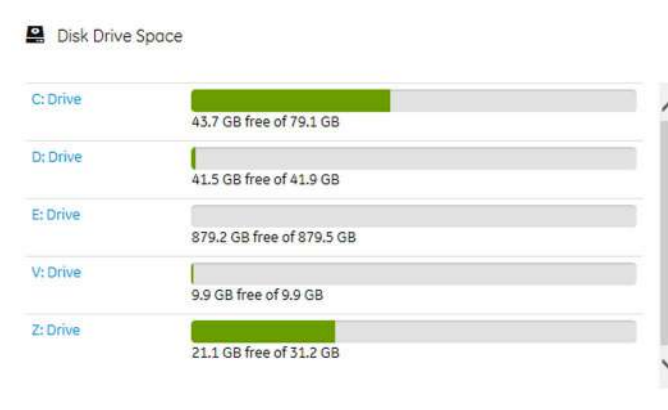
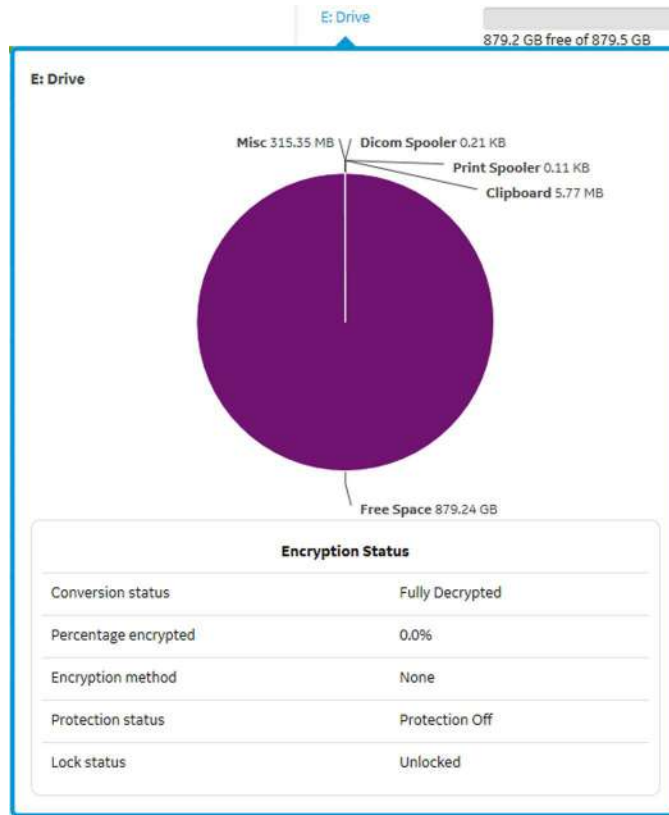


Figure 5-53 E: Drive Details



This table shows all the elements available on **Disk Drive Space** with descriptions.

Table 5-23 Disk Drive Space

| Element | DESCRIPTION |
|----------|--|
| C: Drive | C: partition shows the graphical representation of the following: <ul style="list-style-type: none">• Used space in GB• Available free space in GB |
| D: Drive | D: partition shows the graphical representation of the following: <ul style="list-style-type: none">• Service• Logs• Temp• Export• Service configuration• Misc• Available free space in GB |
| E: Drive | E: partition shows the graphical representation of the following: <ul style="list-style-type: none">• Print spooler• Clipboard• Dicom spooler• Misc• Available free space in GB |
| V: Drive | V: partition shows the graphical representation of the following: <ul style="list-style-type: none">• Misc• Available free space in GB |
| Z: Drive | Z: partition shows the graphical representation of the following: <ul style="list-style-type: none">• Package repository• Misc• Available free space in GB |

For more information, see:

- [Home on page 5-49](#)

Network Configuration

Use **Network Configuration** to view network (wired and wireless) information (the full ipconfig details) for the network configured with the LOGIQ P7/P8/P9/P10.

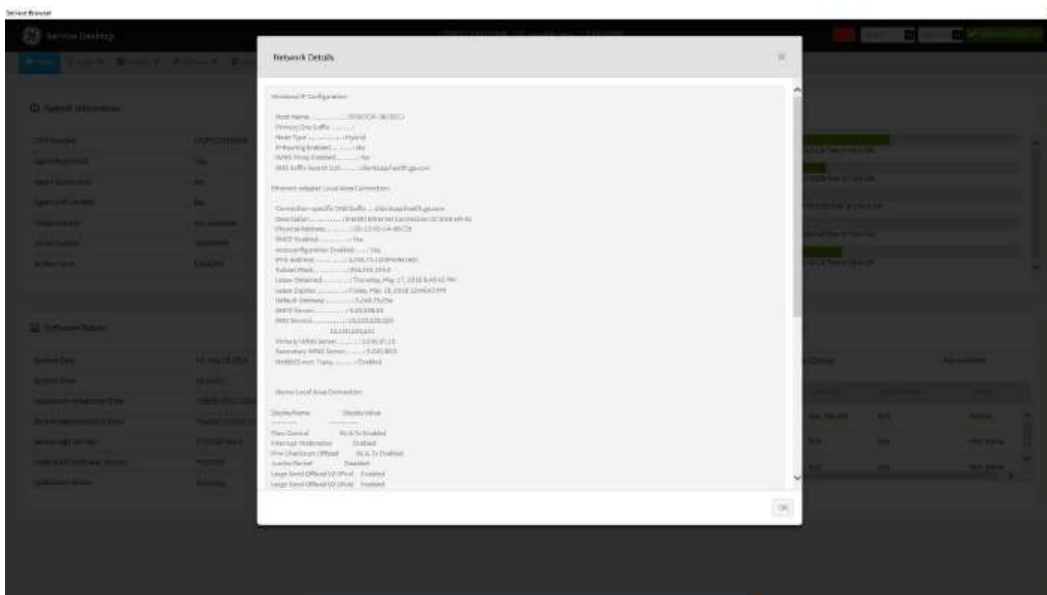
The information on **Network Configuration** is available to Class C and Class M licenses.

To access **Network Configuration**, navigate to **Utility > Service > Home**.

Figure 5-54 Network Configuration

| Network Configuration | |
|-------------------------|-------------------|
| Host Name | DESKTOP-J9032CJ |
| Wired Connection | |
| IPv4 Address | 3.245.75.150 |
| IPv6 Address | |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 3.245.75.254 |
| MAC Address | 00-13-95-24-9B-CB |

Figure 5-55 Network Configuration with More Details



This table shows all the elements available on **Network Configuration** with descriptions.

Table 5-24 Network Configuration

| Element | DESCRIPTION |
|----------------------------|--|
| Host Name | Name of the local host for the LOGIQ P7/P8/P9/P10. |
| More Details | Displays the ipconfig details. |
| Wired Connection | |
| IPv4 Address | Local IP address for the wired network connection. |
| IPv6 Address | Local IP address for the wired network connection. |
| Subnet Mask | Local subnet mask for the wired network. |
| Default Gateway | Default gateway for the wired network. |
| MAC Address | Address for the MAC for the wired network. |
| Speed (Mbps) | Speed of the wireless connection. |
| Wireless Connection | |
| IP Address | IP address for the wireless network connection. |
| Subnet Mask | Subnet mask for the wireless connection. |
| Default Gateway | Default gateway for the wireless connection. |
| MAC Address | Address for the MAC for the wireless connection. |
| Speed (Mbps) | Speed of the wireless connection. |
| Status | Current status of the wireless connection. |

For more information, see:

- [Home on page 5-49](#)

Connected Probes

Connected Probes shows probes connected to the LOGIQ P7/P8/P9/P10. The order on the user interface is top down matching the left-to-right order on the LOGIQ P7/P8/P9/P10.

The information on **Connected Probes** is available to all service class licenses.

To access **Connected Probes**, navigate to **Utility > Service > Home**.

Figure 5-56 Connected Probes



This table shows all the elements available on **Connected Probes** with descriptions.

Table 5-25 Connected Probes

| Element | DESCRIPTION |
|------------------------------------|---|
| Active Probe Temperature (Celsius) | When available, temperature of the active probe. Not all probes report temperature. The most common probe to report temperature is the TEE probe. |
| Probe Name | Name of the probe connected to the LOGIQ P7/P8/P9/P10. |
| Probe ID | Identifier of the probe connected to the LOGIQ P7/P8/P9/P10. |
| Serial Number | Serial number of the probe connected to the LOGIQ P7/P8/P9/P10. If the serial number of the probe is not available, then N/A displays. |
| Status | Statuses of the probe connected to the LOGIQ P7/P8/P9/P10. Valid values are: <ul style="list-style-type: none"> Active Non Active |

For more information, see:

- [Home on page 5-49](#)

5-11-7 Diags

Use **Diags** to troubleshoot functionality with hardware components. With an active Service PRO license, probe diagnostics will be available. Specifically, use these pages:

- **Run Diags** – Run diagnostics on hardware components.
- **Diag History** – View a history of the diagnostics you have run and the results.

NOTE: *Reboot the system after performing any diagnostics before returning the LOGIQ P7/P8/P9/P10 to customer use.*

For more information, see:

- **Run Diags** on page 5-73
- **Diag History** on page 5-77

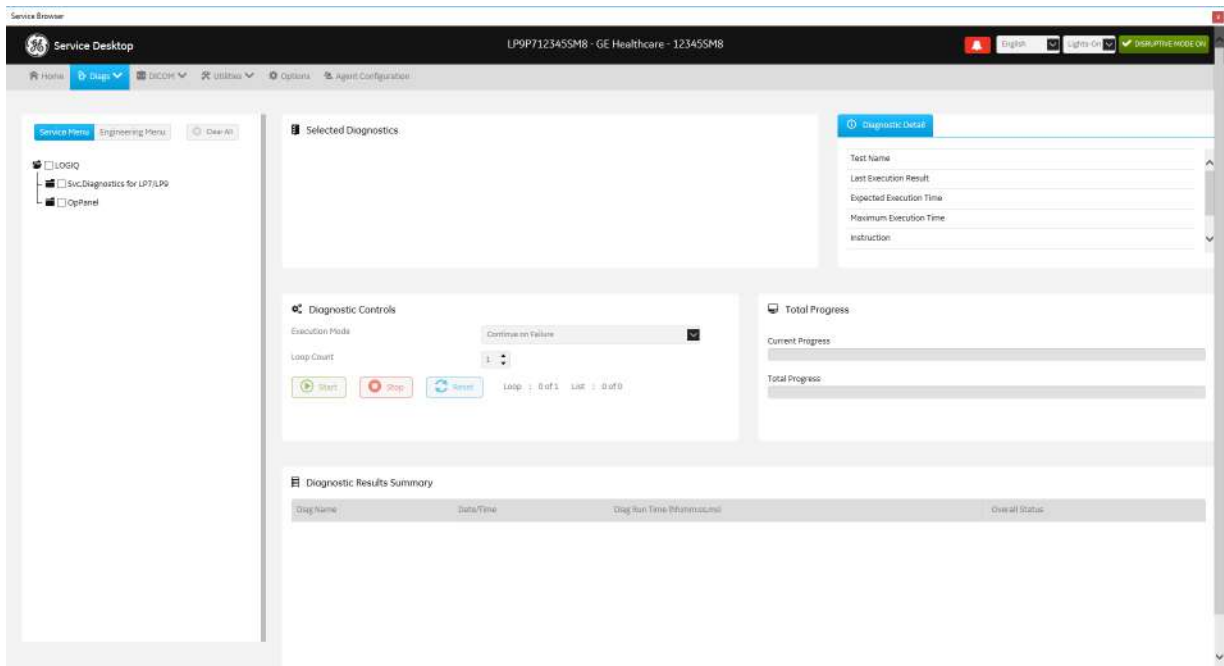
Run Diags

With Disruptive mode set to On, use **Run Diags** to run diagnostics on hardware components with the LOGIQ P7/P8/P9/P10. For information on disruptive mode, see **Disruptive Mode** on page 5-105.

The information on **Run Diags** is available to Class C and Class M licenses.

To access **Run Diags**, navigate to **Utility > Service > Diags > Run Diags**.

Figure 5-57 Run Diags



This table shows all the elements available on **Run Diags** with descriptions.

Table 5-26 Run Diags

| Element | DESCRIPTION |
|-----------------------------------|---|
| Service Menu | Available service diagnostics in a diagnostics tree. |
| Engineering Menu | Available engineering diagnostics in a diagnostics tree. |
| Clear All | Resets the selections within the diagnostics tree. |
| Selected Diagnostics | Diagnostics that have been selected. |
| Diagnostic Detail | |
| Test Name | Name of the diagnostic. |
| Last Execution Result | Result of the diagnostic run. |
| Expected Execution Time | Time expected to run the diagnostic. |
| Maximum Execution Time | Maximum amount of time allowed to run the diagnostic. |
| Instruction | Special instructions needed in order to perform the diagnostic. |
| Diagnostic Controls | |
| Execution Mode | Way the diagnostic behaves when a failure occurs. Valid values are: <ul style="list-style-type: none"> • Continue on Failure • Finish Loop and Stop on Failure • Stop on Failure |
| Loop Count | Number of times to run the selected diagnostic. |
| Start | Starts the selected diagnostic. |
| Stop | Stops the selected diagnostic. |
| Reset | Clears the current diagnostic information. |
| Total Progress | |
| Current Progress | Progress the current diagnostic. |
| Total Progress | Progress for all of the selected diagnostics. |
| Diagnostic Results Summary | |
| Diag Name | Name of the diagnostic. |
| Date/Time | Date and time of the diagnostic run. |
| Diag Run Time | Amount of time taken to run the diagnostic. |
| Overall Status | Current status of the diagnostic. |
| Pass/Fail | Whether the selected diagnostic passed or failed. <ul style="list-style-type: none"> • Green - Diagnostic passed • Red - Diagnostic failed |

To run a diagnostic:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 2.) Navigate to **Utility (second page) > Service > Diags > Run Diags.**
- 3.) From the **Service Menu** tab, select the diagnostic (for example, GRLY with Probes). The **Selected Diagnostics** and **Diagnostic Detail** areas populate with information specific to the selected diagnostic.
- 4.) In **Execution Mode**, select the desired mode.
- 5.) In **Loop Count**, select the number of times to run the diagnostic.
- 6.) Click **Start**.

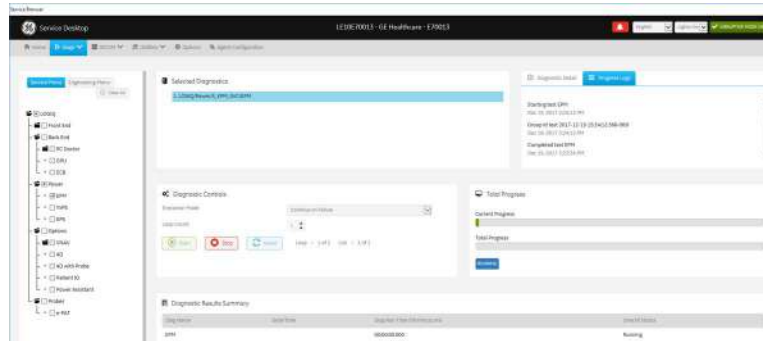


Figure 5-58 (R3)

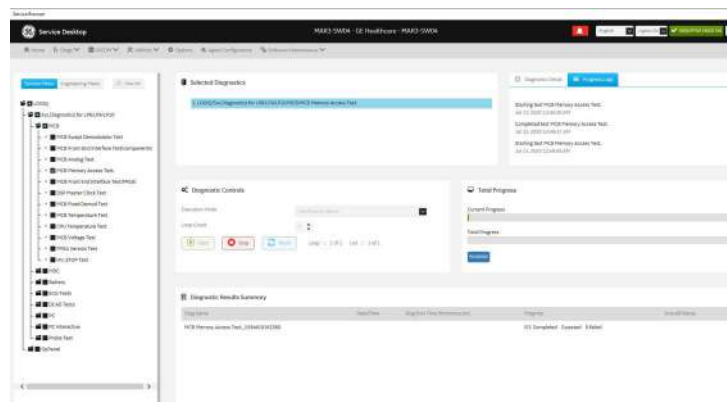


Figure 5-59 (R4 and R4.5)

- 7.) View progress in the **Total Progress** area.
- 8.) View the results (Passed or Failed) in the **Diagnostic Results Summary** area.

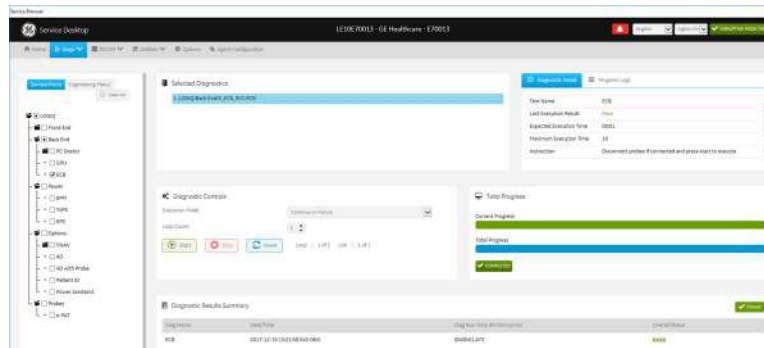


Figure 5-60 (R3)

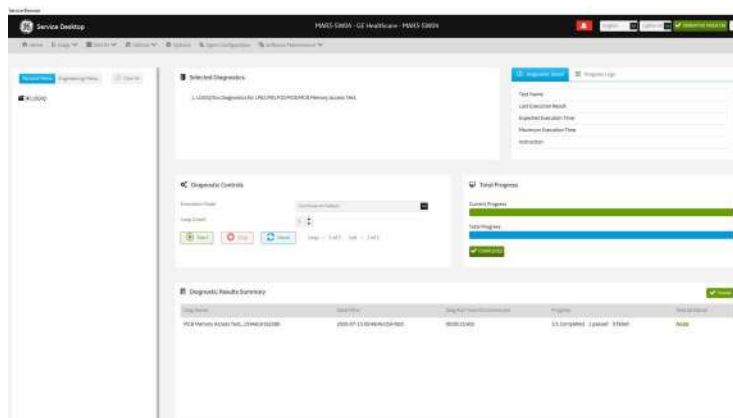


Figure 5-61 (R4 and R4.5)

- 9)
 - 10.) To view details about the diagnostics run, see [Diag History](#) on page 5-77.
- For more information, see:

- [Diags](#) on page 5-73
- [Diag History](#) on page 5-77

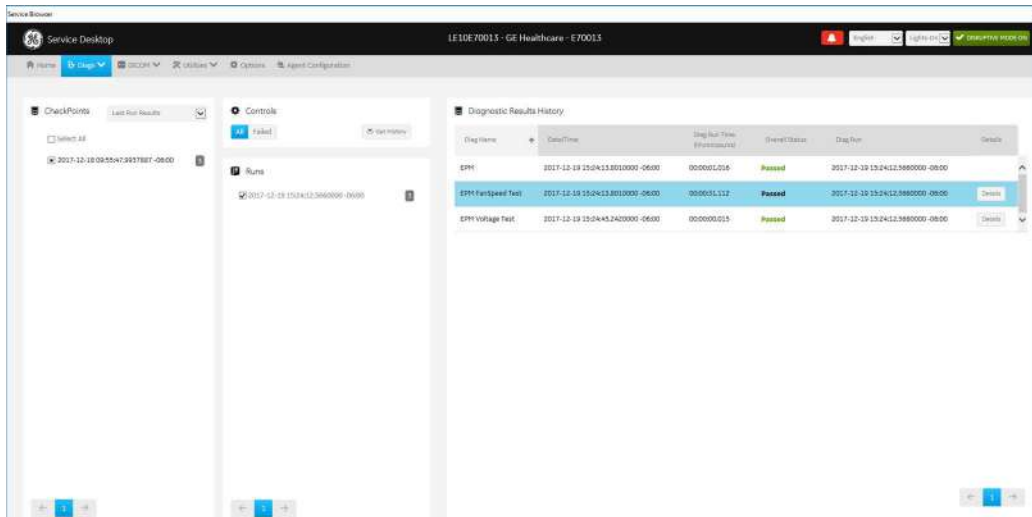
Diag History

Use **Diag History** to view a history of the diagnostics run on the LOGIQ P7/P8/P9/P10 and the results.

The information on **Diag History** is available to Class C and Class M licenses.

To access **Diag History**, navigate to **Utility > Service > Diags > Diag History**.

Figure 5-62 Diag History



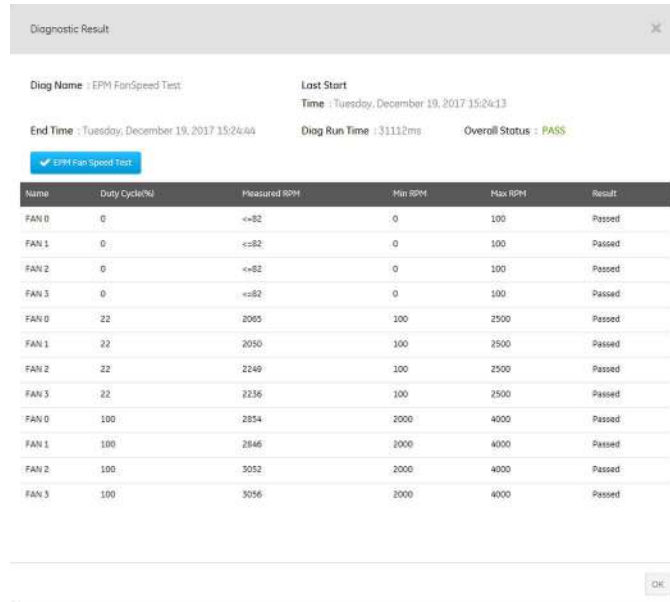
This table shows all the elements available on **Diag History** with descriptions.

Table 5-27 Diag History

| Element | DESCRIPTION |
|-----------------------------------|---|
| Checkpoints | |
| Select All | Selects all of the available checkpoints in the list. |
| Controls | |
| All | Filters results to show all of the diagnostics. |
| Failed | Filters results to show failed diagnostics. |
| Get History | Select to display a history of the run diagnostics. |
| Runs | |
| | List of diagnostics run on the LOGIQ P7/P8/P9/P10. |
| Diagnostic Results History | |
| | Details about the diagnostics run. |

To view a history of diagnostics:

- 1.) Navigate to **Utility (second page) > Service > Diags > Diag History**.
- 2.) Select the options that you want to view.
- 3.) Click **Get History**.
- 4.) View the results of your query.
- 5.) To view specific details, click **Details**



The screenshot shows a 'Diagnostic Result' window for an 'EPM FanSpeed Test'. It includes fields for 'Diag Name', 'Last Start Time', 'End Time', 'Diag Run Time', and 'Overall Status'. Below this is a table with columns for Name, Duty Cycle(%), Measured RPM, Min RPM, Max RPM, and Result.

| Name | Duty Cycle(%) | Measured RPM | Min RPM | Max RPM | Result |
|-------|---------------|--------------|---------|---------|--------|
| FAN 0 | 0 | <=82 | 0 | 100 | Passed |
| FAN 1 | 0 | <=82 | 0 | 100 | Passed |
| FAN 2 | 0 | <=82 | 0 | 100 | Passed |
| FAN 3 | 0 | <=82 | 0 | 100 | Passed |
| FAN 0 | 22 | 2095 | 100 | 2500 | Passed |
| FAN 1 | 22 | 2050 | 100 | 2500 | Passed |
| FAN 2 | 22 | 2249 | 100 | 2500 | Passed |
| FAN 3 | 22 | 2236 | 100 | 2500 | Passed |
| FAN 0 | 100 | 2854 | 2000 | 4000 | Passed |
| FAN 1 | 100 | 2846 | 2000 | 4000 | Passed |
| FAN 2 | 100 | 3052 | 2000 | 4000 | Passed |
| FAN 3 | 100 | 3056 | 2000 | 4000 | Passed |

For more information, see:

- [Diags on page 5-73](#)
- Run Diags [on page 5-73](#)

5-11-8 DICOM

Use **DICOM** to troubleshoot DICOM components and connectivity. Specifically, use these pages:

- DICOM Service Status
- DICOM Spooler

For more information, see:

- **DICOM Service Status on page 5-79**
- **DICOM Spooler on page 5-81**

DICOM Service Status

DICOM Service Status displays information on the DICOM components and connectivity. Use DICOM to test the connectivity of all the available DICOM devices or individual DICOM devices. In addition, you can:

- View DICOM details
- View DICOM connectivity status
- Stop a service
- Ping a single service
- Ping all services

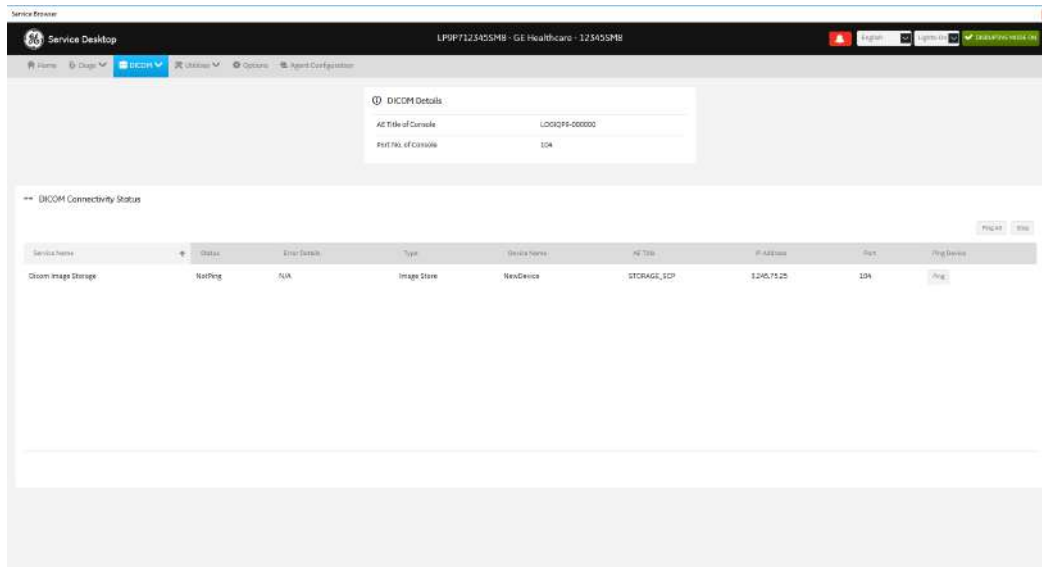
DICOM connectivity status displays as green or red.

- Green means that the DICOM ping passed
- Red means that the DICOM ping failed

The information on **DICOM Service Status** is available to Class C and Class M licenses.

To access **DICOM Service Status**, navigate to **Utility > Service > DICOM > DICOM Service Status**.

Figure 5-63 DICOM Service Status



This table shows all the elements available on **DICOM Service Status** with descriptions.

Table 5-28 DICOM Service Status

| Element | DESCRIPTION |
|----------------------------------|---|
| DICOM Details | |
| AE Title of Console | Application entity title of the LOGIQ P7/P8/P9/P10. |
| Port No of Console | Port number of the LOGIQ P7/P8/P9/P10. |
| DICOM Connectivity Status | |
| Service Name | Name of the DICOM services configured for the LOGIQ P7/P8/P9/P10. |
| Status | Status of the DICOM service. Valid values are: <ul style="list-style-type: none"> • OK • Not Ok • Not Ping • Ping in progress • Queued |
| Error Details | Details for any errors associated DICOM services. |
| Type | Type of error. |
| Device Name | Name of the device. |
| AE Title | Application entity title for the device. |
| IP Address | IP address for the device. |
| Port | Port for the device. |
| Ping Device | Select to confirm that a device is connected or not. |

For more information, see:

- [DICOM on page 5-79](#)
- [DICOM Spooler on page 5-81](#)

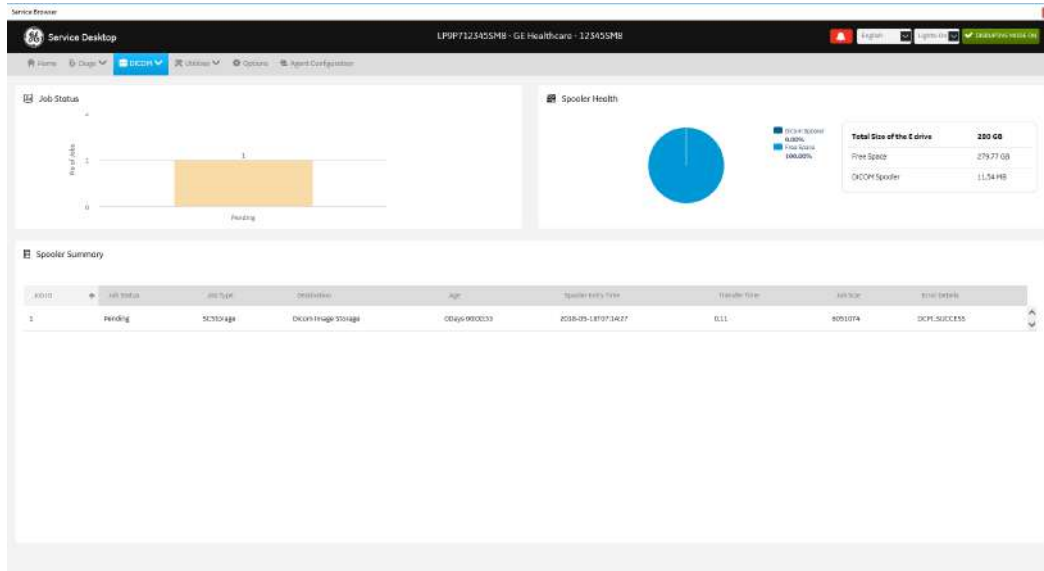
DICOM Spooler

DICOM Spooler provides a summary of the current and recent outgoing jobs.

The information on DICOM Spooler is available to Class C and Class M licenses.

To access DICOM Spooler, navigate to **Utility > Service > DICOM > DICOM Spooler**.

Figure 5-64 DICOM Spooler



This table shows all the elements available on **DICOM Spooler** with descriptions.

Table 5-29 DICOM Spooler

| Element | DESCRIPTION |
|----------------------------|--|
| Job Status | Displays the number of jobs for each type by status. For example, Pending. |
| Spooler Health | |
| DICOM Spooler | Space allotted to DICOM jobs on the E: drive. |
| Free Space | Available space on the E: drive. |
| Total Size of the E: Drive | Total space on the E: drive. |
| Spooler Summary | |
| Job ID | Number for the job. |
| Job Status | Current status of the job. These are the valid values: <ul style="list-style-type: none"> • Pending • Active • Hold • Done • Success • Failed |
| Job Type | Type of job. These are the valid values: <ul style="list-style-type: none"> • Storage – Images • Structured Reports • Key Image Notes • STC – Storage Commitment • MPPS – Modality Performed Procedure Step |
| Destination | Name of service receiving the objects. |
| Age | Amount of time the job has been in the spooler. |
| Spooler Entry time | Time the job entered the spooler. |
| Transfer time | Time the job was transferred from the spooler. |
| Job Size | Size of the job. |
| Error details | If applicable, details for the error. |

For more information, see:

- [DICOM on page 5-79](#)
- [DICOM Service Status on page 5-79](#)

5-11-9 Utilities

Utilities configurations vary depending upon the service class.

For more information, see:

- [Change Password on page 5-89](#)
- [Checkpoints on page 5-103](#)
- [Clean Userdefs on page 5-96](#)
- [Data Transfer on page 5-106](#)
- [Delete Files on page 5-86](#)
- [Disable Remote Connectivity on page 5-87](#)
- [Disk Defragment on page 5-84](#)
- [Disruptive Mode on page 5-105](#)
- [Gather Logs on page 5-85](#)
- [Network Capture on page 5-111](#)
- [Reset Patient Database on page 5-95](#)
- [SSA License on page 5-99](#)
- [SSH on page 5-110](#)
- [Software Reload on page 5-91](#)
- [System Shutdown on page 5-101](#)
- [Third Party Software Licenses on page 5-98](#)
- [Virtual Console Observation on page 5-88](#)

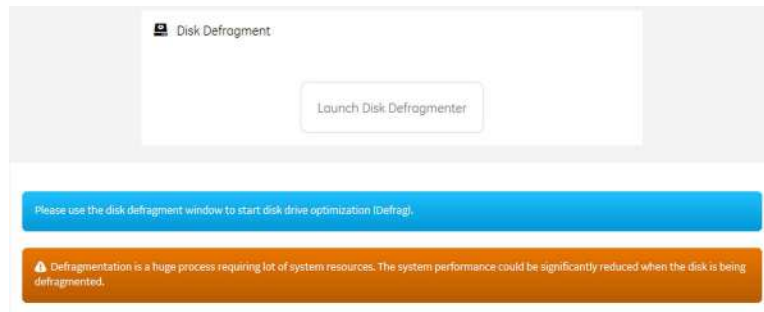
Disk Defragment

Disk Defragment provides a way to launch the Windows Disk Defragmenter tool to use to defragment the disks. Disk fragmentation can reduce the amount of disk space available, and slow computing speed. Use the disk defragmenter to restore optimum disk space and speed performance. If LOGIQ P7/P8/P9/P10 performance would be significantly reduced when the disk is being defragmented, a warning message displays. It is not possible to analyze the SSH drives.

The information on **Disk Defragment** is available to Class C (Service Advanced) and Class M licenses. **Disk Defragment** is not available through a remote connection.

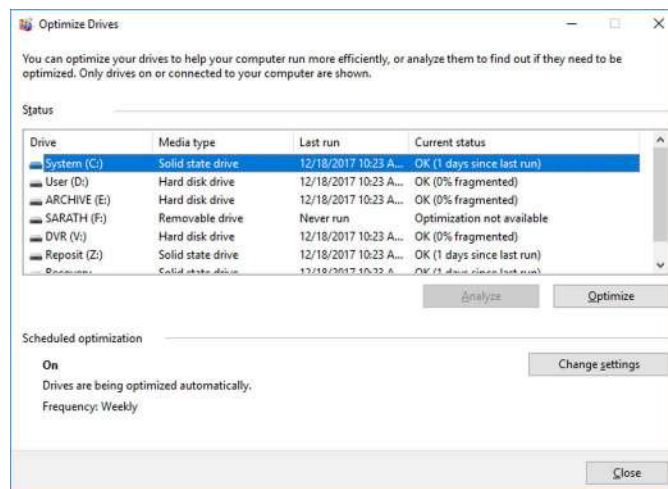
To access **Disk Defragment**, select **Utility (second page) > Service > Utilities > Disk Defragment**.

Figure 5-65 Disk Defragment



To analyze, optimize, or schedule optimization for a disk:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Disk Defragment**.
- 2.) Click **Launch Disk Defragmenter**.
- 3.) In the **Optimize Drives** dialog box, select the drive.



- 4.) To analyze the selected drive, click **Analyze**.
- 5.) To optimize the selected drive, click **Optimize**.
- 6.) To set up a schedule, click **Change settings** and select the schedule.

For more information, see:

- [Utilities on page 5-83](#)

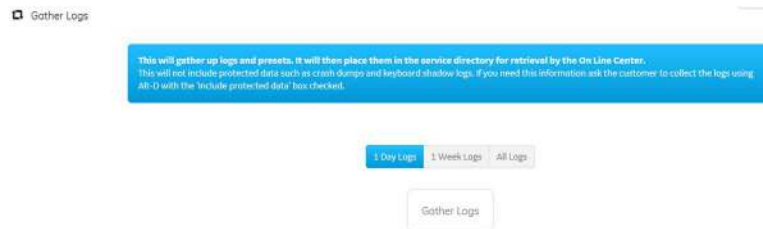
Gather Logs

Gather Logs provides a way to collect system logs and place the log files in the D:\Service directory for retrieval by the online center. These log files do not include protected data such as crash dumps and keyboard shadow logs. The customer can collect logs (including protected data) using Alt+D when Protected Data is checked. Log files are compressed into a .zip file and the file path and name display. If the application software is not running, use the **Gather Logs** shortcut on the Windows desktop.

The information on **Gather Logs** is available to all service class licenses.

To access **Gather Logs**, select **Utility (second page) > Service > Utilities > Gather Logs**.

Figure 5-66 Gather Logs



This table shows all the elements available on **Gather Logs** with descriptions.

Table 5-30 Gather Logs

| Element | DESCRIPTION |
|-------------|--|
| 1 Day Logs | When selected, gathers log files for one day. |
| 1 Week Logs | When selected, gathers log files for one week. |
| All Logs | When selected, gathers all available log files. |
| Gather Logs | Select to gather the log files for the selected time period. |

To gather log files:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Gather Logs**.
- 2.) Select one of the following:
 - 1 Day Logs
 - 1 Week Logs
 - All Logs
- 3.) Click **Gather Logs**. In the resulting dialog box, record the location of the log files and click **OK**.
- 4.) When the gather log operation is complete, click the notification icon in the banner to view the location of the log files.



For more information, see:

- [Utilities on page 5-83](#)

Delete Files

Delete Files displays all the files and folders present in the D:\Service folder and allows for their deletion. Deleting unneeded files improves performance and reduces the need to defragment the disk drive.

The information on **Delete Files** is available to all service class licenses.

To access Delete Files, select **Utility (second page) > Service > Utilities > Delete Files**.

Figure 5-67 Delete Files



This table shows all the elements available on **Delete Files** with descriptions.

Table 5-31 Delete Files

| Element | DESCRIPTION |
|--------------|---|
| Delete Files | Displays the files that are available for deletion. |
| Delete | Deletes the selected files. |

To delete files:

- 1.) Navigate to select **Utility (second page) > Service > Utilities > Delete Files**.
- 2.) Under **Delete Files**, select the available folders and files that you want to delete.
- 3.) Click **Delete**.
- 4.) In the resulting dialog box, click **Delete** and then click **OK**.

For more information, see:

- [Utilities on page 5-83](#)

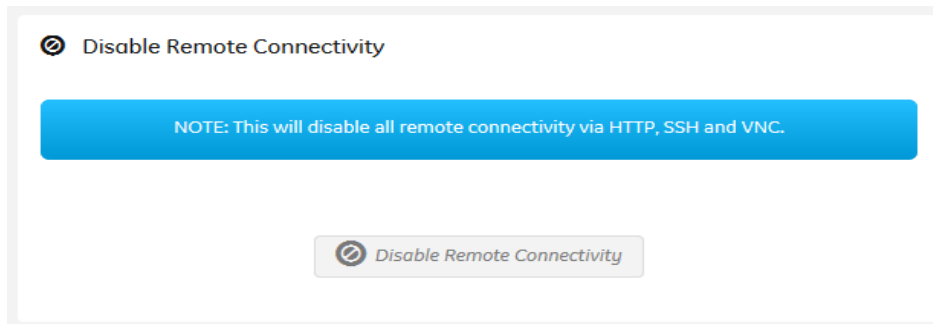
Disable Remote Connectivity

This utility will uninstall remote connectivity items like Agent Configuration, SSH and Virtual Console Observation (VCO) from Service Desktop. If remote connectivity is disabled, then the Submit Changes button on Agent Configuration and the Start/Stop buttons for SSH and VCO will all be disabled. In addition, some scripts will execute to make the LOGIQ P7/P8/P9/P10 more secure.

NOTE: *If you have disabled remote connectivity and then performed a software reload, you will have to disable remote connectivity again.*

To access Disable Remote Connectivity, navigate to Utility (second page) > Service > Utilities, and then select Disable Remote Connectivity.

Figure 5-68 Disable Remote Connectivity



To disable remote connectivity:

- 1.) Navigate to Utility (second page) > Service > Utilities, and then select Disable Remote Connectivity.
- 2.) Select Disable Remote Connectivity.
- 3.) To disable connectivity to the LOGIQ P7/P8/P9/P10 through Agent Configuration, SSH, and Virtual Console Observation, click OK.
- 4.) Once connectivity has been disabled, select OK again.

Virtual Console Observation

Virtual Console Observation displays the status of the VNC server. Virtual console observation (VCO) is normally used to remotely access and modify settings and programs.

The information on **Virtual Console Observation** is available to Class M licenses. **Virtual Console Observation** is not available through a remote connection.

To access **Virtual Console Observation**, select **Utility (second page) > Service > Utilities > Virtual Console Observation**.

Figure 5-69 Virtual Console Observation



This table shows all the elements available on **Virtual Console Observation** with descriptions.

Table 5-32 Virtual Console Observation

| Element | DESCRIPTION |
|---------|---|
| Status | When Disruptive mode is on, displays the status of the VNC server. Valid values are: <ul style="list-style-type: none"> • VCO is stopped • VCO is running |
| Start | When Disruptive mode is ON, starts the VNC server. |
| Stop | When Disruptive mode is ON and the VNC server is running, stops the VNC server. |

To start virtual console observation:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 2.) Navigate to **Utility (second page) > Service > Utilities > Virtual Console Observation**.
- 3.) Select **Start**. When VCO starts, the Windows task bar and Windows desktop display.
- 4.) Modify settings and programs as needed.
- 5.) To stop virtual console observation, click **Stop**. When VCO is stopped, the Windows desktop is hidden.
- 6.) Restart the LOGIQ P7/P8/P9/P10.

For more information, see:

- [Utilities on page 5-83](#)

Change Password

Change Password allows you to change the password for a specified user type.



CAUTION RISK OF LOSING DATA.

IF THE PASSWORD IS LOST, GE WILL NOT BE ABLE TO RECOVER OR RESET IT. LOSS OF A PASSWORD MAY RESULT IN THE LOSS OF PATIENT DATA.

The information on **Change Password** is available to all service class licenses. **Change Password** is not available through a remote connection.

To access **Change Password**, select **Utility (second page) > Service > Utilities > Change Password**.

Figure 5-70 Change Password

This table shows all the elements available on **Change Password** with descriptions.

Table 5-33 Change Password

| Element | DESCRIPTION |
|------------------|--------------------------------------|
| User Type | Type of user for the password reset. |
| New Password | Password |
| Confirm Password | Password |
| Update Password | Select to update the password. |
| Reset | Select to reset the information. |

To change the password:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Change Password**.
- 2.) Under **User Type**, select the user.

NOTE: Before changing the GEService password (the default is SvcForward123\$), make sure the LOGIQ P7/P8/P9/P10 is connected to the network and the agent is configured. The GEService password is used to perform portions of remote service. If the password is changed and the system information is not updated, it may slow down remote service. Both file transfer and SSH depend on the GEService password.

- 3.) In **New Password** and **Confirm Password**, enter the new password.



CAUTION ***RISK OF LOSING DATA.***

***GE WILL NOT BE ABLE TO RECOVER OR RESET CHANGED PASSWORDS.
SECURELY RECORD THE NEW PASSWORD.***

- 4.) Click **Update Password**.
- 5.) When a SVCService user password has been changed, reboot the LOGIQ P7/P8/P9/P10 to reflect the password change.

For more information, see:

- [Utilities on page 5-83](#)

Software Reload

Software Reload displays versions of the base image, application software, base patch, service platform, and documentation packages currently installed on the LOGIQ P7/P8/P9/P10. **Software Reload** reimages the C:\ drive and installs the base image.

- If the drives are encrypted, **Software Reload** will have a catastrophic effect if the customer does not have the recovery key. All patient data will be lost.
- If the drives are not encrypted, software can be reloaded without a recovery key.

With Disruptive mode set to On, reload these software versions from repository partition on the hard drive. The software reload is automatic without any loss of presets, patient data, or connectivity settings.

The information on **Software Reload** is available to Class C (Service Advanced) and Class M licenses.

To access **Software Reload**, select **Utility > Service (second page) > Utilities > Software Reload**.

Figure 5-71 Software Reload (R3 only)

Software Reload

Base Image Version
3

Base Patch Version
3.0.1

Application Software Version
3.0.1

Service Platform Version
3.0.1




 Software Reload

Figure 5-72 Software Reload (R4 and R4.5)

 Software Reload

| Package Type | Part Number | Version |
|----------------------|-------------|-------------|
| Base Image | 5835767 | 5835767 |
| Application Software | 5835768 | R4.0.0P2 |
| Service Platform | 5857022 | R2.0.0P1 |
| Online Help | N/A | OLH_2.0.0P1 |
| Security Package | 5857023 | R2.0.0P1 |
| Base Image Update | 5857024 | R2.0.0 |

 Software Reload

This table shows all the elements available on **Software Reload** with descriptions.

Table 5-34 Software Reload

| Element | DESCRIPTION |
|------------------------------|--|
| Base Image Version | Displays the version number of the base image software. |
| Base Patch Version | Displays the version number of the base patch. |
| Application Software Version | Displays the version number of the application software. |
| Service Platform Version | Displays the version number of the service platform. |
| Documentation Version | Displays the version number for the documentation. |
| Software Reload | Reloads the versions listed. |

To reload software:

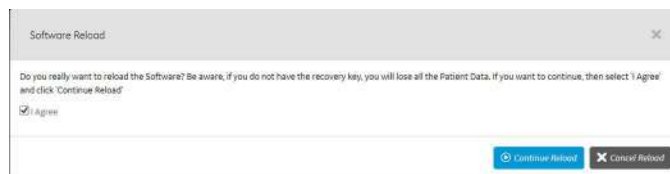
- 1.) If the drives are encrypted, obtain the recovery key.
- 2.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 3.) Navigate to **Utility (second page) > Service > Utilities > Software Reload**.
- 4.) View the current version numbers.
- 5.) Click **Software Reload**.

 **CAUTION** *RELOADING SOFTWARE WITHOUT A RECOVERY KEY WILL RESULT IN THE LOSS OF PATIENT DATA.*

- 6.) If you have a recovery key, select **I have a recovery key** and then click **Continue**.



- 7.) If you have a recovery key, select **I Agree** and then click **Continue Reload**.



For more information, see:

- [Utilities on page 5-83](#)

Reset Patient Database

Reset Patient Database resets the LOGIQ P7/P8/P9/P10 patient database. This operation automatically shuts down the application before cleaning the patient database. Once the operation is complete, the LOGIQ P7/P8/P9/P10 reboots with an empty database. Disruptive mode must be On to reset the patient database. If Disruptive mode is Off, a warning message displays asking to turn on Disruptive mode.

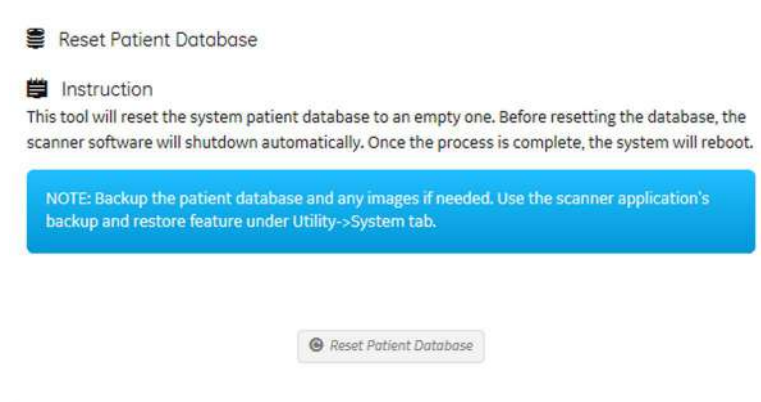
Reset Patient Database deletes the contents of the following folders:

- E:\Scanner\GEMS_IMG
- E:\Scanner\GEMS_REP

The information on **Reset Patient Database** is available to Class C (Service Advanced) and Class M licenses.

To access **Reset Patient Database**, select **Utility (second page) > Service > Utilities > Reset Patient Database**.

Figure 5-73 Reset Patient Database



This table shows all the elements available on **Reset Patient Database** with descriptions.

Table 5-35 Reset Patient Database

| Element | DESCRIPTION |
|------------------------|---|
| Instruction | Information about the database reset. |
| Reset Patient Database | When Disruptive mode is ON, resets the LOGIQ P7/P8/P9/P10 patient database. |

To reset the patient database:

- 1.) Back up the patient database.
- 2.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 3.) Navigate to **Utility (second page) > Service > Utilities > Reset Patient Database**.
- 4.) Click **Reset Patient Database**.
- 5.) Confirm the patient database has been emptied.

For more information, see:

- [Utilities on page 5-83](#)

Clean Userdefs

Clean Userdefs provides a way to delete user-defined data when user presets may be inhibiting proper operation. User-defined data returns to the user-defined settings to the factory default values. **Clean Userdefs** provides information to backup the current settings if you want to use them later. Disruptive mode must be On to clean user-defined data. If Disruptive mode is Off, a warning message displays asking to turn on Disruptive mode.

Before cleaning user-defined data, the LOGIQ P7/P8/P9/P10 application software automatically shuts down. Once the operation is complete, the system reboots.

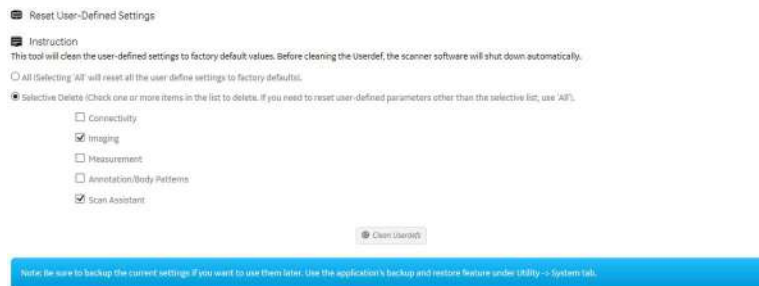
Clean Userdefs provides a way to selectively delete the following user-defined data:

- Connectivity – Deletes this file: %TEST_ROOT%\resources\userdefs\connectivity.res
- Imaging – Deletes this folder: %TEST_ROOT%\resources\userdefs\ImagingPresets\
- Measurement – Delete this folder: %TEST_ROOT%\resources\userdefs\EchoMeasure\
- Annotation/Bodymark – Deletes the folder: %TEST_ROOT%\resources\userdefs\EchoAnnotation\
- Scan Assistant – Deletes the folder: %TEST_ROOT%\resources\userdefs\EchoExamProtocol

The information on **Clean Userdefs** is available to Class C (Service Advanced) and Class M licenses.

To access **Clean Userdefs**, select **Utility (second page) > Service > Utilities > Clean Userdefs**.

Figure 5-74 Clean Userdefs



This table shows all the elements available on **Clean Userdefs** with descriptions.

Table 5-36 Clean Userdefs

| Element | DESCRIPTION |
|--------------------------|--|
| All | When Disruptive mode is ON, deletes all of the user-defined data and returns the LOGIQ P7/P8/P9/P10 to factory default settings. |
| Selective Delete | When Disruptive mode is ON, deletes the selected user-defined data. |
| Connectivity | When Selective Delete is selected, deletes this file: %TEST_ROOT%\resources\userdefs\connectivity.res |
| Imaging | When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\ImagingPresets\ |
| Measurement | When Selective Delete is selected, delete this folder: %TEST_ROOT%\resources\userdefs\EchoMeasure\ |
| Annotation/Body Patterns | When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\EchoAnnotation\ |
| Scan Assistant | When Selective Delete is selected, deletes this folder: %TEST_ROOT%\resources\userdefs\EchoExamProtocol |
| Clean Userdefs | Restarts the application software with a fresh database. |

To clean user-defined data:

- 1.) If you want to use the current settings later, back them up now.
- 2.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 3.) Navigate to **Utility (second page) > Service > Utilities > Clean Userdefs**.
- 4.) Select the data you want to set to the default settings.
- 5.) Click **Clean Userdefs**.

For more information, see:

- [Utilities on page 5-83](#)

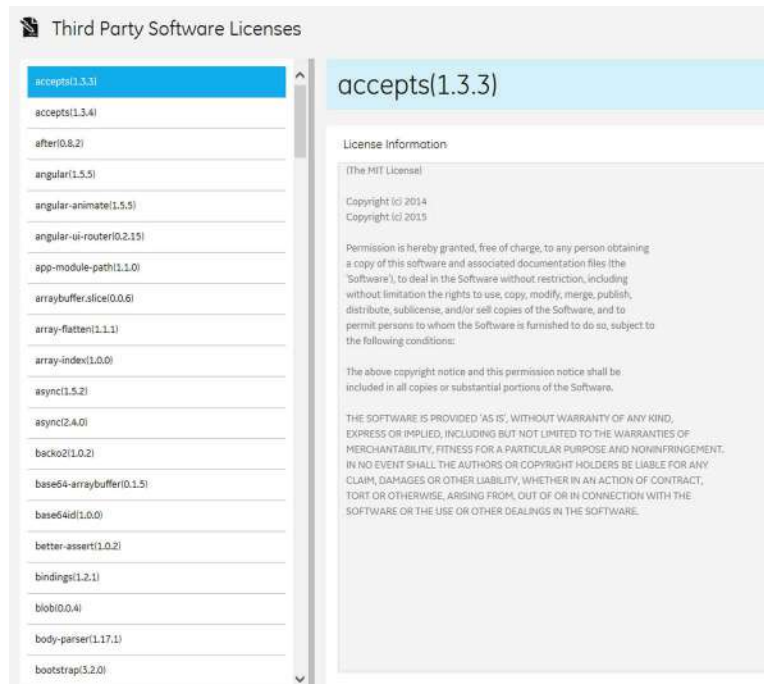
Third Party Software Licenses

Third Party Software Licenses displays the third-party software licenses used as part of the service platform.

The information on **Third Party Software Licenses** is available to all service class licenses.

To access **Third Party Software Licenses**, select **Utility (second page) > Service > Utilities > Third Party Software Licenses**.

Figure 5-75 Third Party Software Licenses



For more information, see:

- [Utilities on page 5-83](#)

SSA License

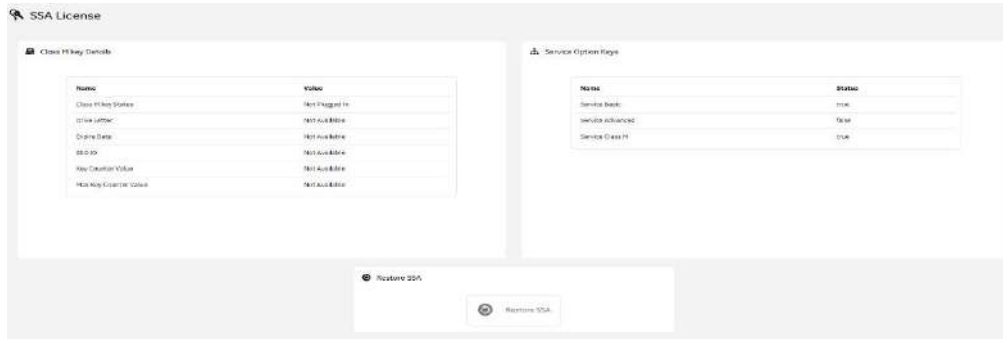
SSA License provides a way to do the following:

- When inserted, view the details of an SSA key.
- View the status of the service class options.
- Restore an SSA license when the SSA key is not validating or when a remote log in shows as a Class A user.

The information on **SSA License** is available to all service class licenses.

To access **SSA License**, select **Utility (second page) > Service > Utilities > SSA License**.

Figure 5-76 SSA License



This table shows all the elements available on **SSA License** with descriptions.

Table 5-37 SSA License

| Element | DESCRIPTION |
|----------------------------|--|
| Class M Key Details | |
| Class M Key Status | Status of the SSA key. Valid values are: <ul style="list-style-type: none"> • Not Plugged In • Plugged In |
| Drive Letter | Drive where the SSA key is plugged into the LOGIQ P7/P8/P9/P10. |
| Expire Date | Date the SSA key is set to expire. |
| SSO ID | Identifier for the user assigned to the SSA key. |
| Key Counter Value | Number of times the SSA key has been used. |
| Max Key Counter Value | Number of remaining times the SSA key can be used. |
| Service Option Keys | |
| Name | Name of the service class option. |
| Status | Status of the access to the associated service class option. Valid values are: <ul style="list-style-type: none"> • True • False |
| Restore SSA | Restores the SSA license to the SSA key. |

To view the Class M license information:

- 1.) Insert the SSA key.
- 2.) Navigate to **Utility (second page) > Service > Utilities > SSA License**.
- 3.) Under **Class M key Details**, view the values. For example, the **SSO ID** for the user assigned to the SSA key.

If **Not Available** displays for all of these values, the SSA key is not validating.

To restore an SSA key that is not validating:

- 1.) Remove the SSA key from the LOGIQ P7/P8/P9/P10.
- 2.) If open, close the Service desktop.
- 3.) Restart the LOGIQ P7/P8/P9/P10.
- 4.) Once the LOGIQ P7/P8/P9/P10 has restarted, plug in the SSA key.
- 5.) Navigate to **Utility (second page) > Service > Utilities > SSA License**.
- 6.) Click **Restore SSA**.
- 7.) Check to see if the SSA key validates.

For more information, see:

- [Utilities on page 5-83](#)
- [SSA key on page 7-32](#)

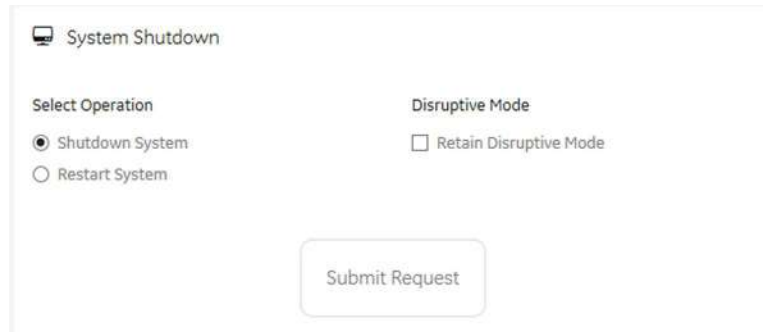
System Shutdown

With remote access, **System Shutdown** provides a way to shut down or restart the LOGIQ P7/P8/P9/P10. Disruptive mode must be On to shut down or restart the LOGIQ P7/P8/P9/P10. If Disruptive mode is Off, a warning message displays.

The information on **System Shutdown** is available to Class M licenses.

To access **System Shutdown**, select **Utility (second page) > Service > Utilities > System Shutdown**.

Figure 5-77 System Shutdown



This table shows all the elements available on **System Shutdown** with descriptions.

Table 5-38 System Shutdown

| Element | DESCRIPTION |
|-------------------------|---|
| Select Operation | |
| Shutdown System | When Disruptive mode is On, shuts down the LOGIQ P7/P8/P9/P10 when Submit Request is pressed. |
| Restart System | When Disruptive mode is On, restarts the LOGIQ P7/P8/P9/P10 when Submit Request is pressed. |
| Shutdown Application | When Disruptive mode is On, shuts down the application software when Submit Request is pressed. |
| Disruptive Mode | |
| Retain Disruptive Mode | Determines whether Disruptive mode is retained after an operation has been performed. Generally used by the remote engineer to regain access to disruptive functions after a reboot without having to request Disruptive mode be enabled again. |
| Submit Request | Performs the operation selected under Select Operation . |

To remotely start, restart, or shut down the LOGIQ P7/P8/P9/P10:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 2.) Navigate to **Utility (second page) > Service > Utilities > System Shutdown** and then select an operation:
 - To shut down the LOGIQ P7/P8/P9/P10, select **Shutdown System**.
 - To restart the LOGIQ P7/P8/P9/P10, select **Restart System**.
 - To shut down the application software, select **Shutdown Application**.
- 3.) To retain the current setting for Disruptive mode, select **Retain Disruptive Mode**.
- 4.) Click **Submit Request**.

For more information, see:

- [Utilities on page 5-83](#)

Checkpoints

Checkpoints allows for the creation of checkpoints and displays the history of those checkpoints. Checkpoints are used to indicate when the LOGIQ P7/P8/P9/P10 has been serviced, status has been reset, and information related to the service performed has been added.

The information on **Checkpoints** is available to Class C (Service Advanced) and Class M licenses.

To access **Checkpoints**, select **Utility (second page) > Service > Utilities > Checkpoints**.

Figure 5-78 Checkpoints



This table shows all the elements available on **Checkpoints** with descriptions.

Table 5-39 Checkpoints

| Element | DESCRIPTION |
|----------------------------|---|
| Checkpoints History | |
| Checkpoint | Displays the name of the checkpoint. |
| Service Personnel | Displays the ID for the logged in user. |
| Action | Displays the service action. |
| Comment | Displays comment text entered when the checkpoint was created. |
| Service Checkpoint | Displays whether the checkpoint is a service checkpoint or not. |
| Create Checkpoint | |
| Action | Selects the service action. Value values are <ul style="list-style-type: none"> Scheduled Maintenance Unscheduled Maintenance Upgrade FMI |
| Service Personnel | ID for the logged in user. Value values are: <ul style="list-style-type: none"> SSO ID: When a Class M key is plugged in, the SSO ID for the logged in user. Remote user ID: If there is a remote connection, the remote user ID. User ID: If the SSO ID and remote user ID are not available, the user ID for the logged in user. Unknown: The logged in user ID is not available. |
| Comment | Enter comments for creating a checkpoint. |
| Service Checkpoint | Select whether to mark a service checkpoint or not. |
| Save | Saves the information. |

To create a check point:

- 1.) Navigate to **Utility (second page) > Service > Utilities > Checkpoints**.
- 2.) Under **Create Checkpoints**, from **Action**, select the action.
- 3.) In **Comment**, enter notes for the checkpoint.
- 4.) If this is a checkpoint for service, select **Service Checkpoint**.
- 5.) Click **Save**.

For more information:

- [Utilities on page 5-83](#)

Disruptive Mode

Disruptive Mode provides a way to enable and disable Disruptive mode. When enabled, Disruptive mode allows a remote user to access the LOGIQ P7/P8/P9/P10 which can disrupt normal operation of the LOGIQ P7/P8/P9/P10. Disruptive mode can be remotely turned on when the logged-in user has Authorize Remote Service Access privilege. If the logged-in user does not have remote service privilege, displays this error message: "You do not have the required permission to perform this operation."

When initiating Disruptive mode from a remote location, a message displays on the LOGIQ P7/P8/P9/P10 asking whether the user will allow Disruptive mode and notifying them that normal operation might be disturbed.

- If **Yes** is selected, then Disruptive mode is turned on.
- If **No** is selected, then Disruptive mode is not turned on and an error message displays saying that permission to change the mode was denied.

When Disruptive mode is On, the GE icon in the status bar changes to red and displays this message: "Due to Service testing restart needed."

When Disruptive mode is changed to Off, the GE icon turns white and displays this message: "Due to Service testing restart needed." In addition, VCO and SSH stop if running.

The information on **Disruptive Mode** is available to Class C (Service Advanced) and Class M licenses.

To access **Disruptive Mode**, select **Utility (second page) > Service > Utilities > Disruptive Mode Utility**.

Figure 5-79 Disruptive Mode (R3 only)

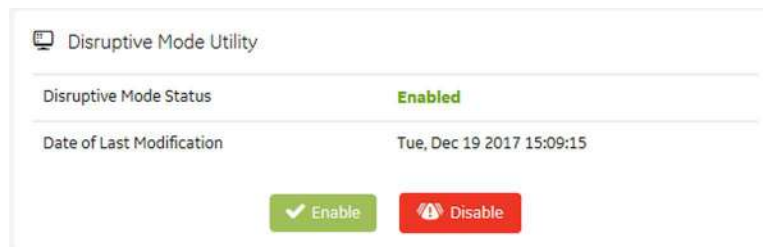
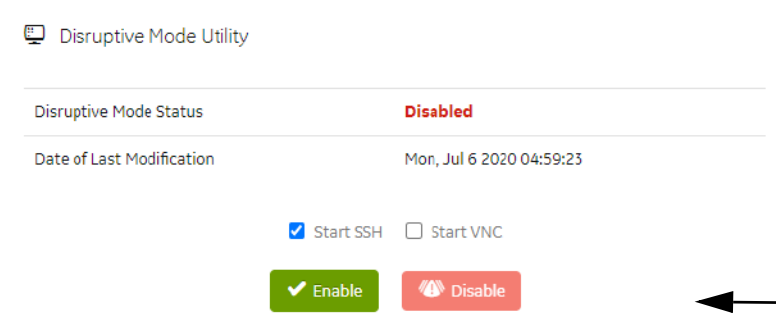


Figure 5-80 Disruptive Mode (R4 and R4.5 only)



← Enables Disruptive Mode and VCO

For more information:

- [Utilities on page 5-83](#)

Data Transfer

Data Transfer provides a way to do the following:

- View information about past transfers of (APM) information.
- Set up automatic/scheduled transfer of allowed data files from the LOGIQ P7/P8/P9/P10 to the server.
- Manually transfer data files allowed data files from the LOGIQ P7/P8/P9/P10 to the server.

The information on **Data Transfer** is available to all service class licenses.

To access **Data Transfer**, select **Utility (second page) > Service > Utilities > Data Transfer**.

Figure 5-81 Data Transfer (R3 only)

Data Transfer

| Type of Upload | Upload Permission | Last Upload Status | Last Upload Attempt | Last Successful Attempt |
|---------------------------|-------------------|--------------------|--------------------------|--------------------------|
| Never identifiable images | No | NA | | |
| Monitoring Logs | Yes | Success | Dec 19, 2017 11:17:41 AM | Dec 19, 2017 11:17:41 AM |
| System Logs | Yes | Success | Dec 19, 2017 11:17:44 AM | Dec 19, 2017 11:17:44 AM |
| User Information | No | NA | | |
| System Configurations | Yes | Success | Dec 19, 2017 11:17:45 AM | Dec 19, 2017 11:17:45 AM |
| User Configurations | Yes | Success | Dec 19, 2017 11:17:46 AM | Dec 19, 2017 11:17:46 AM |
| Other logs | Yes | Success | Dec 19, 2017 11:17:54 AM | Dec 19, 2017 11:17:54 AM |
| Windows logs | Yes | Success | Dec 19, 2017 11:18:30 AM | Dec 19, 2017 11:18:30 AM |

Scheduler

All Days
 Mon
 Tue
 Wed
 Thu
 Fri
 Sat
 Sun

Save Settings

Send All

Figure 5-82 Data Transfer (R4 and R4.5 only)

Data Transfer

| Type of Upload | Upload Permission | Last Upload Status | Last Upload Attempt | Last Successful Attempt |
|---------------------------|-------------------|--------------------|------------------------|-------------------------|
| Never identifiable images | No | NA | | |
| Monitoring Logs | Yes | Failed | Jul 6, 2020 4:28:52 PM | |
| System Logs | Yes | Failed | Jul 6, 2020 4:29:08 PM | |
| User Information | No | NA | | |
| System Configurations | Yes | Failed | Jul 6, 2020 2:51:25 PM | |
| User Configurations | Yes | NA | | |
| Other logs | Yes | Failed | Jul 6, 2020 2:51:25 PM | |
| Diag Logs | Yes | Failed | Jul 6, 2020 2:51:25 PM | |
| Windows logs | Yes | NA | | |

Type of upload

All
 Never identifiable images
 Monitoring Logs
 System Logs
 User Information
 System Configurations
 User Configurations
 Other logs
 Diag Logs
 Windows logs

Scheduler

All Days
 Mon
 Tue
 Wed
 Thu
 Fri
 Sat
 Sun

Save Settings

Send All

This table shows all the elements available on **Data Transfer** with descriptions.

Table 5-40 Data Transfer

| Element | DESCRIPTION |
|------------------------|--|
| Type of Upload | Type of log file. For example, Incremental Logs or Full Logs . Monitoring Logs , System Logs , and Windows Logs are incrementally transferred when automatic transfer is enabled. To enable automatic transfer, navigate to System Admin and, under Service , check Enable Automatic Request for Service . |
| Upload Permission | Whether the permission to upload the log file is allowed or not. |
| Last Upload Status | Whether the last log file upload was successful or not. |
| Last Upload Attempt | Date and time the last log file upload was attempted. |
| Last Successful Upload | Date and time the last log file was successfully uploaded. |
| Scheduler | When selected, enables the related day selections. For example, All Days , Monday , and Tuesday . |
| Save Settings | Saves the information. |
| Send All | Manually send the selected log files to the server. |

To configure automatic data transfers:

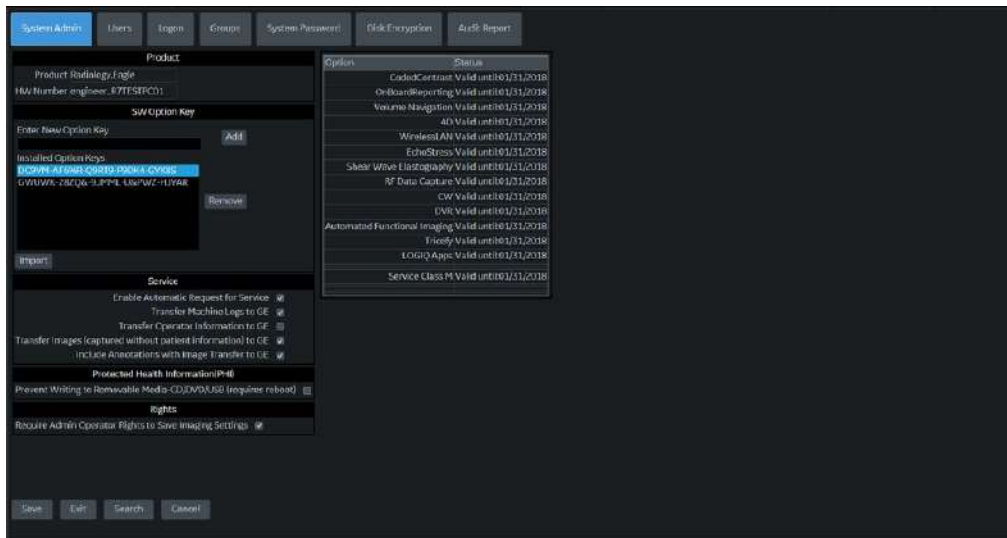


Figure 5-83 System Admin (R3-R4)

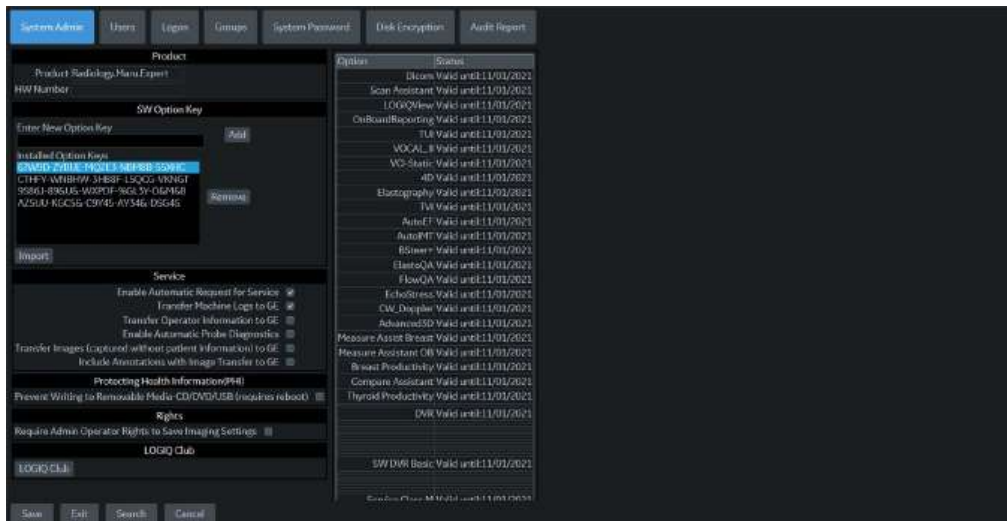


Figure 5-84 System Admin (R4.5)

- 1) On **System Admin**, configure these settings:
 - **Transfer Machine Logs to GE** – Default is checked
 - **Transfer Operator Information to GE**
 - **Transfer Images (captured without patient information) to GE** – Default is checked.
 - **Enable Automatic Probe Diagnostics** – Default is unchecked. (R4.5 only)

When Enable Automatic Probe Diagnostics, allows the Probe Check (VITA) Tool to gather information about probes used and put that information into a VITA folder.dump file. Once enabled, the Probe Check (VITA) routine will run once at system startup to generate this dump file. Only performed in the first supported probe found from left to right. Available in LOGIQ P7/P8/P9/P10 Version R4.5 (R4.5 .x.x) or later.

- 2.) Click **Save**.
- 3.) Navigate to **Utility (second page) > Service > Utilities > Data Transfer**.
- 4.) On **Data Transfer**, select **Scheduler**, and then select the days to perform the data transfer.
- 5.) Click **Save Settings**.
- 6.) To manually perform a data transfer, click **Send All**.

For more information:

- [Utilities on page 5-83](#)

SSH

SSH displays the status of the Secure Shell (SSH) server. SSH is a cryptographic network protocol for operating network services securely over an unsecured network. This protocol is used for remote login to the operational system. SSH allows remote login to the LOGIQ P7/P8/P9/P10 and remote file transfer from the LOGIQ P7/P8/P9/P10. Remotely log into the LOGIQ P7/P8/P9/P10 using the username “GEService” and its password.

The information on **SSH** is available to Class M licenses.

To access **SSH**, select **Utility > Service > Utilities > SSH**.

Figure 5-85 SSH



This table shows all the elements available on **SSH** with descriptions.

Table 5-41 SSH

| Element | DESCRIPTION |
|---------|--|
| Status | When Disruptive mode is on, displays the status of the SSH server. Valid values are: <ul style="list-style-type: none">• SSH is stopped• SSH is running |
| Start | When Disruptive mode is ON, start the SSHD service. |
| Stop | When Disruptive mode is ON and the SSHD service is running, stops the SSHD service. |

To start the SSH server:

- 1.) Navigate to **Utility > Service > Utilities > Disruptive Mode Utility** and set Disruptive mode to On.
- 2.) Navigate to **Utility > Service > Utilities > SSH**.
- 3.) Click **Start**.
- 4.) To stop the SSH server, select **Stop**.

For more information, see:

- [Utilities on page 5-83](#)

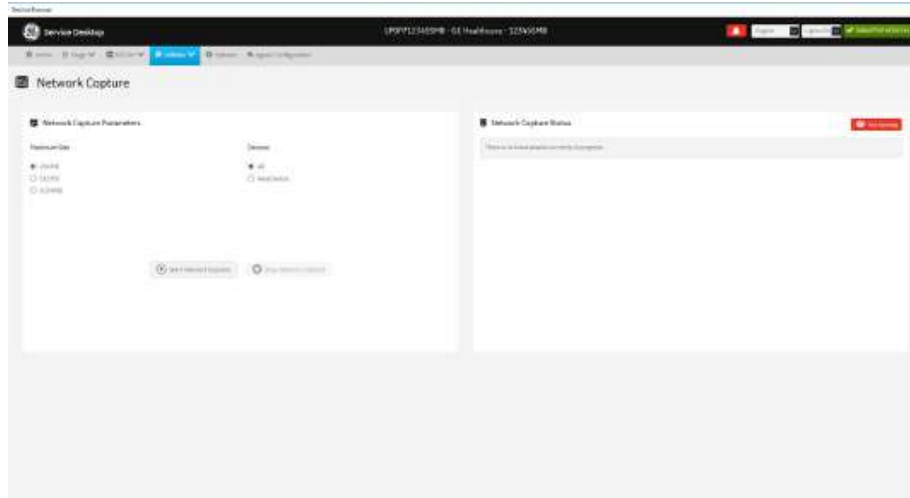
Network Capture

Network Capture displays network traffic between the LOGIQ P7/P8/P9/P10 and configured devices. A network capture outputs two log files: one for main logging with no protected information and another including protected information. These log files are useful when debugging connectivity issues. Because these log files can be large, they are only kept for one week.

The information on **Network Capture** is available to all service class licenses.

To access **Network Capture**, select **Utility > Service > Utilities > Network Capture**.

Figure 5-86 Network Capture



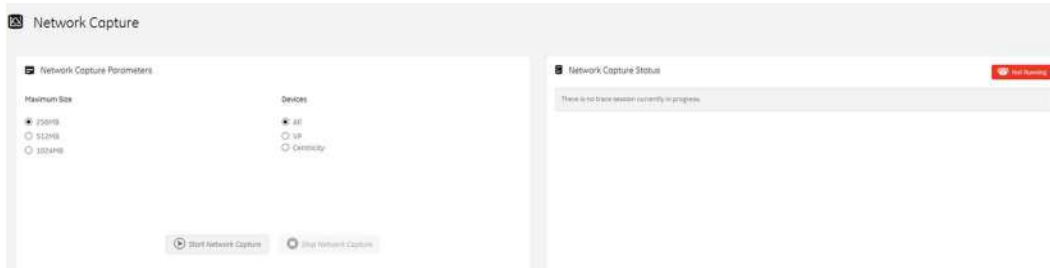
This table shows all the elements available on **Network Capture** with descriptions.

Table 5-42 Network Capture

| Element | DESCRIPTION |
|-----------------------------------|---|
| Network Capture Parameters | |
| Maximum Size | Allowed size of the generated log file. Valid value are: <ul style="list-style-type: none"> • 256MB • 512MB • 1024MB |
| Devices | DICOM-configured devices for which you want to capture information. If no additional devices are configured, only All will be available. |
| Start Network Capture | Select to start the process. This causes the network capture to start, enables the Stop button, and updates the Network Capture Status pane and changes the Status to Running . |
| Stop Network Capture | Select to stop the process. |
| Network Capture Status | |
| | Displays information about the status of the network capture. The language setting for this information is set in Windows and not through the Service desktop or LOGIQ P7/P8/P9/P10 application software. |
| | Displays the current status of the network capture. Valid values are: <ul style="list-style-type: none"> • Not Running • Running |

To perform a network capture:

1.) Navigate to **Utility > Service > Utilities > Network Capture**.



2.) From **Network Capture**, do the following:

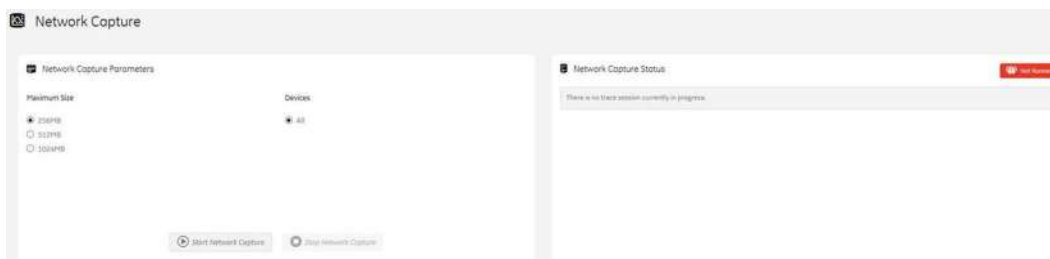
- Under **Maximum Size**, select the allowed size of the generated log file.
- Under **Devices**, select the DICOM-configured device for which you want to capture information. If no additional devices are configured, only **All** will be available.

3.) Select **Start Network Capture** to start the process. This causes the network capture to start, enables the **Stop** button, and updates the **Network Capture Status** pane and changes the **Status** to **Running**.



4.) Click the **Stop** button to end data collection. Stopping is a two-step process:

- Stops the data collection and immediately closes the .etl file.
- Collects additional diagnostic data that may help diagnose network issues. When the file is closed, you see “There is no trace session currently in progress”. When the remaining data is collected and the .cab file is closed, you are notified in the banner.



NOTE: The network capture file, "NetworkCapture.etl" is saved in D:\Log\Protected\ folder. The .etl file shall be analyzed by using analysis tools like as Microsoft Message Analyzer, Wireshark and so on.

For more information, see:

- [Utilities on page 5-83](#)

5-11-10 Options

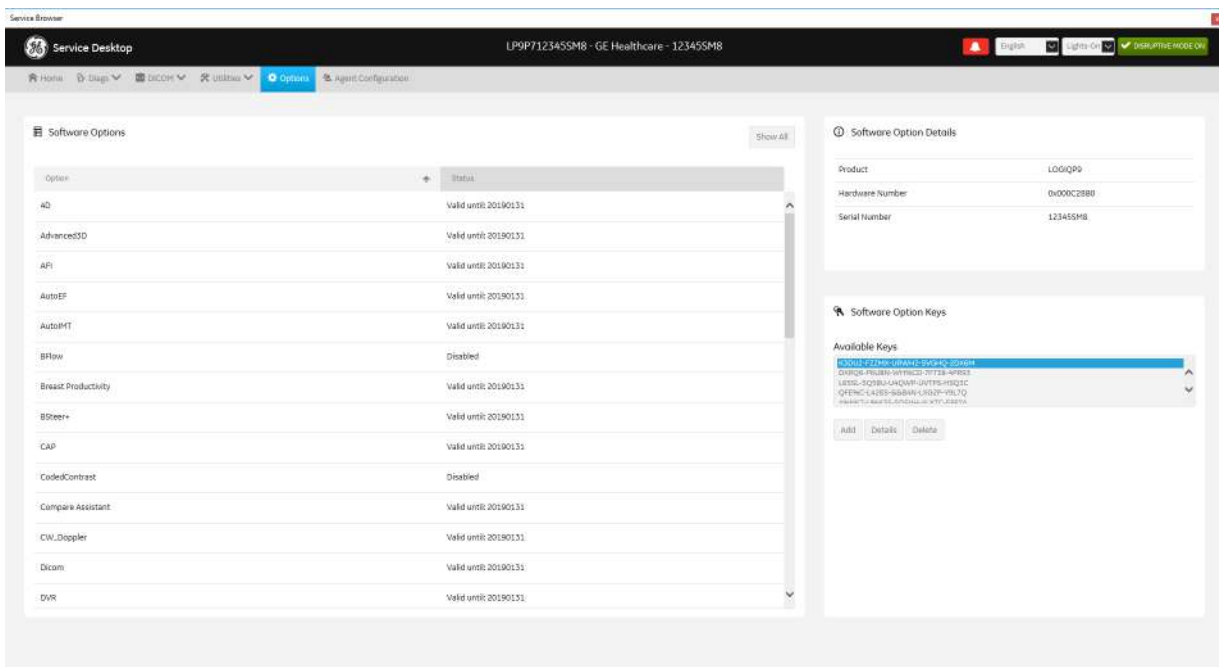
Use **Options** to:

- View software options.
- View software option details.
- Add (or delete) a valid option key, add a duplicate option key, not add an invalid option key, and ask for confirmation before deleting an option key.
- View software option key details. Key details are a list of options that are enabled by a particular key. Under **Available Keys**, highlight the option string, select **Details** and then view the options on the left side of the screen. Press **Show All** to view all of the activated options.

The information on **Options** is available to all service class licenses.

To access **Options**, navigate to **Utility > Service > Options**.

Figure 5-87 Options



This table shows all the elements available on **Options** with descriptions.

Table 5-43 Options

| Element | DESCRIPTION |
|--------------------------------|--|
| Software Options | |
| Option | Software options on the LOGIQ P7/P8/P9/P10. |
| Status | Status of the options on the LOGIQ P7/P8/P9/P10. |
| Software Option Details | |
| Product | Name of the product. |
| Hardware Number | Number for the hardware. The hardware number is the hash of the serial number that is used to generate the option key. |
| Serial Number | Serial number of the LOGIQ P7/P8/P9/P10. |

Table 5-43 Options

| Element | DESCRIPTION |
|-----------------------------|--|
| Software Option Keys | |
| Available Keys | List of the option keys installed on the LOGIQ P7/P8/P9/P10. |

5-11-11 Agent Configuration

Use **Agent Configuration** to:

- Edit and configure the following:
 - Enterprise host name in the agent
 - Enterprise port number in the agent
 - Proxy server in the agent
 - Proxy port in the agent
 - CRM number in the agent
 - Display name in the agent
- Set the serial number in the agent
- Enter the username and password for the proxy
- Reset the edited unsaved value
- Update contact details

The information on **Agent Configuration** is available to all service class licenses.

To access **Agent Configuration**, navigate to **Utility > Service > Agent Configuration**.

Figure 5-88 Agent Configuration (R3 only)

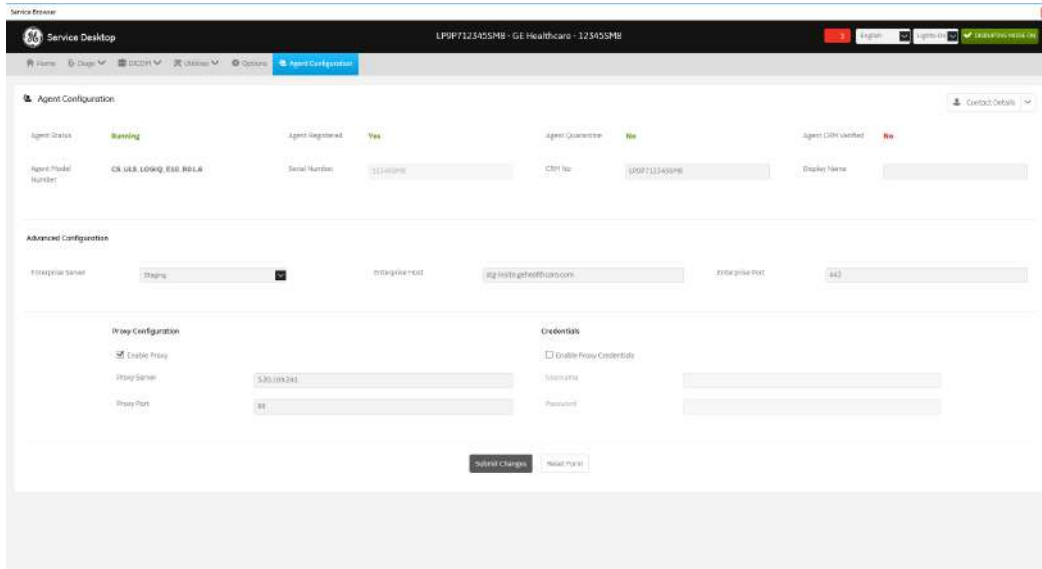
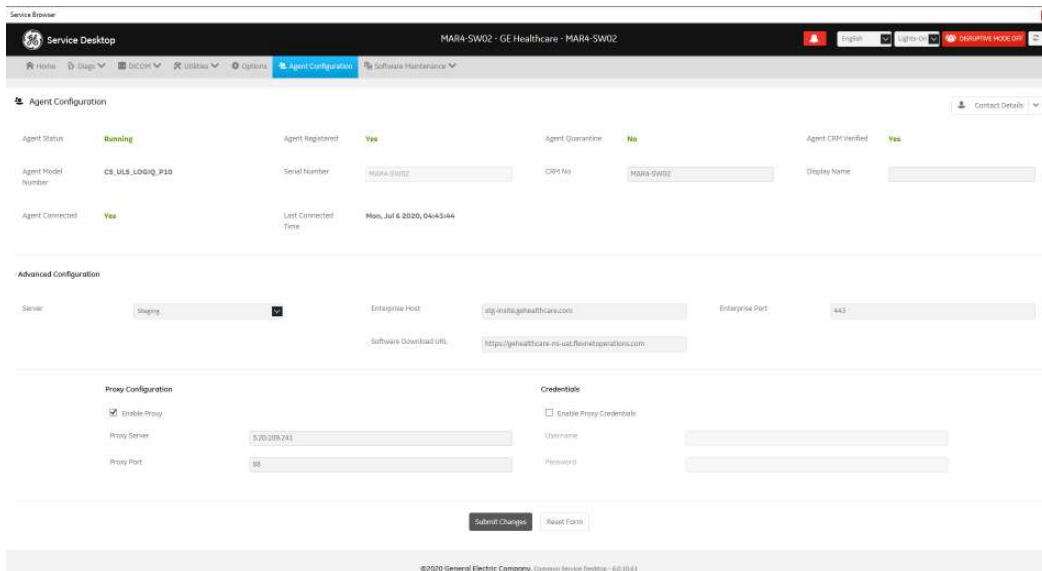


Figure 5-89 Agent Configuration (R4 and R4.5 only)



This table shows all the elements available on **Agent Configuration** with descriptions.

Table 5-44 Agent Configuration

| Element | DESCRIPTION |
|----------------------------|--|
| Agent Configuration | |
| Contact Details | Phone number for the person at the customer site a GE remote service engineer would contact. The phone number is entered during installation and reviewed at every service call to make sure the information is correct. |

Table 5-44 Agent Configuration

| Element | DESCRIPTION |
|-------------------------------|--|
| Agent Status | Status for the agent. Valid values are: <ul style="list-style-type: none"> • Running • Not Running |
| Agent Registered | Registered status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent is registered in the back office. • No – The agent is not registered in the back office. • Not Available – The agent is not configured or running. |
| Agent Quarantine | Quarantine status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent has more than one device registered with the same CRM Number in the back office. This scanner cannot send data back to GE or be remotely accessed. • No – The agent has one device registered with the listed CRM Number in the back office. • Not Available – The agent is not configured or running. |
| Agent CRM Verified | CRM verified status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes – The agent is verified in the back office. • No – The agent is not verified in the back office. • Not Available – The agent is not configured or running. |
| Agent Model Number | GE part number for the LOGIQ P7/P8/P9/P10. The same number as listed on the rating plate. |
| Serial Number | Serial number of the agent (read-only). If the agent is not registered with a serial number, this field is populated with the serial number of the LOGIQ P7/P8/P9/P10. The serial number of the agent is tied to the serial number of the LOGIQ P7/P8/P9/P10. |
| CRM No | Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region. CRM is pre-populated by adding P9P7 to the CRM number. The CRM number of the LOGIQ P7/P8/P9/P10 is editable. |
| Display Name | Displayed name of the agent. |
| Advanced Configuration | |
| Enterprise Server | Name of the enterprise server. |
| Enterprise Host | Number of the enterprise host. |
| Enterprise Port | Number of the enterprise port. |
| Proxy Configuration | |
| Enable Proxy | Enables the proxy server. |
| Proxy Server | When Enable Proxy is selected, name of the proxy server IP. |
| Proxy Port | When Enable Proxy is selected, number of the proxy server port. |
| Credentials | |
| Enable Proxy Credentials | Enables the proxy credentials. |
| Username | When Enable Proxy Credentials is selected, name of the user. |
| Password | When Enable Proxy Credentials is selected, password for the user. |

Chapter 6

Service Adjustments

Section 6-1 Overview

6-1-1 Purpose of Chapter 6

This chapter describes how to test and adjust the mechanical capabilities of a scanner that may be out of specification. Although some tests may be optional they should only be performed by qualified personnel.

Table 6-1 Chapter 6 Contents

| Section | Description | Page Number |
|---------|------------------------|-------------|
| 6-1 | Overview | 6-1 |
| 6-2 | Regulatory | 6-1 |
| 6-3 | LCD Monitor Adjustment | 6-2 |

Section 6-2 Regulatory

Verify, where applicable, that any regulatory information or tests required by national law are present and accounted for, and any regulatory tests required by national law are performed *and* documented.

Section 6-3 LCD Monitor Adjustment

6-3-1 Brightness/Contrast (R1.x.x)

6-3-1-1 Brightness

Adjusting the monitor's contrast and brightness is one of the most important factors for proper image quality. If these controls are set incorrectly, the Gain, TGC, Dynamic Range and even Acoustic Output may have to be changed more often than necessary to compensate.

The proper setup displays a complete gray scale. The lowest level of black should just disappear into the background and the highest white should be bright, but not saturated.

- 1) Go to Utility -> System -> General.
- 2) Press the OSD Control button to adjust the BRIGHTNESS and Contrast by using scroll bar to decrease/increase value.

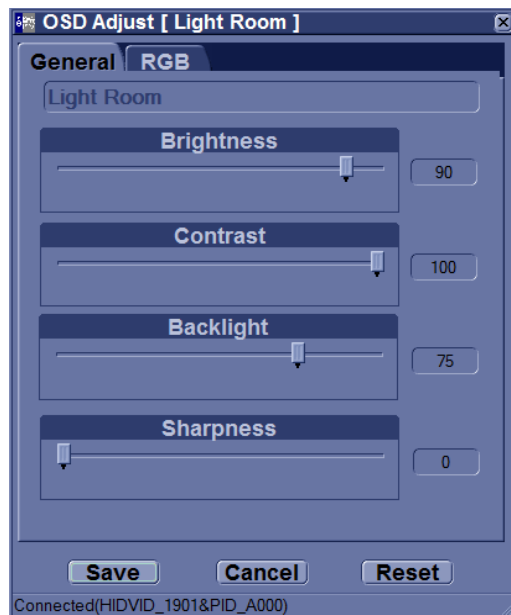


Figure 6-1 Brightness/Contrast Adjust

6-3-1-1-1 Gamma

- 1) Go to Utility -> System -> General.
- 2) Press the OSD Control button.
- 3) Press RGB tab.
- 4) Select 2.2 or 2.4 by using scroll bar to decrease/increase the value in Gamma Correction box.

6-3-2 OSD Control on the Utility mode (R1.x.x)



Figure 6-2 Monitor

- 1) Go to Utility -> System -> General.
- 2) See Monitor category.
- 3) There are preset parameters below for monitor setting.

Table 6-2

| Preset Parameter | Description |
|------------------|--|
| Dark | Pre-defined monitor settings for Dark Room |
| Semi Dark | Pre-defined monitor settings for Semi-Dark Room |
| Light | Pre-defined monitor settings for Light Room |
| OSD Control | The monitor can also be adjusted in brightness and contrast. For detailed adjustment press the [OSD controls] buttons on the screen. The OSD menu will appear on the screen. Brightness, Contrast, Backlight and Sharpness can be adjusted in General tab. Monitor colors can be adjusted in RGB tab. |

6-3-3 21.5 inch Wide Monitor Adjustment (R2.x.x and later)

All Monitor settings have been optimized at the factory, so normally, there should be no need for any further adjustments.

- 1) Go to Utility second touch panel
- 2) Adjust Room profile, Color Profile, Gamma, Brightness/Contrast (Roomprofile-User defined) as necessary.

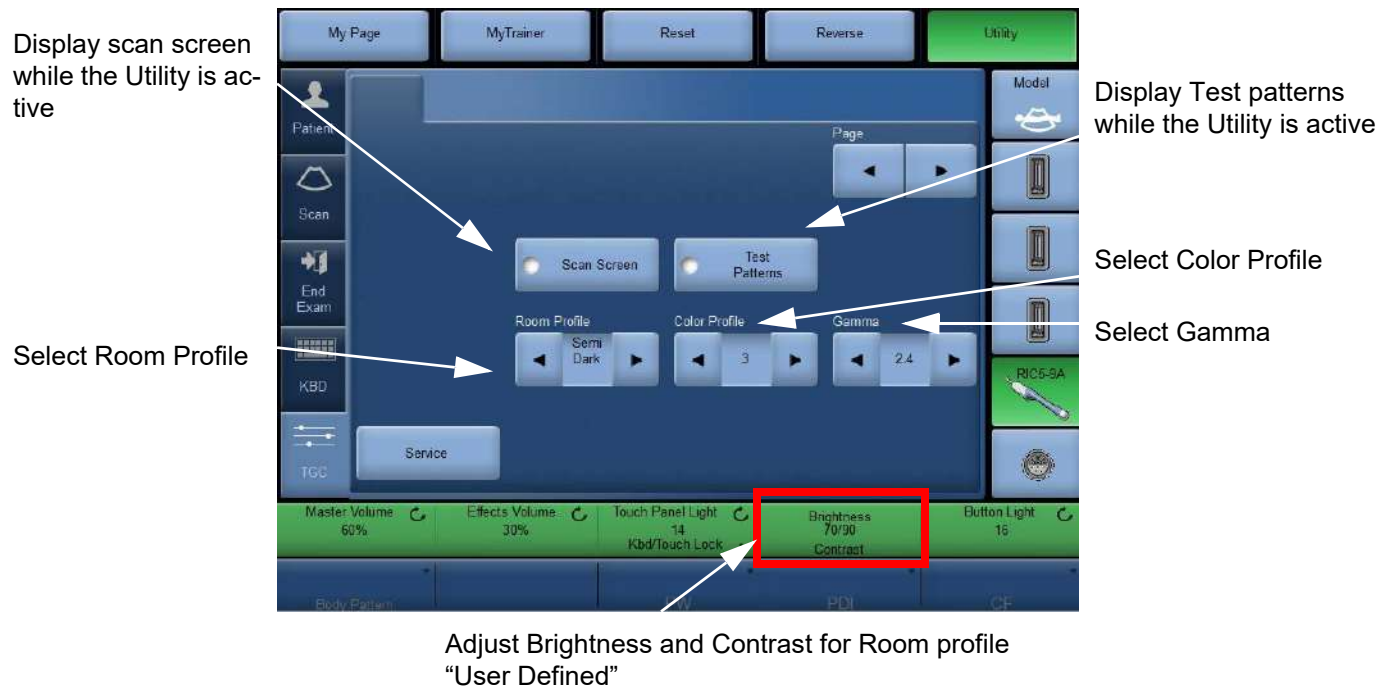


Figure 6-3 Monitor Adjustment (R2.x.x)

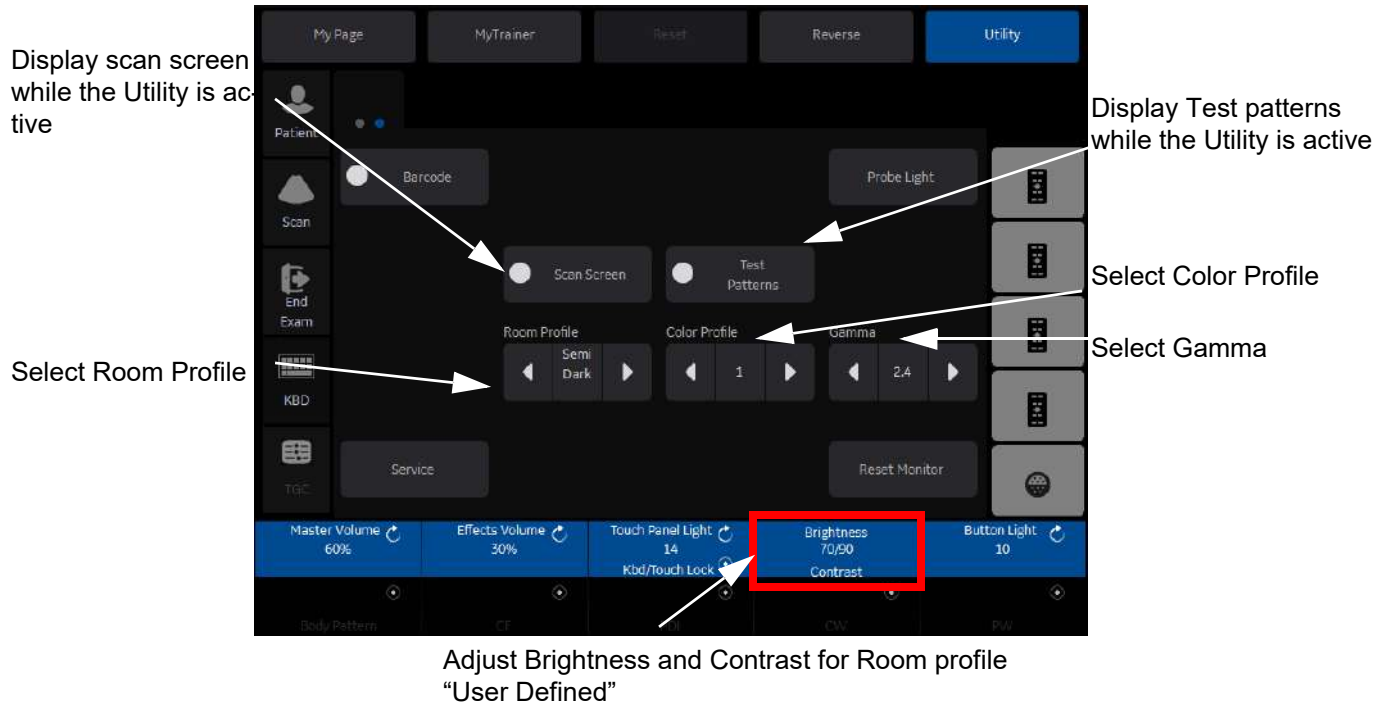


Figure 6-4 Monitor Adjustment (R3.x.x or R4.x.x)

Table 6-3 Parameters for Wide Monitor

| Parameter | Range | Note |
|---|-----------------------------------|---|
| Room Profile | Dark/Semi Dark/Light/User Defined | |
| Color Profile | 0 - 6 | 0: 6500K 1: 9000K 2: 11000K 3: 13000K 4: 7500K 5: 9500K 6: USER |
| Gamma | 2.2 or 2.4 | |
| Brightness (Room Profile - User Defined) | 0 - 100 | |
| Contrast (Room Profile - User Defined) | 0 - 100 | |

6-3-3-1 Scan Screen

In order to view the monitor while adjusting the Contrast/Brightness and Color Profile, press the **Scan Screen** on the second Utility Page.

- 1) Press **Scan Screen**. The scan screen displays on the main display while the Utility touch panel is active.
- 2) Adjust Room Profile/Color Profile as necessary.

6-3-3-2 Room Profile

Room Profile changes Brightness/Contrast of main display.

If "User Defined" is selected the user can adjust Brightness/Contrast by Brightness/Contrast control at the bottom of the Touch Panel.

NOTE: Brightness/Contrast setting is displayed only when touch panel has Room profile button.

NOTE: Brightness/Contrast is changeable only when Room Profile setting is "User Defined"

6-3-3-3 Color Profile

Color Profile controls temperature.

Section 6-4 Advanced monitor adjustment (R4 and R4.5)

6-4-1 Review Gamma Setting

Gamma settings can be adjusted in two ways, with or without DICOM Gray Scale Standard Display Function (GSDF) enabled. GSDF-compliant refers to all brightness settings, but not all contrast settings.

To enable the GSDF mode:

- 1) Navigate to Utilities > System > System Display.
- 2) Select Enable DICOM grayscale display mode (GSDF).
- 3) Set Use Wide Screen for Single Image to Off.
- 4) Navigate to Utility (second page) > Scan Screen. The scan screen displays on the main display while the Utility touch panel is active so you can see the affect your adjustments are making to the monitor.
- 5) With GSDF enabled, the Gamma button on the touch panel affects the image, emulating the appearance of that gamma, but does not affect the monitor.

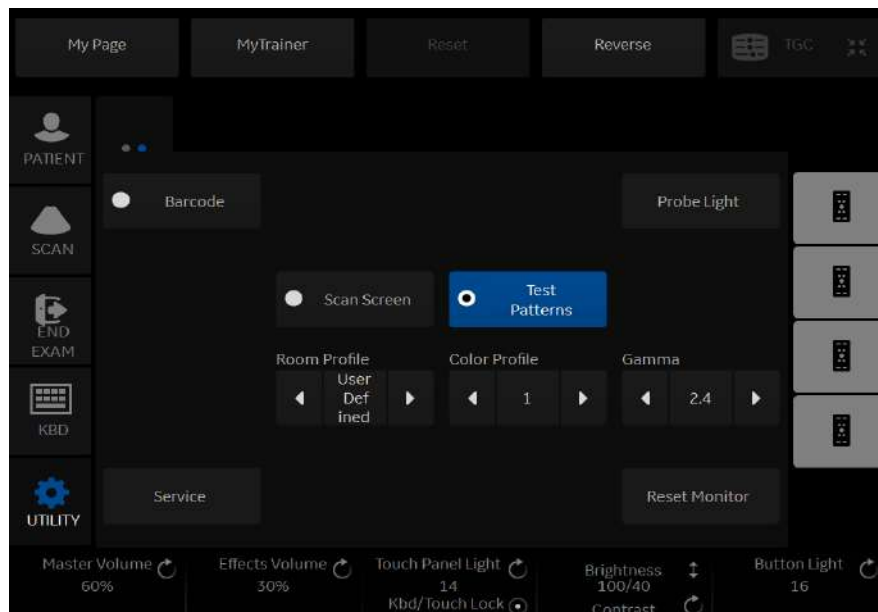


Figure 6-5 Check to enable GSDF Mode

If a site's PACS workstations are calibrated to the GSDF, this setting may help to make the image appearance more uniform between the Ultrasound system and PACS.

- With GSDF disabled, the monitor still uses a gamma curve that may be selected on the touch panel (for backwards compatibility with sites that are happy with their PACS or may have a mix of older systems).
- With GSDF enabled, the gamma button on the touch panel affects the image, emulating the appearance of that gamma, but does not affect the monitor.

6-4-2 Test Patterns

Test patterns are available to aid in evaluating the display visually and quantitatively.

Table 6-4 Test Patterns


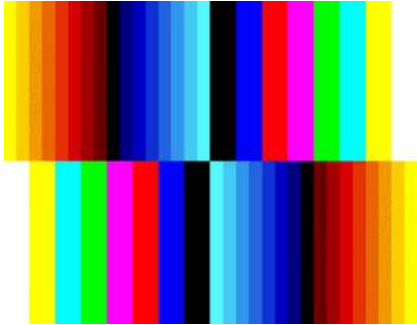
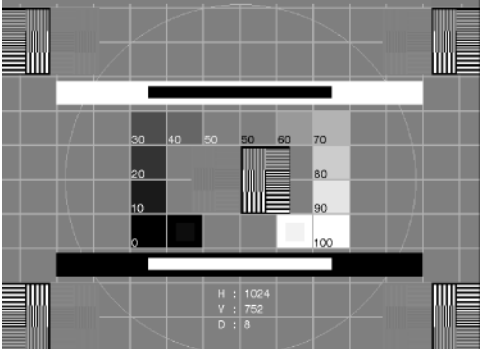
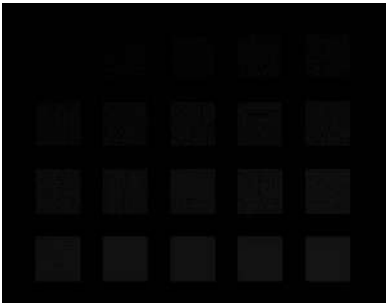
| Test Patterns | Description | Corresponding Graphic |
|---------------------|---|---|
| Gray Bars | Confirm that you can clearly see all of the different gradations of the grayscale in each gray cell. |  |
| Color Bars | Confirm that you can clearly see all of the different colors in each colored cell. |  |
| Resolution | Confirm that this image is clear and crisp and without edges or lines |  |
| Brightness contrast | <p>Before making any adjustments, record the setting for contrast and brightness. In a dimly lit room, adjust the monitor to brightness 100 and contrast 10. Increase the contrast to 100. Most of the remaining blocks in the last 2 rows of the image should be more visible as the contrast value is increased.</p> <p>Reset the contrast and brightness to the recorded levels.</p> |  |

Table 6-4 Test Patterns

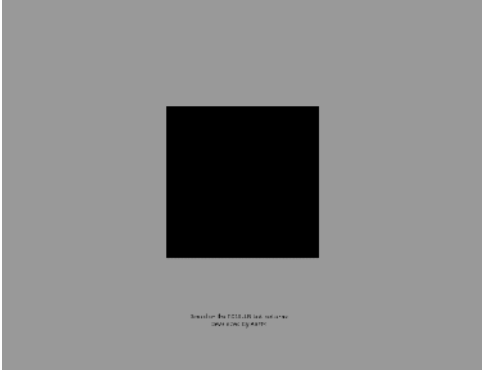
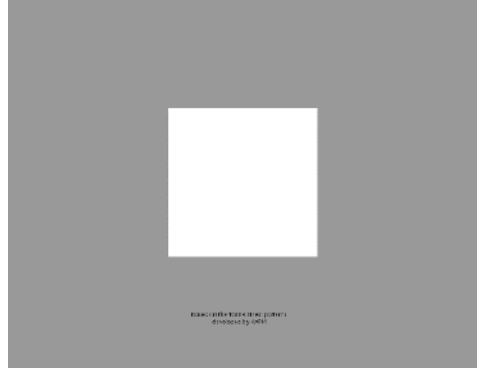
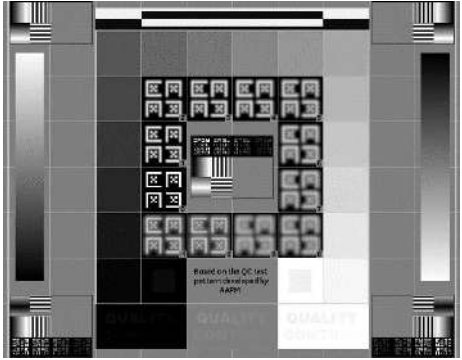
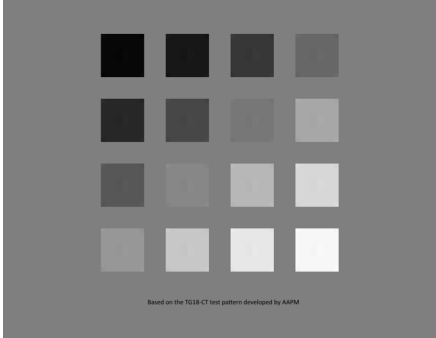
| Test Patterns | Description | Corresponding Graphic |
|---------------|---|---|
| LN1 to LN18 | <p>Luminance for different grayscale levels. Usually, the Facility's Biomed Engineer tests each gray level map on the monitor from LN-1 to LN-18 with a light meter and then graphs these on a scale to ensure that the curve falls within the GSDF's standard.</p> | <p>LN1</p>  <p>LN18</p>  |
| QC | <p>Quality Control. Confirm that this image is clear and crisp and without jagged edges or lines.</p> |  |

Table 6-4 Test Patterns

| Test Patterns | Description | Corresponding Graphic |
|--------------------------------|--|--|
| CT Used for Luminance response | Contrast. Confirm that you can detect the circles within the square grayscale boxes. |  |

NOTE: In QC, some characters of "QUALITY CONTROL" cannot be detected by eyes because this pattern is for 5 mega pixel high resolution monitor.

NOTE: In CT, some circles cannot be detected by eyes because this pattern is for 5 mega pixel high resolution monitor.

Chapter 7

Diagnostics/Troubleshooting

Section 7-1 Overview

7-1-1 Purpose of Chapter 7

This section describes how to setup and run the tools and software that help maintain image quality and system operation. Basic host, system, and board level diagnostics are run whenever power is applied.

Some Service Tools may be run at the application level.

7-1-2 Overview

There may be a time when it would be advantageous to capture trouble images and system data (logs) for acquisition through remote diagnostics or to be sent back to the manufacturer for analysis. There are different options to acquire this data that would give different results.

Table 7-1 Contents in Chapter 7

| Section | Description | Page Number |
|---------|--|-------------|
| 7-1 | Overview | 7-1 |
| 7-2 | Collect Vital System Information | 7-2 |
| | 7-2-1 Collecting System Information | 7-2 |
| | 7-2-2 Request for Service (RFS) (R1, R2, R2.5 only) | 7-5 |
| | 7-2-3 Request for Service (RFS) (R3, R4 and R4.5) | 7-7 |
| 7-3 | Check Points Voltages | 7-10 |
| 7-4 | Screen Captures and Logs | 7-11 |
| 7-5 | Remote Access to Service Platform | 7-18 |
| | 7-5-1 General | 7-18 |
| | 7-5-2 How the Customer enables/disables Disruptive Mode and VCO | 7-19 |
| | 7-5-3 GE Icon and Remote Connection | 7-19 |
| | 7-5-4 Customer Granting Full Remote Access Permission to GE Service Technician | 7-19 |
| | 7-5-5 Common Service Desktop (CSD) | 7-21 |
| | 7-5-6 CSD: Configuration | 7-21 |
| 7-6 | Minimum Configuration to Boot/Scan | 7-22 |
| 7-7 | Troubleshooting Trees, Instructions and Tech Tips | 7-23 |

Section 7-2 Collect Vital System Information

7-2-1 Collecting System Information

The following information is necessary to properly analyze data or images being reported as a malfunction or being returned to the manufacturer:

NOTE: This information is normally collected with the Alt+D or Gather Logs utility.

- Product Name = LOGIQ P7/P8/P9/P10

1) From the touch panel, select Utility -> System-> About.

| Software | System Image |
|--|---------------------------------|
| Copyright © 2013, General Electric Company | Image Part Number 5491331 Rev 2 |
| Software Version R2 | Image Date 2013-DEC-24 13:03 |
| Software Revision 0.0 | |
| Software Part Number 5491332 | |
| Build View kmuribuild2_NURI_R2_view | |
| Build Date Mon Mar 24 05:54:39 2014 | |

Figure 7-1 About (R1, R2, R2.5 only)



Figure 7-2 About (R3 only)

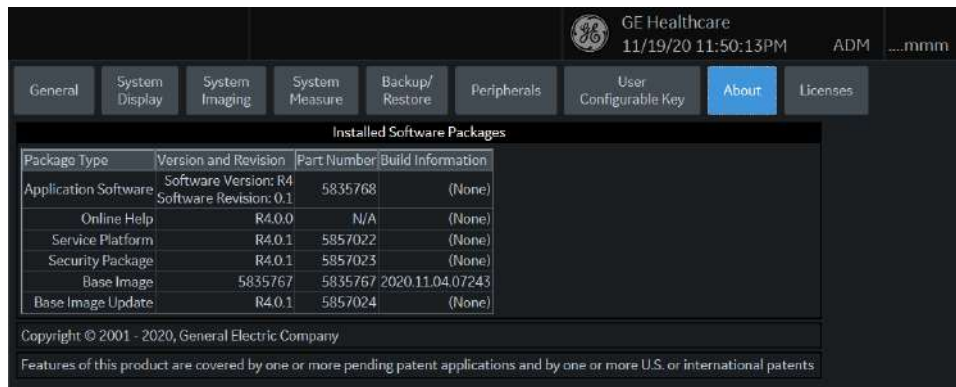


Figure 7-3 About (R4 only)



Figure 7-4 About (R4.5 only)

2) Record software version and System Image version

Applications Software

- Software Version
- Software Revision
- Software Part Number
- Build View
- Build Date

System Base Image Software

- Base Image Revision
- Image Part Number
- Image Date

7-2-2 Request for Service (RFS) (R1, R2, R2.5 only)



NOTICE Service Connectivity has to be checked out once before you can request for service. i.e., Service platform has to be configured properly; see: [CSD: Configuration on page 7-21](#).

There are two possibilities to contact GE:

- by means of the GE “Remote Status Icon” that is displayed on the bottom of the screen.



Move the cursor to the GE icon and press the **left trackball key** (= left-click) to display the “Request For Service” form (see: [Figure 7-5](#) below).

- via the System Setup - SERVICE page
 - 1) Press the **UTILITIES** key on the control panel.
 - 2) In the “Utilities” menu select **SYSTEM SETUP** to invoke the setup desktop on the screen.
 - 3) On the left side of the screen select **ADMINISTRATION** and then click the **SERVICE** tab.
 - 4) Enter the password **SHE** and click the **ACCEPT** button to display the Service Tools window.
 - 5) Click the **GFS** button and fill out the displayed form. (Enter detailed Problem description.)

The screenshot shows a web browser window titled "Contact GE - Service Browser". The window has a menu bar with "RFS", "Queue", "Machine Queue", and "Users". The main content area is divided into several sections:

- Contact Information:** Fields for Last (TEST), First (PERSON), Phone (04376823800), Ext., E-mail (xx.xx@xx.at), System ID (KE810026), and Other System ID.
- * Problem Type:** Two buttons: "Service" (selected) and "Applications".
- * Problem Area:** Two columns of buttons. Under "Service": Hardware, Network, Software (selected). Under "Applications": Hardware, Network, Software.
- * Problem Description:** A text area containing "Make Center TEST". Below it, "Date/Time of Problem:" is set to "03/05/2009 15:06" with a "Now" button. A character count shows "963 characters left".
- At the bottom of the form are "Send" and "Cancel" buttons.

Annotations on the left side of the image:

- An arrow points from the text "fill out the form" to the "Contact Information" section.
- An arrow points from the text "[Send] button" to the "Send" button.
- An arrow points from the text "Connection must be Checked out" to the "Connection: Checked Out" status bar at the bottom of the window.

Figure 7-5 Contact GE - Request for Service

- 3) Click the **SEND** button to send the problem description to GE Service/Application representatives.

A request confirmation screen is displayed:

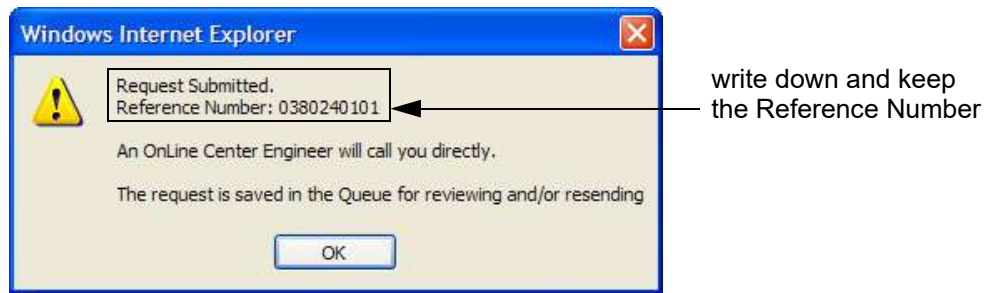


Figure 7-6 Request submitted

4) Write down and keep the Reference Number for follow up procedures, then click OK.

NOTE: If the service platform is not configured an Error message is displayed. The request is **NOT sent!** The request is saved in QUEUE for reviewing and/or resending.

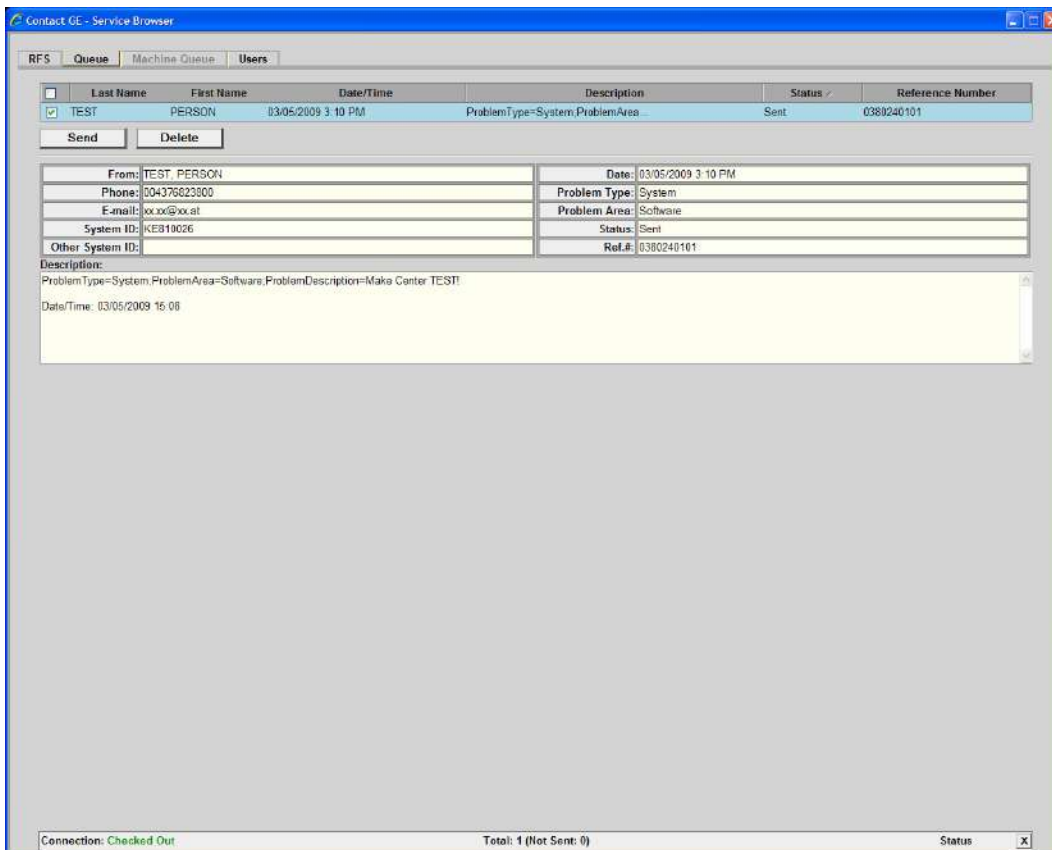


Figure 7-7 Contact GE - Queue

7-2-3 Request for Service (RFS) (R3, R4 and R4.5)

7-2-3-1 Request for Service

- 1) Move the cursor to the GE icon and press the right-click, select "Contact GE"

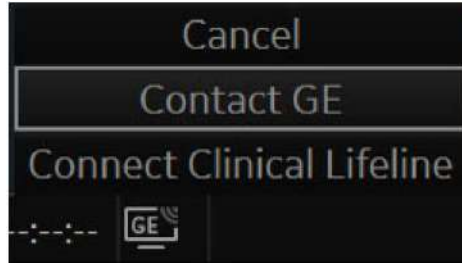


Figure 7-8 Contact GE (R3 only)

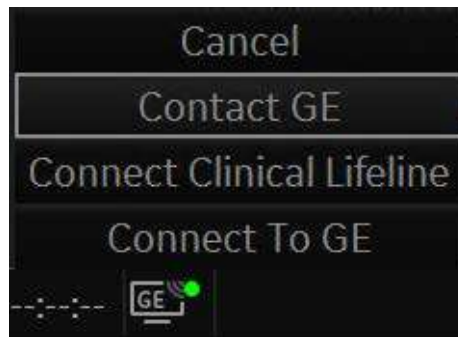


Figure 7-9 Contact GE (R4 and R4.5)



NOTICE *If Agent configuration is not configured correctly, "Contact GE" will not be indicated.*

2) The Request for Service (RFS) page is displayed

The screenshot displays the 'Contact GE' web interface for creating a Request for Service (RFS). The page features a dark header with the GE logo and 'Contact GE' text. Below the header, there are navigation links for 'Create RFS' and 'RFS History'. The main content area contains a form titled 'Contact GE' with the following fields:

- System ID: LP9712345678
- Problem Type: [Dropdown menu]
- Problem Area: [Dropdown menu]
- Problem Description: [Text area]
- First Name: [Text input]
- Last Name: [Text input]
- Phone Number: [Text input]
- Email: [Text input]

At the bottom of the form, there are 'Submit' and 'Reset' buttons.

Figure 7-10 Contact GE – Request for Service

3) Click the “Submit” button to send the problem description to GE Service/Application representatives



NOTICE If Agent configuration is not configured correctly, the "Submit" button is disabled. Refer to the below.

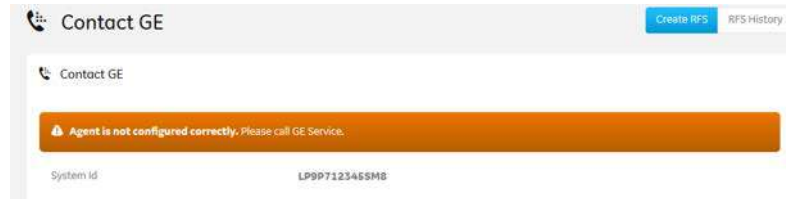


Figure 7-11 Contact GE – Not configured correctly of the Agent configuration

4) Click the “RFS History” button on Contact GE page

The Request for Service History page is displayed. RFS histories are displayed up to 10 recently requested

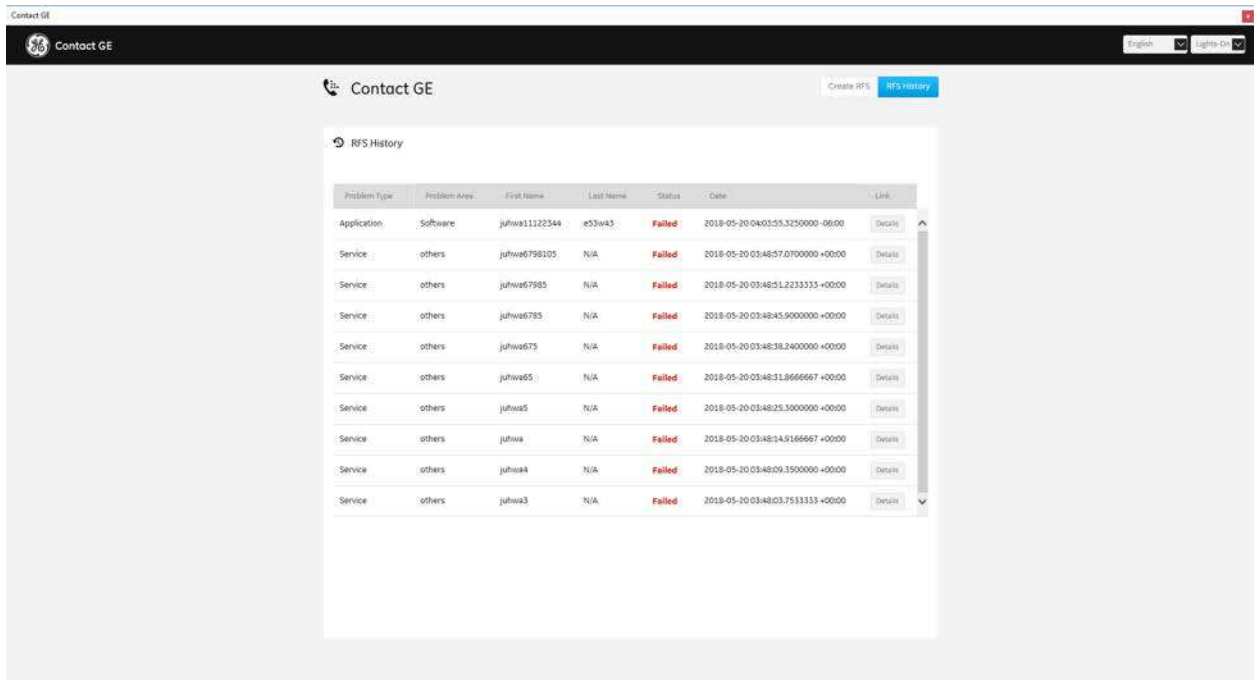


Figure 7-12 Contact GE – Request for Service History

Section 7-3 Check Points Voltages

7-3-1 LED for Power Status

LEDs near the front cooling fan can provide information pertaining to the DC power distribution status.

- 1) Remove Front Cover (no tools required)

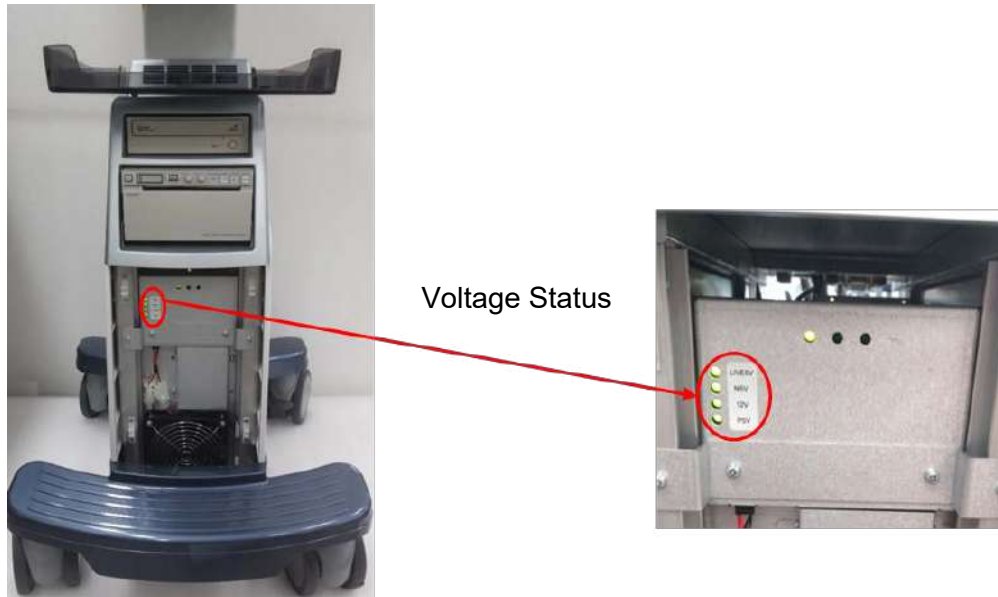


Figure 7-13 LED for Power Status

| LED | Breaker OFF System OFF | Breaker ON System OFF | Breaker ON System ON | Breaker ON System Sleep |
|--------|---------------------------|--------------------------|-------------------------|----------------------------|
| LIVE5V | OFF | ON | ON | ON |
| N5V | OFF | OFF | ON | OFF |
| 12V | OFF | OFF | ON | OFF |
| P5V | OFF | OFF | ON | OFF |

Section 7-4 Screen Captures and Logs

Sometimes, the customer or field engineer wants to capture a presentation on the screen to identify the issue may be recovered by the Online Center (OLC). This is accomplished by saving the log files.

- A) To archive log files and current screen image put DVD-R/CD-R media to DVD drive tray or plug-in external USB drive.
- B) Press ALT+D to archive log files and a screen capture to the target media
- C) “System Problem Reporting” dialog will be popped up and please describe brief information about the issue.
- D) Please select destination drive (CD/ DVD recordable/ HDD/ USB drive).
- E) Press store button to save archive file to the destination drive.

7-4-1 Capturing a screen

The following is the generic process to capture any screen from the scanner.

- 1) Navigate and display the image/screen/volume to be captured.
- 2) Press the **P1**, **P2**, **P3** or **P4** key (depending on system configuration) on the control panel and store the image onto the clipboard (frame on left side of the screen).
- 3) Select the stored image(s) and export them to DVD-R/CD-R, an external USB drive (optional) or mapped Network drive (jpg, bmp, tiff).

7-4-2 Export Log’s and System Data

- 1) “ALT + D” key to save a snapshot and “Full Backup” of the System status.
See: Section 7-4-2-1 on page 7-8

7-4-2-1 Export System Data (by pressing the ALT + D key)

Pressing ALT + D make “Full Backup” archive of the system status. In addition, it creates one screenshot of the point in time when “ALT + D” is pressed. The main usage of the archived files is to identify system problem based on logs and captured screen. (e.g., when experiencing strange behavior or when the problem should be investigated by engineering team.)

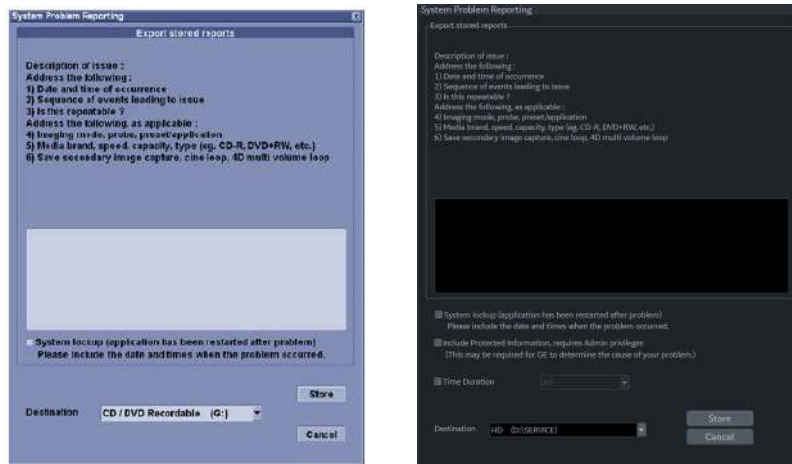
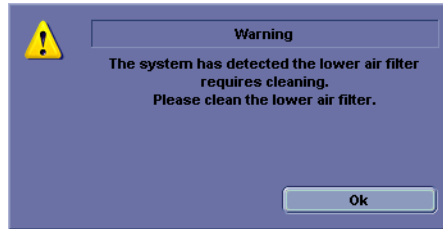


Figure 7-14 System Problem Reporting

NOTE: For capturing logs limitation, please refer to LP9/P7 R3 user manual in chapter 10 under the "Groups" for the preset parameters.

7-4-3 System Warning/Errors and Logs

7-4-3-1 Temperature warning



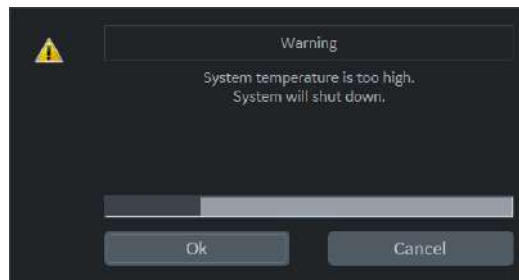
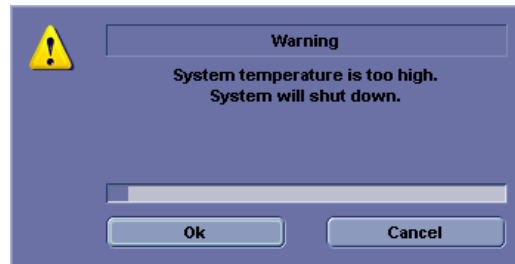
7-4-3-1-1 Cause

CPU Temperature exceeded threshold (104°C).

7-4-3-1-2 What to do

- 1) Shut down the system and Clean the filter.

7-4-3-2 Temperature exceeded threshold



7-4-3-2-1 Cause

CPU Temperature exceeded threshold (100°C) and therefore, system must be shut down immediately.

7-4-3-2-2 What to do

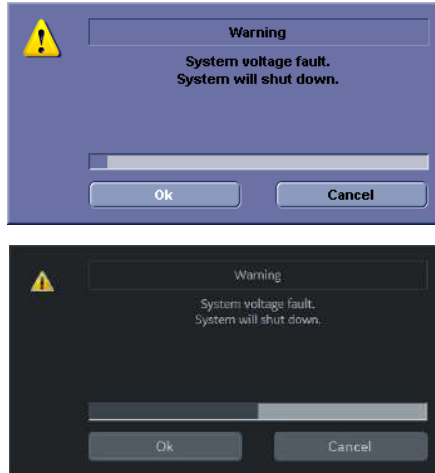
- 1) Shut down the system and Clean the filter.

7-4-3-2-3 Log message of the high temperature

(Example)

Error ; acqHouseKeeping(****); CPU Temperature Sensor BEP_CPU_TEMPERATURE = 105.00 degrees C is outside tolerance limits. UpperLimit = 104.00 LowerLimit = -10.00

7-4-3-3 System voltage failure



7-4-3-3-1 Cause

System detected unexpected voltage level from voltage level monitoring circuits.

7-4-3-3-2 What to Do

- 1) Press OK and reboot the system.
- 2) If problem persists, then shut down the system, turn OFF breaker and reboot.

7-4-3-3-3 Log message of the Voltage error

(Example)

Error ; acqHouseKeeping(540); MCB_AFE_3V3_0= 2.5 outside tolerance limits. UpperBound = 3.6 LowerBound = 2.970, Soft Limits are usually narrower than upperBound and lower bound

7-4-3-4 Hardware configuration error

7-4-3-4-1 Cause

Hardware(s) not detected as valid system. System will boot up but will not allow scanning.

7-4-3-4-2 What to do

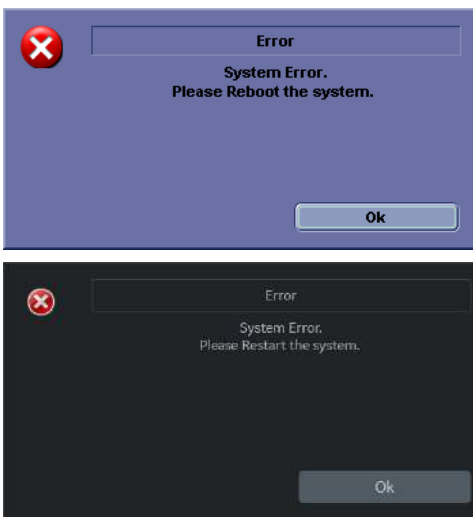
- 1) Press OK, and shutdown the system and reboot.
- 2) If same issue persists, then shut down the system, system breaker.

7-4-3-4-3 Log message of the Invalid hardware error

Example

```
Error ; acqHWCAP(1776); *****
Error ; acqHWCAP(1776); *** ***
Error ; acqHWCAP(1776); *** HW RACK CONFIGURATION INVALID!!! ***
Error ; acqHWCAP(1776); *** ***
Error ; acqHWCAP(1776); *****
Error ; acqHWCAP(1776); *** ***
Error ; acqHWCAP(1776); *** Board FuncRevs Provided ***
Error ; acqHWCAP(1776); *** ----- ***
Error ; acqHWCAP(1776); *** MCB_FuncRev1A (qty=1)
Error ; acqHWCAP(1776); *** COMEXP_FuncRev1A (qty=1)
Error ; acqHWCAP(1776); *** MDC_FuncRev1A (qty=1)
Error ; acqHWCAP(1776); *** MPI_FuncRev1A (qty=1)
Error ; acqHWCAP(1776); *** MIO_FuncRev1A (qty=1)
Error ; acqHWCAP(1776); *** ***
Error ; acqHWCAP(1776); *****
Info ; DFEManager(1776); HandleRunFlag: setting RunDfe and RunBlock flags to true!
Error ; EAErrorHandler(1776); Error from acqHWCAP: Invalid Hardware Rack Configuration - Check logs. Severity : FatalHW
```

7-4-3-5 System Error



7-4-3-5-1 Cause

Unrecoverable error occurred and unable to continue scan. Error dialog does not indicate the root cause of system error. To identify the root cause clearly, it is necessary to investigate the log files.

7-4-3-5-2 What to do

- 1) Press "OK", turn off the console and reboot.
- 2) If same issue persists, then shut down the system, and turn off the system breaker.

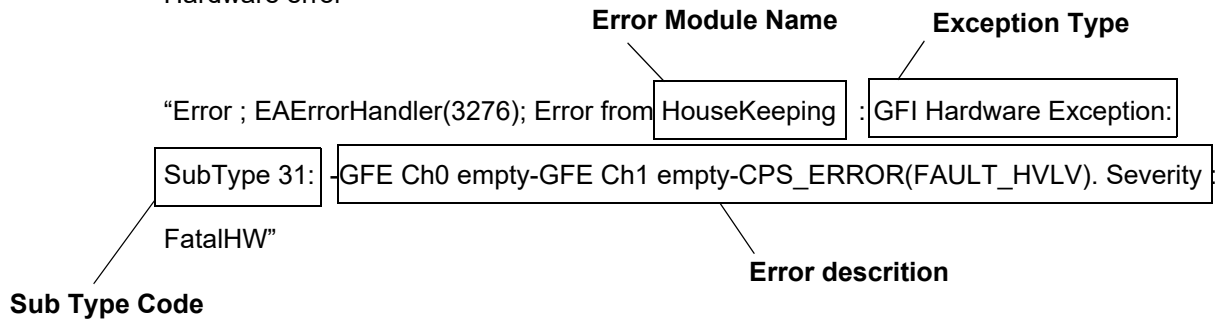
7-4-3-5-3 Log message of System error
 Log message format
 "Error ; EAErrorHandler(****); Error from" + ErrorMessage + ErrorMessage

7-4-3-5-4 Types

7-4-3-5-4-1

Example1 Hardware Errors:

Hardware error



Please see the below tables for the details.

Exception Types:

| |
|--------------------------|
| GFI Hardware Exception |
| GFI Setup Exception |
| GFI Buffer Exception |
| GFI Processing Exception |

Sub Type Codes:

| Code | Error Name | Description |
|------|--|--|
| 31 | eSwHardwareException_ErrorHandler_GFIHardwareError | Hardware Error (MCB/ MDC/MPI..) |
| 167 | eSwProcessingException_TsLevelOk_Timeout | HV (High Voltage) is not available from MDC. |

Error Descriptions:

| Message | Description |
|--|----------------------------------|
| GFE Ch0 empty-GFE Ch1 empty-CPS_ERROR(FAULT_HVLV). Severity :FatalHW | MDC Error. |
| GFE Ch0 empty-GFE Ch1 empty-CPS_ERROR(FAULT_POWER). Severity :FatalHW | MDC Error. |
| GFE Ch0 empty-GFE Ch1 empty-CPS_ERROR(FAULT_STOP). Severity :FatalHW | MDC Error. |
| GFE Ch0 empty-GFE Ch1 empty-BF_ERROR_A . Severity : FatalHW | MCB Error (One of Callisto FPGA) |
| GFE Ch0 empty-GFE Ch1 empty-BF_ERROR_B . Severity : FatalHW | MCB Error (One of Callisto FPGA) |
| scanctrl ScanControl::startScan: Tx Power Supply is not ready. HV setup timeout after 4127 ms, ScanSequencer NOT started!. Severity : NonFatalSW | MDC Error or MDC Error |

7-4-3-5-4-2 Software Errors :

Software error

Error Module Name

“Error ; EAErrorHandler(2284); Error from DFEManager; DFEManager - RunDfe failed!;

DFE ERROR: InPort is not connected (2); device "DelayValues_CW.ceDelay". Severity :

NonFatalSW”

Error Module Name

Section 7-5 Remote Access to Service Platform

7-5-1 General

If the console is setup to connect to InSite ExC server (refer to Chapter.3 for InSite ExC Configuration(R1, R2 and R2.5 only) or Agent Configuration(R3 only)), then remote access technology may provide GE technicians the possibility to view the entire customer's desktop and operation system for diagnostics and trouble shooting.

Using VCO (Virtual Console Observation) a service technician or the OnLine Center can access and modify all PC settings and programs or run diagnostics on the customer's ultrasound scanner. Remote access to the LOGIQ P7/P8/P9/P10 scanner requires permission and customer input before a GE service technician or OLC can access the customer's ultrasound scanner remotely. "Disruptive Mode" can be selected by the customer directly on the LOGIQ P7/P8/P9/P10 ultrasound system (see: Section 7-5-2 on page 7-16), or remotely by the service technician or OLC.

7-5-2 How the Customer enables/disables Disruptive Mode and VCO

- 1) If not already in read mode, **FREEZE** the image.
- 2) Move the cursor to the GE icon and press the **right trackball key** (= right-click).
- 3) Select **Connect Clinical Lifeline**

This activates “Disruptive Mode” and “VCO” for the application OLC to quickly assist the customer.

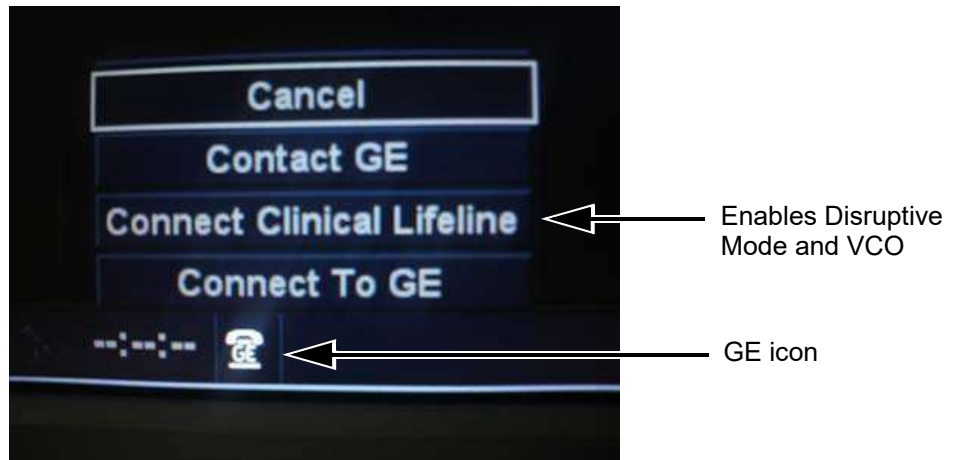


Figure 7-15 Connect Clinical Lifeline (R1, R2, R2.5 only)

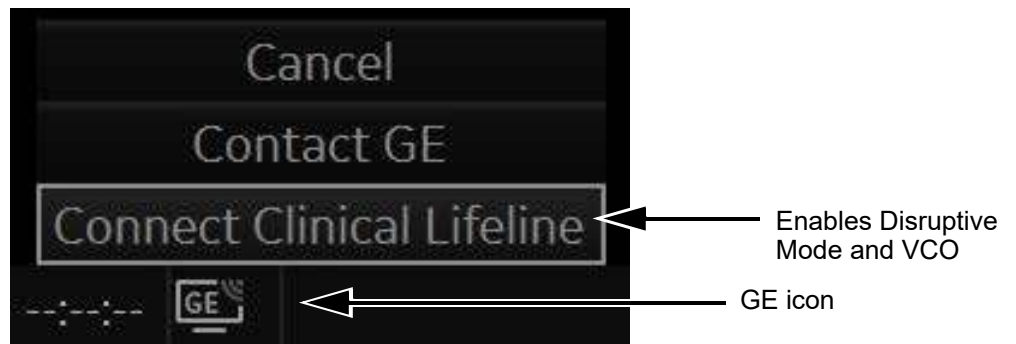


Figure 7-16 Connect Clinical Lifeline (R3 only)

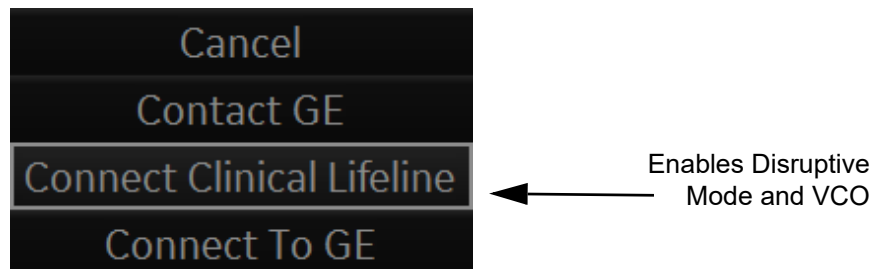


Figure 7-17 Connect Clinical Lifeline (R4 and R4.5 only)

NOTE: To disable disruptive mode, select “CANCEL”.

7-5-3 GE Icon and Remote Connection

Refer to [Section 5-9](#) for Remote Access Icons.

7-5-4 Customer Granting Full Remote Access Permission to GE Service Technician

7-5-4-1 If GE Service Technician requests Remote Access Permission

If a GE Service technician requests remote access to your LOGIQ P7/P8/P9/P10 scanner, following "InSite Notification" appears on the systems screen.

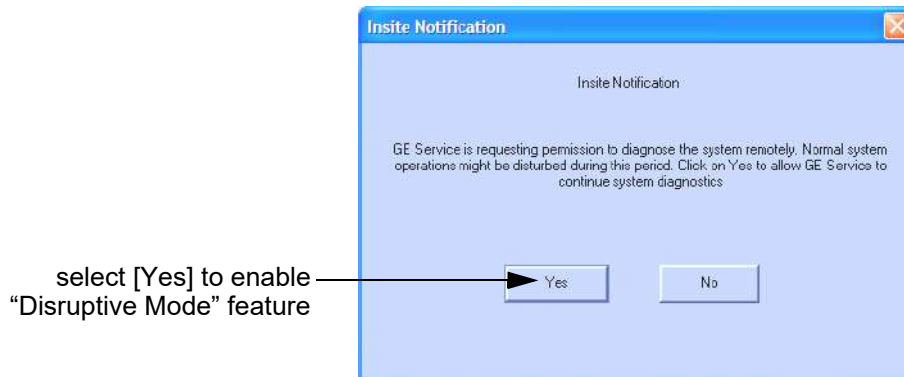


Figure 7-18 Insite Notification (R1, R2, R2.5 only)

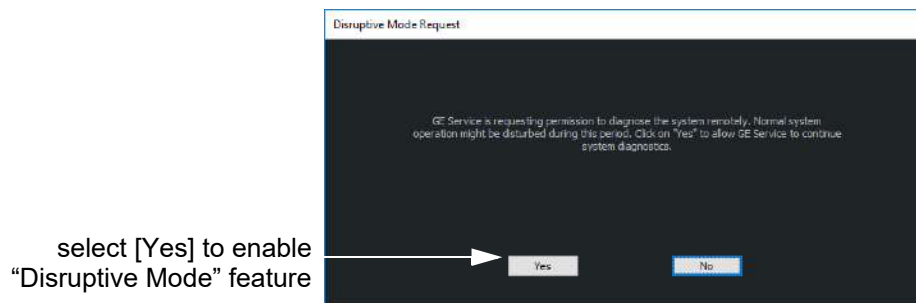


Figure 7-19 Insite Notification (R3, R4 and R4.5)

- 1) Enable "Disruptive Mode" feature by confirming YES

NOTE: If the customer does not wish to have diagnostics running at the time of the request, they select NO. A message is sent back to the OLC or FE that "Disruptive Mode" is not enabled.

7-5-5 Common Service Desktop (CSD)

Refer to Section 3-13 for accessing Common Service Desktop remotely.

7-5-6 CSD: Configuration

Refer to Section 3-13 for accessing Common Service Desktop remotely.

Section 7-6 Minimum Configuration to Boot/Scan

LOGIQ P7/P8/P9/P10 will require at minimum MPI, MCB (with COMExpress),MDC, IO Box, HDD(Mounted on MBP) and OPIO to boot up.

Section 7-7 Troubleshooting Trees, Instructions and Tech Tips

Table 7-2 below outlines LOGIQ P7/P8/P9/P10 troubleshooting trees and instructions shown in the sub-sections.

Table 7-2 Troubleshooting Trees and Instructions

| Sub-section | Description | Page Number |
|-------------|--------------------------|-------------|
| 7-7-1 | System does not boot up | 7-24 |
| 7-7-1 | System does not boot up | 7-24 |
| 7-7-2 | Noise disturbs the image | 7-25 |
| 7-7-4 | Printer Malfunction | 7-27 |
| 7-7-5 | Monitor Troubleshooting | 7-28 |

7-7-1 System does not boot up

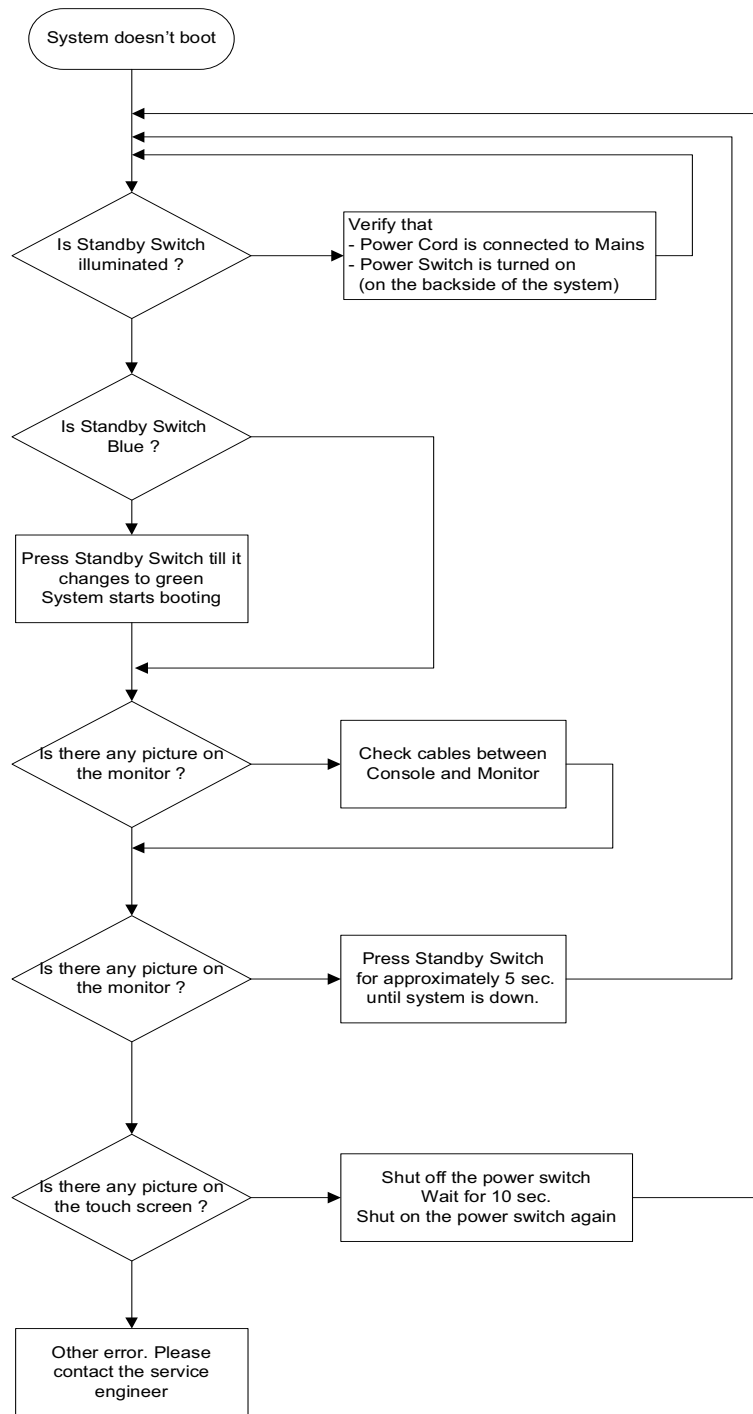


Figure 7-20 System does not Power On / Boot Up

7-7-2 Noise disturbs the image

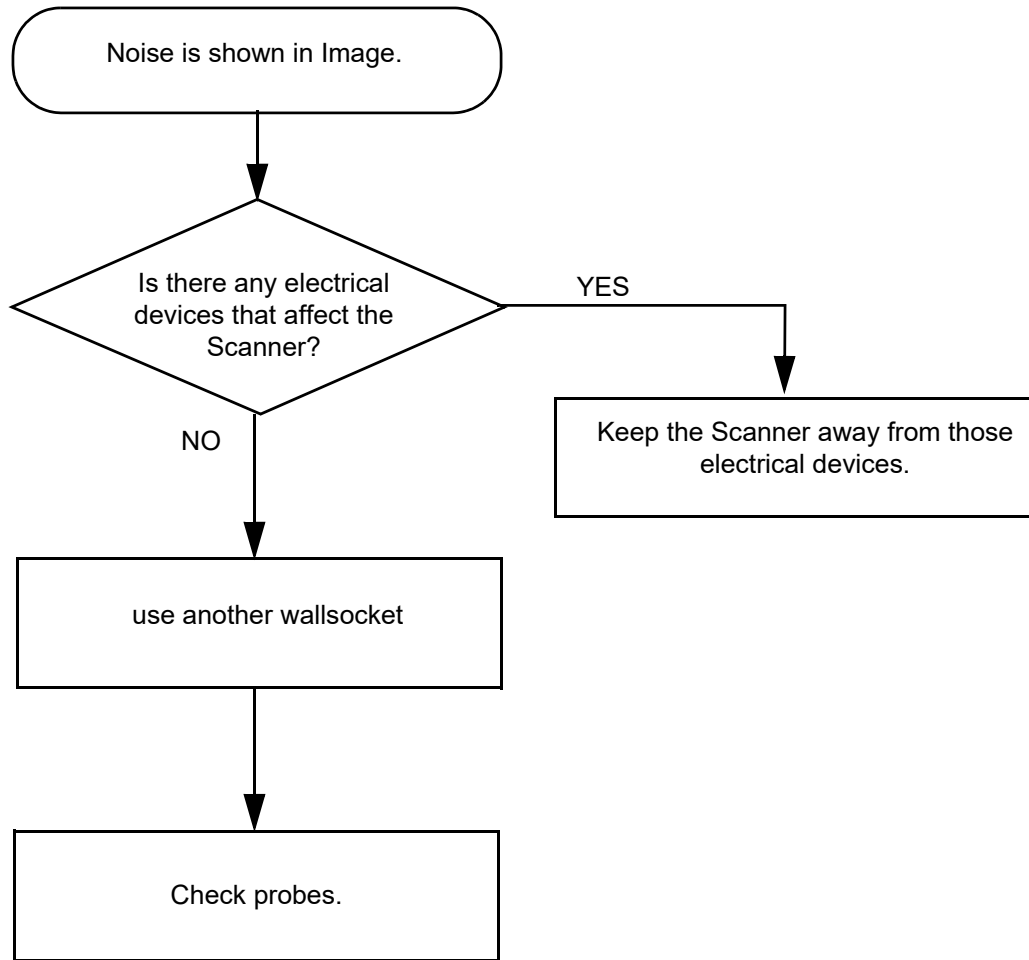


Figure 7-21 Noise disturbs the Image - Troubleshooting

7-7-3 Trackball - Impaired Sensitivity

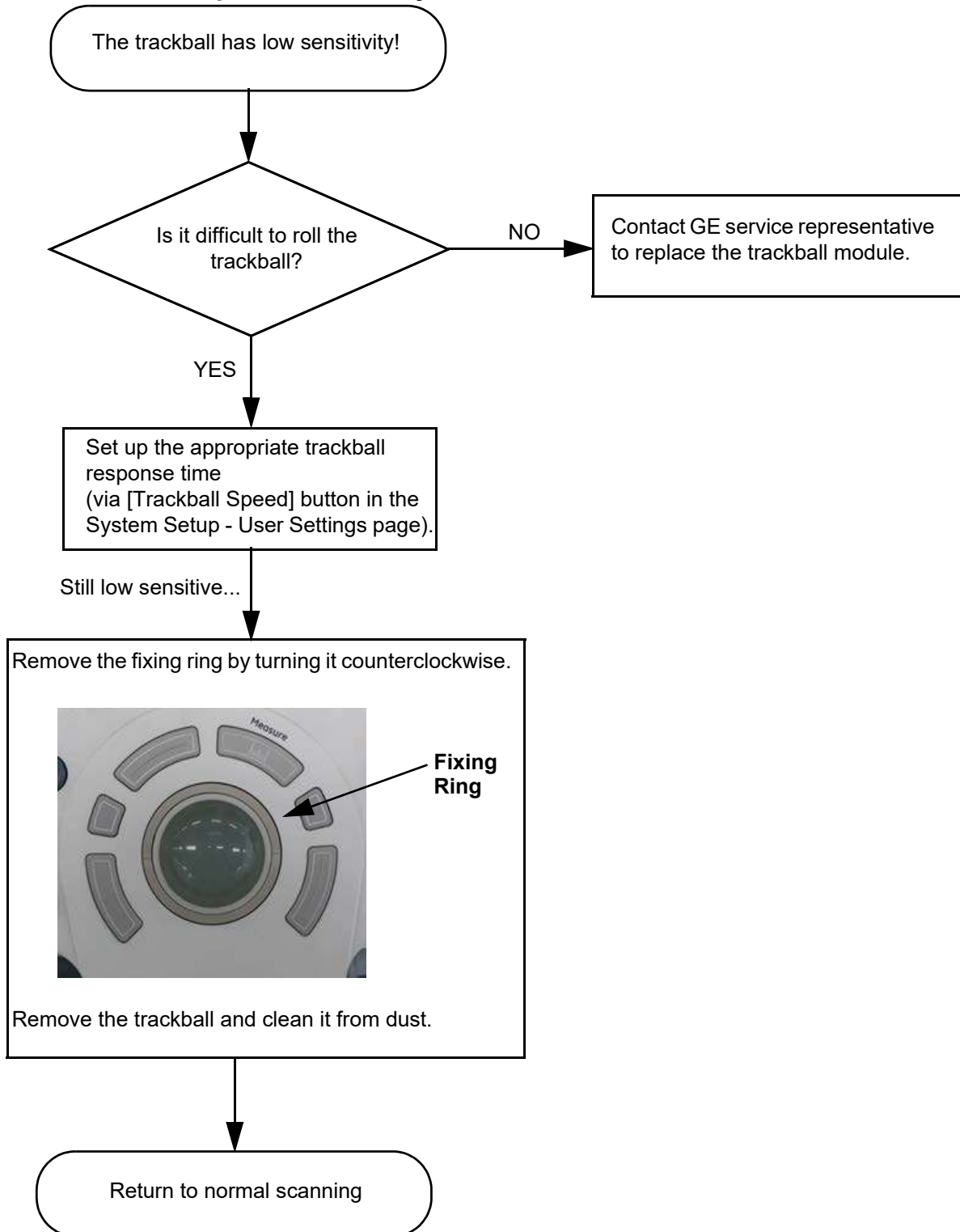


Figure 7-22 Trackball - Impaired Sensitivity

7-7-4 Printer Malfunction

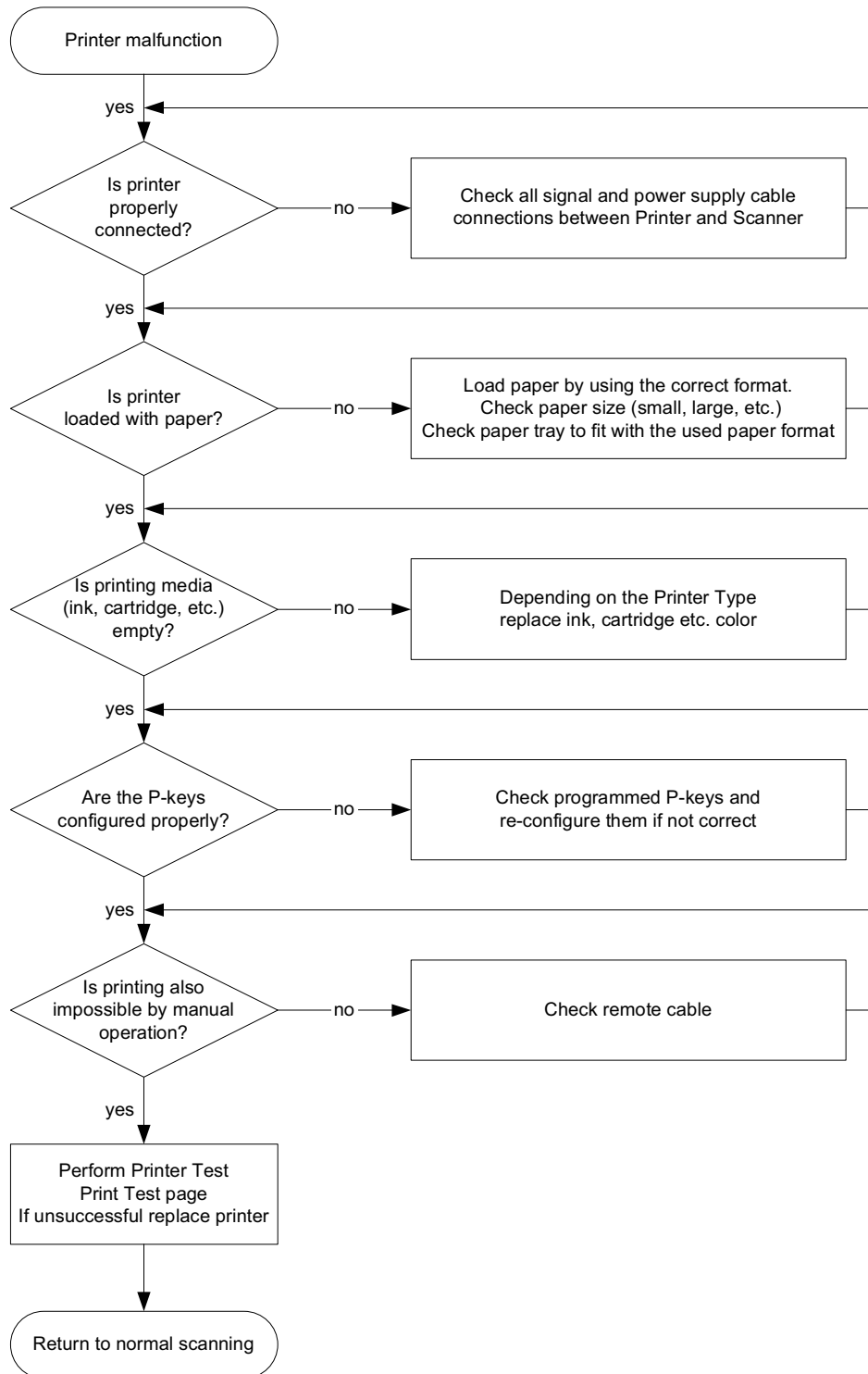



Figure 7-23 Printer Malfunction

7-7-5 Monitor Troubleshooting

| Fault symptom | Check these items |
|---|---|
| No image | Check the power cord is properly connected. |
| | Check the video cable is properly connected. |
| | Check no pins of the video cable are bent. |
| | Check if video is present on backplane. |
| Color is not uniform | Turn ON the power to activate the Auto-Degauss function. |
| Colored streaks appear in image | Check for presence of magnetic sources near the monitor. Eliminate the sources and then degauss the monitor. |
| Screen image is not centered or sized properly | Adjust the picture location, picture size, picture rotation or pincushion distortion. |
| | Some video modes do not fill the screen to the edge of the monitor. There is no single answer to solve the problem. This phenomenon may occur on higher refresh rates (vertical frequency). |
| Picture is fuzzy | Adjust the picture contrast and picture brightness. Some SVGA cards having an excessive video output level will cause a fuzzy picture at the maximum contrast level. |
| | Turn ON the power to activate the Auto-Degauss function. |
| Video test patterns are not clear, bright, parallel or square | Replace the monitor. |

 **NOTICE** The monitor should automatically degauss itself each time power is applied if you wait at least 15 seconds before you turn power back ON.

For further details refer to [Section 6-3 "LCD Monitor Adjustment" on page 6-2](#).

7-7-6 How to import patient data base from older consoles

Customers should back up their dataset through DICOM Export from their older scanner to import back onto the LOGIQ P7/P8/P9/P10. The LOGIQ P7/P8/P9/P10 can only understand DICOM media and cannot understand GE-specific database or private xml.

7-7-7 EZbackup will not delete images to open disk space

Customers have to manually delete the patients after successful EZBackup operation to free up disk space.

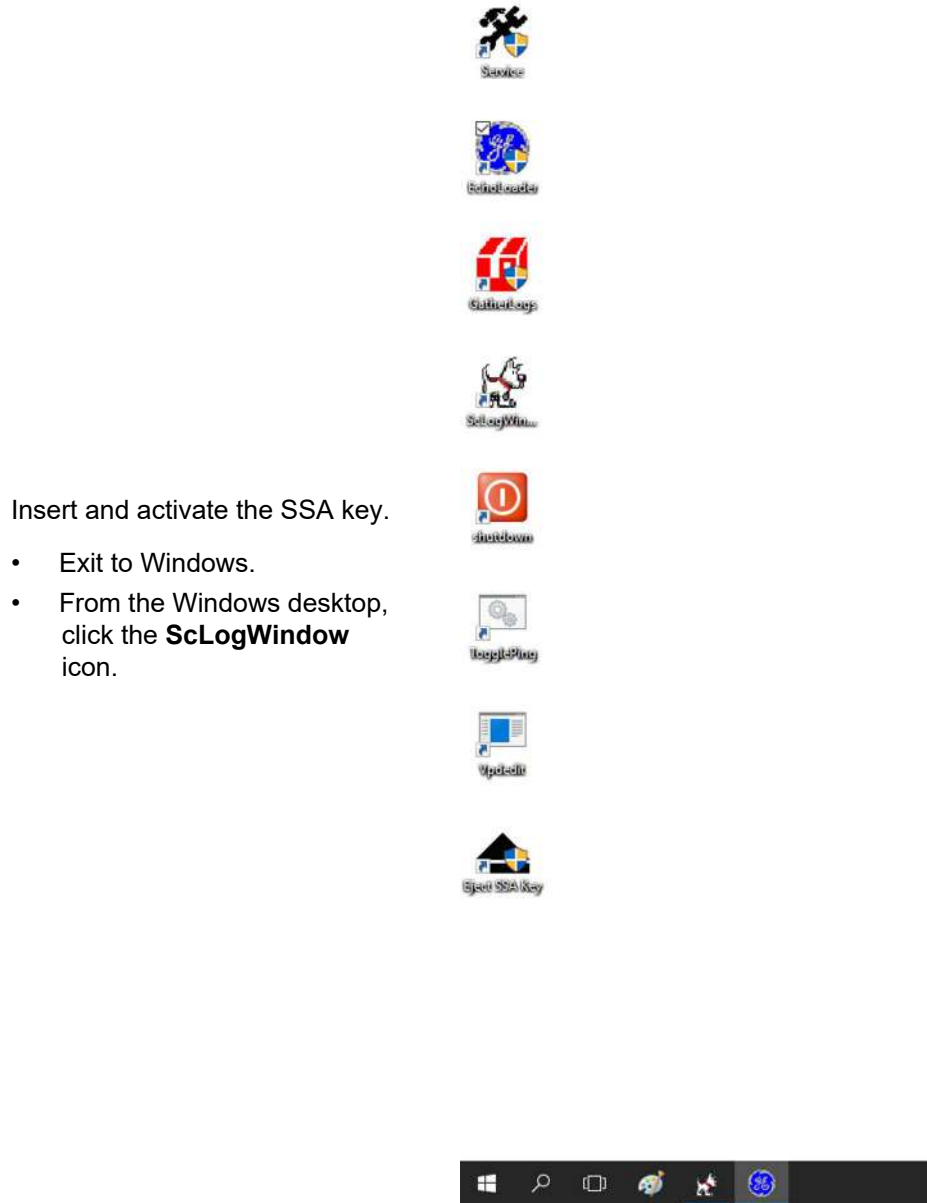
7-7-8 Use ScLogWindow

The ScLogWindow application helps identify errors while the system is running. Access this application from the Windows desktop or through Task Manager. From **ScLogWindow**, you can:

- View the logs
- Save the log
- Filter the log

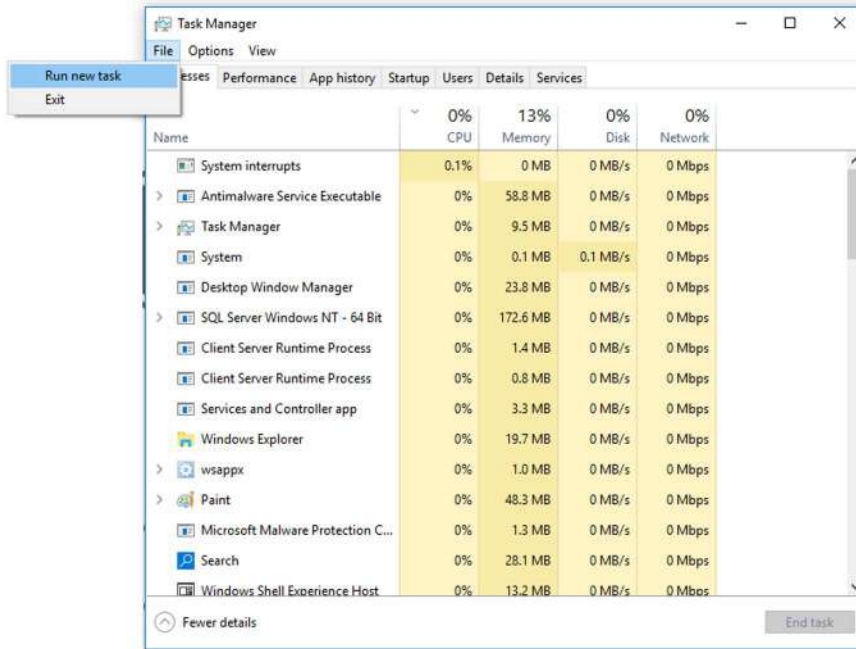
To open ScLogWindow from the Windows desktop:

Figure 7-24 ScLogWindow from the Windows desktop

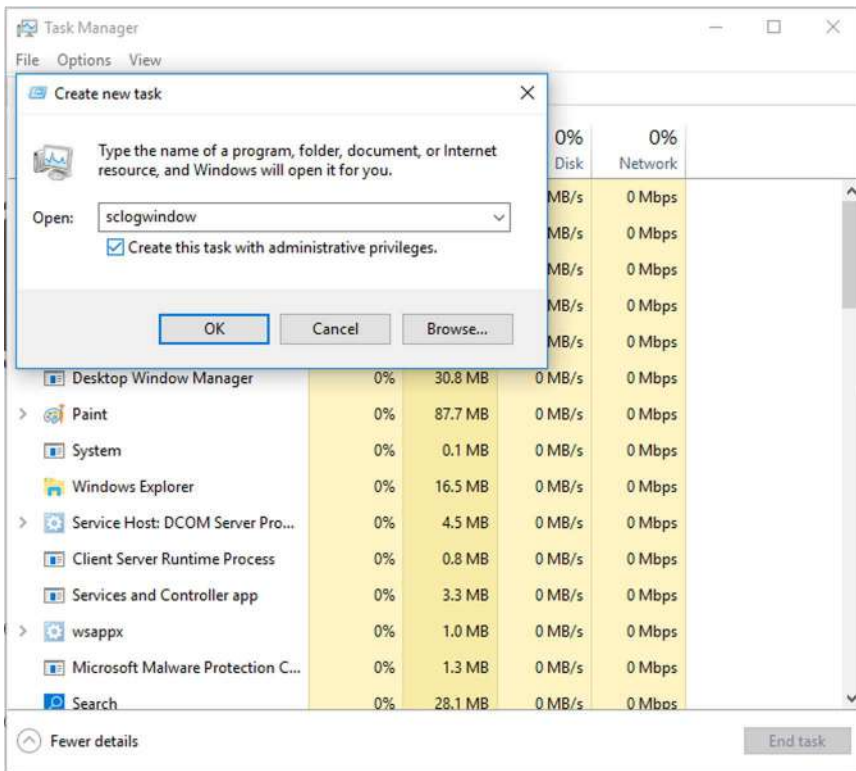


To open ScLogWindow from Task Manager:

- 1.) Insert and activate the SSA key.
- 2.) Press **Ctrl+Alt+Del** and select **Task Manager**.
- 3.) In Task Manager, select **File > Run New Task**.

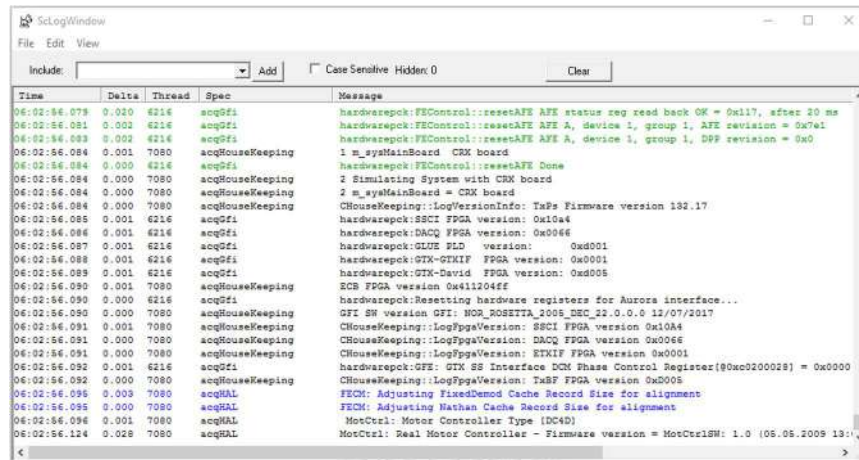


- 4.) In **Open**, enter **SclogWindow**, check **Create this task with administrative privileges**, and then press **OK**.



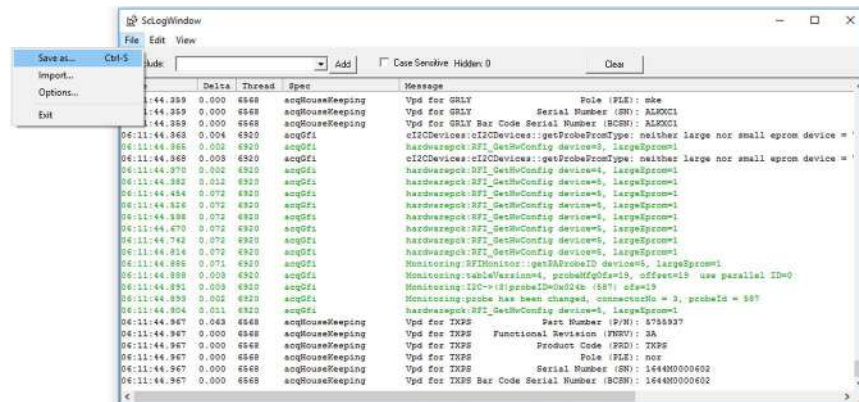
To view logs in the ScLogWindow:

- 1.) With the ScLogWindow open, double-click the **EchoLoader** icon.
- 2.) Use **Alt+Tab** to put the ScLogWindow in front.
- 3.) While the application is booting up, observe logging in ScLogWindow.



To save logs in ScLogWindow:

- Select **File > Save as**



To filter logs in ScLogWindow:

- 1.) Select **View** and check the entries to filter.
- 2.) Select **Stop** to stop the logging.
- 3.) View the filtered logs.
- 4.) To clear the window and start a fresh log capture, select **Clear**.

7-7-9 SSA key

Expiration of an SSA key

When you plug in an SSA key to the LOGIQ P7/P8/P9/P10 and enter the code to unlock it, a message should display on the screen acknowledging the connection. If the message does not appear, the SSA key may have expired.

To check whether the SSA key has expired, navigate to **Service > Utilities > SSA License** and check the expiration status.

Figure 7-25 Example of an expired SSA key



The screenshot shows a table titled "Class M key Details" with two columns: "Name" and "Value". The table contains the following data:

| Name | Value |
|-----------------------|------------|
| Class M key Status | Plugged In |
| Drive Letter | F: |
| Expire Date | Expired |
| SSO ID | |
| Key Counter Value | -1 |
| Max Key Counter Value | -1 |

Dual Class M SSA key support

The SSA service does not support two Class M SSA keys plugged into the LOGIQ P7/P8/P9/P10 at the same time. The first key will validate. If a second key is plugged in, the SSA service will not validate the second key. Apart from validation, plugging two SSA keys into the LOGIQ P7/P8/P9/P10 could cause additional problems.

Abnormal shutdown

If an abnormal shutdown occurs, there is a chance that the SSA service could corrupt and not validate the SSA key. In this occurs, see **To restore an SSA key that is not validating: on page 5-100**.

SSA key battery

There is a battery inside the SSA key. If the SSA key is not periodically charged, the battery may die. The battery life is approximately six months.

For more information, see **SSA License on page 5-99**.

7-7-10 Log analysis

Error logs and monitoring logs are kept in a database format. If needed for troubleshooting, collect them with Alt+D or gather logs. Either process extract information from the database in a collection of files that are readable for the field.

Crashes

Crash information is contained in **/Log/CrashDump**.

Use this log to troubleshoot issues with software crashes. Send these files to engineering for evaluation and determination of the root cause.

Auto transfer errors

When auto transfer is enabled, error information is contained in **CSD_LogFile.log**.

Auto transfer periodically logs data to the back office. For example:

```
13:27:49] ERROR data-transfer.js:764 DataTransfer Manual Data Transfer: Error in uploading full logs file D:\Scanner\upload\log_LogOther_E70034_171221_132748_DB.zip "error"
```

This example may indicate that network connectivity has been compromised on the LOGIQ P7/P8/P9/P10 or there is an issue with the facility reaching out to the back office. Check with the network administrator.

Service alerts

Service alert information is contained in **/Log/SvcAlert*.txt**.

Use this log to troubleshoot issues with alerts generated by the LOGIQ P7/P8/P9/P10. Alerts can also be viewed on the Service desktop. Review log file content to determine the errors the LOGIQ P7/P8/P9/P10 has generated in the past.

USB issues

USB information is contained in **/Log/ScLogsDatabase/UsbLog.txt**.

Use this log to troubleshoot issues with a USB device that may be working intermittently. This log indicates connection and disconnection of USB devices during operation.

Probe use

Probe use information is contained in **/Log/ScLogsDatabase/MainLog.txt**.

Use this log to troubleshoot issues with probes. This log indicates probe selection and mode.

Monitoring logs

Monitoring log information is contained in **/Log/ScLogsDatabase/MonitoringLog.txt**.

Use this log to troubleshoot issues with voltage and temperature. This log contains the monitoring parameters for voltage and temperature, same used to the status indicators on the Service desktop. Use this log to evaluate details of red indicators in the Service desktop.

System configuration logs

Hardware configuration information is contained in **/Log/SysCfg.csv**.

Use this file to troubleshoot issues with hardware configuration (also known as VPD). This log helps to determine the part numbers of boards installed along with versions and serial numbers.

Boot up issues

To troubleshoot issues at boot up, refer to **Bootup Issues** [on page 5-63](#).

7-7-11 Automatic probe diagnostics (Probe Check / VITA)

For R4.5.x and later, automatic probe diagnostics (PHT Probe Check /VITA) has been added.

NOTE: To enable automatic probe diagnostics (Probe Check/VITA), see [Section "To configure automatic data transfers:" on page 5-108](#).

The initial VITA version collects diagnostic data at boot up from the first supported probe found

- Automatic Test Routine - Periodically between patient exams, an automatic routine pulses a single element and lens echoes are recorded by other elements in the array. This is repeated until all elements are pulsed.
- Advanced Data Analysis - The system compiles the lens echo data into a sensitivity matrix comprising the relative transmit and receive frequencies between each combination of elements. This matrix is then analyzed for patterns.
- On-Board Customer Features - The result of this analysis will assess the health of the customers probe, alert to specific failure types, and can even adjust image quality to compensate for probe wear and degradation.

The diagnostic result will be logged in a file, stored under the d:\log\Diag\VITA folder and d:\log, with a.TXT extension.This file can be collected with the Alt+D logs.

Figure 7-26 Probe Acceptance Criteria

| Probe Type | Probe Name | Maximum number of total defect elements | Defects of nearby elements | Gap between defect nearby elements |
|------------------|------------|---|----------------------------|------------------------------------|
| Phased | 3Sc-RS | 13 | 13 | 0 |
| | 6S-RS | 17 | 13 | 0 |
| | 12S-RS | 17 | 13 | 0 |
| | M5Sc-RS | 17 | 9 | 0 |
| | 6Tc-RS | 17 | 13 | 0 |
| Convex: Common | C1-5-RS | 17 | 7 | 3 |
| | 8C-RS | 17 | 7 | 1 |
| | C3-10-D | 17 | 7 | 1 |
| | C2-7-D | 17 | 9 | 3 |
| | 10C-D | 17 | 7 | 1 |
| | C1-6-D | 17 | 9 | 0 |
| Convex: Invasive | E8C-RS | 17 | 7 | 1 |
| | E8CS-RS | 17 | 7 | 1 |
| | Ic9-RS | 17 | 9 | 3 |
| E7C8C-RS | E7C8C-RS | 17 | 7 | 1 |
| Linear: invasive | E7C8L-RS | 17 | 9 | 1 |
| Linear | 9L-RS | 17 | 9 | 1 |
| | ML6-15-RS | 17 | 9 | 1 |
| | L8-18i-RS | 13 | 7 | 1 |
| | 12L-RS | 17 | 7 | 3 |
| | L6-12-RS | 17 | 9 | 1 |
| | L4-12t-RS | 17 | 9 | 1 |
| | L10-22-RS | 17 | 9 | 1 |
| | L3-9i-RS | 17 | 9 | 1 |
| | L3-12-RS | 17 | 9 | 1 |
| 3D/4D | RAB2-6-RS | 17 | 9 | 3 |
| | RIC5-9A-RS | 17 | 9 | 3 |
| Bi-plane | BE9CS-RS | 17 | 9 | 3 |
| Doppler Probe | P8D | Doppler probe does not support PHT | | |
| | P6D | | | |
| | P2D | | | |

7-7-11-1 Max. number of total defect elements

Increasing defect transducer elements result in a more and more dark image and might reduce the lateral resolution. If the overall limit of allowed defect element is reached, the algorithm rates the connected probe as failed. The position of the broken elements is not important for this test, bad elements can be randomly distributed all over the transducer surface.



Figure 7-27 Example: 32 elements total. 8 defects (defect elements marked by X)

7-7-11-2 Defects of nearby elements

This criterium looks for defect element groups with a defined maximum number of elements. These group might contain groups of good elements, where the section “Gap between defect nearby elements” defines the minimum number of good elements which separate the groups of defect elements. These limits are defined for each probe type individually. The image in the affected region is darker than the surrounding part and image details get lost which could result in clinical miss diagnoses. If the limit of too many elements in one group is reached, the element check is rated as failed.



Figure 7-28 Example visualization: 6 out of 32 elements defect (defect elements marked by X)

7-7-11-3 Gap between defect nearby elements

Additionally, to the nearby element criterium a gap of good elements between the defects could appear. If the gap is very small, the image would appear like the image without gap and the automatic recognition would lead to a failed result. If the gap between group of defect elements is wide enough, the operator can recognize two separated areas of broken elements where each might have a negligible IQ effect. In combination with the nearby element criterium, gaps smaller than the limit are rated as failed.



Figure 7-29 Example: 6 of 32 elements are defect with a gap of 2 good elements between (defect elements marked by X)


Chapter 8


Replacement Procedures

Section 8-1 Overview

8-1-1 Purpose of Chapter 8

This chapter contains replacement procedures for different modules and their subsystems.

 **NOTICE** The **Manpower**, time and **Tools** indicated in the Sub-sections include all requirements from **Preparations to Installation Procedures**.

 **WARNING** *No covers or panels should be removed from the system (high-voltage risk). Service and repairs must only be performed by authorized personal. Attempting do-it-yourself repairs invalidate warranty and are an infringement to regulations and are inadmissible acc. to IEC 60601-1.*

 **NOTICE** Energy Control and Power Lockout for LOGIQ P7/P8/P9/P10.

When servicing parts of the system where there is exposure to voltage greater than 30 Volts:

1. Turn off the scanner.
2. Unplug the system.
3. Maintain control of the system power plug.
4. Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation.

Beware that the Power Supply, Front End Processor and Back End Processor may be energized even if the power is turned off when the cord is still plugged into the AC Outlet.



The Waste of Electrical and Electronic Equipment (WEEE) must not be disposed as unsorted municipal waste and must be collected separately. Please contact the manufacturer or other authorized disposal company for information concerning the decommission of your equipment.

Table 8-1 Chapter 8 Contents

| Section | Description | Page Number |
|---------|---|-------------|
| 8-1 | Overview | 8-1 |
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8-1-2 Returning/Shipping System, Probes and Repair Parts

When returning or shipping the LOGIQ P7/P8/P9/P10 system in the original packaging:

- system must be lowered to its minimum height with monitor flapped down
- the Control Console has to be centered and locked in “unextended” position

Equipment being returned must be clean and free of blood and other infectious substances.

GEHC policy states that body fluids must be properly removed from any part or equipment prior to shipment. GEHC employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or and ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

The US Department of Transportation (DOT) has ruled that “items what were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purpose and must be transported as a hazardous material.

Section 8-2 Warnings and important information

8-2-1 Purpose of this section

This section includes important information. Please read it before doing any of the procedures in this chapter.

8-2-2 Warnings



WARNING NO COVERS OR PANELS SHOULD BE REMOVED FROM THE SYSTEM (HIGH-VOLTAGE RISK). SERVICE AND REPAIRS MUST ONLY BE PERFORMED BY AUTHORIZED PERSONAL. ATTEMPTING DO-IT-YOURSELF REPAIRS INVALIDATE WARRANTY AND ARE AN INFRINGEMENT TO REGULATIONS AND ARE INADMISSIBLE ACC. TO IEC 60601-1.



WARNING DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS.



ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (NEAR THE POWER CONNECTOR).

FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.



WARNING THE WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENT MUST NOT BE DISPOSED AS UNSORTED MUNICIPAL WASTE AND MUST BE COLLECTED SEPARATELY.



PLEASE CONTACT THE MANUFACTURER OR OTHER AUTHORIZED DISPOSAL COMPANY TO DECOMMISSION YOUR EQUIPMENT.



NOTICE Energy Control and Power Lockout for LOGIQ P7/P8/P9/P10.

When servicing parts of the system where there is exposure to voltage greater than 30 Volts:

1. Turn off the scanner.
2. Unplug the system.
3. Maintain control of the system power plug.
4. Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation.

Beware that the Power Supply, Front End Processor and Back End Processor may be energized even if the power is turned off when the cord is still plugged into the AC Outlet.



8-2-3 Returning/Shipping Probes and Repair Parts

Equipment being returned must be clean and free of blood and other infectious substances.

GE Healthcare policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE Healthcare employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe). The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

Refer to [Section 1-3-10 "Returning/Shipping System, Probes and Repair Parts"](#) on page 1-19.

The US Department of Transportation (DOT) has ruled that "items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care" are "regulated medical waste" for transportation purposes and must be transported as a hazardous material.

Section 8-3 System Software - Installation/Upgrade Procedure

8-3-1 Introduction

This section describes procedure to install/upgrade software to system.

8-3-2 Manpower

1 person, 1 hour

- Depends on contents of System DVD, peripherals, etc. (R1.x.x or R2.x.x)
- Depends on contents of USB media, peripherals, etc. (R3.x.x or later)

8-3-3 Tools

- System DVD (R1.x.x or R2.x.x)
- Software Flash Drive with Base Load Image and Application Software. (R3.x.x or later)

8-3-4 Preparations

Before performing the Software Upgrade:

- make sure that all system functions are working correct
- check the current Application Software version and the installed Options

8-3-5 Preparation

8-3-5-1 General Notes on LOGIQ P7/P8/P9/P10 Software Loading

When preparing to load software, you must perform the following steps:

- Back up the entire Patient Archive and Reports (you can import the database from previous version into this version).
- Back up all presets, including Service.
- Record Connectivity settings (TCP/IP).
- Load Base System Software and install Application Software:
 - Reload entire drive (all partitions) or
 - Reload only C partition

- The Hard Disk Drive (HDD) on LOGIQ P7/P8/P9/P10 is divided into four visible (R1.x.x.) or five (R2.x.x or later) visible partitions.

Table 8-2 Use of the Partitions (R1.x.x)

| Drive Letter | Label |
|--------------|---------|
| C: | SYSTEM |
| D: | USER |
| E: | ARCHIVE |
| Z: | REPOSIT |

Table 8-3 Use of the Partitions (R2.x.x or later)

| Drive Letter | Label |
|--------------|---------|
| C: | SYSTEM |
| D: | USER |
| E: | ARCHIVE |
| V: | DVR |
| Z: | REPOSIT |

NOTE: Before loading the Base System Software, you must perform the following steps:

- Contact the customer to allow enough lead time to back up the system.
- Be sure no images are in the clipboard or opened exams.
- Review troubleshooting section to collect information for future analysis if you are troubleshooting loss of image or patient data.
- Disconnect the system from the network and remove all transducers from the system.
- Be sure all USB devices (printers only) are connected and turned on (except for USB Flash devices). If a printer is plugged in at this time, it is automatically installed.
- Save all Service Presets if you are connected to InSite to restore remote connectivity after something is completed.
- Save all User Presets.

NOTE: After a full or partial system software load, be sure to check the system date, time and time zone are set correctly.

8-3-5-2 Preparation for Software Loading

8-3-5-2-1 Recording important settings and parameters (optional)

If the system has not been deployed into a customer site yet (i.e. the system has been in the factory default and there has not been patient data), this step can be skipped.

8-3-5-2-1-1 Overview

See the following pages to record data.

These subsections include descriptions for recording/setting up data for the following screens.

With the system Powered On, follow the procedures below to document basic system information and back up Presets, and if required, Patient Archive and Patient Images prior to software load.

- Utility -> Connectivity
 - TCP/IP (see: "Connectivity - Recording the TCP/IP settings").
 - Device (see: "Connectivity - Recording the AE Title and Port settings").
 - Miscellaneous (see: "Connectivity - Recording Miscellaneous settings").
- Utility -> Admin
 - System Admin (see: "Admin - Recording the Software Option Keys").

These subsections include descriptions for recording/setting up data for the following screens.

Hardcopy forms are provided here for convenience, but content will be included if selected during Backup process. Backing up this information is only required if an upgrade specifies the information be backed up or as an extra precaution against loss due to a corrupt back-up disk.

- Utility -> Connectivity
 - Device (see: "Connectivity - Recording Device Destination settings").
 - Service (see: "Connectivity - Recording Service settings").
 - Dataflow (see: "Connectivity - Recording Dataflow settings").
 - Buttons (see: "Connectivity - Recording the Print Key Assignments").
 - Removable Media (see: "Connectivity - Service settings").
- Utility -> Admin
 - Users (see: "Admin - Users").
- Utility -> System
 - Backup/Restore (see: "System - Data Store Management").
 - Peripherals (see: "System - Recording Peripheral settings").
 - About (see: "System - Recording software and hardware versions").
 - General, Record preset Region, Language and Regional Options. (See the latest revision of the LOGIQ P7/P9, LOGIQ P8/P9/P10 Basic User Manual)

8-3-5-2-1-2 Connectivity - Recording the TCP/IP settings

- 1) From the touch panel, select Utility -> Connectivity -> TCP/IP.

Computer Name: PXV1-ME02

IP settings

Enable DHCP:

IP-Address: 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.254

Network Speed: Auto Detect

Reboot the system to activate any changes saved from this page!

Figure 8-1 Connectivity - Recording the TCP/IP settings (R1.x.x)

Computer Name: P0000

Wired Network Configuration

Enable DHCP:

IP-Address: 0.0.0.0

Subnet Mask: 255.255.255.255

Default Gateway:

Network Speed: Auto Detect

Wired Connection

IP-Address:

Subnet Mask:

Default Gateway:

MAC Address: 00-E0-4B-4F-82-23

Speed (Mbps):

Connected (min):

Status:

Restart the system to activate any changes saved from this page!

Figure 8-2 Connectivity - Recording the TCP/IP settings (R2.x.x or R3.x.x)

Computer Name: GHJGP603E

Wired Network Configuration

Enable DHCP:

IPv6:

IP-Address: 0.0.0.0

Subnet Mask: 255.255.255.255

Default Gateway:

Primary DNS Server: 127.0.0.1

Secondary DNS Server:

Network Speed: Auto Detect

Wired Connection

IP-Address:

Subnet Mask:

Default Gateway:

Primary DNS Server:

Secondary DNS Server:

MAC Address: E4-54-E8-79-4A-20

Speed (Mbps):

Connected (min):

Status:

Restart the system to activate any changes saved from this page!

Figure 8-3 Connectivity - Recording the TCP/IP settings (R4.x.x or later)

2) Record all settings in [Table 8-4](#).

Table 8-4 Record settings from TCP/IP screen

| Parameter | Value |
|---|----------|
| Computer Name | |
| IP Settings | |
| Enable DHCP | ON / OFF |
| IP-Address | |
| Subnet Mask | |
| Default Gateway | |
| Network Speed | |
| MAC Address (R2.x.x or later) Primary DNS Server (R4.x.x or later) Secondary DNS Server (R4.x.x or later) | |

8-3-5-2-1-3 Connectivity — WLAN

- 1) Press Utility--> Connectivity--> TCP/IP--> Wireless Network Configuration--> Configuration. The Wireless Network Configuration tool appears. Available Wireless Networks appear.
- 2) Select the Properties Tab.



3) Record all settings in [Table 8-5](#).

Table 8-5 Record settings from WLAN screen

| PARAMETER | VALUE |
|---|-------|
| NETWORK NAME (SSID) | |
| NETWORK AUTHENTICATION | |
| DATA ENCRYPTION | |
| NETWORK KEY | |
| KEY INDEX | |
| Specify Yes/No to "The Key is Provided Automatically" | |

Table 8-5 Record settings from WLAN screen

| PARAMETER | VALUE |
|--|-------|
| IEEE 802.1x AUTHENTICATION INFORMATION | |
| EAP TYPE | |

8-3-5-2-1-4 Connectivity - Recording the AE Title and Port settings

- 1) From the touch panel, select Utility -> Connectivity -> Device.
- 2) Select My Computer in the List of Devices, if not already selected.



Figure 8-4 Connectivity - Recording the AE Title and Port settings (R1.x.x)



Figure 8-5 Connectivity - Recording the AE Title and Port settings (R2.x.x and later)

- 3) Record all settings in [Table 8-6](#).

Table 8-6 Record settings for My Computer from Device screen

| Parameter | Value |
|----------------------|-------|
| AE Title | |
| Port Number | |
| MAC Address (R1.x.x) | |

4) Record all settings in [Table 8-7](#).

Table 8-7 Record settings for each device listed in Device table

| Name | IP Address |
|------|------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

8-3-5-2-1-5 Connectivity - Recording Device Destination settings

1) From the touch panel, select Utility -> Connectivity -> Service.

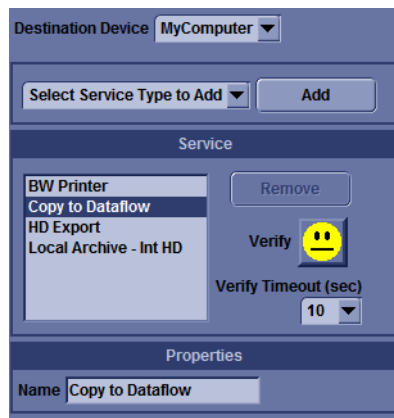


Figure 8-6 Connectivity - Recording Device Destination settings

2) Record all settings in [Table 8-8](#) for each Destination Device and Service.

Table 8-8 Record settings from Service screen

| Destination Device | Properties |
|--------------------|------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

8-3-5-2-1-6 Connectivity - Recording Dataflow settings

- 1) From the touch panel, select Utility -> Connectivity -> Dataflow.

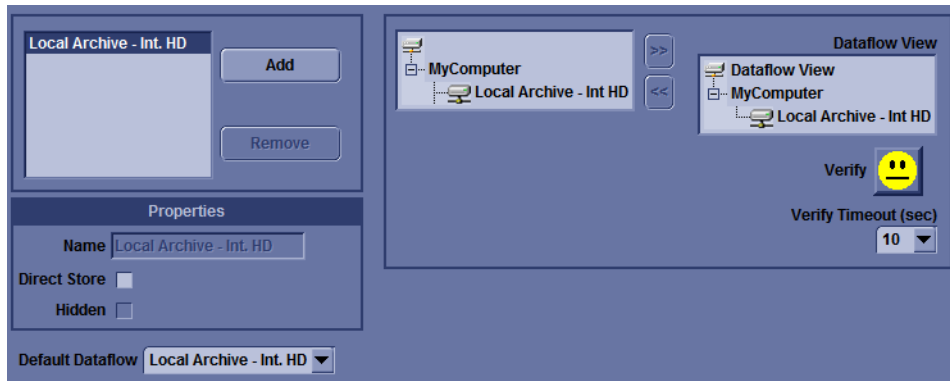


Figure 8-7 Connectivity - Recording Dataflow settings

- 2) Record all settings in Table 8-9 for each Destination Device and Service.

Table 8-9 Record settings from Dataflow screen

| Properties Name | Direct Store | Dataflow | Verify Timeout (sec) |
|-----------------|--------------|----------|----------------------|
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |
| | ON / OFF | | |

Table 8-10 Record settings from Dataflow screen 2

| | |
|------------------|--|
| Default Dataflow | |
|------------------|--|

8-3-5-2-1-7 Connectivity - Recording the Print Key Assignments

- 1) From the touch panel, select Utility -> Connectivity -> Buttons.

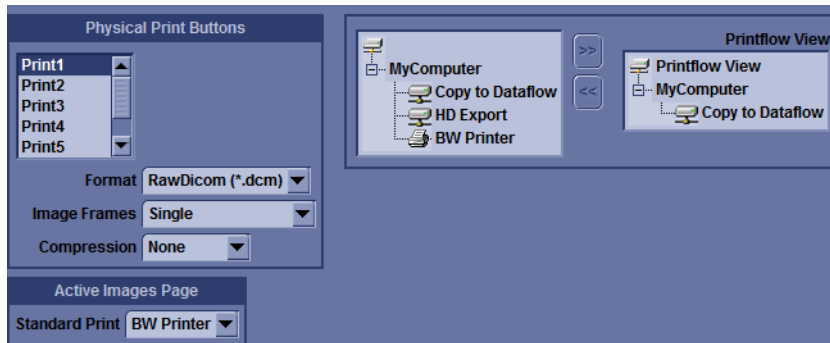


Figure 8-8 Connectivity - Recording the Print Key Assignments

- 2) Record all settings in Table 8-11.

Table 8-11 Record settings from Button screen

| Parameter | Format | Image Frames | Compression | Compression Quality | Printflow View |
|-------------|--------|--------------|-------------|---------------------|----------------|
| Print1 | | | | | |
| Print2 | | | | | |
| Print3 | | | | | |
| Print4 | | | | | |
| Print5 | | | | | |
| Print6 | | | | | |
| PrintScreen | | | | | |

8-3-5-2-1-8 Connectivity - Recording other settings for Print

- 1) From the Touch Panel, select **Utility -> Connectivity -> Buttons**.

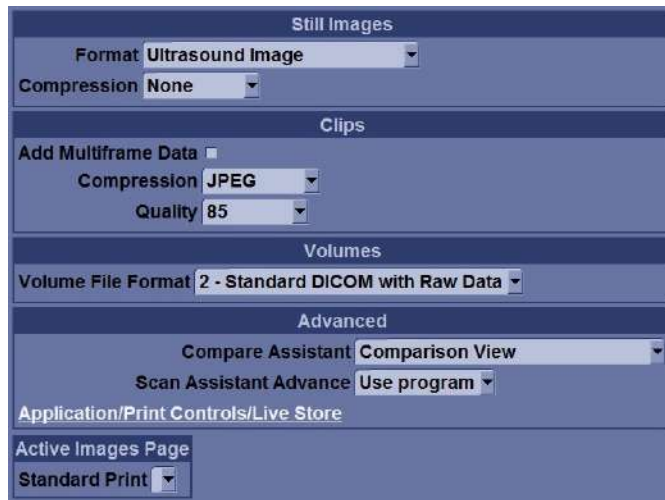


Figure 8-9 Button settings

- 2) Record all settings in [Table 8-16](#)

Table 8-12 Record settings from Button screen

| Still Images | |
|---------------------------|---|
| Format | Ultrasound Image / Secondary Capture - Image / Secondary Capture - Video / Secondary Capture - Screen |
| Compression | None / RLE / JPEG / JPEG2000 |
| Clip/Volumes | |
| Clips Add Multiframe Data | ON / OFF |
| Compression | None / RLE / JPEG / JPEG2000 |
| Quality | |
| Volume File Format | 1 - Standard DICOM / 2 - Standard DICOM with Raw / 3 - Enhanced DICOM / 2&3 (2 files) |

8-3-5-2-1-9 Connectivity - Service settings

- 1) From the touch panel, select Utility -> Connectivity -> Service.

8-3-5-2-1-10 Connectivity - Recording Miscellaneous settings

- 1) From the touch panel, select Utility -> Connectivity -> Miscellaneous.

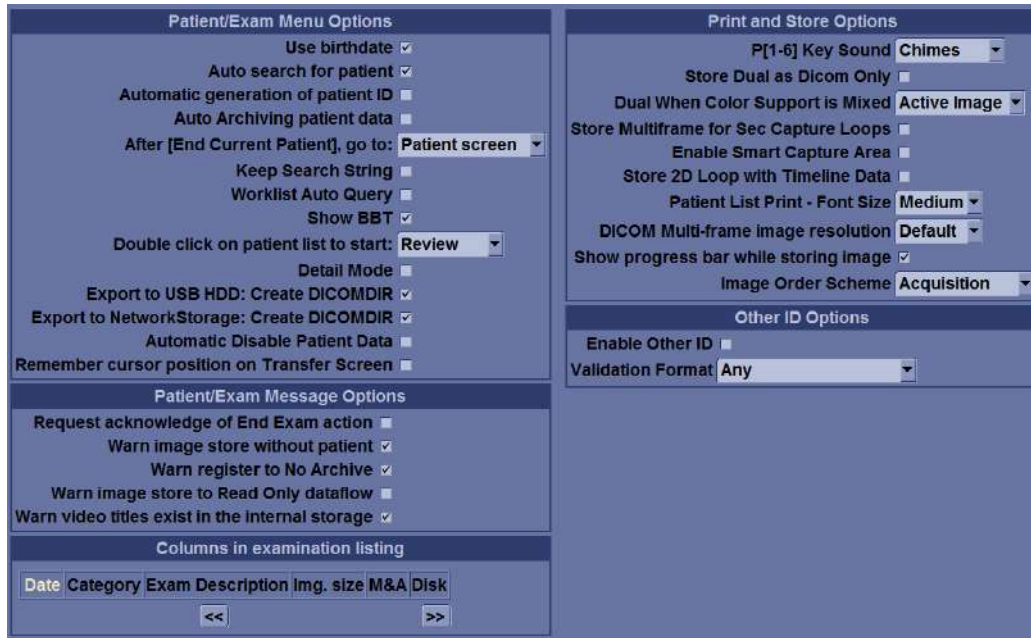


Figure 8-11 Connectivity - Recording Miscellaneous settings (R1.x.x or R2.x.x)

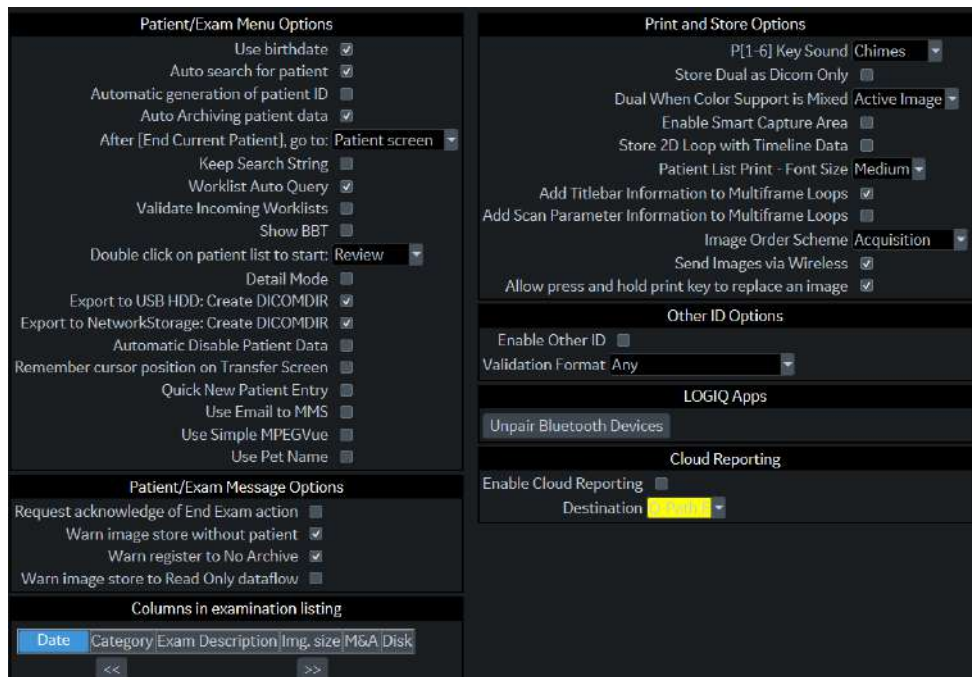


Figure 8-12 Connectivity - Recording Miscellaneous settings (R3.x.x or later)

2) Record all settings in [Table 8-14](#).

Table 8-14 Record settings from Miscellaneous screen

| Patient/Exam Menu Options | ON/OFF or Value |
|--|-----------------|
| Use birthdate | |
| Auto search for patient | |
| Automatic generation of Patient ID | |
| Auto Archiving patient data | |
| After [End Current Patient], go to: | |
| Keep Search String | |
| Worklist Auto Query | |
| Validate Incoming Worklist (R3.x.x or R4.x.x) | |
| Show BBT | |
| Double click on patient list to start: | |
| Detail Mode | |
| Export to USB HDD: Create DICOMDIR | |
| Export to Network Storage: Create DICOMDIR | |
| Automatic Disable Patient Data | |
| Remember cursor position on Transfer Screen | |
| Quick New Patient Entry (R3.x.x or R4.x.x) | |
| Use Email to MMS (R3.x.x or R4.x.x) | |
| Use Simple MPEGVue (R3.x.x or R4.x.x) | |
| Use Pet Name (R3.x.x or R4.x.x) | |
| Patient/Exam Message Options | ON/OFF or Value |
| Request acknowledge of End Exam action | |
| Warn Image store without patient | |
| Warn register to No Archive | |
| Warn Image store to Read Only dataflow | |
| Warn video titles exist in the internal storage (R1.x.x or R2.x.x) | |
| Columns in examination listings | ON/OFF or Value |
| (Date Category Exam Description Img. Size M&A Disk | |
| Print and Store Options | ON/OFF or Value |
| P[1-6] Key Sound | |
| Store Dual as Dicom Only | |
| Dual When Color Support is Mixed | |
| Store Multiframe for Sec Capture Loops (R1.x.x. or R2.x.x) | |
| Enable Smart Capture Area | |
| Store 2D Loop with Timeline Data | |
| Patient List Print - Font Size | |

Table 8-14 Record settings from Miscellaneous screen

| | |
|---|------------------------|
| Add Titlebar Information to Multiframe Loops (R3.x.x or R4.x.x) | |
| Add Scan Parameter Information to Multiframe Loops (R3.x.x or R4.x.x) | |
| DICOM Multi-frame image resolution (R1.x.x or R2.x.x) | |
| Show progress bar while storing image (R1.x.x or R2.x.x) | |
| Image Order Scheme | |
| Send Images via Wireless (R3.x.x or R4.x.x) | |
| Allow press and hold print key to replace an image (R3.x.x or R4.x.x) | |
| Other ID Options | ON/OFF or Value |
| Enable Other ID | |
| Validation Format | |
| Cloud Reporting (R3.x.x or R4.x.x) | ON/OFF or Value |
| Enable Cloud Reporting | |

8-3-5-2-1-11 Admin - Recording the Software Option Keys

- 1) From the touch panel, select Utility -> Admin -> System Admin.

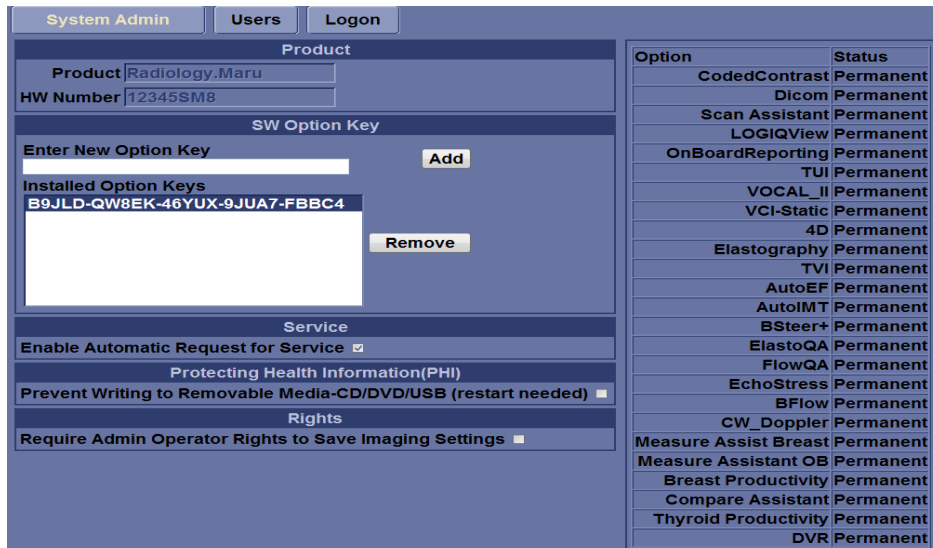


Figure 8-13 Admin - Recording the Software Option Keys (R1.x.x or R2.x.x)

8-3-5-2-1-12 Admin - Users

- 1) From the touch panel, select Utility -> Admin -> Users.

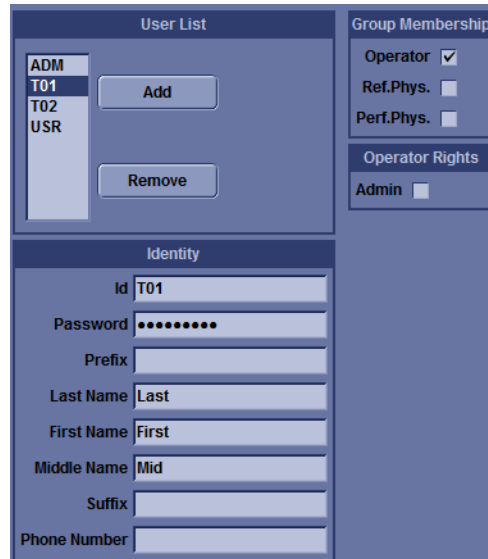


Figure 8-15 Admin - Users (R1.x.x or R2.x.x)

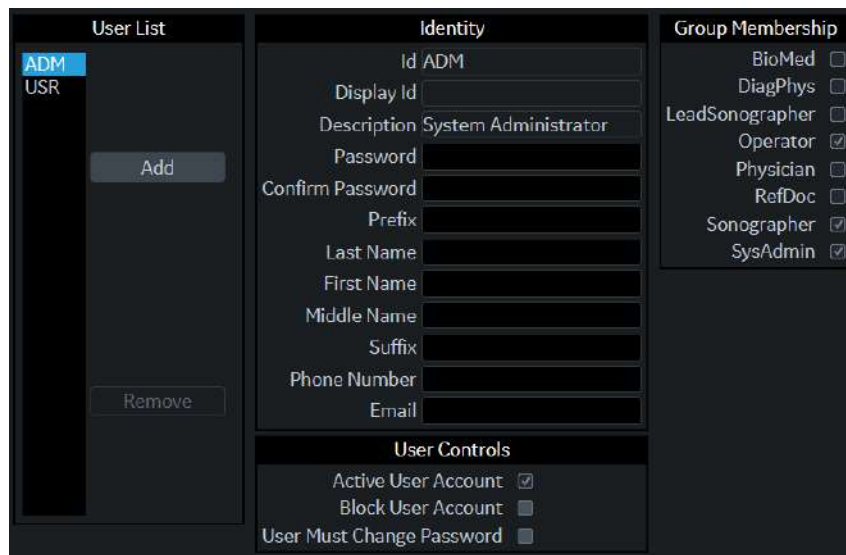


Figure 8-16 Admin - Users (R3.x.x or later)

- 2) Record all settings in [Table 8-16](#).

Table 8-16 Record settings from Users screen

| User ID | Prefix | Last Name | First Name | Group Membership | Op Rights |
|---------|--------|-----------|------------|------------------|-----------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Table 8-16 Record settings from Users screen

| User ID | Prefix | Last Name | First Name | Group Membership | Op Rights |
|---------|--------|-----------|------------|------------------|-----------|
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

8-3-5-2-1-13 System - Data Store Management

- 1) From the touch panel, select Utility -> System-> Backup/Restore.

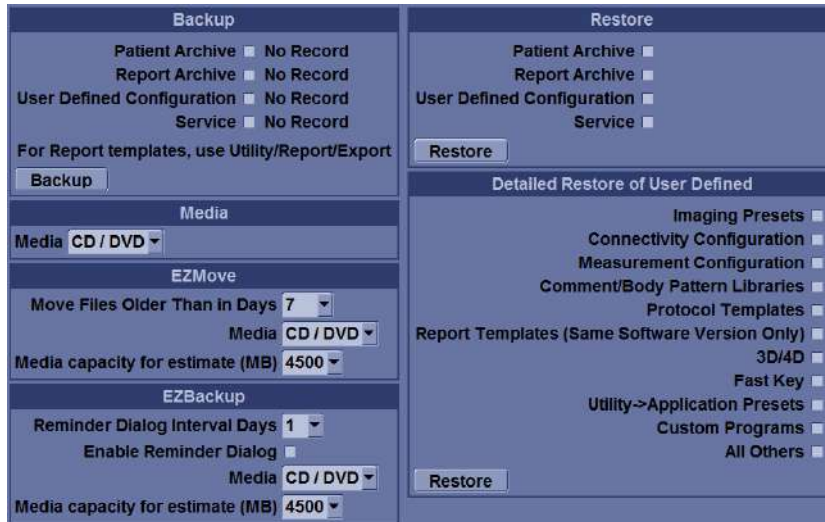


Figure 8-17 System - Data Store Management (R1, R2, R2.5)

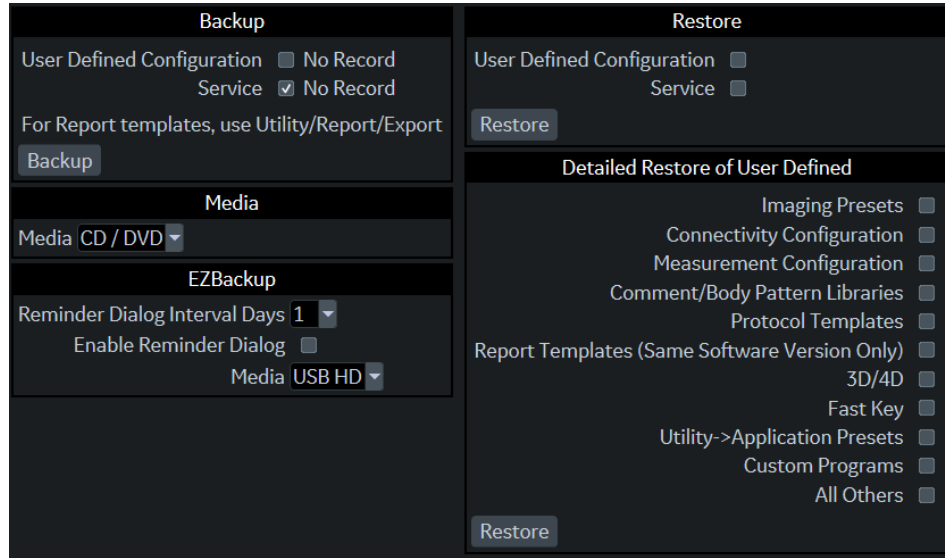


Figure 8-18 System - Data Store Management (R4.x.x or later)

2) Record all settings in Table 8-17.

Table 8-17 Record settings from Backup/Restore screen

| | Move Files Older than in (Days) | Reminder Dialog Interval Days | Media | Capacity |
|----------|---------------------------------|-------------------------------|-------|----------|
| EZMove | | | | |
| EZBackup | | | | |

8-3-5-2-1-14 System - Recording Peripheral settings

- 1) From the touch panel, select Utility -> System-> Peripherals.



Figure 8-19 System - Recording Peripheral settings (R1.x.x.)

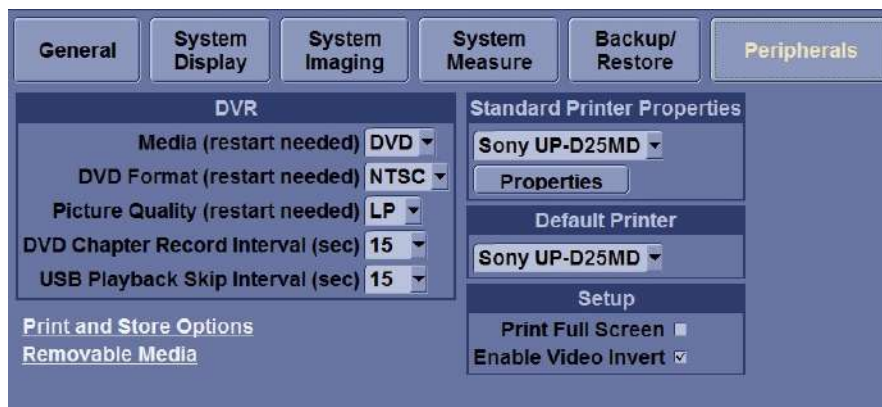


Figure 8-20 System - Recording Peripheral settings (R2.x.x)

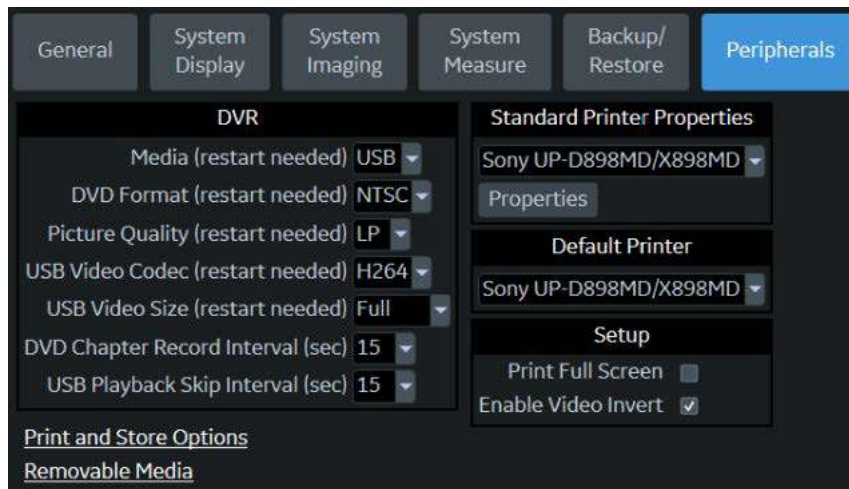


Figure 8-21 System - Recording Peripheral settings (R3.x.x or later)

2) Record all settings in [Table 8-18](#).

Table 8-18 Record settings from Peripherals screen (R1.x.x)

| Parameter | Value |
|-----------------------------|-------|
| Video Settings - Format | |
| Standard Printer | |
| Default Printer | |
| Setup - Print Full Screen | |
| Setup - Enable Video Invert | |
| DVR Picture Quality | |

Table 8-19 Standard printer and Default printer (R2.x.x. and later)

| Parameter | Value |
|------------------|-------|
| Standard Printer | |
| Default Printer | |

Table 8-20 DVR (R2.x.x. and later)

| Parameter | Value |
|------------------------------------|------------------------------|
| Media | ___ DVR ___ USB |
| DVD Format | ___ PAL ___ NTSC |
| Picture Quality | ___ HQ ___ SP ___ LP ___ EP |
| DVD Chapter Record Interval | ___ 15 ___ 30 ___ 60 ___ 120 |
| USB Playback Skip Interval | ___ 15 ___ 30 ___ 60 ___ 120 |
| USB Video codec (R3.x.x or R4.x.x) | ___ H264 ___ MPEG2 |
| USB Video Size (R3.x.x or R4.x.x) | ___ Full ___ Normal |

8-3-5-2-1-15 System - Recording software and hardware versions

1) From the touch panel, select Utility -> System-> About.



Figure 8-22 System - Recording software and hardware versions

2) Record software and hardware versions in [Table 8-21](#).

Table 8-21 Record software and hardware versions

| Description | Record Versions |
|-------------------------------------|-----------------|
| Application Software Version | |
| Application Software Part Number | |
| System Software Version (Image Rev) | |
| System Software (Image) Part Number | |

8-3-5-2-1-16 Location, Region and Language

- 1) From the touch panel, select Utility -> System-> General.

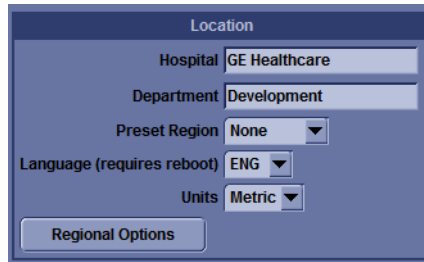


Figure 8-23 Location, Region and Language (R1.x.x)



Figure 8-24 Location, Region and Language (R2.x.x)

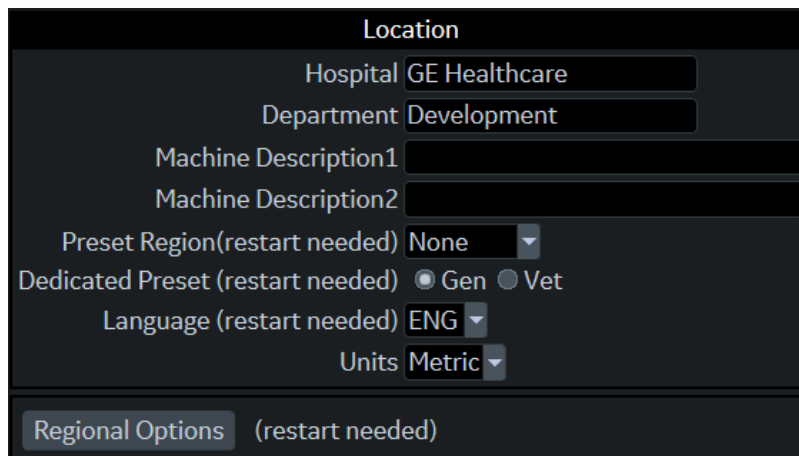


Figure 8-25 Location, Region and Language (R3.x.x or later)

- 2) Record all settings in [Table 8-22](#).

Table 8-22 Record settings from Location

| Parameter | Value |
|---------------|-------|
| Hospital | |
| Department | |
| Preset Region | |
| Language | |

Table 8-22 Record settings from Location

| Parameter | Value |
|------------------------------------|-------|
| Units | |
| Machine Description1 (R2.x.x) | |
| Machine Description2 (R2.x.x) | |
| Dedicated Preset (R3.x.x or later) | |

8-3-6 System Software - Installation Procedure

Two separate methods of software installation is offered in LOGIQ P7/P8/P9/P10.


- A) Software Load from DVD(R1/R2) or USB media (R3/R4/R4.5)
- B) Software Re-Load from Repository

| | | |
|-----------|---|--|
| Situation | <ul style="list-style-type: none"> • Harddrive is new • Reload from Repository fails • Wish to perform "Clean Install" | <ul style="list-style-type: none"> • Re-installation for application or operating system issues |
| | ↓ | ↓ |
| | Perform Software Load from DVD or USB media Refer to <i>section 8-3-7</i> | Perform Software Reload Refer to <i>section 8-3-8</i> |

8-3-7 Software Installation from DVD

8-3-7-1 System Software - Installation Procedure (R1.x.x)

- 1) Prepare the Base System Software DVD.
- 2) Power ON the scanner and press "DEL"(If AN key is installed) or press left bottom key of trackball (If there's no AN Key) to enter BIOS

 **NOTICE** If there's no AN key, please use trackball to move menu in BIOS mode and click left bottom key of trackball to select menu in BIOS and double-click to set or change the value in BIOS. Right bottom key of trackball is 'ESC' in BIOS.

Left bottom key of trackball to enter BIOS and select menu and set or change the value in BIOS

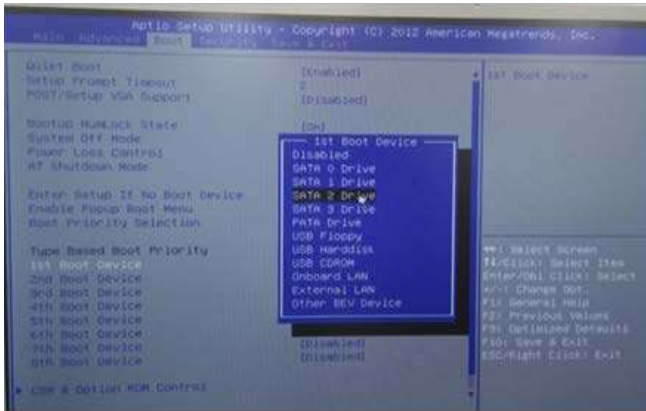


Right bottom key of trackball for 'ESC' in BIOS

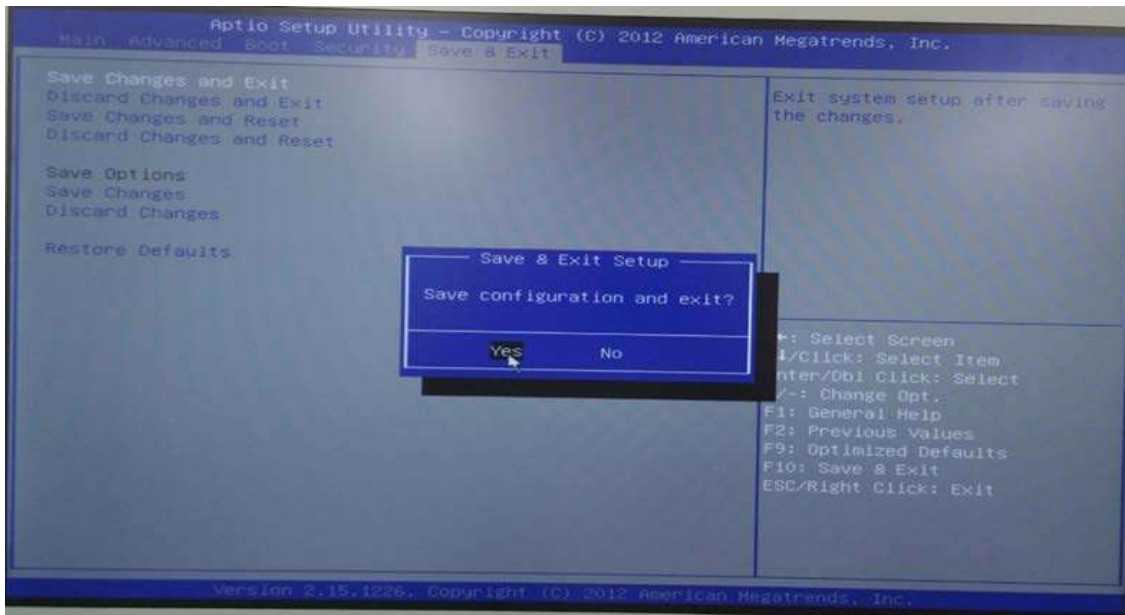
- 3) Type "maru" for password.



- Go to “Boot” in BIOS menu and change the setting value from “SATA 1 Drive” to “SATA 2 Drive” in ‘1st Boot Device’, change the setting value from “SATA 2 Drive” to “SATA 1 Drive” in ‘2nd Boot Device’

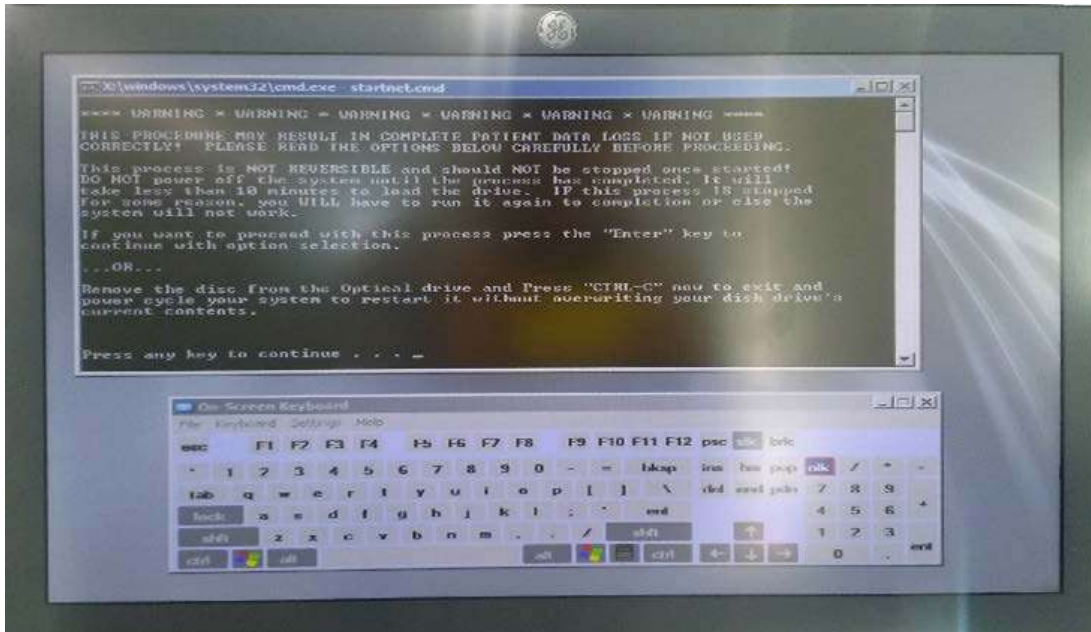


- Go to “Save & Exit” in BIOS menu and select “Save Changes and Exit”. Then, the system will re-boot.



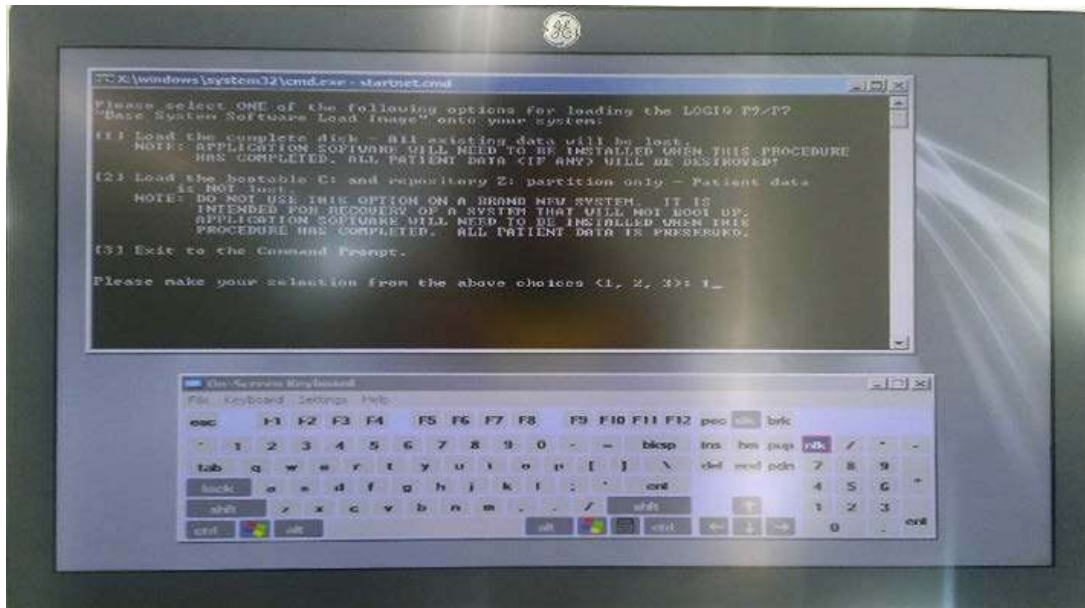
- Press DVD-Drive eject button.
- Place the Base System Software DVD on the tray.
- Wait few moments for DVD drive to read DVD contents.

9) The notification screen appears, and then hit the Enter key.

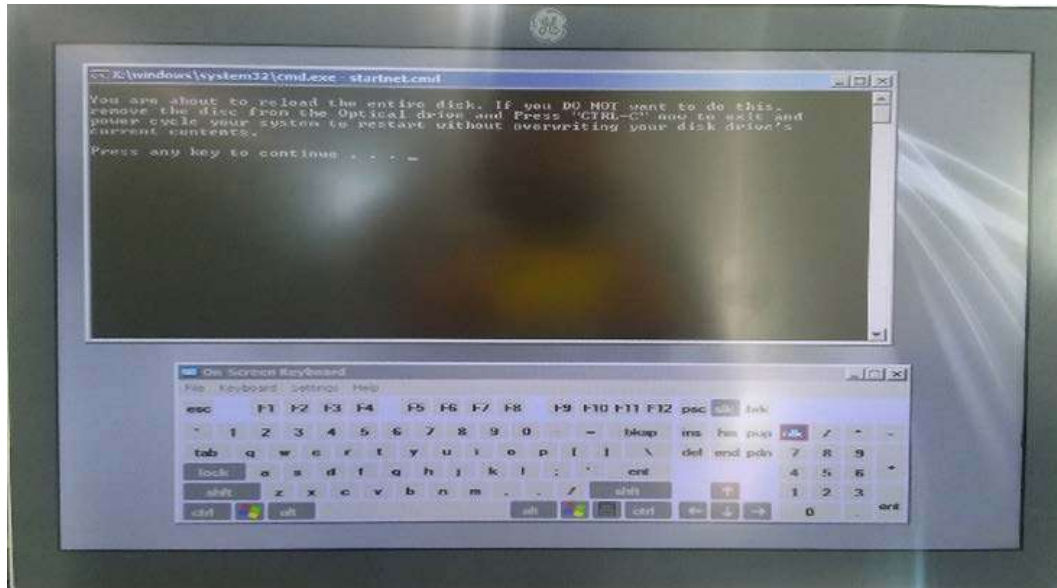


NOTE: Use simulator A/N keyboard if customer's system does not have external A/N keyboard

- 10) Select either
[1] "Load the complete disk", or
[2] "Load the bootable C: and repository Z: partition only" and hit the Enter key.

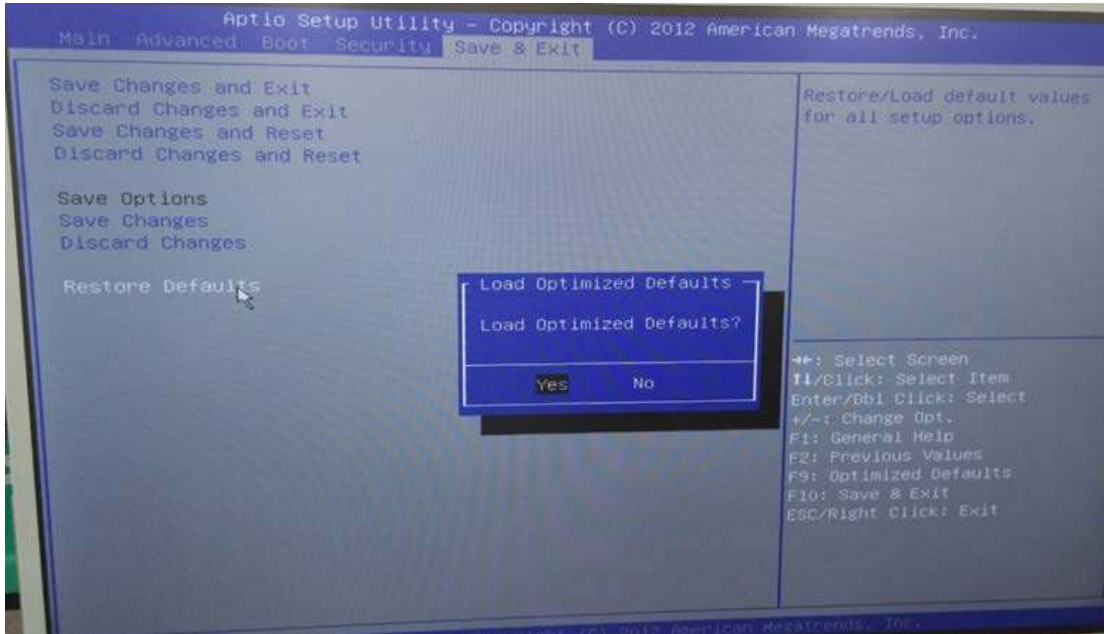


11) A confirmation window appears, and then hit the Enter key.

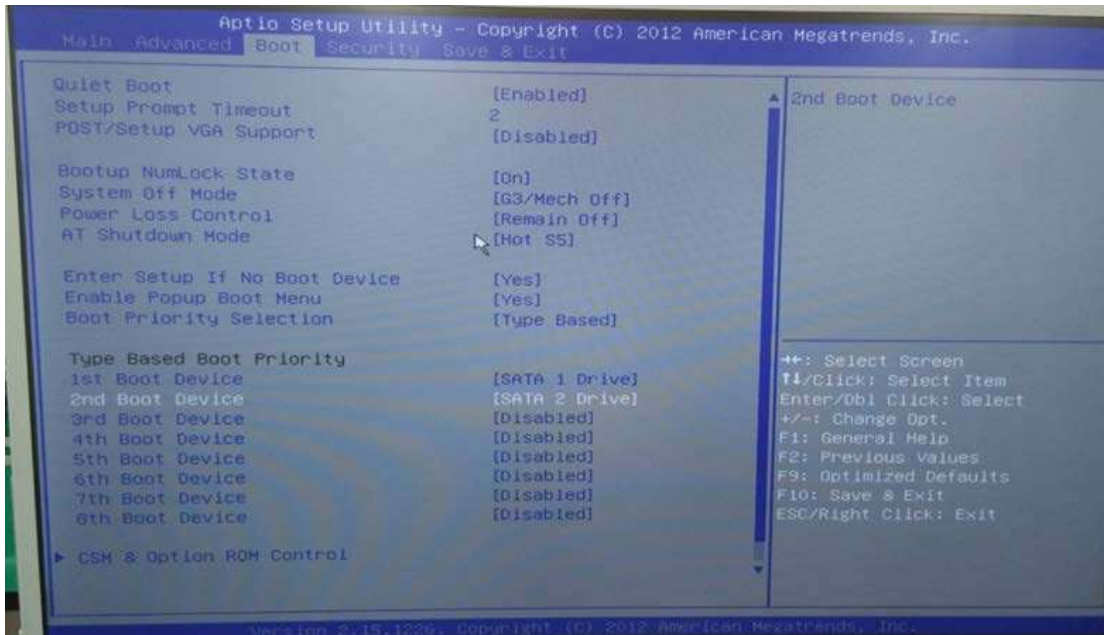


- 12) Approx. 40 minutes later, loading the software will be completed.
- 13) Remove Base System Software DVD, and type "exit" to reboot the system.
- 14) At the first system reboot after loading the software, the OS will reboot the system automatically.
- 15) After the reboot, the installation of system (Windows Embedded Standard will be fully completed.
- 16) Go to BIOS mode (Refer to the procedure 2) 3) above.)

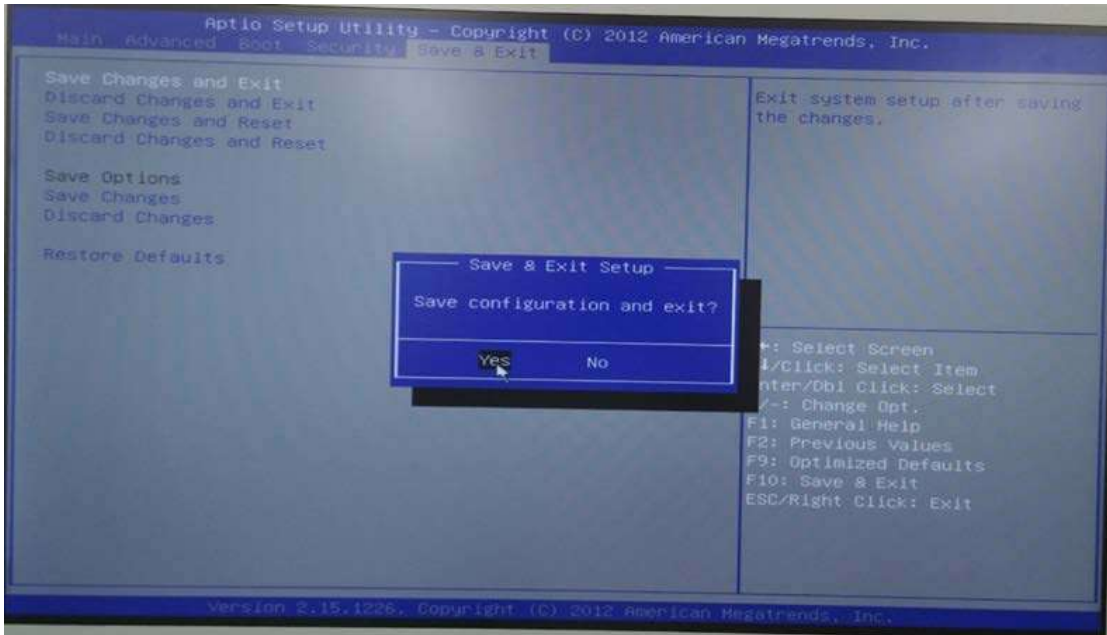
17) Go to "Save & Exit" in BIOS menu and select "Restore Defaults".



18) Go to "Boot" in BIOS menu and check that '1st Boot Device' is set to "SATA 1" and '2nd Boot Device' is set to "SATA 2".



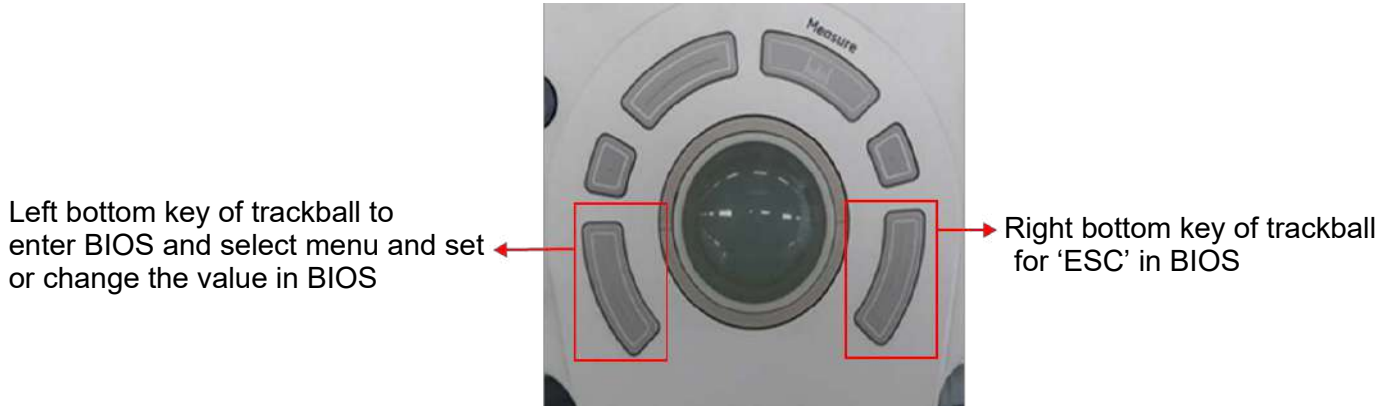
19) Go to "Save & Exit" in BIOS menu and select "Save Changes and Exit". Then, the system will re-boot.



8-3-7-2 System Software - Installation Procedure (R2.x.x)

- 1) Prepare the Base System Software DVD.
- 2) Power ON the scanner and press “DEL”(If AN key is installed) or press left bottom key of trackball (If there’s no AN Key) to enter BIOS

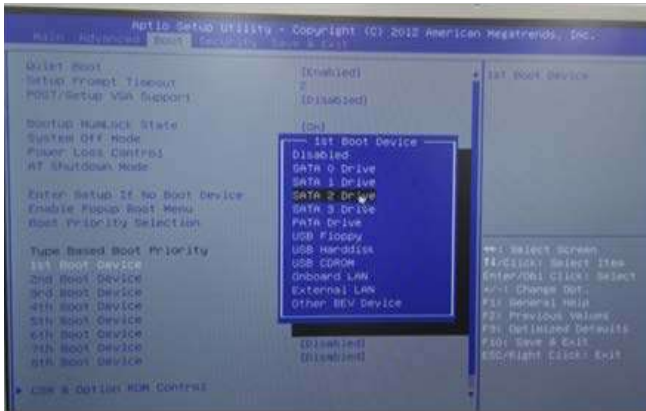
NOTICE If there’s no AN key, please use trackball to move menu in BIOS mode and click left bottom key of trackball to select menu in BIOS and double-click to set or change the value in BIOS. Right bottom key of trackball is ‘ESC’ in BIOS.



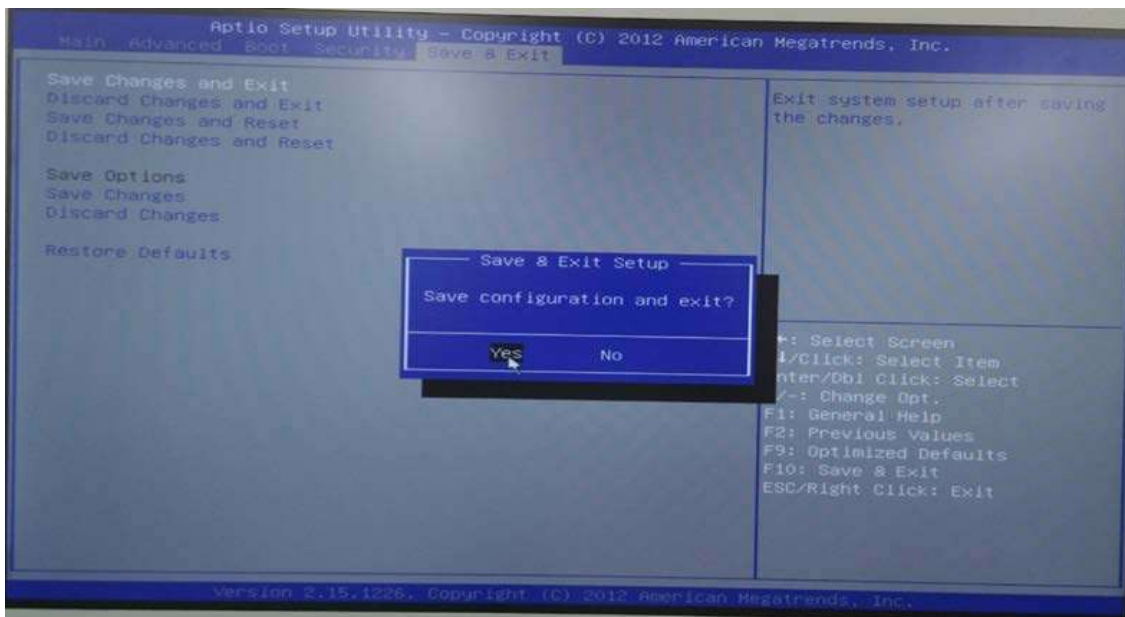
- 3) Type “maru” for password.



- Go to “Boot” in BIOS menu and change the setting value from “SATA 1 Drive” to “SATA 2 Drive” in ‘1st Boot Device’, change the setting value from “SATA 2 Drive” to “SATA 1 Drive” in ‘2nd Boot Device’.

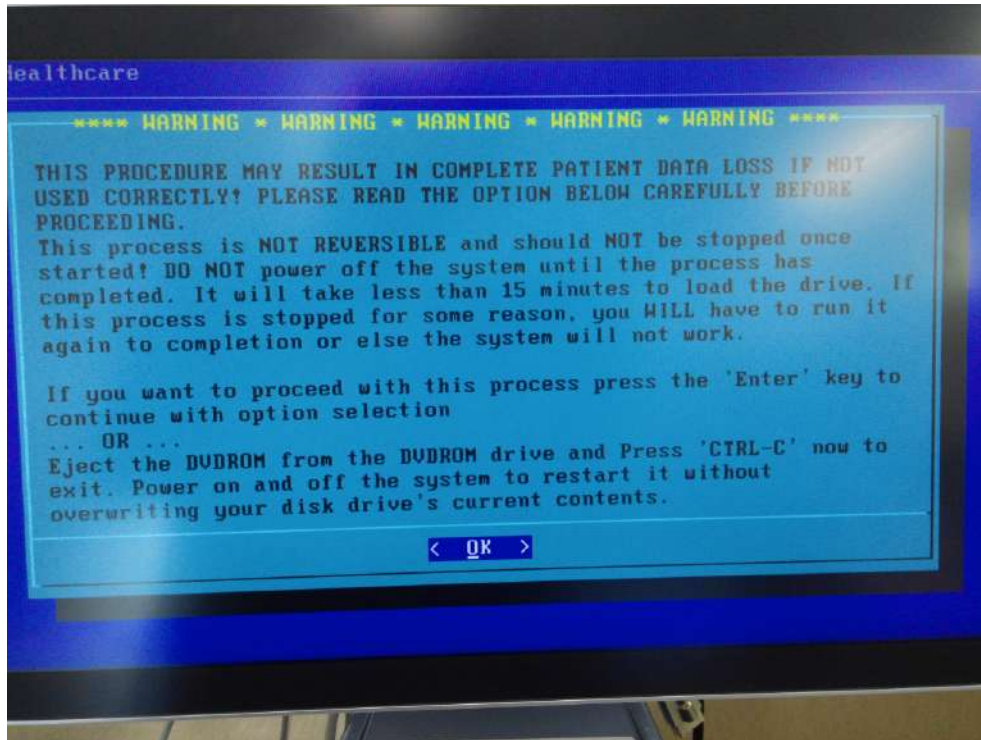


- Go to “Save & Exit” in BIOS menu and select “Save Changes and Exit”. Then, the system will reboot.



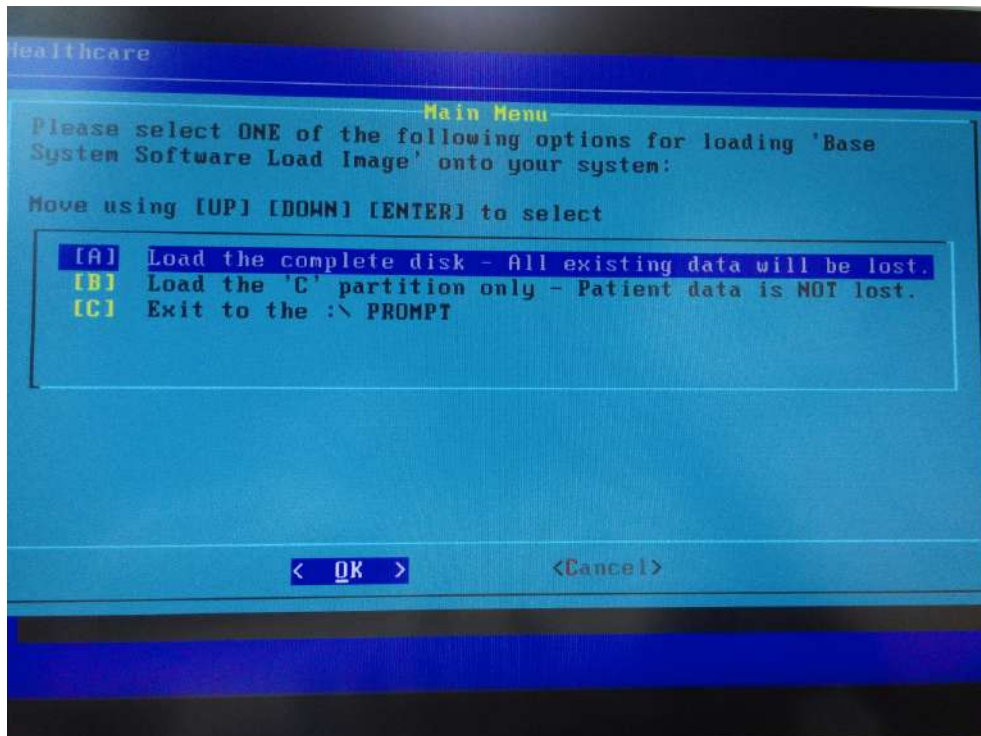
- Press DVD-Drive eject button.
- Place the Base System Software DVD on the tray.
- Wait few moments for DVD drive to read DVD contents.

- 9) The notification screen appears, and then hit the Enter key.

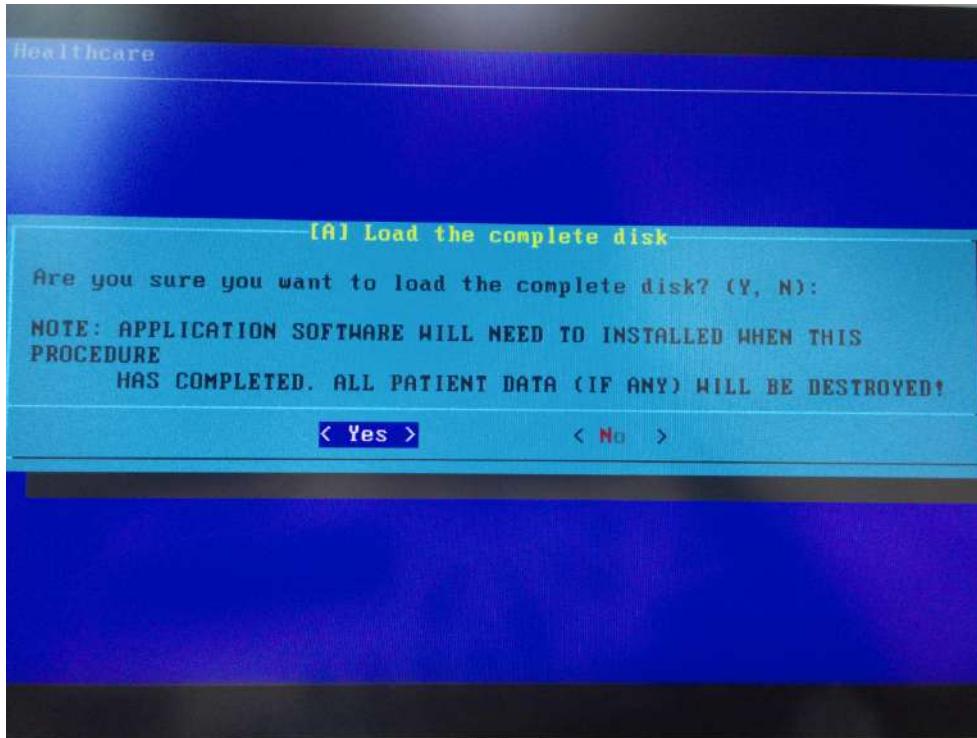


NOTE: Use the trackball and left set key if the customer's system does not have an external A/N keyboard.

- 10) Select either
[A] "Load the complete disk", or
[B] "Load the 'C' partition only" and hit the Enter key.

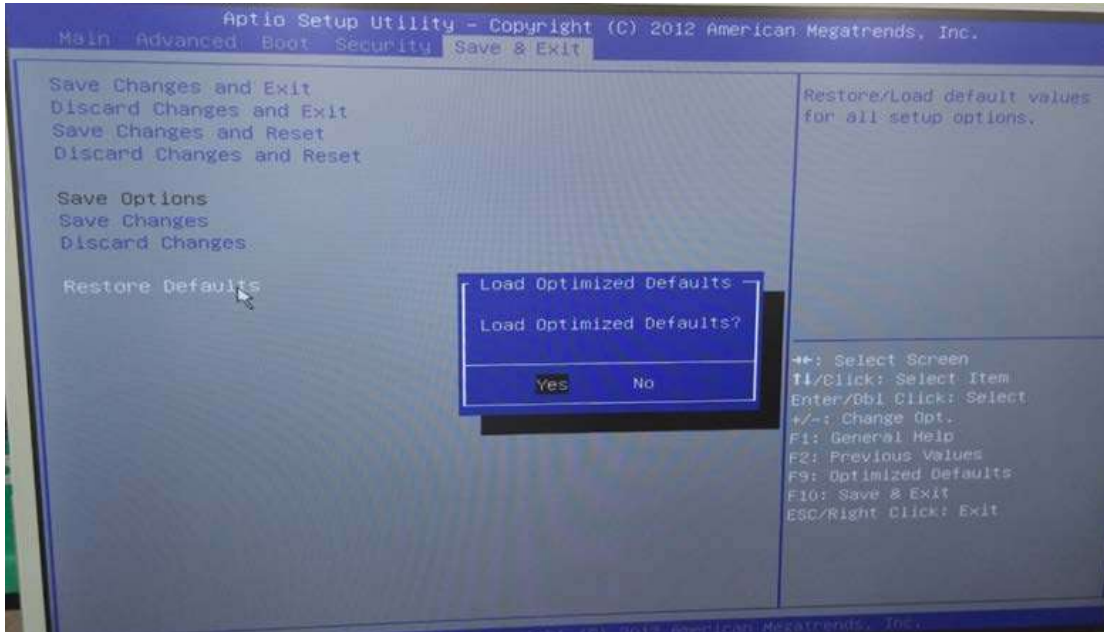


- 11) A confirmation window appears, and then hit the Enter key.

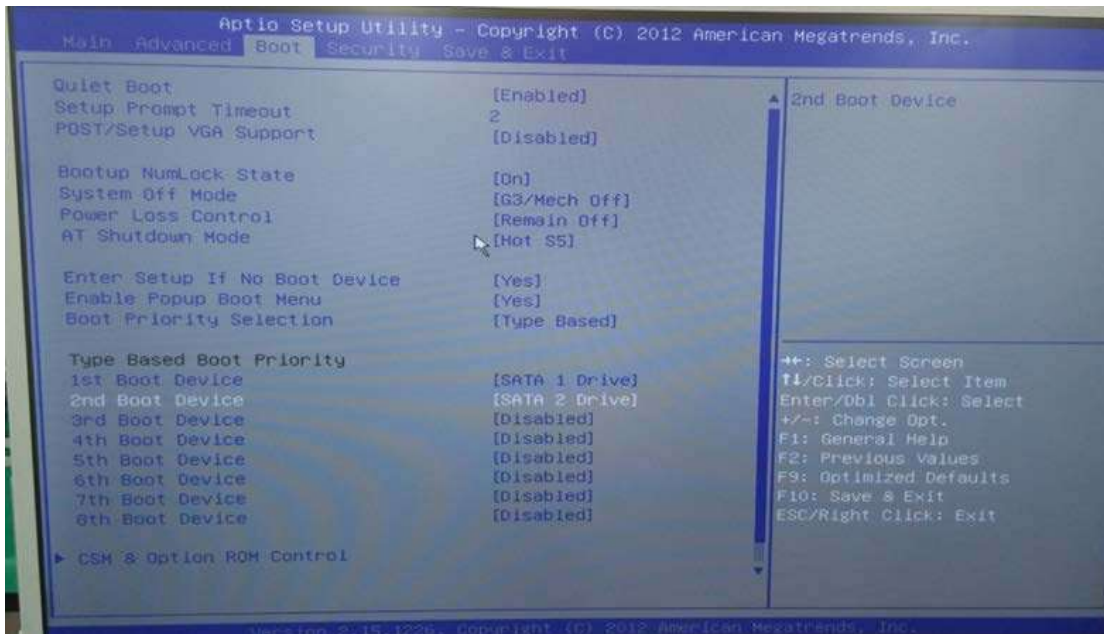


- 12) Approx. 30~40 minutes later, loading the software will be completed.
- 13) Remove Base System Software DVD, and hit the Enter key to reboot the system.
- 14) At the first system reboot after loading the software, the OS will reboot the system automatically.
- 15) After the reboot, the installation of system (Windows Embedded Standard 7) will be fully completed.
- 16) Go to BIOS mode (Refer to the procedure 2.) 3.) above.)

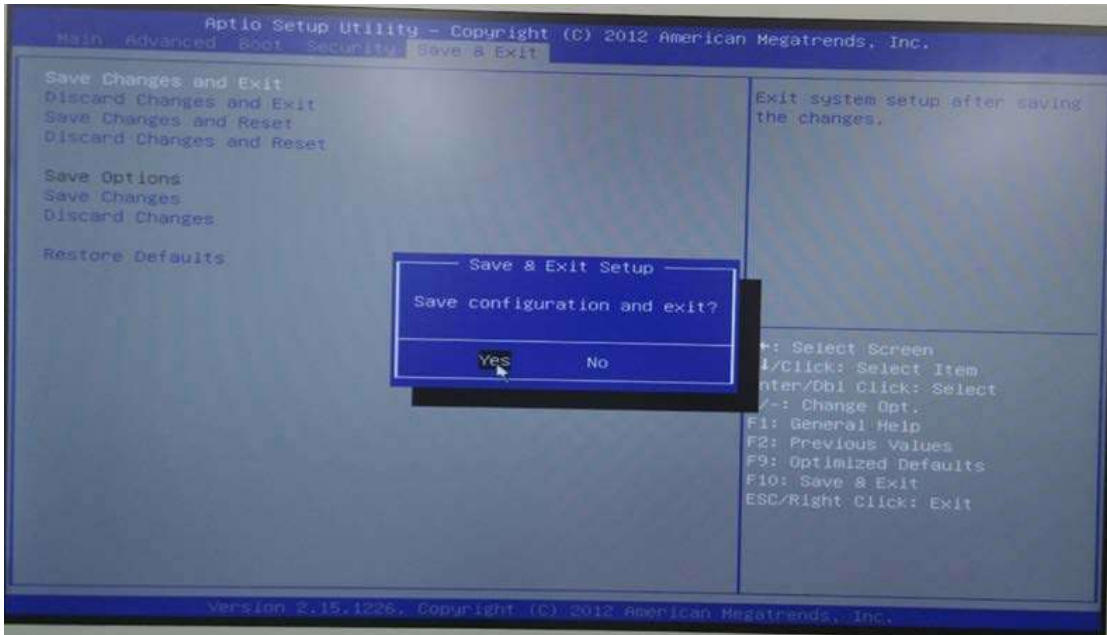
17) Go to "Save & Exit" in BIOS menu and select "Restore Defaults".



18) Go to "Boot" in BIOS menu and check that '1st Boot Device' is set to "SATA 1" and '2nd Boot Device' is set to "SATA 2".



19) Go to "Save & Exit" in BIOS menu and select "Save Changes and Exit". Then, the system will re-boot.



8-3-7-3 System Software - Installation Procedure (R3.x.x or later)

8-3-7-3-1 Set the system boot order (BIOS setting)

- 1.) Prepare the THUMB DRIVER R3.x.x, R4.x.x or R4.5.x.x (USB media) including Base Image Load Windows 10.
- 2.) Insert USB media to the system USB port.



Figure 8-26 System USB port

- 3.) Power on the scanner
- 4.) Press "DEL" (If AN key is installed) or press left bottom key of trackball (If there's no AN Key) to enter BIOS
- 5.) Enter the "maru" in Enter Password



Figure 8-27 Enter Password

6.) In “Boot” page, Change “Boot Option #1” to USB memory which is inserted (R3.x.x) or change “1st Boot Device” to USB Harddisk (R4.x.x or later).

NOTE: The name of USB memory can be displayed different depend on the inserted USB memory (R3.x.x).

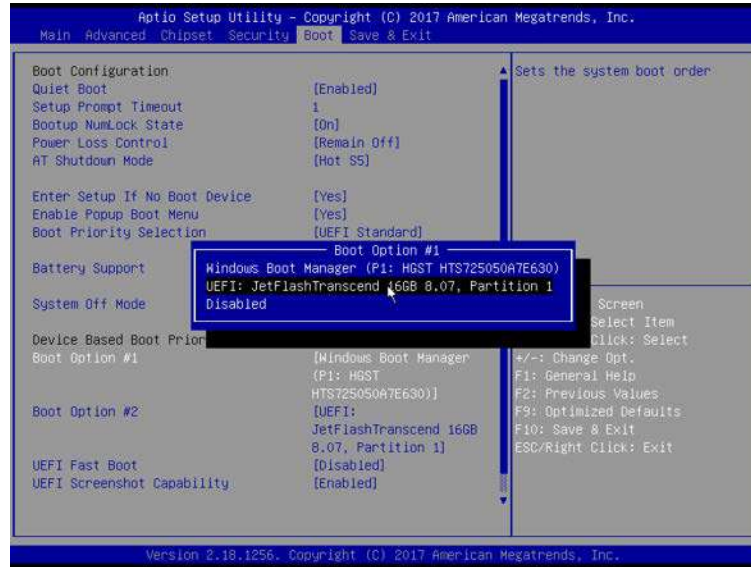


Figure 8-28 “Boot” page 1 (R3.x.x)

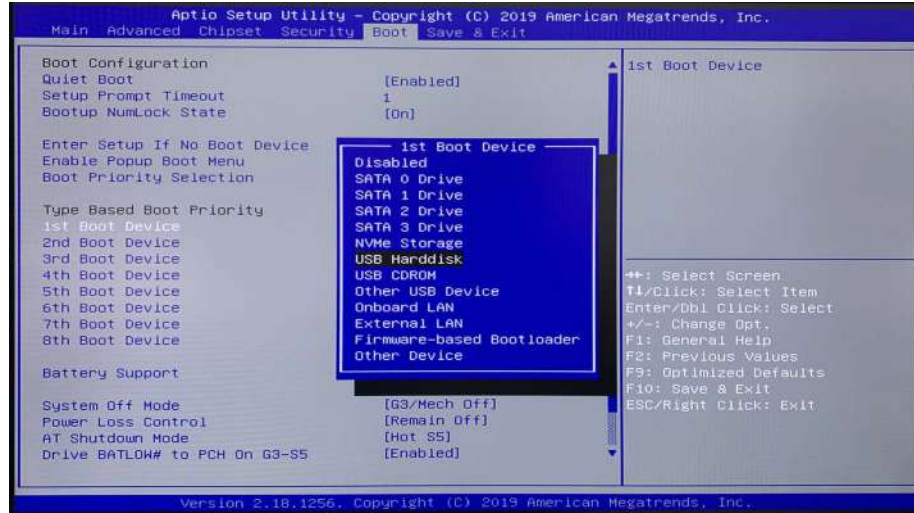


Figure 8-29 “Boot” page 1 (R4.x.x or later)

- 7.) After changing the "Boot Option#1" (R3.x.x) or "1st Boot Device" (R4.x.x), save the BIOS set and exit by pressing 'F10' key.

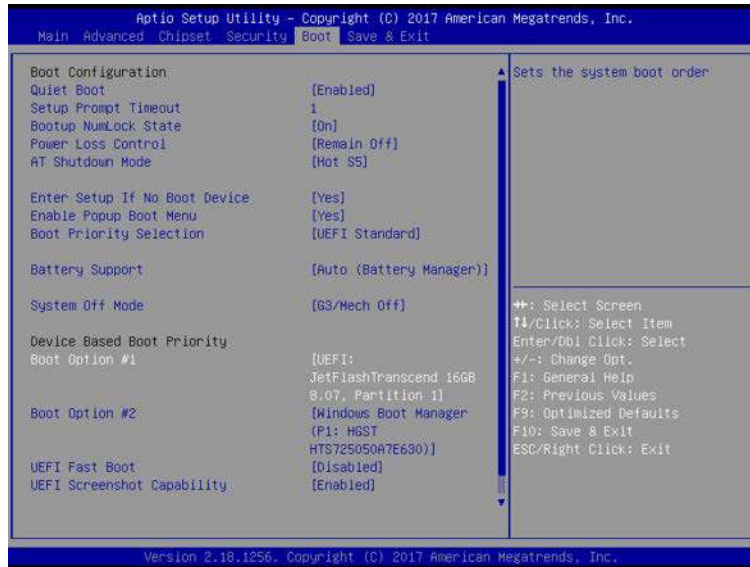


Figure 8-30 "Boot" page 2 (R3.x.x)

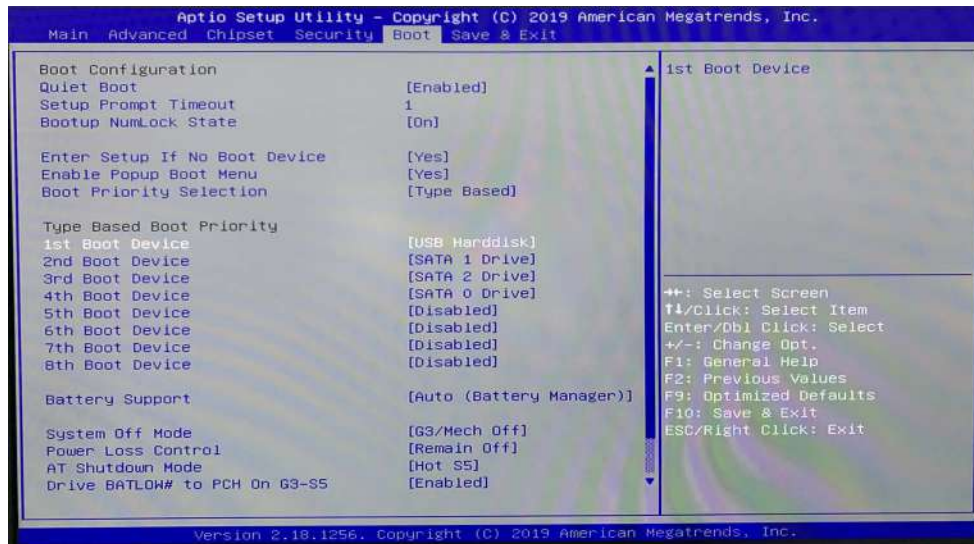


Figure 8-31 "Boot" page 2 (R4.x.x or later)

8-3-7-3-2 Base and Application Software installation

- Base Image Software Load Procedure
 - 1.) The system will reboot automatically.
 - 2.) Wait few moments for USB drive to read USB contents.
 - 3.) The notification screen appears like below.
 - 4) Select [1] Load the complete disk (FULL), and Press [OK] button using the trackball key.

NOTE: If there is no physical keyboard option, use the external keyboard or on-screen menu.

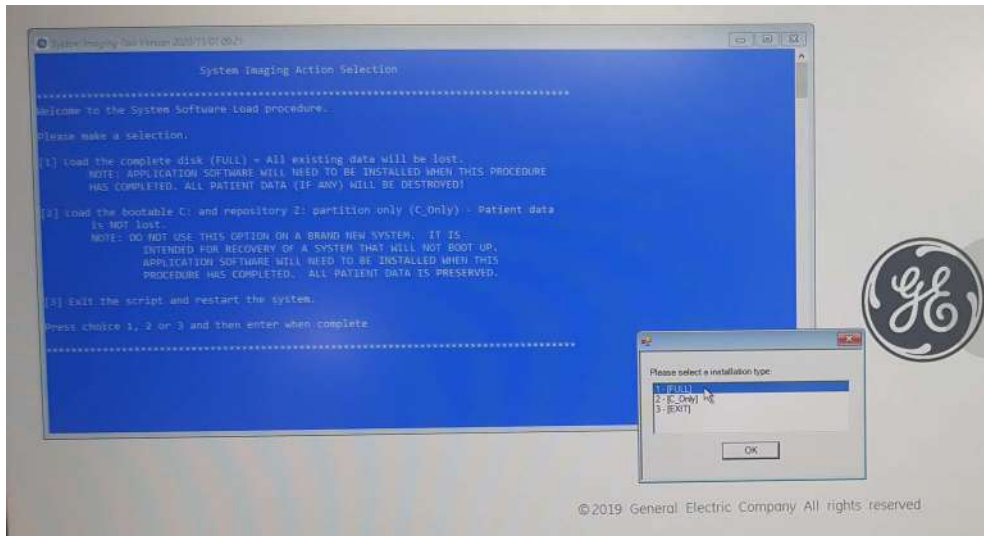


Figure 8-32 The notification screen 1

- 5.) A confirmation window appears, and then Press [Yes] button using the trackball key.

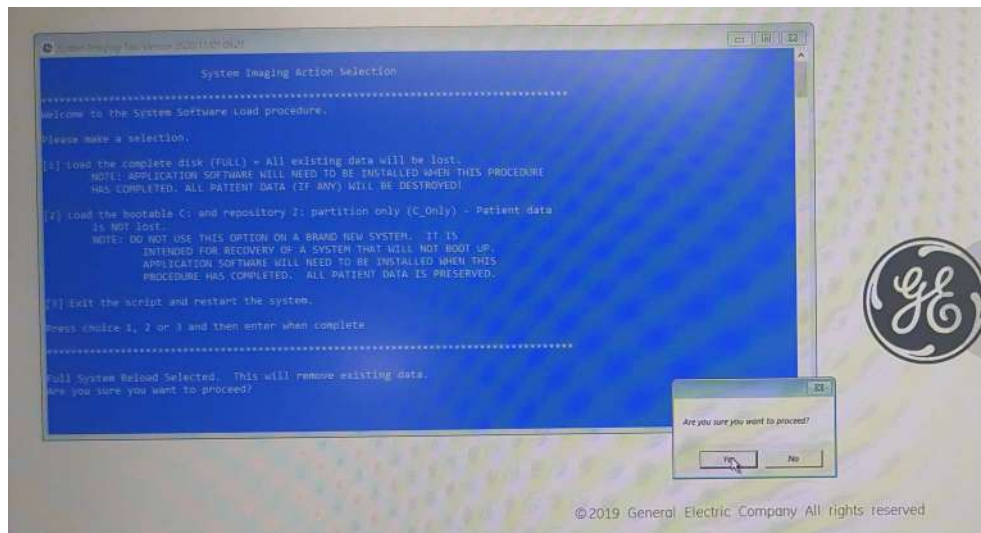


Figure 8-33 The notification screen 2

6.) The Installation progress screen appears like below.

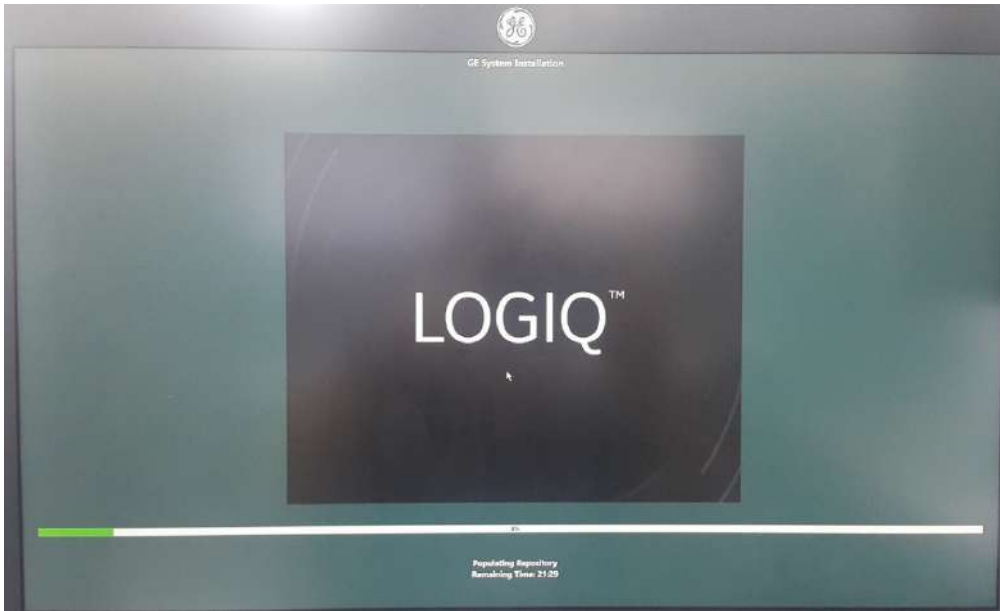


Figure 8-34 The notification screen 3

WARNING Do not interrupt the software loading at any time.

- 7.) Approximately 20~ 30 minutes (R3.x.x) or 10~ 15 minutes (R4.x.x or later) later, loading the software will be completed.
- 8.) After completing, remove USB media from the system USB port.
- 9.) Press [OK] button using the trackball key to reboot the system.
- 10) Enter BIOS mode with the password "maru" and change "1st Boot Device" to NVMe Storage. (R4.x.x)

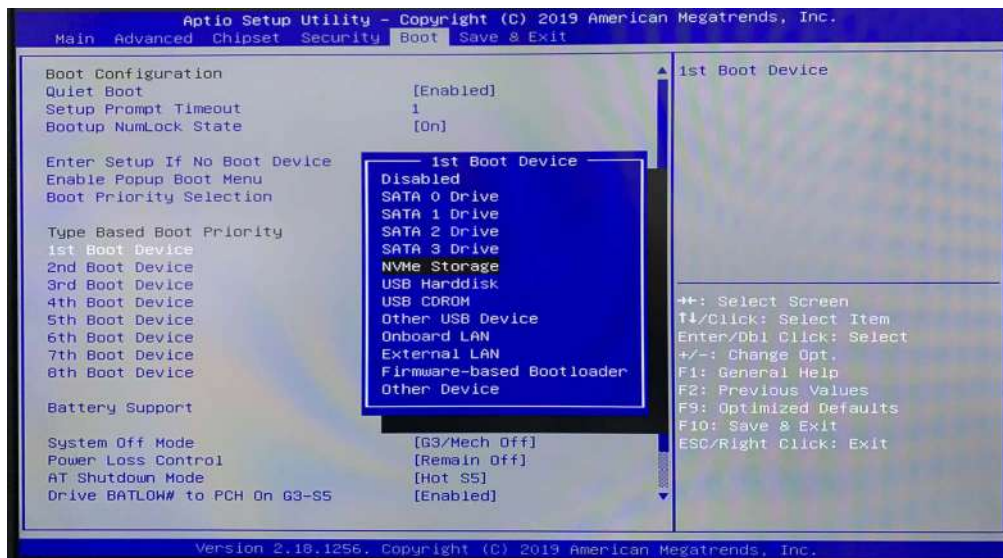


Figure 8-35 "Boot" page 3 (R4.x.x or later)

- 11) After change the "1st Boot Device", save the BIOS set and exit by pressing 'F10' key. (R4.x.x.)
- 12) At the system reboot after loading the software, the OS will reboot the system automatically.
- 13) After reboot, the installation will be fully completed.

NOTE: Do NOT touch the system during this process. Activating the keyboard, mouse or front panel could corrupt the installation. While the script is running, several window or dialog boxes appear on the screen. At times it may look like the system is unresponsive.

8-3-7-3-3 Application Software Load Procedure

- 1.) After the reboot again, the application software installation will start automatically.
- 2.) About few minutes, the following options will appear. Select your product. Click “Start Installation” button.

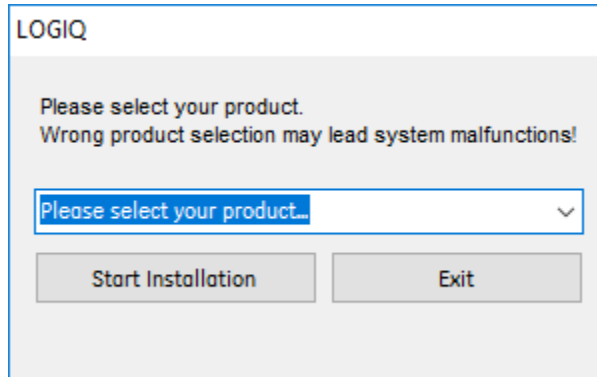


Figure 8-36 Click “Start Installation”

- 3.) Don't press any key and wait until the software installation is done.

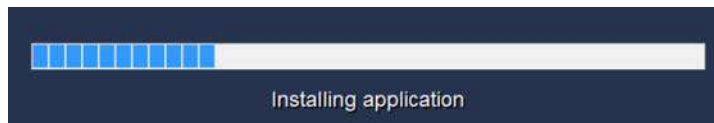


Figure 8-37 Installing application

- 4.) After the installation completes, the system will be rebooted automatically.
- 5.) SW License window may appear, then enter correct Option String and click “OK”.

NOTE: The HW Id shown in the picture is an example.

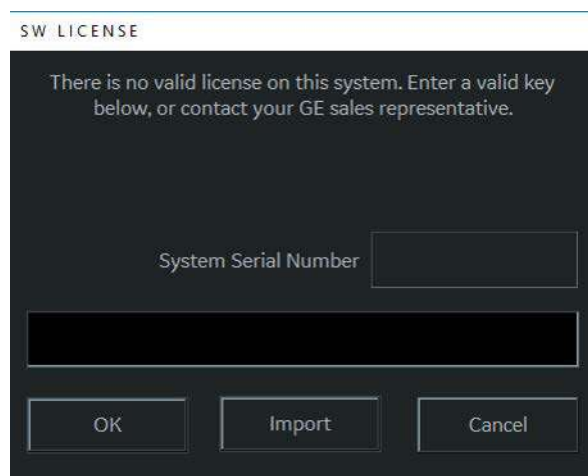


Figure 8-38 SW License window

8-3-7-3-4 Base and Application Software installation for LOGIQ P7/P9 R2.5 to R3 upgraded system

- 1.) If LOGIQ P7/P9 R3.0.11 System Software or above is being installed to the R2.5 to R3 upgrade R2.5 to R3 upgrade system, follow the below instructions.
- 2) Insert the SW thumb drive to the USB port.
- 3) Reboot the system.
- 4) Press “DEL” (If AN key is installed) or press left bottom key of trackball (If there’s no AN Key) to enter BIOS.
- 5) Enter the “maru” in Enter Password.
- 6.) Select the install USB in Boot Option #1 of Boot menu.



Figure 8-39

- 7.) Click “Restore User Defaults” and then click “Yes”.



Figure 8-40

8.) Click “Save Changes” and then click “Yes”.



Figure 8-41

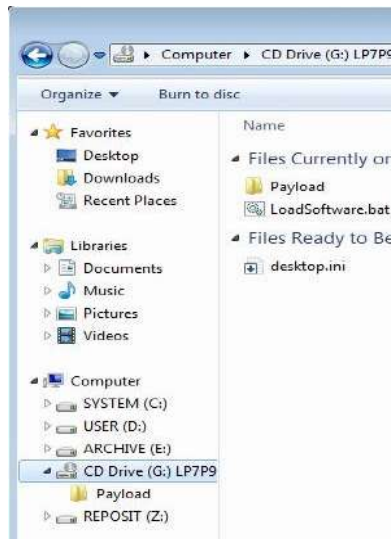
- 9) **MUST force the shutdown by pushing the power button for 5 seconds.**
- 10) After rebooting by forcing the shutdown, reinstall R3.0.11 or upgrade higher version by referring section [System Software - Installation Procedure \(R3.x.x or later\)](#) on page 8-44

8-3-7-4 Application Software Installation Preparation (R1.x.x or R2.x.x)

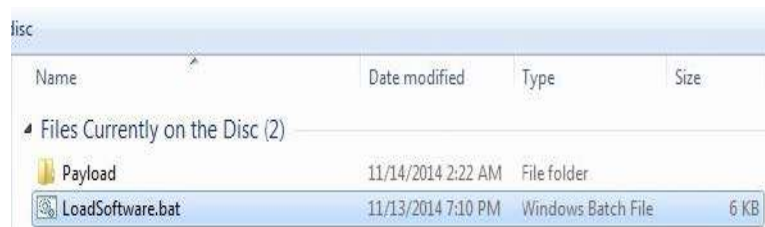
- 1) Verify the system boot up to Windows Screen
- 2) Prepare the Application Software DVD.
- 3) Press DVD-Drive eject button, and place the Application Software DVD on the tray.
- 4) Click Windows Explorer icon on the taskbar.



- 5) Select "G" drive in the tree view.

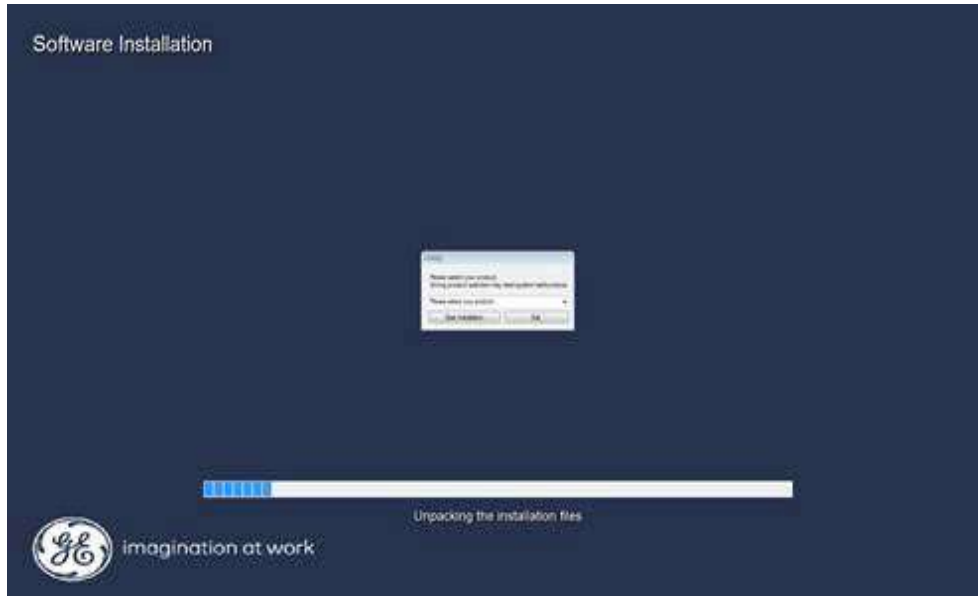


- 6) Double click "LoadSoftware.bat". Software Installation will begin.



8-3-7-5 Application Software Installation (R1.x.x or R2.x.x)

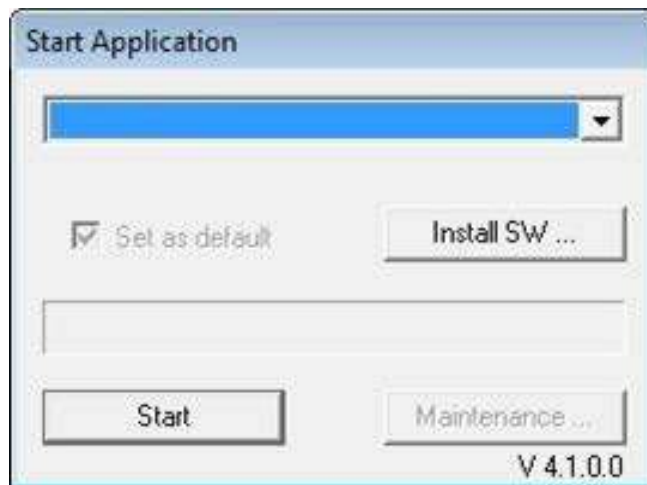
- 1) Application Software Installation process will take approximately 20 minutes



- 2) Select your product. Click "Start Installation" button.
- 3) After the installation completes, the system will be rebooted automatically.

NOTE: Do not remove Application Software DVD from drive. (R1.x.x or R2.x.x)

- 4) After rebooting the system, the "Start Application" window appears. Remove the DVD from the tray (R1.x.x or R2.x.x), then click "Start" button.



- 5) If SW License window appears, then enter correct Option String and click “OK”.



8-3-7-6 Software DVD / USB Storage (R1 to R3)

Remove the rear cover and store the software DVD / USB in the system.

- 1) Remove the rear cover.

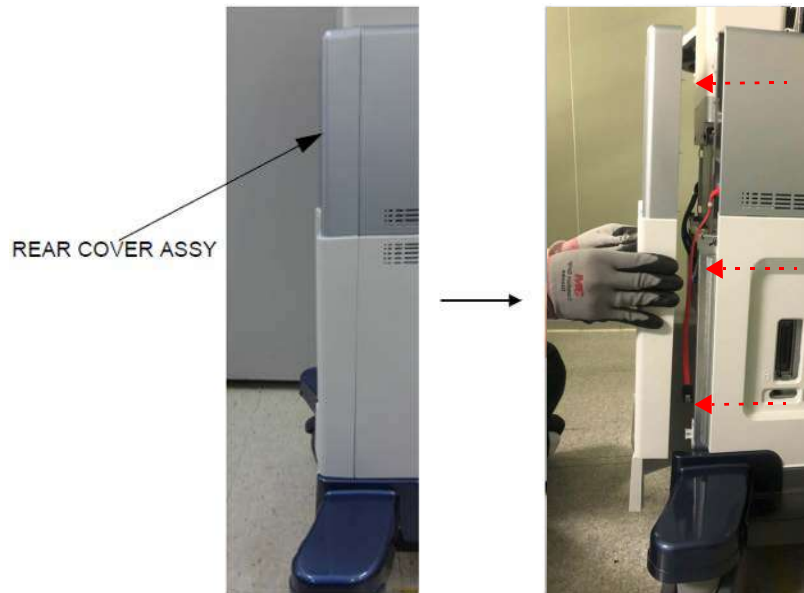


Figure 8-42 Removing the rear cover

- 2) Store the Software DVD in the pocket. (R1, R2, R2.5 only)



Figure 8-43 CD pocket

- 3) Store the Software USB STICK in the pocket as below picture.(R3)



Figure 8-44 USB stick pocket

8-3-7-7 Software USB Storage (R4 and R4.5)

- 1) Simply pull out Front Cover.
- 2) Store the Software USB STICK in the pocket as below picture.



Figure 8-45 USB storage

8-3-8 Software Installation from Common Service Desktop (R1.x.x or R2.x.x)

NOTE: This procedure requires PC with LAN connection capable of reaching to GE Network

8-3-8-1 Involving Software Reload

- 1) Select [SERVICE] from [UTILITY] Menu (R1.x.x) or Select [SERVICE] from [UTILITY] Menu (R2.x.x)



Figure 8-46 Utility menu (R1.x.x)

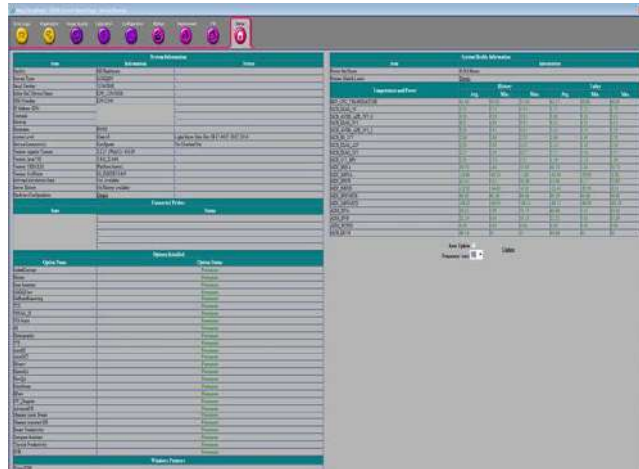


Figure 8-47 Utility menu (R2.x.x)

- 2) Select "GE Service" and enter Password

A screenshot of the 'Service Login' dialog box. The title is 'Service Login'. It contains the following information: 'Hospital Name: GE Healthcare', 'System Type: LOGIQP9', and 'CRM Number: LP912345'. Below this is a 'Select User Level' dropdown menu with 'GE Service' selected. There is an 'Enter Password' text field. At the bottom, there are 'Okay' and 'Clear' buttons.

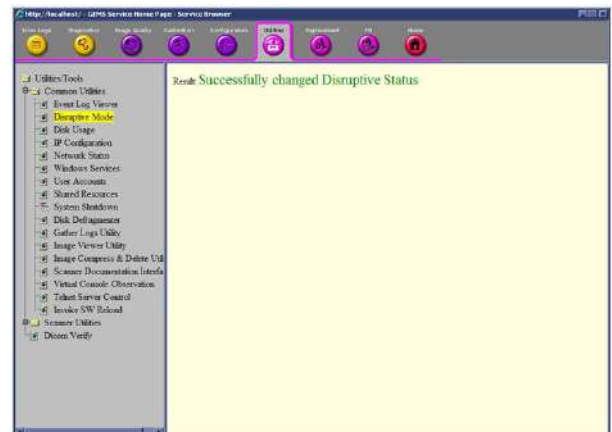
3) Verify entering to Common Service Desktop (CSD)



4) Select "Disruptive Mode" under Common Utility, in [Utilities] Tab

5) Acknowledge "Disruptive Mode" on Console Screen

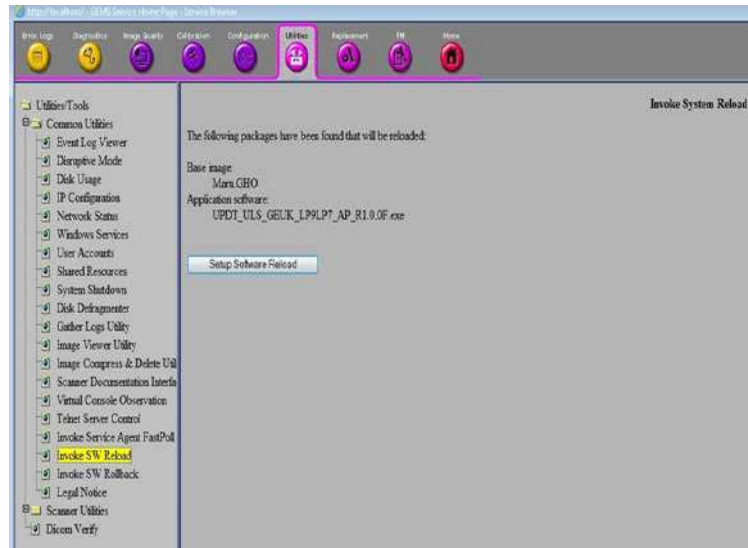
6) Verify Disruptive Mode



NOTE: This operation cannot continue without user acknowledge

7) Select [Invoke SW Reload] under Common Utilities.

8) Click Setup software reload.

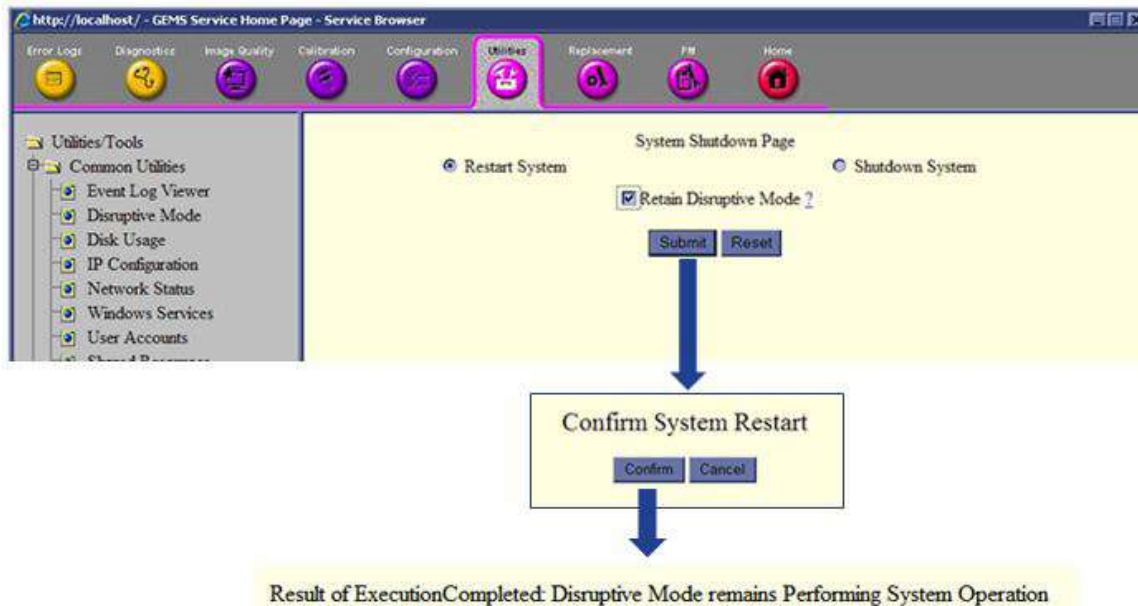


9) Select [SYSTEM SHUTDOWN] from Common Utility Menu in CSD

10) Select

- Restart System
- Retain Disruptive Mode

11) Press [SUBMIT]



12) On console side, wait until application software loading completes.

13) Rest of the processes are same as [8-3-7-4 Application Software Installation Preparation \(R1.x.x or R2.x.x\)](#)

8-3-9 Software Installation from Common Service Desktop (R3.x.x or R4.x.x)

For detail information, please refer to 8-3-9 **Software Reload** [on page 5-91](#)

8-3-10 System Setup Procedure to display the messages in Japanese/Chinese (Up to R3.0.8)

To setup the system to display the messages in Japanese/
Chinese:

NOTE: You cannot enter text in Japanese/Chinese.

- 1) Press **Regional Options** in Utility--> System--> General.
The "Region and Language pop-up" appears.
- 2) Select the "Administrative" tab. In the "Language for non-Unicode programs" section. select the "Change system locale..." button. The "Region and Language Settings" pop-up menu appears.



Figure 8-48 Administrative tab

- 3) Under "Current system locale:", select Japanese (Japan) or Chinese (Simplified PRC). Press OK.

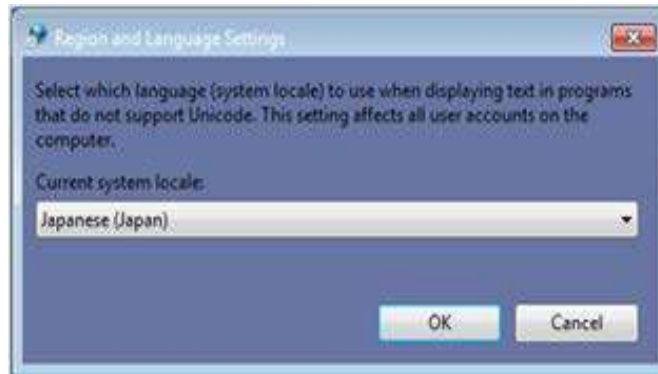


Figure 8-49 Set Language - example

- 4) The "Change System Locale" pop-up prompt appears. Select **Cancel** to not reboot the system yet.

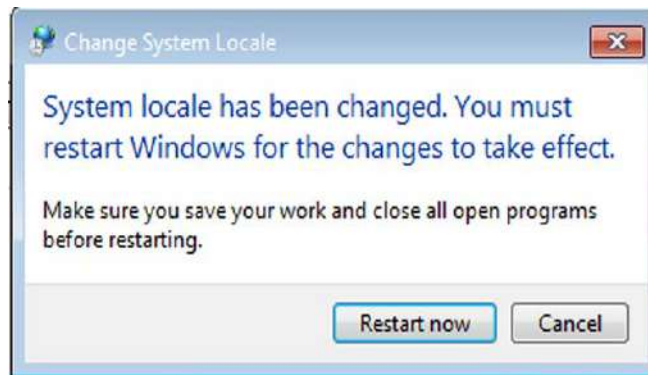


Figure 8-50 Change system locale

- 5) Select **Close** on the Administrative tab. The "Change System Locale" pop-up prompt appears again. Select **Cancel** to not reboot the system yet.
- 6) Reboot the system using Power on/off button.

- 7) Open the Administrative tab and check Japanese or Chinese displays under Current language for non-Unicode programs.



Figure 8-51 Administrative tab - example

- 8) Under "Format:", select "Japanese (Japan)"/"Chinese (Simplified PRC)". Press **Apply**, Press **OK**.



Figure 8-52 Formats

- 9) In Utility--> System--> General, set the Language as Japanese or Chinese. Press **Save** and reboot the system using Power on/off button.



Figure 8-53 Change the system language

8-3-11 Setting the System's Language and Keyboard (R3.0.9 or later)

- 1) Press Utility -> System -> General, then set the Language (restart needed) to the language required. Press Save.

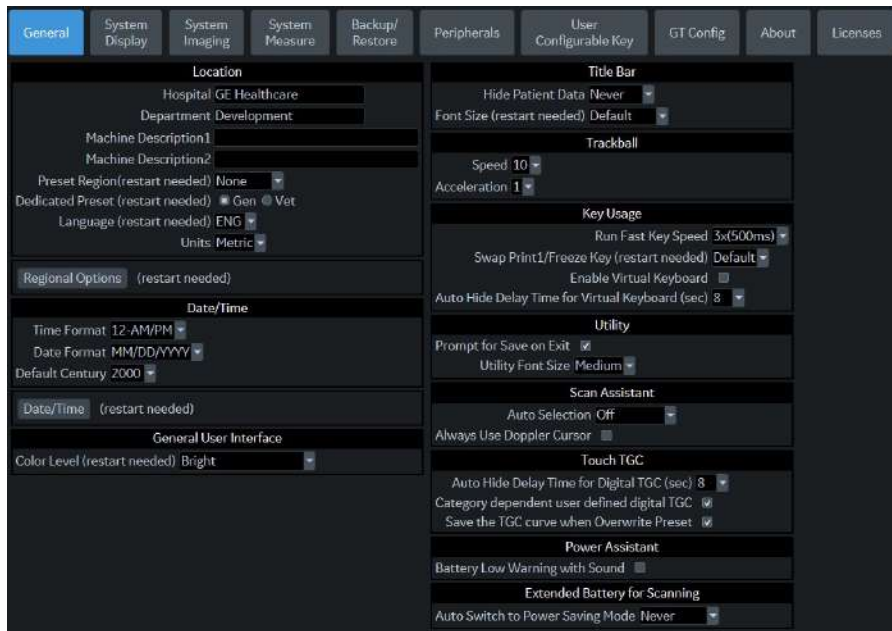


Figure 8-54

- 2) Press the [Regional Options] button. The “Region” pop-up appears.

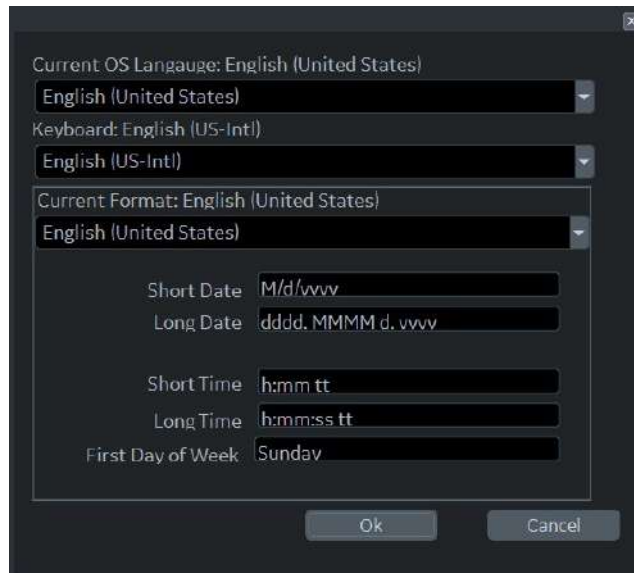


Figure 8-55

- 3) Select the language required from the [Current Format:] pull-down menu.
- 4) Select the language required from the [Keyboard:] pull-down menu. Press [OK].
- 5) When Question message box appears, press [Cancel] to not reboot the system yet.

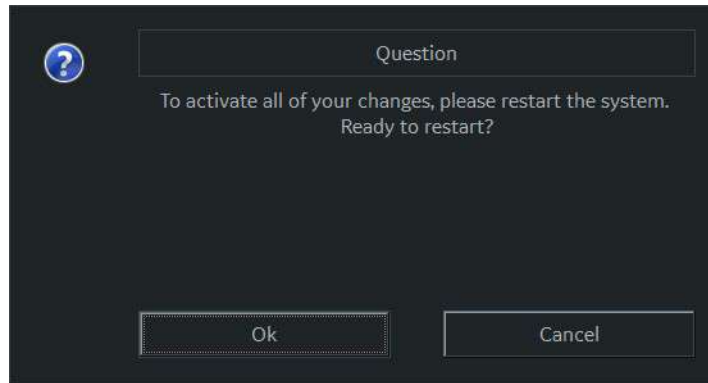


Figure 8-56

- 6) Insert SSA key into console USB port.
- 7) Enter the Windows maintenance mode.
- 8) Select Control Panel > Region. The Region pop-up menu appears.
- 9) On the Formats tab, Press Language preferences to open the Language pop-up.
- 10) Remove all other language keyboards, except for English and the required language keyboard by highlighting the language and pressing the Remove button.
- 11) Set English (United States) as the first keyboard. second, set the required language as the second keyboard; Press the X in the upper, right-hand corner of the Language pop-up to close the window.

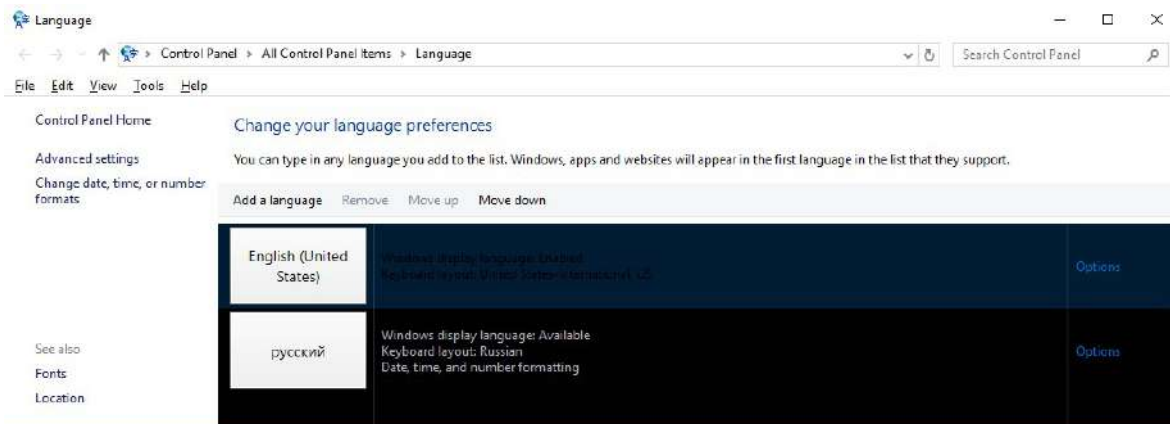


Figure 8-57

- 12) Shut down and restart the system.

Section 8-4 Software and Functional Checks after Installation Procedure

8-4-1 Functional Check

Table 8-23

| Item | Test Procedure Reference | Note |
|---|---|--|
| Power ON | 4-3-3 Power On/Off | <input type="checkbox"/> Passed <input type="checkbox"/> Failed |
| System Info | 4-3-4 System Information | Record software version and System Image version Application Software Part Number: _____ Software Revision: _____ Base Image Software Part Number: _____ Software Revision: _____ <input type="checkbox"/> Passed <input type="checkbox"/> Failed |
| Mode Transition | 4-3-8 Mode Transition Checks | <input type="checkbox"/> Passed <input type="checkbox"/> Failed |
| Functional Checks | 4-3-2 Mechanical Parts Functional Check | |
| CW Mode (Optional) | | <input type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> N/A |
| WLAN (Optional) | | <input type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> N/A |
| 4D (Optional) | | <input type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> N/A |
| Power Assistant (Optional) | | <input type="checkbox"/> Passed <input type="checkbox"/> Failed <input type="checkbox"/> N/A |
| System Serial Number: Probe Used (Name and Serial Number written below): | | |
| Overall Results: Passed / Failed Date (MMM/DD/YYYY): _____ SSO ID and Name (Print): _____ Signature: _____ | | |

Section 8-5 Settings - Backup and Restore

This section briefly describes Image Setting backup and restore function.

For detailed documentations and warnings, refer to Chapter.16, Section “System/Backup and Restore Preset Menu” in the Basic User Manual.

8-5-1 General Information

The Backup/Restore function enables the user to:

- Copy/Restore the patient archive.
- Copy/Restore the system configuration. The Copy/Restore system configuration feature enables the user to configure several units with identical presets, providing that the units have the same software version.

8-5-1-1 Supported Media

Depending on the system, you can use either a CD-R, DVD-R, USB Flash Drive, or USB Hard Disk for system backup/restore. System does NOT support CD-RW/DVD+R/DVD+RW.

For the sake of simplicity, we have used the CD-R in the examples in this section.

8-5-1-2 General Notes

NOTE: When you restore backup data from the Utility menu, the LOGIQ P7/P8/P9/P10 application usually restarts automatically when the restoring is complete.

NOTE: To perform backup and restore procedures, you must login with administrator privileges.

8-5-2 Backup Procedures

Back up patient data AFTER you've archived (via EZBackup/EZMove) images so that the pointers to the patients images reflect that the images have been moved to removable media and are no longer on the hard drive.

LOGIQ P8/P9/P10 R4/R4.5 system does not support EZMove.

- 1) Insert a media into the drive or USB device into a USB port.

NOTE: About formatting media, See 'Formatting removable media' on Basic User Manual for more information.

- 2) In the patient screen, select the dataflow Local Archive - Int. HD.
- 3) On the touch panel, press Utility.
- 4) On the Utility touch panel, press System.
- 5) On the monitor display, select Backup/Restore.
The Backup/Restore screen is displayed.


- 6) In the Backup list,
 - Select Patient Archive and Report Archive to backup the patient records.
 - Select User Defined Configuration to copy system settings and user presets.

NOTE: The detailed section of this menu decouples the user defined configuration above. This allows you to selectively restore what you want to restore across multiple machines.

- 7) Specify where to save data in the media field.
- 8) Select Backup.
The system performs the backup. As it proceeds, status information is displayed on the Backup/Restore screen.
- 9) At the end of the process, the Backup completed message is displayed on the monitor.
Press Eject (F3) for eject media/disconnect USB.
- 10) Make sure to physically label the media. An identification of the system should also be noted on the media and a backup log should be kept.

File the media in a safe place.

8-5-3 Restore Procedures

 **CAUTION** The restore procedure overwrites the existing database on the local hard drive. Make sure to insert the correct media.
You cannot restore the data between systems with different software versions.

 **CAUTION** To avoid the risk of overwriting the local patient and report archives, **DO NOT** check Patient Archive when restoring userdefined configurations.

- 1) On the touch panel, press Utility.
- 2) On the Utility touch panel, press System.
- 3) On the monitor display, select Backup/Restore.
The Backup/Restore screen is displayed.
- 4) In the Restore list,
 - Select Patient Archive and Report Archive to restore the patient archive.
 - Select User Defined Configuration to restore all system settings and user presets.or
One or several system configuration items to restore parts of the Detailed Restore of User Defined.
- 5) In the Media field, select the appropriate Source device.
- 6) Select Restore.
The system performs the restore. As it proceeds, status information is displayed on the Backup/Restore screen.
- 7) The LOGIQ P7/P8/P9/P10 restarts automatically when Restore is done.

8-5-4 EZBackup and EZMove

 **CAUTION** ***EZBackup or move do not backup patients without images, or reports. If the entire patient archive plus images plus reports need to be backed up, it is recommended to use the Export/import utility. (Export/Import Utility: go to Patient, and select Data Transfer menu.)***

NOTE: R4/R4.5 System does not support EZMove.

EZBackup or EZMove allows you to manage hard disk space (move images off the hard drive) while maintaining the patient database on the scanner, as well as to back up the patient database and images.

- EZBackup: Copy the data from the local HDD to the removable media.
- EZMove: Copy the data from the local HDD to the removable media. After copying the image file to the media, EZMove deletes the image file from the Local HD.

8-5-4-1 EZBackup and EZMove

Basically, when you perform the EZBackup or EZMove procedure, you insert the media (or connect USB HDD if applicable), the system backs up/moves the images, and creates a reference between the patient database and the media's volume.

EZBackup/EZMove can take up to 20 minutes (or longer, depending on the size of the backup). Make sure to schedule this at the same time daily, when no patients are scheduled.

- 1) Prepare unformatted media or the USB HDD before starting EZBackup/EZMove.
BEFORE starting the EZBackup, select Unlock All in Utility -> Admin -> Logon.
- 2) Specify the EZBackup/EZMove setup on the Utility -> System -> Backup/Restore page.
- 3) To start the EZBackup/EZMove procedure, go to the Patient menu and select EZBackup/EZMove. The EZBackup/EZMove Wizard starts.
- 4) Verify the information on the first page of the EZBackup/EZMove Wizard, then press Next.
Full backup options display on the first page of the EZBackup wizard. If you want to backup all of the exams in the range (even if the exam was previously backed up, check this option). If you uncheck this option, the system only backs up exams which have not yet been backed up.

EZBackup does not back up the exams which were previously backed up once by EZBackup or Export.
- 5) Verify the information on the EZBackup/EZMove Wizard, Page 2. The backup may span multiple media. This page tells you how many media you need to do this backup. After you have gathered the media (allow for one extra media, just in case), you are ready to begin the backup. Press Next.
Free Space/Total Size: tells you the size of the data you have selected to store/and the total size of the USB Hard Drive storage media. If the storage capacity of the USB HD is insufficient, you will see the message, Selected Location does not have enough free space.
- 6) A pop-up message appears that provides you with the media label. Label the media, then insert the media. Press OK.

8-5-4-2 To review EZBackup and EZMove

You can review backed up media via the Patient Menu, Import, and the DICOM Read dataflow.

To review EZMoved image,

- 1) Select the patient on the Patient Menu (on the same system where the EZMove was performed).
- 2) Insert the media volume indicated on the Patient Menu.
- 3) View the exam from the media.

8-5-5 Option Keys

- 1) From the touch panel, select Utility -> System-> Backup/Restore.
- 2) ADD or REMOVE new option key at “Enter New Option Key” field.

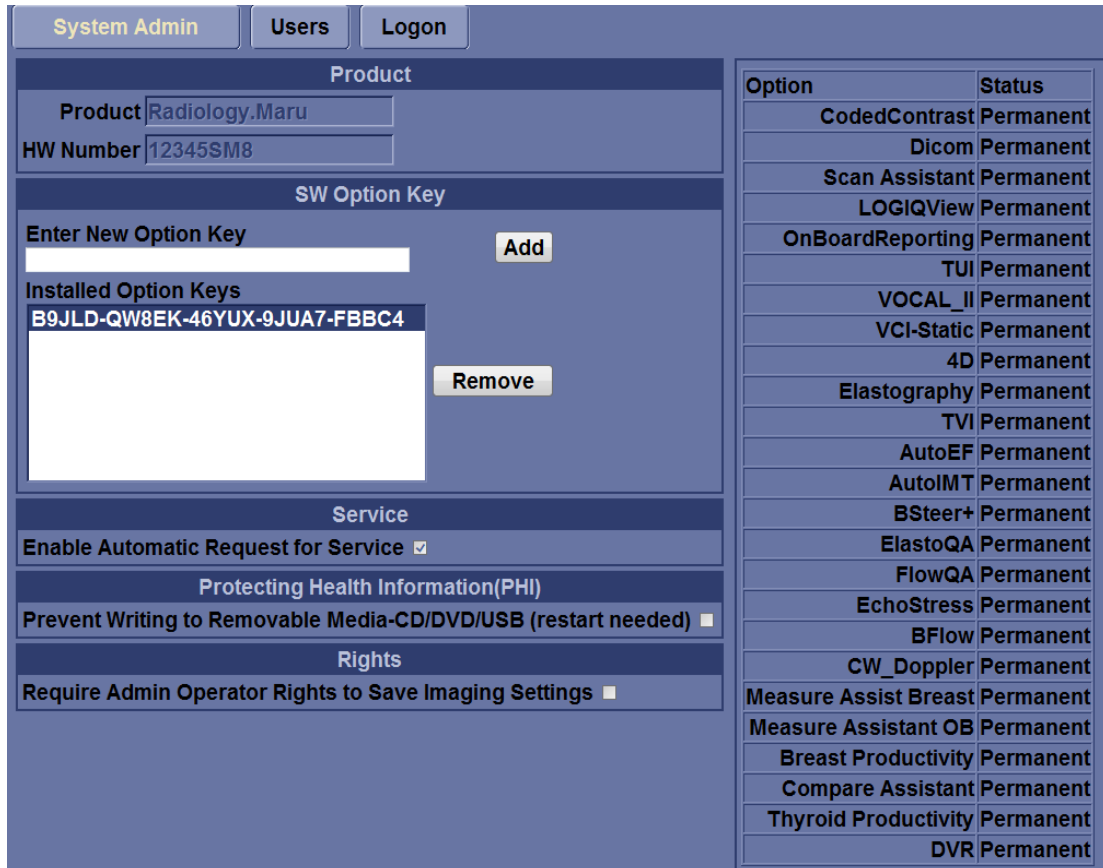


Figure 8-58 Option Keys

NOTE: This screen shot and options may slightly differ between product type and releases.

- 3) Record de settings in Table 12.

Section 8-6 Replacement of Front Cover

8-6-1 Manpower

1 person, 1 min.

8-6-2 Tools

None required.

8-6-3 Removal Procedure

- 1) Simply pull out Front Cover.

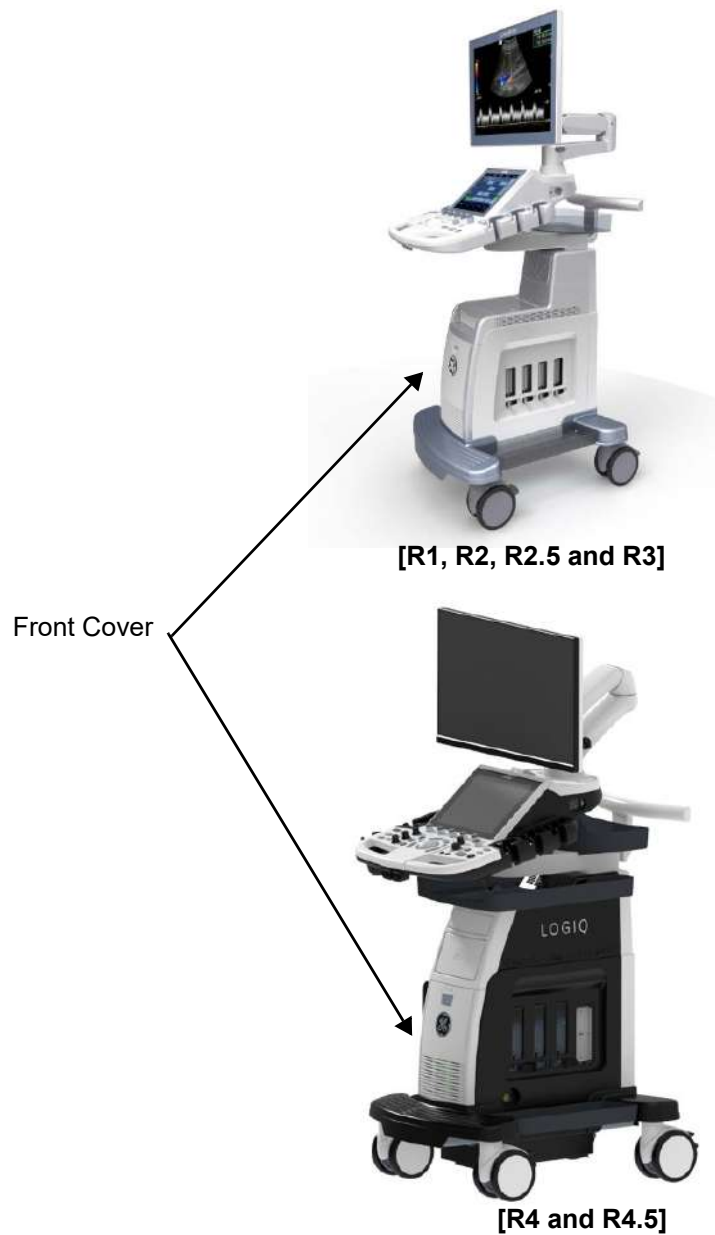


Figure 8-59 Front Cover

2) Front cover is attached using four “latches” as shown below.



Figure 8-60 latches

3) Pull out the Air filter from Front Cover.

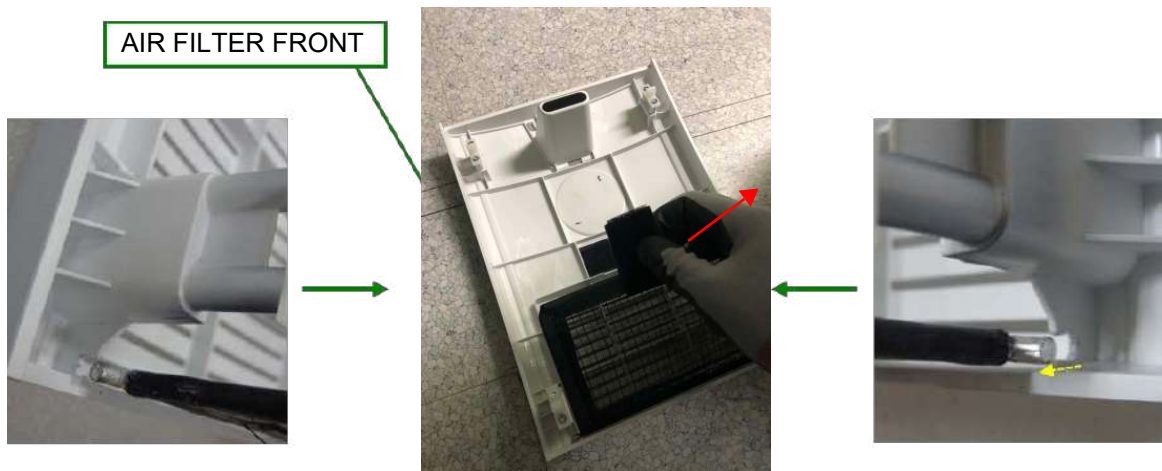


Figure 8-61 Removal of Air filter

8-6-4 Installation Procedure

- 1) Front cover and Air filter to be installed in reverse order of removal.
- 2) Align the edges and simply push to make sure all four "latches" are engaged.



Figure 8-62 Installation of latches

8-6-5 Functional Check

Visual inspection only.

Section 8-7 Replacement of Cabinet

8-7-1 Manpower

1 person, 5 min.

8-7-2 Tools

None required.

8-7-3 Removal Procedure

- 1) Cabinet shapes differ for each configuration, but removal/installation procedure are the same.



Figure 8-63 Low Cabinet and High cabinet

- 2) Slide out Cabinet toward front of the console. No tools required.

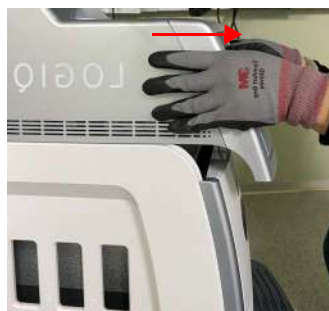


Figure 8-64 Slide out Cabinet

8-7-4 Installation Procedure

- 1) Cover to be installed in reverse order of removal.
- 2) Make sure “latches” on both sides are engaged.

NOTE: For Mid and High Cabinet type, there is “Guide Rail” for installation.



Figure 8-65 Guide Rail and latch

8-7-5 Functional Check

Visual inspection only.

Section 8-8 Replacement of Side Cover

8-8-1 Manpower

1 person, 15 min.

8-8-2 Tools

Standard Phillips Screwdriver.

8-8-3 Removal Procedure

8-8-3-1 Removal Procedure - Side Cover L

- 1) Remove Cabinet.



Figure 8-66 Removal of Cabinet

- 2) Remove 3 screws for Side Cover L.



Figure 8-67 Unscrew 3 screws

- 3) Pull out Side Cover (L). There is mechanical hook on bottom of the part.

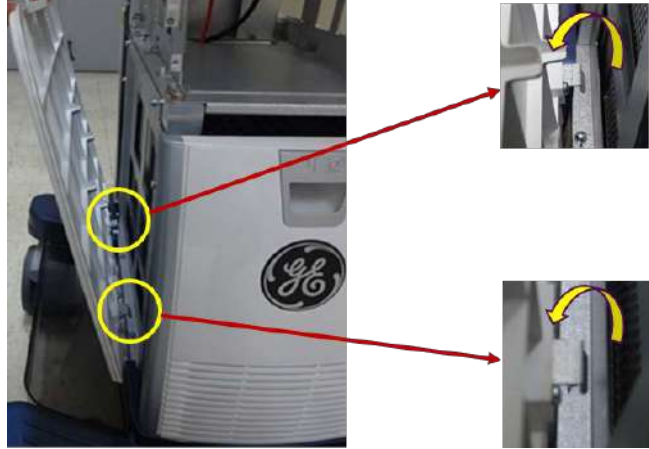


Figure 8-68 Pull out Side Cover L

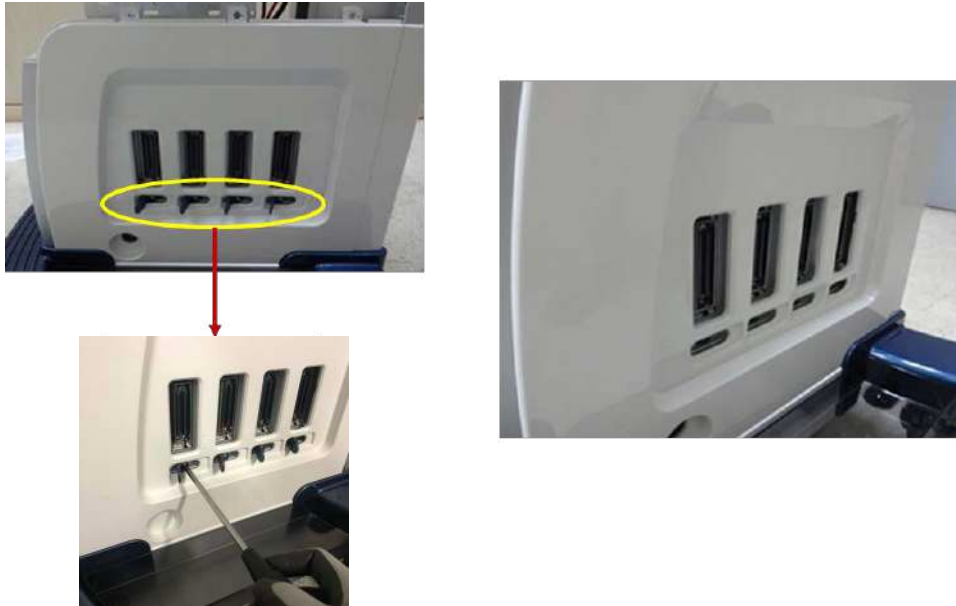
8-8-3-2 Removal Procedure - Side Cover R

- 1) Remove Cabinet.



Figure 8-69 Removal of Cabinet

- 2) Unscrew 3 or 4 screws of RS Knobs and remove RS Knobs.



[R1, R2, R2.5 and R3]



[R4 and R4.5]

Figure 8-70 Removing RS probe knobs
Chapter 8 - Replacement Procedures

- 3) Unscrew 3 screws for Side Cover R.



[R1, R2, R2.5 and R3]



[R4 and R4.5]

Figure 8-71 Unscrew 3 screws

- 4) Pull out Side Cover R. There is mechanical hook on bottom of the part.

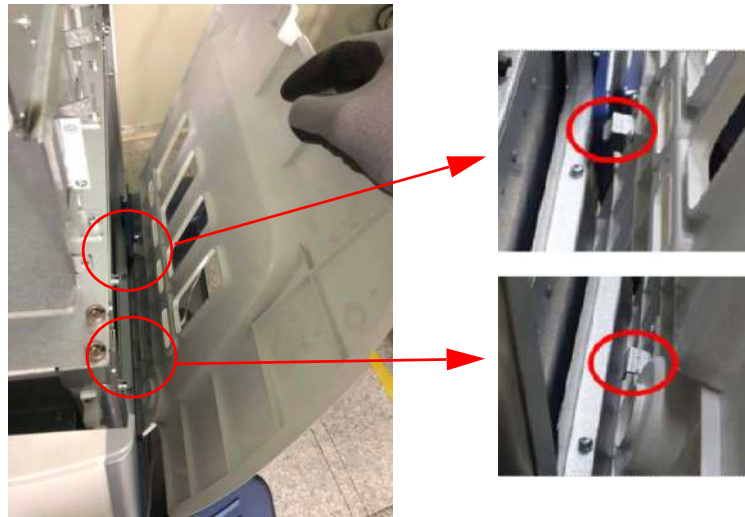


Figure 8-72 Pull out Side Cover R

8-8-4 Installation Procedure

Cover to be installed in reverse order of removal.

8-8-5 Functional Check

Visual inspection only.

Section 8-9 Replacement of Rear Cover

8-9-1 Manpower

1 person, 1 min.

8-9-2 Tools

No tool.

8-9-3 Removal Procedure

1) Pull the rear cover and remove it as following figure

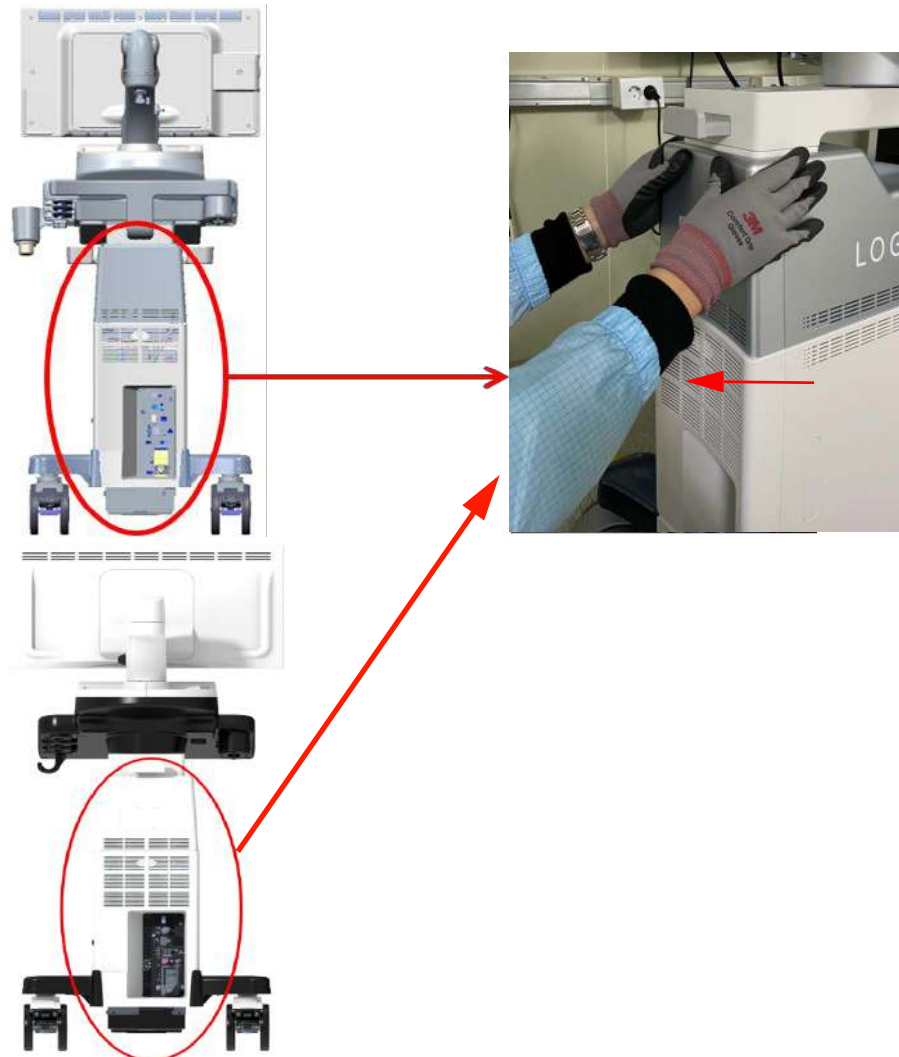


Figure 8-73 Removal of Rear Cover.

8-9-4 Installation Procedure

1) Cover to be installed in reverse order of removal.

8-9-5 Functional Check

Visual inspection only.

Section 8-10 Replacement of Side Tray & Foot Rest Cover

8-10-1 Manpower

1 person, 15 min.

8-10-2 Tools

Standard Phillips Screwdriver.

NOTE: "Short" type driver preferable for Foot Rest Cover removal/installation.

8-10-3 Removal Procedure

8-10-3-1 Removal Procedure - Side Tray.

Procedures are common for both the Left and Right Side Tray.

- 1) Remove 2 screws and carefully lift up the side tray.



Figure 8-74 Side Tray screw points

- 2) Remove 2 screws and carefully lift up the side tray.

SIDE TRAY FIX BRKT



Figure 8-75 SIDE TRAY FIX BRKT screw points

8-10-3-2 Removal Procedure - Foot Rest Cover

- 1) Remove Front Cover (refer to *section 8-6*)
- 2) Remove Top Cover (refer to *section 8-7*)
- 3) Remove Side Cover (refer to *section 8-8*)
- 4) Remove 3 screws.

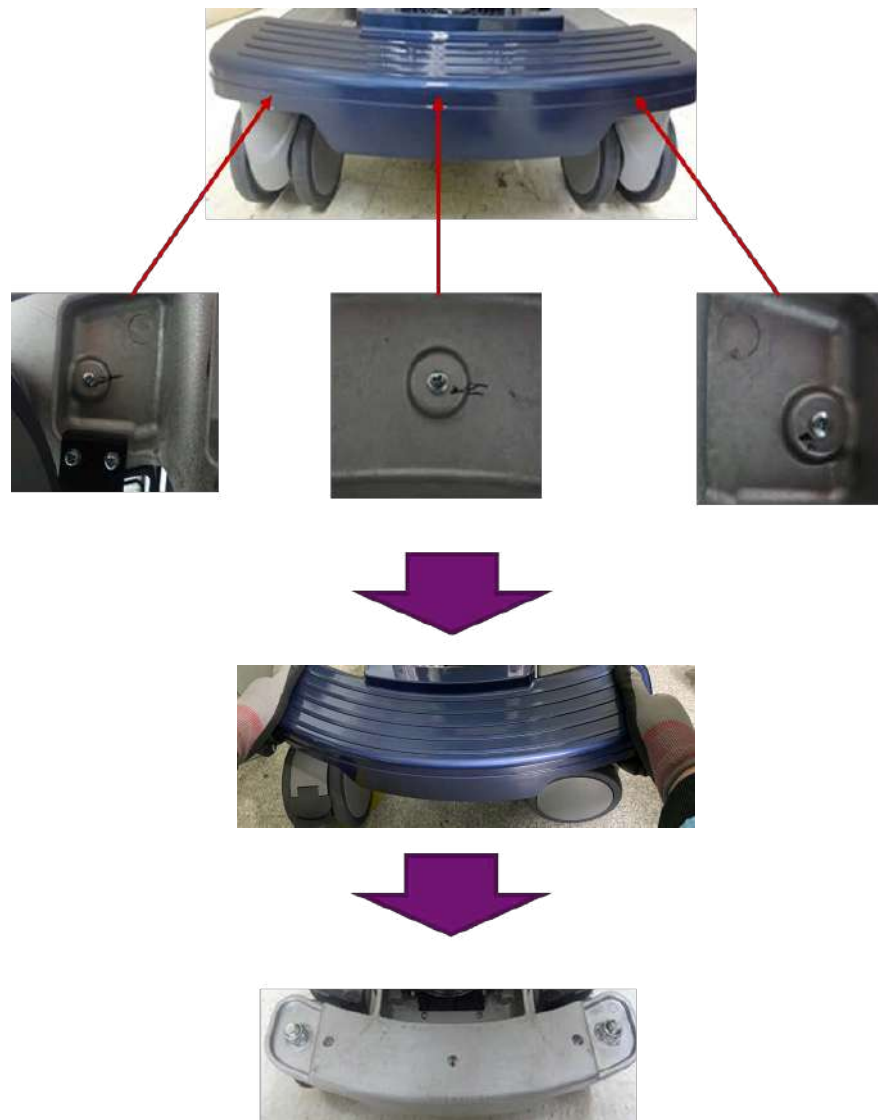



Figure 8-76 Foot Rest Cover

8-10-4 Installation Procedure

Parts to be installed in reverse order of removal.

Section 8-11 Replacement of Monitor and LCD Arm Plastic Covers

 **WARNING** Be care that the monitor does not fall during the replacement process.

8-11-1 Replacement of Monitor and LCD Arm Plastic Covers (R1, R2, R2.5 and R3)

8-11-1-1 Manpower

2 person, 15 minutes.

8-11-1-2 Tools

Standard Phillips Screwdriver, 4 mm Hex Wrench.

8-11-1-3 Preparations

1) Lock the Monitor Arm to prevent hazard. Refer to the figure below.

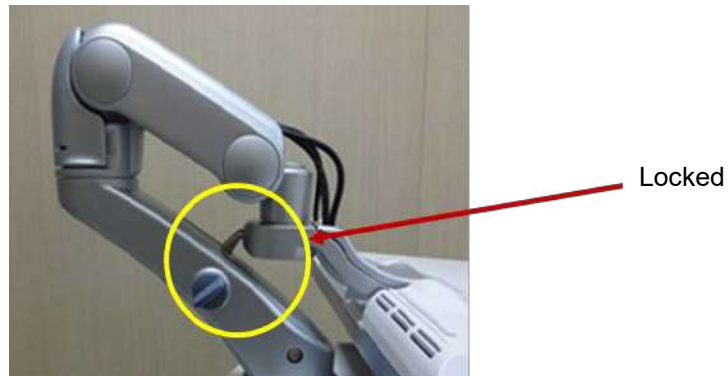


Figure 8-77 Locking the Monitor Arm

8-11-1-4 Monitor Remove Procedure

1) Unscrew 2 screws, then remove the Monitor rear panel. Refer to the figure below.



Figure 8-78 Removing the Monitor cover

- 2) Unscrew 5 screws, then remove cable clamp.

NOTE: There is cable position marker at red circle.

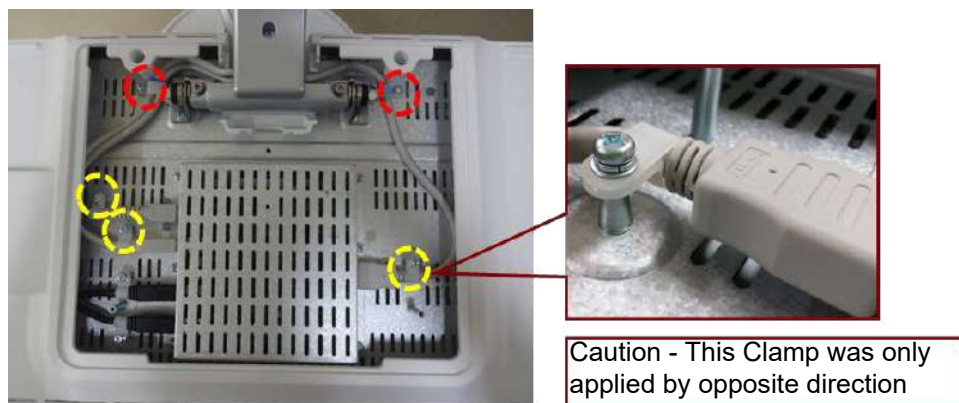


Figure 8-79 Unscrew cable clamp screws

- 3) Disconnect three Monitor cables. Refer to the figure below.

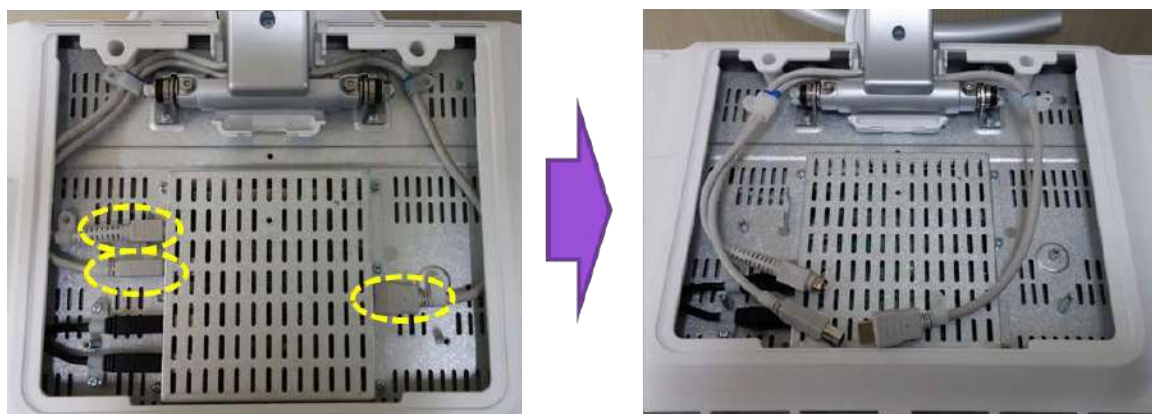


Figure 8-80 Disconnecting Monitor cables

- 4) Unscrew 2 screws, then separate the Monitor from the Monitor Stand Arm. Refer to the figure below.

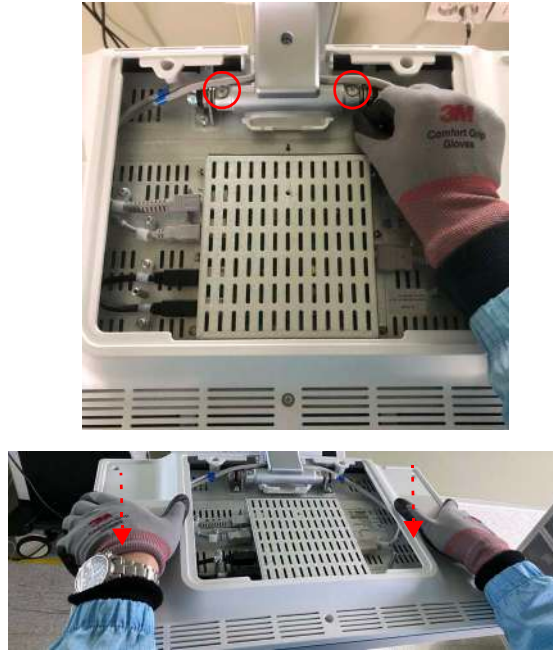


Figure 8-81 Unscrewing 2 screws & separating the Monitor

8-11-1-5 Monitor Installation Procedure

Parts to be installed in reverse order of removal.

8-11-1-6 LCD Arm Plastic Covers Remove Procedure

- 1) Unscrew 1 screw, than remove 3rd Arm Cover. Refer to the figure below.

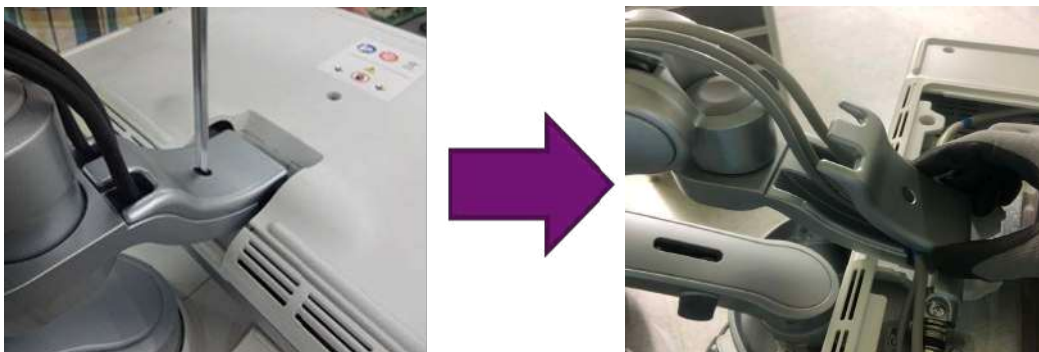


Figure 8-82 Removing the 3rd Arm Cover

- 2) Remove 2nd Axis Cover. Refer to the figure below.



Figure 8-83 Removing 2nd Axis Cover

- 3) Remove 2nd Arm Cover. Refer to the figure below.



Figure 8-84 Removing 2nd Arm Cover

- 4) Unscrew 1 screw and Remove the 1st Arm Cover. Refer to the figure below.

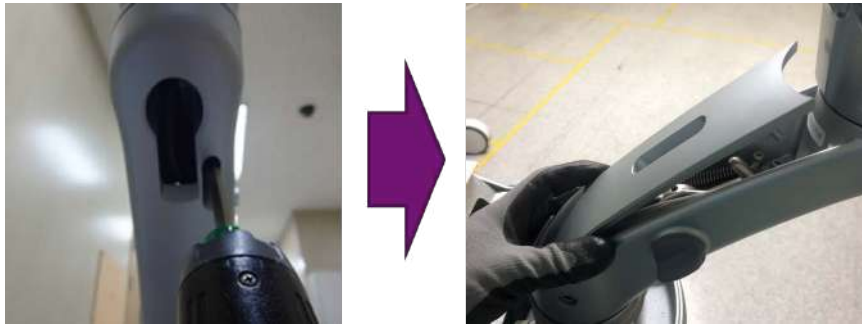


Figure 8-85 Removing the 1st Arm Cover

- 8-11-1-7 **LCD Arm Plastic Covers Installation Procedure**
Parts to be installed in reverse order of removal.

8-11-2 Replacement of Monitor and LCD Arm Plastic Cover (R4 and R4.5)

8-11-2-1 Manpower

2 person, 15 minutes

8-11-2-2 Tools

Standard Phillips Screwdriver, Hex Wrench set, Nipper

8-11-2-3 Preparations

- 1) Lock the Monitor Arm to prevent hazard.



Figure 8-86 Locking the Monitor Arm

8-11-2-4 Monitor Remove Procedure

- 1) Detach Monitor Cable Cover.



Figure 8-87 Removing the monitor cable cover

- 2) Unscrew 5 screws, then disconnect three monitor cables.



Figure 8-88 Unscrewing 5 screws and disconnecting monitor cables

- 3) Unscrew 2 screws.

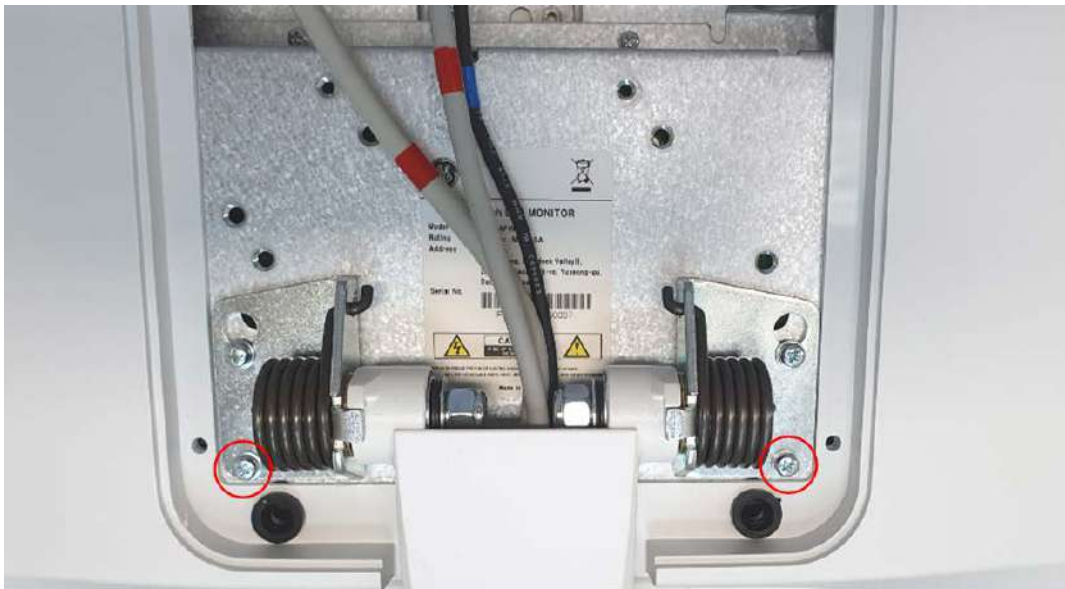


Figure 8-89 Unscrewing 2 screws

- 4) Unscrew 2 screws only halfway through and do not remove these screws.



Figure 8-90 Halfway unscrewing points

- 5) Push the monitor so that screw holes meet the screw head as following figure and remove the monitor.



Figure 8-91 Pushing the monitor to remove the monitor

8-11-2-5 Monitor Remove Procedure (R4 and R4.5 HD monitor)

- 1) Detach the Monitor Cable Cover.



Figure 8-92 Removing the monitor cable cover

- 2) Disconnect the USB cable.



Figure 8-93 Disconnecting USB cable

- 3) Unscrew 3 screws and unlock the cable clamp, then disconnect three monitor cables.



Figure 8-94 Unscrewing 3 screws and disconnecting monitor cables

- 4) Unscrew 2 screws.



Figure 8-95 Unscrewing 2 screws

- 5) Unscrew 2 screws only halfway through and do not remove these screws.



Figure 8-96 Half unscrewing points

- 6) Push the monitor so that screw holes meet the screw head as following figure and remove the

monitor.

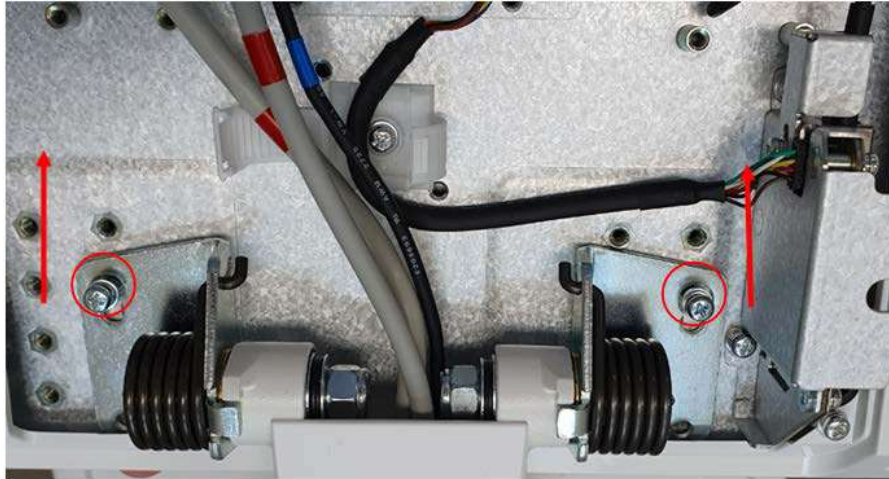


Figure 8-97 Pushing the monitor to remove the monitor

8-11-2-6 Monitor Installation Procedure

Parts to be installed in reverse order of removal.

8-11-2-7 LCD arm Plastic covers Remove procedure

- 1) Unscrew 2 screws, then detach Pan Arm Down Cover.



Figure 8-98 unscrewing 2 screws and separating the Pan Arm Down Cover

- 2) Unscrew 2 screws, then detach Lift Arm Cover, L, R.

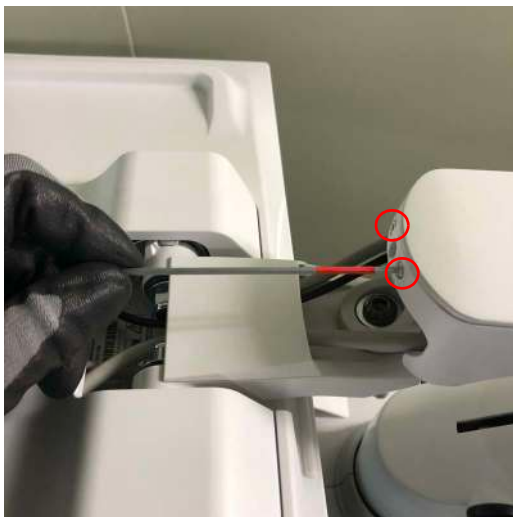


Figure 8-99 unscrewing 2 screws and detaching the Lift Arm Cover L, R

- 3) Detaching the Joint Cover.



Figure 8-100 Detaching the Joint Cover

- 4) Unscrew 1 screw, then detach Extension Arm Cover.



Figure 8-101 Unscrewing 1 screw and detaching the Extension Arm Cover

- 8-11-2-8 **LCD Arm Plastic Covers Installation Procedure**
Parts to be installed in reverse order of removal.

Section 8-12 Replacement of Monitor Covers

8-12-1 Replacement of Monitor Covers (R1, R2, R2.5 and R3)

8-12-1-1 Manpower

2 persons, 10 minutes.

8-12-1-2 Tools

Standard Phillips Screwdriver, Hex Wrench

8-12-1-3 Pre-Work

1) LCD Monitor and Monitor Cable Cover removed (refer to *section 8-11-1*)

8-12-1-4 Removal Procedure

1) Remove 9 screws and remove the Monitor Rear Cover.

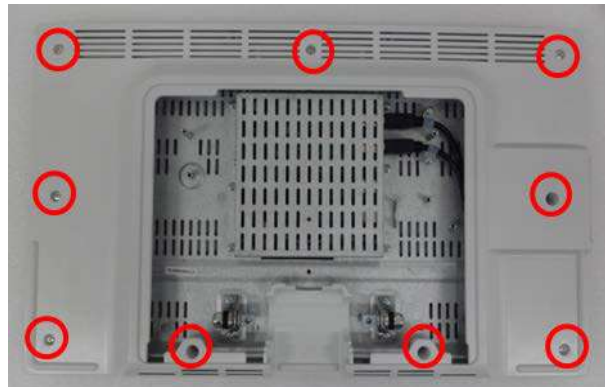


Figure 8-102 Monitor Rear Cover screw points

2) Remove 11 screws and remove the Monitor Front Cover and Glass Filter Assy.

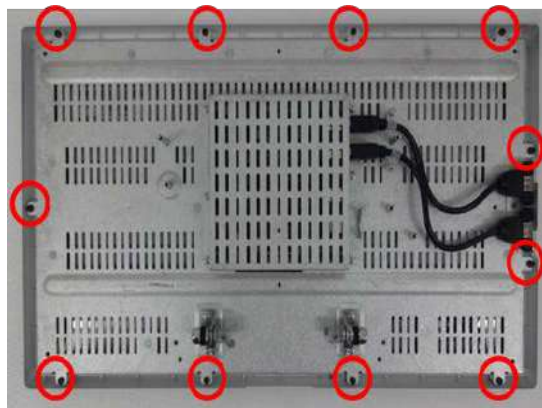


Figure 8-103 Monitor Front Cover screw points

8-12-1-5 Installation Procedure

- 1) Parts to be installed in reverse order of removal.



CAUTION

Make sure not to remain any dust on Glass during Front Cover and Glass Filter Assy installation

8-12-1-6 Functional Check

Visual Check only.

8-12-2 Replacement of Monitor Covers (R4 and R4.5)

8-12-2-1 Manpower

2 persons, 10 minutes.

8-12-2-2 Tools

Standard Phillips Screwdriver, Hex Wrench, Nipper, Hook Remover

8-12-2-3 Pre-Work

1) LCD Monitor and Monitor Cable Cover removed (refer to *section 8-11-2-4*)

8-12-2-4 Removal Procedure

1) Unscrew 4 screws and remove the Monitor Rear Cover by using Hook remover.

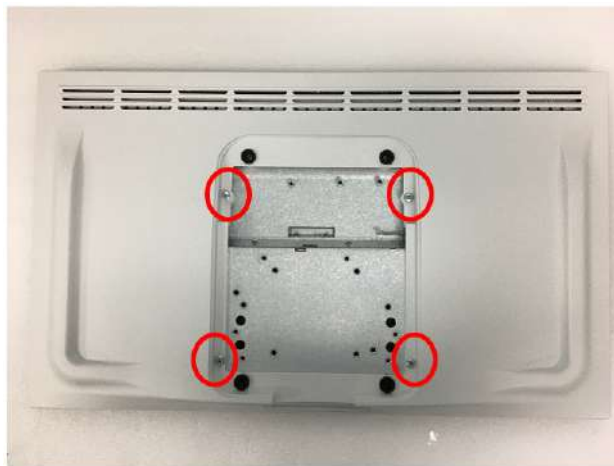


Figure 8-104 Unscrewing 4 screws and separating Monitor Rear Cover

- 2) Unscrew 8 screws and remove the Monitor front cover.

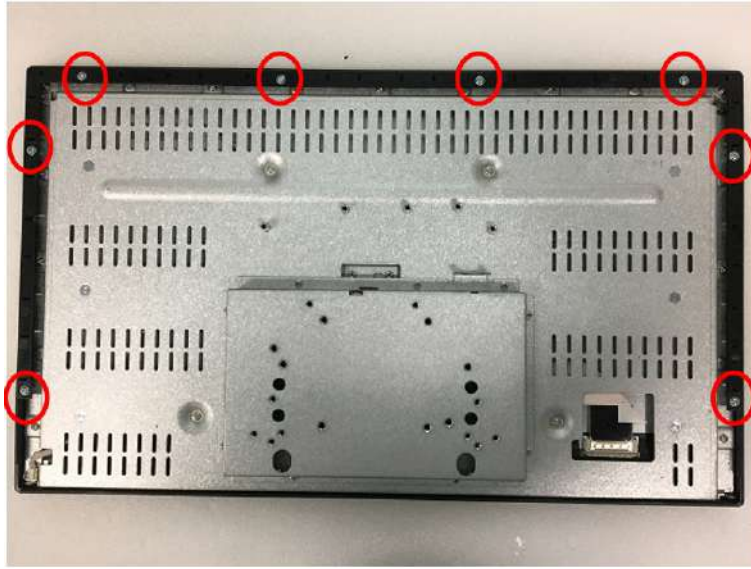


Figure 8-105 Unscrewing 8 screws

8-12-2-5 Monitor Covers Installation Procedure

Parts to be installed in reverse order of removal.

8-12-3 Replacement of Monitor Covers (R4 and R4.5 HD monitor)

8-12-3-1 Manpower

2 persons, 10 minutes.

8-12-3-2 Tools

Standard Phillips Screwdriver, Hex Wrench, Nipper, Hook Remover

8-12-3-3 Pre-Work

1) Monitor and Monitor Cable Cover removed (refer to *section 8-11-2-5*)

8-12-3-4 Removal Procedure

1) Unscrew 4 screws and remove the Monitor Rear Cover by using Hook remover.



Figure 8-106 Unscrewing 4 screws and separating Monitor Rear Cover

- 2) Unscrew 4 screws and remove the Monitor front cover by using Hook remover.

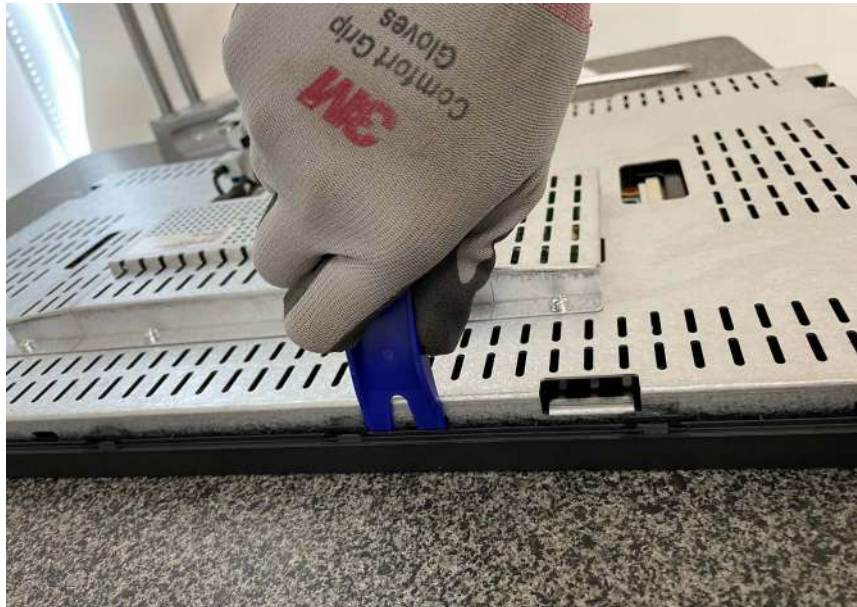
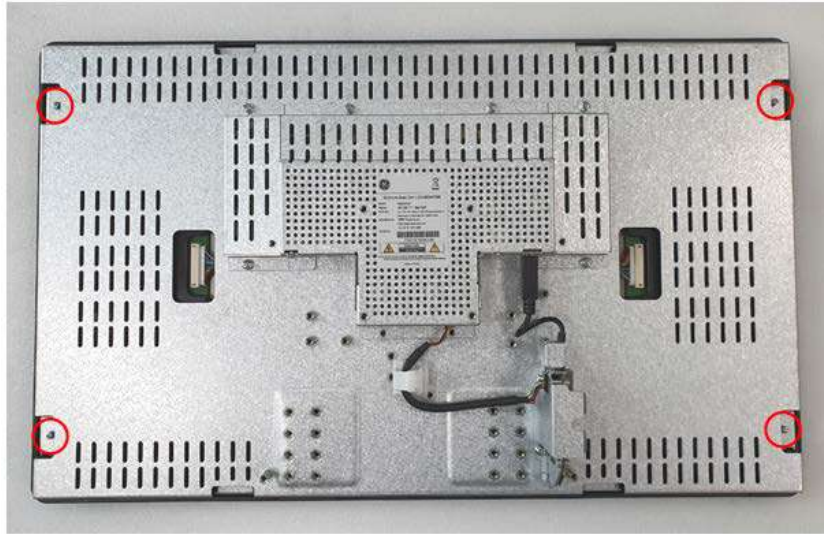


Figure 8-107 Unscrewing 4 screws and remove the Monitor Front Cover

- 8-12-3-5 **Monitor Covers Installation Procedure**
Parts to be installed in reverse order of removal.

Section 8-13 Replacement of Fixed Arm Cover and Fixed Arm Holder Grip

8-13-1 Manpower

2 person, 5 minutes.

8-13-2 Tools

Standard Phillips Screwdriver, Hex Wrench.

8-13-3 Removal Procedure

8-13-3-1 Removal Procedure - Fixed Arm Cover

- 1) Remove 1 screw and lift up the Fixed Arm Cover.



Figure 8-108 Fixed Arm Cover screw point

8-13-3-2 Removal Procedure - Fixed Arm Holder Grip

- 1) Remove 2 screws and pull out the Fixed Arm Holder Grip.



Figure 8-109 Fixed Arm Holder Grip Cover screw points

8-13-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-13-5 Functional Check

Visual Check only.

Section 8-14 Replacement of OPIO and Related Parts

NOTE: This section describes removal and installation of OPIO and related parts. OPIO Assy itself, Main PWA Assy, LCD Touch module Assy, HUB Board, Encoder, Freeze key Assy, OPIO AN Key & Gel warmer board and Trackball Assy.

8-14-1 Replacement of OPIO and Related Parts (R1, R2, R2.5 and R3)

8-14-1-1 Manpower

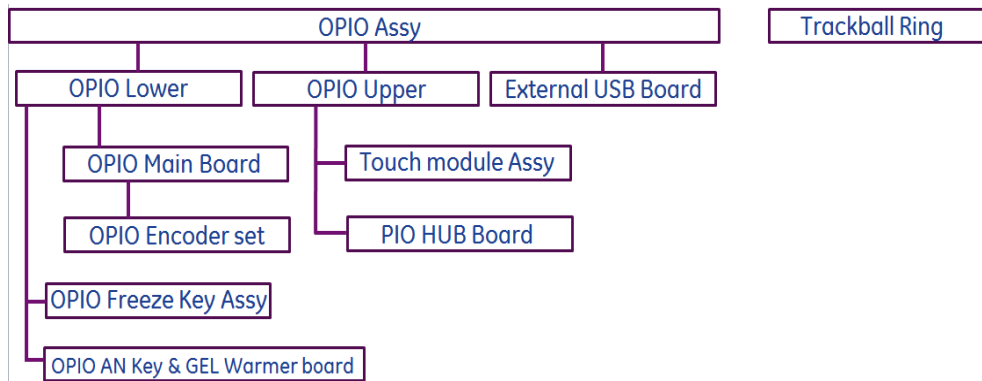
1 person, 5 minutes.

8-14-1-2 Tools

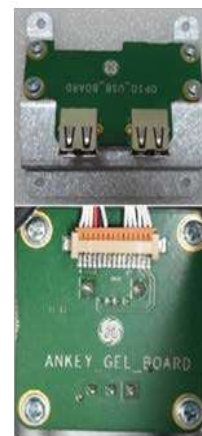
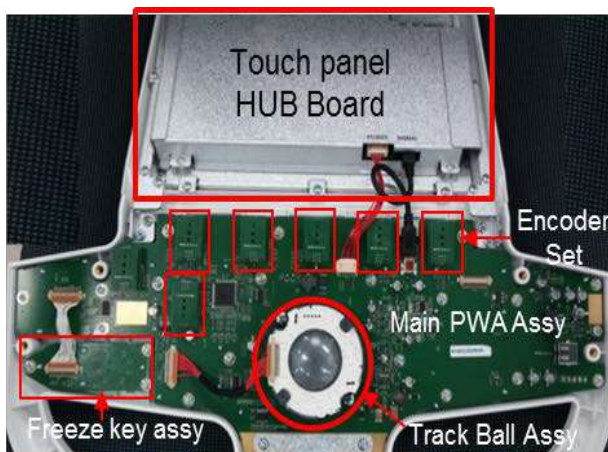
Standard Phillips Screwdriver.

8-14-1-3 Removal Procedure

Nesting of the parts are as follows.



For example, to access Encoder for repair, OP Panel must be removed and then OPIO Main PWA assy must be removed.



External USB Board

OPIO AN Key & GEL
Warmer board

Figure 8-110 OP Panel Assy

8-14-1-3-1 Removal Procedure - Trackball Ring

NOTE: Removal of Trackball Ring and Cleaning does not require tools.

- 1) Turn the ring counter clock-wise
- 2) Lift trackball from OP Panel

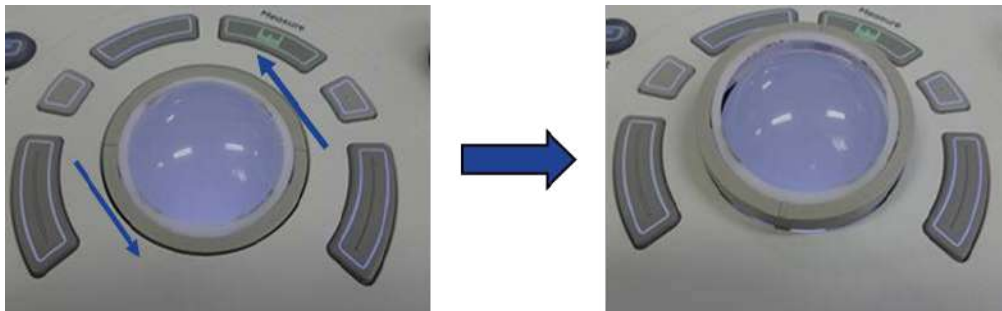


Figure 8-111 Trackball Ring

8-14-1-3-2 Removal Procedure - OP Panel Assy



Figure 8-112 OP Panel Assy

- 1) Remove 7 screws from bottom of the OPIO Base.



Figure 8-113 Bottom of OPIO Base

- 2) Remove 2 screws on OPIO covers.



Figure 8-114 Rear of OPIO Base

- 3) Remove USB cables on Touch panel and unscrew 2 screws. Refer to following figure.

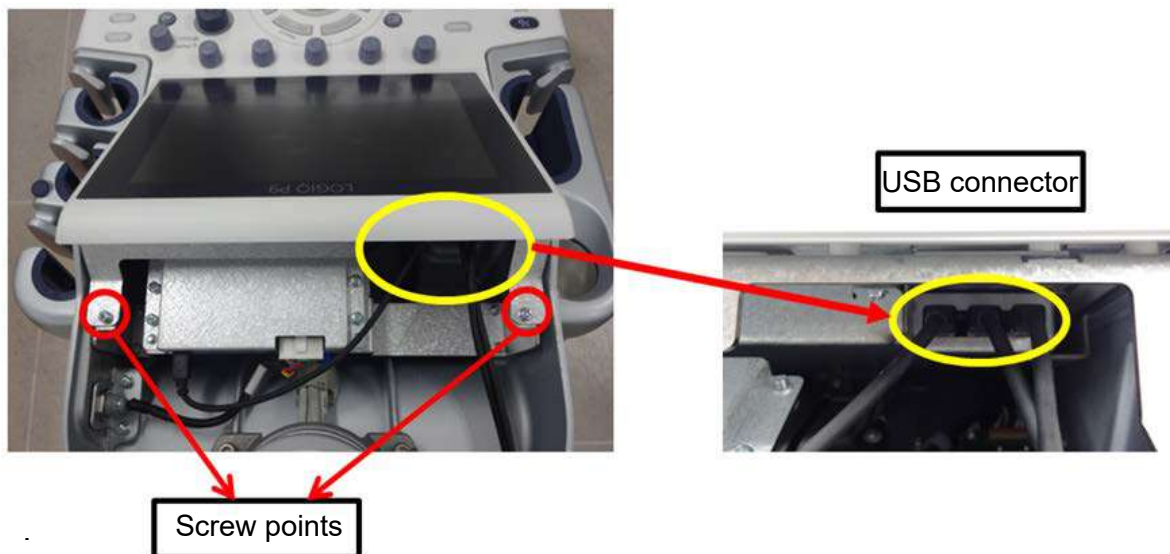


Figure 8-115 USB cable position and screw points.

- 4) Lift OP Panel.

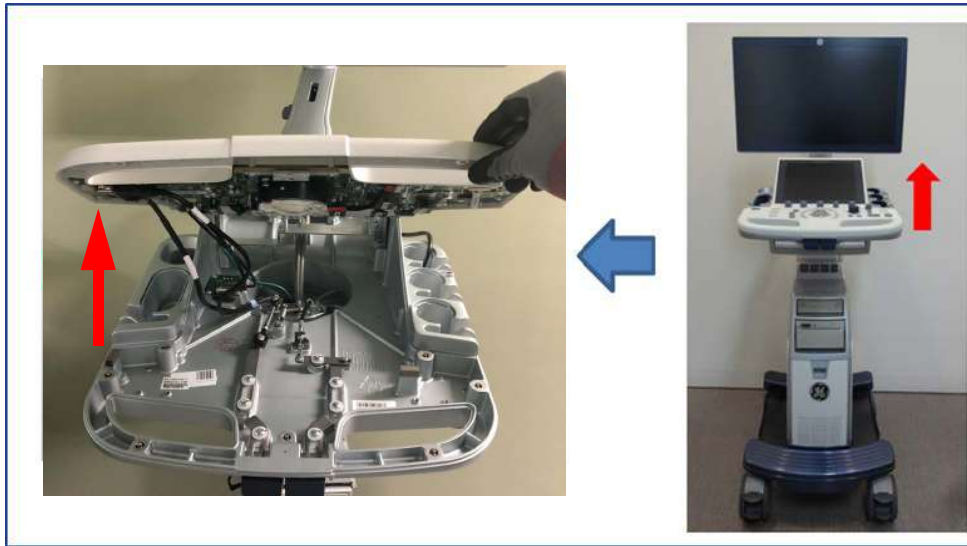


Figure 8-116 Lift OP Panel

- 5) Remove USB locking type Cable
- 6) Remove OPIO Power cable.
- 7) Remove USB locking type connector.

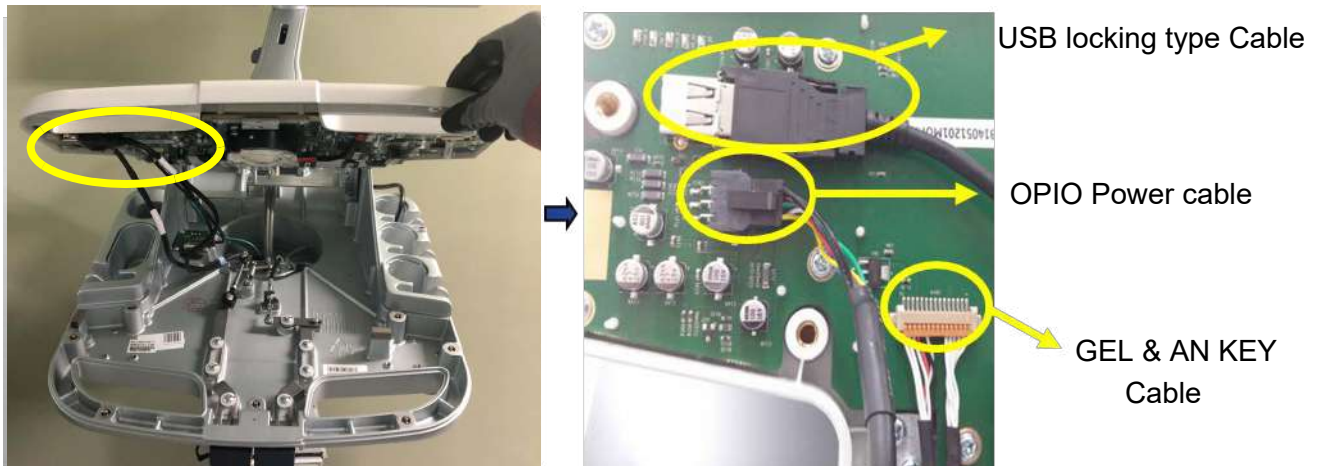


Figure 8-117 Removal of connectors

- 8) OP Panel can now be separated from the console.

8-14-1-3-3 Removal Procedure - AN Keyboard (Option)

- 1) Remove 4 screws on AN keyboard Brkt. (2 screws on right side and 2 screws on left side)



Figure 8-118 Removal of screws

- 2) Unscrew 2 screws on AN keyboard Brkt only half . (1 screw on right side and 1 screw on left side). Do not remove these screws.(Red circle in following figure)



Figure 8-119 Half unscrewing points

- 3) Push the AN keyboard so that screw holes meet the screw head as following figure.

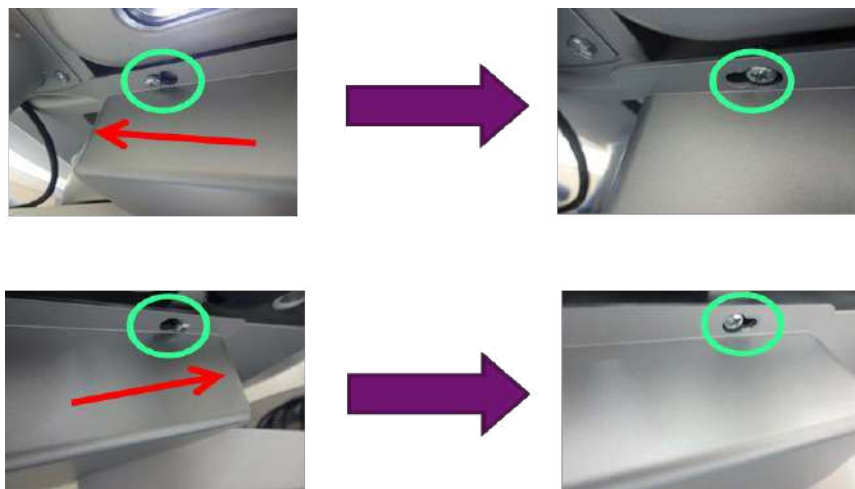


Figure 8-120 Half unscrewing points

- 4) Disconnect USB cables as following figure.



Figure 8-121 Disconnecting USB cable

8-14-1-3-4 Removal Procedure - Trackball

- 1) Remove a connector from back of OP Panel Assy.
- 2) Remove 2 screws.
- 3) Slowly lift up trackball from OP Panel.

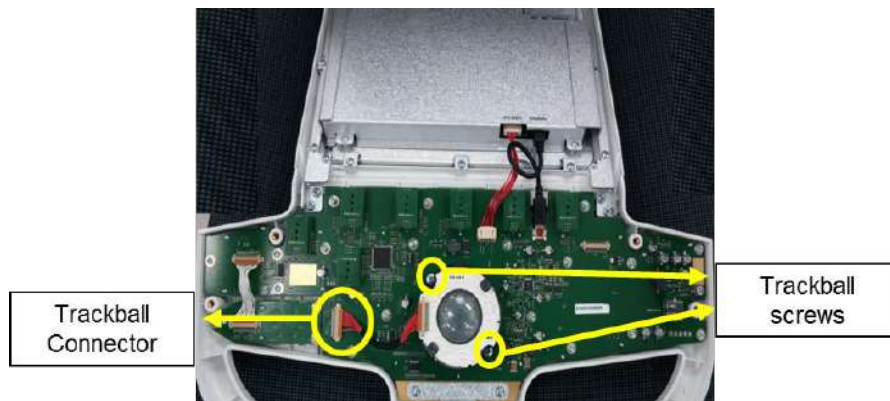


Figure 8-122 Trackball removal

8-14-1-3-5 Removal Procedure - LCD Touch Panel Assy

- 1) Disconnect connectors as following figure.

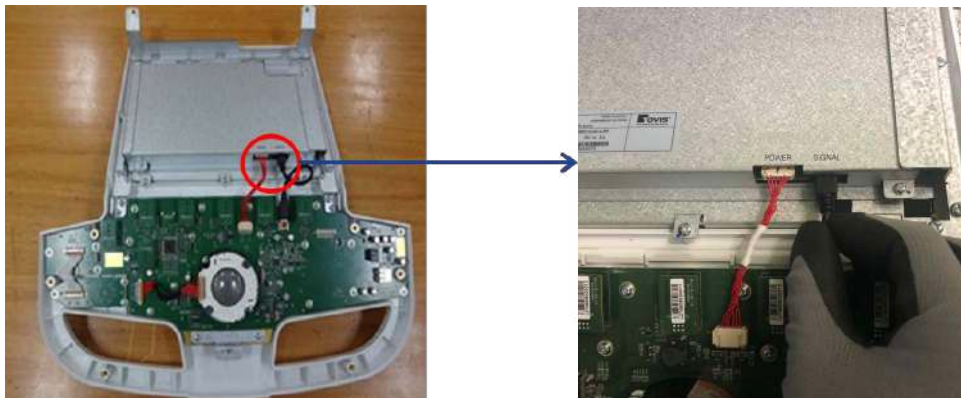


Figure 8-123 Disconnection of LCD Touch panel Assy

- 2) Remove 4 screws as following figure.

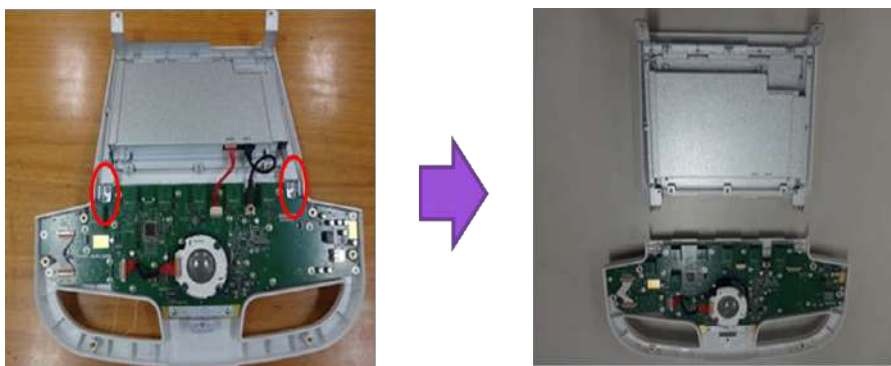


Figure 8-124 Removal of 4 screws of LCD Touch panel Assy

8-14-1-3-6 Removal Procedure - Freeze key assy

- 1) Remove connector as following figure

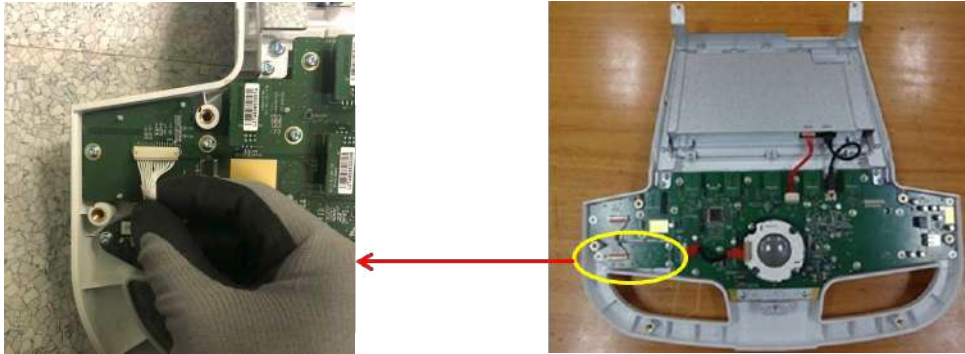


Figure 8-125 Disconnection of freeze key Assy connector

- 2) Remove 3 screws from Freeze key Assy

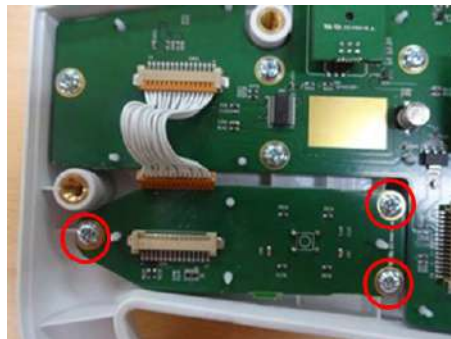


Figure 8-126 Screw points of freeze key assy .

- 3) Slowly lift board from OP Panel.

8-14-1-3-7 Removal Procedure - OP Panel Main PWA Assy

- 1) Carefully lift up knobs as following figures

2) Place the new knobs.



Figure 8-127 Position of knobs

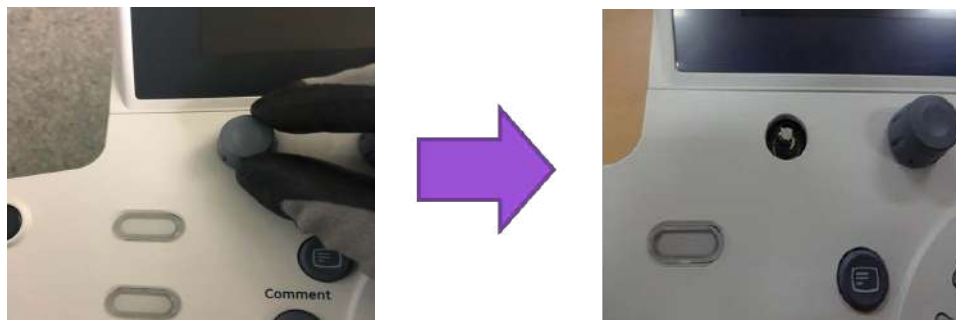


Figure 8-128 Removal of knobs

- 3) Disconnect freeze key assy connector, trackball connector and Touch panel connectors. Refer to following figure.

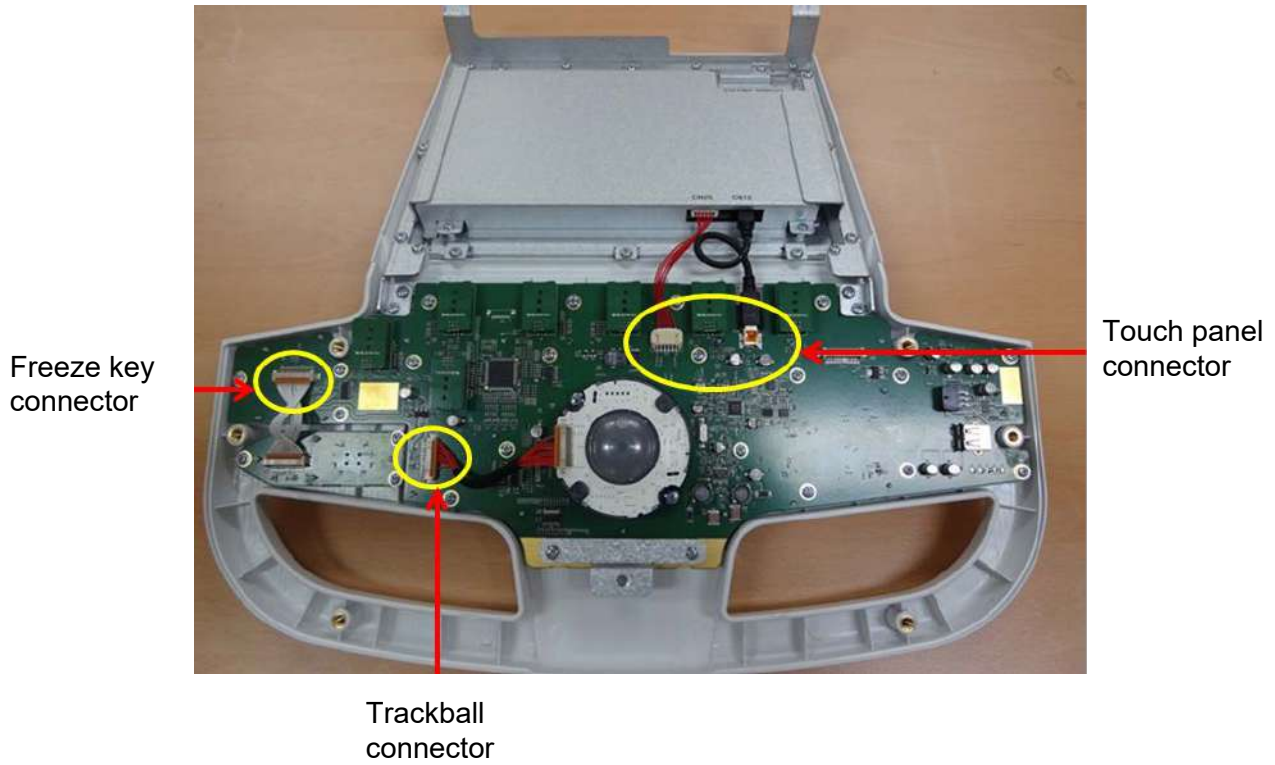


Figure 8-129 Removal of connectors on Main PWA assy

- 4) Remove 23 screws around PWA. Refer to following figure.



Figure 8-130 Screw points on Main PWA Assy

8-14-1-3-8 Removal Procedure - Encoder on PWA

- 1) Remove OP Panel Main PWA Assy.
- 2) Loosen nut.
- 3) Remove part

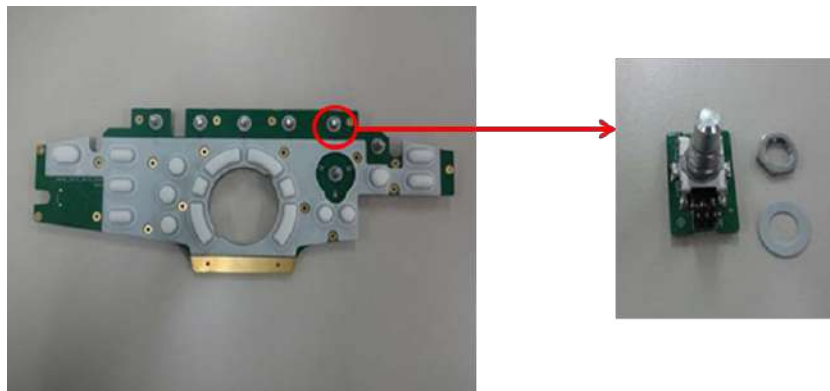


Figure 8-131 Removal of Encoder

8-14-1-3-9 Removal Procedure - Touch panel

- 1) Remove OP Panel Assy.
- 2) Separate LCD Touch Panel Assy from OP Panel Assy.

- 3) Remove 12 screws on 3 BRKT and remove 3 BRKT Refer to following figure.

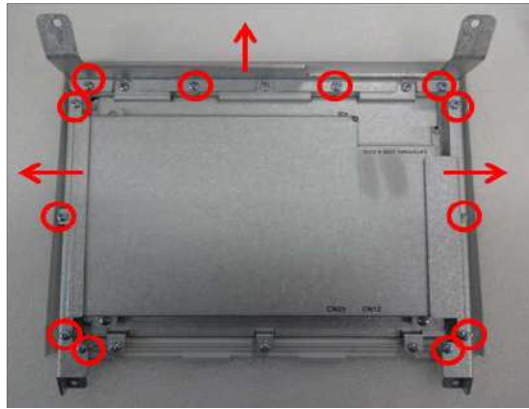


Figure 8-132 Screw points to remove 3 BRKT

- 4) Remove 10 screws on BRKT and remove 1 BRKT Refer to following figure.

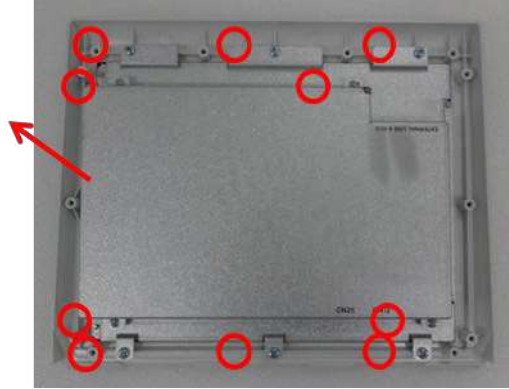


Figure 8-133 Screw points to remove 3 BRKT

- 5) Remove flexible connectors and carefully lift up Touch panel.

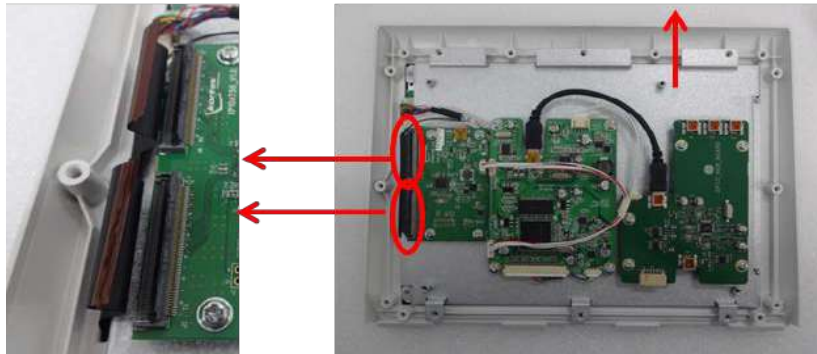


Figure 8-134 Disconnection of Touch panel connector

8-14-1-4 Installation Procedure

- 1) Parts to be installed in reverse order of removal.

NOTE: Make sure to assemble "Rubber Sheet" securely to PWA.



Figure 8-135 Installation of PWA

NOTE: Make sure to connect Touch panel connector to hub board as blow figure.



Figure 8-136 Installation of Touch panel connector

CAUTION  Make sure not to remain any dust on Glass during OPIO Upper Cover and Touch Screen Assy installation

NOTE: In some cases, when OPIO is replaced the Windows base system may recognize new OPIO as 'new' hardware device.
 This could bring Touch Panel graphics to top of main screen resulting to have only the wall paper (ping, cherry blossom) without touch panel buttons.
 When this occurs, go into Windows desktop, and double click "OPIO Position Reset" icon.
 Alternatively, go to Windows graphics property manager, and bring SCREEN3 to below SCREEN1.

8-14-1-5 Functional Check

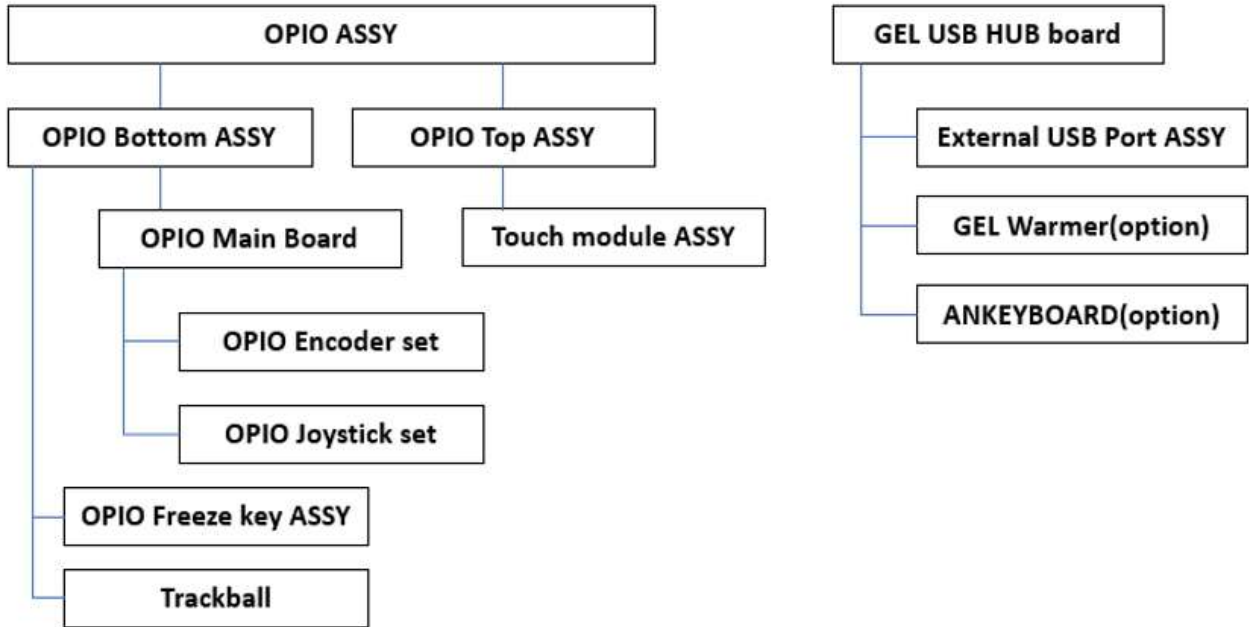
| Test | Refer to | Note |
|------------------------------|---------------|---------------------------------|
| System Exterior Visual Check | section 4-3-1 | Control panel visual check only |
| Power On/Off | section 4-3-3 | |
| System Integration Checks | section 4-3-5 | section 4-3-5-1 OPIO Test only |
| OPIO Interface Check | section 4-3-9 | |

8-14-2 Replacement of OPIO and Related Parts (R4 and R4.5)

8-14-2-1 **Manpower**
 1 person, 5 minutes

8-14-2-2 **Tools**
 Standard Phillips Screwdriver

8-14-2-3 **Replacement Procedure**
 Nesting of the parts are as follows.



For example, to access Encoder for repair, OPIO Assy must be removed and then OPIO Main Board must be removed.

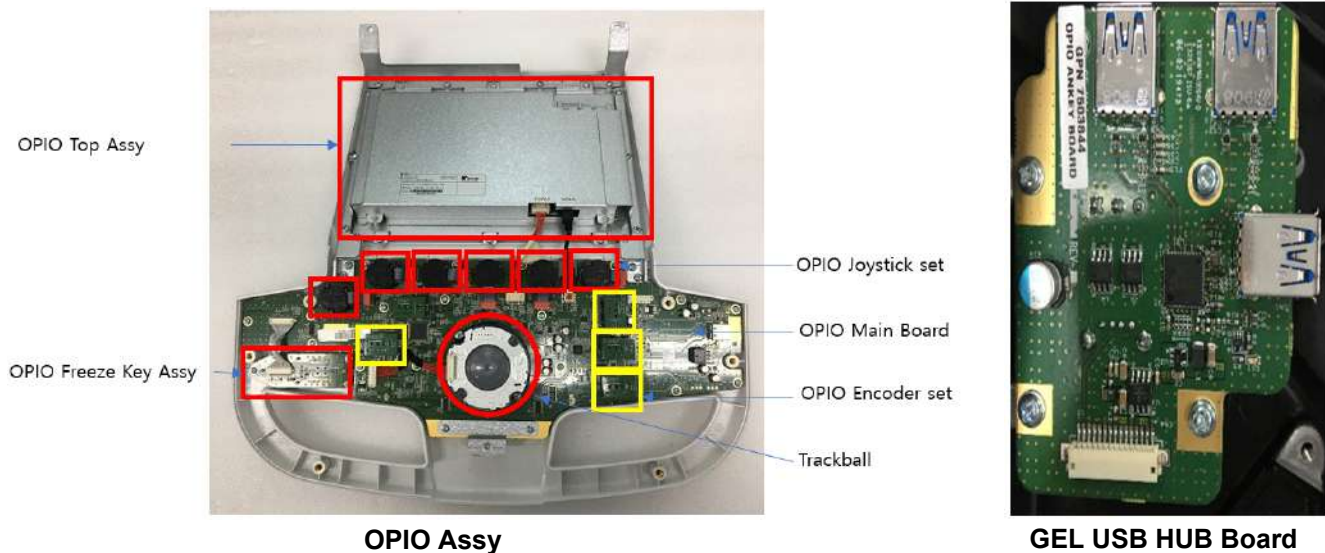
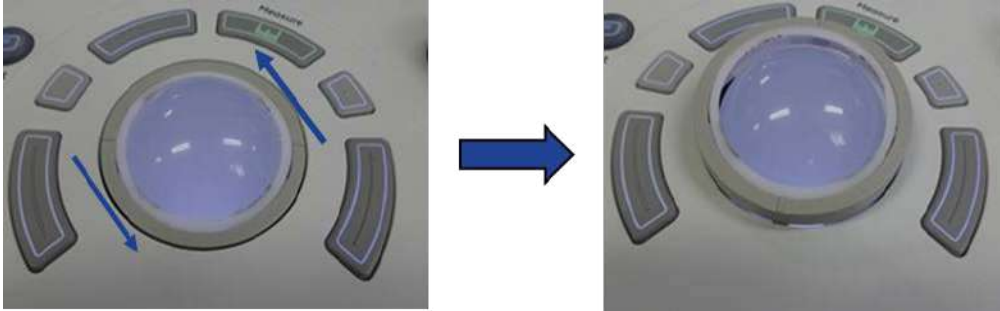


Figure 8-137 OPIO Assy and GEL USB HUB Board

8-14-2-3-1 Removal Procedure - Trackball Ring

NOTE: Removal of Trackball Ring and Cleaning does not require tools.

- 1) Turn the ring counter clock-wise
- 2) Lift trackball from OP Panel



8-14-2-3-2 Removal Procedure - OPIO Assy



Figure 8-138 OPIO Assy

- 1) Unscrew 7 screws from bottom of the OPIO Base.



Figure 8-139 Unscrewing 7 screws

- 2) Unscrew 2 screws on OPIO Top Covers



Figure 8-140 Unscrewing 2 screws on OPIO Top Covers

- 3) Disconnect USB cables on Touch panel and unscrew 2 screws.

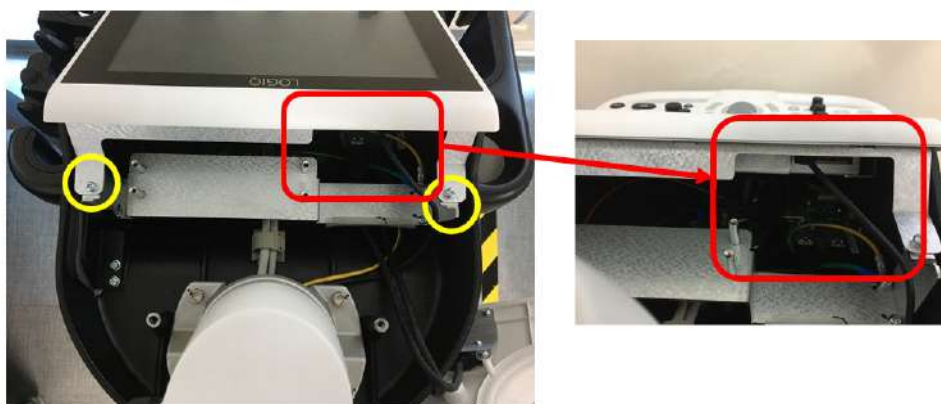


Figure 8-141 Disconnecting USB cables and unscrewing 2 screws

- 4) Lift OPIO Assy up.



Figure 8-142 Lifting OPIO Assy up

- 5) Disconnect 4 cables and separate the OPIO assy

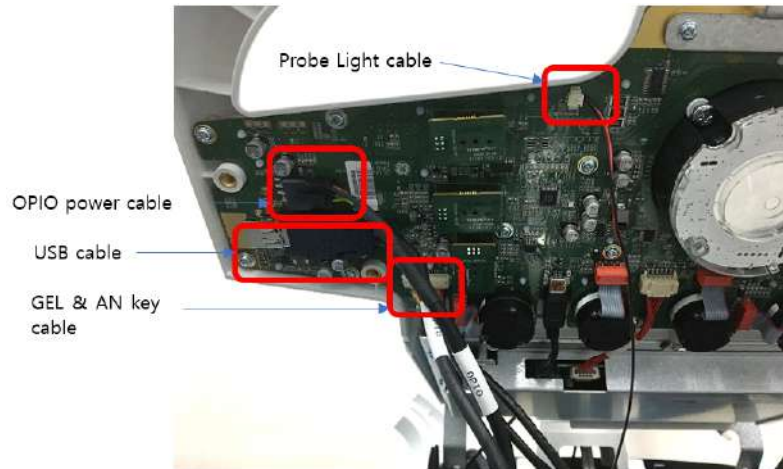


Figure 8-143 Disconnecting cables

- 6) Assembly Procedure - OPIO Assy
Parts to be installed in reverse order of removal.

8-14-2-3-3 Removal Procedure - AN Keyboard (Option)

Refer to section 8-14-1-3-3.

8-14-2-3-4 Removal Procedure - Trackball

Refer to section 8-14-1-3-4

8-14-2-3-5 Removal Procedure - OPIO Top assy

- 1) Disconnect 2 cables

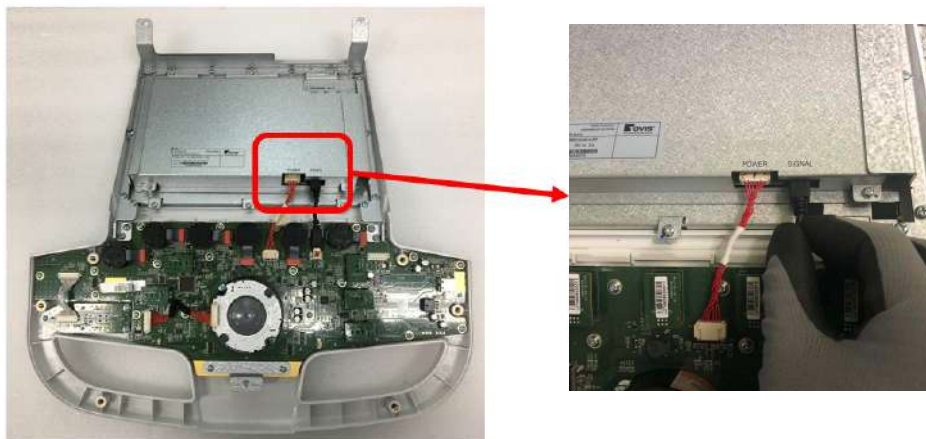


Figure 8-144 Disconnecting cables

- 2) Unscrew 4 screws and separate OPIO Top Assy.

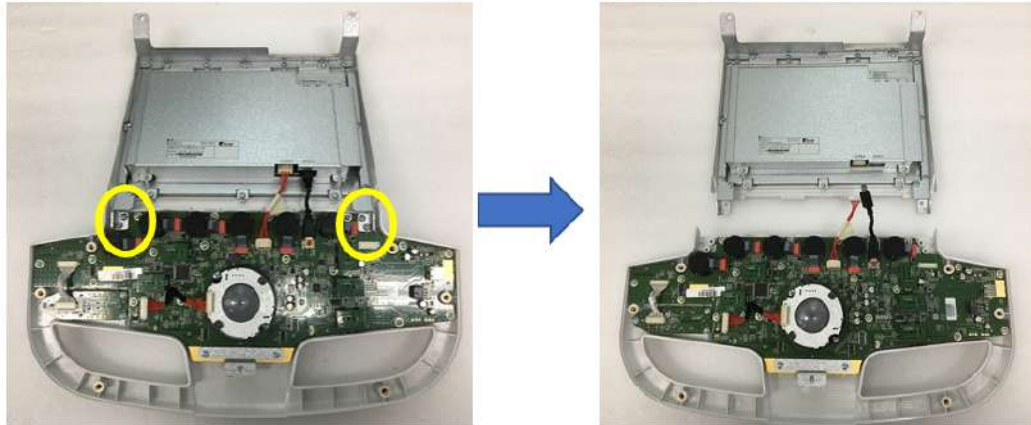


Figure 8-145 Unscrewing 4 screws and separating OPIO Top Assy

- 3) Assemble Procedure - OPIO Top Assy
Parts to be installed in reverse order of removal.

8-14-2-3-6 Removal Procedure - Freeze key Assy

- 1) Disconnect cable and unscrew 3 screws

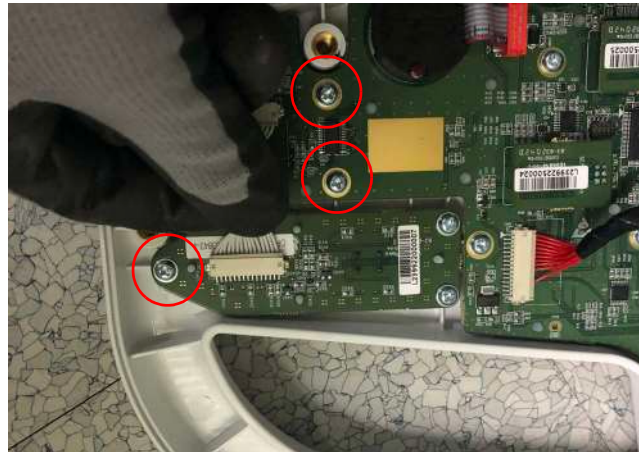


Figure 8-146

- 2) Detach the Freeze key Assy
- 3) Assemble Procedure - Freeze key Assy
Parts to be installed in reverse order of removal.

8-14-2-3-7 Removal Procedure - OPIO Main board

- 1) Detach 11 knobs from the OPIO Bottom assy.



Figure 8-147 Detaching 11 knobs

- 2) Disconnect freeze key assy connector, trackball connector and Touch panel connectors.

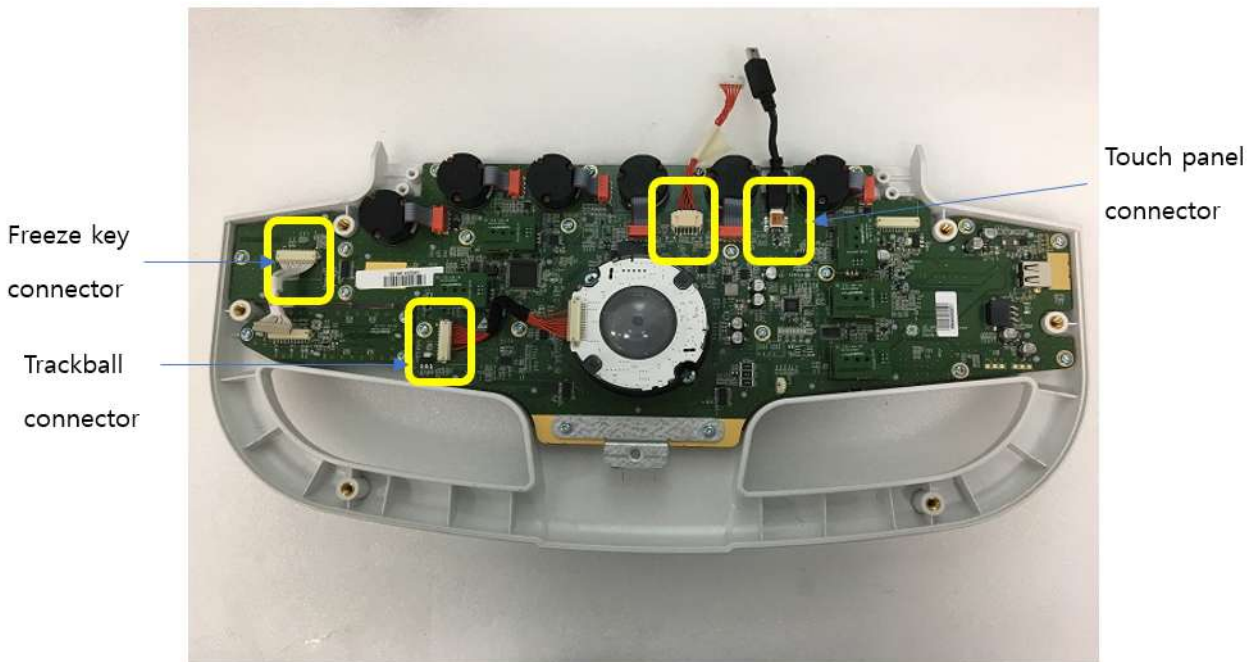


Figure 8-148 Disconnecting 4 cables

- 3) Unscrew 20 screws on Main board and detach the board.

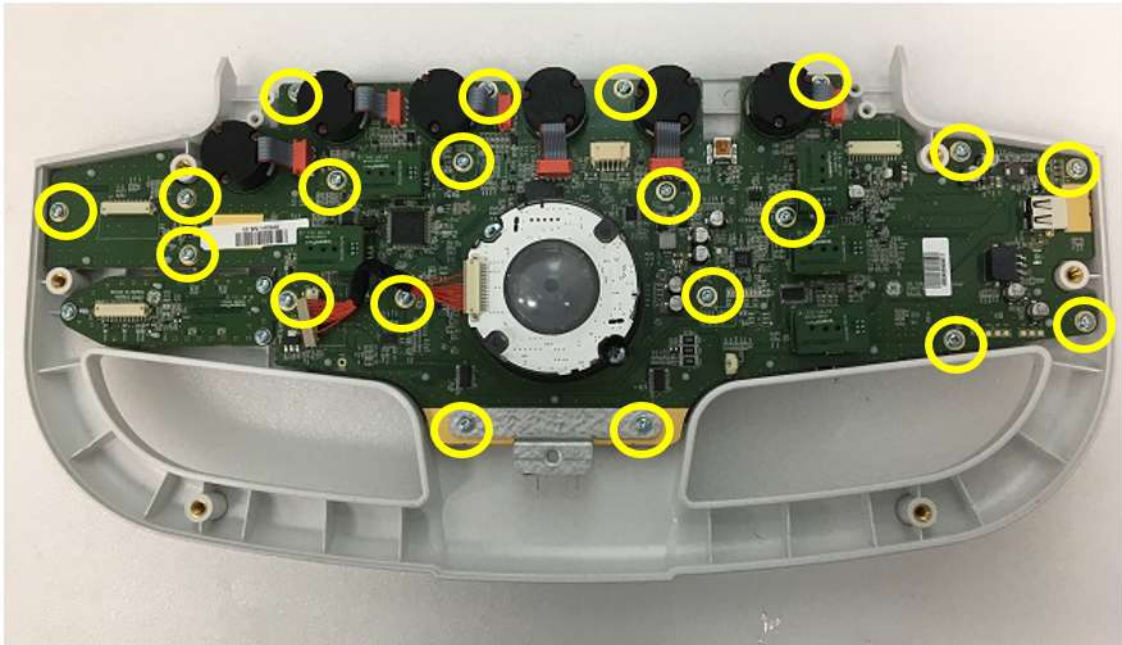


Figure 8-149 unscrewing 20 screws

- 4) Assemble Procedure - OPIO main board
Parts to be installed in reverse order of removal.
- 8-14-2-3-8 Removal Procedure - Encoder on main board
- 1) Remove OPIO main board (Refer to the section [8-14-2-3-7](#))
 - 2) Unfasten nut and detach the encoder.

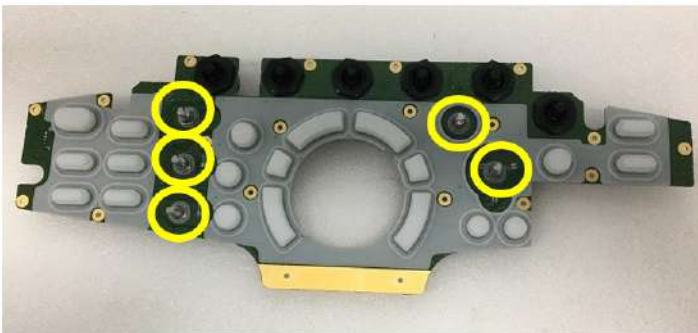


Figure 8-150 unfastening nut and detaching the encoder

- 3) Assemble Procedure - Encoder on main board
Parts to be installed in reverse order of removal.

8-14-2-3-9 Removal Procedure - Joystick encoder on main board

- 1) Remove OPIO main board (Refer to the section [8-14-2-3-7](#))
- 2) Unfasten nut and detach the encoder.



Figure 8-151 Unfastening nut and detaching the Joystick encoder

- 3) Assemble Procedure - Joystick Encoder on main board
Parts to be installed in reverse order of removal.

Section 8-15 Replacement of the Caps for Hardkeys

8-15-1 Manpower

1 person, approx. 1 minute/cap.

8-15-2 Tools

Small-sized slotted screwdriver or tweezers.

8-15-3 Removal Procedure

- 1) By means of a small slotted screwdriver, carefully push against the hardkey cap.
- 2) Lift the cap, until it is completely loosened from its base.
- 3) Place the new hardkey cap down until it snaps into position.



Figure 8-152 Push against the circle cap and lift it

NOTE: Each of the key have "Slit" where flathead screwdriver can be inserted for easy removal.



Figure 8-153 Slit for removal

8-15-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-15-5 Functional Check

| Test | Refer to | Note |
|------------------------------|----------------------|---------------------------------------|
| System Exterior Visual Check | <i>section 4-3-1</i> | Control panel visual check only |
| Power On/Off | <i>section 4-3-3</i> | |
| System Integration Checks | <i>section 4-3-5</i> | <i>section 4-3-5-1</i> OPIO Test only |
| OPIO Interface Check | <i>section 4-3-9</i> | |

Section 8-16 Replacement of Key Caps (by special native language keys)

8-16-1 Manpower

1 person, 30 minutes.

8-16-2 Tools

- Regular Standard Phillips Screwdriver
- Screwdriver (Diameter : 3mm)

8-16-3 Preparations

- 1) Power Off/Shutdown the system.



CAUTION Before you replace the boards, please make sure you wear the Ground strap, which prevents ESD problems just in case.

8-16-4 Removal Procedure

- 1) Remove '1' Key, 'Left Shift' Key, 'F5' Key, '6' Key, '7' Key, 'H' Key, 'J' Key, 'N' Key, 'Back space' Key, 'Right Shift' Key and 'Pg Up' Key by using fingertips. Refer to below Figure 8-75.



Figure 8-154 Remove key : '1', 'Left Shift', 'F5', '6', '7', 'H', 'J', 'N', 'Back space', 'Right Shift', 'Pg Up'

- 2) Remove the 6 screws using the plus(+) screwdriver. Refer to below Figure 8-76



Figure 8-155 Loosen the 6 screws

- Carefully pull out key caps. Refer to below Figure 8-77



Figure 8-156 Detaching key caps.

8-16-5 Installation Procedure

- Parts to be installed in reverse order of removal.

8-16-6 Replacement Checking Procedure

- Insert service dongle key in the front USB port of OPIO.
- Push the power button and then click the exit.
- Exit to windows mode by inputting the password.

- 4) Run the OPIO Test tool (ScFpApiTest.exe) in the desktop screen and then click the “Op-panel Open” button of test tool. (Program path: C:\scanner\target\bin\ScFpApiTest.exe)



Figure 8-157

- 5) Check on the “Keyboard Test on” check box.
- 6) Check that pressed key is displayed except for ‘Fn’ key, when AN Keyboard is pressed.
- 7) End ScFpApiTest by click the “Op-Panel Close” button.



Figure 8-158

8-16-7 Functional Check

| Test | Refer to | Note |
|------------------------------|---------------|---------------------------------|
| System Exterior Visual Check | section 4-3-1 | Control panel visual check only |
| Power On/Off | section 4-3-3 | |
| System Integration Checks | section 4-3-5 | section 4-3-5-1 OPIO Test only |
| OPIO Interface Check | section 4-3-9 | |

Section 8-17 Replacement around Nest Box

NOTE: This section covers replacement of components related to Nest Box.
: MPI, MCB, MDC, MIO, CWD, DCWD, EEPROM, DC4D, Battery, HDD and SOM

8-17-1 Manpower

1 person, 15 minutes for each part.

8-17-2 Tools

Standard Phillips Screwdriver.

8-17-3 Pre-Work

- 1) Front cover removed. (refer to section 8-6-3)
- 2) Rear cover removed. (refer to section 8-9-3)

8-17-4 Nest Box Access

- 1) Remove Rear Cover. (refer to section 8-9)
- 2) Remove 2 screws and Power Cord Fix Bracket.



Figure 8-159 Power Cord Fix Bracket.

- 3) Remove 5 screws and Cable Cover Bracket.

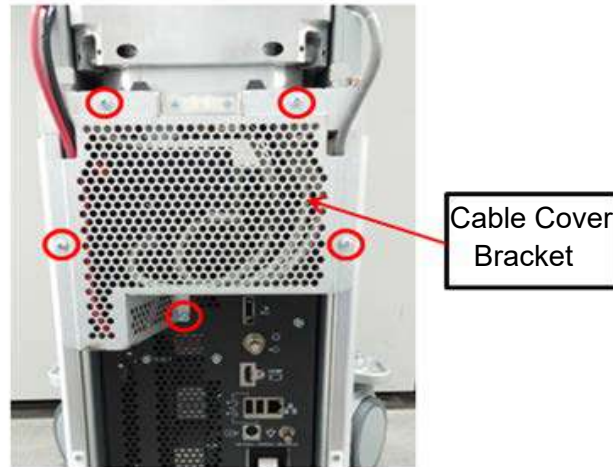


Figure 8-160 Cable Cover Bracket

- 4) Disconnect Cables.

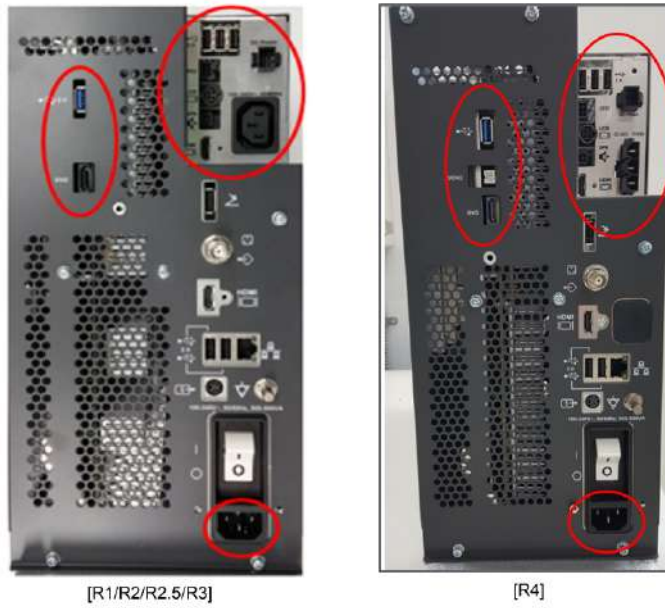


Figure 8-161 Cable Disconnecting points

8-17-5 Removal Procedure - Nest Box

NOTE: Before working with Nest box, be sure to remove probes.

- 1) Remove front cover. (refer to *section 8-6*)
- 2) Disconnect 1 fan connector of bottom fan.
- 3) Unlock cable clamp, then pull out connector and cable of bottom fan. Refer to following figures.

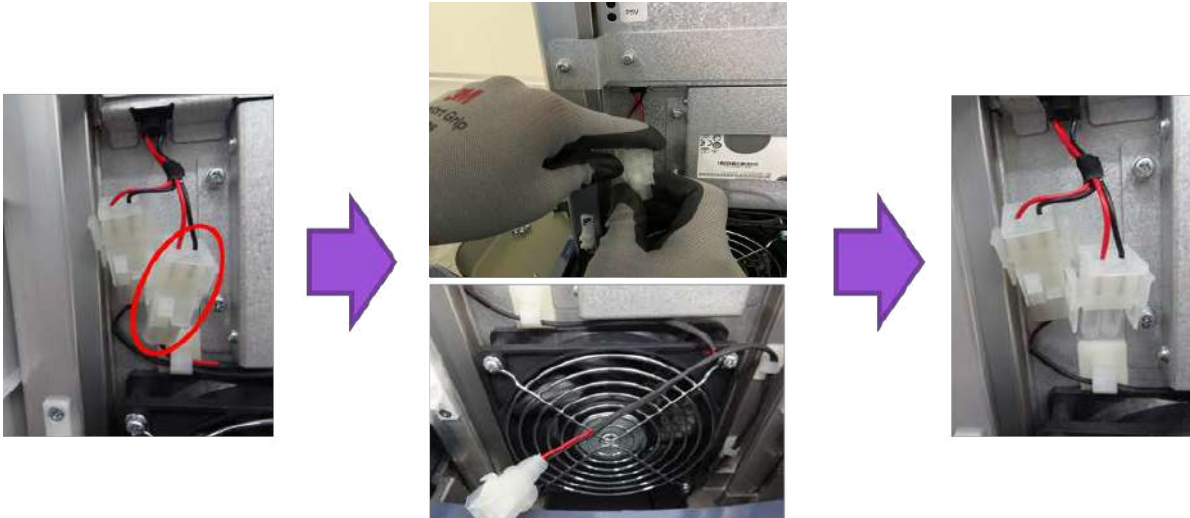


Figure 8-162 Fan Connector

- 4) Remove 2 screws on front side.



Figure 8-163 Front side screw points

- 5) Remove the rear cover. (refer to *section 8-9*)
- 6) Remove Power cord fix bracket and power cord. (refer to *section 8-17*)
- 7) Remove cable cover bracket and disconnect cables. (refer to *section 8-17*)

- 8) Remove 2 screws on rear side.



Figure 8-164 Rear side screw points

- 9) Pull out Nest Box.

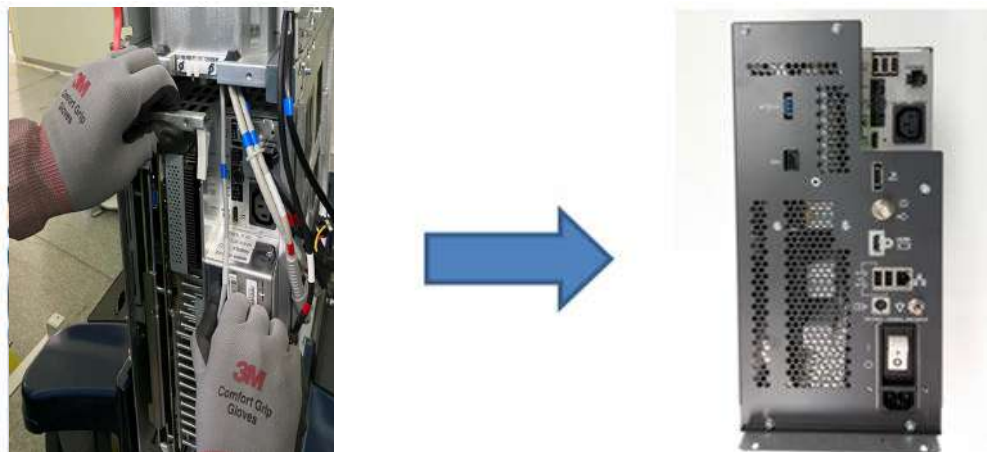


Figure 8-165 Nest Box

8-17-6 Installation Procedure - Nest Box.

Parts to be installed in reverse order of removal.

8-17-7 Removal Procedure - Board Assy in Nest Box

- 1) Get Next Box access.
- 2) Remove 7 screws on EMI bracket.



Figure 8-166 Screw points on Nest Box

- 3) Draw MPI, MCB and IO Box out of the Nest Frame



Figure 8-167 Separating Board Assy



MPI board assy

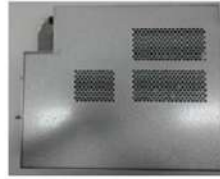


MCB board assy

[R1/R2/R2.5/R3]



MDC board assy



IO BOX assy



MPI board assy

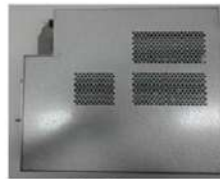


MCB board assy

[R4/R4.5]



MDC board assy

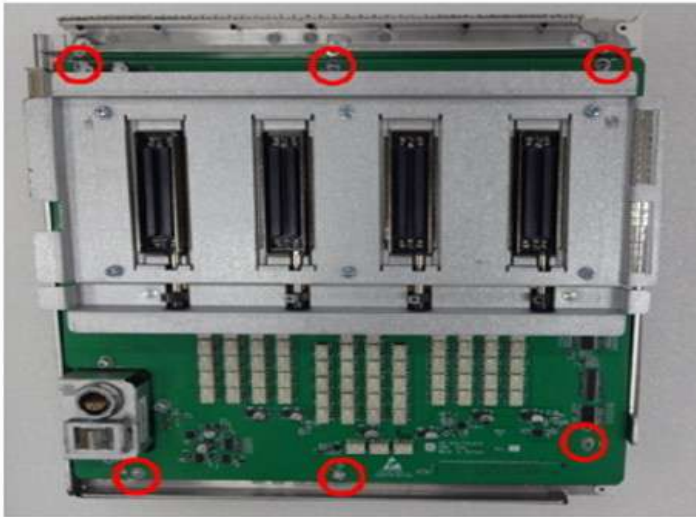


IO BOX assy

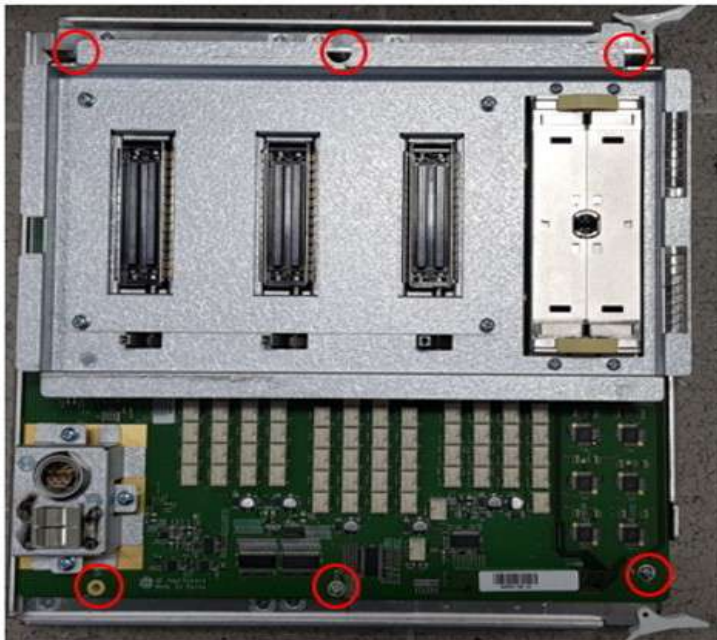
Figure 8-168 Board assys in Nest Box

8-17-8 Removal Procedure - Separating MPI and MCB

1) Unscrew 6 screws. Refer to following figure.



[R1/R2/R2.5/R3]

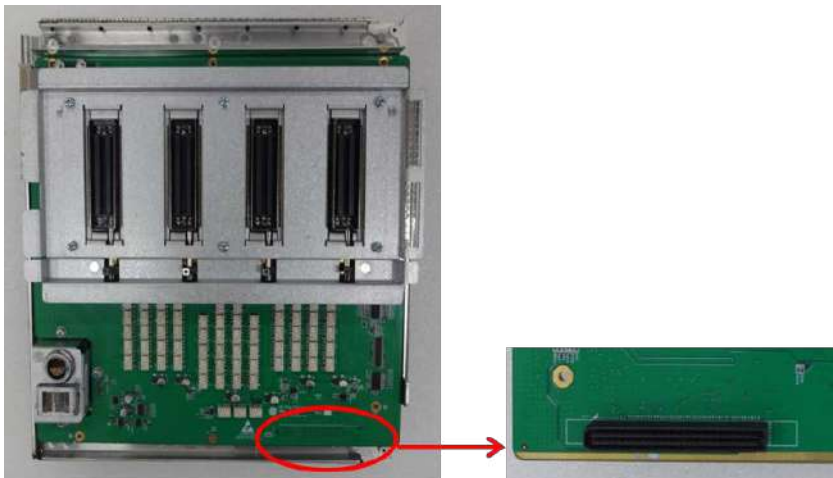


[R4/R4.5]

Figure 8-169 Screw points on MPI assy

2) Carefully separate MPI assy from MCB assy. Refer to following figure.

[R1, R2, R2.5 and R3]



[R4 and R4.5]

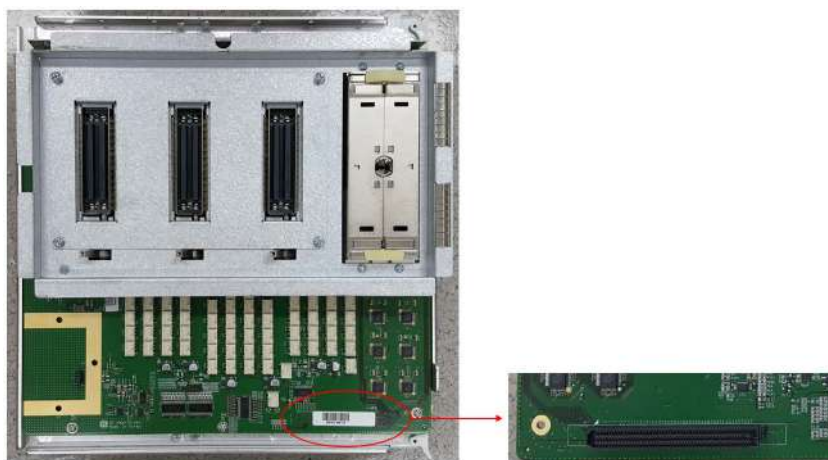


Figure 8-170 Lifting up MPI and position of Stacking up connector on MPI assy

8-17-9 Removal Procedure - Separating DCWD Board(Optional) from MPI

8-17-9-1 R1, R2, R2.5 and R3

Philips screw-driver required to add this part.

- 1) Remove 3 screws on MPI assy.

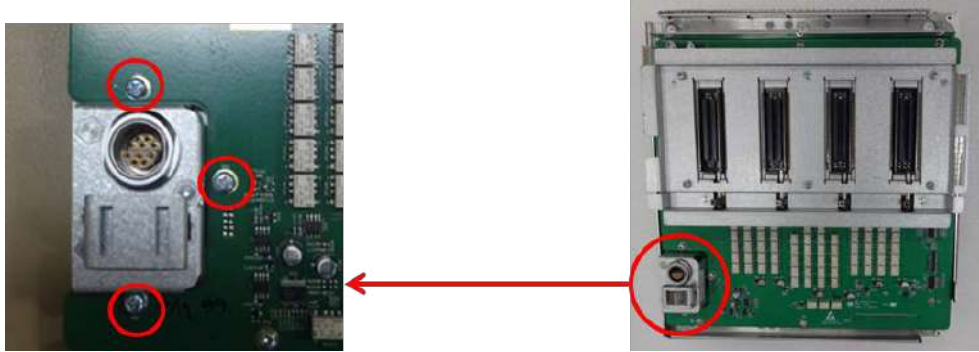


Figure 8-171 DCWD Board screw points

- 2) Carefully separate DCWD board from MPI assy not to damage the DCWD connector. Refer to following figure.

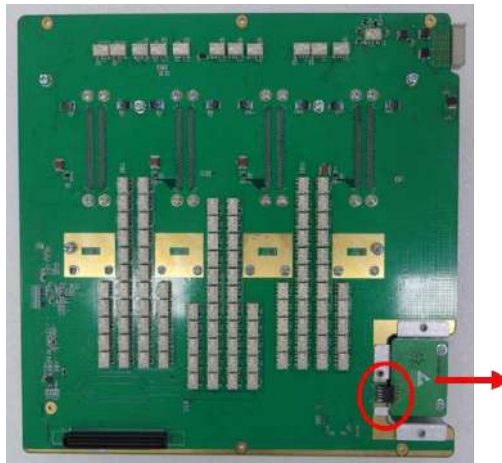


Figure 8-172 Position of DCWD board connector

8-17-9-2 R4 and R4.5

- 1) Separating MPI from MCB assy : refer to section 8-17-8

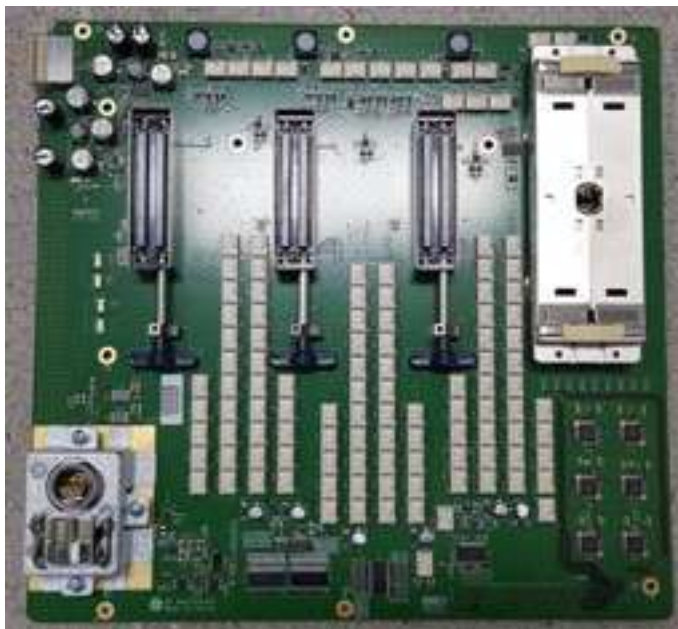


Figure 8-173 Separated MPI assy

- 2) Remove 3 screw on bottom side of MPI assy

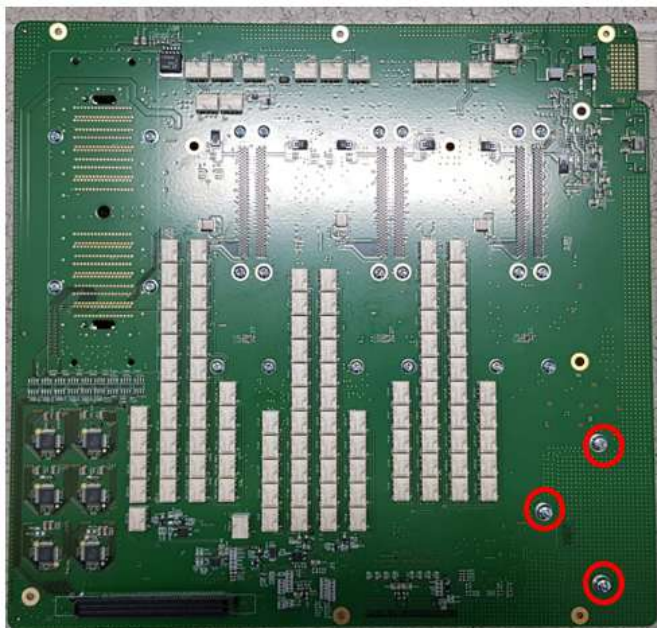


Figure 8-174 DCWD board screw points

- 3) Lift up DCWD board from MPI assy

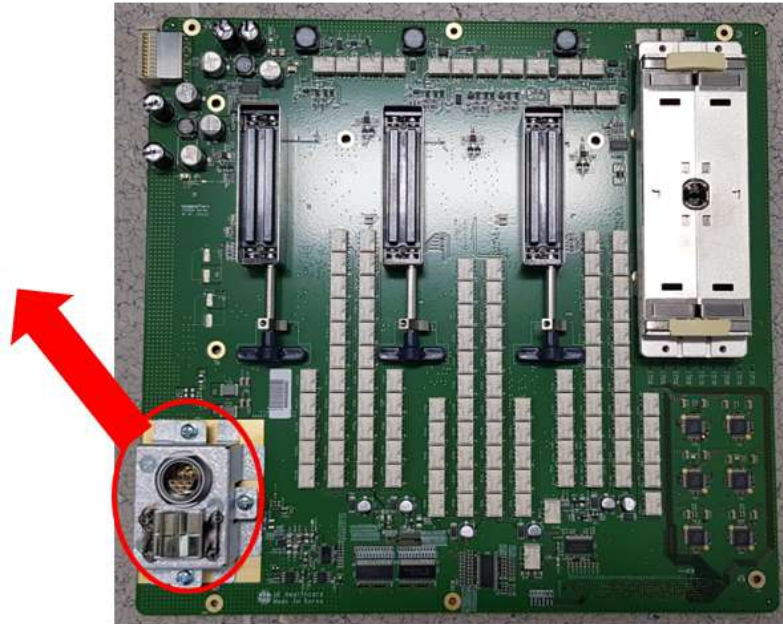


Figure 8-175 Lift up DCWD board

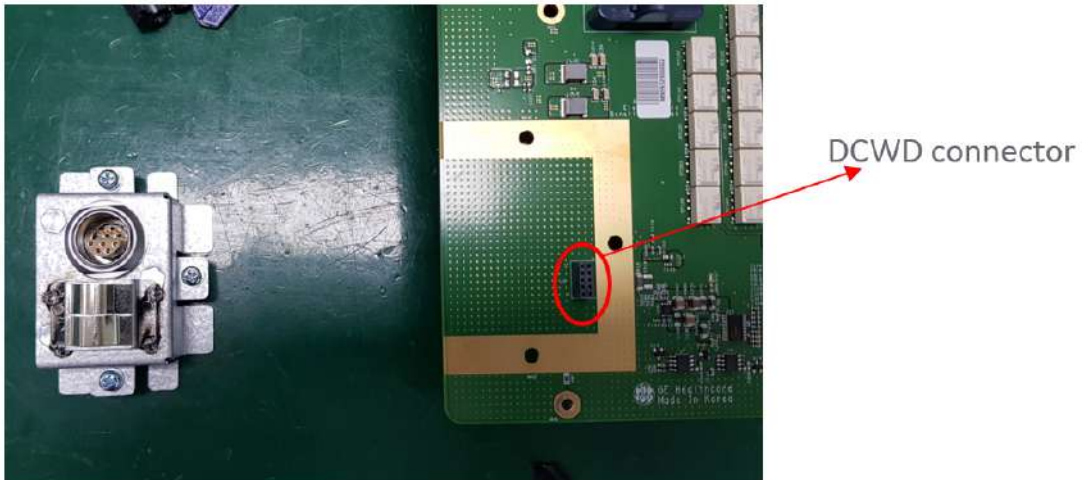


Figure 8-176 Separated DCWD board

8-17-10 Separating MDC assy from MCB assy

8-17-10-1 BIOS update

NOTE: In case of SOM GEPN “7324558-x” or “7324560-x”, it does not need to follow this procedure. Skip section 8-17-10-1 and go to section 8-17-10-2

- 1) Before replacing MDC assy (R1, R2), BIOS update is required if the current BIOS version is not the latest. The latest BIOS version is *GEMARUR9*. BIOS check and update procedure are described in the following procedure.
 - 1) Checking the current BIOS revision
 - 1.) Turn the system on by pushing the power button.
 - 2.) Enter the BIOS mode by pushing *Delete* button or *Trackball left-side button*.
(* This procedure needs the system BIOS password)
 - 3.) Check the “*OEM BIOS version*”.

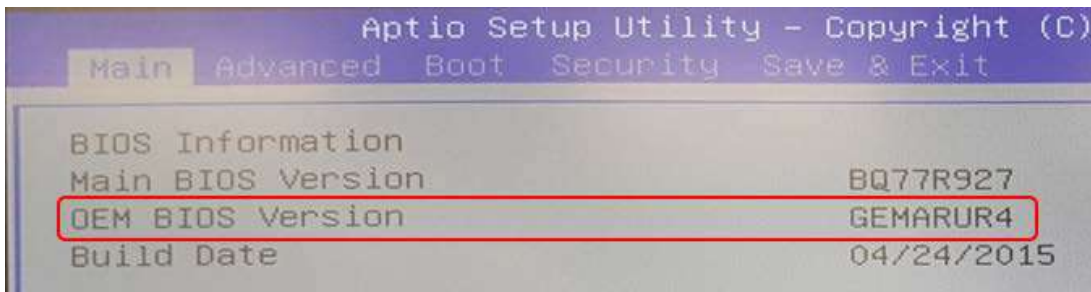


Figure 8-177

(* The BIOS information including OEM BIOS Version could be different than above figure. This is just for reference.)

- 4.) If the “OEM BIOS version” is not “*GEMARUR9*”, it needs to be updated to the latest version. The latest version of the BIOS is “*GEMARUR9*”.
- 2) Preparing *BIOS update application* and *MARU BIOS binary file*
 - 1.) Need to download *BIOS update application* and *MARU BIOS binary file*. Access “*SOM_BIOS_Revision_tool & MARU BIOS binary file*” in the GE BOX. <https://ge.box.com/s/2yr0onbu7z8iq0fyd5wgs580vgi2tr5y>
 - 2.) Download two files
 - BIOS update application : *CGUTL_CGOS.zip*
 - Latest BIOS file : *GEMARUR9.BIN*
 - 3.) Copy those files into an USB memory. The free capacity of the USB memory shall be at least 200MB.
- 3) Installing BIOS update tool
 - 1.) Turn the system on and enter the maintenance mode.
(* This procedure needs a service dongle and maintenance access password.)
 - 2.) Plug in the USB memory to the system.

3.) Copy the BIOS update application and the latest BIOS file.

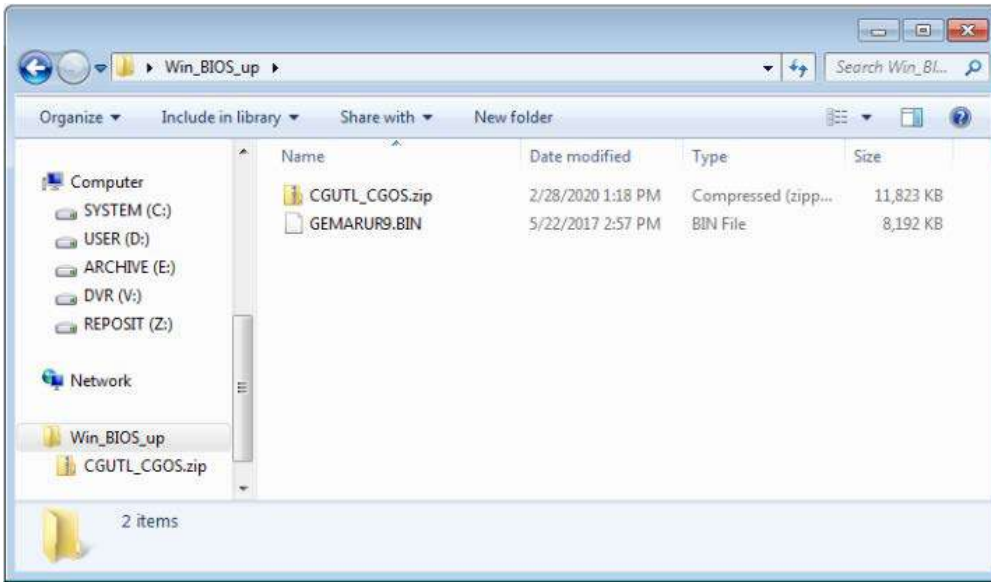


Figure 8-178

4.) Extract BIOS update application file, and run "Setup.exe" file in the folder Cgos.
(\\...\\CGUTL_CGOS\\Cgos-x32-x64\\Cgos\\)

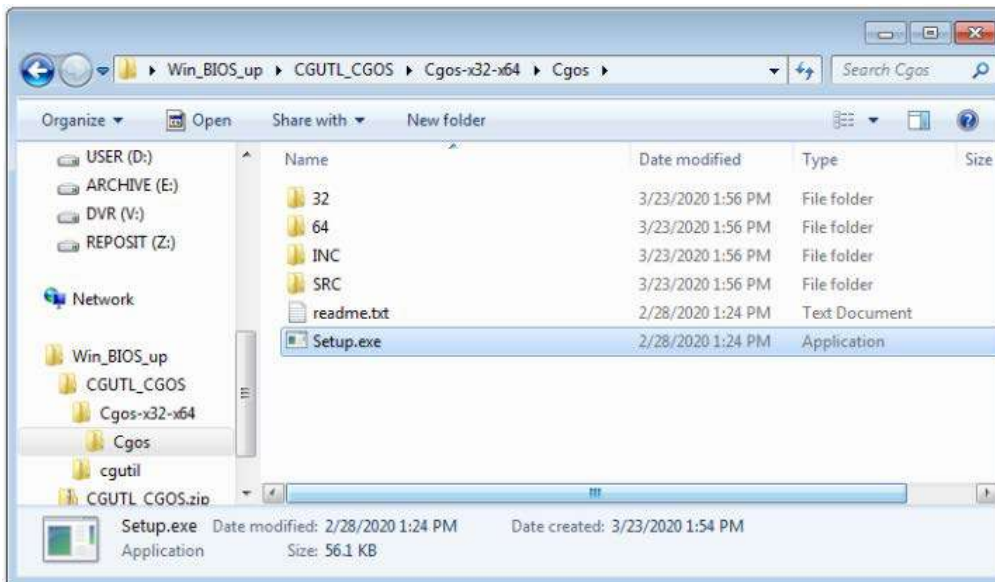


Figure 8-179

- 5.) If the installation is complete, the program will be shown in the installed program list under “Program and Features”.
The program name is ‘congatec CGOS API’.

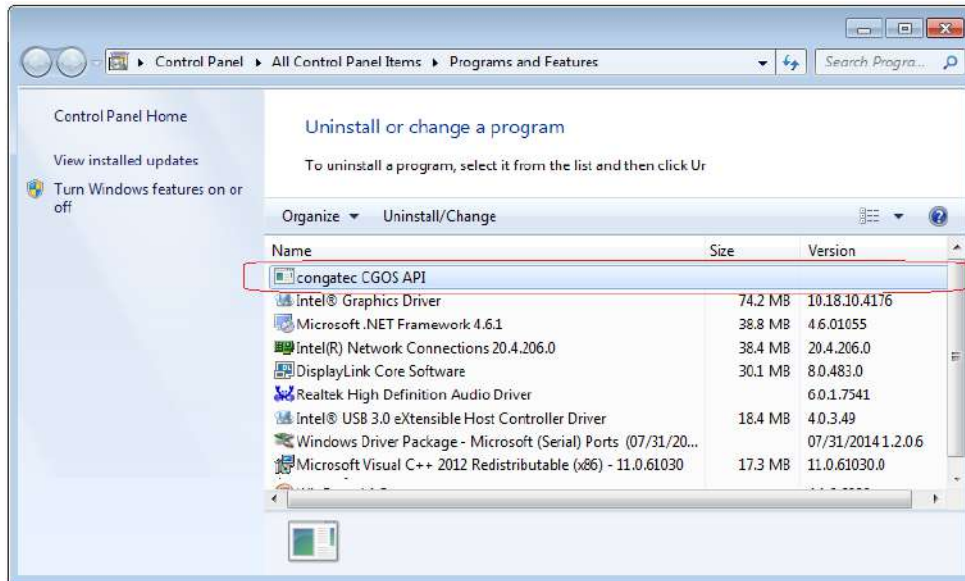


Figure 8-180

- 4) BIOS update
 - 1.) Run “CGULGUI.exe” file in the folder win32.
[\(\\...CGUTL_CGOS\Cgos-x32-x64\Cgos\\)](#)

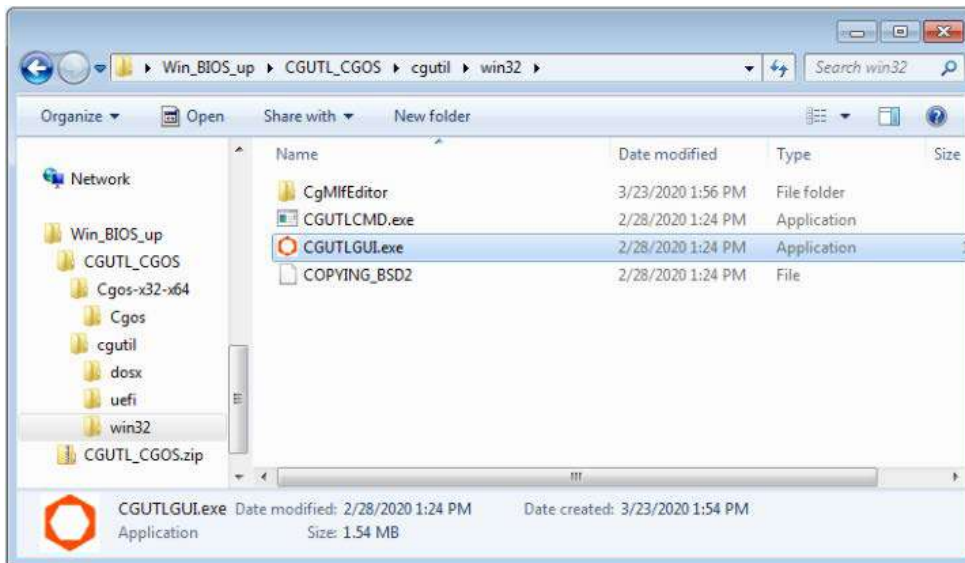


Figure 8-181

2.) Select "Board (CGOS)" and "BIOS Update".

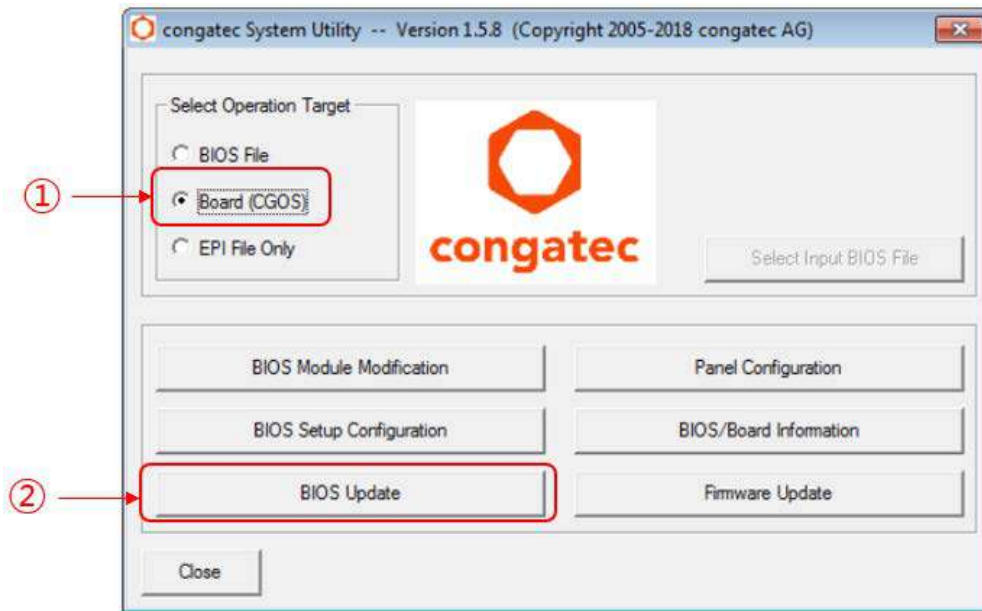


Figure 8-182

3.) Select "Select BIOS file".

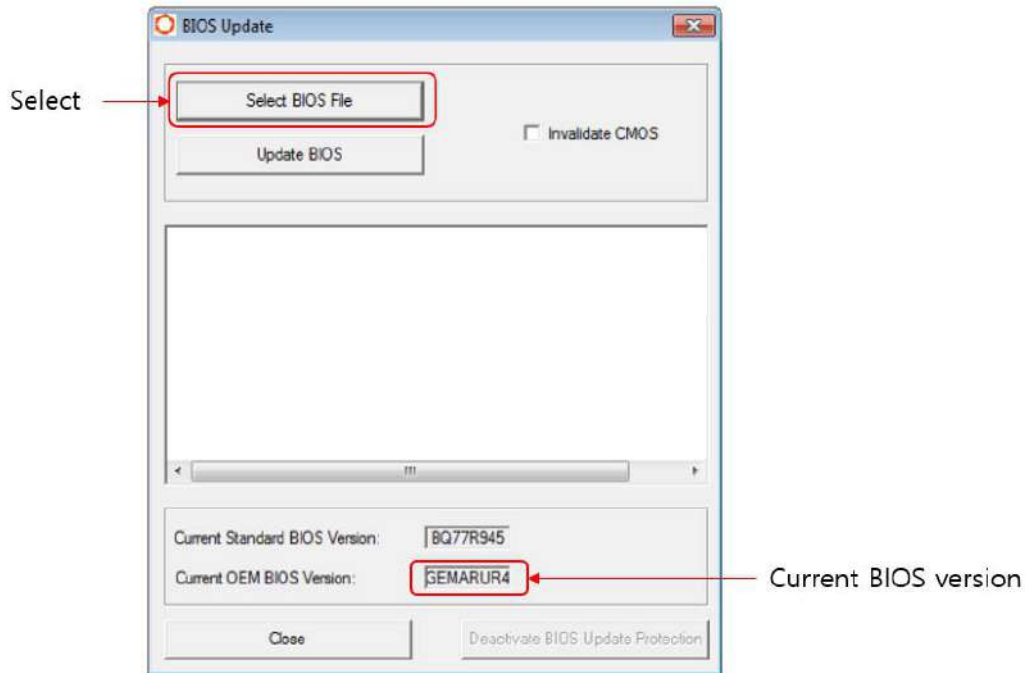


Figure 8-183

4.) Find the latest BIOS file and select it and "Open".

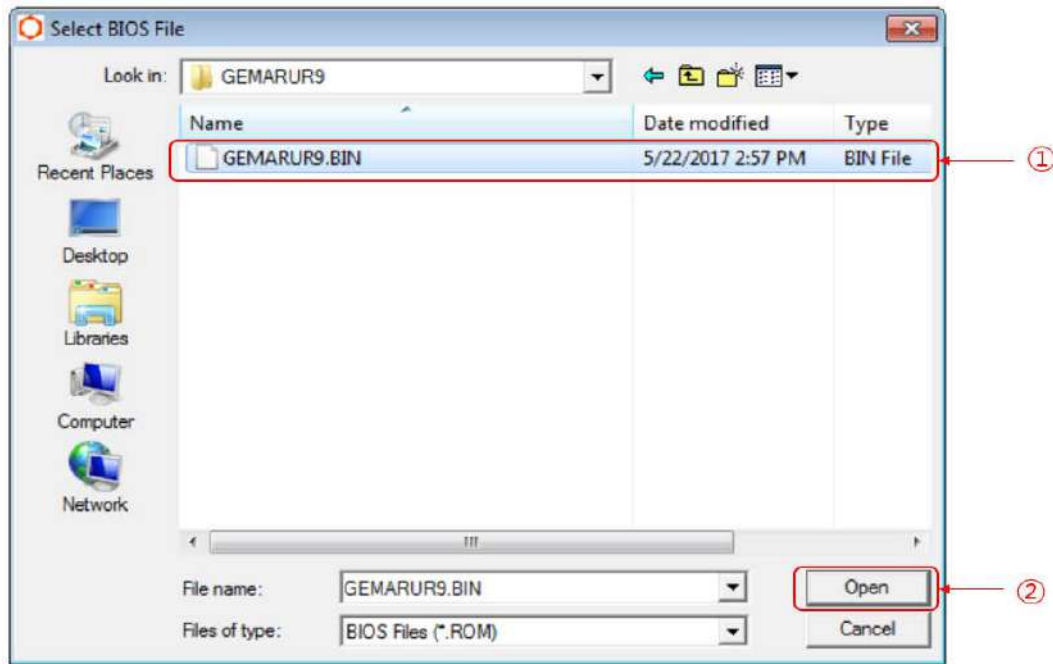


Figure 8-184

5.) Select "Update BIOS".

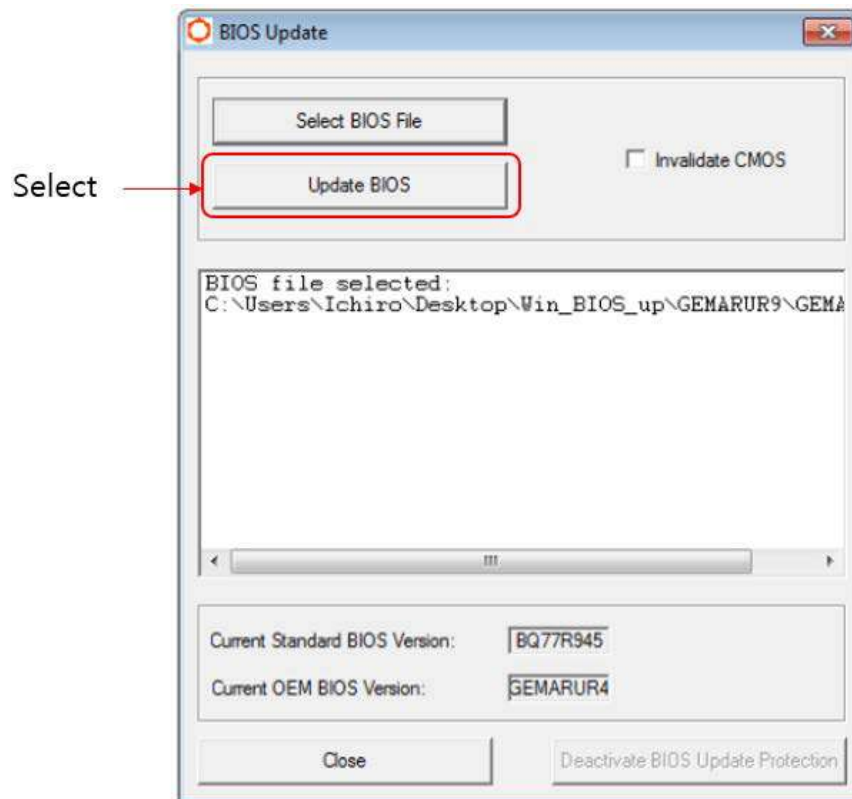


Figure 8-185

6.) After updating the BIOS, it will be shown like below. Check if the Current OEM BIOS version is "GEMARU 9". Then, select "Close".

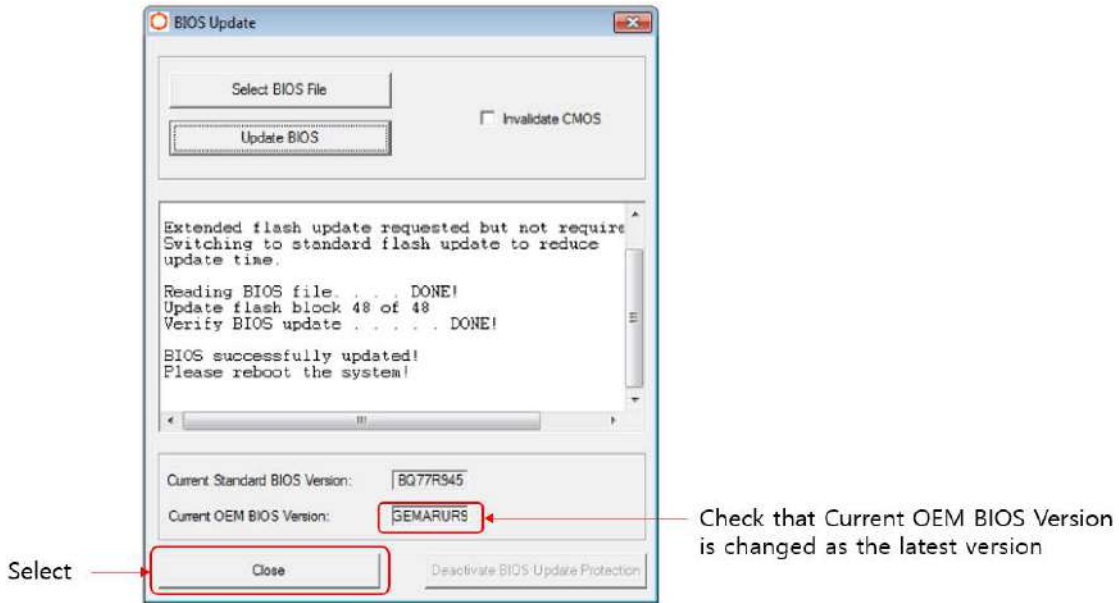


Figure 8-186

7.) Select "Close".



Figure 8-187

5) Deleting BIOS update application and the BIOS file.

- 1.) Enter "Programs and Features" in Control Panel. Select "Congatec CGOS API" and "Uninstall/Change".

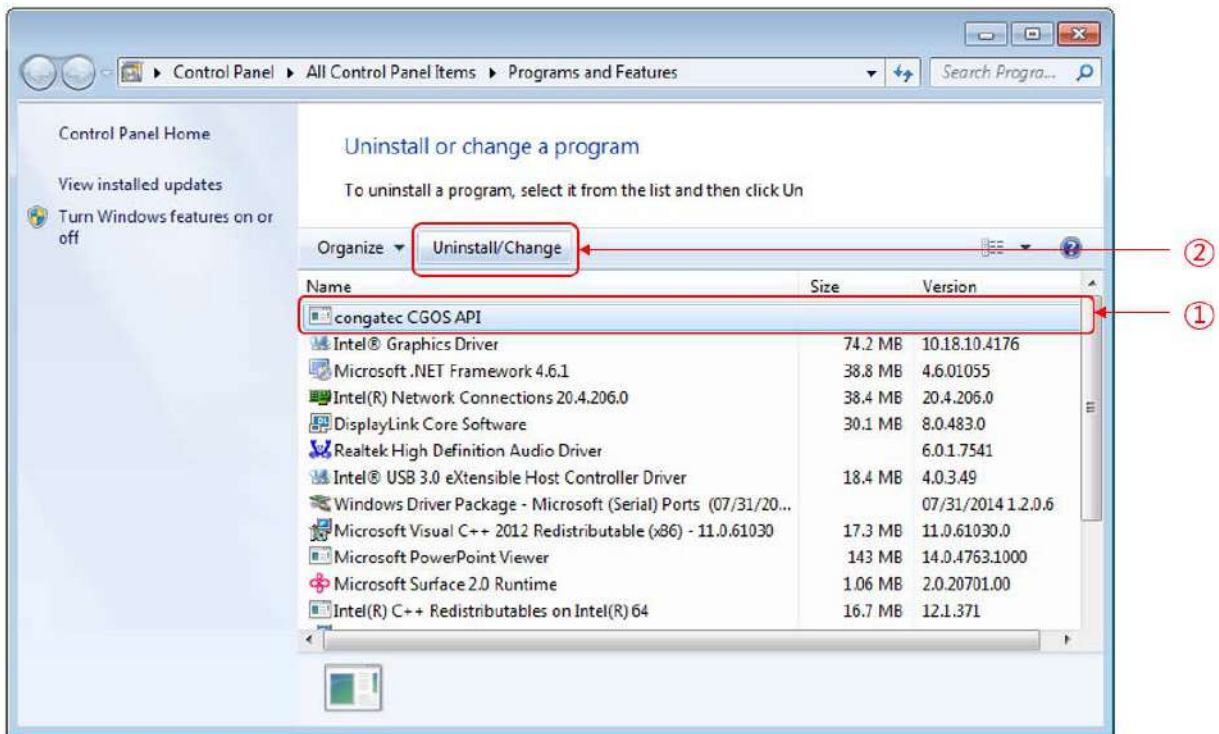


Figure 8-188

- 2.) Delete copied files permanently. Select those files and push [Shift] + [Ctrl] + [Delete] keys all together at the same time.

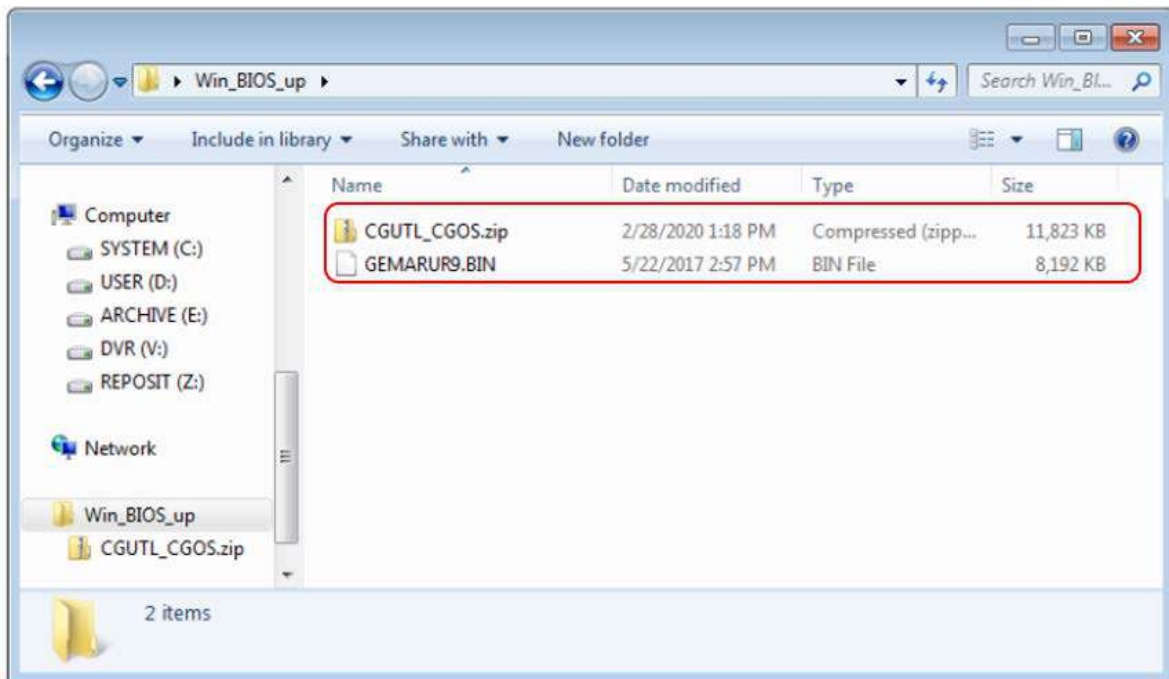
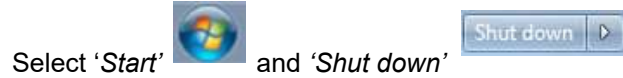


Figure 8-189

- 3.) Turn the system off.



- 6) Checking BIOS update completion
 - 1.) Turn the system on by pushing the power button.
 - 2.) Enter the BIOS mode by pushing *Delete* button or *Trackball left-side button*.
(* This procedure needs the system BIOS password)
 - 3.) Check that "*OEM BIOS version*".
It will be shown as below in main page.

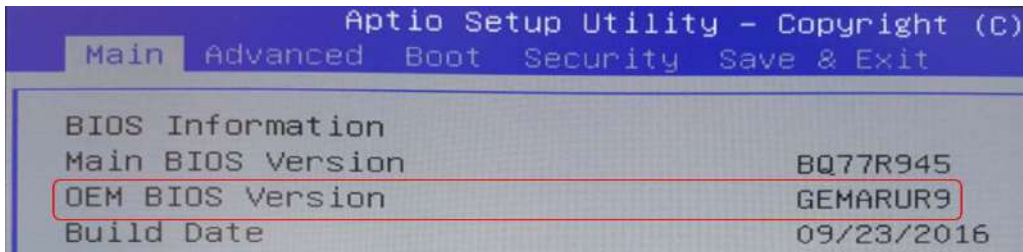


Figure 8-190

8-17-10-2 Replacement Procedure

- 1) Remove 7 screws around MDC assy. Refer to following figure.

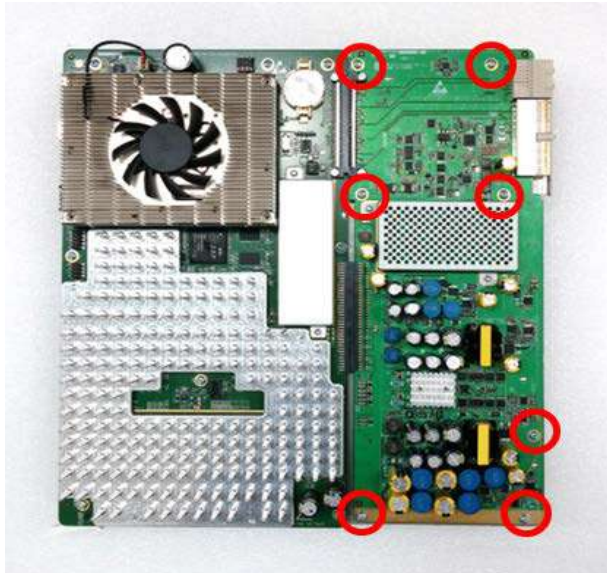


Figure 8-191 Screw points around MDC assy

- 2) Carefully separate MDC assy from MCB assy. Refer to following figure.

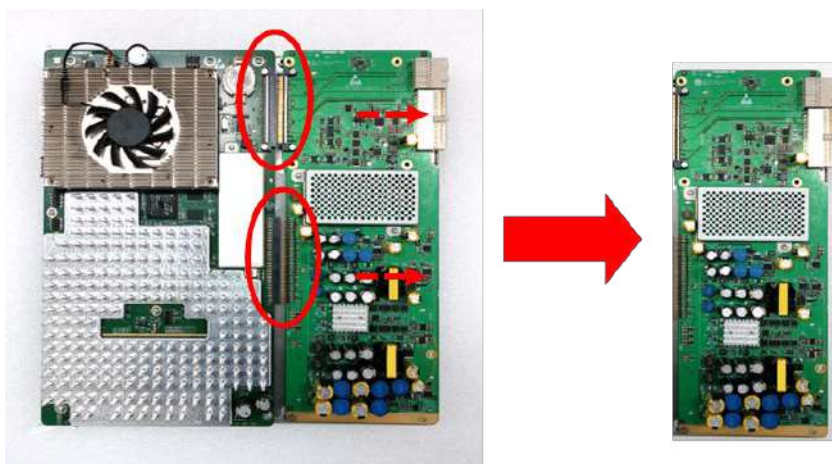


Figure 8-192 Removal of MDC assy

8-17-11 Handling EEPROM on MCB Board

EEPROM on MCB board contains vital information.

- A) System Serial Number that is matched against stored software option key.
- B) ComExpress Functional REV that is monitored for sub-system compatibility.

Therefore, when MCB board is replaced, EEPROM must be moved from one board to the other to make sure vital information pertaining to the system is transferred to the new MCB board.

EEPROM must be moved.

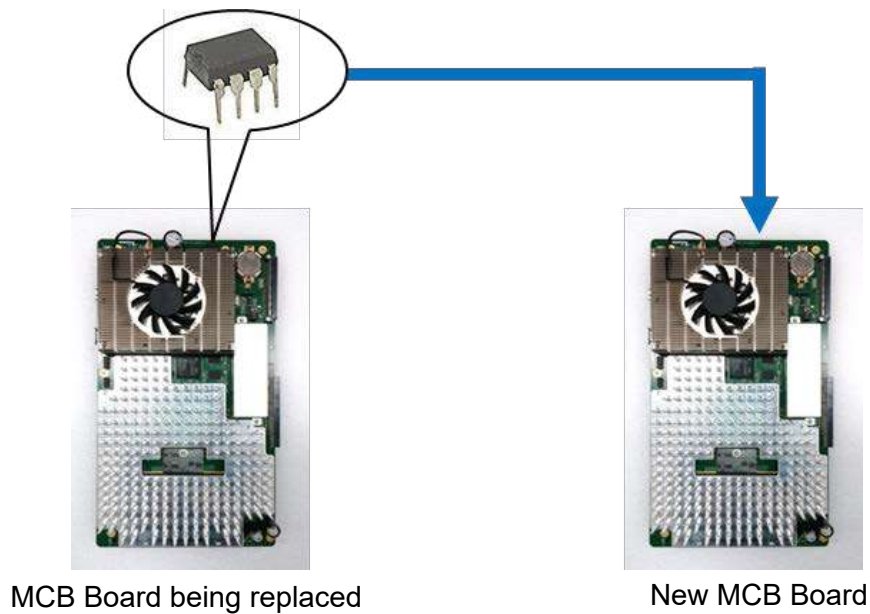


Figure 8-193 EEPROM

- 1) Locate EEPROM on MCB Board.

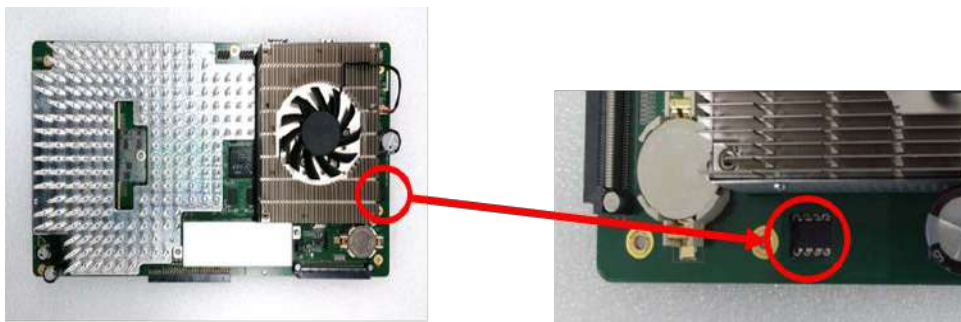


Figure 8-194 Location of EEPROM (example)

- 2) Gently lift up EEPROM from its socket by using a chip-puller or a small straight blade screwdriver.

NOTE: Be sure not to bend "legs" of EEPROM. They are fragile.



- 3) Remove EEPROM from replacement MCB board if present.
- 4) Verify direction of the EEPROM Slot by aligning EEPROM "notch" mark to that of MCB board. print mark.

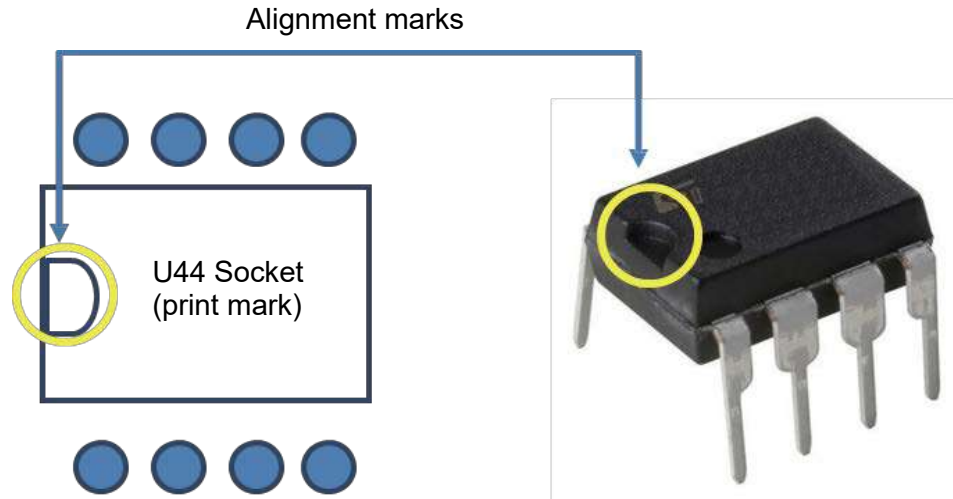


Figure 8-195 Aligning EEPROM

NOTE: *Inserting EEPROM in wrong direction will result in permanent damage to EEPROM or to MCB board. Proceed with caution.*

- 5) Verify tips of all 8 pins are aligned with socket.
- 6) Gently push down EEPROM to its position.

8-17-12 Separating MCB assy from Brackets and COM Express

- 1) Remove 8 screws around MCB assy. Refer to following figure.

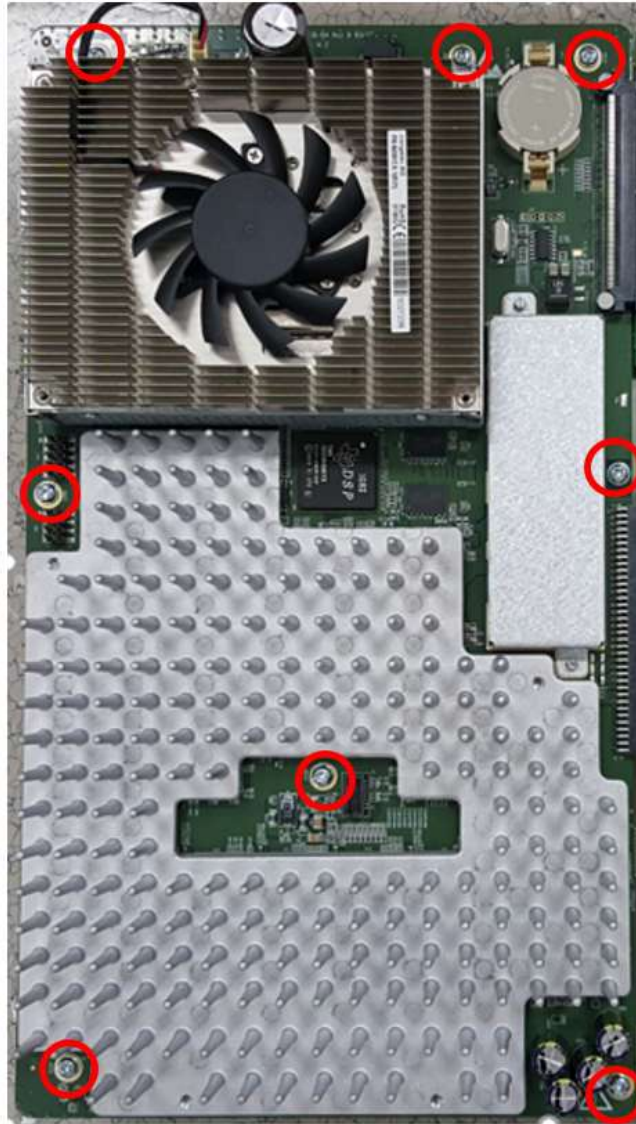


Figure 8-196 Screw points around MCB assy

- 2) Remove MCWD board from MCB Assy. Refer to following figure.

NOTE: Be careful not to damage CWD connector.

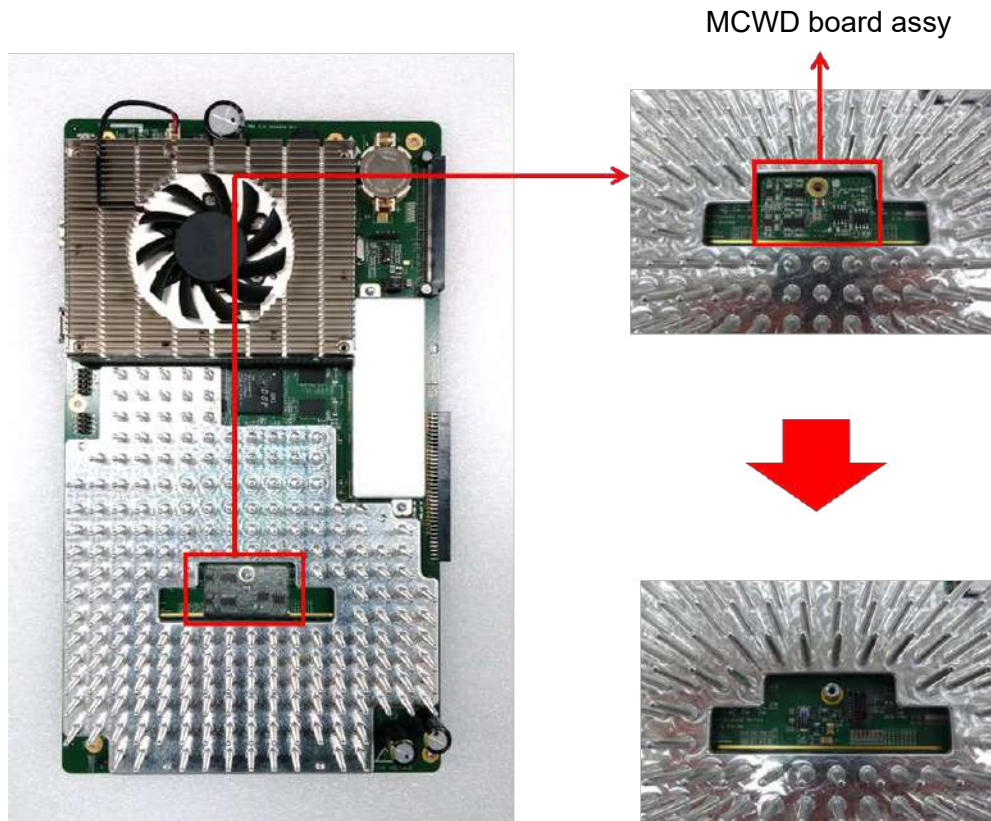


Figure 8-197 Removal of MCWD board.

- 3) Remove Stud on MCB Assy and carefully lift up the MCB Assy. Refer to following figure.



Figure 8-198 Stud position on MCB board.

8-17-13 Separating DC4D Unit from IO BOX

- 1) Unscrew 12 screws to remove the IO BOX Cover.

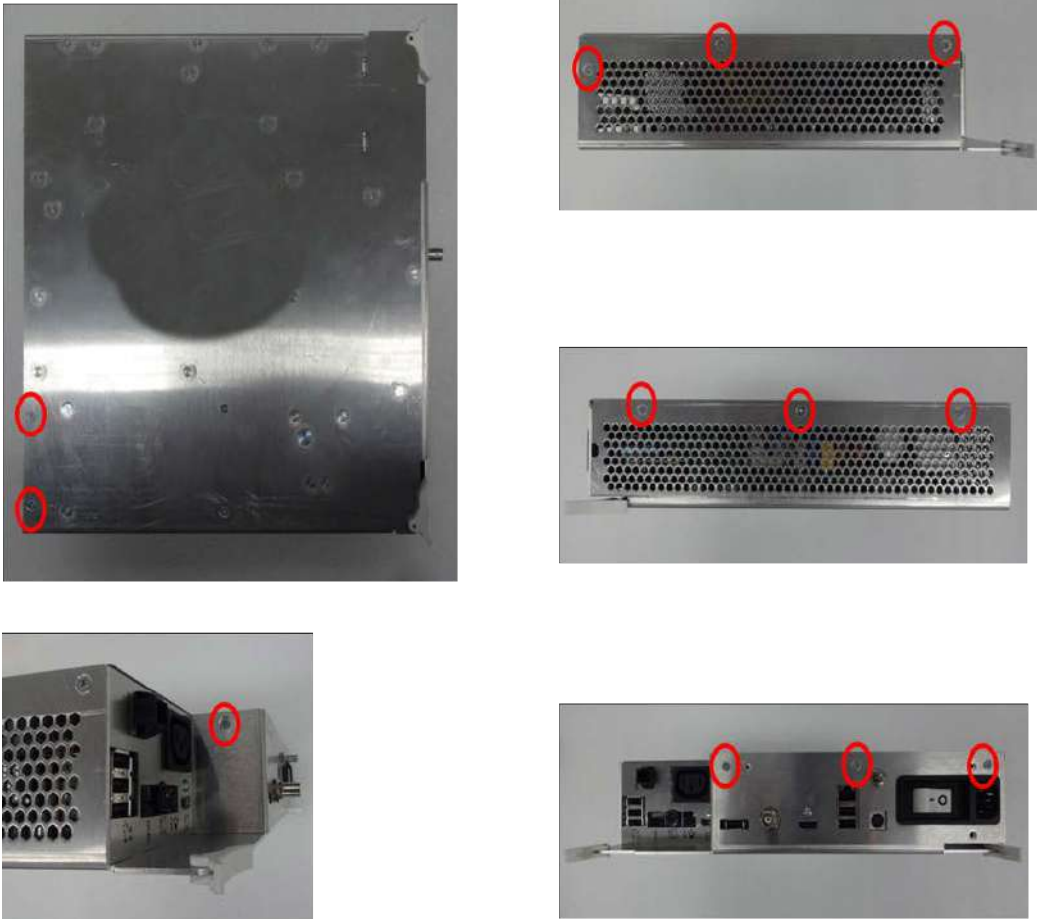


Figure 8-199 Screw points of IO BOX cover

- 2) Unscrew five screws to remove the DC4D from the MIO Assy. Refer to following figure.

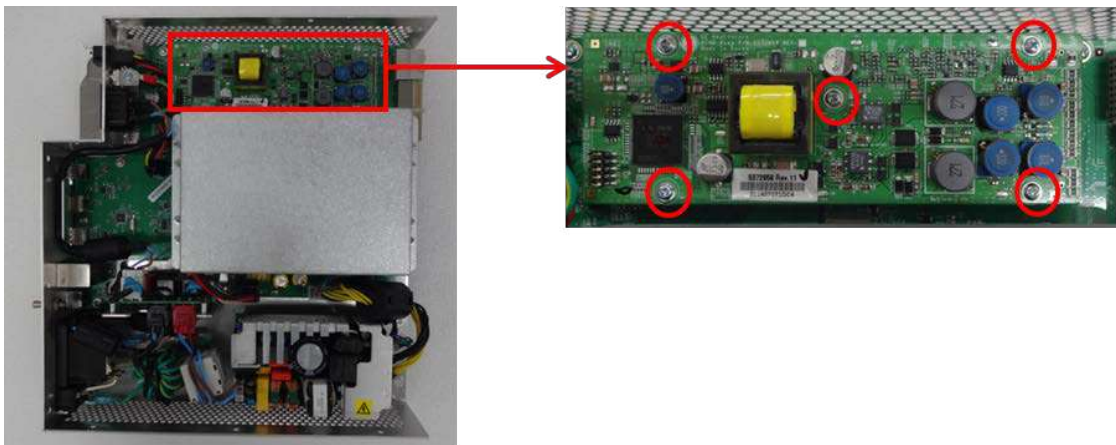


Figure 8-200 Screw points of DC4D Assy

- 3) Carefully lift up the DC4D unit.

8-17-14 Separating Battery Unit from IO BOX

- 1) Unscrew 12 screws to remove the MIO Cover. (refer to *section 8-17-13*)
- 2) Unscrew 8 screws and 2 Battery connectors. Refer to following figure.

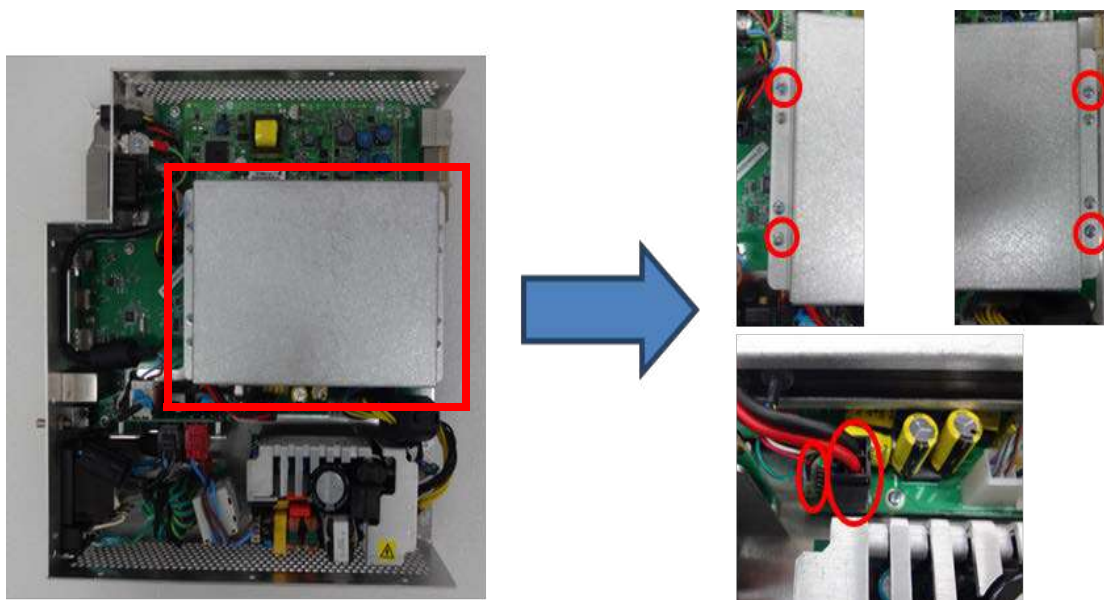


Figure 8-201 Screw points and Connectors on battery assy

- 3) Carefully lift up the battery unit

8-17-15 Separating HDD (R1, R2, R2.5) or SSD (R3)

- 1) Open the front cover. (refer to section 8-6)
- 2) Remove 4 screws around HDD Bracket Refer to following figure.



Figure 8-202 Screw points around HDD Bracket.

- 3) Carefully pull down HDD assy. Refer to following figure.

NOTE: Be careful not to damage HDD connector

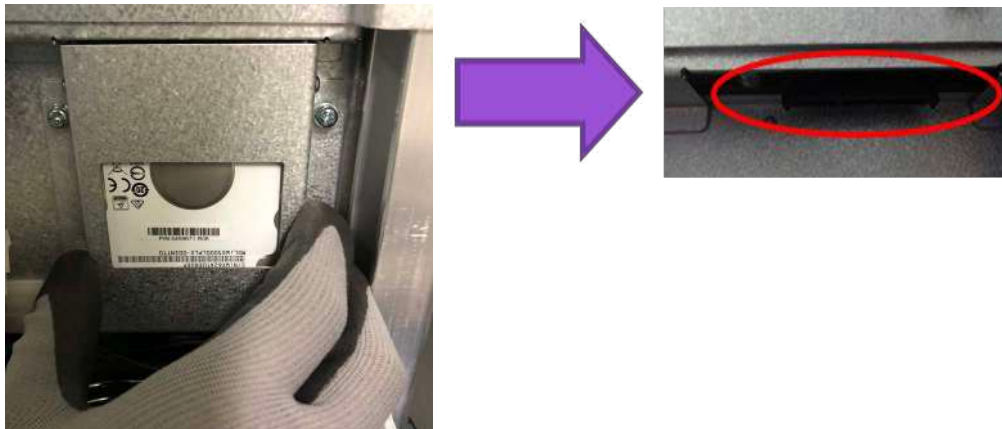


Figure 8-203 Removal of HDD assy and position of HDD connector

8-17-16 Separating M.2 SSD (R4 and R4.5)

- 1) Take the board assy out of the nest box (Refer to *section 8-17-7*)
- 2) Remove eight screws (check red-designating circles out) and separate MCB from the assy.



Figure 8-204

- 3) Remove one screw and pull out M.2 SSD.

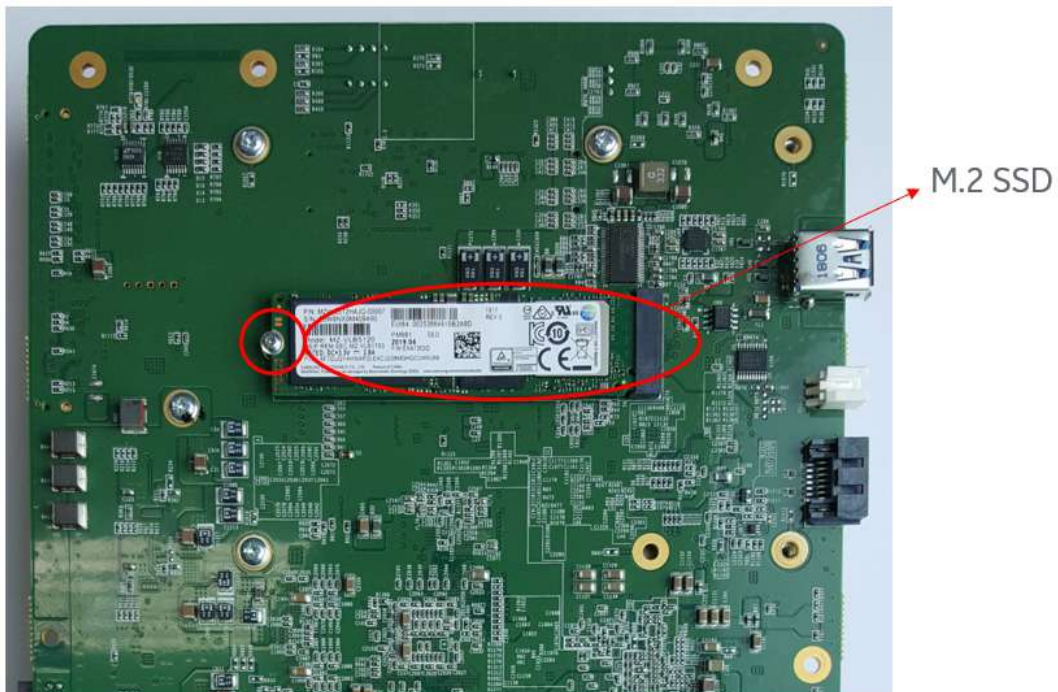


Figure 8-205

8-17-17 Separating COM Express

8-17-17-1 Separating COM Express (R1, R2, R2.5 and R3)

- 1) Unscrew 5 screws on bottom side of MCB board assy. Refer to following figure.

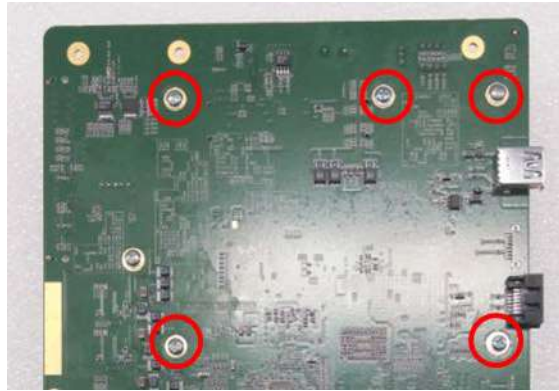


Figure 8-206 Screw points for removal of COM Express

- 2) Disconnect fan cable and carefully detach COM Express module. Refer to following figure.

NOTE: Be careful not to damage COM Express connector

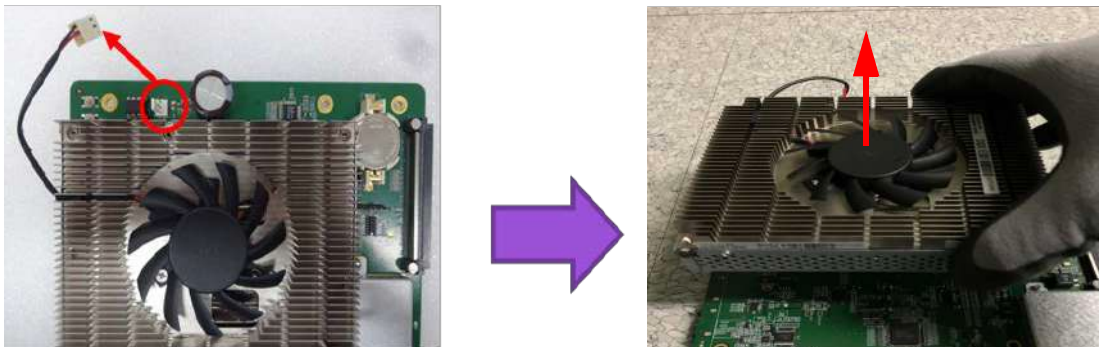


Figure 8-207 Detaching COM Express

- 3) Unscrew 4 screws in the side of COM Express to remove SOM bracket and carefully lift up the COM express from the bracket. Refer to following figure

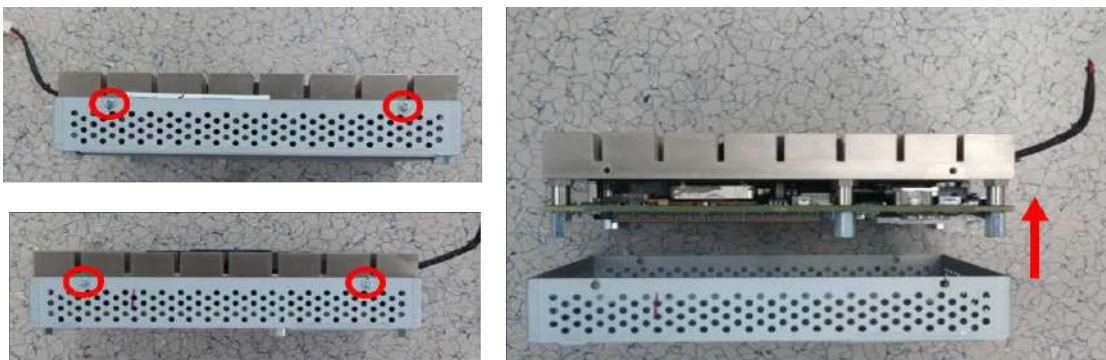


Figure 8-208 Removal COM Express Bracket

8-17-17-2 Separating COM Express (R4 and R4.5)

- 1) Disconnect fan cable.



Figure 8-209 Disconnecting fan cable

- 2) Unscrew five male-type-screws.



Figure 8-210 Unscrewing five male type screws

- 3) Detach COM-Express module.

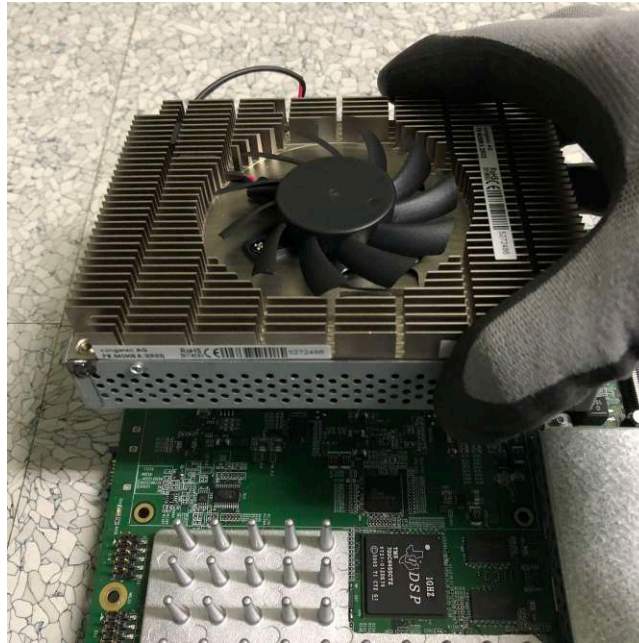


Figure 8-211 Detaching COM-Express

- 4) Unscrew four male-type-screws in the side of COM-Express module.
And remove SOM Bracket from the COM-Express module.

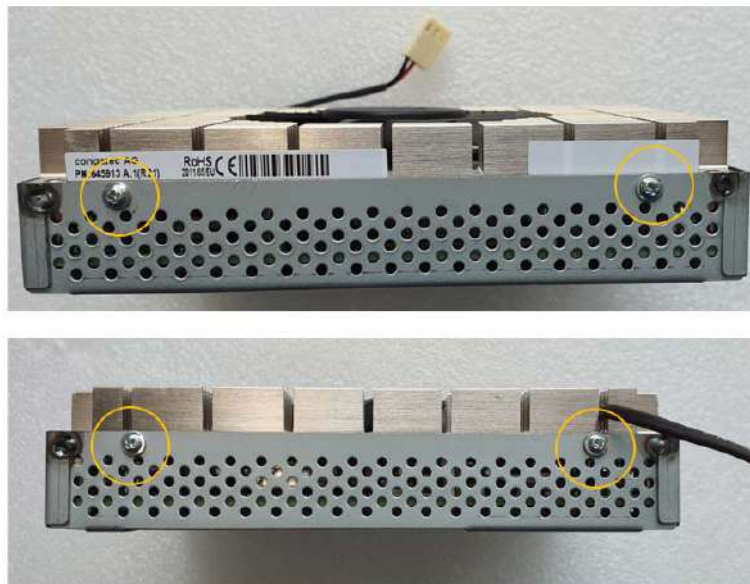


Figure 8-212 Unscrewing 4 male-type-screws

8-17-18 Installation Procedure - MPI, MCB, MDC, DC4D, HDD, Battery and COM Express

- 1) Parts to be installed in reverse order of removal.

8-17-19 Functional Check - MPI, MCB, MDC, IO Box

Refer to *section 4-4* for Functional Diag Test List

8-17-20 Removal Procedure - MBP assy

8-17-20-1 Removal Procedure - MBP assy (R1, R2, R2.5 and R3)

- 1) Remove Nest Box from system.
- 2) Remove MPI, MCB and IO Box out of Nest Frame
- 3) Remove 4 screws (Circle) and fan connector (Square).



Figure 8-213 Screw points and connector point to remove MBP

- 4) Remove 6 screws.

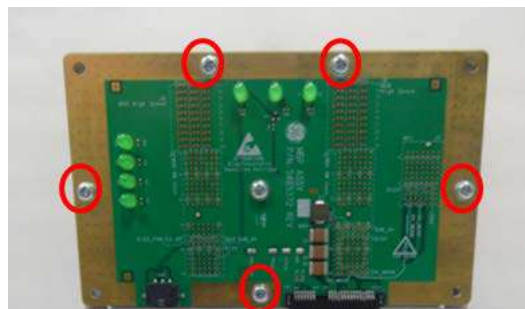


Figure 8-214 Screw points to remove MBP

8-17-20-2 Removal Procedure - MBP assy (R4 and R4.5)

- 1) Remove Nest Box from system
- 2) Remove MCB, MDC< MPI boards assy and IO BOX
- 3) Remove four screws and fan connector (check red-designating circles)

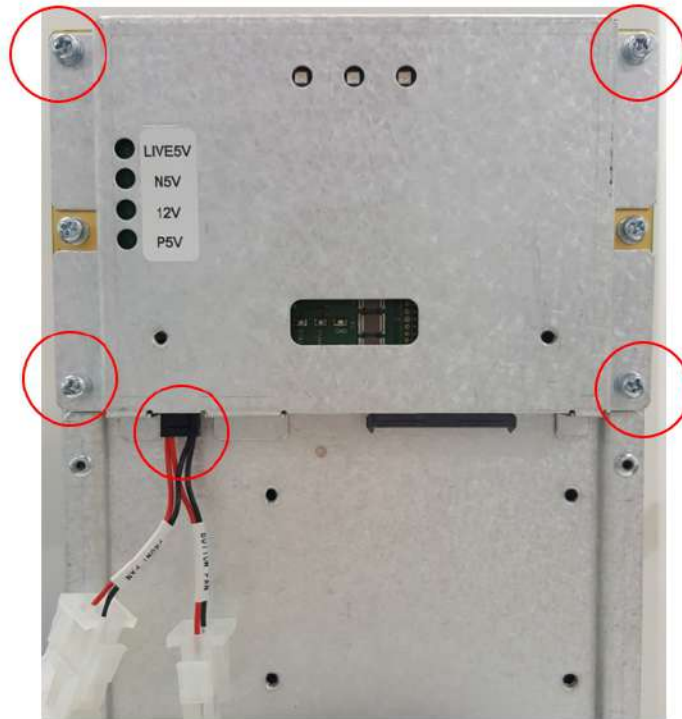


Figure 8-215

- 4) Remove screw (red-designating circle) and pull CSI out of system

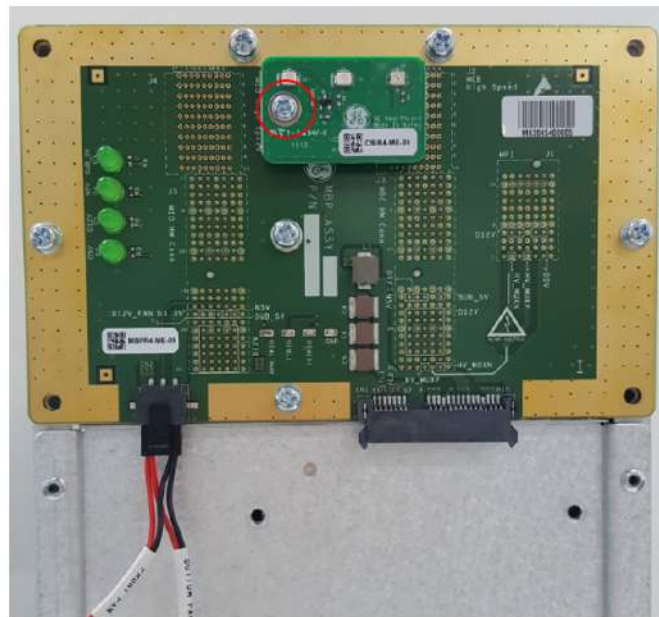


Figure 8-216

- 5) Remove stud of CSI and six screws (red-designating circle)
- 6) Pull MBP4 out of system



Figure 8-217

8-17-21 Installation Procedure - MBP assy

Parts to be installed in reverse order of removal.

8-17-22 Functional Check

Refer to *section 4-4* for Functional Diag Test List.

Section 8-18 Replacement of Front fan

8-18-1 Manpower

1 Person, 10 minutes.

8-18-2 Tools

Standard Phillips Screwdriver.

8-18-3 Removal Procedure

- 1) Remove the Front Cover from system. (refer to *section 8-6*)
- 2) Remove 4 screws and disconnect fan connector.
- 3) Unlock cable clamp (square), then pull out connector and cable. Refer to following figures.

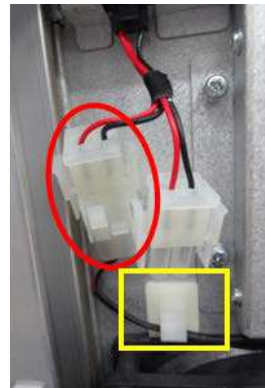


Figure 8-218 Fan screw points and disconnecting fan connector

8-18-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-18-5 Functional Check

Visual examination.

- 1) Verify that Fan is rotating when system is turned ON.

Section 8-19 Replacement of Bottom fan

8-19-1 Manpower

1 Person, 10 minutes.

8-19-2 Tools

Hex Wrench.

8-19-3 Removal Procedure

- 1) Remove the Front Cover from system. (refer to *section 8-6*)
- 2) Remove the nest Box from system. (refer to *section 8-17-5*)
- 3) Remove 4 Hex screws, front bottom and rear side.



Figure 8-219 Fan screw points of bottom fan assy

- 4) Place bottom fan cable not to be entangled on system frame as following figure

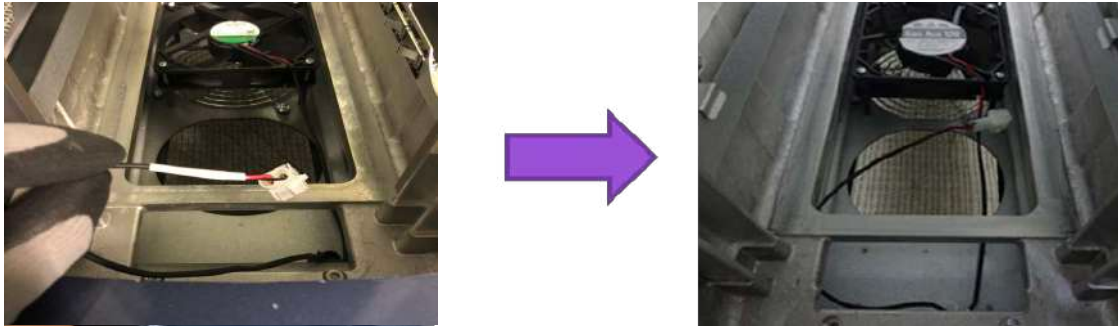


Figure 8-220 Placing bottom fan connector

- 5) Pull out bottom fan assy as following figure



Figure 8-221 Removal of bottom fan Assy

- 6) Remove 4 screws on the fan.



Figure 8-222 Screw points of bottom fan.

8-19-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-19-5 Functional Check

- 1) After turn on the system, confirm the fan rotating by feeling wind at the bottom fan dust filter.

Section 8-20 Replacement of Rear Handle

8-20-1 Manpower

1 Person, 10 minutes.

8-20-2 Tools

Standard Phillips Screwdriver and 6mm Hex Wrench.

8-20-3 Removal Procedure

- 1) Remove 1 screw and remove the Link Arm Top Cover as following figure.

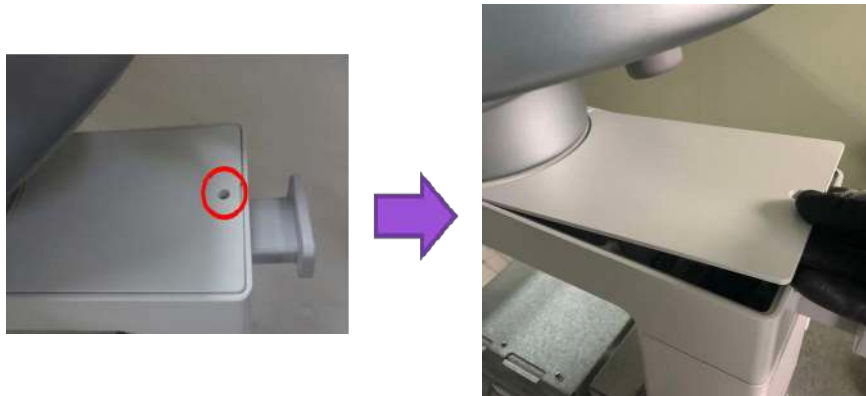


Figure 8-223 Removal of Link Arm Top Cover.

- 2) Remove 2 Hex screws. Refer to following figure.

 **CAUTION** Rear Handle will not stay in position without screws. Make sure not to drop the part when removing/installing Rear Handle



Figure 8-224 Hex screw points of Rear Handle

8-20-4 Installation Procedure

Parts to be installed in reverse order of removal.

NOTE: Hex screws should be tightened.

8-20-5 Functional Check

Visual Check only.

Section 8-21 Replacement of Link Arm Cable Hook

8-21-1 Manpower

1 Person, 10 minutes.

8-21-2 Tools

Standard Phillips Screwdriver.

8-21-3 Removal Procedure

1) Remove 1 screw and remove the Link Arm Top Cover as following figure.

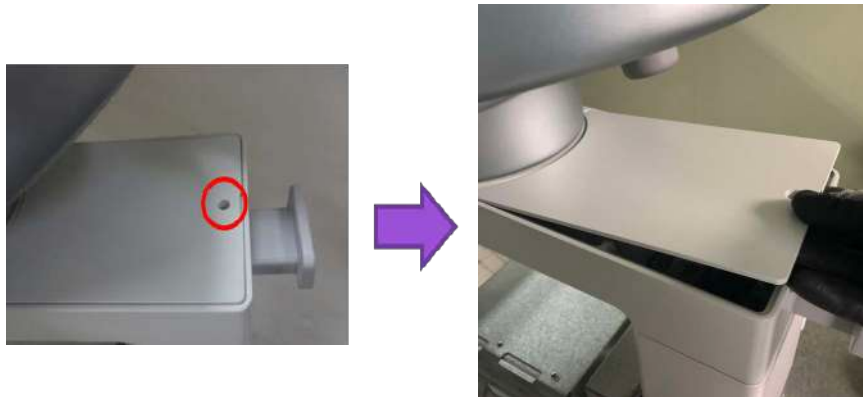


Figure 8-225 Removal of Link Arm Top Cover.

2) Remove 2 screws. Refer to following figure.



Figure 8-226 screw points of Link Arm Cable Hook

8-21-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-21-5 Functional Check

Visual Check only.

Section 8-22 Replacement of Caster

8-22-1 Manpower

2 persons, 15 minutes.

8-22-2 Tools

24mm Socket or adjustable Wrench, Standard Phillips Screwdriver

NOTE: "Short" type driver preferable for Foot Rest Cover removal/installation.

8-22-3 Removal Procedure

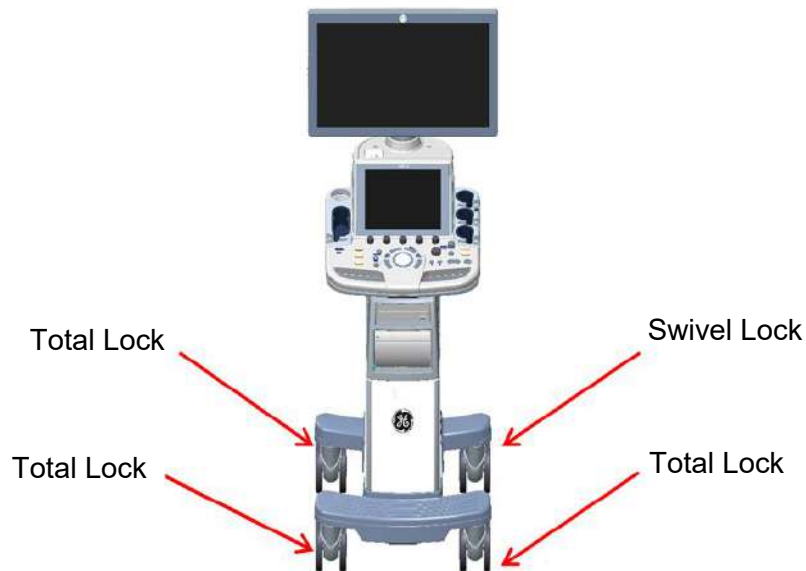


Figure 8-227 Caster

NOTE: Press the caster wheel locks and ensure that they prevent the system from moving.

- 1) Remove Front Cover (refer to section 8-6)
- 2) Remove Top Cover (refer to section 8-7)
- 3) Remove Side Cover (refer to section 8-8)

NOTE: This does not require any tools. Be careful not to damage Hand during pulling hook of the cap

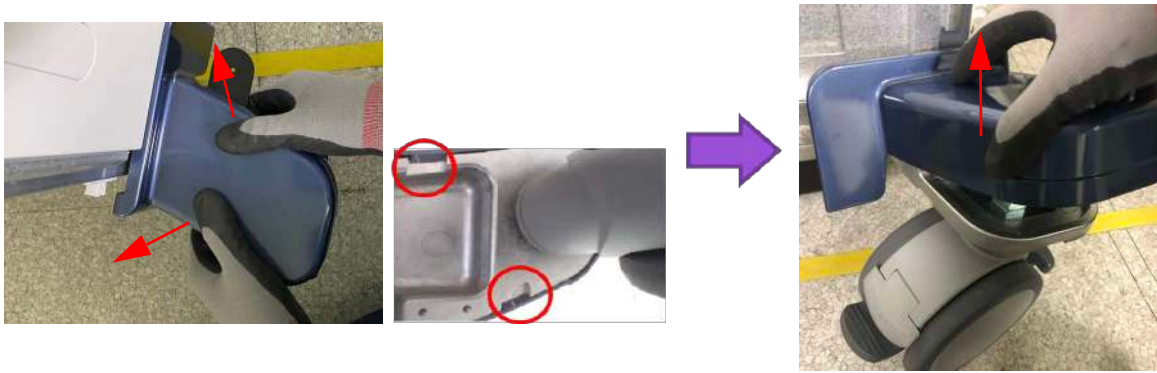


Figure 8-228 Caster Cap and hook points

- 4) Remove Caster Cap by slightly pulling hook of the cap to outside and then move upward. Procedures are common for both the Left and Right Caster Cap.
- 5) Remove 3 screws.

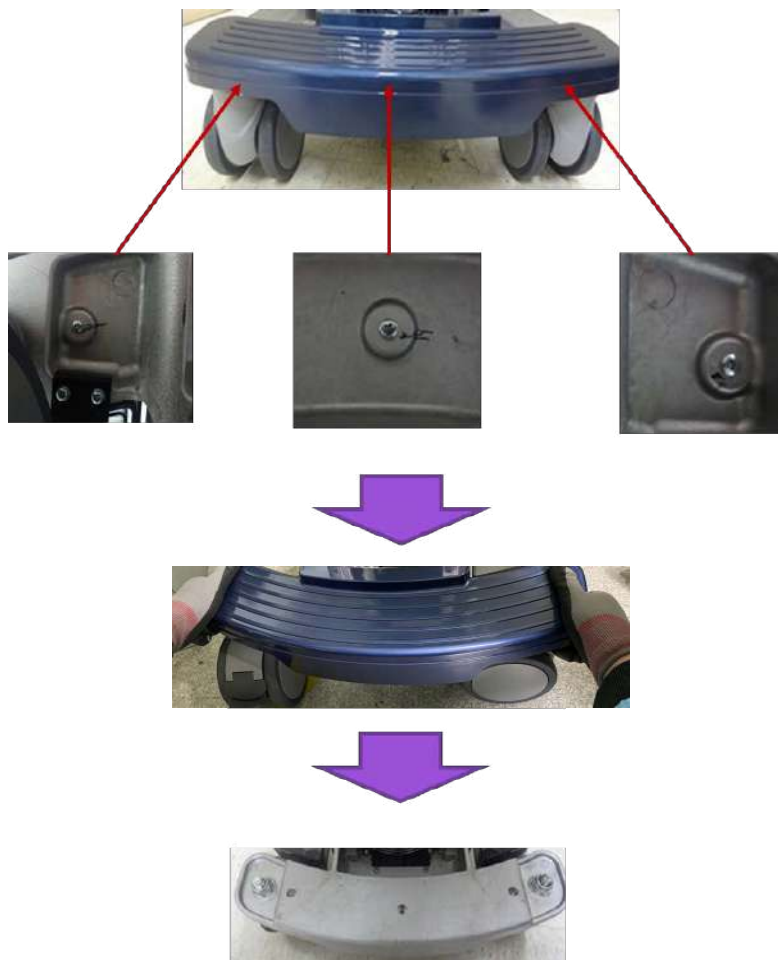


Figure 8-229 Foot Rest Cover

- 6) Remove Nut and replace Caster.



Figure 8-230 Removable Nut of Caster



CAUTION Proceed with extreme caution and avoid system tipping over. The system weighs approximately 60kg.

8-22-4 Installation Procedure

Parts to be installed in reverse order of removal.

NOTE: Hex screws should be tightened.

8-22-5 Functional Check

Visual inspection Only.

Section 8-23 Replacement of the COM Express

8-23-1 Manpower

1 Person, 5 minutes.

8-23-2 Tools

Standard Phillips Screwdriver.

8-23-3 Removal Procedure

8-23-3-1 Removal Procedure (R1, R2, R2.5 and R3)

- 1) Separate MCB Assy and MDC Assy. (Refer to *section 8-17-10*)
- 2) Remove 8 screws around MCB assy and carefully separate MCB assy from MPI assy. Refer to following figure.

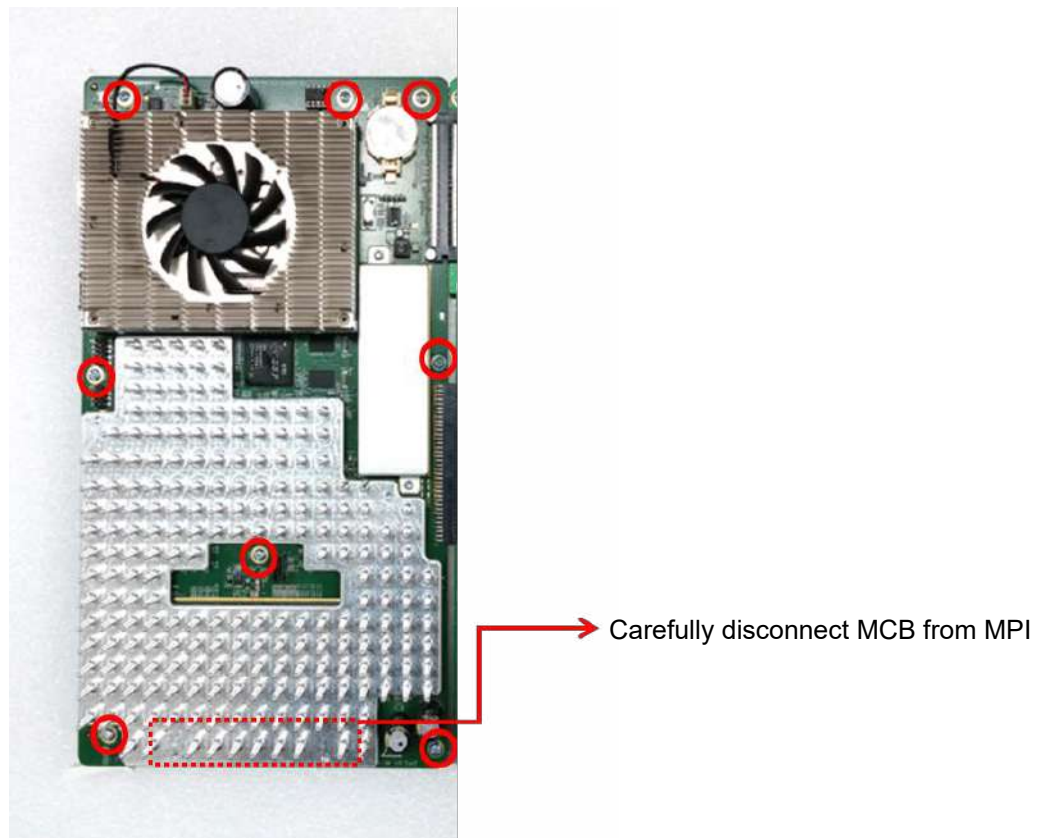


Figure 8-231 Separating MPI and MCB

- 3) Unscrew 5 screws on bottom side of MCB board assy. Refer to following figure.

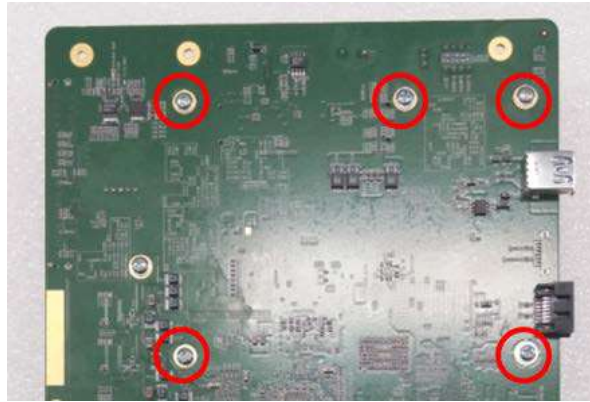


Figure 8-232 Screw points for removal of COM Express.

- 4) Disconnect fan cable and carefully detach COM Express module. Refer to following figure.

NOTE: Be careful not to damage COM Express connector

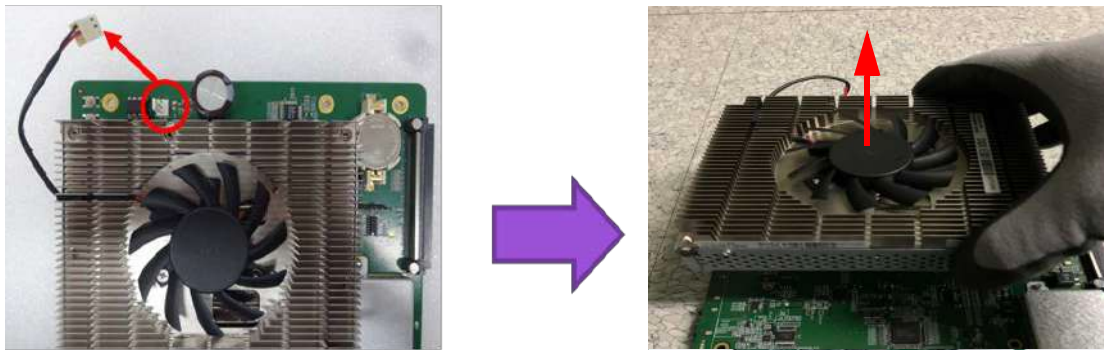


Figure 8-233 Detaching COM Express.

- 5) Unscrew 4 screws in the side of COM Express to remove SOM bracket and carefully lift up the COM express from the bracket. Refer to following figure

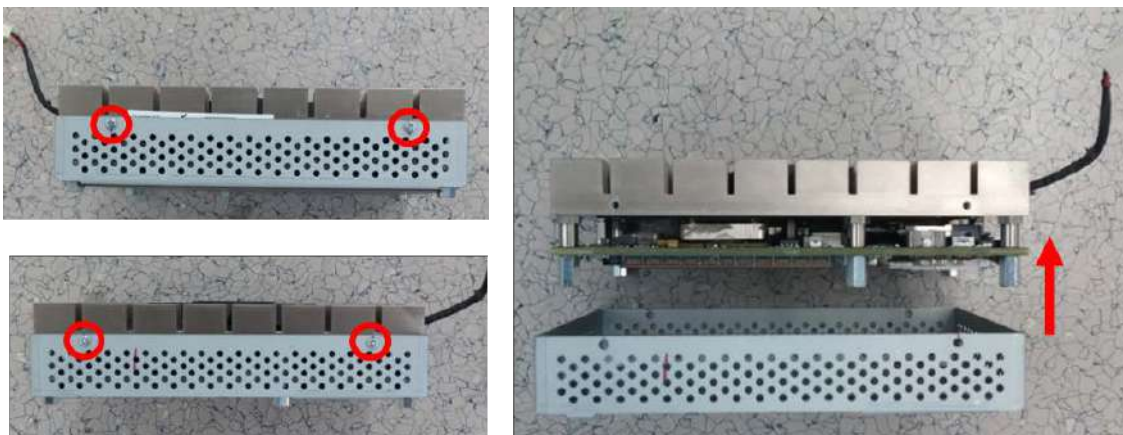


Figure 8-234 Removal COM Express Bracket.

8-23-3-2 Removal Procedure (R4 and R4.5)

- 1) Disconnect fan cable.

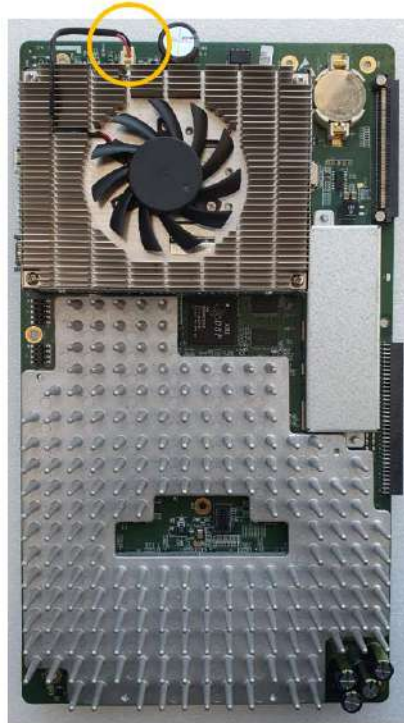


Figure 8-235 Disconnecting fan cable

- 2) Unscrew five male-type-screws.

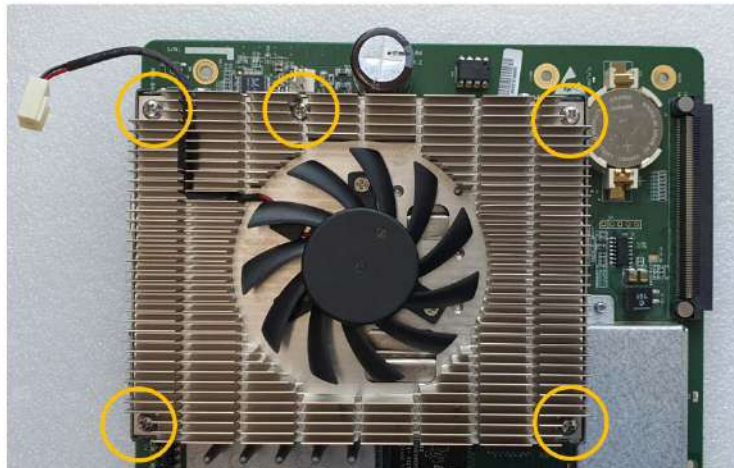


Figure 8-236 Unscrewing five male type screws

- 3) Detach COM-Express module.

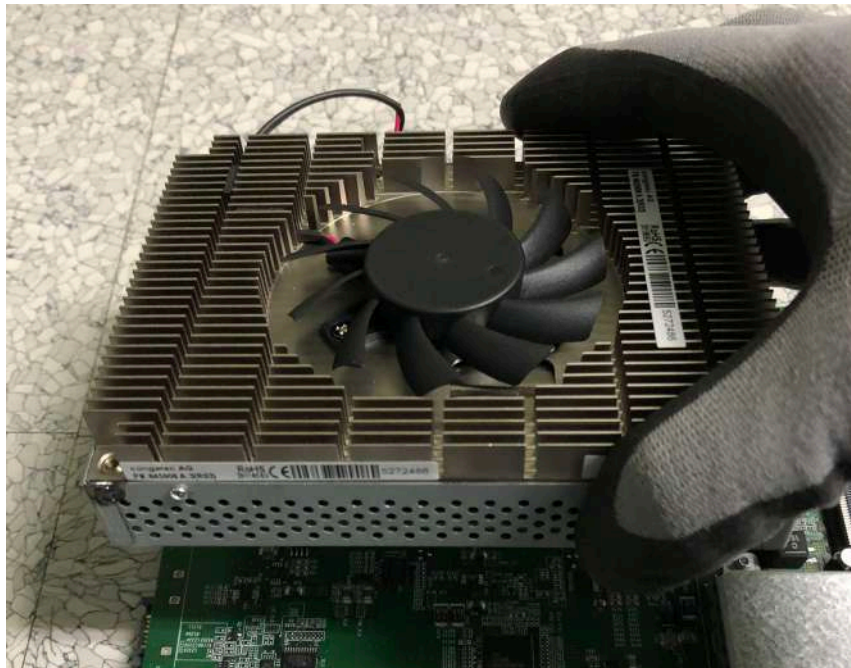


Figure 8-237 Detaching COM-Express

- 4) Unscrew four male-type-screws in the side of COM-Express module.
And remove SOM Bracket from the COM-Express module.

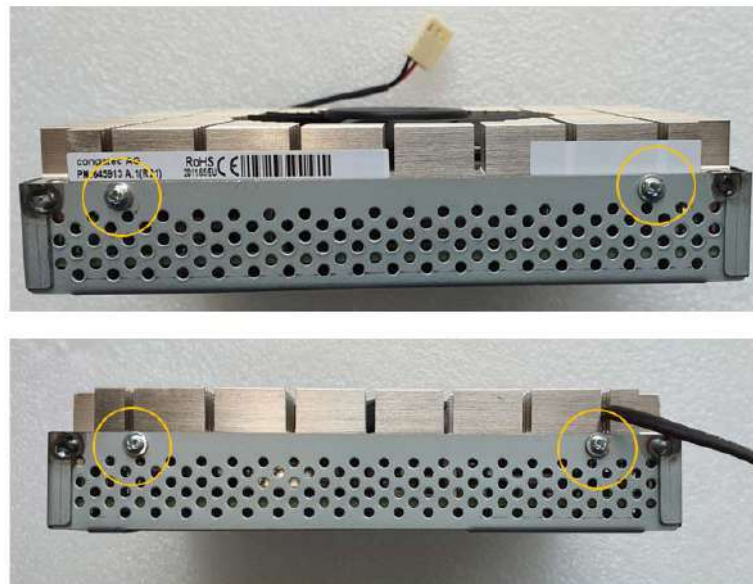


Figure 8-238 Unscrewing 4 male-type-screws

8-23-4 Installation Procedure

Install components in reverse order of removal.

CAUTION When replacing with new SOM, Push the SOM in both side of MCB Assy like as below Figure 8-130.

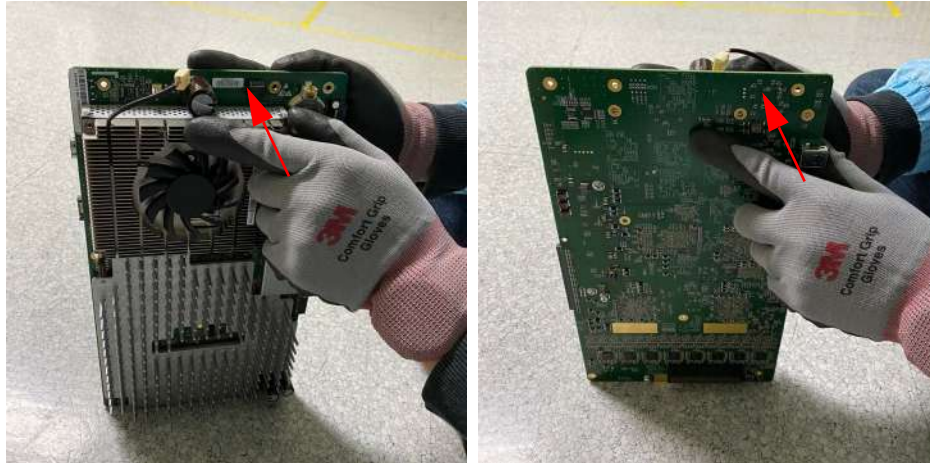


Figure 8-239 Push the SOM in both side of GFS Assy

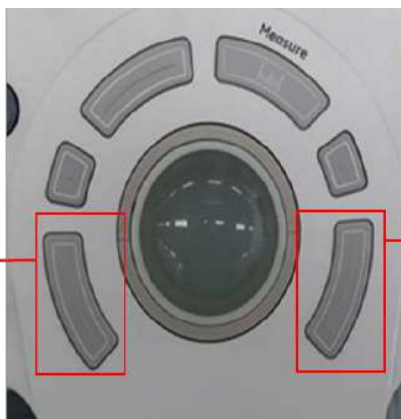
8-23-5 Note on COM Express Replacement

COM Express retains its memory (date/time/BIOS setting) by receiving 3V from coin battery on MCB Board. Therefore, when COM Express and MCB boards are separated, COM Express is likely to lose its date/time setting. In such case, follow the procedure outlined below to update BIOS information.

8-23-5-1 Configuring BIOS

- 1) Power ON the scanner and press “DEL”(If AN key is installed) or press left bottom key of trackball (If there’s no AN Key) to enter BIOS.

NOTICE If there’s no AN key, please use trackball to move menu in BIOS mode and click left bottom key of trackball to select menu in BIOS and double-click to set or change the value in BIOS. Right bottom key of trackball is ‘ESC’ in BIOS.



Left bottom key of trackball to enter BIOS and select menu and set or change the value in BIOS

Right bottom key of trackball for ‘ESC’ in BIOS

- 2) Type “maru” for password.
- 3) After successfully entering BIOS, verify the following parameters

Table 8-24 Configuring BIOS.

| TAB | top menu |
|------|-------------|
| Main | System Time |
| | System Date |

- 4) Change date/time parameters as needed, and save the changes.
- 5) Reboot the console.

8-23-6 Note on EEPROM Replacement

NOTE: EEPROM on MCB contains VPD (Vital Product Data) for SOM (ComExpress). This VPD contains information such as system serial number to be matched to Software License Key, or Board revision number that is cross referenced to system software for compatibility. Service personnel may require to initialize EEPROM or to modify EEPROM contents for proper operation of the system.

EEPROM on MCB Board Memory

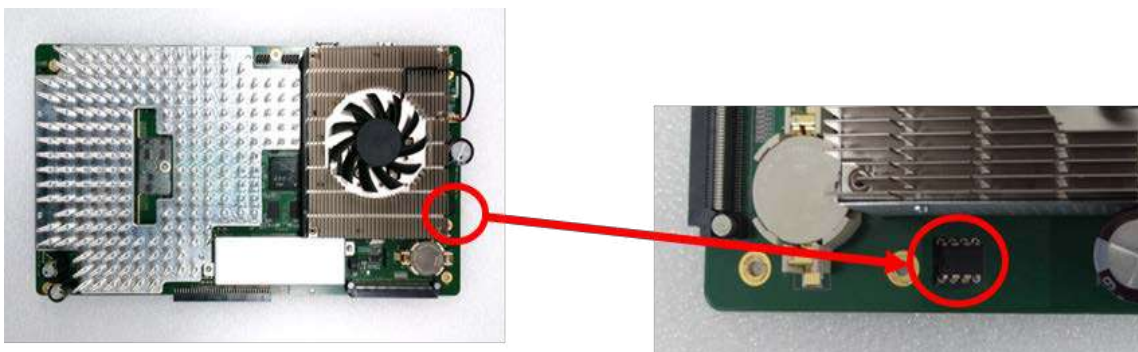


Figure 8-240 EEPROM on MCB Board

NOTE: There are various types of VPD EEPROM integrated in the system.

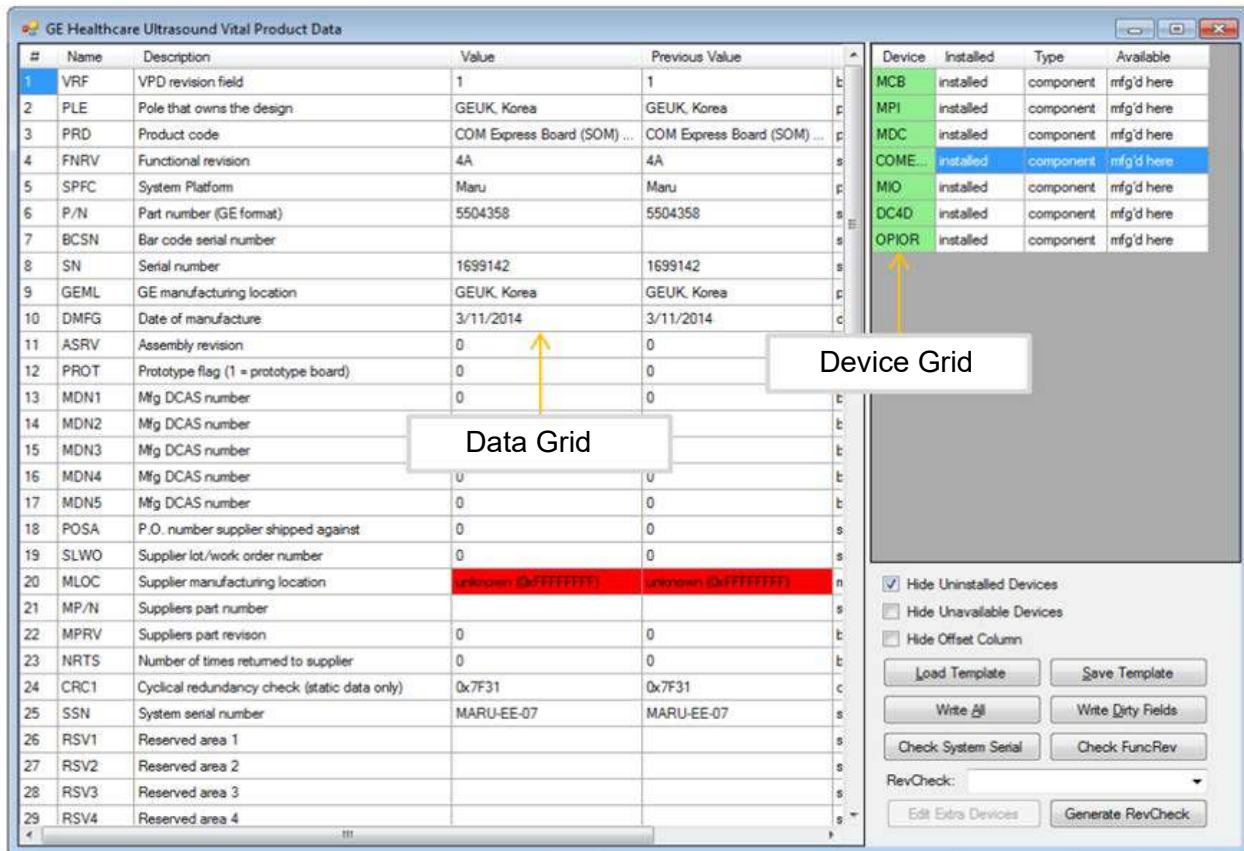
| Board Name | Main VPD Contents | Replaceable | Physical VPD location |
|------------|--------------------------------------|-------------|-------------------------------------|
| MCB | FuncRev | No | Integrated with MCB |
| MPI | FuncRev | No | Integrated with MPI |
| MDC | FuncRev | No | Integrated with MDC |
| COMEXP | FuncRev, , SSN (System Serial Number | Yes | On MCB board as replaceable EEPROM. |
| MIO | FuncRev | No | Integrated with MIO |
| DC4D | FuncRev | No | Integrated with DC4D |
| OPIOR | FuncRev | No | Integrated with OPIO |

8-23-6-1 Accessing EEPROM

- 1) Exit to Desktop (Refer to section 5-10 for details)
- 2) Start VPD Editor by clicking icon on the desktop. ("Vpdedit")



- 3) Select COMEXP from device grid.



| | |
|----------------|--|
| Device Grid | The list of devices in the system that support VPD. Click on a row in this grid to select a device and view the VPD fields. For Maru, MCB, MPI, MDC, COMEXP, MIO, DC4D, and OPIOR supports VPD. |
| VPD Field Grid | A list of data items that make up the selected VPD. |

- 4) Note: If the following windows pop up without changing any parameters (i.e. simply browsing

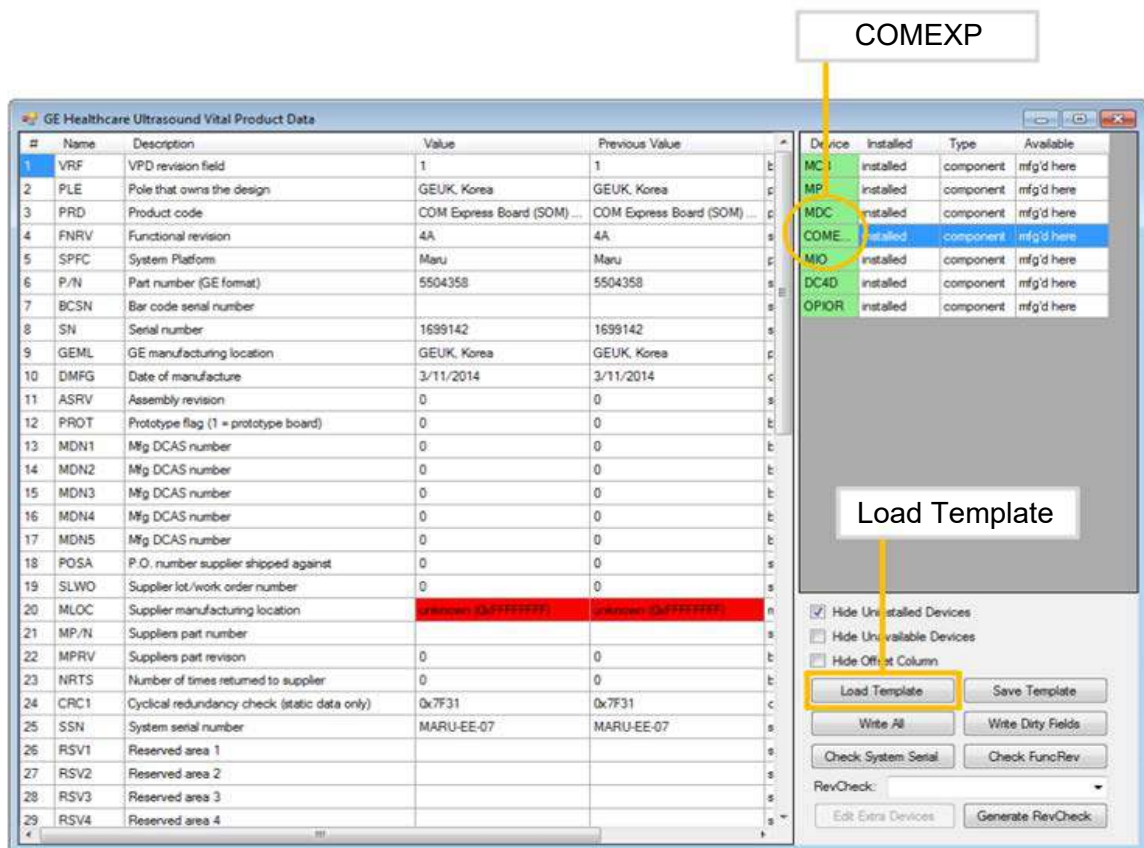
through the VPD contents), then press “NO” before continuing.



8-23-6-2 Initializing EEPROM

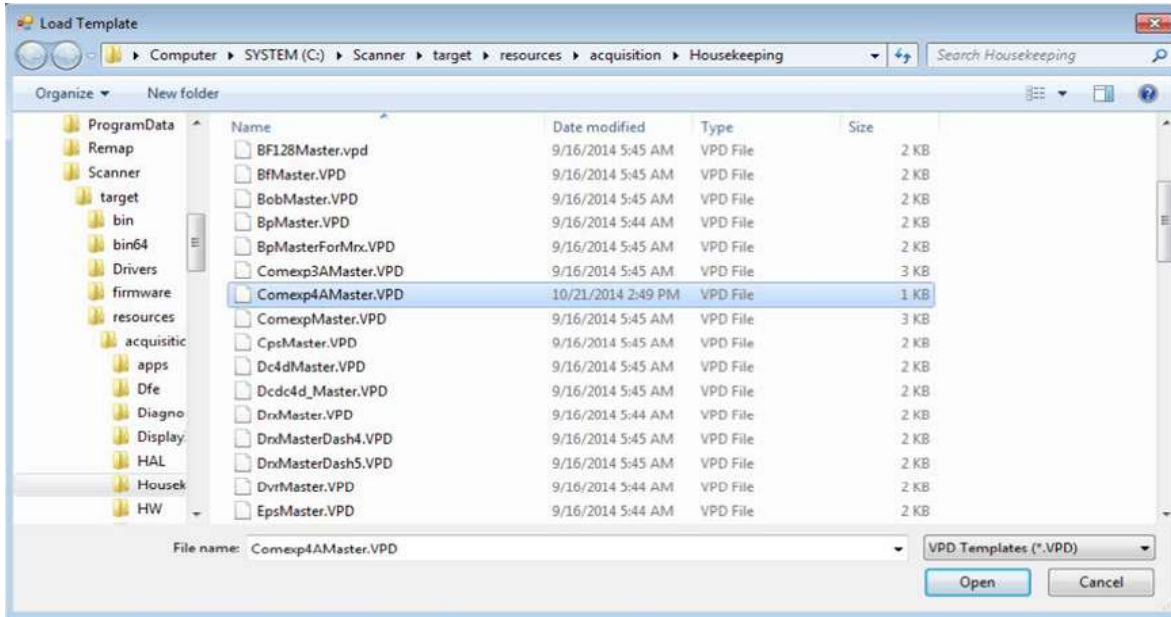
When a new EEPROM is attached to a system, it will require initialization.

- 1) Select “COMEXP” from device grid. (right pane).



- 2) Select “Load Template” from right pane.
- 3) Select “Comexp4amaster.vpd”.

The file can be found under *c:\Scanner\target\resources\Acquisition\Housekeeping*



4) Click “Open” to load the selected template.

NOTE: This procedure can be applied to other components with VPD, for example, for initializing MPI VPD. However, it is unlikely needed for such event arises, as these components are hardware-integrated into boards.

VPD templates to use EEPROM initialization of each board are stored in *c:\Scanner\target\resources\acquisition\Housekeeping* and please refer to the following table to template file names.

| Board Name | VPD Template File Name |
|------------|---|
| MCB | MCB.VPD(R1 to R2.5), MCB-R3_2C.VPD(R3), MCB-R4_3A.VPD(R4) |
| MPI | MPI.VPD, MPI_R4.VPD(R4) |
| MDC | MDC.VPD |
| COMEXP | Comexp4AMater.VPD(R1 to R2.5), MARU_COMEXP.VPD(R3), MARU_COMEXP.VPD(R4) |
| MIO | MIOMaster.VPD(R1 to R2.5), MIO-B.VPD |
| DC4D | Dc4dMaster.VPD |
| OPIOR | OpPanelMaruMaster.VPD, OpPanelMaruMaster_R4.VPD(R4) |

8-23-6-3 Modifying contents of EEPROM (ComExpress VPD)

System checks that the SSN (System serial number) is valid for the installed software option. If you need to update SSN to replace software option string for other SSN, please follow the below instruction.

- 1) Select COMEXP from device grid.
- 2) Double-click value for “System Serial Number (SSN)” .
- 3) Type in the console serial number (SSN)
- 4) Click “write dirty files” button on the right pane.

8-23-7 Functional Check

| Test | Refer to | Note |
|-------------------|--------------------|------|
| Board Diagnostics | <i>section 4-4</i> | |

Section 8-24 Replacement of the HDD/SSD

8-24-1 Manpower

1 Person, 5 minutes.

8-24-2 Tools

Standard Phillips Screwdriver.

8-24-3 Removal Procedure

- 1) Open the front cover. (refer to *section 8-6*)
- 2) Remove 4 screws around HDD/SSD Bracket Refer to following figure.



Figure 8-241 Screw points around HDD/SSD Bracket.

- 3) Carefully pull down HDD/SSD assy. Refer to following figure.

NOTE: Be careful not to damage HDD/SSD connector

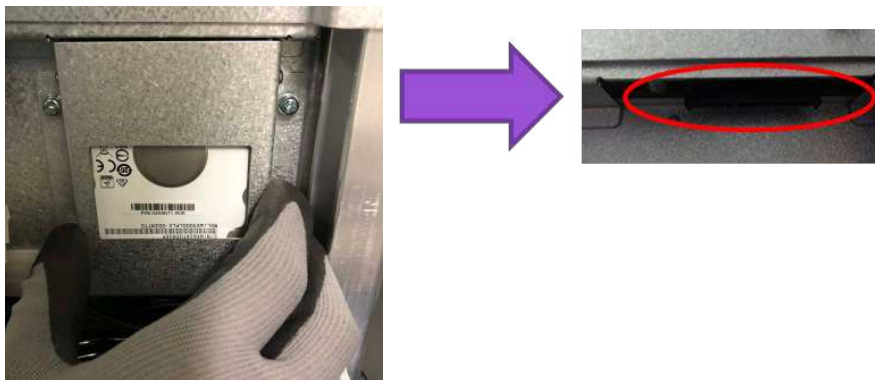


Figure 8-242 Removal of HDD/SSD assy and position of HDD/SSD connector

4) Unscrew 4 screws to remove HDD/SSD bracket. Refer to following figure.

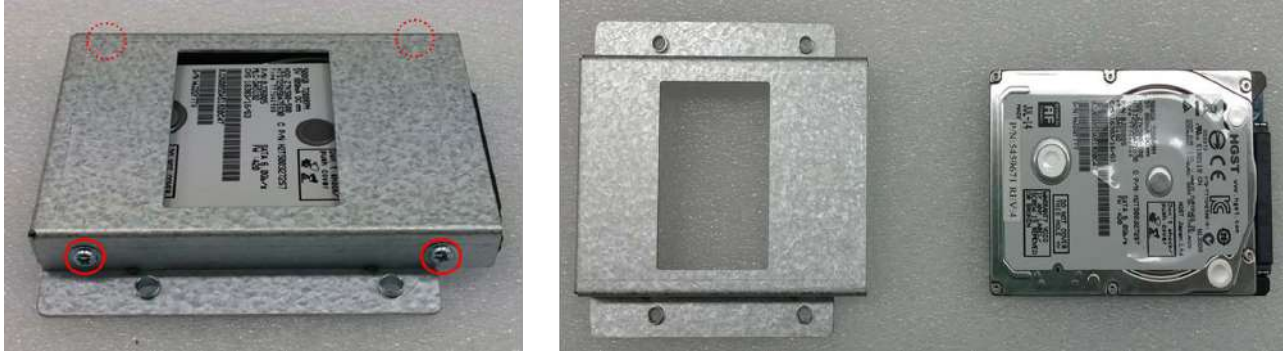


Figure 8-243 Removal of HDD/SSD bracket

8-24-4 Installation Procedure

Install components in reverse order of removal.

8-24-5 Functional Check

| Test | Refer to | Note |
|-------------------|-------------|------|
| Board Diagnostics | section 4-4 | |

Section 8-25 Replacement of the M.2 SSD

8-25-1 Manpower

1 person, 20 minutes

8-25-2 Tools

Standard Phillips Screwdriver.

8-25-3 Removal Procedure

- 1) Take the board assy out of the nest box (Refer to *section 8-17-7*)
- 2) Remove eight screws (check red-designating circles out) and separate MCB from the assy.



Figure 8-244 Removal of eight screws

- 3) Remove one screw on bottom side of the board and pull out M.2 SSD.



Figure 8-245 Removal of one screw on bottom side of the board

8-25-4 Installation Procedure

Install components in reverse order of removal.

8-25-5 Functional Check

Refer to *section 4-3-3* for Power On/Off test.

Section 8-26 Replacement of Battery

8-26-1 Manpower

1 person, 1 hour

NOTE: LP9/P7 BUM 5504583 provides the information, "Refreshing the battery" in Chapter 3 Preparing to System for Use. The recommended procedure can be executed by user for maintaining battery life.

8-26-2 Tools

Standard Phillips Screwdriver.

8-26-3 Removal Procedure

- 1) Unscrew 12 screws to remove the IO BOX Cover.

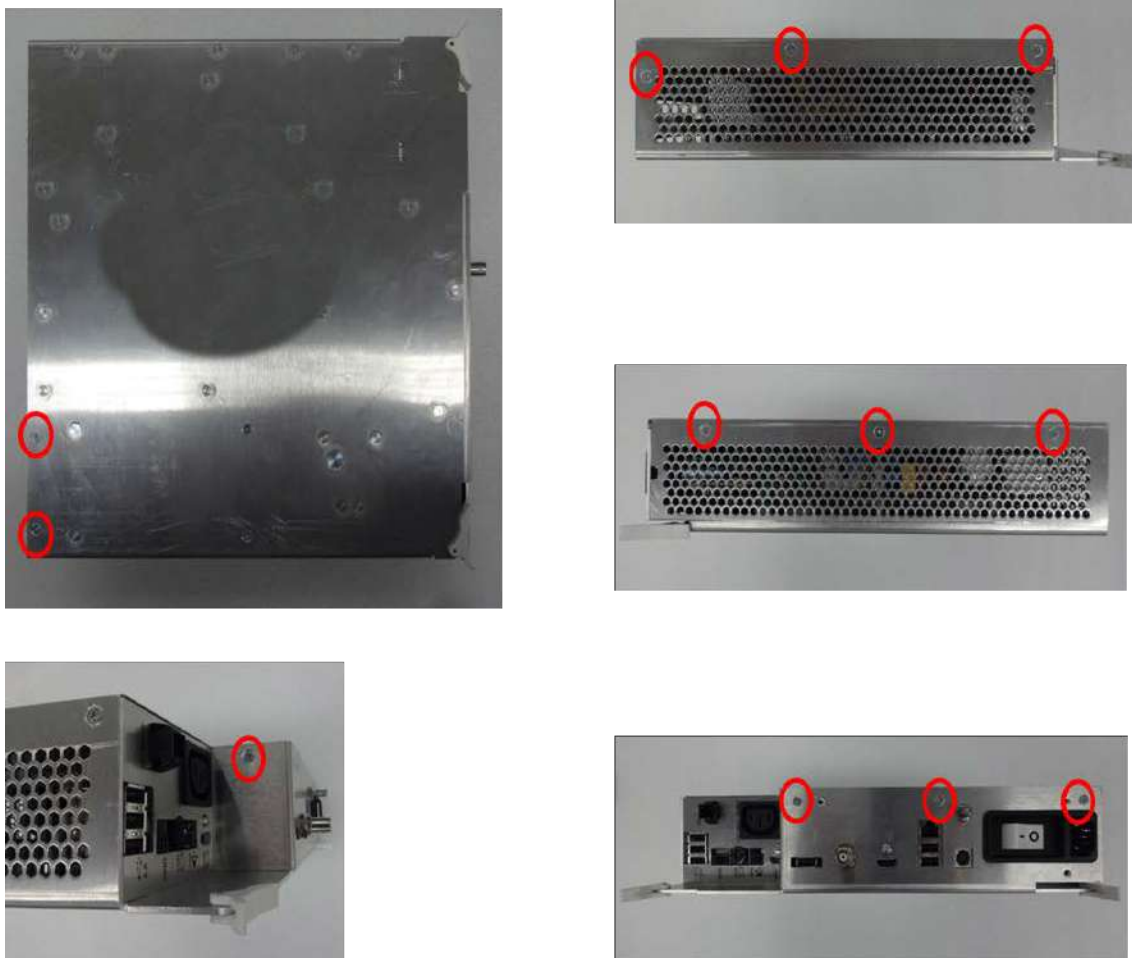


Figure 8-246 Screw points of IO BOX cover

2) Unscrew 4 screws and disconnect 2 connectors from Battery. Refer to following figure.

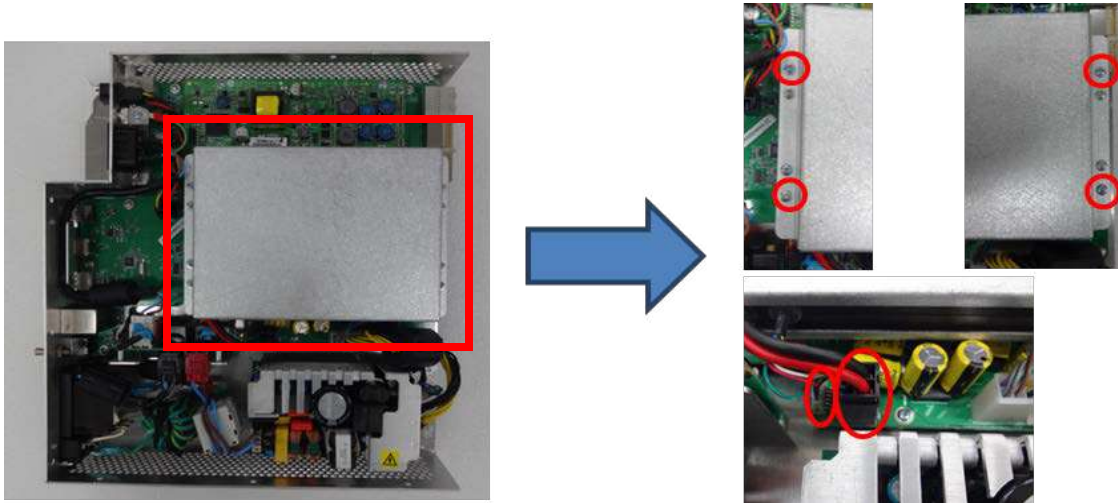


Figure 8-247 Screw points and Connectors on battery assy

3) Unscrew 4 screws to remove Battery bracket

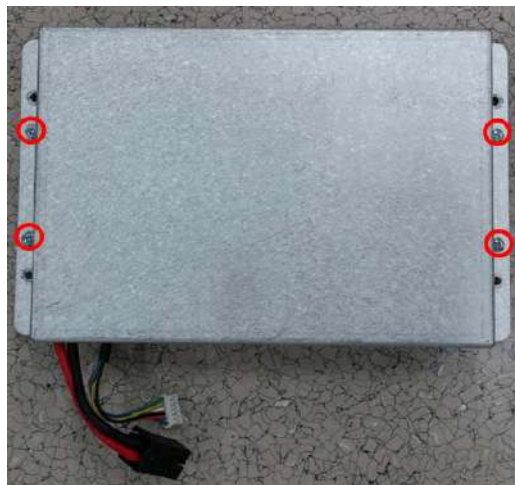


Figure 8-248 Removal of Battery bracket

8-26-4 Installation Procedure

Install components in reverse order of removal.

8-26-5 Functional Check

| Test | Refer to | Note |
|--------------|---------------|------|
| Power On/Off | section 4-3-3 | |

Section 8-27 Replacement of 4D

8-27-1 Manpower

1 Person, 1 hour.

8-27-2 Tools

Standard Phillips Screwdriver.

8-27-3 Removal Procedure

- 1) Unscrew 12 screws to remove the IO BOX Cover.



Figure 8-249 Screw points of IO BOX cover

- 2) Unscrew five screws to remove the DC4D from the IO BOX. Refer to following figure.

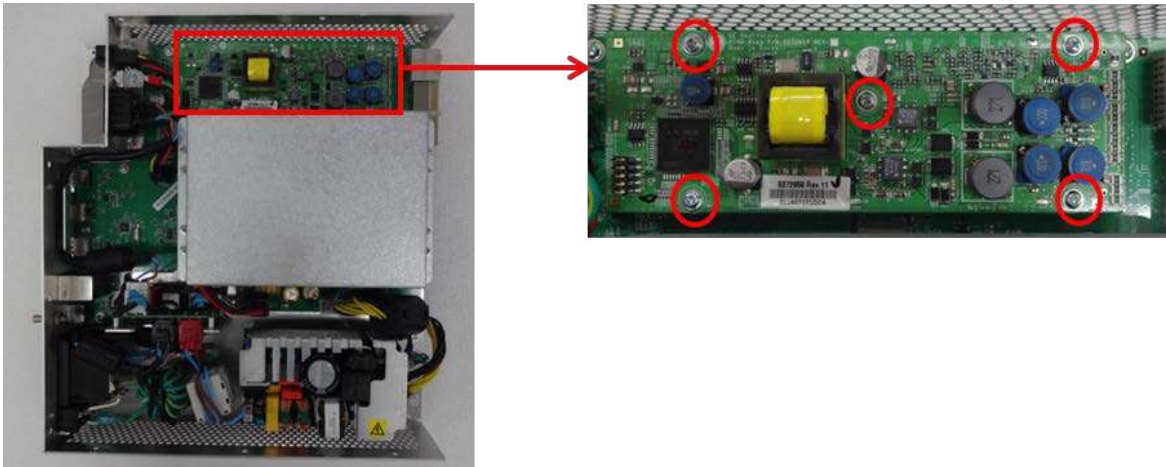


Figure 8-250 Screw points of DC4D Assy

- 3) Carefully lift up the DC4D unit.

8-27-4 Installation Procedure

Install components in reverse order of removal.

8-27-5 Functional Check

Refer to *section 4-4* for Functional Diag Test List.

Section 8-28 Replacement of Wireless LAN

8-28-1 Manpower

1 Person, 5 minutes.

8-28-2 Tools

None Required.

8-28-3 Removal Procedure

- 1) Remove Top Cover (refer to *section 8-7*)
- 2) Attach loop sheet on Wireless LAN dongle. Refer to below figure.

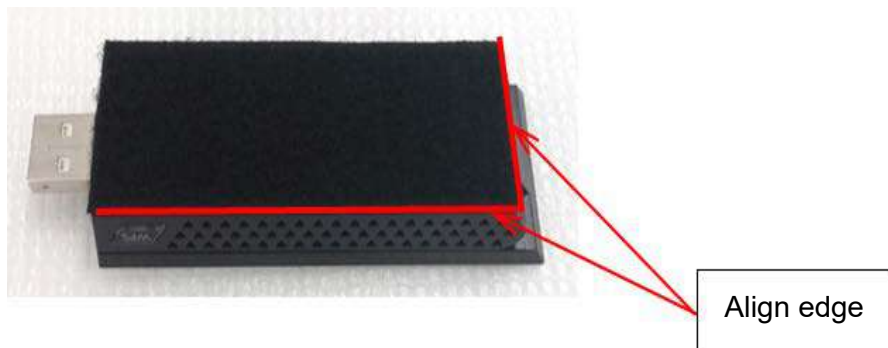


Figure 8-251 Attachment of loop sheet.

- 3) Disconnect connector and carefully detach out Wireless LAN. Refer to following figure.

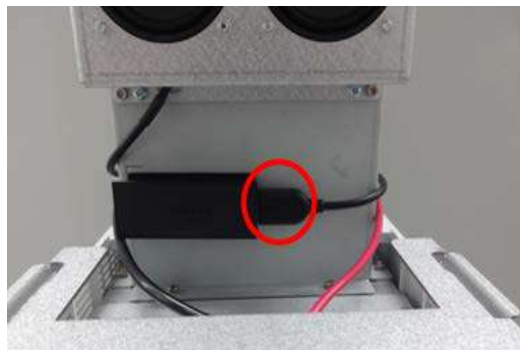


Figure 8-252 Removal of Wireless LAN

8-28-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-28-5 Functional Check

Visual Check Only

Section 8-29 Replacement of the Harness Cable and OPIO Cable Assy

8-29-1 Replacement of the Harness Cable and OPIO Cable Assy (R1, R2, R2.5 and R3)

8-29-1-1 Manpower

1 person, 30 minutes

8-29-1-2 Tools

Standard Phillips Screwdriver, Nipper, 4mm Hex Wrench, 3 Cable ties (GEPN: 2160955).

8-29-1-3 Pre-Work

- 1) Rear Cover removed. (refer to *section 8-9*)
- 2) OPIO removed. (refer to *section 8-14*)
- 3) LCD Monitor removed and Covers from LCD Arm removed. (refer to *section 8-11*)
- 4) Main monitor cables disconnected. (refer to *section 8-29*)
- 5) All monitor and OPIO cables on rear connectors are disconnected. (refer to *section 8-17*)
- 6) Link arm top cover removed. (refer to *section 8-20*)

8-29-1-4 Removal Procedure (Harness Cable Assy)

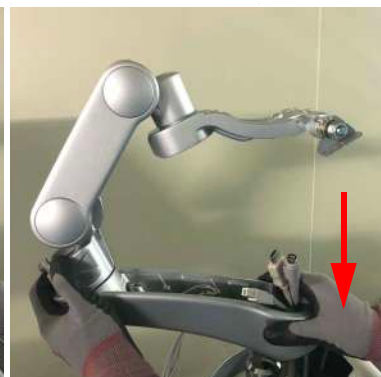
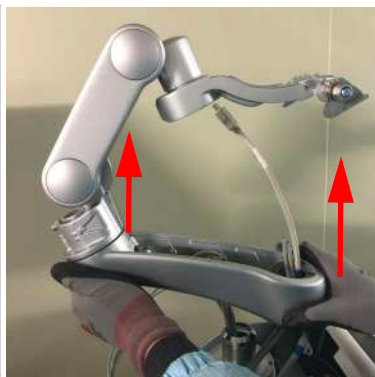
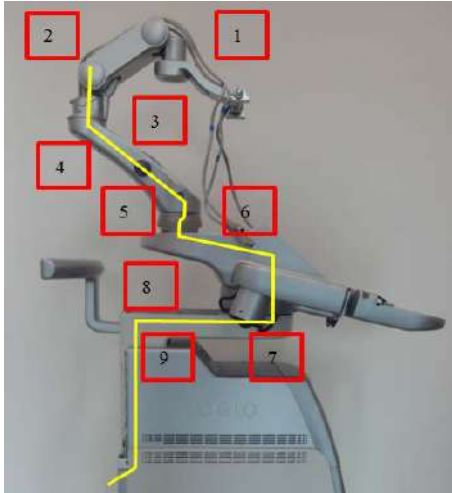
- 1) Loosen Cable through 3rd Arm (1).
- 2) Remove 2 Cable ties and loosen Cable from 2nd Arm.

NOTE: There is cable position marker at this location.

- 3) Remove 1 Cable tie and loosen Cable from 1st Arm.
- 4) Loosen cable around 2nd and 1st Axis as following figure.
- 5) Unscrew 1 screw and carefully lift up arms and loosen all cables.

NOTE: There is cable position marker at this location.

- 6) Release the cable holder and carefully pull down cables.
- 7) Unscrew 2 screws and remove Link arm cable fix brkt.
- 8) Carefully pull up cables and remove cables



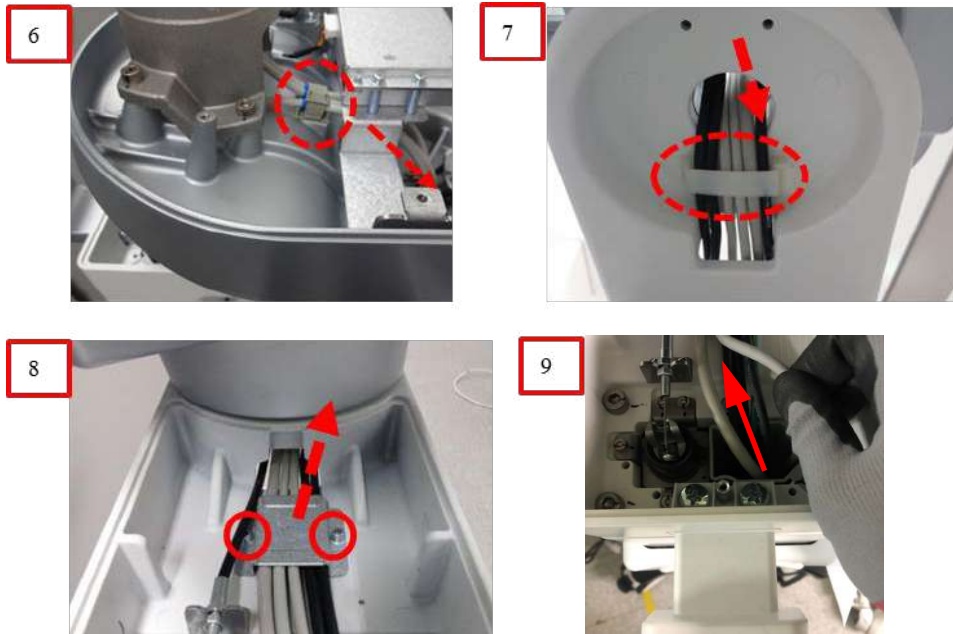


Figure 8-253 Removal of Harness Cable Assy

8-29-1-5 Removal Procedure (OPIO Cable Assy)

- 1) Unscrew 1 screw, remove cable clamp, and then loosen cable through hole.

NOTE: There is cable position marker at this location.

- 2) Release the cable holder and carefully pull down cables.
- 3) Unscrew 2 screws and remove Link arm cable fix brkt.
- 4) Carefully pull up cables and remove cables

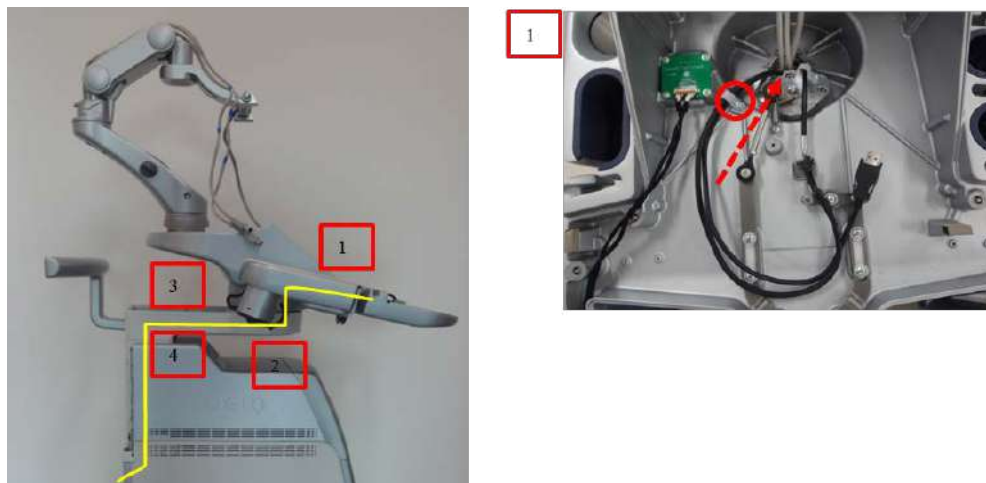


Figure 8-254 Removal of Harness Cable Assy

8-29-1-6 Installation Procedure

Install components in reverse order of removal. Replace the cut cable ties with new ones of the appropriate length.

8-29-1-7 Functional Check

| Test | Refer to | Note |
|------------------------------|----------------------|---------------------------------|
| System Exterior Visual Check | <i>section 4-3-1</i> | Control panel visual check only |
| Power On/Off | <i>section 4-3-3</i> | |

Visual check on LCD monitor to see if image displays without color distortion

Check OSD Control function operates. Refer to *section 6-3-1* Brightness/Contrast

8-29-2 Replacement of Monitor cable and OPIO cable (R4 and R4.5)

8-29-2-1 Manpower

2 persons, 30 minutes

8-29-2-2 Tools

Standard Phillips Screwdriver, Hex Wrench, Nipper, 6 Cable ties (GEPN: 2160955)

8-29-2-3 Pre-Work

- 1) Rear Cover removal (refer to [Section 8-9](#))
- 2) OPIO Assy removal (refer to [Section 8-14](#))
- 3) Monitor and arm cover removal (refer to [Section 8-11](#))
- 4) Main monitor cables disconnected (refer to [Section 8-11](#))
- 5) All monitor and OPIO cables on rear connectors disconnected (refer to [Section 8-17](#))
- 6) Link arm top cover removal (refer to [Section 8-20](#))

8-29-2-4 Removal Procedure (Monitor cables)

- 1) Cut the 6 cable ties



Figure 8-255 Cutting 6 cable ties

- 2) Extract 3 monitor cables through the LCD Arm hole.



Figure 8-256 Extracting 3 monitor cables

- 3) Unscrew 1 screw and detach the LCD arm.

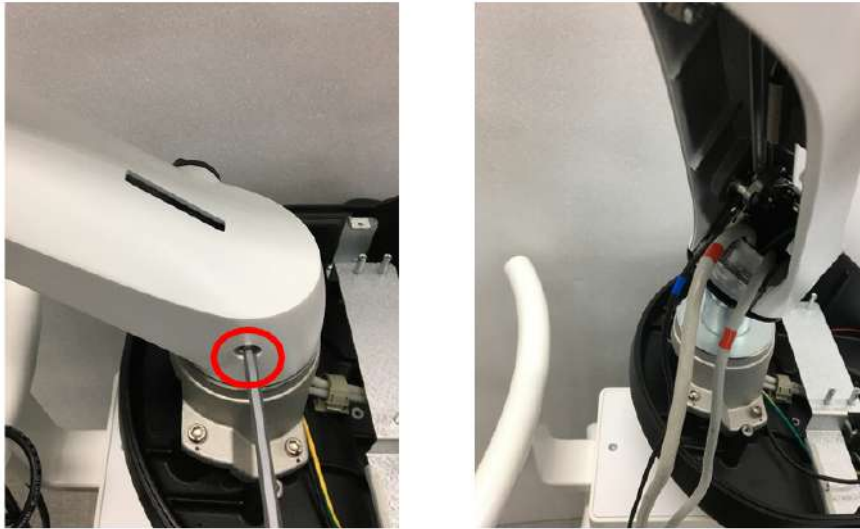


Figure 8-257 Unscrewing 1 screw and detach the LCD arm

- 4) Extract 3 monitor cables through the LCD Arm hole.



Figure 8-258 Extracting 3 monitor cables

- 5) Extract 3 monitor cables as the picture below.



Untying the cable clamp



Unlocking cable clamp



Unscrewing 2 screws



Extracting 3 cables through the hole

- 6) Assemble Procedure - Monitor Cables
Parts to be installed in reverse order of removal.

8-29-2-5 Removal Procedure (OPIO cables)

- 1) Unscrew 1 screw and extract the 2 cables.

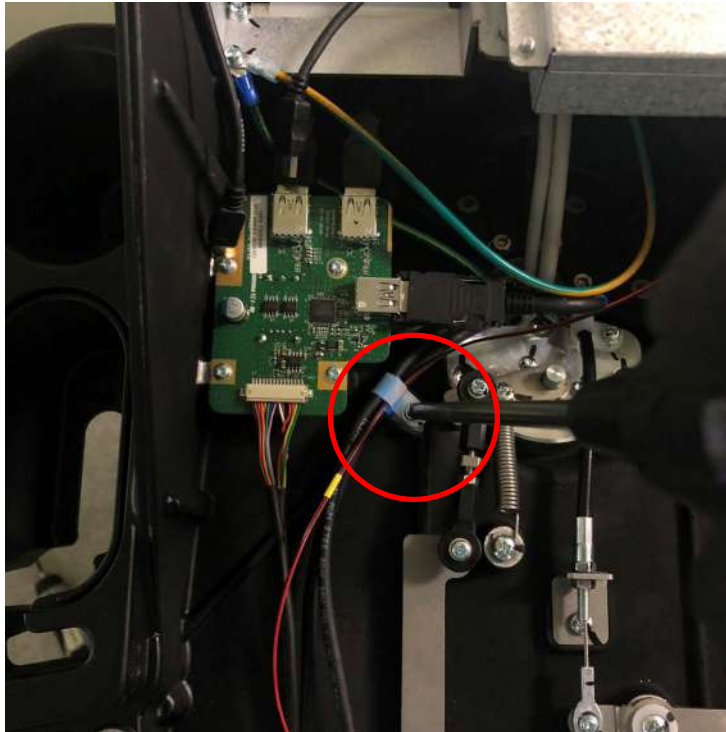


Figure 8-259 Unscrewing 1 screw and extract 2 cables through the hole

- 2) Unscrew 2 screws and remove OPIO cables.



Figure 8-260 Unscrewing 2 screws and removing 2 cables

- 3) Assemble Procedure - OPIO Cables
Parts to be installed in reverse order of removal.

8-29-2-6 Functional Check

| Test | Refer to | Note |
|------------------------------|----------------------|---------------------------------|
| System Exterior Visual Check | <i>section 4-3-1</i> | Control panel visual check only |
| Power On/Off | <i>section 4-3-3</i> | |

Visual check on LCD monitor to see if image displays without color distortion

Check OSD Control function operates. Refer to *section 6-3-1* Brightness/Contrast

Section 8-30 Replacement of Peripheral Cable Assy

8-30-1 DVD Cables

8-30-1-1 Manpower

1 person, 5 minutes.

8-30-1-2 Tools

Nipper, 2 Cable ties (GEPN: 2160955).

8-30-1-3 Pre work

- 1) Remove Rear Cover. (refer to *section 8-9*)
- 2) Remove Top Cover. (refer to *section 8-7*)
- 3) Remove Cable Cover Bracket. (refer to *section 8-17*)

8-30-1-4 Removal Procedure

- 1) Remove the cable ties.



Figure 8-261 Cable tie points

- 2) Unlock cable clamp. Refer to following figure.



Figure 8-262 Cable clamps

- 3) Disconnect 2 DVD cables from the rear panel. Refer to following figure.



Figure 8-263 DVD cable connectors

- 4) Disconnect 2 DVD cables from the DVD.



Figure 8-264 Removal of DVD cables from the DVD

- 5) Carefully pull out the cables.

8-30-1-5 Installation Procedure

Parts to be installed in reverse order of removal. But, refer to below procedure for cable ties.



Align the head of cable tie as shown

Align the head of cable tie as shown



Figure 8-265 Tie cables with the ties through the holes

8-30-2 B/W Printer Cables

8-30-2-1 Manpower

1 person, 5 minutes.

8-30-2-2 Tools

Standard Phillips Screwdriver.

8-30-2-3 Pre work

- 1) Remove Rear Cover. (refer to *section 8-9*)
- 2) Remove Top Cover (refer to *section 8-7*)
- 3) Remove Cable Cover Bracket. (refer to *section 8-17*)

8-30-2-4 Removal Procedure

- 1) Remove the cable tie.

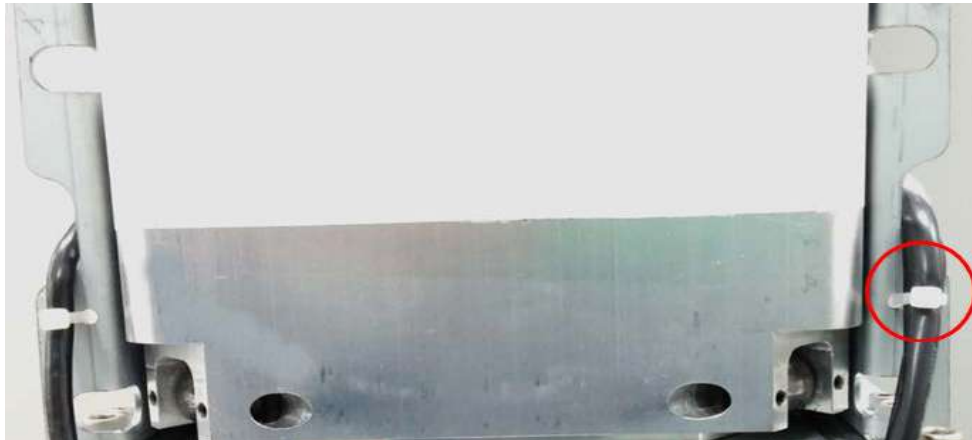


Figure 8-266 Cable tie point

- 2) Remove 2 screws on left side of BW printer and remove BW printer Power fix Bracket

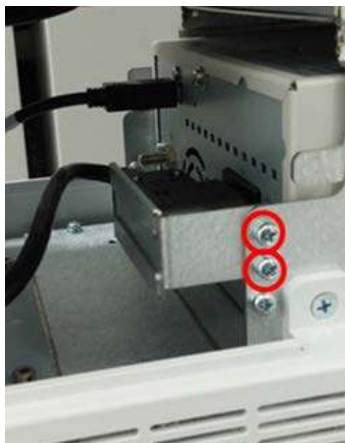


Figure 8-267 Screw points to remove BW power fix bracket.

- 3) Unlock cable clamp. Refer to following figure.

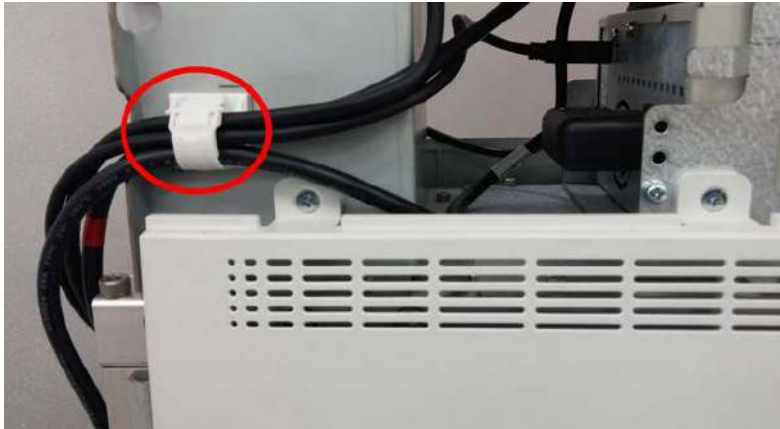


Figure 8-268 Cable clamp

- 4) Disconnect 2 BW printer cables from the rear panel. Refer to following figure.

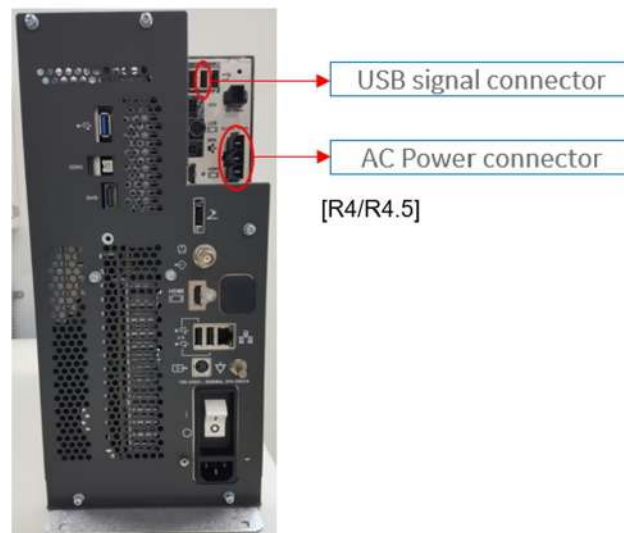
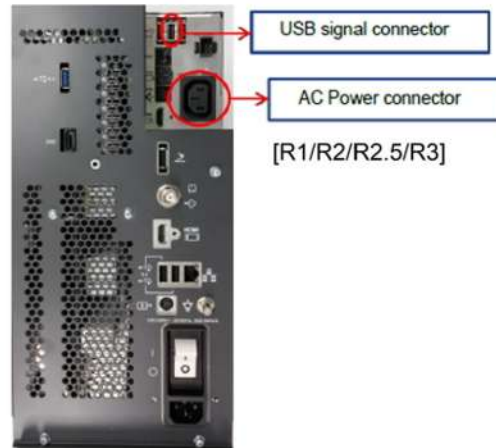


Figure 8-269 BW printer connectors

- 5) Disconnect 2 BW printer cables from printer and carefully pull out the cables.

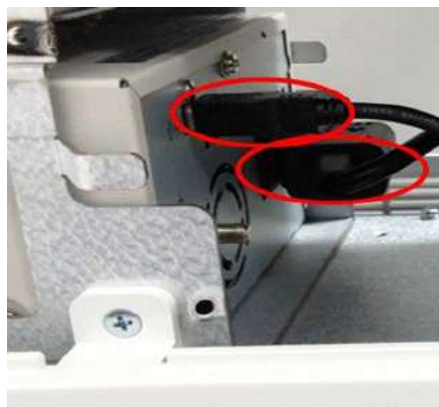


Figure 8-270 Removal of printer cables from the printer

8-30-2-5 Installation Procedure

Parts to be installed in reverse order of removal. But, refer to below procedure for cable ties.

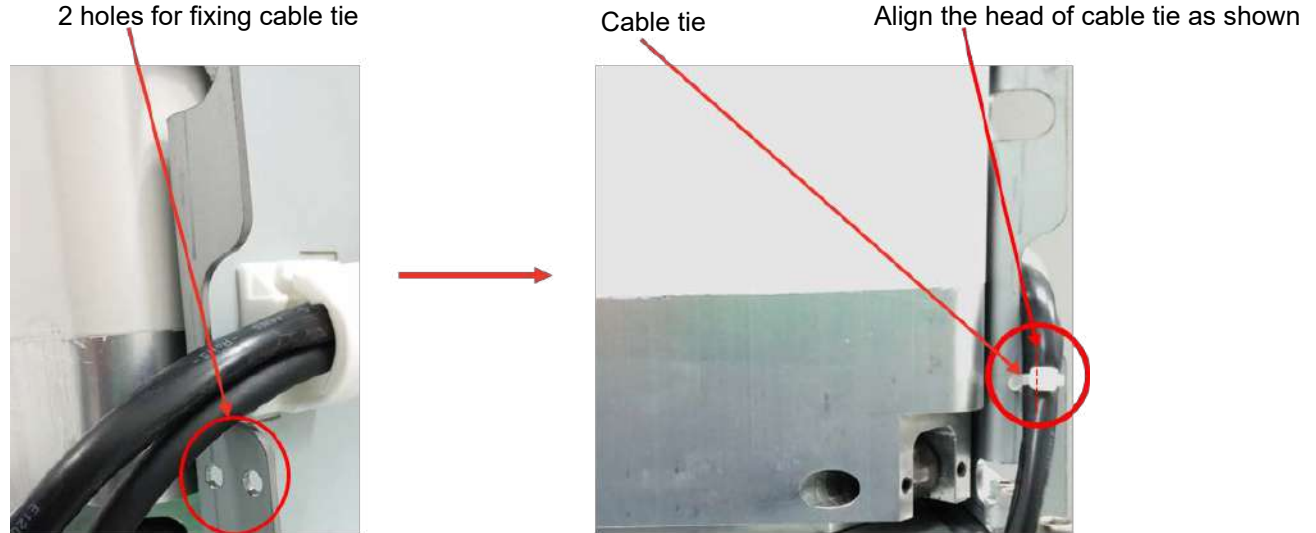


Figure 8-271 Tie cables with the tie through the holes

8-30-2-6 Functional Check

Test 1: Print an image by pressing the button P1 on the operator panel. (P1 key should be configured correctly. Refer to *section 3-8-4 Adding Printer to the system*)

Verify1: - Verify that image can be printed.

Verify2: - Verify that printed image has no distortion as compared the image on screen.

Section 8-31 Replacement of the Probe Holder

8-31-1 Manpower

1 Person, 5 minutes.

8-31-2 Tools

No tool is required.

8-31-3 Removal Procedure

1) Simply pull out Probe Holder from its location.

NOTE: This procedure applies to all locations of probe holder.



Figure 8-272 Removal of Probe Holder



Figure 8-273 Probe Holders

8-31-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-31-5 Functional Check

Visual inspection Only.

Section 8-32 Replacement of the Cable Hook

8-32-1 Manpower

1 Person, 5 minutes.

8-32-2 Tools

Standard Phillips Screwdriver.

8-32-3 Removal Procedure

1) Remove screws as following figure and carefully remove cable hook.

NOTE: Make sure not to lose washers when removing hooks.

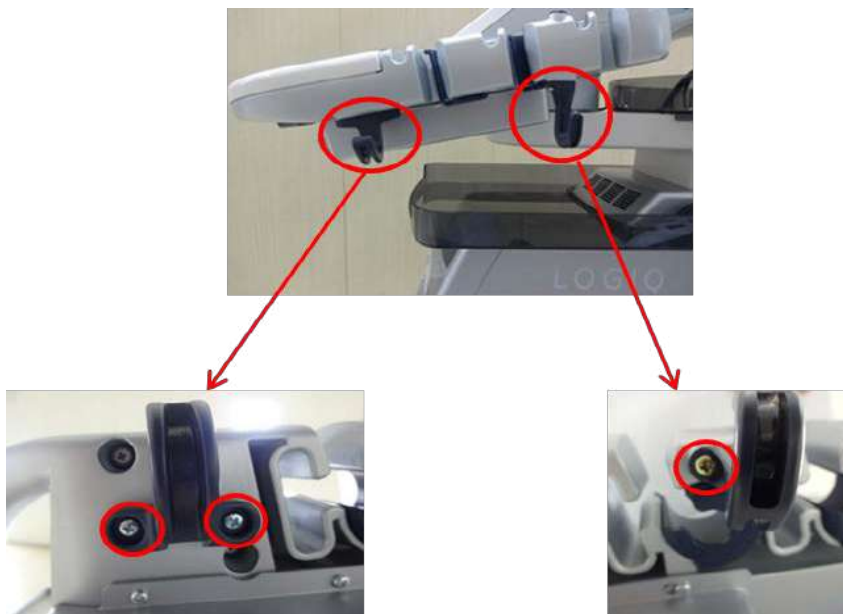


Figure 8-274 Removal of Cable hook

8-32-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-32-5 Functional Check

Visual inspection Only.

Section 8-33 Replacement of the OPIO Tray

8-33-1 Manpower

1 Person, 5 minutes.

8-33-2 Tools

Standard Phillips Screwdriver.

8-33-3 Removal Procedure

1) Remove screw as following figure and carefully remove OPIO Tray.

NOTE: Make sure not to lose tray fix brkt when removing OPIO Tray.

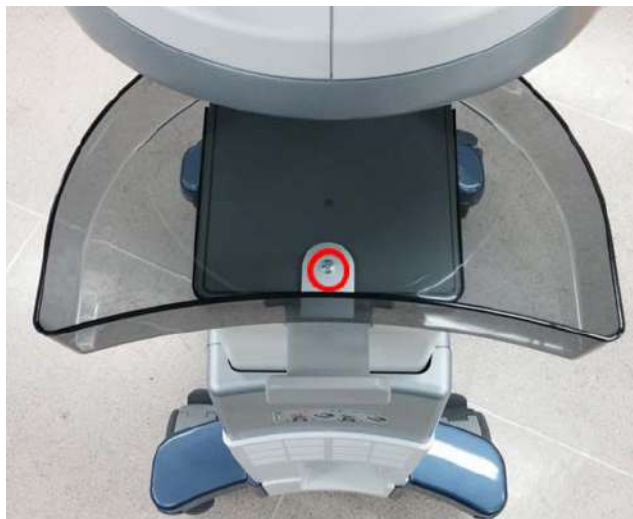


Figure 8-275 Removal of OPIO Tray

8-33-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-33-5 Functional Check

Visual inspection Only.

Section 8-34 Replacement of the Paper tray

8-34-1 Manpower

1 Person, 1 minutes.

8-34-2 Tools

None Required.

8-34-3 Removal Procedure

- 1) Remove Paper tray from Top Cover.

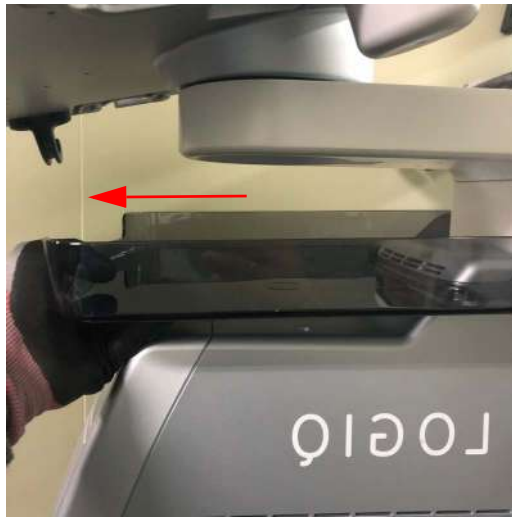
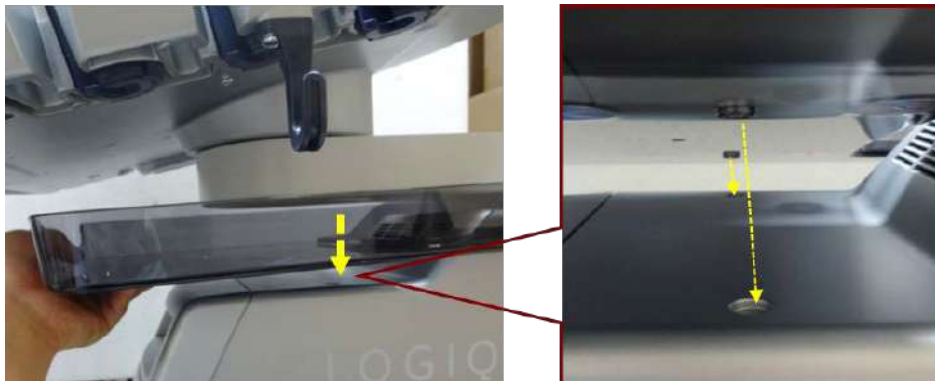


Figure 8-276 Removal of Paper tray

8-34-4 Installation Procedure

- 1) Align the assembly point and put the Paper Tray on Top Cover.



8-34-5 Functional Check

Visual inspection Only.

Section 8-35 Replacement of AC Cable Holder

8-35-1 Manpower

1 Person, 5 minutes.

8-35-2 Tools

Standard Phillips Screwdriver.

8-35-3 Removal Procedure

- 1) Remove 2 Screws from AC Cable Holder

NOTE: This procedure applicable to all AC Power Cord replacement



Figure 8-277 AC Cable Holder

8-35-4 Installation Procedure

Parts to be installed in reverse order of removal.

8-35-5 Functional Check

Visual inspection Only.

Section 8-36 Replacement of the BW printer

8-36-1 Manpower

1 person, 10 minutes

8-36-2 Tools

Standard Phillips Screwdriver.

8-36-3 Pre work

- 1) Remove Rear Cover. (refer to *section 8-9*)
- 2) Remove Top Cover (refer to *section 8-7*)
- 3) Remove Cable Cover Bracket. (refer to *section 8-17*)
- 4) Remove BW printer Power fix Bracket and Disconnect 2 BW printer cables from printer (refer to *section section 8-29-2*)

8-36-4 Removal Procedure

- 1) Remove 4 screws around BW printer. Refer to following figure.



Rear left



Rear right



Front left



Front right

Figure 8-278 4 screws points for removal of BW printer

- 2) Pull out BW printer as following figure.



Figure 8-279 Pulling out the BW printer

- 3) Remove 4 screws on BW printer bottom part. Refer to following figure.



Figure 8-280 4 screws points

8-36-5 Installation Procedure

- 1) Parts to be installed in reverse order on removal.

8-36-6 Functional Check

Test 1: Print an image by pressing the button P1 on the operator panel. (P1 key should be configured correctly. Refer to *section 3-8-4 Adding Printer to the system*)

Verify1: - Verify that image can be printed.

Verify2: - Verify that printed image has no distortion as compared the image on screen.

Section 8-37 Replacement of the Speaker

8-37-1 Manpower

1 Person, 10 minutes.

8-37-2 Tools

Standard Phillips Screwdriver, Hex Wrench, Nipper, 1 Cable ties (GEPN: 2160955).

8-37-3 Pre work

- 1) Remove Rear Cover. (refer to *section 8-9*)
- 2) Remove Top Cover (refer to *section 8-7*)
- 3) Remove Cable Cover Bracket. (refer to *section 8-17*)

8-37-4 Removal Procedure

- 1) Disconnect Speaker cable. Refer to following figure.



Figure 8-281 Speaker cable connector position

- 2) Remove the cable tie.



Figure 8-282 Cable tie point

- 3) Unlock cable clamp. Refer to following figure.



Figure 8-283 Cable clamp

- 4) Remove 4 screws around speaker assy. Refer to following figure.

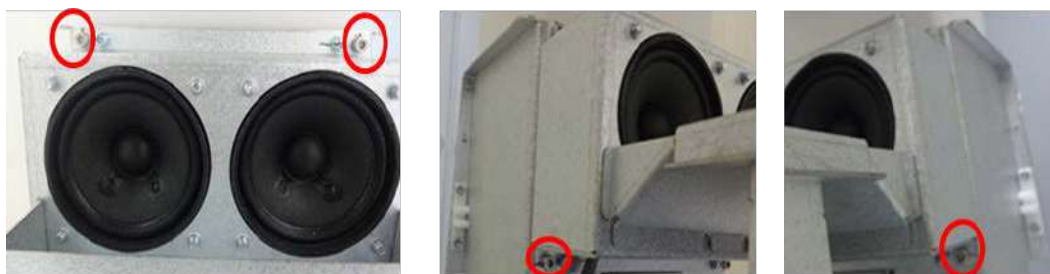


Figure 8-284 4 screws points to remove speaker assy

- 5) Remove 4 screws, and then remove speaker brkt. Refer to following figure.

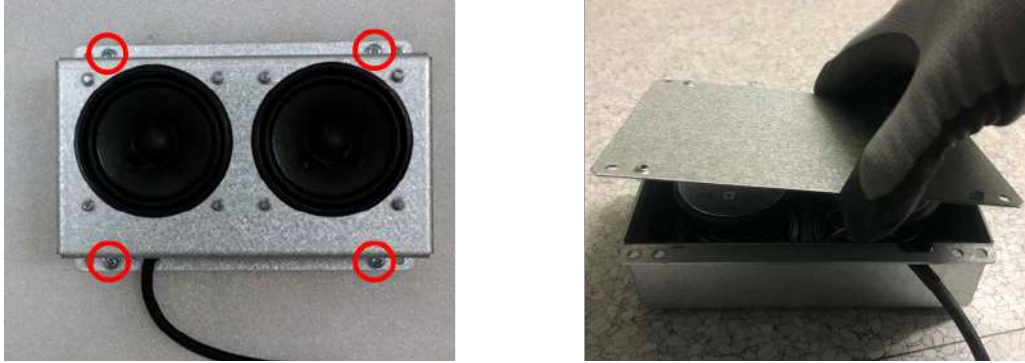


Figure 8-285 4 screw points to remove speaker brkt

- 6) Remove 8 screws and carefully pull out speaker assy. Refer to following figure.

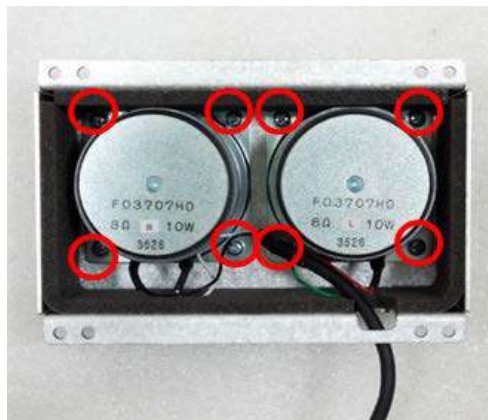


Figure 8-286 8 screws points to remove speaker

8-37-5 Installation

Parts to be installed in reverse order of removal. But, refer to below procedure for cable ties.

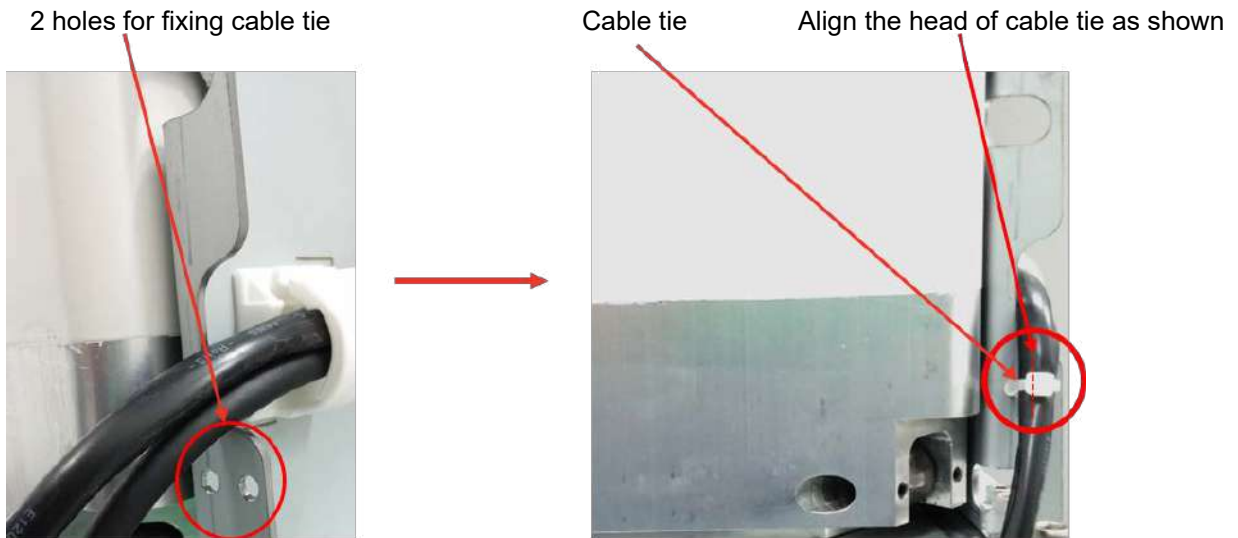


Figure 8-287 Tie cables with the tie through the holes

8-37-6 Functional Check

Perform Diagnostics

- 1) Enter Common Service Desktop
 - 2) Select Diagnostics -> Service Diag -> Doppler Audio -> Execute
- Make sure audible sound comes out of the speaker

NOTE: Make sure system volume is not set to zero.

Section 8-38 Replacement of the Monitor Arm

8-38-1 Manpower

1 person, 15 minutes.

8-38-2 Tools

Standard Phillips Screwdriver, Nipper, 4 mm Hex Wrench, 3 Cable ties (GEPN: 2160955).

8-38-3 Removal Procedure

- 1) Remove LCD monitor and LCD Arm Plastic Covers.(refer to *section 8-11*)
- 2) Remove Harness Cable Assy and Monitor Arm. (refer to *section 8-11-1-4 1)~4*)

8-38-4 Installation Procedure

In reverse order of removal.

8-38-5 Functional Check

- 1) Visually check LCD monitor
- 2) LCD Arm Test. (Refer to *section 4-3-2-2*).

Section 8-39 Replacement of Front Fan Filter

8-39-1 Manpower

1 Person, 2 minutes.

8-39-2 Tools

None Required.

8-39-3 Removal Procedure

- 1) Remove Front Cover. (refer to *section 8-6*)
- 2) Pull out Filter upward. Refer to following figure.



Figure 8-288 Pulling out the front fan filter.

8-39-4 Installation Procedure

In Reverse Order.

8-39-5 Functional Check

Visual inspection Only.

Section 8-40 Replacement of Bottom Fan Filter

8-40-1 Manpower

1 Person, 3 minutes.

8-40-2 Tools

None Required.

8-40-3 Removal Procedure

1) Pull out bottom fan filter as following figure.



Figure 8-289 Removal of bottom fan filter

8-40-4 Installation Procedure

In Reverse Order.

8-40-5 Functional Check

Visual inspection Only.

Section 8-41 Replacement of SW CD set (R1, R2, R2.5 only) and SW USB (R3, R4 and R4.5 only)

8-41-1 Manpower

1 Person, 3 minutes.

8-41-2 Tools

None Required.

8-41-3 Removal Procedure

8-41-3-1 Removal Procedure for R1/R2/R2.5/R3

- 1) Remove Rear Cover. (refer to *section 8-9*)
- 2) CD or USB is placed on Rear Cover.

8-41-3-2 Removal Procedure for R4/R4.5

- 1) Remove Front Cover. (refer to *section 8-6*)
- 2) USB is placed on Front Cover.

8-41-4 Installation Procedure

In Reverse Order.

8-41-5 Functional Check

Visual inspection Only.

Section 8-42 Replacement of Drawer

8-42-1 Manpower

1 Person, 5 minutes.

8-42-2 Tools

Standard Phillips screwdriver.

8-42-3 Removal Procedure

- 1) Pull out the Top cover.

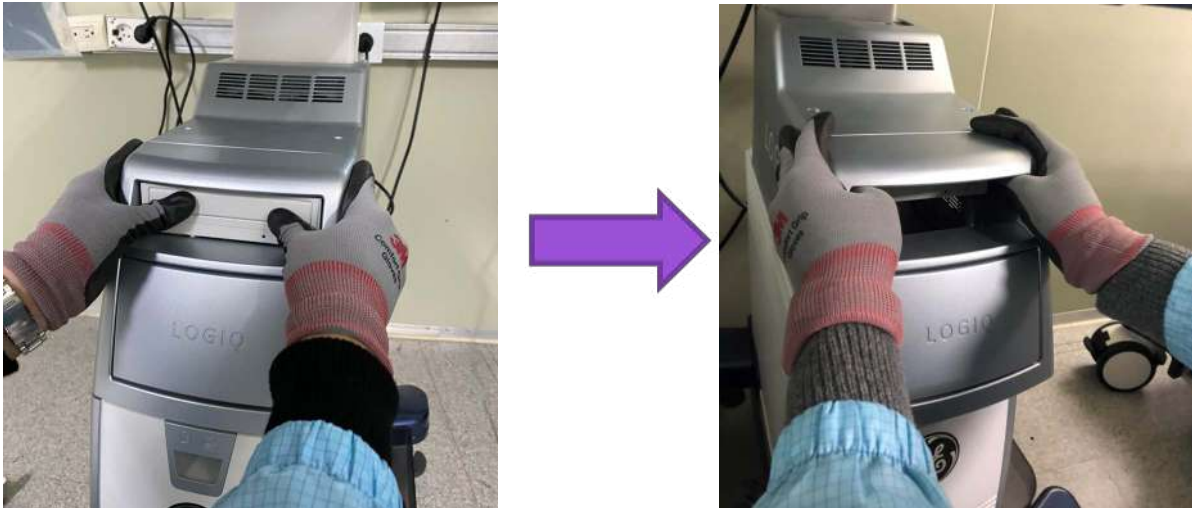


Figure 8-290 Drawing out Top cover.

- 2) Remove 4 screws. Refer to following figure.

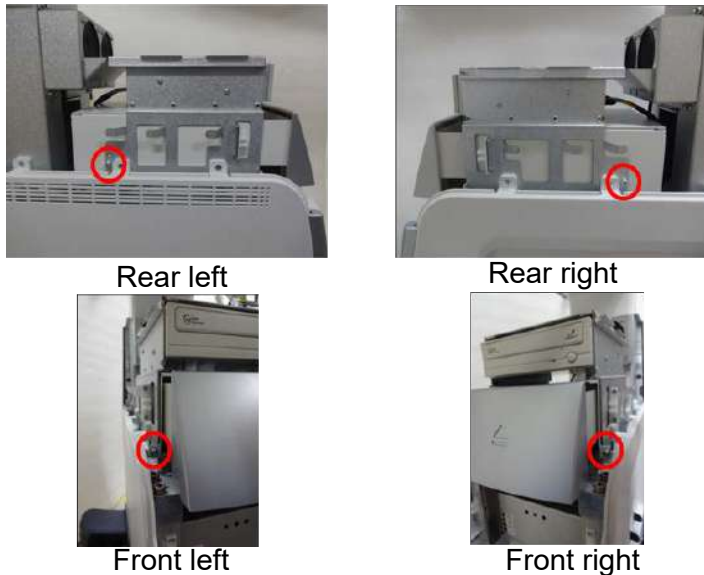


Figure 8-291 Screw point around drawer.

- 3) Carefully pull out the Drawer.

8-42-4 Installation Procedure

Parts to be installed in reverse order on removal.

8-42-5 Functional Check

Visual Check Only

Section 8-43 Replacement of ECG

8-43-1 Manpower

1 Person, 5 minutes.

8-43-2 Tools

Standard Phillips screwdriver.

8-43-3 Removal Procedure

- 1) Remove OPIO covers (refer to *section 8-14*)
- 2) Remove cables on ECG Assy (square) and unscrew 4 screws (circle). Refer to following figure.

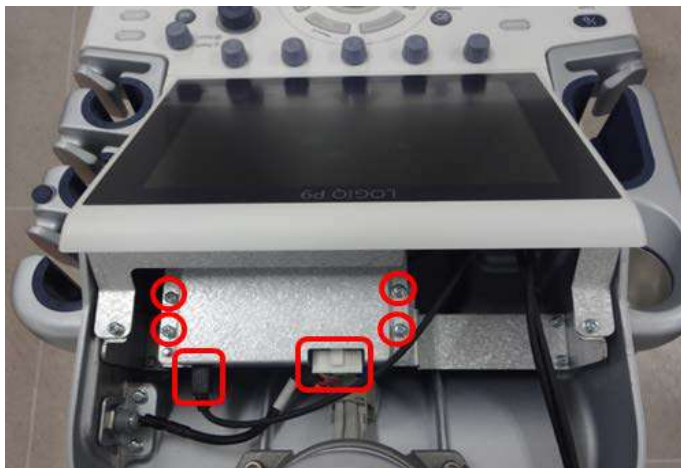


Figure 8-292 Cables position and points.

- 3) Remove ECG Assy.
- 4) Unscrew 4 screws and remove ECG BRKT.

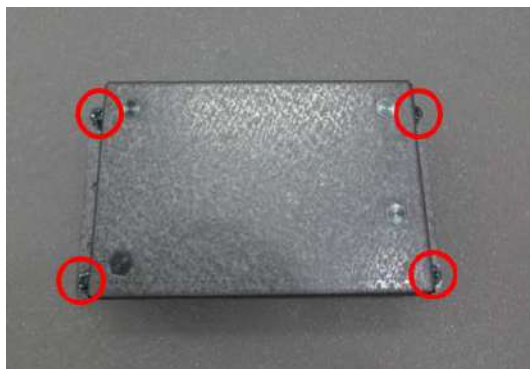


Figure 8-293 ECG BRKT screw points.

- 5) Unscrew 4 screws and remove ECG BRKT

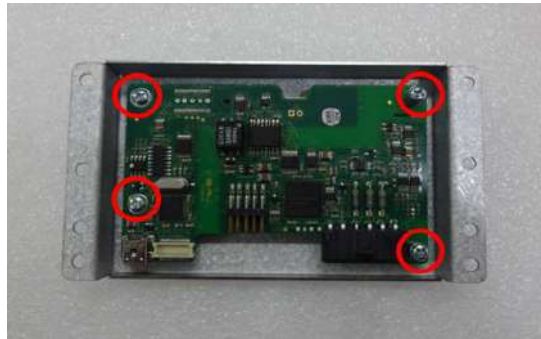


Figure 8-294 ECG screw points.

8-43-4 Installation Procedure

Parts to be installed in reverse order on removal.

8-43-5 Functional Check

Visual Check Only

Section 8-44 Replacement of DCWD ASSY

8-44-1 Manpower

1 person, 15 minutes

8-44-2 Tools

Standard Phillips screwdriver.

8-44-3 Removal Procedure

8-44-3-1 Removal Procedure - R1 to R3

- 1) Separate MPI assy from MCB and MDC. Refer to the *section 8-17-8* Removal Procedure - Separating MPI and MCB.
- 2) Remove 3 screws on MPI assy.

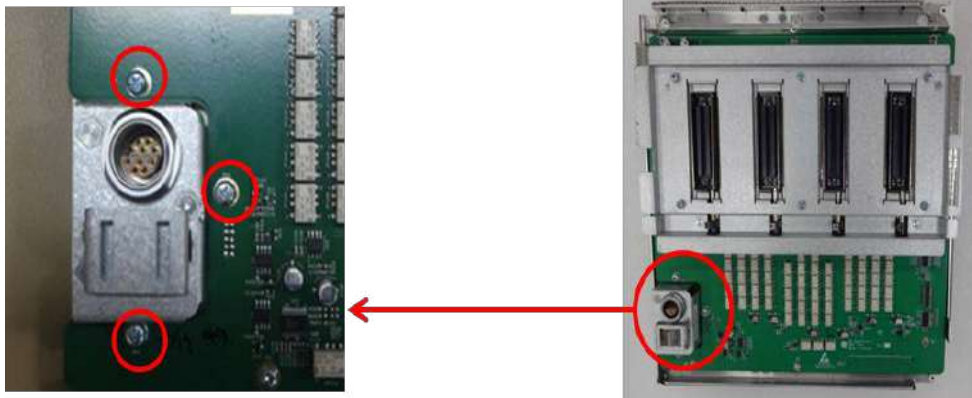


Figure 8-295 DCWD Board screw points

- 3) Carefully separate DCWD board from MPI assy not to damage the DCWD connector. Refer to following figure.

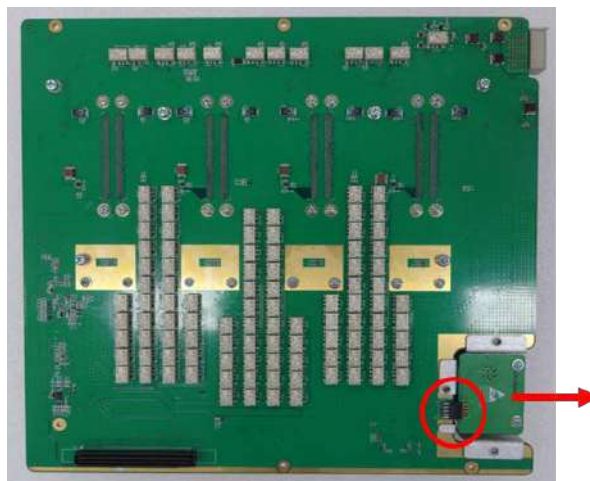


Figure 8-296 Position of DCWD board connector

8-44-3-2 Removal Procedure - R4/R4.5

- 1) Separate MPI assy from MCB and MDC. Refer to the *section 8-17-8* Removal Procedure - Separating MPI and MCB.
- 2) Remove 3 screws on MPI assy.

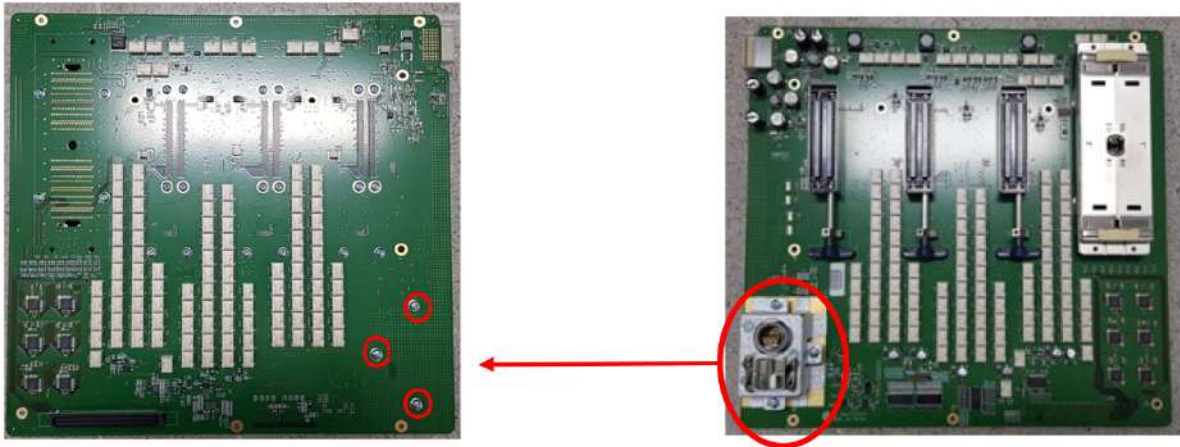


Figure 8-297 DCWD Board screw points

- 3) Carefully separate DCWD board from MPI assy not to damage the DCWD connector. Refer to following figure.

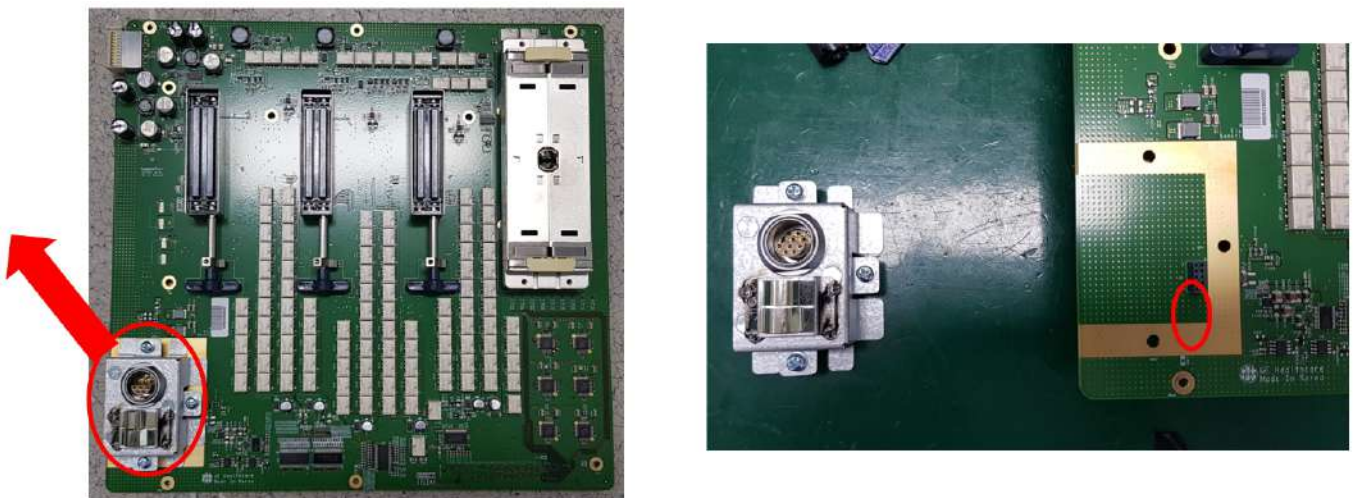


Figure 8-298 Position of DCWD board connector

8-44-4 Installation Procedure

Parts to be installed in reverse order on removal.

8-44-5 Functional Check

Refer to *section 4-4* Functional Diag Test List

Section 8-45 Replacement of MCWD ASSY

8-45-1 Manpower

1 person, 15 minutes

8-45-2 Tools

Standard Phillips Screwdriver.

8-45-3 Removal Procedure

- 1) Separate MCB Assy and MDC Assy. (Refer to section 8-17-7)
- 2) Unscrew 1 screw and remove MCWD assy

NOTE: Be careful not to damage MCWD connector.

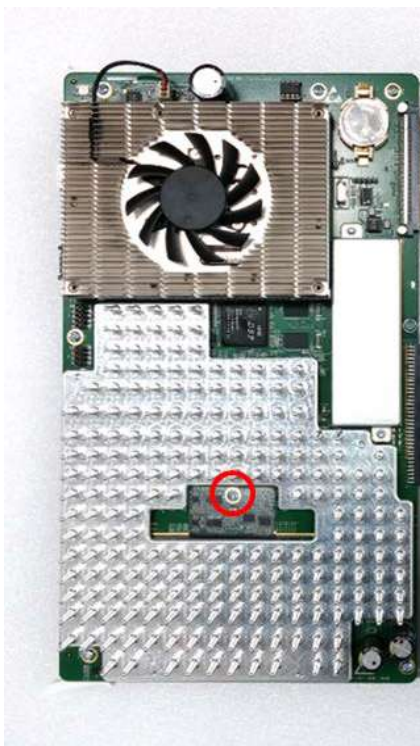


Figure 8-299 Removal of MCWD board.

8-45-4 Installation Procedure

Parts to be installed in reverse order on removal.

8-45-5 Functional Check

NOTE: Refer to section 4-4 Functional Diag Test List

Section 8-46 Replacement of battery pack for LP7-P9 R2 ext battery pack

8-46-1 Manpower

1 person, 30 minutes

8-46-2 Tools

Standard Phillips Screwdriver, Hex-Wrench

8-46-3 Removal Procedure

- 1) Unscrew 2 screws and then pull out the BATTERY PACK COVER BRKT LP7_P9 from 6 points of LATCH.

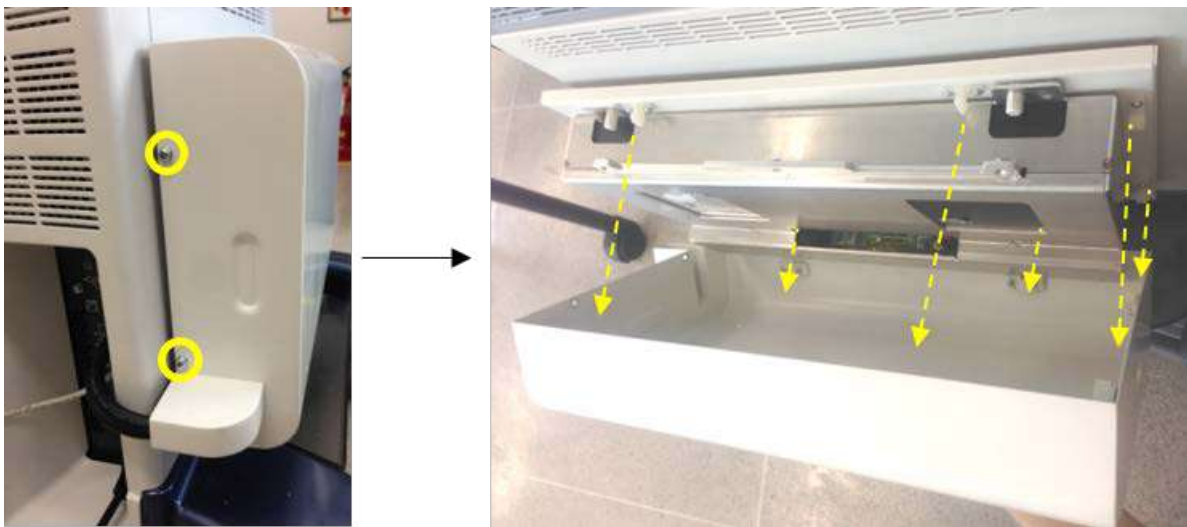


Figure 8-300 Removing the BATTERY PACK COVER BRKT LP7_P9

- 2) Unscrew 2 screws to remove CONNECTOR BRKT.



Figure 8-301 Unscrewing 2 screws to remove CONNECTOR BRKT

- 3) Disconnect BATTERY SIG Harness and PWR Harness.

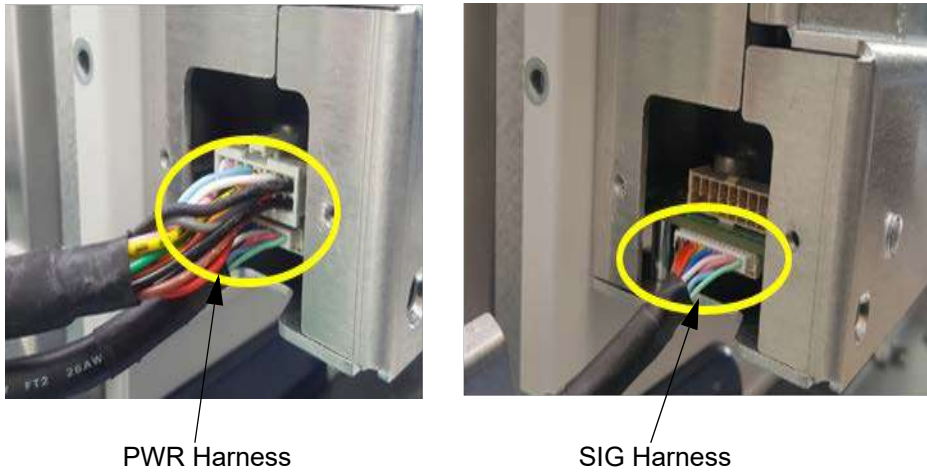
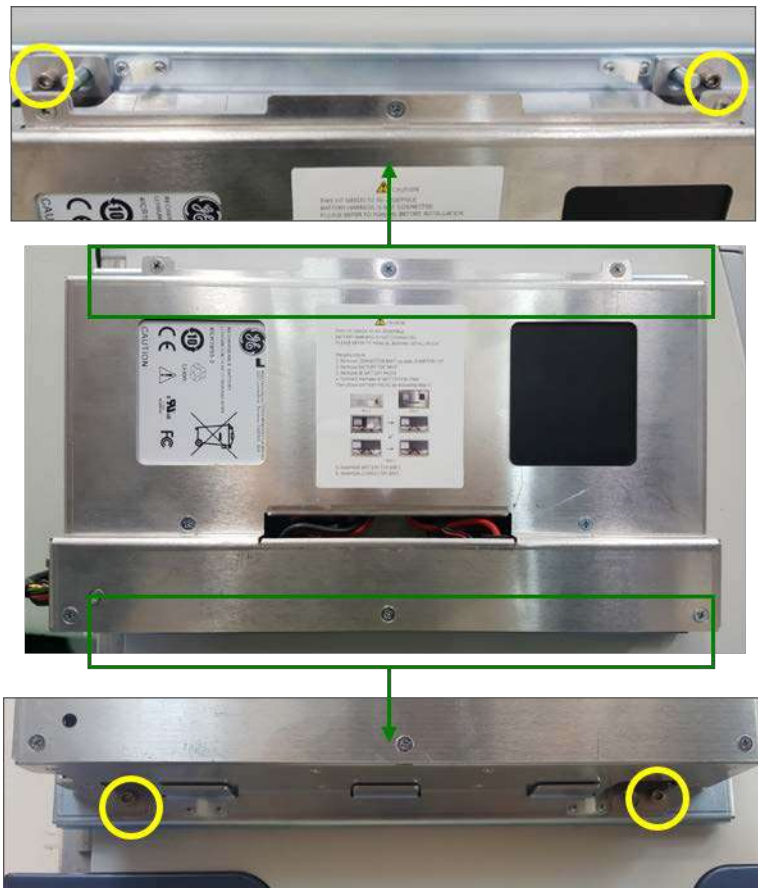


Figure 8-302 Disconnecting BATTERY Harnesses

- 4) Unscrew 4 screws.



- 5) Disassemble LP7-P9 R2 EXT BATTERY PACK from extrude shape of BATTERY PACK FRAME BRKT.

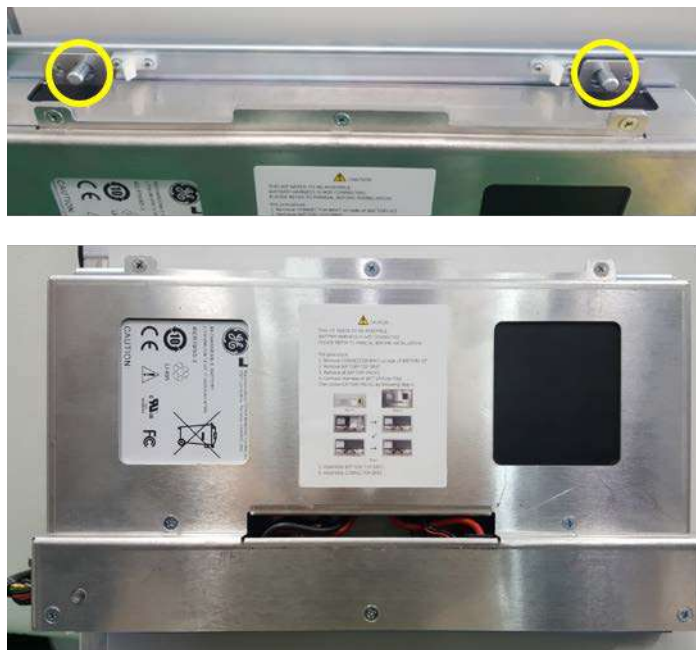


Figure 8-304 Removing LP7-P9 R2 EXT BATTERY PACK

- 6) Unscrew 8 screws to remove BATTERY PACK TOP BRKT.

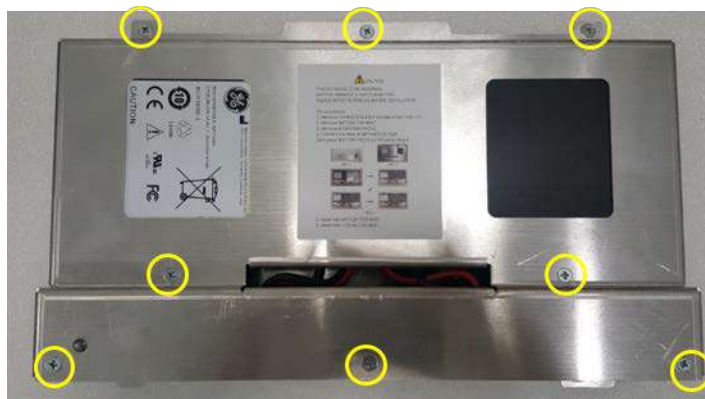


Figure 8-305 Unscrewing 8 screws to remove BATTERY PACK TOP BRKT

- 7) Lift up POLARIS BATTERY PACK and disconnect BATTERY Harness from PWA. Then remove POLARIS BATTERY PACK.

NOTE: Once replacing battery pack, all of battery packs (4 pcs) need to be replaced in same time.

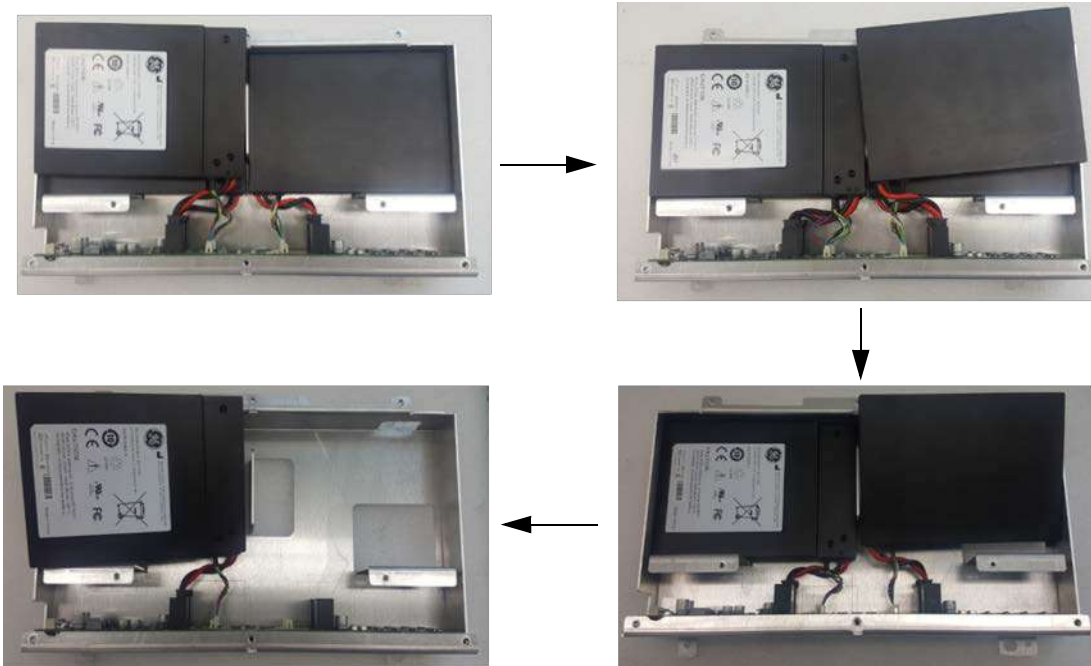


Figure 8-306 Removing POLARIS BATTERY PACKS

8-46-4 Installation Procedure

NOTE: Once replacing battery pack, all of battery packs (4 pcs) need to be replaced in same time.

All components to be installed in reverse order of removal.

8-46-5 Functional Check

- 1) Turn on the circuit breaker.



Figure 8-307 Turning on circuit breaker

- 2) Boot-up the console using power button on OPIO ASSY.



Figure 8-308 Booting-up using power button

- 3) Check that battery icon is displayed on left bottom side.



Figure 8-309 Checking battery icon

- 4) Switch off the circuit breaker (Wall power mode -> Battery mode). Confirm that is operating with battery mode.

Section 8-47 Replacement of battery pack for LP7-P9 R2 Battery option

8-47-1 Manpower

1 person, 30 minutes

8-47-2 Tools

Standard Phillips Screwdriver, Hex-Wrench, Socket driver

8-47-3 Removal Procedure

- 1) Unscrew 2 screws to remove POWER CORD FIX BRKT. Then disconnect POWER CORD and remove REAR COVER.



Figure 8-310 Removing POWER CORD FIX BRKT, POWER CORD and REAR COVER

- 2) Unscrew 5 screws to remove REAR CABLE COVER BRKT. Then disconnect all cables.

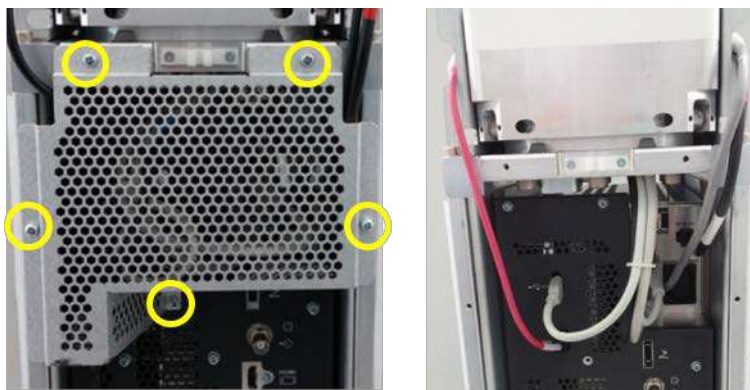


Figure 8-311 Unscrewing 5 screws to remove REAR CABLE COVER BRKT and disconnect cables

- 3) Unscrew 7 screws to remove the NEST EMI BRKT and pull out MIO ASSY from system.

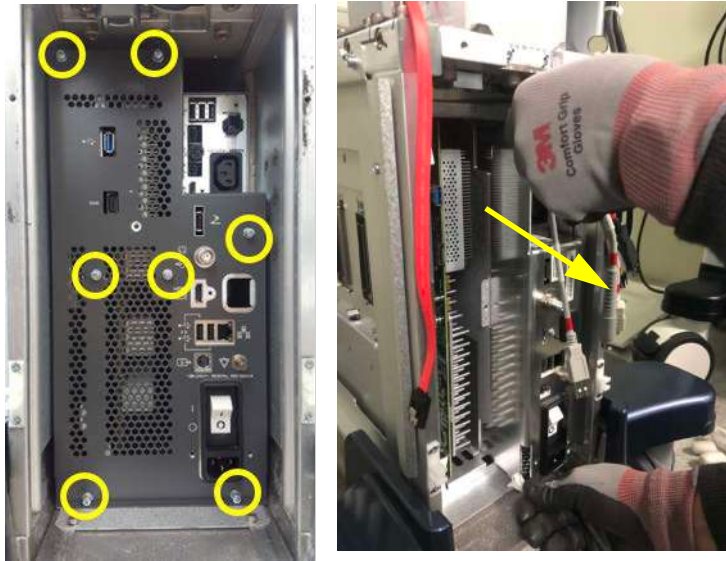


Figure 8-312 Unscrewing 7 screws to remove NEST EMI BRKT and MIO ASSY

- 4) Unscrew 12 screws to remove the MIO BOX BRKT.



Figure 8-313 Unscrewing 12 screws to remove MIO BOX BRKT

- 5) Disconnect 2 connectors of BATTERY and unscrew 4 screws to remove BATTERY ASSY.

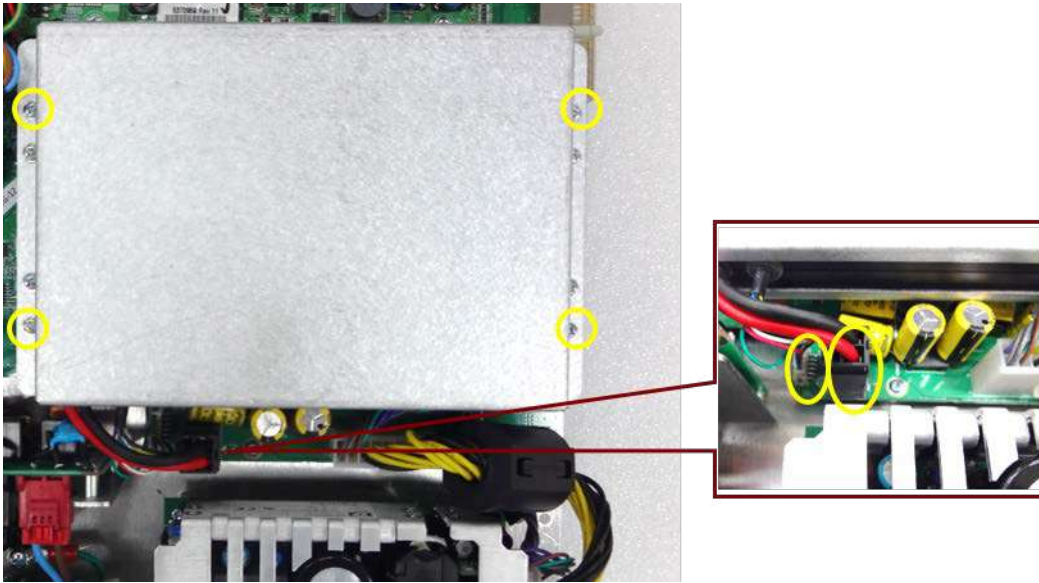


Figure 8-314 Removing BATTERY ASSY

- 6) Unscrew 4 screws to remove BATTERY TOP BRKT. Then remove POLARIS BATTERY PACK.

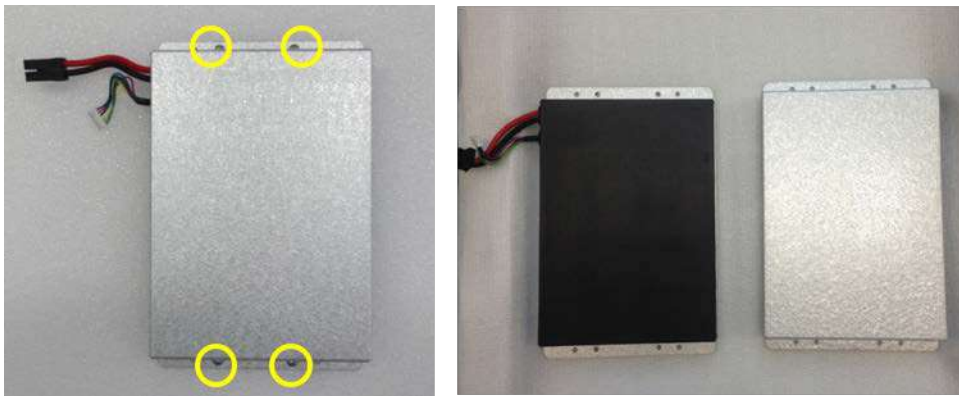


Figure 8-315 Removing BATTERY TOP BRKT to remove POLARIS BATTERY PACK

8-47-4 Installation Procedure

All components to be installed in reverse order of removal.

8-47-5 Functional Check

- 1) Turn on the circuit breaker.



Figure 8-316 Turning on circuit breaker

- 2) Boot-up the console using power button on OPIO ASSY.



Figure 8-317 Booting-up using power button

- 3) Check that battery icon is displayed on left bottom side.



Figure 8-318 Checking battery icon

- 4) Switch off the circuit breaker (Wall power mode -> Battery mode). Confirm that is operating with battery mode.

Section 8-48 Replacement of MBOB

8-48-1 Manpower

1 person, 20 minutes

8-48-2 Tools

Standard Phillips Screwdriver

8-48-3 Removal Procedure

- 1) Remove POWER CORD FIX BRKT and POWER CORD.



Figure 8-319 Removing POWER CORD FIX BRKT and POWER CORD

- 2) Remove REAR COVER ASSY.

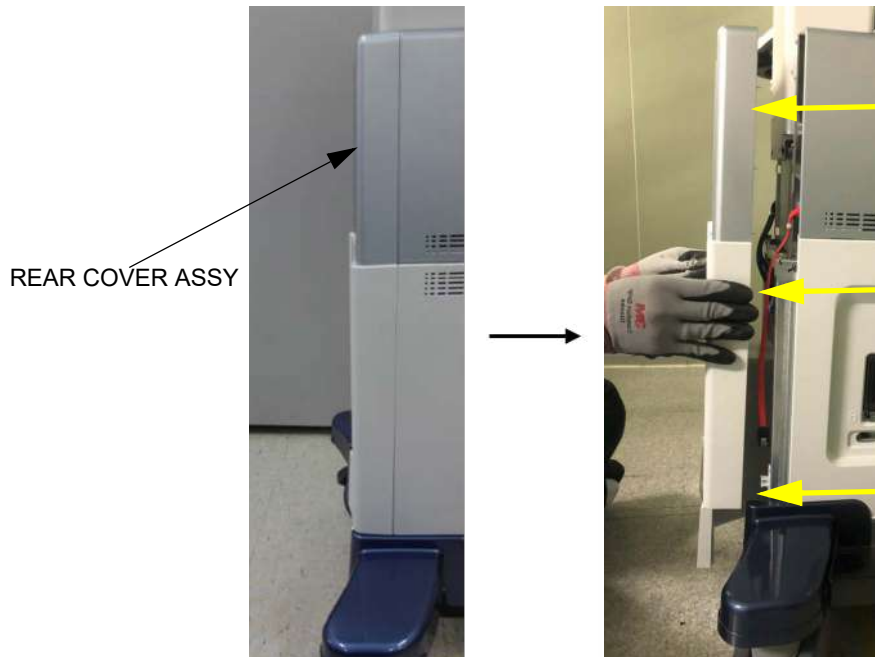


Figure 8-320 Removing REAR COVER ASSY

- 3) Unscrew 5 screws and remove REAR CABLE COVER BRKT.

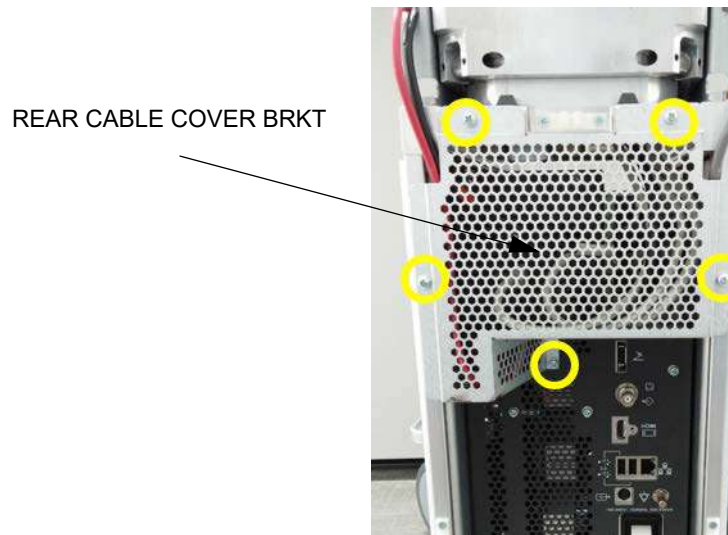


Figure 8-321 Unscrewing 5 screws

- 4) Remove CABLES (RED CIRCLE) and unscrew 7 screws, then remove NEST EMI BACK BKRT.

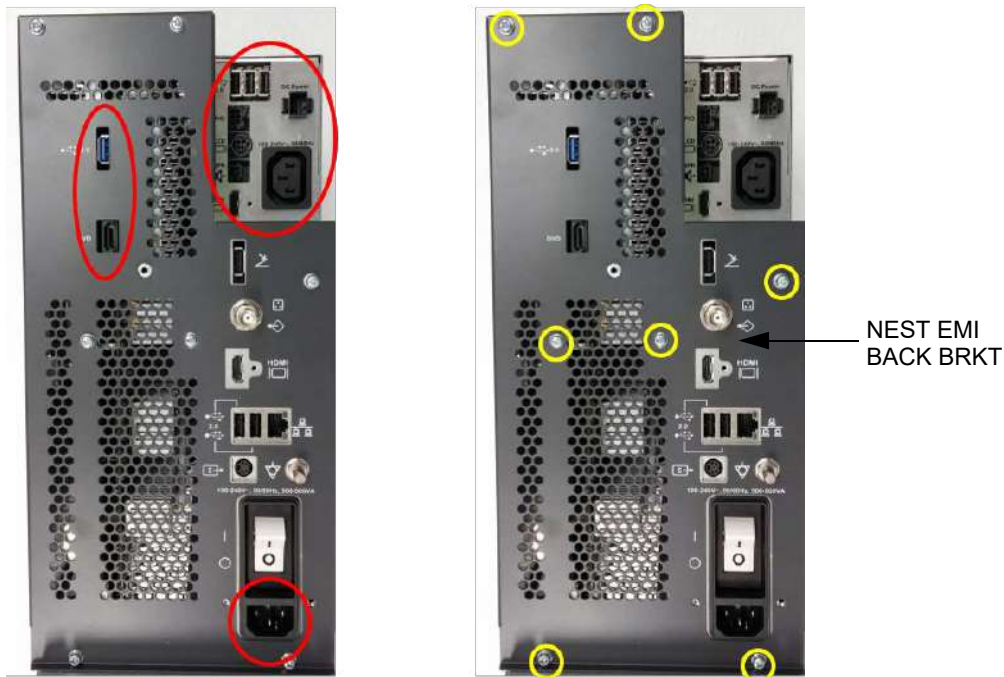


Figure 8-322 Removing CABLES (RED CIRCLE) and unscrewing 7 screws

5) Draw IO BOX from NEST FRAME.



Figure 8-323 Drawing IO BOX from NEST FRAME

6) Unscrew 12 screws and remove MIO BOX BRKT.



Figure 8-324 Unscrewing 12 screws

- 7) Disconnect PWR and SIG connectors.

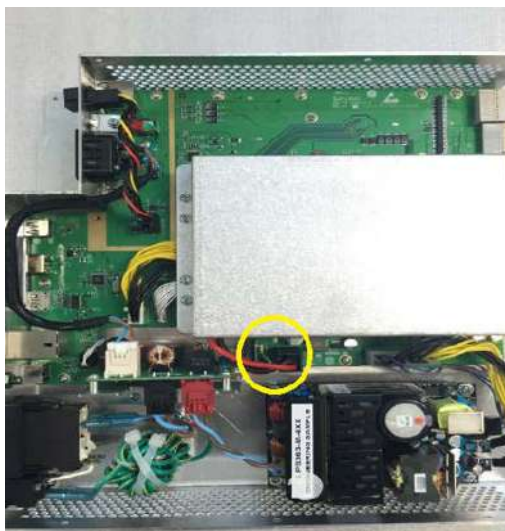


Figure 8-325 Disconnecting PWR and SIG connectors

- 8) Disassemble BATTERY ASSY.



Figure 8-326 Disassembling BATTERY ASSY

- 9) Disassemble MBOB PWR HARNESS (5728317) and MBOB SIG HARNESS (5728318)

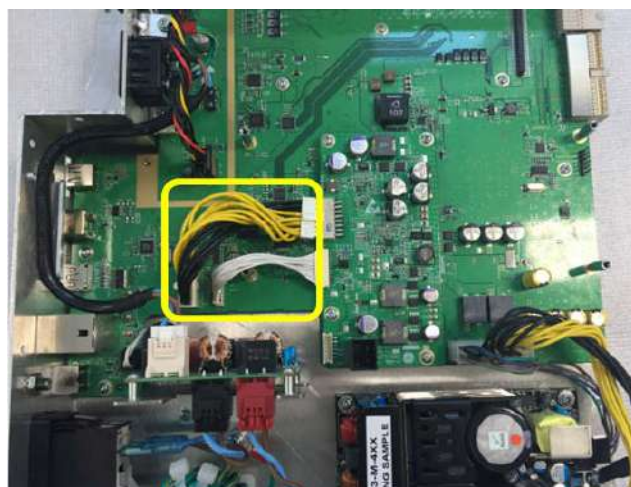


Figure 8-327 Disassembling MBOB PWR HARNESS (5728317) and MBOB SIG HARNESS (5728318)

10) Disassemble MBOB PWA from MIO-B PWA

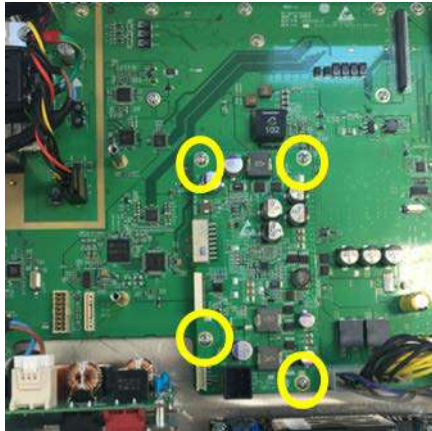


Figure 8-328 Disassembling MBOB PWA

8-48-4 Installation Procedure

All components to be installed in reverse order of removal.

8-48-5 Functional Check

Refer to *section 4-4* for Functional Diag Test List.

Section 8-49 Replacement of MIO-B

8-49-1 Manpower

1 person, 20 minutes

8-49-2 Tools

Standard Phillips Screwdriver

8-49-3 Removal Procedure

1) Unscrew 12 screws and remove MIO BOX BRKT.

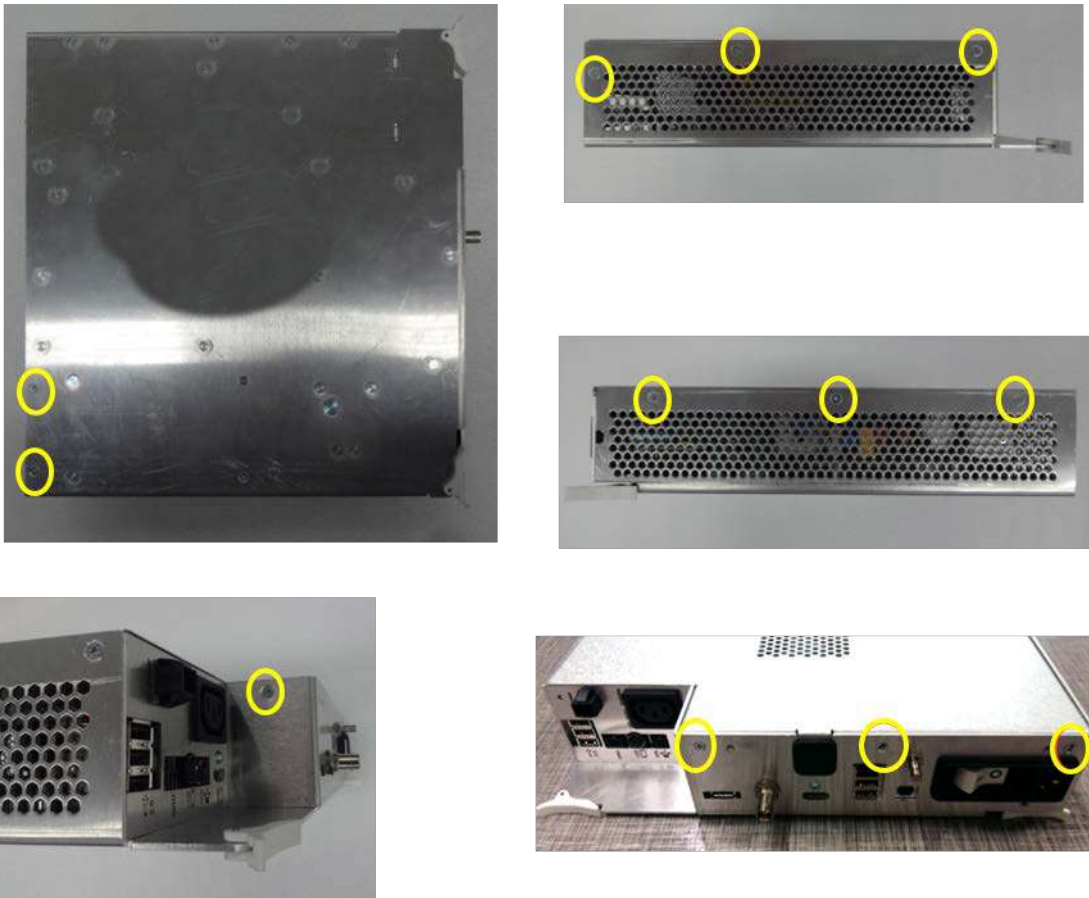


Figure 8-329 Unscrewing 12 screws

- 2) Disassemble ACFL BOARD FIX BRKT(5538682).

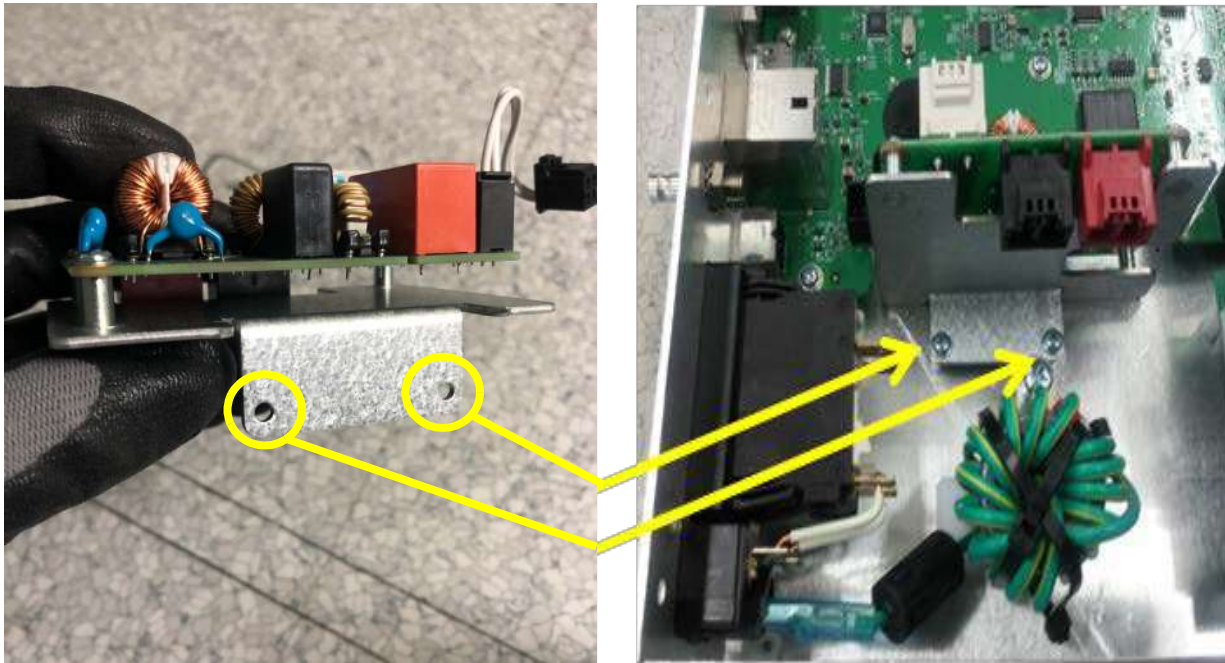


Figure 8-330 Disassembling ACFL BOARD FIX BRKT(5538682)

- 3) Disassemble Nut from the IOBOX-B Chassis Bracket

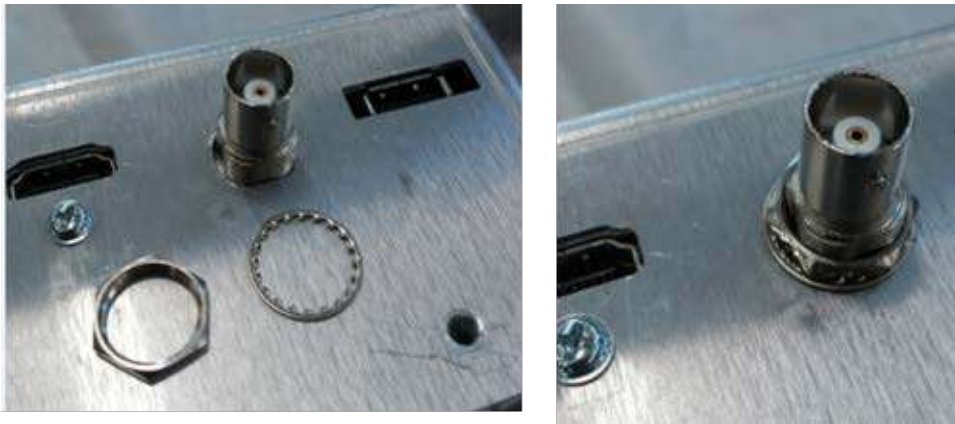


Figure 8-331 Disassembling Nut from the IOBOX-B Chassis Bracket

4) Disassemble the following screws

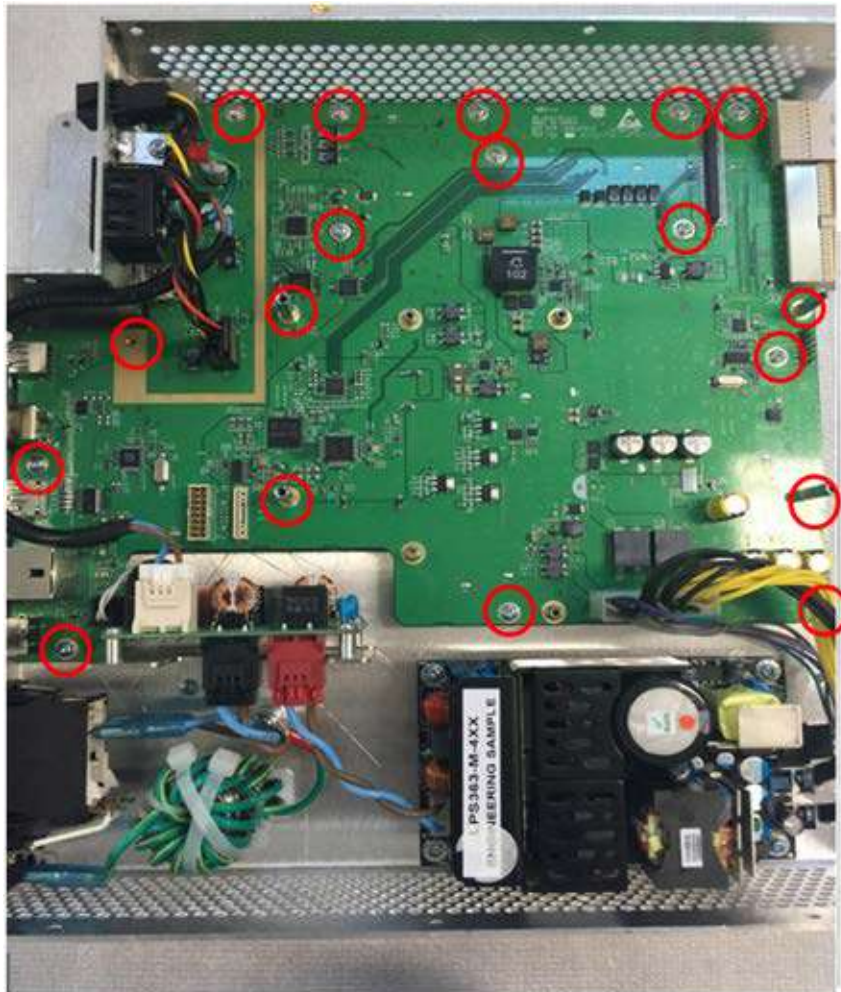


Figure 8-332 Disassembling the following screws

8-49-4 Installation Procedure

All components to be installed in reverse order of removal.

8-49-5 Functional Check

Refer to *section 4-4* for Functional Diag Test List.

Section 8-50 Replacement of BBC

8-50-1 Manpower

1 person, 30 minutes

8-50-2 Tools

Standard Phillips Screwdriver, Hex-Wrench

8-50-3 Removal Procedure

- 1) Unscrew 2 screws to remove COVER BRKT.

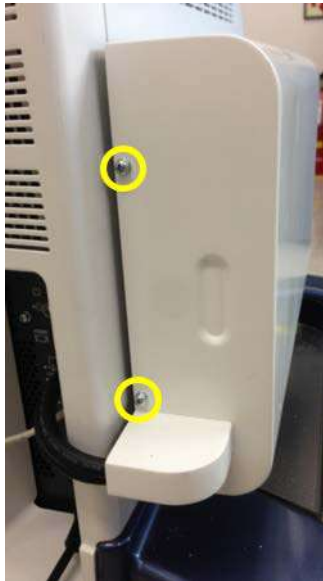


Figure 8-333 Unscrewing 2 screws to remove COVER BRKT

- 2) Disassemble BATTERY PACK COVER BRKT.



Figure 8-334 Disassembling BATTERY PACK COVER BRKT

- 3) Disassemble CONNECTOR BRKT using 2 screws. (2327596, SCREW WH M3X6)

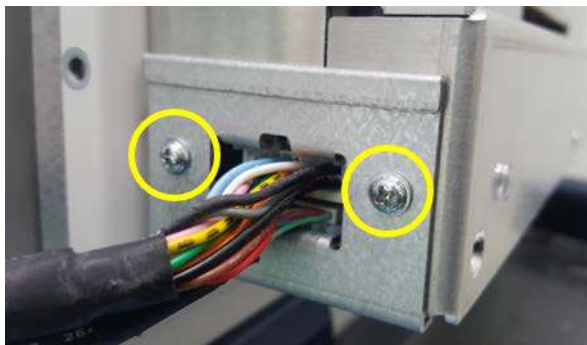


Figure 8-335 Disassembling CONNECTOR BRKT using 2 screws

- 4) Disconnect BATTERY SIG HARNESS and PWR HARNESS.

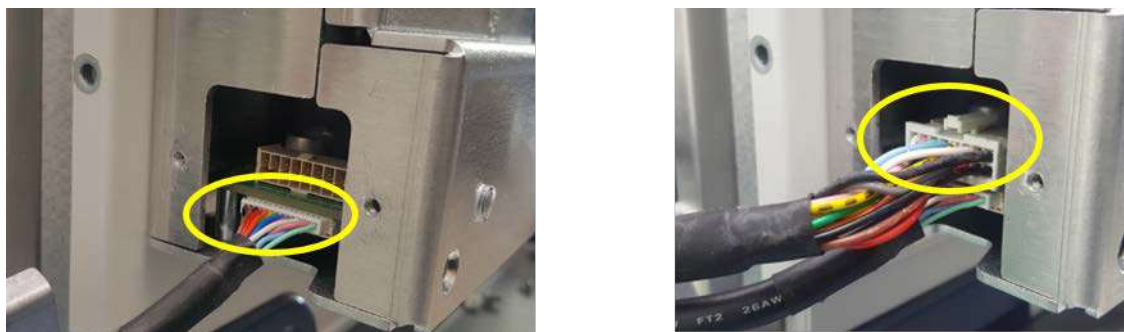


Figure 8-336 Disconnecting BATTERY SIG HARNESS and PWR HARNESS

NOTE: Both connectors are locking type. Please pull out connectors pressing locking points.

- 5) Unscrew LP7-P9 R2 EXT BATTERY PACK from BATTERY PACK FRAME BRKT LP7_9 using 4 screws (5431313, SCREW HSH M5X10).

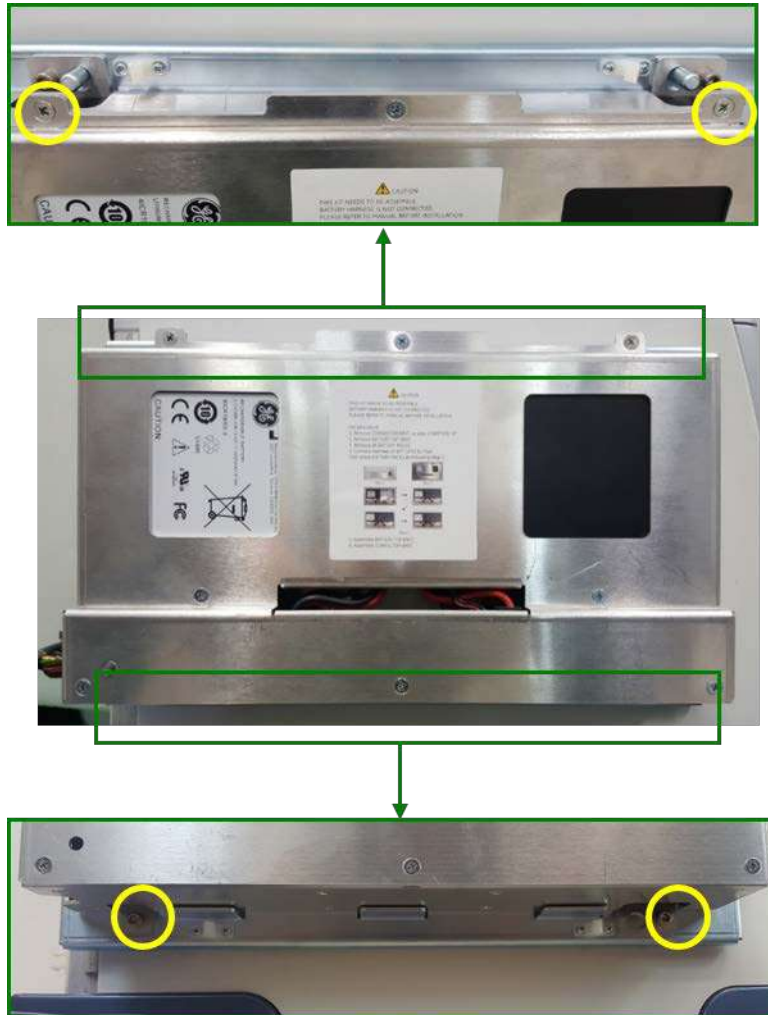


Figure 8-337 Unscrewing LP7-P9 R2 EXT BATTERY PACK from BATTERY PACK FRAME BRKT LP7_9 using 4 screws

- 6) Pull out LP7-P9 R2 EXT BATTERY PACK from BATTERY PACK FRAME BRKT



Figure 8-338 Pulling out LP7-P9 R2 EXT BATTERY PACK from BATTERY PACK FRAME BRKT

- 7) Unscrew 8 screws to remove BATTERY PACK TOP BRKT.

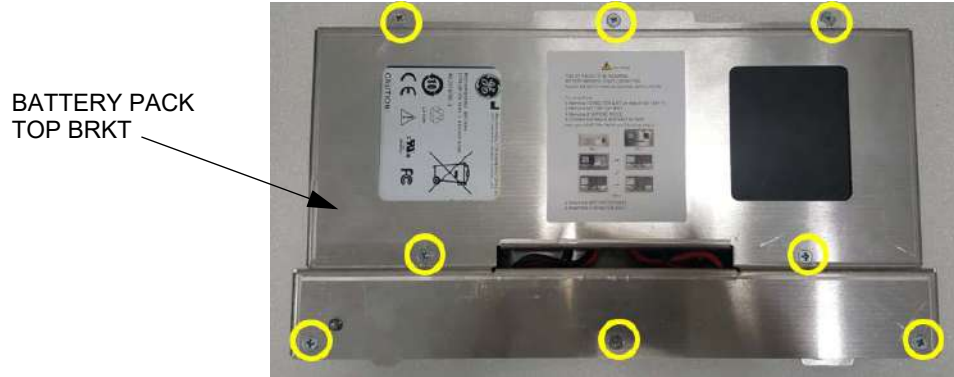


Figure 8-339 Unscrewing 8 screws to remove BATTERY PACK TOP BRKT

- 8) Remove 4 BATTERY PACKS.

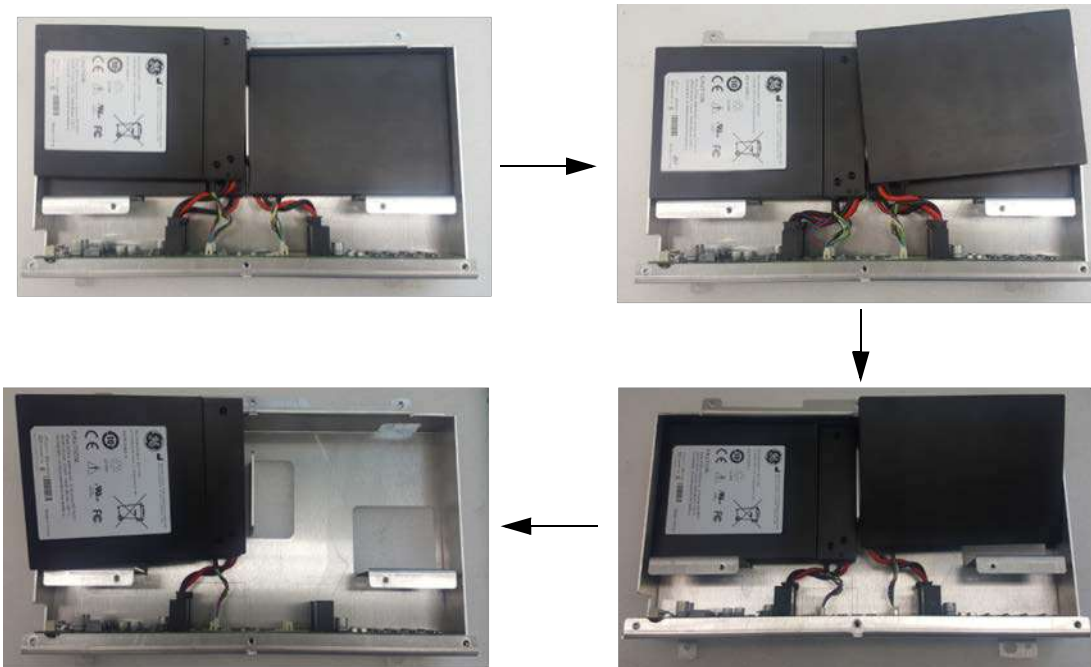


Figure 8-340 Removing 4 BATTERY PACKS

9) Disassemble BBC PWA

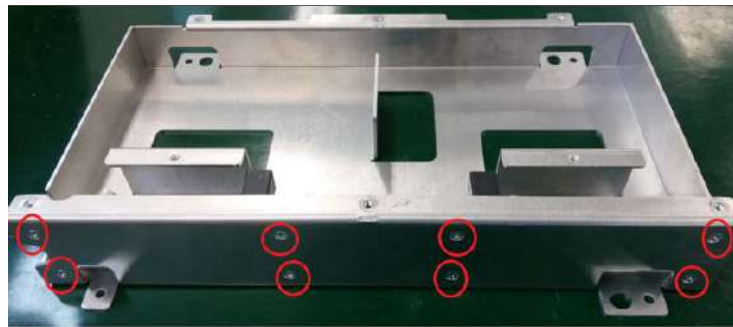
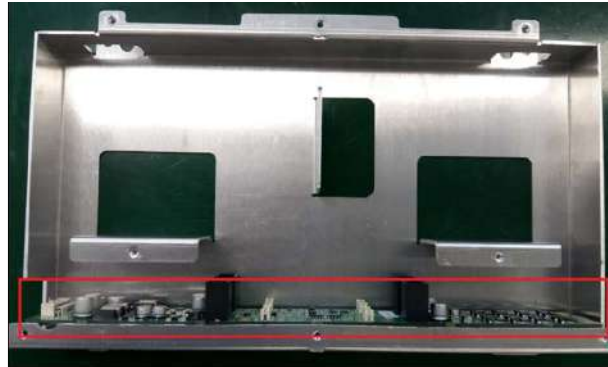


Figure 8-341 Disassembling BBC PWA

8-50-4 Installation Procedure

All components to be installed in reverse order of removal.

8-50-5 Functional Check

Refer to *section 4-4* for Functional Diag Test List.

Section 8-51 Replacement of ROTATION MODULE KIT

8-51-1 Replacement of LOGIQ P9 ROTATION MODULE KIT (R1 to R3)

8-51-1-1 Manpower

1 person, 30 minutes

8-51-1-2 Tools

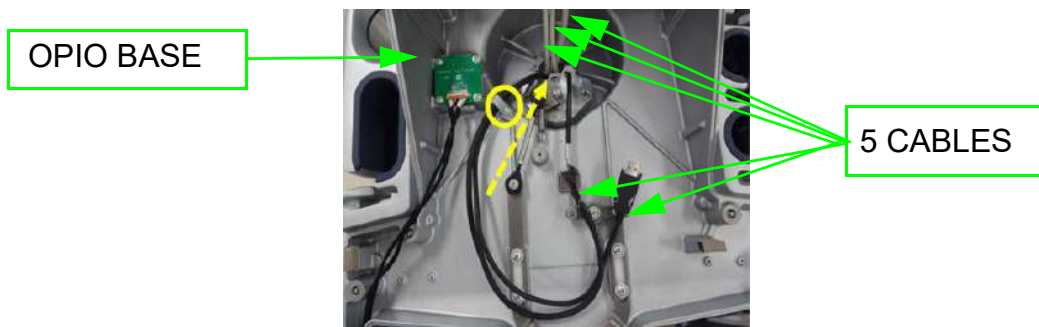
Standard Phillips Screwdriver, Nipper, Torque wrench: Needed HEX wrench - 4mm HEX wrench (For M5 HEX Screw), Needed force - 60 Kgf·cm (For screw tighten force), Monkey Spanner (For NUT M4), Hot air blower or Electric hair dryer

8-51-1-3 Removal Procedure

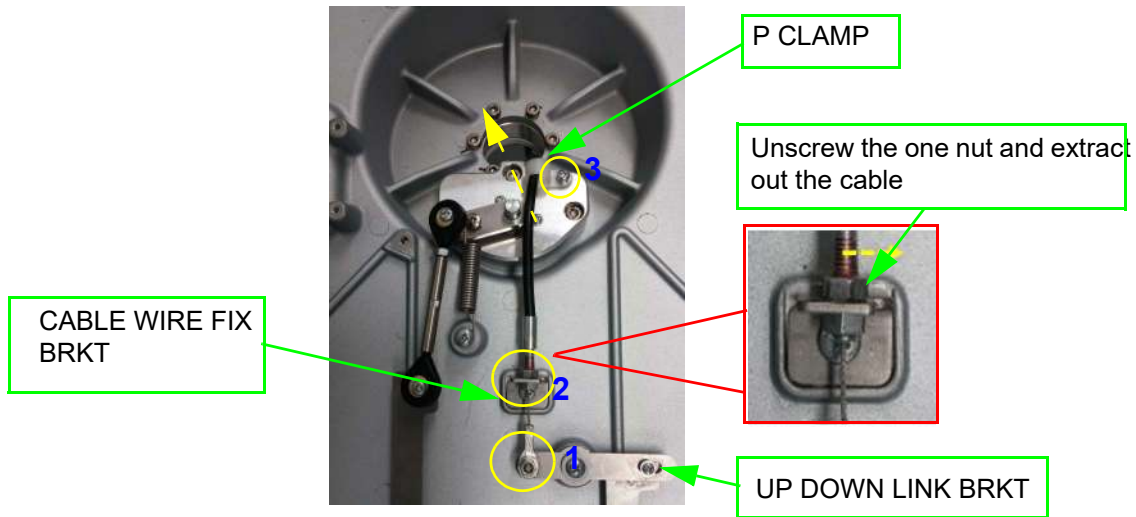
- 1) Remove the Monitor, Monitor Arm and OPIO Assy.
- 2.) Unlock cable clamp and carefully pull down 3 cables.



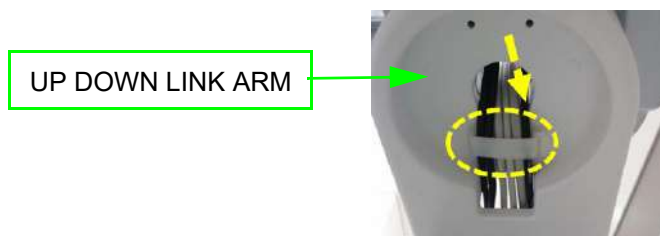
- 3.) Unscrew 1 screw and remove the cable clamp, and then extract out the 5 cables through the hole of OPIO BASE.



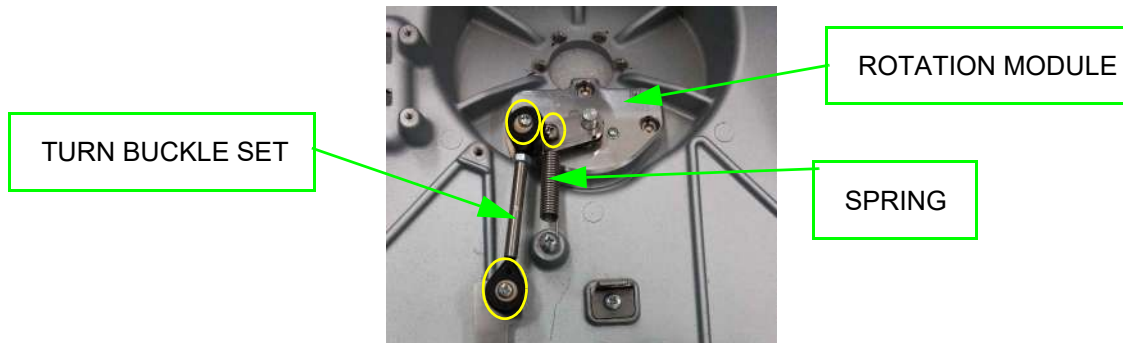
- 4.) Unscrew nut and unfix the cable wire from the UP DOWN LINK BRKT.
- 5.) Unscrew nut and unfix the cable wire from the CABLE WIRE FIX BRKT.
- 6.) Unscrew 1 screw and remove the P CLAMP, and then extract out the cable through hole of the OPIO base.



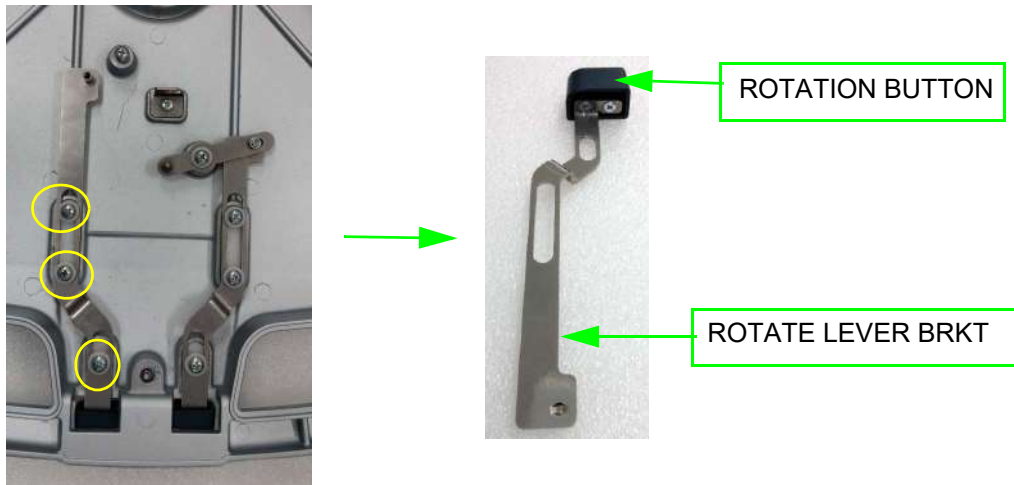
- 7.) Unlock CABLE CLAMP, and then extract out the all cables from the OPIO base and the UP DOWN LINK ARM.



- 8.) Unscrew 3 screws and remove the TURN BUCKLE SET and SPRING from the ROTATION MODULE ASSY.



- 9.) Unscrew 3 screws and remove the ROTATE LEVER BRKT from OPIO base.
10.) Unscrew 2 screws and remove the ROTATION BUTTON from ROTATE LEVER BRKT.



- 11.) Unscrew 3 screws and remove the ROTATION MODULE ASSY from the OPIO base.

 **CAUTION** When reassemble the ROTATION MODULE ASSY, HSH screw should be tightened proper torque (60kgf-cm)

 **CAUTION** When reassemble the screws, please use SCREW HSH M5X16 NYLOK(5729013).



12.) Unscrew 6 screws and carefully remove the OPIO base.

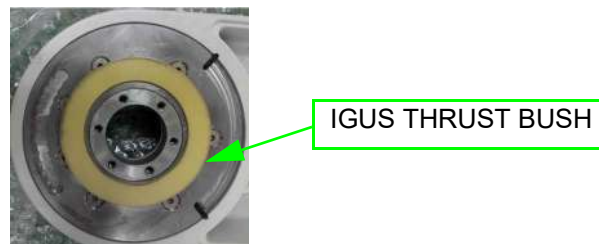
 **CAUTION** When reassemble the OPIO base, HSH screw should be tightened proper torque (60kgf-cm).

 **CAUTION** When reassemble the screws, please use SCREW HSH M5X16 NYOK (5729013).

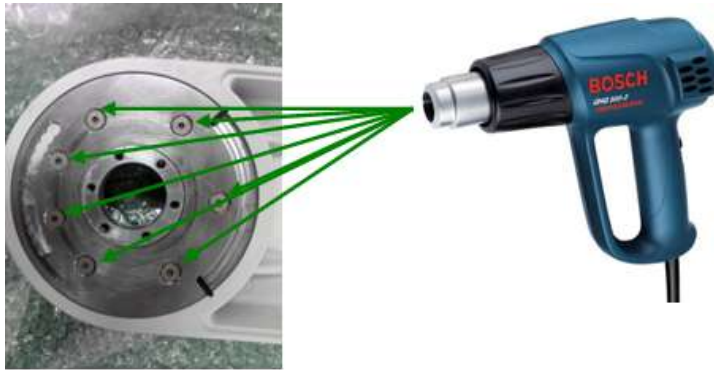


13.) Remove the IGUS THRUST BUSH.


 **CAUTION** DO NOT wipe out grease from part.



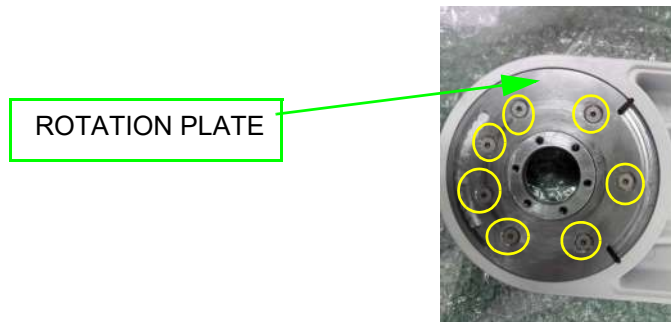
14.) Each screws should be heated for 5 minutes by HOT AIR BLOWER or ELECTRIC HAIR DRYER to melt LOCTITE on screw before unscrew the screw. (**Caution hot surfaces**)



15.) Unscrew 7 screws and then remove the ROTATION PLATE.

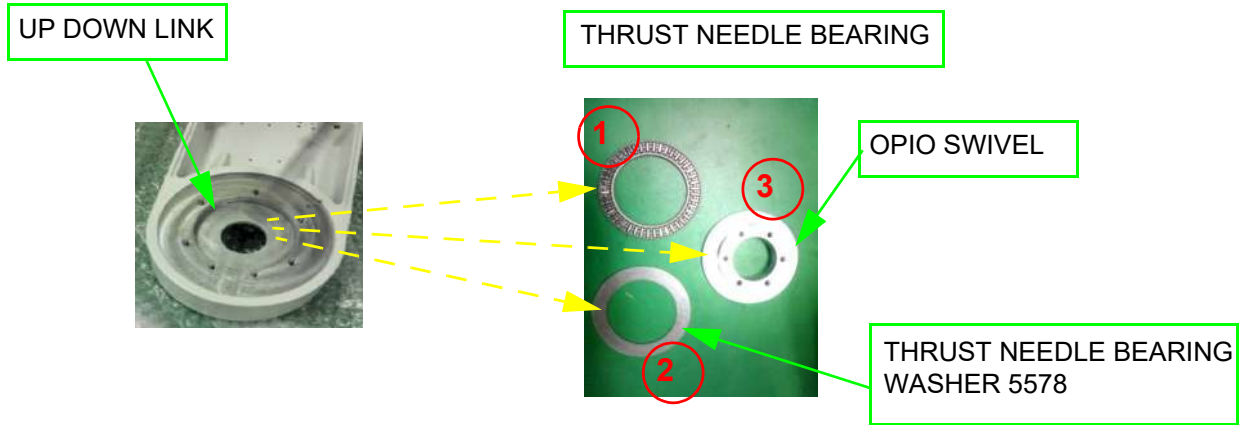
 **CAUTION** When reassemble the ROTATION MODULE ASSY, HSH screw should be tightened proper torque (60kgf-cm). When reassemble the screws, please use SCREW FSH M5X16 NYLOK(5729014).

 **CAUTION** Carefully unscrew the each screw to prevent wear of screw head.



16.) Remove the THRUST NEEDLE BEARING WASHER 5578, THRUST NEEDLE BEARING 5578, OPIO SWIVEL SHAFT from the UP DOWN LINK ARM in order.

 **CAUTION** Do not wipe out grease from part.



8-51-1-4 Installation Procedure

Parts to be installed in reverse order on removal. But ROTATION PLATE, OPIO SWIVEL SHAFT, ROTATE LEVER BRKT and ROTATION MODULE ASSY should be reassembled using new parts.

8-51-1-5 Functional Check

| Test | Refer to | Note |
|-----------------------------------|---|----------------|
| System Exterior Visual Check | section 4-3-1 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| Mechanical Parts Functional Check | section 4-3-2 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| Power On/Off | section 4-3-3 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| System Integration Checks | section 4-3-5 of LOGIQ P8P9P10 PSM(GPN : 5599028) | OPIO Test only |

8-51-2 Replacement of LOGIQ P8/P9/P10 ROTATION MODULE KIT (R4 and R4.5)

8-51-2-1 Manpower

1 person, 30 minutes

8-51-2-2 Tools

Standard Phillips Screwdriver, Nipper, Torque wrench : needed HEX wrench – 4mm HEX wrench (For M5 HEX Screw), Needed force – 60Kgf·cm (For screw tighten force), Hot air blower or Electric hair dryer, 6 Cable ties (GEPN : 2160955)

8-51-2-3 Pre-Work

- 1) Rear Cover removal (refer to *section 8-9*)
- 2) OPIO removal (refer to *section 8-14*)
- 3) Monitor and arm cover removal (refer to *section 8-11*)
- 4) Main monitor cables disconnected (refer to *section 8-11*)

8-51-2-4 Removal Procedure

- 1) Unscrew 1 screw and remove the cable clamp, and then extract our the 5 cables through the hole of OPIO BASE

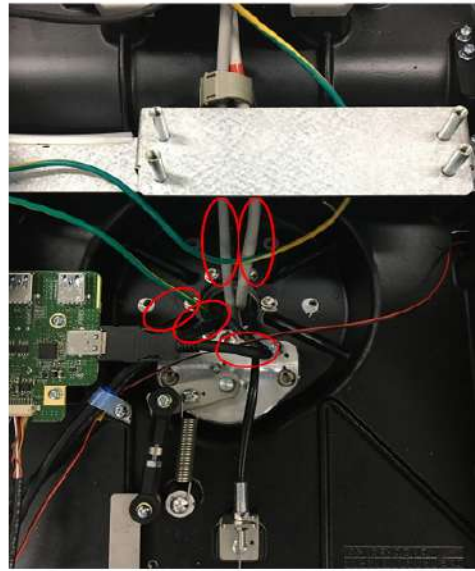
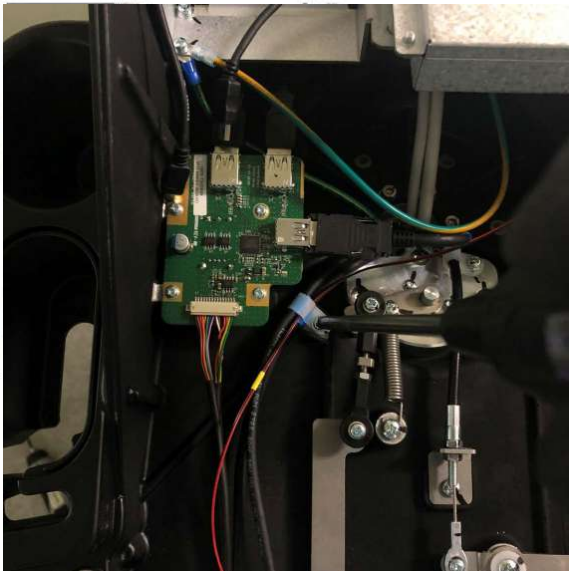


Figure 8-342 Unscrewing 1 screw and extract 5 cables through the OPIO BASE Hole

- 2) Unscrew 1 screw and disassemble the cable wire from the bracket.



Figure 8-343 Unscrewing 1 screw and disassemble the cable wire

- 3) Unscrew nut and disassemble the cable wire from the bracket with the arrow direction.



Figure 8-344 Unscrewing nut and disassemble the cable wire

- 4) Unlock cable clamp, and then extract 5 cables and cable wire from the Hole.



Figure 8-345

- 5) Unscrew 3 screws and remove the Turn Buckle Set and Spring.



Figure 8-346 Unscrewing 3 screws and removing Turn Buckle Set and Spring

- 6) Unscrew 3 screws and remove the Rotation Module Assy.

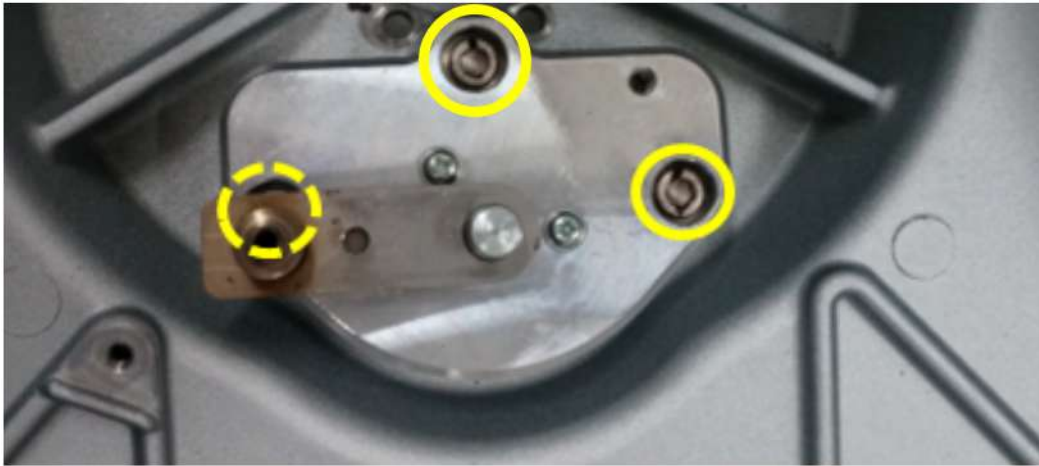


Figure 8-347 Unscrewing 3 screws and removing Rotation Module Assy

CAUTION When reassemble the Rotation Module Assy, screw should be tightened with 60Kgf·cm torque and use the Screw HSH M5X16 Nylok (GE Part no.: 5729013) for reassembly.

- 7) Unscrew 6 screws and detach the OPIO Base.

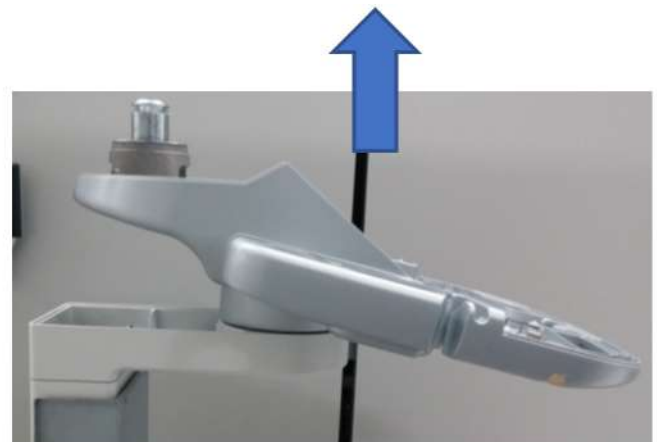


Figure 8-348 Unscrewing 6 screws and detaching OPIO Base

CAUTION When reassemble the OPIO Base, screw should be tightened with 60Kgf·cm torque and use Screw HSH M5X16 Nylok (GE Part no. : 5729013) for reassembly.

- 8) Detach the IGUS Thrust Bush.

IGUS Thrust Bush

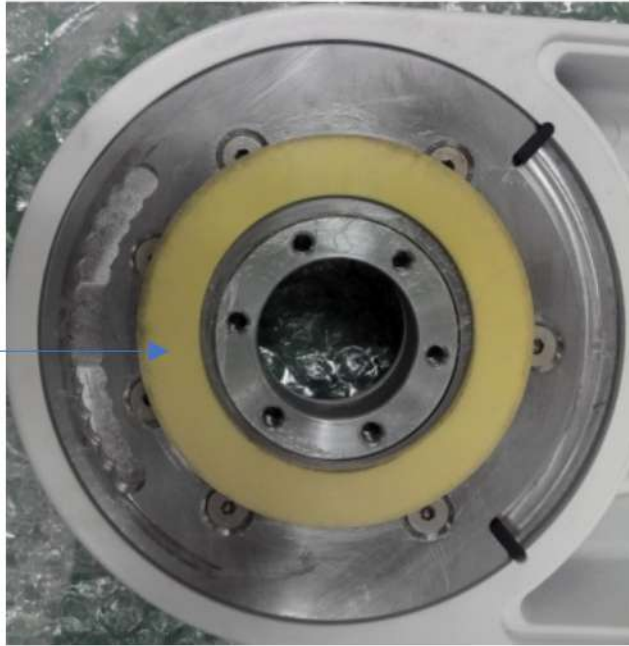


Figure 8-349 Detaching IGUS Thrust Bush

 CAUTION DO NOT wipe out grease from part.

- 9) Each screw should be heated for 5 minutes by Hot Air Blower or Electric Hair Dryer to melt LOCTITE on screw before unscrewing 6 screws.

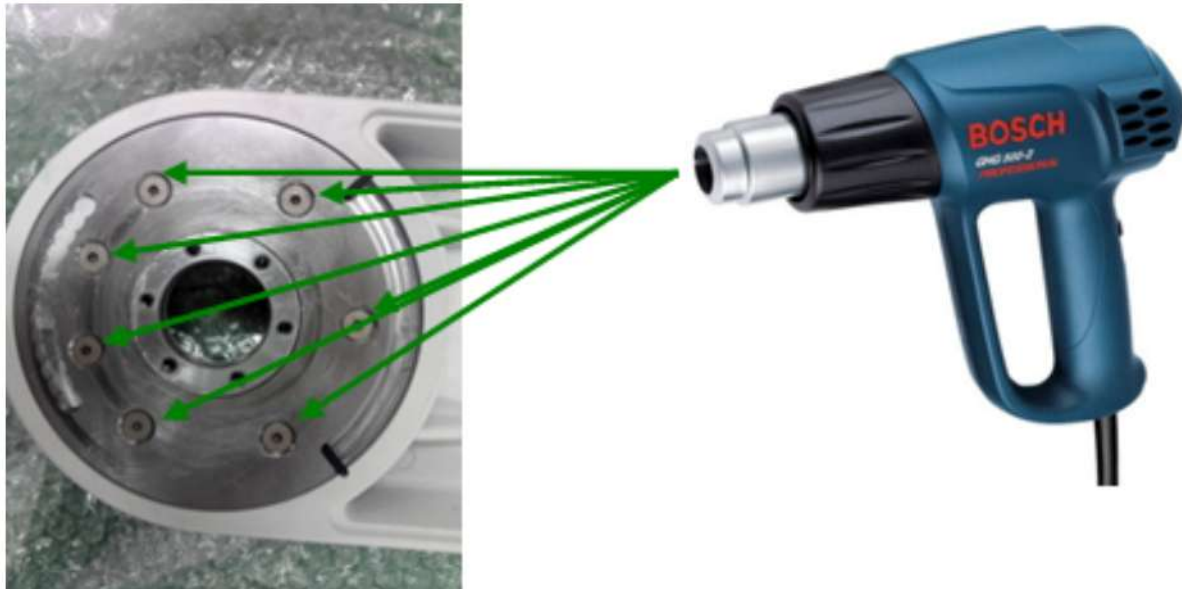


Figure 8-350

 CAUTION Be careful with hot surfaces.

10) Unscrew 7 screws and then remove the ROTATION PLATE.



Figure 8-351 Unscrewing 7 screws and removing Rotation Plate

CAUTION When reassemble the ROTATION PLATE, screw should be tightened with 60Kgf·cm torque and use SCREW FSH M5X16 NYLOK (GE Part no. : 5729014) for reassembly.

CAUTION Carefully unscrew to prevent wear of screw head.

11) Remove the Thrust Needle Bearing Washer, Thrust Needle Bearing, OPIO Swivel Shaft.



Figure 8-352 Detaching Thrust Needle Bearing Washer, Thrust Needle Bearing, OPIO Swivel Shaft

8-51-2-5 Installation Procedure

Parts to be installed in reverse order on removal. But Rotation Plate, OPIO Swivel Shaft.
Rotation Module Assy should be reassembled using new parts.

8-51-2-6 Functional Check

| Test | Refer to | Note |
|-----------------------------------|---|----------------|
| System Exterior Visual Check | section 4-3-1 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| Mechanical Parts Functional Check | section 4-3-2 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| Power On/Off | section 4-3-3 of LOGIQ P8P9P10 PSM(GPN : 5599028) | |
| System Integration Checks | section 4-3-5 of LOGIQ P8P9P10 PSM(GPN : 5599028) | OPIO Test only |

Section 8-52 Replacement of ODD Dummy Cover R3

8-52-1 Manpower

1 person, 5 minutes

8-52-2 Tools

Standard Phillips Screwdriver

8-52-3 Pre work

- 1) Remove Rear Cover (refer to *section 8-9*)
- 2) Remove Top Cover (refer to *section 8-7*)

8-52-4 Removal Procedure

- 1) Unscrew 2 screws and disassemble ODD Dummy cover.

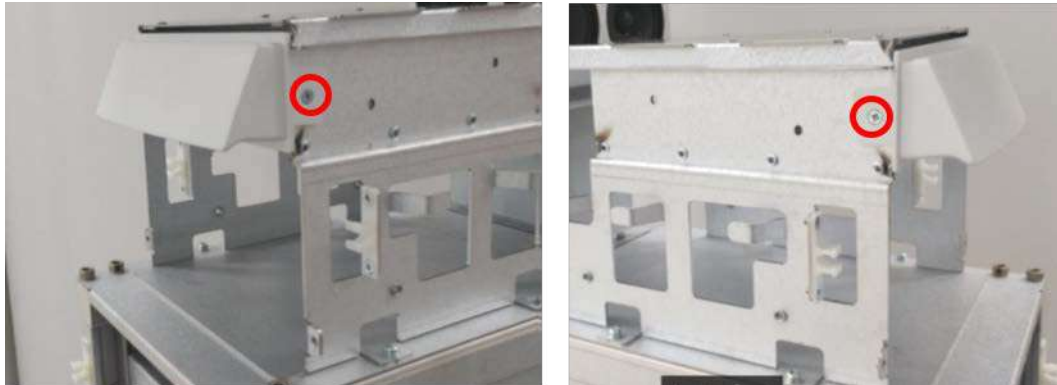


Figure 8-353 Unscrewing 2 screws and disassembling ODD Dummy cover

8-52-5 Installation Procedure

All components to be installed in reverse order of removal.

8-52-6 Functional Check

Visual inspection only

Section 8-53 Replacement of Probe Light assy

8-53-1 Replacement of Probe Light Assy (R3)

8-53-1-1 Manpower

1 person, 20minutes

8-53-1-2 Tools

Standard Phillips Screw driver

8-53-1-3 Pre work

1) Remove OPIO Panel assy (refer to section 8-14)

8-53-1-4 Removal Procedure

1) Remove probe light cable.

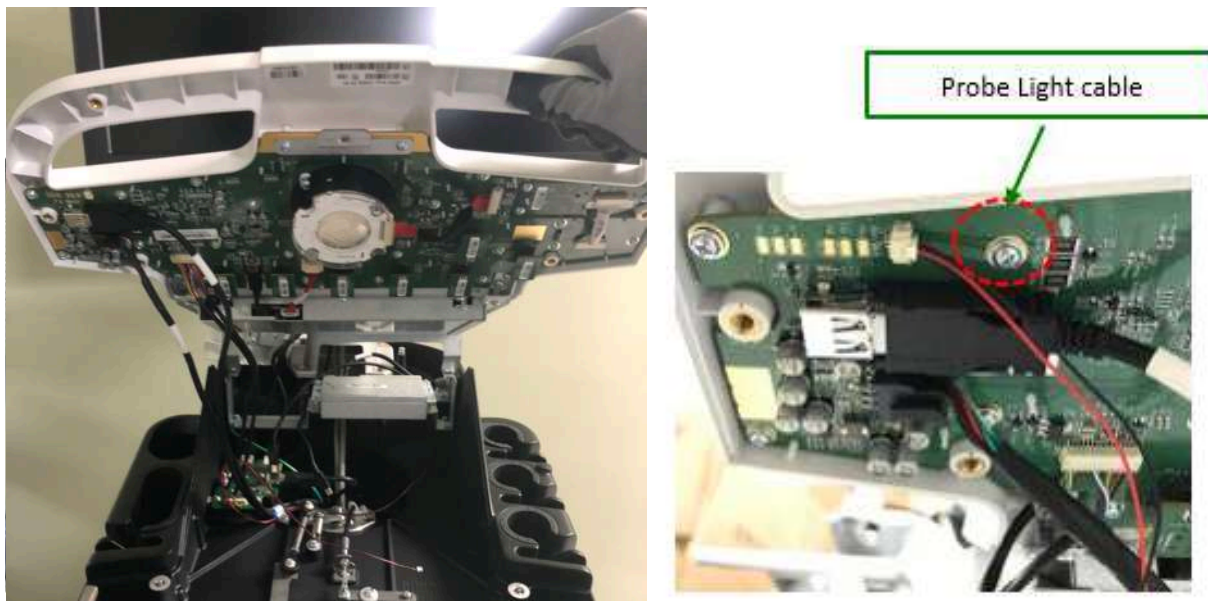


Figure 8-354 Remove of probe light cable from LP7P9 OPIO MAIN BOARD PWA

- 2) Untie clamp for release Probe light cable



Figure 8-355 Un-tie of Probe light cable from OPIO base

8-53-2 Replacement of Probe Light Assy (R4 and R4.5)

8-53-2-1 Manpower

1 person, 20 minutes

8-53-2-2 Tools

Standard Phillips Screw driver

8-53-2-3 Pre-Work

- 1) Remove OPIO Assy (refer to *section 8-14*)

8-53-2-4 Removal Procedure

- 1) Disconnect the probe light cable.

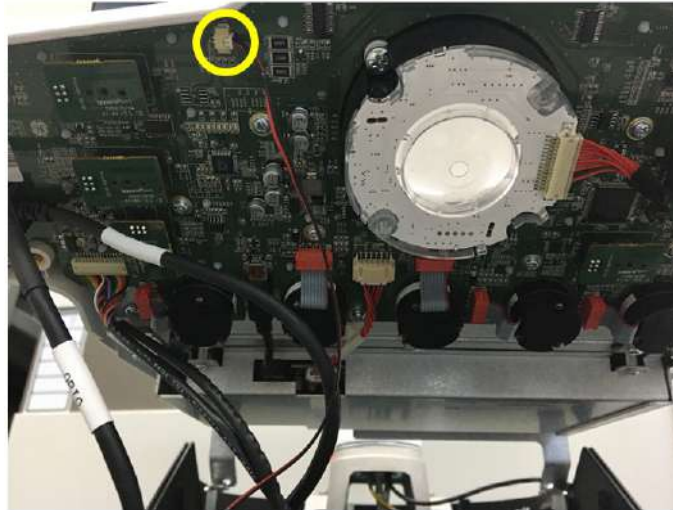


Figure 8-356 Disconnecting the probe light cable

- 2) Unscrew 1 screw for untying the probe light cable.

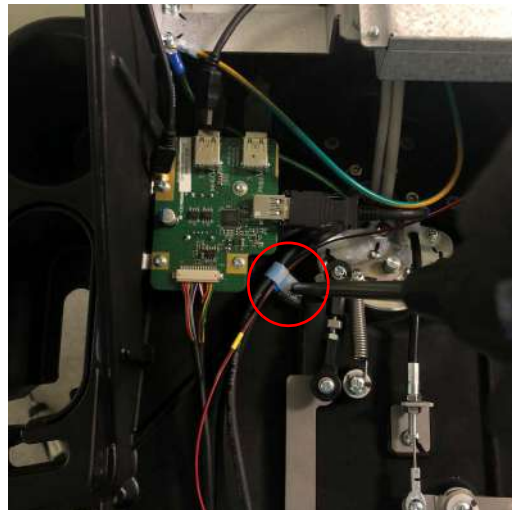


Figure 8-357 Unscrewing 1 screw

- 3) Unscrew 3 screws and detach the probe light assy



Figure 8-358 Unscrewing 3 screws and detaching the probe light assy

Section 8-54 Replacement of ACDC

8-54-1 Manpower

1 person, 15 minutes

8-54-2 Tools

Standard Phillips screwdriver

8-54-3 Removal Procedure

- 1) Remove 2 screws and Power Cord Fix Bracket.

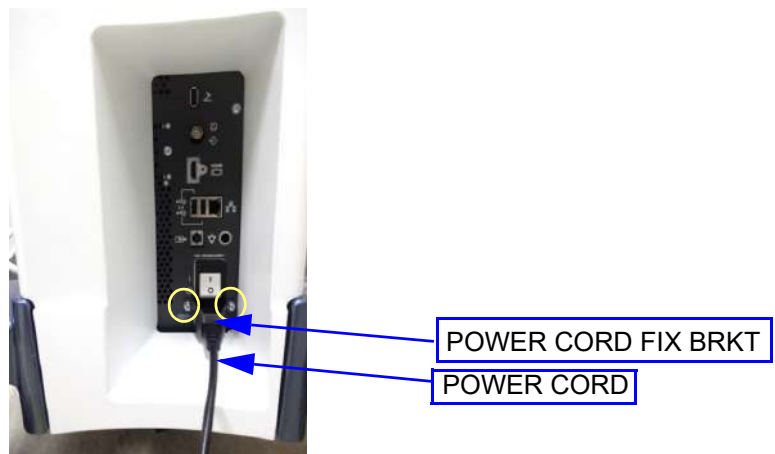


Figure 8-359 Removing the power cord fix brkt and power cord

- 2) Pull the rear cover and remove it as following figure.

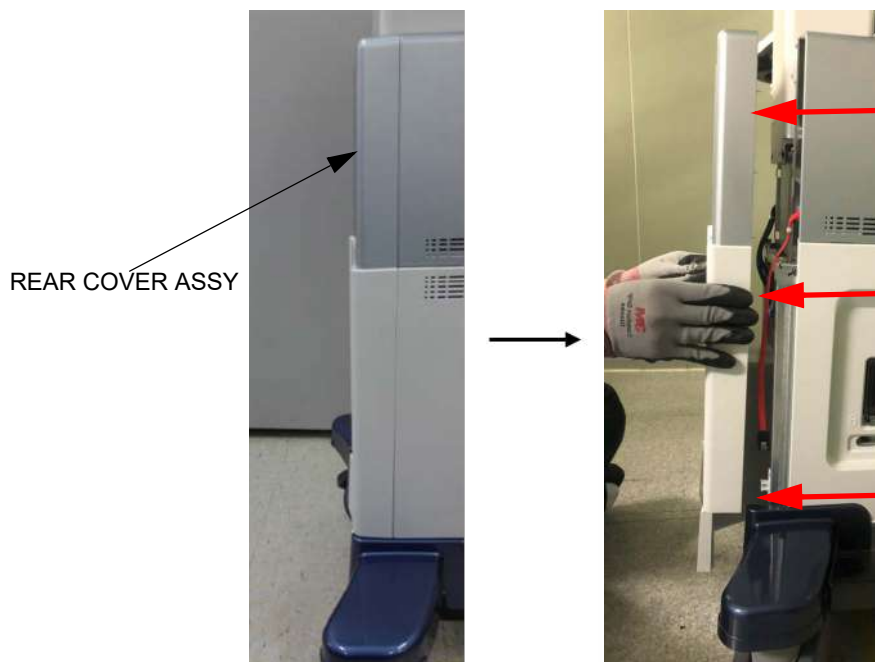


Figure 8-360 Removing the rear cover assy

- 3) Remove 5 screws and Cable Cover Bracket.

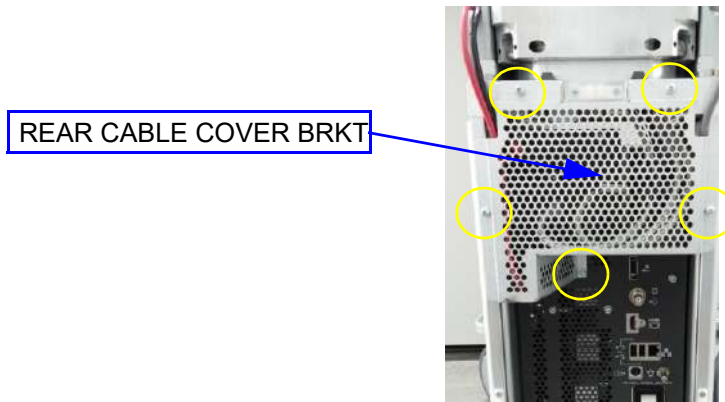


Figure 8-361 Unscrewing 5 screws and removing the rear cable cover brkt

- 4) Disconnect Cables and unscrew 7 screws. Then remove NEST EMI Back Bracket.

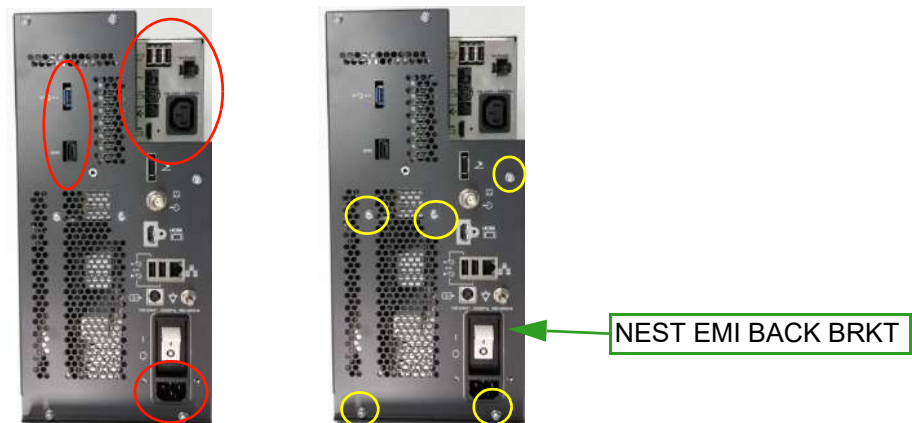


Figure 8-362 Disconnecting cables and unscrewing 7 screws

- 5) Pull out the IOBOX-B Assy from the nest box.



Figure 8-363 Drawing the IO Box from Nest Frame

- 6) Remove 12 screws:
 - [LOGIQ P7/P9 R1 to R3]
 - 1.) from IOBOX or IOBOX-B.

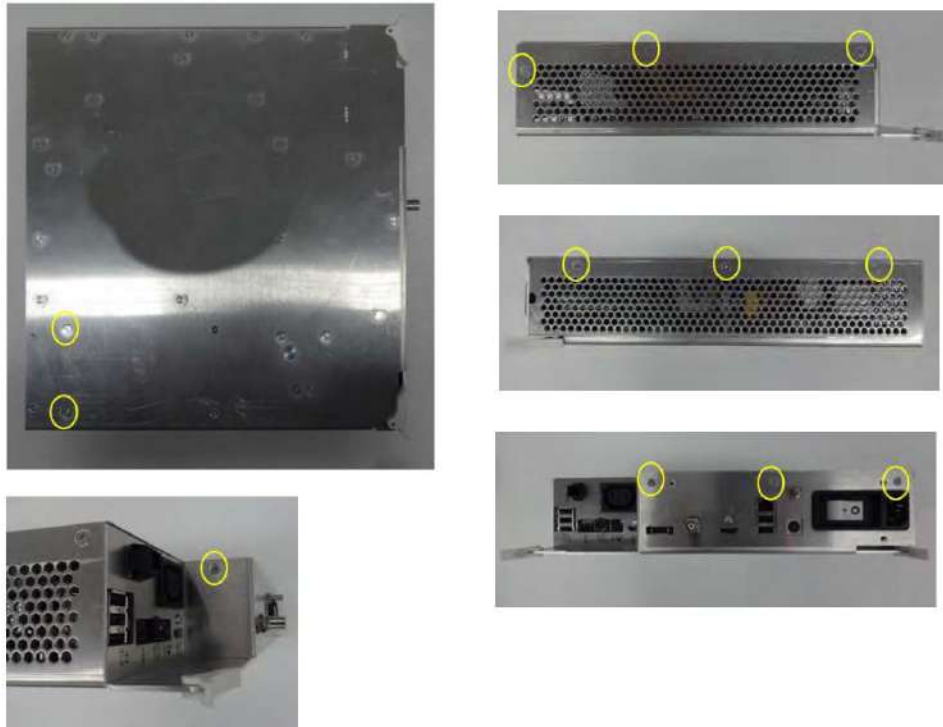


Figure 8-364 Removing 12 screws

- 2.) Install Artesyn ACDC-4 (5728320-4).
- 3.) Connect 'Artesyn ACDC Input Harness (5728321)' and 'ACDC Output Harness (5728321)'

Connect Artesyn ACDC
Input Harness (5728321) to ACFL



Reinforce the Artesyn ACDC
Input Harness using glue gun.



Figure 8-365

- 4.) Assemble Artesyn ACDC Output Harness (5728321) with ACDC Assy.



Figure 8-366

- 5.) Tighten the harness using cable tie (2160954).



Figure 8-367 Tightening the harness

- 6.) Assemble Artesyn ACDC heatsink. Red box is the ACDC heatsink position. Remove the adhesive tape from the heatsink.

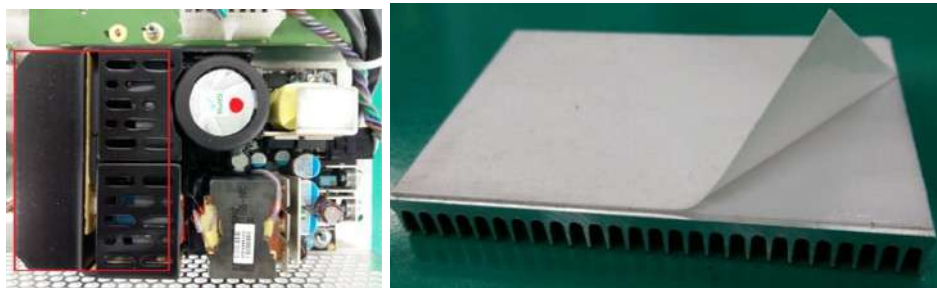


Figure 8-368 Assembling Artesyn ACDC heatsink

- 7.) Attach Artesyn ACDC heatsink as below figure.

NOTE: Attach the heatsink exactly at the same position like red square.

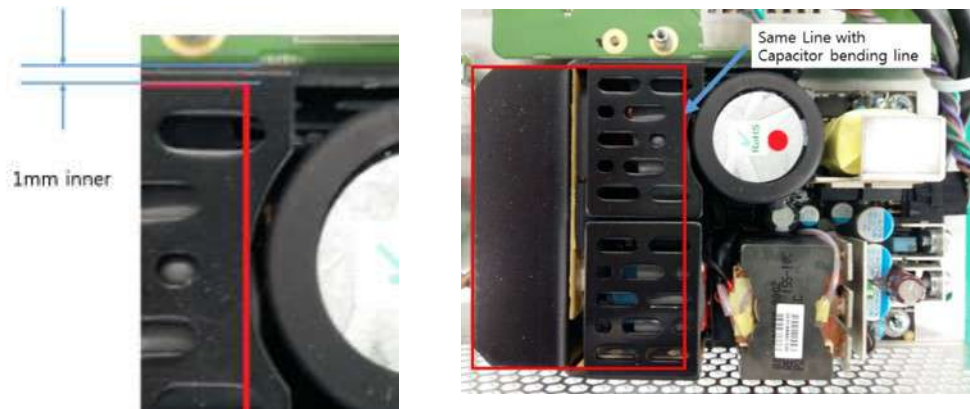


Figure 8-369 Attaching Artesyn ACDC heatsink

8.) Check the Internal harnesses.



Figure 8-370 Checking the Internal harness

- [LOGIQ P8/P9/P10 R4 and R4.5]
1.) from IOBOX.

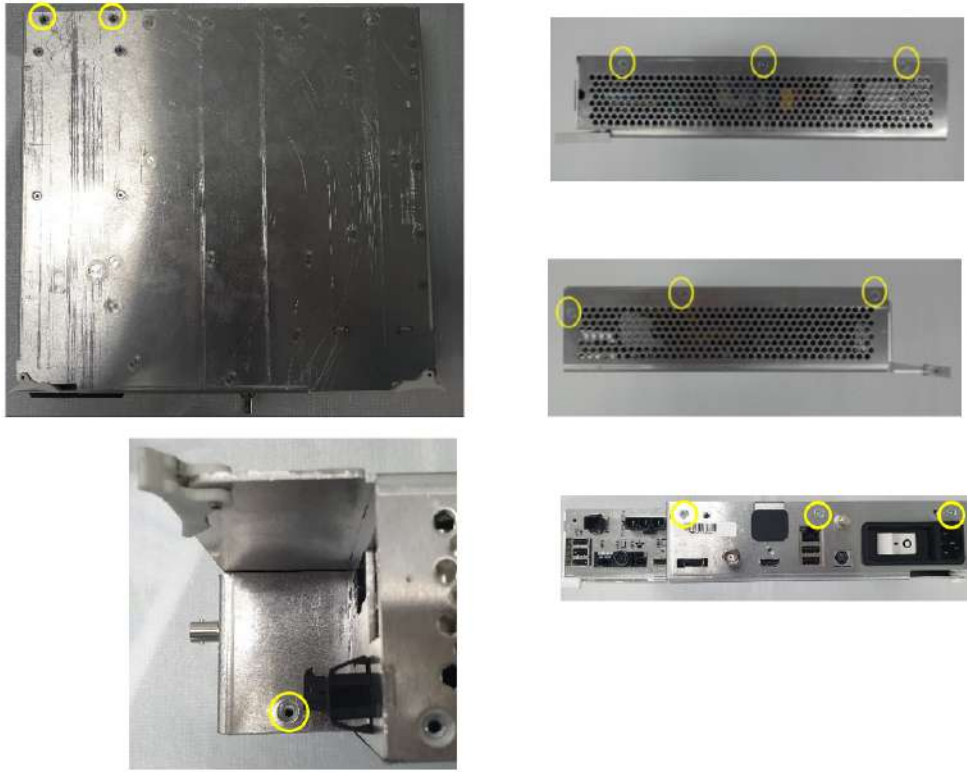


Figure 8-371

- 2.) Remove the TDK-L ACDC Input Harness (5856083), TDK-L ACDC Output Harness (5856084) then uninstall ACDC Module (5831552) with removing 4 screws on IOBOX.

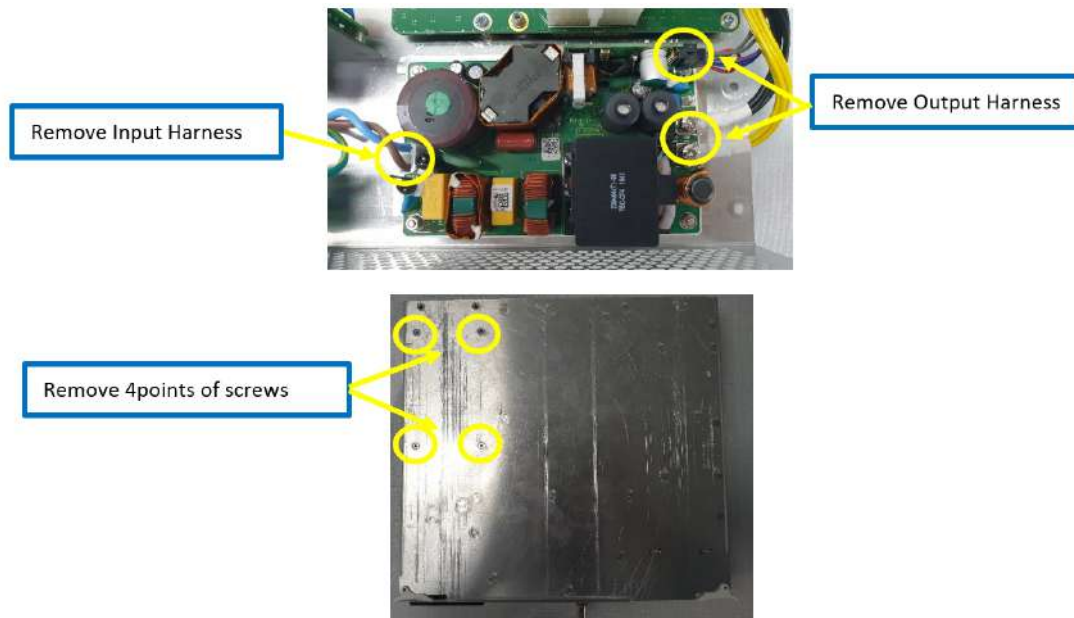


Figure 8-372 Removing Connected Harness and screws

3.) Prepare ACDC Module (5831552). Then remove the 2screws on ACDC Module.



Figure 8-373 TDK ACDC Module

4.) Connect 'TDK-L ACDC Input Harness (5856083)' to ACFL and 'TDK ACDC Module (5831552)'.

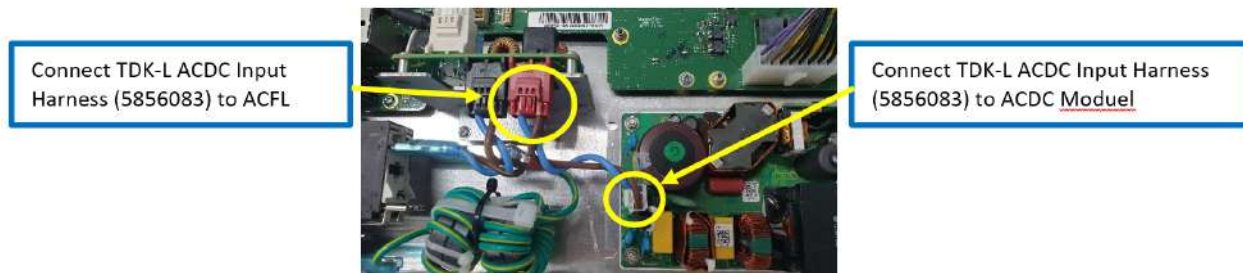


Figure 8-374 Connecting TDK ACDC Input harness

5.) Assemble TDK-L ACDC Output Harness (5856084) with ACDC Assy.

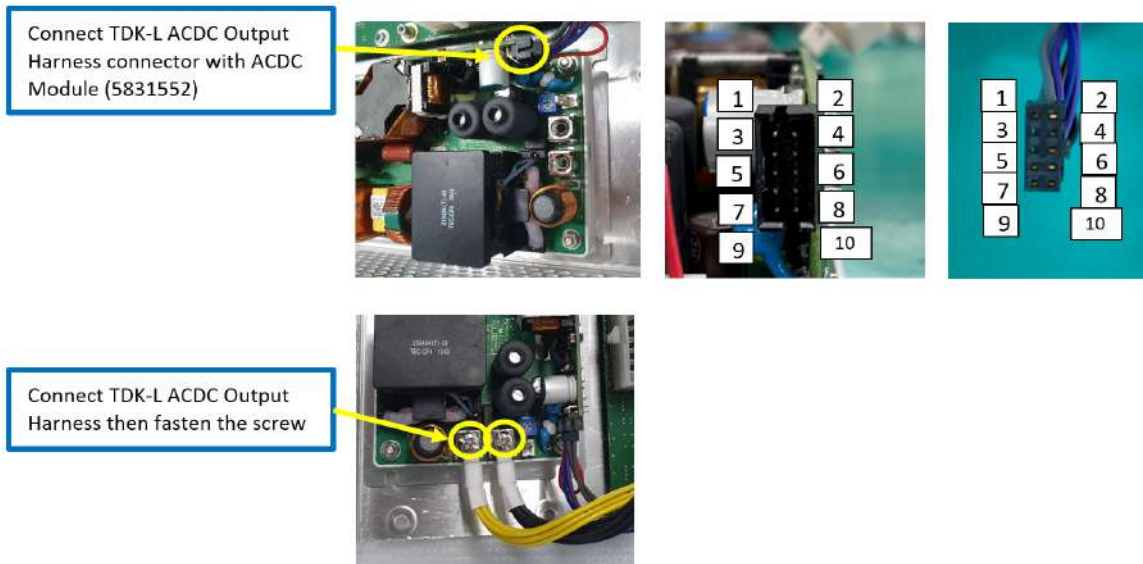


Figure 8-375 Connecting Artesyn ACDC Output harness

6.) Check the Internal harnesses



Figure 8-376 Checking the Internal harness

8-54-4 Assemble procedure

All components to be installed/assembled in reverse order of removal. Please refer to step 1) ~ 6).

8-54-5 Verification after rework

- Power-On test: Follow the procedure in [Section 4-3-3 "Power On/Off"](#)
- Power-Down test: Follow the procedure in [Section 4-3-3-2 "Complete power down"](#)

8-54-6 Pass/Fail criterion for the reworks

- Pass: Both 'A)' and 'B)' are satisfied
 - A.) After "Power-on" procedure regarding [Section 4-3-3 "Power On/Off"](#) , On/Off button color is changed to green. Then access the application.
 - B.) After "Power-Down" procedure regarding [Section 4-3-3-2 "Complete power down"](#) , the system turns down and On/off button color is changed to blue.
- Fail: A) or B) is not satisfied.

8-54-7 Check the IOBOX (or IOBOX-B) and replaced ACDC serial number



Figure 8-377

8-54-8 Check the IOBOX (or IOBOX-B) and replaced ACDC serial number



Figure 8-378 ACDC serial number

Chapter 9

Renewal Parts

Section 9-1 Overview

9-1-1 Purpose of Chapter 9

This chapter gives an overview of replacement parts available for the LOGIQ P7/P8/P9/P10.

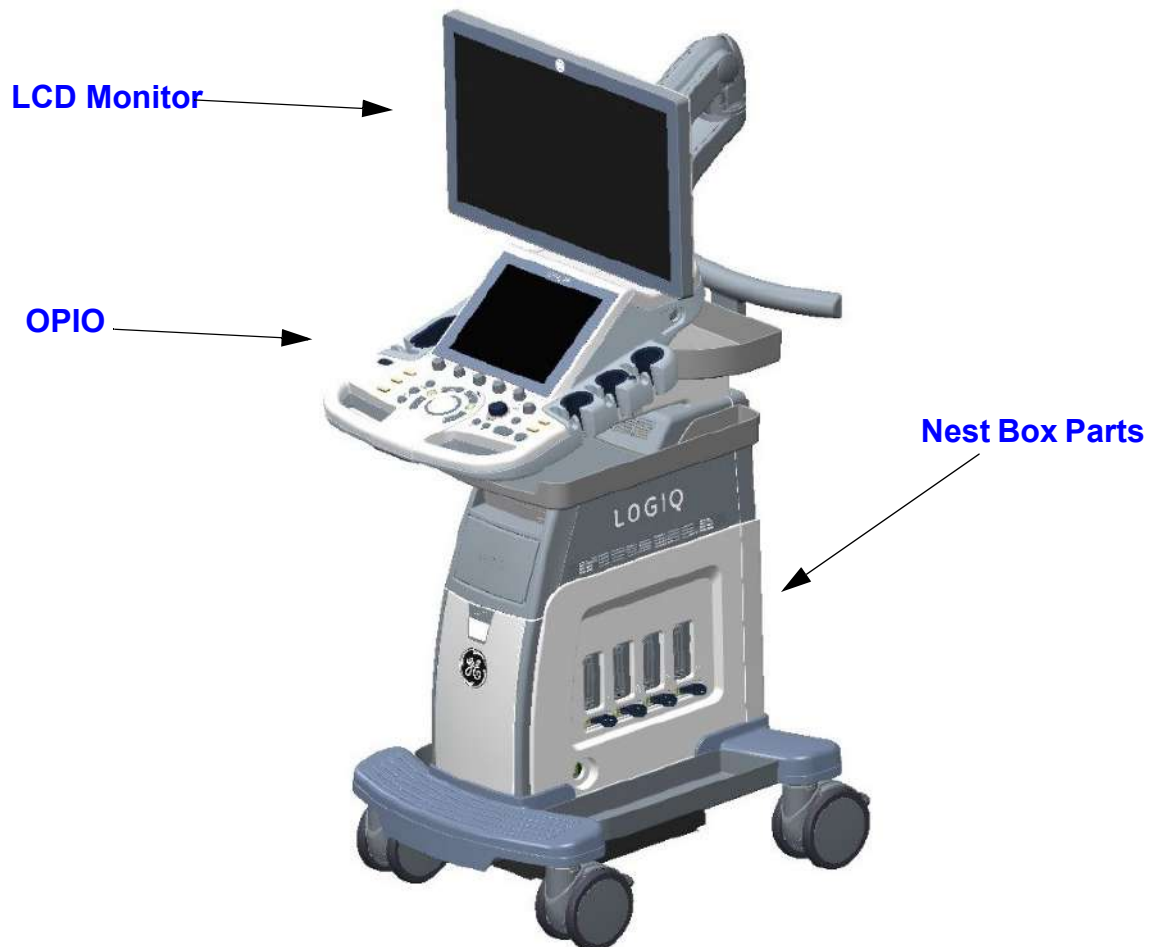


Figure 9-1 LOGIQ P7/P9 R1 to R2.5

Mechanical Part

Plastics Covers (Front/Sides/Rear)

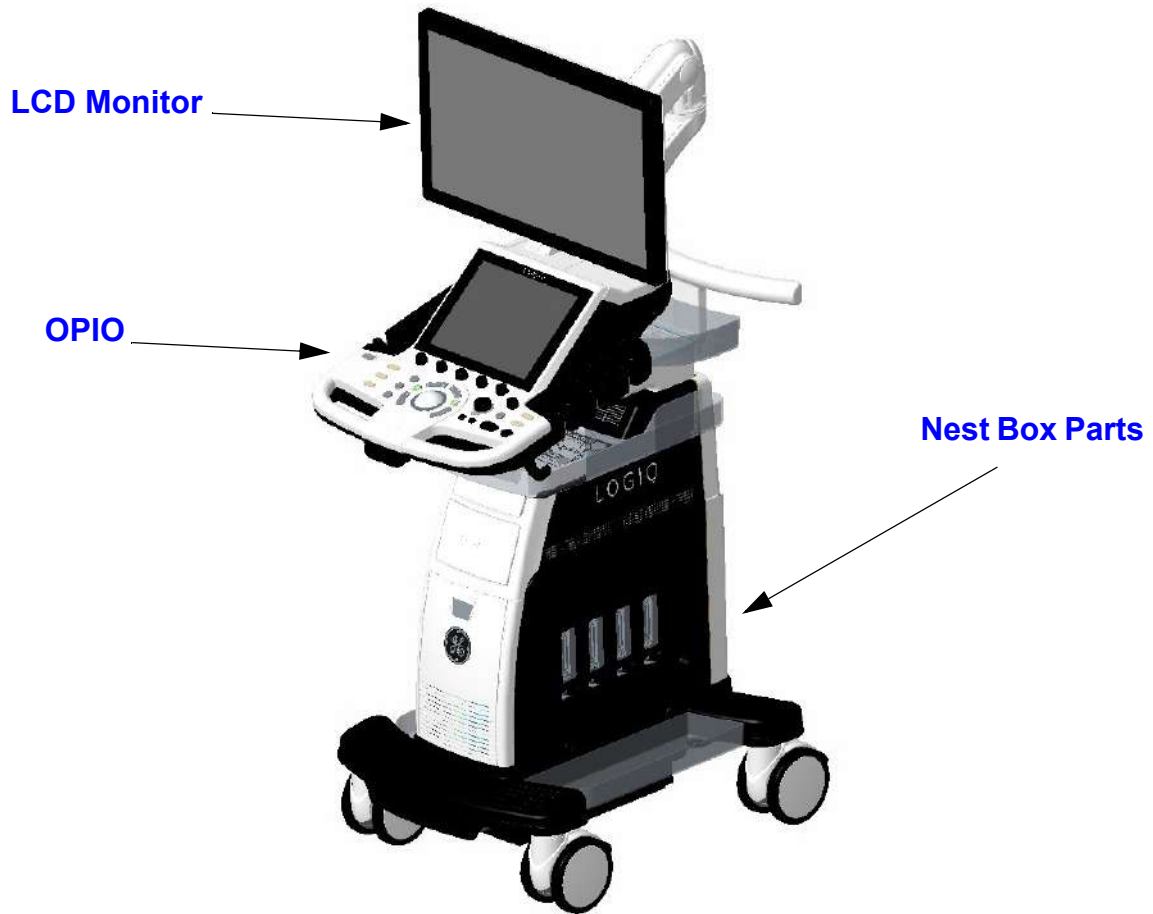


Figure 9-2 LOGIQ P7/P9 R3

Mechanical Part
Plastics Covers (Front/Sides/Rear)



Figure 9-3 LOGIQ P8/P9/P10 R4 and R4.5

Mechanical Part
Plastics Covers (Front/Sides/Rear)

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Section 9-2 List of Abbreviations

| | |
|----------------|---|
| AC | Alternating Current |
| ADC | Analog to Digital Converter |
| A/N Key | Alpha Numeric Keys |
| ASIC | Application Specific Integrated Circuit |
| Assy | Assembly |
| MCB | MARU Core board(Merged Radio frequency module and Beaforming board) |
| MBP | Backplane interface module |
| CPU | Central Processing Unit |
| MCWD | Continuous wave doppler module |
| DAC | Digital to Analog Converter |
| DC | Direct Current |
| DSP | Digital Signal Processing |
| DVD | Digital Video Disc |
| DVI | Digital Visual Interface |
| ECGP | Electrocardiography module |
| EUM | Electronic User Manual |
| FRU 1 | Replacement part available in parts hub |
| FRU 2 | Replacement part available from the manufacturer (lead time involved) |
| HDD | Hard Disk Drive |
| Int | Internal |
| I/O | Input/Output |
| LCD | Liquid Crystal Display |
| PCI | Peripheral Component Interconnect |
| PWA | Printed Wire Assembly |
| SOM | System On Module |
| SSD | Solid State Drive |
| USB | Universal Serial Bus |

Section 9-3 LOGIQ P7/P8/P9/P10 Software

Table 9-2 LOGIQ P9/P7 software (R1 to R2.5)

| Item | SW Version | Base SW Part Number | Application SW Part Number | Qty | FRU | R1 | R2 | R2.5 |
|------|------------|----------------------|----------------------------|-----|-----|----|----|------|
| 1 | R1.0.0 | 5507300 | 5507301 | 1 | 1 | Y | N | N |
| 2 | R1.0.1 | 5507300-2 | 5507301-2 | 1 | 1 | Y | N | N |
| 3 | R1.0.2 | | 5507301-3 | 1 | 1 | Y | N | N |
| 4 | R1.0.3 | | 5507301-4 | 1 | 1 | Y | N | N |
| 5 | R1.0.4 | 5507300-3 | 5507301-5 | 1 | 1 | Y | N | N |
| 6 | R1.0.5 | 5507300-4 | 5507301-6 | 1 | 1 | Y | N | N |
| 7 | R2.0.2 | 5724300 | 5724301 | 1 | 1 | N | Y | N |
| 8 | R2.0.3 | 5724300-2 | 5724301-2 | 1 | 1 | N | Y | N |
| 9 | R2.0.4 | | 5724301-3 | 1 | 1 | N | Y | N |
| 10 | R2.0.5 | 5724300-2(Ivybridge) | 5724301-4 | 1 | 1 | N | Y | N |
| 11 | R2.0.6 | 5724300-3(Skylake) | 5724301-5 | 1 | 1 | N | Y | N |
| 12 | R2.0.7 | 5724300-4(Ivybridge) | 5724301-6 | 1 | 1 | N | Y | N |
| | | 5724300-5(Skylake) | | 1 | 1 | N | Y | N |
| 13 | R2.5.3 | 5766409 | 5760487 | 1 | 1 | N | Y | Y |
| 14 | R2.5.4 | 5781578 | 5760487-2 | 1 | 1 | N | N | Y |
| 15 | R2.5.5 | 5781578-2(Skylake) | 5760487-3 | 1 | 1 | N | N | Y |
| 16 | | 5766409-2(Ivybridge) | | 1 | 1 | N | N | Y |
| 17 | R2.5.6 | 5781578-3(Skylake) | 5760487-4 | 1 | 1 | N | N | Y |
| 18 | | 5766409-3(Ivybridge) | | 1 | 1 | N | N | Y |
| 19 | R2.5.7 | 5781578-4(Skylake) | 5760487-5 | 1 | 1 | N | N | Y |
| | | 5766409-4(Ivybridge) | | 1 | 1 | N | N | Y |

Table 9-3 LOGIQ P7/P8/P9/P10 software (R3 to R4.5)

| Item | SW Version | SW FRU Number | Qty | FRU | R3 | R4 | R4.5 |
|------|------------|---------------|-----|-----|----|----|------|
| 1 | R3.0.2 | 5795390 | 1 | 1 | Y | N | N |
| 2 | R3.0.3 | 5795390-2 | 1 | 1 | Y | N | N |
| 3 | R3.0.4 | 5795390-3 | 1 | 1 | Y | N | N |
| 4 | R3.0.5 | 5795390-4 | 1 | 1 | Y | N | N |
| 5 | R3.0.6 | 5795390-5 | 1 | 1 | Y | N | N |
| 6 | R3.0.8 | 5795390-7 | 1 | 1 | Y | N | N |
| 7 | R3.0.9 | 5795390-8 | 1 | 1 | Y | N | N |
| 8 | R3.0.10 | 5795390-9 | 1 | 1 | Y | N | N |
| 9 | R3.0.11 | 5795390-10 | 1 | 1 | Y | N | N |

Table 9-3 LOGIQ P7/P8/P9/P10 software (R3 to R4.5)

| Item | SW Version | SW FRU Number | Qty | FRU | R3 | R4 | R4.5 |
|------|------------|---------------|-----|-----|----|----|------|
| 10 | R3.0.12 | 5795390-11 | 1 | 1 | Y | N | N |
| 11 | R4.0.3 | 5851137 | 1 | 1 | N | Y | N |
| 12 | R4.0.4 | 5851137-2 | 1 | 1 | N | Y | N |
| 13 | R4.0.5 | 5851137-3 | 1 | 1 | N | Y | N |
| 14 | R4.0.7 | 5851137-5 | 1 | 1 | N | Y | N |
| 15 | R4.0.6 | 5851137-4 | 1 | 1 | N | Y | N |
| 16 | R4.5.1 | 5874238 | 1 | 1 | N | N | Y |
| 17 | R4.5.2 | 5874238-2 | 1 | 1 | N | N | Y |

NOTE: How to check CPU code name, Ivybridge or Skylake

- 1.) Turn the system on and go to BIOS mode by pressing 'Del' key
- 2.) Go to 'Main -> 'Platform Information'
- 3.) Check 'Codename'. There is 'IvyBridge' or 'SkyLake'

NOTE: SOM 6324558 -x is only allowed for Ivybridge.
 SOM 7324558 is only allowed for Skylake.

Section 9-4 Parts List Groups



Figure 9-4 Console Views (R1 to R2.5)



Figure 9-5 Console Views(R3)



Figure 9-6 Console Views (R4 and R4.5)

Table 9-4 Mechanical and user accessible parts

| Item | Part Group Name | Table Number | Description |
|-----------|--|-------------------------|---|
| 101-111 | Plastics Covers (Front/Sides/Rear) | Table 9-5 on page 9-10 | Housing Covers |
| 101-113-1 | Plastics Covers (Front/Sides/Rear) (R3 and R4) | Table 9-6 on page 9-13 | Housing Covers |
| 201-212 | LCD Monitor | Table 9-7 on page 9-16 | Monitor and its covers |
| 301-343 | OPIO | Table 9-8 on page 9-19 | User interface parts |
| 401-429 | Nest Box Parts | Table 9-10 on page 9-29 | Main board modules Including front/back end boards |
| 501-525 | Mechanical Part | Table 9-11 on page 9-37 | Mechanical Parts and speaker |
| 701-748 | Options | Table 9-12 on page 9-42 | Options |
| 811 | Optional Peripherals and Accessories | Table 9-13 on page 9-51 | B/W Printer, Color Printer, Line Printer Bluetooth |
| - | Probes | - | Probes |
| 930-946 | Power Cord | Table 9-14 on page 9-53 | Power Cord |

Section 9-5 Plastics Covers (Front/Sides/Rear)

9-5-1 Plastics Covers (Front/Sides/Rear) (R1,R2 and R2.5)

Table 9-5 Plastic Covers

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|----------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 101 | Side Cover R Assy | 5499849 | Assy Plastic  | 1 | 1 | Y | Y | Y | N | N | N |
| 102 | Side Cover L Assy R2 | 5499847-2 | Assy Plastic  | 1 | 1 | Y | Y | Y | N | N | N |
| 103 | Front Cover Assy | 5499845 | Assy Plastic  | 1 | 1 | Y | Y | Y | N | N | N |
| 104 | Rear Cover Assy R2.5 | S5499822 | Assy Plastic(with e-IFU label)  | 1 | 1 | N | N | Y | N | N | N |
| 104-1 | Rear Cover Assy | 5499846 | Assy Plastic(without e-IFU label)  | 1 | 1 | Y | Y | Y | N | N | N |

Table 9-5 Plastic Covers




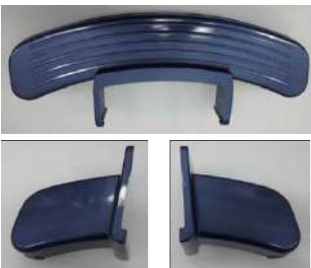

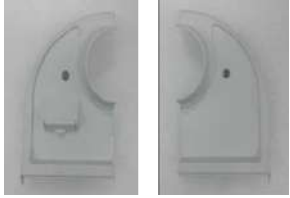
| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 105 | Top Cover - High Cabinet | 5499645 | High Cabinet Cover  | 1 | 1 | Y | Y | Y | N | N | N |
| 106 | Top Cover - Low Cabinet | 5499661 | Low Cabinet Cover  | 1 | 1 | Y | Y | Y | N | N | N |
| 107 | High Cabinet Dummy Cover | 5499660 | Plastics, BW PRT Bezel, Dummy for High Cabinets  | 1 | 1 | Y | Y | Y | N | N | N |
| 108 | Dummy Cover Set | 5582883 | RS Dummy Cover, RS Lever Dummy Cover, CWD Dummy Cover  | 1 | 1 | Y | Y | Y | N | N | N |
| 109 | Foot Cover Set | 5582885 | Foot Cover Front, Foot Cover Rear L, Foot Cover Rear R  | 1 | 1 | Y | Y | Y | N | N | N |
| 110 | Link Arm Top Cover | 5507028 | Plastic  | 1 | 1 | Y | Y | Y | Y | Y | Y |

Table 9-5 Plastic Covers

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 111 | OPIO Top Cover Set | 5582886 | OPIO Top Cover L, OPIO Top Cover R, OPIO USB COVER  | 1 | 1 | Y | Y | Y | Y | Y | Y |

9-5-2 Plastics Covers (Front/Sides/Rear) (R3 and R4)

Table 9-6 Plastic Covers (R3 and R4)

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|----------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 101-1 | Side Cover R Assy R3 | 5794893 | Assy Plastic  | 1 | 1 | N | N | N | Y | N | N |
| 102-1 | Side Cover L Assy R3 | 5794894 | Assy Plastic  | 1 | 1 | N | N | N | Y | Y | Y |
| 103-1 | Front Cover Assy R3 | 5794912 | Assy Plastic  | 1 | 1 | N | N | N | Y | Y | Y |
| 104-1 | Rear Cover Assy R3 | 5794891 | Assy Plastic  | 1 | 1 | N | N | N | Y | N | N |

Table 9-6 Plastic Covers (R3 and R4)

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-----------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 105-1 | High Cabinet Assy R3 | 5794899 | Assy Plastic  | 1 | 1 | N | N | N | Y | Y | Y |
| 106-1 | Low Cabinet Assy R3 | 5794892 | Assy Plastic  | 1 | 1 | N | N | N | Y | Y | Y |
| 107-1 | High Cabinet Dummy Cover R3 | 5794085 | Plastics, BW PRT Bezel, Dummy for High Cabinets  | 1 | 1 | N | N | N | Y | Y | Y |
| 108-1 | Dummy Cover Set R3 | S5794033 | RS Dummy Cover, RS Lever Dummy Cover, CWD Dummy Cover  | 1 | 1 | N | N | N | Y | Y | Y |
| 109-1 | Foot Cover Set R3 | S5794020 | Foot Cover Front, Foot Cover Rear L, Foot Cover Rear R  | 1 | 1 | N | N | N | Y | Y | Y |
| 110-1 | ODD Dummy Cover R3 | 5794027 | Plastic  | 1 | 1 | N | N | N | Y | Y | Y |

Table 9-6 Plastic Covers (R3 and R4)

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|----------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 111-1 | Side Cover R Assy R4 | 5848755 | Assy Plastic  | 1 | 1 | N | N | N | N | Y | Y |
| 112-1 | Rear Cover Assy R4 | 5857308 | Assy Plastic  | 1 | 1 | N | N | N | N | Y | N |
| 113-1 | Rear Cover Assy R4.5 | S5882294 | Assy Plastic  | 1 | 1 | N | N | N | N | N | Y |

Section 9-6 LCD Monitor




Table 9-7 User Interface

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---|-------------|---|-----|-----|----|----|------|----|----|------|
| 201 | 21.5" LCD | 5501560-122 | Full 21.5" LCD Monitor set with hinge  | 1 | 1 | Y | N | N | N | N | N |
| 202 | 21.5 INCH LCD MONITOR with USB 2.0 and without glass filter | 5501560-141 | Full 21.5" LCD Monitor set with hinge  | 1 | 1 | Y | Y | Y | N | N | N |
| 203 | MARU R3 21.5 monitor | 7501560-2 | MARU R3 21.5 monitor  | 1 | 1 | N | N | N | Y | N | N |
| 204 | 21.5" LCD Cover SET | 5582887 | Plastics, Front, Rear and Cable cover, Monitor USB cap, Glass Filter for 21.5" LCD  | 1 | 1 | Y | N | N | N | N | N |

Table 9-7 User Interface

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--|-------------|--|-----|-----|----|----|------|----|----|------|
| 205 | 21.5 INCH LCD Cover SET w/o glass filter | 5727721 | Plastics, Front, Rear and Cable cover, Monitor USB cap  | 1 | 1 | N | Y | Y | N | N | N |
| 206 | 21.5inch LCD Cover SET R3 | S5792901 | Plastics, Front, Rear and Cable cover, Monitor USB cap  | 1 | 1 | N | N | N | Y | N | N |
| 207 | Bezelless 23.8 inch LCD Monitor | 8501560 | Bezelless 23.8 inch LCD monitor  | 1 | 1 | N | N | N | N | Y | N |
| 208 | Monitor Cover Set 23.8 inch | S5848754 | Plastics, Front, Rear, Cable Cover and Hook Remover  | 1 | 1 | N | N | N | N | Y | Y |
| 209 | HD Display | 8501561 | 23.8 inch LCD monitor  | 1 | 1 | N | N | N | N | Y | N |

Table 9-7 User Interface

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--|-------------|--|-----|-----|----|----|------|----|----|------|
| 210 | HD Monitor Cover Set 23.8inch | S5862906 | Plastics, Front, Rear, Cable Cover and Hook Remover  | 1 | 1 | N | N | N | N | Y | Y |
| 211 | Bezelless 23.8 inch LCD Monitor for external monitor audio | 9501560 | Bezelless 23.8 inch LCD monitor  | 1 | 1 | N | N | N | N | N | Y |
| 212 | HD Display for external monitor audio | 9501561 | 23.8 inch LCD monitor  | 1 | 1 | N | N | N | N | N | Y |

Section 9-7 OPIO

Table 9-8 OPIO





| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 301 | OPIO ASSY LOGIQ P7 SET | S5781418-2 | OPIO ASSY LOGIQ P7 SET  | 1 | 1 | Y | Y | Y | N | N | N |
| 302 | OPIO ASSY LOGIQ P7 R3 | 7503848 | Full OPIO set, including Main and Sub OPIO sets for LOGIQ P7 R3(Different Emblem)  | 1 | 1 | N | N | N | Y | N | N |
| 303 | OPIO ASSY LOGIQ P9 SET | S5781419-2 | OPIO ASSY LOGIQ P9 SET  | 1 | 1 | Y | Y | Y | N | N | N |
| 304 | OPIO ASSY LOGIQ P9 R3 | 7603848 | Full OPIO set, including Main and Sub OPIO sets for LOGIQ P9 R3 (Different Emblem)  | 1 | 1 | N | N | N | Y | N | N |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---|-------------|--|-----|-----|----|----|------|----|----|------|
| 305 | OPIO Main PWA Assy | 5503847 | OPIO Main PWA Assembly  | 1 | 1 | Y | N | N | N | N | N |
| 306 | LOGIQ P7/P9 OPIO 10.4 inch LCD module set | 5561038 | Maru OPIO 10.4 LCD Set  | 1 | 1 | Y | N | N | N | N | N |
| 307 | LP7 Upper ASSY SET | S5788926 | LP7 Upper ASSY SET  | 1 | 1 | Y | Y | Y | N | N | N |
| 308 | LP9 Upper ASSY SET R3 | S5788927 | LP9 Upper ASSY SET  | 1 | 1 | Y | Y | Y | N | N | N |
| 309 | LP7 Upper ASSY SET R3 | S6788926 | LP7 Upper ASSY SET R3  | 1 | 1 | N | N | N | Y | N | N |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 310 | LP9 Upper ASSY SET R3 | S6788927 | LP9 Upper ASSY SET R3  | 1 | 1 | N | N | N | Y | N | N |
| 311 | Trackball Assy | 5554918 | Trackball Assy (In case it is not available, order 9554918 with 5761351)  | 1 | 1 | Y | N | N | N | N | N |
| 312 | LOGIQ P7P8P9P10 Laser trackball | 9554918 | LOGIQ P7P8P9P10 Laser trackball  | 1 | 1 | N | Y | Y | Y | Y | Y |
| 313 | OPIO Button and Knob Sets | S5582808-2 | OP Button+Knob sets  | 1 | 1 | Y | Y | Y | N | N | N |
| 314 | OPIO Up/Down Button Sets | 5582809 | Up/Down Button, Rotation Button, OPIO Dummy Button Sets  | 1 | 1 | Y | Y | Y | N | N | N |

Table 9-8 OPIO






| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 315 | OPIO AN Key Gel Board | 5503844 | OPIO AN Key Gel Board  | 1 | 1 | Y | N | N | N | N | N |
| 316 | LP7P9 OPIO ANKEY GEL BOARD PWA - H | S5781421 | LP7P9 OPIO ANKEY GEL BOARD PWA - H  | 1 | 1 | N | Y | Y | N | N | N |
| 317 | LP7P9 OPIO ANKEY GEL BOARD PWA | 7503844 | LP7P9 OPIO ANKEY GEL BOARD PWA  | 1 | 1 | N | N | N | Y | Y | Y |
| 318 | OPIO LOWER COVER | 5507036 | OPIO LOWER COVER  | 1 | 1 | Y | Y | Y | N | N | N |
| 319 | OPIO Main PWA Assy | S5781422 | OPIO Main PWA Assy  | 1 | 1 | N | Y | Y | Y | N | N |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 320 | LP7P9 OPIO MAIN BOARD PWA SET | S5781465 | LP7P9 OPIO MAIN BOARD PWA SET  | 1 | 1 | N | N | N | Y | N | N |
| 321 | LP7P9 OPIO FREEZE AND P1 BOARD SET | S5781426-2 | LP7P9 OPIO FREEZE AND P1 BOARD SET  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 322 | LP7P9 OPIO 10.4 LCD Set - E | 6561038 | LP7P9 OPIO 10.4 LCD Set - E  | 1 | 1 | N | Y | Y | N | N | N |
| 323 | LP7P9 OPIO lower Assy - H | S5781425 | LP7P9 OPIO lower Assy - H  | 1 | 1 | N | Y | Y | N | N | N |
| 324 | LP7P9 R3 OPIO lower assy | 7554917 | LP7P9 R3 OPIO lower assy  | 1 | 1 | N | N | N | Y | N | N |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---------------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 325 | COMMON ROTARY ENCODER SET FOR LP9_LP7 | S5718726-2 | COMMON ROTARY ENCODER SET FOR LP9_LP7  | 1 | 1 | Y | Y | Y | N | N | N |
| 326 | LP7P9 R3 COMMON ROTARY ENCODER SET | S5794055 | LP7P9 R3 COMMON ROTARY ENCODER SET  | 1 | 1 | N | N | N | Y | N | N |
| 327 | B MODE ROTARY ENCODER SET FOR LP9_LP7 | S5718727-2 | B MODE ROTARY ENCODER SET FOR LP9_LP7  | 1 | 1 | Y | Y | Y | N | N | N |
| 328 | LP7P9 R3 B MODE ROTARY ENCODER SET | S5794057 | LP7P9 R3 B MODE ROTARY ENCODER SET  | 1 | 1 | N | N | N | Y | N | N |

Table 9-8 OPIO











| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 329 | OPIO HUB BOARD PWA FOR LP9_LP7 | 5503846-3 | OPIO HUB BOARD PWA FOR LP9_LP7  | 1 | 1 | Y | Y | Y | N | N | N |
| 330 | Probe Light Assy | S7503830 | Probe Light Assy  | 1 | 1 | N | N | N | Y | Y | Y |
| 331 | Op Button_Knob Sets R3 | S5794044 | OP Button+Knob sets  | 1 | 1 | N | N | N | Y | N | N |
| 332 | OPIO Up_Down Button Set R3 | S5794070 | Up/Down Button, Rotation Button, OPIO Dummy Button Sets  | 1 | 1 | N | N | N | Y | Y | Y |
| 333 | OPIO LOWER COVER R3 | 5794065 | OPIO LOWER COVER  | 1 | 1 | N | N | N | Y | N | N |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---|-------------|--|-----|-----|----|----|------|----|----|------|
| 334 | Operator Panel 10.4 R4 | 8603848 | OPIO Assy LP8P9P10 R4  | 1 | 1 | N | N | N | N | Y | Y |
| 335 | LP8P9P10 R4 OPIO Upper Assy set | S7788926 | LP8/P9/P10 OPIO Upper Assy  | 1 | 1 | N | N | N | N | Y | Y |
| 336 | LP8P9P10 R4 OPIO Lower Assy | S8554917 | LP8/P9/P10 OPIO Lower Assy  | 1 | 1 | N | N | N | N | Y | Y |
| 337 | Main PWA for Operator Panel 10.4 R4 | S7781465 | LP8/P9/P10 OPIO Main PWA  | 1 | 1 | N | N | N | N | Y | Y |
| 338 | Rotary Encoder set for Operator Panel 10.4 R4 | S6794055 | Rotary Encoder set R4  | 1 | 1 | N | N | N | N | Y | Y |

Table 9-8 OPIO

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---|-------------|---|-----|-----|----|----|------|----|----|------|
| 339 | Joystick Encoder set for Operator Panel 10.4 R4 | S5856454 | Joystick Encoder set R4  | 1 | 1 | N | N | N | N | Y | Y |
| 340 | B Mode Rotary Encoder Set R4 | S6794056 | B Mode Rotary Encoder set R4  | 1 | 1 | N | N | N | N | Y | Y |
| 341 | OPIO Lower Cover R4 | 5841801 | OPIO Lower Cover R4  | 1 | 1 | N | N | N | N | Y | Y |
| 342 | Key Rubber Set R4 | S5857875 | Key Rubber Set R4  | 1 | 1 | N | N | N | N | Y | Y |
| 343 | OPIO Button Knob set R4 | S5848756 | OPIO Button Set R4  | 1 | 1 | N | N | N | N | Y | Y |

9-7-1 Software compatibility information

For the systems that are marked as 'x', both base and application software are required to be ordered as FRUs and installed as it is described in the table after the OPIO replacement.

Table 9-9

| # | GPN | Description | Base:5507300-4 Application: 5507301-6 | | | | | Base:5724302-2 Application:5724301-4 | | | | |
|---|------------|---------------------------------|--|--------|--------|--------|-----------------------|---|--------|--------|--------|-----------------------|
| | | | R1.01 | R1.0.2 | R1.0.3 | R1.0.4 | R1.0.5 or above | R2.01 | R2.0.2 | R2.0.3 | R2.0.4 | R2.0.5 or above |
| 1 | S5781418-2 | OPIO ASSY LOGIQP7 SET | x | x | x | x | | x | x | x | x | |
| 2 | S5781419-2 | OPIO ASSY LOGIQP9 SET | x | x | x | x | | x | x | x | x | |
| 3 | S5781422 | LP7P9 OPIO MAIN BOARD PWA-H SET | x | x | x | | | x | x | x | x | |
| 4 | S5788926 | LP7 Upper ASSY SET | x | x | x | x | | x | x | x | x | |
| 5 | S5788927 | LP9 Upper ASSY SET | x | x | x | x | | x | x | x | x | |
| 6 | S5781425 | LP7P9 OPIO lower Assy - H SET | x | x | x | | | x | x | x | x | |

NOTE: In case LOGIQ P7/P9 OPIO 10.4 inch LCD module set (5561038) is not available:

- For LP7 SW R1.0.5 or above systems, LP7 Upper ASSY SET(S5788926) can be used instead.
- For LP7 SW R1.0.4 or below systems, LP7 Upper ASSY SET(S5788926), Base SW(5507300-4) and Application SW(5507301-6) can be used instead.
- For LP9 SW R1.0.5 or above systems, LP9 Upper ASSY SET(S5788927), can be used instead.
- For LP9 SW R1.0.4 or below systems, LP9 Upper ASSY SET(S5788927), Base SW(5507300-4) and Application SW(5507301-6) can be used instead.

NOTE: In case LOGIQ P7/P9 OPIO 10.4 inch LCD module set(6561038) is not available:

- For LP7 SW R2.0.5 or above systems, LP7 Upper ASSY SET(S5788926) can be used instead.
- For LP7 SW R2.0.4 or below systems, LP7 Upper ASSY SET(S5788926), Base SW(5724300-2) and Application SW(5724301-4) can be used instead.
- For LP9 SW R2.0.5 or above systems, LP9 Upper ASSY SET(S5788927) can be used instead.
- For LP9 SW R2.0.4 or below systems, LP9 Upper ASSY SET(S5788927), Base SW(5724300-2) and Application SW(5724301-4) can be used instead.

Section 9-8 Nest Box Parts

Table 9-10 Nest Box Parts





| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-----------|-------------|--|-----|-----|----|----|------|----|----|------|
| 401 | MBP Assy | 5503745 | MBP Assy  | 1 | 1 | Y | Y | Y | Y | N | N |
| 401-1 | MBP R4 | 5822300 | MBP R4 PWA  | 1 | 1 | N | N | N | N | Y | Y |
| 401-2 | CSI R4 | 5822433 | CSI R4 PWA  | 1 | 1 | N | N | N | N | Y | Y |
| 402 | MCB PWA | 5494666-4 | MCB PWA  | 1 | 1 | Y | N | N | N | N | N |
| 402-1 | MCB-H | 6494666-2 | MCB-H Assy  | 1 | 1 | N | Y | Y | N | N | N |
| 402-2 | MCB-R3 | 7494666-2 | MCB-R3 PWA - AudioCodec  | 1 | 1 | N | N | N | Y | N | N |

Table 9-10 Nest Box Parts






| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-----------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 402-3 | MCB-A | 8494666-2 | MCB-A PWA  | 1 | 1 | N | N | N | N | Y | Y |
| 403 | MDC Assy | 5552220-2 | MDC Assy  | 1 | 1 | Y | Y | Y | N | N | N |
| 403-1 | MDC-R3 Assy | 5552220-3 | MDC-R3 Assy  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 404 | 3 port MPI Assy | 5582646-6 | LOGIQ_P7_P9_Three_ports_MPI_H_Assy  | 1 | 1 | Y | Y | Y | Y | N | N |
| 405 | 4 port MPI Assy | 5504162-6 | LOGIQ_P7_P9_Four_ports_MPI_H_Assy  | 1 | 1 | Y | Y | Y | Y | N | N |

Table 9-10 Nest Box Parts


| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|---------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 405-1 | MPI-R4 | 5822930 | MPI-R4-PWA  | 1 | 1 | N | N | N | N | Y | Y |
| 406-1 | IOBOX-B Assy | 5554921-5 | IOBOX Assy  | 1 | 1 | Y | N | N | N | N | N |
| 406-2 | IOBOX-B Assy | 5991830-4 | IOBOX-B Assy  | 1 | 1 | N | Y | Y | Y | N | N |
| 406-3 | IOBOX-BT Assy | 5877267 | IOBOX-BT Assy  | 1 | 1 | N | N | N | Y | N | N |
| 406-4 | IOBOX R4 | 5831932 | IOBOX R4  | 1 | 1 | N | N | N | N | Y | Y |
| 407 | DC4D Assy | 5372959 | DC4D Assy  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 408 | HDD | 5459671 | HDD  | 1 | 1 | Y | Y | Y | N | N | N |

Table 9-10 Nest Box Parts



| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-------------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 409 | SSD | 5839947 | 2.5inch SSD 500GB  | 1 | 1 | N | N | N | Y | N | N |
| 409-1 | M.2 SSD | 5832283 | M.2 SSD  | 1 | 1 | N | N | N | N | Y | Y |
| 410 | DVD Drive (ODD) | 5393433 | Without Cables  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 411 | Nest front FAN with Cable Assy MARU | 5549305 | Nest front FAN with Cable Assy MARU  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 412 | ODD SATA PWR cable collector | S5581980 | Maru Shielding SATA cable, Maru ODD PWR Cable  | 1 | 1 | Y | Y | Y | Y | Y | Y |

Table 9-10 Nest Box Parts






| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-----------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 413 | Nest Bot FAN with Cable Assy MARU | 5549309 | <p>Nest Bot FAN with Cable Assy MARU</p>  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 414 | COM module | 6324558-2 | <p>COM module</p>  | 1 | 1 | Y | N | N | N | N | N |
| 414-1 | COM module | 6324558-4* | <p>COM module(IvyBridge)</p>  | 1 | 1 | N | Y | Y | N | N | N |
| 414-2 | COM module | 7324558-2* | <p>COM Express MODULE, Type6,i3-6100E,DDR4 8G Memory, Heatsink with FAN for MARU(SkyLake)</p>  | 1 | 1 | N | Y | Y | N | N | N |
| 414-3 | COM module | 7324560-2 | <p>COM Express MODULE, Type6,i3-6100E,DDR4 8G Memory, Heatsink with FAN for MARU R3</p>  | 1 | 1 | N | N | N | Y | N | N |

Table 9-10 Nest Box Parts




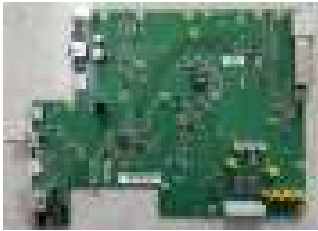


| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 414-4 | COM module | 8324560 | COM Express MODULE, Type6, i3-6100E, DDR4 8G Memory, Heatsink with FAN for MARU R4  | 1 | 1 | N | N | N | N | Y | Y |
| 415 | MBOB with Harness and screws | 5758146 | MBOB with Harness and screws  | 1 | 1 | N | Y | Y | Y | Y | Y |
| 416 | MIO-2 PWA | 5551110-2 | MIO-2 PWA Assy  | 1 | 1 | Y | N | N | N | N | N |
| | MIOB2a | 5551110-10 | MIOB2a PWA Assy  | 1 | 1 | N | N | N | Y | N | N |
| | MIOB2 | 6426420-4 | MIOB2 PWA  | 1 | 1 | N | N | N | Y | Y | Y |
| 417 | BBC with Harness and Screws | 5758147 | BBC with Harness and Screws  | 1 | 1 | N | Y | Y | Y | Y | Y |

Table 9-10 Nest Box Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|----------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 418 | Artesyn LPS363 ACDC Assy for FRU | 5737480-5 | Artesyn LPS363 ACDC Assy for FRU  | 1 | 1 | Y | Y | Y | Y | N | N |
| 418-1 | ACDC with cable R4 | S6737480-2 | TDK ACDC with cable R4  | 1 | 1 | N | N | N | Y | Y | Y |
| 419 | OPIO Cable Assy MARU | 5582888 | OPIO Power Cable OPIO USB Cable  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 420 | LCD Monitor Cable Assy MARU | 5582890 | LCD POWER CABLE (R1/R2/R2.5/R3) LCD HDMI CABLE (R1/R2/R2.5/R3) LCD USB CABLE (R1/R2/R2.5)  | 1 | 1 | Y | Y | Y | Y | N | N |
| 421 | Speaker with Cable Assembly MARU | 5549296 | Including Speaker Cable  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 422 | Peripheral Cable Assy MARU | 5582891 | Usb*2/Pwr -Bw Color USB Cable Assy Usb*2/Pwr -Bw Color Power Cable Assy  | 1 | 1 | Y | Y | Y | Y | N | N |

Table 9-10 Nest Box Parts






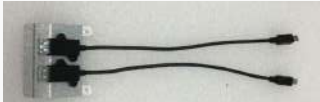


| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|-----------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 422-1 | Peripheral Cable Assy LP8P9P10 R4 | S5857337 | Peripheral Cable Assy LP8P9P10 R4  | 1 | 1 | N | N | N | N | Y | Y |
| 423 | LP9P7 Cable Set R3 | S7503831 | LP9P7 Cable Set R3  | 1 | 1 | N | N | N | Y | Y | Y |
| 424 | LP9_LP7 OPIO Cable Set | S5716942-2 | LP9_LP7 OPIO Cable Set  | 1 | 1 | Y | N | N | N | Y | Y |
| 425 | LP9_LP7 OPIO Cable Set - JH | 5761351 | LP9_LP7 OPIO Cable Set - JH  | 1 | 1 | N | Y | N | N | Y | Y |
| 426 | LP9_LP7 OPIO Cable Set - H | 6716942 | LP9_LP7 OPIO Cable Set - H  | 1 | 1 | N | Y | Y | Y | Y | Y |
| 427 | LOGIQ P9P7 External USB port ASSY | S5808601 | LOGIQ P9P7 External USB port ASSY  | 1 | 1 | Y | Y | Y | N | N | N |

Table 9-10 Nest Box Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--|-------------------------|---|-----|-----|----|----|------|----|----|------|
| 428 | HDMI male to HDMI female adaptor cable | H44942LW (5761422)** | HDMI male to HDMI female adaptor cable  | 1 | 1 | Y | Y | Y | Y | N | N |
| 429 | Monitor Cable SET R4 | S8503831 | Monitor Cable SET R4  | 1 | 1 | N | N | N | N | Y | Y |

* Ivybridge and SkyLake COM module can be determined by checking the BIOS Codename.
Mechanical Parts

** Use the HDMI male to HDMI female adaptor cable to connect the external monitor as HCAT.
After that, if there is a problem with the adaptor, please order FRU 5761422.

Section 9-9 Mechanical Part

Table 9-11 Mechanical Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|----------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 501 | Total Lock Caster | 5400391-2 | except Swivel Lock Caster (3 per console)  | 3 | 1 | Y | Y | Y | N | N | N |
| 502 | Swivel Lock Caster | 5400392-2 | Rear-Right Caster (1 per console)  | 1 | 1 | Y | Y | Y | N | N | N |
| 503 | Castor Total Lock N9 | 5746120 | except Swivel Lock Caster (3 per console)  | 3 | 1 | N | N | N | Y | Y | Y |

Table 9-11 Mechanical Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 504 | Castor Dual Lock N9 | 5746121 | Rear-Right Caster (1 per console)  | 1 | 1 | N | N | N | Y | Y | Y |
| 505 | Air Filter set | 5582810 | Front Air Filter, Bottom Air Filter  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 506 | Probe Holder set | 5582811 | Probe cup, Small Probe Cup, 4D Probe Holder, Hanger Cap Rubber  | 1 | 1 | Y | Y | Y | N | N | N |
| 507 | Probe Holder set R3 | S5794066 | Probe cup, Small Probe Cup, 4D Probe Holder, Hanger Cap Rubber  | 1 | 1 | N | N | N | Y | Y | Y |
| 508 | Front Cable Hook | 5394432 | OPIO Front Hook  | 1 | 1 | Y | Y | Y | N | N | N |
| 509 | OPIO Front Hook R3 | 5730659 | OPIO Front Hook  | 1 | 1 | N | N | N | Y | N | N |

Table 9-11 Mechanical Parts








| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 510 | Fixed Arm set | 5507554 | Full Assy for LCD Monitor  | 1 | 1 | Y | Y | Y | N | N | N |
| 511 | Fixed Arm Assy R3 | 5794897 | Full Assy for LCD Monitor  | 1 | 1 | N | N | N | Y | N | N |
| 512 | Fixed Arm Cover sets | 5582893 | Plastic Cover  | 1 | 1 | Y | Y | Y | N | N | N |
| 513 | Fixed Arm Cover Set R3 | S5794075 | Plastic Cover  | 1 | 1 | N | N | N | Y | N | N |
| 514 | AC Cable Holder set | 5589119 | Power Cord Fix BRKT 220V, Power Cord Fix BRKT 110V  | 1 | 1 | Y | Y | Y | Y | N | N |

Table 9-11 Mechanical Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|-------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 515 | Gel Holder R2 | 5508055-2 | Gel holder  | 1 | 1 | Y | Y | Y | N | N | N |
| 516 | Gel Holder R3 | 5794072 | Gel holder  | 1 | 1 | N | N | N | Y | Y | Y |
| 517 | Link Arm Cable Hook | 5507026 | Link Arm Cable Hook  | 1 | 1 | Y | Y | Y | N | N | N |
| 518 | Link Arm Cable Hook R3 | 5794895 | Link Arm Cable Hook  | 1 | 1 | N | N | N | Y | Y | Y |
| 519 | Option Tag Label | 5573772 | Option Tag Label  | 1 | 1 | Y | Y | Y | N | N | N |
| 520 | Option Tag Label R3 | 5794163 | Option Tag Label  | 1 | 1 | N | N | N | Y | N | N |
| 521 | OPTION TAG LABEL R4 CHN | 5857310 | Option tag label R4 CHN  | 1 | 1 | N | N | N | N | Y | N |

Table 9-11 Mechanical Parts

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 522 | LOGIQ P9 ROTATION MODULE KIT | 5728965 | LOGIQ P9 Rotation module kit  | 1 | 1 | Y | Y | Y | N | Y | Y |
| 523 | RS KNOB SET R3 | S5794028 | RS KNOB SET R3  | 1 | 1 | N | N | N | Y | Y | Y |
| 524 | Option Tag Label R4 ENG | 5857309 | Option Tag Label R4 English  | 1 | 1 | N | N | N | N | Y | Y |
| 525 | Option Tag Label R4 CHN | 5857310 | Option Tag Label R4 Chinese  | 1 | 1 | N | N | N | N | Y | Y |





Section 9-10 Options

Table 9-12 Options

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 701 | Multi Purpose Holder set | 5582894 | Multi Purpose Holder and Gel Cup  | 1 | 1 | Y | Y | Y | N | N | N |
| 702 | USB Footswitch, 3 button | 5380960-2 | 3 button switches operated by the feet  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 703 | LCD Arm | 5538531 | Full assy for LCD Monitor  | 1 | 1 | Y | Y | Y | N | N | N |
| 704 | LCD Arm R3 | 5794197 | Full assy for LCD Monitor  | 1 | 1 | N | N | N | Y | N | N |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|--------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 704-1 | LCD Arm R4 | 5841783 | LCD Arm Assy  | 1 | 1 | N | N | N | N | Y | Y |
| 704-2 | LCD Arm Cover Set R4 | S5857259 | LCD Arm Cover Set  | 1 | 1 | N | N | N | N | Y | Y |
| 705 | LCD Arm Plastic Covers | 5548571 | Plastics  | 1 | 1 | Y | Y | Y | N | N | N |
| 706 | LCD Arm Plastic Covers 3 | S5794170 | Plastics  | 1 | 1 | N | N | N | Y | N | N |
| 707 | OPIO Tray set | 5603831 | OPIO Tray, Tray Fix BRKT  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 708 | Paper Tray | 5499671 | Plastics  | 1 | 1 | Y | Y | Y | Y | Y | Y |



| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 709 | Side Tray Assy | 5582897 | Side Tray L, R  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 710 | Drawer Assy | 5537774 | Drawer Assy  | 1 | 1 | Y | Y | Y | N | N | N |
| 711 | Drawer Assy R3 | 5794898 | Drawer Assy  | 1 | 1 | N | N | N | Y | Y | Y |
| 712 | Rear Handle | 5730809 | Rear Handle  | 1 | 1 | Y | Y | Y | N | N | N |
| 713 | Rear Handle R3 | 5794081 | Rear Handle  | 1 | 1 | N | N | N | Y | Y | Y |
| 714 | Probe cable hanger | 5172249 | Probe cable hanger  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 715 | Rear Cable Hook | 5394433 | Rear Cable Hook  | 1 | 1 | Y | Y | Y | N | N | N |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 716 | OPIO Side Rear Hook R3 | 5730661 | Rear Cable Hook  | 1 | 1 | N | N | N | Y | Y | Y |
| 717 | Card Reader BRKT set | 5599965 | Card Reader BRKT, Self adhesive hook and loop  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 718 | MCWD assy | 5717876 | MCWD assy  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 719 | ECG | 5570914 | ECG  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 720 | Gel Warmer | 5537501-2 | Gel warmer 2 LP7P9  | 1 | 1 | Y | Y | Y | N | N | N |
| 721 | Gel Warmer Cap | 5491354 | Bottom of Gel Warmer  | 1 | 1 | Y | Y | Y | N | N | N |
| 722 | Gel Warmer 2 LP7P9 R3 | 5794080 | Gel Warmer  | 1 | 1 | N | N | N | Y | Y | Y |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|--|----------------------|--|-----|-----|----|----|------|----|----|------|
| 723 | Gel Warmer Cap LS8 R3 | 5692045 | Bottom of Gel Warmer  | 1 | 1 | N | N | N | Y | Y | Y |
| 724 | Multi Purpose Holder Set R3 | S5794159 | Multi Purpose Holder and Gel Cup  | 1 | 1 | N | N | N | Y | Y | Y |
| 725 | ECG Assy | 5599525 | LOGIQ P7_P9 ECG Module Assy  | 1 | 1 | Y | Y | Y | Y | N | N |
| 725-1 | ECG Assembly | 5851293 | LOGIQ P8P8P10 ECG Module Assy  | 1 | 1 | N | N | N | N | Y | Y |
| 726 | MARU WIRELESS LAN ASSY for Japan MARU WIRELESS LAN ASSY except for Japan | 5599724 5599725-2 | MARU WIRELESS LAN ASSY for Japan MARU WIRELESS LAN ASSY except for Japan  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 727 | BT820-02 Laird Bluetooth dongle | 5799898 | BT820-02 Laird Bluetooth dongle  | 1 | 1 | N | N | N | Y | Y | Y |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|-------|--|-------------|---|-----|-----|----|----|------|----|----|------|
| 728 | Battery | 5450061-3 | Battery  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 730 | Universal Video Converter S300, UVC-S300 | 5750263 | Universal Video Converter S300, UVC-S300  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 731 | DCWD assy | 5507749 | DCWD assy  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 731-1 | DCWD Assy | 5371008 | DCWD Assy  | 1 | 1 | N | N | N | N | Y | Y |
| 732 | IEC Type ECG CABLE | 5341188 | ECG Patient cable only for EU, ASIA  | 1 | 1 | Y | Y | Y | Y | N | N |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|----------------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 733 | Norav ECG Patient cable AHA Type | 5178978 | Norav ECG Patient cable AHA Type  | 1 | 1 | Y | Y | Y | Y | N | N |
| 734 | Norav ECG Patient cable IEC Type | 5192623 | Norav ECG Patient Cable IEC Type  | 1 | 1 | Y | Y | Y | Y | N | N |
| 735 | ECG TRUNK CABLE AHA | 2106305-001 | ECG TRUNK CABLE, 3/5-LEAD, AHA, 3.6 M/12 FT  | 1 | 1 | N | N | N | N | Y | Y |
| 736 | ECG TRUNK CABLE IEC | 2106305-003 | ECG TRUNK CABLE, 3/5-LEAD, IEC, 3.6 M/12 FT  | 1 | 1 | N | N | N | N | Y | Y |


| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|-------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 737 | ECG LEADWIRE SET AHA | 2106390-001 | ECG LEADWIRE SET, 3-LD GROUPED, GRABBER, AHA, 74 CM/ 29 IN  | 1 | 1 | N | N | N | N | Y | Y |
| 738 | ECG LEADWIRE SET IEC | 2106390-003 | ECG LEADWIRE SET, 3-LD GROUPED, GRABBER, IEC, 74 CM/ 29 IN  | 1 | 1 | N | N | N | N | Y | Y |
| 739 | AN KEYBOARD ASSY R3 | 5794155 | AN KEYBOARD ASSY ENGLISH AN KEYBOARD ASSY GREEK AN KEYBOARD ASSY NORWEGIAN AN KEYBOARD ASSY RUSSIAN AN KEYBOARD ASSY FRENCH AN KEYBOARD ASSY SWEDISH AN KEYBOARD ASSY GERMAN  | 1 | 1 | N | N | N | Y | Y | Y |
| 740 | AN KEYBOARD ASSY GREEK R3 | 5794900 | | 1 | 1 | N | N | N | Y | Y | Y |
| 741 | AN KEYBOARD ASSY NORWEGIAN R3 | 5794902 | | 1 | 1 | N | N | N | Y | Y | Y |
| 742 | AN KEYBOARD ASSY RUSSIAN R3 | 5794904 | | 1 | 1 | N | N | N | Y | Y | Y |
| 743 | AN KEYBOARD ASSY FRENCH R3 | 5794906 | | 1 | 1 | N | N | N | Y | Y | Y |
| 744 | AN KEYBOARD ASSY SWEDISH R3 | 5794908 | | 1 | 1 | N | N | N | Y | Y | Y |
| 745 | AN KEYBOARD ASSY GERMAN R3 | 5794910 | | 1 | 1 | N | N | N | Y | Y | Y |

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|----------------------------|-------------|----------------------------|-----|-----|----|----|------|----|----|------|
| 746 | AN KEYBOARD ASSY | 5582898 | AN KEYBOARD ASSY ENGLISH | 1 | 1 | Y | Y | Y | N | N | N |
| 747 | AN KEYBOARD ASSY GREEK | 5611226 | AN KEYBOARD ASSY GREEK | 1 | 1 | Y | Y | Y | N | N | N |
| 748 | AN KEYBOARD ASSY NORWEGIAN | 5611228 | AN KEYBOARD ASSY NORWEGIAN | 1 | 1 | Y | Y | Y | N | N | N |
| 749 | AN KEYBOARD ASSY RUSSIAN | 5611234 | AN KEYBOARD ASSY RUSSIAN | 1 | 1 | Y | Y | Y | N | N | N |
| 750 | AN KEYBOARD ASSY FRENCH | 5611237 | AN KEYBOARD ASSY FRENCH | 1 | 1 | Y | Y | Y | N | N | N |
| 751 | AN KEYBOARD ASSY SWEDISH | 5611239 | AN KEYBOARD ASSY SWEDISH | 1 | 1 | Y | Y | Y | N | N | N |
| 752 | AN KEYBOARD ASSY GERMAN | 5611241 | AN KEYBOARD ASSY GERMAN | 1 | 1 | Y | Y | Y | N | N | N |



Section 9-11 Optional Peripherals and Accessories

Table 9-13 Optional Peripherals and Accessories - Printers

| Item | Part Name | Part Number | Description | Qty | FRU |
|------|---|-------------|---|-----|-----|
| 811 | Digital B/W Video Printer (Sony UP-D898) | H46992LS | Digital B/W Video Printer, USB-Port  | - | 1 |

NOTE: The illustrations may not correspond to the actual product!

Section 9-12 Probes

Refer to the [Table 3-24 Probe Description](#)

Section 9-13 Power Cord

Table 9-14 Power Cord






| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|----------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 930 | Power Cord for India | 6736108-3 | Power Cord for India  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 931 | Power Cord for Switzerland | 6736113-3 | Power Cord for Switzerland  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 932 | Power Cord for UK/HK | 6736107-3 | Power Cord for UK/HK  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 933 | Power Cord for ANZ | 6736102-3 | Power Cord for ANZ  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 934 | Power Cord for Denmark | 6736115-3 | Power Cord for Denmark  | 1 | 1 | Y | Y | Y | Y | Y | Y |

Table 9-14 Power Cord

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--------------------------------|-------------|---|-----|-----|----|----|------|----|----|------|
| 935 | Power Cord for Italy | 6736110-3 | Power Cord for Italy  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 936 | Power Cord for Argentina | 6736101-3 | Power Cord for Argentina  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 937 | Power Cord for Israel | 6736109-3 | Power Cord for Israel  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 938 | Power Cord 110V for Canada/USA | 6736114-3 | Power Cord 110V for Canada/USA  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 939 | Power Cord 220V for EU/Korea | 6736105-3 | Power Cord 220V for EU/Korea  | 1 | 1 | Y | Y | Y | Y | Y | Y |

Table 9-14 Power Cord

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|--|-------------|---|-----|-----|----|----|------|----|----|------|
| 940 | Power Cord for China | 6736104-3 | Power Cord for China  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 941 | Power Cord for Brazil | 6736103-3 | Power Cord for Brazil  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 942 | Power Cord for South Africa | 6736112-3 | Power Cord for South Africa  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 943 | Power Cord for Japan/ Taiwan | 6736111-3 | Power Cord for Japan  | 1 | 1 | Y | Y | Y | Y | Y | Y |
| 944 | PWR SPLY CRD ST DENMARK NON-HOSPITAL GRADE STD PLUG 20A 250V | 6736106-12 | PWR SPLY CRD ST DENMARK NON-HOSPITAL GRADE STD PLUG 20A 250V  | 1 | 1 | Y | Y | Y | Y | Y | Y |

Table 9-14 Power Cord

| Item | Part Name | Part Number | Description | Qty | FRU | R1 | R2 | R2.5 | R3 | R4 | R4.5 |
|------|---------------------------|-------------|--|-----|-----|----|----|------|----|----|------|
| 945 | LP7P9 CORD FIX BRKT | 5802024 | LP7P9 POWER CORD FIX BRKT  | 1 | 1 | Y | Y | Y | Y | N | N |
| 946 | Power Cord Fix Brkt R4 | 5841823 | Power Cord Fix Brkt R4  | 1 | 1 | N | N | N | N | Y | Y |

NOTE: In case of Feller power cable is being replaced with a Volex power cable, LP7P9 POWER CORD FIX BRKT (GPN:5802024) need to be ordered separately (R1 to R3)

Chapter 10

Care & Maintenance

Section 10-1 Overview

10-1-1 Preventive Maintenance Inspections


It has been determined by engineering that your LOGIQ P7/P8/P9/P10 system does not have any high wear components that fail with use, therefore no Preventive Maintenance Inspections are mandatory. However, some Customers Quality Assurance Programs may require additional tasks and/or inspections at a different frequency than listed in this manual.


10-1-2 Purpose of Chapter 10

This chapter describes **Care & Maintenance** on the LOGIQ P7/P8/P9/P10 system and its peripherals. These procedures are intended to **maintain the quality** of the ultrasound **systems performance**. Read this chapter completely and familiarize yourself with the procedures before performing a task.

Table 10-1 Contents in Chapter 10

| Section | Description | Page Number |
|---------|---|-------------|
| 10-1 | Overview | 10-1 |
| 10-2 | Why do Maintenance | 10-2 |
| 10-3 | Maintenance Task Schedule | 10-2 |
| 10-4 | Tools Required | 10-5 |
| 10-5 | System Maintenance | 10-6 |
| 10-6 | System Software Updates (Software Download) (R1, R2, R2.5 only) | 10-13 |
| 10-7 | Using a Phantom | 10-22 |
| 10-8 | Electrical Safety Tests | 10-22 |
| 10-9 | When There's Too Much Leakage Current... | 10-33 |
| 10-10 | Ultrasound INSPECTION CERTIFICATE | 10-36 |

 **CAUTION** Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and even when disconnecting/connecting cables.

 **DANGER** **THERE ARE SEVERAL PLACES ON THE BACKPLANE, THE AC DISTRIBUTION, AND DC DISTRIBUTION THAT ARE DANGEROUS. BE SURE TO DISCONNECT THE SYSTEM POWER PLUG AND SWITCH OFF THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.**

 **CAUTION** Do not pull out or insert circuit boards while power is ON.



CAUTION DO NOT operate this unit unless all board covers and frame panels are securely in place, to ensure optimal system performance and cooling. When covers are removed, EMI may be present.

Section 10-2 Why do Maintenance

10-2-1 Quality Assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer's responsibility to have a quality assurance program in place for each scanner. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designer.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program. Please contact us for coverage information and/or price for service.

Section 10-3 Maintenance Task Schedule

10-3-1 How often should care & maintenance tasks be performed?

The Customer Care Schedule (see: [page 10-3](#)) specifies how often your LOGIQ P7/P8/P9/P10 should be serviced and outlines items requiring special attention.

NOTE: *It is the customer's responsibility to ensure the LOGIQ P7/P8/P9/P10 care & maintenance is performed as scheduled in order to retain its high level of safety, dependability and performance.*

Your GE Service Representative has an in-depth knowledge of your LOGIQ P7/P8/P9/P10 ultrasound scanning system and can best provide competent, efficient service. Please contact us for coverage information and/or price for service.

The service procedures and recommended intervals shown in the Customer Care Schedule assumes that you use your LOGIQ P7/P8/P9/P10 for an average patient load (10-12 per day) and not use it as a primary mobile unit which is transported between diagnostic facilities.

NOTE: *If conditions exist which exceed typical usage and patient load, then it is recommended to increase the maintenance frequencies.*

Abbreviations used in the Customer Care Schedule [Table 10-2](#):

D = Daily W = Weekly M = Monthly A = Annually

10-3-1 How often should care & maintenance tasks be performed? (cont?)

Table 10-2 Customer Care Schedule

| Item | Service at Indicated Time | D | W | M | A | Notes |
|---|---|----|---|----|---|--|
| Air Filter Grid | Remove the filter grid and clean the air filter. | | • | | | Recommend to clean filter at least bi-weekly |
| AC Mains Cable | Inspect AC Mains Cable | | | • | | Mobile Unit Check weekly |
| Cables and Connectors | Check if all cables are fixed well seated at the correct position and if there is no mechanical damage visible. | | | | • | also after corrective maintenance |
| User Interface | Clean alphanumeric keyboard, Functional keys, Digital potentiometers, TGC-Shift potentiometers. (vacuum cleaner, lukewarm soap water on a soft, damp cloth) | | • | | | Be careful not to get the cloth too wet so that moisture does not enter the loudspeakers, TGC-Slider, or other keys! |
| LCD Monitor, Touch Panel and Probe holder | Clean LCD Monitor surface and Probe holder with a fluid detergent in warm water on a soft, damp cloth. | | • | | | Be careful not to get the cloth too wet so that moisture does not enter the entire system. |
| Mechanical parts | Clean and inspect the mechanical function of wheels, casters, brakes and swivel locks as well as side door, foot rest, front and rear handle, and monitor holder. Remove Dust and Coupling gel. | | | • | | Mobile Unit Check Daily |
| Control Console movement | Check Translation/Rotation and Height Adjustment (Elevation) | | | | • | more frequently at Mobile Units |
| Trackball Check | Check proper operation (Cursor movement X, Y direction) | • | | | | If failure occurs go to trackball cleaning. |
| Trackball Cleaning | Remove trackball ring; open the trackball housing and take out the trackball to clean it with soft tissue and screwdriver shaft. | | | | • | Please record it in the systems setup maintenance report |
| Disk Drives (Data Backup) | Test Image filing (Archive) Import and Export data capability (DVD/CD Drive) | | • | •* | | * save the image filing data weekly or at least monthly on DVD/CD depending on the number of examinations |
| Safe Probe Operation | Clean probes and probe cables and check acoustic lens housing (cracks) and probe cables. In case of mechanical damage, don't use them! Danger: Safety risk for operator and patient. | •* | | | | * or before each use |
| Probe Air bubbles | To detect air bubbles in filling liquid, shake the probe carefully and check abnormal noise. | | | | | |
| Probe connectors | Remove dust/dirt of all probe connectors. Clean with vacuum cleaner if dust is visible. | | | • | | |
| Console Leakage Current Checks | | | | | • | Also after corrective maintenance or as required by your facilities QA program. |
| Peripheral Leakage Current Checks | | | | | • | Also after corrective maintenance or as required by your facilities QA program. |

Table 10-2 Customer Care Schedule

| Item | Service at Indicated Time | D | W | M | A | Notes |
|---|--|---|---|---|---|---|
| Surface Probe Leakage Current Checks | | | | | | <ul style="list-style-type: none"> Also after corrective maintenance or as required by your facilities QA program. |
| Endocavity Probe Leakage Current Checks | | | | | | <ul style="list-style-type: none"> Also after corrective maintenance or as required by your facilities QA program. |
| Measurement Accuracy Checks | | | | | | <ul style="list-style-type: none"> Also after corrective maintenance or as required by your facilities QA program. |
| Probe/Phantom Checks | Check axial and lateral resolution (see Basic User Manual Technical specifications). Check Gain and TGC changes, vary the focus and check reaction on screen. | | | | | <ul style="list-style-type: none"> Also after corrective maintenance or as required by your facilities QA program. |
| Functional Checks of all probes Section 10-5-2 on page 10-7 | | | | | | <ul style="list-style-type: none"> Also after corrective maintenance or as required by your facilities QA program. |

Section 10-4 Tools Required

10-4-1 Special Tools, Supplies and Equipment

10-4-1-1 Specific Requirements for Care & Maintenance

Table 10-3 Overview of Requirements for Care & Maintenance

| Tool | Part Number | Comments |
|------------------------------|---|---|
| Digital Volt Meter (DVM) | | minimum 5% accuracy, 3.5 digit and 200 Ohm range required |
| Anti Static Kit | 46-194427P231 46-194427P279 46-194427P369 46-194427P373 46-194427P370 | Kit includes anti-static mat, wrist strap and cables for 200 to 240 V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive ground cord |
| Anti Static Vacuum Cleaner | 46-194427P278 46-194427P279 | 120V 230V |
| Safety Analyzer | 46-285652G1 | DALE 600 KIT (or equivalent) for electrical tests |
| QIQ Phantom | E8370RB | RMI Grayscale Target Model 403GS |
| CD-RW Media | | (minimum quad speed) |
| DVD+RW Disc Media blank | H48641D | blank 4,7GB DVD+RW disc |
| B/W Printer Cleaning Sheet | | see printer user manual for requirements |
| Color Printer Cleaning Sheet | | see printer user manual for requirements |
| Disposable Gloves | | Use to reach the exterior of the system |
| Cut resistant gloves | | Use to avoid scraping your hands when reaching into the Main Console or blind spaces |
| Screwdriver PH0 | | |
| Screwdriver PH1 | | |
| Screwdriver PH2 | | |

Section 10-5 System Maintenance

10-5-1 Preliminary Checks

The preliminary checks take about 15 minutes to perform. Refer to the system user documentation whenever necessary.

Table 10-4 System Checks

| Step | Item | Description |
|------|---------------|---|
| 1 | Ask & Listen | Ask the customer if they have any problems or questions about the equipment. |
| 2 | Paperwork | Fill in the top of the Ultrasound Inspection Certificate (see: page 10-36). Note all probes and system options. |
| 3 | Power up | Turn the system power on and verify that all fans and peripherals turn on. Watch the displays during power up to verify that no warning or error messages are displayed. |
| 4 | Probes | Verify that the system properly recognizes all probes. |
| 5 | Displays | Verify proper display on the LCD monitor and Touch Panel. |
| 6 | Presets | "Full Backup" all customer presets on Hard disk and/or DVD (see: Settings - Backup and Restore on page 8-69). |
| 7 | Image Archive | Backup the Image Archive on DVD, USB-Stick, etc. (see: see: "Settings - Backup and Restore" on page 8-69). |

10-5-2 Functional Checks

The functional checks take about 60 minutes to perform.
 Refer to the LOGIQ P7/P8/P9/P10 Basic User Manual whenever necessary.

10-5-2-1 System Checks

Table 10-5 System Functional Checks

| Step | Item | Description |
|------|------------------------------|--|
| 1 | B Mode | Verify basic B Mode (2D) operation. Check the basic system controls that affect this mode of operation. |
| 2 | M Mode | Verify basic M Mode operation. Check the basic system controls that affect this mode of operation. |
| 3 | CFM Mode | Verify basic CFM Mode (Color Flow Mode) operation. Check the basic system controls that affect this mode of operation. |
| 4 | PD Mode | Verify basic PD Mode (Power Doppler Mode) operation. Check the basic system controls that affect this mode of operation. |
| 5 | Doppler Modes | Verify basic Doppler Mode operation (PW). Check the basic system controls that affect this mode of operation. |
| 6 | *Applicable Software Options | Verify the basic operation of all optional modes. Check the basic system controls that affect each options operation. |
| 7 | Keyboard Test | Perform the Keyboard Test Procedure to verify that all keyboard controls are OK. |
| 8 | LCD Monitor | Verify basic LCD Monitor display functions. |
| 9 | Measurements | Scan a gray scale phantom and use the measurement controls to verify distance and area calculation accuracy. Refer to the Basic User Manual, for measurement accuracy specifications. |

NOTE: * Some software may be considered standard depending upon system configuration.

10-5-2-2 Peripheral/Option Checks

If any peripherals or options are not part of the system configuration, the check can be omitted.

Table 10-6 Approved Peripheral/Hardware Option Functional Checks

| Step | Item | Description |
|------|-----------------------------------|--|
| 1 | B/W Printer | Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary. |
| 2 | Color Printer | Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary. |
| 3 | Color Deskjet (Bluetooth) Printer | Verify hardcopy output of the Deskjet (Bluetooth) printer. Clean heads and covers if necessary. |
| 4 | DICOM | Verify that DICOM is functioning properly. Send an image to a DICOM device. |
| 5 | Footswitch | Verify that the footswitch is functioning as programed. Clean as necessary. |
| 6 | DVD-Drive | Verify that the DVD-drive reads/writes properly (export/recall image in Image Management System = Archive) |

10-5-3 Input Power

10-5-3-1 Mains Cable Inspection

Table 10-7 Mains Cable Inspection

| Step | Item | Description |
|------|-----------------|---|
| 1 | Unplug Cord | Disconnect the mains cable from the wall and system. |
| 2 | Inspect | Inspect it and its connectors for damage of any kind. |
| 3 | Terminals | Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit. |
| 4 | Inlet Connector | Inlet connector retainer is functional. |

10-5-4 Cleaning

10-5-4-1 General Cleaning

Frequent and diligent cleaning of the LOGIQ P7/P8/P9/P10 ultrasound system reduces the risk of spreading infection from person to person, and also helps to maintain a clean work environment.

Table 10-8 General Cleaning

| Step | Item | Description |
|------|-------------|---|
| 1 | Console | Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire system. Be careful not to get the cloth too wet so that moisture does not enter the console. Caution: DO NOT allow any liquid to drip or seep into the system. |
| 2 | LCD Monitor | Clean LCD Monitor surface with a fluid detergent in warm water on a soft, damp cloth. Caution: DO NOT spray any liquid directly onto the LOGIQ P7/P8/P9/P10 covers, LCD Monitor, keyboard, etc. |

10-5-4-2 Air filter cleaning

Clean the system's air filters to ensure that a clogged filter does not cause the system to overheat and reduce system performance and reliability. It is recommended the filters be cleaned every two weeks, but the requirements will vary with environment.



CAUTION Be sure to lock the wheels before cleaning the air filters to avoid injury by any unexpected movement of the system.

DO NOT operate the unit without the air filters in place.

Allow the air filters to dry thoroughly before re-installing them on the unit.

Plastic Air filter

- 1) Pull the front cover with hand and pull out the front air filter.



Figure 10-1 Front Air filter location

- 2) Pull out the Bottom air filter.



Figure 10-2 Bottom Air filter location

- 3) Dust the filter with a vacuum cleaner and/or wash it with a mild soapy solution. If washed, rinse and dry the filter before re-installation.
- 4) Put back the air filters and the front cover.

NOTE: For your convenience or if the air filter is too dirty, replacement filters are available. Refer to Chapter 9 for the air filter replacement part number.

10-5-5 Physical Inspection

Table 10-9 Physical Checks

| Step | Item | Description |
|------|----------------------------|--|
| 1 | Labeling | Verify that all system labeling is present and in readable condition. |
| 2 | Scratches & Dents | Inspect the console for dents, scratches or cracks. |
| 3 | LCD Monitor Display | Inspect the LCD Monitor Display for scratches and raster burns. Verify proper operation of Contrast and Brightness controls. |
| 4 | Control Panel and Keyboard | Inspect the Control Panel and Keyboard. Note any damaged or missing items. (Replace faulty components, as required). Verify proper operation of Control Panel backlighting and TGC sliders. |
| 5 | DVD Drive | Clean the drive head and media with the vendor-supplied cleaning kit. Advise the user to repeat this often, to prevent future problems. DVDs/CDs must be stored away from dust and cigarette smoke. Do not use alcohol or benzene to clean the drive |
| 6 | Wheels & Brakes | Check all wheels and casters for wear and verify operation of foot brake, to stop the unit from moving, and release mechanism. Check all wheel locks and swivel locks for proper operation. |
| 7 | Cables & Connectors | Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs. |
| 8 | Power Cord | Check the power cord for cuts, loose hardware, tire marks, exposed insulation or other deterioration, and verify continuity. Tighten the clamps that secure the power cord to the unit and the outlet plug to the cord. |
| 9 | Shielding & Covers | Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems during scanning. |
| 10 | Peripherals | Check and clean the peripherals according to the manufacturer's directions. To prevent EMI or system overheating, dress the peripheral cables inside the peripheral cover. |
| 11 | External I/O | Check all connectors for damage and verify that the labeling is good. |
| 12 | Op Panel Lights | Check proper operation of all control panel key illuminations (flash once during system start-up). |

10-5-6 Optional Diagnostic Checks

Optionally you can access the diagnostic software as described in Chapters 5 or 7.
View the error logs and run desired diagnostics.

10-5-6-1 View the logs

- 1) Review the system error log for any problems.
- 2) Check the temperature log to see if there are any trends that could cause problems in the future.
- 3) Check the Configuration Log; update if needed.

10-5-7 Probe Maintenance

10-5-7-1 Probe Related Checks

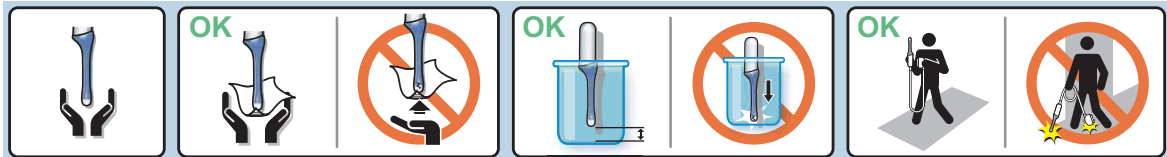
Table 10-10 Probe Related Checks

| Step | Item | Description |
|------|--------------|--|
| 1 | Probes | Thoroughly check the system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins. |
| 2 | Probe Holder | Clean probe holders (they may need to be soaked to remove excess gel). |

10-5-7-2 Basic Probe Care

The Basic User Manual and/or care card provides a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE probes.

Ultrasound probes can be easily damaged by improper handling. Review the Basic User Manual of LOGIQ P7/P8/P9/P10 for more details. Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.







Any evidence of wear indicates the probe cannot be used.

Do a visual check of the probe pins and system sockets before plugging in a probe.

10-5-7-3 Basic Probe Cleaning and/or Disinfection

Refer to the Basic User Manual of LOGIQ P7/P8/P9/P10 for details on cleaning.

-  **CAUTION** Failure to follow the prescribed cleaning or disinfection procedures will void the probe's warranty. **DO NOT** soak or wipe the lens with any product not listed in the LOGIQ P7/P8/P9/P10 Basic User Manual and/or care card. Doing so could result in irreparable damage to the probe and/or LOGIQ P7/P8/P9/P10 system.
-  **CAUTION** Follow the Care Card instructions supplied with each probe (inside the transducer boxes) for disinfectants and gels that are compatible with the surface material of the probes.
-  **CAUTION** To help protect yourself from blood borne diseases, when cleaning and handling probes, wear approved, non-allergenic disposable gloves.
-  **NOTICE** Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.

 **CAUTION**



Please be aware of the sensitive probe head. TAKE EXTREME CARE!



NEVER place or store a probe on its scan head!



When disinfecting a probe, ensure that there is sufficient space between the probe and the

Section 10-6 System Software Updates (Software Download) (R1, R2, R2.5 only)

Software Updates for the unit may be available for download and installation. When a Software Update is available, a message icon is displayed on the system exit window.

Only users with administrator rights are allowed to download Software Updates. You first download the software, then install the software. It is a two-step process.

Once the software installation has begun, the system is not useable until the software installation is done. The installation can take up to 45 minutes to complete. While installing, **DO NOT** turn off system power or the system can be left in a unusable mode. For this reason, you may want to perform the software download one evening and then install the software the next evening.

After the software installation is complete, you will be asked to perform a few system functional checks to determine normal system operation.

NOTE: A software download may take more than 1 hour (and may take several hours), depending on local network conditions. During this time, you cannot perform any other function. Please allow sufficient time to complete the software download and installation.

NOTE: A wired network connection is recommended for faster software download.

NOTE: After you press a software download button, it may take up to three (3) seconds for the system to respond.

NOTE: Software Updates through the GE service platform may not be available in all countries.

10-6-1 Software download and installation

You receive notification of available software updates via the envelope icon that appears in the status bar on the bottom of the monitor.

NOTE: To update the software, you must login with administrator privileges.

- 1) Press the on/off button on the control panel. The Exit dialog window with software download displays.



Figure 10-3 System - Exit Dialog Window

- **Automatically install after download:** The software installation starts automatically after the software has been downloaded if this box is checked.
- **More Info:** Displays a window with information about the software to download.



Figure 10-4 More Info

- **Decline:** You decline the software download; the software is not downloaded, no update will be performed. The software download will not occur and you will not be informed about this package again.
- **Download:** Starts the software download.

NOTE: If you are not logged in as an Administrator and there is a software package to download, you will see the following dialog when shutting down the system:



Figure 10-5 Software Download Dialog If Not an Administrator

If you get a dialog with “Unknown status,” this may mean that your system has lost connection with the network. In this case, ensure that your system is connected to the network. Then restart your system.



Figure 10-6 Check the Network Connection

However, if the network appears to be connected, then the problem may have resolved itself and no further action on your part is required.

2) Press **Download**.



Figure 10-7 System - Exit Dialog Window

The download process starts. The progression of the download process is displayed.

NOTE: *The download step can be paused. While paused, you can return to normal operation. However, once the software installation has begun, the system is not useable until the software installation is done. The installation can take up to 45 minutes to complete. While installing, **DO NOT** turn off system power or the system can be left in a unusable mode. For this reason, you may want to perform the software download one evening and then install the software the next evening.*

NOTE: *A typical software update of about 600 Mb may take up to 60 minutes to download, but times may vary depending on your location and network connection. If you are downloading **both** the Operating System **and** software update, the total size is about 9 GB and will take much longer to download.*

Press **Download**.



Figure 10-8 Download in Progress Options

- **Stop:** Stops the download process; no software upgrade is performed. If you select Stop, you **WILL NOT** be given an opportunity to download this package again.

The following dialog appears (it is the same dialog as the Decline option):



Figure 10-9 Stop (or Decline) the Software Download Dialog

- **Pause:** Pauses the software download process. If you select Pause, you can cancel out of this dialog and return to normal scanning or you can power off the scanner. A paused download can be resumed by logging in as Administrator, pressing the power switch, and selecting Resume.

When you press Pause, the following dialog displays:



Figure 10-10 Paused Software Download

- **Resume:** Press Resume to continue the software download.
- 3) If auto-install was not checked, you will see the following dialog when the software download has finished (the message, "SW is ready to be installed," and the "Install" button appear.



Figure 10-11 Software Ready To Be Installed

Press **Install**.

The system reboots automatically and the installation process is started. **Do not interrupt the installation.** The system may reboot automatically during installation or you may be prompted to restart the system.

NOTE: At this time, you can also select to stop, or decline, the software installation process.

- **Decline:** DO NOT install the downloaded software; no software upgrade will be performed. If you decline this installation, you **WILL NOT** be offered the chance to install this software package again. You can select Cancel to return to normal scanning. You can perform the install at a later time.

NOTE: If auto-install was checked, the system will reboot automatically and start the software installation as soon as the download has finished.

Multiple screens appear during the software installation process. **DO NOT** interrupt this process **AND** follow instructions as they appear on the display.

NOTE: A typical installation may take up to 15 minutes. When the installation is complete, the New Software Verification Checklist window is displayed.

- 4) When the system starts up after the software installation has finished, the following dialog displays: the "New Software Verification" Checklist.

This dialog is **critical**. You **MUST** perform software verification after downloading and installing a software update.



Figure 10-12 New Software Verification Checklist



CAUTION Perform a check for all the features listed. You **MUST** ensure that the entire system functions normally, as expected, in each of the categories listed on the New Software Verification checklist.

These verification results are tracked for regulatory purposes, sent back to GE for tracking, and approved with your signature.

NOTE: Press the Question mark to get information on how to check each feature.



Figure 10-13 New Software Verification Checklist

NOTE: You can move this dialog, but **DO NOT** close it. You can also minimize this dialog by clicking on the "<<" button at the top, right-hand corner of the dialog.

A minimized window looks like this. To maximize the Checklist again, click on the ">>" button at the lower, right-hand corner of the dialog.

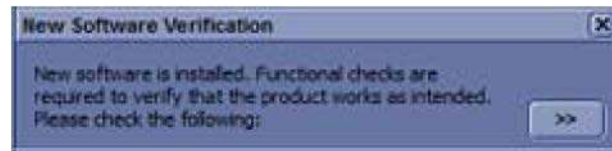


Figure 10-14 Minimized New Software Verification Checklist

- As you verify that each feature works correctly, select "Passed." If all features work correctly and "Passed" is filled in for all features, then the signature field is enabled at the bottom of the New Software Verification Checklist.
Type your signature (minimum of three characters) and press **OK**. The system is now ready for use.

WARNING However, if any of the features **DID NOT** function as expected, you need to select "Failed" next to the feature that failed. Type your signature (minimum of three characters) and press **Reload**.

When there is a failed feature noted on the New Software Verification Checklist, the following Warning dialog displays:

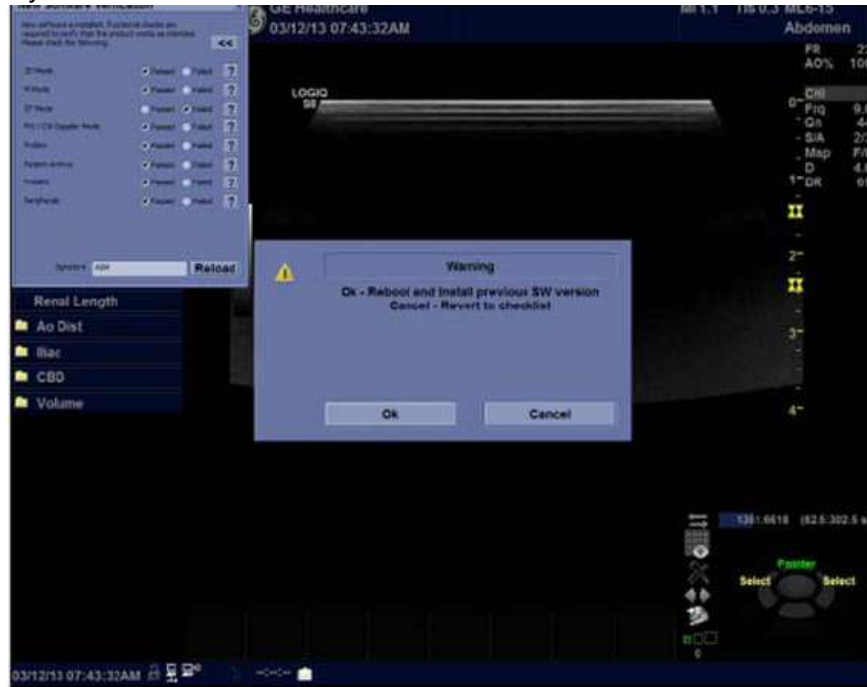


Figure 10-15 Re-Install Previous Software Version Dialog

When the New Software Verification Checklist contains a 'Failed' feature, you have two options available: 1) Re-Install the previous version of software ("OK"), or 2) Revert to the Checklist ("Cancel") and continue with the software version you just downloaded and installed.

If you press "OK," the system re-images the hard drive and reloads the previous version of software. This takes approximately 30 minutes. Select Cancel to return to the dialog window. Here you can either 1) change the New Software Verification Checklist items to Pass and then use the just-installed version of the software; or 2) select OK and to reload your original software.

Multiple screens appear during the software re-imaging installation process. **DO NOT** interrupt this process **AND** follow instructions as they appear on the display.


Section 10-7 Using a Phantom


Refer to the User Manual of the Phantom for information on using a phantom and quality assurance tests. For measurement accuracy of the system review chapter 13.5 of the Basic User Manual of LOGIQ P7/P8/P9/P10. To get comparable results, use Multi-purpose phantom, Model 539-05 from ATS Laboratories Inc.

Section 10-8 Electrical Safety Tests


10-8-1 Safety Test Overview

The electrical safety tests in this section are based on and conform to ANSI/AAMI ES60601-1(For USA) and IEC60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the ANSI/AAMI ES60601-1(For USA) and IEC 60601-1 documents.

 **WARNING** ***THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO THE REQUIREMENTS OF THE PATIENT SAFETY STANDARD AAMI/ANSI ES 60601-1 AND IEC60601-1. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE SAFETY INSPECTIONS MENTIONED ABOVE.***

 **CAUTION** To avoid electrical shock, the unit under test must not be connected to other electrical equipment. Remove all interconnecting cables and wires. The unit under test must not be contacted by users or patients while performing these tests.

 **CAUTION** Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.

 **WARNING** ***Test the system, peripherals and probes for leakage current. Excessive leakage current can cause FATAL INJURY OR DEATH. High leakage current can also indicate degradation of insulation and a potential for electrical failure. DO NOT use probes or equipment having excessive leakage current.***

To minimize the risk of a probe causing electrical shock, the customer should observe the following recommendations:

- DO NOT use a probe that is cracked or damaged in any way
- Check probe leakage current:
 - * once a year on surface probes
 - * once a year on endocavitary probes
 - * whenever probe damage is suspected

10-8-2 GEHC Leakage Current Limits

The following limits are summarized for ANSI/AAMI ES60601-1(For USA), IEC 60601-1 Medical Equipment Safety Standards and IEC 62353 Medical Electrical Equipment - Recurrent test and test after repair of medical electrical equipment.

Measurement limits per ANSI/AAMI ES60601-1(For USA) and IEC 60601-1 Medical Equipment Safety Standards.

Table 10-11 Enclosure Leakage Current Limits - Accessible Surfaces not protectively earthed

| Conditions | Country | |
|--|---------|----------|
| | USA | Others |
| Close Protective earth and close neutral with normal polarity | 0.1mA* | 0.1mA*** |
| Close Protective earth and close neutral with reverse polarity | 0.1mA* | 0.1mA*** |
| Open Protective earth and close neutral with normal polarity | 0.3mA** | 0.5mA*** |
| Open Protective earth and close neutral with reverse polarity | 0.3mA** | 0.5mA*** |
| Open neutral and close Protective earth with normal polarity | 0.5mA* | 0.5mA*** |
| Open neutral and close Protective earth with reverse polarity | 0.5mA* | 0.5mA*** |

Table 10-12 Earth Leakage Current Limits

| Conditions | Country | |
|--|---------|----------|
| | USA | Others |
| Close Protective earth and close neutral with normal polarity | 0.3mA** | 0.5mA*** |
| Close Protective earth and close neutral with reverse polarity | 0.3mA** | 0.5mA*** |
| Open neutral and close Protective earth with normal polarity | 1mA* | 1mA*** |
| Open neutral and close Protective earth with reverse polarity | 1mA* | 1mA*** |

Table 10-13 Type BF Patient Leakage Limits - Non-Conductive Surface

| Conditions | Country | |
|--|---------|----------|
| | USA | Others |
| Close Protective earth and close neutral with normal polarity | 0.1mA* | 0.1mA*** |
| Close Protective earth and close neutral with reverse polarity | 0.1mA* | 0.1mA*** |
| Open Protective earth and close neutral with normal polarity | 0.5mA* | 0.5mA*** |
| Open Protective earth and close neutral with reverse polarity | 0.5mA* | 0.5mA*** |
| Open neutral and close Protective earth with normal polarity | 0.5mA* | 0.5mA* |
| Open neutral and close Protective earth with reverse polarity | 0.5mA* | 0.5mA*** |

Table 10-14 Type BF Patient Auxiliary Limits

| Conditions | Country | |
|--|---------|----------|
| | USA | Others |
| Close Protective earth and close neutral with normal polarity | 0.1mA* | 0.1mA*** |
| Close Protective earth and close neutral with reverse polarity | 0.1mA* | 0.1mA*** |
| Open Protective earth and close neutral with normal polarity | 0.5mA* | 0.5mA*** |
| Open Protective earth and close neutral with reverse polarity | 0.5mA* | 0.5mA*** |
| Open neutral and close Protective earth with normal polarity | 0.5mA* | 0.5mA*** |
| Open neutral and close Protective earth with reverse polarity | 0.5mA* | 0.5mA*** |

Table 10-15 Isolation between Mains and Applied Limits
**** Patient Leakage Main to Type BF Applied part

| Conditions | Country | |
|--|---------|--------|
| | USA | Others |
| Close Protective earth and close neutral with normal polarity | 5mA* | 5mA*** |
| Close Protective earth and close neutral with reverse polarity | 5mA* | 5mA*** |

NOTE:

- * Measurement limits per ANSI/AAMI ES60601-1 Medical Electrical Equipment Safety Standards Table IV
- ** Measurement limits per ANSI/AAMI ES60601-1 Medical Electrical Equipment Safety Standards, Table 19.5DV.1
- *** Measurement limits per IEC 60601-1 Medical Electrical Equipment Safety Standards, Table IV
- **** Isolation between Mains and Applied Limits refers to the measurement of leakage current flow which would flow from mains to patient if the patient were to come into contact with mains voltage.

The following tests are performed at the factory and should be performed at the customer site as well.

- Grounding Continuity
- Earth Leakage Current.
- Enclosure Leakage Current
- Patient Leakage Current

All measurements should be made with an electrical safety analyzer.

10-8-3 Outlet Test - Wiring Arrangement - USA & Canada

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

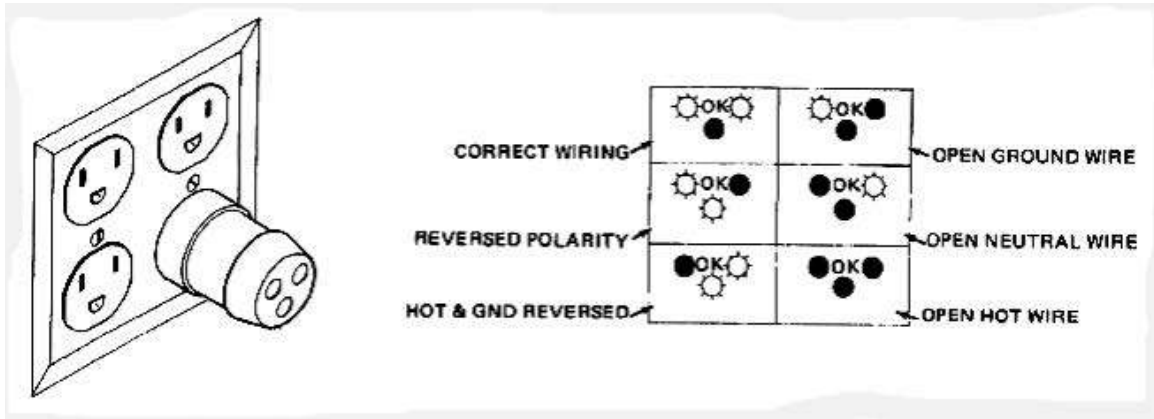


Figure 10-16 Typical Outlet Tester

NOTE: No outlet tester can detect the condition where the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

10-8-4 Grounding Continuity

CAUTION Electric Shock Hazard!
The patient or operator **MUST NOT** come into contact with the equipment during this test

Measure the resistance from the third pin of the attachment plug to the exposed protectively - earthed metal parts of the case. The ground wire resistance should be less than **0.2** ohms.

Reference the procedure in the IEC60601-1.

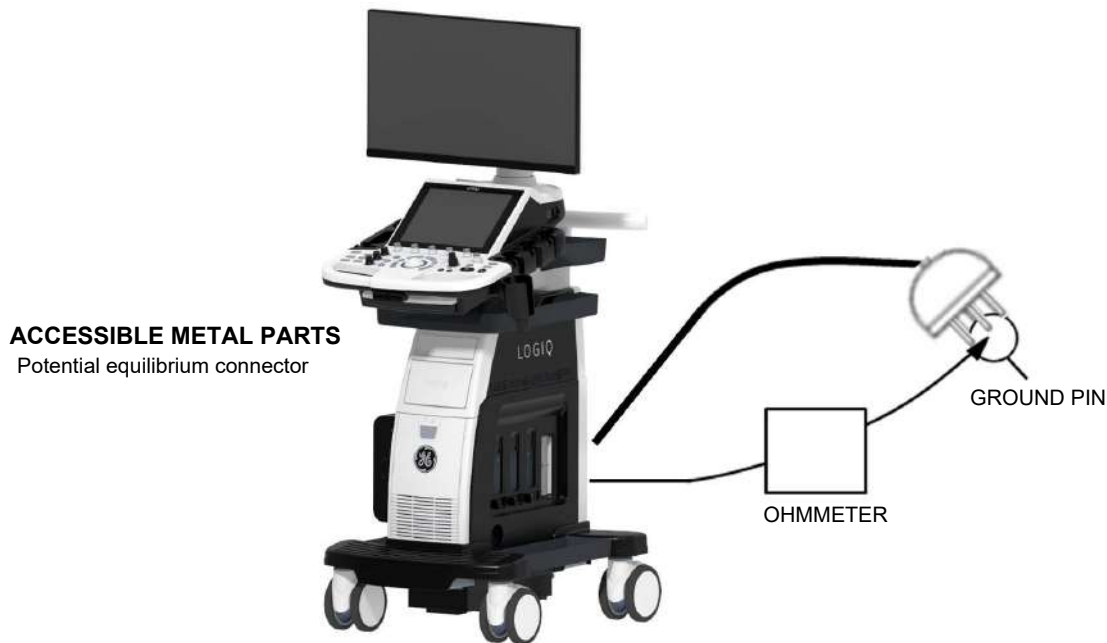


Figure 10-17 Ground Continuity Test

CAUTION Lacquer is an isolation barrier! Resistor may be high-impedance!
Measure only on blank parts, stated in [Figure 10-17](#) above.

10-8-4-1 Meter Procedure

Follow these steps to test the Ground wire resistance.

- 1) Turn the system unit OFF.
- 2) Plug the unit into the meter, and the meter into the tested AC wall outlet.
- 3) Plug the black chassis cable into the meter's "CHASSIS" connector and attach the black chassis cable clamp to an exposed protectively earthed metal part of the system, such as Potential equilibrium connector.
- 4) Set the meter's "FUNCTION" switch to the RESISTANCE position.
- 5) Set the meter's "POLARITY" switch to the OFF (center) position.
- 6) Measure and record the Ground wire resistance. This should be less than 0.2 Ohms.

10-8-5 Enclosure Leakage Current Test

10-8-5-1 Definition

This test measures the current that would flow in a grounded person who touched accessible non-protectively-earthed parts of equipment if the ground wire were to break. The test verifies the isolation of the power line from the chassis.

The meter is connected from accessible non-protectively-earthed parts of the case to ground. Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the neutral open and closed. Record the highest reading.



DANGER Electric Shock Hazard.

When the meter's ground switch is OPEN, DO NOT touch the unit!



CAUTION Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.

10-8-5-2 Generic Procedure

The test verifies the isolation of the power line from the enclosure. The testing meter is connected from accessible non-protectively-earthed parts of the case to ground. Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the neutral open and closed. Record the highest reading of current.

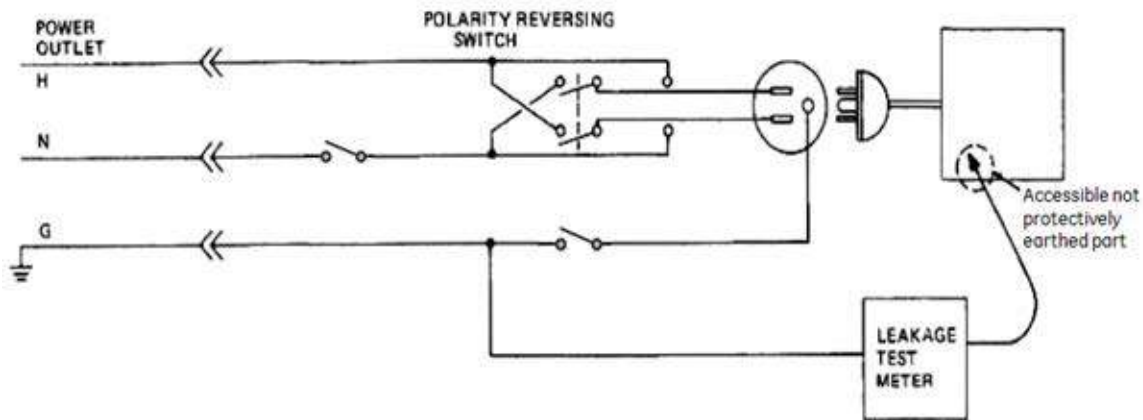


Figure 10-18 Set Up for Test of Enclosure Leakage Current, AAMI/ANSI ES 60601-1/IEC 60601-1 Clause 19

NOTE: Color of Power outlet cable

- i) USA and Canada
 - Hot: Black
 - Neutral: White
 - Ground: Green or Green-yellow

- ii) Others
 - Hot: Brown
 - Neutral: Blue
 - Ground: Green-yellow

When using Dale 600/601 or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to ground will be indicated in any of the current ranges. The maximum allowable limit for enclosure leakage current is shown in [Table 10-11 on page 10-23](#)

10-8-5-3 Data Sheet for Enclosure Leakage Current

The test passes when all readings measure less than the value shown in [Table 10-11](#). Record all data on the Ultrasound Inspection Certificate.

Table 10-16 Typical Data Sheet for Enclosure Leakage Current


| Tester Neutral | Tester Polarity Switch | Protective Earth Switch | Test 1 Wheel | Test 2 LCD | Optional Test 3 | Optional Test 4 |
|---------------------------------------|------------------------|-------------------------|--------------|------------|-----------------|-----------------|
| Enter Name of tested peripheral here: | | | | | | |
| Closed | Normal | Closed | | | | |
| Closed | Normal | Open | | | | |
| Closed | Reversed | Closed | | | | |
| Closed | Reversed | Open | | | | |
| Open | Normal | Closed | | | | |
| Open | Reversed | Closed | | | | |

10-8-6 Earth Leakage Current Test

10-8-6-1 Definition

This test measures the current that would flow to a grounded person who touched accessible protectively-earthed parts of equipment if the ground wire should break.

The meter is connected from accessible protectively-earthed parts of the equipment to ground. Measurements should be made with power line polarity normal and reversed, and with the neutral open and closed Record the highest reading.

 **CAUTION Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.**

10-8-6-2 Generic Procedure

The testing meter is connected from accessible protectively-earthed parts of the equipment to ground. Measurements should be made with power line polarity normal and reversed, and with the neutral open and closed. Record the highest reading of current.

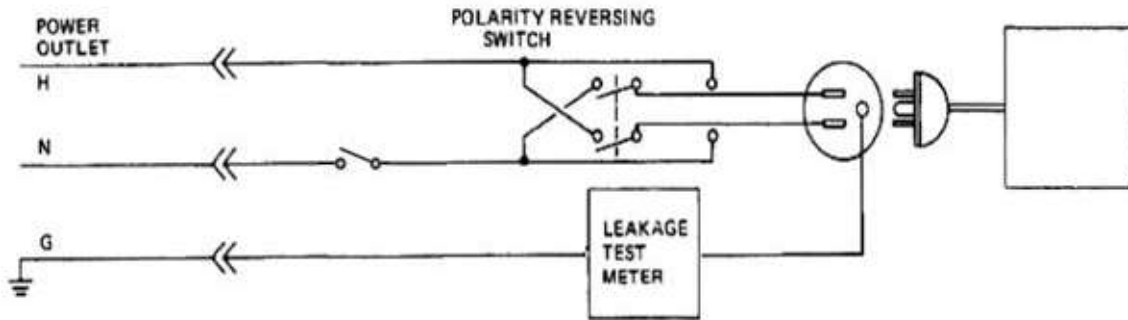


Figure 10-19 Set Up for Test of Earth Leakage Current, AAMI/ANSI ES 60601-1/IEC 60601-1 Clause 19

NOTE: Color of Power outlet cable

- i) USA and Canada
 - Hot: Black
 - Neutral: White
 - Ground: Green or Green-yellow
- ii) Others
 - Hot: Brown
 - Neutral: Blue
 - Ground: Green-yellow

When using Dale 600/601 or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing through protective earth will be indicated in any of the current ranges. The maximum allowable limit for earth leakage current is shown in [Table 10-12](#).

Table 10-17 Typical Data Sheet for Earth Leakage Current


| Tester Neutral | Tester Polarity Switch | Measured Earth leakage current |
|---------------------------------------|------------------------|--------------------------------|
| Enter Name of tested peripheral here: | | |
| Closed | Normal | |
| Closed | Reversed | |
| Open | Normal | |
| Open | Reversed | |

10-8-7 Type BF Patient Leakage Current Test - Probe

10-8-7-1 Definition

This test measures the current that would flow to ground from any of the probes through a patient who is being scanned and becomes grounded by touching some other grounded surface.

NOTE: Some leakage current is expected on each probe, depending on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. It is abnormal if no leakage current is measured. If no leakage current is detected, check the configuration of the test equipment.

CAUTION  **Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.**

10-8-7-2 Generic Procedure on Leakage Current

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with neutral open and closed. For each combination, the probe must be active to find the worst case condition.

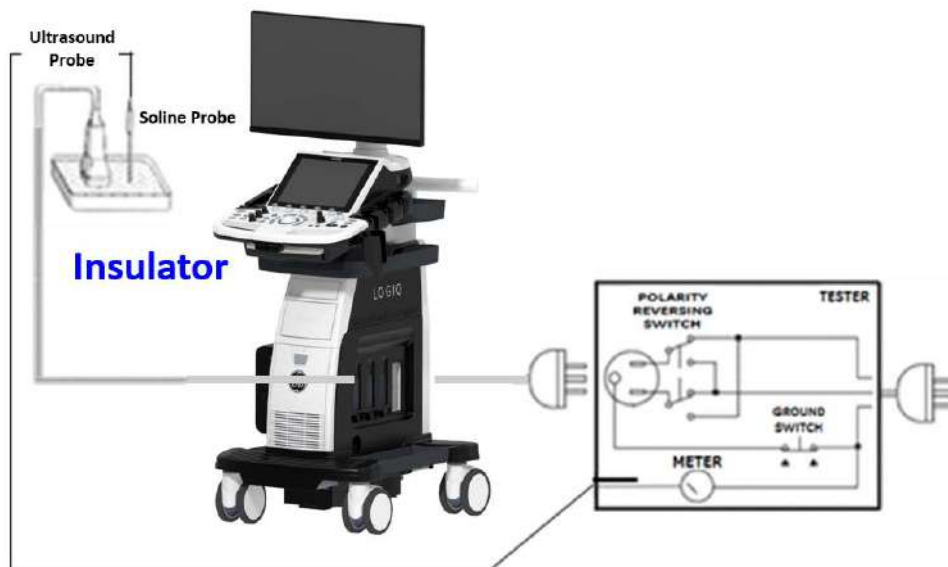


Figure 10-20 Set Up for Probe Leakage Current

NOTE: Saline water pod should be insulated from floor and earth ground

Table 10-18 Typical Data Sheet for Type BF Patient Leakage Current Test

| Tester Neutral | Tester Polarity Switch | Ground Switch | Measured leakage current |
|----------------|------------------------|---------------|--------------------------|
| Closed | Normal | Closed | |
| Closed | Normal | Open | |
| Closed | Reversed | Closed | |
| Closed | Reversed | Open | |
| Open | Normal | Closed | |

Table 10-18 Typical Data Sheet for Type BF Patient Leakage Current Test

| Tester Neutral | Tester Polarity Switch | Ground Switch | Measured leakage current |
|----------------|------------------------|---------------|--------------------------|
| Open | Reversed | Closed | |

10-8-8 Type BF Patient Leakage current - Mains to Probe

Reference the procedure in the IEC 60601-1. Measure leakage current flow from mains to Probe.



DANGER Electric Shock Hazard.

Line voltage is applied to Probe during this test. To avoid possible electric shock hazard, the system being tested must not be touched by patients, users or anyone during testing.



CAUTION Equipment damage possibility. Never switch the Polarity and the status of Neutral when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the unit may be damaged.

Table 10-19 Typical Data Sheet for Type BF Patient Leakage Current - Mains to Probe

| Tester Neutral | Tester Polarity Switch | Ground Switch | Measured leakage current |
|----------------|------------------------|---------------|--------------------------|
| Closed | Normal | Closed | |
| Closed | Reversed | Closed | |

NOTE: It is not necessary to test each lead individually or power condition combinations as required in previous tests.

Section 10-9 When There's Too Much Leakage Current...

10-9-1 Earth and/or Enclosure Fails

Check the ground on the power cord and plug for continuity. Ensure the ground is not broken, frayed, or intermittent. Replace any defective part. Tighten all grounds. Ensure star washers are under all ground studs. Inspect wiring for bad crimps, poor connections, or damage. Test the wall outlet; verify it is grounded and is free of other wiring abnormalities. Notify the user or owner to correct any deviations. As a workaround, check the other outlets to see if they could be used instead.

NOTE: No outlet tester can detect the condition where the neutral wire and the grounding wire are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

10-9-2 Probe Fails

- Test another probe to isolate if the fault lies with the probe or the scanner.

NOTE: Each probe will have some amount of leakage, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from an inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

- Test the probe in another connector to isolate if the fault lies with the probe or the scanner. If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and ground continuity.

If the problem remains with the probe, replace the probe.

10-9-3 Peripheral Fails

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

10-9-4 Still Fails

If all else fails, begin isolation by removing the probes, external peripherals, and then the on-board peripherals one at a time while monitoring the leakage current measurement.

10-9-5 New Unit

If the leakage current measurement tests fail on a new unit and if situation cannot be corrected, submit a Safety Failure Report to document the system problem. Remove unit from operation.

ELECTRICAL SAFETY

Outlet and Ground Continuity test

Table 10-20

| Outlet/Ground Continuity | Max Value Allowed | Value Measured | OK? | Comments |
|--|-------------------|----------------|-----|----------|
| Outlet (correct ground & wiring config.) | N/A | N/A | | |
| System Ground Continuity | 0.2 Ohm | | | |

Earth leakage current test

Table 10-21

| Tester Neutral | Tester Polarity Switch | Max Value Allowed | Value Measured | OK? | Comments |
|---------------------------------------|------------------------|--------------------------|----------------|-----|----------|
| Enter Name of tested peripheral here: | | | | | |
| Closed | Normal | 0.3mA(USA)/0.5mA(Others) | | | |
| Closed | Reversed | 0.3mA(USA)/0.5mA(Others) | | | |
| Open | Normal | 1mA | | | |
| Open | Reversed | 1mA | | | |

Enclosure leakage current test

Table 10-22

| Tester Neutral | Tester Polarity Switch | Protective Earth Switch | Max Value Allowed | Test 1 Wheel | Test 2 LCD | Optional Test 3 | Optional Test 4 | OK? | Comments |
|---------------------------------------|------------------------|-------------------------|--------------------------|--------------|------------|-----------------|-----------------|-----|----------|
| Enter Name of tested peripheral here: | | | | | | | | | |
| Closed | Normal | Closed | 0.1mA(USA)/0.1mA(Others) | | | | | | |
| Closed | Normal | Open | 0.3mA(USA)/0.5mA(Others) | | | | | | |
| Closed | Reversed | Closed | 0.1mA(USA)/0.1mA(Others) | | | | | | |
| Closed | Reversed | Open | 0.3mA(USA)/0.5mA(Others) | | | | | | |
| Open | Normal | Closed | 0.5mA(USA)/0.5mA(Others) | | | | | | |
| Open | Reversed | Closed | 0.5mA(USA)/0.5mA(Others) | | | | | | |

Type BF Patient Leakage Current Test - Probes (This test should be done for all probe)

Table 10-23

| Tester Neutral | Tester Polarity Switch | Ground Switch | Max Value Allowed | Value Measured | OK? | Comments |
|----------------|------------------------|---------------|-------------------|----------------|-----|----------|
| Closed | Normal | Closed | 0.1mA | | | |
| Closed | Normal | Open | 0.5mA | | | |
| Closed | Reversed | Closed | 0.1mA | | | |
| Closed | Reversed | Open | 0.5mA | | | |
| Open | Normal | Closed | 0.5mA | | | |
| Open | Reversed | Closed | 0.5mA | | | |

Type BF Patient Leakage Current Test - Mains to Probe (This test should be done for all probes)

Table 10-24

| Tester Neutral | Tester Polarity Switch | Ground Switch | Max Value Allowed | Value Measured | OK? | Comments |
|----------------|------------------------|---------------|-------------------|----------------|-----|----------|
| Closed | Normal | Closed | 5mA | | | |
| Closed | Reversed | Closed | 5mA | | | |

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

10-9-6 **Ultrasound Equipment Quality Check (EAC and IQC)**

Download and use the latest version of these forms. They can be retrieved from MyWorkshop.

- EQC -- Refer to DOC0929340 in MyWorkshop.

Section 10-10 Ultrasound INSPECTION CERTIFICATE

| | | | | |
|----------------|------------|---------------|---------------------------------|-----------------------|
| Customer Name: | | System ID: | Dispatch Number/Date Performed: | Warranty/Contract/HBS |
| System Type | | Model Number: | Serial Number: | Manufacture Date: |
| Probe 1: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 2: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 3: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 4: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 5: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 6: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 7: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 8: | Frequency: | Scan Format*: | Model Number: | Serial Number: |
| Probe 9: | Frequency: | Scan Format*: | Model Number: | Serial Number: |

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

FUNCTIONAL CHECKS

PHYSICAL INSPECTION AND CLEANING

| Functional Check (if applicable) | OK? or N/A | Physical Inspection and Cleaning (if applicable) | Inspect | Clean |
|----------------------------------|------------|---|---------|-------|
| B-Mode Function | | Console | | |
| M-Mode Function | | Monitor | | |
| Doppler Modes Functions | | | | |
| Color Modes Functions | | Air Filter | | |
| 3D/4D-Mode Function | | Probe Holders | | |
| Applicable Software Options | | External I/O | | |
| Applicable Hardware Options | | Wheels, Brakes & Swivel Locks | | |
| Control Panel | | Cables and Connectors | | |
| Monitor | | Approved Peripherals (VCR, DVD Drive, Printers, etc.) | | |
| Measurement Accuracy | | | | |
| | | | | |

COMMENTS:

ELECTRICAL SAFETY

| Electrical Test Performed | Max Value Allowed | Value Measured | OK? | Comments |
|---|-------------------|----------------|-----|----------|
| Outlet (correct ground & wiring config.) | | | | |
| System Ground Continuity | | | | |
| Chassis Source Leakage Current - Probe | | | | |
| Chassis Source Leakage Current - Wheel | | | | |
| Chassis Source Leakage Current - CRT | | | | |
| Patient Lead Source Leakage (Lead to Ground) | | | | |
| Patient Lead Source Leakage (Lead to Lead) | | | | |
| Patient Lead Source Leakage (Isolation) | | | | |
| Peripheral 1 Leakage Current | | | | |
| Peripheral 1 Ground Continuity | | | | |
| Peripheral 2 Leakage Current | | | | |
| Peripheral 2 Ground Continuity | | | | |
| Peripheral 3 Leakage Current | | | | |
| Peripheral 3 Ground Continuity | | | | |

PROBES

| Probe Number (from previous page) | Mas Value Allowed | Max Value Measured | OK? | Comments |
|-----------------------------------|-------------------|--------------------|-----|----------|
| Probe 1: | | | | |
| Probe 2: | | | | |
| Probe 3: | | | | |
| Probe 4: | | | | |
| Probe 5: | | | | |
| Probe 6: | | | | |
| Probe 7: | | | | |
| Probe 8: | | | | |
| Probe 9: | | | | |

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

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