



Technical Publication

Versana Active™

Basic Service Manual

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Product Information

This Manual covers the software version of R1.1.x for Versana Active ultrasound system.



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GE Medical Systems, a General Electric Company, going to
market as GE

Manufacturer:

GE Medical Systems (China) Co., Ltd.
No. 19, Changjiang Road
WuXi National Hi-Tech Dev.Zone
214028 Jiangsu China

TEL: +86 510 85225888; FAX: +86 510 85226688
www.gehealthcare.com

Revision history

Revision History

REV	DATE (YYYY/MM/DD)	REASON FOR CHANGE
Rev.1	2020/01/03	Initial Release
Rev.2	2020/05/10	Update the use scenarios for Spare Battery Charger; Update the graphics about battery charger connecting cable
Rev.3	2020/11/09	Update renewal parts list
Rev.4	2021/06/07	Update Power cord
Rev.5	2022/05/10	Add India factory site information
Rev.6	2022/10/30	Add new service part 5841065-6S and 5841065-7S
Rev.7	2023/03/23	Add new service part 5841065-8S and 5931299-2S
Rev.8	2023/10/23	Add new SVC part 5931299-3S/5835777-S Add new USB stick 5863937
Rev.9	2024/10/20	Add Digital Expert information
Rev.10	2025/01/20	Update FRU part list.

List of Effected Pages (LOEP)

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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.

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

Slovenščina
(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

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。

日本語
(JA)

- 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

中文
简体
(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

Svenska
(S)

Den här servicehandboken finns endast på engelska.

- 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

繁體
中文
(ZH-TW)

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

- 이 서비스 설명서는 영어로만 제공됩니다.
- 한국어
- 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.

경고

- 이 서비스 설명서는 영어로만 제공됩니다.
- 한국어
- 고객의 서비스 공급자가 영어 이외의 언어를 요구하는 경우 번역 서비스를 제공할 책임은 고객에게 있습니다.
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 - 이 경고를 무시한 경우 서비스 공급자, 오퍼레이터 또는 환자가 감전, 기계적 위험 또는 기타 위험으로 인한 부상을 입을 수 있습니다.

OSTRZEŻENIE

- Niniejszy podręcznik serwisowy jest dostępny wyłącznie w języku angielskim.
- Polski
- 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

Ελληνικά
(EL)

Το παρόν Εγχειρίδιο σέρβις διατίθεται μόνο στα Αγγλικά.

- Εάν ο πάροχος σέρβις του πελάτη απαιτεί γλώσσα εκτός των Αγγλικών, η παροχή μεταφραστικών υπηρεσιών αποτελεί ευθύνη του πελάτη.
- Μην επιχειρήσετε να επισκευάσετε τον εξοπλισμό εάν πρώτα δεν συμβουλευτείτε και κατανοήσετε το παρόν Εγχειρίδιο σέρβις.
- Σε περίπτωση μη τήρησης της παρούσας προειδοποίησης, ενδέχεται να προκληθεί τραυματισμός στον πάροχο σέρβις, το χειριστή ή τον ασθενή εξαιτίας ηλεκτροπληξίας καθώς και μηχανικών ή άλλων κινδύνων.

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 zákazníkom 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
(TK)
- 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

(LV)
Latviski

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 serviser, 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 noutra 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

Українська
(UK)

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)

คู่มือซ่อมบำรุงนี้เฉพาะภาษาอังกฤษเท่านั้น

- หากผู้ให้บริการของคุณต้องการฉบับภาษาอื่นนอกเหนือจากภาษาอังกฤษ คุณจำเป็นต้องเป็นผู้รับผิดชอบในการจัดเตรียมคู่มือซ่อมบำรุงฉบับแปล
- โปรดอย่าซ่อมบำรุงอุปกรณ์โดยไม่ศึกษา และทำความเข้าใจคู่มือซ่อมบำรุงนี้
- หากไม่ปฏิบัติตามคำเตือนนี้อาจส่งผลให้ผู้ให้บริการ ผู้ใช้งานอุปกรณ์ หรือผู้ปวยได้รับบาดเจ็บจากไฟฟ้าช็อต อันตรายจากกลไกของอุปกรณ์ หรืออันตรายอื่น ๆ

CẢNH BÁO

Tiếng Việt
(vi)

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

- Nếu nhà cung cấp dịch vụ của khách hàng yêu cầu ngôn ngữ khác ngoài tiếng Anh, thì khách hàng phải có trách nhiệm cung cấp các dịch vụ dịch thuật.
- Không được tìm cách sửa chữa thiết bị trừ khi đã tham khảo và hiểu rõ Hướng dẫn sử dụng dịch vụ này.
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(КК)

Осы қызмет көрсету нұсқаулығы тек ағылшын тілінде қолжетімді.

- Егер тұтынушылардың қызметтер жеткізушісі ағылшын тілінен басқа тілді талап етсе, аудару қызметтерімен қамтамасыз ету тұтынушының жауапкершілігіне кіреді.
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(T)

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TEL: +86 510 85225888; FAX: +86 510 85226688

GE employees should use TrackWise to report service documentation issues.

These issues will then be in the internal problem reporting tool and communicated to the writer.

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.

For a complete review of all safety requirements, refer to Chapter 1 in the Service Manual.

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Chapter 1

Introduction

This chapter describes important issues related to safely servicing the Ultrasound system. The service provider must read and understand all the information presented here before installing or servicing the units.

1-1 Overview

1-1-1 Contents in this chapter

- 1-1 'Overview' on *page 1-2*
- 1-2 'Manual Overview' on *page 1-3*
- 1-3 'Important conventions' on *page 1-6*
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- 1-8 'Lockout/Tagout (LOTO) requirements' on *page 1-24*
- 1-9 'Returning probes and repair parts' on *page 1-25*
- 1-10 'EMC, EMI and ESD' on *page 1-26*
- 1-11 'Customer assistance' on *page 1-28*

1-2 Manual Overview

This manual provides installation and service information for the Versana Active Ultrasound system. It is divided in ten chapters as shown below.

1-2-1 Contents in this manual

The manual is divided into ten chapters.

In the beginning of the manual, before chapter 1, you will find the *Revision overview*, the *Important precautions* including *Translation policy*, *Damage in transportation*, *Certified electrical contractor statement*, *Omission & errors*, *Service safety considerations* and *Legal notes*, and the *Table of Contents (TOC)*.

An Index has been included after Chapter 10.

Table 1-1: Contents in this manual

Chapter number	Chapter title	Description
1.	Introduction	Contains a content summary and warnings.
2.	Site preparations	Contains pre-setup requirements for the Versana Active.
3.	System Setup	Contains setup procedure with procedure checklist for the system.
4.	General Procedures and Functional Checks	Contains functional checks that must be performed as part of the installation, or as required during servicing and periodic maintenance.
5.	Components and Functions (Theory)	Contains block diagrams and functional explanations of the electronics.
6.	Service Adjustments	Contains instructions on how to make any available adjustments to the Versana Active.

Table 1-1: Contents in this manual (Continued)

Chapter number	Chapter title	Description
7.	Diagnostics/ Troubleshooting	Provides procedures for running diagnostic or related routines for the Versana Active.
8.	Replacement procedures	Provides disassembly procedures and reassembly procedures for all changeable FRU.
9.	Renewal Parts	Contains a complete list of replacement parts for Versana Active.
10.	Care & Maintenance	Provides periodic maintenance procedures for Versana Active.
N/A	Index	A quick way to the topic you're looking for.

1-2-2 Typical users of the Proprietary Service Manual

- GEHC Service Personnel (setup, maintenance, etc.)
- GEHC Online Center Personnel
- Licensed Hospital's Service Providers

1-2-3 Purpose of Operator Manual(s)

The Operator Manual(s) should be fully read and understood before operating the Versana Active and also kept near the unit for quick reference.

NOTE: *Probe information displayed on screen does not necessarily reflect the probes available on your ultrasound system. Please refer to the probe list for available probes and features.*

1-2-4 Versana Active models covered by this manual

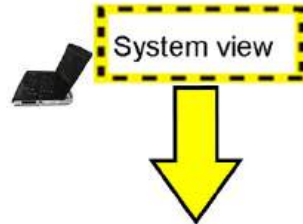
Table 1-2: Versana Active Model Designations

Model Name	System SW
Versana Active	R1.1.x

NOTE: *When not otherwise specified, the contents of this manual applies to all Versana Active models.*

1-2-5 Smart Manual Function

On each page of this Proprietary Service Manual, there is a smart manual icon to bring you back to Overview of Versana Active.



8-3-3 Overview of Versana Active



Figure 8-1. System Overview

Figure 1-1. Smart Manual Icon

1-3 Important conventions

1-3-1 Conventions used in book

Important conventions, used in this document, are described next.

1-3-1-1 Model designations

This manual covers the Versana Active Ultrasound systems listed in:

[1-2-4 'Versana Active models covered by this manual' on page 1-4.](#)

1-3-1-2 Icons

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

1-3-1-3 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 to personnel are labeled in one of three ways:

- DANGER
- WARNING
- CAUTION



Danger is used to indicate the presence of a hazard that will cause severe personal injury or death if the instructions are ignored.



Warning is used to indicate the presence of a hazard that can cause severe personal injury and property damage if instructions are ignored.



Caution is used to indicate the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored. Equipment damage possible.







NOTE: *Notes are used to provide important information about an item or a procedure.*

NOTE: *Be sure to read the notes; the information contained in a note can often save you time or effort.*

1-3-2 Standard hazard icons

Important information will always be preceded by either the exclamation point (!) contained within a triangle, or the symbols for “Danger”, “Warning” or “Caution”, 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 possibly cause harm.

Table 1-3: Standard hazard icons







	ELECTRICAL
	MECHANICAL
	RADIATION
	LASER
	HEAT
	PINCH

NOTE: *Even if a symbol isn't used on the product or in this manual, it may be included for your reference.*

1-3-2-1 Standard Icons that indicate that a special procedure is to be used

Some others icons make you aware of specific procedures that should be followed.

Table 1-4: Standard Icons that indicates that a special procedure is to be used

Avoid Static Electricity	Tag and Lock Out	Wear Eye Protection
		
Hand Protection	Foot Protection	Wear Eye Protection
		

Be sure to read the notes; the information contained in a note can often save you time or effort.

1-4 Product icons

It is important to refer to the current revision of the Ultrasound system's Basic User Manual for a full list of product labels prior to servicing the system.

1-5 Labels locations

It is important to refer to the current revision of the Ultrasound system’s Basic User Manual for a full list of product labels prior to servicing the system.

1-5-1 Rating Plate Location

Versana Active labels are provided in English.

The labels are at the rear of the system. The label content may be different for different regions. Please refer to the labels on the system for the actual content.

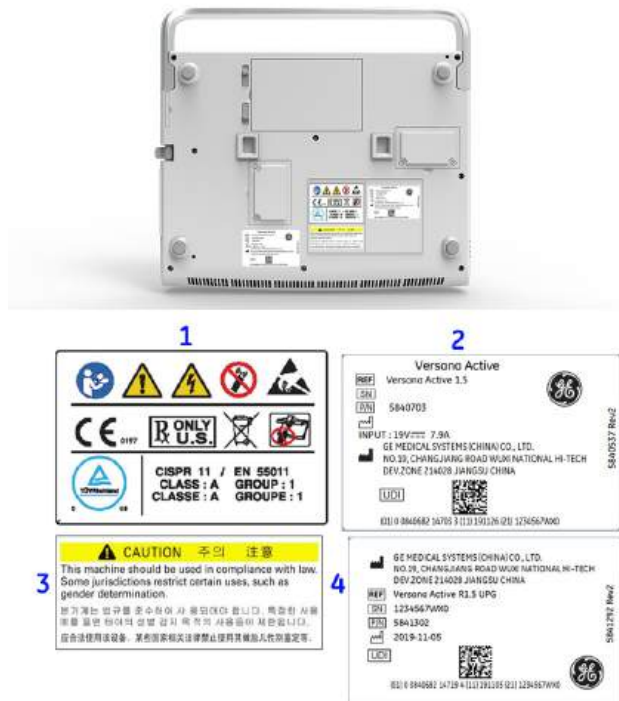




Figure 1-2. Versana Active Rating Plate Label Location

NOTE: The rating plate in the graphic is only for illustration purpose.

1-5-1 Rating Plate Location(continued)

1. Rating Plate

Table 1-5: Label Icons

Label/Icon	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 Versana Active 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>Serial Number.</p>	<p>Rating plate</p>

NOTE: *If the new label is needed during the service activities, please click “Ask an Expert” to submit the case in the support central: http://supportcentral.ge.com/products/sup_products.asp?prod_id=44177. And please use Internet Explorer to open the link.*

1-6 Safety considerations

1-6-1 Contents in this section

- 1-6-2 'Introduction' on *page 1-13*
- 1-6-3 'Human Safety' on *page 1-13*
- 1-6-4 'Mechanical safety' on *page 1-16*
- 1-6-5 'Electrical safety' on *page 1-19*

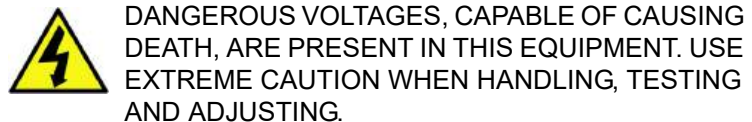
1-6-2 Introduction

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.

1-6-3 Human Safety

- Operating personnel must not remove the system covers.
- Servicing should be performed by authorized personnel only.

Only personnel who have participated in a Versana Active Training Seminar are authorized to service the equipment.



If the covers are removed from an operating Versana Active, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.

1-6-3 Human Safety(continued)



Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



Have two people available to deliver and unpack the Versana Active.

Attempts to move the Ultrasound system considerable distances or on an incline by one person could result in injury or damage or both.



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.



DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, ONLY install GE approved parts. DO NOT perform any unauthorized modification of the equipment.



Ensure that the Ultrasound system is turned off and unplugged.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel ON/OFF button will turn off.

Ultrasound system components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions.

1-6-3 Human Safety(continued)



Risk of electrical shock, Ultrasound system must be turned off and disconnected from power source. Cord must be controlled at all times.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel on/off button will turn off.

Ultrasound System components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions



Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.



Beware of possible sharp edges on all mechanical parts. If sharp edges are encountered, the appropriate PPE should be used to reduce the risk of injury.



Wear all PPE including gloves as indicated in the chemical MSDS.

1-6-4 Mechanical safety



^w WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups to removable media or hardcopy before doing a software upgrade.



^w 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.



^w WARNING

Never use a probe that has fallen to the floor. Even if it looks OK, it may be damaged.



^c CAUTION

Take extra care when moving the system.

The Versana Active weighs approximately 6kg or more, depending on installed peripherals, when ready for use. To avoid possible injury and equipment damage when transporting from one area of use to another:

- Use the handle to move the Ultrasound system.
- Do not let the Ultrasound system strike walls or door frame.

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

- Before transporting, place the system in its special storage case.
- Ensure that the system is firmly secured while inside the vehicle.
- Secure system with straps or as directed otherwise to prevent motion during transport.
- Prevent vibration damage by driving cautiously. Avoid unpaved roads, excessive speeds, and erratic stops or starts.

1-6-4 Mechanical safety(continued)



When the Ultrasound system is raised for a repair or moved along any incline, use extreme caution since it may become unstable and tip over.



To avoid injury when you move the monitor and the monitor arm, do not put your finger, hand, or object on the joint of the monitor or the monitor arm.



Use protective glasses during drilling, filing smooth surfaces, and during all other work where eyes need protection.



Use safety shoes when doing work where there is any chance of foot injury.



1-6-4 Mechanical safety(continued)



Use protective gloves when working with sharp edges or when directed to wear PPE during a removal/replacement procedure.



Be careful not to pinch any of the cables.

1-6-5 Electrical safety

1-6-5-1 Safe practices

Follow these guidelines to minimize shock hazards whenever you are using the Ultrasound system:

- To minimize shock hazard, the equipment chassis must be connected to an electrical ground.
- The Ultrasound system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground.
- 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 must meet international electrical standards.



Connecting a Versana Active to the wrong voltage level will most likely destroy it.



DO NOT SERVICE OR DISASSEMBLE PARTS UNDER FRU UNIT LEVEL AT ANY CIRCUMSTANCES.

1-6-5-2 Probes

Follow these guidelines before connecting a probe to the Ultrasound system:

- Inspect the probe prior to each use for damage or degradation to the:
 - housing
 - cable strain relief
 - lens
 - seal
 - connector pins
 - locking mechanism
- Do not use a damaged or defective probe.
- Never immerse the probe connector or adapter into any liquid.
- The system has more than one type of probe port. Use the appropriate probe port designed for the probe you are connecting.

1-6-5-3 Peripherals

Refer to the Patient Safety Environment section of the User's Manual for peripheral isolation information.

1-6-6 Battery Safety

NOTE: *Battery in this section only refers to the battery pack applicable for Versana Active system. For Versana Active Advanced Cart Battery (optional), please refer to Versana Active Advanced Cart Battery User Instruction for detailed descriptions.*

To avoid the risk of injury, follow the warning and cautions to make sure that the battery does not burst, ignite, or generate heat of fumes.



- The battery has a safety device. Do not disassemble or alter the battery.
- Charge and discharge the batteries only when the ambient temperature is between 10° and 40° C (50° F and 104° F).
- 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 temperature over 50° C (122° F). Keep it 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 drop packs from height to prevent them from possible malfunction damage.
- Do not pierce the battery with a sharp object, hit it, or step on it.
- Do not use a damaged battery.
- Do not solder a battery.
- Do not connect the battery to an electrical power outlet.
- Do not contact PCM (Power Control and Monitor, it's a small board in the battery) directly to prevent packs from ESD damage.
- In case of longer non-use of the Versana Active, please make sure the battery is removed.

1-6-6 Battery Safety(continued)



CAUTION

To avoid the battery bursting, igniting, or fumes from the battery causing equipment damage, observe the following precautions:

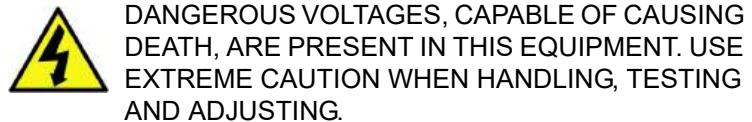
- Do not immerse the battery in water or allow it to get wet.
- Do not put the battery into a microwave oven or pressurized container.
- If the battery leaks or emits an odor, remove it from all possible flammable sources.
- If the battery emits an odor or heat, is deformed or discolored, or in a way appears abnormal during use, recharging or storage, immediately remove it and stop using it. If you have any questions about the battery, consult GE or your local representative.
- Short term (less than one month) storage of battery pack:
 - Store the battery in a temperature range between -5° C (23° F) and 50° C (122° F).
- Use only GE recognized batteries.
- In case of the long term (3 months or more) storage:
 - Store the battery in a temperature range of -5° C (23° F) and 50° C (122° F).
 - When charging for the first time after long-term storage. Recover such packs to original performance through repeating several cycles of full charging and discharging.
 - When store packs for more than 6 months, charge at least once per 6 months to prevent leakage and deterioration in performance due to self-discharging.
- When the system isn't powered on continuously more than 6 months, in order to prevent leakage and deterioration in performance of CMOS battery, power on the system at least once per 6 months for more than 10 hours to have CMOS battery fully charged. Time and date need to be re-setup.

NOTE: *The battery shall be shipped in about 30% charged state. Those packs have to be fully charged and discharged up to 3 times to utilize Li-Ion smart packs before use.*

NOTE: *The label on service part will provided the information of expiry date. This date is only used for shelf life management. If it is expired, the battery needs to do a complete discharge and charge operation to extend shelf life. After the battery is installed on ultrasound system for using, the expiry date is no longer valid.*

1-7 Dangerous procedure warnings

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



If the covers are removed from an operating Versana Active, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.



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.



DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, **ONLY** install GE approved parts. **DO NOT** perform any unauthorized modification of the equipment.



SHUT DOWN FORCEDLY OR PLUG IN/OUT ACDC INVALID MAY CAUSE THE DAMAGE OF SYSTEM FILES.



AFTER UNPLUG POWER CORD, WAIT FOR AT LEAST 20 SECONDS FOR CAPACITORS TO DISCHARGE AS THERE ARE NO TEST POINTS TO VERIFY ISOLATION.

1-8 Lockout/Tagout (LOTO) requirements

Follow Lockout/Tagout requirements by ensuring you are in total control of the AC power plug at all times during the service process.

To apply Lockout/Tagout (LOTO):

1. Plan and prepare for shutdown.
2. Shutdown the equipment.
3. Isolate the equipment.
4. Remove/disconnect the battery, if present.
5. Apply Lockout/Tagout Devices.
6. Control all stored and residual energy.
7. Verify isolation.

All potentially hazardous stored or residual energy is relieved.



Energy Control and Power Lockout for Versana Active.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.



Ultrasound System components may be energized.

1-9 Returning probes and repair parts

Equipment being returned must be clean and free of blood and other infectious substances. GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE 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.

NOTE: *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.*

NOTE: *The USER/SERVICE staff should dispose of all the waste properly, per federal, state, and local waste disposal regulations.*

The Ultrasound system is not meant to be used for long-term storage of patient data or images. The user is responsible for the data on the system and a regular backup is highly recommended.

If the system is sent for repair, please ensure that any patient information is backed up and erased from the system before shipping. It is always possible during system failure and repair to lose patient data. GE is not responsible for the loss of this data.

If PHI (Patient Healthcare Information) data needs to be sent to GE employees for service purposes, GE will ascertain agreement from the customer. Patient information shall only be transferred by approved service processes, tools and devices restricting access, protecting or encrypting data where required, and providing traceability in the form of paper or electronic documents at each stage of the procedure while maintaining compliance with cross-border restrictions of patient information transfers.

1-10 EMC, EMI and ESD

1-10-1 Electromagnetic Compatibility (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 to 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.

1-10-2 CE Compliance

Versana Active 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.

For applicable standards, refer to the Safety Chapter of the Ultrasound system User's Manual.

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.*

1-10-3 Electrostatic discharge (ESD) prevention



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 Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.



Risk of electrical shock, Ultrasound 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.

1-11 Customer assistance

1-11-1 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.

Before you call, identify the following information, and acquire log (Alt+D) to send to the Customer Care team:

1. System ID / serial number.
2. Software version.
3. Date and time of occurrence.
4. Sequence of events leading to issue.
5. Is the issue repeatable?
6. Imaging mode, probe, preset/application.
7. Media brand, speed, capacity, type.
8. Save secondary image capture, cine loop.

NOTE: Restart the application before resuming clinical scanning.

NOTE: The serial number can be found at the rear of the system.

1-11-2 Phone numbers for Customer Assistance

Table 1-6: Phone numbers for Customer Assistance

LOCATION	PHONE NUMBER	
USA GE Healthcare - GE Medical Systems Ultrasound Service Engineering 9900 Innovation Drive Wauwatosa, WI 53226	Service: On-site	1-800-437-1171
	Service Parts	1-800-558-2040
	Application Support	1-800-682-5327 or 1-262-524-5698
Canada	Phone:	1-800-668-0732
Latin America	Service Application Support	1-800-321-7937 1-262-524-5698
Europe (OLC-EMEA) GE Healthcare GmbH Peter-Müller-Straße 24-26 40468 Düsseldorf Germany	OLC - EMEA Phone:	+49 (0) 211 73744789 +33 1 3083 1300
	Fax:	+49 (0) 211 73744685
Online Services Ultrasound Asia	Phone: • Australia • China • India • Japan • Korea • Singapore	+ (61) 1-800-647-855 + (86) 800-810-8188 + (91) 1800-425-8025 + (81) 42-648-2940 + (82) 2620 13585 + (95) 6277-3444

1-11-3 System manufacturer

Table 1-7: Legal manufacturer

MANUFACTURER	PHONE NUMBER	FAX NUMBER
GE Medical Systems (China) Co., Ltd. No.19 Changjiang Road WuXi National Hi-Tech Dev.Zone 214028 Jiangsu China	+86 510 85225888	+86 510 85226688

1-11-4 Authorized Representative

Table 1-8: Authorized Representative

AUTHORIZED REPRESENTATIVE	TELEPHONE / FAX NUMBER		
<p>The location of the CE marking is shown in the Safety chapter of the Basic User Manual.</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">EC</td> <td style="padding: 2px 5px;">REP</td> </tr> </table> </div> <p>Authorized EU Representative: GE Medical Systems SCS 283 rue de la Minière 78530 BUC, France</p>	EC	REP	
EC	REP		

1-11-5 Factory Sites

Table 1-9: Factory Sites

Factory Sites
<p>GE Medical Systems (China) Co., Ltd. No.19, Changjiang Road, Wuxi National Hi-Tech Dev.Zone, 214028 Jiangsu China</p>
<p>Wipro GE Medical Device Manufacturing Private Limited No. 4 Kadugodi Industrial Area Sadarmangala, Whitefield, Bangalore, Karnataka, India 560067</p>

Chapter 2

Site Preparations

This chapter provides the information required to plan and prepare for the setup of an Ultrasound system. Included the descriptions of the facility and electrical needs to be met by the purchaser of the units.

2-1 Overview

2-1-1 Contents in this chapter

- 2-1 'Overview' on *page 2-2*
- 2-2 'General Ultrasound system requirements' on *page 2-3*
- 2-3 'Facility needs' on *page 2-11*
- 2-4 'Environmental Dangers' on *page 2-21*

2-2 General Ultrasound system requirements

2-2-1 Contents in this section

- 2-2-2 'Ultrasound system environmental requirements' on *page 2-3*
- 2-2-3 'Electrical requirements' on *page 2-6*
- 2-2-4 'EMI limitations' on *page 2-8*
- 2-2-5 'Probes environmental requirements' on *page 2-10*
- 2-2-6 'Time and manpower requirements' on *page 2-10*

2-2-2 Ultrasound system environmental requirements

2-2-2-1 If the Ultrasound system is very cold or hot

When unpacking the Ultrasound system, allow the temperature of the Ultrasound system to stabilize before powering up. The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.



If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

Table 2-1: System Acclimation Time Chart

Degree C	-4.5	-2	0.5	3	40	42.5	45	47.5	50	55	60
Degree F	23.9	28.4	32.9	37.4	104	108.5	113	117.5	122	131	140
hours	3	2	1	0	0	1	2	3	4	6	8

2-2-2-2 Environmental specifications for Ultrasound system

The system should be operated, stored, or transported within the parameters outlined below. Either its operational environment must be constantly maintained or the unit must be turned off.

Table 2-2: System Environmental Requirements

	Operational (Versana Active)	Storage (Versana Active)	Transport (Versana Active)
Temperature	10 - 40° C 50 - 104° F	-5 - 50° C 23 - 122° F	-5 - 50° C 23 - 122° F
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.



CAUTION

The Versana Active system and probe connector is not waterproof. Do not expose the device to water or any kind of liquid.

2-2-2-3 Cooling

The cooling requirement for a console Ultrasound system with monitor and on board peripherals, is up to 3800 BTU/h. 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/h demand on the cooling system.

2-2-2-4 Lighting

Bright light is needed for Ultrasound 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.

2-2-3 Electrical requirements

2-2-3-1 General requirements

NOTE: *GE 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 Ultrasound system.*

Sites with a mains power system with defined Neutral and Live:

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.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), 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 system is only a conduit.*

2-2-3-2 Electrical requirements for the Ultrasound system

In the table below, the electrical specifications for the Ultrasound system includes monitor and on board peripherals.

Table 2-3: Electrical Specifications for Versana Active system

Voltage	Tolerance	Power Consumption	Frequency
100-240 VAC	±10%	Max. 200VA	50/ 60HZ

2-2-3-3 Site circuit breaker

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



CAUTION

POWER OUTAGE MAY OCCURE.

The Versana Active 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.

2-2-3-4 Site power outlets

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

2-2-3-5 Unit power plug

If the Ultrasound system arrives without a power plug, or with the wrong plug, you must contact your GE dealer or the installation engineer must supply what is locally required.

2-2-3-6 Power stability requirement

Table 2-4: Power stability requirement

IEC 61000-4-11 Voltage dips, short interruptions and voltage variations on mains supply	< 5%T (> 95% dip) for 0.5 cycle;	< 5%T (> 95% dip) for 0.5 cycle;	Mains power quality should be that of a typical commercial or hospital environment.
	40%T (60% dip) for 5 cycles;	40%T (60% dip) for 5 cycles;	
	70%T (30 dip) for 25 cycles;	70%T (30 dip) for 25 cycles;	
	< 5%T (>95% dip) for 5 sec	< 5%T (>95% dip) for 5 sec	

2-2-4 EMI limitations

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

Possible EMI sources should be identified before the Ultrasound system is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of a defect. Some of these sources include:

- medical lasers
- scanners
- cauterizing guns
- computers
- monitors
- fans
- gel warmers
- microwave ovens
- light dimmers
- mobile phones
- in-house wireless phones (DECT phones)
- wireless computer keyboard and mouse
- air conditioning system
- High Frequency (HF) surgery equipment
- general AC/DC adapters
- portable phones

The presence of a broadcast station or broadcast van may also cause interference.

See: [2-2-4-1 'EMI prevention/abatement' on page 2-9](#) for EMI prevention tips.

2-2-4-1 EMI prevention/abatement

Table 2-5: EMI prevention/abatement

EMI RULE	DETAILS
Be aware of Radio Frequency sources	<ul style="list-style-type: none"> • Keep the Ultrasound system at least 5 meters (15 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 Ultrasound system	Poor grounding is the most likely reason an Ultrasound system will have noisy images. Check grounding of the power cord and power outlet.
Replace all screws, Radio Frequency gaskets, covers, cores	<ul style="list-style-type: none"> • After you finish repairing or updating the Ultrasound system, replace all covers and tighten all screws. • Any cable with an external connection requires a magnet wrap at each end. • Install all covers. Loose or missing covers or Radio Frequency gaskets allow radio frequencies to interfere with the ultrasound signals.
Replace broken Radio Frequency gaskets	If more than 20% or a pair of the fingers on an Radio Frequency gasket are broken, replace the gasket. Do not turn on the Ultrasound system until any loose metallic part is removed.
Do not place labels where Radio Frequency gaskets touch metal	Where applicable, never place a label where Radio Frequency gaskets meet the Ultrasound system. Otherwise, the gap created will permit Radio Frequency leakage. Or, if a label has been found in such a position, move the label.
Use GE specified harnesses and peripherals	The interconnect cables are grounded and require ferrite beads and other shielding. Also, cable length, material, and routing are all important; do not change from what is specified.
Take care with cellular phones	Cellular phones may transmit a 5 V/m signal; that could cause image artifacts.
Properly route peripheral cables	Where applicable, do not allow cables to lie across the top of the Card Rack 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.

2-2-5 Probes environmental requirements

2-2-5-1 Operation, storage and transport temperatures for probes

Probes should be operated, stored, or transported within the parameters outlined below.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

Table 2-6: Probe Environmental Requirements

	Operational	Storage	Transport
Temperature	10° - 40° C 50° - 104° F	-5° - 50° C 23° - 122° F	-5° - 50° C 23° - 122° F
Humidity	30- 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



CAUTION

Check the room temperature before you use the probe.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

NOTE: Refer to [Table 2-1 on page 2-3](#) to determine the needed settlement time.

2-2-6 Time and manpower requirements

Site preparation takes time. Begin site preparation checks as soon as possible, if possible, six weeks before delivery, to allow enough time to make any changes.

2-3 Facility needs

2-3-1 Contents in this section

- 2-3-2 'Purchaser responsibilities' on *page 2-12*
- 2-3-3 'Required facility needs' on *page 2-13*
- 2-3-4 'Desirable features' on *page 2-14*
- 2-3-5 'Minimal floor plan suggestion' on *page 2-15*
- 2-3-6 'Recommended floor plan suggestion' on *page 2-16*
- 2-3-8 'Networking setup requirements' on *page 2-18*

2-3-2 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. 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 Ultrasound 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 Ultrasound system. 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 Ultrasound system reliability.

2-3-3 Required facility needs

NOTE: GE 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 Ultrasound system.

Sites with a mains power system with defined Neutral and Live:

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.

Sites with a mains power system without a defined Neutral:

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

2-3-3 Required facility needs(continued)

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.

- Dedicated single branch power outlet of adequate amperage meeting all local and national codes which is located less than 2.5 m (8 ft.) from the unit's proposed location
- Door opening is at least 76 cm (30 in) wide
- Proposed location for unit is at least 0.5m (1.5 ft.) from the wall for cooling
- 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.
- Power outlets for other medical equipment.
- Power outlets for test equipment within 1 m (3.2 ft.) of Ultrasound system.
- Clean and protected space to store probes (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

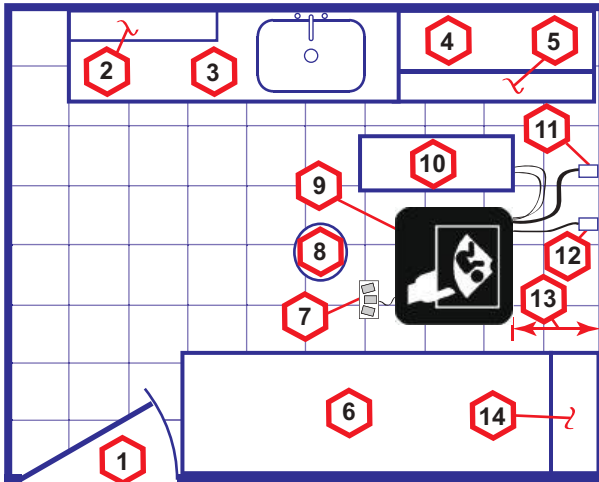
For the amperage requirements, see: [2-2-3 'Electrical requirements' on page 2-6.](#)

2-3-4 Desirable features

- Door is at least 92 cm (3 ft.) wide
- Circuit breaker for dedicated power outlet is easily accessible
- Sink with hot and cold water
- Receptacle for bio-hazardous waste, like used probe sheaths
- Emergency oxygen supply
- Storage for linens and equipment
- Nearby waiting room, lavatory, and dressing room
- Dual level lighting (bright and dim)
- Lockable cabinet ordered by GE for its software and proprietary manuals

2-3-5 Minimal floor plan suggestion

CSI 8x10



Scale:

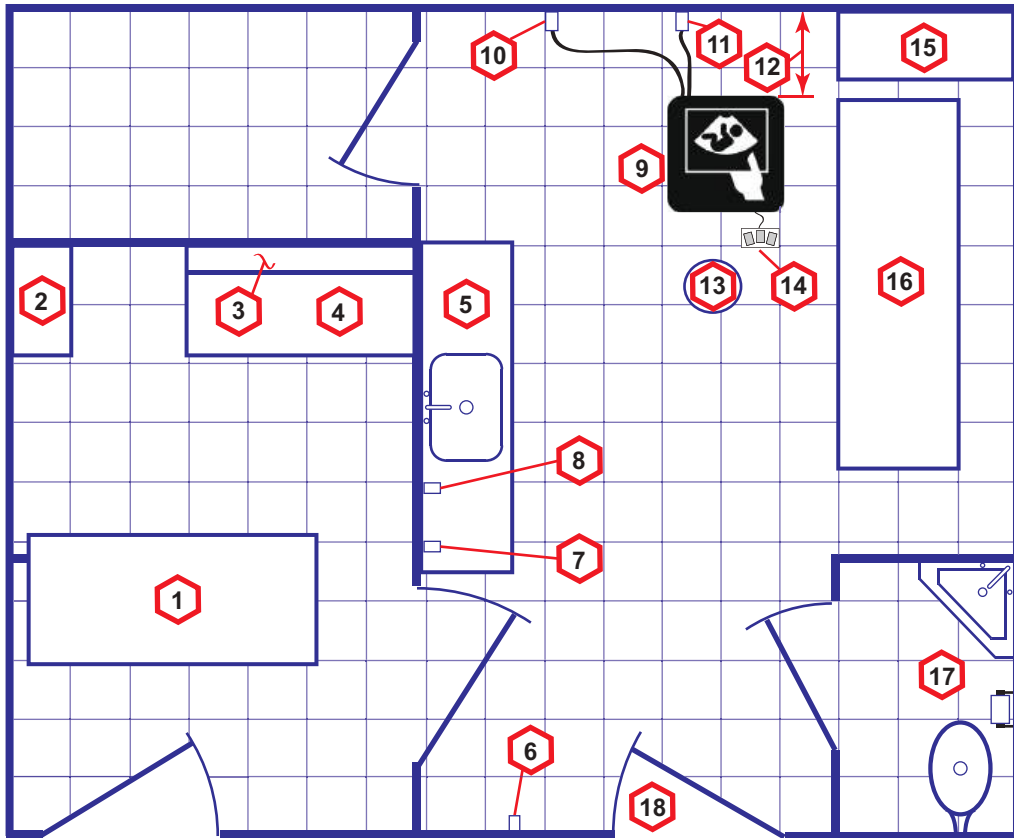
Each square equals one square foot (app. 31 x 31 cm)

- | | | |
|---|--|---|
| 1. Door – at least 762 mm (30 inches) | 6. Examination Table – 1930 x 610 mm (76 x 24 inches) | 12. Network Interface |
| 2. Film Viewer | 7. Footswitch | 13. 457 mm (18 inches) distance of Ultrasound system from wall or objects |
| 3. Counter Top, Sink with hot and cold water and Supplies Storage | 8. Stool | 14. GE Cabinet for Software and Manuals |
| 4. Linen Supply | 9. Ultrasound system | |
| 5. Probes/Supplies | 10. External Peripherals | |
| | 11. Dedicated Power Outlet - Circuit Breaker protected and easily accessible | |

Figure 2-1. Minimal floor plan, 2.5 m x 3 m (8 by 10 foot)

2-3-6 Recommended floor plan suggestion

CSI 14x17

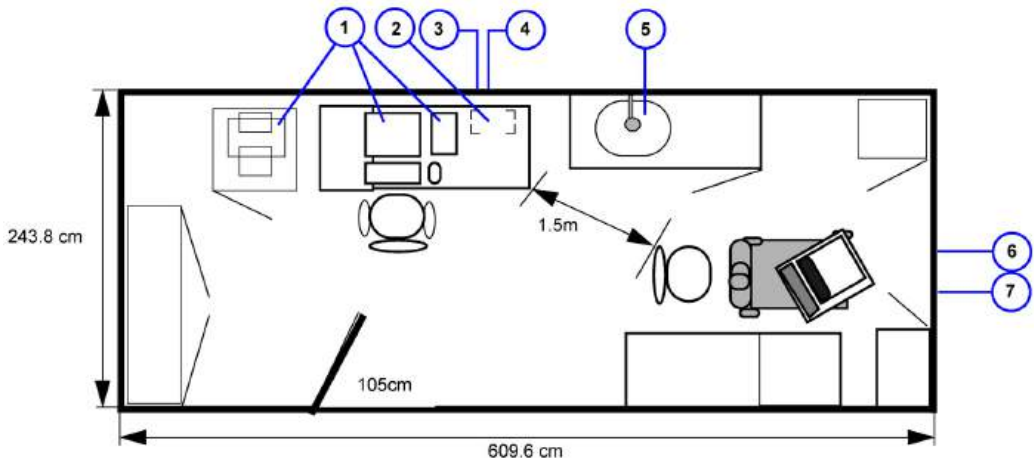


Scale: Each square equals one square foot (app. 31 x 31 cm)

- | | | |
|--|--|--|
| 1. Secretaries or Doctors Desk | 8. Suction Line | 14. Footswitch |
| 2. File Cabinet | 9. Ultrasound system | 15. Storage for Linens and Equipment |
| 3. Film Viewer | 10. Dedicated Power Outlet - Circuit Breaker protected and easily accessible | 16. Examination Table – 1930 x 610 mm (76 x 24 inches) |
| 4. Counter Top | 11. Network Interface | 17. Lavatory and Dressing Room |
| 5. Counter Top and Sink with hot and cold water | 12. 457 mm (18 inches) distance of Ultrasound system from wall or objects | 18. Door – at least 762 mm (30 inches) |
| 6. Overhead Lights Dimmer - Dual Level Lighting (bright and dim) | 13. Stool | |
| 7. Emergency Oxygen | | |

Figure 2-2. A 14 by 17 foot recommended floor plan

2-3-7 Suggested floor plan, Ultrasound system, and PC in same room



- | | | |
|---------------------------------|---------------------------------|---------------------------------|
| 1. PC workstation parts | 4. 3x mains power outlets | 7. Ethernet network wall outlet |
| 2. UPS | 5. Hot and Cold water | |
| 3. Ethernet network wall outlet | 6. Dedicated mains power outlet | |

Figure 2-3. Suggested Room with EchoPAC PC workstation and Ultrasound Scanner

2-3-8 Networking setup requirements

2-3-8-1 Stand alone Ultrasound system (without network connection)

None.

2-3-8-2 Scanner connected to hospital's network

Supported networks:

100/1000 Mbit Ethernet/DICOM network (option)

2-3-8-3 InSite requirements

InSite requires an Ethernet connection via:

- 100/1000 Mbit Interface

2-3-8-4 Purpose of the DICOM network function

DICOM 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.

2-3-8-5 DICOM option setup requirements

To configure the Ultrasound system to work with other network connections, the site's network administrator must provide information to complete the form "Worksheet for DICOM Network Information". Ensure that there are no spaces in any field of the form.

See:

Entries must include:

- A host name, local port number, AE Title, IP address and Net Mask for the Ultrasound system.
- The IP addresses for the default gateway and other routers at the site for ROUTING INFORMATION.
- The host name, IP address, port and AE Title for each device the site wants connected to the Ultrasound system for DICOM APPLICATION INFORMATION. A field for the make (manufacturer) and the revision of the device, is also included. This information may be useful for error solving.

2-3-8-5 DICOM option setup requirements(continued)

Host Name	<input style="width: 90%;" type="text"/>	IP Address	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	Local Port	<input style="width: 40%;" type="text"/>	
AE Title	<input style="width: 90%;" type="text"/>	Net Mask	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>			
Network Speed	<input style="width: 90%;" type="text"/>	Default Gateway	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>			
DHCP	<input type="checkbox"/>					
DICOM APPLICATION						
	NAME	MAKE/	AE TITLE	IP	PORT	OTHER CONFIGURATION
Store 1	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	<input type="checkbox"/> Raw Data <input type="checkbox"/> Allow Multiframe <input type="checkbox"/> Structured Reporting <input type="checkbox"/> Compression _____
Store 2	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	<input type="checkbox"/> Raw Data <input type="checkbox"/> Allow Multiframe <input type="checkbox"/> Structured Reporting <input type="checkbox"/> Compression _____
Store 3	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	<input type="checkbox"/> Raw Data <input type="checkbox"/> Allow Multiframe <input type="checkbox"/> Structured Reporting <input type="checkbox"/> Compression _____
DICOM Print	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	Vendor: _____ Print Size: _____ Medium: _____ Copies: _____ Orientation: _____ Color _____
Worklist	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	
Storage Commit	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	Associated Storage AE _____
DICOM MPPS	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 90%; height: 20px;" type="text"/>	<input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/> . <input style="width: 15%;" type="text"/>	<input style="width: 15%;" type="text"/>	

Figure 2-4. Worksheet for DICOM Network Information

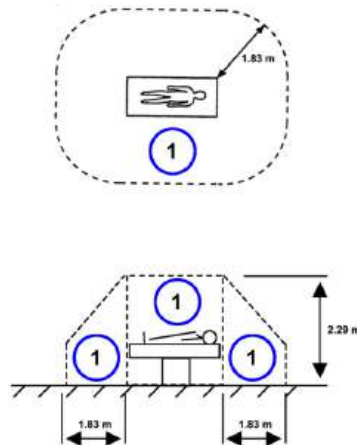
2-4 Environmental Dangers

Commercial devices such as laser cameras, printers, VCRs and external monitors, usually exceed allowable leakage current limits and, when plugged into separate AC outlets, are in violation of patient safety standards. Suitable electrical isolation of such external AC outlets, or providing the device with extra protective earth, will be required in order to meet UL60601-1 and IEC60601-1 / IEC60601-1-1 standards for electrical leakage.

2-4-1 Patient Vicinity UL60601-1 (USA)

2.12.20DV (UL60601-1:2003)

In area in which patients are normally cared for, the patient vicinity is the space with surfaces likely to be contacted by the patient or attendant who can touch the patient. This encloses a space within the room 1.83 m (6 ft.) beyond the perimeter of the bed (examination table, dental chair, treatment booth, and the like) in its intended location, and extending vertically 2.29 m (7.5 ft.) above the floor.



1. Patient environment

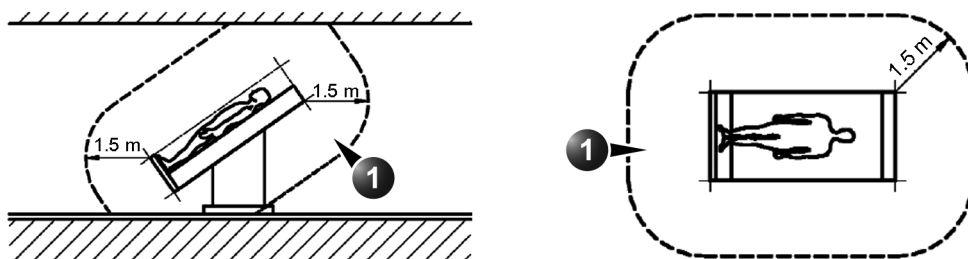
2-4-2 Patient Environment IEC60601-1 and ANSI AAMI ES60601-1

Sub Clause 3.79 and figure A.9 (IEC60601-1:2005 and ANSI AAMI ES60601-1:2005)

Such an area is an environment in which medical diagnosis, monitoring or treatment is carried out. It is very difficult to attach unique dimensions to the PATIENT ENVIRONMENT.

In practice a distance of 2,5 m (8.2 ft.) above the floor on which the medical personnel stand and a horizontal distance of 1,5 m (4.9 ft.) have justified themselves as indicative of the dimensions of the Patient Environment.

The patient environment/vicinity will be depicted as a dashed line in this procedure. See example below.



1. Patient environment

Figure 2-5. Patient environment

Chapter 3

System Setup

This chapter contains information needed to install Versana Active system.

Included is a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim.

How to prepare the facility and unit of the actual installation, and how to check and test the unit, probes, and external peripherals for electrical safety are also included in this procedure.

3-1 Overview

3-1-1 Contents in this chapter

- 3-1 'Overview' on *page 3-2*
- 3-2 'Setup reminders' on *page 3-3*
- 3-3 'Receiving and unpacking the equipment' on *page 3-6*
- 3-4 'Packing materials - recycling information' on *page 3-12*
- 3-5 'Preparing for setup' on *page 3-13*
- 3-6 'Completing the setup' on *page 3-14*
- 3-7 'System Configuration' on *page 3-21*
- 3-8 'Peripherals Installation' on *page 3-28*
- 3-9 'Connectivity setup' on *page 3-64*
- 3-10 'Option Setup' on *page 3-101*
- 3-11 'Paperwork after setup' on *page 3-104*
- 3-12 'Cart Setup' on *page 3-106*

3-2 Setup reminders

3-2-1 Average setup time

- Unpacking the Versana Active: 20 minutes
- Set up Versana Active options: 15 minutes
- DICOM Network Configuration: 30 minutes or more, depending on the configuration
- Install Insite: 0.5 hour

The Versana Active installation and functional checkout will take approximately 1 hour. Versana Active consoles with optional equipment may take slightly longer.

3-2-2 Setup warnings



DANGER

WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE ULTRASOUND SYSTEM!



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 wear the ESD wrist strap when you work on circuits.



CAUTION

DO NOT operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.

3-2-2 Setup warnings(continued)

1. 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.

NOTE: *For information regarding packing labels, refer to LABELS ON PACKAGE.*

2. After being transported, the unit may be very cold or hot. If this is the case, allow the unit to acclimate before you turn it on. It requires one hour for each 2.5°C increment it's temperature is below 3°C or above 40°C.



DANGER

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



CAUTION

If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.

Table 3-1: System Acclimation Time Chart

Degree C	-4.5	-2	0.5	3	40	42.5	45	47.5	50	55	60
Degree F	23.9	28.4	32.9	37.4	104	108.5	113	117.5	122	131	140
hours	3	2	1	0	0	1	2	3	4	6	8

3-2-2 Setup warnings(continued)



Operator Manual(s)
The User Manual(s) should be fully read and understood before operating the Versana Active and kept near the Ultrasound system for quick reference.



Acoustic Output Hazard
Although the ultrasound energy transmitted from the Versana Active probe is within AIUM/NEMA standards, avoid unnecessary exposure. ultrasound energy can produce heat and mechanical damage.



3-3 Receiving and unpacking the equipment

3-3-1 Purpose of this section

This section describes how to receive and unpack Versana Active.

3-3-2 Contents in this section

- [3-3-3 'Warnings for receiving and unpacking' on page 3-6](#)
- [3-3-4 'Receiving the Versana Active' on page 3-7](#)
- [3-3-5 'Unpacking the Versana Active' on page 3-8](#)
- [3-3-6 'Packing the Equipment' on page 3-11](#)

3-3-3 Warnings for receiving and unpacking



CAUTION

Remember to use relevant personal protecting equipment (PPE) during packing and unpacking. Check with your local EHS representative.

3-3-4 Receiving the Versana Active

3-3-4-1 Overview

Improper handling during transportation may harm the equipment inside the package even if the package itself is undamaged.

3-3-4-2 Examine all packages

Examine package closely at time of delivery, as described in the procedure below.

3-3-4-3 Damage in transportation

Follow this procedure if damage is apparent:

1. Write "Damage In Shipment" on ALL copies of the freight or express bill **BEFORE** delivery is accepted or "signed for" by a GE representative or hospital receiving agent.
2. Report the damage to the carrier.
 - Whether noted or concealed, damage **MUST** be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier.
 - A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

3-3-5 Unpacking the Versana Active

When a new system arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1



CAUTION

Please carefully unpack the system, and do not dispose the package of Versana Active, so that it can be reused for service.

NOTE: *Please check the Versana Active console is well assembly after unpacking the system.*

1. Cut the adhesive tape and open top covers of paper carton.

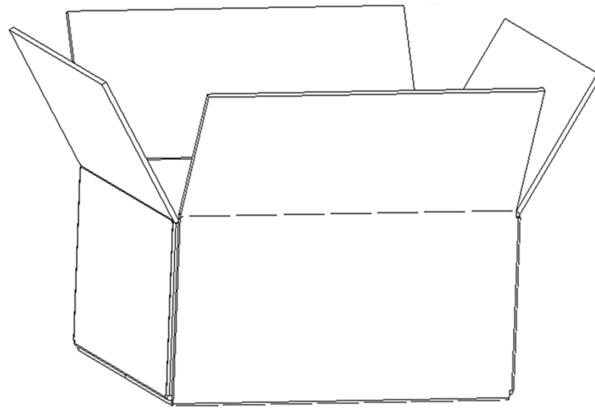


Figure 3-1. Open Top Covers of Paper Carton

3-3-5 Unpacking the Versana Active(continued)

2. Take out console together with 2 interleavers from console package.
3. Take out the interleavers beside Accessories Package
4. Take out Accessories Package.

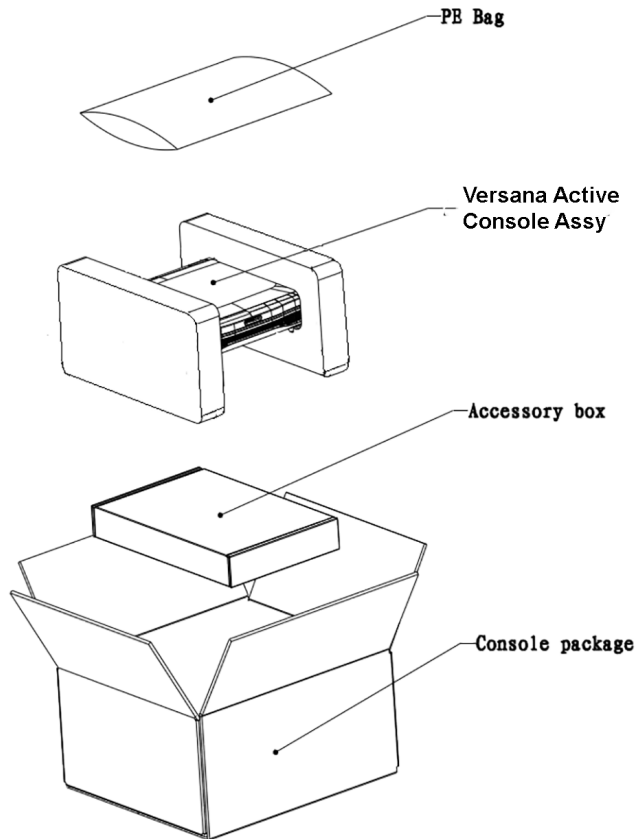


Figure 3-2. Unpacking the equipment



CAUTION

Do not lift the unit by the rubber band. Equipment damage may result.

3-3-5 Unpacking the Versana Active(continued)

5. Remove 2 interleavers.
6. Remove plastic bag.

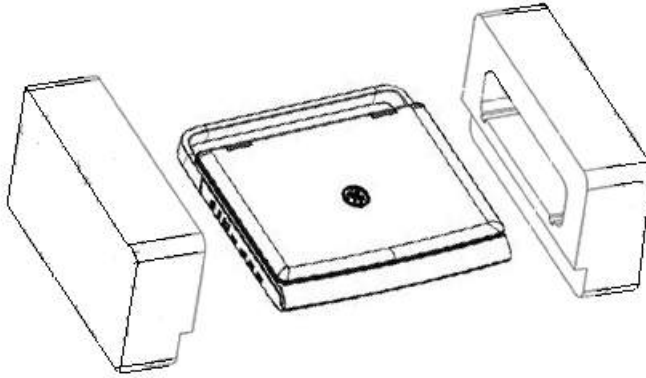


Figure 3-3. Removing interleavers and plastic bag

3-3-5 Unpacking the Versana Active(continued)

NOTE: Check the shipping container for special instructions. Verify that the container is intact. In some cases a secondary container may be used. If so, ask the carrier for unpacking instructions.

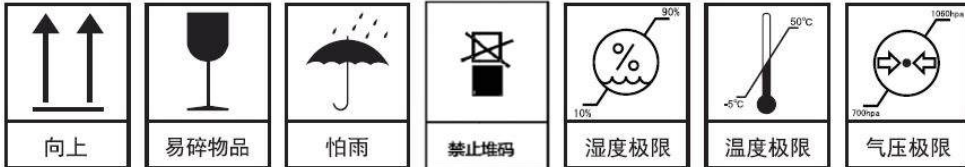


Figure 3-4. Labels on Package

Moving into Position



CAUTION

Do not lift the unit by the rubber band. Use handle to move system.



CAUTION

Equipment Damage Possibility. Lifting the console by holding covers may damage the covers. Do not lift the console by holding any covers.

In general, a single adult can move the Versana Active. Before moving, store all loose parts in original accessory box or in back pack. Return probes to original box.

3-3-6 Packing the Equipment

Please pack Versana Active in the reverse order of unpacking.

3-4 Packing materials - recycling information

The packing materials for Versana Active are recyclable:

- The Transportation Box is made of spruce or similar material. ("PHYTOSANITARY CERTIFICATE" included in all shipments to The People's Republic of China.)
- Lever lockings (hinges) are made of zinc plated steel.
- The inner reinforcements are made of Ethafoam (Polyethylene foam).
- The plastic foil is made of LDPE (Low Density Polyethylene).

3-5 Preparing for setup

3-5-1 Verify customer order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered, or damaged.

3-5-2 Physical inspection

Verify that the system arrived intact (visual inspection).

If the system has been damaged, please refer to '[Damage in transportation](#)' on [page i-16](#) in the beginning of this manual.

3-5-3 EMI protection

The Versana Active 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.

See [2-2-4 'EMI limitations'](#) on [page 2-8](#) for more information about EMI protection.

3-6 Completing the setup

3-6-1 Purpose of this section

This section describes how to complete the installation of Versana Active.

3-6-2 Contents in this section

- [3-6-3 'System specifications' on page 3-15](#)
- [3-6-4 'Electrical specifications' on page 3-16](#)
- [3-6-6 'Connections on Peripheral/Accessories Connector Panel' on page 3-19](#)
- [3-6-7 'Connecting probes' on page 3-20](#)
- [3-6-8 'Powering the system' on page 3-20](#)

3-6-3 System specifications

3-6-3-1 System requirements verification

- Verify that the site meets the requirements listed in Chapter 2.
(See: 2-3 'Facility needs' on page 2-11.)
- Verify that the specifications below don't conflict with any on-site conditions.

3-6-3-2 Physical dimensions

Table 3-2: Physical dimensions of Versana Active

Height	Width	Depth	Unit
58	362	390	mm
2.28	14.25	15.35	Inches

3-6-3-3 Console Weight

- Weight: less than 6 kg with battery

3-6-4 Electrical specifications



WARNING

Connecting a Versana Active to the wrong voltage level will most likely destroy it.

3-6-4-1 Verification of the system's voltage setting

Verify that the mains voltage specified for the Versana Active is available on-site.

Refer to the latest revision of the Basic User Manual for a full list of product labels prior to serving the system.

3-6-4-2 Electrical specifications for Versana Active

In the table below, the electrical specifications for Versana Active includes monitor and on board peripherals.

Table 3-3: Electrical specifications for Versana Active

Model Name	Voltage	Tolerances	Power consumption	Frequency
Versana Active VA	100-240V	±10%	Max.200VA	50/60 Hz
Versana Active VS				

3-6-5 Peripherals/Accessories Connector Panel

Versana Active peripherals and accessories can be properly connected using the side connector panel.

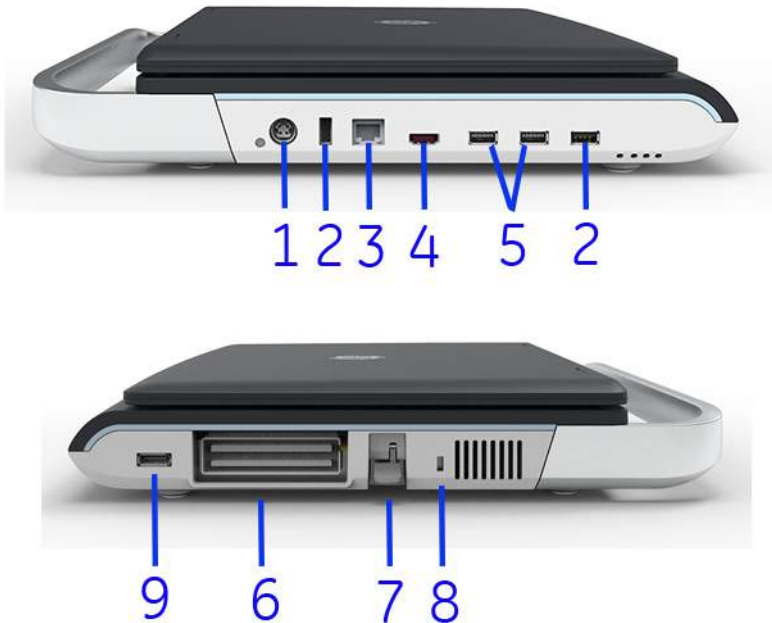


Figure 3-5. Rear Connector Panel

1. Port for DC In (AC Adapter)
2. 2 general USB 2.0 ports
3. Network Port
4. HDMI port
5. 2 general USB 3.0 ports
6. 1 Probe Connector Port
7. Probe Connector Locking Level
8. Security Lock
9. 4D port (only for Versana Active R1.1.x)

3-6-5 Peripherals/Accessories Connector Panel(continued)



Figure 3-6. LED Indicators

1. Indicates battery status. When the battery is charged, the LED is green. When battery power is low, the LED is orange.
Color: Green and Orange
2. Indicates hard disk working status. When the LED is flashing, the system is writing or reading from the hard disk.
Color: Green
3. Diagnostic LED 2.
4. Diagnostic LED 1.

3-6-6 Connections on Peripheral/Accessories Connector Panel

NOTE: *Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g. IEC60950 for data processing equipment and IEC60601-1 for medical equipment). Furthermore, all complete configurations shall comply with the valid version of the system standard IEC60601-1. Everybody who connects additional equipment to the signal input part or signal output part of Versana Active, configures a medical system, and is therefore responsible that the Ultrasound system complies with the requirements of the valid version of IEC60601-1. If in doubt, consult the technical service department or your local representative for GE.*

3-6-6-1 Connect Ethernet

Connect the network cable to the Ethernet connector on the side connector panel.

The connector is located on the side of Versana Active.

3-6-6-2 Connect USB Flash Drive

NOTE: *USB Flash Drive approved for Versana Active are verified for EMC performance according to EN55011 class B. The use of any other USB Flash Drive will compromise this verification, and may cause interference on Versana Active itself, or on other electronic devices.*

For approved models, please refer to Chapter 9.

Insert the USB Flash Drive in one of the USB ports on the Versana Active.

3-6-7 Connecting probes

Please refer to Basic User Manual on how to connect/disconnect a probe.

3-6-8 Powering the system

Please refer to Basic User Manual on how to power the system.

- The power plug is an isolation means which used to isolate its circuits electrically from the SUPPLY MAINS.
- If powered by Advanced Cart, the mains switch is also an isolation means which used to isolate its circuits electrically from the SUPPLY MAINS.

NOTE: Whether the Advanced Cart is configured with power transformer or not depends on the configuration. If the cart doesn't contain the power transformer, it shall be an unpowered cart.

NOTE: If power transformer is available on the advanced cart, the main cable in the advanced cart can be connected to the power transformer at the bottom side of the system, the AC printer will be connected to the rear port of the Advanced Cart for power.

NOTE: If power transformer is not available on the advanced cart, user shall use the power adapter to connect the console to wall outlet. The AC printer shall be connected to wall outlet with another power adapter.

3-7 System Configuration

3-7-1 Purpose of this section

This section describes how to configure the Versana Active.

3-7-2 Versana Active configuration

For complete instructions, refer to the latest revision of the Versana Active Basic User Manual, Chapter 16.

Information includes Entering Location, Adjusting Date and Time, Selecting User interface Language, Selecting Online Manual Language, Selecting Unites of Measure.

3-7-2-1 User Configurable Key

When the system is received, please check the software option installed on the system.

- Power on the system.
- Enter **Utility -> Admin -> System Admin -> Option Information** to check the option status.

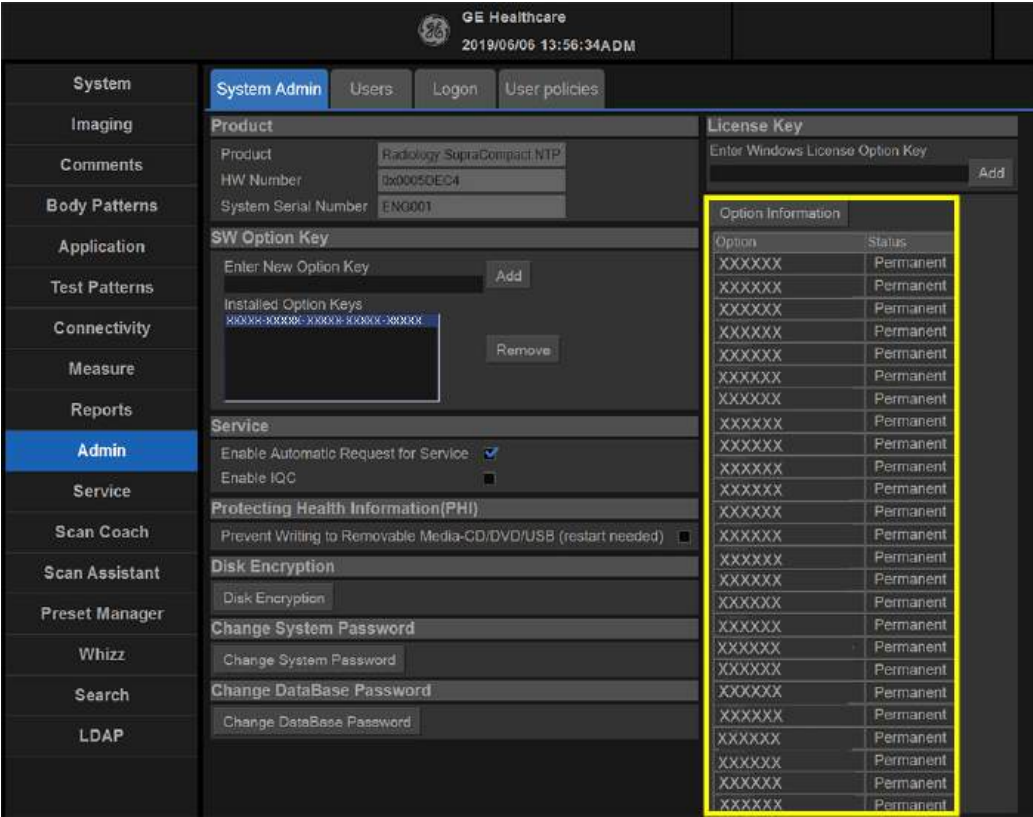


Figure 3-7. Check SW Option Status

3-7-2-1 User Configurable Key(continued)

To configure the user configurable key, enter Utility-> System-> User Configurable Key and assign the user configurable key.

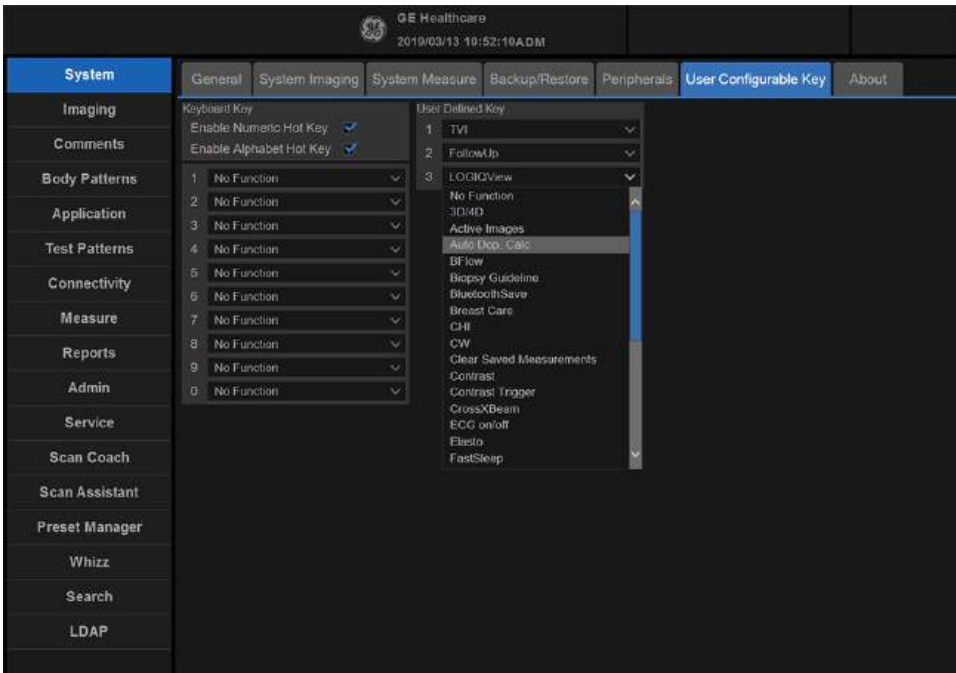


Figure 3-8. Assign User Configurable Key

3-7-3 LDAP

Versana Active Ultrasound System support integration with LDAP compliant directory servers. If the system is configured to use LDAP (Utility/LDAP), the access control and user authentication is performed with use of services from the connected directory server. The authentication will be done by the directory server, while the access control to the system is done with data received from the directory server.

3-7-3-1 Identity Provisioning

3-7-3-1-1 Management of user accounts

When using LDAP, the user accounts on the directory server (DS) must be managed outside the Versana Active Ultrasound System. It will not be possible to change user passwords or any other properties of the user accounts from the Versana Active Ultrasound System.

3-7-3-1-2 User information stored on the system

In general, there should be no user information stored on the system if LDAP is used. Users that are defined in the local user management system will remain on the system, with exception of the ADM user, these accounts will not be active.

To be able to log on to the system with no network connectivity, the system has an option for caching of LDAP user information. This can be enabled by a system administrator.

If caching is enabled, the system will have time limited storage of user information received from the DS. See [3-7-3-5 'Caching of users' on page 3-25](#) for more information.

3-7-3-1-3 Username and password restrictions

The systems restrictions for usernames and passwords are:

- Usernames can be 1 - 32 characters long.
- Password can be 0 - 256 characters long.

3-7-3-2 Username and password policies

When using LDAP, username and password policies are managed by the DS. The local username and password policy on the system will then have no effect on LDAP users.

3-7-3-3 User Authentication

When a user is logging in, the system will send an authentication request with the entered user credentials to the configured DS. If the authentication is successful and the user has access rights to the system, the user will be granted access.

3-7-3-4 Assigning Access Rights

The access right to the system is controlled by the DS authentication of the user, together with use of the user's DS group membership. To get access to a system, a user must be a member of one or more DS groups specified on the Versana Active Ultrasound system.

DS group membership is used to assign the user privileges on the system.

When configuring a Versana Active Ultrasound System to use LDAP, proper user groups must be created or identified on the DS. The users of the system must be assigned the proper DS group membership.

For example, users that are going to use the system as "Sonographer" can be part of a "Versana_Active_Ultrasound_Sonographers" DS group, while users going to be have "Sys admin" rights could be part of a "SysAdmin" group.

There is a group mapping tool in the system's Utility/LDAP page. Use this tool to map DS groups to operator groups on the Versana Ultrasound system.

3-7-3-5 Caching of users

To enable off line usage, the systems support caching of user information and off-line authentication. The caching can be turned on / off by a system administrator.

For a user to be able to log on when off line, he/she must previously have performed a successful logon on the system when on-line, and still have valid (i.e. not timed out) cached user information on the system.

The caching is time-limited per individual user. The lifetime of the cached information is configurable. If the lifetime has expired, the user will not be able to log on when offline. The time stamp is reset when a successful on-line authentication is done by the user.

3-7-3-6 Certificate Installation

Press **Utility** -> **LDAP**, click **Certificates** button to open the Certmgr-Certification page, import the certificates you need then save them to the specific folder.

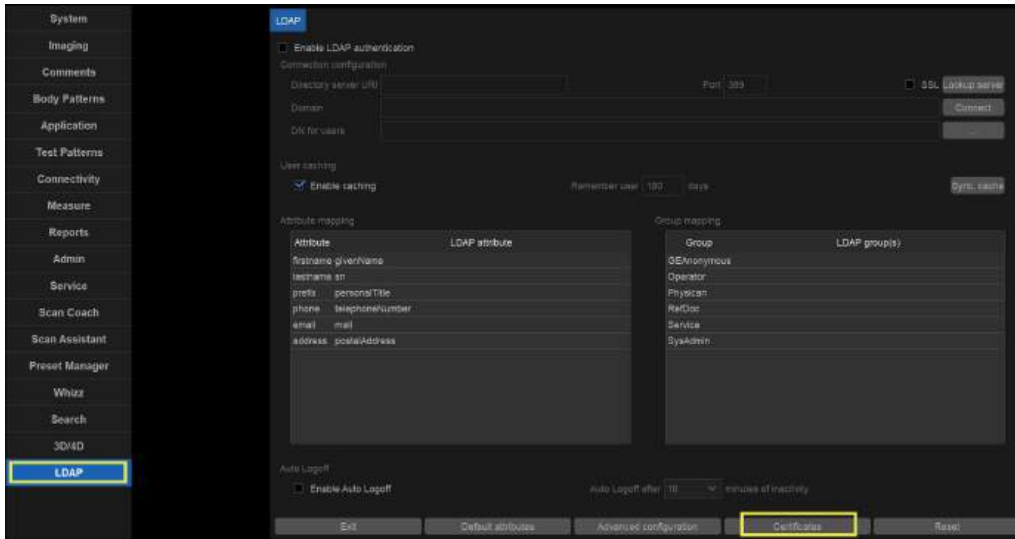


Figure 3-9. Utility -> LDAP -> Certificates

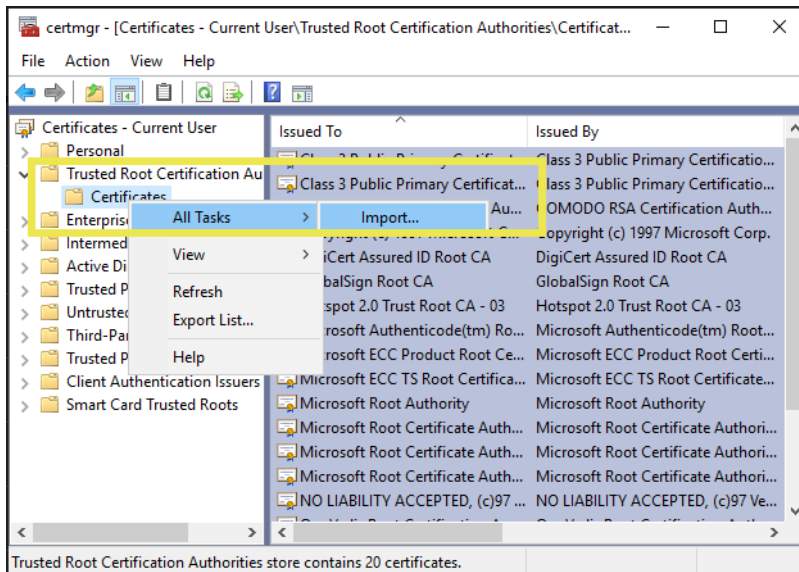


Figure 3-10. Import

3-7-3-6 Certificate Installation(continued)

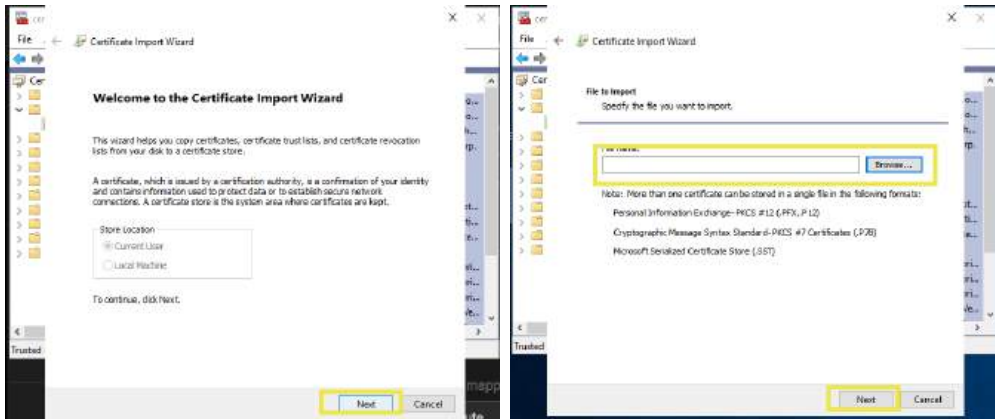


Figure 3-11. Save to folder

3-8 Peripherals Installation

3-8-1 Overview

This section describes how to install and configure the peripherals validated for the Versana Active.

About the operation check-out of peripherals, [See 4-4-19 'Peripheral checks' on page 4-70 for more information.](#)

Table 3-4: Versana Active Peripherals

Description	Control	Model
B/W USB Printer	USB port	Sony UP-D898MD Printer
B/W USB Printer	USB port	HP Officejet 200 Printer
Color USB Printer	USB port	Sony UP-D25MD Printer
Network Printer	NA	HP Universal Printer
3-Pedal Footswitch	USB port	Footswitch MKF 2-MED USB GP26
1-Pedal Footswitch	USB port	Whanam FSU-1000
USB Stick	USB port	USB stick
USB HDD	USB port	1TB mobile USB HDD
ECG	USB Port	USB ECG Module
Wireless Adaptor	USB port	Wireless Adaptor
Bluetooth Adaptor	USB port	Bluetooth Adaptor Note: The HCAT H48122BT and service part 5774524-S for Bluetooth Adaptor is not orderable now.
DVD RW	USB port	DVDRW kit
Printer USB Isolator	USB port	NA
Video Output Adapter for Versana Active-CRU	HDMI port	VOA
Spare Battery Charger for Versana Active-CRU	NA	Spare Battery Charger

3-8-2 Furnished materials

This section describes the materials with the Peripherals and with the system.

Retain the original carton and packing materials in case transport is needed in the future.

- B/W USB Printer

Table 3-5: Materials furnished with B/W Printer

Item	Description	Quantity	Note
1	Sony UP-D898MD Printer	1	
2	Paper Roll	1	
3	USB cable	1	

- B/W USB Printer

Table 3-6: Materials furnished with Printer

Item	Description	Quantity	Note
1	HP Officejet 200 Printer	1	
2	Paper Roll	1	
3	USB cable	1	

- Color USB Printer

Table 3-7: Materials furnished with Color USB Printer

Item	Description	Quantity	Note
1	Sony UP-D25MD Printer	1	
2	Paper Roll	1	
3	AC Power Cord (local purchase)	1	
4	USB cable	1	

- Printer USB Isolator

Table 3-8: Materials furnished with printer USB Isolator

Item	Description	Quantity	Note
1	Printer USB Isolator	1	

- USB Stick

Table 3-9: Materials furnished with USB Stick

Item	Description	Quantity	Note
1	USB Stick	1	

3-8-2 Furnished materials(continued)

- USB HDD

Table 3-10: Materials furnished with the USB HDD

Item	Description	Quantity	Note
1	USB HDD	1	
2	USB Cable	1	

- Wireless Adaptor

Table 3-11: Materials furnished with the Wireless Adaptor

Item	Description	Quantity	Note
1	1 Wireless Adaptor	1	

- Bluetooth Adaptor

Table 3-12: Materials furnished with the Bluetooth Adaptor

Item	Description	Quantity	Note
1	1 Bluetooth Adaptor	1	

- Footswitch

Table 3-13: Materials furnished with the Footswitch

Item	Description	Quantity	Note
1	1 Pedal Footswitch	1	
2	3 Pedal Footswitch	1	

- DVD RW

Table 3-14: Materials furnished with the DVD RW

Item	Description	Quantity	Note
1	DVD RW	1	
2	USB cable	1	

3-8-3 Peripherals Installation Instructions

3-8-3-1 Sony UP-D898MD Printer Installation

3-8-3-1-1 Tools

No special tools needed.

3-8-3-1-2 Manpower

One person 5 minutes.

3-8-3-1-3 Preparations

1. Unpack B/W Printer.
2. Ensure no physical damage.

3-8-3-1-4 Installation Procedure

1. Place the device in a suitable place.
2. Connect the USB cable and power cable on the Printer.
3. Connect the power cord in the wall outlet, then turn on the printer.
4. Connect USB cable to Versana Active USB port.



Figure 3-12. Sony UP-D898MD Connection

3-8-3-1 Sony UP-D898MD Printer Installation(continued)

5. Press Utility-->Connectivity-->Service.
6. Select **Standard Print** under Service box by default or Select **Standard Print** from drop-down menu and click **Add**.

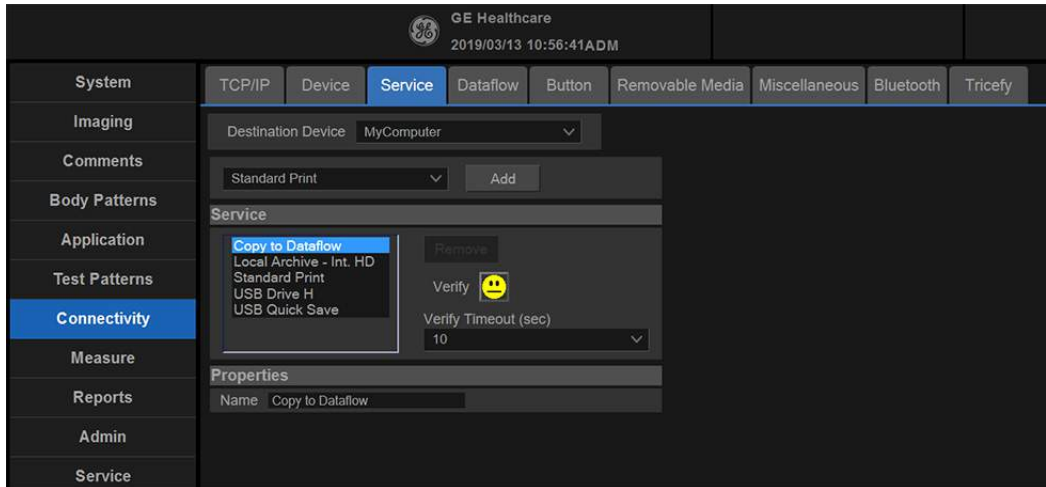


Figure 3-13. Connectivity->Service

NOTE: The **print** key configured in this step also can be used as **Print** key in Worksheet.

7. Select the printer from the Printer pull-down Properties menu. Type the printer name in the Name Field. This name is used on the Button screen. Press **Save**.

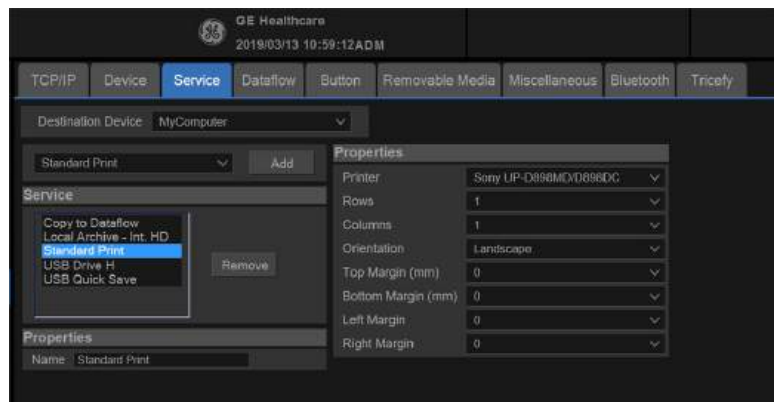


Figure 3-14. Select the Printer

3-8-3-1 Sony UP-D898MD Printer Installation(continued)

8. Select **Button**. Select the appropriate print key (Print1, Print2 or Print3) from the **Physical Print Buttons** selection. Select the printer from **MyComputer** column and press >> to move it to the Printflow View column. Press **Save**.

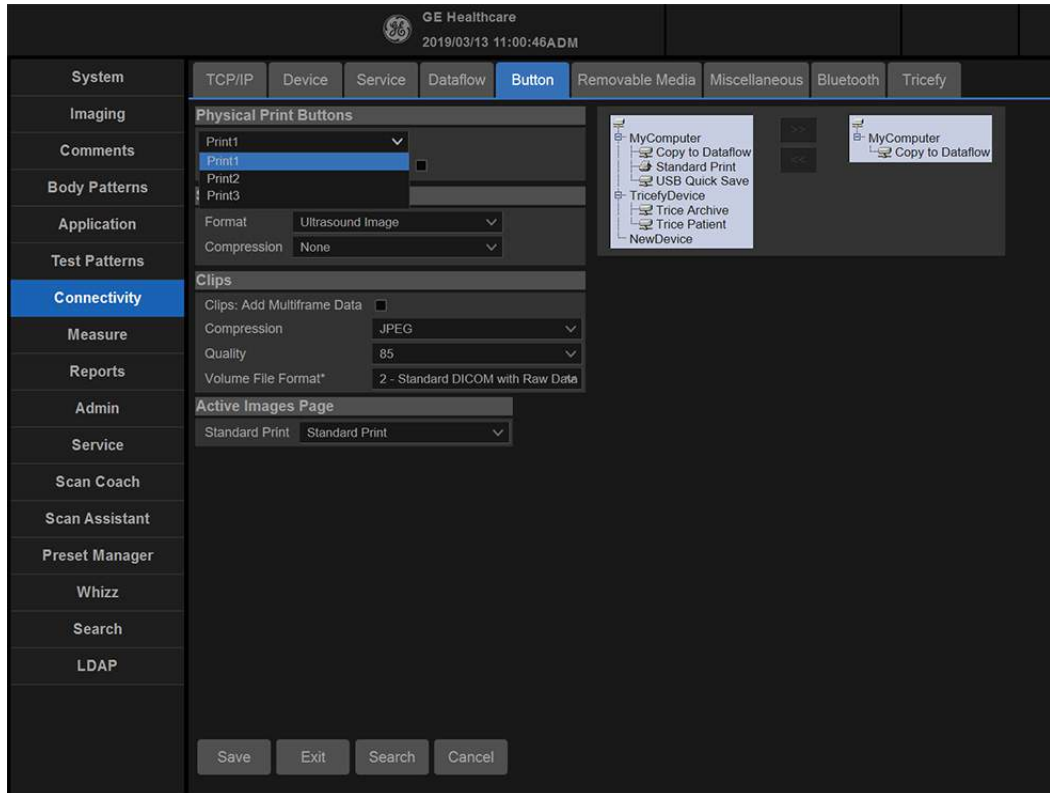


Figure 3-15. Select Button

3-8-3-1-5 Set up Paper Size

Follow these steps to set up the paper size of the printer, take Sony UP-D898 as an example.

- Press Utility-->System-->Peripherals. Select the UP-D898 from the pull-down menu under. Then Click Properties.

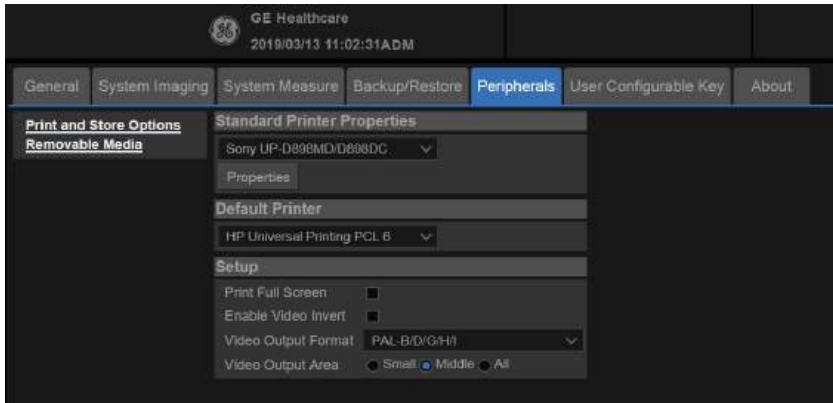


Figure 3-16. Peripherals Setting

- Click Printer -> Printing Preferences at the menu of Properties Window.

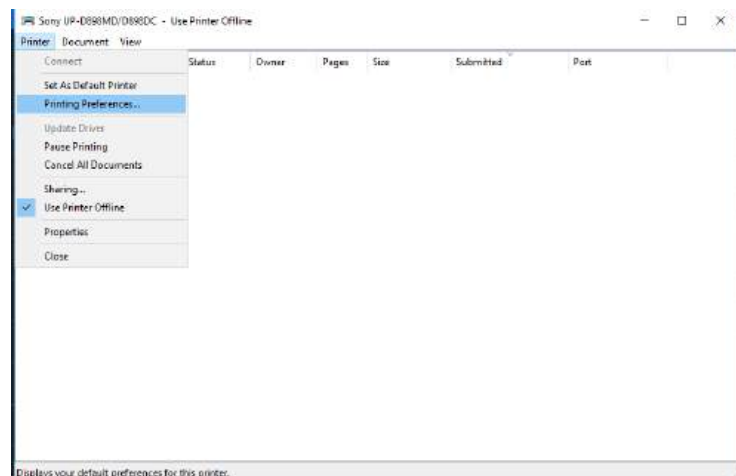


Figure 3-17. Properties

3-8-3-1 Sony UP-D898MD Printer Installation(continued)

- Select Paper Size. Press Apply. Press OK.

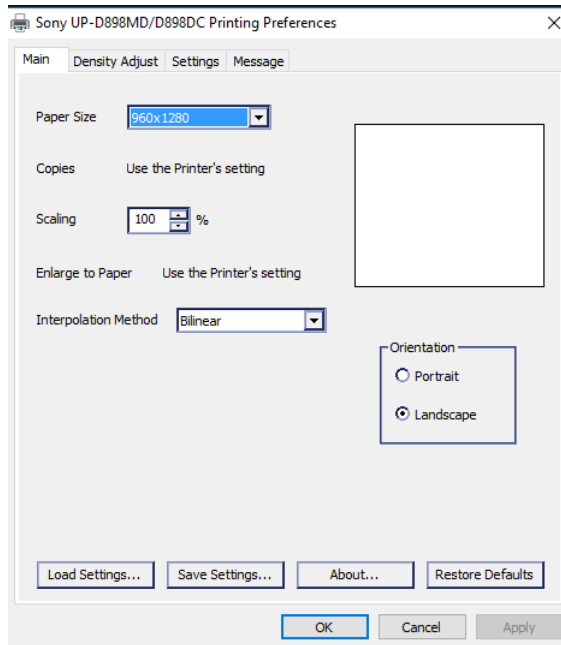


Figure 3-18. Printing Preferences

- Press Save, then Exit.

3-8-3-1-6 Adjust Printer Brightness for Sony UP-D898MD Printer

1. The first setting method is to adjust by “BRIGHT” button on printer.



Figure 3-19. BRIGHT button on printer

3-8-3-1 Sony UP-D898MD Printer Installation(continued)

- The second setting method is to adjust brightness by Printer properties on Versana Active user interface. Please refer to below steps to set.
 - Press Utility-->System-->Peripherals. Select the UP-D898 from the pull-down menu under. Then Click Properties.

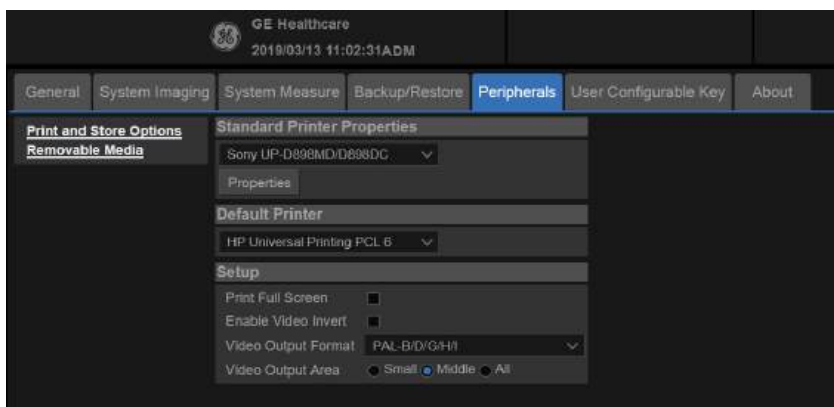


Figure 3-20. Peripherals Setting

- Click Printer -> Printing Preferences at the menu of Properties Window.

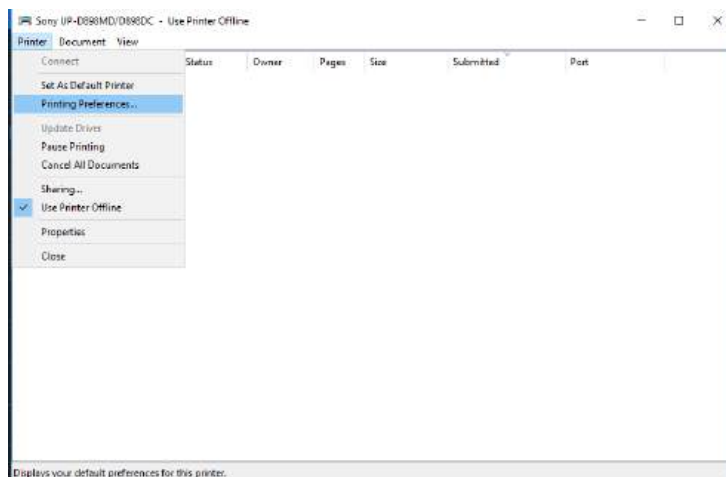


Figure 3-21. Properties

3-8-3-1 Sony UP-D898MD Printer Installation(continued)

3. Select Density Adjust, adjust Light to the desired value. Then press OK to save.

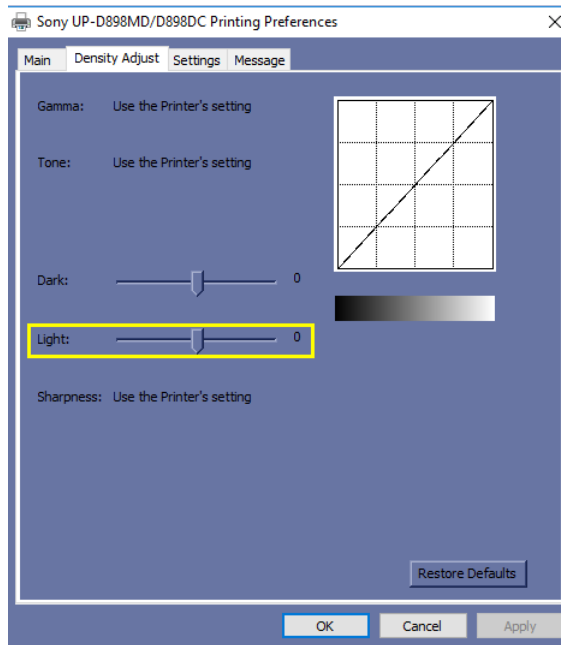


Figure 3-22. Density Adjust

3-8-3-2 HP Officejet 200 Printer Installation

3-8-3-2-1 Tools

No special tools needed.

3-8-3-2-2 Manpower

One person 5 minutes.

3-8-3-2-3 Preparations

1. Unpack the Printer.
2. Ensure no physical damage.

3-8-3-2-4 Installation Procedure

1. Connect Printer USB Isolator to the Versana Active System, see 'Printer USB Isolator' on *page 3-55* .
2. Place the device in a suitable place.
3. Connect the USB cable and power cable on the Printer.
4. Connect the power cord in the wall outlet, then turn on the printer.
5. Connect USB cable to Printer USB Isolator.



Figure 3-23. HP Officejet 200 Connection

6. Refer to the Connectivity configure steps of [3-8-3-1 'Sony UP-D898MD Printer Installation'](#) on *page 3-31*.

3-8-3-3 Sony UP-D25MD Printer Installation

3-8-3-3-1 Tools

No special tools needed.

3-8-3-3-2 Manpower

One person 5 minutes.

3-8-3-3-3 Preparations

1. Unpack the Sony UP-D25MD Printer.
2. Ensure no physical damage.

3-8-3-3-4 Installation Procedure

1. Place the device in a suitable place.
2. Connect the USB cable and power cable on the Printer.
3. Connect the power cord in the wall outlet, then turn on the printer.
4. Connect USB cable to Versana Active USB port.

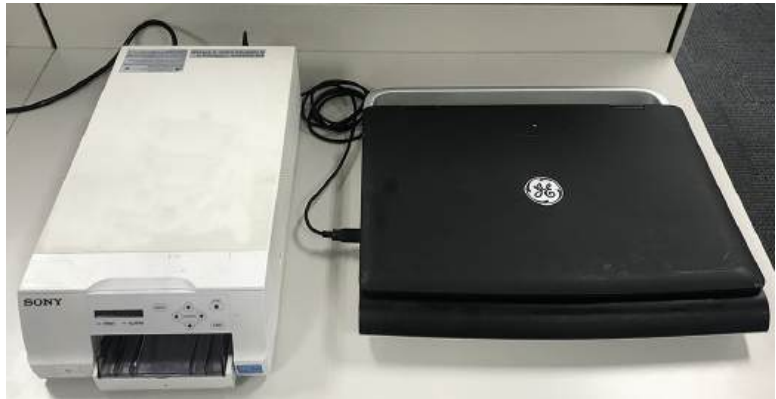


Figure 3-24. Sony UP-D25MD Connection

5. Refer to the Connectivity configure steps of [3-8-3-1 'Sony UP-D898MD Printer Installation' on page 3-31](#).

3-8-3-4 HP Universal Printer Installation

3-8-3-4-1 Tools

No special tools needed.

3-8-3-4-2 Manpower

One person 5 minutes.

3-8-3-4-3 Preparations

1. Prepare the network connection.

3-8-3-4-4 Installation Procedure

1. Press Utility-->Connectivity-->Service. Select **MyComputer** as Destination Device. And Select **Standard Print** under Service box by default or Select **Standard Print** from drop-down menu and click **Add**.

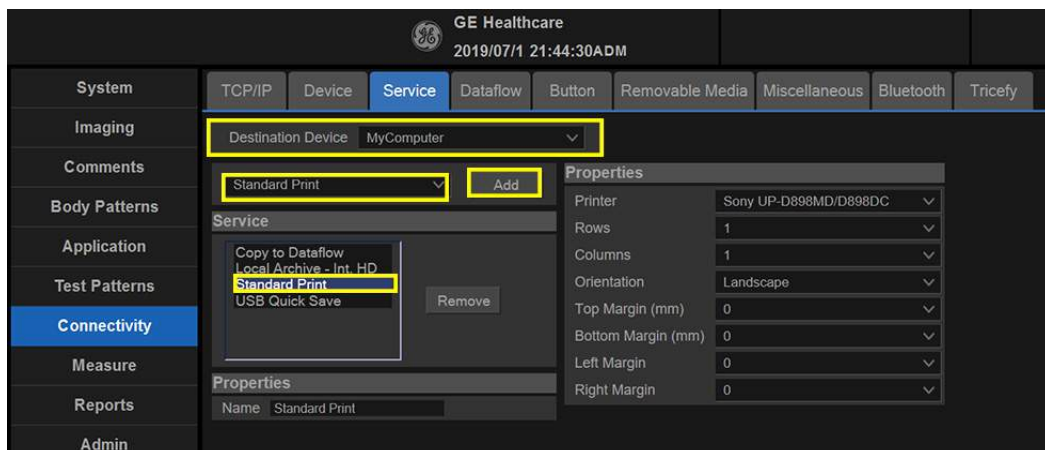


Figure 3-25. Connectivity->Service

3-8-3-4 HP Universal Printer Installation(continued)

2. Select **HP Universal Printing PCL 6** in the Properties category.

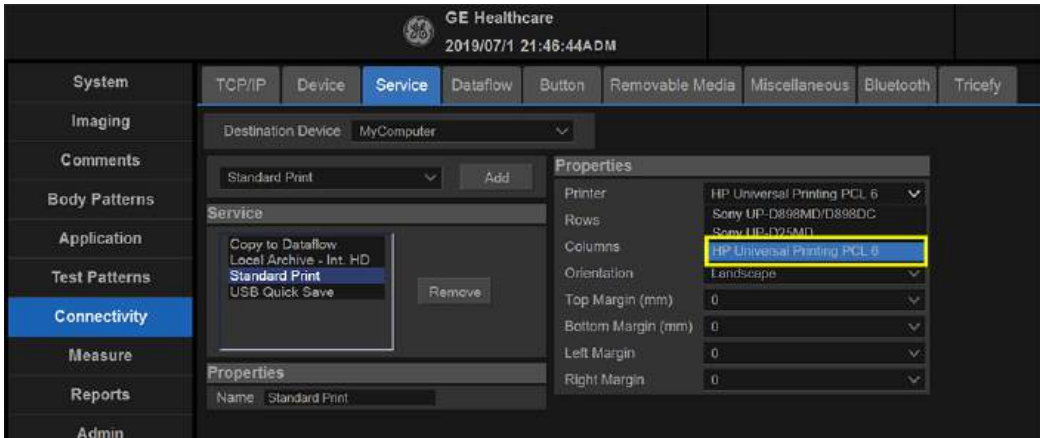


Figure 3-26. Select the network printer

3-8-3-4 HP Universal Printer Installation(continued)

3. Select **Button**. Select the appropriate print key (Print1, Print2 or Print3) from the **Physical Print Buttons** selection. Select **Standard Printer** from MyComputer column and press >> to move it to the Printflow View column. Click to assign **Standard Print** in the Active Images Page category. Press**Save**.

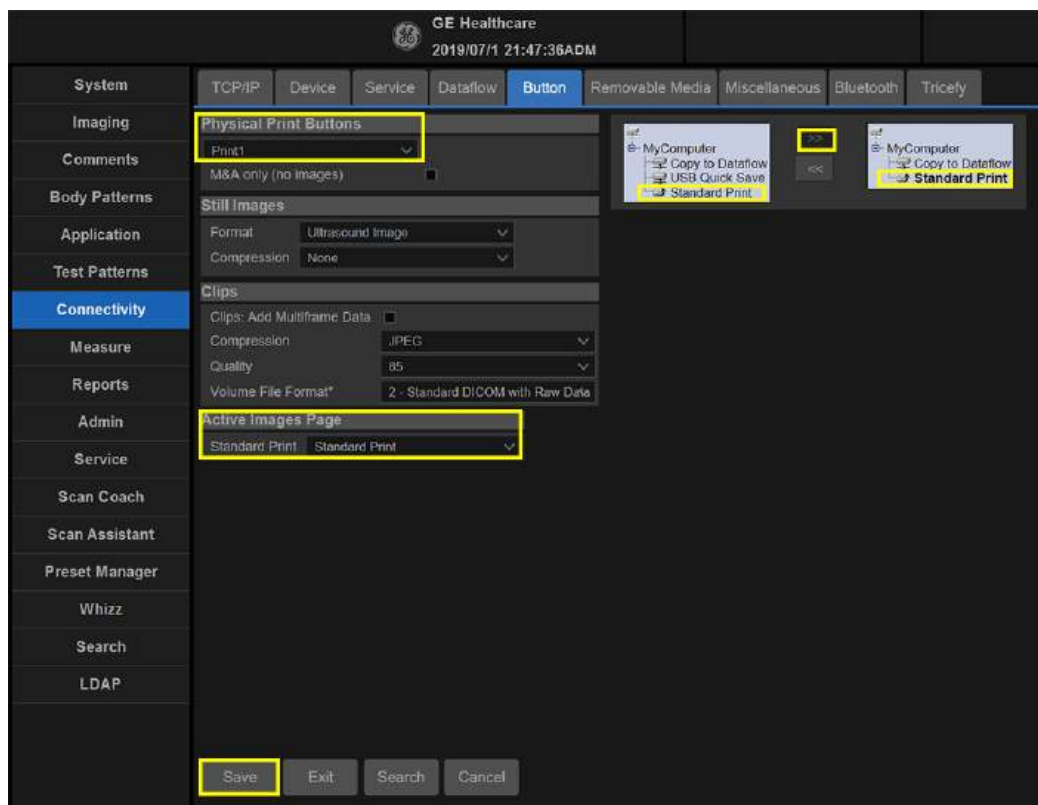


Figure 3-27. Select Button

3-8-3-4 HP Universal Printer Installation(continued)

4. Press Utility-->System-->Peripherals. Select **HP Universal Printing PCL 6** as the default printer.
Click **Save** and exit Utility page.

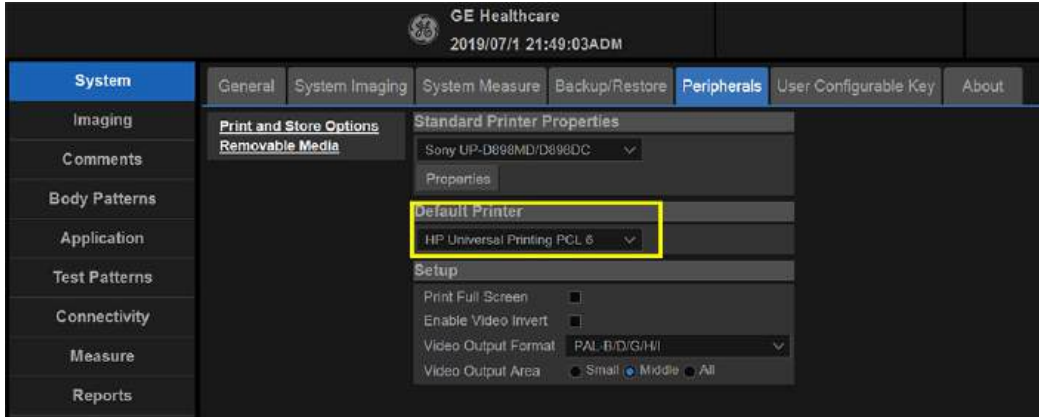


Figure 3-28. Peripherals Setting

5. The first time the print button configured is pressed, a HP Universal Printing PCL 6 menu pops up. Select “**Enter a Printer Address...**”.

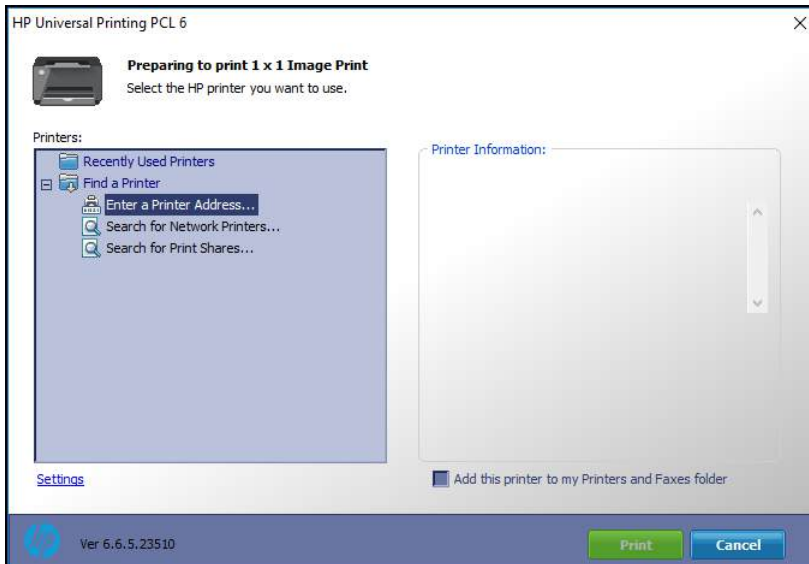


Figure 3-29. Enter a Printer Address...

3-8-3-4 HP Universal Printer Installation(continued)

6. A window will pop out. Input a printer address and select **OK**.

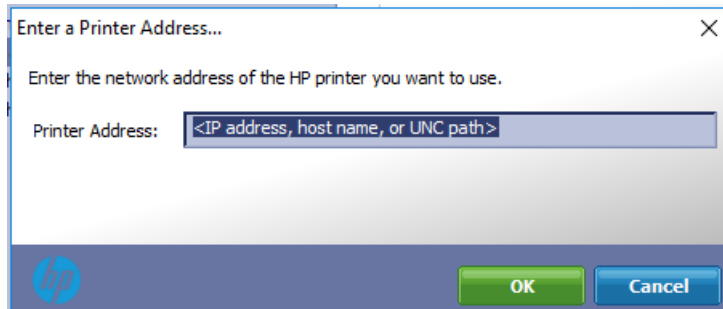


Figure 3-30. Input Printer Address

7. A confirmation will be displayed when the printer address is accepted.

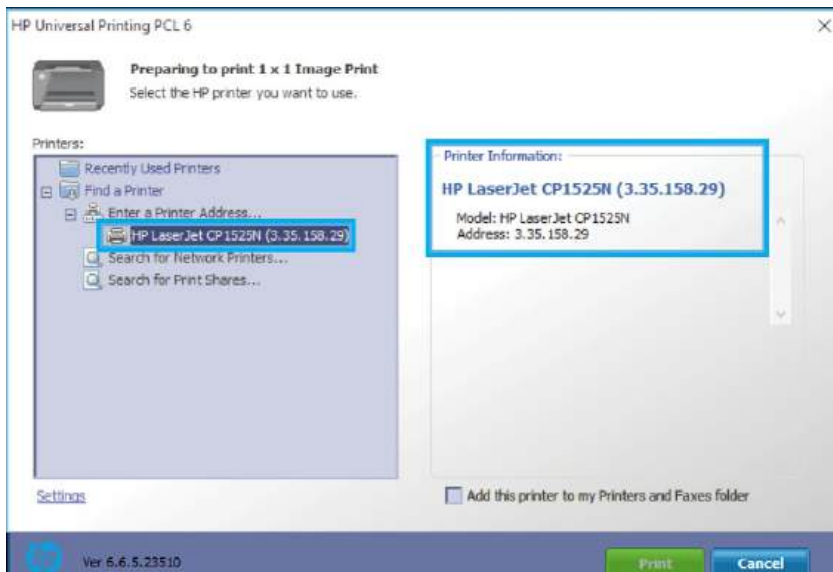


Figure 3-31. Confirmation

3-8-3-5 Footswitch Installation

3-8-3-5-1 Tools

No special tools needed.

3-8-3-5-2 Manpower

One person 2 minutes.

3-8-3-5-3 Preparations

1. Unpack the Footswitch.
2. Ensure no physical damage.

3-8-3-5-4 Installation Procedure

1. Connect the Footswitch to the USB port on the Versana Active system.

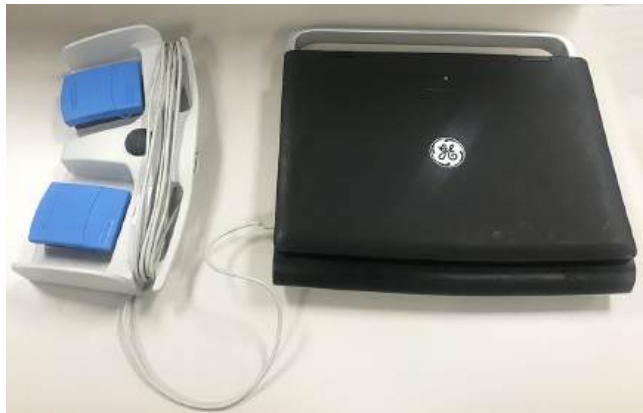


Figure 3-32. Connect Footswitch to the system (1)



Figure 3-33. Connect Footswitch to the system (2)

3-8-3-5-5 Configuring Footswitch

Footswitch supports these configurations: No Function, Freeze, Store, Print, Update, Next Step (Scan Coach), Previous Step (Scan Coach), Scan Coach Pause/Resume.

Enter **Utility** -> **Application**-> **Settings** to configure the Footswitch functions.

*NOTE: For single footswitch, please use **Middle** to do setting.*

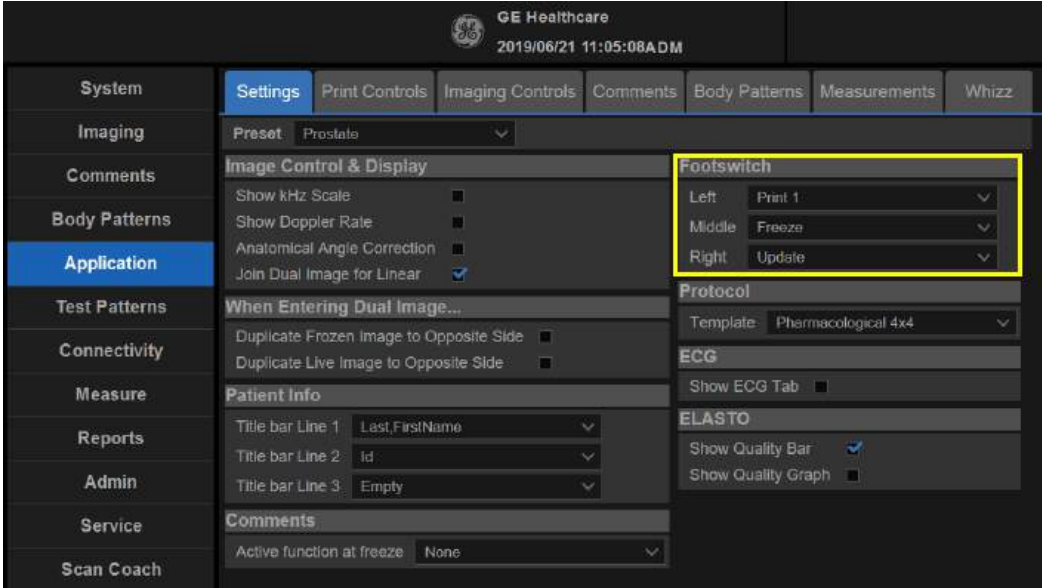


Figure 3-34. Configuring Footswitch Functions

3-8-3-6 USB HDD Installation

3-8-3-6-1 Tools

No special tools needed.

3-8-3-6-2 Manpower

One person 1 minute.

3-8-3-6-3 Preparations

1. Unpack the USB HDD.
2. Ensure no physical damage.

3-8-3-6-4 Installation Procedure

1. Connect the USB HDD to the USB port on the Versana Active system.



Figure 3-35. Connect HDD to the system

3-8-3-7 ECG Installation

3-8-3-7-1 Tools

No special tools needed.

3-8-3-7-2 Manpower

One person 1 minute.

3-8-3-7-3 Preparations

1. Unpack the ECG Assy.
2. Ensure no physical damage.

3-8-3-7-4 Installation Procedure

1. Connect the ECG to the USB port on the Versana Active system.



Figure 3-36. Connect ECG to the system



Use GE provided ECG cable to ensure the protection performance against the effects of a discharge of a cardiac defibrillator to the patient.

3-8-3-8 DVDRW Installation

3-8-3-8-1 Tools

No special tools needed.

3-8-3-8-2 Manpower

One person 1 minute.

3-8-3-8-3 Preparations

1. Unpack the DVDRW.
2. Ensure no physical damage.

3-8-3-8-4 Installation Procedure

1. Take out the DVDRW and USB cable and connect the USB cable to the DVDRW.



Figure 3-37. Connect USB cable

2. Connect both of the USB cables to the USB ports on the Versana Active system.



Figure 3-38. Connect DVDRW to the system

3-8-3-9 Wireless Adapter

3-8-3-9-1 Tools

No special tools needed.

3-8-3-9-2 Manpower

One person 1 minute.

3-8-3-9-3 Preparations

1. Unpack the wireless adapter
2. Ensure no physical damage.

3-8-3-9-4 Installation Procedure

1. Connect the wireless adapter to the USB port on the Versana Active system.



Figure 3-39. Connect Wireless Adapter

3-8-3-10 Bluetooth Adapter

3-8-3-10-1 Tools

No special tools needed.

3-8-3-10-2 Manpower

One person 1 minute.

3-8-3-10-3 Preparations

1. Unpack the bluetooth adaptor
2. Ensure no physical damage.

3-8-3-10-4 Installation Procedure

1. Connect the Bluetooth Adapter to the USB port on the Versana Active system.



Figure 3-40. Connect Bluetooth Adapter

3-8-3-10 Bluetooth Adapter(continued)

2. Reboot the system.
3. After the power-up sequence is complete, press **Utility** on the Control Panel. Select **Connectivity-> Bluetooth**, click **Add New Device**.

NOTE: For Bluetooth Adapter connection, the operator must login as Administrator.

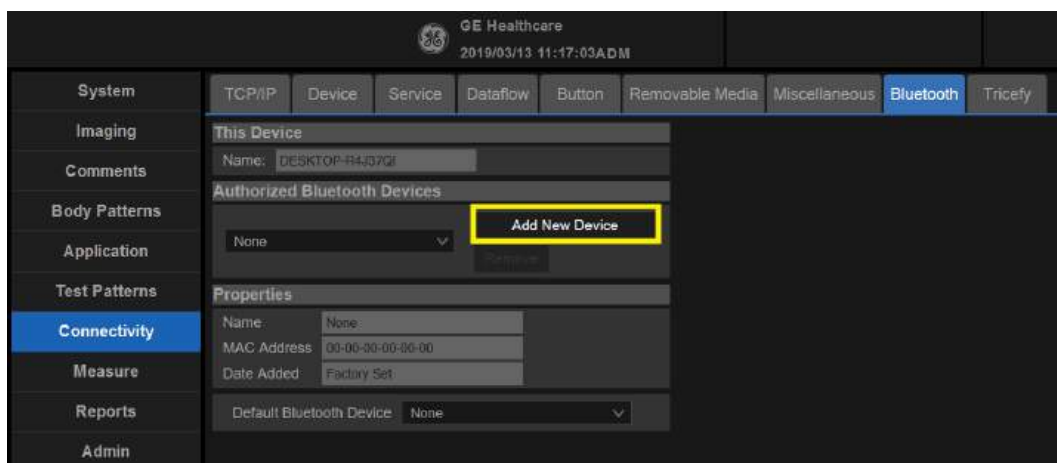


Figure 3-41. Add New Device

4. Follow the Bluetooth pairing wizard to turn on Bluetooth on your mobile device. Scan for surrounding devices. Then select the device name of the Versana Active in your surrounding device list to pair.

3-8-3-10 Bluetooth Adapter(continued)

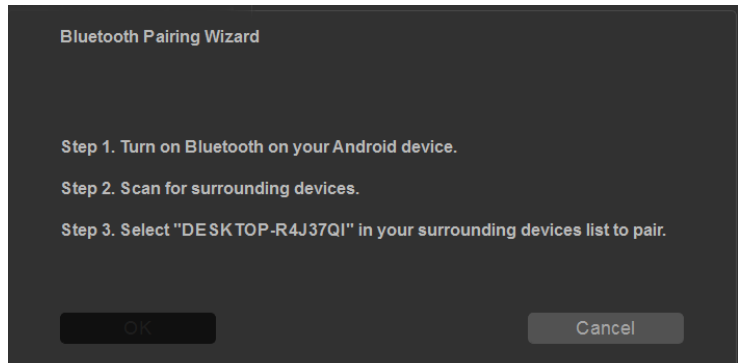


Figure 3-42. Bluetooth Pairing Wizard (1)

NOTE: *Versana Active system does not support to pair with Apple device.*

5. The **Pincode** is shown in the dialogue, click **Accept** to continue.

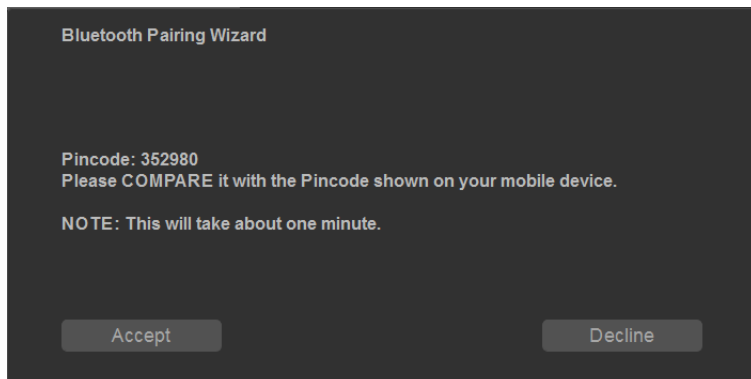


Figure 3-43. Bluetooth Pairing Wizard (2)

6. On your mobile device a dialogue box should appear asking for permission to connect to the Versana Active system. Click **OK** and wait for the process to complete.

3-8-3-10 Bluetooth Adapter(continued)

7. After pairing is done, the mobile device name appears in the **Authorized Bluetooth Devices** field.

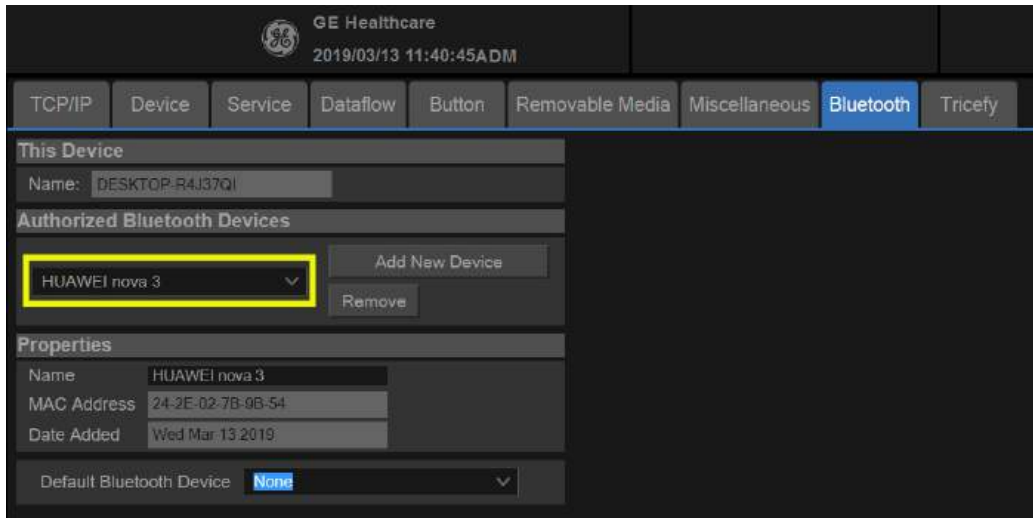


Figure 3-44. Connected Successfully

3-8-3-11 Printer USB Isolator

3-8-3-11-1 Tools

No special tools needed.

3-8-3-11-2 Manpower

One person 5 min.

3-8-3-11-3 Preparations

1. Unpack the AC isolation USB.
2. Ensure no physical damage.

3-8-3-11-4 Installation Procedure

1. Insert the Mini USB side of the cable into the Printer USB Isolator.



Figure 3-45. Insert the USB connector into Printer USB Isolator

3-8-3-11 Printer USB Isolator(continued)

2. Insert the USB cable connector in one of the USB ports on the Ultrasound system.

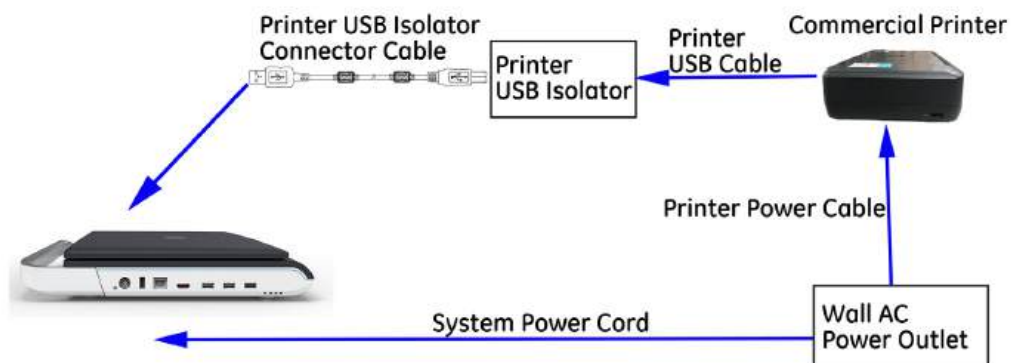


Figure 3-46. Insert the USB cable into the Ultrasound system

NOTE: *The Ultrasound system in above graphic is only for illustrational purposes. You can use the Printer USB Isolator on the desired Ultrasound system.*

3-8-3-12 Spare Battery Charger for Versana Active-CRU

3-8-3-12-1 Tools

No special tools needed.

3-8-3-12-2 Manpower

One person 5 mins.

3-8-3-12-3 Preparations

1. Unpack the Spare Battery Charger for Versana Active-CRU.
2. Ensure no physical damage.

3-8-3-12-4 Installation Procedure

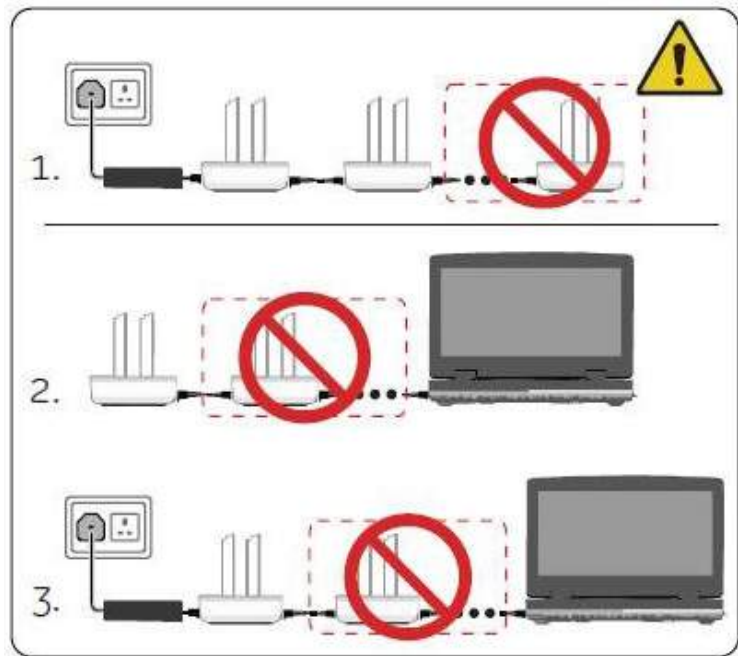


Figure 3-47. Scenarios

3-8-3-12 Spare Battery Charger for Versana Active-CRU(continued)

1. Connect AC adapter - Spare Battery Charger (- Spare Battery Charger). If two Spare Battery Chargers are connected together, maximum of four spare batteries can be charged at the same time, but it will take one more hour compared with two batteries in charging.

NOTE: *Do not connect more than two Spare Battery Chargers.*

2. Connect Spare Battery Charger - Versana Active system. The battery charger with the discharging battery acts as an alternative power source for Versana Active.

NOTE: *Do not connect more than one Spare Battery Charger.*

NOTE: *For this use scenario, when the spare battery power is low, please connect Spare Battery Charger to AC adapter immediately*

3. Connect AC adapter - Spare Battery Charger - Versana Active system. In this situation, it can charge the spare battery and supply power to Versana Active for scanning at the same time.

NOTE: *Do not connect two or more Spare Battery Chargers to Versana Active system.*

NOTE: *Only above use scenarios are allowed. DO NOT support Spare Battery Charger to be used in other scenarios.*

NOTE: *Always use Spare Battery Charger on a flat surface.*

3-8-3-12-5 Charging/Discharging Time

1. Charge 1pc or 2pcs of battery at the same time, it needs 3h.

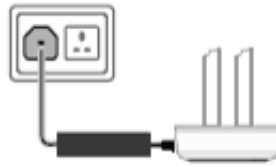


Figure 3-48. Charging: 1pc & 2pcs

2. Charge 3pcs or 4pcs of battery at the same time, it needs 4h.



Figure 3-49. Charging: 3pcs & 4pcs

3. 1pc of spare battery and console battery together can support scanning for 2hours.



Figure 3-50. Discharging: 1pc spare battery + console battery

4. 2pcs of spare battery and console battery together can support scanning for 3hours.



Figure 3-51. Discharging: 2pcs spare battery + console battery

3-8-3-12 Spare Battery Charger for Versana Active-CRU(continued)

5. 2pcs of spare battery and console battery need 6 hours to fully charge with AC adapter connected when scanning.



Figure 3-52. Charging: 2pcs spare battery + console battery

3-8-3-12-6LED Indicators Information



Figure 3-53. 1,2,3,4: LED indicators

Each Versana Active module supports charging of two spare batteries concurrently. Charging status of each of the two batteries, are displayed through independent LED indicators.

LED battery **charge status** indications are as follow:

Remaining battery capacity	LED1	LED2	LED3	LED4
0% ~ 30%	flashing	x	x	x
31% ~ 50%	blue	flashing	x	x
51% ~ 75%	blue	blue	flashing	x
75% ~ 99%	blue	blue	blue	flashing
100%	Four LED indicators are lit up successively.			

NOTE: “x” means that the LED indicator is off.

Versana Active with the discharging battery acts as an alternative power source for the system. Discharging status of each of the two batteries, are displayed through independent LED indicators.

LED battery **discharge status** indications are as follow:

Remaining battery capacity	LED1	LED2	LED3	LED4
76% ~ 100%	blue	blue	blue	blue
51% ~ 75%	blue	blue	blue	x
31% ~ 50%	blue	blue	x	x
1% ~ 30%	blue	x	x	x
0%	Four LED indicators are off.			

NOTE: When the remaing battery capacity is less than 25%, the corresponding four LED lights will flash at the same time till battery power is running out. Please charge the battery immediately.

3-8-3-13 Video Output Adapter for Versana Active-CRU

3-8-3-13-1 Tools

No special tools needed.

3-8-3-13-2 Manpower

One person 5 min.

3-8-3-13-3 Preparations

1. Unpack the Versana Active Video Adapter Assy.
2. Ensure no physical damage.

3-8-3-13-4 Installation Procedure

1. Connect the HDMI cable to the HDMI port at the front of the Video Adapter and plug in the other end of the cable to the ultrasound system's HDMI port. Then the LED light is turned to green.
2. Connect the S-video or CVBS cable to the corresponding port at the rear of the Video Adapter and plug in the other end of the cable to your Video Device.



Figure 3-54. Video Output Adapter for Versana Active-CRU

NOTE: *The Video Adapter could be connected to the system at any time, no matter the system is powered ON or powered Off.*

3-8-3-13-5Code Switch

The Video Output Adapter receives HDMI signals and transfer them to S-video and CVBS video which support several TV modes and three kinds of image zooming areas.

The HDMI cable is required as power supply.

The default value is 00011(Scan image + PAL-B, PAL-D, PAL-G, PAL-B, PAL-I,)



Figure 3-55. Code Switch

Table 3-15: Code Switch (1,2)

1	2	Image area
0	0	Scan image
0	1	Scan image with parameter
1	0	Full image
1	1	Full image

Table 3-16: Code Switch (3,4,5)

3	4	5	Video Standard
0	0	0	NTSC-M
0	0	1	NTSC-J
0	1	0	NTSC-433
0	1	1	PAL-B, PAL-D, PAL-G, PAL-H, PAL-I
1	0	0	PAL-M
1	0	1	PAL-N
1	1	0	PAL-Nc

3-9 Connectivity setup

3-9-1 EZ configuration Wizard

EZ configuration wizard is a function to enable the operator to configure some common system settings when turning on the system for the first time after the software installation.

NOTE: *Password setting is required when turning on the system for the first time after the software installation.*

For Versana Active, you can also enter EZ Configuration Wizard by clicking the Insite icon at the top right of the screen.

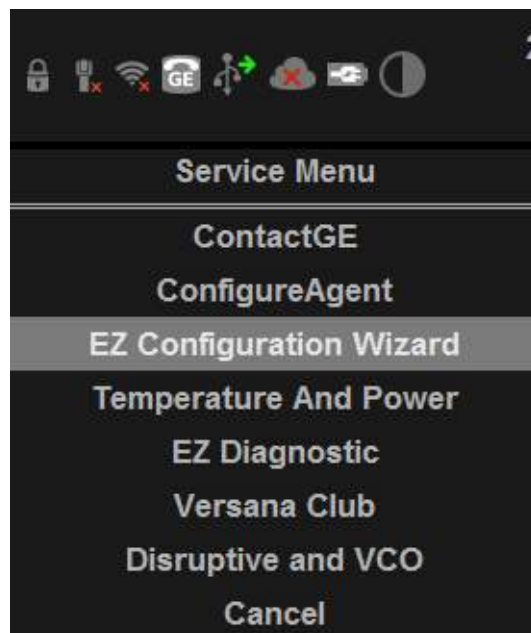


Figure 3-56. Enter EZ Configuration Wizard

3-9-1 EZ configuration Wizard(continued)

1. Select policy level in **Password Policies** and then press **Next**.

NOTE: *Selecting password policy level is required when turning on the system for the first time or after the software installation.*

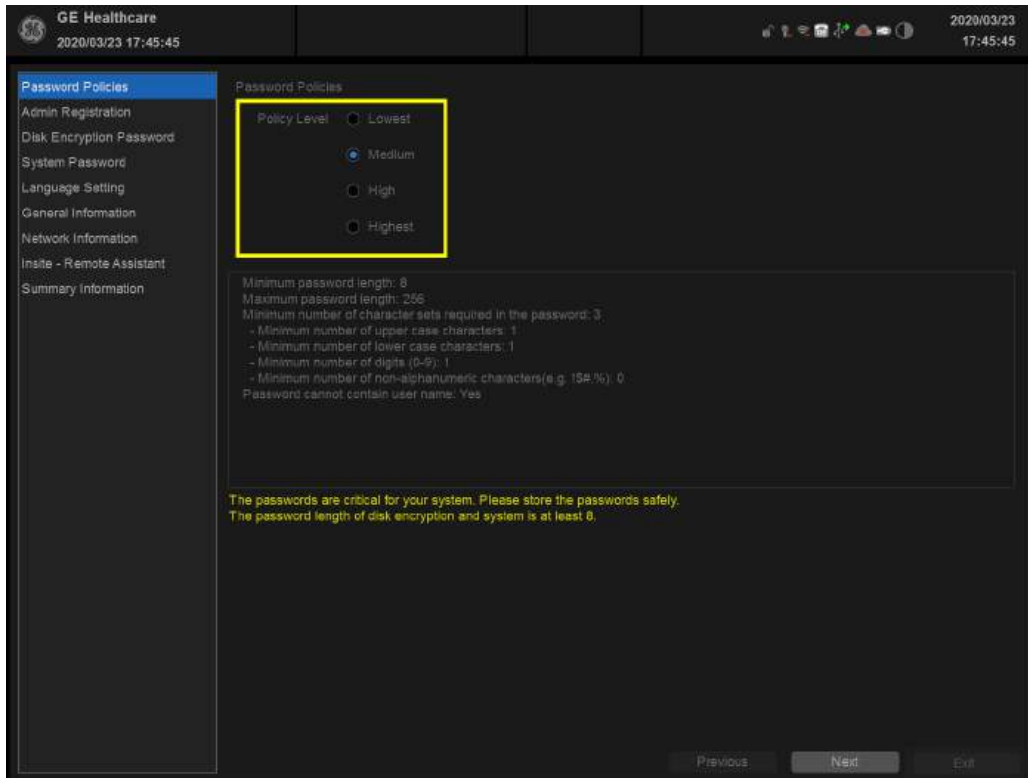


Figure 3-57. Select password policy level

3-9-1 EZ configuration Wizard(continued)

User can select the option Lowest, Medium, High or Highest for policy level. The complexity of the password will be differed by the policy level you selected:

Table 3-17: Password Policy Level and Complexity

Policy Level	Complexity
Lowest	Minimum password length: 0 Maximum password length: 256 Minimum number of character sets required in the password: 0 - Minimum number of upper case characters: 0 - Minimum number of lower case characters: 0 - Minimum number of digits (0-9): 0 - Minimum number of non-alphanumeric characters (e.g. !\$,%,): 0 Password cannot contain user name: No
Medium	Minimum password length: 8 Maximum password length: 256 Minimum number of character sets required in the password: 3 - Minimum number of upper case characters: 1 - Minimum number of lower case characters: 1 - Minimum number of digits (0-9): 1 - Minimum number of non-alphanumeric characters (e.g. !\$,%,): 0 Password cannot contain user name: Yes
High	Minimum password length: 10 Maximum password length: 256 Minimum number of character sets required in the password: 4 - Minimum number of upper case characters: 1 - Minimum number of lower case characters: 1 - Minimum number of digits (0-9): 1 - Minimum number of non-alphanumeric characters (e.g. !\$,%,): 1 Password cannot contain user name: Yes
Highest	Minimum password length: 144 Maximum password length: 256 Minimum number of character sets required in the password: 4 - Minimum number of upper case characters: 1 - Minimum number of lower case characters: 1 - Minimum number of digits (0-9): 1 - Minimum number of non-alphanumeric characters (e.g. !\$,%,): 1 Password cannot contain user name: Yes

NOTE: Do not use space when creating the password.

NOTE: *If user selects Lowest level in password policies, ADM password can be empty during Admin Registration.*

NOTE: *When user selects Lowest level, a warning message will display to inform that the current security policy will put your system at risk.*

3-9-1 EZ configuration Wizard(continued)

NOTE: When user selects Lowest level, a warning message will display to inform that the current security policy will put your system at risk.

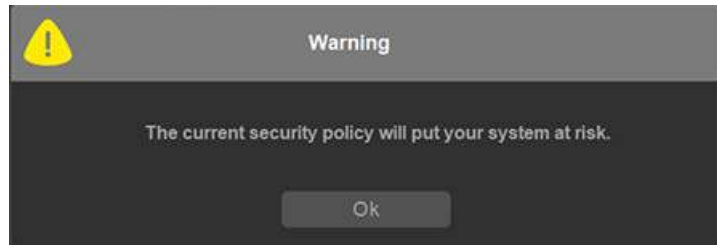


Figure 3-58. Lowest policy level warning

2. Set ADM password in **Admin Registration**. And then set up 3 password security questions and answers.

ADM is the administrator of the ultrasound system and has the highest authority for the software. ADM can create other accounts, import and export data and make some sensitive settings.

NOTE: The passwords are critical for your system. Please store the passwords safely.

NOTE: Record your answers for the 3 questions. The answers are required when you need to reset ADM password.

NOTE: ADM password and security questions can be empty if password policy level is selected as LOWEST.

3-9-1 EZ configuration Wizard(continued)

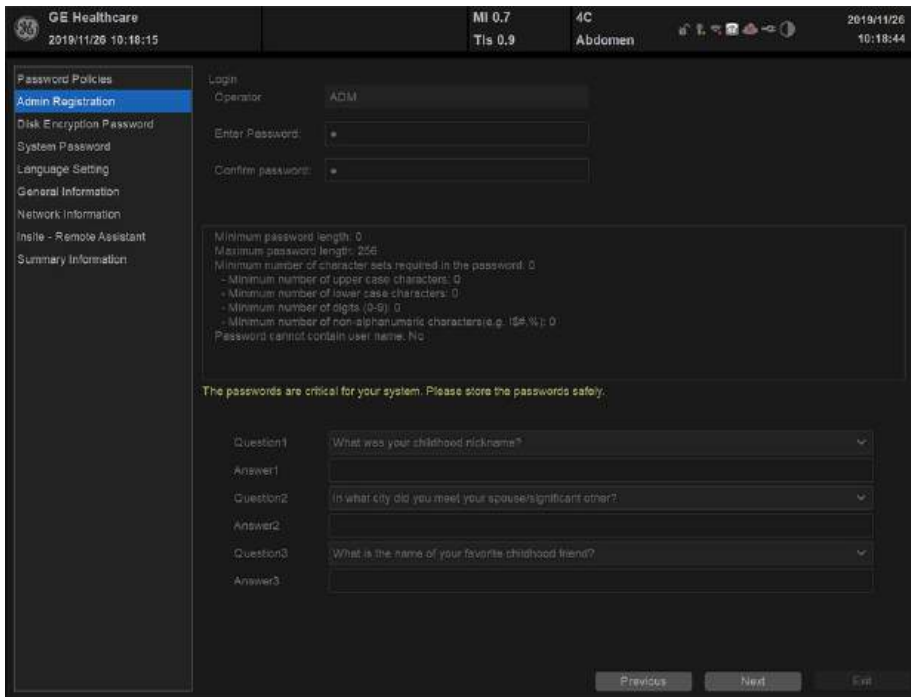


Figure 3-59. ADM password setting

NOTE: *If you didn't set ADM password during software upgrade procedure, you could also set operator password later by **Utility -> Admin -> Users**.*

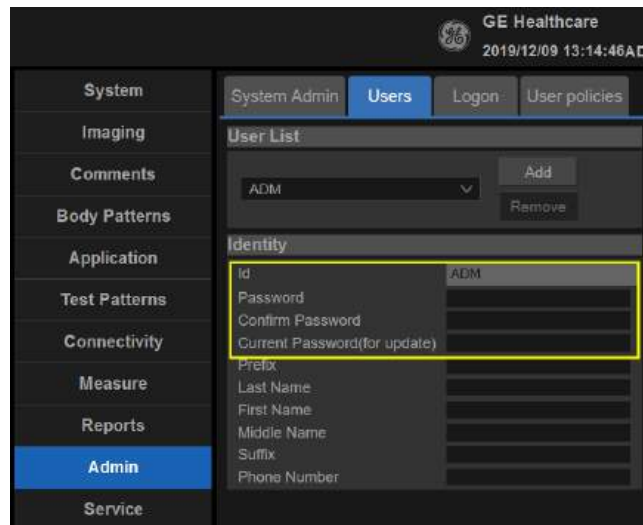


Figure 3-60. Set ADM password

3-9-1 EZ configuration Wizard(continued)

3. Set Disk Encryption Password for Drive D&E (including Archive of patient information, temp files, user defines, logs). The password is set by user. It is required for reading the data on the hard disk when software is running. System will remember the password automatically.

NOTE: Disk Encryption Password setting is required when turning on the system for the first time or after the software installation.

NOTE: The passwords are critical for your system. Please store the passwords safely.

NOTE: When the HDD is removed from the unit, it will need password to decode.

3-9-1 EZ configuration Wizard(continued)

Set Disk Encryption Password and press **Next**.

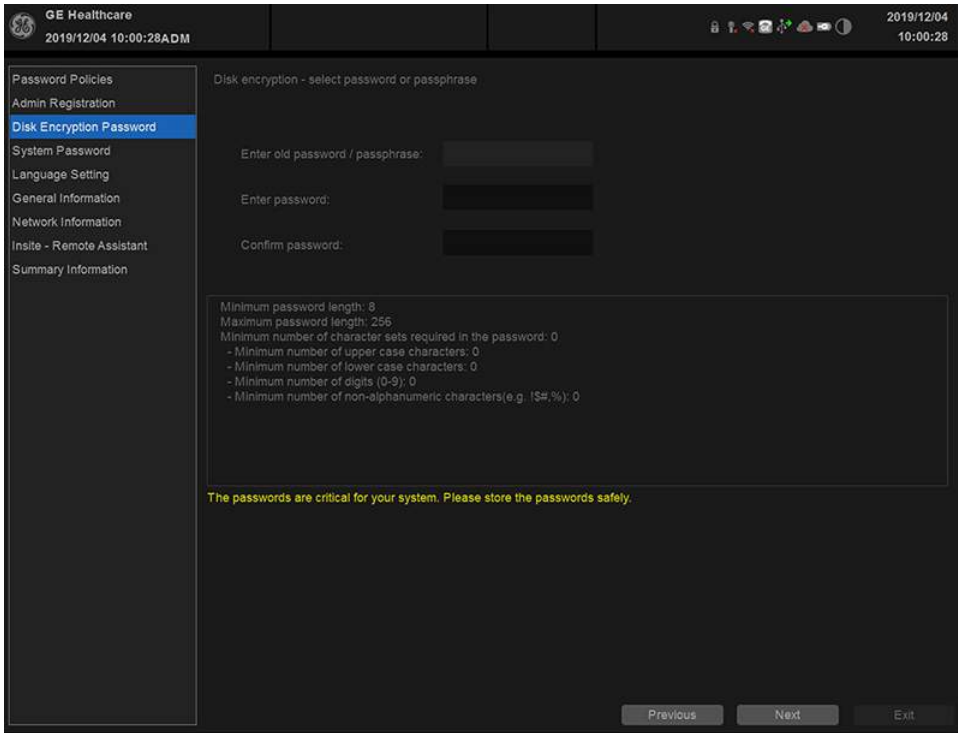


Figure 3-61. Disk Encryption Password

An information window of Change Password Success will display, press **OK** to continue.

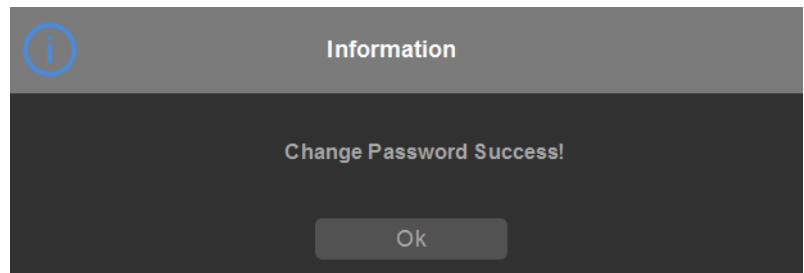


Figure 3-62. Change Password Success

3-9-1 EZ configuration Wizard(continued)

4. Set **System Password**. System password is the Windows password. User needs to initialize it for logging on the system Windows desktop for the first time.

Set system password by **Install wizard -> System Password OR Utility -> Admin -> System Admin -> Change System Password**.

NOTE: System password setting is required when turning on the system for the first time or after the software installation.

NOTE: The passwords are critical for your system. Please store your passwords safely.

3-9-1 EZ configuration Wizard(continued)

Set System Password and press **Next**.

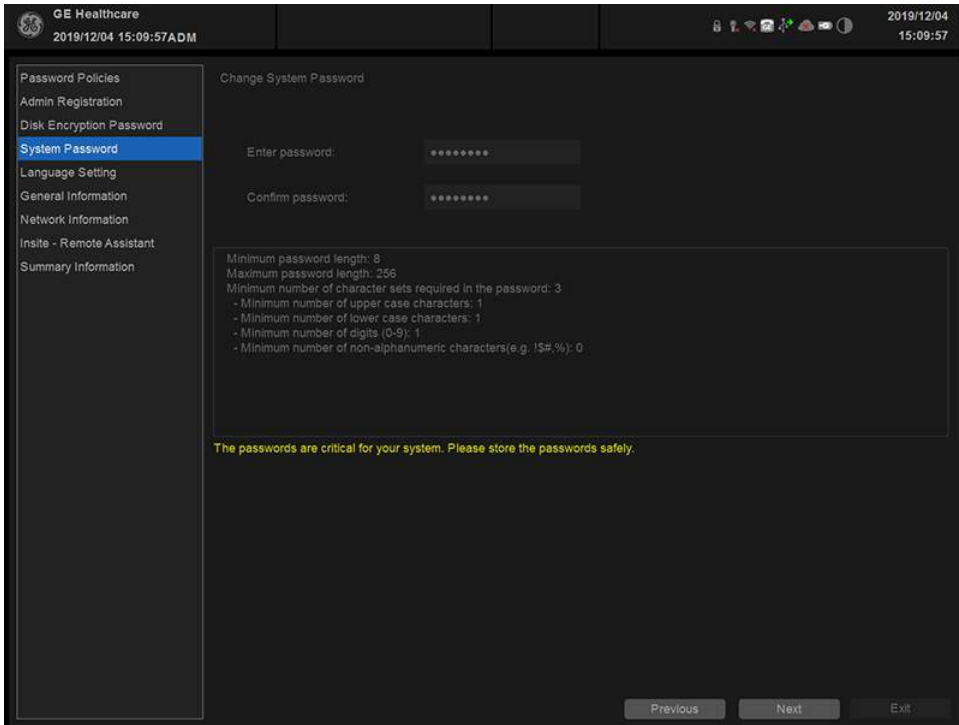


Figure 3-63. System Password Setting

An information window of Change Password Success will display, press **OK** to continue.

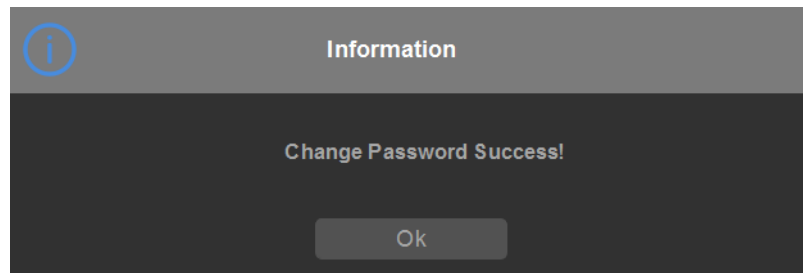


Figure 3-64. Change Password Success

3-9-1 EZ configuration Wizard(continued)

5. Select the appropriate language for system language and keyboard language from the drop-down list.

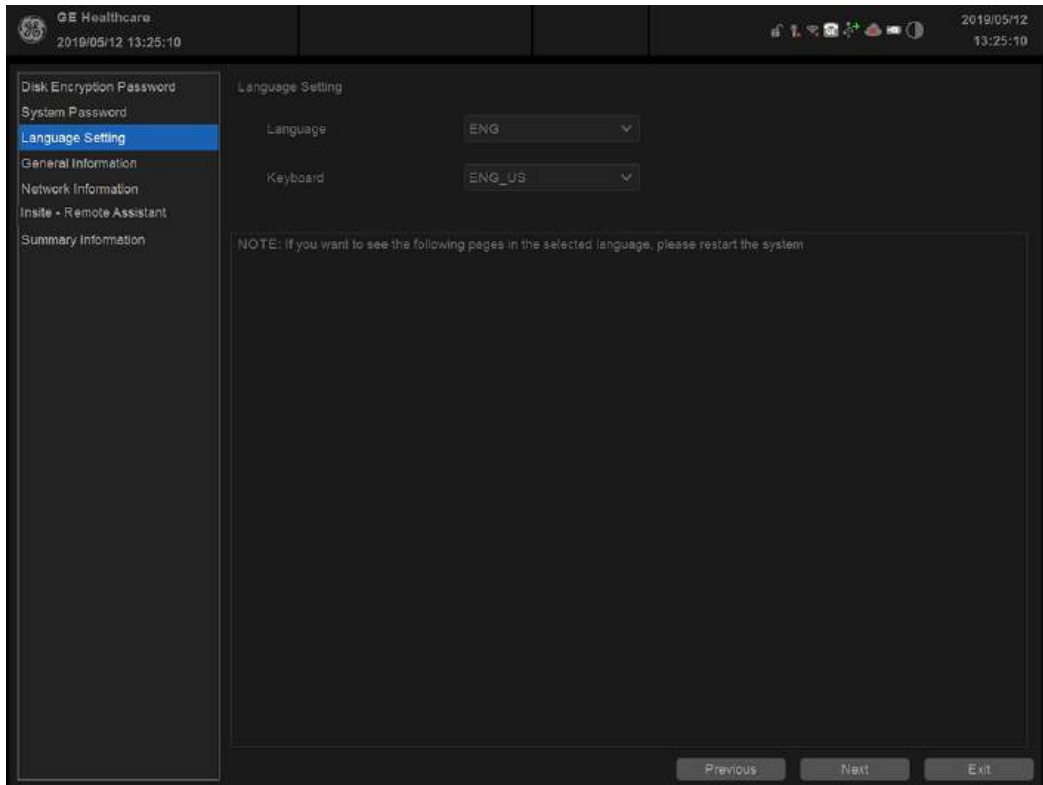


Figure 3-65. System Language Setting

- NOTE:** *If you select **Exit**, you will exit the installation wizard.*
- If you do not change the language, press **Next** to continue.

3-9-1 EZ configuration Wizard(continued)

- If you change the language setting and press **Next**, a window will pop out. Under **Formats** select desired language and select **Cancel**.

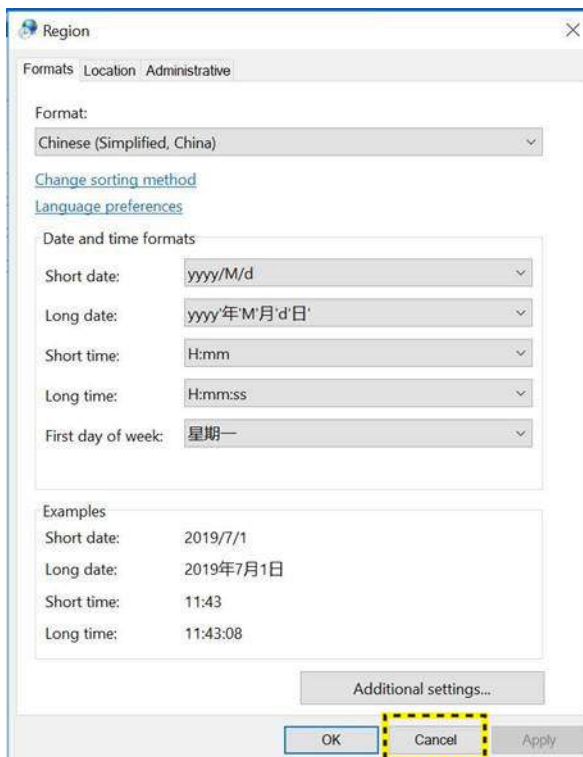


Figure 3-66. Formats selection

Click **Ok** to restart the system.

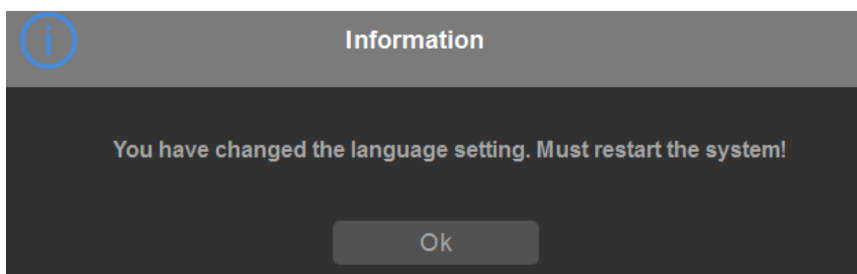


Figure 3-67. System Language settings (2)

NOTE: If you press **Previous**, you will go to the previous page.

3-9-1 EZ configuration Wizard(continued)

- This screen shows the hospital and time information, and you can set the system date and time here.

GE Healthcare
2019/05/12 13:26:03

2019/05/12
13:26:03

Disk Encryption Password
System Password
Language Setting
General Information
Network Information
Insite - Remote Assistant
Summary Information

Hospital Information

Hospital: GE Healthcare

Department: Development

Customer Name:

Address:

Continent: AFRICA

Country: ALGERIA

Time Information

Time Zone: (UTC-08:00) Pacific Time (US & Canada)

System Date

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

System Time: 13:25:05 24 Hour

Previous Next Exit

Figure 3-68. General Information

- Press **Next** to continue.

3-9-1 EZ configuration Wizard(continued)

8. The **Network Information** screen shows the configuration of wireless and local network:

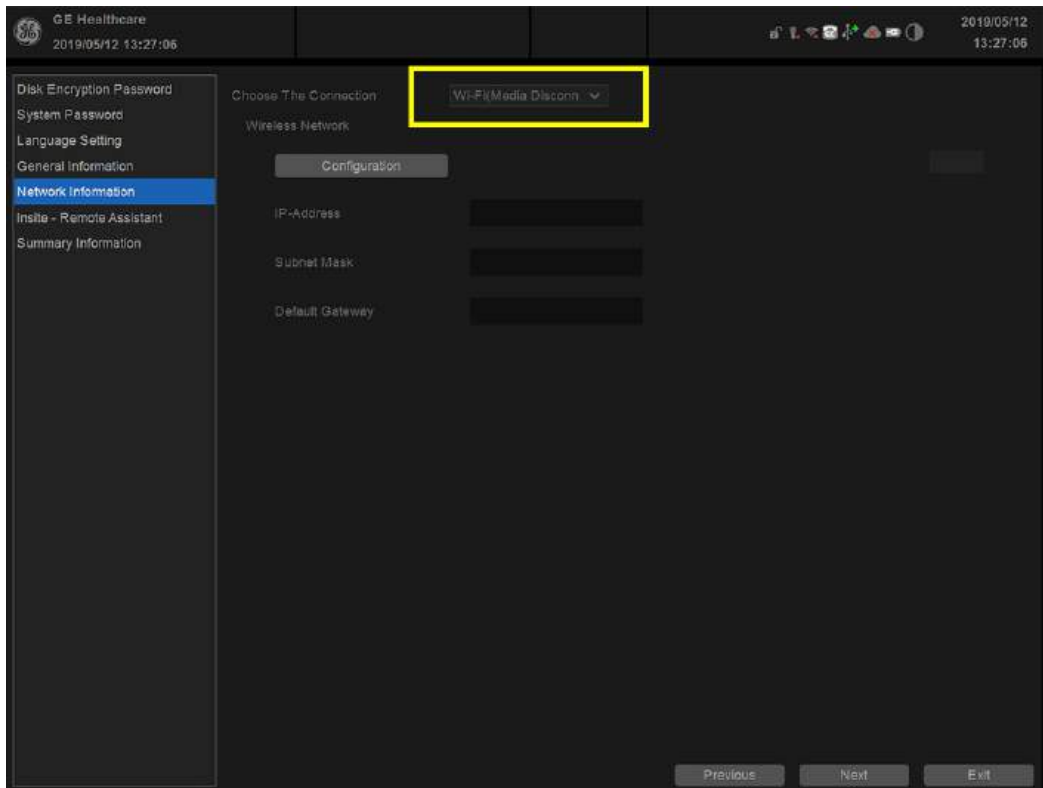


Figure 3-69. Wireless Network Information

3-9-1 EZ configuration Wizard(continued)

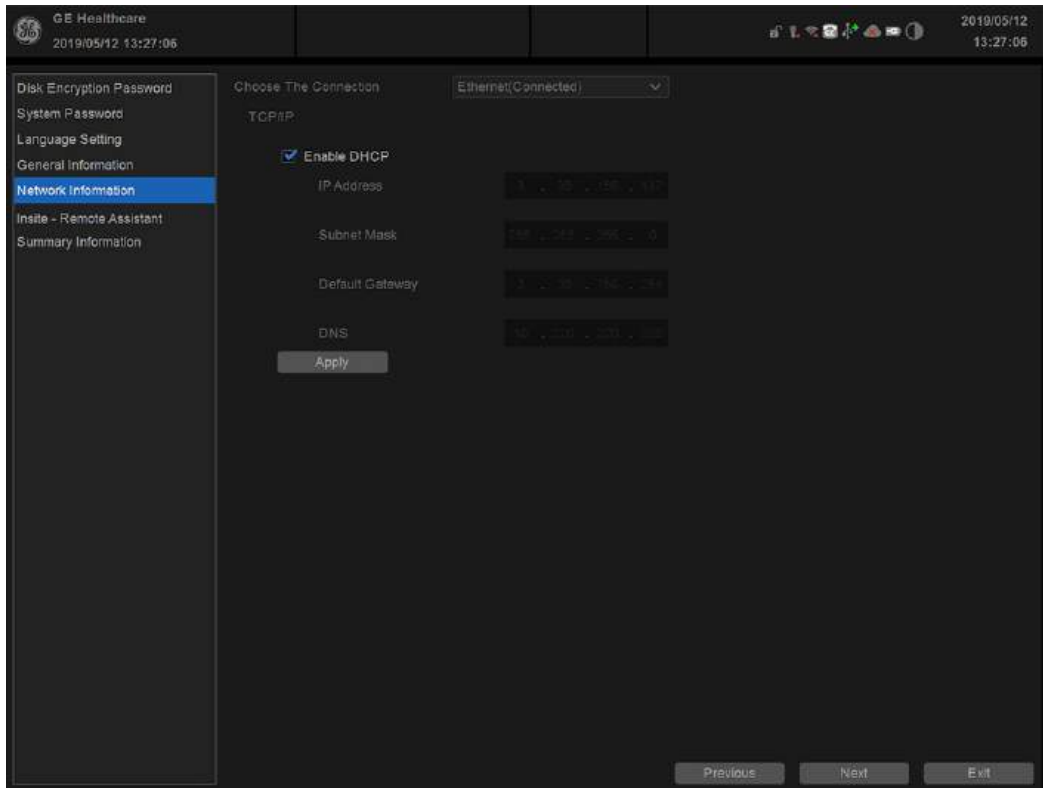


Figure 3-70. Local Network Information

Table 3-18: Network settings

Preset Parameter	Description
Enable DHCP	Select to set TCP/IP.

9. Press **Next** to continue.

3-9-1 EZ configuration Wizard(continued)

10. The **Insite - Remote Assistant** screen shows the configuration of Agent and Proxy.

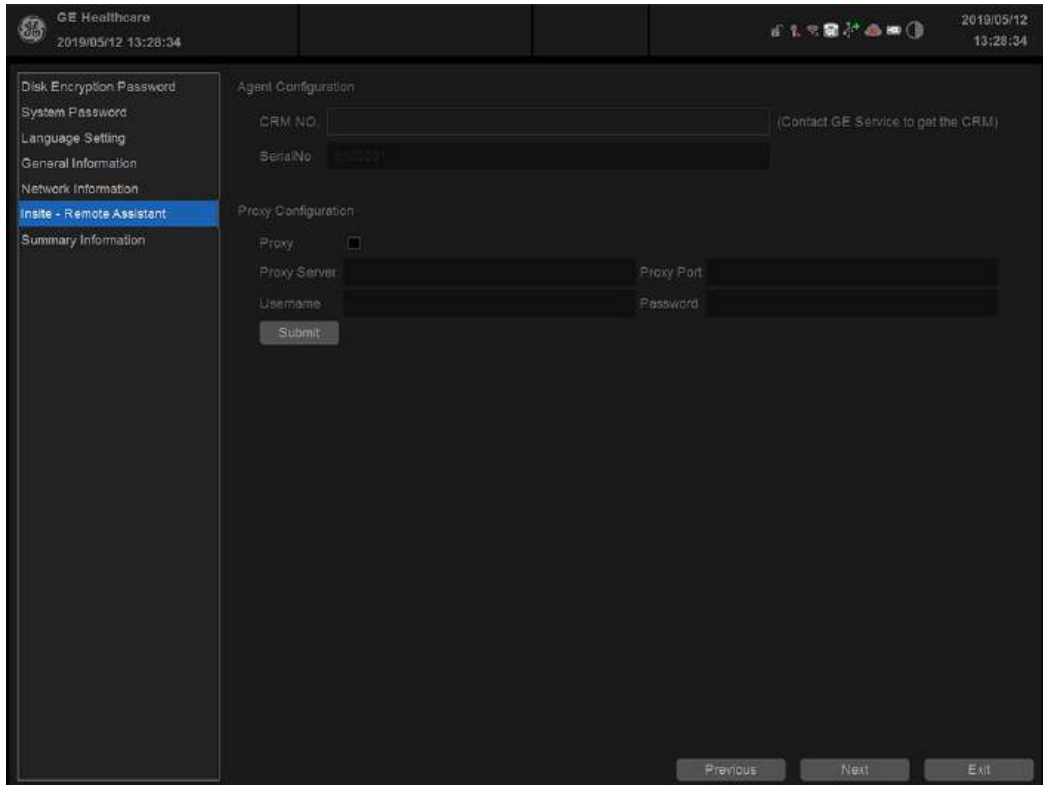


Figure 3-71. InSite - Remote Assistant

Table 3-19: Agent and Proxy Configuration

Element	DESCRIPTION
CRM No	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region. CRM is pre-populated by adding Versana Active to the CRM number. The CRM number of the Versana Active is editable.
Serial No	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 Versana Active. The serial number of the agent is tied to the serial number of the Versana Active.
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.
Username	When Proxy is selected, name of the user.
Password	When Proxy is selected, password for the user.

3-9-1 EZ configuration Wizard(continued)

After InSite - Remote Assistant has been successfully configured, 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**.

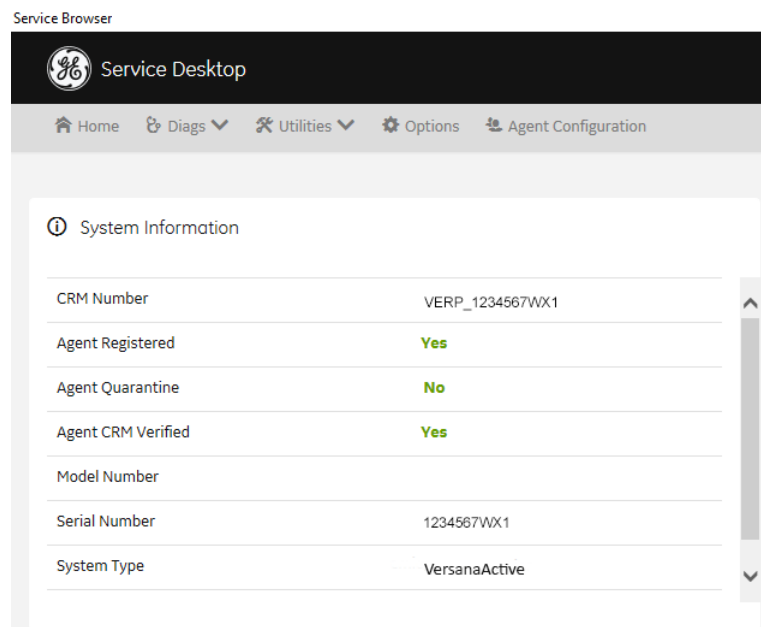


Figure 3-72. System Information

11. After having set the InSite - Remote Assistant, press **Next** to continue.

3-9-1 EZ configuration Wizard(continued)

12. This screen shows the report of the previous settings. You can export it to the database.

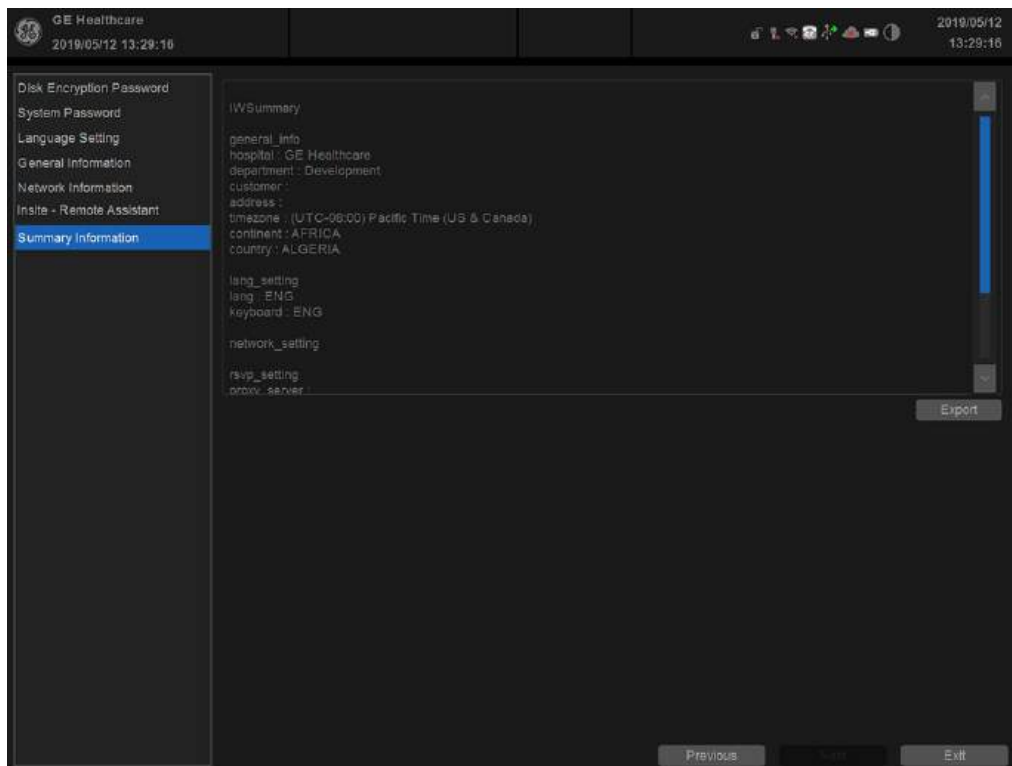


Figure 3-73. Summary Information

Press **Export** and select **OK** to store the report.

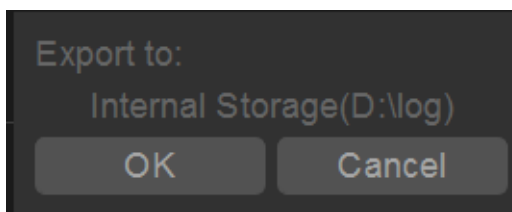


Figure 3-74. Export Summary

13. Press **Exit** to exit Installation Wizard.

3-9-2 TCP/IP Screen

1. Press **Utility** on the control panel and login as admin, refer to See 4-2-5 'Logging on to Versana Active as "ADM"' on page 4-11 for more information..
2. Select **Connectivity** on the screen.
3. Select **TCP/IP** tab, the screen gives an overview of the network settings for Versana Active.

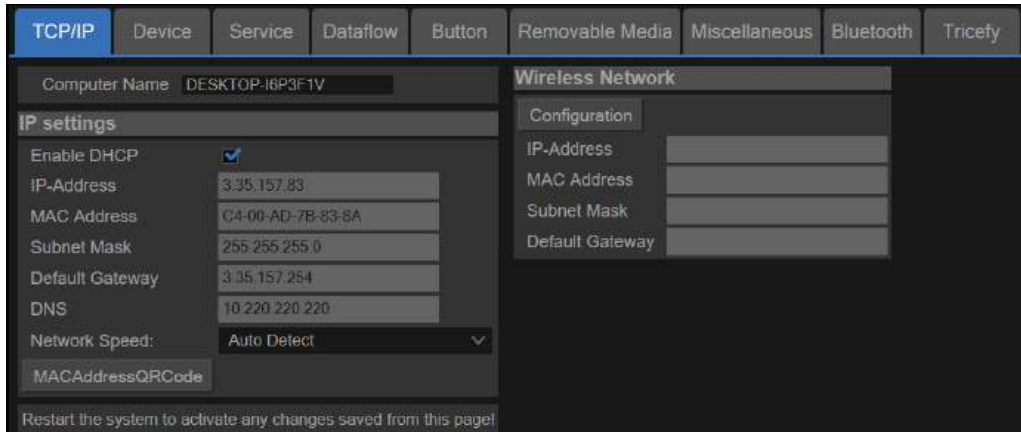


Figure 3-75. TCP/IP Screen

4. By clicking **MACAddressQRCode**, there will be a QR code popping out on the screen. You can get MAC address here.



Figure 3-76. MAC Address QR Code

3-9-2 TCP/IP Screen(continued)

MAC Address can also be found in OAC system as showing in Figure 3-77.

The screenshot shows a web browser window titled "MT5847 - Option Activation Report - Google Chrome". The address bar shows "oac.health.ge.com/oac/reportAction.do?reportVal=ActivationCode&serialNumber=" and "popup=1". The main content area is titled "Option Activation Codes" and displays "Serial Number: XXXXXXXX" and "Ethernet :XX-XX-XX-XX-XX-XX" (the latter is highlighted with a blue box). Below this is a link "Generate LCS Unit". At the bottom is a table with the following data:

Item Number	Activation Code	Option Name	Model Name	Internal Sales Order	Global Order Number	Date Configured	G
XXXXX	XXXXX-XXXXX-XXXXX-XXXXX-XXXXX	XXXXX	XXXX	XXXXX	XXXXX	XXXXX	X:

Figure 3-77. MAC Address in OAC system

3-9-2-1 Changing the AE title and/or Port Number

1. To change **AE Title** and/or **Port No**, edit the respective fields.

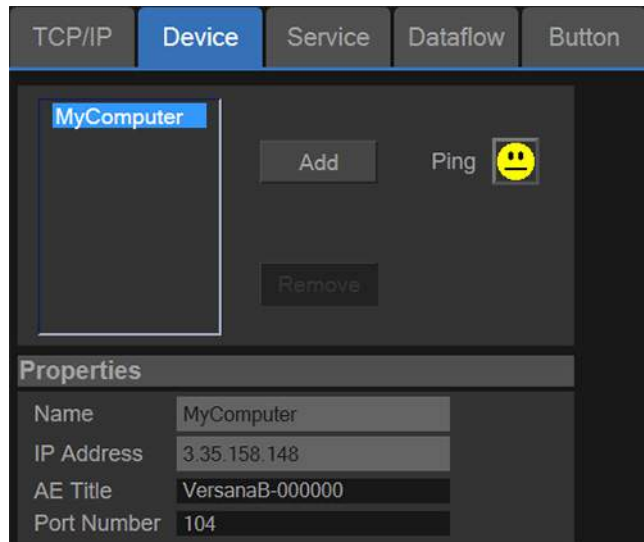


Figure 3-78. AE Title/Port No

2. Select **Save** to store your changes. This will bring up a new warning screen.

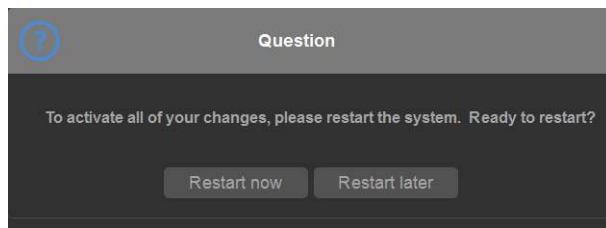


Figure 3-79. Warning Message

3. Select **OK** to save your changes or **Cancel** to return without saving any changes.
4. Reboot the system to activate the settings or continue with other TCPIP setup tasks.

3-9-3 Network setup

For network connection setup, See 7-6-1 'Network Configuration' on page 7-37 for more information.

3-9-4 Setup connection to a DICOM server

Versana Active is configured to work with DICOM servers in a network environment. Images are first saved on the local image butter on the system. At the end of the examination the images are sent to the DICOM server via a DICOM spooler and to the local database, depending on dataflows.

To connect to the DICOM server, the following information has to be entered in the system.

- The DICOM server IP address
- The DICOM server port number
- The DICOM server AE title (the server application's name)

Table 3-20: Utility ->Connectivity ->TCP/IP screen

1	Enter the Versana Active computer name. This may be the same as the station name.
2	Enter the Versana Active IP address, subnet mask, default gateway and network speed. For automatic assignment of IP address, subnet mask and default gateway, select DHCP . <i>Note: If possible, set the Versana Active network Speed to match that of the Network switch. if in doubt, set it to AutoDetect. Otherwise, transfer times can be two or five times longer, during which the Versana Active will appear to be locked up. (If the Hard Drive activity light on the front of the console is lit steady or blinks quickly, the Versana Active is most likely not hung.)</i>

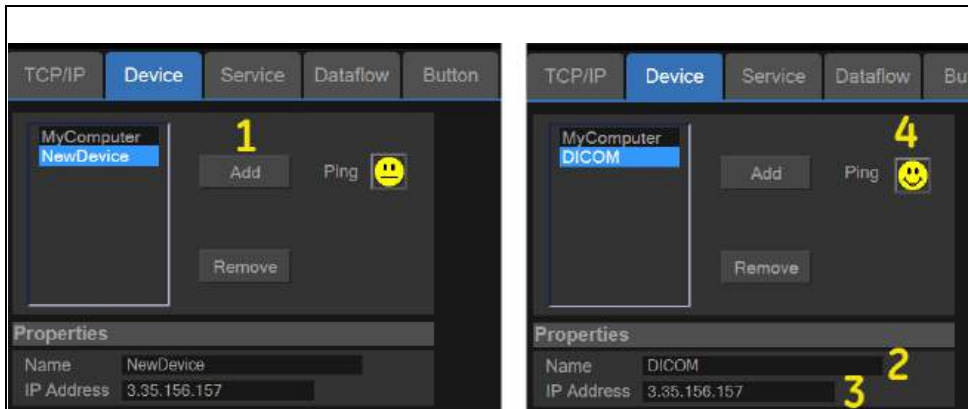
3-9-4 Setup connection to a DICOM server(continued)



Table 3-21: Utility ->Connectivity ->Device screen

1	Select MyComputer .
2	Assign an AE title to the Versana Active. (AE stands for Application Entity. DICOM services use this to identify the Versana Active.) AE title is case-sensitive. This title may contain the Computer Name from the TCP/IP page, if desired. <i>Note: It is NOT recommended to use the factory default. This is not prohibited, but more than one system with the same AE title can cause confusion.</i>
3	Edit Port Number if needed. 104 is typical. Save your changes and reboot the system.

3-9-5 How to get the Versana Active to recognize another Device on the Network

Table 3-22: Utility ->Connectivity ->Device screen

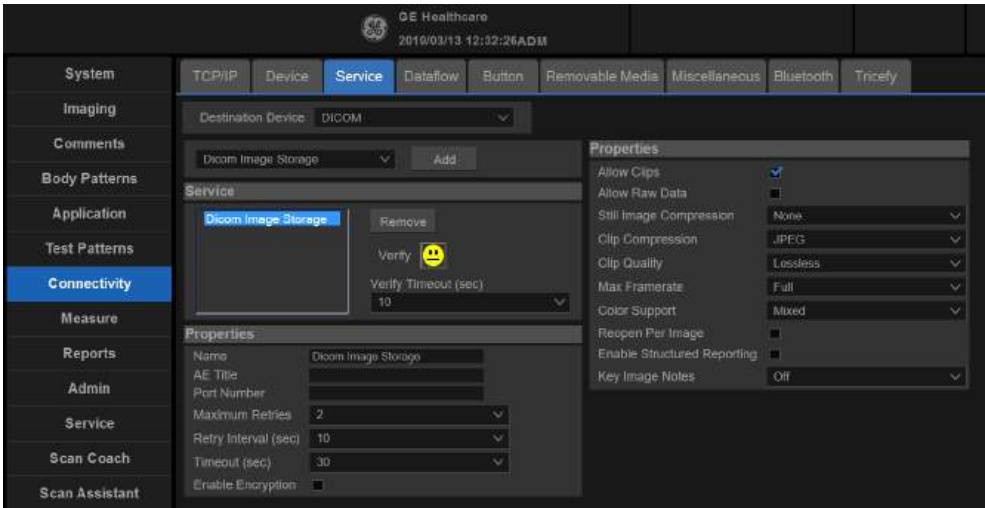


1	Select Add . The system creates a device called "NewDevice".
2	Change the name to one of your choosing.
3	Enter the IP address of the device.
4	<div style="text-align: center;">   </div> <p>Save your changes and then press Ping. A "Smiley Face" indicates successful communication between your Versana Active and the device. A "Frown" indicates failed communication. Check the following:</p> <ul style="list-style-type: none"> • Is the device running? • Is it connected to the network? • Did you enter the right IP address?

3-9-6 How to Setup and Use a DICOM Image Storage Service

An Image Storage Service provides a place to store patient and exam data from Versana Active and corresponding images. The Image Storage Service, or the device that hosts it, is often called a Patient Archiving and Communication System (PACS).

Table 3-23: Setup an Image Storage Service

	
1	In Utility -> Connectivity -> Service , from the Destination Device drop-down menu, select the device on which the service resides. (This assumes you have already setup the device in the Device tab in 'How to Setup and Use a DICOM Image Storage Service' on page 3-87 .
2	From the <i>Select Service Type to add</i> drop-down menu, select DICOM Image Storage and press Add .
3	Change the name of the service to one of your choosing.
4	Enter the AE Title and port Number of the service. AE Title is case-sensitive.
5	Save your changes and then press Verify . A “Smiley Face” indicates successful communication with the service. Note: If you get a successful Ping (Smiley Face) at the device level but not at the service level, it is possible that the AE Title or Port Number of the service settings are incorrect. Ensure that these are correct then re-verify. Be sure that the service type (Store, Print, etc) is correct and supported by the device.

3-9-7 Dataflow



CAUTION

DO NOT rename the factory default dataflow.

A dataflow is a set of pre-configured services. When you select a dataflow, the ultrasound system automatically works according to the services associated with the dataflow. The Dataflow tab allows you to select and review information about dataflows. You can also create, change, and remove dataflows.

Set up dataflows for the services.

NOTE: You must be logged on as Administrator to use the Dataflow tab.

Table 3-24: Setup an Image Storage Service

1	Select the dataflow from the list.
2	Select to store data directly to archive (no buffer storage).
3	Select so that this dataflow does not appear as a Dataflow on the Patient menu.
4	Select to use this dataflow as the default dataflow when you start the system.

3-9-8 Button

You can assign print buttons via the Utility --> Connectivity --> Button page.

Assigning print buttons. First select the print button to configure on the upper, left corner of the page. Then select the device you want to add in the middle part of the page, under Available Input/Outputs. Then click on the right arrow in the top right corner of the page.

NOTE: You can configure each print key to multiple output devices/dataflows.

NOTE: Only attach one DICOM service per print key (e.g., PACS and DICOM printer). Multiple DICOM devices should be configured via a dataflow.

NOTE: When using a print key to send an image directly to a DICOM device, this causes a single DICOM association per image. Most devices (all known printers) work fine with this. However, some storage devices, such as ALI, Kodak Access, and Cemax, assume that the end of each association is the end of the exam and can result in a new folder for each image. In the Utility menu, select a single association or open PR for the desired DICOM storage device.

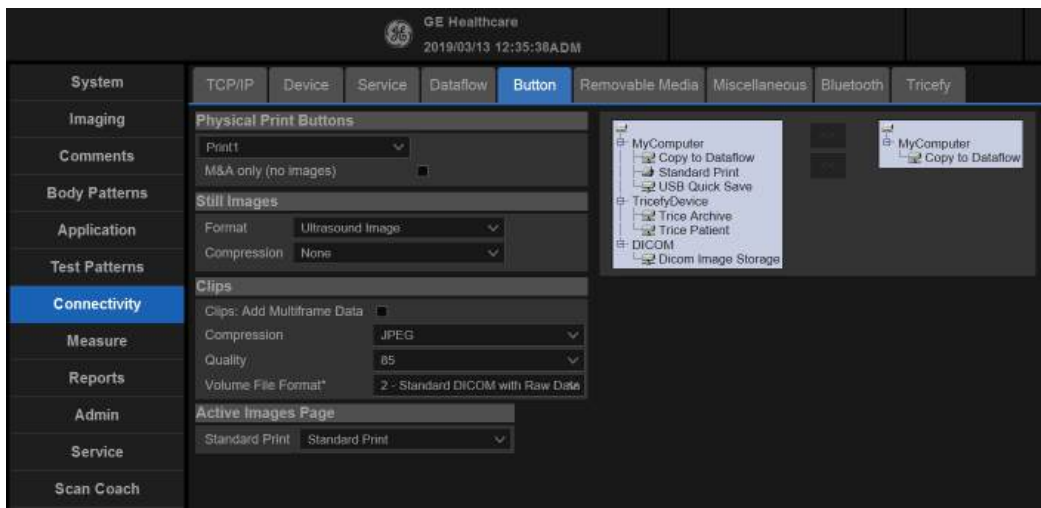


Figure 3-80. Button Preset Menu

3-9-8 Button(continued)

Table 3-25: Physical Print Buttons

Preset Parameter	Description
M&A only (no images)	Configures the system to send a DICOM structured report only; no image is generated or sent.

Table 3-26: Still Images

Preset Parameter	Description
Format	RawDICOM, DICOM, or M&A.
Compression	Always set to None.

Table 3-27: Clips/Volumes

Preset Parameter	Description
Clips: Add Multiframe Data	Checkbox
Compression	None, Rle, Jpeg, Jpeg2000
Quality	Lossless, 99, 98, 97, ... 50 Note: The default Compression for Clips is JPEG85. It is strongly recommended to keep the Compression set to JPEG85.
Volume File Format	2- Standard DICOM with Raw Data

Table 3-28: Active Images Page

Preset Parameter	Description
Standard Print	Lets you send to a Windows-based printer.

3-9-9 Removable Media

The Removable Media tab allows you to:

- Verify the DICOM directory on removable media.
- Verify the free space of the media.
- Verify that the media is finalized or unfinalized.
- Verify that the media is formatted or unformatted.
- Format removable media (rewritable CD/DVD or USB device).

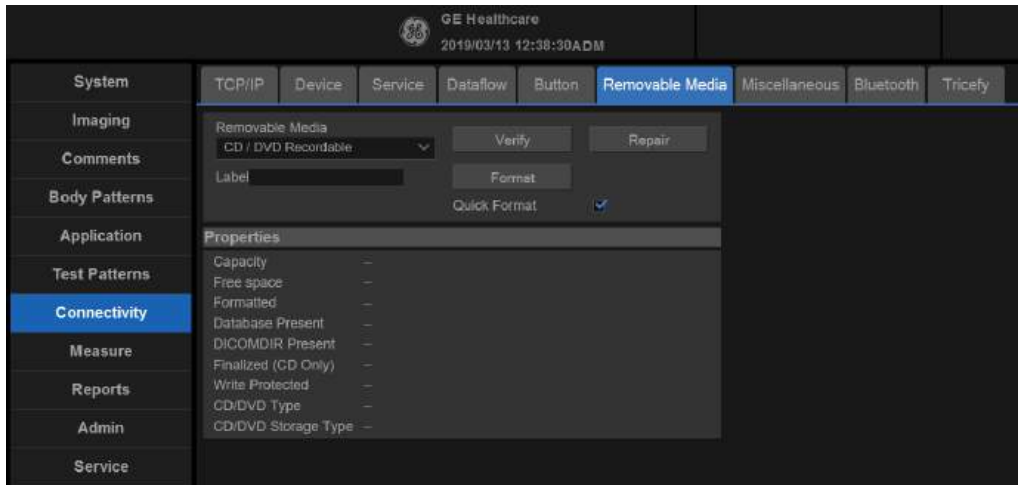


Figure 3-81. Removable Media Preset Menu

Table 3-29: Tools

Preset Parameter	Description
Removable Media	Select the removable media to format or verify.
Label	Type a label for a new removable media (free text).
Verify	<ul style="list-style-type: none"> • Select to verify DICOM directory on removable DICOM disk. • Verify the free space of the media. • Verify that the media is finalized or unfinalized. • Verify that the media is formatted or unformatted.
Format	Select to format removable media.
Quick Format	To format the media quickly, check this box. If you uncheck this box, the media is formatted with a full format. New media should always be formatted with a full format.

The bottom of the screen lists properties of the selected media.

3-9-9 Removable Media(continued)

Formatting removable media

1. Select the removable media from the Media list.
2. Type a name for the removable media in the Label field.

NOTE: Do not use the following characters for labelling:

*\ / : ; . , * < > | + = []*

3. Select **Format**. Confirm **OK** or **Cancel**.
4. An information window confirms when the format has been completed. Select **OK** to exit.

Verifying removable media

1. Select the removable media from the Media list.
2. Select **Verify**.

3-9-10 Miscellaneous

The Miscellaneous tab allows you to configure tools related to patient management and print and store options. You can specify default system functionality, such as whether patient ID is required when you archive data, or if you want the system to automatically search the archive for a patient when you enter patient data.

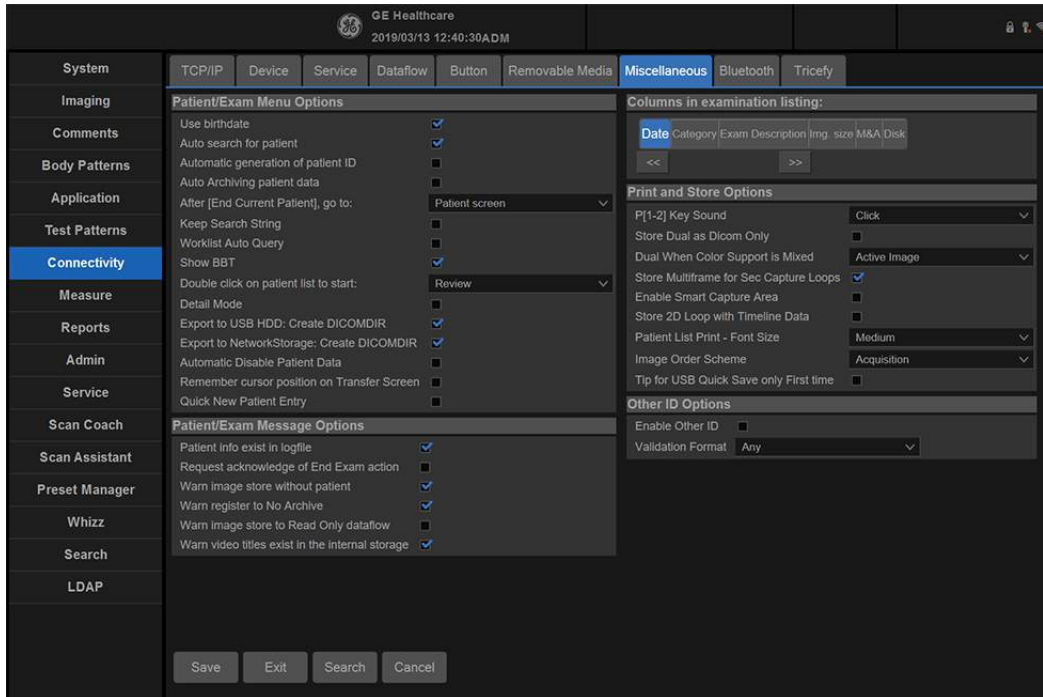


Figure 3-82. Miscellaneous Preset Menu

Table 3-30: Patient/Exam Menu Options

Preset Parameter	Description
Use birthdate	In the Patient information window, enter either the patient age or the birthdate:When selected, enter birth date, then the age is calculated.Whencleared, enter age (birth date field not available).
Auto search for patient	In the Search/Create Patient window: When selected, the system automatically searches through the selected patient archive, while the user enters patient information.When cleared, the automatic search tool is turned off. If you are trying to keep the past patient data confidential, DO NOT use this feature.
Automatic generation of patient ID	In the Search/Create Patient window: When selected, the Patient ID is notrequired when entering a new patient in the archive. The systemautomatically generates an ID number. When cleared, the Patient ID isrequired when entering a new patient in the archive.

Table 3-30: Patient/Exam Menu Options (Continued)

Preset Parameter	Description
Auto Archiving patient data	Archives patient data automatically.
After [End Current Patient], go to	Select go to Worklist screen or Patient screen when ending the current patient.
Keep Search String	Search string is kept rather than cleared.
Worklist Auto Query	Automatically queries the worklist server.
Show BBT	Show BBT field on the OB patient screen to input the basal body temperature.
Double click on patient list to start	Select Review or New Exam to display each time you double click on the patient name in the patient list on the Patient menu.
Detail Mode	Select to display Detail Mode, rather than Exam View, when you select the patient name in the patient list on the Patient menu. You can also type comments while in Detail Mode.
Export to USB HDD: Create DICOMDIR	Create DICOMDIR is a DICOM file format which contains how the directory and DICOM files structured for diagnostic portable media behave. It is important for portability between the Versana Active to PACS. If you want to save exams to the USB Hard drive and look at it on the PACS, the DICOMDIR is a must.
Export to Network storage: Create DICOMDIR	
Automatic Disable Patient Data	Select to automatically disable patient data. If selected, locks the patient name, date of birth and gender (like Patient ID). The Factory Default for this preset is unchecked.
Remember Cursor Position on the Transfer Screen	To set a default cursor location on the Data Transfer screen: <ol style="list-style-type: none"> 1. Select the "Remember cursor position in the Transfer screen" preset and press Save. 2. On the Data Transfer screen, move the cursor to the desired field. 3. Exit out of the Data Transfer screen. When returning to the Data Transfer screen, the cursor location is in the position you selected.
Quick New Patient Entry	Select to store new patient automatically by pressing the Patient key.

Table 3-31: Patient/Exam Message Options

Preset Parameter	Description
Patient info exist in logfile	Check box to select.
Request acknowledge of End Exam action	When selected, the user is asked to confirm action when ending an examination.
Warn Image Store without Patient	Select to receive a warning when you press the Print key without an active patient.
Warn Register to No Archive	Select to receive a warning when you register a patient to the "No Archive" data flow. Select a different data flow for permanent storage of patient data.
Warn image store to Read Only dataflow	The system posts a warning message if you attempt to store images to a read-only Dataflow.

Table 3-31: Patient/Exam Message Options

Preset Parameter	Description
Warn video titles exist in the internal storage	The system posts a warning if the video titles exist on the internal DVR flash memory.

Table 3-32: Print and Store Options

Preset Parameter	Description
P[1-2] Key Sound	Select None, Click, Chimes, Ding, Ding-Dong, or Whoosh.
Store Dual as Dicom Only	Select to always store dual images as a DICOM (secondary capture) store, rather than Raw DICOM.
Dual When Color Support is Mixed	Dataflow Mixed is not available. While transferring dual images to the PACS, send black and white images as gray; send color images as color. Set up 2 services (one gray and one color), set up 2 dataflows, and set up 2 buttons. Each button needs to be tied to a different service. Select if you want to keep the user preset for Color Photometric Interpretation while in Dual mode.
Store Multiframe for Sec Capture Loops	Select if you want the CINE loop stored as secondary capture.
Enable Whizz Capture Area	Check box to select.
Store 2D Loop with Timeline Data	Check box to select.
Patient List Print-Font Size	Select font size.
Image Order Scheme	Select to Direct Store images in Acquisition Order, Scan Coach/Assistant Order, or Off. <ul style="list-style-type: none"> • Off. The clipboard on the Ultrasound system shows the image in the order it was acquired. Therefore, re-stored images appear where you'd expect. However, on the PACS system, images appear in arrival order or in image number order. • Acquisition Order. From the Ultrasound system perspective, the same as "Off." But on the PACS system (if based on image number order), images are displayed consistently with the way they are stored on the Ultrasound system. • Scan Coach/Assistant Order. You can define the storage order (reading order) via Scan Coach/Assistant Creator. Therefore, based on the order defined in Scan Coach/Assistant, images are re-ordered and displayed in this manner both on the Clipboard and on the PACS system.
Tip for USB Quick Save only First time	Check box to select.

Table 3-33: Other ID Options

Preset Parameter	Description
Enable Other ID	Not selected is the Default. If selected, allow entering Other ID, such as Citizen Service Number, Burger Service Number (BSN), National Health System (NHS) number, along with patient ID information on the Patient Screen.
Validation Format	If the Enable Other ID preset is selected, the system validates the format of "Other ID" when an ID is entered. Choose: NHS Number *** ** *****, Letters and Numbers, Numbers, or Any (no restriction)

3-9-11 Bluetooth

To add a new bluetooth device,

1. Press **Add New Device**.
2. Type the device name in the Name field.

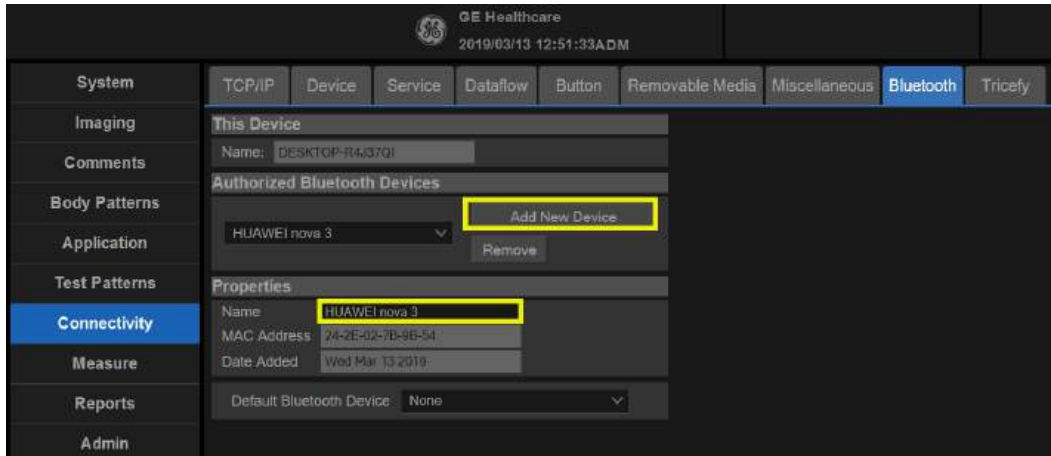


Figure 3-83. Connectivity Bluetooth Preset Menu

Table 3-34: Device

Preset Parameter	Description
Add New Device/Remove	Press Add new device to add a new device; press Remove to delete a device.
Properties: Name	Type the name of the device.
Properties: MAC Address	Unique network card address. NOTE: Only available for MyComputer.
Properties: Date Added	Display the new device added date.

3-9-12 Tricefy

New GE Versana ultrasound systems have Tricefy pre-installed. Additional software is not necessary for using Tricefy; simply activate your account using the following steps.

1. Press **Utility** -> **Connectivity** -> **Tricefy**.

NOTE: *The Tricefy tab is only available on machines that have Tricefy option.*

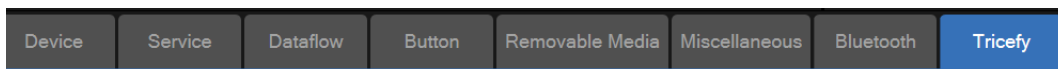


Figure 3-84. Tricefy Menu

2. Enable **Tricefy** checkbox, and enter the **email address** to authorize the account. Press “**Activate account**” to activate your account, this process may take up to 30 seconds, and a dialog will pop up if succeeded. And you will receive a notification email, click the link to complete the whole activating process.

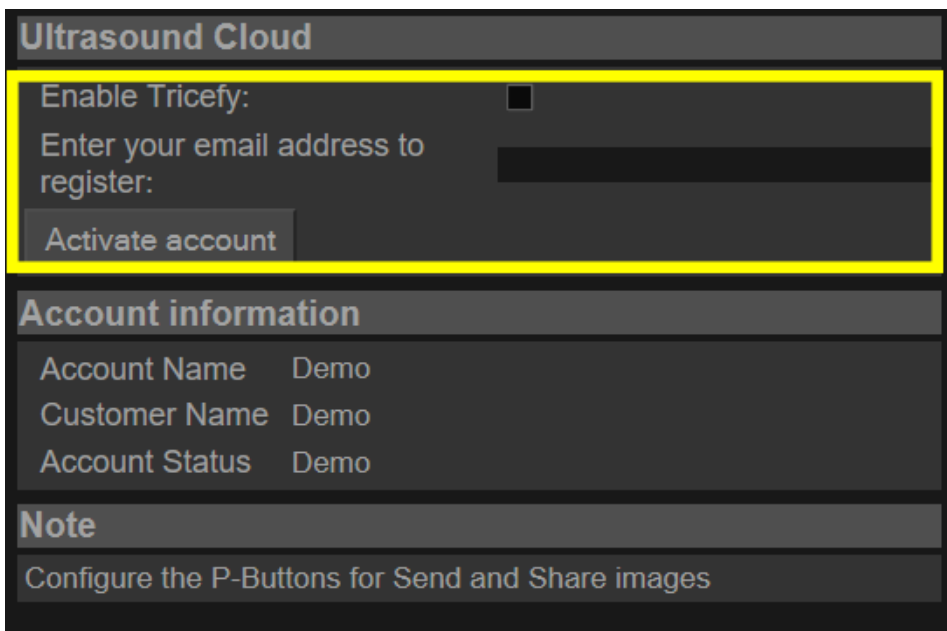


Figure 3-85. Activate Tricefy Account

3-9-12 Tricefy(continued)

3. Add Tricefy to Print workflow.
 - Click **Button** to configure the P- Buttons for sending and sharing images.

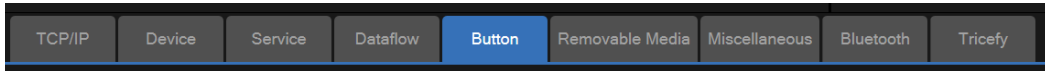


Figure 3-86. Button Menu

- Select **Print1** (or **Print2**, **Print3**) which you would like to use. Then Select **Trice Archive** and press **>>** button to add it to Printflow View, press **Save**. Now when you press the **P1** button, the image will be sent to your Tricefy cloud.

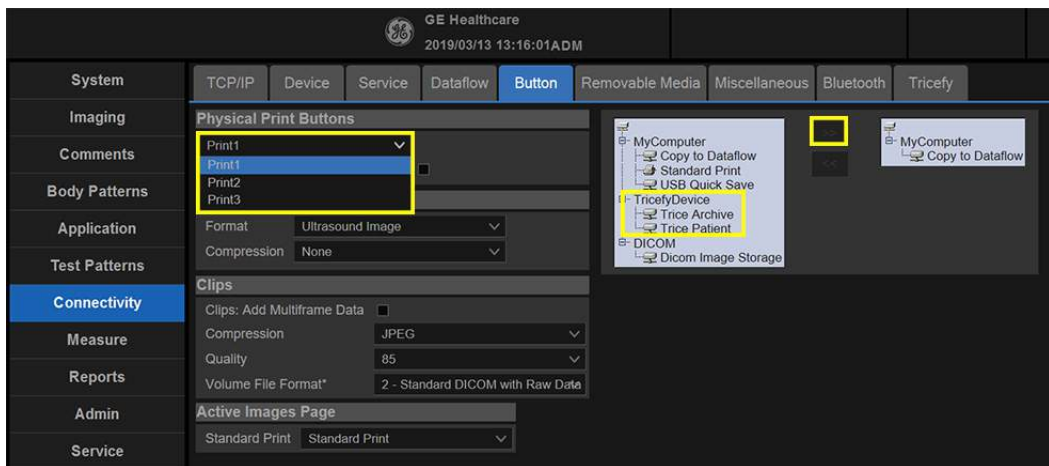


Figure 3-87. Configure the P-Button for Tricefy

3-9-12 Tricefy(continued)

- 4. If you want to share the images to patient, please add **Trice Patient** to **Printflow View**. And also remember input the patient's Phone number or email address.

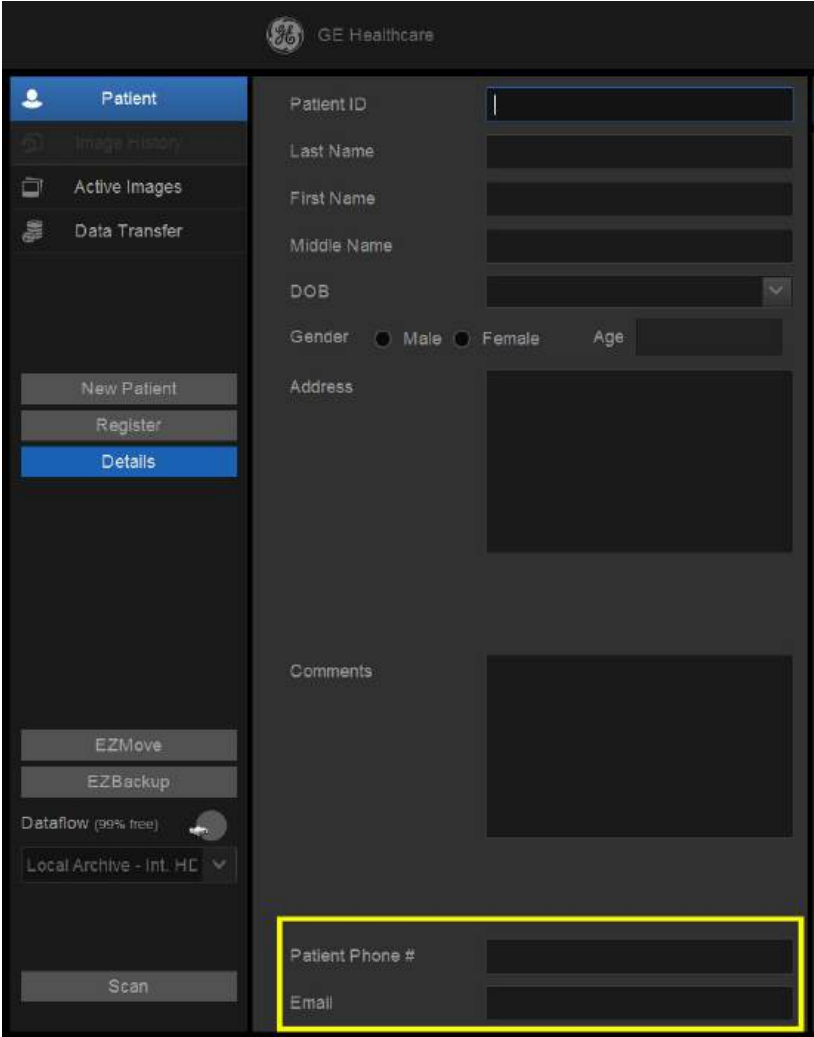


Figure 3-88. Share Images to Patient

NOTE: If you have any problem with Tricefy settings, please contact your GE service/sales representative.

3-10 Option Setup

3-10-1 Software Option Installation Procedure

NOTE: Not all features described in this section may be available or cleared for sale in all markets. Please contact with your local GE Ultrasound representative to get the latest information.

1. Power on the system.

NOTE: Keep the power cord connection during the installation.

2. After the power-up sequence is complete, press **Utility** on the control panel, and then select **Admin-> System Admin**.



For software Option Installation, the operator must login as Administrator.

3. Enter the new SW Option key and then select **Add**.

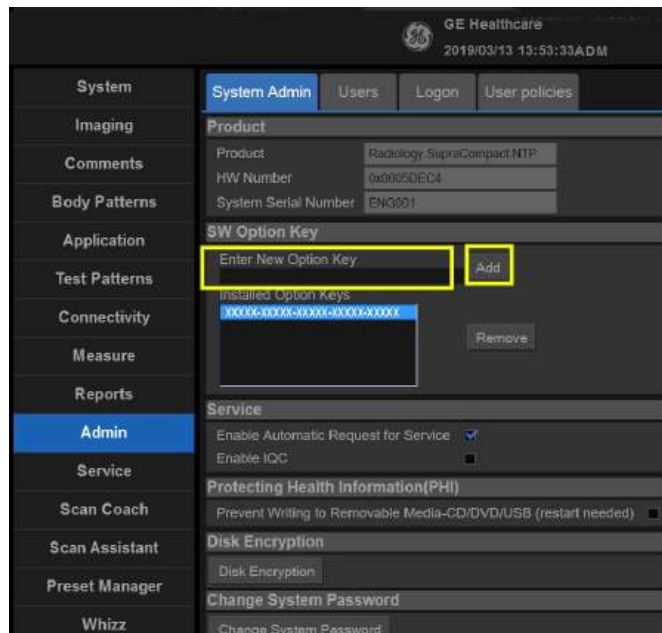


Figure 3-89. New Option Key

3-10-1 Software Option Installation Procedure(continued)

6. Configure the user define key in utility. On the screen, the user defined key name will be displayed.



Figure 3-92. User define key display on the screen

7. This completes the option installation of Versana Active.

NOTE: *Installing corresponding hardware is a prerequisite of loading software option successfully. Please check below table for correspondence.*

Table 3-35: Software Corresponding Hardware

Software Option	Hardware
CW_Doppler	CWD PWA

3-11 Paperwork after setup

NOTE: During and after setup, the documentation (i.e. CDs with documentation, User Manuals, Installation Manuals, etc.) for the Versana Active and the peripherals must be kept as part of the original Ultrasound system documentation. This ensures that all relevant safety and user information is available during the operation and service of the complete Ultrasound system.

3-11-1 Contents in this Section

- [3-11-2 'User's Manual\(s\)' on page 3-104](#)
- [3-11-3 'Product Locator Installation Card' on page 3-105](#)

3-11-2 User's Manual(s)

User 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.

3-12 Cart Setup

3-12-1 Purpose of this section

This section contains information needed to install 3 types of Versana Active Cart:

- VSN A Base Cart
- Versana Active Advanced Fixed Cart
- Versana Active Advanced Height-Adj Cart

3-12-1-1 Contents in this chapter

- [3-12-1 'Purpose of this section' on page 3-106](#)
- [3-12-1-1 'Contents in this chapter' on page 3-106](#)
- [3-12-2 'Safety Consideration' on page 3-107](#)
- [3-12-3 'Set Up the Cart' on page 3-108](#)
- [3-12-4 'Cart Using' on page 3-117](#)
- [3-12-5 'Peripheral Installation' on page 3-121](#)
- [3-12-6 'Paperwork' on page 3-141](#)

3-12-2 Safety Consideration

NOTE: Please refer to Chapter 1 and Chapter 2 for the safety information and site requirement for the Cart. Chapter 1 and Chapter 2 should be read before conducting any installation work on Cart.



CAUTION

Care must be used when moving the Cart or replacing its parts.

Failure to follow the precautions listed below could result in injury, uncontrolled motion and costly damage.

ALWAYS:

- be sure the pathway is clear
- use slow, careful motions
- Limit movement to a slow careful walk.

Need two people to work together when moving on inclines or lifting more than 16 kg (35 lbs).



WARNING

When the cart is raised for a repair or moved along any incline, use external caution since it may become unstable and tip over.



CAUTION

Do not move Cart with big incline angle.



CAUTION

The Cart is not water proof. Do not expose the Cart to water or any kind of liquid.

Never set liquids on the Cart to ensure that liquid does not drip into the unit.



CAUTION

Put peripherals in correct position to avoid Cart overload.

NOTE: Special care should be taken when transporting the Cart in a vehicle.

3-12-3 Set Up the Cart

3-12-3-1 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), DON'T TOUCH THE UNIT!



CAUTION

Two people should unpack the unit because of its weight. Two people are required whenever a part weighing 19kg (42 lb.) or more must be lifted.



CAUTION

To avoid damage to the ultrasound system, do not place the cart close to the wall or heating devices.



CAUTION

OPERATOR MANUAL(S)

The User Manual(s) for the Cart should be fully read and understood before operating the Cart and kept near the unit for quick reference.

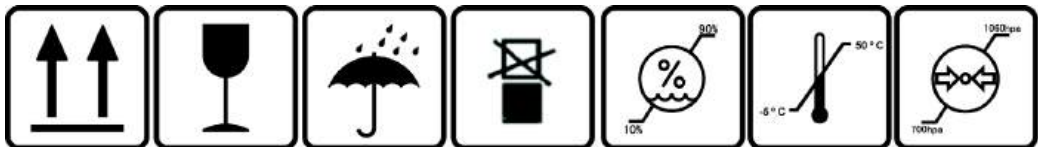


Figure 3-94. Environmental Labels

3-12-3-2 Receiving and Unpacking the Equipment

When a new Cart arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.

3-12-3-2-1 Unpacking Cart

NOTE: The unpacking procedure is the same for 3 types of Cart. Take VSN A Base Cart as an example.

Table 3-36: Procedure to take out Cart



No.	Steps	Corresponding Graphic
1.	Tear the stop open mark.	
2.	Cut the two packing straps around the carton. <i>Note: To avoid injury, with one hand holding the strap clasp when cutting the strap.</i>	

Table 3-36: Procedure to take out Cart


No.	Steps	Corresponding Graphic
3.	Open the carton cover and remove it.	
4.	Remove the stretch film.	

Table 3-36: Procedure to take out Cart





No.	Steps	Corresponding Graphic
5.	<p>Flip up the lock and remove the belt and the cushion pad.</p>	
6.	<p>Remove the dust bag from the cart. <i>Note: There is no dust bag if the system is transported by sea. Ignore this step if there is no dust bag.</i></p>	

Table 3-36: Procedure to take out Cart

No.	Steps	Corresponding Graphic
7.	Remove the cushion pad.	
8.	With one hand holding the front handle and the other hand holding the rear handle, move the whole cart down to the ground.	

3-12-3-2-1 Unpacking Cart(continued)

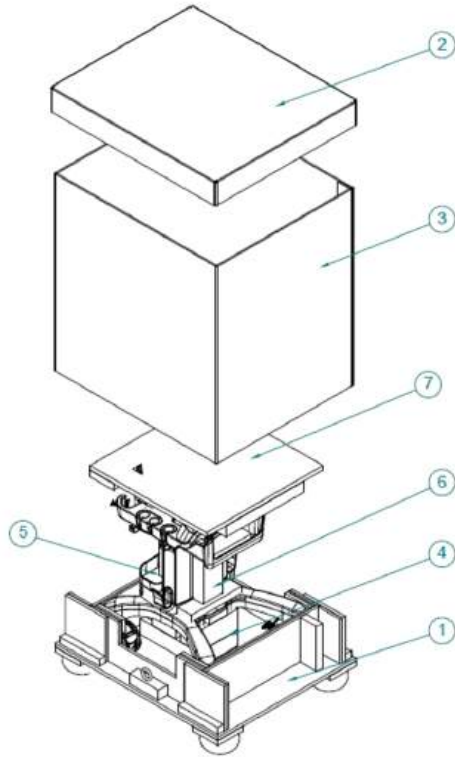


Figure 3-95. Remove Foam

1. Pallet with foam
2. Fefco 0452 BC-flute
3. Fefco 0501 BC-flute
4. Support foam 1
5. Support foam 2
6. Support foam 3
7. Top foam

3-12-3-2-2 Moving into Position



CAUTION

Do not tilt the unit more than 5 degrees to avoid tipping it over.

In general, a single adult can move the Cart along an even surface with no steep grades. At least two people should move the machine when large humps, grooves, or grades will be encountered. (It is better to pull from the rear rather than push from the front of the unit). Before moving, store all loose parts in the unit. Wrap transducers in soft cloth or foam to prevent damage.

3-12-3-3 Preparing for Installation

3-12-3-3-1 Verify Customer Order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered or damaged.

3-12-3-3-2 Physical Inspection

Verify that Cart arrived intact (visual inspection).
If the Cart has been damaged, please refer to '[Damage in transportation](#)' on [page i-16](#) in the beginning of this manual.

3-12-3-3-3 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.

3-12-3-3-4 Physical Dimension and Weight

The physical dimension of the Cart is summarized in [Table 3-37 on page 3-115](#).

Table 3-37: Physical Dimensions of Cart

	Length	Depth	Height	Unit
VSN A Base Cart	556	517	890	mm
Versana Active Advanced Fixed Cart	556	585	920	mm
Versana Active Advanced Height-Adj Cart	556	585	from 900 to 1190	mm

The weight of VSN A Base Cart is 21 kg (46.3 lbs).



Figure 3-96. VSN A Base Cart

3-12-3-3-4 Physical Dimension and Weight(continued)



Figure 3-97. Versana Active Advanced Fixed Cart



Figure 3-98. Versana Active Advanced Height-Adj Cart

3-12-4 Cart Using

3-12-4-1 Lock/Unlock Wheels

1. Press the lever down to lock the wheel.
2. Press the "ON" pedal on the wheel to unlock the wheel.

NOTE: All four wheels have brakes.

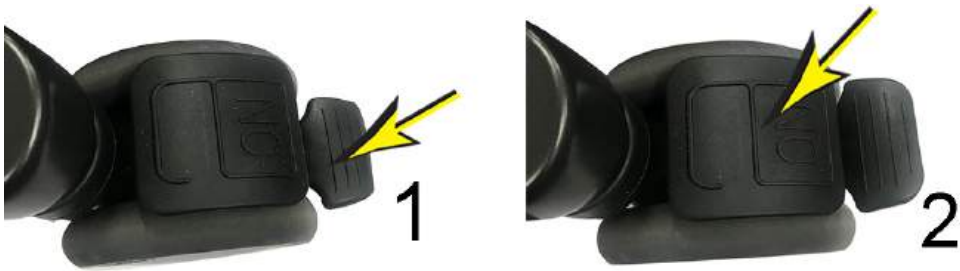


Figure 3-99. Wheels

3-12-4-2 Mount the system to Cart

Table 3-38: Mounting Procedure of Versana Active



No.	Step	Corresponding Graphic
1.	<p>Align the system with the two Locate Blocks and place the system on the top panel of the cart. Caution: Except the cart, always use the system on a flat surface to avoid any damage for the outer covering.</p>	
2.	<p>If the top panel has two ground bosses, and the system has the corresponding notch at the rear of the handle, earth grounding will be automatically connected. Otherwise, please follow step 3~4 to assure adequate grounding for the system.</p>	

Table 3-38: Mounting Procedure of Versana Active


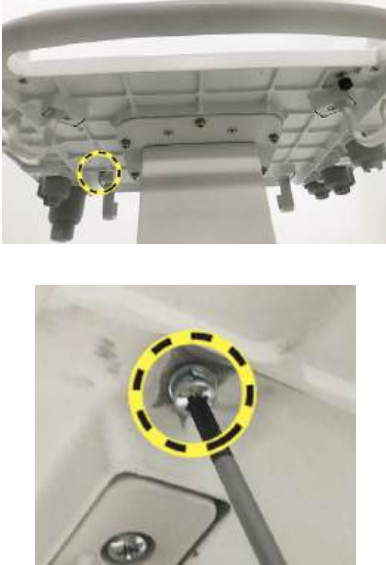


No.	Step	Corresponding Graphic
3.	Take out the screwdriver from the bottom of top panel.	
4.	Screw 1 screw under the top panel.	
5.	Connect AC adapter to Versana Active. Or connect Cart Power Cable (a) to the system if Versana Active Advanced Cart has installed power transformer (optional).	
6.	For Versana Active Advanced Cart only, connect Cart USB Cable (b) to the system.	

Table 3-38: Mounting Procedure of Versana Active

No.	Step	Corresponding Graphic
7.	Flip up the monitor and begin scanning. To avoid damage, DO NOT push the LCD beyond its maximum angle (170 degrees).	

NOTE: Refer to the ultrasound system user manual for more information on connecting the power cord and probe.



CAUTION

Be sure that the system is fixed correctly on the Cart to avoid falling down.

3-12-4-3 Remove the system from Cart

Remove the system in the reverse order of installation, refer to 'Mount the system to Cart' on page 3-118 .

NOTE: Press down the release button by hand before removing the system from Cart.

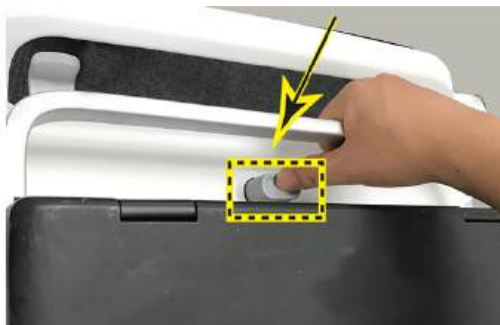


Figure 3-100. Press down the release button

3-12-5 Peripheral Installation

3-12-5-1 On-Board Optional Peripherals

Table 3-39: Peripherals Validate for Cart

Device	Manufacturer	Model	Interface	Video Signal
B/W Printer	SONY	UP-D898MD	USB Interface	N/A (* USB Interface)
B/W Printer	SONY	UP-D898DC	USB Interface	N/A (* USB Interface)
DVD-RW	Transcend	Transcend TS8XDVDS-K DVDRW kit	USB Interface	N/A (* USB Interface)

See each option setup instructions for installation and connection procedures.

NOTE: *Sony UP-D898DC printer is only applicable for Versana Active Advanced Cart (including Versana Active Advanced Fixed Cart and Versana Active Advanced Height-Adj Cart).*



Serious injuries may result. To prevent the Cart from becoming unstable, please use the peripherals with the recommended specifications. **DO NOT** install peripheral devices that are too large or too heavy for the location on the cart.

3-12-5-2 Install Sony UP-D898MD on VSN A Base Cart

3-12-5-2-1 Tools

- Common Hex driver
- common Phillips screwdriver

3-12-5-2-2 Needed Manpower

- 1 person, 5 minutes

3-12-5-2-3 Preparations

- Turn off all the power supply.

3-12-5-2-4 Installation Procedure

Table 3-40: Installation Procedure of Printer


No.	Step	Corresponding Graphic
1.	If the DVD-RW is installed on the DVD-RW shelf, remove the DVD-RW first before installing the printer, refer to 3-12-5-5-5 'Removal Procedure' on page 3-135	
2.	Align two holes on the bracket with the two holes on the bottom of the printer, then place the bracket on bottom of the printer. Screw 2 screws.	

Table 3-40: Installation Procedure of Printer


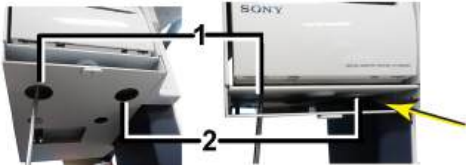


No.	Step	Corresponding Graphic
3.	Place the printer on the Printer shelf and push the printer into the shelf completely.	
4.	Screw 2 screws at the bottom of the Printer/ DVD-RW shelf. You can view the two screws through the DVD-RW shelf.	
5.	Connect the Power cable(b) and the USB cable(a) to the back of the printer.	

Table 3-40: Installation Procedure of Printer

No.	Step	Corresponding Graphic
6.	Connect USB cable to the system through the isolated USB printer port.	

3-12-5-2-5 Removal Procedure

Remove the printer in the reverse order of installation.

3-12-5-3 Install Sony UP-D898MD on Versana Active Advanced Cart

3-12-5-3-1 Tools

- None.

3-12-5-3-2 Needed Manpower

- 1 person, 5 minutes

3-12-5-3-3 Preparations

- Turn off all the power supply.

3-12-5-3-4 Installation Procedure

Table 3-41: Installation Procedure of AC Printer


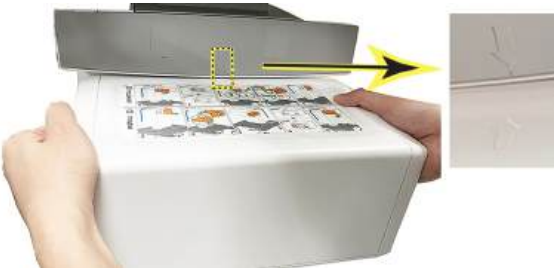
No.	Step	Corresponding Graphic
1.	Remove rear window cover with hand.	
2.	Align the arrow on the Printer/ DVD-RW Shelf to the arrow on the cart.	

Table 3-41: Installation Procedure of AC Printer


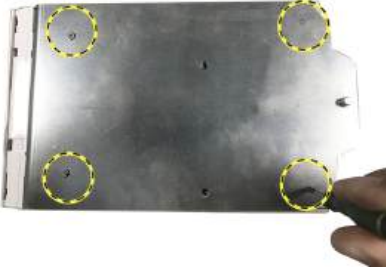

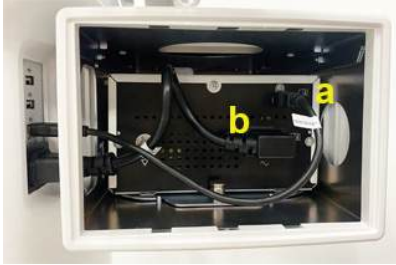


No.	Step	Corresponding Graphic
3.	Press down the Printer/DVD-RW Shelf using both hands.	
4.	Screw 4 screws to install Printer Base Plate on the bottom of the printer.	
5.	Place the printer in the Printer/DVD-RW Shelf and completely push the printer into the shelf.	
6.	Connect the USB cable (a) and Power cable (b) to the back of the printer and the cart.	

Table 3-41: Installation Procedure of AC Printer

No.	Step	Corresponding Graphic
7.	Install the shelf by hand.	
8.	Connect the cart USB cable to the system.	

3-12-5-3-5 Removal Procedure

Disconnect the cables and remove the shelf in the reverse order of step 7~9. Then lift the locking pin(1) and push the printer (with Printer Base Plate) out of the Printer/DVD-RW Shelf.



Figure 3-101. Lift the locking pin

Unscrew 4 screws to separate the printer from Printer Base Plate.



Figure 3-102. Remove Printer Base Plate

To remove the Printer/DVD-RW Shelf:

1. Pull out the locking pin with one hand and lift up the Printer/DVD-RW Shelf with the other hand.



Figure 3-103. Pull out the locking pin

2. Remove Printer/DVD-RW Shelf.

3-12-5-4 Install Sony UP-D898DC on Versana Active Advanced Cart

3-12-5-4-1 Tools

- None

3-12-5-4-2 Needed Manpower

- 1 person, 5 minutes

3-12-5-4-3 Preparations

- Turn off all the power supply.

3-12-5-4-4 Installation Procedure

Table 3-42: Installation Procedure of DC Printer



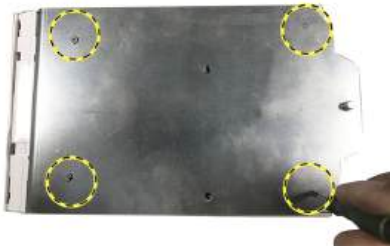
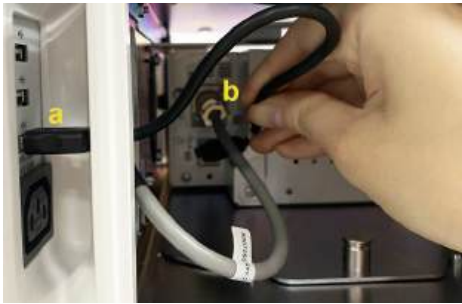


No.	Step	Corresponding Graphic
1.	Remove rear window cover with hand.	
2.	Connect the DC printer power extend cable to Cart.	
3.	Install Printer/DVD-RW Shelf on the cart, refer to step 2~4 of 3-12-5-3-4 'Installation Procedure' on page 3-125.	

Table 3-42: Installation Procedure of DC Printer

No.	Step	Corresponding Graphic
4.	Screw 4 screws to install Printer Base Plate on the bottom of the printer.	
5.	Place the printer in the Printer/DVD-RW Shelf and completely push the printer into the shelf.	
6.	Connect the USB cable (a) to the back of the printer and the cart. Connect the power extend cable (b) to the back of the printer.	
7.	Install the shelf by hand.	
8.	Connect the cart USB cable to the system.	

3-12-5-4-5 Removal Procedure

Disconnect the cables and remove the shelf in the reverse order of step 6~8. Then lift the locking pin(1) and push the printer (with Printer Base Plate) out of the Printer/DVD-RW Shelf.



Figure 3-104. Lift the locking pin

Unscrew 4 screws to separate the printer from Printer Base Plate.

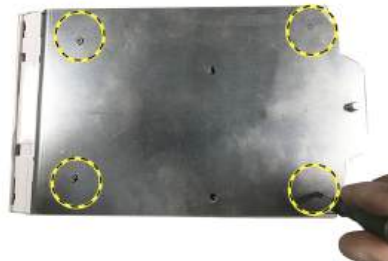


Figure 3-105. Remove Printer Base Plate

Remove the Printer/DVD-RW Shelf, refer to [3-12-5-3-5 'Removal Procedure'](#) on [page 3-128](#).

3-12-5-5 Install DVD-RW on VSN A Base Cart

3-12-5-5-1 Tools

- NA

3-12-5-5-2 Needed Manpower

- 1 person, 8 minutes

3-12-5-5-3 Preparations

- Turn off all the power supply.

3-12-5-5-4 Installation Procedure

Table 3-43: Installation Procedure of DVD-RW





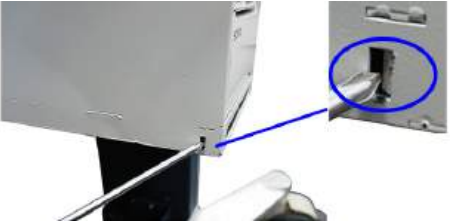
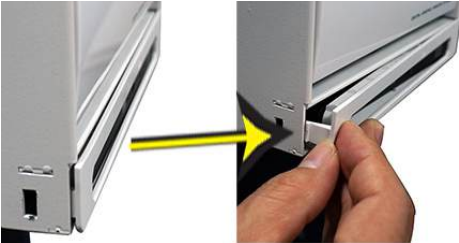

No.	Step	Corresponding Graphic
1.	Align the arrow mark(b) on the bracket with the open/close button(a) on DVD-RW, then mount the bracket to DVD-RW.	
2.	Place the DVD-RW to the DVD-RW shelf and push it into the shelf completely until it is fixed.	

Table 3-43: Installation Procedure of DVD-RW

No.	Step	Corresponding Graphic
3.	Connect USB cable to DVD-RW through the hole under the Printer/DVD-RW shelf.	
4.	Connect both USB connectors to the USB ports on the system. Note: Be sure both of the USB cables are connected to the system at the same time.	

3-12-5-5-5 Removal Procedure

Table 3-44: Removal Procedure of DVD-RW

No.	Step	Corresponding Graphic
1.	Use the tool to push the button inside the slot at the side of the shelf.	
2.	When the bracket is loosened, use the figure tip to pry off the bracket and remove it.	
3.	Take out the DVD-RW.	

3-12-5-6 Install DVD-RW on Versana Active Advanced Cart

3-12-5-6-1 Tools

- NA

3-12-5-6-2 Needed Manpower

- 1 person, 8 minutes

3-12-5-6-3 Preparations

- Turn off all the power supply.

3-12-5-6-4 Installation Procedure

Table 3-45: Installation Procedure of DVD-RW








No.	Step	Corresponding Graphic
1.	If the Printer is installed on the Printer/DVD-RW Shelf, remove the printer first before installing the DVD-RW.	
2.	Route DVD-RW cable through Printer/DVD-RW Shelf.	
3.	Connect the DVD-RW cable to DVD-RW.	
4.	Place the DVD-RW into the Printer/DVD-RW Shelf and push it to the end of shelf.	

Table 3-45: Installation Procedure of DVD-RW

No.	Step	Corresponding Graphic
5.	Mount the bracket onto Printer/DVD-RW Shelf.	
6.	Connect both USB cables to the USB ports on the cart.	
7.	Install the shelf cover by hand.	
8.	Connect the cart USB cable to the system.	

3-12-5-6-5 Removal Procedure

Remove the DVD-RW in the reverse order of installation.

3-12-5-7 Peripheral Cable Routing

Gather the peripheral cables together and place them on the hook on the cart.

1. AC cable
2. ECG cable
3. Probe cable



Figure 3-106. Cable Route1

3-12-5-7 Peripheral Cable Routing(continued)

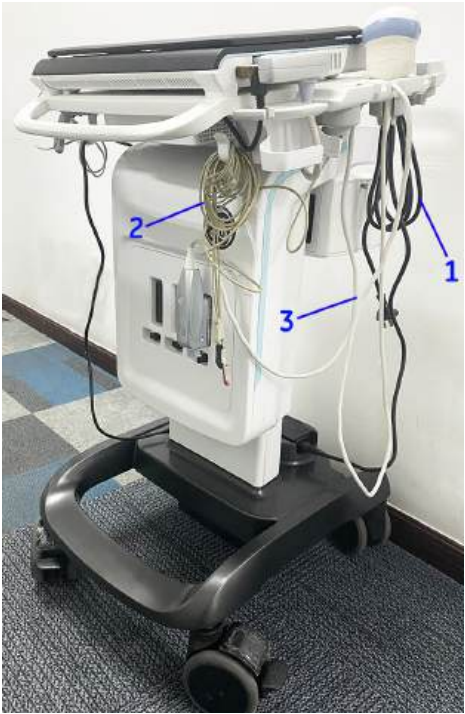
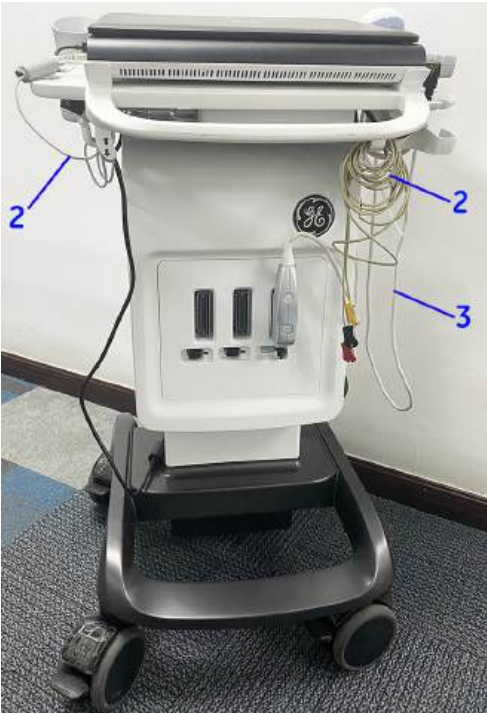


Figure 3-107. Cable Route 2

3-12-6 Paperwork

NOTE: During and after setup, the documentation (i.e. User Manuals...) 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.

3-12-6-0-1 Product Locator Installation Card

NOTE: The Product Locator Installation Card shown in this manual 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					
	PREPARE FOR ORDERS THAT DO NOT HAVE A LOCATOR INSTALLATION REPORT	DESCRIPTION	FDA	MODEL	REV	SERIAL
PRINTED IN USA INSTALLATION	SYSTEM ID NUMBER	OCP BS ORD		DATE (MO-DA-YR)		
	INSTALLATION	DIST.-COUNTRY ROOM		EMPLOYEE NO.		
	CUSTOMER NO.					
	DESTINATION - NAME AND ADDRESS					
	_____ _____ _____ _____					
ZIP CODE						

Figure 3-108. Product Locator Installation Card

3-12-6-0-2 User Manual

Check that the correct User Manual(s) for the Cart 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

General Procedures and Functional Checks

This chapter provides procedures for quickly checking major functions of the Versana Active and diagnostics instructions using the built-in service software.

4-1 Overview

4-1-1 Purpose of this chapter

This chapter provides procedures for quickly checking major functions of the scanner and diagnostics instructions using the built-in service software.

4-1-2 Contents in this chapter

- 4-1 'Overview' on *page 4-2*
- 4-2 'General procedures' on *page 4-3*
- 4-3 'Disk Encryption/Decryption' on *page 4-36*
- 4-4 'Functional checks' on *page 4-50*
- 4-5 'Power supply test & adjustments' on *page 4-72*
- 4-6 'Application Turnover Check List' on *page 4-73*
- 4-7 'Site Log' on *page 4-74*
- 4-8 'My Trainer' on *page 4-75*

4-1-3 Special Equipment required

To perform these tests, you'll need any of the sector, linear, or convex probes. (Normally you should check all the probes used on the system).

4-2 General procedures



Ultrasound system requires all covers.

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



Energy Control and Power Lockout for Versana Active.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.



Ultrasound System components may be energized.

4-2-1 Overview

Some procedures are used more often than other. The intention with this section is to keep the most used procedures in one place.

4-2-1-1 Contents in this section

- [4-2-1 'Overview' on page 4-4](#)
- [4-2-2 'Power ON/Boot Up' on page 4-5](#)
- [4-2-3 'Power off' on page 4-8](#)
- [4-2-4 'Check System Date and Time' on page 4-10](#)
- [4-2-5 'Logging on to Versana Active as "ADM" on page 4-11](#)
- [4-2-6 'Change Password' on page 4-12](#)
- [4-2-7 'Forgot Password' on page 4-14](#)
- [4-2-8 'Service Key \(SSA\)' on page 4-18](#)
- [4-2-9 'Exit to Windows Desktop from the Versana Active application software' on page 4-19](#)
- [4-2-10 'Removable media' on page 4-19](#)
- [4-2-11 'Backup and Restore Database, Preset Configurations and Images' on page 4-19](#)
- [4-2-12 'Data Management' on page 4-28](#)
- [4-2-13 'Backup' on page 4-28](#)
- [4-2-14 'Restore the factory defaults' on page 4-28](#)
- [4-2-15 'Installation and Setup Procedure for Peripherals' on page 4-28](#)
- [4-2-16 'Where are the User Manuals and the Service Manual?' on page 4-29](#)
- [4-2-17 'How to display or print the PDF files from the Manual CD?' on page 4-29](#)
- [4-2-18 'Cleaning the Trackball' on page 4-30](#)
- [4-2-19 'Cleaning the air filter' on page 4-32](#)
- [4-2-21 'Monitor' on page 4-35](#)
- [4-2-22 'Operator Control Panel' on page 4-35](#)

4-2-2 Power ON/Boot Up

4-2-2-1 Warnings



ALWAYS CONNECT THE ULTRASOUND SYSTEM TO A FIXED POWER SOCKET WHICH HAS THE PROTECTIVE GROUNDING CONNECTOR.



NEVER USE A THREE-TO-TWO PRONG ADAPTER; THIS DEFEATS THE SAFETY GROUND.



ENSURE THAT THE POWER CORD AND PLUG ARE INTACT AND THAT THE POWER PLUG IS THE PROPER HOSPITAL-GRADE TYPE (WHERE REQUIRED).



Ultrasound system requires all covers.

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



Use only power supply cords, cables and plugs provided by or designated by GE.

4-2-2-2 Connect AC (mains) Power to Versana Active

Connecting AC Power to the Versana Active ultrasound unit, involves preliminary checks of the power cord, voltage level and compliance with electrical safety requirements.

If the system is powered by AC adapter:

1. Ensure that the wall outlet is of appropriate type.
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 bottom of the unit.
5. Plug the AC adapter output connector into the system DC input port (located on the system's side connector panel).
6. Plug the AC adapter power cord into a ground, protective earth outlet. And the unit is ready for Power ON/Boot up.

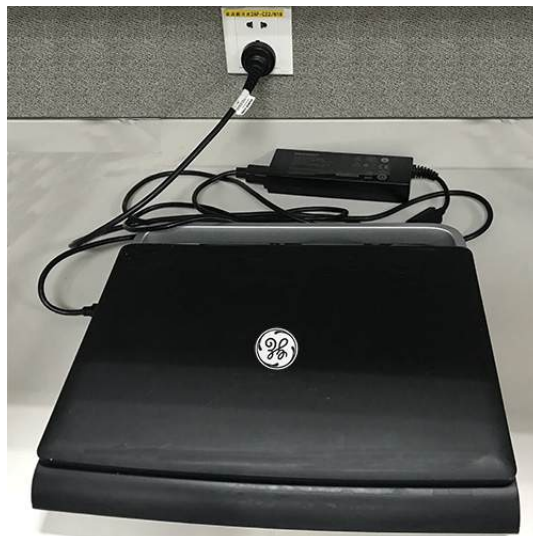


Figure 4-1. Connect AC Adapter

If the system is powered by Versana Active Advanced Cart, please refer to Versana Active Advanced Cart User Instruction for detailed information.

4-2-2-3 Switch ON the AC Power to Versana Active

Press once on the **On/Off** key on the Operator Panel to boot the unit.

During a normal boot, you may observe that:

- a. The unit's ventilation fan starts on full speed, but slows down after a few seconds (listen to the fan sound).
- b. Power is distributed to the peripherals, Operator Panel (Console), Monitor, Front End Processor and Back End Processor.
- c. Back End Processor and rest of scanner starts with the sequence listed in the next steps:
- d. Back End Processor is turned ON and starts to load the software.
- e. The Start Screen is displayed on the monitor.
- f. A start-up bar indicating the time used for software loading, is displayed on the monitor.
- g. The software initiates and sets up the Front End electronics and the rest of the instrument.
- h. The backlight in the keyboard is lit.
- i. As soon as the software has been loaded, either a 2D screen is displayed on the screen, indicating that a probe has been connected, or a No Mode screen is displayed, indicating that no probe has been connected.

NOTE: *Total time used for start-up is typical one and a half minutes or less. If starting after a power loss or a lock-up, the start-up time may be up to four minutes.*

NOTE: *Diagnostic LEDs on the side connector panel indicate the boot up status, refer to "Normal Status" in [Table 7-13 on page 7-57](#).*

NOTE: *Set up Drive D password and System password. See [3-9-1 'EZ configuration Wizard' on page 3-64](#) for more information.*

4-2-3 Power off

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

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

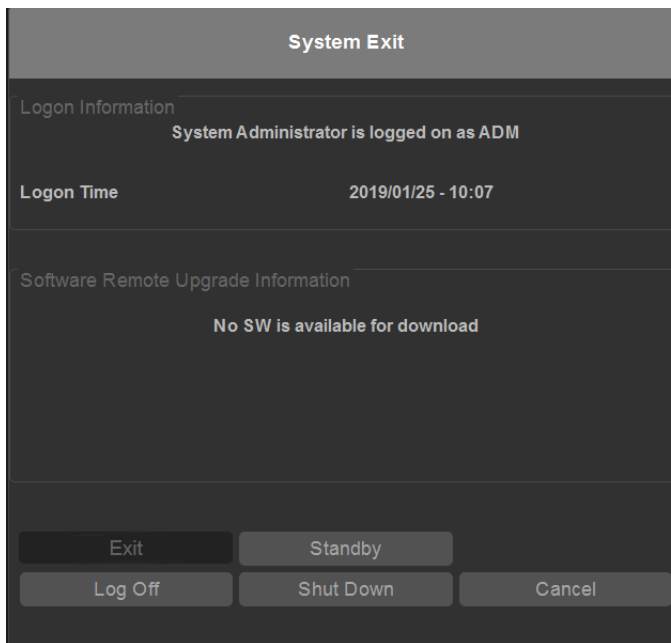


Figure 4-2. System Exit Window

- **Exit**
(Only available when logged in as GE Service with Service Dongle)
Select this button when you want to exit to Windows.
- **Standby**
Use this button to select Standby mode.

4-2-3 Power off(continued)

- **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, use the key-combination <Ctrl+Alt+Delete> to shut down the unit.

NOTE: To enable the key-combination <Ctrl+Alt+Delete>, the dongle should be connected to the system.

- **Cancel**

Use this button to exit from the System-Exit menu and return to the previous operation.

4-2-3-1 System shutdown

Disconnect the Mains Power Cable is necessary. *For example:* Relocating the scanner.



DO NOT unplug and/or transport the unit until after the power off sequence has been completed. Failure to do so may result in corrupted patient files.

4-2-4 Check System Date and Time

A warning message "Please check the system date and time are correct" appears on the screen when the system is powered on. This warning message appears for the possible reasons:

- The system is not boot up for over 14 days.
- The system time has been changed by 24 hours earlier than the current system time of last boot-up.
- The BIOS time is changed by 24 hours earlier than the current system by resetting BIOS time, replacing BIOS module or changing BIOS time.

This warning message is to remind the user to check the system date in case the system date and time is incorrect.

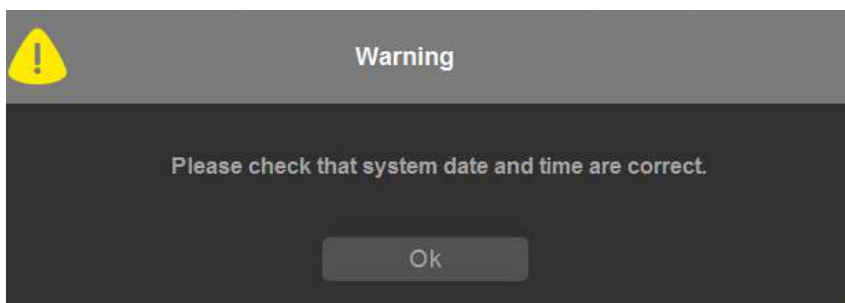


Figure 4-3. Check system date and time message

Move the cursor to OK and press Set key on the control panel to select OK. The system enters.

Check the system date and time. If it is incorrect, follow below steps to reset the system date and time.

- Enter Utility -> System -> General -> Date/Time(restart needed).
- Reset the system date and time.
- Select Apply and then select OK.
- Select Save.

4-2-5 Logging on to Versana Active as “ADM”

Select **Utility** on the control panel, then select **Admin**.

It will bring up the **Operator Login** dialog where you must log on.

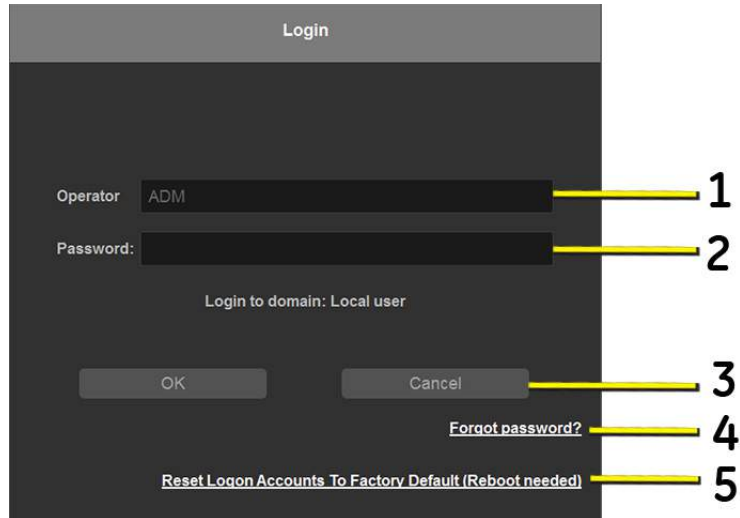


Figure 4-4. Operator Login Window

1. **Operator:** Enter the Operator ID.
2. **Password:** Enter Operator's password (optional).
3. Select type of Logon or Cancel.
 - **OK:** Proceed with the logon
 - **Cancel:** Cancel logon
4. **Forgot Password?:** User can reset a password.
5. **Reset Logon Accounts To Factory Default (Reboot needed):** Plug in SSA Dongle to reset Logon accounts.

NOTE: When you login as administrator for the first time, you are prompted to set a password.

4-2-6 Change Password

User can change ADM password in **Utility -> Admin -> Users -> Identity**.

*NOTE: The new password should meet the password complexity rules for selected Policy Level. Password Level could be set in **Utility -> Admin -> User policies**.*

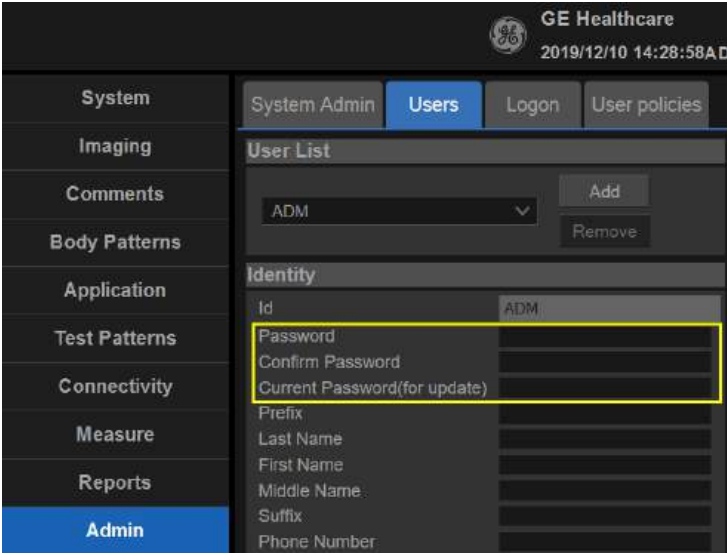


Figure 4-5. Change Password

4-2-6 Change Password(continued)

NOTE: *If user can change the empty password to a new password (non-empty). When first logging into the Versana Active, the user will be prompted to set up 3 password security questions and answers. Record the answers as they're required for password reset.*

The screenshot displays the 'Login' screen of the Versana Active system. It features a dark grey background with white text and input fields. At the top, the word 'Login' is centered. Below it, there are two input fields: 'Operator' with the value 'ADM' and 'Password' with a masked password of ten dots. A text box below the password field lists password requirements: Minimum password length: 0, Maximum password length: 256, Minimum number of character sets required in the password: 0, and a list of requirements for upper case characters, lower case characters, digits (0-9), and non-alphanumeric characters (e.g. !\$,%), all set to 0. Below this, the 'Password Security Questions' section is shown, containing three questions with dropdown menus and corresponding answer input fields. The questions are: 'Question 1: What was your childhood nickname?', 'Question 2: In what city did you meet your spouse/significant other?', and 'Question 3: What is the name of your favorite childhood friend?'. At the bottom of the form, there are 'OK' and 'Cancel' buttons.

Figure 4-6. Set Password Security Questions

4-2-7 Forgot Password

If you forgot the ADM login password, the system will help you reset a new password.

To reset your password,

1. Select **Forgot password?**

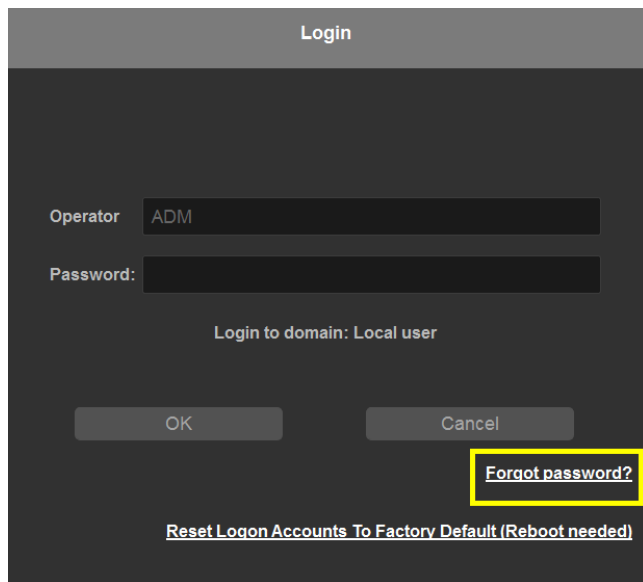
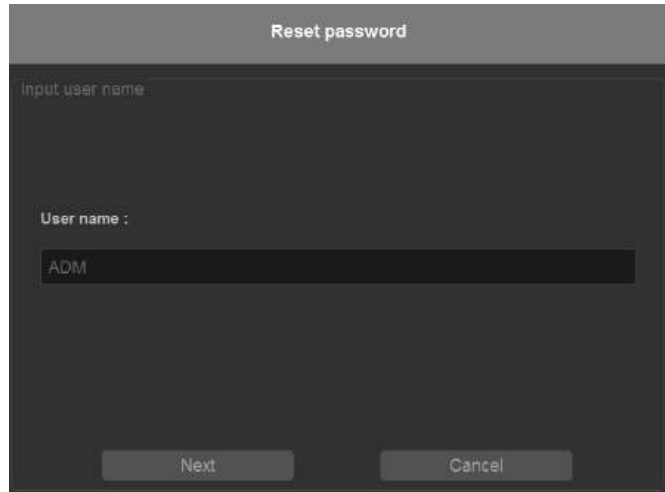


Figure 4-7. Select Forgot password?

4-2-7 Forgot Password(continued)

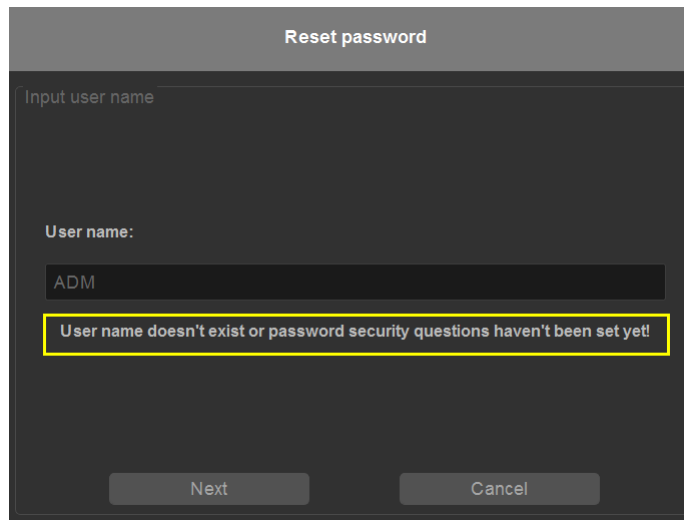
2. Reset password pop-up appears. Input user name and press **Next** to continue.



The screenshot shows a dark-themed dialog box titled "Reset password". At the top, it says "Input user name". Below that, there is a label "User name :" followed by a text input field containing the text "ADM". At the bottom of the dialog, there are two buttons: "Next" on the left and "Cancel" on the right.

Figure 4-8. Input user name

If user types the wrong user name or has not set up password security questions yet, a warning message will appear on the screen. Press **Cancel** to exit to Operator Login window and the following steps will be skipped.

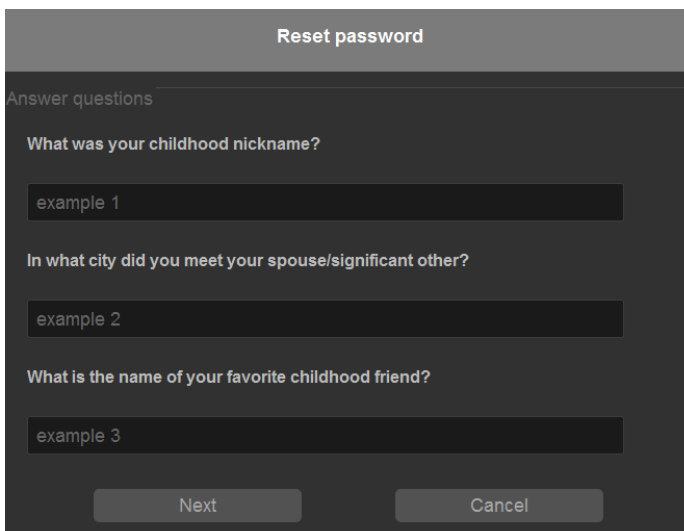


The screenshot shows the same "Reset password" dialog box as in Figure 4-8. The "User name:" field still contains "ADM". A yellow rectangular box highlights a warning message that has appeared below the input field: "User name doesn't exist or password security questions haven't been set yet!". The "Next" and "Cancel" buttons are still visible at the bottom.

Figure 4-9. Warning Message

4-2-7 Forgot Password(continued)

3. Answer 3 password security questions that you previously set up when creating ADM password (non-empty) for the first time.



The screenshot shows a dark-themed dialog box titled "Reset password". Below the title is a section labeled "Answer questions". There are three questions, each followed by a text input field:

- Question 1: "What was your childhood nickname?" with an input field containing "example 1".
- Question 2: "In what city did you meet your spouse/significant other?" with an input field containing "example 2".
- Question 3: "What is the name of your favorite childhood friend?" with an input field containing "example 3".

At the bottom of the dialog box are two buttons: "Next" and "Cancel".

Figure 4-10. Answer questions

4-2-7 Forgot Password(continued)

4. Set up the new ADM password, based on the selected Policy Level.

Reset password

Input new password

New password:

Confirm password:

Minimum password length: 10
 Maximum password length: 256
 Minimum number of character sets required in the password: 4
 - Minimum number of upper case characters: 1
 - Minimum number of lower case characters: 1
 - Minimum number of digits (0-9): 1
 - Minimum number of non-alphanumeric characters(e.g. !\$#,%): 1
 Password cannot contain user name: Yes

OK Cancel

Figure 4-11. Input a new password

NOTE: *If the password you type doesn't meet the password complexity rules of selected Policy Level, a warning message will appear on the screen and you will be prompted to correct the password.*

Reset password

Input new password

The number of character sets in the password is less than required!

New password:

Confirm password:

Minimum password length: 10
 Maximum password length: 256
 Minimum number of character sets required in the password: 4
 - Minimum number of upper case characters: 1
 - Minimum number of lower case characters: 1
 - Minimum number of digits (0-9): 1
 - Minimum number of non-alphanumeric characters(e.g. !\$#,%): 1
 Password cannot contain user name: Yes

OK Cancel

Figure 4-12. Warning Message

4-2-8 Service Key (SSA)

A Service Key and a proprietary GE Service password are necessary for use by GE Service when performing proprietary level diagnostics like accessing the desktop on the BEP. The password used with the GE service key changes at specific intervals.

The SSA key provides secure access for GE service personnel to advanced tools to service the system.

SSA is a class M key with the following characteristics:

- Access to all service features
- Access to Windows Desktop
- Key must be renewed every 30 days
- Tied to SSO
- Password locked via key pad

Please complete the course on GE Learning before using SSA:

Course name: Secure Service Access Training

Course ID: GEHC-SVCS-63061025

NOTE: Press I Agree to enter the Maintenance Access Screen when below Information dialogue window appears. Press OK before the status bar completes, otherwise the system may enter scanning screen.

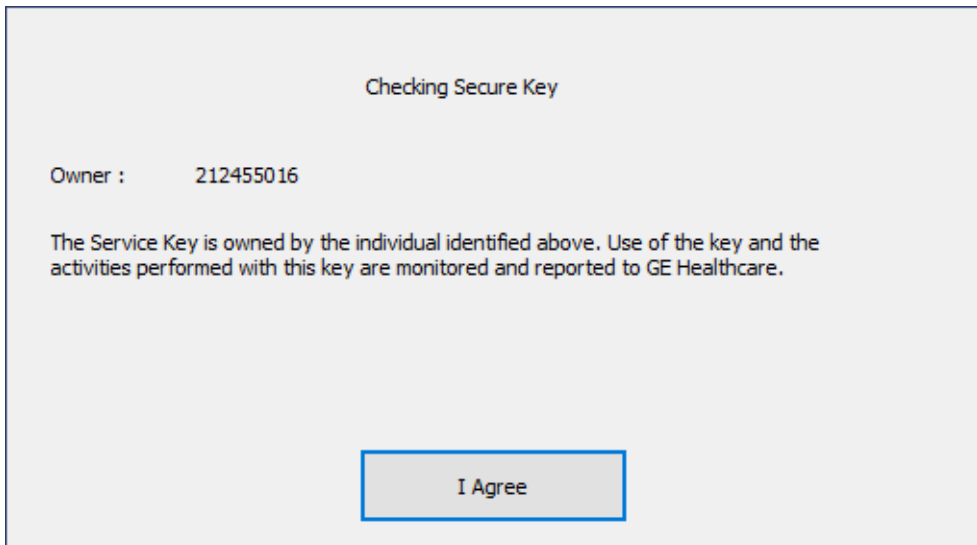


Figure 4-13. Service Key Information

4-2-9 Exit to Windows Desktop from the Versana Active application software

If you want to exit to the Windows Desktop when the application software is running, please refer to Proprietary Service Manual.

4-2-10 Removable media

Refer to the latest revision of the User Manual to perform the following tasks:

- Using Removable Media
- Labeling Removable Media
- Formatting Removable Media
- Verifying Removable Media

4-2-11 Backup and Restore Database, Preset Configurations and Images

NOTE: Always save presets before any software reload. This ensures the presets loaded after the software reload are as up-to-date as possible.

All user presets except changes to Summary, Anatomy, and Biometry pages, can be saved on an DVD-R disk (or USB memory device) for reloading on the system.

NOTE: Presets should NOT be saved on the same USB memory device (or DVD-R disk) as images. The Archive Menu lists the images but does NOT list the presets stored on a USB memory device (or DVD-R disk).

4-2-11-1 Formatting Media

1. Select **Utility -> Connectivity -> Removable Media**.
2. Select the media type from the drop down menu.
3. Enter the label for the media. It is best to use all capital letters with no spaces or punctuation marks. Select Format.

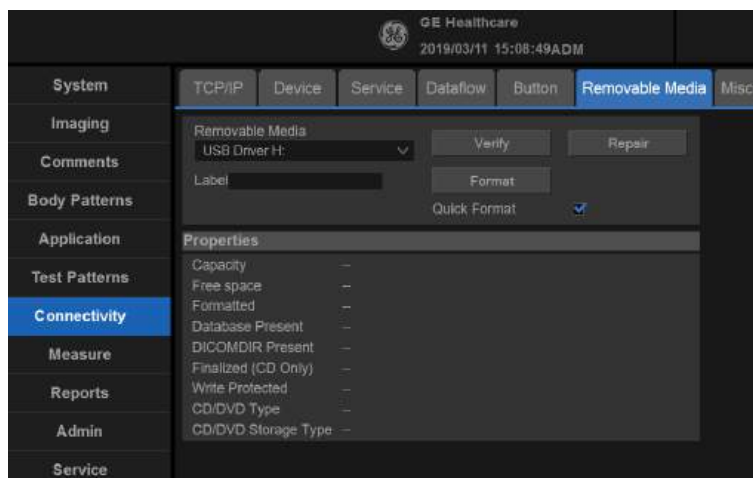


Figure 4-14. Format and Verify Media

4. The system displays a pop-up menu, as shown in [Figure 4-15](#), select OK to continue.

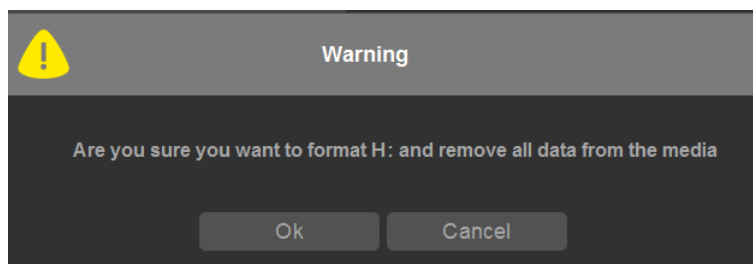


Figure 4-15. Format Warning Pop-up Window

5. If desired, verify that the format was successful by returning to Utility-> Connectivity->Removable Media and selecting Verify.

4-2-11-2 Backup System Presets and Configurations

NOTE: Always backup any preset configurations before a software reload. This ensures that if the presets need to be reloaded, after the software update, they will be the same ones the customer was using prior service.

1. Insert a formatted media into the drive.
2. Enter enter Utility-> System-> Backup/Restore.

NOTE: If you are not logged in as GE Service or with administrator privileges, the Operator Login window is displayed. Log on with administrator privileges.

3. In the Backup list, select Patient Archive, User Defined Configuration and Service.
4. In the Media field, select CD/DVD (or USB memory device).
5. Select Backup.

The system performs the backup. As it proceeds, status information is displayed on the Backup/Restore screen.

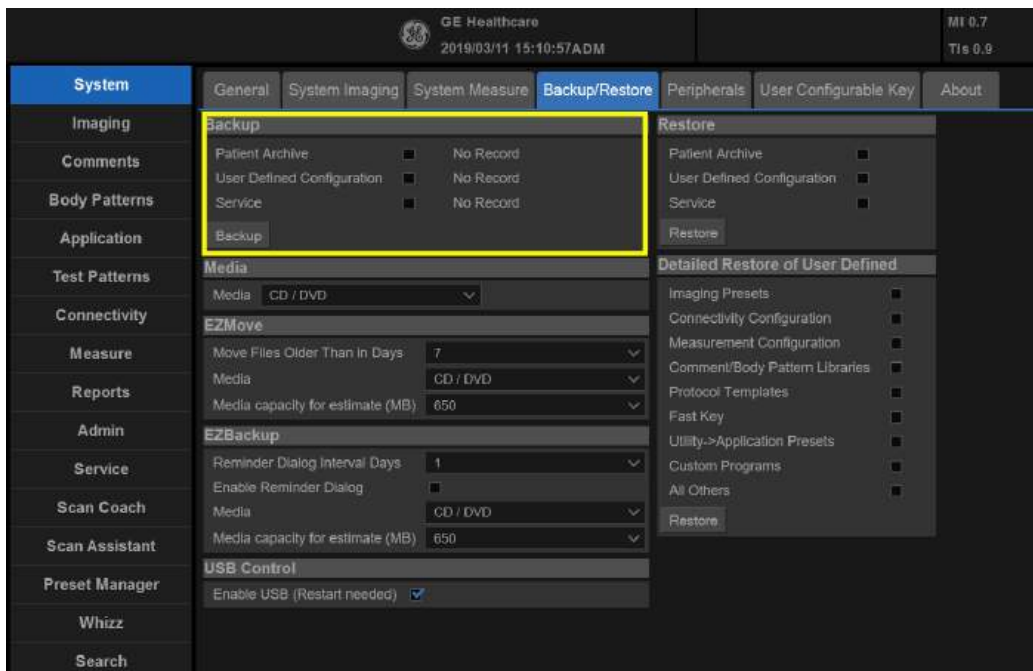


Figure 4-16. Backup/Restore Menu

4-2-11-3 Restore System Presets and Configurations



CAUTION

The restore procedure overwrites the existing database on the local hard drive. Make sure to insert the correct CD (or USB memory device).

1. Insert the Backup/Restore CD/DVD (or USB memory device) into the drive.
2. Enter enter Utility-> System-> Backup/Restore.

NOTE:

If you are not logged in with administrator privileges, the Operator Login window is displayed. Log on with administrator privileges.

3. In the Restore list, select Patient Archive, User Defined Configuration and Service.
4. In the Media field, select the Backup/Restore CD/DVD (or USB memory device).
5. Select Restore.

The system performs the restore. As it proceeds, status information is displayed on the Backup/Restore screen.

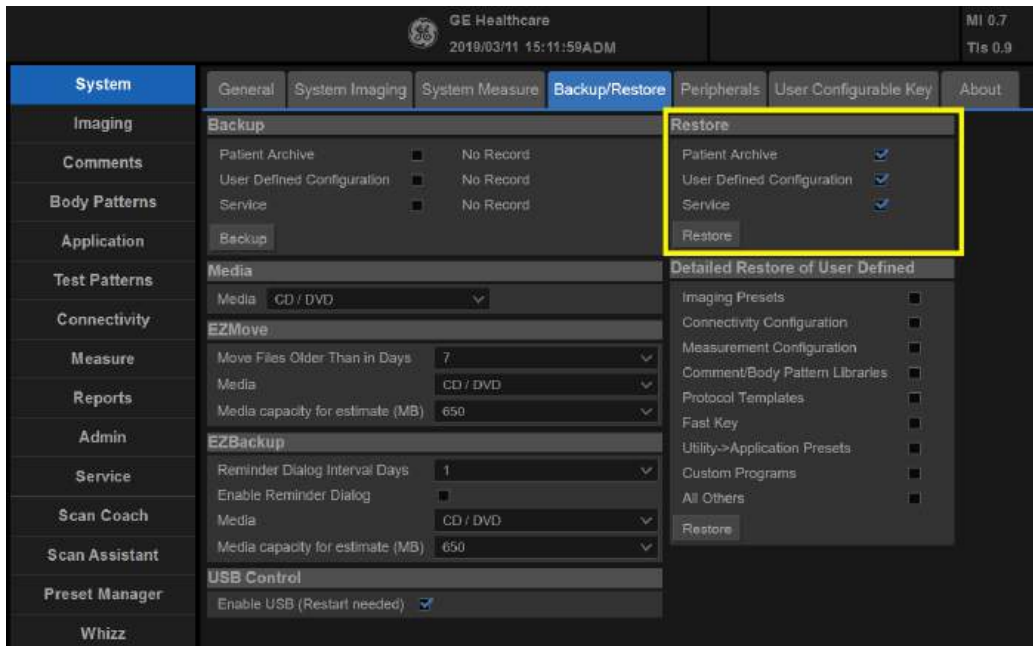


Figure 4-17. Restore message

4-2-11-4 Archiving Images

1. Insert the archive media.
2. To format the archive media, enter Utility-> Connectivity-> Removable Media.
3. Format the CD. Verify the format if desired.
4. Images will be moved from the hard drive by date. Therefore, the best way is to label media by date.

NOTE: *Images will be moved from the hard drive by date. Therefore, the best way to label media is by date. When images are moved to the archive media, they will be deleted from the system hard drive. However, the patient database (backed up earlier) maintains pointers to the location of the images on the archive media.*

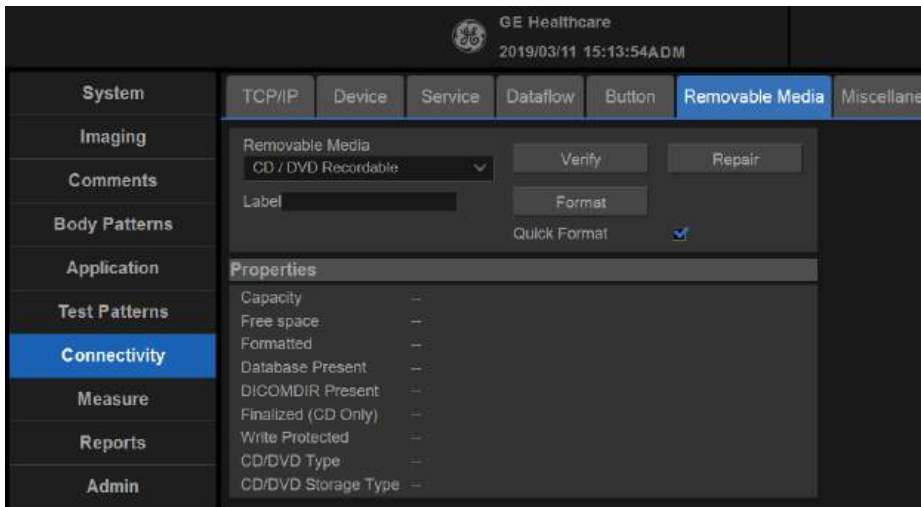


Figure 4-18. Format Media Screen

5. Enter Utility-> System-> Backup/Restore.

4-2-11-4 Archiving Images(continued)

6. Select “Move File Older Than in Days”.

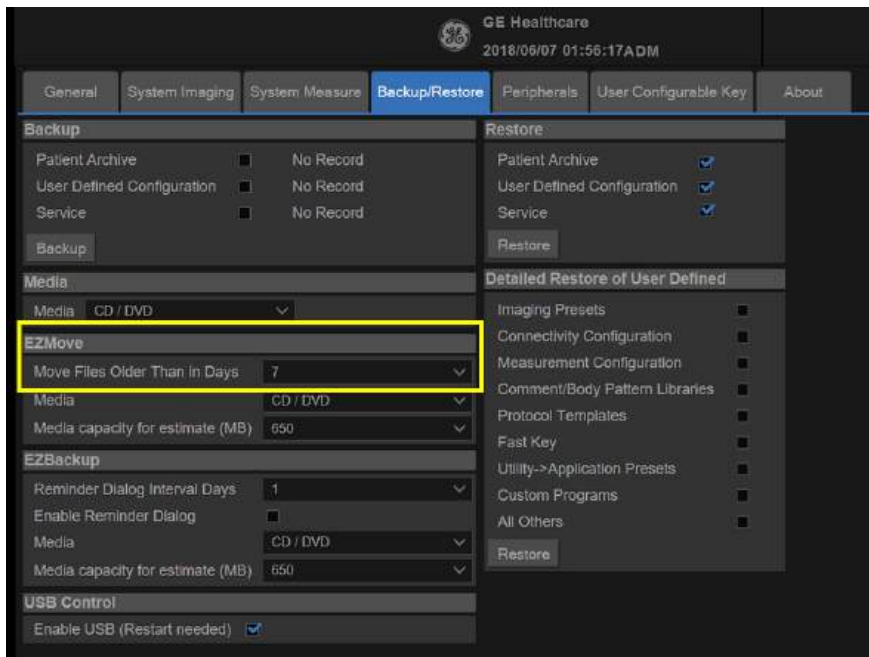


Figure 4-19. EZBackup/Move

7. Press **EZBackup/EZMove**.

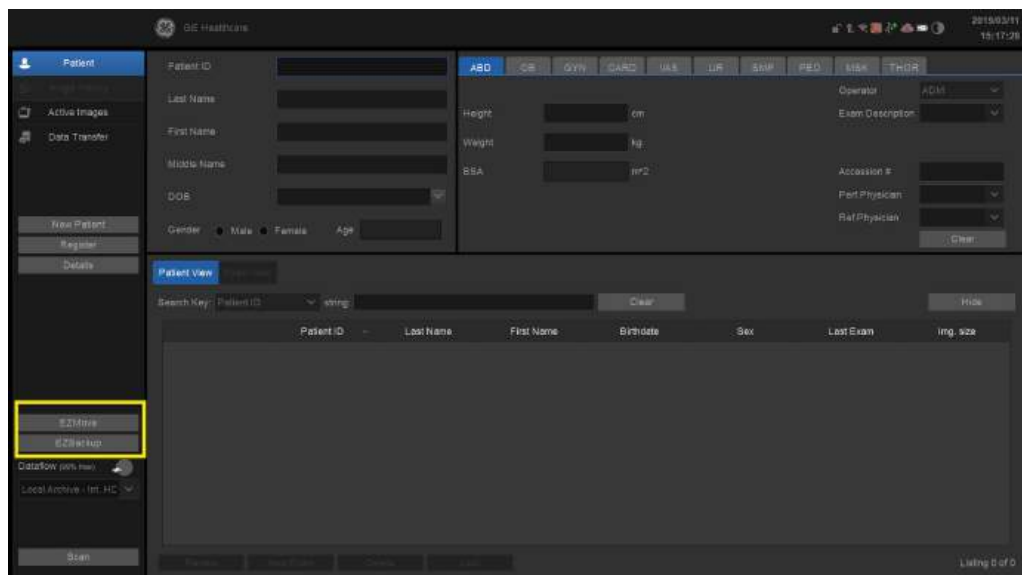


Figure 4-20. EZBackup Wizard 1

4-2-11-4 Archiving Images(continued)

8. Verify the information on the first page of EZBack/EZMove wizard, then select Next. 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.

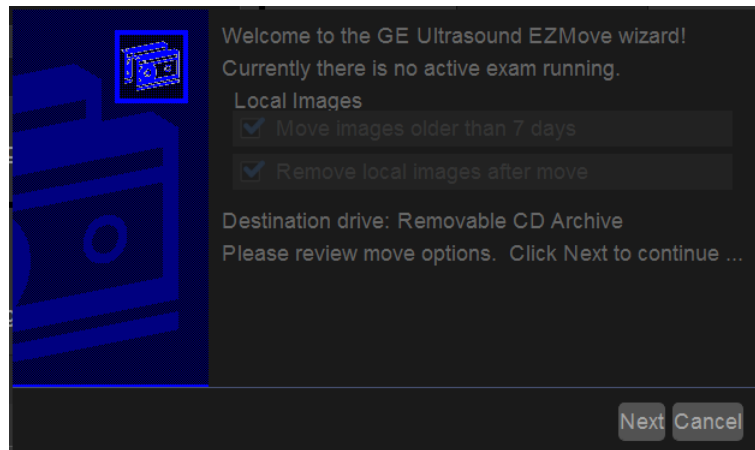


Figure 4-21. EZBackup Wizard 1

9. It indicates the size of the data and the storage. Select Next to continue.

NOTE: *The calculation for the number of backup CD is only an estimate. Allow for one additional CD when performing an EZBack/EZMove.*

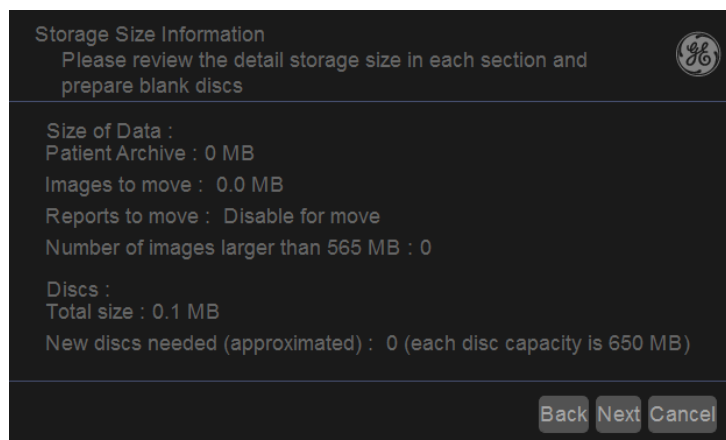


Figure 4-22. EZBackup Wizard 2

4-2-11-4 Archiving Images(continued)

NOTE: This message “Please insert a blank media...” appears if you press Next without inserting the backup media. Insert the media and continue.

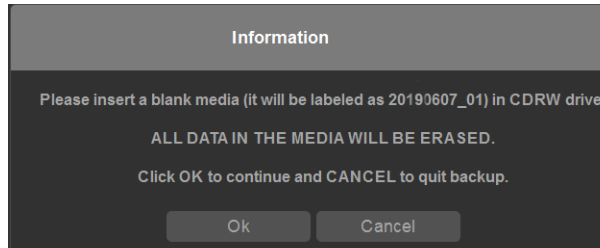


Figure 4-23. Insert Media Message

10. The status menu appears. When the backup/move has been complete, press Next.

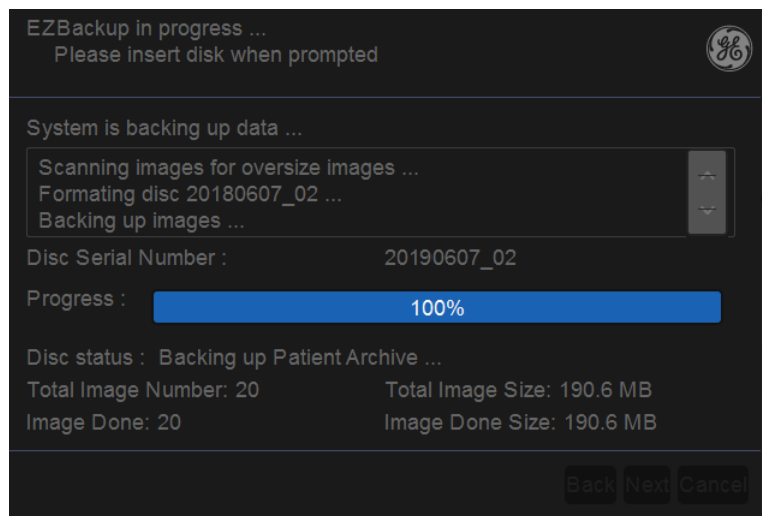


Figure 4-24. EZBackup Wizard 3

NOTE: If you need to insert the next media, a message appears providing you with the media label.

4-2-11-4 Archiving Images(continued)

11. When the backup is complete, the completion wizard page appears. Press Finish.

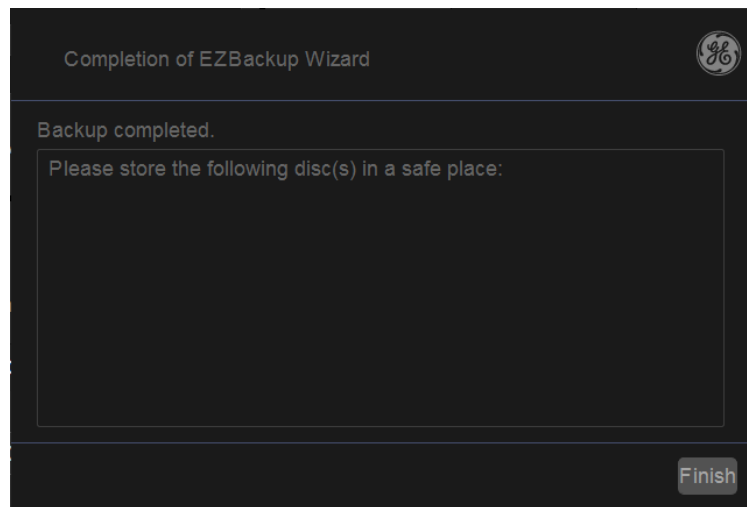


Figure 4-25. EZBackup Completion Window

All databases, presets and images should now be saved to removable media.

NOTE: *After EZBackup completed, system will eject the removable media automatically. No need to press F3 key to eject it.*

4-2-12 Data Management

Refer to the latest revision of the Versana Active Basic User Manual to perform the following tasks:

- Configuring the Disk Management Function
- Setting the Disk Management Schedule
- Configuring Data Management Settings
- Configuring destination Device Setting
- Running the Disk Management Function
- Starting Disk Management Manually

4-2-13 Backup

For more information, refer to the latest revision of the Versana Active Basic User Manual.

4-2-14 Restore the factory defaults

For instructions, please see “Data Backup and Restore” in the Basic User Manual/User Guide.



To avoid not being able to connect to Local Archive, *connectivity.res* and *IPSave.in* “*D:\Scanner\target\resources\userdefs*” should not be deleted. If they are deleted, please rewrite the serial number.

4-2-15 Installation and Setup Procedure for Peripherals

Please refer to [3-8-3 ‘Peripherals Installation Instructions’ on page 3-31](#).

4-2-16 Where are the User Manuals and the Service Manual?

Online versions of the User Manuals are available via the help function.

Both the User Manuals and the Service Manual are delivered as PDF files on a CD-ROM. Paper copies may be ordered from GE.

4-2-17 How to display or print the PDF files from the Manual CD?

1. Insert the CD-R disk (CD-ROM) into the CD-drive on a PC or Laptop with Adobe Acrobat Reader.



Do not try to use the Versana Active to read these files, it will not work!

2. Follow the instructions on the screen to display the manual of choice.
3. Before printing the complete manual, or pages from the manual, select **File > Print**.
4. Select the **paper size** and choose **Portrait**.
5. Select **Print** to start printing. In the pop up window, you may choose which pages to print and the number of copies you want to print (usually 1 copy).

4-2-18 Cleaning the Trackball



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 Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.

4-2-18-1 Manpower

One person, 10 minutes

4-2-18-2 Tools

- Antistatic brush and/or antistatic vacuum cleaner

4-2-18-3 Preparations

To get access to the trackball for cleaning, you must perform the following steps:

1. Power down the system.
2. Disconnect the mains power cable from the wall outlet.

Follow these links if you need more information: [See 4-2-3 'Power off' on page 4-8 for more information.](#)

4-2-18-4 Clean the Trackball

Dust is often building up behind the ball, so it interferes with the ball rotation and for optical trackballs the light used for sensing. To get access for cleaning, you need to remove the ball.

The ball is held in position by the Dust Gasket.

1. Power off the system.
2. Rotate the dust gasket counterclockwise until it can be removed from the keyboard.

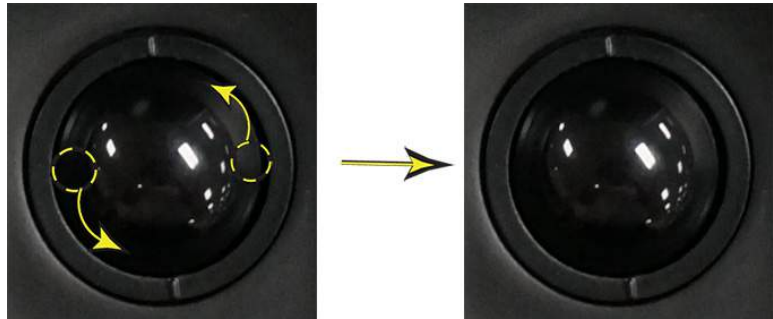


Figure 4-26. Remove the Retainer

3. Separate the trackball and the gasket. Wipe off any oil or dust from the trackball, gasket and the trackball housing using a cleaner or cotton swab.
4. Assemble the trackball and gasket, then put it into the housing and rotate it clockwise until its notches are set in the position.



CAUTION

When cleaning, make sure not to spill or spray any liquid into the trackball housing (keyboard or system).

4-2-18-5 Test the Trackball

Power up the system and test that the trackball now works as intended.

4-2-19 Cleaning the air filter

Clean the system's air filter to ensure that a clogged filter does not cause the system to overheat and reduce system performance and reliability. It is recommended the filter be cleaned every two weeks, but the requirements will vary due to your system use.



DO NOT operate the unit without the air filter in place.

Allow the air filter to dry thoroughly before re-installing it on the unit.

4-2-19-1 Cleaning

1. Power off the system.
2. Remove the air filter with hand.



Figure 4-27. Remove the Air Filter

4-2-19 Cleaning the air filter(continued)

3. Dust the filter with a vacuum cleaner and/or wash it with a mild soapy solution.
If washed, rinse and dry the filters before re-installation.
4. Put back the air filter in the direction as marked on the bottom cover.

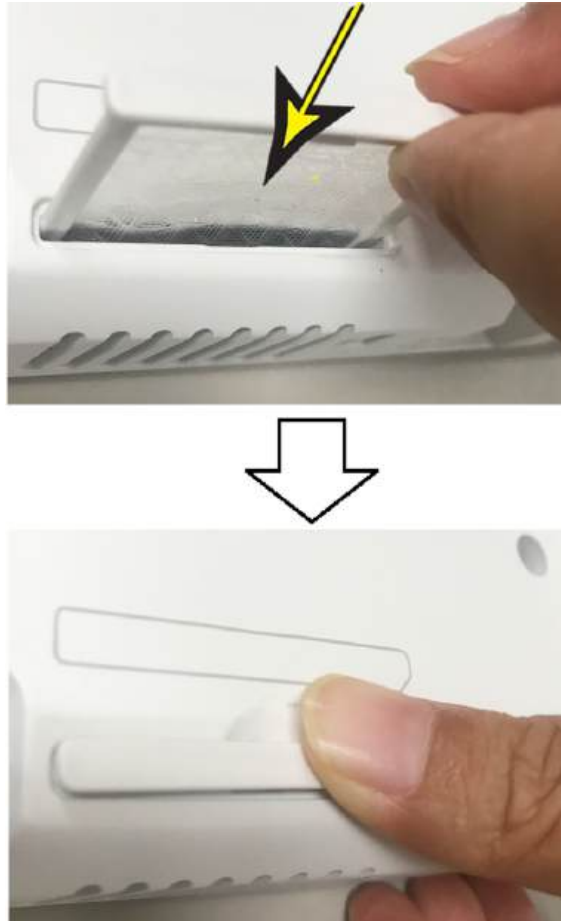


Figure 4-28. Install the Air Filter

4-2-20 Cleaning the gel warmer

The reservoir of the gel warmer is designed to hold the redundant gel temporarily. User needs to clean the reservoir in time to avoid reservoir being full and leaking inside of the system.

Follow below steps to remove and clean the reservoir:

1. Spin the reservoir counterclockwise to remove it from the gel warmer.
 - a. Clean the reservoir.
 - b. If there is already gel leaked to the inside of gel warmer, please clean it before re-install the reservoir.

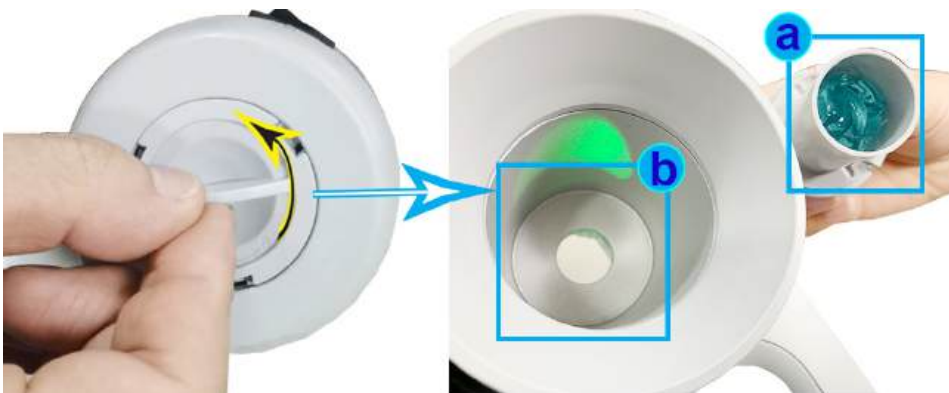


Figure 4-29. Remove the reservoir from gel warmer

2. Re-install the reservoir to the gel warmer.



CAUTION

If the gel leaked in the gel warmer always cannot be cleaned on time, it may cause a short circuit in the internal board.

4-2-21 Monitor

To clean the monitor face:

Use a soft, folded cloth. Gently wipe the monitor face.

DO NOT use a glass cleaner that has a hydrocarbon base (such as Benzene, Methyl Alcohol or Methyl Ethyl Kentone) on monitors with the filter (anti-glare shield). Hard rubbing will also damage the filter.

NOTE: *When cleaning the screen, make sure not to scratch the monitor.*

4-2-22 Operator Control Panel

To clean the operator control panel:

1. Moisten a soft, non-abrasive folded cloth with a mild, general purpose, non-abrasive soap and water solution.
2. Wipe down operator control panel.
3. Use a cotton swab to clean around keys or controls. Use a toothpick to remove solids from between keys and controls.

NOTE: *When cleaning the operator control panel, make sure not to spill or spray any liquid on the controls, into the system cabinet, or in the probe connection receptacle.*

NOTE: *In case of SARS, use bleach, or Cidex in a normal diluted form for cleaning/disinfecting the operator panel.*

NOTE: *DO NOT use T-spray or Sani Wipes on the control panel.*

NOTE: *DO NOT remove AN Key Film when cleaning the operator control panel.*



CAUTION

Before cleaning the control panel, make sure the key cap is firmly in place.

4-3 Disk Encryption/Decryption

4-3-1 Overview

Disk Encryption is a function to protect the patient information on the device and prevent unauthorized access to PI/PHI, especially when the device is stolen. The encryption AES is 256 bit.

NOTE: Disk Encryption can also protect the user data stored on removable device.

NOTE: The steps for Removable Media Encryption and Local Patient Data Drive Encryption are the same.



The user must make backups and take care of the encryption password/passphrase and recovery key. It is the customer's responsibility for storing the data. GE will have no back door or any responsibility or possibility of recovering the data.

4-3-2 Disk Encryption

NOTE: Encryption is set as “ON” for Local patient data drive after software installation. User can not turn off the Disk Encryption. But user can turn on and off the Disk Encryption for Removable Media.



Figure 4-30. Encryption ON for R1.1.x

You could change password as you wish.

- Select Change Password and you will be prompted to enter old password/passphrase which you previously set up in EZ Configuration Wizard, refer to step 3 of [3-9-1 'EZ configuration Wizard'](#) on [page 3-64](#).

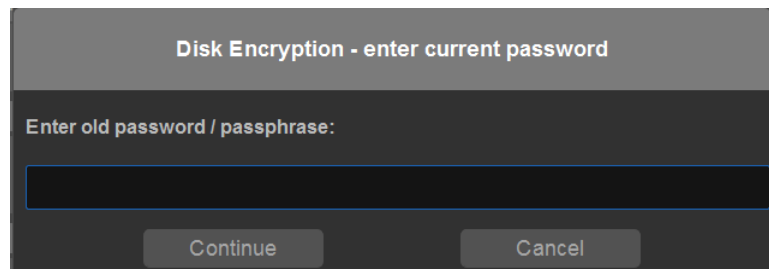


Figure 4-31. Enter Current Password

4-3-2 Disk Encryption(continued)

- Enter new password/passphrase, and re-enter it to confirm.

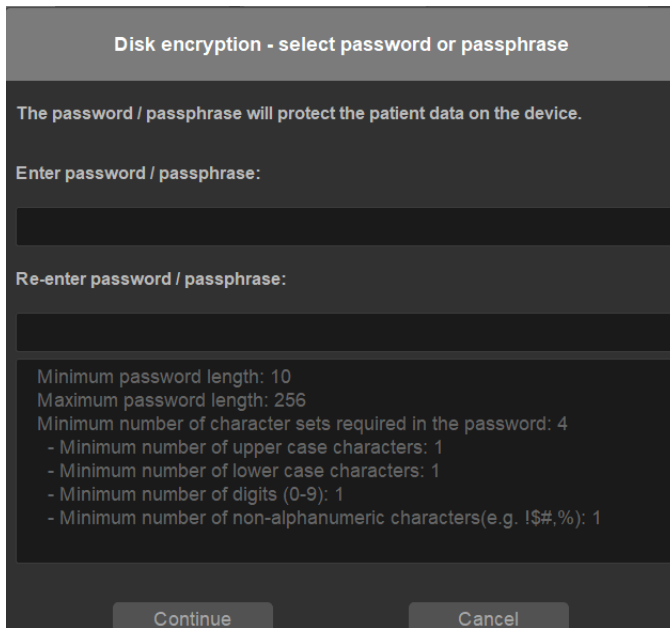


Figure 4-32. Change Password 1

- Press **OK**.

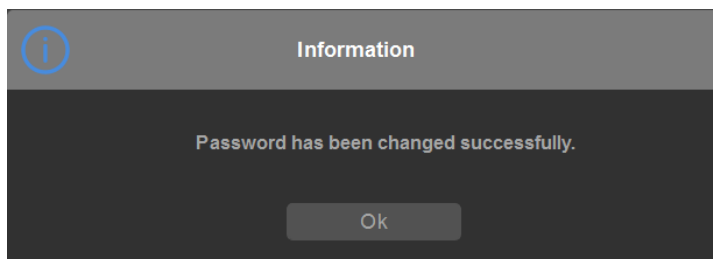


Figure 4-33. Change Password 2

4-3-2 Disk Encryption(continued)

Turn on Disk Encryption of Removable Media on R1.1.x.

1. Login as administrator. Press **Utility -> Admin -> System Admin -> Disk Encryption**.

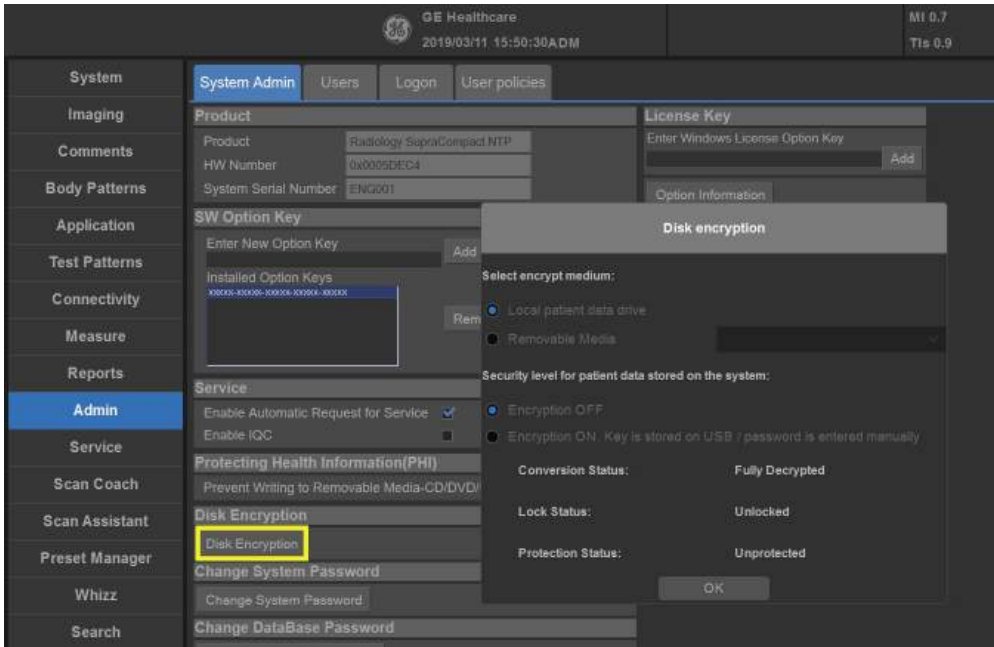


Figure 4-34. Disk Encryption 1

2. Select **Encryption ON**. A confirmation message pops up, press **Continue** to continue the encryption process.



Figure 4-35. Disk Encryption

4-3-2 Disk Encryption(continued)

3. Enter a password or a passphrase and re-enter to confirm. Press **Continue**.



Figure 4-36. Disk Encryption 3

4-3-2 Disk Encryption(continued)

4. Insert a USB and select it to record the recovery key. You can also press **Print recovery key** to print the recovery key, or you can press **Hide recovery key** to hide the recovery key.

Press **Continue**.



Figure 4-37. Disk Encryption 4

4-3-2 Disk Encryption(continued)

5. When the recording process is completed, a confirmation dialog pops up, press **OK**.

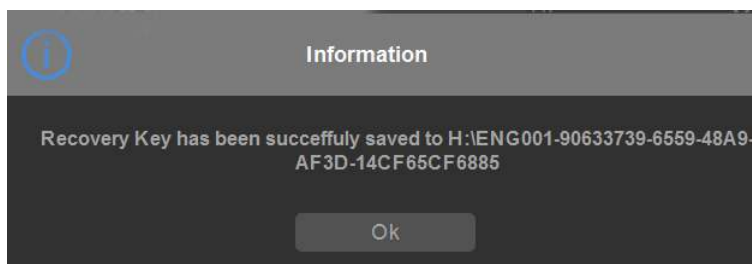


Figure 4-38. Disk Encryption 5

6. Encryption process begins.
You can press **Pause** to pause the encryption process.

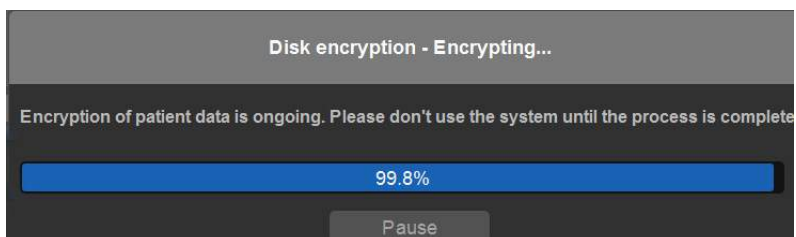


Figure 4-39. Disk Encryption 6

7. When the encryption process completes, press **Finish**.

NOTE: *The encryption process for patient data drive may take thirty minutes or more.*



Make sure to keep the password/passphrase, recovery key and any back up of these in secure place, not accessible for unintended audience.

4-3-3 Pause Encryption

1. During encryption process, you can press Pause to stop the encryption process.



Figure 4-40. Encryption Pause 1

2. A confirmation dialog pops up, press **Yes** to continue or **No** to cancel.

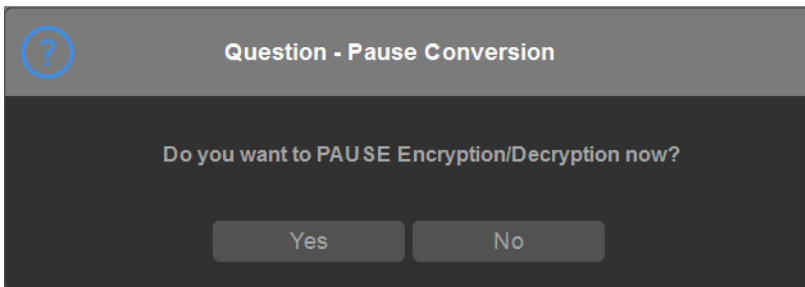


Figure 4-41. Encryption Pause 2

4-3-4 Resume Encryption

1. Press Utility -> Admin -> System Admin -> Disk Encryption. Press Resume.

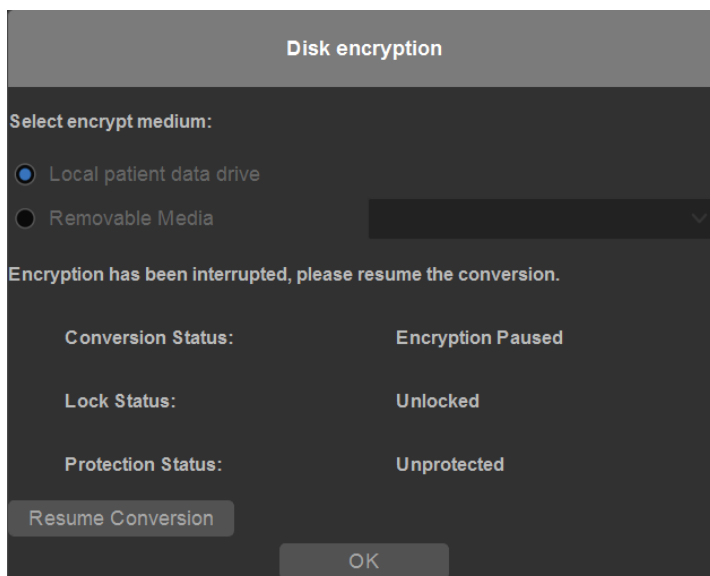


Figure 4-42. Encryption Resume 1

2. A confirmation dialog pops up, press **Yes** to resume conversion or press **No** to cancel.



Figure 4-43. Encryption Resume 2

4-3-4 Resume Encryption(continued)

3. Encryption of patient data is ongoing. Please do not use the system until the process is completed.

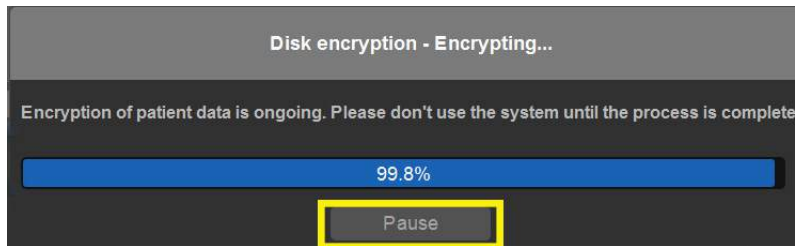


Figure 4-44. Encryption Resume 3

4-3-5 Change Encryption Password

After the encryption process is completed, you can change the password as you wish (for Disk Encryption of Removable Media on R1.1.x).

1. Press **Utility -> Admin -> System Admin -> Disk Encryption**. Press **Change Password**.

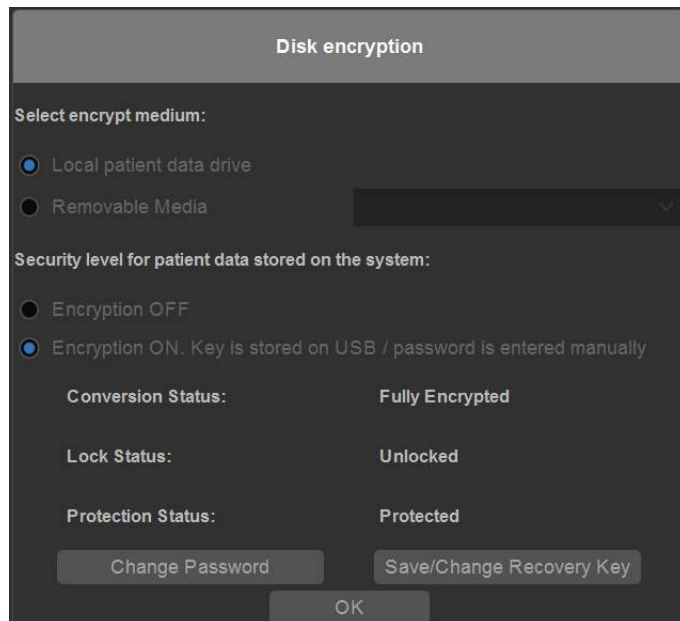


Figure 4-45. Change Password 1

4-3-5 Change Encryption Password(continued)

2. Enter new password/passphrase, and re-enter it to confirm.

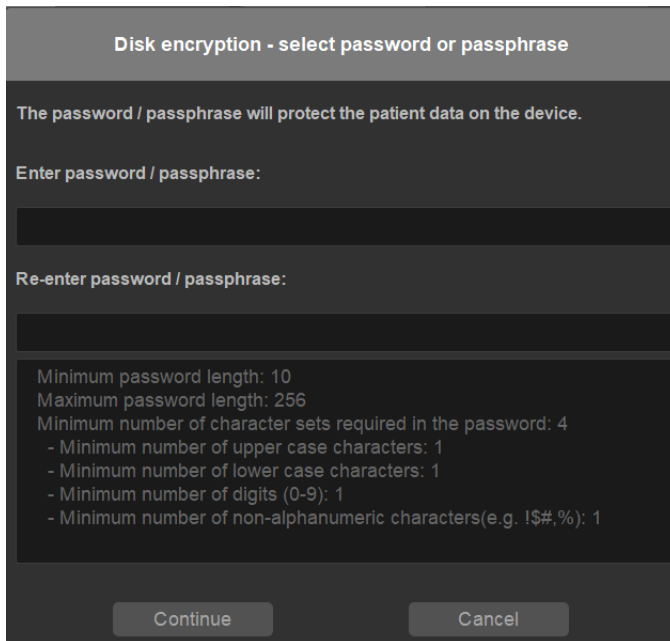


Figure 4-46. Change Password 2

3. Press **OK**.

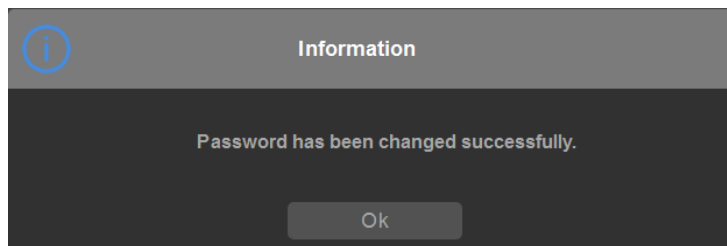


Figure 4-47. Change Password 3

4-3-6 Change Recovery Key

After the encryption process is completed, you can change the recovery key as you wish (for Disk Encryption of Removable Media on R1.1.x).

1. Press **Utility -> Admin -> System Admin -> Disk Encryption**. Press **Save/Change Recovery Key**.

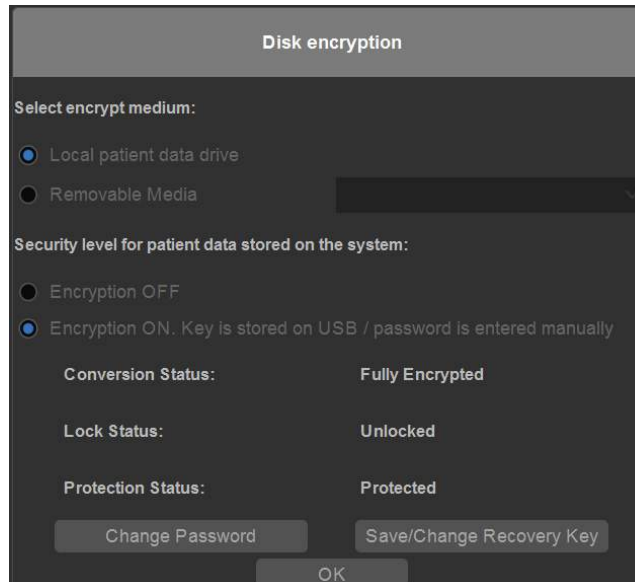


Figure 4-48. Change Recovery Key 1

2. Insert a USB to store the new recovery key.

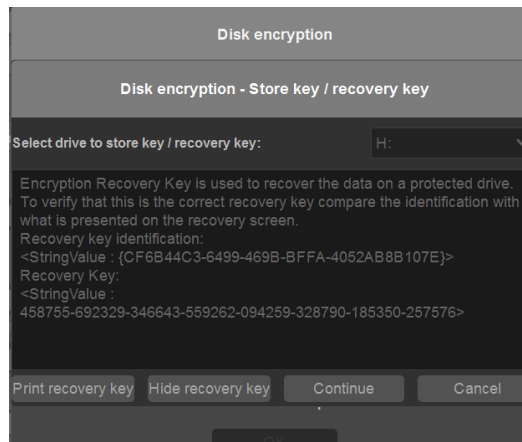


Figure 4-49. Change Recovery Key 2

4-3-6 Change Recovery Key(continued)

3. Press **OK**.

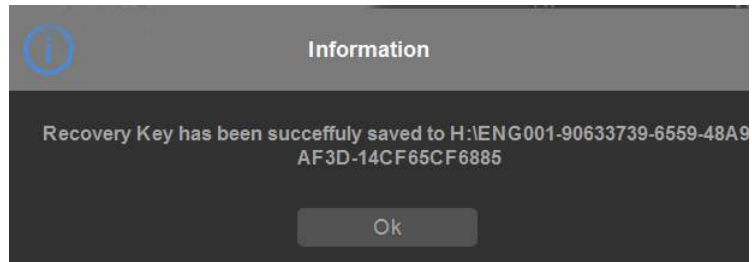


Figure 4-50. Change Recovery Key 3

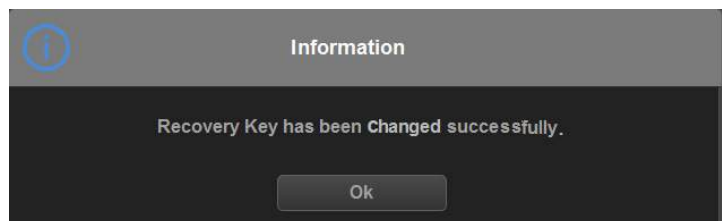


Figure 4-51. Change Recovery Key 4

4-3-7 Unlock with user entered key & recovery key

When the patient data is in locked status, you can unlock it with user entered key and recovery key.

You can insert the USB with recovery key, or you can input the password or recovery key manually to unlock the system.

NOTE: *If you press **Cancel**, the system will stay in locked status and some of the functions will be not available.*

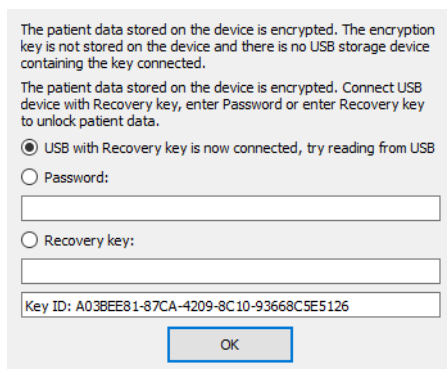


Figure 4-52. Unlock Dialog

4-3-8 Disk Decryption

1. For Disk Encryption of Removable Media on R1.1.x, if you want to decrypt the patient data, you can press **Utility** -> **Admin** -> **System Admin** -> **Disk Encryption**. Select **Encryption Off**.



Figure 4-53. Decryption 1

2. A confirmation dialog pops up, press **Yes** to continue.
3. Decryption of patient data is ongoing. Please don't use the system until the process is completed.

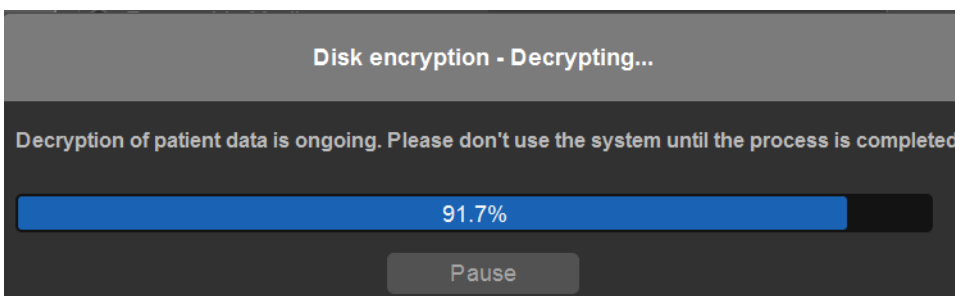


Figure 4-54. Decryption 2

4. When the decryption process is completed, press **Finish**.

4-4 Functional checks

4-4-1 Overview

In this section, the functional checks for Versana Active are described. Functional checks are used to verify that the product works as intended. Functional checks may also be used during troubleshooting.

4-4-2 Contents in this Section

4-4-3 Preparation

Turn on power to Versana Active. For detailed description, [See 4-2-2 'Power ON/Boot Up' on page 4-5 for more information.](#)

4-4-4 Basic Controls

4-4-4-1 Control Panel

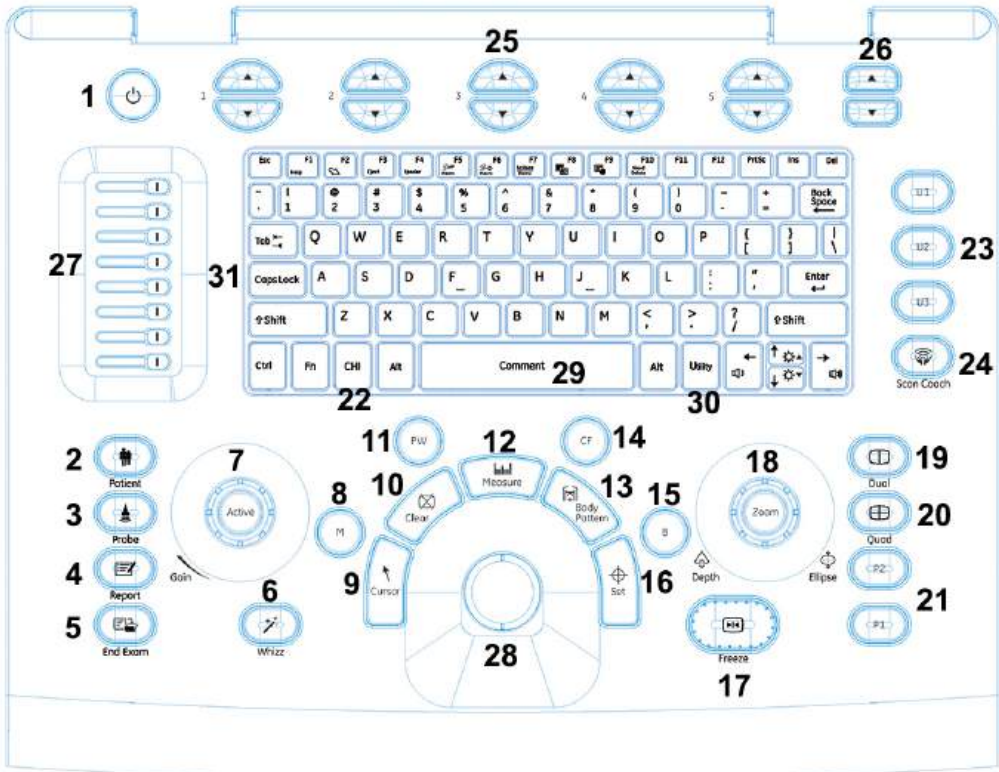


Figure 4-55. Control Panel Map

- | | | |
|--------------------|---|----------------------------|
| 1. Power On/Off | 12. Measure key | 23. User Configurable Keys |
| 2. Patient key | 13. Body Pattern key | 24. Scan Coach key |
| 3. Probe key | 14. CF Mode | 25. Primary Menu keys |
| 4. Report key | 15. B Mode | 26. Up/Down keys |
| 5. End Exam key | 16. Set key | 27. TGC |
| 6. Whizz key | 17. Freeze key | 28. Trackball |
| 7. Active/Gain key | 18. Depth/Ellipse/Zoom key | 29. Comment key |
| 8. M Mode | 19. Dual key | 30. Utility |
| 9. Cursor key | 20. Quad key | 31. Alphanumeric Keyboard |
| 10. Clear key | 21. Physical print buttons (Utility
-> Connectivity -> Button) | |
| 11. PW Mode | 22. CHI key | |

4-4-4-2 Primary Menu Keys Tour

Press primary keys to adjust the value of the softmenu associated with it.

Press up/down buttons to turn the menu page up and down.



Figure 4-56. Primary Menu Keys Tour

4-4-5 Control Panel

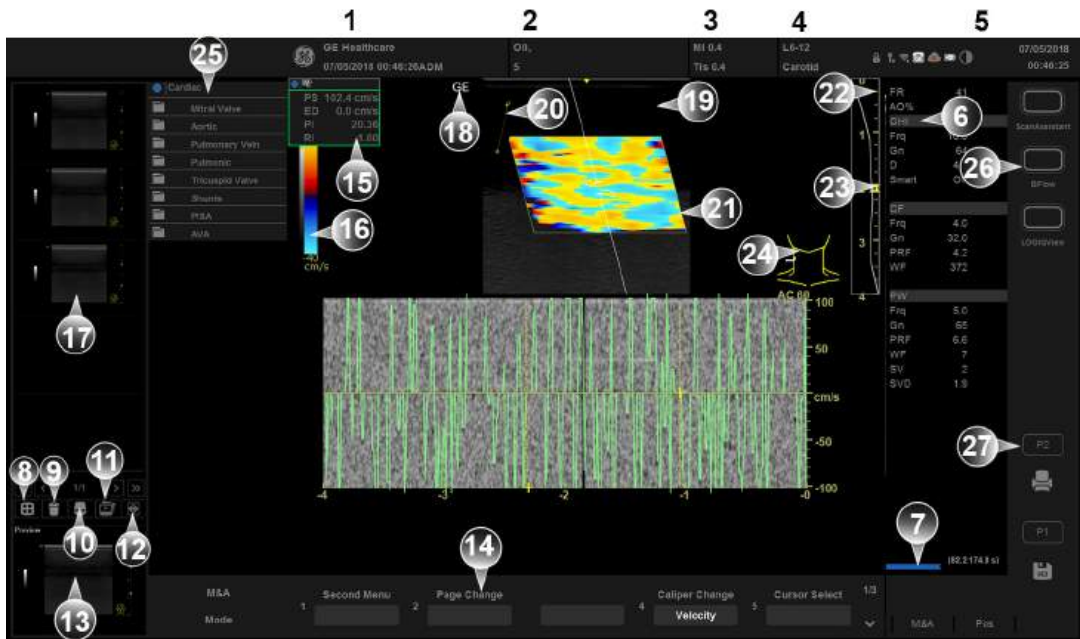


Figure 4-57. Monitor Display Tour

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Institution/Hospital Name, Date, Time, Operator Identification. 2. Patient Name, Patient Identification. 3. Power Output Readout. 4. Probe Identifier. Exam Preset. 5. Current date and time, Caps Lock: (lit when on), network connection indicator, system messages display, InSite status, InSite controls. 6. Imaging Parameters by Mode. 7. Cine Gauge. 8. Active Images screen. 9. Delete Image. 10. Save As Menu. 11. Slide Show. 12. Follow-up tool. | <ol style="list-style-type: none"> 13. Image Preview. 14. Primary menu. 15. Measurement Results Window. 16. Gray/Color Bar. 17. Image Clipboard. 18. Probe Orientation Marker. 19. Image. 20. Measurement Calipers. 21. Region of interest. 22. Depth Scale. 23. Focal Zone Indicator. 24. Body Pattern. 25. Measurement Summary Window. 26. User Configurable Key. 27. P1,P2. |
|--|---|

4-4-6 Performance Tests

4-4-6-1 Image Quality Check (IQC) preset for service

Image Quality Check (IQC) is intended to facilitate Image Quality checks during Quality Assurance Evaluation. Quality Assurance tests are used to determine whether a scanner is providing the same level of performance year after year.

By using the same setting year after year, this ensures that the data collection consistent, independently of who performs the test.

This preset only includes fundamental settings for 2D mode. Processing modes like SRI, Harmonics, etc., are turned off.

To do IQC, follow the steps below:

NOTE: *The IQCforService is only visible when service dongle is connected to the system.*

1. Activate IQC via **Utility--> Admin--> System Admin**. Check the “Enable IQC for Service” box. Select **Save**, then select **Exit**.

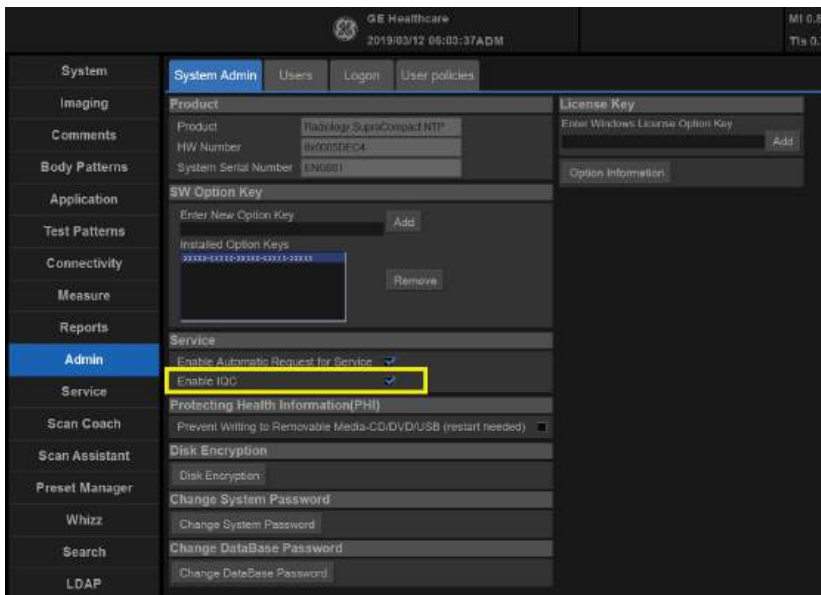


Figure 4-58. Check “Enable IQC for Service”

2. Press **Utility -> Preset Manager**. Select IQC from the left column, and select **>>** to move it to the **Imaging Preset Selections**. Then Select **Exit**.

4-4-6-1 Image Quality Check (IQC) preset for service(continued)

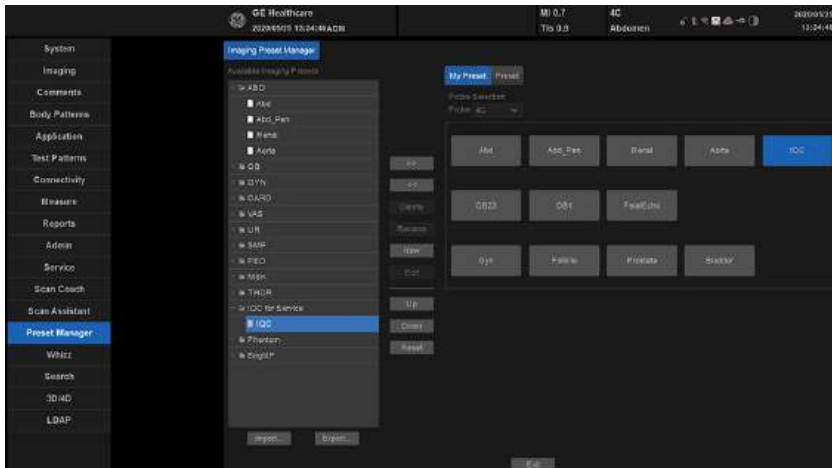


Figure 4-59. Image Quality Check

3. Press **Probe** on the control panel. Then select IQC.

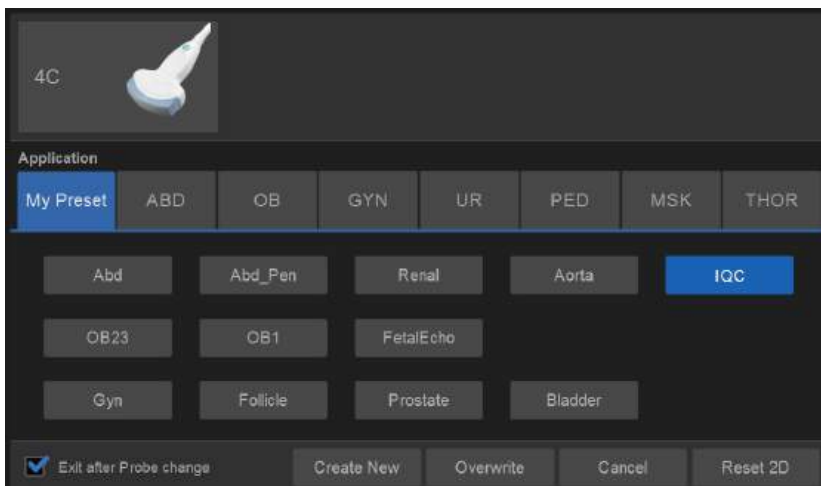


Figure 4-60. Image Quality Check

4-4-6-2 Test Phantoms

The use of test phantoms is only recommended if required by your facility's (customer's) QA program.

4-4-7 B Mode Checks

4-4-7-1 Introduction

The B Mode is the system's default mode.

4-4-7-2 Preparations

- Connect one of the probes.
- Turn ON the scanner.

The B Mode is displayed (default mode).

4-4-7-3 Adjust the B mode controls

Press **B Mode** on the Operator Panel to access B mode.

These Image Controls are used to optimize the B Mode picture. Verify that all the listed controls are working as intended:

- Use **Gain** and TGC controls to optimize the overall image together with the Power control.
- Use **Depth** to adjust the range to be imaged.
- Use **Focus** to center the focal point(s) around the region of interest.
- Use **Frequency** (move to higher frequencies) or **Line Density** (move to higher line density) to increase resolution in image.
- Use **Frequency** (move to lower frequency) to increase penetration.
- Use the **Rejection** control to reduce noise in the image.

4-4-8 M Mode Checks

4-4-8-1 Preparations

- Connect one of the probes to the scanner's probe connector.
- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- Press **M Mode** on the Operator panel to bring up an M-Mode picture on the screen.

Use the trackball to position the cursor over the required area of the image.

4-4-8-2 Adjust the M Mode controls

These Image Controls are used to optimize the M mode picture. Verify that all the listed controls are working as intended:

- Adjust **Sweep Speed** to optimize the display resolution.
Adjust **Gain** and TGC controls to adjust the range to be imaged.
Adjust **Compression** and **Edge Enhance** to further optimize the display.
Adjust **Rejection** to reduce noise while taking care not to eliminate significant low-level diagnostic information.

4-4-9 Color Mode Checks

4-4-9-1 Introduction

Color Flow screens are 2D or M Mode screens with colors representing blood or tissue movement.

Color Flow may be selected both from 2D mode or from M mode or a combination of these.

4-4-9-2 Preparations

- Connect one of the probes to the scanner's probe connector.
- Turn ON the scanner.

The 2D Mode window is displayed (default mode).

4-4-9-3 Select Color 2D Mode

1. From an optimized 2D image, press **CF**.
2. Use the trackball to position the ROI frame over the area to be examined.
3. Press **Set**. The instruction **Size** should be highlighted in the trackball status bar. Use the trackball to adjust the dimension of the ROI.

4-4-9-4 Adjust the Color Mode controls

- Adjust the **Active mode gain** to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: The scale value may affect FPS, Low Velocity Reject, and Sample Volume.

Adjust **Wall Filter** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Sample Volume** to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows.

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.

Adjust **PowerOutput** to obtain an acceptable image using the lowest setting possible.

NOTE: The Power setting affects all other operating modes.

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Threshold** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.

Use **Spatial Filter** to reduce noise in the color flow area. Spatial Filter smooths the image by averaging collected data along the same horizontal line. An increase of the spatial filter will reduce noise, but this will also reduce the lateral resolution.

4-4-10 Select Color M Mode

1. Select M Mode.
2. Use the trackball to position the ROI frame over the area to be examined.
3. Press **Set**. The instruction **Size** should be highlighted in the trackball status bar. Use the trackball to adjust the dimension of the ROI.

4-4-10-1 Adjust the Color M Mode controls

- Adjust the **Active mode gain** to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: The scale value may affect FPS, Low Velocity Reject, and Sample Volume.

Adjust **Wall Filter** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Sample volume** (SV) to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.

Adjust **PowerOutput** to obtain an acceptable image using the lowest setting possible.

NOTE: The Power setting affects all other operating modes.

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Threshold** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.

4-4-11 PW Doppler Mode Checks

4-4-11-1 Introduction

PW Doppler are used to measure velocity (most often in blood).

Doppler mode can be done with a special pencil probe or with an ordinary probe. By using an ordinary probe, you can first bring up a 2D picture for navigation purpose and then add PW Doppler.

4-4-11-2 Preparations

- Connect one of the probes to the scanner.
- See [4-4-14 'Probe/Connectors Check' on page 4-66](#) for info about connecting the probes.

For available probes, see [9-3-4 'Probe' on page 9-7](#):

- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press **PW** to start Pulsed Wave Doppler (PW).

Use the trackball to select the Area of Interest (Sample Volume) in PW.

4-4-11-3 Adjust the PW Doppler Mode controls

Adjust the **Active mode gain** to set the gain in the spectral Doppler area.

- Adjust **Wall Filter** to reduce unwanted low velocity blood flow and tissue movement.

In PW mode, adjust **Volume** to low setting for better resolution, or higher setting to more easily locate the disturbed flows.

Adjust the **Compression** setting to balance the effect of stronger and weaker echoes and obtain the desired intensity display.

Adjust **Frequency** to optimize flow display. Higher setting will improve resolution and the lower setting will increase the depth penetration.

Adjust **Frame rate** to a higher setting to improve motion detection, or to a lower setting to improve resolution.

NOTE: Frequency and Frame rate settings may affect the Low Velocity Reject.

Adjust **Power Output** to obtain an acceptable image using the lowest setting possible. This is particularly important in CW mode, as the energy duty cycle is 100% (constant).

NOTE: The Doppler Power setting affects only Doppler operating modes.

Adjust the following settings to further optimize the display of the image.

Use the **Sweep Speed** to optimize the sweep speed.

To view signal detail, adjust **Scale** to enlarge the vertical spectral Doppler trace.

Use **Invert** to reverse the vertical component of the spectral Doppler area of the display.

Use **Angle Correct** to steer the ultrasound beam to the blood flow to be measured.

4-4-12 Tissue Velocity Imaging (TVI) Checks

4-4-12-1 Introduction

TVI calculates and color codes the velocities in tissue. The tissue velocity information is acquired by sampling of tissue Doppler velocity values at discrete points. The information is stored in a combined format with grey scale imaging during one or several cardiac cycles with high temporal resolution.

4-4-12-2 Preparations

- Connect one of the probes, to the scanner's probe connector.
- See [4-4-14 'Probe/Connectors Check'](#) on [page 4-66](#) for info about connecting the probes.
For available probes, see [9-3-4 'Probe'](#) on [page 9-7](#):
- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press User Configurable Key to get into TVI.

Use the trackball (assigned function: Pos) to position the ROI frame over the area to be examined.

Press **Set**. The instruction Size should be highlighted in the trackball status bar.

*NOTE: If the trackball control pointer is selected, press **trackball** to be able to select between Position and Size controls.*

Use the trackball to adjust the dimension of the ROI.

4-4-12-3 Adjust the TVI Controls

- To reduce quantification noise (variance), the Nyquist limit should be as low as possible, without creating aliasing. To reduce the Nyquist limit: Reduce the **Scale** value.

NOTE: The Scale value also affects the frame rate. There is a trade off between the frame rate and quantification noise.

TVI provides velocity information only in the beam direction. The apical view typically provides the best window since the beams are then approximately aligned to the longitudinal direction of the myocardium (except near the apex). To obtain radial or circumferential tissue velocities, a parasternal view must be used. However, from this window the beam cannot be aligned to the muscle for all the parts of the ventricle.

NOTE: PW will be optimized for Tissue Velocities when activated from inside TVI.

4-4-13 Basic Measurements

*NOTE: The following instructions assume that you first scan the patient and then press **Freeze**.*

4-4-13-1 Check Distance and Tissue Depth Measurement

1. Press **Measure** once to display an active caliper.
2. Move the trackball to position the active caliper at the start point (distance) or the most anterior point (tissue depth).
3. Press **Set** to fix the start point.
4. The system fixed the first caliper and displays a second active caliper.
5. Move the trackball to position the second active caliper at the end point (distance) or the most posterior point (tissue depth).
6. Press **Set** to complete the measurement. The system displays the distance or tissue depth value in the measurement results window.

Before you complete a measurement:

To toggle between active calipers, rotate Cursor Select button.

To erase the second caliper and the current data measured and start the measurement again, press Clear.

NOTE: To rotate through and activate previously fixed calipers, rotate Cursor Select button.

NOTE: After you complete the measurement, to erase all data that has been measured to this point, but not data entered onto worksheets, press Clear.

4-4-14 Probe/Connectors Check

NOTE: Probes can be connected at any time, whether the unit is ON or OFF.

4-4-14-1 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 cable.
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.

4. Hold the probe connector vertically with the cable pointing upward.
5. Align the connector with the probe port and carefully push into place.
6. Lock the probe latch upward.
7. Carefully position the probe cable in the probe cord holder spot so it is free to move, but not resting on the floor.



CAUTION

TAKE THE FOLLOWING PRECAUTIONS WITH THE PROBE CABELS:

- KEEP AWAY FROM THE WHEELS
- DO NOT BEND
- DO NOT CROSS CABLES BETWEEN PROBES

Table 4-1: Probe and Connectors Checks

Step	Task	Expected Results
1	Select the appropriate connected probe from the probe indicators.	The probe activates in the currently-selected operating mode. The probe's default settings for the mode and selected exam are used automatically.
2	Launch the application. To change application, press Probe key on the Control Panel.	The selected application starts.
3	Verify there's no EMI/RFI or artifacts specific to the probe.	No EMI/RFI or artifacts.
4	Test the probe in each active connector slot.	It will display pictorial data each time.

Table 4-1: Probe and Connectors Checks

Step	Task	Expected Results
5	Do a leakage test on the probe, See 10-7 'Electrical safety tests' on page 10-21 for more information.	It passes the test.
6	Repeat this procedure for all available probes.	

4-4-14-2 Activating the probe

The probe activates in the currently-selected operating mode. The probe's default settings for the mode and selected exam are used automatically.

4-4-14-3 Deactivating the probe

1. Press the Freeze key.
2. Gently wipe the excess gel from the face of the probe. (Refer to the User Guide for complete probe cleaning instructions.)
3. Carefully slide the probe around the right side of the keyboard, toward the probe holder. Ensure that the probe is placed gently in the probe holder.

4-4-14-4 Disconnecting the probe

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

1. Deactivate the probe.
2. Slide the conenctor lock downwards to unlock the probe.
3. Pull the probe connector straight out of the probe port carefully.
4. Ensure the cable is free.
5. Be sure that the probe head is clean before placing the probe in its storage box.



Take the following precautions with the probe cables: Do not bend, be sure to keep probe cables free from the wheels.

4-4-15 ECG Check

4-4-15-1 Introduction

The ECG capability on this unit, is intended as use as a trigger for measurements, but can also be viewed on the screen.

4-4-15-2 Parts needed

- ECG Module

4-4-15-3 Preparations

None

4-4-15-4 ECG Check

Table 4-2: ECG Checks

Step	Task	Expected Result(s)
1	Connect the ECG harness to the connector under the control panel.	The unit displays a straight curve along the bottom edge of the image sector on the screen.
2	Connect the three leads to an ECG simulator, or Fasten the three ECG Pads to your body and connect the three leads to respective ECG Pad.	When connecting, the signal on the screen will be noisy. When the connection is completed, a typical clean ECG signal is displayed.

4-4-16 Cineloop Check

4-4-16-1 Introduction

A cineloop is a sequence of images recorded over a certain time frame. When using ECG the time frame can be adjusted to cover one or more heart cycles. When frozen, the System automatically displays the cineloop boundary markers on either side of the last detected heart cycle.

4-4-16-2 Preparation

- Connect one of the probes to the scanner.
- See [4-4-14 'Probe/Connectors Check'](#) on [page 4-66](#) for info about connecting the probes
For available probes, see [9-3-4 'Probe'](#) on [page 9-7](#):
- Turn ON the scanner. The 2D Mode is displayed (default mode).

4-4-16-3 Adjust the Cineloop controls

- Press Freeze.
The left and right markers are displayed on either side of the last detected heart cycle on the ECG trace.
- Press Freeze.
The selected heart beat is played back.
- Press **Freeze** to freeze the cineloop.
Use the trackball to scroll through the acquisition and find the sequence of interest.
- Adjust **Cycle** select to move from heart beat to heart beat and select the heart cycle of interest.
Adjust **Num cycles** to increase or decrease the number of heart beats to be played back.
Adjust **Left marker** and **Right marker** to trim or expand the cineloop boundaries.

4-4-17 Back End Processor checks

- If all the previous tests have been passed successfully, the Back End Processor is most likely OK.

If the system seems to be operating erratically, please refer to '[Diagnostics/Troubleshooting](#)' on [page 7-1](#).

4-4-18 Operator Panel Test

- The Operator Panel is tested when the Versana Active is powered up as part of the start-up scripts, run at every start-up.

For more info, please refer to '[Diagnostics/Troubleshooting](#)' on [page 7-1](#).

4-4-19 Peripheral checks

Check that peripherals work as described below:

Table 4-3: Peripheral Checks

Step	Task to do	Expected Result(s)
1.	Press FREEZE	Stop image acquisition.
2.	Press P2 on the Control Panel	The image displayed on the screen is printed on B&W printer.
3.	Connect with Foot Switch on USB port and press once.	To start image acquisition (the same function as FREEZE key).

4-4-19-1 Printer checks

The internal printer is controlled from the **P1** and **P2** keys on the Versana Active's Operator Panel.

The factory default is:

- **P1** for the screen capture to clipboard
- **P2** for the standard printer

4-4-20 Turn OFF Power to Versana Active

See 4-2-3 'Power off' on page 4-8 for more information.

4-4-21 Mechanical Functions Checks

4-4-21-1 Operator Panel Movement

Please refer to:

- 6-3 'Monitor Adjustments' on page 6-5

4-4-21-2 Casters (Wheels) and Brakes Checks

Examine the wheels frequently for defects to avoid breaking or jamming.

Table 4-4: Wheel Characteristics

Wheel	Characteristics
Front and Rear	Swivel and Brake

4-5 Power supply test & adjustments

4-5-1 Power Supply Test Procedure

There is no need to do any special tests on the Power Supplies if there don't seem to be a problem that may be related to the Power Supply.

Refer to [7-7-1-2 'System Doesn't Boot \(Hang-up\)' on page 7-57](#), if you appear to have a problem that may be related to the Power Supplies.

4-5-2 Power Supply Adjustment

There are no adjustments on the power supply. The DC Power is self-regulated. If a voltage is outside the specified range, it means that something is wrong, either with the power supply itself or with a unit connected to that specific power outlet. When an error occurs, the power will be turned off immediately.

Refer to [7-7-1-2 'System Doesn't Boot \(Hang-up\)' on page 7-57](#), if you appear to have a problem that may be related to the Power Supplies.

4-6 Application Turnover Check List

Complete these checks before returning the scanner to customer for use:

4-6-1 Software Configuration Checks

Table 4-5: Software Configuration Checks

Step	Task to do	Notes
1	Verify Date and Time is correct.	
2	Verify that Location (Hospital Name) is correct.	
3	Verify Language settings are correct.	
4	Verify assignment of Print Keys.	
5	Verify all of the customer's options are set up correctly.	Demo Option strings turn on

4-7 Site Log

Table 4-6: Site Log

DATE	SRVICE PERSON	PROBLEM	COMMENTS

4-8 My Trainer

4-8-1 Overview

My Trainer provides a quick guide to operate the system.

To access My Trainer,

1. Press **Alt + H** to enter My Trainer.

Or,

1. Press Utility -> System -> User Configurable Key. Check Enable Numeric Hot Key, then set **My Trainer** in the Keyboard Key or User Defined Key.

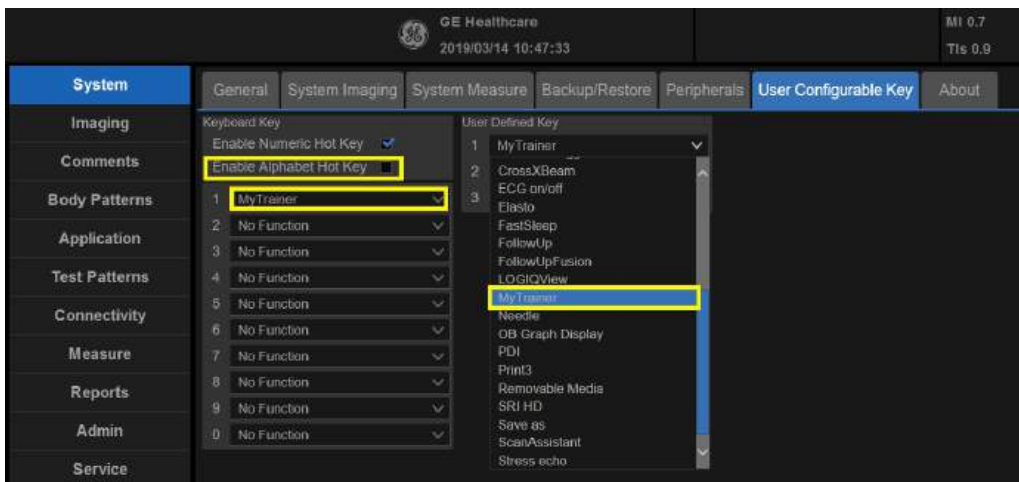


Figure 4-61. Set My Trainer

2. Press defined key to access My Trainer.

4-8-1 Overview(continued)

There are four sections in My Trainer. The four sections are displayed on the left side of the My Trainer interface.



Figure 4-62. Sections display

1. Getting Started: Probe Connection
2. System Setting: EZ Configure, Enable Options Check, Enable Option Key Activation Workflow, Numeral Key Conf, User Defined Keys Conf, Create Preset, Preset Archive and Restore, Patient Archive and Restore, Images Archival, My Preset, Back-up/Restore the Patient Preset, System Software Update, Standby Mode, Software Version
3. Peripheral Connection: Back Panel Ports, Wired Connectivity, Wireless Connectivity, Bluetooth Connectivity, Connect to Thermal Printer, Connect to Network Printer, DICOM Worklist Setting, DICOM Image Storage
4. Maintenance: Contact GE service, Configure Insite Agent for Remote Service, Log Export, Trackball Cleaning, Air Filter Replacement, AN Key Film, Isolation USB Connection, Keycaps

4-8-1 Overview(continued)







Figure 4-63. Interface Illustration

The interface of the My Trainer includes below information:

1. The product name of the system.
2. Sections. Select the button to expand the section to show the list of subsections.
3. Subsections.
4. The highlighted subsection shows this subsection is currently opened and displayed on the right side.
5. Exit. Press this button to exit this interface.
6. The left number shows the current page of the subsection. The right number shows the total pages of the subsection.
7. Illustration with graphic.
8. Previous, Next, Home, End icons.

4-8-1 Overview(continued)

Table 4-7: Page turning

	Select the arrow to go to the previous page.
	Select the arrow to move to the next page.
	Select the arrow to go to the home page.
	Select the arrow to go to the end page.

9. Step Description

Chapter 5

Components and Functions (Theory)

This chapter explains Versana Active's system concepts, component arrangement, and subsystem functions.

It also describes the power distribution and the Common Service Desktop interface.

5-1 Overview

5-1-1 Contents in this chapter

- 5-1 'Overview' on *page 5-2*
- 5-2 'Block Diagram and Theory' on *page 5-3*
- 5-4 'Common Service Desktop' on *page 5-7*

5-2 Block Diagram and Theory

5-2-1 General Information

Versana Active is an ultrasound imaging scanner.

The system can be used for:

- 2D Gray Scale
- 2D Color Flow imaging
- M-Mode Gray Scale imaging
- Color M-Mode
- Doppler
- Different combinations of the above

Signal flow from the Probe Connector Panel to the Front End, to the Mid Processors and Back End Processor and finally to the monitor and peripherals.

System configuration is stored on a hard disk drive and all necessary software is loaded from the hard disk drive on power up.

5-2-2 Top Console

The Top Console includes a Standby/On switch, a keyboard, different controls for manipulating the picture quality, controls for use in Measure & Analyze (M&A), and loudspeakers for stereo sound output (used during Doppler scanning).

5-2-3 Block Diagram

5-2-3-1 System Diagram

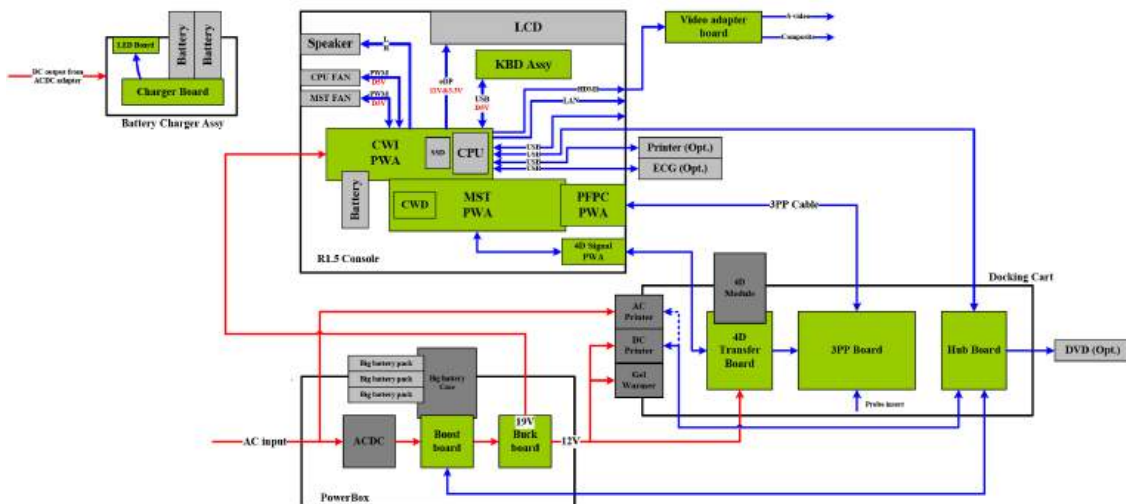


Figure 5-1. Versana Active System Block Diagram

5-2-3-2 Introduction

4D signal board provides 4D control signals from MST board to 4D transfer board via communication cable.

4D transfer board provides power supply and control signals to 4D module.

3PP board provides 3 ports for RS type probe and activates the related probe port analog/digital signals connection to the system under the control of MST.

Boost board provides constant power supply output with either AC input or big battery input, it also can communicate with CWI board to deliver battery information via USB bus.

Buck board provides 19V and 12V power supply to whole system.

Battery charger board can be used to charge battery independent.

LED board can be used to display the charge status information.

Video adapter board receives HDMI signals from console and transfers them into S-video and composite output.

USB HUB board shall receive USB signals from upstream port of console and provide USB downstream port to printer, DVD and boost board.

AC-DC module receives AC input and provides DC output to boost board. It also provides AC output to AC printer.

Big battery case can be used to charge big battery pack.

5-3 Program Diagram

5-3-1 Overview

The AC Power assy's main tasks are to isolate and output to the DC/DC unit which is inside the system console. The input of AC power pack will be the AC outlet and it's universal, the range is AC 100V-240V, 50-60Hz. And no main power switch located on this power pack.

5-3-2 AC Power

Versana Active Power supply is an ACDC adapter which use 100V-240V,(50-60Hz) as input and DC 19V (7.9A) as output.

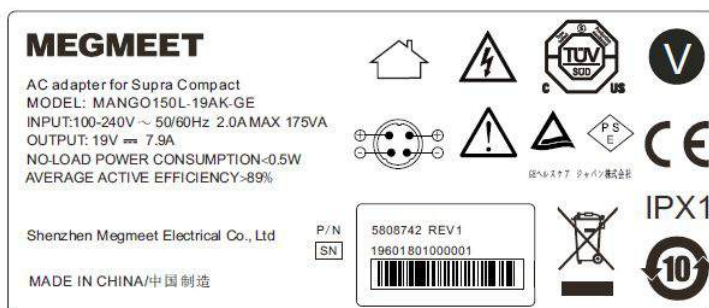


Figure 5-2. ACDC Adapter

5-3-3 Power On Sequence

NOTE: During normal boot-up, the power supply is distributed to each board.

1. ACDC powered.
2. Power available from ACDC->CWI, CWI waiting for power on signal.
3. Power on signal from Keyboard->CWI .
4. CWI activated.
5. CWI supply power to MST and other parts.

5-4 Common Service Desktop

5-4-1 Introduction

The Service Desktop is an interface that provides access to system information, status and diagnostics.

The Service Desktop has different content or views depending on the access level. The access level is determined by the user profile as well as the service options enabled on the Versana Active.

- Basic view is the standard view, restricted only by the user through the user profile settings. Administrator default user has access to the Service Desktop. Any user with "local Service access" in their user profile can have access to this view.
- Class C view is the view enabled by the service options purchased.
 - Service Advanced
 - Service Expert (requires Service Advanced)
 - Service Pro (requires Service Advanced)

Chapter 6

Service Adjustments

This chapter describes how to test and make adjustments to the Versana Active. You can use these to test the system for errors.

6-1 Overview

6-1-1 Contents in this chapter

- [6-1 'Overview' on page 6-2](#)
- [6-2 'Preset Region' on page 6-3](#)
- [6-3 'Monitor Adjustments' on page 6-5](#)

6-2 Preset Region

Only factory default presets are supported. User is allowed to selection region presets according to where the system is used with service support.

Table 6-1: Preset Region

Region	Preset Region
USA, Canada and Latin America	USA_LA_Preset
Europe	EU Preset
China	China Preset
APAC	Asia Preset
South Asia	India Preset
Middle East, Africa and other countries	EAGM Preset

6-2-1 Region presetting procedure

The Region Presetting procedure:

- In Utility--> System--> General, select the correct region from Preset Region (restart needed), refer to [Figure 6-1 on page 6-4](#).

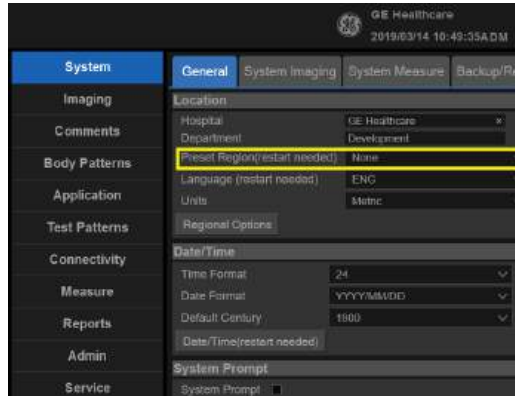


Figure 6-1. Region Preset

- The window below will display after the region being selected. Select "Ok", refer to [Figure 6-2 on page 6-4](#).

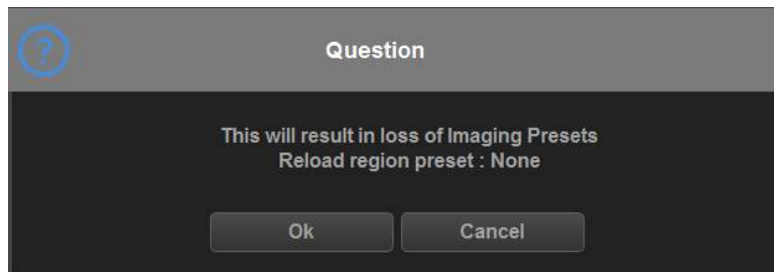


Figure 6-2. Question

- After "Ok" is selected, the window below will display. Select "Restart now" and then restart the system.

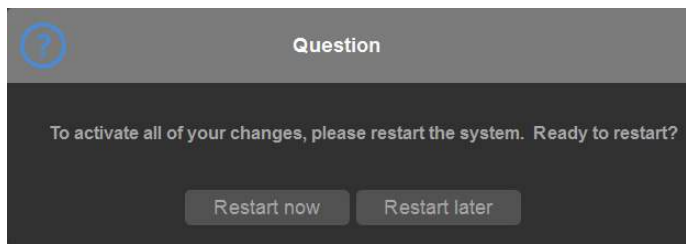


Figure 6-3. Restart the system

6-3 Monitor Adjustments

6-3-1 Purpose of this section

This section describes how to test and adjust the scanner. These tests are optional. You may use them to check the system for errors.

6-3-2 Monitor Adjustments

Please refer to User Manual for how to adjust the Monitor Position, Brightness and Contrast.

To adjust the brightness and volume:

1. On the alphanumeric keyboard,
 - adjust brightness with **Ctrl +Up/Down** keys;
 - adjust volume with **Ctrl +Left/Right** keys.

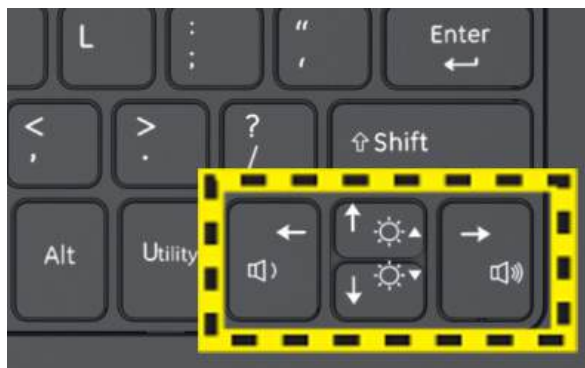


Figure 6-4. Monitor Adjustment

6-3-3 Brightness and Contrast

1. Press **Cursor** key on the control panel. Move the trackball to position the cursor over the adjustment icon, then press **Set** to display the setting menu.

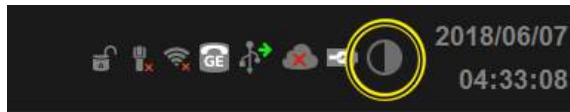


Figure 6-5. Setting Menu Icon

2. Follow the procedure below to adjust the Color Temperature, Contrast, Brightness and LED Light:
 - To adjust the color temperature: press **Standard**, **Brown**, or **Blue** to choose the color temperature. The chosen color temperature displays in the **Color Temp** area.

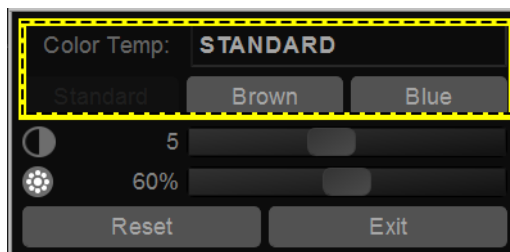


Figure 6-6. Color Temperature

- To adjust the Contrast: Press **Set** to choose the adjustment button, hold down the **Set** key and move the trackball to move the adjustment button. Move the adjustment button to the left to decrease the contrast or move the adjustment button to the right to increase the contrast.

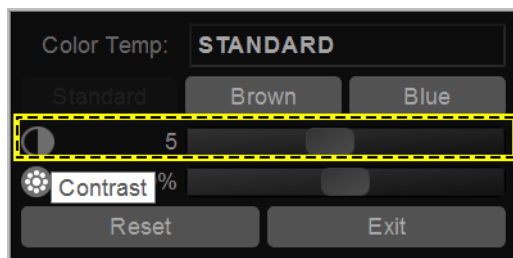


Figure 6-7. Contrast

6-3-3 Brightness and Contrast(continued)

- To adjust the Brightness: Press **Set** to choose the adjustment button, hold down the **Set** key and move the trackball to move the adjustment button. Move the adjustment button to the left to decrease the brightness or move the adjustment button to the right to increase the brightness.

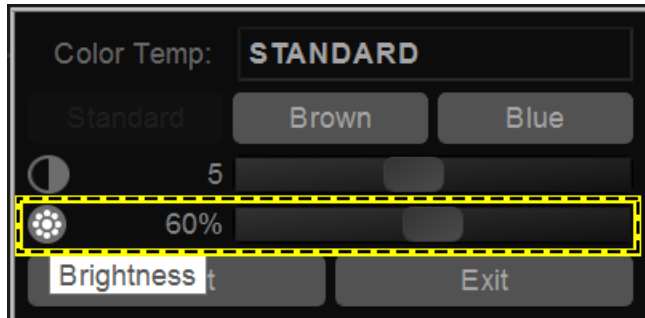


Figure 6-8. Brightness

- Press **Reset** to return to the default setting; Press Exit to exit the setting menu.

NOTE: Press Reset button and the three color temperature settings will return to the default settings.

Chapter 7

Diagnostics/Troubleshooting

This chapter describes how to setup Versana Active and run the tools and software that help maintain image quality and system operation. Very basic host, system and board levels are run whenever power is applied. Some Service Tools may be run at the application level. However most software tests are required.

7-1 Overview

7-1-1 Contents in this chapter

- 7-1 'Overview' on *page 7-2*
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- 7-3 'Screen Capture' on *page 7-5*
- 7-5 'Common Service Desktop' on *page 7-14*
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- 7-7 'Troubleshooting' on *page 7-56*

7-2 Gathering Trouble Data

7-2-1 Overview

There may be a time when it would be advantageous to capture trouble images and system data (logs) for acquisition to be sent back to the manufacturer for analysis. There are different options to acquire this data that would give different results.

7-2-2 Collect Vital System Information

The following information is necessary in order to properly analyze data or images being reported as a malfunction or being returned to the manufacturer:

Product Name = Versana Active

From the **Utility>System>About** screen:

Applications Software

- Software Version
- Software Part Number

System Image Software

- Image Date
- Image Part Number

Additional Information

7-2-3 Collect a Trouble Image with Logs

If the system should malfunction, press the Alt+D keys simultaneously. This will collect a screen capture of the image monitor, system presets and several log files in a date and time stamped “.zip” file.

NOTE: This function may also be used to make a Print Screen.

This **Alt+D** function is available at all times.

When **Alt+D** is pressed, a menu box appears that allows for:

- a place to enter a description of the issue
- a checkbox to indicate a System lockup
- a choice to Export a pre-formated CD-R/DVD-R or save to the Export directory D: drive (for remote viewing through FFA)

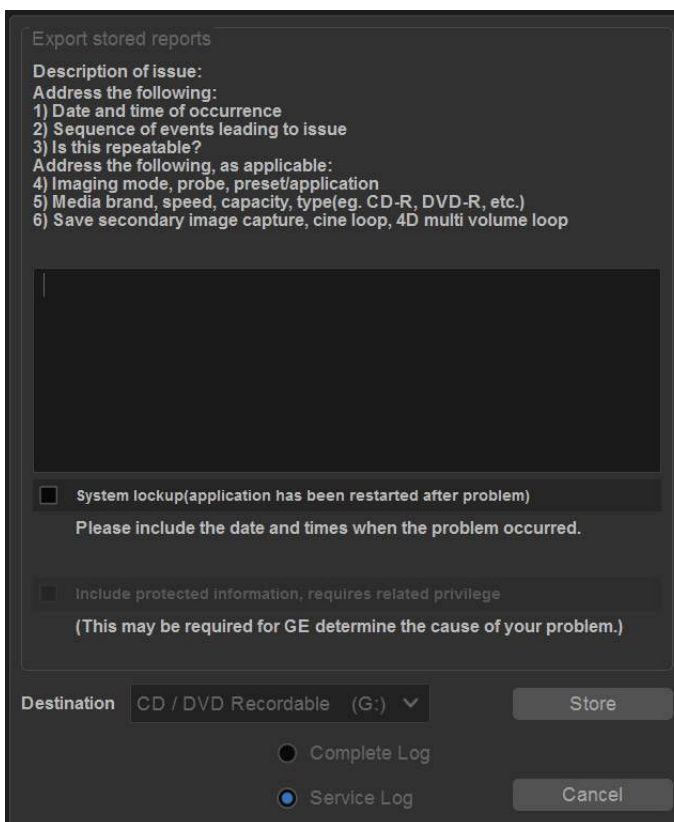


Figure 7-1. Alt+D Dialog Box

7-3 Screen Capture

There may be times when the customer or field engineer will want to capture a presentation on the screen. This is accomplished by first saving the image(s) to the clipboard using a Print Key.

7-3-1 Setting the P1 Key to Screen Capture

If the P1 Key is not set to screen capture:

1. Press **Utility** -> **Connectivity** -> **Button**.
2. Select **Print1**. Then Select **Copy to Dataflow** and press >> button to add it to Printflow View, press **Save**. Now when you press the **P1** button, the image will be saved to the clipboard.

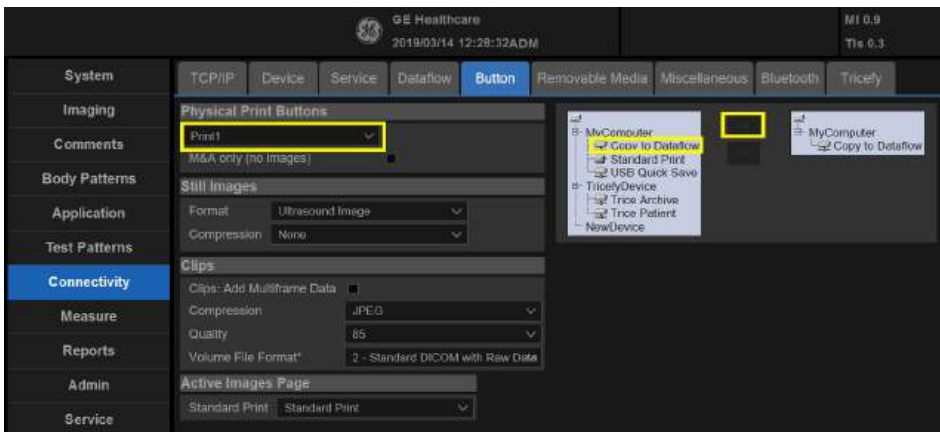


Figure 7-2. Configure the P1 Key

7-3-2 Capturing a Screen

The following is a generic process to capture any screen from the scanner:

1. Navigate to and display the image/screen to be captured.
2. Press **P1**. This will place a snapshot of the screen on the “clipboard” displayed at the left side of the scan image display.

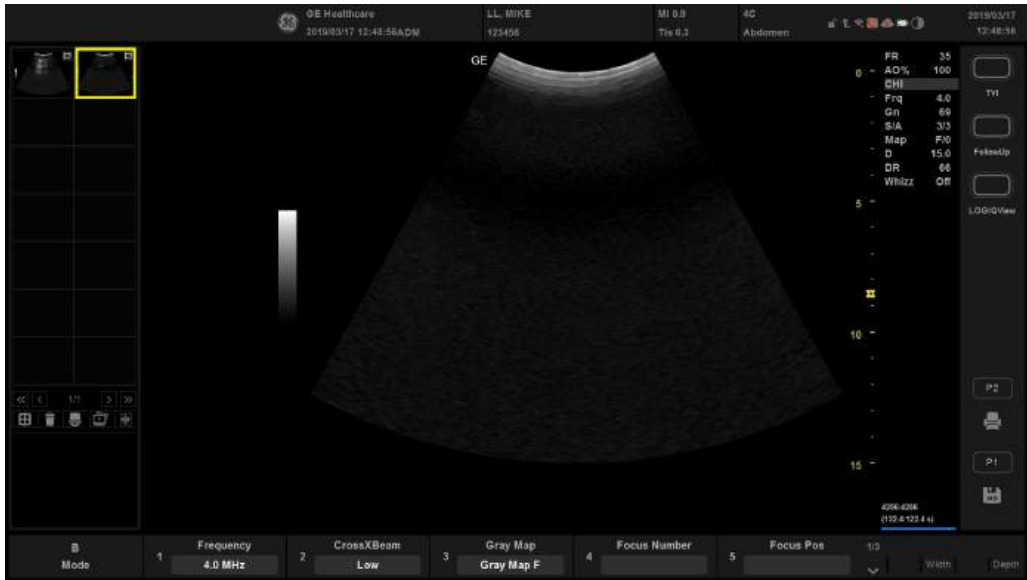


Figure 7-3. Select Image to Capture

3. Select and highlight the snapshot to be stored.
4. Select Save As Icon on the lower left of the image screen.



Figure 7-4. Menu > Save As

7-3-2 Capturing a Screen(continued)

5. A Save dialog box will be opened. Choose the archive location to save image on the USB Drive or CD/DVD.

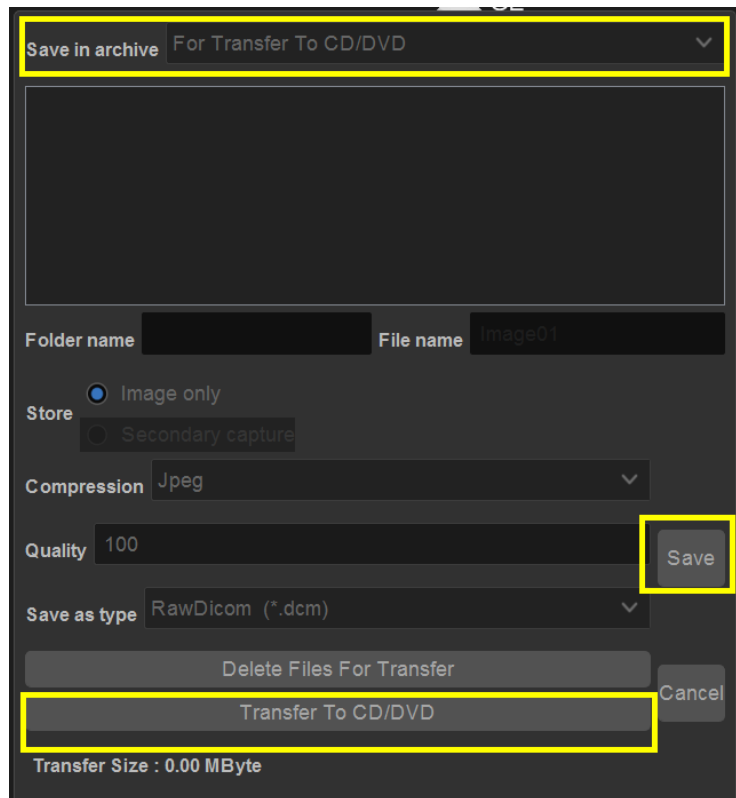


Figure 7-5. Save Dialog Box

NOTE: Click **Save** -> **Transfer To CD/DVD**, if the archive location is DVD/CD; Click **Save**, if the archive location is USB.

NOTE: It is better to save the image in Jpeg format. Image of this format can be easily reviewed in the computer.

7-3-3 Capturing a Screen with Service Key

The following is a generic process to capture the whole screen from the scanner:

1. Insert the Service Key in the system's USB port.
2. Press **Prtsc** key on the control panel, the whole screen is captured.
3. Press **Ctrl+Alt+Delete**, the **Start Task Manager** dialog is displayed.

NOTE: *It is also available to Exit to Windows and save the image on the system or removal media. For how to Exit to Windows, please refer to Proprietary Service Manual.*

4. In **Windows Task Manager**, select **File-> New Task (Run...)**.

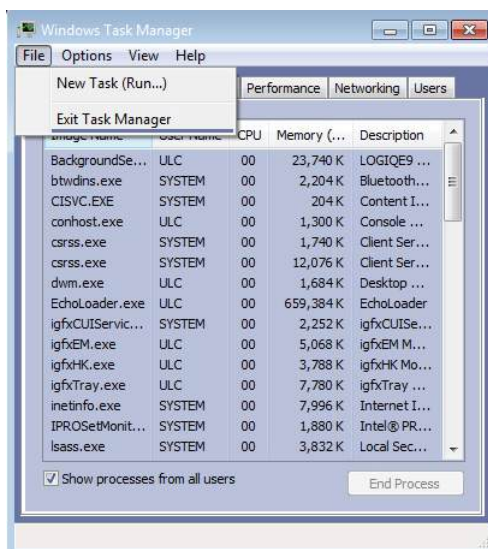


Figure 7-6. Windows Task Manager

5. Type in the program name: **mspaint**.

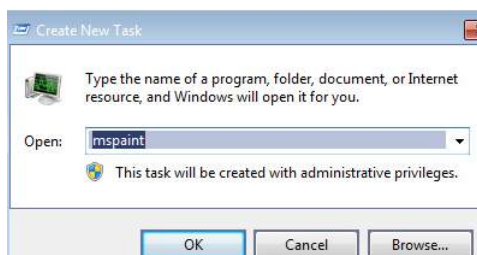


Figure 7-7. Create New Task

7-3-3 Capturing a Screen with Service Key(continued)

6. The paint screen is displayed, press **Ctrl+V** to paste the captured screen. And then save the image in the appropriate destination.

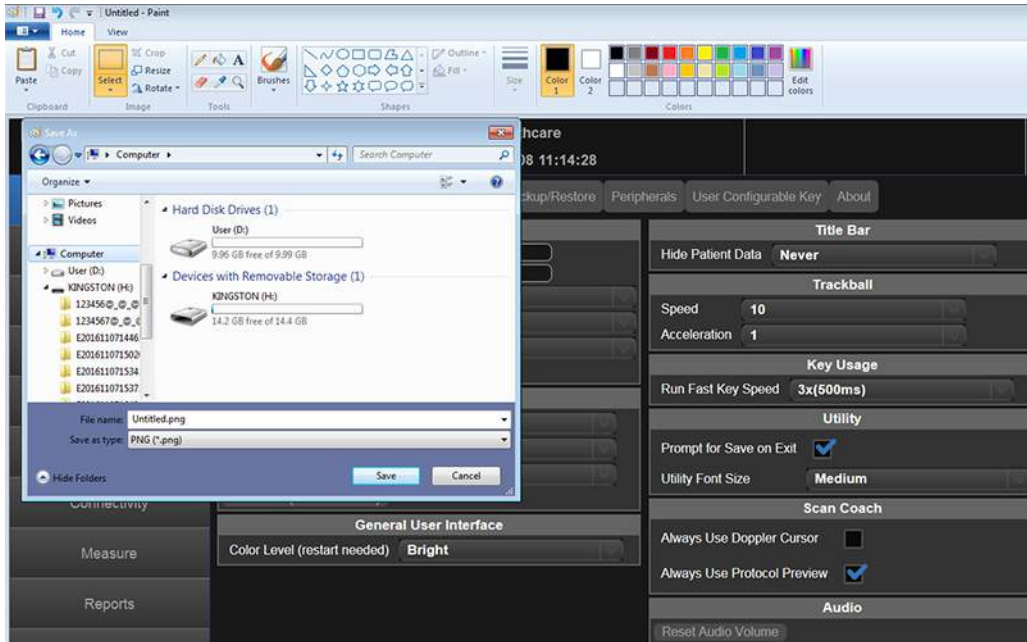


Figure 7-8. Save Image

7-3-4 Capturing a Screen by physical print buttons

The following is a generic process to capture the whole screen from the scanner:

1. Press **Utility -> Connectivity -> Button** to configure Physical Print Buttons for the button to capture screens.
2. Select any key from Print1, Print2, Print3 or Print4 from **Physical Print Buttons**.
3. Select **Secondary Capture Screen** from **Format**.
4. Select **USB Quick Save**, press **>>** to move to right column. Press Save and Exit.

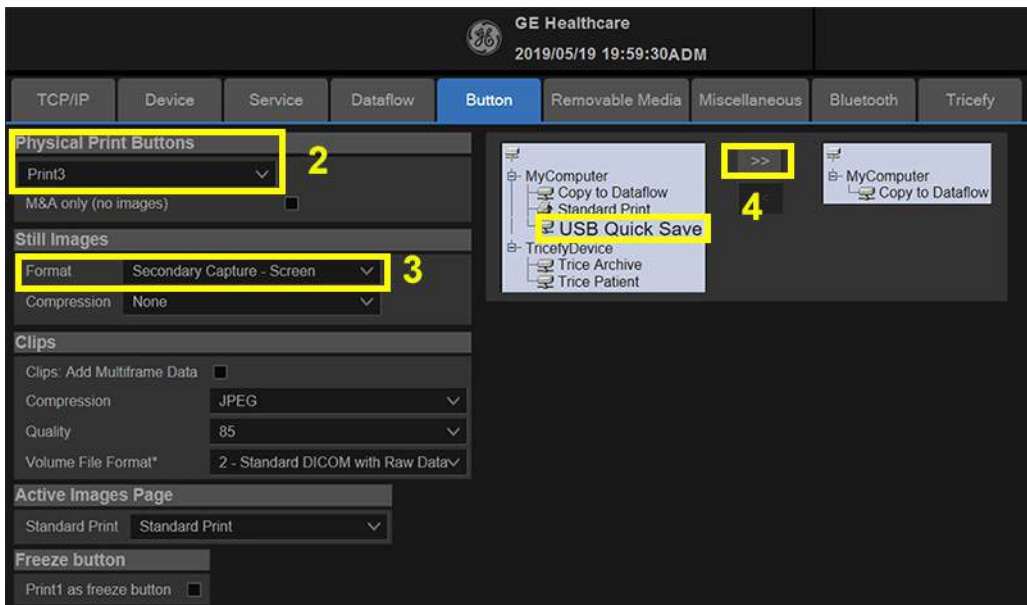


Figure 7-9. Windows Task Manager

5. After Print key configuration complete, press the configured Print key, the captured screen will be saved to the USB directly.

7-4 System Warning/Error and Logs

7-4-1 Temperature warning

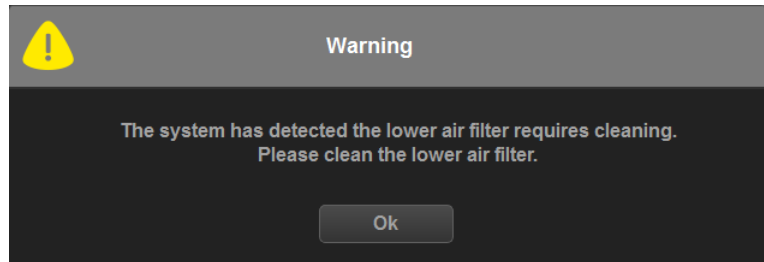


Figure 7-10. Temperature Warning

- Cause: CPU temperature exceeds threshold (95 degrees)
- What to do: shut down the system and clean the filter.

7-4-2 Temperature exceeds threshold

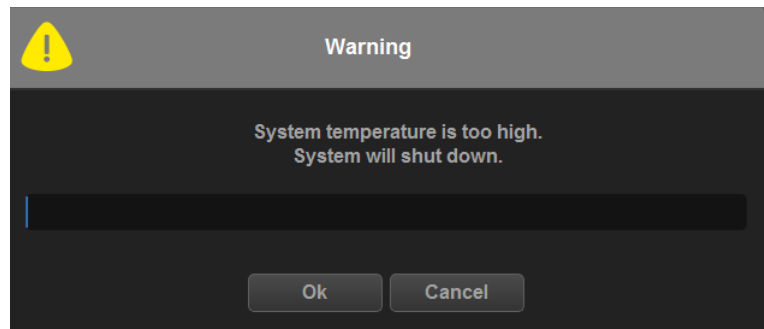


Figure 7-11. Temperature exceeds threshold

- Cause: CPU temperature exceeds threshold (100 degrees) and therefore, system must be shutdown immediately.
- What to do: shut down the system and clean the filter.

7-4-3 System voltage failure

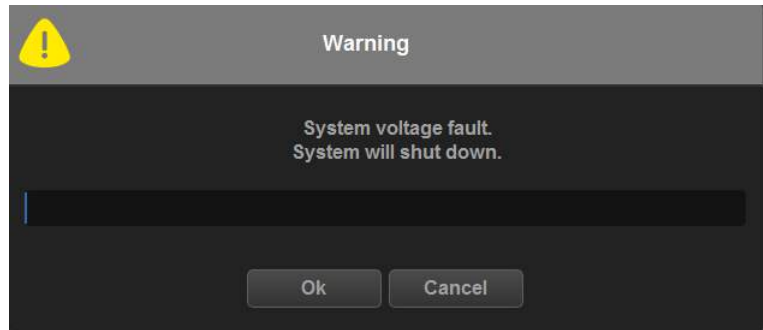


Figure 7-12. System voltage failure

- Cause: Hardware and/or voltage error detected.
- What to do: Press OK and reboot the system.

7-4-4 Hardware configuration error

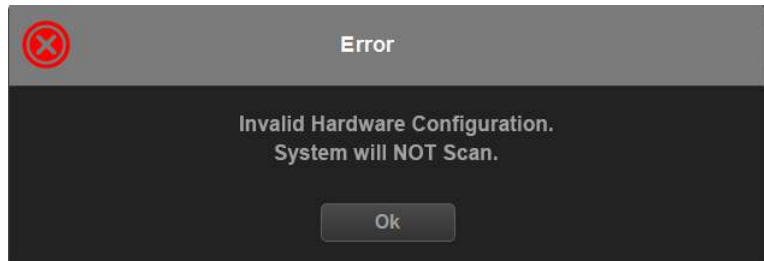


Figure 7-13. Hardware configuration error

- Cause: Hardware(s) is not detected as valid system. System is able to boot up but not able to scan.
- What to do
 1. Press OK and reboot the system.
 2. If the problem persists, shut down the system and analyze the log files in Technical Support Mode.

7-4-5 System error

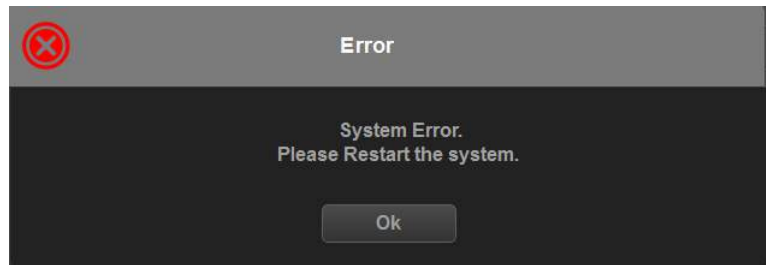


Figure 7-14. System error

- Cause: Hardware(s) is not detected as valid system. System is able to boot up but not able to scan.
- What to do
 1. Press OK, turn off the system and then reboot it.
 2. If the problem persists, shut down the system and analyze the log files.

7-5 Common Service Desktop

7-5-1 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 Expert, Pro, and 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 Versana Active. 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.

7-5-2 Disruptive mode

Disruptive mode is a way to control interruptions to operation of the Versana Active. 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 Versana Active needs to be restarted once the service activity is complete. The message remains until the Versana Active is restarted. This prevents patient scanning while the Versana Active is not operating at an optimal status. For example, running a diagnostic may leave the Versana Active 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 Versana Active may be limited.
- When Disruptive mode is Off, some service functionality on the Service desktop is not available and user operation of the Versana Active 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 Versana Active 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 Versana Active will not be able to automatically switch Disruptive mode to On. The logged in user (user actually logged on to the Versana Active) 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: [7-5-2 'Disruptive mode' on page 7-15](#)

7-5-3 Color statuses

Throughout the Service desktop, colors indicate the following:

- Green - Status is normal
- Orange - Status is a warning
- Red - Status is an error

7-5-4 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
 - Thirty Party Licenses
- Options
- Agent Configuration

With Service Advanced (Class C), these are the available options:

NOTE: *With a Class C license, options display according to these purchased level of access.*

- HOME
- Diags
 - Run Diags
 - Diag History
- Utilities
 - Change Password
 - Checkpoints
 - Delete Files
 - Disk Defragment
 - Data Transfer
 - Gather Logs
 - Network Capture
 - SSA License

7-5-4 Licenses(continued)

- System Shutdown
- Thirty Party Licenses
- Options
- Agent Configuration

With Service Advanced plus Service Expert (Class C), the Clean Userdefs, Reset Patient Database, and Software Reload utilities are added to the Service Advanced options listed.

With Service Advanced and Service Expert plus Service PRO (Class C), the probe assessment tool (ePAT) diagnostic is added to the Service Advanced and Service Expert options listed.

With GE Service access (Class M) and an SSA key, these are the available options:

- HOME
- Diags
 - Run Diags
 - Diag History
- Utilities
 - Change Password (not available through a remote connection)
 - Checkpoints
 - Clean Userdefs
 - Data Transfer
 - Delete Files
 - Disk Defragment (not available through a remote connection)
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - SSH
 - Thirty Party Licenses
 - Virtual Console Observation
- Options
- Agent Configuration

7-5-5 Home

Home configurations vary depending upon the purchased service level.

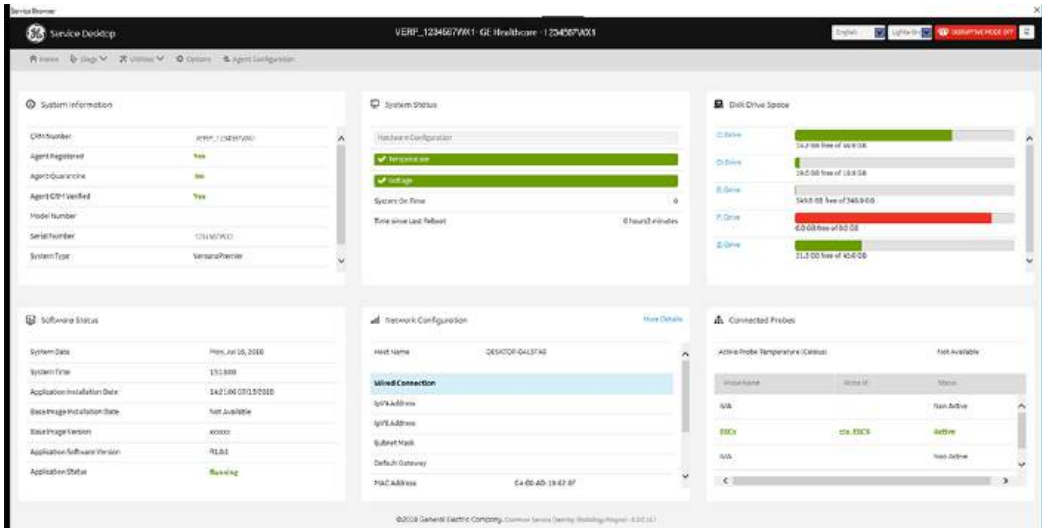


Figure 7-15. Home with Class C and Class M Access

For more information, see:

- [7-5-5-1 'System Information' on page 7-19](#)
- [7-5-5-2 'Software Status' on page 7-21](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5-11 'Disk Drive Space' on page 7-32](#)
- [7-5-5-12 'Network Configuration' on page 7-34](#)
- [7-5-5-13 'Connected Probes' on page 7-36](#)

7-5-5-1 System Information

System Information displays general information about the Versana Active. When the Versana Active 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**.

The screenshot displays the 'System Information' page in the Service Desktop. The page is organized into several panels:

- System Information:** A list of system details including CIM# Number, Agent Registered (Not Available), Agent Quarantine (Not Available), Agent CRM Verified (Not Available), Model Number (R709991), Serial Number (E90990), and System Type (VERSANA32).
- System Status:** Shows hardware configuration with 'Applications' and 'Hardware' both checked.
- Disk Drive Space:** A table showing the status of various drives (C:, D:, E:, F:, G:) with their total and free space.
- Software Status:** Displays system date (Fri Mar 15, 2019), system time (09:48:52), application and base image installation dates (Mon Nov 26 09:00:00 2018), base image and application software versions (R1.00), and application status (Running).
- Network Configuration:** Shows host name (DESKTOP-RN27201) and a table for wired connection details including IPv4 Address, IPv6 Address, Default Gateway, and MAC Address.
- Connected Probes:** Shows active probe temperature (Celsius) as 'Not Available' and a table for probes with columns for Probe Name, Product, and Status.

Figure 7-16. System Information

This table shows all the elements available on **System Information** with descriptions.

7-5-5-1 System Information(continued)

Table 7-1: System Information

Element	DESCRIPTION
CRM Number	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the region service team.
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 Versana Active. The same number as listed on the rating plate.
Serial Number	Serial number of the Versana Active. The same number as listed on the rating plate.
System Type	Product name of the Versana Active.
Facility	Name of the hospital or facility where the Versana Active is installed

For more information, see: [7-5-5 'Home' on page 7-18](#)

7-5-5-2 Software Status

Use **Software Status** to view general information about the software installed on the Versana Active.

The information on **Software Status** is available to all service class licenses.

To access **Software Status**, navigate to **Utility > Service > Home**.

Software Status	
System Date	Mon, Jul 16, 2018
System Time	15:18:08
Application Installation Date	14:21:00 07/13/2018
Base Image Installation Date	Not Available
Base Image Version	xxxxxx
Application Software Version	R1.0.1
Application Status	Running

Figure 7-17. Software Status

This table shows all the elements available on **Software Status** with descriptions.

Table 7-2: 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 Built Date	Date the application software was built. The application software includes the Versana Active product-specific software.
Base Image Built Date	Date the base image software was built. 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:

- [7-5-5 'Home' on page 7-18](#)

7-5-5-3 System Status

Use **System Status** to view status information on the Versana Active. 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 and AC
- View the amount of time the Versana Active has been running
- View the amount of time since the Versana Active 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**.

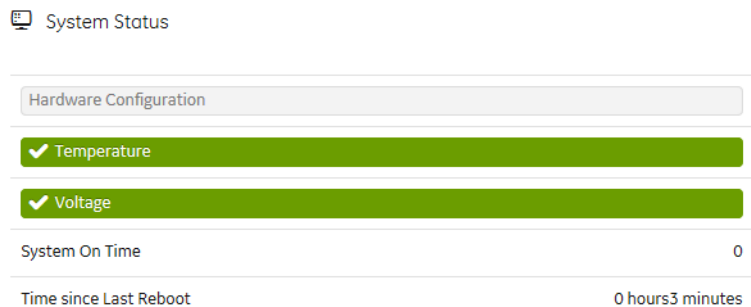


Figure 7-18. System Status

This table shows all the elements available on **System Status** with descriptions.

7-5-5-3 System Status(continued)

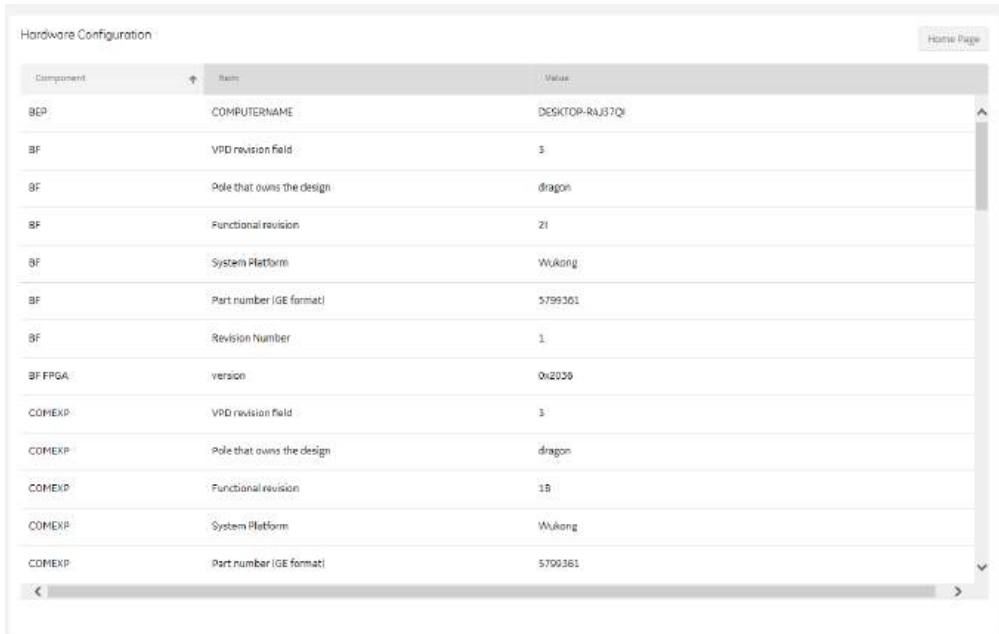
Table 7-3: System Status

Element	DESCRIPTION
Hardware Configuration	Displays the contents of the hardware configuration file.
Temperature	Displays the temperature monitoring of the Versana Active 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 Versana Active 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.
System On Time	Displays the time the Versana Active was turned on.
Time Since Last Reboot	Displays the time the Versana Active was last rebooted.

7-5-5-4 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**.



Component	Item	Value
BEP	COMPUTERNAME	DESKTOP-RAJ37Q2
BF	VPD revision field	3
BF	Pole that owns the design	dragon
BF	Functional revision	2I
BF	System Platform	Wukong
BF	Part number (GE format)	5799361
BF	Revision Number	1
BF FPGA	version	0x2039
COMEXP	VPD revision field	3
COMEXP	Pole that owns the design	dragon
COMEXP	Functional revision	1B
COMEXP	System Platform	Wukong
COMEXP	Part number (GE format)	5799361

Figure 7-19. Hardware Configuration

This table shows all the elements available on **Hardware Configuration** with descriptions.

Table 7-4: 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:

- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-5 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:

- [7-5-5-6 'FRU Status' on page 7-26](#)
- [7-5-5-7 'Graphs' on page 7-28](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-6 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**.

Name	Status	Lower Limit Warnings	Upper Limit Warnings	Lower Limit Errors	Upper Limit Errors
BEP_CPU_TEMPERATURE	Normal	0	0	0	0
MST_AFE_TEMPERATURE	Normal	0	0	0	0
MST_BFO_TEMPERATURE	Normal	0	0	0	0
MST_MVP_TEMPERATURE	Normal	0	0	0	0

Figure 7-20. FRU Status

7-5-5-6 FRU Status(continued)

This table shows all the elements available on **FRU Status** with descriptions.

Table 7-5: FRU Status

Element	DESCRIPTION
FRU Status Summary	Number of the FRUs being monitored.
FRU Status Details	
Name	• Name of the FRU.
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.
Lower Limit Warnings	Number of low limit temperature warnings.
Upper Limit Warnings	Number of high limit temperature warnings.
Lower Limit Errors	Number of low limit temperature errors.
Upper Limit Errors	Number of high limit temperature errors.

For more information, see:

- [7-5-5-5 'Temperature' on page 7-25](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-7 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**.

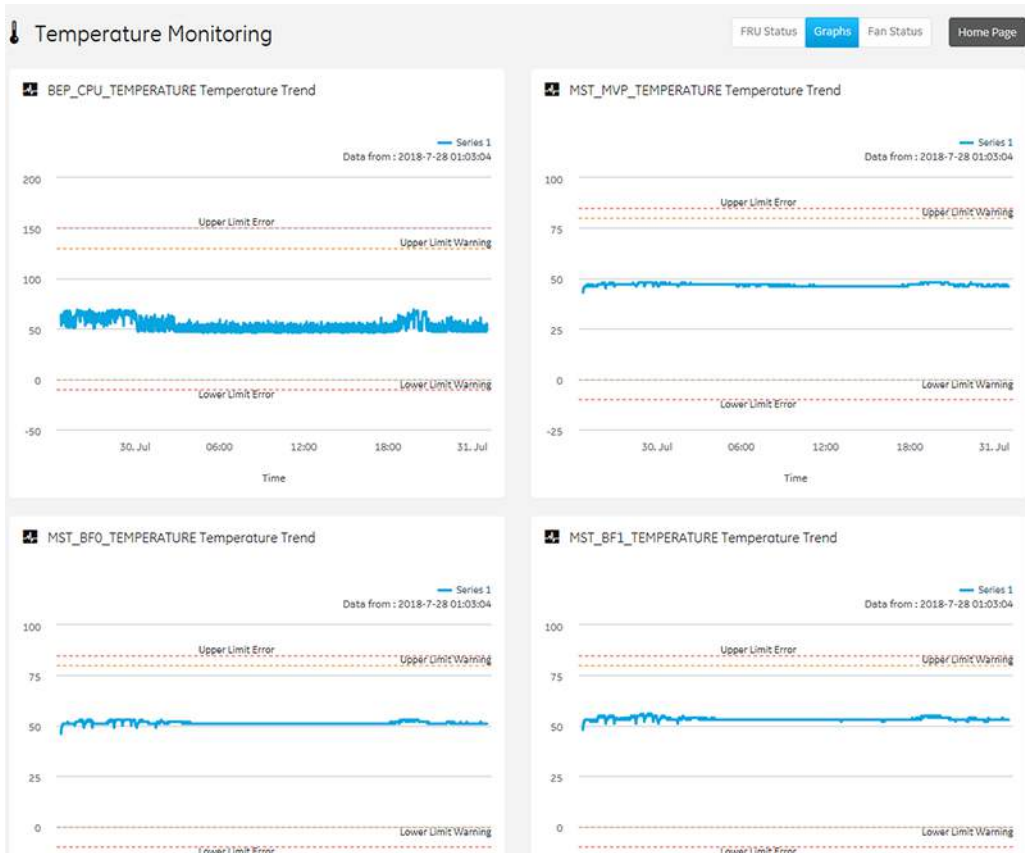


Figure 7-21. Graphs

For more information, see:

- [7-5-5-5 'Temperature' on page 7-25](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-8 Voltage

Use **Voltage** to troubleshoot problems with monitored FRUs and the AC voltage of the Versana Active.

Specifically, use these pages:

- FRU Status
- AC Voltage

To access **Voltage**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Voltage**.

For more information, see:

- [7-5-5-6 'FRU Status' on page 7-26](#)
- [7-5-5-10 'AC Voltage' on page 7-31](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-9 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**.

Name	Status	Lower Limit Warnings	Upper Limit Warnings	Lower Limit Errors	Upper Limit Errors
MST_2V5V_CLK	Normal	0	0	0	0
MST_AFE_1V8	Normal	0	0	0	0
MST_AFE_3V3_0	Normal	0	0	0	0
MST_AFE_3V3_1	Normal	0	0	0	0
MST_D1V1_0	Normal	0	0	0	0
MST_D1V1_1	Normal	0	0	0	0
MST_D1V1_2	Normal	0	0	0	0
MST_D1V2_D5P	Normal	0	0	0	0
MST_D1V5_X10	Normal	0	0	0	0

Figure 7-22. FRU Status

This table shows all the elements available on **FRU Status** with descriptions.

Table 7-6: 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 fan 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:

- [7-5-5-8 'Voltage' on page 7-29](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-10 AC Voltage

AC Voltage graphically displays the voltage input over a period of time to help identify instabilities, or fault conditions, over time.

To access this page, under **System Status**, select **Voltage** and then select **AC Voltage**.

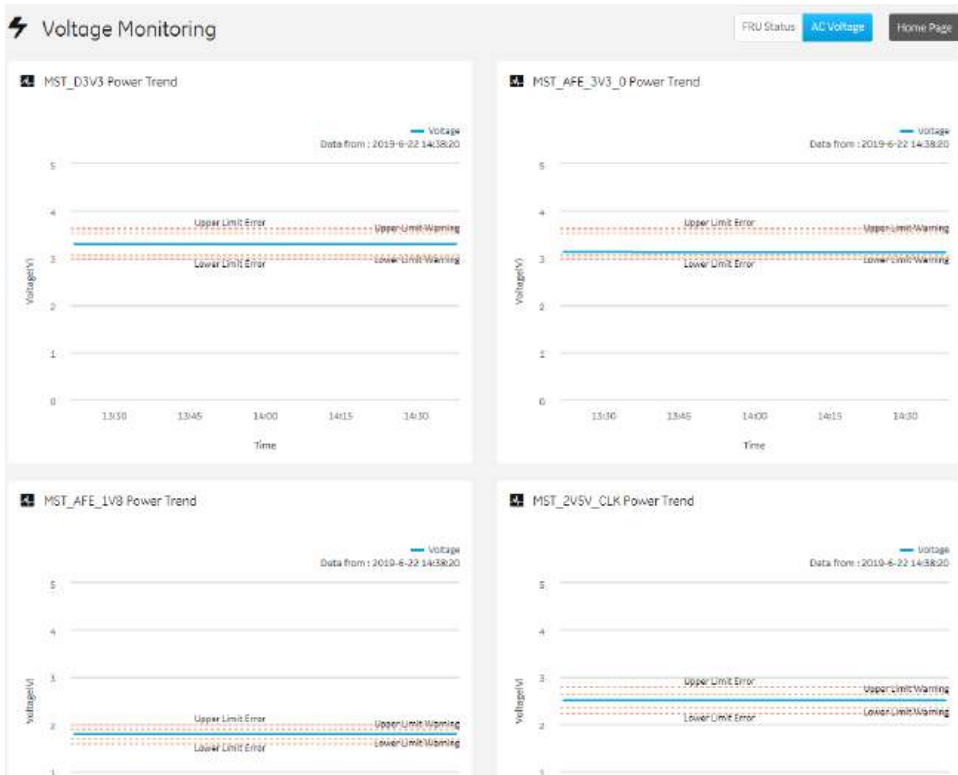


Figure 7-23. AC Voltage

For more information, see:

- [7-5-5-8 'Voltage' on page 7-29](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-11 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.

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**.

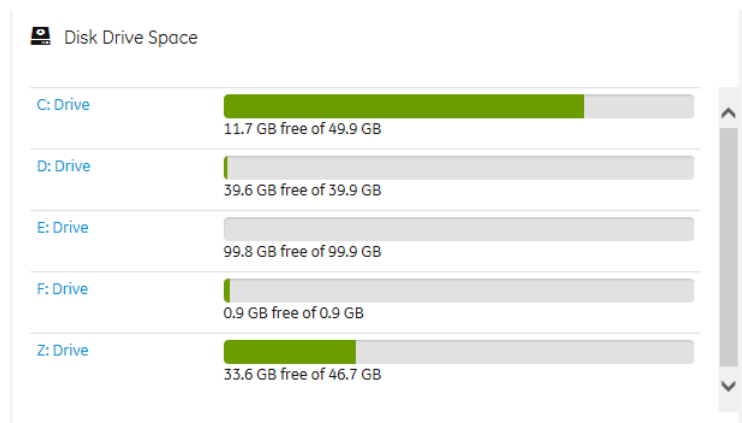


Figure 7-24. Disk Drive Space

This table shows all the elements available on **Disk Drive Space** with descriptions.

Table 7-7: 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

Table 7-7: Disk Drive Space

D: Drive	<p>D: partition shows the graphical representation of the following:</p> <ul style="list-style-type: none"> • Service • Logs. • Temp • Export • Service configuration • Misc • Available free space in GB
E: Drive	<p>E: partition shows the graphical representation of the following:</p> <ul style="list-style-type: none"> • Patient images • Archive • Printer spooler • Clipboard • Dicom spooler • Misc • Available free space in GB
F: Drive	<p>F: partition shows the graphical representation of the following:</p> <ul style="list-style-type: none"> • Serial Number • Available free space in MB
Z: Drive	<p>Z: partition shows the graphical representation of the following:</p> <ul style="list-style-type: none"> • Package repository • Misc • Available free space in GB

For more information, see:

- [7-5-5 'Home' on page 7-18](#)

7-5-5-12 Network Configuration

Use **Network Configuration** to view network (wired and wireless) information (the full ipconfig details) for the network configured with the Versana Active.

The information on **Network Configuration** is available to Class C and Class M licenses.

To access **Network Configuration**, navigate to **Utility > Service > Home**.

Network Configuration	
Host Name	DESKTOP-LHIDARA
Wired Connection	
IPv4 Address	3.35.156.137
IPv6 Address	fe80::c4e4:35bb:c33b:fd9b%4
Subnet Mask	255.255.255.0
Default Gateway	3.35.156.254
MAC Address	C4-00-AD-0F-37-13

Figure 7-25. Network Configuration

```

Network Details
-----
Windows IP Configuration
Host Name . . . . . : DESKTOP-IVBQ113
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : clients.health.go.com

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix . : clients.health.go.com
   Description . . . . . : Intel(R) Ethernet Connection (2) I219-LM
   Physical Address . . . . . : 74-E4-49-72-5B-0E
   DHCP Enabled. . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::9a2c1c025462ad71c21e6e1e1
   IPv4 Address. . . . . : 3.35.156.137 (Preferred)
   Subnet Mask . . . . . : 255.255.255.0
   Lease Obtained . . . . . : Thursday, May 17, 2018 1:02:54 AM
   Lease Expires . . . . . : Friday, May 18, 2018 5:22:55 AM
   Default Gateway . . . . . : 3.35.156.254
   DHCP Server . . . . . : 3.40.138.30
   DNS Servers . . . . . : 3.225.2104
   DHCPv6 Client DUID. . . . . : 00-01-00-01-22-8E-E3-84-74-FE-48-22-56-06
   DNS Servers . . . . . : 10.225.220.221
   . . . . . : 10.225.220.221
   Primary WINS Server . . . . . : 3.245.97.10
   Secondary WINS Server . . . . . : 3.20.88.25
   NetBIOS over Tcpip. . . . . : Enabled

Tunnel adapter {atap.clients.health.go.com}:

   Media State . . . . . : Media disconnected
   Connection-specific DNS Suffix . : clients.health.go.com
   Description . . . . . : Microsoft ISATAP Adapter #1
   Physical Address . . . . . : 00-00-00-00-00-00-00-00
   DHCP Enabled. . . . . : No
   Autoconfiguration Enabled . . . . : Yes
    
```

Figure 7-26. Network Configuration with More Details

7-5-5-12 Network Configuration(continued)

This table shows all the elements available on **Network Configuration** with descriptions.

Table 7-8: Network Configuration

Element	DESCRIPTION
Host Name	Name of the local host for the Versana Active.
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:

- [7-5-5 'Home' on page 7-18](#)

7-5-5-13 Connected Probes

Connected Probes shows probes connected to the Versana Active. The order on the user interface is top down matching the left-to-right order on the Versana Active.

The information on **Connected Probes** is available to all service class licenses.

To access **Connected Probes**, navigate to **Utility > Service > Home**.

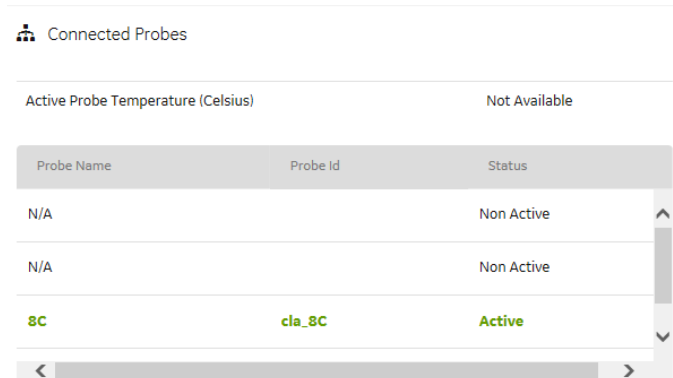


Figure 7-27. Connected Probes

This table shows all the elements available on **Connected Probes** with descriptions.

Table 7-9: 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 Versana Active.
Probe ID	Identifier of the probe connected to the Versana Active.
Status	Statuses of the probe connected to the Versana Active. Valid values are: <ul style="list-style-type: none"> • Active • Non Active

For more information, see: [7-5-5 'Home' on page 7-18](#)

7-6 Network and Common Diagnostics

7-6-1 Network Configuration

7-6-1-1 Wire-LAN Network

1. Connect system with network.
2. Enter **Utility-> Connectivity-> TCP/IP**, in IP settings window, check **Enable DHCP**, and select the proper network speed in **Network Speed**.



Figure 7-28. Enable DHCP

7-6-1 Network Configuration(continued)

NOTE: If user wants to setup static IP address, uncheck **Enable DHCP** option, input static address in **IP-Address box**, **MAC Address**, **Subnet Mask** and **Default Gateway** box. In **Network Speed**, choose the proper speed available.

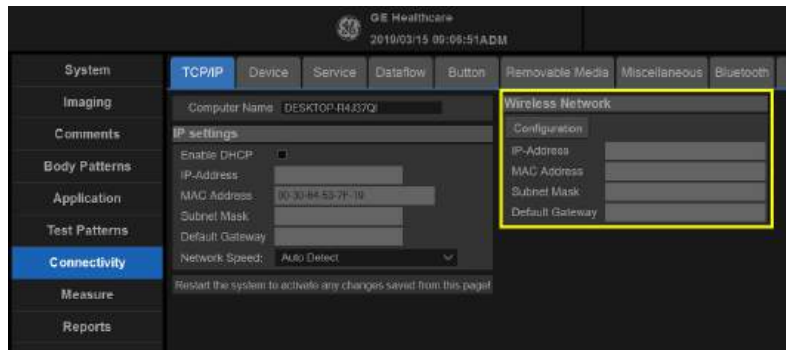


Figure 7-29. Network Settings

3. Select **Save**, and a popup window displays. Select **Restart Now** to restart the system and activate the changes.

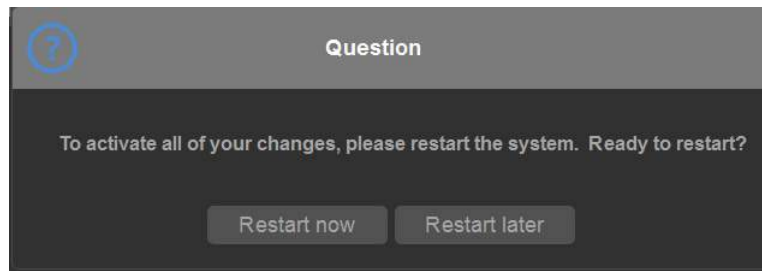


Figure 7-30. System Restart inquiry dialog

7-6-1 Network Configuration(continued)

4. After the system restarts, the network icon on the right top of the screen shows that the network is available.

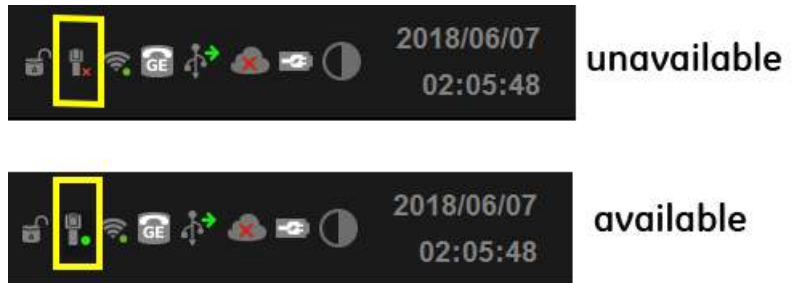


Figure 7-31. Network icon

7-6-1-2 Wireless-LAN Network

NOTE: To configure the Wireless-LAN network, the operator must login as administrator.

1. Connect the wireless adapter in the USB port.
2. Enter **Utility-> Connectivity-> TCP/IP**, press **Configuration**.
3. Double click **Wireless network**. you chosen, or click the **Connect** at the left bottom of screen.

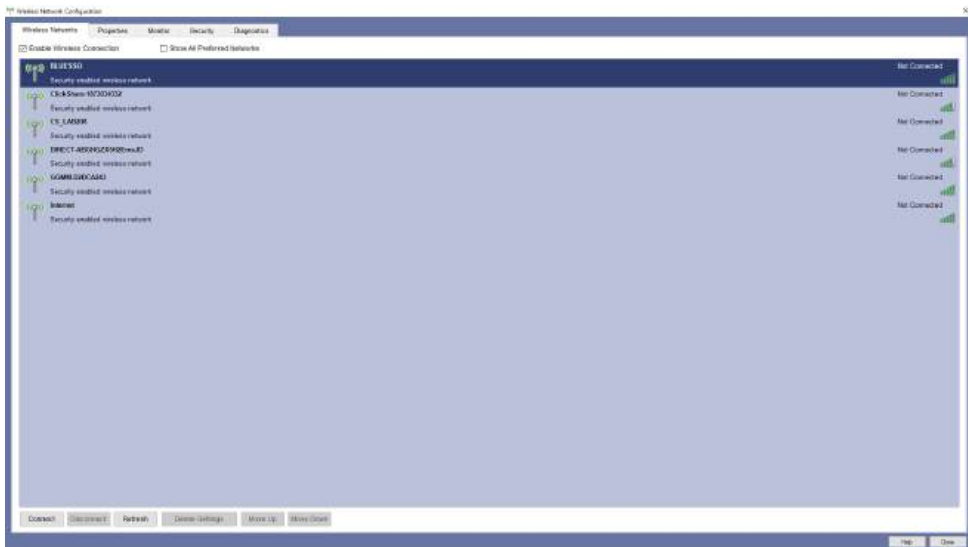


Figure 7-32. Wireless Network Connection

7-6-1-1 Wire-LAN Network(continued)

4. Enter Internet Wireless Network Properties, select Security type and Encryption type. Then input Network security key and click OK.

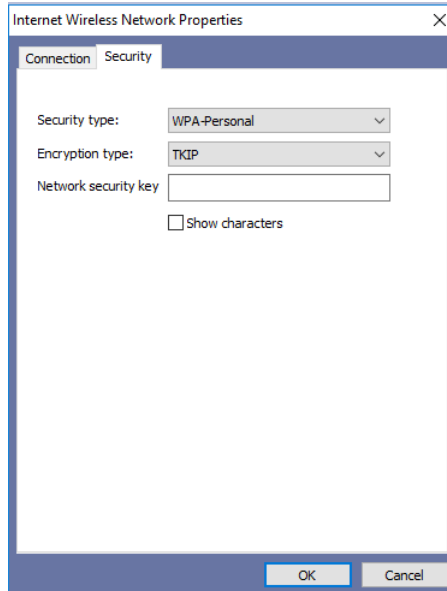


Figure 7-33. Connection Status

5. The network icon at the left bottom of screen shows that the wireless network is available.

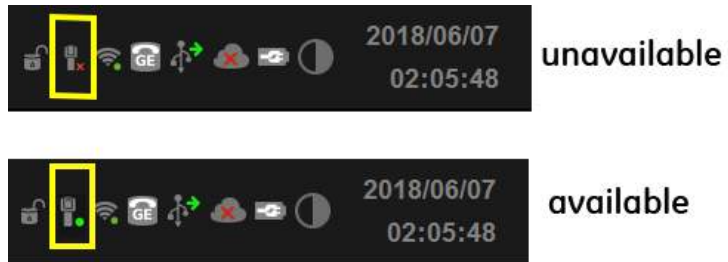


Figure 7-34. Wireless-LAN Connection

7-6-2 Remote Access

Remote Access is a feature designed to enable OLE’s access to customer’s desktop remotely, service engineers don’t have to be on site to connect the physical dongle to exit to desktop, it’s doable remotely by using this feature.

1. In the server side, type the CRM No. of the system which the OLE would remotely connect to, and select **Get Started**.

NOTE: Remote FFA link: <https://stg-ffa.am.health.ge.com/#/di/home>.

The screenshot shows a web form titled "Start Remote Troubleshooting". It is divided into two main sections: "Workflow Type" and "Enter System or Service ID".

- Workflow Type:** A radio button is selected for "Standard (Includes Insite1, Insite2, and RSvP)".
- Enter System or Service ID:** This section has two radio buttons: "System ID" (selected) and "Service Request ID".
 - Under "System ID", there is a note: "Devices using RSvP may utilize [Advanced Search](#) for filtering." Below this is a text input field containing "CRMNo.", which is highlighted with a yellow rectangular box.
 - Below the text field is an optional "Service Request ID" input field.
- Below the "System ID" section, there are two more input fields: "Service Request ID" and "Country of System".
- At the bottom right of the form is a dark "Get Started" button.

Figure 7-35. Input System ID

7-6-2 Remote Access(continued)

2. Select **Connect**. Then the **Connect** page is displayed.

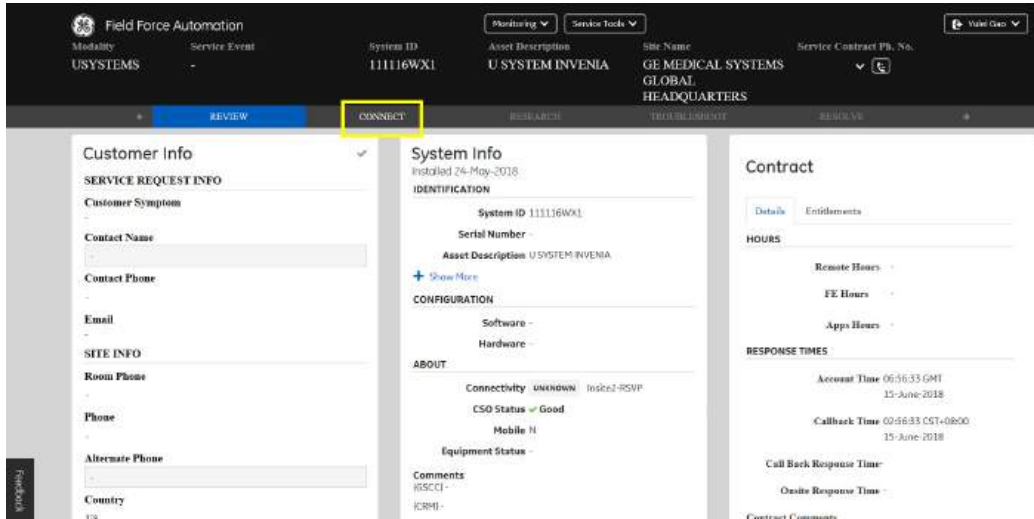


Figure 7-36. Connect Page

3. Select HTTPS to **Connect**. Then the OLE is remotely connected to the system.

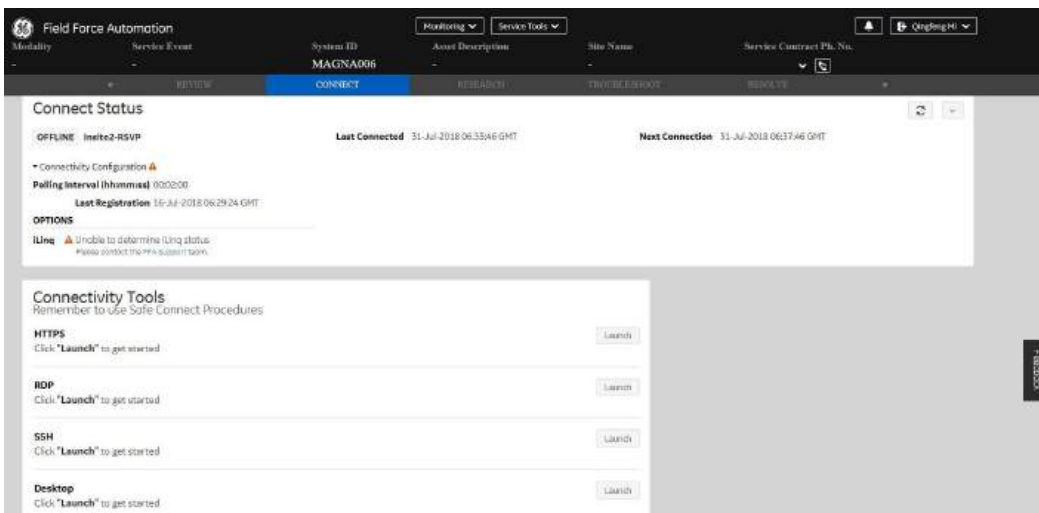


Figure 7-37. Select HTTPS to Connect

NOTE: RDP is not available in Versana Active.

7-6-2 Remote Access(continued)

4. Enter **Options** to add service option key.

NOTE: Please delete the added service option key when your service work is done.

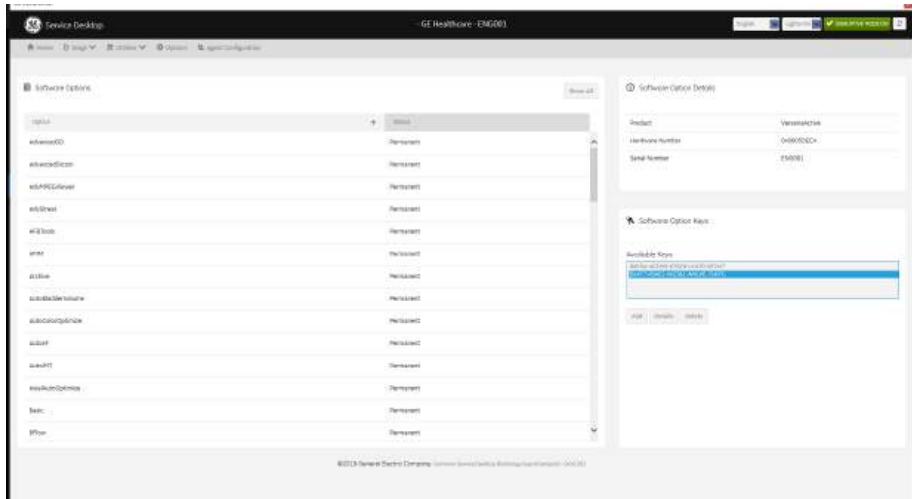


Figure 7-38. Add Service Option Key

5. Enter **Utility-> Disruptive Mode Utility**, select **Enable**.

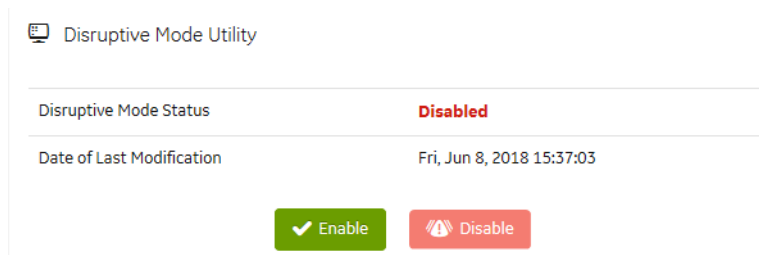


Figure 7-39. Enable Disruptive Mode

7-6-2 Remote Access(continued)

- If we want to see the Scan screen or have control of the unit, we have to go to Virtual Console Observation and start it. Enter **Utility-> Virtual Console Observation**, select **Start**.

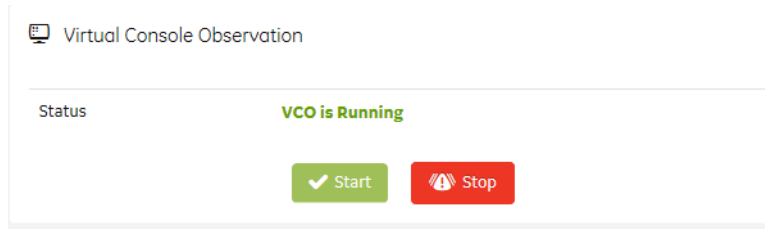


Figure 7-40. Start VCO

- Select Desktop to Connect. Then the OLE is remotely connected to the system.

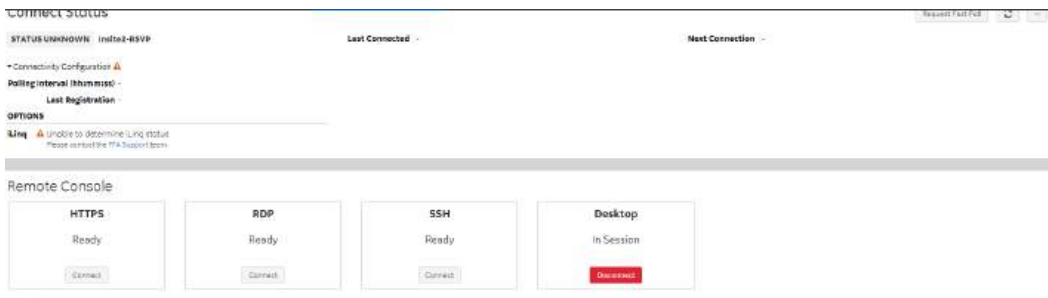


Figure 7-41. Select Desktop to Connect

NOTE: *You need to reboot the system before clinical scanning is resumed.*

7-6-3 Service Diagnostics

7-6-3-1 MST board

- MST Swept Demodulator Test performs a signal path test of the swept demodulator FPGA on the MST.
- MST Front End Interface Test tests that the MST can access Front-End boards.
- MST Analog Test.
- MST Memory Access Test tests that MST can access to the internal, external, external cache memory spaces.
- Front End Interface FPGA Test reads the version of the GFE FPGA.
- MST Fixed Demodulator Test: MST Fixed Demodulator signal path test.
- DSP Master Clock Check checks DSP Master Clock.
- MST Swept Demodulator Long Test.
- MST Temperature Test.
- MST Voltage.
- FPGA Internal Memory Test.

NOTE: The FPGA Internal Memory test may fail if it is performed with other tests at the same time.

- FPGA Version.

7-6-3-2 CWI board

- HV STOP Test tests HV-STOP mechanism and checks each board is able to assert HV_STOP using its HV_STOP source.
- CWI Voltage.
- Other Voltage test point.
- Memory tests the memory on the mother board.
- Network Interface.
- Network Interface Reliability Test.
- CPU Temperature Test.

7-6-3-3 Front End Path

- AFE IF Test checks digital path between AFE chips and FPGA.
- Complex Mixer Test checks the Mixer process chain of FPGA.
- CE Decoder Test checks the Code Excitation Decoder process chain of FPGA.
- Analog CW checks I-Q symmetry of pedof CW beamformer receiving signal.
- When AFE IF Test/Complex Mixer Test/CE Decoder Test fail, please try to replace MST. If it doesn't work, please try other PWA. When aCW IQ Symmetry Test fail, please try to replace MST. If it doesn't work, please try CWD or other PWA.

7-6-3-4 PC Test

- Hard Drive Test Long tests functionality of the hard drive.
- Hard Drive Test Short tests functionality of the hard drive.
- RTC clock:
- **AVI playback** tests playing back an AVI file.
 - Click "Play" to run the test. If the test is successful, you will see a brief video clipo with audio. For more information about the test, click "More Information".
 - Click "Pass" if the test successfully reproduces the video clip.
 - Click "Fail" if the test is unable to successfully reproduce the video clip.
 - Click "Cancel" button to quit the test without recording a test result.
- **Keyboard**
 - Press each key on the keyboard and it will be added to the History. Hold down a key to test the repeat of that key. To cancel, click Cancel or press Alt-X.
 - Special purpose keys like volume control or Internet access keys may not be detected. To test the Fn key of a notebook computer, hold down the Fn key while pressing another key.
 - Note: This diagnostic is intended to verify keyboard keys are in good working order. It is not intended to verify that keyboards produce desired characters.

7-6-3-4 PC Test(continued)

- **Monitor Test Patterns**
 - This test is composed of various elements that verify a monitor functions correctly. To test a monitor feature, click the appropriate button. You can return to this dialog by clicking the mouse button or pressing any key.
 - The Combination Test helps you verify your monitor is properly aligned, and set at the correct color depth and resolution. Use the crosshair pattern in each corner of the screen to visually determine if the monitor aligns correctly. If the crosshairs appear distorted or out of focus, a problem may exist with the monitor alignment. Use the color spectrum array for visually verifying the monitor color depth capacity. If the colors in the color spectrum do not blend smoothly together, a problem may exist with the monitor color depth. Use the graduated horizontal and vertical alignment bars to determine the monitor resolution capabilities. The better you can discern individual lines as they move closer together, the higher the resolution capabilities of the monitor.
 - The Solid Color Test helps point out malfunctioning or dysfunctional pixels using five basic colors: red, green, blue, black, and white. Fill the screen with an appropriate color by clicking the associated button. If a pixel is malfunctioning, the pixel color will contrast with the color of all other pixels.
 - The VESA Test Patterns allow you to test the monitor for proper luminance, geometry and focus. Click the appropriate button to fill the screen with the associated test pattern. You can return to this dialog by clicking the mouse button or pressing any key.

7-6-3-4 PC Test(continued)

- **Trackball**
 - The Mouse Status Test verifies the cursor position and mouse button state. When a mouse button is pressed, the corresponding button on the picture will change color. If the mouse is a wheel or scroll mouse, an arrow will indicate the direction the wheel is being rotated. Clicking the wheel will flash the picture of the mouse in the Mouse Status Test area.
 - The Drag and Drop Test verifies a mouse can successfully perform drag and drop operations. Left click the picture of the CD and drag it onto the picture of the drive. If successful, the picture will change.
 - The Double Click Test verifies a mouse can successfully perform double-click operations. Double-click on the picture of the monitor. If successful, the picture will change.
- **Sound Test** generates sounds for testing the speakers.
- **USB Ports Test** lists USB Devices.

7-6-3-5 Battery

7-6-3-5-1 Battery Pack (Used in Versana Active console system)

Parameters for Battery Pack:

- Capacity:5.36Ah
- Rating:14.4V 77.18Wh
- Limited charging Voltage:16.4V

Battery Pack has a test function about the remaining fuel gauge. User can press TEST button, and then Fuel Gauge LEDs shall display below pattern for 5 seconds, refer to [Table 7-10 on page 7-50](#).

NOTE: *The test fuction won't be activated until the battery has been used in the system.*

Table 7-10: Fuel gauge LED indication

SOC	LED1	LED2	LED3	LED4
0-30%	ON	OFF	OFF	OFF
31-50%	ON	ON	OFF	OFF
51-75%	ON	ON	ON	OFF
76%-100%	ON	ON	ON	ON



Figure 7-42. Press TEST Button

NOTE: *The graphic above is for illustration purpose only.*

7-6-3-5-2 Internal Battery (Used in Big Battery Case for VSN A Adv Cart)

Parameters for Internal Battery:

- Capacity:5.4Ah
- Rating:18V 97.2Wh

Internal Battery has a test function about the remaining fuel gauge. User can press TEST button, and then Fuel Gauge LEDs shall display below pattern for 5 seconds, refer to [Table 7-11 on page 7-51](#).

NOTE: *The test fuction won't be activated until the internal battery has been used in the system.*

Table 7-11: Fuel gauge LED indication

SOC	LED1	LED2	LED3	LED4
0-25%	ON	OFF	OFF	OFF
26-50%	ON	ON	OFF	OFF
51-75%	ON	ON	ON	OFF
76%-100%	ON	ON	ON	ON



Figure 7-43. Press TEST Button

NOTE: *The graphic above is for illustration purpose only.*

7-6-3-6 Assessment Utility

7-6-3-6-1e-PAT

e-PAT is a probe assessment tool that evaluates each probe element response scanning on the air. Probes have to be clean, any gel residue will provide incorrect data. This test is an assessment that is intended to be used comparatively during the life of the probe to evaluate possible probe deterioration over time.

NOTE: Probe diagnostics is available to Class C (Service Pro) license.

1. Check that the probe to be tested is thoroughly clean and dry. Connect it to the probe port on the scanner, then hold the probe in the air ready for testing.



Figure 7-44. The probe port


NOTE: Prior to inserting the probe, ensure that the connector locking handle is positioned to the unlock state.

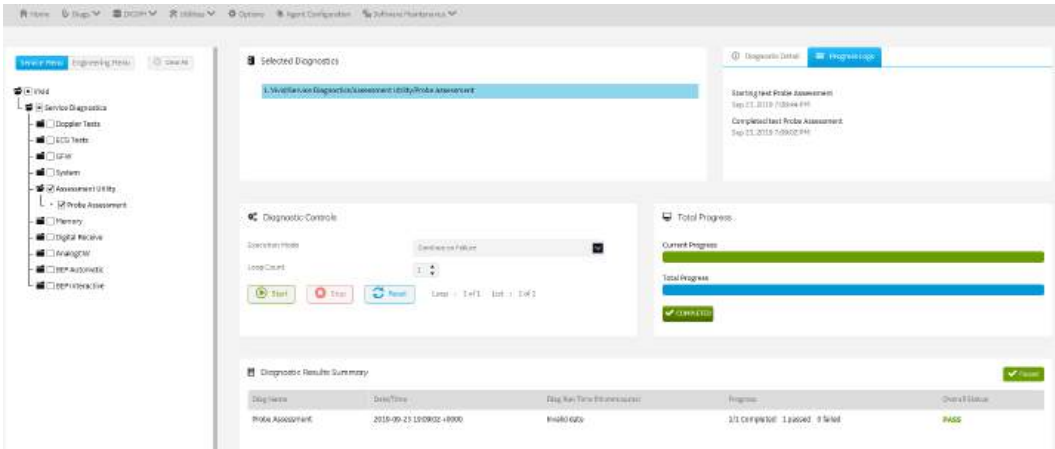
NOTE: Ensure the probe is locked to the system before you start the probe diagnostics.




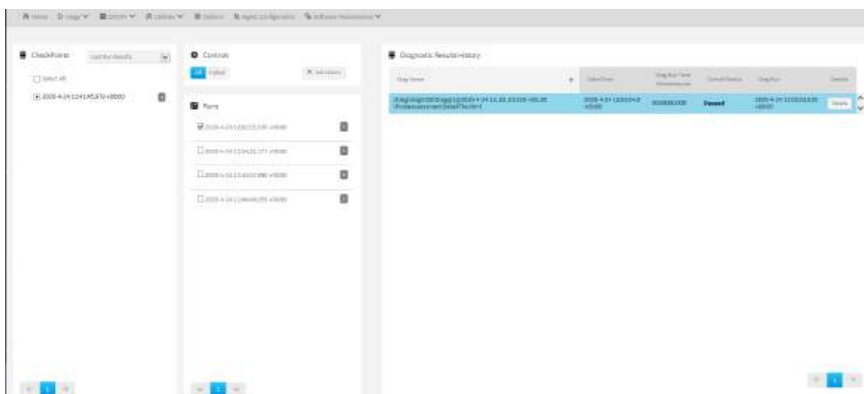
DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.

7-6-3-6-1e-PAT(continued)

2. Insert the SSA key and press **Insite ExC**  > **Service Desktop** > **Diags** > **Run Diags** > **Probe Assessment**.

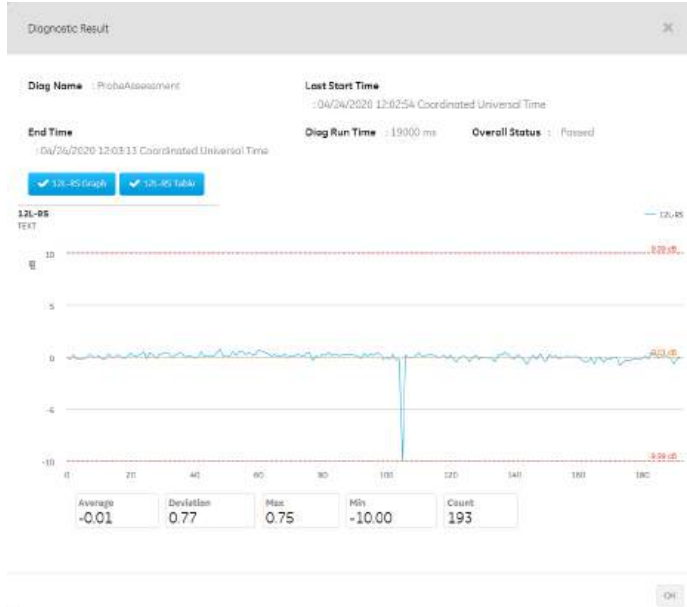


3. Select **Start**.
The Probe Diagnostics commence. While the test proceeds, the name of the test currently in progress is displayed in the Selected Diagnostics field. As the testing sequence progresses, the progress bar in the Total Progress field will advance to reflect the test progress.
4. At any stage, press **Stop** or **Reset** button, if required.
5. When the probe diagnostics is completed, there will be **Pass/Fail** information listed in the Diagnostic Results Summary field to indicate whether the probe diagnostic is completed successfully or not.
6. If you want to review all Reports to ensure the probe is fully functional and has no damaged elements, go to In the **Insite ExC**  > **Service Desktop** > **Diags** > **Diags History** to check the probe diagnostic results.



7-6-3-6-1e-PAT(continued)

- 7. All the probe diagnostics you have run will be displayed in Runs field. Select one and press **Get History** button, the corresponding reports will be shown in the Diagnostic Results History field.
- 8. Press **Details** button if you want to see the detailed Reports of the selected diagnostic.



NOTE: *The above detailed information is just for reference and not used to decide probe defect or not.*



CAUTION

Reboot the system after the probe diagnostics.

7-6-3-6-2 Supported probes

Table 7-12: Supported probes

Item	Probe Name	HCAT
1.	4C-RS	H4000SR
2.	8C-RS	H40402LS
3.	E8C-RS	H40402LN
4.	E8Cs-RS	H48062AF
5.	9L-RS	H40442LL
6.	3Sc-RS	H45041DL
7.	6S-RS	H45021RP
8.	12S-RS	H44901AB
9.	12L-RS	H40402LY
10.	LK760-RS Note: The probe is for veterinary use.	H44901AF
11.	L8-18i-RS	H40462LF
12.	L6-12-RS	H48062AC
13.	RAB2-6-RS	H48681WR

7-6-3-6-3 Restart the system after diagnostics

Always shutdown the system and reboot after a diagnostics session.

7-7 Troubleshooting

7-7-1 Console Troubleshooting

7-7-1-1 Bootup Sequence Theory

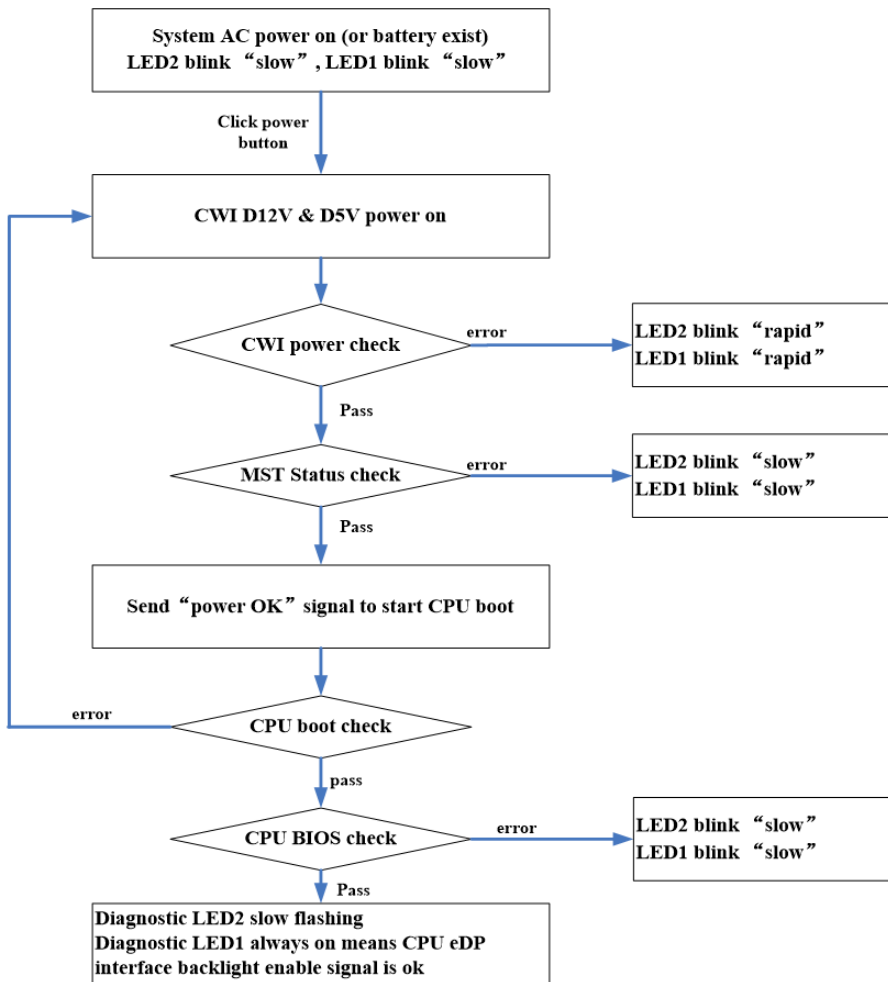


Figure 7-45. Bootup Sequence

7-7-1-2 System Doesn't Boot (Hang-up)

Table 7-13: Hang-up black screen diagnostic table

	LED2	LED1	HDD LED	KBD On/Off button LED	Checklist (only for reference)	Note
Before pressing power On/Off button	Blink Slowly	Blink Slowly		OFF	Normal status	
	Not Blink	Not Blink		OFF	<ol style="list-style-type: none"> 1. Check ACDC adaptor and related cable 2. Check battery 3. Check CWI PWA 	<ol style="list-style-type: none"> 1. No power supply to system. 2. CWI internal logic error.
After pressing power On/Off button, the system monitor still keeps black. (After at least 2 minutes)	Blink Slowly	Blink Slowly		Not Green	<ol style="list-style-type: none"> 1. Check KBD board 2. Check KBD cable 3. Check CWI PWA 	<ol style="list-style-type: none"> 1. KBD board LED failure 2. KBD cable failure 3. CWI board boot up failure
	Blink Quickly	Blink Quickly			<ol style="list-style-type: none"> 1. Check CWI PWA 2. Check the monitor and related eDP cable 	<ol style="list-style-type: none"> 1. Remove eDP cable from CWI PWA. Then power on system and observe the LED1 and LED2 status again.
	Blink Slowly	Blink Slowly		Green	<ol style="list-style-type: none"> 1. Check MST PWA 2. Check CWI PWA 	<ol style="list-style-type: none"> 1. Remove MST board from CWI board. Then power on system and observe the LED1 and LED2 status again.
	Blink Slowly	OFF	Blink when reading and writing data.	Green	<ol style="list-style-type: none"> 1. Check CWI PWA 	<ol style="list-style-type: none"> 1. CPU PWM_EN signal failure. 2. Connect a normal external monitor to HDMI port.
	Blink Slowly	ON		Green	<ol style="list-style-type: none"> 1. Check eDP cable and monitor connection 2. Check eDP cable 3. Check monitor 	<ol style="list-style-type: none"> 1. Connect a normal external monitor to HDMI port.

Chapter 8

Replacement Procedures

This chapter describes how to remove and install, or replace, modules and subsystems in the Versana Active. It also includes instructions for installing and re-installing the software.

8-1 Overview

8-1-1 Contents in this chapter

- 8-1 'Overview' on *page 8-2*
- 8-2 'Warnings and important information' on *page 8-3*
- 8-3 'Disassembly/Re-assembly' on *page 8-5*
- 8-4 'Loading the software' on *page 8-9*

8-2 Warnings and important information

8-2-1 Warnings



Energy Control and Power Lockout for Versana Active.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.



Ultrasound System components may be energized.



Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



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 Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.

8-2-1 Warnings(continued)

NOTE: Use an ESD compatible work space or the ESD-kit during parts replacement.



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.

8-2-2 Returning/shipping probes and repair parts

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

GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE 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.

NOTE: *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.*

NOTE: *Please remove the battery pack before system shipment to avoid any potential danger.*

8-3 Disassembly/Re-assembly

8-3-1 Warning and Caution



For FRU (Field Replaceable Unit), only qualified service personnel should remove any covers or panels. Electrical hazards exists at several points inside. Become thoroughly familiar with all hazardous voltages and high current levels to avoid accidental contact.

CRU (Customer Replaceable Unit) can be replaced by customers, as these parts are not related to any electrical hazards, no tool is needed for the replacement.



Remove/disconnect the battery before disassembling or re-assembling the parts.



DO wear the ESD wrist strap when you work on circuits.

8-3-2 Tools needed for servicing Versana Active

Table 8-1: Standard tools list for Versana Active

No	Part Name	Part No.	QTY	Screw Description	Screwdriver Description
1	screw	2327785	5	D2 SCREW M2x4, NYLOK	Common Phillips Screwdriver
2	screw	5801820	57	SCREW FH M2.5x5-NL_BLACK	Common Phillips Screwdriver
3	screw	5138465	2	Screw FH M2.5x5-NL	Common Phillips Screwdriver
4	screw	2327793	54	D2 SCREW SJ2836-87 M3x8	Common Phillips Screwdriver
5	screw	2327766	5	Screw M3x5	Common Phillips Screwdriver
6	screw	5478161	34	Taping SCREW M3x6	Common Phillips Screwdriver
7	screw	5138468	3	Screw BN5687 M3x10_NL	Common Phillips Screwdriver
8	screw	5162727	6	D2 SCREW BN5687 M3x25	Common Phillips Screwdriver
9	screw	5237561	4	Screw GB T9074.4-1988 M4x12	Common Phillips Screwdriver
10	screw	5826240	4	Screw M3x10L_Zn	Common Phillips Screwdriver
11	screw	5439265	36	Screw M4X10	Common Phillips Screwdriver
12	screw	5495588	2	M3X6 CSK SCREW	Common Phillips Screwdriver
13	screw	5476387	4	M6x15 with washer	#5 Inner Hexangular Set

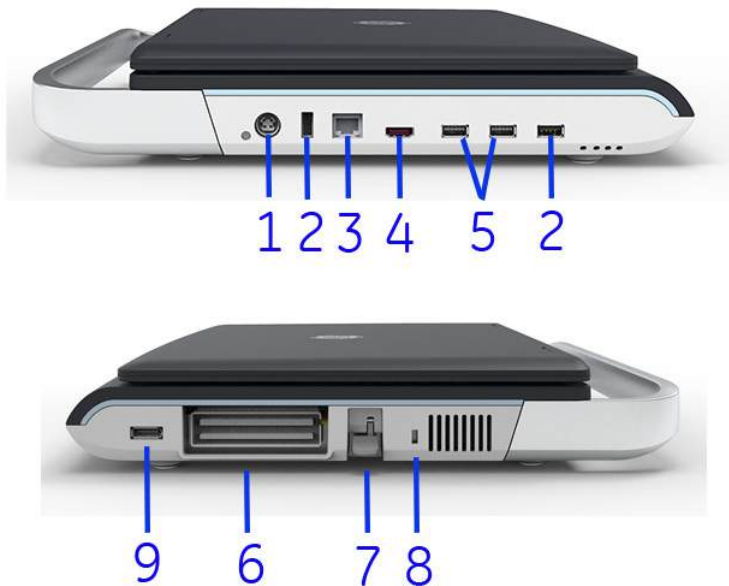
NOTE: Please use the correct Screwdrivers listed in [Table 8-1](#).

8-3-3 Overview of Versana Active



Figure 8-1. System Overview

8-3-3 Overview of Versana Active(continued)



- | | |
|--------------------------------|---|
| 1. Port for DC In (AC Adapter) | 5. 2 general USB 3.0 ports |
| 2. 2 general USB 2.0 ports | 6. 1 Probe Connector Port |
| 3. Network Port | 7. Probe Connector Locking Level |
| 4. HDMI port | 8. Security Lock |
| | 9. 4D port (only for Versana Active R1.1.x) |

8-4 Loading the software

8-4-1 Purpose of this section

This section describes how to reinstall software on Versana Active.

8-4-2 Customer provided prerequisite

- Formatted and labelled media for Images storage.
- Formatted and labelled media for Patient Archive and Presets (User Defined Settings).
- Password for the user ADM.

8-4-3 Data Management - moving all images



An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved away from Versana Active before doing backup of the Patient Database.

Depending on the location set-up, either move the images to a remote server or to removable media like DVD or CD discs.

- Move the images to a remote server or to removable media.

For instructions, please see “Disk management” in the Basic User Manual/User Guide.

8-4-4 Backing up the Patient Archive and System Configurations



CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved away from Versana Active before doing backup of the Patient Database.

Depending on the location set-up, either move the images to a remote server or to removable media like DVD or CD discs.

- Backup the Patient Archive and System Configurations.

8-4-5 Restoring up the Patient Archive and System Configurations

NOTE: *It is not suggested to manually delete the files in `D:\Scanner\target\resources\userdefs`.*



WARNING

To avoid not being able to connect to Local Archive, `connectivity.res` and `IPSave` in `"D:\Scanner\target\resources\userdefs"` should not be deleted. If they are deleted, please rewrite the serial number.

8-4-6 Recording important settings and parameters

8-4-6-1 Overview



CAUTION

An error, or a power loss may occur.

It is considered to be best practice to always keep a record on paper of the settings for the Versana Active. Verify if it is current before you start to load software!

Always keep a record of the settings for the Versana Active on paper. Verify if it is current before starting a software loading! If needed, record the settings.

8-4-7 Data Backup

NOTE: The screen graphics in this manual are only for illustrational purposes. Actual screen output may differ with different users' systems.



CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

*NOTE: For the upgrade option **Load the complete disk** or **Load the bootable C: partition only**, the information for Computer name and IP setting will be lost. Before upgrade, backup these information.*

8-4-7 Data Backup(continued)

1. Record the information for Computer name and IP setting in **Utility -> Connectivity -> TCP/IP**. Refer to [Table 8-2 on page 8-12](#).
 - If “Enable DHCP” is not selected, record all the information about IP setting. Refer to a) in [Figure 8-2 on page 8-12](#).
 - If “Enable DHCP” is selected, only record Computer name and Network Speed. Refer to b) in [Figure 8-2 on page 8-12](#).

Table 8-2: Record Table

Item Name	Setting
Computer Name	
IP-Address	
Subnet Mask	
Default Gateway	
Network Speed	

a)



b)

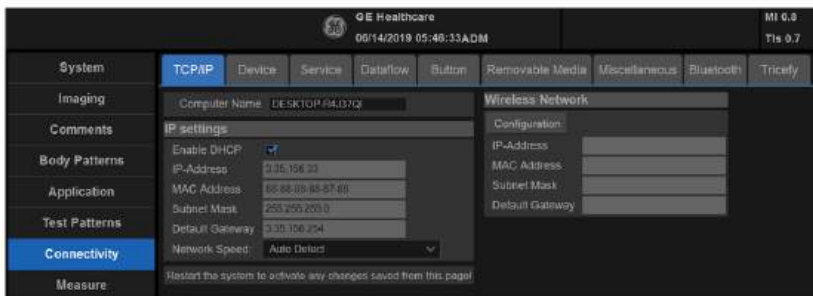


Figure 8-2. Record IP Setting

8-4-7 Data Backup(continued)

- Record the installed option keys in **Utility -> Admin -> System Admin**.

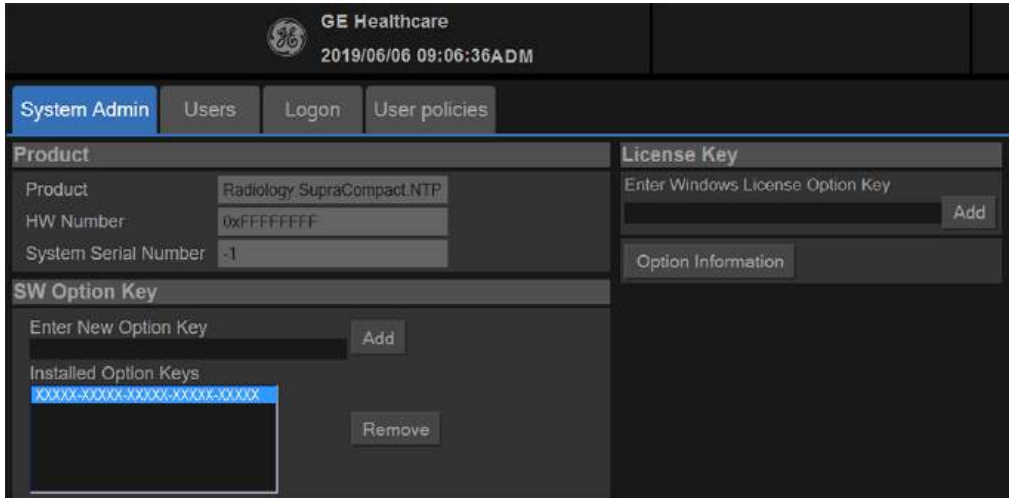


Figure 8-3. Option Key

- Insert the backup media. Go to **Utility -> System -> Backup/Restore -> Media** to select the media.

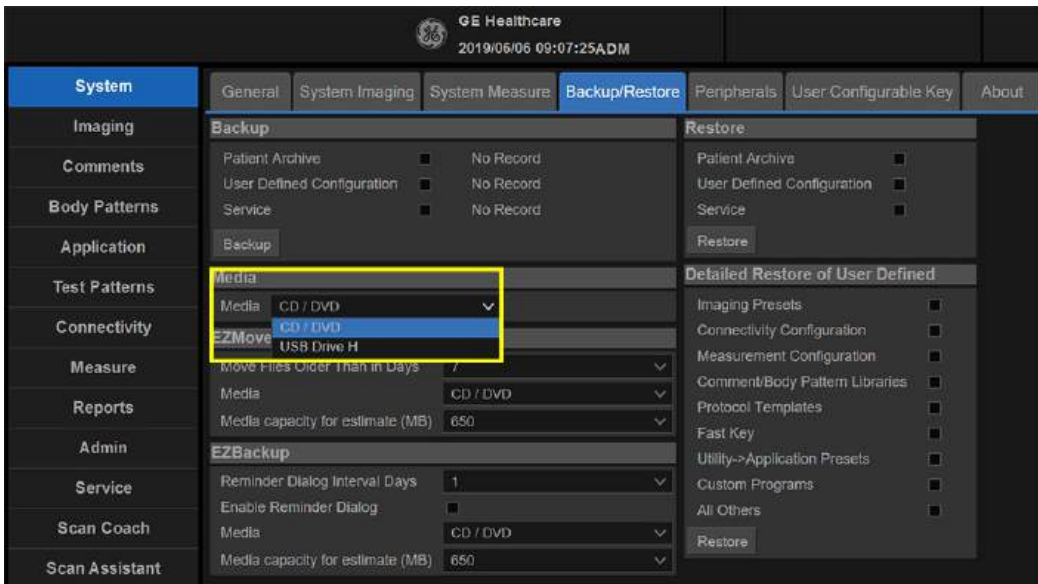


Figure 8-4. Media Menu

8-4-7 Data Backup(continued)

4. Go to **Utility -> System -> Backup/Restore**, select **Patient Archive**, **User Defined Configuration** and **Service** under **Backup** by placing a check mark in front of them. Then select **Backup** to backup the information.

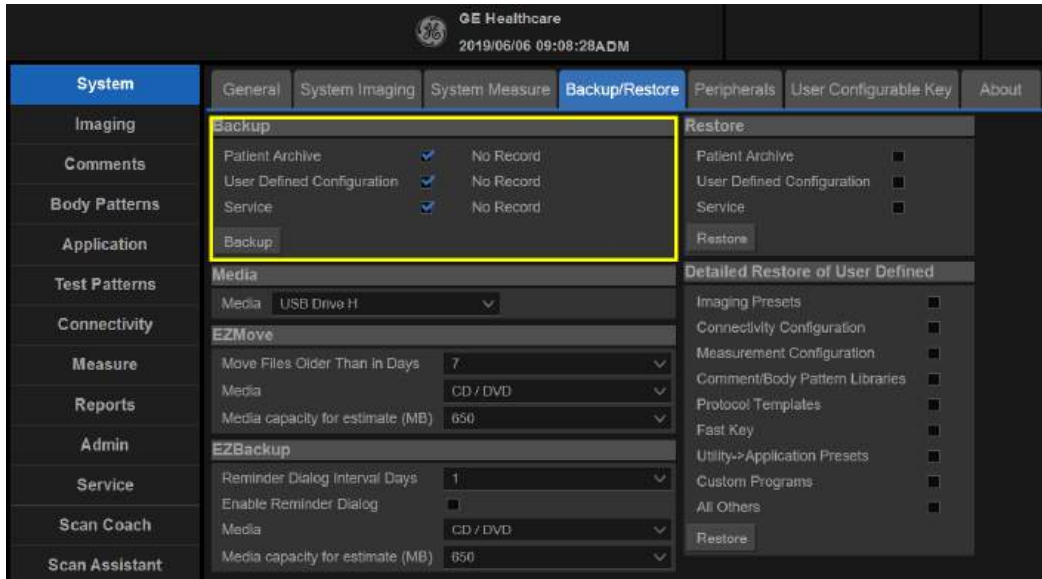


Figure 8-5. Backup Menu

8-4-7 Data Backup(continued)

5. Select OK to backup the system information when the following pop-up warning windows display.

NOTE: *After Patient Archive, User Defined Configuration and Service backup, remove all the external USB devices.*

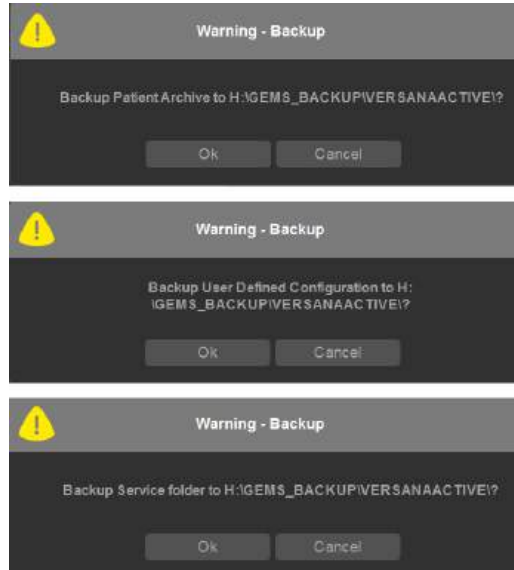


Figure 8-6. Backup Confirmation message

6. Go to **Utility -> System -> General**, record the **Preset Region** and the **Language**. Then select **Regional Options**.

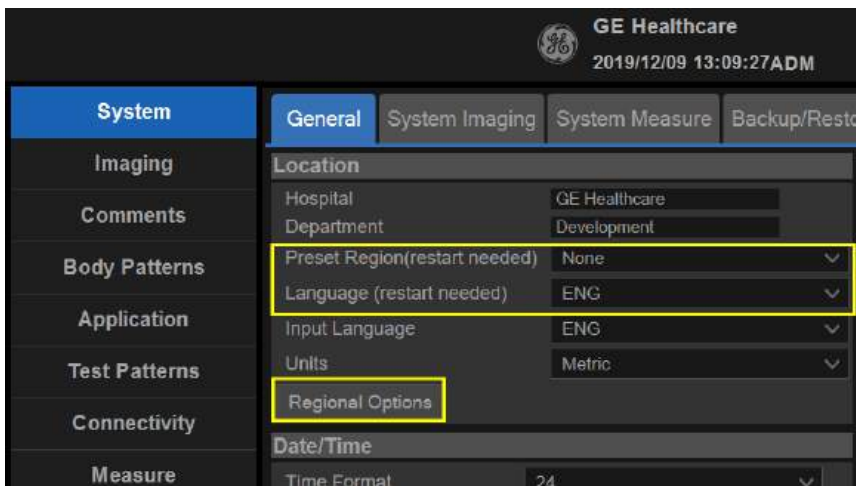


Figure 8-7. Preset region

8-4-7 Data Backup(continued)

7. In **Format** tab, record the Format. In the **Location** tab, record the current location. And in the **Administrative** -> **Change system locale...**, record current system locale.

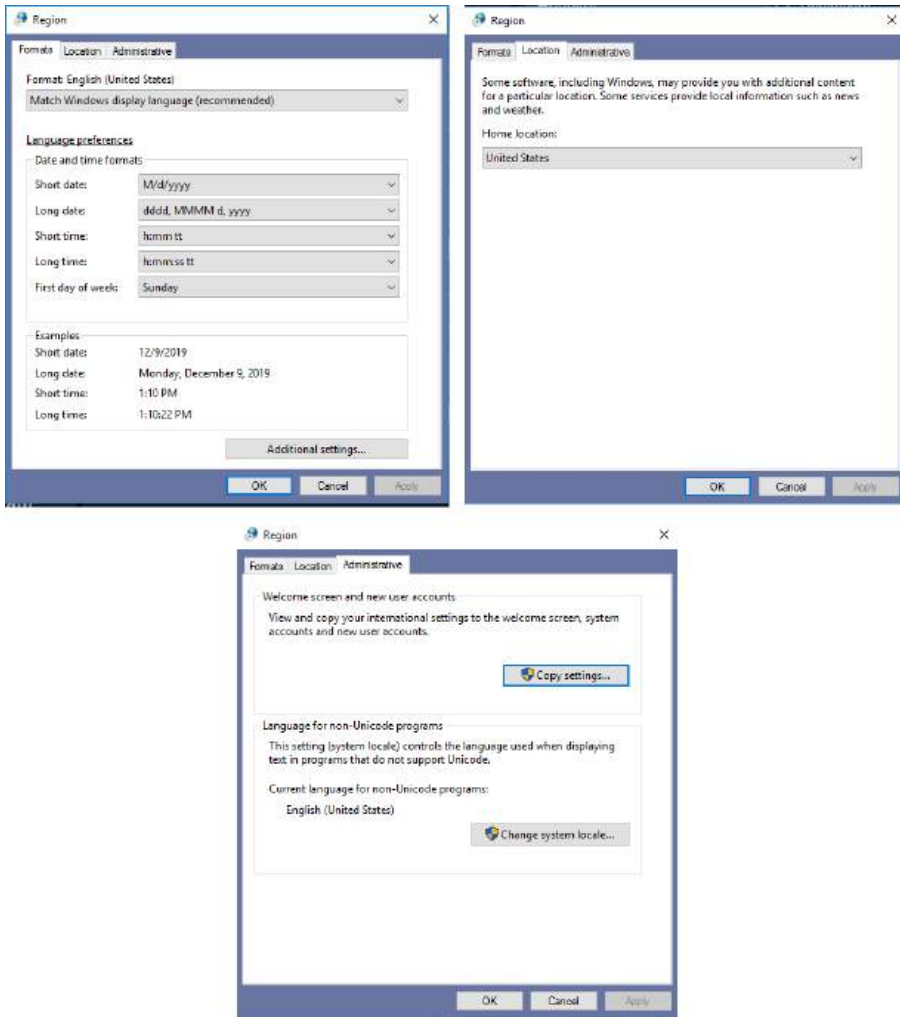


Figure 8-8. Region and Language

8-4-7 Data Backup(continued)

8. Press **Patient** key on the control panel, and then select **Data Transfer**. Select the task as Export and specify the destination to backup the patient information and images.

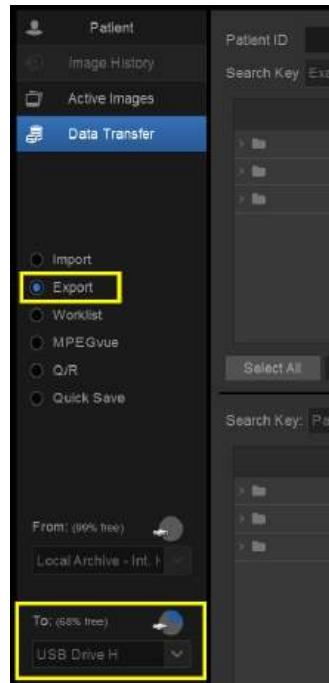


Figure 8-9. Data Transfer

9. Select **Select All**, and then select **Transfer** to backup all the patient information and images.

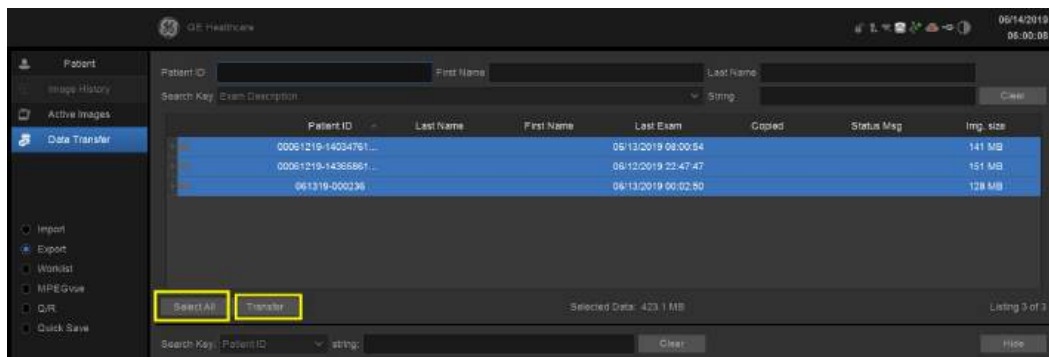


Figure 8-10. Export Patient Information

8-4-8 Loading the System Software



WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups and customer presets to CD, DVD, USB Flash Drive, or USB Hard Disk before doing a software upgrade.

NOTE: *Before loading the system software, please ensure that the power can be continuously supplied and there is no risk of power cut off during loading procedure.*

NOTE: *Before loading/reload the system software, please change system language to English, refer to [Figure 3-65 on page 3-73](#). Otherwise, there will be garbage on the system after software reload/loading.*

There is one method to load the system software:

- Load the system software with USB memory stick.

NOTE: *Find the system software USB memory stick in the accessory box.*

8-4-8-1 Loading the System Software with USB memory stick

This section describes how to upgrade the software.

1. Insert the Upgrade USB memory stick labeled “System & Application Software” to the USB port of the system.
2. Properly turn off the system by momentarily pressing the *Power On/Off Switch*. Then select **Shutdown** in the System Exit Window.

NOTE: If the system does not shutdown normally, hold down the Power On/Off Switch until the light turns off.

3. Power on the system and it will detect the USB memory stick automatically.

NOTE: A window will pop out. Do not close the window, or the upgrade process will be terminated.

4. Select the option **Load the complete disk** or **Load the bootable C: partition only** or **Only Reload/Upgrade Application Software** for software upgrade. Or select **Exit** to exit the upgrade process.

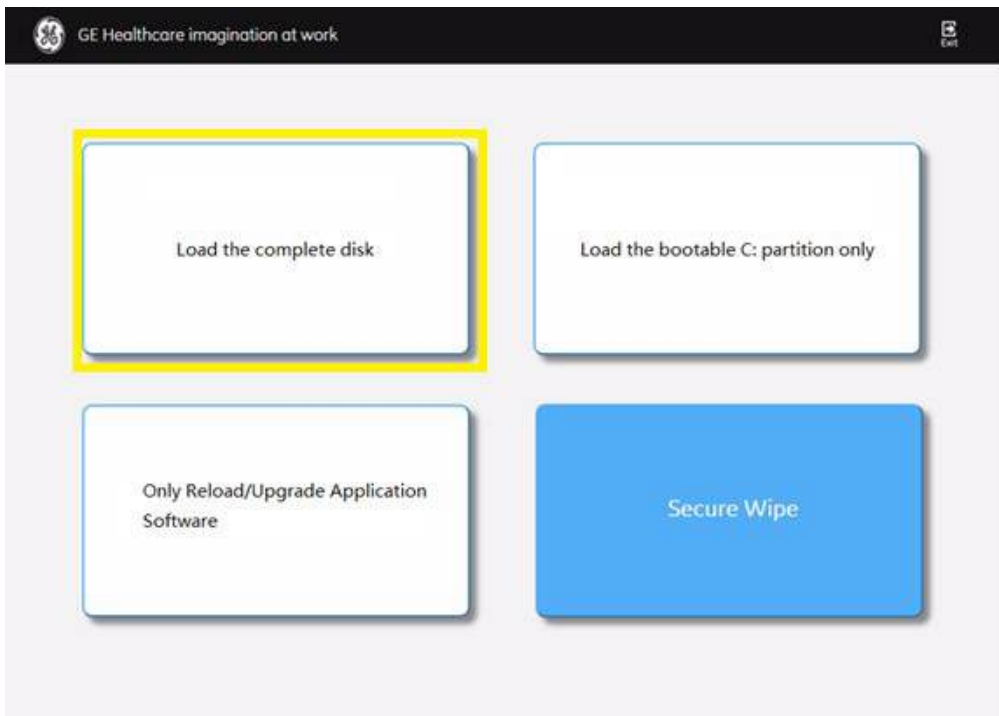


Figure 8-11. Upgrade instruction

8-4-8-1 Loading the System Software with USB memory stick(continued)

- **Load the complete disk:** the complete disk will be loaded. This option is recommended for application software upgrade.



WARNING

If selecting Load the complete disk, all existing software and data will be erased. If backup has not been performed, all data like Patient Data, System Configuration and User Configurations (Customer Presets) will be lost. Please ensure that any patient data on the disk has been backed up before upgrading the system.

NOTE: *This option is used by service engineer only.*

- **Load the bootable C: partition only:** this option is intended for recovery of a system that will not boot up. All patient data is preserved.

NOTE: *While the software installation procedure is designed to preserve data, select choice Load the bootable C: partition only to format disk C.*

- **Only Reload/Upgrade Application Software:** the application software will be loaded/updated only. This option is recommended for application software upgrade or reload. The software upgrade kit will automatically detect if the system compatible with this function and complete upgrading.

NOTE: *If the current system base image does not support the application version of the upgrade USB disk, a message will be displayed on the screen and cancelled upgrading automatically.*

8-4-8-1 Loading the System Software with USB memory stick(continued)

5. If **Load the complete disk** is selected, a confirmation window will pop out, then select **Execute** to continue.

NOTE: Before loading the complete disk, please ensure that any patient data on the disk has been backed up.

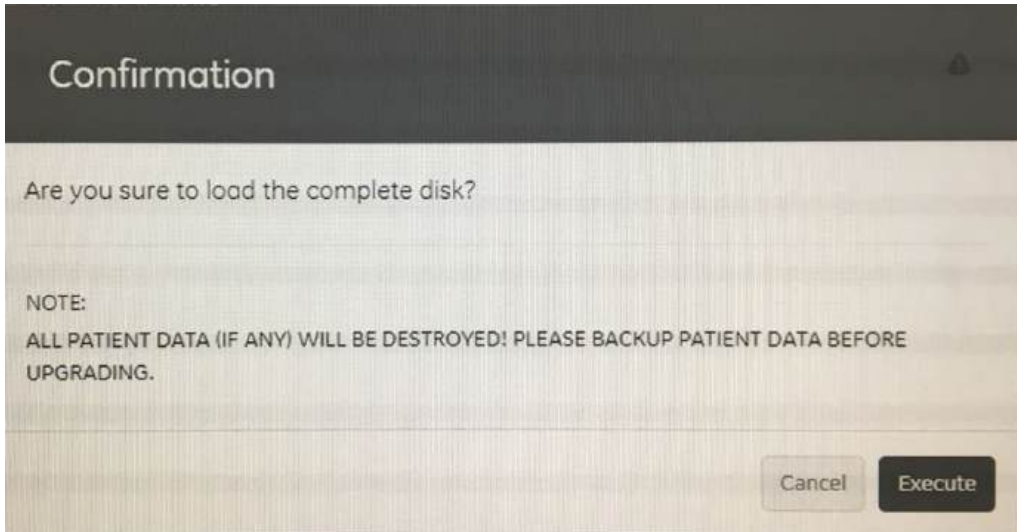


Figure 8-12. Confirmation Window

6. System USB memory stick will be loading. Wait for the software installation to complete. Status bar on the screen indicates the progress (about 30 minutes).



Do not interrupt the software loading at any time.

8-4-8-1 Loading the System Software with USB memory stick(continued)

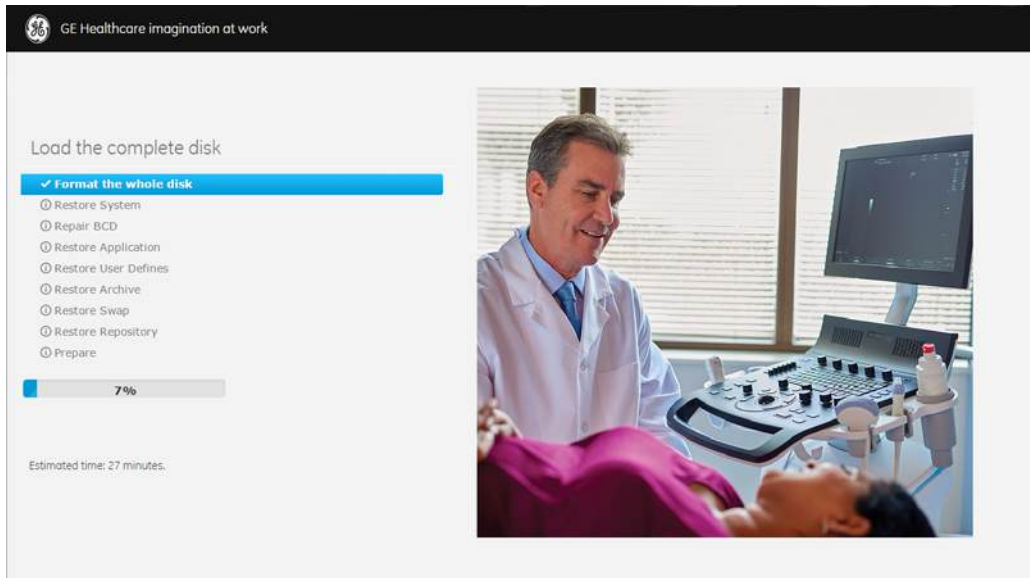


Figure 8-13. Loading Process

8-4-8-1 Loading the System Software with USB memory stick(continued)

7. The system will display upgrading result and shutdown automatically within 30 seconds. Or click the Shutdown in the screen to shut down the system immediately.

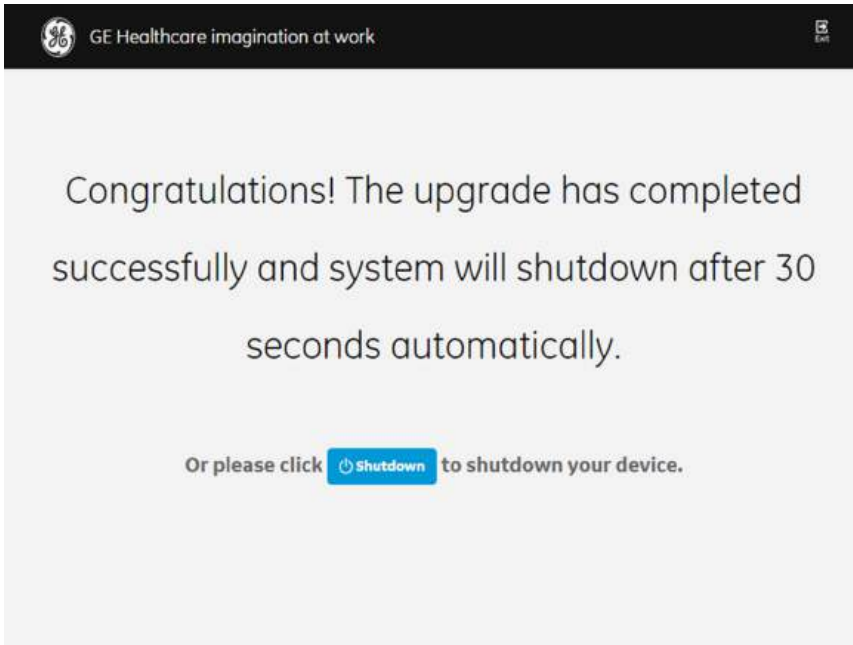


Figure 8-14. System upgrade complete

If the upgrade fails, select **Exit** to exit the upgrade process, then remove the USB memory stick. Insert the USB memory stick again and repeat the upgrade process from [step 2 on page 8-19](#).

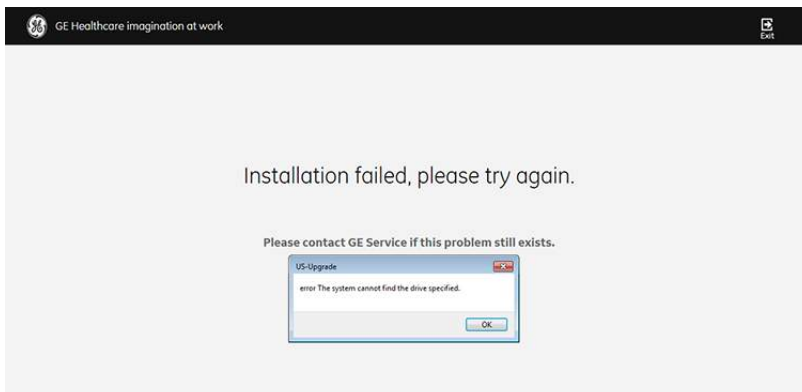


Figure 8-15. System upgrade fail

8-4-8-1 Loading the System Software with USB memory stick(continued)

8. Remove USB memory stick. Then press *Power On/Off* switch to power on the system.

NOTE: Remove the USB memory stick before the system restarts. If you do not remove the USB memory stick, the software system upgrading process repeats when the system boots up.

NOTE: Ensure the USB memory stick is properly and securely connected. Once the USB memory stick is accidentally disconnected from the system during the upgrading process, the error message will pop up: "The volume for a file has been externally altered so that the opened file is no longer valid." Insert the USB memory stick again and restart the system to run the upgrading process from [step 3 on page 8-19](#).

8-4-8-2 Rewrite the Serial Number

If selected to load the complete disk during the software loading process, when powering the system, the system will indicate to rewrite the serial number.

8-4-8-3 Set Password

After the serial number is reset, the system will shutdown automatically. Power on the system and complete the password setting for use. For more information, please refer to [3-9-1 'EZ configuration Wizard' on page 3-64](#).

NOTE: For R1.1.x, selecting password policy level, ADM password setting, Disk Encryption setting, System Password setting is required when turning on the system for the first time or after the software installation.

NOTE: Software upgrade will cause password reset, see [Table 8-3](#) for more information.

Table 8-3: Password Reset Policy

System Upgrade	Disk Encryption password	System password	ADM User password	Database password
Whole disks	Yes	Yes	Yes	Yes
Only C disk	No	Yes	No	No
Reload Apps	No	No	No	No

NOTE: Please save the system password properly. User is required to provide the system password to back office for remote connection.

8-4-8-4 Secure Wipe

Secure wipe is intended to erase all the patient data with the software on the system before the system will be shipped for service.

NOTE: This tool is not BAM approved.

NOTE: Before starting this procedure, remove all probes and peripherals and remove them from the system.

NOTE: While it is believed to be unnecessary, it would not hurt to disconnect the system from the network and remove all transducer.

NOTE: Please ensure AC adapter is connected during system upgrade!

1. Insert the USB memory stick labeled “System & Application Software” to the system.
2. Properly turn off the scanner by momentarily pressing the *Power On/Off* Switch. In System-Exit window, select **Shutdown** to shutdown the system.

NOTE: If the system will not shutdown normally, hold down the Power On/Off Switch until the light turns off.

3. Power on the system. The system will detect the USB memory stick automatically.

8-4-8-4 Secure Wipe(continued)

4. Select **Secure Wipe**. Or select **Exit** to exit the process.

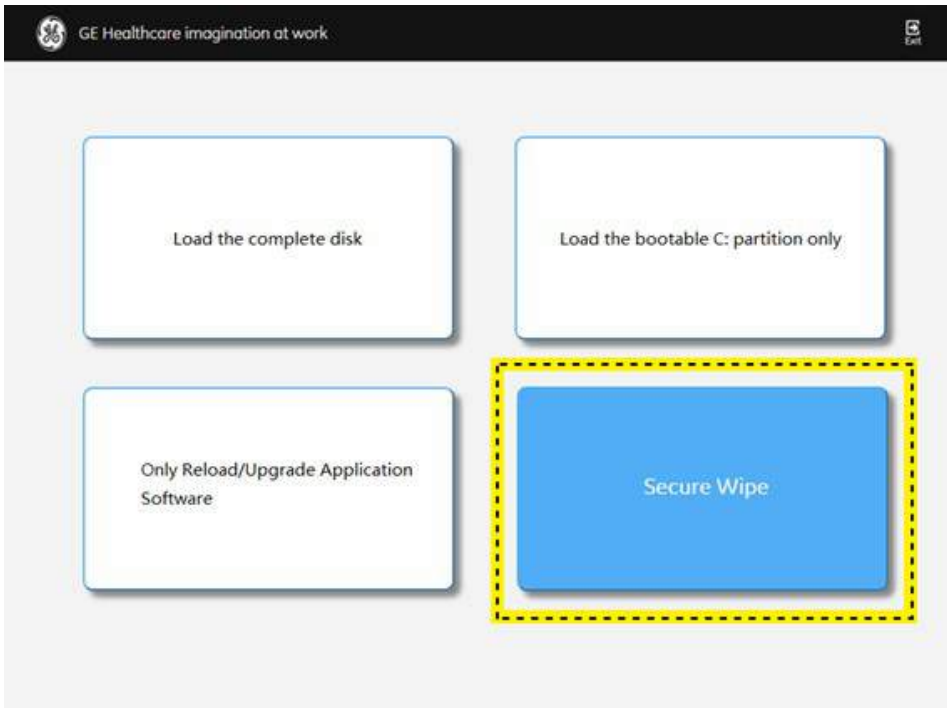


Figure 8-16. Upgrade screen

5. The system indicates all data will be erased, select **Execute** to continue.

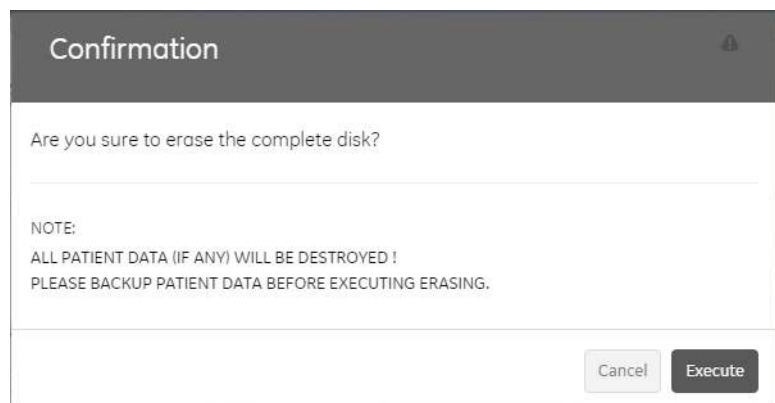


Figure 8-17. Confirm Dialog

NOTE: All the patient data cannot be recovered after wipe process.

8-4-8-4 Secure Wipe(continued)

6. The process may take twenty minutes or more.

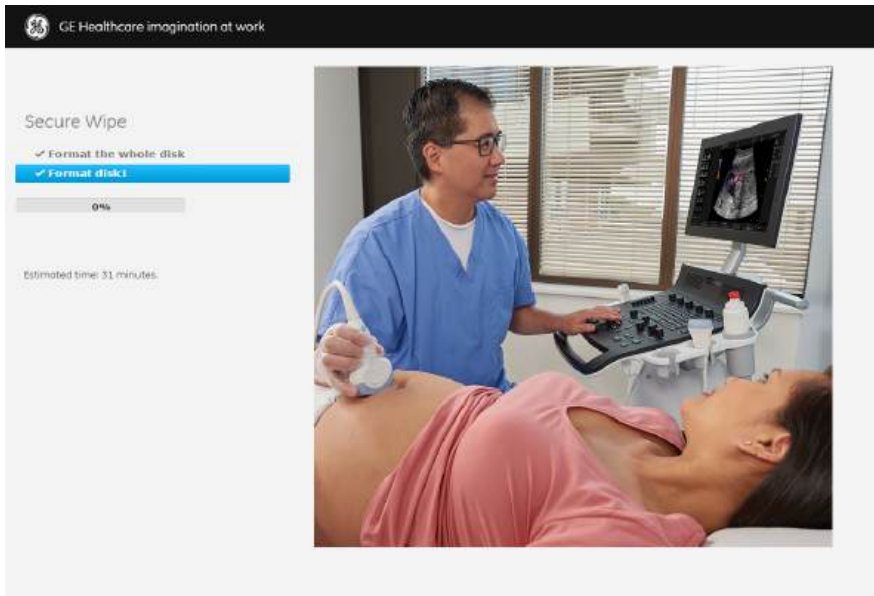


Figure 8-18. Wiping Process

7. The system will shutdown automatically when the wiping progress completes.

NOTE: *As the SSD is empty after secure wipe, the system cannot boot up. The software should be loaded first after the wipe process.*

8-4-8-5 Software Version check out

8-4-8-5-1 Functional Check-out

1. Power on Versana Active system and wait until system booting to scanning screen.

NOTE: *If selected to load C Disk only when loading the system software, the system will display a screen to restore Computer name before entering the scanning screen.*

2. Press **Utility** on the control panel.
3. Select the **System** -> **About** and check whether the software version is right.

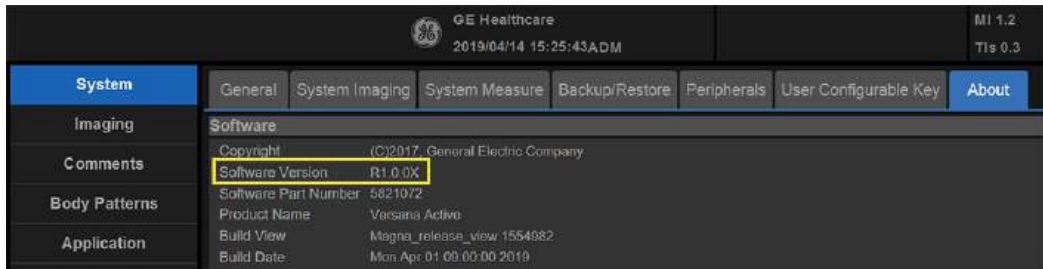


Figure 8-19. Software version

8-4-8-6 Option Strings Check

NOTE: After the system software loading completion, please check the option strings to ensure that the options are activated and working.

1. Reboot the system.
2. Press **Utility** -> **Admin**, the following dialog is displayed. Select **Acknowledge** to continue.

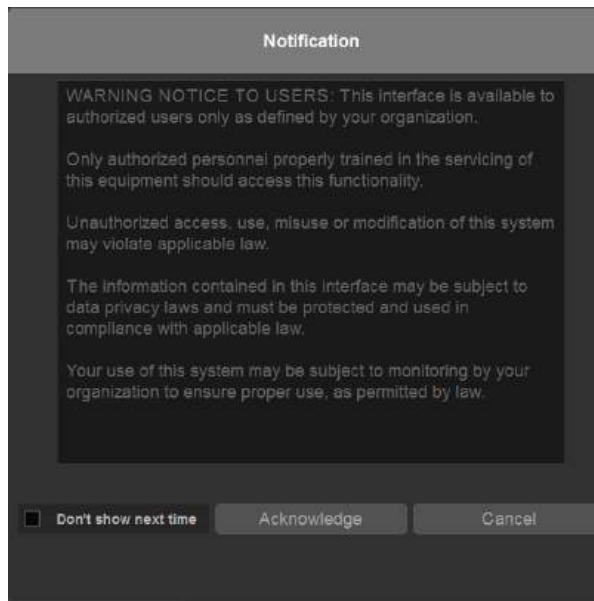


Figure 8-20. Notification Window

3. Login to the Versana Active for the first time. Refer to [4-2-5 'Logging on to Versana Active as "ADM" on page 4-11.](#)

8-4-8-6 Option Strings Check(continued)

4. Enter **Utility** -> **Admin**-> **System Admin**, ensure that all the installed option keys are displayed and the status of Options are valid.
 - The status “Permanent” means the option keys are activated and working.

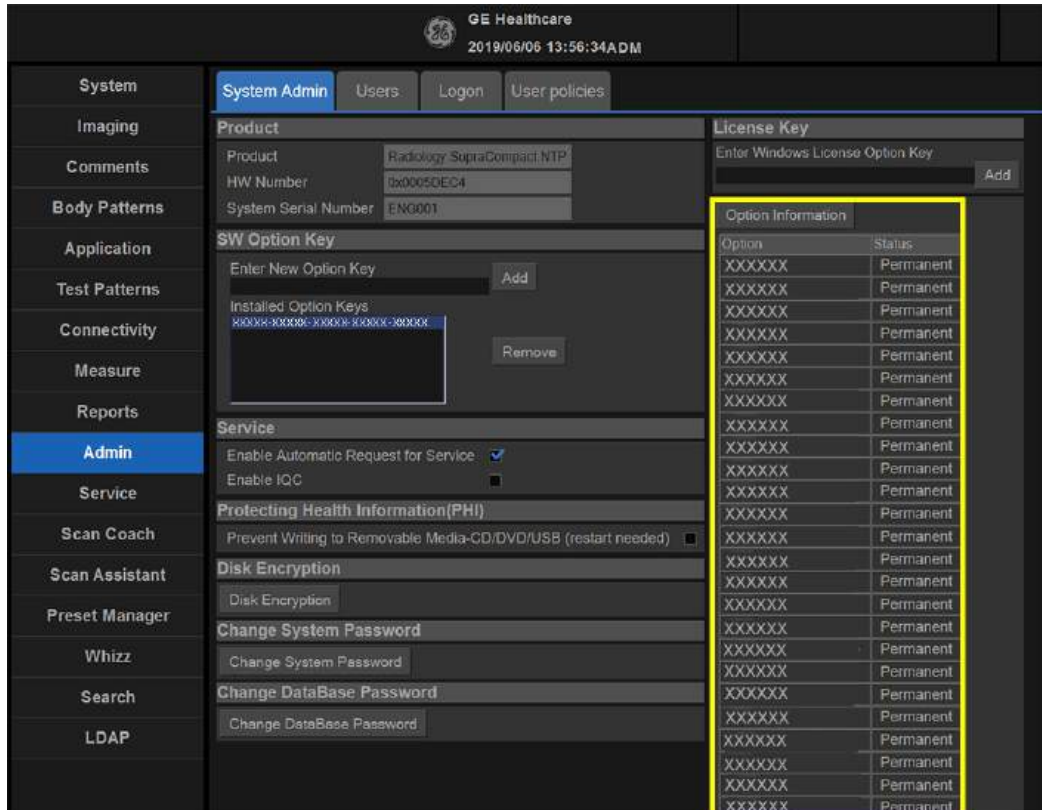


Figure 8-21. Software Option

8-4-8-7 Reload the Correct Preset Region

NOTE: After the software upgrade process, the system language and region preset will be set as the default. Change the settings if needed.

NOTE: Refer to step 6 on 8-15 and step 7 on 8-16 for the system Region Preset and Language settings.

1. When the system is powered on, go to **Utility -> System -> General**. Select **Regional Options**.

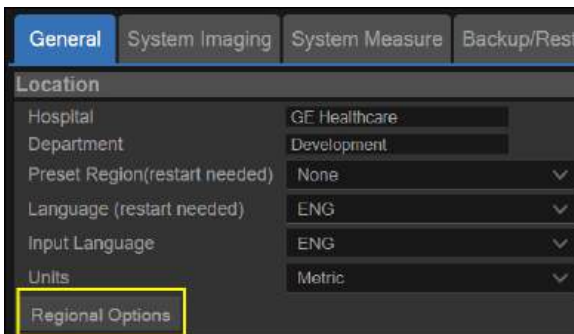


Figure 8-22. Preset Region

2. Under **Formats** select the desired language.

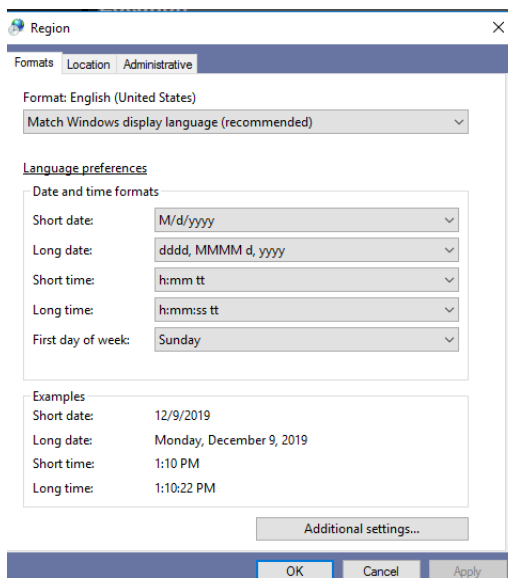


Figure 8-23. Formats selection

8-4-8-7 Reload the Correct Preset Region(continued)

3. Under **Location**, select the desired location.

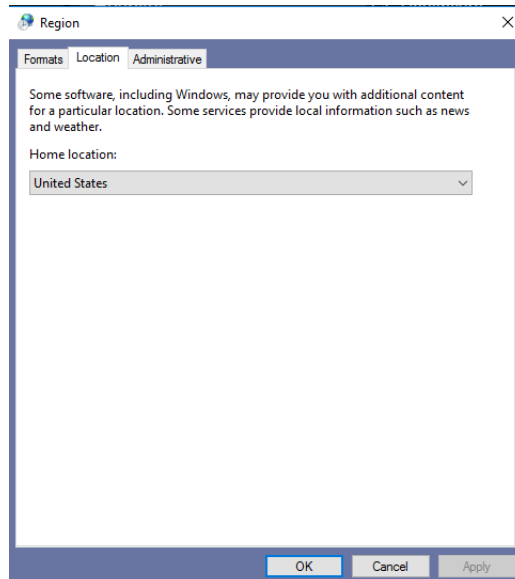


Figure 8-24. Location selection

4. Under **Administrative**, select **Change system locale....**

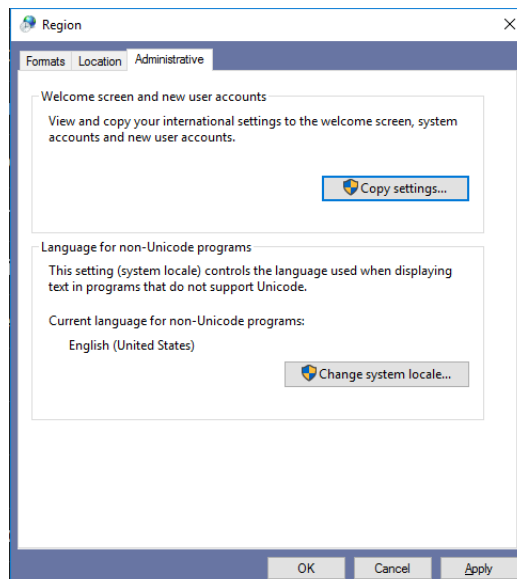


Figure 8-25. Location selection

8-4-8-7 Reload the Correct Preset Region(continued)

- 5. Select **Apply** when below message displays.



Figure 8-26. Change Regional Options

- 6. Select the language under **Current system locale**, then select **OK**.

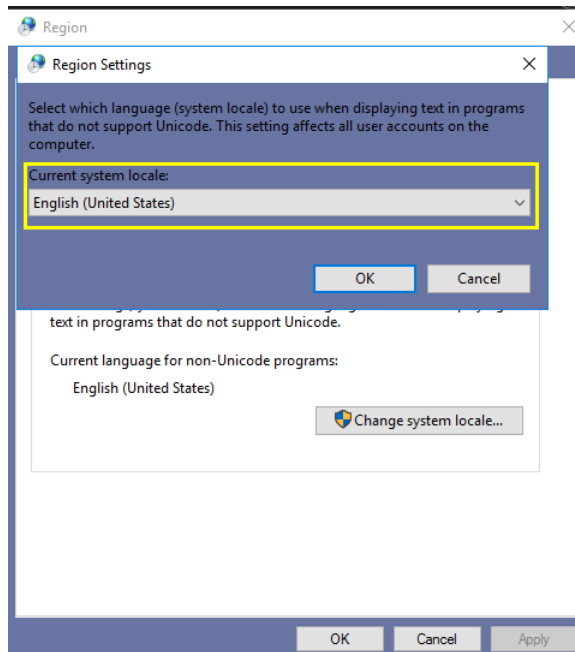


Figure 8-27. Set Language

8-4-8-7 Reload the Correct Preset Region(continued)

7. Select **Cancel** not to restart the system.

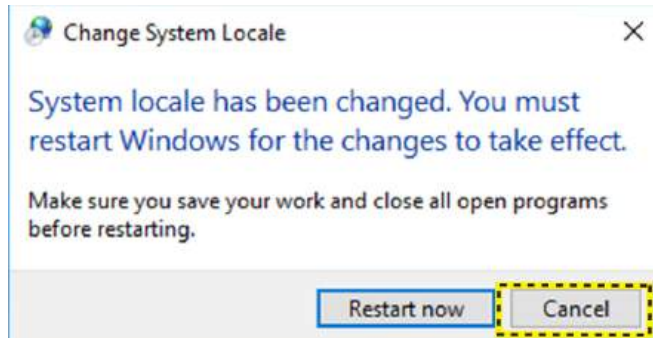


Figure 8-28. Restart request

8. Select **Close** to close the window.

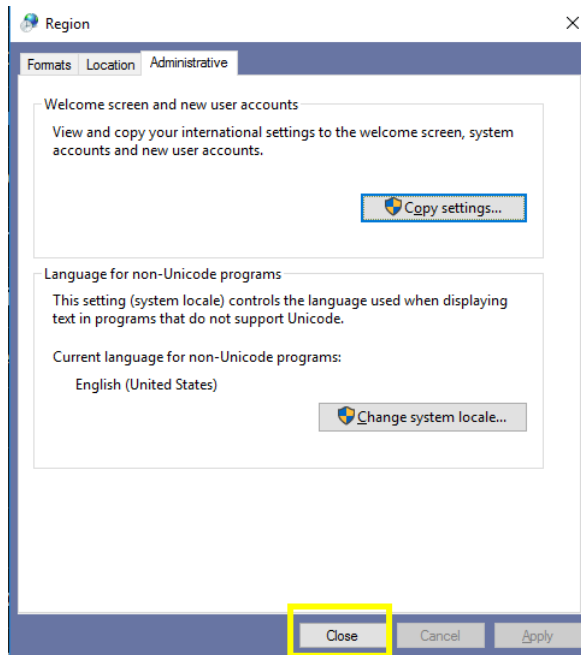


Figure 8-29. Installed service

8-4-8-7 Reload the Correct Preset Region(continued)

9. Select **Cancel** to return to system setting.

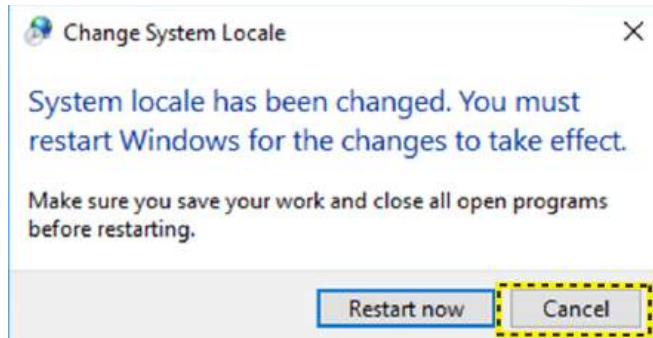


Figure 8-30. Installed service

10. In **Utility** -> **System** -> **General**, select the language as desired, and then select **Save**.

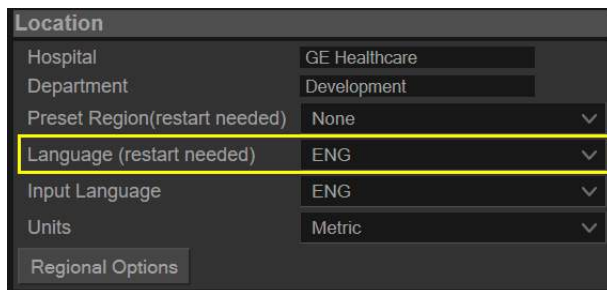


Figure 8-31. Language

NOTE: *Keep Input Language the same as system language, otherwise corrupted characters will incur.*

8-4-8-7 Reload the Correct Preset Region(continued)

11. Select **Restart now** to restart the system.

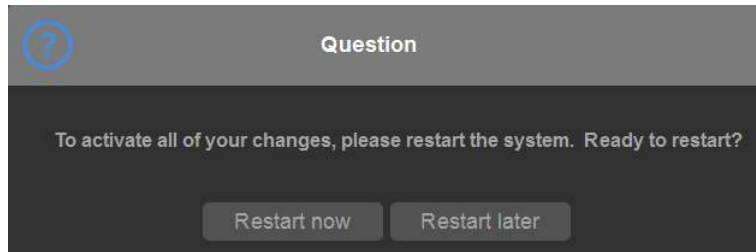


Figure 8-32. Question Window

12. When the system boots up, the system appears in the selected language.

NOTE: *To have the settings take effect, you **MUST** restart the system.*

NOTE: *Press **Alt+Shift** to change the input language.*

8-4-8-8 Configuration Restore

1. When the system is powered on, go to **Utility -> Connectivity -> TCP/IP**.
 - If the original selection is that the "Enable DHCP" is selected, the selection is restored by default and the system will automatically get the IP address.



Figure 8-33. Enable DHCP

- If the original selection is that the "Enable DHCP" is not selected, please uncheck "Enable DHCP". Input the information about IP setting which have been recorded.



Figure 8-34. Disable DHCP

8-4-8-8 Configuration Restore(continued)

2. Select **Save**, then the following pop-up window will display. Select **Restart later**.

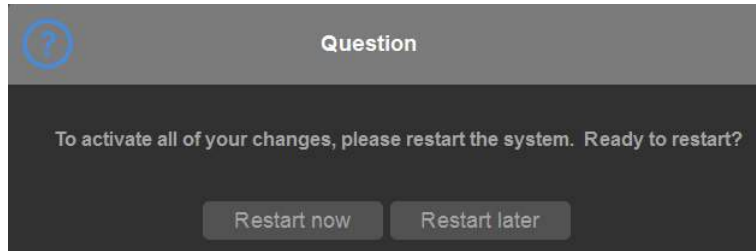


Figure 8-35. Question Window

3. If **Load the complete disk** is selected for software upgrade, the user is required to restore the Patient Archive and System Configurations.
Insert the media which is used to back-up.
4. Select **System**, then select **Backup/Restore**.
5. In the Media field, select the media. Refer to [Figure 8-4 on page 8-13](#).
6. Restore user defined configuration. There are 2 options.
 - If the user would restore all user defined configuration, in the **Restore** field, select **User Defined Configuration**. Then select **Restore** button in the **Restore** field.

NOTE: *If the user requires to restore all the User Defined Configuration, there is no need to select all the items of the **Detailed Restore of User Defined** to restore.*

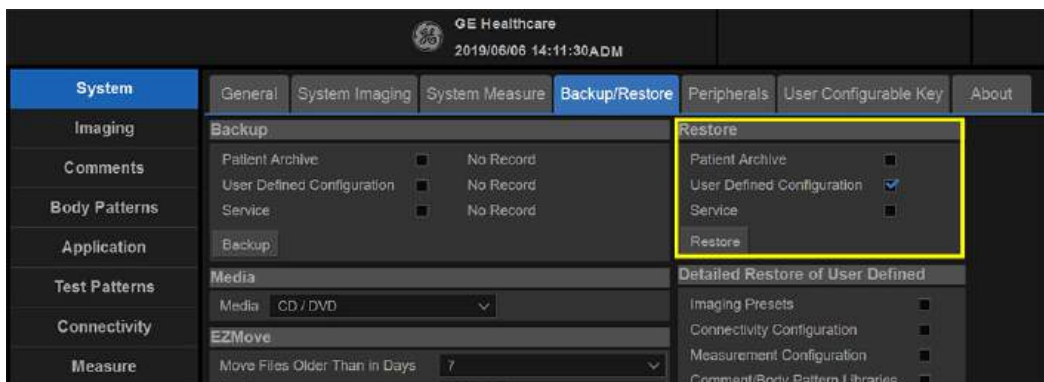


Figure 8-36. Restore all user defined configuration

8-4-8-8 Configuration Restore(continued)

Then the following pop-up Warning message will display, then select **OK** to continue.

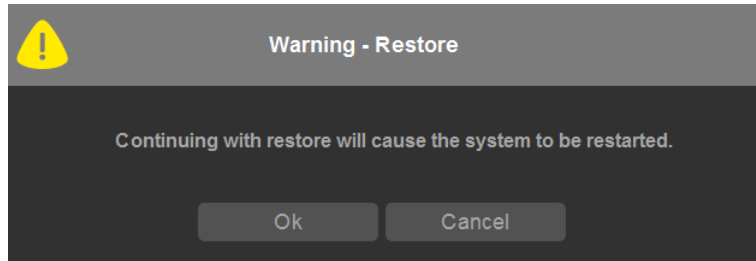


Figure 8-37. Question Message

- If the user would not restore all user defined configuration, in the **Detailed Restore of User Defined** field , select the items the user would like to restore.Then select **Restore** button in the **Detailed Restore of User Defined** field.

NOTE:

*According to the requirements from the User, restore the items in **Detailed Restore of User Defined**.*

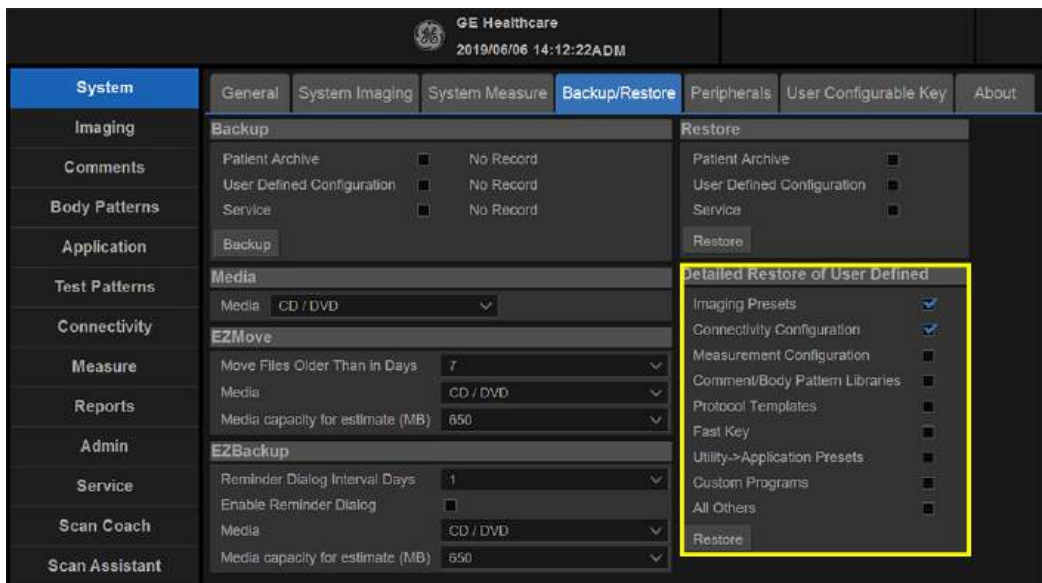


Figure 8-38. Detailed Restore of User Defined

8-4-8-8 Configuration Restore(continued)

During the restore process, the following pop-up message will display. Press **OK** to continue. Refer to [Figure 8-39 on page 8-41](#) as an example.

NOTE:

How many warning message windows show up depends on how many items of Detailed Restore of User Defined are selected to restore.

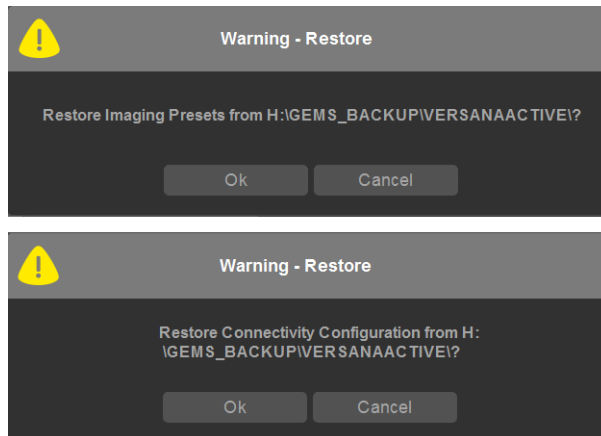


Figure 8-39. Restore Warning Message

7. After restoring the User Defined Configuration, the System will restart.

8-4-8-8 Configuration Restore(continued)

- 8. After the system is powered on, go to **Utility -> System -> Backup/Restore**. Select **Patient Archive**, **User Defined Configuration** and **Service** under **Restore** field.

NOTE: If the user selects Patient Archive, the patient data will be restored but the exam images might be damaged thus unable to read.

NOTE: If the user already restores the detailed User Defined Configuration in step 6 on 8-39, DO NOT select User Defined Configuration in this step.

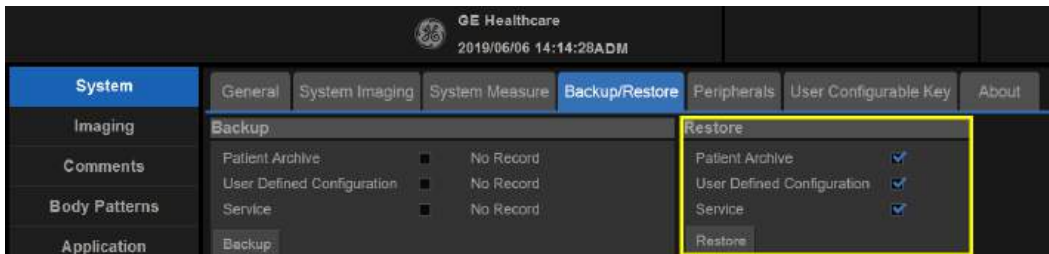


Figure 8-40. Restore Menu

- 9. Select **Restore**. Then the following pop-up Warning message will display, then select **OK** to continue.

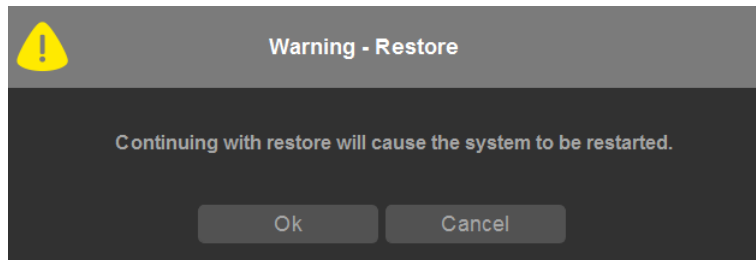


Figure 8-41. Warning Message

8-4-8-8 Configuration Restore(continued)

10. Then the following pop-up Warning message will display, then select **OK** to continue.

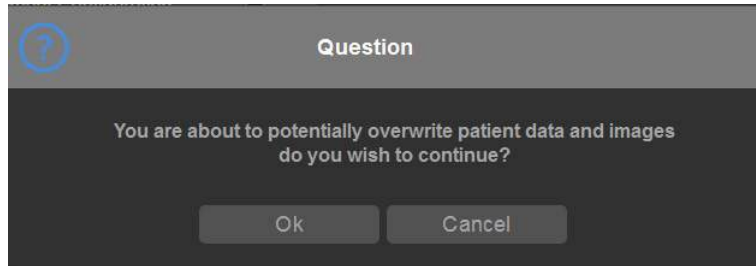


Figure 8-42. Question Message

11. During the restoring process, the following pop-up message will display. Press **OK** to continue.

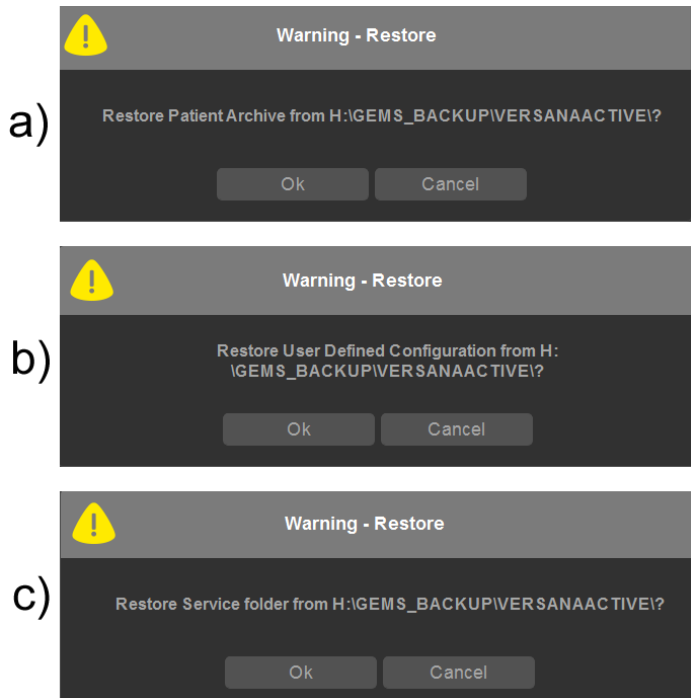


Figure 8-43. Warning Message

NOTE: *If User Defined Configuration is not selected to restore in step 8 on 8-42, the warning message (b) in [Figure 8-43 on page 8-43](#) will not display.*

8-4-8-8 Configuration Restore(continued)

12. Press **Patient** key on the control panel, and then select **Data Transfer**. Select the task as **Import** and select the source as where the patient information is exported to.

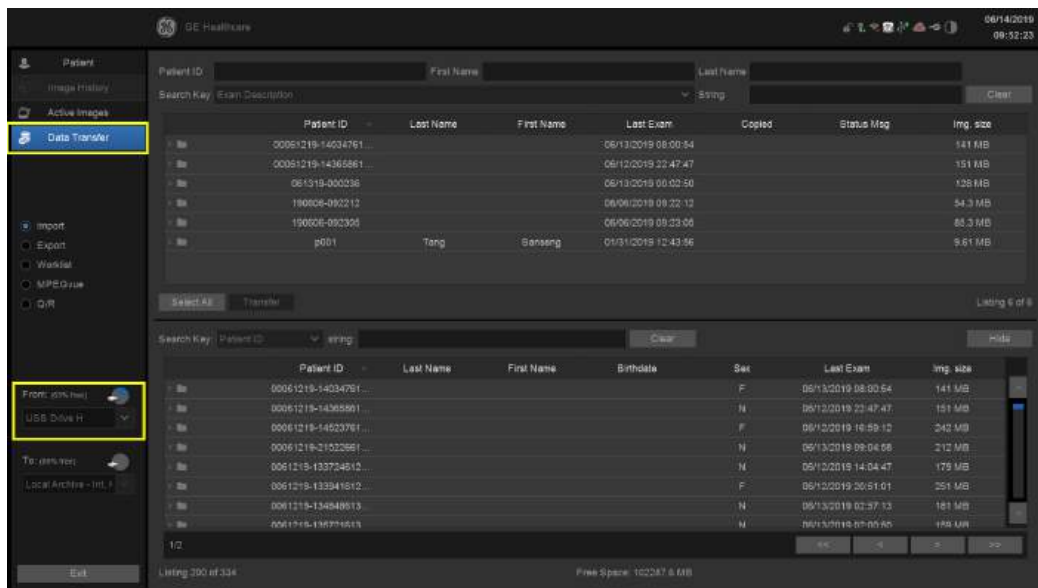


Figure 8-44. Data Import

13. Select **Select All**, and then select **Transfer** to restore all the patient information and images.

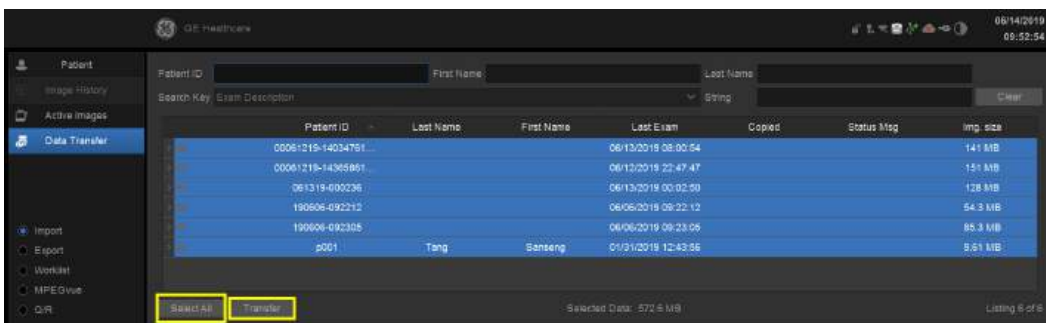


Figure 8-45. Data Transfer

8-4-8-8 Configuration Restore(continued)

14. Then the following pop-up question message will display, select **YesToAll** to continue.

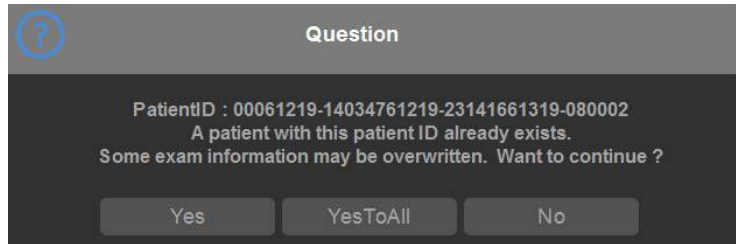


Figure 8-46. Overwrite Question Message

15. The following pop-up warning will display, select **Ok** to continue.

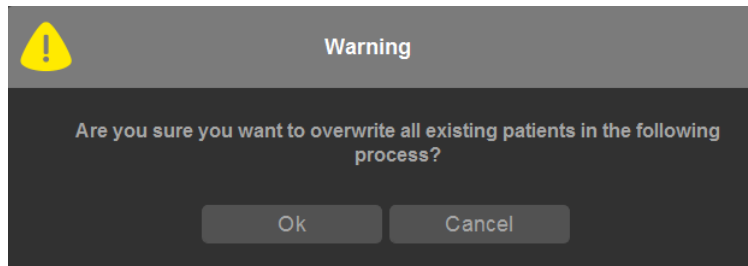


Figure 8-47. Overwrite Warning

8-4-8-8 Configuration Restore(continued)

16. The overwrite process is completed.

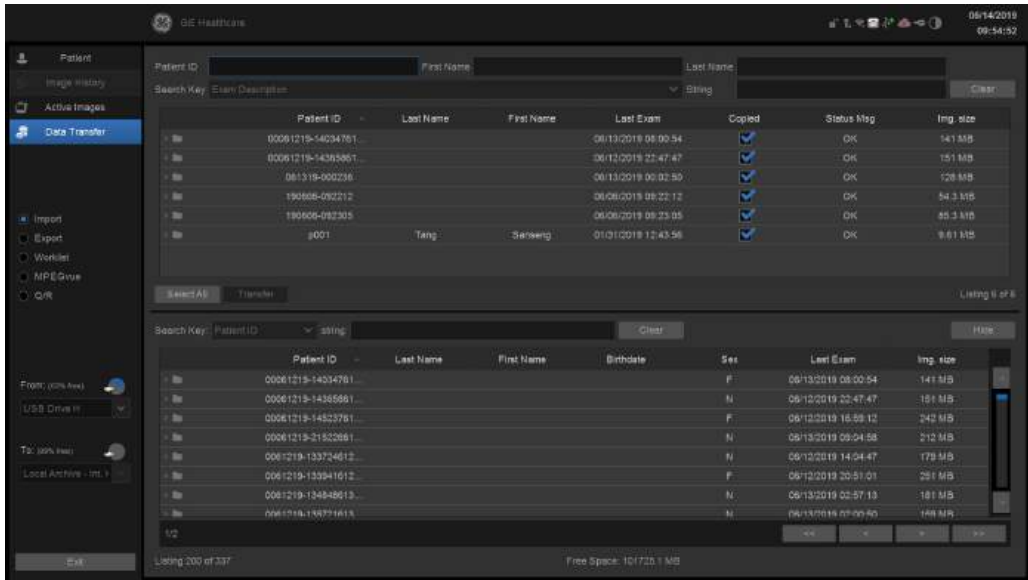


Figure 8-48. Overwrite Process

8-4-8-9 Probe Recognition Check

NOTE: After the system software loading completion, please check to ensure that the system can recognize the probes.

Plug in the probe. In scanning mode, the probe information is displayed on the **right top** location of the screen. About the probe specification for intended use on Versana Active.

Plug in at least one of each type of the probes and check if each of the probes is recognized and the probe information is displayed correctly.



Figure 8-49. Probe identification

8-4-8-10 Peripheral Device Check

Check to ensure that all the peripheral devices work properly.

For instruction of peripheral device check, [See 4-4-19 'Peripheral checks' on page 4-70 for more information.](#)

8-4-8-11 Reinstall DICOM Devices

Reinstall any DICOM devices used by the customers and check to ensure these DICOM devices work properly.

The instruction about installing DICOM devices is not incorporated in this manual. To access the instruction about installing DICOM devices please refer to another manual **Basic User Manual**. Please use the latest revision of this document.

Chapter 9

Renewal Parts

This chapter lists the renewal parts available for the Versana Active.

9-1 Overview

9-1-1 Contents in this chapter

- [Overview](#)
- [List of Abbreviations](#)
- [Renewal Parts Lists](#)

9-2 List of Abbreviations

Table 9-1: List of Abbreviations

ABBREVIATION	DESCRIPTION
3D	THREE DIMENSIONAL
Assy	ASSEMBLY
FRU	Field Replaceable Unit
CRU	Customer Replaceable Unit
KBD	Keyboard Assy
LCD	Liquid Crystal Display
BnV	Brightness and Volume
MST	Master Board
CWI	CPU / WDC / IO Board. WDC is DC Power Board for Wukong Platform.

9-3 Renewal Parts Lists

9-3-1 Operator Console Assy



Figure 9-1. Operator Console Assy

9-3-2 Cart



Figure 9-2. Versana Active Base Cart



Figure 9-3. Versana Active Advanced Fixed Cart

9-3-2 Cart(continued)



Figure 9-4. Versana Active Advanced Height-Adj Cart

9-3-3 Renewal Parts List

Table 9-2: Renewal Parts list

Section	Page Number
Probe	9-7
Peripheral	9-8
Power Cord	9-10
Manuals	9-11

9-3-4 Probe

Table 9-3: Probes for Versana Active

Item	Part Name	Part Number	Commercial Part Number	Center Image Frequency (MHz)	Replaced By
1.	4C-RS	5488477	H4000SR	3.1 ± 10%	
2.	8C-RS	5499508	H40402LS	6.5 ± 20%	
3.	E8C-RS	5499516	H40402LN	6.5 ± 20%	
4.	E8Cs-RS	5670375	H48062AF	6.5 ± 20%	
5.	9L-RS	5499511	H40442LL	5.3 ± 20%	
6.	3Sc-RS	5433833	H45041DL	2.75 ± 10%	
7.	6S-RS	5499316	H45021RP	4.5 ± 10%	
8.	12S-RS	5499321	H44901AB	7.75 ± 10%	
9.	12L-RS	5499501	H40402LY	7.5 ± 20%	
10.	LK760-RS Note: The probe is for veterinary use.	5548914	H44901AF	7.15 ± 10%	
11.	L8-18i-RS	5499609	H40462LF	9.5 ± 20%	
12.	L6-12-RS	5454332	H48062AC	7.75 ± 20%	
13.	RAB2-6-RS Note: The probe is only used for Versana Active R1.1.x.	KTZ303982	H48681WR	3.3 ± 10%	

9-3-5 Peripheral

Table 9-4: Peripherals for Versana Active

Item	Part Number	Commercial Part Number	Description
Footswitch			
1.	5151236	H41882LD	Footswitch FSU-1000
2.	5338419	H41642LS	Footswitch MKF 2-MED USB GP26
USB Stick			
3.	5831001	H48442BK	32G USB MEMORY STICK
4.	5863937	NA	USB3.0 stick for Storage(NEW FW)
Printer			
5.	5133106-2	H48542LY	Sony UPD25 Color Printer Chinese kit
6.	5133107-2	H48542LZ	Sony UPD25 Color Printer USA kit
7.	5133108-2	H48552LA	Sony UPD25 Color Printer European kit
8.	5133109-2	H48552LB	Sony UPD25 Color Printer Japanese kit
9.	5491253	H48312AN	Sony UPD25 Color Printer Brazil kit
10.	5151259-2	H48492AF	UP-D898MD B/W Printer USA kit
11.	5151261-2	H48492AG	UP-D898MD B/W Printer Europe kit
12.	5151262-2	H48492AH	UP-D898MD B/W Printer China kit
13.	5151263-2	H48492AJ	UP-D898MD B/W Printer Japan kit
14.	5495509-2	H48492AK	UP-D898MD B/W Printer Brazil kit
15.	5778615	H48052BG	SONY UP-D898DC printer
16.	NA	NA	HP Officejet Pro 200
ECG			
17.	NA	H48502AR	USB ECG Module (IEC)-MFG Germany
18.	NA	H41852LK	USB ECG Module (AHA)-MFG Israel
19.	NA	H41852LL	USB ECG Module (IEC)-MFG Israel
20.	5129487	H48492AY	ECG module from Norav Isral, not applies to Muslim country and China
21.	5149641	H41852LM	ECG Assy with Chinese label
22.	5146056	H48502AA	ECG detachable cable AHA Type USA
23.	5146739	H48502AB	ECG detachable cable IEC type EURO and ASIA

Table 9-4: Peripherals for Versana Active

Item	Part Number	Commercial Part Number	Description
24.	5146055	NA	USB cable for ECG
Others			
25.	5434317-4	H48492AB	1TB mobile HDD-CRU
26.	5449275-4	H48442BG	Transcend TS8XDVDS-K DVDRW kit
27.	5774524-S	H48122BT	Bluetooth Adaptor Note: The HCAT and service part for Bluetooth Adaptor is not orderable now.
28.	5728576	H48832AC	NetGear Wireless USB Adapter A6210 Kit-CRU
29.	5933000-S	H48962CG	NetGear Wireless USB Adapter A8000 for Service <i>Note: Only for software version R1.2.4 and above for New MST version</i> <i>Note: Only for software version R1.1.11 and above for Old MST version</i>
30.	5792464-S	H48242BC	Isolation USB kit-CRU
31.	5840530-S	H48722BF	Spare Battery Charger for Versana Active-CRU
32.	5840613-S	H48722BE	Video Output Adapter for Versana Active-CRU
33.	5835777-S	NA	HDMI for vedio adapter for Versana active
34.	NA	E8390AA	Digital Expert Hardware Kit (includes Microsoft Surface Tablet)
35.	NA	E8390AC	Digital Expert Cables and Video Grabber
36.	NA	HG11VCL	Digital Expert Connect – License Term

9-3-6 System and Application Software Update USB

For the latest revision of system and application software update USB, please contact your service partner for detail information.

9-3-7 Power Cord

Table 9-5: Power Cord for Versana Active

Item	Part Number	Commercial Part Number	Description
1000	5177123-2	H48482AF	Europe Class AC powercord-CRU
1001	5176304-2	H48482AK	China Class AC powercord-CRU
1002	5176773-2	H48482AH	India class AC powercord-CRU
1003	5177195-2	H48482AC	Argentina Class AC powercord-CRU
1004	5176907-2	H48482AG	UK class AC powercord-CRU
1005	6736102-2	H48512AD	PWR SPLY CRD ANZ 10A 250V STRAIGHT 2.5M
1006	5177154-2	H48482AD	Switzerland AC powercord-CRU
1007	5177187-3	H48482AE	AC Power Cord Australia and New Zealand Class-CRU
1008	5177146-2	H48482AL	USA class AC powercord-CRU
1009	5400868-2	H48482AN	Brazil Class AC powercord-CRU
1010	5176753-2	H48482AJ	Israel class AC powercord-CRU
1011	5177126-2	H48482AB	Japan class AC powercord for Cart-CRU

NOTE: Cable clip for [Table 9-5](#) power cord should be installed in the hole 1, refer to [Figure 9-5](#).



Figure 9-5. Cable clip installation

9-3-8 Manuals

Table 9-6: Manuals for Versana Active

Item	Part Number	Commercial Part Number	Description
1100	5840715-200	H48732BF	Versana Active R1.5 Manual DVD
1101	5840769-100	H48732BJ	Versana Active R1.5 Advanced Reference Manual English version
1102	5840775-100	H48732BG	Versana Active R1.5 Basic Service Manual
1103	5840764-100	H48732BH	Versana Active R1.5 Basic User Manual English version
1104	5840761-100	H48732BL	Versana Active R1.5 User Guide English version
1105	5840761-101	H48732BM	Versana Active R1.5 User Guide French version
1106	5840761-106	H48732BN	Versana Active R1.5 User Guide Spanish version
1107	5840761-108	H48732BP	Versana Active R1.5 User Guide German version
1108	5840761-111	H48732BR	Versana Active R1.5 User Guide Italian version
1109	5840761-121	H48732BS	Versana Active R1.5 User Guide Dutch version
1110	5840761-127	H48732BT	Versana Active R1.5 User Guide Brazilian Portuguese version
1111	5840761-129	H48732BW	Versana Active R1.5 User Guide Estonian version
1112	5840761-131	H48742BT	Versana Active R1.5 User Guide Slovenian version
1113	5840761-140	H48732BY	Versana Active R1.5 User Guide Japanese version
1114	5840761-141	H48732BK	Versana Active R1.5 User Guide Simplified Chinese version
1115	5840761-142	H48732BZ	Versana Active R1.5 User Guide Swedish version
1116	5840761-144	H48742BA	Versana Active R1.5 User Guide Korean version
1117	5840761-145	H48742BB	Versana Active R1.5 User Guide Russian version
1118	5840761-150	H48742BC	Versana Active R1.5 User Guide Polish version
1119	5840761-151	H48742BD	Versana Active R1.5 User Guide Greek version
1120	5840761-153	H48742BY	Versana Active R1.5 User Guide Hungarian version
1121	5840761-154	H48742BE	Versana Active R1.5 User Guide Slovakian version
1122	5840761-155	H48742BF	Versana Active R1.5 User Guide Czech version
1123	5840761-159	H48742BG	Versana Active R1.5 User Guide Turkish version
1124	5840761-160	H48742BH	Versana Active R1.5 User Guide Danish version
1125	5840761-161	H48742BZ	Versana Active R1.5 User Guide Norwegian version
1126	5840761-162	H48742BJ	Versana Active R1.5 User Guide Finnish version

Table 9-6: Manuals for Versana Active

Item	Part Number	Commercial Part Number	Description
1127	5840761-165	H48742BK	Versana Active R1.5 User Guide Bulgarian version
1128	5840761-167	H48742BL	Versana Active R1.5 User Guide Romanian version
1129	5840761-168	H48752BA	Versana Active R1.5 User Guide Croatian version
1130	5840761-174	H48742BM	Versana Active R1.5 User Guide Lithuanian version
1131	5840761-175	H48742BN	Versana Active R1.5 User Guide Latvian version
1132	5840761-176	H48742BP	Versana Active R1.5 User Guide Serbian version
1133	5840761-177	H48742BR	Versana Active R1.5 User Guide European Portuguese version
1134	5840761-180	H48752BB	Versana Active R1.5 User Guide Ukrainian version
1135	5840761-181	H48742BS	Versana Active R1.5 User Guide Indonesian version
1136	5840761-183	H48752BC	Versana Active R1.5 User Guide Vietnamese version
1137	5840761-184	H48742BW	Versana Active R1.5 User Guide Kazakh version
1138	5808652-100	H48412BA	Versana Active Release Notes English version
1139	5808652-101	H48422BB	Versana Active Release Notes French version
1140	5808652-106	H48422BC	Versana Active Release Notes Spanish version
1141	5808652-108	H48422BD	Versana Active Release Notes German version
1142	5808652-111	H48422BE	Versana Active Release Notes Italian version
1143	5808652-121	H48422BF	Versana Active Release Notes Dutch version
1144	5808652-127	H48422BG	Versana Active Release Notes Brazilian Portuguese version
1145	5808652-129	H48422BH	Versana Active Release Notes Estonian version
1146	5808652-131	H48432BR	Versana Active Release Notes Slovenian version
1147	5808652-140	H48422BJ	Versana Active Release Notes Japanese version
1148	5808652-141	H48412BZ	Versana Active Release Notes Simplified Chinese version
1149	5808652-142	H48422BK	Versana Active Release Notes Swedish version
1150	5808652-144	H48422BL	Versana Active Release Notes Korean version
1151	5808652-145	H48422BM	Versana Active Release Notes Russian version
1152	5808652-150	H48422BN	Versana Active Release Notes Polish version
1153	5808652-151	H48422BP	Versana Active Release Notes Greek version
1154	5808652-153	H48432BJ	Versana Active Release Notes Hungarian version
1155	5808652-154	H48422BR	Versana Active Release Notes Slovakian version

Table 9-6: Manuals for Versana Active

Item	Part Number	Commercial Part Number	Description
1156	5808652-155	H48422BS	Versana Active Release Notes Czech version
1157	5808652-159	H48422BT	Versana Active Release Notes Turkish version
1158	5808652-160	H48422BW	Versana Active Release Notes Danish version
1159	5808652-161	H48432BK	Versana Active Release Notes Norwegian version
1160	5808652-162	H48422BY	Versana Active Release Notes Finnish version
1161	5808652-165	H48422BZ	Versana Active Release Notes Bulgarian version
1162	5808652-167	H48432BA	Versana Active Release Notes Romanian version
1163	5808652-168	H48432BL	Versana Active Release Notes Croatian version
1164	5808652-174	H48432BB	Versana Active Release Notes Lithuanian version
1165	5808652-175	H48432BC	Versana Active Release Notes Latvian version
1166	5808652-176	H48432BD	Versana Active Release Notes Serbian version
1167	5808652-177	H48432BE	Versana Active Release Notes European Portuguese version
1168	5808652-180	H48432BM	Versana Active Release Notes Ukrainian version
1169	5808652-181	H48432BF	Versana Active Release Notes Indonesian version
1170	5808652-183	H48432BN	Versana Active Release Notes Vietnamese version
1171	5808652-184	H48432BH	Versana Active Release Notes Kazakh version
1172	5840769-101	H48752BF	Versana Active R1.5 Advanced Reference Manual French version

Chapter 10

Care and Maintenance

*This chapter describes **Care and Maintenance** on the Ultrasound system and peripherals. These procedures are intended to **maintain the quality** of the Ultrasound **system's performance**. Read this chapter completely and familiarize yourself with the procedures before performing a task.*

10-1 Overview

10-1-1 Contents in this chapter

- 10-1 'Overview' on *page 10-2*
- 10-2 'Warnings' on *page 10-3*
- 10-3 'Why do maintenance' on *page 10-4*
- 10-4 'Maintenance task schedule' on *page 10-6*
- 10-5 'Tools required' on *page 10-8*
- 10-6 'System maintenance' on *page 10-12*
- 10-7 'Electrical safety tests' on *page 10-21*
- 10-8 'When there's too much leakage current ...' on *page 10-32*
- 10-9 'Inspection Paperwork' on *page 10-34*
- 10-10 'Electrical Safety Tests Log' on *page 10-36*

10-2 Warnings



BE SURE TO DISCONNECT THE ULTRASOUND SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.



Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and even when disconnecting/connecting cables.



Do not pull out or insert circuit boards while power is on.



Do not operate this Ultrasound system unless all board covers and frame panels are securely in place. System performance and cooling require this.

10-3 Why do maintenance

10-3-1 Periodic maintenance inspections

It has been determined by engineering that your Versana Active does not have any high wear components that fail with use, therefore no Periodic 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.

10-3-2 Keeping records

It is good business practice that ultrasound facilities maintain records of periodic and corrective maintenance. The Ultrasound Periodic Maintenance Inspection Certificate provides the customer with documentation that the Ultrasound system is maintained on a periodic basis.

A copy of the *Ultrasound Periodic Maintenance Inspection Certificate* should be kept in the same room or near the Ultrasound system.

10-3-3 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 Ultrasound system. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designee.

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. Contact GE for coverage and/or price for service.

10-4 Maintenance task schedule

10-4-1 How often should maintenance tasks be performed?

The Care and Maintenance task schedule (provided in [Table 10-1 on page 10-6](#)) specifies how often your Versana Active should be serviced and outlines items requiring special attention.

NOTE: *It is the customer's responsibility to ensure the Versana Active care and 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 Versana Active and can best provide competent, efficient service. Contact GE for coverage information and/or price for service.

The service procedures and recommended intervals shown in the Care and Maintenance Task Schedule assumes that you use your Versana Active for an average patient load (depends on the clinical setting, typically daily or weekly) and not use it as a primary mobile Ultrasound system which is transported between diagnostic facilities.

NOTE: *If conditions exist which exceed typical usage and patient load, then it is recommended to increase the periodic maintenance frequencies.*

Table 10-1: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probes	•*				* or before each use
Inspect AC Mains Cable			•		Mobile Ultrasound system: Check Weekly
Inspect Cables and Connectors			•		
Clean Console			•		

Table 10-1: Customer Care Schedule (Continued)

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Monitor			•		
Clean Filters			•		
Console Leakage Current Checks				See Notes	Twice Annually
Peripheral Leakage Current Checks				See Notes	Twice Annually
Surface Probe Leakage Current Checks				See Notes	Twice Annually
Endocavity Probe Leakage Current Checks				See Notes	Quarterly Annually
Surgical Probe Leakage Current Checks				See Notes	Quarterly Annually
Measurement Accuracy Checks				See Notes	Twice Annually
Functional Checks				See Notes	also after corrective maintenance

NOTE: The maintenance may require specialized equipment to complete.

NOTE: The periodic maintenances are not mandatory. The table above is for reference only.

10-5 Tools required

NOTE: For a list of required tools for servicing the Versana Active, refer to chapter 8.

10-5-1 Standard GE tool kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required.

Table 10-2: Overview of GE-1 tool kit contents

Tool ID	Description	Tool ID	Description
9-45358	Pliers Retaining Ring	9-XL9971MM	Xcelite-hex Blade 1.27mm
9-4078	Scribe	9-XL9972MM	Xcelite-hex Blade 1.5mm
9-44572	Wrench Open End 3/8 - 7/16	9-XL9973MM	Xcelite-hex Blade 2 mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9974MM	Xcelite-hex Blade 2.5mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9975MM	Xcelite-hex Blade 3mm
9-45385	Pliers, Arc Joint 7 inch	9-XL9976MM	Xcelite-hex Blade 4mm
9-45378	Pliers, Slip Joint	9-XL9977MM	Xcelite-hex Blade 5mm
9-4518	Pliers, Long Nose, Miniature	9-XL991CM	Handle
9-4518	Pliers, Long Nose, Miniature	C2356E	Screw starter - Kedman Quick Wedge
9-44776	Ignition Wrench Set, 10 pc.	BLBO	Box - 18 Compartment
9-44601	Wrench, Adj., 4 inch	DWL4283T	Box - 5 Compartment
9-4151	Screwdriver, Blade, Stubby	9-41322	Pickup Tool, Claw type
9-41421	Screwdriver, Blade, Pocket clip	9-6757	6 pc Needle File Set
9-41594	Screwdriver, Blade 1/8 in. × 4 in.	9-9487	Utility Knife
9-41581	Screwdriver, Blade 3/16 in. × 4 in.	9-45341	Pliers Vice Grip 10 inch
9-39451	20' Steel Tape, locking Spring load	9-3001	Xacto Pen Knife

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-GH807	Ratchet, Offset, Slotted	9-HT62002	Solder Aid, Fork and Hook
68-412	Ratchet, Offset, Phillips	9-4099	Mirror, Round, Telescoping
9-GH130	Tapered Reamer	9-GH3001	Steel Rule Decimal 6 inch
9-41584	Screwdriver, slotted 1/4 in. × 6 in.	9-GH300ME	Steel Rule Metric 6 inch
9-4118	Screwdriver, Phillips #2, Stubby	9-XL9920	Xcelite-hex Blade.050 inch
9-41293	Screwdriver, Phillips #0	9-XL9921	Xcelite-hex Blade 1/16 inch
9-41294	Screwdriver, Phillips #1	9-XL9922	Xcelite-hex Blade 5/16 inch
9-41295	Screwdriver, Phillips #2	9-XL9923	Xcelite-hex Blade 3/32 inch
9-46677	Hex Keys, 20 pc., Metric	9-XL9924	Xcelite-hex Blade 1/8 inch
9-34701	1/4 in. Standard Socket set (19 pc)	9-XL9925	Xcelite-hex Blade 5/32 inch
9-43499	1/2 inch Socket 1/4 inch drive	9-XL9926	Xcelite-hex Blade 3/16 inch
9-4355	Flex Spinner	9-XL99764	Xcelite-hex Blade 7/64
9-43523	Breaker	9-XL99964	Xcelite-hex Blade 9/64
9-43531	6 inch Ext.	9-XLM60	Mini-screwdriver kit
9-65283	Case 8.5 in. × 4.5 in. × 2 in. Deep	9-45072	Pliers 6 inch Diagonal
9-46696	Hex Keys	9-XL100X	Wire Stripper/Cutter 5 inch - 100X
9-39829	Torpedo Level, Magnetic	9-XL87CG	Pliers - very fine needle nose-87CG
9-38461	Hammer, Ball Peen, 4 oz.	9-WEWDT-07	Weller-Soldering-Replacement Tip(1)
9-4280	Universal Joint 1/4 inch	9-WS175-E	Wiss - Surgical Scissors
9-WEW60P3	Weller - Soldering Iron, 3 wire	KH174	Hemostat 5 inch Straight
9-WECT5B6	Weller - Soldering Iron Tip	KH175	Hemostat 5 inch curved
9-WEWDP12	Weller - Desoldering Pump	9-Z9480121	Alignment tool (red)
93383	Flashlight Mini-Mag Lite (AAA Bat.)		
9-GH408	Tweezers		
21576	Brush - Bristle		

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-4516	Pliers 4 1/4 inch Diagonal		

10-5-2 GE-2 tool kit

Table 10-3: Overview of GE-2 tool kit contents

GE-2 Sears Kit (#99034)			
Tool ID	Description	Tool ID	Description
9-45381	Pliers, Arc Joint 9 1/2 inch	9-44067	Socket 1 1/16 in. for 1/2 in. drive
9-45092	Pliers, Linesman 8 1/2 inch	9-42679	Socket 10MM Hex for 1/2 in. drive (2273333)
9-42882	Punch, Pin 3/32 inch	9-44262	Extension 10 inch for 1/2 in. drive (2273405)
9-42884	Punch, Pin 5/32 inch	9-4258	3/8 inch to 1/2 inch Adapter
9-42886	Punch, Pin 1/4 inch	9-34374	3/8 inch Metric Socket Set - 12 PT
9-42973	Cold Chisel 1/2 inch	9-44311	16mm Socket 12 pt.
9-GH77	Center Punch Automatic	9-33485	Metal Socket Tray
9-GH890	File Handle, Adj.	9-33484	Metal Socket Tray
9-31276	File, Round, Bastard 8 inch	9-33484	Metal Socket Tray
9-31277	File, Half Round, Bastard 8 inch	9-52068	Tap and Drill Set
9-31263	File, Flat Mill 8 inch	9-52722	#6 Tap
21045C	Close Quarter Saw	9-52723	#8 Tap
9-44604	Wrench, Adj. 10 inch		High Speed Drill Set
9-41587	Screwdriver 5/16 inch × 8 inch		#36 Drill
9-41586	Screwdriver, Stubby 5/16 inch		#29 Drill
9-GH19512	Countersink 1/2 inch	9-44046	3/8 inch Socket Set
9-44741	12 PC Combination Wrench Set		

10-5-3 Special tools, supplies and equipment used for maintenance

Table 10-4: Overview of tool requirements for periodic maintenance

Tool / kit	Comments
Digital Volt Meter (DVM)	
Anti Static Kit	Kit includes anti-static mat, wrist strap and cables for 200 to 240V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive ground cord
Anti Static Vacuum Cleaner	120V 230V
Safety Analyzer	The safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.
QIQ Phantom	RMI Grayscale Target Model 403GS NOTE! The use of a Phantom is not required during Preventive Maintenance. Customer may use it as part of their Quality Assurance Program tests.
B/W Printer Cleaning Sheet	See printer user manual for requirements
Color Printer Cleaning Sheet	See printer user manual for requirements
Disposable Gloves	

10-6 System maintenance

10-6-1 Preliminary checks

The preliminary checks take about 15 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

Table 10-5: System preliminary checks

Step	Item	Description
1.	Ask and Listen	Ask the customer if they have any problems or questions about the equipment.
2.	Paperwork	Fill in the top of Ultrasound Inspection Certificate (see Figure 10-5 on page 10-34). Record all probes and Ultrasound system options.
3.	Power up	<ul style="list-style-type: none"> • Turn the Ultrasound 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. • Where applicable, confirm that the battery is charged. If no AC Input present, use the internal battery.
4.	Probes	Verify that the Ultrasound system properly recognizes all probes.
5.	Displays	Verify proper display on the monitor.
6.	FFA (server)	Where applicable, for Warranty and Contract Customers only: <ul style="list-style-type: none"> • Verify that InSite is functioning properly. • Ensure two-way remote communications.
7.	Review Error Logs	Where applicable, Error Logs can be reviewed via system diagnostics.
8.	Diagnostics	Optional.
9.	Presets	Backup all Customer Presets to an appropriate media.
10.	Image Archive	Back up the Image Archive onto appropriate media.

10-6-2 Functional checks

NOTE: See also Chapter 4

The functional checks take about 60 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

10-6-2-1 System checks

Table 10-6: System functional checks

Step	Item	Description
1.	B-Mode	Verify basic B-Mode (2D) operation. Check the basic Ultrasound system controls that affect this mode of operation.
2.	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic Ultrasound system controls that affect this mode of operation.
3.	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic Ultrasound system controls that affect this mode of operation.
4.	M-Mode	Verify basic M-Mode operation. Check the basic Ultrasound system controls that affect this mode of operation.
5.	Probe Elements	Perform an Element Test on each probe to verify that all the probe elements and system channels are functional.
6.	Applicable Software Options	Verify the basic operation of all optional modes such as Contrast. Check the basic Ultrasound system controls that affect each options operation.
7.	Xmit/Recv Elements	Use the Visual Channel Utility on the loop connect to verify that all system xmit/recv channels are functional.
8.	Operator Panel test	Perform the Operator Panel Test Procedure.
9.	Keyboard	Do the interactive keyboard test.
10.	Monitor	Verify basic monitor display functions. Refer to Chapter 3 of the Basic User Manual.
11.	Software Menu check	Verify Software Menu display functions. Refer to Chapter 3 of the Basic User Manual.
12.	Peripherals	See: 4-4-19 'Peripheral checks' on page 4-70.
13.	Measurements	In measurement mode, make distance measurement, get result in result window. Verify the distance by graduate rule. Distance Accuracy should be within $\pm 5\%$. (Name result from result window Result A, result from graduate rule Result B; Distance Accuracy = (Result B-Result A)/Result A)

10-6-2-2 Peripheral/option checks

If any peripherals or options are not part of the system configuration, the check can be omitted.

Refer to the User Manual for a list of approved peripherals/options.

Table 10-7: GE approved peripheral/hardware option functional checks

Step	Item	Description
1.	Media	Verify media drive(s) read/write properly. Clean if necessary.
2.	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3.	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4.	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5.	ECG	Verify basic operation with customer
6.	Footswitch	Verify that the footswitch is functioning as programmed. Clean as necessary.
7.	DVD	Verify that the DVD is functioning properly. Clean heads and covers if necessary.

10-6-2-3 Mains cable inspection

Table 10-8: Mains Cable Inspection, As Appropriate

Step	Item	Description
1.	Unplug Cord	Disconnect the mains cable from the wall and Ultrasound system.
2.	Inspect	Inspect it and its connectors for damage of any kinds.
3.	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.
4.	Verify	Inlet connector retainer is functional.

10-6-2-4 Cleaning

Table 10-9: General Cleaning

Step	Item	Description
1.	Console	Remove the battery. 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.
2.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
3.	Monitor	Use a soft, non-abrasive folder cloth. Gently wipe the monitor face. DO NOT use a glass cleaner that has a hydrocarbon base (such as Benzene, Methy Alcohol or Methy Ethyl Ketone) on monitor with the filter (anti-glare shield).

For general cleaning of the system, we recommended to use non-abrasive soap and water solution.

Table 10-10: Compatible Chemicals for Cleaning

	System Cabinet	Operator Control Panel	Main display	Cart (top table/body/base)
Cleaning agents				
PDI Easy Screen Cleaning Wipe	X	X	X	X
70% isopropyl alcohol	X	X	X	X
Wet Wipe	X	X	X	X
Disinfectants ^[1]				
PDI Sani-Cloth Plus	X	X	X	X
Protex	X	X	X	X
Tristel Wipes	X	X	X	X
Sono Ultrasound Wipes	X	X	X	X
Clorox wipes	X	X	X	X
CaviWipes	X	X	X	X
PDI Sani-Cloth HB	X	X	X	X
PDI Super Sani-Cloth Plus	X	X	X	X
[1]: Effective Disinfection is always a balance between safe inactivation of infectious agents and undesirable side effects. Due to the generally uneven and irregular surface of Ultrasound consoles, a comprehensive surface disinfection process cannot be recommended by the manufacturer.				

10-6-3 Physical inspection

NOTE: These features may not be present on all Ultrasound systems.

Table 10-11: Physical checks

Step	Item	Description
1.	Labeling	Verify that all Ultrasound system labeling is present and in readable condition.
2.	Scratches & Dents	Inspect the exterior for dents, scratches or cracks.
3.	Input Power	Refer to: 10-6-2-3 'Mains cable inspection' on page 10-14 .
4.	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.
5.	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 while scanning.
6.	Control Panel	Inspect keyboard and control panel. Note any damaged or missing items.
7.	Control Panel Lighting	Check for proper operation of all operator panel and Freeze Key light.
8.	Monitor	Inspect the monitor Display for scratches and bad pixels. Verify proper operation of Contrast and Brightness controls. Where applicable, confirm that the monitor arm allows: <ul style="list-style-type: none"> • swivelling the screen to the left and to the right • folding the screen to the locked position • release and adjustment backwards and forwards • can be adjusted in the up/down positions. Note: Monitor Arm movement may vary and is not applicable to all Ultrasound systems.
9.	External I/O	Check all connectors for damage.
10.	Power and System Status Indicators	Check for proper operation of all Power and System Status Indicators.
11.	Battery	Where applicable, check that the battery is not damaged, does not leak, does not emit an odor, and is not deformed or discolored. Observe all warnings and cautions for battery handling, recharging, storing, and/or disposal,

10-6-4 Optional Diagnostic Checks

Optionally you can access the diagnostic software as described in Chapter 5 or 7. View the error logs and run desired diagnostics.

10-6-4-1 View the Log

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.

10-6-5 Probe maintenance

10-6-5-1 Probe related checks

Table 10-12: System preliminary checks

Step	Item	Description
1.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
2.	Probes	Thoroughly check the Ultrasound system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins.
3.	Probes	Verify that the Ultrasound system properly recognizes all probes.

10-6-5-2 Basic probe care

The Ultrasound system user manuals and various probe handling cards provide 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. See the User Manual and probe care cards 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 Ultrasound system sockets before plugging in a probe.

The Interoperative probes often have special considerations and individual probe user manuals. For Interoperative probes also refer to their separate user manuals.

10-6-5-3 Basic probe cleaning

To clean the probe:

1. Disconnect the probe from the ultrasound console and remove all coupling gel from the probe by wiping with a soft cloth and rinsing with flowing water.
2. Wash the probe with mild soap in lukewarm water. Scrub the probe as needed using a soft sponge, gauze, or cloth to remove all visible residue from the probe surface. Prolonged soaking or scrubbing with a soft bristle brush (such as a toothbrush) may be necessary if material has dried onto the probe surface.



Do not submerge the probe above the probe as the strain relief is not sealed. Do not allow fluid into or onto the connector of the probe.



Take extra care when handling the lens face of the Ultrasound transducer. The lens face is especially sensitive and can easily be damaged by rough handling. NEVER use excessive force when cleaning the lens face.

3. Rinse the probe with enough clean potable water to remove all visible soap residue.
4. Air dry or dry with a soft cloth.



To help protect yourself from blood borne diseases, wear approved disposable gloves. These are made of nitrile derived from vegetable starch to prevent allergic latex reactions.



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 User Manual. Doing so could result in irreparable damage to the probe.

Follow care instructions that came with the probe.



Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.

10-6-5-4 Disinfecting probes

Ultrasound probes can be disinfected using liquid chemical germicides. The level of disinfection is directly related to the duration of contact with the germicide. Increased contact time produces a higher level of disinfection.

For information about probe disinfectants, please refer to the latest version of the ultrasound system user manuals.



Review the probe care card that is packed with each probe. The following website contains the most current and up-to-date recommendations:

http://www.gehealthcare.com/usen/ultrasound/products/probe_care.html

10-7 Electrical safety tests

10-7-1 Safety test overview

The electrical safety tests in this section are based on and conform to IEC 60601-1 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 IEC 60601-1 documents



THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO HISTORICAL DATA. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE SAFETY INSPECTIONS MENTIONED ABOVE.



DANGER TO MINIMIZE RISK OF ELECTRICAL SHOCK, ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE ELECTRICAL SAFETY INSPECTIONS AND TESTS.



DANGER TO AVOID ELECTRICAL SHOCK, THE ULTRASOUND SYSTEM UNDER TEST **MUST NOT** BE CONNECTED TO OTHER ELECTRICAL EQUIPMENT. REMOVE ALL INTERCONNECTING CABLES AND WIRES. THE ULTRASOUND SYSTEM UNDER TEST MUST NOT BE CONTACTED BY USERS OR PATIENTS WHILE PERFORMING THESE TESTS.



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.

10-7-1 Safety test overview(continued)

Prior to initiating any electrical test, the Ultrasound system must be visually inspected. Perform the following visual checks:

- Check for missing or loose enclosure covers that could allow access to internal live parts.
- Examine the mains cord, mains plug and appliance inlet for damaged insulation and adequacy of strain relief and cable clamps.
- Locate and examine all associated transducers. Inspect the cables and strain relief at each end. Inspect the transducer enclosure and lens for cracks, holes and similar defects.

Test the system, peripherals and probes for leakage current. Excessive leakage current can cause injury or death in sensitive patients. 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 that a probe may shock someone the customer should:

- Not use a probe that is cracked or damaged in any way.
- Check probe leakage current:
 - Based on your facilities QA program for surface probes.
 - Based on your facilities QA program for endocavitary probes.
 - whenever probe damage is suspected.

10-7-2 Leakage current limits



Energy Control and Power Lockout for Versana Active.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.



Compare all safety-test results with safety-test results of previously performed safety tests (e.g. last year etc). In case of unexplainable abrupt changes of safety-test results consult experienced authorized service personnel or GE for further analysis.

The following limits are summarized for IEC 60601-1 Medical Equipment Safety Standards. These limits are GEMS standards and in some cases are lower than the above standards listed.

Table 10-13: Chassis Leakage Current Limits - Accessible Metal Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
All (Except USA & Canada)	0.1 mA	0.5 mA	0.5 mA	0.5 mA
USA & Canada	0.1 mA	0.3 mA	0.3 mA	0.3 mA

Table 10-14: Type BF Applied Part Leakage Current Limits - Probes Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

10-7-2 Leakage current limits(continued)



Table 10-15: Type CF Applied Part Leakage Current Limits - ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

NOTE: **Mains Applied refers to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient contacted mains voltage.*

The following tests are performed at the factory and should be performed at the site. These tests are: chassis leakage current, and probe leakage current. All measurements are made with an electrical safety analyzer which should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

Table 10-16: Equipment Type and Test Definitions

Applied Parts (AP)	Parts or accessories that contact the patient to perform their function. For ultrasound equipment, this includes transducers and ECG leads.	
Type BF	Body Floating or non-conductive ultrasound probes which are marked with the 'man in box' BF symbol. this includes all transducers.	
Type CF	Cardiac Floating or non-conductive intraoperative probes for direct cardiac contact and isolated ECG connections so marked with the 'heart in box' CF symbol.	
Sink Leakage	The current resulting from the application of mains voltage to the applied part. This test is required test for Type CF applied parts.	

10-7-3 Outlet test - wiring arrangement

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.

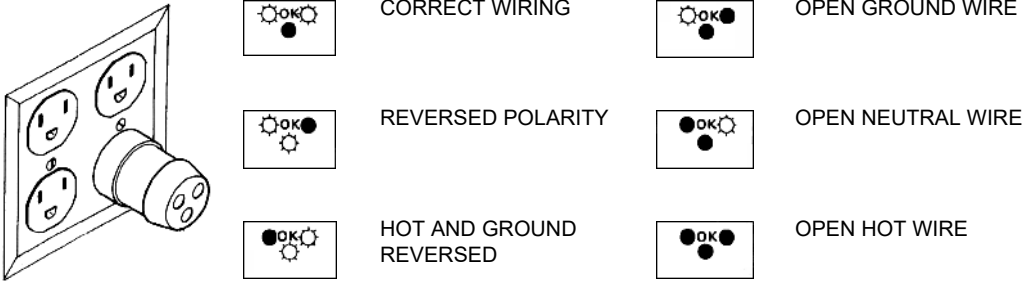


Figure 10-1. Typical alternate outlet tester

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.

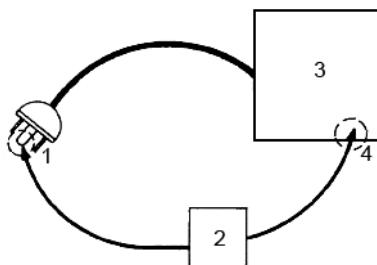
10-7-4 Grounding continuity



DANGER ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2** ohms. Reference the procedure in the IEC60601-1.

NOTE: *User needs to unscrew the GROUND PIN before releasing the Versana Active.*



1. GROUND PIN
2. OHMMETER
3. Versana Active
4. ACCESSIBLE METAL PART:
 - MONITOR HOUSING
 - PEAR PANEL CONNECTOR
 - ANY CASTER/WHEEL SUPPORT

Figure 10-2. Ground continuity test

10-7-5 Chassis leakage current test



DANGER ELECTRIC SHOCK HAZARD. WHEN THE METER'S GROUND SWITCH IS OPEN, DON'T TOUCH THE ULTRASOUND SYSTEM!.



CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

10-7-5-1 Generic procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

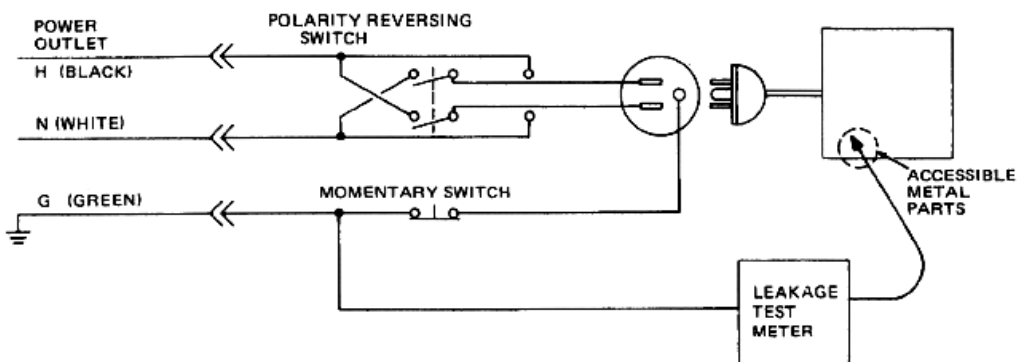


Figure 10-3. Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuous Leakage Currents and Patient, Auxiliary Currents

When using the Microguard 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 chassis source leakage is shown in [Table 10-13 on page 10-23](#).

10-7-5-2 Data Sheet for enclosure Source Leakage Current

The test passes when all readings measure less than the value shown in [Table 10-13 on page 10-23](#). Record all data on the PM Inspection Certificate.

Table 10-17: Typical Data Sheet for enclosure Source Leakage Current

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Speaker Cover	Test 2 Real Panel Metal Parts	Optional Test 3	Optional Test 4
Enter Name of tested peripheral here:						
ON	NORM	OPEN				
ON	NORM	CLOSED				
ON	REV	OPEN				
ON	REV	CLOSED				
OFF	NORM	OPEN				
OFF	NORM	CLOSED				
OFF	REV	OPEN				
OFF	REV	CLOSED				

10-7-6 Probe leakage current test



DO NOT USE THE PROBE IF THE INSULATING MATERIAL HAS BEEN PUNCTURED OR OTHERWISE COMPROMISED. INTEGRITY OF THE INSULATION MATERIAL AND PATIENT SAFETY CAN BE VERIFIED BY SAFETY TESTING ACCORDING TO IEC60601-1.



Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

10-7-6-1 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.

10-7-6-2 Tools

For needed tools, see: [10-5 'Tools required' on page 10-8.](#)

10-7-6-3 Generic procedure on probe leakage current

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the unit Off and On. For each combination, the probe must be active to find the worst case condition.

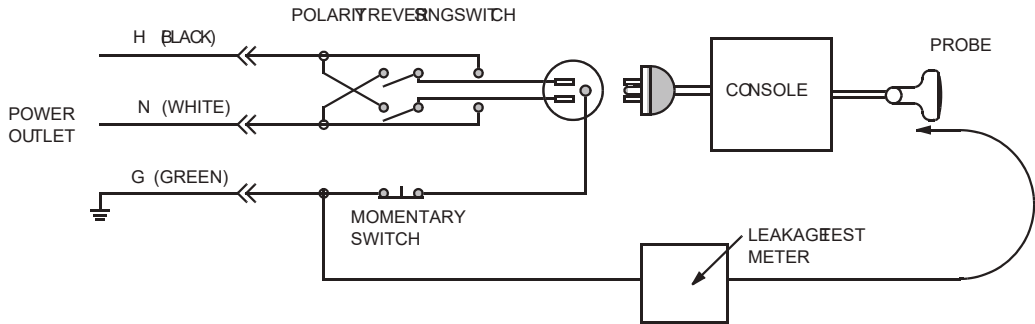


Figure 10-4. Set up for probe leakage current

NOTE: *Each probe will have some amount of leakage current, 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.*



DANGER TO AVOID PROBE DAMAGE AND POSSIBLE ELECTRIC SHOCK, DO NOT IMMERSE PROBES INTO ANY LIQUID BEYOND THE LEVEL INDICATED IN THE PROBE USERS MANUAL. **DO NOT TOUCH THE PROBE, CONDUCTIVE LIQUID OR ANY PART OF THE UNIT UNDER TEST WHILE DOING THE TEST.**

10-7-6-4 Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

10-7-6-5 No Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

10-7-6-6 Data Sheet for Transducer Source Leakage Current

The test passes when all readings measure less than the values shown in [Table 10-14 on page 10-23](#). Record all data on the PM Inspection Certificate.



CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Table 10-18: Typical Data Sheet For Transducer Source Leakage Current

Transducer Tested:			
Unit Power	Tester Power Polarity Switch	Tester GROUND or NUETRAL Switch	Measurement
ON	NORM	OPEN	
ON	NORM	CLOSED	
ON	REV	OPEN	
ON	REV	CLOSED	
OFF	NORM	OPEN	
OFF	NORM	CLOSED	
OFF	REV	OPEN	
OFF	REV	CLOSED	

10-8 When there's too much leakage current ...

10-8-1 AC/DC Fails

Where applicable, check the AC/DC adapter and its cable. Replace a new one if any portion is defective.

10-8-2 Chassis 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.

Where applicable, 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 work around, check the other outlets to see if they could be used instead.

NOTE: *No outlet tester can detect the condition where the white neutral wire and the green 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.*

10-8-3 Probe Fails

Test the probe in another connector to isolate if the fault lies with the probe or the Ultrasound system. Or Change another probe to confirm if the fail is caused by console.

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 inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

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.

10-8-4 Peripheral Fails

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

10-8-5 Still Fails

If all else fails, begin isolation by removing the probes, external peripherals, then the on board ones, one at a time while monitoring the leakage current measurement.

10-8-6 New Unit

If the leakage current measurement tests fail on a new Ultrasound system and if situation can not be corrected, submit a Safety Failure Report to document the Ultrasound system problem. Remove Ultrasound system from operation.

10-8-7 ECG Fails

Inspect cables for damage or poor connections.

10-9 Inspection Paperwork

10-9-1 Ultrasound Inspection Forms

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:

* ScanFormat: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Figure 10-5. Ultrasound Inspection Certificate

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

10-9-1 Ultrasound Inspection Forms(continued)

FUNCTIONAL CHECKS

Functional Check (if applicable)	OK? or N/A
B-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Panel	
LCD	
Measurement Accuracy	
GE Approved Peripherals	

PHYSICAL INSPECTION AND CLEANING

Physical Inspection and Cleaning (if applicable)	Inspect	Clean
Console		
LCD		
External I/O		
Cables and Connectors		
GE Approved Peripherals (DVD-RW Printer)		
Labeling (see User Manual for Labeling)		

COMMENTS:

Figure 10-6. Functional Checks

ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground & wiring config.)				
Type B Applied Part Leakage Current Limits-Probe				
enclosure Source Leakage Current Chassis Leakage Current Limits				
Peripheral 1 Leakage Current				
Peripheral 2 Leakage Current				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				

Final Check All system covers are in place. System scans with all probes as expected.

Accepted by: _____

Figure 10-7. Electrical Safety

10-10 Electrical Safety Tests Log

Table 10-19: Electrical safety tests log

Electrical test performed	Max value allowed	Value measured	OK?	Comments
Outlet (correct ground and wiring config.)				
System ground continuity				
Chassis source leakage current - probe				
Chassis source leakage current - wheel				
Chassis source leakage current - monitor				
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				

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