

Natural Gas and Biogas Facilities and Network Monitoring

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INSPECTRA® LASER IECEx

Laser Technology
applied to Methane Detection

- Zone 1, IECEx and ATEX certified
- Selectivity to methane (CH₄)
- 1 ppm sensitivity CH₄
- Measurement range from 0ppm to 100% volume CH₄

Using laser spectroscopy technology, the INSPECTRA® LASER IECEx equipment by GAZOMAT™ is a high-performance methane detector offering all the advantages of optical detection.

The device meets latest IECEx and ATEX standards for use in explosive atmospheres as well as in confined zones. It detects methane and locates leaks with precision, across a wide measurement range, down to the smallest concentrations. It is ideal for the monitoring of natural gas and biogas facilities and pipelines, both outdoors and indoors.



Total Selectivity to Methane

- The measuring chamber of the INSPECTRA® LASER analyzer is fitted with a laser diode adjusted to the absorption wavelength specific to methane.
- In the presence of methane molecules, the laser beam is partially absorbed. Thus, only methane is detected.
- The device is insensitive to other hydrocarbon gases, chemicals, water vapours and pollution that may be present in the ambient air in small quantities.

Unique Measuring Precision and Reliability

- 1 ppm sensitivity (CH₄) thanks to the path length of the multipass cell
- Two measurement scales with simultaneous display
 - PPM scale from 0 ppm to 19,999 ppm
 - GAS scale: from 0 % to 100 % volume gas
- Very quick response time

Zone 1, IECEx and ATEX Certified



Intrinsically safe, the device can be operated in zone 1 explosive atmospheres, both indoors and outdoors.

Easy-to-Use

- Quick start-up, in just a few seconds, with automatic self-test,
 - Visual and audio indicators (battery charge level, pump status, alarm on/off, risk of explosion, etc.)
 - Access to standard and advanced functions with the 5-key keypad and a scrolling menu
 - Four measurement ranges with Autoscale function improving measurement range change
 - Measurement in absolute or relative
 - GAZOMAT battery pack easy to replace by operator – no return to Service center required
- Note: the INSPECTRA® may be operated with three LR20 dry cells, outside explosive atmospheres exclusively*
- Extended set of sampling equipment
 - Connects to dedicated survey App for real-time data transmission (option).

Wide Scope of Application

Suitable for any application requiring the measurement of methane and biomethane concentrations:

- Detection and location of gas leaks in any type of configuration: bore holes, confined areas, etc.
- Survey of underground and aboveground pipelines
- Monitoring of compression plants, gas storage plants, high pressure lines, pressure reducing stations, etc.
- Surface emission monitoring of volcano sites, landfills, etc.
- Gas analysis in laboratories.



Accessories and Adds-on

- 100-240VAC 50Hz-60Hz charger
- Rechargeable battery pack (not shown) – fits inside the instrument
- Modular telescopic sampling rod with suction cup
- Storage case for the detector and its accessories
- Set of water-repellent filters and dust filters (not shown)
- Pin wrench to access the water-repellent filter compartment (not shown)
- **Optional:**
 - 12VDC charger
 - Long semi-rigid sampling probe with its filter fitted handle (not shown)
 - Short flexible probe with its handle (not shown)
 - Gas check kit comprising a gas check cylinder and a pressure regulator
 - Bluetooth communicator (not shown) for wireless data transfer



Sampling Equipment Compatible with the Instrument

Telescopic sampling probe and accessories



Modular telescopic carbon sampling probe



Suction cup probe



Gas trap trolley (optional)



Single-wheel probe (optional)

Other sampling probes



Long probe (optional)



Short probe (optional)

GAZOSURVEY™, the Mobile App Dedicated to Methane Leak Monitoring (optional)

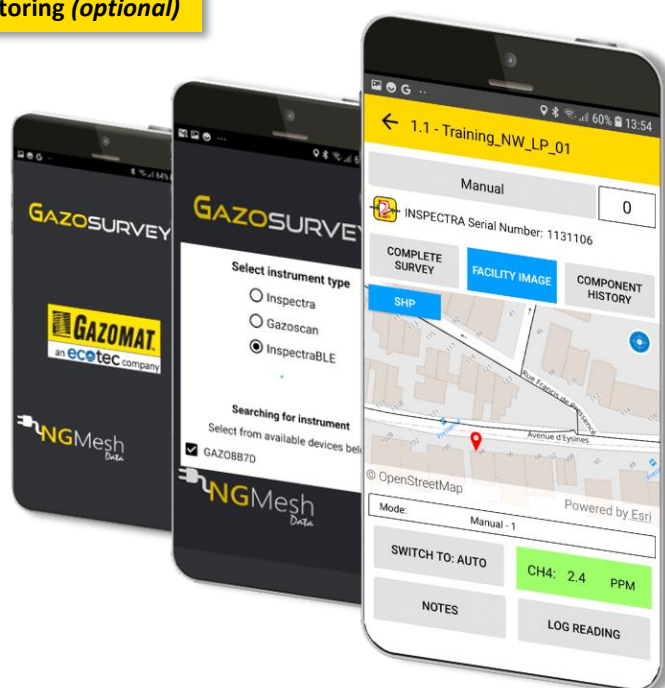
Available as an option, GAZOSURVEY ⁽¹⁾ is a software application running on iOS and Android smart devices. It has been developed for leak monitoring of natural gas and biogas pipelines and installations.

GAZOSURVEY app facilitates survey data collection and transfer. The smart device connects in Bluetooth to the INSPECTRA® detector. Via the app, the field technician can then use the smart device's functions:

- Geolocation and navigation on maps
- Note entry
- Multiple photo storage using the camera

Through an interface with a web platform, georeferenced survey data is transferred, and alerts are automatically sent to emergency personnel or services.

(1) Application marketed separately. Consult GAZOSURVEY brochure



TECHNICAL SPECIFICATIONS **INSPECTRA® LASER IECEx**

Measurement principle:	• Laser spectroscopy (TDLAS – Tunable Diode Laser Absorption Spectroscopy)		
Gas selectivity:	• Methane gas (CH ₄)		
Measurement scales: (Simultaneous display)	PPM 0ppm to 19,999ppm CH ₄	GAS 0.0% to 100.0% VOL. GAS CH ₄	LEL (on request only) 0.0% LEL to 100.0% LEL CH ₄
Measurement range:	• 0ppm-100.0 % VOL. GAS CH ₄		
Detection threshold:	• 1ppm CH ₄		
Response time:	- T10 standard: 2 seconds - T10 with suction rod: <3.5 seconds - T90 standard: 4.5 seconds - T90 with suction rod: 6 seconds		
Start-up time:	• In less than 30 seconds		
Display:	- LCD screen display with green color backlighting visible in daylight 3 display areas: Measurements/Status indicators/Dialog window - Height of measurement character: 13 mm		
Keypad:	5 direct-control keys: ON/OFF, pump, alarm, backlighting, menu - Advanced function control with protected access scrolling menu		
Power supply:	• Ni-MH rechargeable battery pack along manufacturer's references:		
Charger	○ 3.6V, 23.22Wh / 6.45Ah		
Charge time:	- Input: 100-240VAC 50Hz-60Hz Max 0.35A - Charge time up to 10 hours		
Battery life:	12 hours at temperatures within +20°C and +25°C - no accessories and all functions on (backlighting, pump on normal speed) - Battery life reduced by 20% at temperatures below 0°C and above +35°C		
Electric pump flowrate:	• 55 l/h (normal flow) and 45 l/h (slow flow)		
Alarms:	- They activate the visual (LED and LCD displays) and audio warnings: - Methane (CH₄) concentration threshold - Explosion risk due to methane concentration - Pump: pump stopped, pump error		
Status indicators:	• Battery charge level, pump status (2 speeds)		
Gas connection:	- Quick-connect inlet coupling with locking mechanism: suction probe on right side - Quick-connect gas outlet coupling		
Electrical connections:	2.1mm connector for battery charger - Communication connector for connection to: - a PC via an optional dedicated cable - an optional external Bluetooth communicator		
Data transfer:	• Via an external wireless Bluetooth communicator (option) and a dedicated application (option)		
Housing:	- Housing material: polyamide reinforced with fiber glass and carbon - Material of front side: anodized aluminum		
Dimensions:	• Length 263 mm x Width 113 mm x Height 141 mm (10.3 x 4.4 x 5.5 inches)		
Weight:	• 2.7 kg with batteries (5.95 lbs)		
Conditions of use in stabilized mode:	- Humidity: 5% to 80% relative humidity - Operating temperature range: -15°C to +50°C (+5°F to 122°F) - Atmospheric pressure 1013 mbar (± 100 mbar)		
Storage conditions: (excluding batteries)	- Humidity: < 90% relative humidity - Temperature: -20°C to +60°C (-4°F to +140°F)		
Protection rating:	• IP54 (complies with IEC 60529)		
CE Marking Standard conformity:	- EN 50270 :2015 - Electromagnetic compatibility - EN 61010-1 :2010 + A1:2019/AC 2019-04 - Safety requirements for electrical equipment for measurement, control and laboratory use - IEC 60825-1 :2014 - Safety of laser products - European standards of use in explosive atmospheres: - EN IEC 60079-0 :2018 - General Requirements - EN 60079-11 :2012 - Intrinsic Safety - EN 60079-28 :2015 – Optical radiation protection		
IECEx Marking: Zone 1	II2G Ex ib op is IIB T3 Gb IECEx INE 19.0017X		
ATEX Marking: Zone 1	Ex II 2 G Ex ib op is IIB T3 Gb INERIS 19ATEX0018X		
Patents:	No 7352463 and No 1647820		
Country of origin:	Made in France		



IEC 60079-0 :2017 (Ed. 7.0)
IEC 60079-11 :2011 (Ed. 6.0)
IEC 60079-28 :2015





- 2 Appareil ou système de protection destiné à être utilisé en atmosphères explosibles
Equipment and protective systems intended for use in potentially explosive atmospheres

Directive 2014/34/UE
Directive 2014/34/EU

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ATTESTATION D'EXAMEN UE DE TYPE
EU-TYPE EXAMINATION CERTIFICATE

- 3 Numéro de l'attestation d'examen UE de type / *Number of the EU-Type Examination Certificate*

INERIS 19ATEX0018X

INDICE / *ISSUE* : 00

- 4 Appareil ou système de protection / *Equipment or protective system:*

DETECTEUR DE GAZ PORTABLE TYPE INSPECTRA LASER
PORTABLE GAS DETECTOR TYPE INSPECTRA LASER

- 5 Fabricant / *Manufacturer:*

GAZOMAT™

- 6 Adresse / *Address :*

11, rue de l'Industrie
F-67400 ILLKIRCH-GRAFFENSTADEN

- 7 Cet appareil ou système de protection et toute autre variante acceptable de celui-ci sont décrits dans l'annexe de la présente attestation et dans les documents descriptifs cités dans cette annexe.

This equipment or protective system and any acceptable variation thereto is specified in the Annex of this certificate and the descriptive documents therein referred to.

- 8 L'INERIS, organisme notifié et identifié sous le numéro 0080, conformément aux articles 17 and 21 de la directive 2014/34/UE du Parlement Européen et du Conseil, datée du 26 février 2014, et accrédité par le COFRAC sous le n° 5-0045 dans le cadre de l'activité de certification de produits et services (portée disponible sur www.cofrac.fr) certifie que cet appareil ou système de protection répond aux Exigences Essentielles de Sécurité et de Santé en ce qui concerne la conception et la construction des appareils et des systèmes de protection destinés à être utilisés en atmosphères explosibles, décrites en annexe II de la Directive.

INERIS, notified body and identified under number 0080, in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, and accredited by COFRAC under number 5-0045 for certification of products and services (scope of accreditation available on the website www.cofrac.fr), certifies that this equipment or protective system fulfils the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

Les procédures de certification sont disponibles sur www.ineris.fr.

The rules of certification are available on INERIS website on: www.ineris.fr.

Les examens et les essais sont consignés dans le rapport :

The examinations and the tests are recorded in report:

N° 029447.

9 Le respect des Exigences Essentielles de Sécurité et de Santé est assuré par :

The respect of the Essential Health and Safety Requirements has been assured by:

- la conformité à / *Conformity with:*

EN 60079-0	:	2012 + A11 : 2013
EN 60079-11	:	2012
EN 60079-28	:	2015

- les solutions spécifiques adoptées par le fabricant pour satisfaire aux Exigences Essentielles de Sécurité et de Santé décrites dans les documents descriptifs /

Specific solutions adopted by the manufacturer to meet the Essential Health and Safety Requirements described in the descriptive documents

10 Si le signe X est placé à la suite du numéro de l'attestation d'examen UE de type, il indique que cet appareil ou système de protection est soumis à des conditions spéciales d'utilisation, mentionnées dans l'annexe de la présente attestation.

If the sign X is placed after the Number of the EU type examination certificate, it indicates that this equipment and protective system is subject to the Specific Conditions of Use, mentioned in the annex of this certificate.

11 Cette attestation d'examen UE de type se rapporte uniquement à la conception, aux examens et essais de l'appareil ou système de protection spécifié conformément à la directive 2014/34/UE. D'autres exigences de cette Directive s'appliquent à la fabrication et à la fourniture de cet appareil ou système de protection, celles-ci ne sont pas couvertes par cette attestation.

This EU-Type Examination Certificate relates only to the design, examinations and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 Le marquage de l'appareil ou du système de protection doit contenir :

The marking of the equipment or the protective system shall include the following:



Verneuil-en-Halatte, 2019 11 08



Signé électroniquement
Digitally signed by
Thierry HOUËIX
Ex Certification Officer
Délégué Certification

Le Directeur Général de l'INERIS
Par délégation
The Chief Executive Officer of INERIS
By delegation

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ANNEXE**15 DESCRIPTION DE L'APPAREIL OU DU SYSTÈME DE PROTECTION :**

Le détecteur de gaz type Spectra Laser permet la détection et la mesure de fuite dans les réseaux de distribution de gaz, des milieux industriels et des industries chimiques.

Protégé par sécurité intrinsèque, la détection de gaz ou de fuite s'effectue par un module laser.

Le matériel se compose d'une enveloppe en matériau plastique munie de cartes à circuits imprimés sur lesquelles sont implantés les composants électroniques.

L'alimentation du matériel s'effectue par un ensemble de trois éléments de batteries connectées en série.

PARAMETRES RELATIFS A LA SECURITE :

Tension d'alimentation aux bornes du connecteur de recharge : $U_m = 250\text{ V}$

Tension d'alimentation aux bornes du connecteur de communication (BINDER) : $U_m = 250\text{ V}$

Caractéristiques des batteries / Batteries characteristics :

<u>Fabricant / Manufacturer</u>	ARTS Energy	ARTS Energy	GP Batteries
<u>Référence / Model</u>	VNT-D(H) U	VHT-D(L)	GP1000DH
<u>Type / Type</u>	Ni-Cd	Ni-Mh	Ni-Mh
<u>Capacité / Capacity</u>	4250 mAh	6450 mAh	10 Ah
<u>Format / Size</u>	LR20 - D	LR20 - D	LR20 - D
<u>Tension par élément/ Voltage per element</u>	1,55 V / 1.55 V	1,60 V / 1.60 V	1,60 V / 1.60 V

MARQUAGE :

Le marquage doit être lisible et indélébile ; il doit comporter les indications suivantes :

GAZOMAT™
F-67400 Illkirch-Graffenstaden
INSPECTRA LASER
INERIS 19ATEX0018X
(Numéro de série)
(Année de construction)



II 2 G
Ex ib op is IIB T3 Gb

AVERTISSEMENT :
NE PAS REMPLACER OU RECHARGER LE PACK
BATTERIES EN ATMOSPHERE EXPLOSIBLE

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ANNEX**15 DESCRIPTION OF THE EQUIPMENT OR THE PROTECTIVE SYSTEM :**

The Gas Detector type Spectra Laser allows to detect and measure gas leakage in industrial gas network from industrial fields and chemical industry.

Protected by intrinsic safety, gas detection or leak is performed by a laser module.

The apparatus is composed of a plastic enclosure provided printed circuits boards on which are implemented electronic components.

Power supply of the apparatus is performed by a whole of three batterie elements connected in series.

PARAMETERS RELATING TO THE SAFETY :

Supply voltage to charging terminals: $U_m = 250\text{ V}$

Supply voltage to communication port (BINDER):
 $U_m = 250\text{ V}$

MARKING :

Marking has to be readable and indelible; it has to include the following indications:

GAZOMAT™
F-67400 Illkirch-Graffenstaden
INSPECTRA LASER
INERIS 19ATEX0018X
(Serial number)
(Year of manufacture)



II 2 G
Ex ib op is IIB T3 Gb

WARNING:
DO NOT REPLACE OR CHARGE BATTERIES PACK IN
HAZARDOUS AREA

L'ensemble du marquage peut être réalisé dans la langue du pays d'utilisation.

L'appareil ou le système de protection doit aussi porter le marquage normalement prévu par les normes de construction qui le concernent.

EXAMENS ET ESSAIS INDIVIDUELS :

Néant.

16 DOCUMENTS DESCRIPTIFS :

Les documents descriptifs cités ci-après, constituent la documentation technique de l'appareil, objet de la présente attestation.

Marking may be carried out in the language of the country of use.

The protective system or equipment has also to carry the marking normally stipulated by its construction standards.

ROUTINE EXAMINATIONS AND TESTS :

None.

16 DESCRIPTIVE DOCUMENTS :

The descriptive documents quoted hereafter constitute the technical documentation of the equipment, subject of this certificate.

Titre / Title	Réf. / Ref.	Rév. / Rev.	Date / Date
Technical file (111 pages/ 9 Rubriques/Rubrics)	02-200-999-AE	AE	2019.09.20
Manuel d'utilisation / User manual	02_340_000AN_BE	BE	2019.09.02

17 CONDITIONS SPÉCIALES D'UTILISATION :

- Cet appareil est prévu pour une gamme de températures ambiantes de -15°C à +50°C.
- La recharge du pack batteries ou l'utilisation du port de communication (BINDER) doivent s'effectuer hors atmosphères explosibles

Les autres conditions d'utilisation sont définies dans la notice d'instructions.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE :

Le respect des Exigences Essentielles de Sécurité et de Santé est assuré par :

- La conformité aux normes listées au paragraphe (9).
- L'ensemble des dispositions adoptées par le constructeur et décrites dans les documents descriptifs.

19 REMARQUES :

Néant.

17 SPECIFIC CONDITIONS OF USE :

- *The equipment is intended to be used in an ambient temperature range from -15°C to +50°C.*
- *Charging batteries pack or usage of communication port (BINDER) shall be perform outside hazardous area.*

The other conditions of use are stipulated in the instructions.

18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS :

The respect of the Essential Health and Safety Requirements is ensured by:

- *Conformity to the standards quoted in clause (9).*
- *All provisions adopted by the manufacturer and defined in the descriptive documents.*

19 REMARKS :

None.



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx INE 19.0017X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: **2019-11-08**

Applicant: **GAZOMAT**
11, rue de l'Industrie
F-67400 Illkirch Graffenstaden
France

Equipment: **Gas Detector type Inspectra Laser**

Optional accessory:

Type of Protection: **ib**

Marking: **Ex ib op is IIB T3 Gb**

Approved for issue on behalf of the IECEx
Certification Body:

Thierry HOUEIX

Ex Certification Officer

Position:

Signature:
(for printed version)



Thierry Houeix

Digitally signed by
Thierry HOUEIX

Date:

2019-11-08

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

INERIS
Institut National de l'Environnement Industriel et des Risques
BP n2 / Parc Technologique ALATA
F-60550 Verneuil-en-Halatte
France



controlling risks
for sustainable development



IECEx Certificate of Conformity

Certificate No.: **IECEx INE 19.0017X**

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Date of issue: 2019-11-08

Issue No: 0

Manufacturer: **GAZOMAT**
11, rue de l'Industrie
F-67400 Illkirch Graffenstaden
France

Additional
manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[FR/INE/ExTR19.0031/00](#)

Quality Assessment Report:

[GB/ITS/QAR14.0023/01](#)



IECEx Certificate of Conformity

Certificate No.: **IECEx INE 19.0017X**

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Date of issue: 2019-11-08

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The apparatus type Inspectra laser allows detection and measures of gas leakage in industrial gas network from industrial fields and chemical industry.

Protected by intrinsic safety, gas detection or leak is performed by a laser module.

The apparatus is composed of a plastic enclosure provided printed circuits boards on which are implemented electronic components.

Power supply of the apparatus is performed by a whole of three batterie elements connected in series.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- The equipment is intended to be used in an ambient temperature range from -15°C to +50°C.
- Charging batteries pack and usage of communication port (BINDER) shall be perform outside hazardous area.

The other conditions of use are stipulated in the instructions.

Annex:

[IECEx INE 19.0017X-00_Annex.pdf](#)



IECEX Certificate of Conformity

Certificate No.: IECEx INE 19.0017X

Issue No.: 0

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Annex: IECEx INE 19.0017X-00_Annex.pdf

PARAMETERS RELATING TO THE SAFETY

Supply voltage to charging terminals: $U_m = 250\text{ V}$

Supply voltage to communication port (BINDER): $U_m = 250\text{ V}$

Batteries characteristics:

Manufacturer	ARTS Energy	ARTS Energy	GP Batteries
Model	VNT-D(H) U	VHT-D(L)	GP1000DH
Type	Ni-Cd	Ni-Mh	Ni-Mh
Capacity	4.25 Ah	6.45 Ah	10 Ah
Size	LR20 - D	LR20 - D	LR20 - D
Voltage per element	1.55 V	1.60 V	1.60 V

MARKING

Marking has to be readable and indelible; it has to include the following indications:

- GAZOMAT
- 11, rue de l'Industrie
- F-67400 Illkirch Graffenstaden
- Inspectra Laser
- IECEx INE 19.0017X
- (Serial number)
- Ex ib op is IIB T3 Gb
- **WARNING:**
 - DO NOT REPLACE OR CHARGE BATTERIES PACK IN HAZARDOUS AREA.

ROUTINE EXAMINATIONS AND TESTS

None.