Additional Safety Instructions for instruments intended for use in ATEX/IECEx classified Hazardous Locations

FOREWORD

These safety instructions refer to the installation, use and maintenance of White LED illuminator Model:

LL W XI HT	Led bar intrinsically safe, 1 m cable for intrinsically safe power supply
LL W BE HT	Led bar with power supply enclosure backside mounted
LL W RE HT	Led bar with power supply enclosure remote mounted

that have been designed, manufactured, and tested according to the requirements of Directive 2014/34/UE – ATEX -, intended for use in areas with potentially explosive atmospheres.

1 STOCKING AND STORAGE

All the systems, upon delivery, are specially prepared to face shipment and storage.
Each device is normally provided with special covers, shock-dampening plastic films, which shall be left where they are until installation is performed.
Moreover, the instruments shall be stored/stocked in a clean and dry place until the time they need to be installed.

2 NAMEPLATE DATA CONCERNING SAFETY

MARKING

Model: LL W BE HT

CE 0722
OFFICINE OROBICHE Italy
Zanica (Bergamo), Via Giorgio Paglia, 22
Model: LL W BE HT
Year: XXXX
Batch: YYYYYY
TÜV CY 22 ATEX 0206620 X
IECEx FIDI 21.____X
LED Illuminator Cabinet:
Ex II 2G D
Ex ia op is IIC T4 Gb
Ex ia op is IIIC T135 °C Db
Power Supply Unit: Backside Mounted
Ex II 2G D
Ex db [ia Ga] IIC T6 Gb
Ex tb [ia Da] IIIC T85°C Db
Ambient temperature -40°C / +55°C
Warning: See additional safety installation instruction document
IP66

Model: LL W RE HT

CE 0722
OFFICINE OROBICHE Italy
Zanica (Bergamo), Via Giorgio Paglia, 22
Model: LL W RE HT
Year: XXXX
Batch: YYYYYY
TÜV CY 22 ATEX 0206620 X
IECEx FIDI 21.____X
LED Illuminator Cabinet:
Ex II 2G D
Ex ia op is IIC T4 Gb
Ex ia op is IIIC T135 °C Db
T amb -50°C / +70°C
Power Supply Unit: Remote Mounted
Ex II 2G D
Ex db [ia Ga] IIC T6 Gb
Ex tb [ia Da] IIIC T85°C Db
T amb -40°C / +55°C
Warning: See additional safety installation instruction document
IP66

Model: LL W XI HT

ATEX **CE 0722**

Model: LL W BE HT

LED Illuminator cabinet

Atex	**IECEx**
II 2G Ex ia op is IIC T4 Gb II 2D Ex ia op is IIIC T135 °C Db	Ex ia op is IIC T4 Gb Ex ia op is IIIC T135 °C Db

T amb -50°C / +70°C

Power supply unit

II 2 G Ex db [ia Ga] IIC T6 Gb II 2 D Ex tb [ia Da] IIIC T85°C Db	Ex db [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T85°C Db

Ambient temperature -40°C / + 55°C

Model: LL W RE HT

LED Illuminator cabinet

Atex	**IECEx**
II 2G Ex ia op is IIC T4 Gb II 2D Ex ia op is IIIC T135 °C Db	Ex ia op is IIC T4 Gb Ex ia op is IIIC T135 °C Db

T amb -50°C / +70°C

Power supply unit

II 2 G Ex db [ia Ga] IIC T6 Gb II 2 D Ex tb [ia Da] IIIC T85°C Db	Ex db [ia Ga] IIC T6 Gb Ex tb [ia Da] IIIC T85°C Db

T amb -40°C / +55°C

Model: LL W XI HT

LED Illuminator cabinet

Atex	**IECEx**
II 2G Ex ia op is IIC T4 Gb II 2D Ex ia op is IIIC T135 °C Db	Ex ia op is IIC T4 Gb Ex ia op is IIIC T135 °C Db

T amb -50°C / +70°C

ATEX Certificate Number:

TÜV CY 22 ATEX ---------- X

IECEx Certificate Number:

IECEx FIDI 24.-------X

ELECTRICAL PARAMETERS

Power Supply:
Rated Voltage Um= 100-240 VAC

LL W XI White Illuminator:

Each Led module has 6 Leds connected in series and shall be connected to an associated apparatus - see electrical connection scheme.
Electrical Parameters of LED Module:

Ui= 24V
Ii= 90mA
Ci= 100nF
Li negligible
Pi= 540mW

G.M. International srl Type “D5040D / D5040S” Associated apparatus:
Power Supply I.S. Single/Dual Channel Output Barrier Electrical Parameters:

Uo= 23.6V
Io= 108mA
Co= 130nF
Lo= 4.5mH
Po= 519mW

Intrinsically safe electrically system comply with IEC 60079-25:2020.

3. INSTALLING THE INTRINSICALLY SAFE LED ILLUMINATOR

In cases when the LED illuminator are used in areas featuring explosion dangers, the user needs to ensure the LED illuminator suits the area classification and the characteristics of the flammable substances that are found in the plant. The essential safety requirements against the risk of explosion in the classified areas are set forth in the 2014/34/UE.

WARNINGS: Cables, cable glands, plugs of white LED illuminator cannot be removed or replaced.

PLACES WHERE FLAMMABLE GASES, VAPOURS, MISTS OR POWDERS ARE FOUND

The criteria adopted for the classification of the areas featuring explosion risks are set forth in Standard EN 60079-10.
The technical requirements of the electrical systems in the classified areas are set forth in Standard EN 60079-14.
Special instructions for the manufacture, the testing and marking of electrical systems belonging to systems group II.
Based on these technical and legal provisions, the choice of the case shall also consider the following factors:

- System type: surface systems (group II)
- Area classification: 0, 1, 2 (for which units belonging to category 1(Ga), 2(Gb), 3(Gc) respectively are suitable)
- Characteristics of the flammable substances present in the form of gases, vapours, mists or powders
- subgroup: IIA, IIB, IIC
- temperature class: Tx (defining the gas ignition temperature)
- temperature class: 85 °C (defines ignition temperature of powders)

The ratings include, in addition to the functional data:

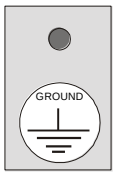
- all data required to choose the suitable type of case and its correct installation.
- The references to the notified organisms in charge of the certification.

Legend of ATEX marking:

CE	Mark of compliance with directive 2014/34/UE and the related technical regulations
Ex	Mark of compliance with the applicable European directives
II 2	Housing for surface systems with presence of gases or vapours, category 2, suitable for zone 1. Housing for surface systems with presence of powders, category 2, suitable for zone 21
Ex ia	Protection mode: Ex ia = intrinsically safe
Ex db – Ex tb	Protection mode: Ex db – Ex tb Protection through housing
IIC	Case of the IIC group suitable for substances (gases) of the IIB or IIC group
Tx	Case temperature class (maximum surface temperature) suitable to the corresponding temperature class of the flammable substance (GAS) see below: T6 = 85°C T4 = 135°C
T 85 °C	Maximum surface temperature of the housing for dust.
EPL Ga/Gb	For GAS Ga: “very high” protection degree Gb: “high” protection degree
EPL Da/Db	For DUST Da: “very high” protection degree Db: “high” protection degree
AB xx ATEX yyy	AB : name of the laboratory that issued the CE type certificate xx : year when the certificate was issued yyy : number of type certificate
0722	Number of the notified organism that carried out the notification of the production system quality

Notes for the erection and operation for use in ATEX classified Hazardous Locations:

1. The instructions for safe use are completed by those included in the instruction manuals and drawings of the manufacturer of each Ex component fitted in the final product.
2. Steel enclosure and Cable protection are part of the certified equipment and have to be mounted and cannot be removed.



3. CABLING AND GROUNDING

LED illuminators have to be grounded properly using the screw identified as per beside logo

The wiring shall be made using cable inlets in compliance with the EN 60079-14 Standard.
The cable inlet shall be made in such a way as not to alter the properties that are typical of the protection mode, as described in the EN 60079-1 Standard for Ex d housings and Ex i equipments.

When the cable inlet is made by using a cable gland, this must be properly selected as a function of the type of plant and cable. The cable gland shall be tightened to allow the seal rings to achieve the pressure required:
a) to prevent the transmission of mechanical stress to the terminals
b) to guarantee the mechanical protection (IP degree) of the terminal box.

Cable inlets shall be made with Ex d sealing fittings or cable glands certified in accordance with the EN 60079-0, EN 60079-1 and EN 60079-31 ATEX Standards (directive 2014/34/UE) and a minimum protection degree equalling IP 66.
Please note: No seals shall be added unless they are supplied by the manufacturer;
Please see M.A.M. Instructions flameproof enclosure GUB enclosed to present document

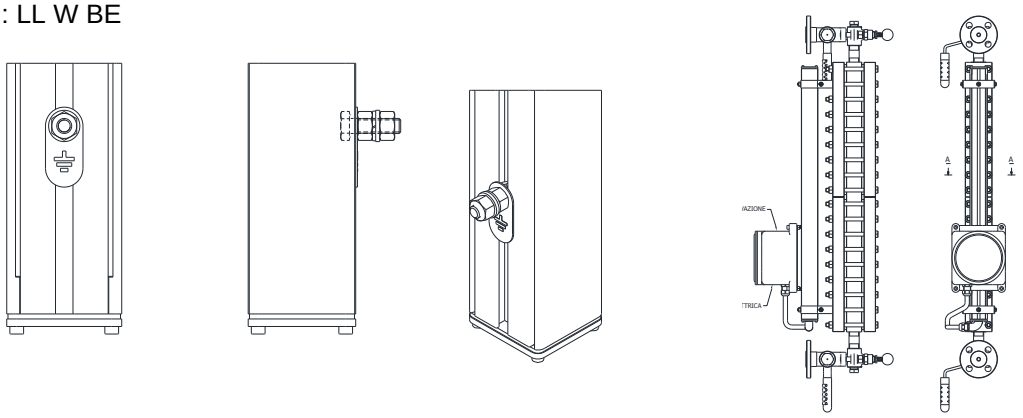
The user shall check the grounding of the instrument at regular intervals.

Ground it through the dedicated terminal, see figure on the page below.

For all units, the authorized grounding terminal as per the symbol below shall be used:

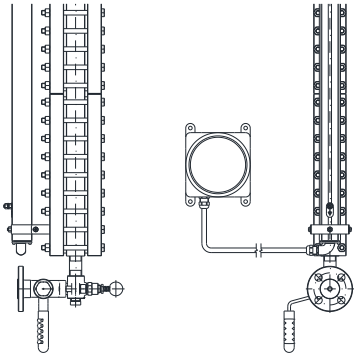
Such terminal, equipped with a rotation and loosening prevention system, shall be connected to the general system grounding line by using a conductor that is ≥ 4 mm^2 in gauge.

Model: LL W BE



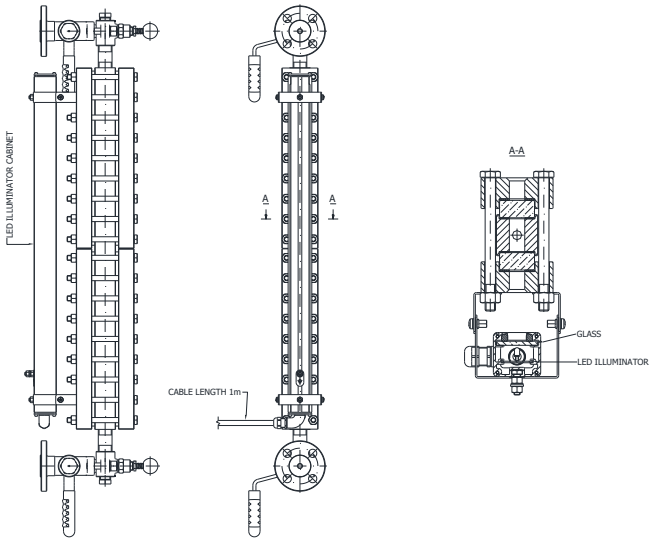
Model: LL W RE

Power supply enclosure can be installed even remotely with a 5 to 100 m long cable, it is important protect cable against traction, abrasion, damaging, cuts or blows.



Model: LL W XI

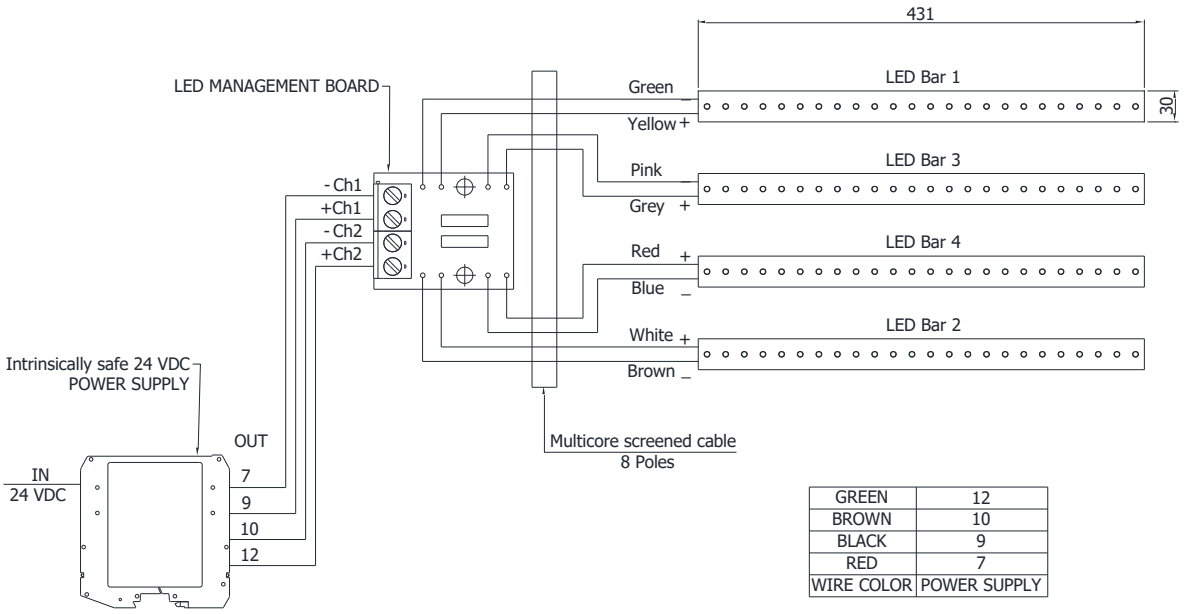
Intrinsically safe version is available with 1 m cable, power supply will come from an intrinsically power supply



Wiring for intrinsically safe power supply GMI D5040S & D5040S or similar as per IEC 60079-14

POWER SUPPLY

- 110-230 VAC 50-50 Hz
- 24 VDC (on request)



GREEN	12
BROWN	10
BLACK	9
RED	7
WIRE COLOR	POWER SUPPLY

For barrier electrical parameters see GMI D5040S – D5040D Instruction and Safety manual

4 PRECAUTIONS FOR USE

Maintenance shall be carried out by expert and only after having read the pertaining instructions.
When the units covered by this Technical File are installed or maintained, please observe the following guidelines:

1. Perform a risk-analysis and remove, or cut down, all potential source of firing in compliance with the requirements of the rated installation area.

2. Comply with all health and safety regulations applying to the site (rated area) where the equipment is installed, in full compliance with the employer's risk analysis (Dir.99/9/CE).

3. Wear the statutory personal protection devices.

4. To avoid sparks of mechanical origin between the tools used for maintenance and the equipment's parts, the personnel in charge of maintaining the equipment shall be suitably trained to prevent such phenomenon.

5. Do not remove or maintain the equipment if it has not been fully depressurized, emptied and cooled down to room temperature beforehand and, wherever necessary, set free from all residues of all toxic, explosive or flammable substances possibly used.

6. Do not handle equipment that has been used in the presence of harmful substances, unless it has been fully decontaminated and certified as safe for all handling purpose.

7. To avoid the accumulation of electrostatic charges, whatever cleaning shall be exclusively carried out with antistatic or wet cloths.

8. Avoid the accumulation of powders

9. Do not use the equipment for tasks that exceed the specified working parameters. Please contact the Technical Department of **Officine Orobiche S.r.l.** for further information on this subject.

10. Do not modify nor alter the equipment without having first consulted the manufactured. Only use original spare parts as instructed by the manufacturer.

11. Always use suitable lifting means and methods to install, remove and maintain the equipment, and make sure it is always well supported in its final working location.

12. The final users are responsible for guaranteeing that the product is compatible with the specific application (that is pressure and type of process fluid, corrosion state, which may affect aptitude and reliability).

13. Before installing the equipment is areas that are potentially exposed to seismic activity or extreme weather conditions, please consult the Technical Department of **Officine Orobiche S.r.l**. If the equipment must be used in the presence of unstable gases, ensure that the specified working parameters are not exceeded.

14. These units are not safety devices, and shall be controlled/protected by other devices to prevent exceeding pressure and temperature values.

15. Whenever the surface temperatures of the equipment are found to be close to the minimum ignition temperature of the potentially explosive atmosphere, always create a suitable thermal insulation (suitable also as a further protection from potentially explosive powders – type D-) of the equipment as set forth in Standard EN1127-1 (par.6.4.2).

16. Never use flames close to the equipment, whether this is running or being maintained.

17. To safeguard tightness, with a view to preventing all powders from entering the unit, we recommend you routinely check tie rods for proper tightening.

18. To prevent potentially explosive fluids from leaking out, it is advisable to periodically check the connections for proper seal.
    We further recommend you intervene immediately so as to minimize or avoid losses, also by previously and routinely replacing parts that are exposed to ear-and-tear.

19. To avoid sparks of mechanical origin to show up, owing to flanged connections coming into contact with one another, we recommend you routinely inspect tie rods for proper tightening and always provide for replacement of the seals.

20. All applications of electrical and/or electronic parts shall take place in compliance with the protection requirements as set forth in Directive Atex 2014/34/UE.

Other specific indications are provided with the instructions for use and maintenance supplied along with the units.