

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

### FOREWORD

These safety instructions refer to the installation, use and maintenance of red/green LED illuminator Model LL RG4 Ex HT, LL RG6 Ex HT, LL RG4 CG Ex HT, LL RG6 CG Ex HT 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

|   |   |  |
|---|---|--|
| 0722<br>TÜV CY 19 ATEX ..... X<br>LED Illuminator Cabinet: LL RG 4 Ex HT<br>T amb -40°C / +70°C<br>Warning: See Installation Instruction Document | <b>OFFICINE OROBICHE Italy</b><br>Zanica (Bergamo) Italy, Via Giorgio Paglia, 22<br>Model: LL RG 4 Ex HT<br>year: YYYY<br>Batch: XXXXXX | Power Supply Unit:<br>II 2 G Ex db [ia Ga] IIC T6 Gb<br>II 2 D Ex tb [ia Da] IIIC T85°C Db |
|---|---|--|

|   |   |  |
|---|---|--|
| 0722<br>TÜV CY 19 ATEX ..... X<br>LED Illuminator Cabinet: LL RG 6 Ex HT<br>T amb -40°C / +70°C<br>Warning: See Installation Instruction Document | <b>OFFICINE OROBICHE Italy</b><br>Zanica (Bergamo) Italy, Via Giorgio Paglia, 22<br>Model: LL RG 6 Ex HT<br>year: YYYY<br>Batch: XXXXXX | Power Supply Unit:<br>II 2 G Ex db [ia Ga] IIC T6 Gb<br>II 2 D Ex tb [ia Da] IIIC T85°C Db |
|---|---|--|

ATEX

**CE 0722**

#### LED Illuminator cabinet

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

T amb -40°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

T amb -40°C / +55°C

#### ATEX Certificate Number:

TÜV CY 19 ATEX 0206221X Issue 1

**ELECTRICAL PARAMETERS**

Power Supply:  
Rated Voltage  $U_m = 100-240$  VAC

LL RG\_ Ex HT Led Illuminator:  
Led module (3 Leds connected in series) Electrical Parameters:

$U_i = 26$ V  
 $I_i = 0,113$ mA  
 $C_i = 82$ nF  
Li negligible  
 $P_i = 730$ mW

G.M. International srl Type "D5040D / S" Associated apparatus:  
Single or dual channel Loop Powered Digital Output Isolators Electrical Parameters Output B:

$U_o = 25.2$ V  
 $I_o = 108$ mA  
 $C_o = 107$ nF  
 $L_o = 3.07$ mH  
 $P_o = 676$ mW

Intrinsically safe electrically system comply with IEC 60079-25:2010.

**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 and connectors of 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:**

|                |   |
|----------------|---|
|                | Mark of compliance with directive 2014/34/UE and the related technical regulations  |
|                | 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.<br>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:<br>T6 = 85°C<br>T4 = 135°C               |
| T 85 °C        | Maximum surface temperature of the housing for dust.  |
| EPL Ga/Gb      | For GAS<br>Ga: “very high” protection degree<br>Gb: “high” protection degree  |
| EPL Da/Db      | For DUST<br>Da: “very high” protection degree<br>Db: “high” protection degree   |
| AB xx ATEX yyy | AB : name of the laboratory that issued the CE type certificate<br>xx : year when the certificate was issued<br>yyy : number of type certificate  |
| 0722           | Number of the notified organism that carried out the notification of the production system quality  |

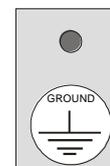
**Notes for the erection and operation for use in ATEX classified Hazardous Locations:**

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;

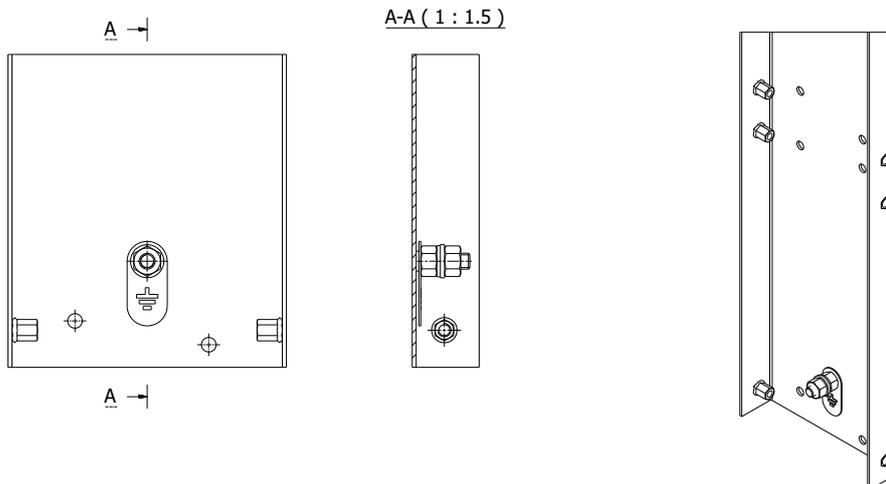
**Please see M.A.M. Instructions flameproof enclosure GUB enclosed to present document**

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  $\geq 4 \text{ mm}^2$  in gauge.



#### 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 manufacturer. 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 in 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.



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### 1 STOCKING AND STORAGE

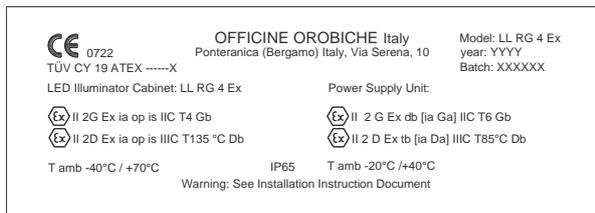
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### 2 NAMEPLATE DATA CONCERNING SAFETY

#### MARKING



### ATEX CE 0722

#### LED Illuminator cabinet

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T amb -40°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

T amb -20°C / +40°C

#### ATEX Certificate Number:

TÜV CY 19 ATEX ----- X



## ELECTRICAL PARAMETERS

Power Supply:  
Rated Voltage  $U_m = 100-240$  VAC

LL RG\_ Ex Led Illuminator:  
Led module (3 Leds connected in series) Electrical Parameters:

$U_i = 24$ V  
 $I_i = 90$ mA  
 $C_i = 100$ nF  
 $L_i$  negligible  
 $P_i = 540$ mW

G.M. International srl Type "PSD1001" Associated apparatus:  
Power Supply I.S. Single Channel Output Barrier Electrical Parameters:

$U_o = 23.6$ V  
 $I_o = 88.2$ mA  
 $C_o = 130$ nF  
 $L_o = 4.5$ mH  
 $P_o = 519$ mW

Intrinsically safe electrically system comply with IEC 60079-25:2010.

### 3. INSTALLING THE INTRINSICALLY SAFE LED ILLUMINATOR

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## Legend of ATEX marking:

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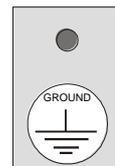
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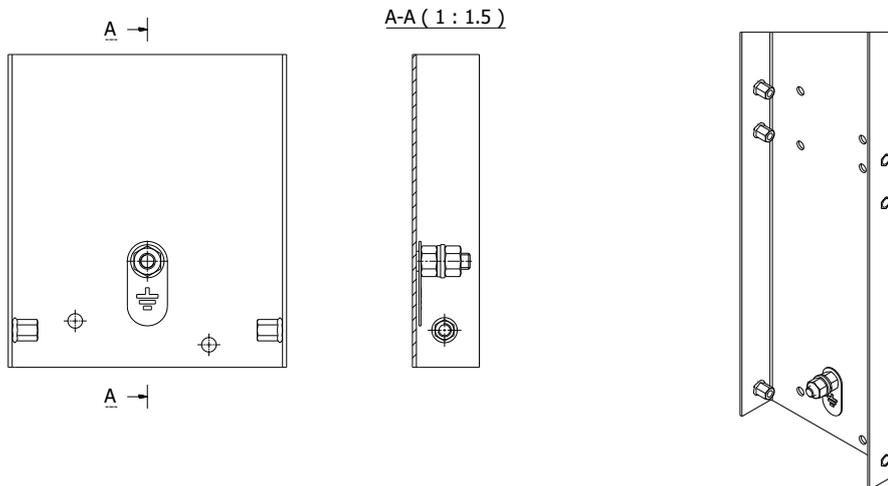
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