



INSTRUCTION MANUAL

ILLUMINATORS LL RG4 Ex, LL RG6 Ex, LL RG4 CG Ex, LL RG4 CG Ex

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- 2.1 Intended use
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- 3.2 System description
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Enclosed:

- Additional Safety Instruction Manual – Officine Orobiche ist194
- Intrinsically safe power supply Atex certificate – DMT 01 ATEX E042X
- Explosion proof power supply enclosure Atex certificate – INERIS 16 ATEX 0024X



1.1 General health and safety instructions

- A.** Avoidance of danger for persons and property
- Only use unit for intended purpose.
 - No additional mountings and modifications on the unit without our approval.
 - Adhere to the standards for prevention of accidents and to the plant specific safety regulations.
 - Read and observe installation and operating instructions.
- B.** Application limits
- Only use this unit according to these operating instructions and to the parameters agreed upon in the delivery contract (see identification plate) including the agreed operating conditions.
- C.** Avoidance of danger and damages
- Distribute these mounting and operating instructions to appropriate department “arrival of goods, works transport, mounting, commissioning and maintenance”.
 - When passing the unit to a third party, these mounting and operating instructions must be enclosed in the national language of this third party.
 - Only skilled and qualified personnel with special work order may work on the unit, which must be free of pipeline stress!
 - Carefully read, observe and preserve these mounting and operating instructions.
 - Observe and adhere to the precautions marked in bold characters in the sections of these mounting and operating instructions!
 - Avoid shocks and impacts during transport, which could damage the unit.
 - In case of intermediate storage take care for a dry and appropriate place where the unit cannot be damaged.

Attention

The fitting is under pressure during operation!

If flange connections, screw plugs or stuffing boxes are unfixed, hot water and steam will escape.

Carry out assembly and maintenance works only if plant is completely depressurized!

The fitting is hot during operation!

Severe burns on hands and arms are possible.

Wait until the unit has cooled before carrying out assembly and maintenance works!

Severe burns and scaldings on the whole body are possible!

Wait until the unit has cooled. In case of opening and disassembling the unit, residual medium can escape. Further evaporation is also possible on depressurized plant.

Sharp-edged interior parts can cause cutting damages on the hands!

2.1 Intended use

The illuminators are used in direct water level gauge which can be mounted on steam generators. In the sight opening, the water space is indicated in green and the steam space in red.

The level gauge works on the principle of communicating pipes. With the LL RGx Ex illuminators, red and green light falls on the display unit. If there is water in the display area, then the light rays will be diverted in such a way that the green light beam falls on to the slit diaphragm of the display box. In the steam area the light rays are not diverted and the red light beam is projected.

As a result the water compartment always appears green and the steam compartment red.

3.1 Scope of supply

The LL RGx Ex illuminator are delivered in 3 parts. (see fig. 1)

Part 1 consists of:

- illuminators

Part 2 consists of:

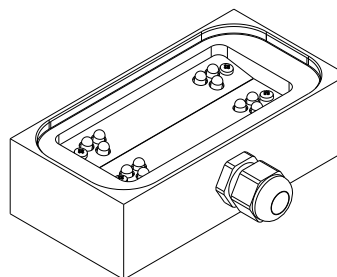
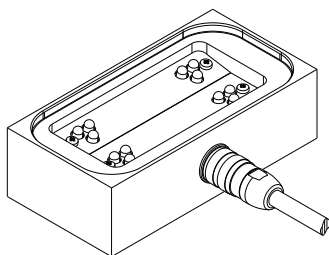
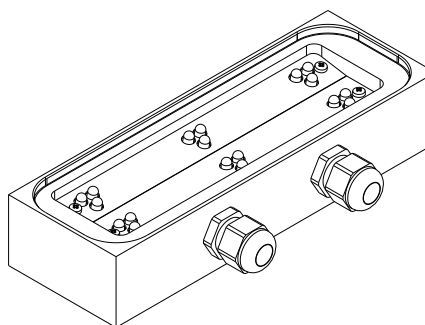
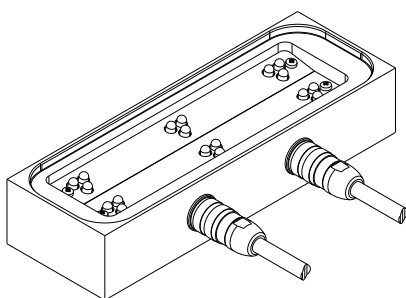
- steel enclosure

Part 3 consist of:

- power supply enclosure

The level gauge can be right hand or left hand, see Fig. 2 to clarify the versions, illuminator has to be mounted as per the picture

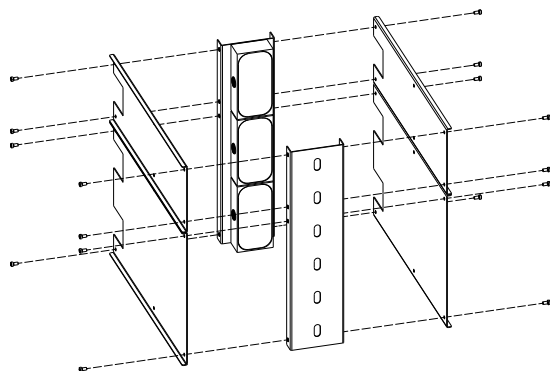
Fig. 1



Part 1

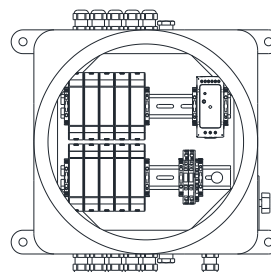
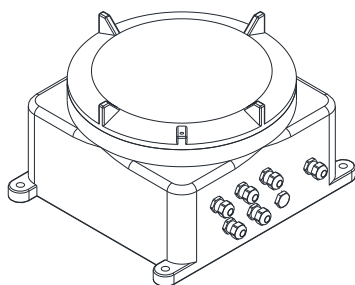
Illuminator with round connector
(standard version)

Illuminator with cable gland
(special version)



Part 2
Steel enclosure

Ex POWER UNIT



Part 3
Explosion proof power supply unit

3.2 System description

ILLUMINATOR

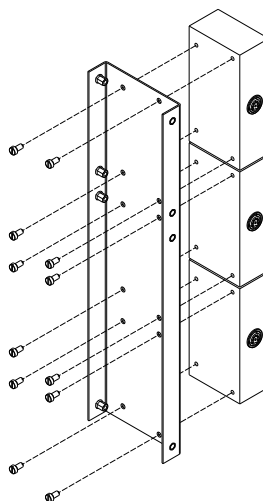
The illuminator is modular and has two different sizes, six pixels (three green and three red) and four pixels (two green and two red). Pitch between pixels is 70 mm and the pair of pixels red and green is oriented in order to allow the light emitted pass through the gauge glass window. Connection to power supply can be fitted via circular connector or via cable gland. Each pixel is connected to the power supply via two single conductor, power supply will be 12 VDC and comes from an intrinsically safe power supply via circular connector or via cable gland. Illuminator body is made of an aluminium block machined, front side is protected with polycarbonate sheet stuck to the aluminium body. In order to prevent static electricity formation the parts of the polycarbonate sheet non concerned in the light are covered with a self-adhesive zinc sheet. The illuminator with four pixels has one circular connector or one cable gland, the ones with six pixels has two circular connectors or two cable glands. The illuminator itself always has to be mounted on own steel case. Steel case ensure the right fixing of the illuminator and the protection of the circular connector, the same protection also acts as a cable guide.

Coding

Four pixels with round connector:	LL RG4 Ex	4W
Six pixels with round connector:	LL RG6 Ex	6W
Four pixels with cable gland:	LL RG4 CG Ex	4W
Six pixels with cable gland:	LL RG6 CG Ex	6W

The complete illuminator will be fixed to the steel cabinet with four screws, position of one respect to another is fixed in order to maintain the distance from the pixels (70 mm) (see fig. 3). The quantity of the illuminators is related to the dimension of the level gauge. The light, green and red, is projected on a diffused white screen at the opposite side of the level gauge body. Power supply cable is an 8x0,34 mm, length is in relation to the installation site, each cable is connected to four pixels. In the six pixels illuminator one of the two cables is partially used, only four single conductor is connected to the power supply.

Fig. 3

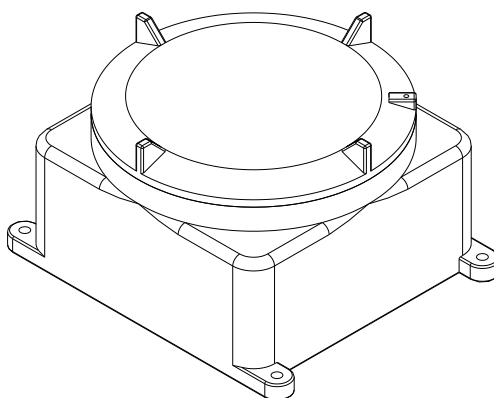


POWER SUPPLY ENCLOSURE

Power supply unit is composed of an explosion proof enclosure type in different sizes in relation to the dimension of the level gauge. Inside there are intrinsically safe power supply with V_{in} 24 VDC and V_{out} 12 VDC, every single power supply unit has four isolated channels, one for each pixel, so for every illuminator model LL RG4 Ex there is a four channel power supply. The illuminator model LL RG6 Ex wants two intrinsically safe power supply, in one of the two, two channels are not used. This situation occurs when the complete level gauge wants an odd number of pixels. 24 VDC inlet is made available by a AC/DC power supply 230 VAC / 24 VDC always mounted inside the explosion proof enclosure. Cable entries are ensured via explosion proof cable gland, quantity is in relation to the power supply quantity, one cable entry for each intrinsically safe power supply. One more cable gland is needed for the 230 VAC in.

When the illuminators are supplied with circular connectors wiring is ready for the plug and play, enclosure has the right quantity of cables and connectors to be connected to the illuminators, cable length has to be defined in the order description.

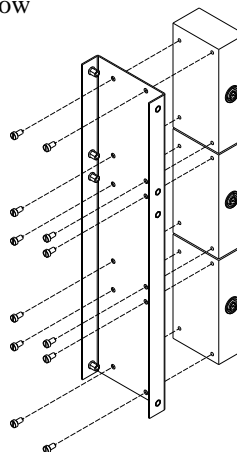
Ex POWER UNIT



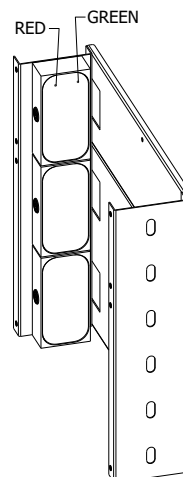
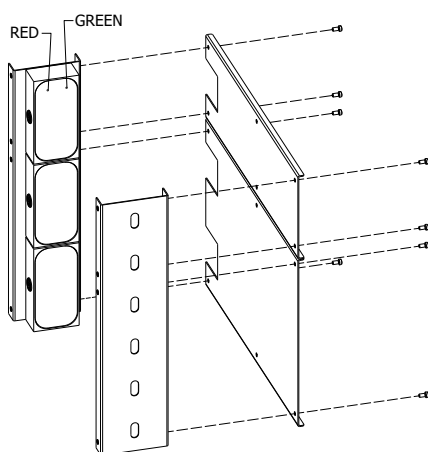
4.1 Mounting

Mounting of the complete illuminator device is simply.

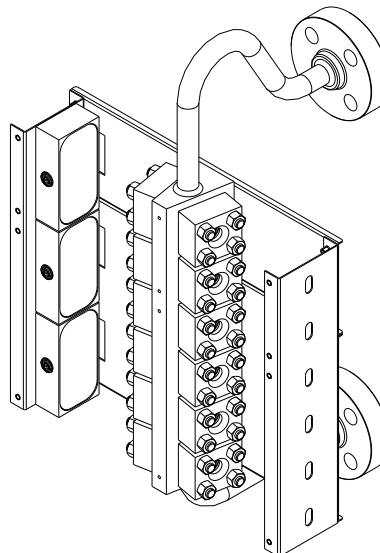
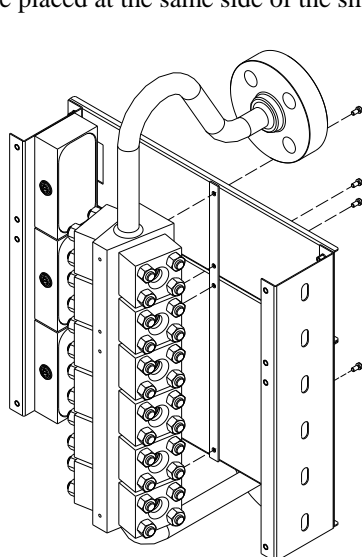
- 1) Fix the LL RGx to steel plate as per the picture below



- 2) Fix the panel to the front screen and to the back plate with the M5 screws, **remember that the power supply round connector or cable gland will be placed where the smaller side of the gauge is** as per picture below



- 3) Fix the assembly just obtained to gauge body with M5 screw as per picture below, pay attention that connector shall be placed at the same side of the smaller part of the body



- 4) Fix the last steel plate to close the enclosure always using M5 screws, connect all the cables using the round connector locking the male stopper and apply the cable protection using some of the M5 screws

Fig. 4.1 Without Sunshade

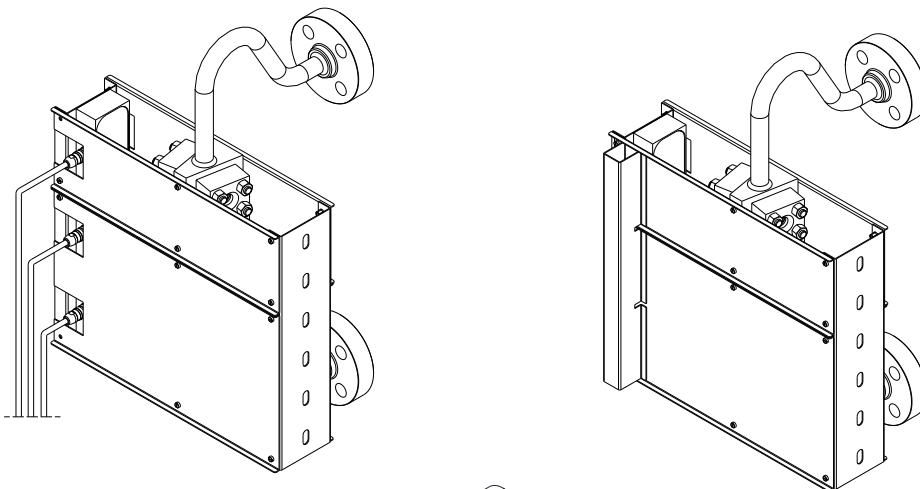
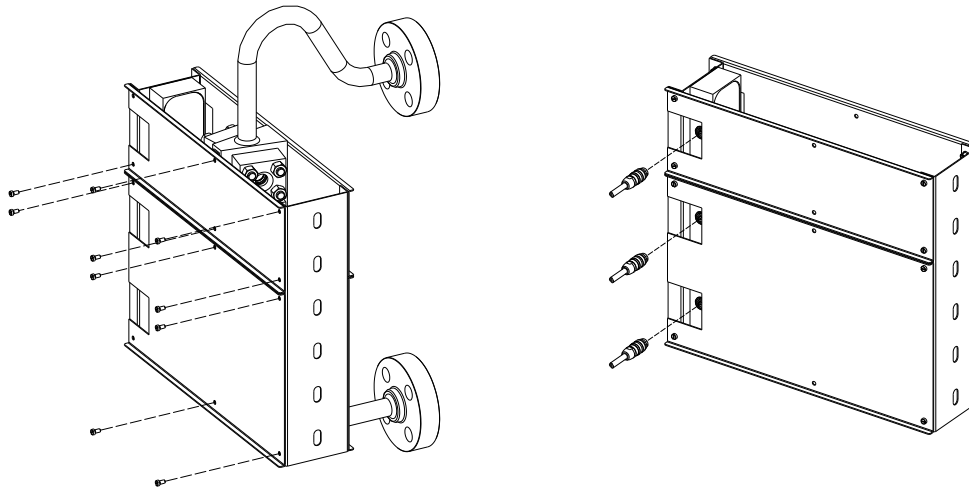


Fig. 4.2 With Sunshade

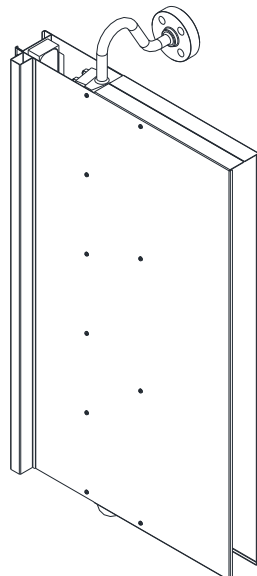
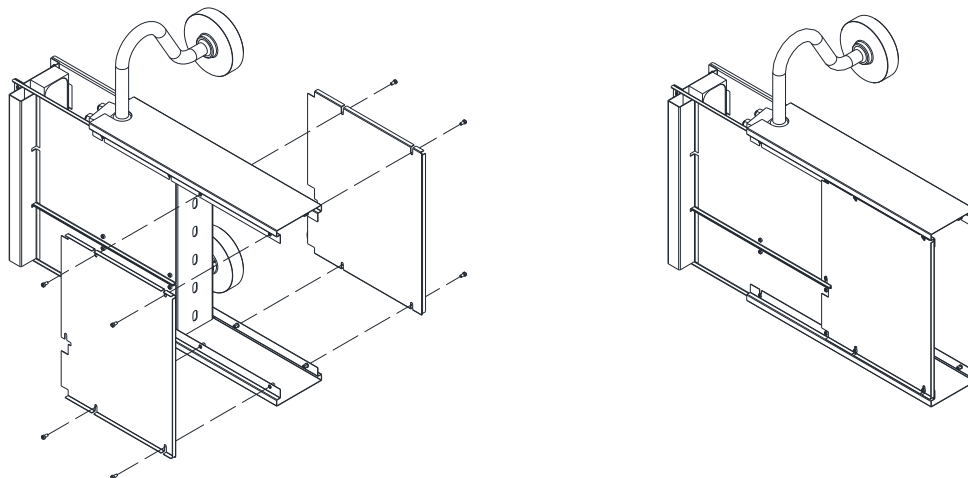
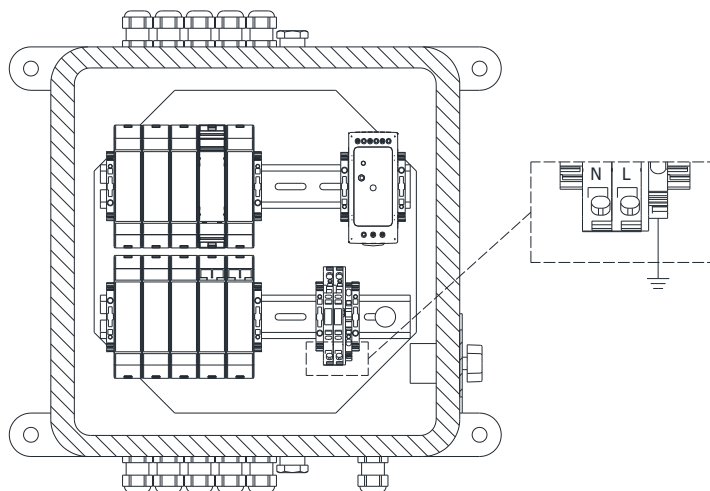


Fig 4.3 With Removable Sunshade



5.1 Wiring

To connect the main power supply provide a 3x2,5 mm² to be connected to the dedicated terminals inside the power unit. Earth terminal has to be connected to the ground properly and power supply has to be protected as per country regulation.



6.1 Identification plate / Marking

The following data are indicated on the identification plate:

* marking depending on the realization

- A Model code
- B Manufacturer Logo
- C Atex / IECEx marking
- D

Refer to the enclosed Additional Safety Instruction Manual for the Installation details.



7.1 Maintenance

Illuminator itself is maintenance free, if any problem occurs eg pixel not working or bad working the illuminator has to be removed and replaced.

Periodically if needed, clean with a soft and damp cloth the transparent front screen. The same is true for the white front screen.

Pay attention to hot surface before cleaning.

8.1 Disposal

Dismount unit and separate waste products.

When disposing the unit, observe legal regulations for waste disposal.

9.1 Warranty

All the illuminator device are guaranteed to be free from manufacturing faults over a period of 12 months from the date of shipment.

In the event of failures, implying return of goods within the limit specified above, OFFICINE OROBICHE will replace (shipment fees not included) all damaged parts free, provided that the failure does not ensue from incorrect use.

OFFICINE OROBICHE shall never be held responsible for any incorrect use of their products when these are used for purposes other than those mentioned in the specifications approved at the order stage.

In these cases, no complaints will ever be taken into consideration.

No damage and/or fee, whether direct or indirect, ensuing from an incorrect installation or use shall ever be debited to OFFICINE OROBICHE.