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**INSTRUCTION MANUAL**

**Illuminators LL RG4, LL RG6, LL RG4 CG, LL RG4 CG**

- 1.1 General health and safety instructions
- 2.1 Intended use
- 3.1 Scope of supply
- 3.2 System description
- 4.1 Mounting
- 5.1 Wiring
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- 7.1 Maintenance
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## 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 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 illuminator are delivered in 3 parts. (see fig. 1)

Part 1 consists of:

- illuminators

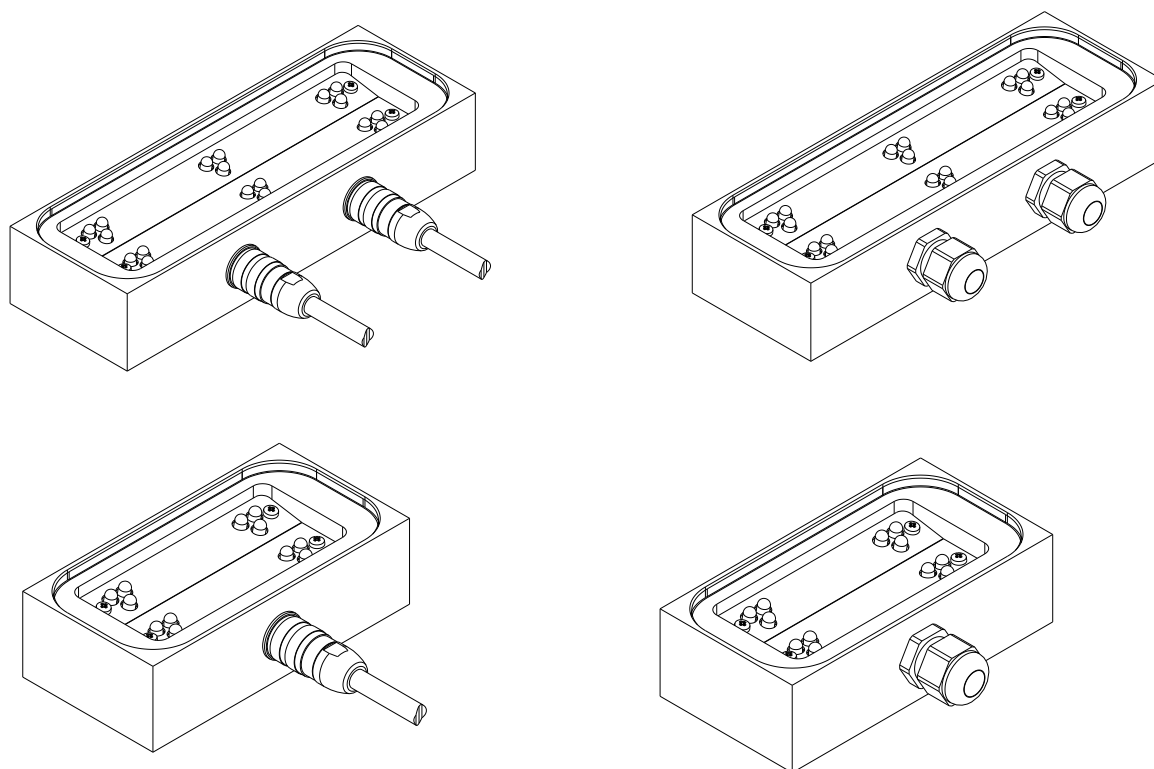
Part 2 consists of:

- steel enclosure

Part 3 consist of:

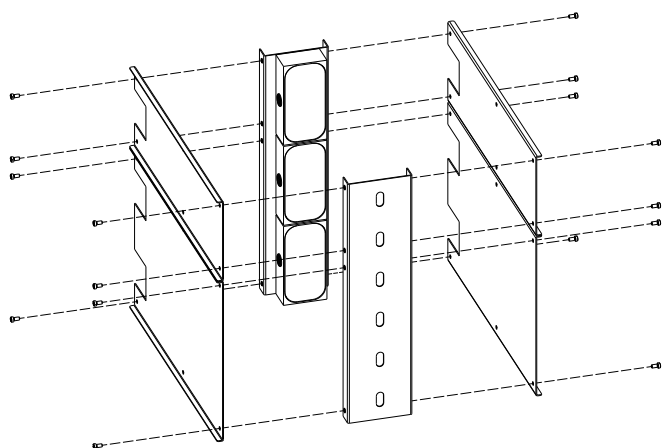
- power supply enclosure

Fig. 1



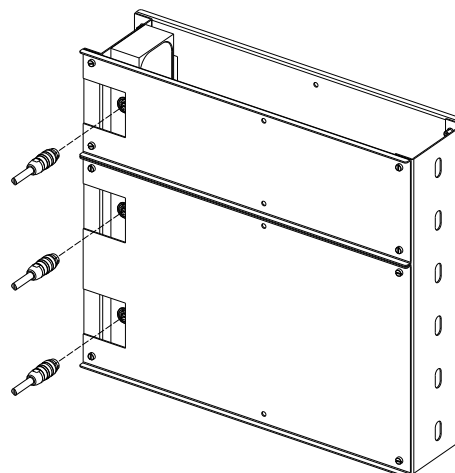
## Part 1

Illuminator with round connector  
(standard version)

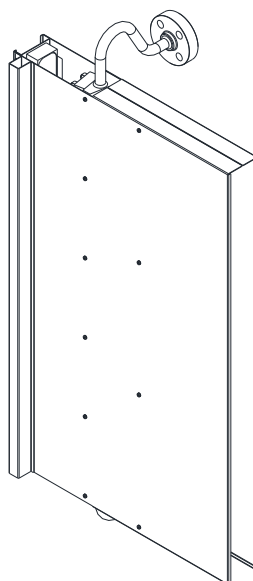


Illuminator with cable gland  
(special version)

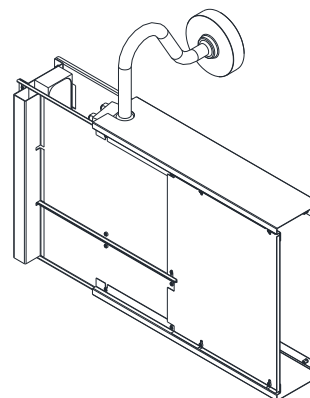
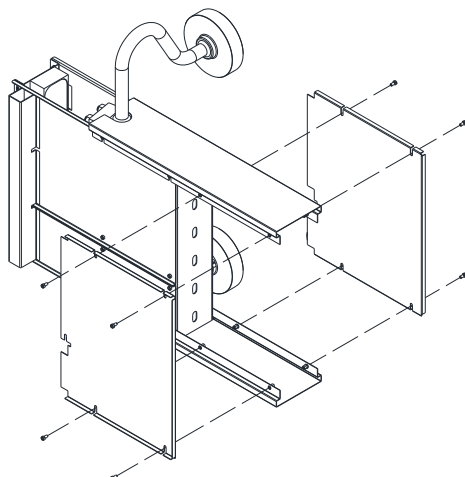
Without Sunshade



With Sunshade

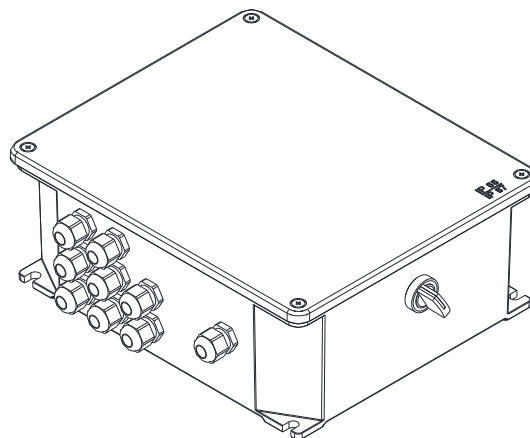
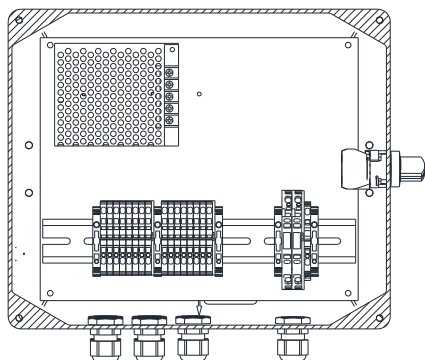


With removable Sunshade



**Part 2**

Steel enclosure

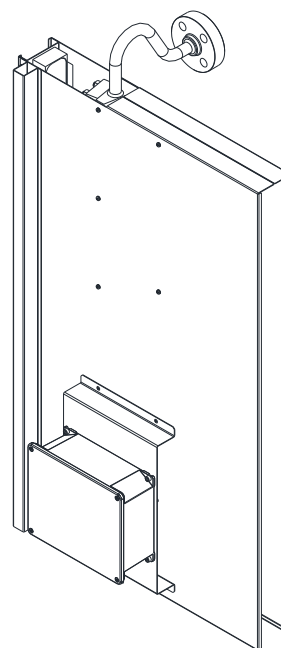
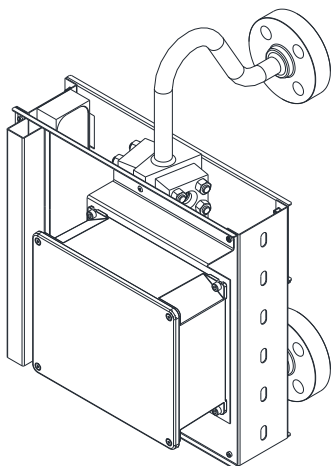


**Part 3**

Power supply unit

Fig. 3.2 Without Sunshade

Fig. 3.3 With Sunshade



**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 related to the distance between glasses 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

24010 Ponteranica (Bergamo) ITALY - Via Serena, 10 - Tel. +39 035 4530211 - Fax +39 035 570546  
[www.officineorobiche.it](http://www.officineorobiche.it) - e-mail: [info@officineorobiche.it](mailto:info@officineorobiche.it)

12 VDC and comes from an AC/DC converter inside the power supply unit via circular connector. Illuminator body is made of an aluminum block machined, front side is protected with polycarbonate sheet stuck to the aluminum body. The illuminator with four pixels has one circular connector or one cable gland, the ones with six pixels has two cable glands or two circular connectors. 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.

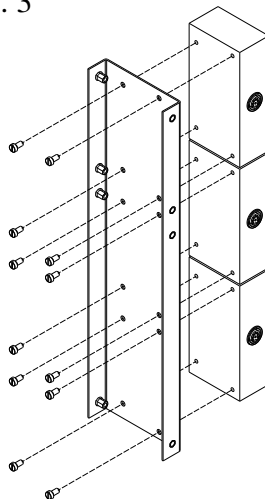
## Coding

Four pixels with round connector:	LL RG4	4W
Six pixels with round connector:	LL RG6	6W
Four pixels with cable gland:	LL RG4 CG	4W
Six pixels with cable gland:	LL RG6 CG	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 (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 8x0,5 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

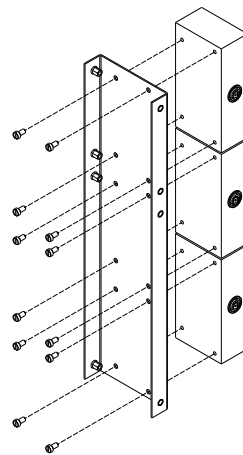
Power supply unit is composed of an enclosure in different sizes in relation to the dimension of the level gauge. Inside there is an AC/DC power supply with  $V_{in}$  115/230 VAC and  $V_{out}$  12 VDC. For every illuminator there is a cable with own round connector except for the LL RG6 who has two connectors. Every cable comes out from the power supply enclosure via its own cable gland. One more cable gland is needed for the 115/230 VAC in.

When the illuminators are supplied with circular connectors wiring is ready for 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.

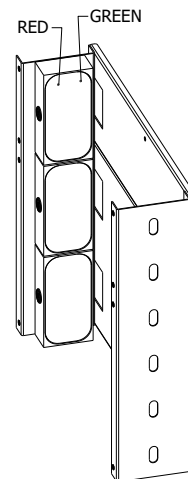
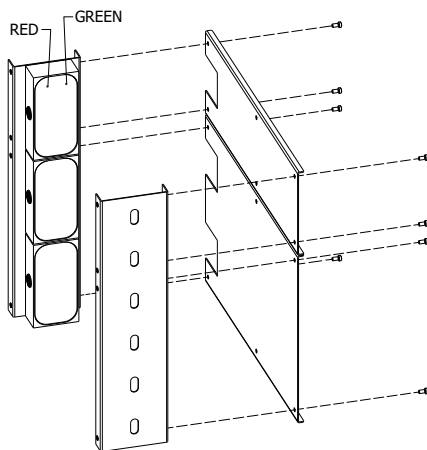
## 4.1 MOUNTING

Mounting of the complete illuminator device is simply.

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

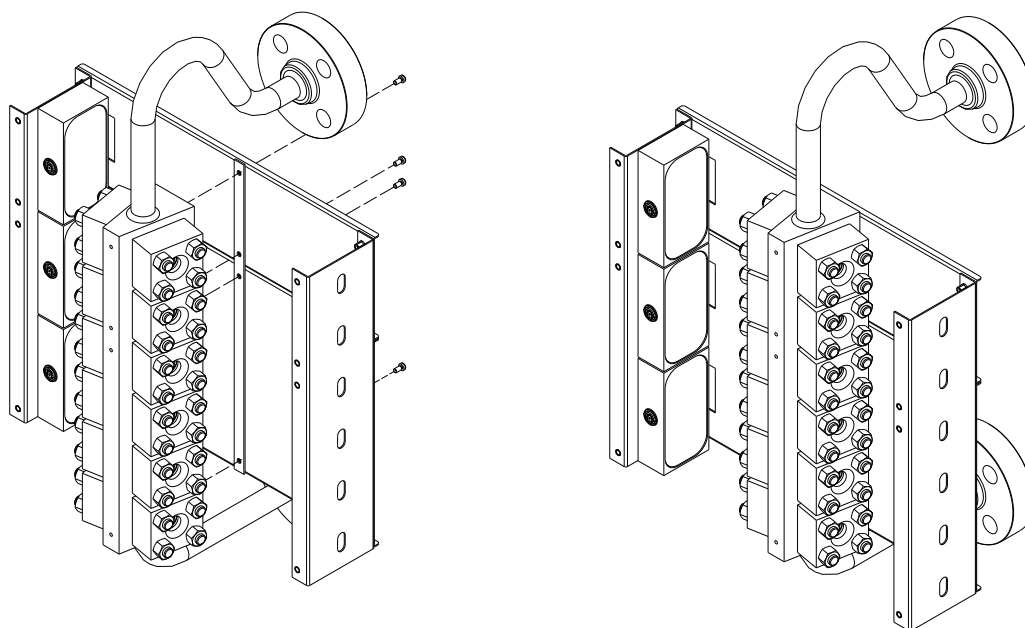


- 2) Fix the panel to the front screen and to the back plate with the M5 screws, **remember that the power supply round connector or cable gland will be placed where the smaller side of the gauge is** as per picture below

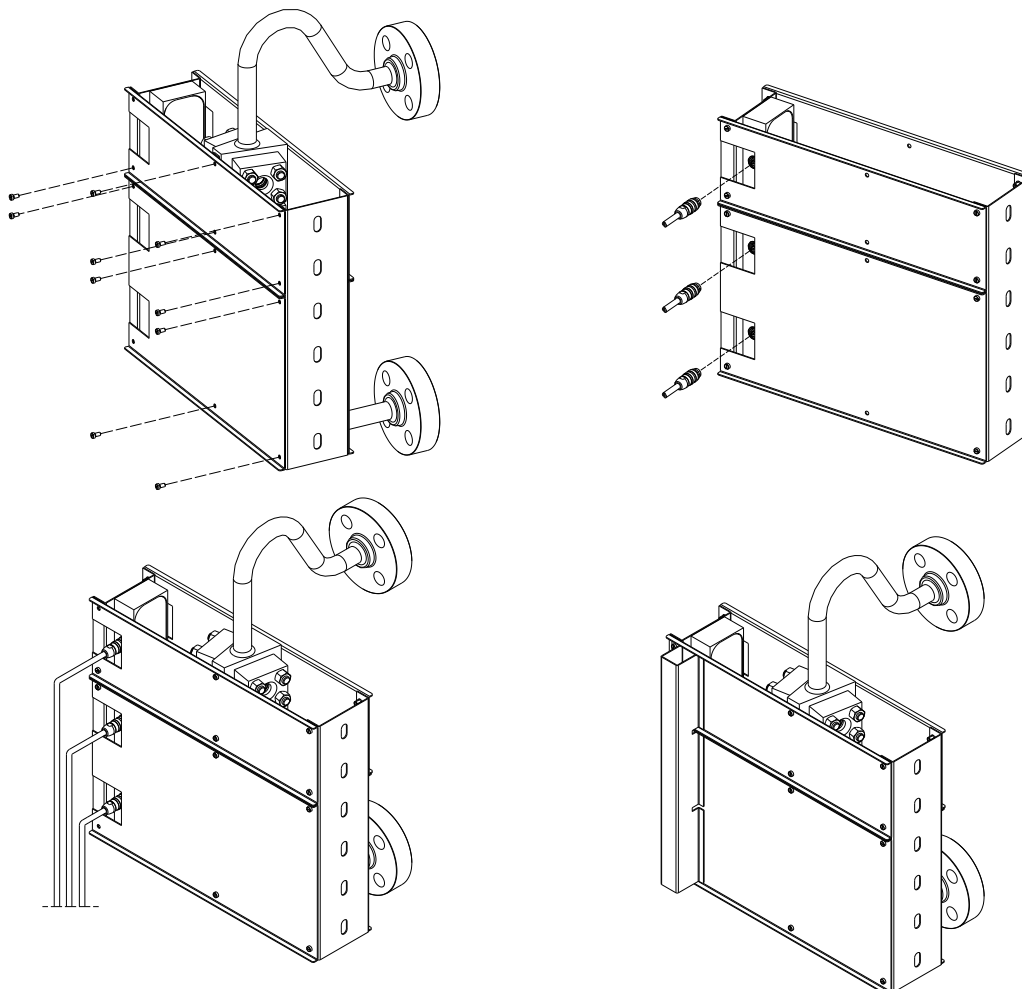


- 3) Fix the assembly just obtained to gauge body with M5 screw as per picture below, pay attention that connector shall be placed at the same side of the smaller part of the body

4)



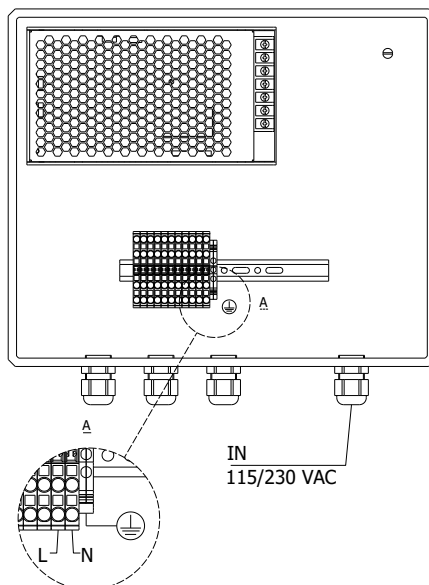
5) Fix the last steel plate to close the enclosure always using M5 screws, connect all the cables using the round connector locking the male stopper and apply the cable protection using some of the M5 screws





## 5.1 Wiring

To connect the main power supply provide a 3x2,5 mm<sup>2</sup> 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

## 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.