



BONETTI

ELECTRONIC METERING, MONITORING AND TRANSMISSION UNIT

RLG/E

GENERAL DESCRIPTION

Electronic unit of **RLG** system used for metering, monitoring and transmitting the water/steam level in high pressure and high temperature applications. The electronic unit works together with the pressurized fluid containing column **RLG/C**.

WORKING PRINCIPLE

RLG/E electronic unit detects the presence of water or of steam surrounding one or more electrodes (probes) **RLG/P**, measuring the conductivity between the probe tip and the metallic wall of the column **RLG/C**.

FEATURES

The electronic unit is housed in a box suitable for outdoor installation, typically on wall. It is equipped with two special cables for the connection to probes. The system is preconfigured for a connection to the probes split in two groups: odd and even. Each group has its own power supply and its own connecting cable. Each group can continue its work also in case of any failure of the other group.

As a matter of fact, **RLG** consists of two fully independent gauges contained in the same apparatus, so that fully redundant and highest reliability is granted giving trustworthiness working operation.

Electronic station is divided in two sections: measuring section and data processing section.

Measurement is performed by fully analog and independent circuits, one for each probe; this assures continuous working also in case of a section failure. Each section has its own fail-safe contact power relay, typically used for signal remote transmission by cable; the condition of such exit signal is shown on the front panel by a bicolor LED green in presence of water red in presence of steam.

As software is totally absent in this section, **RLG** system is fully complying with most severe requirements for safety devices, as stated by PED and ATEX Directives.

The up-to-date design of **RLG** employs also two microprocessor sections, again redundant.

Both those sections can receive signals from all probes, so having full measurement resolution.

The careful design isolates microprocessors from measurement circuits: no failure to CPU can invalidate main measurement, that shall be maintained fully safe and valid also in case of total destruction of digital section.

Microprocessors manage following functions:

- adequacy analysis of measurement signals, showing anomalous situations (as presence of water over steam and conversely);
- piloting an analog exit 4-20 mA (current loop) for interface with others remote indicators;
- managing an error signal, having its own error signal and a power relay fail-safe exit;
- managing an alarm signal, having its own error signal and a power relay fail-safe exit;
- managing a display for the visual indication of the working situation and the clear description of any anomaly;

This framework makes **RLG** system suitable for two different application needs:



1 Very high-level reliability applications

They are typically redundant DCS controlled plants, where operation occurs having 2/3 logic or 3/4 logic; this is the case of thermoelectric power stations. In this case, generally, all **RLG** alarm exits are straight connected to DCS digital inputs, distributing them on separate I/O boards.

2 Simply operating applications

Many simple systems are not equipped with a DCS control, but nevertheless they need a reliable and friendly use measuring system: this is the case of boilers.

To fulfill such application **RLG** system has been equipped with the microprocessor able to manage a "pre-configured" alarm.

This consent to preset the right configuration (water or steam at right points) and to obtain an alarm signal when something different is detected.

The design having two independent data processing sections again grants highest reliability.

RLG/E is fully complying with A criteria for electromagnetic compatibility. In particular **RLG/E** grants absence of false or missing alarms also in presence of strong electromagnetic noise or electrostatic shock.

TECHNICAL SPECIFICATIONS

Electronic station housing box

- Glass filled polyester, grey colour RAL RAL7038, with front window.
- Protection IP66 (EN60529)
- 7 joule shock resistant (EN60079-0)
- Dimensions: 241,5 x 163 x 100 mm - Weight < 3 Kg
- Wall mounting with on board brackets - Equipped with No. 4 cable clamps PG13.5

Power supply

- Double power supply (redundant)
- Power supply (auto-switching):
 - 18÷28 VDC (24VDC rated)
 - 100÷240VAC – 50/60Hz
- Absorbed power: < 40W

Exit power relays and alarms

- Internal terminal board, connected with exchange power relay (NC – C – NO)
- Max. power relay supply: 48VDC – 1A

Analog exit

- Double analog exit 4÷20 mA (current loop)
- Setting at 3.5 mA in case of alarm

Visualization & Display

- No. 1 bicolor LED for each channel, green for water and red for steam;
- No. 1 green LED for each section, indicating normal operation;
- No. 1 yellow LED for each section, indicating error;
- No. 1 red LED for each section, indicating alarm;
- No. 1 backlighted graphic LCD display - white/blue - 128x64 resolution

Electronic station working conditions

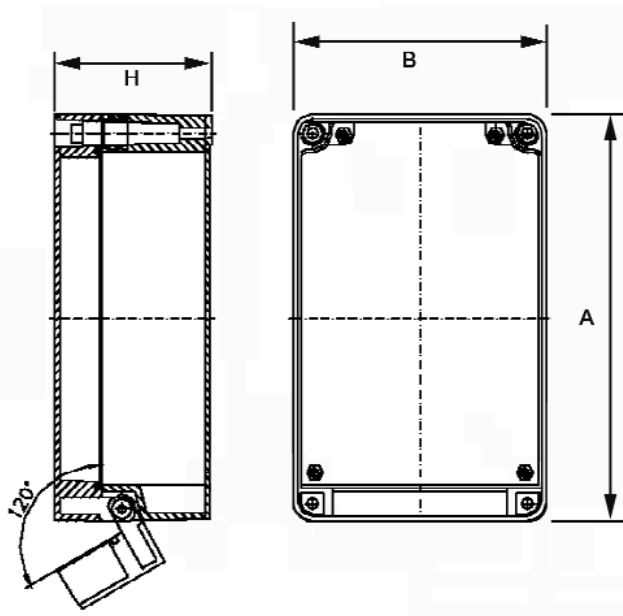
- Temperature range: -20 ÷ +60 °C
- ATEX: 2 / 22 area - II3G ExnL IIC T6 / II3D tD A22 IP66 T135 °C

Measurable fluids

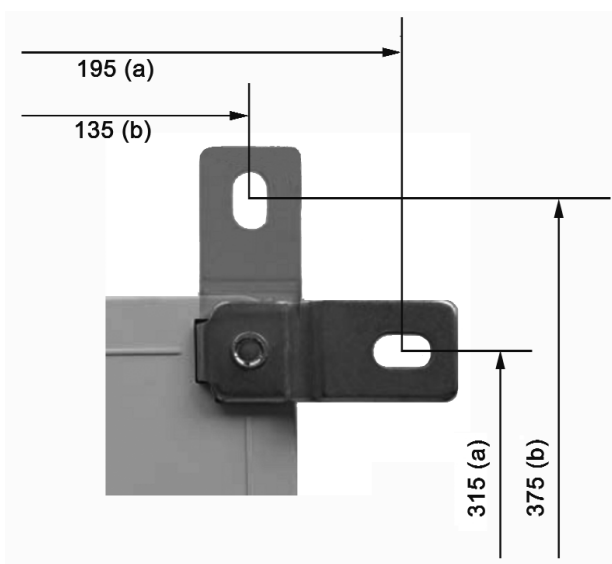
- Designed for industrial water/steam.
- Water:
 - conductivity $\geq 0.5 \mu\text{S/cm}$
@ 25°C and operating temperature $\geq 50^\circ\text{C}$
 - corresponding to:
 - conductivity $\geq 1.6 \mu\text{S/cm}$
@ 25°C and operating temperature $\geq 25^\circ\text{C}$

Applicable standards

- 2004/108/CE - EMC
- 73/23/CE - LVD
- 97/23/CE - PED
- 94/9/CE – ATEX



**Dimensions of electronic station housing box:
A=341.5mm – B=163mm – H=100mm**



**Dimension of housing box wall fixture brackets
(a) with horizontally turned brackets
(b) with vertically turned brackets**

CESARE BONETTI S.p.A.

Via Cesare Bonetti 17 - 20024 Garbagnate Milanese (Italy)
 Telefono: +3902 990721
 Telefax: +3902 9952483
 Internet web site: <http://www.cesare-bonetti.it>
 E-mail: bont.post@bont.it

Vendite Italia:	Telefono:	+39 02 99 072 333
	Telefax:	+39 02 99 072 300
	E-mail:	italia@bont.it
Export sales:	Telephone:	+39 02 99 072 444
	Telefax:	+39 02 99 072 400
	E-mail:	export@bont.it