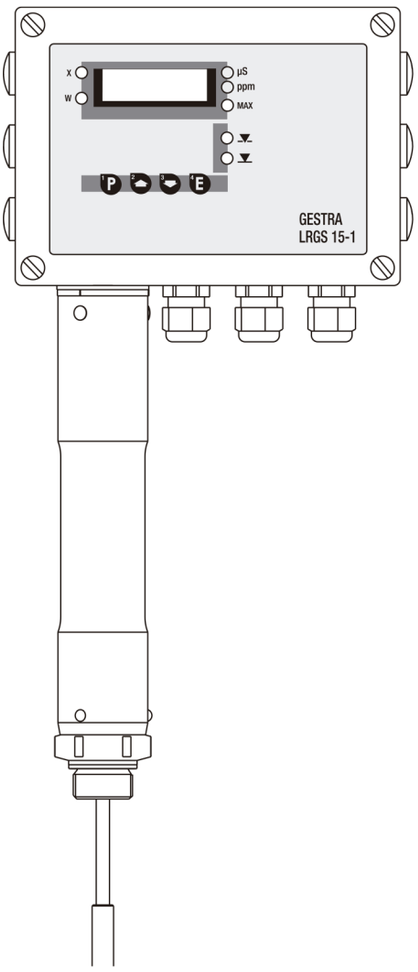
Electrodo de Conductividad LRGS15-1



LRGS 15-1

Conductivity Switch

LRGS 15-1

Description

The conductivity switch LRGS 15-1 is a compact system consisting of a conductivity monitoring electrode and a conductivity switch integrated in the terminal box.

The LRGS 15-1 is used as limit switch and continuous blowdown controller in steam boilers.

Function

The conductivity switch works according to the conductometric measuring method, continuously sensing the electrical conductivity of the boiler water and thus taking a direct measurement of the total dissolved solids (TDS).

The conductivity switch features an integrated 2-position controller for actuating a continuous blowdown valve and automatic closing of the valve on boiler shut-down. Furthermore, an additional adjustable contact outputs a signal when a limit is reached.

The electrical conductivity being a function of temperature, the measured value must be based on a reference temperature of 25 °C. For calibration purposes a reference measurement (at 25 °C) is therefore required.

If, however, a resistance thermometer (boiler water temperature) is applied, the adjustable temperature coefficient can be used to compensate the obtained conductivity values. This means that the conductivity reading will not be affected by variations in pressure and temperature.

Electrical conductivity is measured in units of microSiemens per centimeter (µS/cm). However, in some countries the unit ppm (parts per million) is used. Conversion: 1 µS/cm = 0.5 ppm. The conductivity switch can be switched to either µS/cm or ppm.

Technical Data

Service pressure
PN25: 25 barg at 224 °C

Mechanical connection
Screwed ¾", ISO 228-1
Screwed ¾" NPT (optional)

Materials
Screw-in electrode body:
1.4571, X6CrNiMoTi17-12-2 or
1.4404, A 479 316 L (for NPT thread)
Measuring electrode: 1.4571, X6CrNiMoTi17-12-2
Electrode rod insulation: PTFE
Terminal box: Polycarbonate

Measuring length & length of installation
200, 300, 400, 500, 600, 800, 1000 mm

Input
1 Input for resistance thermometer, e. g. TRG 5-53, measuring insert Pt 100

Measuring range
100 to 10000 µS/cm at 25 °C or 50 to 5000 ppm at 25 °C

Setpoint
Adjustable between 100 and 10000 µS/cm or 50 to 5000 ppm

MAX limit
Adjustable between 100 and 10000 µS/cm or 50 to 5000 ppm

Switching hysteresis
Controller output: –10 % of the adjusted setpoint
MAX limit: –3 % of the adjusted MAX limit

Technical Data – continued –

Temperature coefficient T_k
(if a resistance thermometer Pt 100 is connected)
1.6 – 3.0 % per °C, adjustable in steps of 0.1

Supply voltages
230 V, +10 / –15 %, 50-60 Hz
115 V, +10 / –15 %, 50-60 Hz (optional)

Power consumption
5 VA

Fuse
External slow-blow fuse 63 mA at 230 V
External slow-blow fuse 125 mA at 115 V

Output
3 Volt-free relay contacts
5 A 230 V AC / 30 V DC cos $\phi = 1$ (IEC 61810)
Provide contactor with inference suppressor (RC combination).
Contact material: AgNi 0.15

Indicators and adjustors
1 Four-digit, seven-segment indicator, red, for showing the actual value (X) / setpoint (W) and status & malfunction messages
2 Amber LEDs for indicating the actual value (X) / setpoint (W)
1 Red LED for indicating the MAX limit
2 Green LEDs for indicating "Valve OPEN / CLOSED"
4 Pushbuttons for parameter settings

Cable entry / Electrical connection
Cable glands with integrated cable clamp,
3 x M 16 x 1.5
1 Four-pole screw-type terminal strip for mains connection
1 Three-pole screw-type terminal strip for connecting the continuous blowdown valve
1 Three-pole screw-type terminal strip for MAX limit
The terminal strips can be detached;
conductor size 1.5 mm²
4 Terminal lugs for connecting the resistance thermometer

Protection
IP 65 to DIN EN 60529

Protection class
2 (protective insulation)

Weight
Approx. 1.5 kg

Ambient temperature
when system is switched on: 0 ° ... 70 °C,
during operation: -10 ... 70 °C

Transport temperature
–20 ... +80 °C (< 100 hours), defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

Storage temperature
–20 ... +70 °C, defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

Relative humidity
max. 95%, no moisture condensation

Site altitude
max. 2000 m

Conductivity Switch

LRGS 15-1

Information for project engineering

The conductivity switch can be installed in a horizontal, vertical or inclined position. The terminal box can be repositioned to suit the corresponding plane of installation (see “Example of Installation”).

Cable recommended for wiring: multi-core flexible control line, min. conductor size 0.75 – 1.5 mm².

For disconnecting the conductivity switch install an easily accessible disconnect switch in the close proximity of the equipment.

Order & Enquiry Specification

GESTRA Compact system LRGS 15-1

Conductivity sensor with integrated conductivity controller incl. display

Pressure rating: PN 25 / Connection ¾"

Measuring length & length of installation:.....

Measuring range 100 – 10000 µS/cm / 50 – 5000 ppm

Outputs: Volt-free contacts for
- Continuous blowdown valve BAE
- MAX limit

Inputs: External PT 100 resistance thermometer

Indicator: Four-digit, seven-segment display for
- Actual value
- Setpoint
- Parameters
- Temperature
- Error / status messages

5 Status LEDs
Adjustors
4 Keys in front panel

Material: Terminal box: 1.4571
Measuring tip: 1.4571
Electrode head: Polycarbonate

Protection: IP 65

Supply voltage: 230 V / 50…60 Hz
Optional: 115 V / 50…60 Hz
Weight: 1.5 kg

Stock code: 377.32.XXX

LV (Low Voltage) Directive and EMC (Electromagnetic Compatibility)

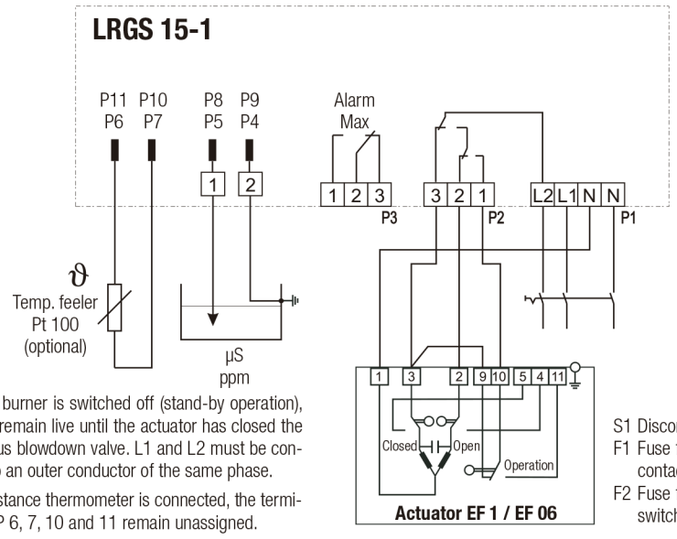
The equipment meets the requirements of the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

ATEX (Hazardous Area)

According to the European Directive 2014/34/EU the equipment must not be used in potentially explosive areas.

Supply in accordance with our general terms of business.

Electrical Connection

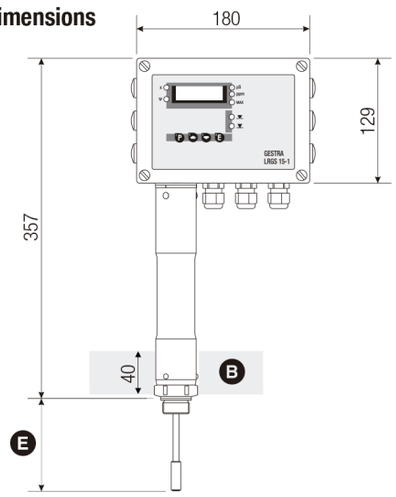


After the burner is switched off (stand-by operation), L2 must remain live until the actuator has closed the continuous blowdown valve. L1 and L2 must be connected to an outer conductor of the same phase.

If no resistance thermometer is connected, the terminal lugs P 6, 7, 10 and 11 remain unassigned.

S1 Disconnector
F1 Fuse for output contact
F2 Fuse for conductivity switch

Dimensions

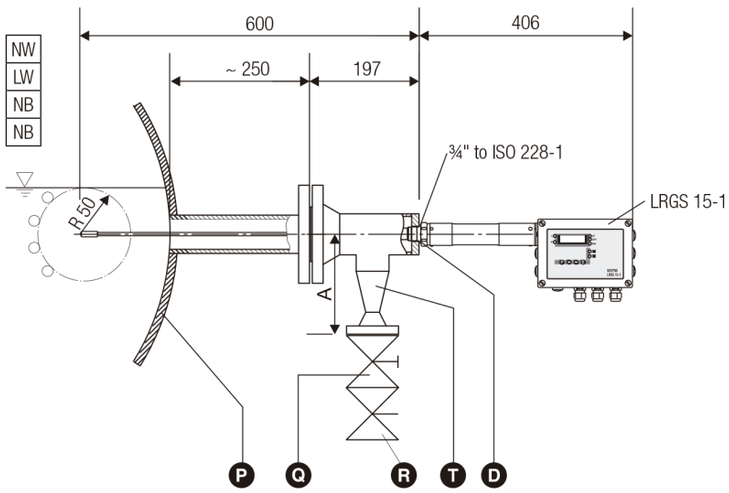


Key

- B Thermal insulation, provided on site, d = 40 mm (outside of thermal insulation of steam boiler)
- E Measuring length & length of installation
- D Joint ring 27 x 32, form D, DIN 7603, 1.4301, bright annealed
- P Boiler drum
- Q Shut-off valve GAV
- R Continuous blowdown valve BAE
- S Measuring pot
- T T-type connector

Example of Installation

LRGS 15-1 used for continuous blowdown control



DN [mm]	A [mm]
15	182
20	184
25	184
40	189