

GESTRA Steam Systems

Conductivity Electrodes

ERL 16

LRG 16

Product Range B1

ERL 16

LRG 16

Description

Conductivity Monitoring

Continuous monitoring of boiler water for increase in density (TDS control) with the GESTRA conductivity limit switch type LRS. Monitoring of the condensate returned to the boiler to detect any ingress of acids, alkalis etc.

Application mainly in steam boiler plants operating without constant supervision (TRD 604) for condensate monitoring, as well as in district heating plants, paper and woodworking industries, catering kitchens, for dye-bath monitoring in dye works, for conductivity monitoring in water treatment plants.

Continuous Blowdown Control

Used in conjunction with GESTRA continuous blowdown controller type LRR 1-5/LRR 1-6/LRR 1-10 and GESTRA continuous blowdown valve type BAE for fully automatic blowdown control. Accurate TDS control increases the operational safety of the plant, reduces water consumption and effluent disposal charges and saves energy by reducing the blowdown rate to the minimum. Automatic isolation of blowdown line on boiler shut-down.

Function

The electrode is positioned so that it continuously senses the boiler water condition and can take a direct conductivity reading. The electrical conductivity produces a proportional current provided that measuring surface and voltage supply remain constant.

Design

The conductivity electrodes are provided with an electrode rod completely insulated by a PTFE sleeving except for the measuring surface. A pressure-tight sealing between electrode rod and body is ensured by a Teflon tube.

The electrode tip of the LRG 16-4 can be shortened back by 200 mm (for details see "Installation and Service Instructions").

The electric connection is carried out via a four-pole connector.

The following designs are available:

- Conductivity electrode type ERL 16-1 with screwed connection, 1/2" BSP, (1/2" NPT available on request), for sandwiching between wafer-type mounting flange 1/2" BSP, DN 15, 20, 25, 40 mm, for direct connection to the continuous blowdown valve.
- Conductivity electrode type ERL 16-1 with screwed connection 3/4" BSP; installation on a side connection (measuring pot) is highly recommended.
- Conductivity electrode type LRG 16-4 for flanged connection PN 40 (see "Technical Data") for installation in the boiler shell or on a side connection.
- Conductivity electrode type LRG 16-4 for installation in a tee piece specially designed for a side connection of the boiler, DN 15 – 40 mm. The blowdown line is directly connected to the measuring pot.

Technical Data

Max. service pressure

32 barg (465 psig) at saturation temperature 238 °C (higher pressures available on request)

Connection

ERL 16-1: Screwed 1/2" or 3/4" BSP (screwed NPT on request), PN 40 to DIN 228

Flanged DN 50, PN 40, DIN 2527, for marine application

Four inspection certificates

Flanged DN 100, PN 40, DIN 2527, inspection to 3.1 B

Square flange DN 100, PN 40
□ 128 mm, inspection to 3.1 B

LRG 16-4: With tee piece for side connection of the boiler, DN 15 – 40, Screwed 3/8", DIN 228 – optional – Flanged DN 50, PN 40, DIN 2527 Tee piece DN 15 – 40, PN 40, DIN 2527

Lengths L supplied (see "Dimensions")

ERL 16-1 (screwed 3/4" BSP): 99 mm

LRG 16-4: 300, 400, 500, 600, 800, 1000 and 1200

Materials

Body ERL 16-...: X 6 CrNiMoTi 17 12 2 (1.4571)

Body LRG 16-4: X 6 CrNiMoTi 17 12 2 (1.4571)

Tee-piece for LRG 16-4: C 22.8/St. 35.8

Electrode rod: X 6 CrNiMoTi 17 12 2 (1.4571)

Electrode tip: X 6 CrNiMoTi 17 12 2 (1.4571)

Insulating sleeving: PTFE

Terminal box and connector: plastics

Permissible conductivity range

From 1 µS/cm

Max. permissible ambient temperature at terminal box

60 °C

Electric connection

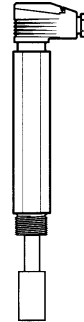
Via four-pole connector with screw terminals, cable strain relief and cable gland Pg 11

Approx. weight (with max. length L)

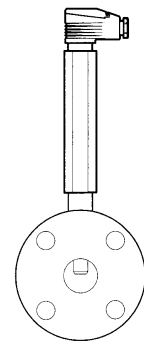
ERL 16-1: 0.9 kg

Mounting flange (screwed 1/2" BSP): 1.4 kg

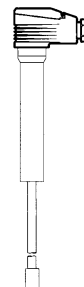
LRG 16-4: 0.5 kg



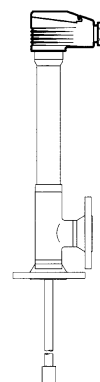
Conductivity electrode ERL 16-1, 3/4"



Conductivity electrode ERL 16-1, 1/2", with mounting flange



Conductivity electrode LRG 16-4



Conductivity electrode LRG 16-4 with tee piece

Important Notes

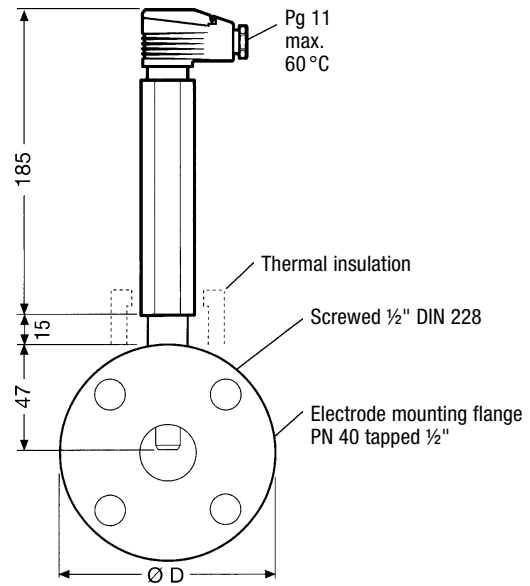
Cable required for wiring: screened cable, e.g. 2 x 2 x 0.8 or 4 x 0.5 mm²: For cable length see data sheet of the associated electronic control unit.

The conductivity electrode type ERL 16, ½", is provided with a wafer-type mounting flange for direct connection to the continuous blowdown valve type BAE.

The conductivity electrode type LRG 16-4 is used with a tee piece. The continuous blowdown line is connected to the tee piece, i. e. the conductivity is measured, even if the blowdown valve is closed.

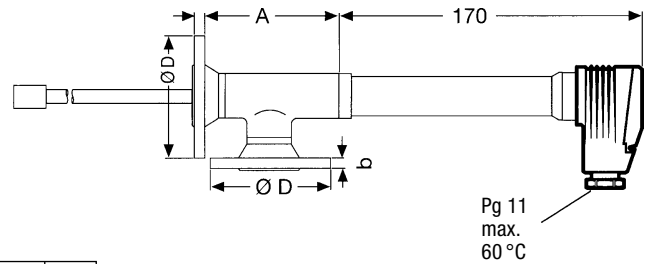
The conductivity electrode can be installed vertically, horizontally or radially inclined. The electrode tip must be constantly submerged by at least 100 mm.

When mounting the electrode into steam or pressurized hot water boilers the relevant regulations must be considered.



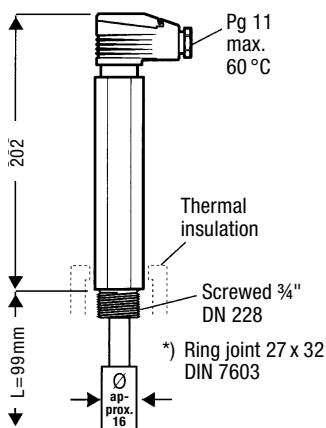
DN mm	Flange dia D	Flange thickness b
15	95	32
20	105	32
25	115	32
40	150	32

Conductivity electrode type ERL 16-1 with wafer-type mounting flange, PN 40, DIN 2527

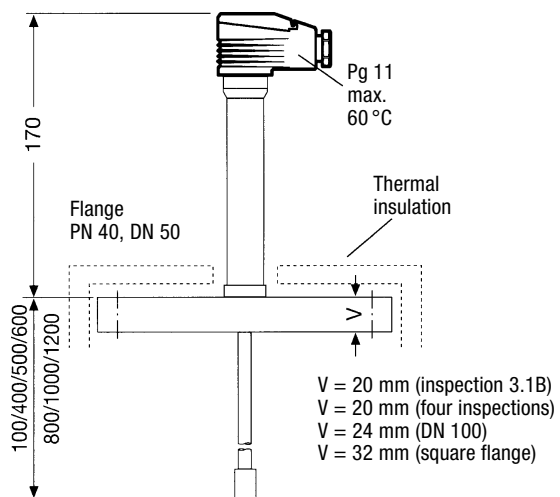


DN mm	Flange dia D	Flange thickness b	A
15	95	18	118
20	105	18	129
25	115	18	137
40	150	18	180

Conductivity electrode type LRG 16-4 with tee-piece



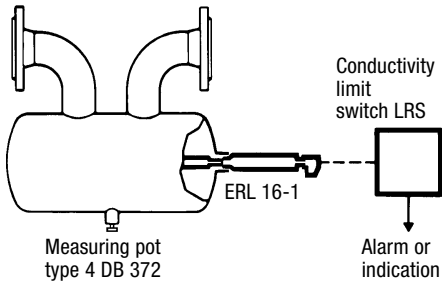
Conductivity electrode type ERL 16-1, ¾"



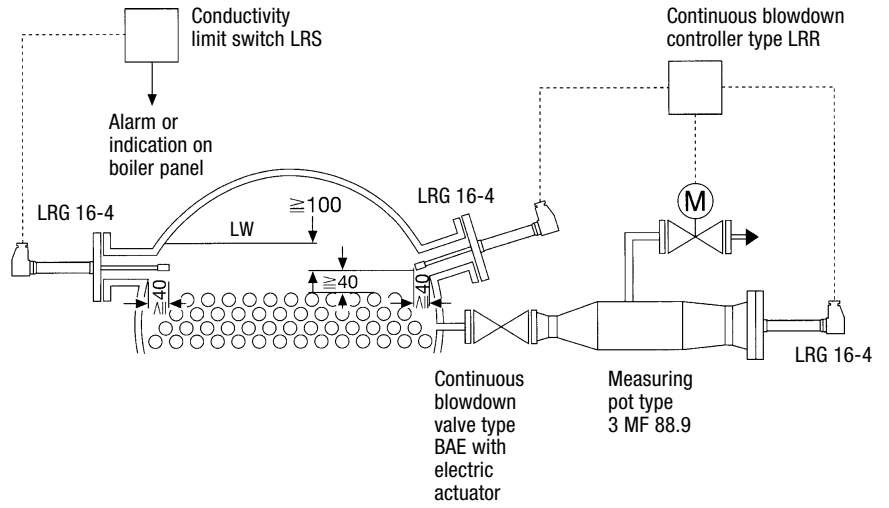
Conductivity electrode type LRG 16-4 with flange DN 50, PN 40, DIN 2527

- V = 20 mm (inspection 3.1B)
- V = 20 mm (four inspections)
- V = 24 mm (DN 100)
- V = 32 mm (square flange)

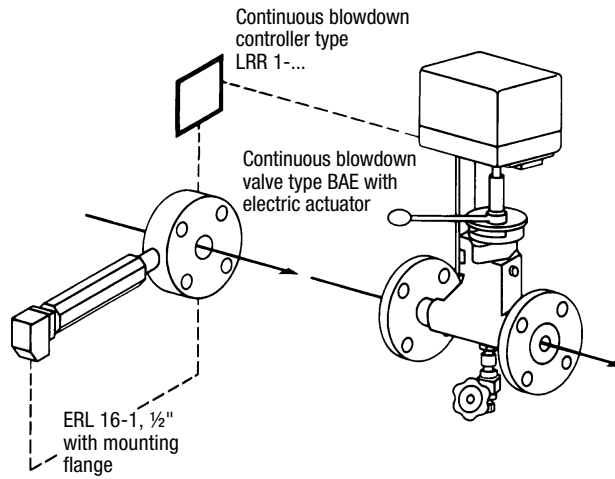
Examples of Installation



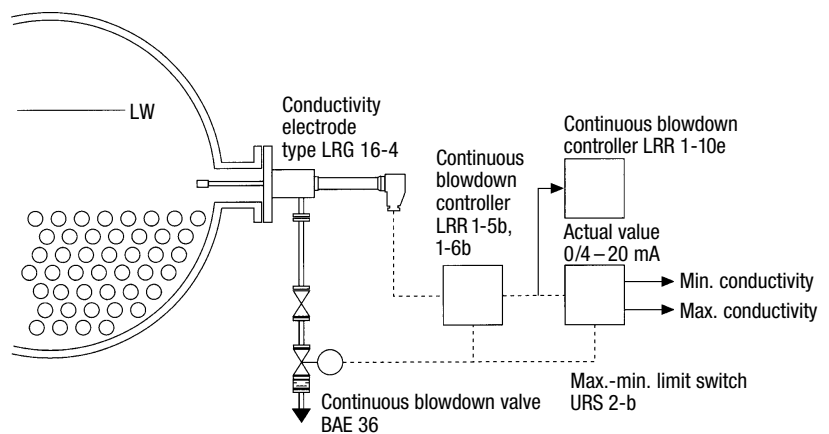
Horizontal installation of conductivity electrode type ERL 16-1 in a measuring pot. Application for condensate monitoring.



Left-hand side horizontal installation of conductivity electrode type LRG 16-4 in a boiler drum, right-hand side installation of LRG 16-4 inside the boiler and outside in a measuring pot



Fitting of conductivity electrode type ERL 16-1 with wafer-type mounting flange to BAE



Conductivity electrode type LRG 16-4 with tee-piece fitted directly to the boiler drum

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Order and Enquiry Specifications

GESTRA conductivity electrode as sensor for conductivity monitoring or continuous blowdown control:

Conductivity electrode type ERL 16-1, PN 40,
with screwed connection 1/2" BSP (DIN 228),

Length supplied L = 47 mm

Electrode mounting flange 1/2", DN ...

or

Conductivity electrode type ERL 16-1, PN 40,
with screwed connection 3/4" BSP (DIN 228),

Length supplied L = 99 mm

or

Conductivity electrode type LRG 16-4, PN 40,
with flanged connection DN,

DIN 2527 or Square flange,

Length supplied L = mm

Inspection

or

Conductivity electrode type LRG 16-4, PN 40,
with tee piece, DN

The following test certificates can be issued on request, at extra cost:

In accordance with EN 10204-2.1, -2.2 and -3.1B.

All inspection requirements have to be stated with the order. After supply of the equipment certification cannot be established. For tests and inspection charges please consult us.

Associated Equipment

For conductivity monitoring:

Conductivity limit switch type LRS.

For continuous blowdown control:

Continuous blowdown controller type LRR 1-5b or

LRR 1-6b, max.-min. limit switch type URS 2b, bar-

chart indicator type URA 1e or 2e, continuous blowdown

valve BAE or blowdown controller LRR 1-10e.

Supply in accordance with our general terms
of business.

GESTRA AG

P. O. Box 10 54 60, D-28054 Bremen

Münchener Str. 77, D-28215 Bremen

Telephone +49 (0) 421 35 03 -0, Fax +49 (0) 421 35 03 - 393

E-Mail gestra.ag@flowserve.com, Internet www.gestra.de

