



GESTRA® Industrial Electronics · Product Range Group B1

LRG 16-5  
LRG 16-7

## Conductivity Electrode LRG 16-5 Four-Electrode Measuring System

## Conductivity Electrode LRG 16-7 Two-Electrode Measuring System

### Purpose and Application

The conductivity electrode type LRG 16-... in conjunction with the continuous blowdown controller type LRR 1-9 measures the electrical conductivity and the temperature of process or boiler water. Conductivity electrode type LRG 16-..., continuous blowdown controller type LRR 1-9 and continuous blowdown valve Reactomat type BAE form a complete continuous blowdown system.

Application mainly in steam boilers, evaporators or similar plants, in particular plants operated automatically, e. g. in accordance with the regulations for operation without constant supervision (TRD 604).

### Design

The conductivity electrode type LRG 16-... consists of a terminal box with integral pre-amplifier, an annular column provided with a stud and an electrode tip with four annular measuring electrodes (LRG 16-5) or a measuring element (LRG 16-7). A temperature sensor PT 1000 is integrated in the upper part of the electrode tip. The electric connection is effected coaxially with the aid of the stud. A system of compression springs locked by two nuts ensures sufficient sealing forces at the insulating seals, even if the temperatures vary.

The electrode LRG 16-... is supplied in standard lengths of 300 mm, 420 mm and 600 mm. The terminal box can be turned to facilitate the introduction of the cable.

The electrode is provided with a screwed connection  $\frac{3}{4}$ " BSP (G  $\frac{3}{4}$  to ISO 228) for fitting into a flange  $\geq$  DN 40 mm or for use with a tee-piece provided with a flanged connection for the blowdown line.

### Operation

For monitoring the boiler water, its conductivity is used.

The measuring current produced in a power source flows through the fluid via measuring electrodes. Between the electrodes there is a voltage drop which is parallel to the electrical conductivity. In the case of the LRG 16-5 this voltage drop is measured by the two inner measuring electrodes, and in the case of the LRG 16-7 between measuring tube and rod. To avoid polarization this is effected at high frequency, so that the inner electrodes are not charged by current.

The temperature influence is compensated by a temperature sensor PT 1000 integrated in the electrode.

### Technical Data

#### Max. service pressure

32 barg (465 psig) at saturation temperature 238 °C

#### Connection

Screwed  $\frac{3}{4}$ " BSP (G  $\frac{3}{4}$  to ISO 228)  
Tee-piece in accordance with customer's specifications, standard electrode flange DN 50 mm, blowdown line connection DN 15, 20, 25 or 40 mm.

#### Length L supplied

300 mm, 420 mm or 600 mm

#### Materials

Parts in contact with fluid: Austenitic stainless steel X 6 CrNiMoTi 17 12 2 (DIN No. 1.4571)  
Terminal box: Die-cast aluminium  
Insulating bushes: PEEK

#### Permissible conductivity

LRG 16-5: from 100 ppm (200  $\mu$ S/cm) at 25 °C  
LRG 16-7: 0 to 100 ppm (0 to 200  $\mu$ S/cm) at 25 °C

#### Max. permissible ambient temperature at terminal box

70 °C

#### Excess temperature fuse

100 °C

#### Electric connection

16 pole connector with screw terminals in the terminal box, max. conductor size 1.5 mm<sup>2</sup>, cable gland Pg 11

#### Temperature sensor

PT 1000

#### Time constant

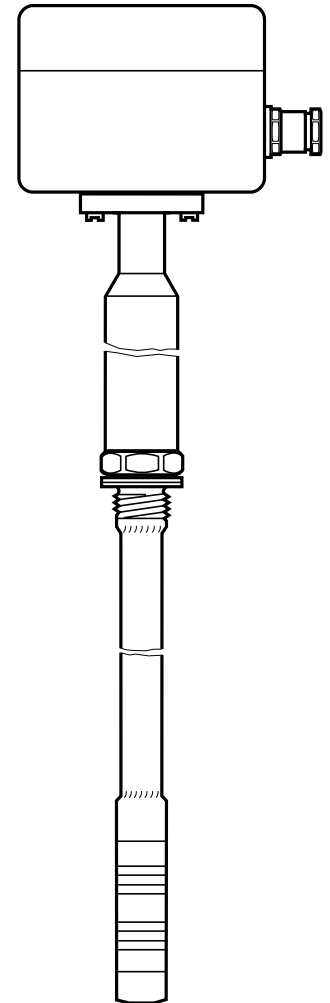
15 sec. in accordance with DIN 3440

#### Protection

IP 65

#### Weight

with length L 300 mm: 2.4 kg  
with length L 420 mm: 2.7 kg  
with length L 600 mm: 3.0 kg



Conductivity electrode LRG 16-5

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# Conductivity Electrode LRG 16-7 Two-Electrode Measuring System

## Important Notes

Cable required for wiring: Eight-core overall screened cable, e.g. 8 x 0.5 mm<sup>2</sup>, max. cable length 100 m.

The conductivity electrode type LRG 16-... is installed directly into the boiler standpipe or with a tee-piece. The position of installation is horizontal. The measuring surface of the electrode must be constantly submerged by at least 100 mm. This has to be taken into account during installation.

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

## Order and Enquiry Specifications

GESTRA conductivity electrode type LRG 16-..., PN 40, with screwed connection 3/4" BSP (G 3/4 to ISO 228),

Length L .....mm.

Flange PN 40, DN 50 mm with 3/4" centre bore.

Tee-piece PN 40,

Boiler standpipe DN.....mm,

Continuous blowdown valve DN.....mm.

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

In accordance with DIN 50049-2.1, -2.2 and -3.1 B.

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

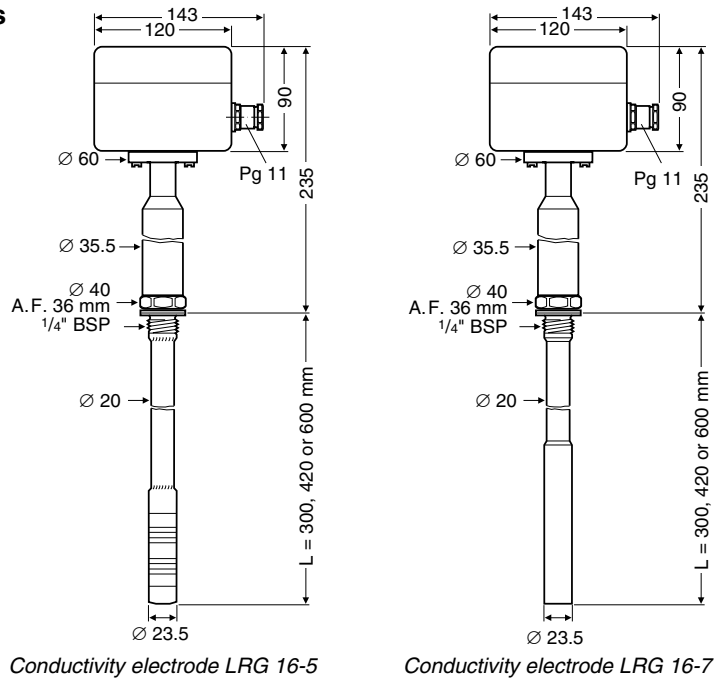
## Associated Equipment

Continuous blowdown controller type LRR 1-9.

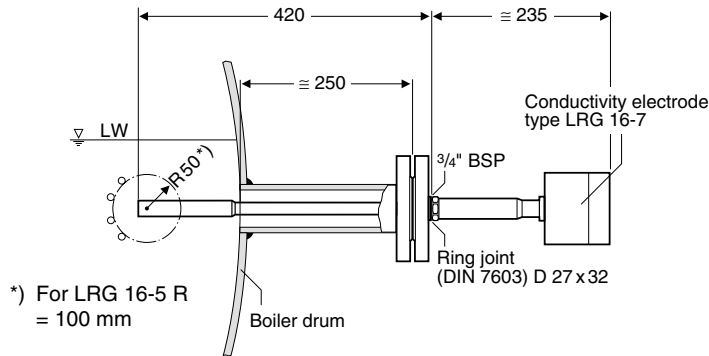
Continuous blowdown valve type BAE 36-1.

Supply in accordance with our general terms of business.

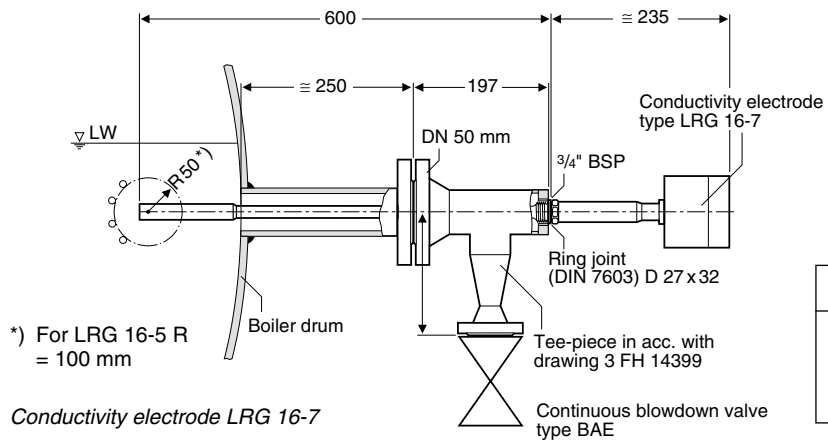
## Dimensions



## Examples of Installation



Conductivity electrode LRG 16-7



Conductivity electrode LRG 16-7

DN mm	A
15	182
20	184
25	184
40	189



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