

## Manual Temp. Compensation

### LRG 16-4 / LRG 12-2

#### Purpose and Application

The conductivity electrodes LRG 16-4 and LRG 12-2 are used in conjunction with conductivity switch LRS 1-5/6 b or conductivity controller LRR 1-5/6 b to sense continuously the conductivity of process or boiler water.

### LRG 17, LRG 19

#### I Conductivity monitoring

In combination with GESTRA conductivity switch LRS for continuous TDS monitoring of boiler water. Particularly suitable for steam boiler operation without constant supervision (TRD 604).

#### II Continuous blowdown control

In combination with GESTRA blowdown controller LRR 1-5 and blowdown valve REAKTOMAT BAE for fully automatic continuous and intermittent blowdown control. Accurate TDS control reduces water consumption and increases the operational safety of the installation. An alarm is raised when the desired boiler water condition cannot be obtained by the control system. Automatic isolation of blowdown line during boiler shut-down.

### LRR 1-5 b/LRR 1-6 b

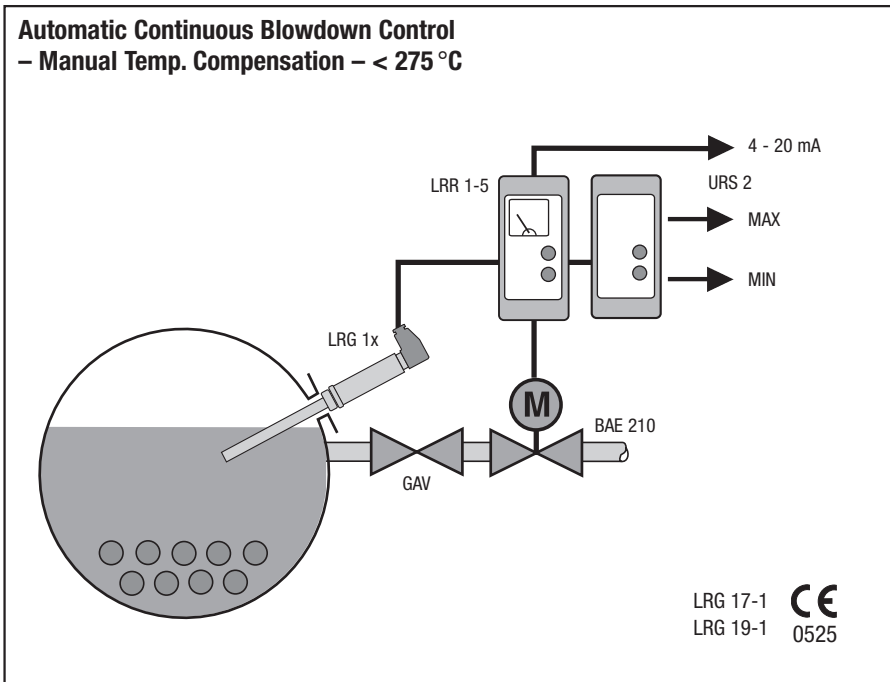
#### Purpose and Application

For automatically controlled blowdown to reduce blowdown wastage and increase safety in operation. Use in conjunction with GESTRA conductivity electrode LRG 16-4 or LRG 17/19 as sensing unit, and GESTRA continuous blowdown valve BAE as control valve. Automatic closing of blowdown line during boiler shut-down. Current output for remote indication or recording of conductivity. Application in steam boilers, evaporators or similar plant, in particular plants operated automatically, e. g. in accordance with the regulations for operation without constant supervision (TRD 604).

#### Design

Plug-in unit in plastic case for installation in control cabinets. The terminals in the case are accessible after undoing two screws and unplugging the unit from its base. To avoid confusion with other plug-in units of the GESTRA range, inserts are fitted in the bases so that only the correct unit may be plugged into each base. The plug-in units may be snapped onto a 35 mm supporting rail or screwed into position on a mounting panel. Field enclosures for several plug-in units are available on request.

**Automatic Continuous Blowdown Control  
– Manual Temp. Compensation – < 275 °C**



Equipment	PN	Stock code
LRG 16-4 G 3/8" BSP	40	3772245
LRR 1-5b		3801441
URS 2		3351041
BAE 46-3 DN 15		3891203
BAE 46-3 DN 20		3891403
BAE 46-3 DN 25		3891503
LRG 17-1 60 bar 275 °C	63	3771443
LRR 1-5		3801441
URS 2		3351041
BAE 47	25/63	3901500
LRG 19-1 60 bar 275 °C	160	3771743
LRR 1-5		3801441
URS 2		3351041
BAE 210 SE 33.7 x 3.6	250	3931500
DN 25 Fl.		393150001

GAV see pages 71.

Flanges see Price List.

Tee piece connector for LRG 16-4 see Price List.

Level pots LRG 17-1/19-1 see page 117.

(optional)

## Manual Temp. Compensation

### LRS 1-5 b, LRS 1-6 b

Continuous monitoring of the conductivity of liquids with GESTRA conductivity electrodes LRG 16-4, LRG 17 or LRG 19. Signalling of preset conductivity limits.

Application in steam boiler plants for condensate and feedwater monitoring; for condensate monitoring in district heating plants, in the paper and pulp industry and in catering kitchens; for conductivity monitoring in water treatment plants; for monitoring of cooling towers, for dyebath monitoring in dye works.

## Automatic Temp. Compensation

### LRG 12-1

#### Purpose and Application

In conjunction with GESTRA conductivity transmitter LRT 1 for continuous monitoring of the conductivity of liquids, signalling of limit values, remote indication or recording. Application in steam boiler plants for feedwater and condensate monitoring, as well as in district heating plants, paper and pulp industries, catering kitchens, for dyebath monitoring in dye works, and for conductivity monitoring in water treatment plants.

#### Design

The conductivity electrode is provided with two electrode tips completely insulated by a PTFE tubing except for the free ends. The non-insulated ends form together with a PTFE sleeve a measuring cell. The screwed body incorporates a temperature feeler.

A system of compression springs ensures pressure-tight sealing between electrode tips and body even at varying temperatures.

### LRT 1-5 b, LRT 1-6 b

Measuring transducer with analogue current output used in conjunction with conductivity electrode LRG 12-1 for continuous monitoring of liquids, signalling of limits, remote indication or recording.

Application mainly in condensate systems to detect any ingress of foreign matter, e. g. in steam boiler plants for monitoring the boiler water or the condensate returned to the boiler.

### URS 2-b

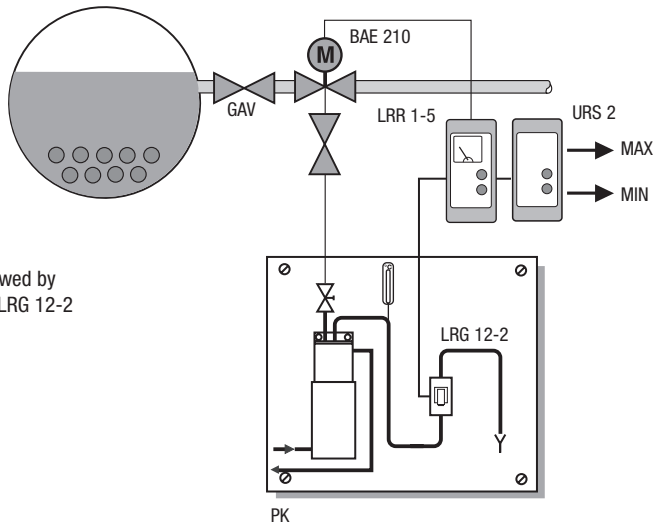
#### Purpose and Application

Universal signalling of two limit values as MAX and MIN alarm. Connection to a measuring transducer with current output 0/4 – 20 mA. Application for instance with GESTRA level transmitter NRT 2-1b, continuous blow-down controller LRR 1-5 b and conductivity transmitter LRT 1-5b/LRT 1-6b.

#### Design

Plug-in unit in plastic case for installation in control cabinets. The terminals in the case are accessible after undoing two screws and unplugging the unit from its base. To avoid confusion with other plug-in units of the GESTRA range, inserts are fitted in the bases so that only the correct unit may be plugged into each base. The plug-in units may be snapped onto a 35 mm supporting rail or screwed into position on a mounting panel. Field enclosures for several plug-in units are available on request.

**Manual temperature compensation  
Temperature > 275 °C**

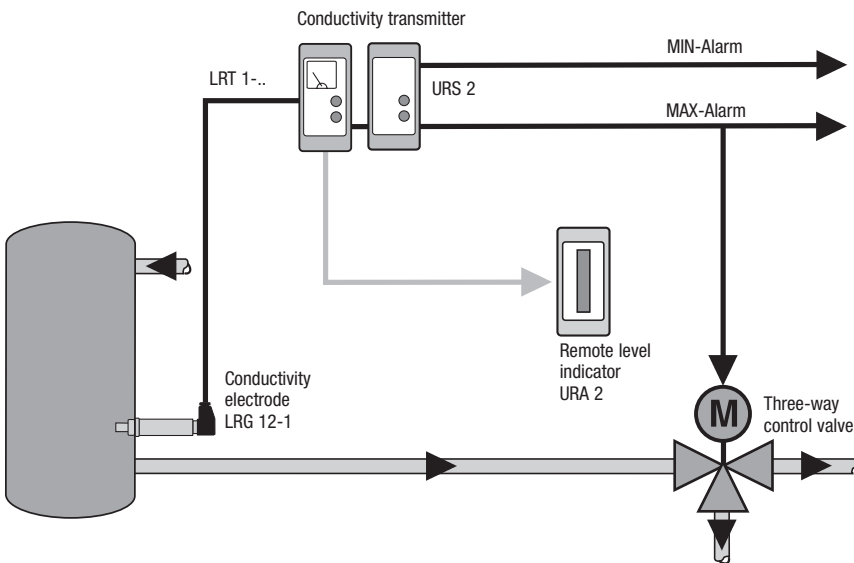


**PK**  
Sample valve unit followed by conductivity electrode LRG 12-2

Sample valve unit > 275 °	Stock code
<b>LRG 12-2</b>	3773030
<b>PK-250 PE2A</b>	
<b>LRR 1-5</b>	3801441
<b>URS 2</b>	3351041
<b>BAE 210 DN 25 Fl.</b>	393150001

**GAV see page 71**

**Signalling of MAX and MIN conductivity values  
– automatic temperature compensation –**



**– Automatic temperature compensation**

Equipment	PN	Stock code
<b>LRG 12-1</b>	10	3771040
<b>LRT 1-5 &lt; 10000 µS/cm</b>		3811441
<b>LRT 1-6 &lt; 100 µS/cm</b>		3811541
<b>URS 2</b>		3351041

**Signalling of MAX. conductivity value  
– Manual temperature compensation –**

Equipment	PN	Stock code
<b>LRG 16-4</b>	40	3772244
<b>LRG 17-1</b>	63	3771443
<b>LRG 19-1</b>	160	3771743
<b>LRS 1-5 &lt; 10000 µS/cm</b>		3781441
<b>LRS 1-6 &lt; 100 µS/cm</b>		3781541

### **VRM 2**

The service case VRM 2 contains the conductivity meter GMH 3410. The GMH 3410 is equipped with a built-in measuring cell which measures the conductivity of water.

#### **Function**

The GMH 3410 is suitable for conductivities within a range from 0 to 200 mS/cm.

#### **Design**

##### **VRM 2**

Plastic case with foamed plastics insert.  
Conductivity measuring instrument GMH 3410 with built-in measuring cell.

### **VRM 3**

The service case VRM 3 contains the conductivity meter GMH 3410 and the pH measuring device GMH 3510.

The GMH 3410 is equipped with a built-in measuring cell which measures the conductivity of water.

The GMH 3510 is equipped with pH electrode type GE 100 BNC and Pt 100 temperature probe type GTF 401. The electrode and the probe are plugged into the equipment.

The service case contains also the handling and calibration set GAK 100, consisting of:

- 5 orange capsules for the calibration solution pH 4.01 and a plastic bottle
- 5 green capsules for the calibration solution pH 7.01 and a plastic bottle
- 5 blue capsules for the calibration solution pH 10.01 and a plastic bottle
- 1 bottle 3mol KCL-solution
- 1 bottle pepsin cleaning agent

#### **Function**

The GMH is suitable for conductivities within a range from 0 to 200 mS/cm.

The GMH 3510 together with the pH electrode GE 100 BNC can measure pH values from 0.00 to 14.00.

The temperature probe measures temperatures between  $-50^{\circ}\text{C}$  and  $+250^{\circ}\text{C}$ .

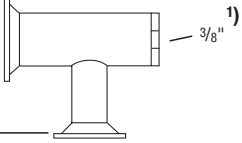
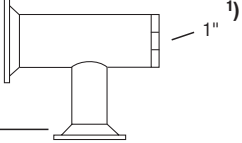
For pH measuring the temperature range is limited to  $10^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ .

#### **Design**

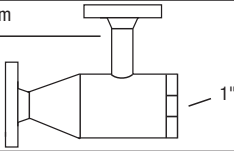
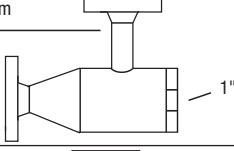
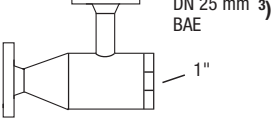
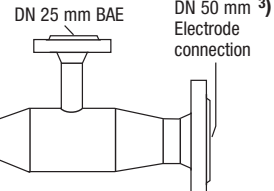
##### **VRM 3**

Plastic case with foamed plastics insert.  
Conductivity measuring instrument GMH 3410 with built-in measuring cell.  
pH meas. device GMH 3510 with pH electrode GE 100 BNC and temperature probe GTF 401.  
Calibration set GAK 1400.

**Tee Pieces for Conductivity Electrodes**

		Connections DN <sup>2)</sup>	Stock code
DN 15 – 40 mm Boiler BAE 	To suit electrode LRG 16-4 Material: C 22.8 / St 35.8 Pressure rating: PN 40	15	141873
		20	141874
		25	141875
		40 <sup>1)</sup>	141876
DN 50 mm Boiler DN 15 – 40 mm BAE 	To suit conductivity electrodes LRGT 16-1 / LRG 16-40 Material: C 22.8 / St 35.8 Pressure rating: PN 40	15	147093
		20	147094
		25	147095
		40	147096

**Level Pots Instruments for Conductivity Electrodes**


		Connections DN <sup>2)</sup>	Stock code
DN 15 – 40 mm BAE DN 15-40 mm Boiler 	<b>MF 1161 STT</b> For installing level electrodes outside the boiler LRGT 16-1 / LRG 16-40 Material: C 22.8 / St 35.8 / Ø 88.9 Pressure rating: PN 40	15	1500632
		20	1500633
		25	1500634
		40 <sup>1)</sup>	1500635
DN 15 – 40 mm BAE DN 15-40 mm Boiler 	<b>MF 1162 STT</b> For installing level electrodes outside the boiler LRGT 16-2 / LRG 16-41 Material: C 22.8 / St 35.8 / Ø 139.7 Pressure rating: PN 40	15	
		20	
		25	
		40	
DN 25 mm Boiler connection DN 25 mm BAE 	<b>MF 1171 STT</b> To suit electrode type LRGT 17-1, LRG 17-40 Material: C 22.8 / St 35.8 / Ø 88.9 Pressure rating: PN 63	25	1500989
DN 25 mm Boiler connection DN 25 mm BAE DN 50 mm <sup>3)</sup> Electrode connection 	<b>3MF 88.9</b> To suit electrode type LRG 17-1/LRG 19-1 For continuous blowdown valve BAE (automatic continuous blowdown control)	PN 63 25	1500987
		PN 160 25	1500988

<sup>1)</sup> Approval acc. to PED 97/23/EC Module A1 60,-

<sup>2)</sup> Please state nominal size (DN) when ordering.

<sup>3)</sup> Approved in acc. with PED 97/23/EC 299,-

**Portable Measuring Instruments for Conductivity + pH Value**

		Type	Stock code
<b>VRM 2</b>	Conductivity		3821040
<b>VRM 3</b>	Conductivity, temperature and pH value		3821141