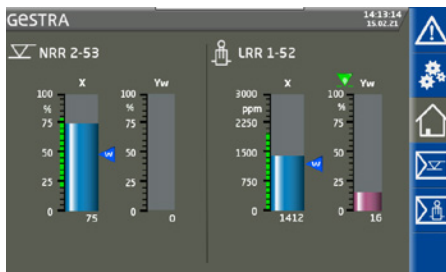
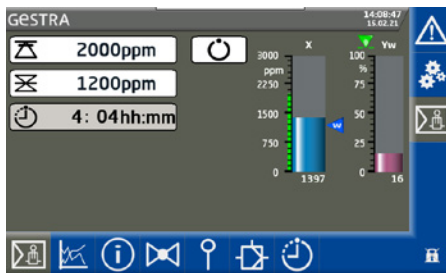


LRR 1-52, LRR 1-53



Home screen for overview of NRR 2-5x with LRR 1-5x



Home screen for LRR 1-5x only

Directives and standards

LRR 1-52 / LRR 1-53:

- UL 60730-1 and CAN/CSA E60730-1
General Requirements for Automatic Electrical Controls

URB 55:

- UL 61010-1 and CAN/CSA C22.2 No. 61010-1
Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
- UL 61010-2-201 and CAN/CSA C22.2 No. 61010-2-201
Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-201: Particular Requirements for Control Equipment

Improper use

There is a danger of death due to explosion if the equipment is used in potentially explosive atmospheres.
Do not use the equipment in potentially explosive atmospheres.

Conductivity Controller

LRR 1-52, LRR 1-53

Visual display and operating unit

URB 55

Description

The functional unit consisting of the URB 55 visual display and operating unit and LRR 1-52, LRR 1-53 conductivity controller is used in combination with LRG 1... conductivity electrodes and the LRGT 1... conductivity transmitter as a conductivity controller and limiter, e.g., in steam boilers and hot water installations and in condensate and feedwater tanks. The conductivity controller indicates when MAX or MIN conductivity has been reached, opens or closes a continuous blowdown valve and can actuate an intermittent blowdown valve.

The conductivity controller can be combined in a circuit with the following conductivity electrodes or transmitters: LRR 1-52 conductivity controller with LRG 16-4, LRG 16-9 conductivity electrodes, LRR 1-53 conductivity controller with LRGT 16-3, LRGT 16-4 and LRGT 17-3 conductivity transmitters.

If the system contains a level controller and a conductivity controller, they can both be operated with one URB 55.

Function

The **URB 55 visual display and operating unit** and **LRR 1-52, LRR 1-53 conductivity controller** make up a unit with the following functions:

Conductivity controller	LRR 1-52	LRR 1-53
Conductivity measurement with an LRG 16-4 conductivity electrode or Conductivity measurement with an LRG 16-9 conductivity electrode with integrated resistance thermometer.	●	
Evaluation of the temperature-compensated current signal of a connected LRGT 1x-x conductivity transmitter.		●
3-position stepping controller with proportional-plus-integral control action (PI controller) and actuation of an electrically operated continuous blowdown valve.	●	●
MAX alarm when the conductivity limit is exceeded.	●	●
MIN alarm when conductivity drops below the minimum limit. Alternatively, MIN relay for automated intermittent blowdown.	●	●
Indication of the valve position is possible if a potentiometer is connected (in the continuous blowdown valve). The valve position is then indicated on the "URB 55" visual display and operating unit	●	●
Switch-selectable (DIP3*) actual value/manipulated variable output, e.g., for separate indication of the actual value or direct connection to a continuous blowdown valve (manipulated variable output *)	●	●
Volt-free input 24 V DC (standby) for inputting an external command Control OFF / Valve CLOSED / Intermittent blowdown OFF	●	●
Visual display and operating unit	URB 55	
Indication of actual value (bar graph in $\mu\text{S}/\text{cm}$ or ppm)	●	
Indication of valve position (bar graph in %)	●	
Setting of the measuring range	●	
Indication/setting of control parameters and values	●	
Trend log	●	
Indication and listing of errors, alarms and warnings	●	
Test of MIN/MAX output relays or actuation of intermittent blowdown valve	●	
Manual/automatic mode	●	
Password protection	●	
Level and conductivity controllers can be operated simultaneously *)	●	

*) Controller software version 311178.13 or later

Technical data of the LRR 1-5x

Supply voltage

24 VDC, + / - 20%; PELV / CLASS2

Fuse

M0.5A (medium time-lag)

Power consumption

5 W

Reset hysteresis

MAX limit: - 3% of set MAX limit, factory default.

MIN limit: + 3% of set MIN limit, factory default.

Input/output

Interface for data exchange with the URB 55 visual display and operating unit

Conductivity Controller

LRR 1-52, LRR 1-53

Inputs

1 volt-free input, 24 V DC, for external command Control OFF, Valve CLOSED, Intermittent blowdown OFF (standby).
1 analog input for potentiometer 0 - 1000 Ω, 2-wire connection (indication of valve position)

Outputs

2 volt-free relay contacts,
8 A 250 V AC / 30 V DC $\cos \varphi = 1$
(continuous blowdown valve).
2 volt-free relay contacts,
8 A 250 V AC / 30 V DC $\cos \varphi = 1$,
or
1 volt-free relay contact,
8 A 250 V AC / 30 V DC $\cos \varphi = 1$,
1 volt-free relay contact,
8 A 250 V AC / 30 V DC $\cos \varphi = 1$
(intermittent blowdown valve)

Inductive loads must have interference suppression (RC combination) as specified by the manufacturer.

1 analog output 4-20 mA, max. output load 500 ohms (actual value)

Indicators and controls

1 multicolor LED (start-up = amber, power ON = green, communication failure = red)
1 4-pole code switch for configuration.

Terminal box

Terminal box material: base of black polycarbonate, front of gray polycarbonate

Wire size: 1 x AWG12 (4.0 mm²) solid, or
1 x AWG14 (2.5 mm²) stranded with sleeve acc. to DIN 46228, or
2 x AWG16 (1.5 mm²) stranded with sleeve acc. to DIN 46228

Terminal strips can be removed separately

Terminal box attachment: Mounting clip on support rail TH 35, EN 60715

Electrical safety

Pollution degree 2, overvoltage category II according to UL 60730-1

Protection

Terminal box: IP40 according to EN 60529

Terminal strip: IP20 according to EN 60529

As a UL open type, the equipment must be installed in a control cabinet.

Weight

Approx. 1.1 lb (0.5 kg)

Ambient temperature

at power-on 32 ° ... 131 °F (0 ° ... 55 °C)

in operation 14 ° ... 131 °F (-10 ° ... 55 °C)

Transport temperature

-4 ° ... 176 °F (-20 ° ... +80 °C) (< 100 hours), only switch on after a defrosting period of 24 hours.

Storage temperature

-4 ° ... 158 °F (-20 ° ... +70 °C), only switch on after a defrosting period of 24 hours.

Relative humidity

Max. 95%, non-condensing

LRR 1-52 conductivity controller only

Connecting a conductivity electrode

1 input for LRG 1-... conductivity electrode (cell constant 1 cm-1), 3-pole with shield, or
1 input for LRG 16-9 conductivity electrode (cell constant 0.5 cm-1), with integrated resistance thermometer Pt100, 5-pole with shield.

Measuring voltage

0.8 V_{ss}, pulse duty factor tv=0.5, frequency 20-10000 Hz.

Measuring range

1 to 10000 μS/cm at 77 °F (25 °C) or
1 to 5000 ppm at 77 °F (25 °C).

Dimensions

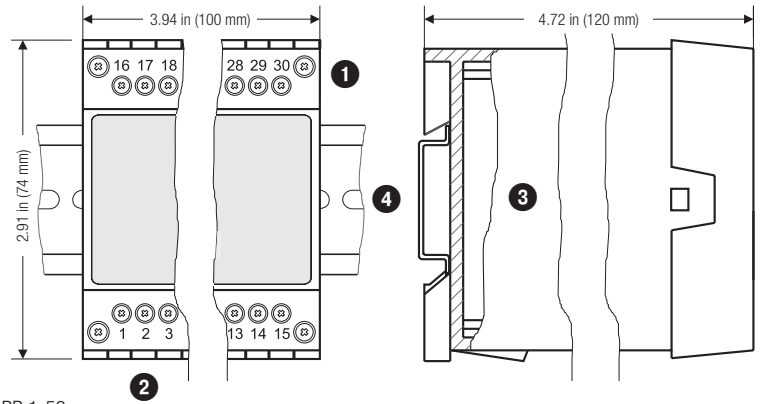


Fig. 1 LRR 1-52, LRR 1-53

Electrical connection of the LRR 1-52

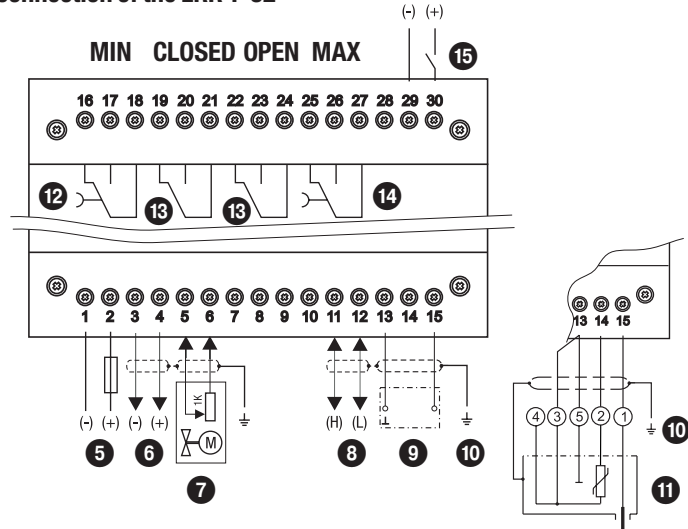


Fig. 2

Electrical connection of the LRR 1-53

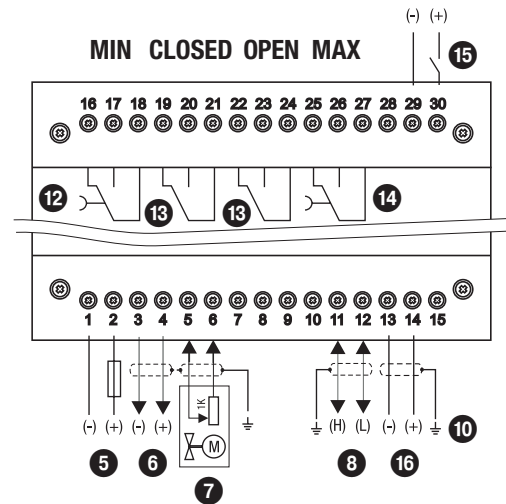


Fig. 3

Key

- 1 Upper terminal strip
- 2 Lower terminal strip
- 3 Terminal box
- 4 Support rail TH 35, EN 60715
- 5 Connection of supply voltage 24 V DC with 0.5A medium time-lag fuse provided by customer
- 6 Actual value/manipulated variable output 4-20 mA
- 7 Indication of valve position, potentiometer 0 - 1000 Ω
- 8 Data line for URB 55 visual display and operating unit
- 9 Conductivity electrode LRG 1-...
- 10 Central grounding point (CGP) in control cabinet
- 11 LRG 16-9 conductivity electrode with integrated resistance thermometer
- 12 MIN output contact or actuation of intermittent blowdown valve
- 13 Output contact for actuation of continuous blowdown valve
- 14 MAX output contact
- 15 Standby input, 24 V DC, for external command Control OFF, Valve CLOSED; Intermittent blowdown OFF
- 16 Conductivity transmitter LRG1 1-..., 4-20 mA

Conductivity Controller

LRR 1-52, LRR 1-53

Technical data

LRR 1-53 conductivity controller only

Connecting a conductivity transmitter

1 analog input 4-20 mA, e.g., for LRGT 1-... conductivity transmitter, 2-pole with shield.

Lower end of measuring range SinL

0.25 - 25 - 50 ppm (0.5 - 50 - 100 µS/cm), adjustable.

Upper end of measuring range SinH

10 - 50 - 100 - 250 - 500 - 1000 - 1500 - 2500 - 3000 - 3500 - 5000 - 6000 ppm
(20 - 100 - 200 - 500 - 1000 - 2000 - 3000 - 5000 - 6000 - 7000 - 10000 - 12000 µS/cm), adjustable.

Visual Display and Operating Unit

URB 55

Technical data

Supply voltage

24 VDC +/- 20%; PELV / CLASS2

Fuse

Internal, automatic

Power consumption

Max. 14.4 W

Input/output

Interface for data exchange.

User interface

5" touch panel 800x480px with LED illumination

Dimensions

Front panel 5.79 in (147 mm) x 4.21 in (107 mm)
Switch panel cutout 5.35 in (136 mm) x 3.78 in (96 mm)
Depth 2.05 in (52 mm) + 0.32 in (8 mm)

Electrical connection

1 3-pole connector,
1 9-pole D-Sub connector.

Protection

Front: IP66 according to EN 60529
Back: IP20 according to EN 60529

Weight

Approx. 2.21 lb (1 kg)

Service temperature

32 ° ... 140 °F (0 ° ... 60 °C)

Transport temperature

-4 ° ... 176 °F (-20 ° ... +80 °C) (<100 hours), only switch on after a defrosting period of 24 hours.

Storage temperature

-4 ° ... 158 °F (-20 ° ... +70 °C), only switch on after a defrosting period of 24 hours.

Relative humidity

5-85 %, non-condensing

Key

- 19 Cutout for control cabinet door
5.35 in (136 mm) x 3.78 in (96 mm)
- 20 9-pole D-Sub connector for data line
- 21 3-pole connector for supply voltage 24 V DC
- 22 Connection for supply voltage 24 V DC, pin assignment
- CGP Central grounding point (CGP) in control cabinet

Please note our general terms of business.

Dimensions

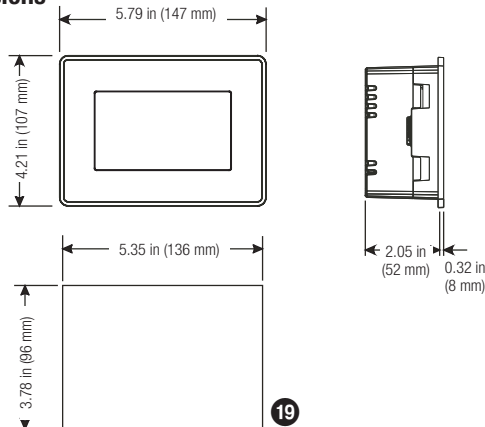
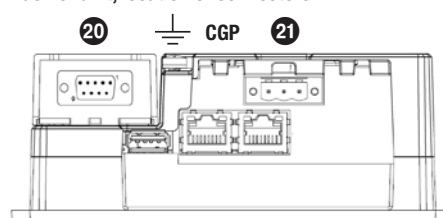


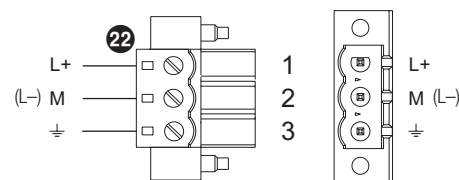
Fig. 4

Electrical connection, URB 55

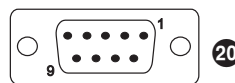
Back of unit, location of connectors



Supply voltage connection



Pin assignment of data line for LRR 1-52, LRR 1-53 + URB 55



PIN 2	Data_L
PIN 7	Data_H

Fig. 5

How to order and specify, LRR 1-5x

Conductivity controller LRR 1-52

GESTRA SPECTOR^{modul} – Touch
Continuous conductivity controller with MIN and MAX alarm
Input: 1 input for conductivity electrode
1 input for Pt100 sensor
Output: 1 switch-selectable actual value/manipulated variable 4-20 mA
2 volt-free relay contacts for MIN/MAX alarm
2 volt-free relay contacts for valve actuation incl.
1 separate URB 55 operating unit with touch panel
Supply voltage: 24 V DC

Conductivity controller LRR 1-53

GESTRA SPECTOR^{modul} – Touch
Continuous conductivity controller with MIN and MAX alarm
Input: 1 input for LRGT conductivity transmitter (4-20 mA)
Output: 1 switch-selectable actual value/manipulated variable 4-20 mA
2 volt-free relay contacts for MIN/MAX alarm
2 volt-free relay contacts for valve actuation incl.
1 separate URB 55 operating unit with touch panel
Supply voltage: 24 V DC

Important notes

The LRR 1-52, LRR 1-53 conductivity controller is clipped onto a support rail in the control cabinet. The URB 55 visual display and operating unit is inserted in a cutout in the control cabinet door.

The conductivity controller and operating unit are both supplied with 24 V DC. The URB has an internal fuse and the LRR 1-5... has an external 0.5A medium time-lag fuse.

Protect the output contacts with an external slow blow 2.5A fuse to prevent them from welding together.

Switching off inductive loads produces surges that can severely impair the function of control systems. Connected inductive loads must therefore have interference suppression (RC combination) as specified by the manufacturer.

Use a shielded, multi-core TC-ER control cable with minimum wire size AWG18, e.g., OELFLEX CONTROL TM CY 5G1, to connect the LRG 16-4 conductivity electrode.

To connect the LRG 16-9 conductivity electrode, a pre-wired control cable in various lengths is available as an accessory.

If you are not using the pre-wired control cable, lay a shielded five-pole TC-ER control cable with minimum wire size AWG18, e.g., OELFLEX CONTROL TM CY 5G1, as the connecting cable. In addition, connect a socket, e.g., Binder series 713 99-0436-58-05, to the control cable at the electrode end.

The cable length between the conductivity electrode and controller is max. 98 ft (30 m), or max. 32 ft (10 m) with a conductivity of 0.5 -5 ppm (1-10 µS/cm).

Route connecting cables between items of equipment separately from power lines.

If used as a conductivity limiter, the LRR 1-52, LRR 1-53 conductivity controller does not interlock automatically when the MAX limit is exceeded.

If the installation requires an interlock, this must be implemented in the downstream (safety) circuit.

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