

Level Controller NRR2-60

Description

The NRR 2-60 level controller can be used together with the NRG 26-60 or NRG 26-61 level electrodes as a level control system and limit switch in steam boilers and hot water installations, and in condensate and feedwater tanks.

The NRR 2-60 level controller can also be used for the above applications with a URW 60 universal converter* and in combination with an external level electrode (with a current output of 4-20 mA).

* *The URW 60 universal converter converts the analogue 4-20 mA signals from the level electrodes into CAN bus signals.*

The equipment is configured and operated and information is viewed via the URB 60 visual display and operating unit.

Function

The NRR 2-60 level controller is a 3-position stepping controller. It cyclically evaluates data telegrams from a level electrode (e.g. NRG 26-60 or NRG 26-61) or a URW 60 universal converter.

In the level controller, the actual value is compared with the setpoint, and a corrective signal is formed to compensate the control deviation. In addition, switching operations can be triggered by the output contacts if defined switchpoints are reached.

The data are transferred via an ISO 11898 CAN bus using the CANopen protocol.

Function tests and failure diagnosis are performed using the URB 60 visual display and operating unit.

Possible combinations of functions and equipment

Level controller	NRR2-60
Function	
Evaluation of CAN bus data telegrams from connected NRG 26-60 or NRG 26-61 level electrodes.	●
Evaluation of CAN bus data telegrams from the connected URW 60 universal converter in combination with a 4-20 mA current output from a level electrode.	●
3-point stepping controller with proportional plus integral control (PI controller) and actuation of an electrically operated control valve.	●
MIN/MAX water level alarm.	●
Current inputs for steam and feedwater flowrate (3-component control)	●
The valve position can be displayed if a potentiometer is connected (in the control valve). The valve position is then shown on the URB 60 visual display and operating unit.	●
Actual value output 4-20 mA	●

Technical data

Supply voltage

- 24V DC +/-20%

Power consumption

- Max. 5 W

Current input

- Max. 0.3 A

Required external fuse

- M0.5A

Input/output

- Interface for CAN bus to ISO 11898, CANopen, insulated

Inputs of the NRR 2-60

- 1 x analogue input for potentiometer 0-1000 Ω, two-wire connection (indication of valve position)
- 1 x analogue input IN 2, 4-20 mA (feedwater flowrate) - (optional)
- 1 x analogue input IN 3, 4-20 mA (steam flowrate) - (optional)

Outputs of MIN/MAX contacts

- 2 x volt-free relay contacts (changeover relays), contact material AgNiO.15, AgSnO2
- Maximum switching current - 8 A at 250V AC / 30V DC - $\cos \varphi = 1$
- Inductive loads must have interference suppression (RC combination) as per the manufacturer's specification

Off delay of MIN/MAX output relays

- 3 seconds (default)

On delay of MIN/MAX output relays

- 0 seconds (default)

Outputs of control valve OPEN/CLOSED

- 2 x volt-free relay contacts (changeover relays), contact material AgNiO.15, AgSnO2
- Maximum switching current - 8 A at 250V AC / 30V DC - $\cos \varphi = 1$
- Inductive loads must have interference suppression (RC combination) as per the manufacturer's specification

Analogue output

- 1 x actual value output 4-20 mA, e.g. for an actual value display
- Max. load resistance 500 Ω

Indicators and controls

- 1 x multicolour LED (orange, green, red)
 - ◆ orange = power up
 - ◆ green = running
 - ◆ red = malfunction
- 1 x 4-pole code switch for setting the controller group and baud rate

Level Controller NRR2-60

Protection class

- II double insulated

IP rating to EN 60529

- Terminal box: IP 40
- Terminal strip: IP 20

Electrical safety

- Pollution degree 2 for installation in control cabinet with protection rating IP 54, fully insulated

Admissible ambient conditions

- Service temperature: -10 °C - 55 °C (0 °C - 55 °C at power-on)
 - Storage temperature: -20 °C - 70 °C
 - Transport temperature: -20 °C - 80 °C (< 100 hours)*
 - Air humidity: Max. 95% non-condensing
- * Only switch on after a 24-hour defrosting period

Terminal box

- Terminal box material: Lower section of black polycarbonate (glass-fibre reinforced), front of grey polycarbonate
- 2 x 15-pole terminal strips, removable separately
- Max. cross-section per screw terminal:
 - ◆ 1 x 4.0 mm² solid, or
 - ◆ 1 x 2.5 mm² stranded with sleeve, or
 - ◆ 2 x 1.5 mm² stranded with sleeve
- Terminal box attachment: Mounting clip on support rail TH 35 (to EN 60715)

Weight

- Approx. 0.5 kg

Important notes

Use a shielded, multi-core, twisted-pair control cable, e.g. UNITRONIC® BUS CAN 2 x 2 x .. mm² or RE-2YCYV-fl 2 x 2 x .. mm² as the bus line.

Pre-wired control cables (with connector and coupling) are available as accessories in various lengths.

The baud rate (transfer rate) is determined by the cable length between the bus terminal devices, and the conductor size is determined by the overall power input of the measuring sensors.

Directives and standards

You can find details on the conformity of the equipment and the applicable standards and directives in the Declaration of Conformity and associated certificates and approvals.

Please note our terms of sale and delivery.

Connecting the MIN/MAX/CLOSED/OPEN output contacts

Use a T2.5A fuse to protect the switching contacts.

Connecting the actual value output and analogue inputs (4-20 mA) or potentiometer (0-1000 ohms)

Use a shielded, multi-core, twisted-pair control cable with a minimum conductor size of 0.5 mm², e.g. LIYCY 2 x 0.5 mm². Maximum cable length = 100 m.

Important notes on connecting the CAN bus system

If two or more system components are connected in a CAN bus network, a 120 Ω terminating resistor must be connected to the first and last devices between terminals CL/CH.

The NRR 2-60 level controller is equipped with an internal terminating resistor. To activate the internal terminating resistor in the NRR 2-60 level controller, insert a jumper between the terminals ("Option 120Ω" and "CH").

Use a central earth to prevent differences in potential in plant parts. Connect the bus line shields to one another all the way along, and connect to the central earthing point (CEP).

How to order:

Level controller

Type:	Stock code:
■ NRR 2-60, 3-position with actual value	3246041
■ NRR 2-60, 3-position with 3 components and actual value	3246030

Additional modules:

- Capacitance level electrode NRG 26-60
- Capacitance level electrode NRG 26-61
- URB 60 as a convenient visual display and operating system

Dimensions

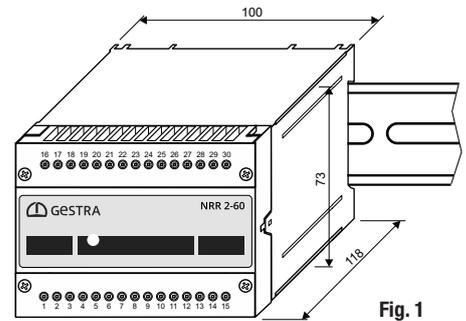
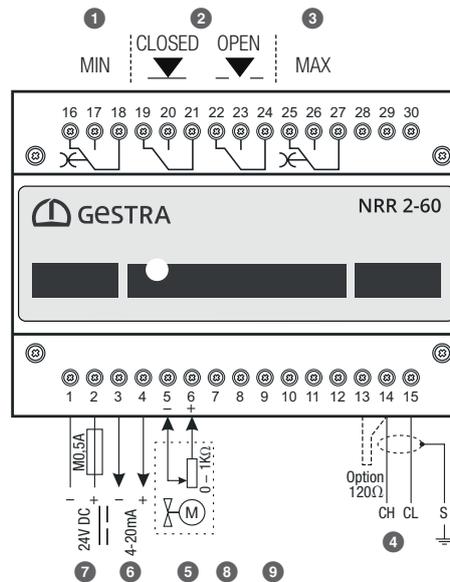


Fig. 1

Wiring diagram



Key

- 1 MIN alarm relay output
 - 2 Relay outputs for valve control (CLOSED/OPEN)
 - 3 MAX alarm relay output
 - 4 CAN bus CH = CAN High / CL = CAN Low S = shield
 - 5 Indication of valve position potentiometer (0-1000 Ω)
 - 6 Actual value output 4-20 mA
 - 7 Supply voltage 24V DC (M0.5A)
 - 8 Analogue input 2: Feedwater flowrate *
 - 9 Analogue input 3: Steam flowrate *
- * Options if used as a 3-component controller

Fig. 2

Wiring diagram of CAN bus system

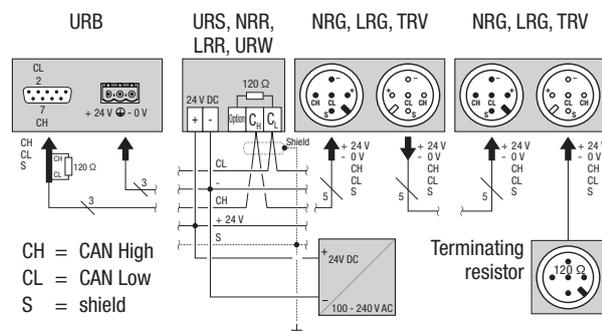


Fig. 3

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