

## Level Controller NRR2-60

### System description

The NRR 2-60 level controller can be used in conjunction with NRG 26-60 and NRG 26-61 level electrodes as a water level controller and limit switch in pressurised steam and hot-water plants 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 to an ISO 11898 CAN bus via 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
<b>Function</b>	
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)	●
Indication of valve position is possible 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

- 24 V DC +/-20 %

#### Power consumption

- max. 5 VA

#### Current input

- max. 0.3 A

#### Required external fuse

- 0.5 A M

#### 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) - (option)
- 1 x analogue input IN 3, 4 - 20 mA (steam flowrate) - (option)

#### Outputs of MIN/MAX contacts

- 2 x volt-free relay contacts (changeover relays), contact material AgNi0.15, AgSn02
- Maximum switching current - 8 A at 250 V AC/30 V DC -  $\cos \varphi = 1$
- Inductive loads must have interference suppression (RC combination) as per the manufacturer's specification

#### Switch-off delay of MIN/MAX output relays

- Factory default setting 3 seconds.

#### Outputs of control valve OPEN/CLOSED

- 2 x volt-free relay contacts (changeover relays), contact material AgNi0.15, AgSn02
- Maximum switching current - 8 A at 250 V AC/30 V 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 actual value indication
- 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

#### Protection class

- II double insulated

# Level Controller NRR2-60

## IP rating to EN 60529

- Housing: IP 40
- Terminal strip: IP 20

## Electrical safety

- Degree of contamination 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

## Housing

- Housing 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 mm<sup>2</sup> solid or
  - ◆ 1 x 2.5 mm<sup>2</sup> stranded with sleeve, or
  - ◆ 2 x 1.5 mm<sup>2</sup> stranded with sleeve
- Housing attachment: Mounting clip on support rail TH 35 (to EN 60715)

## Weight

- Approx. 0.5 kg

## Applicable directives:

The NRR 2-60 level controller has been tested and approved for use in the scope governed by the following directives and standards:

- Directive 2014/35/EU Low Voltage Directive
- Directive 2014/30/EU EMC Directive
- Directive 2011/65/EU RoHS II Directive

## Notes for planning

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

Pre-wired control cables (with plug 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 wire cross-section is determined by the overall power input of the measuring sensors.

## Connecting the MIN/MAX/CLOSED/OPEN output contacts

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

Please note our terms of sale and delivery.

## 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 mm<sup>2</sup>, e.g. LIYCY 2 x 0.5 mm<sup>2</sup>.

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 units 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 bridge between the terminals ("Option" and "CH").

Use a central earth to prevent differences in potential in system 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:

- NRR 2-60, 3-position with actual value
- NRR 2-60, 3-position, 3-component and actual value

#### Stock code:

- 3246041
- 3246030

### Additional modules:

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

## Dimensions

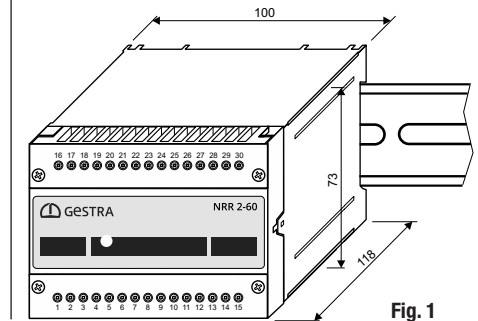
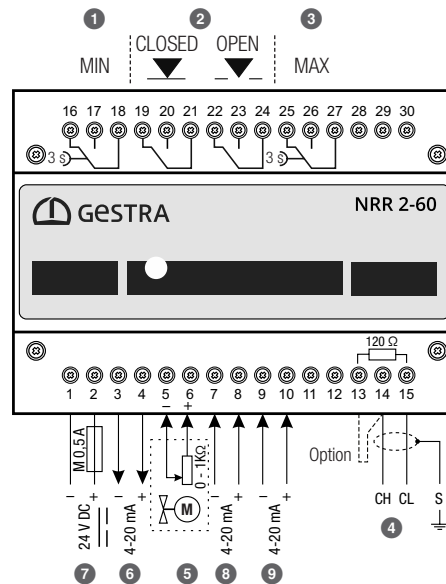


Fig. 1

## 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 24 V DC (M 0.5 A)
  - 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

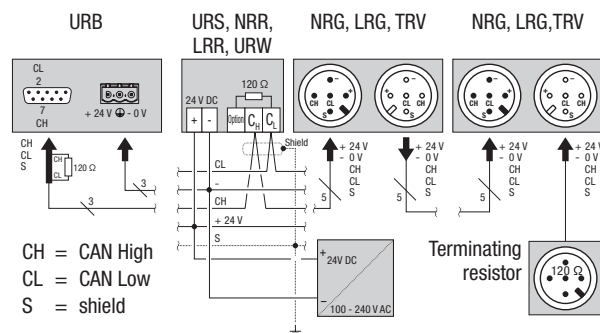


Fig. 3

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