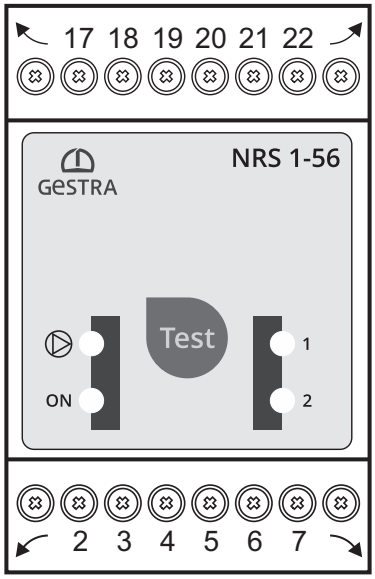


Level Switch
NRS 1-56

Description

The NRS 1-56 level switch can be used in conjunction with various conductive level electrodes as an on/off level control system in steam boilers and hot water installations and in condensate and feedwater tanks.

The NRS 1-56 level switch also indicates two alarm states, which can be configured as MIN or MAX.

The NRS 1-56 level switch can be combined in a circuit with the NRG 1.-52 level electrode (with 4 rods).

Function

The NRS 1-56 level switch uses the conductivity of the water to measure the level.

The level switch is designed for different conductivities and for connection to four electrode rods in total.

The level switch functions as an on/off level control system (fill/discharge/switchable), and also indicates when the water reaches two independent alarm states, which can be configured as MIN or MAX.

The switchpoints for water level control and for the MIN or MAX levels are determined by the length of the respective electrode rods.

For water level control, the level switch recognizes whether the electrode rods are immersed or exposed and, depending on which function is set, it switches the controller output contact, which then turns the feedwater pump on or off, for example. The Pump LED lights up when the level switch has switched the feedwater pump on, for example.

Behavior in the event of MIN/MAX water level alarms

When the MIN or MAX water level is reached, the level switch recognizes that the corresponding electrode rod is immersed or exposed. When the off delay has elapsed, the relevant Alarm 1/Alarm 2 output contact is switched. The Alarm 1/Alarm 2 LED simultaneously lights up red.

Alarm simulation

Press the button to begin a test sequence. During the test sequence, the MIN or MAX alarm is simulated.

Behavior in the event of fault indications

If faults occur in the level electrode and/or the electrical connection, the integrated relays are de-energized.

Alarm and fault indications are displayed by LEDs.

Technical data

Supply voltage

- 24 V DC +/-20 %; SELV / PELV / CLASS2

Power consumption

- Max. 2 W

Current input

- Max. 0.2 A

Required external fuse

- M0.5A (medium time-lag)

Inputs for connecting level electrodes

- 4 x inputs for level electrodes: NRG 10-52, NRG 16-52 four-pole with shield

Electrode voltage

- 5 Vss

Response sensitivity [electrical conductivity of water at 77 °F (25 °C)]

- > 5 ppm (10 µS/cm) < 5000 ppm (10,000 µS/cm)

Alarm 1/Alarm 2 outputs

- 2 x volt-free relay contacts, (changeover relays) contact material AgNi0.15, AgSnO2
- Maximum switching current - 8 A at 250 V AC / 30 V DC - cos φ = 1

Inductive loads must have interference suppression (RC combination) in accordance with the manufacturer's specification

Off delay of Alarm 1/Alarm 2 outputs

- Factory default setting 3 seconds

Pump output

- 1 x volt-free relay contact, contact material AgNi0.15, AgSnO2
- Maximum switching current - 8 A at 250 V AC / 30 V DC - cos φ = 1

Inductive loads must have interference suppression (RC combination) in accordance with the manufacturer's specification

Indicators and controls

- 1 x button for initiating the test function
- 1 x multicolor “ON” LED (green, red) -
  - green = running
  - red = power up, malfunctions or internal error
- 1 x red “Alarm 1” LED for indicating a MIN/MAX alarm
- 1 x red “Alarm 2” LED for indicating a MIN/MAX alarm
- 1 x green “Pump” LED for indicating pump status ON/OFF
- 1 x 4-pole code switch for setting the function and sensitivity

Protection according to EN 60529

- Terminal box: IP 40 according to EN 60529
- Terminal strips: IP 20 according to EN 60529
- As a UL open type, the level switch must be installed in a control cabinet.

Electrical safety

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

Level Switch
NRS 1-56

Admissible ambient conditions

- Service temperature: 32 ° - 131 °F (0 ° - 55 °C)
  [at power-on 32 ° - 131 °F (0 ° - 55 °C)]
- Storage temperature: -4 ° - 158 °F (-20 ° - 70 °C)*
- Transport temperature: -4 ° - 176 °F (-20 ° - 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-fiber reinforced), front of gray polycarbonate
- 2 x 8-pole terminal strips, removable separately
- Max. wire size per screw terminal:
  - 1 x AWG12 (4.0 mm²) solid, or
  - 1 x AWG14 (2.5 mm²) stranded with sleeve, or
  - 2 x AWG16 (1.5 mm²) stranded with sleeve
- Terminal box attachment: Mounting clip on support rail TH 35 (according to EN 60715)

Weight

- Approx. 0.44 lb (0.2 kg)

Applicable directives:

The equipment has been tested and approved for use in the scope governed by the following directives and standards:

Standards:

- UL 60730-1 and CAN/CSA E60730-1 General Requirements for Automatic Electrical Controls
- UL 60730-2-15 and CAN/CSA E60730-2-15 Requirements for Automatic Electrical Water Level Sensing Controls

Important notes

Connecting the 24 V DC power supply

The NRS 1-56 level switch is supplied with 24 V DC. A safety power supply unit that delivers a Safety Extra Low Voltage (SELV / PELV / CLASS2) must be used to supply the equipment with 24 V DC.

Use a 0.5A medium time-lag fuse as an external fuse.

Connecting the output contacts

Use a T2.5A (slow blow) fuse to protect the switching contacts.

Connecting the level electrodes

Use a shielded, multi-core TC-ER control cable with minimum wire size AWG 18, e.g., OELFLEX CONTROL TM CY 5G1.

Maximum cable length = 328 ft (100 m).

Route connecting cables separately from power cables.

Please note our general terms of business.

How to order/specify:

Level Switch type NRS 1-56

GESTRA SPECTOR*modul* on/off level controller with dry running and high-level alarm
For mounting on a support rail in a control cabinet

Input:

- 1 x conductive 4-rod level electrode

Output:

- 3 volt-free relay contacts Max/Min alarm, pump On/Off
- Response sensitivity 5 - 5000 ppm (10 - 10000µS/cm) Off delay: 3 seconds.

Dimensions

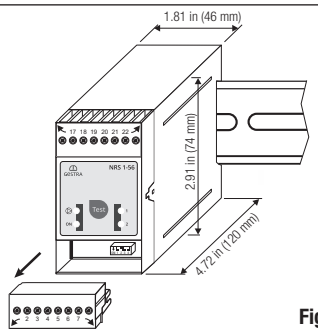
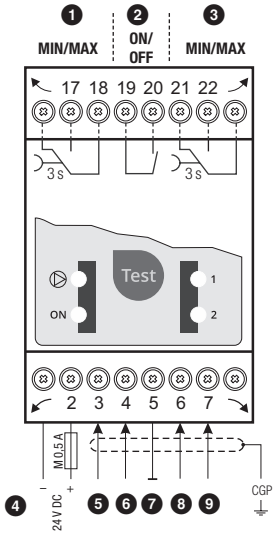


Fig. 1

Wiring diagram



Key

1. Alarm 2 MIN/MAX relay output
2. Pump/output contact
3. Alarm 1 MIN/MAX relay output
4. Supply voltage 24 V DC (M0.5A)
5. Alarm 2 (MIN/MAX) electrode rod
6. Pump 2 electrode rod (pump ON for fill control)
7. Functional ground (tank for reference electrode)
8. Pump 1 electrode rod (pump OFF for fill control)
9. Alarm 1 (MIN/MAX) electrode rod

Fig. 2

Fill control - connection of level electrodes

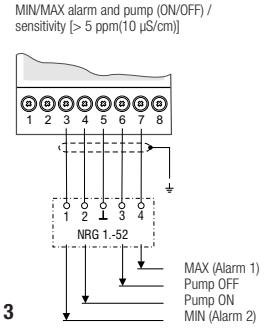


Fig. 3

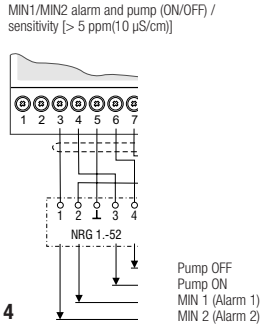


Fig. 4

Discharge control - connection of level electrodes

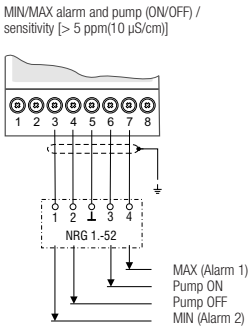


Fig. 5

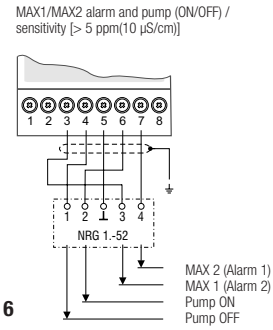


Fig. 6

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