

NRGS 15-1

Compact System for Level Monitoring and Control

NRGS 15-1

Description

The NRGS 15-1 level switch indicates when four different water levels have been reached, and acts as a water level controller with MIN and MAX alarm, e.g. in steam boilers and hot water installations and also in condensate and feedwater tanks.

Function

The NRGS 15-1 level switch is a compact system consisting of a level electrode with four rods and an integrated level switch. The equipment only functions if used in water with a minimum electrical conductivity of $> 0.25 \text{ ppm}$ ($0.5 \text{ }\mu\text{S/cm}$) at $77 \text{ }^{\circ}\text{F}$ ($25 \text{ }^{\circ}\text{C}$). In the level switch, a time-delayed switching channel, an output relay and a signal LED are assigned to each of the four electrode tips. The function of switching channels 1 and 4 is fixed, while switching channels 2 and 3 are defined via the code switch. The switchpoints of each switching channel depend on the level and are determined by shortening the relevant electrode tips. The following functions are possible:

- Electrode rod 1 exposed / switching channel 1 energizes relay 1 = low water 1
- Electrode rod 2 exposed / switching channel 2 energizes relay 2 = low water 2
- Electrode rod 3 exposed or immersed / switching channel 3 energizes relay 3 (time-dependent) = timed pump control (supply/discharge)
- Electrode rods 2 and 3 exposed or immersed / switching channel 3 energizes relay 3 = on/off pump control (supply/discharge)
- Electrode rod 4 immersed / switching channel 4 energizes relay 4 = high water

Technical data

Service pressure

363 psi at $435 \text{ }^{\circ}\text{F}$ (25 bar at $224 \text{ }^{\circ}\text{C}$)

Mechanical connection

Thread 1 ° - 11.5 NPT

Materials

Screw-in body: 1.4404 / F316L
Electrode rods: 1.4571, CrNiMoTi17-12-2
Electrode rod insulation: PTFE
Spacer: PTFE
Terminal box: Polycarbonate

Electrode rods

Length supplied: 39.37 in (1000 mm)
Diameter: 0.2 in (5 mm)

Supply voltage

NRGS 15-1 / 240 VAC: $240 \text{ V} +10/-15 \%$, 50/60 Hz
NRGS 15-1 / 120 VAC: $120 \text{ V} +10/-15 \%$, 50/60 Hz

Power consumption

3 VA

Fuse

External 63 mA, slow blow, at 240 V
External 125 mA, slow blow, at 120 V.

Response sensitivity

(electrical conductivity of water at $77 \text{ }^{\circ}\text{F}$ [25°C])
 $> 5 \dots < 5000 \text{ ppm}$ ($> 10 \dots < 10000 \text{ }\mu\text{S/cm}$)
(switch-selectable)

Technical data continued

Electrode voltage

20 V_{ss}

Output

4 volt-free relay contacts,
 $8 \text{ A } 250 \text{ V AC} / 30 \text{ V DC } \cos \varphi = 1$ (IEC 61810)
Ensure interference suppression (RC combination) for contactor

Energizing/de-energizing delay

Relays 1 and 2: 1s, fixed
Relay 3: 0-30s, adjustable via potentiometer
Relay 4: 3s, fixed

Indicators and controls

3 red LEDs to indicate "Low level alarm 1 + 2 / High level"
1 yellow LED to indicate "Pump on"
1 green LED to indicate "Mains supply on"
1 10-pole code switch to select the sensitivity and define the functions

Cable entry/electrical connection

3 cable glands with integrated cable clamp (M 16)
1 2-pole terminal strip for power supply
1 12-pole terminal strip for connecting the control cables
Terminal strips are detachable screw-type models with conductor size $\geq \text{AWG } 16$ ($\leq 1.5 \text{ mm}$)

Protection

NEMA type 4 according to NEMA 250
IP 65 according to EN 60529

Protection class

Class II with functional ground via boiler wall

Admissible ambient temperature

at power-on $32 \text{ }^{\circ} \dots 158 \text{ }^{\circ}\text{F}$ ($0 \text{ }^{\circ} \dots 70 \text{ }^{\circ}\text{C}$)
during operation $14 \text{ }^{\circ} \dots 158 \text{ }^{\circ}\text{F}$ ($-10 \text{ }^{\circ} \dots 70 \text{ }^{\circ}\text{C}$)

Transport temperature

$-4 \text{ }^{\circ} \dots +176 \text{ }^{\circ}\text{F}$ ($-20 \text{ }^{\circ} \dots +80 \text{ }^{\circ}\text{C}$) (< 100 hours), only switch on after a defrosting period of 24 hours.

Storage temperature

$-4 \text{ }^{\circ} \dots 158 \text{ }^{\circ}\text{F}$ ($-20 \text{ }^{\circ} \dots +70 \text{ }^{\circ}\text{C}$), only switch on after a defrosting period of 24 hours.

Relative humidity

Max. 95%, no moisture condensation

Weight

Approx. 3.08 lb (1.4 kg)

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Key

- 23 Flange
- 24 Perform preliminary inspection of standpipe and flange during the boiler inspection
- 25 Level pot
- 26 Reducer
- 28 High water HW
- 29 Low water LW
- 30 Electrode rod
- 31 Electrode spacing ≥ 0.55 in (14 mm) (air gap and creepage path)
- CD center distance

Important notes

For the electrical connection, a flexible multi-core control cable with conductor size AWG18 - AWG16 (0.75 - 1.5 mm²) can be used.

Install a disconnector near the equipment in an easily accessible location.

How to order/specify

GESTRA compact system type NRGS 15-1 / 120 VAC or NRGS 15-1 / 240 VAC

Connection: 1" - 11.5 NPT

with 4 volt-free relay contacts.

The different functions are selected using a 10-pole code switch

Energizing/de-energizing delay:

- MIN: 1 s, fixed
- Switchpoint 2: Adjustable from 0 s to 30 s
- Switchpoint 3: 1 s, fixed
- MAX: 3 s, fixed

Response sensitivity switch-selectable > 5 ppm (10 μ S/cm)

Supply voltage.....

Length supplied 39.37 in (1000 mm)

Directives and standards

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

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.

Please note our general terms of business.

Dimensions

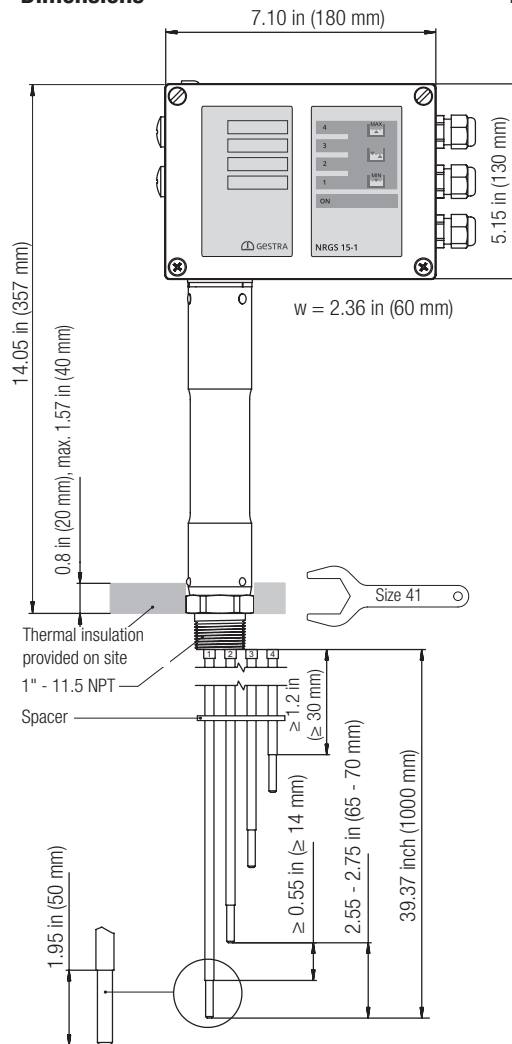


Fig. 1 NRGS 15-1

Installation example

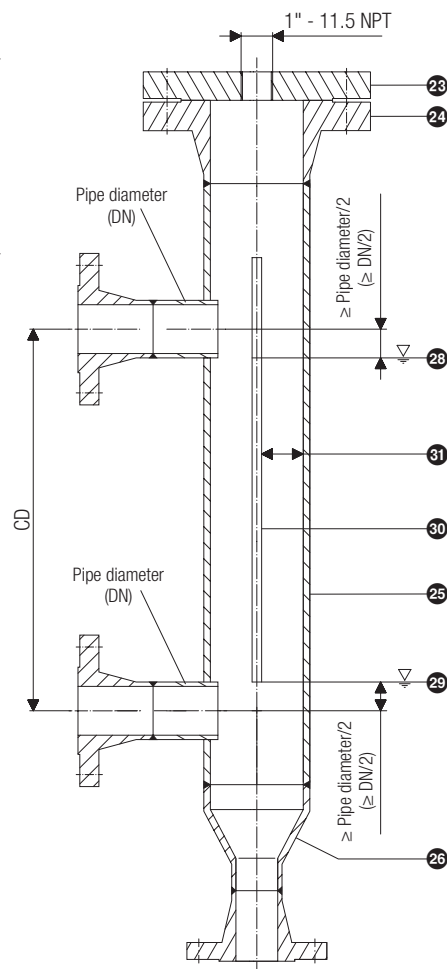


Fig. 3 Level pot for external use

Electrical connection

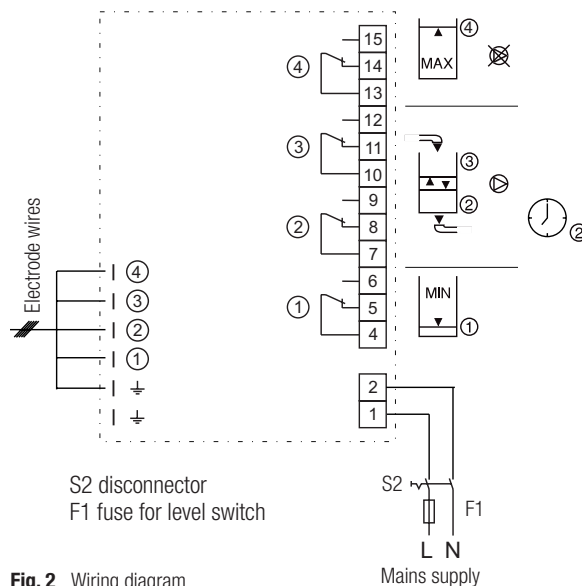


Fig. 2 Wiring diagram

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