

NRGs 11-2, NRGs 16-2

## Compact System for Level Monitoring

### NRGs 11-2 NRGs 16-2

#### Description

The NRGs 11-2, NRGs 16-2 is a compact-type system consisting of a level electrode with four tips and an integrated level switching controller.

The compact system is used as water level controller / limiter, for instance in steam boilers, (pressurized) hot-water installations as well as condensate and feedwater collecting tanks.

#### Function

For the correct functioning of the equipment the water must have a minimum conductivity of  $> 0.5 \mu\text{S}/\text{cm}$  at  $25^\circ\text{C}$ .

The length of the individual electrode tips determines the switchpoints for water level control and MIN level.

The equipment monitors the water level by sensing whether the electrode tips are exposed or immersed and – by energizing or de-energizing the controller output contact – switches the feedwater pump on or off. The LED for pump is illuminated when the feedwater pump is switched on by the equipment.

When the water level falls below the low level, the two MIN electrode tips are exposed and the equipment energises the MIN output contacts after the de-energizing delay has elapsed. The safety circuit for the heating will be opened and the two MIN LED are illuminated.

A MIN alarm can be simulated by pressing the test button.

The heating will be switched off and interlocked. To reset the interlock the MIN electrode tips must enter the water again and the button "Reset" must be pushed.

#### Directives and Standards

##### VdTÜV Bulletin "Wasserstand 100" (= Water Level 100)

The compact system is type approved according to VdTÜV Bulletin "Wasserstand (= Water Level) 100".

The VdTÜV Bulletin "Wasserstand (= Water Level) 100" specifies the requirements made on water level control and limiting equipment for boilers.

##### LV (Low Voltage) Directive and EMC (electromagnetic compatibility)

The equipment meets the requirements of the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

##### ATEX (Atmosphère Explosible)

According to the European Directive 2014/34/EU the equipment must **not** be used in potentially explosive areas.

##### UL/cUL (CSA) Approval

The equipment meets the requirements of the following standards: UL 508 and CSA C22.2 No. 14-13, Standards for Industrial Control Equipment. File E243189.

#### Technical Data

##### Type approval no.

TÜV · WR/WB · 07-392

##### Service pressure

NRGs 11-2: 6 bar at  $159^\circ\text{C}$

NRGs 16-2: 32 barg at  $238^\circ\text{C}$

##### Mechanical connection

Screwed G 1 A to ISO 228

##### Materials

Terminal box 3.2161 G AISi8Cu3

Sheath 1.4301 X5 CrNi18-10

Screw-in body 1.4571 X6 CrNiMoTi17-12-2

Electrode tips 1.4571 X6 CrNiMoTi17-12-2

Insulation PTFE

Spacer disc PTFE

#### Technical Data – continued –

##### Electrode tips

Lengths supplied: 500, 1000, 1500 mm

##### Supply voltage

230 V +/- 10 %, 50/60 Hz

115 V +/- 10 %, 50/60 Hz

24 V +/- 10 %, 50/60 Hz (option)

##### Power consumption

5 VA

##### Fuse

external 63 mA, slow-blow, for 230 V and 115 V,

external 150 mA, slow-blow, for 24 V.

internal thermal fuse  $T_{\text{max}} = 102^\circ\text{C}$

##### Sensitivity of response

(electrical conductivity of water at  $25^\circ\text{C}$ )

$>0.5 \dots < 1000 \mu\text{S}/\text{cm}$  or  $>10 \dots < 10\,000 \mu\text{S}/\text{cm}$

(switch-selectable)

##### Electrode voltage

10 V<sub>ss</sub>

##### Output

2 volt-free change-over contacts, 8 A 250 V AC / 30 V DC  
cos  $\varphi = 1$ .

De-energizing delay: 3 seconds (MIN alarm).

1 volt-free change-over contact, 8 A 250 V AC / 30 V DC

cos  $\varphi = 1$  (e. g. feedwater pump ON).

Provide inductive loads with RC combinations according

to manufacturer's specification to ensure interference suppression.

##### Indicators and adjustors

2 red LEDs for signalling "Low water level",

1 green LED "Pump ON".

1 four-pole code switch for selecting the response sensitivity.

1 push button for testing the MIN (low-level) alarm

1 push button "Reset"

##### Cable entry

Cable gland with integral cable clamp

M 16 (PG 9)

M 20 (PG 16)

##### Protection

IP 65 to DIN EN 60529

##### Weight

Approx. 0.8 kg

##### Ambient temperature

when system is switched on:  $0^\circ \dots 70^\circ\text{C}$ ,

during operation:  $-10 \dots 70^\circ\text{C}$

##### Transport temperature

$-20 \dots +80^\circ\text{C}$  (<100 hours), defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

##### Storage temperature

$-20 \dots +70^\circ\text{C}$ , defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

##### Relative humidity

max. 95 %, no moisture condensation

##### Approvals

TUV type approvals acc. to

VdTÜV Bulletin "Wasserstand 100":

Requirements made on water level limiting & control equipment.

Type approval no. TÜV · WR / WB · xx-392

(see name plate).

# Compact System for Level Monitoring

## NRGS 11-2

## NRGS 16-2

### Important Notes

For mains and control cables you can use multi-core flexible control cable (conductor size 0.75 - 1.5 mm<sup>2</sup>).

Provide an external slow-blow fuse for the compact system: 63 mA for 230 V and 115 V or 150 mA for 24 V.

To prevent the welding together of contacts provide an external slow-blow fuse T 2.5 A for the output contacts.

When switching off inductive loads, voltage spikes are produced that may impair the operation of control systems. Connected inductive loads must be provided with suppressors such as RC combinations as specified by the manufacturer.

Install an easily accessible disconnecting switch as isolating device for the compact system in the close proximity of the equipment. Mark this disconnecting switch as isolating device for the compact system.

### Order & Enquiry Specification

GESTRA Compact system **NRGS 1..-2**

PN ..., G 1, acceptance inspection .....

Supply voltage .....

with 2 volt-free relay contacts for MIN alarms 1 and 2,

MIN energizing/deenergizing delay 3 sec.,

1 volt-free relay contact pump ON/OFF,

sensitivity switch-selectable between > 0.5 µS/cm and

> 10 µS/cm

Length supplied .....mm

### Key

- 1 Flange PN 40, DN 50 DIN 2527  
Flange PN 40, DN 100, DIN 2527
- 2 For the approval of the boiler standpipe with connecting flange the relevant regulations must be considered.
- 3 Vent hole
- 4 High water (HW)
- 5 Electrode tip d = 5 mm
- 6 Protection tube ≥ DN 100
- 7 Low water (LW)
- 8 Reducer DIN 2616-2, K-88.9 x 3.2-42.4 x 2.6 W

### Dimensions

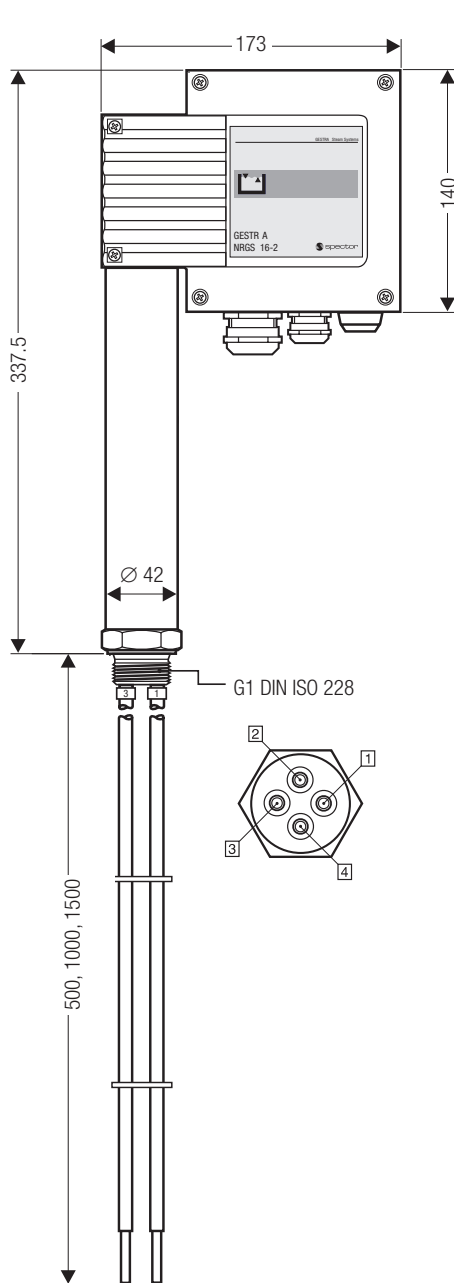


Fig. 1 NRGS 11-2, NRGS 16-2

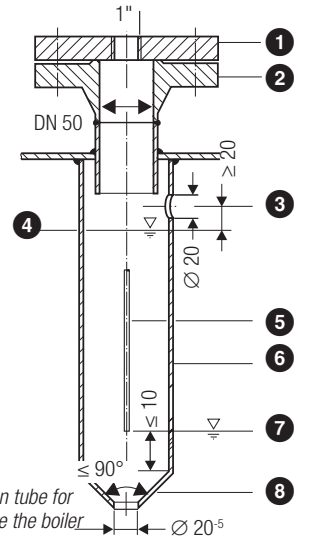


Fig. 2 Protection tube for installation inside the boiler

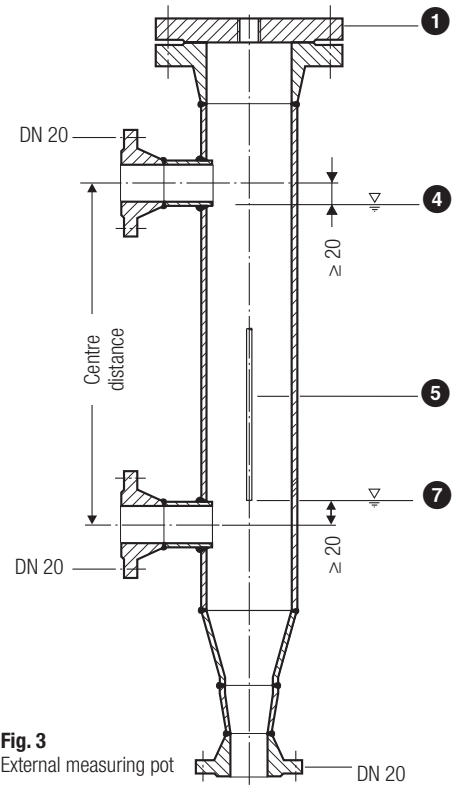
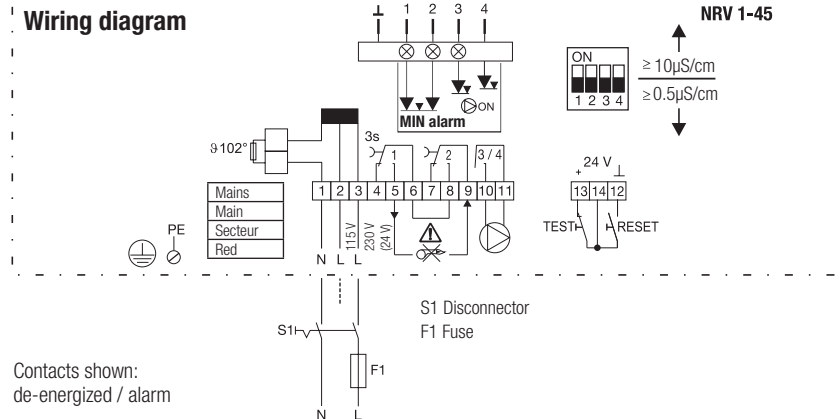


Fig. 3 External measuring pot

### Wiring diagram



Contacts shown:  
de-energized / alarm

Supply in accordance with our general terms of business.

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