

NRGs 11-1, NRGs 16-1

Compact System for Level Monitoring

NRGS 11-1

NRGS 16-1

NRGS 16-1S for Marine Applications

Description

The NRGs 11-1, NRGs 16-1 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, 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°C .

The lengths of the associated electrode rods determine the switchpoints for water level control and MIN / MAX water level.

The equipment detects whether the electrode tips are exposed or immersed and activates the associated relay output contact accordingly. The associated LEDs are illuminated.

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 (Hazardous Area)

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

UL/cUL (CSA) Approval

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

Technical Data

Service pressure

NRGS 11-1: 6 bar at 159°C
NRGS 16-1: 32 bar at 238°C

Mechanical connection

Screwed G 1 A, ISO 228

Materials

Terminal box 3.2161 G AISi8Cu3
Sheath 1.4301 X5 CrNi18-10
Screw-in body 1.4571 X6 CrNiMoTi17-12-2
Flange 1.0460 C 22.8 (nur NRGs 16-1S)
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 $\pm 10\%$, 50/60 Hz
115 V $\pm 10\%$, 50/60 Hz
24 V $\pm 10\%$, 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°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_{ss}

Output

4 volt-free change-over contacts, 8 A 250 V AC / 30 V DC
 $\cos \varphi = 1$.
De-energizing delay: 3 sec.
Provide inductive loads with RC combinations according to manufacturer's specification to ensure interference suppression

Indicators and adjustors

4 red LEDs for signalling "Electrode submerged"
1 four-pole code switch for selecting the response sensitivity.

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. 1.8 kg (NRGS 1..-1)

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:

TÜV type approvals acc. to VdTÜV Bulletin "Wasserstand 100": Requirements made on water level limiting & control equipment.

Type approval: TÜV · WRB · XX-388.

Marine applications: GL 99250-96 HH,
LR 98/20075 (E2).

Compact System for Level Monitoring

NRGS 11-1

NRGS 16-1

NRGS 16-1S

Important Notes

Installation

■ The level transmitter NRGS 1..-1 can be installed together with one GESTRA level electrode for water level limiting or for high-level alarm in a single protection tube or external level pot (inside diameter 100 mm). If the level limiting electrode is installed inside the vessel, it must be at least 40 mm away from the upper vent hole.

■ The compact system must only be installed in a vertical position.

Electrical connection

■ For mains and control cables you can use multi-core flexible control cable (conductor size 0.75 - 1.5 mm²).

■ 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..-1**
 PN ..., G 1, acceptance inspection
 with 4 volt-free relay contacts
 for low level alarm, pump On/Off,
 high-level alarm,
 energizing/deenergizing delay 3 s,
 sensitivity switch-selectable between
 > 0.5 µS/cm and > 10 µS/cm,
 Supply voltage.....
 Length suppliedmm

Dimensions

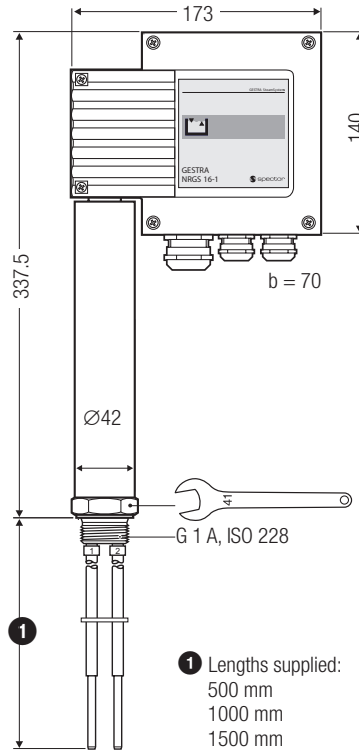


Fig. 1 NRGS 16-1
(NRGS 11-1)

1 Lengths supplied:
 500 mm
 1000 mm
 1500 mm

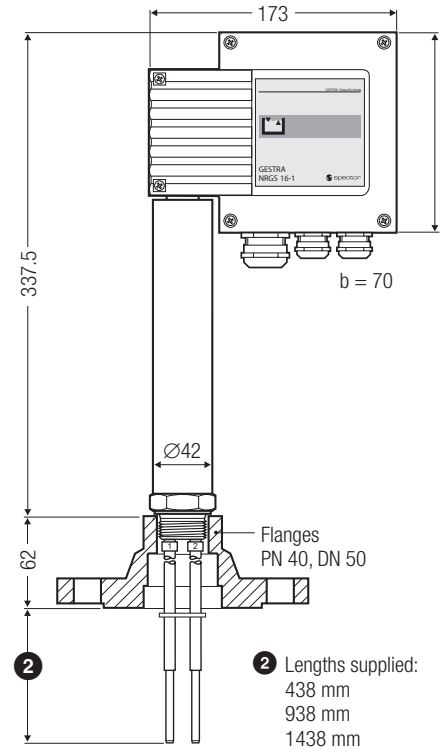
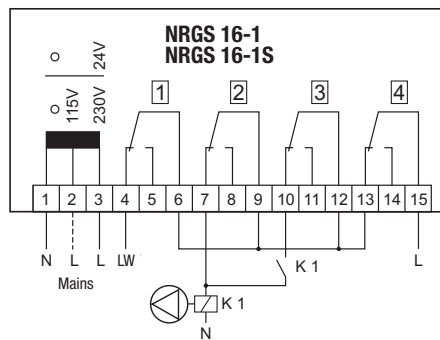


Fig. 2 NRGS 16-1S

2 Lengths supplied:
 438 mm
 938 mm
 1438 mm

Electrical connection

Wiring diagram Fill control



Wiring diagram Discharge control

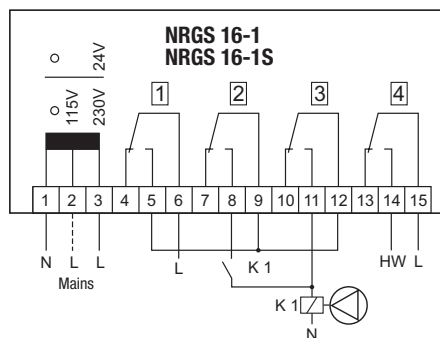


Fig. 3

Compact System for Level Monitoring

NRGS 11-1

NRGS 16-1

NRGS 16-1S

Key

- 12 Flange PN 40, DN 50, DIN EN 1092-01
(for one electrode)
- 13 Flange PN 40, DN 100, DIN EN 1092-01
(for electrode combination)
- 14 Vent hole \varnothing 20 mm
- 15 High water HW
- 16 Electrode rod
- 17 Protection tube DN 80
(in France according to AFAQ \geq DN 100)
- 18 Protection tube DN 100
- 19 Distance between electrode rod and
protection tube \geq 14 mm
- 20 Distance between electrode tip (NRG 1...-50 or
NRG 1...-51) \geq 14 mm (creepage distances and
clearances)
- 21 Low water LW
- 22 Reducer DIN 2616-2, K-88.9 x 3.2-42.4 x 2.6 W
- 23 Reducer DIN 2616-2, K-114.3 x 3.6-48.3 x 2.9 W
- 24 Level pot \geq DN 80

Examples of installation

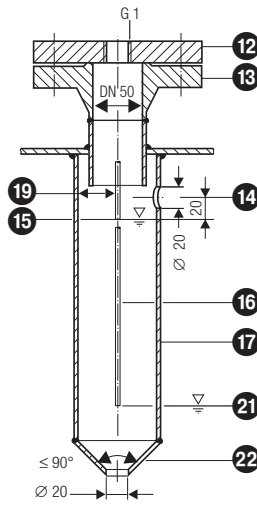


Fig. 4 Protection tube (provided on site) for installation inside the boiler

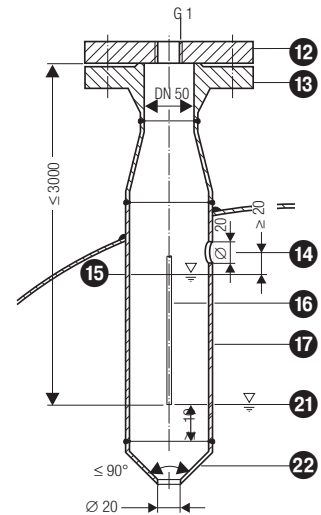


Fig. 5 Protection tube (provided on site) for installation inside the boiler

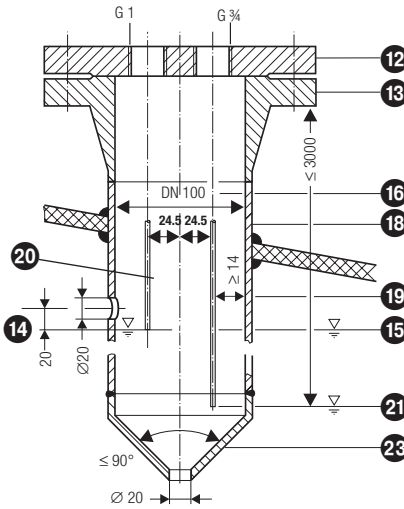


Fig. 6 Protection tube (provided on site) for installation inside the boiler and in combination with other GESTRA equipment

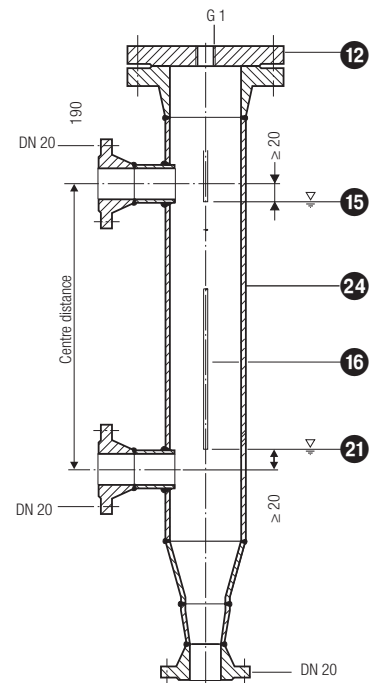


Fig. 7 External level pot

Supply in accordance with our general terms of business.

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