

NRG 16-38 S

## Water Level Limiter with Level Electrode NRG 16-38 S, NRG 16-39 S

### Description

The level electrode NRG 16-38S, NRG 16-39S is used in conjunction with level switch NRS 1-50 for water level limiting and level monitoring in steam boilers and (pressurised) hot-water installations on board of seagoing vessels, mobile offshore platforms or river boats.

Water level limiters switch off the heating when the water level falls below the set minimum level (low water).

### Function

The level electrode **NRG 16-38S** is an equipment combination consisting of

- 1 level electrode NRG 16-11 (water level limiter) and
- 1 level transmitter NRGT 26-1S (continuous level monitoring).

The level electrode **NRG 16-39S** is an equipment combination consisting of

- 2 level electrodes NRG 16-11 (water level limiter) and
- 1 level transmitter NRGT 26-1S (continuous level monitoring).

### Water level limiter NRG 16-11 / NRS 1-50

The water level limiter is an equipment combination consisting of one or two level electrode(s) NRG 16-11 and **one** level switch NRS 1-50.

When the water level falls below the low level, the level electrode is exposed and a low level alarm is triggered in the level switch NRS 1-50. This switchpoint "Low water level (LW)" is determined by the length of the electrode tip.

After the de-energizing delay has elapsed, the two output contacts of the level switch NRS 1-50 will open the safety circuit for the heating. The equipment has a factory set default de-energizing delay of 15 seconds to compensate for the movements of the ship.

The operation of the level electrode NRG 16-11 is based on the conductive measuring principle using the electrical conductivity of the water for signalling water level. The self-monitoring function ensures that an alarm will also be triggered if the electrode insulation is contaminated or has developed a leak or if there is a malfunction in the electrical connection.

The level electrode is installed inside steam boilers or (pressurised) hot-water systems. The protective tube mounted on site ensures correct functioning.

### Continuous level monitoring NRGT 26-1S

The level transmitter NRGT 26-1S is a compact-type system consisting of a capacitance level electrode with integrated level transmitter. The equipment works according to the capacitance measurement principle and provides a level proportional measuring current of 4-20 mA. The level transmitter continuously monitors the liquid level in steam boilers or hot-water installations.

### Technical Data

#### Design

##### ■ NRG 16-38S

- 1 Level electrode NRG 16-11
  - 1 STARLOCK® retaining ring 11.5/4.8
  - 1 Level transmitter NRGT 26-1S
- Both level electrodes are installed in one common flange DN 100.

##### ■ NRG 16-39S

- 2 Level electrodes NRG 16-11
  - 2 STARLOCK® retaining rings 11.5/4.8
  - 1 Level transmitter NRGT 26-1S
- All level electrodes are installed in one common flange DN 150.

#### Service pressure

PN 40, 32 bar at 238 °C

#### Mechanical connection

NRG 16-38 S: Flanged DN 100, PN 40, DIN 2635  
NRG 16-39 S: Flanged DN 150, PN 40, DIN 2635

#### Materials

Flange: 1.0460 / A 105  
Screw-in body / measuring electrode: 1.4571, X6CrNiMoTi17-12-2  
Electrode tip NRG 16-11: 1.4401, X5CrNiMo17-12-2  
Electrode insulation NRG 16-11: Gylon®  
Spacer disc NRG 16-11: PEEK  
Protection tube NRGT 26-1S: 1.0460 / A 105  
Electrode insulation NRGT 26-1S: PEEK  
Centering piece NRGT 26-1: PTFE

#### Lengths available

400 mm, 1000 mm, 1500 mm, 2000 mm

#### Level electrode NRG 16-11

#### Electrical connection

Four-pole connector, cable gland M 16

#### Protection

IP 65 to EN 60529

#### Admissible ambient temperature

Max. 70 °C

#### Level transmitter NRGT 26-1S

#### Supply voltage

24 V AC/DC.  
AC  $\pm 20\%$  (19.2 to 28.8 V)  
DC  $\pm 10\%$  /  $-45\%$  (13.5 to 26.5 Veff.)  
115 V  $\pm 10\%$ , 50/60 Hz (optional)  
230 V  $\pm 10\%$ , 50/60 Hz (optional)

#### Fuse

external slow-blow 250 mA  
internal thermal fuse  $T_{max} = 102^\circ\text{C}$

#### Power consumption

3 VA at 24 V DC  
5 VA at 24, 115, 230 V AC

#### Output

4 – 20 mA level proportional. Electrically insulated, max. load 500  $\Omega$

#### Response time to level changes

NRGT 26-1: below 5 sec.

# Water Level Limiter with Level Electrode NRG 16-38 S, NRG 16-39 S

## Technical Data – continued –

### Indicators and adjusters

- 2 red LEDs for “Level 0 %” or “Level 100 %” within the measuring range,
- 1 green LED for “Level between 0 % and 100 %” of the measuring range.
- 1 Code switch for setting the measuring range.
- 2 Adjustable resistors for small-percentage adjustment of the measuring range.
- 2 Terminal lugs for voltage measurement

### Cable entry

- Cable gland with integral cable clamp
- 2 x M20 x 1.5

### Protection

IP 65 to DIN EN 60529

### Max. admissible ambient temperature

Max. 70 °C

### Weight

- NRG 16-38 S: approx. 17 kg
- NRG 16-39 S: approx. 25.5 kg

### Approvals

- GL 40 601-01 HH DNV A-12022
- LR 01 / 20026 (E2) KR HMB 06190-MS 001
- ABS 01-HG 227959-PDA NK TA 11017M
- BV 11400 / B0 BV CCS HBT04721062-3

## Important Notes

- **NRG 16-11** (water level limiter)  
To connect the level electrode(s) use screened multi-core control cable with a min. conductor size of 0.5 mm<sup>2</sup>, e.g. LiYCY 4 x 0.5 mm<sup>2</sup>. Max. length 100 m with an electrical conductivity of the boiler water > 10 µS/cm at 25 °C.
- **NRGT 26-1S** (level transmitter)  
To connect the supply voltage please use flexible cable. To connect the signal output use flexible and screened control cable, min. conductor size 1,5 mm<sup>2</sup> and make sure that it is separated from the supply voltage cable.

## Order & Enquiry Specification

- GESTRA level electrode **NRG 16-38 S**, length E ..... or
- GESTRA level electrode **NRG 16-39 S**, length E .....

## Associated Equipment

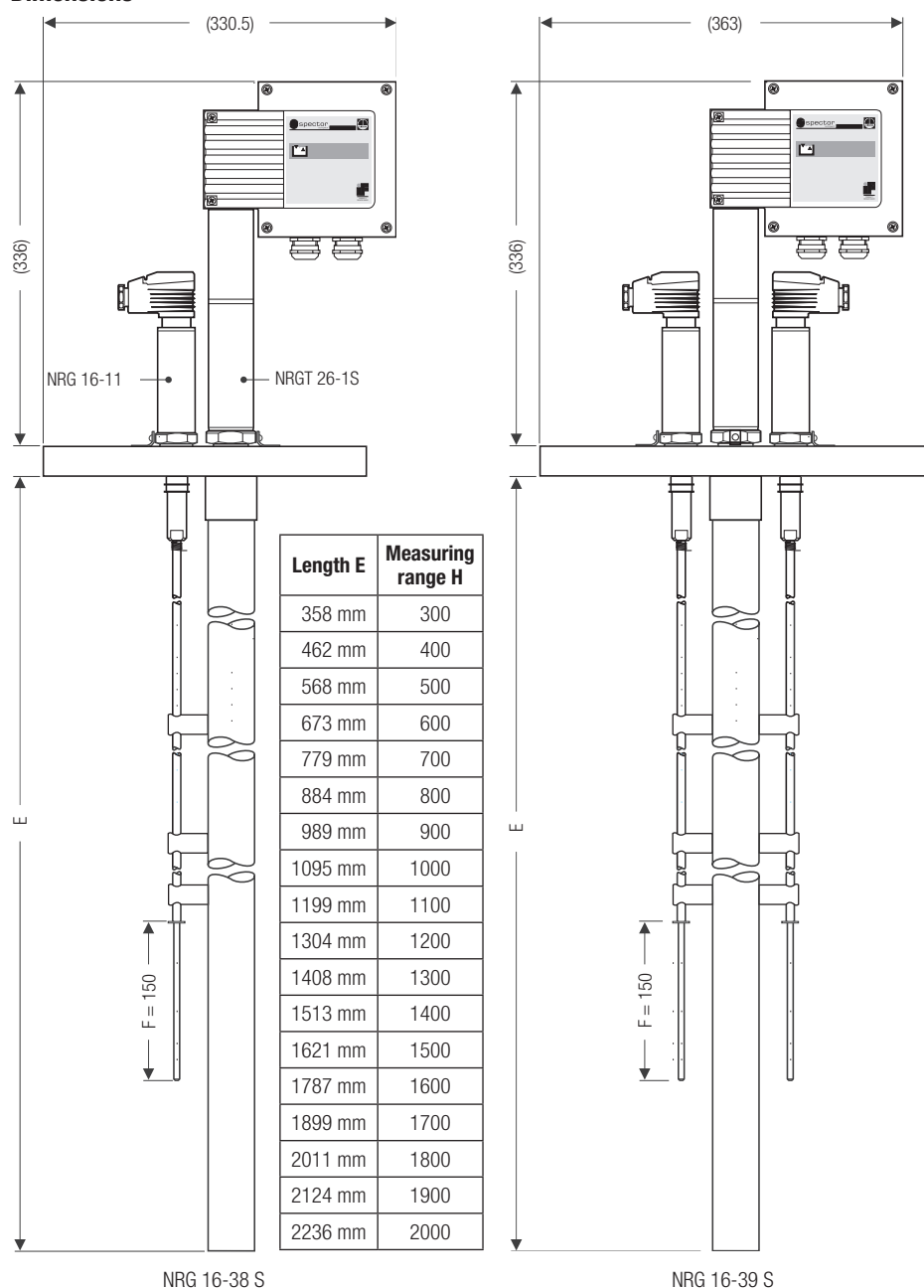
- GESTRA Level switch NRS 1-50 in conjunction with level electrodes NRG 16-11.
- GESTRA Universal controller KS 92-1 in conjunction with level transmitter NRGT 26-1S.

## Legende

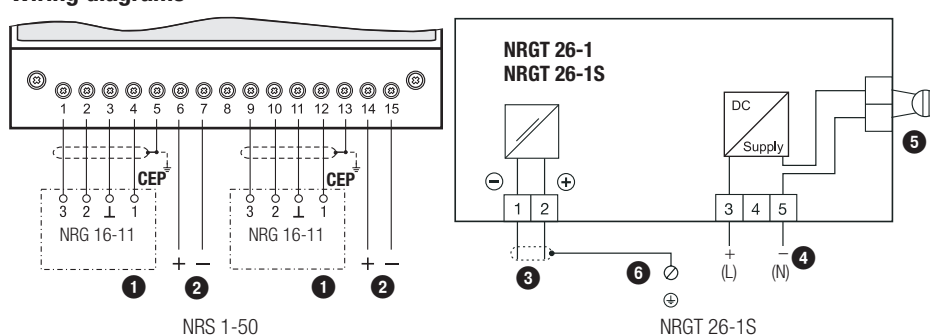
- 1 Niveauelektrode NRG 16-11
- 2 Standby Eingang, 24 VDC für Anschluss Überwachungslogik SRL 6-50
- 3 Istwert-Ausgang 4-20 mA, max. Bürde 500 Ω
- 4 Versorgungsspannung 24 V AC/DC optional 115/230 V AC
- 5 Temperatursicherung
- 6 Erdungsschraube im Gehäuse

Supply in accordance with our general terms of business.

## Dimensions



## Wiring diagrams



CEP Central earthing point in control cabinet



Master Distributor in China & Taiwan  
**Quko Int'l Development Limited**  
Unit B, 17/F, EGL Tower, 83 Hung To Road, Kwun Tong,  
Kowloon, Hong Kong, China  
Tel: (852) 2344 0201  
Email: sales@qukointl.com

Fax: (852) 2343 6078  
Website: www.qukointl.com



GESTRA