

GESTRA Steam Systems

Product Range B

Level Electrode With CAN Bus, CANopen Protocol Type NRG 26-40

NRG 26-40

System Description

The level electrode NRG 26-40 works according to the capacitance measurement principle. The NRG 26-40 is used for signalling different levels in conductive and non-conductive liquids:

- Water level maintained within the control band defined by two preset limits.

Use level electrode NRG 26-40 in combination with level switch type NRS 2-40 or further system components. The level data are transferred to the level switch or another system component via the CAN data bus. The controller and the electrode use the CANopen protocol.

Function

The principle of capacitance measurement is applied to determine the level. The electrode rod and the vessel wall form the plates of a capacitor. If the level of the dielectric located between these two capacitor plates changes, the current which flows through the plates changes proportionally to the level. A dielectric is by definition an insulating substance, which excludes many liquids such as water. In order to receive a useful measuring result the measuring rod, which is submerged to varying depths in the liquid, must be completely insulated. After the calibration of the zero point/measuring range (0%/100%) the level can be read off from a remote display unit. The level measuring range can be changed during operation.

At regular intervals the level electrode NRG 26-40 sends a data signal to the level switch NRS 2-40 or level controller NRR 2-40. The data transfer is effected by means of a CAN bus according to DIN ISO 11898 using the CAN open protocol.

Design

NRG 26-40 screwed 3/4" BSP EN ISO 228-1

P.T.O.

Wiring

Note that screened multi-core twisted-pair control cable is required, e. g. UNITRONIC® BUS CAN 2 x 2 x ... mm² or RE-2YCYV-fl 2 x 2 x ... mm².

Prefabricated control cable (with connector and coupler) of various lengths for connecting the equipment are available as accessories. The baud rate (data transfer rate) dictates the cable length between the bus nodes and the total power consumption of the sensor dictates the conductor size.

S 8	S 9	S 10	Baud rate	Cable length	Number of pairs and conductor size [mm ²]
OFF	ON	OFF	250 kBit/s	125 m	2 x 2 x 0.34
Factory setting					
ON	ON	OFF	125 kBit/s	250 m	2 x 2 x 0.5
OFF	OFF	ON	100 kBit/s	335 m	
ON	OFF	ON	50 kBit/s	500 m	on request, dependent on bus configuration
OFF	ON	ON	20 kBit/s	1000 m	
ON	ON	ON	10 kBit/s	1000 m	

The baud rate is set via a code switch. Reduce baud rate if cable is longer than specified in the table above. Make sure that all bus nodes feature the same settings.

To protect the switching contacts fuse circuit with 2.5 A (anti-surge fuse) or according to TRD regulations (1.0 A for 72 hrs operation).

When a max. cable length of more than 125 m (up to 1000 m) is desired, make sure to modify the baud rate accordingly.

Technical Data

Type Approval N°
TÜV · WR · 04-399

Max. service pressure
32 barg at 238 °C

Connections
Screwed 3/4" BSP, EN ISO 228-1

Materials
Case Die cast aluminium 3.2161(G AISi8Cu3)
Stem S. S. 1.4571 (X6CrNiMoTi17-12-2)
Measuring electrodes S. S. 1.4401 (X5CrNiMo17-12-2)
Electrode insulation PTFE

Length supplied
300 mm to 2000 mm

Supply voltage
18 – 36 V DC

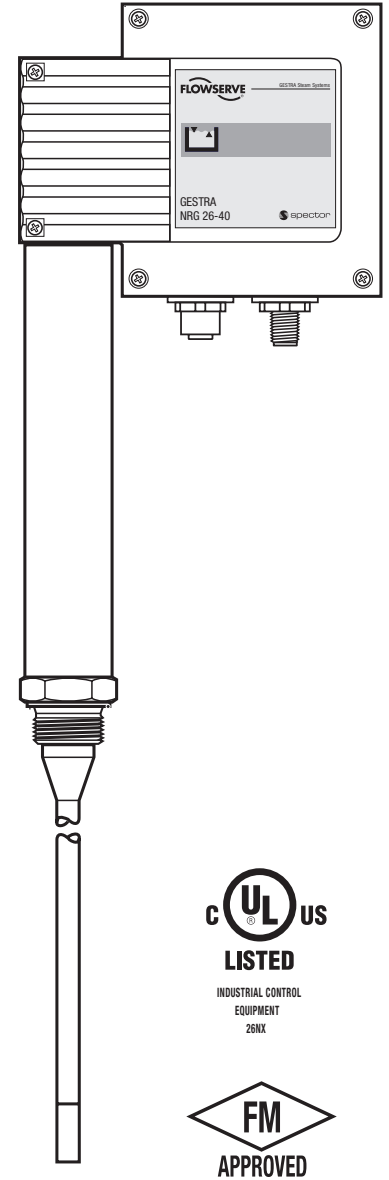
Current consumption
65 mA

Fuse
Thermal fuse T_{max} = 80 °C

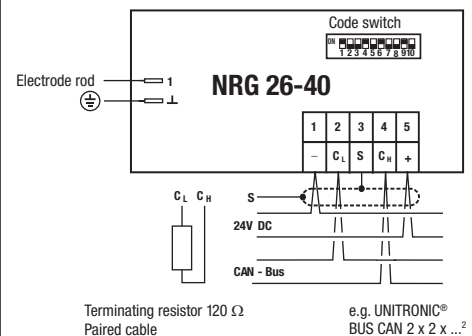
Hysteresis
-2 K

Data exchange
CAN bus acc. to DIN ISO 11898,
CANopen protocol

Indicators and adjustors
1 green LED for indication "CAN BUS COMMUNICATION"
1 red LED "BUS FAULT"
1 10-pole code switch for node ID and baud rate settings



Wiring Diagram



Level Electrode With CAN Bus, CANopen Protocol Type NRG 26-40

Technical Data – continued –

Electric connection

M 12 sensor connector, 5 poles, A-coded,
M 12 sensor jack, 5 poles, A-coded

Protection

IP 65 to DIN EN 60529

Max. admissible ambient temperature

70 °C

Weight

approx. 2.5 kg

Order and Enquiry Specification

GESTRA Level electrode type NRG 26-40
CANopen

Associated Level Switch/ Level Controller

- Level switch type NRS 2-40 CANopen
- Level controller type NRR 2-40 CANopen

Ancillary Equipment

- Visual display unit type URB 1, URB 2

Key

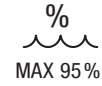
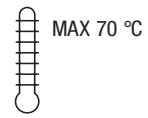
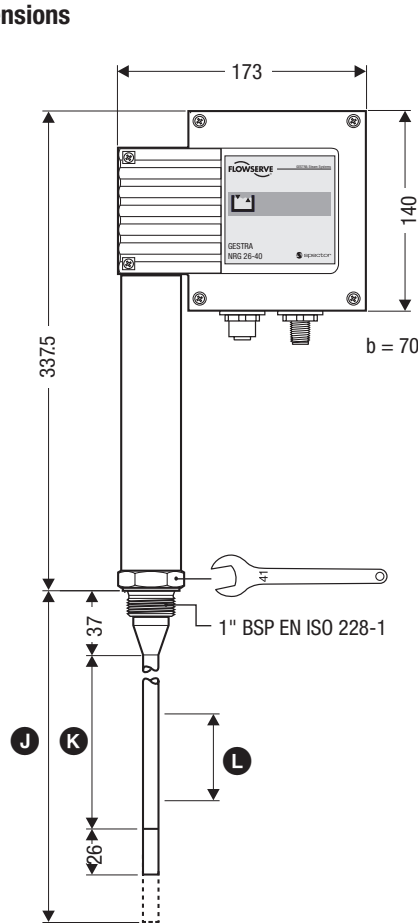
- A** Flange PN 40, DN 50 (2"), DIN ISO 2527
Flange PN 40, DN 100 (4"), DIN ISO 2527
- B** For the approval of the boiler standpipe with connecting flange the relevant regulations must be considered.
- C** Vent hole
- D** High water (HW)
- E** Electrode rod $d = 15$ mm
- F** Protection tube DN 80 mm
- G** Electrode distance
- H** Low water (LW)
- I** Reducer K-88.9 x 3.2 – 42.4 x 2.6 W
- J** Max. length of installation at 238 °C
- K** Measuring range
- L** Adjustable control range

ATEX (Atmosphère Explosible)

According to the European Directive 94/9/EC the equipment must **not** be used in explosion-risk areas.

Supply in accordance with our general terms of business.

Dimensions



J	K
373	300
477	400
583	500
688	600
794	700
899	800
1004	900
1110	1000
1214	1100
1319	1200
1423	1300
1528	1400
1636	1500
2156	2000

Fig. 1 NRG 26-40

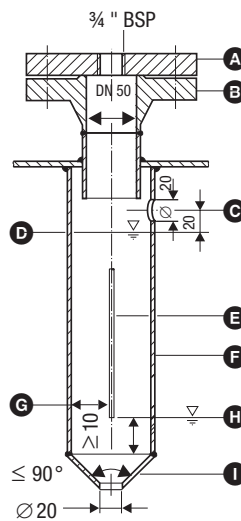


Fig. 2 Protection tube for installation of electrode inside the boiler

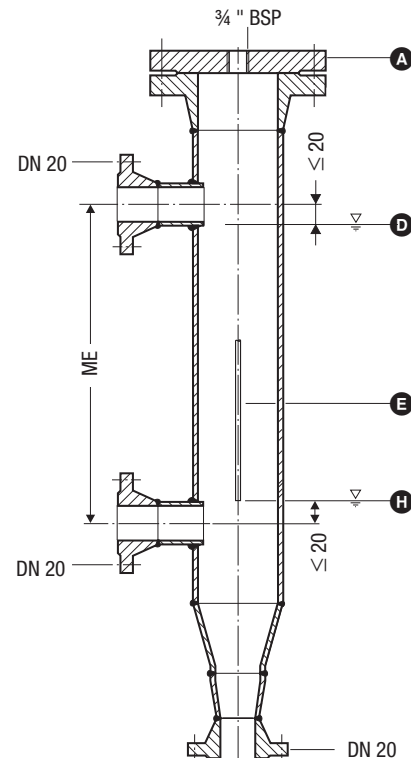


Fig. 3 External measuring pot

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