

NRG 26-40

Level Monitoring with CAN Bus, CANopen protocol NRG 26-40

Description

The level electrode NRG 26-40 is used for continuous level monitoring in steam boilers and (pressurized) hot-water installations or in condensate and feedwater tanks.

In conjunction with the level switch NRS 2-.. and the level controller NRR 2-.. the electrode can be used as water level controller with MIN/MAX alarm.

The level electrode can be used in combination with the following level switches/controllers: NRS 2-40 and NRR 2-40.

Function

The level electrode NRG 26-40 consists of a level measuring electrode and an electronic module in the terminal box.

The level electrode works according to the capacitance measurement principle and translates the level changes into a data telegram, with the length of the electrode rod determining the measuring range.

The level electrode is installed inside steam boilers, vessels or in an external level pot. If the equipment is installed inside the boiler or vessel, a protection tube provided on side ensures correct functioning.

The level electrode 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.

The level electrode can be used in electrically conductive and non-conductive fluids.

Directives and Standards

VdTÜV Bulletin "Wasserüberwachung 100" (= Water Monitoring 100)

The level electrode NRG 26-40 in conjunction with the following level switches / controllers is type approved according to VdTÜV Bulletin "Wasserstand (= Water Level) 100": NRS 2-40 and NRR 2-40.

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

PN 40, 32 bar at 238°C

Mechanical connection

NRG 26-40: Screwed G $\frac{3}{4}$ A, ISO 228

Materials of construction

Screw-in body: 1.4571, X6CrNiMoTi17-12-2

Electrode rod insulation: PTFE

Terminal box: 3.2161 G AISi8Cu3

Length of installation / measuring range

NRG 26-40			
Length of installation at 238° C	Measuring range	Length of installation at 238° C	Measuring range
373	300	1110	1000
477	400	1214	1100
583	500	1319	1200
688	600	1423	1300
794	700	1528	1400
899	800	1636	1500
1004	900	2156	2000

Weight

NRG 26-40: approx. 2.5 kg (NRG 26-40 L=1000mm)

Electronic module

Supply voltage

18-36 V DC

Current consumption

65 mA

Fuse

Thermal fuse $T_{max} = 80$ °C

Hysteresis

-2 K

Data exchange

CAN bus to DIN ISO 11898, CANopen protocol

Attenuation of signal output

19 sec.

Indicators and adjusters

1 10-pole code switch for node ID and baud rate setting

1 green LED "Communication CAN bus"

1 red LED "Malfunction in bus"

Electrical 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

Max. 70 °C

Storage and transport temperature

- 40 to + 80 °C

Approvals:

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

Type approval: TÜV · WR · XX-399 (see name plate)

UL/cUL (CSA) Approval UL 508 and CSA C22.2

No. 14-13, Standards for Industrial Control Equipment.

File E243189.

Level Monitoring NRG 26-40

Important Notes

Installation

■ One level electrode NRG 26-40 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 angle of inclination of the electrode must not exceed 45°, with the length of the electrode rod being limited to 688 mm.

■ Do not cut the electrode rod.

Electrical connection

■ The level electrode NRG 26-40 is equipped with a M 12 sensor connector and a M 12 sensor jack, both A-coded and with 5 poles. For connecting the electrode and wiring the CAN bus devices control cable assemblies (with plug and socket) of various lengths are available as add-on equipment.

■ **Note that the recommended control cables are not UV-resistant and, if installed outdoors, must be protected by a UV-resistant plastic tube or cable duct.**

■ If you do not want to use the control cable assemblies you must use screened multi-core twisted-pair control cable for the bus line, e. g. UNITRONIC® BUS CAN 2 x 2 x ... mm² or RE-2YCYV-fl 2 x 2 x ... mm². In addition, connect at the electrode end a screened male or female connector to the control cable.

■ The baud rate (data transfer rate) dictates the cable length and size between the bus nodes. The total power consumption must also be taken into consideration when selecting the conductor size. The total power consumption is obtained from the number of bus nodes. If the cable length between the steam boiler and the control cabinet exceeds 15 m, we recommend that you fit a branching box that is resistant to electromagnetic interference (stock code 1501214) and use a control cable with a larger conductor size for the distance to the control cabinet.

■ Connect the screen only once to the central earthing point (CEP) in the control cabinet.

■ Make sure that the control cable is segregated and runs separately from power cables.

Key

- 1 Max. length of installation at 238 °C
- 2 Measuring range
- 3 Electrode thread G ¾ A, ISO 228
- 4 Thermal insulation, provided on site, d = 20 mm (outside of thermal insulation of steam boiler)
- 5 M 12 sensor connector, 5 poles, A coded, M 12 sensor jack, 5 poles, A code
- 6 Fixing screws for terminal strip
- 7 CAN bus line, twisted pair control cable
- 8 Terminating resistor 120 Ω, RES 1 or RES 2
- 9 Pin 3: Supply voltage 24 V DC- (black)
- 10 Pin 4: CAN-data line C_H (white)
- 11 Pin 1: Screen
- 12 Pin 5: CAN-data line C_L (blue)
- 13 Pin 2: Supply voltage 24 V DC+ (red)

Dimensions

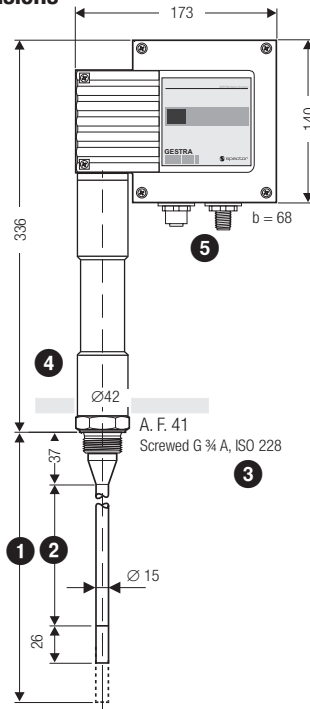


Fig. 1

NRG 26-40

NRG 26-40	
1	2
Length of installation at 238° C	Measuring range
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

Electrical connection

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	2 x 2 x 0.75
ON	OFF	ON	50 kBit/s	500 m	on request, depending on bus configuration
OFF	ON	ON	20 kBit/s	1000 m	
ON	ON	ON	10 kBit/s	1000 m	

Fig. 2

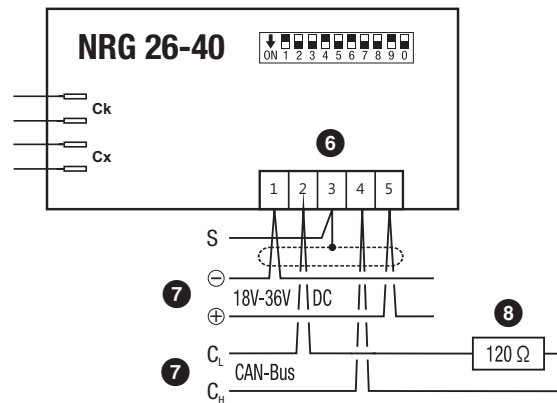


Fig. 3

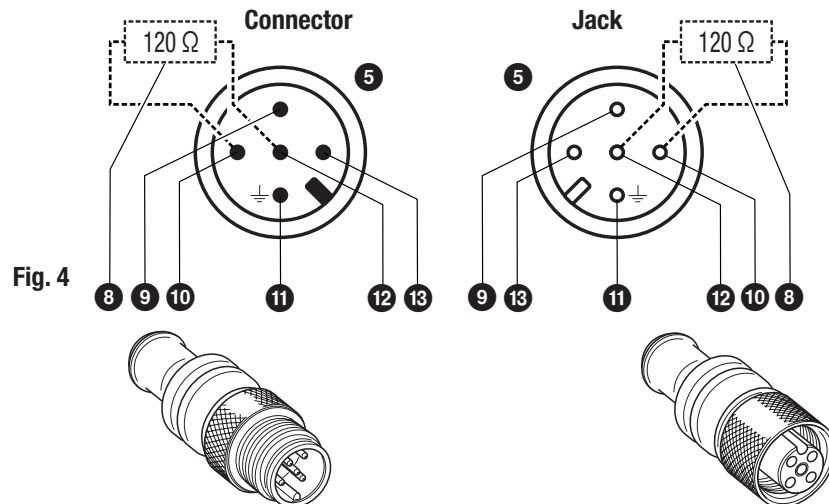


Fig. 4

Fig. 5 RES 1

Fig. 6 RES 2

Level Monitoring
NRG 26-40

Order & Enquiry Specification

GESTRA Level Electrode NRG 26--40
PN 40, connection G 3/4
Length of installationmm
Fluid

Associated switch / controller

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

Key

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

Examples of installation

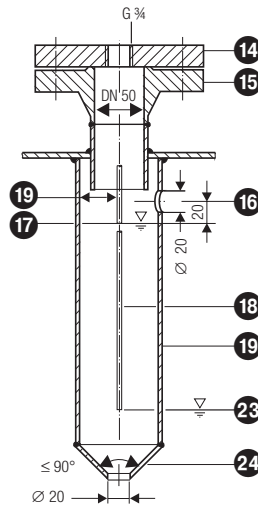


Fig. 4 Protection tube (provided on site) for installation inside the boiler

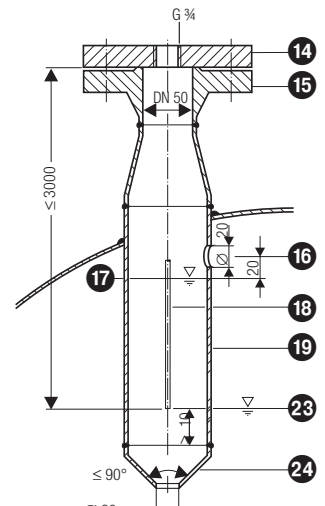


Fig. 5 Protection tube (provided on site) for installation inside the boiler

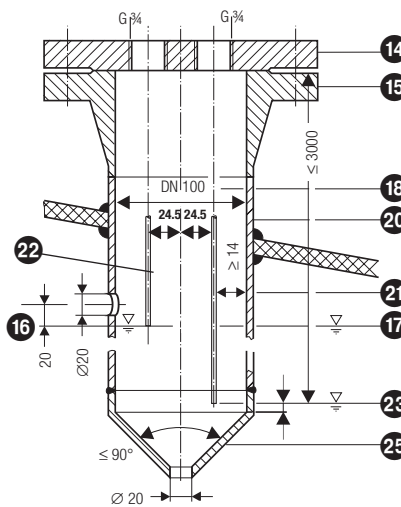


Fig. 6 Protection tube (provided on site) for installation inside the boiler and in combination with other GESTRA equipment

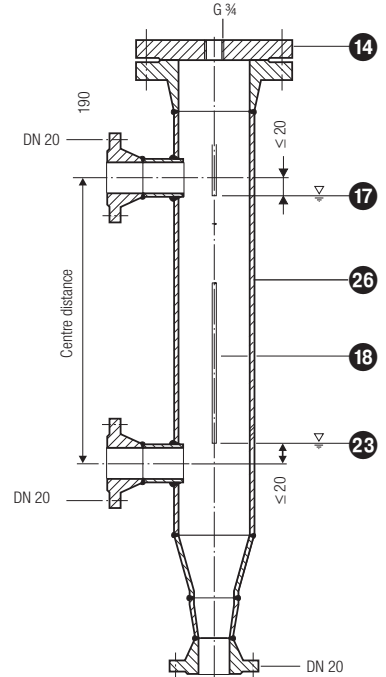


Fig. 7 External level pot

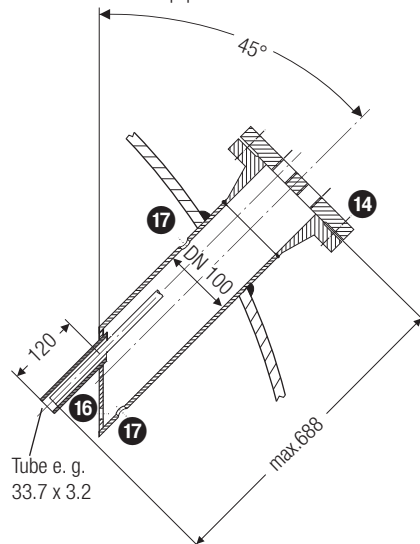


Fig. 8 Inclined installation, e. g. in steam boilers

Supply in accordance with our general terms of business.

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