

Test station NRS 1-3

Test Station

NRA 1-3

with CAN Bus Interface

Description

Use test station NRA 1-3 only in conjunction with electrodes NRG 16-19, NRG 16-27 and NRG 16-28 for monitoring steam traps for banking-up of condensate and loss of steam.

It is designed for connecting up to max. 16 measuring electrodes and a temperature sensor for detecting the plant temperature.

The measuring electrodes are either fitted directly in the steam trap or in a separate test chamber, and monitor the steam trap for banking-up of condensate and loss of live steam.

The measuring electrodes NRG 16-27, NRG 16-28 feature an additional temperature sensor for detecting the condensate temperature.

Function

The following electrodes can be used for monitoring steam traps:

- Measuring electrode NRG 16-19 for detecting banking-up of condensate or loss of live steam (electrode exposed or submerged).
- Measuring electrode NRG 16-27, NRG 16-28 for detecting steam loss and banking-up of condensate by measuring the condensate temperature by means of an integrated temperature sensor.

Three LEDs indicate banking-up of condensate, steam loss and malfunction in measuring electrode (cable disruption, short circuit) and a three-digit seven-segment display shows the number of the faulty steam trap. If more than one steam trap are defective the numbers of the faulty traps are indicated one after another.

If banking-up of condensate, steam loss or malfunction in measuring electrode is indicated, an output relay for the collective alarm will also be energised.

When using the measuring electrodes NRG 16-27, NRG 16-28 you can set the switchpoint for the message "Banking-up of condensate" as a function of the plant temperature that is detected separately or of the temperature measured in the steam trap.

The seven-segment display indicates every 6 months the maintenance interval of the measuring electrodes in the form of an error code.

The seven-segment display indicates also status and error messages.

For processing the measured values by a visual display unit – e. g. Spectorcontrol – the test station NRA 1-3 is equipped with a CAN bus interface. The CANopen protocol is used for data exchange. The test station features an electronic address – the node ID. The four-core bus cable serves as power supply and data highway for digital data exchange. The CAN address (node ID) can be set between 1 and 127.

Design

The housing of the test station NRA 1-3a is designed for wall mounting. The four fixing holes are freely accessible after opening the base part of the enclosure.

The housing of the test station NRA 1-3e is designed for panel mounting, panel cut-out: 236 x 151 mm.

Technical data

Input / output

CAN bus interface with power supply 24 V DC +/- 20 %, short-circuit protected

Data exchange

CAN bus to ISO 11898, CANopen protocol

Fuse

external, 200 mA, slow-blow

Power consumption

max. 4 W

Inputs

16 inputs for measuring electrodes

NRG 16-19, NRG 16-27, NRG 16-28

1 input for temperature sensor, e. g. TRG 5-53, measuring insert PT 100

max. length of connecting cables 100 m

Output

1 volt-free relay contact, 4 A 250 V AC /

30 V DC $\cos \varphi = 1$ (IEC 61810)

Contact material AgNi 0,15

Inductive loads must be provided with interference suppressors (RC combinations) as specified by the manufacturer.

Electrode voltage

12 V

Setting for banking-up of condensate

Difference between condensate and plant temperatures dts 1 K to 100 K, adjustable in steps of 1 K (mode 1 and 6)

Difference between condensate temperature and switchpoint "Banking-up of condensate"

dTc 1 K to 100 K,

adjustable in steps of 1 K (mode 2 and 7)

Switchpoint "Banking-up of condensate" 0 °C to 255 °C, adjustable in steps of 5 K (mode 2 and 7)

Indicators and adjustors

1 three-digit seven-segment LED display, red, for indicating faulty steam traps and status and error messages

3 LEDs for indicating banking-up of condensate, steam loss and malfunction in measuring electrode

3 operating buttons

1 ten-pole code switch for system configuration

Design

NRA 1-3a for wall mounting

NRA 1-3e for panel mounting

Housing material: ABS

Protection

NRA 1-3a: IP 65 to EN 60529

NRA 1-3e: Front: IP 65 to EN 60529, back: IP 00

Protection class

NRA 1-3a: 2 (completely insulated)

Weight

approx. 2 kg

Cable gland / Electrical connection

Cable gland with integral cable clamp, 8 x M 16 x 1.5 mm

18 five-pole screw-type terminals, conductor size 1.5 mm²

1 three-pole screw-type terminal, conductor size 1.5 mm²

Ambient temperature

when system is switched on: 0°...55 °C

during operation: -10°... 55 °C

Test Station NRA 1-3

P. T. O.

Technical Data - continued -

Transport temperature

-20°... +80 °C (<100 hours), defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

Storage temperature

-20°... +70 °C, defrosting time of the de-energized equipment before it can be put into operation: 24 hours.

Relative humidity

max. 95 %, no moisture condensation

Site altitude

max. 2000 m

Important Notes

Connecting supply voltage

The equipment is supplied with 24 V DC and fused with an external slow-blow fuse 200 mA. Please use a safety power supply unit with safe electrical isolation.

The power supply unit must be electrically isolated from dangerous contact voltages and must meet at least the requirements on double or reinforced isolation according to one of the following standards: DIN EN 50178, DIN EN 61010-1, DIN EN 60730-1 or DIN EN 60950.

Connecting line of temperature sensor for detecting the plant temperature

For the connecting line use screened three-core cable, e.g. Ölflex 110 CH, manufactured by Lapp, 3 x 0.5 mm². Max. cable length between temperature sensor and test station NRA 1-3: 100 m. Please connect screen to sensor.

Connecting line of measuring electrodes NRG 16-19

The measuring electrode comes with a 2 m long connecting cable and can be directly connected to the test station NRA 1-3. To extend the cable use screened two-core cable, e.g. Ölflex 110 CH, manufactured by Lapp, 2 x 0.5 mm². Max. cable length between measuring electrode and test station NRA 1-3: 100 m.

NRG 16-27, NRG 16-28

For the connecting line use screened five-core cable, e.g. Ölflex 110 CH, manufactured by Lapp, 5 x 0.5 mm². Max. cable length between measuring electrode and test station NRA 1-3: 100 m.

Connecting cable assemblies (with connector) of various lengths are available as add-on equipment.

LV (Low Voltage) Directive and EMC (Electromagnetic Compatibility)

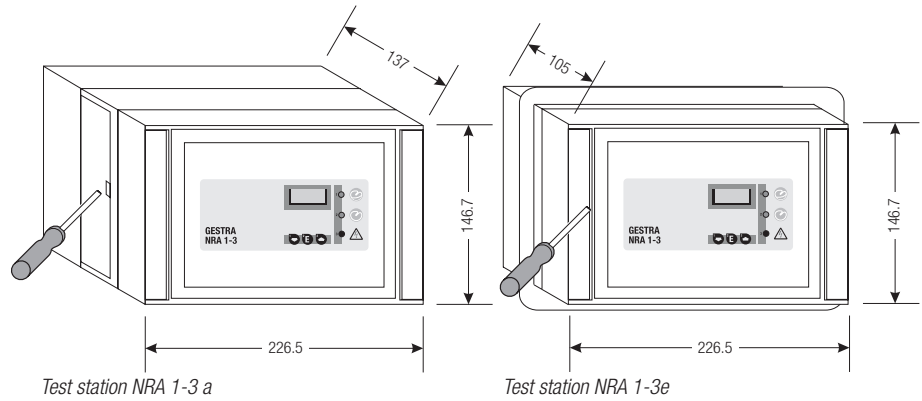
The equipment meets the requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

ATEX (Atmosphère Explosible)

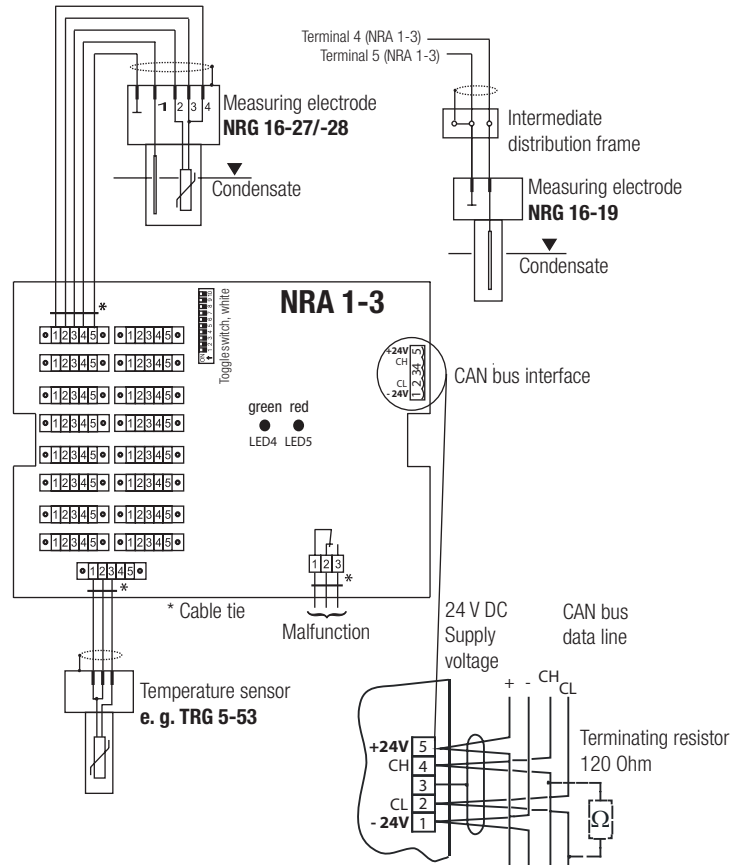
According to the European Directive 94/9/EC the equipment must **not** be used in potentially explosive areas.

Supply in accordance with our general terms of business.

Dimensions



Electrical Connection



Order & Enquiry Specification

Test station NRA 1-3 for continuous steam trap monitoring

For detecting steam loss and banking-up of condensate

Housing for wall mounting or panel mounting

16 inputs for measuring electrodes with integrated temperature sensor Pt 1000

or for measuring electrodes without temperature sensor
1 input for temperature sensor Pt 100 for measuring the plant temperature

1 output for collective alarm

1 three-digit seven-segment display, 3 status LEDs and operating pushbuttons on front

CAN bus interface and power supply 24 V DC,

CAN bus to ISO 11898, CANopen protocol

7 different operating modes for processing the

measured values

- banking-up of condensate detected either by temperature sensor or - without delay - by measuring electrode
- suitable for all types and makes of steam traps
- limits are detected automatically
- individually adjustable limits
- automatic detection of operating mode so as to prevent false alarms during start-up and shut-down
- alarm history

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