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Subject to change.

All dimensions in mm (inches).

All prices in Euro, excluding VAT.

All prices are EXW Betzigau, excluding packaging costs.

Valid: From 01.04.2016 until 31.03.2017, unless otherwise agreed.

By publishing this selection list all other lists become invalid.

We assume no liability for typing errors.

Different variations to those specified are possible. Please contact our technical consultants.

Overview

Features

Continuous level measurement of solids applications

Process

- Independent of bulk material properties
- Accurate measurement

Service

- Simple installation and commissioning
- Rope and tape version with long service life
- Low maintenance

Approvals

- Approval for use in Hazardous Areas
- 2011/65/EU RoHS conform

Mechanics

- Measurement range up to 30m (100ft)
- 1 1/2" process connection possible
- Aiming flange to be mounted directly on a flat silo roof
- Internal tape cleaner for difficult materials

Electronics

- Micro processor controlled measurement
- Diagnostic possibilities
- Output 4-20mA/ Modbus
- Two programmable Relay
 (can be used as Counting/reset pulse output
 or as Failure / Upper stop position)



NB 4100
 Rope version
 Fig. with flange DN 100
 and PVC sensor weight



NB 4200
 Tape version
 Fig. with thread connection
 and stainless steel sensor
 weight



NB 4100
 Rope version
 Fig. with aiming flange and
 stainless steel sensor weight
 with pin

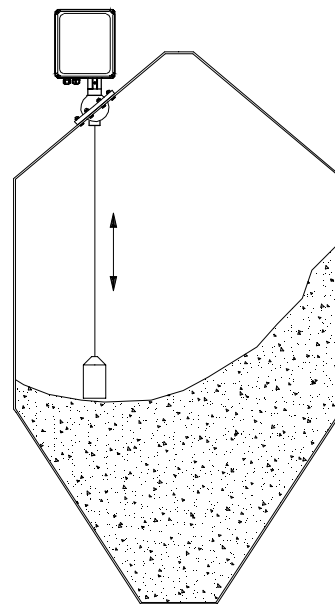
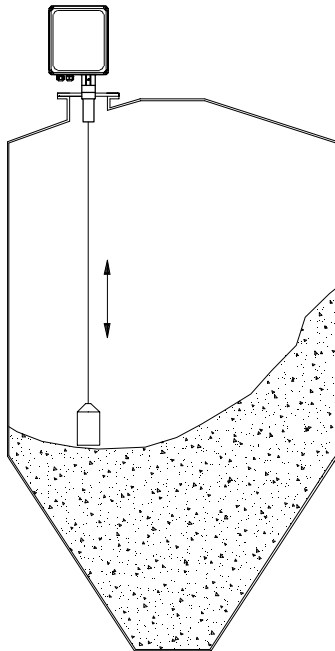
Specification / application

Specification

| | | |
|--------------------|----------------------|---|
| Process | Measurement range | 15m (50ft) or 30m (100ft) |
| | Process temperature | 80°C (176°F) |
| | Process overpressure | -0,2 .. +0,2 bar (-3.0 .. + 3.0 psi) |
| | Min. powder density | >300 g/l (18 lb/ft³) |
| Electronics | Power supply | AC version 115V or 230V 50-60Hz DC version 20 .. 28V |
| | Output | 4-20mA |
| | | 2 relais (optional) |
| | | Modbus RTU |
| Approvals | Dust Ex | ATEX 1/2D |
| | | FM Cl. II, III Div. 1, TR-CU |
| | Ordinary Location | CE, FM, TR-CU |

Application

Solids measurement



Aiming flange
screwed directly
to the silo roof

NB 4000

NB 4100

Rope version
 (fig. with flange DN 100
 and PVC sensor weight)



NB 4200

Tape version
 (fig. with thread connection
 and stainless steel sensor
 weight)



Cable entries (by default)

Depending on selected version (options see pos. 26):

| | | |
|-----------|----------------------|---------------------------|
| CE, ATEX, | Screwed cable gland: | 1x M25x1.5 and 1x M20x1.5 |
| TR-CU | Blindplug: | 1x M25x1.5 and 1x M20x1.5 |

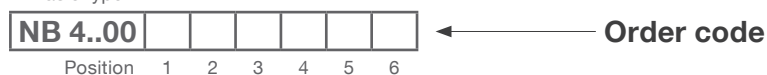
| | | |
|----|----------------------------|-----------------------------|
| FM | Open conduit ANSI B1.20.1: | 1x NPT 3/4" and 1x NPT 1/2" |
| | Blindplug: | 1x NPT 3/4" and 1x NPT 1/2" |

Dimensions see page 7

NB 4000

| | | | | | | | |
|--------|-------------------------------------|---|----------------------|-------|--|--|---|
| pos. 1 | Basic type | | | | | | |
| | C | NB 4100 | Rope version | ..... |  |  | • |
| | D | NB 4200 | Tape version | ..... |  |  | • |
| pos. 2 | Certificate | | | | | | |
| | 0 | CE ⁽¹⁾ | | | | | • |
| | W | ATEX II 1/2 D | ..... |  |  |  | • |
| | M | FM general purpose | ..... |  |  |  | • |
| | N | FM Class II, III Div.1 Group E-G | ..... |  |  |  | • |
| | E | TR-CU DIP A20/ A21 | ..... |  |  |  | • |
| pos. 3 | Measurement range | | | | | | |
| | 1 | 15m (50ft) | ..... |  |  |  | • |
| | 2 | 30m (100ft) | ..... |  |  |  | • |
| pos. 4 | Power supply/ Signal output | | | | | | |
| | 1 | 230V 50-60Hz | 4-20mA | ..... |  |  | • |
| | 4 | 230V 50-60Hz | Modbus | ..... |  |  | • |
| | 2 | 115V 50-60Hz | 4-20mA | ..... |  |  | • |
| | 5 | 115V 50-60Hz | Modbus | ..... |  |  | • |
| | 3 | 20 .. 28V DC | 4-20mA | ..... |  |  | • |
| pos. 5 | Process connection | | | | | | |
| | A | Thread R 1 1/2 inch | tapered DIN 2999 | ..... |  |  | • |
| | B | Thread NPT 1 1/2 inch | tapered ANSI B1.20.1 | ..... |  |  | • |
| | X | Flange DN100 PN16 (EN1092-1) and flange 4" 150lbs ANSI B16.5 (unit is fitting to this flange) | ..... |  |  |  | • |
| | Y | Flange 2" and flange 3" 150lbs ANSI B16.5 (unit is fitting to this flange) | ..... |  |  |  | • |
| | W | Aiming flange (to be mounted directly to the silo roof) ⁽⁵⁾ | | | | | • |
| pos. 6 | Sensor weight ⁽²⁾ | | | | | | |
| | Y | without ⁽³⁾ | | | | | • |
| | A | PVC ⁽⁴⁾ | | | | | • |
| | C | Stainless steel | ..... |  |  |  | • |
| | E | Folding cover | ..... |  |  |  | • |

Basic type



All positions are available in special design (use code "Z").

⁽¹⁾ TR-CU (Ordinary Locations) included

⁽²⁾ For use in Hazardous Locations (Dust Ex): It must be ensured, that no static discharge from the material surface can occur. Sensor weights, which can be used in case of possible static discharge, on request.

⁽³⁾ Only for tape version. Including mounting set for sensor weight (see page 9: Sensor weights)

⁽⁴⁾ Does not fit through a 1 1/2 inch nozzle, must be mounted after fixing the unit to the silo

⁽⁵⁾ Mounting without a socket. Including fixing material (screws, sealing etc.)

Options / Accessories

Options

- pos. 11 x **Guarantee extension to 5 years** •
 Wear and tear parts rope/tape and motor not included

- pos. 21 **Weather protection cover** •
 For Ex only approved for Zone 22 or Division 2

- pos. 22 **Internal heater** •
 Needed for: ambient temp. <-20°C (-4°F) or condense water inside silo or wet process atmosphere
 (Note: <-20°C (-4°F) with ATEX, FM Class II or TR-CU on request possible)

- pos. 23 **Length of socket pipe** •
 - 1 200mm (7.87") •
 - 2 500mm (19.7") •
 - 3 1000mm (39.4") •

- pos. 24 **Pin for sensor weight** •
 POM or stainless steel (in accordance to selected sensor weight material, not for pos.6 E)

- pos. 25 **Relais output** •
 Two relais (possible indication; Failure, reset pulse, counting pulse, upper stop position)
 Nicht für Modbus (Pos. 4 4,5)

- pos. 26 **Cable entry** •
 Selection of the following options only necessary, if a deviation from the default cable gland / conduit is required:
 - 0 Screwed cable gland 1x M25x1,5 + 1x M20x1,5 + blindplug 1x M25x1,5 + 1x M20x1,5 •
 - A Conduit 1x NPT 3/4"+ 1x NPT 1/2" + blindplug 1x NPT 3/4"+ 1x NPT 1/2" •

- pos. 27 **Preset fieldbus address (Modbus)** •
 Enables easy commissioning with Nivotec Level Monitoring System.
 Preset from address = "1" to "amount of ordered units". Address label on enclosure.
 Termination resistor set on unit with highest address. •

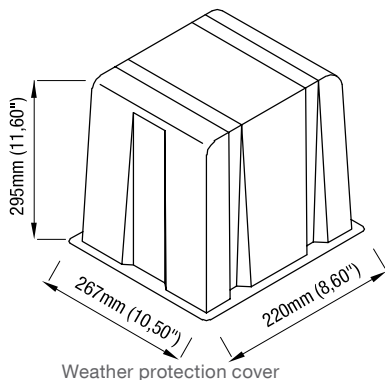
Accessories

- Fixing material for mounting the unit on a flange**
- zu107000 4 bolts M16x60, 8 washers, 4 nuts. Stainless steel. •

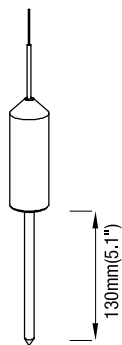
- Sealings for mounting the unit on a flange**
- di300125 Flange sealing for DN100 PN16 / 4" (neoprene) •
- di300127 Flange sealing for 2" / 3" 150lbs (neoprene) •

- Adapter NPT 1 1/2" to NPT 3"**
- zu103100 Thread tapered ANSI B1.20.1, aluminium •

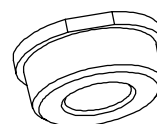
- Cable gland**
- em400589 Cable gland with 2 inputs. M25x1,5, clamping range 2x4,5-7mm, -20 .. +70°C •



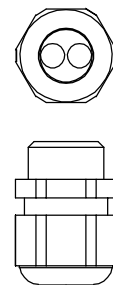
Weather protection cover



Pin for sensor weight
 POM or 1.4305 (303)



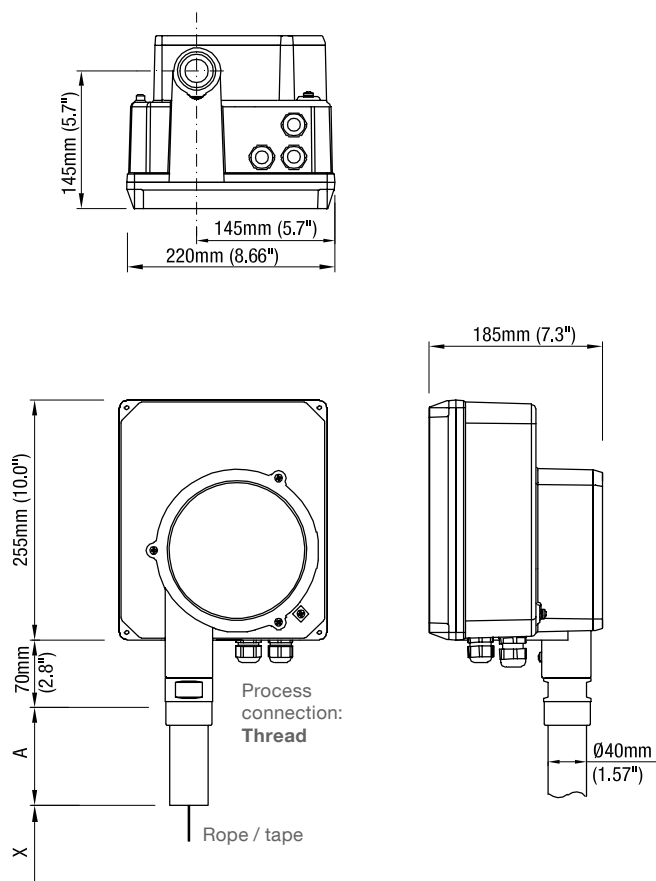
Adapter NPT 1 1/2" to NPT 3"



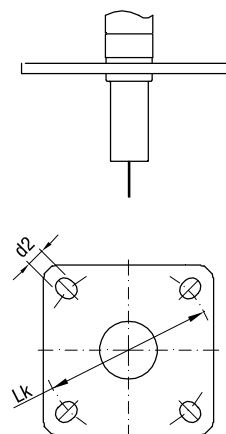
Cable gland with 2 inputs

Dimensions and materials

Basic unit

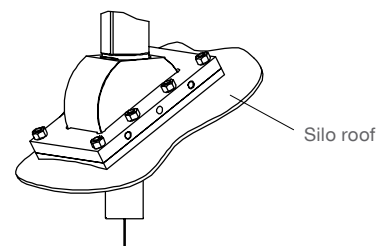


Process connection: **Flange**



Process connection: **Aiming flange**

To be screwed directly to the silo roof
 0°-50° adjustable
 Including screws, nuts and sealing



Flange plate outside dimensions:
 Width x Height: 120mm x 180mm (4.7"x7.1")

Dimensions

| | |
|---|--|
| X = Length to bottom of sensor weight (in upper stop position, see next page) | |
| A = Length of socket pipe 100mm (3.9") Optional 200mm (7.9") / 500mm (19.7") / 1000mm (39.4") | |
| Flanges | |
| fitting to: DN100 PN16 / 4" 150lbs | Lk = ϕ 180-190.5mm (7.1-7.5") slot d2 = ϕ 19mm (0.75") |
| fitting to: 2" / 3" 150lbs | Lk = ϕ 120.7-152.4mm (4.75-6.0") slot d2 = ϕ 19mm (0.75") |
| Rope | ϕ 1,0mm (0.04") |
| Tape | 12x0.2mm (0.47x0.008") |

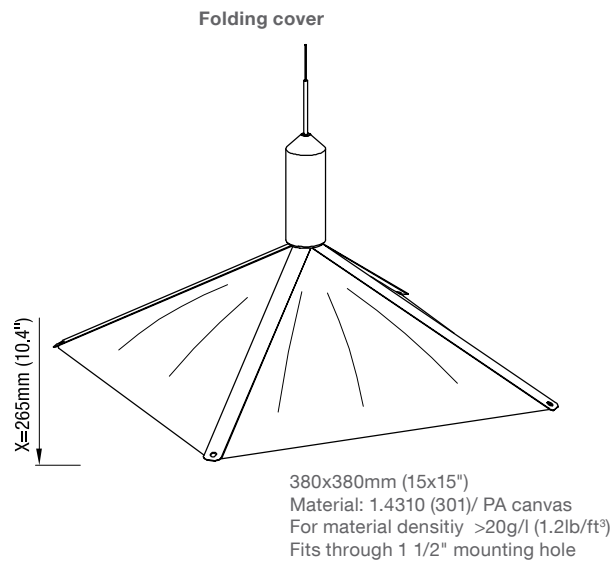
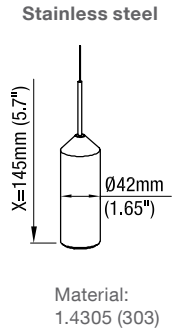
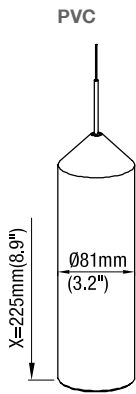
Materials

| | |
|------------------------|--------------------------|
| Housing outside | Aluminium, powder coated |
| Housing inside | Aluminium |
| Thread / Flange | Aluminium |
| Aiming flange | Aluminium / 1.4301 (301) |
| Rope | 1.4401 (316) |
| Tape | 1.4310 (301) |

Dimensions and materials

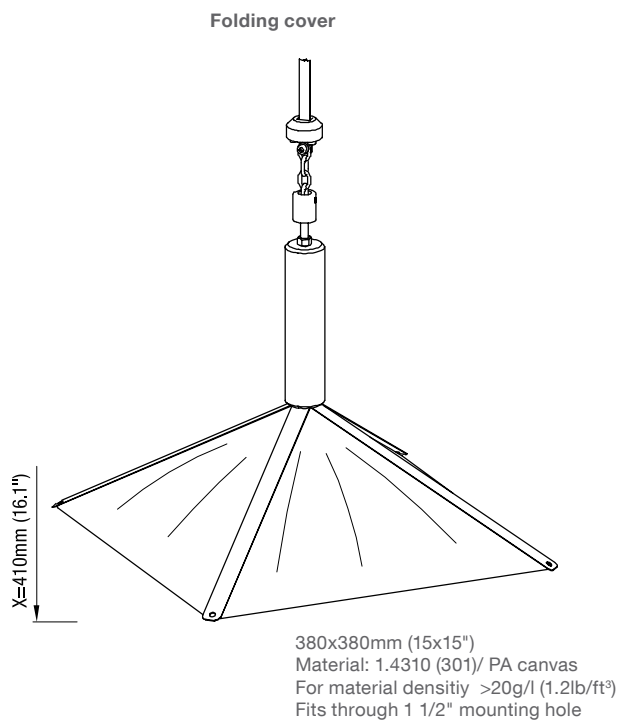
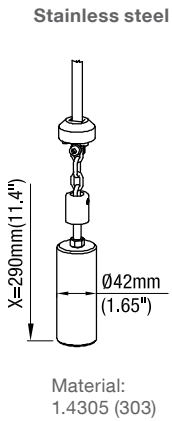
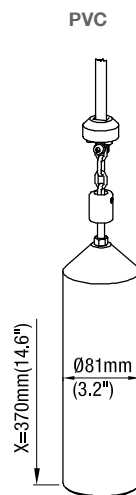
Sensor weights

Rope version



All sensor weights:
 1,6 kg (3.5 lbs)

Tape version



Fixing elements between tape and sensor
 weight: aluminium / 1.4305 (303)

All sensor weights:
 1,6 kg (3.5 lbs)

Spare parts

Roller

| | | |
|-----------------|---------------------------------|---|
| sl103239 | Rope roller with 15m rope | • |
| sl103240 | Rope roller with 30m rope | • |
| sb103239 | Tape roller with 15m tape | • |
| sb103240 | Tape roller with 30m tape | • |

Sensor weights

All sensor weights are delivered incl. mounting parts for proper fixing to the rope/tape and excl. rope/tape

For rope version:

| | | |
|-----------------|-----------------------------------|---|
| sl103231 | PVC without pin | • |
| sl103232 | PVC with pin | • |
| sl103233 | Stainless steel without pin | • |
| sl103234 | Stainless steel with pin | • |
| sl103235 | Folding cover | • |

For tape version:

| | | |
|-----------------|-----------------------------------|---|
| sb103231 | PVC without pin | • |
| sb103232 | PVC with pin | • |
| sb103233 | Stainless steel without pin | • |
| sb103234 | Stainless steel with pin | • |
| sb103235 | Folding cover | • |

Mounting set without sensor weight

| | | |
|-----------------|------------------------|---|
| sl100280 | For rope version | • |
| sl108030 | For tape version | • |

Motor

| | | |
|-----------------|-------------|---|
| gm103202 | Motor | • |
|-----------------|-------------|---|

Electronics

| | | | | |
|-----------------|--------------|--------|---------------------------------------|---|
| pl103690 | 230V 50-60Hz | 4-20mA | without 2 Relais ⁽¹⁾ | • |
| pl103691 | 230V 50-60Hz | 4-20mA | with 2 Relais ⁽¹⁾ | • |
| pl103696 | 230V 50-60Hz | Modbus | without 2 Relais ⁽¹⁾ | • |
| pl103692 | 115V 50-60Hz | 4-20mA | without 2 Relais | • |
| pl103693 | 115V 50-60Hz | 4-20mA | with 2 Relais ⁽¹⁾ | • |
| pl103697 | 115V 50-60Hz | Modbus | without 2 Relais ⁽¹⁾ | • |
| pl103694 | 20 .. 28V DC | 4-20mA | without 2 Relais ⁽¹⁾ | • |
| pl103695 | 20 .. 28V DC | 4-20mA | with 2 Relais ⁽¹⁾ | • |

Required information: Rope or Tape version; measuring range 15m or 30m; evt. further menu presettings.

Internal Heater ⁽²⁾

| | | | |
|-----------------|----------|-------------------------------------|---|
| em100373 | 680 Ohms | For power supply 230V 50-60Hz | • |
| em100374 | 220 Ohms | For power supply 115V 50-60Hz | • |
| em100375 | 8,2 Ohms | For power supply 20 .. 28V DC | • |

Weather protection cover

| | | |
|-----------------|-------|---|
| zu400217 | | • |
|-----------------|-------|---|

⁽¹⁾ Implements the electronic components needed to control the Internal Heater (needed for option pos.22)

⁽²⁾ Used for replacement for already mounted heater.

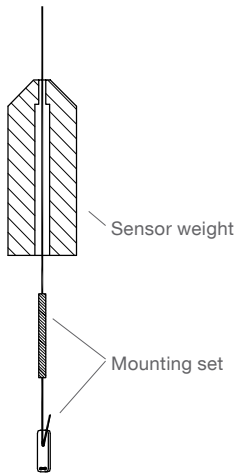
In case of re-fitting the Internal Heater, the electronics must include components for the Internal Heater Control (please contact factory).

Spare parts

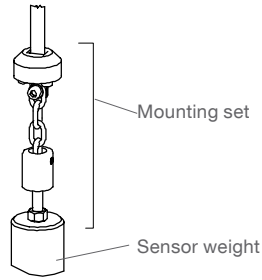
Sensor weights/ Mounting set

All sensor weights are delivered including stated parts for proper fixing to the rope / tape

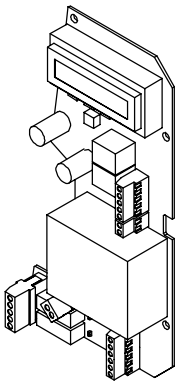
Rope version



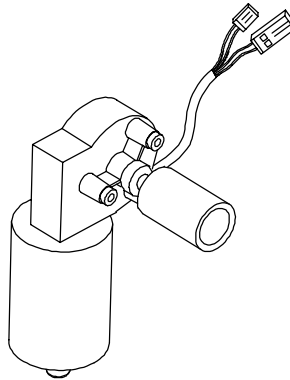
Tape version



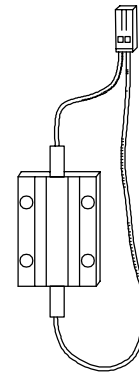
Electronics



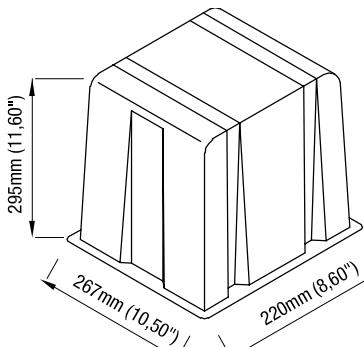
Motor



Internal heater



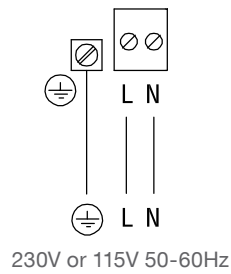
Weather protection cover



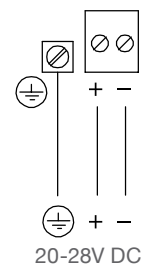
Electrical installation

Power supply

AC version

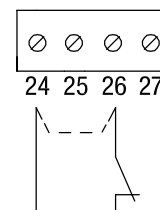
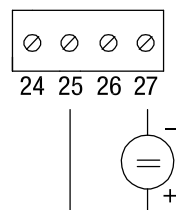
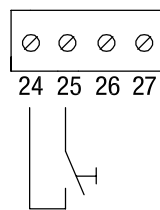


DC version



AC or DC supply
depending on
ordered version

Signal input: Start of measurement



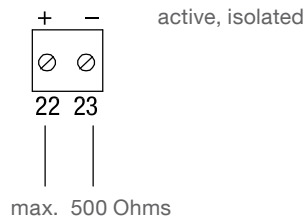
Start contact

Start +24V

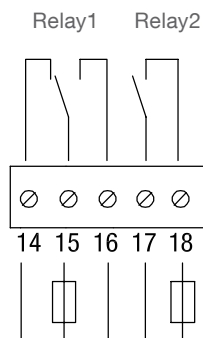
alternative

Measurement interruption in
case of filling. If used, remove
factory provided connection.

Signal output: 4-20mA



Signal output: Relais (optional)



Fuse: max. 2A, 250V, HBC, fast or slow
 max. 250V AC, 2A, 500VA, non inductive

Electrical installation

Modbus network

