

## 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 30 m (100 ft)
- 1½" process connection possible
- Aiming flange to be mounted directly on a flat silo roof
- Internal tape cleaner for difficult materials

#### Electronics

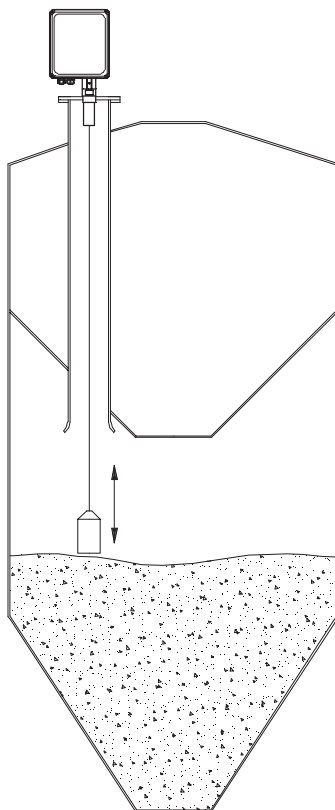
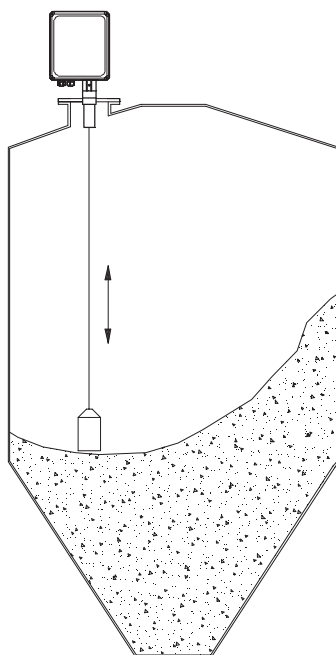
- Micro processor controlled measurement
- Diagnostic possibilities
- Output 4-20 mA/ Modbus
- Two programmable Relay  
(can be used as Counting/ reset pulse output  
or as Failure/ Upper stop position)

### Specification

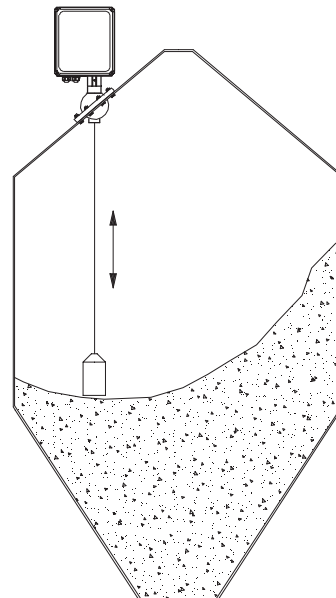
<b>Process</b>	Measurement range	15 m (50 ft) or 30 m (100 ft)
	Process temperature	80°C (176°F)
	Process overpressure	-0.2 .. +0.2 bar (-3.0 .. + 3.0 psi)
	Min. powder density	>300 g/l (18 lb/ft³)
<b>Electronics</b>	Power supply	AC version 115 V or 230 V 50 - 60 Hz DC version 20 .. 28 V
	Output	4-20 mA
		2 relais (optional)
		Modbus RTU
<b>Approvals</b>	Dust Ex	ATEX
		UKEX
		FM Cl. II, III Div. 1
		TR-CU
	Ordinary Location	CE, UKCA, FM, TR-CU

## Application

### Solids measurement



Aiming flange  
screwed directly  
to the silo roof



For measurements through a long pipe  
in a double chamber silo we recommend  
the use of NB 4200 (tape version).

## NB 4000



**NB 4100**  
 Rope version  
 Fig. with flange DN100  
 and PVC sensor weight



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



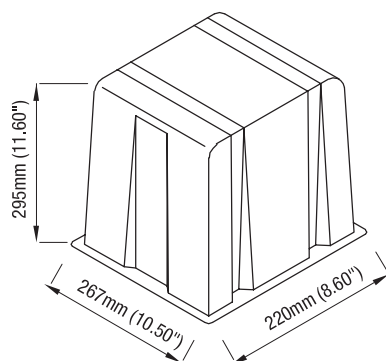
**NB 4100**  
 Rope version  
 Fig. with aiming flange and  
 stainless steel sensor weight  
 with pin

### Cable entries (by default)

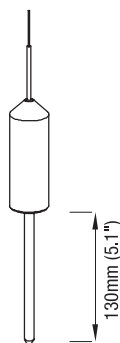
Depending on selected version (options see pos.26):

CE, UKCA, ATEX, UKEX, TR-CU	Screwed cable gland: 1x M25 x 1.5 and 1x M20 x 1.5 Blindplug: 1x M25 x 1.5 and 1x M20 x 1.5
FM	Open conduit ANSI B1.20.1: 1x NPT ¾" and 1x NPT ½" Blindplug: 1x NPT ¾" and 1x NPT ½"

## Options



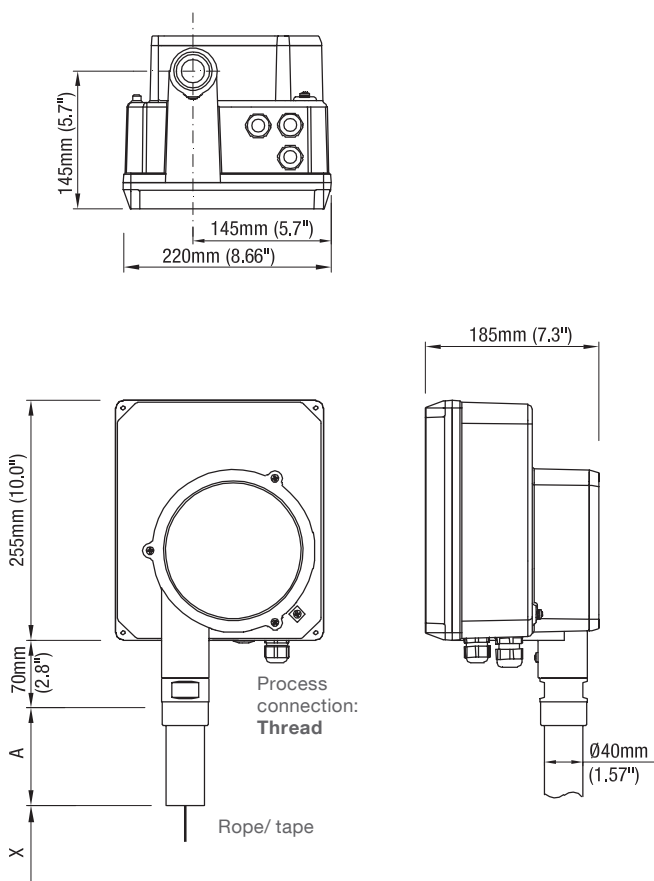
Weather protection cover



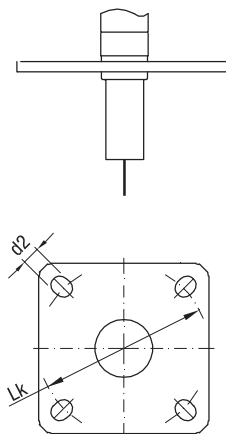
Pin for sensor weight  
 POM or 1.4305 (303)

## Dimensions and materials

### Basic unit

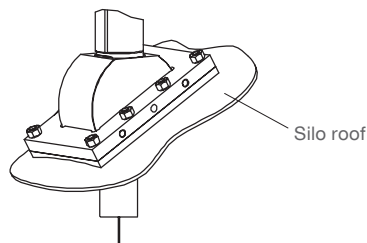


Process connection: **Flange**



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: 120 mm x 180 mm (4.7\" x 7.1\")

### Dimensions

<b>X</b> = Length to bottom of sensor weight	
<b>A</b> = Length of socket pipe 100 mm (3.9\") Optional 200 mm (7.9\")/ 500 mm (19.7\")/ 1,000 mm (39.4\")	
<b>Flanges</b>	
fitting to: DN100 PN16/ 4\" 150lbs	Lk = $\varnothing 180 - 190.5$ mm ( $\varnothing 7.1 - 7.5$ ") slot d2 = $\varnothing 19$ mm ( $\varnothing 0.75$ ")
fitting to: 2\"/ 3\" 150lbs	Lk = $\varnothing 120.7 - 152.4$ mm ( $\varnothing 4.75 - 6.0$ ") slot d2 = $\varnothing 19$ mm ( $\varnothing 0.75$ ")
<b>Rope</b>	$\varnothing 1.0$ mm ( $\varnothing 0.04$ ")
<b>Tape</b>	12 x 0.2 mm (0.47 x 0.008")

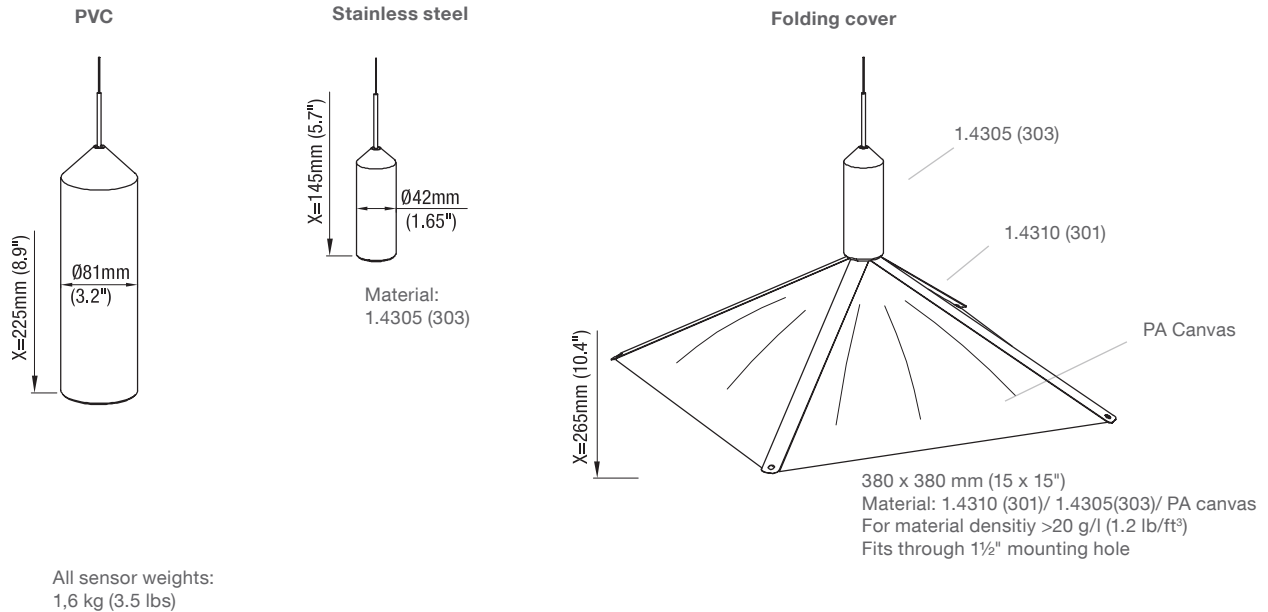
### Materials

<b>Housing outside</b>	Aluminium, powder coated
<b>Housing inside</b>	Aluminium
<b>Thread/ flange</b>	Aluminium
<b>Aiming flange</b>	Aluminium/ 1.4301 (301)
<b>Rope</b>	1.4401 (316)
<b>Tape</b>	1.4310 (301)

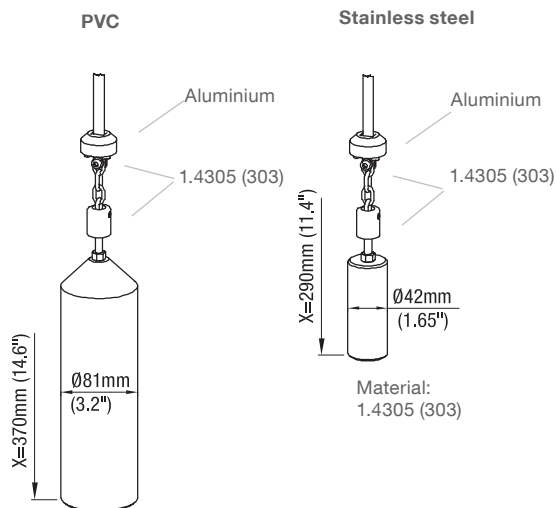
## Dimensions and materials

### Sensor weights

#### Rope version



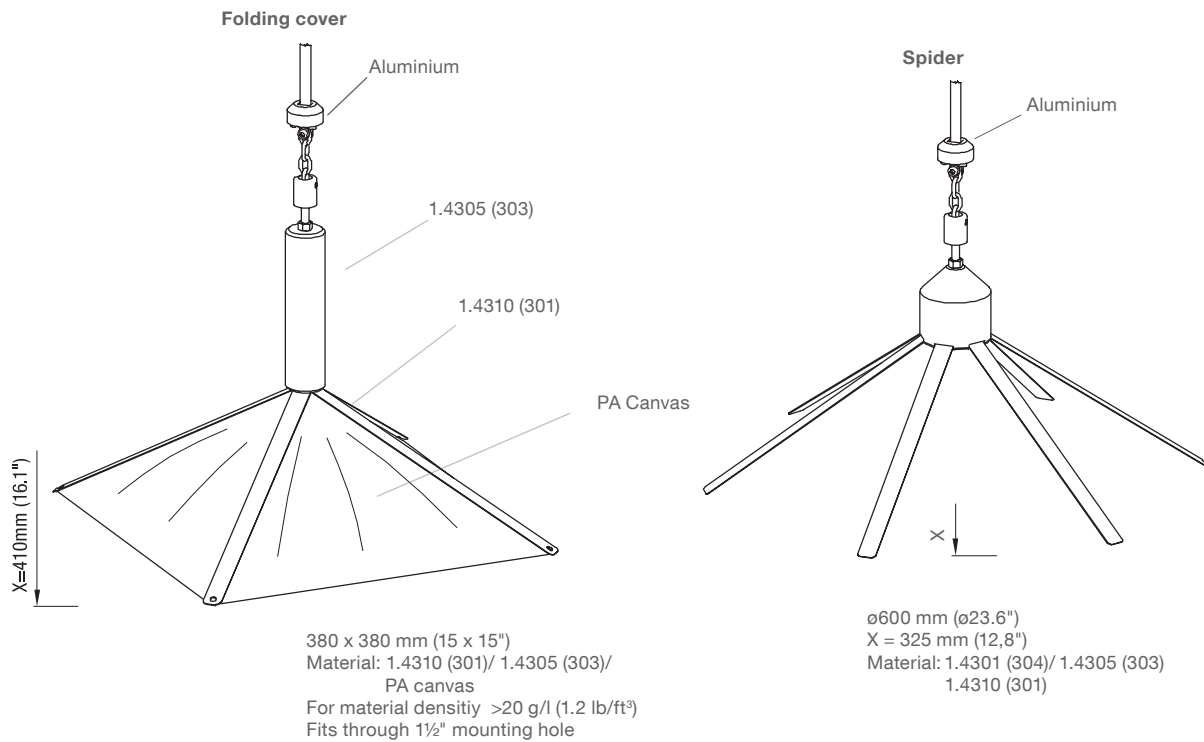
#### Tape version



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

All sensor weights:  
1.6 kg (3.5 lbs)

## Dimensions and materials



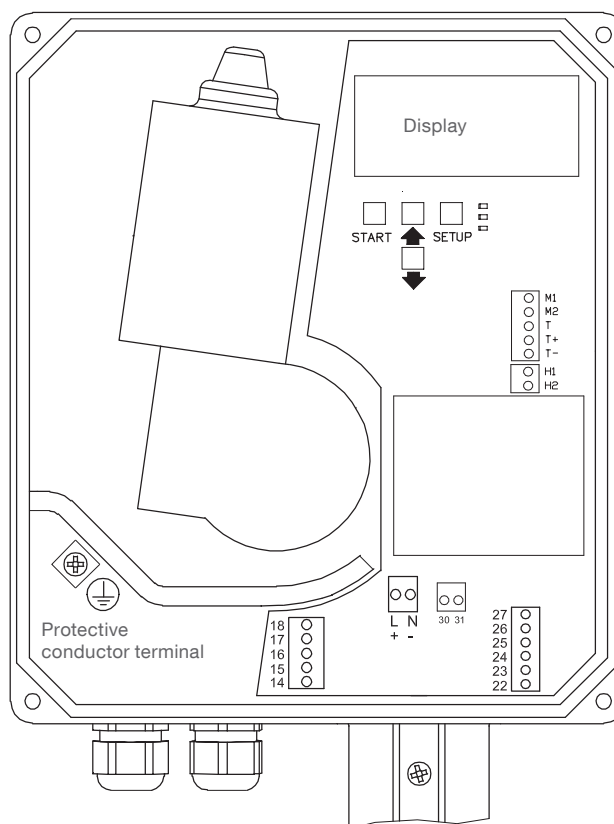
Fixing elements between tape and sensor  
 weight: aluminium/ 1.4305 (303)

All sensor weights:  
 1.6 kg (3.5 lbs)

## Electrical installation

Version 4-20 mA

### Terminal location



Internal terminals for motor and heater

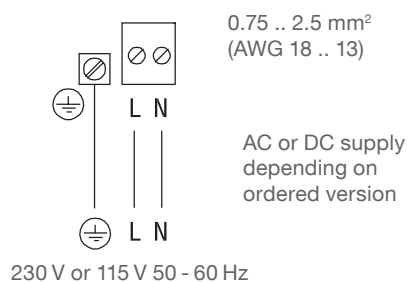
Terminals for:

- Power supply
- Signal input:
  - Start of measurement
  - Measurement interruption
- Signal output:
  - 4-20 mA
  - Relais

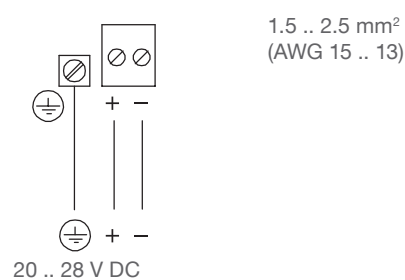
Note: Terminal 30 and 31 not used

### Power supply

#### AC version



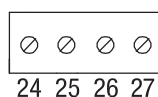
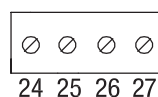
#### DC version



### Signal input:

#### Start of measurement

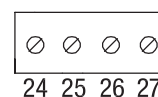
#### Measurement interruption



Start contact

Start +24 V

alternative

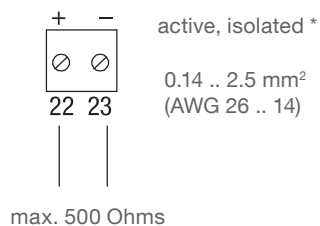


Measurement interruption in case of filling. If used, remove factory provided connection.

0.14 .. 2.5 mm<sup>2</sup>  
(AWG 26 .. 14)

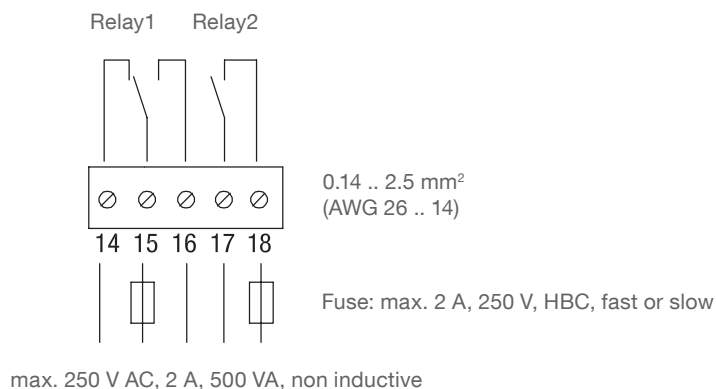
## Electrical installation

**Signal output:**  
4-20 mA



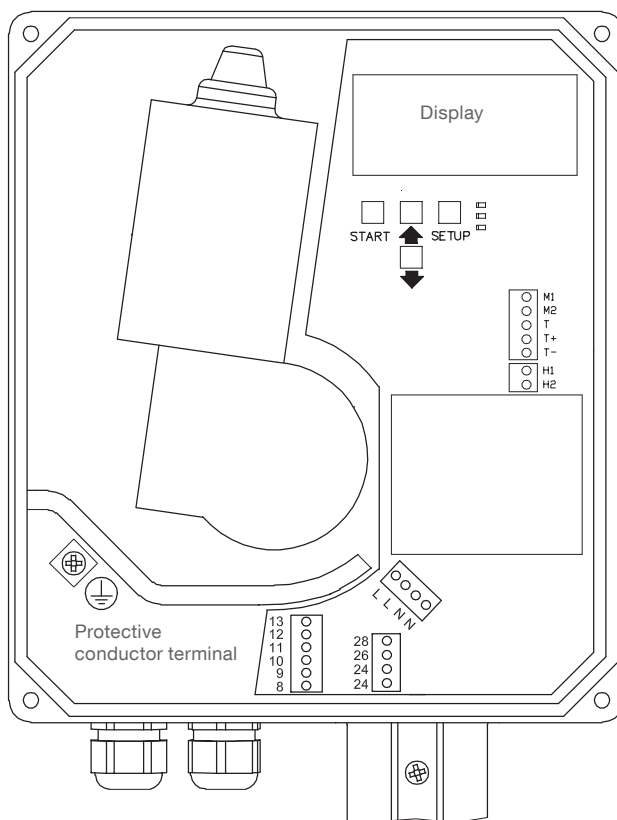
**\* CAUTION:**  
If connecting to a PLC with isolated (floating) 4-20 mA input, the "-" line must be connected to ground of the PLC. See user manual of the PLC.

**Signal output:**  
**Relais**  
(optional)



## Version Modbus

### Terminal location



Internal terminals for  
motor and heater

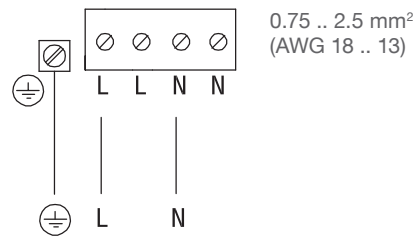
Terminals for:

- Power supply
- Signal input:  
Measurement interruption
- Signal output:  
Modbus



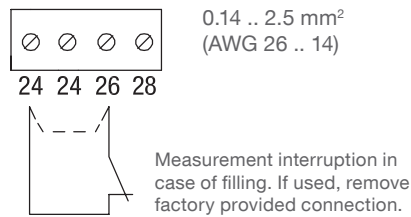
## Electrical installation

### Power supply

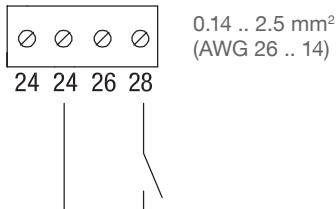


### Signal input: Measurement inter- ruption

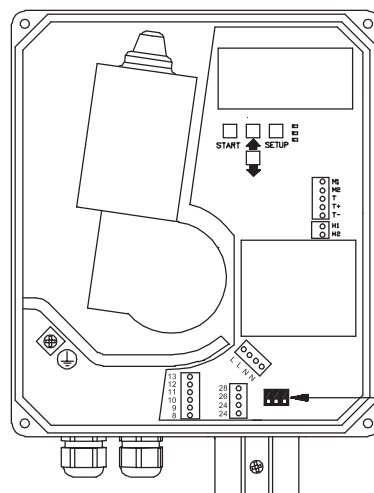
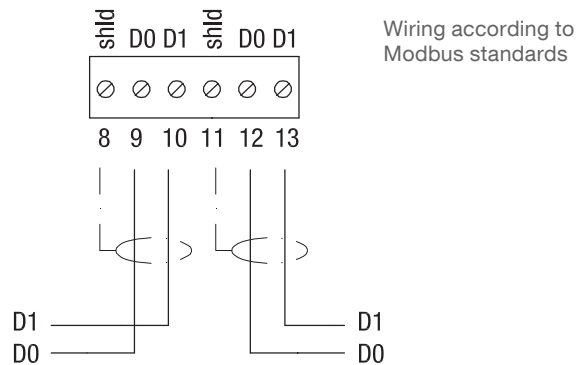
230 V or 115 V 50 - 60 Hz



### Signal input: Full detector



### Modbus network



### Setting Biasing and Termination Resistor

For use of NB 4000 units in a external Modbus network, it is possible to set Biasing and Termination Resistor on each unit as required.

Biasing	OFF*	OFF	ON	ON
Termination Resistor	OFF*	ON	OFF	ON



DIP Switch position:

Top view Side view