

Overview

Features

Continuous level measurement of solids and interface applications

Process

- Independent of bulk material properties
- Very accurate measurement

Service

- Simple installation and commissioning
- Rope, tape and (optional) motor with increased service life
- Low maintenance

Approvals

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

Mechanics

- Measurement range up to 50 m (164 ft)
- 1½" process connection possible
- Internal tape cleaner for difficult materials
- Window in lid and outside start button (optional)

Electronics

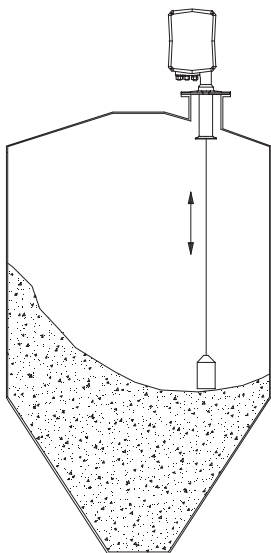
- Micro processor controlled measurement
- Comprehensive diagnostic possibilities
- Output 0/ 4-20 mA/ Modbus/ Profibus DP/ counting pulses
- Programmable Relais (can be used as level limit switch outputs)

Specification

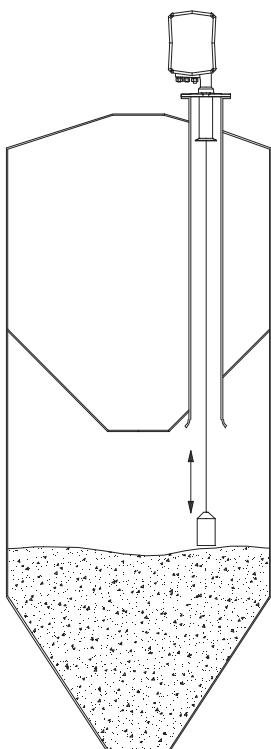
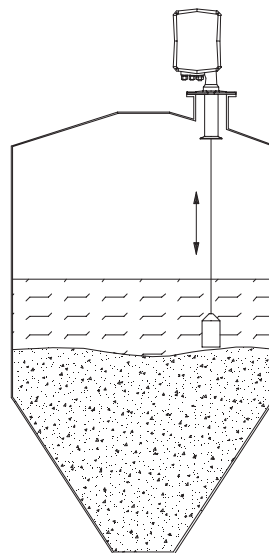
				NB 3100/ 3200 Solids measurement	NB 3300/ 3400 Interface measurement
Process	Measurement range	Rope version	30 m (98.4 ft)	•	•
		Tape version	40 m (131 ft)/ 50 m (164 ft)	•	•
	Process temperature		80°C (176°F)	•	•
			150°C (302°F)	•	
			250°C (482°F)	•	
	Process overpressure		-0.3 .. +0.3 bar (-4.35 .. + 4.35 psi)	•	•
			-0.5 .. +1.1 bar (-7.3 .. +16 psi)	•	•
			-0.5 .. +1.7 bar (-7.3 .. +25 psi)	•	•
Electronics	Power supply	AC version	98 .. 253 V 50 - 60 Hz	•	•
		DC version	20 .. 28 V	•	•
	Output		0/ 4-20 mA	•	•
			4 relais	•	•
			Modbus RTU	•	•
			Profibus DP	•	•
Approvals	Dust Ex		ATEX 1/2D	•	•
			UKEX 1/2D	•	•
			FM Cl. II, III Div. 1	•	•
			TR-CU	•	•
	Ordinary Locations		CE, UKCA, FM, TR-CU	•	•

Applications

Solids measurement



Interface measurement
 (solids in water)



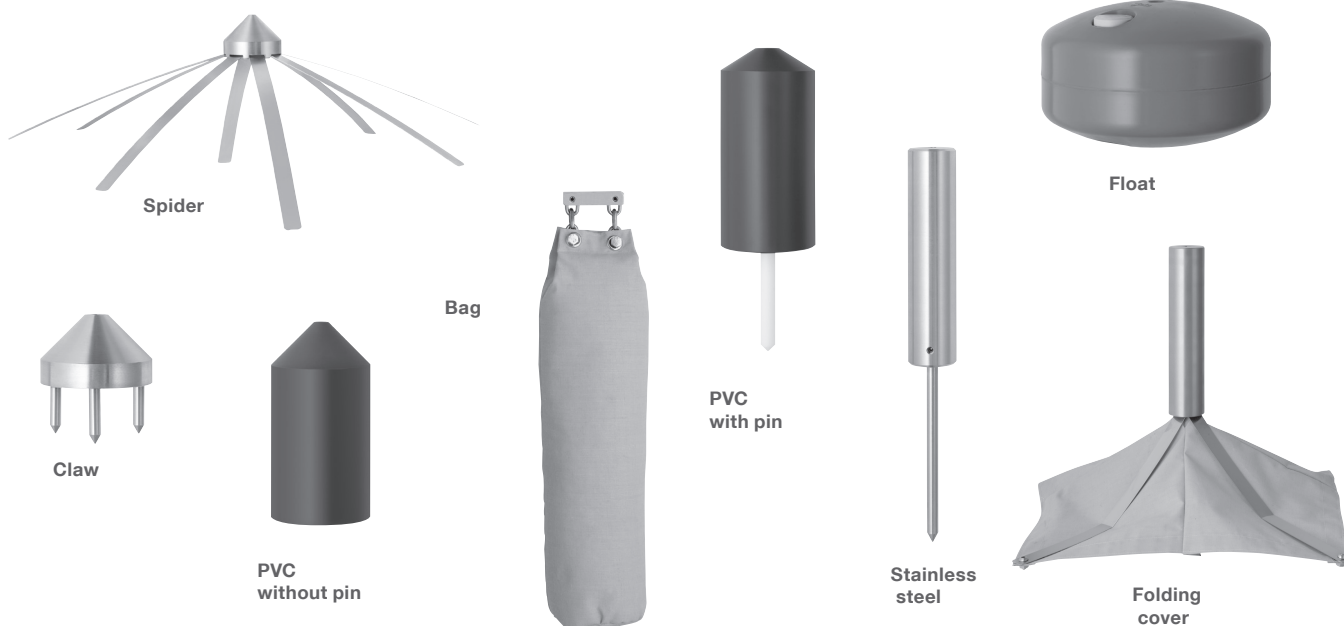
For measurements through a long pipe in a double chamber silo we recommend the use of NB 3200 (tape version).

Applications

Sensor weight guide (solids measurement)

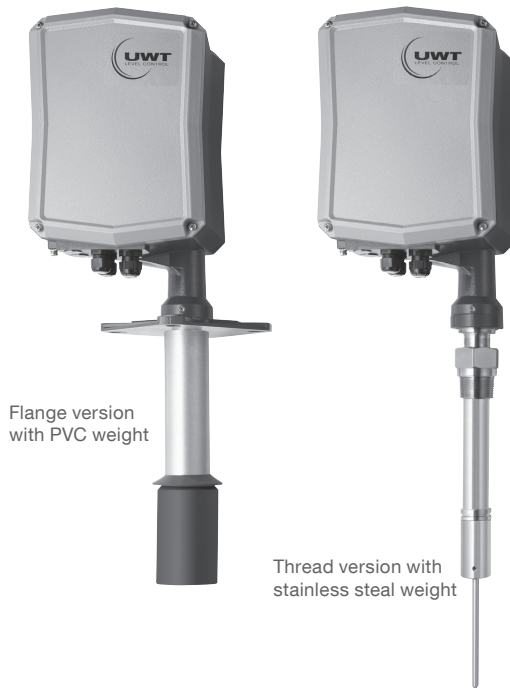
Sensor weight	Application				Note	Fits through mounting hole				
						Thread		Flange		
						1½"	3"	2"	3"	DN100 / 4"
PVC without pin	>300 (18)	granulate	flat	80°C (176°F)	Standard weight					•
PVC with pin	>300 (18)	granulate, powder	steep	80°C (176°F)	The pin penetrates into the material and avoids slipping or tilting of the sensor weight on the steep bulk surface.					•
Stainl. steel	>300 (18)	granulate, powder	flat, steep	250°C (482°F)	The pin penetrates into the material and avoids slipping or tilting of the sensor weight on the steep bulk surface.	•	•	•	•	•
Claw	>200 (12)	coarse (e.g. stones)	steep	250°C (482°F)	Avoids slipping or tilting on the steep bulk surface.					•
Folding cover	>20 (1.2)	light powder	flat, steep	80°C (176°F)	Big surface prevents the sensor weight from sinking into the material.	•	•	•	•	•
Spider	>40 (1.4)	light powder	flat, steep	250°C (482°F)	Big surface prevents the sensor weight from sinking into the material.					•
Bag	>300 (18)	granulate, powder	flat	80°C (176°F)	Prevents damage of the conveying screw. To be filled with bulk material.					•
Float	-	liquids only	-	80°C (176°F)	To be filled with material.					

* The above mentioned data is a guideline and is valid for material which has settled after filling. During the filling the bulk density can change (e. g. for fluidised material).

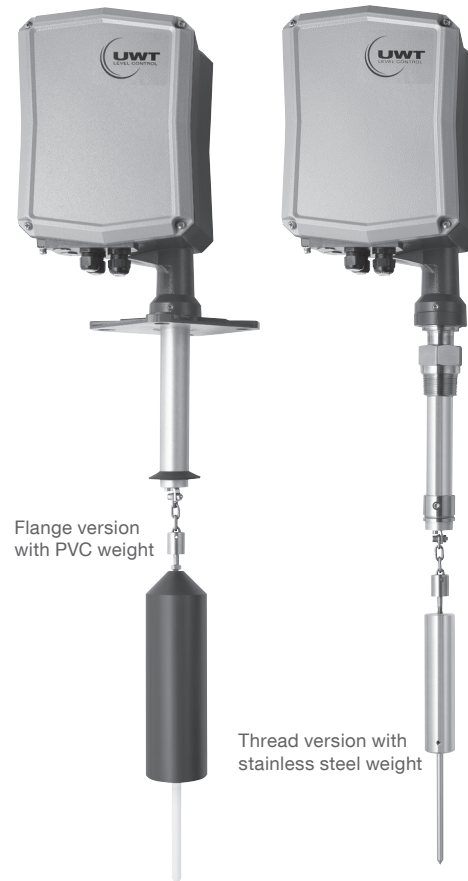


Solids measurement

NB 3100
 Rope version



NB 3200
 Tape version



Cable entries (by default)

Depending on selected version (options see pos.31):

CE, UKCA, ATEX, UKEX, TR-CU	Screwed cable gland: 2x M20 x 1.5 and 1x M25 x 1.5 Blindplug: 2x M20 x 1.5
FM	Open conduit ANSI B1.20.1: 1x NPT ¾" and 2x NPT ½" Blindplug: 2x NPT ½"

Interface measurement (solids in water)

NB 3300

Rope version

For applications with soft/ muddy
 or compact material surface



NB 3400

Tape version

For applications with
 compact material surface



Implemented

- Internal heater
- Rope/ tape roller with rubber coating to avoid slipping
- Plastic coated steel weight (rope version)
- Adjustment possibility for applications with soft/muddy material surface (rope version)

Cable entries (by default)

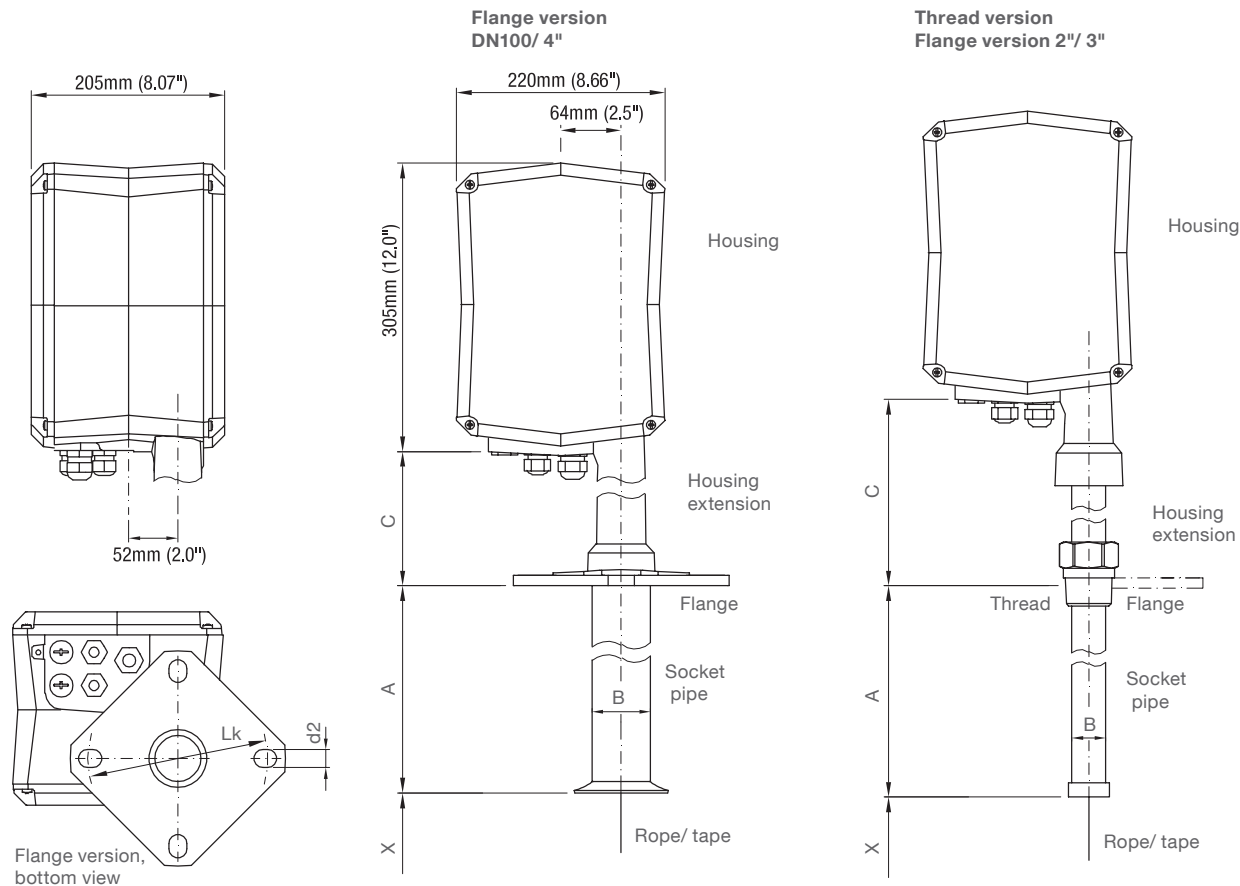
Depending on selected version (options see pos. 31):

CE, UKCA, ATEX, UKEX, TR-CU Screwed cable gland: 2x M20 x 1.5 and 1x M25 x 1.5
 Blindplug: 2x M20 x 1.5

FM Open conduit ANSI B1.20.1: 1x NPT ¾" and 2x NPT ½"
 Blindplug: 2x NPT ½"

Dimensions

Basic type



Dimensions

X = Length to bottom of sensor weight

A = Length of socket pipe

200 mm (7.9")
Optional 500 mm (19.7")/ 1,000 mm (39.4")

B = Diameter of socket pipe

Rope version with Flange DN100/ 4"	ø60 mm (ø2.36")
All other versions	ø40 mm (ø1.57")

C = Housing extension

Flange version DN 100/4"	80°C/ 150°C	95 mm (3.74")
	250°C	340 mm (13.4")
Other Versions	80°C/ 150°C	160 mm (6.3")
	250°C	340 mm (13.4")

Rope	ø1.0 mm (ø0.04")
Tape	12 x 0.2 mm (0.47 x 0.008")

Flanges

fitting to: DN100 PN16/ 4" 150lbs	Lk = ø180 - 190.5 mm (ø7.1 - 7.5") slot d2 = ø19 mm (ø0.75")
fitting to: 2"/ 3" 150lbs	Lk = ø120.7 - 152.4 mm (ø4.75 - 6.0") slot d2 = ø19 mm (ø0.75")

Materials

Housing outside	Aluminium, powder coated
Housing inside	Aluminium
Housing extension	Aluminium, powder coated or 1.4305 (303)
Flange	80°C/ 150°C: Aluminium, powder coated 250°C: 1.4305 (303)
Thread	1.4301 (304)
Socket pipe	Flange version DN100/ 4", 80°C/ 150°C: Aluminium All other versions: 1.4301 (304)
Rope	1.4401 (316)
Tape	1.4310 (301)

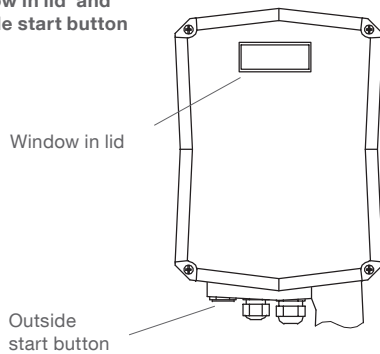
With option "Increased corrosion resistance":

All metal parts in contact with the process are coated.
The rope is plastic coated with PA.
The internal bearings are made of stainless steel.

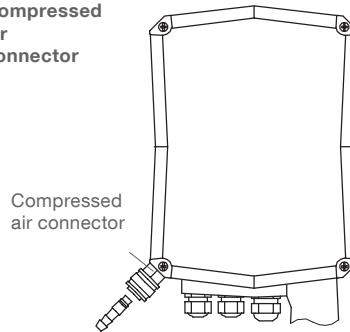
Dimensions

Options

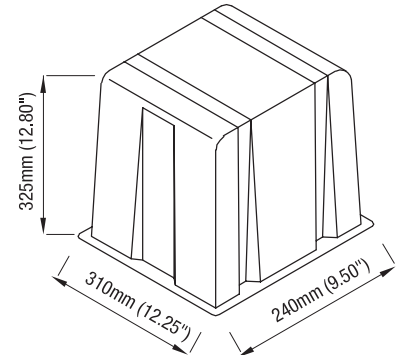
pos.25
Window in lid and
outside start button



pos.28
Compressed
air
connector



pos.21
Weather protection cover

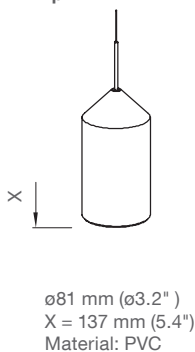


Sensor weights

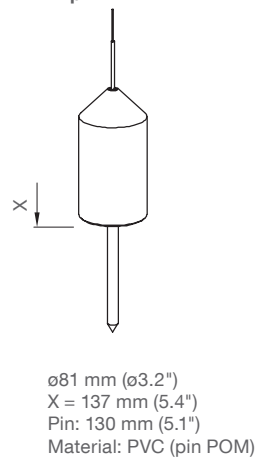
Solids measurement: Rope version

All weights ca. 1,0 kg (2.2 lbs)

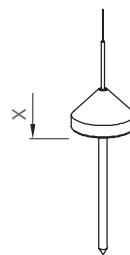
PVC without
pin



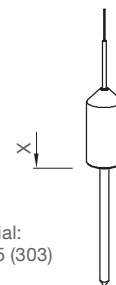
PVC with
pin



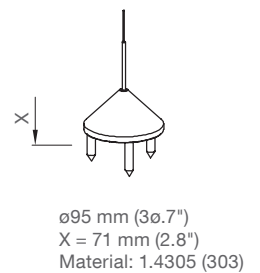
Stainless steel



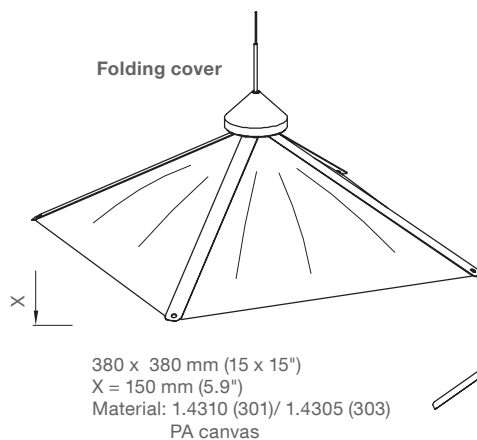
Material:
1.4305 (303)



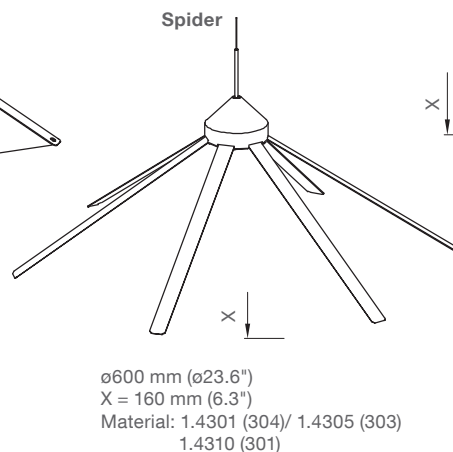
Claw



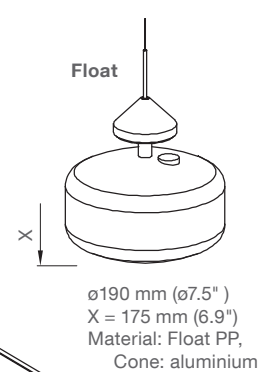
Folding cover



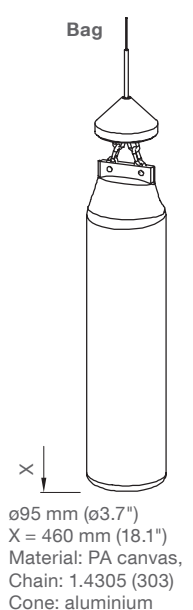
Spider



Float



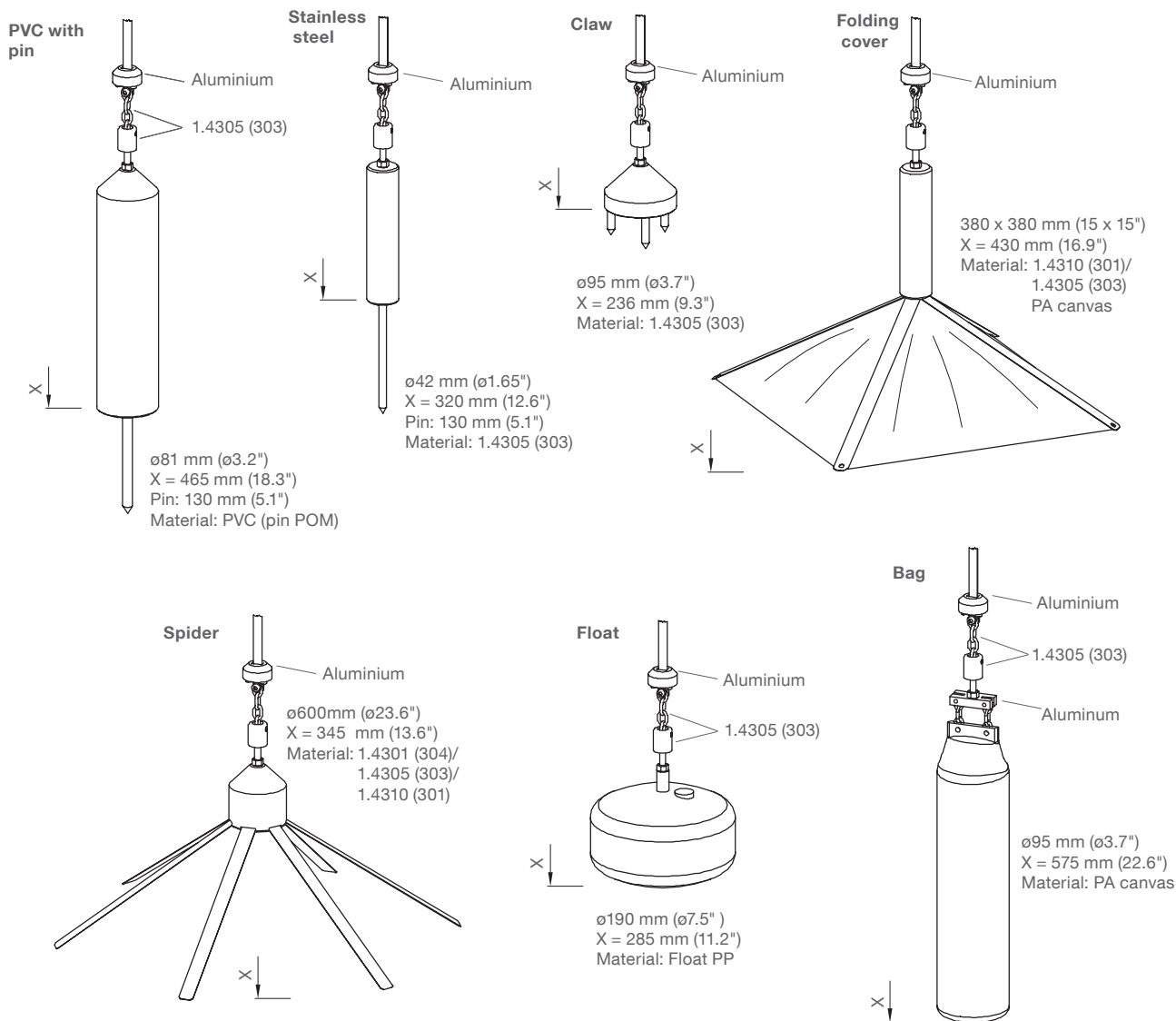
Bag



Dimensions

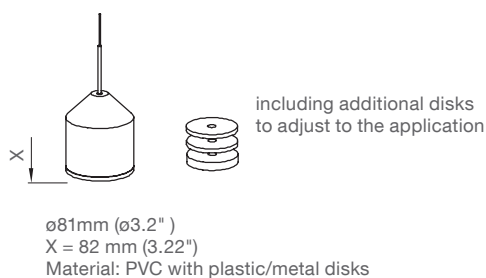
Solids measurement: Tape version

All weights ca. 2.1 kg (4.6 lbs)



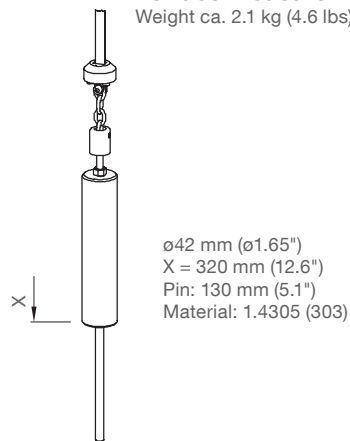
Interface measurement: Rope version

Weight ca. 1.0 kg (2.2 lbs)



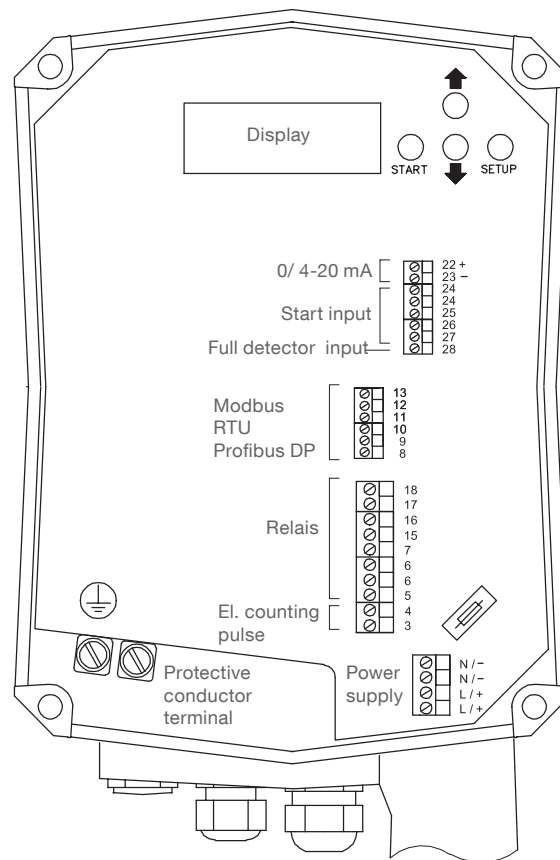
Interface measurement: Tape version

Weight ca. 2.1 kg (4.6 lbs)



Electrical installation

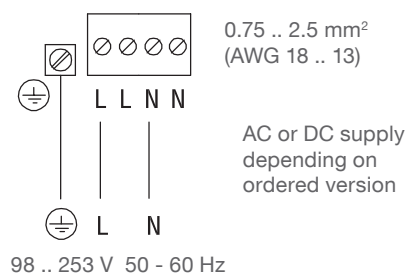
Terminal location



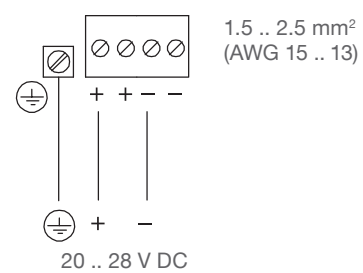
Power supply and Signal input/ output

Power supply

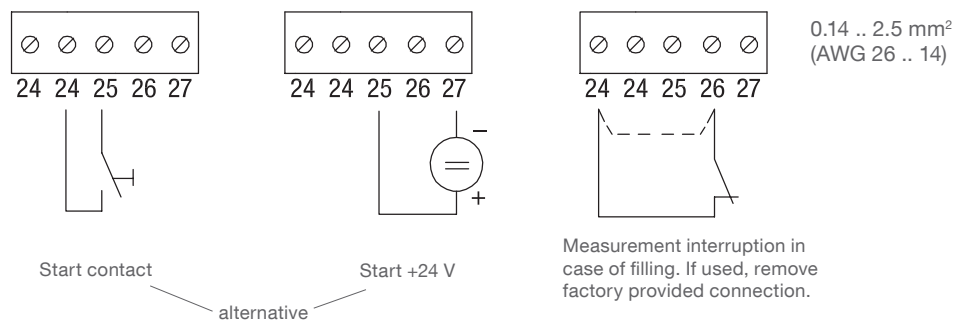
AC version



DC version

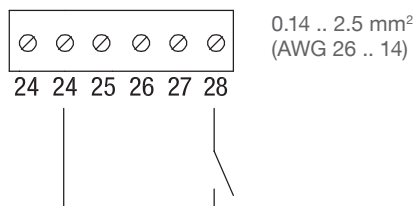


Signal input: Start of measurement

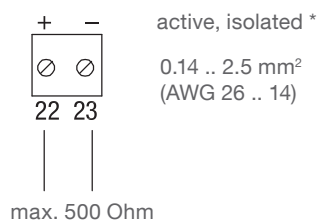


Electrical installation

Signal input: Full detector

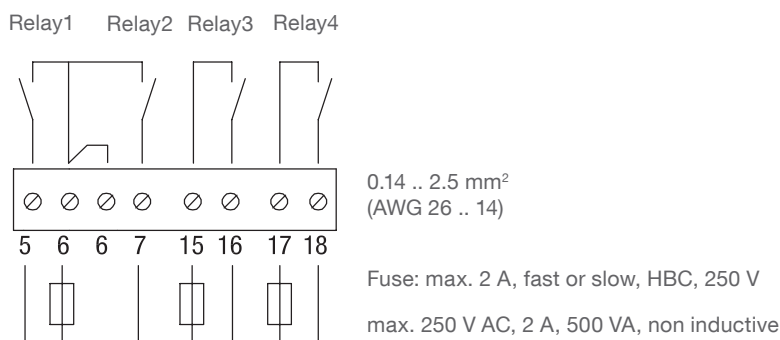


Signal output: 0/4-20 mA

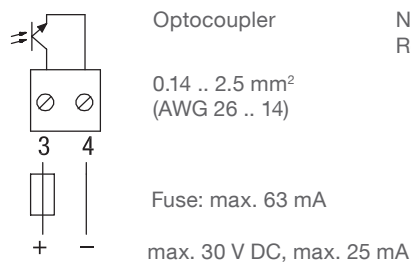


* CAUTION:
If connecting to a PLC with isolated (floating) 4-20 mA input, the "-" line must be connected to ground of the PLC. See user manual of the PLC.

Signal output: Relay



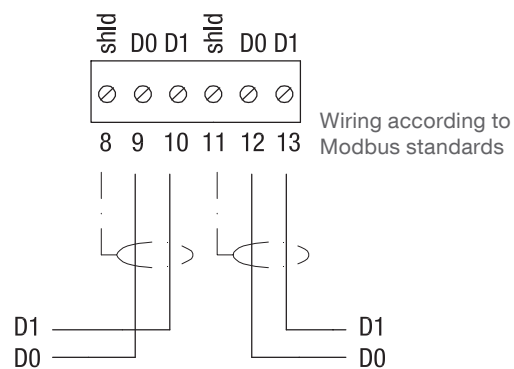
Signal output: Electronic counting pulse



Note:
Reset pulse is done with Relay 2

Electrical installation

Modbus network



Profibus DP network

