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Subject to technical change.

Valid from 01.04.2009 until 31.03.2010 unless otherwise agreed.

All dimensions in mm (inches).

By publishing this option list all other option 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 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

Mechanics

- Measurement range upto 40m (133ft)
- 1 1/2" 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 0/4–20mA / Modbus / Profibus DP / counting pulses
- Programmable Relais (can be used as level limit switch outputs)

Solids measurement



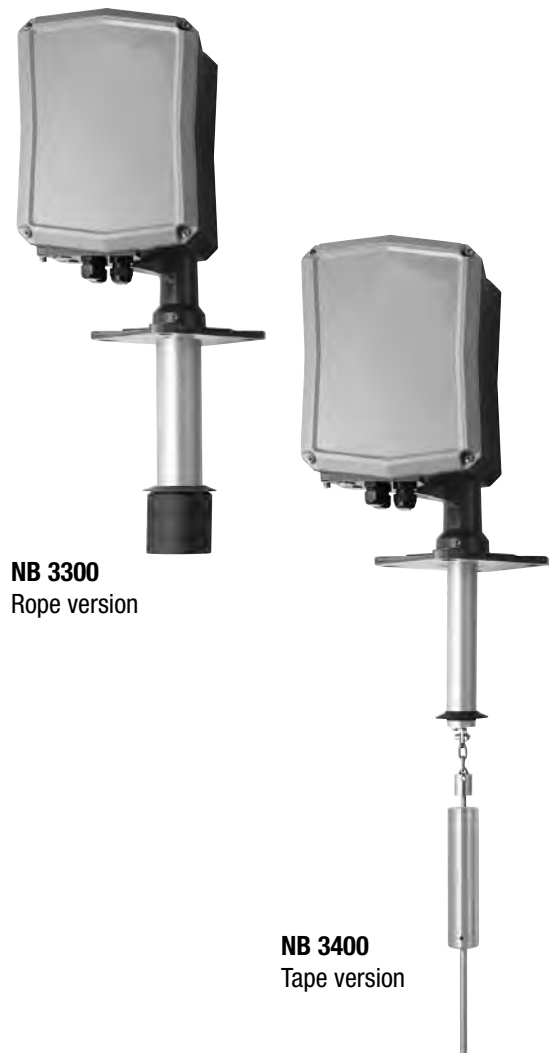
NB 3100

Rope version
(fig. with process
connection thread
and stainless steel
weight)

NB 3200

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

Interface measurement



NB 3300

Rope version

NB 3400

Tape version

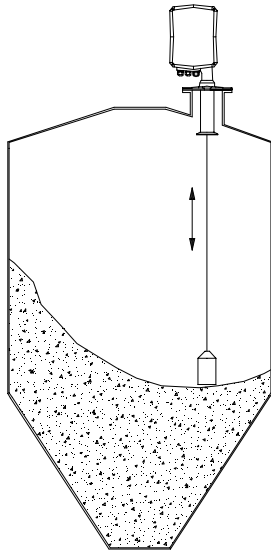


Specifications

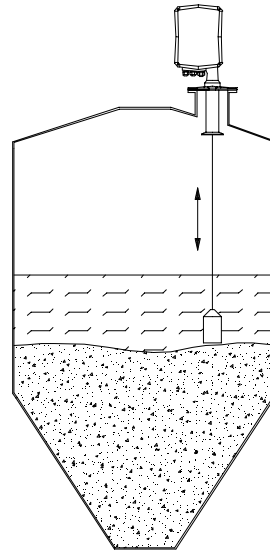
				NB 3100 / 3200 Solids measurement	NB 3300 / 3400 Interface measurement
Process	Measurement range	Rope version	30m (98.4ft)	•	•
		Tape version	40m (131ft)	•	•
	Process temperature		80°C (176°F)	•	•
			150°C (302°F)	•	
			250°C (482°F)	•	
	Process overpressure		-0,3 .. +0,3 bar (-4.35 .. + 4.35 psi)	•	•
		-0.5 .. +1.7bar (-7.3 .. +25psi)	•	•	
Electronics	Power supply	AC version	98 .. 253V 50-60Hz	•	•
		DC version	20-28V	•	•
	Output		0/4-20mA	•	•
			4 relais	•	•
			Modbus RTU	•	•
			Profibus DP	•	•
Certificate	Dust Ex		ATEX 1/2D	•	
			FM Cl. II, III Div. 1	•	
	General purpose		CE, FM	•	•

Applications

Solids measurement



Interface measurement
(solids in water)

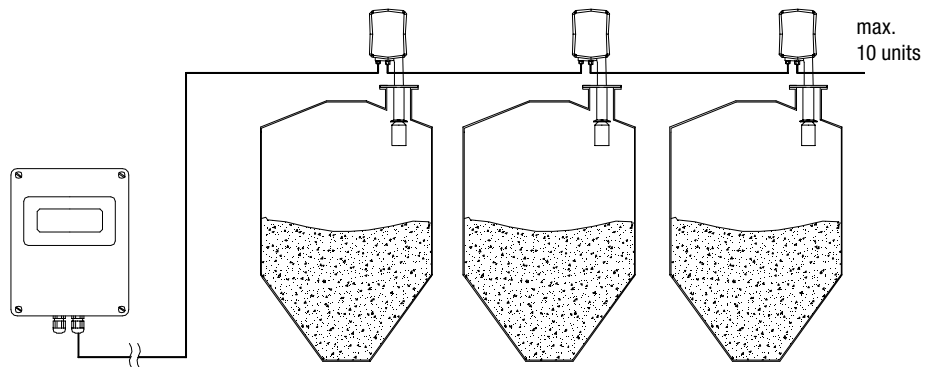


Remote box NB 9000

Connecting Nivobob units
with Modbus RTU network

Features:

- Programming of the Nivobob units
- Display of level
- Start of measurement
- Display of diagnostics information

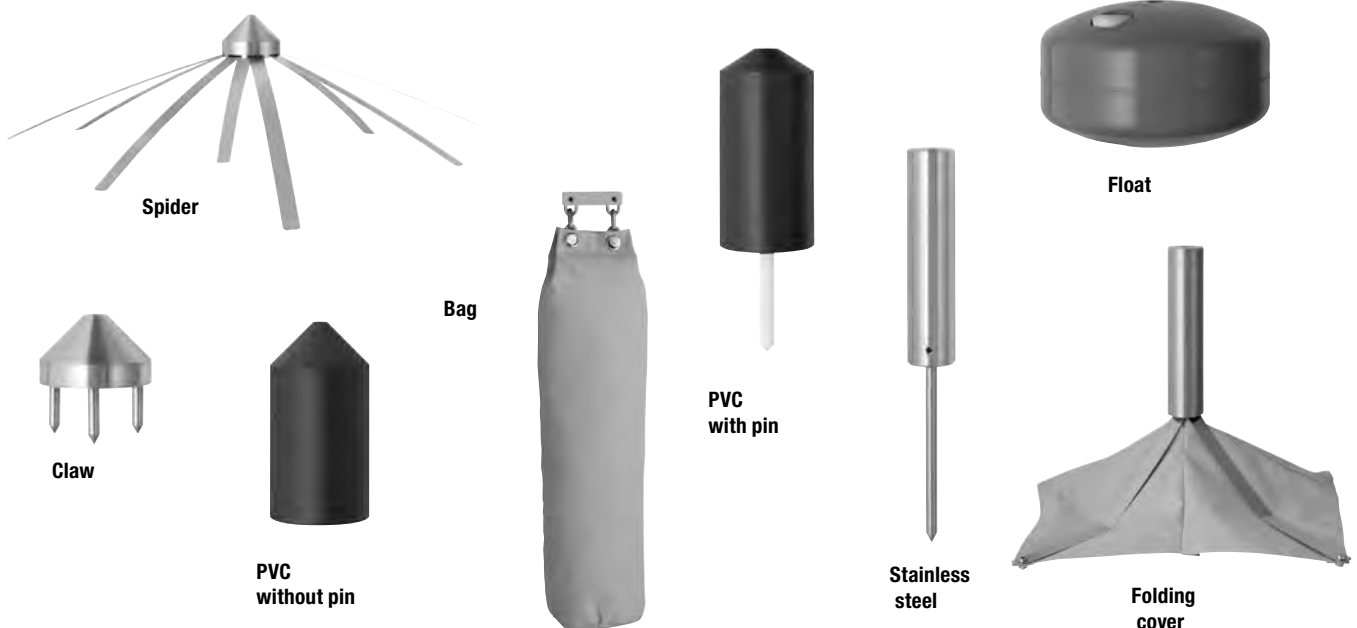


Applications

Sensor weight guide (solids measurement)

Sensor weight	Application				Note	Fits through mounting hole				
	* Material density g/l (lb/ft³)	Material consistence	Angle of repose	Max. process temp.		Thread		Flange		
						1 1/2"	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.					

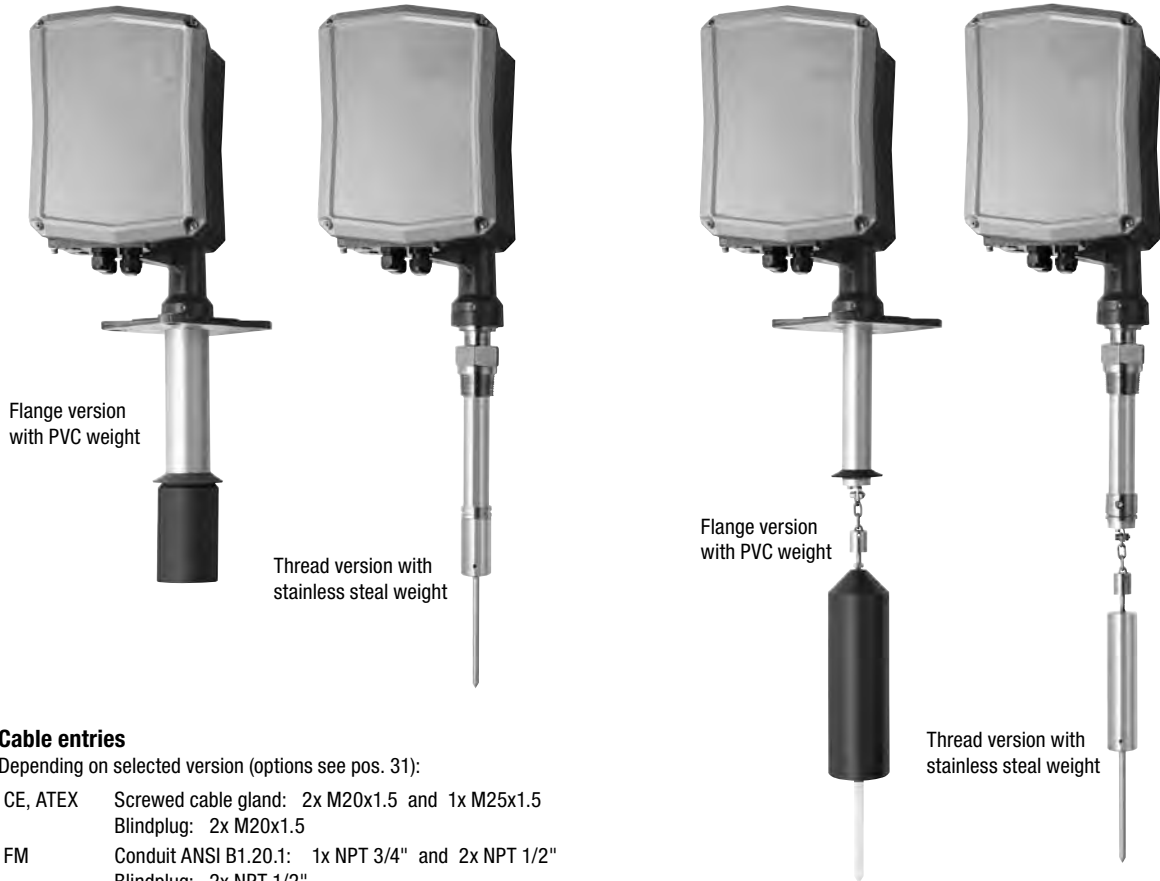
* The above mentioned data is a guideline and is valid for material which has settled after filling. During the filling the bulk density can change (e. g. for fluidised material).



Solids measurement

NB 3100
 Rope version

NB 3200
 Tape version



Cable entries

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

- | | |
|----------|-----------------------------------------------------------------------------|
| CE, ATEX | Screwed cable gland: 2x M20x1.5 and 1x M25x1.5
Blindplug: 2x M20x1.5 |
| FM | Conduit ANSI B1.20.1: 1x NPT 3/4" and 2x NPT 1/2"
Blindplug: 2x NPT 1/2" |

Dimensions see page P12

pos. 1	Basic type		
	C NB 3100	Rope version (30m)	.....
	D NB 3200	Tape version (40m)	.....
pos. 2	Certificate		
	0 CE		.....
	W ATEX II 1/2 D		.....
	M FM general purpose		.....
	N FM Class II, III Div.1 Group E-G		.....
pos. 3	Process temperature		
	A max. + 80°C (176°F)		.....
	S max. +150°C (302°F)		.....
	T max. +250°C (482°F)		.....
pos. 4	Power supply		
	1 98 .. 253V 50-60Hz		.....
	3 20 .. 28V DC		.....
pos. 5	Signal output		
	D 0/4-20mA	Modbus	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
	B 0/4-20mA	Modbus	Electronic counting pulse (1cm 2.5cm 1/20ft 1/10ft)
	E 0/4-20mA	Profibus DP	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)



Solids measurement

pos. 6	Process connection	
	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)	.....
	A Thread R 1 1/2 inch tapered DIN 2999	.....
	B Thread NPT 1 1/2 inch tapered ANSI B1.20.1	.....
	C Thread NPT 3 inch tapered ANSI B1.20.1	.....
pos. 7	Motor for high measurement frequency ⁽¹⁾	
	1 standard	
	2 brushless motor	
pos. 8	Sensor weight ^(2,3)	
	Y without ⁽⁴⁾
	A PVC without pin only with rope version pos.1 C, max. 80°C	.....
	B PVC with pin max. 80°C	.....
	C Stainl. steel	.....
	D Claw stainless steel	.....
	E Folding cover max. 80°C, stainless steel, PA canvas	.....
	F Spider stainless steel	.....
	G Bag max. 80°C, PA canvas	.....
	H Float max. 80°C, PP	.....

Basic type	1	2	3	4	5	6	7	8
NB 3..00								

Order code

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

⁽¹⁾ Motor with increased service life

⁽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⁾ See Sensor weight guide on page P5

⁽⁴⁾ Including mounting set for sensor weight (see page P17: Sensor weights)

Options

pos. 25	Window in lid and external start button	.....
pos. 26	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 or FM Class II on request possible)	
pos. 27	Length of socket pipe	
	A 500mm (19.7")	.....
	B 1000mm (39.4")	.....
pos. 28	Compressed air connector	.....
	Quick coupling including counter part, for hose diameter 9mm (0,35")	
pos. 29	Increased corrosion resistance	.....
	All metal parts on process side coated, rope with plastic coating, use of stainless steel bearings Available with: Rope version (pos.1 C), CE or FM gen.purp. (pos.2 O,M), 80°C (pos.3 A), PVC weight (pos.8 A,B)	
pos. 30	Increased process overpressure	.....
	-0.5 to 1.7bar (-7.3 to 25psi) (only with CE pos.2 O)	
pos.31	Cable entry	
	O Screwed cable gland 1x M25x1,5 + 2x M20x1,5 + blindplug 2x M20x1,5	.....
	A Conduit 1x NPT 3/4" + 2x NPT 1/2" + blindplug 2x NPT 1/2"	.....
pos. 33	Preset fieldbus address (Modbus)	.....
	Enables easy commissioning with Remote Box NB 9000 Preset from address = "1" to "amount of ordered units". Address label on enclosure. Termination resistor set on unit with highest address.	



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

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

CE, ATEX Screwed cable gland: 2x M20x1.5 and 1x M25x1.5
Blindplug: 2x M20x1.5

FM Conduit ANSI B1.20.1: 1x NPT 3/4" and 2x NPT 1/2"
Blindplug: 2x NPT 1/2"

Dimensions see page 12

Interface measurement (solids in water)

- pos. 1 Basic Type**
 E **NB 3300** Rope version (30m) incl. sensor weight
 F **NB 3400** Tape version (40m) incl. sensor weight
- pos. 2 Certificate**
 0 CE
 M FM general purpose
- pos. 4 Power supply**
 1 98 .. 253V 50–60Hz
 3 20 .. 28V DC
- pos. 5 Signal output**
 D 0/4–20mA Modbus Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
 B 0/4–20mA Modbus Electronic counting pulse (1cm 2.5cm 1/20ft 1/10ft)
 E 0/4–20mA Profibus DP Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
- pos. 6 Process connection**
 X Flange DN100 PN16, EN1092–1 and flange 4" 150lbs ANSI B16.5 (unit is fitting to this flange)
- pos. 7 Motor for high measurement frequency ⁽¹⁾**
 1 standard
 2 brushless motor

Basic type	1	2	3	4	5	6	7	8
NB 3.00			A			X		1

Order code

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

⁽¹⁾ Motor with increased service life

Options

- pos. 25 Window in lid and external start button**
- pos. 27 Length of socket pipe**
 A 500mm (19.7")
 B 1000mm (39.4")
- pos. 28 Compressed air connector**
 Quick coupling including counter part, for hose diameter 9mm (0,35")
- pos. 29 Increased corrosion resistance**
 All metal parts on process side coated, rope with plastic coating, use of stainless steel bearings
 Available with rope version (pos.1 E)
- pos. 30 Increased process overpressure**
 –0.5 to 1.7bar (–7.3 to 25psi) (only with CE pos.2 0)
- pos.31 Cable entry**
 0 Screwed cable gland 1x M25x1,5 + 2x M20x1,5 + blindplug 2x M20x1,5
 A Conduit 1x NPT 3/4" + 2x NPT 1/2" + blindplug 2x NPT 1/2"
- pos. 33 Preset fieldbus address (Modbus)**
 Enables easy commissioning with Remote Box NB 9000
 Preset from address = "1" to "amount of ordered units". Address label on enclosure.
 Termination resistor set on unit with highest address.



Accessories

NB 9000 Remote box

Connecting upto 10 units with Modbus RTU network

Features:

- Programming of the Nivobob units
- Display of level
- Start of measurement
- Display of diagnostics information

NB 9000 Panel mounting



pos. 1	Basic Type	
	A NB 9000	.....
pos. 2	Language	
	1 German (Display in meter)	.....
	2 English (Display in meter)	.....
	4 English (Display in feet)	.....
	3 French (Display in meter)	.....
pos. 3	Mounting	
	A Panel mounting	.....
	B Wall mounting with enclosure	.....
pos. 4	Power supply	
	1 24V DC	.....
	2 85 .. 264V 50–60Hz	.....

Basic Type	1	2	3	4	order code
NB 9000	A				

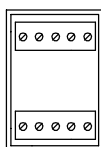
All positions are available in special design (use code "Z").

NB 9000 Panel mounting

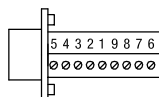
Included parts

For easy installation and proper functioning of the Modbus network

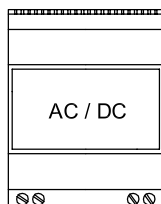
Biasing network
(with Termination resistor)



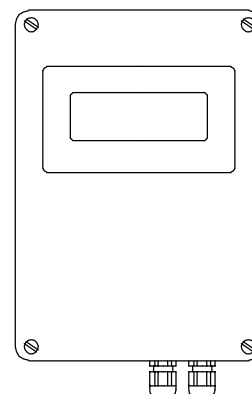
Terminal Plug
Supplies screwing terminals for connection between NB 9000 panel and Biasing network



AC/DC converter
(for pos.4 2)



NB 9000 Wall mounting



Material: PC (fibre glas reinforced)
 Biasing network implemented.
 AC/DC converter (for pos.4 2) implemented

Accessories

Extension cables

For connecting the NB 9000 Remote box or for building a Modbus network

Shielded cable

Functionality up to 50m (164ft).

em300515 price/meter

Twisted pair cable

Functionality up to 1000m (3270ft).

em300516 price/meter

Protection hose

For installation of Modbus cable in ATEX Zone 21

em300529 price/meter

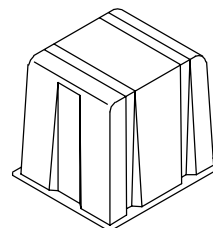
Threaded hose coupling

With thread M20 x 1,5. Fitting with protection hose em300529. Applicable for ATEX Zone 21.

em100530 price/pcs

Weather protection cover

For Ex only approved for Zone 22 or Division 2



zu300215

Mounting Kit

Bolts, washers and nuts for mounting the unit on a flange

	material	bolts	washers	nuts
zu107000	stainless steel / A2	4 pieces M16x60	8 pieces	4 pieces

Flange sealings

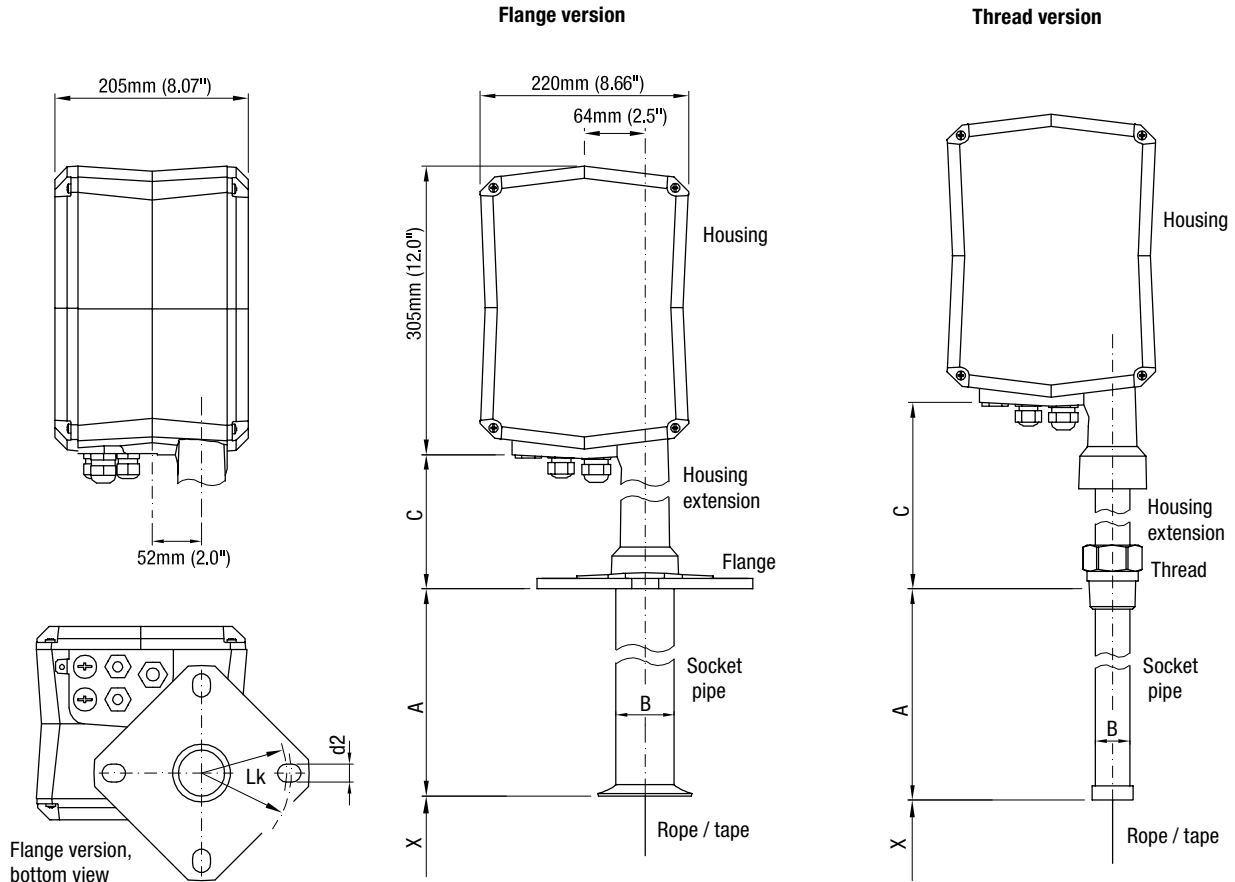
Sealings for mounting the unit on a flange.

Material: neoprene (85°C), temperature resistive plastic AFM30 (250°C)

	suitable for flanges	max. temp.	suitable mounting kit
di300125	DN100 PN16 / 4"	+85°C (185°F)	zu107000
di300108	DN100 PN16 / 4"	+250°C (482°F)	zu107000
di300127	2" / 3" 150lbs	+85°C (185°F)	zu107000
di300128	2" / 3" 150lbs	+250°C (482°F)	zu107000

Dimensions

Basic type



Dimensions

X = Length to bottom of sensor weight (in upper stop position): see next page

A = Length of socket pipe
200mm (7.9") Optional 500mm (19.7") / 1000mm (39.4")

B = Diameter of socket pipe	
Rope version with Flange DN100 / 4"	ø60mm (2.36")
All other versions	ø40mm (1.57")

C = Housing extension		
Flange version	80°C / 150°C	95mm (3.74")
	250°C	340mm (13.4")
Thread version	80°C / 150°C	160mm (6.3")
	250°C	340mm (13.4")

Rope	ø1,25mm (0.49")
Tape	12x0.2mm (0.47x0.008")

Flanges	
fitting to: DN100 PN16 / 4" 150lbs	Lk = ø90 .. 95.3mm (3.54 .. 3.75") slot d2 = ø19mm (0.75")
fitting to: 2" / 3" 150lbs	Lk = ø60.4 .. 76.2mm (2.38 .. 3.0") slot d2 = ø19mm (0.75")

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 80°C / 150°C: Aluminium All other versions: 1.4301 (304)
Rope	1.4301 (304)
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.

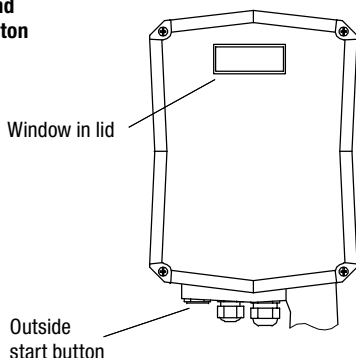


Dimensions

Options and Accessories

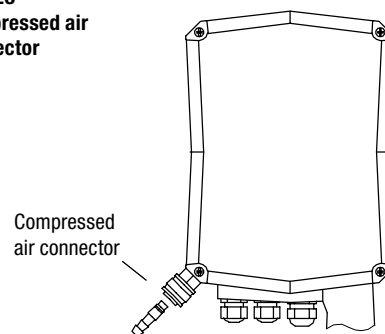
Pos. 25

Window in lid and
outside start button



Pos. 28

Compressed air
connector

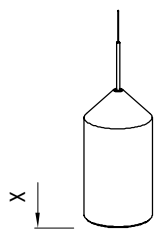


Sensor weights

Solids measurement: Rope version

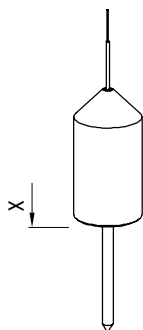
All weights ca. 1,0kg (2.2lbs)

PVC without pin



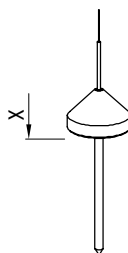
Ø81mm (3,2")
X = 137mm (5.4")
Material: PVC

PVC with pin



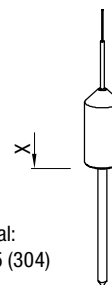
Ø81mm (3,2")
X = 137mm (5.4")
Pin: 130mm (5.1")
Material: PVC (pin POM)

Stainless steel



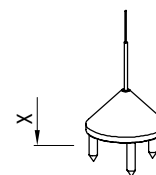
Version with
Flange DN100 / 4"
Ø75mm (3.0")
X = 25mm (1.0")
Pin: 130mm (5.1")

Material:
1.4305 (304)



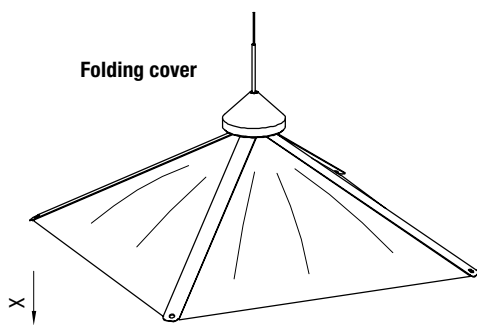
All other versions
Ø42mm (Ø 1.65")
X = 81mm (3.19")
Pin: 130mm (5.1")

Claw



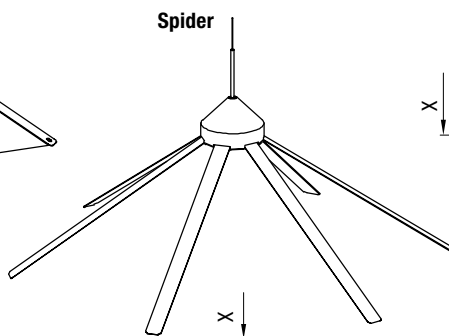
Ø95 (3.7")
X = 71mm (2.80")
Material: 1.4305 (304)

Folding cover



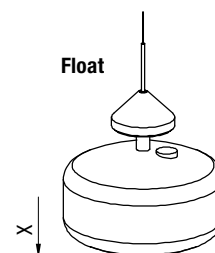
380x380mm (15x15")
X = 150mm (5.9")
Material: 1.4310 (301)
PA canvas

Spider



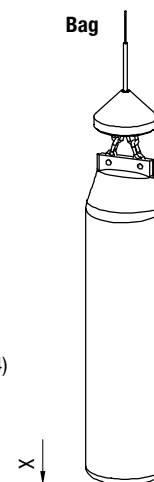
Ø600mm (23.6")
X = 160mm (6.3")
Material: 1.4301 (304) /
1.4310 (301)

Float



Ø190mm (7.5")
X = 175mm (6.9")
Material: Float PP,
Cone: 1.4305 (304)

Bag

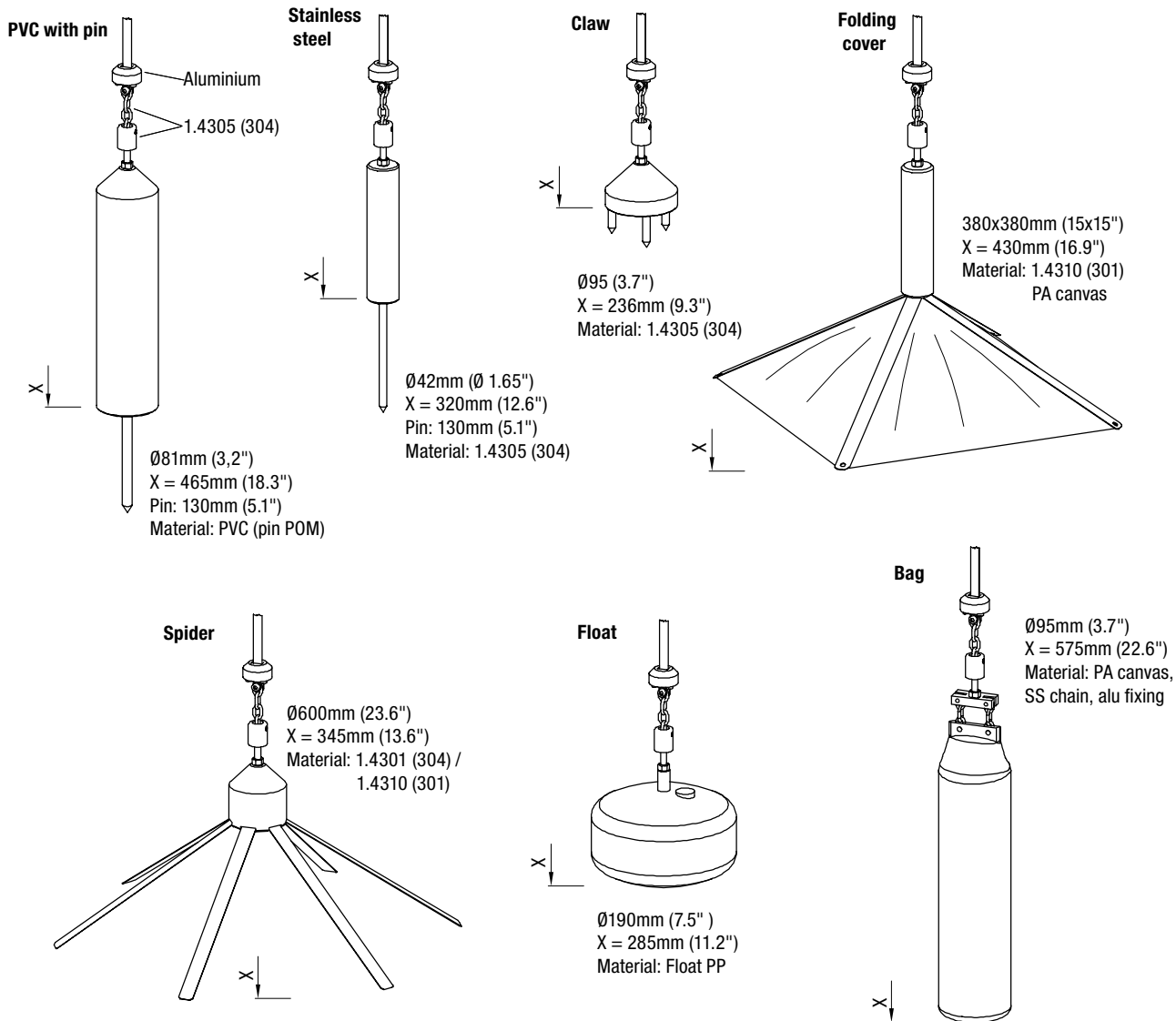


Ø95mm (3.7")
X = 460mm (18.1")
Material: PA canvas,
SS chain, alu cone

Dimensions

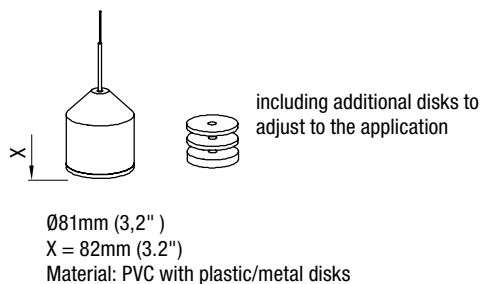
Solids measurement: Tape version

All weights ca. 2.1kg (4.6lbs)



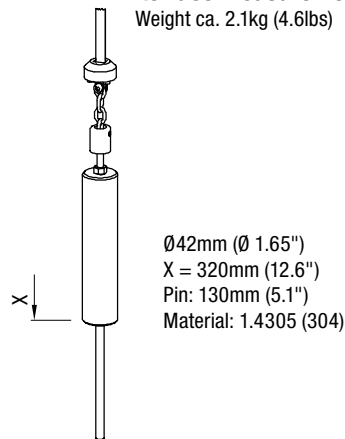
Interface measurement: Rope version

Weight ca. 1.0kg (2.2lbs)



Interface measurement: Tape version

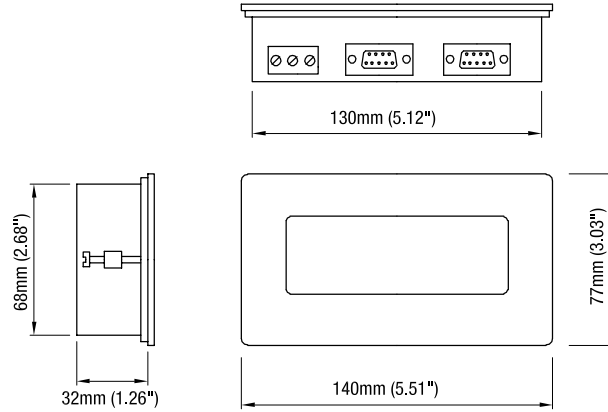
Weight ca. 2.1kg (4.6lbs)



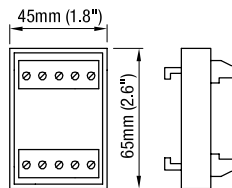
Dimensions

NB 9000 Remote Box

NB 9000 Panel mounting

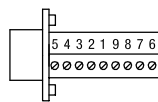


Biasing network

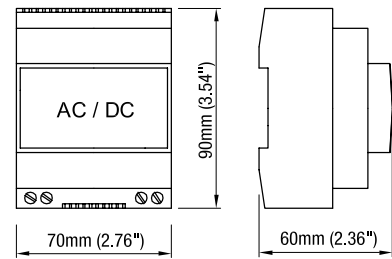


Mounting: DIN rail 35

Terminal plug

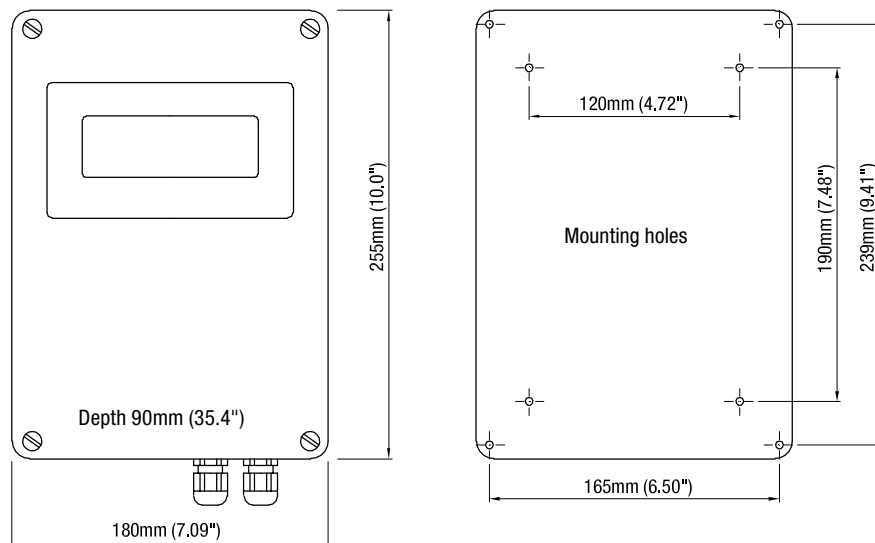


AC/DC converter



Mounting: DIN rail 35

NB 9000 Wall mounting



Spare parts

Rope roller

sl102240	Rope roller with 30m rope
sl102242	Rope roller with 30m rope for increased corrosion resistance (plastic coated)

Tape roller

sb102240	Tape roller with 40m tape
-----------------	---------------------------------

Sensor weights

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

Solid measurement

sl102220	Sensor weight for rope	PVC without pin
sl102221	Sensor weight for rope	PVC with pin
sl102222	Sensor weight for rope	Stainless steel Ø75mm (3,0")
sl102228	Sensor weight for rope	Stainless steel Ø42mm (1,65")
sl102223	Sensor weight for tape	Claw
sl102224	Sensor weight for rope	Folding cover
sl102225	Sensor weight for rope	Spider
sl102226	Sensor weight for rope	Bag
sl102227	Sensor weight for rope	Float
sb102221	Sensor weight for tape	PVC with pin
sb102222	Sensor weight for tape	Stainless steel
sb102223	Sensor weight for tape	Claw
sb102224	Sensor weight for tape	Folding cover
sb102225	Sensor weight for tape	Spider
sb102226	Sensor weight for tape	Bag
sb102227	Sensor weight for tape	Float

Interface measurement

sl102230	Sensor weight for rope	PVC with metal core
sb102230	Sensor weight for tape	Stainless steel

Motor

gm102202	Motor standard version
gm102211	Motor brushless version

Electronics

pl102691	Electronics	98 .. 253V 50–60Hz	0/4–20mA	Modbus	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
pl102690	Electronics	98 .. 253V 50–60Hz	0/4–20mA	Modbus	Electronic counting pulse (1cm 2.5cm 1/20ft 1/10ft)
pl102692	Electronics	98 .. 253V 50–60Hz	0/4–20mA	Profibus DP	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
pl102696	Electronics	20 .. 28V DC	0/4–20mA	Modbus	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)
pl102695	Electronics	20 .. 28V DC	0/4–20mA	Modbus	Electronic counting pulse (1cm 2.5cm 1/20ft 1/10ft)
pl102697	Electronics	20 .. 28V DC	0/4–20mA	Profibus DP	Relay counting pulse (5cm 10cm 1/6ft 1/3ft)

Internal Heater

em100372	220 Ohms	For power supply 98 .. 253V 50–60Hz
em100371	8 Ohms	For power supply 20 .. 28V DC

Remote Box NB 9000

em100910	Panel	24V DC
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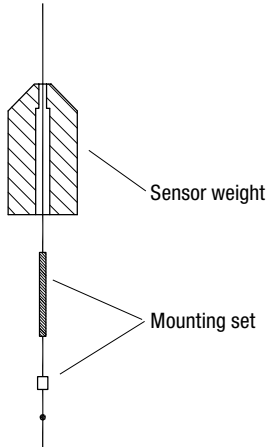


Spare parts

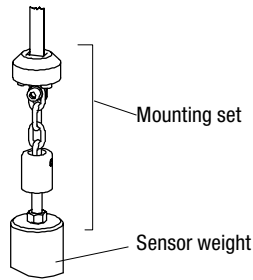
Sensor weights

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

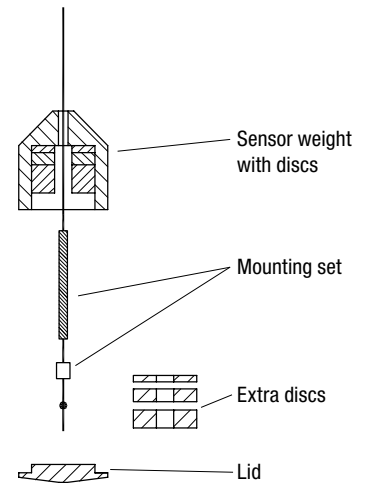
Solids measurement: rope version



Solids measurement: tape version Interface measurement: tape version

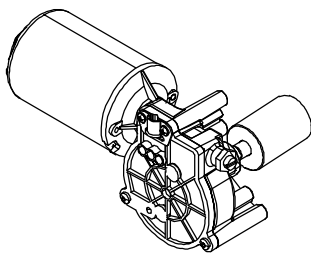


Interface measurement: rope version



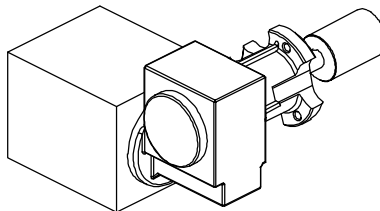
Motor

Standard

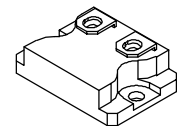


Delivery including: cable, plug, sealing, mounting tools

Brushless motor

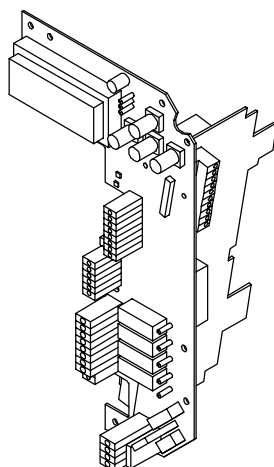


Heater



Delivery including cable and plug

Electronics



Remote Box NB 9000

Panel

