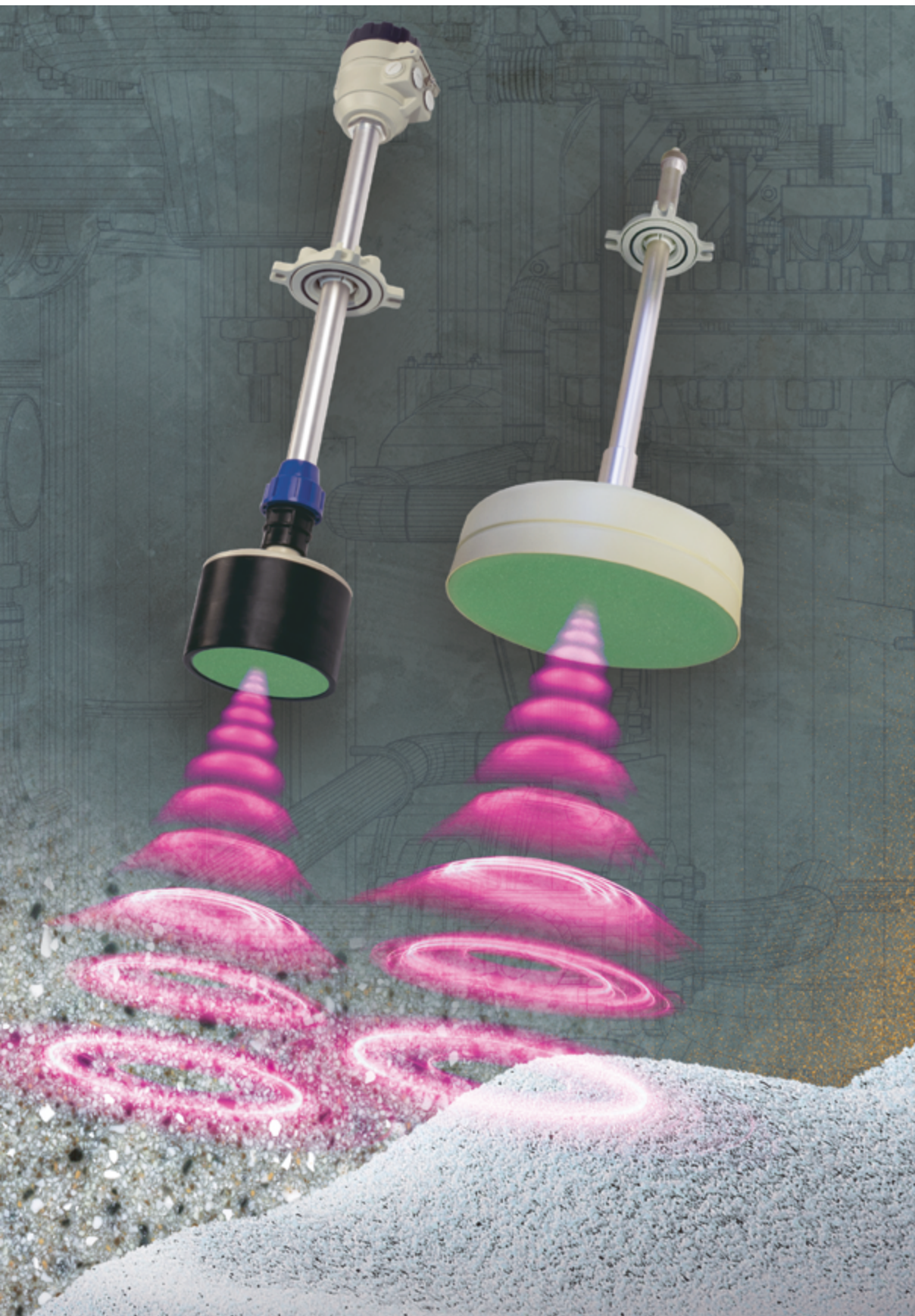


EasyTREK / EchoTREK

ULTRASONIC LEVEL TRANSMITTERS FOR SOLIDS



5 YEARS WARRANTY

NIVELCO

LEVEL TRANSMITTERS

GENERAL DESCRIPTION

The 4-wire **EasyTREK** & **EchoTREK** compact ultrasonic level transmitters are offered for solids level monitoring tasks where previously only more complex, two part systems have performed adequately. NIVELCO's high efficiency SenSonic narrow beam angle transducers, giving superb signal transmission, make possible that the **EasyTREK** & **EchoTREK** units overcome filling noise, dusting and irregular surface formations in most cases to give a high performance, compact, powder and solids level measurement transmitter. This is provided by the **QUEST+** software, using advanced process adaptive signal processing for reliable echo monitoring, offering a best-in-class solution.

MAIN FEATURES

- Non-contact level measurement
- 4-wire integrated (blind) level transmitters
- Maximum 60 m (200 feet) measuring range
- Narrow (5°) beam angle
- Full temperature compensation
- IP65 protection
- HART® communication
- Dust Ex version
- Plug-in display unit

APPLICATIONS

- Measurement of normal and explosive dust hazardous powders and bulk solids
- Level, volume and weight calculation
- Wide application range: light powders to coarse bulk solid materials
- Reliable measurement in challenging applications such as dusting during filling

CERTIFICATIONS

- EasyTREK:**
- ATEX (Ex ma ta D)
 - EAC Ex (Ex ma ta D)
- EchoTREK:**
- ATEX (Ex ma ta/tb D)



SCD-33J-4

OPERATION

Ultrasonic level metering technology is based on the principle of measuring the time required for the ultrasound pulses to cover the distance from the sensor to the surface of the medium and back. The echoes bounced back from the surface reach the face of the sensor after the time of flight of the ultrasonic impulse. The time of flight of the reflected signal is measured and processed by the electronics, and then this is converted to distance, level, volume or mass proportional data with the help of the customizable tank shape and dimensions. The intelligent **QUEST+** process adaptive signal processing software system ensures that the electronics identifies and validates the solids surface signal, giving reliable level monitoring.

Coning or arching caused by the filling / emptying process can result in an adversely weak echo when the transducer is installed vertically. The joystick aiming device, an important part of the **EasyTREK** & **EchoTREK** level transmitters offers a suitable solution to minimize most of these unfavourable effects. The optimal tilting position can be adjusted during operation and recommended to be checked at multiple levels during the filling / emptying process. As a general rule, best result is obtained by the transducer aimed towards the centre of the tank bottom.

TRANSDUCERS

Transducer housing material	EasyTREK	EchoTREK
	SCD-300	STD / SBD-300
PP, aluminum (normal type)	■	■
Aluminum (Ex type)	■	■

PROPERTIES

Functions	EasyTREK	EchoTREK
	SCD-300	STD / SBD-300
Relay / SSR	■	■
HART®	■	■
Dust Ex version	■	■
Display	-	SAP-100



SBD-300



SCD-31J-8Ex



SAP-100 display

TECHNICAL DATA

Type	EasyTREK SCD-300	EchoTREK S□D-300
System	4-wire	
Accuracy ¹⁾	± (0.2% of measured distance + 0.1% of range)	
Resolution	10 mm (0.4 inch)	
Output	Analogue	4 – 20 mA
	Relay	SPST, 48 V AC / 5 A
	Digital communication	HART®
Ambient temperature	-30 °C ... +60 °C (-22 °F ... +140 °F)	-30 °C ... +60 °C (-22 °F ... +140 °F), with display: -25 °C ... +60 °C (-13 °F ... +140 °F)
Process temperature		-30 °C ... +75 °C (-22 °F ... +167 °F)
Process pressure	0.7 – 1.1 bar (0.07 – 0.11 MPa [10 – 16 psi g]) Pabsolute and ±0.1 bar (0.01 MPa [1.45 psi g]) difference between ambient and tank pressure	
Power supply	11.4 – 40 V DC / 4.7 W or 11.4 – 28 V AC / 5.2 VA	I. version: 85 – 255 V AC / 6.8 VA II. version: 11.4 – 40 V DC / 4.1 W and 11.4 – 28 V AC / 4.6 VA
Electrical protection	Class III	Class I
Housing	Same as the transducer housing material	Paint coated aluminum
Electrical connection	LiYCY type 7x 0.5 mm ² (AWG20) shielded Ø7.5 mm (0.3 in) cable; standard cable length: 5 m (16.5 ft) (can be ordered up to 30 m [100 ft])	2x M20x1.5 plastic cable glands for Ø6 – Ø12 mm (0.25 – 0.45 in) cable, 3x terminal blocks for max. 2.5 mm ² (AWG16) wire cross section, 2x ½" NPT internal threads for cable protective pipes. Ex version: See: "Special data for Ex certified models" table
Ingress protection	IP65	
Explosion protection	See: "Special data for Ex certified models" table	
Mass	~3 – 3.5 kg (6.6 – 7.7 lb), or 6.5 kg (14.3 lb)	~7 kg (15.4 lb) or 10 kg (22 lb)

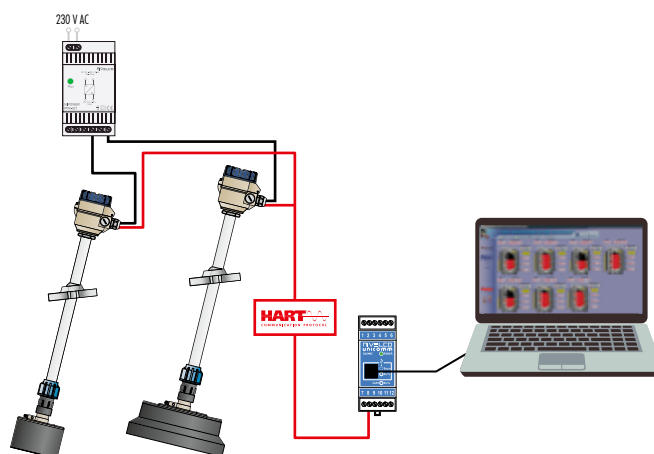
¹⁾Under optimum conditions and stabilized transducer temperature

SPECIAL DATA FOR Ex CERTIFIED MODELS

Type	EasyTREK SCD-300	EchoTREK S□D-300
Protection type	Dust Ex	
Ex marking	⊕ II 1 D Ex ma ta IIIC T85°C...T130 °C Da	⊕ II 1/2 D Ex ma ta/tb IIIC T85°C...T130 °C Dα/Db
Ambient temperature	-30 °C ... +60 °C (-22 °F ... +140 °F)	-30 °C ... +60 °C (-22 °F ... +140 °F), with display: -25 °C ... +60 °C (-13 °F ... +140 °F)
Process temperature		-30 °C ... +75 °C (-22 °F ... +167 °F)
Electrical connection	LiYCY type 7x 0.5 mm ² (AWG20) shielded Ø 7.5 mm (0.3 in) cable; standard cable length: 5 m (16.5 ft)	2x M20x1.5 cable glands with Ex ta IIIC protection type for Ø7 – Ø12 mm cable, 3x terminal blocks for max. 2.5 mm ² wire cross section, 2x ½" NPT internal threads for cable protective pipes.
Output	electronic switch: SPST, 48 V AC 50 V DC / 1 A	relay: SPDT, 250 V AC / 3 A, AC1

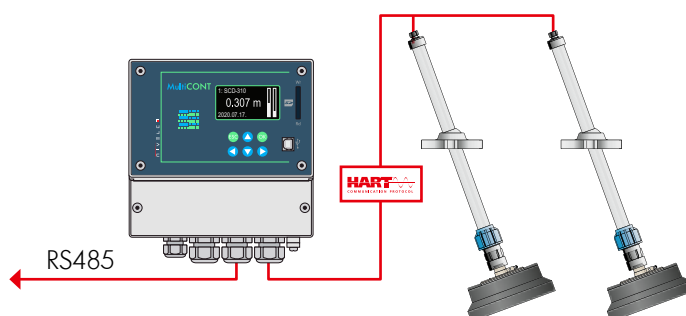
ULTRASONIC LEVEL TRANSMITTERS IN SYSTEM WITH A PC

Instruments with HART® output can be connected to a PC interfaced by a **UNICOMM HART-USB** modem. A HART® multidrop loop can consist of a maximum of 15 transmitters. All measured values can be visualized and/or the **EasyTREK / EchoTREK** transmitters can be remote programmed by the PC. Applicable software: **EView2** configuration software or **NIVISION** process visualization software.

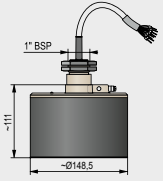
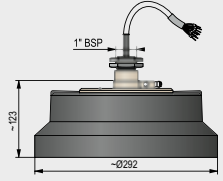
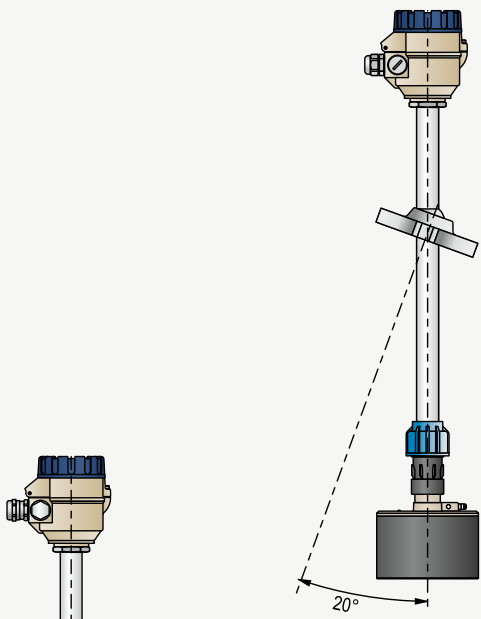
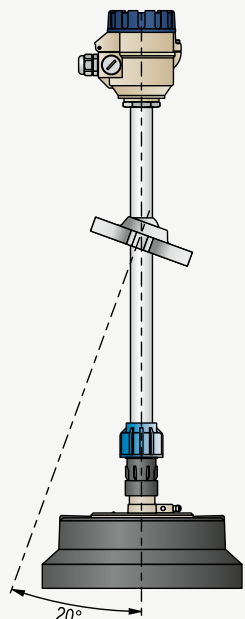
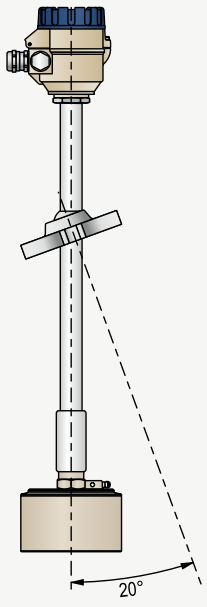
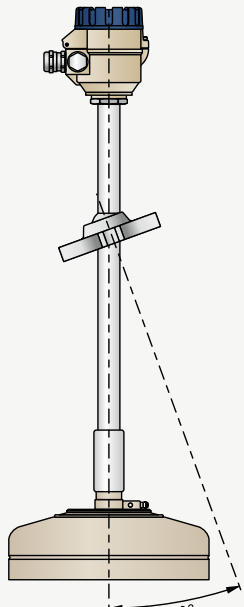
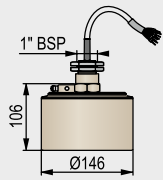
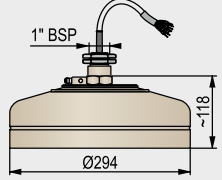


ULTRASONIC LEVEL TRANSMITTERS IN HART® MULTIDROP LOOP

The **MultiCONT** processes and displays measurement data supplied by NIVELCO's HART® equipped transmitters connected to a Multidrop loop. Up to 15 transmitters (also mixed models) can be connected and remote programming can be also performed through the **MultiCONT**. Re-transmission of the data is possible via RS485 communication line to a PC or PLC when needed.

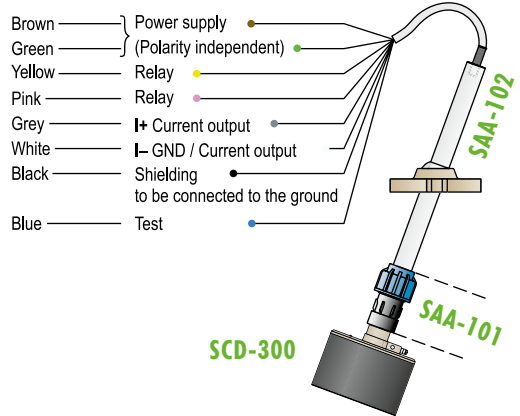
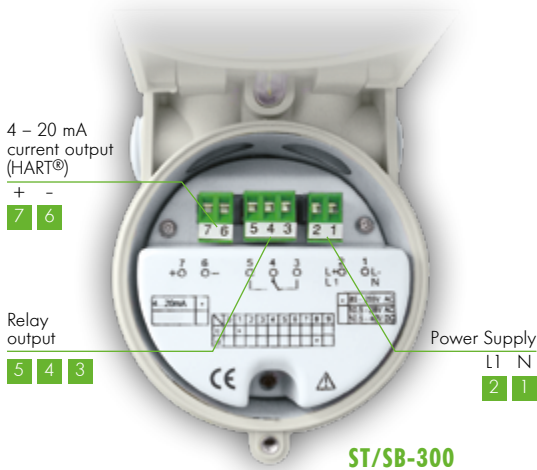


TRANSDUCER DATA AND DIMENSIONS

Transducer type	S□D-34	S□D-33	S□D-31
Recommended applications	Small tanks, hoppers, conveyor belts. Both powders and granules.	Powders / dusting granules = small / medium measuring range. Non-dusting granules = medium measuring range.	Powders / highly dusting granules = medium / high measuring range. Non-dusting granules = high measuring range.
EasyTREK (normal type)			
EchoTREK (normal type)			
EchoTREK (Ex type)			
EasyTREK (Ex type)			
Transducer housing material	Normal type: PP and aluminum. Ex type: paint coated aluminum		
Surface of the transducer	Closed cell Polyurethane foam sensor face (PUR)		
Beam angle	5°		
Max. measuring range ⁽¹⁾	15 m (50 feet)	30 m (100 feet)	60 m (200 feet)
Min. measuring range ⁽¹⁾	0.6 m (2 feet)		1 m (3.3 feet)

⁽¹⁾ Under optimum conditions and stabilized transducer temperature

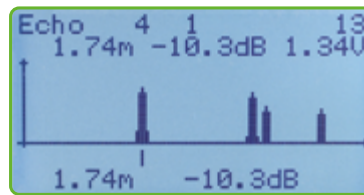
WIRING



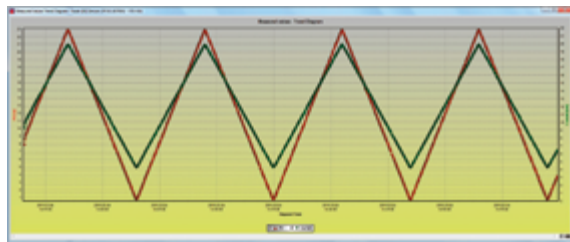
DISPLAY



ECHO MAP WITH MultiCONT

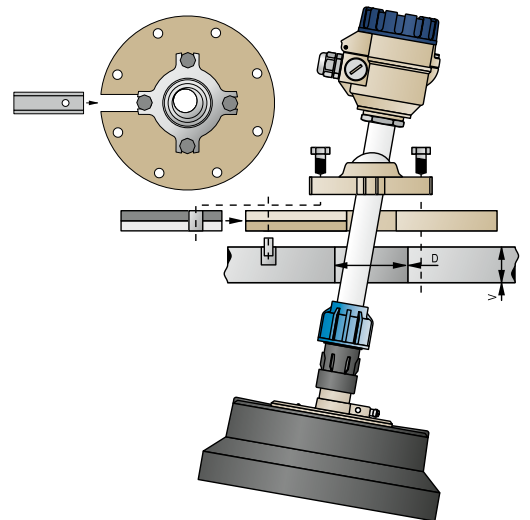


DISPLAY MEASUREMENT VALUE WITH EView2



MOUNTING

Coning or arching is a general feature of solid material storage is caused by the filling / emptying process. Optimising the aiming by the **SAA-102** joystick (part of the **EchoTREK** units) is recommended in these situations. The drawing on the right shows a special **SFA-3□5** type flange providing easy and fast mounting on the silo top. In case the entire tilting range of the aiming arm is required, the diameter of the opening "D" and the thickness of the roof "V" is to be taken into account. The chart below aids the design of the proper mounting position for the **EasyTREK** / **EchoTREK** units.



Diameter of the opening "D"	Max. thickness of the roof "V"
160 mm (6.3 inch)	110 mm (4.3 inch)
190 mm (7.5 inch)	150 mm (5.9 inch)
230 mm (9.0 inch)	200 mm (7.8 inch)
300 mm (11.8 inch)	280 mm (11.0 inch)
340 mm (13.4 inch)	300 mm (11.8 inch)



ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

EasyTREK 4-wire integrated compact ultrasonic level transmitters for solids

EasyTREK S **■** D-3 **■** **■** **■** - **■** ⁽¹⁾

Type	Code	Measuring range / Frequency	Code	Process connection	Code	Output / Ex	Code
4-wire integrated transmitter	C	60 m (200 feet) / 15 kHz	1	1" BSP thread	0	4 - 20 mA + HART® + Relay	4
		30 m (100 feet) / 30 kHz	3	With aiming device	J	4 - 20 mA + HART® + SSR / Ex ma ta D	8
		15 m (50 feet) / 40 kHz	4				

⁽¹⁾The order code of an Ex version should end in "Ex"

EchoTREK 4-wire compact ultrasonic level transmitters for solids

EchoTREK S **■** D-3 **■** **■** **■** - **■** ⁽¹⁾

Type	Code	Measuring range / Frequency	Code	Process connection	Code	Output / Ex	Code	
4-wire compact transmitter	T	60 m (200 feet) / 15 kHz	1	With aiming device	J	85 - 255 V AC power supply	1	
		30 m (100 feet) / 30 kHz	3				HART®	3
		15 m (50 feet) / 40 kHz	4				Ex ma ta/tb D	5
4-wire compact transmitter + display	B					11.4 - 40 V DC and 11.4 - 28 V AC power supply	HART® / Ex ma ta/tb D	7
							4 - 20 mA + relay	2
							HART®	4
							Ex ma ta/tb D	6
							HART® / Ex ma ta/tb D	8

⁽¹⁾The order code of an Ex version should end in "Ex"

ACCESSORIES TO ORDER

Separately orderable PP plastic flanges

NIVOSONAR SFA-3 **■** **■** **■** -0

DIN flanges	Code	FF ANSI flanges	Code	JIS flanges	Code	For units with	Code
DN80	2	3" FF	A	80A	G	Ø35 mm hole (1" BSP)	1
DN100	3	4" FF	B	100A	H	2" BSP thread	2
DN125	4	5" FF	C	125A	P	2" NPT thread	4
DN150	5	6" FF	D	150A	R	For mounting to SAA-102 aiming device	5
DN200	6	8" FF	E	200A	S	1½" BSP thread	6
DN250	7	12" FF	Y	300A	Z	1½" NPT thread	7
DN300	8						

Accessories	Order code
Fast connecting gland for pipe mounting, 1", PP	SAA-101-0
Aiming device, L=500 mm, Aluminum, Pg9, drilled as DN50 PN16	SAA-102-0
Damping gland for mounting the devices to thin metal roofs, PP	SAA-106-0

Accessories	Order code
Plug-in programming and display module	SAP-100
Multichannel process controller and display unit	MultiCONT P-200
24 V DC power supply module, DIN rail mountable	NIPOWER PPK-331
HART®-USB/RS485 modem for remote programming with PC, DIN rail mountable	UNICOMM SAK-305
HART®-USB modem for remote programming with PC	UNICOMM SAT-304
HART®-USB/Bluetooth® modem for remote programming with PC	UNICOMM SAT-504
EView2 - configuration software for remote programming with PC	FREE download



SBD-34J

