EchoTREK

ULTRASONIC LEVEL TRANSMITTERS

30 YEARS

NIVELCO

3 év garancia · 3 years warranty

LEVEL TRANSMITTERS

OUR PROFESSION IS YOUR LEVEL

EchoTREK LEVEL TRANSMITTERS FOR LIQUIDS

MAIN FEATURES

- Max. 25 m measuring range
- Digital communication
- Power relay output for control and alarm
- Full temperature compensation
- From water through chemical applications
- Complete open channel flow metering package
- 32 point linearization
- ATEX approval

- **Data-logging facility.** The data logger incorporated in the two-wire EchoTREK can store 10.000 sets of data. Recording can be triggered by a specific event or by time. The EchoTREK holds data available for downloading it via HART protocol as long as power is on, but retains data without power for one week.

- **IrDA communication port** on the programming module (for infrared communication to download information from the data logger)

TECHNICAL DATA

Type	SE/SG-39□-□	SE/SG-38□-□	SE/SG-37□-□	SE/SG-36□-□	SE/SG-34□-□	SE/SG-32□-□
EchoTREK level transmitters for liquids with plastic transducers (2-wire)						

Type	ST/SB-49□-□	ST/SB-48□-□	ST/SB-47□-□	ST/SB-46□-□	ST/SB-44□-□	ST/SB-42□-□
EchoTREK level transmitters for liquids with plastic transducers (4-wire with 2 relays)						
Application	Small vessels with 1 ½" process connection	Small vessels with 2" process connection		Small vessels with flange	Mid-size vessels with flange	Tall vessels with flange
Max. measuring range	4 m (13 feet) / PTFE: 3 m (10 feet)	6 m (20 feet) / PTFE: 5 m (16.5 feet)	8 m (26 feet) / PTFE: 6 m (20 feet)	10 m (33 feet)	15 m (50 feet)	25 m (82 feet)
Min. measuring range	0.2 m (0.65 feet) / PTFE: 0.25 m (0.82 feet)	0.25 m (0.82 feet)	0.35 m (1.15 feet)	0.35 m (1.15 feet)	0.45 m (1.5 feet)	0.6 m (2 feet)
Total beam angle	6°	5°	7°	5°	5°	7°
Process connection	1 ½" BSP / NPT	2" BSP / NPT	2" BSP / NPT	DN80 flange	DN125 flange	DN150 flange
Sensor material	PP , PVDF or PTFE				PP or PVDF	
Housing material	Paint coated aluminium or plastic PBT					
Accuracy*	± (0.2% of measured distance + 0.05% of range)					
Ingress protection	Sensor: IP 68 Housing: IP 67					
Process temperature	–30 °C ... +90 °C (–22 °F ... +194 °F)					
Output SE/SG-3	4 - 20 mA max. 600 Ohm, HART, Relay (SPDT) 30V DC, 1A DC					
Output ST/SB-4**	4 - 20 mA max. 600 Ohm, HART, Relay 1 (SPDT) 250V AC, 3 A AC1, Relay 2 (SPDT) 30 V DC, 1 A DC					
Power supply SE/SG-3	12…36 V DC / 48 …720 mW					
Power supply ST/SB-4	85…255 V AC / 2 VA or 20…28 V AC/DC / 3 VA / 3 W					
Electrical connection	Standard version: 2 x M20x1.5 plastic cable gland: Cable: Ø6 … 12 mm (0.25 … 0.45 inch) Ex version: 2 x M20x1.5 metal cable gland: Cable: Ø7 … 13 mm (0.3 … 0.5 inch) Wire cross section: 0.5 ... 1.5 mm² (0.0007 ... 0.002 square inch)					
Ex marking	ATEX Ⓔx II 1 G EEx ia IIB T6 (only for 2-wire)					–

* Under optimum conditions and stabilized transducer temperature   ** Two parallel operating relays

Type	S□S-□6□-□ S□M-□6□-□	S□S-□4□-□ S□M-□4□-□	S□S-□2□-□ S□M-□2□-□
EchoTREK transmitters with stainless steel flush face transducers for liquids (2 or 4 wire)*			
Max. measuring range	7 m (23 feet)	12 m (40 feet)	15 m (50 feet)
Min. measuring range	0.4 m (1.3 feet)	0.55 m (1.8 feet)	0.65 m (2.15 feet)
Process connection	DN80 flange	DN125 flange	DN150 flange
Sensor material	Stainless Steel		
Housing material	Paint coated aluminium or plastic PBT		
Process temperature	–30 °C … +100 °C (–22 °F ... +212 °F) (CIP 120 °C (248 °F) for max. 2 hours)		

* Further specifications are identical with those of plastic transducers

EchoTREK ultrasonic transmitters offer the best in liquid level measurement in a compact simple package. Developed using the established SenSonic range of narrow beam angle pulse echo transducers, EchoTREK units are available with measurement ranges up to 25 meters - with standard plastic, PTFE or stainless steel sensor faces. Installed on the tank roof, or above the liquid level surface to be measured, the transmitter gives an analogue output proportional to liquid level. Initial set-up is achieved using the simple plug-in display module: then the intelligent QUEST+ process adaptive signal processing software system ensures that the electronics identifies and validates the liquid surface signal, giving reliable level monitoring.

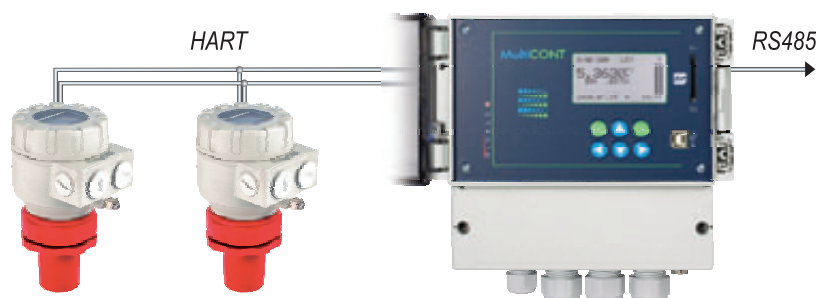# EchoTREK LEVEL TRANSMITTERS FOR SOLIDS (4-WIRE)

MAIN FEATURES

- Measuring range up to 60m
- Power relay output for control and alarm
- Possibility of metering even during filling
- Full temperature compensation
- Narrow beam, highly efficient transducers
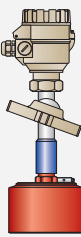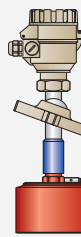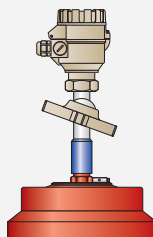- Spurious echo rejection
- Dust-Ex approval

Type	STD/SBD-34□-□	STD/SBD-33□-□	STD/SBD-31□-□
EchoTREK transmitters for solids (four-wire)			
Application	Monitoring of small tanks, chutes, conveyer belts with narrow measuring range	Powders, powdery granules with narrow / medium measuring range. non-powdery granules with medium measuring range	Powders, powdery granules, non-powdery granules with wide measuring range
Max. measuring range	15 m (50 feet)	30 m (100 feet)	60 m (200 feet)
Min. measuring range	0.6 m (2 feet)	0.6 m (2 feet)	1 m (3.3 feet)
Total beam angle	5°		
Process connection	Flange with aimer		
Sensor material	Plastic or aluminium sensor with foam facing		
Housing material	Paint coated aluminium		
Accuracy *	± (0.2% of measured distance + 0.05% of range)		
Ingress protection	Sensor: IP 65 Housing: IP 67		
Process temperature	–30 °C … + 75 °C (–22 °F … +167 °F)		
Output	4 - 20 mA max. 600 Ohm, HART, Relay (SPDT) 250V AC 3A AC1		
Power supply	85…255 V AC / 6.8 VA or 11.4…40 V DC / 4.1 W and 11.4…28 V AC / 4.6 VA		
Ex marking	ATEX ⬡ II 1/2 D IP65 T130°C		

* Under optimum conditions and stabilized transducer temperature

EchoTREK measures the level of any powder or free flowing solid, even under difficult circumstances - such as dust clouds caused by pneumatic filling, or constantly varying and uneven material surfaces. Simple to install and commission, a built-in aiming device aids initial setting up on the tank roof. EchoTREK offers a unique cost effective transmitter solution for single as well as multi-vessel applications.

A surprise from NIVELCO - the experts in solids level measurement. EchoTREK compact level transmitters featuring SenSonic narrow beam angle transducers are offered for solids level monitoring - where previously only more complex, two part systems have performed. With the high efficiency SenSonic transducers, giving superb signal transmission, plus the QUEST+ software, using advanced process adaptive signal processing for reliable echo monitoring, 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.
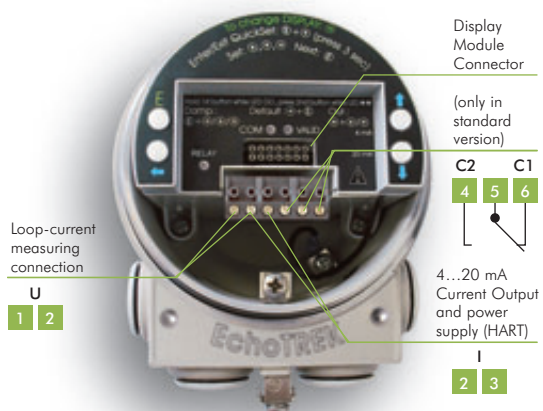
EchoTREK IN SYSTEMS WITH PC

Multichannel application with HART MODEM and PC
Using a PC and UNICOMM HART-USB Modem, it is possible to create your own multi-drop HART network, where the PC displays all EchoTREK measurement data and also allows re-programming of the units as necessary. In this way the outputs - derived from the displayed data - can be programmed via the PC, which acts as the master. A maximum of 15 transmitters can be connected to one HART modem and NIVELCO's EView configuration or NIVISION process visualization software can be applied.

EchoTREK SELECTION CHART

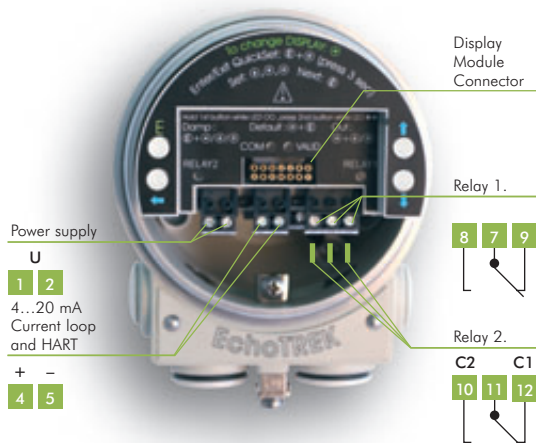| EchoTREK	Liquids		Solids
	SE/SG-300	ST/SB-400	STD/SBD-300
Relay	■	■	■
HART	■	■	■
Ex ia	■	–	–
Dust Ex	–	–	■
IrDa	■	■	–
Logger	■	■	–
Display	SAP-200	SAP-200	SAP-100

HART

RS485

EchoTREK IN SYSTEMS WITH MultiCONT

The MultiCONT receives digital data from a maximum of 15 EchoTREK transmitters featuring HART communication then processes, displays or, if needed, transmits them to a PC via RS485 output. If visualization is needed, NIVELCO's NIVISION software offers a solution.
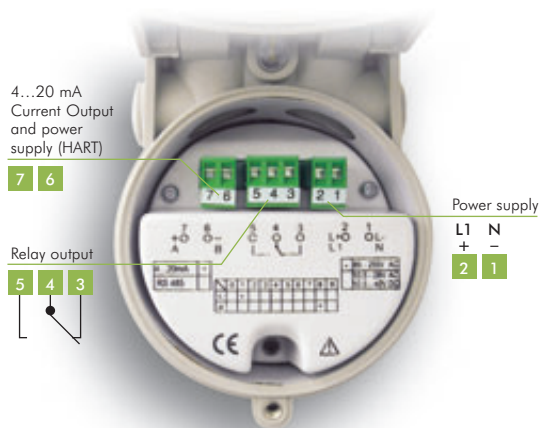
WIRING

Display
Module
Connector

(only in
standard
version)

Loop-current
measuring
connection

U
| 1 | 2 |

C2   **C1**
| 4 | 5 | 6 |

4...20 mA
Current Output
and power
supply (HART)

I
| 2 | 3 |

SE/SG - 300

Display
Module
Connector

Relay 1.

| 8 | 7 | 9 |

Power supply

U
| 1 | 2 |

4...20 mA
Current loop
and HART

Relay 2.

+   **−**
| 4 | 5 |

C2   **C1**
| 10 | 11 | 12 |

ST/SB - 400

4...20 mA
Current Output
and power
supply (HART)

| 7 | 6 |

Power supply

L1   **N**
+   **−**
| 2 | 1 |

Relay output

| 5 | 4 | 3 |

STD/SBD - 300

PROGRAMMING AND DISPLAY MODULE

SE/SG-300

SAP-200

ST/SB-400

SAP-100

STD/SBD-300

The SAP-100 is a combined display and programming module whereas the SAP-200 is just as a display aiding programming by keys on the EchoTREK's body.

ORDER CODES

EchoTREK compact transmitters for solids

EchoTREK S ☐ D - 3 ☐ J - ☐ (1)

Type	Code
4-wire transmitter	T
4-wire transmitter with display	B

Measuring range	Code
60 m (200 feet)	1
30 m (100 feet)	3
15 m (50 feet)	4

Power Supply / Output / Ex	Code
85…255 V AC	
4 - 20 mA + Relay	1
4 - 20 mA + HART + Relay	3
4 - 20 mA + Relay / Ex	5
4 - 20 mA + HART + Relay / Ex	7
11.4…40 V DC; 11.4…28 V AC	
4 - 20 mA + Relay	2
4 - 20 mA + HART + Relay	4
4 - 20 mA + Relay / Ex	6
4 - 20 mA + HART + Relay / Ex	8

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

ACCESSORIES

SAP - 100 programming module
SAS - 301 EView HART software on CD

SAT - 304 HART modem
SFA - ☐☐☐ flanges

www.nivelco.com

ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

EchoTREK compact transmitters for liquids

EchoTREK S ☐☐ - 3 ☐☐ - ☐ (1)

2-wire

Type	Code
2-wire transmitter	E
2-wire transmitter with display	G

Sensor / Housing mat.	Code
PP / Aluminium	A
PVDF / Aluminium	B
PTFE / Aluminium	T
St. st. / Aluminium	S
PP / Plastic housing	P
PVDF / Plastic h.	V
PTFE / Plastic h.	F
St. st. / Plastic h.	M

Measuring range[2]	Code
25 m (82 feet)	2
15 m (50 feet)	4
10 m (33 feet)	6
8 m (26 feet)	7
6 m (20 feet)	8
4 m (13 feet)	9

Process connection[3]	Code
BSP thread	0
NPT thread	N
DN80 PN16/PP	2
DN100 PN16/PP	3
DN125 PN16/PP	4
DN150 PN16/PP	5
DN200 PN16/PP	6
200 mm bracket	K
500 mm bracket	L
700 mm bracket	M

Output / Ex	Code
4 - 20 mA + LOGGER	1
4 - 20 mA	2
4 - 20 mA + HART + LOGGER	3
4 - 20 mA + HART	4
4 - 20 mA + LOGGER / Ex	5
4 - 20 mA / Ex	6
4 - 20 mA + HART + LOGGER / Ex	7
4 - 20 mA + HART / Ex	8
4 - 20 mA + LOGGER + Relay	L
4 - 20 mA + Relay	R
4 - 20 mA + HART + LOGGER + Relay	A
4 - 20 mA + HART + Relay	H
PROFIBUS PA	P
PROFIBUS PA / Ex	E [4]

(1) The order code of an Ex version should end in 'Ex'
(2) PTFE (Teflon) and stainless steel sensors have different measuring range
(3) The S☐☐-39, -38, -37 types feature threaded process connections while the other versions are flanged or mounting bracket equipped. Separate mounting brackets or flanges can be ordered for threaded versions.
(4) Under development

ACCESSORIES
SAP - 200 plug-in display module, for 2-wire transmitter
SAS - 302 Eview HART software on CD
SAT - 304 HART modem
SAK - 305 HART-USB/RS485 modem
SAA - ☐☐☐-☐ flanges

EchoTREK compact transmitters for liquids

EchoTREK S ☐☐ - 4 ☐☐ - ☐

4-wire

Type	Code
4-wire transmitter	T
4-wire transmitter with display	B

Sensor / housing mat.	Code
PP / Aluminium	A
PVDF / Aluminium	B
PTFE / Aluminium	T
St. st. / Aluminium	S
PP / Plastic housing	P
PVDF / Plastic h.	V
PTFE / Plastic h.	F
St. st. / Plastic h.	M

Measuring range[5]	Code
25 m (82 feet)	2
15 m (50 feet)	4
10 m (33 feet)	6
8 m (26 feet)	7
6 m (20 feet)	8
4 m (13 feet)	9

Process connection[6]	Code
BSP thread	0
NPT thread	N
DN80 PN16/PP	2
DN100 PN16/PP	3
DN125 PN16/PP	4
DN150 PN16/PP	5
DN200 PN16/PP	6
200 mm bracket	K
500 mm bracket	L
700 mm bracket	M

Output[7] / Power Supply	Code
4…20 mA + 2x Relay / 85-255 V AC	1
4…20 mA + 2x Relay / 24 V AC/DC	2
4…20 mA + HART + 2x Relay / 85-255 V AC	3
4…20 mA + HART + 2x Relay / 24 V AC/DC	4
4…20 mA + HART + LOGGER + 2x Relay / 85-255 V AC	G
4…20 mA + HART + LOGGER + 2x Relay / 24 V AC/DC	H
4…20 mA + LOGGER + 2x Relay / 85-255 V AC	K
4…20 mA + LOGGER + 2x Relay / 24 V AC/DC	L

(5) PTFE (Teflon) and stainless steel sensors have different measuring range
(6) The S☐☐-49, -48, -47 types feature threaded process connections while the other versions are flanged or mounting bracket equipped. Separate mounting brackets can be ordered for threaded versions.
(7) Two parallel operating relays

ACCESSORIES
SAP - 200 programming module
SAS - 302 Eview HART software on CD
SAT - 304 HART modem
SAK - 305 HART-USB/RS485 modem
SAA - ☐☐☐-☐ flanges