EchoTREK
ULTRASONIC LEVEL TRANSMITTERS
**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.

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

**TECHNICAL DATA**

### Type

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>EchoTREK level transmitters for liquids with plastic transducers (2-wire)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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

### EchoTREK level transmitters for liquids with plastic transducers (4-wire with 2 relays)

<table>
<thead>
<tr>
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<tbody>
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</tr>
</tbody>
</table>

### Technical Specifications

- **Max. measuring range**
  - SE/SG-37: 0.4 m (1.3 feet)
  - ST/SB-42: 2" BSP / NPT
  - ST/SB-47: 2" BSP / NPT
- **Min. measuring range**
  - ST/SB-44: 0.65 m (2.15 feet)
- **Process temperature**
  - ST/SB-49: –30 °C ... +100 °C (–22 °F ... +212 °F) (CIP 120 °C (248 °F) for max. 2 hours)
- **Process connection**
  - SE/SG-36: 1 ½" BSP / NPT
  - SE/SG-38: 2" BSP / NPT
- **Sensor material**
  - Paint coated aluminium or plastic PBT
  - PP or PVDF
  - PTFE

### Housing material

- Paint coated aluminium or plastic PBT
- PP, PVDF or PTFE

### Ex marking

- ATEX (C) II 1 G Ex ia IIB T6

### Accuracy

- ± (0.2% of measured distance + 0.05% of range)

### Ingress protection

- Sensor: IP 68
- Housing: IP 67

### Power supply

- SE/SG-3: 24 V DC / 100 mW
- ST/SB-4: 24 V DC / 250 mW
- SE/SG-36: 12...36 V DC / 48...720 mW

### 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)

### Process parameters

- Ex marking: ATEX (C) II 1 G Ex ia IIB T6

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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

**EchoTREK SELECTION CHART**

<table>
<thead>
<tr>
<th>Type</th>
<th>STD/SBD-34□-□</th>
<th>STD/SBD-33□-□</th>
<th>STD/SBD-31□-□</th>
</tr>
</thead>
<tbody>
<tr>
<td>EchoTREK</td>
<td>Transmitters</td>
<td>Transmitters</td>
<td>Transmitters</td>
</tr>
<tr>
<td></td>
<td>for solids</td>
<td>(four-wire)</td>
<td>(four-wire)</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th></th>
<th>Monitoring of small tanks, chutes, conveyer belts with narrow measuring range</th>
<th>Powders, powdery granules with narrow / medium measuring range. non-powdery granules with medium measuring range</th>
<th>Powders, powdery granules, non-powdery granules with wide measuring range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. measuring range</td>
<td>15 m (50 feet)</td>
<td>30 m (100 feet)</td>
<td>60 m (200 feet)</td>
</tr>
<tr>
<td>Min. measuring range</td>
<td>0.6 m (2 feet)</td>
<td>0.6 m (2 feet)</td>
<td>1 m (3.3 feet)</td>
</tr>
<tr>
<td>Total beam angle</td>
<td>5°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process connection</td>
<td>Flange with aimer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensor material</td>
<td>Plastic or aluminium sensor with foam facing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Paint coated aluminium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy *</td>
<td>± (0.2% of measured distance + 0.05% of range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingress protection</td>
<td>Sensor: IP 65  Housing: IP 67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process temperature</td>
<td>–30 °C … + 75 °C (-22 °F … +167 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>4 - 20 mA max. 600 Ohm, HART, Relay (SPDT) 250V AC 3A AC1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ex marking</td>
<td>ATEX II 1/2 D IP65 T130°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Under optimum conditions and stabilized transducer temperature

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 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**

**SE/SG - 300**

- Power supply
- Relay output
- 4…20 mA Current Output and power supply (HART)
- Loop-current measuring connection

**ST/SB - 400**

- Power supply
- Relay 1.
- Relay 2.
- 4…20 mA Current loop and HART

**STD/SBD - 300**

- Power supply
- Relay output
- 4…20 mA Current Output and power supply (HART)
PROGRAMMING AND DISPLAY MODULE

EchoTREK compact transmitters for solids

Measuring range

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Power Supply / Output / Ex</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-wire transmitter</td>
<td>T</td>
<td>85…255 V AC</td>
<td></td>
</tr>
<tr>
<td>4-wire transmitter with display</td>
<td>B</td>
<td>4 - 20 mA + Relay</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 20 mA + HART + Relay</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 20 mA + Relay / Ex</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 20 mA + HART + Relay / Ex</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.4…40 V DC, 11.4…28 V AC</td>
<td></td>
</tr>
<tr>
<td>60 m (200 feet)</td>
<td>1</td>
<td>4 - 20 mA + Relay</td>
<td>2</td>
</tr>
<tr>
<td>30 m (100 feet)</td>
<td>3</td>
<td>4 - 20 mA + HART + Relay</td>
<td>4</td>
</tr>
<tr>
<td>15 m (50 feet)</td>
<td>4</td>
<td>4 - 20 mA + Relay / Ex</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 20 mA + HART + Relay / Ex</td>
<td>8</td>
</tr>
</tbody>
</table>

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

ORDER CODES

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.

SAP-100

SAP-200

SAP-100

SAP-100

ACCESSORIES

SAP - 100 programming module
SAS - 301 View HART software on CD
SAT - 304 HART modem
SFA - flanges
ORDER CODES (NOT ALL COMBINATIONS AVAILABLE)

EchoTREK compact transmitters for liquids

**EchoTREK S [ ] - 3 [ ] - [ ]**

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Sensor / Housing mat.</th>
<th>Code</th>
<th>Measuring range</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-wire transmitter</td>
<td>E</td>
<td>PP / Aluminium</td>
<td>A</td>
<td>25 m (82 feet)</td>
<td>2</td>
</tr>
<tr>
<td>2-wire transmitter</td>
<td>G</td>
<td>PVDF / Aluminium</td>
<td>B</td>
<td>15 m (50 feet)</td>
<td>4</td>
</tr>
<tr>
<td>with display</td>
<td></td>
<td>PTFE / Aluminium</td>
<td>T</td>
<td>10 m (33 feet)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. st. / Aluminium</td>
<td>S</td>
<td>8 m (26 feet)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PP / Plastic housing</td>
<td>P</td>
<td>6 m (20 feet)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PTFE / Plastic h.</td>
<td>V</td>
<td>4 m (13 feet)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. st. / Plastic h.</td>
<td>M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Process connection**

- BSD 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**

- 4 - 20 mA + LOGGER 1
- 24 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

**EchoTREK compact transmitters for liquids**

**EchoTREK S [ ] - 4 [ ] - [ ]**

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Sensor / Housing mat.</th>
<th>Code</th>
<th>Measuring range</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-wire transmitter</td>
<td>T</td>
<td>PP / Aluminium</td>
<td>A</td>
<td>25 m (82 feet)</td>
<td>2</td>
</tr>
<tr>
<td>4-wire transmitter</td>
<td>B</td>
<td>PVDF / Aluminium</td>
<td>B</td>
<td>15 m (50 feet)</td>
<td>4</td>
</tr>
<tr>
<td>with display</td>
<td></td>
<td>PTFE / Aluminium</td>
<td>T</td>
<td>10 m (33 feet)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. st. / Aluminium</td>
<td>S</td>
<td>8 m (26 feet)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PP / Plastic housing</td>
<td>P</td>
<td>6 m (20 feet)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PTFE / Plastic h.</td>
<td>V</td>
<td>4 m (13 feet)</td>
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**Process connection**

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- 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 / Power Supply**

- 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 + LOGGER + 2x Relay / 85-255 V AC 5
- 4…20 mA + LOGGER + 2x Relay / 24 V AC/DC 6
- 4…20 mA + LOGGER + Relay / 85-255 V AC 7
- 4…20 mA + LOGGER + Relay / 24 V AC/DC 8

**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

**Specifications in metric & US units!**