# EASTERN reliability

Ultrasonic Level System

Eastern Reliability's Ultrasonic Leveling System uses ultrasonic technology to continually perform measurements of tank contents to monitor and notify user on contents level. An added alarm is activated notifying user level has reached full and a silence button to cancel alarm sound when addressed.

Ultrasonic Transmitter

Ultrasonic level transmitters provide continuous level measurement up to 39.3' with a 4-20mA analog output signal and can be configured via an integral push button display module. The non-contact reflective technology delivers reliable level measurement in condensing environments. It is ideal for bulk tanks with non-foaming or mildly vaporous media such as chemicals, water, wastewater, and oils. Typical application areas include bulk storage, neutralization tanks, clarifiers, and waste sumps.
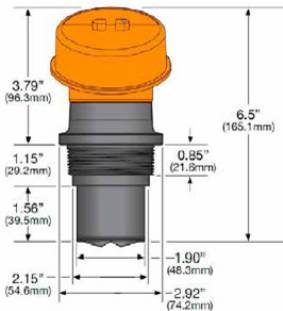
- Measuring range: 19.6' or 39.3'
- Reflective technology, reliable measurement (even with condensation)
- Corrosion-resistant PVDF transducer
- Narrow 3" beam width for applications with limited space
- Fail-safe diagnostics with selectable signal fail-safe outputs
- LCD display indicates level in inches, meters, or percent of span
- Configuration via push-button display or NEOCal software
- Automatic temperature compensation from -40 to 176°F

NEO-7006

Reflective Technology

Condensation is the most common variable in liquid-level applications. Condensation attenuates the acoustic signal of ultrasonic sensors with horizontal transducers, weakening their signal strength and signal to noise ratio by up to 50%, substantially reducing their measurement reliability. At the core of reflective technology is a simple principle. Unlike flat horizontal surfaces, significant water droplets cannot adhere to smooth vertical surfaces. By orienting the transducer vertically, the condensation runs off the transducer and does not affect the sensor performance. The unimpeded transmit and receive signals are redirected to and from the liquid off 45° reflector, delivering reliable level measurement.
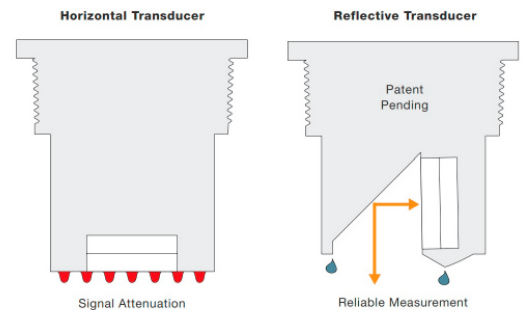
TECHNICAL DATA

Configuration

In addition to the push button display module, the sensor may be configured via our NEOCal software and one Fob USB adapter. NEOCal is a PC utility program that allows users to easily configure their sensors, update firmware, save configurations, and print wiring schematics prior to installation. You can also hook into the panel meter on box with a micro-USB to USB-A cord as an alternative to setup sensor parameters. The configuration software will be prompted to download when connection is acquired. DO NOT connect micro-USB cord to unit while plugged into 110v power supply.

NEO-7006: 8.0" to 19.6'

NEO-7012: 18.0" to 39.3'

Accuracy: ± 0.2% of range

Resolution:
- NEO-7006: 0.079"
- NEO-7012: 0.196"

Dead Band:
- NEO-7006: 8.0"
- NEO-7012: 18.0"

Beam Width:
- NEO-7006: 3.0"
- NEO-7012: 6.0"

Configuration:
- Push Button or NEOCal® P.C.
- Software Windows USB 2.0

Memory: Non-volatile

Display Type: LCD, 6-digits

Display Units: Inch, Centimeter, Percent

Supply Voltage: 14-28 VDC

Loop Resistance: 500 Ohms @ 24 VDC

Signal Output: 4-20mA, Two-wire

Signal Invert: 4-20mA or 20-4mA

Signal Fail-Safe: 4mA, 20mA, 21mA, 22mA, Hold Last

Process Temp.: -40 to 176 °F (-40 to 80 °C)

Temp. Compensation: Automatic

Ambient Temperature:
- NEO-7006: -31 to 140 °F (-30 to 60 °C)
- NEO-7012: -40 to 176 °F (-40 to 80 °C)

Pressure Rating: 30 PSI (2 bar)

Enclosure Rating: Type 6P (IP68)

Enclosure Material:
- NEO-7006: Polypropylene
- NEO-7012: Aluminum

Conduit Entrance: 1/2" NPT

Transducer Type: Reflective

Transducer Material: Polyvinylidene Fluoride

Process Connection:
- NEO-7006: 2" NPT Male

Classification:
- NEO-70xx Versions: General Purpose
- NEO-7006-IS Version: Intrinsically Safe

Approval(s):
- NEO-70xx: UL 61010-1
- NEO-7006-IS (USA):
  - Class I, Div I, A, B, C, & D T4;
  - Class II, Div I, E, F, & G T4;
  - Class III, T135C;
  - Class I, Zone 0, IIC AEx ia T4 Ga;
  - Class II, Zone 20, IIIC AEx ia, T135C, Da

(Canada): Class I, Div I, A, B, C, & D T4; Class II, Div I, E, F, G T4; Class III, T135C

(for IECEx): Ex ia IIC T4 Ga; Ex ia IIIC, T135C Da; Tamb: -40 to 80 °C

Entity Parameters: Upon Request

Compliance: CE, RoHS

Ultrasonic Display

The PDA2300 series of economical plastic NEMA 4X enclosures for 1/8 DIN digital panel meters provides a convenient way to mount up to 10 meters to walls and other vertical structures. Many of these enclosures also have room for additional devices like a light/horn and a 24V transmitter power supply. Sub-panels are available to mount additional devices to the base of the enclosure.

The meter is mounted in the door of the enclosure, thus allowing for programming and operation of the meter. Mounting hardware is provided. The door is hinged and secured with stainless steel latches. Standard enclosure setup comes with metering display with 4 relays and a stack light with red, yellow, and green colored indicators. There is an 80db alarm triggered when the ultrasonic sensor shows tank at full capacity that is tied into a reset button located on door to silence alarm after being triggered.

FEATURES

- **House up to 10 Meters**
- Plastic
- 1/8 DIN Cutout(s) Pre-Cut
- NEMA 4X
- Hinged Door
- Stainless Steel Cover Latches
- Meter Mounted in Cover
- Sub-Panels Available
- Mounting Hardware Provided
- UL Listed
- Light/Horn & Reset Button

4-20 mA Ultrasonic Leveling Device (Kobold NEO-7006)

- Meter display connected to transmitter with optional liquid tight conduit.
- Meter display can be preprogrammed for light activation at levels determined by customer. The indicator colors are green, yellow, red and also an alarm that can all be programmed to go off at certain levels of the tank contents.
- Optional display stand can be ordered if mounting display panel needs a stand alone mounting option. This stand is made of steel tubing welding together and painted with a protective weatherproof black paint and comes with predrilled mounting holes for enclosure and predrilled anchor holes in steel cross section.

RS-232 & RS-485 Serial Communication Options with Modbus RTU

This system can provide outputs to your industrial automation system or PLCs (Programmable Logic Controllers) using both RS-232 and RS-485 options with Modbus, allowing for real-time monitoring and control of sensor data. The choice of communication option depends on the distance between the sensor and the control system, and the number of sensors connected to the control system. RS-232 can support communication up to 50 feet and is limited to one master and one slave device while RS-485 is used as a communication option with Modbus RTU for long-distance communication, where multiple sensors are connected to a single communication line.

Transmitter: *any 40-20mA system*
01- NEO-7006
02- ********

ORDERING INFORMATION

Model ER-(ULT)

ULT Ultra Sonic Leveling System Standard

Liquid Tight Conduit
S24- 24" Length
S48- 48" Length
S96- 96" Length
SXX- Custom Length

Power Cord Length
P06- 6' Length
P09- 9' Length
P20- 20' Length
PXX- Custom Length

| ULT | 01 | S06 | P06 |

Typical Product # (i.e., ER-ULT-01-S24-P06)