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*We Do Your Level Best*

Achieve™  Endress+Hauser **E+H**
People for Process Automation

# Level Sensors

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# Level Sensors and Switches

Level sensors monitor the level of liquids, pellets, powders, and other similar products in tanks and process systems. The measurement can be used for monitoring purposes or to control a process. Integrated level controllers can sense level and operate alarms, pumps, valves, and other industrial equipment. A variety of sensing technologies are available, including contact and non-contact methods.

## Ultrasonic Level Sensors

Ultrasonic sensors emit a sound impulse and measure the elapsed time to receive an echo from a detected object or material. These downward facing, non-contact level sensors and are unaffected by environments with dirty, sticky, or scaling media. Models with discrete outputs indicate the presence of the material within the sensing range; distance sensing models with analog outputs indicate the material's relative level within the sensing range.

## Pulsed Radar Level Sensors

Downward-looking pulsed radar level sensors emit pulses towards the surface of a liquid and measure the time (time of flight) for the pulses to reflect from the surface and return to the sensor. Since the distance to the liquid surface is proportional to the time of flight, the level can be determined.

## Guided Wave Radar Level Sensors

Guided wave radar level sensors use electromagnetic pulses that travel down a metal probe until they reach the medium, which then reflects the pulse waves back to the probe. The time difference between the transmitted and received pulses is used to compute and display the level with high precision.
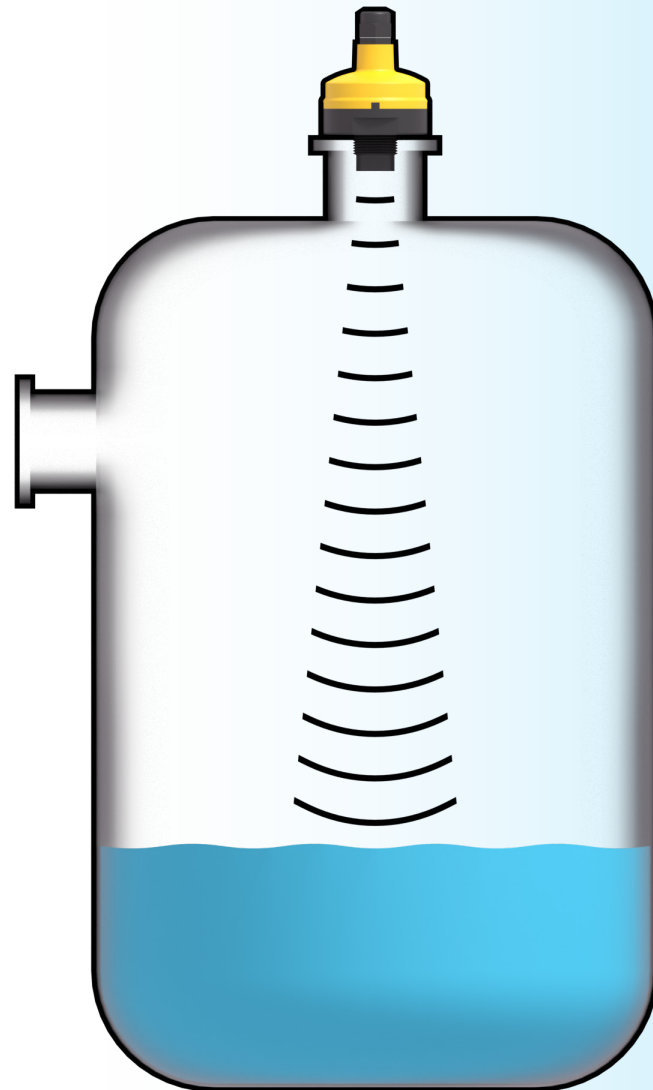
## Float Level Switches

Low-cost float switches provide single-point liquid level monitoring in industrial applications. Powerful permanent magnets within the float actuate a highly reliable, repeatable, hermetically sealed reed switch as the float rises and lowers with liquid level. A variety of material constructions and mounting styles offer compatibility with many liquids, temperature ranges, and system pressures.

## Differential Pressure Level Sensors

Differential pressure level transmitters measure the difference in pressure between two points in a fluid. This pressure difference is directly proportional to the level of the fluid.

## Capacitive Level Sensors

Capacitive sensors are useful for detecting the level of solids such as plastic pellets, or water-based conductive liquids. These devices output a discrete signal when the presence of material is detected within the sensing range.



Ultrasonic liquid level sensors emit a sound impulse and measure the echo's return time from the material's surface

## Vibrating Fork Switches

Vibrating fork switches use a harmonic vibrating frequency which is reduced when the fork contacts the liquid being monitored. The frequency reduction indicates the presence of the liquid, and the switch sends a signal to the control unit. These switches provide reliable level detection of dirty liquids that coat, scale, or foam such as wastewater, diluted caustic soda, and light oils. They can be mounted through-the-wall or inside a tank as high- or low-level indicators.

## Why buy level sensors from us?

There are several distinct advantages to purchasing level sensing equipment from AutomationDirect:

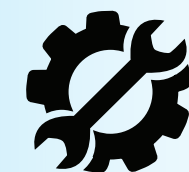**Free 2-day delivery for orders over $49\*** *\*See Terms and Conditions for exceptions.*

### Price

As with all our product lines, our prices are often well below the list prices of traditional automation suppliers. Our direct business model allows us to operate more efficiently than other suppliers and pass the savings on to you.

### Availability

All the level components we provide are stocked in our local warehouses in Georgia. That's correct. When we say we have them in stock, they are in our inventory and ready to be shipped to you. No more waiting for months when you need a replacement component that is keeping your facility from operating.

### Service

We give you options for self-service, but at the same time are there when you need us. You can place your order online or call our customer service team. Have a technical question about one of our products? Need help selecting a bill of materials for one of your projects? You can call our free Technical Support. If you get stuck or have a question, our knowledgeable technical support experts can help you with product selection and configuration or wiring.
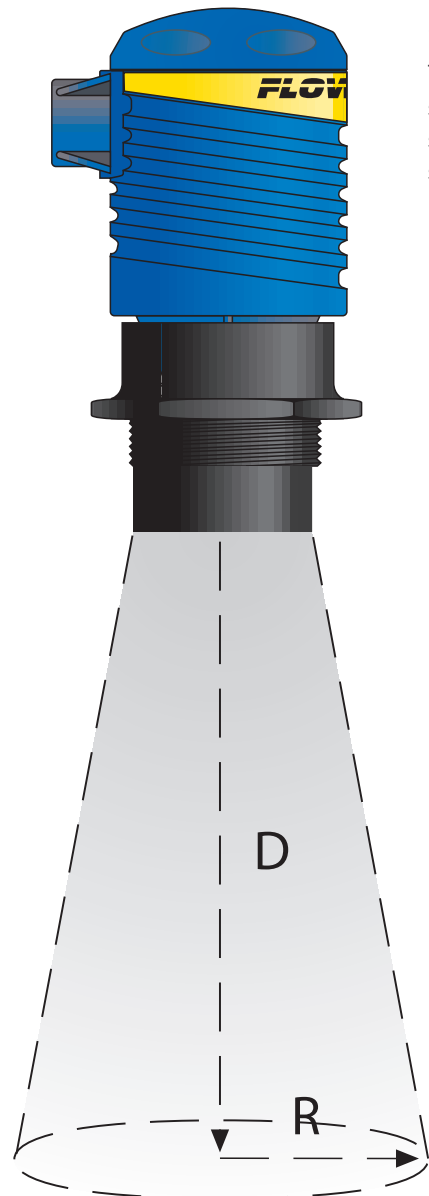
**AUTOMATIONDIRECT**

# FLOWLINE™ LEVEL BEST
# Ultrasonic Liquid Level Sensors

Flowline ultrasonic liquid level sensors emit a sound impulse and measure the echo's return time from the material's surface. They are available in contact and non-contact versions, with models designed for hazardous or high-condensation locations.

## Software Configured Ultrasonic Level Sensors & Switches

The Flowline EchoPod and EchoSonic II general-purpose ultrasonic sensors, suitable for use in small, medium, and large capacity tanks, are available with single and multi-function capabilities, including continuous level measurement, switching, and control.

### PodView® Digital Level Indicator

The PodView is a low-cost general purpose level indicator that displays engineering units for level or volume and is compatible with the EchoPod Series ultrasonic sensors.

**Starting at $286.00** (LI40-1001)

- Operates with EchoPod DL, DS, and DX series level sensors compatible with WebCal 6.0 software/firmware 50.0 or higher
- No separate power supply required
- Level indication up to 15 ft away from sensor



Easy to use Webcal configuration software

### EchoPod DL Series Multi-Function Ultrasonic Liquid Level Sensors

- In ranges up to 4.1 ft (1.25m), 9.8 ft (3m) or 18 ft (5.5m)
- Level switch and level control functions with continuous level measurement
- Analog output and four programmable relays
- NEMA Type 6P/IP67 enclosure rating

**Starting at $470.00** (DL14-00)

### EchoSonic II LU Series Ultrasonic Liquid Level Transmitters

The EchoSonic II LU Series ultrasonic liquid level transmitters provide continuous level measurement up 32.8 ft (10m) and are configured via WebCal software.

- In ranges up to 9.8 ft (3m), 18 ft (5.5m), 26.2 ft (8m), or 32.8 ft (10m)
- 4-20 mA output
- NEMA 6P polycarbonate enclosure

**Starting at $780.00** (LU27-00)

### EchoPod DX10 and DL10 Series Ultrasonic Liquid Level Transmitters

- Continuous level measurement up to 4.1 ft (1.25m)
- NEMA Type 6P/IP67 enclosure rating
- Selectable 0-5 VDC, 0-10 VDC or 976- 2000 Hz frequency signal output (DX10), or a 4-20 mA output for longer signal distances, up to 1000 ft (300m) (DL10)

**Starting at $415.00** (DX10-00)

## Pushbutton Configured Ultrasonic Liquid Level Sensors & Switches

Flowline EchoSpan and EchoSwitch ultrasonic level sensors are easily configured using integral pushbuttons and an LCD digital display.

### EchoSpan® LU Series Ultrasonic Level Transmitters

Flowline EchoSpan general purpose level transmitters provide continuous level measurement up to 32.8 ft (10m) with a 4-20 mA signal output, and are configured via an integral pushbutton display module.

- 4 measurement ranges from 9.8 ft to 32.8 ft
- Narrow 2" or 3" beam for limited space applications
- NEMA 4X / IP65 polycarbonate enclosure
- 6-digit LCD display

**Starting at $835.00** (LU80-5101)

### EchoPod DS14 Series Ultrasonic Liquid Level Switch & Controller

- Continuous liquid level detection up to 4.1 ft (1.25m)
- NEMA Type 6P/IP67 enclosure rating
- Four programmable relay outputs for level switch or control functions
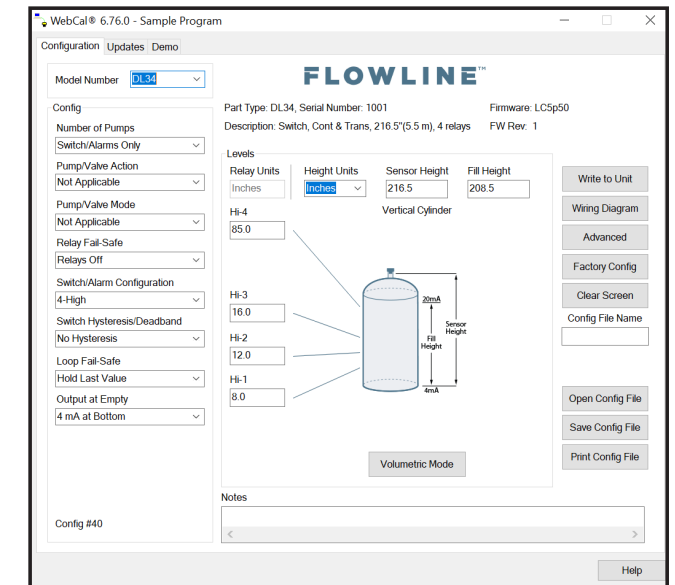
**Starting at $505.00** (DS14-00)

### EchoSwitch® LU Series Ultrasonic Level Sensors

Flowline EchoSwitch ultrasonic level sensors sensor provide continuous level detection up to 26.2 ft (8m) with three programmable relays for level switch or level control functions, and a 4-20 mA signal output.
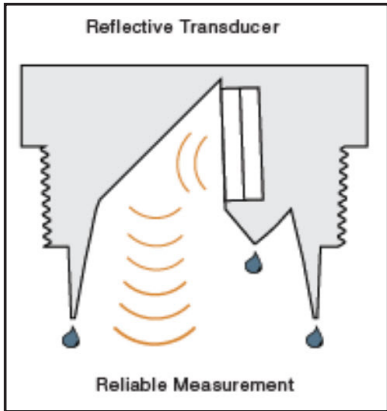
- In ranges up to 9.8 ft, 18 ft, and 26.2 ft
- Narrow 2" or 3" beam for limited space applications
- LCD display indicates level height
- Corrosion resistant PVDF transducer & NEMA 4X / IP65 polycarbonate enclosure

**Starting at $1,075.00** (LU77-5004)



D

R

Ultrasonic wave increases in diameter as the wave travels away from the sensor

# FLOWLINE™
## LEVEL BEST
# Reflective Ultrasonic Liquid Level Sensors

Reflective Transducer

Reliable Measurement

**Vertical surfaces limit water droplet formation**

## Flowline® Reflective Technology™

Condensation is commonly encountered in liquid level applications. It forms on the horizontal sensing face, weakening signal strength, and substantially reducing measurement reliability. Flowline's proprietary Reflective Technology™ uses vertical surfaces to limit water droplet formation. The vertical orientation preserves the sensor performance by preventing condensation from building up on the sensing face. A 45° reflector redirects signals to and from the liquid, delivering reliable level measurement.

### Flowline® Reflective Technology™
### EchoPod UG01, UG03, UG06, and UG12 Series Ultrasonic Level Sensors

Reflective Technology™ uses vertical surfaces to prevent most water droplets from adhering to the sensor surface.

- Measurement ranges: Up to 4.9 ft [1.5m], 9.8 ft [3m], 19.6 ft [6m], and 39.3 ft [12m]
- Maintains reliable level measurements in applications with condensation
- 4-20 mA or relay outputs (depending on model)
- Units with 6-digit LCD display available
- Type 6P (IP68) enclosure rating

**Starting at $550.00** (UG01-0001-40)

### Flowline® Reflective Technology™
### EchoTouch US01, US02, and US03 Series Ultrasonic Level Sensors

Flowline EchoTouch intrinsically safe reflective ultrasonic level transmitters provide continuous level measurement with a 4-20 mA analog signal output, are configured via WEBCAL software, and feature Flowline's proprietary Reflective Technology™ that delivers reliable level measurement in condensing environments.

- Measurement ranges: Up to 4.9 ft [1.5m], 9.8 ft [3m], and 19.6 ft [6m]
- Intrinsically safe approvals for hazardous locations
- Unit with 6-digit LCD display available
- Type 6P (IP68) enclosure rating

**Starting at $675.00** (US01-0001-00)

# Submersible Level Transmitters

## Endress+Hauser EH
### People for Process Automation

### Endress+Hauser Submersible Level Sensors

Endress+Hauser Waterpilot hydrostatic submersible level transmitters provide continuous liquid level measurement by sensing the hydrostatic pressure produced by the height of liquid above the sensor and providing a 4-20 mA output signal corresponding to their specific pressure sensing range. The Waterpilot FMX11 series is designed for freshwater applications and NSF Certified for drinking water applications. The Waterpilot FMX21 series has FM hazardous location approvals for intrinsically safe applications and is suitable for wastewater applications.

- Up to 2 bar (6.9 ftWC) sensing range
- Shielded cable with atmospheric pressure compensation tube and Teflon filter
- Rugged 316 stainless steel construction
- IP68 protection rating

**Starting at $534.00** (FMX11-CA11DS06)

## AchieVe™
### AchieVe ELT Series Submersible Level Sensors

AchieVe ELT series economical, general-purpose submersible level transmitters are ideal for applications where small size, weight, and low cost are required.

- Full scale ranges from 11.5 to 115 feet of water
- 8 to 32 VDC operating voltage
- 4 to 20 mA output
- 316L stainless steel construction
- IP68 protection rating

**Starting at $298.00** (ELT-005-L30)

## ProSense®
### ProSense® GPLT Series Submersible Level Sensors

ProSense GPLT series general-purpose submersible level sensors are designed for water applications and offer a slim housing diameter, several sensing ranges and cable lengths, integral lightning protection, and ratings for hazardous locations.

- Full scale ranges from 11.5 to 115 feet of water
- 11 to 30 VDC operating voltage
- 4 to 20 mA output
- Slim 0.825 in. diameter housing
- 316L stainless steel construction
- Built-in lightning protection
- Hazardous location rated
- IP68 protection rating

**Starting at $393.00** (GPLT-005-L30)

### ProSense® NFLT Series Submersible Level Sensors

ProSense NFLT series non-fouling, submersible level sensors feature a rugged Kynar sensing membrane with superior abrasion and puncture resistance. As a result, NFLT sensors can be used in challenging wastewater applications without being damaged by floating particles and small objects.

- Full scale ranges from 11.5 to 69.2 feet of water
- 11 to 30 VDC operating voltage
- 4 to 20 mA output
- Slim 1.26 inch diameter housing without protective shield
- 316L stainless steel construction
- Built-in lightning protection
- Hazardous location rated
- IP68 protection rating

**Starting at $598.00** (NFLT-005-L30)

# FLOWLINE™ LEVEL BEST
# FMCW Radar Level Sensors

## FLOWLINE™ LEVEL BEST — EchoBeam LR80 Radar Liquid and Bulk Solids Level Sensor

The Flowline LR80 EchoBeam® is a general-purpose, non-contact FMCW (Frequency Modulated Continuous Wave) radar level transmitter. It is highly reliable, easy to use, and features Flowline's 80 GHz radar technology, which is unaffected by most media, processes, or environmental factors.
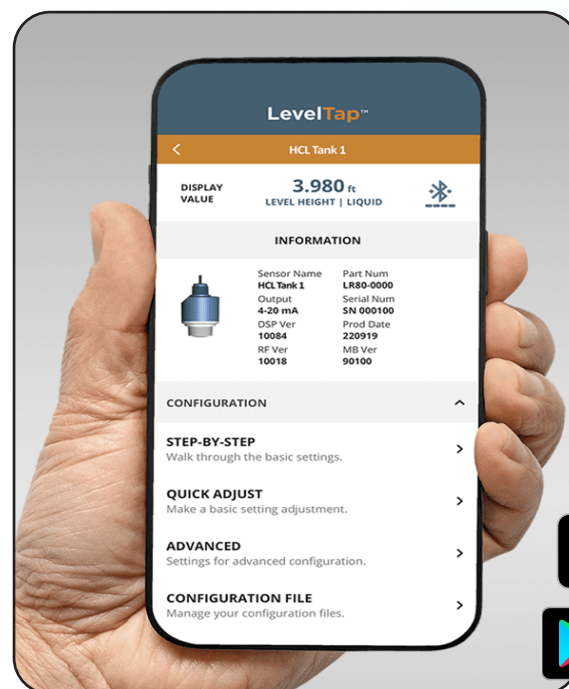
The EchoBeam level sensor detects both solid and liquid media with a dielectric constant ≥1.6, such as water, chemical or petroleum-based liquids, pellets, grains, powders, or aggregate solids using the difference in frequencies between transmitted and received signals.. It measures liquids up to 32.8' (10m) or bulk solids up to 16.4' (5m), and provides a 4-20 mA output signal.

The wireless LevelTap™ App offers a Bluetooth interface that allows easy connection from the safety of the ground or a nearby catwalk. It provides an intuitive interface for easy configuration and quick access to level information, statuses, and settings.

The Flowline EchoBeam LR80 level sensor offers a rugged PVDF thermoplastic housing, a high IP68 protection rating, and is ideal for a variety of level measuring applications, such as tanks, sumps, lift stations, weirs, canals, reservoirs, bins, or transfer stations.

**Priced at $795.00 (LR80-0000)**

### Features

- 80 GHz technology provides reliable, maintenance-free operation
- Measures level height, air gap, tank volume or open channel flow
- Rugged PVDF antenna and enclosure for corrosive liquid or solids
- IP68 rated sensor for harsh outdoor or below grade installations
- Shielded 10m PVC jacketed cable for corrosive level environments
- Zero dead band maximizes the potential fill capacity of small tanks
- Optionally measures through top wall of plastic or fiberglass tanks
- Bluetooth wireless configuration via the LevelTap™ mobile App (seen below)

Download on the App Store  
GET IT ON Google Play

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# Endress+Hauser EH — People for Process Automation
# Pulsed Radar Liquid Level Sensors

## Endress+Hauser EH — Micropilot® FMR10 Free Space Radar Liquid Level Sensor

The Endress+Hauser Micropilot FMR10 series pulsed radar liquid level sensor provides accurate, reliable non-contact liquid level measurement. It is designed for storage tanks, basins, and channels; is ideal for a variety of applications, including water, wastewater, and utilities; and offers one of the best price to performance ratios on the market.

The Micropilot FMR10 features an extremely compact footprint, making it ideal for space-limited applications. It is easily commissioned with only three simple parameter settings using the SmartBlue Mobile App, which allows simple, safe, and secure wireless remote access via Bluetooth - even in places that are difficult to reach.

**Starting at $796.00 (FMR10-CAQBMVCEVEE2)**

### Features

- 4-20mA analog output
- 10.5-30 VDC operating voltage
- 8m (26.25 ft) sensing range or 12m (39.37 ft) with the flooding protection tube (purchase separately)
- 1-1/2in. male NPT process connection
- Rugged, hermetically sealed thermoplastic housing
- IP66/68 and NEMA 4X/6P protection rating

### Operation

The Micropilot FMR10 is a downward facing, non-contact pulsed radar level sensor that emits radar pulses and determines level based on the time of flight required for a reflected pulse to reach the sensing unit. It is immune to temperature variations, humidity, air density, and dust, and offers several advantages over other types of sensors, including non-contact measurement, long range, accuracy, repeatability, and maintenance-free operation with no moving parts.

Save curve sequence as a movie | Single curve as screenshot | Send curve data via e-mail | Level, distance, and signal amplitude | Tag, date, and device status
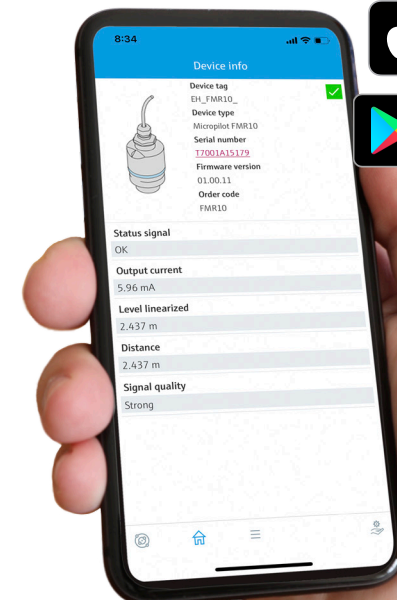
### FREE SmartBlue Mobile App

The SmartBlue Mobile App allows configuration as well as comprehensive access to device data.

- Time saving mobile access to device diagnostics and process information
- Secure data transmission for fast and reliable configuration and maintenance
- At-a-glance device status and live list allows efficient maintenance
- Available for Android and iOS

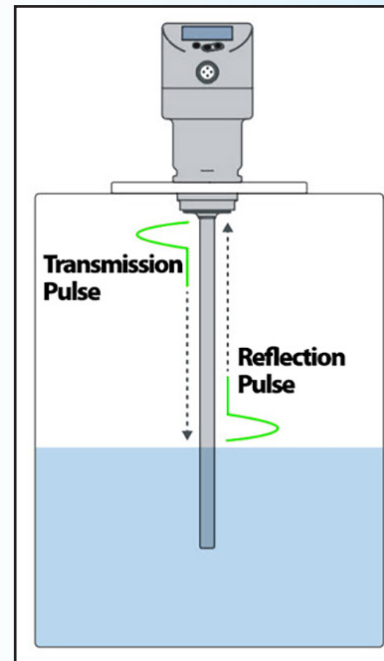Download on the App Store  
GET IT ON Google Play

# Guided Wave Radar Level Sensors

Prosense GWR level sensors use innovative guided wave radar technology to provide reliable, low-cost liquid level measurement for industrial applications. These sensors are ideal for use in smaller tanks and for challenging applications with liquids that are soiled, viscous, or prone to formation of deposits. Probe and coaxial tube configurations are available in lengths from 240mm to 1600mm and can be cut to adapt to custom level applications.
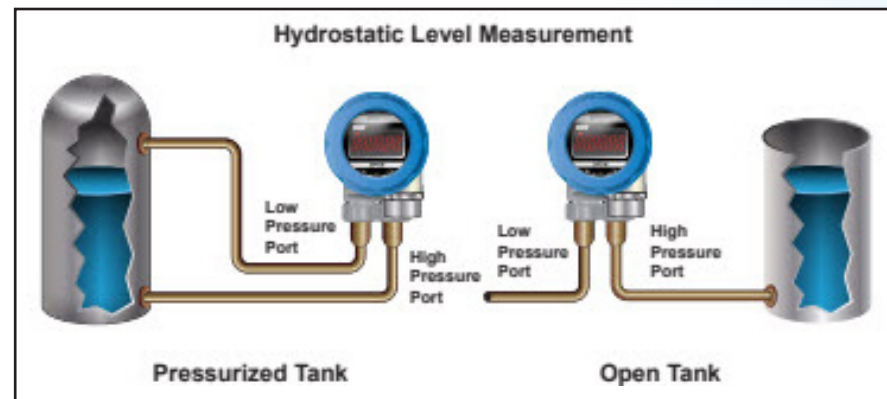
- Active measuring range dependent on probe length and media
- PNP/NPN selectable and 4-20 mA outputs for both continuous and point level measurement
- Measure and display liquid level in millimeters, inches, or percent
- 4-digit alphanumeric display and LEDs with easy pushbutton setup
- Rugged 316 stainless steel IP68/IP69K rated housing
- 4-pin M12 quick disconnect electrical connection

**Starting at**
**$363.00**
(GWR-1600-P)

**Transmission Pulse**

**Reflection Pulse**

GWR level sensors transmit pulses down a metal probe to the medium, where the pulses are reflected back to the sensor head. The sensor calculates level based on the elapsed time between the transmitted and received pulses.

# Differential Pressure Level Transmitters

### Hydrostatic Level Measurement

Low Pressure Port

High Pressure Port

Low Pressure Port

High Pressure Port

**Pressurized Tank**     **Open Tank**

Differential level transmitters calculate the hydrostatic liquid level in pressurized or open tanks

**For information on our differential pressure level transmitters, please see our Pressure Sensors brochure**

# ProSense Level Switches

### ProSense® Float Level Switches

ProSense float level switches are available in several different material constructions for compatibility with many types of liquids, a wide temperature range, and various system pressure requirements. Vertical and horizontal mounting styles with several mounting thread variations are available for ease of installation.

- Vertical top-mount
- Vertical suspendible / submersible
- 55 gallon drum switches
- HVAC condensate line switches
- Horizontal side-mount
- Float level switch kits
- Float level tilt switches

**Starting at**
**$14.50**
(FLS-VM-100)

### ProSense® VFL Series Vibration Fork Liquid Level Switches

ProSense VFL series vibration fork level switches are designed using tuning fork technology for reliable liquid point level detection for monitoring, alarming, and control applications. These robust, stainless steel sensors are ideal for applications where other liquid point level technologies are not suitable due to conductivity, turbulence, buildup, air bubbles, foam, pressure, temperature, and viscosity changes.

- 1/2" or 3/4" male NPT process connection
- Short or extended insertion lengths
- Standard or high temperature constructions
- 3-wire DC output for PLC inputs or 2-wire AC/DC output for control of valves and pumps
- M12 quick disconnect or DIN style electrical connectors

**Starting at**
**$175.00**
(VFL50-100S-3D)

### ProSense® PLS Series Rotating Paddle Level Switches

ProSense PLS series rotating paddle level switches are point level switches for dry, granular bulk solids. These switches operate by contact with the medium; if the paddle is stopped by the material, the motor's position change operates switch contacts.

- Available in three shaft lengths
- Rope versions can be field shortened
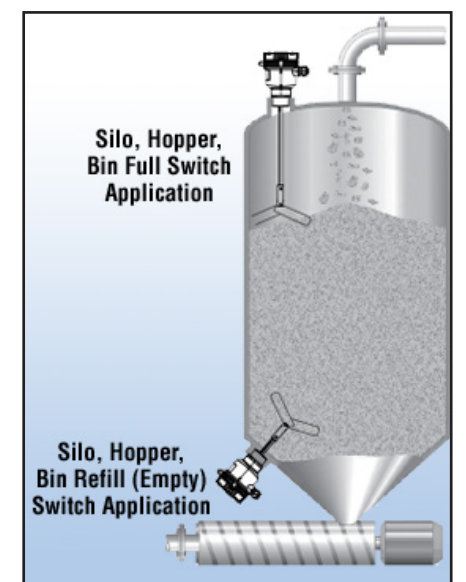- Select models are rated for hazardous locations

**Starting at**
**$216.00**
(PLS-4P-1-115)

**Full Switch Application**
When the "Full" switch paddle stops, the storage unit is full, and the product inflow is halted.

**Refill Switch Application**
When the "Empty" switch paddle is freely rotating, the storage unit is empty and the product inflow is started.

Silo, Hopper, Bin Full Switch Application

Silo, Hopper, Bin Refill (Empty) Switch Application

# FLOWLINE™ LEVEL BEST Level Switches

## Flowline Vibration Fork Liquid Level Switches

Flowline general-purpose vibration level switches provide high or low liquid level detection of dirty liquids or those with light to medium coating or scaling characteristics with a 1A relay output.

**Starting at $385.00**
(LZ12-1405)

## Flowline Buoyancy Level Switch

The Flowline general-purpose buoyancy level switch provides high or low liquid level detection of relatively clean water and chemical solutions with a 15VA reed switch output.

**Starting at $167.00**
(LV10-1301)

## Flowline Ultrasonic Level Switch

CSA approved for use in hazardous locations, the Flowline intrinsically safe ultrasonic level switch provides high or low liquid level detection of chemical, solvent or low viscosity petroleum based liquids with a 1A relay output.

**Starting at $345.00**
(LU10-1305)

## Flowline Capacitive Level Switch

The general-purpose guard capacitance point liquid level switch provides reliable high or low liquid level detection of water based conductive liquids with light coating, crystalizing or scaling characteristics with a 1A relay output.

**Starting at $335.00**
(LP15-1405)

# Endress+Hauser EH Level Switches
People for Process Automation

## Nivector FTI26 Capacitance Level Switches

Endress+Hauser Nivector FTI26 capacitance point level switches detect powders or fine-grained bulk solids in silos, hoppers, and bins.

- Polycarbonate or stainless steel housings
- G 1" male thread process connection
- IO-Link available on select models
- DC PNP switches and IO-Link communication output options
- Signal LEDs on select models
- 12-30 VDC operating voltage

- Stainless steel versions are FDA compliant and marked with the 3-A symbol for food industry hygienic applications
- CSA approved for general-purpose or hazardous locations (depending on model)
- M12 quick disconnect or DIN style valve plug termination styles
- IP65 (NEMA 4X), IP65/67 (NEMA 4X), or IP66/68/69 (NEMA 4X/6P) protection rating

**Starting at $244.00**
(FTI26-CA7MWDG)

## Liquipoint FTW23 Capacitance Level Switches

Endress+Hauser Liquipoint FTW23 capacitance point level switches detect water-based liquids in vessels, tanks, or pipes.

- Plastic/stainless steel or all stainless steel housings
- G ½", ¾", or 1" male thread process connections
- IO-Link available on select models
- IO-Link communication versions can be adjusted to work with alcohol- and oil-based liquids, or even powders
- DC PNP switches and IO-Linkc communication output options
- Signal LEDs on select models

- 10 to 30 VDC operating voltage
- Select models are FDA compliant and marked with the 3-A symbol for food and beverage industry hygienic applications
- Each output can be set to detect different media (IO-Link models only)
- M12 quick-disconnect termination style
- IP65/67 (NEMA 4X) or IP66/68/69 (NEMA 4X/6P) protection rating

**Starting at $254.00**
(FTW23-CA4MW5J)

## Soliphant® FTM20 Vibration Rod Bulk Solid Level Switches

Endress+Hauser Soliphant FTM20 vibration rod point level switches detect fine- or coarse-grained non-fluidized bulk solids in silos, hoppers, and bins. These robust level switches have a wide range of applications and can be installed in any orientation to indicate full, demand, or empty status.

A piezoelectric drive vibrates the rod at its resonant frequency. The measured media is detected when it covers the vibrating rod and dampens its vibration. Because this behavior is consistent with a variety of media, no calibration is required, making installation simple and easy.

- PNP N.O./N.C. selectable or DPDT relay outputs
- 10 to 45 VDC or 19 to 253 VAC operating voltage options
- Rugged plastic or aluminum housings
- Screw terminal connections
- 316L stainless steel sensing element

- 8.86in. insertion length
- 1-1/4in. or 1-1/2in. male NPT process connections
- Select models offer CSA general purpose or FM hazardous location ratings
- IP66/67, NEMA 4X protection rating

**Starting at $673.00**
(FTM23-AM23A)

# Level Controllers

**FLOWLINE** LEVEL BEST  **Switch-Pro™ Level Controllers**

Flowline Switch-Pro™ and DataPoint™ Remote Level Controllers provide continuous liquid level control with the accuracy and dependability you need. The fail-safe relay design can be configured for alarming or automatic fill control using valves and pumps in a closed-loop system.

- 35mm DIN rail mount or panel mount enclosure with removable terminal strips
- Relay control of pumps or valves with 0-60 second delay
- LED status indicators

- 3.5-digit LED display indicates level in custom engineering units (LC52 model)
- Invert switch changes relay state from NO to NC without rewiring
- The DataPoint™ LC52 controller provides 2 relay outputs, up to three setpoints, and an isolated analog 4-20 mA repeater
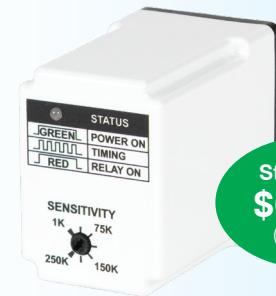
**Starting at**
**$285.00**
(LC40-1001)

**prosense®  CLC Series Conductive Liquid Level Controllers**

The ProSense CLC series conductive liquid level controllers are designed to detect and control levels of conductive liquids in dual-probe pump up or pump down applications. They offer simple, low-cost level control with no programming required.

- Can be used with a broad range of conductive media
- Probes do not have to be installed vertically in the tank

- Cuttable probes are available in lengths from 240 mm to 1600 mm
- Any conductive material can be used as a probe

**Starting at**
**$60.00**
(CLC1-D-120)

### Dual Probe Installation for Metallic Tanks

The figure on the right shows two ways to mount the probes for a dual-probe installation on a typical storage tank. When installed in a metallic conductive tank, the tank acts as the common probe. For plastic tanks, a third probe is needed for the common probe.