

FLOWLINE®



Chemical, Water, Wastewater & Energy

We Do Your Level Best™



Market Overview

Global demand for specialty chemicals has risen to \$451B a year and Liquid Gold pervades every sector of our modern economy. Can you name an industry that has no reliance or association with chemicals in the manufacturing or delivery of their products or services? Chemical prices have steadily ascended due to rising oil, energy and transportation costs; increased global demand from emerging countries; and supply shortages caused by manufacturing relocation to low-cost producer countries. The landscape has and will continue to change for the foreseeable future. Chemical distributors, industrial manufacturers and municipalities have entered a new era where rising costs and margin compression are inevitable without equivalent gains in productivity. Now more than ever, level measurement and control solutions play a key role in the cost-effective delivery, inventory and use of Liquid Gold.

Chemical

Life Science

Water

Energy

Wastewater

Food & Beverage



We Do Your Level Best™



A globally recognized and respected supplier of industrial instrumentation, Flowline designs, manufactures and markets level measurement and control solutions for chemical, water and wastewater applications. We enable industrial manufacturers and municipalities to safely and efficiently manage their contained liquid assets. Our quality solutions automate tank processes, protect the environment and ensure workplace safety. Flowline products are sold and supported worldwide through our stocking distribution partners. Customers include design engineers, system integrators, original equipment manufacturers, facility management and maintenance decision makers. The leading criteria for product selection are reliability, performance and ease of use. We do your level best through our commitment to customer satisfaction and continuous improvement.

Technology

Flowline's core technology is non-contact ultrasonic level measurement. This highly reliable technology is ideal for a wide range of liquid applications including chemical, oil, water and wastewater. The sensor emits multiple high frequency sound pulses per second from the base of the transducer. Each pulse travels through the air gap, reflects off the liquid surface and returns to the transducer where its received. The temperature compensated sensor calculates the time interval from pulse transmission to receipt, and translates this into distance based upon the speed of sound. Packaged in advanced thermoplastics for corrosive applications, Flowline ultrasonic sensors require little or no maintenance, and provide better performance than contact devices which generally suffer from prolonged liquid contact.



Chemical



Water



Wastewater



Quality Commitment

We strive to provide our customers with products and services that meet your requirements and exceed your expectations. We do your level best by listening, learning and acting to pursue continuous improvement throughout our business practices with the following commitments:

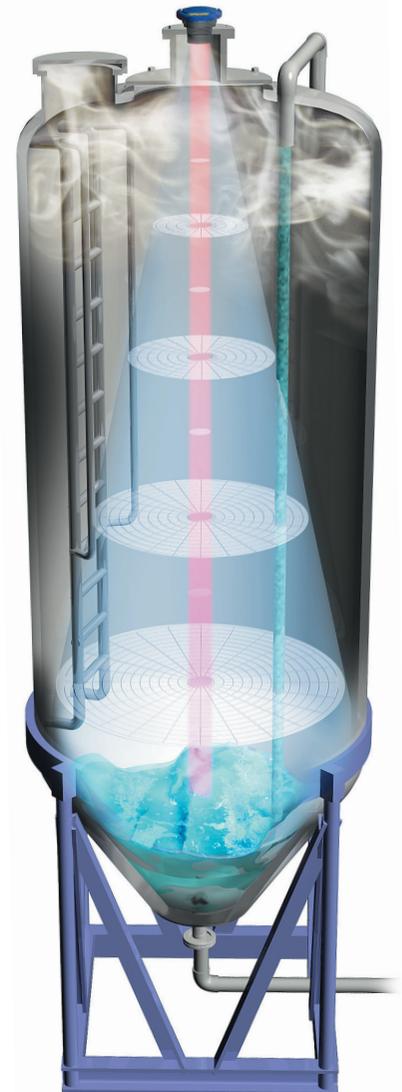
- Company commitment to deliver customer satisfaction
- Action culture founded in meeting customer requirements
- Empowerment to provide great products and service on time
- Measurement driven to deliver continuous improvement



Digital Signal Processing

Flowline ultrasonic level sensors feature our patented digital signal processing technology that delivers the Flowline advantage, accurate and reliable, non-contact measurement of chemical, oil, water and wastewater from 0.25m-10m. This adaptive technology creates a living map of your tank process and continuously optimizes sensor power, obstacle recognition, signal output filtering, environmental noise rejection and fail-safe diagnostics. The Flowline DSP advantage delivers the following application benefits:

- Robust non-contact level measurement from 0.25m-10m
- 0.2% accuracy with little or no degradation over the range
- Auto-adaptive signal output filtering smooths liquid agitation
- Narrow 2" beam width for installation near walls or obstacles
- Tight 2" dead band optimizes the filling capacity of small tanks

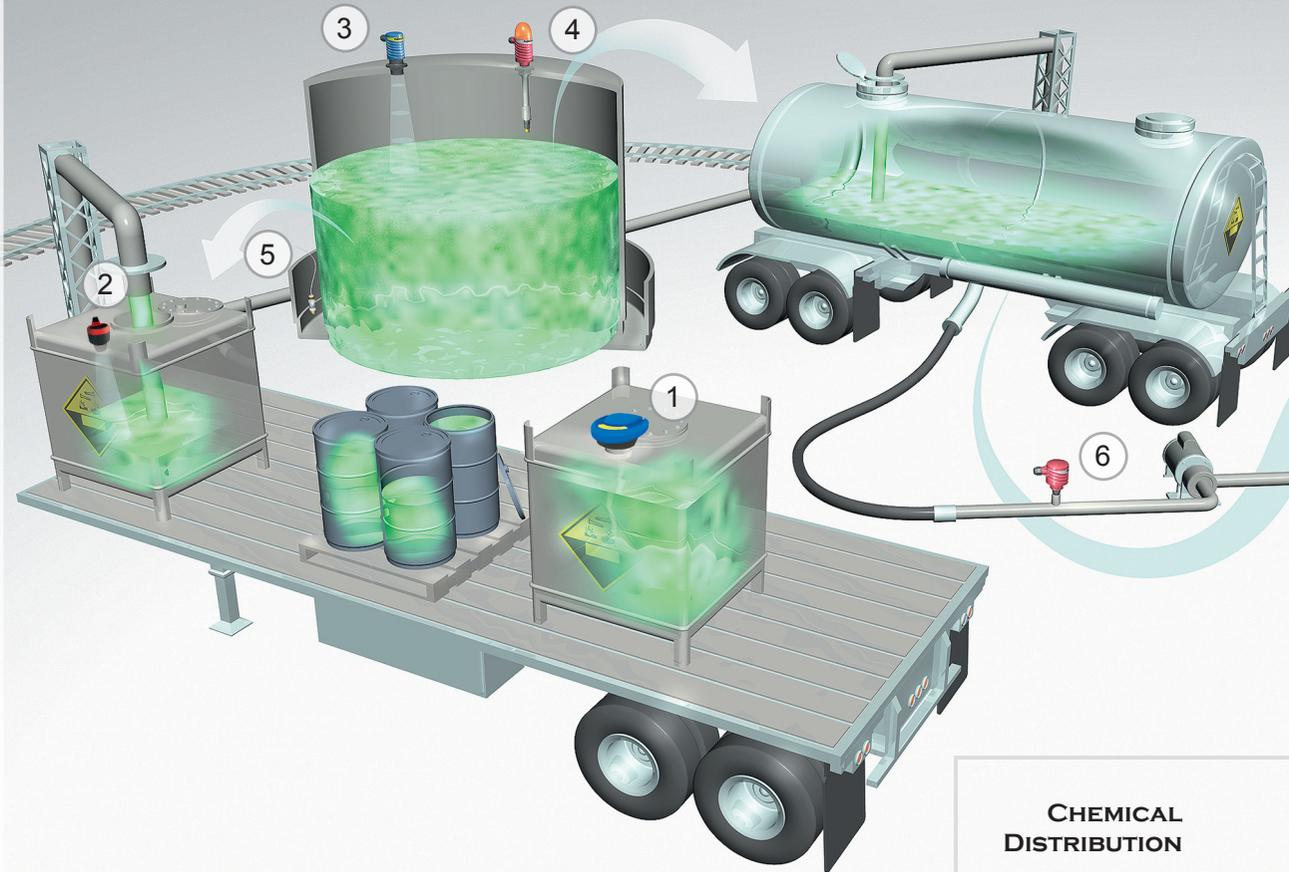


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|------------|-----------|
| Accuracy | Obstacles |
| Dead band | Vapor |
| Beam width | Agitation |

Introduction

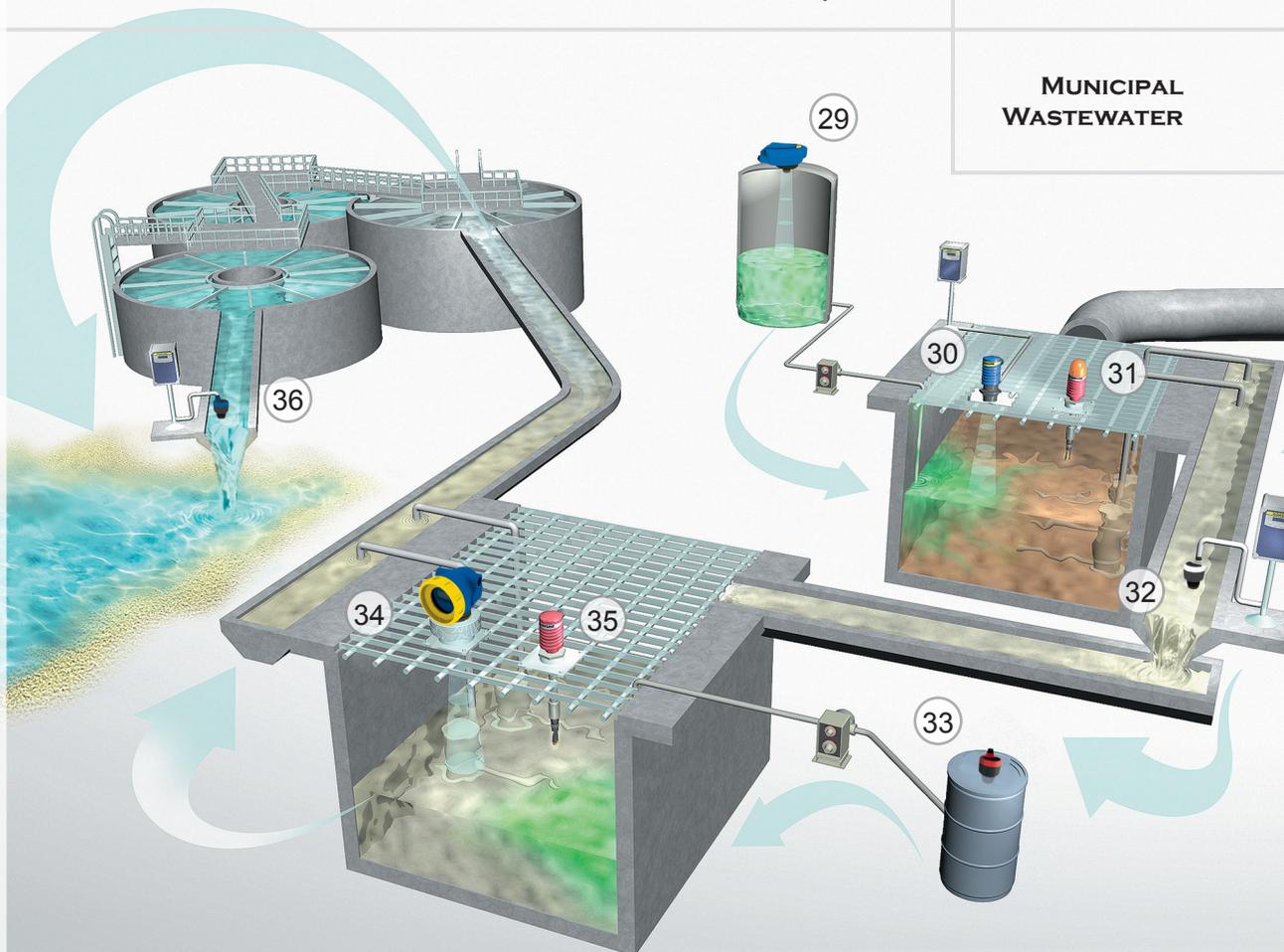
Level Automation Map

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2. Tote High Level Alarm
EchoPod DS14 | Page 17
3. Bulk Inventory Monitoring
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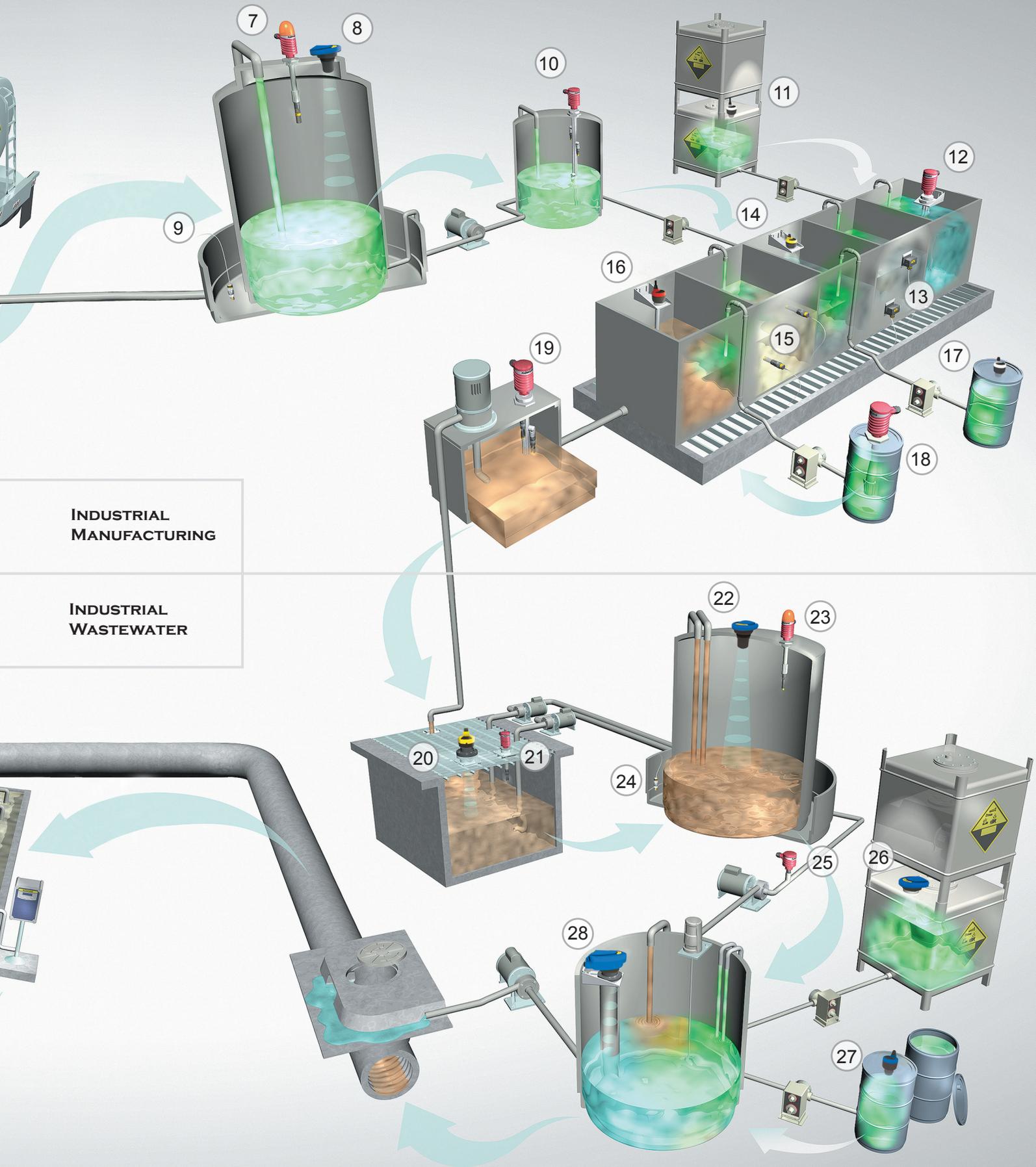


CHEMICAL
DISTRIBUTION

MUNICIPAL
WASTEWATER



Chemical, Water & Wastewater



INDUSTRIAL
MANUFACTURING

INDUSTRIAL
WASTEWATER

EchoPod | DL24 & DL34 | Pages 15 - 16



Expanded EchoPod Measurement Ranges

The typical level application requires the ability to determine liquid level, control a tank filling or emptying operation and signal an alarm condition. Most level products are single function with any additional features provided through external devices. EchoPod provides all three functions in a single product with

newly extended measurement ranges up to 5.5m (18.0'). The EchoPod DL24 and DL34 feature a two-wire, 4-20 mA signal output with (4) SPST relays that can be configured on a single set point alarm or latched on two set points for automatic fill or empty control functions with selectable hysteresis and fail-safe logic.

EchoPod | DS14, DL10 & DX10 | Pages 17 - 19



Expanded EchoPod Signal Outputs

Having the right sensor output is just as important as the right measurement technology and price. Flowline has released three new variations of EchoPod with four different outputs to meet your specific application requirements. The DL10 series has a two-wire, 4-20 mA signal for use with PLC analog inputs. The DS14 has (4) SPST relay outputs for use

with PLC discreet inputs or external ice cube relays utilizing the integral control functions. The DX10 has a selectable voltage or frequency output. Select the 0-5 or 0-10 voltage output for use with PLC analog inputs. Select the 976-2k Hz. frequency output for use with a PLC discreet input, which saves the additional cost of an analog input card.

DeltaSpan IS | LD31-IS & LD32-IS | Pages 28 - 29



Intrinsically Safe Level Measurement

Pressure transmitters are the ideal complement to ultrasonic transmitters because they're unaffected by surface foam or vapor above the liquid level. The new DeltaSpan transmitters are intrinsically safe for use in Class I, Div 1, Groups A, B, C and D; Class II, Div 1, Groups E, F and G and Class III environments. These submersible

sensors are perfect for municipal storm water, wastewater and water treatment applications that require intrinsic safety due to the presence of hazardous methane gas. The LD31 series is used in clean water and diluted chemicals. The LD32 series is used in pump lift stations and clarifiers with more challenging dirty, coating or scaling liquids.

Switch-Tek | LH29 | Page 71



Leak Detection Switching

Requirements for leak detection have grown steadily due to increased environmental regulations, the rising cost of insurance and associated liability. To maximize safety and minimize cost, the early detection of leaks is critical. The new LH29 series float leak detection switch is designed for placement in the

hard to reach interstitial space of secondary containment tanks or sumps. In the event of a leak, the non-powered float switch will signal an alarm condition. Check with your insurance company to see if you qualify for a premium reduction through the use of secondary containment leak detection switches.

Float-Point | AV17 | Page 62



55-Gallon Drum Alarming

55-gallon drums are the mainstay of small tank chemical transportation and storage with millions of drums in service worldwide. Once empty, used drums are replaced with full drums. While flexible, this rotation creates special challenges when attempting to monitor drum levels using traditional line powered sensors. The Float-Point 55-gallon drum alarm is a

portable, battery powered solution. In the event of an alarm condition, the battery powered LED will actuate to indicate the problem. Alarm enclosures are available in both compact and remote mount types for optimal user placement. The drum alarm is offered in high, low or high and low configurations.

EchoSonic II | LU23, LU27, LU28 & LU29 | Pages 34 - 35



General Purpose Level Measurement

Most general purpose level transmitters are cost burdened with push button display hardware that's used once during configuration. To eliminate this cost, six years ago Flowline introduced the EchoSonic II ultrasonic level transmitter that's PC configured via our free Web-Cal software. Offered in a submersible, Type 6P enclosure with cable interface,

EchoSonic II has since become a best seller. Now we're offering the same great product in a water tight, NEMA 4X enclosure with conduit interface. Additionally, we've added a 5.5m (18.0') measurement range because you asked for it. Your favorite ultrasonic level transmitter just got better.

Level Application Selection Guide

Application Matrix

Continuous	Point
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Industrial	Measurement	Indication / Control	Hi / Low Alarm
Bulk storage	X		X
Day tank		X	X
IBC & drum		X	X
Process vessel			X
Waste sump	X		X
Wastewater treatment		X	X

Automation Machine, Tool & Skid	Measurement	Indication / Control	Hi / Low Alarm
Dispensing	X		X
Plating	X		X
Mixing		X	X
Printing	X	X	X
Washers		X	X
Semi-conductor	X		X
Wet bench	X		X
Life science	X		X
Water remediation		X	X
Process make-up water	X		X
Wastewater neutralization	X		X
Pharmaceutical process	X	X	X
Dialysis	X	X	X
Bio-waste	X	X	X
Disinfecting	X	X	X
Commercial laundry	X		X
Commercial fountains		X	X
HVAC chemical feed		X	X
Boiler chemical feed		X	X

Process Control	Measurement	Indication / Control	Hi / Low Alarm
Wastewater treatment	X		X
Power generation	X		X
Energy	X		X
Gas & oil	X	X	X
Mining	X	X	X
Marine		X	X
Food & beverage	X		X
Commercial pools	X		X
Water parks	X		X
Paints & coatings		X	X
Parts cleaners			X
Municipalities	X		X
Deionized water	X		X
Cosmetics	X		X
Agriculture		X	X



Sensor Only



DataView™ LI55

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DataLoop™ LI25

Pages 31, 42



Commander™ LI90

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FluidWell™ 300400

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