

BABBITT INTERNATIONAL

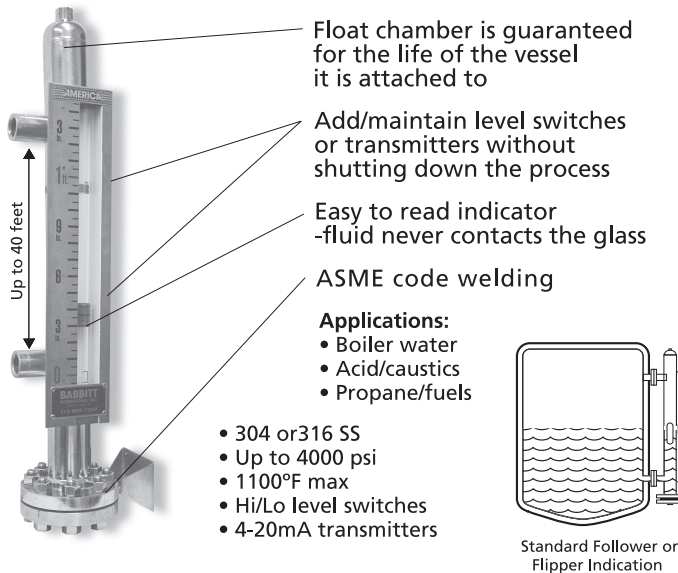
Level Controls & Systems

BABBITT® LEVEL CONTROLS

Safe • Simple • Reliable • Guaranteed Performance

MAGNETIC LIQUID LEVEL GAGE

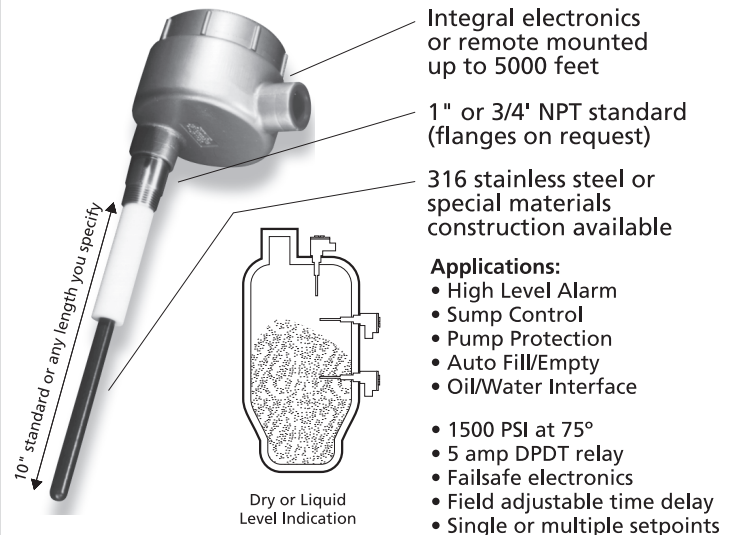
A magnetic float tracks the fluid level in the tank, while a bright indicator shows level in a hermetically sealed tube.



Safe for flammable, toxic or corrosive fluids.

RADIO FREQUENCY LEVEL/INTERFACE

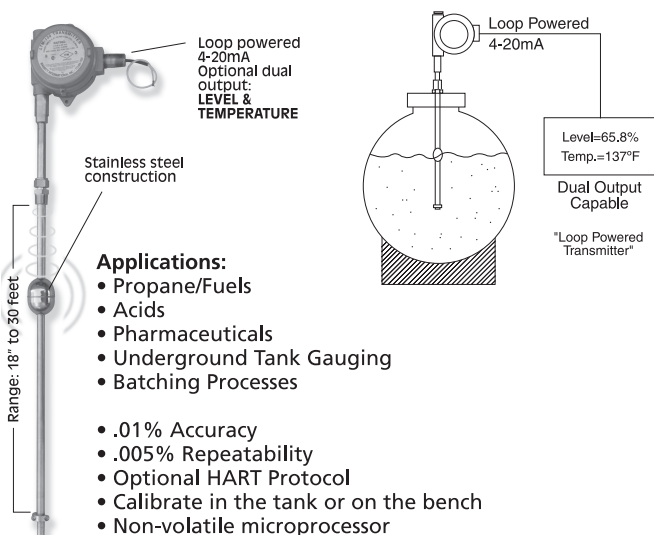
Field-proven RF sensor works even when probe is coated with material build-up.



Two year warranty Fast Delivery

MAGNETOSTRICTIVE LIQUID LEVEL TRANSMITTER

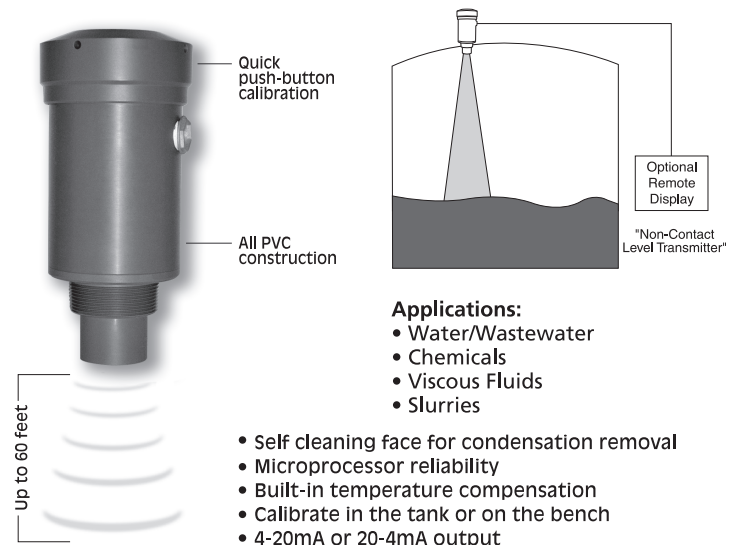
Calibrates in less than 10 seconds!



FM and CSA approvals

ULTRASONIC LIQUID LEVEL TRANSMITTER

Quick and easy to calibrate!



BABBITT INTERNATIONAL, INC.
P.O. BOX 70094
HOUSTON, TEXAS 77270 U.S.A.

PHONE: 800-835-8012
713-869-7259
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BABBITT LS2000 Level Switch

FEATURES

- Simple installation and calibration
- Solid state; no moving parts
- 10 amp SPDT relay output
- Fail-safe electronics
- Explosion Proof Housing Standard

APPLICATIONS

- High or low level alarms
- Sump control
- Oil / water interface detection
- Dry pump protection

LIQUIDS

- Water / Wastewater
- Acids / Caustics
- Chemicals / Oils
- Slurries

DRY SOLIDS

- Flour / Grains
- Powders
- Plastics
- Sand / Cement



GENERAL OPERATION

The LS2000 can measure virtually any liquid or dry bulk solid. It can even sense the difference between oil and water. The proprietary radio frequency (RF) circuit has a wide tuning range and exceptional temperature stability.

When the probe is installed, it is calibrated in the absence of material touching the probe. When the desired product comes into contact with the probe, the relay switches giving the desired output.

CONSTRUCTION

The probe is made of a solid 316 stainless steel rod; the standard insulator is made from Ultra-High Molecular Weight Polyethylene (UHMWPE) – Teflon optional. UHMWPE has high abrasion resistance, while the optional Teflon insulator operates at higher temperatures. Standard seals are double Viton “O” rings on the probe and insulator. All of the electronics are housed in an explosion proof cast aluminum housing.

CHOICE OF PROBE DESIGNS

The LS2000 offers 2 standard probe designs. Our **standard stainless steel rod** is available in a variety of lengths and is suited for liquids or bulk solids. These probes can be coated with Halar in lengths up to 60 inches.

The **blind-end probe** has no visible probe; the insulating material completely covers the sensing probe, making it a good choice for applications where a wet material build-up may foul a horizontally mounted probe. This is also a preferred probe for alarming when a line feeding a pump runs dry.

Flanged process connections and other materials of construction are available.

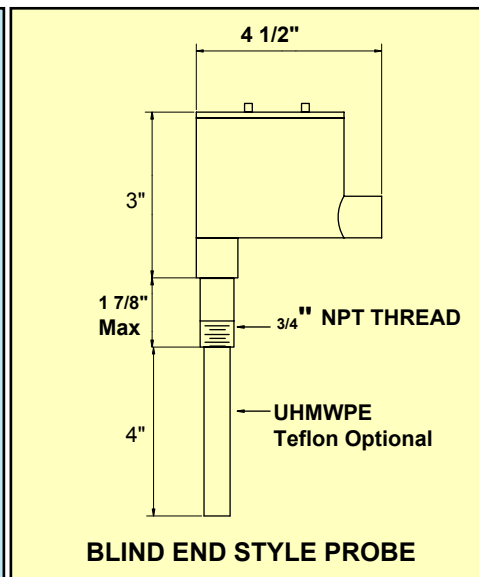
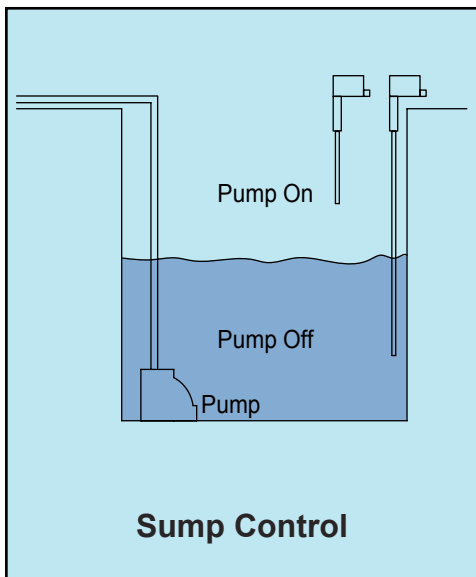
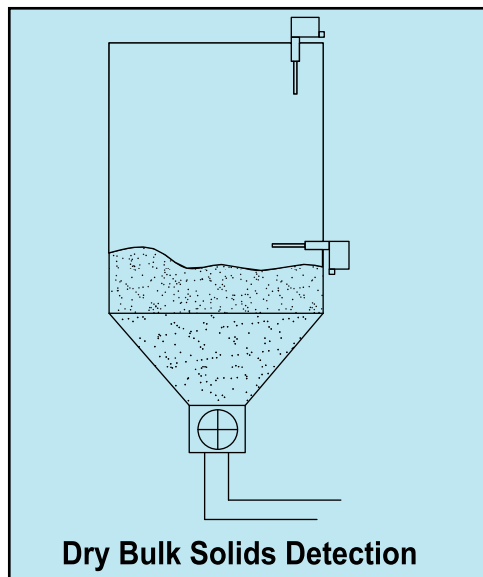
SIMPLE CALIBRATION

All of the necessary calibration indicators are on-board so all you need to calibrate the LS2000 is a small screwdriver. The modular electronics make troubleshooting and repair a snap. *The entire unit is backed by our two year warranty.*

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SPECIFICATIONS:

ELECTRICAL

Power (+/-15%): 115 VAC, 60Hz, 2 watts – or -
24 VDC @ 32 mA maximum

Output: 1 Form C contact (SPDT) relay
10 amp resistive at 125 VAC
8 amp @ 250VAC
5 amp @ 30VDC

Failsafe: Field selectable
High or Low level

RF Frequency: Approx. 1.3 MHz

ENVIRONMENTAL

Temperature: Probe with:
UHMWPE insulator -30°F to 180°F
Teflon insulator -30°F to 280°F

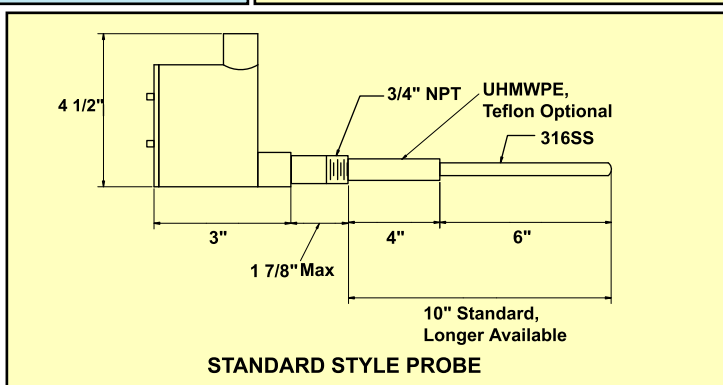
Pressure: 300 psi @ 75°F Note: at 180°F,
pressure should not exceed 15psi.

Hazardous Area: Housing is CSA and UL approved for
Class I, Div. 1, Groups C & D;
Class II, Groups E, F, & G; Class III
NEMA 4

Specifications are subject to change without notice.

WARRANTY The entire unit is warranted for two
years against defects in material or workmanship. See
owners manual for complete details.

Distributed By:



ORDERING INFORMATION:

Standard Probe Style:

LS2000 – 115VAC – S – 10"

Model
Supply Voltage
"S" – 316 Stainless Steel Probe
"H" – Halar Coated Probe
Probe length in inches

Blind-end Probe Style:

LS2000 – 115VAC – U – 4"

Model
Supply Voltage
"U" – UHMWPE
"T" – Teflon
Probe length in inches
(4" standard – call for other lengths)

APPLICATION PERFORMANCE GUARANTEE
If within 60 days of purchase, the LS 2000 does not perform
according to our claims and was properly installed in an ap-
proved application that does not exceed the stated performance
specifications, the LS 2000 may be returned for full credit.

BABBITT LS2100 2-WIRE Level Switch

FEATURES

- Simple installation and calibration
- Solid state; no moving parts
- Fail-safe electronics
- Explosion proof housing standard

APPLICATIONS

- High or low level alarms
- Sump control
- Oil / water interface
- Dry pump protection

LIQUIDS

- Water / Wastewater
- Acids / Caustics
- Chemicals / Oils
- Slurries

DRY SOLIDS

- Flour / Grains
- Powders
- Plastics
- Sand / Cement



GENERAL OPERATION

The LS2100 can measure virtually any liquid or dry bulk solid. It can even sense the difference between oil and water. The proprietary radio frequency (RF) circuit has a wide tuning range and exceptional temperature stability.

When the probe is installed, it is calibrated in the absence of material touching the probe. When the desired product comes into contact with the probe, the milli-amp signal on the 24 VDC Loop changes to indicate level.

The 2-Wire design makes the LS2100 perfect for use with PLC'S and DCS systems. Often existing instrument wire pairs can be used.

CONSTRUCTION

The probe is made of a solid 316 stainless steel rod; the standard insulator is made from Teflon; the standard seals are double Viton "O" rings on the probe and insulator. All of the electronics are housed in an explosion proof cast aluminum housing.

CHOICE OF PROBE DESIGN

The LS2100 offers 2 standard probe designs. Our **standard stainless steel rod** is available in a variety of lengths and is suited for liquids or bulk solids. These probes can be coated with Halar in lengths up to 60 inches.

The **blind-end probe** has no visible probe; the insulating material completely covers the sensing probe, making it a good choice for applications where a wet material build-up may foul a horizontally mounted probe. This is also a preferred probe for alarming when a line feeding a pump runs dry.

Flanged process connections and other materials of construction are available.

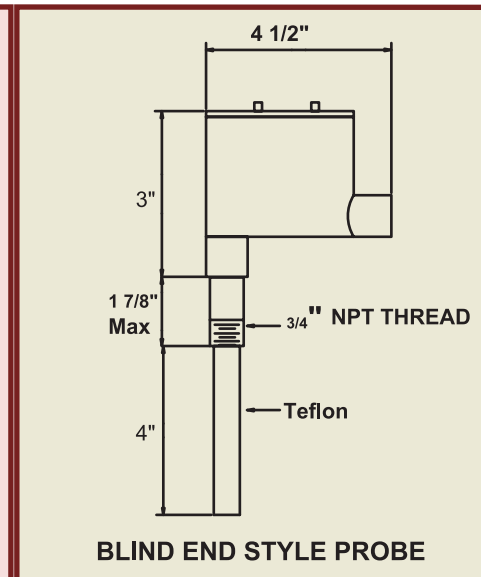
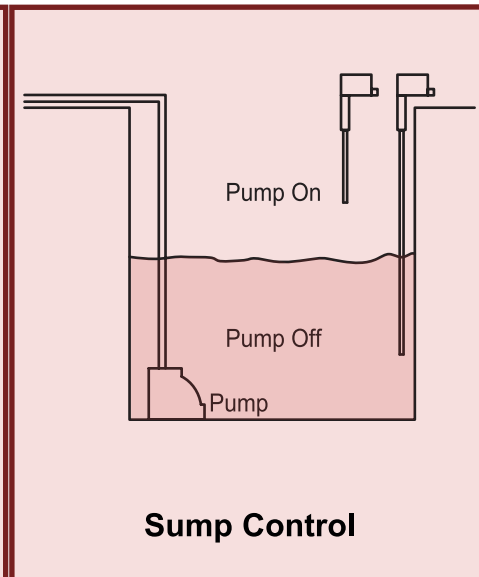
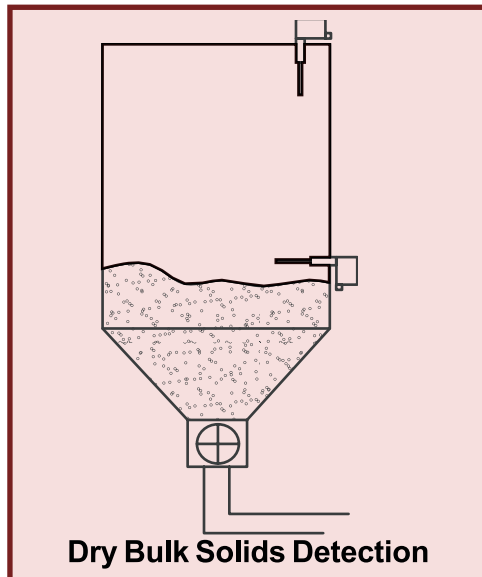
SIMPLE CALIBRATION

All of the necessary calibration indicators are on-board so all you need to calibrate the LS2100 is a small screwdriver. The modular electronics make troubleshooting and repair a snap. *The entire unit is backed by our two year warranty.*

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SPECIFICATIONS:

ELECTRICAL

Power: Loop Powered 16-32 VDC

Output: Normal - 8mA
Alarm - 16mA
Output is reversible

RF Frequency: Approx. 1.3 MHz

ENVIRONMENTAL

Temperature: Probe: -30°F to 400°F
Electronics: -30°F to 180°F

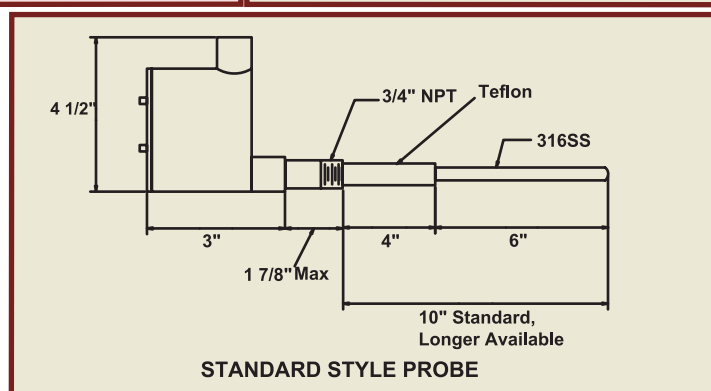
Pressure: 1000 psi @ 75°F

Hazardous Area: Housing is CSA and UL approved for
Class I, Div. 1, Groups C & D;
Class II, Groups E, F, & G;
Class III & NEMA 4

Specifications are subject to change without notice.

WARRANTY The entire unit is warranted for two years against defects in material or workmanship. See owners manual for complete details.

Distributed By:



ORDERING INFORMATION:

Standard Probe Style:

LS2100 - 24 VDC - S - 10"

Model |
Supply Voltage |
"S" - 316 Stainless Steel Probe
"H" - Halar Coated Probe
Probe length in inches |

Blind-end Probe Style:

LS2100 - 24 VDC - T - 4"

Model |
Supply Voltage |
"T" - Teflon
Probe length in inches |
(4" standard - call for other lengths)

APPLICATION PERFORMANCE GUARANTEE
If within 60 days of purchase, the LS 2100 does not perform according to our claims and was properly installed in an approved application that does not exceed the stated performance specifications, the LS 2100 may be returned for full credit.

BABBITT LEVEL SWITCHES

**GUARANTEED
PERFORMANCE
& RELIABILITY**



LS 6000



LS 7000

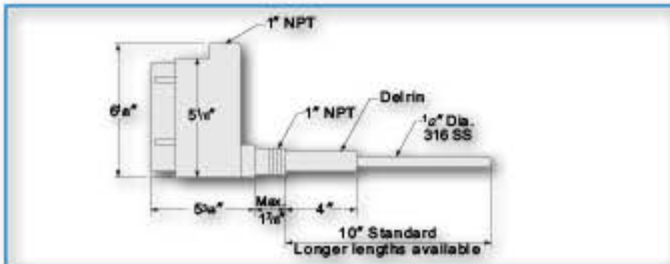


LS 8000

LS 6000 Level Switch

Low Cost, High Performance

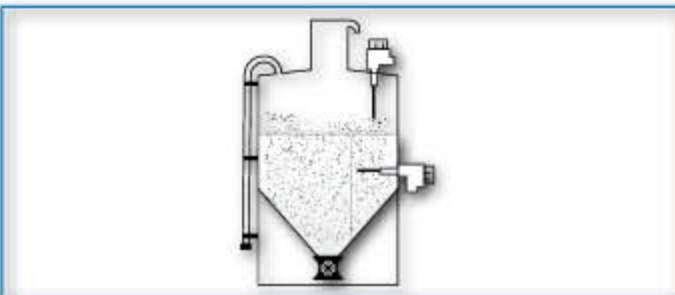
The LS 6000 level switch is an excellent general purpose level control. This unit can sense all liquids and difficult to measure dry materials.



Like all Babbitt International level switches, the LS 6000 employs a radio frequency (RF) balanced impedance bridge to sense the presence or absence of products. This technique provides the ability to ignore significant product build-up on the probe and is very stable over wide temperature swings, thus eliminating the need for seasonal recalibration.

All electronics are housed in an explosion proof enclosure and all necessary calibration adjustments and indicators are on-board, so all you need to calibrate the LS 6000 is a small screwdriver.

The probe is very rugged and made of 1/2" diameter 316 stainless steel. If a probe is too long, just cut it off with a saw. Or, if you require a longer probe, simply weld on additional rods. Probes of all lengths are available from the factory.

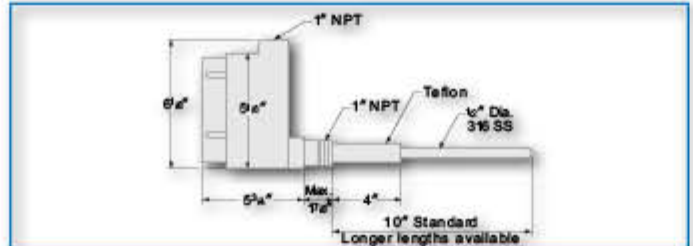


- Senses Liquid and Dry Materials
- Ignores Significant Product Build-up
- Simple Calibration
- Failsafe Electronics
- 5 AMP, DPDT Relay Output

LS 7000 Level Switch

Most Versatile Level Switch Available

The LS 7000 level switch has all the features and reliability of the LS 6000, plus features that make it the most versatile level control on the market today.

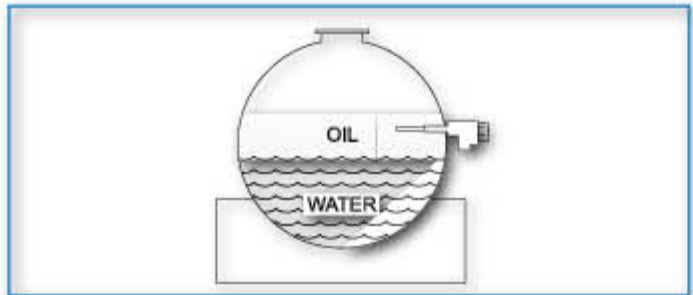


Every standard unit has an on-board fuse and surge suppressor to protect the electronics from improper supply voltages.

A built in static arrestor protects the circuitry from hostile bin environments created by static prone materials such as plastic pellets.

An on-board test switch combined with modular electronics makes troubleshooting and repair a snap. Of course, every unit is backed by our two year warranty.

The time delay allows the user to select ON DELAY or OFF DELAY operation. This timing range is adjustable from 1/8 second to 2 hours. The timer can be used to ignore wave action in a tank, or the timer can be used to pump down a sump with a single probe.

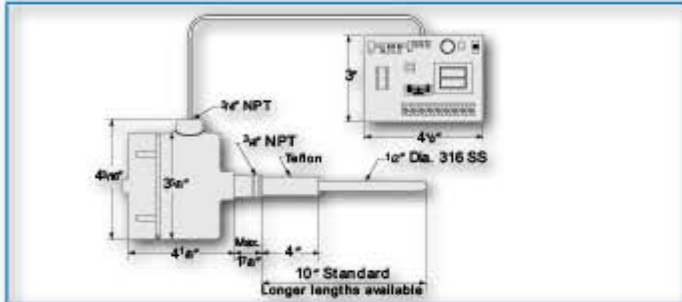


- User Programmable Time Delay
- On-Board Fuse and Spike Suppression
- Built-in Static Protection
- Failsafe High or Low Level
- On-Board Test Switch

LS 8000 Remote Mounted Level Switch

Remote Mount the Electronics up to One Mile from the Probe

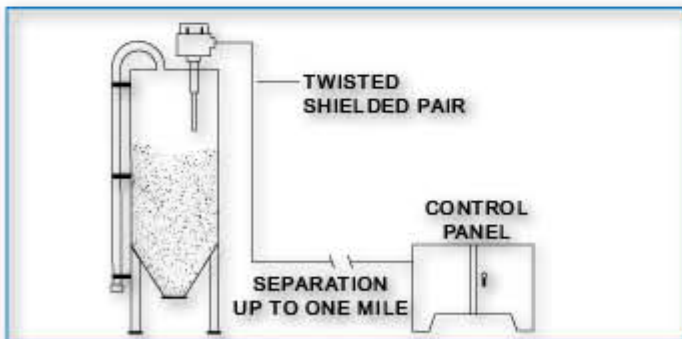
The LS 8000 remote mounted level switch is the perfect choice when it is unsafe or inconvenient to mount the electronics directly to the probe.



The probe consists of a maintenance free, epoxy encapsulated transmitter in an explosion proof housing. The transmitter is connected to a receiver with a twisted, shielded pair of wires (Belden 8761 or equal). The receiver board is wired to the supply voltage and has all the necessary calibration adjustments; failsafe and time delay adjustments, and the relay output.

It is possible to calibrate the LS 8000 without climbing a tall tank, or a probe can be located up to one mile from the nearest supply voltage.

The remote mounting does not sacrifice the reliability, stability or performance that makes Babbitt International level switches famous.



- Class I, Group C & D; Class II, Group E, F & G
- Inexpensive Interconnect Cable
- Failsafe High or Low Level
- Adjustable Time Delay
- Optional Enclosures for Receiver

Common Features

- Ignores significant product build-up
- Solid state, no moving parts
- Simple installation and calibration
- Modular electronics easily replaced
- Probe length easily field modified
- Explosion proof housing standard
- Rugged construction handles roughest products

Liquids

Wastewater
Oils
Acids
Slurries
Fuels
Caustics

Dry/Solids

Fly Ash
Cement
Plastics
Flour
Powders
Sand
Grains
Wood Chips

Interfaces

Oil/ Water
Foam/ Liquid

Applications

- High/Low Level Alarm
- Auto Tank Filling
- Dry pump protection
- Sump Controls
- Plugged Chute Protection

Optional Configurations Include

- Stainless Steel Enclosures
- Tri-Clamp Process Connections
- Flexible Cable Probes



Specifications

ELECTRICAL	LS 6000	LS 7000	LS 8000
Power	115 VAC (+/- 15%), 50/60 HZ, 2 WATTS - STANDARD (12 VDC, 24 VDC, OR 230 VAC OPTIONAL)		
Output	2 FORM C Contacts, DPDT relay, 5 Amp Resistive @ 125, 230 VAC; 30 VDC		
On-Board Fuse	250mA	250mA	250mA
Selectable Failsafe	High or Low Level	High or Low Level	High or Low Level
Time Delay	N/A	Select: On or Off Delay Adj: 1/8 Sec - 2 Hrs	Select: On or Off Delay Adj: 1/8 Sec - 2 Hrs
MECHANICAL	LS 6000	LS 7000	LS 8000
Vessel Entry	1" NPT	1" NPT	3/4" NPT
Conduit Entry	1" NPT	1" NPT	3/4" NPT
Probe	1/2" Diameter Stainless Steel Standard (Halar/ Other Coatings Optional)		
Insulator	Delrin	Teflon	Teflon
Housing	Explosion proof, Copper Free, Cast Aluminium		Transmitter: Explosion Proof Receiver: Track Mounted PC Optional Enclosures
ENVIRONMENTAL	LS 6000	LS 7000	LS 8000
Hazardous Area	Class I Group C,D Class II, Group E, F, G	Class I Group C,D Class II, Group E, F, G	Class I Group C, D; Class II, Group E, F, G
Temp: Electronics	-40°F to 185°	-40°F to 185°	-40°F to 185°
Temp: Probe	-30°F to 250°	-30°F to 450°	-30°F to 450°
Pressure: Probe	1500 PSI @ 75° F (Higher on Request)		
Special Materials of Construction Available			

Specifications Subject to Change Without Notice

Distributed by:

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P.O. Box 70094
Houston, Texas USA
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APPLICATION PERFORMANCE GUARANTEE If within 60 days of purchase, our product does not perform according to our claims and was properly installed in an approved application that does not exceed the stated performance specifications, the unit may be returned for full credit. © 2009 Babbitt International Inc. LS 4-Series 09A

WARRANTY

Every unit is warranted for two years against defects in material or workmanship. See Owners Manual for details.

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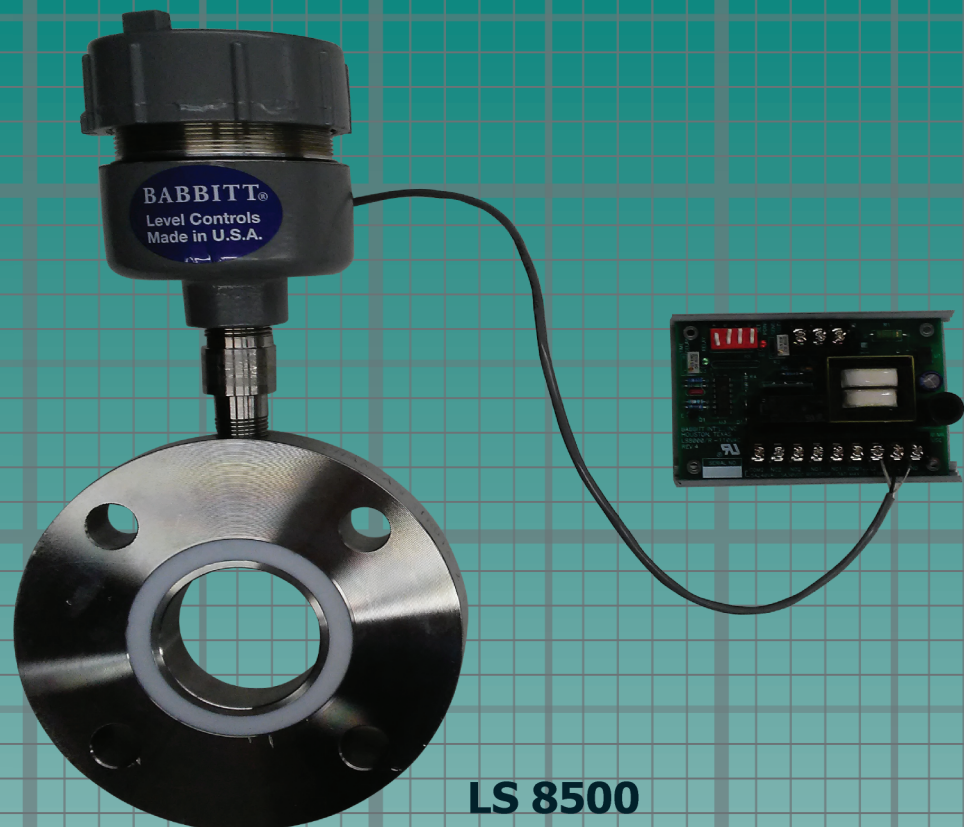
PRESENCE/ABSENCE SWITCHES

Simple • Safe • Reliable

Performance & Reliability
GUARANTEED



LS 7500



LS 8500

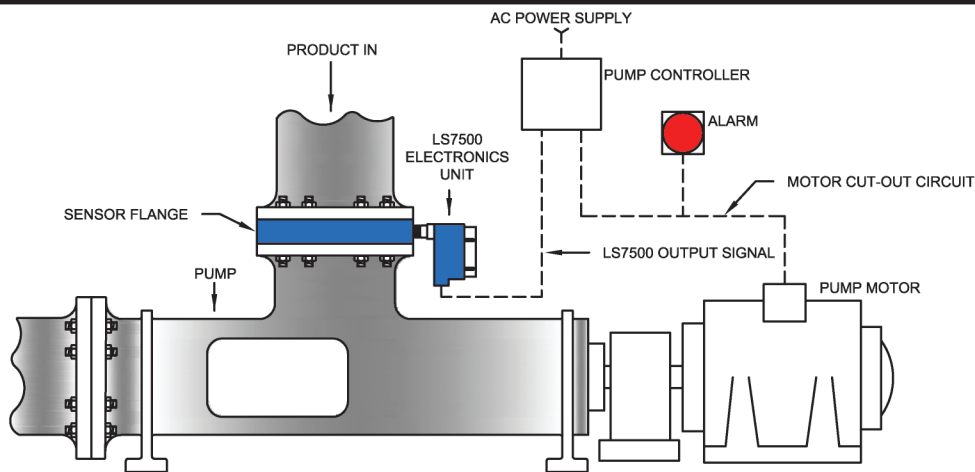
Presence / Absence Switches

Product Features:

- Non-Intrusive Sensor
- Solid state, no moving parts
- Simple installation and calibration
- Explosion proof housing standard
- Built-in static protection
- User Programmable time delay

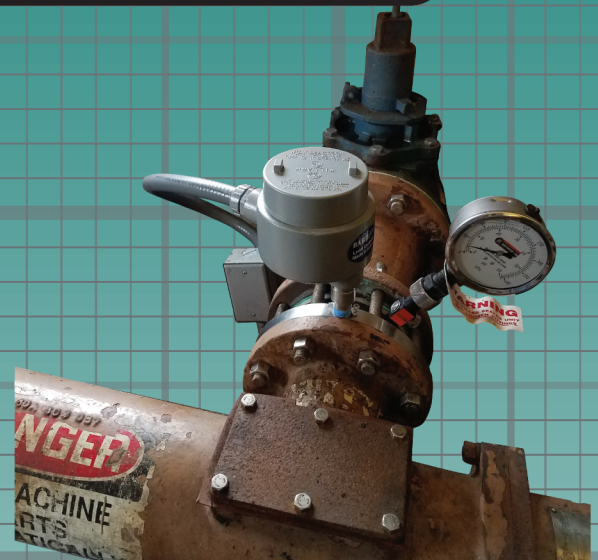


Babbitt Presence/Absence switches offer a unique design that allows obstructionless detection of liquids and solids in all types of process systems. These units are especially ideal for run-dry protection of positive displacement pumps. Babbitt LS7500 & LS8500 presence/absence switches are designed to be installed in virtually any type of pipe where an un-restricted flow is desired. Mounting in a vertical pipe is preferred in order that residue material drain away from the sensor. However, operation in any position is possible.



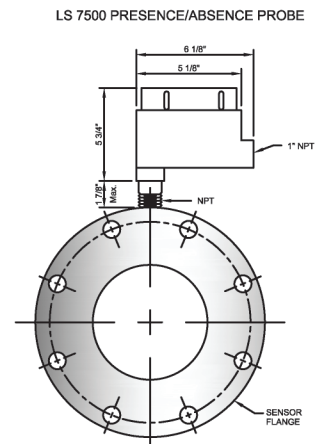
TYPICAL INSTALLATION ON POSITIVE DISPLACEMENT PUMP

Flange sensors are available in two distinct models depending upon the industry application. The first model is a partial ring sensor and is suited for conductive materials such as sewage, brine and acids. The other model is a full ring sensor, which is better suited for non-conductive materials such as solvents, hydrocarbons or dry products. These model sensors are available in standard pipe sizes ranging from 2 1/2" to 12 inches. Standard flanges are 150 lb. 316SS flat-faced. Connection is typically made with flat-faced flanges and full-faced gaskets. These sensor models are also available in Sanitary Tri-Clamp connections ranging from 1" to 4". Refer to the last page for complete sensor specifications and ordering information.



LS7500

The Babbitt LS7500 is composed of an electronics unit housed inside a cast aluminum, explosion proof enclosure and a mounted sensor flange. The LS7500 has all the features of our LS7000 RF Level Switch, including adjustable time delay, built in fuse/surge arrestor and on-board test switch. Time delay functions allow the user to avoid unnecessary shutdowns caused by momentary voids which may appear in the process stream.



Specifications

Electrical

Power: 115VAC (+/- 15%) 50/60Hz, 2 watts STANDARD (12 VDC, 24VDC or 230VAC Optional)

Output: 2 Form C Contact DPDT relay, 5 Amp resistive at 125, 230VAC; 30VDC

On-Board Fuse: 250mA

Environmental

Hazardous Area: Class I, Group C & D; Class II, Groups E, F & G

Temp: Electronics: -40F to 185F

Temp: 100F*

Pressure: 200 PSI*

*For higher temp/pressure, contact factory.

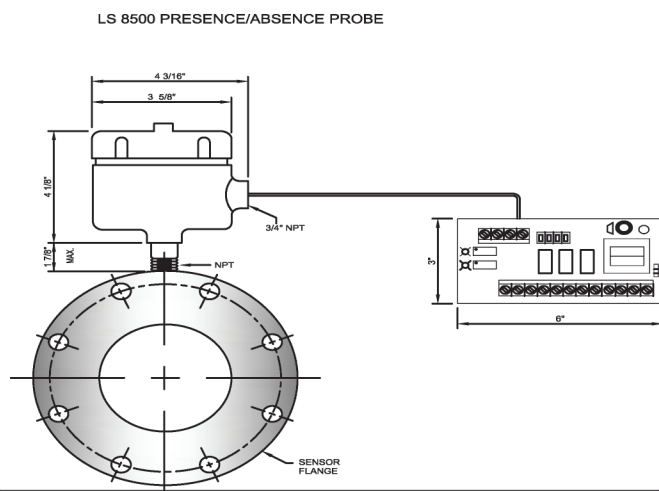
Mechanical

Conduit Entry: 1" NPT

Housing: Explosion Proof, Copper Free, Cast Aluminum

LS8500

The Babbitt LS8500 is composed of a transmitter housed inside of a cast aluminum, explosion proof enclosure which is mounted to the sensor flange. The electronics receiver card is separate and can be mounted up to a mile away. The electronics receiver card has all the features of our LS8000 RF Level Switch, including adjustable time delay and built in fuse/surge arrestor. The electronics receiver card comes standard on a snap track, but can be mounted in an optional NEMA 4 or Explosion Proof Enclosure.



Specifications

Electrical

Power: 115VAC (+/- 15%) 50/60Hz, 2 watts STANDARD (12 VDC, 24VDC or 230VAC Optional)

Output: 2 Form C Contact DPDT relay, 5 Amp resistive at 125, 230VAC; 30VDC

On-Board Fuse: 250mA

Environmental

Hazardous Area: Class I, Group C & D; Class II, Groups E, F & G

Temp: Electronics: -40F to 185F

Temp: 100F *

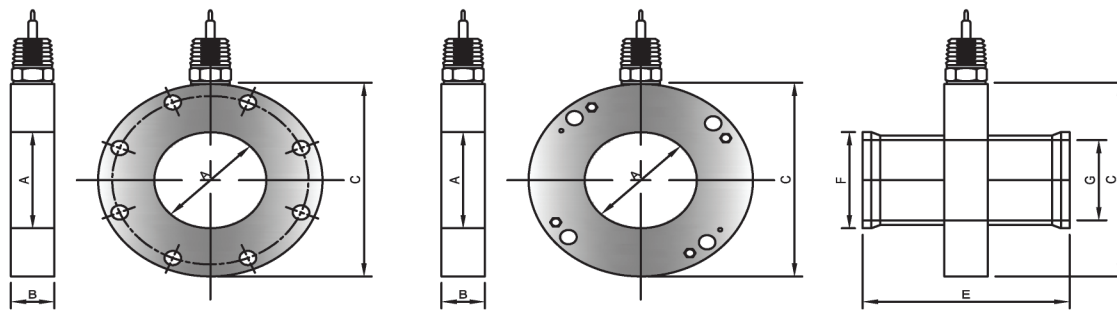
Pressure: 200 PSI*

*For higher temp/pressure, contact factory.

Mechanical

Conduit Entry: 3/4" NPT Optional 1" NPT

Housing: Transmitter: Explosion Proof;
Receiver: Track Mounted PC
(Optional Enclosures)



Flange Sensor

Flange Size	2 1/2	3	4	6	8	10	12
Dim. A	2.47	3.07	4.03	6.06	7.98	10.02	12.00
Dim. B	3/4	13/16	7/8	15/16	1 1/16	1 1/8	1 1/8
Dim. C	7	7 1/2	9	11	13 1/2	16	19
Bolt Circle Dia.	5 1/2	6	7 1/2	9 1/2	11 3/4	14 1/4	17
No. of Holes	4	4	8	8	8	12	12
Bolt Hole Dia.	3/4	3/4	7/8	7/8	7/8	1	1

Tri-Clamp Sensor

Tri-Clamp Size	1	1 1/2	2	2 1/2	3	4
Dim. F	1 31/64	1 31/64	2 23/64	3 3/64	3 37/64	4 11/16
Dim G	7/8	1 3/8	1 7/8	2 3/8	2 7/8	3 7/8

Notes:

- Flanges designed to interface with flat-faced flanges.
- Dimension A based on inside diameter of schedule 40 pipe.
- All dimensions in inches
- For Flange Sizes or Dimensions not in chart, contact factory

Ordering Information:

Model

(LS7500 or LS8500)

Power Supply:

(115VAC 24VDC 12VDC or 220VAC)

Sensor Type:

(FP-Flange Probe or TC-Tri-Clamp)

Sensor Size:

(see charts above)

Flange Model:

(PR-Partial Ring or FR-Full Ring)

LS7500 - 115VAC - FP - 4" 150# - PR

Distributed by:

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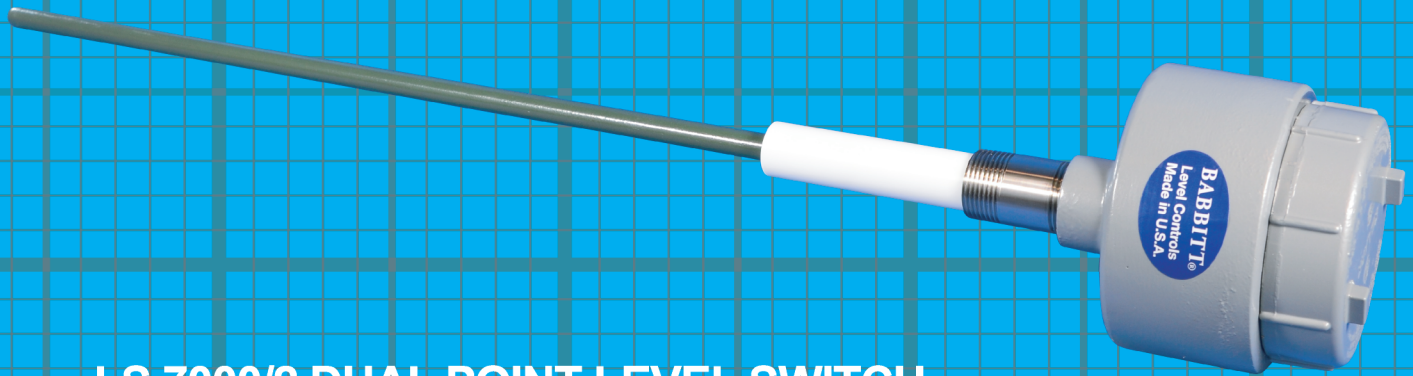
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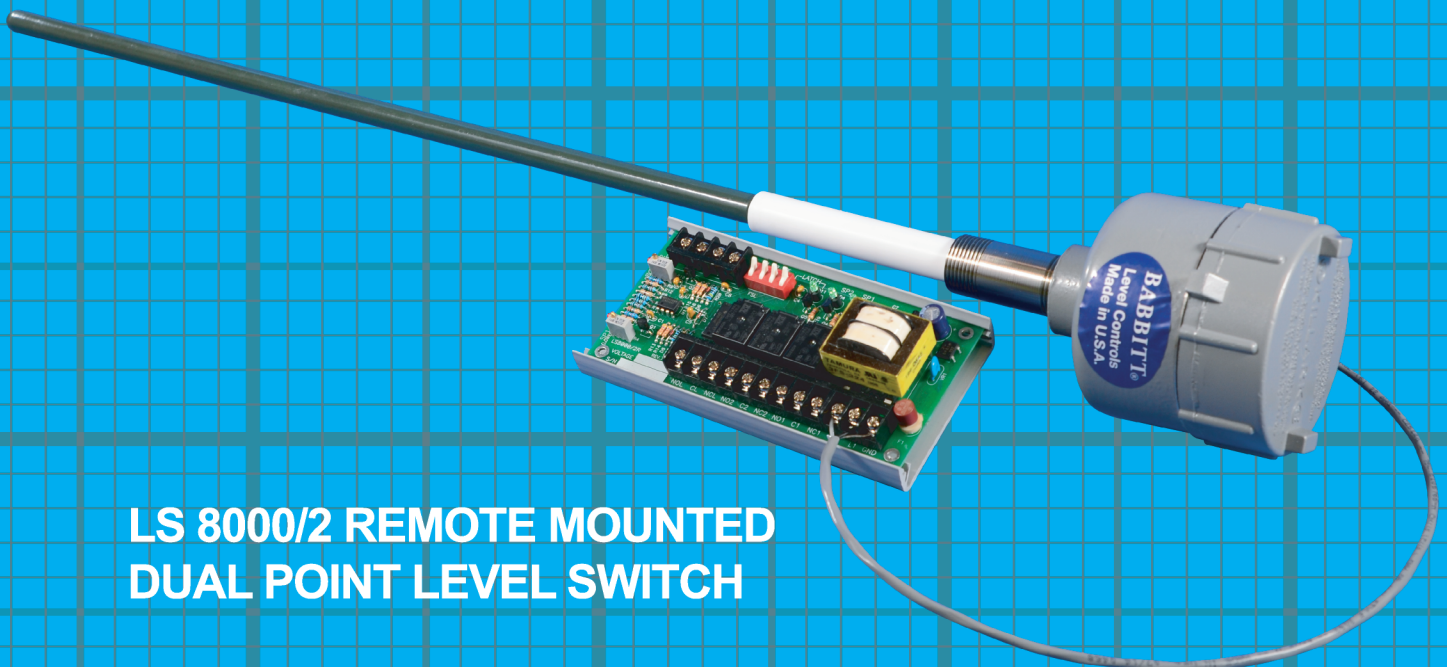
BABBITT

DUAL POINT LEVEL SWITCHES

Performance & Reliability
GUARANTEED

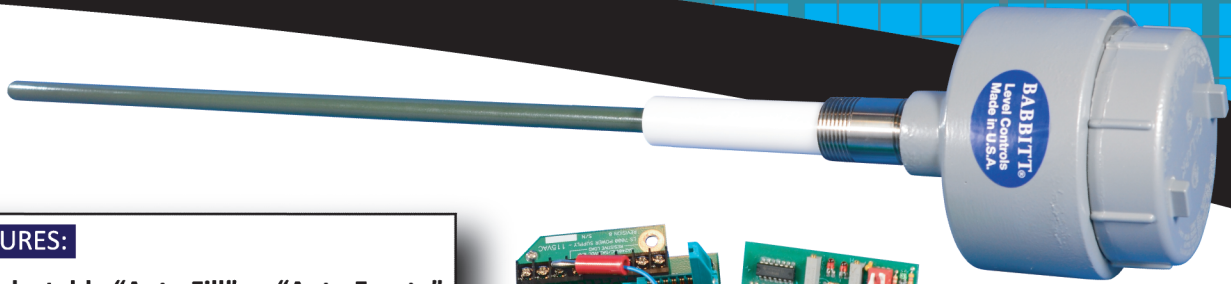


LS 7000/2 DUAL POINT LEVEL SWITCH



**LS 8000/2 REMOTE MOUNTED
DUAL POINT LEVEL SWITCH**

LS 7000/2 DUAL POINT LEVEL SWITCH



PRODUCT FEATURES:

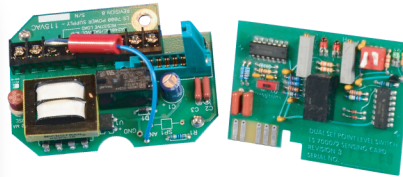
- Field selectable "Auto Fill" or "Auto Empty"
- Solid state, no moving parts
- Simple installation and calibration
- Explosion proof housing standard
- On-board fuse protection
- Modular electronics easily replaced

APPLICATIONS:

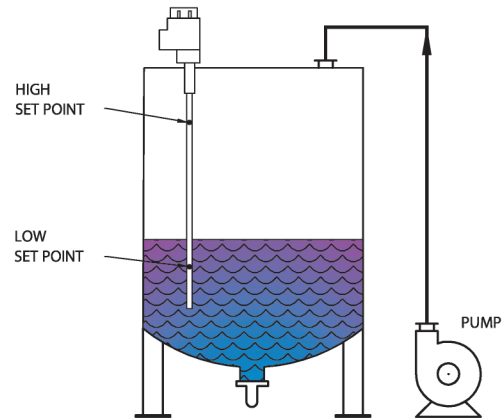
- Auto Fill/Auto Empty
- Pump control

LIQUIDS:

- Water
- Acids/Caustics
- Fuels/Oils
- Solvents



LS 7000/2 DUAL POINT LEVEL SWITCH



GENERAL

The LS7000/2 is a dual point level switch with a single relay making it suitable for auto fill or auto empty operations in a tank, vessel or sump. The LS7000/2 dual-point RF level switch uses the proprietary radio frequency (RF) balanced impedance bridge. Both the high and low set points are adjustable over the entire length of the probe. The LS7000/2 is designed for use in **homogeneous liquids**.

OPERATIONS

The dual-point level switch uses a single relay (DPDT 5 amp) and an on-board latching circuit for automatic operation. No external latching relays or holding contacts are required. Simply wire the relay output in series with the pump. To automatically fill a vessel, select "AUTO-FILL" on the electronics, and the relay will energize when the material is below the "LOW" set point. The pump will turn on and continue to run until the level reaches the "HIGH" set point, then shut off. For "AUTO-EMPTY", the relay action is reversed.

CONSTRUCTION

The probe is made of a HALAR coated 316 stainless steel rod, 1" NPT process connection and the insulator is made of Teflon. The seals are made with Viton "O" rings. All the electronics are housed in a cast aluminum explosion-proof enclosure.

All the necessary calibration indicators are on-board so all you need to calibrate the LS7000/2 is a small screwdriver. The modular electronics make trouble shooting and repair a snap. The entire unit is backed by our two year warranty, 60 day money back guarantee.

LS 8000/2 DUAL POINT LEVEL SWITCH

PRODUCT FEATURES:

- Field selectable "Auto Fill" or "Auto Empty"
- 10 Amp latching relay for pump control
- Solid state, no moving parts
- Simple installation and calibration
- Explosion proof housing standard
- On-board fuse protection
- Modular electronics easily replaced

APPLICATIONS:

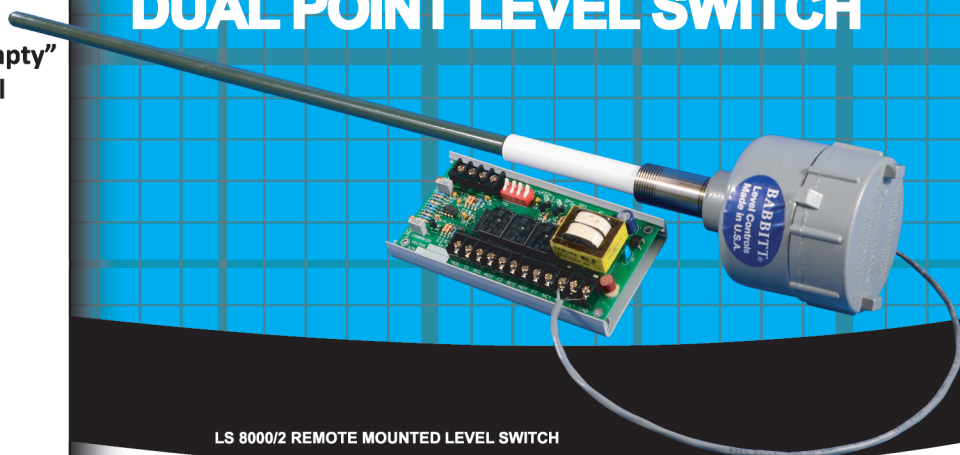
- Auto Fill/Auto Empty
- Pump control
- High/Low level alarm

LIQUIDS:

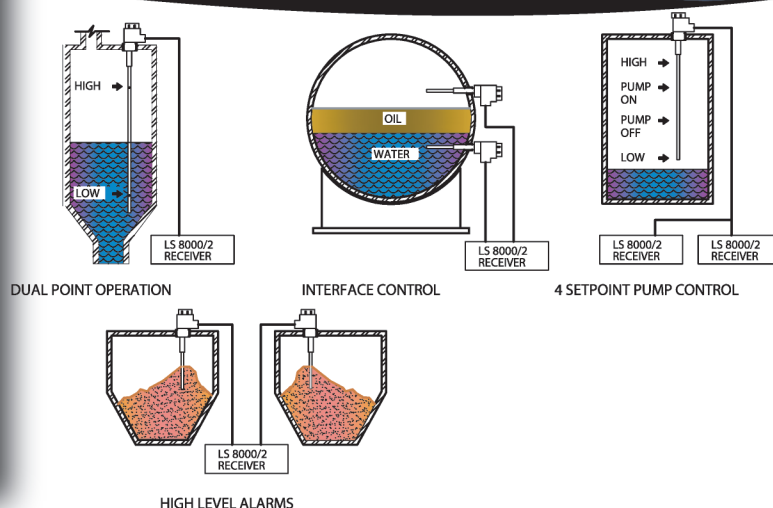
- Water
- Acids/Caustics
- Fuels/Oils
- Solvents

SOLIDS:

- Plastic pellets
- Grains
- Sands
- Cement
- Flours
- Powders



LS 8000/2 REMOTE MOUNTED LEVEL SWITCH



GENERAL

The LS8000/2 is a remote mounted, dual point level switch with 3 relays. The first is a latching relay (like the LS7000/2) used for auto fill / auto empty operations. The other two relays are discreet for high and low set points. The LS8000/2 dual-point level switch can measure virtually any liquid, dry material (2 probe configuration) or interface of electrically conductive or non-conductive products. The proprietary radio frequency (RF) balanced impedance bridge has exceptional temperature stability, thus eliminating the need to recalibrate the unit from season to season. The LS8000/2 can be configured for single-point, dual-point or four-point control. The maintenance-free transmitter is mounted in the explosion-proof head of the probe. The receiver can be mounted up to one mile from the transmitter.

OPERATIONS

The LS8000/2 is specifically designed to automatically fill or empty a tank, hopper or sump. The high and low set points are adjustable over the entire length of the probe. Each receiver has 3 SPDT relay outputs. One is a latching relay for field-selectable "AUTO-FILL" or "AUTO-EMPTY" control. The other two relays provide high and low set point outputs. **For best results, this unit should be applied in homogeneous liquids when configured for multiple set points on one probe.**

CONSTRUCTION

The probe is made of a HALAR coated 316 stainless steel rod, 3/4" NPT process connection and the insulator is made of Teflon. The seals are made with Viton "O" rings. The transmitter electronics are housed in a cast aluminum explosion-proof enclosure. The receiver board is provided with a snap-track mounting or can be purchased with an optional enclosure.

All the necessary calibration indicators are on-board so all you need to calibrate the LS8000/2 is a small screwdriver. Fail-safe electronics provide peace of mind. The modular electronics make trouble shooting and repair a snap. The entire unit is backed by our two year warranty, 60 day money back guarantee.

SPECIFICATIONS

LS 7000/2

Configuration and Ranges

Electrical

Power: 115VAC (+/- 15%) 50/60Hz,
2 watts STANDARD
(12 VDC, 24VDC or 230VAC Optional)
Output: 2 Form C Contact DPDT relay, 5 amp
resistive at 125, 230VAC; 30VDC
On-Board Fuse: 0.5amp

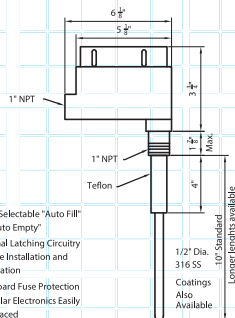
Mechanical

Process Connection**: 1" NPT
Conduit Entry: 1" NPT
Insulator: Teflon
Housing: Explosion Proof, Cooper Free
Cast Aluminum

Environmental

Hazardous Area: Class I, Groups C & D;
Class II, Groups E, F & G
Temp: Electronics -40F to 185F
Temp: Probe -40F to 450F
Pressure: Probe 1500PSI @ 75F

LS 7000/2 DUAL POINT LEVEL SWITCH



Ordering Information

Standard Probe Style:

LS7000/2 - 115VAC - H - 10" *

Model
Supply Voltage
"H" - Halar Probe
Probe length in inches

*This describes an LS7000/2, powered by 115VAC, Halar Coated 316 SS probe, 10" long. The probe length is measured from the end of the process connection to the tip of the probe.

** Special materials of construction are available.
Please consult factory.

LS 8000/2

Configuration and Ranges

Electrical

Power: 115VAC (+/- 15%) 50/60Hz,
3 watts STANDARD
(12 VDC, 24VDC or 230VAC Optional)
Output: 3 relays with 1 Form C Contact,
SPDT, 10 amp resistive at 115 VAC,
8 amp at 230VAC, 5 amp at 30VDC
On-Board Fuse: 0.5amp

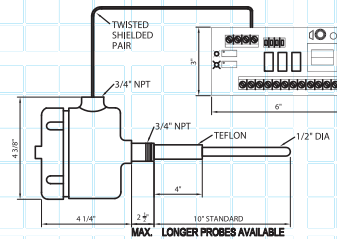
Mechanical

Process Connection**: 3/4" NPT
Conduit Entry: 3/4" NPT
Insulator: Teflon
Housing: Transmitter: Explosion Proof
Receiver: Track Mounted PC
(Optional Enclosures)

Environmental

Hazardous Area: Class I, Groups C & D;
Class II, Groups E, F & G
Temp: Electronics -40F to 185F
Temp: Probe -40F to 450F
Pressure: Probe 300PSI @75F (Higher on request)**

LS 8000/2 REMOTE MOUNTED LEVEL SWITCH



LS 8000/2-115 VAC-S-10

Ordering Information

Standard Probe Style:

LS8000/2 - 115VAC - H - 10" *

Model
Supply Voltage
"H" - Halar Probe
Probe length in inches

*This describes an LS8000/2, powered by 115VAC, Halar Coated 316 SS probe, 10" long. The probe length is measured from the end of the process connection to the tip of the probe.

To order an additional probe, transmitter and explosion proof housing for a 2 probe application specify LS8000/2-TRAN-EX-Probe length in inches.

Distributed by:

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BABBITT INTERNATIONAL

MLS-4EX Multi-Point Float Level Switches

FEATURES

- Up to 4 switch points on a single probe
- Stainless Steel wetted parts
- Rugged construction
- Explosion proof design
- Lengths up to 20 feet
- Cost effective

APPLICATIONS

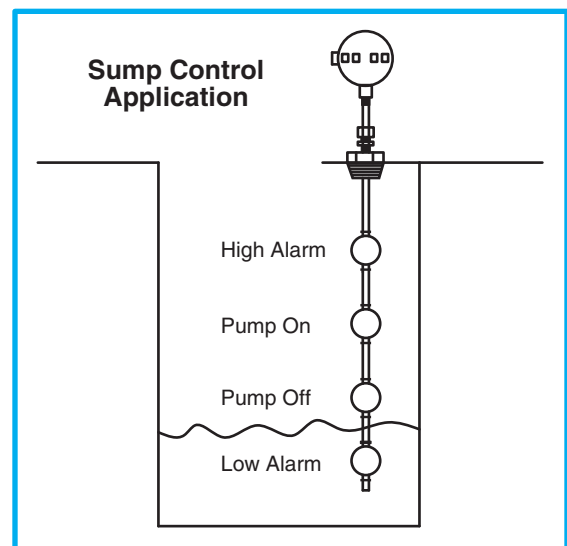
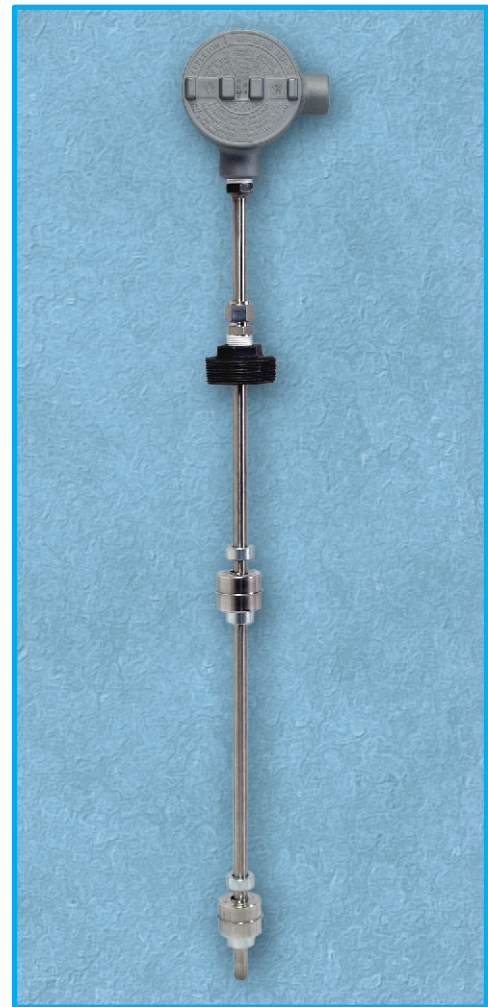
- Water / Chemicals / Fuels
- Level alarms
- Pump controls
- Automatic filling or emptying

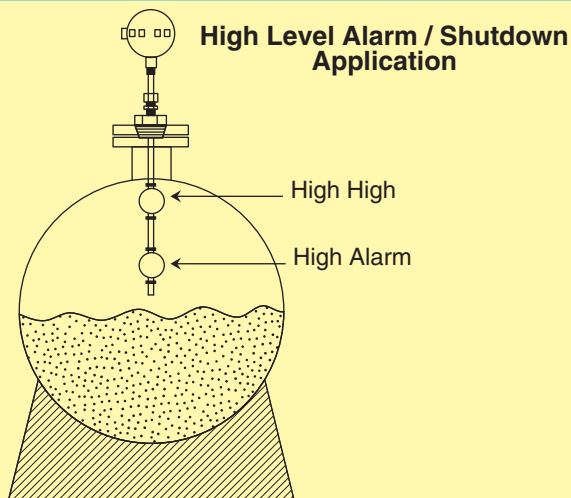
GENERAL

Model MLS-4EX series level switches are a simple and reliable way to sense fluid levels. Magnetic floats actuate a reed switch at each switching point. In the explosion proof housing are terminal blocks to provide simple field wiring. Switches can be ordered Normally Open, Normally Closed or DPDT.

The switch points are fixed on the probe for reliable and repeatable operation. The overall probe length is adjustable by way of a stainless steel compression fitting giving the user some flexibility in installation.

Because each unit is custom fabricated for your application, options include flanged process connections, low specific gravity floats, high pressure floats, stilling wells, other materials of construction, and signal conditioners or control panels.





SPECIFICATIONS

ELECTRICAL

Switching is via reed switches (dry contact)
 Maximum voltage: 100 VDC (120 AC)
 Current: 0.5A switching, 1.2A carry
 Contacts: Choose from 4 options below:
 SPST (Normally Open)
 SPST (Normally Closed)
 SPDT (C, NO, NC)
 DPDT (2 Sets - C, NO, NC)

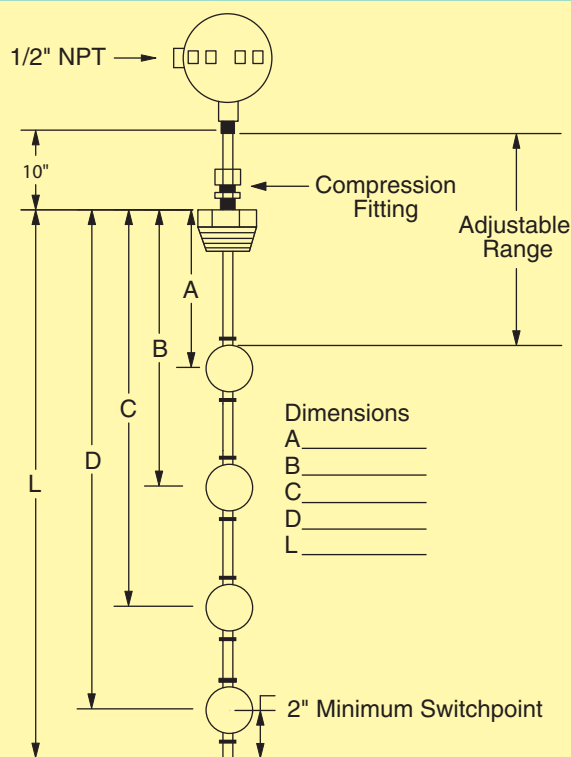
MECHANICAL

Process Entry: 2" MNPT standard
 Conduit Entry: 1/2" NPT
 Probe: 1/2" Heavy wall SS tubing
 Housing: Cast aluminum, explosion proof
 Class I, Group C & D
 Class II, Group E, F, & G

OPERATIONAL / ENVIRONMENTAL

Pressure: 225 PSIG standard
 (up to 1000 PSI optional)
 Maximum Temp: 250°F
 Min. Specific Gravity: 0.61 standard
 (as low as 0.4 optional)
 Interface detecting floats available
 Approval: CSA approved

Specifications subject to change without notice.



ORDERING INFORMATION EXAMPLE

MLS-4EX - B - 4C - 2"NPT - 0.9 - 150F - 85 - 24" - 10" - 22" - NO - X

Number of floats: _____

A = 1 B = 2
 C = 3 D = 4

Wetted parts - material of construction:

4C = 304SS with carbon steel connection
 4 = 304SS including process connection
 6 = 316SS including process connection
 X = Other (specify)

Process connection: _____

2" NPT standard
 Other (specify)

Min. specific gravity _____

Max. temperature _____

Pressure (PSIG) _____

L - Dimension _____

A - Dimension _____

B - Dimension _____

Contact type: _____

NO = All Normally Open (in dry condition)
 NC = All Normally Closed
 SPDT
 DPDT

Options: Please describe _____

Stilling well - for over 12 feet long or turbulent applications
 Control panels

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ABM Series Ultrasonic Level Transmitters

FEATURES

- Simple push-button calibration
- 4-20 mA or 20-4 mA output
- Non-volatile memory-batteries not required
- Microprocessor based reliability
- Ignores peripheral obstructions
- Built-in temperature compensation
- Field or bench calibration
- Self-cleaning face eliminates condensation

APPLICATIONS

- Water / Wastewater
- Chemicals / Oils
- Viscous Fluids / Slurries
- Food and Beverages

GENERAL

Ultrasonic Level Transmitters allow simple and reliable non-contact level measurement of fluids in a tank, sump or other container. The microprocessor-controlled circuit generates a pulse that is transmitted from the transducer face. This pulse is reflected back from the fluid surface and the transit time is converted into a current output directly proportional to the fluids level.

Because the speed of sound through air changes as the air temperature changes, each transducer has built-in temperature compensation, thus increasing the accuracy of the output.

Our proprietary circuit automatically filters out false echoes that may be produced by peripheral obstructions in the tank. This unique feature allows the unit to work in a standpipe over the full range of operation.

OUTPUT

The current output can power a load of up to 750 ohms. The output may be proportional or inversely proportional (either 4-20 mA or 20-4mA). The output is isolated on AC powered units. Lost echo hold time is 30 seconds, then an output of 22mA.



CALIBRATION

A single push-button is used to set the zero and span.

Calibration can be done in the vessel by varying the fluid level or the unit can be calibrated on the bench by aiming the transducer at a target. Factory pre-calibrated units are available.

The zero and span points are independent of each other, fully adjustable over the units range and stored in non-volatile memory. Calibration feed back is via a "green-yellow-red" LED.

Model Number	Operating Range	Operating Frequency	Mounting Thread
ABM300/400-45U	12" to 60'	45 KHz	3" NPT
ABM300/400-52U	11" to 50'	52 KHz	3"/ 2" NPT
ABM300/400-70U	10" to 30'	70 KHz	2" NPT
ABM300/400-80U	8.5" to 20'	80 KHz	2" NPT
ABM300/400-81U	7" to 16'	81 KHz	1.5" NPT
ABM300/400-148U	5" to 9'	148 KHz	1" NPT

SPECIFICATIONS

ELECTRICAL

Power (+/-20%):	115VAC/60 Hz 230VAC/50 Hz (Optional) 12-30 VDC
Output:	4/20mA or 20-4mA, 6.1uA resolution 750 ohms Isolated w/ AC supply Non-isolated w/ DC supply
Fuse:	0.125A/250V type 2AG

MECHANICAL

Process Entry:	Threaded per chart
Conduit Entry:	1/2" NPT - plastic conduit
Transducer:	PVC
Enclosure:	PVC-94VO

ENVIRONMENTAL

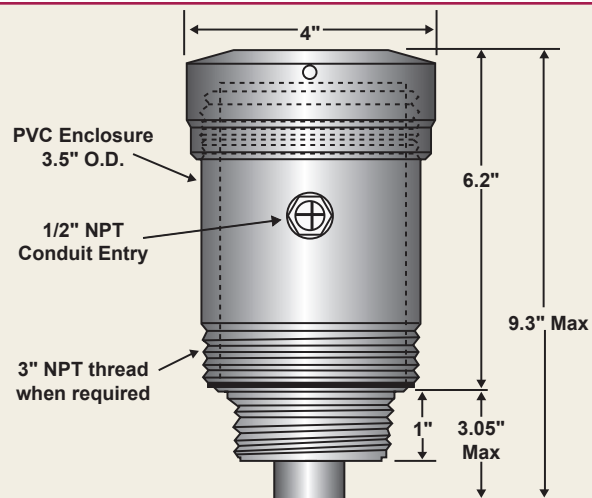
Temperature:	-40°F to 140°F (Transducer & Electronics)
Pressure:	15 PSIG Max.
Area:	ENTELA Certified #8294 - CSA1010.1 - UL 61010A-1 - IEC 61010

OPERATIONAL














Dead Zone / Range	Model dependent, see chart on front.
Accuracy:	+/- 0.25% of span
Lost Echo Hold Time:	30 seconds: output 22mA
Temp. Compensation:	In transducer
<i>Specifications subject to change without notice.</i>	

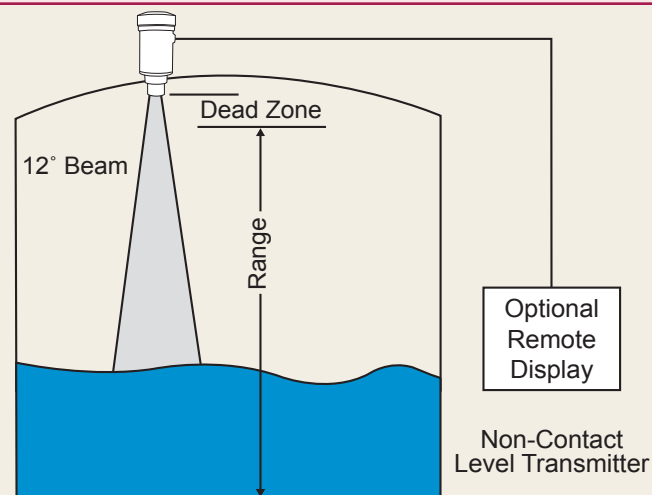
ORDERING INFORMATION

	ABM - xxx - xxx U
300 = 3 Wire, DC Power	
400 = 4 Wire, AC Power	
Operating Frequency (see chart on front)	



CALIBRATION

  	SET 20 mA	LED COLOR	TIME
	1. Push button		0 seconds
	2. Release button		3 seconds
	3. Observe		Flash to Acknowledge
  	SET 4 mA	LED COLOR	TIME
	1. Push button		0 seconds
	2. Release button		3 seconds
	3. Observe		7 seconds
			Flash to Acknowledge



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Pulsed Radar Level Transmitters

FEATURES

- Simple push-button calibration
- 4-20mA or 20-4mA output
- Not effected by vapors and fumes
- Optional communication – RS232 or RS485
- PLC compatible – (Modbus RTU)
- Non-volatile memory – batteries not required

APPLICATIONS

- Water / Wastewater
- Chemicals / Acids / Caustics
- Slurries
- Food and Beverage

GENERAL

Radar level transmitters allow simple and reliable non-contact level measurement of fluids in a metal tank. The microprocessor-controlled electronics transmit a 6.3 GHz electromagnetic pulse at the fluid's surface, which is then reflected back to the antenna. The "round trip" time of flight is then calculated to determine the fluid level in the container.

Pulsed radar can "see through" environments that would normally interfere with an ultrasonic type sensor, thus fuming and foams can be ignored in the field.

Our proprietary software senses and analyzes the amplitude and shape of the received echoes. This enables the units automatic gain control to track the process level and also eliminate false echoes from unwanted obstructions such as standpipes or tank walls.

The dielectric constant of a material is important to the proper operation of radar units. Each unit has the ability to work with materials that have a dielectric constant greater than 2.














CALIBRATION

A single push-button is used to set the zero and span. Calibration can be done in the vessel by varying the fluid level, or the unit can be calibrated on the bench by aiming the unit at a suitable target. Factory pre-calibrated units are available.

With the optional communication software, the unit can be programmed with any personal computer. This software also enables diagnostics, data logging and special calibration, such as configuring the unit to work in a narrow pipe.

The zero and span points are independent of each other and fully adjustable over the units range.

CALIBRATION

	SET 20 mA	LED COLOR		TIME
				
TARGET	1. Push button		●	0 seconds
	2. Release button		●	3 seconds
	3. Observe		●	Flash to Acknowledge
	SET 4 mA	LED COLOR		TIME
				
TARGET	1. Push button		●	0 seconds
	2. Release button		●	3 seconds
	3. Observe		●	7 seconds
			●	Flash to Acknowledge

SPECIFICATIONS

ELECTRICAL

Power: AC: 115 VAC 60Hz (+/- 20%)
230 VAC 50Hz (Optional)
DC: 12 to 30 VDC
Output: 4-20 or 20-4 mA
6.1uA resolution
750 ohms (Isolated on AC units)
Fuse: 0.125A / 250V type 2AG

MECHANICAL

Process Entry: 2" NPT
Conduit Entry: 1/2" NPT
Antenna: Polypropylene (Standard)
Teflon (Optional)
Enclosure: Aluminum (Standard)
Stainless Steel (Optional)
NEMA 4 (IP65)

ENVIRONMENTAL

Temperature: Electronics: -40° to 140° F
PP Antenna: -40° to 190° F
Teflon Ant.: -40° to 250° F
Pressure: 150 PSIG Maximum
Approvals: FCC Part 15 - Low Power
Communication Device

OPERATIONAL

Range: 50 or 100 feet – model dependent
Accuracy: +/- 0.25% of maximum target
range in air
Frequency: 6.3 GHz
Transmitter Power: 50 uW average
Loss Echo: 30 sec. hold time, then 22mA output

Specifications subject to change without notice.

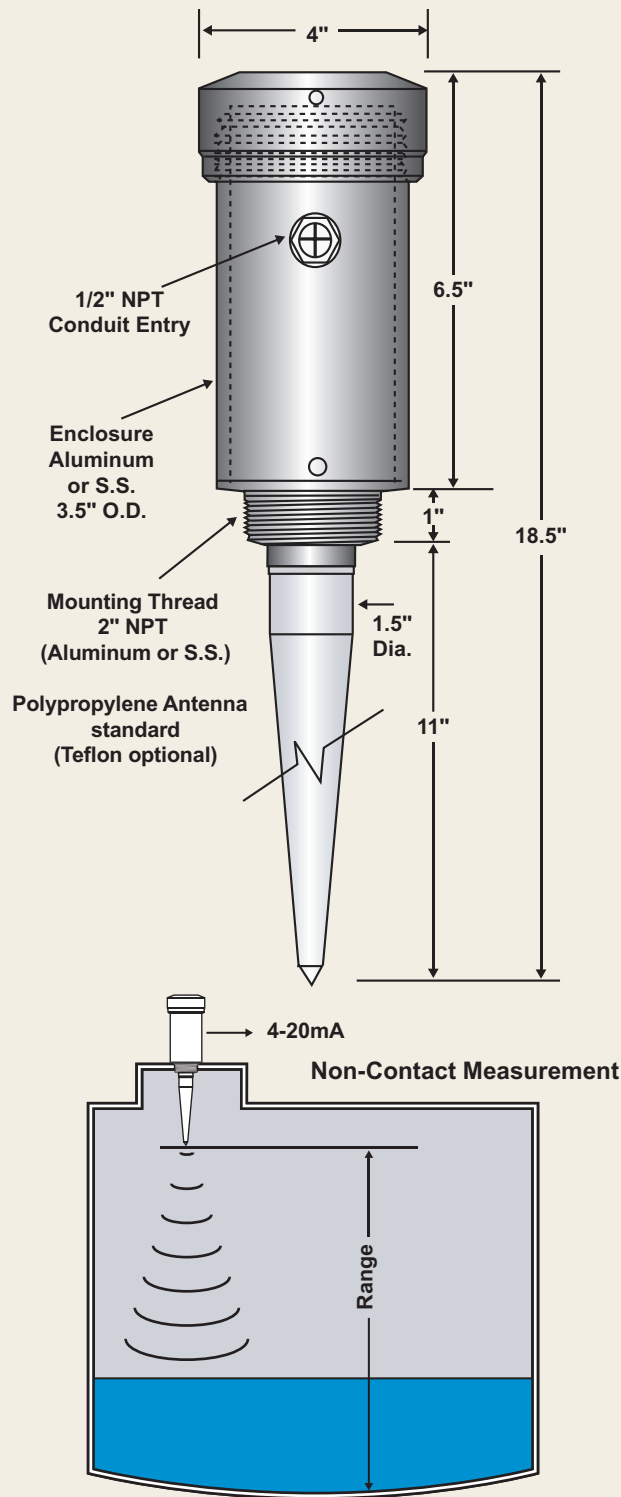
ORDERING INFORMATION

300 = 3 Wire, DC Power
400 = 4 Wire, AC Power

Maximum Range
050 = 50 feet
100 = 100 feet

Options (spell out)

- Teflon Antenna
- SS Housing and Process Conn.
- 230VAC Power
- SS Process Connection Only
- Communication (choose one) RS232 or RS485



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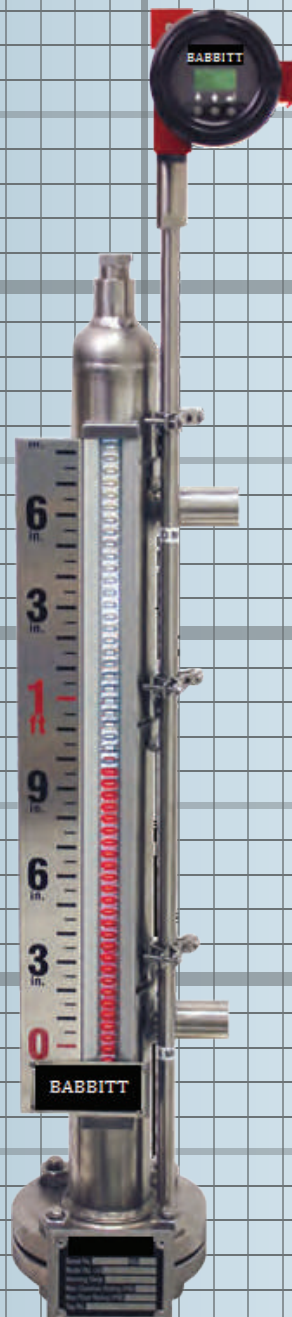
BABBITT

MAGNETIC LEVEL INDICATORS

Simple • Safe • Reliable

- **Boiler Water**
- **Acids / Caustics**
- **Propane / Fuels**
- **Chemicals**

- **Hi/Lo MLS Switches**
- **4-20mA Transmitters**
- **Heat Tracing**
- **Insulation Blankets**



- **ASME Code Welded**
- **12" to 40 feet**
- **Process connection
any size NPT or Flange**
- **Easy to read
flipper scale**
- **Fluid never contacts
the glass**

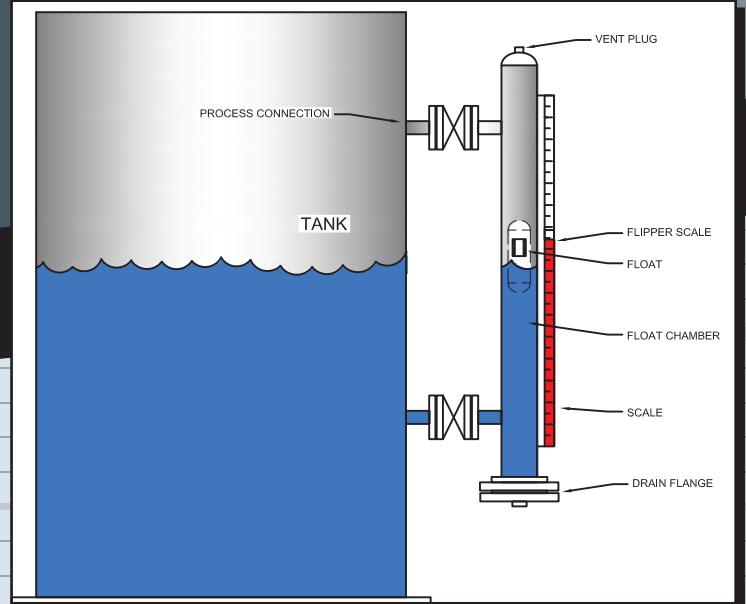
LG-Series Magnetic Level Indicators

Theory of Operation

Babbitt Magnetic Level Indicators are a safe, simple and reliable way to measure fluid level inside a tank. These visual indicators are an alternative to sight glasses and provide a non-invasive, low maintenance, cost-effective level solution. They are especially safe for flammable, toxic, corrosive liquids because the fluid never contacts the indicating glass. Should the glass ever break, there is no possibility of leakage.

Babbitt Magnetic Level Indicators, also referred to as Level Gauges, consist of a chamber, a magnetic float and a flipper type indicator scale mounted to the side of the chamber. Understanding the operation of the Magnetic Level Indicator is quite simple. The fluid in the tank seeks its own level inside the chamber. The magnetic float in the chamber rises and falls with the fluid level. As the Magnetic float rises and falls, it changes the orientation of the flippers on the scale providing a visual level indication. In addition, as the magnetic float rises and falls, it actuates any transmitter or alarm switches that are attached to the side of the gauge.

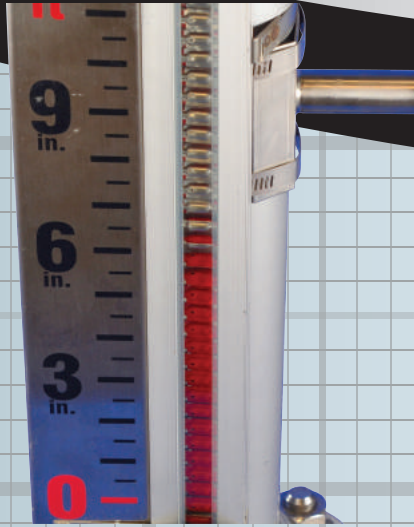
BABBITT LG SERIES MAGNETIC LEVEL INDICATOR



Construction	Standard	Alternative as required
Chamber Material	316SS/L dual grade Stainless Steel	CPVC, Kynar, Hastelloy, Monel 400 or Inconel
Chamber Size	2 ½" Sch.10 or Sch.40 welded pipe	2", 3, 4" or schedules up to Sch.160 may be required depending upon the application
Chamber Flanges	316SS/L dual grade Stainless Steel ANSI B16.5 RF slip on type	ANSI weld neck, socket weld or lapjoint as well as other flanges faces such as RTJ and flat face
Process Connections	1" 3000# FNPT unless otherwise Specified; vent/drains are ½" 3000# FNPT	Upgrades to ANSI Flanges, other size/rating NPT, vents/drains or socket weld connections are available
Float	316 Stainless Steel. Float material and size is determined by the process conditions	Floats are available in a variety of materials. Floats are available for processes up to 3400 psig and specific gravities as low as 0.40 (See page 3)
Indicator	Red and silver metal flags, high temperature design reading in feet and inches with ½" divisions	Optional all Stainless Steel housing for harsh environments. Other color flags available as well as other units of measurement such as mm & %.
Chamber Design	Chamber designed to ANSI B31.1 And B31.3 and ASME Boiler Code PG60. Welding and welder Qualification in accordance with ASME Section IX	Non-standard welding procedures, qualifications or testing may be supplied if required as well as proprietary customer design specifications.
Testing	Functional and calibration test	MTR's, radiography, hydrostatic pressure test, PMI, Dye penetrant, NACE or witness testing available

Increased reliability with rugged non pressurized floats

Babbitt floats are designed specifically to meet the process conditions of the application. Float construction is determined by the process fluid, pressure, temperature and specific gravity of the fluid. Inside each sealed float is a 360 degree ring of magnets. Most processes use a stainless steel float, but other materials of construction are available, including exotic metals and plastics. High pressure titanium floats are suitable for specific gravities as low as 0.41 and pressures as high as 3400 psi.



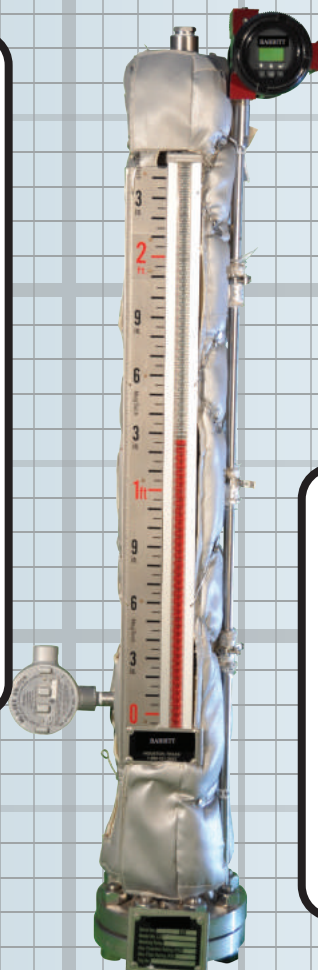
Flipper indicator provides higher usability and safety

Babbitt flipper scales are safe because the process fluid never contacts the glass. Should the glass ever break, there is no possibility of leakage. Babbitt indicators contain small metal flags that are red on one side and silver on the other. As the magnetic float passes with the rising or falling liquid, the flags rotate 180 degrees, showing the other color. Red indicates the liquid level while silver indicates the vapor space. These brightly colored flags can be seen and read from a distance of more than 100 feet. Each scale assembly is custom made and is one continuous piece up to 20 feet, with no joints or blind spots. Custom scale options are available, see page 8.

Insulation

Insulation is recommended when indicators are to be used under extreme temperature conditions. Factory installed, removable insulation blankets are available in two configurations. The standard blanket is for temperatures to 500°F (260°C) and consists of a 2 inch thick (compressed to 1 inch), 6# Cer-Wool HP enclosed in 3201-2-SS silicone coated fiberglass cloth. For operating temperatures above 500°F (260°C), fiberglass material rated to 1100°F (593°C) is included on the contact surface of the blanket.

In cryogenic applications, aluminum-skinned "foamglass" insulation with indicator frost extension to prevent "icing" and flashing for fluids with low boiling points is provided.

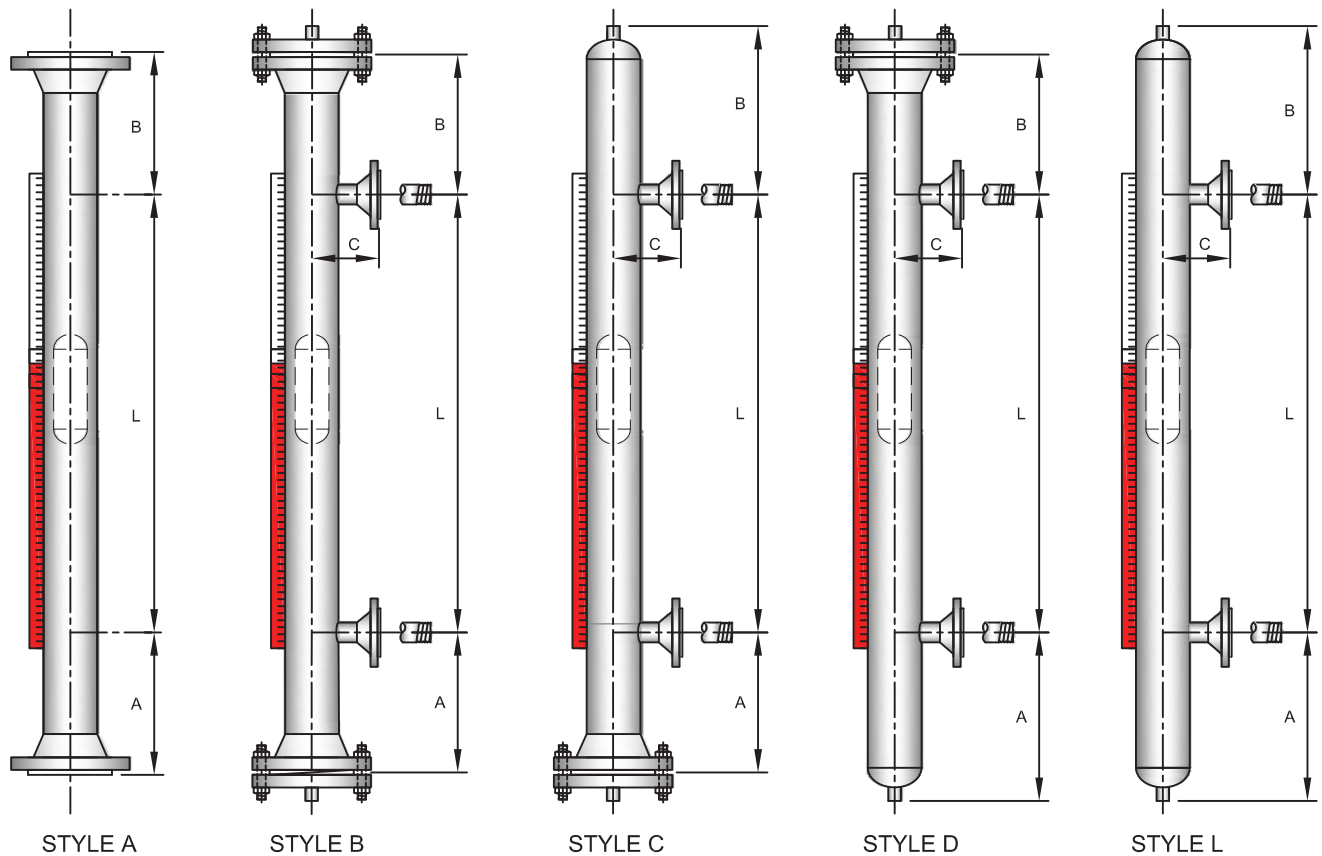


Heat tracing

A wide variety of electrical and steam heat tracing options are available. Heat tracing can be used for freeze protection or to maintain the process temperature of molten materials. Electrical tracing is engineered to customer specifications and can be provided with controllers. Common types are mineral insulated (MI) and self-regulating (SR). Steam tracing of Babbitt indicators is accomplished by traversing four lengths of the gauge with ¼ inch or 3/8 inch stainless steel tubing.

Standard Magnetic Level Indicator Mounting Styles

All Babbitt Magnetic Level Indicators are custom made based on your requirements



Babbitt Magnetic Level Indicator Mounting Styles

Style A – Flanged top and bottom, no top or bottom blind and no side process connections

Style B – Flanged top and bottom with either NPT or Flange side process connections

Style C – Closed top, flanged bottom with either NPT or Flange side process connections

Style D – Flanged top, closed bottom with either NPT or Flange side process connections

Style L – Closed top and bottom with or without NPT or Flange side process connections

Standard Dimensions

	A	B	C	L
Style A	12	8	4	Specify
Style B	12	8	4	Specify
Style C	12	8	4	Specify
Style D	12	8	4	Specify
Style L	12	8	4	Specify

Notes:

Standard dimensions are based on standard 8"-10" floats. Some process conditions will require a longer float which may change A and B dimensions. If spacing is a concern, A and B dimensions can be shortened to meet your requirements, however a reduction in measuring range may be required.

Transmitters

LT-1

The LT-1 Level Transmitter is designed to be used with the LG Series Magnetic Level Indicators to provide a 4/20mA signal proportional to level. The LT-1 is a low cost alternative where precise measurement and communication is not required. The unit mounts externally on the chamber and consist of a sensor tube made up of a string of resistors and magnetically operated reed switches. The LT-1 is an analog transmitter with no digital display and provides step up level in ½ inch increments (¼ inch resolution is available for units under 30" in measuring length.) This transmitter is the preferred choice for applications with significant vibration.



Specifications

Sensor probe

Length: Maximum 20 ft (6 m)

Resolution: ½ inch (¼ inch under 30" measuring length)

Material: 316 stainless steel standard

Max. Operating temp.: 750 °F (399 °C) process temperature

Transmitter

Power: 24 V dc (loop powered) nominal

Output: 4-20 mA

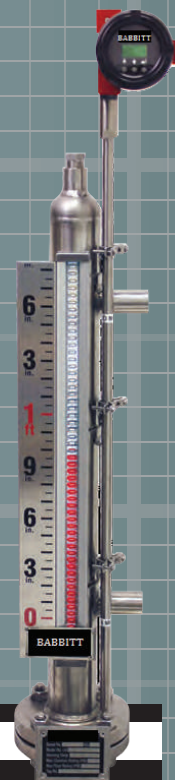
Load: 750 ohm max.

Housing: Explosion-proof, Class I, Div. I, Groups. B, C and D
Maximum temperature: 150 °F (85 °C) in housing

LTM Transmitters

Babbitt LTM 250/350 series magnetostrictive level transmitters offer highly accurate and precise liquid level measurement. The LTM mounts externally to the magnetic level indicator for non-invasive level measurement. This allows the unit to be installed and serviced without having to remove the indicator from service. The LTM senses the fluid level by detecting the magnets inside the float and transmits the measurement back to the control system.

LTM transmitters are available with two-wire loop powered 4-20 mA signal output or bus powered (Fieldbus) with digital output(s). Remote-mount electronics are available for easy access or high temperature applications. Sensor probes are available in a variety of materials including stainless steel and exotic alloys or electropolished for sanitary service. LTM transmitters feature explosion-proof, dual-compartment enclosures and integral displays. "Plug-and-play" electronics allow for easy upgrades. LTM transmitters offer the latest and most advanced software features on the market, introducing a registered HART DD, Rev. 5 with AMS Aware and Rev. 7 with EDD, compliant to IEC 61804-2, and compliant to Foundation Fieldbus software version ITK-4.6



Specifications

Housing: Epoxy coated aluminum or stainless steel

Protection rating: NEMA 4X, NEMA 7, IP66

Sensor Probe

Material: 316SS, 5/8inch (15.88m) standard probe; other materials available. All wetted parts are non-ferrous
Compatible materials (stainless steel, Monel, Hastelloy, ect.)

Maximum Length: 30 feet (9m)

Mounting Style: Gauge mount via 316SS brackets

Operating Temperature: -200 to 750F (-129 to 399C)

*All transmitters have the following RFI limits: SAMA PMC 31.1, 20 to 1000 MHz, up to 30V/m

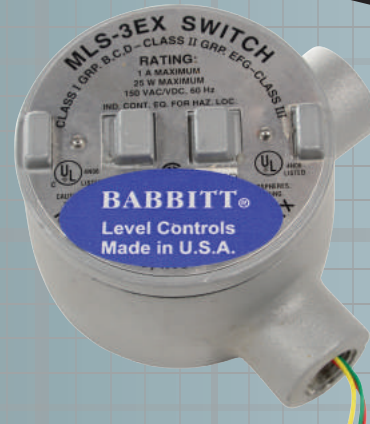
For high temperature applications, the transmitter should be remote mounted

Magnetic Level Switches for LG Indicators

Babbitt MLS level switches provide low cost, reliable alarm and control functions to meet your requirements. MLS switches are non-invasive alarm switches which clamp to the side of the chamber and are magnetically actuated by the float through the chamber wall. Multiple control points can be added to the Level Indicator without having to cut additional holes in the vessel. External mounting clamps allow for easy adjustment of set points or servicing of MLS switches without interrupting the process. All Babbitt MLS Series switches can be wired for either rising or falling level and NC or NO operation. Each switch has approximately a ½ inch deadband to eliminate the possibility of chatter.

MLS-3 Series

The MLS-3EX is a hermetically sealed reed switch with Form C contacts. A bias magnet latches the switch, maintaining the output contact as the float continues to rise or fall within the gauge. The switch will only unlatch when the float passes the switch again in the opposite direction. This low cost switch is best suited for low power alarm signals.



Specifications

Deadband:	.50 inches (12.7mm)
Max. Temp:	350F (177C) Standard 650F (343C) MLS-3EX-HT
Min Temp:	-40F (-40C)
Contacts:	SPDT or DPDT, Form C
Current:	1 Amp ac/dc resistive

Switch Options

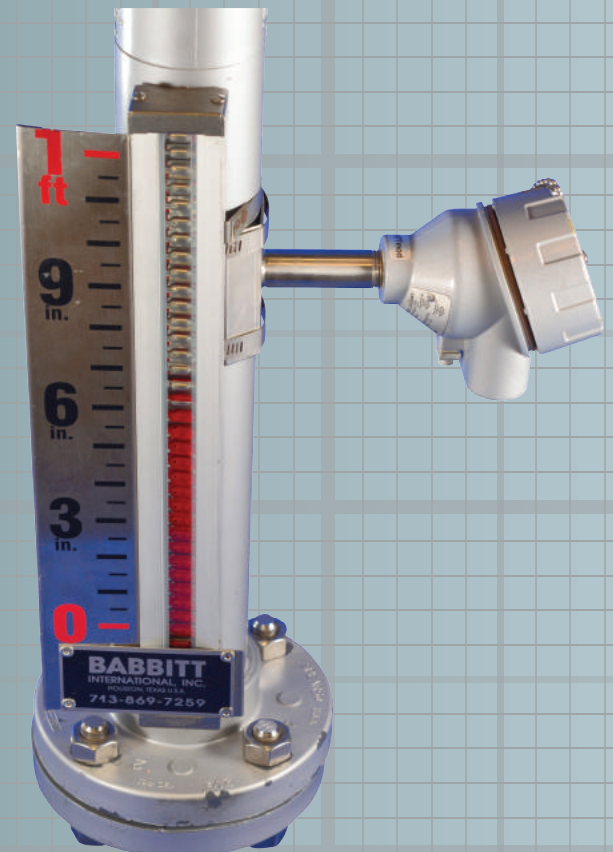
MLS-3	Switch only (No housing)
MLS-3EX-M	Standard EXP housing
MLS-3EX-M-A	ATEX EXP Housing
MLS-3EX-2	DPDT Contacts
MLS-3EX-HT	High Temp. option up to 650F (343C)
Approvals	UL/CUL & CSA Class I Grp. B, C, D; Class II Grp. E, F, G; Class III, ATEX Ex II 2G EExd IIC T6

MLS-10EX

The MLS-10EX is a high current level switch and is an excellent choice for controlling pumps, alarms or solenoids. The switching mechanism is a cam activated internal UL approved switch. The unit can be set by the user for rising or falling activation. The MLS-10EX-C is a DPDT switch. These switches meet Class I, Div. I requirements and the internal micro-switches are UL approved. The MLS-10EX-R (relay requires auxiliary power) is available for higher inductive load.

Specifications

Deadband	.50 inches
Max Temp:	200F (93C) Standard 450F (232C) High temperature version
Min. Temp:	-40F (-40C)
Contacts:	DPDT Form C
Current:	10 Amps maximum at 250Vac 5 Amps maximum at 125Vdc
Power:	2 KVA/300W
Approvals:	UL/CUL and CSA Class I Grp. B, C, D; Class II Grp. E, F, G; Class III



Magnetic Level Indicator Worksheet

Name _____ Date _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

All Magnetic Level Indicators are custom made. Please fill out the form below:

Quantity _____

Chamber Material (Circle one) 316SS CPVC KYNAR Monel Hastelloy Other _____

Process Fluid _____ Specific Gravity _____

Mounting Style (See Page 4) _____ Process Connection (Circle one) NPT Flange Specify Size _____

Center to Center (L Dimension in inches) _____ Max. Operating Pressure (PSIG) _____

Max. Operating Temperature (F) _____

Accessories

MLS Alarm Switches (See Page 6) Type _____ Quantity _____

4-20mA Transmitter (See Page 5) Type _____ Quantity _____

Head Mount (Circle one) Top Bottom Remote

Orientation (Circle one) Left Right(Standard)

Add on options (See Options Page 8)

Performance & Reliability GUARANTEED

Ordering Information

Model LG6 B - ¾" - 300# - 0.92 - 100F - 250 - 36" - X

LG6=316SS
LGCPVC=CPVC
LGPVDF=Kynar

Mounting Style

A, B, C, D or F
(see page 4)

Process Conn. Sizes

Flange Rating

Specific Gravity of Measured Fluid

Max. Operating Temperature (F)

Max. Operating Pressure (PSI)

Measurement Length "L" (in.)

(see page 4)

Options (for options not listed consult factory)

CS = Carbon steel flanges

ST = Steam trace

HT = Heat trace

IB = Insulation blanket

FS = Flipper scale

RJ = Ring joint flange

WN = Weld neck flange

FX = Fixed flanges (RFSO)

PI = Polycarbonate indicator

BV = Blocking valve (specify type)

VV = Vent Valve (specify type)

DV = Drain valve (specify type)

X = Special options (spell out description)

Scale Options

Feet & Inches (**standard**)

Inches only

Negative/Positive

Metric (mm&cm)

Decimal Feet (0.1 ft. or 0.01 ft. divisions)

Offset zero (plus and minus scale divisions)

Percent (0-100)

Specifications subject to change without notice

Distributed by:

**BABBITT
INTERNATIONAL**

P.O. BOX 70094

Houston, Texas 77270

(713) 467-4438

www.babbittlevel.com

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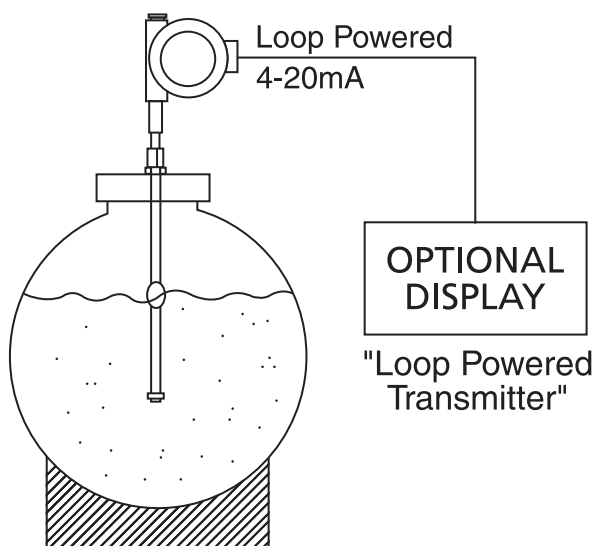
Magnetostrictive Level Transmitters



Next-Generation Design

Babbitt introduces the world's smartest magnetostrictive level transmitter – the LTM-350. The LTM-350 series has a similar look and feel to the 2nd generation model LTM-300, but is packed with many new innovative enhancements – from HART 7 to error preventive configuration. In addition, the LTM-350 features modular

electronics and multiple output options including 4/20 mA, HART (6 or 7) and wireless HART. The LTM 350 may be externally mounted to any Babbitt LG Series magnetic gauge, or used as a direct insertion level probe. This feature-packed instrument is the perfect solution to many of the industry's most difficult level measurement applications.



Can be inserted directly into a vessel or mounted external to the process on a Magnetic By-Pass Gage

FEATURES

- Dynamic RoC filter
- Simple configuration
- Auto detect configuration errors
- Power optimization software
- Factory set threshold – fit and forget
- Outputs include 4-20mA, HART 6 or 7

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Description

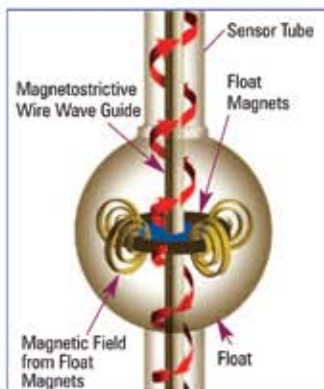
LTM Series magnetostrictive level transmitters offer highly accurate, and precise liquid level measurement with a variety of configuration options. The LTM may be utilized as a direct insertion transmitter or externally mounted to a magnetic level gauge for non-invasive level control.

The LTM sensor probe with magnetic float(s) is inserted directly into a tank. As the float rises or falls with the fluid, the transmitter provides level output. LTM transmitters are available with two-wire loop powered 4-20 mA signal output and HART.

LTM Series level transmitter operation is based on the principle of magnetostrictive technology. To explain briefly, the sensor consists of an alloy wire with specific magnetic characteristics called the wave guide. The wave guide is housed within a stainless steel tube, creating the probe assembly. The transmitter electronically generates a high current pulse which is transmitted down the wave guide, producing a circular magnetic field as it travels down the wire. Another magnetic field is generated on the

wave guide by the permanent magnet in the float along the length of the probe. When the pulse field interferes with the float magnetic field, a torsional force is produced, twisting the wire and producing a torsional wave. The time of flight of the torsional wave is measured and the distance to the float magnet is easily calculated.

Other configurations include remote-mount electronics for easy access or high temperature applications. Sensor probes are available in a variety of materials including stainless steel and exotic alloys (Monel, Hastelloy, etc.). Sensor probes may also be electropolished for sanitary applications. All LTM transmitters feature explosion-proof, dual compartment enclosures with integral displays.



Magnetostrictive Principle

The "plug-and-play" electronics allow easy upgrades from HART to Fieldbus without replacing the sensor probe. LTM transmitters offer the latest and most advanced software features on the market, introducing the only registered HART DD compliant to IEC 61804-2 and compliance certified to HART 7.



INDUSTRIES

- | | |
|------------------|---------------------|
| ■ Marine | ■ Pharmaceutical |
| ■ Coatings | ■ Power Industries |
| ■ Oil and Gas | ■ Food and Beverage |
| ■ Petrochemicals | |

APPLICATIONS

- | | |
|----------------------|---------------------------------|
| ■ Position Sensing | ■ Underground Tanks |
| ■ Sanitary Service | ■ Primary Level/Interface |
| ■ Valve Positioning | ■ Process Temperature and Level |
| ■ Inventory Control | |
| ■ Corrosive Process | |
| ■ Batching Processes | |

Advantages

RoC filter

- Integral filter to suppress noise
- Ignores momentary external noise

Simple 4/20 mA configuration and reranging

- Simply change LRV or URV in units
- No recalibration required

Field-reversible mounting

- Gauge mount units are convertible to bottom mount or top mount with a few simple steps

One point calibration

- Unit may be calibrated by using one reference point; process shutdown not required

Error-proof calibration

- Auto-detects calibration errors

Factory default settings

- Reverts back to factory settings
- Holds three additional configurations

LTM Series Transmitter Options

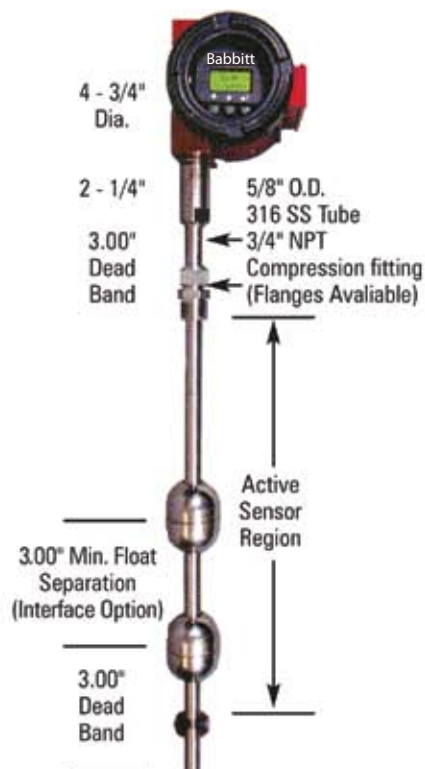
AMS
Suite



LTM 250
(4/20mA)



LTM 350
(HART)



Electronic Specifications

Supply Voltage:	13 to 36 VDC
Repeatability:	.005% of full scale or .010 in., whichever is greater
Non-Linearity:	.01% of full scale or .030 in., whichever is greater
Level Sensor Accuracy:	.01% of full scale or .020 in., whichever is greater
Analog Output:	(1) 4/20 mA primary level
Resolution:	.025% of full scale
Output:	Primary level, (1) 4/20 mA optional digital outputs via HART for temperature or interface detection
Calibration:	Zero and span field adjust with push buttons or HART; secondary level is auto-detect; temperature is configured via HART or AMS only
Diagnostics:	On-board diagnostics for troubleshooting
Dampening:	1 to 25 seconds (field adjustable via DISPLAY)
Operating Temperature (electronics):	-58 to 185° F (-50°C to 85°C)
Housing:	Explosion proof, dual compartment, 1/2-in NPT, epoxy coated aluminum; stainless steel optional


Polarity	
Protection:	Diode in series with the loop
Approvals:	CSA-USA Exp (Explosion-proof): Cl. I, Div 1. Grp. B,C,D,E,F,G
Humidity Limits:	SAMA PMC 31.1-5.2
Vibration Limits:	SAMA PMC 31.1-5.3
RFI Limits:	SAMA PMC 31.1-20 to 1,000 MHz up to 30V/m

Transmitter Sensor Tube

Material:	316 ss standard, optional Hastelloy, Monel, Kynar sleeve
Operating Temperature:	-50 to 300° F (-50 to 150° C)
Max. Pressure:	2000 psig @ 300° F
Range:	12 in. to 30 ft.

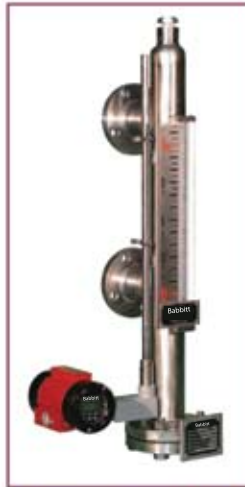
Specifications subject to change without notice.

LTM Approvals

Approvals	LTM - 250	LTM - 350
CSA-US EXP 	Class I, Div. I and II; Groups B,C,D Class II, Div. I; Groups E,F,G Class III, NEMA 4X, IP66	Class I, Div. I and II; Groups B,C,D Class II, Div. I; Groups E,F,G Class III, NEMA 4X, IP66



*Top-mounted LTM
Transmitter on LG Series
Magnetic Gauge*



*Bottom-mounted LTM
Transmitter on LG Series
Magnetic Gauge*



*Remote-mounted LTM
Transmitter for
High-temperature Applications*

LTM Order Information

Insertion Type

Model # (Example):

LTM 350S - 3 - 3 - 0.64 - 150F - 300 - 30.00 - RM10

250 Single Output Analog, Alum. Housing
251 Single Output Analog, SST Housing
350 HART* (3 Variables), Alum. Housing
351 HART* (3 Variables), SST Housing

Probe Material

3 = 316 SS
K = Kynar Sleeve
O = Other (Specify)

Mounting Connection

3 = 3/4" NPT (Standard)
O = Other (Specify)

Min. Oper. S.G.

Max. Oper. Temp.

(°F or °C)

Max. Oper. Press. (psig)

Measuring Length (in inches, 2 decimal places)

Options

* Temp = Temp output (Digital)
* Dual = Dual Level Outputs
INT = Interface (Specify both S.G.'s)
SW = Stilling Well
(Specify size; Required over 10 Ft)
3A = 3A Sanitary Application
RM = Remote Electronics
(Specify cable length, in ft.)

*Available on LTM 350 HART version only
All units are CSA-US approved standard

Gauge Mount (Gauge dimensions may vary)

Model # (Example):

LTM 250G - 30.00 - RM10

250 Single Output Analog, Alum. Housing
251 Single Output Analog, SST Housing
350 HART* (3 Variables), Alum. Housing
351 HART* (3 Variables), SST Housing

Measuring Length

Options

RM = Remote Mount Electronics (Specify cable length, in ft.)
(Mounting elbow standard)

Distributed By:

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LTM 350-2011A

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BABBITT

DUST EMISSIONS MONITORS & FLOW SWITCHES

Performance & Reliability
GUARANTEED



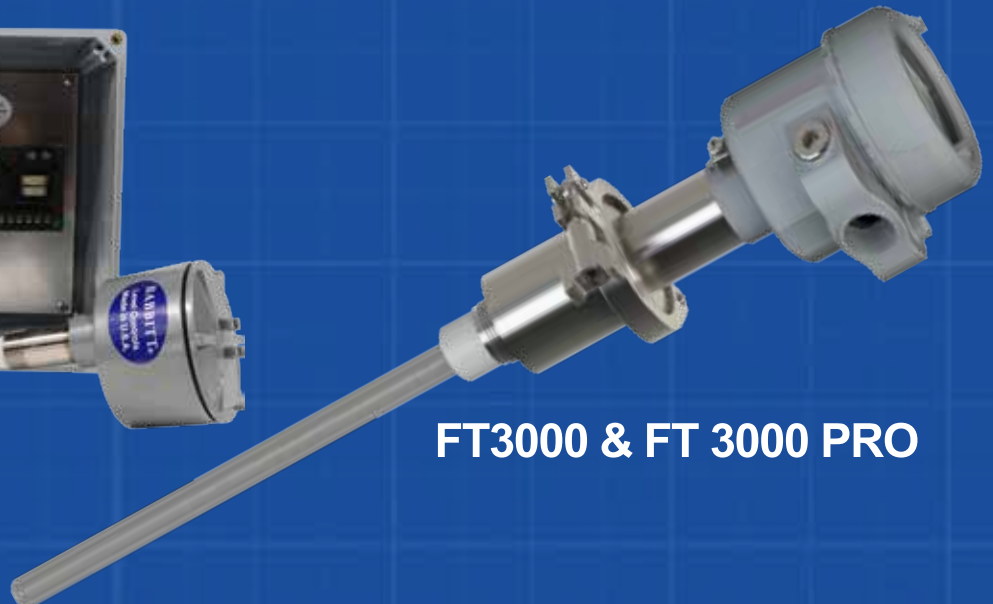
DP20T



FT4100



FS10000



FT3000 & FT 3000 PRO

FT 3000 & FT 3000 PRO PARTICULATE MONITOR & LEAK FLOW DETECTOR

FT 3000

- Low Cost and Simple
- 2-Wire Loop or Universal Line Power with Relays

The FT 3000 is the industry's best value in a basic particulate monitor and leak/flow detector. The engineering and quality greatly exceed comparably priced devices. Low cost justifies monitoring even small nuisance dust collectors.

FEATURES:

- **DynaCHARGE Technology** - Superior reliability over other charge and tribo
- **Digital Readout, Lockable Keypad** - Simple text prompts (no trim pots or blind auto set)
- **Convenient Loop Check and Alarm Functions** - Speeds up and confirms installation



FT 3000 PRO

- High Performance and Heavy-Duty Construction
- 2-Wire Loop or Universal Line Power with Relays

The FT 3000 PRO is the benchmark for reliability and features in a standard particulate monitor and leak/flow detector. A state-of-the-art instrument, it is the first loop power particulate monitor with EPA certifiable self-tests and performance.

FEATURES:

- **Device Diagnostics (to NAMUR 107)** - Help ensure installation, proper operation
- **Automatic EPA Self-Tests** - Adhere to regulations, also for critical process
- **Performance and Design to EPA Standards** - Meets ASTM D7392 and EN 15859
- **Communication and Data Logging** -HART, USB, and basic internal data logging



Specifications:

	FT3000	FT3000 PRO	
Power Supply	2-Wire Loop or universal line	2-Wire Loop or universal line	
Processor/Display	Basic LCD	Advanced/Graphic	
Discrete Output	Up to 2	Up to 2	
Analog Output	Up to 1	Up to 1	
Analog & Discrete Outputs	None	None	
Ambient Temperature	-13 F to 140 F (-25 C to 60 C)	-40 F to 158 F (-40 C to 70 C)	
Process Temperature	-13 F to 450 F (-25 C to 232C)	-40 F to 1650 F (-40 C to 898 C)	
Process Pressure	10 PSI	1,000 PSI	
Enclosure Rating *	NEMA 4/IP65	NEMA 4/IP65	
Hazardous Area Rating	Class II Div. II (Zone 22)	Class I Div. I (Zone 0/20)	*Explosion Proof Available

FT 4100 DUST EMISSION MONITOR

FEATURES:

- No Calibration - Auto-Ranging
- 2 Set points for Alarm
- 4-20mA Output for Recording
- LCD Bar-Graph Display
- Real-Time Digital Readout
- Peak Value Capture Display
- Lockable Keypad

BENEFITS:

- Comply with EPA Filter Leak Regulations
- Monitor Filter Performance without Prior Baseline Data
- Protect Downstream Equipment
- Eliminate Unplanned Shutdowns
- Prevent Product Loss and Cleanup

GENERAL

The FT4100 is designed to sense dust emissions passing through a filter in a dust collector or bag house. This very sensitive device allows the user to continuously monitor the level of emission and record the data.

The FT4100 allows simple, no calibration, "plug and play" monitoring of filter conditions in a baghouse or dust collector. The solid 316SS probe is placed in the discharge duct of the dust collector. Dust particles passing by the probe induce an electrical charge that is carried along the low noise coaxial cable to the control unit. The control unit displays the sensed values, alarms and provides a 4-20mA output proportional to the level of emissions.

For applications that have electrically conductive dusts, condensate or moisture which would cause a build-up on the sensing probe, we offer a system with a coated probe that will be unaffected by such conditions; please specify option "PP" when ordering for this option.

ALARMS and OUTPUT

Dust emissions occur at two different times and at two different levels in a dust collector. The first is the baseline emission level, which is the normal leakage whenever the collector is in operation. Typically a higher emission level occurs when the filters are being pulsed or cleaned by reverse air.

The FT4100 allows the operator to precisely set the alarm set point when the baseline leakage increases, when the peak levels during cleaning increase or both! A time delay (0-60 seconds) is user programmable via the keypad to filter out nuisance alarms for both set points. Each alarm has an on board relay output. A 4-20mA signal proportional to the dust leakage is provided for recording or remote monitoring of the dust filters condition.



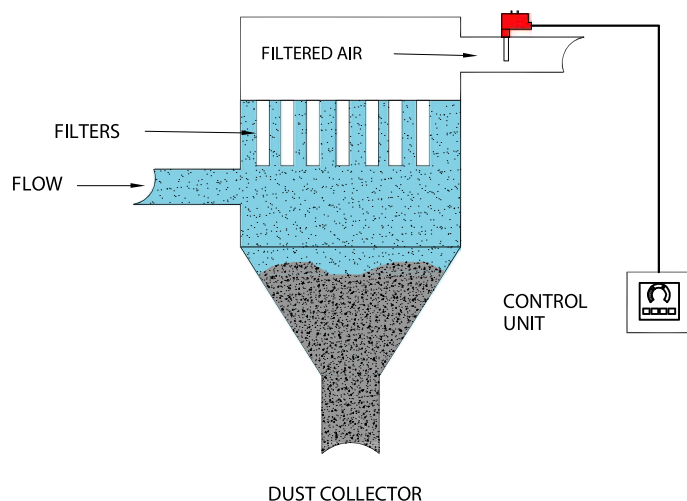
LCD DISPLAY

A semi-circular bar graph displays the dust leakage levels on a logarithmic scale (field selectable linear scale is also standard). The bar graph corresponds to a real time digital readout. A flashing "Alarm" and "Pre-Visible" message signals when set points have been exceeded. One segment of the bar graph will hold the peak value reading allowing operators to observe the peak value in a fast changing environment.

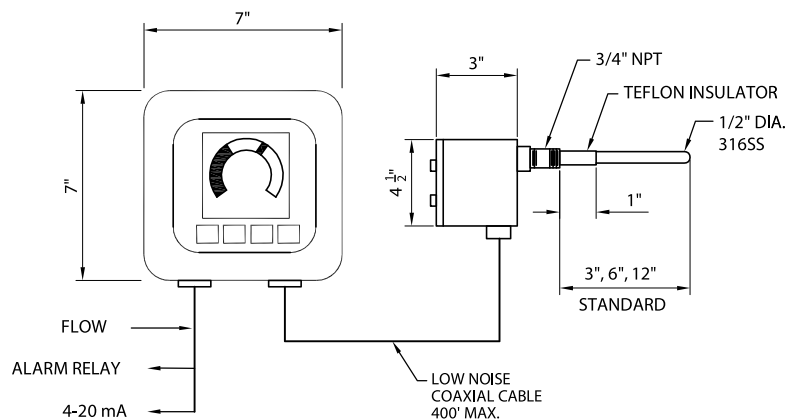
FT 4100

Dust Emission Monitor

FT4100 DUST EMISSION MONITOR



FT4100 DUST EMISSION MONITOR



ELECTRICAL

Power: 115VAC/230 VAC 50/60Hz, 24VDC Optional
 Output: (2) Relay SPDT, 5 amp at 240VAC 4-20mA non-isolated, 500 ohms
 Fuse: On-board 0.032 Amp

MECHANICAL

Process Entry: 3/4" NPT, Tri-clamp optional
 Conduit Entry: 3/4" NPT
 Probe: 1/2" Diameter 316 Stainless Steel
 3", 6" and 12" standard (Coated probes Optional)
 Enclosure: Probe: Copper free cast aluminum
 Control Unit: Non-metallic 7"x7"x5" with membrane key-pad
 Sensor Cable: Low noise coaxial, 15 feet standard
 400 feet maximum

ENVIRONMENTAL

Temperature: Control unit: -13F to 160F
 Probe: -30F to 400F
 Pressure: 80 PSI
 Enclosures: Sensor: Class I, Groups C & D
 Class II, Groups E, F & G; Class III
 Control unit: NEMA 4X, 12, 13
 I.S. Barrier: Built-in at control unit

OPERATIONAL

Sensitivity: Standard: 5.0 to 5000pA
 (~5.0 to 5000 mg/m³ or
 0.002 to 2.0 gr/cf)
 Optional: 0.5 to 500 pA
 (~5.0 to 5000 mg/m³ or
 0.002 to 2.0 gr/cf)
 Particle size: >0.3 micro
 Air Velocity: 300 FPM or higher
 Accuracy: +/-5% of output range

Specifications subject to change without notice.

Standard Probe Style:

FT4100 - 115VAC - S - 12"-

Model
 Supply Voltage
 "S" - 316SS Probe
 Probe length in inches
 Option Codes

Option Codes

ES= Enhanced Sensitivity (0.5 to 500pA) PP=Coated probe and modified electronics for
 conductive or wet applications
 TC= 1.5" Tri-clamp mounting X= Other, please specify

FS 10000 DRY MATERIAL FLOW SWITCH

FEATURES:

- Solid state, no moving parts
- Simple installation and calibration
- No optics or lenses to clean or align
- NEMA 4X enclosure for electronics
- Optional NEMA 7 or 9 enclosure
- Explosion-proof housing at probe
- Field adjustable time delay

APPLICATIONS:

- Broken bag alarm
- Pneumatic conveying flow/no flow
- Plugged chute detection



SIMPLE CALIBRATION

All necessary calibration indicators are on the remote mounted electronics, so all you need to calibrate the FS10000 is a small screwdriver. Calibration is performed under a no-flow condition. Each unit has a field adjustable time delay that may be used to ignore nuisance indications or intermittent gaps in product feed.

GENERAL

The FS10000 is designed to detect the flow of dust, granular or powdered materials in a pneumatic conveying line or chute. This flow switch is especially suited to detect the flow of dust resulting from a ruptured filter bag in a bag house or dust collector.

The FS10000 can detect dust collector emissions before they become visible. When particles collide with the sensing probe, a small electrical charge is transferred to the probe and sensed via the FS10000's proprietary circuitry. This charge transfer is called the triboelectric effect, or "frictional electricity". The FS10000's output is via an on-board relay, which can be used to sound an alarm or perform other control functions.

ALARMS and OUTPUT

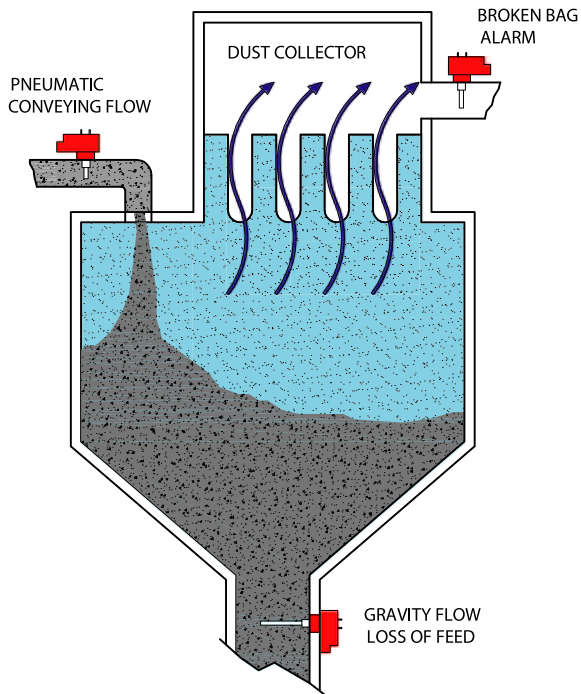
The FS10000 comes complete with the electronic circuit board mounted in a NEMA 4X enclosure, 15 feet of low noise coaxial cable and connectors, and a 316 stainless steel probe mounted in an explosion-proof enclosure.

An optional Shield Screen is available for the probe. The Shield Screen is designed to shield the probe from unwanted electrical noise in the duct that may be caused by nearby fans or motors. It can also shield the probe from stray static electrical charges created in non-metallic ducts. The Shield Screen bleeds the electrical noise to ground before it reaches the probe, while allowing the dust in the air stream to collide with the sensing probe.

FS 10000

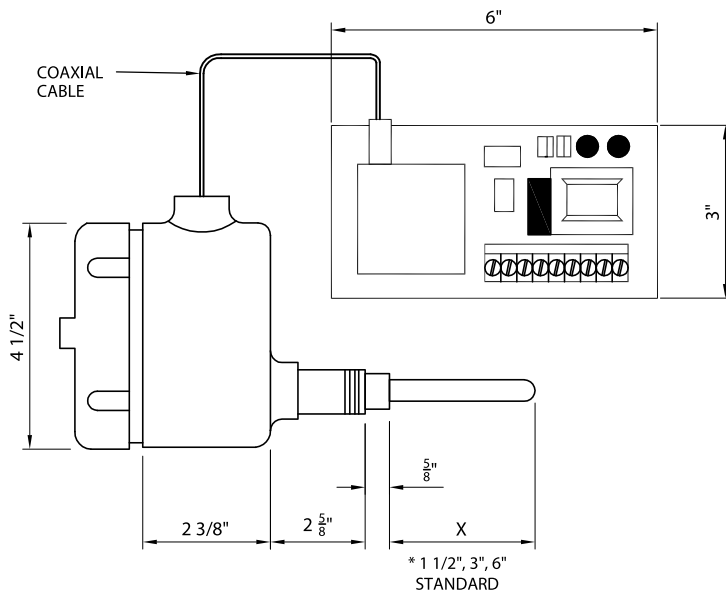
DRY MATERIAL FLOW SWITCH

FS10000 DRY MATERIAL FLOW SWITCH



TYPICAL APPLICATIONS

FS10000 DRY MATERIAL FLOW SWITCH



ELECTRICAL

Power: 115VAC/230 VAC (+/-15%) 50/60Hz
 Output: 2 Form C Contacts, DPDT Relay, 5 Amp resistive @ 125, 250 VAC; 30VDC
 Time Delay: Selectable ON or OFF Delay Adjustable 1/8 second to 2 Hours
 Proof Pressure: On-board 1/2 Amp

MECHANICAL

Process Entry: 3/4" NPT
 Conduit Entry: 3/4" NPT
 Probe: 1/2" Diameter 316 Stainless Steel 1 1/2", 3" and 6" standard (Coated probes Optional)
 Insulator: Ultra High Molecular Weight Polyethylene
 Enclosure: Probe: Copper free cast aluminum Electronics: Non-metallic 10"x8"x5" with clear acrylic window

ENVIRONMENTAL

Temp. Electronics: -30F to 170F
 Temp. Probe: -30F to 200F Standard (400F Optional)
 Pressure: 85 PSI
 Housing Probe: Class I, Groups C & D; Class II, Groups E, F & G; Class III
 Enclosure Elec: NEMA 4, 12, 13

STANDARD PROBE STYLE:

FS10000 - 115VAC - S - 3"

Model
 Supply Voltage
 "S" - 316SS Probe
 Probe length in inches
 Optional Codes

OPTIONAL CODES - SHIELD SCREENS

This describes an FS10000 flow switch, complete with electronics mounted in the NEMA 4X enclosure, 15 feet of coaxial cable and 3" stainless steel sensing probe with explosion proof housing.

DP 20T NON CLOGGING DIFFERENTIAL PRESSURE TRANSMITTER

FEATURES:

- Solid-state micro machined sensing element
- Temperature compensated, operate at temperatures up to 450F
- Accurate and repeatable 4-20mA output signal
- Heavy duty body prevents errors from mounting stress

APPLICATIONS

- Ideal for Baghouses, cartridge filters and cyclones
- Wet/Wet design for scrubbers and mist eliminators
- Static measurement for powder and solid flow pipes
- Intrinsically-safe version for hazardous locations
- 3A Sanitary rating for Food and Pharmaceutical industries

BENEFITS:

- Replace photomechanical/helical devices that clog
- Record differential pressure to meet EPA Regulations
- Ensure reliable "pressure activated" filter cleaning
- Integrate with Dust Emission monitors to optimize filter cake and maximize filtration efficiency



GENERAL

The DP20T is a heavy duty, maintenance free low pressure transmitter designed for fabric filters, cyclones, powder processes and low pressure particulate laden pipes. The unique flush/ported design enables configuration for either differential or static movement. The ability to transmit accurate measurements below 10 W.C., over a broad temperature range without clogging, makes the DP20T the ideal replacement for mechanical or helical devices.

For differential measurements the flush diaphragm is mounted to the dirty or wet side of a process, such as the inlet of a dust collector, wet scrubber or mist eliminator. The port is used to route tubing to the cleaner side of the process such as the clean side of a dust collector or mist eliminator. For static measurement, such as in a powder conveying pipe, the port is simply vented to atmosphere.

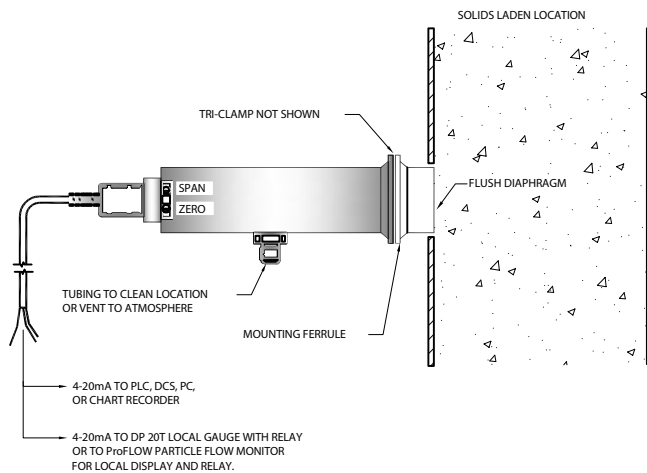
Standard output is a 4-20mA signal for connection to a PLC, DCS, PC or chart recorder. For local display and relay control, a programmable panel mount LCD gauge is available (consult factory).

PRINCIPLE OF OPERATION

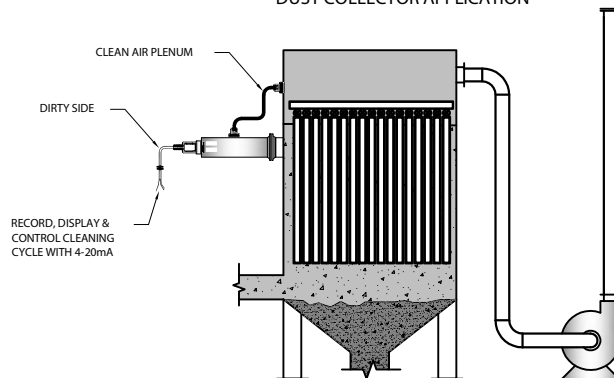
The DP 20T uses a state-of-the-art micro machined sensing element with temperature compensation packaged in a heavy duty stainless steel body. Changes in process pressure or vacuum applied to the diaphragm cause deflection in the sensing element. A precise, linear 4-20mA output signal proportional to the pressure or vacuum is produced by the circuitry.

DP 20T NON CLOGGING DIFFERENTIAL PRESSURE TRANSMITTER

NON-CLOGGING TRANSMITTER



DUST COLLECTOR APPLICATION



Configuration and Ranges

Configurations: Differential Wet/Wet
Static Wet/Wet
Ranges: 0 - 10" WC standard
other optional
Action: Positive at diaphragm
Negative at diaphragm
Bi-directional, optional
Proof Pressure: 50" WC for 0-10" WC range
Higher consult factory

Process Compatibility and Temperature

Sanitary Rating: 3-A #37-01, optional
Process Media: Wet/Wet design is
compatible with most
gases and fluids
Temperature: -20 to 280F, standard
-20 to 450F, optional

Accuracy and Performance

Total Error, Diaphragm at 200F: <1.5% FS
Total Error, Diaphragm at 280F: <3.0% FS
Based on zeroing at ambient. Zeroing at
temperature reduces error.
Response Time: 500 microseconds
Resolution: Infinite
Orientation Sensitivity: 0.03 psi/G

Electrical

Supply Voltage: +13 to 32VDC
Connection: 1/2 NPT exit with 5' cable
Load Impedance: 950 ohm at 32VDC
Output: 4-20mA
Intrinsic safety: Consult factory
Explosion-proof: Consult factory

Mechanical

Diaphragm: Polished 316L SS, other opt
Case Material: 304L SS, other optional
Fill Material: NEOBEE M-20
Housing: NEMA 4X equivalent
Mount: Tri-clamp flange
Port Connection: 7/16-20 UNF
Weight: 16 oz.

Installation Kit

Includes: Mounting ferrule
Tri-clamp & gasket
Differential port connectors
10' Differential port tubing

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