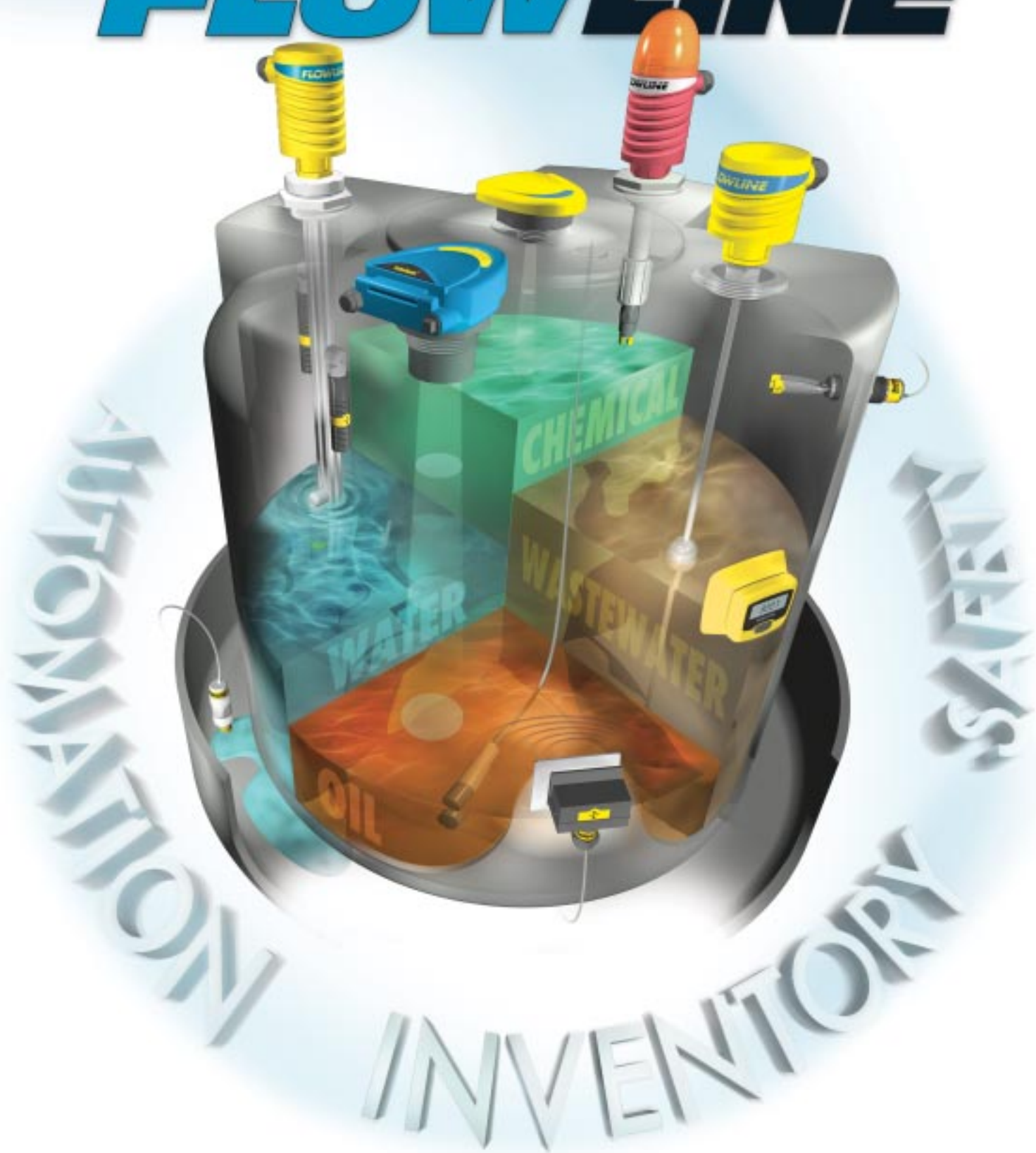
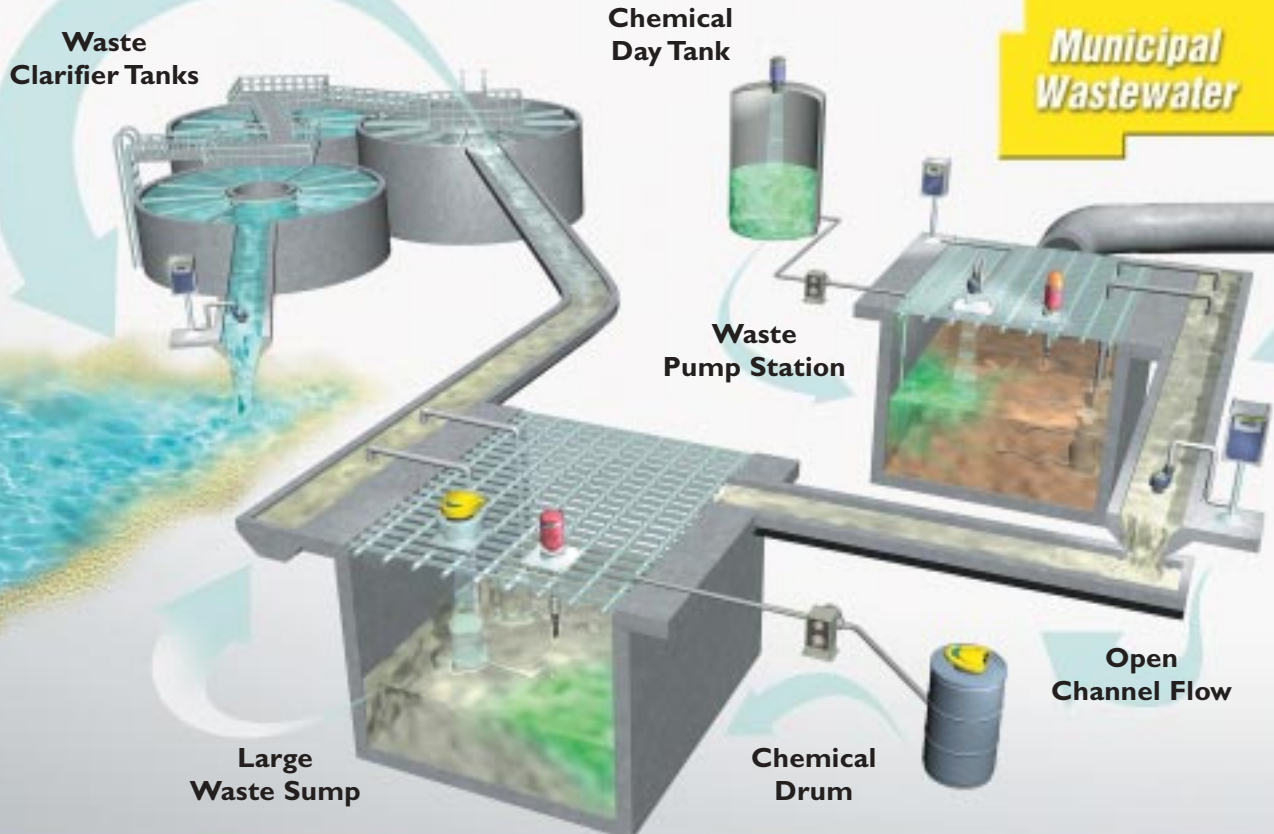
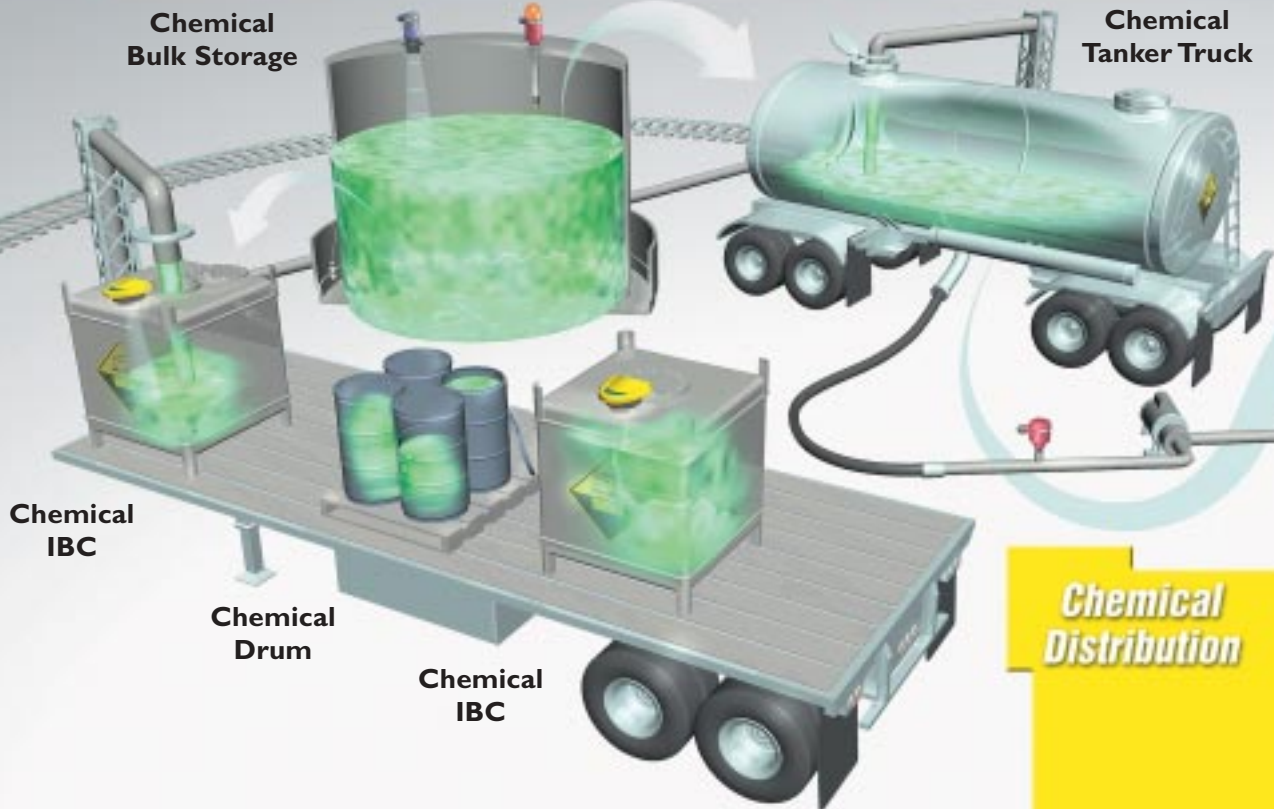
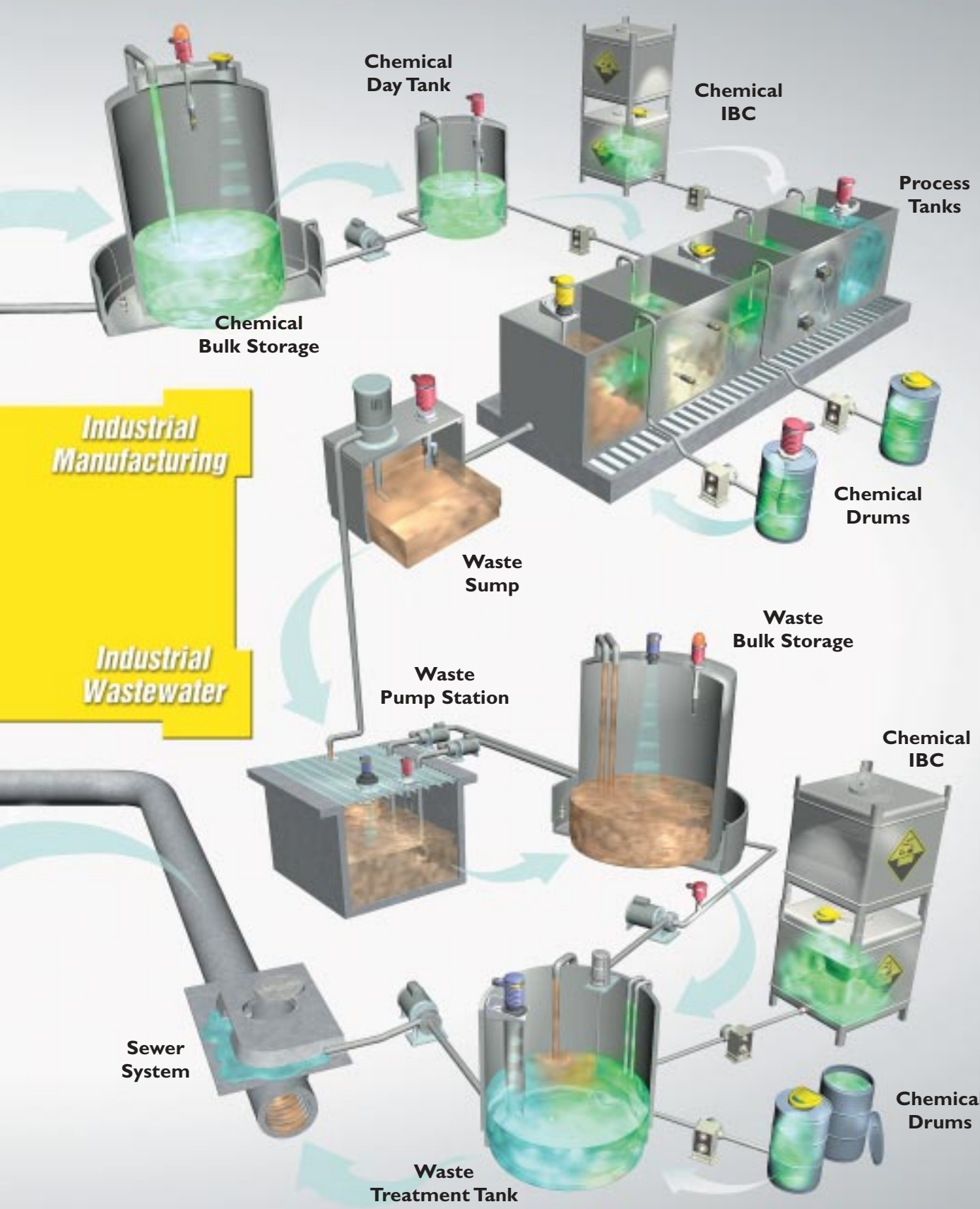


FLOWLINE



We Do Your Level Best





**Industrial
Manufacturing**

**Industrial
Wastewater**

**Sewer
System**

**Chemical
Day Tank**

**Chemical
IBC**

**Process
Tanks**

**Chemical
Bulk Storage**

**Chemical
Drums**

**Waste
Sump**

**Waste
Bulk Storage**

**Waste
Pump Station**

**Chemical
IBC**

**Chemical
Drums**

**Waste
Treatment Tank**



CONTACT US

Flowline is the best source for *tank inventory monitoring, automation and safety solutions*. A recognized leader in non-contact ultrasonic level sensors, we offer the most reliable and cost effective solutions for the measurement and control of chemical, waste and ultrapure liquid media. Flowline products are sold worldwide through our technical stocking distribution

network and are broadly applied in industrial, OEM, municipal and agricultural containment applications. Please contact your local distributor, visit our web site or call Flowline directly for your level solution. With over 750,000 successful installations worldwide, *it's level made simple!*

FLOWLINE
LIQUID INTELLIGENCE

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Selection Guides

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White Papers & Glossary

Chemical Compatibility

Distributor Contacts



Go to www.flowline.com

To receive the full benefits of our information rich site, we recommend that you register once and login each time you visit flowline.com.



DIGITAL INFINITY

Digital Infinity provides unparalleled ultrasonic level sensor performance and application reliability through scalable *digital surface imaging* technology. This adaptive signal processing intelligence continuously optimizes sensor power, output filtering, environmental noise rejection, obstacle recognition and sensor diagnostics. Try our Digital Infinity sensors in your application and experience the future of ultrasonic level today.

PERFORMANCE

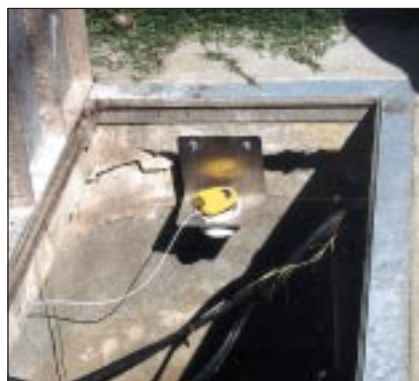
- Accuracy** Digital Infinity sensors are accurate to $\pm 0.2\%$ of measured span in air with little or no accuracy degradation over range.
- Range** These compact sensors are available in five ranges up to 10m with 1" and 2" transducers.
- Dead band** The miniature 5 cm dead band optimizes the filling capacity of smaller vessels.
- Beam width** The amazing 7.6 cm minimum beam width enables sensor placement in narrow restricted space.

APPLICATION

- Fittings** Digital Infinity sensors are broadly installed in tank adapters, still wells or flanges and can even be located in the center of parabolic dome top tanks.
- Dome tops** The acoustic signal strength and processing capacity enable the sensor to measure through most aqueous based vapor, and work with a variety of liquid surface conditions.
- Vapor** The advanced digital imaging creates a living map of the process and enables the sensor to reject obstacle reflections within the broader measurement beam.
- Obstacles** During agitation, the sensor maintains level focus and accuracy.
- Agitation** In the event of acoustic signal loss, the sensor inverts to the user defined fail-safe state and indicates a diagnostic string for easy troubleshooting. *It's level made simple!*
- Diagnostics**



Metal Finishing Process



Municipal Pump Lift Stations



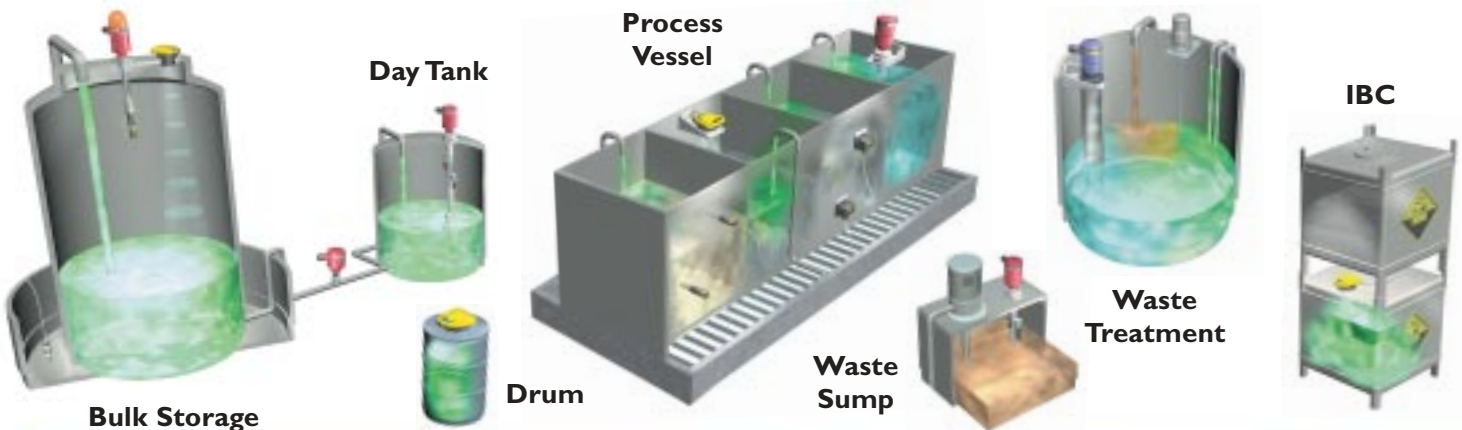
Chemical Bulk Storage

APPLICATION CATEGORY

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level Measurement	Trans	EchoSpan	5m-10m	GP	LCD	Button	4-20 mA	Various	60° C	2 bar	10-11
	Trans	EchoSonic	1m-8m	GP	None	Target	4-20 mA	Various	60° C	2 bar	12-13
	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
	Trans	FloaTek	1.8m	XP	None	Pot	4-20 mA	Water	148° C	20 bar	17
Indication and/or Control	Type	Product	Chan	Mount	Display	Cal	Output	Rating	Supply	Repeat	Page
	Ind	MicroPoint	2/4	Field	LCD	PC	FET	IP65	12-24VDC	None	25
	Meter	DataPoint	1	Panel	LED	Button	Relay	IP65	95-250VAC	4-20 mA	22
Leak Detection	Type	Product	Mat	Class	Output	Orient	F-safe	Media	Temp	Press	Page
	Switch	Optic	PP/PFA	GP	Relay	Univ	Wet	Various	90° C	10 bar	47
Automatic Fill/Empty	Type	Product	Range	Class	Output	Cal	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	1m-8m	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Smart Trak	3m	GP/IS	Relay	Adjust	PP	Various	90° C	0 bar	34-35
	Switch	Float-Point	1.8m	GP/XP	Reed	Factory	SS	Water	148° C	51 bar	36-37
High/Low Alarm	Type	Product	Supply	Class	Output	Orient	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	AC/DC	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Switch-Pak	AC/DC	GP/IS	Relay	Vertical	PP/PVDF	Various	90° C	10 bar	34-35
	Switch	Switch-Pro	AC/DC	GP/IS	Relay	Horiz	PP/PFA	Various	90° C	10 bar	43
	Switch	Vibration	DC	GP	Relay	Univ	Ryton	Waste	90° C	10 bar	45
	Switch	Ultrasonic	DC	IS	Relay	Univ	PP/PFA	Chem	90° C	10 bar	44
Low Flow Switch	Type	Product	Supply	Class	Output	Flow	Mat	Media	Temp	Press	Page
	Switch	Switch-Pro	AC/DC	GP	Relay	.04 FPS	PP/PVDF	Liq/Gas	60° C	10 bar	63
	Switch	Thermal	DC	GP	Relay	.04 FPS	PP/PVDF	Liq/Gas	60° C	10 bar	61

BULK STORAGE TANK

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level Measurement	Trans	EchoSpan	5m-10m	GP	LCD	Button	4-20 mA	Various	60° C	2 bar	10-11
	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
Indication and/or Control	Type	Product	Chan	Mount	Display	Cal	Output	Rating	Supply	Repeat	Page
	Ind	MicroPoint	2/4	Field	LCD	PC	FET	IP65	12-24VDC	None	25
Leak Detection	Type	Product	Mat	Class	Output	Orient	F-safe	Media	Temp	Press	Page
	Switch	Optic	PP/PFA	GP	Relay	Univ	Wet	Various	90° C	10 bar	47
High Alarm	Type	Product	Supply	Class	Output	Orient	Mat	Media	Temp	Press	Page
	Switch	Switch-Pak	AC/DC	GP/IS	Relay	Vertical	PP/PVDF	Various	90° C	10 bar	40-41
	Switch	Ultrasonic	DC	IS	Relay	Univ	PP/PFA	Chem	90° C	10 bar	44
Low Flow Switch	Type	Product	Supply	Class	Output	Flow	Mat	Media	Temp	Press	Page
Switch	Switch-Pro	AC/DC	GP	Relay	.04 FPS	PP/PVDF	Various	60° C	10 bar	63	



DAY TANK

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level	Trans	EchoSonic	1m-8m	GP	None	Target	4-20 mA	Various	60° C	2 bar	12-13
Measurement	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
Automatic Fill	Type	Product	Range	Class	Output	Cal	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	1m-8m	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Smart Trak	3m	GP/IS	Relay	Adjust	PP	Various	90° C	0 bar	34-35

PROCESS VESSEL

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level	Trans	EchoSonic	1m-8m	GP	None	Target	4-20 mA	Various	60° C	2 bar	12-13
Measurement	Trans	FloaTek	1.8m	XP	None	Pot	4-20 mA	Water	148° C	20 bar	17
Automatic Fill/Empty	Type	Product	Range	Class	Output	Cal	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	1m-8m	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Smart Trak	3m	GP/IS	Relay	Adjust	PP	Various	90° C	0 bar	34-35
	Switch	Float-Point	1.8m	GP/XP	Reed	Factory	SS	Water	148° C	51 bar	36-37
High/Low Alarm	Type	Product	Supply	Class	Output	Orient	Mat	Media	Temp	Press	Page
	Switch	Vibration	DC	GP	Relay	Univ	Ryton	Waste	90° C	10 bar	45
	Switch	Ultrasonic	DC	IS	Relay	Univ	PP/PFA	Chem	90° C	10 bar	44
	Switch	Buoyancy	N/a	N/a	Relay	Vertical	PP/PVDF	Water	90° C	1.7 bar	46

WASTE SUMP

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level	Trans	EchoSonic	1m-8m	GP	None	Target	4-20 mA	Various	60° C	2 bar	12-13
Measurement	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
Automatic Empty	Type	Product	Range	Class	Output	Cal	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	1m-8m	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Smart Trak	3m	GP/IS	Relay	Adjust	PP	Various	90° C	0 bar	34-35
High Alarm	Type	Product	Supply	Class	Output	Orient	Mat	Media	Temp	Press	Page
	Switch	Switch-Pak	AC/DC	GP/IS	Relay	Vertical	PP/PVDF	Various	90° C	10 bar	40-41
	Switch	Vibration	DC	GP	Relay	Univ	Ryton	Waste	90° C	10 bar	45

WASTE TREATMENT

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level	Trans	EchoSpan	5m-10m	GP	LCD	Button	4-20 mA	Various	60° C	2 bar	10-11
Measurement	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
High/Low Alarm	Type	Product	Supply	Class	Output	Orient	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	AC/DC	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Switch-Pak	AC/DC	GP/IS	Relay	Vertical	PP/PVDF	Various	90° C	10 bar	40-41
	Switch	Vibration	DC	GP	Relay	Univ	Ryton	Waste	90° C	10 bar	45

IBC and Drum

Application	Type	Product	Range	Class	Display	Cal	Output	Media	Temp	Press	Page
Level	Trans	EchoSonic	1m-8m	GP	None	Target	4-20 mA	Various	60° C	2 bar	12-13
Measurement	Trans	EchoTouch	5m	IS	LCD	Button	4-20 mA	Various	60° C	2 bar	14
Automatic Fill	Type	Product	Range	Class	Output	Cal	Mat	Media	Temp	Press	Page
	Switch	EchoSwitch	1m-8m	GP	Relay	Button	PVDF	Various	60° C	2 bar	30-31
	Switch	Smart Trak	3m	GP/IS	Relay	Adjust	PP	Various	90° C	0 bar	34-35



Metal Tank Solutions



Semiconductor Waste Process



Ground Water Remediation



Sulfuric Acid Bulk Storage

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IBC Chemical Metering



Residential Water Lift Station

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Plastic Tank Solutions



Oil-Water Separation

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Industrial Waste Lift Station



HVAC Cooling Tower Water



Marine Lube Oil Storage

INTRODUCTION

Flowline offers the most advanced family of level measurement and control solutions for your bulk storage, day tank, process vessel and waste sump applications.

Ultrasonic

Offered in intrinsically safe and general purpose configurations, our non-contact ultrasonic level transmitters are ideal for acid, caustic and wastewater storage.

Pressure

Constructed of rugged stainless steel, our general purpose submersible pressure transmitter is well suited for water, well water, irrigation, ponds and reservoirs.

Capacitance

Featuring a patented self grounding FEP probe for plastic and fiberglass tanks, our general purpose capacitance transmitter is perfect for clean water and acid.

Float

Constructed of heavy duty stainless steel for high temperature and pressure, the explosion proof float transmitter is ideal for water, light oil and diluted acid.

Alphasonic

Offered in a wide variety of wetted materials, the general purpose alphasonic transmitter is well suited for simple, light duty applications in water and diluted acid.

Inventory Monitoring



LEVEL TRANSMITTERS

Product	EchoSpan	EchoSonic	Echotouch	Echotouch	EchoDucer	FloaTek	DeltaSpan	Symprobe	Cricket	Ricochet
Series	LU8_	LU_	LU20	LU30	LU43	LV5_	LD1_	LP75	LA12	LA15/LA20
Range	5m-10m	1.2m-8m	4m	5m	8m	2m	10m	3m	3m	3.7m
Class	GP	GP	IS	GP	GP	XP	GP	GP	GP	GP
Display	LCD	None	LCD	LED	None	None	None	None	None	None
Cal	Button	Target	Button	Button	Fixed	Pot	Fixed	Pot	Pot	Fixed
Output	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA	4-20 mA
Media	Various	Various	Various	Various	Various	Water	Various	Various	Water	Water
Temp.	60° C	60° C	60° C	60° C	60° C	148° C	50° C	70° C	60° C	60° C
Press.	2 bar	2 bar	2 bar	2 bar	2 bar	20 bar	2 bar	5 bar	Atm.	2 bar
Dead Band	5-30 cm	10-20 cm	15 cm	15 cm	20 cm	5 cm	N/A	5 cm	5 cm	9 cm
Spray Ball	Yes	Yes*	No	No	Yes	Yes	Yes	No	No	No
Foam	Standpipe	Standpipe	Standpipe	Standpipe	Standpipe	Yes	Yes	No	No	Standpipe
Coating	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Vapor	Medium	Medium	Light	Light	Medium	Heavy	Heavy	Heavy	Light	Medium
Page	10-11	12-13	14	15	16	17	18	19	20	21

* 50 kHz. only

INDICATORS AND CONTROLLERS

Product	DataPoint	DataView	DataSwitch	MicroPoint	DataLoop	EchoPump
Series	LV5_	LI1_	LC52	LI4_	LI2_	LU60
Channel	1	1	1	2/4	1	1
Mount	Panel	Panel	DIN	Field	Panel	Panel
Display	LED	LED	LED	LCD	LCD	LCD
Calibrate	Button	Button	Button	PC	Pot	Button
Output	Relay	Relay	Relay	FET	None	Relay
Rating	IP65	IP65	IP65	IP65	IP65	IP65
Supply	95-250 VAC	124/240 VAC	120/240 VAC	12-24 VDC	24 VDC	120/240 VAC
Repeater	4-20 mA	4-20 mA	4-20 mA	None	None	4-20 mA
Page	22	23	24	25	26	27





Rear View
Shown

Faceplate
Shown



SPECIFICATIONS

Range:	LU81: 4" to 16.4' (10 cm to 5m) LU83: 8" to 26.2' (20 cm to 8m) LU84: 12" to 32.8' (30 cm to 10m)
Accuracy:	± 0.2% of span in air
Resolution:	LU81/83: 0.039" (1 mm) LU84: 0.078" (2 mm)
Beam width:	3" (7.6 cm) dia.
Dead band:	LU81: 4" (10 cm) LU83: 8" (20 cm) LU84: 12" (30 cm)
Display type:	LCD, 6-digit
Display units:	Inch, cm or percent
Memory:	Non-volatile
Supply voltage:	12-28 VDC
Loop resist.:	500 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 mA or 20-4 mA
Calibration:	Push button
Fail-safety:	Selectable 4mA, 20mA, 21 mA, 22 mA or hold
Process temp.:	F: -4° to 140° C: -20° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 160° C: -40° to 71°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Enclosure vent:	Water tight membrane
Encl. material:	PC/ABS FR
Trans. material:	PVDF
Process mount:	2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Dual, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC (pending)

APPLICATION

The general purpose two-wire ultrasonic transmitter provides non-contact level measurement up to 32' or 10m, and is ideally suited for challenging ultrapure, corrosive or waste liquids. Push button calibrated, the transmitter is broadly selected for atmospheric bulk storage, day tank and waste sump applications. Media examples include wastewater and sodium hydroxide.

USER FRIENDLY

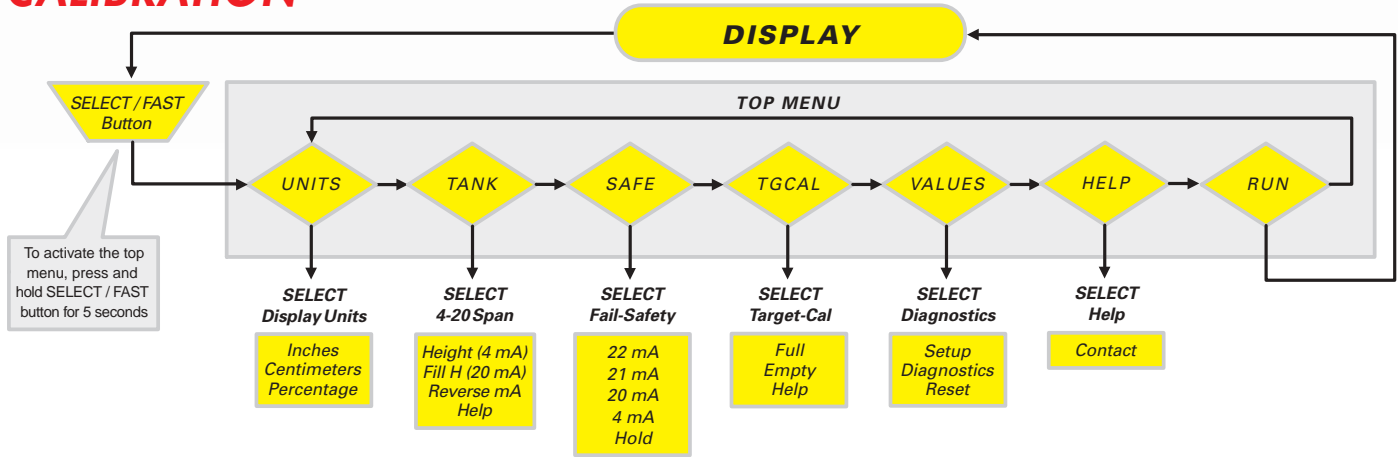
Calibration is fast and simple with our scrolling single layer menu, three button interface and 6-segment LCD display. **Troubleshooting** has never been easier with our unique **Setup** and **Diagnostic** feedback modes. Setup displays the transmitter's calibration set points. Diagnostics provides users with a snapshot of sensor performance and application variables. It's level made simple!

FEATURES

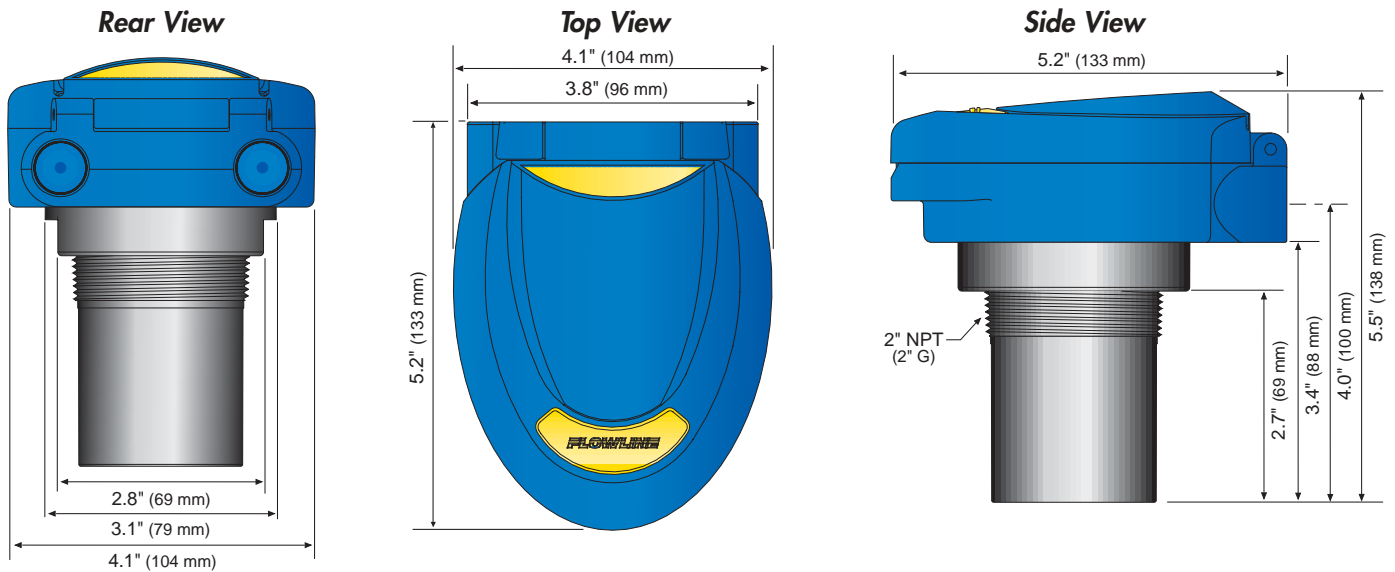
- ✓ Setup is fast and simple with push button calibration and LCD display
- ✓ Offered in three measurement ranges up to 10m with 2" transducer
- ✓ 6-segment LCD display indicates level in inch or centimeter values
- ✓ 7.6 cm minimum beam width for applications with restricted space
- ✓ PC/ABS enclosure rated NEMA 4X with rugged PVDF transducer
- ✓ Fail-safe intelligence with diagnostic feedback for easy troubleshooting



CALIBRATION



DIMENSIONS



LM50
Shown



EchoSpan

ORDER

LU -51 1

Sensor range

- 81 5m (16.4')
- 83 8m (26.2')
- 84 10m (32.8')

Process mount (1) (2)

- 0 NPT (US)
- 6 G (Metric)

Ordering Notes

- 1) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 2) For a liquid tight cable connection, order the LM90-1001 connector.



LU11/13
Shown



LU05
Shown



LU_ _51_ I
Shown

SPECIFICATIONS

Range:	LU05: 2" to 4' (5 cm to 1.2m) LU12: 4" to 9.8' (10 cm to 3m) LU11: 4" to 16.4' (10 cm to 5m) LU13: 8" to 26.2' (20 cm to 8m)
Accuracy:	LU05: 0.125" (3 mm) LU11/12/13: ± 0.2% of span in air
Resolution:	LU05/12: 0.019" (0.5 mm) LU11/13: 0.039" (1 mm)
Beam width:	LU05/12: 2" (5 cm) dia. LU11/13: 3" (7.6 cm) dia.
Dead band:	LU05: 2" (5 cm) LU11/12: 4" (10 cm) LU13: 8" (20 cm)
LED indication:	Power, calibration and diagnostics
Memory:	Non-volatile
Supply voltage:	12-28 VDC
Loop resist.:	500 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 mA or 20-4 mA
Calibration:	Target, calibration wire
Fail-safety:	Reverts to 22 mA
Process temp.:	F: -4° to 140° C: -20° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 160° C: -40° to 71°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	50_1: NEMA 6 (IP67) 51_1: NEMA 4X (IP65)
Encl. material:	PC/ABS FR
Trans. material:	PVDF
Cable jacket mat.:	50_1: PP
Cable type:	50_1: 3-cond., shielded
Cable length:	50_1: 10' (3m)
Conduit entrance:	51_1: Dual, 1/2" NPT
Process mount:	LU05/12: 1" NPT (1" G) LU11/13: 2" NPT (2" G)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC

APPLICATION

The general purpose two-wire ultrasonic transmitter provides non-contact level measurement up to 26' or 8m, and is well suited for challenging ultrapure, corrosive, slurry or waste liquids. The transmitter is broadly selected for atmospheric bulk storage, day tank, waste sump, process vessel, IBC tote, 55-gallon drum and waste sump applications. Media examples include acetic acid and resin.

CALIBRATION

The 4-20 span set points are easily calibrated with the Cal-wire, a DC power supply and flat reflective target. To configure the 4 mA set point, attach the Cal-wire to the return side of the power supply, hold the transmitter at the desired set point range and turn power on until the logo plate illuminates. It's level made simple!

FEATURES

- ✓ Simple compact sensor with target calibration and LED status indicator
- ✓ Offered in four measurement ranges up to 8m with 1" and 2" transducers
- ✓ 5 cm minimum beam width for applications with restricted space
- ✓ 5 cm miniature dead band optimizes the filling capacity of small vessels
- ✓ PC/ABS enclosure rated NEMA 6 or NEMA 4X with PVDF transducer
- ✓ Fail-safe intelligence with diagnostic feedback for easy troubleshooting



LM50
Shown

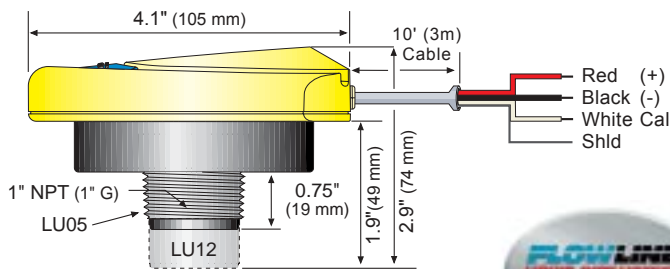
DIAGNOSTICS

The transmitter features advanced self-test diagnostics that continuously sweep the applied performance of the product. In the event of low acoustic confidence, the analog signal will hold at 22 mA and the blue LED logo plate will turn on until such time that the level is acquired.

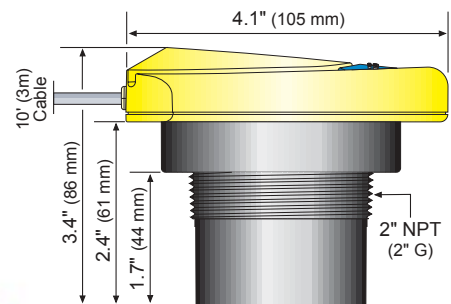


DIMENSIONS

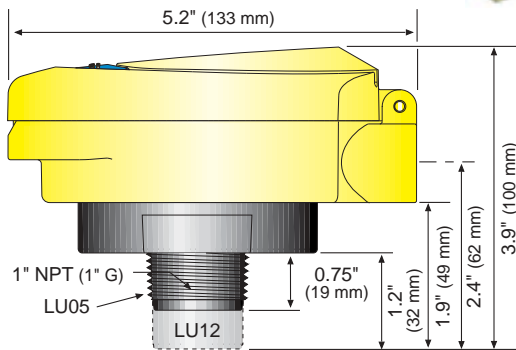
LU05/12-5001 Side View



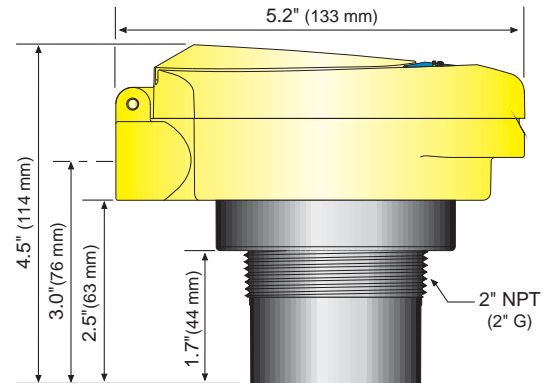
LU11/13-5001 Side View



LU05-12-5101 Side View



LU11/13-5001 Side View



EchoSonic

ORDER

LU -5 1

Sensor range / size

- 05 1.2m (4') / 1"
- 12 3m (9.8') / 1"
- 11 5m (16.4') / 2"
- 13 8m (26.2') / 2"

Enclosure / termination (1) (2)

- 0 NEMA 6 / cable
- 1 NEMA 4X / conduit

Process mount (3)

- 0 NPT (US)
- 6 G (Metric)

Ordering Notes

- 1) The NEMA 6 includes a standard 10' (3m) cable. To special order a 25' (7.6m) or 50' (15.2m) cable, place the cable length at the end of the part number (ie: LU12-5001-25).
- 2) The NEMA 4X enclosure has a flip-lid with dual conduit ports and a terminal strip.
- 3) For installation on open tanks, order the LM50-1001-1 (1" NPT) or LM50-1061-1 (1" G) side mount bracket for; or order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.

APPLICATION

CSA approved intrinsically safe for use in general purpose or hazardous applications, the two-wire ultrasonic transmitter provides non-contact level measurement up to 18' or 5.4m, and is ideally suited for challenging corrosive, slurry or waste liquids. Push button calibrated, the transmitter is typically selected for atmospheric bulk storage, day tank and waste sump applications located within a classified area. Media examples include diesel fuel and sulfuric acid.

FEATURES

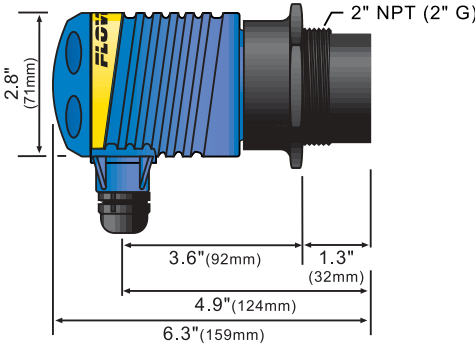
- ✓ Intrinsically safe transmitter for use in hazardous environments
- ✓ LCD digital display indicates level in inches or centimeters
- ✓ EasyCal simple push button calibration for all user set points
- ✓ PP enclosure rated NEMA 4X with rugged PVDF transducer
- ✓ Adjustable dead band and range filters eliminate false echo returns



LU20
Shown

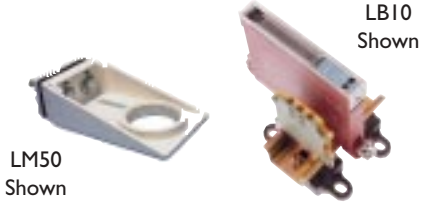


Faceplate
Shown



SPECIFICATIONS

Range:	6" to 18" (15 cm to 5.4m)
Accuracy:	± 0.25% of span in air
Resolution:	0.125" (3 mm)
Beam width:	8" conical
Dead band:	6" (15 cm)
Display type:	LCD, 4-digit
Display units:	Inch or cm
Memory:	Non-volatile
Supply voltage:	12-32 VDC
Loop resist.:	600 Ohms @ 24VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 or 20-4 mA
Calibration:	Push button
Fail-safety:	Reverts to safe state during echo-loss
Process temp.:	F: -4° to 140° C: -20° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Trans. material:	PVDF
Process mount:	2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Single, 1/2" NPT
Classification:	Intrinsically safe
Approvals:	CSA: Class I, Groups A, B, C & D; Class II, Groups E, F and G; Class III; T3C EEx: Class 1, Division 1, Groups A, B, C, D; EEx ia IIC T3
Parameters:	CSA: Vmax < 32.0 V; Imax < 130 mA; Ca = 0 µF; La = 0 µH EEx: Ui = 32 V; li = 300 mA; Pi = 1.3 W; Ci = 0 µF; Li = 0 µH
Certificates:	CSA: LR 79326
CE compliance:	EN 61326 EMC



LM50
Shown

LB10
Shown

Echotouch ORDER

LU20-50 **1-15**

Process mount (1) (2)
 0 2" NPT (US)
 6 2" G (Metric)

Ordering Notes
 1) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
 2) When used in hazardous environments, order the LB10-1001 intrinsic safety barrier.

APPLICATION

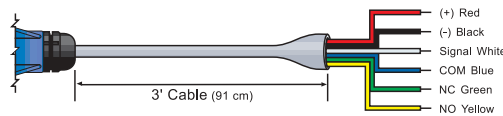
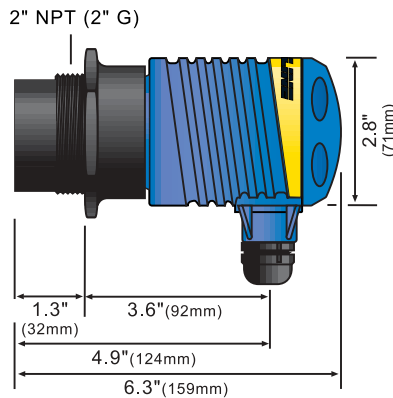
The general purpose three-wire ultrasonic transmitter provides non-contact level measurement up to 24' or 7.4m with an internal relay that can be configured as a single-point alarm or latched on two points for automatic fill or empty control. The transmitter is ideally suited for challenging corrosive, slurry or waste liquids and is typically selected for atmospheric bulk storage and waste sump applications. Media examples include wastewater and resin.

FEATURES

- ✓ Integral relay for alarm or automatic fill-empty control
- ✓ LED digital display indicates level in inches or centimeters
- ✓ EasyCal simple push button calibration for all user set points
- ✓ PP enclosure rated NEMA 4X with rugged PVDF transducer



LU30 Shown



SPECIFICATIONS

Range:	6" to 24.5' (15 cm to 7.4m)
Accuracy:	± 0.25% of span in air
Resolution:	0.125" (3 mm)
Beam width:	8° conical
Dead band:	6" (15 cm)
Display type:	LED, 4-digit
Display units:	Inch or cm
Memory:	Non-volatile
Supply voltage:	14-36 VDC
Consumption:	200 mA max.
Current flow:	Source/sink
Signal output:	4-20 mA, three-wire
Signal invert:	4-20 or 20-4 mA
Calibration:	Push button
Contact type:	(1) SPDT relay, latching
Contact rating:	250 VAC @ 10A
Contact logic:	Single point: alarm Two point: latching
Contact fail-safety:	Reverts to safe state during echo-loss
LED indication:	Relay status
Process temp.:	F: -20° to 140° C: -4° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Trans. material:	PVDF
Cable jacket mat.:	Vinyl
Cable type:	Pow/signal: 3-conductor Relay: 3-conductor
Cable length:	3' (91 cm)
Process mount:	2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Echotouch

ORDER

LU30-50

Process mount

- 0 NPT / ANSI (US)
- 6 G / DIN (Metric)

Signal output (1) (2)

- 3 4-20 mA, sourcing
- 4 4-20 mA, sinking

Ordering Notes

- 1) The sourcing transmitter provides internal excitation for use with sinking devices. The sinking transmitter requires external excitation for use with sourcing devices.
- 2) For three wire transmitter power, order the LC95-1001 (120 VAC) or LC96-1001 (240 VAC) power supply (24 VDC @ 0.6A).

APPLICATION

The general purpose two-wire ultrasonic transmitter provides non-contact level measurement up to 26' or 8m, and is broadly suited for challenging corrosive or waste liquids. The transmitter is typically selected for atmospheric bulk storage or day tank applications with tall installation fittings or enclosed concrete wall waste sumps. Media examples include hydrochloric acid and wastewater.

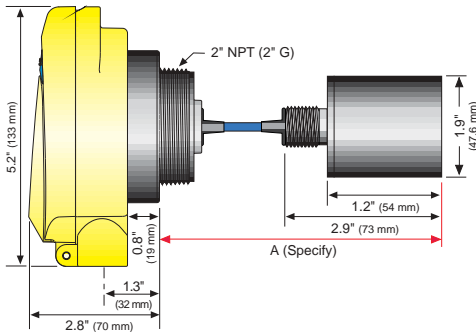
FEATURES

- ✓ Rugged PVDF transducer for insertion through tall riser fittings, concrete walls or pipes with ID > 2" schedule 40
- ✓ Fixed 20 cm to 8m measurement span does not require field calibration
- ✓ 7.6 cm minimum beam width for applications with restricted space
- ✓ Fail-safe intelligence with diagnostic feedback for easy troubleshooting



SPECIFICATIONS

Range:	8" to 26.2' (20 cm to 8m)
Accuracy:	± 0.2% of span in air
Resolution:	0.039" (1 mm)
Beam width:	3" (7.6 cm) dia.
Dead band:	8" (20 cm)
Memory:	Non-volatile
Supply voltage:	12-28 VDC
Loop resist.:	500 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Fail-safety:	Reverts to 22 mA
Process temp.:	F: -4° to 140° C: -20° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 160° C: -40° to 71°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PC/ABS FR
Trans. insertion:	7" to 10' (18 cm to 3m)
Trans. alignment:	Self-aligning, perpendicular to liquid surface
Trans. material:	PVDF
Trans. cable mat.:	FEP
Strain relief mat.:	Viton®
Conduit entrance:	Dual, 1/2" NPT
Process mount:	2" NPT (2" G)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC (pending)



TECH TIP

The breakthrough insertion design eliminates the acoustic interference associated with installation in tall fittings. Specify the A-dimension from the top of the process mount to the opening in the vessel.



EchoDucer ORDER

LU43-51 1-

Process mount (1)
0 NPT (US)
6 G (Metric)
Dimensions (2)
A Specify

Ordering Notes

- 1) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 2) Specify the A-dimension at the end of the part number (ie: LU43-5101-8"). The A-dimension may be specified in 1" (2.5 cm) increments from 7" (18 cm) to 10' (3m).

APPLICATION

Offered in FM and CSA approved explosion proof or general purpose configurations, the two-wire float transmitter provides contact level measurement up to 6' or 1.8m, and is ideally suited for relatively clean water, light oil or diluted corrosive liquids. The transmitter is typically selected for high temperature and/or pressure process tank applications located within a classified hazardous or general purpose area. Media examples include hot boiler water and cooking oil.

FEATURES

- ✓ Explosion proof transmitter for use in hazardous environments
- ✓ Rugged 316 stainless steel float, guide and 2" NPT mounting plug
- ✓ Compatible with Flowline remote indicator and relay controllers
- ✓ Custom assembled to your exact guide length and span dimensions

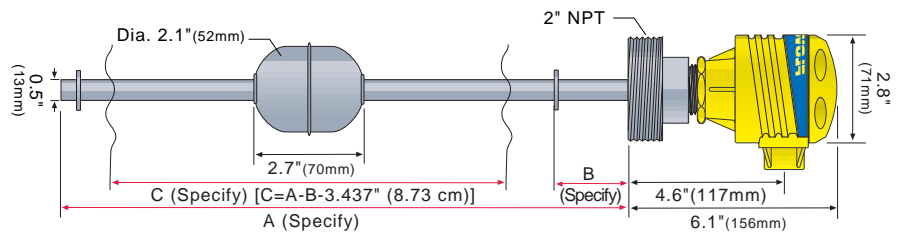
TECH TIP

Perfect for high temperature and pressure applications, the XP transmitter is provided with a rugged cast aluminum enclosure rated NEMA 7P. It's level made simple!



SPECIFICATIONS

Range:	5" to 72" (12.7 cm to 1.8m)
Accuracy:	0.25" over span in water
Specific gravity:	0.75 minimum
Orientation:	± 30° from vertical
Supply voltage:	LV50: 10 to 30 VDC LV51: 10 to 40 VDC
Loop resist.:	600 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 or 20-4 mA
Calibration:	None, fixed span
Process temp.:	F: -40° to 300° C: -40° to 148.9°
Electronic temp.:	F: -40° to 160° C: -40° to 71°
Pressure:	300 psi maximum
Enclosure rating:	LV50: NEMA 4X (IP65) LV51: NEMA 7
Encl. material:	LV50: PP, UL94VO LV51: Aluminum
Guide/float mat.:	316 SS
Process mount:	2" NPT
Conduit entrance:	Single, 1/2" NPT
Classification:	LV50: General purpose LV51: Explosion proof
Approvals:	LV50: UL, CSA LV51: FM: Class I, Division I, Groups B, C & D; Class II, Groups E, F and G
CE compliance:	EN 61326 EMC



FloaTek

ORDER

LV5 -5001- - -

Approval / classification

- 0 UL, CSA / GP
- 1 FM / XP

Dimensions (1) (2) (3)

- A Specify
- B Specify
- C Specify



Ordering Notes

- 1) Specify the A, B, and C dimensions at the end of the part number. The dimensions may be specified in 1/2" (1.3 cm) increments.
- 2) The guide length or A-dimension may be specified from 12" to 72" (30 cm to 1.8m). The maximum offset or C-dimension may be specified no greater than the A-dimension minus 3.47" (8.9 cm). The minimum span or B-dimension may be specified no less than 0.25" (0.64 cm).
- 3) To calculate the guide adder, round up the A-dimension to the next inch (2.5 cm).

APPLICATION

The general purpose two-wire pressure transmitter provides contact level measurement up to 30 psi or 2.0 bar and is ideally suited for relatively clean water, light oil or diluted corrosive liquids. The transmitter is typically selected for underground bulk storage, wet well, open channel or pond applications. Media examples include irrigation water and motor oil.

FEATURES

- ✓ Rugged stainless steel transducer with flexible polyurethane cable
- ✓ Optional weight anchors sensor in turbulent or fast moving liquids
- ✓ Removable guard protects sensor from damage and process debris

TECH TIP

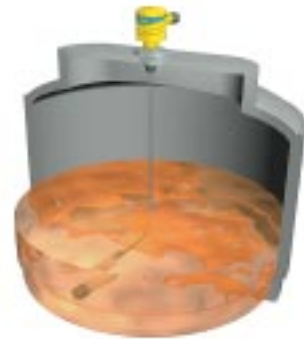


For integral wiring termination and process mount, order the LD90 installation kit for use with your transmitter. Each kit includes a compact junction box, PP plug fitting and nylon cable connector for fast installation. Its level made simple!



SPECIFICATIONS

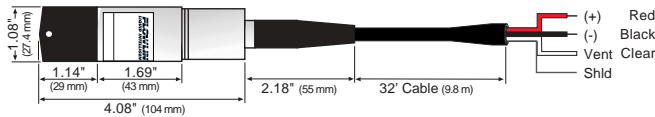
Range:	LD10: 0 to 7.5 psi (0 to 0.5 bar)
	LD11: 0 to 15 psi (0 to 1 bar)
	LD12: 0 to 30 psi (0 to 2 bar)
Accuracy:	± 0.25% of span
Supply voltage:	7-35 VDC
Loop resist.:	(Vs-7) x 50 ohms
Signal output:	4-20 mA, two-wire
Calibration:	None, fixed span
Process temp.:	F: -5° to 125° C: -20° to 50°
Temp. comp.:	Automatic
Proof pressure:	2 x full span
Burst pressure:	> 35 x full span
Enclosure rating:	NEMA 6X (IP68)
Probe material:	316 ss and 17-4 PH ss
Cable material:	Polyurethane
Cable type:	2-conductor, shielded
Cable length:	LD10: 0 to 32' (0 to 9.8m)
	LD11: 0 to 32' (0 to 9.8m)
	LD12: 0 to 48' (0 to 14.6m)
Weight:	Approx. 100 grams
Classification:	General purpose
CE compliance:	EN 61326 EMC



DeltaSpan ORDER

LD1 -5041

- Sensor range (1) (2) (3)**
- 0 0 to 7.5 psi (0 to 0.5 bar)
 - 1 0 to 15 psi (0 to 1 bar)
 - 2 0 to 30 psi (0 to 2 bar)



Ordering Notes

- 1) The maximum sensor range in tank height for each type is as follows:
LD10: 0 to 17' (0 to 5.1m)
LD11: 0 to 35' (0 to 10.6m)
LD12: 0 to 48' (0 to 14.6m)
- 2) For integral conduit termination and process mount (PP), order the LD90-1001 (2" NPT) or LD90-1061 (1 1/2" G) installation kit.
- 3) To weight the sensor for use in extremely turbulent applications, order the nose cone the nose cone weight (LD10-NOSE).

APPLICATION

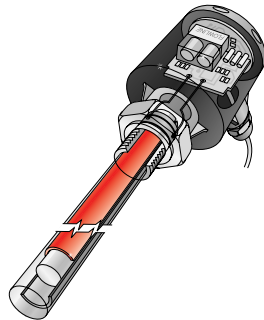
The general purpose two-wire capacitance transmitter provides contact level measurement up to 10' or 3m, and is ideally suited for clean, water-based, non-coating corrosive liquids with constant chemistry. The transmitter is typically selected for pressurized day tank and process vessel applications. Media examples include nitric and hydrochloric acid.

FEATURES

- ✓ FEP probe for use with highly corrosive acid solutions
- ✓ Self grounding probe does not require reference in plastic tanks
- ✓ Easy potentiometer calibration with power LED and span invert switch



Faceplate Shown



LP75 Shown

SPECIFICATIONS

Range:	1' to 10' (30 cm to 3m)
Accuracy:	± 1% of full span
Resolution:	0.125" (3 mm)
Conductive range:	> 100 micromhos
Dielectric range:	> 20 constants
Capac. range:	100 to 1000 pF
LED indication:	Power status
Supply voltage:	14-36 VDC
Loop resist.:	600 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 or 20-4 mA
Calibration:	Potentiometer
Process temp.:	F: -40° to 158° C: -40° to 70°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	75 psi (5 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94V0
Probe material:	FEP
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton® (G version only)
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC



Symprobe ORDER

LP75-20 1-

Process mount (1) (2)

0 3/4" NPT (US)
6 3/4" G (Metric)

Probe length (3)

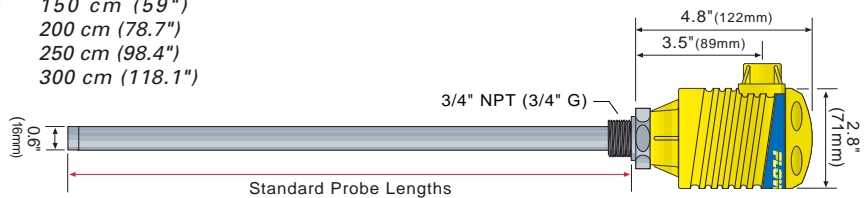
US
012 12" (30 cm)
018 18" (46 cm)
024 24" (61 cm)
036 36" (91 cm)
048 48" (122 cm)
060 60" (152 cm)
072 72" (183 cm)
084 84" (213 cm)
096 96" (244 cm)
108 108" (274 cm)
120 120" (305 cm)

Metric

050 50 cm (19.7")
100 100 cm (39.4")
150 150 cm (59")
200 200 cm (78.7")
250 250 cm (98.4")
300 300 cm (118.1")

Ordering Notes

- 1) The straight G thread version seals with an included Viton® mounting gasket.
- 2) For installation on open tanks, order the LM50-1001-3/4" (3/4" NPT) or LM50-1061-3/4" (3/4" G) side mount bracket.
- 3) Custom probes may be special ordered in 1/2" (1.3 cm) increments from 12.5" (32 cm) to 119.5" (303 cm) (ie: LP75-2001-81").



APPLICATION

The general purpose two-wire alphasonic transmitter provides light duty level measurement up to 10' or 3m, and is well suited for clean water or non-coating and scaling diluted corrosive liquids. The transmitter is typically selected for atmospheric day tank and process vessel applications. Media examples include potable water and malic acid.

FEATURES

- ✓ Low-cost measurement solution for light duty level applications
- ✓ PVC, PP or PVDF wave guides may be easily sized in the field
- ✓ Simple potentiometer calibration with power LED and span invert switch
- ✓ Wave guide dampens turbulence for accurate measurement in agitation



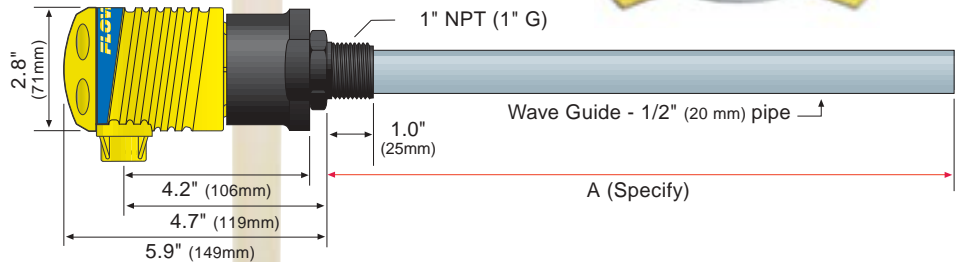
LA12-50_I Shown

SPECIFICATIONS

Range:	3.5" to 10' (9 cm to 3m)
Accuracy:	± 1% of span in air
Resolution:	0.125" (3 mm)
LED indication:	Power status
Supply voltage:	14-36 VDC
Loop resist.:	600 Ohms@24VDC
Signal output:	4-20 mA, two-wire
Signal invert:	4-20 or 20-4 mA
Calibration:	Potentiometer
Process temp.:	F: -40° to 140° C: -40° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -4° to 140° C: -20° to 60°
Pressure:	Atmospheric
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Guide material:	PVC, PP or PVDF
Process mount:	1" NPT (1" G)
Mount. gasket:	Viton®
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC



Faceplate Shown



Cricket

ORDER

LA12- 0 1-

Guide material

- 7 PVC
- 1 PP
- 5 PVDF

Process mount (1) (2)

- 0 1" NPT (US)
- 6 1" G (Metric)

Guide length (3)

- 012-120 12"-120" (30 cm to 3m)

LM50 Shown



Ordering Notes

- 1) The straight G thread version seals with an included Viton® mounting gasket.
- 2) For installation on open tanks, order the LM50-1001-1 (1" NPT) or LM50-1061-1 (1" G) side mount bracket.
- 3) The guide length or A-dimension may be specified in 1/2" (1.3 cm) increments from 12" to 120" (30 cm to 3m). To order the LA12 without a factory installed guide, specify a 00 guide length. Separately sourced and installed guides should adhere to a 1/2" (20 mm) schedule 40 pipe specification.

APPLICATION

The general purpose two-wire ultrasonic transmitter provides non-contact level measurement up to 12' or 3.7 m, and is well suited for corrosive or ultrapure liquids. The transmitter is typically selected for light duty atmospheric day tank and process vessel applications. Media examples include ultrapure water, potable water and brine solutions.

FEATURES

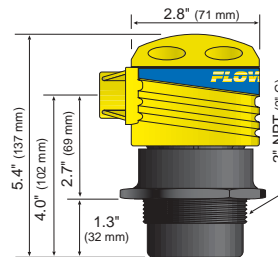
- ✓ Simple compact sensor with fixed span and LED status indicator
- ✓ Two measurement ranges up to 3.7m with 3/4" and 2" transducers
- ✓ Narrow 8° beam width for application in restricted space
- ✓ PP enclosure rated NEMA 4X with rugged PVDF transducer
- ✓ Fail-safe intelligence with diagnostic feedback for easy troubleshooting



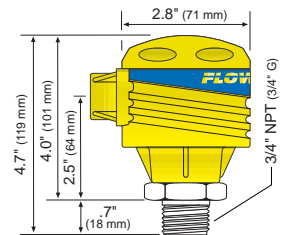
SPECIFICATIONS

Range:	LA15: 3.6" to 6' (9 cm to 1.8m) LA20: 6" to 12' (15 cm to 3.7m)
Accuracy:	± 0.25% of span in air
Resolution:	0.125" (3mm)
Beam width:	8° conical
Dead band:	LA15: 3.6" (9 cm) LA20: 6" (15 cm)
LED indication:	Power and fail-safety
Supply voltage:	12-36 VDC
Loop resist.:	600 Ohms @ 24 VDC
Signal output:	4-20 mA, two-wire
Fail-safety:	Reverts to 22 mA during echo-loss
Process temp.:	F: -40° to 140° C: -40° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -4° to 140° C: -20° to 60°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94V0
Trans. material:	PVDF
Process mount:	LA15: 3/4" NPT (3/4" G) LA20: 2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC

LA20 Side View



LA15 Side View



Ricochet ORDER

LA -50 1

Sensor range / size
 15 6' (1.8 m) / 3/4"
 20 12' (3.7 m) / 2"
Process mount (1)
 0 NPT (US)
 6 G (Metric)

Ordering Notes

- For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.



APPLICATION

The general purpose meter reads engineering units with one level transmitter input channel and is offered in three configurations. Select the meter only for indication, the meter with 2 relays for indication and automation functions, and the meter with 4-20 mA repeater for signal isolation. Each relay can be configured on a single set point, two latched set points for tank automatic fill or empty with pump alternation and lead-lag functions. With the optional MeterView® PC calibration kit, users can conveniently program or clone meters, save meter profiles, datalog and export data to HTML or TXT file formats.



LM92
Shown



LM93
Shown

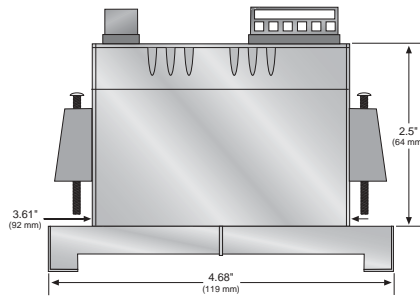
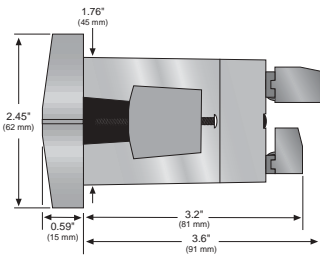
FEATURES

- ✓ Relay alternation and lead-lag control functions optimize pump performance and maintenance
- ✓ High intensity LED display is readable in direct sunlight for use in outdoor applications
- ✓ Rugged 1/8 DIN polycarbonate enclosure with splash-proof NEMA 4X faceplate

SPECIFICATIONS

Display type:	LED, 4-digit
Display units:	Engineering
Decimal point:	Floating
Display output:	0-9999
Display height:	0.56" (1.4 cm)
User interface:	Four push buttons
Input channels:	(1) 4-20 mA / 0-10 VDC
Supply voltage:	90-250 VAC, 50-60 Hz.
PC-cal interface:	* RS232 (9-pin db to RJ11) adapter w/cable
PC-cal software:	* MeterView (Windows®)
Memory:	Non-volatile
Sensor supply:	24 VDC @ 200 mA
Repeater output:	LI52: Isolated (requires ext. 12-35 VDC supply)
Contact type:	LI51: (2) SPDT relays
Contact rating:	LI51: 750 VA
Contact output:	LI51: Selectable NO/NC
Contact mode:	LI51: Alarm, latched, pump altern., lead-lag
Contact delay:	0-199 seconds
Contact fail-safe:	Programmable
Contact status:	LED indication
Operating temp.:	F: -4° to 140° C: -20° to 60°
Enclosure type:	1/8 DIN
Enclosure rating:	NEMA 4X (IP65) faceplate
Enclosure mat'l:	Polycarbonate
Enclosure mount:	Panel mount
Classification:	General purpose
UL certificate:	E160849: 508
CE compliance:	EN 61326 EMC EN 61010-1:2001 safety

* Requires LI97-1001 MeterView calibration kit



MeterView provides a convenient interface for meter calibration and datalog functions.

DataPoint ORDER

LI5-1001

- Configuration (1) (2)**
- 0 Meter only
 - 1 Meter with 2 relays
 - 2 Meter with 4-20 mA repeater



LI97
Shown



Ordering Notes

- 1) For panel mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM92-1001 (single meter box) or the LM93-1001 (two meter box).
- 2) Order the LI97-1001 MeterView PC calibration kit to program or clone meters, save meter profiles, datalog and export data to HTML or TXT file formats. Each kit includes (1) PC Windows® based MeterView software CD and (1) RS232-RJ11 adapter with 2m cable.



SPECIFICATIONS

Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Display type:	LED, 4.5-digit
Display units:	Engineering
Display height:	.56" digits
LED indication:	Relay status
Calibration:	Digital, push button
Linearization:	(11) point function
Memory:	Non-volatile
Sensor input:	(1) two or three-wire 4-20 mA transmitter
Sensor supply:	24 VDC @ 25 mA
Loop power:	4-20 mA, 18 VDC
Repeater output:	4-20 mA, 24-36 VDC
Contact type:	LI12/3: (2) SPDT relays, latching LI14/5: (4) SPDT relays, latching
Contact rating:	250 VAC @ 2A
Contact delay:	Hysteresis, full scale
Electronics temp.:	F: -40° to 149° C: -40° to 65°
Enclosure type:	1/8 DIN panel meter
Enclosure rating:	NEMA 4X (faceplate)
Encl. material:	Polycarbonate
Classification:	General purpose
UL certificate:	E160849

APPLICATION

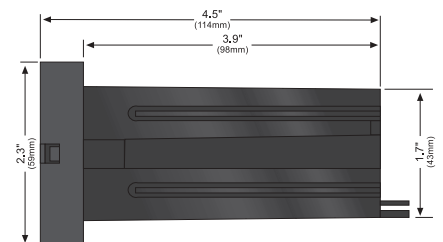
The general purpose meter reads engineering units with one level transmitter input channel and is offered in six configurations with optional 2 or 4 relays, 4 or 8 set points and an isolated 4-20 mA repeater. Each relay can be configured on a single set point or two latched set points for automatic fill or empty control.

FEATURES

- ✓ 4.5 digit LED display indicates level in custom engineering units
- ✓ 11-point linearization function for volumetric tank measurement
- ✓ Fail-safe design with security lock out jumper for process safety
- ✓ 1/8 DIN polycarbonate enclosure with NEMA 4X faceplate

TECH TIP

For three-wire transmitters, package the meter with our external power supply rated 24 VDC @ 0.6A. The rail mount power supply can support up to three LU30 level transmitters.



DataView ORDER

LI1 -1001

Configuration (1) (2) (3)

- 0 Meter only
- 1 Meter with 4-20 mA repeater
- 2 Meter with 2 relays
- 3 Meter with 2 relays and 4-20 mA repeater
- 4 Meter with 4 relays
- 5 Meter with 4 relays and 4-20 mA repeater

Ordering Notes

- 1) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LI10-1001-E).
- 2) For panel mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM92-1001 (single meter box) or the LM93-1001 (two meter box).
- 3) For three wire transmitter power, order the LC95-1001 (120 VAC) or LC96-1001 (240 VAC) power supply (24 VDC @ 0.6A).



LC52 Shown

SPECIFICATIONS

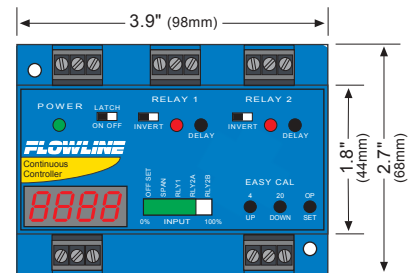
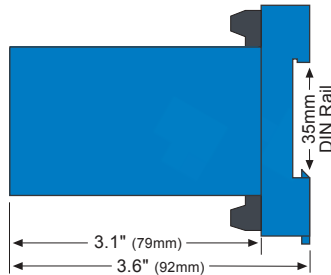
Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Display type:	LED, 3.5-digit
Display units:	Engineering
LED bar graph:	Span and set points
LED indication:	Power and relay status
LED sensor alarm:	< 4 mA = amber > 20 mA = red
Calibration:	Digital, push button
Memory:	Non-volatile
Security:	Set point lock out
Sensor input:	(1) two or three-wire 4-20 mA transmitter
Sensor supply:	28 VDC @ 5 watts
Loop power:	4-20 mA, 24 VDC
Repeater output:	4-20 mA, 12-36 VDC
Contact type:	(2) SPDT relays, (one latching)
Contact rating:	250 VAC @ 10A
Contact latch:	Selectable ON/OFF
Contact delay:	0-60 seconds
Electronics temp.:	F: -40° to 158° C: -40° to 70°
Enclosure type:	35 mm DIN rail
Encl. material:	PP, UL94V0
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety

APPLICATION

The general purpose controller provides single tank level indication with 2 relays, 1-3 set points and an isolated 4-20 mA repeater. Relay 1 is configurable on a single set point. Relay 2 can be configured on a single set point or latched on two set points for automatic fill or empty control. A LED bar graph indicates the level as a percentage of measured span.

FEATURES

- ✓ 3.5 digit LED display indicates level in custom engineering units
- ✓ EasyCal push button calibration for span, display and relay set points
- ✓ Fail-safe design with security lock out calibration for process safety
- ✓ PP 35 mm DIN enclosure with removeable terminal strips



DataSwitch **ORDER**

LC52-1001 (1) (2) (3) (4)



LM94 Shown

Ordering Notes

- 1) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LC52-1001-E).
- 2) To order the CE configuration, place CE at the end of the P/N: (ie: LC52-1001-CE).
- 3) To factory configure for sinking for use with a sourcing three-wire transmitter, place SINK at the end of the P/N: (ie: LC52-1001-SINK).
- 4) For field mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM94-1001 (single controller box) or the LM95-1001 (two controller box).

APPLICATION

Factory calibrated, the general purpose indicator reads 0-100% of span with two or four level transmitter input channels. A single push button allows users to scroll through active channels. With the optional MicroCal PC calibration kit, users can customize engineering units, configure FET alarm set points from level transmitter and switch inputs, and/or linearize the volumetric measurement of odd shaped tanks. The compact NEMA 4X enclosure supports panel and wall mount installations. Select the 2 channel version for loop insertion with PLC's and the 4 channel for stand alone indication.



LI4_ Shown

MicroCal Software



SPECIFICATIONS

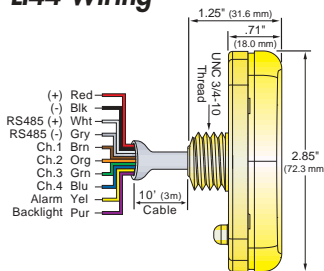
Display type:	LCD, 5-digit
Display units:	Factory cal: % of span PC cal: engineering*
Decimal point:	Floating
Display output:	Transmitter: 0-99999 Switch: Good / alarm*
Display height:	0.4" (1 cm)
Display backlight:	LED bar (adjustable)
Linearization:*	2-16-point function
User interface:	Single push button
Input channels:	LI42: (2) 4-20 mA LI44: (4) 4-20 mA
Loop insertion:	LI42: In-series, 10 Ohms LI44: N/a (stand-alone)
Supply voltage:	12-24 VDC
PC-cal. interface:*	USB® adapter w/cable
PC-cal. software:*	MicroCal (Windows®)
Memory:	Non-volatile
Alarm type:*	LI42: (2) FET switches with opt. audible chirp LI44: (1) FET switch with opt. audible chirp
Alarm cancel:*	Single push button
Alarm set points:*	1 point: alarm 2 points: out of bounds
Switch rating:*	1A @ 24 VDC
Switch output:*	Normally open
Operating temp.:	F: -4° to 140° C: -20° to 60°
Cable type:	10-conductor, #22 AWG
Cable length:	10' (3m)
Enclosure rating:	NEMA 4X (IP65)
Enclosure matl:	PC/ABS FR
Enclosure mount:	Panel or field
Button matl:	Silicon rubber
Classification:	General purpose
CE compliance:	EN 61326 (97) Class A CISPR 11 (97) Class A Group 1

* Requires LI96-1001 MicroCal calibration kit

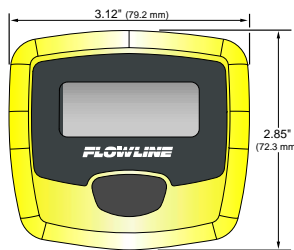
FEATURES

- ✓ Multi-channel indicator compatible with Flowline transmitter and switch sensors
- ✓ Alarms can be configured for high level, low level, out of bounds or leak detection
- ✓ Adjustable LED backlight for use outdoors or in poorly lit locations

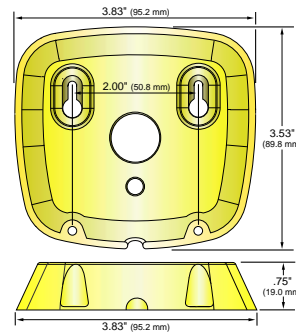
LI44 Wiring



Panel Indicator



Wall Bracket



LC95/6 Shown

MicroPoint ORDER

LI4 -1001

- Sensor input channels (1) (2) (3)
- 2 2 channels (transmitter or switch)
 - 4 4 channels (transmitter or switch)



LI96 Shown



Ordering Notes

- 1) For indicator and loop power, order the LC95-1001 (120 VAC) or LC96-1001 (240 VAC) power supply (24 VDC @ 0.6A).
- 2) Factory calibrated, the indicator displays % of span with transmitter inputs only and no alarm set points.
- 3) Order the LI96-1001 MicroCal PC calibration kit to display engineering units, configure alarm set points from transmitter and switch inputs, and/or linearize the volumetric measurement of odd shaped tanks. Each kit includes (1) PC Windows® based MicroCal software CD and (1) USB to RS485 adapter with 1m cable.



LI20
Shown



LI21-22
Shown

SPECIFICATIONS

Display type:	LCD, 3.5-digit
Display units:	Engineering
Display range:	4 mA: ± 500 20 mA: 20-1999
Display height:	.56" digits
Calibration:	Potentiometer
Sensor input:	(1) two-wire, 4-20 mA transmitter
Loop power:	12-24 VDC @ 30 mA
Voltage drop:	LI20: 1 VDC @ 20 mA LI21: 1.5 VDC @ 20 mA LI22: 3.5 VDC @ 20 mA
Electronics temp.:	F: -40° to 149° C: -40° to 65°
Enclosure type:	1/8 DIN panel meter
Enclosure rating:	LI20: NEMA 4X (faceplate) LI21/2: NEMA 4X
Encl. material:	Polycarbonate
Classification:	General purpose

APPLICATION

Offered in both panel mount and field mount enclosure configurations, the general purpose loop powered meter provides basic single tank level indication. Package the meter with any of our level transmitters and a 24 VDC loop power supply.

TECH TIP

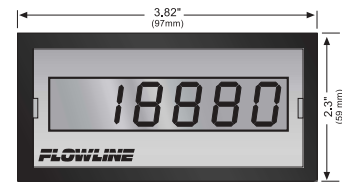
For loop power, package your meter and transmitter with our external power supply rated 24VDC @ 0.6A. Offered in 120 and 240 VAC versions, one power supply can support an entire tank farm of two-wire level transmitters.



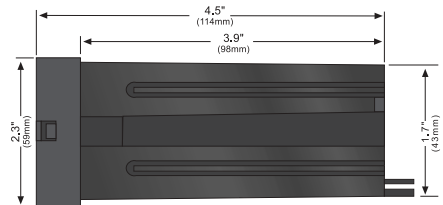
FEATURES

- ✓ 3.5 digit LCD display indicates level in custom engineering units
- ✓ Simple potentiometer calibration for span and display set points
- ✓ 1/8 DIN panel or compact field meter polycarbonate enclosures
- ✓ Field meter has backlight for use outdoors or in poorly lit locations

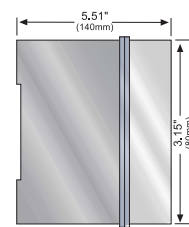
LI20 Meter



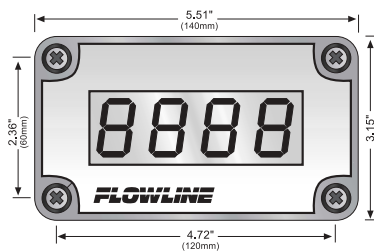
LI20 Meter



LI21/22 Meter



LI21/22 Meter



DataLoop

ORDER

LI2 -1001

Configuration (1) (2)

- 0 Panel meter
- 1 Field meter
- 2 Field meter with backlit display

Ordering Notes

- 1) For external loop power, order the LC95-1001 (120 VAC) or LC96-1001 (240 VAC) power supply (24 VDC @ 0.6A).
- 2) For panel mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM92-1001 (single meter box) or the LM93-1001 LM93-1001 (two meter box).

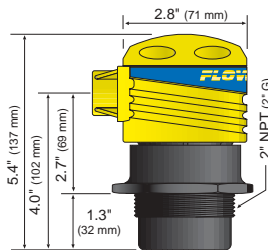
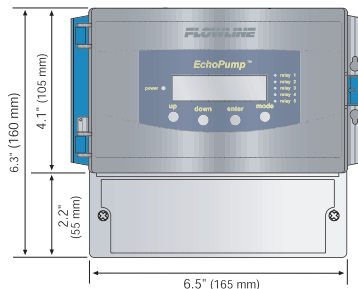


APPLICATION

The general purpose ultrasonic controller provides non-contact level measurement up to 33' or 10m with advanced display, tank shape linearization and control functions with 5 relays. Each relay can be configured as a single set point alarm, two latched set points for automatic fill or empty control or two independent set points for out of bounds alarming. Additionally, latched relay pairs can be configured for duplexing pump control. The sensor is ideally suited for challenging corrosive, slurry or waste liquids and is typically selected for atmospheric bulk storage and waste pump transfer applications. Media examples include sodium hypochlorite and wastewater.

FEATURES

- ✓ LCD digital display indicates level in distance or volumetric units
- ✓ Isolated 4-20 mA repeater output for integration with remote PLC
- ✓ PC NEMA 4X enclosure with rugged PVDF transducer
- ✓ 16-point linearization function for volumetric tank measurement
- ✓ Fail-safe intelligence and relay logic for maximum process safety



SPECIFICATIONS

Sensor

Range:	6" to 33' (15 cm to 10m)
Accuracy:	± 0.25% of span in air
Resolution:	0.125" (3 mm)
Beam width:	8° conical
Dead band:	6" (15 cm)
Process temp.:	F: -40° to 140° C: -40° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -20° to 140° C: -4° to 60°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Rec. cable:	(5) conductor, shielded
Cable length:	150' (48m) max.
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Trans. material:	PVDF
Mount. threads:	2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Single, 1/2" NPT

Controller

Display type:	2-line LCD, 16-digit
Display units:	Distance: inch/cm Volume: gallon/liter
Memory:	Non-volatile
Supply voltage:	120/240 VAC @ 50-60 Hz.
Signal output:	4-20 mA, two-wire
Current flow:	Isolated, sinking
Signal invert:	4-20 or 20-4 mA
Calibration:	Digital, push button
Linearization:	2-16 points
Contact type:	(5) SPDT relay, latching
Contact rating:	250 VAC @ 10A
Contact fail-safety:	Reverts to de-energized state during echo-loss
LED indication:	Power & relay status
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Enclosure:	NEMA 4X (IP65)
Encl. material:	Polycarbonate
Conduit entrance:	1/2" knock outs
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety

EchoPump

ORDER

LU60-10 1

Process mount (1)
0 2" NPT (US)
6 2" G (Metric)

Ordering Notes

- 1) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.

INTRODUCTION

Flowline offers the most advanced family of level switch automation and safety solutions for your bulk storage, day tank, process vessel and waste sump applications.

Vibration

Offered in Ryton® with a IA relay, the general purpose vibration switch is ideal for challenging coating, scaling and foaming media such as wastewater and brine.

Ultrasonic

Offered in PP and PFA with a IA relay, the intrinsically safe ultrasonic switch is applied in hazardous media including solvent, chemical, hydrocarbon and petroleum.

Capacitance

Offered in both intrusive and non-intrusive configurations with a IA relay, the general purpose capacitance switches are best for ultrapure water and acid.

Optic

Offered in PP and PFA with a IA relay, the general purpose optic switch is widely applied in secondary containment leak detection of chemical and wastewater.

Buoyancy

Offered in PP, PVDF and stainless steel with a dry contact closure, the general purpose float switches are ideal for basic water, chemical and light oil applications.

Automation and Safety



LEVEL SWITCH PACKAGES

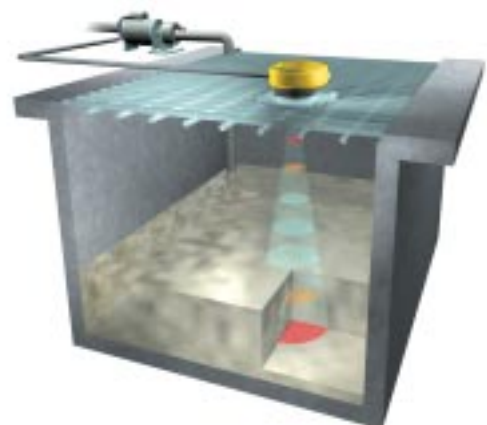
Product	EchoSwitch	Smart Trak	Smart Trak	Float-Point	Switch-Pak	Switch-Pak	Switch-Pro	Switch-Pro
Series	LU7_	A_23	A_---	AV_6	A_13	A_1_	A_13	A_1_
Range	1-8m	3m	3m	2m	3m	3m	N/A	N/A
Class	GP	GP/IS	GP	GP/XP	GP	GP/IS	GP	GP/IS
Supply	AC/DC	AC	DC	DC	AC	DC	AC	DC
Output	(3) 1A	(1) 10A	(1-4) 1A	(1-4) Reed	(1) 10A	(1) 1A	(1) 10A	(1) 1A
Temp.	60° C	90° C	90° C	149° C	90° C	90° C	90° C	90° C
Press.	2 bar	Atm	Atm	51 bar	10 bar	100 bar	10 bar	10 bar
Material	PVDF	PP	PP	316 ss	PP/PVDF	PP/PVDF	PP/PFA	PP/PFA
Contact	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Page	30-31	32-33	34-35	36-37	38-39	40-41	42	43

LEVEL SWITCHES

Product	Ultrasonic	Vibration	Buoyancy	Optic	RF-Cap	RF-Cap	RF-Cap	Float	Float	Float
Series	LU10	LZ12	LV10	LO10	LP15	LP50	LP10	LV10	L_2_	L_3_
Class	IS	GP	GP	GP	GP	GP	GP	GP	GP	GP
Output	1A	1A	15VA	1A	1A	1A	1A	50VA	15VA	20VA
Media	Acid/Solvent	Wastewater	Acid/Water	Leak	Wastewater	RO Water	Acid/Water	Water	Water	Various
Temp.	90° C	70° C	90° C	90° C	90° C	90° C	90° C	90° C	90° C	149° C
Press.	10 bar	10 bar	1.7 bar	10 bar	10 bar	Atm	100 bar	1.7 bar	0.7 bar	51 bar
Material	PP/PFA	Ryton	PP/PVDF	PP/PFA	PP	PE	PP/PFA	PP/PVDF	PP	316 ss
Page	44	45	46	47	48	49	50	51	52	53

CONTROLLERS

Product	Compact	Remote	Strobe	Junction
Series	LC1_	LC_ _	LC_ _	LC0_
Inputs	1-2	1-3	1	1-4
Output	(1) 10A	(2) 10A	N/A	N/A
Mount	Field	Panel	Field	Field
Supply	AC	AC	AC/DC	N/A
Page	54	55	58	59





Faceplate
Shown

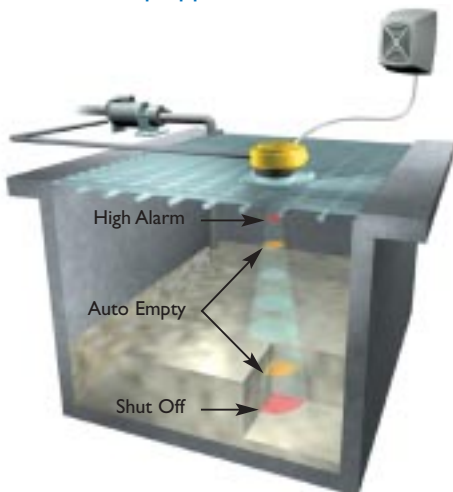


LU71/73
Shown



APPLICATION

The general purpose ultrasonic switch provides non-contact level detection up to 8m with 3 relays. Each relay can be configured on a single set point alarm, automatic fill or empty including pump alternation or duplexing control, or two set points for out of bounds alarms. The switch is well suited for a wide range of corrosive, waste and slurry type media, and is broadly selected for atmospheric day tank, process vessel, pump lift station and waste sump applications.



FEATURES

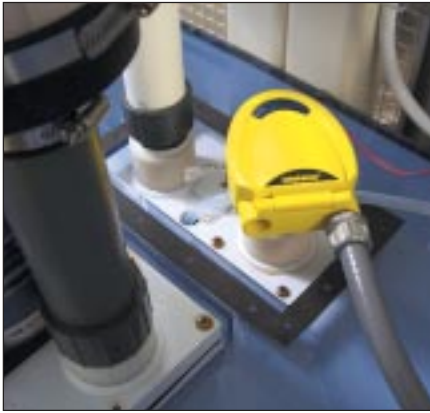
- ✓ Non-contact level detection with integral 3-channel relay control
- ✓ Offered in four sensor ranges up to 8m with 1" and 2" transducers
- ✓ EasyCal target push button calibration with non-volatile memory
- ✓ 5 cm minimum beam width for applications with restricted space
- ✓ PC/ABS enclosure rated NEMA 4X with rugged PVDF transducer
- ✓ 5 cm miniature dead band optimizes the filling capacity of small vessels
- ✓ Fail-safe intelligence with diagnostic feedback for easy troubleshooting

AUTOMATION

The integral three channel controller has powerful tank automation features including advanced pump and alarm control logic designed for day tank, process vessel and waste sump applications. From alarms to automatic fill or empty, pump duplexing and run dry protection, EchoSwitch does it all. It's level made simple!

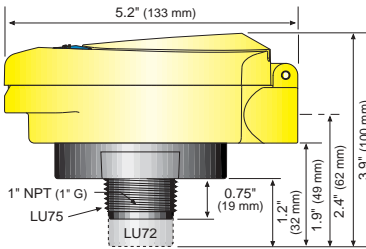
SPECIFICATIONS

Range:	LU75: 2" to 4' (5 cm to 1.2m) LU72: 4" to 9.8' (10 cm to 3m) LU71: 4" to 16.4' (10 cm to 5m) LU73: 8" to 26.2' (20 cm to 8m)
Repeatability:	0.25" (6 mm)
Adjustability:	Over entire range
Hysteresis:	LU72/5: 0.5" (1.2 cm) (single set point) LU71/3: 1" (2.5 cm) (single set point)
Beam width:	LU72/5: 2" (5 cm) dia. LU71/3: 3" (7.6 cm) dia.
Dead band:	LU75: 2" (5 cm) LU71/2: 4" (10 cm) LU73: 8" (20 cm)
LED indication:	Power, relay and echo status
Calibration:	Target, push button
Memory:	Non-volatile
Supply voltage:	50_5: 95-250 VAC 58_5: 12-28 VDC
Consumption:	50_5: 20 watts max. 58_5: 100 mA @ 24 VDC
Contact type:	(3) SPDT relays
Contact rating:	60 VA
Contact logic:	Single point: alarm Two point: latching or out of bounds alarms
Relay interlock:	Relays 1 & 2 only; alternation or duplexing
Contact fail-safety:	De-energizes during echo signal loss
Process temp.:	F: -4° to 140° C: -20° to 60°
Temp. comp.:	Automatic
Electronics temp.:	F: -40° to 160° C: -40° to 71°
Pressure:	30 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Enclosure rating:	NEMA 4X (IP65)
Enclosure vent:	Water tight membrane
Encl. material:	PC/ABS FR
Trans. material:	PVDF
Process mount:	LU72/5: 1" NPT (1" G) LU71/3: 2" NPT (2" G)
Mount. gasket:	Viton®
Conduit entrance:	Dual, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010 safety

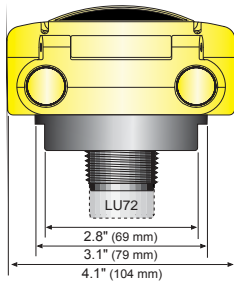


DIMENSIONS

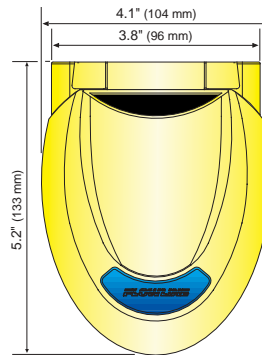
LU75/72 Top View



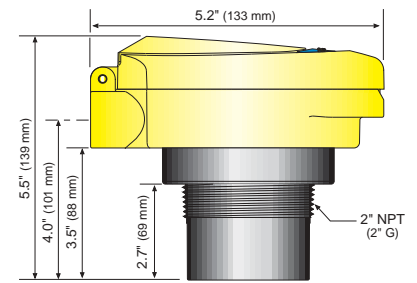
LU75/72 Rear View



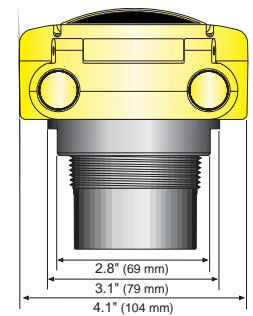
LU_ _ Top View



LU71/73 Side View



LU71/73 Rear View



EchoSwitch

ORDER

LU7 -5 5

Sensor range / size

- 5 1.2m (4') / 1"
- 2 3m (9.8') / 1"
- 1 5m (16.4') / 2"
- 3 8m (26.2') / 2"

Supply voltage

- 0 95-250 VAC
- 8 12-28 VDC

Process mount (1)

- 0 NPT (US)
- 6 G (Metric)

Ordering Notes

- 1) For installation on open tanks, order the LM50-1001-1 (1" NPT), LM50-1061-1 (1" G), LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.



LM50
Shown

APPLICATION

This general purpose switch package provides a complete solution for automatic filling or emptying of a tank between two adjustable level switch points with a 10A latching compact relay controller for pump or valve actuation. The product is typically selected to atmospheric day tank, process vessel and waste sump applications. Specify the appropriate sensor technology and assembly dimensions.

FEATURES

- ✓ Fail-safe relay control of pumps and valves with 0-60 second time delay
- ✓ Offered in 3 sensing technologies for broad application coverage
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ Rugged PP construction for use in challenging corrosive environments
- ✓ Adjustable level switches make field adjustment fast and simple



SPECIFICATIONS

Length:	8" to 10' (20 cm to 3m)
Switch points:	2 (field adjustable)
Orientation:	± 30° vertical
Supply voltage:	120/240 VAC @ 50-60 Hz.
Strobe type:	431_: N/a 432_: Xenon tube
Strobe flash:	431_: N/a 432_: 1 per second
Contact type:	(1) SPDT relay, latching
Contact rating:	250 VAC @ 10A
Contact latch:	Selectable ON/OFF
Contact delay:	0-60 seconds
LED indication:	Power, relay and sensor status
Process temp.:	F: -40° to 176° C: -40° to 80°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	Atmospheric
Wetted material:	PP (20% glass fill)
Process mount:	2" NPT (2" G)
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety
Sensor technology	
Ultrasonic:	See page 44
Vibration:	See page 45
Buoyancy:	See page 46

RELAY CONTROL

The AC powered relay controller has a latching 10A relay, adjustable time delay, LED indicators and NO or NC invert switch. The rugged NEMA 4X enclosure is made of UL approved fire retardant PP and features a 300° swivel base for easy conduit alignment.



SENSORS



Vibration

- Typically applied in wastewater media with light coating and/or foaming characteristics



Ultrasonic

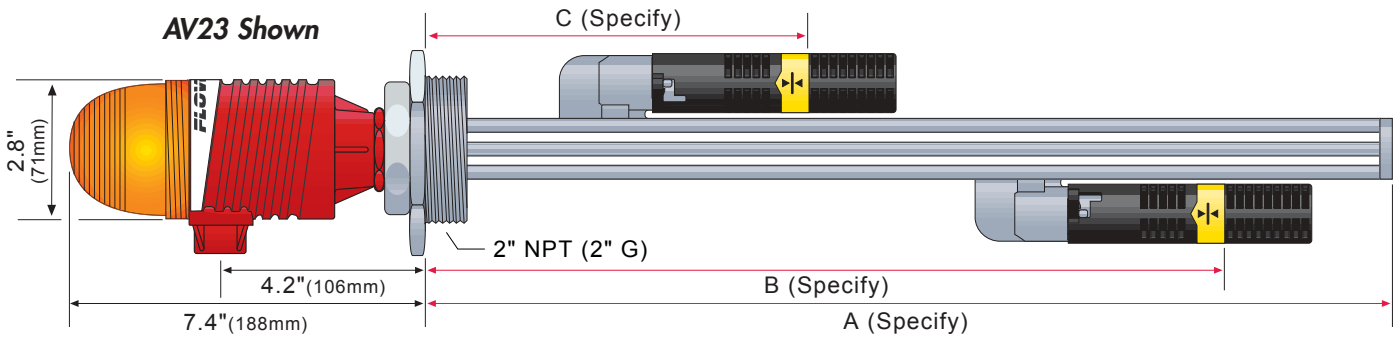
- Broadly applied in chemical, solvent, hydrocarbon and light weight oil media



Buoyancy

- Best applied in clean water or water-like chemical media that is non-coating or scaling

DIMENSIONS



Smart Trak ORDER

A 23-43 - - -

Sensor technology (1)

- Z Vibration
- U Ultrasonic
- V Buoyancy

Configuration (2) (3)

- 1 Controller only
- 2 Controller with Strobe Alert

Process mount (4) (5)

- 3 2" NPT (US)
- 7 2" G (Metric)

Dimensions (6) (7) (8)

- A Specify
- B Specify
- C Specify

Strobe
Shown



STROBE ALERT

The controller with Strobe Alert configuration flashes when the relay is energized to bring attention to process conditions such as the automatic emptying of waste into treatment.

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: AU23-4343-87"-76"-17"-E).
- 3) To order the CE configuration, place CE at the end of the P/N: (ie: AU23-4343-87"-76"-17"-CE).
- 4) The straight G thread version seals with an included Viton® mounting gasket.
- 5) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 6) Specify the A, B and C dimensions at the end of the part number (ie: AZ23-4343-87"-76"-17"). The dimensions may be specified in 1/2" (1.3 cm) increments.
- 7) The track length or A-dimension may be specified from 8" to 10' (20 cm to 3m). The sensor or B and C dimensions may be specified from 4" to 10' (10 cm to 3m).
- 8) For maximum field adjustability, specify all sensor dimensions equal to the A-dimension.

APPLICATION

Offered in CSA approved intrinsically safe or general purpose configurations, this switch package provides up to four adjustable level switch points with a 1A relay or dry contact closure interface for remote devices such as a PLC, SCADA or alarm. The product is typically selected for atmospheric day tank, process vessel and waste sump applications. Specify the appropriate sensor technology and assembly dimensions.

FEATURES

- ✓ Corrosive multi-point level detection with contacts for PLC or control input
- ✓ Offered in 3 sensing technologies for broad application coverage
- ✓ Rugged PP construction for use in challenging corrosive environments
- ✓ Adjustable level switches make field adjustment fast and simple
- ✓ PP junction box with swivel base

SENSORS

- Vibration**

 - Typically applied in wastewater media with light coating and/or foaming characteristics
 - General purpose classification
- Ultrasonic**

 - Broadly applied in chemical, solvent, hydrocarbon and light weight oil media
 - Intrinsically safe classification
- Buoyancy**

 - Best applied in clean water or water-like chemical media that is non-coating or scaling
 - General purpose classification



AU35
Shown

SPECIFICATIONS

Length:	8" to 10' (20 cm to 3m)
Switch points:	1 to 4 (field adjustable)
Orientation:	± 30° vertical
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	Atmospheric
Wetted material:	PP (20% glass fill)
Process mount:	2" NPT (2" G)
Enclosure rating:	NEMA 4X (IP65)
Installed height:	5.7" (14.4 cm) above tank process mount
Encl. material:	PP, UL94V0
Conduit entrance:	Single, 1/2" NPT
Termination:	12 poles
CE compliance:	EN 61326 EMC EN 61010-1 safety
Ultrasonic sensor	
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	GP: 60 VA IS: 32 VDC @ 0.5A
Contact output:	Selectable NO/NC
Classification:	Intrinsically safe
Vibration sensor	
Supply voltage:	12-30 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Classification:	General purpose
Buoyancy sensor	
Contact type:	(1) SPDT reed
Contact rating:	15 VA
Contact output:	Selectable NO/NC
Classification:	General purpose

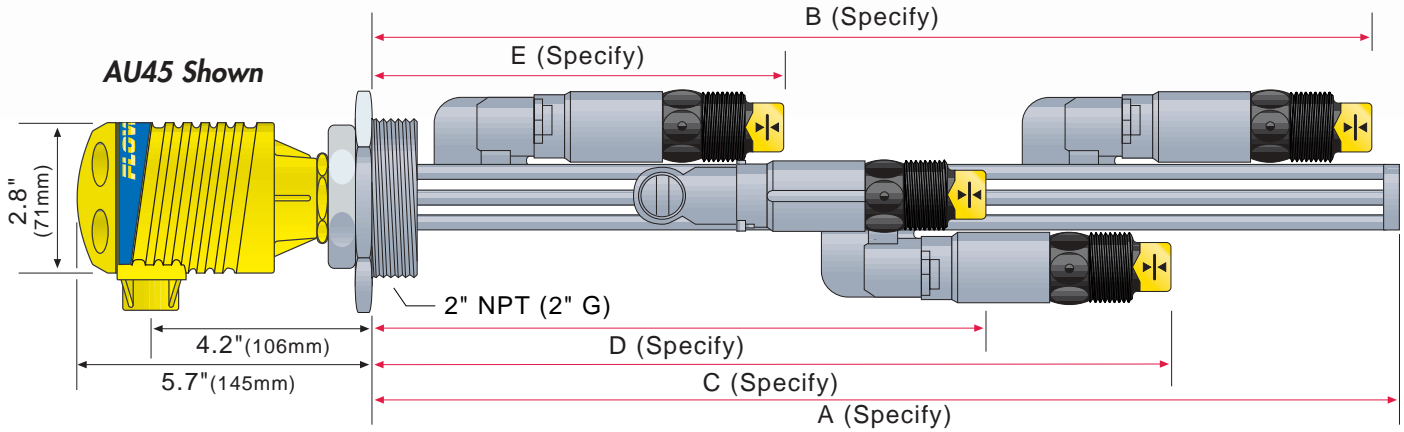
TECH TIP

The compact junction box is constructed of UL approved fire retardant PP and comes pre-wired with a 12-pole terminal strip. It's level made simple!



Junction
Box Shown

DIMENSIONS



LM50
Shown



Smart Trak ORDER

A -434 - - - - - -

Sensor technology (1)

- Z Vibration
- U Ultrasonic
- V Buoyancy

Number of sensors (2)

- 1 One sensor - add 1 x ST
- 2 Two sensors - add 2 x ST
- 3 Three sensors - add 3 x ST
- 4 Four sensors - add 4 x ST

Contacts / classification (3)

- 5 SPST relay / IS
- 6 SPDT reed / GP
- 8 SPST relay / GP

Process mount

- 3 2" NPT (US)
- 7 2" G (Metric)

Dimensions (4) (5) (6) (7)

- A Specify
- B Specify
- C Specify (if applicable)
- D Specify (if applicable)
- E Specify (if applicable)

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) Multiply the number of sensors by the selected sensor technology adder and add.
- 3) The following are the available contacts for each sensor technology:
Ultrasonic: 5 type only
Vibration: 8 type only
Buoyancy: 6 type only
- 4) Specify the applicable A, B, C, D, and E dimensions at the end of the part number based upon the number of sensors in your assembly (ie: AZ28-4343-87"-76"-17"):
1-sensor: Specify A and B
2-sensors: Specify A, B and C
3-sensors: Specify A, B, C and D
4-sensors: Specify A, B, C, D and E
- 5) The dimensions may be specified in 1/2" (1.3 cm) increments.
- 6) The track length or A-dimension may be specified from 8" to 10' (20 cm to 3m). The sensor or B, C, D, and E dimensions may be specified from 4" to 10' (10 cm to 3m).
- 7) For maximum field adjustability, specify all sensor dimensions equal to the A-dimension.

RELAY CONTROL

For process automation, package your switch assembly with our remote relay controllers. See page 55 for more details.



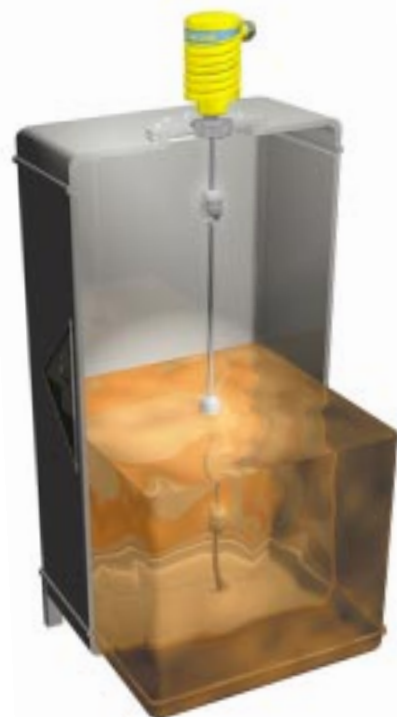
LC42
Shown

APPLICATION

Offered in FM and CSA approved explosion proof or general purpose configurations, this switch package provides up to four level switch points with a dry contact closure interface for remote devices such as a PLC or SCADA. The product is typically selected for high temperature and/or pressure process vessel applications located within a classified hazardous or general purpose area. Media examples include nickel acid or acetone. Specify the appropriate assembly dimensions.

FEATURES

- ✓ High temp-pressure multi-point level detection with contacts for PLC input
- ✓ Rugged 316 stainless steel float, guide and 2" NPT mounting plug
- ✓ Compatible with Flowline remote relay controllers and alarms
- ✓ Offered with aluminum NEMA 7P or PP NEMA 4X enclosures
- ✓ Custom assembled to your exact guide length and float dimensions



Side Mount

Order the LM50 side mount bracket for easy installation on open tanks.



SPECIFICATIONS

Length:	4" to 72" (10 cm to 1.8m)
Switch points:	1 to 4 (set by factory)
Accuracy:	± 3 mm in water
Repeatability:	± 1 mm in water
Specific gravity:	0.75 minimum
Orientation:	± 30° vertical
Contact type:	(1-4) SPDT reed
Contact rating:	240 VAC/VDC @ 20 VA
Process temp.:	F: -40° to 300° C: -40° to 148.9°
Pressure:	750 psi max. (51.7 bar max.)
Guide/float mat.:	316 ss
Process mount:	2" NPT
Enclosure rating:	S443: NEMA 4X (IP65) S453: NEMA 7
Installed height:	S443: 5.2" (13.2 cm) S453: 6.2" (15.7 cm)
Encl. material:	S443: PP, UL94VO S453: Aluminum
Conduit entrance:	Single, 1/2" NPT
Wire type:	3-12 wire, #18 AWG
Termination:	12 poles
Classification:	S443: General purpose S453: Explosion proof
Approvals:	S443: None S453: FM, CSA: Class I, Division I, Groups B, C & D; Class II, Groups E, F and G
CE compliance:	EN 50082-2 immunity EN 55011 emission EN 61010-1 safety

TECH TIP

The compact junction box is constructed of UL approved fire retardant PP and comes pre-wired with a 12-pole terminal strip. It's level made simple!



RELAY CONTROL



LC42
Shown

For process automation with pumps, valves and alarms, package your level switch assembly with our remote relay controllers offered in a 35 mm DIN package. See page 55 for more details.

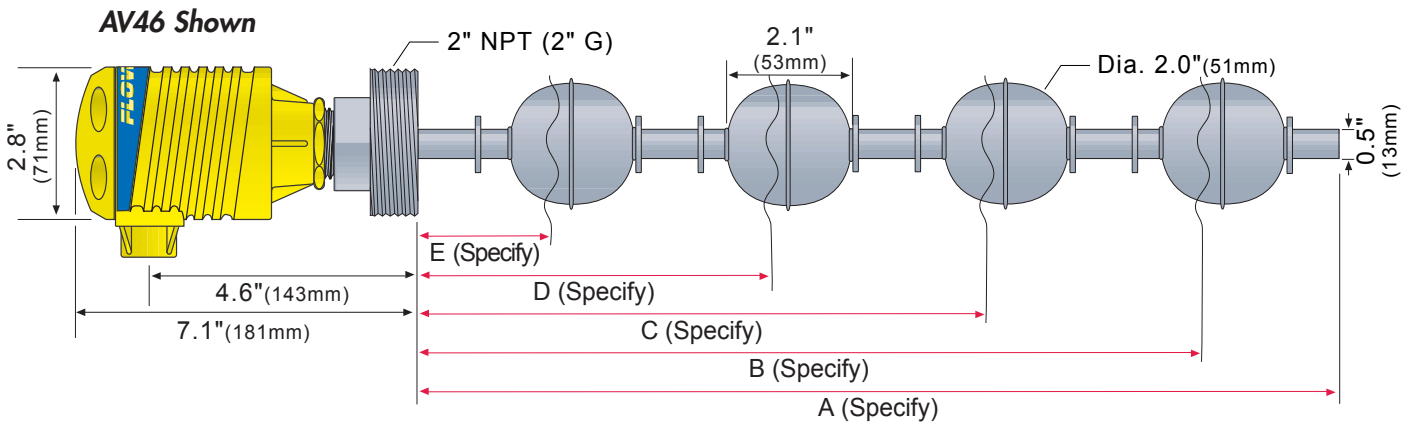
HAZARDOUS

The FM and CSA approved explosion proof configuration is provided with a cast aluminum enclosure for use in Class I, Division I, Groups B, C & D; Class II, Groups E, F and G hazardous area applications.



AV_6-S453
Junction Box Shown

DIMENSIONS



Float-Point ORDER

AV 6-54 3-----

Number of floats

- 1 One float
- 2 Two floats
- 3 Three floats
- 4 Four floats

Approval / classification

- 4 None / GP
- 5 FM / XP

Dimensions (1) (2) (3)

- A Specify
- B Specify
- C Specify (if applicable)
- D Specify (if applicable)
- E Specify (if applicable)

Ordering Notes

- 1) Specify the applicable A, B, C, D and E dimensions at the end of the part number based upon the number of sensors in your assembly (ie: AV26-S443-70"-68"-10"):
 - 1-float: Specify A and B
 - 2-floats: Specify A, B and C
 - 3-floats: Specify A, B, C and D
 - 4-floats: Specify A, B, C, D and E
- 2) The dimensions may be specified in 1/2" (1.3 cm) increments.
- 3) The guide length or A-dimension may be specified from 4" to 72" (10 cm to 1.8m). The float or B, C, D and E dimensions may be specified from 1.5" to 70" (3.8 cm to 1.7m) with a minimum distance of 3" (7.6 cm) between each dimension.



APPLICATION

This general purpose switch package provides a complete solution for high level spill prevention with a fixed level switch point and 10A compact relay controller for pump or valve actuation. The optional flash alarm brings immediate attention to tank high level conditions. The product is typically selected for corrosive bulk storage, day tank and waste sump applications. Specify the appropriate sensor technology, material and assembly dimension.

FEATURES

- ✓ Fail-safe relay control of pumps and valves with 0-60 second time delay
- ✓ PP or PVDF construction for use in challenging corrosive environments
- ✓ Offered in 3 sensing technologies for broad application coverage
- ✓ Optional strobe brings immediate attention to tank alarm conditions
- ✓ PP enclosure rated NEMA 4X with 300° conduit swivel base

TECH TIP



AU13-521_ Shown

For applications with highly corrosive media such as hydrofluoric acid, select the PVDF wetted material option for years of lasting and reliable performance. The PVDF extension fitting is heat welded and custom assembled to your A-dimension with either a PVDF buoyancy or PFA ultrasonic sensor. It's level made simple!



AU13 Shown

Side Mount

Order the LM50 side mount bracket for easy installation on open tanks.



SPECIFICATIONS

Length:	6" to 10' (15 cm to 3m)
Switch point:	1 (set by factory)
Orientation:	± 30° vertical
Supply voltage:	120/240 VAC @ 50-60 Hz.
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 10A
Contact delay:	0-60 seconds
LED indication:	Power, relay and sensor status
Strobe type:	_21_: Xenon tube _22_: N/a
Strobe flash:	_21_: 1 per second _22_: N/a
Process temp.:	F: -40° to 176° C: -40° to 80°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	AU13: 150 psi (10 bar) AZ13: 150 psi (10 bar) AV13: 25 psi (1.7 bar)
Wetted material:	42__: PP 52__: PVDF
Process mount:	_2_3: 2" NPT _2_7: 1 1/2" G
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	_21_: PP, UL94VO and polycarbonate _22_: PP, UL94VO
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety
Sensor technology	
Ultrasonic:	See page 44
Vibration:	See page 45
Buoyancy:	See page 46

RELAY CONTROL

The AC powered relay controller has a 10A relay, adjustable time delay, LED indicators and NO or NC invert switch. The rugged NEMA 4X enclosure is made of UL approved fire retardant PP and features a 300° swivel base for easy conduit alignment.



Controller Shown

SENSORS



Vibration

- Typically applied in wastewater media with light coating and/or foaming characteristics
- Available in PP-Ryton®



Ultrasonic

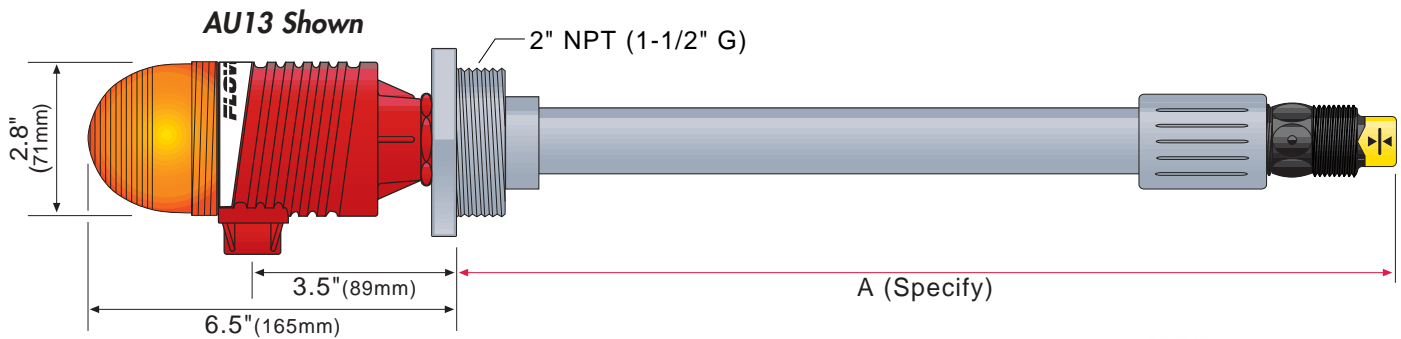
- Broadly applied in chemical, solvent, hydrocarbon and light weight oil media
- Available in PP or PFA



Buoyancy

- Best applied in clean water or water-like chemical media that is non-coating or scaling
- Available in PP or PVDF

DIMENSIONS



Switch-Pak ORDER

A 13- 2 -

Sensor technology (1)

- Z Vibration
- U Ultrasonic
- V Buoyancy

Wetted material (2)

- 4 PP
- 5 PVDF

Configuration (3) (4)

- 1 Controller with Strobe Alert
- 2 Controller only

Process mount (5) (6)

- 3 2" NPT (US)
- 7 1 1/2" G (Metric)

Dimensions (7)

- A Specify (PP)
- (PVDF)

Strobe Alert
Shown



STROBE ALERT

The controller with Strobe Alert configuration flashes when the relay is energized during a high or low level alarm condition.

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) The following are the available wetted materials for each sensor technology:
Ultrasonic: 4 and 5 type
Vibration: 4 type only
Buoyancy: 4 and 5 type
- 3) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: AU13-4213-14"-E).
- 4) To order the CE configuration, place CE at the end of the P/N: (ie: AU13-4213-14"-CE).
- 5) The straight G thread version seals with an included Viton® mounting gasket.
- 6) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 7) Specify the A-dimension at the end of the part number (ie: AU13-4223-17"). The A-dimension may be specified in 1/2" (1.3 cm) increments from 6" to 10' (15 cm to 3m).

APPLICATION

Offered in CSA and Cenelec approved intrinsically safe or general purpose configurations, this high level spill prevention switch package provides a fixed level switch point with a 1A relay or dry contact closure interface for remote devices such as a PLC, SCADA or alarm. The product is typically selected for pressurized and/or highly corrosive bulk storage, day tank and waste sump applications. Specify the appropriate sensor technology, material and assembly dimension.

FEATURES

- ✓ Corrosive single-point level detection with contact for PLC or control input
- ✓ PP or PVDF construction for use in challenging corrosive environments
- ✓ Offered in 3 sensing technologies for broad application coverage
- ✓ PP enclosure rated NEMA 4X with 300° conduit swivel base
- ✓ Available in intrinsically safe and general purpose configurations

TECH TIP



AVI6-524_ Shown

For applications with highly corrosive media such as hydrofluoric acid, select the PVDF wetted material option for years of lasting and reliable performance. The PVDF extension fitting is heat welded and custom assembled to your A-dimension with either a PVDF buoyancy or PFA ultrasonic sensor. It's level made simple!



AU13 Shown

Side Mount

Order the LM50 side mount bracket for easy installation on open tanks.



SPECIFICATIONS

Length:	6" to 10" (15 cm to 3m)
Switch point:	1 (set by factory)
Orientation:	± 30° vertical
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	AU1_: 150 psi (10 bar) AZ1_: 150 psi (10 bar) AV1_: 25 psi (1.7 bar)
Wetted material:	424_: PP 524_: PVDF
Process mount:	_243: 2" NPT _247: 1 1/2" G
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94V0
Conduit entrance:	Single, 1/2" NPT
Termination:	2-4 poles
CE compliance:	EN 61326 EMC EN 61010-1 safety
Ultrasonic sensor	
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	GP: 60 VA IS: 32 VDC @ 0.5A
Contact output:	Selectable NO/NC
Classification:	Intrinsically safe
Vibration sensor	
Supply voltage:	12-30 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Classification:	General purpose
Buoyancy sensor	
Contact type:	(1) SPDT reed
Contact rating:	15 VA
Contact output:	Selectable NO/NC
Classification:	General purpose

RELAY CONTROL

For process automation with pumps, valves and alarms, package your level switch assembly with our remote relay controllers offered in a 35 mm DIN package. See page 55 for more details.



LC42 Shown

SENSORS



Vibration

- Typically applied in wastewater media with light coating and/or foaming characteristics
- Available in PP-Ryton®
- General purpose classification



Ultrasonic

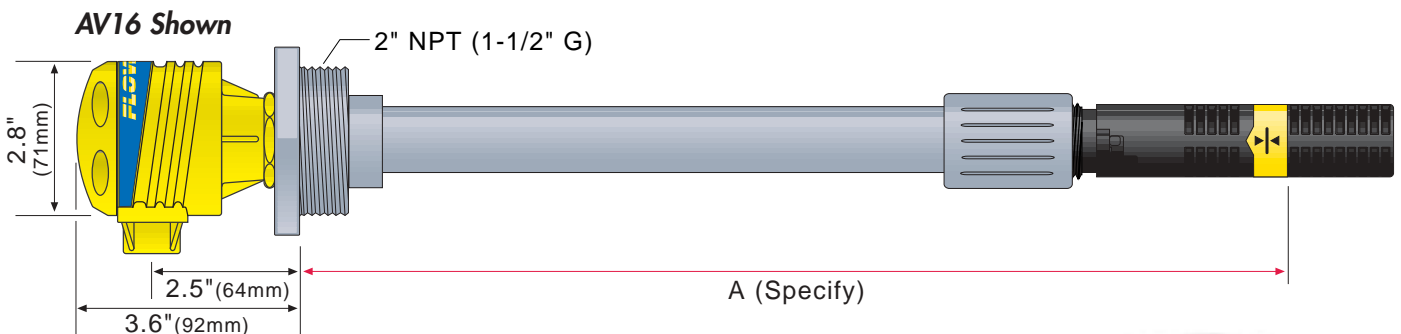
- Broadly applied in chemical, solvent, hydrocarbon and light weight oil media
- Available in PP or PFA
- Intrinsically safe classification



Buoyancy

- Best applied in clean water or water-like chemical media that is non-coating or scaling
- Available in PP or PVDF
- General purpose classification

DIMENSIONS



Switch-Pak

ORDER

A 1 - 24 -

Sensor technology (1)

- Z Vibration
- U Ultrasonic
- V Buoyancy

Contacts / classification (2)

- 5 SPST relay / IS
- 6 SPDT reed / GP
- 8 SPST relay / GP

Wetted material (3)

- 4 PP
- 5 PVDF

Process mount (4) (5)

- 3 2" NPT (US)
- 7 1 1/2" G (Metric)

Dimensions (6)

- A Specify (PP)
- (PVDF)

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) The following are the available contacts for each sensor technology:
Ultrasonic: 5 type only
Vibration: 8 type only
Buoyancy: 6 type only
- 3) The following are the available wetted materials for each sensor technology:
Ultrasonic: 4 and 5 type
Vibration: 4 type only
Buoyancy: 4 and 5 type
- 4) The straight G thread version seals with an included Viton® mounting gasket.
- 5) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 6) Specify the A-dimension at the end of the part number (ie: AV16-4243-17"). The A-dimension may be specified in 1/2" (1.3 cm) increments from 6" to 10' (15 cm to 3m).

JUNCTION BOX

The compact junction box is constructed of UL approved fire retardant PP with a 6-pole terminal strip.





AU13
Shown

Controller
Shown

APPLICATION

Installed through the side wall, this general purpose high or low level switch package includes a 10A compact relay controller for pump or valve actuation with an optional flash alarm. The product is typically selected for bulk storage, day tank and process vessel applications. Specify the appropriate sensor technology and material.

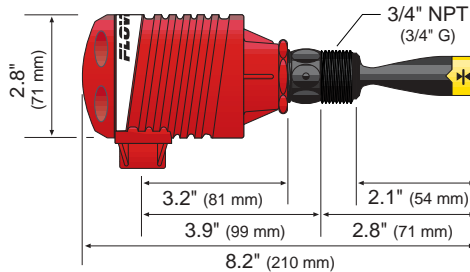
FEATURES

- Fail-safe relay control of pumps and valves with 0-60 second time delay
- PP, Ryton® or PFA wetted material for challenging corrosive liquids
- Optional strobe brings immediate attention to tank alarm conditions
- Offered in 2 sensing technologies for broad application coverage

TECH TIP

The AC powered relay controller has a 10A relay, adjustable time delay, LED indicators and NO or NC invert switch. The NEMA 4X enclosure is made of UL approved fire retardant PP and features a 300° swivel base.

AZ13 Shown



SPECIFICATIONS

Orientation:	± 20° horizontal
Supply voltage:	120/240 VAC @ 50-60 Hz.
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 10A
Contact delay:	0-60 seconds
LED indication:	Power, relay and sensor status
Strobe type:	_ 11_: Xenon tube _ 12_: N/a
Strobe flash:	_ 11_: 1 per second _ 12_: N/a
Process temp.:	F: -40° to 176° C: -40° to 80°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar)
Wetted material:	AU13: PP / PFA AZ13: Ryton®
Process mount:	3/4" NPT (3/4" G)
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	_ 11_: PP, UL94VO and polycarbonate _ 12_: PP, UL94VO
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety
Sensor technology	
Ultrasonic:	See page 44
Vibration:	See page 45



Switch-Pro ORDER

A 13- 1

Sensor technology (1)

- Z Vibration
- U Ultrasonic

Wetted material (2)

- 1 PP
- 2 PFA

Configuration (3) (4)

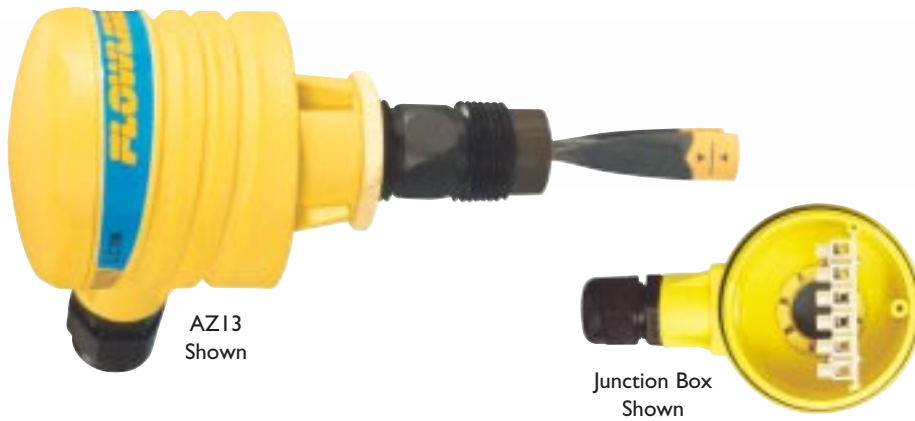
- 1 Controller with Strobe Alert
- 2 Controller only

Process mount

- 0 3/4" NPT (US)
- 4 3/4" G (Metric)

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) The following are the available wetted materials for each sensor technology:
Ultrasonic: 1 and 2 type
Vibration: 1 type only
- 3) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: AU13-1120-E).
- 4) To order the CE configuration, place CE at the end of the P/N: (ie: AU13-1120-CE).



APPLICATION

Installed through the side wall and offered in CSA approved intrinsically safe or general purpose configurations, this high or low level switch package includes a 1A relay for remote PLC, SCADA or alarm interface. The product is typically selected for bulk storage, day tank and process vessel applications. Specify the appropriate sensor technology and material.

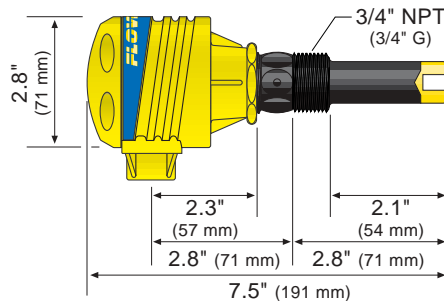
TECH TIP

The NEMA 4X enclosure is made of UL approved fire retardant PP and features a 300° swivel base for easy conduit alignment. The power and switch conductors are prewired to the terminal strip.

FEATURES

- ✓ Corrosive single-point level detection with contact for PLC or control input
- ✓ PP, Ryton® or PFA wetted material for challenging corrosive liquids
- ✓ Offered in 2 sensing technologies for broad application coverage
- ✓ PP enclosure rated NEMA 4X with 300° conduit swivel base

AU15 Shown



SPECIFICATIONS

Orientation:	± 20° horizontal
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	AU1_: 150 psi (10 bar) AZ1_: 150 psi (10 bar)
Wetted material:	AU1_: PP / PFA AZ1_: PP-Ryton®
Process mount:	3/4" NPT (3/4" G)
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94V0
Conduit entrance:	Single, 1/2" NPT
Termination:	2-4 poles
CE compliance:	EN 61326 EMC EN 61010-1 safety

Ultrasonic sensor

Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	GP: 60 VA IS: 32 VDC @ 0.5A
Contact output:	Selectable NO/NC
Classification:	Intrinsically safe

Vibration sensor

Supply voltage:	12-30 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Classification:	General purpose



Switch-Pro ORDER

A 1 - 13

Sensor technology (1)

- Z Vibration
- U Ultrasonic

Contacts / classification (2)

- 5 SPST relay / IS
- 8 SPST relay / GP

Wetted material (3)

- 1 PP
- 2 PFA

Process mount

- 0 3/4" NPT (US)
- 4 3/4" G (Metric)

Ordering Notes

- 1) Select the best sensor technology based upon your application.
- 2) The following are the available contacts for each sensor technology:
Ultrasonic: 5 type only
Vibration: 8 type only
- 3) The following are the available wetted materials for each sensor technology:
Ultrasonic: 1 and 2 type
Vibration: 1 type only

APPLICATION

CSA approved intrinsically safe for use in hazardous area locations, the ultrasonic level switch is broadly applied in chemical, solvent, hydrocarbon and petroleum based liquids. Media examples include fuel, acetone and hydrochloric acid. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The submersible sensor is universally mounted through the wall or inside the tank.

FEATURES

- ✓ CSA approved intrinsically safe for use in hazardous area locations
- ✓ PP or PFA sensor and cable rated NEMA 6 or IP68
- ✓ IA relay selectable NO or NC via power supply wiring polarity

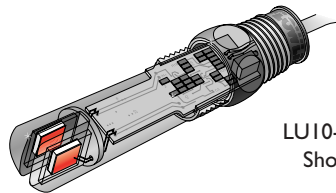
TECH TIP

Select the PFA sensor for use in highly corrosive and/or ultrapure applications such as wafer etching.

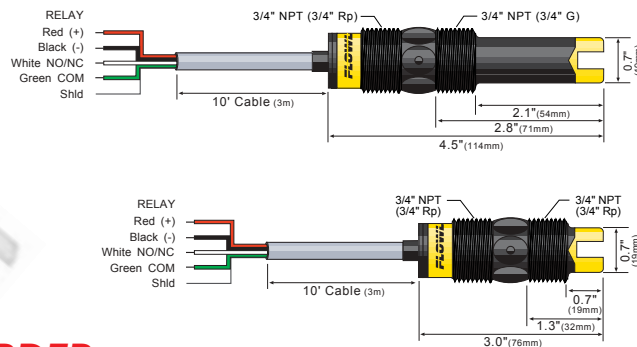


LU10-1305
Shown

LU10-1405
Shown



LU10-2305
Shown



SPECIFICATIONS

Orientation:	Universal
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	GP: 60 VA IS: 32 VDC @ 0.5A
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	1__5: PP 2__5: PFA
Cable jacket mat.:	1__5: PFA 2__5: PFA
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	Intrinsically safe
Approvals:	CSA: Class I, Groups A, B, C & D; Class II, Groups E, F and G; Class III EEx: Class 1, Division 1, Groups A, B, C, D; EEx ib IIC T6
Parameters:	CSA: Vmax = 32V, Imax = 300 mA, Pmax = 1.3 W Ci = 0 µF, Li = 0 µH EEx: Ui = 32V; li = 300 mA; Pi = 1.3 W; Ci = 0 µF; Li = 0 µH
Certificates:	CSA: LR 79326
CE compliance:	EN 61326 EMC EN 61010-1 safety



Ultrasonic

ORDER

LU10-5

- Sensor material (1)**
- 1 PP
 - 2 PFA
- Sensor length**
- 3 Short
 - 4 Long
- Process mount (2)**
- 0 3/4" NPT (US)
 - 2 3/4" G / Rp (Metric)

Ordering Notes

- To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LU10-1305-25').
- The short Metric sensor is offered with conical Rp threads on both sides of the wrench flat. The long Metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.

APPLICATION

The general purpose vibration level switch is a great choice for dirty liquids including those with light to medium coating, scaling or foaming characteristics. Media examples include wastewater, diluted caustic soda and light weight oil. For optimum performance and proactive maintenance, the sensor automatically adjusts for coating build up, and if necessary, outputs a preventative maintenance alarm. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The submersible sensor is universally mounted through the wall or inside the tank.

FEATURES

- ✓ Automatic coating adjustment optimizes sensor performance with media build-up
- ✓ Ryton® sensor and PP cable rated NEMA 6 or IP68
- ✓ Coating preventative maintenance alarm saves time and money
- ✓ IA relay selectable NO or NC via power supply wiring polarity



LZ12-1405
Shown

SPECIFICATIONS

Orientation:	Universal
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Supply voltage:	12-30 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Maint. alarm:	NPN transistor, 10 mA max.
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	Ryton® (glass filled), Viton® cable grommet
Cable jacket mat.:	Polypropylene
Cable type:	5-conductor, #24 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC (pending) EN 61010-1 safety

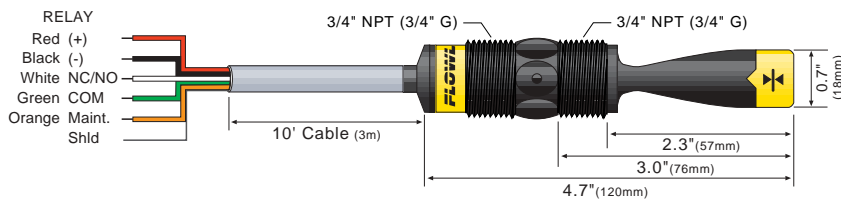
INTELLIGENCE

Using advanced self-learning technology, the level switch automatically adjusts to increased material build-up on the forks for maximum coating performance. If the coating becomes too significant, then the sensor will actuate a transistor alarm for proactive maintenance.



RELAY CONTROL

For process automation with pumps, valves and alarms, package your vibration level switch with our remote relay controllers offered in a 35 mm DIN package. See page 55 for more details.



LC42
Shown

Vibration

ORDER

LZ12-14 5

Process mount (1)
0 3/4" NPT (US)
2 3/4" G (Metric)

Ordering Notes

- 1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LZ12-1405-25).

APPLICATION

The general purpose buoyancy level switch is a perfect choice for relatively clean water and chemical solutions with non-coating and/or scaling characteristics. Media examples include acetic acid and process water. The baffle body eliminates switch chatter caused by turbulence. The dry contact closure provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The sensor mounts vertically inside the tank on our Smart Trak or Switch-Pak fittings.

FEATURES

- ✓ Baffle body and dynamically stabilized float eliminate turbulence switch chatter
- ✓ PP or PVDF sensor and cable rated NEMA 6 or IP68
- ✓ 15 VA dry contact with selectable NO or NC state via wire selection
- ✓ Compatible with Flowline controller, alarm and fitting accessories

TECH TIP



For years of reliable service in highly corrosive media, select the PVDF material option. The rugged sensor features a PVDF body with a PFA cable. It's level made simple!

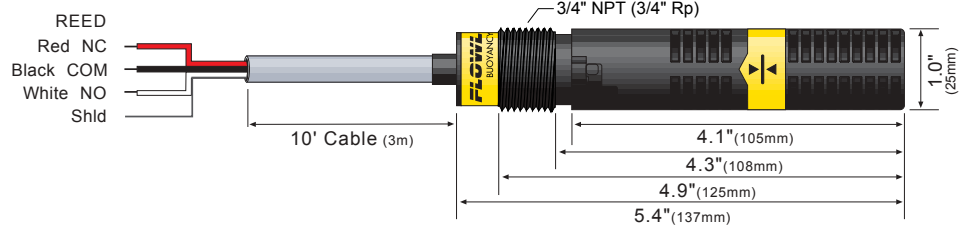
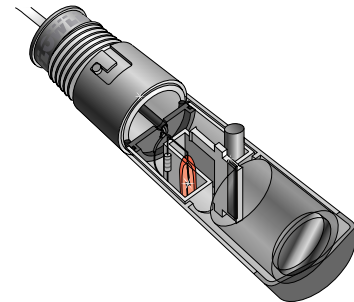
LV10-5301
Shown



LV10-1301
Shown

SPECIFICATIONS

Orientation:	± 20° vertical
Accuracy:	± 2 mm in water
Repeatability:	± 1 mm in water
Specific gravity:	0.8 minimum
Contact type:	(1) SPDT reed
Contact rating:	15 VA
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	25 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	13_1: PP 53_1: PVDF
Cable jacket mat.:	13_1: PP 53_1: PFA
Cable type:	3-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" Rp)
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Buoyancy

ORDER

LV10-31

Sensor material (1)

- 1 PP
- 5 PVDF

Process mount

- 0 3/4" NPT (US)
- 5 3/4" Rp (Metric)

Ordering Notes

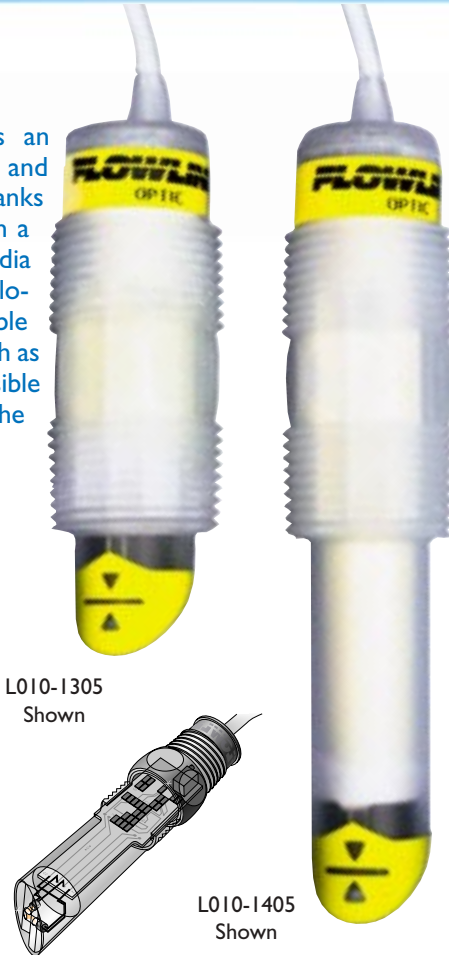
- 1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LV10-1301-25').

APPLICATION

The general purpose optic switch is an excellent choice for leak detection in and around secondary containment sumps, tanks and pipes. The sensor can be applied in a broad range of chemical solutions. Media examples include ferric chloride and chlorine. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The submersible sensor is universally mounted within the interstitial space of the vessel.

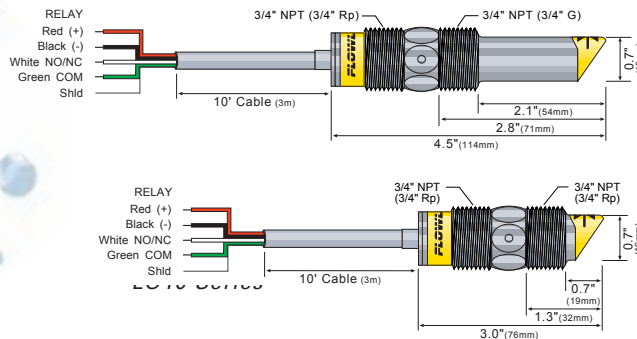
FEATURES

- ✓ Fail-safe leak sensor inverts wet to alert user for maintenance
- ✓ IA relay selectable NO or NC via power supply wiring polarity
- ✓ PP or PFA sensor and cable rated NEMA 6 or IP68



SPECIFICATIONS

Orientation:	Universal
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	1__5: PP 2__5: PFA
Cable jacket mat.:	1__5: PP 2__5: PFA
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Optic

ORDER

L010-□□□5

Sensor material (1)

- 1 PP
- 2 PFA

Sensor length

- 3 Short
- 4 Long

Process mount (2)

- 0 3/4" NPT (US)
- 2 3/4" G / Rp (Metric)

Ordering Notes

- 1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: L010-1305-25').
- 2) The short Metric sensor is offered with conical Rp threads on both sides of the wrench flat. The long Metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.

APPLICATION

The general purpose guard capacitance level switch is a great choice for a wide range of aqueous based conductive liquids with light coating, crystallizing or scaling characteristics. Media examples include copper sulfate and brine. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The submersible sensor is universally mounted through the wall or inside the tank.

FEATURES

- ✓ Guard circuit optimizes sensor performance in coating type media
- ✓ Rugged PP sensor and cable rated NEMA 6 or IP68
- ✓ IA relay selectable NO or NC via power supply wiring polarity
- ✓ Compatible with Flowline alarm, controller and fitting accessories

TECH TIP

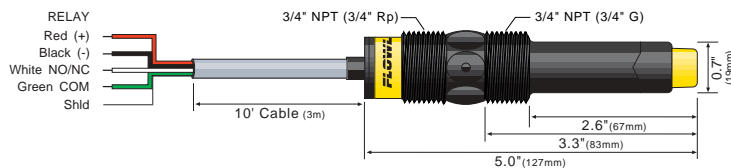
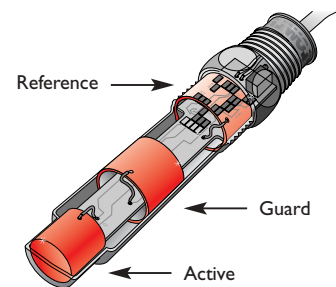
The capacitance switch has a unique RF guard circuit which eliminates the coating signal path between the active and reference electrodes. For best performance in coating liquids, install the sensor horizontally through the side wall of a non-metallic tank. It's coating liquid level made simple!



LP15-1405
Shown

SPECIFICATIONS

Orientation:	Universal
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Dielectric range:	> 20 constants
Conductive range:	> 100 micromhos
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	PP
Cable jacket mat.:	PP
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Capacitance ORDER

LP15-14 5

Process mount (1) (2)
 0 3/4" NPT (US)
 2 3/4" G / Rp (Metric)

Ordering Notes

- 1) The Metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.
- 2) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LP15-1405-25').

APPLICATION

The general purpose non-intrusive capacitance level switch is a great choice for highly corrosive or ultra-pure, aqueous based liquids with non-coating and/or scaling characteristics. Media examples include deionized water and hydrochloric acid. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The sensor is bracket mounted on the exterior wall of non-metallic tanks.

FEATURES

- ✓ Non-intrusive level detection through plastic or fiberglass tank walls with a maximum thickness of 1"
- ✓ PE, PVC, PP or PVDF mounting bracket designed for adhesive and plastic tack-weld installation

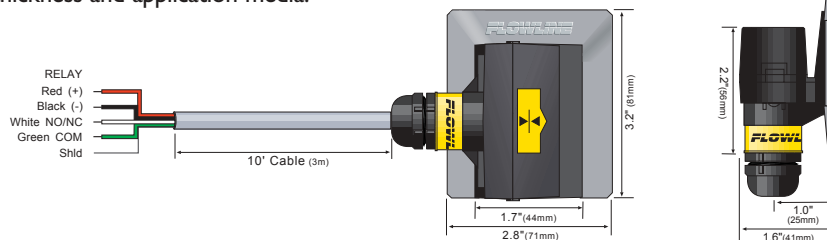
TECH TIP

With two calibration adjustments, the non-intrusive switch set point will be customized to your specific tank wall thickness and application media.



SPECIFICATIONS

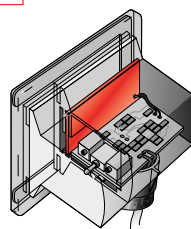
Tank mounting:	Non-intrusive
Tank mat. comp.:	Non-metallic
Tank wall thick.:	< 1" (25 mm)
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Dielectric range:	> 10 constants
Conductive range:	> 100 micromhos
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Enclosure rating:	NEMA 4X (IP65)
Enclosure mat.:	PSO
Conduit entrance:	Single, 1/2" NPT
Bracket material:	1005: PP 5005: PVDF 6005: PE
Bracket mounting:	3M adhesive / plastic thermal weld
Cable jacket mat.:	PP
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Capacitance ORDER

LP50- 005

- Bracket material (1) (2) (3)
- 1 PP
 - 5 PVDF
 - 6 PE



Ordering Notes

- 1) Select the bracket that matches the tank wall material in your application.
- 2) Each sensor comes with one user specified bracket. Additional brackets may be ordered separately for multiple installation points:
LP95-1001: PP bracket
LP95-5001: PVDF bracket
LP95-6001: PE bracket
- 3) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LP50-6005-25').

APPLICATION

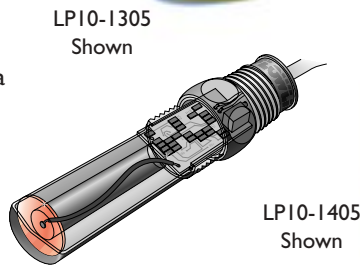
The general purpose intrusive capacitance switch is an excellent choice for a wide range of relatively clean, aqueous base conductive liquids with non-coating and/o scaling characteristics. Media examples include hydrogen peroxide and chromic acid. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The submersible sensor is universally mounted through the wall or inside the tank.

FEATURES

- ✓ PP or PFA sensor and cable rated NEMA 6 or IP68
- ✓ Available in short and long sensor lengths for flexible installation
- ✓ IA relay selectable NO or NC via power supply wiring polarity

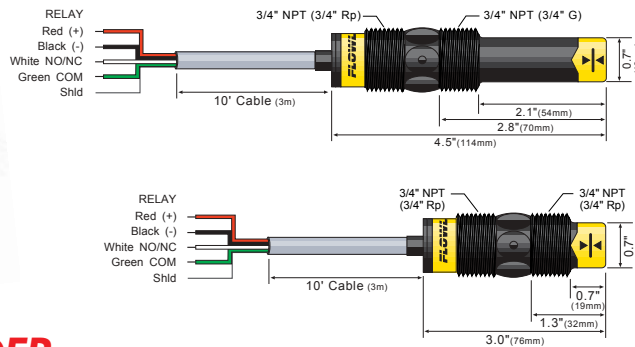
TECH TIP

The NO or NC relay state is selected via the power supply wiring polarity. Its level made simple!



SPECIFICATIONS

Orientation:	Universal
Accuracy:	± 1 mm in water
Repeatability:	± 0.5 mm in water
Dielectric range:	> 20 constants
Conductive range:	> 100 micromhos
Supply voltage:	12-36 VDC
Consumption:	25 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	1__5: PP 2__5: PFA
Cable jacket mat.:	1__5: PP 2__5: PFA
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Capacitance ORDER

LP10-5

- Sensor material (1)**
- 1 PP
 - 2 PFA
- Sensor length**
- 3 Short
 - 4 Long
- Process mount (2)**
- 0 3/4" NPT (US)
 - 2 3/4" G / Rp (Metric)

Ordering Notes

- 1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LP10-1305-25').
- 2) The short Metric sensor is offered with conical Rp threads on both sides of the wrench flat. The long Metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.

APPLICATION

The general purpose buoyancy level switch is a great choice for relatively clean water and chemical solutions with non-coating and/or scaling characteristics. Media examples include sulfuric and hydrobromic acids. The baffle body dampens most switch chatter caused by turbulence. The dry contact closure provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The sensor mounts vertically inside the tank on our Smart Trak or Switch-Pak fittings.

FEATURES

- ✓ Baffel body reduces switch chatter caused by process turbulence
- ✓ PP or PVDF sensor and cable rated NEMA 6 or IP68
- ✓ 50VA dry contact with selectable NO or NC state via float orientation



LV10-1201
Shown

SPECIFICATIONS

Orientation:	± 20° vertical
Accuracy:	± 2 mm in water
Repeatability:	± 1 mm in water
Specific gravity:	0.8 minimum
Contact type:	(1) SPDT reed
Contact rating:	50 VA
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	25 psi (2 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 6 (IP68)
Sensor material:	12_1: PP 52_1: PVDF
Cable jacket mat.:	12_1: PP 52_1: PFA
Cable type:	2-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" Rp)
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety

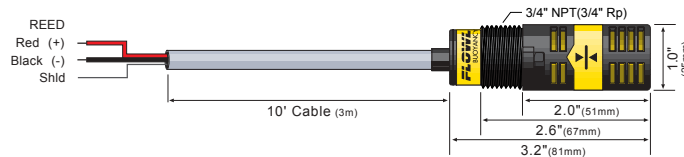
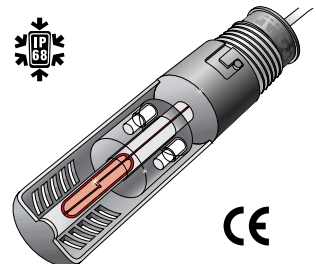
TECH TIP



Package the vertical float switch with our Switch-Pak fitting and junction box. Offered in various materials with lengths up to 10', Switch-Pak makes installation simple. See page 57 for more details.



LV10-5201
Shown



Float

ORDER

LV10-21

Sensor material (1)

- 1 PP
- 5 PVDF

Process mount

- 0 3/4" NPT (US)
- 5 3/4" Rp (Metric)

Ordering Notes

- 1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LV10-1201-25').



LH23
Shown



LV20-1201
Shown

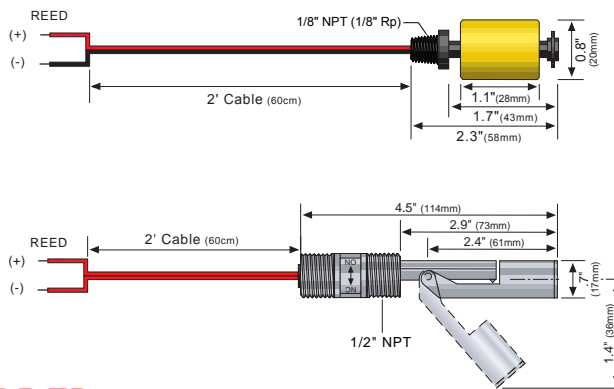
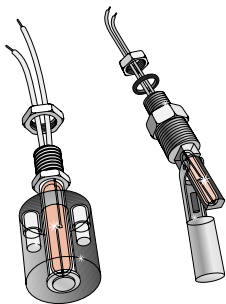
LV20-5201
Shown

APPLICATION

Offered in both vertical and horizontal float configurations, the general purpose mini-float level switches are a great choice for less critical applications with clean water and/or chemical solutions. Media examples include water and acetic acid. The dry contact closure provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm.

SPECIFICATIONS

Orientation:	LV20: ± 20° vertical LH2_: ± 20° horizontal
Accuracy:	± 5 mm in water
Repeatability:	± 2 mm in water
Specific gravity:	0.8 minimum
Contact type:	(1) SPST reed
Contact rating:	15 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	10 psi (0.7 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor material:	LV20-12_1: PP LV20-52_1: PVDF LH2_-1201: PP
Wire type:	2-conductor, #22 AWG
Wire length:	Standard: 2' (60 cm) Special order: 25' (7.6m) or 50' (15.2m)
Wire jacket mat.:	LV20-12_1: PVC LV20-52_1: TFE LH2_-1201: Polymeric
Process mount:	LV20: 1/8" NPT LH21: 1/2" NPT LH22: Compression
Mount. gasket:	Viton® (LH22 only)
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Mini-Float ORDER

Vertical

Sensor material (1)

- 1 PP
- 5 PVDF

Process mount

- 0 1/8" NPT (US)
- 5 1/8" Rp (Metric)

Horizontal

Installation type (2)

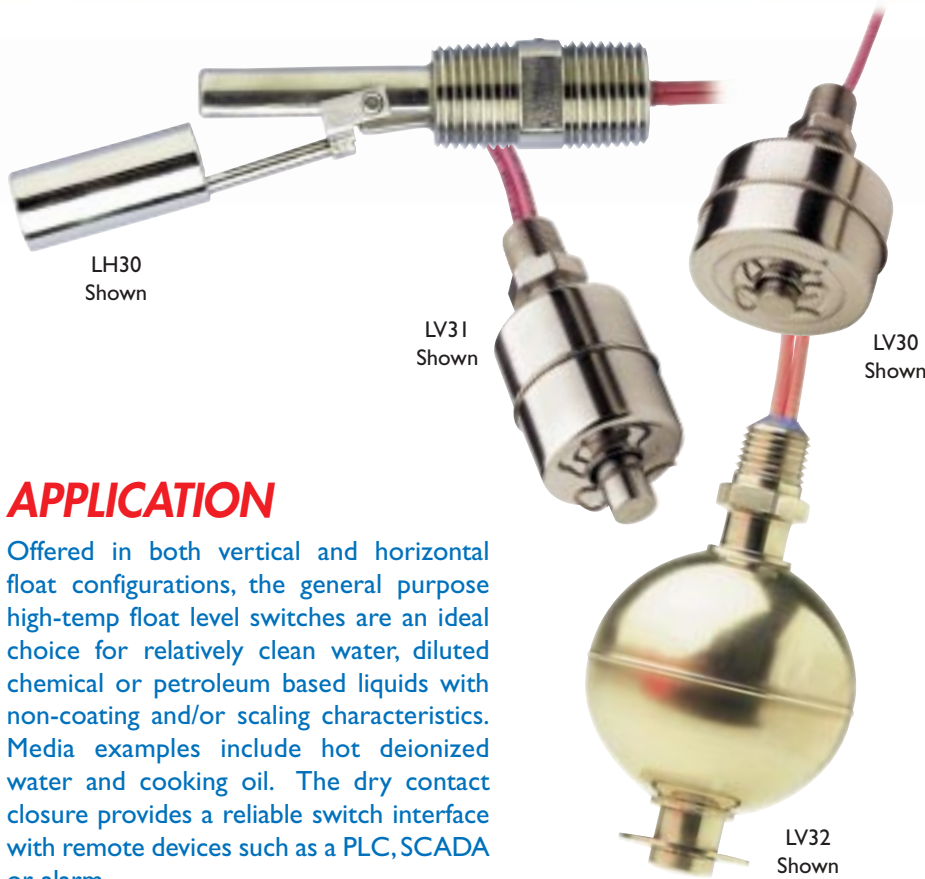
- 3 Outside-in / Inside-out

LV20- 2 1

LH2 -1201

Ordering Notes

1) To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: LV20-1201-25').



SPECIFICATIONS

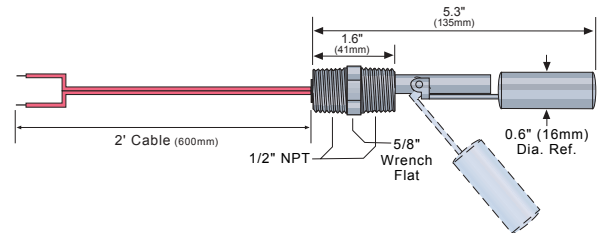
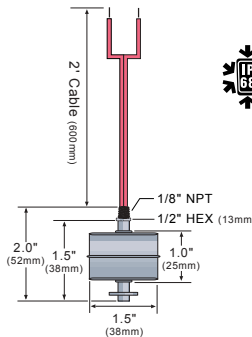
Orientation:	LV3 : ± 20° vertical LH30: ± 20° horizontal
Accuracy:	± 3 mm in water
Repeatability:	± 1 mm in water
Specific gravity:	LV30: 0.7 min. LV31: 0.9 min. LV32/LH30: 0.8 min.
Contact type:	(1) SPST reed
Contact rating:	20 VA
Contact output:	Selectable NO/NC
Process temp.:	F: -40° to 300° C: -40° to 148.9°
Pressure:	LV30: 100 psi max. (6.9 bar max.) LV31: 275 psi max. (18.9 bar max.) LH30: 300 psi max. (20.7 bar max.) LV32: 750 psi max. (51.7 bar max.)
Sensor rating:	NEMA 6 (IP68)
Sensor material:	316 ss
Process mount:	LV30: 1/8" NPT LV31: 1/8" NPT LV32: 1/4" NPT LH30: 1/2" NPT
Wire type:	LV30/LV31/LH30: 2-wire, #22 AWG LV32: 2-wire, #18 AWG
Wire length:	24" (61 cm)
Wire jacket mat.:	Polymeric
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety

APPLICATION

Offered in both vertical and horizontal float configurations, the general purpose high-temp float level switches are an ideal choice for relatively clean water, diluted chemical or petroleum based liquids with non-coating and/or scaling characteristics. Media examples include hot deionized water and cooking oil. The dry contact closure provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm.

FEATURES

- ✓ 316 SS float and stem for high temp and pressure applications
- ✓ 20VA dry contact with selectable NO or NC state via float orientation
- ✓ Offered in four configurations with pressures up to 750 psi



Float

ORDER

Vertical

- Maximum pressure (1)**
- 0 100 psi (6.9 bar)
 - 1 275 psi (18.9 bar)
 - 2 750 psi (51.7 bar)

LV3 -5201

Horizontal

- Maximum pressure (2)**
- 0 300 psi (20.7 bar)

LH3 -5301

Ordering Notes

- 1) Each sensor type has a different shape and dimension. Please check the dimensional specifications prior to ordering.
- 2) The normally open or closed contact output is selectable based on the installed 12:00 or 6:00 sensor orientation.



APPLICATION

The general purpose controller is offered in two versions with 1 relay and 1 or 2 sensor inputs. The LC10 provides a high or low level switch with a single sensor input. The LC11 provides latched automatic fill or empty control with two sensor inputs, and is typically integrated with Smart Trak. The optional flash alarm brings immediate attention to process conditions. Package the controller with any of our level switches.

FEATURES

- ✓ Fail-safe compact relay control of pumps and valves with 0-60 second time delay
- ✓ Optional strobe brings immediate attention to tank alarm conditions
- ✓ PP enclosure rated NEMA 4X with 300° swivel base for easy conduit alignment
- ✓ Easy setup with LED indicators for sensor, power and relay status



LCI_-1002
Shown

TECH TIP

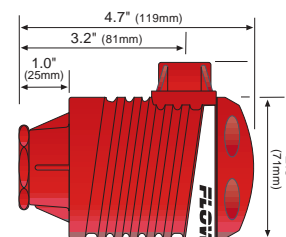
The AC powered relay controller has a 10A relay, adjustable time delay, LED indicators and NO or NC invert switch. The rugged NEMA 4X enclosure is made of UL approved fire retardant PP with a swivel base for easy conduit alignment.

SPECIFICATIONS

Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Strobe type:	10_1: N/A 10_2: Xenon tube
Strobe flash:	10_1: N/A 10_2: 1 per second
Sensor inputs:	LC10: (1) two-wire level switch LC11: (2) two-wire level switches
Sensor supply:	13.5 VDC @ 27 mA
Contact type:	LC10: (1) SPDT relay LC11: (1) SPDT relay, latching
Contact rating:	250 VAC @ 10A
Contact latch:	LC10: N/A LC11: Select ON/OFF
Contact delay:	0-60 seconds
LED indication:	Sensor, power and relay status
Electronics temp.:	F: -40° to 158° C: -40° to 70°
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	10_1: PP, UL94VO 10_2: PP, UL94VO and polycarbonate
Encl. mount:	100_: 3/4" NPT 105_: 3/4" Rp
Encl. rotation:	300° swivel base
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
Certificate:	CSA: LR 79326
CE compliance:	EN 61326 EMC EN 61010-1 safety



LC11
Shown



Controller

ORDER

LC1 -10

Contact / input(s) (1)

- 0 1 SPDT relay / 1 sensor
- 1 1 SPDT latching relay / 2 sensors

Enclosure mount

- 0 3/4" NPT (US)
- 5 3/4" Rp (Metric)

Configuration (2) (3) (4)

- 1 Controller only
- 2 Controller with Strobe Alert

Ordering Notes

- 1) Select the best configuration based upon your control requirements. The following are the typical applications for each type:
LC10: High or low level switch
LC11: Automatic fill or empty
- 2) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LC10-1001-E).
- 3) To order the CE configuration, place CE at the end of the P/N: (ie: LC11-1001-CE).
- 4) For a liquid tight cable connection, order the LM90-1001 connector.



LC92 Shown



LM94 Shown

SPECIFICATIONS

Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Sensor inputs:	LC40/90: (1) two-wire level switch LC41/91: (2) two-wire level switches LC42/92: (3) two-wire level switches
Sensor supply:	13.5 VDC @ 27 mA
Contact type:	LC40/90: (1) SPDT relay LC41/91: (1) SPDT relay, latching LC42/92: (2) SPDT relays, (one latching)
Contact rating:	250 VAC @ 10A
Contact latch:	Selectable ON/OFF
Contact delay:	0-60 seconds
LED indication:	Sensor, power and relay status
Electronics temp.:	F: -40° to 158° C: -40° to 70°
Enclosure type:	35 mm DIN rail
Encl. material:	PP, UL94VO
Classification:	LC4_: General purpose LC9_: Assoc. apparatus
Approvals:	CSA: Class I, Groups A, B, C & D; Class II, Groups E, F and G; Class III
Parameters:	CSA: Voc = 17.47 VDC; (LC9_ only) Isc = 0.4597A; Ca = 0.494 µF; La = 0.119 mH
Certificate:	CSA: LR 79326
CE compliance:	EN 61326 EMC EN 61010-1 safety

APPLICATION

Available in two classifications; CSA approved general purpose and isolation with built-in intrinsic safety barriers for use with associated apparatus. Each classification is offered in three versions with 1 or 2 relays and 1-3 sensor inputs. The LC40/90 provides a high or low level switch with a single sensor input. The LC41/91 provides latched automatic fill or empty control with two sensor inputs. The LC42/92 provides latched automatic fill or empty control and an independent high or low level switch with three sensor inputs.

FEATURES

- ✓ Optional built-in intrinsic safety barriers for hazardous level applications
- ✓ Fail-safe remote relay control of pumps and valves with 0-60 second time delay
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ 35 mm DIN rail mount PP enclosure with removable terminal strips

The intrinsically safe ultrasonic level switch is CSA approved for use in hazardous areas. See page 44 for more details.



LU10 Shown



Controller ORDER

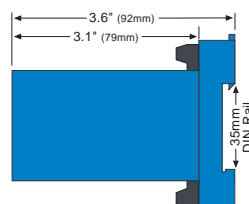
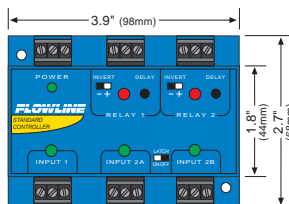
LC -1001

Classification (1)

- 4 General purpose
- 9 Isolation (hazardous)

Contact(s) / input(s) (2) (3) (4) (5)

- 0 1 SPDT relay / 1 sensor
- 1 1 SPDT latching relay / 2 sensors
- 2 2 SPDT relays (1 latching) / 3 sensors



Ordering Notes

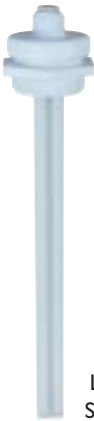
- 1) Select the classification based upon your general purpose or isolation (intrinsic safety for associated apparatus) requirements.
- 2) Select the best configuration based upon your control requirements. The following are the typical applications for each type:
LC90: High or low level switch
LC91: Automatic fill or empty
LC92: Automatic fill or empty with high or low level switch
- 3) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LC90-1001-E).
- 4) To order the CE configuration, place CE at the end of the P/N: (ie: LC92-1001-CE).
- 5) For field mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM94-1001 (single controller box) or the LM95-1001 (two controller box).

APPLICATION

The adjustable multi-point fitting enables users to install and adjust up to four Flowline level switches to any depth along the entire length of track. The fitting is typically applied in atmospheric day tanks, process vessels and waste sumps. Select the appropriate track length based upon your applied tank height and add one sensor car kit for each sensor to be installed on the track.

FEATURES

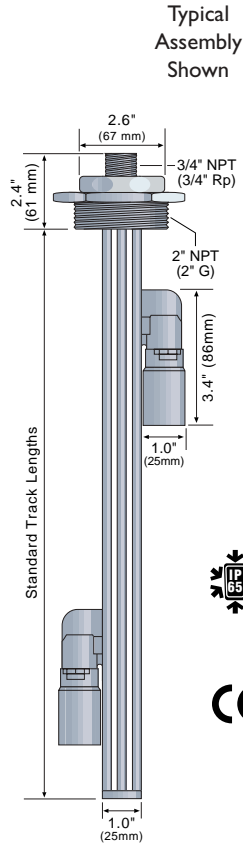
- ✓ Adjustable level sensor cars make setup or changes fast and simple
- ✓ Standard track lengths are easily cut to applied length in the field
- ✓ Rugged PP construction for use with challenging corrosive liquids



LM10
Shown

TRACK KIT

The track kits are offered in standard lengths with a 2" process mount and 3/4" enclosure or conduit nipple. Up to four sensor cables are sealed via the internal neoprene and santoprene gaskets.



SPECIFICATIONS

Fitting	
Track lengths:	US: 2', 4', 6', 8', 10' Metric: 1m, 2m, 3m
Adjustability:	Entire track length
Mixing velocity:	< 1.5 fps (.45 mps)
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	Atmospheric
Fitting material:	PP (20% glass fill)
Process mount:	1_01: 2" NPT 1_61: 2" G
Mount. gasket:	Viton®

Junction box	
Sensor inputs:	1-4 sensors
Terminal strip:	12 pole socket
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94V0
Encl. rotation:	300° swivel base
Conduit entrance:	Single, 1/2" NPT
Temp. rating:	F: -40° to 158° C: -40° to 70°
CE compliance:	EN 61326 EMC EN 61010-1 safety

Side mount	
Bracket material:	PP
Female threads:	1001: 2" NPT 1051: 2" G
Tank installation:	Bolt or plastic weld

CAR KIT

LM30
Shown

At the heart of the fitting is the screwdriver adjustable level sensor car. Each kit includes a 3/4" car with track mounting hardware. Order one car kit for each level sensor.



Smart Trak ORDER

LM10-1 [] [] 1

Track length (1) (2) (3)

US

- 2 24" (61 cm)
- 4 48" (122 cm)
- 6 72" (183 cm)
- 8 96" (244 cm)
- 0 120" (305 cm)

Process mount (4) (5)

- 0 2" NPT (US)
- 6 2" G (Metric)

Metric

- 1 100 cm (39.4")
- 3 200 cm (78.7")
- 7 300 cm (118.1")

Ordering Notes

- 1) Select the appropriate US or Metric track length based upon the maximum sensor depth and/or application tank height. Standard track lengths may be cut to custom lengths in the field.
- 2) Each track is provided with one 2" plug fitting less the required sensor cars.
- 3) Order one LM30-1001 (3/4" NPT) or LM30-1051 (3/4" Rp) sensor car kit for each level sensor to be installed on Smart Trak.
- 4) For integral wiring and/or conduit termination, order one LC05-1001 (NPT) or LC05-1051 (Rp) compact junction box.
- 5) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.

APPLICATION

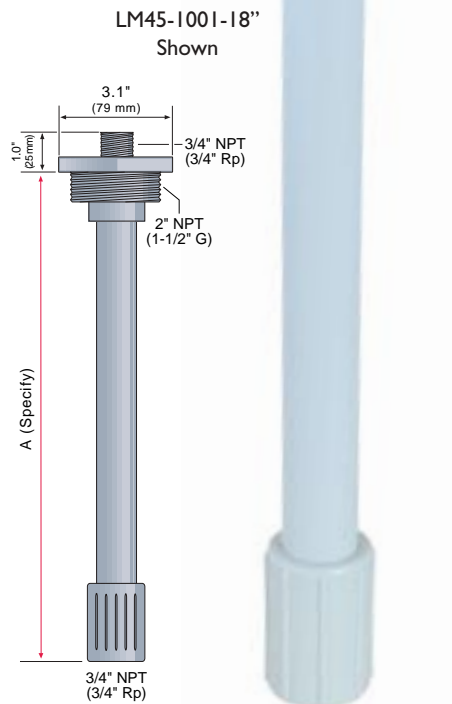
The single-point fitting enables users to install and extend a Flowline level switch through the top wall of the tank. Offered in PVC, PP and PVDF materials, the fitting is typically applied in bulk storage tanks, day tanks and waste sumps. Each fitting is built custom to your requirements. Select the appropriate material based upon your application liquid and specify the A-dimension, taking into consideration the installed sensor length.

FEATURES

- ✓ Thermal or solvent welded fitting is built to your switch insertion length
- ✓ Offered in PVDF, PP and PVC material for maximum chemical compatibility

TECH TIP

For easy field assembly, order the LM45-70_1-00" PVC plug fitting and sensor adapter. Solvent weld a 3/4" PVC schedule 40 pipe between the parts to the desired length. It's level made simple!



SPECIFICATIONS

Fitting	
Length:	6" to 10' (15 cm to 3m)
Process temp.:	F: -40° to 176° C: -40° to 80°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Fitting material:	70_1: PVC 10_1: PP 50_1: PVDF
Process mount:	_001: 2" NPT _061: 2" G
Mount. gasket:	Viton®
Sensor adapter:	3/4" NPT (3/4" Rp)
Junction box	
Sensor inputs:	1 sensor
Terminal strip:	6 pole socket
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Encl. rotation:	300° swivel base
Conduit entrance:	Single, 1/2" NPT
Temp. rating:	F: -40° to 158° C: -40° to 70°
CE compliance:	EN 61326 EMC EN 61010-1 safety
Side mount	
Bracket material:	PP
Female threads:	1001: 2" NPT 1051: 2" G
Tank installation:	Bolt or plastic weld

Switch-Pak ORDER

LM45-01-

Fitting material

- 7 PVC
- 1 PP
- 5 PVDF

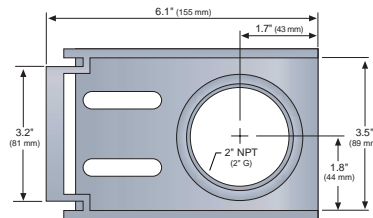
Process / sensor mount (1) (2)

- 0 2" NPT / 3/4" NPT (US)
- 6 1 1/2" G / 3/4" Rp (Metric)

Dimensions (3) (4)

- A Specify (PVC)
(PP)
(PVDF)

LM50
Shown



Ordering Notes

- 1) For integral wiring and/or conduit termination, order one LC06-1001 (NPT) or LC06-1051 (Rp) compact junction box.
- 2) For installation on open tanks, order the LM50-1001 (2" NPT) or LM50-1061 (2" G) side mount bracket.
- 3) Specify the A-dimension at the end of the part number (ie: LM45-1001-17"). The A-dimension may be specified in 1/2" (1.3 cm) increments from 6" to 10' (15 cm to 3m). Switch-Pak will be solvent (PVC) or socket welded (PP and PVDF) per your length specification.
- 4) To order the 2" plug fitting and 3/4" sensor adapter unassembled (without a 25 mm pipe) specify a zero A-dimension at the end of the part number (ie: LM45-1001-00").





LC__
Shown



SPECIFICATIONS

Supply voltage:	LC09: 12-36 VDC
	LC10: 120 VAC @ 50-60 Hz.
	LC10-E: 240 VAC @ 50-60 Hz.
Consumption:	3 watts max.
Strobe color:	Amber
Strobe type:	Xenon tube
Strobe flash:	1 per second
Strobe life:	10M cycles
Electronics temp.:	F: -40° to 158°
	C: -40° to 70°
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	Polycarbonate
Encl. compatibility:	LC05, LC06, LC10 and LC11 enclosures
Wire type:	2-wire, #22 AWG
Wire length:	5" (12.7 cm)
Wire jacket mat.:	Polymeric
Classification:	General purpose
Certificate:	CSA: LR 79326

APPLICATION

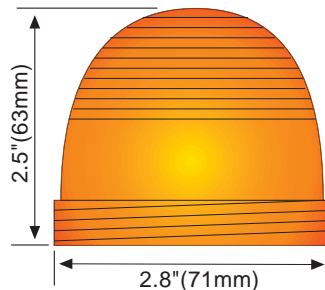
Offered in both AC and DC powered configurations, the compact flash alarm brings immediate attention to process conditions. The alarm is compatible with our round enclosures and may be actuated with any of our level switch, flow switch or relay control products. Specify the strobe supply voltage.



LC10
Shown

FEATURES

- High intensity amber flash alarm visually alerts on-site personnel
- Rugged NEMA 4X polycarbonate enclosure for harsh environments
- Mounts directly on any Flowline round NEMA 4X enclosure



TECH TIP

The alarm is commonly applied in tank spill prevention, pump or process protection applications. Install the alarm in a visible location. We recommend the use of secondary audible alarms in critical applications.



Strobe Alert ORDER

LC -1004

Supply voltage (1) (2)
09 12-36 VDC
10 120 VAC

Ordering Notes

- 1) To factory configure the LC10-1004 for 240 VAC, place an E at the end of the P/N (ie: LC10-1004-E).
- 2) For field mount and conduit termination, order a LC06-10_1 junction box.

APPLICATION

Offered in small and large sizes, the junction box is ideal for compact sensor wiring and conduit termination. The junction box is universally compatible with our level switch, flow switch and fitting products. The small enclosure has 6 poles and is typically applied with a single level or flow switch sensor. The large enclosure has 12 poles for multiple level switches and is typically applied with Smart Trak. Select the size and appropriate mounting thread.

FEATURES

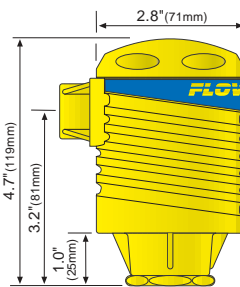
- ✓ PP enclosure rated NEMA 4X with 300° conduit swivel base
- ✓ Compatible with Flowline sensors, installation fittings and alarms
- ✓ Removable terminal strips with upper and lower screw poles
- ✓ Offered in large and small sizes for single and multi-point installations



LC05
Shown



LC06
Shown



SPECIFICATIONS

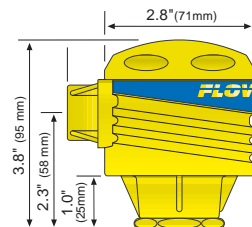
Sensor inputs:	LC05: 1-4 sensors LC06: 1-2 sensors
Terminal strip:	LC05: 12 pole socket LC06: 6 pole socket
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Encl. mount:	1001: 3/4" NPT 1051: 3/4" Rp
Encl. rotation:	300° swivel base
Conduit entrance:	Single, 1/2" NPT
Temp. rating:	F: -40° to 158° C: -40° to 70°
CE compliance:	EN 61326 EMC EN 61010-1 safety



LC05
Shown



LC06
Shown



Junction

ORDER

LC0 -10 1

Size / terminals (1)

- 5 Large 12 pole (1-4 sensors)
- 6 Small 6 pole (1-2 sensors)

Enclosure mount

- 0 3/4" NPT (US)
- 5 3/4" Rp (Metric)

Ordering Notes

1) For a liquid tight cable connection, order the LM90-1001 connector.



INTRODUCTION

Flowline offers the most capable range of solid state liquid and gas flow switch solutions for corrosive pump, fan exhaust motor and process protection applications.

Sensors

Offered in PP or PVDF bodies with a 1A relay, the general purpose sensors are broadly applied in water, chemicals, light weight oils, process gases and exhaust fumes.

Packages

The sensors are also offered in compact packages with integral relay controllers for pump and valve control, or junction boxes for convenient power and switch termination.

Liquid Pump Protection



FLOW SWITCHES

Product	Thermo-Flo	Thermo-Flo	Switch-Pro	Switch-Pro
Series	FT10	GT10	A_1_	A_1_
Media	Liquid	Gas	Liquid/Gas	Liquid/Gas
Range	.04-3 fps	1-90 fps	.04-3/1-90 fps	.04-3/1-90 fps
Supply	DC	DC	AC	DC
Output	1A	1A	10A	1A
Temp.	60° C	60° C	60° C	60° C
Press.	10 bar	10 bar	10 bar	10 bar
Material	PP/PVDF	PP/PVDF	PP/PVDF	PP/PVDF
Class	GP	GP	GP	GP
Page	61	61	62	63

CONTROLLERS

Product	Compact	Remote
Series	LC30	LC80
Inputs	1	1-2
Output	(1) 10A	(2) 10A
Mount	Field	Panel
Supply	AC	AC
Page	64	65

Gas Process Protection



APPLICATION

Offered in liquid and gas configurations for low-flow detection, the general purpose flow switch is a great choice for a diverse range of relatively clean, non-coating media. Liquid examples include deionized water and sulfuric acid. Gas examples include nitrogen and scrubber exhaust fumes. The IA relay provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm. The short sensor is intended for use in pipe or ducting from 1/2" to 1 1/2"; the long sensor is applied in 2" and up. The liquid switch set point may be adjusted from .04 to 3 fps, and the gas switch from 1 to 90 fps.

FEATURES

- ✓ Adjustable set point with LED for flow or no-flow status indication
- ✓ Solid state sensor is not damaged by over-ranging flow velocities

SET POINT

The clear adjustment knob doubles as an LED to indicate the flow status.

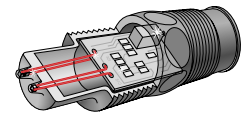
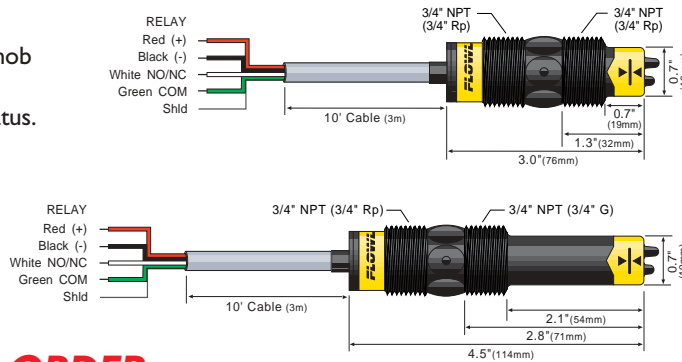


T10-1305
Shown

FT50-5000
Shown

SPECIFICATIONS

Set point range:	FT10: .04 to 3 fps (.012 to .91 mps) GT10: 1 to 90 fps (.3 to 27 mps)
Factory set point:	FT10: .2 fps (.06 mps) GT10: 10 fps (3 mps)
Repeatability:	±.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
Supply voltage:	12-36 VDC
Consumption:	70 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA
Contact output:	Selectable NO/NC
Process temp.:	F: 32° to 140° C: 0° to 60°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Sensor rating:	NEMA 4X (IP65)
Sensor material:	1__5: PP-Ryton® 5__5: PVDF
Cable jacket mat.:	1__5: PP 5__5: PFA
Cable type:	4-conductor, #22 AWG (shielded)
Cable length:	Standard: 10' (3m) Special order: 25' (7.6m) or 50' (15.2m)
Process mount:	3/4" NPT (3/4" G / Rp)
Mount. gasket:	Viton®
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Thermal

ORDER

T10- 5

Application media

F Liquid
G Gas

Sensor material (1)

1 PP
5 PVDF

Sensor length (2) (3)

3 Short
4 Long

Process mount (4)

0 3/4" NPT (US)
2 3/4" G / Rp (Metric)



Ordering Notes

- To special order a 25' (7.6m) or 50' (15.2 m) sensor cable, place the cable length at the end of the part number (ie: FT10-1305-25').
- Select the short sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).
- Select the Pulse-Point fitting to dampen the pulsating flow of liquid metering pumps. Order the FT50-1000 (PP) fitting or the FT50-5000 (PVDF) fitting. The FT50 is compatible with the short NPT flow switch.
- The Metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.

APPLICATION

This general purpose liquid or gas switch package provides a complete solution for low flow pump or process protection with a 10A compact relay controller. The optional flash alarm brings immediate attention to low flow conditions. The short sensor is intended for use in pipe or ducting from 1/2" to 1 1/2"; the long sensor is applied in 2" and up. The product is broadly selected for low or no-flow applications. Specify the appropriate sensor technology, length and material.

FEATURES

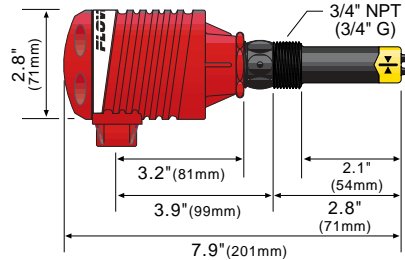
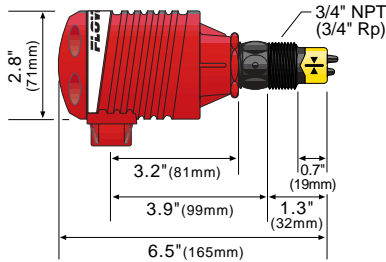
- ✓ Fail-safe relay control of pumps and valves with 0-60 second time delay
- ✓ Optional strobe brings immediate attention to flow alarm conditions
- ✓ PP or PVDF wetted material for challenging corrosive fluids



AT10-1305
Shown



FT50
Shown



SPECIFICATIONS

Set point range:	AT1_: .04 to 3 fps (.012 to .91 mps) AG1_: 1 to 90 fps (.3 to 27 mps)
Factory set point:	AT1_: .2 fps (.06 mps) AG1_: 10 fps (3 mps)
Repeatability:	±.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
Viscosity range:	AT1_: 1-200 centipoise AG1_: N/a
Supply voltage:	120/240 VAC @ 50-60 Hz.
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 10A
Contact delay:	0-60 seconds
LED indication:	Power, relay and sensor status
Strobe type:	_61_: Xenon tube _62_: N/a
Strobe flash:	_61_: 1 per second _62_: N/a
Process temp.:	F: 32° to 140° C: 0° to 60°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Wetted material:	16__: PP-Ryton® 36__: PVDF
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton®
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	_61_: PP, UL94VO and polycarbonate _62_: PP, UL94VO
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety

Switch-Pro ORDER

A -

Application media

- T Liquid
- G Gas

Sensor length (1) (2)

- 2 Short
- 4 Long

Sensor material

- 1 PP
- 3 PVDF

Configuration (3) (4)

- 1 Controller with Strobe Alert
- 2 Controller only

Process mount

- 0 3/4" NPT (US)
- 4 3/4" G (Metric)

Ordering Notes

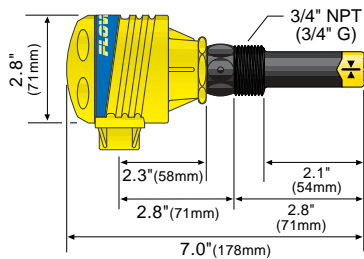
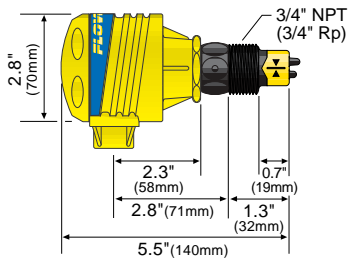
- 1) Select the short sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).
- 2) Select the Pulse-Point fitting to dampen the pulsating flow of liquid metering pumps. Order the FT50-1000 (PP) fitting or the FT50-5000 (PVDF) fitting. The FT50 is compatible with the short NPT flow switch.
- 3) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: AT12-1610-E).
- 4) To order the CE configuration, place CE at the end of the P/N: (ie: AT12-1610-CE).

APPLICATION

This general purpose liquid or gas switch package provides a low flow detection solution for pump or process protection with a IA relay interface for remote devices such as a PLC, SCADA or alarm. The short sensor is intended for use in pipe or ducting from 1/2" to 1 1/2"; the long sensor is applied in 2" and up. The product is broadly selected for low or no-flow applications. Specify the appropriate sensor technology, length and material.

FEATURES

- ✓ IA relay selectable NO or NC via power supply wiring polarity
- ✓ PP enclosure rated NEMA 4X with 300° conduit swivel base
- ✓ PP or PVDF wetted material for challenging corrosive fluids
- ✓ Compatible with Flowline controller, alarm and fitting accessories



SPECIFICATIONS

Set point range:	AT1_: .04 to 3 fps (.012 to .91 mps) AG1_: 1 to 90 fps (.3 to 27 mps)
Factory set point:	AT1_: .2 fps (.06 mps) AG1_: 10 fps (3 mps)
Repeatability:	±.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
Viscosity range:	AT1_: 1-200 centipoise AG1_: N/a
Supply voltage:	12-36 VDC
Consumption:	70 mA maximum
Contact type:	(1) SPST relay
Contact rating:	120 VAC/VDC @ 1A
Contact output:	Selectable NO/NC
LED indication:	Flow status
Process temp.:	F: 32° to 140° C: 0° to 60°
Electronics temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C., derated @ 1.667 psi (.113 bar) per °C. above 25° C.
Wetted material:	161_: PP-Ryton® 163_: PVDF
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton®
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	PP, UL94VO
Conduit entrance:	Single, 1/2" NPT
Termination:	4-poles
Classification:	General purpose
CE compliance:	EN 61326 EMC EN 61010-1 safety



Switch-Pro ORDER

A 1 - 63

Application media

- T Liquid
- G Gas

Sensor length (1)

- 7 Short
- 8 Long

Sensor material

- 1 PP
- 3 PVDF

Process mount (2)

- 0 3/4" NPT (US)
- 4 3/4" G (Metric)

Ordering Notes

- 1) Select the short sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).
- 2) Select the Pulse-Point fitting to dampen the pulsating flow of liquid metering pumps. Order the FT50-1000 (PP) fitting or the FT50-5000 (PVDF) fitting. The FT50 is compatible with the short NPT flow switch.

APPLICATION

The general purpose controller provides single channel low flow switch automation with one sensor input. The optional flash alarm brings immediate attention to flow alarm conditions. Package the controller with our liquid or gas flow switch sensors on page 61.

FEATURES

- ✓ Fail-safe compact relay control of pumps and valves with 0-60 second time delay
- ✓ Optional strobe brings immediate attention to flow alarm conditions
- ✓ PP enclosure rated NEMA 4X with 300° swivel base for easy conduit alignment
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ Compatible with Flowline liquid or gas flow switch sensors

TECH TIP

The AC powered relay controller has a 10 relay, adjustable time delay, LED indicators as or NC invert switch. The rugged NEMA 4X sure is made of UL approved fire retardant PP swivel base for conduit alignment.



Controller
Shown



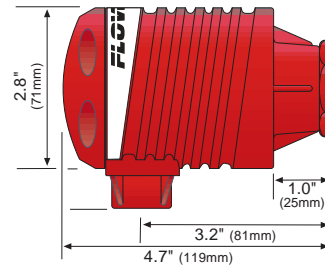
LC30-1002
Shown



LC30-1001
Shown

SPECIFICATIONS

Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Strobe type:	10_1: N/a 10_2: Xenon tube
Strobe flash:	10_1: N/a 10_2: 1 per second
Sensor input:	(1) four-wire flow switch
Sensor supply:	13.5 VDC @ 100 mA
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 10A
Contact delay:	0-60 seconds
LED indication:	Sensor, power and relay status
Electronics temp.:	F: -40° to 158° C: -40° to 70°
Enclosure rating:	NEMA 4X (IP65)
Encl. material:	10_1: PP, UL94VO 10_2: PP, UL94VO and polycarbonate
Encl. mount:	100_: 3/4" NPT 105_: 3/4" Rp
Encl. rotation:	300° swivel base
Conduit entrance:	Single, 1/2" NPT
Classification:	General purpose
Certificate:	CSA: LR 79326
CE compliance:	EN 61326 EMC EN 61010-1 safety



Controller

ORDER

LC30-10

Enclosure mount

- 0 3/4" NPT (US)
- 5 3/4" Rp (Metric)

Configuration (1) (2) (3)

- 1 Controller only
- 2 Controller with Strobe Alert

Ordering Notes

- 1) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LC30-1001-E).
- 2) To order the CE configuration, place CE at the end of the P/N: (ie: LC30-1001-CE).
- 3) For a liquid tight cable connection, order the LM90-1001 connector.



LC82
Shown



LM94
Shown

SPECIFICATIONS

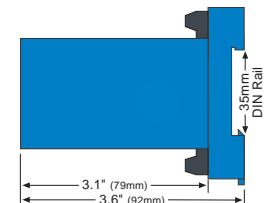
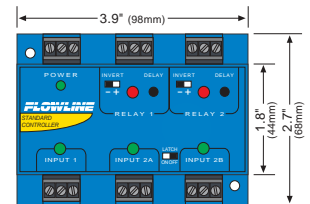
Supply voltage:	120/240 VAC @ 50-60 Hz.
Consumption:	5 watts max.
Sensor inputs:	LC80: (1) four-wire flow switch LC82: (2) four-wire flow switches
Sensor supply:	13.5 VDC @ 100 mA
Contact type:	LC80: (1) SPDT relay LC82: (2) SPDT relays
Contact rating:	250 VAC @ 10A
Contact latch:	LC80: N/a LC82: Select ON/OFF
Contact delay:	0-60 seconds
LED indication:	Sensor, power and relay status
Electronics temp.:	F: -40° to 158° C: -40° to 70°
Enclosure type:	35 mm DIN rail
Encl. material:	PP, UL94VO
Classification:	General purpose
Certificate:	CSA: LR 79326
CE compliance:	EN 61326 EMC EN 61010-1 safety

APPLICATION

The general purpose controller is offered in two versions with 1 or 2 relays and 1-2 sensor inputs. The LC80 provides single channel low flow switch automation with one sensor input. The LC82 provides dual channel low flow switch automation with two sensor inputs. Package the controller with our liquid or gas flow switch sensors on page 61.

FEATURES

- ✓ Fail-safe remote relay control of pumps and valves with 0-60 second time delay
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ 35 mm DIN rail mount PP enclosure with removable terminal strips



Controller

ORDER

LC8□-1001

Contact(s) / input(s) (1) (2) (3) (4)

- 0 1 SPDT relay / 1 sensor
- 2 2 SPDT relays / 2 sensors

Flow Switches

Package the controller with our liquid or gas flow switch sensors. See page 61 for more details.



Ordering Notes

- 1) Select the best configuration based upon your control requirements. The following are the typical applications for each type:
LC80: Single low flow switch
LC82: Dual low flow switch
- 2) To factory configure for 240 VAC, place an E at the end of the P/N: (ie: LC80-1001-E).
- 3) To order the CE configuration, place CE at the end of the P/N: (ie: LC82-1001-CE)
- 4) For field mount installation in a NEMA 4X polycarbonate windowed enclosure, order the LM94-1001 (single controller box) or the LM95-1001 (two controller box).

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
2-Ethyl Hexanol		40	104			E		
CH ₃ (CH ₂) ₃ CH(C ₂ H ₅)CH ₂ OH		80	176			G		
Acetaldehyde		40	104		E		E	E
CH ₃ CHO		80	176					E
Acetaldehyde (Aqueous)	40	40	104		E		E	
CH ₃ CHO	40	80	176		G			
Acetic Acid	10	40	104	E	E	E	E	E
CH ₃ COOH	10	80	176		G	G		E
	20	40	104	G	E	E		E
	20	80	176		F	G		E
	50	40	104	G	G	E		E
	50	80	176			G		E
	80	40	104	G	F	G		G
	80	80	176			C		G
Acetic Anhydride	Pure	40	104		F	F	E	G
(CH ₃ CO) ₂ O	Pure	80	176					G
Acetone		40	104		E		E	E
CH ₃ COCH ₃		80	176					E
Acetone (Aqueous)	Trace	40	104	E	E	E	E	
CH ₃ COCH ₃	Trace	80	176		E	G		
Acetonitrile		40	104			E	E	
CH ₃ CN		80	176			C		
Acetophenone		40	104		G	F	E	G
C ₆ H ₅ O		80	176		C			G
Acetyl Acetone		40	104					
CH ₃ COCH ₂ COCH ₃		80	176					
Acetyl Bromide		40	104			E		
CH ₃ COBr		80	176			G		
Acetyl Chloride		40	104		E	G	E	
CH ₃ COCl		80	176		C	C		
Acetylene		40	104		E	E	E	E
C ₂ H ₂		80	176		G	E		
Acrylic Acid		40	104			G		
Ethyl Ester		80	176			C		
Acrylonitrile		40	104		F	G		
CH ₂ =CHCN		80	176					
Adipic Acid (Aqueous)	Satu	40	104	E	E	E	E	G
HO ₂ C(CH ₂) ₄ CO ₂ H	Satu	80	176		G	E		G
Allyl Alcohol		40	104		E	E	E	
CH ₂ =CHCH ₂ OH		80	176			E		
Allyl Chloride		40	104			F	E	G
CH ₂ =CHCH ₂ Cl		80	176					
Aluminum Acetate	Satu	40	104	G	E	E		
(CH ₃ CO) ₂ Al	Satu	80	176			E		
Alum (Potassium Alum)	Satu	40	104	E	E	E	E	G
K ₂ SO ₄ Al ₂ (SO ₄) ₂ ·24H ₂ O	Satu	80	176		E	E		G
Aluminum Ammonium Sulfate (Ammonium Alum)	Satu	40	104		E	E	E	
(NH ₄) ₂ SO ₄ Al ₂ (SO ₄) ₂	Satu	80	176		E	E		
Aluminum Bromide	Satu	40	104	E	E	E		
AlBr ₃	Satu	80	176		E	E		

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Aluminum Chloride	Satu	40	104	E	E	E	E	C
AlCl ₃	Satu	80	176		E	F		C
Aluminum fluoride	Satu	40	104	E	E	E	E	F
AlF ₃	Satu	80	176		E	E		
Aluminum Hydroxide	Satu	40	104	E	E	E	E	G
Al(OH) ₃	Satu	80	176		E	E		
Aluminum Nitrate	Satu	40	104	E	E	E	E	E
Al(ONO ₂) ₂ ·9H ₂ O	Satu	80	176		E	E		E
Aluminum Sulfate	Satu	40	104	E	E	E	E	G
Al ₂ (SO ₄) ₃	Satu	80	176		E	E		F
Amber Acid (Succinic Acid)	Satu	40	104	E	E	E		
COOH(CH ₂) ₂ COOH	Satu	80	176		G	E		
Ammonia Gas	100	40	104	E	E	E	E	
NH ₃	100	80	176		G	E		
Ammonia Liquid	100	40	104	C	G	E		E
NH ₃	100	80	176		C	E		G
Ammonia Water	10	40	104	E	E	E	E	
NH ₄ OH	10	80	176		G	E		E
Ammonia Acetate	Satu	40	104	E	E	E		
CH ₃ COONH ₄	Satu	80	176		G	E		
Ammonium Carbonate	Satu	40	104	E	E	E	E	G
(NH ₄) ₂ CO ₃	Satu	80	176		G	E		G
Ammonium Chloride	Satu	40	104	E	E	E	E	F
NH ₄ Cl	Satu	80	176		G	E		F
Ammonium Difluoride	Satu	40	104	E	E	E		
NH ₄ HF	Satu	80	176		E	E		
Ammonium fluoride	20	40	104	G	E	E	E	
NH ₄ F	20	80	176		G	E		
Ammonium Hydroxide	40	40	104	E	E	E	E	E
NH ₄ OH	40	80	176		E	E		G
Ammonium Metaphosphate		40	104	E	E	E		
NH ₄ PO ₃		80	176		E	E		
Ammonium Nitrate		40	104	G	E	E	E	E
NH ₄ NO ₃		80	176		E	E		E
Ammonium Phosphate		40	104	E	E	E	E	F
(NH ₄) ₂ PO ₄		80	176		E	E		
Ammonium Sulfate	Satu	40	104	E	E	E	E	G
(NH ₄) ₂ SO ₄	Satu	80	176		E	E		G
Ammonium Sulfide		40	104		E	E		
(NH ₄) ₂ S		80	176		E	E		
Amyl Acetate	Pure	40	104			G	E	E
CH ₃ CO ₂ (CH ₂) ₄ CH ₃	Pure	80	176					E
Amyl Alcohol	Pure	40	104	E	E	E		
C ₅ H ₁₁ OH	Pure	80	176		G	E		
Amyl Chloride	Pure	40	104			E	E	E
CH ₃ (CH ₂) ₄ Cl	Pure	80	176			G		
Aniline	Pure	40	104	C	G	G	E	G
C ₆ H ₅ NH ₂	Pure	80	176		C	F		G
Aniline Hydrochloride	Pure	40	104	G		E	E	C
C ₆ H ₅ NH ₂ ·HCL	Pure	80	176			C		C
Animal Oil (Lard)		40	104	E	E	E		
		80	176		E	E		

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Antimony Trichloride	Satu	40	104	E	E	E	E	E
SbCl ₃	Satu	80	176		G	F		
Aque Regia		40	104	F	F	G	E	C
3HCl + HNO ₃		80	176			E		C
Arsenic Acid		40	104	G	E	E	E	E
H ₂ AsO ₄		80	176		F	E		G
Asphalt		40	104		E	E	E	E
		80	176			E		G
Barium Carbonate	Satu	40	104	E	E	E	E	G
BaCO ₃	Satu	80	176		E	E		G
Barium Chloride	Satu	40	104	E	E	E	E	G
BaCl ₂ ·2H ₂ O		80	176		E	E		
Barium Hydroxide	Satu	40	104	E	E	E	E	G
Ba(OH) ₂	Satu	80	176		E	E		G
Barium Nitrate	Satu	40	104	E	E	E	E	G
Ba(NO ₃) ₂	Satu	80	176		E	E		G
Barium Sulfate	Satu	40	104	E	E	E	E	G
BaSO ₄	Satu	80	176		E	E		
Barium Sulfide	Satu	40	104	E	E	E	E	G
BaS	Satu	80	176		E	E		
Beer		40	104	E	E	E	E	E
		80	176		E	E		E
Beet Sugar Liquors		40	104	E	E	E	E	E
		80	176		E	E		E
Benzaldehyde	10	40	104	E	E	E	E	G
C ₆ H ₅ CHO	10	80	176					G
Benzene	Pure	40	104	C	F	G	E	G
C ₆ H ₆	Pure	80	176			F		G
Benzene Sulfonic Acid		40	104			G	E	G
C ₆ H ₅ SO ₃ H		80	176			C		G
Benzine	Pure	40	104		G	E		
	Pure	80	176					
Benzoic Acid	Pure	40	104	E	G	E	E	G
C ₆ H ₅ O ₂	Pure	80	176		C	E		G
Benzyl Alcohol	Pure	40	104		E	E	E	E
C ₆ H ₅ CH ₂ OH	Pure	80	176			E		
Benzyl Benzoate	Satu	40	104					
C ₆ H ₅ CO ₂ CH ₂ -C ₆ H ₅	Satu	80	176					
Benzyl Chloride	Pure	40	104			E	E	
C ₆ H ₅ CH ₂ Cl	Pure	80	176			E		
Black Liquor	Satu	40	104	E	E	E	E	E
Fe(CH ₃ COO) ₂	Satu	80	176		G	E		
Bleaching Liquor	5	40	104	E		E		
Ca(ClO) ₂	5	80	176			E		
	20	40	104	E		E		
	20	80	176			E		
Boric Acid	Satu	40	104	E	E	E	E	E
H ₃ BO ₃	Satu	80	176		E	E		E
Borofluoric Acid		40	104	E	E	E		
HF ₂		80	176		G	E		
Brine		40	104	E	E	E		
		80	176		E	E		

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Bromic Acid	Pure	40	104			E		
HBrO ₃	Pure	80	176			E		
Bromine Vapor	25	40	104	F		E		C
	25	80	176			E		C
Bromine Water	Satu	40	104	F	C	E		C
	Satu	80	176			G		C
Butadiene	Gas	40	104	E		E	E	E
CH ₂ =CH-CH=CH ₂	Gas	80	176			E		
Butane	Gas	40	104	E	E	E	E	E
CH ₃ (CH ₂) ₂ CH ₃	Gas	80	176		E	E		E
Butyl Acrylate	Pure	40	104			G		
CH ₂ =CHCO ₂ (CH ₂) ₃ CH ₃	Pure	80	176				C	
Butyl Acetate	Pure	40	104	C	C	G	E	E
H ₂ CO ₂ C ₄ H ₉	Pure	80	176					E
Butyl Acrylate	Satu	40	104					
	Satu	80	176					
Butyl Alcohol	Pure	40	104	E	E	E		
CH ₃ OH	Pure	80	176		E	E		
Butyl Amine	Satu	40	104				C	E
CH ₃ (CH ₂) ₃ NH ₂	Satu	80	176					E
Butyl Bromide	Pure	40	104			E		
CH ₃ (CH ₂) ₃ Br		80	176			E		
Butyl Carbitol		40	104					
CH ₂ CH ₂ OC ₄ H ₉		80	176					
Butyl Cellosolve	Pure	40	104			E		
C ₄ H ₉ O(CH ₂) ₂ OH	Pure	80	176				F	
Butyl Chloride		40	104			E	E	
CH ₃ (CH ₂) ₃ Cl		80	176			E		
Butyl Diol		40	104	F		E		
		80	176			E		
Butyl Ether		40	104			E	E	
(CH ₃ (CH ₂) ₃) ₂ O		80	176				C	
Butyl Mercaptan	Pure	40	104			E		
CH ₃ (CH ₂) ₃ SH	Pure	80	176			E		
Butyl Phenol		40	104			E		
C ₆ H ₄ (OH)(C ₄ H ₉)		80	176					
Butyl Phthalate		40	104		E	G	E	G
C ₆ H ₄ (COOC ₄ H ₉)(COOH)		80	176				C	G
Butyl Stearate	Pure	40	104			E		
	Pure	80	176			E		
Butylene		40	104			E		
CH ₂ CH ₂ CH=CH ₂		80	176			E		
Butyric Acid	Pure	40	104		E	E		
CH ₃ CH ₂ CH ₂ CO ₂ H	Pure	80	176		E	E		
Caffeine Citrate		40	104			E		
		80	176			E		
Calcium Acetate	Satu	40	104	E	E	E		
Ca(CH ₃ COO) ₂	Satu	80	176		G	E		
Calcium Bisulfide	Satu	40	104	E	E	E	E	E
CaS	Satu	80	176		E	E		

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Calcium Bisulfite (Calcium Hydrogen Sulfite) $\text{Ca(HSO}_3)_2$	Satu	40	104	E	E	E	E	G
Calcium Bromide	Satu	40	104	E	E	E	E	E
Calcium Carbonate CaCO_3	Satu	40	104	E	E	E	E	G
Calcium Chlorate $\text{Ca(ClO}_3)_2 \cdot 2\text{H}_2\text{O}$	Satu	40	104	E	E	E	E	E
Calcium Chloride CaCl_2	Satu	40	104	E	E	E	E	E
Calcium Hydroxide Ca(OH)_2	Satu	40	104	E	E	E	E	G
Calcium Nitrate $\text{Ca(NO}_3)_2$	Satu	40	104	E	E	E	E	G
Calcium Sulfate CaSO_4	Satu	40	104	E	E	E	E	G
Calcium Sulfide CaS	Satu	40	104	E	E	E	E	E
Cane Sugar Liquor		40	104	E	E	E	E	E
Caprylic Acid $\text{CH}_3(\text{CH}_2)_6\text{COOH}$	Pure	40	104			E		
Carbitol $\text{HO(CH}_2)_7\text{O(CH}_2)_2\text{OC}_2\text{H}_5$	Pure	40	104	G		E		
Carbon Dioxide (Wet-Dry) CO_2		40	104	E	E	E	E	E
Carbon Disulfide CS_2	Pure	40	104	F			E	F
Carbon Monoxide CO Gas	Gas	40	104	E	E	E	E	E
Carbon Tetrachloride CCl_4	Pure	40	104	C		E	E	G
Carbonic Acid H_2CO_3		40	104	E	E	E	E	E
Casein		40	104			E		
Castor Oil	Pure	40	104	E	E	E		
Caustic Potash (Potassium Hydroxide) KOH	25	40	104	E	E	E	E	F
Cellulosolve $\text{C}_2\text{H}_5\text{O(CH}_2)_3\text{OH}$		40	104	E	E	E	E	E
Chloramine $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NClNa(H}_2\text{O)}_3$		40	104			E		
Chloric Acid HClO_3	20	40	104	E		E		C
Chlorinated Solvents		40	104					
Chlorine Dioxide ClO_2	Pure	40	104	G	C	E		
Chlorine Gas Cl_2		40	104					

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Chlorine Gas Cl_2	Wet	40	104	G		E		
Chlorine Water Cl_2Aq	400 ppm	40	104	G	C	E	E	
Chloro Benzene $\text{C}_6\text{H}_5\text{Cl}$	Pure	40	104		F	E	E	G
Chloro Sulfonic Acid $\text{SO}_2\text{Cl(OH)}$	Pure	40	104			C	E	F
Chloroform CHCl_3	Pure	40	104		C	E	E	G
Chromic Acid H_2CrO_4	10	40	104	E		E	E	C
Chromium Alum $\text{K}_2\text{Cr}_2\text{(SO}_4)_2$	Satu	40	104			E	E	
Citric acid $\text{C}_6\text{H}_8\text{O}_7$	10	40	104	E	E	E	E	E
Coconut Oil		40	104	E	E	E	E	E
Coke Oven Gas		40	104			E		
Copper (Cupric) Chloride CuCl_2		40	104	E	E	E		
Copper Acetate $\text{Cu(CH}_3\text{COO)}_2 \cdot \text{H}_2\text{O}$	Satu	40	104			E		
Copper Borofluoride CuBF_4		40	104			E		
Copper Carbonate CuCO_3	Satu	40	104			E		
Copper Cyanide CuCN		40	104			E	E	G
Copper Fluoride CuF	Satu	40	104	E	E	E	E	C
Copper Sulfate CuSO_4	Satu	40	104	E	E	E	E	G
Corn Oil		40	104			E	E	
Corn Syrup		40	104	E	E	E	E	
Cottonseed Oil		40	104			E	E	E
Creosote		40	104				E	G

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Cresol	Pure	40	104	F		E	E	E
$C_6H_4(CH_3)OH$	Pure	80	176	C		G		E
Croton Aldehyde	Pure	40	104			E		
$CH_3-CH=CH-CHO$	Pure	80	176			G		
Crude Oil		40	104	E		E	E	E
		80	176			E		E
Cryolite		40	104	G	E	E		
$NaAlF_6$		80	176		E	E		
Cupric Fluoride	Satu	40	104	E	E	E		
$CuF_2 \cdot 2H_2O$	Satu	80	176		G	E		
Cupric Nitrate	10	40	104	E	E	E		
$Cu(NO_3)_2$		80	176		G	E		
Cuprous Chloride	Satu	40	104	E	E	E		
$CuCl$	Satu	80	176		E	E		
Cyclohexane	Pure	40	104		C	E	E	E
C_6H_{12}	Pure	80	176			E		E
Cyclohexanol	Pure	40	104		G	E	E	
$C_6H_{11}OH$	Pure	80	176		C	G		
Cyclohexanone	Pure	40	104		C	E	E	
$C_6H_{10}O$	Pure	80	176			E		
Decalin	Pure	40	104			E		
$C_{10}H_{18}$	Pure	80	176			E		
Decane	Pure	40	104			E		
$CH_3(CH_2)_8CH_3$	Pure	80	176			E		
Dextrine	Satu	40	104	E	E	E		
	Satu	80	176		E	E		
Diacetone		40	104					E
		80	176					
Diacetone Alcohol	Pure	40	104		E	G	E	E
$(CH_3)_2C(OH)CH_2COCH_3$	Pure	80	176			C		
Dibenzyl Ether	Pure	40	104			G		
$C_6H_5CH_2OCH_2C_6H_5$	Pure	80	176			C		
Dibutyl Ether		40	104			G		
$(CH_3)(CH_2)_3_2O$		80	176			C		
Dibutyl Phthalate	Pure	40	104			G	E	G
$C_6H_4(COOC_4H_9)_2$	Pure	80	176			C		
Dibutyl Sebacate		40	104			G		
$H_3C_2OOC-(CH_2)_8-COOC_2H_5$		80	176			C		
Dibutylamine	Pure	40	104			F		
$(C_4H_9)_2NH$	Pure	80	176					
Dichloro Benzene	Pure	40	104			E		
$C_6H_4Cl_2$	Pure	80	176					
Dichloroethylene	Pure	40	104			E	E	
$CH_2=CCl_2$	Pure	80	176					
Dichloroisopropyl Ether	Pure	40	104			G		
$Cl-CH_2-CH-O-CH-CH_2Cl$	Pure	80	176			C		
CH_3-CH_3								
Diesel Fuels		40	104			E	E	E
		80	176			E		E
Diethylamine	Pure	40	104		G	F	E	G
$(C_2H_5)_2NH$	Pure	80	176					

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Diethylether	Pure	40	104		C	G	E	
$C_2H_5OC_2H_5$		80	176			C		
Diethylene Triamine		40	104			G		
$H_2N(CH_2CH_2NH)_2H$		80	176			C		
Diglycolic Acid	Satu	40	104	E				
$(HO_2CCH_2)_2O+H_2O$	Satu	80	176					
Dilsobutyl Ketone	Pure	40	104					
$((CH_3)_2CHCH_2)_2CO$		80	176					
Dilsobutylene	Pure	40	104			E		
C_8H_{16}		80	176			G		
Dilsopropyl Ketone	Pure	40	104					
$((CH_3)_2CH)_2CO$		80	176					
Dimethyl Amine	Pure	40	104		G	F		
$(COCH_3)_2NH$	Pure	80	176					
Dimethyl Aniline	Pure	40	104			F	E	
$C_6H_4(N)$	Pure	80	176			C		
Dimethyl Formamide	Pure	40	104		G		E	
$HCON(CH_3)_2$	Pure	80	176					
Dimethyl Phthalate		40	104			F	E	
$C_6H_4(COOC_2H_5)_2$		80	176			C		
Dioxane	Pure	40	104		F	F		
$C_4H_8O_2$	Pure	80	176					
Dioxolene		40	104					
$C_4H_6O_2$		80	176					
Diphenyl Oxide	Satu	40	104					G
$C_{12}H_{10}O$	Satu	80	176					
Disodium Phosphate		40	104	E		E		
Na_2HPO_4		80	176			E		
Epichlorohydrine	Satu	40	104			C		
C_2H_3OCl	Satu	80	176					
Epson Salt (Magnesium Sulfate) $MgCl_2$	Satu	40	104	E	E	E		E
	Satu	80	176		E	E		
Ethanolamine	Pure	40	104				E	E
$H_2NCH_2CH_2OH$	Pure	80	176					E
Ethyl Acetoacetate	Pure	40	104			G		
$CH_3CO-CH_2COOC_2H_5$	Pure	80	176			C		
Ethyl Acrylate	Pure	40	104			G		
$H_2C=CH-COOC_2H_5$	Pure	80	176			C		
Ethyl Alcohol	Pure	40	104	E	E	E		
C_2H_5OH	Pure	80	176		G	E		
Ethyl Benzene		40	104			E	E	G
$C_6H_5C_2H_5$		80	176					
Ethyl Chloride		40	104		C	E	E	E
C_2H_5Cl		80	176					E
Ethyl Ether	Pure	40	104			G	E	
$(C_2H_5)_2O$	Pure	80	176					
Ethyl Formate	Pure	40	104					
$HCOOC_2H_5$		80	176					

Materials		Ratings	
PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)	E	Excellent (Recommended)
PP	Polypropylene	G	Good (Good)
PVDF	Polyvinylidene Fluoride	F	Fair (Special Conditions Only)
PFA	Perfluoroalkoxy	C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Ethyl Mercaptan	Pure	40	104					
C ₂ H ₅ -SH	Pure	80	176					
Ethyl Oxalate		40	104					
(CO ₂ C ₂ H ₃) ₂		80	176					
Ethylene Bromide	Pure	40	104			E	E	
CH ₂ Br-CH ₂ BR	Pure	80	176			E		
Ethylene Chloride (Ethylene Dichloride) ClCH ₂ CH ₂ Cl		40	104		C	E	E	E
		80	176			E		
Ethylene Chlorohydrin	Pure	40	104			G		G
CH ₂ OH-CH ₂ OH	Pure	80	176			C		
Ethylene Diamine	Pure	40	104			C	E	
NH ₂ CH ₂ CH ₂ NH ₂	Pure	80	176					
Ethylene Glycol	Pure	40	104	E	E	E	E	E
ClCH ₂ -CH ₂ OH	Pure	80	176		G	G		G
Ethylene Oxide	Pure	40	104			G	E	
(CH ₂) ₂ O	Pure	80	176			C		
Fatty Acids		40	104	E	G	E	E	E
RCOOH		80	176		F	E		E
Ferric Chloride		40	104	E	E	E	E	
FeCl ₃		80	176			E		
Ferric Hydroxide	Satu	40	104	E	E	E		F
Fe(OH) ₃	Satu	80	176			E		F
Ferric Nitrate	Satu	40	104	E	E	E	E	
Fe(NO ₃) ₃	Satu	80	176		G	E		
Ferric Sulfide		40	104	E	E	E	E	
Fe ₂ S ₃		80	176		G	E		
Ferrous Chloride		40	104	E	E	E	E	F
FeCl ₂		80	176			E		F
Ferrous Hydroxide	Satu	40	104	E	E	E		
Fe(OH) ₂	Satu	80	176			E		
Ferrous Nitrate	Satu	40	104	E	E	E		
Fe(NO ₃) ₂	Satu	80	176			E		
Ferrous Sulfate		40	104	E	E	E	E	G
FeSO ₄		80	176			E		G
Fluoboric Acid	Pure	40	104	E	E	E	E	
HFBr ₄	Pure	80	176		G	E		
Flourine Gas (Wet)		40	104	G	G	E	E	
F ₂		80	176			E		
Fluosilic Acid	50	40	104	G	E	E		G
(Hydrofluosilic Acid) H ₂ SIF ₆	50	80	176		G	E		G
Formaldehyde	35	40	104	E	E	E	E	E
HCHO	35	80	176		E	C		
Formalin	40	40	104	E	E	E		
	40	80	176		E	C		
Formic Acid	90	40	104	G	G	E	E	F
HCOOH		80	176			E		F
Freon-11		40	104	E		E	E	F
CCl ₃ F		80	176			E		E
Freon-113		40	104			E	E	F
CC1F ₂ -CC1F ₂		80	176			E		
Freon-114		40	104			E	E	F
CC1F ₂ -CC1F ₂		80	176			E		

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Freon-12		40	104	E		E	E	F
CCl ₂ F		80	176			E		
Freon-21		40	104			E	E	F
CHCl ₂ F		80	176			E		
Freon-22		40	104			E	E	F
CHClF ₂		80	176			E		
Fructose (Fruit Sugar)		40	104	E		E		
		80	176			E		
Fuming Sulfuric Acid	30	40	104					
H ₂ SO ₄ +SO ₃	30	80	176					
Fuming Sulfuric Acid		40	104					
H ₂ SO ₄ +SO ₃		80	176					
Furan		40	104					
CH=CH O / CH=CH		80	176					
Furfural	Pure	40	104		C	E		G
C ₄ H ₃ O ₂	Pure	80	176			C		G
Furfural Alcohol	Pure	40	104			G		
C ₂ H ₃ O ₂	Pure	80	176			C		
Gallic Acid		40	104			G	E	G
C ₇ H ₃ O ₅ -H ₂ O		80	176			C		G
Gas (Natural Gas)		40	104	E		E	E	E
		80	176			E		E
Gasoline		40	104			E	E	E
		80	176					E
Gasoline (Sour)		40	104	E		E	E	
		80	176			E		
Gelatin		40	104	E	E	E	E	E
		80	176			E		
Gin		40	104	E	E	E		
		80	176		G	E		
Glacial Acetic Acid		40	104		F	G		
CH ₃ COOH		80	176			G		
Glucose		40	104	E	E	E	E	E
C ₆ H ₁₂ O ₆		80	176			E	E	
Glue		40	104			E	E	E
		80	176			E		
Glycerol (Glycerine)		40	104	E	E	E	E	E
C ₃ H ₅ (OH) ₃		80	176			E		E
Glycolic Acid	Satu	40	104		E	G	E	E
CH ₂ (OH)COOH	Satu	80	176			C		E
Grape Sugar		40	104	E	E	E		
C ₆ H ₁₂ O ₆		80	176			E	E	
Heavy Oil		40	104					
		80	176					
Heptane		40	104	E	G	E	E	E
CH ₃ (CH ₂) ₅ CH ₃		80	176			E		
Hexane		40	104	G	G	E	E	E
C ₆ H ₁₄		80	176			E		
Hexyl Alcohol	Pure	40	104	E		E		
CH ₃ (CH ₂) ₅ OH	Pure	80	176			G		

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
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Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Hydrazine	Pure	40	104		C	F	E	E
H ₂ N-NH ₂	Pure	80	176					
Hydrobromic Acid		40	104	E	E	E	E	
HBr		80	176		E	E		
Hydrochloric Acid	15	40	104	E	E	E	E	C
HCl	15	80	176		E	E		C
	25	40	104	E	E	E	E	C
	25	80	176		E	E		C
	35	40	104	E	E	E	E	C
	35	80	176		G	E		C
	38	40	104	E	E	E	E	C
	38	80	176		G	E		C
Hydrocyanic Acid	10	40	104	E	E	E	E	F
HCN		80	176			E		F
Hydrofluoric Acid	Dilute	40	104	E	G	E	E	C
HF Dilute		80	176		G	E		C
	30	40	104	G	G	E		C
	30	80	176	C	G	E		C
	40	40	104	F	G	E		C
	40	80	176		G	E		C
	50	40	104	F	G	E		C
	50	80	176		G	E		C
Hydrogen		40	104	E	E	E	E	E
H ₂		80	176		E	E		E
Hydrogen Fluoride (Anhydrous)		40	104			E	E	E
HF		80	176			E		G
Hydrogen Peroxide	5	40	104	E	E	E	E	G
H ₂ O ₂	5	80	176		G	E		G
	20	40	104	E	E	E		G
	20	80	176		G	E		G
	30	40	104	G	G	E		G
	30	80	176		F	E		G
	50	40	104	F	C	E		F
	50	80	176			E		F
	90	40	104			E		E
	90	80	176			E		C
Hydrogen Sulfide (Aqueous)		40	104	E	E	E	E	F
		80	176		G	E		
Hydrogen Sulfide (Dry)		40	104	E	E	E	E	G
H ₂ S		80	176		E	E		G
Hydroiodic Acid		40	104	E	E	E		
HI		80	176			E		
Hydroquinone	Satu	40	104	E		E		
C ₆ H ₄ (OH) ₂	Satu	80	176			E		
Hypochlorous Acid	10	40	104	E	G	E	E	C
HClO	10	80	176			E		C
Iodine		40	104	F	E	E	E	
I ₂		80	176		E	E		
Iodine Solution	10	40	104	E		E	E	
	10	80	176			E		
Iso-Octane		40	104			E	E	
C ₈ H ₁₈		80	176			E		

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Isobutyl Alcohol	Pure	40	104			E	E	E
(CH ₃) ₂ CHCH ₂ OH	Pure	80	176			E		
Isophorone	Pure	40	104					
C ₉ H ₁₆ O	Pure	80	176					
Isopropyl Acetate		40	104				E	E
CH ₃ COOCH(CH ₃) ₂		80	176					E
Isopropyl Alcohol	Pure	40	104	E	E	E	E	G
(CH ₃) ₂ CHOH	Pure	80	176			E		
Isopropyl Chloride		40	104			G		
(CH ₃) ₂ CHCl		80	176			C		
Isopropyl Ether	Pure	40	104			G	E	E
(CH ₃) ₂ CH-O-CH(CH ₃) ₂	Pure	80	176			C		
Jet Fuel Jp-4		40	104			E	E	E
		80	176			E		
Jet Fuel Jp-5		40	104			E	E	E
		80	176			E		
Kerosene (Kerosin)		40	104	E	G	E	E	E
		80	176			E		E
Lacquer		40	104				E	E
		80	176					
Lactic Acid	25	40	104	E	E	E	E	G
CH ₃ CH(OH)COOH	25	80	176			E	E	G
	80	40	104	G	E	E		G
	80	80	176		G	E		G
Lauric Acid		40	104			E		
CH ₃ (CH ₂) ₁₀ COOH		80	176			E		
Lauryl Chloride	Pure	40	104			E		
C ₁₂ H ₂₅ Cl	Pure	80	176			E		
Lead Acetate	Satu	40	104	E	E	E	E	G
Ph(CH ₃ COO) ₂ ·3H ₂ O	Satu	80	176		G	G		G
Lead Chloride		40	104	E	E	E		
PbCl ₂		80	176			E		
Lead Nitrate	Satu	40	104	E	E	E	E	
Pb(NO ₃) ₂	Satu	80	176			E	E	
Lead Sulfate		40	104	E	E	E		
PbSO ₄		80	176			E	E	
Lemon Oil		40	104			E		
		80	176			E		
Linolenic Acid		40	104	G		E	E	
CH ₃ (CH=CHCH ₂)(CH ₂) ₇		80	176			E		
Linolenic Oil (Linolic Oil)		40	104	G		E		
		80	176			E		
Linseed Oil		40	104	E	E	E	E	E
		80	176		G	E		
Lithium Bromide	60	40	104	E		E		
LiBr	60	80	176			E		
Lithium Chloride	Satu	40	104	E	E	E	E	G
LiCl	Satu	80	176			E	E	G
Lubricating Oil (ASTM1)		40	104	E		E	E	E
		80	176			E		E
Lubricating Oil (ASTM2)		40	104	E		E	E	E
		80	176			E		E

Materials

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Ratings

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C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Lubricating Oil (ASTM3)		40	104	E		E	E	E
		80	176			E		E
Machine Oil		40	104	E	E	E		
		80	176			E		
Magnesium Carbonate MgCO ₃		40	104	E	E	E	E	E
		80	176			E	E	
Magnesium Chloride MgCl ₂	Satu	40	104	E	E	E	E	F
	Satu	80	176			E	E	F
Magnesium Citrate		40	104	E	E	E		
		80	176			E	E	
Magnesium Hydroxide Mg(OH) ₂	Satu	40	104	E	E	E	E	E
	Satu	80	176			E	E	E
Magnesium Nitrate Mg(NO ₃) ₂ ·6H ₂ O		40	104	E	E	E	E	E
		80	176			G	E	E
Magnesium Sulfate MgSO ₄		40	104	E	E	E	E	G
		80	176			E	E	G
Maleic Acid (CHCOO) ₂		40	104	E	E	E	E	G
		40	104	E	E	E	E	G
Malic Acid (C ₄ H ₆ O ₅)	10	40	104	E	E	E	E	E
	10	80	176			E	E	
Manganese Sulfate MnSO ₄		40	104	E	E	E	E	
		80	176			E	E	
Mercuric Chloride HgCl ₂		40	104	E	E	E	E	C
		80	176			E	E	C
Mercuric Cyanide Hg(CN) ₂	Satu	40	104	E	E	E	E	E
		80	176			E	E	
Mercuric Sulfate HgSO ₄	Satu	10	104	E	E	E		
	Satu	80	176			E	E	
Mercurous Nitrate Hg ₂ (NO ₃) ₂	Satu	40	104			E	E	F
	Satu	80	176			E		F
Mercury Hg		40	104	E	E	E	E	E
		80	176			E	E	E
Methane CH ₄		40	104	E	G	E	E	E
		80	176			G	E	E
Methane Sulfonic Acid CH ₃ SO ₃ H	Pure	40	104			E		
	Pure	80	176			E		
Methyl Acetate CH ₃ COOCH ₃	Pure	40	104			G	E	E
	Pure	80	176			C		F
Methyl Acrylate CH ₂ CHCOOCH ₃	Pure	40	104			G		
	Pure	80	176			C		
Methyl Alcohol CH ₃ NH ₂		40	104	G	E	E	E	E
		80	176			E	E	E
Methyl Alcohol CH ₃ OH		40	104	G	E	E	E	E
		80	176			G	E	E
Methyl Bromide CH ₃ Br		40	104			E	E	
		80	176			E		
Methyl Cellosolve HOCH ₂ CH ₂ OCH ₃		40	104			E	E	C
								C
Methyl Chloride CH ₂ Cl		40	104			E	E	E
		80	176			E		E
Methyl Chloroform CH ₂ CCl ₃		40	104			E		
		80	176			F		

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Methyl Ether (CH ₃) ₂ O		40	104					
		80	176					
Methyl Ethyl Ketone CH ₃ COC ₂ H ₅		40	104		F		E	E
		80	176					E
Methyl Formate HCOOCH ₃		40	104					
		80	176					
Methyl Isobutyl Carbinol (CH ₃) ₂ CHCH ₂ CH(OH)(CH ₃)		40	104					
		80	176					
Methyl Isobutyl Ketone (CH ₃) ₂ CHCH ₂ COCH ₃		40	104		C		E	E
		80	176					
Methyl Isopropyl Ketone (CH ₃) ₂ CH-C-CH ₃ O		40	104					
		80	176					
Methyl Methacrylate CH ₂ C(CH ₃)COOCH ₃		40	104			G		
		80	176			C		
Methyl Sulfoxide (CH ₃) ₂ SO		40	104					
		80	176					
Methylene Bromide CH ₂ Br ₂		40	104			E		
		80	176			E		
Methylene Chloride CH ₂ Cl ₂		40	104			G	E	F
		80	176					F
Methylene Iodide CH ₂ I ₂		40	104			E		
		80	176			E		
Milk		40	104	E	E	E	E	E
		80	176			E	E	E
Mineral Oil		40	104	G	G	E	E	E
		80	176			E		
Monochloro Acetic Acid ClCH ₂ COOH	50	40	104	G	G	E	E	
	50	80	176			G		
Monochloro-Benzene C ₆ H ₅ Cl		40	104		F	E	E	G
		80	176					
Monoethanol Amine H ₂ NCH ₂ CH ₂ OH		40	104					G
		80	176					G
Monomethyl-Aniline C ₆ H ₅ NHCH ₃		40	104					
		80	176					
Motor Oil		40	104			E	E	E
		80	176			E		
Naphtha		40	104		G	E	E	E
		80	176			G		E
Naphthalene C ₁₀ H ₈		40	104			E	E	E
		80	176			E		E
Nickel Acetate Ni(CH ₃ COO) ₂		40	104	E	E	E		
		80	176			G	G	
Nickel Aminosulfonate N:(NH ₂ SO ₃) ₂ ·H ₂ O		40	104			E		
		80	176			E		
Nickel Chloride NiCl ₂	Satu	40	104	E	E	E	E	F
		80	176			E	E	
Nickel Nitrate Ni(NO ₃) ₂ ·6H ₂ O	Satu	40	104			E	E	G
	Satu	80	176			E		G
Nickel Sulfate NiSO ₄	Satu	40	104	E	E	E	E	G
	Satu	80	176			G	E	

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Nicotine		40	104			G		
$C_{10}H_{14}N_2$		80	176					
Nicotinic Acid		40	104			E		
$C_6H_5O_2N$		80	176			E		
Nitric Acid	10	40	104	E	E	E	E	E
HNO_3	10	80	176	C	G	E		E
	30	40	104	E	E	E		E
	30	80	176	C	G	E		E
	50	40	104	G	G	E		G
	50	80	176	C	C	G		G
	70	40	104	G	C	E		F
	70	80	176	C		G		F
	98	40	104			G		E
	98	80	176					
Nitrobenzene		40	104		F	G	E	E
$C_6H_5NO_2$		80	176					E
Nitroethane		40	104					
$CH_3CH_2NO_2$		80	176					
Nitrogen Dioxide		40	104			G		
NO_2		80	176					
Nitrogen Monoxide		40	104	E	E	E		
NO		80	176					
Nitromethane	Pure	40	104			E	E	
CH_3NO_2	Pure	80	176					
Nitrous Acid	10	40	104				E	G
HNO_2	10	80	176					
Nitrous Oxide		40	104	E	E	E	E	
N_2O		80	176		E	E		
Octane		40	104			E	E	
C_8H_{18}		80	176			E		
Octene	Pure	40	104			E		
$CH_3(CH_2)_6CH=CH_2$	Pure	80	176			E		
Oleic Acid		40	104	E	E	E	E	G
$C_{18}H_{34}O_2$		80	176		E	E		G
Olive Oil		40	104	E	E	E		E
		80	176			E		F
Oxalic Acid	20	40	104	E	E	E	E	
HOOC-COOH	20	80	176		E	E		
	50	40	104	E	E	E		
	50	80	176		E	E		
Oxygen Gas		40	104			E	E	
O_2		80	176			E		
Ozone		40	104	G		E	E	
O_3		80	176			E		
Paint Solvents		40	104					
		80	176					
Palmitic Acid	5	40	104		E	E	E	F
$C_{16}H_{32}COOH$	5	80	176		E	E		F
	10	40	104		E	E		F
	10	40	176		E	E		F
	70	40	104		E	E		F
	70	80	176		G	E		F

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Paraffin		40	104			E	E	E
		80	176			E		E
Peanut Oil		40	104			E		
		80	176			E		
Perchloric Acid	10	40	104	E	G	E	E	
$HClO_4$	10	80	176			E		
	70	40	104			E		
	70	80	176					
Perchloro Ethylene		40	104				E	G
$Cl_2C=CCl_2$		80	176					G
Perphosphate		40	104	E	E	E		
		80	176		E	E		
Petroleum Oil		40	104			E	E	
		80	176			E		
Phenol		40	104	G	E	E		
C_6H_5OH		80	176		C	C		
Phenyl Disulfide		40	104					
$C_6H_5SSC_6H_5$		80	176					
Phenylhydrazine		40	104			E		
$C_6H_5NHNH_2$		80	176					
Phosgene Gas		40	104					
$COCl_2$		80	176					
Phosgene Liquid		40	104					
$COCl_2$		80	176					
Phosphoric Acid	10	40	104	E	E	E	E	
H_3PO_4	10	80	176		E	E		G
	50	40	104	E	E	E		G
	50	80	176		F	E		G
	80	40	104	E	G	E		
	80	80	176		F	E		
Phosphorus Oxchloride		40	104					
$POCl_3$		80	176					
Phosphorus Pentoxide		40	104	E	E	E	E	
P_2O_5		80	176			E		
Phosphorus Red		40	104			E		
P_4		80	176			E		
Phosphorus Trichloride	Pure	40	104			E	E	
PCl_3	Pure	80	176			E		
Photographic Solutions		40	104	E	E	E	E	E
(Sodium Thiosulfate) $Na_2S_2O_3$		80	176			E		
Phthalic Acid		40	104			E	E	G
$C_6H_4(COOH)_2$		80	176			E		G
Pickling Solutions		40	104	E	E	E		
(For Steel)		80	176		E	E		
Picric Acid	10	40	104	E	E		E	G
$C_6H_3O_3N_3$		80	176		E			G
Plating Solutions (Brass)		40	104	E	E	E	E	E
		80	176		E	E		
Plating Solutions (Cadmium)		40	104	E		E	E	E
		80	176			E		
Plating Solutions (Chrome)		40	104	E		E	E	
		80	176			E		

Materials		Ratings	
PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)	E	Excellent (Recommended)
PP	Polypropylene	G	Good (Good)
PVDF	Polyvinylidene Fluoride	F	Fair (Special Conditions Only)
PFA	Perfluoroalkoxy	C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Plating Solutions (Copper)		40	104	E	E	E	E	E
		80	176		G	E		
Plating Solutions (Gold)		40	104	E		E	E	
		80	176			E		
Plating Solutions (Lead)		40	104	E	E	E	E	
		80	176			E		
Plating Solutions (Nickel)		40	104	E	E	E	E	F
		80	176			E		
Plating Solutions (Rhodium)		40	104	E	E	E		
		40	176			E		
Plating Solutions (Silver)		40	104			E	E	E
		80	176					
Plating Solutions (Tin)		40	104	E	E	E	E	F
		80	176			E		
Plating Solutions (Zinc) $(CH_3)_2CH-C-CH_3$ $\quad \quad \quad $ $\quad \quad \quad O$		40	104					
		80	176					
Poly Aluminum Chloride $IA_1(OH)_nCl_{3-n}$		40	104	E	E	E	E	
		80	176					
Polyethylene -Glycol $HOCH_2(CH_2OCH_2)_nCH_2OH$		40	104	E	E	E		
		80	176		G	E		
Polyvinyl Acetate $ICH_2COOCH_2-CH_2In$		40	104			E		
		80	176			E		
Polyvinyl Alcohol $I-CH_2-CH(OH)-n$		40	104	E	E	E		
		80	176			E		
Potash K_2CO_3		40	104	E	E	E		
		80	176			E		
Potassium Acetate CH_3CO_2K	Satu	40	104			E	E	F
		80	176			E		F
Potassium Alum $K_2SO_4 \cdot Al_2(SO_4)_3$		40	104					
		80	176					
Potassium Aluminum Sulfate $K_2O \cdot 3Al_2O_3 \cdot 6SiO_2 \cdot 2H_2O$		40	104	E	E	E	E	G
		80	176			E		
Potassium Bicarbonate $KHCO_3$	Satu	40	104	E	E	E	E	F
		80	176			E		
Potassium Bichromate $K_2Cr_2O_7$	Satu	40	104	E	E	E	E	F
		80	176		G	E		C
Potassium Bisulfate (Potassium Hydrogen Sulfate) $KHSO_4$		40	104	E	E	E		
		80	176			E		
Potassium Borate		40	104	E	E	E		
		80	176			E		
Potassium Bromate $KBrO_3$		40	104	E	E	E		
		80	176		G	E		
Potassium Bromide KBr		40	104	E	E	E	E	E
		80	176			E		E
Potassium Carbonate K_2CO_3		40	104	E	E	E	E	G
		80	176			E		
Potassium Chlorate (Aqueous) $KClO_3$		40	104	E	E	E	E	G
		80	176		G	E		
Potassium Chloride KCl		40	104	E	E	E	E	G
		80	176			E		G

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Potassium Chromate K_2CrO_4		40	104	E	E	E	E	E
		80	176			G	E	
Potassium Coppercyanide $K_2(CuCN)_4$		40	104	E	E	E		
		80	176			E	E	
Potassium Cyanide KCN		40	104	E	E	E	E	G
		80	176		G	E		G
Potassium Ferricyanide $K_3[Fe(CN)_6]$		40	104			E	E	
		80	176			E		
Potassium Ferrocyanide $K_4[Fe(CN)_6]$		40	104			E	E	F
		80	176			E		F
Potassium Fluoride KF		40	104			E		
		80	176			E		
Potassium Hydroxide KOH	25	40	104	E	E	E	E	E
		80	176		E	F		E
Potassium Hypochlorite $KClO$		40	104	E		E	E	
		80	176			E		
Potassium Iodide KI		40	104	E	E	E	E	E
		80	176		E	E		E
Potassium Nitrate KNO_3		40	104	E	E	E	E	F
		80	176			E		F
Potassium Perborate		40	104	E	E	E		
		80	176			E		
Potassium Perchlorate $KClO_4$		40	104	E	E	E		
		80	176			E		
Potassium Permanganate $KMnO_4$	10	40	104	E	E	E	E	G
		80	176		G	E		G
		25	40	104	E	E	E	G
Potassium Persulfate $K_2S_2O_8$		40	104	E	E	E		
		80	176			E		
Potassium Sulfate K_2SO_4	Pure	40	104	E	E	E	E	E
		80	176			E		E
Potassium Sulfite K_2SO_3		40	104	E	E	E	E	
		80	176					
Propane $CH_3CH_2CH_3$		40	104				E	E
		80	176			E		
Propyl Acetate $CH_3CO_2C_2H_5$	Pure	40	104			G	E	
		80	176			C		
Propyl Aceton $CH_3COCC_2H_5$	Pure	40	104					
		80	176					
Propyl Alcohol C_3H_7OH		40	104	E	E	E	E	G
		80	176	G	G	E		G
Propylene Dichloride $CH_2CHClCH_2Cl$		20	68					
		80	176					
Propylene Oxide C_2H_4O		40	104				E	G
		80	176					
Pyridine C_5H_5N		40	104		E	F	E	E
		80	176					E
Rhodan Salts		40	104	E	E	E		
		80	176			E		
Salicyl Aldehyde $C_6H_4(OH)(CHO)$		40	104			E		
		80	176			F		

Materials

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Ratings

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G	Good (Good)
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Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Salicylic Acid		40	104			E	E	F
C ₇ H ₆ (OH)(COOH)		80	176			E		F
Salt Water	Satu	40	104	E	E	E	E	F
		80	176			E	E	F
Sea Water		40	104	E	E	E	E	E
		80	176			E	E	E
Sewage		40	104	E	E	E	E	
		80	176			E	E	
Silicic Acid		40	104	E	E	E		
SiO ₂ ·nH ₂ O		80	176			E	E	
Silicon Oil		40	104	E	E	E	E	E
		80	176			E	E	
Silver Dyanide		40	104	E	E	E	E	
Ag-CN		80	176			E	E	
Silver Nitrate		40	104	E	E	E	E	F
AgNO ₃		80	176			E	E	F
Silver Sulfate		40	104	E	E	E		
AgSO ₄		80	176			E	E	
Soaps		40	104	E	E	E	E	E
		80	176			E	E	E
Sodium Acetate	Satu	40	104	E	E	E	E	F
CH ₃ CO ₂ Na	Satu	80	176			E	E	F
Sodium Alum	Satu	40	104	E	E	E	E	
Na Al(SO ₄) ₂	Satu	80	176			E	E	
Sodium Benzoate		40	104	E	E	E	E	
C ₇ H ₆ O ₂ Na		80	176			E	E	
Sodium Bicarbonate		40	104	E	E	E	E	F
NaHCO ₃		80	176			E	E	F
Sodium Bichromate	Satu	40	104	E	E	E	E	F
Na ₂ Cr ₂ O ₇	Satu	80	176			G	E	F
Sodium Bisulfate	20	40	104	E	E	E	E	E
NaHSO ₄	20	80	176					E
Sodium Bisulfite		40	104	E	E	E	E	
NaHSO ₃		80	176			G	E	
Sodium Borate	Satu	40	104	E	E	E	E	G
Na ₂ B ₄ O ₇	Satu	80	176			E	E	G
Sodium Bromide	Satu	40	104	E	E	E	E	
NaBr		80	176			E	E	
Sodium Carbonate		40	104	E	E	E	E	E
Na ₂ CO ₃		80	176			E	E	E
Sodium Chlorate	Satu	40	104	E	E	E	E	G
NaClO ₃	Satu	80	176			G	E	F
Sodium Chloride		40	104	E	E	E	E	F
NaCl		80	176			E	E	F
Sodium Chlorite	25	40	104				C	
(NaClO ₂)	25	80	176					
Sodium Cyanide (Solution)		40	104	E	E	E	E	E
NaCN		80	176			G	E	F
Sodium Ferricyanide	Satu	40	104	E	E	E	E	
NaFe(CN) ₆ ·H ₂ O	Satu	80	176			G	E	
Sodium Ferrocyanide	Satu	40	104	E	E	E		
NaFe(NC) ₆ ·10H ₂ O	Satu	80	176			G	E	

Chemical Formula	Concentration %	Temp		PVC	PP	Material		
		°C	°F			PVDF	PFA	316 ss
Sodium Fluoride		40	104	E	E	E	E	
NaF		80	176			E	E	
Sodium Hydroxide	15	40	104	E	E	E	E	E
NaOH	15	80	176			G	F	E
	30	40	104	E	E	E		G
	30	80	176			G	F	G
	50	40	104	E	E	G	G	F
	50	80	176			E	C	F
	70	40	104	G	G	G		
	70	80	176			G	C	
Sodium Hypochlorite	3	40	104	E	G	E	E	F
NaClO	3	80	176					
	5	40	104	E	G	E		F
	5	80	176					
	7	40	104	E	F	E		F
	7	80	176					
	10	40	104	E	F	E		F
	10	80	176					
	13	40	104	E	F	E		F
	13	80	176					
Sodium Metasilicate		40	104	E	E	E	E	E
Na ₂ SiO ₃		80	176			E	E	E
Sodium Nitrate	Satu	40	104	E	E	E	E	G
NaNO ₃	Satu	80	176			E	E	F
Sodium Nitrate	Satu	40	104	E	E	E	E	G
NaNO ₂	Satu	80	176			E	E	F
Sodium Palmitate		40	104				E	
Na(C ₁₅ H ₃₁ COO)		80	176				E	
Sodium Perborate		40	104				E	F
NaBO ₃ ·4H ₂ O		80	176				E	
Sodium Perchlorate		40	104	E	E	E		
NaClO ₄		80	176			G	E	
Sodium Peroxide		40	104	E	E	E	G	E
Na ₂ O ₂		80	176			G	E	E
Sodium Phosphate		40	104	E	E	E	E	F
Na ₂ HPO ₄ ·12H ₂ O		80	176			E	E	F
Sodium Phosphate Acid		40	104	E	E	E		
NaH ₂ PO ₄ ·2H ₂ O		80	176				E	
Sodium Phosphate Alkaline		40	104	E	E	E		
Na ₂ PO ₄ ·12H ₂ O		80	176			E	E	
Sodium Silicofluoride		40	104	E	E	E		
Na ₂ SiF ₆		80	176				E	
Sodium Sulfate	Satu	40	104	E	E	E	E	E
Na ₂ SO ₄	Satu	80	176			E	E	E
Sodium Sulfide		40	104	E	E	E	E	E
Na ₂ S		80	176			E	E	E
Sodium Sulfite		40	104	E	E	E	E	
Na ₂ SO ₃		80	176			E	E	
Sodium Thiocyanate		40	104	E	E	E		
NaSCN		80	176				E	
Sodium Thiosulfate		40	104	E	E	E	E	E
Na ₂ S ₂ O ₃		80	176			E	E	

Materials

PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)
PP	Polypropylene
PVDF	Polyvinylidene Fluoride
PFA	Perfluoroalkoxy

Ratings

E	Excellent (Recommended)
G	Good (Good)
F	Fair (Special Conditions Only)
C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Sodium Hydroxide NaOH		40	104					E
		80	176					
Sour Crude Oil		40	104		E	E		
		80	176			E		
Soybean Oil		40	104	E	E	E	E	E
		80	176		G	E		E
Stannic Chloride (Tin (IV) Chloride) SnCl ₄		40	104	E	E	E	E	
		80	176		G	E		
Stannous Chloride (Tin (II) Chloride) SnCl ₂		40	104	E	E	E	E	E
		80	176		G	E		
Starch (C ₆ H ₁₀ O ₅) _n		40	104	E	E	E	E	E
		80	176		E	E		E
Stearic Acid CH ₃ (CH ₂) ₁₆ COOH		40	104	E	G	E	E	E
		80	176		G	E		E
Styrene Monomer CH ₂ H ₃ CH=CH ₂		40	104			E		
		80	176			E		
Sulfamic acid HSO ₂ NH ₂	20	40	104					
	20	80	176					
Sulfite Liquor NaHSO ₃	6	40	104	E	E	E	E	G
	6	80	176		E	E		G
Sulfonated Oil		40	104					
		80	176					
Sulfur S		40	104	E		E		E
		80	176			E		E
Sulfur Dioxide (Dry) SO ₂		40	104	E	E	E		
		80	176		E	E		
Sulfur Dioxide (Wet) SO ₂		40	104	E	E	E		
		80	176		G	E		
Sulfur Chloride S ₂ Cl ₂		40	104		C	E	E	G
		80	176			E		G
Sulfur Dichloride SCl ₂		40	104		C	E		
		80	176			E		
Sulfuric Acid H ₂ SO ₄	10	40	104	E	E	E	E	
	10	80	176		E	E		
	30	40	104	E	E	E		
	30	80	176		E	E		
	50	40	104	E	E	E		
	50	80	176		E	E		
	60	40	104	E	E	E		
	60	80	176		G	E		
	70	40	104	E	E	E		
	70	80	176		G	E		
	80	40	104	E	E	E		
	80	80	176		G	E		
	90	40	104	G	E	E		
	90	80	176		G	E		
	98	40	104	F		E		
	98	80	176			F		
Sulfuric Anhydride SO ₃		40	104					
		80	176					
Sulfurous Acid H ₂ SO ₃		40	104	E	E	E	E	F
		80	176		E	E		

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Sulfurous Acid Gas (Wet) SO ₂		40	104					
		80	176					
Sumition® (Insecticide)		40	104		E	E		
		80	176		G	E		
Tall Oil		40	104			E	E	F
		80	176			E		F
Tannic Acid C ₇₆ H ₅₂ O ₄₆		40	104		E	E	E	E
		80	176		E	E		E
Tar	Satu	40	104			E	E	E
	Satu	80	176			E		
Tartaric Acid (Dioxysuccinic Acid) C ₄ H ₆ O ₆		40	104	E	E	E	E	
		80	176		E	E		
Tertiary Butyl Alcohol (CH ₃) ₃ C(OH)		40	104			E		
		80	176			E		
Tertiary Butyl Catechol C ₉ H ₁₀ (C ₆ H ₄) ₂ (OH) ₂		40	104					
		80	176					
Tetrachloro Ethane Cl ₂ CH-CHCl ₂	Pure	40	104			E	E	E
	Pure	80	176			E		
Tetrachloro Ethylene Cl ₂ C=CCl ₂	Pure	40	104		F	E	E	E
	Pure	80	176			E		E
Tetraethyl Lead Pb(C ₂ H ₅) ₄	Pure	40	104			E	E	
	Pure	80	176			E		
Tetrahydrofuran (THF) C ₄ H ₈ O	Pure	40	104		F	F	E	E
	Pure	80	176				E	E
Tetraline (Tetrahydro Naphthalene) C ₁₀ H ₁₂	Pure	40	104					
	Pure	80	176					
Tetramethyl Ammonium Hydroxide	50	40	104			E		
	50	80	176			G		
Titanium (III) Sulfate Ti ₂ (SO ₄) ₃		40	104	E	E	E		
		80	176		E	E		
Titanium (IV) Sulfate Ti ₂ (SO ₄) ₂		40	104	E	E	E		
		80	176		E	E		
Titanium Tetrachloride TiCl ₄		40	104				E	
		80	176					
Toluene (Toluol) C ₆ H ₅ CH ₃		40	104		G	E	E	E
		80	176					E
Tomato Juice	Pure	40	104	E	E	E	E	E
	Pure	80	176		E	E		
Triacetin C ₃ H ₅ O ₂ (COCH ₃) ₃		40	104					
		80	176					
Tributyl Phosphate (C ₄ H ₉ O) ₃ PO		40	104		G	E	E	
						C		
Trichloroacetic Acid Cl ₃ C-COOH		40	104		E	G	E	
		80	176			C		
Trichloroethylene ClCH=CCl ₂		40	104		F	E	E	G
		80	176					G
Triethanolamine N(CH ₂ CH ₂ OH) ₃		40	104					E
		80	176					E
Triethylamine (C ₂ H ₅) ₃ N		40	104			F	E	
Trimethyl Propane		40	104			E		
		80	176			E		

Materials		Ratings	
PVC	Polyvinyl Chloride (Unplasticized Polyvinyl Chloride)	E	Excellent (Recommended)
PP	Polypropylene	G	Good (Good)
PVDF	Polyvinylidene Fluoride	F	Fair (Special Conditions Only)
PFA	Perfluoroalkoxy	C	Corroded (Not Recommended)

Chemical Formula	Concentration %	Temp °C	Temp °F	PVC	PP	Material PVDF	PFA	316 ss
Turbine Oil (#140)		40	104					
		80	176					
Turpentine Oil		40	104		F	E	E	E
		80	176		C	E		E
Urea CO(NH ₂) ₂	Pure	40	104	E	E	E	E	F
	Pure	80	176			E	E	F
Urine		40	104	E	E	E	E	E
		80	176	E	E	E	E	C
Varnish		40	104			E	E	E
		80	176			E		E
Vaseline (Petrolatum)		40	104	E	E	E		
		80	176		E	E		
Vegetable Oil		40	104			E		
		80	176			E		
Vinegar		40	104	E	E	E	E	E
		80	176		E	E		C
Vinyl Acetate CH ₃ COOCH=CH ₂		40	104			E	E	E
		80	176			E		F
Water H ₂ O		40	104	E	E	E	E	E
		80	176			E	E	E
Water (Distilled)		40	104	E	E	E	E	E
		80	176			E	E	C
Water (Potable)		40	104	E	E	E	E	E
		80	176			E	E	E
Whisky		40	104	E	E	E	E	E
		80	176			E		E
White Acid	Pure	40	104			E		
	Pure	80	176			E		
White Liquor		40	104	E	E	E	E	E
		80	176			E		C
Wines		40	104	E	E	E	E	E
		80	176			E		C
Xylene C ₈ H ₁₀ (CH ₃) ₂		40	104			E	E	E
		80	176			G		E
Yellow Phosphorus P ₄		40	104			E		
		80	176			E		
Zinc Acetate (CH ₃ COO) ₂ Zn		40	104	E	E	E		
		80	176			E	E	
Zinc Bromide ZnBr ₂		40	104	E	E	E		
		80	176			E		
Zinc Chloride ZnCl ₂	Satu	40	104	E	E	E	E	
	Satu	80	176			E		
Zinc Nitrate Zn(NO ₃) ₂ ·6H ₂ O		40	104	E	E	E	E	E
		80	176			E	E	E
Zinc Sulfate ZnSO ₄		40	104	E	E	E	E	F
		80	176			E	E	F

COMPATIBILITY

The information found within the chemical compatibility chart is intended as a reference guideline only, and is not a guarantee of actual chemical resistance. We do not assume any liability for the accuracy, completeness or applicability of such information. Final determination as to the suitability or use of any product or information found within this publication is the sole responsibility of the user and should be done in accordance with all relevant health and safety standards.

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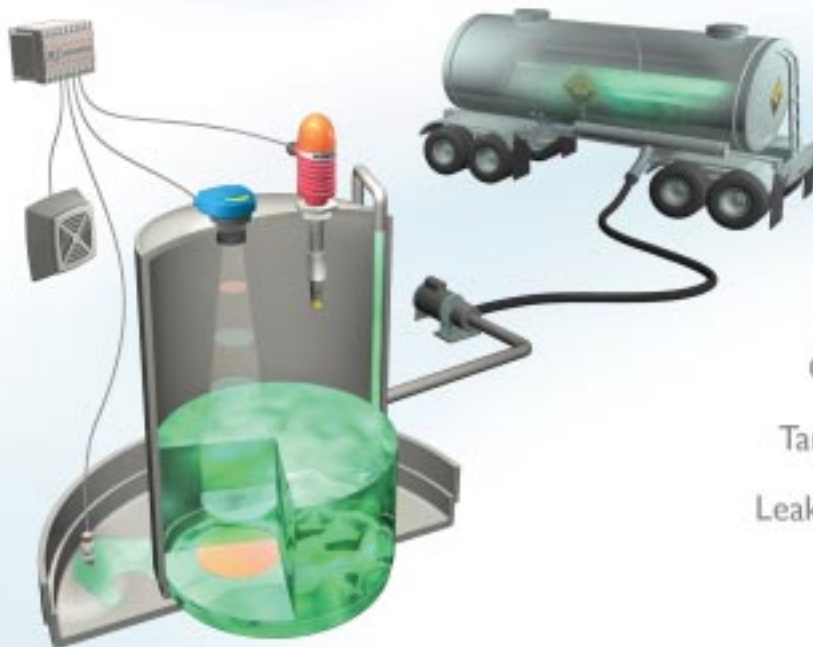
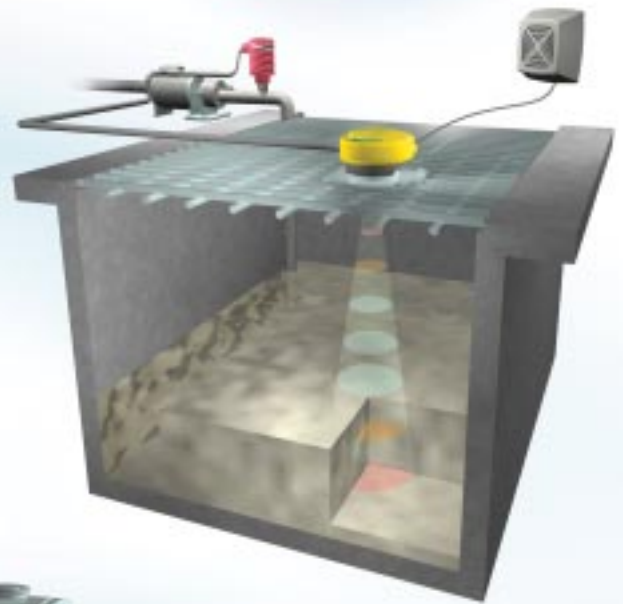
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SAFETY

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