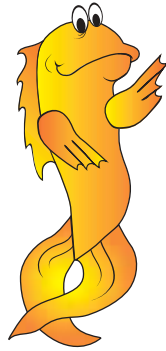


*Design simplicity
and leading-edge
manufacturing
is how we create
the best value
in OEM switches
and sensors*



Innovative Solutions new supplemental catalog features several new liquid level, flow switches and sensors that have recently been added to our growing product line.

Developed specifically for the OEM market, these products represent the latest fluid sensing technology available. With Innovative's superior manufacturing capabilities and the newest technology, these new products deliver the quality, rugged durability, AND PRICE, needed by the original equipment designer.

This supplemental catalog features:

RF Capacitance Transmitters

Innovative has succeeded in delivering these fully programmable electronic sensors at a very affordable price. They provide proportional current or voltage outputs in a wide variety of extreme process temperatures and fluid conditions.

Ultrasonic Gap Level Switches

This line combines versatility, flexibility, and solid state technology in a compact package suitable for the most demanding applications.

Bi-Polar Conductivity Controllers

Solid state technology at an OEM price. This bi-polar controller alternates the current between probes to reduce plating and corrosion typical in similar devices.

These new electronic lines provide the latest in cost-effective sensor technology and are a perfect match for a series of new float actuated designs from Innovative. From our new **Swing Arm Switch**, developed for the high particulate of industrial dishwashers, to our **Integral Dispensing Tube Switch**, which combines an extreme low level switch with a built in siphon for packaged liquids, Innovative continues to be true to its name.

Innovative quality is a result of maintaining our own full manufacturing and testing facilities. This provides the highest level of quality control and makes Innovative a trusted source for our customers and even our competitors. Trust us with your next application.



Innovative Solutions uses only the highest quality components in all its liquid level switches, produced to exacting standards and thoroughly inspected prior to assembly as a completed product.

**Innovative Solutions**
A New Level in Fluid SensingSM



C o n t e n t s

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Continuous Output Level Transmitters

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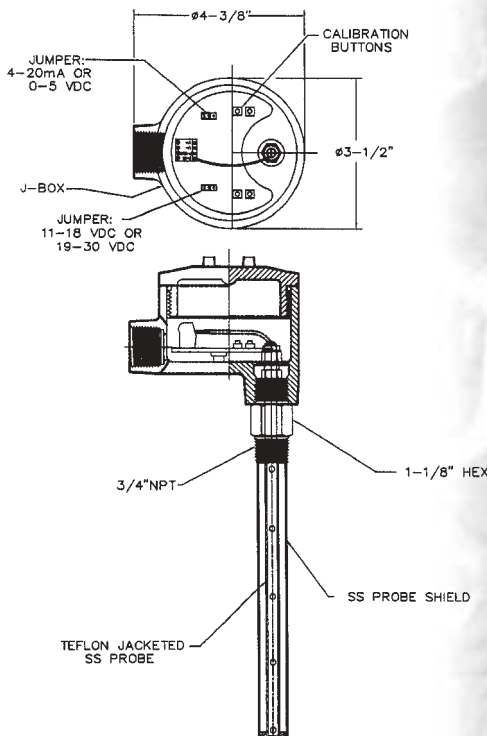


Model CS001: Low Cost RF Capacitance Transmitter

The CS001 RF Capacitance Transmitter is an economical and compact level sensing device providing a continuous electronic output without moving parts or internal switches. Equipped with selectable 4-20 mA, 0-5 VDC, or 0-10 VDC proportional outputs, the solid state RF capacitance principle provides accurate level measurement for many extreme process temperatures and fluid conditions.

The vertically mounted CS001 sensor is 316L stainless steel construction with a Teflon® encapsulated center electrode and probe lengths up to 10 feet. It is available with standard 3/4" npt process connection or a variety of other mounting sizes and comes in either a NEMA 4 or NEMA 7 electronic enclosure.

Ideal for refrigerant level monitoring, the CS001 is suitable for R22, R134a, and other similar fluids. It features a simple and fully programmable four button calibration for specific medias but can be factory set for particular requirements.



Features:

- No moving parts
- Simple four button scale and media calibration
- 4-20 mA, 0-5 VDC, and 0-10 VDC selectable outputs
- Replaceable solid state electronics
- NEMA 4, (IP65) or NEMA 7 & 9 enclosure
- Probe lengths to 120"
- 316L stainless steel and teflon construction

Environmental:

- Ambient Temperature, (Electronics): -40 to +160° F (-40 to +71° C)
- Process Temperature: -40 to +400° F (-40 to +204° C)
- Process Pressure: 400 psig, (27 bar)
- Housing Material: 316L stainless steel
- Probe: 316L, teflon encased
- Enclosure: NEMA 4, NEMA 4X, NEMA 7/9

Electrical:

- Power Supply: 11-30 VDC
- Signal Outputs: 4-20 mA or 0-5 VDC proportional to liquid level
- Power Consumption: 1.3 VA
- Linearity: $\pm 0.5\%$ of actual
- Response Time: 0.5 second

Applications:

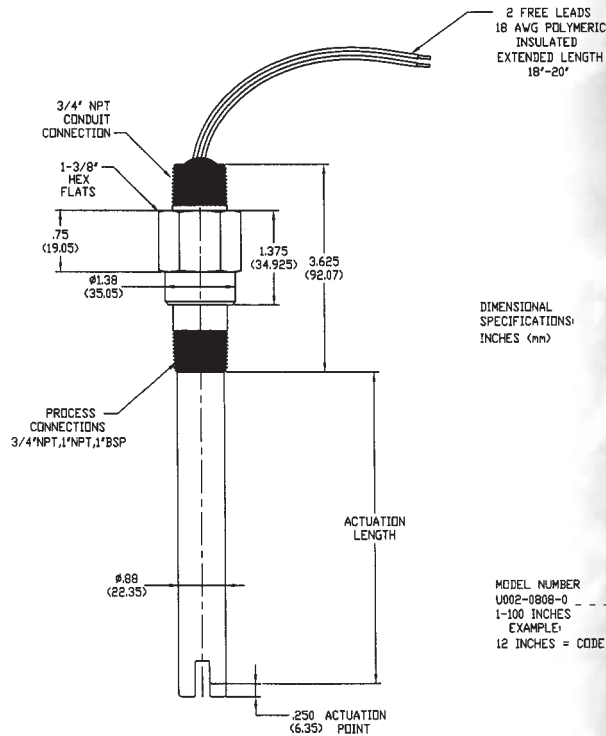
- Refrigerant Systems
- Food & Beverage Processing
- Process Control
- Chemical Storage
- Chillers & Cooling Towers
- Semiconductor Processing
- Water Treatment
- Storage Tanks



Model U002: Ultrasonic Level Switch

The U002 is a compact, 24 VDC loop-powered level switch that uses ultrasonic technology to detect the presence or absence of fluid between two piezo-electric crystals sealed within the sensor gap.

The all stainless steel, all solid state U002 has no moving parts, may be mounted vertically or horizontally and provides a reliable and economical alternative to mechanical level controls. It never needs calibration, can be provided with actuation lengths up to 100 inches and is available with an npt conduit connection or other connector options.



Features:

- No moving parts: continuous 2 MHz ultrasonic signal
- Horizontal or vertical installation
- Compact one inch diameter probe
- Easy to install two-wire output
- No calibration required
- Intrinsically safe when connected with barrier

Electrical:

- Input Voltage: 19 to 30 VDC
- Output: Dry Sensor: 8 mA ±2 mA
Wet Sensor: 16 mA ±2 mA
- Power Consumption: 1 watt (max.)
- Response Time: 100 millisecond (typical)
- Repeatability: ±0.078" (2 mm)
- Crystal Frequency: 2 MHz

Environmental:

- Process Temperature:
-40° to +250° F (-40° to +120° C)
- Process Pressure:
Operating 800 psig (55 bar)
Non-operating 1500 psig (103 bar)

Applications:

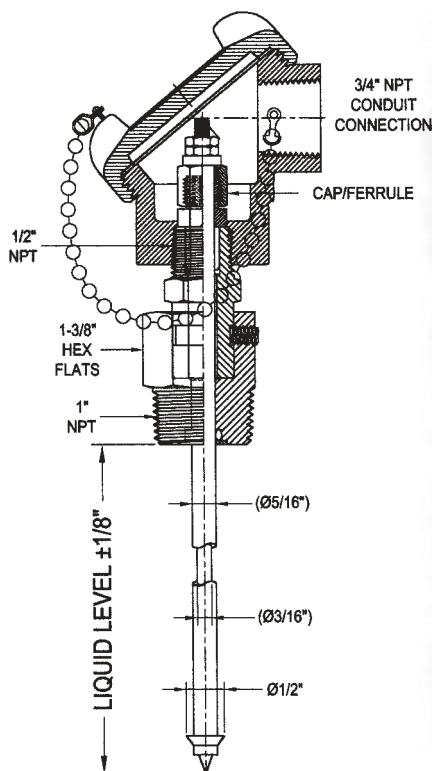
- Water & Wastewater
- Ink Trays
- Food & Dairy
- Chemical Processing & Storage
- Pharmaceuticals



Model CC24-1: Single Level Conductivity Controller

The CC24-1 is a low cost, single level controller for conductive liquids, switching an integral SPDT relay. By detecting the presence of current between the electrodes of a dual probe, or between a single wire probe and the tank itself, the CC24-1 offers a reliable and versatile solution to a wide range of level sensing needs with minimal space for installation.

The CC24-1 can be used with programmable controllers and is available in either a chassis mount or NEMA 4 enclosed designs. Probes are available in standard or custom configurations.



Features:

- Single level input
- SPDT, 0.5 A relay
- Low power consumption
- Requires minimum space
- Variety of installation packages
- Variety of sensor (probe) designs

Electrical:

- Power: 24 VDC
- Output: SPDT 0.5 A relay
- Power Consumption: 0.72 VA max.
- Probe: 7.2 VAC, 480 mA

Environmental:

- Ambient Temperature:
-40 to +160° F (-40 to +71° C)

Applications:

- Food & Beverage
- HVAC
- Storage Tanks
- Water Treatment
- Chillers
- Cooling Towers
- Medical
- Pharmaceutical
- Stationary Engine Coolant
- Humidifiers
- Boilers
- Steam Generators
- Steam Cleaners
- Aqueous Cleaning Systems



Solid State Point Level Controls

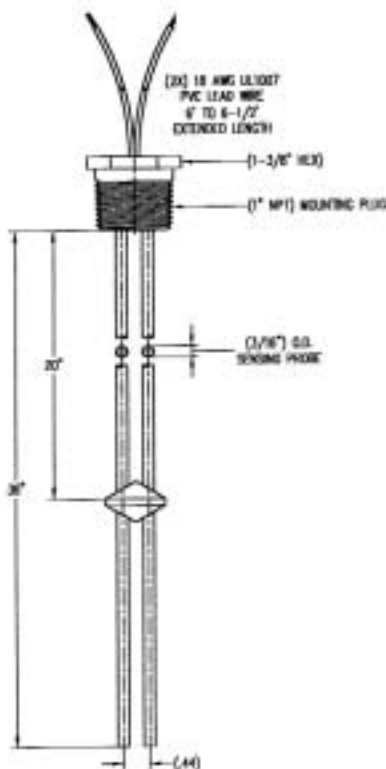
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Model CC24-2: Dual Level Conductivity Controller

The CC24-2 is a two level conductivity controller with independent probe inputs and relay outputs. The bi-polar control circuitry alternates current between the probes to resist plating and corrosion typical of other conductivity devices and switches at a safe 1.2 V, 0.03 mA. The controller can be used for high/low or customer selected level switch positions.

The CC24-2 can be used with programmable controllers or other digital receiver and is available in a chassis mount or NEMA 4 enclosure.



Features:

- Two independent level inputs/outputs
- Bi-polar operation resists corrosion
- SPDT 0.5 A relays
- Requires minimal space
- Low power consumption
- Variety of installation packages

- Power: 12 VDC and 24 VDC
- Output: (2) SPDT 0.5 A relays
- Power Consumption: 1.6 VA max.
- Probe: 1.2 VAC, 30 Ma

Environmental:

- Ambient Temperature: -40 to +160° F (-40 to +71°C)

Applications:

- Food & Beverage
- HVAC
- Storage Tanks
- Water Treatment
- Chillers
- Cooling Towers
- Medical
- Pharmaceutical
- Stationary Engine Coolant
- Humidifiers
- Boilers
- Steam Generators
- Steam Cleaners
- Aqueous Cleaning Systems



Continuous Output Level Transmitters

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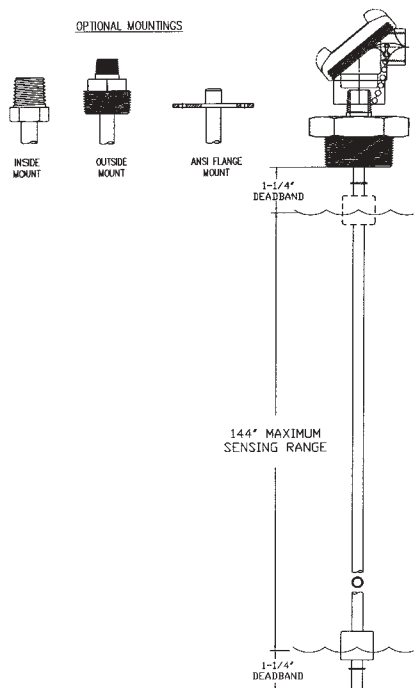


Model TR420: Continuous Output Level Transmitter

The TR420 is a low cost, vertically mounted, continuous output transmitter designed for remote liquid level monitoring.

Employing a staged series of magnetic reed switches and resistors, this sensor provides a continuous 4-20 mA output proportional to the tank level that can be used in conjunction with programmable controllers, meters or other digital receivers.

The electronics are field replaceable without removal of the probe from the process. With probe lengths up to 12 feet, the TR420 is available in 316L stainless steel, buna or polypropylene floats and a wide variety of mounting and process connections. Nema 4 or Nema 7 & 9 enclosures are also available.



Model	Max Temp.	Stem	Float	Float Dia.	Applications
TR420-0401-20	+180° F / +82° C	Brass	Buna	1.87"	Petroleum based liquids, diesel
TR420-0408-03	+150° F / +65° C	316 SS	PP	2"	General purpose, water based liquids
TR420-0408-08	+300° F / +148° C	316 SS	316 SS	1.63"	Food and beverage, medical, severe service

Features:

- 4-20 mA output
- Power: 24 VDC
- 2 Wire Loop Powered
- 316L stainless, brass & engineered plastics
- Replaceable solid state electronics
- Lengths up to 12 feet
- Watertight NEMA 4 (IP65) enclosure

Electrical:

- Power: 24 VDC
- Output Signal: 4-20 Ma
- Power Consumption: 1 VA
- Linearity: $\pm 0.5\%$ of actual

Environmental:

- Ambient Temperature (Electronics): -40° to +160° F (-40° to +71° C)
- Process Temperature: (see table)
- Process Pressure:
- Plastic: 50 psig (3.4 bar)
- Buna: 150 psig (10 bar)
- 316 SS: 750 psig (51 bar)

Applications:

- Food & Beverage Processing
- Medical & Pharmaceutical
- HVAC
- Underground Tanks
- Day Storage Tanks
- Chillers & Cooling Towers
- Semiconductor Processing



Continuous Output Level Transmitters

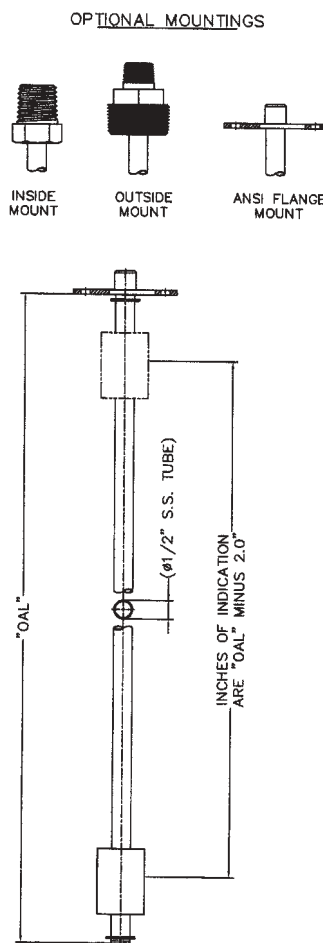
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Model TR30240: Continuous Output Fuel Level Transmitter

The TR30240 is a low cost, reed switch type transmitter designed to provide fuel level monitoring to panel mounted fuel gauges in marine and stationary tank applications. The two-wire resistive probe delivers a proportional 30-240 Ω output with optional resistance ranges available and may also be equipped with high/low or customer specified switch closure positions. Custom resistance curves for non-linear tanks and both increasing and decreasing resistances from the dry position can also be provided.

The vertically mounted TR30240 is manufactured in 316L stainless steel with a Buna float and is available in other materials, tank mountings and probe lengths up to 120".



Features:

- 2-Wire variable resistance probe
- 30-240 Ω output (standard)
- Custom resistance ranges
- Lengths up to 10 feet

Electrical:

- Signal Output: 30-240 Ω
- Linearity: $\pm 0.5\%$ of actual

Environmental:

- Process Temperature:
Buna Float: +180° F (+82° C)
316L Stainless Float: +300° F (+148° C)
- Process Pressure:
Buna Float: 150 psig (10 bar)
316L Stainless Float: 300 psig (20 bar)

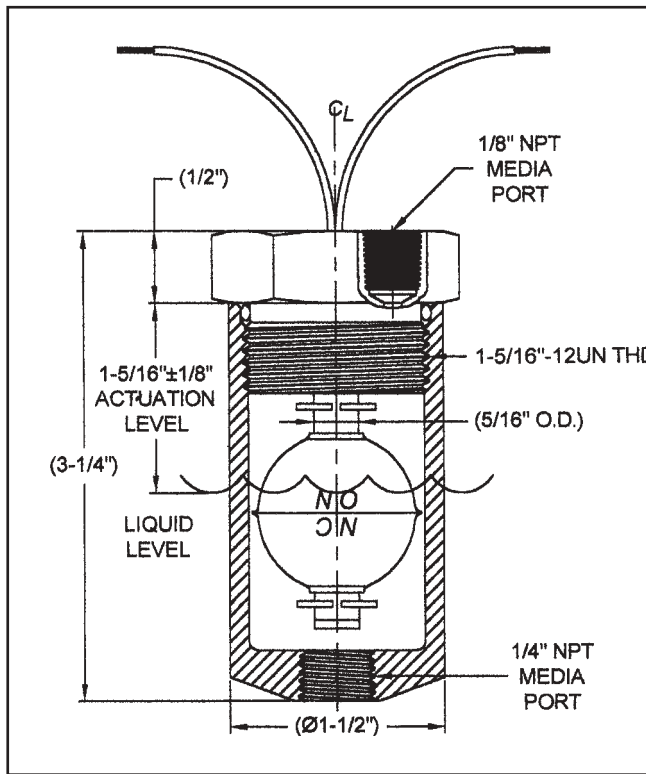
Applications:

- Marine Fuel Tanks
- Water Storage Tanks
- Generator Drive Engine Fuel Tanks
- Farm Equipment Fuel Tanks



Model L312C: Small Remote Chamber Level Switch

The L312 series is a compact single level switch contained in an all metal remote chamber, designed for installations where internal mounting in the tank is impractical. The unit is mounted on the outside of the vessel at the point of actuation and can be supported by the pipe connections. The switch and float mechanism is removable from the chamber without removing the entire unit from the tank. Offered in a 6061-T6 aluminum housings, the L312C comes with a brass mounting and a choice of Buna or 316L stainless steel floats.



Features:

- Externally mounted
- Single set point
- Optimum float clearance
- Selectable NO/NC operation
- Requires minimal space
- SPST or SPDT switches

Electrical:

- Output: SPST 20, 50 & 100 VA
SPDT 3 VA

Environmental:

- Temperature:
 - Buna Float: -40 to +180° F (-40 to +82° C)
 - Stainless Float: -40 to +300° F (-40 to +148° C)
- Pressure:
 - Buna float: 150 psig (10 bar)
 - Stainless float: 600 psig (41 bar)

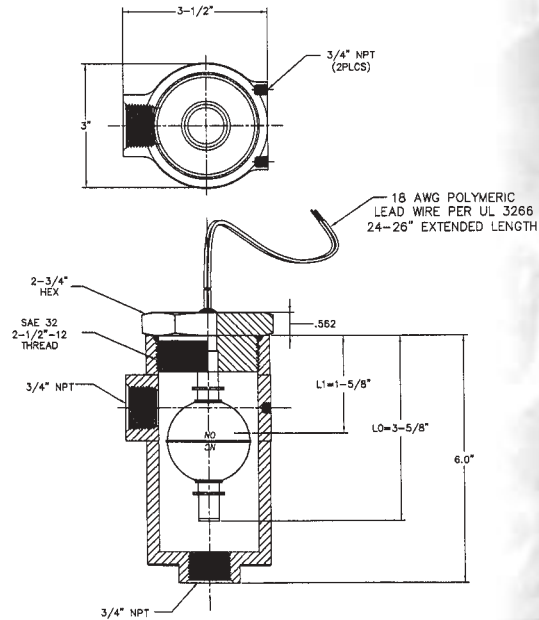
Applica

- Storage Tanks
- Cooling Towers
- Sight Glass Replacement



Model L500C: Large Remote Chamber Level Switch

The L500C is a large chamber design for non-intrusive applications requiring higher volume or system pressure. This vertically mounted device features a rugged all brass body with 316L stainless steel float and internals. To avoid particle entrapment, the wider diameter housing affords ample clearance between the moving float and the chamber wall. It may be mounted directly to the npt pipe connections or mounting pad provided.



Features:

- Externally mounted
- Single set point
- Optimum float clearance
- Selectable NO/NC operation
- Requires minimal space
- SPST or SPDT switches

Electrical:

- Output: SPST 20, 50 & 100 VA
SPDT 3 & 100 VA

Environmental:

- Temperature:
-40 to +300° F (-40 to +148° C)
- Pressure:
750 psig @ +70° F (51 bar @ +21° C)

Applications:

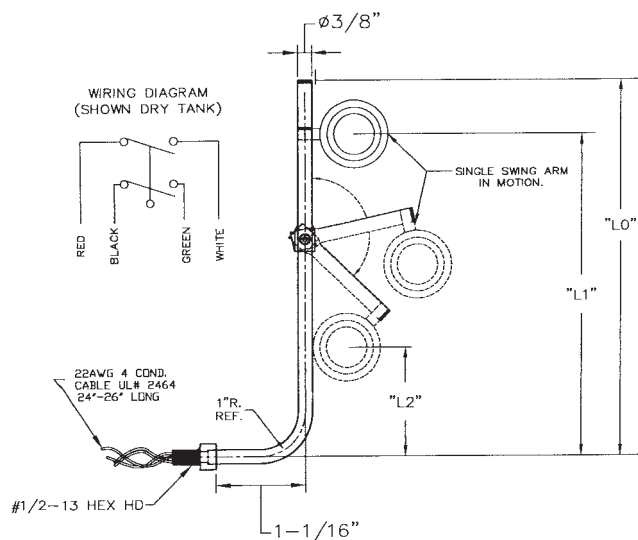
- Storage Tanks
- Cooling Towers
- Sight Glass Replacement



Model L090SA: Single & Dual Level Swing Arm Level Switches

The L090SA is an economical single and dual level switch designed for dirty applications where particulate entrapment is a problem.

Manufactured to customer specified switch points, it was originally developed for commercial dishwashers to alleviate the common problem of particulate jamming in a conventional float switch movement. This device has adequate clearance between the moving arm and the mounting stem to provide a self cleaning action on each actuation. The L090SA is available in brass and stainless steel versions with a wide variety of mounting sizes.



Features:

- Single float
- Single and dual setpoints
- Self cleaning movement
- Side mounted
- SPST and SPDT switch types

Electrical:

- Output: SPST 20, 50 & 100 VA
SPDT 3 & 100 VA

Environmental:

- Process Temperature:
-40° to +300° F (-40° to +148° C)
- Process Pressure:
120 psig (8 bar) maximum

Applications:

- Commercial Dishwashers
- Food & Beverage
- Commercial Carpet Cleaning Systems
- HVAC
- Medical Equipment
- Heater Protection



L190S Series: Shielded Level Switches For Turbulent & Dirty Liquids

The L190S Shielded Level Switch provides accurate and stable level detection in turbulent and highly contaminated non-static fluids. A clear polycarbonate slosh shield minimizes the effects of tank motion and turbulence and helps prevent particle interference.

The L190 is equipped with six feet of 18-gauge insulated cable and a water sealed connection. It comes with a standard Buna-N (or optional 316 stainless steel) float.



L190S

Features:

- Buna-N or stainless floats
- Fully shielded movement
- Universal side mounting
- SPST or SPDT switches

Environmental:

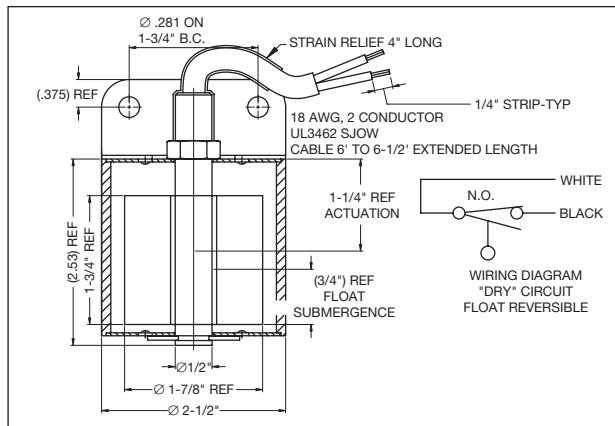
- Process Temperature: -40° to +140° F (-40° to +60° C)
- Process Pressure: 150 psig (10 bar)

Electrical:

- Output: SPST 50 & 100 VA
SPDT 20 & 100 VA

Applications:

- Sumps
- Mobile Tanks
- Wells
- Bilges
- Storage Tanks



Shielded Level Switches

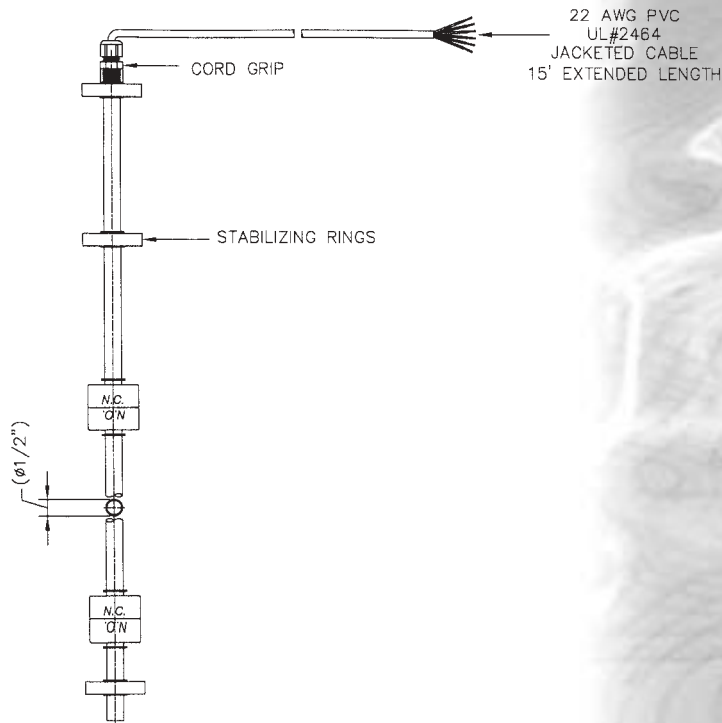
Series	Mounting Material	Float Material	Specific Gravity	Temperature	Pressure	Part Number
L190	316 Stainless Steel	Buna	.65	-40° to +140° F	150 PSIG	L190-4508-2003
	316 Stainless Steel	316 Stainless Steel	.75	-40° to +140° F	150 PSIG	L190-4508-0803

SG refers to recommended minimum liquid specific gravity



Model L500S: Adjustable Suspended Level Switch

The L500S series is a low cost, single or multiple level switch designed for level monitoring or leak detection in underground storage tanks, sumps or wells. Vertically mounted and suspended by the electrical cable to the desired set point, the integral weight maintains the correct orientation and removes slack from the cable. A compression fitting secures the cable and forms a leak tight seal. The L500S is available in PVC, brass/Buna and stainless steel with custom material and configurations available.



Features:

- Adjustable set points
- Integral weight ensures proper orientation
- Clearance spacers ensure float movement
- Flexible cable provides easy installation
- SPST and SPDT switch types

Electrical:

- Output: SPST 20, 50 & 100 VA
SPDT 100 VA

Environmental:

- Process Temperature:
 - PVC: -40° to +140°F (-40° to 60° C)
 - Brass/Buna: -40° to +180° F (-40° to +82° C)
 - Stainless Steel: -40° to +300° F (-40 to +148° C)
- Process Pressure:
 - PVC: 50 psig (3.4 bar)
 - Brass/Buna: 150 psig (10 bar)
 - Stainless Steel: 100 psig (6.8 bar)

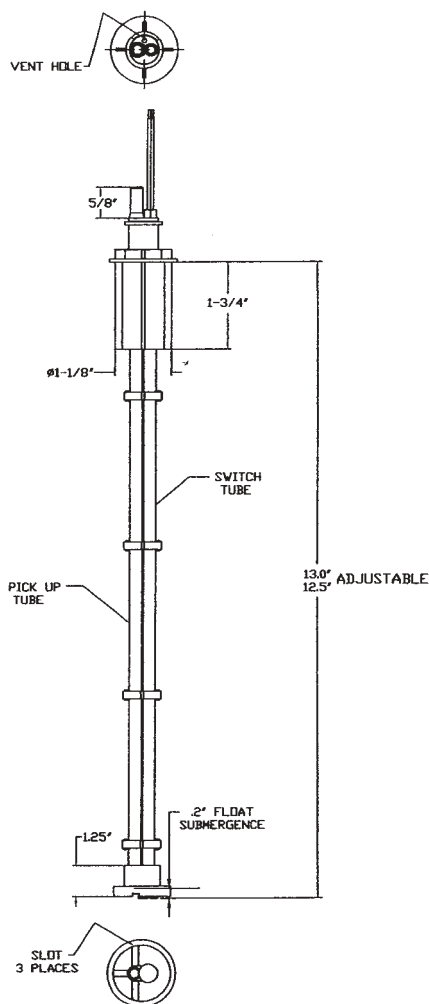
Applications:

- Underground Storage Tanks
- Leak Detection
- Sumps
- Wells
- Wastewater



Model L250AD: Low Level Switch with Integral Dispensing Tube

The L250AD series is a vertically mounted, single or dual point level switch that combines a low level switch/alarm closure with an integral liquid dispensing tube. This device was designed for the pharmaceutical industry to dispense as well as monitor low levels of critical medical laboratory solutions from a plastic liner bag in a cardboard container. The specially engineered poly float requires a mere $\frac{3}{16}$ " (4.7 mm) of liquid to operate. The L250AD is available in FDA approved polysulfone and polypropylene materials. The external mount is provided in a standard 1.125" (28.5 mm) diameter and custom sizes are available.



Features:

- Spring loaded mount for self adjustment
- Single and dual set points
- SPST and SPDT switch types
- Requires minimal space
- FDA and NSF approved plastic construction

Electrical:

- Output: SPST 20 & 50 VA
SPDT 3 VA

Environmental:

- Process Temperature:
-40° to +150° F (-40° to +65° C)
- Process Pressure:
150 psig (10 bar)

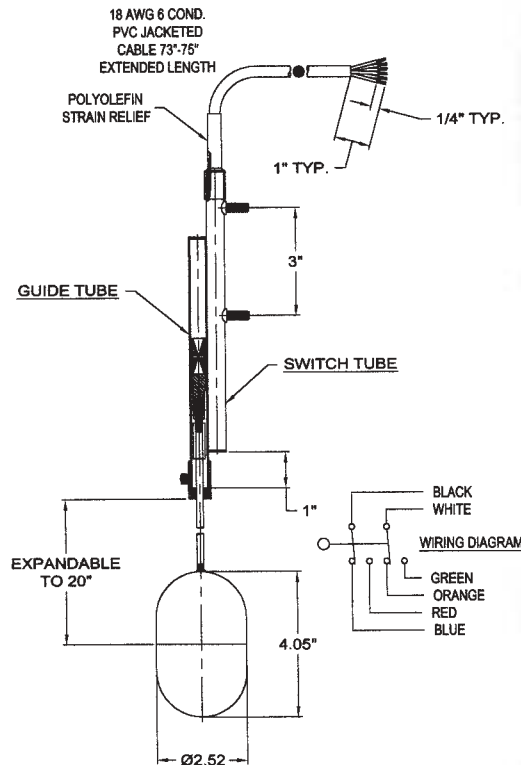
Applications:

- Medical
- Pharmaceutical Packaging
- Food & Beverage
- Low Level Process Control



Model S003: "Trombone" Level Switch for Dirty & Viscous Liquids

The S003 series is a low cost, single or multiple level switch designed for use in extremely contaminated or highly viscous fluids. Developed for parts cleaners and chemical plating tanks, the S003 features a telescoping float arm that slides into the switch housing mounted on the side of the tank and out of the process. The retractable float movement and isolation of the switch elements from the media make it an ideal choice for thick, corrosive and slurried liquid applications where a conventionally submerged float switch will not operate. Available in lengths extended to 20", the S003 can be furnished with up to three independent switch points and a variety of wiring options and wetted materials.



Features:

- Telescoping float arm for a wide range of tank sizes and levels
- Isolated, "dry" switch housing
- Selectable arm movement
- All stainless steel construction
- SPST and SPDT switch types

Electrical:

- Output: SPST 20, 50 & 100 VA
SPDT 100 VA

Environmental:

- Process Temperature:
Stainless Steel:
-40° to +500° F (-40 to +260° C)
- Process Pressure:
Stainless Steel: 150 psig (10 bar)

Applications:

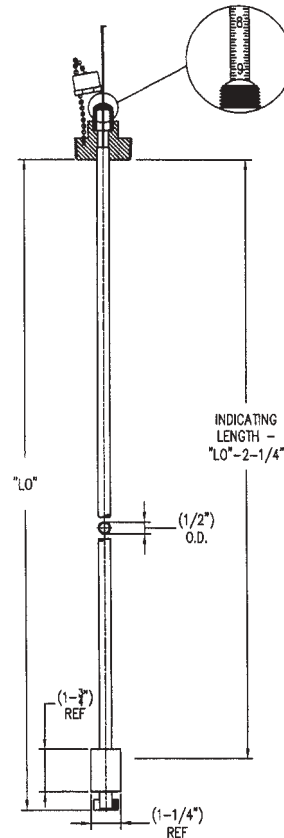
- Chemical Tanks
- Etching & Plating Baths
- Parts Washers
- Sumps
- Wells
- Wastewater



Model L505: Dip Tape Visual Indicators

The L505 series is a simple and economical liquid level indicator for quick continuous readings in remote and mobile storage tanks and vessels. Requiring no electricity, the L505 provides an accurate and reliable visual indication to within a $\frac{1}{16}$ of an inch. Available in brass, 316 stainless steel or PVC stem materials with either a Buna or stainless steel floats, it comes in a variety of mounting sizes and measuring lengths from 6 inches up to 6 feet.

The removable steel tape is magnetically interlocked with the level position of the float. Only the float and stem come in contact with the liquid so the tape is always clean and readable. Level readout is obtained by sliding the tape out of the stem tube and reading the aligning calibration mark where the interlock is felt. The indicator is then lowered back into the tube where it is enclosed by a protective screw cap when not in use.



Features:

- Requires no electricity
- Low cost
- Compact and self contained
- High contrast, easy to read graduated steel tape
- Available in 1", 2" and 3" NPT and flange mounting styles
- Standard temperature to +180° F (+82° C), high temperature designs to +300° F (+148° C)
- Pressure rating to 500 psig (34 bar)
- "Closed" measuring for hazardous liquids

Environmental:

- Process Temperature:
Buna/Brass: -40° to +180° F (-40° to +82° C)
Stainless Steel: -40° to +300° F (-40° to +148° C)
- Process Pressure:
Buna/Brass: 150 psig (10 bar)
Stainless Steel: 750 psig (51 bar)

Applications:

- Fuel Tanks
- Remote Water & Chemical Storage
- Hazardous Liquid Storage
- Mobile & On-Road Tanks & Drums



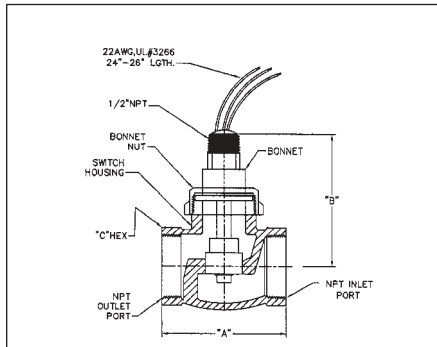
Flow Switches: **In-Line Flow Switch**

**Innovative
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F003 Series

The series F003 is a low cost flow switch installed in line with the fluid movement for monitoring flow rates from .5 to 50 GPM. The compact and durable design allows for ease of installation and many years of trouble free service. The removable bonnet assembly provides easy cleaning without removal from the process. The F003 is available in a bronze body with a Teflon® shuttle mechanism. Optional materials and configurations are available upon request.



Model	Port Size NPT	"A" Inch	"B" Inch	"C" Hex Inch	Max. Flow
F003-05	3/4"	3"	3"	1-13/32"	12 GPM (US)
F003-06	1"	3-1/4"	3"	1-25/32"	15 GPM (US)
F003-09	2"	5-3/8"	4"	3-3/32"	50 GPM (US)

Features:

- In-line mounting
- Horizontal or vertical mount
- Low pressure drop
- SPDT switch type
- Single fixed set point
- Easy access to internal shuttle
- Fixed set-points to 50 GPM

Electrical:

- Output: SPDT 20 and 100 VA

Environmental:

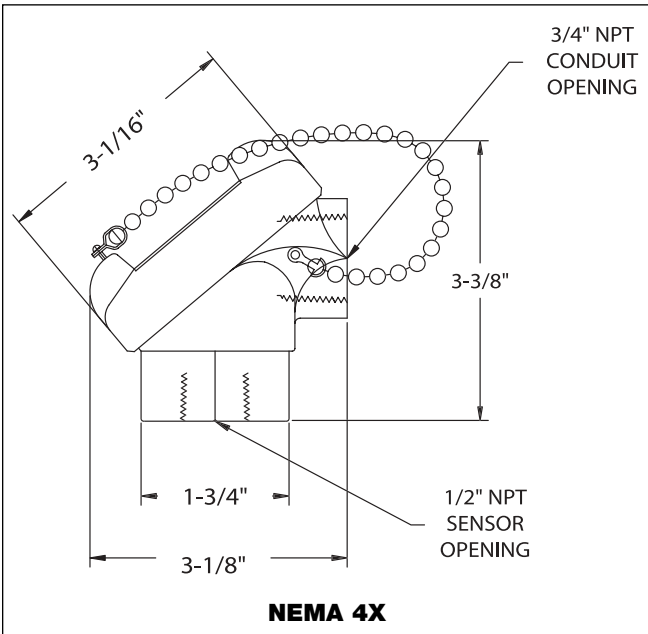
- Process Temperature:
Bronze/Teflon:
-20° to +300° F (-28° to +148° C)
- Process Pressure:
400 psig @ +100° F
(27 bar @ +37° C)

Applications:

- Lubricant Flow Monitoring
- Coolant Flow Monitoring
- Chillers
- Cooling Towers

This NEMA 4X

is recommended for use on the following product series: L007, L312, L500, L070 & U001



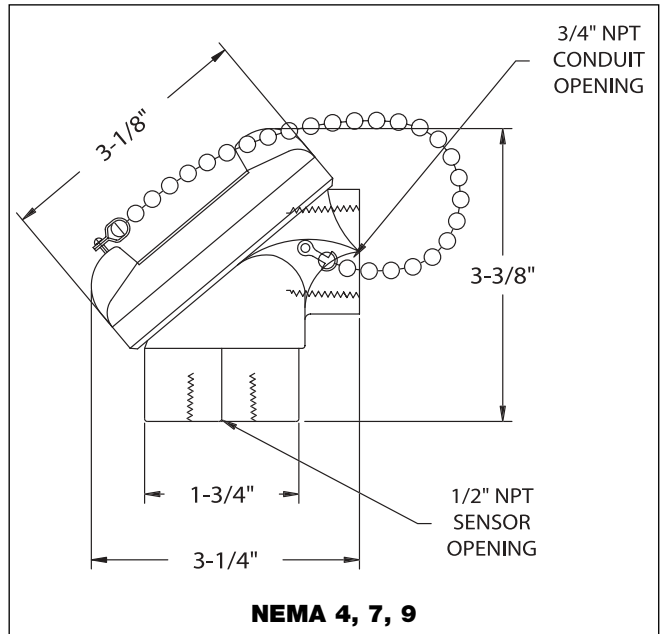
NEMA 4X

White Polypropylene

Excellent resistance to acids, alkalines, and many process chemicals. Temperature rating: 198° F

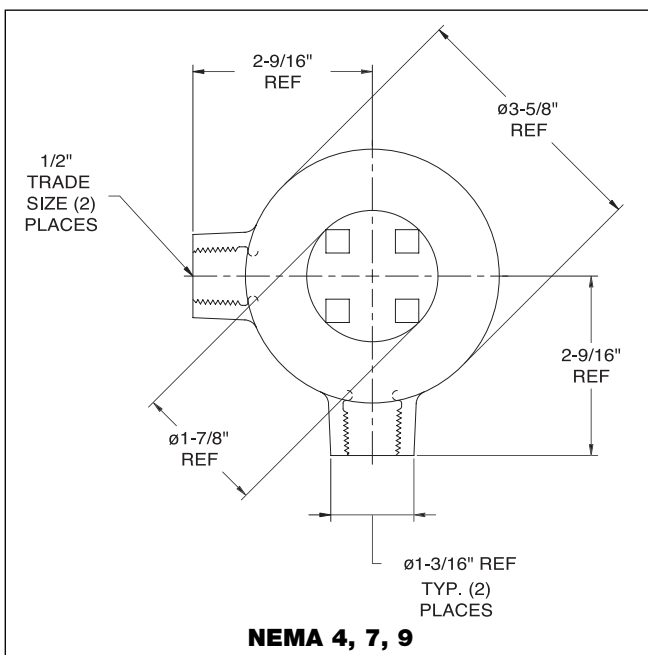
This NEMA 4, 7 & 9 J-Box

is recommended for use on the following product series: L007, L312, L500, L070 & U001



NEMA 4, 7, 9

Die Cast Aluminum Cover w/Steel box



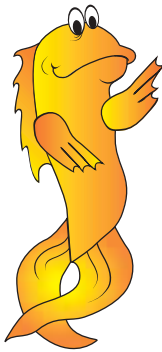
NEMA 4, 7, 9

Malleable Iron

This NEMA 4, 7 & 9 J-Box

is recommended for use on the following product series: L312, L500 & L070

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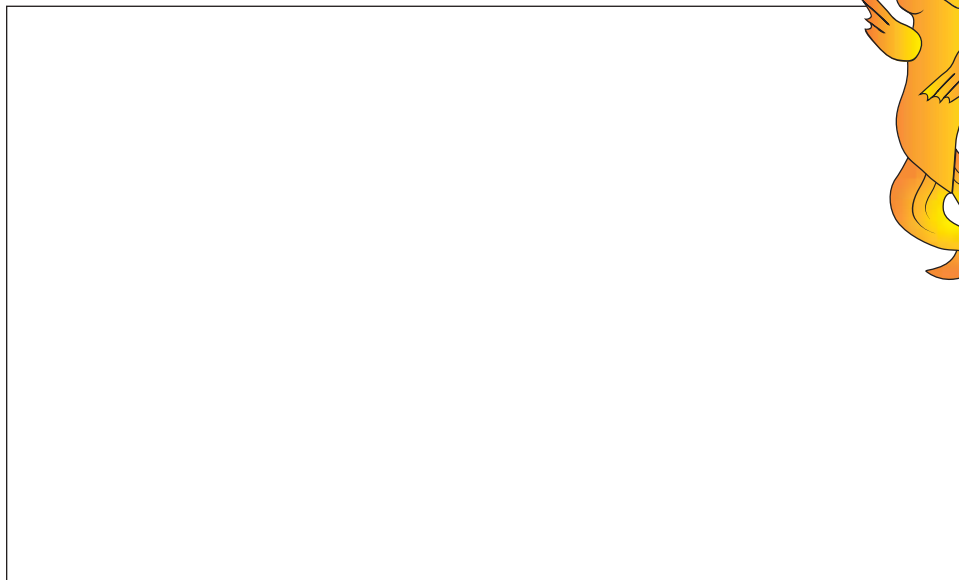


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