

CAP-100 Series – Non-Contact, Capacitive Level Sensor

- ▶ For non-metallic containers
- ▶ Easy external mounting
- ▶ Compact – 30x45 mm (1.18" x 1.77")
- ▶ Potentiometer for sensitivity adjustment
- ▶ Power on and signal LED indicators

The CAP-100 series offers a unique level sensing solution for a wide variety of bottle types including plastic, glass and fiberglass. The non-contact sensor is ideally suited for medical applications such as waste, reagent or diluent liquids as well as dark, sticky or viscous fluids. The easy-to-calibrate sensor is available in both aqueous and non-aqueous versions and can be delivered with factory preset sensitivity for quick installation for OEM orders. The CAP-100 may also be used as a proximity sensor to detect the presence of solids such as paper or pulp.

Specifications

Performance	
Nominal Sensing Distance, Sn	0.39" (10mm)
Sensing Range	0-0.39" (0-10mm)
Repeat Accuracy - (% of Sn)	<10%
Hysteresis - (% of Sn)	<20%
Mechanical	
Enclosure Ratings	IP67, NEMA 1,3,4,6,13
Operating Temperature Range	-13°F to +158°F (-25°C to +70°C)
LED Signal Indicator	Yellow
Power On LED Indicator	Green
Potentiometer	Yes
Sensor Type	
Unshielded	L-Type, Non-Embeddable
Shielded	D-Type, Embeddable
Sensor Material	Glass Filled Nylon
Cable	78.74" (2 meter), 3 Wire PVC
Shock	30g, 11ms
Vibration	55Hz, 1mm amplitude in all planes
Electrical	
Supply Voltage	5-48 VDC
Continuous Switching Current	300 mA
Voltage Drop	<2 VDC
Current Consumption	<10 mA
Switching Frequency	100 Hz
Transient Protection	2kV, 1ms, 1 kOhm
Overload Protection	Yes
Short Circuit	Yes
Reverse Polarity Protection	Yes
Approvals	CE (Except at Frequency 803-805 MHz), RoHS

How To Order

Select a Part Number based on Fluid Properties and Sink State.

Fluid Properties	Max. Container Wall Thickness	Wet/Dry Sink	Part Number
Water Based, Conductive (unshielded sensor)	5/8"	Wet	230079
		Dry	230081
Non-Water Based, Not Conductive (shielded sensor)	3/8"	Wet	228830
		Dry	229855

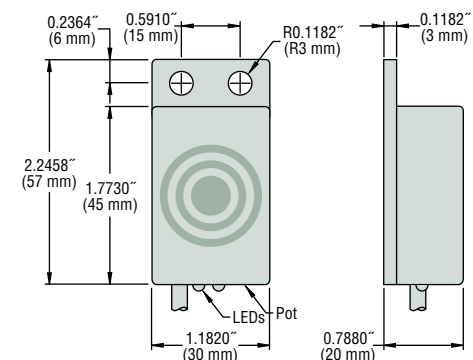


Typical Applications

Fluid Monitoring:

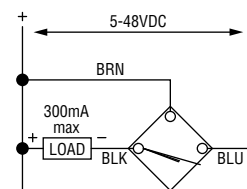
- Waste
- Reagents
- Diluent
- Detergent/Wash
- Coolant
- Printing Ink

Dimensions

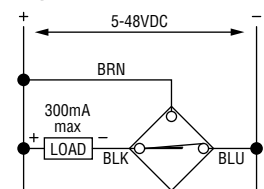


Wiring Diagram

Wet Sink



Dry Sink



CAP-150 Series – Capacitive Level Sensor

- ▶ For non-metallic containers
- ▶ Non-intrusive level sensing
- ▶ Optional Sight Glass Bracket
- ▶ Potentiometer for sensitivity adjustment

The CAP-150 series offers a unique level sensing solution for a wide variety of bottle types including plastic, glass and fiberglass. The non-contact sensor is ideally suited for medical applications such as waste, reagent or diluent liquids as well as dark, sticky or viscous fluids. The easy-to-calibrate sensor is available in both aqueous and non-aqueous versions and can be delivered with factory preset sensitivity for quick installation for OEM orders. The CAP-150 may also be used as a proximity sensor to detect the presence of solids such as pulp & paper.

Specifications

Performance	
Nominal Sensing Distance, Sn	0.2" (5mm)
Repeat Accuracy - (% of Sn)	<2%
Hysteresis - (% of Sn)	<20%
Mechanical	
Enclosure Ratings	IP67, NEMA 1,3,4,6,13
Operating Temperature Range	-13°F to +158°F (-25°C to +70°C)
LED Signal Indicator	Yellow
Power On LED Indicator	Green
Potentiometer	Yes
Termination	78.74" (2 meter), 3 Wire PVC
Shock	30g, 11ms
Electrical	
Supply Voltage	5-48 VDC
Continuous Switching Current	300 mA
Voltage Drop	<2 VDC
Current Consumption	<10 mA
Switching Frequency	100 Hz, maximum
Overload Protection	No
Short Circuit	Yes
Reverse Polarity Protection	Yes
Approvals	CE

How To Order

Select a Part Number based on Fluid Properties and Sink State.

Fluid Properties	Sensor Material	Flush Mountable	Sensing Range	Shielded	Sink/Source	Logic	Part Number
Aqueous, Conductive (Unshielded Sensor)	Delrin® Body with Valox® Sensor Face	No	2-8mm	No	Sink	Wet	239890
						Dry	239891
					Source	Wet	241366
						Dry	241367
Non-Aqueous, Non-Conductive (Shielded Sensor)	Ni-Plated Brass Body with Valox® Sensor Face	Yes	1-5mm	Yes	Sink	Wet	240607
						Dry	240612
					Source	Wet	241368
						Dry	241369

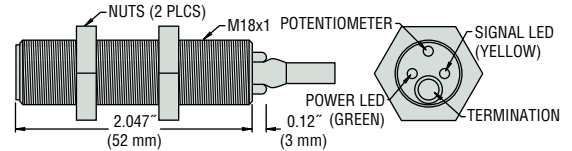


Typical Applications

Fluid Monitoring:

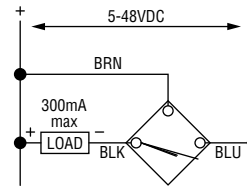
- Waste
- Reagents
- Diluent
- Detergent/Wash
- Coolant
- Printing Ink

Dimensions

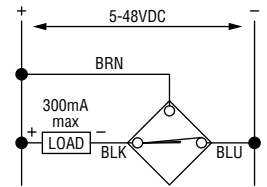


Wiring Diagram

Wet Sink



Dry Sink

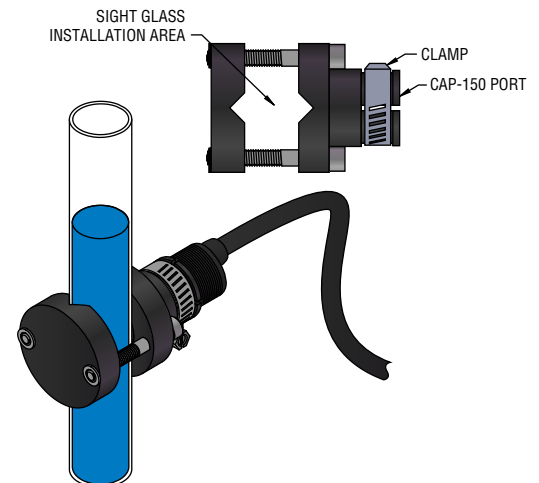


Convert Simple Sight Glass into Switch Actuation Device

- For glass tubing 1/4" to 1" Dia.

Use this easy-to-install clamp with the CAP-150 to provide liquid level sensing and switch actuation along the length of sight glasses 1/4" to 1" in diameter.

Part Number: 240836



CAP-200 Series – Compact, 1/2" NPT Mount

- ▶ For metallic and non-metallic containers
- ▶ Food grade plastic housing
- ▶ No sensor well required
- ▶ Potentiometer for sensitivity adjustment

The CAP-200 Series is easily threaded directly into 1/2" NPT fittings for an easy level sensing solution within a wide variety of metal and non-metal tanks. The highly accurate sensor is built from durable Delrin® material, and is available in both aqueous and non-aqueous versions. The easy to calibrate sensor can be delivered with factory preset sensitivity for quick installation by OEM. The CAP-200 may also be used as a proximity sensor to detect the presence of solids such as paper or pulp.

Specifications

Performance	
Nominal Sensing Distance, Sn	0.118" (3mm)
Sensing Range	0-0.118" (0-3mm)
Repeat Accuracy - (% of Sn)	<10%
Hysteresis - (% of Sn)	<20%
Mechanical	
Enclosure Ratings	IP67, NEMA 1,3,4,6,13
Operating Temperature Range	-13°F to +158°F (-25°C to +70°C)
LED Signal Indicator	Yellow
Power On LED Indicator	Green
Potentiometer	Yes
Sensor Type	
Unshielded	L-Type, Non-Embeddable
Shielded	D-Type, Embeddable
Barrel Material	Delrin®
Termination	78.74" (2 meter), 3 Wire PVC
Shock	30g, 11ms
Vibration	55Hz, 1mm amplitude in all planes
Max. Pressure	150 psi (10.3 bar)
Electrical	
Supply Voltage	5-48 VDC
Continuous Switching Current	300 mA
Voltage Drop	<2 VDC
Current Consumption	<10 mA
Switching Frequency	100 Hz
Transient Protection	2kV, 1ms, 1 kOhm
Overload Protection	Yes
Short Circuit	Yes
Reverse Polarity Protection	Yes
Approvals	CE (Except at Frequency 803-805 MHz), RoHS

How To Order

Select a Part Number based on Fluid Properties and Sink State.

Fluid Properties	Container Material	Wet/Dry Sink	Part Number
Water Based, Conductive (unshielded sensor)	Non-Metallic	Wet	230077
		Dry	230078
Non-Water Based, Not Conductive (shielded sensor)	Non-Metallic or Metallic	Wet	230082
		Dry	230083

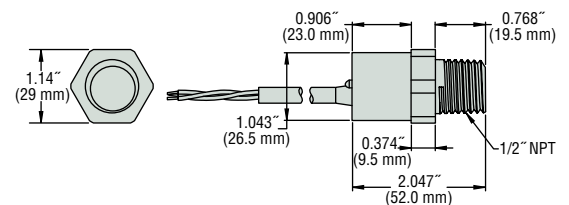


Typical Applications

Fluid Monitoring:

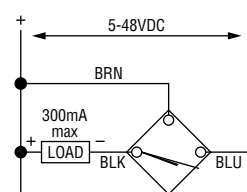
- Waste
- Reagents
- Diluent
- Detergent/Wash
- Coolant
- Printing Ink

Dimensions

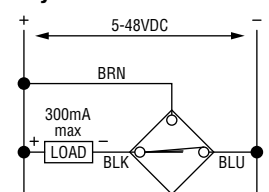


Wiring Diagram

Wet Sink



Dry Sink

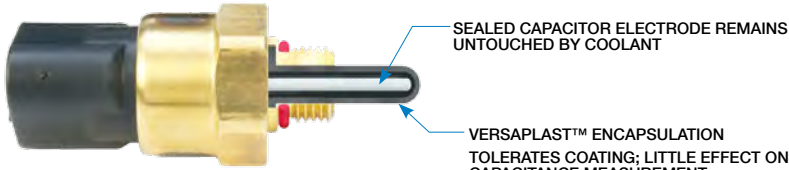


LEVEL SWITCHES – SINGLE POINT

CAP-300 Series – Capacitive Level Sensor

- ▶ Durable sealed design – IP67
- ▶ Developed for the most rugged aqueous applications
- ▶ Tolerates coolant coating
- ▶ Small size – 2" (51 mm) long
- ▶ Available in Stainless Steel for Food & Beverage Applications

The CAP-300 capacitive level sensor is one of our most durable and reliable point level sensors. The versatile CAP-300 is the ideal OEM solution for power generation equipment, off-highway vehicles, generators, Food & Beverage, Medical, Rail and HVAC applications, and excels in coolant monitoring. With nearly zero maintenance, the sensor mounts in any position, is compact, tolerates coating, remains reliable even in standby mode, and is compatible with temperatures up to 257°F (125°C). For use where sloshing occurs, or the reservoir's attitude changes frequently, Gems offers a variety of actuation delays.



Specifications

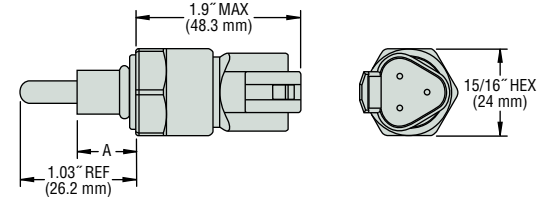
Mountings	1/4" NPT, 1/2"-20 per SAE J1926-3, M12x1.0-8g, M12x1.5 ISO 6149-3, 1/2" NPT
Materials	
Housing	Brass or 316L Stainless Steel*
O-Ring	EPDM
Probe Tip	Versaplast™
Operating Pressure	Up to 100 PSIG
Operating Temperature	
Common	-40°F to +257°F (-40°C to +125°C)
Cable Versions	-4°F to +158°F (-20°C to +70°C)
Supply Voltage	9 to 32 VDC
Current Consumption	15mA max. (no load)
Output	Open collector, sinking or sourcing output, 9-32 VDC, 30mA max.
Electrical Termination	3-pin Deutsch, 18 AWG Type SXL flying leads or 18 AWG PVC Cable
Sensing Element Length	1.03" (26.2mm) Max. (including thread length)
Approvals	CE, IP67, RoHS

* NSF Approved material of construction

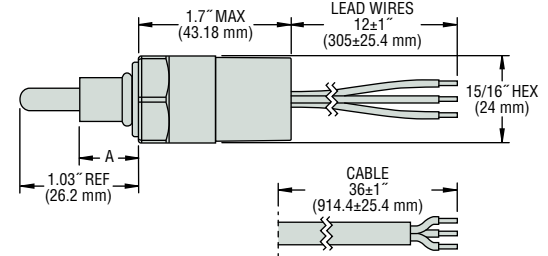


Dimensions

Deutsch® Connector



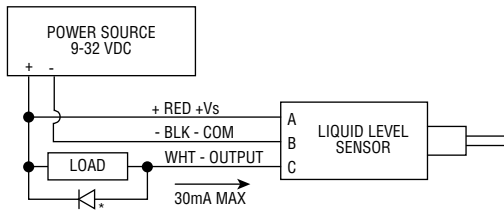
Lead Wires or Cable



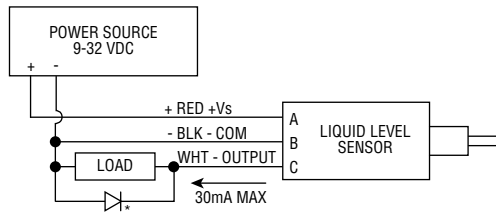
		A DIM. REF.	EPDM O-Ring
Thread Sizes	1/2"-20	0.43" (10.9 mm)	3-905
	M12x1-8g	0.54" (13.5 mm)	2-110
	M12x1.5	0.53" (15.2 mm)	9.3 x 2.2 mm
	1/4"-18NPT	0.62" (15.7 mm)	None
	1/2"-14NPT	0.62" (15.7 mm)	None

Wiring Diagram

Sinking



Sourcing



* For inductive loads, use diode suppression.

How To Order

Select a Part Number based on mounting type, connection and actuation condition.

Actuation Condition	Electrical Connection	Thread Sizes						
		Brass				316L Stainless Steel		
		1/4"-18 NPT (male)	1/2"-20 per SAE J1926-3	M12x1.5 Stud End Per ISO6149-3	M12x1.0-8g	1/2"-14 NPT (male)	1/4"-18 NPT (male)	1/2"-14 NPT (male)
Wet Sink	Integral 3-pin Deutsch® DT04-3P Connector	240640	240700	240800	240900	242970	244510	244540
	12" 18 AWG SXL Flying Leads	240660	240720	240820	240920	242975	244515	244545
	36" PVC Cable	240680	240740	240840	240940	242980	244520	244550
Dry Sink	Integral 3-pin Deutsch® DT04-3P Connector	240650	240710	240810	240910	242985	244525	244555
	12" 18 AWG SXL Flying Leads	240670	240730	240830	240930	242990	244530	244560
	36" PVC Cable	240690	240750	240850	240950	242995	244535	244565
Wet Source	Integral 3-pin Deutsch® DT04-3P Connector	240645	240705	240805	240905	242971	244511	244541
	12" 18 AWG SXL Flying Leads	240665	240725	240825	240925	242976	244516	244546
	36" PVC Cable	240685	240745	240845	240945	242981	244521	244551
Dry Source	Integral 3-pin Deutsch® DT04-3P Connector	240655	240715	240815	240915	242986	244526	244556
	12" 18 AWG SXL Flying Leads	240675	240735	240835	240935	242991	244531	244561
	36" PVC Cable	240695	240755	240855	240955	242996	244536	244566

Optional Delay

Delays are useful when the liquid being sensed is subject to frequent sloshing or the reservoir's attitude changes significantly. For low quantities, Gems offers a 5- and 10-second delay ($\pm 1/2$ second). Gems will customize the delay up to 99 seconds for large volume OEM applications. Please call Gems for more information.

LEVEL SWITCHES - SINGLE POINT