Optical Liquid Level Switches

Optomax Digital Series

- Reverse polarity, ESD and transient over-voltage protected
- Push-pull output, capable of sinking or sourcing up to 100mA, can directly drive small loads
- Optional fail-safe PWM output
- Polysulfone or Trogamid® housing material options
- Detects presence or absence of fluid
- Choice of threads



Description

SST's Optomax Digital Sensors are intelligent liquid level switches designed for applications that require a miniature, cost-effective, and low-power sensing solution. Featuring a FET output, they can directly drive small loads up to 100mA.

These sensors offer high temperature tolerance, and fast, accurate response with long life and high reliability. Easy to install and interface with customer's electronics, they are compatible with a wide range of fluids and chemicals, making them perfect in space-constrained industrial settings. [a]

Specifications

Technical Specifications	
Supply voltage (Vs)	4.5...15.4V_{DC} or 4.5...5.5V_{DC} (PWM Output)
Supply current (Is)	2.5mA max. (Vs = 15.4V_{DC})
Operating temperatures	Standard: -25...+80°C (-13...+176°F)
	Extended: -40...125°C (-40...+257°F)
Storage temperatures	Standard: -30...+85°C (-22...+185°F)
	Extended: -40...125°C (-40...+257°F)
Housing material [b]	Polysulfone or Trogamid® [c]
Sensor termination	24AWG, 250mm PVDF wires, 10mm tinned
Output Values	
Output current (Iout):	100mA max
Output Voltage (Vout)	
Output High	Vout = Vs - 1.5V max
Output Low	Vout = 0V + 0.5V max
PWM	
Duty cycle in air	25% ± 10%
Duty cycle in liquid	75% ± 10%
Frequency	2kHz ± 10%

Core Applications

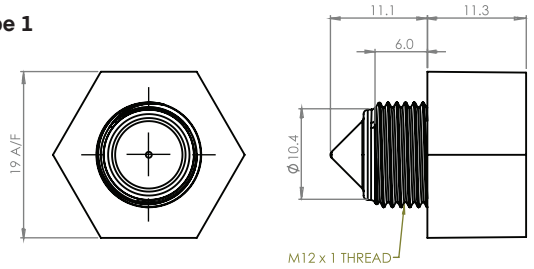
- Tank or Vessel Level Control Monitoring
- Protecting Robotic Process Automation Systems
- Off highway vehicles
- Leak detection
- Overspill protection
- Food & Beverage Manufacturing
- SCR (Selective Catalytic Reduction) Emissions Systems

[a] Avoid reflective surfaces within 10mm of the sensing tip, see SST's Liquid Level Switches – Installation, Operation and Compatibility Guide.
[b] Before use check that the fluid in which you wish to use these devices is compatible either with Polysulfone or Trogamid®. Some common fluids and compatibility can be found in SST's Liquid Level Switches – Installation, Operation and Compatibility Guide
[c] When using Trogamid® above +85°C some oil based liquids can cause deformation of the sensing tip, and must be tested for compatibility

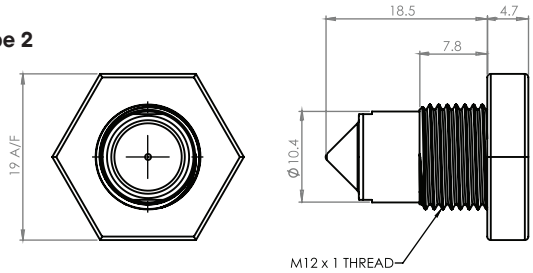
Outline Drawing

All dimensions shown in mm. Tolerances = ±0.5mm.

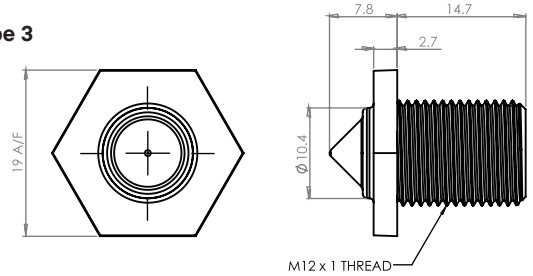
Type 1



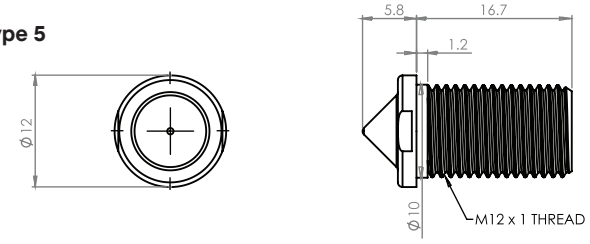
Type 2



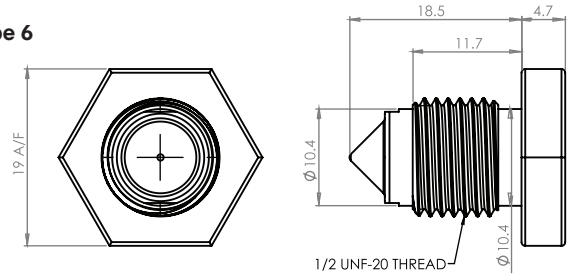
Type 3



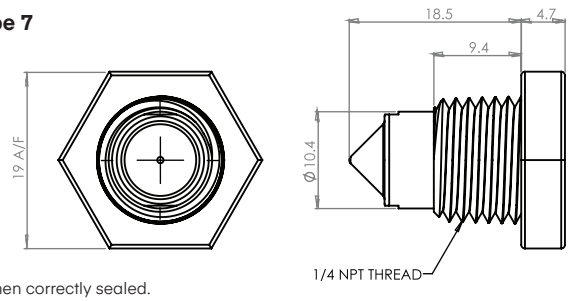
Type 5



Type 6



Type 7



[c] When correctly sealed.

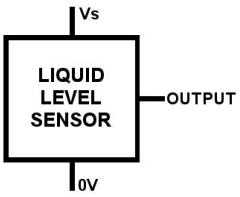
Housing Specifications

Installation drawings and 3D (.step) files available on the product webpage.

Housing Type			
	Type 1	Type 2	Type 3
Thread	M12x1x 8g		
Pressure [c]	7 bar / 101 psi maximum		
Tightening Torque	1.5 Nm / 13.26 in-lbs maximum		

Housing Type			
	Type 5	Type 6	Type 7
Thread	M10x1	1/2"-20 UNF	1/4" NPT
Pressure [c]	20 bar / 290 psi max.	7 bar / 101 psi maximum	
Tightening Torque	1.5 Nm / 13.26 in-lbs maximum		

Electrical Interface

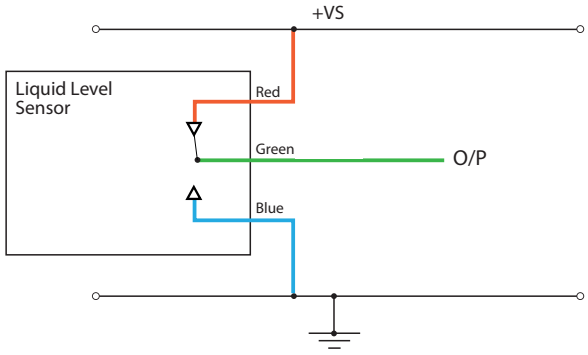


Wire	Designation
Red	Vs
Green	Output
Blue	0V

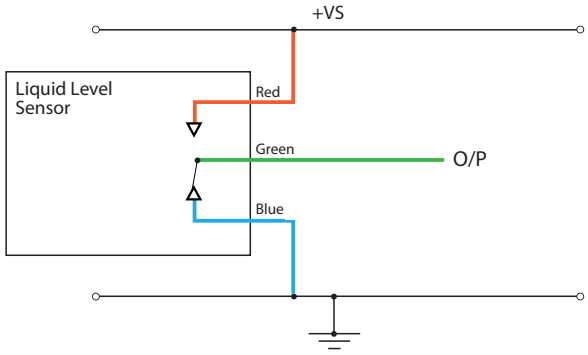
Circuit Diagrams

In order to suit any application, these sensors have been designed with various output circuit configurations.

Digital Output High in Air



Digital Output Low in Air



Ordering Guide

Generate your specific part number using the convention shown below.
Use only those letters and numbers that correspond to the sensor and output options you require — omit those you do not.

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Sensor mounted from inside vessel

L L X X X 0 D 3 X

Housing Material	Housing Type	Operating Temp.	Output Logic
C Polysulfone	3 Type 3 M12x1-8g	0 -25...+80°C	Blank Output High in air
T Trogamid ®	5 Type 5 M10x1	1 -40...+125°C	L Output Low in air
			P PWM output

Sensor mounted from outside vessel

L L X X X 0 D 3 X S H

Housing Material	Housing Type	Operating Temp.	Output Logic
C Polysulfone	1 Type 1 M12x1-8g	0 -25...+80°C	Blank Output High in air
T Trogamid ®	2 Type 2 M12x1-8g	1 -40...+125°C	L Output Low in air
	6 Type 6 1/2"-20 UNF		P PWM output
	7 Type 7 1/4" NPT		

Notes:

- Type 3 and Type 5 sensors are mounted internally.
- Types 1, 2, 6 & 7 sensors are mounted externally.

Caution

Take care when connecting loads. The minimum load impedance should not be less than Vs/max output current.
Note: Shorting the output to Vs or 0V will result in irreparable damage to the sensor.

Accessory Table

Thread	Housing Type	Accessory	Material	Order Code
M12	Type 2	Seal Washer	Nitrile	41000190-002
M12	Type 2	Seal Washer	EPDM	41000190-003
M12	Type 2	Seal Washer	VAMAC	41000190-004
M12	Type 2	'O' Ring	As Required	Not Sold by SST
M12	Type 2	Nut	Zinc-Plated Brass	LL-NUT-ZNC
M12	Type 2	Nut	Stainless Steel	LL-NUT-STS
1/2" -20 UNF	Type 6	'O' Ring	As Required - See SAE J1926-1	Not Sold by SST
1/4" NPT	Type 7	Sealing Tape	PTFE	Not Sold by SST
1/4" NPT	Type 7	Sealing Compound	Sealing Compound must be compatible with housing material	Not Sold by SST

Caution

Do not exceed maximum ratings and ensure sensor(s) are operated in accordance with their requirements.

Carefully follow all wiring instructions. Incorrect wiring can cause permanent damage to the device.

SST Sensing Ltd recommend using alcohol based cleaning agents. Do NOT use chlorinated solvents such as trichloroethane as these are likely to attack the sensor material.

Failure to comply with these instructions may result in product damage.

Information

As customer applications are outside of SST Sensing Ltd.'s control, the information provided is given without legal responsibility. Customers should test under their own conditions to ensure that the equipment is suitable for their intended application. Before use, check that the fluid in which you wish to use these devices is compatible with Polysulfone or Trogamid®.

General Note: SST Sensing Ltd. reserves the right to make changes to product specifications without notice or liability. All information is subject to SST Sensing Ltd's own data and considered accurate at time of going to print.

For technical assistance or advice, please email: sensors@dwyeromega.com

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