

# DATA SHEET

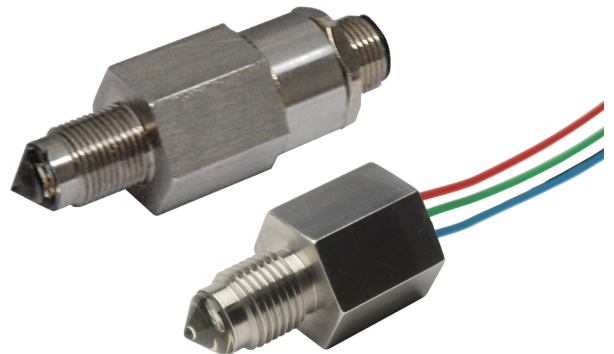
## Liquid Level Switches

### Optomax Industrial Glass Series



#### FEATURES

- Liquid level switches that can detect the presence or absence of oil or water based liquids
- Corrosion resistant, 316L stainless steel housing with hardened glass tip; suitable for harsh environments
- Compact size, wide operating temperature and pressure, choice of mounting threads and terminal connections



Housing / Mounting	Output Type / Logic	Supply Voltage	Output Current	Temp. / Pressure
 STAINLESS STEEL 316	 N-TYPE	 4.5 - 15.4 V VOLTAGE	 UP TO 1A CURRENT	 -40°C to +125°C TEMPERATURE
 GLASS TIP	 P-TYPE	 8 - 30 V VOLTAGE		 0 - 600bar
 M12x1	 PUSH PULL			
 1/4" NPT	 1 0 HIGH IN AIR			
 1/2" NPT	 0 1 LOW IN AIR			
 1/2"-20 UNF				

#### BENEFITS

- Direct high current switching
- Industrial supply voltages
- Direct load drive design
- High pressure
- High temperature

#### APPLICATIONS

- Tank level control; fill/empty
- Leak detection
- Pump control
- Sump level switching
- Overfill protection

#### OUTPUT VALUES

<b>Output Voltage (Vout):</b> <b>Vs = 4.5—15.4V<sub>DC</sub></b>	<b>Iout = 1A</b>
Output High	Vout = Vs - 1.5V max
Output Low	Vout = 0V + 0.5V max
<b>Output Voltage (Vout):</b> <b>Vs = 8—30V<sub>DC</sub></b>	<b>Iout = 1A</b>
Output High	Vout = Vs - 1.8V max
Output Low	Vout = 0V + 0.7V max

#### TECHNICAL SPECIFICATIONS

Supply voltage (Vs)	4.5V <sub>DC</sub> to 15.4V <sub>DC</sub>
	or 8V <sub>DC</sub> to 30V <sub>DC</sub>
Supply current (Is)	2.5mA max. (Vs = 15.4V <sub>DC</sub> )
	or 7.5mA max. (Vs = 30V <sub>DC</sub> )
Output sink and source current (Iout)	Up to 1A
Operating temperature <sup>a</sup>	-40°C to +125°C (-40°F to +257°F)
Storage temperature	-40°C to +125°C (-40°F to +257°F)
Operating pressure	0 to 600bar (0 to 8700psi)
Housing material	316L Stainless steel with glass tip
Switch termination	20AWG, 250mm PVDF wires, or 22AWG PVC cable or M12 connector

Other sensor options available on request, email: [technical@sstsensing.com](mailto:technical@sstsensing.com)

**Need help? Ask the expert**  
**Tel: + 44 (0)1236 459 020**  
**and ask for "Technical"**

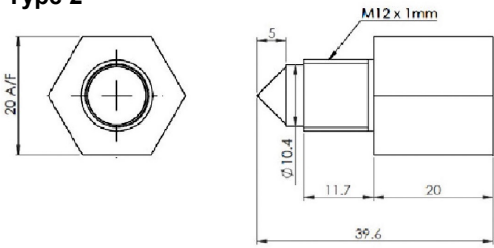


a) Not suitable for use in freezing liquid or high condensing environments such as steam.

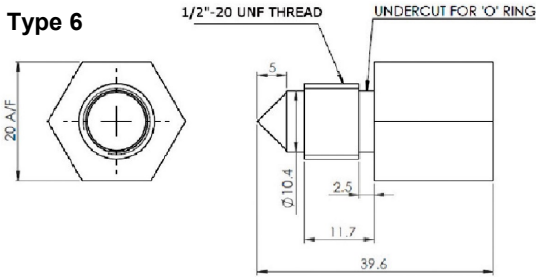
## OUTLINE DRAWING

All dimensions shown in mm. Tolerances = ±1mm.

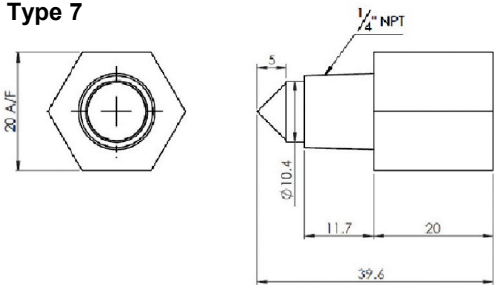
### Type 2



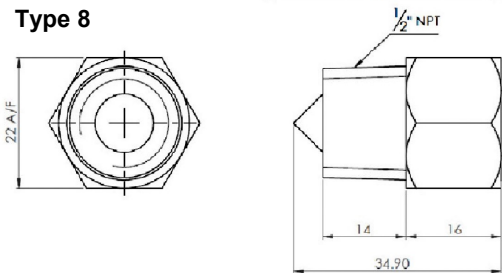
### Type 6



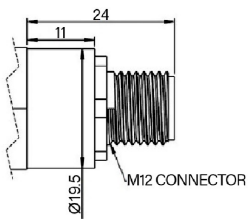
### Type 7



### Type 8



### M12 Connector Dimensions



## HOUSING SPECIFICATIONS

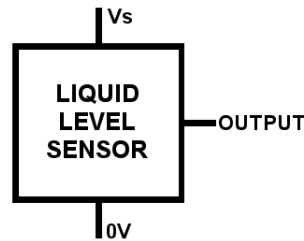
Installation drawings and 3D (.step) files available on [the product webpage](#).

Housing Series		
	Type 2	Type 6
Thread <sup>bc</sup>	M12x1 with hex nut	1/2"-20 UNF with O-ring
Pressure <sup>d</sup>	100 bar / 1450 psi maximum	
Tightening Torque <sup>e</sup>	3 Nm / 26.5 in-lbs maximum	

Housing Series		
	Type 7	Type 8
Thread <sup>bc</sup>	1/4" NPT	1/2" NPT
Pressure <sup>d</sup>	100 bar / 1450 psi maximum	600 bar / 8702 psi maximum
Tightening Torque <sup>e</sup>	3 Nm / 26.5 in-lbs maximum	

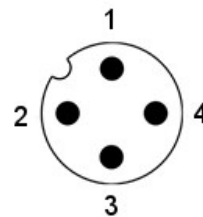
## ELECTRICAL INTERFACE OPTIONS

### Flying Leads



Wire	Cable	Designation
Red	Brown	Vs
Green	Black	Output
Blue	Blue	0V

### M12 Connector



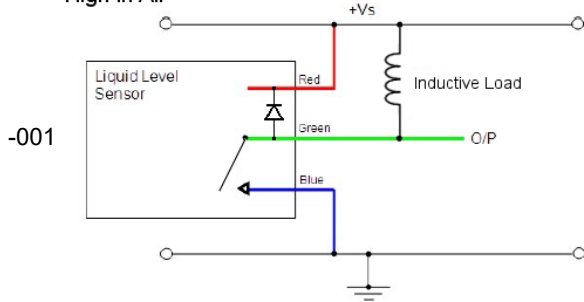
Pin	Designation
1	Vs
2	Not connected
3	0V
4	Output



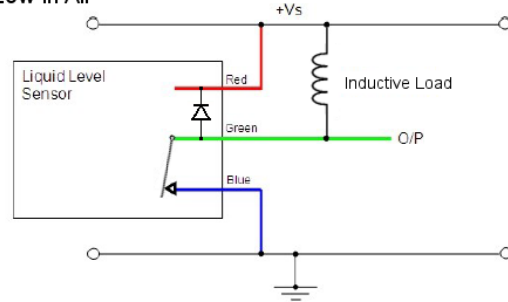
- b) Recommended nuts and sealing accessories outlined within the [Accessory Table](#)
- c) Refer to mounting information on [page 4](#).
- d) When correctly sealed.
- e) Do NOT over-tighten as this can permanently damage the switch.

In order to suit any application, these switches have been designed with various output circuit configurations. They are identified by the 3-digit output type code in the part number as shown in [Order Information](#).

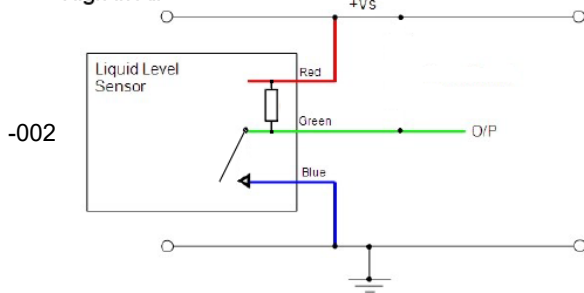
**N-Type with Flyback Protection Diode  
High in Air**



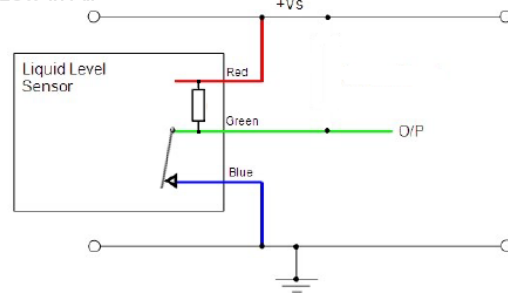
**N-Type with Flyback Protection Diode  
Low in Air**



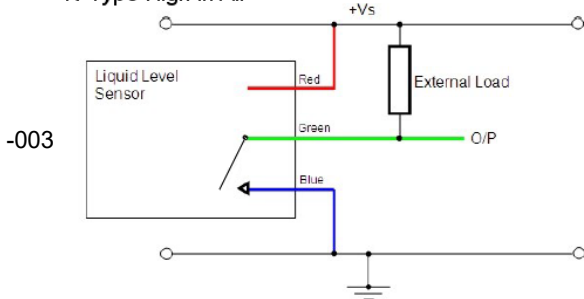
**N-Type with Internal 10kΩ Pull-Up Resistor  
High in Air**



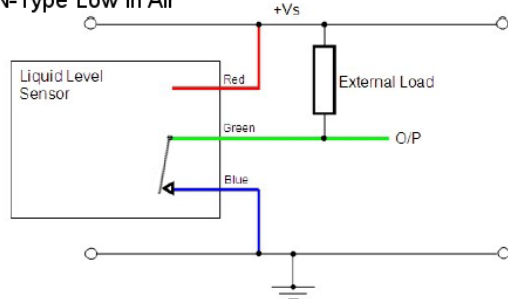
**N-Type with Internal 10kΩ Pull-Up Resistor  
Low in Air**



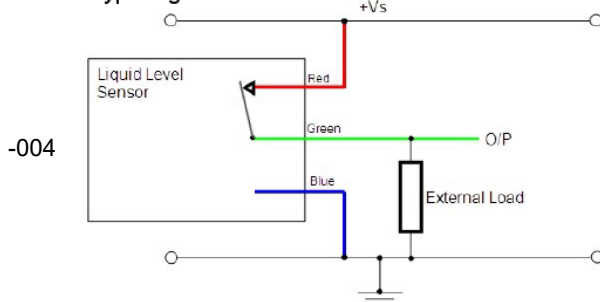
**N-Type High in Air**



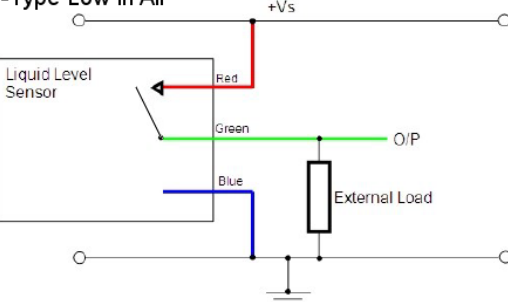
**N-Type Low in Air**



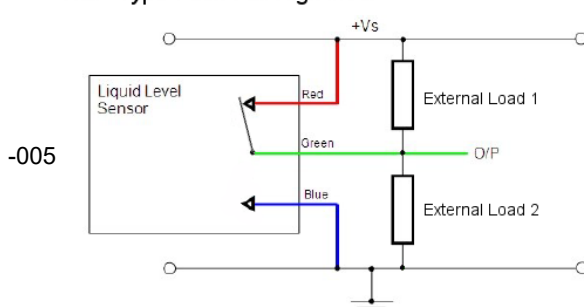
**P-Type High in Air**



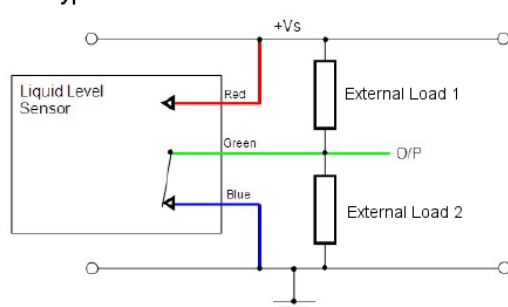
**P-Type Low in Air**



**N&P-Type Push Pull High in Air**



**N&P-Type Push Pull Low in Air**



**CAUTION:** Take care when connecting loads.

The minimum load impedance should not exceed  $V_s/\text{max output current}$ .

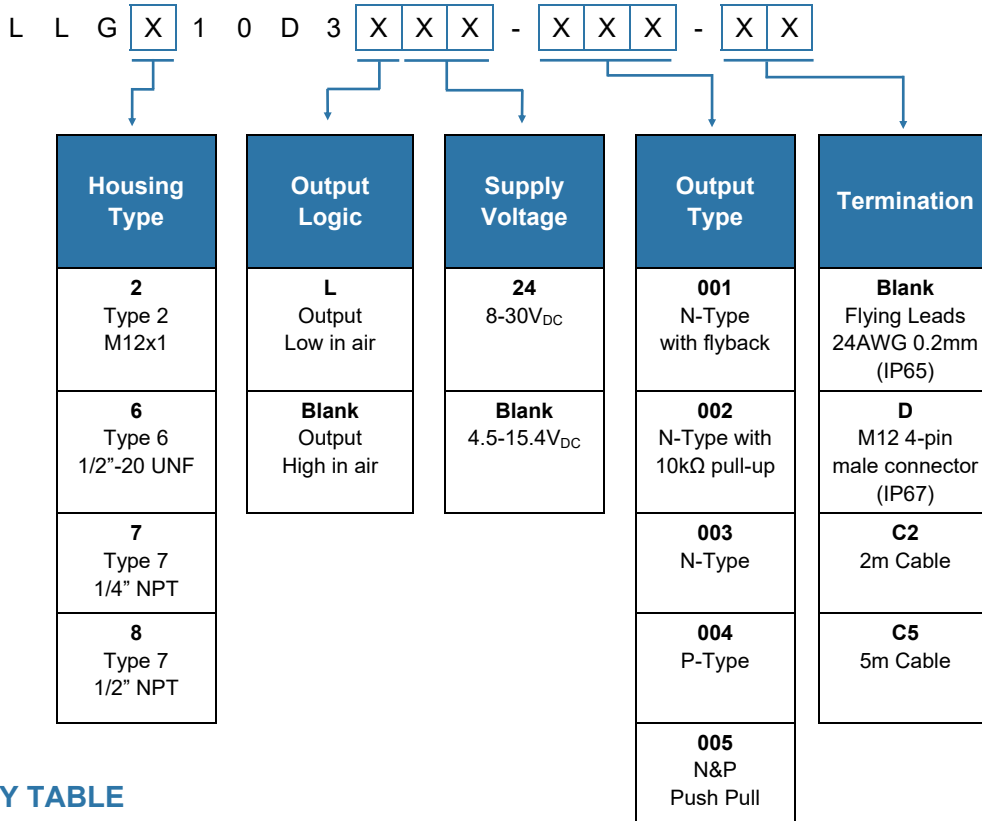
**Note:** Shorting the output to  $V_s$  or  $0V$  will result in irreparable damage to the switch.

**Note:** Colours shown are for 3-wire version. See electrical interface table on [page 2](#) for equivalent cable colours.

## ORDER INFORMATION

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.

Other sensor options available on request, email: [technical@sstsensing.com](mailto:technical@sstsensing.com) for details.



## ACCESSORY TABLE

Thread	Housing Type	Accessory	Material	Order Code
M12	2x0	Seal Washer	Nitrile	41000190-002
M12	2x0	Seal Washer	EPDM	41000190-003
M12	2x0	Seal Washer	VAMAC	41000190-004
M12	2x0	'O' Ring	As Required	Not Sold by SST
M12	2x0	Nut	Zinc-Plated Brass	LL-NUT-ZNC
M12	2x0	Nut	Stainless Steel	LL-NUT-STC
1/2" -20 UNF	6x0	'O' Ring	As Required - See SAE J1926-1	Not Sold by SST
1/4" NPT	7x0	Sealing Tape	PTFE	Not Sold By SST
1/4" NPT	7x0	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 Stainless Steel and glass.

**For technical assistance or advice, please email:**  
[technical@sstsensing.com](mailto:technical@sstsensing.com)

**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.