

Optische Sensoren Jacob Typ LO

DIE ANWENDUNG

Die optischen Niveauschalter sind geeignet für Anwendungen auch bei höheren Druckbereichen zur Füllstandserkennung von Flüssigkeiten in Behältern, Kesseln, Heizungsanlagen, Kühlanlagen, Kompressoren, Kältekompressoren und Motoren.

WICHTIGE MERKMALE

- Ausführung in Kunststoff und Edelstahl verfügbar
- Einstellung der Empfindlichkeit durch Werksabgleich
- Einsetzbar bei hohen Druckbereichen max. 10...40 bar (Kunststoff), max. 40...60 bar (Edelstahl)
- Gehäuse komplett aus glasfaserverstärktem Polysulfon (PSU) oder Edelstahl mit Sensorspitze aus Quarzglas
- Transistorausgang zum direktem Anschluss an eine SPS
- Schaltverzögerung kann über eine SPS oder optional über den integrierten Timer ab Werk eingestellt werden
- LED-Anzeigen für Betriebs- und Schaltzustände (LO 142 + LO 144)
- Einfaches Funktionsprinzip für ein großes Anwendungsspektrum
- Keine beweglichen Bauteile vorhanden
- Geringe Baumasse, Einbaulage beliebig
- PSU-Ausführung ist FDA konform, einsetzbar im Lebensmittelbereich
- exzellente chemische Beständigkeit in PSU- und VA-Ausführung
- Ausführung mit analogem 4-20 mA Temperaturausgangssignal verfügbar



ANWENDUNGSBEREICHE

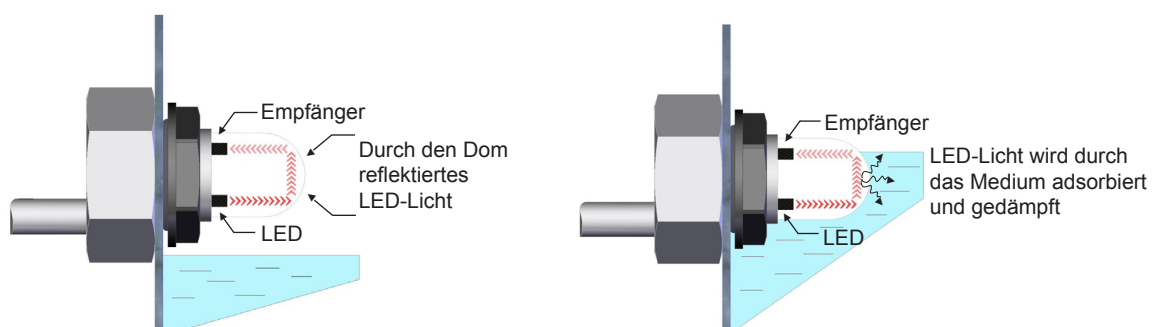
- Allgemeiner Maschinenbau
- Chemische Industrie
- Pharma- und Biotechnologie
- Energie
- Nahrungsmittel- und Getränkeindustrie
- Wasserwirtschaft

DAS MESSPRINZIP

Die Niveauschalter arbeiten mit Infrarot-Technologie. Durch die Sensorspitze wird ein optisches Signal gesendet, das durch die Infrarot LED erzeugt wird.

Ohne Medium wird das Licht der LED zum Empfänger reflektiert, mit Medium verliert das optische Signal durch Adsorption die Möglichkeit, den Empfänger zu erreichen. Der Empfänger reagiert auf diesen Zustandswechsel mit der Erzeugung eines elektrischen Schaltsignals. Die Schaltfunktion ist wahlweise als Öffner oder Schließer bei Mediumkontakt wählbar.

Die Verzögerungszeit für das Schaltsignal kann direkt über eine SPS eingestellt oder optional durch einen integrierten Timer, ab Werk voreingestellt werden.



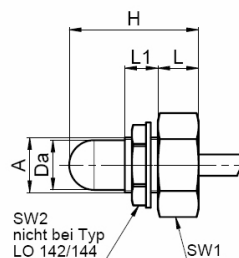
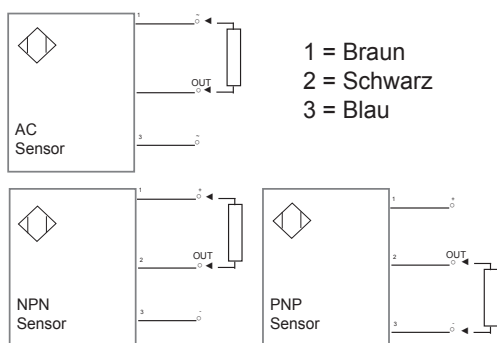
Optische Infrarot-Sensoren von Jacob Typ LO 1xx



	LO 112, LO 114	LO 142, LO 144
Körper	Polysulfon glasfaserverstärkt	Polysulfon glasfaserverstärkt
Kabel	PVC	PVC
Mutter	Nylon 6.6	----
LED	----	Grün / Rot
Anzugsmoment	5 Nm	5 Nm
Gewicht g	40	50
Schutzart	IP54	
Wiederholgenauigkeit	± 2mm	
Standardausgang	NPN open collector, PNP bei 12-28 VDC Ausführung	
Sonderausführungen	24 VAC, AC-Ausgang oder NPN	
Elektrische Schutzmaßnahmen	Verpolungsschutz, kurzschlusssicherer Ausgang	
Lieferumfang	mit 1 Meter PVC-Kabel, Sonderlängen auf Anfrage möglich	

Typ	Prozessanschluss	Funktion	Ausgang	Stromversorgung	Stromaufnahme abhängig von der Einsatztemperatur	Druck max.	Temperaturbereich
LO 112	M12x1	NO in Luft	NPN open collector	12-28 VDC	max. 100mA	10 bar	0°C bis +60°C
LO 114	M12x1	NC in Luft	PNP	12-28 VDC	max. 100mA	10 bar	0°C bis +60°C
LO 142	G 3/8"	NO in Luft	NPN open collector	12-28 VDC	max. 100mA	40 bar	-40°C bis +85°C*
LO 144	G 3/8"	NC in Luft	PNP	12-28 VDC	max. 100mA	40 bar	-40°C bis +85°C*

* Temperaturbereich bei Einsatz in Wasser ist 0°C bis +60°C.



Typ	A	L	L1	SW1	SW2	H	Da
LO 112 /114	M12x1	16,5	7,30	19	15	36	10,5
LO 142/144	G 3/8"	25	10	22	--	47,25	14

Optische Infrarot-Sensoren von Jacob Typ LO 2xx



Körper	1.4305 (AISI 303)
Spitze	Quarzglas
Kabel	PVC
Anzugsmoment	15 Nm
Gewicht g	200
Schutzart	IP54
Wiederholgenauigkeit	± 2mm
Standardausgang	NPN open collector, PNP bei 12-28 VDC Ausführung
Sonderausführungen	24 VAC, AC-Ausgang oder NPN
Elektrische Schutzmaßnahmen	Verpolungsschutz, kurzschlussicherer Ausgang
Lieferumfang	mit 1 Meter PVC-Kabel, Sonderlängen auf Anfrage möglich oder mit M12, 5-poliger Industriestecker (IP67)

Typ	Prozessanschluss*	Funktion	Ausgang	Stromversorgung	Stromaufnahme abhängig von der Einsatztemperatur	Druck max.	Temperaturbereich	Elektrischer Anschluss
LO 212	G 1/2"	NO in Luft	NPN open collector	12-28 VDC	max. 100mA	60 bar	-40°C bis +125°C	Kabel PVC
LO 214	1/2" NPT							
LO 216	G 1/2"	NC in Luft	PNP	12-28 VDC	max. 100mA	60 bar	-40°C bis +125°C	Kabel PVC
LO 218	1/2" NPT							
LO 222	G 1/2"	NO in Luft	NPN open collector	12-28 VDC	max. 100mA	60 bar	-40°C bis +125°C	Stecker M12
LO 226	G 1/2"	NC in Luft	PNP	12-28 VDC	max. 100mA	60 bar	-40°C bis +125°C	Stecker M12

* Metrisches Gewinde auf Anfrage

1 = Braun
2 = Schwarz
3 = Blau

PIN-Belegung Sensor
 1: V+
 2: 4-20mA+
 3: GND
 4: OUT
 5: 4-20mA-
PIN-Belegung Stecker

Typ	A	L	L1	SW	H
LO212 / LO226	G 1/2", 1/2" NPT	41	18	27	59

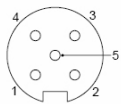
Optische Infrarot-Sensoren von Jacob Typ LO 3xx mit analogem 4-20mA Temperatursignal



Körper	1.4571 (AISI 316L)
Spitze	Quarzglas
Anzugsmoment	15 Nm
Gewicht g	200
Schutzart	IP67
Wiederholgenauigkeit	± 2mm
Elektrische Schutzmaßnahmen	Verpolungsschutz, kurzschlussicherer Ausgang
Lieferumfang	M12, 5-poliger Industriestecker

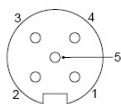
Typ	Prozessanschluss	Funktion	Schaltausgang	Temperaturausgang*	Stromversorgung	Stromaufnahme abhängig von der Einsatztemperatur	Druck max.	Temperaturbereich
LO 312	G 1/2"	NO in Luft	NPN open collector	4-20mA	12-28 VDC	max. 100mA	40 bar	-40°C bis +125°C
LO 314	G 1/2"	NC in Luft	PNP	4-20mA	12-28 VDC	max. 100mA	40 bar	-40°C bis +125°C

* entsprechend dem festgelegten Temperaturbereich von -40°C (4mA) bis 120°C (20mA)

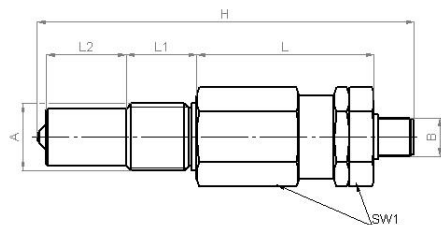


PIN-Belegung Sensor

- 1: V+
- 2: 4-20mA+
- 3: GND
- 4: OUT
- 5: 4-20mA-



PIN-Belegung Stecker



Typ	A	B	L	L1	L2	SW	H
LO312 / LO314	G 1/2"	M12x1	56	22	25	27	118,5

PSU-Beständigkeitsliste gegen Chemikalien

Das Polysulfon ist ein sehr steifes, formloses thermoplastisches Material.

Es ist hydrolytisch stabil und zeigt langfristigen Widerstand gegen Dampf. Elektrische Eigenschaften werden über einen breiten Temperaturbereich (-40°C + 160°C) nach untertauchen in Wasser aufrechterhalten. Das Polysulfon ist gegen Mineralsäuren, Laugen, Salzlösungen, Reinigungsmittel, Kohlenwasserstofföle in hohem Grade beständig.

Das Polysulfon hat FDA-, USP-, 3-A- und NSF-Zulassungen, die den Kontakt mit Nahrungsmitteln und den Einsatz im medizinischen Bereich erlauben.

Chemische Beständigkeit			
+ = resistent; 0 = teilweise resistent; - = nicht resistent; II = sich auflösend			
Substanz (Konzentration)	Beständigkeit	Substanz (Konzentration)	Beständigkeit
Aceton (100%)	-	Kaltwasser (100%)	+
Aluminiumchlorid (10%)	+	Magnesiumchlorid (10%)	+
Aluminiumsulfat (10%)	+	Mangansulfat (10%)	+
Ameisensäure (85%)	+	Methanol (98%)	0
Ammoniak (10%)	+	Methylenchlorid (100%)	0
Ammoniumchlorid (10%)	+	Milchsäure (10%)	+
Benzin (100%)	0	Mineralöl (100%)	+
Benzol (100%)	-	Naphthen (100%)	0
Bleichlauge 0.1% akt. Chlor	-	Natriumbisulfid (10%)	+
Borsäure (10%)	+	Natriumcarbonat (10%)	+
Butanol (100%)	0	Natriumchlorid (10%)	+
Butylacetat (100%)	-	Natriumsulfat (10%)	+
Calciumchlorid, alkoholisch (20%)	0	Natronlauge (10%)	+
Calciumhypochlorit (10%)	+	Natronlauge (50%)	+
Chlorbenzol (100%)	II	Ölsäure Konzentriert (40%)	+
Chlorgas (100%)	-	Ozon (-)	-
Chloroform (100%)	II	Paraffin (100%)	+
Chlorwasser (-)	+	Petroleum (100%)	+
Chlorwasserstoffsäure (2-10%)	+	Phenol (10%)	-
Chromalaun	+	Phosphorsäure (10%)	+
Chromsäure (10%)	-	Phosphorsäure Konzentriert	+
Dibutylphthalat (100%)	+	Pyridin (100%)	-
Diesel (100%)	+	Quecksilber (100%)	+
Diethylphthalat (100%)	+	Quecksilber (5%)	+
Essigsäure (80-100%)	+	Salpetersäure (10%)	+
Ethanol (96%)	+	Salpetersäure Konzentriert (65%)	-
Ethylacetat (100%)	+	Schwefelkohlenstoff (100%)	-
Ethylenchlorid (100%)	II	Schwefelsäure (10%)	+
Ethylether (100%)	+	Schwefelsäure (98%)	-
Fluorwasserstoffsäure (40%)	-	Seewasser (100%)	+
Formaldehyd (20%)	+	Seifenlösung (1%)	+
Freon 12, flüssig (100%)	+	Talg (100%)	+
Furfural (100%)	+	Tetrachlorkohlenstoff (100%)	-
Glycerin (90%)	+	Trafoöl (100%)	+
Harnstoff, wässrig (10%)	+	Wasserstoffperoxid (0.5%)	+
Heptan (100%)	+	Wasserstoffperoxid (1%)	+
Hexan (100%)	+	Wasserstoffperoxid (3%)	+
Jod-Jodkaliumlösung (3%)	-	Wasserstoffperoxid (10%)	+
Jodtinktur (-)	-	Wasserstoffperoxid (30%)	+
Kalilauge, wässrig (10%)	+	Xylol (100%)	-
Kalilauge, wässrig (50%)	+	Zinkchlorid (10%)	0
Kaliumbichromat (5%)	+	Zitronensäure (10%)	+
Kaliumnitrat (10%)	+		
Kaliumpermanganat (1%)	+		

Die hier aufgeführten Richtwerte bei 20°C sind nicht auf alle Betriebsverhältnisse übertragbar. Die chemische Beständigkeit von Kunststoffen ist abhängig von der Temperatur, Konzentration, Strahleneinwirkung, mechanischen/dynamischen Beanspruchung und nicht zuletzt von der sorgfältigen Herstellung des Werkstückes (Spannungsrissegefahr). Daher können Garantie- und Schadenersatzansprüche nicht anerkannt werden. Für spezifische Anwendungen ist es unerlässlich, den Betriebsbedingungen entsprechende Versuche zu machen.

DATA SHEET

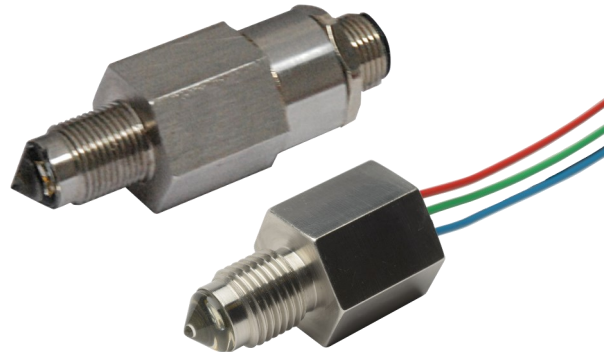
Liquid Level Switches

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 M12x1 1/4" NPT GLASS TIP 1/2" NPT 1/2"-20 UNF	 N-TYPE P-TYPE PUSH PULL 1 0 HIGH IN AIR 0 1 LOW IN AIR	 4.5 - 15.4 V VOLTAGE 8 - 30 V VOLTAGE	 UP TO 1A CURRENT	 -40°C to +125°C TEMPERATURE 0 - 600bar

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

Output Voltage (Vout): Vs = 4.5—15.4V_{DC} Output High Output Low	Iout = 1A Vout = Vs - 1.5V max Vout = 0V + 0.5V max
Output Voltage (Vout): Vs = 8—30V_{DC} Output High Output Low	Iout = 1A Vout = Vs - 1.8V max Vout = 0V + 0.7V max

TECHNICAL SPECIFICATIONS

Supply voltage (Vs)	4.5V _{DC} to 15.4V _{DC} or 8V _{DC} to 30V _{DC}
Supply current (Is)	2.5mA max. (Vs = 15.4V _{DC}) or 7.5mA max. (Vs = 30V _{DC})
Output sink and source current (Iout)	Up to 1A
Operating temperature ^a	-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

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

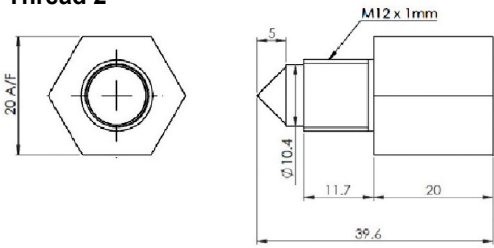


a) Not suitable for use in freezing liquid or high condensing environments such as steam.

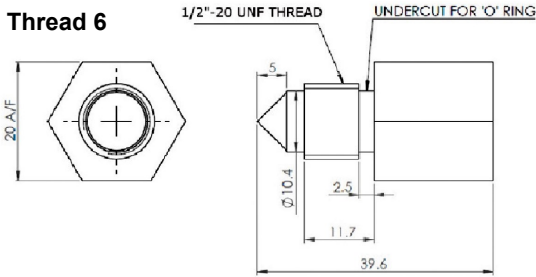
OUTLINE DRAWING

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

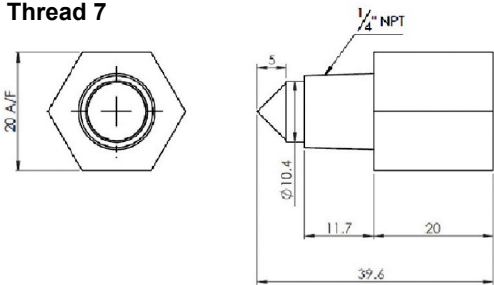
Thread 2



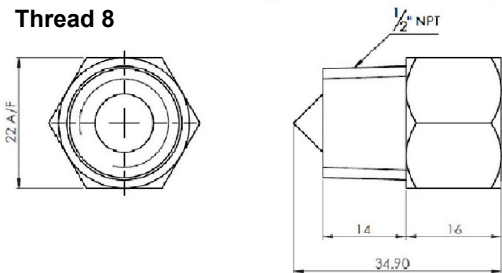
Thread 6



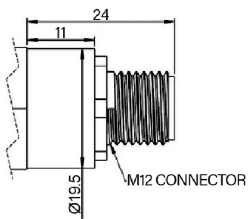
Thread 7



Thread 8



M12 Connector Dimensions



HOUSING SPECIFICATIONS

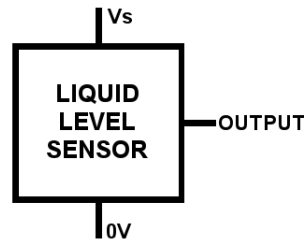
Installation drawings and 3D (.step) files available on [the product webpage](#).

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

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

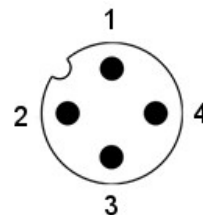
ELECTRICAL INTERFACE OPTIONS

Flying Leads



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

M12 Connector



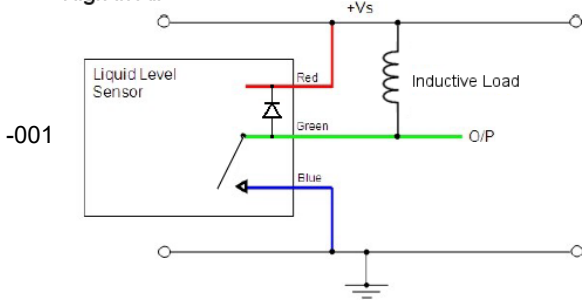
Pin	Designation
1	Vs
2	Not connected
3	0V
4	Output



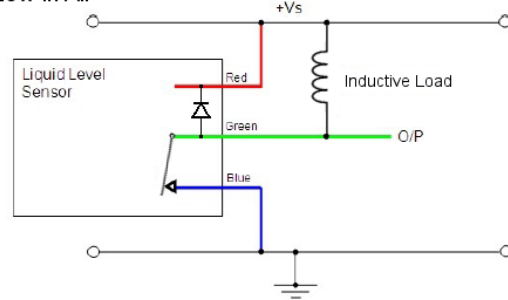
- b) Recommended nuts and sealing accessories outlined within the [Accessory Table](#)
- c) Refer to mounting information on [page 4](#).
- d) When correctly sealed.
- e) Do NOT over-tighten as this can permanently damage the switch.

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](#).

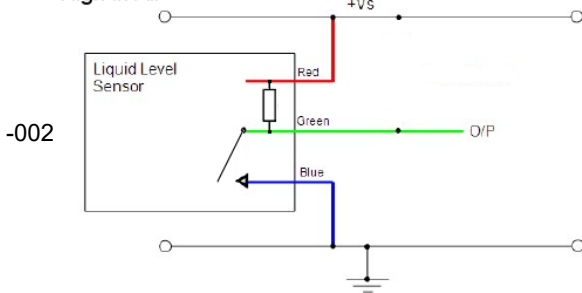
**N-Type with Flyback Protection Diode
High in Air**



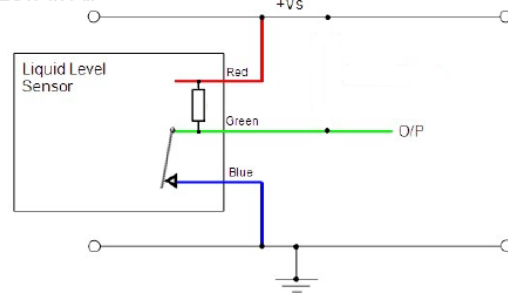
**N-Type with Flyback Protection Diode
Low in Air**



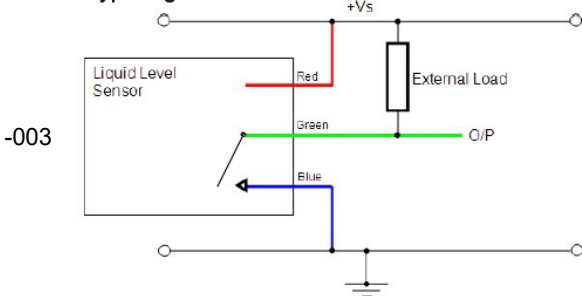
**N-Type with Internal 10kΩ Pull-Up Resistor
High in Air**



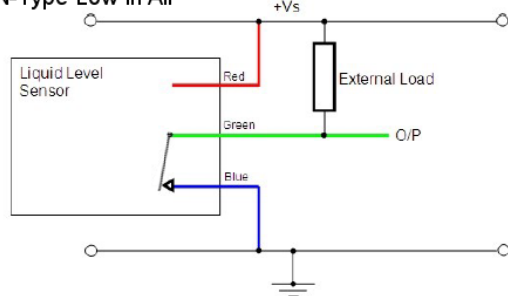
**N-Type with Internal 10kΩ Pull-Up Resistor
Low in Air**



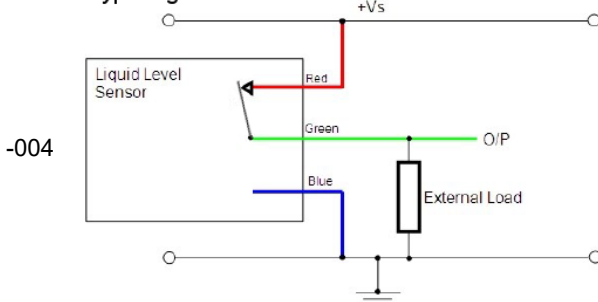
N-Type High in Air



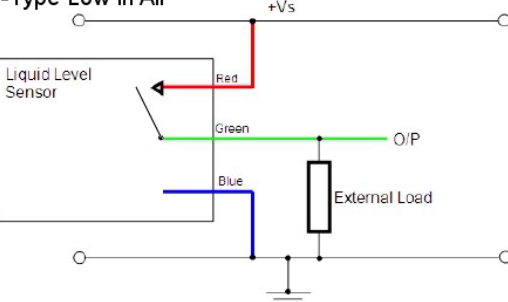
N-Type Low in Air



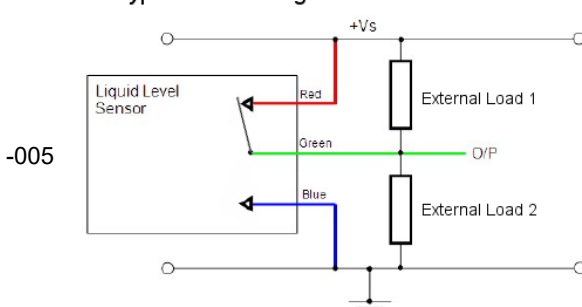
P-Type High in Air



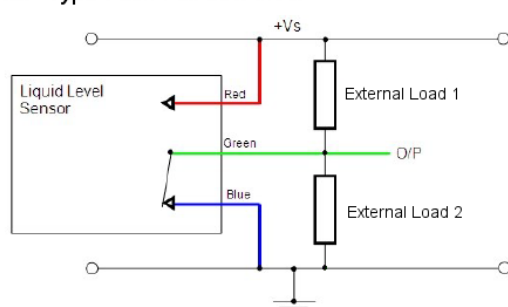
P-Type Low in Air



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 $V_s/\text{max output current}$.

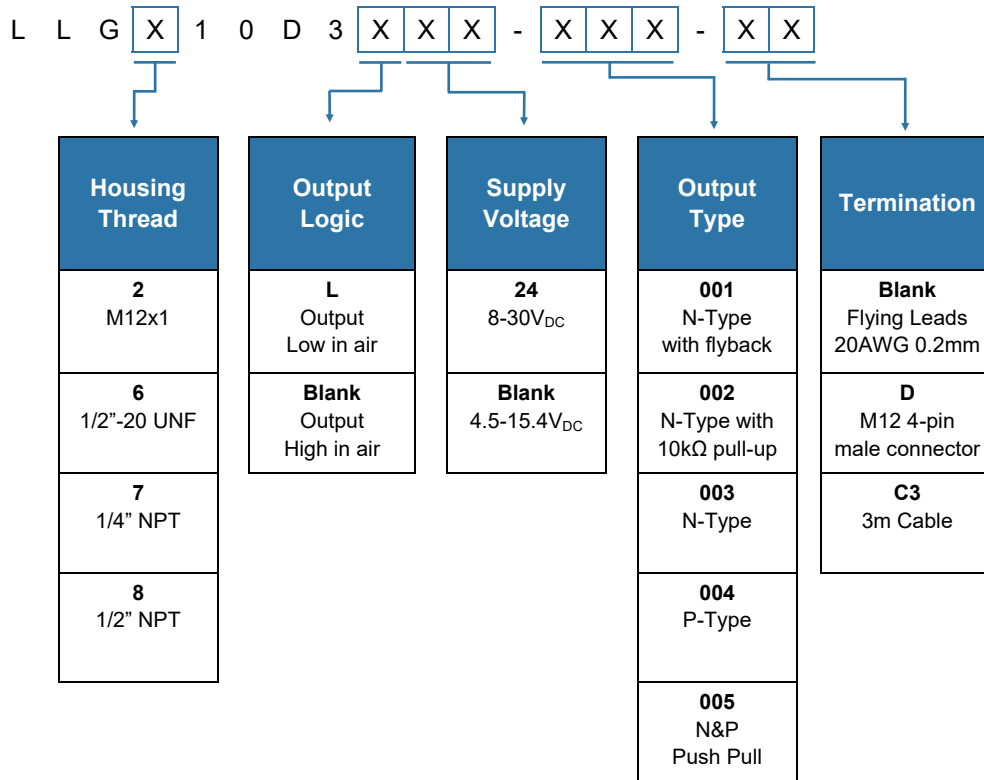
Note: Shorting the output to V_s or $0V$ will result in irreparable damage to the switch.

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 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-STSS
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

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.

DATA SHEET

Liquid Level Switches

High Performance Series



FEATURES

- Liquid level switches that can detect almost any liquid type; oil or water based
- Large load output; high switching currents
- Choice of threads and terminal connections

Housing/ Mounting	Output Type / Logic	Supply Voltage	Output Current	Temp
<ul style="list-style-type: none">3/8" BSPP1/2" BSPP1/2" NPT3/4"-16 UNJF	<ul style="list-style-type: none">N-TYPEP-TYPEPUSH PULL1 0 HIGH IN AIR0 1 LOW IN AIR	<ul style="list-style-type: none">4.5 - 15.4 V VOLTAGE10 - 45 V VOLTAGE	<ul style="list-style-type: none">UP TO 100mA CURRENTUP TO 800mA CURRENT	<ul style="list-style-type: none">-25°C to +80°C TEMPERATURE-40°C to +125°C TEMPERATURE

BENEFITS

- Robust stainless steel housing
- Suitable for use within aggressive environments
- Larger mounting threads; standard or custom

TECHNICAL SPECIFICATIONS

Supply voltage (Vs)	4.5V _{DC} to 15.4V _{DC} (±5%)
or	10V _{DC} to 45V _{DC} (±5%)
Supply current (Is)	15mA max. (Vs = 12V _{DC})
or	35mA max. (Vs = 45V _{DC})
Output sink and source current (Iout)	100mA max. (15.4V _{DC})
or	800mA max. (45V _{DC})
Operating temperatures	Standard: -25°C to +80°C Extended: -40°C to +125°C
Storage temperatures	Standard: -30°C to +85°C Extended: -40°C to +125°C
Housing material	Stainless Steel with Polysulfone tip ^a
Sensor termination	Various; refer to page 2

OUTPUT VALUES

Output Voltage (Vout): Iout = 100mA
Vs = 4.5—15.4V_{DC}
Output High Vout = Vs - 1.5V max
Output Low Vout = 0V + 0.5V max

Output Voltage (Vout): Iout = 800mA
Vs = 10—45V_{DC}
Output High Vout = Vs - 1.8V max
Output Low Vout = 0V + 0.7V max

Other sensor options available on request, email: technical@sstsensing.com

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

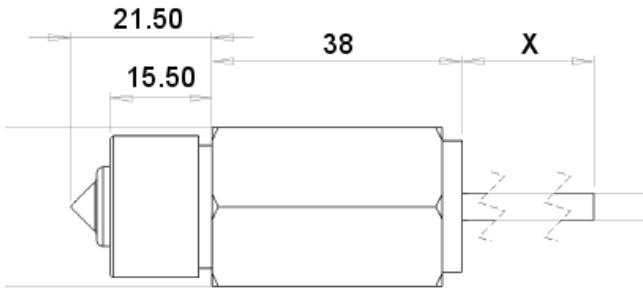


a) Before use check that the fluid in which you wish to use these devices is compatible with Stainless Steel and Polysulfone.

OUTLINE DRAWING

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

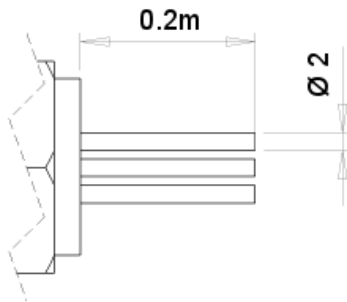
Cable



Brad Harrison micro



Flying Leads



Note: "X" can equal 0.5, 1.0 or 3.0 metres.

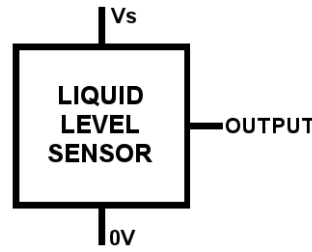
HOUSING SPECIFICATIONS

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

	Housing			
Thread	1/2" BSPP	3/8" BSPP	1/2" NPT	3/4"-16 UNJF
Pressure ^b	25 bar / 363 psi maximum			
Sensor Termination	Cable: 0.5m, 1m or 3m lengths (IP67)			
	M12x1 Brad Harrison micro (IP67)			
	Flying leads: 24AWG, 0.2m PTFE wires, 8mm tinned (IP65)			

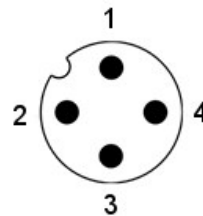
ELECTRICAL INTERFACE

Cable



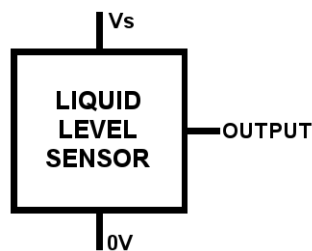
Wire	Designation
Red	Vs
White	Output
Black	0V

Brad Harrison micro



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

Flying Leads



Wire	Designation
Red	Vs
Green	Output
Blue	0V

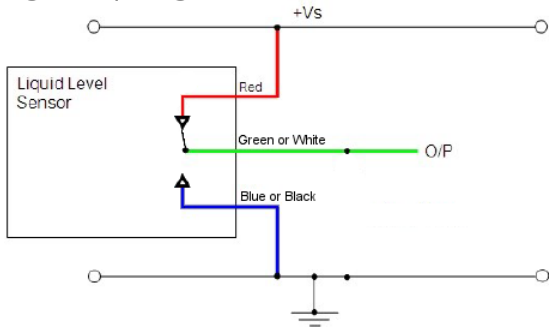


b) When sealed correctly.

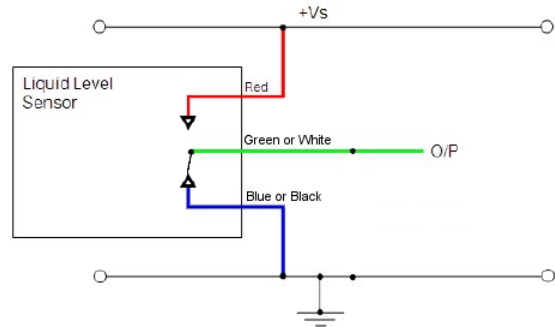
In order to suit any application, these sensors have been designed with various output circuit configurations.

4.5V—15.4V_{DC}

Digital Output High in Air

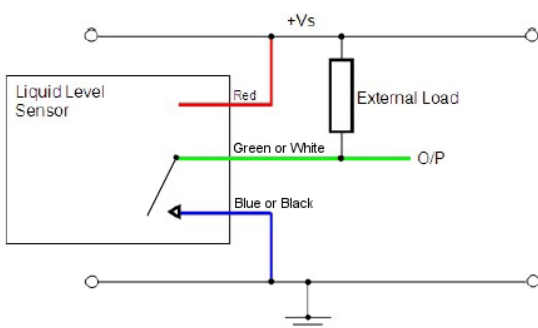


Digital Output Low in Air

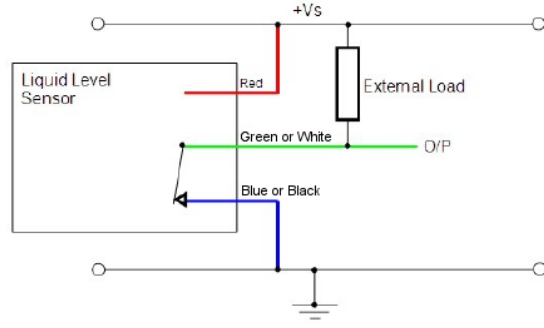


10V—45V_{DC}

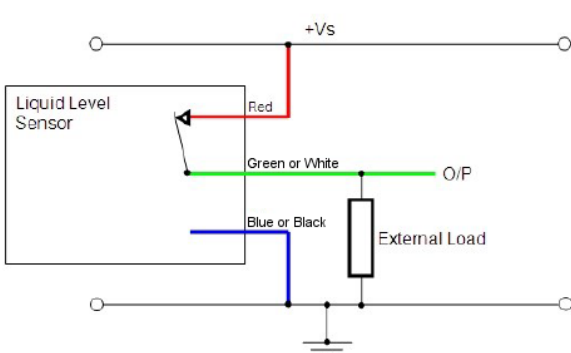
N-Type High in Air



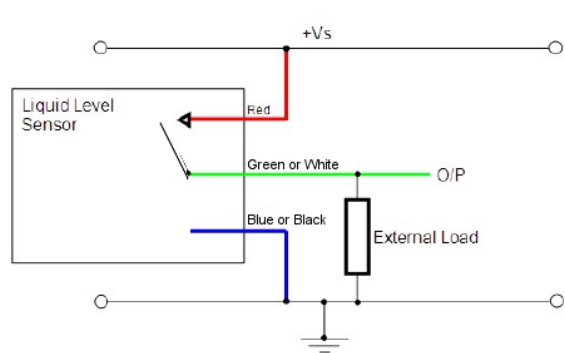
N-Type Low in Air



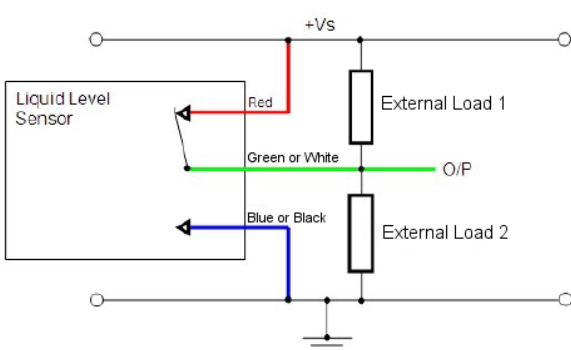
P-Type High in Air



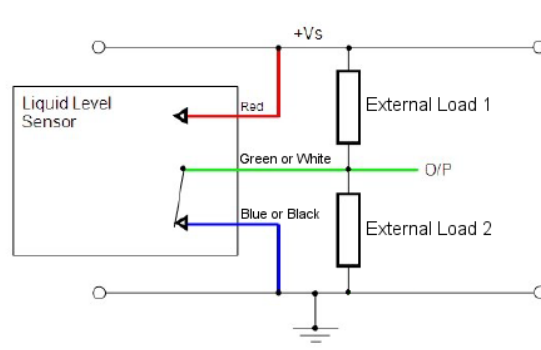
P-Type Low in Air



Push Pull High in Air



Push Pull Low in Air



CAUTION: Take care when connecting loads.

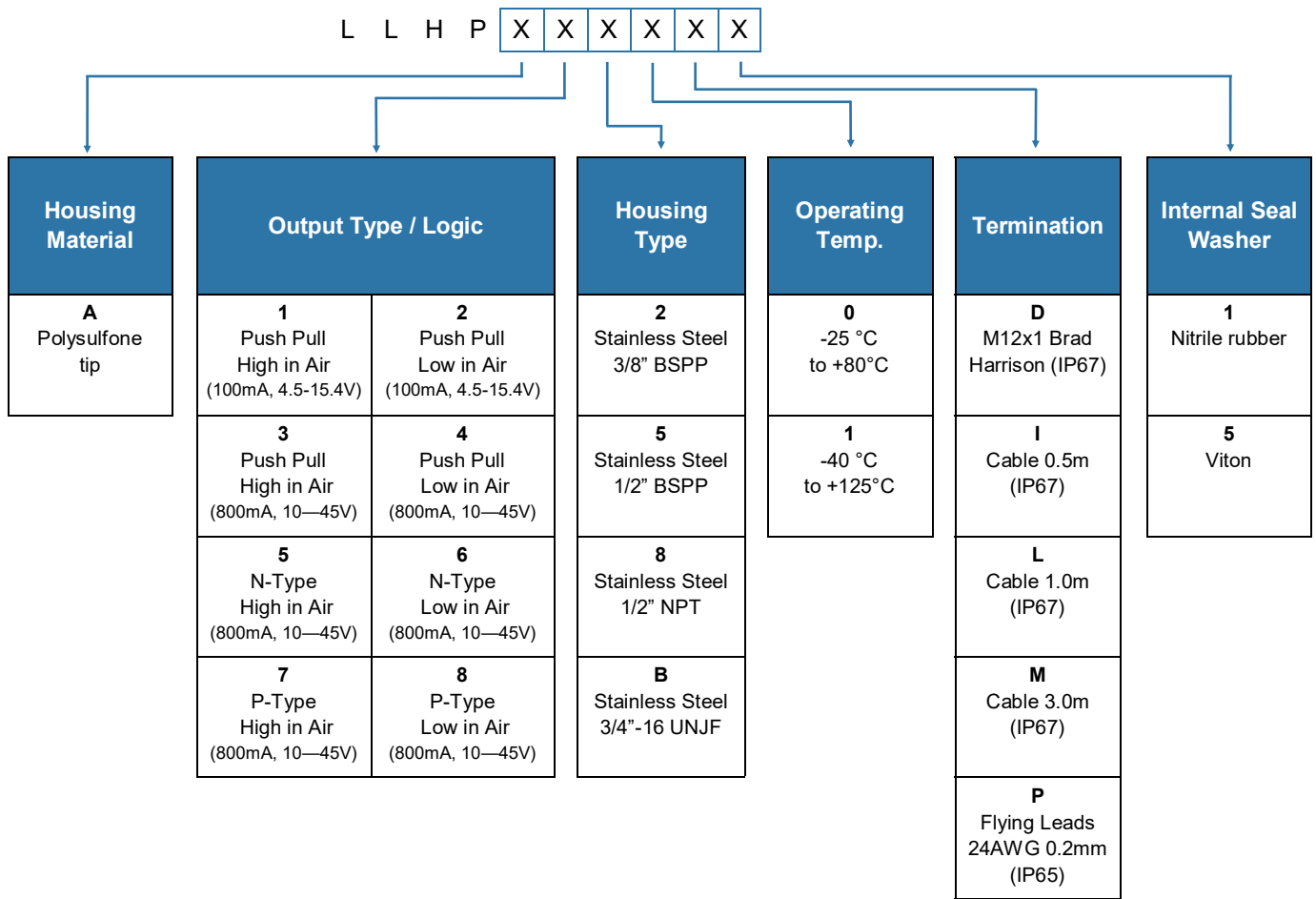
The minimum load impedance should not exceed $V_s/\text{max output current}$.

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



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.



Note: Not all combinations are configurable and minimum order quantities (MOQs) may apply in some cases. Please contact SST Sensing for details; email: technical@sstsensing.com

<p>! CAUTION</p> <p>Do not exceed maximum ratings and ensure sensor(s) are operated in accordance with their requirements.</p> <p>Carefully follow all wiring instructions. Incorrect wiring can cause permanent damage to the device.</p> <p>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.</p> <p>Failure to comply with these instructions may result in product damage.</p>	<p>i INFORMATION</p> <p>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 Polysulfone.</p> <p>For technical assistance or advice, please email: technical@sstsensing.com</p>
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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.



DATA SHEET

Liquid Level Switches

LLHT Series



FEATURES

- Liquid level switches that can detect almost any liquid type; oil or water based
- Suitable for harsh environments; robust Stainless Steel housing and crystal glass tip
- Choice of terminal connections



Housing/ Mounting 	Output Type / Logic 	Supply Voltage 	Output Current 	Temp
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BENEFITS

- Suitable for use within aggressive environments
- Extreme temperatures
- LED output indication

OUTPUT VALUES

Output Voltage (Vout): **Iout = 200mA**
Vs = 12—30V_{DC}
Output High Vout = Vs - 1.5V max
Output Low Vout = 0V + 0.5V max

TECHNICAL SPECIFICATIONS

Supply voltage (Vs)	12V _{DC} to 30V _{DC}
Supply current (Is)	25mA max.
Output sink and source current (Iout)	200mA max.
Operating temperatures	LLHT187: -25°C to +100°C LLHT287: -25°C to +140°C
Storage temperatures	-25°C to +80°C
Housing material	Stainless Steel with Simax crystal glass tip ^a
Sensor termination	M12 Brad Harrison connector or PUR 3x0.25mm ² , 2m cable

Other sensor options available on request, email: technical@sstsensing.com

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

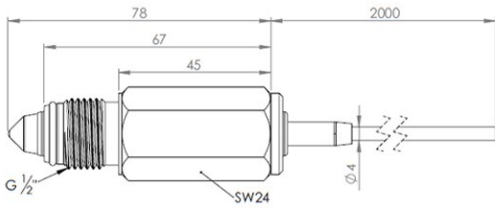


a) Before use check that the fluid in which you wish to use these devices is compatible with Simax crystal glass.

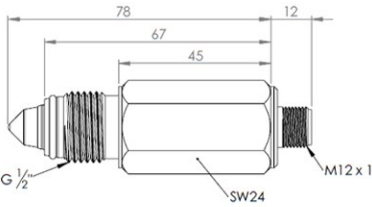
OUTLINE DRAWING

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

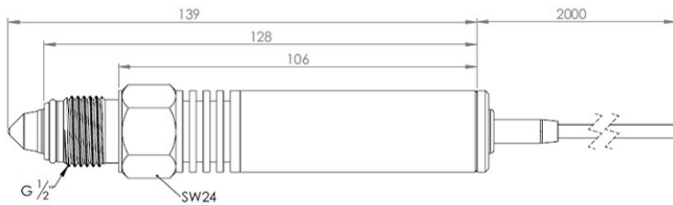
LLHT187-3XX



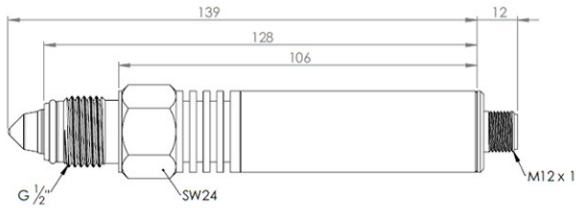
LLHT187-4XX



LLHT287-3XX



LLHT287-4XX



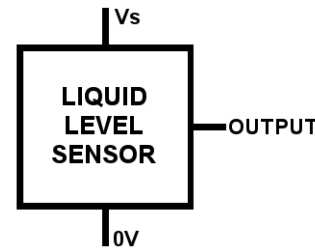
HOUSING SPECIFICATIONS

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

	Housing	
	LLHT187	LLHT287
Thread	G1/2" (1/2" BSPP)	
Pressure ^b	80 bar / 1160 psi maximum	
Sensor Termination	Cable: PUR 3 x 0.25mm ² , 2m long (IP68)	
	M12x1 Brad Harrison micro (IP67)	

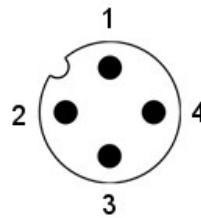
ELECTRICAL INTERFACE

Cable



Wire	Designation
Brown	Vs
Black	Output
Blue	0V

Brad Harrison micro



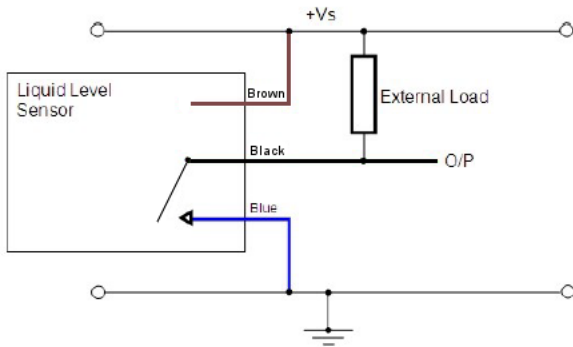
Output Type / Logic				
Pin	11	12	13	14
1	Vs	Vs	Vs	Vs
2	-	Low in Air N-Type Output	-	High in Air P-Type Output
3	0V	0V	0V	0V
4	High in Air N-Type Output	-	Low in Air P-Type Output	-



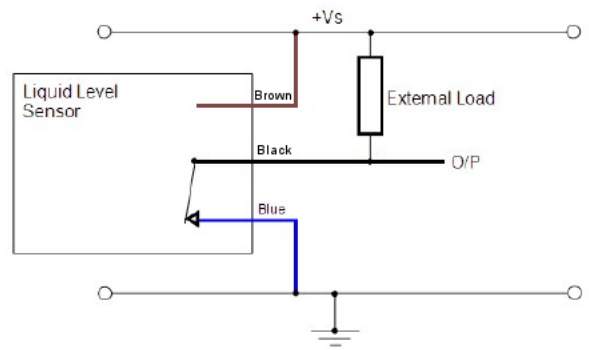
b) When correctly sealed.

In order to suit any application, these sensors have been designed with various output circuit configurations. They are identified by the 2-digit code at the end of the part number as shown in [Order Information](#).

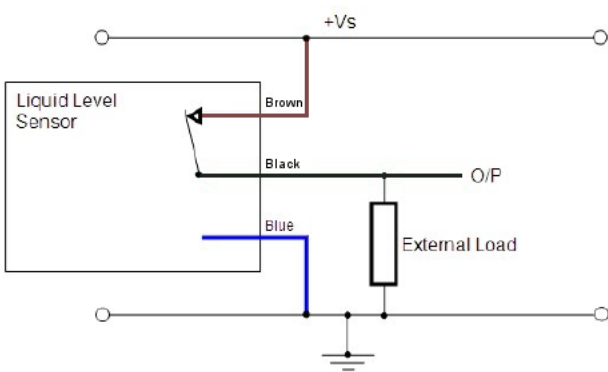
N-Type High in Air



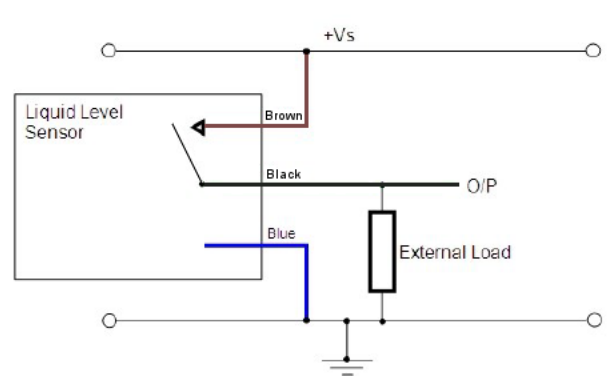
N-Type Low in Air



P-Type High in Air



P-Type Low in Air



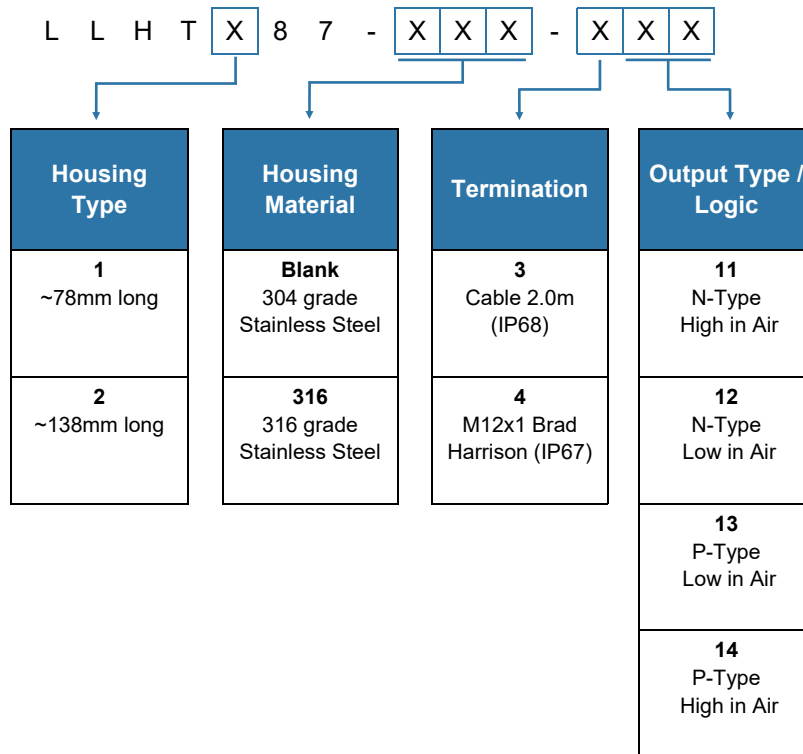
CAUTION: Take care when connecting loads.

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 sensor.

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 require.



ACCESSORY TABLE

Thread	Accessory	Material	Order Code
1/2" BSPP	Weld Nut	304 Stainless Steel	LLHT12BSP

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 Simax crystal glass.

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technical@sstsensing.com

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