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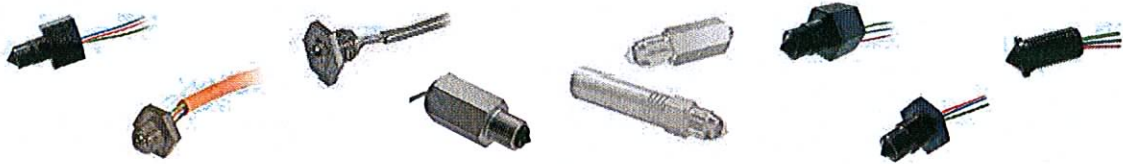
Liquid Sensing Solutions
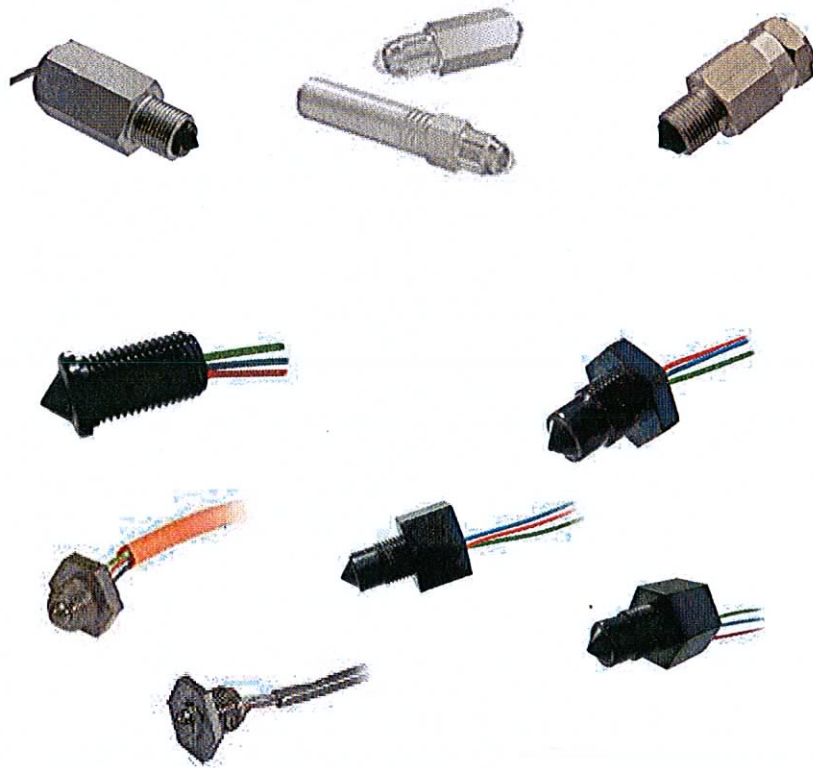
Liquid Level Sensors

SST Sensing Ltd manufactures and supplies a comprehensive range of Optical Liquid Level Sensors

An LED and photo-transistor are housed within an optical sensing tip at the head of the device. When no liquid is present, light from the LED is internally reflected by the tip from the LED to the photo-transistor. When liquid covers the tip, some of the light is refracted into the liquid. Thus the amount of light received by the photo-transistor is reduced and the sensor's output changes state. This method of liquid level sensing is very fast and eliminates the need for moving parts.

SST has an extensive range of Optical Liquid Level Sensors available and we have a solution for most applications where fluid control is required.

Features

- Miniaturised sensors with precise, repeatable switching point and no moving parts
- Digital (TTL/CMOS compatible) or load-switching outputs
- Pre-wired connectors available
- 3 and 4 wire options available
- Supply voltage ranges from 5V to 45V d.c. available
- Output currents from 10mA to 800mA
- Reverse polarity, over voltage, short circuit and transient protection
- Temperature ranges from -40°C to +140°C
- Custom sensors include a.c. supply options and relay (volt-free) outputs
- For very high volumes, an OEM sensor is available – please call us for details

Benefits

- Robust materials permit use in a wide range of fluids and chemicals
- High pressure options available
- Easy to install, saving assembly time
- 4 wire option allows sensitivity adjustment
- High power output drive options allow direct control of machinery without an intermediate controller.

Function

Sensor in Air: IR light reflected back to detector.

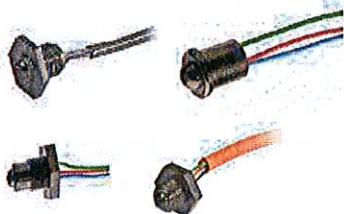Sensor in Liquid: IR light refracted out of tip so less energy reaches detector.
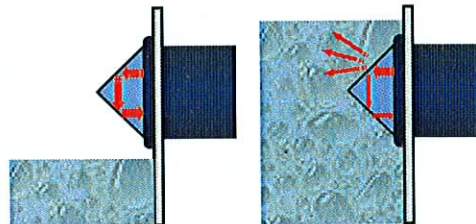
EOC Büchner GmbH
Heegwaldring 2
D – 63694 Limeshain

Phone: +49 (0) 6047-96280
Fax: +49 (0) 6047-962814
email: info@m-buechner.de

A complete range of
innovative, versatile liquid
presence sensors.

Standard Liquid Level sensors

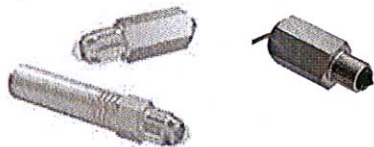A basic range of polysulphone
liquid presence detectors

Optomax Liquid Level Sensors

A more versatile range: low cost, high reliability
and configured to suit your application

High Performance Liquid Level Sensors

A range for low temperature, high temperature,
aggressive environments. Shock resistant; chemical resistant
with options for high switching currents

Probe Style Liquid Level Sensors

A range of probe style sensors with an
Automotive style connector and housing

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Standard Liquid Level Sensors

Ideal for a wide range of commercial and industrial applications

Sensor Type	Standard Liquid Level	
	Standard Temperature	High Temperature
Output Function	Digital - High in Air	
Repeatability	± 1 mm	
Hysteresis	2 mm depending on liquid	
Housing Type	10mm Push Fit or 12mm Threaded Probe	
Response time rising liquid	50 μS	
Response time falling liquid (ethanol)	< 1 second	
Supply Voltage	+ 5 to 12Vdc	
Supply Current	15mA	
Temperature range operating (storage)	-25°C to +80°C (-30°C to +85°C)	-40°C to +125°C (-40°C to +125°C)
Housing material	Polysulphone	
Output Current (@25°C & @ 5Vdc)	Sinks 10mA	Sinks 40mA
Leadwire Length	180mm PTFE	

ORDER GUIDE		Catalogue Listing		
Description	Housing Type	Standard Temperature [1]	High Temperature [2]	Mounting Dimensions
Screw In, M12 Thread, Plastic	Type 1	LLE101000	LLE101101	
Screw In, M12 Thread, Plastic	Type 2	LLE102000	LLE102101	
Screw In, M12 Thread, Plastic	Type 3	LLE103000	LLE103101	
Push In, Plastic	Type 5	LLE105000	LLE105100	
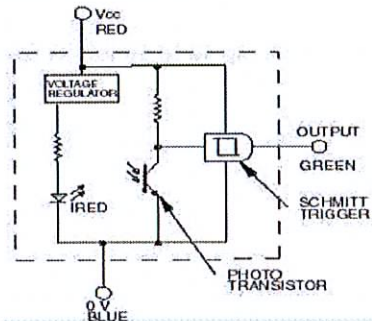
(1) Nitrile washer and nut supplied unassembled (except Type 5)

(2) VAMAC washer and nut supplied unassembled (except Type 5)

SST Sensing are the sole manufacturer of Honeywell International Inc's complete range of liquid level sensors. The above sensors can be supplied under the Honeywell or SST brands.

Optomax Liquid Level Sensor

A range for general liquid sensing applications.
Low cost, high reliability, configured to suit your application.

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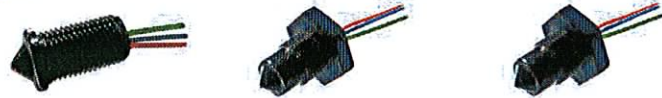| Housing Style	LLC500 M10 Thread (1)	LLC200 M12 Thread (2)	LLC600 1/2" SAE Thread (3)
Output Function	Digital (High or Low in Air) outputs		
Repeatability	± 1 mm		
Hysteresis	1 mm depending on liquid		
Response time rising liquid	50 μS		
Response time falling liquid (ethanol)	< 1 second		
Supply Voltage (Vs)	5 to 12Vdc		
Supply Current	15mA nominal		
Sink/Source Current	10mA max		
Operating temp range: operating (storage)	-25°C to +80°C (-30°C to +85°C)		
Housing Material	Polysulphone UDEL 1700		
Cable Length	200mm PTFE wires		
Environmental	IP 67 rated		
Thermal Testing	As per BS EN60068-2-33		
Humidity	As per BS EN60068-2-30		
Vibration	As per BS EN60068-2-6 Part S3: 1996		
Mechanical Shock	As per BS EN60068-2-27 Part 2 Ea: 1987		
Max. Pressure	20 bar	7 bar	7 bar
High In Air Sensors: Output Voltage in Liquid < 1Vdc, Output in Air is within Vs -0.5Vdc			
3 wire	LLC500D3	LLC200D3SH	LLC600D3SH
4 wire (4)	LLC500D4	LLC200D4SH	LLC600D4SH
Low in Air Sensors: Output Voltage in Liquid is within Vs -0.5Vdc, Output in Air < 1Vdc			
3 wire	LLC500D3L	LLC200D3LSH	LLC600D3LSH
4 wire (4)	LLC500D4L	LLC200D4LSH	LLC600D4LSH
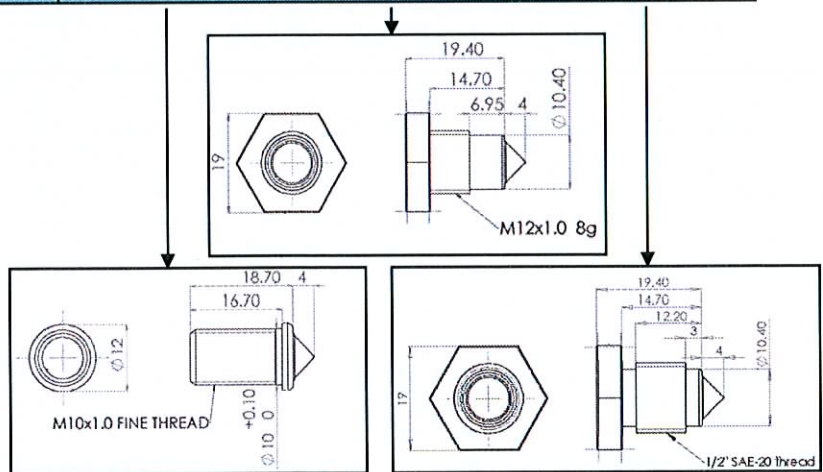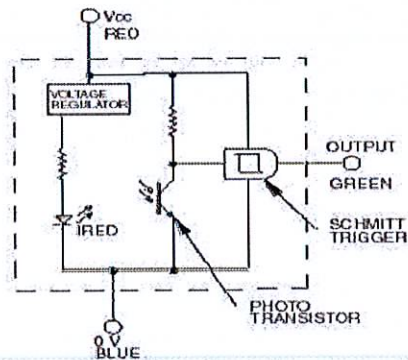
(1)   LLC500 - Plastic Nut available separately (order LLPK3)

(2)   LLC200 – Stainless steel nut and Nitrile washer available separately (order LLPK1)

(3)   LLC600 - O-Ring supplied unassembled

(4)   In certain applications (when used in certain liquids or emulsions and in heavily condensing applications), it may be necessary to "tune" the sensor's operation using a 4th wire connected directly to the LED. This requires the installer to select a suitable current-limiting resistor (details available on request)
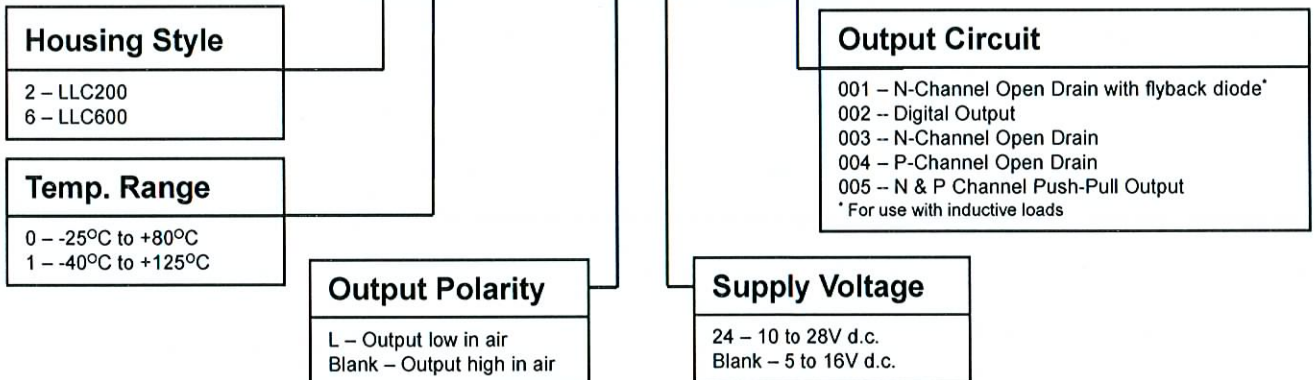
Optomax Liquid Level Sensor

A more heavy duty range for industrial, locomotive and off-highway-vehicle applications.
Higher supply voltage ranges and current drive options as well as
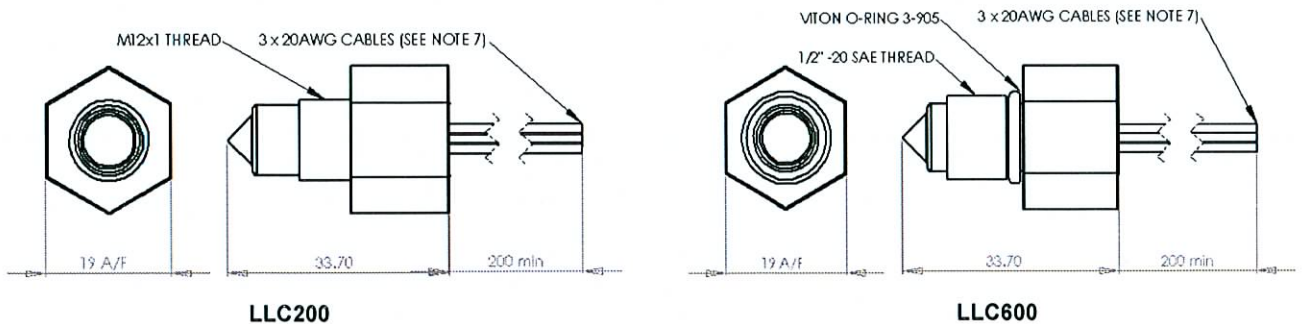operation across an extended temperature range

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Housing Style	LLC200 M12 Thread [1]	LLC600 1/2" SAE-20 Thread [2]
Output Function	High or Low in Air outputs	
Repeatability	± 1 mm	
Hysteresis	1 mm depending on liquid	
Response time rising liquid	50 µS	
Response time falling liquid (ethanol)	< 1 second	
Supply Voltage (Vs)	Various (see below)	
Supply Current	15mA max	
Sink/Source Current	250mA max	
Operating Temp Range	-25°C to +80°C or -40°C to +125°C	
Housing Material	Polysulphone UDEL 1700	
Cable Length	200mm PTFE wires	
Environmental	IP 67 rated	
Thermal Testing	As per BS EN60068-2-33	
Humidity	As per BS EN60068-2-30	
Vibration	As per BS EN60068-2-6 Part S3: 1996	
Mechanical Shock	As per BS EN60068-2-27 Part 2 Ea: 1987	
Max. Pressure	7 bar	

LLC X X 0 D 3 X X - ITEM

Housing Style
2 – LLC200
6 – LLC600

Temp. Range
0 – -25°C to +80°C
1 – -40°C to +125°C

Output Polarity
L – Output low in air
Blank – Output high in air

Supply Voltage
24 – 10 to 28V d.c.
Blank – 5 to 16V d.c.

Output Circuit
001 – N-Channel Open Drain with flyback diode*
002 -- Digital Output
003 -- N-Channel Open Drain
004 – P-Channel Open Drain
005 -- N & P Channel Push-Pull Output
* For use with inductive loads

Examples: LLC610D3L24-001   ½" SAE thread, high temp, low in air, 10-28V supply, N-Channel output with diode

LLC200D3-004   M12 thread, standard temp, high in air; 5 to 16V supply, P-Channel open drain output

M12x1 THREAD   3 x 20AWG CABLES (SEE NOTE 7)
19 A/F   33.70   200 min
LLC200

VITON O-RING 3-905   3 x 20AWG CABLES (SEE NOTE 7)
1/2" -20 SAE THREAD
19 A/F   33.70   200 min
LLC600

(1)   LLC200 – Stainless steel nut and Nitrile washer available separately (order LLPK1)

(2)   LLC600 - O-Ring supplied unassembled

High Performance Liquid Level
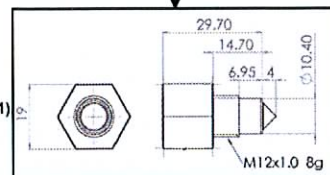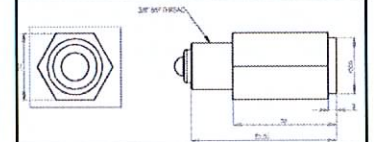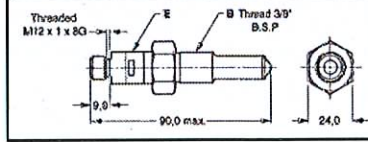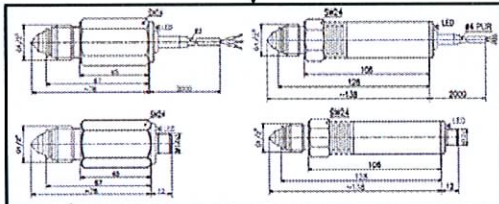
SST SWITCHING · SENSING · TECHNOLOGY

A range for low temperature, high temperature, aggressive environments, shock resistant and chemical resistant.

High output drive currents allow pumps, relays, indicators, motors etc. to be driven directly by the sensor allowing the elimination of costly intermediate control systems.

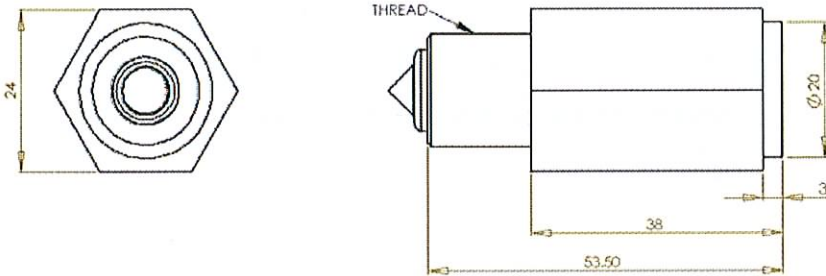| Specification	POS Std [1]	POS High Temp [1]	LLN	M12 Plastic [2]	1/2" SAE-20 Plastic [3]	LLHP Configurable
Max. Output Current	200mA		200mA		500mA	800mA
Repeatability	± 1 mm					
Hysteresis	1 mm					
Dimensions (thread, length, hex)	G1/2" (1/2" BSP), 78mm, 24mm	G1/2" (1/2" BSP), 138mm,24mm	3/8in BSP, 90mm, 24mm	M12 , 33.7mm, 19mm AF	1/2" SAE-20, 33.7mm, 19mm AF	Various
Response time rising liquid	50 µS					
Response time falling liquid (ethanol)	< 1 second					
Supply Voltage	12-28V dc		10 to 40Vdc	10 to 40Vdc		Up to 45Vdc
Supply Current	25mA		60mA	25mA		Various
Operating temperature range	-25°C to +100°C [4]	-25°C to +140°C [4]	-40°C to +125°C [4]	-25°C to +80°C		-40°C to +125°C
Housing Material	Crystal Glass & Stainless Steel		Polysulphone & Stainless Steel	Polysulphone		Polysulphone & Stainless Steel / Brass or Nickel-plated Brass
Cable Length (option)	2m (PUR3 x.25mm)			200mm (leads)		Various
Connector Type (option)	M12 Connector		M12 Connector	N/A		Various
Environmental	IP67 (connector version). IP68 (cable version)		IP67	IP 67 rated		up to IP68
Thermal testing	As per BS EN60068-2-33					
Humidity	As per BS EN60068-2-30					
Vibration	As per BS EN60068-2-6 Part S3: 1996					
Mechanical Shock	As per BS N60068-2-27 Part 2 Ea: 1987					
Pressure range	20 bar		25 bar	5 bar		25 bar
LED Output Indicator	Yes	Yes	No	No		No
Cable Type Listings						
NPN (no) High In Air (open collector)	POS187311	POS287311	----	LLHP1NPN	LLHP1NPN-S	
NPN (nc) Low In Air (open collector)	POS187312	POS287312	----	LLHP2NPN	LLHP2NPN-S	
PNP (no) Low In Air (open collector)	POS187313	POS287313	----	LLHP2PNP	LLHP2PNP-S	See configurator guide on page 8
PNP (nc) High In Air (open collector)	POS187314	POS287314	----	LLHP1PNP	LLHP1PNP-S	
Push Pull - High In Air	----	----	----	LLHP1TOT	LLHP1TOT-S	
Push Pull - Low In Air	----	----	----	LLHP2TOT	LLHP2TOT-S	
Connector Type Listings						
NPN (no) High In Air (open collector)	POS187411	POS287411	LLN8651721	----	----	
NPN (nc) Low In Air (open collector)	POS187412	POS287412	LLN8651722	----	----	See configurator guide on page 8
PNP (no) Low In Air (open collector)	POS187413	POS287413	----	----	----	
PNP (nc) High In Air (open collector)	POS187414	POS287414	----	----	----	

(1)   G1/2" nut available separately (order POS12BSP).

(2)   LLHP Plastic (M12) – Stainless steel nut and Nitrile washer available separately (order LLPK1)

(3)   LLHP Plastic (1/2" SAE-20) – O-Ring supplied unassembled.

(4)   Operating temperature range relates to sensing end only.

High Performance Liquid Level Configurable Range

A range for low temperature; high temperature, aggressive environments.
Shock resistant; chemical resistant and with options for high switching currents.

If you do not see the options you need then please
contact us as we have additional options available.

LLHP Order Guide

$$\text{LLHP} \quad X \quad X \quad X \quad X \quad X \quad X$$

Sensor Element

A – Uses polysulphone sensor

Internal Seal Washer

1 – Nitrile rubber
5 – Viton washer

Output

1 – Standard LLC – High in Air (10mA, 5 to12V)
2 – Standard LLC – Low in Air (10mA, 5 to 12V)
3 – Push Pull –High in Air (800mA, 10 to 45V)
4 – Push Pull –Low in Air (800mA, 10 to 45V)
5 – NPN – High in Air (800mA, 10 to 45V) Open collector
6 – NPN – Low in Air (800mA, 10 to 45V) Open collector
7 – PNP – High in Air (800mA, 10 to 45V) Open collector
8 – PNP – Low in Air (800mA, 10 to 45V) Open collector

Termination

D = M12 x 1 (Brad Harrison micro) (IP67)
H = Amp Superseal 1.5 (0.4m, 3-core cable)
(IP67) (Mating part no.: 282087)
I = Cable (0.5 meter) (IP67)
L = Cable (1 meter) (IP67)
M = Cable (3 meter) (IP67)
P = Flying Leads (24 AWG, 0.2m) (IP65)
R = Deutsch DT Series (0.4m, 3-core cable)
(IP67) (Mating part no.: DT06-3S-CE06)
Other terminations available on request.
Termination options D, H, I, L, M and R have
a temperature range of -20 to +75°C.

Housing Type

1 – Deleted	8 - Stainless steel 1/2 NPT
2 - Stainless Steel 3/8 BSP	9 – Brass 1/2 NPT
3 - Brass 3/8 BSP	A - Stainless steel 3/8 NPT
4 - Nickel plated brass 3/8 BSP	B – Brass 3/8 NPT
5 - Stainless Steel 1/2 BSP	C - Stainless steel M18x1.5
6 - Brass 1/2 BSP	D – Brass M18x1.5
7 - Nickel plated brass 1/2 BSP	

Temperature Range [1]

0 – -25 deg C to + 80 deg C
1 – -40 deg C to + 125 deg C

Not all combinations are possible and MOQs may apply in some cases.
Please   Büchner GmbH for details.
buechner.de

Probe Style Liquid Level

A flexible range of probe style level sensors with an Automotive style connector and housing.

Specifications	LLAS	
Operation mode	User defined single point on/off switch (Output high in air)	
Repeatability (mm)	± 1	
Response time	Rising liquid level – 50 µS	
	Falling Liquid level – 1 second max (in ethanol)	
	Response in other liquids dependent on viscosity	
Mounting	Plastic Probe Style	
Termination	Amp Superseal 1.5 Series 282105	
	1. Ground	
	2. Output	
	3. +5V to +12V supply	
Material	Polysulphone end. Plastic Body	
Mounting dia	19.98 mm	
Environmental –IP67 rated	IP 67 rated	
Operating temperature (°C)	-40 to +125 (-40°F to +257°F)	
Thermal testing	As per BS EN60068-2-33	
Humidity	As per BS EN60068-2-30	
Vibration	As per BS EN60068-2-6 Part S3: 1996	
Mechanical Shock	As per BS EN60068-2-27 Part 2 Ea: 1987	
Pressure range (bar)	0 to 5 (plastic housing) (Note 2)	
Supply voltage (Vcc)	+5Vdc to +12Vdc ± 5%	
Supply current (mA)	15mA nominal @ +5V	
Output sink current (Note 4)	@ 25 °C 10mA max	
@ 5Vdc	@ 80 °C 3mA max	
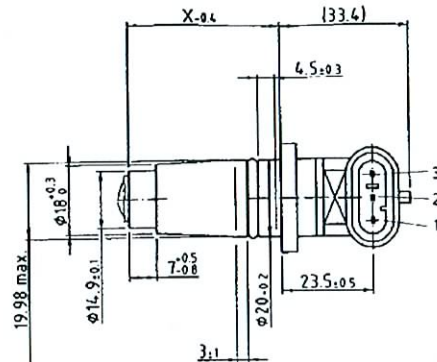
Probe Length

Probe Length x Dimension	
1	40mm
2	53mm
3	71mm
4	77.75mm
5	83.25mm
6	95mm
7	100mm
8	125mm

Order Guide

Part Number	Description
	Connector/ Temp/ voltage/ Position/ Probe Length
LLAS1A111	AMP Superseal/ STD/ 12V/ posn 1/ 40mm
LLAS1A112	AMP Superseal/ STD/ 12V/ posn 1/ 53mm
LLAS1A113	AMP Superseal/ STD/ 12V/ posn 1/ 71mm
LLAS1A114	AMP Superseal/ STD/ 12V/ posn 1/ 77.75mm
LLAS1A115	AMP Superseal/ STD/ 12V/ posn 1/ 83.25mm
LLAS1A116	AMP Superseal/ STD/ 12V/ posn 1/ 95mm
LLAS1A117	AMP Superseal/ STD/ 12V/ posn 1/ 100mm
LLAS1A118	AMP Superseal/ STD/ 12V/ posn 1/ 125mm
LLAS1A131	AMP Superseal/ STD/ 12V/ posn 3/ 40mm

Example Configurations

LLAS 1 A 1 1 1

1 = AMP Superseal

1 = 12 V

Connector Position

A=Std temp –25 deg c to +85 deg c
B=High Temp –25deg c to 125 deg c

Position 1 :   Position 2 :   Position 3 :

Issue J– 09/04/09 LL Short Form

Our capabilities

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Design
We have a strong design team and can offer product modifications to all of our product range.

Our Design engineers are all Design for Six Sigma qualified and we pride ourselves on the speed and quality of our engineering capability.   We have expertise in:
Electronic & Mechanical Design specialising in solid state sensors
PCB layout
Device Physics
Analog and digital electronics
Product evaluation & testing

Manufacturers' Representatives
In the UK and Ireland SST are also sales representatives for
Honeywell Sensing & Control.
In this capacity we can supply you with a wide range of sensing solutions tailored to suit your needs.

Approvals
ISO9000:2000

Contact details

Phone: +49 (0) 6047-96280
Fax: +49 (0) 6047-962814
email: info@m-buechner.de

EOC Büchner GmbH

Heegwaldring 2
D – 63694 Limeshain
GERMANY

Visit us on our website at www.m-buechner.de to see the full range of sensor and switch products from SST

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Warranty Service

SST Sensing Ltd take reasonable steps to ensure that our goods are free from defective materials or workmanship. SST Sensing Ltd standard product warranty applies unless specifically agreed otherwise, in writing, by an officer of the company. Please request warranty details for specific products from our office.

If warranted good are returned within the warranty period, SST will repair or replace without charge those items it finds defective. This is the buyers sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event will SST Sensing Ltd be liable for consequential, direct or indirect damages, stoppages or any other loss arising from defective products.

These products should not be fitted in safety critical environments where failure could cause injury or death.

SST Sensing Ltd will provide application assistance but it is ultimately the responsibility of the customer to ensure that the products are suitable for the application.

Contact details

Phone: +49 (0) 6047-96280
Fax: +49 (0) 6047-962814
email: info@m-buechner.de

EOC Büchner GmbH

Heegwaldring 2
D – 63694 Limeshain
GERMANY

Visit us on our website at www.m-buechner.de to see the full range of sensor and switch products from SST

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