

# Installation Instructions for Optomax Basic Series Liquid Level Sensors

## GENERAL DESCRIPTION

The LLC Basic Series liquid level sensor provides a single point detection for high volume OEM applications. The sensor contains an infra-red emitter and detector accurately positioned to ensure good optical coupling between the two when the sensor is in air. When the sensor's cone is immersed in liquid, the infra-red light escapes from the cone causing a change in the amount of light at the detector.

This configuration allows the customer to tailor the sensor electronics (supply voltage, protection etc) to their unique application

## CLEANING

Proper fluids should be selected based on type of contamination to be removed. SST Sensing recommends freon and alcohol based solvents. DO NOT use chlorinated solvents such as trichloroethane as these are likely to attack the sensor material.

## Liquid Media Compatibility

Before use check that the fluid in which you wish to use these devices is compatible with polysulphone.

## ELECTRICAL SPECIFICATIONS

Supply voltage (Vs)	Any
Supply current	10 mA nominal
Output Type	Phototransistor (Digital)
Output Signal	See next page.
Operating temperature	-25 °C to 80 °C
Storage temperature	-30 °C to 85 °C



## MOUNTING

### Catalogue Listing

Catalogue Listing			
Standard temperature	LLC200A3SH LLC200A4SH	LLC500A3 LLC500A4	LLC600A3SH LLC600A4SH
Thread	M12x1x8g with hex nut *	M10x1	½" SAE with o-ring *
Tightening torque	1.5 N m/13.26 in lb max.		
Pressure (using washer available separately)	7 bar max	20 bar max	7 bar max
Mounting hole	Ø12mm	Ø10mm	Ø ½ Inch
Housing Material	Polysulphone		
Sensor Termination	24AWG, 250mm PTFE Wires, 8mm Tinned		

\* Hex nut and o-ring sold separately, please contact us for details.

## TYPICAL INSTALLATION

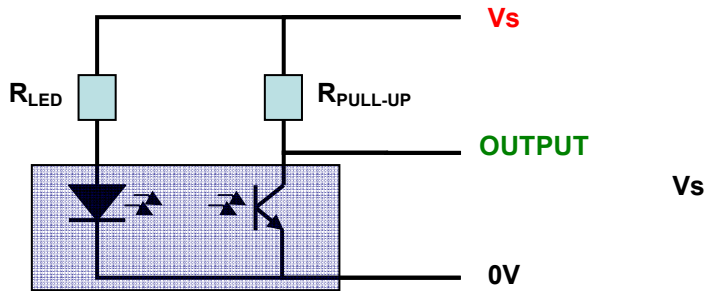
Customer has to select suitable resistors for their chosen supply voltage. Forward voltage of LED is 1.3V and LED current should be 10mA (depending on application liquid). Therefore, for a supply of Vs = 5V for example:

$$R_{LED} = \frac{(V_s - 1.3)V}{10mA} = \frac{5 - 1.3}{0.01} = 370\Omega \approx 360\Omega \text{ (standard value)}$$

**NOTE: FAILURE TO SELECT CORRECT RESISTOR VALUES MAY RESULT IN DAMAGE TO THE SENSOR !**

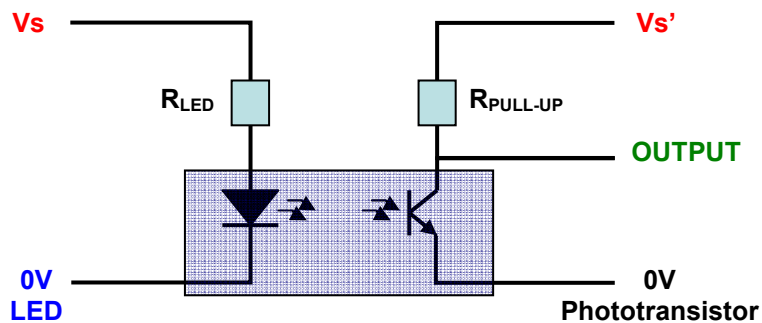
## SCHEMATIC DIAGRAMS

### LLC500A3/ LLC200A3SH/ LLC600A3SH



WIRE	DESIGNATION
RED	Vs
GREEN	OUTPUT
BLUE	0V

### LLC500A4/ LLC200A4SH/ LLC600A4SH



WIRE	DESIGNATION
RED	Vs
GREEN	OUTPUT
BLUE	0V LED
BLACK	0V Phototransistor

Note: The 4-wire version provides galvanic isolation between input (IR-LED) and output (Phototransistor).

**Pre-selected R<sub>LED</sub> and R<sub>PULL-UP</sub> Value for different Supply Voltages**

Vs	R <sub>LED</sub>	R <sub>PULL-UP</sub>	V <sub>OUTPUT</sub> in Air	V <sub>OUTPUT</sub> in Water
3.3V	200R	2K	< 0.75V	> 2.5V
5V	360R	2K	< 1V	> 4.25V
8V	680R	2.5K	< 1.5V	> 7.25V
12V	1K	3K	< 3V	> 11.25V
15V	1.3K	3.5K	< 3.25V	> 14.25V
24V	2.2K	4K	< 10.5V	> 22.5V

#### WARNING

##### Personal Injury

DO NOT USE these products as safety or Emergency Stop devices or in any other application Where failure of the product could result in Personal injury.

**Failure to comply with these instructions could Result in death or serious injury.**

#### CAUTION

Do not exceed maximum ratings.

This sensor has no reverse polarity protection

Do not overtighten screw-in type.

Do not use chlorinated solvents.

Do not mount with dome pointing downwards.

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

For technical assistance or advice, please email us: [info@m-buechner.de](mailto:info@m-buechner.de)