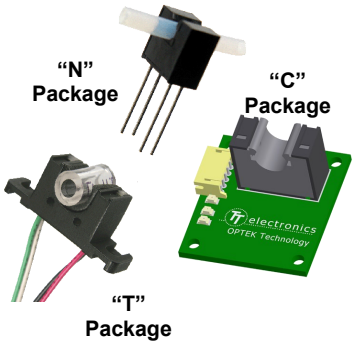
Sensing and Control

Tube Liquid Sensor

OPB350 / OCB350 Series

(Calibration Circuit Available)



Features:

- Can identify if liquid is present in clear tubes that have an outside diameter of 1/16" [1.6mm], 1/8" [3.2mm], 3/16" [4.8 mm] or 1/4" [6.3 mm]
- Opaque plastic housing enhances ambient light rejection
- Printed circuit board mounting or 24" (610 mm) 26 AWG wires

Description:

The **OPB350** series liquid sensor is designed to work with 1/16" [1.6mm] 1/8" [3.2mm], 3/16" [4.8 mm] and 1/4" [6.3 mm] outside diameter clear tubes. When output reference circuitry is added, multiple output states such as "fluid present," "no fluid present" and "no tube present" can be recognized.

Clear liquid present causes the phototransistor to sink the maximum current, while dark liquid present causes it to sink the minimum current. As bubbles pass through the tube, the signal will vary between the "liquid present" and "no liquid" states. If no tube is present, the phototransistor sinks current between the dark fluid and clear fluid states. The customer will have to identify the typical current values for each situation. The ratio between the different states allows acknowledgement of different conditions.

The **OPB350L** series have leads that are designed to mount directly to PCBoards. The **OPB350W** series with 26 AWG wires are remote mountable. The **OCB350** series provides a full solution with automatic calibration capability and a preset trip level.

The **OCB350** series is configured to optimize the design effort needed to use a fluid sensor with the addition of self calibration circuitry. The **OCB350** series are easy to use requiring only an optical device and power supply. Four lights are provided on the board that acknowledge when the device is calibrated (Green LED), that the device could not be calibrated (Red LED) and when the analog output has reached the logical trip higher than the calibration point (Blue LED) or lower than the calibration point (Green LED). The internal phototransistor load resistance can be set for three different values (~2.5K, ~9.6K or ~27K Ohms). A Reset/Clear pin is provided for remote signaling to calibrate of the system.

The **OCB350** series comes with an OPB350L_ _ _Z, PCBoard, interface cable (OCB100-MC24) and all the necessary electronics required for sensing either transmissive or opaque fluids.

See "Theory of Operation" for detailed information.

For a custom PCBoard design for your unique challenge, contact your OPTEK representative.

Applications:

- Non-contact fluid sensing
- IV fluid
- Oils and other petroleum products
- Colored fluids

RoHS

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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COMPLETE PART NUMBERS OF OPB350 AND OCB350 SERIES	
OPB350	PCB mount for 1/8" tubing
OPB350L062	PCB mount for 1/16" tubing
OPB350W062Z	Wired assembly for 1/16" tubing, with mounting tabs
OPB350L125	PCB mount for 1/8" tubing
OPB350C125Z	Wired assembly for 1/8" tubing, mounting tabs & Molex connector 50-57-9404
OPB350W125Z	Wired assembly for 1/8" tubing, with mounting tabs
OPB350L187	PCB mount for 3/16" tubing
OPB350W187Z	Wired assembly for 3/16" tubing, with mounting tabs
OPB350L250	PCB mount for 1/4" tubing
OPB350W250Z	Wired assembly for 1/4" tubing, with mounting tabs
OCB350L062Z	OPB350L062 mounted on OCB100AZ calibration circuit board, with OCB-100-MC24 cable*
OCB350L125Z	OPB350L125 mounted on OCB100AZ calibration circuit board, with OCB-100-MC24 cable*
OCB350L187Z	OPB350L187 mounted on OCB100AZ calibration circuit board, with OCB-100-MC24 cable*
OCB350L250Z	OPB350L250 mounted on OCB100AZ calibration circuit board, with OCB-100-MC24 cable*

(*cable not sold separately)

Notes:

(1) All parameters tested using pulse technique.
(2) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(3) Methanol or isopropanol are recommended as cleaning agents. The plastic housing is soluble in chlorinated hydrocarbons and keytones.
(4) Derate linearly 1.33 mW/° C above 25° C.
(5) $E_{e(APT)}$ is a measurement of the average apertured radiant energy incident upon a sensing area 0.250" (6.350 mm) in diameter, which is perpendicular to and centered to the mechanical axis of the emitting surface at a distance of 0.466" (11.837 mm). $E_{e(APT)}$ is not necessarily uniform within the measured area.
(6) The on/off ratio is referenced to the I.D. as specified for a clear PVC tube with O.D. per the device dimensions. The ratio is calculated by the $I_{C(ON)}$ when the tube is filled with water divided by the $I_{C(ON)}$ with an empty tube.

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