OPERATING MANUAL
Optical Sensor Switch

PICTURE SHOWING OPTICAL SENSOR SWITCHES INSTALLED ON A TYPICAL ROTAMETER

AALBORG

20 CORPORATE DRIVE • ORANGEBURG, NY 10962 • PHONE: 845.770.3000 • FAX: 845.770.3010
E-MAIL: info@aalborg.com • TOLL FREE IN USA OR CANADA: 1.800.866.3837 • WEB SITE: WWW.AALBORG.COM
CAUTION:
This product is not intended to be used in life support applications!

NOTE: Aalborg™ reserves the right to change designs and dimensions at its sole Discretion at any time without notice. For certified dimensions please contact Aalborg™.
GENERAL DESCRIPTION

The Optical Sensor Switch is a non-invasive means for detection of a HI or LOW flow. This sensor is ideal for signaling an alarm, cutoff valve, or other device when the float passes the detector (alarm, valve, etc. are not included). The Optical Sensor Switch helps protect processes and equipment from damage caused by extreme flow rates.

NOTE: Used in conjunction with P, S and T Style Flow Meters.

Its compact design and ease of operation make it a non-obtrusive, simple to use addition to your flow meter. Perfect for OEM applications, use whenever maximum or minimum flow levels need to be monitored automatically. It also can be used in conjunction with a control relay to power alternate equipment or monitoring devices.

PRINCIPLE OF OPERATION

A self-contained miniature photoelectric sensor (Thrubeam type) consisting of a transmitter and receiver are mounted at opposite sides of the flow tube on a solid carrier. The float inside the flow tube is detected as it passes across the beam of light. The sensor can be used to detect the float passage beyond the setpoint of the sensor and can also be set to monitor the float position at a specific level, signaling when the float is outside of the range of the sensor light beam.

TO ORDER A FLOW METER WITH OPTICAL SENSOR SWITCHES

NOTE: To order a flow meter with a single Optical Sensor Switch add “O1-” to P, S, or T Model Numbers. Example: O1-P11A4-BA0-032-41-ST-VN.

ORDERING INFORMATION FOR OPTICAL SENSOR SWITCH ACCESSORY

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSV1-6-P</td>
<td>Optical Sensor Switch for 65mm P Style Meters</td>
</tr>
<tr>
<td>OSV1-1-P</td>
<td>Optical Sensor Switch for 150mm P Style Meters</td>
</tr>
<tr>
<td>OSV1-6-S</td>
<td>Optical Sensor Switch for 65mm S Style Meters</td>
</tr>
<tr>
<td>OSV1-1-S</td>
<td>Optical Sensor Switch for 150mm S Style Meters</td>
</tr>
<tr>
<td>OSV1-6-T</td>
<td>Optical Sensor Switch for 65mm T Style Meter</td>
</tr>
<tr>
<td>OSV1-1-T</td>
<td>Optical Sensor Switch for 150mm T Style Meter</td>
</tr>
</tbody>
</table>
The sensor consists of two parts: transmitter and receiver. When power is properly connected the power supply indicator (green LED) on the transmitter is constantly on.

The receiver has two indicators:

Stable operation indicator (green LED) turns on with a stable incoming beam and with a stable blocked light. Output indicator (orange LED) turns on when the beam from emitter is blocked by the float.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CHECK &amp; ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>All indicators are off.</td>
<td>The power supply is not connected.</td>
<td>Connect the power supply.</td>
</tr>
<tr>
<td>The output indicators turn on and off but output does not turn on or off.</td>
<td>Incorrect wiring.</td>
<td>Check the wiring for the output wires.</td>
</tr>
<tr>
<td></td>
<td>The input device has failed.</td>
<td>Try connecting the sensor output to a separate input device.</td>
</tr>
<tr>
<td></td>
<td>Sensor output has failed or an output wire is broken.</td>
<td></td>
</tr>
<tr>
<td>The output indicator is flashing.</td>
<td>Overcurrent has passed through an output.</td>
<td>Check that the rated current for the input device has not exceeded 50 mA.</td>
</tr>
<tr>
<td></td>
<td>The sensor is affected by ambient light.</td>
<td>Check that the output wires are not shorted by any other wires.</td>
</tr>
</tbody>
</table>

OPTICAL SENSOR SWITCH CONNECTION

<table>
<thead>
<tr>
<th>WIRE LEAD COLOR</th>
<th>CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK</td>
<td>Positive Power Lead (+10 to 30 VDC)</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Negative Power Lead</td>
</tr>
<tr>
<td>GREEN</td>
<td>NPN output #1</td>
</tr>
<tr>
<td>RED</td>
<td>NPN output #2 (Complementary to Output #1)</td>
</tr>
</tbody>
</table>
PR-F

Output indicator (orange)

Power supply indicator (green)

Stable operation indicator (green)

Transmitter

Ø3.2 mm

8 mm

Receiver

Output Wiring Diagram

- NPN

Main circuit

Over current protection circuit

Brown/(1)  10 to 30 VDC

Black/(4)  Load

Output 1

White/(2)  Load

Output 2

Blue/(3)  0 V
WARRANTY

Aalborg® Optical Sensor Switch is warranted against parts and workmanship for a period of one year from the date of purchase. Calibrations are warranted for up to six months after date of purchase, provided calibration seals have not been tampered with. It is assumed that equipment selected by the customer is constructed of materials compatible with gases used. Proper selection is the responsibility of the customer. It is understood that gases under pressure present inherent hazards to the user and to equipment, and it is deemed the responsibility of the customer that only operators with basic knowledge of the equipment and its limitations are permitted to control and operate the equipment covered by this warranty. Anything to the contrary will automatically void the liability of Aalborg® and the provisions of this warranty. Defective products will be repaired or replaced solely at the discretion of Aalborg® at no charge. Shipping charges are borne by the customer. This warranty is void if the equipment is damaged by accident or misuse, or has been repaired or modified by anyone other than Aalborg® or factory authorized service facility. This warranty defines the obligation of Aalborg® and no other warranties expressed or implied are recognized.

TRADEMARKS

Aalborg® is a registered trademark of Aalborg® Instruments.
Buna® is a registered trademark of DuPont Dow Elastomers.
Kalrez® is a registered trademark of DuPont Dow Elastomers.
VCR® is a registered trademark of Swagelok Marketing Co.
Viton® is a registered trademark of Dupont Dow Elastomers L.L.C.
ASIAN SERVICE FACILITY
Authorized Repair and Service Facility for Aalborg Thermal Mass Flow Systems

Aalborg-Beijing Comity Measure & Control Co.
Floor 1 Tower B Jindayuan Office Building
Xisanqi, Hai Dian District, Beijing, China
Phone: 86-10-6295-0464, 86-10-6295-0465
Fax: 86-10-6295-0466
Website: http://www.comity-tec.com

EUROPEAN SERVICE FACILITY
Authorized Repair and Service Facility for Aalborg Thermal Mass Flow Systems

Aalborg-Analyt-MTC Messtechnik Gmbh
Klosterrunsstraße 18
P.O. Box 1321
Müllheim D-79379 Germany
Telefon: +49 (0)7631 5545
Fax: +49 (0)7631 14740
Website: www.analyt-mtc.de
e-mail: info@analyt-mtc.de

175, avenue d’Alsace
68000 Colmar
Tel: 03 89 41 47 78
Fax: 03 89 41 59 88
e-mail: ANALYT_MTC@T-online.de
Products Manufactured By Aalborg

**ROTMETERS**

**Single Tube**
- Aluminum / Brass / Stainless
- Interchangeable Glass Flow Tubes
- Optional Valves

**Multiple Tube**
- Two to Six Channels
- Aluminum or Stainless

**PTFE Single and Multiple Tube**
- Chemically Inert
- 1 to 4 Channels
- Interchangeable Glass Flow tubes

**PTFE - PFA**
- Chemically Inert
- Low to Medium Flow of Corrosive Liquids with PFA Flow Tube

**Kits**
- Aluminum / Stainless / PTFE
- Including Five Glass Flow Tubes and a Set of Floats

**Gas Proportioners**
- Aluminum / Stainless
- Used for Blending Two or Three Gases

**Medium Range Glass Safety Shield**
- Dual Air and Water Scale

**Optical Sensor Switch**
- Non-Invasive Means for Detection of a High or Low Flow

**High Flow Industrial Stainless Steel Flow Meters**
- Heavy Duty Stainless Steel
- Direct Reading Air and Water Scales

---

**VALVES**

**Barstock**
- Brass or Stainless
- Standard or High Precision

**PTFE**
- Chemically Inert
- Needle or Metering

**Proportionating Solenoid**
- Stainless
- For Controlling Gas or Liquid Flow
- Pulse width Modulated

**SMV • Stepping Motor Valve**

---

**PERISTALTIC PUMPS**

**Fixed RPM Pumps**
**Pump Heads**
**Tubing Pumps**
**Variable Speeds**
**Dispensing Pumps**
**Flexible Tubings**

---

**ELECTRONIC METERS & CONTROLLERS**

**Low Cost Mass Flow Meters**
- Aluminum or Stainless
- With or Without LCD Readout

**Low Cost Mass Flow Controllers**
- Aluminum or Stainless
- With or Without LCD Readout

**Mass Flow Controllers**
- Stainless
- One to Four Channel Systems

**Digital Mass Flow Controllers**
- Auto Zero
- Totalizer
- Alarms
- Built in RS485

**Multi Parameter Digital Mass Flow Meters**
- Displays Flow Pressure and Temperature

**Paddle Wheel Meters**
- For Liquids
- Optional Temperature Measurements

**Vortex In-Line and Insertion Flow Meters**
- Steam / Liquid and Gas Service

**Smart Rate / Totalizer / Signal Conditioner**
- LCD Keypad
- RS232 / 485
- Pulse Output = Alarms