LVCF/LVCR/LVCP, LVCN4000 and LVCN200 Series Conductive Level Switches
<table>
<thead>
<tr>
<th>OMEGAnet® Online Service</th>
<th>Internet e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.omega.com">www.omega.com</a></td>
<td><a href="mailto:info@omega.com">info@omega.com</a></td>
</tr>
</tbody>
</table>

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CABLE: OMEGA

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e-mail: sales@omega.co.uk

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

WARNING: These products are not designed for use in, and should not be used for, human applications.
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Introduction

Conductive level switches are designed to control the level of all conductive mediums with up to 5 different points of level control. Models are available with fixed rigid rods, removable rigid rods, with pendular electrodes attached to the housing with cables, and also built-in units.

Wetted parts and connections are made with 316 S.S. and are isolated with a Teflon joggle. Rods can be Teflon coated, when the probe is applied in aggressive or sticky mediums prone to build up.

The probes work through the variation of the electrical resistance between the reference electrode and the level control electrode. Conductive Level Switches detect the level resistance when their electrodes are covered by the medium. An electrically conductive tank wall may be used as the reference electrode. If the tank is made of plastic, concrete or any other non-conductive material, an additional electrode is required to act as a reference.
- Easy to install and operate
- Built in units (probe and controller)
- Up to 5 points of level control
- Rods can be coated when necessary
- Available with 316SS, sanitary, flange or threaded connections

PROBES
LVCF (1 to 5) - fixed rods
LVCR (1 to 5) - removable rods
LVCP (1 to 5) - pendular electrodes

These models are all used along with an external controller.
CONTROLLERS:

LVCN-201 AND LVCN-202
controls the differential of minimum and maximum level.

LVCN-203 AND LVCN-204
controls two independent levels.
Conductive level switch with built-in controllers

LVCN 4100

LVCN 4200

3 1/2" (88mm)

2 1/2" (64 mm)

1/4"
Do not turn or handle by the housing.

Seal the thread with Teflon tape before screwing.

Use the correct tool to screw the switch.
**Pre-Installation Checks:**
Before installing the Conductive Level Switch, check if the wire connections are correct and that the available power supply is compatible with the controller.

Check if the operating pressure and temperature of the process corresponds to the correct model of the sensor.

**Installation**
The Conductive Switch must be installed utilizing the type of connection provided. The tank must be free from turbulence or vortices throughout use. When tightening the switch, only use the hexagon fitting to achieve a seal, do not twist by the housing.

When installing the switch either directly to the tank, or utilizing a "T" connection, make sure that the rod extends beyond the inner wall of the tank so that internal build up or other debris does not interfere with the performance of the switch.

Care should also be taken when handling and installing switches with coated rods. Scratching the coating could interfere with the switch performance.

**Recommended installation positions:**

![Diagram of recommended installation positions](image_url)
Wiring Diagram

LVCF 01 - Fixed rod
LVCR 01 - Removable rod
LVCP 01 - Pendular electrode

LVCF 02 - Fixed rods
LVCR 02 - Removable rods
LVCP 02 - Pendular electrodes

LVCF 03 - Fixed rods
LVCR 03 - Removable rods
LVCP 03 - Pendular electrodes

LVCF 04 - Fixed rods
LVCR 04 - Removable rods
LVCP 04 - Pendular electrodes

LVCF 05 - Fixed rods
LVCR 05 - Removable rods
LVCP 05 - Pendular electrodes

Relay LVCN-201 and LVCN-202
Relay LVCN-203 and LVCN-204

Conductive Level Switch with Built-in controllers

LVCN 4100
LVCN 4200
PROBES:

Care should be taken when cleaning coated rods to avoid scratching them.

When cleaning the rods use a soft brush or any other similar object.
<table>
<thead>
<tr>
<th>MODELS</th>
<th>LVCF 01 - Fixed rod</th>
<th>LVCF 02 - Fixed rods</th>
<th>LVCF 03 - Fixed rods</th>
<th>LVCF 04 - Fixed rods</th>
<th>LVCF 05 - Fixed rods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LVCR 01 - Removable rod</td>
<td>LVCR 02 - Removable rods</td>
<td>LVCR 03 - Removable rods</td>
<td>LVCR 04 - Removable rods</td>
<td>LVCR 05 - Removable rods</td>
</tr>
<tr>
<td></td>
<td>LVCP 01 - Pendular electrodes</td>
<td>LVCP 02 - Pendular electrodes</td>
<td>LVCP 03 - Pendular electrodes</td>
<td>LVCP 04 - Pendular electrodes</td>
<td>LVCP 05 - Pendular electrodes</td>
</tr>
<tr>
<td>Application</td>
<td>Level of Conductive liquids in tanks and pipes</td>
<td>Level of Conductive liquids in tanks and pipes</td>
<td>Level of Conductive liquids in tanks and pipes</td>
<td>Level of Conductive liquids in tanks and pipes</td>
<td>Level of Conductive liquids in tanks and pipes</td>
</tr>
<tr>
<td>Process connection</td>
<td>1/2&quot; ... 1 1/2&quot; BSP or NPT sanitary and flanges</td>
<td>3/4&quot; ... 1 1/2&quot; BSP or NPT sanitary and flanges</td>
<td>1&quot; ... 1 1/2&quot; BSP or NPT sanitary and flanges</td>
<td>1 1/2&quot; BSP or NPT sanitary and flanges</td>
<td>1 1/2&quot; BSP or NPT sanitary and flanges</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>cable gland</td>
<td>cable gland</td>
<td>cable gland</td>
<td>cable gland</td>
<td>cable gland</td>
</tr>
<tr>
<td>Electrode</td>
<td>1 fixed rod 1 removable rod 1 pendular by cable</td>
<td>2 fixed rods 2 removable rods 2 pendular by cable</td>
<td>3 fixed rods 3 removable rods 3 pendular by cable</td>
<td>4 fixed rods 4 removable rods 4 pendular by cable</td>
<td>5 fixed rods 5 removable rods 5 pendular by cable</td>
</tr>
<tr>
<td>Length</td>
<td>Rod: 0.33 up to 6.57ft (100mm up to 2000mm) Cable: 1.64ft up to 65.7 ft (500mm up to 20000mm)</td>
<td>Rod: 0.33 up to 6.57ft (100mm up to 2000mm) Cable: 1.64ft up to 65.7 ft (500mm up to 20000mm)</td>
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<td>Rod: 0.33 up to 6.57ft (100mm up to 2000mm) Cable: 1.64ft up to 65.7 ft (500mm up to 20000mm)</td>
</tr>
<tr>
<td>Endrossure Material</td>
<td>Glass filled nylon</td>
<td>Glass filled nylon</td>
<td>Glass filled nylon</td>
<td>Glass filled nylon</td>
<td>Glass filled nylon</td>
</tr>
<tr>
<td>Temperature operation</td>
<td>14 to 248°F (-10 to 120°C)</td>
<td>14 to 248°F (-10 to 120°C)</td>
<td>14 to 248°F (-10 to 120°C)</td>
<td>14 to 248°F (-10 to 120°C)</td>
<td>14 to 248°F (-10 to 120°C)</td>
</tr>
<tr>
<td>Max pressure</td>
<td>290 PSI (20 Bar)</td>
<td>290 PSI (20 Bar)</td>
<td>290 PSI (20 Bar)</td>
<td>290 PSI (20 Bar)</td>
<td>290 PSI (20 Bar)</td>
</tr>
<tr>
<td>Class Protection</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
</tr>
</tbody>
</table>
### Technical Specifications

<table>
<thead>
<tr>
<th>MODELS</th>
<th>LVCN-201</th>
<th>LVCN-202</th>
<th>LVCN-203</th>
<th>LVCN-204</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Control of min and max level for conductive level probes</td>
<td>Control of 2 different levels for conductive level probes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>24 Vdc (+/- 10%) 115 or 230 Vac (50/60Hz)</td>
<td>24 Vdc (+/- 10%) 115 or 230 Vac (50/60Hz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Consumption</td>
<td>2 VA</td>
<td>3 VA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity adjustment</td>
<td>0.5 to 50K Ohms (potentiometer)</td>
<td>0.5 to 50K Ohms (potentiometer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>Relay (SPDT) 5A max (250Vac)</td>
<td>2 Relay (SPDT) 5A max (250Vac)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time delay</td>
<td>0.1 to 5 seconds</td>
<td>1 second</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>14°F to 140°F (-10 to 60°C)</td>
<td>14°F to 140°F (-10 to 60°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure material</td>
<td>ABS</td>
<td>ABS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN rail or screws</td>
<td>DIN rail or screws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class Protection</td>
<td>IP 40</td>
<td>IP 40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODELS</th>
<th>LVCN-4100</th>
<th>LVCN-4200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Level detection of conductive liquids in tanks and pipes</td>
<td>Level detection of conductive liquids in tanks and pipes</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>24 Vdc +/- 10%</td>
<td>24 Vdc +/- 10%</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>Max. 2VA</td>
<td>Max. 2VA</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Cable gland or M12 connector</td>
<td>Cable gland or M12 connector</td>
</tr>
<tr>
<td>Output</td>
<td>Relay (SPDT) 5A max (250Vac)</td>
<td>Relay (SPDT) 5A max (250Vac)</td>
</tr>
<tr>
<td>Output voltage for the electrodes</td>
<td>12V - 100Hz</td>
<td>12V - 100Hz</td>
</tr>
<tr>
<td>Sensitivity adjustment</td>
<td>0.5 to 50K Ohms (potentiometer)</td>
<td>0.5 to 50K Ohms (potentiometer)</td>
</tr>
<tr>
<td>Time delay</td>
<td>0.1 to 5 seconds</td>
<td>0.1 to 5 seconds</td>
</tr>
<tr>
<td>Process connection</td>
<td>1/2&quot; ... 1 1/4&quot; BSP or NPT sanitary and flanges</td>
<td>3/4&quot; ... 1 1/4&quot; BSP or NPT sanitary and flanges</td>
</tr>
<tr>
<td>Electrodes</td>
<td>Single - 316 SS fixed rod</td>
<td>minimum and maximum - 316 SS fixed rod</td>
</tr>
<tr>
<td>Length</td>
<td>0.33 to 6.57 ft (100mm to 2.000mm)</td>
<td>0.33 to 6.57 ft (100mm to 2.000mm)</td>
</tr>
<tr>
<td>Enclosure Material</td>
<td>Glass filled nylon</td>
<td>Glass filled nylon</td>
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</tr>
<tr>
<td>Class Protection</td>
<td>IP 65</td>
<td>IP 65</td>
</tr>
<tr>
<td>Fault</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Does not switch</td>
<td>No LED, no power</td>
<td>Check power supply</td>
</tr>
<tr>
<td>LED ON</td>
<td>Check cable resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(max. Must be 40k Ω)</td>
<td></td>
</tr>
<tr>
<td>LED ON</td>
<td>Check if medium is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>conductive</td>
<td></td>
</tr>
<tr>
<td>Continuously</td>
<td>LED ON</td>
<td>Check sensitivity adjustment</td>
</tr>
<tr>
<td>switching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED ON</td>
<td>Check medium temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If there is vapor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>presence we recomend the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use of coated rods.</td>
<td></td>
</tr>
<tr>
<td>LED ON</td>
<td>Check rods build up</td>
<td></td>
</tr>
</tbody>
</table>
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1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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