CONDUCTIVITY LEVEL SWITCHES

LVCF/LVCR/LVCP Series

LVCR-441-12 shown smaller than actual size. LVCR units with removable rods are available with varied rod lengths for custom applications. Consult Flow Engineering for details. Rods can also be shortened in the field.

LVCN-201 relay shown smaller than actual size.

- **Easy to Install and Operate**
- **Rugged Construction**
- **Low Cost**
- **Removable Rods**
- **Up to 5 Points of Level Control**
- **Rods Can be ECTFE/ETFE Coated**
- **Available with 316 SS Tri-Grip™ Sanitary, Flange, or Threaded Connections Models**
- **LVCF (1-5) Fixed Rods**
- **LVCR (1-5) Removable Rods**
- **LVCP (1-5) Pendular Electrodes**
- **CLE-P Pendular Electrode Without the Housing**
- **LVCN-200 Series Controllers**

OMEGA's conductivity level switches offer a wide range of customized options to meet any application's needs. They are designed to control the level of all conductive mediums, offering up to 5 different points of level control. Models are available with fixed rigid rods, with removable rigid rods, or with pendular electrodes attached to the housing with cables.

These switches suit applications involving both alarm point detection and on/off pump valve control. Installation is easy and operation is maintenance-free.

The probes work through the variation of the electrical resistance between the reference electrode and the level-control electrode. Conductivity level switches detect the level resistance when their electrodes are covered by the medium.

An electrically conductive tank wall can 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 as a reference.

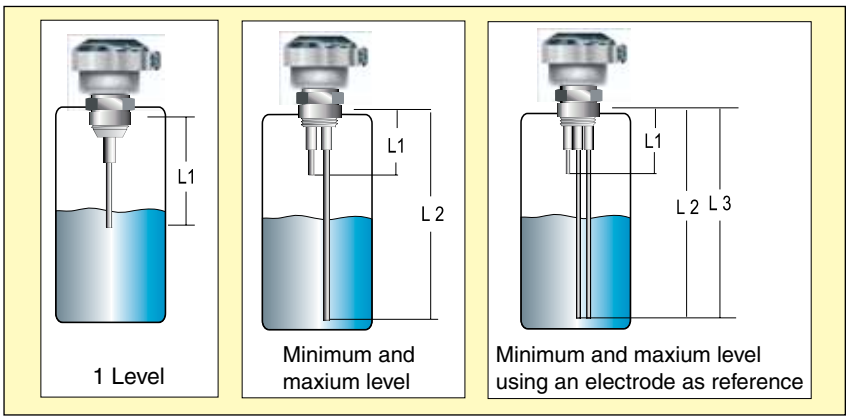
The LVCF switches can accommodate up to five 316 SS fixed rods for 5 different levels of control. The rods are isolated with a TFE bushing and can be coated with ECTFE/ETFE when the probe is used with aggressive or sticky media that cause buildup. The user can easily modify operating levels in the tank by cutting the length of the electrodes. The LVCF switches are rugged and compact and have no moving parts. This makes them reliable for controlling conductive media as well as for high-pressure applications. LVCF models are compatible with LVCN-200 Series controllers only.

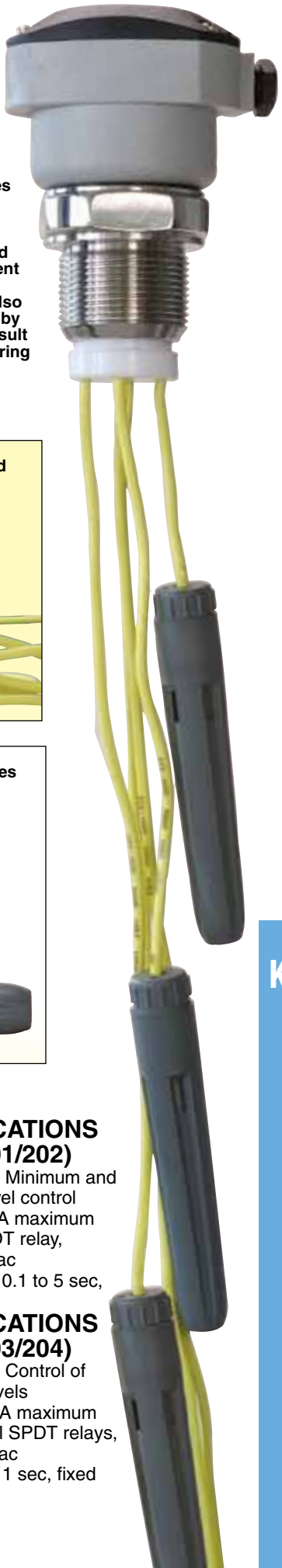
The LVCR models offer the same features as the LVCF, plus removable 316 SS threaded rods that make it possible to switch the rods. Rods can be ordered separately in longer length and can then be custom cut. Removable rods make the system more versatile, easier to handle, and more forgiving if the rod's length is cut incorrectly. LVCR models are compatible with LVCN-200 Series controllers only.

Along with the same features as the rigid rod probes, LVCP pendular probes can accommodate up to 5 model CLE-P electrodes. The LVCP probes are ideal for deep measurements in wells or large tanks where long rods would be impractical, but they work equally well for shorter-length applications. The electrodes are suspended from PVC cables that allow for longer lengths, as well as for different applications and installations. LVCP models are compatible with LVCN-200 controllers.

The electrode model CLE-P is the simplest version of all conductivity probes. A small polypropylene

LVCR Mounting Diagram





LVCP, shown smaller than actual size. LVCP switches are available with varying cable lengths to monitor and control different fluid levels. Cables may also be shortened by the user. Consult Flow Engineering for details.

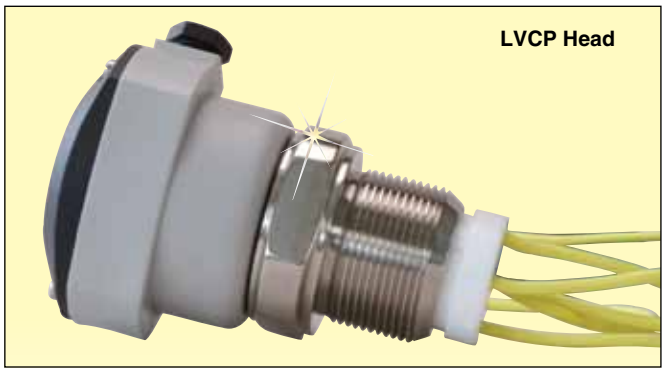
enclosure houses a 316 SS rod that is attached to a PVC cable. This option eliminates the need for a process connection.

LVCN-200 Series conductive liquid on/off level controllers are used to power all level probes. The LVCN-200 models are electronically controlled devices that open and close an electrical contact to effect the operation of other devices in the same, or another, electrical circuit.

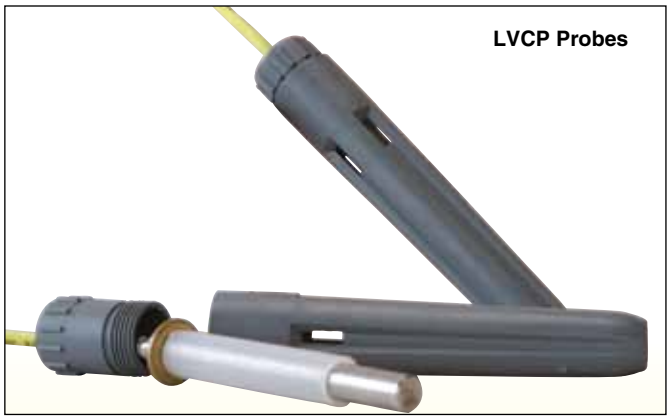
The LVCN-201/202 models can control the differential of minimum and maximum level, with an adjustment for sensitivity. The relay has 1 reverse SPDT contact.

The LVCN-203/204 models control 2 independent levels and 2 reverse SPDT contacts. They also include a sensitivity adjustment.

The LVCN-200 Series is designed so that multiple units can be used in combination to provide a variety of control functions, including multiple alarms and on/off control for alternating pumps. Both models are available with DIN rail sockets or with screws.



LVCP Head



LVCP Probes

SPECIFICATIONS (LVCF/LVCR/LVCP)

Electrical Connection: Cable gland with ½ NPT conduit
Electrodes: Available in configurations from 1 to 5 electrodes
Fixed Rod Length: 100 mm to 2 m (3.9" to 6.5')
Pendular Cable Length: 500 mm (19.7") to 20 m (65.6')
Enclosure: Glass filled nylon or die cast aluminum; NEMA 4 (IP65)
Operating Ambient: -10 to 120°C (14 to 248°F); 20 bar (290 psi) maximum

COMMON SPECIFICATIONS (LVCN-200)

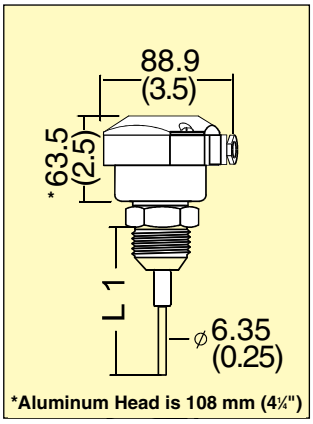
Power: 24 Vdc ±10%, 115 or 230 Vac (50/60 Hz)
Sensitivity: 0.5 to 50 kΩ; potentiometer adjust
Operating Ambient: -10 to 60°C (14 to 140°F)
Enclosure: ABS; DIN rail mount or screw attachment; IP40 protection

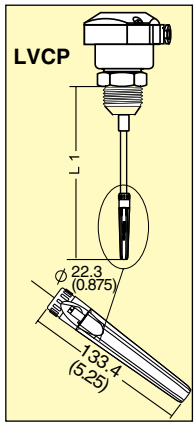
SPECIFICATIONS (LVCN-201/202)

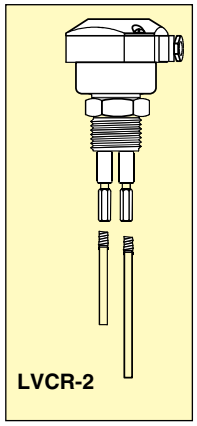
Application: Minimum and maximum level control
Current: 2 VA maximum
Output: SPDT relay, 5 A @ 250 Vac
Time Delay: 0.1 to 5 sec, adjustable

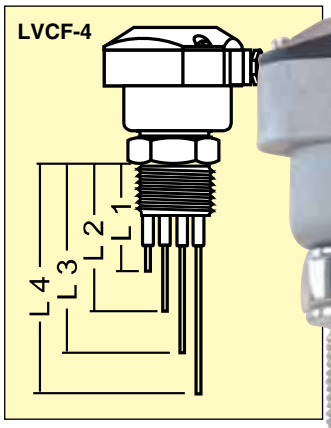
SPECIFICATIONS (LVCN-203/204)

Application: Control of 2 different levels
Current: 3 VA maximum
Output: Dual SPDT relays, 5 A @ 250 Vac
Time Delay: 1 sec, fixed



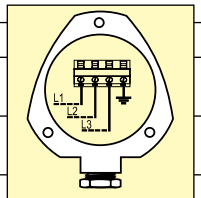


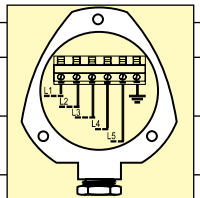


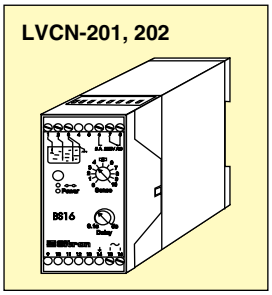


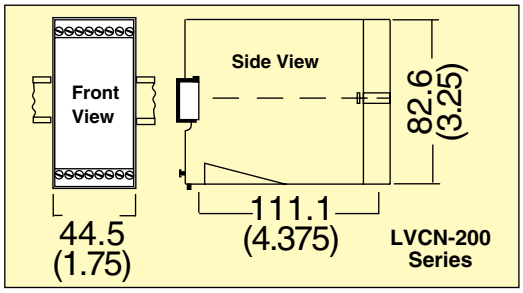
Dimensions: mm (inch) ø = diameter

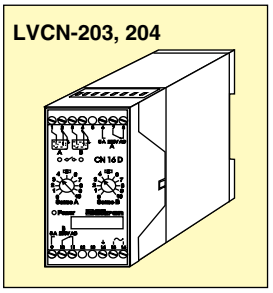
Application	Point level of conductive liquids in tanks and pipes				
Process Connection	½ to 1½ NPT or BSP 1½" sanitary or flange	¾ to 1½ NPT or BSP 1½" sanitary or flange	1 to 1½ NPT or BSP 1½" sanitary or flange	1½ NPT or BSP 2" sanitary or flange	2" sanitary or flange
Electrical	Cable entry or ½ NPT conduit entry				
Electrode	1 fixed rod	2 fixed rods	3 fixed rods	4 fixed rods	5 fixed rods
	1 removable rod	2 removable rods	3 removable rods	4 removable rods	5 removable rods
	1 pendular by cable	2 pendular by cable	3 pendular by cable	4 pendular by cable	5 pendular by cable
Length (L)	**Rod:** 100 mm to 2 m (3.9" to 6.56')				
	Cable: 500 mm to 20 m (19.7" to 65.6')				
Enclosure Material	Glass-filled nylon or aluminum die cast				
Temperature	-10 to 120°C (14 to 248°F)				
Max Pressure	290 psi (20 bar)				
Class Protection	NEMA 4 (IP65)				











Application	Control of Min and Maximum Level for Conductive Level Probes	Control of 2 Different Levels for Conductive Level Probes
Operating Voltage	24 Vdc (±10%) or 115 or 230 Vac (50/60 Hz)	24 Vdc (±10%) or 115 or 230 Vac (50/60 Hz)
Current Consumption	2 VA	3 VA
Sensitivity Adjustment	0.5 to 50 kΩ (potentiometer)	0.5 to 50 kΩ (potentiometer)
Output	5 A maximum, 250 Vac relay (SPDT)	5 A maximum, 250 Vac relay (2-SPDT)
Time Delay	0.1 to 5 seconds	1 second
Operating Temperature	-10 to 60°C (14 to 140°F)	-10 to 60°C (14 to 140°F)
Enclosure Material	ABS	ABS
Mounting	DIN rail or screws	DIN rail or screws
Class Protection	IP40	IP40

To Order

Model No.	Description
LVCF-111-12-ETFE	Fixed rod conductivity level switch; one 12" rod, ½ NPT process connection, nylon enclosure, ECTFE/ETFE coating
LVCF-231-24-ETFE	Fixed rod conductivity level switch; two 24" rods, 1 NPT process connection, nylon enclosure, ECTFE/ETFE coating
LVCR-231-60	Removable rod conductivity level switch; two 60" rods, 1 NPT process connection, nylon enclosure
LVCR-341-72	Removable rod conductivity level switch; three 72" rods, 1½ NPT process connection, nylon enclosure
LVCP-121-96	Pendular rod conductivity level switch; one electrode, 96" cable, ¾ NPT process connection, nylon enclosure
LVCP-231-96	Pendular rod conductivity level switch; two electrodes, 96" cables, 1 NPT process connection, nylon enclosur
LVCP-341-96	Pendular rod conductivity level switch; three electrodes, 96" cables, 1½ NPT process connection, nylon enclosure

Switch Sensors

Model No.	Description
LVCF-(A)(B)(C)-(D)	Custom fixed rod conductivity level switch; select number of rods (A), process connection (B), enclosure (C) and rod length in inches (D)
LVCR-(A)(B)(C)-(D)	Custom removable rod conductivity level switch; Select number of rods (A), process connection (B), enclosure (C), and rod length in inches (D)
LVCP-(A)(B)(C)-(D)	Custom pendular conductivity level switch; Select number of electrodes (A), process connection (B), enclosure (C), and cable length in inches (D)

Ordering Options

Order Suffix	Description
A-Rods/Electrodes	
1	1 rod/electrode; single point detection
2	2 rods/electrodes; minimum/maximum detection
3	3 rods/electrodes; 3-point detection
4	4 rods/electrodes; 4-point detection
5	5 rods/electrodes; 5-point detection
B-Process Connection	
1	½ NPT thread (LVCF-1, LVCR-1, LVCP-1 only)
2	¾ NPT thread (LVCF/LVCR/LVCP-1 or 2 only)
3	1 NPT thread (LVCF/LVCR/LVCP-1, 2 or 3 only)
4	1½ NPT thread (LVCF/LVCR/LVCP-1, 2, 3 or 4 only)
5	1.5" Tri-Grip™, sanitary (LVCF/LVCR-1, 2 or 3 only)
6	2" flange, ANSI, 316 SS (all models)
7	2" Tri-Grip™, sanitary (LVCF/LVCR-1, 2, 3 or 4 only)
C-Enclosure	
1	Glass filled nylon with ½ NPT conduit with cable gland
2	Aluminum die cast with ½ NPT conduit entry
3	Aluminum die cast with cable gland entry
D-Rod Length/Cable Length	
Specify	Fixed rod length (inch) for LVCF
Specify	Removable rod length (in) for LVCR
Specify	Cable length (inch) for LVCP
ETFE Coating	
-ETFE	ECTFE/ETFE coating for LVCF or LVCR rod sensors

LVCR-441-12, shown smaller than actual size.

Controllers

Model No.	Description
LVCN-201	Min/max level controller, 24 Vdc power
LVCN-202	Min/max level controller, 115 Vac power
LVCN-202-230VAC	Level controller for 2 independent levels, 230 Vac power
LVCN-203	Level controller for 2 independent levels, 24 Vdc power
LVCN-204	Level controller for 2 independent levels, 115 Vac power
LVCN-204-230VAC	Minimum/maximum level controller, 230 Vac power

Comes complete with operator's manual.

Ordering Examples: LVCF-111-12-ETFE, *1 fixed rod,* ***LVCN-202,*** *controller,* ***70A-1,*** *alarm.*
LVCP-231-96, *2 pendular electrode switch,* ***LVCN-204,*** *controller,* ***70A-1,*** *alarm,*

Accessories

Model No.	Description
70A-1	Continuous tone alarm
TX4-100	30.5 m (100') spool of 4-conductor wire
PSU-93	Unregulated power supply
LVCR-(**)	Replacement rods for LVCR Series
CLE-P	Electrode

*** Specify rod length (in inches): 12, 24, 36, 60.*

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