CAPACITANCE CONTINUOUS LEVEL MEASUREMENT PROBES

LV3000/4000 Series

1 YEAR WARRANTY

LV4021-24 shown smaller than actual size.

- Can Operate at High Temperatures and Pressure
- Unaffected by Coating Media
- Accurate and Reliable Measurement
- Easy, Economical Installation
- Rugged Construction
- No Moving Parts
- Compatible with Both Conductive and Non-Conductive Media
- Wide Range of Applications/Industries (e.g., Water, Oils, Corrosives)
- Sanitary Mount Available

iSeries CNi16D33 controller shown smaller than actual size.

The LV3000/LV4000 Series continuous level measurement probes are flexible, cost-effective solutions for applications involving liquids, pastes, and some solids. The built-in (one-piece) electronic module provides a 4 to 20 mA output (2-wire) signal that is proportional to the process level. Zero and span adjustment helps account for various media, tank dimensions, rod lengths, and positions of installation.

OMEGA® offers these probes in several different models. The user must choose the probe that suits his or her application and install it in the proper location. When submerged, the probe must be able to produce enough capacitance variance. The probe's success depends on these important factors:

A) Conductive materials can cause a short circuit between a bare stainless steel probe and the tank wall. For this situation, we recommend using PTFE sleeving on the rod surface.

B) Material buildup affects the accuracy of RF capacitive measurements. Additional adjustment to the probe's sensitivity is therefore recommended.

Housings must be compatible with the requirements for hazardous, washdown, wet, or dusty environments. For explosion-proof environments, the housing may need to be certified. In addition, the active probe might need to be intrinsically safe or have an intrinsic safety barrier.

The electronic circuitry of the probe performs several functions, such as rectifying and filtering the incoming power, generating the radio frequency signal, and measuring the changes in current flow.

SPECIFICATIONS (LV3000 SERIES)

Accuracy: 0.5%
Repeatability: ±1 mm
Level Indication:
Bar graph, 0 to 1000%
Process Connection:
¾ to 1½ NPT, Tri-Grip™ or flange
Wetted Material: 316 SS or PTFE
Enclosure Material: Aluminum die cast
Maximum Pressure: 290 psi (20 bar)
Operating Temperature: -10 to 120°C (14 to 248°F)
Class Protection:
LV3000: NEMA 4 (IP65)
LVCN410: IP40
Maximum Probe Length: 1.8 m (6')
Dimensions:
Aluminum Die-Cast Head:
89 W x 108 mm H (3.5 x 4¼")
Diameter of Probe: 16 mm (⅝")
Electrical Connection: Cable gland with ½ NPT conduit

Note: *The LV3000 Series probes require a LVCN400 Series controller.*

SPECIFICATIONS (LVCN410 SERIES)

Operating Voltage: 24 Vdc, 110 or 240 Vac (50/60 Hz)
Current Consumption: 4 mA
Adjustment: Zero and span (potentiometer) and 2 switch point (potentiometer)
Range of Sensitivity: 50 to 1000 pF
Output: 4 to 20 mA and 2-relay SPDT
LVCN411/LVCN412:
73 W x 110 H x 110 mm L
(2⅞ x 4⅜ x 4⅜")

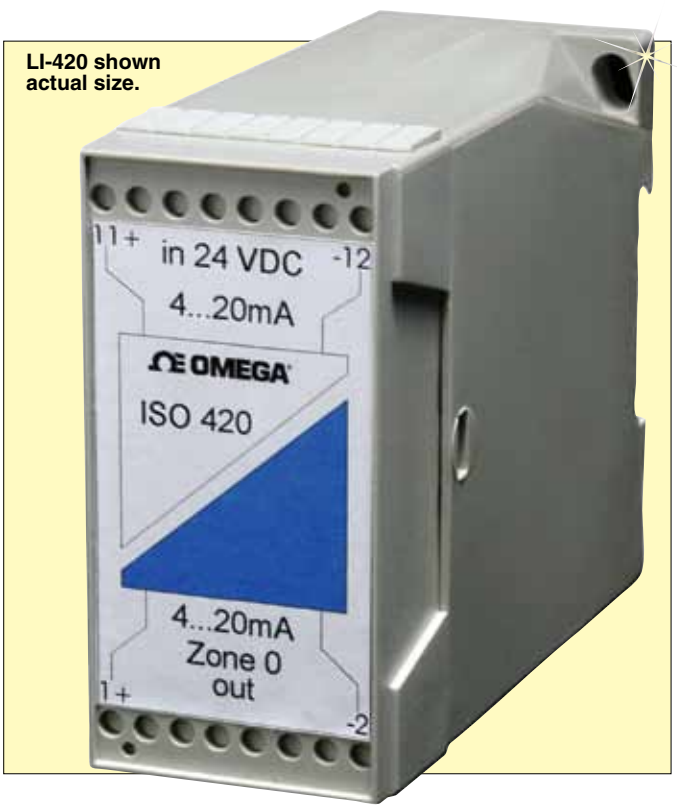
SPECIFICATIONS (LV4000 SERIES)

Accuracy: 0.5%
Repeatability: ±1 mm
Operating Voltage: 12 to 30 Vdc
Adjustment:
Zero and span (potentiometer)
Range of Sensitivity: 100 to 5500 pF
Frequency Oscillation: 400 kHz
Output: 4 to 20 mA (2-wire)
Process Connection:
¾ to 1½ NPT, Tri-Grip or flange
Wetted Material: 316 SS or PTFE
Enclosure Material: Glass-filled nylon or aluminum die cast
Maximum Pressure: 290 psi (20 bar)
Operating Temperature:
-10 to 120°C (14 to 248°F)
Class Protection: NEMA 4 (IP65)
Maximum Probe Length: 1.8 m (6')
Dimensions:
Nylon Head: 89 W x 64 mm H (3.5 x 2.5")
Aluminum Die-Cast Head:
89 W x 108 mm H (3.5 x 4.25")
Diameter of Probe: 16 mm (⅝")
Electrical Connection:
Cable gland with ½ NPT conduit

Note: *The LV4000 Series probes require a galvanic isolator, LI-420*

SPECIFICATIONS (LI-420)

Input Current from the Evaluation Instrument: 4 to 20 mA
Input Voltage: 22 to 24 Vdc
Output Current: 4 to 20 mA
Output Voltage to the Transducer at 20 mA: 12.5 V
Output Voltage to the Transducer at 4 mA: 15.5 V
Resistance per Conductor: 15 Ω
Testing Voltage:
Input/output circuit: 2000 V_{eff}
Domestic Current Demand:
300 ±60 µA
Ambient Temperature:
-20 to 70°C (-4 to 158°F)
Enclosure Dimensions:
44 W x 82 H x 110 mm L
(1¾ x 3¼ x 4⅜")



LI-420 shown actual size.

LV4121-36 shown smaller than actual size.

To Order	
Model No.	**Description of Capacitance Transmitter with 4 to 20 mA Output and Switch**
LV4111-24	60 cm (24") long probe with ¾ NPT connection, with PTFE sleeving and nylon head
LV4121-36	90 cm (36") long probe with 1 NPT connection, with PTFE sleeving and nylon head
LV4121-48	1.2 m (4') long probe with 1 NPT connection, with PTFE sleeving and nylon head
LV4121-60	1.5 m (5') long probe with 1 NPT connection, with PTFE sleeving and nylon head
LV3123-48-HT	1.2 m (4') long probe with 1 NPT connection, with high temperature PTFE sleeving and aluminum die-cast head, 177°C (350°F); Remote electronics required LVCN410 Series
LVCN411	24 Vdc powered controller with relay and 4 to 20 mA output for LV3000 Series only
LVCN412	115 Vac powered controller with relay and 4 to 20 mA output for LV3000 Series only

Accessories

Model No.	Description
CNI16D33	1/16 DIN dual display with two 3 A relays and 24 Vdc excitation
TX4-100	30 m (100') spool of 4-conductor wire
FPW-15	15 Vdc power supply
LI-420	Loop isolator (required for the LV4000 Series)

Custom Models Available

Model No.	Description for Built to Order Unit
LV4XYZ-LENGTH (inches)	Custom capacitance system, specify X, Y, Z from **Options**
LV3XYZ-LENGTH (inches)	Custom remote capacitance system, requires LVCN410 Series remote electronics, specify X, Y, Z from **Options**

*Specify all length in inches. Maximum length is 72" (6') for **LV4000/LV3000.***

Options

Ordering Suffix	Description
X-Insulation Connection	
0	316 SS rod
1	PTFE sleeve*
Y-Process Connection	
1	¾ NPT thread
2	1 NPT thread
3	1.5 NPT thread
4	1.5 Tri-Grip, sanitary
5	Flange 2" ANSI, 15016 316 SS
Others	Please specify
Z-Enclosure	
1	Glass-filled nylon with ½ NPT conduit entry and cable gland
2	LV4000 Aluminum die cast with ½ NPT conduit entry
3	LV4000 Aluminum die cast with cable gland entry
4	LV3000 Aluminum die cast with ½ NPT conduit entry
5	LV3000 Aluminum die cast with cable gland entry
Length of Rod (-LENGTH)	
Specify Inches	Length of rod
High Temp to 350°F (-HT)	
Add "-HT" to Model No.	High temperature to 177°C (350°F)*

Comes with complete operator's manual.

***** *High temperature PTFE sleeving available for temperatures up to 200°C (382°F). For PTFE sleeving add suffix **"HTPTFE"** to model number, for additional cost.*

***Ordering Examples: LV4111-24,** 60 cm (24") level transmitter, **CNi16D33,** process controller, and **TX4-100,** multiconductor wire.*

***LV4121-36,** 90 cm (36") level transmitter, **FPW-15**, power supply.*