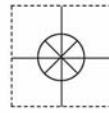


**1 YEAR**  
WARRANTY



# User's Guide



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It is the policy of OMEGA Engineering, Inc. 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.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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

Offered in small and large sizes, the compact junction box is ideal for sensor wiring and conduit termination. The junction box is universally compatible with our level switch, flow switch and fitting products. The small enclosure (LVCN-12 series) has 6 poles and is typically used with a single level or flow switch sensor. The large enclosure (LVCN-11 series) has 12 poles for multiple level switches and is typically used with Smart Trak.

**Features**

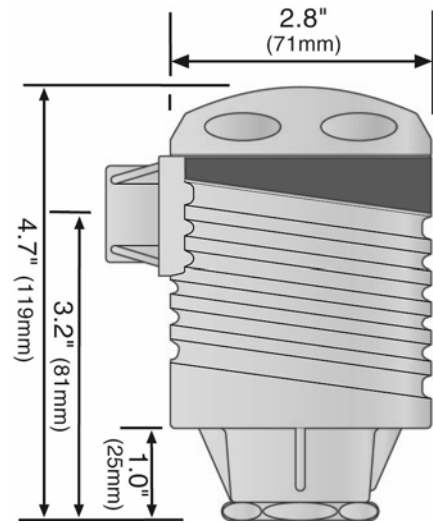
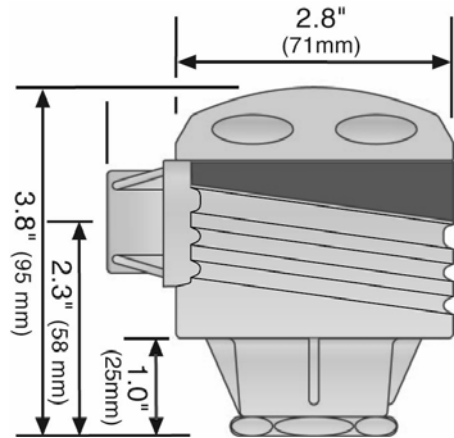
- Polypropylene enclosure rated NEMA 4X with 300° conduit swivel base.
- Compatible with Omega Engineering sensors, installation fittings and alarms.
- Removable terminal strips with upper and lower screw poles.
- Offered in large and small sizes for single or multi-point installations.

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**SPECIFICATIONS/DIMENSIONS****Step Two**

Sensor input:	LVCN-11: 1 - 4 sensors LVCN-12: 1 - 2 sensors
Terminal strip:	LVCN-11: 12 pole socket LVCN-12: 6 pole socket
Max. current capacity:	26 Amps
Max. voltage:	380 V
Wire stripping:	0.5mm or 0.2"
Terminal screw torque:	3.5 in-lbs.
Wire gauge:	22-14 AWG Cu (copper)
Enclosure rating:	NEMA 4X (IP65)
Enclosure material:	Polypropylene (U.L. 94 VO)
Enclosure rotation:	300° swivel base
Temperature range.:	F: -40° to 158° C: -40° to 70°
Conduit entrance:	Single, ½" NPT
Mounting connection:	Single, ¾" NPT

**Side View  
LVCN-11 Series****Top View w/o Cap  
LVCN-11 Series****Side View  
LVCN-12 Series****Top View w/o Cap  
LVCN-12 Series**

- ⚠ **About This Manual:** PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on the Compact Junction Boxes from Omega Engineering: LVCN-11 and LVCN-12 Series. Please refer to the part number located on the label to verify the exact model which you have purchased. Many aspects of installation and use are similar between models.
- ⚠ **User's Responsibility for Safety:** OMEGA ENGINEERING manufactures several models of controller, with different mounting and switching configurations. It is the user's responsibility to select a junction box model that is appropriate for the application, install it properly, perform tests of the installed system, and maintain all components.
- ⚠ **Electrical Shock Hazard:** It is possible to contact components on the junction box that carry high voltage, causing serious injury or death. All power to the circuits in the terminal strip should be turned OFF prior to working on the controller. If it is necessary to make adjustments during powered operation, use extreme caution and use only insulated tools. Making adjustments to powered controllers is not recommended. Wiring should be performed by qualified personnel in accordance with all applicable national, state and local electrical codes.
- ⚠ **Flammable or Explosive Applications:** *Sensor mount controllers should not be used with explosive or flammable liquids, which require an intrinsically safe or explosion proof rating.* If you are unsure of the suitability of a controller for your installation, consult your Omega Engineering representative for further information.
- ⚠ **Install In a Dry Location:** While the compact junction box is liquid-resistant when installed properly, it is not designed to be immersed. It should be mounted in such a way that it does not normally come into contact with fluid. Its housing is made out of PP (propylene). Refer to an industry reference to ensure that compounds that may splash onto the controller housing will not damage it. Such damage is not covered by the warranty.
- ⚠ **Application:** The LVCN-11 series junction box is commonly used for the local termination of multiple switches installed on a LVM-10 series mounting system. The LVCN-12 series junction box is commonly used for the local termination of a single level or flow switch. Combine these junction boxes with any switch or fitting assembly to complete your application.

**Make a Fail-Safe System:** Design a fail-safe system that accommodates the possibility of relay or power failure. If power is cut off to the controller, it will de-energize the relay. Make sure that the de-energized state of the relay is the safe state in your process. For example, if controller power is lost, a pump filling a tank will turn off if it is connected to the Normally Open side of the relay.

⚠ All power to the system must be turned off before installing the housing.

⚠ **Important:** Do not strip more than 0.25" of insulation from any wire that will be connected to the terminal strip. Longer un-insulated wire may contact the terminal strip panel, causing a short circuit leading to a system failure.

⚠ All wiring between a controller and sensor(s) should be in conduit. The power entrance of the terminal strip housing is a standard ½" NPT female fitting that will attach to a standard electrical conduit, either plastic or metal, as specified by local codes. Keep in mind that the housing may have to be unscrewed from the sensor for periodic cleaning of the sensor. For this reason the use of flexible conduit, providing enough slack for easy access is recommended.

⚠ Use caution when installing the conduit. Excessive tightening may break the fitting. Such damage is not covered by the warranty.

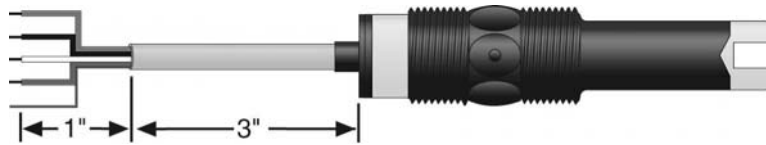
⚠ In some cases, additional user-provided components may need to be attached to the terminals. If so, make sure that both wires and/or components entering the terminal are secure after the screws are tightened.

**Components:**

- LVCN-11 - Multi-Input (12-pole) Junction Box, NPT Thread
- LVCN-12 - Single-Input (6-pole) Junction Box, NPT Thread
- Owner's Manual

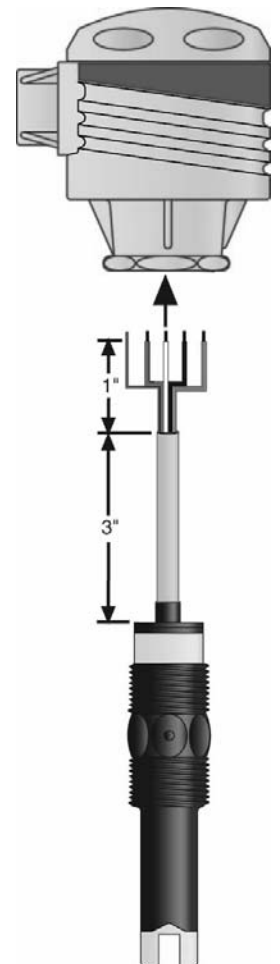
**Mounting on a Sensor:** The following procedure should be used when mounting the junction box directly on a sensor. **All power to the system must be off before installing the junction box.**

1. **Prepare the sensor:** The following instructions assume the sensor is already mounted in a position on its tank or fitting (as described in the sensor manual). Note that because the insulation jacket of the sensor is less flexible than most (to ensure chemical compatibility), it is important that you follow the instructions exactly.
  - a. Cut the wire 4-1/4" from the top of the sensor.
  - b. Using a 10 gauge wire stripper, strip the white outer layer of insulation from the last 1-1/4" of the sensor wire. Trim off and discard the exposed foil shield flush with the insulation jacket. In long cable runs, do not cut off the drain wire.
  - c. Using a 20 gauge wire stripper, strip the last 1/4" of insulation from the signal wires.



⚠ **Important:** Do not strip more than 0.2" (5mm) of insulation from any wire that will be connected to the terminal strip. Longer insulated wire may contact the terminal strip panel, causing a short circuit leading to a system failure.

2. **Position the junction box on the sensor:** To make the mounting and wiring easier, you must first remove the terminal strip from the junction box.
  - a. Unscrew the lid of the junction box.
  - b. Gently tip the junction box to slide out the terminal strip panel, and place it aside.
  - c. Thread the pre-trimmed sensor wires through the 3/4" NPT entrance to the junction box, and place the junction box in position over the sensor.
  - d. Being careful not to cross the threads, screw the junction box on the sensor. Stop when the cap of the sensor becomes flush with the bottom wall of the junction box, or when the 1/2" power conduit entrance is in the desired location.
3. **Connect the sensor input wires:**
  - a. Route the sensor-wire so it stays as close to the housing as possible, but do not bend the wire sharply at the cap of the sensor. (If the installation allows, you may rotate the junction box and/or the sensor until the wire outlet of the sensor is in the best position.)
  - b. Position the terminal strip panel in the housing aligned with the two channels designed to hold it. Do not insert the panel all the way into the housing, but let it rest on the top of the housing to facilitate the wiring.
  - c. Using a small screwdriver, loosen the terminal screws. Insert the sensor wires into the hole on the lower side of the terminal strip, and tighten the terminal screws.
4. **Mechanical connection to conduit:** All wiring between a controller and sensors should be in conduit. The power entrance of the junction box is a standard 1/2" NPT female fitting that will attach to standard electrical conduit, either plastic or metal, as specified by local codes. Keep in mind that the housing may have to be unscrewed from the sensor for periodic cleaning of the sensor. For this reason the use of flexible conduit, providing enough slack for easy access is recommended.



**5. Connect the extension wiring:**

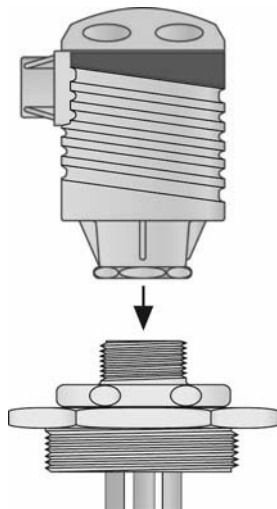
**⚠ Before making connections, make sure all power to the system (controller, motor, valve, alarm, etc.) is OFF with a safety lockout on the circuit breaker.**

- a. The extension wiring to sensors should be of the same type as the sensors. If the run is long, it may need to be a slightly thicker gauge so the series resistance is kept within allowable limits.
- b. Thread the extension wiring through the power conduit entrance of the housing.
- c. Strip ¼” of the insulation from the ends of the wires.
- d. Loosen the upper terminal screws. Insert the extension wires into the corresponding terminals, matching the sensor wires.
- e. Tighten the terminal screws.
- f. Slide the terminal strip panel back into the housing, making sure it is in the groove provided on each side of the housing. The panel “floats” in the housing, held in position by the wiring.
- g. Screw the lid of the housing back on.

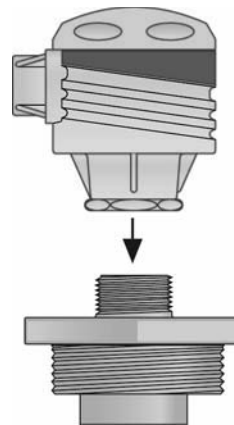
**⚠ Note:** In some cases, additional user-provided components may need to be attached to the terminals. If so, make sure that both wires and/or components entering the terminal are secure after the screws are tightened.

**Mounting on a LVM-10 series or LVM-51 series:** A terminal strip may be mounted directly on a LVM-10 series or LVM-51 series mounting system. The only difference between mounting on a LVM-10 series, a LVM-51 series or directly on a sensor is in the length of the wiring from the sensor(s). Assuming that each sensor is already mounted in position, cut the sensor wires to the length approximately 1-1/2” above the top of the housing. However, be sure to make allowances when cutting the sensor leads for future adjustments to the sensor position.

**Mounting to LVM-10 Series Mounting System**



**Mounting to LVM-51 Series Mounting System**



**Note:** Always tighten the controller from the wrench flat located on the swivel base. Never tighten from the body of the controller.











## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
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3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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