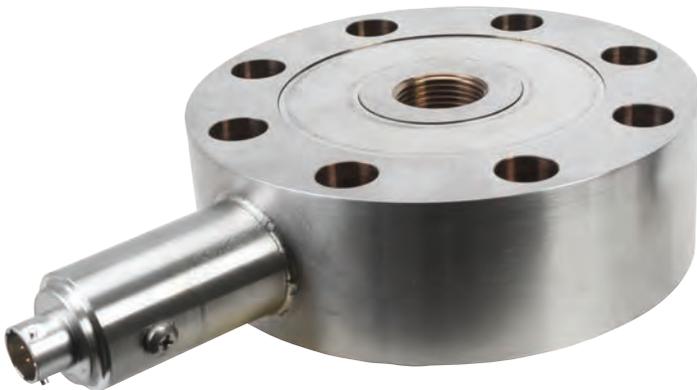


1 YEAR
WARRANTY

Ω OMEGA® **User's Guide**

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LCHD and LC412 **LCMHD and LCM412** **Load Cells** **Hazardous Location** **Installation Guide**



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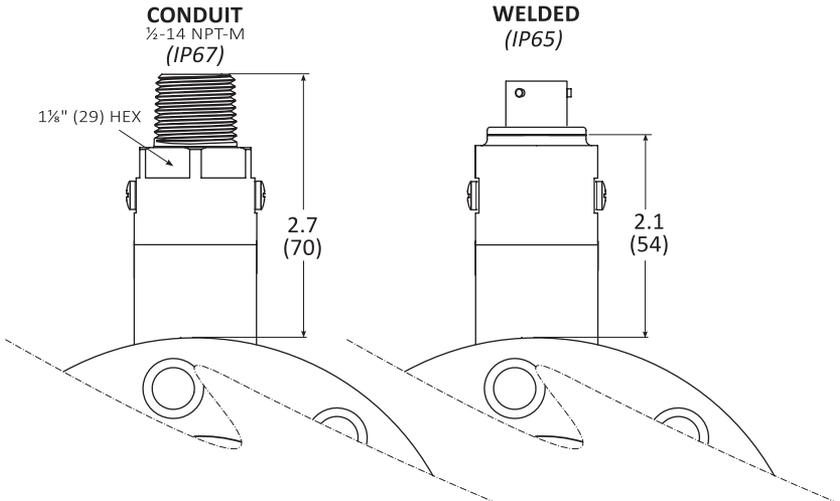
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1. GENERAL:

Misuse of product by exceeding specifications for pressure, temperature, & vibration or exposure to excessive pressure pulsation or corrosion can result in a failure possibly causing injury or damage.

Consult Omega Engineering Inc. before installing if there are any questions or concerns.

Load Cell Amplifier Housing Typical Dimensions and Construction*



*Dimensions and details may vary depending on customer specifications

2. TROUBLE SHOOTING:

Any damage to the load cell can lead to an incorrect output or even no output at all. Carefully check the load cell to make sure no damage has been done.

- Deformation of protective covers or distorted diaphragms.
- A pinched cover or if the cover is in contact with the inside of the load cell.
- Misaligning the load cell or an off-center load.
- If no output is measured, the transducer may not be wired correctly; refer to wiring codes at the back of this guide.
- Look for any sign of damage to the cable, such as: cuts or nicks, sharp bends, excessive twisting, too much tension, crushed or pinched sections.

For accurate readings, make sure the load cell is properly mounted. Follow the installation guide to prevent any damage to the sensor. Also make sure to handle the sensor with care. The lower the capacity, the more susceptible the sensor is to being damaged.

Having a preload, such as a fixture weight, on the sensor will create an offset in the zero. This will reduce the load that can be applied. For instance, if an installation of 15 lb sensor includes 3 lb of fixtures the available measurement range is cut to 12 lbs. Even if the instrument is tared to zero, the sensor should not take more than a 15 lb total load.

3. STATIC ELECTRICAL CHARGES:

Discharge of static electrical energy may damage any electrical device. Take these steps to avoid damage to the transducer:

- Operator/installer should follow the proper ESD (electrostatic discharge) protection procedures before handling the pressure transducer.
- Ground the body of the transducer **BEFORE** making any electrical connections
- When disconnecting, remove the ground **LAST!**

Note: *The shield and drain wire in the cable (if supplied) is not connected to the transducer body, and is not a suitable ground.*

4. HAZARDOUS AREA SPECIFIC GUIDELINES

- 1) Do not open unit when energized.
- 2) Do not disconnect equipment unless area is known to be non-hazardous.

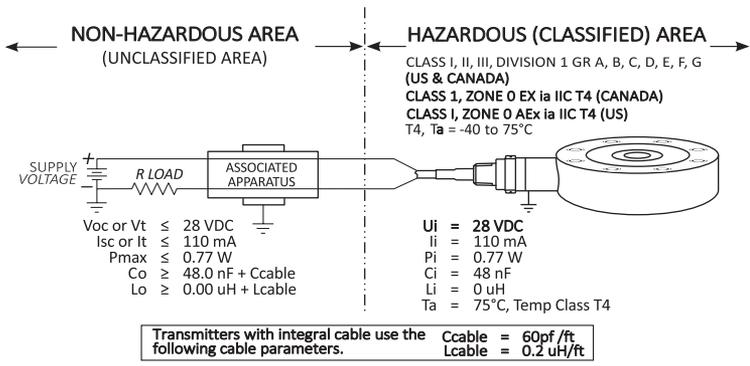
**5. FM Installation Guidelines: INTRINSICALLY SAFE
INSTALLATION FOR FM:**

**INTRINSICALLY SAFE CLASS I, II, III, DIVISION 1 GR A, B, C, D, E, F, G
CLASS I, ZONE 0 AEx ia IIC (US): CLASS I, ZONE 0 Ex ia IIC (CANADA)**

NOTES:

- 1) BARRIER MUST BE NRTL APPROVED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 2) CLASS I, DIVISION 1, CLASS 1, ZONE 1 WIRING PRACTICES PERMITTED BY THE NEC (NFPA 70) AND CEC PART 1(C22.1).
- 3) MAXIMUM SAFE AREA VOLTAGE = 250 V.
- 4) INSTALL USING WIRE RATED AT LEAST 5 DEG C GREATER THAN MAXIMUM AMBIENT TEMPERATURE.
- 5) REFERENCE OMEGA Engineering DOCUMENT A031432
- 6) SPECIAL CONDITION OF USE- The ingress protection of all customer connectors must match the requirements of the site where the transmitter is to be installed. If hose down cleaning is required the connector hardware must be rated IPx5; alternately, if dust protection is required, IP6x are required. Lower levels of ingress protection may cause a reduction in classification for the entire transmitter, and the customer's process control engineer must properly account for this.

The equipment may present a risk of electrostatic sparking. Cleaning should only be performed with a damp cloth.



**6. FM Installation Guidelines: NON-INCENDIVE
INSTALLATION FOR FM:**

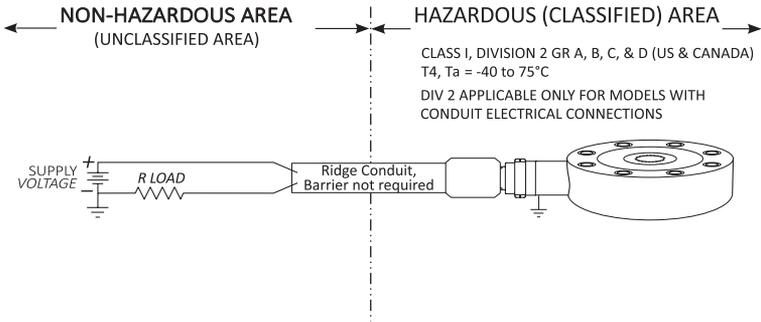
NON-INCENDIVE CLASS I DIVISION 2 GR A, B, C, D

Div 2 applicable only for models with conduit electrical connections.

NOTES:

- 1) RIGID CONDUIT, ASSOCIATED APPARATUS (BARRIER) IS NOT REQUIRED.
- 2) CLASS I, DIV 2, CLASS I, ZONE 2 WIRING PRACTICES PERMITTED BY THE NEC (NFPA 70) AND CEC PART 1 (C22.1).
- 3) REFERENCE OMEGA Engineering DOCUMENT A031432.

Associated apparatus and non-incendive associated field wiring apparatus parameters	Conditions that must be satisfied	Intrinsically safe and non-incendive field wiring apparatus parameters
Voc or Uo	\leq	VMAX or Ui
Isc or Io	\leq	IMAX or Ii
Po	\leq	Pi
Ca OR Co	\geq	Ci
La or Lo	\geq	Li
LA/RA or Lo/Ro	\geq	LI/RL



7. Installation

Do not pull on or carry sensor by the cable. Cable damage can result in discontinuity in the wire. If the cable will experience continuous flexing, provide bend radius of a least 10x the cable diameter.

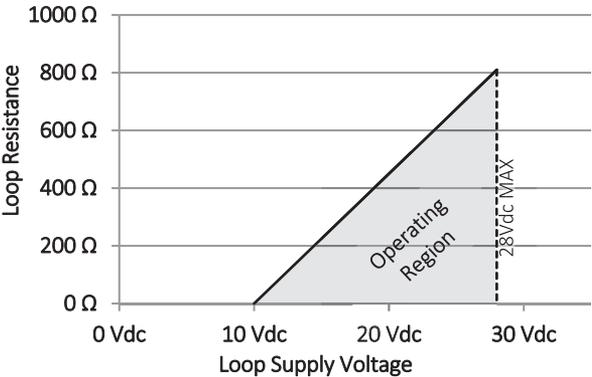
When installing the sensor, connect it to an instrument and monitor the output to prevent possible overload. Do not excessively torque or generate torque on load cell when attaching fixtures. Even with output monitoring, developed torque may permanently damage the load cell before output changes are registered. Do not tamper with any covers or connectors. This will void any warranty.

Take care with load cells that are provided with protective diaphragms, the diaphragms protects the sensing elements from harsh environments. Do not apply pressures or loads to these diaphragms for this may result in their puncture or deformation.

For accurate measurement of load, the force must be evenly distributed across the entire load surface. Insure mounting surfaces are clear of any debris before mounting. The load cell has been calibrated in its optimal direction and has taken into account the measurement end. Reference the label when mounting the sensor.

8. Power Supply

Loop Supply Voltage vs. Loop Resistance



- Vmin = 10Vdc+ (.022A x RL) (includes a 10% safety factor)
- RL = RS + RW
- RL = Loop Resistance (ohms)
- RS = Sense Resistance (ohms)
- RW = Wire Resistance (ohms)

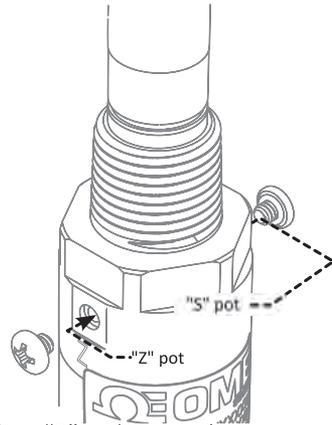
9. Zero and Span Adjustment

Instructions below apply to the particular configurations noted. While zero adjustment is not normally necessary, it may be desirable to trim out any offset in the system.

Using a small trim pot tool, you can adjust zero $\pm 10\%$ of full scale and span $\pm 10\%$ of full scale.

For Welded body and Conduit Transmitters (with pots):

O-ring sealed screws on the side of the body protect the trim pots. A stamped "Z" or "S" indicates the identity of the trim pot. To gain access a trim pot, remove the screw on the side of the body



10. Recalibration Instructions:

Proper calibration requires a pressure standard three to five times more accurate than the accuracy of the transducer.

1. Apply 0% full-scale load.
2. Adjust the output using the zero adjustment trim pot.
3. Apply 100% full-scale load.
4. Adjust the output using the span adjustment trim pot.
5. Repeat steps 1 through 4 as necessary.

HAZARDOUS AREA CERTIFICATIONS

Intrinsically Safe (applies to 4-20mA) FM:

Intrinsic Safety: Class I, II and III Div.1, Groups A, B, C, D, E, F, G

Class I, Zone 0 AEx ia IIC

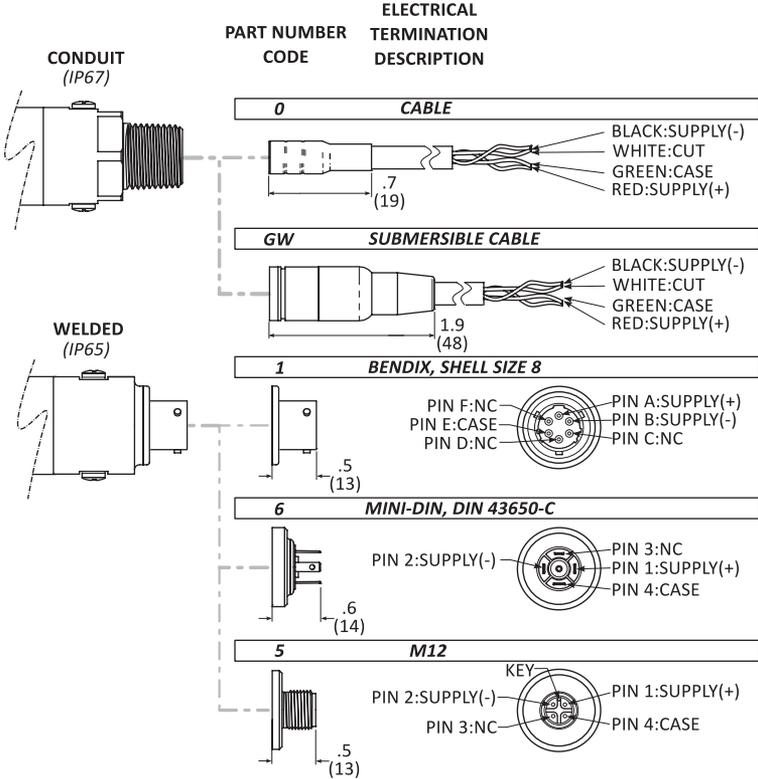
Class I, Zone 0 Ex ia IIC (Canada)

per entity requirements see Omega Engineering drawing # A031432.

Non-Incendive: Class I, Div. 2, Groups A, B, C, D

Div 2 applicable only for models with conduit electrical connections, no barriers needed per Omega Engineering drawing # A031432.

11. Output Wiring Codes



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.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

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,
2. Model and serial number of the product under warranty, and
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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