

LV132
Electro-Optic Conductivity Sensor
Instruction Sheet M1800/1299

DESCRIPTION

The compact, LV132 Conductivity Sensor, with built-in electronics, is ideal for leak detection applications. It combines electro-optic and conductive technologies and can discriminate between hydrocarbons and water. The sensor is compatible with a broad range of conductive and non-conductive liquids. It is also suitable for high, low or intermediate level detection in practically any tank - large or small. Installation is simple and quick through the tank top, bottom or side. With no moving parts, the sensor is ideal for interstitial applications. The pull ring facilitates easy installation in double-wall tanks and pipes, yet can be removed for use in 1/4" NPT holes.

SENSOR OPERATING PRINCIPLE

The sensor has the capability of discriminating between conductive and non-conductive liquids, such as water and gasoline. Conductivity probes are used in conjunction with an optical prism, consisting of a light-emitting diode and phototransistor. The prism detects liquid via a loss of light intensity on the phototransistor (due to refraction). The sensor has two outputs: one for conductive liquid and one for non-conductive liquid. Both outputs are TTL/CMOS compatible.

WARNING

The nature of the sensor is that it is a non-voltage producing device, containing limited energy-storing components. However, since its primary use is in a hazardous location, an appropriate intrinsically safe interface device must be used and installed in strict accordance with the National Electrical Code and applicable OMEGA technical brochure and instruction bulletin. Failure to observe this warning could result in serious injury or damages.

UNPACKING

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

INSTALLATION - Running of Field Wire

- A. The conductors of the intrinsically safe circuit should be sealed in a rigid metal conduit at the point where the wiring enters the hazardous area. The wiring and contacting device should be such that conductive dusts in the area will not close the circuit in place of the contacts.
- B. Hazardous area field wiring will store energy due to distributed capacitance and inductance in proportion to its length. The maximum run of cable has been defined at 750 feet between barrier and sensor.
- C. Shielded cable is not required, but if used in the application, the shield must be returned to ground. The shield must be connected to barrier earth ground.
- D. Intrinsically safe wiring must be installed in accordance with Article 504 of the NEC, ANSI/NFPA-70 or CEC Part 1, as applicable. All intrinsically safe wiring must have 0.01 inch minimum insulation thickness. Non-intrinsically safe wiring cannot be run in conduit or open raceways together with intrinsically safe wiring.

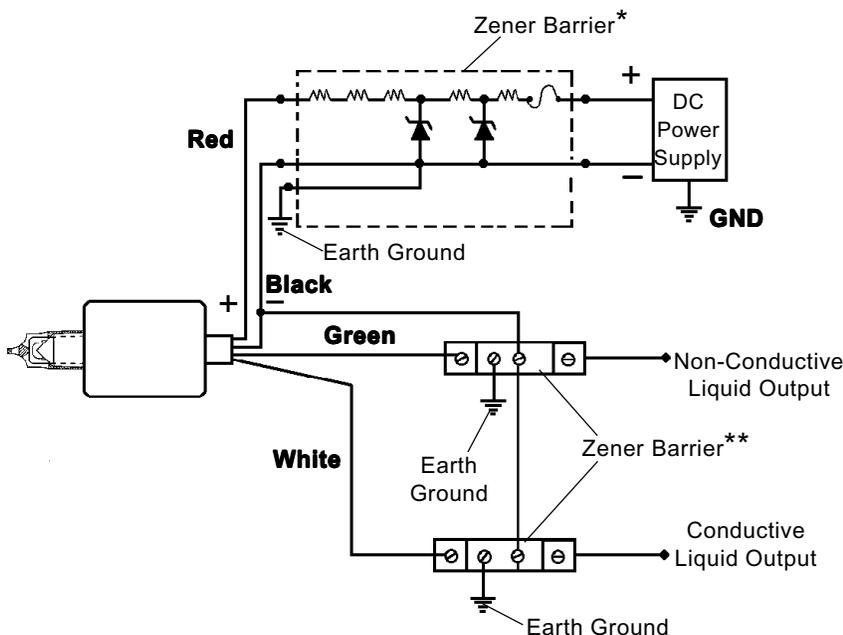
U.L. Entity Parameters

For CSA Intrinsic safety approval, the following barriers must be used: SBG111950 and SBG111954

Terminal	Vmax	I _{max}	C _i	L _i
Red/Black	38V	150mA	.052μ	0
Green/Black	38V	150mA	.052μ	0
White/Black	38V	150mA	.052μ	0

V_{max} ≥ V_{oc} (barrier)
 I_{max} ≥ I_{sc} (barrier)
 C_i + C_{able} ≤ (C_A barrier)
 L_i + L_{able} ≤ (L_A barrier)

Zener Barrier Wiring Diagram



Note
 Source voltage not greater than 250 VAC. Zener barriers must be installed in accordance with barrier manufacturer's instructions.

*Use OMEGA P/N SBG111954 for CSA approval.

**Use OMEGA P/N SBG111950 for CSA approval.

INSTALLATION - Sensor

When installed in accordance with this installation procedure, the sensor is suitable for use in Class I, Division 1, Groups C and D.

1. With protective shield attached, sensor can be pulled through interstitial space of double-wall tank. Sensor can also be placed loose in tank or reservoir.
2. Sensor may be installed in horizontal or vertical positions, only.
3. Do not install sensor close to infrared sources.
4. Prism surface must be at least 2" from any reflective surfaces.
5. Connect 10-28 VDC power to red lead; return to (-) black lead.

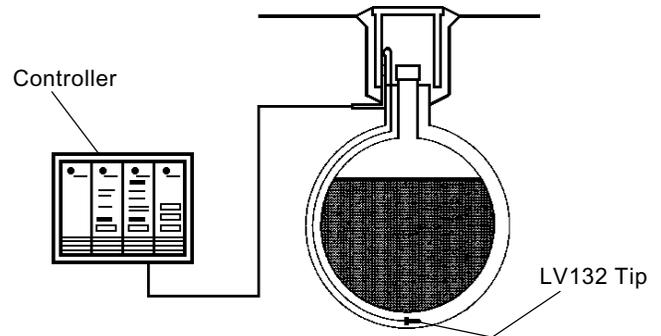
MAINTENANCE

Sensor may require a periodic cleaning of prism surface. **Chlorinated hydrocarbons must not be used for cleaning.** A mild detergent may be used to clean prism surface.

SPECIFICATIONS

- Input Voltage: 10-28 VDC
Current Consumption: Approximately 17mA
Output: TTL/CMOS Compatible
Output may sink 100mA up to 28 VDC
- Not for use in freezing conditions (See Temperature Ranges)
- Materials in contact with fluids are polysulfone, plastic, PVC, stainless steel and polyolefin.
- Repeatability: $\pm 1\text{mm}$

Sensor Pulled Through Interstitial Space of Double-Wall Tank

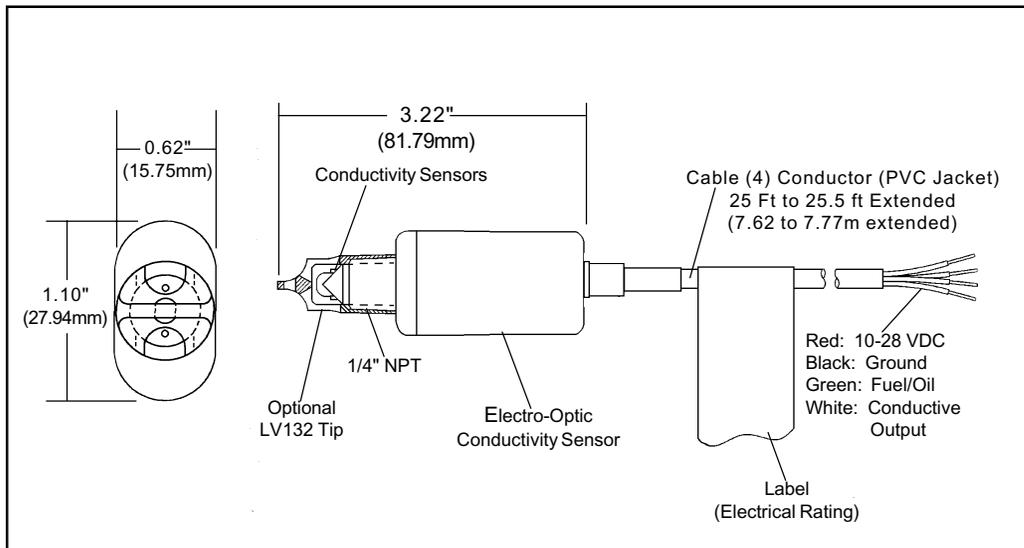


TEMPERATURE RANGES	
(°F)	(°C)
0°F to 176°F	-17.8°C to 80°C

PRESSURE RANGE

0 to 50 PSI, Max.

DIMENSIONS



Servicing USA and Canada: Call OMEGA Toll Free

USA

One Omega Drive, Box 4047
Stamford, CT 06907-0047
Telephone: (203) 359-1660
FAX: (203) 359-7700

Canada

976 Bergar
Laval (Quebec) H7L 5A1
Telephone: (514) 856-6928
FAX: (514) 856-6886

Sales Service: 1-800-826-6342 / 1-800-TC-OMEGASM
Customer Service: 1-800-622-2378 / 1-800-622-BESTSM
Engineering Service: 1-800-872-9436 / 1-800-USA-WHENSM
TELEX: 996404 EASYLINK; 62968934 CABLE OMEGA

Servicing Europe: United Kingdom Sales and Distribution Center

25 Swannington Road, Broughton Astley, Leicestershire
LE9 6TU, England
Telephone: 44 (0455) 285520 FAX: 44 (0455) 283912

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada: 1-800-622-2378, FAX: 203-359-7811; International: 203-359-1660, FAX: 203-359-7807.

BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR 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.

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

1. P.O. 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 you are having with the product.

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

1. P.O. number to cover the COST of the repair/calibration,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems you are having with 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. OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 1994 OMEGA ENGINEERING, INC. All rights reserved. This documentation may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without prior written consent of OMEGA ENGINEERING, INC.

MADE
USA

WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA 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 our customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. Our 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. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being 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 which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

We are glad to offer suggestions on the use of our various products. Nevertheless, OMEGA only warrants that the parts manufactured by it 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 buyer 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.

Every precaution for accuracy has been taken in the preparation of this manual; however, OMEGA ENGINEERING, INC. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITION: Should this equipment be used in or with any nuclear installation or activity, buyer will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.