

1 YEAR
WARRANTY

Ω OMEGA™ **User's Guide**

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LD200/300/400/500 **Series Linear Variable** **Displacement Transducers**



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SECTION 1 - DESCRIPTION

The Omega LD 200 / 300 / 400 / 500 series of linear variable displacement will measure a wide range of displacement. The following models are available:

MODEL NO.	RANGE (mm)	FEATURES
LD200 - 1.25 2.5 5.0 7.5 10	1.25 2.5 5.0 7.5 10	RUGGED - Designed for use on machine tools and vehicles where infinite resolution and high repeatability are very important characteristics.
LD300 - 15 25 50 100 150 250 300	15 25 50 100 150 250 300	LONG STROKE AC - High accuracy and our longest stroke up to $\pm 12"$. Armatures are spring loaded up to 6" length. AC operation provides the highest accuracy and performance.
LD400 - 1.0 2.5 5.0	1.0 2.5 5.0	MINIATURE DC - Supplied with delrin bearings these miniature transducers provide near frictionless motion to detect the smallest displacement
LD500 - 1.0 2.5 5.0	1.0 2.5 5.0	PRECISION GAGING - Designed for industrial automation, these transducers have hardened steel shafts, O-ring seals and titanium push rods to give highly repeatable readings.

SECTION 2 - UNPACKING

Remove the Packing list and verify that all equipment has been received. If there are any questions about the shipment, please call OMEGA Customer Service Department at 1-800-622-2378.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of 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 reshipping is necessary.

SECTION 3 - OPERATION

OMEGA's LD200/300/400/500 displacement transducers are essentially miniature transformers, have one primary winding, two symmetrically wound secondary coils, and an armature core that is free to move along the linear axis in precision bearing guides. A push rod connects the monitored component to the armature core, such that the displacement of that component moves the core off-center.

A voltage is applied across the primary winding and the EMF induced in the magnetic circuit produces corresponding voltages in the secondary windings, which are connected differentially to produce a zero output signal when the armature core is in its central position. When the core is displaced off center in either direction, the efficiency of transformation in the secondary winding on that side is increased and decreases in the other secondary coil. This results in a positive (+ve) voltage output signal when the core moves off center in one direction and a negative (-ve) voltage output in the other direction. The intensity of the output signal is directly proportional to the linear displacement of the core and, hence, of the monitored component.

SECTION 4 TRANSDUCER MOUNTING INFORMATION

CLAMPING (DISPLACEMENT TRANSDUCERS)

The clamp should be non-metallic whenever possible. If a metal clamp is used, care should be taken to ensure that it is linear over the entire body of the transducer.

Mounting at one end of the transducer can give rise to non-linearity of five per cent (5%) or worse.

Where possible, all large metal parts should be at least six inches (6") from the transducers at all times to reduce their effect on the transducer.

PROBE TIPS (GAGING TRANSDUCERS)

Care should be taken not to overtighten the probe tip of the transducer. The tip should be finger tight only and a thread locking compound used on tip to prevent movement. Any overtightening is likely to damage the internal mechanism of the transducer and cause poor repeatability. The tip used should be carefully selected to prevent excessive side pressure. The maximum step height that the tip is to climb should not exceed 0.3R of the tip.

PROBE CLAMPING (GAGING TRANSDUCERS)

When clamping the probe, care should be taken not to exceed 50 Kg point load at any point on the body of the transducer. Exceeding this may cause distortion of the case and result in damage to the internal components

The most common method of clamping the transducer is to use a split collar or sleeve arrangement to spread the load over as large an area as possible.

CABLE OUTLET (ALL TRANSDUCERS)

Maximum Bend Radius for the cable should not be less than six inches (6") for long life. The cable should be reinforced with Spiroband or a protective sleeve where it is likely to sustain damage.

Support for the cable should be provided at the point where it exists for the transducer body whenever possible.

Continuous flexing of any part of the cable should be avoided.

SECTION 5 - LVDT SELECTION FACTORS

Particular attention should be made to the following factors when selecting an LVDT for a specific application:

- Nominal transducer linear stroke (core displacement)
- Non-linearity
- Typical sensitivity
- Primary excitation requirements (voltage and frequency)
- Residual voltage at null core position
- Electrical terminations (wire leads, connector, cable length)
- Environment (temperature, humidity, vibration, etc.)
- Core dimensions and weight

SECTION 6 - WIRING

The transducer cables are color coded. Connections should be made as indicated. Refer to Figure 1.

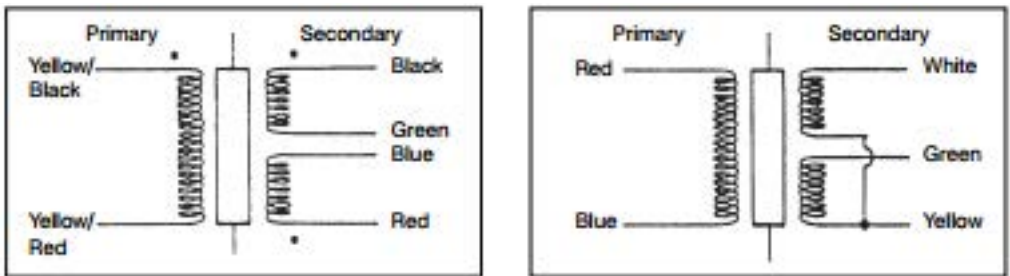


Figure 1. Wiring Diagram

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.

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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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