

LaserLine Manufacturing, Inc.

LR1050DD DIGITAL LASER THEODOLITE

Long Range Alignment Laser



OWNER'S MANUAL

 LASERLINE MFG., INC.

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LR1050DD OWNER'S MANUAL

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PRODUCT DESCRIPTION

The LR I050DD is a digital laser theodolite reading down to 5 or 10 arc seconds accuracy. The LR I050DD was specifically designed for long range alignment when the ability to turn a horizontal angle and/or hold a continuous slope is required.

FEATURES

- High power 5mw ultra long range laser is fixed focus to infinity providing the smallest spot over the longest possible distance.
- 5 or 10 second selectable accuracy on horizontal and vertical axis.
- Easy to read LCD screen.
- Stable and accurate performance.
- Ability to back-site.
- Vertical scale reads in percent of grade or degrees.

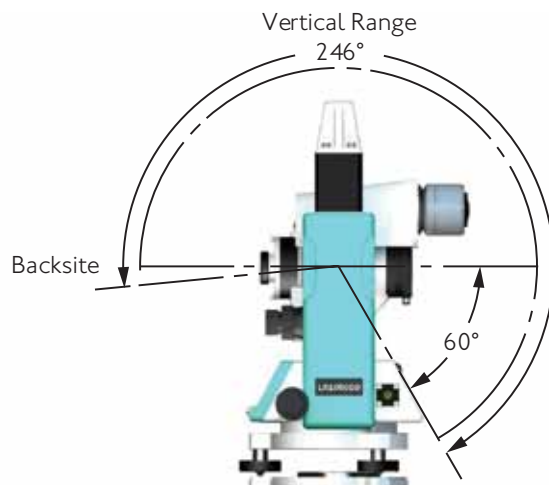
Fan Lens 2000-0035
(optional)



Fan Lens swung away
for straight beam.



Fan Lens Closed for
Fanned laser plane



LASER SAFETY

When operating **Class IIIa** lasers with an output of less than 0.005 watts (5mW):

Operators and crew members shall read this manual and become familiar with all-operating procedures and Safety considerations on the vehicle.

Post at least one Laser warning placard (Item 1) at each laser location.

Turn the laser off when it is not required or if left unattended.

Don't look directly into the laser or at the Laser Spot on a reflective surface. DO NOT point the laser at another person.

Set the laser up well above the heads of employees when possible. Otherwise, set it up well below.

Have "Laser Operator Training and Qualification" card (Wallet size) (Item 2) in the possession of individual responsible for laser operation.

1). WARNING PLACARD



2). OPERATORS CARD

Front

LASER OPERATOR TRAINING AND QUALIFICATION CARD	
By signing below, _____ indicates that he is familiar with the laser safety consideration on the reverse side of this card and is qualified to operate Laserline Manufacturing, Inc. laser with a power output of less than 0.005 watts. (5 mW)	
Operator's Signature _____	Date _____
This card must be kept in the laser operator's possession	
Laserline MFG., INC	1810 SE 1 st St., Suite H Redmond, OR 97756 Ph. 541-548-0882

Back

Laser Safety Considerations	
When operation laser with an output power of less than 0.005 watts (5 mW)	
1.	Post at least one LaserLine laser warning placard at each laser location.
2.	Tun the laser off when it is not required or is left unattended for a substantial period of time.
3.	Do not look directly into the laser or point the laser at another person unless a fan lens is in use and the viewer is at least 500 feet away.
4.	Set the laser up well above the heads of employees when possible: otherwise, set it up well below.

LASER SAFETY (CONTINUED)

The LR I050DD Series Laser is a Class IIIa Laser Product generating less than 5 milliwatts of Laser Light. Class IIIa Lasers are used every day in construction and alignment applications. With every use, eye safety is a consideration.

The Operators of the laser are effectively the "Safety Persons", and should think of themselves as the person responsible for preventing accidents and unwanted exposure.

SAFETY CONSIDERATIONS:

Class IIIa Lasers are bright lights that can or may be aimed. Be aware of people and your surroundings.

Therefore, think of the laser as the sun, something you do not stare back into. Do not look at the laser through optical devices, or look at it reflected off of shiny surfaces such as chrome, glass or mirrors.

CAUTION! The use of optical instruments with this product will increase eye hazard.

Viewing the laser beam or a reflection of the beam with optics, such as binoculars or cameras can be hazardous because they can gather or concentrate the laser right to the eye.

Turn laser off in the event of potential exposures: i.e., stopped at a crosswalk in the vicinity of pedestrian traffic. Watch for the reflection off of bumpers, windows, etc.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

WARNING! Under no circumstances attempt to open or disassemble Laser Housing. Doing so may cause exposure to potentially hazardous levels of Laser Radiation.

LASER SAFETY (CONTINUED)

This laser complies with all applicable portions of Title 21 of the Code of Federal Regulations, Department of Health, Education, and Welfare, Food and Drug administration, Bureau of Radiological Health (Federal Register, Volume 40, No. 148, July 31, 1975).

NOTE: The LR1050DD is a Class IIIA laser in the United States and in most countries. It does comply to IIIB certification where applicable.

CAUTION! DO NOT disassemble the laser head or attempt to perform any internal servicing. This will violate CDRH Regulations and Void the Warranty

DESCRIPTION OF COMPLIANCE

- | | | |
|-----------------------------|-------------------------|-----------------------------|
| 1. Emissions Indicator Lamp | 3. Label: Aperture | 5. Label: Identification SN |
| 2. Label: Warning Logo | 4. Label: Certification | 6. Power Connector 12Vdc |



GENERAL LR I050DD SETUP AND OPERATION

1. Carry the instrument in its case whenever transporting it between jobs.
2. When carrying the instrument while on a tripod, do not carry it over the shoulder, but cradled in an under arm position. The instrument should never be lifted for carrying until a security check is made of all fasteners, especially the tripod head mounting bolt.
3. When setting up the instrument, be sure to spread the tripod legs sufficiently to guard against possible fall.
4. Particular care should be taken not to grasp any part which may put the instrument out of adjustment, such as the telescope, level vial, etc.
5. When leaving the instrument set up outdoors for long periods of time, in applications like dredging, it is highly recommended that the laser be set up in an enclosure or "house" to protect it from the elements.
6. Do not expose the instrument to rain. If the instrument is subjected to moisture, wipe it carefully with a dry cloth before returning it to its case.
7. Upon completion of use, clean the instrument before returning it to its case. Clean the lens carefully with a soft hair brush or lens tissue. When dust cannot be removed by that method, use several drops of alcohol on a lint free cloth or lens tissue and wipe it gently
8. Never store laser in a damp dirty case!
9. Keep laser stored in dry secure place.

SETUP AND OPERATION (REFER TO PAGE 7)

1. **MOUNT** the LR I050DD to a tripod or any flat surface using a 5/8" x 11 bolt through the instrument mount (1). When mounting to other than a tripod, be sure the engagement length of the threads do not exceed 7/16". Center the instrument and level per standard practice.
2. **LASER POWER-UP** by connecting the power cord to the instrument (2), then to a 12VDC source such as directly to a battery or to a model 1140 power converter for 110/220VAC operation. The emission indicator (3) and the laser should both be on.
3. **INSTRUMENT POWER-UP** by activating the instrument power switch (17) on the side LR I050DD.
4. **ACTIVATE SCALE** for horizontal and vertical read-out (15) by tilting the telescope (12).
5. **SELECT VERTICAL SCALE** readout to percentage of grade or degrees by pushing button (19)
6. **ALIGN** to horizontal far point and zero horizontal scale by pressing horizontal preset button (22)
7. **SELECT HORIZONTAL** left or right by depressing button (20) if turning and angle to the left or right from your far point.

The LR I050DD may be used as a theodolite only by using the cross hairs through the scope or be used as a laser reference by using the laser spot to determine the line and/or grade.

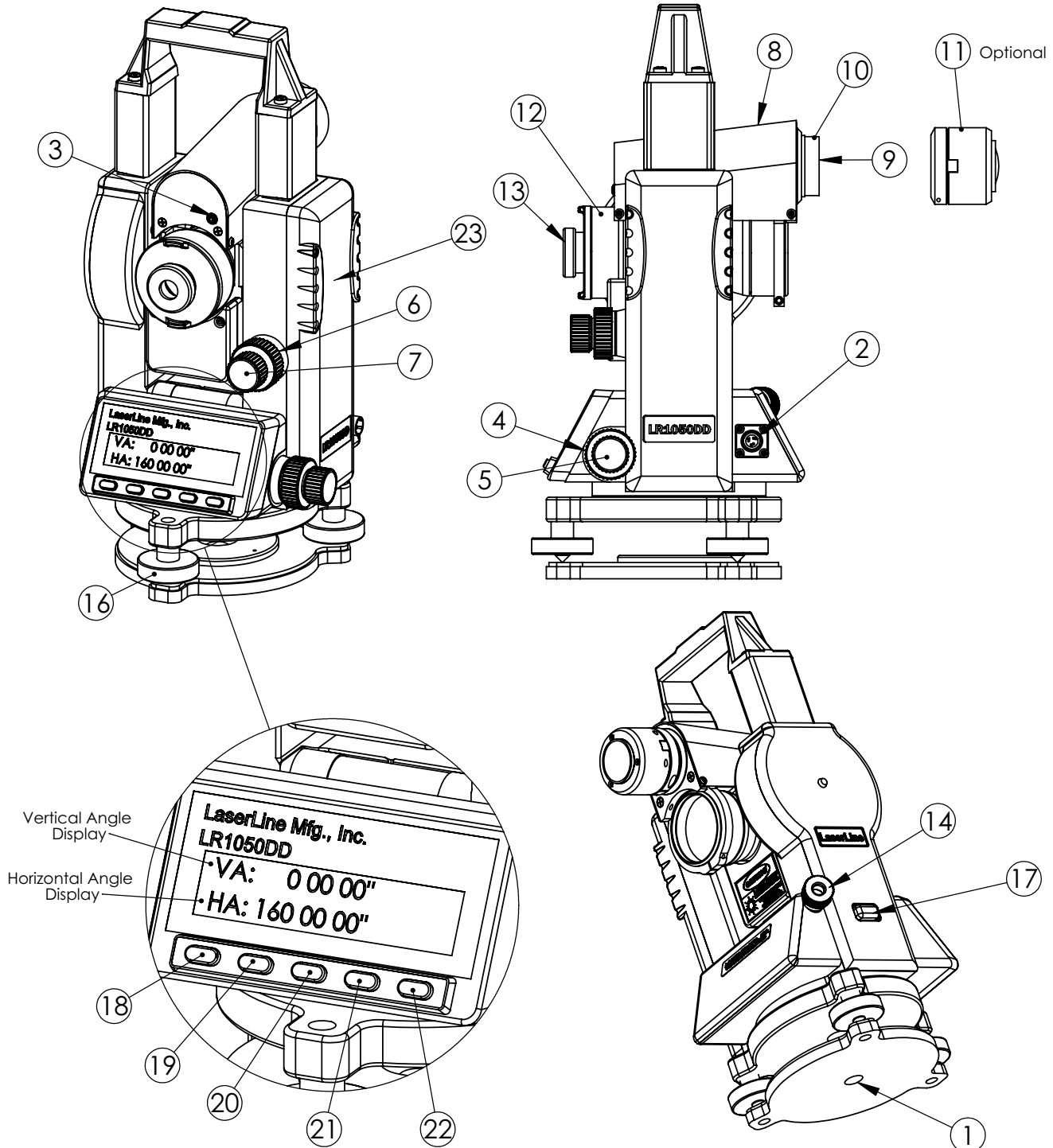


Adjust beam to vertical crosshair with an offset of 2.125" (53.98mm) above the horizontal crosshair.

This unit was calibrated when it was shipped from LaserLine. We cannot guarantee calibration after the instrument after the instrument leaves the factory. Always check calibration prior to using the instrument.

PRODUCT NOMENCLATURE

- | | | | |
|---------------------------------|----------------------------------|-----------------------------------|--|
| 1. Instrument Mount | 7. Vertical tangent | 13. Scope Eye Piece Reticle Focus | 19. % grade/Vertical Angle |
| 2. Laser Power Connector 12 Vdc | 8. Laser Housing | 14. Optical Plummet | 20. Horizontal Angle Left & Right |
| 3. Emission Indicator | 9. Laser Output Lens | 15. Control Panel Display | 21. Horizontal Angle Hold |
| 4. Horizontal Lock (Large Ring) | 10. Fan Lens Mount Ring | 16. Leveling Foot | 22. Reset Horizontal Angle |
| 5. Horizontal Tangent | 11. Fan Lens Assembly (optional) | 17. Instrument Power Switch | 23. Battery Compartment for Instrument |
| 6. Vertical Lock (Large Ring) | 12. Scope Focus Ring | 18. Display Backlight | |



PRODUCT SPECIFICATIONS

LASER SPOT SIZE CHART

DISTANCE

500' (152 m)
1000' (305 m)
1500' (457 m)
2000' (610 m)
2500' (762 m)
5280' (1609 m)

DIAMETER

0.8" (2.0 cm)
1.1" (2.8 cm)
1.4" (3.6 cm)
1.7" (4.3 cm)
2.0" (5.1 cm)
4.0" (10.2 cm)

NOTE: Atmospheric conditions can reduce the working range of the laser by distorting and/or apparently enlarging the laser spot at distance. For "line and grade" applications, in good conditions, 2,000 feet (610 meters) is about the maximum range. For center line control, using a fan lense, out to four miles (6,436 meters) or more is not uncommon.

LR 1050DD SPECIFICATIONS

LASER

POWER

BEAM DIAMETER

POWER

TELESCOPE

OPTICAL PLUMMET

LEVELING BASE

ACCURACY

HEIGHT

LENGTH

WIDTH

OPERATING TEMPERATURE

STORAGE TEMPERATURE

SHIPPING WEIGHT

635NM CLASS IIIA

5MW (NOMINAL)

.07" AT EXIT. SEE CHART FOR DISTANCE

10-14 VDC AT 0.1 AMPS PER HOUR

30X WITH STADIA (45MM DIAMETER)

2.2X

3 SCREW TRIBRACH

5 OR 10 ARC SELECTABLE

12 ⁷/₈" (30.70 CM)

7 ⁵/₁₆" (17.78 CM)

6 ⁷/₁₆" (15.64 CM)

0° / 120° F (-18° / +50° C)

-40° / +150° F (-40° / +65° C)

29 LBS (13.2 KG)



WARRANTY

This product is guaranteed against defects in materials and workmanship with parts and labor, under normal working conditions from one year from the date of purchase, except as noted herein.

LaserLine Mfg., Inc. liability under this warranty is limited to repairing or replacing any product returned to an authorized service center for that purpose. Any evidence of attempts to repair this unit by other than factory authorized personnel automatically voids the warranty.

FACTORY SERVICE CENTER

LaserLine MFG., INC.

1810 S.E. First Street, Suite H,

Redmond, OR 97756

FACTORY SERVICE: New Product Warranty service policy for new products stated above.

SERVICE WARRANTY: 1 year on replacement Parts, 90 days on Labor.

FOR ALL WARRANTY: Call **Order Processing** for RMA # at 541-548-0882. The Unit will be repaired and returned by prepaid freight.

NON-WARRANTY

Send to: LaserLine MFG., INC. at above address.



LaserLine MFG., Inc. Service Center provides trained personnel using authorized replacement parts to ensure the highest quality and fast turnaround. If any part of your LR 1050DD should require servicing, contact LaserLine MFG., Inc. at 541-548-0882.

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