

Tunnel Laser LD.60.IS

Ex ia I/II C T4 IP 55



Operator's Manual

This manual is an important part of your purchase. Please read it thoroughly before using your TUNNEL LASER.

We recommend that you record details of your purchase here so that the information is readily available if you ever need to contact your supplier.

Serial Number _____

Date of Purchase _____

Purchased from _____

Telephone _____

Facsimile _____

Email _____

Published By:

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90 Willandra Drive
Epping 3076
Victoria, Australia

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Warranty

Statement of Limited Warranty

The Tunnel Laser is warranted to be free from defects in performance and workmanship for a period of twelve months from date of purchase. The warranty covers all costs of repair or replacement at the manufactures option.

LIMITS AND EXCLUSION:

The warranty will not apply to any damage resulting from negligence, accident, damage, misuse, repair or storage, or in case of abnormal use.

The warranty is considered void absolutely, if any attempt is made to repair, modify or recalibrate the unit whatsoever. In these circumstances the manufacturer reserves the right to charge for costs incurred in repair or replacement of the unit.

MOBA AUSTRALIA is not liable for:

1. Freight charges incurred in return of defective unit to manufacturer.
2. Loss of income or inconvenience relating to defect in performance of the unit.
3. Leasing charges of alternative equipment during repair of a defective unit.

MOBA AUSTRALIA requires that the customer makes reasonable attempt to inform MOBA AUSTRALIA of problems with the product prior to returning the unit for repairs.

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This drawing forms part of the documentation for
Certification: IECEx SIM 11.0003 Issue: 3
Alterations not authorised by Simtars may invalidate this certification.

1. General Information

1.1 Description

The LD.60.IS Tunnel Lasers LD.60.IS enables accurate construction and alignment of tunnels by use of tunnel boring machines, drill and blast techniques, pipe jack or conventional hand techniques. The laser is certified to IEC 60079-0:2004 and IEC 60079-11:2006 standards as intrinsically safe.

Grouping And Classification:

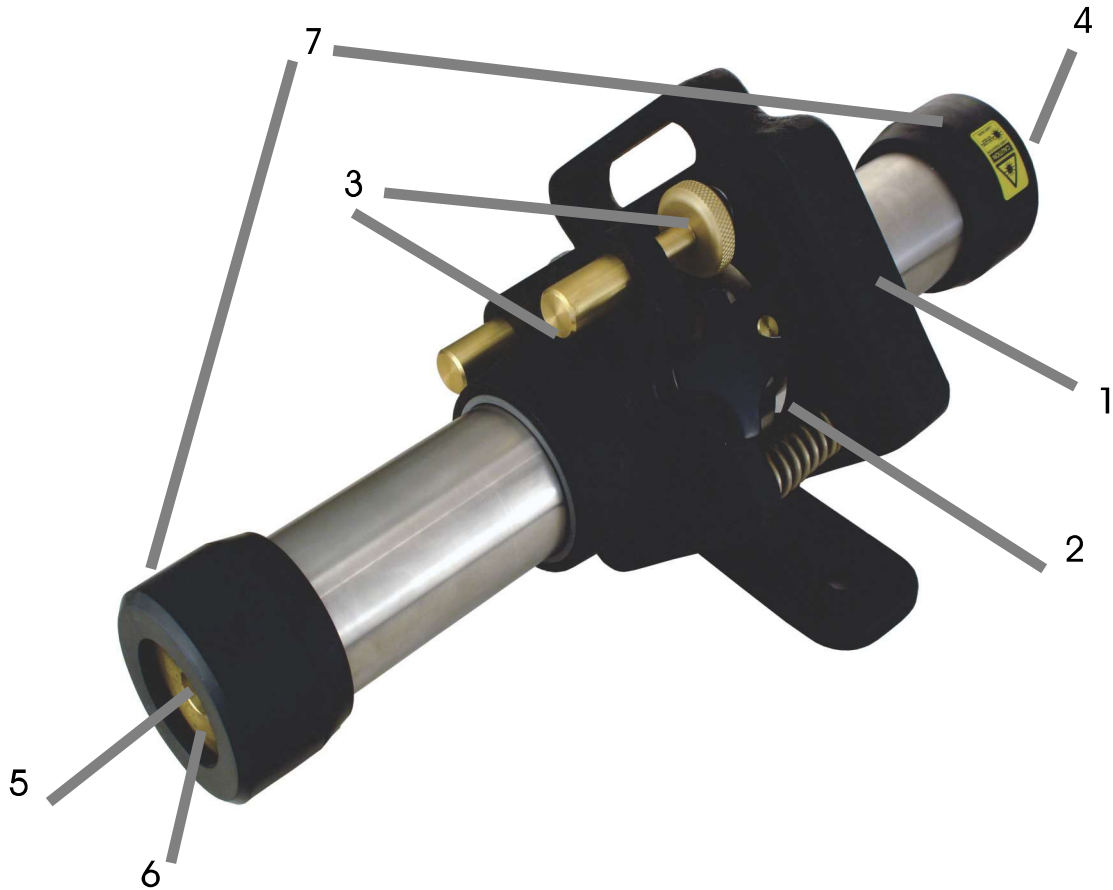
Ex ia I/II C T4 IP55 when used with Panasonic Batteries
LR20(XW)

1.2 Features

The LD.60.IS Tunnel Laser is weather resistant to IP55 level, rugged and constructed from stainless steel and brass. The laser is based on diode technology and powered by 4 'D' cell batteries.

When used with the specifically designed adjustable gimbal (A.60.004.IS), the laser can be easily installed on tunnel walls and adjusted the beam to a target.

1.3 Overview



- 1 Horizontal Mounting Gimbal A.60.004.IS
- 2 Knob to secure the LD.60.IS Lasers
- 3 X & Y laser direction alignment knobs
- 4 On/Off switch
- 5 Exit point for laser beam
- 6 Position for the external line generator
- 7 Rubber caps

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2. Using the Lasers

2.1 Conditions of Use

The LD.60.IS has a beam diameter of 10mm and a maximum beam power of 3mW. Although this falls within the Class 2M regime for laser safety, it does present some hazards. The lasers should always be operated with the safety of the user and co-workers in mind. The laser beam of the LD.60.IS will not cause any permanent eye damage but mounting and positioning of the lasers should be such as to reduce distraction to co-workers.

- 1 Do not view the laser beam along its axis, do not stare into the beam.
- 2 Never view the beam through optical instruments such as dumpy levels, which increase laser density.
- 3 When mounting the laser, be aware of:
 - * Mounting at eye level or where it may present a hazard to a person.
 - * Mounting in a position which may be a hazard to moving machinery.
 - * Positioning of the laser beam in a way that effects person and machinery moving towards the laser.
 - * Ergonomics for person replacing laser when batteries depleted.
- 4 Do not use the laser beam against highly reflective surfaces except for targets.

2.2 Set up and Mounting

- 1 Decide mounting positionb - this is usually a ceiling or a side wall. Height and direction of the laser should be decided in reference to the projection target.
- 2 Secure the mounting gimbal for the LD.60.IS.
- 3 Slide the laser into the mounting gimbal and tighten securing knob.

2.3 Use

- 1 Switch on the laser by pressing the switch on the back of the LD.60.IS.
- 2 Align the projected laser dot to the target using the X & Y laser direction adjustment knobs on the gimbal. The knobs allow adjustment in two axes, X and Y.
- 3 For convenience of setting to the required target, an attachable line generator (A.60.009) can be used.

3. Replacing the Batteries

WARNING: Batteries **MUST ONLY** be replaced in a non hazardous area.

Batteries must be Panasonic Alkaline D cells, model LR20(XW).

- 1 Remove the rear rubber bumper around the switch.
- 2 Use an Allen Key to loosen the M4 grub screw which is located in the battery pack holder by turning counter clockwise two to three times.
- 3 Unscrew the rear switch assembly to access the battery compartment by turning counter clockwise.
- 4 Replace the batteries according to the polarity indicated in the battery compartment. Note that if the batteries are installed incorrectly, the laser has electrical and mechanical polarity protection.
- 5 Replace the rear switch assembly by turning clockwise until the rubber seal compresses firmly against the rear of the laser.
- 6 Using the M4 Allen key, turn the grub screw clockwise until firm.
- 7 Replace the rear rubber bumper around the switch.

4. Maintenance and Repair

The LD.60.IS should be returned to the manufacturer MOBA Mobile Automation Australia for any repair or service. Repair and service of this laser is carried out under strict procedures (including compliance with relevant clauses of IEC 60079-19) which are required to ensure compliance to the requirements for intrinsic safety. In the event of any defect, return the laser to the manufacturer for service and recalibration.

5. Care and Handling

- 1 Always store and transport the LD.60.IS and accessories in the carry case.
- 2 Always keep the LD.60.IS and its accessories dry and clean after use.
Do not store the instrument in its case if the instrument or the case is wet to avoid water condensation inside the instrument.
- 3 Although the components are rated from -20°C to $+50^{\circ}\text{C}$, the recommended operating temperature is 0°C to $+40^{\circ}\text{C}$.
- 4 Keep the aperture lens clean, using a soft cloth and glass cleaner.

6. Technical Specifications

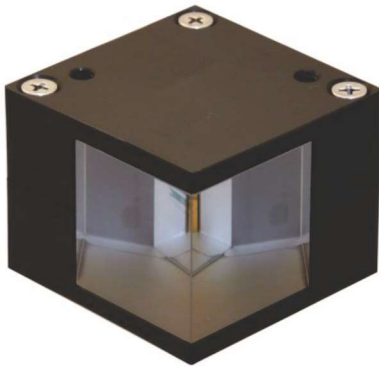
Beam diameter	10 mm (at exit)
Operating range	300 meter to 500 meter
Output power	3 mW
Operating time	300 hrs
Laser source	Laser diode, visible
Laser class	2M
Power supply	4 x 'D' cell batteries - Panasonic LR20(XW)
Length	455 mm
Diameter	60 mm
Weight	3.7 kg with batteries
Operating Temperature	-20°C to 50°C

7. Optional Accessories



Horizontal Gimbal I/S A.60.004.IS

The gimbal must be securely mounted before use. This should be done through the use of either the two mounting holes or through the central 5/8 inch mounting thread. Once the laser is inserted through the gimbal, ensure that it is securely tightened and held in position by tightening the knob.



Penta Prism A.MCE.029

This 90 degree penta prism is an optical device used to bend the laser beam by 90 degrees regardless of the angle of input of the beam.

The penta prism should be mounted on an approved bracket or holder.

7. Optional Accessories Continued



Rubber Caps
A.60.001



External Line Generator
A.60.009

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8. *Labelling of the Laser*

The LD.60.IS is fitted with laser safety and intrinsically safe labeling which must not be obscured to the end-user.

The label indicates the type of approval conferred on this instrument for intrinsic safety, as well as a warning that batteries must not be removed in hazardous environments and other appropriate laser safety information.

This information is engraved on the outer casing of the laser and an example is shown below for reference.

MCE Lasers Tunnel Laser LD.60.IS
Ex ia I/IIC T4 IP55
S/N.....
IECEX SIM 11.0003
WARNING: DO NOT REPLACE BATTERIES WHEN
AN EXPLOSIVE ATMOSPHERE IS PRESENT.
WARNING: USE ONLY BATTERIES SPECIFIED IN
OPERATOR MANUAL.

The laser is also engraved with a serial number, which provides traceability throughout the manufacturing process.