MOBILE AUTOMATION AUSTRALIA PTY LTD

Tunnel Lasers
LD.35.IS, LD.35.ISG
LD.25.IS

Ex ia I/IIC T4 IP 55
Ex ia I/IIC T3 IP 55

Operator's Manual

MOBILE AUTOMATION AUSTRALIA PTY LTD

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 _____

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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.

Contents:

1. General Information

1.1 Description

The MOBA Australia Tunnel Lasers LD.35.IS (red beam),LD.35.ISG (green beam) and LD.25.IS (red beam) enable accurate construction and alignment of tunnels by use of tunnel boring machines, drill and blast techniques, pipe jack or conventional hand techniques. These lasers are certified to IEC 60079-0:2011 and IEC 60079-11:2011 standards as intrinsically safe.

Grouping And Classification:

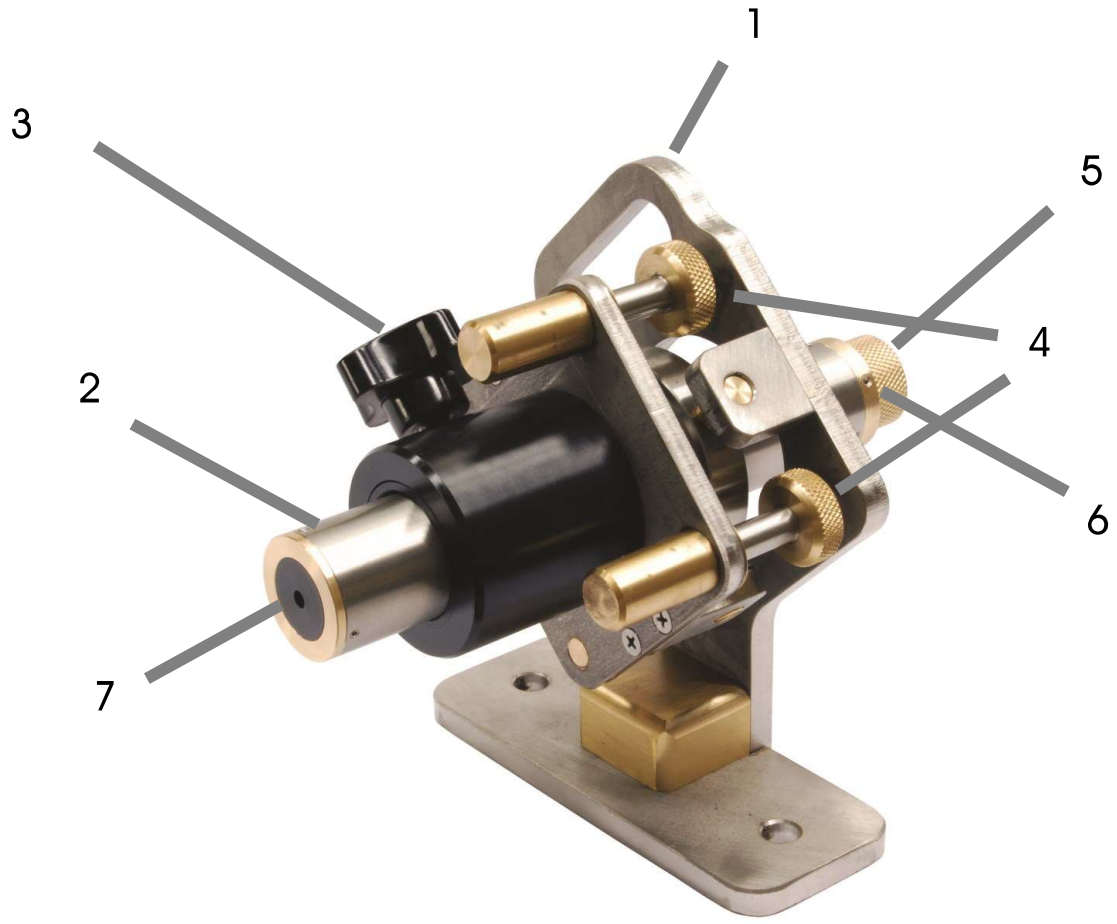
Ex ia I/IIC T4 IP55	when used with Panasonic Batteries LR14(XW) (LD.35.IS and LD.35.ISG only)
Ex ia I/IIC T3 IP55	when used with GP Batteries GP14AU (LD.35.IS and LD.35.ISG only) or GP Batteries GP15AU (LD.25.IS only)

1.2 Features

The LD.35.IS,LD.35.ISG and LD.25.IS are weather resistant to IP55 level, rugged and constructed from stainless steel and brass. The lasers are based on diode technology and powered by 2 C cell alkaline batteries (LD.35.IS and LD.35.ISG) or 2 AA cell alkaline batteries (LD.25.IS).

When used with the MOBA Australia designed adjustable gimbal, the lasers can be easily installed on tunnel walls and adjusted to a target.

1.3 Overview



1 Horizontal Mounting Gimbal A.35.004.IS
2 LD.35.IS or LD.35.ISG or LD.25.IS
3 Knob to secure the LD.35.IS, LD.35.ISG or LD.25.IS Lasers
4 X & Y laser direction alignment
5 Switch Assembly with On/Off switch
6 Locking grub screw for Switch Assembly
7 Exit point for laser beam

2. Using the Lasers

2.1 Conditions of Use

The LD.35.IS, LD.35.ISG and LD.25.IS Lasers have a beam that falls within the Class 2M regime for laser safety. Although a safe class, the user should be aware of some possible hazards as outlined below. The lasers should always be operated with the safety of the user and co-workers in mind. The laser beams 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 to avoid:
  * 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.
4 Do not project the laser beam against highly reflective surfaces except for targets.

If required, additional visual aids such as “topes” can be used to make the beam easier to see.

2.2 Set up and Mounting

1 For mounting of the laser, decide the position. 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.
3 Slide the laser into the mounting gimbal and secure using knob.

2.3 Use

1 The laser can be switched on by pressing the switch on the Switch Assembly.
2 The projected laser dot can be aligned and positioned in two axes using the knobs for X & Y laser direction alignment. This alignment should be done in reference to the target.

3. Replacing the Batteries

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

For LD.35.IS and LD.35.ISG, batteries MUST be Panasonic Alkaline C cells, model LR14(XW), to maintain the product's Ex ia I/IIC T4 IP55 classification. Alternatively, batteries MUST be GP Alkaline C cells, model GP14AU for a lower product classification of Ex ia I/IIC T3 IP55. With this lower T3 classification, the product cannot be used in a T4 or higher area.

For LD.25.IS, batteries MUST be GP Alkaline AA cells, model GP15AU to maintain the product's Ex ia I/IIC T3 IP55 classification.

To replace batteries:

1 Use an Allen Key to loosen the grub screw which locks the rear switch assembly in place (M4 for LD.35.IS and LD.35.ISG; M3 for LD.25.IS).
2 Unscrew the rear switch assembly to access the battery compartment by turning counter clockwise.
3 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.
4 Replace the rear switch assembly by turning clockwise until the rubber seal compresses firmly against the rear of the laser.
5 Using an Allen Key, turn the locking grub screw clockwise until firm to lock the rear switch assembly.

4. Maintenance and Repair

The products should be returned to the manufacturer, MOBA Australia, for any repair or service. Repair and service 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 products and their accessories in their carry case.
2 Always keep the products and their accessories dry and clean after use. Do not store the products in their case if the products or the case are wet to avoid water condensation inside the instruments.
3 Although the components are rated from –20°C to +50°C, the recommended operating temperature is 0°C to +40°C.
4 Keep the aperture lens clean, using a soft cloth and glass cleaner.

6. Technical Specifications

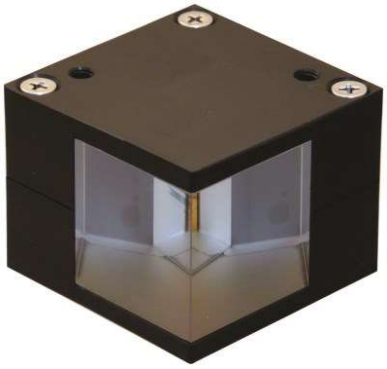
Beam Diameter LD.35.IS, LD.35.ISG, LD.25.IS	5 mm
Operating Range	300 m to 500 m
Peak Output Power LD.35.IS, LD.35.ISG LD.25.IS	2 mW 1 mW
Operating time LD.35.IS LD.35.ISG LD.25.IS	200 hrs 60 hrs 50 hrs
Laser Beam LD.35.IS and LD.25.IS LD.35.ISG	Red (635nm) Green (532nm)
Laser Class	2M
Power Supply LD.35.IS, LD.35.ISG	2 X C cell alkaline batteries: Panasonic, LR14(XW) for T4 rating; GP, GP14AU for T3 rating
Power Supply LD.25.IS	2 X AA cell alkaline batteries: GP GP15AU
Length LD.35.IS, LD.35.ISG LD.25.IS	230 mm 221 mm
Diameter LD.35.IS, LD.35.ISG LD.25.IS	38 mm 25 mm
Weight LD.35.IS, LD.35.ISG LD.25.IS	890g with batteries 510g with batteries
Operating temperature	–20°C to +50°C

7. Optional Accessories

Horizontal Gimbal I/S (Brass)
A.35.004.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.

8. Labelling of the Laser

The LD.35.IS, LD.35.ISG and LD.25.IS are marked 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.35.IS
Ex ia I/IIC T3 IP55 or
Ex ia I/IIC T4 IP55 (subject to battery model)
S/N……
IECEx SIM 13.0004
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.