

ILM150HR0

OEM Laser

Manual

ILM150HR⁰

OEM Industrial Laser Module



WORLD LEADERS IN MEASUREMENT TECHNOLOGY

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LM150HR ò Operator's Manual

This manual has been compiled with care.

However, should you discover any error, we would be grateful if you could contact the Marketing Manager, direct.

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Some names referred to within this document are registered trademarks.

DEAR CUSTOMER

We congratulate you on the purchase of the ILM150HR®.

However, we would ask you to take the time to carefully work through these operating instructions before using the instrument and keep it with the instrument at all times.

If your instrument requires a service, contact us at:

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For best service, please make a note of the serial number, which can be found on the instrument.

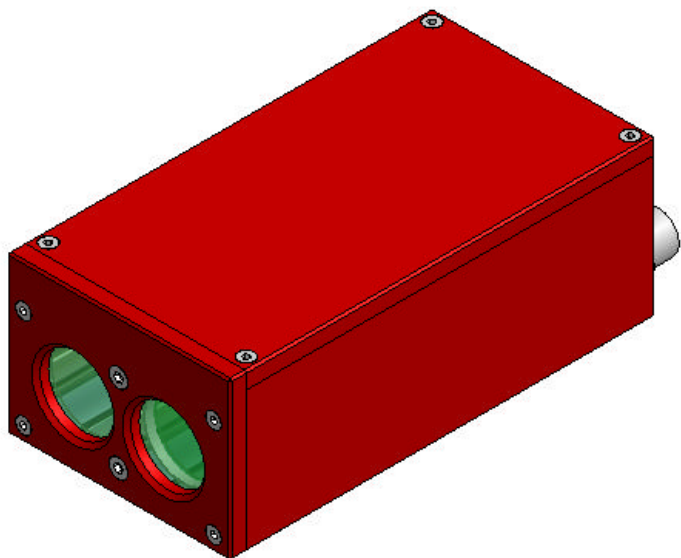
Thank you.

1. Warranty Information

This product is manufactured by Measurement Devices Limited, Silverburn Crescent, Bridge of Don Industrial Estate, Aberdeen, AB23 8EW, Scotland, UK.

- (a) Unless otherwise specified MDL warrants the equipment for a period of twelve months from the date of delivery. This warranty is however given subject to the following conditions:-
 - (i) MDL shall be under no liability in respect of any defects in the equipment arising from any drawing, design or specification supplied or modification requested by the customer.
 - (ii) MDL shall be under no liability in respect of defects arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow MDL's instructions (*whether oral or in writing*), misuse or alteration or repair of the equipment without MDL's approval.
- (b) Claims in respect of defective equipment must be intimated by notice in writing to MDL and the customer pending written instructions from MDL must retain the equipment.
- (c) Following authorised return of the equipment, which must be made by the customer on freight prepaid basis, MDL will examine the equipment and if the claim is justified, at MDL's option, will repair the defective equipment or will make replacement without charge and MDL will have no further liability to the customer.

2. ILM150HR



The ILM150HR Laser Rangefinder is designed as an OEM module for scanning applications for use with passive targets. The use of reflective target, such as survey prism, cube-corner or retroreflective foil, should be avoided.

The ILM150HR works in a mode where it detects the first target. It operates in a single shot mode (1 laser pulse per range measurement) and has a repetition rate of 400Hz.

It is important that the instrument temperature should lie between -10°C and +60°C when the instrument is switched on.

The ILM150HR is water resistant to IP67.

Never apply force or shock to the lenses or to the housing of the instrument. As with other optical instruments, the ILM150HR should be protected from being shaken, knocked or dropped

The lenses when necessary should be gently cleaned using a suitable lens cleaning fluid (*e.g. pure ethylene alcohol*).

The ILM150HR makes use of sensitive optical, electronic and mechanical components. The ILM150HR requires appropriate handling.

Operators should remember that direct sunlight or a similarly intensely radiating source of light looking directly into the instrument lenses must be avoided.

3 Operation / Data Format

When power is applied to the laser it will go through a start up routine and then start to take range measurements at a rate of 400 Hz. A range measurement consists of a single laser pulse, the received signal from this pulse is processed and the corresponding range data is sent out in serial RS232 format. The data output rate is 400Hz

The range data is sent in two (8 bit) bytes as a 12 bit binary word. The first byte contains the 6 MSB's and the second byte contains the 6 LSB's of the word. The most significant bits are set to '10' for the most significant byte and to '00' for the least significant byte.

Example:

MSB	LSB	RANGE
10101001	00010111	2647dm
10101011	00111110	2814dm
10000011	00000001	193dm
10001101	00101100	876dm

If no range is detected the data output is:

MSB	LSB	RANGE
10111111	00111111	4095dm

The data output rate is 400Hz

The range reference point is the rear most mounting hole, which is 40mm back from the lens face (see mounting diagram).

4. LM150HR 6kHz Connection

The ILM150HR is supplied with a 2 meter connecting cable which provides a RED and a BLACK conductor for power connection and a 9 way female 'D' type connector for data.

The power supply should be connected to the red and black wires, RED is positive BLACK is zero volts.

(the voltage must be in the range of 9 to 24 volts D.C.)

Note, although the power consumption of the laser is less than 5 watts the power source should be able to tolerate current pulses of 2 amp.

The data output provided is RS232 at 38400 baud 8 bits no parity 1 stop bit.

Pin connector details for the laser feed are as follows

Pin 1 0 volts
Pin 2 12 volts
Pin 3 Data Out

There are only two connections used in the 9 way 'D'

Pin 2 is data out of the laser
Pin 5 is zero volts

5. Technical Specification ILM150HR

	ILM150HR
	<i>(High Repetition Rate Distance Meter)</i>
Laser	
Type	InGaAs Laser Diode
Wavelength	905nm
Beam Divergence	2.5 x 0.2 mrad (typically)
Passive Range	0.5m to 150m
Accuracy	+/- 10 cm (typically)
Measuring Rep Rate	400Hz
Eye Safety	Class 1
Communication	
Data Output	Serial RS232 at 38400 baud
Connection	
	Via 5 way W.W.Fischer Connector (DBEE 102 A054 – 130)
	Cable Connector (SE 102 A054 – 130 / 4.15)
Power	9 to12 volts DC <5 watts
Environmental	
Operating Temp	-10°C to +60°C
Storage Temp	-30°C to +90°C
Protection Class	IP67
Physical	
Construction	Black anodised aluminium
Dimensions (LxWxH)	103mm x54mm x 38mm
Weight	260g

Information contained herein is believed to be accurate. However, no responsibility is assumed by MDL for its use. Technical information is subject to change without notice.

6. Safety

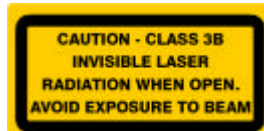


The ILM150HR is classified as a Class 1 eye safe laser product in compliance with the European eye safety regulation CENELEC EN60825-1 (2001).

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

Never open the instrument's housing!

WARNING – Opening the protective housing may result in exposure to Class 3B radiation.



(This caution label is positioned inside the outer housing on the cover of the laser emitter mount. It is therefore only visible by qualified maintenance engineer prior and after access to the laser emitter)

Do not operate evidently damaged instruments! If the instrument is handled incompetently, the manufacturers absolve themselves from honouring any guarantee or insurance whatsoever.

Do not unnecessarily look into the transmitter lens of the ILM150HR!

This product is intended for use in a locale where the emitted radiation is unlikely to be viewed with optical instruments.

Nevertheless, **we recommend that the instrument is not directly pointed at people's eyes, (especially if they are using binoculars).**

Aligning the ILM150HR with the lenses of CCD-cameras or infrared night vision devices can result in damage to them and is therefore not permitted.

7. Electromagnetic compatibility and emissions

ILM150HR meets or exceeds the requirements of the following European Standards:

EN 50081-1 (1992) EN 50082-1 (1997) European Community Requirements:
Electromagnetic Compatibility

Generic Emission Standard
Part 1: Residential, Commercial and Light Industry

Generic Immunity Standard
Part 1: Residential, Commercial and Light Industry

The tests are carried out in compliance with:

EN 55022 (1998)

Limits and methods of measurement of radio interference characteristic of information technology equipment.

Radiated Emissions.

Conducted Emissions.

EN 55014-1 (1993) A1(1997) A2(1999)

Limits and methods of measurement of radio disturbance characteristics of electrical motor-operated and thermal appliances for household and similar purposes, electrical tools and similar apparatus.

Discontinuous Emissions.

EN 61000-4-2 (1995) A1(1998) A2(2000)

Testing and measurement techniques.

Electrostatic discharge immunity test.

EN 61000-4-3 (1996) A1(1998) A2(2000)

Electromagnetic compatibility – Basic immunity standard.

Radiated radio frequency electromagnetic field immunity test.

DD ENV 50204 (1996)

Radiated electromagnetic field from digital radio telephones.

Immunity test.

EN 61000-4-4 (1995) A1(2000)

Testing and measurement techniques.

Electrical fast transient/burst immunity test.

EN 61000-4-5 (1995) A1(2000)

Testing and measurement techniques.

Surge immunity test.

EN 61000-4-6 (1996) A1(2000)

Testing and measurement techniques.

Immunity to conducted disturbances induced by radio frequency fields.

EN 61000-4-8 (1994) A1(2000)

Testing and measurement techniques.

Section 8. Power frequency magnetic field immunity test.

EN 61000-4-11(1994) A1(2000)

Testing and measurement techniques.

Voltage dips, short interruptions and voltage variations immunity tests.

ILM150HR is therefore CE approved.

8. Mounting Details

