

**LASERMET
ULTRA LED SIGN
INSTRUCTION MANUAL**



**SINGLE AND DUAL ASPECT ILLUMINATED SIGN
LEDS-ULT-470 and LEDS-ULT-790**

LASERMET LED Ultra Sign Instruction Manual

Contents

1	Declaration of Conformity	3
2	Safety Warnings.....	4
3	Concept.....	5
4	Installation	6
5	Wiring	9
5.1	‘Sign Good’ Indicators	11
6	Specifications.....	12
7	Warranty.....	12
8	Contact Details.....	13

1 Declaration of Conformity



LASERMET LIMITED

LEDS-ULT-470

00625-00-000 Standard
00864-00-000 High Reliability

00865-00-000 Dimmable
00866-03-000 High Reliability Dimmable

DECLARATION OF CONFORMITY

This is to certify that the LED Ultra Signs designated by Lasernet Part Number LEDS-ULT-470 has been tested in accordance with the following directives and standards and found to comply.

Lasermet certifies that this product complies with the basic requirements for health and safety as provided by the following directives and standards:

Directives: Low Voltage Directive 2014/35/EU
 EMC Directive 2014/30/EU
 CE Directive 93/68/EEC

Standards: EN 60598-1:2008
 EN 62471:2008
 EN 55015:2006
 EN 61547:1995 inc. A1:2000
 EN 61547:2009

Supplier:

Lasermet Limited
 Lasermet House
 137 Hankinson Road
 Bournemouth
 BH9 1HR
 Dorset
 United Kingdom

Country of Origin: England

Signed:

Paul Tozer
 Managing Director



Date: 9 December 2019



2 Safety Warnings

This device is intended to be used as part of a safety system which may be used to protect personnel and equipment from possible injury, damage, or loss.

As such it must be installed and wired according to these instructions and tested by suitably qualified persons. No attempt may be made to tamper with the parts, open them, or use them outside of the parameters contained herein.

The units are only designed to be fixed to surfaces using their inbuilt fixing holes. They must not come into contact with each other or any other moving part when in use. The parts should never be subject to impact or mechanical strain.

Safety switches should never be defeated or bypassed. It is imperative that all steps are taken to ensure that any spare actuators are made unavailable, such that they cannot be used to defeat the switch or reduce the protection offered by the system in any way.

3 Concept

Lasernet Ultra LED Signs are intended to be wall mounted for which purpose several mounting options exist. The sign is for indoor use only and should not be used in damp areas or places of high humidity.

The sign is designed to give a long service life and has no user-replaceable parts inside.

The sign must be powered by a smoothed and regulated 24VDC supply capable of providing at least 0.7A. In order to minimise the effects of voltage loss in the wires the power supply should not be too far from the sign and adequate wire thickness must be used in order that the voltage at the sign is within the specified limits at the input to the sign when it is illuminated.

The 24V operating voltage provides enhanced safety within the sign and supply wiring compared to a mains supply.

The sign has a dimming option which can be configured to reduce the brightness and power consumption of the sign. This may be achieved either automatically according to the light falling on an internal sensor, or by applying a separate brightness control voltage to the sign.

The message is almost invisible when the sign is switched off.

The sign may be used on its own or in conjunction with Lasernet's interlock systems.

When the sign is used on its own, Lasernet offer a power supply and switch kit which enables easy installation and operation.

Lasernet provides a full range of laser interlock equipment including control systems, interlock switches, illuminated warning signs, laser shutters, door locks, external power supplies etc. which can be connected to provide a complete laser interlock system. Full support, design and installation is available from Lasernet, please contact us for any queries. Contact details are given at the end of this manual.

4 Installation

The LED Sign is designed to be permanently attached to a wall or other fixed vertical surface. The sign should be mounted in a convenient position for use and wiring, preferably sufficiently high up the wall to render it relatively inaccessible without access equipment.

During installation, wired connections will need to be made to the sign and allowance should be made for the installation of electrical conduit or trunking if required to make entry to the unit.

The sign may be directly screwed to the wall and four $\varnothing 5$ mm mounting holes are provided in the back of the sign for the purpose. To access the fixing holes and electrical connections unscrew and remove the plastic end caps and slide the front panel and graphics film sideways as required.

When sliding the front panel back into place, slide the flexible graphics film into position first keeping it clear of the light sensor and indicator LED on the driver board. It is then easier to slide the front panel across the top. It is most important that the components on the driver board are not dislodged or bent as otherwise they will not align with the apertures in the graphics film. This will impair the operation of the sign.

The preferred cable entry to the sign is via the $\varnothing 20$ mm hole provided in the rear top centre of the sign. When directly wall-mounted, the use of buried cables provides the most aesthetically pleasing appearance. Alternatively, 20mm surface-run plastic conduit may be brought to either end of the sign, and a knockout is provided in the centre of each end cap for this purpose.

If there are two or more adjacent signs stacked vertically, Lasernet supply a joining strip which fills the gaps between the signs and gives a more professional appearance. When mounting two or more signs vertically, allow a 4mm gap between the signs for insertion of the joining strip.

Refer to Figure 1 for details of the fixing holes and cable entry. It is recommended that at least 150mm clearance is allowed at each side of the sign to permit removal of the end caps for installation and wiring purposes.

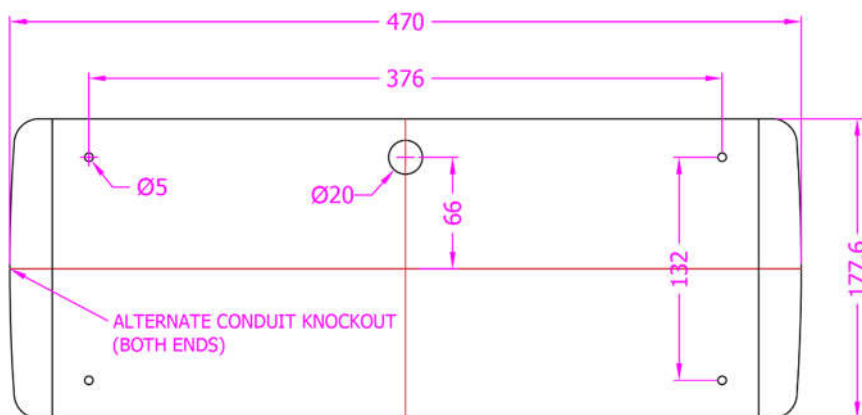


Figure 1. Sign Outline Dimensions, Fixings and Cable Entry

Lasermet also supply a range of shallow surface trays which can accommodate multiple signs arranged vertically. Each tray has a $\text{Ø}20\text{mm}$ cable/conduit entry which must be located at the top. Additional holes may be cut if required. The trays allow convenient hook-on mounting and electrical connection to the signs.

To attach the signs to the wall tray, start with the bottommost sign, hang it on the hooks provided on the wall tray and secure using two M4 X 12 screws in the bottom two fixing holes in the sign. Make the wiring connections next, then lay a joining strip along the top of the first sign before proceeding to fit the next one.

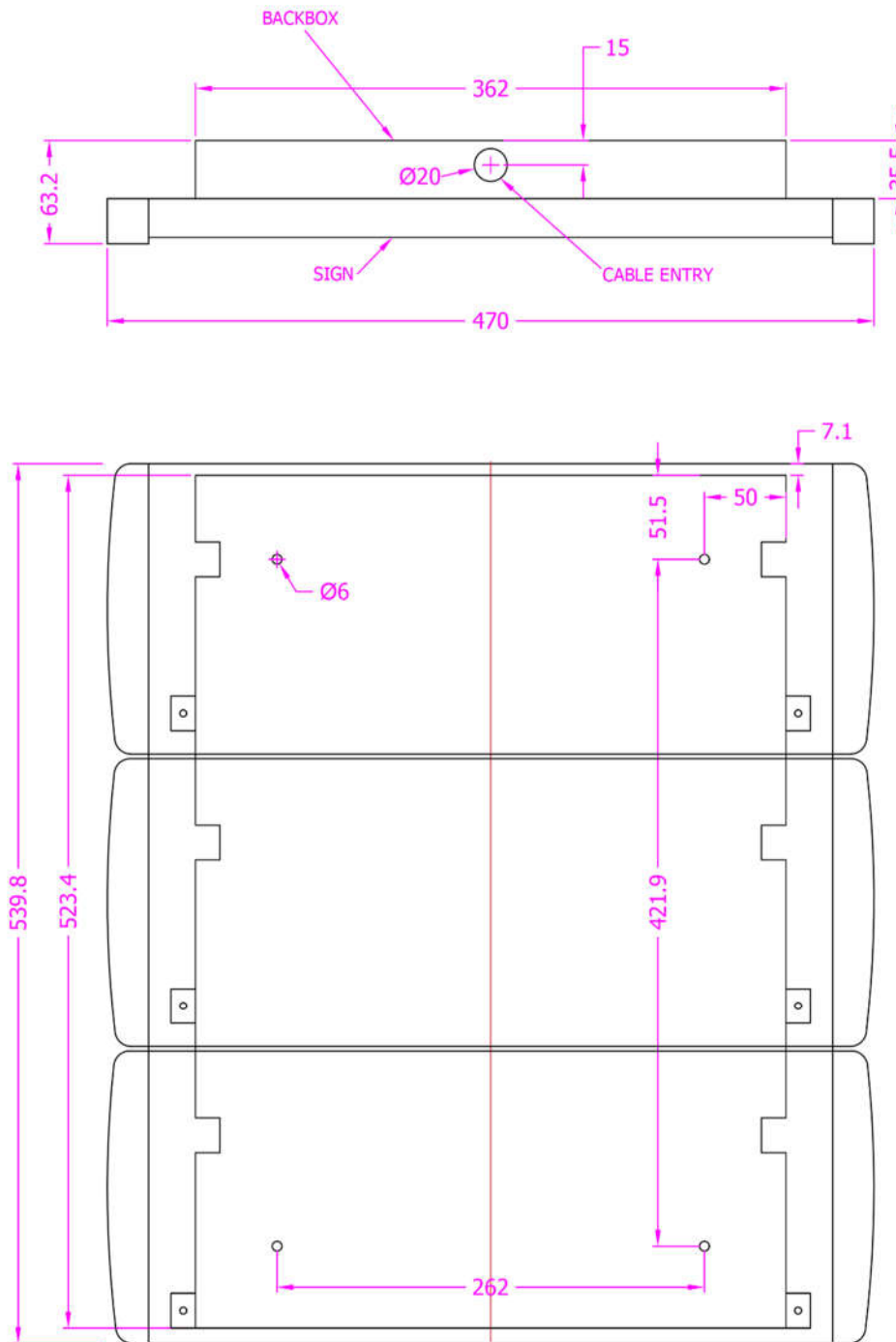


Figure 2. Mounting Arrangement using 3-way Wall Tray

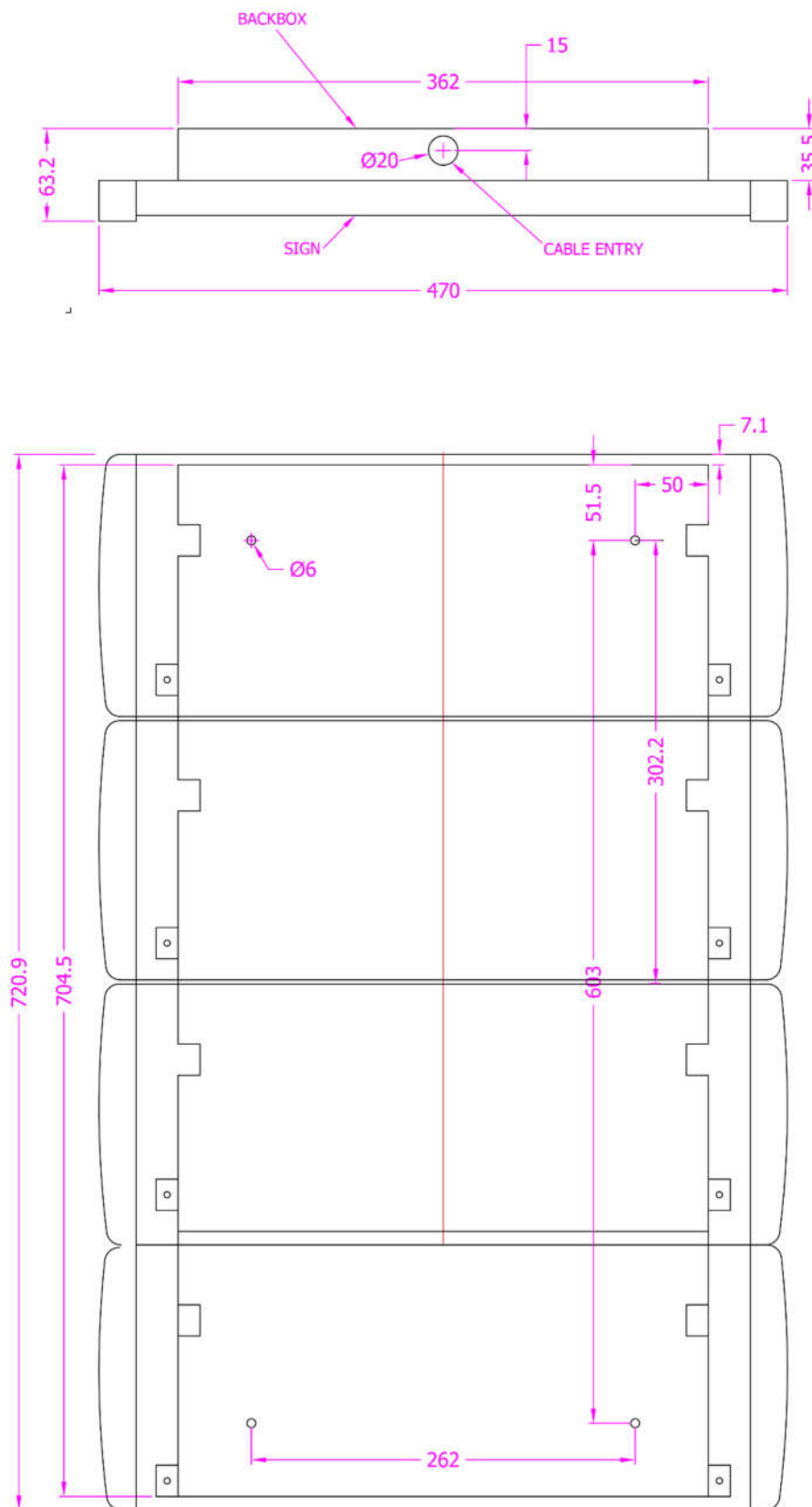


Figure 3. Mounting Arrangement using 4-way Wall Tray

5 Wiring

The sign is powered by smooth regulated 24VDC. Normal one-way signs have one LED Driver circuit board. Two-way signs and one-way signs with enhanced reliability have two LED Driver circuit boards, each one operating half of the LEDs in the sign.

With the one-way enhanced reliability type it is possible to operate each driver from a separate supply/circuit. In the event of loss of a supply, the sign can still illuminate at a lower brightness on the other supply. For single-supply operation, it is necessary to wire the driver board supply terminals in parallel. See Figure 6.

With two-way signs, either one driver or the other is powered to select the illumination colour and message. Figure 8 shows a simple scheme to do this with a switch. Suitable controls are available from Lasernet.

A three-way terminal block is provided on the driver board. Two terminals are used for the supply connections. The third terminal may be used if desired for a remote dimming control voltage. The connections are shown in Figure 4. Note that one-way signs have just one driver board.

It is preferable for the negative (0V) of the power supply to be connected to earth at the source. To eliminate the potential for static electrical damage to the sign circuitry, the 0V terminal of each driver board is connected to the casing of the sign through a 100Ω resistor. The sign contains no hazardous voltages and it is not normally necessary to provide a dedicated earth connection for the sign casing.

Where there are two driver boards and separate power sources are used for each driver board, the negative wires of the two power sources should be connected together as shown in Figure 5.

A selector link is provided on the driver circuit board to choose the dimming method. If no dimming function is required set the link to the 'EXT/NONE' position and make no connection to the DIM terminal.

If using the internal sensor, set the link to 'SENSOR'.

If using external control, set the link to 'EXT/NONE' and connect the external control voltage to the DIM terminal.

The optional dimming control voltage is connected as shown in figure 7. The voltage should be in the range 0 – 24V where increasing the voltage will increase the brightness. When using an external dimming control voltage, the 0V of the control voltage must be connected to the 0V of the power supply.

An external dimming control potentiometer may be used.



Figure 4. Terminal Identification

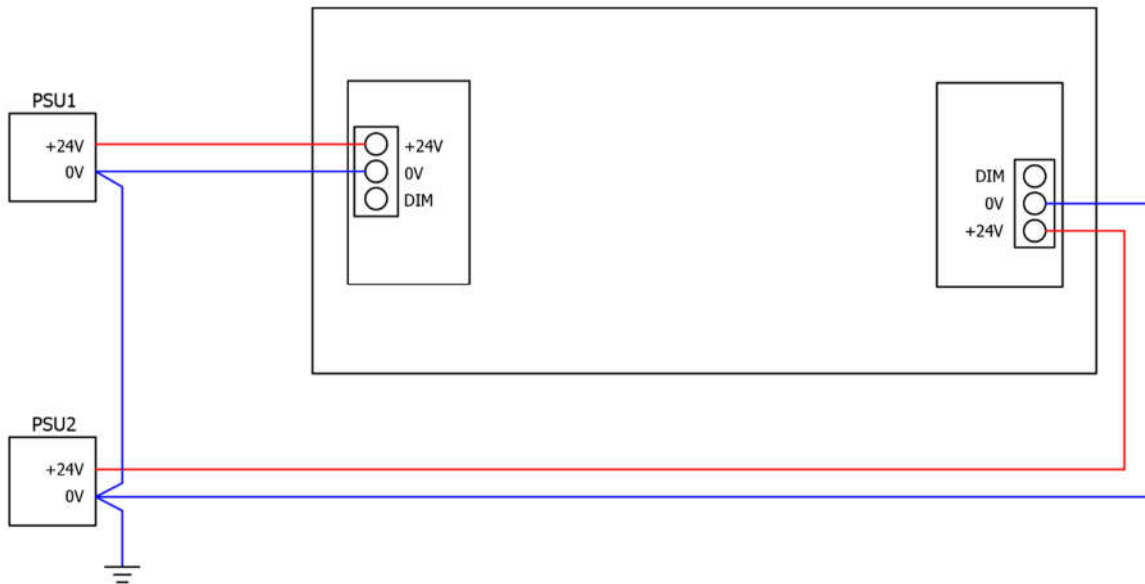


Figure 5. Connections for dual drivers using two power supplies

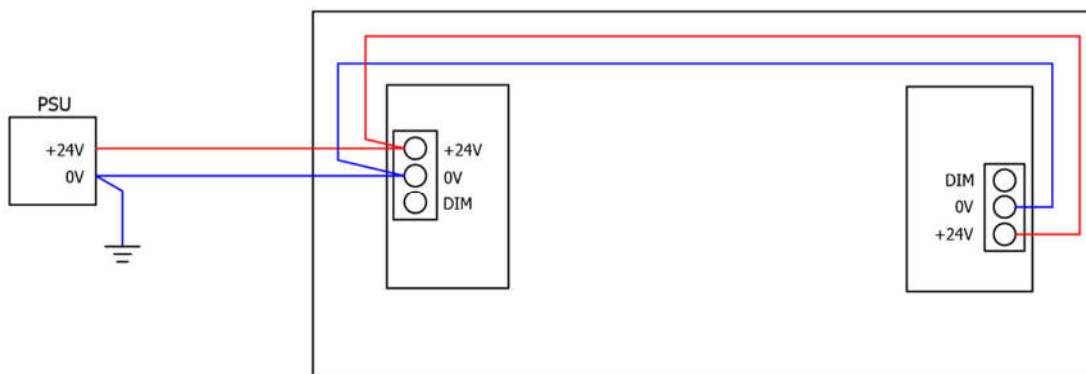
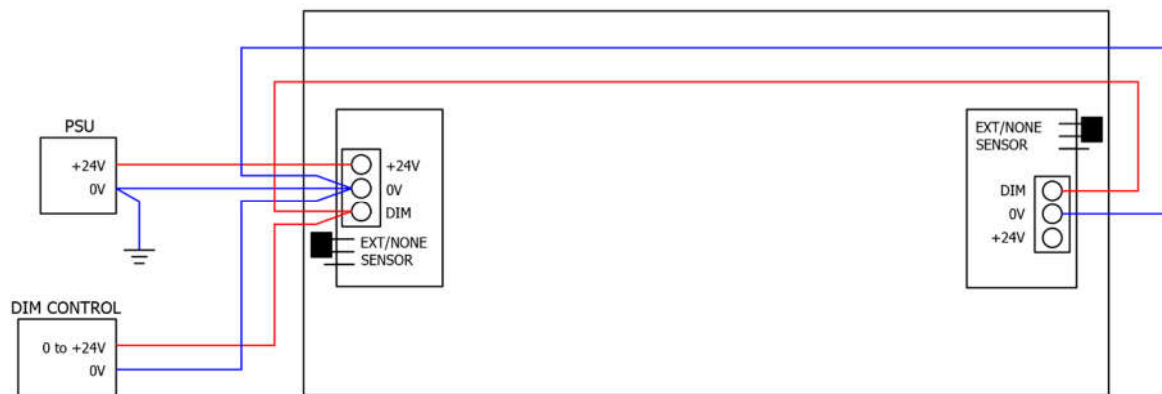


Figure 6. Connections for one-way dual drivers using one power supply



**Figure 7. Connections when using external dimming control
(Omit second driver connections if not fitted)**

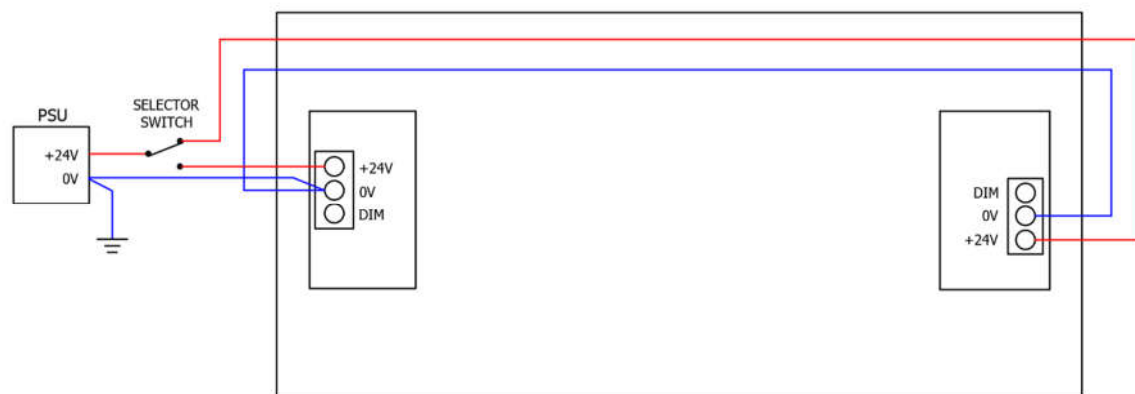


Figure 8. Two-way Sign Control

5.1 'Sign Good' Indicators

Each driver board has an indicator which shows as a white spot at each end of the sign. One-way signs having one driver board will show a spot at one end only. For two-way signs with two driver boards, the presence of an indication at both ends confirms that both drivers are operating.

6 Specifications

Operating Voltage	18-26VDC smoothed regulated The sign will draw more current if operated at a reduced voltage.
Power Consumption (per driver)	15.6W (0.65A) at 24VDC, full brightness
Auto Dimming	Full brightness typically achieved at 1200 lux ambient
Ingress Protection	IP30, indoor use only
Operating Conditions	0° to 55°C, 0% - 95% relative humidity non-condensing.
Size	470mm wide X 178mm high X 27.8mm deep 790mm wide X 178mm high X 27.8mm deep
Weight	1.6kg (LEDS-ULT-470) 3kg (LEDS-ULT-790)

Dimensions are approximate. Values given as 'typical' are average values measured across a number of samples and are not guaranteed. Lasernet reserve the right to alter any specification without prior notice.

7 Warranty

Lasermet provide a 12-month warranty for defects in materials and manufacture, from the date of installation or delivery. Installations completed by Lasermet are covered against defects in workmanship for 12 months.

Damage or defects caused by other factors are not covered. For example, industrial contamination, incorrect cleaning, storm damage. Consequential loss is not covered under warranty. Compensation for indirect or direct loss or damage is expressly excluded. Rectification of the defects or a replacement does not initiate a new warranty period.

For all deliveries, payments and other legal transactions, English law takes precedence for any litigation.

8 Contact Details

Lasermet provide a full range of laser interlock equipment including interlock switches, illuminated warning signs, laser shutters, entry keypads with built-in fail-safe override timer, door locks, external power supplies etc. which can be interconnected to provide a complete system. We also supply equipment and consultancy covering all aspects of laser safety. Full support, design, and installation is available from Lasermet, please contact us for any queries.

For sales and technical support:

Lasermet Ltd.

Lasermet House,
137 Hankinson Road,
Bournemouth
BH9 1HR
United Kingdom.

Tel: +44 (0) 1202 770740

Fax: +44 (0) 1202 770730

Email: sales@lasermet.com

Website: www.lasermet.com

Lasermet Inc.

10N Martingale Road, Suite 400,
Schaumburg, Illinois 60173
United States.

Tel: 847 466 1475

Email: usa@lasermet.com

Website: www.lasermet.com