



MEDIUM INTENSITY LED

OBSTACLE LIGHT

L550

Installation and operation manual



Before installing or operating your L550 light, please read this manual carefully and retain it for future reference

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VOCABULARY

Base	=	the foot of the light fixture used for mounting and in which the internal is fitted and the lens/dome is placed on
CAA	=	Civil Aviation Administration
CIP300	=	Communication & Interface Processor for low (via MLM26), L450 L550 medium LED, L500 high intensity LED and L1000 high intensity xenon lights
Commissioning	=	check-up after installation, if correct, powering up to check for correct operation
Cover	=	front panel of an enclosure (without hinges) or the top plate of the light
Dome	=	transparent drum shaped cover for the LED based lights
Door	=	front panel of an enclosure with hinges
EMC	=	Electro Magnetic Compatibility
Enclosure	=	Box, cabinet
FAA	=	Federal Aviation Administration
Gasket	=	Rubber seal
(-G)	=	GPS synchroniser
ICAO	=	International Civil Aviation Organization
IOM	=	Installation & Operation Manual
Junction box	=	Box/enclosure to connect lights and other devices together
LED	=	Light Emitting Diode
Light, light fixture	=	complete light (= base + LPS + LED segments + lens/dome)
Marker light	=	Low intensity light, sometimes also called 'side / tower light'
MLC	=	Marker Light Controller (for connecting low intensity lights to a CIP controller)
LPS-board	=	Light Power Supply board
PCB	=	Printed Circuit Board
RMA number	=	Return Material Authorization number
SLC	=	Strobeline cable
Station	=	Medium or high intensity light ID.
Strobeline™ cable	=	TWR Lighting, Inc. connection cable with mains power and data wires, trademark of BV

WARNING!

The WARNING! sign denotes a hazard. It calls attention to a procedure or practices which if not correctly performed or adhered to could result in injury or loss of life. Do not proceed beyond a WARNING! sign until the indicated conditions are fully understood.

CAUTION!

A CAUTION! sign denotes a hazard. It calls attention to a procedure or practices, which if not correctly performed or adhered to, could result in damage or destruction of part or of all the equipment. Do not proceed beyond a CAUTION! sign until the indicated conditions are fully understood and met.

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NOTICE

This instruction manual provides information about installation, operation, and maintenance of TWR Lighting, Inc. Omni-directional Aviation Obstacle Lights and their variations.

The manual has been written for installation, user and first line maintenance personnel.

For information about required adjustments or repair not instructed in this manual, please contact TWR Lighting, Inc.

TWR Lighting Inc. (for North, Central and South America)

c/o TWR Lighting, Inc.

10810 W. Little York Rd #130

Houston, Texas

77041-4051 USA

Telephone: 713 973-6905

Fax: 713-973-9352

E-mail: techsupport@twrlighting.com

The use of foreign parts which are not approved by TWR Lighting, Inc. will invalidate the warranty as well as compliance with ICAO Annex 14 Volume I standards, FAA requirements as published in Advisory Circulars FAA, AC70/7460-1K and AC150/5345-43G and AC150/5345-1 and various national CAA requirements.

DISCLAIMER

While every effort has been made to provide a complete, up-to-date, accurate manual, no liability claims for damages resulting from any errors or omissions in this manual will be accepted by TWR Lighting, Inc.

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Please visit our website at <http://www.twrlighting.com> for product information and services.

TRADEMARK ACKNOWLEDGEMENTS

TWR Lighting® is a registered trademark name. Strobeline™ and TWR Lighting logo are all trademarks and property of TWR Lighting, Inc. and are recognized and acknowledged as such by TWR Lighting, Inc.

THE SUPPLIER

This equipment has been manufactured and sold to you by TWR Lighting, Inc.

WARRANTY

THE FOLLOWING IS THE STANDARD LIMITED WARRANTY FOR THE TWR LIGHTING, INC. SYSTEMS AND PRODUCTS (“PRODUCTS”) SUPPLIED BY TWR LIGHTING, INC. - HOUSTON, TEXAS, HEREINAFTER “TWR LIGHTING, INC.”. THIS WARRANTY APPLIES UNLESS A DIFFERENT WARRANTY HAS BEEN SPECIFICALLY AGREED TO AND SIGNED BY AN TWR LIGHTING, INC. AUTHORIZED REPRESENTATIVE.

LIMITED WARRANTY

(a) TWR LIGHTING, INC. warrants, subject to the following limitations, that at time of delivery to Buyer, its Products will conform to applicable TWR LIGHTING, INC. drawings and Product specifications and will be free from defects in workmanship and material. If applicable, TWR LIGHTING, INC. warrants that at the time of delivery Products are compliant to applicable national and/or international rules and regulations. However, unauthorized maintenance or repair could invalidate compliance with such rules and regulations.

(b) The Products are not in conformity as meant under (a) in the case of a defect in workmanship or material becoming apparent under normal authorized use consistent with TWR LIGHTING, INC. Product instructions and specifications. Normal wear and tear (including but not limited to light failure) or problems with electrical power, relatively minor anomalies which are customary and/or technically unavoidable, or the need for periodic maintenance shall not constitute non-conformity.

These warranties shall be available to the initial purchaser, and may be transferable to its successors and assigns.

The duration of these warranties shall be as follows:

1. For led-based lighting fixtures sixty (60) months after shipment of the product ex works, Houston Texas¹⁾.
2. All other products twelve (12) months after commissioning, with a maximum of eighteen (18) months after shipment of the product ex works, Houston Texas¹⁾.

(c) All Products repaired or replaced hereunder shall be warranted only for the unexpired portion of the original warranty period. If TWR LIGHTING, INC. is of the opinion that the complaint about the defect is justified, TWR LIGHTING, INC. will repair or replace at its own option any faulty Product returned within the warranty period at its cost (including material and labor costs, excluding shipping costs). Repaired or replaced Products will be delivered ex works, Houston Texas¹⁾. The risk of loss or damage to all Products in transit shall be borne by Buyer.

(d) The integrity and reliability of TWR LIGHTING, INC. systems and Products are dependent on the use of TWR LIGHTING, INC. parts and components. To ensure the optimum performance and reliability of your TWR LIGHTING, INC. system, it is strongly advised that only components and modules manufactured by TWR LIGHTING, INC. be used. No other parts can be used without prior written permission from TWR LIGHTING, INC.

Any right under this warranty shall lapse if the Product has been exposed or subjected to:

3. Any maintenance or lack of maintenance, repair, installation, handling, transportation, storage, operation, treatment, failure to observe the instructions for use or use which is improper, excessive or otherwise is not in compliance with TWR LIGHTING, INC.'s instructions; or
4. Any direct intervention, alteration, modification, transformation or repair by anyone other than TWR LIGHTING, INC. or those specifically authorized in writing by TWR LIGHTING, INC., without prior written permission from TWR LIGHTING, INC.; or
5. Any accident, contamination, foreign object damage, abuse, misuse, neglect, negligence or any other circumstances after delivery to buyer; or
6. Any damage induced by failure of an TWR Lighting, Inc. supplied product not under warranty or by any product not supplied by TWR LIGHTING, INC.

TWR LIGHTING, INC. shall not be responsible for Buyer's or any third party's Product, Product information, or memory data contained in, sorted on, or integrated with any Product returned to TWR LIGHTING, INC., whether under warranty or not. Buyer is responsible for backing up its programs and data to protect against loss or corruption.

(e) Repair or redelivery as meant in the previous paragraphs shall in principle be affected only within the United States of America. Repair and or redelivery outside the Netherlands shall only be affected if this can reasonably be requested of TWR LIGHTING, INC., such to be judged exclusively by TWR LIGHTING, INC.

With respect to noticeable defects, the Buyer must submit a claim in writing within three (3) working days after delivery, failing which any claim on TWR LIGHTING, INC. will lapse.

Claims with respect to other defects must be made in writing within ten (10) working days after their appearance, failing which any claim on TWR LIGHTING, INC. will lapse.

In respect of Products or parts of Products which TWR LIGHTING, INC. received from third parties, the warranty obligations granted by TWR LIGHTING, INC. to the Buyer shall never exceed in nature nor in duration the warranty obligations granted by those third parties to TWR LIGHTING, INC..

(f) This warranty is exclusive and in lieu of all other warranties, whether written or oral, express, implied or statutory, including, without limitation, any implied warranties of merchantability, fitness for particular purpose, or non-infringement, all of which are hereby expressly disclaimed. No extension or expansion of this warranty shall be binding upon TWR LIGHTING, INC. unless set forth in writing and signed by TWR LIGHTING, INC.'s authorized representative.

(g) All disputes existing between parties shall be heard exclusively by the Rotterdam District Court, unless TWR LIGHTING, INC. prefers another competent forum. This warranty notice is subject to Dutch law. The stipulations specified in the Convention of



International Sale of Goods of 11 April 1980 (Weens Koopverdrag) do not apply, nor does any future international regulation concerning the purchase of moveable property of which parties can make use.

(h) TWR LIGHTING, INC. reserves the right to modify its warranty at any time, at its sole discretion.

¹⁾. EXW, Incoterms

RETURN POLICY

BUYER MUST NOTIFY TWR LIGHTING, INC. SERVICE, HEREINAFTER: "TWR LIGHTING, INC." OF ANY DEFECT IN THE PRODUCT(S) BY SENDING AN EMAIL TO TECHSUPPORT@TWRLIGHTING.COM OR BY CALLING TWR LIGHTING, INC. (713-973-6905).

TO ENSURE YOUR RETURN IS PROCESSED QUICKLY, AND EFFICIENTLY, PLEASE FOLLOW THE GUIDELINES OUTLINED BELOW. BUYER SHOULD INCLUDE PRODUCT SERIAL NUMBER(S) IN EVERY SERVICE REQUEST.

Returned Material Authorization (RMA) guidelines

Returns require a Return Material Authorization (RMA) number and RMA sheet completed prior to shipping goods. Buyer should contact TWR LIGHTING, INC. in order to obtain an RMA form.

The RMA form needs to be returned to TWR LIGHTING, INC. by email or by fax (713-973-9352).

- Part number(s)/device name(s) and corresponding quantities to be returned;
- Serial number(s) (device + component when applicable);
- Site location(s) when available;
- When available, Buyer's site technician and telephone number;
- Enclose description of the failure with the units including a contact name and telephone number;
- Shipping address, contact person and telephone number;
- Billing address, contact person and telephone number;
- Buyer reference/purchase number;
- Reason for return (i.e., ordered the wrong part, over-ordered, Product no longer needed, defective unit, etc...).

After receipt of completed RMA form

Within three (3) working days after receipt of the completed RMA form, TWR LIGHTING, INC. will provide Buyer with a Return Material Authorization ("RMA") number and the location to which Buyer must return, at its cost, the defective Product. Buyer is responsible for proper packaging of Product returned to TWR LIGHTING, INC. and return of Product within twenty (20) working days after issuance of the RMA number.

Package returned Product in the following manner:

- Use standard packaging procedures to ensure safe arrival of goods into our factory;
- Enclose a copy of the completed RMA in each package;
- Enclose a copy of any and all associated packing slips/invoices, when available.
- Shipping preparation requires the following
- Markings: All returned goods must include our receiving address:

TWR LIGHTING, INC

Attn: Service Department

4300 Windfern Road #100

Houston, Texas 77041-8943 USA

RMA number _____

(Packages that do not include the RMA number on the outside of the box will be refused and returned to sender.)

- Do not ship freight collect. Shipments marked freight collect may be refused, resulting in the Product's return to sender;
- TWR LIGHTING, INC. does not accept responsibility for any Product lost in transit and recommends that the return be insured for the full value;
- In no event will TWR LIGHTING, INC. accept any returned Product that does not have a completed RMA form;
- Buyer's failure to return Product within forty (40) working days of its receipt of an RMA may result in cancellation of the RMA. TWR LIGHTING, INC. will use all reasonable efforts within fifteen (15) working days of receipt of defective Product to repair or replace such Product.


Buyer notification

- TWR LIGHTING, INC. will notify the Buyer of its acceptance of the warranty claim, or of the cost to repair the Product upon evaluation and processing of the returned material;
- When a Product outside warranty appears not to be repairable, or no defect has been found, the Buyer will be charged with an inspection fee of \$75.00. The Buyer can then decide to ask for the Product to be returned, and will be charged for the return transportation costs. If Buyer decides not to repair the Product but order a new Product this inspection fee will not be invoiced;
- No non-warranty repairs will be performed without prior Buyer approval;
- After TWR LIGHTING, INC. notifies Buyer of the applicable repair charges Buyer has ten (10) working days to respond. If there is no response from Buyer, TWR LIGHTING, INC. will notify Buyer by telephone or e-mail about this non-response. Within ten (10) working days from receipt of this notification Buyer should notify TWR LIGHTING, INC. to repair, return or scrap the Product. If the Buyer does not reply by the end of this ten-working day period the Product will be scrapped.

Return Products to TWR LIGHTING, INC. stock

- For standard new Products which are in their original condition and are not obsolete to TWR LIGHTING, INC., and which have been delivered by TWR LIGHTING, INC. no longer than (30) days ago, the Buyer may request that TWR LIGHTING, INC. buys them back, however, TWR LIGHTING, INC. is not obliged to do so;
- Products can only be returned when a copy of the associated TWR LIGHTING, INC. invoice(s) is presented;
- The returned Products have to be in the original package and must not be damaged;
- If TWR LIGHTING, INC. accepts the return of Products to stock, all of the costs of return and risks shall be borne by the Buyer. In such a case TWR LIGHTING, INC. shall credit the Buyer the net price less 20% for handling charges;
- Non-standard Products are not taken back;
- Returns due to Buyer error or fault will be subject to a restocking fee of 20 %.

RMA FORM

	<small>MARINE AND AERONAUTICAL AIDS TO NAVIGATION - EXPLOSION PROOF ELECTRICAL EQUIPMENT</small> <h2 style="text-align: center;">RETURN MATERIAL AUTHORIZATION FORM</h2> <p style="text-align: center;">Please send this form together with the defect product to TWR Lighting, Inc.</p>
TWR Lighting, Inc. reference RMA nr. :	
Date (dd-mm-yyyy) :	
Number of pages :	1 of 1
Customer name :	
Contact person :	
Delivery address :	TWR Lighting, Inc., 10810 W. Little York Rd. #. 130 - Houston, TX 77041-4051
Department :	Service
Telephone :	(713) 973-6905
Fax :	(713) 973-9510
<p>Dear customer, Please fill in this form completely and return it to the above mentioned fax number without indicating a RMA number. The RMA number will be immediately generated by us. Please complete the following questions. Use one sheet for each item that is returned.</p>	
Customer reference RMA nr. :	
Site location :	
Product type :	
Serial number :	
Reason for return delivery :	
Initial TWR Lighting, Inc. PO (order) number :	
Warranty claimed :	Yes / No
Replacement product needed in advance? :	Yes / No
TWR Lighting, Inc. Service Engineer visit needed? :	Yes / No
<p>Inspection costs in the amount of \$75.00 will be charged for each product. When a replacement product is ordered, the inspection cost will be calculated in the price.</p>	

The **automated RMA form** is available online at our website:
twrlighting.com → Support → RMA form or: <http://twrlighting.com/support/rma-form>

1. INTRODUCTION

This manual is intended for use with an L550 light that is used as a single stand-alone fixture when the light is not a part of a larger system of multiple lights connected to one controller. **(When L550 is used in a lighting system refer to system controller manual and drawings for further installation details.)**

Depending on the applicable standards and requirements, one (1) or more lights are required to mark the obstacle.

The TWR Lighting, Inc. L550 Type Omni-directional Aviation Obstacle Light is an LED source light, manufactured to comply with current applicable, ICAO, FAA and local CAA requirements.

The L550 light is designed to maximize hazard warning to aviation and to minimize environmental visual impact to ground level.

The CIP300 controller is used to connect a number of lights operating in synchronization and with some additional features like reduced intensity settings. See the CIP300 manual for instruction when the light is part of a system.

The L550 light has an internal monitoring function and does not require an external alarm system to detect any malfunction.

NOTE!

For installations where the light will be exposed to **high RF (radio frequency) radiation**, please consult TWR Lighting, Inc. prior to the installation.

1.1 Light fixture design

Application	Marking of aviation hazards, typically structures such as wind turbines, communication towers, broadcast antennas, electricity transmission and distribution towers, chimneys, bridges and buildings.
Operating voltage	See Table 1 - Operating voltage, dimensions and weight.
Beam divergence	360 degrees horizontal.
Fixture materials	UV-stabilized materials are used throughout.
Mounting	4 holes of 15 mm (11/16") diameter on a pattern of 240 mm (16½"), matching industry standard light mounting pattern.
Light source	LEDs.
Control	Microprocessor based controller for power management, flasher, synchronization, status monitoring and photocell control.
Photocell	Internal photocell installed for automatic day, twilight and night time operation and control.
Synchronization	GPS unit (only in –G version lights) to synchronize the flash character with other TWR Lighting, Inc. GPS synchronized lights.

Dimensions See Table 1 - Operating voltage, dimensions and weight.
 Weight See Table 1 - Operating voltage, dimensions and weight.
 Cable Integral power and alarm signal connection cable (Strobeline cable) provided for connection to a junction box.
 Operating conditions -40 to +55 °C with 95 % relative humidity.

Product type	Operating voltage	Dimensions h x w x d	Weight
L550	120-240 V _{AC} nominal, 50-60Hz	510x510x240mm (20.6"x20.6"x9.4")	13.6kg (30lbs.)

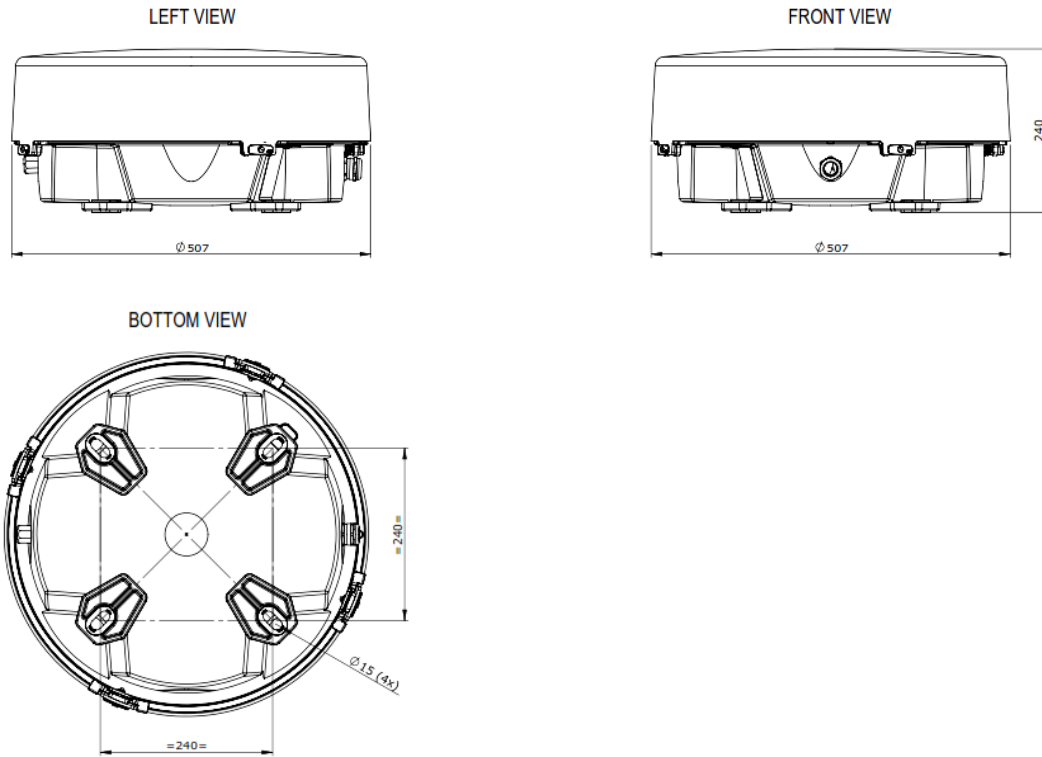


Figure 1 –dimension and weight and GA drawing.

2. OPERATING DESCRIPTION

A precision optical element enables the required light intensity and beam profile to be achieved with low power consumption.

See Figure 1 – Operating voltage, dimension, weight and GA drawing.

The light is set to flash according the local requirements. See Table 3 – Flash rate and power consumption for details.

The effective intensity of the light is set to ICAO, FAA and local CAA requirements for daytime, twilight (if required) and night time and varies between 2,000 and 20,000 cd ($\pm 25\%$) white or red.

An internally installed control unit uses microprocessor technology and provides the necessary functions for a trouble free, long service life. The control unit continuously monitors the status of the light and gives an alarm in the event of a malfunction. The alarm can be monitored using the alarm wires of the Strobeline cable (volt free contact status change) and is presented as a visible alarm with a small red LED in the photocell.

The light has a built in photocell, mounted in the base. The light will automatically switch between day, twilight and night time operating modes according to the ambient light level measured by the integrated photocell.

In the event of a photocell malfunction the light will automatically operate continuously in the highest intensity.

The L550 light has an internal flasher and does not require an external flasher system.

The L550 light has an internal monitoring function and does not require an external alarm system to detect any malfunction.

The light is provided with several segments LEDs. When one of the segments is not operating, then the alarm contact will be activated.

If the light is provided with a GPS flash synchronizer mounted inside the product (-G version), the flash synchronizer uses information from the GPS satellite system signal. All L550-G lights will flash in unison with each other.

If the light is not correctly synchronizing from the GPS satellite signal, then the alarm contact will be activated.

The light starts up when power is connected. It can take up to 15 minutes for the light to synchronize with other L550 lights with GPS synchronization facility included, depending on the availability of a proper GPS satellite signal.

If after a power disconnection the power is back again it may take up to 15 minutes for the light to re-synchronize with other lights, depending on the availability of a proper GPS satellite signal.

3. SAFETY PRECAUTIONS

Although TWR Lighting, Inc. has incorporated practical safety precautions always exercise extreme caution when dealing with electrical equipment. The following general safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of this equipment. TWR Lighting, Inc. assumes no liability for the customers' failure to comply with these requirements.

WARNING!

Do not look directly into the light beam at close range when it may flash as the intensity of the light could result in permanent eye damage.

- Do not touch the components of the electrical circuit while the system is in operation. Never adjust or change the settings while the system is "on".
- Do not replace components with the power connected.
- Always wait for at least 2 minutes after disconnecting the power source before opening or working on any part of the system.
- To prevent fire or shock hazard, do not expose the device to rain or moisture while opened.
- Should any solid objects or liquid fall into the device while opened, disconnect the system immediately and have it checked by qualified personnel before any further use.
- Do not service or maintain the system when distracted or short of sleep.
- Maintenance and repair of the opened device under voltage should be avoided if at all possible and when required should be carried out only by a skilled person who is aware of the hazards involved.
- Do not install substitute parts or perform any unauthorized modification to the equipment.

WARNING!

HIGH VOLTAGE!

The device operates at voltage levels that constitute a personnel safety hazard. Personnel must observe safety regulations at all times.

4. UNPACKING

4.1 Receiving the equipment

Before unpacking, check if the packing shows any signs of damage.

After opening, check the contents against the delivery slip. All items should be inspected separately for visible damage. Report any damage or loss claims immediately to the freight handler and take any necessary steps to protect your rights.

4.2 Handling

- Open the package the right way up.
- The light must always be handled with care.
- Always hold and support the light at the base.
- Do not change or remove any labels from the equipment.

4.3 Pre installation test

If possible it is recommended that the light is tested on site before it is installed on the structure to confirm the correct operation.

The light can be tested by connecting the power wires of the Strobeline cable to the local mains power supply. Take suitable precautions when making electrical connections. The light should start to operate within 2 minutes after the power is supplied.

NOTE!

It is assumed that the **incoming power supply** is suitably protected at the site distribution board.

5. INSTALLATION

- Read this manual in full before starting.
- Check that there are no signs of damage to the light. Clean the outside of the light if necessary with detergent and water and a soft cloth (do not use solvents).
- Follow the mechanical installation instructions, ensure that the light is correctly mounted and is levelled.
- Make sure the bracket on which the light is mounted is directly connected to a good ground (earth) point with minimum 10 mm² cable.
- Make sure that the obstacle light is protected against lightning damage with a lightning rod.
- Make sure that the outer braided shield of the Strobeline cable is correctly attached to the EMC cable gland used to fit the Strobeline cable to the junction box.
- Make sure that the electrical connections are properly made in any junction boxes using secure terminal connections. Do not use “wire nuts”.
- Make sure that the earth terminal of any junction box is directly connected to a good earthing (ground) point.
- Make sure any junction box to which the light is connected is directly bonded to a good earthing (ground) point with minimum 10 mm² cable.

The location and positioning of the L550 light(s) on the obstacle must be made in accordance with the applicable ICAO, FAA or applicable national CAA regulations.

NOTE!

Ensure that the light can be seen from **all horizontal approach paths** and that it is not shielded from view by other equipment.

NOTE!

This **warranty is declared to be null and void** if TWR Lighting, Inc.'s inspection indicates that items have not been installed according the instructions and diagrams in this manual.

5.1 Installation location considerations

The location and positioning of the light(s) must be done according the applicable ICAO Annex 14, Volume 1, FAA or national CAA regulations.

The light will be typically located on the top of structures that, due to their nature, will potentially be subject to lightning strikes.

We assume that the structure is provided with an adequate primary lightning arresting system (for instance in accordance with NFPA-780 or DIN 48801) that will guide the energy directly to earth.

The TWR Lighting, Inc. design is based on extensive consultation with experts in the fields of over voltage protection and the effects of lightning discharges. Over voltage surges on

control signals, data or power supply lines can cause considerable operational disruption, note the following installation considerations:

- Protect the light with a lightning rod (air terminal). Maintain the correct distances between the lightning rod and the light (see Figure 1 - Distance between the lightning rod and light).
- Reduce the chance of a lightning strike affecting the cable by minimizing the exposed cable length.
- Protect the power supply, monitoring device and communications devices to which the light is connected with over voltage protection devices.

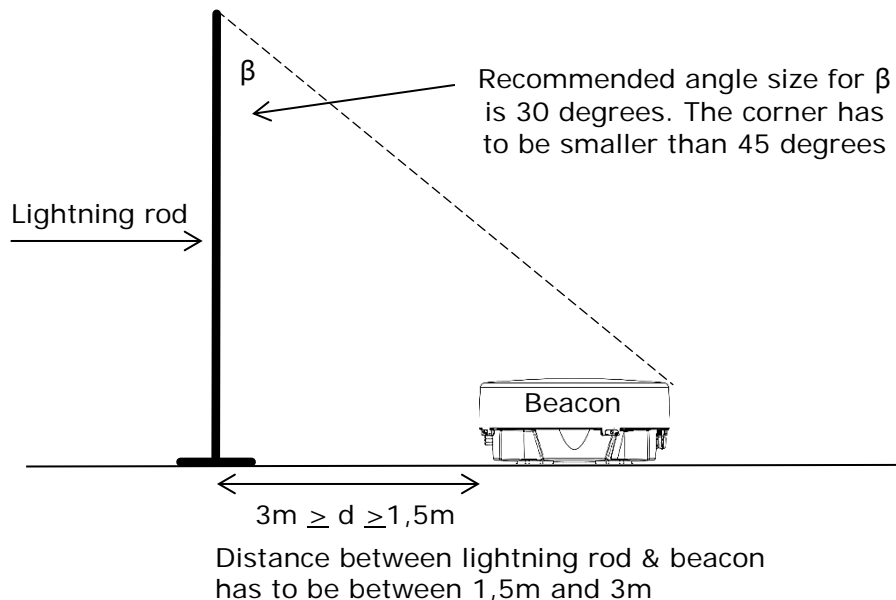


Figure 1 - Distance between the lightning rod and light

The Strobeline cable has an outer braided shield that, when used with the correct EMC cable glands at the power connection junction box will provide an effective equipotential bonding system between the system components when this is directly connected to a good ground (earth) point. This ensures that any secondary lightning current (which will occur as the impedance of an obstacle from the top of the structure to earth will never be zero) will flow through a controlled path. This ensures that this current does NOT run through the light and as a result damaging or even destroying the light.

NOTE!

For installations where the light will be exposed to **high RF (radio frequency) radiation**, please consult TWR Lighting, Inc. prior to the installation.

5.2 Mechanical installation

The light must be positioned so that the photocell is able to measure representative ambient light levels. Position the light fixture so that the photocell has the clearest possible view of the ambient environment. Make sure that the photocell is not directly shielded by nearby structures which would mean that it is not reading the proper ambient light level. When the light is installed on a wind turbine, the light must be mounted in such a way that the photocell is located towards the outside of the wind turbine, but never towards the wind turbines' rotor blades, nor inwards while facing each other. This to avoid false light measurements.

The GPS antenna needs to be able to receive satellite signals for correct operation. Position the light fixture so that the GPS antenna has the clearest possible view of the sky and horizon in all directions. Avoid placing the light adjacent to large areas of conductive metal as this may cause poor signal reception, and as a result loss of synchronization.

The light is designed to be mounted with threaded rods on a secure and level horizontal surface, in a position that meets with the unrestricted visibility requirements. Due consideration must be given to accessibility.

The secure and level horizontal mounting of the light is important to maintain the design photometrical characteristics, the ingress protection, the loads on mounting points, cooling and overall reliability. Ensure that there is a gap between the light and the mounting bracket (see Figure 3 Mounting of light to bracket).

Use the spirit-levels that are mounted in the light as level indicators. Levelling is extremely important to assure that the light will be pointing in the correct horizontal plane to provide the proper obstacle light visibility to air traffic and to prevent light scatter at ground level.



Figure 2 – Spirit-level

NOTE!

Please ensure that the base of the light is **25-50 mm (1-2") distance** above the mounting surface (see Figure 3 Mounting of light to bracket).

Four equally spaced fixing holes are provided, to fit 14 mm (9/16") threaded rods/bolts arranged on a 336.5 mm (13.25") circle diameter / 240 x 240 mm (9.5") square pattern. The light needs to be levelled by using lock nuts and/or spacers on the fixing bolts. The mounting bolt torque should be 10-12 Nm.

TWR Lighting, Inc. advises the use of a mounting bolt with a:

- length of 60-120 mm (2-4") and a
- thickness (diameter) of 14 mm (9/16")

Material: silicon bronze (if it is not possible to use silicon bronze then use stainless steel).

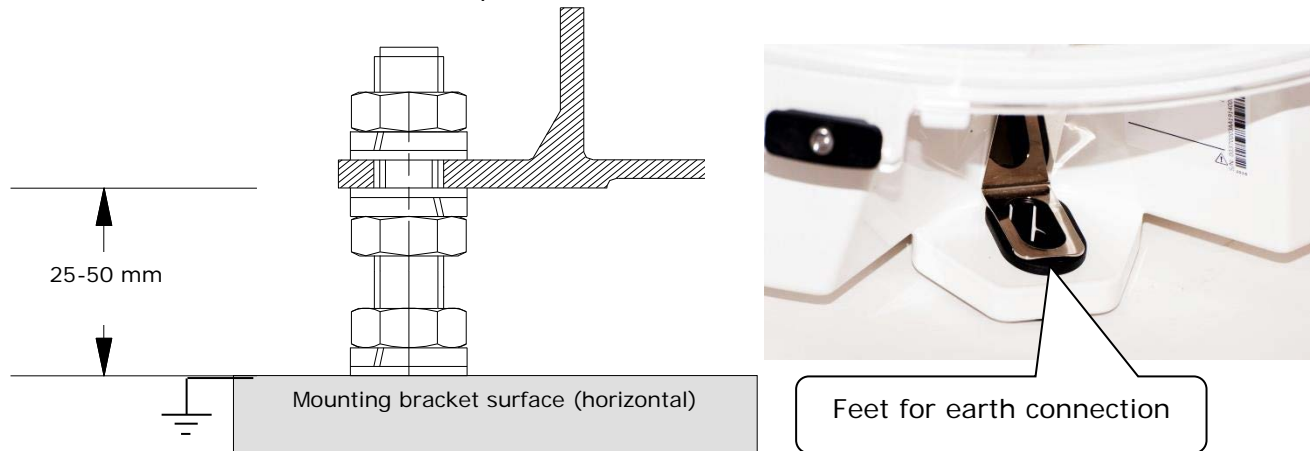


Figure 3 Mounting of light to bracket (with earth connected detail)

Provide the required quantity of nuts, spring washers and flat washers for each bolt. Use for all hardware for mounting the light the same material as the threaded rod/bolts. See Figure 3 Mounting of light to bracket.

Do never use plastic washer for earth connected feet. The earth connected feet of the light must be connected to earth (ground). The use of plastic washers will isolate the feet from the earth.

Support the light on the mounting bolts as shown above so that there is a gap between the light and the mounting bracket surface.

CAUTION!

Take extreme care that all 4 of the light's mounting feet rest properly on the mounting bolts before tightening the top nuts. Not paying attention to this while tightening the nuts can result in damage to the base.

The mounting bolt **torque** should be **10-12 Nm**.

5.3 Earthing of the system

To ensure that the L550 light gives many years of reliable operation, the system must be protected from overvoltage and electrostatic discharges by ensuring that the light system is correctly connected to earth.

The light fixture's mounting brackets and junction boxes and other system enclosures must be directly connected to an earth point with a minimum 10 mm² wire.

The light's Strobeline cable must be correctly assembled to the EMC cable glands so that the outer screen of the Strobeline cable is connected to the light fixture and enclosures.

The light's Strobeline cable must be attached to other system enclosures (i.e. junction boxes) using the provided EMC cable glands.

The light(s) should be protected by an air terminal (lightning rod) directly connected to the structure's primary earthing (grounding) system. Ideally the air terminal should be mounted between approx. 1.5 meter (5 ft) and 3 meter (10 ft) away from the light and be at least high enough to cover the light completely by an angle of 30 degrees preferred (max 45 degrees), see Figure 1 - Distance between the lightning rod and light.

If the system is not correctly connected to the earth it may behave erratically, the system components may be damaged, the service life of the system components significantly reduced and the warranty of the system invalidated.

5.4 Overvoltage protection

The L550 light has built in over voltage protection devices on the power supply connections, incorporating a dual protection design which provides protection per Class III according to IEC61643-1.

NOTE!

It is assumed that the **incoming power supply** is suitably protected at the site distribution board.

5.5 Electrical installation

The L550 light is supplied with a factory fitted TWR Lighting, Inc. Strobeline connection cable in which power and alarm signal wires are combined. The wires are color coded (see Table 2 - Colors of the Strobeline cable wires). The "Fieldbus" wires are used for communication with an TWR Lighting, Inc. CIP controller. The alarm contact wires are used when the stand alone light needs to be monitored.

For additional information about the Strobeline cable, see the applicable datasheet.

Color wires Strobeline cable			
		Worldwide excl. USA/Canada/Japan	USA, Canada and Japan
Power	Phase/Live Neutral Earth/Ground	Brown Blue Green/Yellow	Black White Green
Fieldbus	A B Screen	Orange Yellow Black	Orange Yellow Black
Alarm contact	Common NC	Red Purple	Red Purple

Table 2 - Colors of the Strobeline cable wires

- Connect the Strobeline cable to the EMC cable gland at the power connection junction box as shown in paragraph connecting the Strobeline cable and EMC gland.
- Check that all system wiring connections are correctly made and that the wires are securely connected on the terminals.
- The cables should be tested and checked for earth faults prior to power connection.

To determine the correct protection device rating note power consumption in table 3 below:

Product type	Flashes per minute		Power consumption (W) @ 20 °C nominal	
	Day	Night	Day	Night
L550-63A(-G)	20	20	40	20
L550-63B(-G)	Off	20	40	20
L550-63Ba(-G)	20	20	TBD	TBD
L550-63Bd(-G)	20	Off	TBD	TBD
L550-63A/63B(-G)	20	20	40	20
L550-63A/63B-40(-G)	40	40	TBD	TBD
L550-63A/63B-HR(-G)	40	40	TBD	TBD
L550-63A/63B-S01(-G)	40	30	TBD	TBD
L550-63A/63C(-G)	20	Fixed	40	20
L550-63A/63C-HR(-G)	40	Fixed	TBD	TBD
L550-864/865(-G)	40	20	40	20

Table 3 – Flash rate and power consumption

5.6 Connecting the Strobeline cable and EMC gland

NOTE!

The Strobeline cable is factory fitted with cable shoes at the end of the wires and a heat shrink sleeve around the fieldbus data wires.

In case the cable needs to be shortened, it should be completed as follows:

- Strip the wires of the Strobeline cable as shown in Figure 4 - Wires of the Strobeline cable. **(Other EMC glands may be used on lighting system cabling, so refer to system manual and drawings.)**

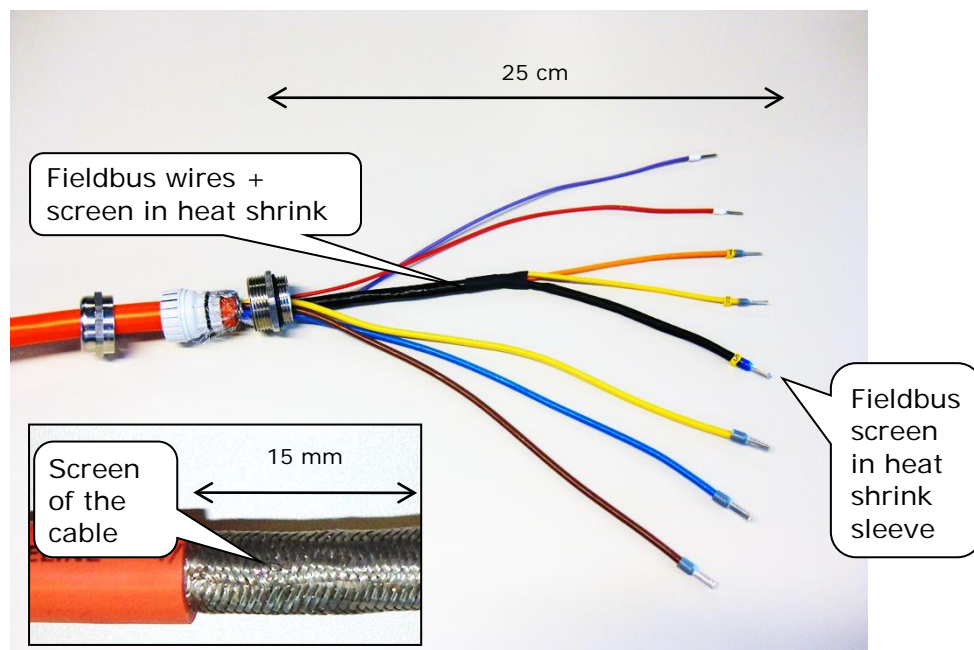


Figure 4 - Wires of the Strobeline cable

- Make the screen of the fieldbus wires into a separate wire by putting a heat shrink or other suitable sleeve around it as shown above.
- Add wire pins at the end of the wires. See Figure 5 - Wire pins.
- The screen of the fieldbus wires must be connected to the “screen” terminals in the junction box.

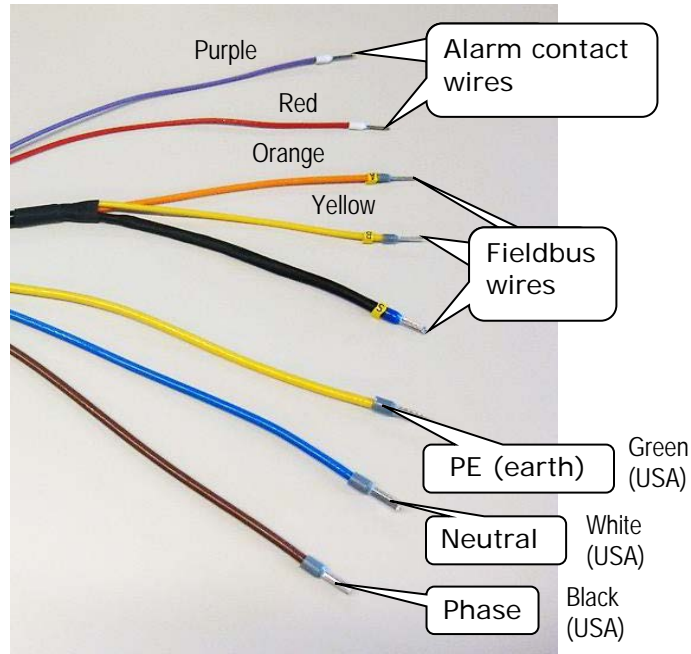


Figure 5 - Wire pins

- o Cut back the outer orange cable cover to expose 15 mm (5/8") of the outer screen.
- o Put the EMC cable gland around the cable as shown below in Figure 7 - EMC cable gland - screen.
- o Pull back the outer screen of the cable around the plastic cylinder as shown below.

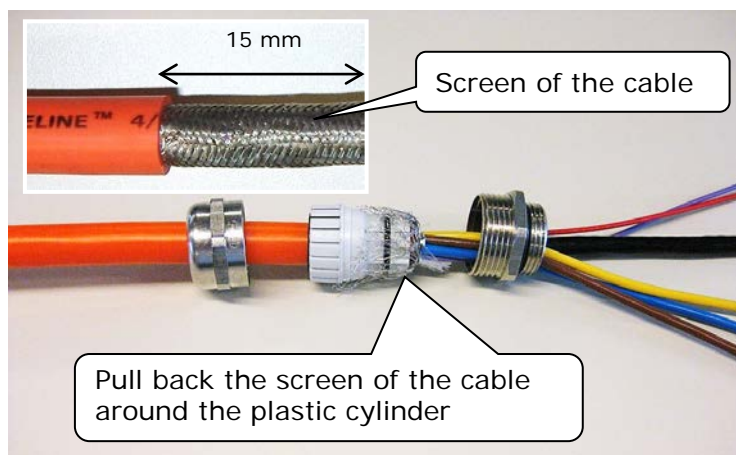


Figure 7 - EMC cable gland - screen

(Other EMC glands may be used on lighting system cabling, so refer to system manual and drawings.)

Assemble the cable gland and make sure that the outer screen is held between the plastic cylinder and the metal part. The screen must make contact in 360° to the metal part, to ensure that the light is protected against the effects of lightning discharge and static electric emissions. See Figure 8 – Cable gland connected to the Strobeline cable.

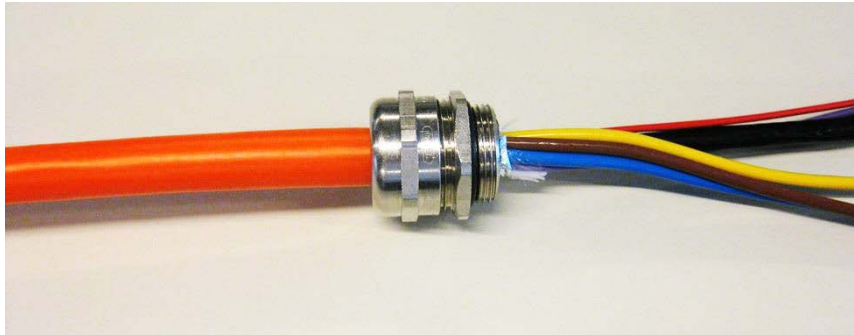


Figure 8 – Cable gland connected to the Strobeline cable

(Other EMC glands may be used on lighting system cabling, so refer to system manual and drawings.)

5.7 Commissioning procedure

After installation, the system is ready for commissioning.

No special parts are needed for the commissioning procedure.

- Check if the light shows any signs of damage.
- Check the correct mechanical installation.
- Check the correct use of the EMC cable gland on the Strobeline cable.
- Check that all electrical connections are tight.
- Check the correct grounding of the system components.
- Check that the supply voltage of the light agrees with the available mains power supply.
- Turn on the power supply.

WARNING!

Do not look directly into the light beam at close range when it may flash as the intensity of the light could result in permanent eye damage.

- The light will automatically turn on and operate according to the ambient light conditions after the power is connected. Depending on the status of the photocell the light(s) may be flashing in day, twilight or night mode.

- If applicable check that the light flashes in synchronization with other L550 lights – it may take up to 15 minutes to auto synchronize depending on the availability of the GPS satellite signal.

6. MAINTENANCE

The L550 light not requires routine maintenance. However, TWR Lighting, Inc. recommends that the condition of the light system is visually checked whenever a suitable qualified engineer is doing other tasks near to the light.

WARNING!

HIGH VOLTAGE!

The device operates at voltage levels that constitute a **personnel safety hazard**. Personnel must observe safety regulations at all times.

The power supply should be isolated prior to the execution of any maintenance work.

6.1 Light fixture maintenance

- Check the light is securely fixed to the mounting bracket.
- Check that the light is level by observing the level indicator on the light.
- Check for a proper earth connection between the light and to the wind turbine's earth/ground path.
- Check the light for any damage.
- Check the lightning rod and the mounting bracket for any damage and if it's correctly connected to earth. Replace if necessary.
- Clean the obstacle light for an optimal light emission.
- Check for any significant moisture inside the light. Slight condensation is normal.
- Check that the Strobeline cable is still fitted well into the gland.
- Check the Strobeline cable for any damage.
- If applicable, visually check the flash synchronization with other lights at the same location.

7. TROUBLESHOOTING

Please contact the TWR Lighting, Inc. Service Department with further information about your problem if the following topics do not resolve the fault so that we can assist you in making your L550 light operational.

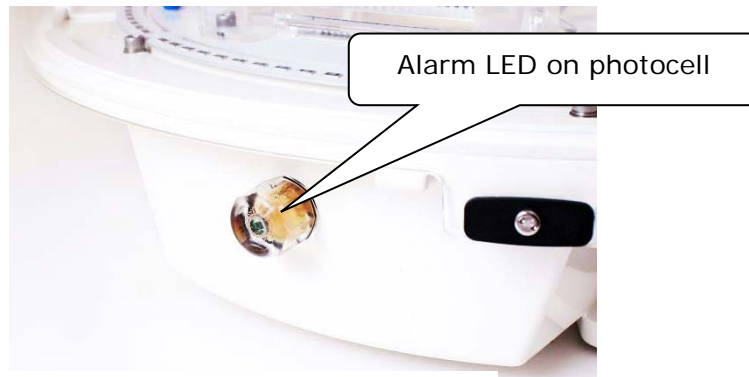


Figure 9 - Photocell

7.1 Light failure

If the light is not correctly synchronizing from the GPS satellite signal, then the alarm contact will be activated.

In the event of a photocell malfunction the light will automatically operate continuously in day mode (highest intensity) and the alarm contact will be activated.

The light is provided with several LED segments. When part of the segments is not operating, then the alarm contact will be activated.

The light should be replaced – follow the RMA instructions in this manual.

7.2 Wrong day/twilight/night intensity

This indicates that the system cannot determine a day, twilight or night condition.

The internal controller of the L550 light continuously monitors the readings from the photocell. If a L550 light is not reading the correct ambient light level conditions then the light will default to “day time” mode.

- Check the position of the L550 light and make sure that the photocell is not directly shielded by nearby structures so that it is not reading the proper ambient light level. If that is the case turn the light through 90 or 180 degrees.
- Check that there is no external ambient light coming into the photocell.
- Check the photocell condition for excessive dirt or damage.
- Power off, wait one minute and power on again.

If the situation still occurs then the light fixture needs to be replaced – follow the RMA (return material authorization) instructions in this manual.

8. SPARE PARTS

The warranty statement as written in this manual is applicable during the installation and commissioning procedure and daily operation.

In the event that the product is damaged or does not otherwise operate correctly, it is recommended that the complete product is replaced to ensure on-going reliable operation. Contact TWR Lighting, Inc. for further support if your light is not operating correctly and we will help you to solve the problem in the most effective way.

9. SERVICE

WARNING!

The **power supply** to the light fixture **should be isolated** prior to the execution of any maintenance work.

The light requires no routine maintenance when installed and operated as designed apart from external cleaning when necessary.

In the event that the light is physically damaged it is recommended to exchange the complete light unit as there are no user replaceable parts.

Return the complete light to TWR Lighting, Inc.; see for details the TWR Lighting, Inc. Return Policy.

Please copy the RMA-form which is available in this manual, or visit our website twrlighting.com → Support → RMA form or: <http://twrlighting.com/support/rma-form> and send it to TWR Lighting, Inc. for an RMA number and further instructions.

When returning the product to TWR Lighting, Inc. it is mandatory to **send the fully filled out RMA form with the product in the box.**

||||||| END OF MANUAL |||||||