

# Protecta X LED Emergency Linear Luminaire Industrial

## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

**Important:** Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should always be followed, and this data should be used as a guide only.

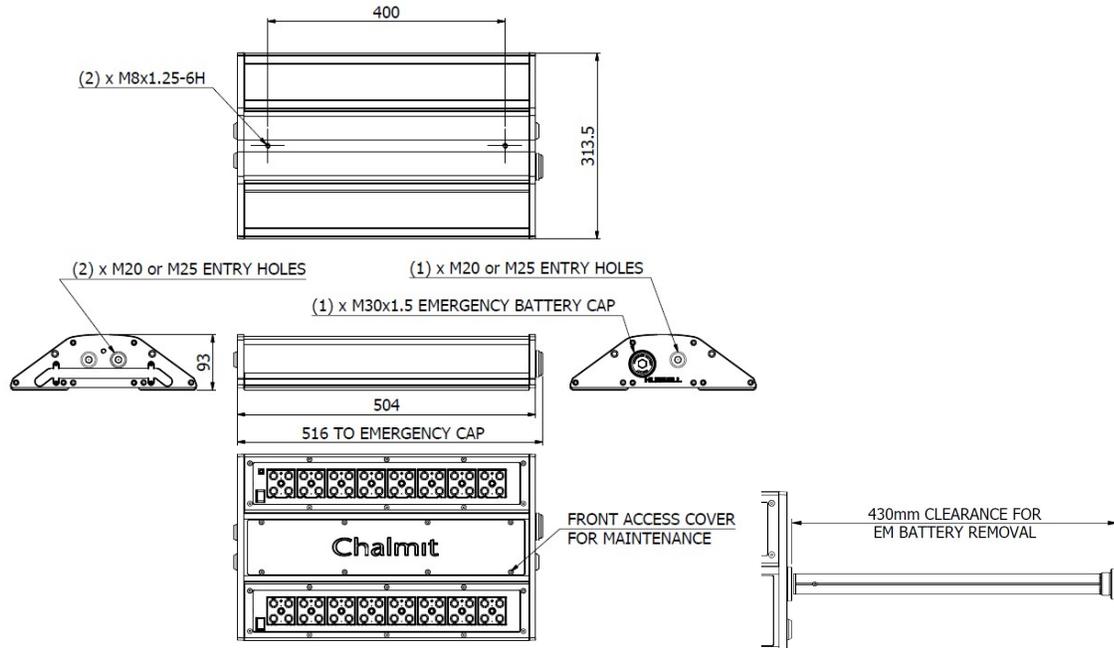


Fig. 1

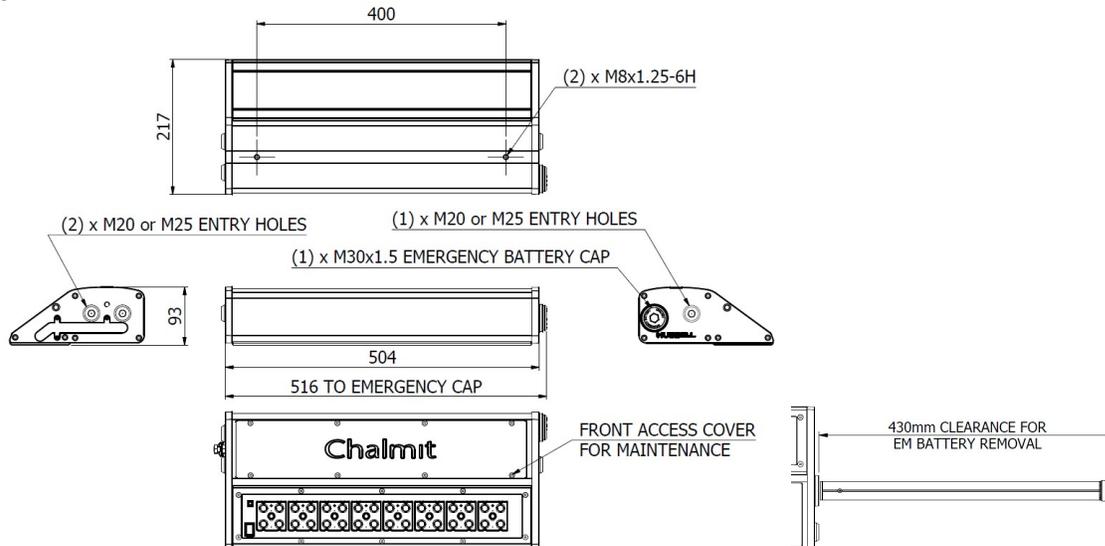


Fig. 2

Specification

<b>0.0 Specification</b>	
Type of Protection	N/A
Standards	EN 60598-1, EN 60598-2-22
Area Classification	Industrial (Non- Hazardous)
Ambient	-25°C to +60°C
Ingress Protection	IP66/67 to EN 60529
  	<p>The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 2006", "The Electromagnetic Compatibility Regulations 2004", the "Waste Electrical and Electronic Equipment Regulations 2006". [This legislation is the equivalent in UK law of EU directives 2014/35/EU, 2014/30/EU, 2012/19/EU respectively].</p> <p>The UKCA marking of this product applies to "The Electrical Equipment (Safety) Regulations 2016", "The Electromagnetic Compatibility Regulations 2016", the "Waste Electrical and Electronic Equipment Regulations 2012</p> <p>M Poutney Technical Manager</p>

**1.0 Introduction – Protecta X**

The Protecta X Luminaire operates from mains voltage.

This installation leaflet covers the range of Protecta X Industrial Luminaire models. These luminaires are mainly used in Safe Area environments and are constructed using Non-corrosive materials. Refer to the current catalogue for information on product references. The luminaires are available in 02L, and 05L Lumen outputs.

**2.0 Electrical Supplies**

**Table 1 MODEL VARIATIONS**

Voltage range AC ==> 110-277V				
Voltage range DC ==> 127-250V				
Frequency range Hz ==> 50-60Hz				
Product	Ambient	Voltage AC	Watts	Amps
PRXI/02L/LE/EM	Ta25°C	110 -277V	19	0.18 – 0.07A
PRXI/05L/LE/EM	Ta25°C	110 - 277V	38	0.38 – 0.15A

The maximum nominal variation from rated voltages stated above is +/- 6%. For the full range of Product Technical data please contact Chalmit technical department

**Power Factor @ 230V >0.90**

**Over Voltage**

**Through Wiring**

**Fuse and MCB Ratings**

Power is constant over voltage range.

400V ac for 1 min and EN 61000-4-5 > 4kV

The through current rating is 16A. 4mm<sup>2</sup> terminals are standard (As option /SC 6mm<sup>2</sup> wiring can be used in the terminals in accordance with the luminaire certificate).

It is recommended that for selection of MCBs users should consult the MCB manufacturer as this unit contains electronic control gear. The electronic control gear has nominal values of inrush current as follows;

**05L** 20.2A for 38µs on 230V @ Ta25°C.

**02L** 17.9A for 16µs on 230V @ Ta25°C.



**Luminaire is supplied with Battery plug/Socket disconnected, just prior to switching power on, connect battery plug and socket.**

Emergency versions – Emergency products with internal Ni-MH battery packs should not be stored for longer than one year without being connected to mains power to allow battery charging to take place.

Emergency products ship from the factory with the battery plug and socket disconnected.

### 3.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation. Storage temperature range to be -40°C to +80°C. Battery packs in storage should be cycled charged/discharged/charged every 6 months, as per instructions below. Section 4.1.3 to 4.1.5

If it is expected that the Luminaire will be left without power for a period greater than 6 months, consideration should be given to the /BNI (Batteries not Included) option of the Protecta X range.

#### **Always disconnect battery plug and socket for storage.**

Any specific instructions concerning emergency luminaires must be complied with.  
(Warning: Battery packs not cycled and stored for a year may not be recoverable)

### 4.0 Installation and Safety

#### 4.1 General

**These instructions should be read fully and carefully before attempting to install the luminaire. For details of servicing operations, opening etc. see section 5.0**

Copies of these instructions should be held in a safe place for future reference. It is the responsibility of the installer to ensure that the apparatus selected is fit for its intended purpose and that the installation, operation and maintenance of the apparatus complies with applicable regulations, standards or codes of practice.

Any specific installation instructions must be referred to. In the UK the requirements of the *Health and Safety at Work Act* must be met and electrical work associated with this product must be in accordance with the *"Manual Handling Operations Regulations"* and *"Electricity at Works Regulations 1989"*. Disposal instructions should be complied with. The luminaires should be considered Class 1 to EN 60598 and effectively earthed. The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required without notice.

#### 4.1.2 Hybrid Mixtures – Gas plus Dust.

Not Applicable for this product

#### Emergency Operation

##### 4.1.3 Emergency Duration

The luminaire is supplied as standard set for 90 minutes emergency duration, the Emergency Self-test is also set as standard. Options of 180 minutes and Non self test are available on request.

Light Output range is 02L for 90 mins = 50% and for 3hrs = 25%. 05L for 90 mins = 25% and for 3hrs = 12.5%. These are suitable for an ambient of +60°C.

##### 4.1.4 General description of operation

The luminaire will go seamlessly into emergency mode at not less than 60% rated supply voltage and will remain in mains mode up to 85% of rated supply voltage.

The charging function is monitored continuously, there is a check for over charging and no charging.

After a complete battery discharge, the unit will switch over to a low discharge current mode, until power restored.

##### 4.1.5 Emergency Commissioning

The Protecta X is programmed to commence a self-test programmed test upon battery connection & energisation of mains power supply.

The self-test programme is as stated below:-

Mains power will operate for an hour, at this point the system will switch the operation of the LEDs to battery power, until the LED's goes out. – This checks the battery pack is accepting charge (battery connected).

Mains power will then operate the fitting for 24 hours, at this point the system will switch the operation of the LEDs to battery power. The duration should be 90 or 180 minutes minimum depending on what was specified.

After the discharge for the emergency duration period, the fitting will switch back to mains power operation completing the Self-test programme.

This self-test programme of 27 hours duration approximately, should not be interrupted.

Prior to manual discharge test Chalmit recommend that the fitting is charged for a further 24hours or a full solid Green LED indicator is present.



When there is a planned power outage for 5 days or more continuously, the battery stick should be dis-engaged from the Luminaire. When the battery stick assembly is removed a suitably approved stopping plug must be put in its place in order to maintain the IP rating of the enclosure.

If a battery is left connected to the luminaire during an extended power outage for longer than 5 days and is allowed to completely discharge, the battery may require a short, external boost charge before the luminaire takes over the battery management process.

Please see section 3.0 for battery storage instructions.

**4.1.6 Optical performance**

In addition to the Wide and Medium beam optics, the Protecta X utilises specialised asymmetric optics (ASL or ASW) to maximise the spacing between adjacent luminaires along walkways, aisles, corridors and escape routes. If using the ASL or ASW optics in the 05L model, it is recommended that the luminaire is mounted at a minimum height of 2.5m to achieve the optimum spacing and lighting distribution.

**4.1.7 Automatic Self Testing**

A manual test of emergency duration can only be made by manually de-energising the luminaire and timing the discharge. The LED must be constant green to show that charging has been completed before commencing this test. The LED indication will show if the emergency battery duration is too low. The electronic control gear continuously monitors all charging functions.

The unit will perform a complete battery discharge every 102 days and will check for minimum emergency duration as stated above. The start of the first complete battery discharge is at a random point between 0 and 102 days after applying mains voltage. The test will be repeated at fixed 102 day intervals. If the self-test detects a failure it is indicated as per the table below by the LED.

After a complete battery discharge, the unit will switch over to a low battery discharge mode which maintains the memory and monitoring function. The control contains dedicated features which prevent any unsafe condition arising if the micro-processor were to malfunction.

**4.1.8 Emergency Integrated (EMI) version.**

This type of product is NOT hot swappable and during any replacement **The battery assembly must be protected from damage and water ingress then removed from any potentially hazardous area as soon as practical.**

**LED display**

Table 1 Monitoring function indication

GREEN	RED	MODE	REMARKS
Continuous - Steady		Fully Charged / During Self Test	
Flashing Green		Charging	
	Flashing Red	Battery Fault Detected	Consider full re-commissioning cycle, If Flashing Red continues
	Continuous - Steady	Self-test failure	
	Continuous - Steady	Battery Fail or not connected	Battery
None	None	Mains off, Battery Discharged, or Total unit defective	Luminaire off
Continuous - Steady		Unit in Emergency Mode	Luminaire with reduced light output. (LEDs illuminated)

**4.2 Tools**

- 6mm A/F socket keys (For Blanking Plugs) / 12mm A/F socket keys (For Emergency Plugs)
- 4mm flat blade Screw Driver (For Terminal Connection)
- Pozi Screw Driver (For Front Cover Access)
- Suitable Spanners for Installing Cable Glands
- Pliers, Knife, Wire Strippers / Cutters

**4.3 Mounting**

Luminaires should be installed where access for maintenance is practical and in accordance with lighting design information. Refer to the note in 4.1.1 concerning electrostatic charge.



The standard suspension is via two M8 x 12mm deep blind tapped holes in the top of the body, the recommended torque for the fixing bolts is 10-15Nm. Various adaptors, pole clamps and suspension brackets are available to order.

#### 4.4 Electrical Supplies

A maximum voltage variation of +6%/-6% on the nominal is expected.

#### 4.5 Light Source

The luminaire is fitted with LEDS that can last >200,000 hours depending on ambient temperatures. Therefore depending on the functionality of the fitting replacement of LED's will be rare /unnecessary.

#### 4.6 Cabling and Cable Glands

##### 4.6.1 Cable Glands

The installer and user must take responsibility for the selection of cables, cable glands and seals.

Three tapped cable entries are provided, two with a plug and seal suitable for permanent use on Non EM side, The EM swappable side has one travelling plug M20 x 1.5 pitch entries are standard, other sizes are available on request up to M25 x 1.5 pitch. Cable Glands must be reliable and maintain the IP rating of the Enclosure

##### 4.6.2 Cable

The temperature conditions at the supply cable entry point are such that 70°C (ordinary PVC) cable can be used.

##### 4.6.3 Cable Connection

The cable connections are made by removing the main front access cover (Fig.1). The screws are retained and should be re-greased as required. The conductors should be bared back so that they make full contact in the terminals, but the bare conductor should not be more than 1mm beyond the terminal. Unused terminal screws should be tightened. The core must be identified by polarity and connected in accordance with the terminal markings. Before re-fitting the cover, a final check on the correctness of connections should be made. Front access cover screw torque 3.5 Nm.

#### 4.7 Electrical Connections and Testing

If any work is to be done on any luminaire already connected to the electrical system, the luminaire must be isolated from the system. The access front cover (Fig.1) is swung down. To access the mains terminals loosen the 8 fixing screws. Screw type or screw-less "cage clamp" terminals are fitted in the range of luminaires.

Mains terminal blocks are marked Lc Ls N Earth.

The maximum amount of insulation allowed beyond the throat of the terminal is 1mm. The normal method of insulation testing is to connect Live and Neutral together and test between this point and Earth to prevent the risk of damage to the electronic control gear.

However, if this is not possible luminaires can be tested with an insulation tester that complies with IEC 364 or BS 7671 with a maximum output current of 1mA and output voltage of 500V dc. (Units damaged by incorrect insulation testing can be detected). Before completing the wiring, ensure that all the connections are correctly introduced into place before reassembling the luminaire.

#### 5.0 Inspection, Maintenance and Servicing

**Safe servicing on the gear tray requires the mains supply to be isolated.**

Individual organisations will have their own procedures for inspection and maintenance. Maintenance work and fault finding must be performed by competent personnel under an appropriate permit to work and with the apparatus isolated. Frequency of maintenance will depend on experience and the operating conditions.

Maximum Insulation Resistance Test 500V dc.

- 1 Check if any LED's have failed.
- 2 The LEDs are mounted on boards, if there is 3 or more LED's not working on one board the light output will have dropped to a level where the LED board may need replaced. Refer to **6.2 LED Replacement**.
- 3 Check the front access cover screws for tightness.
- 4 Check the cable gland for tightness and re-tighten if necessary.
- 5 Check any external earthing.
- 6 Examine the LED diffuser for any signs of damage and for any signs of sealant damage, cracking or discoloration.
- 7 Check all End Cover bolts for tightness, Torque 4Nm. Front Cover screws Torque 3.5Nm



- 8 Check for signs of corrosion between the LED Light Engine and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. A damaged or non-resilient gasket must be replaced (supplied by Chalmit).

The cover should be re-fitted with all screws fully tightened. Any replacement screws must be identical to the original. Replacement fasteners should be stainless steel marine grade of ISO262 Grade A4-70 minimum.

- 9 The front access cover should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 3-year interval). (supplied by Chalmit).
- 10 If painting operations have taken place around the luminaire, ensure that coatings have not entered or been deposited on the LED Diffuser. If they have, clean carefully.
- 11 Check that mountings are secure.
- 12 Clean the LED Diffuser.
- 13 If there is suspicion that the luminaire has suffered mechanical damage, a stringent workshop check should be made.

**Important:** *Where spares are needed, these must be replaced with manufacturer parts. No modifications should be made without the knowledge and approval of the manufacturer.*

### **6.1 Electrical Fault Finding and Replacement**

Any fault finding must be done by a competent electrician with the luminaire isolated and if carried out with the luminaire in place, under a permit to work. Fault finding is by substitution with known good components.

### **6.2 LED Replacement.**

The need and frequency of replacing LED's be dependent on the functionality of the fitting. If it is continually running at high ambient temperatures it will affect the frequency of LED replacement. If it is necessary to replace the LED's, the LED's are mounted on boards that can be replaced individually. (The boards with LED's supplied by Chalmit).

Removal of LED assembly is as follows:

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Removal of LED assembly is as follows:

1. Remove front cover and disconnect positive and negative LED and EM LED wires.
2. Remove wire end cap located on end plate to allow for free movement of all LED wires.
3. Unscrew 4 off screws that secure the led module to the end plates.
4. Loosen off 4 off screws on one end plate to extrusion (complete removal not needed)
5. Remove old LED module by sliding blank side first (opposite from wired end)
6. Slide new wires from new led module through end plate IP sealed entry.
7. Move module in to position with wired end first.
8. Screw in the 2off screws at both ends of the LED module.
9. Tighten off 4 off screws on end plate for the extrusion.
10. Screw new LED module wires into the corresponding terminal blocks

Replace Front cover and fully tighten all bolts.

### **6.3 Checking of Battery separately**

If the battery is to be checked separately, it should be fully discharged before charging. Charge using a constant current charger at 200/400mA for 30/15 hours for a 3.3Ah min. Discharge measurement is not easy as the current is proportional to the voltage for resistance loads, so it has to be averaged. Discharge the battery at 1 to 2A and multiply current by time. Do not discharge below 1 volt per cell, which is 5V. The capacity should be 75% or more of normal.



**7.0 Disposal of Material**

The unit is mostly made from incombustible materials. The control gear contains electronic components and synthetic resin. All these may give off noxious fumes if incinerated. Care must be taken to render these fumes harmless and avoid inhalation. Any local regulations concerning disposal must be complied with. Any disposal must satisfy the requirements of the WEEE directive [2012/19/EU and Regulations 2012] and therefore must not be treated as commercial waste.



To comply with the Waste Electrical and Electronic Equipment directive 2012/19/EU and Regulations 2012 the apparatus cannot be classified as commercial waste and as such must be disposed of or recycled in such a manner as to reduce the environmental impact.

**Chalmit Lighting is a leading supplier of Hazardous Area lighting products**

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**For technical support, please contact: techsupport@chalmit.com**

Note: Chalmit Lighting reserves the right to amend characteristics of our products and all data is for guidance only.



	<b>EU/UK-Declaration of conformity</b>		
	<b>UE-Déclaration de conformité</b>		
	<b>EU-Konformitätserklärung</b>		
Manufacturer	Chalmit	Address	388 Hillington Road, Glasgow. G52 4BL Scotland UK
Product	Protecta X LED Industrial (Emergency)		
Catalogue	PRXI/***/**	Example: PRXI/02L/LE/EM	
Area Classification	Industrial (Non- Hazardous)		
Ingress Protection	IP66/67		
Ambient	-25°C to +60°C		
Terms of the directive:	Standard & Date Certified to	Standards Date Declared to	
2014/30/EU Regulations 2016	Electromagnetic compatibility	EN 55015 : 2019	
2014/30/UE	Compatibilité électromagnétique	EN 61547 : 2009	
2014/30/EU	Elektromagnetische Verträglichkeit	EN 61000-3-2 : 2019	
2014/35/EU Regulations 2016	Low voltage equipment	EN 60598-1 : 2015	
2014/35/UE	Équipements électriques à bas voltage	EN 60598-2-5 : 2015	
2014/35/EU	Niederspannungsgeräte / -systeme	EN 60598-2-22 : 2014	
		EN 60529 : 1992+A2:2013	
2012/19/EU Regulations 2012	Waste of electrical and electronic equipment		
2012/19/UE	Déchets d'équipements électriques et électroniques		
2012/19/EU	Entsorgung der elektrischen und elektronischen Geräte / Systeme		
2011/65/EU Regulations 2012	RoHS II Directive		

On behalf of the Chalmit, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms to all technical and regulatory requirements of the above listed directives.

En tant que représentant du fabricant Chalmit, je déclare qu'à la date où les équipements accompagnant cette déclaration sont mis sur le marché, ceux-ci sont conformes à toutes les dispositions réglementaires et techniques des directives énumérées ci-dessus.

Hiermit bestätige ich, im Namen von Chalmit, dass am Tag der Lieferung des Produkts/der Produkte zusammen mit dieser Erklärung das Gerät/die Geräte alle technischen und regulativen Anforderungen der oben aufgeführten Direktiven erfüllt.

Name and Date  
Nom et Date  
Name und Datum

Mark Poutney 22/03/2023

Technical Manager  
Directeur technique  
Technischer Leiter

Quality Management System Accreditation:  
Système de Management Qualité Accréditation:  
Qualitätsmanagementsystem Akkreditierung:  
Environmental Management System.  
Système de gestion de l'environnement.  
Umwelt kontroll system.  
Certificate No./Certificat N°/Zertifikat Nr.

**ISO 9001**

**ISO 14001**  
by/par/durch  
**Lloyd's Register**  
**LRQ 4005876**