

# Protecta X LED Linear Luminaire

## ATEX, IECEx and UKEX

### 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.

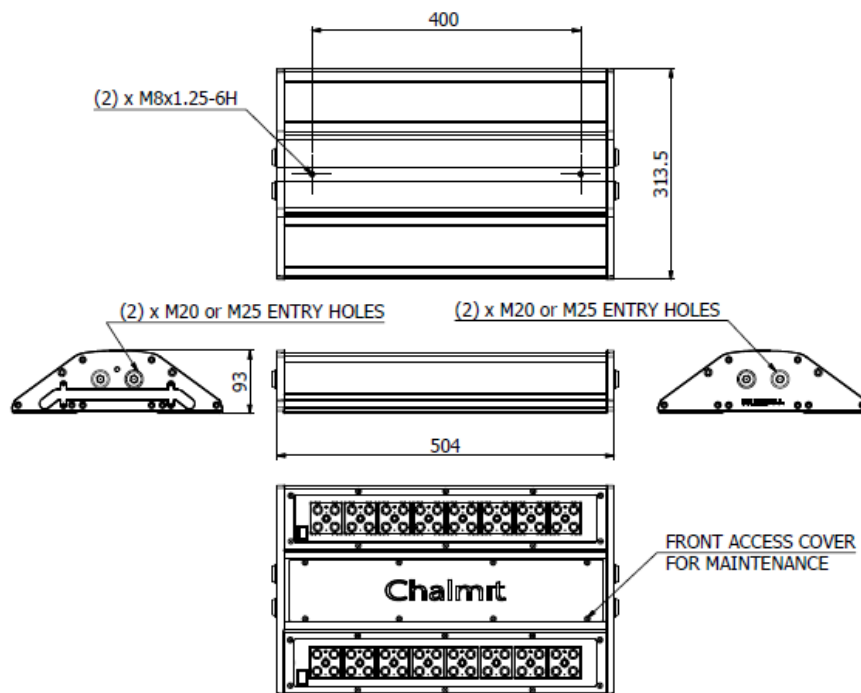


Fig. 1

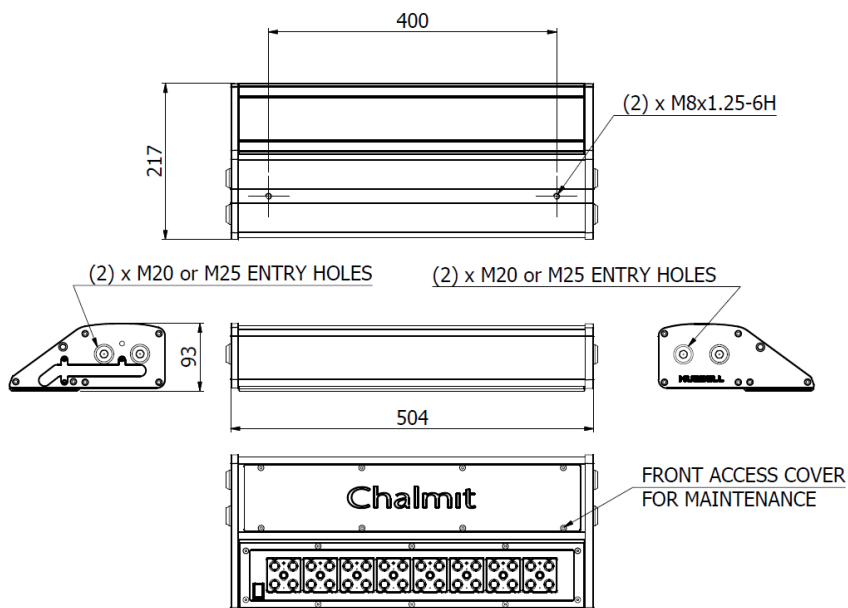





Fig. 2





Specification

Type of Protection	Ex d Driver ((flameproof and increased safety), Ex eb Housing (Increased safety), Ex mb LED Engine (Encapsulation), Ex tb Housing (Dust)
Protection Standards	EN/IEC 60079-0, EN/IEC 60079-1, EN/IEC 60079-7, EN/IEC 60079-18, EN/IEC 60079-31.
Area Classification	Zone 1 and Zone 2 areas to (IEC) EN60079-10-1 Zone 21 and Zone 22 areas to (IEC) EN60079-10-2
Installation	(IEC) EN 60079-14
Certificate	IECEX Certificate of Conformity IECEX CML 18.0167X EU Type Examination Certificate CML 18ATEX3358X UK Type Examination Certificate CML 21UKEX1506X
Equipment Coding	Ex db eb IIB+H2 T5 Gb Ex tb IIIC T**°C Db IP6* -40°C ≤ Ta ≤ 55°C/60°C
ATEX /UKEX Coding	Ⓔ II 2 GD
Ingress Protection	IP66/67
Photobiological safety of Lamps and Lamp Systems	Risk Group 2 LED product to IEC 62471. Avoid looking at exposed LEDs in operation especially with optical instruments. Eye injury can result.
<b>WARNING! DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT</b>	
  	<p>The CE marking of this product applies to "The Electrical Equipment (Safety) Directive", "The Electromagnetic Compatibility Directive", the "Waste Electrical and Electronic Equipment Directive" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Directive". [2014/35/EU, 2014/30/EU, 2012/19/EU and 2014/34/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" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 2016</p> <p>The Equipment is declared to meet the provisions of the ATEX directive (2014/34/EU) by reason of the Type Examination/EU Type Examination and meets the UK statutory requirements SI 2016 No.1107 and compliance with the Essential Health and Safety Requirements.</p> <div style="text-align: center;">   A Reid Technical Manager </div>

**SPECIAL CONDITIONS FOR SAFE USE**

Flameproof joints of driver modules are not intended to be repaired.

Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces (e.g. steam generation, windblown dust, etc). In addition, the equipment shall only be cleaned with a damp cloth.

The presence of certain chemicals in the explosive atmosphere may cause a chemical reaction with non-metallic materials such as the polycarbonate diffuser and silicone/EPDM gaskets that could have detrimental effect on their performance. Chemical compatibility is highly dependent on concentration, temperature, humidity and other environmental conditions. The end user will assume responsibility for evaluation of gaseous or direct contact compatibility at their site prior to product installation. If in doubt please contact Chalmit sales.



### 1.0 Introduction – Protecta X

The Protecta X Luminaire operates from mains voltage.

This installation leaflet covers the range of ATEX and IECEx Protecta X Luminaire models. These luminaires are mainly used in harsh environments and are constructed using Non-corrosive materials. Refer to the current catalogue for information on product references. The luminaires are available in 02L, 05L and 07L 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	Tamb Range
PRXB/02L/LE/**	Ta25°C	110 - 277V	16	0.15 – 0.06A	-40°C to +60°C
PRXB/05L/LE/**	Ta25°C	110 - 277V	35	0.35 – 0.14A	-40°C to +60°C
PRXB/07L/LE/**	Ta25°C	110 - 277V	51	0.47 – 0.19A	-40°C to +55°C

The safety limit for surface temperature (T rating) is +/-10% on the rated voltage. The maximum nominal variation from rated voltages stated above is +/- 6%. For the full range of Product Technical data contact Chalmit technical department

#### Power Factor @230V >0.90 Over Voltage

Power is constant over voltage range.  
400V ac for 1 min and EN 61000-4-5 > 4kV

#### Through Wiring

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).

#### Fuse and MCB Ratings

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;  
**07L** 20.0A for 300µs on 230V @ Ta25°C  
**05L** 17.7A for 41µs on 230V @ Ta25°C.  
**02L** 14.5A for 28µs on 230V @ Ta25°C.

### 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.

### 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. Installation should be carried out in accordance with (IEC) EN 60079-14 or with a local hazardous area code of practice, whichever is appropriate.

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. Certification details on the rating plate must be verified against the application requirements before installation. 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.

#### 4.1.1 Use in Combustible Dust Atmospheres

Where the equipment is used in ignitable dust atmospheres reference must be made to the selection and installation standards in order that the equipment is used correctly. In particular this applies to the de-rating of surface temperature for use where dust clouds may be present. Dust layers should not be allowed to accumulate on the fitting surface and good



housekeeping is required for safe operation. Dust in layers has the potential to form ignitable clouds and to burn at lower temperatures. Refer to EN/IEC 60079-10-2 & EN/IEC 60079-14 for additional details of selection and installation.

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

Where Hybrid mixtures exist as defined in EN1127 as a potentially explosive atmosphere, consideration should be given to verifying that the maximum surface temperature of the luminaire is below the ignition temperature of the hybrid mixture.

#### 4.2 Tools

6mm A/F socket keys (For Blanking 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 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. The safety limit for T rating is +10%.

#### 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.

The product is certified for ATEX, IECEx and UKEX and to comply with the certification for installation cable glands and sealing plugs must be ATEX, IECEx or UKEX certified depending on site requirements.

Cable glands for entry into Ex ec enclosures when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure IP66/67.

The cable gland must withstand an impact value of 7Nm where the risk of mechanical damage is high or 4Nm where the risk of mechanical damage is low.

Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20x the cable OD in mm for non-armoured cable and 80x the cable OD for armoured cable. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used. Two tapped cable entries each end are provided, three with a plug and seal suitable for permanent use, and one has a travelling plug. M20 x 1.5 pitch entries are standard, other sizes are available on request up to M25 x 1.5 pitch

##### 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 L 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 (suitable test unit will automatically test) 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.

## 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. What follows are guidelines based on *EN/IEC 60079-17* and on our experience. 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.

### **Luminaire should not be opened when an explosive atmosphere is present.**

- 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.
- 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 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.*

## 6.0 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.

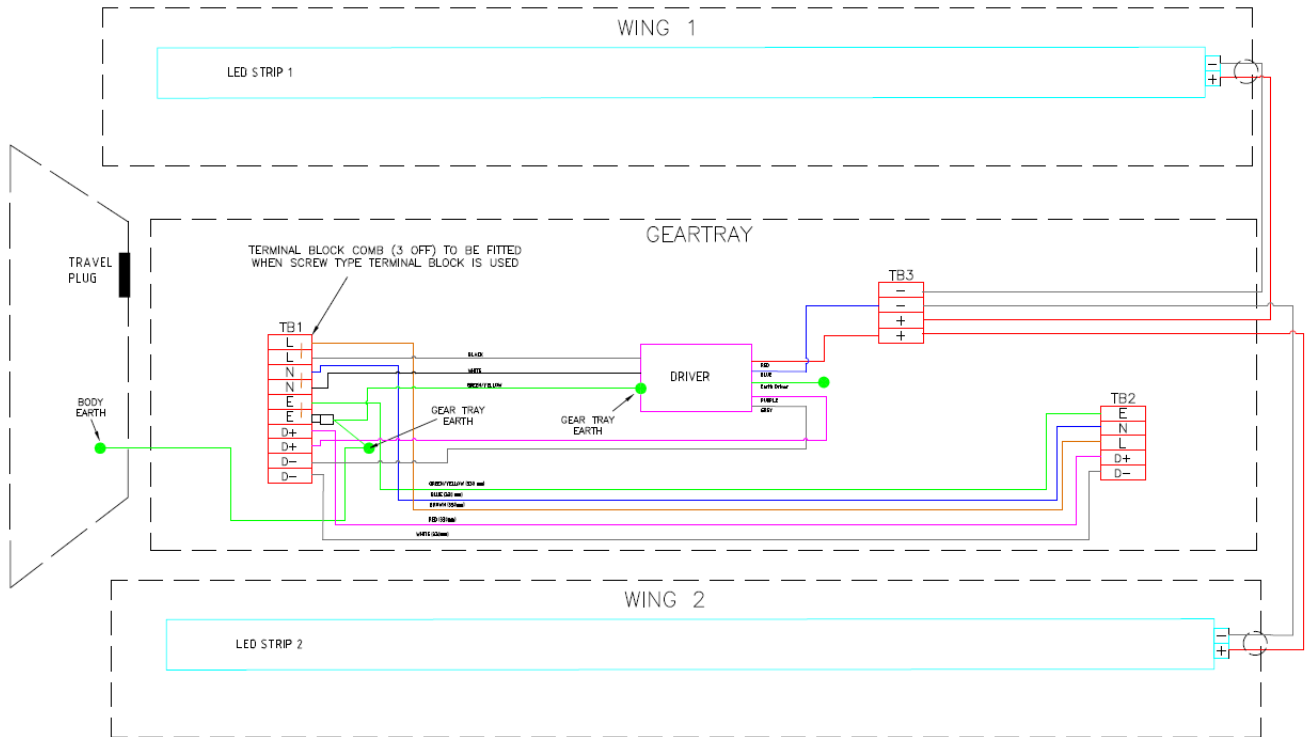
### 7.0 DALI feature,

The driver when ordering a /DM version will have DALI 2 compatibility control gear  
Screw Connection Terminal Block not available for the /DM option

### 7.1 Wire Diagram

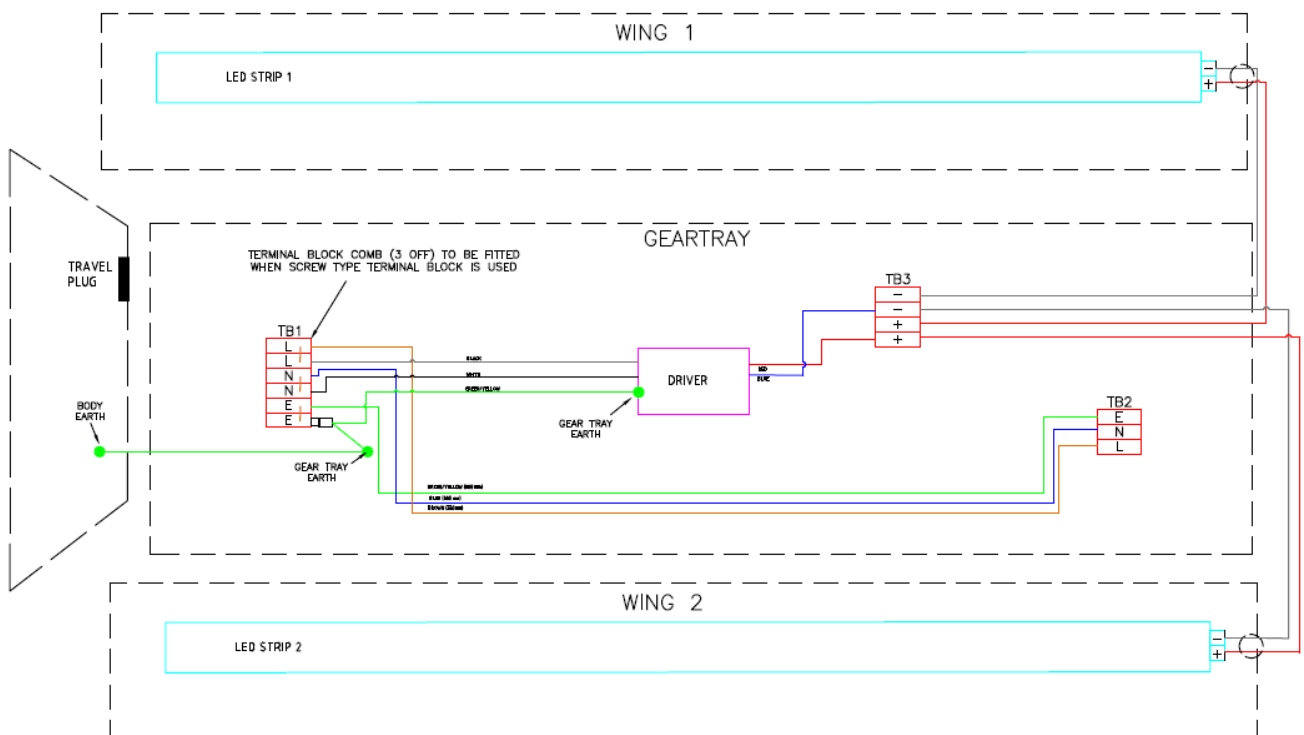
Dimming connections (/DM)

L= LIVE, N= NEUTRAL, E= EARTH, D+ = DALI POSITIVE, D- = DALI NEGATIVE



### Non-Dimming connections

L= LIVE, N= NEUTRAL, E= EARTH





**8.0 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**

	<b>CHALMIT LIGHTING</b> PO Box 5575 Glasgow, G52 9AP Scotland	
Telephone: +44 (0) 141 882 5555 Fax: +44 (0) 141 883 3704 Email: info@chalmit.com Web: www.chalmit.com	Registered No: 669157 Registered Office: Cannon Place 78 Cannon Street London EC4N 6AF UK	

**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 Linear Luminaire)		
Notified Body	CML B.V. 2776		
EU - Type Examination Certificate	CML 18ATEX3358X		
Approved Body	Eurofins CML 2503		
UK Type Examination Certificate	CML 21UKEX1506X		
ATEX/UKEX Coding			
ATEX/UKEX Classification	Group II Category 2 GD		
Equipment Coding	Ex db eb IIB+H2 T5 Gb -40°C ≤ Ta ≤ 55°C/ 60°C Ex tb IIIC T**°C Db IP6*		
Ingress Protection	IP66/67		
The technical basis, with respect to equivalence of			
La base technique, en ce qui concerne l'équivalence de			
Die technische Grundlage hinsichtlich der Normen			
Protection Standards EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-18, EN 60079-31			
Area Classification EN 60079-10-1 and EN 60079-10-2			
of compliance with the EHSRs is valid as there are no changes which materially affect the state of technological progress of the product.			
en conformité avec les EESS est valide puisqu'il n'y a aucun changement qui affecte matériellement l'état de l'évolution technologique du produit.			
zur Erfüllung der GSGA ist gegeben, da keine Änderungen erfolgt sind, die einen Einfluss auf den technischen Stand des Produkts haben.			
Terms of the directive:		Standard & Date Certified to	Standards Date Declared to
Prescription de la directive:		Standard & date certifiée à	Normes date Déclaré
Bestimmungen der Richtlinie:		Standard & Datum Zertifiziert nach	Standards Datum erklärt
2014/34/EU SI 2016 No.1107	Equipment and protective systems intended for use in potentially explosive atmospheres.	EN 60079-0: 2012 A11:2013 EN 60079-1 : 2014	
2014/34/UE	Appareils et les systèmes de protection destinés à être utilisés en atmosphères potentiellement explosibles.	EN 60079-7 : 2015 EN 60079-18 : 2015 EN 60079-31: 2014	
2014/34/EU	Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsfähigen Bereichen.		
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 60529 : 1992+A2:2013	
2014/35/EU	Niederspannungsgeräte / -systeme		
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		



