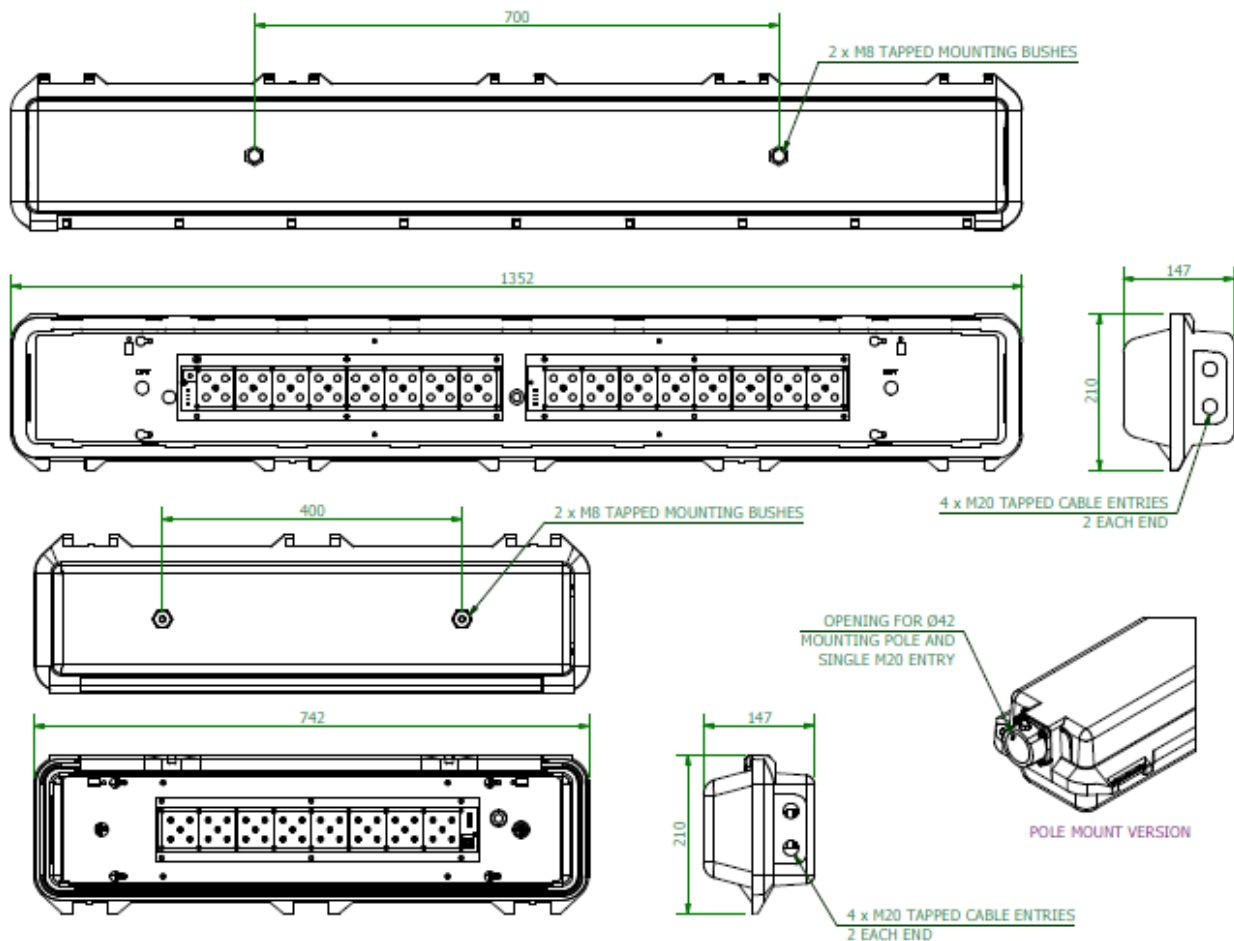




# Protecta IV LED Emergency Linear Luminaire

## 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.



Type of Protection	Ex db eb (Flameproof, Increased Safety) Ex tb (Dust Protected Enclosure)
Protection Standards	EN/IEC 60079-0, EN/IEC 60079-1, EN/IEC 60079-7, EN/IEC 60079-31.
Area Classification	Zone 1 and Zone 2 areas to EN/IEC 60079-10-1 Zone 21 and Zone 22 areas to EN/IEC 60079-10-2
Installation	EN/IEC 60079-14
Certificate	IECEx Certificate of Conformity IECEx CML 23.0140X EU Type Examination Certificate CML 23ATEX1426X UK Type Examination Certificate CML 23UKEX1427X
Equipment Coding	Ex db eb IIC T* Gb Ex tb IIIC T***C Db -***°C ≤ Ta ≤ 60°C */**/** see Table 1
ATEX /UKEX Coding	Ⓔ II 2 GD
Ingress Protection	IP66/67
Photobiological safety of Lamps and Lamp Systems	Risk Group 1 LED product to IEC 62471.
<b>WARNING! DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT</b> <b><u>POTENTIAL ELECTROSTATIC CHARGING HAZARD – CLEAN ONLY WITH A DAMP CLOTH</u></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>  <p>A Reid Technical Manager</p>

**SPECIAL CONDITIONS FOR SAFE USE**

- The equipment is for fixed installation only and shall be protected against the risks resulting electrostatic discharge. See manufacturer instruction manual for the necessary guidance.
- The flamepaths shall not be repaired

## 1.0 Introduction – Protecta IV

The Protecta IV Luminaire operates from mains voltage.

This installation leaflet covers the range of ATEX and IECEx Protecta IV Luminaire models. These luminaires are mainly used in harsh environments and are constructed using Non-corrosive materials. The integrated unit consists of a battery pack and a mains supplied driver and inverter to supply the LED strips and charge the battery pack in normal situations and power the LED strips from the battery pack in an emergency situation. The driver monitors the emergency functions and displays the emergency unit status by means of a green LED. 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	Watts	Amps	T*	SURFACE T**°C	Tamb -***°C to +60°C	Inrush current Amps (230V)
PR4B/02L/LE/EM/**	18.5	0.14 – 0.07A	T6	T85	-40°C to +60°C	17.9A @ 16µs
PR4B/05L/LE/EM/2FT/**	38.5	0.36 – 0.16A	T5	T100	-40°C to +60°C	20.2A @ 38µs
PR4B/05L/LE/EM/**	38.5	0.36 – 0.16A	T6	T85	-40°C to +60°C	20.2A @ 38µs

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 please contact Chalmit technical department.

<b>Batteries</b>	NiMH 6V 4Ah
<b>Emergency Duration</b>	90 minutes or 3 hours depending on model specified
<b>Power Factor @ 230V &gt;0.90</b>	Power is constant over voltage range
<b>Over Voltage</b>	400V ac for 1 min and EN 61000-4-5 > 4kV
<b>Through Wiring</b>	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).
<b>Fuse and MCB Ratings</b>	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;

## 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

Batteries storage temperature -20°C to +30°C (less than 1 year). It is recommended to store in order to ensure longer usage: +5 to +25°C in a 65 +/- 5% relative humidity. 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

**The inverter positive(red) wire should terminate in a spare terminal to isolate during transportation and prevent battery from draining.**

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**

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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.

#### 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 as follows;

Type	Emergency duration	Lumen percentage	Ambient temperature
02L	90Mins	50%	+60°C
02L	3Hrs (180Mins)	25%	+60°C
05L	90Mins	25%	+60°C
05L	3Hrs (180Mins)	12.5%	+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

**Luminaire is supplied with Battery disconnected, just prior to switching power on, connect inverter positive wire to corresponding battery positive in terminal block.**

The Protecta IV 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 LEDs 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.

If a battery is left connected to the luminaire during an extended power outage for longer than 3 months 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 IV utilises specialised symmetric 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. Please also note that the duration in Emergency conditions for the ASL and ASW optics are restricted to 3hr only

#### 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 Operation

**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	
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)  
 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. 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

Equipment certified cable glands and sealing plugs must have suitable IECEx/ATEX approval. When installed the cable gland or sealing plug should maintain the IP rating of the enclosure, IP66/67.

Four entries are provided. Three entries are fitted with suitably approved blanking plugs, the fourth entry with a transit plug. M20 x 1.5 entries are standard, other sizes are available on request. The standard entry configuration is with an earthed metal plate with tapped holes mounted in the body.

##### 4.6.2 Cable

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

#### 4.7 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. To access the mains terminals refer to **5.1** Opening and closing the Cover followed by **5.3** Releasing the Gear Tray. Luminaires are supplied suitable for looping and through wiring. 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. 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.**

#### 5.1 Opening and Closing the Cover

Insert a screwdriver into one of the slots in the clamping bar with the end of the tool located into the outer flange of the body as a fulcrum point, a wide blade screwdriver is recommended. Gently lever the tool away from the diffuser, the clamping bar will begin to open. Insert the tool in the other clamping bar slot and gently lever away from the diffuser, the clamping bar will open and the cover will be retained by the hinge. Should difficulty be experienced reinsert the tool in the first slot and repeat the procedure.

The procedure for closing and securing the cover is as follows:



Ensure the hinge mechanism is clear of any obstruction and then swing the diffuser into the closed position. Support the diffuser in position whilst pushing the clamp bar over the edge of the diffuser. Apply even pressure at both ends of the bar and press the bar over centre making sure that it goes fully into position.

To remove and replace the diffuser open the diffuser to 180° and it will lift out. When replacing ensure that all the hinges are into place before attempting to close.

### 5.2 Removal and Replacement of Clamping Bar (if required)

Open the luminaire as above and remove the diffuser or let it swing down. Press the clamping bar towards the closed position, tip forward beyond the closed position and the clamping bar will be released from the body. To replace the clamping bar, put in position on the body with the front edge pointing as far inwards as it will go. Click the bar outwards and bring back to the normal closed position. The clamping bar should then be secured in position, open the clamping bar fully by using hand or screwdriver pressure (avoid damaging the gasket), the clamping bar is then ready to accept the normal closure of the diffuser.

### 5.3 Servicing Behind the Gear Tray

**The release of the gear tray exposes live mains terminals. Any work behind the gear tray requires that the supply is isolated to avoid ignition risk and damage to components.**

### 5.4 Releasing the Gear Tray

Loosen the four fixing screws retaining the gear tray far enough for it to slide over keyhole slots. The tray will hang on the retaining cords without stressing the wiring between body and tray. Replace in reverse order.

### 5.5 Removal of Gear Tray

Release gear tray from body and hang on retaining cords, as explained above. Disconnect the cables from the gear tray to the mains terminal block, unhook retaining cord from gear tray and lift clear. With disconnection made at the screw-less terminals the luminaire is safe when re-closed without the tray.

### 5.6 Routine Maintenance

- 1 Check for mechanical damage/corrosion.
- 2 Check connections, fixings, glands and plugs for tightness and re-tighten if necessary.
- 3 Check for undue accumulations of dust, dirt or moisture.
- 4 Check for unauthorised modifications.
- 5 Check if any LED's have failed. 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.
- 6 Check that mountings are secure.
- 7 Inspection of the enclosure seal should be carried out to ensure that the seal is sound. The seal can be replaced and, if necessary, secured in position by the application of a **very** small amount of rubber adhesive and using the joining piece. Care must be taken to ensure seal is not stretched during assembly

**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.*

### 5.6 Cleaning

The body of the luminaire may be cleaned with a mild solution of household detergent and water, after cleaning the body should be washed and wiped with clean water. **The diffuser should not be polished or wiped with a dry cloth as a risk of ignition due to electrostatic discharge may result.** Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

### 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.





### 6.1 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.

	<p>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.</p>
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**Chalmit Lighting is a leading supplier of Hazardous Area lighting products**

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**For technical support, please contact: [techsupport@chalmit.com](mailto: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 IV (LED Linear Luminaire)		
Notified Body	CML B.V. 2776		
EU - Type Examination Certificate	CML 23ATEX1426X		
Approved Body	Eurofins CML 2503		
UK Type Examination Certificate	CML 23UKEX1427X		
ATEX/UKEX Coding	 II 2 GD		
ATEX/UKEX Classification	Group II Category 2 GD		
Equipment Coding	Ex db eb IIC T* Gb -***°C ≤ Ta ≤ 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 60079-31			
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 IEC 60079-0: 2018	
		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+A1:2018 EN 60079-31: 2022	
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 : 2023	
2014/30/EU	Elektromagnetische Verträglichkeit	EN 61000-3-2 : 2019 EN 61000-4-3 : 2020	
2014/35/EU Regulations 2016	Low voltage equipment	EN 60598-1 : 2021	
2014/35/UE	Équipements électriques à bas voltage	EN 60598-2-22 : 2022	
2014/35/EU	Niederspannungsgeräte / -systeme	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		
Additional information:	The luminaire is capable of withstanding over voltage levels of up to 400V AC for 1 minute and impulse voltage surges of 4kV.		
Informations complémentaires:	Le luminaire peut supporter des niveaux de tensions jusqu'à 400V CA pendant 1 minute et des tensions de choc de 4kV.		
Zusatzinformation:	Dieser Strahler widersteht Überspannungen bis 400V AC 1 Minute lang sowie Stoßspannungen von 4kV.		

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	Andy Reid 17/11/2023	Technical Manager Directeur technique Technischer Leiter	
Quality Assurance Notification by: Notification d'assurance qualité par: Qualitätssicherungsnotifikation durch:	<b>SGS Fimko OY 0598</b>	Quality Management System Acreditation: Système de Management Qualité Accréditation: Qualitätsmanagementsystem Akkreditierung:	<b>ISO 9001</b>
UKCA Quality Assurance Notification by:	SGS Baseefa 1180	Environmental Management System. Système de gestion de l'environnement. Umwelt kontroll system. <b>Certificate No./Certificat N°/Zertifikat Nr.</b>	<b>ISO 14001 by/par/durch Loyd's Register LRQ 4005876</b>