

# Sterling III - LED Luminaires (Ex ec)

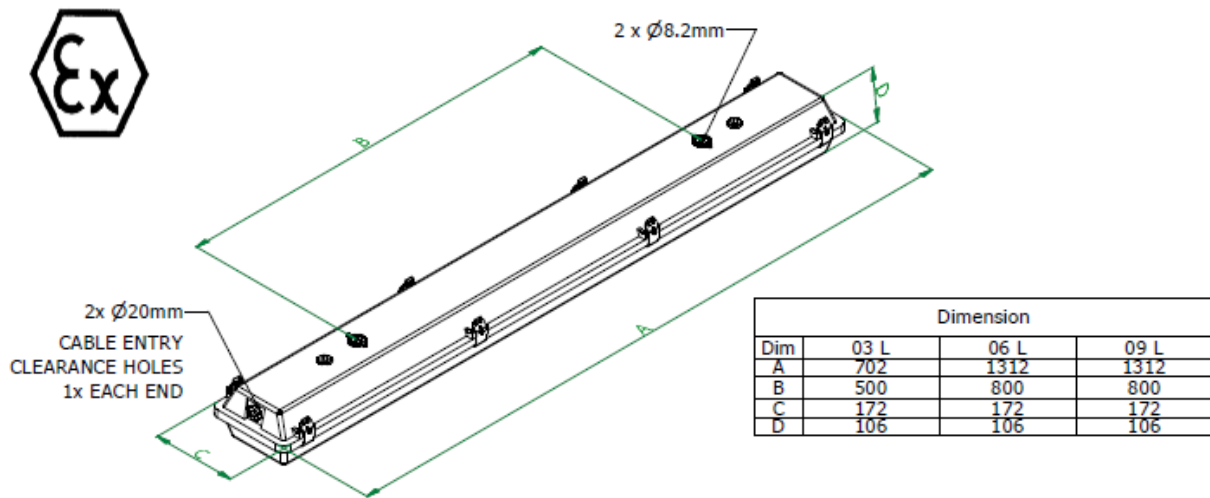
ATEX, IECEx

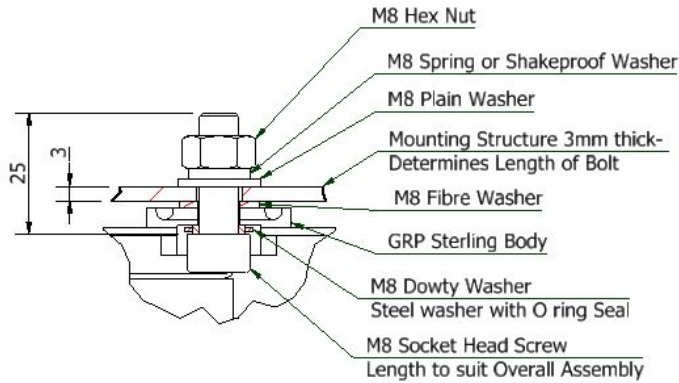
## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

### GRP Standard body


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

**Technical Drawing:**





Section Thru Mounting Holes  
Typical Arrangement of Sealing Washers

<b>0.0 Specification</b>	
Type Of Protection	Ex ec, (non-sparking). Ex tc,
Protection Standards	EN/IEC 60079-0, EN/IEC 60079-7, EN/IEC 60079-31
Area Classification	Zone 2 areas to EN/IEC 60079-10-1, Zone 22 areas to EN/IEC 60079-10-2.
Installation	EN/IEC 60079-14
Certificate	Type Examination Certificate CML 16ATEX 4101X IECEx Certificate of Conformity IECEx CML 16.0044X
Equipment Coding	Ex ec IIC T4 Gc Ex tc IIIC T76°C Dc IP6X, (ambient values see tables below for details)
ATEX Coding	Ⓔ II 3GD
Ingress Protection	IP65 to EN/IEC 60529
CE Mark	 <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" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EU directives 2014/35/EU, 2014/30/EU, 2012/19/EU and 2014/34/EU respectively].</p> <p>The Equipment is declared to meet the provisions of the ATEX directive (2014/34/EU) by reason of the Type Examination and compliance with the Essential Health and Safety Requirements.</p> <p>M Poutney Technical Manager</p>

**SPECIAL CONDITIONS FOR SAFE USE**

**The Luminaire shall only be installed where there is a low risk of mechanical damage.**

**When refitting the diffuser, the fixing clamps are to be re-secured with the original or replacement self tapping screws.**

**Fasteners through the enclosure used for mounting purpose shall be fitted with appropriate sealing washers to maintain the ingress protection rating of the enclosure.**

## 1.0 Introduction – Zone 2 & Zone 22, Ex ec, Ex tc LED Luminaire

### General

The type of protection is Ex ec and Ex tc. The Zone 2 & Zone 22 series LED luminaires are surface mounted or suspended, utilising the two holes on the base of the body. They are mainly used in harsh environments, and are constructed using a corrosion resistant glass reinforced polyester body, attached to an injection moulded polycarbonate diffuser by stainless steel toggle clips. The control gear and LED's are mounted on a removable tray that for maintenance purposes has hanging straps.

**Note:** *The ratings are listed in TABLES A & B.*

### 1.1 Application

The luminaire is designed to be safe in normal operation. The luminaire should not be used where there are environmental, vibration or shock conditions above the normal for fixed installations. The gaskets should not be exposed to hydrocarbons in liquid or high concentration vapour states.

The luminaire is suitable for applications where Category 3 apparatus can be used. The type examination does not address suitability for portable applications.

## 2.0 Storage

Luminaires are to be stored in cool dry conditions preventing ingress of moisture and condensation.

## 3.0 Installation and Safety

### 3.1 General

There is no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with relevant EN / IEC standard or the local hazardous area code of practice, whichever is appropriate.

These instructions should be read carefully before attempting to install the luminaire. 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 regulations, standards or codes of practice applicable.

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". Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.

The luminaires are quite heavy and suitable means of handling on installation must be provided.

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 manufacturer reserves the right to make specification changes as required.

The GRP body & polycarbonate diffuser presents a potential source of ignition by **electrostatic electricity**. The diffuser should only be cleaned using a damp cloth. The luminaire should not be mounted very near to any probable location of fast moving stream of dry air, steam etc. which could generate a propagating brush static discharge

#### 3.1.1 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.

Self tapping screws are supplied with the luminaire to lock the diffuser clamps. **These must be fitted to maintain the certification.**

Refer to EN/IEC 60079-10-2 & EN/IEC 61241-14 for additional details of selection, installation and maintenance.

#### 3.1.2 Hybrid Mixtures – Gas plus Dust

Where Hybrid mixtures exist as defined in EN/IEC1127 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.

### 3.1.3 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 explosion due to electrostatic discharge may result. Cleaning of the diffuser with any chemical or hydrocarbon solvent based cleaner may result in severe damage.

### 3.1.4 Aggressive substances

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

Aggressive substances: e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials.

Suitable precautions: e.g. regular checks as part of routine inspections or establishing from the material's data sheets that it is resistant to specific chemicals.

## 3.2 Tools

Suitable spanners for installing cable glands.

3mm flat blade screwdriver. 12mm flat blade screwdriver. No. 6 pozidrive

Pliers, knife, wire strippers/cutters.

## 3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating is +10%). Luminaires should not be operated continuously at more than +6%/-6% of the rated supply voltage of the control gear.

**Warning:** *Luminaires are assessed and/or tested for EMC requirements. This is based on the disposition of entry cables and, where appropriate, through wiring arrangements as supplied or specified. Users must take care not to introduce wiring into parts of the apparatus materially different to that which could be reasonably inferred from the disposition of fixed supply terminals and specified wiring.*

## 3.4 Light Emitting Diode (LED)

LED's are supplied in 3000, 6000 or 9000 Lumen options with the colour temperature of 4000K or 5000K (Check nameplate for colour temperature)

### 3.4.1 Inotec monitoring module

If the product has a /JSVS or /JSVT suffix this means it comes fitted with an Inotec monitoring module for use with a central battery system.

Modules will be factory set to DL for maintained luminaires, switch position I

/JSVS is the J-SV-Module/S model for emergency luminaires

/JSVT is the J-SV-Modul T/S model for timed luminaires, switching off within 2 minutes.

## 3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. The mounting attitudes are restricted to ceiling, pendant, outreach pole (lamps facing down or horizontally outward) and horizontal wall mount. The luminaire is mounted using the DIA 8.2mm mounting holes on the rear of the body.

On mounting the luminaire by using the holes, it is the responsibility of the user to ensure that an adequate seal is made, to maintain the IP rating of the enclosure. Sealing Washers are provided.

## 3.6 Cabling and Cable Glands

### 3.6.1 Cables

The GRP models have facility for through wiring but do not have a facility for looping.

The temperature conditions of the supply cable entry point are such that 70°C (ordinary PVC) cable can be used.. 300/500V cable ratings are adequate and no special internal construction is necessary.

An internal earth tag can be fitted to the cable gland.

**Note:** Through wiring when used, is subject to a maximum current of 16A.

### 3.6.2 Cable Gland Types

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

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

Cable glands and sealing plugs when installed must reliably maintain the IP rating of the enclosure.

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.

The cable should be reliably clamped externally to the apparatus or surrounding fixture within 200mm of the cable gland.

Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used. 20 DIA cable entry clearance holes suitable for M20 cable glands are standard.

### 3.6.3 Earthing

On GRP bodied luminaires, all internal metal parts are earthed through the Metal gear tray. The Metal gear tray is earthed via supplied cable to incoming terminal block.

It is the installer's responsibility to ensure proper earth supply to the luminaire and to ensure any metal cable glands are properly earthed. Cable gland earth kits are available from the manufacturer.

### 3.6.4 Cabling

Access for cabling is via diffuser cover; care is to be taken, as there is no suspension of diffuser cover. The diffuser clip screws are removed and the diffuser clips are undone and the diffuser laid aside. The gear tray is dropped down after unclipping the steel mounting clips. The tray can be removed by undoing the spring clips on the suspension cables. Any earth tag connections should be fitted.

The connecting terminals are identified and 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 cores 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.

### 3.7 Replacing LED's

Before opening the diffuser cover, ensure that the luminaire is isolated from mains supply. Access is via the diffuser cover; care is to be taken, as there is no suspension facility for the diffuser cover.

It is recommended on failure of LED's an entire geartray kit including driver should be fitted. This will maximise the lifetime of the product.

**Note:** The diffuser cover must be refitted in its original orientation to maintain the IP rating & diffuser clips snapped into place.

Self-tapping screws are supplied with the luminaire to lock the diffuser clamps. **These must be fitted to maintain the certification.**

Refer to EN/IEC 60079-10-2 & EN/IEC 61241-14 for additional details of selection, installation and maintenance.

### 3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

#### 3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on EN/IEC 60079-17 and on our experience:

- 1 Ensure LED's are lit when energised by mains supply.
- 2 Visually check diffuser cover for damage. This should only be cleaned using a damp cloth to avoid static and only use recommended detergents for polycarbonate. If the polycarbonate is discoloured or damaged, a new diffuser cover must be fitted.

- 3 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are any signs of water ingress, the luminaire should be opened up, dried and any likely ingress points eliminated by re-gasketing or other replacements. If the diffuser cover is removed, its orientation must be noted and it must be refitted in the original orientation.
- 4 Check cable gland for tightness and nip up if required.
- 5 Check any external and internal earths.
- 6 Check all terminations are firmly screwed down, tighten if necessary.
- 7 Check clips visually for any damage and replace, if necessary.
- 8 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check on all components should be made. All components can be removed from the luminaire for inspection.
- 9 Avoid the build up of dust layers by regular cleaning and again clean only using a damp cloth.

### **3.8 Electrical Fault Finding and Replacement (Refer EN / IEC 60079-19)**

The supply must be isolated before opening the luminaire.

Any live fault finding must be done by a competent electrician and, if carried out with luminaire in place, under a permit to work.

The electronic drivers are approved components.

On re-assembly, all faulty/damaged wiring should be replaced and connections checked.

### **4.0 Overhaul (Refer EN / IEC 60079-19)**

Components to be incorporated into or used as replacement parts of the equipment shall be fitted by suitably trained personnel and other than the fuse are to be purchased from the manufacturer as to ensure that certification is not invalidated. The certification of this equipment relies upon the following materials used in its construction: Glass re-enforced polyester body, polycarbonate diffuser, stainless steel clips and EPDM rubber gasket.

The unit is largely made of materials that are very corrosion resistant. This allows the unit to be completely stripped, cleaned and then re-built with new electrical parts as required. The internal wiring is 0.8mm<sup>2</sup> solid core, HTPVC insulated. All the spares required are available. Please state the model identification string e.g. ST3N/03L/LE.

The seal is between the polycarbonate diffuser and the base. The diffuser is retained by stainless steel clips. If the sealing gasket has deteriorated by softening or permanent set, a new sealing gasket should be fitted, which can be obtained from the manufacturer. To fit this, care is needed, the old gasket should be removed and remaining adhesive scraped off. The gasket is fixed in place to the body with a small amount of silicone RTV.

It is the end users responsibility to ensure the materials of construction and the product certification as detailed on the product label is suitable for intended installation location.

### **5.0 Fuse Ratings**

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. Where MCB's are used, the type with the higher short time tripping current ratio used for motor starting and lighting should be specified. The inrush current can be calculated where circuit conditions are known. The inrush currents can be obtained from the manufacturer.

The fuse ratings for LED strips in circuits need to take account of the Driver within the construction of the Luminaire. All calculations must satisfy wiring regulations.

### **6.0 Disposal of Material**

Any disposal must satisfy the requirements of the [WEEE directive \[2012/19/EU\]](#) and therefore must not be treated as commercial waste. The unit is made from combustible materials; the control gear contains plastic parts and electronic components. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with.

### 6.1 LED's

LED's in modest quantities are not "special waste". They should be broken in a container to avoid possible injury from fragmentation. Avoid inhaling dust. This applies to the UK; there may be other regulations on disposal operating in other countries.

**Important:** *Do not incinerate LED's.*



To comply with the Waste Electrical and Electronic Equipment directive 2012/19/EU 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.

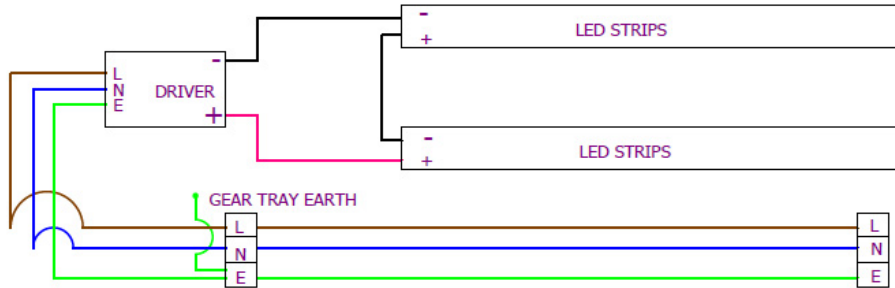
### Tables A, B and C

<b>TABLE A - SCHEDULE – LED CONTROL GEAR – NON EMERGENCY – 120 to 277Vac – 127 to 300Vdc</b>						
Note: for Dust Ratings Refer to Max Surface Temperatures.						
Light Source	Body Type	Nominal Volts	LED Driver	Ambient Temperature	T Rating	Max Surface Temperature (Dust)
3365 Lumen	2ft Twin	120-277Vac 127-300Vdc	26W	-20°C ≤ Ta ≤ +55°C	T4	76°C
6218 Lumen	4Ft Twin	120-277Vac 127-300Vdc	60W	-20°C ≤ Ta ≤ +50°C	T4	76°C
8953 Lumen	4Ft Twin	120-277Vac 127-300Vdc	96W	-20°C ≤ Ta ≤ +45°C	T4	76°C

<b>Table B - Series Circuit.</b>				
No. Of LED Strips	Gear Type	Lumen	Nominal Circuit Power (W)	Line Current
2 x 560mm	LED Driver	3592	23	0.2 – 0.09A
2 x 1120mm		6241	42	0.37 – 0.16A
2 x 1120mm		8798	63	0.54 – 0.24A

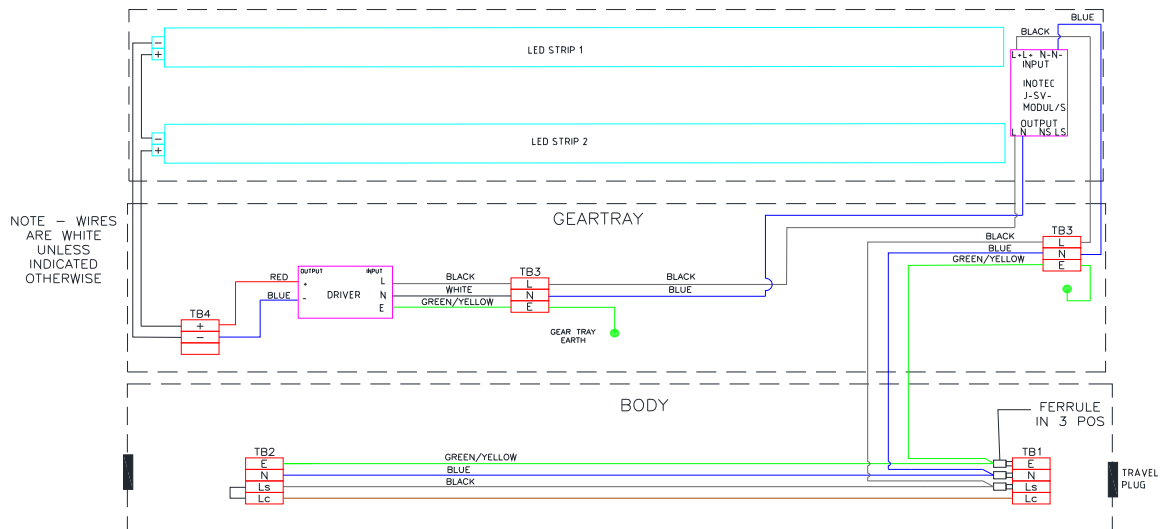
<b>TABLE C - SCHEDULE – LED CONTROL GEAR – INOTEC MODULE – 230Vac 50/60Hz – 176 to 264Vdc</b>						
Note: for Dust Ratings Refer to Max Surface Temperatures.						
Light Source	Body Type	Nominal Volts	LED Driver	Ambient Temperature	T Rating	Max Surface Temperature (Dust)
3365 Lumen	2ft Twin	230Vac 176-264Vdc	26W	-15°C ≤ Ta ≤ +45°C	T4	76°C
6218 Lumen	4Ft Twin	230Vac 176-264Vdc	60W	-15°C ≤ Ta ≤ +45°C	T4	76°C
8953 Lumen	4Ft Twin	230Vac 176-264Vdc	96W	-15°C ≤ Ta ≤ +40°C	T4	76°C

### Typical Standard LED Wiring Diagram





Note: For other Wiring Diagrams, please contact the manufacturer

### Typical Standard with Inotec module Wiring Diagram





	<b>EU-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	Sterling III LED		
Type Examination Certificate	CML 16ATEX 4101X		
Notified Body	CML B.V. 2776		
ATEX Coding	 II 3 G D	ATEX Classification	Group II Category 3 GD
Equipment Coding	Ex ec IIC T4 Gc, Ex tc IIIC T76°C Dc IP6X (ambient temperature refer to Table A).		
Ingress Protection	IP65		
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 60079-7, EN 60079-31			
Area Classification EN 60079-10-1, 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	Equipment and protective systems intended for use in potentially explosive atmospheres.	EN 60079-0: 2012 EN 60079-7: 2015	
2014/34/UE	Appareils et les systèmes de protection destinés à être utilisés en atmosphères potentiellement explosibles.	EN 60079-31: 2014	
2014/34/EU	Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsfähigen Bereichen.		
2014/30/EU	Electromagnetic compatibility	EN 55015 : 2013	
2014/30/UE	Compatibilité électromagnétique	EN 61547 : 2009	
2014/30/EU	Elektromagnetische Verträglichkeit	EN 61000-3-2 : 2014	
2014/35/EU	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 60529 : 1992	
2012/19/EU	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	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      Mark Poutney    01/01/2021  
Nom et Date  
Name und Datum

Technical Manager  
Directeur technique  
Technischer Leiter

Quality Assurance Notification by:      **SGS Fimko OY**  
Notification d'assurance qualité par:      **0598**  
Qualitätssicherungsnotifikation durch:

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**