raytec

SPX/SPZ SPARTAN

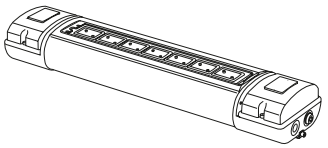
Linear Range - Installation Guide

CML14ATEX3119 & IECExCML15.0001 & CML21UKEX3105
CML15ATEX4138 & IEC Ex CML15.0068 & CML21UKEX4104
CML16ATEX1130 & IEC Ex CML16.0052 & CML21UKEX1100

This installation guide provides instructions for installing SPARTAN series of explosion protected linear luminaires.

Text in italics is specific for emergency variants.

Overview



Important information

The SPARTAN series of explosion protected luminaires are specialist devices, certified for use in specific operating environments.

The units must be installed in accordance with these instructions, must be correctly certified for the specific operating environment and must be installed by suitably qualified personnel.

If you have any queries about the installation or the certification of the unit – please contact Raytec for immediate assistance and advice.

0920-D-00042 Rev B

1. Safety instructions

1. Read this leaflet carefully before commencing to install the SPARTAN unit and retain it for future use. Installation can only be carried out by suitably qualified personnel.
2. Check the certification to ensure that the hazardous zone, mains supply, ambient temperature present and 'T' rating are is suitable for the environment the unit is being installed in.
3. If the SPARTAN unit is to be installed in areas of high vibration, please consult with Raytec.
4. Externally the SPARTAN unit housing is constructed from marine grade aluminium and polycarbonate outer optic, stainless steel brackets/fasteners and silicone gaskets, internally there are many non metallic components. The end user must ensure that these materials are suitable for the environment the SPARTAN unit will be installed in; Zone 1 or Zone 2 Hazardous areas

   Plastic components may be cleaned with water containing a small amount of detergent, followed by a clean water wash. Chemicals/ oils that come into contact with plastic parts may cause stress cracking and premature component failure.
5. Check certification nameplate on cover of luminaire to ascertain type of threaded cable entry on the luminaire. Select suitably certified ATEX/IEC Ex/ UKEX cable glands and stopper plugs, these must be parallel thread, have a minimum of 5 full thread engagement and be of a medium/fine tolerance to ISO965-1 and ISO965-3. The cable entry devices selected must maintain the IP rating of the luminaire
6. The incoming mains cable should not exceed a temperature rise of 27°C above the ambient conditions; select suitable cable.
7. When the unit is installed correctly and in accordance with these installation instructions it will not harm humans or animals.
8. Before installing emergency luminaires please check the last charge date of the battery. This is shown on the external product packaging and also on the battery label, alternatively consult date shown on the declaration at the back of this leaflet. If the last charge date was in excess of 3 months (if stored at 5°C to 25°C) or 1 month (if stored outside this range) from date of installation, please consult Raytec document 0010-D-00001 Battery Handling Guide

Isolate mains before removing cover

Install in a well ventilated area

Do not continually stare at lamp

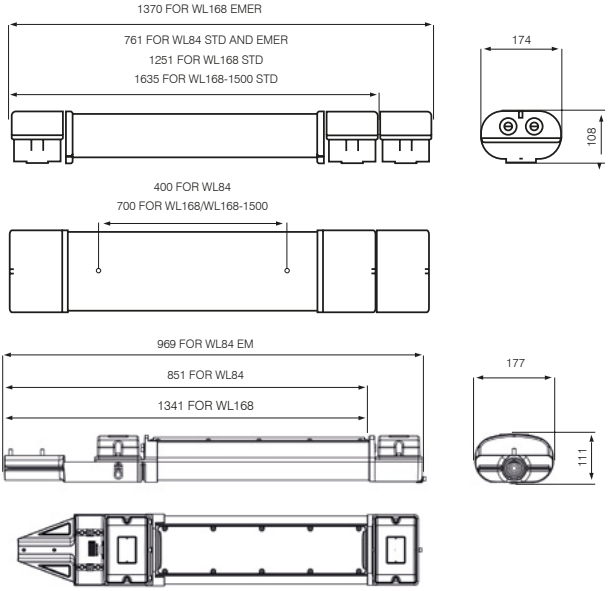
UK / Europe Tel: +44 (0) 1670 520055
Americas Tel: +1 613 270 9990

2. Installation

Mounting SPARTAN Unit

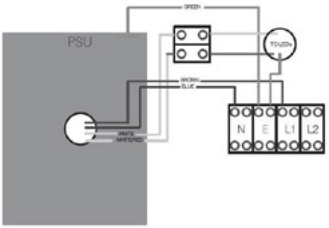
1. To meet the requirements of certification a **MINIMUM** of 2 fixing points must be used, the fixing points must be suitable for the conditions of use.

2. The rear of the unit has 3 blind sets of M8/M6 fixing points, a full range of mounting accessories are available including a range of pole clamps, ceiling mount brackets, various wall mount brackets, outreach bracket and chain mount eyelets. Please consult www.raytecled.com for further details. The spigot mount version of the product is provided with a pole mount system and 2xM6 A4 SS Grub Screws for mounting onto 32-43mm diameter poles. Once mounted tighten grub screws to 15Nm.

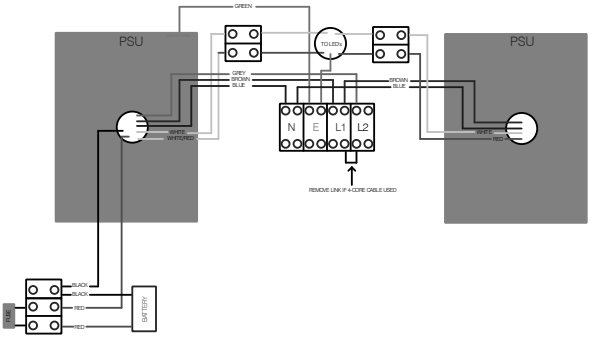


3. When installing the SPARTAN luminaire vertically where possible, the cable glands should be kept to the bottom of the luminaire.

Typical wiring diagram - Standard Variants



Typical wiring diagram - Emergency Variants



Wire the Mains cable into the terminal block. Provision has been made for this and identified as the E (Earth), L1 (Live switched), L2 (Live permanent) and N (Neutral) terminals. There are two pairs of contacts for each of these to facilitate a mains cable that can be looped in and out of the unit, an identical terminal block is also available at the other end of the luminaire to allow the unit to be through wired. The L2 terminals on a standard unit is not electrically connected but allows them to be used on the same circuits as *emergency luminaires.*

4. Installer should earth the unit separately – an internal and external earth point are provided as standard at each end of the luminaire
5. Connect wires to mains supply.
6. If the unit is opened for any reason, disconnect mains – *On emergency luminaires there may be more than one mains supply*

UK / Europe Tel: +44 (0) 1670 520055
Americas Tel: +1 613 270 9990

7. All SPARTAN luminaires have terminal blocks suitable for looping 4mm2 cable, only one cable should be connected to each terminal block connection
8. *The battery fuse is located in the compartment that contains the battery, the fuse is disconnected after final manufacturing testing. When installing the linear the battery fuse will need to be reconnected and the unit charged for 24 hours and then discharged (repeated 3 times) to bring the battery up to peak capacity. (Unless an 'EMX' intelligent emergency variant – see notes below)*
9. *If a 4 core cable is used on emergency luminaires – L1, L2, N and E the link cable at the front of the terminal block between L1 and L2 should be removed*
10. *During emergency operation the light output and duration will be determined by the variant purchased*
11. Once wiring is complete replace terminal enclosure covers. Ensure gasket is located neatly in channel and no wires are trapped between cover and body. Tighten screws to 3Nm
12. If carrying out Insulation Resistance tests 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.

Spartan Intelligent Emergency Operation Guide

Operation

The light fitting will carry out the following function **automatically** after installation:

- Commissioning Cycle
- Function test
- Self-test

A tri-colour LED indicator displays the light fitting status. The indication colours are shown in table 1.

a. Commissioning Cycle

- Starts automatically 24 hours after installation.
- 3 charge/discharge cycles to maintain battery's full capacity.
- Battery is charged for 24 hours before each discharge cycle.
- No need for manual commissioning

b. Function Test

- Carried out every 7 days.
- Checks the function of the battery, lamp and power supply.
- Lasts for few minutes only.

c. Self-test

- Carried out at a random time every 3 month.
- Checks the battery's capacity and lamp's condition.
- Performs self-recovery for the battery if not at peak capacity.
- Is carried out at 100% load
- Discharges only 2/3 of the battery's capacity.

LED indication

LED Indication	Condition
Blinking amber	Commissioning
Static Amber	Function Test
	Self-test
Blinking Red	Battery defective/Fuse blown
	PSU error
	Battery not at peak capacity
	Light engine failure
No light	Emergency mode activated
Static Green	Battery charged and PSU OK

Notes

- The luminaire will switch off momentarily (<0.5sec) during the transition between a test and normal operation.
- If a test was interrupted by a mains failure, the test will be halted, and the unit will enter emergency mode. Once the mains supply is back, the unit will allow 24 hours to recharge the battery before continuing the tests.
- The self-test is carried out at a random time to eliminate the possibility of having more than one unit undergoing the test at the same time.

UK / Europe Tel: +44 (0) 1670 520055
Americas Tel: +1 613 270 9990

3. Maintenance

1. It is essential that all SPARTAN units are maintained in accordance with the requirements of the EN60079-17 standard: (Electrical apparatus for explosive gas atmospheres – other than mines).
2. **IMPORTANT**. No modifications are permitted to the unit, all spare parts must be purchased from the manufacturer, unauthorized modifications or spare parts will invalidate certification and make the equipment dangerous.
3. Isolate the SPARTAN unit from the mains supply and allow to cool before carrying out any maintenance work.
    - For Emergency variants, battery must be isolated/ connected when a hazardous environment is NOT present prior to carrying out any maintenance work.
4. In the unlikely event of a number of LED's failing, the light engine assembly must be replaced. This is achieved by removing the outer polycarbonate cover and then releasing the M3 bolts that hold the LED assembly in place, disconnect the white and red/white cable to the power supply and pull the light engine PCB clear. Re fitting a light engine is a reversal of the above procedure.
    - For emergency variants, battery must be isolated/ connected when a hazardous environment is NOT present prior to carrying out any maintenance work.
5. The unit has either 1 or 2 independent power supplies located in the terminal chamber covers, in the event that a power supply needs to be replaced the terminal chamber cover should be removed, the cables disconnected and the dog clip can then be detached from the cover. Fitting a new power supply is a reversal of the above procedure.
6. Disposal of packaging, SPARTAN unit and old LED assemblies/power supplies should be carried out in accordance with national regulations.

Protection Concepts

CML14ATEX3119 or IEC Ex CML15.0001 or CML21UKEX3105

Standard variants	Emergency variants
II 2 GD Ex eb mb IIC T4 Gb	II 2 GD Ex eb mb IIC T4 Gb
Ex tb IIIC T80°C Db	Ex tb IIIC T76°C Dc
-40°C to +60°C	-20°C to +50°C

CML15ATEX4138 or IEC Ex CML15.0068 or CML21UKEX4104

Standard variants	Emergency variants
II 3 GD Ex ec mc IIC T4 Gc	II 3 GD Ex ec mc IIC T4 Gc
Ex tc IIIC T80°C Dc	Ex tc IIIC T75°C Dc
-40°C to +60°C	-20°C to +50°C

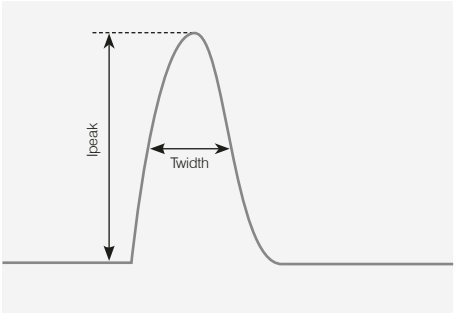
CML16ATEX1130 or IEC Ex CML16.0052 or CML21UKEX1100

Standard variants	Emergency variants
II 2 D Ex tb IIIC T80°C Db	II 2 D Ex tb IIIC T76°C Db
-40°C to +60°C	-20°C to +50°C

4. Technical Specification

	WL84-STD	WL84-EM	WL168-STD	WL168-EM
Input Voltage	110-254V AC			
Input Current (230Vac, full load)	0.15A		0.3A	
Consumption	24W STD	32W EM	49W STD	56W EM
Power Factor (230Vac, full load)	>0.95			
Mains Frequency	50/60Hz			
Inrush Current (I_{peak} @50%)	20A, $\Delta t < 300\mu s$		28A, $\Delta t < 300\mu s$	
Total Harmonic Distortion (230Vac, full load)	<10%			
IP Rating	IP66/67			
Weight (std)	6Kg	7Kg	9Kg	10Kg
Dimensions	See previous pages for line diagrams			
ATEX and IECEx Rating	See below			

Inrush Current Typical Curve



UK / Europe Tel: +44 (0) 1670 520055
Americas Tel: +1 613 270 9990

		Max number of fittings allowed per MCB (Based on 230V)			
MCB Type	Rating	SPZ/SPX-WL84 STD	SPZ/SPX-WL84 EM	SPZ/SPX-WL168 STD	SPZ/SPX-WL168 EM
B	10A	11	10	5	4
B	16A	17	15	8	7
B	20A	25	22	12	11
B	25A	35	32	16	15
C	10A	24	20	11	10
C	16A	34	28	16	15
C	20A	49	44	23	20
C	25A	58	55	28	25

Declaration Of Conformity With The Atex Directive 2014/34/EU & UK Directive SI 2016 No. 1107 **(as amended)**

Raytec Ltd. declares under our sole responsibility that the product(s) listed below conform with the relevant provisions of directive 2014/34/EU of 20th April 2016 and UK Directive SI 2016 No. 1107 (as amended)

Manufacturer	Raytec Ltd Unit 15, Wansbeck Business Park Rotary Parkway Ashington Northumberland NE63 8QW United Kingdom
Description of Equipment	Spartan range of linear luminaires – standard and emergency
Certification Body	CML New Port Road Ellesmere Port CH65 4LZ
Certificate numbers	CML14ATEX3119 & IECExCML15.0001 & CML21UKEX3105 CML15ATEX4138 & IEC Ex CML15.0068 & CML21UKEX4104 CML16ATEX1130 & IEC Ex CML16.0052 & CML21UKEX1100 ATEX Quality Assurance Notification CSA BV (2813) UKCA Quality Assurance Notification CSA UK (0518)

CML14ATEX3119 or IEC Ex CML15.0001 or CML21UKEX3105

Standard variants	Emergency variants
II 2 GD Ex eb mb IIC T4 Gb	II 2 GD Ex eb mb IIC T4 Gb
Ex tb IIIC T80°C Db	Ex tb IIIC T76°C Dc
-40°C to +60°C	-20°C to +50°C

CML15ATEX4138 or IEC Ex CML15.0068 or CML21UKEX4104

Standard variants	Emergency variants
II 3 GD Ex ec mc IIC T4 Gc	II 3 GD Ex ec mc IIC T4 Gc
Ex tc IIIC T80°C Dc	Ex tc IIIC T75°C Dc
-40°C to +60°C	-20°C to +50°C

UK / Europe Tel: +44 (0) 1670 520055
Americas Tel: +1 613 270 9990

CML16ATEX1130 or IEC Ex CML16.0052 or CML21UKEX1100

Standard variants	Emergency variants
II 2 D Ex tb IIIC T80°C Db	II 2 D Ex tb IIIC T76°C Db
-40°C to +60°C	-20°C to +50°C

IP66 & IP67
110V-254V AC or 18-48V AC/18-69V DC

Compliance with the Essential Health and Safety Requirements has been assessed by reference to the following standards -

EN 60079-0 : 2018	EN 60079-31 : 2014
EN 60079-7: 2015+A1:2018	EN 60079-18:2015+A1:2017

And also 2014/35/EU – Low Voltage Directive, 2014/30/EU – EMC Directive

Signed

Name Barry Thompson
Position Director

Dated

Serial number

UK / Europe
T: +44 (0) 01670 520055
sales@raytecled.com

Americas
T: +1 613 270 9990
ushazsales@raytecled.com

www.raytecled.com