

# SPX/SPZ **SPARTAN**

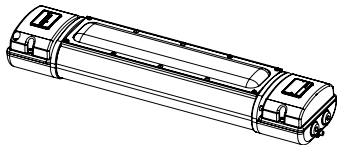
## Linear Range - Installation Guide

CML14ATEX3119 & IEC Ex CML 15.0001 & 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



- 1 Safety Instructions
- 2 Installation
- 3 Maintenance
- 4 Technical Specification
- 5 Declaration of Conformity

### 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.

# 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 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. SPARTAN units are designed to withstand marine environments and are tested in accordance with IEC60068-2-52. However if the SPARTAN unit is to be installed in a very high corrosive environment such as **coastal** and **offshore** the following good practice should be followed:

**During installing** ensure there are no scratches, chips or defects in external paint surface that would allow ingress of water to bare aluminium. If so touch up with suitable paint

**During installation** apply an anti corrosive jointing compound to screw threads such as PSU cover and external earth points.

**During installation** ensure exterior surface of the product is not in direct contact with a dissimilar metal such as galvanised steel. If so fit a nylon barrier to prevent galvanic corrosion.

**During maintenance** regularly wash down external surface of fitting with clean, fresh water to remove any deposits of mineral salts on the exterior surface.

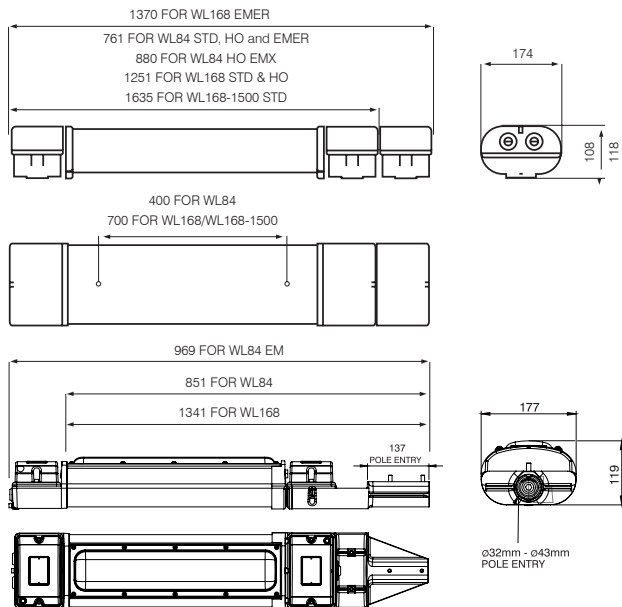
5. Check certification nameplate on cover of luminaire to ascertain type of threaded cable entry on the luminaire. Select suitably certified ATEX/IEC Ex/ UKEX cable glands and stopper plugs, these must be parallel thread, have a minimum of 5 full thread engagement and be of a medium/fine tolerance to ISO965-1 and ISO965-3. The cable entry devices selected must maintain the IP rating of the luminaire
7. The incoming mains cable should not exceed a temperature rise of 27°C above the ambient conditions; select suitable cable.
8. When the unit is installed correctly and in accordance with these installation instructions it will not harm humans or animals.
9. 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



## 2. Installation

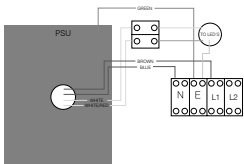
### Mounting SPARTAN Unit

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.rayteclcd.com](http://www.rayteclcd.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.

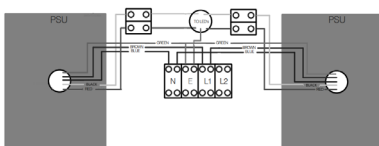


3. When installing the SPARTAN luminaire vertically where possible, the cable glands should be kept to the bottom of the luminaire.

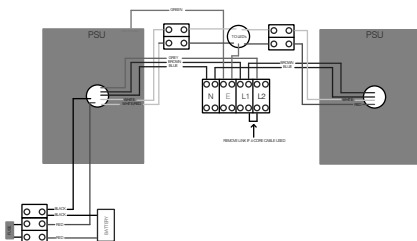
### Typical wiring diagram - WL84 STD, WL168 STD & WL84-HO



### Typical wiring diagram - WL168-HO



### 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*
7. All SPARTAN luminaires have terminal blocks suitable for looping 4mm<sup>2</sup> cable, only one cable should be connected to each terminal block connection. Variants with a Weidmuller MK6 terminal block may have been supplied to special order, these can accommodate cable up to 6mm<sup>2</sup> size conductors.
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.

Description	Behaviour	Installation
Maintained Unswitched	The unit is on 100% under normal conditions and is switched to emergency mode in the event of a mains failure.	A single unswitched mains supply is provided the live line connected to L2. The link between L1 and L2 remains.
Maintained Switched	The unit is on or off depending on the switched line under normal operation and is switched to emergency mode in the event of a mains failure	An unswitched mains supply is provided with the live line connected to L2. A switched mains supply is also provided with the switched live connected to L1. The link between L1 and L2 should be removed.
Non-maintained	The unit is off and only comes on in emergency mode in the event of failure in the mains supply	A single unswitched mains supply is provided the live line connected to L2. The link between L1 and L2 should be removed.

## Spartan Intelligent Emergency Operation Guide

When the battery is first connected the light engine will illuminate and the LED indicator will flash Green/Red alternately for 5 seconds. If no error is found the unit will enter "Sleep Mode" until mains power is connected.

### 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 after 24 hours of uninterrupted charging. If there is a mains failure in this time the count resets for another 24 hours.
- 3 charge/discharge cycles to optimise 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 28 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 annually.
- 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
- The battery is completely discharged following a self test and will require 20 hours of continuous charge to regain full capacity.

### LED indication

LED Indication	Condition
Static Amber	Commissioning in progress
Flashing	Discharge cycle in progress
	LED will flash in relevant colour while discharging
Static Red	Battery defective/Fuse blown
	PSU error
	Battery not at peak capacity
	Light engine failure
No light	Emergency mode activated
Static Green	Commissioning completed

## 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.

## 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

II 2 GD Ex eb mb IIC T4 Gb

Ex tb IIIC T80°C Db

-40°C to +60°C

Emergency variants

II 2 GD Ex eb mb IIC T4 Gb

Ex tb IIIC T76°C Db

-20°C to +50°C

### CML15ATEX4138 or IEC Ex CML15.0068 or CML21UKEX4104

Standard variants

II 3 GD Ex ec mc IIC T4 Gc

Ex tc IIIC T80°C Dc

-40°C to +60°C

Emergency variants

II 3 GD Ex ec mc IIC T4 Gc

Ex tc IIIC T75°C Dc

-20°C to +50°C

### CML16ATEX1130 or IEC Ex CML16.0052 or CML21UKEX1100

Standard variants

II 2 D Ex tb IIIC T80°C Db

-40°C to +60°C

Emergency variants

II 2 D Ex tb IIIC T76°C Db

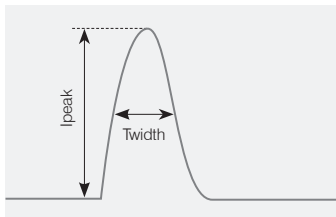
-20°C to +50°C

## 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
High Output Version	48W		98W	
Power Factor (230Vac, full load)	>0.95			
Mains Frequency	50/60Hz			
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



Max number of fittings allowed per MCB (Based on 230V)

MCB Type	Rating	WL84 STD / WL84-HO	WL84-EM	WL168-STD	WL168-EM / WL84-HO-EM	WL168-HO
B	10A	18	17	16	11	7
B	16A	29	28	26	19	13
B	20A	36	35	33	24	16
B	25A	45	44	41	30	20
C	10A	30	25	25	18	11
C	16A	49	40	40	29	18
C	20A	61	51	51	36	23
C	25A	76	64	63	46	28

Product	Inrush Pk / Duration I <sub>max</sub> 50
WL84 STD / WL84-HO	23A (136us)
WL84 EMX	12A (256us)
WL168 STD	23A (136us)
WL168-EM / WL84-HO-EM	29A (152us)
WL168 HO	46A (152us)

## 5. 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  
II 2 GD Ex eb mb IIC T4 Gb  
Ex tb IIIC T80°C Db  
-40°C to +60°C

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

### **CML15ATEX4138 or IEC Ex CML15.0068 or CML21UKEX4104**

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

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

**CML16ATEX1130 or IEC Ex CML16.0052 or CML21UKEX1100**

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

Emergency variants  
II 2 D Ex tb IIIC T76°C Db  
-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  
Position

Jonathan Sommersett  
Technical Director

Dated

Serial number

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