

SPX/SPZ **SPARTAN**

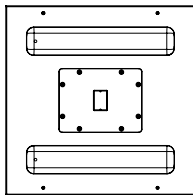
Recess Range - Installation Guide

CML 23ATEX5448X & CML 23UKEX5449X & IECEX & CML 23.0150X
CML 23ATEX5450X & CML 23UKEX5451X & IECEX & CML 23.0150X

This installation guide provides instructions for installing SPARTAN series of explosion protected recessed 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 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

9. The luminaire can be installed to interface with fire resistant ceiling systems to maintain a B15 SOLAS fire rating; the integrity of the ceiling and insulation must be maintained using suitable insulation materials. The ceiling/fitting and insulation should be continuous (without any gaps), care must be taken to maintain this classification.

10. Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

- i. Spartan Recess may be installed with insulation covering the rear of the luminaire. The insulation may be a maximum of 100mm thick and with a maximum density of 110kg/m³. If covering with insulation refer to ambient temperature ratings
- ii. Static hazard – clean only with damp cloth.

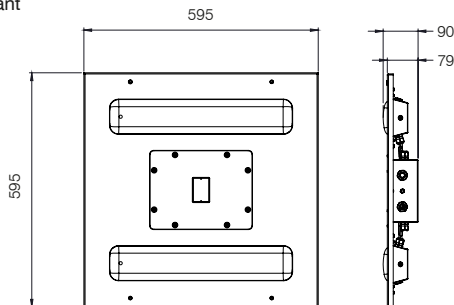


2. Installation

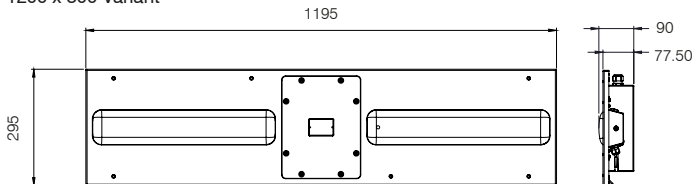
Mounting SPARTAN Unit

1. The rear of the unit has 4 or 6 sets of M6 fixing points, a range of mounting accessories are available including a pull up / plasterboard ceiling fixing kit, surface mount brackets, secondary retention mount eyelets. Please consult www.raytecled.com for further details.
2. The product is delivered suitable for laying in to a standard recessed ceiling grid. See product dimensions below. For other mounting applications please refer to accessory installation instructions.
3. The PSU enclosure can be accessed either from the front or rear of the luminaire.
 - For front access loosen the M4 screws securing the cover and lower the cover.
 - For rear access loosen the M4 nuts securing the PSU enclosure to the luminaire. Rotate the PSU enclosure and remove cover as above.

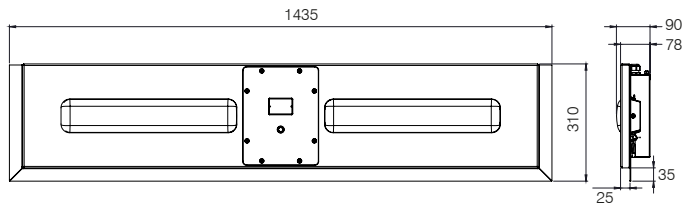
600 x 600 Variant



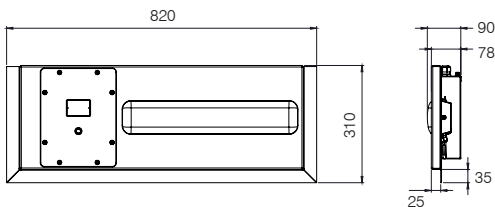
1200 x 300 Variant



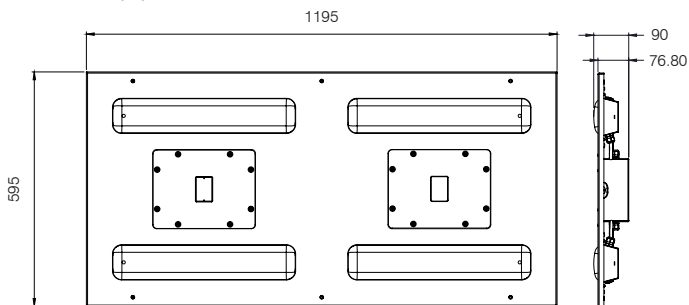
275 x 1400 Variant



275 x 800 Variant



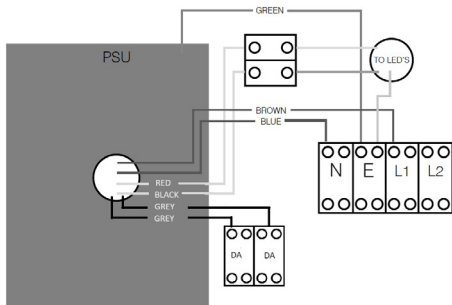
1200 x 600 Variant



Typical Wiring Diagrams

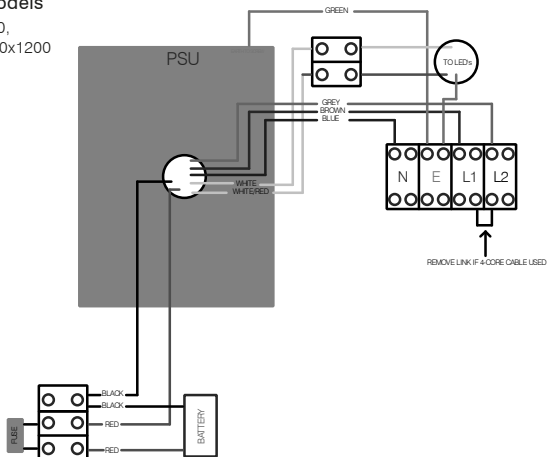
Standard Models

600x600, 275x800,
275x1400 and 300x1200



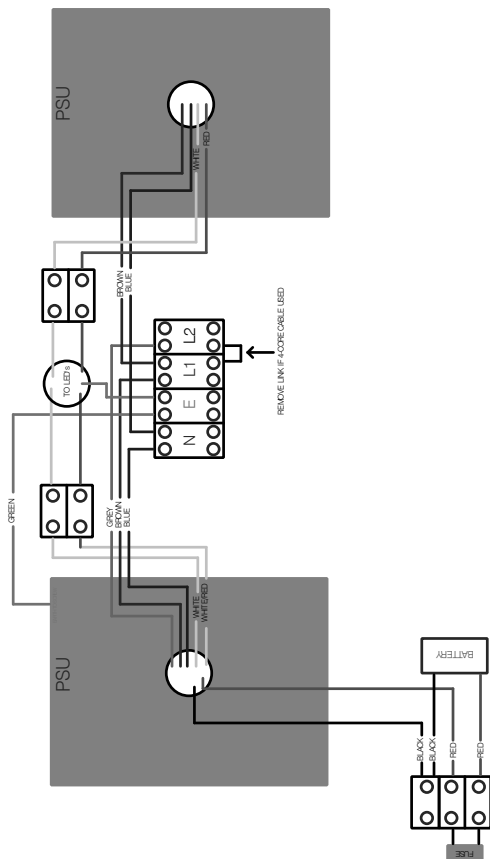
Emergency Models

600x600, 275x800,
275x1400 and 300x1200



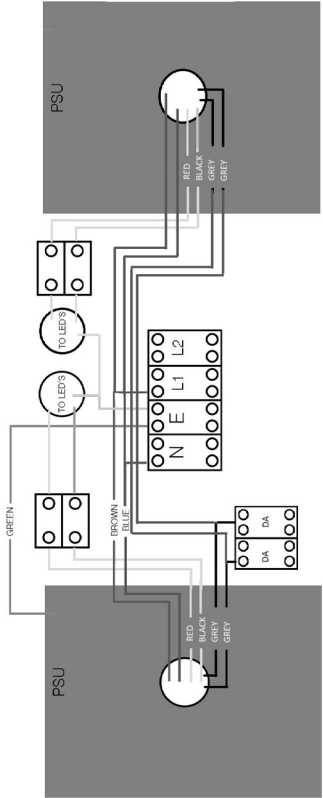
Emergency Models

1200 x 600



Standard Models

1200 x 600



4. 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. The L2 terminals on a standard unit is not electrically connected but allows them to be used on the same circuits as emergency luminaires.

5. Installer should earth the unit separately – an internal and external earth point are provided as standard.
6. Connect wires to mains supply.
7. If the unit is opened for any reason, disconnect mains – On emergency luminaires there may be more than one mains supply
8. All SPARTAN luminaires have terminal blocks suitable for looping 4mm² cable, only one cable should be connected to each terminal block connection
9. The battery fuse is located in the PSU compartment, the battery positive is disconnected after final manufacturing testing. When installing the battery positive 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). On standard 110-277V versions a 2 pole terminal block is provided for looping in / looping out DALI cables upto 4mm²
10. 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
11. During emergency operation the light output and duration will be determined by the variant purchased
12. Once wiring is complete replace terminal enclosure cover. Ensure gasket is undamaged and no wires are trapped between cover and body. Tighten screws to 1Nm
13. 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

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 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 months.
- 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
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

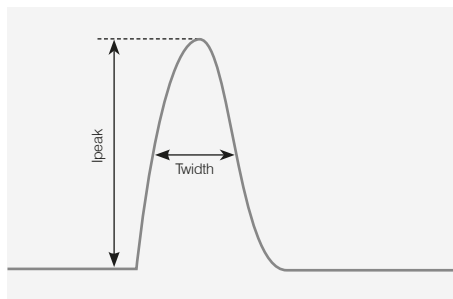
1. It is essential that all SPARTAN units are maintained in accordance with the requirements of the EN60079-17 standard: (Electrical apparatus for explosive gas atmospheres – other than mines).
2. **IMPORTANT.** No modifications are permitted to the unit, all spare parts must be purchased from the manufacturer, 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 opening the PSU enclosure and remove the wiring connections to the light engine. Loosen the cable gland and remove the light engine cable from the PSU enclosure. Remove the 4 screws securing the light engine to the front frame and pull the light engine free. Re fitting a light engine is the 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. Take note of the wiring connections and remove all wiring from the PSU. Remove the 2xM6 screws securing the PSU and withdraw from the PSU enclosure. Refitting is the 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.

4. Technical Specification

600x600-STD 600x600-EM 1200x600-STD 1200x600-EM
1200x300-STD 1200x300-EM

Input Voltage	110-277V AC or 18-48V AC/18-69V DC (LV Version)			
Input Current (230Vac, full load)	0.15A		0.3A	
Consumption	23W STD	32W EM	46W STD	56W EM
High Output Version	46W		92W	
Power Factor (230Vac, full load)	>0.95			
Mains Frequency	50/60Hz			
Total Harmonic Distortion (230Vac, full load)	<10%			
IP Rating	IP65			
Weight (std)	7Kg	7.8Kg	14Kg	15.6Kg
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	600x600, 275x800, 275x1400, 300x1200 STD / HO	600x600, 275x800, 275x1400, 300x1200 EM	600x1200 STD	600x1200-EM / 600x600, 275x800, 275x1400, 300x1200 HO-EM	600x1200 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 _{max50}
600x600, 275x800, 275x1400, 300x1200 STD / HO	23A (136us)
600x600, 275x800, 275x1400, 300x1200 EMX	12A (256us)
600x1200 STD	23A (136us)
600x1200-EM / 600x600, 275x800, 275x1400, 300x1200 HO-EM	29A (152us)
600x1200 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 Recess luminaires – standard and emergency
Certification Body	CML New Port Road Ellesmere Port, CH65 4LZ
Certificate numbers	CML 23ATEX5448X & CML 23UKEX5449X & IECEx & CML 23.0150X CML 23ATEX5450X & CML 23UKEX5451X & IECEx & CML 23.0150X ATEX Quality Assurance Notification CSA BV (2813) UKCA Quality Assurance Notification CSA UK (0518)

CML 23ATEX5448X & CML 23UKEX5449X & IECEx & CML 23.0150X

Standard variants

II 2 GD Ex eb mb IIC T4 Gb
Ex tb IIIC T95°C Db
-40°C to +60°C without insulation
-40°C to +50°C with insulation

Emergency variants

II 2 GD Ex eb mb IIC T4 Gb
Ex tb IIIC T95°C Db
-20°C to +50°C without insulation
-20°C to +40°C with insulation

CML 23ATEX5450X & CML 23UKEX5451X & IECEx & CML 23.0150X

Standard variants

II 3 GD Ex ec mc IIC T4 Gc
Ex tc IIIC T95°C Dc
-40°C to +60°C without insulation
-40°C to +50°C with insulation

Emergency variants

II 3 GD Ex ec mc IIC T4 Gc
Ex tc IIIC T95°C Dc
-20°C to +50°C without insulation
-20°C to +40°C with insulation

IP66 & IP67

110V-277V 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 IEC 60079-0:2018

EN 60079-31 : 2014

EN IEC 60079-7:2015+A1:2018

EN IEC 60079-18:2015+A1:2017

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

Signed



Name

Jonathan Sommersett

Position

Technical Director

Dated

Serial number

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