

02684	EV-RAZOR-16M
02685	EV-RAZOR-16M-B
02686	EV-RAZOR-24M
02687	EV-RAZOR-24M-B



CODE:02684



CODE:02686

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I. WELCOME

Thank you for choosing this quality Ektor product. This manual is intended to help you install this product in a way that ensures the safety of yourself and others. Whilst this Ektor product is designed to be installed easily, we highly recommend you take the time to read this manual thoroughly before commencing installation. When installed correctly and serviced regularly, this product will provide hassle free operation for many years.

2. OVERVIEW

Ektor Generation III platform introduces you to a new era of emergency lighting control. With years in the making, the third generation platform builds on the Ektor product ranges' increasing quality, reliability and performance. In choosing this Ektor product you can be comfortable that you have the best.

This product out of the box can be wired in any of these configurations:

- Self testing unit
- Standalone unit
- Standalone unit controlled with a switch or sensor
- DALI controlled remote testing unit

And can be used with a central battery system (monitored and non-monitored).

An optional wireless module can be added to allow you to connect to standard Wi-Fi networks for remote testing and reporting.

Our Ektor Generation III platform also brings class leading technology which increases performance and reliability including:

- Smart battery charging technology which reduces power consumption up to 90% while increasing the service life of the battery
- Smart battery conditioning to ensure the best performance from the battery
- 450V Electrolytic capacitors which increase the products reliability
- Highly efficient design to reduce fatigue on the product

For buildings requiring longer durations such as 3, 4 and 8 hours the installer can change the jumpers found on the unit for automatic scaling of the output. Moreover should you require non-maintained or maintained output, the installer can select this on installation.

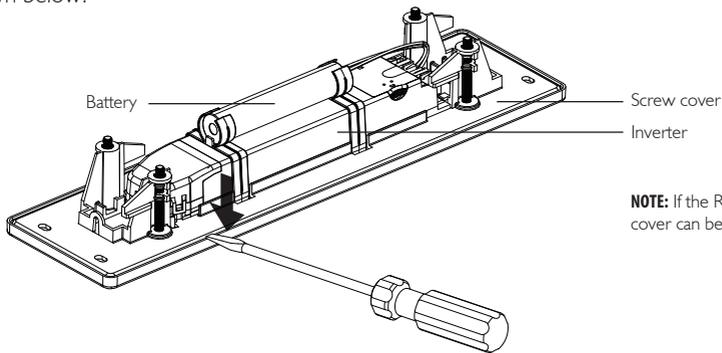
3. SAFETY WARNING

1. THIS PRODUCT MUST ONLY BE INSTALLED BY A LICENSED ELECTRICIAN.
2. BEFORE COMMENCING INSTALLATION TURN OFF AND ISOLATE THE ELECTRICAL SUPPLY.
3. RISK OF ACCIDENTAL CONTACT WITH LIVE PARTS. DO NOT ENERGISE WITH PRODUCT OPEN OR DISASSEMBLED.
4. SUPPLY VOLTAGES WITHIN PRODUCT. ISOLATE SUPPLY VOLTAGES BEFORE OPENING OR SERVICING.
5. THIS LUMINAIRE IS SUITABLE FOR USE IN HIGH-RISK TASK AREA LIGHTING.
6. MAINS SUPPLY AND BATTERY CIRCUIT SEPARATED BY REINFORCED INSULATION.
7. THE ONLY USER SERVICEABLE / REPLACEABLE PART IS THE BATTERY PACK.
8. DO NOT ATTEMPT TO SERVICE OTHER PARTS OF THE FITTING AS THIS WILL VOID THE WARRANTY.
9. AS THE INSTALLER, IT IS YOUR RESPONSIBILITY TO ENSURE YOU COMPLY TO ALL RELEVANT BUILDING AND SAFETY CODES FOR EXAMPLE THE BCA, AS3000.

4. INSTALLATION

The Ektor Razor is supplied semi-assembled for transit, components require to be disassembled prior to fitment in different configurations (refer to **Section 5, pages 3-6**, for mounting options).

1. Remove the product from the box and inspect it for any damage. If you believe the product to be damaged or otherwise unsound, **DO NOT** install the product. Please pack it back into its box and return it to the place of purchase for replacement. If the product is satisfactory, proceed with the installation.
2. When mounted the Razor cover **MUST BE** removed with a flat blade screwdriver as shown below. Release one corner of the cover first by pushing downwards.
3. Remove the screw cover with your hands by sliding it down along the Razor body. Once this cover is removed, the top of the Razor can be removed from the body by sliding and pulling upwards as shown below.



NOTE: If the Razor is **NOT** mounted the cover can be removed by hand.

Figure 1: Razor assembly diagram

5. MOUNTING OPTIONS

FLUSH MOUNT

1. Disassemble the Razor screw cover as shown in **Figure 1 (page 3)** of this manual.
2. When installing the Razor 16M or 24M the same cut out of 65 x 305mm is used. Push the Razor top into the cut out and fasten screws with a Phillips screwdriver to mount into place.

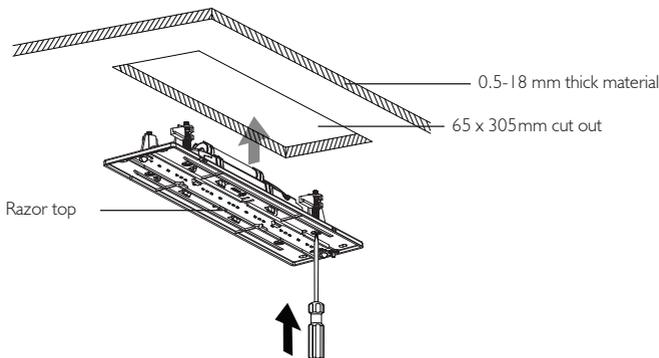


Figure 2: Razor flush mount installation

- Once the top has been mounted, the product can be re-assembled as shown in the figure below.

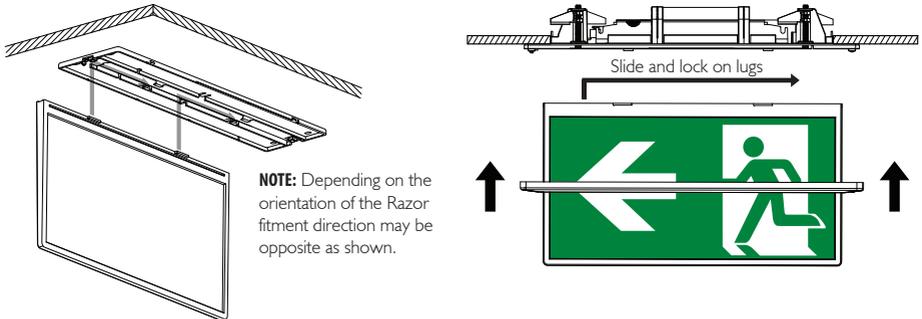


Figure 3: Razor re-assembly diagram

SURFACE MOUNT

- The surface mount cover must be fastened to the ceiling first. Once the cover has been securely mounted the Razor may be assembled by sliding the emergency light parts into place as shown in **Figure 3** and in the diagram below (refer to the **02981 EV-RAZOR-LED-FIRE-SM-KIT** instructions for more details).

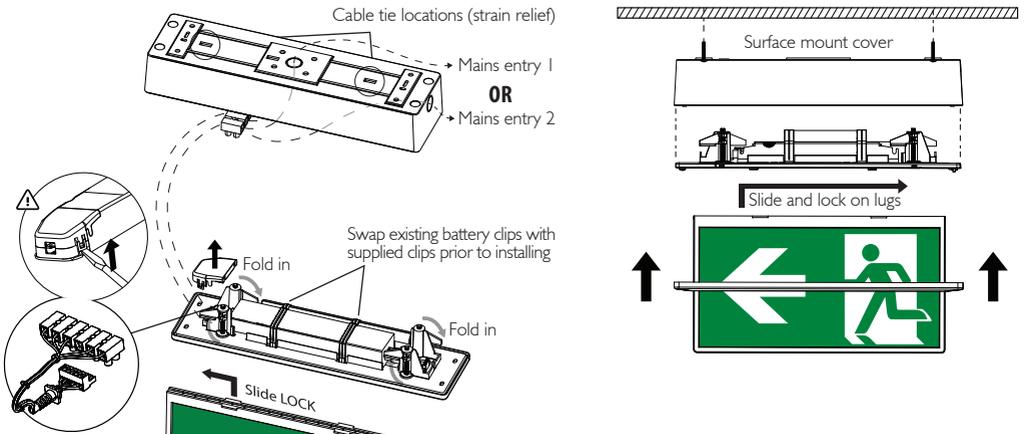
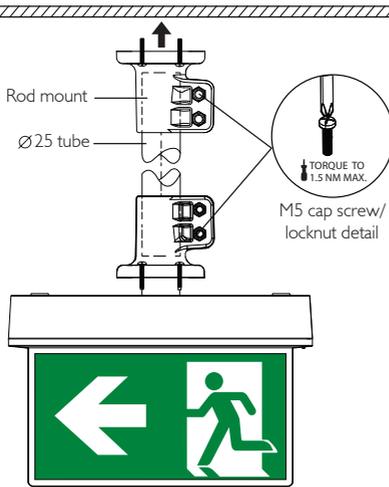


Figure 4: Razor surface mount installation

ROD MOUNT

Refer to **01990 EV-RODMOUNT-WHT Installation guide** included in rod mount kit. The product and rod **MUST BE** dry and clean before assembly to avoid joint contamination.

1. Assemble the Razor as shown in the assembly instructions in **Section 4 (page 3)** of this manual. This will allow for the rod mount to be assembled with the Razor top cover.
2. Ensure rod is mounted **ONLY** on a flat surface and fasten with the appropriate fixing i.e. masonry anchor for concrete.
3. A $\varnothing 25$ tube is to be used, pushed firmly on both ends and fastened with M5 cap screws and locknuts.



NOTE: DO NOT over-tighten screws when mounting the rod mount to the Razor.

The rod mount is suitable with tubes ranging from 0-2 metres in length. Weight on the rod must not exceed 8kg.

(Refer to the **EV-RODMOUNT-WHT** instructions for more detail).

Figure 5: Rod mount installation

JACK CHAIN MOUNT

1. When using a jack chain for mounting, ensure the suitable thickness of 2.5mm chain is used for this product.
2. The surface cover must be threaded with the chain first before assembly of the Razor. Instructions continue on **page 6**.

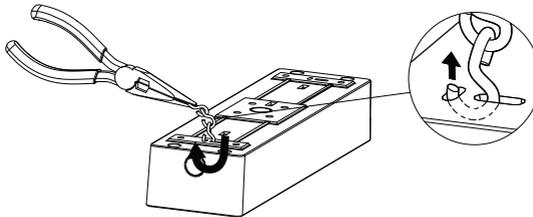


Figure 6: Razor Exit and jack chain assembly

- Using pliers clamp the jack chain and thread through the Razor SM kit as shown in the **Figure 6**.

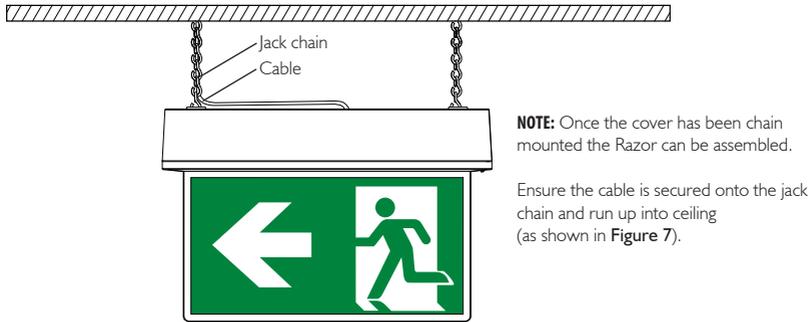


Figure 7: Jack chain installation

CABLE MOUNT

The top of the Razor must be cable mounted by threading the cable through the correct mounting hole as shown in **Figure 6**. Once securely mounted the Razor may be assembled by sliding the body into place.

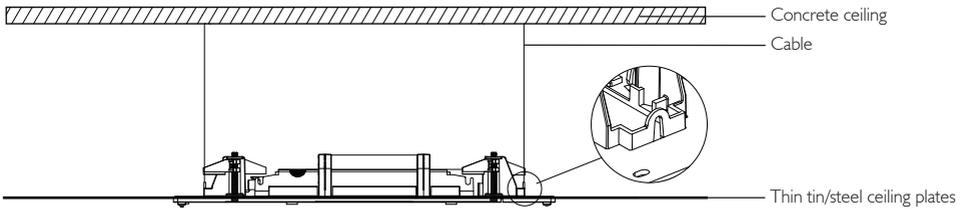


Figure 8: Cable installation

6. INSERTING DECALS

- Slide the decal into the slot at the bottom of the Razor as shown in **Figure 9**.
- Once the bottom is in place the decal can be bent while sliding the top of the decal into the slot on the top of the Razor.

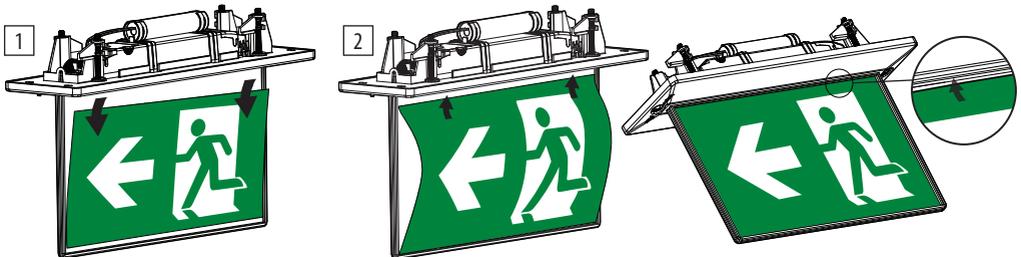


Figure 9: Inserting decals into the Razor

7. REPLACING THE BATTERY

1. Use only the LiFePO₄ battery recommended on the label found on the inverter/battery charger pack. No other battery will work in this fitting, other than the type listed.
2. To access the battery the Razor must be removed from the ceiling or Surface Mount kit by reversing the directions shown in **Section 5** (pages 3-6).
3. Disconnect the battery from the product and if necessary, cut cable ties to release the battery from its mounting position.
4. Replace the battery as was previously installed. The battery can be connected in one direction only, do not force.
5. Place the Razor back into its previously mounted ceiling position and ensure the green charge light is illuminated. Allow a few minutes for the battery to charge.
6. Allow a minimum 24 hours charging time before carrying out any discharge tests as per the requirements in AS/NZS 2293, BCA or other relevant standards.



KIT INCLUDES:

- 1 1 x LiFePO₄ battery (01302)

Figure 10: Example of included battery

8. BATTERY LIFE

To maintain the economical life of this product it is required that the battery be discharged and recharged at least once every 6 months. The battery life can be reduced if the battery is not discharged as per the requirements of AS/NZS 2293 or an equivalent standard. Increasing the number of duration tests above that as defined in AS/NZS 2293 or an equivalent standard can have a positive effect on the battery performance as long as exceed 12 discharge cycles per year is not exceeded.

9. POWER AND BATTERY CHARGE

The Ektor Generation III platform uses smart battery charging technology which reduces power consumption and increases battery life.

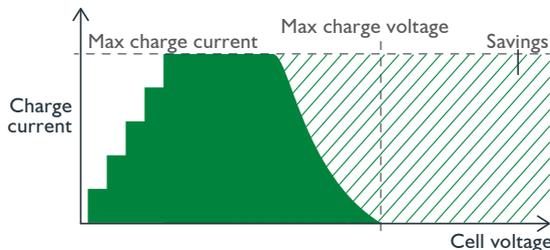


Figure 11: Smart charge rate

During the first stage of operation the battery charger charges the battery until full. Afterwards, the unit goes into a stage which charges the battery periodically. This reduces the battery temperature and reduces the loss of electrolytes which ultimately increases the service life of the battery. As a result of stopping the charging process, the power consumption is reduced and only consumes 1/11th of the typical power.

The smart battery charger also offsets the charger time by a random interval to un-synchronise all the emergency lighting in the building. This reduces the average loading on a building's infrastructure and reduces any impacts of surges created by turning on large numbers of products simultaneously.

10. MAINTAINING YOUR RAZOR LUMINAIRE

⚠ WARNING

The Ektor Razor Emergency is connected to an unswitched active during normal operating conditions. When disconnected from the mains supply, the Razor is powered by a LiFePO4 battery operated inverter. Due to this, care should be taken when replacing the battery.

11. WIRELESS DAUGHTERBOARD

The Razor inverter also supports an optional wireless daughterboard. More information and a list of other accessories can be found in the **Wireless design and installation guide**. The assembly for the daughterboard onto the Razor inverter is shown below:

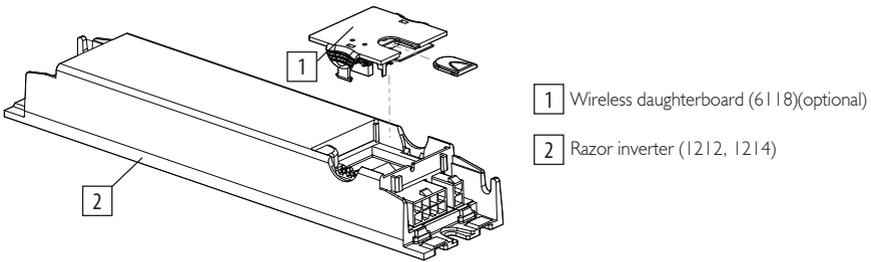


Figure 12: Daughterboard assembly diagram

12. SELF TEST / STANDARD WIRING / CENTRAL BATTERY SYSTEM

The Razor inverter can be used in an automatic self-test mode which reduces the need for a test switch timer. The self-test ability automatically disables if the unit is wired to DALI or the wireless daughterboard is attached. Additionally the third generation platform can be wired to a central battery system. With this wiring the system feedback cannot report the light status (see **Self test support** document for more information).

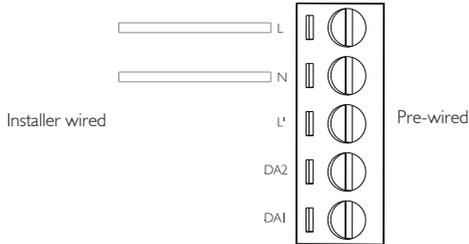


Figure 13: Inverter standard wiring diagram

13. DALI WIRING / CENTRAL BATTERY SYSTEM

The Razor inverter supports DALI out of the box, a hardwiring diagram is shown below, optionally an installer can order a soft wiring cable set found in **Section 16**. The inverter also supports central battery systems and can be monitored through DALI. When used as a central battery system the devices can be tested with DALI.

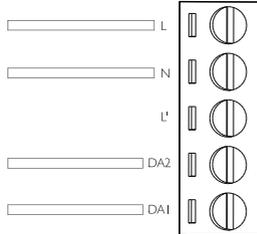


Figure 14: Inverter DALI wiring diagram

14. USING THE INVERTER WITH A SWITCH

A mains rated switch can be wired with this product to turn ON/OFF the non-emergency light in normal use. This does not affect operation in emergency mode.

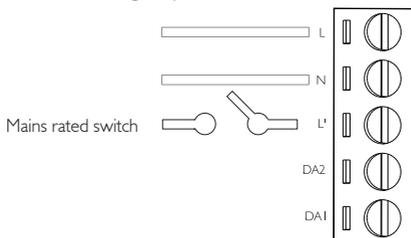


Figure 15: Inverter switch wiring diagram

15. USING THE INVERTER WITH A SENSOR

A mains rated sensor can be wired with this product to turn ON/OFF the light in normal use. This does not affect operation in emergency mode.

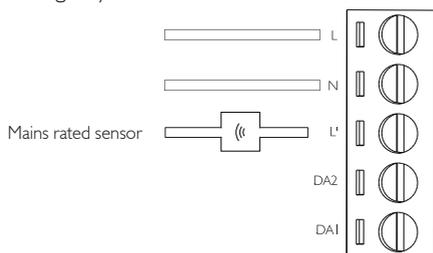
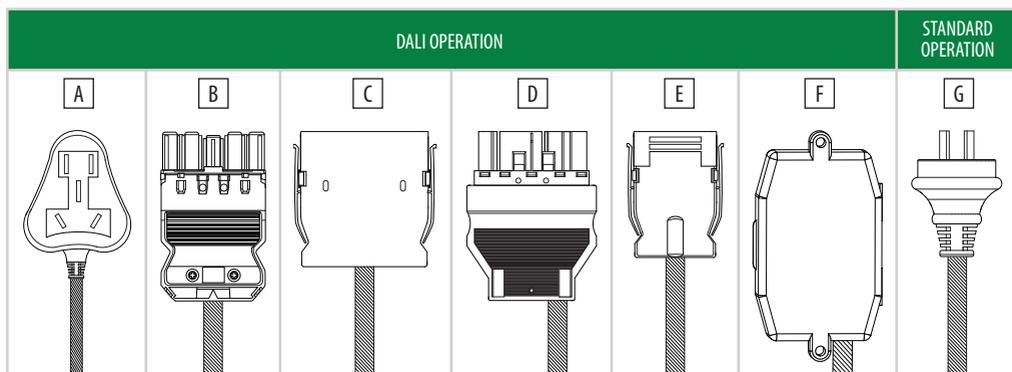


Figure 16: Inverter sensor wiring diagram

16. LEAD AND CABLE ACCESSORIES

The following cordsets can be ordered and attached to the inverter depending on the site requirements.



CORDSET	LENGTH	PRODUCT CODE	DESCRIPTION
A	2.4M	00709	Wire By Click 5-Pin Lead L1025/5
B	2.4M	00707	Wieland Plug GST 1815S BI ZR1 S PB02
C	2.4M	00705	CMS 5 Pin Plug Set
D	2.4M	00706	Wago Plug 5-P Blue WAGO 51110475
E	2.4M	00710	CMS 6 Pin Plug Set
F	0.15M	11088	DALI Cable and Junction Box
G	1.2M	00708	Flex and Plug (Standard)

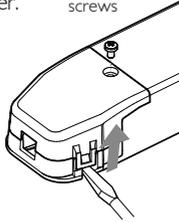
NOTE: Connector is included with the above cordset accessories.

17. CHANGING THE CABLE SET

1 Unscrew the safety screw.



2 Carefully disassemble cover with flat blade screwdriver.



3 Clip into place to connect the inverter and wiring.

Slide the strain relief down into its slot as shown on the right.

NOTE: If there is already a cable set attached, this must first be removed

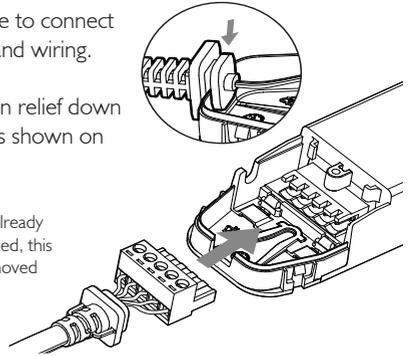


Figure 17: Changing the cable set

18. ACCESSORIES LIST

Below are the listings of the accessories and replacements compatible with the Razor.

PART	EVOLT CODE	CODE
COMPLETE UNITS		
Razor 16M	EV-RAZOR-16M	02684
Razor 16M Black	EV-RAZOR-16M-B	02685
Razor 24M	EV-RAZOR-24M	02686
Razor 24M Black	EV-RAZOR-24M-B	02687
PARTS/REPLACEMENTS		
Razor 16M Inverter	EV-RAZOR-16M-INV	01212
Razor 24M Inverter	EV-RAZOR-24M-INV	01214
Razor 16M Decals	EV-RAZOR-16M-DP	02985
Razor 16M Decals Black	EV-RAZOR-16M-DP-B	02986
Razor 24M Decals	EV-RAZOR-24M-DP	02987
Razor 24M Decals Black	EV-RAZOR-24M-DP-B	02988
Razor 16M Diffuser	EV-RAZOR-16M-DIFF	02989
Razor 16M Diffuser Black	EV-RAZOR-16M-DIFF-B	02990
Razor 24M Diffuser	EV-RAZOR-24M-DIFF	02991
Razor 24M Diffuser Black	EV-RAZOR-24M-DIFF-B	02992
Surface mount kit	EV-RAZOR-LED-FIRE-SM-KIT	02981
Surface mount kit Black	EV-RAZOR-LED-FIRE-SM-KIT-B	02982
Battery 1500mAh, 6.4V, 2 Cell, LiFePO4	EV-1500mAh-6.4V-LiFePO4	01302
Wi-Fi daughterboard compatible with Ektor devices	ZC-WIFI	06118
Easy Commissioning Module - DALI compatible with Ektor devices	ZC-ECM-DALI	05304

19. NON MAINTAINED / MAINTAINED JUMPER

A user can select the mode of operation for the Razor inverter. If the inverter is using a switch input this is disregarded and not used.

INDICATOR	STATUS	DESCRIPTION
NON MAINTAINED		LED is only ON in emergency
MAINTAINED MODE		LED is ON in normal and emergency operation

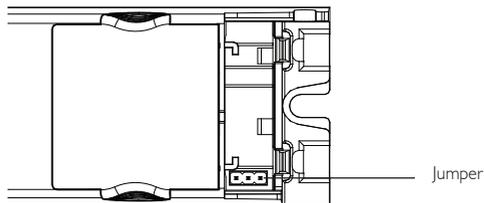


Figure 18: Maintained/non-maintained jumper

20. DISCHARGE RATING SELECTION

The Razor supports a number of discharge ratings which can be selected by the user. The output from the LED scale based on the discharge rating (see Section 23 for output information).

HOURS	A	B	C
1 Hour	OFF	OFF	OFF
2 Hours (default)	ON	ON	ON
3 Hours	ON	ON	OFF
4 Hours	ON	OFF	ON
8 Hours	ON	OFF	OFF
Central battery operation	OFF	ON	OFF
N/A	OFF	ON	ON
N/A	OFF	OFF	ON

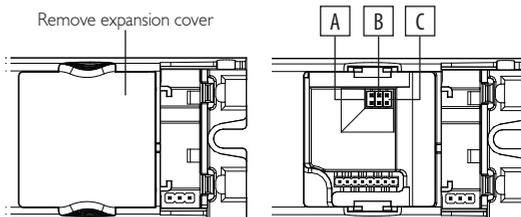


Figure 19: Discharge rating selection

21. SELF TEST INDICATOR LEDS

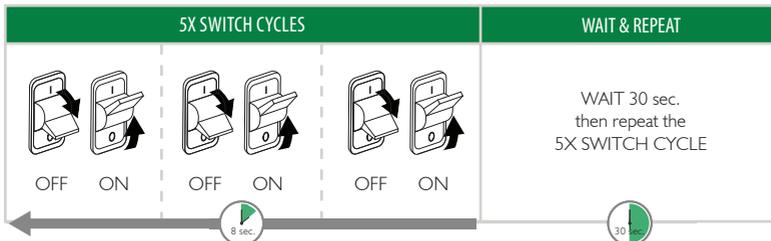
The table below shows the operation of the Razor status indicators:

INDICATOR	DESCRIPTION
☀️ YELLOW 2sec ON / 2sec OFF	Device is performing a duration test
☀️ YELLOW 4sec ON / 1sec OFF	Last duration test passed. The duration was met when last run. Test ran less than five days ago
☀️ YELLOW 0.5sec ON / 0.5sec OFF	Last duration test failed. Failed to meet duration. The device is not currently running a new test. Mains is on
🟢 GREEN 1xFlash	A duration test is pending. The device is not in any self test and is set to normal mode

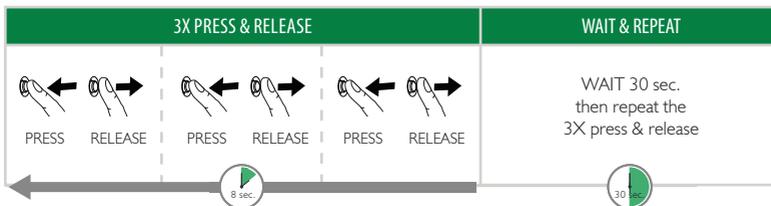
22. SELF TEST/ COMMISSIONING INTERVAL PROGRAMMING

The self test mode must first be enabled to perform tests by switching the breaker, or test button in the correct sequence. The test interval is fixed and set to 26 weeks / 182 days. The LEDs indicate the status of the device and which functions are being performed. For more information refer to the **Configurations: Status LEDs and Device Modes** document.

When self test mode is enabled the status LED will flash either 4x (switched active detected) or 3x (switched active not detected) for 2 minutes.



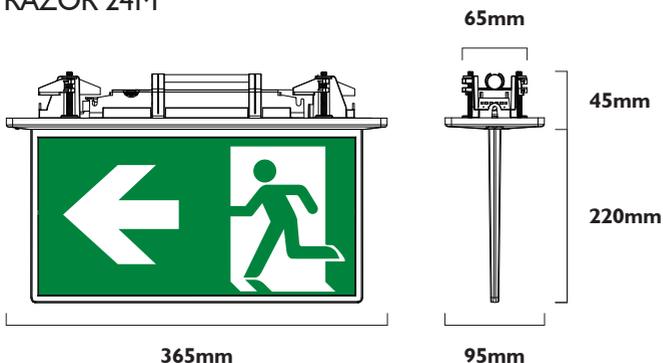
The self test can also be enabled using the test button sequence below:



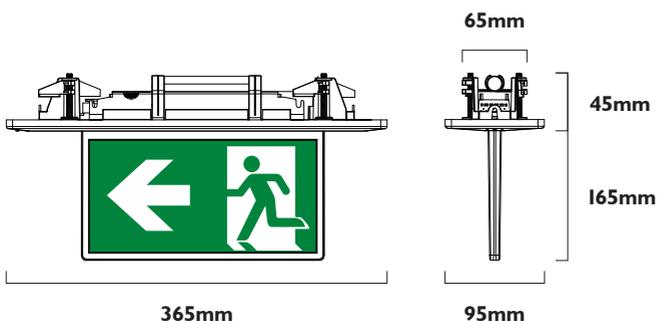
NOTE: If the wait in-between breaker or test button push sequences is longer than **50 seconds** then it will timeout and the procedure will need to begin again.

23. PRODUCT SPECIFICATIONS

RAZOR 24M



RAZOR 16M



Voltage	220~240V	Viewing distance	24/16M
Frequency	50/60Hz	Mounting type	Recessed
Ambient temp.	0-40°C	Wiring	Flex & Plug
Battery type	LiFePO4 6.4V	Battery supply current	750mA
Class	2	Charging time	16 hours
Duration	Dependant on jumpers	Charging operation	Adjustable
IP Rating	IP20	Charging type	Smart charge
Maintained Power consumption	Max. 4.5W	Avg.	2.5W
Non-maintained Power consumption	3W		0.25W

24. SPACING TABLE

Below is the spacing table extract from ASZ293 which details spacing between emergency fittings at different mounting heights.

LUMINAIRE CLASSIFICATION	MOUNTING HEIGHT (M)															
	2.1	2.4	2.7	3	3.3	3.6	4	4.5	5	6	7	8	9	10	15	20
D12.5	11.1	11.5	11.8	12.1	12.4	12.5	12.7	12.9	13.0	12.8	12.3	11.3	9.9	7.6		
D16	12.1	12.6	13.0	13.3	13.6	13.9	14.1	14.6	14.6	14.4	13.8	12.9	11.5			
D25	14.2	14.7	15.3	15.7	16.1	16.5	16.9	17.3	17.7	18.1	18.3	18.2	17.9	17.3	7.7	
D32	15.4	16.1	16.7	17.2	17.6	18.0	18.5	19.1	19.5	20.2	20.6	20.7	20.6	20.3	14.6	
D40	16.7	17.4	18.0	18.6	19.1	19.6	20.1	20.8	21.3	22.1	22.7	23.0	23.1	23.1	19.4	
D50	18.0	18.7	19.4	20.1	20.7	21.2	21.8	22.5	23.2	24.2	24.9	25.4	25.7	25.9	23.7	15.2
D63	19.4	20.3	21.1	21.8	22.4	23.0	23.7	24.5	25.2	26.4	27.4	28.1	28.6	28.9	28.0	22.5

25. AUSTRALIAN EMERGENCY CLASSIFICATION

Classification of the Razor output when duration is selected.

HOURS	RAZOR 16M/24M
1	C ₀ :D8, C ₉₀ :D16
2	C ₀ :D8, C ₉₀ :D16

26. TESTING PRECAUTIONS

When the Ektor Emergency product is permanently connected to the mains supply you will need to allow 24 hours to charge its battery. Once the battery is fully charged you will need to conduct a manual discharge test as per the requirements of AS/NZS 2293 or other relevant standards. At the time of printing, the Australian standard requires that new fittings operate in emergency mode for at least 2 hours for their first discharge test. Further tests are to be carried out at intervals of not more than six months. It is important that you keep records of the initial test and ongoing tests in the building's emergency service logbook. If the fitting is not to be permanently connected to the mains supply at the time of installation, you must give it the mandatory 2 hour test when you connect it permanently to the mains supply.

27. PROBLEM SOLVING PROCEDURE

If you have installed and connected the Ektor Razor as per the instructions contained within this manual and the product fails to work properly, please use the following table as a guide to fixing the problem before calling our office.

FAULT	POSSIBLE CAUSES
Green LED is not lit	<ul style="list-style-type: none"> • AC Supply is not connected • AC Supply turned off • Battery plug not connected to battery pack
Green LED is lit but the lamp does not light when the test switch is pressed	<ul style="list-style-type: none"> • Lamp is damaged • Lamp is not inserted properly • Battery pack is damaged
Lamp lights, but only temporarily, when test switch is pressed or when the main power supply is turned off	<ul style="list-style-type: none"> • Battery pack not fully charged • Battery pack is damaged

28. CONSTRUCTION SITES

IMPORTANT NOTE: Continuously switching the power supply to the fitting on and off during or after the installation process due to other processes being conducted on the building site could cause the fitting to discharge and charge its battery many times during a short period which can impact negatively on the battery life. It is not recommended that you connect the Ektor emergency products to the power supply if such conditions are prevalent. If you choose to expose the Ektor emergency products to such harsh operating conditions, Evolt may not honour any warranty on the life of the batteries or the dish. This Ektor emergency product is designed to undergo regular discharge tests but it is recommended that the intervals between consecutive tests are not less than two weeks. Frequent testing of the exit product will reduce the service life of the battery. In order to prevent damage to the battery, leave the unswitched active circuit turned off at the circuit breaker until such time as emergency lighting is required

29. WARRANTY INFORMATION

Ektor products are distributed in Australia and New Zealand by Evolt Pty Ltd (Evolt).

The Australian Consumer Law as well as other Australian laws guarantee certain conditions, warranties and undertakings, and give you other legal rights, in relation to the quality and fitness for purpose of Ektor products sold in Australia.

In Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. What constitutes a major failure is set out in the Australian Consumer Law.

Nothing in this Warranty purports to modify or exclude the conditions, warranties and undertakings, and other legal rights, under the Australian Competition and Consumer Act and other Australian laws.

Ektor products are warranted in Australia for a period of 12 months from the date of delivery of the product, provided that the products are properly stored, installed, used and maintained in accordance with the instructions contained within their manual.

Products that have been altered in any way or used other than in accordance with their instructions are not covered by this Warranty.

This Warranty is not transferable and is valid only in the hands of the purchaser of the product. The warranty does not cover Ektor products other than those purchased from Evolt. Proof of purchase must be provided to Evolt with any warranty claim. Evolt recommends that the purchaser attaches their proof of purchase to their product manual.

If you wish to claim under this Warranty, you must, at your own expense, return the product or that part of the product which you believe is defective, and proof of original purchase, your name, address and telephone number and a certificate of installation or other document required by the law for the installation of electrical products in the place in which the product was installed, to Evolt Pty Ltd at PO Box 271 Kingsgrove NSW 1480 within 12 months from the date of purchase. Please note that the Warranty does not cover removal or reinstallation of the product or that part of the product which you believe is defective.

Evolt's total liability under this Warranty is limited to the cost of repair or replacement of the faulty product. Evolt may satisfy its obligations under this Warranty in full by repair or replacement of a faulty product.

This Warranty does not apply to consumable items such as lamps or batteries or other items that can be classified as consumable.

For the avoidance of any doubt, any and all warranties or conditions which are not guaranteed under the Australian Competition and Consumer Act or the Australian Competition and Consumer Regulations 2010 and which are not expressly included in this Warranty as additional warranties or conditions are excluded.

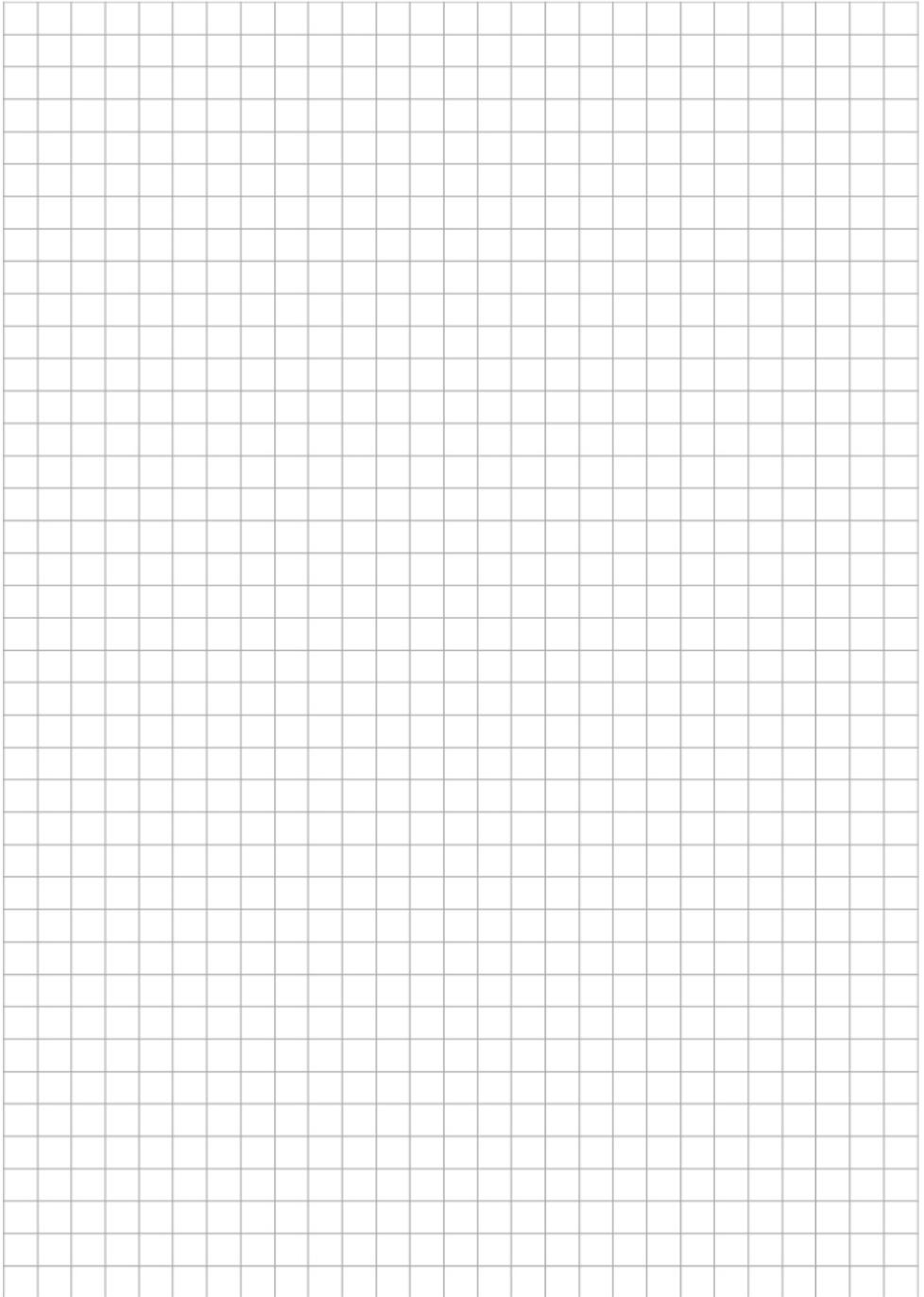
This Warranty does not cover loss or damage caused by wear and tear, misuse, incorrect installation or operation, failure to clean and maintain, incorrect voltage or non-authorized electrical connections, adverse external conditions (such as power surges and dips, acts of God, exposure to heat, corrosion, insect or vermin infestation), use of non-authorized or defective parts or globes, or to items that have been repaired other than by Evolt or a repairer approved by Evolt.

30. COMPLIANCE STANDARDS

	STANDARD	TITLE
Australian/ New Zealand Standards 	AS/NZS 2293-3:2005+A1:2010	Emergency escape lighting and exit signs for buildings. Part 3: Emergency escape luminaires and exit signs.
	AS/NZS 60598-2-22:2005	Luminaires Part 2.22: Particular requirements - Luminaires for emergency lighting (IEC 60598-2-22, Ed. 3.1(2002) MOD).
	AS 61000.3.2:2007 + A1:2009	Electromagnetic compatibility (EMC) - Limits - Limits for harmonic current emissions (equipment input current (16 A per phase) (IEC 61000-3-2, Ed.3.0 (2005) MOD).
	AS/NZS CISPR 15:2011	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.
European Committee for Standardisation 	EN 60598-1:2008+A11:2009	Luminaires - Part 1: General requirements and tests.
	EN 60598-2-22:1998+A1:2003+A2:2008	Luminaires - Part 2-22: Particular requirements - Luminaires for emergency lighting.
	EN 55015:2006+A1:2007+A2:2009	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.
	EN 61547:2009	Equipment for general lighting purposes - Electromagnetic compatibility (EMC) immunity requirements.
	EN 61000-3-2:2006+A1:2009+A2:2009	Electromagnetic compatibility (EMC) Limits. Limits for harmonic current emissions (equipment input current \leq 16 A per phase).
	EN 61000-3-3: 2008	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current \leq 16 A per phase and not subject to conditional connection.

31. TECHNICAL SUPPORT AND TROUBLESHOOTING

For further assistance in using this product, consult your nearest wholesaler or Evolt Pty Ltd. Be aware that illustrations and images used are for illustration purposes only and changes may apply to products after the release of this document.



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