



Installation Instructions

11020 EV-PEARL-EM-IP54
11013 EV-PEARL-EM-IP54-S



CODE: 11020, 11013

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1. 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.

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TO ISO9001

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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.

3. SAFETY WARNINGS

1. **THIS PRODUCT MUST ONLY BE INSTALLED BY A LICENSED ELECTRICIAN.**
2. **BEFORE COMMENCING INSTALLATION TURN OFF AND ISOLATE THE ELECTRICAL SUPPLY.**
3. **DO NOT ENERGISE WITH PRODUCT OPEN OR DISASSEMBLED.**
4. **SUPPLY VOLTAGES WITHIN PRODUCT. ISOLATE SUPPLY VOLTAGES BEFORE OPENING OR SERVICING.**
5. **THE ONLY USER SERVICEABLE PART IS THE BATTERY PACK.**
6. **DO NOT ATTEMPT TO SERVICE OTHER PARTS OF THE FITTING AS THIS WILL VOID THE WARRANTY.**
7. **AS THE INSTALLER, IT IS YOUR RESPONSIBILITY TO ENSURE YOU COMPLY TO ALL RELEVANT BUILDING AND SAFETY CODES FOR EXAMPLE THE BCA, AS3000. REFER TO APPLICATION STANDARDS FOR THE RELEVANT RULES.**
8. **WHEN THE INSTALLATION IS COMPLETE, LEAVE THIS MANUAL WITH THE BUILDING'S OWNER(S) FOR FUTURE REFERENCE.**

4. INSTALLATION

The Ektor Pearl Circular IP54 can be installed by mounting the product to the ceiling.
To install the Circular please follow the steps listed below:

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. Before mounting the Circular cover **MUST** be removed. Remove the cover by twisting it counter-clockwise and lifting it off as shown below, this will allow for access to the gear tray.
3. Locate the three screws holding the gear tray in place, loosen them and twist to unlock the gear tray from the body.
4. The cover must be removed for mounting the product, battery replacement or servicing.

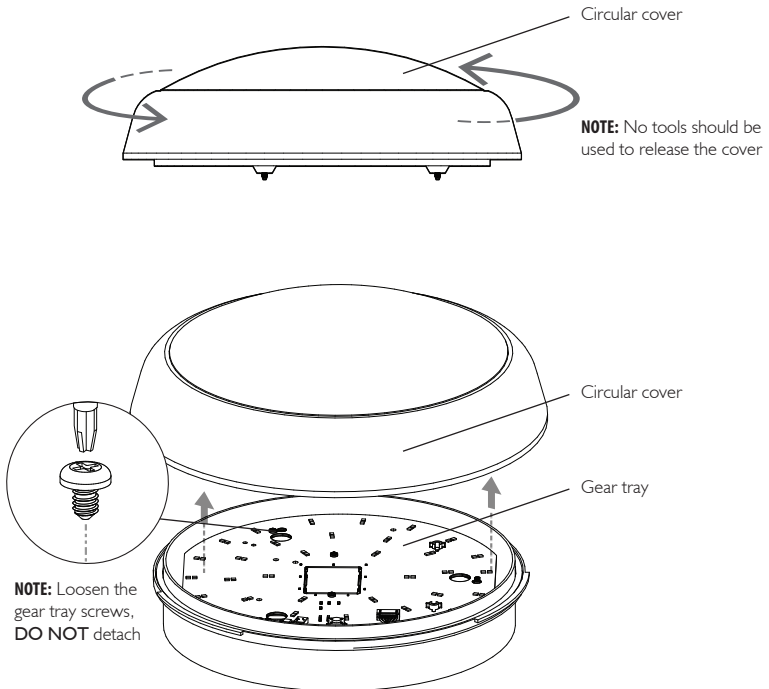


Figure 1. Circular installation

5. MOUNTING

CEILING MOUNT

The Circular can be mounted before or after removing the geartray. You must remove the geartray before wiring the terminal block. Route the wiring for the terminal block through the specified wiring entry (A).

1. Wire the terminal block as shown in **section 6 (page 5)** and tighten terminals.
2. Move the Circular into position on the ceiling and mount by fastening the supplied screws securely to the flat surface through the gear tray and body entries. Then reassemble the geartray and cover.

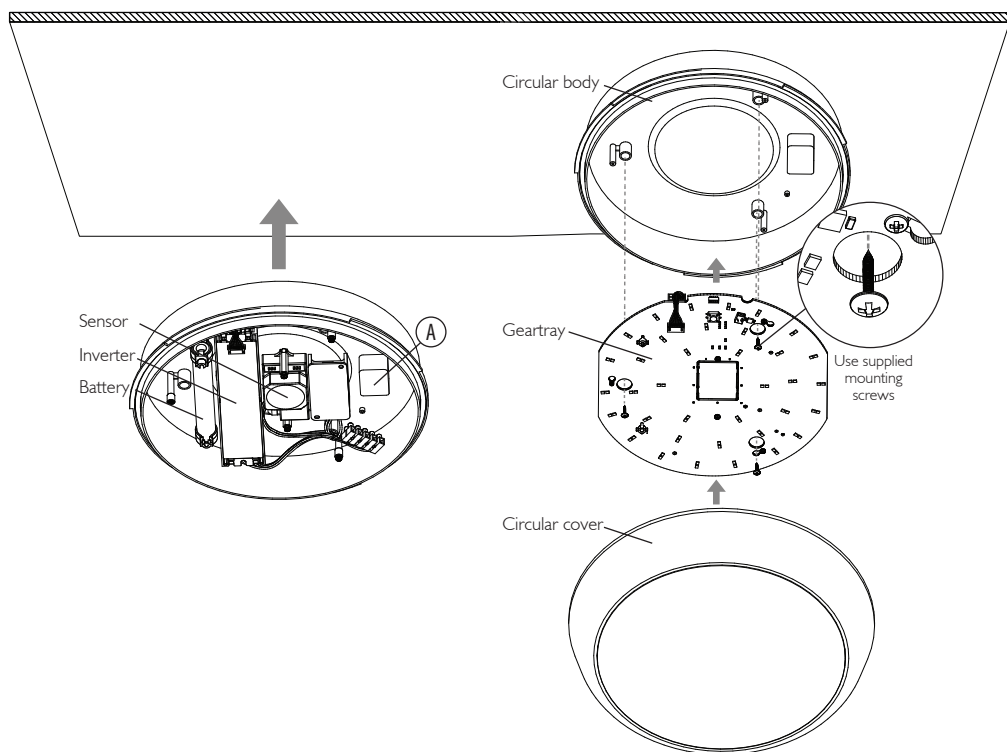


Figure 2. Ceiling mount

6. TERMINAL BLOCK WIRING OPTIONS

The wiring for Circular differs between models and accessories installed. Wiring schematics for the terminal blocks used with the Circulars in the following sections.

EV-PEARL-EM-IP54

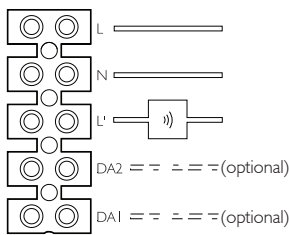
Standard



DALI emergency



External sensor



External switch

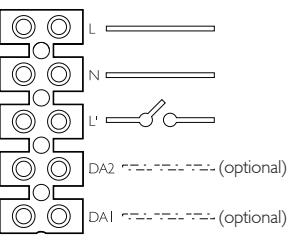
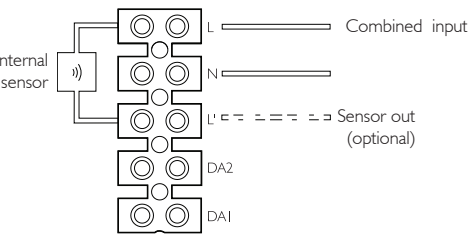


Figure 3. Emergency models

EV-PEARL-EM-IP54-S

Standard



DALI emergency

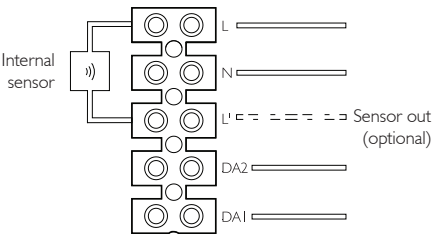


Figure 4. Emergency microwave models

7. SELF-TEST / STANDARD WIRING / CENTRAL BATTERY SYSTEM

In emergency models the 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 cannot report the light status (see **Self test support** document for more information).

8. DALI WIRING / CENTRAL BATTERY SYSTEM

The Circular inverter supports DALI out of the box, illustrated in the hardwiring diagram shown above. 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. See wiring diagram in **section 6 (page 5)**.

NOTE: Emergency models with microwave sensors do not support central battery as regular and emergency power is not separated.

9. 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. See external switch wiring diagram in **section 6 (page 5)**.

NOTE: Emergency models with microwave sensors do not support an external switch.

10. USING THE INVERTER WITH AN EXTERNAL 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. See external sensor wiring diagram in **section 6 (page 5)**.

NOTE: Emergency models with microwave sensors do not support an external sensor

11. USING THE INVERTER WITH AN ONBOARD MICROWAVE SENSOR

For model 11013 an onboard sensor is available. In addition to switching the internal light the L' terminal can be used as a power supply for up to 14 additional Circular lights.

12. COLOUR TEMPERATURE SELECTION

The Circular supports three CCT selections which can be selected by the user. The jumper is located on the geartray and can be accessed by removing the cover as shown in **section 4 (page 3)** of this manual.

COLOUR TEMPERATURE	A	B
WARM WHITE	OFF	ON
COOL WHITE	ON	ON
DAYLIGHT	ON	OFF

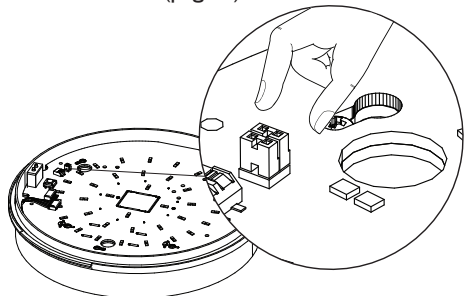


Figure 5. Colour temperature selection jumpers

13. MAINTAINING YOU PEARL CIRCULAR EMERGENCY LUMINAIRE

WARNING

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

14. 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. Access the battery by removing the product cover as shown in **section 4 (page 3)** of this manual.
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 and secure with cable ties.
5. Put the Circular back into its previously mounted position and ensure the green charge light is illuminated.
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.



Figure 6. Example of included battery

15. 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 12 discharge cycles per year is not exceeded.

16. POWER AND BATTERY CHARGE

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

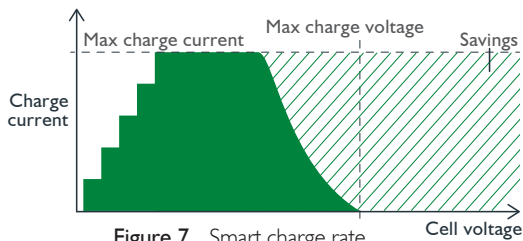


Figure 7. Smart charge rate

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.

17. WIRELESS DAUGHTERBOARD

The Circular inverter used in emergency models also support an optional wireless daughterboard. The driver must be disconnected from mains and battery must be removed, before installing or changing any expansion module. More information and a list of other accessories can be found in the **Wireless design and installation guide**. The assembly for this part onto the inverter is shown below:

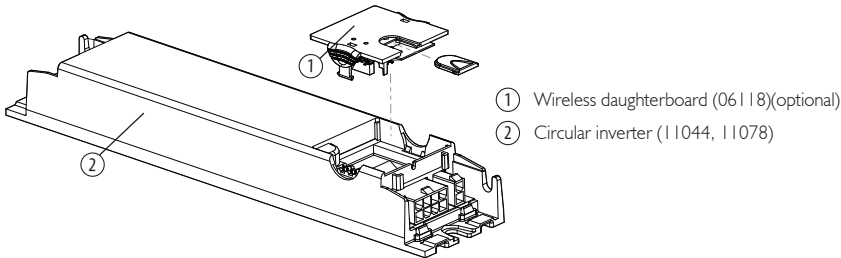


Figure 8. Daughterboard assembly diagram

18. NON-MAINTAINED / MAINTAINED JUMPER

The Emergency light in the Circular is designed for use in non-maintained mode only.

INDICATOR	STATUS	DESCRIPTION
NON MAINTAINED		LED is only ON in emergency
MAINTAINED MODE		Not supported

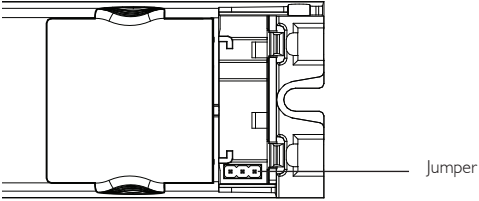


Figure 9. Maintained/non-maintained jumper

19. DISCHARGE RATING SELECTION

The inverter 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 sektor.com.au](http://sektor.com.au) 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

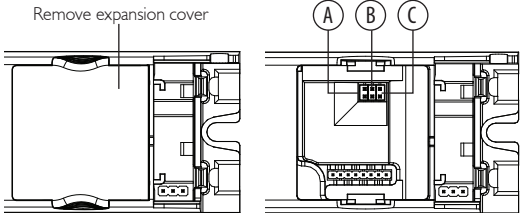


Figure 10. Discharge rating selection

20. ONBOARD MICROWAVE SENSOR SETTINGS

DETECTION AREA

Detection area can be reduced by selecting the combination on the DIP switches to fit for each specific application.

1	2	3	RANGE
●	●	●	100% (default)
○	●	●	75%
●	○	●	50%
○	○	●	25%
○	○	○	10%

● ON
○ OFF

HOLD TIME

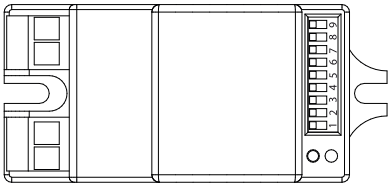
The time period you would like to keep the lamp on 100% after the person has left the detection area.

4	5	6	HOLDTIME
●	●	●	5 sec (walk test mode)
○	●	●	30 sec
●	○	●	90 sec
○	○	●	3 min (default)
●	●	○	20 min.
○	○	○	30 min.

DAYLIGHT SENSOR

The daylight threshold can be set on DIP switches, to fit for particular applications.

7	8	9	LUX OPERATION
●	●	●	2lux darkness operation only
●	●	○	10lux darkness operation only
○	●	○	25lux twilight operation
●	○	○	50lux twilight operation
○	○	○	Daylight sensor disabled (default)



Daylight: The lamp works always, even during daylight
Twilight: The lamp works only in twilight and darkness
Darkness: The lamp works only in darkness

Figure 11. Microwave sensor





21. ACCESSORIES LIST

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

PART	EVOLT CODE	CODE
COMPLETE UNITS Circular Emergency IP54 with Sensor Circular Emergency IP54	EV-PEARL-EM-IP54-S EV-PEARL-EM-IP54	11013 11020
PARTS/REPLACEMENTS Circular emergency IP54 with Sensor Inverter Circular emergency IP54 Inverter Battery 1500mAh 2 Cell LiFePO4 Battery Wireless Daughterboard Easy commissioning module - DALI Easy commissioning module - EKTOR Microwave Sensor 2	EV-PEARL-EM-IP54-S-INV EV-PEARL-EM-IP54-INV EV-1500mAh-64V-LiFePO4 EV-DAUGHTER-DAUG EV-ECM-DALI EV-ECM-EKTOR EV-MICROWAVE-SENS2	11044 11078 01302 06118 05304 05305 11064

22. SELF-TEST INDICATOR LEDS

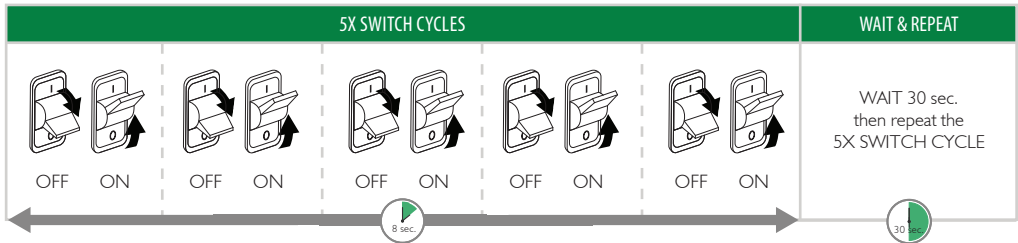
The table below shows the operation of the Circular status indicators:

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

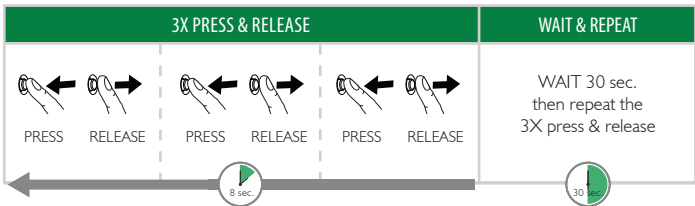
23. SELF-TEST / COMMISSIONING INTERVAL PROGRAMMING

The self test mode must first be enabled to perform tests by switching the emergency power 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.



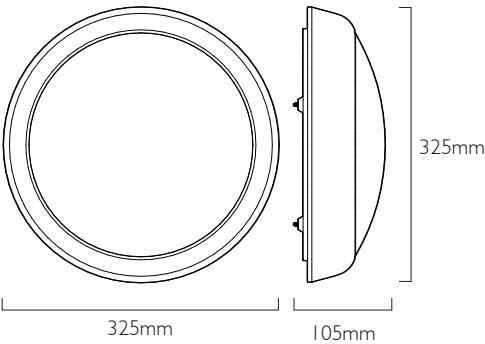
The self test can also be enabled using the test button sequence below:



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

24. PRODUCT SPECIFICATIONS

PEARL CIRCULAR IP54



Voltage	220~240V	L' Output	400 W Max.
Frequency	50 Hz	Mounting type	Surface mounted (wall and ceiling)
Max. ambient temp.	40°C	Wiring	Hard wired
Battery type	LiFePO4	Battery voltage	6.4V
Class	2	Charging time	16 hours
Duration	Dependant on jumper	Charger operation	Multi state
IP rating	IP54	Charger type	Smart charge

Evolt code	Name	Code	Max. power
EV-PEARL-EM-IP54-S	Pearl Circular Emergency IP54 with Sensor	I I 013	13.5 W
EV-PEARL-EM-IP54	Pearl Circular Emergency IP54	I I 020	15 W

25. AUSTRALIAN EMERGENCY CLASSIFICATION

Classification of the Circular output when duration is selected.

HOURS	CIRCULAR PEARL
1	D32
2	D32
3	D16
4	D10
8	D6.3

26. SPACING TABLE

Below is the spacing table extract from AS/NZS2293 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
D6.3	8.6	8.8	9.0	9.1	9.2	9.2	9.2	9.0	8.7	7.7	5.7					
D10	10.2	10.6	10.9	11.1	11.3	11.4	11.5	11.6	11.6	11.2	10.3	8.9	6.7			
D16	14.2	12.6	13.0	13.3	13.6	13.9	14.1	14.6	14.6	14.6	14.4	13.8	12.9	11.5		
D32	16.7	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	

27. 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

28. 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.

29. PROBLEM SOLVING PROCEDURE

If you have installed and connected the Ektor Circular 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

30. 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 at the address above 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-authorised 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-authorised or defective parts or globes, or to items that have been repaired other than by Evolt or a repairer approved by Evolt.

31. 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 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.

32. 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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Reference: 607389_V1.0

evolt
the electrical evolution