PLANET
LIGHTING

FOCUS INTEGRAL: FI1 & FI2

MANUAL

CONTENTS

1.0 Introduction

⚠ CAUTION! This manual is an integral part of the Product, subsequent amendments and supplements. Read and keep this manual close to the Product. Please read this manual carefully before proceeding to install or operate the Product.

User safety

The Product information and warnings described in this document are likely to assist in the protection of the SERVICE PERSONNEL and the Operator from injury, however these must not be relied on as the only reference or processes for user and personnel safety. Operators and Service Personal should also follow their local and workplace safety processes and Organisations strive to improve upon safety processes with their staff. Where there is conflicting or confusing advice or an absence of relevant information, we recommend seeking out further advice or instruction from a supervisor, supplier or another suitable expert.

Conformity

The manufacturer declares that this Product is suitable for use in underwater fish farming industries.

Validity of manual

This installation manual is valid for the following models:

- Focus Integral sea cage light

Customer service and support

Please contact your supplier for any further details you may require regarding the Product including its packaging, transport, installation and for any requests for technical and electrical diagrams. You can also contact Planet Lighting directly at: support@planetlighting.com

Planet Lighting

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Copyright

Translations

The original language of this manual is English. For all other translations, reference must be made to the original manual language.

1.1 Glossary of terms

TERM	DEFINITION
PRODUCT	The equipment to which this manual refers is the Focus Integral sea cage light and its components. For ease of description, this manual may refer to this equipment as the "Product".
WE / US	The manufacturer and company Planet Lighting.
OPERATOR	Person handling the equipment (e.g. professional aquaculture personnel, non-expert person assisting the aquaculture processes).
RESPONSIBLE ORGANIZATION	Entity accountable for the use and maintenance of the equipment (e.g. an aquaculture farming operation). Preparation and training are included in use.
SERVICE PERSONNEL	Authorised and qualified individuals or entities accountable to the responsible organisation that install, assemble, maintain or repair the equipment. In certain circumstances, the safety of such persons depends on their knowledge and training and ability to take appropriate precautions when gaining access to hazardous parts of the Product assembly. As an example only, the following professional figures may be considered SERVICE PERSONNEL: • Mechanical or Structural Engineer (for the suspension works) • Electrical Engineer, or other Electro-technical expert qualified to work as an electrician (for the electrical works) • Technician (employee of manufacturer or distributor) trained by Planet Lighting to conduct in-field refurbishments.

1.2 Graphic signs and symbols used in this manual

The following safety measures and warnings should be observed during Product installation, use and servicing.

To emphasize their importance, a number of safety precautions are repeated throughout the manual. Follow the safety precautions before using or repairing the Product. Carefully abiding by the safety precautions improves the ability to use the Product safely and correctly and helps prevent incorrect maintenance which could be hazardous and cause damage. The safety measures are approximate and not exhaustive; the Operator, the Responsible Organization and the SERVICE PERSONNEL must develop their capacities to upgrade and integrate them.

Indications such as DANGER, WARNING and CAUTION, preceded by the symbol  , indicate the level of risk to which the SERVICE PERSONNEL, the RESPONSIBLE ORGANISATION and the PRODUCT could be exposed.

DANGER: indicates an immediately hazardous situation which could result in death or serious injuries.

WARNING: indicates a potentially hazardous situation that could result in death or serious injuries.

CAUTION: indicates a potentially hazardous situation which could result in moderate or light injuries and Product damage.

This triangular symbol together with the explanation alongside (shown above) indicates the type of hazard to be dealt with.

1.3 Warnings and safety notices

WARNING AND DEFINITION
CAUTION This manual is an integral part of the Product, subsequent amendments and supplements. Read and keep this manual close to the Product.
WARNING Planet Lighting disclaims all liability for any injury to persons or damage to things caused by the Product having been installed by persons who are not SERVICE PERSONNEL.
WARNING The RESPONSIBLE ORGANIZATION is entirely responsible for Product installation activities. No costs or responsibilities relating to the installation and/or commissioning of the Product may therefore be traced back and/or in any case attributed to Planet Lighting.
CAUTION – Poor Earth Management Can Cause Severe Corrosion by Electrolysis The electrical system at the farm site must adequately manage the electrical earth for all devices. Any damage caused to the Product as a result of poor earth management will not be warranted.
DANGER – Risk of Electric Shock. Turn off the light BEFORE commencing any maintenance. The electrical system MUST NOT be powered when divers are in the water or when net cleaners or other machinery are in use. Ensure the Product is completely POWERED OFF before conducting maintenance operations in the cage.
DANGER – Risk of Electric Shock The electrical system at the farm site must conform to the applicable local standards, and any national regulations. A master switch must be installed with fuse or thermal magnetic circuit breaker to be able to interrupt power to the Product.

WARNING AND DEFINITION

DANGER – AUTHORISED SERVICE PERSONNEL ONLY

ONLY AUTHORISED SERVICE PERSONNEL should carry out maintenance on Planet Lighting products. For your safety, always follow your workplace policy or procedure or contact a supervisor if you are unsure.

DANGER – Risk of Electric Shock

Power off equipment IMMEDIATELY if signs of damage. If equipment is suspected damaged by machinery or force, operators should take steps to ensure the system is completely powered off before commencing salvage.

DANGER – Risk of Burns or Permanent Injury
Do Not Run Light Out-Of-Water

DO NOT operate the Product out-of-water under any circumstances. The Focus Integral sea cage light is designed to run UNDERWATER ONLY. Open water under 20°C is required to maintain a compliant running temperature. The heat sink is NOT designed to cool when operated out-of-water. Operation out-of-water may lead to BURNS or PERMANENT INJURY. Operation out-of-water can also damage the product and void warranty.

DANGER – Risk of Electric Shock. DO NOT attempt to clean cables with a sharp object or knife.

DANGER – Electrical Hazard: Loose and Damaged Connector

Always ensure that AC connector is installed correctly. The connector is tightened, secure and the seals are in good condition.

1.4 Warranty and liabilities

Planet Lighting disclaims all liability with regard to unreliable Product operation in any of the following cases:

- Installation, authorised modifications and repairs have not been performed by SERVICE PERSONNEL.
- The Product has not been used for its intended purpose and in conformity with these operating instructions.
- The Product is run whilst out of water.
- The electrical system supplying the lights does not deliver an input voltage within the range specified.
- The electrical system supplying the lights does not comply with local laws and regulations.
- The electrical system does not adequately manage the electrical earth, thus causing corrosion via electrolysis.
- The electrical system has been wired incorrectly.
- Where modifications or adjustments have been made to the Product without permission from us.

1.5 Structural changes or variations

No arbitrary structural changes, modifications or variations to the Product are permitted without prior written authorisation of Planet Lighting. In case of the Product having been tampered with, the warranty shall be invalidated and the manufacturer disclaims all liability for any injuries or damage caused to the OPERATOR, the RESPONSIBLE ORGANISATION and the SERVICE PERSONNEL.

1.6 Operator qualification

The following qualification requirements are based on the definitions given under the 'Glossary of Terms' (section 1.1) The qualification requirements for various tasks relating to the Product are as follows :

Installation:	SERVICE PERSONNEL
Use:	OPERATOR
Cleaning:	OPERATOR
Routine maintenance:	SERVICE PERSONNEL
Special maintenance:	SERVICE PERSONNEL
Disposal:	RESPONSIBLE ORGANISATION and SERVICE PERSONNEL

1.7 Environmental Considerations

Packaging

Cardboard boxes containing Product. Dispose of these in compliance with national directives applicable for waste disposal.

Transport and Storage

Product transport is done by land, sea or air. The Product must be packaged, transported and stored (warehoused) in a dry premises within the following range:

Temperature (°C): -15 / +60

Place of installation

The environment where the Product is started up must have the following characteristics:

Air Temperature (°C): -40 / +40

Water Temperature (lighting fitting only) (°C): -15 / +20

Recycling

Design of the Product takes into account the materials used in the manufacture of components. This is to ensure when it reaches its end of life, the disposal method with the lowest or least negative impact, on human health and the environment is selected.

Unlike the sources of traditional light, LED's do not contain mercury, toxic gases, filaments or fragile parts. Due to the fixture being over 95% recyclable and there being no Bulbs/Globe changing during the Focus LED projected lifetime of >109,000 hours, your environmental footprint will be significantly reduced.

When your Product reaches the end of its life, contact Planet lighting or our local agents to learn about recycling options. The Focus light must be disposed of properly according to local laws and regulations.

2.0 General information

This installation manual describes how to install, operate and maintain the Focus Integral sea cage light from Planet Lighting (referred to throughout this document as the 'Product'). Prior to installation please carefully read through all the instructions in this manual.

2.1 Product Definition

The Product is the Focus Integral sea cage light and its components, a highly efficient all-in-one underwater luminaire designed for use in sea cage farming systems. The Product is designed to deliver the highest performance in the most compact and light weight package available. The Product's robust, lightweight and highly efficient design provides a fish lighting solution which is easy to use, limits maintenance, and delivers class-leading low operational costs.

Manufacturer

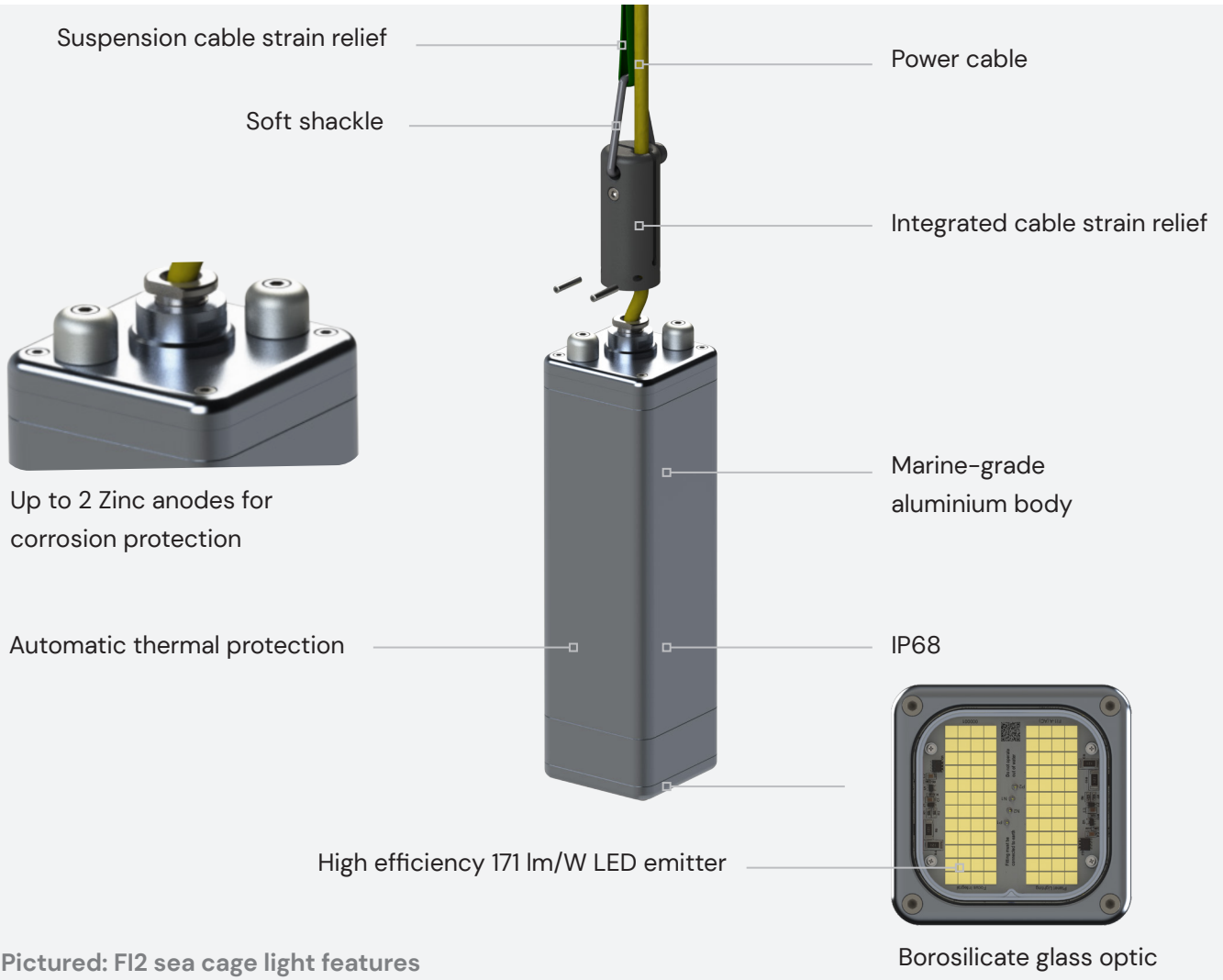
The Product is designed and manufactured in Australia by award-winning lighting manufacturer, Planet Lighting (established 1911). Planet Lighting is a renowned worldwide supplier of cutting edge solid state lighting devices, primarily for aquaculture, architectural and medical applications. We have a proven track record in supplying LED sea cage lighting solutions since 2012 and have a constant commitment to product improvement. We would like to hear from you, should you have any enquiry, comment or special lighting need. We are proud to support our products with great service and a long warranty.

2.2 Product Features, Specifications and Identification FI1 & FI2

Product Features

- High performance, ultra efficient LED technology designed for the sea cage
- Compact, lightweight and slimline form for easy handling
- Ultimate efficiency of up to 171 lumens per watt
- Focused, downwelling light (~120° beam angle) creates a more natural environment for fish and improves efficiency
- Ultra durable, low maintenance design with robust, anti-corrosion features and materials
- Long life LED - LED Projected Lifetime >109,000hrs
- Automatic thermal protection
- Plug and play operation
- Adaptable to traditional metal halide installations and existing RCD protection circuits
- Modular design for easy serviceability* and to help extend product life.
- Max Operating Depth: **FI1: 20m and FI2: 60m**

* by authorised Service Personnel only. Please contact your supplier.



Pictured: FI2 sea cage light features

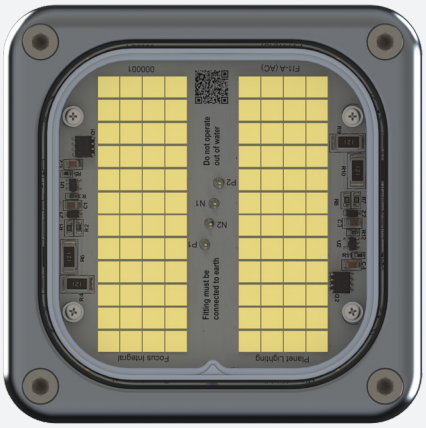
Product Specifications

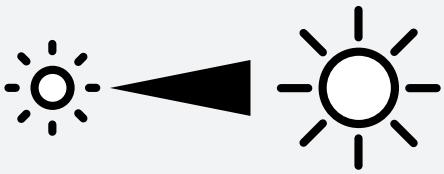
Efficiency:	156 lm/W
Pick Efficiency	171 lm/W at emitter
Max lumen output	72000 lm
Typical lumen output	66000 lm
Max Power	450 W
Typical Voltage	230 V/110 V
Typical current	1.9-2.0 A (at 230 VAC); 4.0-4.23 A (at 110 VAC)
Beam distribution	Circular ~120˚
Colour	Daylight White LED
LED Projected Lifetime	L90(12k)>109,000hrs
Max Operating Depth	FI1: 20m FI2: 60m
Protection Class	IP68
Weight	6.4 kg (excluding cable)
Size	102 mm (W) x 102 mm (D) x 448 mm (H)
Cross-sectional area	10201 mm2

Automatic Thermal Protection

Built In Thermal Throttle

Our custom PCB design provides automatic thermal protection to extend the product life. Focus Integral automatically switches power to 10% when the PCB hits 50-55°C.



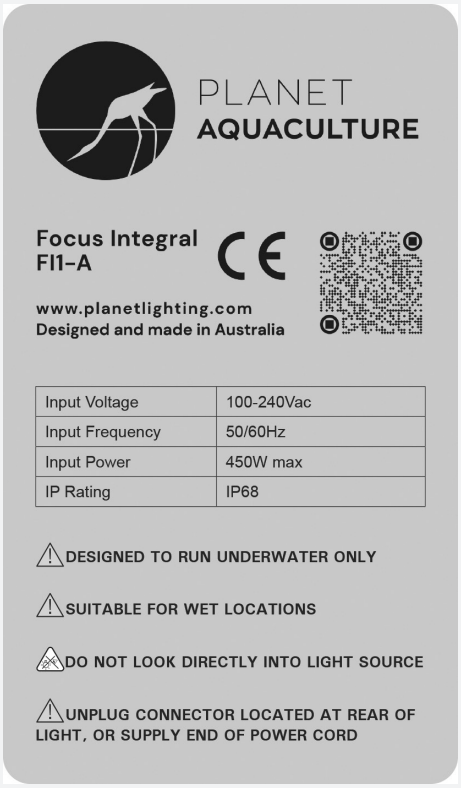


Preprogrammed Soft Start

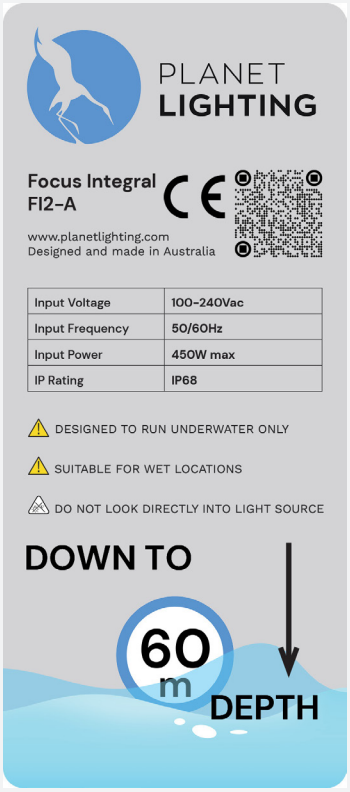
Soft start is provided as standard to benefit fish health. When powered on, the Product runs a dimming program starting at 10% of maximum output. Brightness is slowly increased at a linear rate to 100% over 30 minutes.

Product Identification FI1 & FI2

Focus Integral, 1st Generation



Focus Integral, 2nd Generation



3.0 Electrical Details

⚠ **DANGER! – Risk of electric shock. Mains AC Input Installation by authorised SERVICE PERSONNEL ONLY. Ensure Mains power is OFF and disconnected before installation and maintenance.**

Electrical Specifications

Max Power	450 W
Typical Voltage	230 V/110 V
Typical Current	1.9-2.0 A (at 230 VAC) ; 4.0-4.23 A (at 110 VAC)

AC Input Specifications

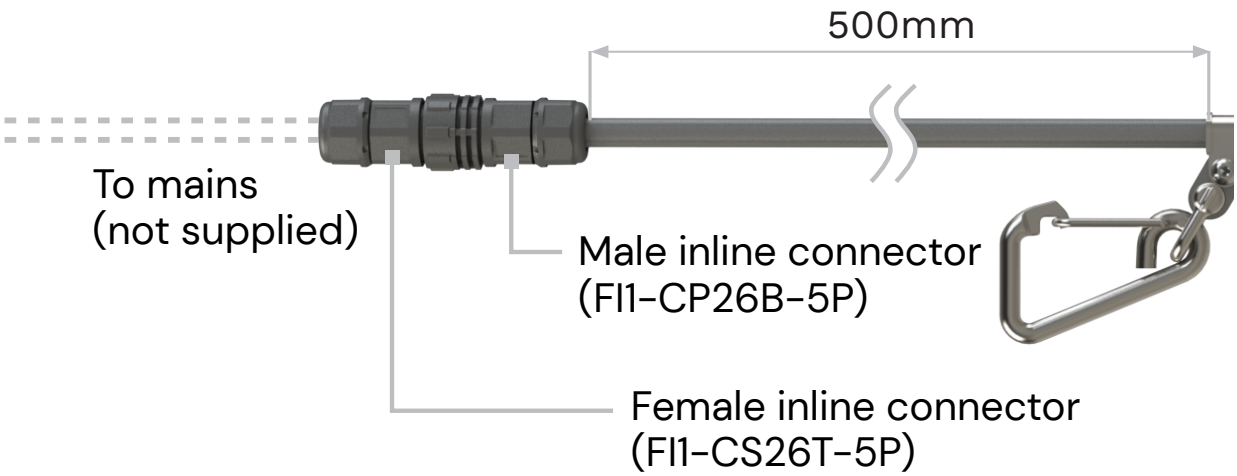
PARAMETER	VALUE	NOTES
Input Voltage	90 VAC - 305 VAC	
Input Frequency	47 Hz min/63 Hz max	
Leakage Current	1.4 mA	IEC60598-1; 240 VAC/ 60 Hz
Input AC Current	4.15 A	Measured at 100% load and 120 VAC input
	2.2 A	Measured at 100% load and 220 VAC input
Inrush Current (A^2s)	8.78 A^2s	
Power Factor	0.9	

3.1 Connectors and cables

⚠ **DANGER! Electrical Hazard: Loose and Damaged Connectors. Always ensure connector locking nuts are tightened and secure and that seals are in good condition.**

⚠ **DANGER! Risk of Electric Shock. DO NOT attempt to clean cables with a sharp object or knife.**

Cable Details



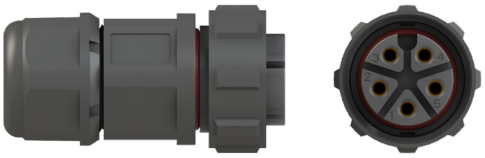
Note:

The FI1-CS26B-5P and FI1-CP26B-5P inline connectors only supplyed with DALI System or sold as replacement parts. FI2 sold separately, supplyed with flying lead at supply end of the cable, for customer to fit their own connector.

Connector Details

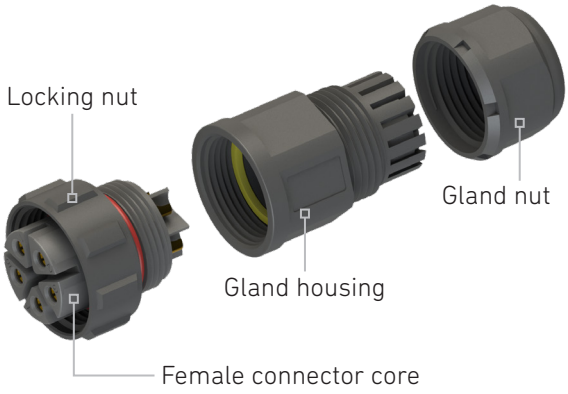
⚠ **DANGER! Electrical Hazard: Loose and Damaged Connectors. Always ensure connector locking nuts are tightened and secure and that seals are in good condition.**

Lighting output connectors are typically supplied with the Product for power connection. These connectors are 32A, IP68, UV Stabilised, CE & ROHS compliant. The Product uses a proprietary connector for lighting output by design. No other electrical equipment can be connected to this Product.

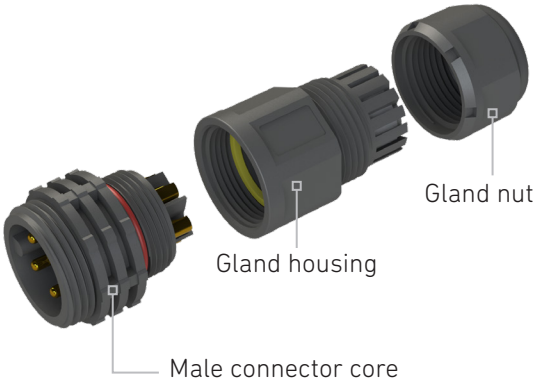


FI1-CS26T-5P Female inline connector

FI1-CP26B-5P Male inline connector



Female inline connector exploded view

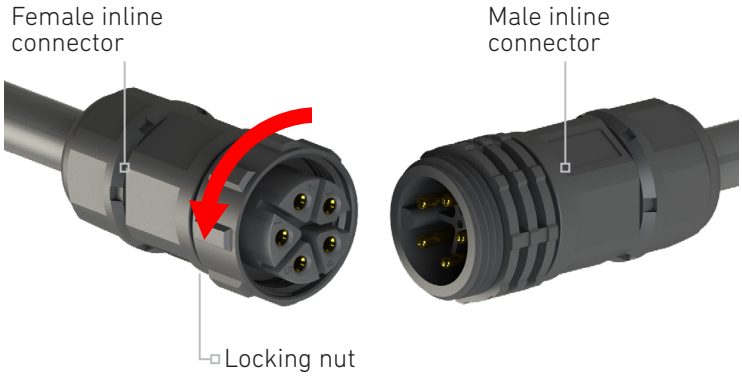


Male inline connector exploded view

Part Number		Part Number	
FI1-CS26B-5P	Female connector with solder buckets	FI1-CP26B-5P	Male connector with solder buckets
FI1-CS26T-5P	Female connector with screw terminals	FI1-CP26T-5P	Male connector with screw terminals

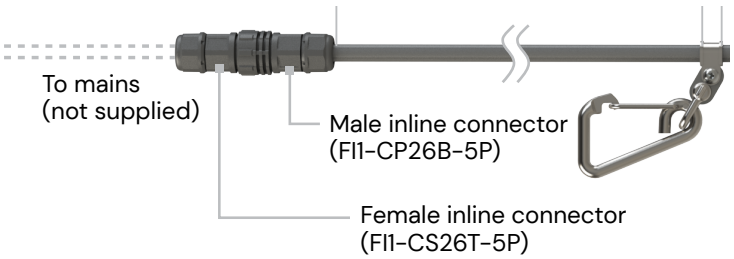
Note:

The FI1-CS26B-5P and FI1-CP26B-5P inline connectors only supplyed with DALI System or sold as replacement parts. FI2 sold separately, supplyed with flying lead at supply end of the cable, for customer to fit their own connector.



⚠ **Ensure connector locking nut is tightened and secure.**

⚠ **DANGER! – Risk of electric shock. Mains AC Input Installation by authorised SERVICE PERSONNEL ONLY. Ensure Mains power is OFF and disconnected before installation and maintenance.**



3.2 Electrical Installation (AUTHORISED SERVICE PERSONNEL ONLY)

⚠ **DANGER: If you observe faulty or damaged electrical equipment, and if it is safe to do so, turn OFF.**

⚠ **DANGER! – Risk of electric shock. Mains AC Input Installation by authorised SERVICE PERSONNEL ONLY. Ensure Mains power is OFF and disconnected before installation and maintenance.**

⚠ **DANGER! The electrical system at the farm site must conform to the applicable national standards and regulations. A master switch must be installed with fuse or thermal magnetic circuit breaker to be able to interrupt power to the Product.**

⚠ **DANGER! AC Supply MUST be protected by a correctly installed and maintained ground fault protection: GFI / RCD/ RCCB or equivalent. We recommend using appropriate strain relief for the AC cabling.**

⚠ **WARNING! – Risk of product damage. The electrical system at the farm site must adequately manage the electrical earth for all devices. Any damage caused to the Product as a result of poor earth management will not be warranted.**

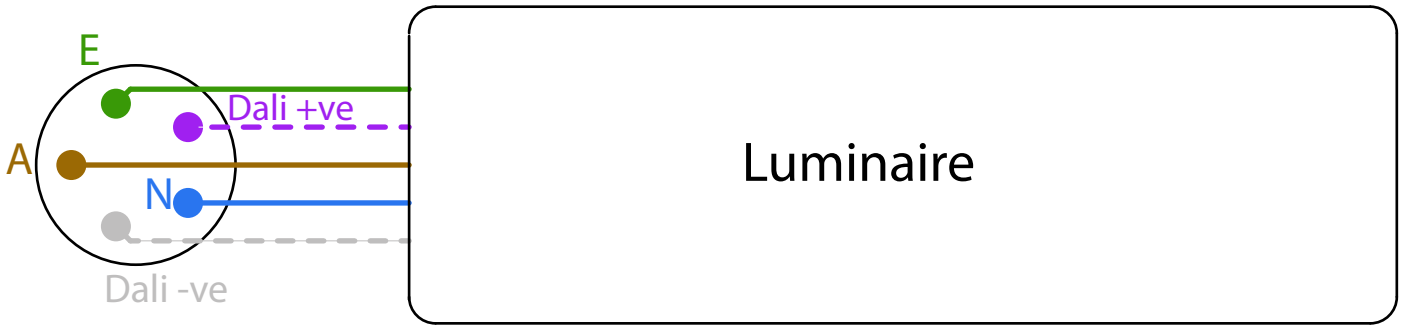
⚠ **DANGER! Risk of electric shock. Ensure that Mains Power AC is turned OFF and disconnected BEFORE attempting installation of the Focus Integral sea cage light.**

⚠ **DANGER! Risk of burns and permanent injury. Do not run lights out-of-water. Ensure the Focus light is submerged before operation.**

General note about electrical installation

Appropriate AC Connector choices and installation methods are farm specific and should be determined by your authorised SERVICE PERSONNEL, and should adhere with any applicable national standards and regulations. Please carefully consider your farm layout and power distribution needs, observing the Product specifications and requirements.

Wiring Schematic



Note for non-dimming versions of the Product: the Dali +ve, and -ve cables are redundant and do not need to be connected.

⚠ **DANGER – Risk of Electric Shock.**

Mains AC Input Installation by authorised SERVICE PERSONNEL ONLY. Ensure Mains power is OFF and disconnected before installation and maintenance.

4.0 Operation

This section is a guide to aid operators of the Product. Operation of the Product must always be in accordance with the safe workplace practices and regulations of your workplace.

> ⚠ **DANGER! Risk of burns or permanent injury. Do not run lights out-of-water. Ensure the Focus light is fully submerged before operation.**
>
> ⚠ **DANGER! Risk of Permanent Eye Damage. DO NOT look into the light fitting when powered. The LED emits extremely bright light which can cause damage to the retina.**
>
> ⚠ **DANGER! Risk of electric shock. POWER OFF equipment immediately if signs of damage. If equipment is suspected damaged by machinery or force, operators should take steps to ensure the system is completely powered off before commencing salvage.**
>
> ⚠ **DANGER! Electrical Hazard: Loose and Damaged Connector. Always ensure that AC connector is installed correctly. The connector is tightened, secure and the seals are in good condition.**
>
> ⚠ **WARNING! Never suspend the light via its power cable only. The Product cable strain relief is not designed as a substitute for appropriate suspension of the light.**

4.1 Before Operating Your light

Setup Checklist

- ☑ You have read and understood this manual.
- ☑ Mains power is turned OFF
- ☑ The light is suspended via the soft shackle
  ⚠ WARNING! Never suspend the light via its power cable only.
- ☑ The light is fully submerged.

4.2 Normal Operation

Normal Operation Description

The Focus Integral light is Plug and Play and designed to turn ON automatically when it is connected to your power source. Once AC power is supplied to the system, the lights will soft start automatically. During soft start, lights will begin their ramp up phase starting at 10% and increasing to full 100% brightness over 30mins.

> **NOTE! If you lose mains power during the ramp up phase, the light will restart its soft start from the beginning once reconnected – starting from its dimmest point at 10% brightness.**

4.3 Instructions to turn ON your light:

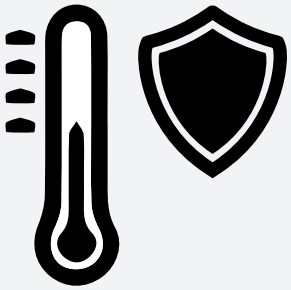
> **NOTE! Ensure to read the above Warnings, Setup Checklist, and Normal Operation Description before operating the light.**

1. Ensure mains power is OFF
2. Connect the light to mains AC power
3. Ensure the plug connector is tightened and secure
   (the plug connection between the light cable and the mains power).
4. Turn ON the power supply. The light will enter normal operation (see 4.2 Normal Operation).

4.4 Automatic Thermal Protection Operation

Thermal Throttle Description

Focus Integral has two, electrically independent, rectangular banks of LEDs. Each bank has its own independent thermal throttle circuitry designed to prevent overheating of the fitting in the event the light is accidentally run out of water. When each throttle circuit detects the maximum allowable temperature (approximately 55°C), it will cause their associated bank of LEDs to dim to a 10% output.



NOTE! Since each bank has independent control, there is often a time delay between the switching of each bank of LEDs. This delay can be extended by the fact that once one of the banks has dimmed, the rate of heat increase is reduced on the remaining bank. In addition, there can be some manufacturing variation between the sensing components which can also contribute to a time difference between the switching of the throttle circuit on each bank.

NOTE! In the special case that the fitting has a plateau temperature close to the actual throttle temperature, the fitting can be seen to enter a 'flicker state' where the banks switch rapidly between 10 and 100% since the throttle circuits are either slightly under or over the 55°C limit.

5.0 Maintenance

5.1 Maintenance Task Schedule

⚠ **DANGER! Risk of electric shock. Turn off the light BEFORE commencing any maintenance. The electrical system MUST NOT be powered when divers are in the water or when net cleaners or other machinery are in use. Ensure the Product is completely POWERED OFF before conducting maintenance operations in the cage.**

⚠ **DANGER! Risk of electric shock. ONLY authorised SERVICE PERSONNEL are permitted to carry out maintenance on Planet Lighting products. Planet Lighting disclaims all liability for any injury to persons or damage to things caused by the Product having been installed or maintained by persons who are not authorised SERVICE PERSONNEL.**

⚠ **DANGER! Risk of electric shock. POWER OFF equipment immediately if signs of damage. If equipment is suspected damaged by machinery or force, operators should take steps to ensure the system is completely powered off before commencing salvage.**

⚠ **DANGER! Risk of burns and permanent injury. DO NOT run lights out-of-water under any circumstances. The Focus Integral sea cage light is designed to run UNDERWATER ONLY. Open water under 20°C is required to maintain a compliant running temperature. Operation out-of-water may lead to BURNS or PERMANENT INJURY. Operation out-of-water can also damage the product and VOID WARRANTY. Ensure the Focus light is submerged before operation.**

⚠ **DANGER! Electrical Hazard: Loose and Damaged Connector. Always ensure that AC connector is installed correctly. The connector is tightened, secure and the seals are in good condition.**

⚠ **DANGER! Risk of Permanent Eye Damage. DO NOT look into the light fitting when powered. The LED emits extremely bright light which can cause damage to the retina.**

⚠ **DANGER! Risk of Electric Shock. DO NOT attempt to clean cables with a sharp object or knife.**

⚠ **WARNING! The disinfectants/cleaning agents may contain substances harmful to health: use disinfectants only recommended by your health authorities and follow the manufacturer's user instruction carefully.**

⚠ **CAUTION! Operating lights out of water will damage the light fittings.**

⚠ **CAUTION! Do not use abrasive products, petrol, paint thinners, alkaline detergent, acidic cleaning agents or aldehydes. Make sure the proportions of the detergents/cleaning agents are accurate based on manufacturers instructions.**

Regular maintenance is an important contributor to user safety, normal operation and to prolonging the life of the Product. Observe the above warnings and always ensure your workplace safety procedures are followed when carrying out maintenance tasks. The following periodic maintenance tasks are recommended.

Monthly Maintenance

TASK	DESCRIPTION	ACTION
CABLES, POWER AND CONNECTOR		
Check connector and seals	Always ensure that AC connector is installed correctly. The connector is tightened, secure and the seals are in good condition.	Check / replace
Check for cable damage	Check the full length of cable for kinks, nicks, or cuts. Replace if damaged.	Check / replace
Check cable strain relief	Ensure strain relief carabiner is correctly secured to protect all lighting cables. Check strain relief on supply cables where applicable.	Check / replace
LIGHT FITTINGS		
Check biofouling	Check for build up of biofouling on the aluminium light body and the lens. Heavy biofouling may reduce cooling and lifetime of the LED.	Check / clean
Check for water ingress	Visually inspect the lens, looking for signs of water ingress.	Contact supplier
Check sacrificial anode(s)	Check the outer surface of the anode(s) for evidence of corrosion. Replace anode(s) if there is significant loss of material.	Check / replace

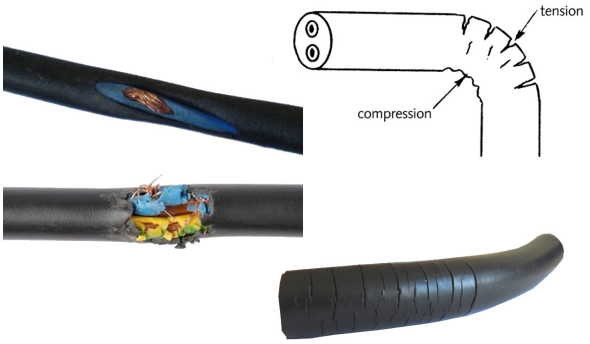
Quarterly Maintenance (Every 3 Months)

TASK	DESCRIPTION	FREQUENCY
CABLES AND POWER MAINTENANCE		
Check cable install	Check that the cable is installed as per the original plan. Check that cables are secure, out of the way and that cable strain relief is installed and protecting electrical lines.	Improve cable management on site
LIGHT FITTINGS		
Check mineral build up	Mineral build up (e.g. salt) around the cable gland, front plate or lens should be cleaned away to prevent minerals working into seals. Take care not to damage parts when cleaning.	Clean
Check corrosion on body	If anode(s) are lost, corrosion may impact the body of the luminaire. Replace anode(s) immediately to prevent further damage. Excess pitting due to corrosion around the seals can cause water ingress. Away from seals, moderate corrosion will not reduce the performance of the product.	Check / replace

5.2 Maintenance Task Definition

Cables and Connectors Maintenance

⚠ **DANGER – Risk of Electric Shock. DO NOT attempt to clean cables with a sharp object or knife.**

Check for cable damage This check is to ensure that the cable is intact and undamaged. Inspect entire length of cable for nicks, kinks, tension cracks, compression folds, stretched or crushed portions. If there is damage, replace the cable. ⚠ **DANGER – Risk of Electric Shock. DO NOT attempt to clean cables with a sharp object or knife.**	
Check cable install This check is to ensure that the cable is correctly installed. The cable should be clipped, or taped to suspension ropes to constrain and control the cable route. Cables should be neatly routed and constrained to avoid unwanted damage, tangles, and trip hazards.	
Check Connector, Locking Nuts and Seals Always ensure that AC connector is installed correctly. The connector is tightened, secure and the seals are in good condition.	
Check contacts for corrosion This check is to ensure that no corrosion is occurring to the contact points within the plug and socket assembly. Undo the locking nut, and remove the plug from the socket. Inspect the both the male pins in the plug attached to cable, and the female socket mounted to the box. If corrosion is present order replacement parts, and replace immediately.	

Light Fittings

⚠ **DANGER: Permanent eye damage. DO NOT look into the light fitting when powered. The LED emits extremely bright light which can cause damage to the retina. Lights should be operated underwater only.**

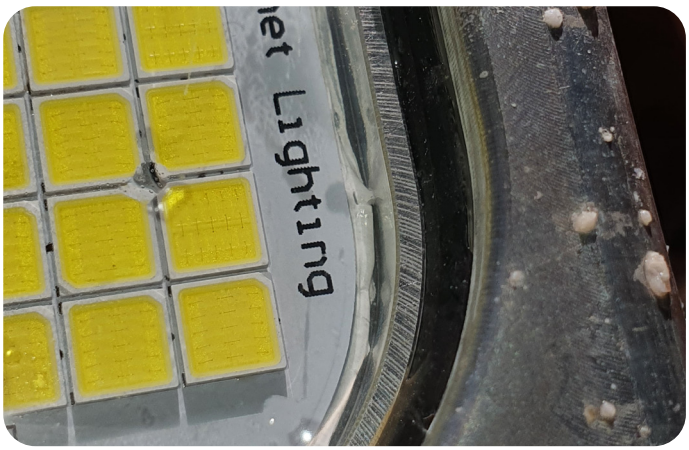
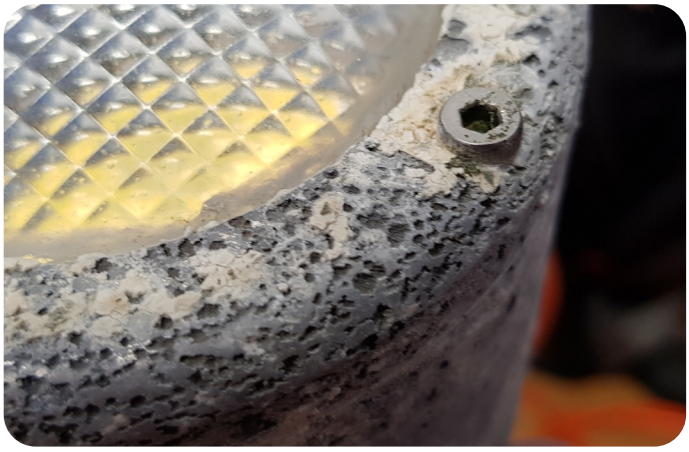
⚠ **DANGER: Risk of Electric Shock and Injury. Turn OFF the light before commencing any cleaning or maintenance.**

⚠ **WARNING: The disinfectants/cleaning agents may contain substances harmful to health: use disinfectants only recommended by your health authorities and follow the manufacturer's user instruction carefully.**

⚠ **CAUTION: Do not use abrasive products, petrol, paint thinners, alkaline detergent, acidic cleaning agents or aldehydes. Make sure the proportions of the detergents/cleaning agents are accurate based on manufacturers instructions.**

⚠ **CAUTION: Operating lights out of water will damage the light fittings.**

Check biofouling This check is to ensure that the external surfaces of the light fitting are free of biofouling. Biofouling can insulate the light, preventing proper cooling of the LED reducing its lifetime and potentially leading to product damage. To clean, wiping or pressure cleaning with water is the preferred method. Avoid use of abrasive or chemical agents, which may damage the oxide layer.	
Check anode(s) for corrosion Inspect the anode(s), looking for evidence of corrosion. Replace the anode(s) if the corrosion is severe. If unusually rapid change for your site is observed, check earth management on site.	
Check for water ingress This check is to ensure that no water has found its way into the light fitting. To do this, turn the light off and closely inspect the fitting by looking into the lens at the front. Look for water inside the LED chamber. Condensation or droplets inside the lens are a problem if there is sufficient water inside the lens to trickle down when the light is held sideways. In the event of water ingress, replace the fitting and return to the manufacturer.	

Check for mineral build up Mineral build up (for example, salt) around the cable gland, front plate or lens should be cleaned away to prevent minerals working into seals. Take care not to damage parts when cleaning.	
Check for corrosion on body If anode(s) are lost, corrosion may impact the body of the light. Replace anode(s) immediately to prevent further damage. Excess pitting due to corrosion around the seals can cause water ingress. Note that moderate corrosion away from seals will not reduce the performance of the product.	

7.0 Product Troubleshooting

⚠ **DANGER! Risk of electric shock. POWER OFF equipment immediately if signs of damage. If equipment is suspected damaged by machinery or force, operators should take steps to ensure the system is completely powered off before commencing salvage.**

⚠ **DANGER – Authorised SERVICE PERSONNEL. ONLY Authorised SERVICE PERSONNEL should carry out maintenance on Planet Lighting products.**

If your Focus light fails to turn ON, or does not operate as expected, please contact your supplier for support.

6.0 Product Storage

The Product has been designed for portability and easy storage. The Focus light and its cabling pack neatly into a standard stackable crate allowing them to be transported and stacked for storage in a suitable location.

Heavy Duty. Without the Heavy Lifting

Focus Integral is compact and lightweight. A Focus Integral light and its cabling ship together in a stackable, collapsible crate. The crate can be reused for easy handling when installing, removing, storing or servicing the equipment.

The blue crate for shorter cable, 40m standard.

The green crate for longer cable, 95m standard.

Dimensions

Blue crate: 600x400x180

Green crate: 600x400x220

Made in Australia Exported to the World

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