



JCU-3

INSTALLATION & OPERATION INSTRUCTIONS



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CHAPTER 1: IMPORTANT INFORMATION

Safety warnings



Warning: Product installation and operation

- This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.
- Certified installation by an approved installer is recommended. A certified installation qualifies for enhanced product warranty benefits. Contact your dealer for further details.



Warning: Switch off power supply

Ensure the vessel's power supply is switched OFF before starting to install this product. Do NOT connect or disconnect equipment with the power switched on, unless instructed in this document.

Product warnings



Warning: Product grounding

Before applying power to this product, it MUST be correctly grounded, in accordance with the instructions provided.



Warning: Positive ground systems

Do not connect this unit to a system which has positive grounding.



Warning: Potential ignition source

This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

Caution: Power supply protection

When installing this product ensure the power source is adequately protected by means of a suitably-rated fuse or thermal circuit breaker.

Regulatory notices

Water ingress

Water ingress disclaimer

Although the waterproof rating capacity of this product meets the stated standard (refer to the product's *Technical Specification*), water intrusion and subsequent equipment failure may occur if the product is not installed correctly or subjected to commercial high-pressure washing. FLIR will not warrant products subjected to high-pressure washing.

Disclaimer

FLIR does not warrant that this product is error-free or that it is compatible with products manufactured by any person or entity other than FLIR.

FLIR is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in information utilized by the product supplied by third parties.

EMC installation guidelines

FLIR equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference between equipment and minimize the effect such interference could have on the performance of your system.

Correct installation is required to ensure that EMC performance is not compromised.

Note:

In areas of extreme EMC interference, some slight interference may be noticed on the product. Where this occurs the product and the source of the interference should be separated by a greater distance.

For **optimum** EMC performance we recommend that wherever possible:

- FLIR equipment and cables connected to it are:
 - At least 1 m (3.3 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 2 m (6.6 ft).
 - More than 2 m (6.6 ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.
- FLIR specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

Note:

Where constraints on the installation prevent any of the above recommendations, always ensure the maximum possible separation between different items of electrical equipment, to provide the best conditions for EMC performance throughout the installation.

Product disposal

Dispose of this product in accordance with the WEEE Directive.

The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment which contains materials, components and substances that may be hazardous and present a risk to human health and the environment when WEEE is not handled correctly.



Equipment marked with the crossed-out wheeled bin symbol indicates that the equipment should not be disposed of in unsorted household waste. Local authorities in many regions have established collection schemes under which residents can dispose of waste electrical and electronic equipment at a recycling center or other collection point. For more information about suitable collection points for waste electrical and electronic equipment in your region, refer to the Raymarine website: <https://bit.ly/rym-recycling>

Warranty policy and registration

Visit the Raymarine / FLIR Maritime website to **read the latest warranty policy**, and **register** your product's warranty online: www.bit.ly/rym-warranty

It is important that you register your product to receive full warranty benefits. Your product package includes a barcode label indicating the serial number of the unit. This serial number is also provided on a label affixed to the product itself. You will need this serial number when registering your product online.

IMO and SOLAS

The equipment described within this document is intended for use on leisure marine boats and workboats NOT covered by International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) Carriage Regulations.

Technical accuracy

To the best of our knowledge, the information in this document was correct at the time it was produced. However, FLIR cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, FLIR cannot accept liability for any differences between the product and this document. Please check the FLIR website (www.flir.com/marine/support) to ensure you have the most up-to-date version(s) of the documentation for your product.

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CHAPTER 2: DOCUMENT INFORMATION

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2.1 Applicable products

This document is applicable to the following product:

- JCU-3, part number: A80510

2.2 Document information

This document contains important information related to the installation and operation of your FLIR product.

The document includes information to help you:

- plan your installation and ensure you have all the necessary equipment;
- install and connect your product as part of a wider system of connected marine electronics;
- use your product along with an appropriate FLIR thermal camera;
- troubleshoot problems and obtain technical support if required.

2.3 Document illustrations

Your product and if applicable, its user interface may differ slightly from that shown in the illustrations in this document, depending on product variant and date of manufacture.

All images are provided for illustration purposes only.

2.4 Product documentation

The following documentation is applicable to your product:

Applicable documents

Document	Description	Link
71002	Installation instructions (This document)	www.bit.ly/jcu-3-docs
87283	Mounting template	www.bit.ly/jcu-3-docs

2.5 Applicable software version

Product software is updated regularly to add new features and improve existing functionality.

This document has been updated to reflect the following JCU-3 software version:

Applicable software version:

v1.06.62

Check the website for the latest software:

JCU-3 software download link

www.bit.ly/jcu3-download

CHAPTER 3: PRODUCT AND SYSTEM OVERVIEW

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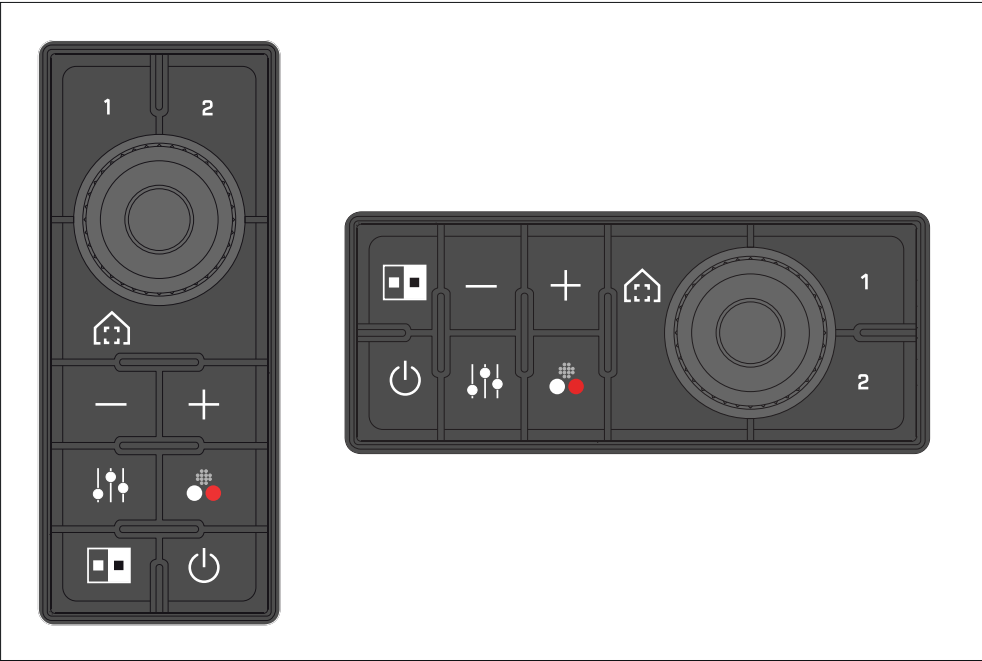
- 3.1 Product overview — page 13
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3.1 Product overview

The JCU-3 is a remote keypad for FLIR thermal cameras. The keypad is a class 1 PoE (Power over Ethernet) device, and can be powered either using a suitable network connection providing PoE, or directly using the dedicated Alternate power connector.

The keypad interacts directly with supported thermal cameras, and does not require any other products (such as an MFD / Chartplotter) to be present in the network.

The keypad can be mounted in landscape or portrait orientation.



Part number	Description
A80510	JCU-3 remote keypad. Both portrait and landscape orientation keypad mats are supplied.

3.2 Compatibility

The keypad is compatible with the following FLIR thermal cameras:

- M100-Series
- M200-Series
- M300-Series

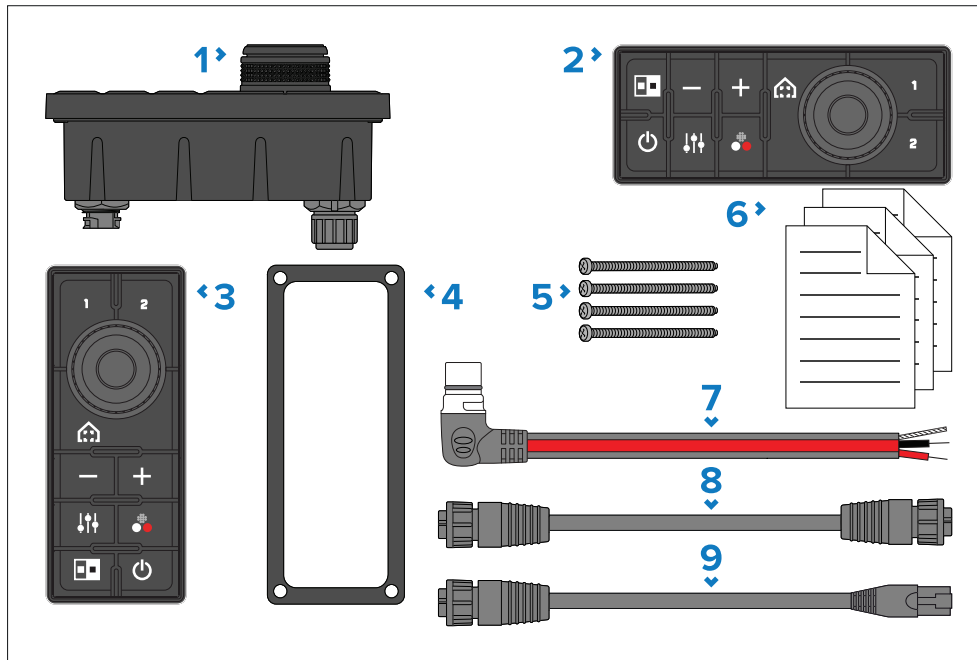
CHAPTER 4: PARTS SUPPLIED

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- 4.1 Parts supplied — page 15

4.1 Parts supplied

The parts supplied with the keypad are shown below.



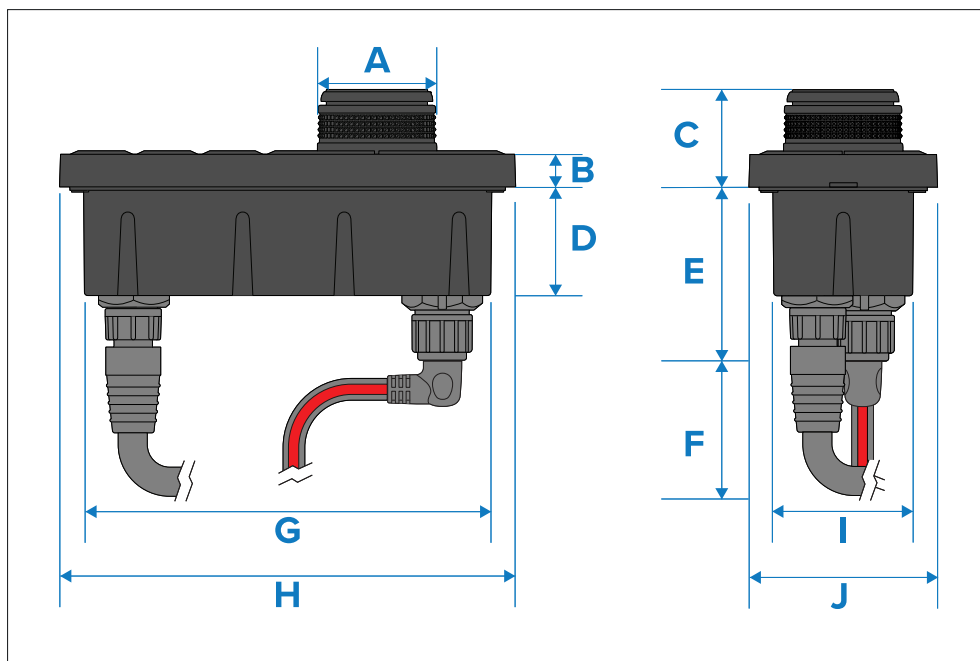
Description	
1	Keypad
2	Landscape keypad mat
3	Portrait keypad mat (supplied fitted to the unit)
4	Mounting gasket
5	4x mounting fixings
6	Documentation pack
7	Right-angled power cable, 2 m (6.6 ft.)
8	RayNet network cable, 2 m (6.6 ft.)
9	RayNet-to- RJ45 adapter cable, 100 mm (3.9 in)

CHAPTER 5: PRODUCT DIMENSIONS

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- [5.1 Product dimensions — page 17](#)

5.1 Product dimensions



Dimension	
A	34.8 mm (1.37 in)
B	10.5 mm (0.41 in)
C	28.4 mm (1.12 in.)
D	31.7 mm (1.25 in.)
E	50.7 mm (2.00 in.)
F	80.0 mm (3.15 in.)
G	119.0 mm (4.69 in.)
H	133.0 mm (5.24 in.)
I	41.0 mm (1.61 in.)
J	55.0 mm (2.17 in.)

CHAPTER 6: LOCATION REQUIREMENTS

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- 6.3 Compass safe distance — page 19

6.1 Warnings and cautions

Important:

Before proceeding, ensure that you have read and understood the warnings and cautions provided in the following section of this document:

[p.7 — Important information](#)



Warning: Potential ignition source

This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

6.2 General location requirements

Important considerations when choosing a suitable location for your product.

This product is suitable for mounting above or below decks.

The product should be mounted where it will be:

- Protected from physical damage and excessive vibration.
- Well ventilated and away from heat sources.
- Away from any potential ignition source such as an engine room, near fuel tanks or a gas locker.

When choosing a location for the product, consider the following points to ensure reliable and trouble-free operation:

- **Access** — there must be sufficient space to enable cable connections and to avoid tight cable bends.
- **Diagnostics** — the product must be mounted in a location where any diagnostics LED are easily visible.

Note:

Not all products include a diagnostics LED. For more information refer to: [Chapter 13 System checks and troubleshooting](#)

- **Electrical interference** — the product should be mounted far enough away from any equipment that may cause interference such as engines,

motors, generators, radio transmitters / receivers and cables carrying high power.

- **Magnetic compass** — refer to the *Compass safe distance* section in this document for advice on maintaining a suitable distance between this product and any compasses on your vessel.
- **Power** — to keep cable runs to a minimum, the product must be located as close as possible to the vessel's dc power supply.
- **Mounting surface** — ensure the product is adequately supported on a secure surface. Refer to the weight information provided in the *Technical specification* for this product and ensure that the intended mounting surface is suitable for bearing the product weight. Do NOT mount units or cut holes in places which may damage the structure of the vessel.

6.3 Compass safe distance

To prevent potential interference with the vessel's magnetic compasses, ensure an adequate distance is maintained from the product.

When choosing a suitable location for the product you must aim to maintain a distance of at least 1 m (3.3 ft) in all directions from any compasses.

For some smaller vessels it may not be possible to locate the product this far away from a compass. In this situation, when choosing the installation location for your product, ensure that the compass is not affected by the product when it is in a powered on state.

CHAPTER 7: CABLES AND CONNECTIONS — GENERAL INFORMATION

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- 7.5 Suppression ferrites — page 21
- 7.6 Connections overview — page 22

7.1 Cable types and length

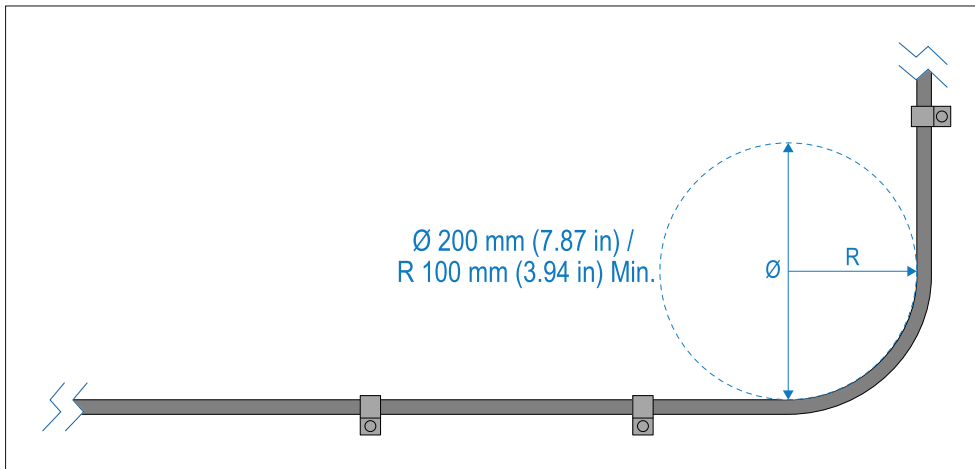
It is important to use cables of the appropriate type and length.

- Unless otherwise stated use only standard cables of the correct type, supplied by FLIR.
- Ensure that any non-FLIR cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize voltage drop along the run.

7.2 Cable routing

Cables must be routed correctly, to maximize performance and prolong cable life.

- Do NOT bend cables excessively. Wherever possible, ensure a minimum bend diameter ($\varnothing$) of 200 mm (7.87 in) / minimum bend radius (R) of 100 mm (3.94 in).



- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using cable clips or cable ties. Coil any excess cable and tie it out of the way.
- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through.

- Do NOT run cables near to engines or fluorescent lights.
- Always route data cables as far away as possible from:
 - Other equipment and cables.
 - High current carrying AC and DC power lines.
 - Antennas.

7.3 Strain relief

Use adequate strain relief for cabling to ensure that connectors are protected from strain and will not pull out under extreme sea conditions.

7.4 Cable shielding

Ensure that cable shielding is not damaged during installation and that all cables are properly shielded.

Important:

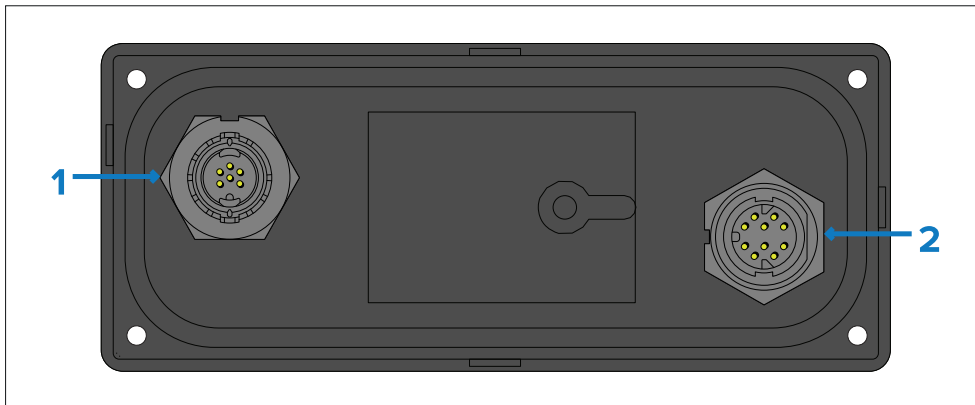
Be aware that some **third-party** cables and adaptors (for example, certain Ethernet cables using RJ45 connectors) are not always shielded. To prevent breaks in cable shielding continuity and potential grounding issues, special attention is required to ensure that any cables, extension cables, adaptors, or other signal-coupling devices (such as multi-way connectors, junction boxes, terminal blocks etc.) used in cable runs **maintain all shield connections throughout the cable run.**

7.5 Suppression ferrites

- Cables may be pre-fitted or supplied with suppression ferrites. These are important for correct EMC performance. If ferrites are supplied separately to the cables (i.e. not pre-fitted), you must fit the supplied ferrites, using the supplied instructions.
- If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.
- Use only ferrites of the correct type, supplied by the manufacturer or its authorized dealers.

- Where an installation requires multiple ferrites to be added to a cable, additional cable clips should be used to prevent stress on the connectors due to the extra weight of the cable.
- If your installation requires long cable runs, you may need to fit additional ferrites to maintain acceptable EMC performance.

7.6 Connections overview



1. Alternate power connector
2. Network / PoE connector

The alternate power connector is required when connecting to a network which does not support Power over Ethernet (PoE). The alternate power connector must be connected directly to a power supply.



Warning: Powering PoE devices

PoE devices can often be powered via an Ethernet connection (PoE) OR via a dedicated power cable.

NEVER connect a PoE device's dedicated power cable when it is being supplied PoE.

When the PoE device's dedicated power cable is not connected, any bare-end wire connections must be separately covered with insulation.

Note:

Do NOT connect the alternate power connector to a SeaTalk NG network.

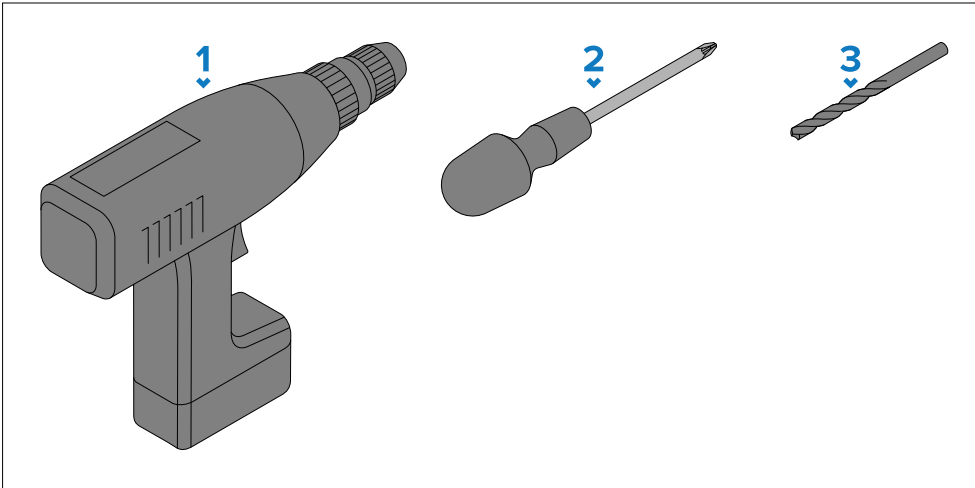
CHAPTER 8: MOUNTING

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8.1 Tools required

Product installation requires the following tools:



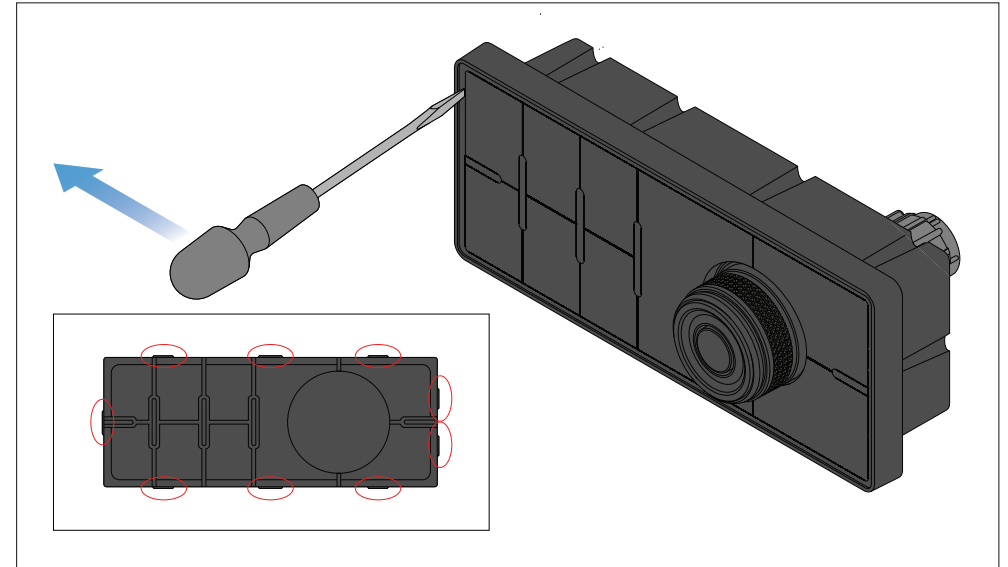
1. Power drill.
2. Pozidrive screwdriver.
3. Drill bit.

Note:

The appropriate drill bit size is dependent on the thickness and material of the mounting surface.

8.2 Removing the keypad mat

To gain access to the mounting hole locations, the keypad mat must be removed.



Note:

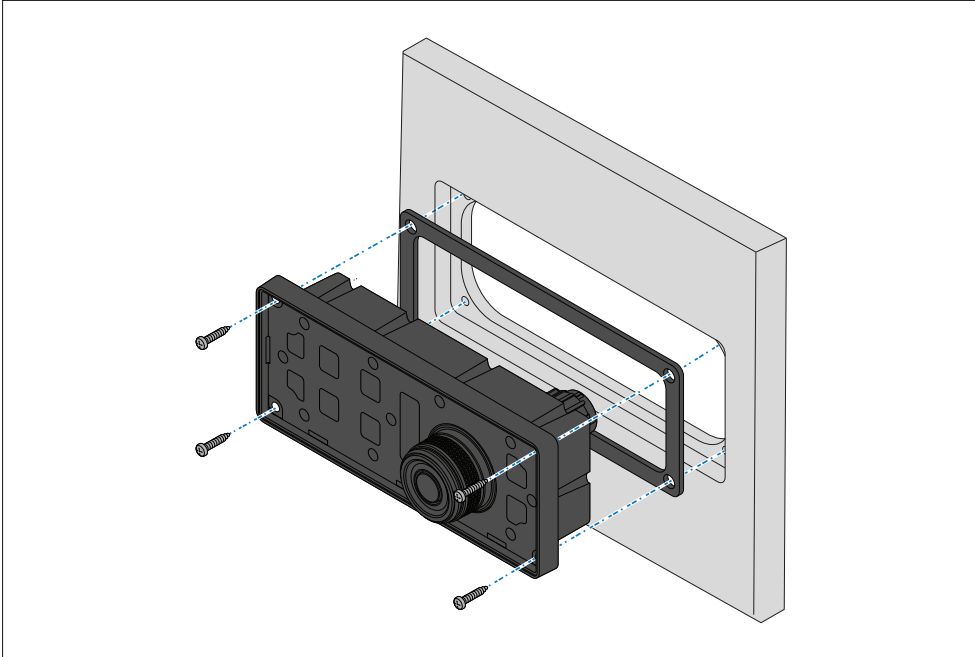
To help prevent scratching the product, cover the tip of your screwdriver blade with a small piece of insulation tape.

1. Using a thin, flat bladed screwdriver insert the tip of the screwdriver into the gap between the edge of the keypad mat and the keypad housing, at a location between locking tabs.
2. Gently lever the keypad mat away from the keypad to release the keypad mat.

Take care not to bend the keypad mat during removal.

8.3 Flush mounting the keypad

Flush mounting provides a sleek installation where the product and dash are flush, with only the buttons and Rotary controller protruding from the dash. Flush mounting requires the mounting surface to be rebated.



1. Check the selected location for the unit. A clear, flat area with suitable clearance behind the panel is required.
2. Before modifying the mounting surface, refer to the dimensions supplied in this document to ensure there is enough space for the unit and all cables.
3. Fix the supplied mounting template to the selected location, using masking or self adhesive tape.
4. Drill 4 holes as indicated on the mounting template to accept the fixings.
5. Using a suitable hole saw (the size and position is indicated on the template), make a hole in each corner of the cut-out area.
6. Using a suitable saw, cut along the inside edge of the cut-out line.
7. Using a Router, follow the Flush mount rebate line, to cut out a rebate to the specified rebate depth, as indicated on the template.

8. Ensure that the unit fits into the removed area and then remove rough edges.
9. Place the supplied gasket onto the rear of the keypad, ensuring the mounting holes are aligned.
10. Connect the relevant cables to the unit.
11. Place the keypad into the rebate and secure using the fixings provided.

Note:

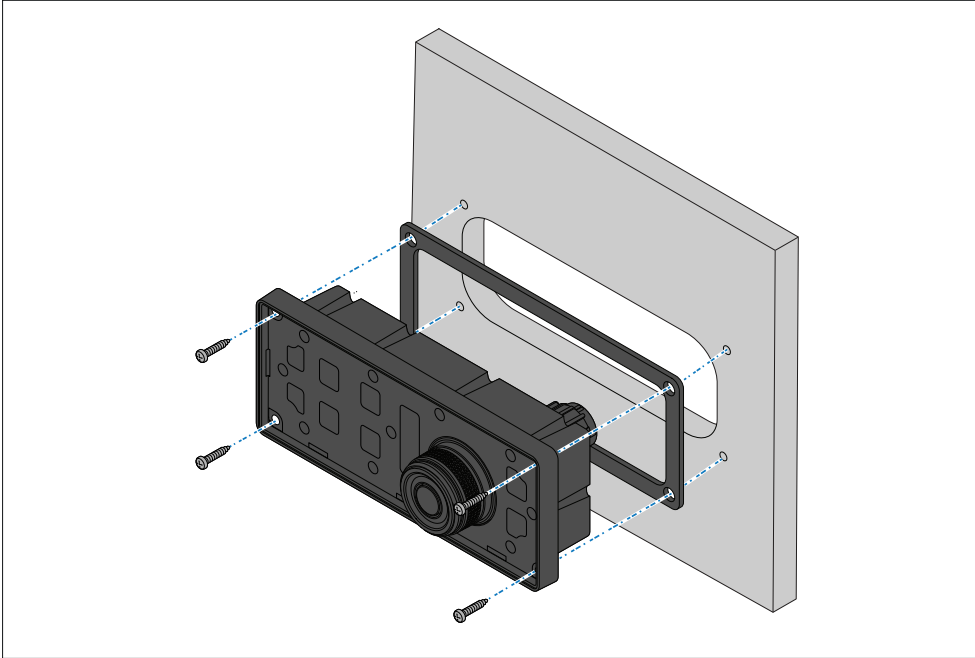
The appropriate tightening torque and drill bit size to use depends on the thickness of the mounting surface and the type of material it is made from.

Note:

The supplied gasket provides a seal between the unit and a suitably flat and stiff mounting surface or binnacle. The gasket should be used in all installations. It may also be necessary to use a marine-grade sealant if the mounting surface or binnacle is not entirely flat and stiff or has a rough surface finish.

8.4 Surface mounting the keypad

Surface mounting provides a uniform installation where the products protrude, usually by the thickness of the bezel, from the mounting surface.



1. Check the selected location for the unit. A clear, flat area with suitable clearance behind the panel is required.
2. Before modifying the mounting surface, refer to the dimensions supplied in this document to ensure there is enough space for the unit and all cables.
3. Fix the supplied mounting template to the selected location, using masking or self adhesive tape.
4. Drill 4 holes as indicated on the mounting template to accept the fixings.
5. Using a suitable hole saw, make a hole in each corner of the cut-out area.
6. Using a suitable saw, cut along the inside edge of the cut-out line.
7. Ensure that the unit fits into the removed area and then remove rough edges.
8. Place the supplied gasket onto the rear of the keypad, ensuring the mounting holes are aligned.
9. Connect the relevant cables to the unit.

10. Secure using the fixings provided.

Note:

The appropriate tightening torque and drill bit size to use depends on the thickness of the mounting surface and the type of material it is made from.

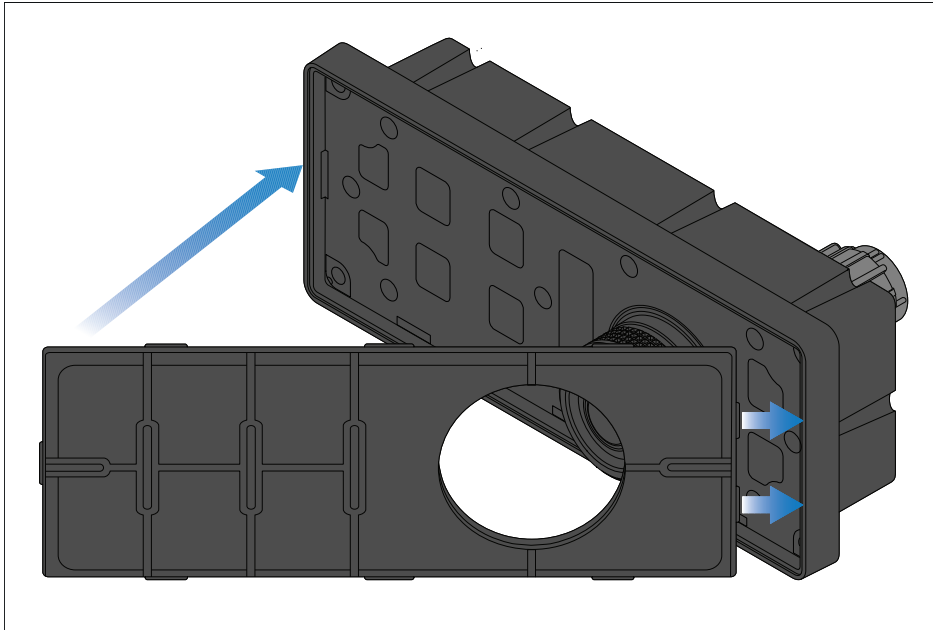
Note:

The supplied gasket provides a seal between the unit and a suitably flat and stiff mounting surface or binnacle. The gasket should be used in all installations. It may also be necessary to use a marine-grade sealant if the mounting surface or binnacle is not entirely flat and stiff or has a rough surface finish.

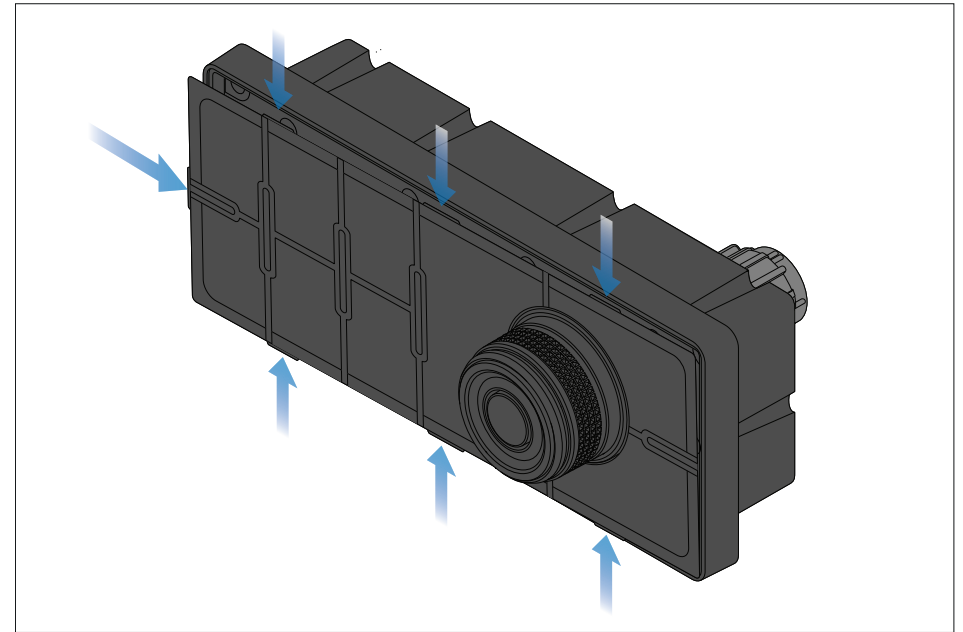
8.5 Fitting the keypad mat

Your keypad can be installed in portrait or landscape orientation. Keypad mats are available for each orientation.

- You should fit the keypad mat that matches your chosen mounting orientation.
 - You should only fit the keypad mat after the unit has been secured to the mounting surface.
1. Ensure the keypad mat is orientated correctly.
 2. Slide the keypad mat's shorter edge, with the 2 locking tabs, into the end of the keypad that has 2 notches to accept the tabs.



3. Close the opposite end of the keypad mat into the keypad, ensuring that the tab slides into the notch provided. Push all of the tabs on the longer sides into their notches (you should hear a click as each tab engages).



CHAPTER 9: NETWORK CONNECTIONS

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9.1 Keypad network connections

Your keypad must be connected to the same network as your thermal camera, via a network switch. If the network connection to the keypad does not provide Power over Ethernet (PoE), then you must power the keypad using the Alternate power connector.

You can connect multiple keypads to the same network:

- A single keypad can control multiple thermal cameras.
- A single thermal camera can be controlled by multiple keypads.

You can also connect your keypad directly to a Raymarine multifunction display (MFD).

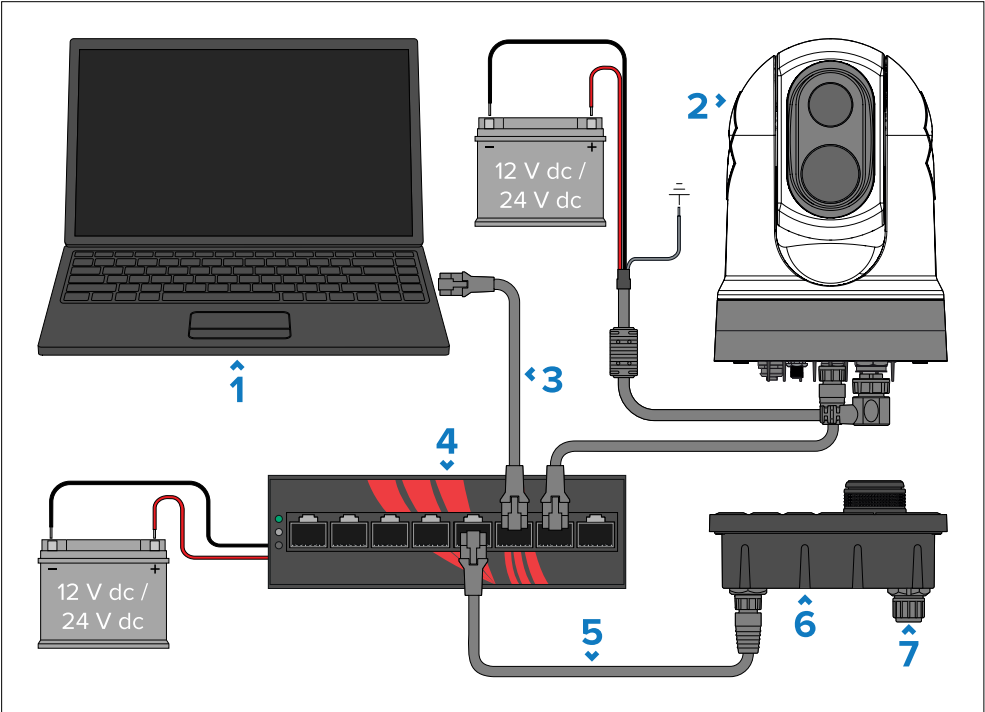
Unless you are connecting your keypad directly to a Raymarine MFD, you will need to pair your keypad to your thermal camera as part of the installation.

To perform the pairing process, you will need to connect a PC, laptop, or other device running a web browser, to the same network as the keypad and thermal camera.

For more information about pairing your keypad to your thermal camera, refer to the following section: [p.45 — Pairing the keypad](#)

JCU-3 in a system with PoE network switch

Both power and data can be supplied to the JCU-3 via a single Ethernet cable, using a PoE network switch, available separately.



Description	
1	Laptop (or other Ethernet-connected device running a web browser)
2	Compatible camera (M300-Series shown)
3	RJ45 to RJ45 Ethernet cable
4	PoE network switch (FLIR 8-port Gigabit Network Switch shown)
5	RayNet (Ethernet) to RJ45 cable
6	Joystick Control Unit keypad (JCU-3 shown)
7	JCU-3 self-powered ("alternate") connection — do NOT connect if supplying PoE (Power over Ethernet) to the JCU-3. Do NOT connect the self-powered ("alternate") power connector to a SeaTalk NG network.

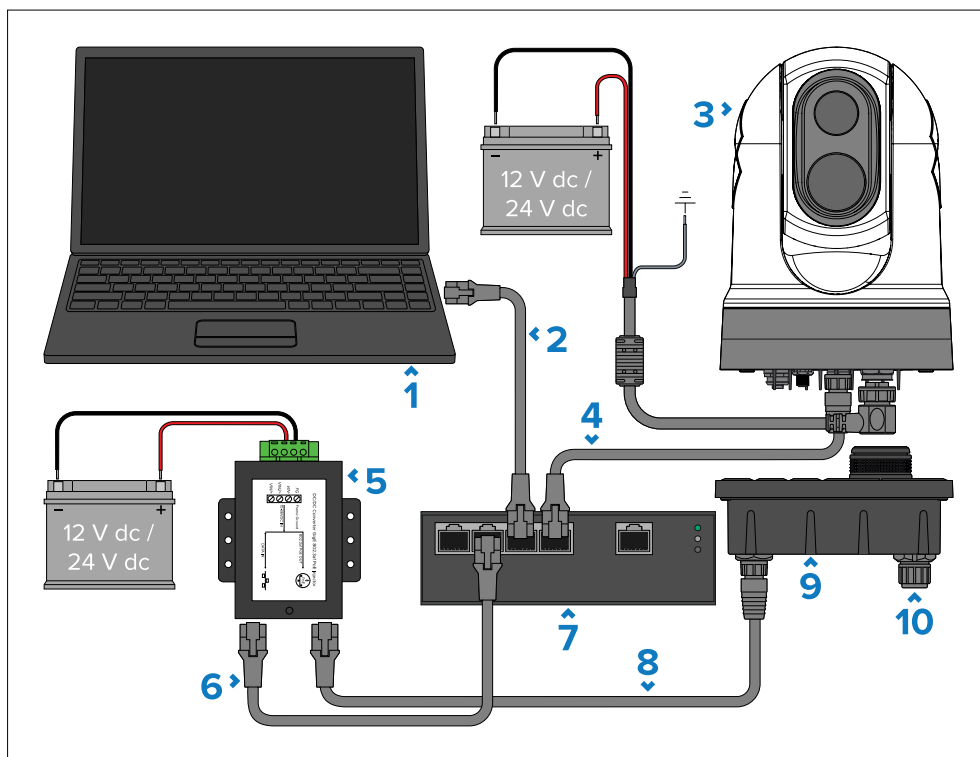
Note:

For relevant power connection information, refer to the instructions which accompany each device.

Note:

A PC / laptop (or other IP-capable device that can run a web browser) is required to pair the keypad to the camera.

JCU-3 in a system with non-PoE network switch

**Description**

- 1 Laptop (or other Ethernet-connected device running a web browser)
- 2 RJ45 to RJ45 Ethernet cable

Description

- 3 Compatible camera (M300-Series shown)
- 4 RayNet (Ethernet) to RJ45 cable
- 5 PoE injector (FLIR PoE Injector (2nd Generation; 5 Gbit) shown)
- 6 RJ45 to RJ45 Ethernet cable
- 7 Non-PoE network switch.
- 8 RayNet (Ethernet) to RJ45 cable
- 9 Joystick Control Unit keypad (JCU-3 shown)
- 10 JCU-3 self-powered ("alternate") connection — do NOT connect if supplying PoE (Power over Ethernet) to the JCU-3. Do NOT connect the self-powered ("alternate") power connector to a SeaTalk NG network.

Note:

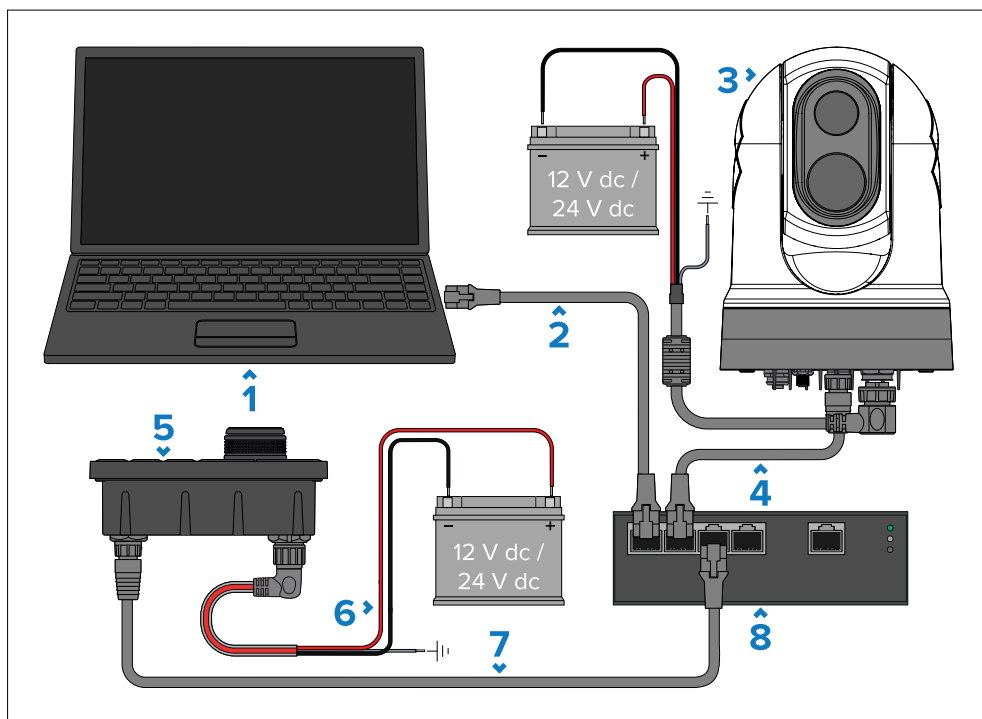
For relevant power connection information, refer to the instructions which accompany each device.

Note:

A PC / laptop (or other IP-capable device that can run a web browser) is required to pair the keypad to the camera.

Self-powered JCU-3 with non-PoE network switch

In systems where PoE is not available or required, the JCU-3 can be powered via its dedicated ("alternate") power connector and the supplied power cable.



Note:

For relevant power connection information, refer to the instructions which accompany each device.

Note:

A PC / laptop (or other IP-capable device that can run a web browser) is required to pair the keypad to the camera.

Description

- 1 Laptop (or other Ethernet-connected device running a web browser).
- 2 RJ45 to RJ45 Ethernet cable.
- 3 Compatible camera (M300-Series shown).
- 4 RayNet (Ethernet) to RJ45 cable.
- 5 Joystick Control Unit keypad (JCU-3 shown).
- 6 Supplied JCU-3 power cable, connected to 12 V / 24 V power supply. When this connection is used, do NOT connect the JCU-3 to a device providing Power over Ethernet (PoE).
- 7 RayNet (Ethernet) to RJ45 cable.
- 8 Non-PoE network switch.

CHAPTER 10: POE POWER CONNECTIONS

CHAPTER CONTENTS

- 10.1 Power options — page 33
- 10.2 Power over Ethernet (PoE) — page 33

10.1 Power options

This product must be powered using **only one** of the following methods:

1. PoE (Power over Ethernet)

- Direct connection to a PSE (*Power Sourcing Equipment*) device, e.g. a PoE Injector or a PoE network switch. Only one Ethernet cable is required to carry both data and power signals.

2. Self-powered (“alternate power”)

- Direct connection to a vessel's power supply using the supplied power cable.



Warning: Powering PoE devices

PoE devices can often be powered via an Ethernet connection (PoE) OR via a dedicated power cable.

NEVER connect a PoE device's dedicated power cable when it is being supplied PoE.

When the PoE device's dedicated power cable is not connected, any bare-end wire connections must be separately covered with insulation.

10.2 Power over Ethernet (PoE)

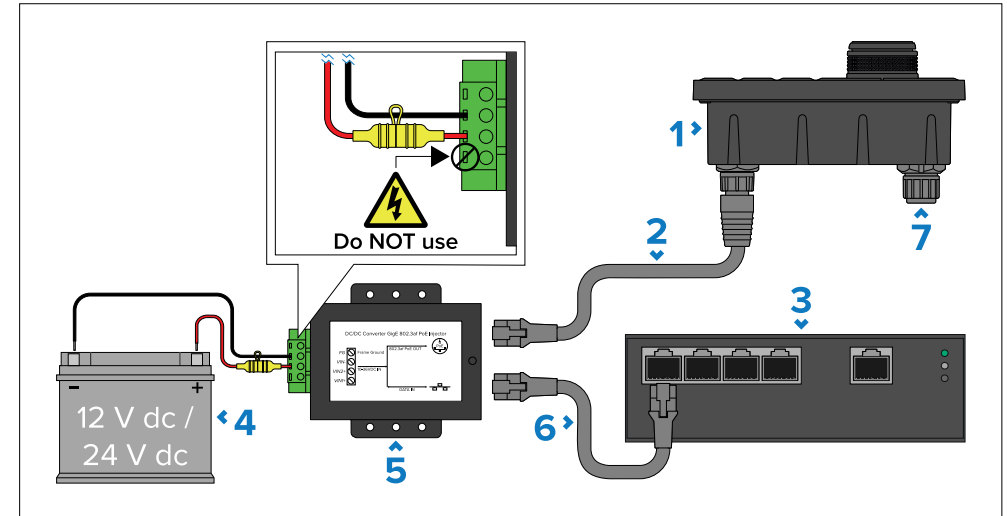
Power over Ethernet (PoE) is a system that allows electrical power to be passed from a PSE (*Power Sourcing Equipment*) to a PD (*Powered Device*), via a single Ethernet connection. This means that one Ethernet cable can provide both power and data to a compatible device, simplifying installation.

The JCU-3 is a Class 1 PD (*Powered Device*). Refer to the product's *Technical specification* section for power consumption ratings. Before connecting the JCU-3, ensure that your PSE's maximum power output will not be surpassed. For further information on your PSE's maximum power output, refer to the instructions that accompany the device.

PSE (Power Sourcing Equipment) power connection

The JCU-3 can be powered via a PSE's (*Power Sourcing Equipment*) Ethernet connection.

In the following example, the PSE (*Power Sourcing Equipment*) providing power to the JCU-3 is the FLIR PoE Injector (2nd Generation; 5 Gbit) (part number: A80811).



1. JCU-3.
2. RayNet (female) to RJ45 (male) adapter cable — **supplied**.
3. **Non-PoE** network switch.
4. 12 V / 24 V power supply for PoE Injector.
5. PSE (*Power Sourcing Equipment*) providing PoE (Power over Ethernet) to the JCU-3 (e.g. PoE Injector is shown in the example above).
6. RJ45 to RJ45 cable (available separately).
7. JCU-3 self-powered (“alternate”) connection — do NOT connect if supplying PoE (Power over Ethernet) to the JCU-3. Do NOT connect the self-powered (“alternate”) power connector to a SeaTalk NG network.

For further information on available cables, refer to the following section:

[p.56 — Spares and accessories](#)

Important:

If powering the JCU-3 via the separately-available PoE Injector (2nd Generation; 5 Gbit) (A80811), do NOT connect the power input labelled “VIN1+” on the PoE Injector.

Important:

Any device supplying PoE (Power over Ethernet) to the JCU-3 must provide a nominal supply voltage in the range of 44 V to 57 V dc.

Important:

When supplying PoE (Power over Ethernet) to the JCU-3, do NOT connect the JCU-3's self-powered (“alternate”) connection.

Network cable extensions

If you wish to extend the length of a network cable connected to your product, refer to the following section for further information:

[p.56 — Spares and accessories](#)

CHAPTER 11: NON-POE POWER CONNECTIONS

CHAPTER CONTENTS

- 11.1 Power options — page 36
- 11.2 Self-powered (“Alternate”) power connection — page 36
- 11.3 Inline fuse requirement — page 36
- 11.4 Inline fuse and thermal breaker ratings — page 37
- 11.5 Power distribution — page 37
- 11.6 Power cable extension (12 / 24 V systems) — page 39
- 11.7 Power cable drain wire connection — page 40

11.1 Power options

This product must be powered using **only one** of the following methods:

1. PoE (Power over Ethernet)

- Direct connection to a PSE (*Power Sourcing Equipment*) device, e.g. a PoE Injector or a PoE network switch. Only one Ethernet cable is required to carry both data and power signals.

2. Self-powered (“alternate power”)

- Direct connection to a vessel's power supply using the supplied power cable.



Warning: Powering PoE devices

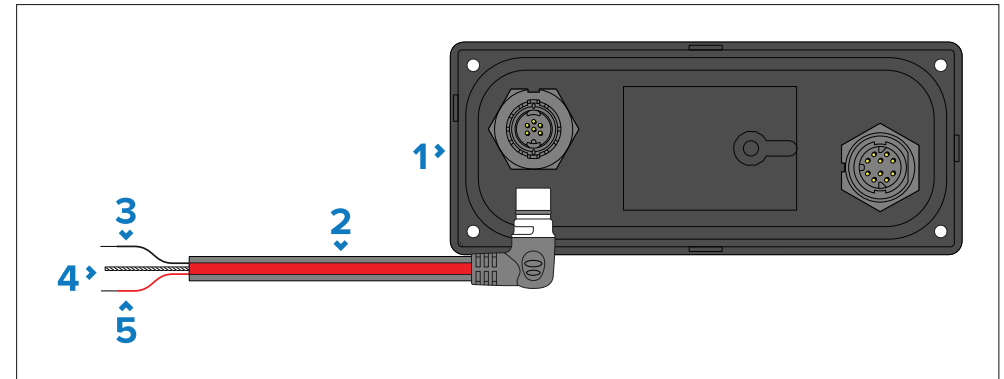
PoE devices can often be powered via an Ethernet connection (PoE) OR via a dedicated power cable.

NEVER connect a PoE device's dedicated power cable when it is being supplied PoE.

When the PoE device's dedicated power cable is not connected, any bare-end wire connections must be separately covered with insulation.

11.2 Self-powered (“Alternate”) power connection

When the keypad is not supplied Power over Ethernet (PoE), the alternate power connection should be connected directly to a 12 V dc or 24 V dc power supply.



1. Keypad
2. Right-angled power cable
3. Black negative wire
4. Drain wire
5. Red positive wire

Note:

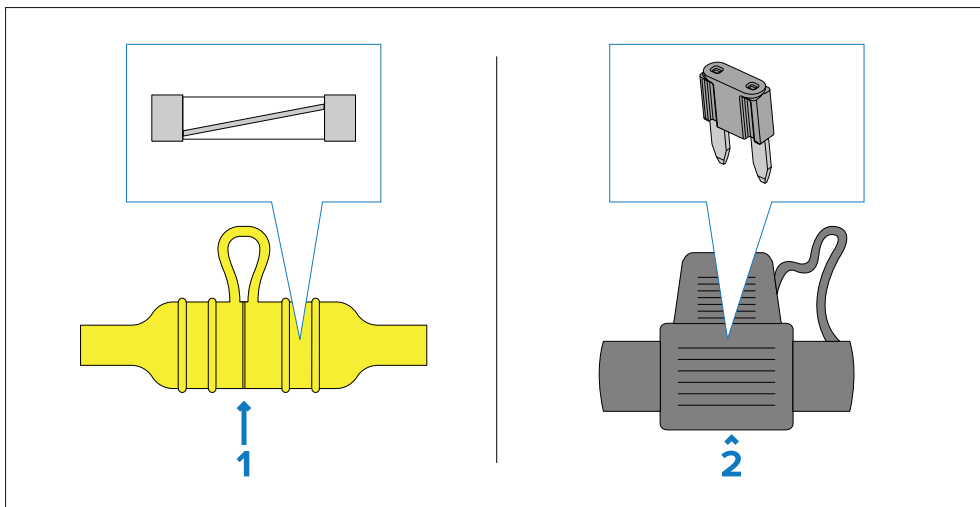
Do NOT connect the alternate power connector to a SeaTalk NG network.

11.3 Inline fuse requirement

If your product is NOT supplied with an inline fuse (whether separately or fitted to the power cable), you **MUST** fit a suitably-rated inline fuse to your product's red power wire, housed in a waterproof fuse holder.

The illustration below shows the two main types of inline fuse with waterproof holder, for use in marine electronics installations. Fuses in a variety of ratings are widely available at chandleries and marine electrical retailers.

Select one of the following fuse types to protect your Raymarine product:



1. Waterproof fuse holder containing a “glass”-type inline fuse.
2. Waterproof fuse holder containing a “blade”-type inline fuse.

Fuse ratings:

- **Voltage rating** — must be equal to or greater than the voltage of your vessel’s power supply.
- **Current rating** — refer to the *Inline fuse and thermal breaker rating* section in this document.

11.4 Inline fuse and thermal breaker ratings

The following inline fuse and thermal breaker ratings apply to your product:

Inline fuse rating	Thermal breaker rating
1A slow blow	1A (if only connecting one device)

Note:

- The suitable fuse rating for the thermal breaker is dependent on the number of devices you are connecting. If in doubt, consult an authorized FLIR dealer.
- Your product’s power cable may have a fitted inline fuse, if not you must add an inline fuse to the **positive** wire of your product’s power connection.

11.5 Power distribution

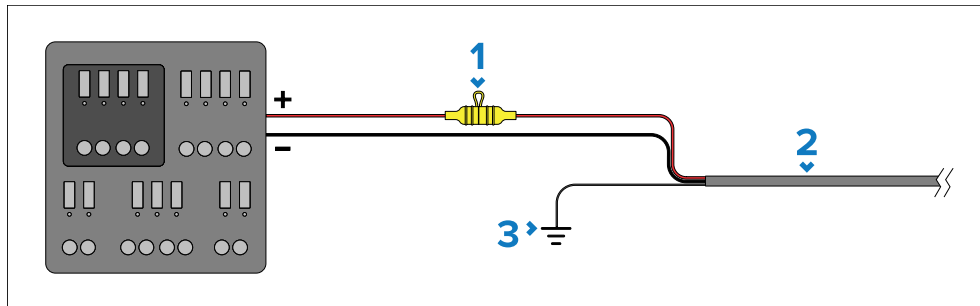
Recommendations and best practice for the power connection of products supplied with a drain wire as part of the supplied power cable.

- The product is supplied with a power cable, either as a separate item or a captive cable permanently attached to the product. Only use the power cable supplied with the product. Do NOT use a power cable designed for, or supplied with, a different product.
- Refer to the *Power connection* section for more information on how to identify the wires in your product’s power cable, and where to connect them.
- See below for more information on implementation for some common power distribution scenarios:

Important:

- When planning and wiring, take into consideration other products in your system, some of which (e.g. sonar modules) may place large power demand peaks on the vessel’s electrical system, which may impact the voltage available to other products during the peaks.
- The information provided below is for guidance only, to help protect your product. It covers common vessel power arrangements, but does NOT cover every scenario. If you are unsure how to provide the correct level of protection, please consult an authorized dealer or a suitably qualified professional marine electrician.

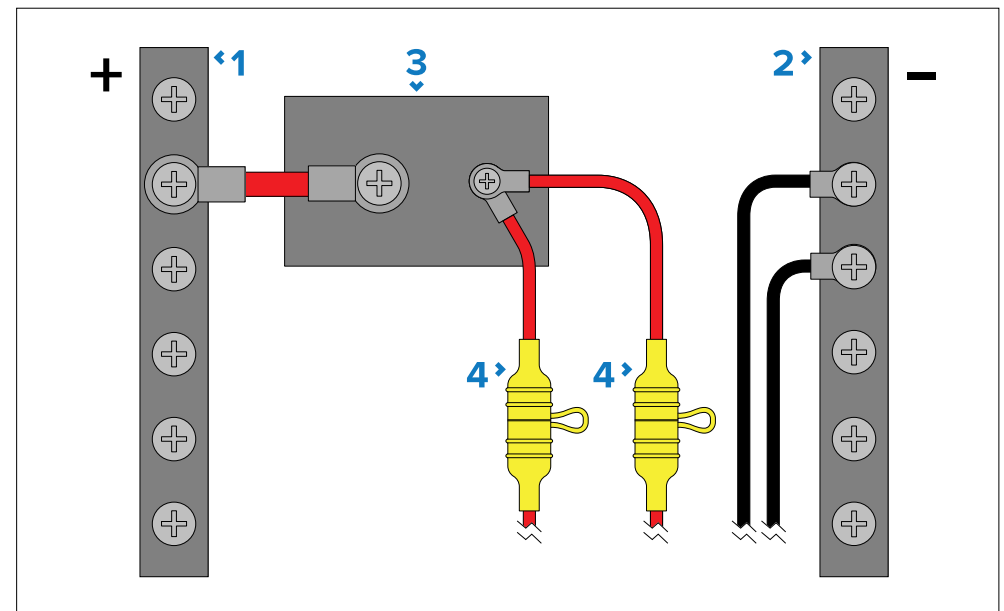
Implementation — connection to distribution panel (Recommended)



Description

- 1 Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.
- 2 Product power cable.
- 3 Drain wire connection point.

- It is recommended that the supplied power cable is connected to a suitable breaker or switch on the vessel's distribution panel or factory-fitted power distribution point.
- The distribution point should be fed from the vessel's primary power source by 8 AWG (8.36 mm²) cable.
- Ideally, all equipment should be wired to individual suitably-rated thermal breakers or fuses, with appropriate circuit protection. Where this is not possible and more than 1 item of equipment shares a breaker, use individual inline fuses for each power circuit to provide the necessary protection.
- The power cable supplied with your product includes a drain wire, which must be connected to the vessel's common RF ground.



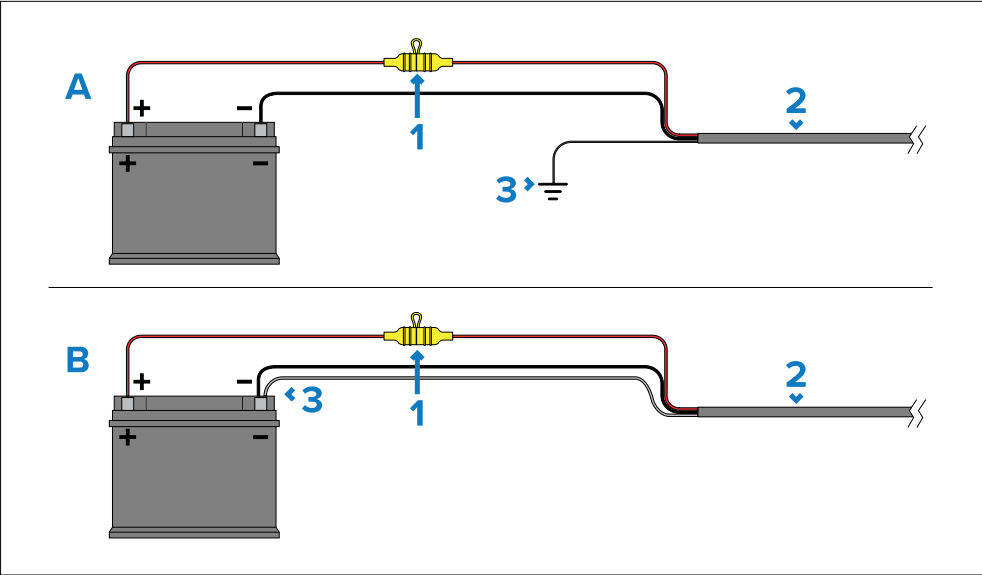
Description

- 1 Positive (+) bar
- 2 Negative (-) bar
- 3 Circuit breaker
- 4 Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: *Inline fuse and thermal breaker ratings*.

Important:

Observe the recommended fuse / breaker ratings provided in the product's documentation, however be aware that the suitable fuse / breaker rating is dependent on the number of devices being connected.

Implementation — direct connection to battery



- Where connection to a power distribution panel is not possible, the power cable supplied with your product may be connected directly to the vessel's battery, via a suitably rated fuse or breaker.
- If the power cable is NOT supplied with a fitted inline fuse, you MUST fit a suitably rated fuse or breaker between the red wire and the battery's positive terminal.
- Refer to the inline fuse ratings provided in the product's documentation.
- If you need to extend the length of the power cable supplied with your product, ensure you observe the dedicated *Power cable extensions* advice provided in the product's documentation.

Description	
1	Waterproof fuse holder containing a suitably-rated inline fuse must be fitted. For suitable fuse rating, refer to: <i>Inline fuse and thermal breaker ratings</i> .
2	Product power cable.
3	Drain wire connection point.

Battery connection scenario A:

Suitable for a vessel with a common RF ground point. In this scenario, the power cable's drain wire should be connected to the vessel's common ground point.

Battery connection scenario B:

Suitable for a vessel without a common grounding point. In this case, the power cable's drain wire should be connected directly to the battery's negative terminal.

Grounding

Ensure that you observe any additional grounding advice provided in the product's documentation.

More information

It is recommended that best practice is observed in all vessel electrical installations, as detailed in the following standards:

- BMEA Code of Practice for Electrical and Electronic Installations in Boats
- NMEA 0400 Installation Standard
- ISO 13297: Small craft — Electrical systems — Alternating and direct current installations
- ISO 10133: Small craft — Electrical systems — Extra-low-voltage d.c. installations
- ABYC E-11 AC & DC Electrical Systems on Boats
- ABYC A-31 Battery chargers and Inverters
- ABYC TE-4 Lightning Protection

11.6 Power cable extension (12 / 24 V systems)

If you need to extend the length of the power cable supplied with your product, ensure you observe the following advice:

- The power cable for each unit in your system should be run as a separate, single length of 2-wire cable from the unit to the vessel's battery or distribution panel.
- Ensure that the extension cable is of a sufficient gauge for the supply voltage and the total load of the device and the length of the cable run. Refer to the following table for typical **minimum** power cable wire gauges:

Cable length in meters (feet)	Wire gauge in AWG (mm ²) for 12 V supply	Wire gauge in AWG (mm ²) for 24 V supply
<8 (<25)	16 (1.31 mm ²)	18 (0.82 mm ²)
16 (50)	14 (2.08 mm ²)	18 (0.82 mm ²)
24 (75)	14 (2.08 mm ²)	16 (1.31 mm ²)
>32 (>100)	14 (2.08 mm ²)	16 (1.31 mm ²)

Important:

Be aware that some products in your system (such as sonar modules) can create voltage peaks at certain times, which may impact the voltage available to other products during the peaks.

Important:

To ensure power cables (including any extension) are of a sufficient gauge, ensure that there is a continuous **minimum** voltage of **10.8 V dc** at the end of the cable where it enters the product's power connector, even with a fully flat battery at 11 V dc. (Do not assume that a flat battery is at 0 V dc. Due to the discharge profile and internal chemistry of batteries, the current drops much faster than the voltage. A "fully flat" battery still shows a positive voltage, even if it doesn't have enough current to power your device).

11.7 Power cable drain wire connection

The power cable supplied with this product includes a dedicated drain wire for connection to a vessel's Radio Frequency (RF) ground point (if available), or the negative battery terminal.

The purpose of the drain wire is to drain excess voltage from the cable shield, giving it a path to safety. The drain wire protects the cable's inner signal conductors from electrical noise emitted by other cables and devices.

Although the drain wire is not intended to ground the product's internal circuits, it's important that the drain wire is connected to the vessel's common RF ground point, which should be used for all equipment in your system. If several items require grounding, the drain wires and dedicated ground connections (if available) of all equipment should first be connected to a single local point (e.g. within a distribution panel), and then this

point connected via an appropriately-rated conductor to the vessel's RF common ground point. An RF ground point is typically a circuit with a very low-impedance signal at Radio Frequency, connected to the sea via an electrode immersed in the sea, or bonded to the inner side of the hull in an area that is underwater.

On vessels without an RF ground system, the drain wires and dedicated ground connections (if available) of all equipment should be connected directly to the vessel's negative battery terminal.

The dc power system should be either:

- Negative grounded ("bonded"), with the negative battery terminal connected to the vessel's RF ground.
- Floating, with neither battery terminal connected to the vessel's ground.

The preferred minimum requirement for the path to ground (bonded or non-bonded) is via a flat tinned copper braid, with a 30 A rating or greater. If this is not possible, an equivalent stranded wire conductor may be used, rated as follows:

- for runs of <1 m (3.3 ft), use 6 mm² (10 AWG) or greater.
- for runs of >1 m (3.3 ft), use 8 mm² (8 AWG) or greater.

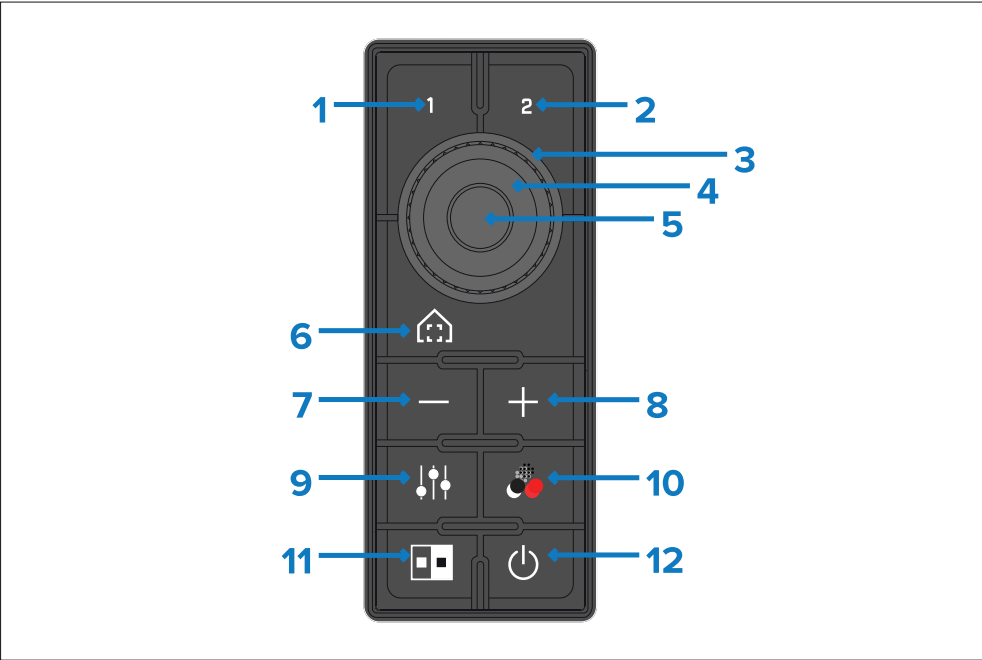
In any grounding system, always keep the length of connecting braid or wires as short as possible.

CHAPTER 12: OPERATION

CHAPTER CONTENTS

- 12.1 JCU-3 controls overview — page 42
- 12.2 Logging in to the Web browser user interface — page 43
- 12.3 Setting the keypad orientation — page 44
- 12.4 Pairing the keypad — page 45
- 12.5 Resetting the keypad to factory defaults — page 46

12.1 JCU-3 controls overview



Description	
1	<i>[USER 1]</i> • User-configurable button (configured via camera web page).
2	<i>[USER 2]</i> • User configurable button (configured via camera web page).

Description	
3, 4, 5	<i>[UNI-CONTROLLER]</i> – Use the uni-controller to control the camera: • Press ring (4) up, down left right – Pan / Tilt camera (pan available on M200-Series and M300-Series only). • Rotate outer ring (3) clockwise or counter-clockwise to pan the camera (pan available on M200-Series and M300-Series only). • Central button (5): long-press to toggle OSD MENU On / Off; short-press to select (OK). Navigate setup menus: • Move up, down – Scroll through menu options. • Press down – Select highlighted menu option.
6	<i>[HOME]</i> • Momentary press – Return camera to home position. • Press and hold – Set current position as camera home. • 4 x press – Reset the camera (realign home and stow positions).
7	<i>[ZOOM-OUT]</i> • Press to zoom thermal camera out.
8	<i>[ZOOM-IN]</i> • Press to zoom thermal camera in
9	<i>[SCENE]</i> • Press to cycle through image scene presets (day; night; docking; high contrast)
10	<i>[COLOR]</i> • Short-press to cycle through color palettes (WhiteHot; RedHot; Fusion; FireIce) • Long-press to toggle polarity of selected color palette (for example: WhiteHot > BlackHot > WhiteHot)

Description	
11	<i>[NEXT PAYLOAD]</i> Short-press to switch to the next payload on the camera (applicable only to cameras with multiple payloads; for example: thermal and visible)
12	<i>[POWER]</i> - Short-press to cycle through keypad backlight brightness settings. - Long-press to put the camera into standby mode (parked and stowed); press any other button to wake the camera. - Double-press to switch to the next available camera in the network.

JCU-3 controls: operation notes

Note:

The listed button actions are the **default** actions for a JCU-3 keypad controlling an M100-Series / M200-Series thermal camera.

Note:

You can use the camera's web interface to change the default actions of certain buttons and controls for compatible thermal cameras (including the user-programmable buttons).

12.2 Logging in to the Web browser user interface

In order to pair the keypad to a thermal camera or change the keypad's associated orientation settings, you must first log in to the keypad's Web browser user interface using a PC / laptop connected to the same network as the keypad (or other IP-network compatible device that supports a Web browser).

If your product was:

- Originally purchased outside of the UK, or;

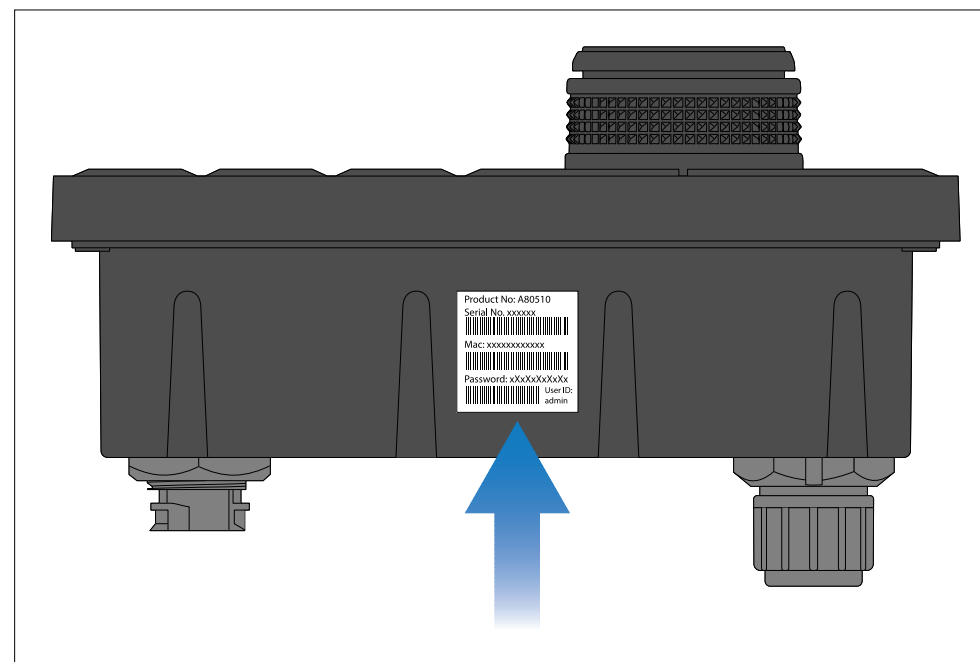
- Originally purchased inside of the UK and obtained running a software version **earlier than** v1.06.62:

You can log in to the Web interface using the Username: *[user]* and Password: *[user]*.

If your product was:

- Originally purchased inside of the UK and obtained running software version v1.06.62 **or later**:

You can log in to the Web interface using the Username: *[user]* and the unique Password located on the serial number label supplied in the box and / or on the side of your product:



In order to log in to the Web browser user interface:

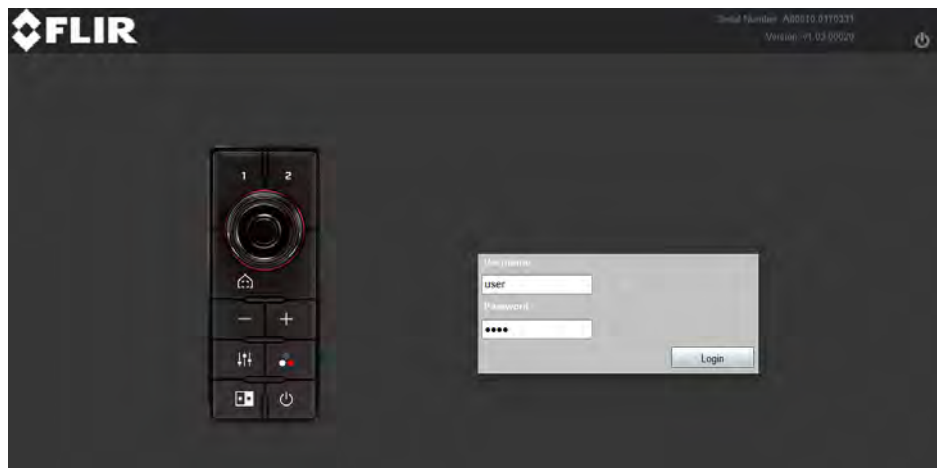
- Make sure that your PC / laptop is configured to detect UPnP devices.
For example, in Windows 7 / 8 / 10, within the *[Network and Sharing Center]*, you'll need to select the option to *[Turn on network discovery]*.

- The keypad is automatically added to the list of devices on your PC / laptop, and is named according to the keypad part number and serial number (for example: **A80510 0123456**).

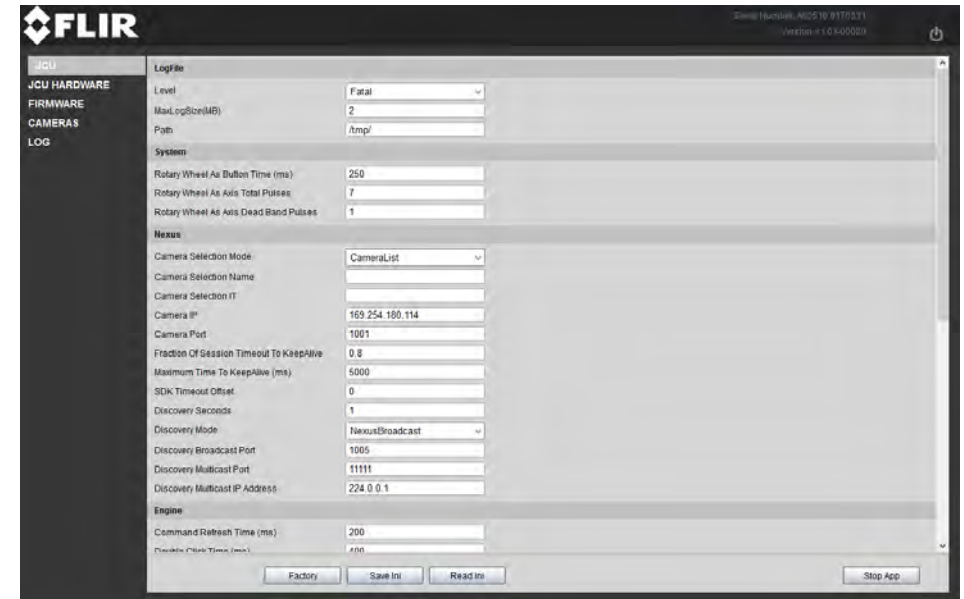
When using Windows XP, the keypad is listed in Windows Explorer under *[My Network Places]*; in later versions of Windows, the keypad is listed in Windows Explorer under *[Network]*.

- For Windows computers, double-click the keypad item to open the keypad's web page. You can also right-click the keypad item and select *[Properties]*, to show more information about the keypad, including its IP address.

The login screen with a picture of the JCU-3 is displayed:



- Enter the applicable login information referenced above, then click **Login**. The configuration page is displayed:



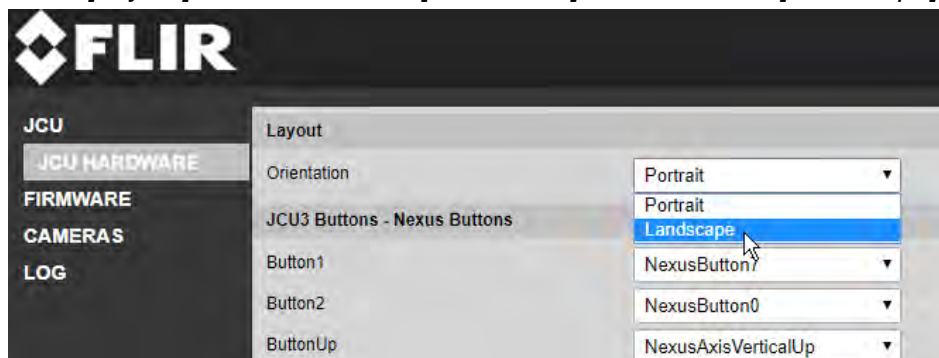
12.3 Setting the keypad orientation

If you choose to replace the fitted portrait-oriented keypad mat with the landscape-oriented keypad mat, you must also change the *[Orientation]* setting via the JCU-3 Web browser user interface.

In order to change the *[Orientation]* setting:

- Log in to the Web browser user interface using the steps found under the following section: [p.43 — Logging in to the Web browser user interface](#)
- From the configuration page, click *[JCU HARDWARE]*. The hardware configuration page is displayed.

3. In the *[Layout]* section, click the *[Orientation]* list, and select *[Landscape]*.

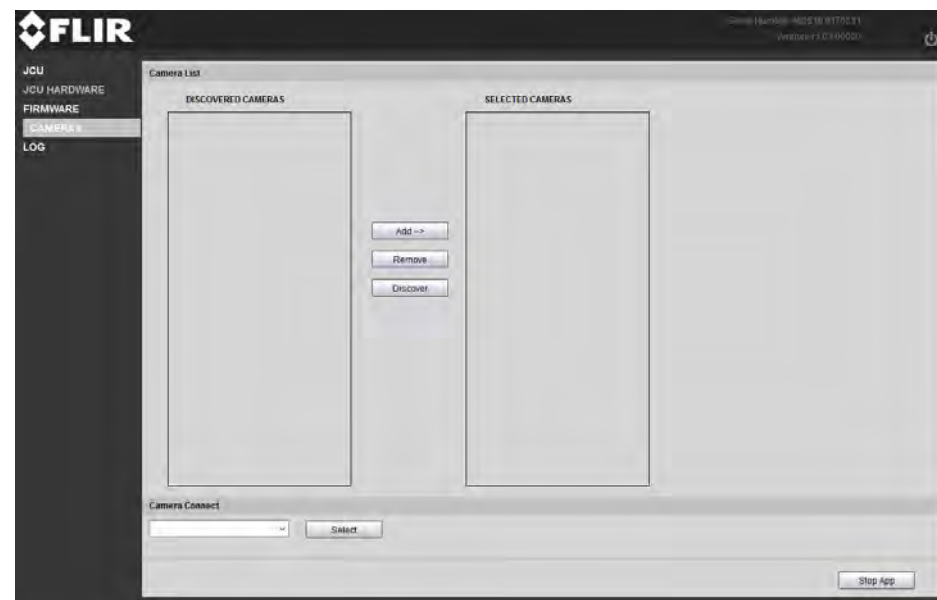


4. Click *[Save Ini]* to save the orientation setting.
A dialog confirms that your changes have been saved.
5. Click the *[Logout]* button at the top-right of the page, then close your web browser.

12.4 Pairing the keypad

Each JCU-3 keypad can be paired with multiple thermal cameras, and each thermal camera can be paired to multiple keypads.

1. Log in to the Web browser user interface using the steps found under the following section: [p.43 — Logging in to the Web browser user interface](#)
2. From the configuration page, click *[CAMERAS]*.
The camera pairing page is displayed:



3. Click *[Discover]* to find all compatible cameras that are on the same network as the JCU-3.
The *[DISCOVERED CAMERAS]* list shows all compatible thermal cameras that were discovered.
4. In the *[DISCOVERED CAMERAS]* list, select the camera you wish to pair with the JCU-3, and click *[Add->]*.

The keypad's LED backlight flashes twice to indicate that pairing was successful. For further information on the keypad's LED status, refer to the following section: [p.48 — Keypad status](#)

The chosen camera is now paired with the JCU-3 keypad, and moved to the *[SELECTED CAMERAS]* list. Repeat this step for any additional cameras that you want to pair with the JCU-3. When you leave the configuration pages, the JCU-3 keypad remembers the selected cameras, and will cycle through the camera list (if you paired the keypad to more than one camera) when you click the *[NEXT CAMERA]* button on the keypad.

5. Optionally, before leaving the configuration pages, you can manually connect to one of the cameras in the *[SELECTED CAMERAS]* list, to confirm that you can control the camera with the JCU-3 keypad. In the

[camera connect] list, highlight the camera you want to connect to and click [Select].

The JCU-3 keypad connects to the camera; you can now control the camera from the keypad. The top-right of the [CAMERAS] page (directly underneath the [Logout] button) shows [Camera Connected:], and lists the name of the connected camera.

6. When you have finished pairing cameras and testing connections, click the [Logout] button at the top-right of the page, then close your web browser.

12.5 Resetting the keypad to factory defaults

If your JCU-3 keypad is operating abnormally, or you have inadvertently saved unwanted changes from the configuration pages, you can reset the keypad to the factory defaults.

Note:

If you reset the JCU-3 keypad to the factory defaults, any previous camera pairing information will be lost.

1. Log in to the Web browser user interface using the steps found under the following section: [p.43 — Logging in to the Web browser user interface](#)
2. From the configuration page, click [FIRMWARE].
The firmware page is displayed.
3. At the bottom of the [FIRMWARE] page, click the [Factory] button.
The keypad backlights turn off while the factory restore process is in progress; a message box – “Factory Defaults have been restored” – is displayed within a few seconds once the process has completed, and the keypad backlights turn on.
4. Click [OK] to acknowledge the Factory Defaults restored message.
5. Click the [Logout] button at the top-right of the page, then close your web browser.

CHAPTER 13: SYSTEM CHECKS AND TROUBLESHOOTING

CHAPTER CONTENTS

- 13.1 Keypad status — page 48
- 13.2 PoE troubleshooting — page 48
- 13.3 Power up troubleshooting — page 49

13.1 Keypad status

The keypad and UniController (rotary control) are backlit with LEDs. Different combinations of LED lighting sequences are used to identify the status of the keypad.

UniController LED ring	Keypad backlight	Status
Off	Off	Keypad powered off.
Flashing	Off	Keypad is powered on, but not paired to a camera.
On	On	Normal operation. Keypad is powered on and paired to at least one camera, and keypad has been used in the last 30 seconds.
On	Off	Normal operation. Keypad is powered on and paired to at least one camera, but keypad has not been used in the last 30 seconds.
On	Double flash (fast)	Keypad is powered on, and has just successfully completed a pairing attempt.
On	Triple flash (slow)	Keypad is powered on, but has just failed to complete a pairing attempt.

Note:

You can adjust the keypad backlight brightness with the **POWER** button. A single short-press of the **POWER** button cycles through the 3 different brightness settings.

13.2 PoE troubleshooting

If you are experiencing connection issues with the remote keypad when powering the device via PoE, consider using the keypad's dedicated ("alternate") power connector to supply the power to the device.

Possible causes for connection issues are:

- Low or inconsistent voltage at the power supply to the PoE network switch or PoE injector.

- Inadequate power or data cabling.
- If multiple devices are powered via PoE from the PoE network switch or PoE injector, the power allocation for the PoE devices may be too high, either because there are too many devices connected, or the total power consumption exceeds the supported allocation. Refer to the network switch or PoE injector's documentation for more information on the PoE power allocation.

13.3 Power up troubleshooting

Problems at power up and their possible causes and solutions are described here.

Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker	1. Check the condition of relevant fuses and breakers and connections, and replace if necessary. (Refer to the <i>Technical Specification</i> section of your product's installation instructions for fuse ratings.) 2. If fuse keeps blowing, check for cable damage, broken connector pins, or incorrect wiring.
Poor / damaged / insecure power supply cable / connections	1. Check that the power cable connector is fully inserted into the unit and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion; replace if necessary. 3. With the unit turned on, try flexing the power cable near to the unit's power connector to see if this causes the unit to re-boot or lose power; replace if necessary. 4. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring that connections are secure, clean and free from corrosion; replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors / fuses etc; replace if necessary.

Possible causes	Possible solutions
Incorrect power connection	The power supply may be wired incorrectly. Ensure that the installation instructions have been followed.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible, to establish actual voltage when the current is flowing. (Refer to the <i>Technical Specification</i> section of your product's <i>Installation Instructions</i> for power supply requirements.)

Product will not start up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions listed in the ' <i>Product does not turn on or keeps turning off</i> ' table, above.
Software corruption	1. In the unlikely event that the product's software has become corrupted please try installing the latest software. 2. On display products, as a last resort, you can try to perform a 'Power on Reset'. However, this will delete all settings / presets and user data (such as waypoints and tracks), and revert the unit back to factory default settings.

CHAPTER 14: MAINTENANCE

CHAPTER CONTENTS

- 14.1 Service and maintenance — page 51
- 14.2 Routine equipment checks — page 51
- 14.3 Product cleaning — page 51

14.1 Service and maintenance

This product contains no user serviceable components. Please refer all maintenance and repair to authorized FLIR dealers. Unauthorized repair may affect your warranty.

14.2 Routine equipment checks

It is recommended that you perform the following routine checks, on a regular basis, to ensure the correct and reliable operation of your equipment:

- Examine all cables for signs of damage or wear and tear.
- Check that all cables are securely connected.

14.3 Product cleaning

Best cleaning practices.

When cleaning products:

- Switch off power supply.
- Use a clean damp cloth to wipe clean.
- Do NOT use: abrasive, acidic, ammonia, solvent or other chemical based cleaning products.
- Do NOT use a jet wash.

CHAPTER 15: TECHNICAL SPECIFICATION

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- 15.1 Power specification — page 53
- 15.2 Environmental specification — page 53
- 15.3 Wired connections — page 53
- 15.4 Conformance specification — page 53

15.1 Power specification

Specification	
PoE class:	Class 1
Nominal supply voltage:	• PoE: 48 V dc • Alternate power: 12 V / 24 V dc
Operating voltage range:	• PoE: 44 V to 57 V dc • Alternate power: 9 V to 32 V dc
Power consumption:	4 W Max with full keypad illumination

15.2 Environmental specification

Specification	
Operating temperature:	-25 °C to +55 °C (-13 °F to 131 °F)
Storage temperature:	-30 °C to +70 °C (-22 °F to 158 °F)
Relative humidity:	Maximum 93%
Waterproof rating:	IPx6 & IPx7

15.3 Wired connections

Specification	
Network / PoE:	1 x 10 / 100 Mbit/s connector
Alternate power:	1 x Power connector (SeaTalk NG-style connector)

15.4 Conformance specification

Specification	
Ethernet / PoE:	• IEEE 802.3 • IEEE 802.3af (PoE)
EMC:	• EN60945

CHAPTER 16: TECHNICAL SUPPORT

CHAPTER CONTENTS

- 16.1 FLIR Maritime product support and servicing — page 55

16.1 FLIR Maritime product support and servicing

FLIR provides a comprehensive product support service, as well as warranty, service, and repairs. You can access these services via the FLIR website, telephone, or e-mail.

Product information

For the latest support information, go to: www.flir.com/support/browse/marine

If you need to request service or support, please have the following information to hand:

- Product name.
- Product identity.
- Serial number.
- Software application version.
- System diagrams.

You can obtain this product information using the menus within your product.

Servicing and warranty

FLIR offers dedicated service departments for warranty, service, and repairs.

Contact details

Region	Contact details
United Kingdom (UK), EMEA, and Asia Pacific:	<u>Telephone:</u> +44 (0)1329 246 932 <u>E-mail:</u> emea.service@flir.com
United States (US):	<u>Telephone:</u> +1 (603) 324 7900 <u>E-mail:</u> rm-usrepair@flir.com

CHAPTER 17: SPARES AND ACCESSORIES

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- 17.1 Keypad spares and accessories — page 57
- 17.2 FLIR networking accessories — page 58
- 17.3 RayNet to RayNet cables and connectors — page 60
- 17.4 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables — page 61

17.1 Keypad spares and accessories

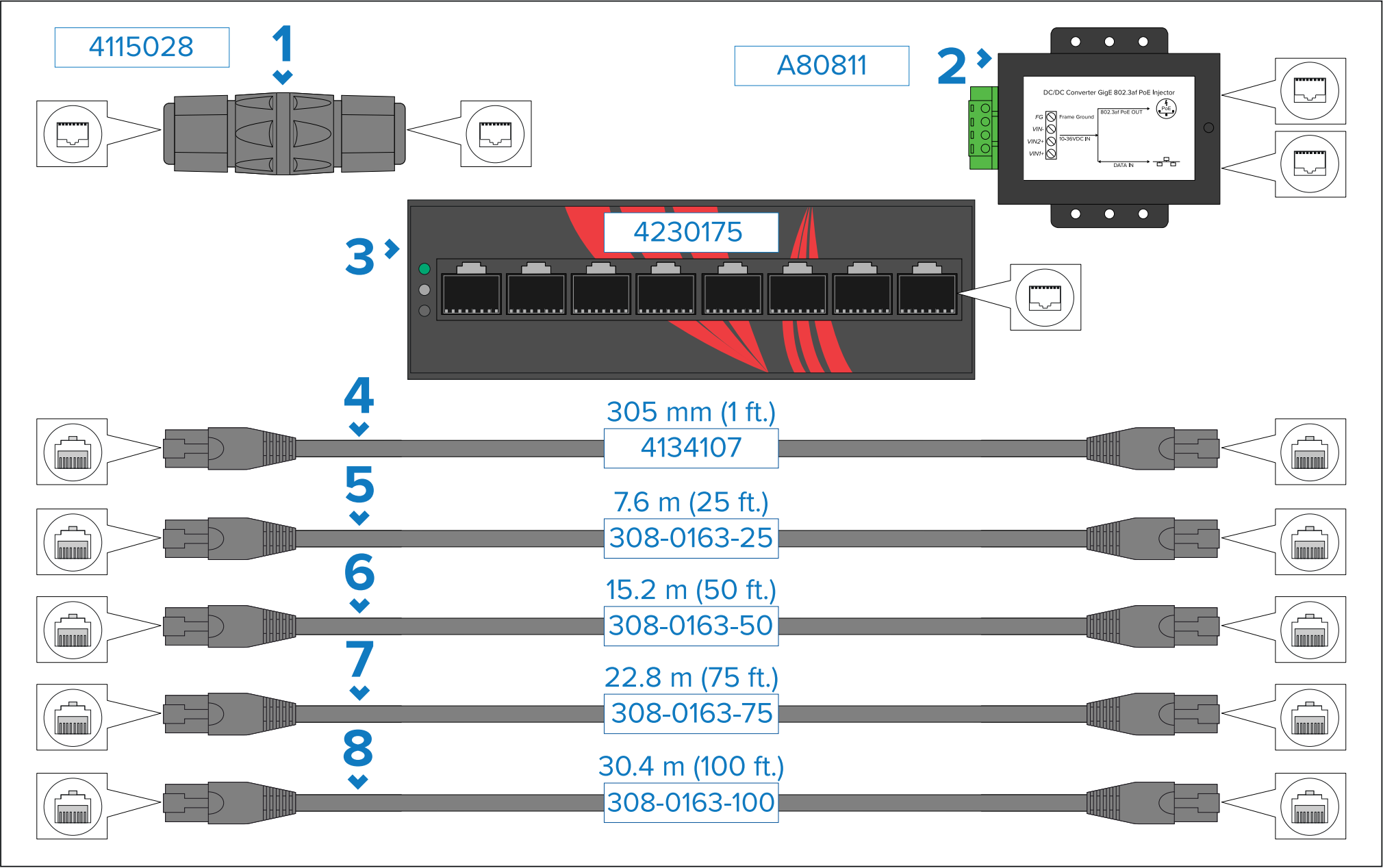
Spares

Item	Part number
Portrait keypad mat spare	R70557
Landscape keypad mat spare	R70558

Accessories

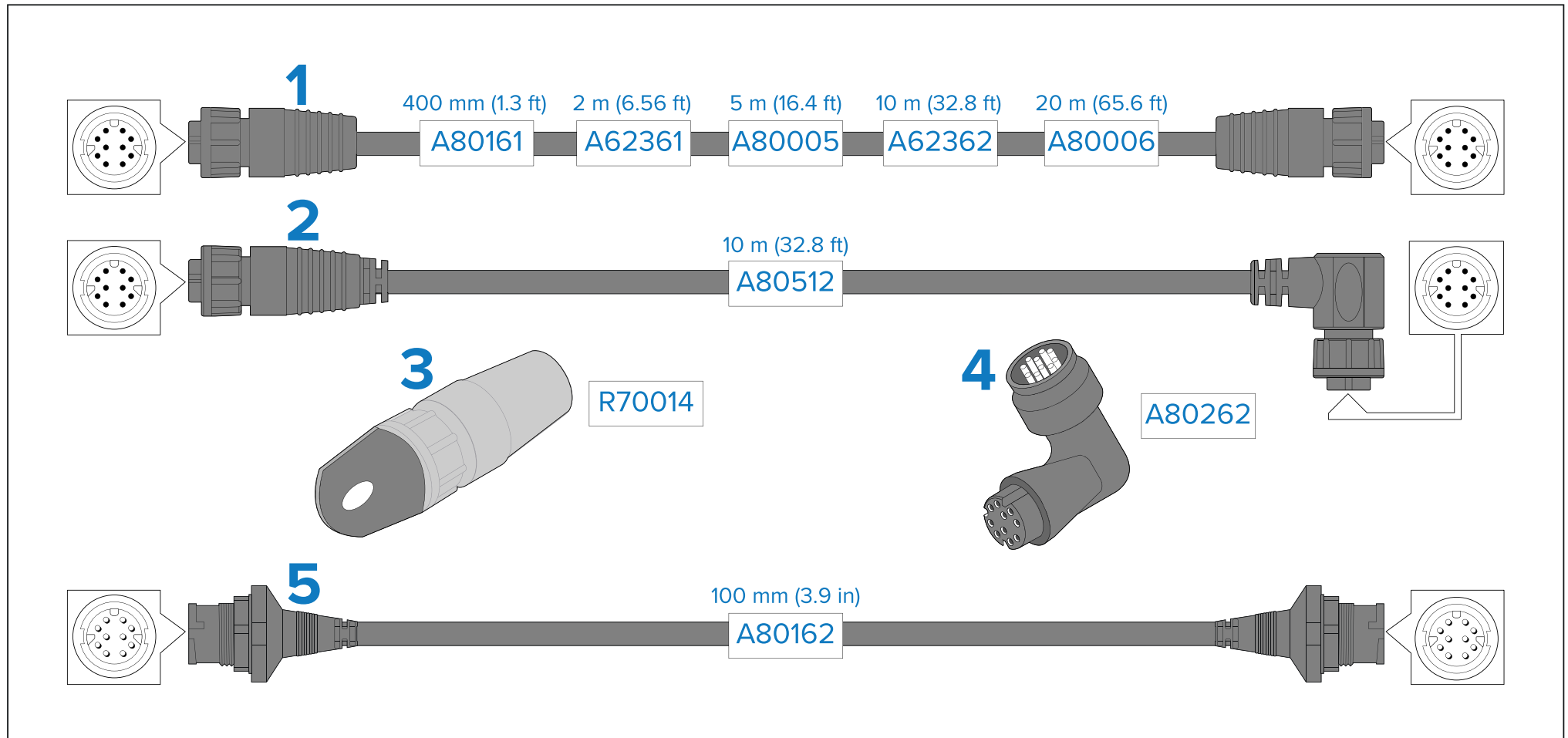
Item	Part number
Right-angled power cable, 2 m (6.6 ft)	A06070
Straight power cable, 2 m (6.6 ft)	A06049

17.2 FLIR networking accessories



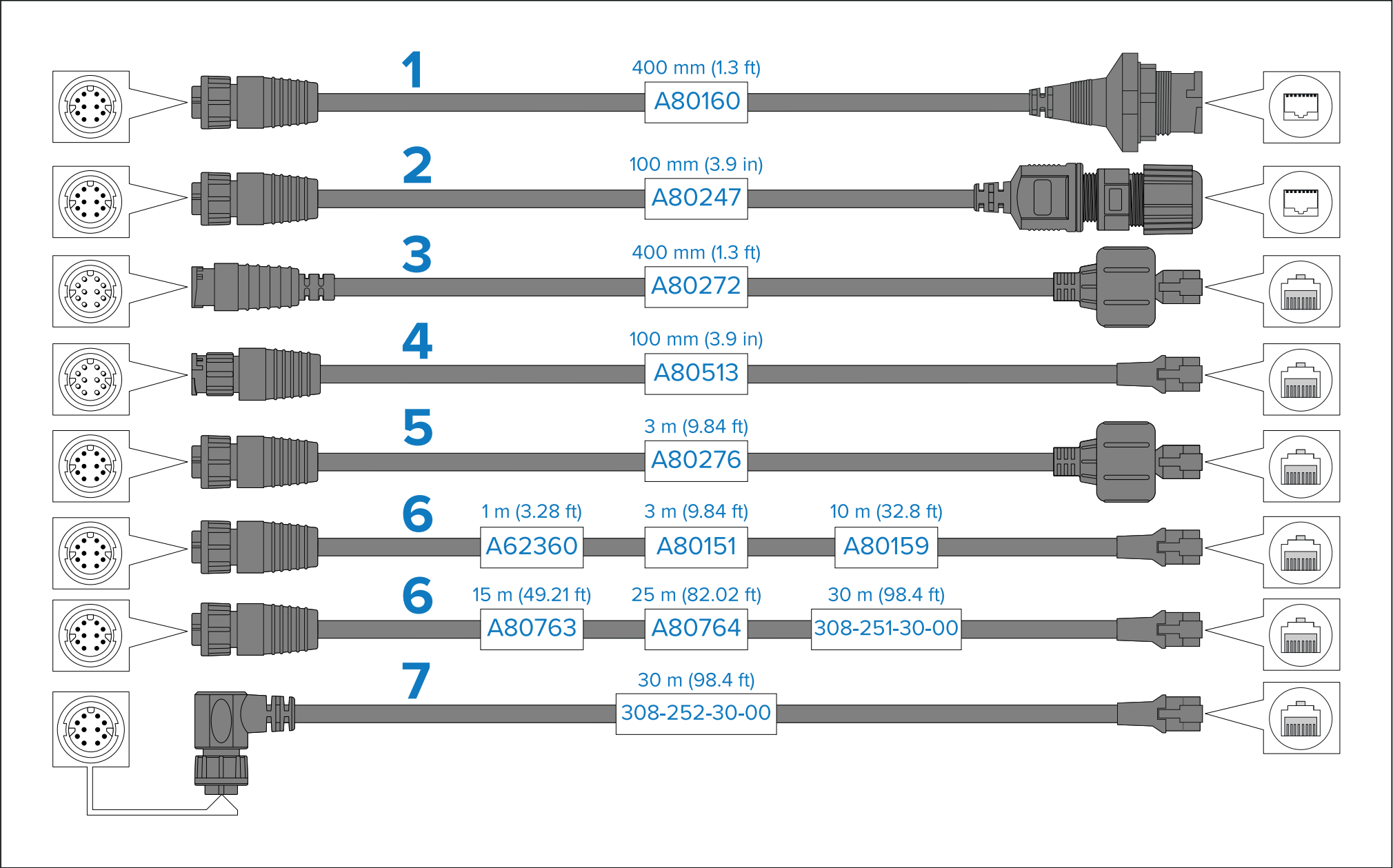
1. RJ45 coupler, for joining 2 separate RJ45 network cables together to achieve longer cable runs.
2. PoE Injector (2nd Generation; 5 Gbit). Supplies power to a non-PoE network connection. Typical use is for powering a JCU-Series controller that is connected to a non-PoE network switch. Supplies power to a PoE network connection.
3. PoE 8-port Gigabit Network Switch.
4. 305 mm (1 ft.) RJ45-to-RJ45 Ethernet cable, double shielded with LSZH low interference jacket.
5. 7.6 m (25 ft.) RJ45-to-RJ45 Ethernet cable, double shielded with LSZH low interference jacket.
6. 15.2 m (50 ft.) RJ45-to-RJ45 Ethernet cable, double shielded with LSZH low interference jacket.
7. 22.8 m (75 ft.) RJ45-to-RJ45 Ethernet cable, double shielded with LSZH low interference jacket.
8. 30.4 m (100 ft.) RJ45-to-RJ45 Ethernet cable, double shielded with LSZH low interference jacket.

17.3 RayNet to RayNet cables and connectors



1. Standard RayNet connection cable with a RayNet (female) socket on both ends.
2. Right-angle RayNet connection cable with a straight RayNet (female) socket on one end, and a right-angle RayNet (female) socket on the other end. Suitable for connecting at 90° (right angle) to a device, for installations where space is limited.
3. RayNet cable puller (5 pack).
4. RayNet to RayNet right-angle coupler / adapter. Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited.
5. Adapter cable with a RayNet (male) plug on both ends. Suitable for joining (female) RayNet cables together for longer cable runs.

17.4 RayNet to RJ45, and RJ45 (SeaTalk HS) adapter cables



1. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, accepting the following cables with an RJ45 (SeaTalk HS) waterproof locking (male) plug:
 - A62245 (1.5 m).
 - A62246 (15 m).
2. Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 (SeaTalk HS) socket on the other end, along with a locking gland for a watertight fit.
3. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.
4. Adapter cable with a RayNet (male) plug on one end, and an RJ45 (male) plug on the other end.
5. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (SeaTalk HS) waterproof (male) plug on the other end.
6. Adapter cable with a RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.
7. Adapter cable with a right-angled RayNet (female) socket on one end, and an RJ45 (male) plug on the other end.

Appendix A Software release history

The list below is a cumulative list of the new features introduced in subsequent releases of the JCU-3 software, since the initial release (v1.03-00020).

This list includes *new features* only. It does NOT include software maintenance items, such as bug fixes or performance improvements.

To download the software, and view the complete list of all software updates, including new features, bug fixes, and performance improvements, visit:

JCU-3 software download links

www.bit.ly/jcu3-download

JCU-3 v1.06.62 new features

(Software release date: *October 2024*)

- Updated Web browser user interface admin passwords to comply with the PSTI (*Product Security and Telecommunications Infrastructure*) regulation. For more information, refer to: [p.43 — Logging in to the Web browser user interface](#)

JCU-3 v1.04-00048 new features

(Software release date: *June 2020*)

- Enabled the ability to amend the Internet Protocol (IP) assignment of the JCU for a static IP environment (extending compatibility for third-party networks).
- Improved key mapping.

JCU-3 v1.03-00020

(Software release date: *May 2017*)

- Initial public release.

Appendix B Document change history

Document	Changes
71002 (Rev 03) Date: 11-2024	'Logging in to the Web browser user interface' section added. - Network connection chapter split into PoE, non-PoE, and self-powered systems. - Power connection chapter split into PoE and non-PoE systems. - Duplicate information within the 'Setting the keypad orientation', 'Pairing the keypad' and 'Resetting the keypad to factory defaults' moved to the 'Logging in to the Web browser user interface' section. - All instances of discontinued FLIR PoE Injector (1st Generation; 1 Gbit) replaced with PoE Injector (2nd Generation; 5 Gbit).
71002 (Rev 02) Date: 01-2023	- Chapter and section structure updated. 'Setting the keypad orientation' section added. - Illustrations updated. - Information updated throughout the 'Power connections' section.
71002 (Rev 01) Date: 05-2017	Initial release.

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