Voyager III

432-0005-00-12
Revision 100
September 2011

Installation Guide

The Voyager III thermal imaging system is controlled by US export laws. There are special versions of this system that are approved for international distribution and travel. Please contact FLIR Systems if you have any questions.

FLIR Systems, Inc.
70 Castilian Drive
Goleta, CA 93117
Phone: +1.888.747.FLIR (+1.888.747.3547)

www.flir.com/maritime

Document Number: 432-0005-00-12, Revision 100

Document History

Revision	Date	Comment
100	September 2011	Initial Release

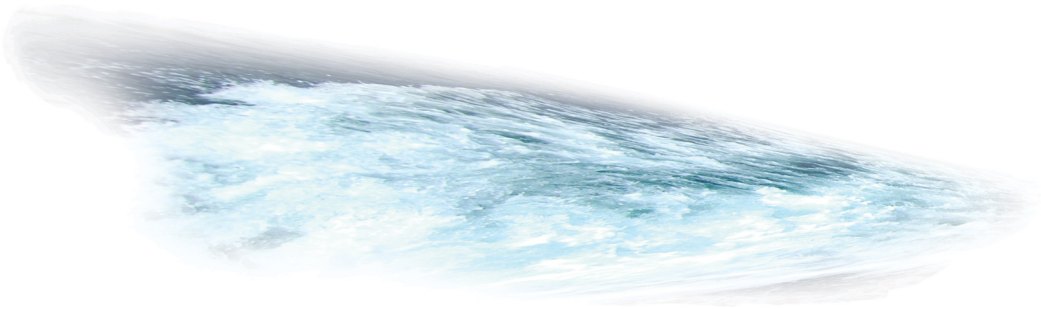
This document is controlled to FLIR Technology Level 1. The information contained in this document pertains to a dual use product controlled for export by the Export Administration Regulations (EAR). FLIR trade secrets contained herein are subject to disclosure restrictions as a matter of law. Diversion contrary to US law is prohibited. US Department of Commerce authorization is not required prior to export or transfer to foreign persons or parties unless otherwise prohibited.

CE **Warning**: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Contents

CHAPTER 1

Voyager III Installation



This manual describes the physical mounting and electrical connection of the Voyager III system. If you need help or have additional questions, call to speak with our support experts; see the phone numbers on the back cover of this manual.

Voyager III is a stabilized maritime thermal and visible-light camera system for use on most types of vessels. Its state-of-the-art thermal imaging system provides excellent night visibility and situational awareness, without any form of natural or artificial illumination.

The Voyager III should be installed by a qualified marine electronics technician; incorrect installation could void the warranty.

This manual includes information about the following topics:

- Installation overview and planning
- Mounting the camera and installing the bulkhead box and JCU
- Connecting the electronics
- Using the NMEA interface
- Parts list and general specifications, standards list, acronyms, and camera installation template

Additional References

Your Voyager III camera comes with a complete documentation set on a CD (FLIR Doc. # 432-0005-00-16) that includes this manual as well as others. All documents are in PDF format and can be viewed with Adobe Acrobat Reader.

- *Voyager III Operator's Manual* (FLIR Doc. # 432-0005-00-10) contains information about how to configure, use, and operate the camera.

- *Voyager III Quick Start Guide* (FLIR Doc. # 432-0005-00-11) is a set of double-sided cards that show the functions executed by the various JCU buttons, puck movements, and on-screen symbols.
- *Voyager III Interface Control Documents (ICD)* is a set of CAD drawings with detailed component dimensions, wiring schemes, and mounting dimensions. There are three separate ICD documents:
  - FLIR Doc. # 500-0385-19 contains dimensions of the maritime multi-product JCU and a template to use while installing it.
  - FLIR Doc. # 432-0005-XX-19 contains drawings related to the Voyager III camera body and the interconnections among system components.
  - FLIR Doc. # 500-0483-19 contains the drawings for the bulkhead box, including over all dimensions, component locations, and wiring.

The ICD drawings are also available from the FLIR Web site:

http://www.flir.com/cvs/americas/en/maritime/ae/

You may also refer to the Resources Web page for up-to-date documentation:

http://www.flir.com/cvs/americas/en/maritime/resources/

Documentation Conventions

For safety, and to achieve the highest levels of performance from the Voyager III system, always follow the warnings and cautions in this manual when handling and operating the camera system.

Warning: Warning notices are used to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury or death exist with this equipment, or may be associated with its use.

Caution: Caution notices are used where equipment might be damaged if care is not taken or an operation might have an unexpected outcome.

Note: Notes call attention to information that is especially significant to understanding and operating the equipment.

Warnings and Cautions

Warning: Do not use the Voyager III imaging system as the primary navigation system. Use it in conjunction with other navigation aids and a primary manual navigation system.

Warning: Use of insufficient wire gauge can result in fire.

Caution: Do not open the Voyager III camera unit for any reason. Disassembly of the camera (including removal of the cover) can cause permanent damage and will void the warranty.

Caution: Be careful not to leave fingerprints on the Voyager III camera optics.

Caution: The Voyager III requires a power supply of 24V DC nominal, 10 Amp maximum. Absolute voltage range: 21 – 32V DC. Operating the camera outside of the specified input voltage range or the specified operating temperature range can cause permanent damage.

This equipment must be disposed of as electronic waste. Contact your nearest FLIR representative for instructions on how to return the product to FLIR for proper disposal.

Installation Overview

The Voyager III system includes these standard components:

- Camera body
- “Non-flight” carrying handle and attaching screws
- Bulkhead box with connectors and terminal blocks
- NMEA interface board, installed in bulkhead box
- FLIR Video Tracker module, installed in bulkhead box
- Tracker bypass PCB, in a separate bag inside the bulkhead box

  The bypass PCB is needed only if you want to operate the camera after removing the tracker module.
- Main sensor cable, for connecting the camera body to the bulkhead box
- Joystick control unit (JCU) and cover
- Ethernet PoE cable (25 ft.)
- System power cable (10 ft.)

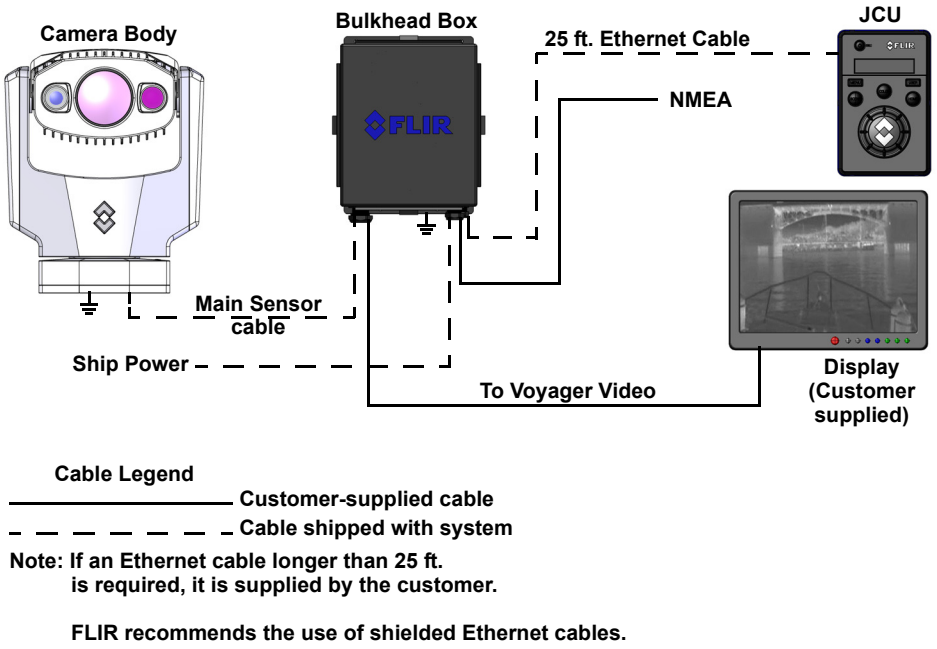
You need to supply:

- One 3/8 x 16 and six 1/4-20 stainless steel bolts and washers to secure the Voyager III camera body—bolt length depends on mounting platform thickness
- Mounting hardware for securing the Voyager III bulkhead box
- One or more multi-function displays (MFD) or other analog video display devices
- Coaxial RG59/U video cables (BNC at bulkhead box) to customer-supplied video displays

- Ethernet cables (up to 100 ft.) to connect to the bulkhead box Ship Ethernet port, rated for use with PoE devices (IEEE802.3af), 8-conductor T568B

Installation Planning

The following illustration shows a schematic of a basic Voyager III installation with one Ethernet JCU, a NMEA connection, and one analog video display.



You should consider a number of factors in planning the locations for the key Voyager III components: the camera body, bulkhead box, JCU, and cables.

Camera Location Planning

- Mount the Voyager III camera body as high as practical, but without interfering with any radar, navigational, or communications electronics, and minimizing the degree to which vessel structures block the camera's 360° view. The approximate camera weight is 50 lbs.
- Mount the Voyager III camera body as close to the vessel's center line as possible so you will have a symmetrical view of on-coming traffic, obstacles, and other navigational hazards.
- Mount the camera body on a flat surface with the base on the bottom and the camera on top. The camera body should not be hung upside down. Improper mounts that are loose and/or resonate can magnify vessel impacts causing the camera to be unable to maintain pointing direction.

Bulkhead Box Planning

- Mount the bulkhead box in an area that is sheltered from the weather, has good airflow, is not exposed to direct sunlight, and is within easy reach of all required cables.
- Ensure the box has access to power. The Voyager III system power cable connecting the bulkhead box to ship's power is 10 feet long.

JCU Planning

- Mount the JCU in a convenient area close to the device that will be displaying the Voyager III system video.
- Ensure the area you choose has enough room for the JCU body, connector, and cable.
- If you are relying on a magnetic compass for navigation and direction, you need to consider the "compass safe distance" when mounting the JCU. The magnetic compass safe distance for the JCU is 21.7 inches (55 cm).
- Optionally more than one JCU can be used to control the camera. If you are planning to use more than one JCU, you should consider the multiple locations in your planning.

Determine Component Locations and Cable Routing

Caution: The Voyager III main sensor cable must maintain a secured minimum bend radius of 5 inches where the cable is connected to the camera body. The cable must be clamped at regular intervals to avoid excess motion, chafing, and to provide strain relief to terminations when the boat is in motion.

- Route all cables and verify they are long enough given the proposed mounting locations and cable routing requirements before you install any other components.
- Verify that both sides of the mounting surface are accessible.
- Verify compliance with minimum keep-out volume, which is represented by a cylinder 22 x 15.5 inches in diameter (see the camera diagram in the ICD).
- Verify compliance with minimum cable routing clearance as shown in the bulkhead box diagram included in the ICD.
- Determine if any interior trim panels must be removed in order to gain access to the mounting hardware, and if so, remove them ahead of time.

Physical Installation

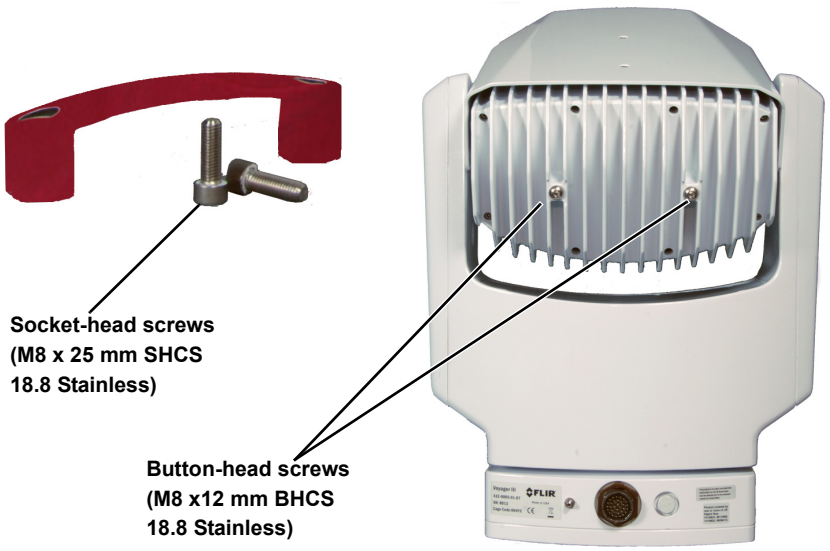
Voyager III Camera Body Handle

A red “non-flight” handle and bolts are supplied with the camera body to make it easier to carry. Install the handle using the following procedure.

1. Using a 5.0 mm hex driver, remove the two button head screws from the rear of the camera body.
2. Using a 6.0 mm hex driver, install the red handle and secure with the two socket head screws supplied.

Caution: Ensure the red handle is removed from the Voyager III camera body before making cable connections or applying power. Damage to the Voyager III camera body may result if the handle is not removed.

When the camera body is mounted, remove the handle and socket-head screws and replace the two button-head screws.

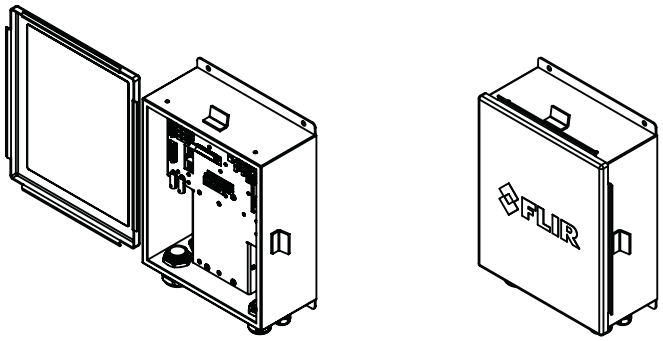


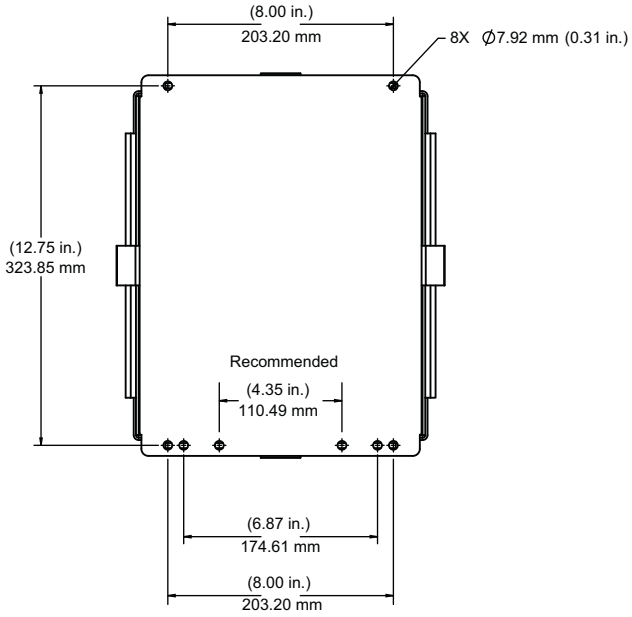
Voyager III Camera Body

- Using the template supplied on page 31 as a guide, mark the location of the holes for mounting the camera body.
- Using customer-supplied stainless steel hardware, mount the Voyager III camera body with six 1/4-20 bolts and washers and a 3/8 x 16 bolt in the center for added support. All the bolts are required due to the weight of the Voyager III camera body.
- Connect the main sensor cable to the camera body and verify the 5 inch minimum bend radius after the cable is connected and secured.

Voyager III Bulkhead Box

- Provide room for adequate service loops as depicted in the installation drawings supplied.
- Using customer-supplied hardware, mount the Voyager III bulkhead box. Refer to the bulkhead box drawings in the Voyager III ICD for detailed instructions.





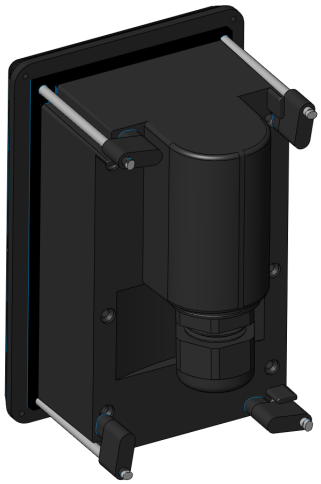
Bulkhead Box Mounting Dimensions

Voyager III Joystick Control Unit (JCU)

The cable gland seal is designed for use with double-shielded category 5 Ethernet cable. To ensure a good seal and to maintain compliance with EMI ratings, a double-shielded cable is required.

The JCU enclosure is rated IP66 above the JCU mounting surface/gasket and rated IP64 behind or below the gasket.

Caution: An installation template is provided in the JCU ICD (Doc. # 500-0385-19). If you print the template from the PDF file, ensure that it was printed to the correct scale by checking the dimensions prior to cutting any holes.



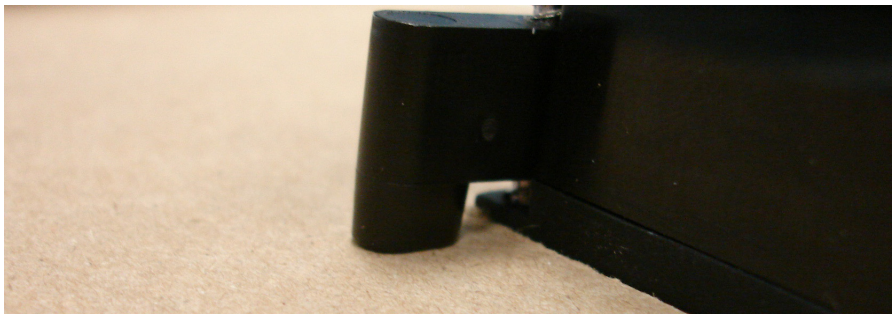
Standard JCU Mounting Instructions

1. Using the JCU template supplied as a guide in Doc. # 500-0385-19, mark the location of the rectangular opening that will allow the JCU to be recessed in the vessel's control console. Ensure the corners are marked precisely and cut square.
2. Apply the adhesive side of the rubber gasket to the back of the JCU on the surface that faces the mounting platform. The JCU comes with 4 panel mounting clamps that can be reversed when the thickness of the panel material is less than 5/16 inches (0.31 in, 0.79 cm; see instructions below). Ensure the mounting clamps are rotated inward and are recessed so the entire JCU fits into the hole.
3. Remove boots from both ends of the Ethernet cable, as it may interfere with the coupling gland. The boot may cause the RJ45 connector tab to depress, which can lead to intermittent connections.
4. Loosen or remove the cable gland nut on the JCU, and insert the Ethernet cable RJ45 connector through the gland nut. Once the Ethernet cable is connected to the JCU, replace the gland nut and turn the nut 1/4 turn beyond hand tight.
5. Insert the JCU into the hole and secure by turning the 4 corner screws clockwise. Rotate each screw one full turn and ensure the mounting clamps are rotated outward from the JCU housing. Tighten the screws to draw the mounting clamps up against the mounting surface and then tighten another quarter or half turn. Do not overtighten the screws.

Mounting the JCU to a Thin Panel

As shipped from the factory, the JCU can be mounted to dash thicknesses ranging from 0.31 – 1.750 inches (0.79 – 4.45 cm). The clamps are set with the small foot on the clamp facing away from the panel and toward the front of the JCU, as shown below.

If you intend to mount the JCU to a panel of 0.31 inches (0.79 cm) thickness or less, remove the clamps from the mounting screws, turn them around and thread them back onto each of the four screws. In this configuration, the clamp foot faces the rear of the mounting surface and allows the clamp to contact thinner panel surfaces while still allowing for proper compression of the JCU mounting gasket to form a watertight seal.



JCU Clamp reversed for mounting JCU to thin panel

Electrical Connections

The following sections describe the connections to the Voyager III system. Refer to the NMEA 0183 Standard for details on interconnecting the Voyager III with other marine electronic devices.

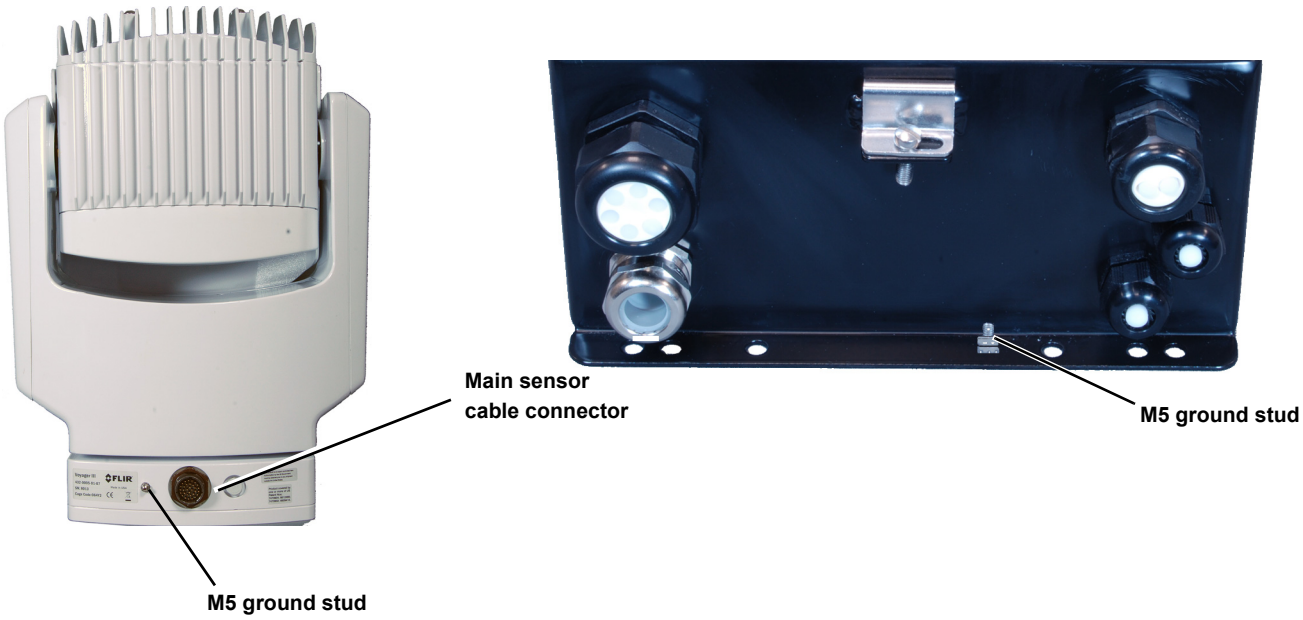
Caution: During installation, ensure the main sensor cable exiting the Voyager III camera body maintains a minimum bend radius of five inches, is not in contact with sharp edges, and is not pinched between any mounting surface. Do not pull on the cables.

Caution: It is recommended that any built-up triboelectric charge on the Ethernet cable should be discharged *before* connecting it to the bulkhead box and JCU. This can be accomplished simply by pressing an ungloved finger across the Ethernet RJ45 connector of the cable for a few seconds.

Proper Grounding

Caution: Ensure the Voyager III system is properly grounded. The camera body and bulkhead box chassis grounding studs are provided for implementing the grounding scheme applicable to the vessel.

Caution: If multiple analog video displays are installed, to minimize ground loops FLIR recommends using a video distribution panel for each video channel (primary and secondary) specific to the installation environment and then attaching the multiple display to the distribution panels.



Main Sensor Cable

After routing the main sensor cable between the Voyager III camera body and the bulkhead box, prepare it for termination inside the bulkhead box as described in the following procedures.

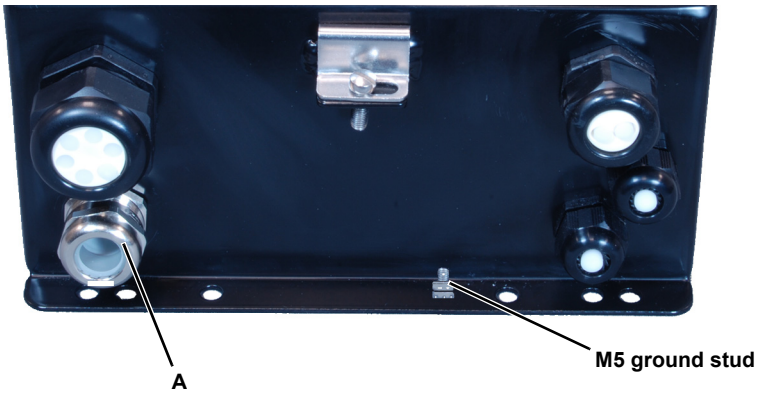
The following tools and documents are recommended to complete the job:

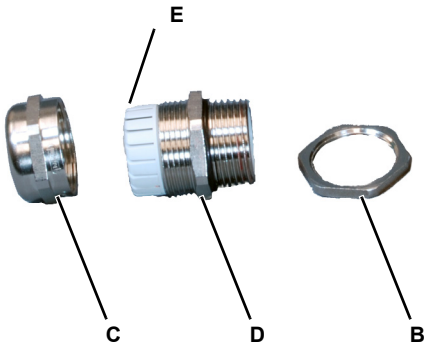
- The bulkhead box drawing in the Voyager III ICD (Doc. # 500-0483-19)
- Ruler or measuring tape
- Exacto knife
- Scissors
- Wire cutter
- Wire stripper for 20 gauge wires
- Crimping tool for BNC connector (RG-179)

- Channel locks
- 2 mm flathead screw driver

Install the Main Sensor Cable Gland Seal

Step 1. Remove the main sensor cable feed-through gland seal (A) by unscrewing the lock nut (B) on the inside of the bulkhead box.

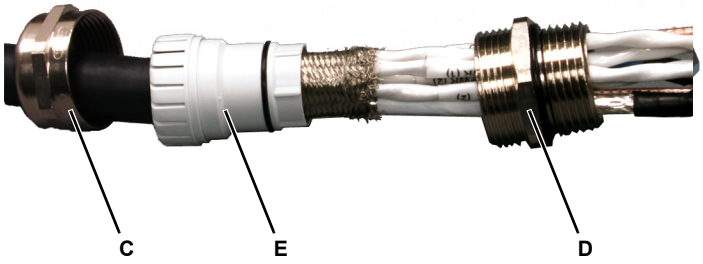




Step 2. Unscrew the squeeze nut (C) from the gland body (D), as shown above, to expose the gland barrel (E).

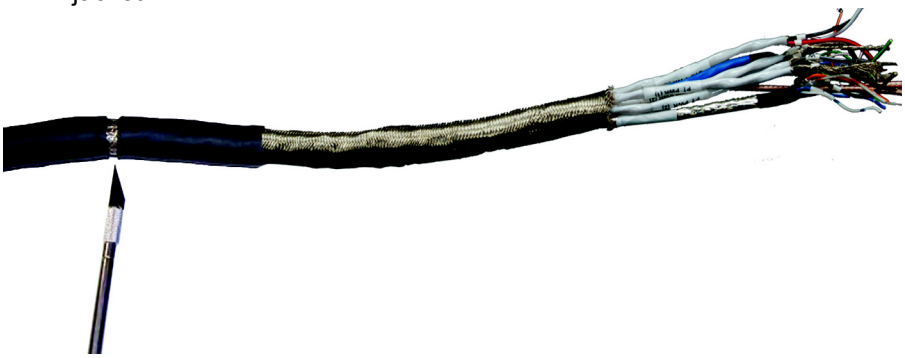
Step 3. Remove the gland barrel from the gland body by inserting a finger and pulling it out.

Step 4. Slide the squeeze nut (C), gland barrel (E), and gland body (D) over the cable and out of the way of preparing the main cable for attachment to the bulkhead box.



Step 5. As shipped, the standard cables have flying leads that are labeled and grouped for additional preparation. Refer to the Voyager III bulkhead box description in the ICD.

Step 6. Measure a minimum of 15.75 in. (40 cm) from the end of the cable, carefully cut around the outer black cable jacket until you can slide it off, and remove it. Be careful not to cut into the metal braid beneath the outer jacket.



Step 7. Slide the black outer jacket off the cable, exposing the inner metal braid.

Step 8. Push the braid back over the black outer jacket an inch or two, creating an area of slack in the braid.

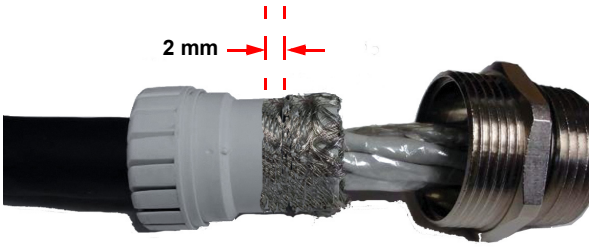
Step 9. Carefully insert scissor tips into the braid, and cut all the way around it. Slide the excess braid off the cable and discard it.

Step 10. Working with the shorter length of braid, trim it so that only 1inch extends beyond the black outer jacket.

Step 11. Slide the gland barrel up the cable so that the front edge just lines up with the end of the black outer cable jacket as shown below.

Step 12. Carefully fold the metal braid back over the gland barrel as shown.

Step 13. Trim the metal braid so that the braid is 2 mm past the black O-ring.



Step 14. Slide the gland body over the gland barrel; capturing the metal braid between the two.

Step 15. Screw and tighten the squeeze nut onto the gland body as shown.

You are now ready to prepare the cable ends for connection to the bulkhead box's internal terminal blocks and connectors. Refer to the Voyager III bulkhead box description in the ICD.

Note: All trim lengths are terminated wire lengths—the wire and the specific termination are included in the length.

Install the Main Sensor Cable

Step 1. Spread apart the individual wire bundles to make them easier to identify and work with. Cut and terminate the cables to the lengths as defined in the Voyager III bulkhead box description in the ICD.

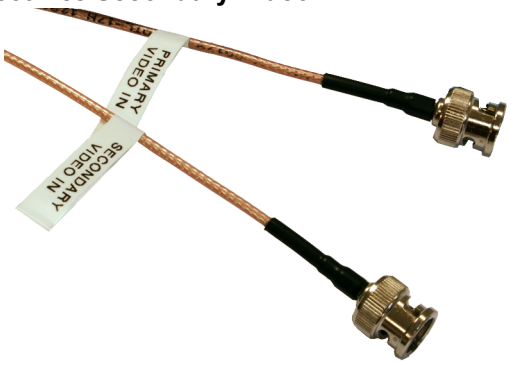
Step 2. **Ethernet cable**—Terminate to RJ45 connector per TIA/EIA-568B standard. If you are unsure how to terminate this type of connector, contact FLIR for additional information.

Step 3. **Video cables**—Two RG-179 video cables terminate to crimpable 75 ohm BNC connectors (provided). If you are unsure how to terminate this type of connector, contact FLIR for additional information.

Step 4. Relabel the video cables using flag-type labels:

Video 1 becomes **Primary Video In**

Video 2 becomes **Secondary Video In**



Step 5. **System power and pan/tilt power**—Four twisted pairs terminate to terminal block J5.

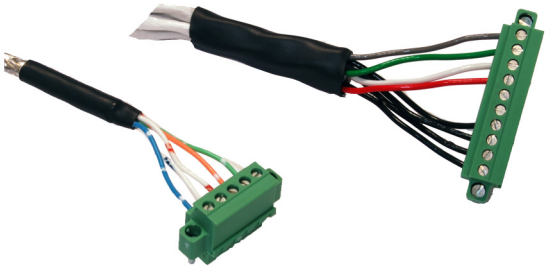
Step 6. **Communication ports**—Six conductor (five are used) with braid terminate to terminal block J6.

Step 7. The wires for J5 and J6 will need to be prepared in a fashion similar to the following progression. Carefully measure, cut, and strip each wire as described in the Voyager III bulkhead box description in the ICD.

Slide the outer insulation off.

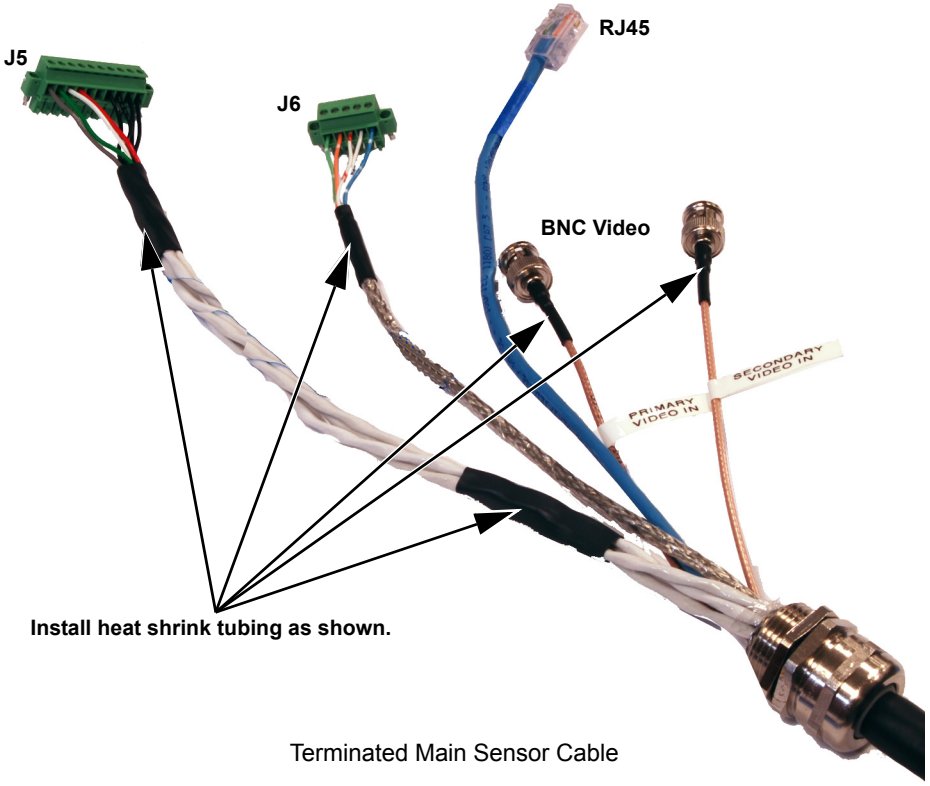
Separate the inner wires.

When this is done, they are ready for termination to the terminal block plugs for J5 and J6.



Note: You can terminate the wires at J5 and J6 after the cable is installed into the bulkhead box to increase the clearance around the cable leads while inserting them into the bulkhead box.

Step 8. The finished cable, shown below, has the RJ45 connector, two BNC video connectors, and all other leads terminated at the terminal block plugs.



Terminated Main Sensor Cable

Step 9. Carefully slide all of the prepared wires and the video cables through the hole in the bulkhead box.

Step 10. Slide the locknut over the wires and tighten to secure the cable gland seal to the bulkhead box.

Step 11. If you have not done so already, connect the wires from the main sensor cable to the terminal block plugs at J5 and J6.

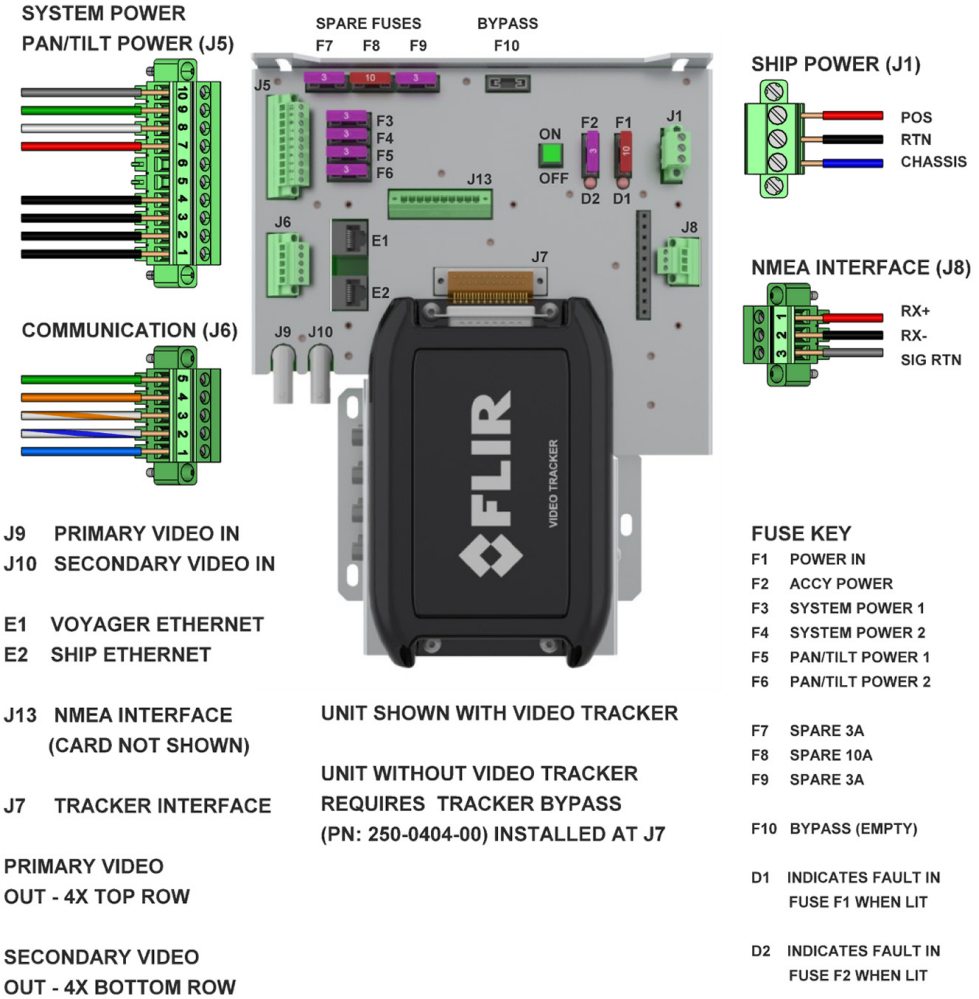
Step 12. Make the following connections:

The Ethernet plug to E1

Primary Video In to J9

Secondary Video In to J10

Refer to the ICD for details of the bulkhead box connections or review the following graphic (also inside the cover door of the bulkhead box) for a color-coded guide.



J9 PRIMARY VIDEO IN
J10 SECONDARY VIDEO IN

E1 VOYAGER ETHERNET
E2 SHIP ETHERNET

J13 NMEA INTERFACE
(CARD NOT SHOWN)

J7 TRACKER INTERFACE

PRIMARY VIDEO
OUT - 4X TOP ROW

SECONDARY VIDEO
OUT - 4X BOTTOM ROW

UNIT SHOWN WITH VIDEO TRACKER

UNIT WITHOUT VIDEO TRACKER
REQUIRES TRACKER BYPASS
(PN: 250-0404-00) INSTALLED AT J7

FUSE KEY

F1 POWER IN
F2 ACCY POWER
F3 SYSTEM POWER 1
F4 SYSTEM POWER 2
F5 PAN/TILT POWER 1
F6 PAN/TILT POWER 2

F7 SPARE 3A
F8 SPARE 10A
F9 SPARE 3A

F10 BYPASS (EMPTY)

D1 INDICATES FAULT IN
FUSE F1 WHEN LIT

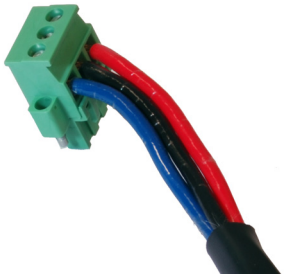
D2 INDICATES FAULT IN
FUSE F2 WHEN LIT

Note: Use the Video Tracker PCB, PN 250-0404-00, at connector J7 if the Video Tracker module is removed from the bulkhead box for service or repair and you want to continue using the camera system without it. The PCB is provided in a separate bag in the bulkhead box.

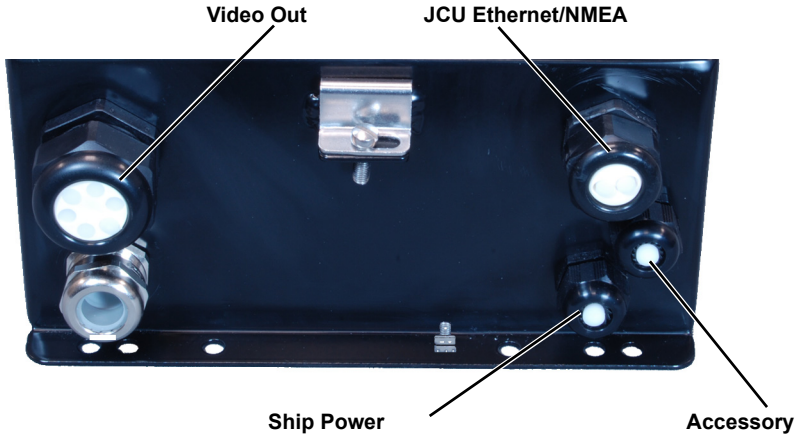
Ship Power, Ship Video, Ethernet, and NMEA

Step 1. **Prepare the ship power input cable (4104680)**—Carefully measure, cut, and strip each wire as described in the Voyager III bulkhead box description in the ICD.

When this is done, terminate to terminal block J1.



Step 2. Remove the ship power cable gland seal from the bulkhead box and install onto the power cable. You can make a clean and singular cut in the gland insert to install the terminated cable into the gland seal.



Note: The following cables can be terminated before passage through the cable gland if the gland insert is modified as described in the following step.

Step 3. **Prepare the video output, JCU Ethernet, and NMEA cables**—Remove the Video Out and JCU Ethernet/NEMA cable gland seals from the bulkhead box and install onto the cables. You can make a clean and singular cut in the gland insert to install the terminated cable into the gland seal.

NMEA Interface

The Voyager III has the capability to listen to or take commands from radar, GPS, or other devices using the National Marine Electronics Association (NMEA) 0183 protocol (version 2). The NMEA 0183 protocol is a combined electrical and data specification for communication between marine electronic devices. Additional information regarding the protocol can be found on the NMEA Web site:

http://www.nmea.org/content/nmea_standards/nmea_standards.asp

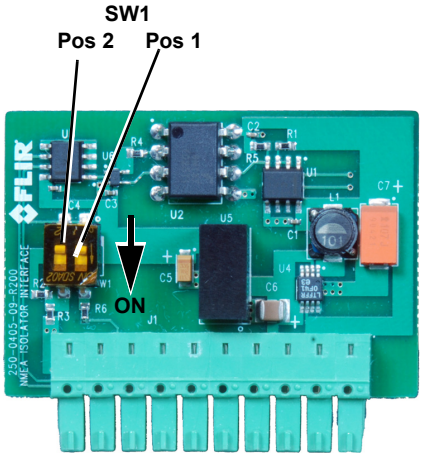
According to the NMEA protocol, the Voyager III is known as a listener, and another device such as a radar, GPS, compass, or multi-function display is known as a talker. This protocol allows the talker to send positional information to the Voyager III camera, and it responds by automatically pointing toward vessels and other objects that show up on the display and tracking their movement.

To connect the Voyager III to other equipment using the NMEA serial cable (not provided with the Voyager III), you will need to supply the following:

- 3-wire cable from the NMEA device to the Voyager III bulkhead box
- NMEA multiplexer if the input to the Voyager III system does not come from a multi-function display that acts as a multiplexer

Note: The Voyager III does not support the NMEA 0183-HS (High Speed) protocol. The NMEA talker must be set to 4800 baud.

This section describes the steps necessary to install and verify the Voyager III NMEA 0183 interface. Operation of the Voyager III NMEA interface is described in the *Voyager III Operator's Manual.*



NMEA Interface Installation

Set the communication standard between the NMEA device and the Voyager III by setting the 2-switch SW1 located on the NEMA interface card installed into connector J13 in the bulkhead box.

Pos 1	Pos 2	Selected Communication Standard
off	off	RS422, no termination
off	on	RS422, with termination
on	off	Single ended
on	on	not applicable

NMEA Interface Wiring

You can route the connection from the NMEA device through either the accessory or Ship Ethernet/NMEA cable gland located on the bottom wall of the bulkhead box as shown in the Voyager III bulkhead box description in the ICD.

NMEA Messages

The Voyager III recognizes or responds to a subset of NMEA 0183 messages—also called sentences. The standard NMEA 0183 messages required for Voyager III integration are as follows:

HDT	Heading, True
GGA	Global Positioning System Fix Data
GLL	Geographic Position, Latitude/Longitude
RSD	Radar System Data
TTM	Tracked Target Message
BWC	Bearing and Distance to Waypoint
VHW	Water Speed and Heading
OSD	Own Ship Data
TLL	Target Latitude and Longitude

MFD as NMEA Talker

When a multi-function display (MFD) is used as the NMEA talker, it functions as a multiplexer, and incoming messages from the radar and other NMEA talker devices are passed through the MFD to the Voyager III. Most MFDs let you select the required messages and output them using an available NMEA 0183 port. Refer to the user documentation provided with the MFD for configuration information. The NMEA talker must be set to 4800 baud.

NMEA Multiplexer as NMEA Talker

In some installations, an NMEA 0183 multiplexer is used to interconnect the other devices and to provide the Voyager III with the required sentences. A multiplexer retrieves NMEA data from more than one source such as a north-seeking gyro, GPS, and radar. It then distributes the data to any connected devices. The NMEA talker must be set to 4800 baud.

Control Station Installation

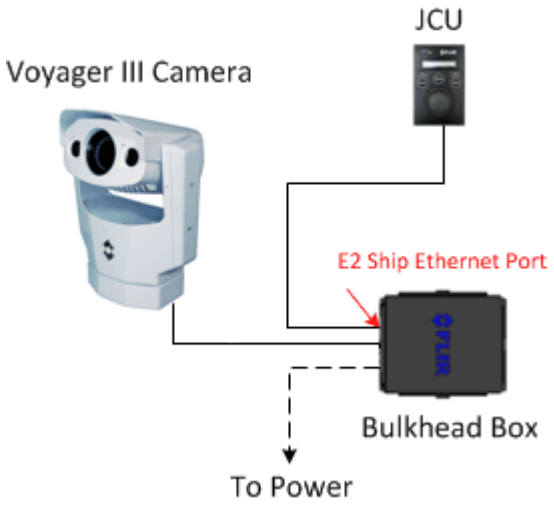
The Voyager III bulkhead box provides a single PoE Ethernet output labeled E2 Ship Ethernet. When a single JCU is used with the system, it can be connected directly to this Ethernet port. If you need to connect an additional JCU or a computer to the system, you will need to provide an Ethernet switch (or equivalent) and PoE for each JCU. You may also want to do this even with a single JCU, depending on your local area network capabilities.

Single JCU Installation

When you are using a single JCU, the system can be configured in three possible ways:

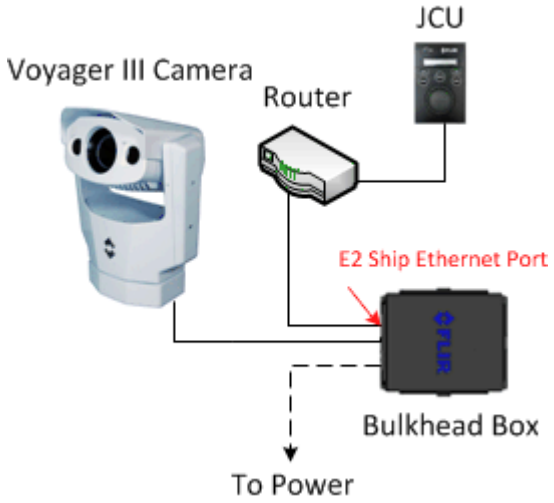
1. If your vessel does not have an Ethernet network, plug one end of the JCU Ethernet cable into the E2 Ship Ethernet port inside the bulkhead box and the other end into the connector on the bottom of the JCU.

Single JCU, No Network



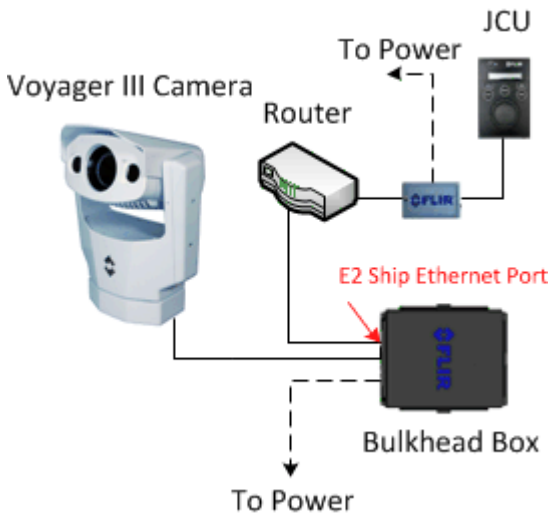
2. If you have an Ethernet switch or router on-board that supplies PoE (Power over Ethernet), then:
   - Plug one cable between your switch/router and the E2 Ship Ethernet port on the bulkhead box.
   - Plug the JCU Ethernet cable into an open PoE Ethernet port on the switch/router and the other end into the connector on the bottom of the JCU.

Single JCU, Switch/Router with POE



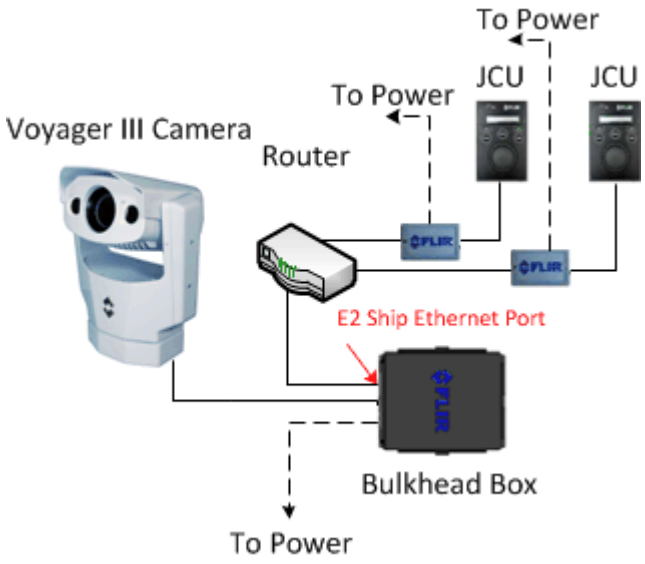
3. If you have an Ethernet switch or router on-board that does not supply PoE, then you must install a PoE injector (FLIR part number 4121837 or equivalent) between the port on your switch/router and the JCU. For this configuration, you must supply an additional Ethernet cable of the appropriate length.

Single JCU, Switch/Router without PoE



Multiple JCU Installation

With the Voyager III system, more than one joystick control unit (JCU) can be used to control a camera. Depending on whether your network switch provides PoE, this configuration is set up in the same way as option 2 or 3 for the single JCU. The injectors in the diagram below are only needed when the router/switch does not supply power.



Each JCU comes with a static IP address assigned. If you plan to use more than one JCU on your network, you may need to change the IP addresses of the additional JCUs to avoid IP conflict errors that would result if two devices had the

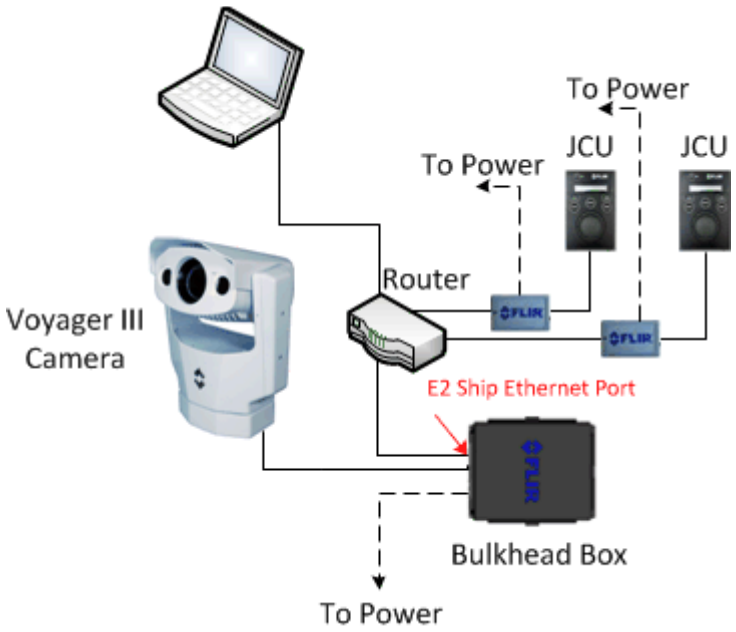
same IP. Details about how to do this are included in the “Webcam Interface” chapter of the *Voyager III Operator’s Manual*.

Digital Video Installation

A computer can be interconnected over a shared Ethernet network to control the Voyager III camera and view digital video. It is connected in the same way as a JCU directly to a switch or router; but in the case of the computer, no PoE injector is needed since it has its own power source. The extent of the local area network (LAN) being used will determine the hardware and cabling requirements for installing the Voyager III system into the network.

In addition to adding the PC to the physical network, a number of configuration steps are required to establish communication between the PC and the Camera. These are described in the “Webcam Interface” chapter of the *Voyager III Operator’s Manual*.

The following diagram shows the addition of a computer to the network.



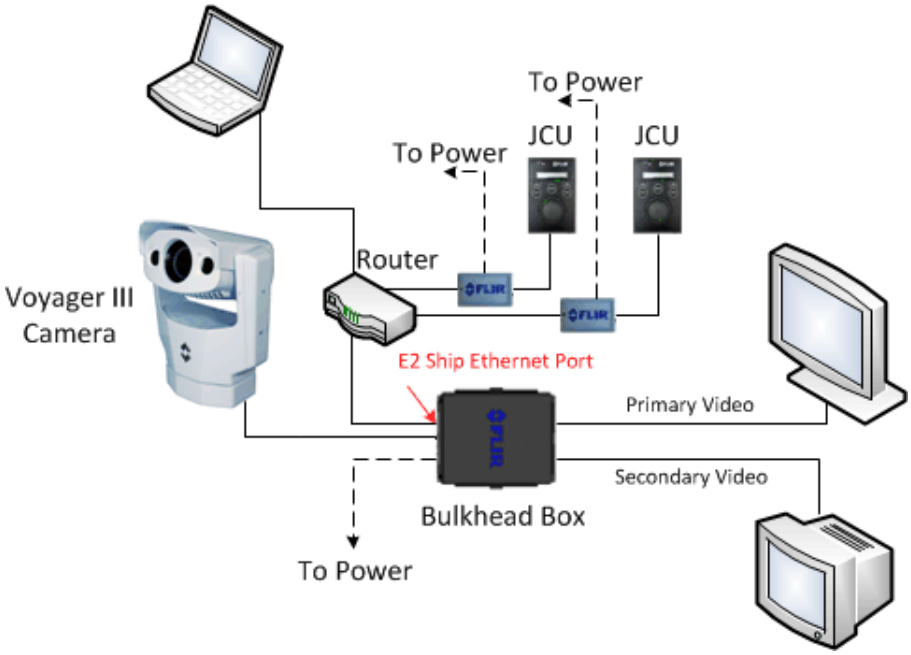
Multiple Analog Displays

Caution: If multiple analog video displays are installed, to minimize ground loops FLIR recommends using a video distribution panel for each video channel (primary and secondary) specific to the installation environment and then attaching the multiple displays to the distribution panels.

The Voyager III bulkhead box video amplifiers provide four analog video signals for each of the two video channels. The primary and secondary video channels can be configured to show either visible or infrared video.

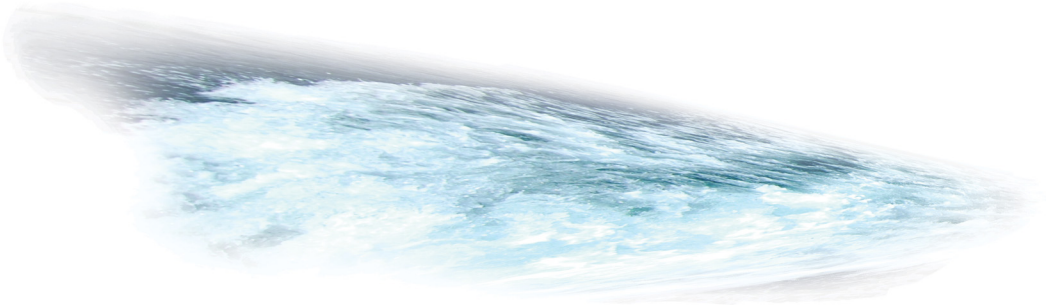
The cable gland seal supplied with the bulkhead box supports a maximum of six video cables routed out of the box. If multiple video outputs are required, an external video amplifier or distribution panel may be installed as required.

The following illustration shows an example with two Ethernet JCU connections, a computer with digital video on the same LAN, and two analog video displays.



CHAPTER 2

Voyager III Reference



Introduction

This chapter includes the following reference information:

- A table of camera specifications
- A list of standards referenced during the installation procedure
- A glossary of acronyms
- A template for use during camera installation

Specifications

This section includes tables that list the component parts in your system, optional accessories, and details about physical characteristics, power usage, and environmental features of your Voyager III camera.

Parts and Accessories

The Voyager III system includes the thermal imaging components listed in Table 2.1. If the components you have are different from those listed here, please contact FLIR immediately using the contact information printed on the back of this guide.

TABLE 2.1 Voyager III Components

Component	Description	Part Number
Camera Body	7.3” x 4.0” x 8.0”	432-0005-01-00 432-0005-01-00S 432-0005-02-00 432-0005-02-00S
Bulkhead Box	6lb	500-0483-00
Joystick Control Unit (JCU)		500-0385-00
Camera Cable	50’ 100’ 150’ 200’ 225’	308-0201-50 308-0201-100 308-0201-150 308-0201-200 308-0201-225
JCU Cable	25’	308-0163-25
Operator’s Manual	Provided on CD and printed	432-0005-00-10
Quick Start Guide	Provided on CD and printed	432-0005-00-11
Installation Guide	Provided on CD and printed	432-0005-00-12

Table 2.2 lists the optional accessories you can purchase for your Voyager III system.

TABLE 2.2 Voyager III Accessories

Accessories	Description	Part Number
Deluxe Dual Station Accessory Kit	Includes the following parts: • Joystick Control Unit – Maritime • Cover, JCU, Marine • Ethernet cable, shielded, RJ45, 50’ • Video Amplifier, 12 VDC • 2 ea Injector – DC/DC PoE • 25’ video cable • 50’ video cable	500-0393-00 500-0385-00 4113315 308-0163-50 4108996 4113746 308-0164-25 308-0164-50
Standard Dual Station Accessory Kit	Includes the following parts: • Joystick Control Unit – Maritime • Cover, JCU, Marine • Ethernet cable, shielded, RJ45, 50’ • 2 ea Injector – DC/DC PoE	500-0394-00 500-0385-00 4113315 308-0163-50 4113746
Joystick Control Unit	Includes the following parts: • Joystick Control Unit – Maritime • Cover, JCU, Marine	500-0395-00 500-0385-00 4113315

TABLE 2.2 Voyager III Accessories

Accessories	Description	Part Number
Ethernet Cable	Double Shielded, RJ45, LSZH, 25’ Double Shielded, RJ45, LSZH, 50’ Double Shielded, RJ45, LSZH, 75’ Double Shielded, RJ45, LSZH, 100’	308-0163-25 308-0163-50 308-0163-75 308-0163-100
Video Cable	BNC Terminated, 25’ BNC Terminated, 50’ BNC Terminated, 75’ BNC Terminated, 100’	308-0164-25 308-0164-50 308-0164-75 308-0164-100
Power Accessory	Injector – DC/DC PoE	4113746

System Overview

Table 2.3 lists general characteristics of your Voyager III system.

TABLE 2.3 Voyager III Overview

Attribute	Value
General	
Size	15” x 23”
Weight	45 lb.
Azimuth Field-of-Regard	360° Continuous
Elevation Field-of-Regard	+/-90°
Slew Rate	Variable to 120°/sec.
Thermal Imaging Performance	
Sensor Type	2 Microbolometer Cameras
Wide FOV Imager	20° x 15° (35mm)
Narrow FOV Imager	5° x 3.75° (140mm)
Spectral Range	7.5 to 13.5 m
Daylight Imaging Performance	
Sensor Type	1/4” Super HAD
Wide FOV Limit	42° horiz. @ F1.6
Narrow FOV Limit	1.6° horiz. @ F3.8
System Specifications	
Pan/Tilt Coverage	360° Az./ +/-90° El.
Video output	NTSC or PAL
Power Requirements	24VDC

TABLE 2.3 Voyager III Overview

Attribute	Value
Environmental	
Operating Temp. Range	-28°C to 55°C
Non-Operating Temp. Range	-50°C to 85°C
Vibration	Per MIL-STD-810

External Standards

Table 2.4 lists other sources of information and standards definitions that may be useful during the installation of your Voyager III camera.

TABLE 2.4 External References

Standard	Description
ANSI/SCTE 01 2006 “F” Port, Female, Outdoor	http://www.scte.org
IEC 60169-24	Radio-frequency coaxial connectors with screw coupling, typically for use in 75 Ohm cable distribution systems (Type F).
IEC 60945	Maritime navigation and radio communication equipment and systems general requirements
IEC 60529	Degrees of Protection Provided by Enclosures (IPX6)
IEC 60068	Basic Environmental Testing Procedures, Part 2: Tests
89/336/EEC	Electromagnetic Compatibility (EMC) directive
Directive 2002/95/EC	Restriction of the use of certain hazardous substances in electrical and electronic equipment (European Union)
Directive 2002/96/EC	Waste Electrical and Electronic Equipment Reg. 2006
TIA/EIA T568B	CAT5/RJ-45 wiring standard
IEEE 802.3 / IEEE 802.3u	10Base-T/100Base-TX Ethernet
IEEE 802.3af	Power over Ethernet (PoE) standard (48V/400mA/ 15.4W)
ANSI/SMPTE 170M - 1994	Composite Analog Video Signal (Supersedes RS-170A)
Directive 96/98/EC	Marine Electronics Directive (MED)

Acronyms

The following table lists each acronym that is used in this manual and its meaning.

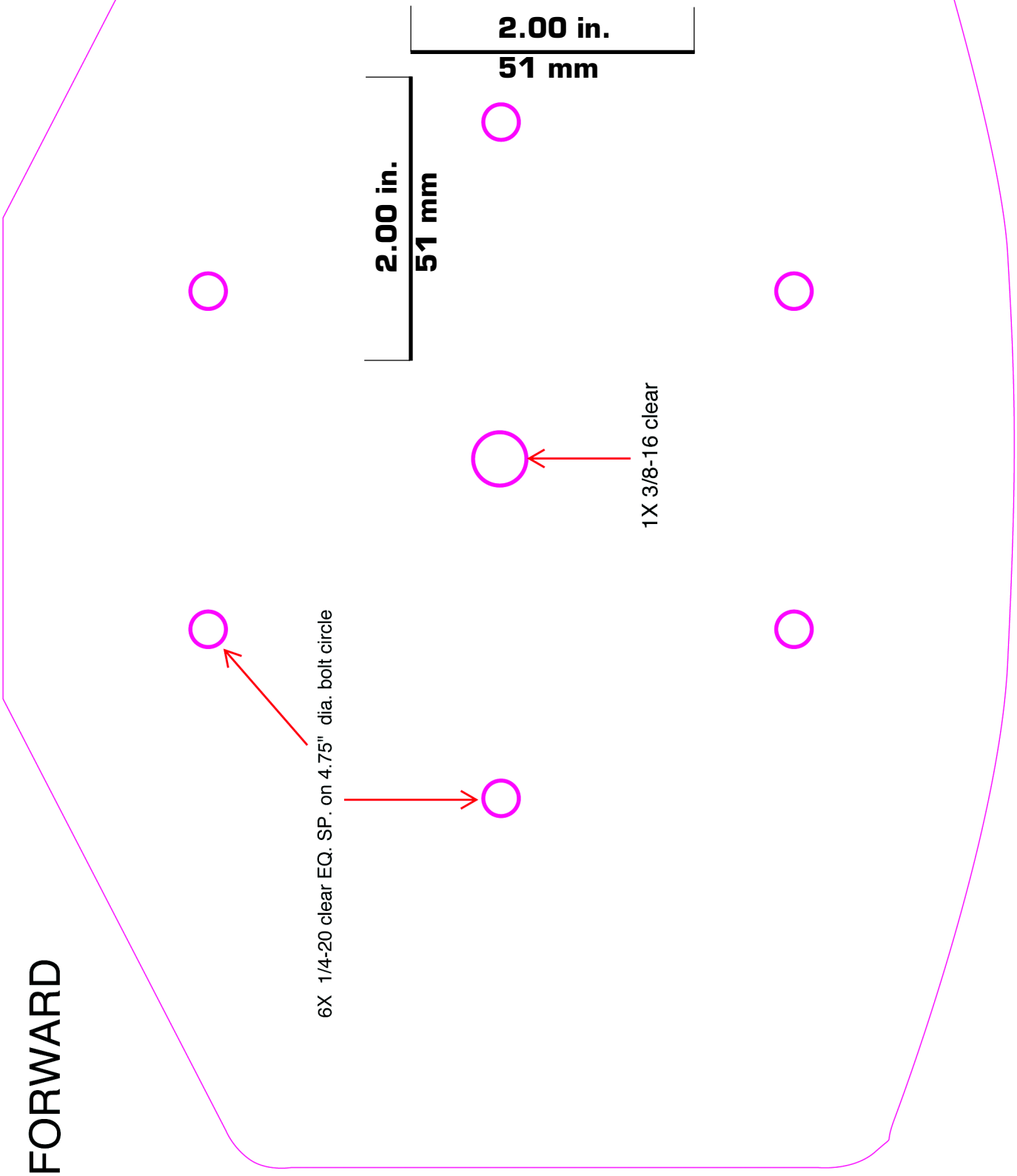
Acronym/Term	Definition
AGC	Automatic Gain Control
ANSI	American National Standards Institute
API	Application Programming Interface
EAR	Export Administration Regulations
EMI	Electromagnetic Interference
FFC	Flat Field Correction
FLIR	Forward Looking Infrared
ICD	Interface Control Document
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
IR	Infrared
JCU	Joystick Control Unit
LCD	Liquid Crystal Display
LWIR	Long-wave infrared
MFD	Multi-function display
NMEA	National Marine Electronics Association
P/T	Pan/Tilt
PoE	Power Over Ethernet
SCTE	Society of Cable Telecommunications Engineers
SDK	Software Developer's Kit
UPnP	Universal Plug and Play
VDC	Volts, Direct Current
VIS	Visible

Installation Template

The next page is a template for use during installation of the camera. If you print this template, verify that the scale is correct before using.

Important Note:

PDF page size: 8.5 x11in.
Template should print 1:1
Due to variation in software and printers,
please verify scales below before modifying mounting surface.
FITS Voyager III PN 432-0005-XX



NOTES

FLIR Systems, Inc.

CS World Headquarters
FLIR Systems, Inc.
70 Castilian Dr.
Goleta, CA 93117
USA
PH:+ 1 805 964 9797
PH:+ 1 877 773 3547 (Sales)
PH:+ 1 888 747 3547 (Apps)
FX: + 1 805 685 2711
sales@flir.com

EUROPE
CS Eurasian Headquarters
FLIR Systems CVS BV
Charles Petitweg 21
4847 NW Teteringen - Breda
Netherlands
PH: + 31 (0) 765 79 41 94
FX: + 31 (0) 765 79 41 99
flir@flir.com

FLIR Systems, Inc.
Corporate Headquarters
FLIR Systems, Inc.
27700A SW Parkway Ave.
Wilsonville, OR 97070
USA
PH: + 1 503 498 3547
PH: + 1 877 773 3547
FX: + 1 503 498 3153
sales@flir.com