

# VOYAGER II

INSTALLATION GUIDE



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

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110	Jan 2009	Voyager II: includes NMEA interface, updated drawings, added TOC and page numbers, other minor changes
120	Jul 2010	Updated NMEA section and various minor enhancements

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# VOYAGER II INSTALLATION

## Introduction

Thank you for buying your new Voyager II! This manual describes the physical mounting and electrical connection of the Voyager II camera. If you need help during the installation process, call 888.747.3547 to speak with one of FLIR's applications experts. The Voyager II should be installed by a qualified marine electronics technician, as incorrect installation could void the warranty.

The Voyager II comes with these standard components:

- Camera Body
- Bulkhead Box
- NMEA Interface Board (in a separate bag inside the Bulkhead Box)
- 50' or 100' main sensor cable (depending on what you ordered) - connects the Camera Body to the Bulkhead Box
- Joystick Control Unit (JCU) with 100' cable that connects to the Bulkhead Box
- System Power cable (10')
- Voyager Documentation Package

You may need to supply:

- 16-gauge electrical wire; up to 100' (3-conductor, for system power)
- One 3/8x16 and six 1/4-20 stainless steel bolts for attaching the Voyager II Camera Body

Note that bolt length may be dependant on mounting platform thickness

- Four (4) bolts or screws for attaching the Bulkhead Box as required
- Miscellaneous electrical hardware, connectors and tools

If using the NMEA interface features, refer to the NMEA Interface chapter.

## Installation Preparation

- Find a good place to mount the Voyager II's components:
  - o Mount the Voyager II 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 view.
  - o Mount the Voyager II as close to the vessel's centerline as possible so you will have a symmetrical view of on-coming traffic.
  - o Voyager II should be mounted on a flat surface with the base on the bottom and the camera on top. Do not hang the Voyager II upside down; the picture will display upside down, and you may damage the Voyager II.

## Prior to Cutting/Drilling Holes

- Once the mounting location has been selected, verify both sides of the mounting surface are accessible.
- Determine if any interior trim panels must be removed in order to gain access to the mounting hardware, and remove them ahead of time.
- When selecting a mounting location for the Voyager II, consider cable lengths and routing. Ensure the cables are long enough, given the proposed mounting locations and cable routing requirements, and route the cables before you install the components.

## PHYSICAL INSTALLATION

### Voyager II Camera Body

Using the template supplied with this Installation Manual as a guide, mark the location of the holes for mounting the Voyager II. Make sure the template is aligned so that the Voyager II will point straight ahead, and that the cable will exit towards the stern of the vessel.

Using stainless steel hardware, mount the Voyager II's camera body with 6 1/4x20 bolts and washers and a 3/8x16 bolt in the center for added support. All the bolts are required due to the weight of the Voyager II camera.

### Voyager II Bulkhead Box

NOTE:

FLIR recommends that you terminate all cable ends inside the Bulkhead Box BEFORE you mount it. Refer to the section on detailed cable preparation and termination for these instructions.

Mount the Bulkhead Box in an area that:

- Is sheltered from the weather
- Has good airflow
- Is not exposed to direct sunlight
- Is within easy reach of all required cables
- Provides room for adequate service loops as depicted in the installation drawings supplied

### Voyager II Joystick Control Unit (JCU)

Mount the JCU in a convenient area that is close to the monitor that will display the Voyager II video output. Make sure the area you choose will leave enough room for the connector and cable under the JCU (refer to the drawing package supplied for dimensions).

Using the template supplied with the Installation Manual as a guide, mark the locations of the holes to be cut and drilled for the JCU.

Cut the hole that will allow the JCU to be recessed in the vessel's control console per the installation drawings supplied, and drill the holes for the four mounting studs.

Route the JCU cable through the JCU mounting hole. Connect the terminated end of the cable to the JCU, insert the JCU into its mounting location and secure with the supplied mounting studs.



The following sections (Electrical Interconnect and NMEA Interface) describe the connections to the Voyager. Refer to the NMEA 0183 Standard for details on interconnecting the Voyager II with other marine electronic devices.

## ELECTRICAL INTERCONNECT

### Main Sensor Cable

After routing the main sensor cable between the Camera Body and the Bulkhead Box, install the Camera Body and connect the terminated end of the main sensor cable to the connector on the back of the Camera Body's base.

This section describes the procedures required to prepare the main sensor cable, JCU cable and main power cable for termination inside the Bulkhead Box. The following tools and documents are recommended to complete the job:

- The installation drawings and templates (FLIR p/n 432-0002-00-19) at the end of this manual
- Ruler or measuring tape
- Exacto knife
- Scissors
- Wire cutter
- Wire stripper for 20 gauge wires
- Crimping tool for BNC connector (RG 179)
- Channel locks
- 2mm flathead screw driver

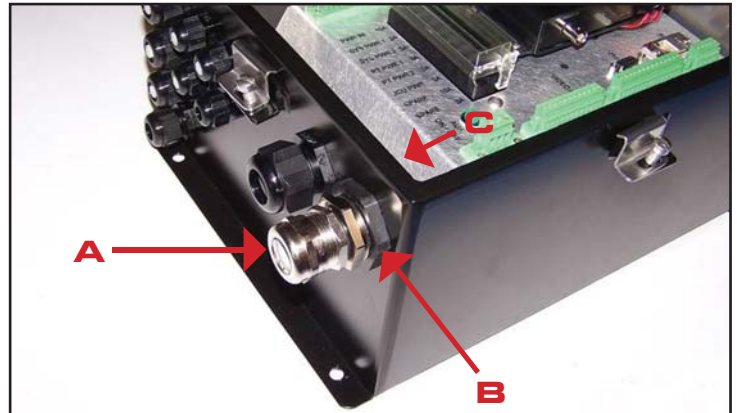
#### Caution:

**A non-isolated connection to external electronics may result in damage to the Voyager Camera System. Use electro-optical isolators when needed in accordance with sound marine electronics practices**

### Installation Steps

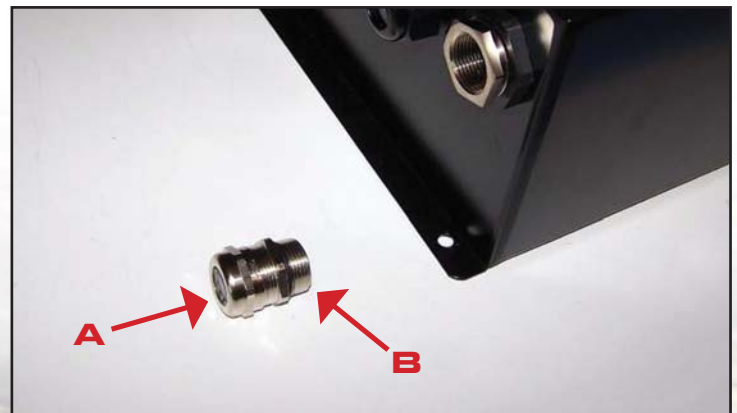
#### Step 1:

Remove the main sensor cable feed through grommet (A) by unscrewing it from the lock nuts (B) and (C) on the Bulkhead Box.



#### Step 2:

Unscrew the grommet cap (A) from the cable gland (B) to expose the grommet seal.



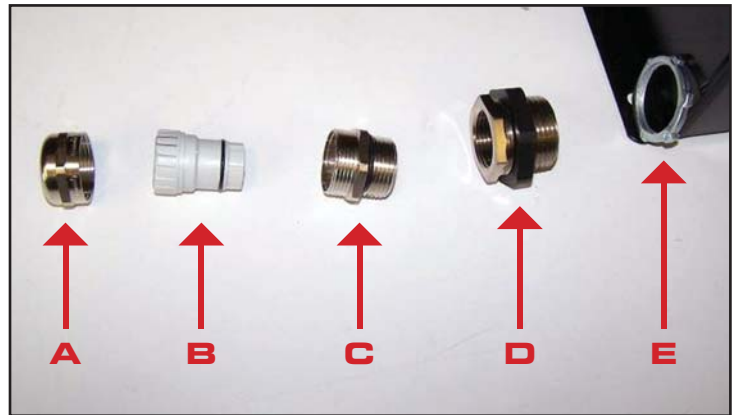
### Step 3:

Remove the grommet seal from the cable gland by inserting a finger and pulling it out.



### Step 4:

Now that the grommet cap (A), seal (B), and cable gland (C) have been disassembled, remove the other sections of the grommet from the front of the Breakout Box, including the 1" reducer (D), and the inner lock nut (E).



### Step 5:

Now prepare the main cable ends for attachment to the inside of the Bulkhead Box. Refer to the drawings at the end of this manual for more information. As shipped, the standard cables have flying leads that are stripped to the appropriate length, labeled and require no additional preparation. Some of the instructions that follow apply only if the cable is shortened to a custom length.



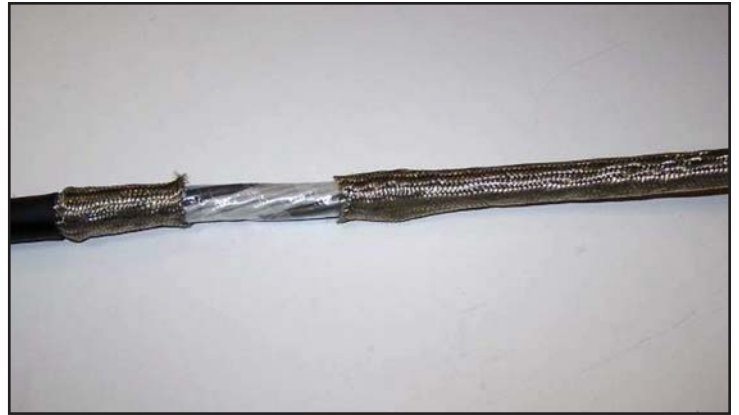
### Step 6:

Slide the black outer jacket off the cable, exposing the inner metal braid. Measure 13.5" 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:

Push the braid back over the black outer jacket an inch or two, creating an area of slack in the braid. Carefully insert scissor tips into the braid, and cut all the way around it as shown. Slide the excess braid off the cable and discard it



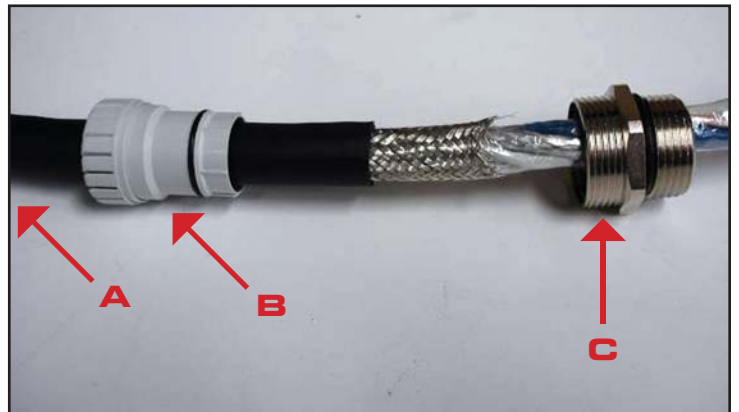
### Step 8:

Working with the shorter length of braid, trim it so that only 1" extends beyond the black outer jacket as shown.



### Step 9:

Slide the grommet cap (A – not shown), seal (B), and cable gland (C) over the cable



### Step 10:

Slide the grommet seal up the cable so that the front edge just lines up with the end of the black outer cable jacket as shown





**Step 11:**

Carefully fold the metal braid back over the grommet seal as shown



**Step 12:**

Trim the metal braid as shown, so that the black o-ring seal is clear of the metal braid.



**Step 13:**

Slide the cable gland over the grommet seal as shown, capturing the metal braid between the two



**Step 14:**

Screw the grommet cap onto the cable gland as shown.

You are now ready to prepare the cable ends for connection to the Bulkhead Box's internal termination blocks



### Step 15:

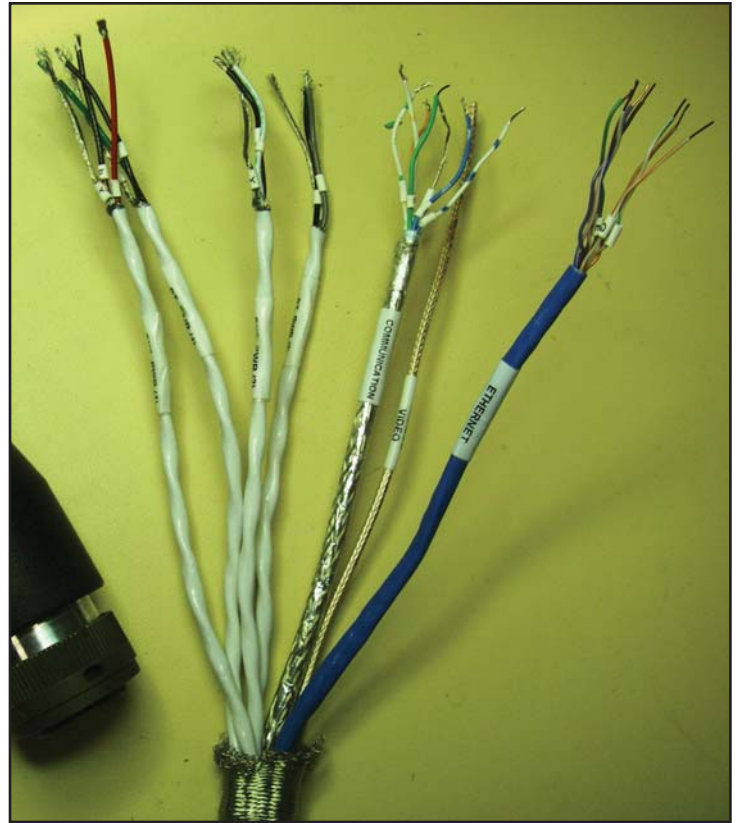
Trim the clear Mylar sheath back so the individual wire bundles can be spread apart as shown. This will make them easier to identify and work with.

Cut the blue Ethernet cable to 12.5" long, measured from the end of the cable gland.

Cut the wire bundle inside a clear jacket and steel braid to measure 11.5" long.

Cut the bundle of 4 twisted pairs inside a white outer jacket to measure 11.5" long.

The video cable should be cut to 9.5"



### Step 16:

Prepare the video cable by securing the crimpable 75-ohm BNC connector (provided) onto the RG-179 cable. If you are unsure how to terminate this type of connector, contact FLIR for additional information.



### Step 17:

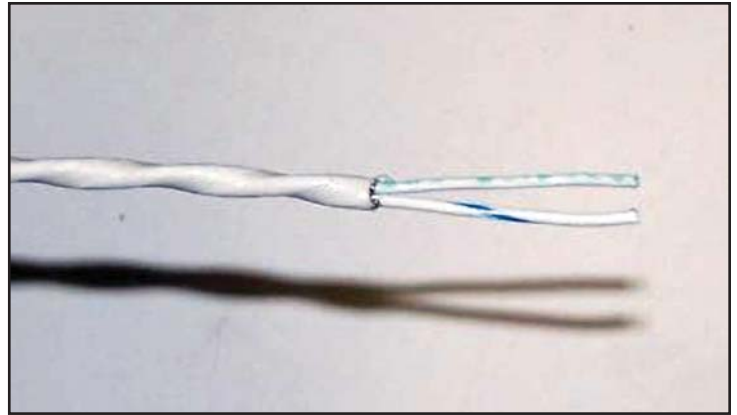
The rest of the wires will need to be prepared in a fashion similar to the following progression.

Carefully cut around the outer insulation as shown.



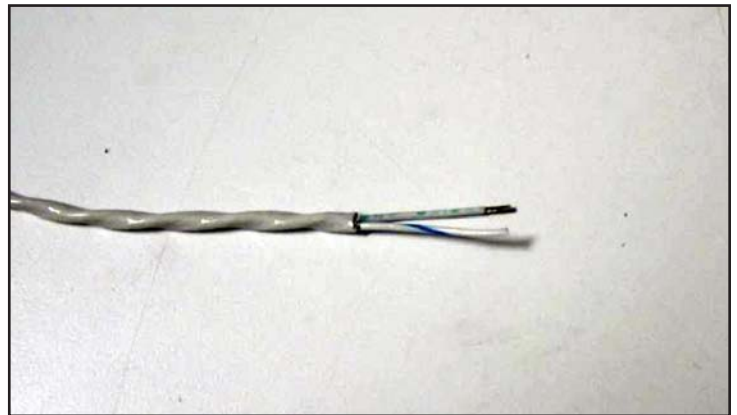
**Step 18:**

Slide the outer insulation off, and separate the two inner wires as shown



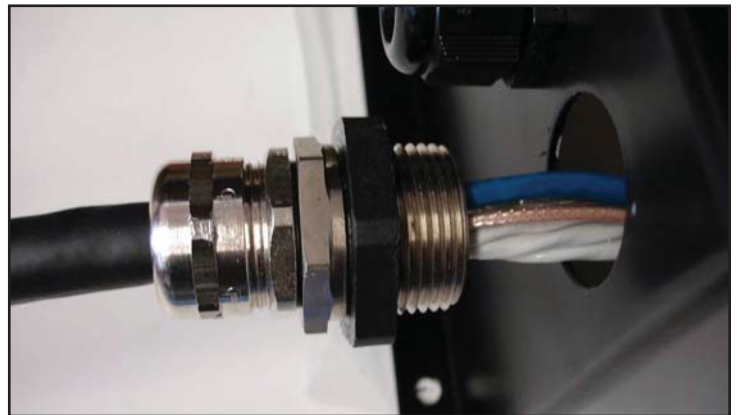
**Step 19:**

Strip ¼" from the end of each wire as shown. When this is done, they are ready for termination in the Bulkhead Box.



**Step 20:**

Slide all of the prepared wires and the video cable through the 1" reducer. Then carefully pass all of the prepared wires and the video cable through the hole in the front of the Bulkhead Box.



**Step 21:**

Slide all of the prepared wires and the video cable through the lock nut, and secure it to the 1" reducer as shown



## Step 22:

Connect the wires from the main sensor cable to terminal blocks **J6**, **J7**, **J8**, and Video In using the drawings provided at the end of this manual for guidance.

You can also refer to the graphic inside the cover door of the Bulkhead Box for a color-coded guide, or the Connections Quick Reference table on page 18.

## Step 23:

Power input - connect the wires from the system power cable to **J5**. The cable ends are prepared using the same procedures used in the previous steps.

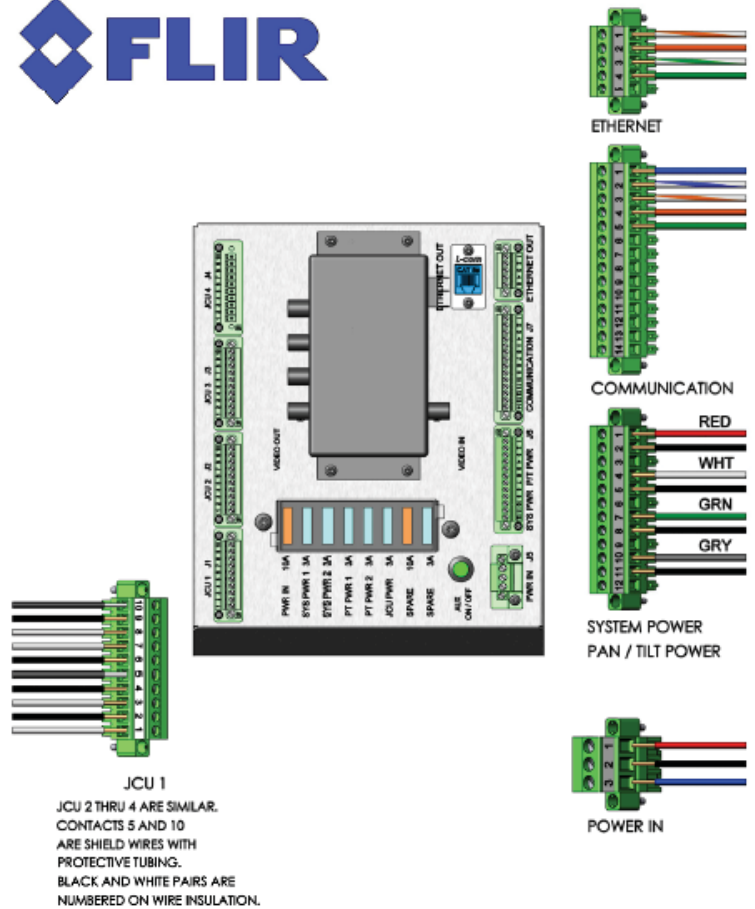
## Step 24:

Connect the wires from the Joystick Control Unit (JCU) to the **J1** terminal block. The cable ends are prepared using the same procedures used for the main sensor cable.

## Step 25:

Install additional (optional) JCUs and other connections as required to **J2 - J4**, as shown on the next page.

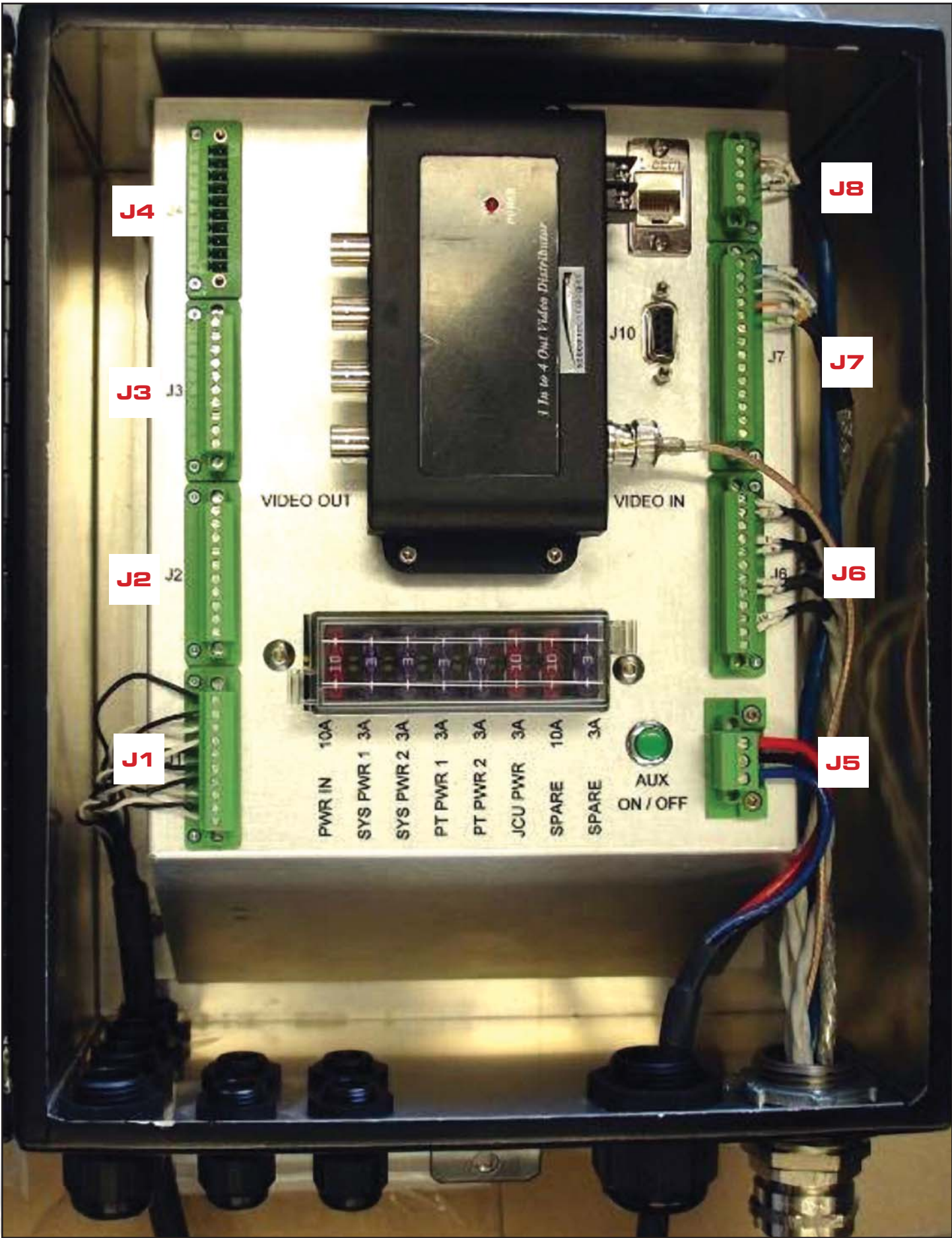
When all wires have been connected, mount the Bulkhead Box in the selected location.



Connections in the Bulkhead Box are shown on the label inside the cover door.



The wires for System Power and Pan/Tilt Power are individually labeled and color-coded. Two pairs are used for each connection to provide adequate load-carrying capability.



J4

J3

J2

J1

J8

J7

J6

J5

PWR IN 10A  
SYS PWR 1 3A  
SYS PWR 2 3A  
PT PWR 1 3A  
PT PWR 2 3A  
JCU PWR 3A  
SPARE 10A  
SPARE 3A  
AUX ON / OFF

VIDEO OUT

VIDEO IN

## NMEA INTERFACE

The Voyager II has the capability to “listen” to (or take commands from) radar, GPS or other devices using the National Marine Electronics Association (NMEA) 0183 Protocol. 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/>

According to the NMEA protocol, the Voyager II 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 II camera, and it responds by automatically pointing toward vessels and other objects that show up on the display and tracking their movement.

The Voyager II connects to the other equipment via a serial cable (not provided with the Voyager II). The serial cable connects to the Voyager II through an unused Joystick Control Unit (JCU) slot on the Voyager Bulkhead Box.

You may need to supply:

- 2- or 3-wire serial cable from the NMEA device to the Voyager II Bulkhead Box
- RS-422/RS-485 electro-optical isolator
- NMEA multiplexer (if the input to the Voyager does not come from a multi-function display that acts as a multiplexer)

This document describes the steps necessary to install and verify the Voyager II NMEA 0183 interface. Operation of the Voyager II NMEA interface is described in the Voyager II Operator’s Manual.

### References

- Voyager Operator’s Manual, FLIR Document Number: 432-0002-00-10
- National Marine Electronics Association, NMEA 0183 Version 2.0

**Note**, the Voyager II does not support the NMEA 0183-HS (High Speed) protocol

## NMEA INTERFACE INSTALLATION

For connecting the NMEA device to the Voyager II, two options are available, depending on the communication standard of the other device. If the output of the other device uses the RS-422 standard, the Voyager II communicates with the other device directly (for protection, use an electro-optical isolator). The other device connects to one of the open JCU connectors (similar to an additional JCU). If the other device uses the RS-232 standard, then it should be connected to the NMEA Interface Card, which is inserted into one of the open JCU connectors. One NMEA Interface Card is included with the Voyager II.

### NMEA Interface Card

When using the NMEA Interface Card, the card is plugged into one of the four JCU connector slots in the Bulkhead Box. The interface card has a 2-wire “pigtail” to connect to the other NMEA device. Alternatively, the device can be connected to the next available JCU slot if one is available.

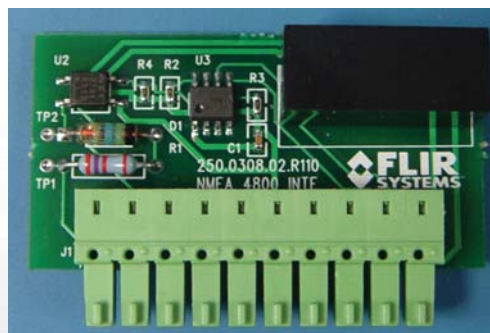


Figure 1: NMEA Interface Card

## NMEA Interface Wiring

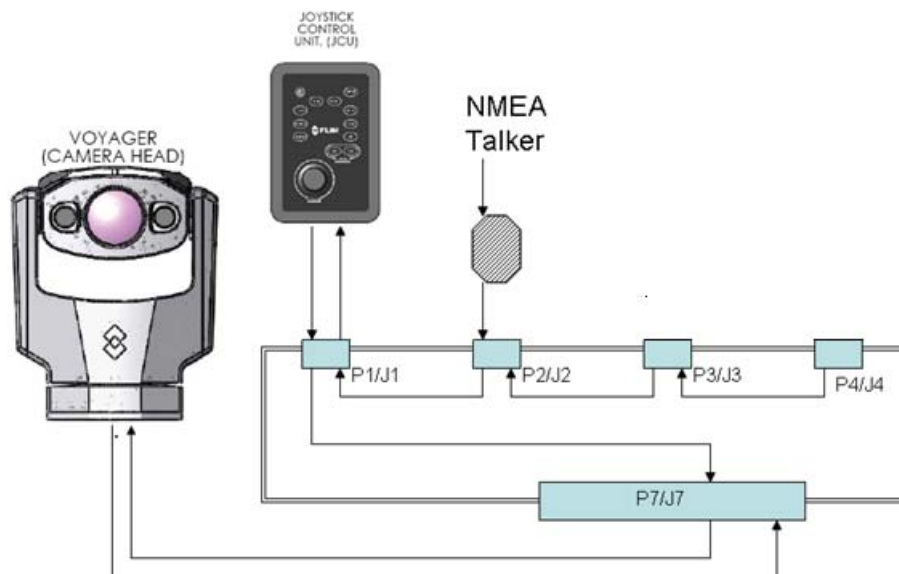
The connection from the other NMEA device must be routed through one of the JCU cable glands located on the bottom wall of the Bulkhead Box.



Figure 3: Cable Glands on the Bulkhead Box

## Serial Communications

The JCU connections on the Voyager II Bulkhead Box are daisy-chained together, as shown in the figure below. Each JCU slot is interconnected to the appropriate terminals in the previous slot within the Bulkhead Box. Any signals/data that come through JCU slot 4 are then passed sequentially through slot 3, slot 2 and then slot 1 before being sent to the camera via the Communication port J7.



**Note**, If connecting to the JCU slot without the NMEA Interface Board, an optical isolator should be used on the serial lines to protect the Voyager II from voltage spikes and surges.

## Connector Slot

The NMEA talker device, whether it uses RS-232 or RS-422, should be connected to the first unused JCU slot. The NMEA interface card comes installed in slot J4 by default. If used, the card must be moved to the JCU slot after the last active JCU. For a system with one JCU, the connection should be made to the J2 slot, as shown in the previous example. For systems with 2 JCUs, the connection must use the J3 slot. For a system with 3 JCUs, the connection must use slot J4.



Figure 2: Bulkhead box JCU connection with NMEA card installed in Slot 3

## RS-232 CONNECTIONS (WITH NMEA INTERFACE CARD)

There are two methods for connecting the NMEA cable to the NMEA interface card. The cable can be spliced to the pigtail wires from the card, or the cable can be connected to the next spare JCU slot (in the case when only one or two JCUs are used). When 3 JCUs are in use and the NMEA card occupies the 4th slot the installer must use the pigtail connection.

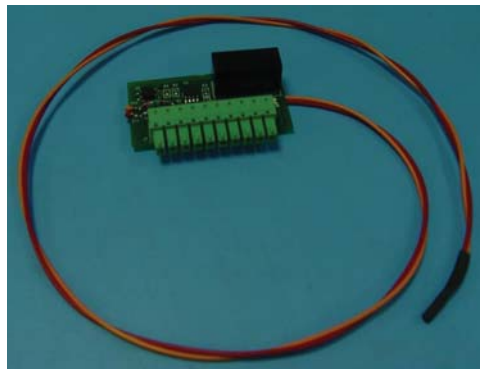


Figure 5: NMEA Interface Card with Pigtail cable

## Spare JCU Slot (1 or 2 JCUs in use)

For a configuration that uses one or two JCUs and with the NMEA card plugged into the second or third slot, it may be more convenient to connect to the screw terminals of the empty adjacent slot (J3 or J4, respectively), as shown in Figure 4, rather than splicing to the pigtail wires.

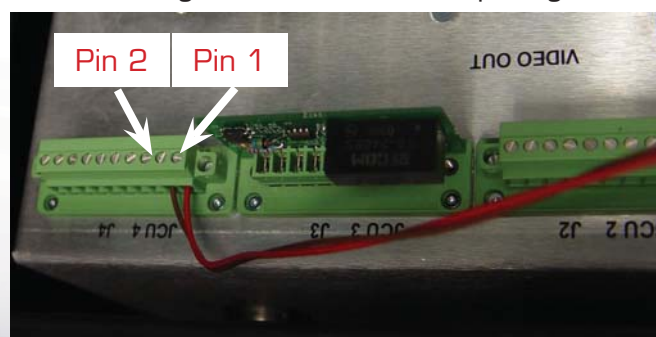


Figure 4: NMEA Interface card on Slot J3; NMEA connection in Slot J4



When connecting to the adjacent slot, attach NMEA "A" and "B" signal wires to connector terminals 1 and 2 respectively. These terminals are interconnected to the appropriate terminals in the previous slot within the Bulkhead Box. No additional jumpers are necessary. Refer to the drawings at the end of the manual for more information on specific pin designations on the terminal blocks.

### **Pigtail Connection**

For a Voyager II configuration with 3 JCU's and a NMEA interface, all four JCU slots are occupied. The NMEA card will reside in the JCU slot J4. Route the NMEA interface cable up to the JCU slot J4 and, using a cable tie, anchor the NMEA cable to the 3rd JCU cable. Cutoff the shrink wrap insulator on the end of the wires and, using in-line crimp splices, attach the NMEA talker signals A and B to the pigtail red and yellow wires respectively.

### **RS-422 CONNECTIONS (NO NMEA INTERFACE CARD)**

When using a direct RS-422 connection, the cable from the NMEA talker device should be connected to an RS-422 isolator (for example, B&B Electronics 4850P or equivalent). Then the isolator can be connected to the next spare JCU slot. The connection will use 3 wires: TxA(-), TxB(+) and common (signal ground). Attach NMEA "A" and "B" signal wires to connector terminals 1 and 2 respectively, and attach the ground to pin 5.

### **ELECTRICAL CHECKOUT**

Disable the NMEA talker and verify the static RS-422 signal levels by measuring the voltage difference between the differential RS-422 outputs. The voltage should be measured on the adjacent "upstream" JCU; namely, if the module is plugged into JCU J3 slot, then the measurement should be on the connector residing in the JCU J2 slot.

Using a voltmeter, measure the voltage difference from pin 8 (hot probe of the voltmeter) and pin 9 (return probe). The voltage reading should be greater than +2.0V.

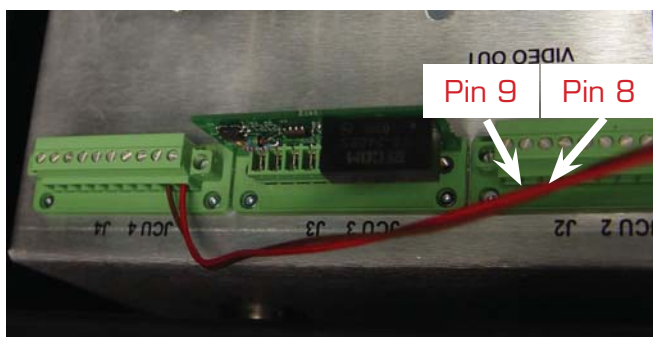


Figure 6: Voltage Test Points

### **Testing the NMEA Interface**

Refer to the user manual for the other NMEA device (the talker) for information on how to install the connection and how to enable and control the NMEA messages it will generate.

Enable the NMEA talker and set the Baud Rate to 4800. On the Voyager II, use the SETUP -> NMEA menu and Enable Radar Tracking to allow the Voyager system to respond to the TTM message (refer to the Voyager II Operator's Manual for information on how to access the SETUP menu.) Next, get the NMEA talker to generate a TTM message. For example, select an active radar target, and verify that the Voyager responds to the TTM message.

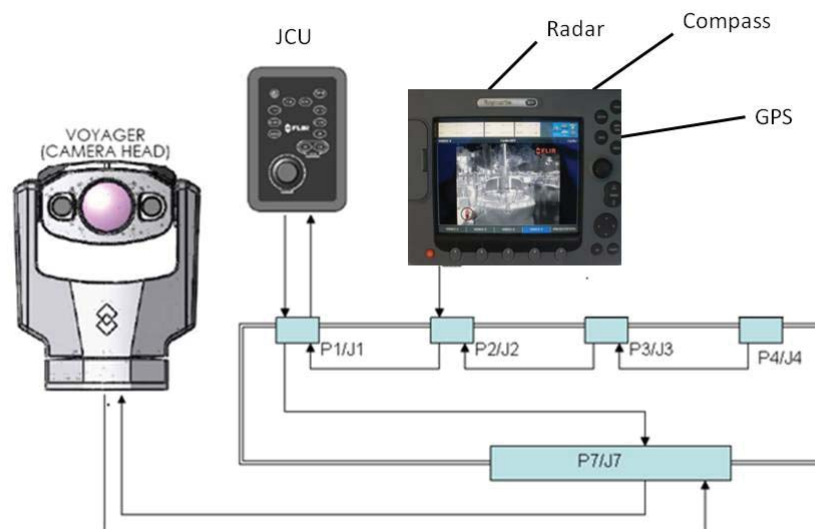
## NMEA Messages

The Voyager II recognizes (or responds to) a subset of NMEA 0183 messages (also called sentences). The standard NMEA 0183 messages required for Voyager II 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

## MFD as NMEA Talker

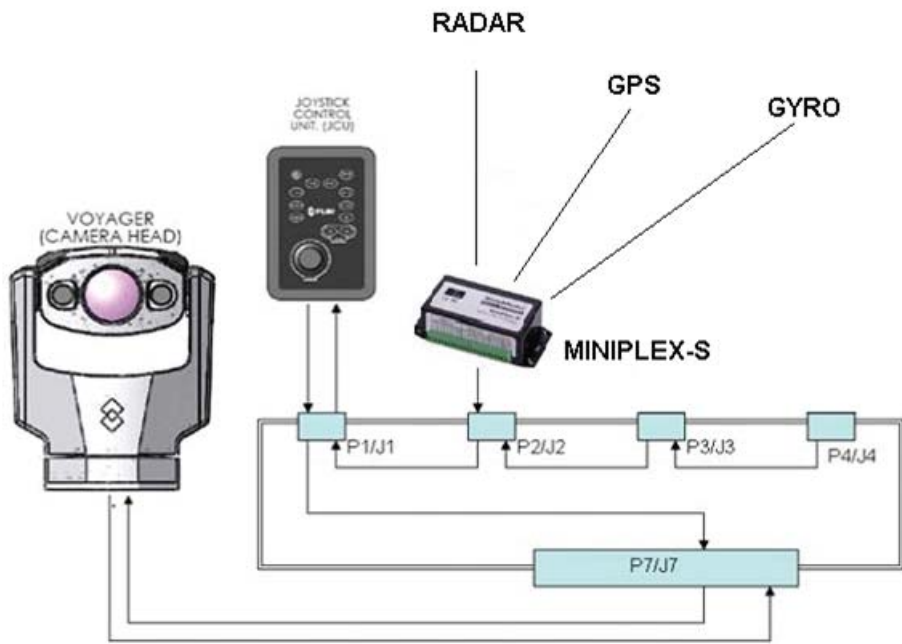
When a Multi Function Display (MFD) is used as the NMEA talker, it functions as a multiplexer, and incoming messages from the radar and other NMEA talker devices are passed through the MFD to the Voyager II. Most MFDs provide the ability to select the required messages and output them via an available NMEA 0183 port. Refer to the user documentation provided with the MFD for configuration information.



## NMEA Multiplexer as NMEA Talker

In some installations an NMEA 0183 Multiplexer is used to interconnect the other devices and to provide the Voyager II with the required sentences. A Multiplexer retrieves NMEA data from more than one source (for example, North Seeking Gyro, GPS, and Radar); it will then distribute the data to any connected devices.

FLIR Systems recommends the MiniPlex-S multiplexer manufactured by ShipModul Marine Electronics. This device works as an NMEA Multiplexer but also allows the user to select or ignore any incoming NMEA 0183 sentence. This greatly reduces the risk of overflow and the resulting loss of data. <http://www.shipmodul.com>



**Caution:**

A non-isolated connection to external electronics may result in damage to the Voyager Camera System. Use electro-optical isolators when needed in accordance with sound marine electronics practices



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## CONNECTIONS QUICK REFERENCE

LEFT SIDE BREAKOUT BOX CONNECTIONS			
Connector	Terminal Opening	Wire Color & Marking	Wire Bundle
JCU 1 – 4 (P1 – P4)	1	White #1	JCU Cable(s)
	2	Black #1	
	3	White #3	
	4	Black #3	
	5	Shield from twisted pair #1	
	6	Black #4	
	7	White #4	
	8	White #2	
	9	Black #2	
	10	Overall Shield	

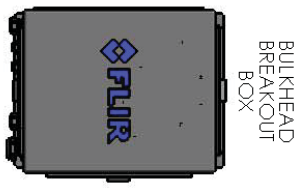
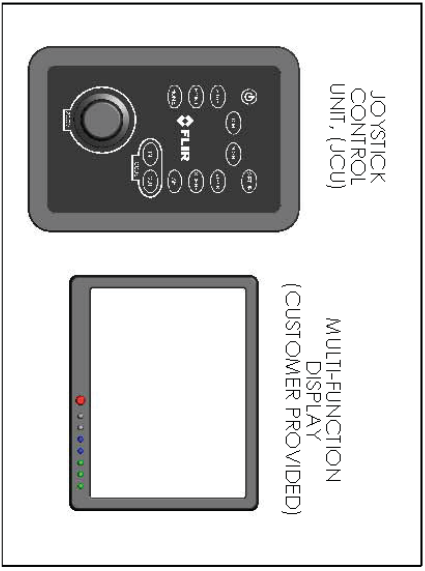
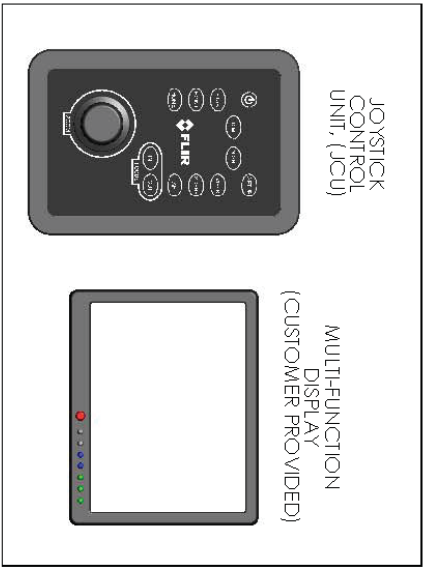
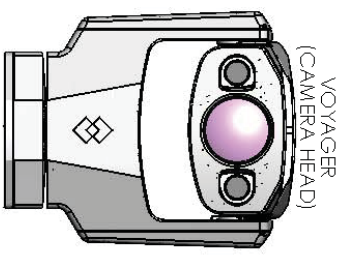
RIGHT SIDE BREAKOUT BOX CONNECTIONS			
Connector	Terminal Opening	Wire Color & Marking	Wire Bundle
Power Input (P5)	1	Red (+24 VDC)	Power Input Cable
	2	Black (-24 VDC)	
	3	Blue (ground)	
Pan/Tilt & System Power (P6)	1	White “j”	Main Sensor Cable – White Outer Jacket
	2	White/Blue “b”	
	3	N/C	
	4	White “f”	
	5	White/Blue “h”	
	6	N/C	
	7	White “g”	
	8	White/Blue “Z”	
	9	N/C	
	10	White “w”	
	11	White/Blue “a”	
	12	N/C	
Communication (P7)	1	Blue “M”	Main Sensor Cable – Clear Outer Jacket; Stainless Steel Braid
	2	White/Blue “P”	
	3	White/Orange “N”	
	4	Orange “R”	
	5	Green “c”	
	6-14	N/C	
Ethernet (P8)	1	White/Orange “G”	Main Sensor Cable – Blue Outer Jacket
	2	Orange “F”	
	3	Green/White “D”	
	4	Green “E”	
	5	N/C	

## DRAWINGS & INSTALLATION TEMPLATES

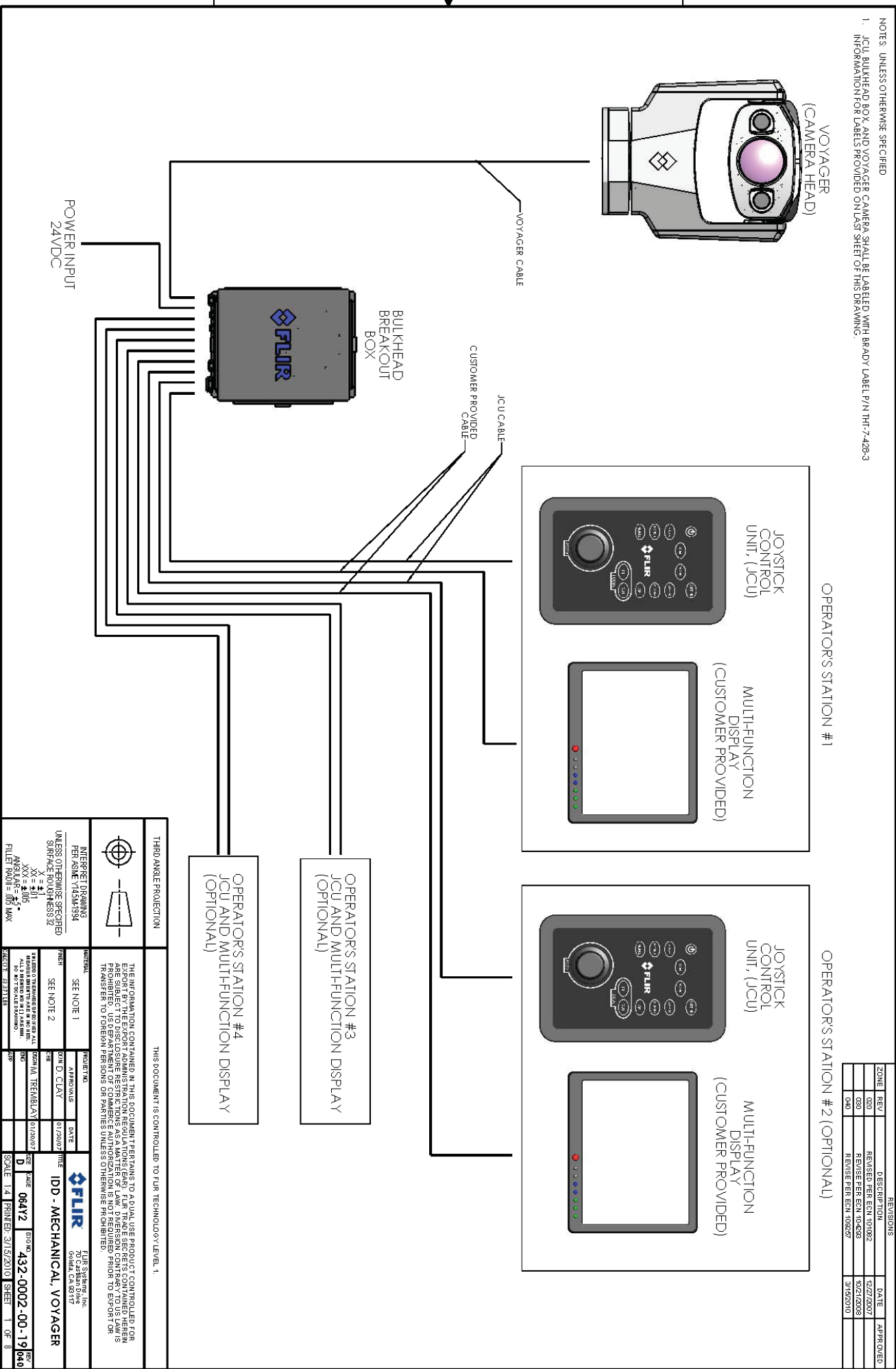
The drawings provide more detailed dimensions and mounting information. If you have any questions, call FLIR’s Applications Experts at 888.747.3547.

Use the templates to locate the holes required to mount the Voyager II’s Camera Body and JCU.

NOTES: UNLESS OTHERWISE SPECIFIED  
 1. JCU BULKHEAD BOX AND VOYAGER CAMERA SHALL BE LABELED WITH GRADY LABEL P/N TH7-74283  
 INFORMATION FOR LABELS PROVIDED ON LAST SHEET OF THIS DRAWING.



POWER INPUT  
24VDC



REV 040

432-0002-00-19

REVISIONS		DATE	APPROVED
ZONE	REV	DESCRIPTION	
000	000	REMOVED PER ECN 101882	12/27/2007
000	000	REMOVED PER ECN 10488	10/27/2008
040	040	REMOVED PER ECN 100627	3/16/2010

THIRD ANGLE PROJECTION

INTERPRET DRAWING PER ASME Y14.3M-1994

UNLESS OTHERWISE SPECIFIED SURFACE ROUGHNESS 32

XX = 2.0  
 XXX = 4.0  
 ANGLE = 45°  
 FILED P/N = 063 MW

GENERAL: SEE NOTE 1

FINISH: SEE NOTE 2

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS (IN PARENTHESES) UNLESS OTHERWISE SPECIFIED

THIS DOCUMENT IS CONTROLLED TO FLIR TECHNOLOGY LEVEL 1

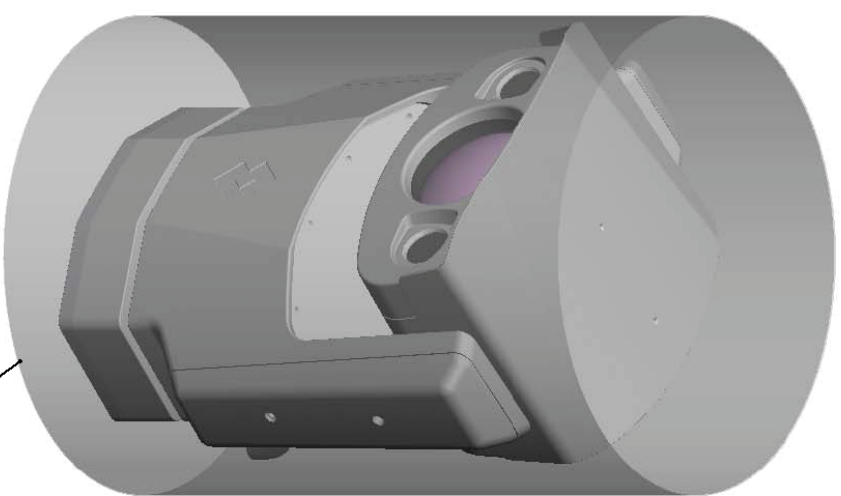
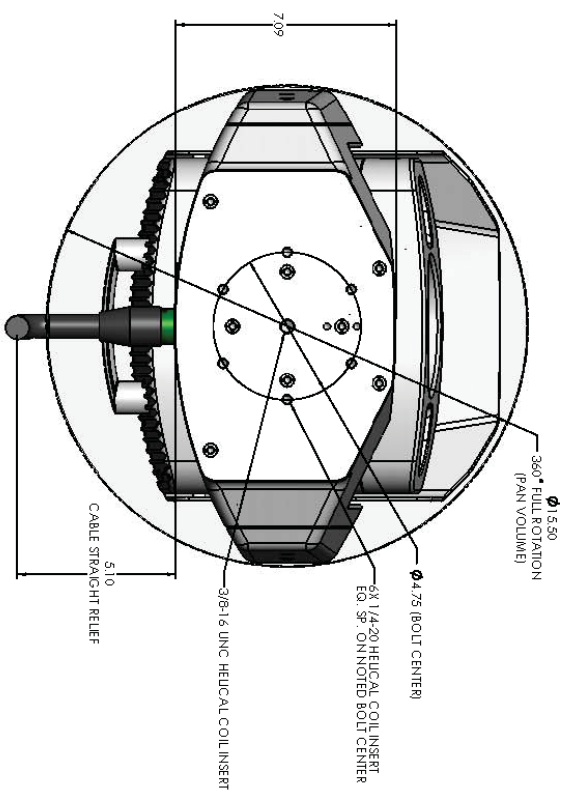
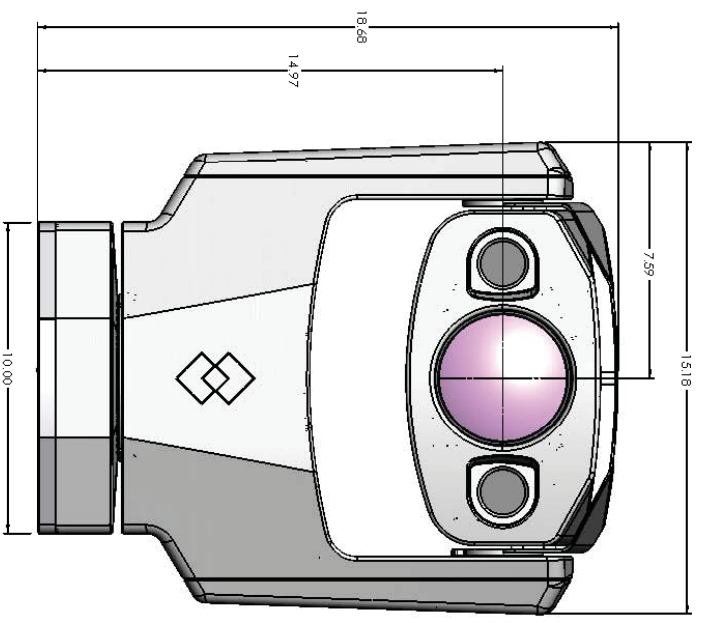
APPROVALS

DATE	APPROVALS	TITLE
01/20/07		IDD - MECHANICAL, VOYAGER

SCALE: 1:1 PRINTED: 3/15/2010 SHEET 1 OF 8

FLIR OPTICAL SYSTEMS, INC.  
 7075 SHERIDAN AVE.  
 GUNDA, CA 95017

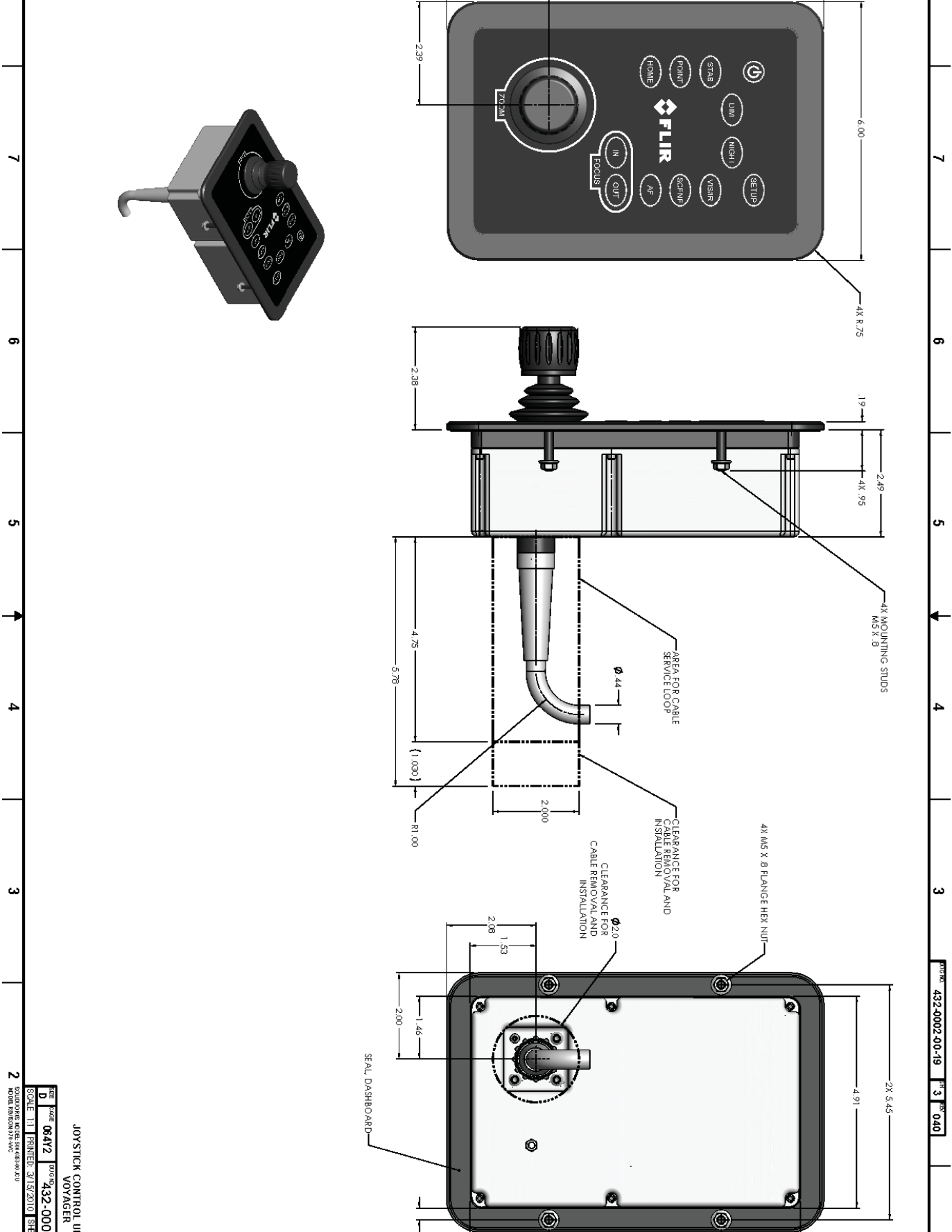
432-0002-00-19



IDD - MECHANICAL, VOYAGER

REV	DATE	BY	APP	DESCRIPTION
D	06/12/21	FRANCO	3/15/2020	SHEET 2 OF 9

SCALE: 2:1  
SOLIDWORKS MODEL NUMBER: 432-0002-00-19



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PROJ: 432-0002-00-19 3 OF 9

REV: 040

DATE: 06/12

SCALE: 1:1

PRINTED: 31/5/2010

SHEET: 3 OF 9

REV: 040

DATE: 06/12

SCALE: 1:1

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DATE: 06/12

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PRINTED: 31/5/2010

SHEET: 3 OF 9

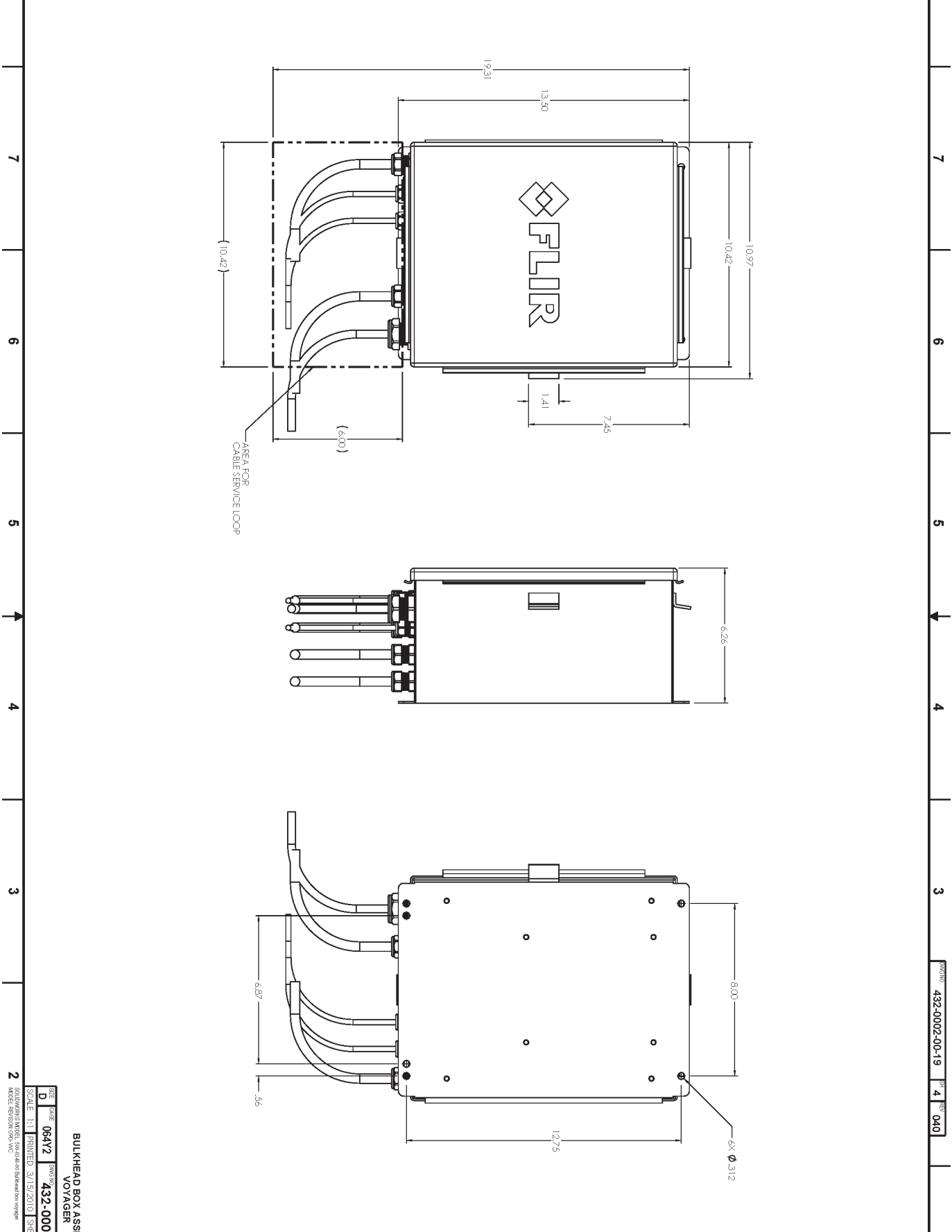
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DATE: 06/12

SCALE: 1:1

PRINTED: 31/5/2010

SHEET: 3 OF 9



PROJ NO: 432-0002-00-19  
 SHEET 4 OF 8  
 REV 040

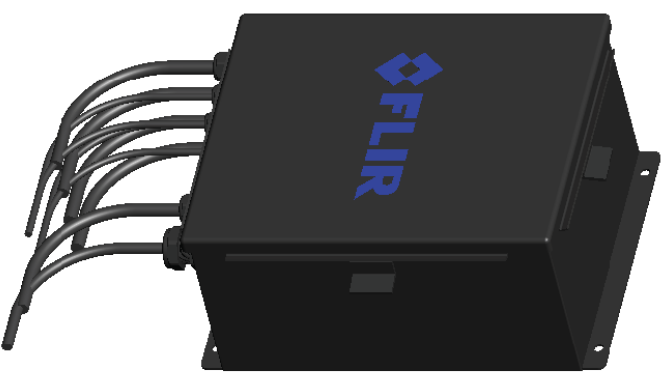
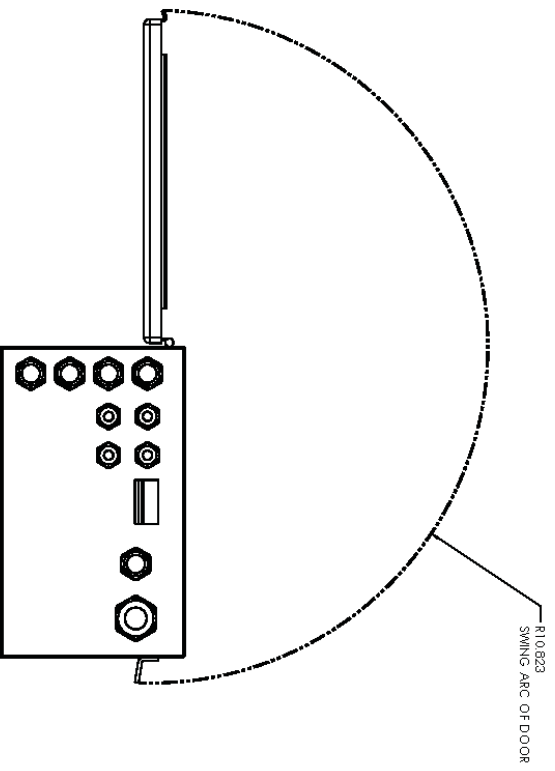
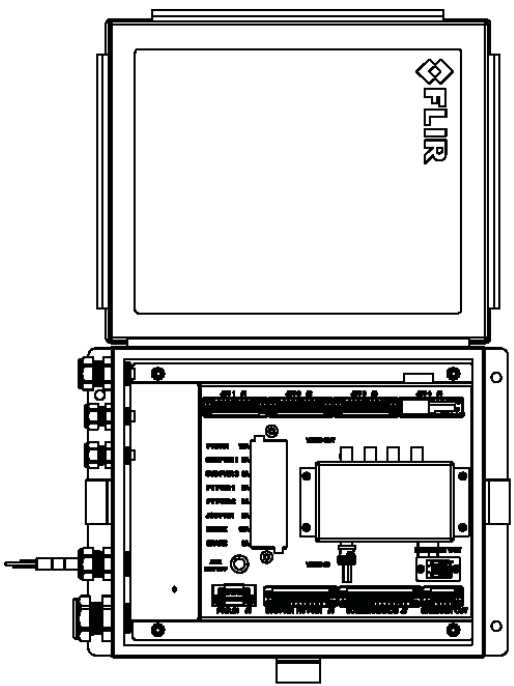
**BULKHEAD BOX ASSEMBLY,  
 VOYAGER**

DATE: 06/12/20  
 DRAWN BY: [Signature]  
 SCALE: 1:1  
 PRINTED: 3/15/2010  
 SHEET 4 OF 8  
 SOLIDWORKS MODEL: 504.02.00 Bulkhead Box Voyager  
 MODEL NUMBER: 003, 110

PROJ NO: 432-0002-00-19  
 SHEET 4 OF 8  
 REV 040



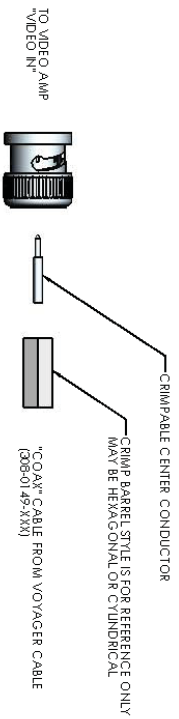
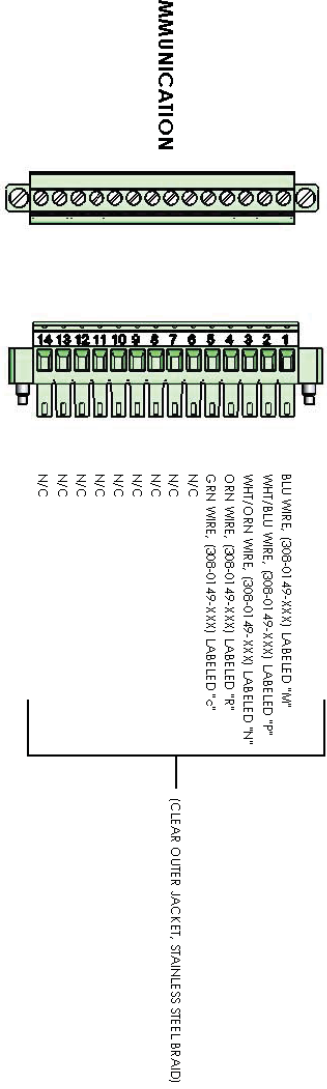
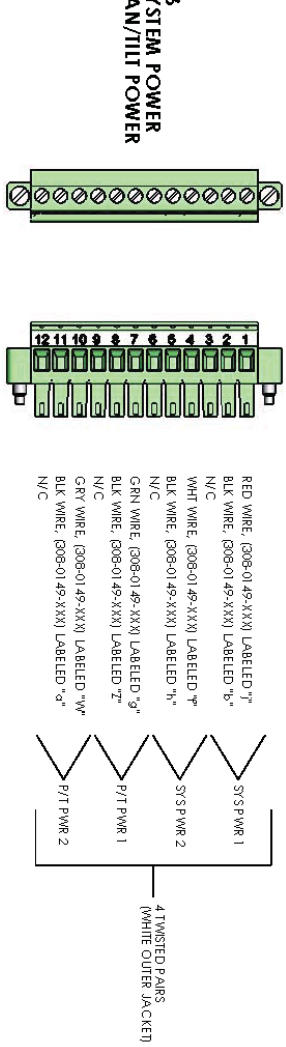
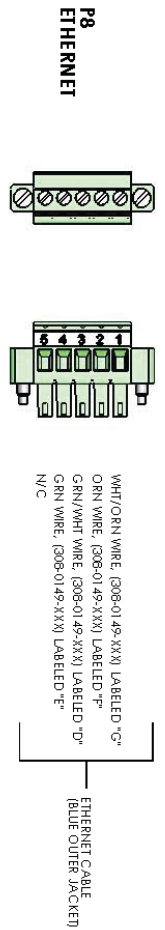
PROJ: 432-0002-00-19 5 040



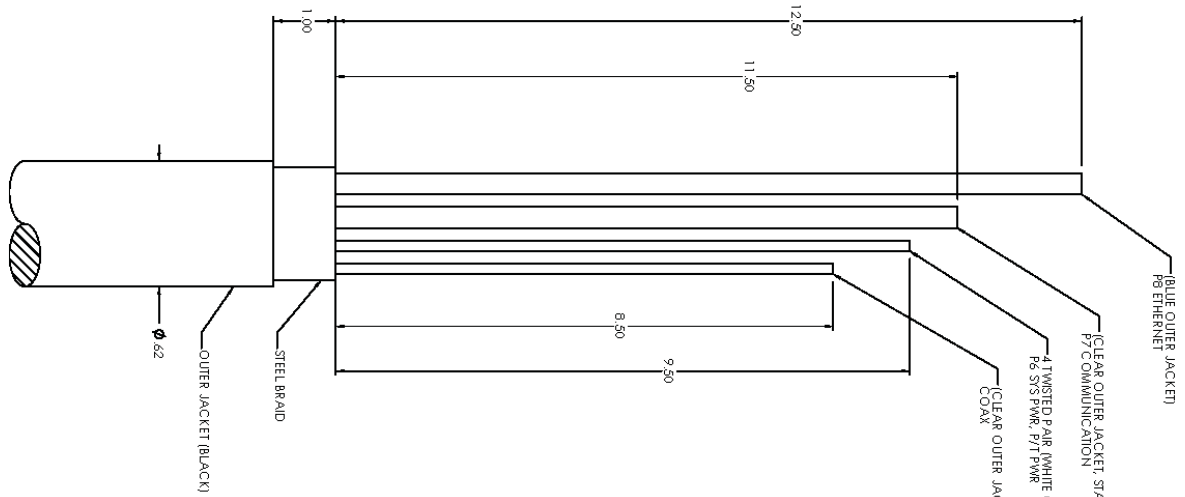
**BULKHEAD BOX ASSEMBLY,  
VOYAGER**

REV	DATE	BY	APP'D	DESCRIPTION
D	06/12			32-0002-00-19
SCALE: 1:1 PRINTED: 3/15/2010 SHEET 5 OF 9				
SOURCE: 3D MODEL: SOLIDWORKS PART: BulkheadBox.sldprt				
MODEL NUMBER: 432-0002-00-19				

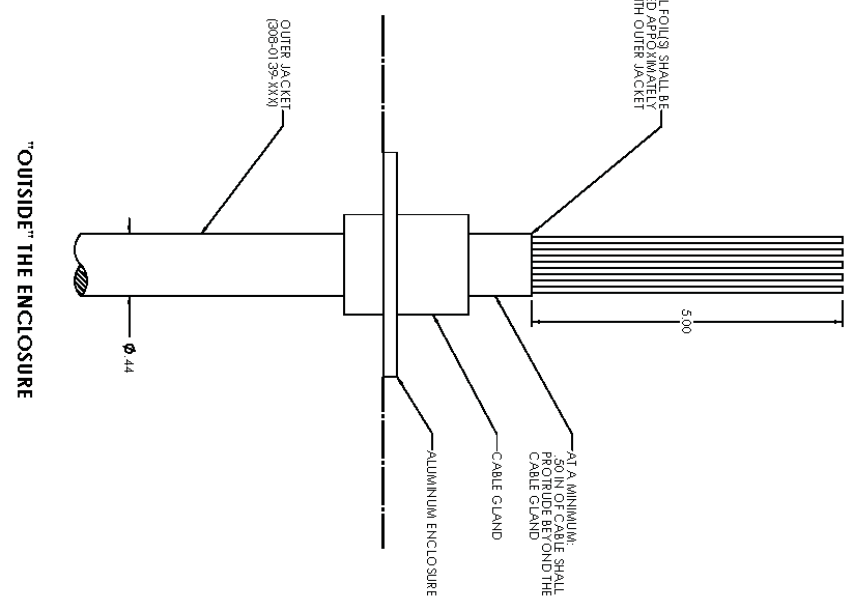
PROJ: 432-0002-00-19 5 040



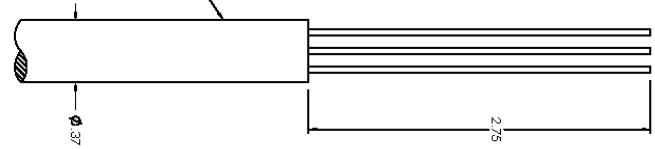
(FLUR SYSTEMS P/N: 202-0003-12)



**CABLE STRIP DETAIL  
JCU CABLE, J1 - J4  
"INSIDE" THE ENCLOSURE**



**"OUTSIDE" THE ENCLOSURE**



**PICTURE OF NMEA 4800 INTERFACE  
THE END OF WIRE SHALL  
HAVE PROTECTIVE COVERING.**

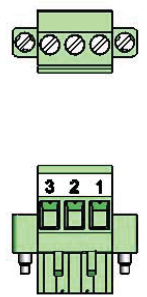


**ONE JCU IC:**  
INSTALL NMEA INTERFACE BOARD INTO VESSEL TO BE INSTALLED AS FOLLOWS:  
SIGNAL "A" TO PIN 1  
SIGNAL "B" TO PIN 2  
OF CONNECTOR J3.

**TWO JCU ICs:**  
INSTALL NMEA INTERFACE BOARD INTO VESSEL TO BE INSTALLED AS FOLLOWS:  
SIGNAL "A" TO PIN 1  
SIGNAL "B" TO PIN 2  
OF CONNECTOR J3.

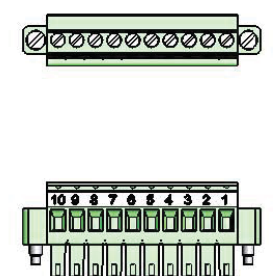
**THREE JCU ICs:**  
INSTALL NMEA INTERFACE BOARD INTO VESSEL TO BE INSTALLED AS FOLLOWS:  
CONNECTOR J4, NMEA WIRES FROM VESSEL TO BE SPliced TO DIGITAL WIRES FROM NMEA 4800 INTERFACE BOARD AND NMEA SIGNAL "B" TO YELLOW WIRE.

**NMEA 4800 INTERFACE BOARD**



RED WIRE, (POWER INPUT CABLE, 4104680)  
BLK WIRE, (POWER INPUT CABLE, 4104680)  
BLU WIRE, (POWER INPUT CABLE, 4104680)

**POWER INPUT  
P5**



WHT WIRE, (Ø08-01-39-XXX, WHT #1)  
BLK WIRE, (Ø08-01-39-XXX, BLK #1)  
WHT WIRE, (Ø08-01-39-XXX, WHT #2)  
BLK WIRE, (Ø08-01-39-XXX, BLK #2)  
SHIELD FROM TWISTED PAIR #1, (Ø08-01-39-XXX)  
BLK WIRE, (Ø08-01-39-XXX, BLK #4)  
WHT WIRE, (Ø08-01-39-XXX, WHT #4)  
WHT WIRE, (Ø08-01-39-XXX, WHT #2)  
BLK WIRE, (Ø08-01-39-XXX, BLK #2)  
OVERALL SHIELD, (Ø08-01-39-XXX)

TWISTED PAIR #1  
TWISTED PAIR #3  
TWISTED PAIR #4  
TWISTED PAIR #2

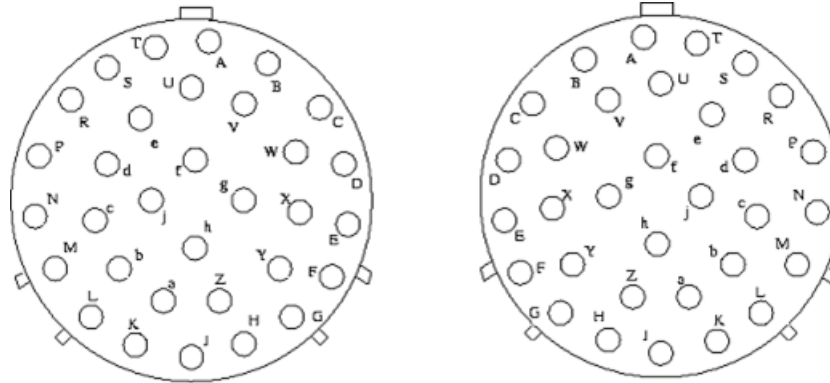
SHALL BE ISOLATED FROM OTHER WIRES AND SHIELD(S) USING PROVIDED TUBING.

**JCU 1 THRU 4  
P1 THRU P4**

## SYSTEM CABLE

The Voyager II uses an electrical-mechanical connection that requires only one integrated cable to interface with the sensor. The cable is terminated with a MIL-C-26482 Series 1 Connector.

### Pin Designations



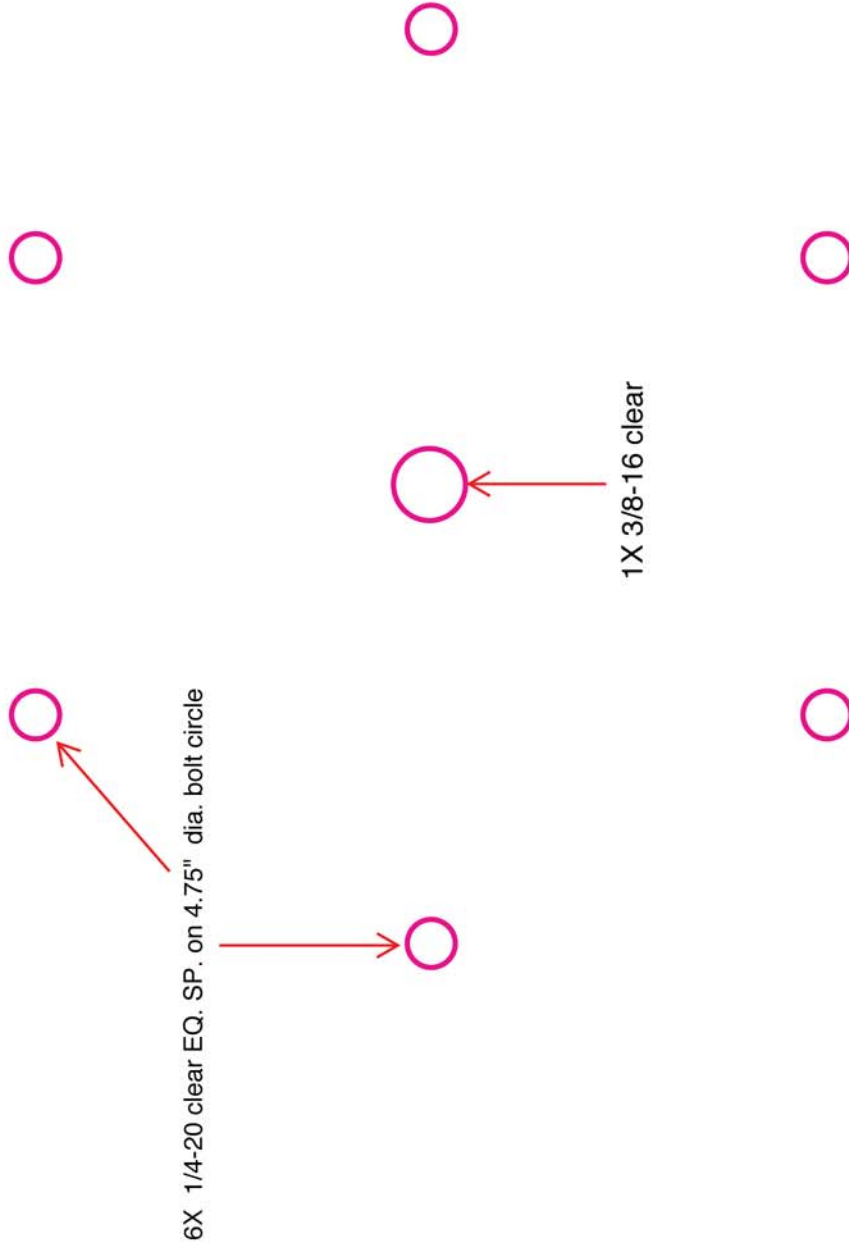
Interface cable connector front view (Male)

Chassis connector front view (Female)

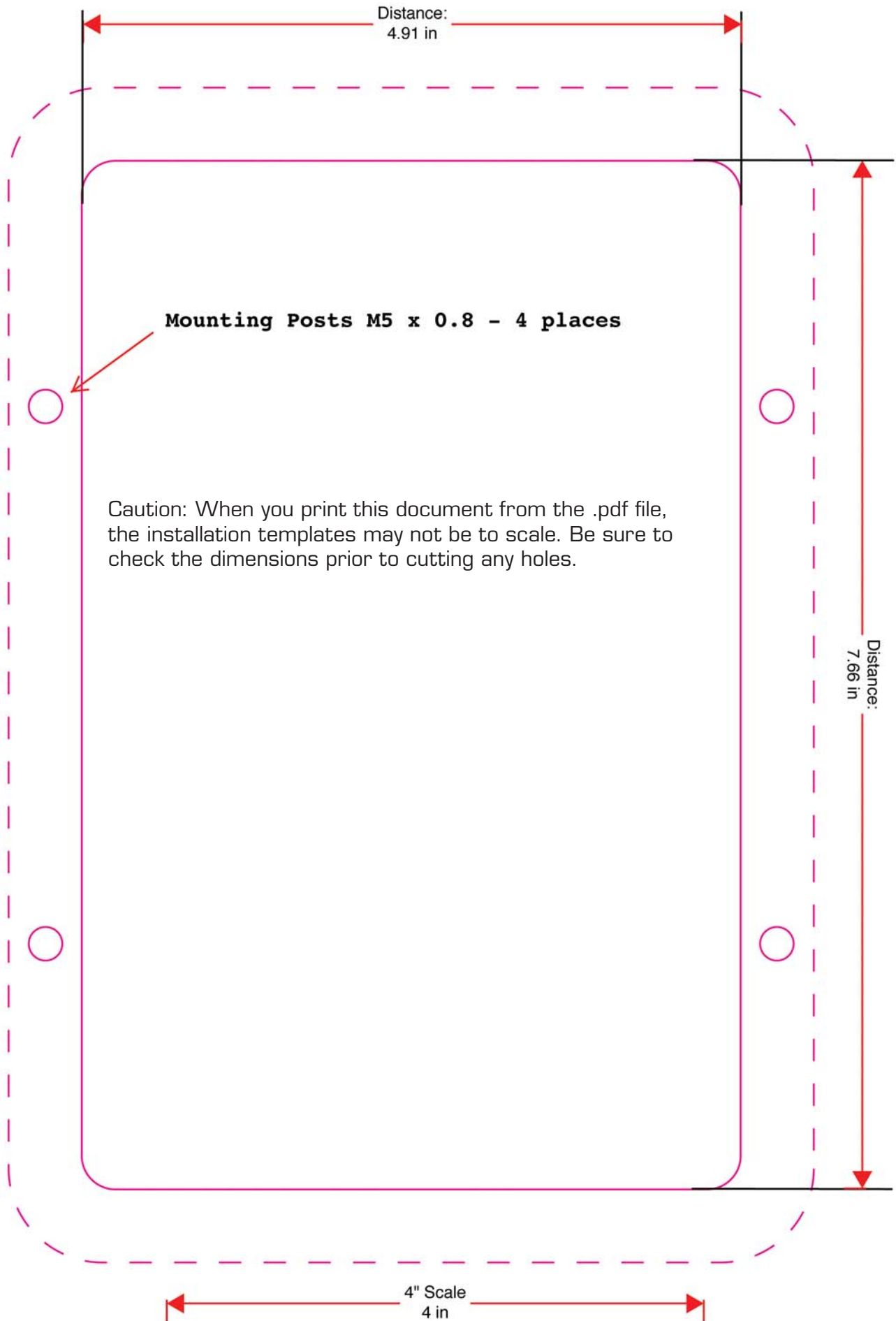
Pin Designation	Function	Name
j	Power	Power in +
f		Power in +
g		Power in +
W		Power in +
b		Power in -
h		Power in -
Z		Power in -
a		Power in -
M	Communications	Tx(+) RS-422
N		Rx(+) RS-422
c		GND RS-422
P		Tx (-) RS-422
R		Rx (-) RS-422
J	Video	Video Out Center
K		Video Out Shield

**FORWARD** ↑

Caution: When you print this document from the .pdf file, the installation templates may not be to scale. Be sure to check the dimensions prior to cutting any holes.



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# **FLIR<sup>®</sup>**

**FLIR Systems, Inc.**

**CS World Headquarters**

**70 Castilian Drive**

**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**

**[www.FLIR.com](http://www.FLIR.com)**

**FLIR Systems, Inc.**

**Corporate Headquarters**

**27700 SW Parkway Avenue**

**Wilsonville, OR 97070 USA**

**PH: + 1 877.773.3547**

**FX: + 1 503.498.3153**

**[sales@flir.com](mailto:sales@flir.com)**

**CS Eurasian Headquarters**

**FLIR Systems CS BV**

**Charles Petitweg 21**

**4847 NW Teteringen - Breda**

**The Netherlands**

**PH: +31 (0) 765.794194**

**FX: +31 (0) 765.794199**

**[flir@flir.com](mailto:flir@flir.com)**