SEA.AI

SEA.AI OFFSHORE

INSTALLATION MANUAL



SEA.AI Professional Services

SEA.AI
Port La Forêt
29940 La Forêt Fouesnant,
France

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1 PRECAUTION OF USE

- The SEA.AI system must be installed by an experienced marine electronics technician, improper installation may void the warranty.



WARNING

• Turn off the power before beginning to install the unit, as this may result in fire, electric shock or serious injury.

• Make sure that the power source is compatible with the voltage rating of the unit: connecting to an unsuitable power source may cause a fire or damage the unit.

• Do not disassemble or modify the equipment: this can result in fire, electric shock or serious injury.



WARNING

• Do not rely exclusively on the SEA.AI system to steer the boat: for the safety of the boat and the people on board, the captain must monitor all available navigation aids. SEA.AI is not a substitute for a proper lookout.

• Adjust the masthead vision unit correctly: the adjustment of the camera has a significant impact on the operation of the system.



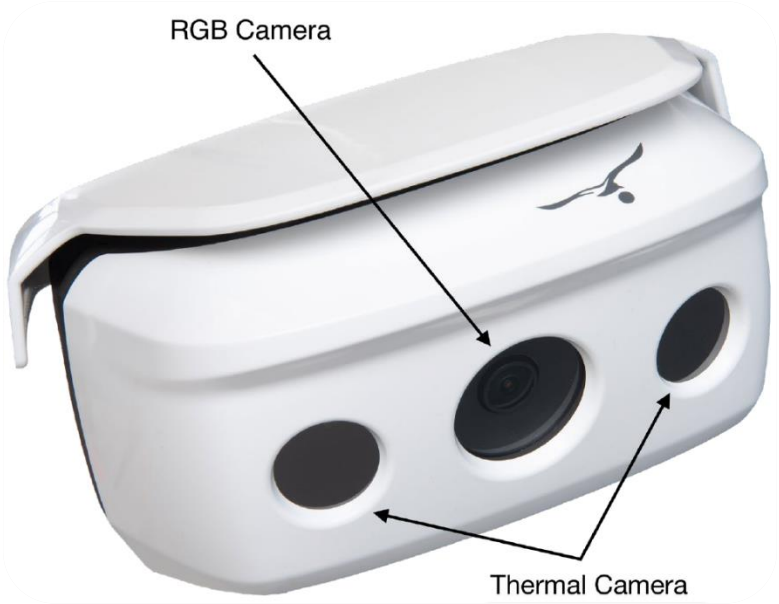
WARNING

• Working at heights requires that safety instructions be followed.

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2 GENERAL INFORMATIONS

- SEA.AI Offshore combines optical sensors and artificial intelligence to detect objects floating on your trajectory. SEA.AI automatically assesses the risk of collision in real time and warns of any possible danger.
- Having a SEA.AI system on board means improved safety for you and your crew.
- All SEA.AI systems can be controlled using the SEA.AI navigation app, which runs on smartphones and tablets (Android and iOS), on your chartplotter or on a computer.



Model	Offshore 320	Offshore 640
Thermal camera	2x FLIR BOSON™ 320 x 256 px, 50°	2x FLIR BOSON™ 640 x 512 px, 50°
RGB camera	5 Mpx low light vision 2592 x 1944 px, 110°	
Range detection		
-Large size (yacht, fishing vessel...)	1000m	1500m
-Middle size (boat, beacon...)	250m	375m
-Small size (MOB, buoy...)	100m	150m
Detection	Thermal	Thermal & RGB
Weight	990 g	990 g
Dimensions	190 x 143 x 106 mm	190 X 143 x 106 mm

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3 PRODUCT REGISTRATION

The user must have previously registered online at the following address to obtain the serial password: https://sea.ai/user_registration/

4 PARTS INCLUDED

Art N°	Designation	Qty
F03100	Vision unit Offshore 320	1
F03110	Vision unit Offshore 640	1
A00030	Processing unit 256GB	1
A02440	Etherline cable 30m Offshore	1
A02681	Power cable 30m Offshore	1
A01271	Mast Bracket V4_V3_2	1
A01260	Hexagon Screw DIN 4014 M5x60 A4	2
A01060	Hexagon Nut DIN 985 M5 A4	2
A01050	Washer DIN 9021 5 A4	4
A01350	Wind Sensor Bracket	1
F03146	Ethernet cable PU (2nd gen) universal (RJ45) 6m	1
A01272	Hexagon Screw DIN 933/ISO 4017 M5x16 A4	4
A02980	RJ45 connector Cat 6 Ethernet Stecter	1
A02920	Power IN cable with bayonet lock connector	1
Document	Offshore user guide	1

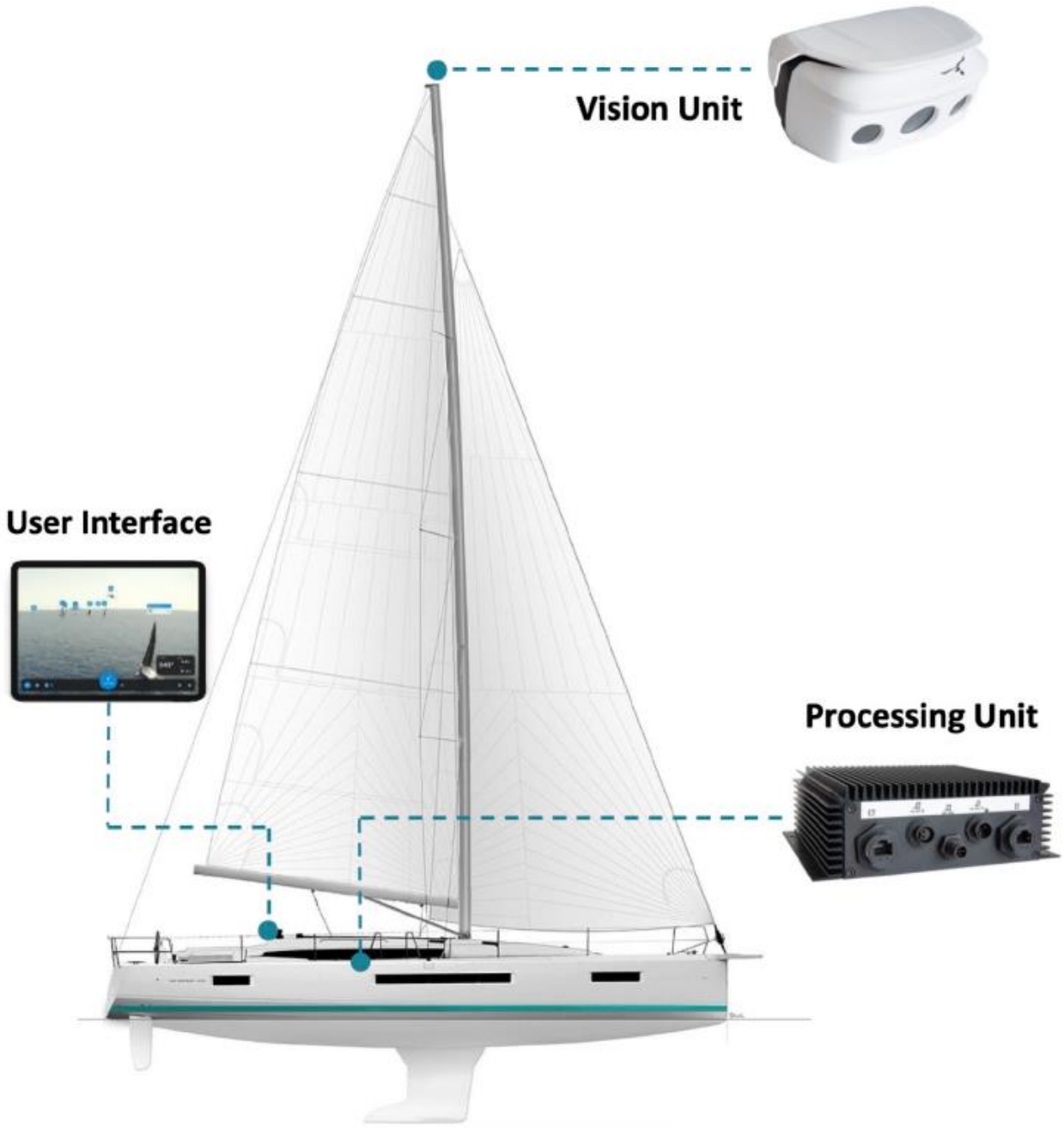
5 TOOLS & EQUIPMENT NEEDED

- Bracket's Mounting screws (x4) – Refer to Chapter 6.3 for more details
- Power drill with appropriate drill bit
- Pen
- Tape Measure or ruler
- 8mm wrench
- 8mm rachet wrench
- Necessary for cables routing in the mast
- Computer
- Ethernet Router
- On-board network adapter

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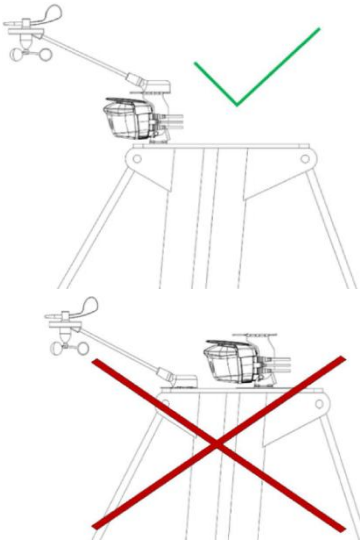
6 INSTALLATION

6.1 General view of the installation



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6.2 Vision Unit installation (VU)



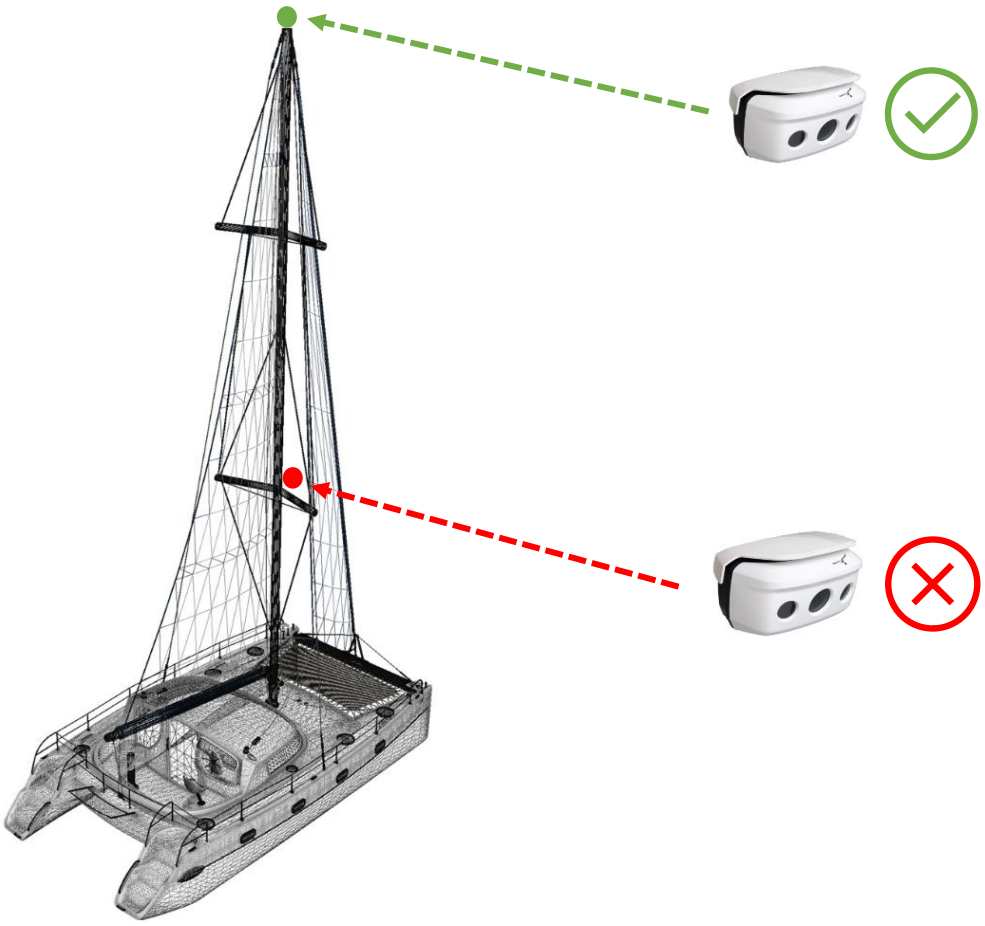
The installation of the vision unit requires the following tools:

- 8mm wrench
- 8mm rachet wrench
- LAN tester
- RJ45 adapter cable

The installation of the vision unit must comply with the following points:

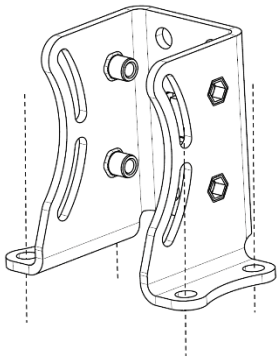
- The VU must be installed at the highest point of the boat
- The VU must be installed at a minimum height of 8 meters
- The field of vision of the VU must be completely clear.

NOTE: Sufficient space at the rear of the VU must be provided for the proper handling of cables and electrical connectors.



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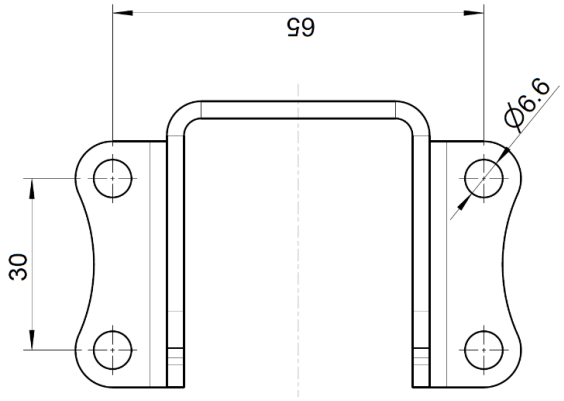
6.3 Attaching vision unit's bracket (Art N° A01271)



The following points must be observed when mounting the system:

- The system bracket must be fixed with four screws 6mm (not inclued)
- adapted to the characteristics of the support on which it is mounted (drawings of the bracket available on page 29).
- The fixing screws must be secured with threadlockers or locknuts.

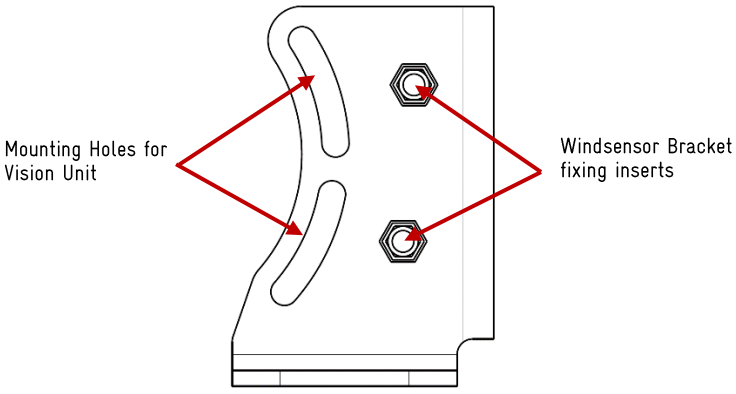
VU bracket's holes pattern



6.4 Mounting the vision unit (VU) on the bracket

To attach the system to the bracket, use x2 screws Art N° A01260, x4 washers Art N° A01050 / x2 nuts Art N° A01060, provided in the installation kit.

A01271 Left View





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NOTE : If necessary, the windsensor bracket (Art N° A01350) included in the installation kit can be attached to the system bracket (Art N° A01271) by using x4 hexagonal screws M5x16 (Art N° A01272).



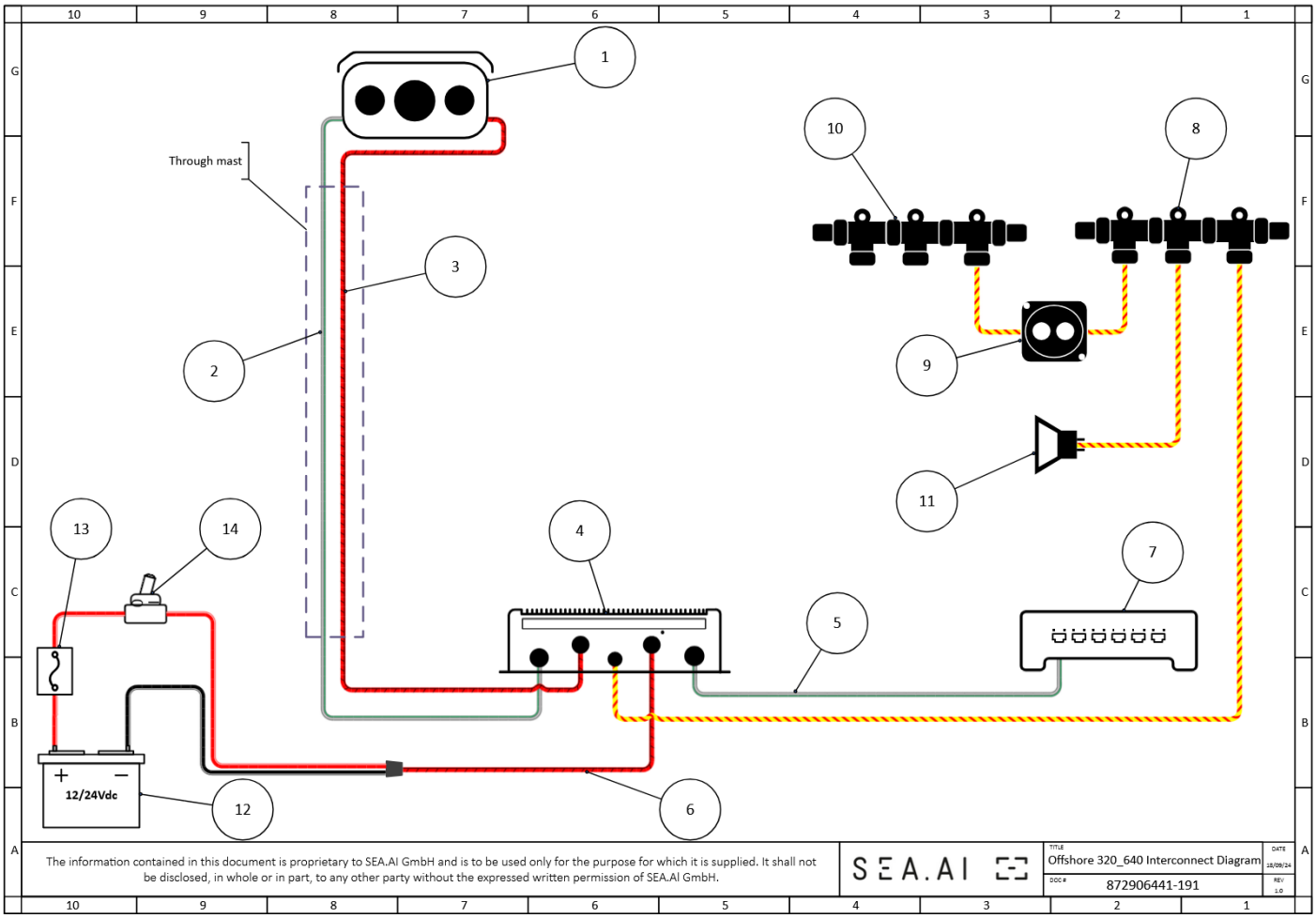
NOTE : The inclination of the system will have to be adjusted during the commissioning (+/- 15°)

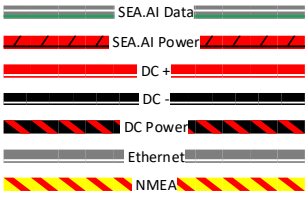


WARNING: Offshore vision unit must not be painted or covered!

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Wiring Offshore 320_640





LEGEND

BOM			
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	OFFSHORE VISION UNIT	F03100 /F03110
2	1	ETHERLINE CABLE 30m OFFSHORE	A02440
3	1	POWER CABLE 30m OFFSHORE	A02681
4	1	PROCESSING UNIT 256GB	A00030
5	1	ETHERNET CABLE PU (2nd gen) UNIVERSAL (RJ45) 6m	F03146
6	1	POWER IN CABLE WITH BAYONET LOCK CONNECTOR	A02920
7	1	BOAT LAN	N/A
8	1	SEA.AI DEDICATED BACKBONE	N/A
9	1	NMEA2000 BRIDGE	N/A
10	1	BOAT BACKBONE	N/A
11	1	NMEA2000 BUZZER	N/A
12	1	12/24VDC POWER SUPPLY	N/A
13	1	FAST BLOW FUSE 3A	N/A
14	1	POWER SWITCH	N/A

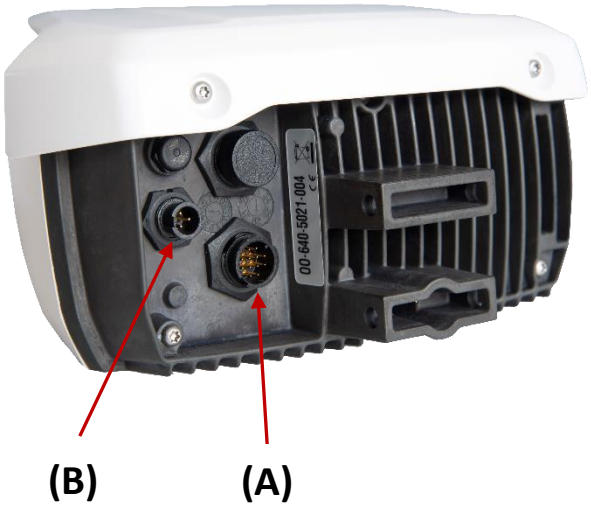
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6.5 Connecting the Vision Unit.

After routing the cables, connect the data cable (Art N°A02440 label **A**) and the power cable (Art N°A02681 label **B**) to the corresponding sockets on the VU.

A Art N°A02440





B Art N°02681



WARNING :
- Circular connectors must be properly locked.
- Cables must be properly secured so that their weight is not supported by the connectors.

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6.6 Processing Unit installation (PU)

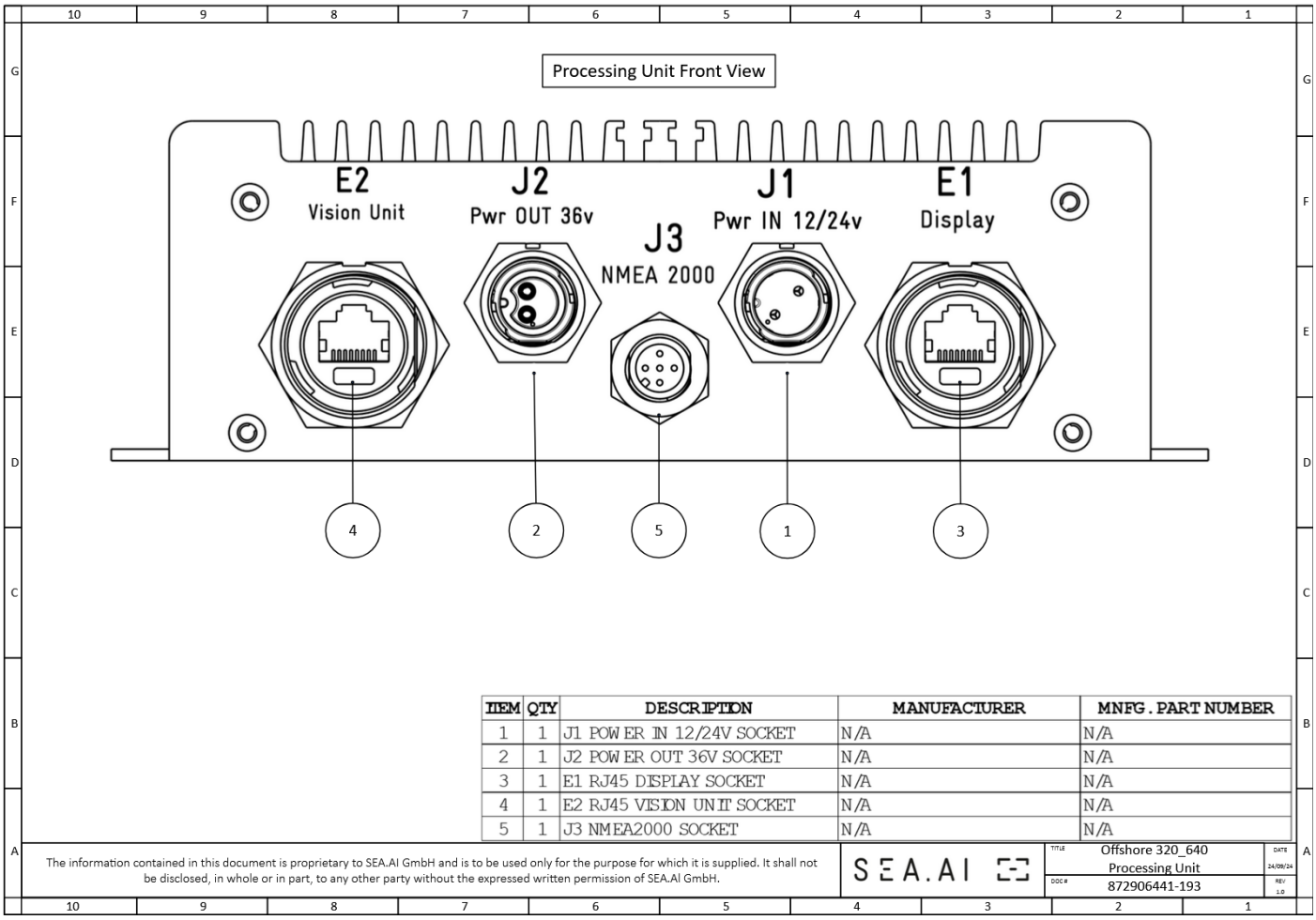
The PU must be fixed by means of six screws (not supplied) on suitable support. The installation of the PU must correspond to the following points:

- The PU must be installed in a clean, ventilated and dry place.
- The PU can be installed flat but not upside down.
- The PU can be tilted on a wall with the connectors downwards.

NOTE: SEA.AI Offshore Processing Unit is not ground isolated, do not install on a surface in contact with common ground.

6.7 Connecting the processing unit (PU)

WARNING: Incorrect positive and negative pinout can damage the system. Make sure the power supply is secured with a fuse (max 5A).



ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	J1 POWER IN 12/24V SOCKET	N/A	N/A
2	1	J2 POWER OUT 36V SOCKET	N/A	N/A
3	1	E1 RJ45 DISPLAY SOCKET	N/A	N/A
4	1	E2 RJ45 VISION UNIT SOCKET	N/A	N/A
5	1	J3 NMEA2000 SOCKET	N/A	N/A

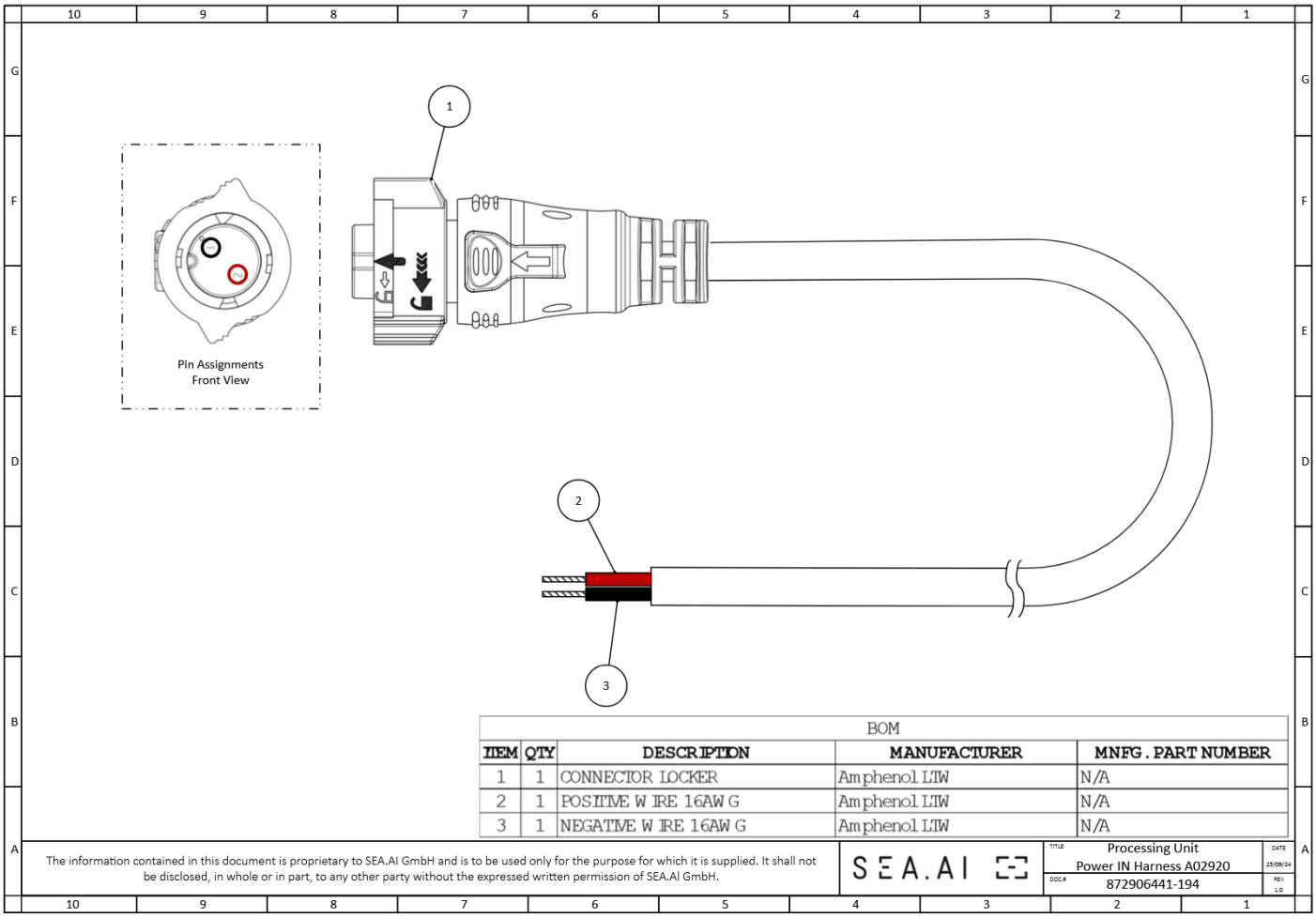
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SEA.AI | TITLE: Offshore 320_640 Processing Unit | DOC #: 872906441-193 | DATE: 24/09/24 | REV: 1.0

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Connect **Art No. A02920** Power IN cable to the boat's electrical system, then to the Processing Unit at socket **J1** (Processing Unit front view mark**1**) until you hear a "click.":

- Supply voltage 12 / 24 V.
- The power supply must be protected by a 3A FAST-BLOW type fuse.
- The power supply must be subject to an independent switch.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	CONNECTOR LOCKER	Amphenol LTW	N/A
2	1	POSITIVE WIRE 16AWG	Amphenol LTW	N/A
3	1	NEGATIVE WIRE 16AWG	Amphenol LTW	N/A

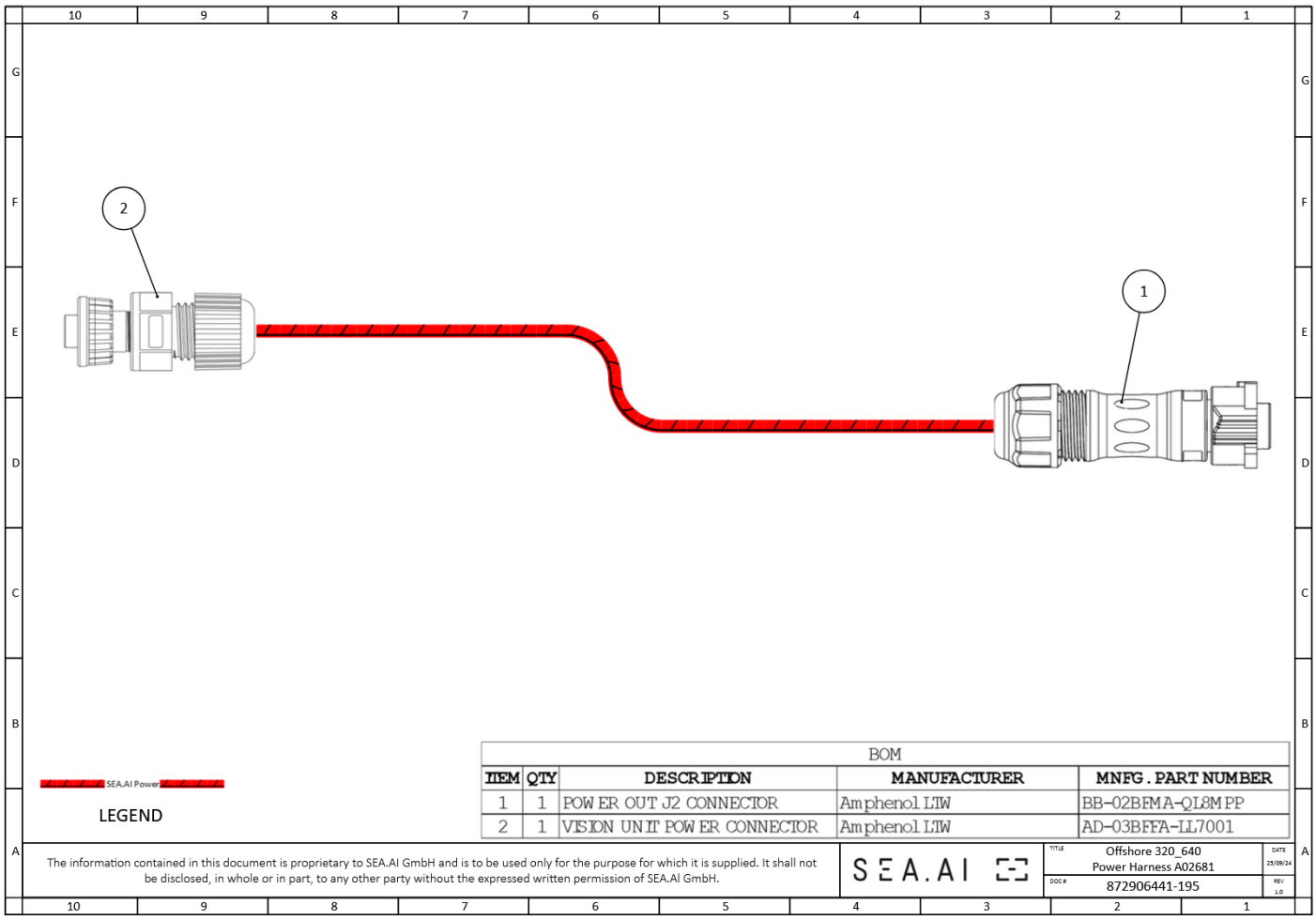
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SEA.AI

TITLE: Processing Unit Power IN Harness A02920
DOC #: 872906441-194
DATE: 25/09/24
REV: 1.0

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Connect **Art No. A02681** Power cable, to the Vision Unit, then to the Processing Unit at socket **J2** (Processing Unit front view mark **2**) until you hear a "click."



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	POWER OUT J2 CONNECTOR	Amphenol LTW	BB-02BFMA-QL8MPP
2	1	VISION UNIT POWER CONNECTOR	Amphenol LTW	AD-03BFFA-LL7001

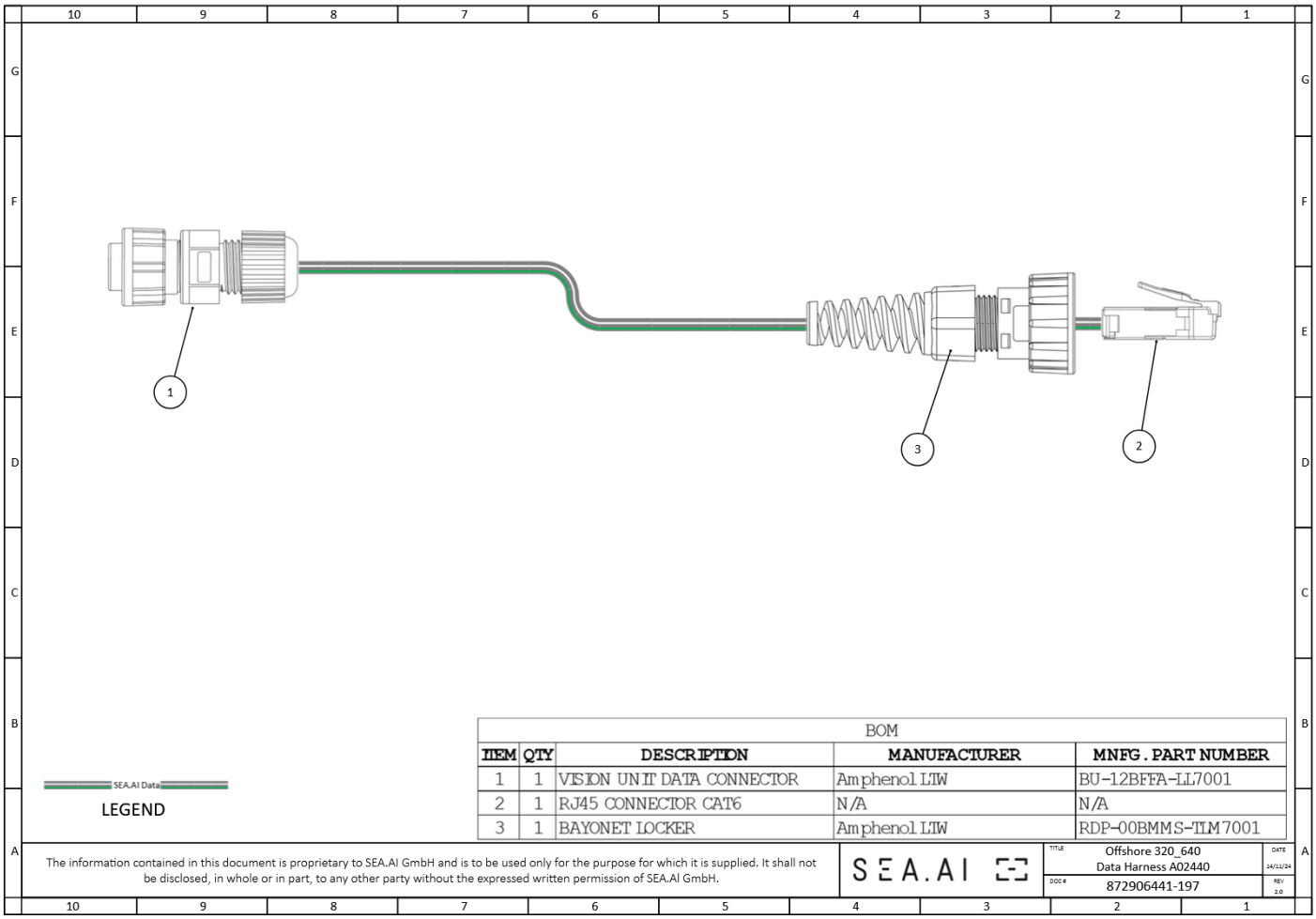
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TITLE: Offshore 320_640 Power Harness A02681
DOC #: 872906441-195
DATE: 25/09/24
REV: 1.0

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Connect **Art No. A02440** data cable from the Vision Unit to the Processing Unit at socket **E2** (Processing Unit front view mark **4**). Ensure that the RJ45 connector is securely fastened with its locking bayonet.



BOM

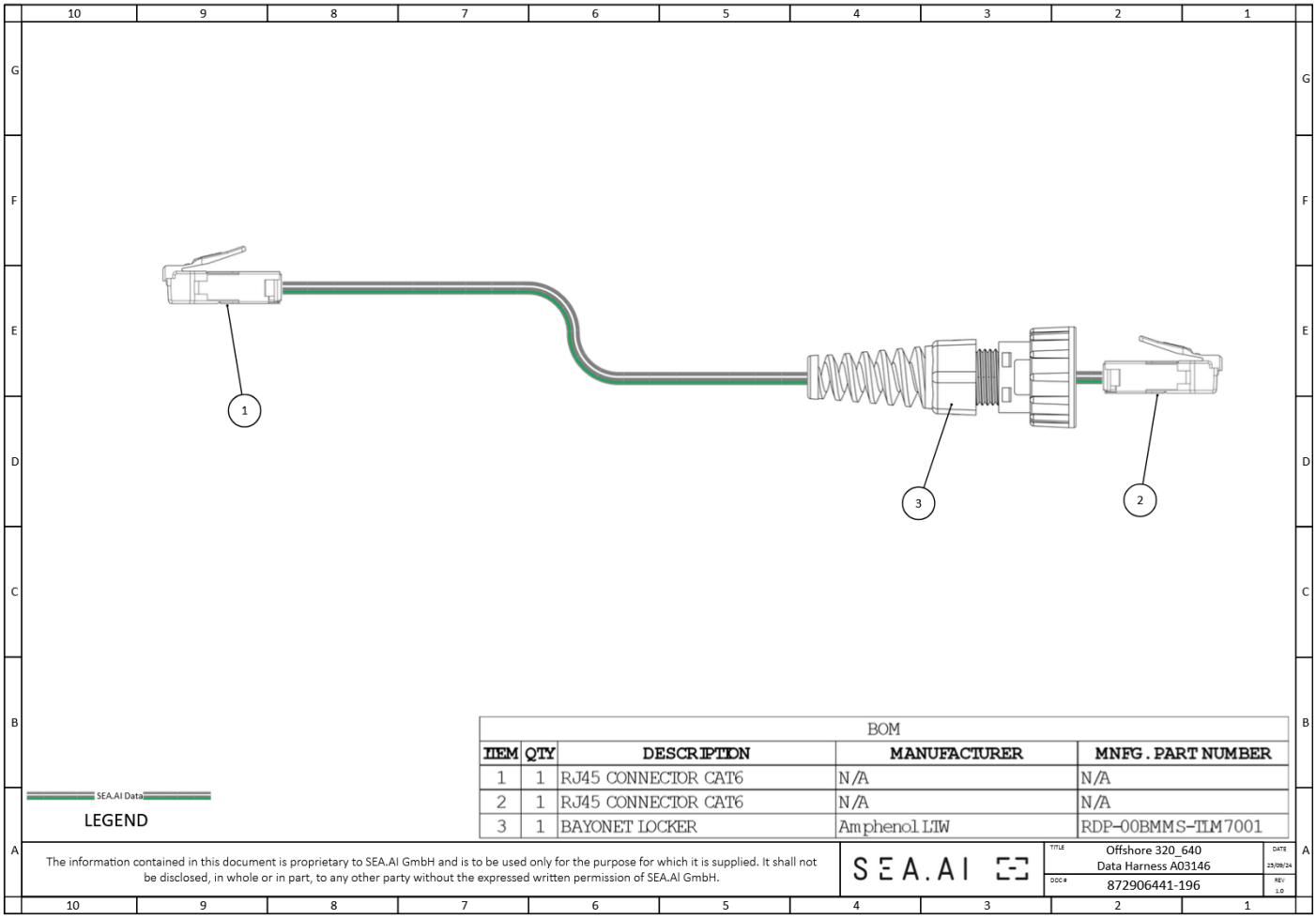
ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	VISION UNIT DATA CONNECTOR	Amphenol LTW	BU-12BFFA-LL7001
2	1	RJ45 CONNECTOR CAT6	N/A	N/A
3	1	BAYONET LOCKER	Amphenol LTW	RDP-00BMMS-ILM7001

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SEA.AI

TITLE: Offshore 320_640 Data Harness A02440
DOC #: 872906441-197
DATE: 14/11/24
REV: 2.0

Connect **Art No. F03146** data cable to the Processing Unit at socket **E1** (Processing Unit front view mark **3**) and to the user interface (MFD, PC, Switch, etc.). Ensure the RJ45 connector is securely fastened using its locking bayonet.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	RJ45 CONNECTOR CAT6	N/A	N/A
2	1	RJ45 CONNECTOR CAT6	N/A	N/A
3	1	BAYONET LOCKER	Amphenol LIW	RDP-00BMMS-LIM7001

SEA.AI Data

LEGEND

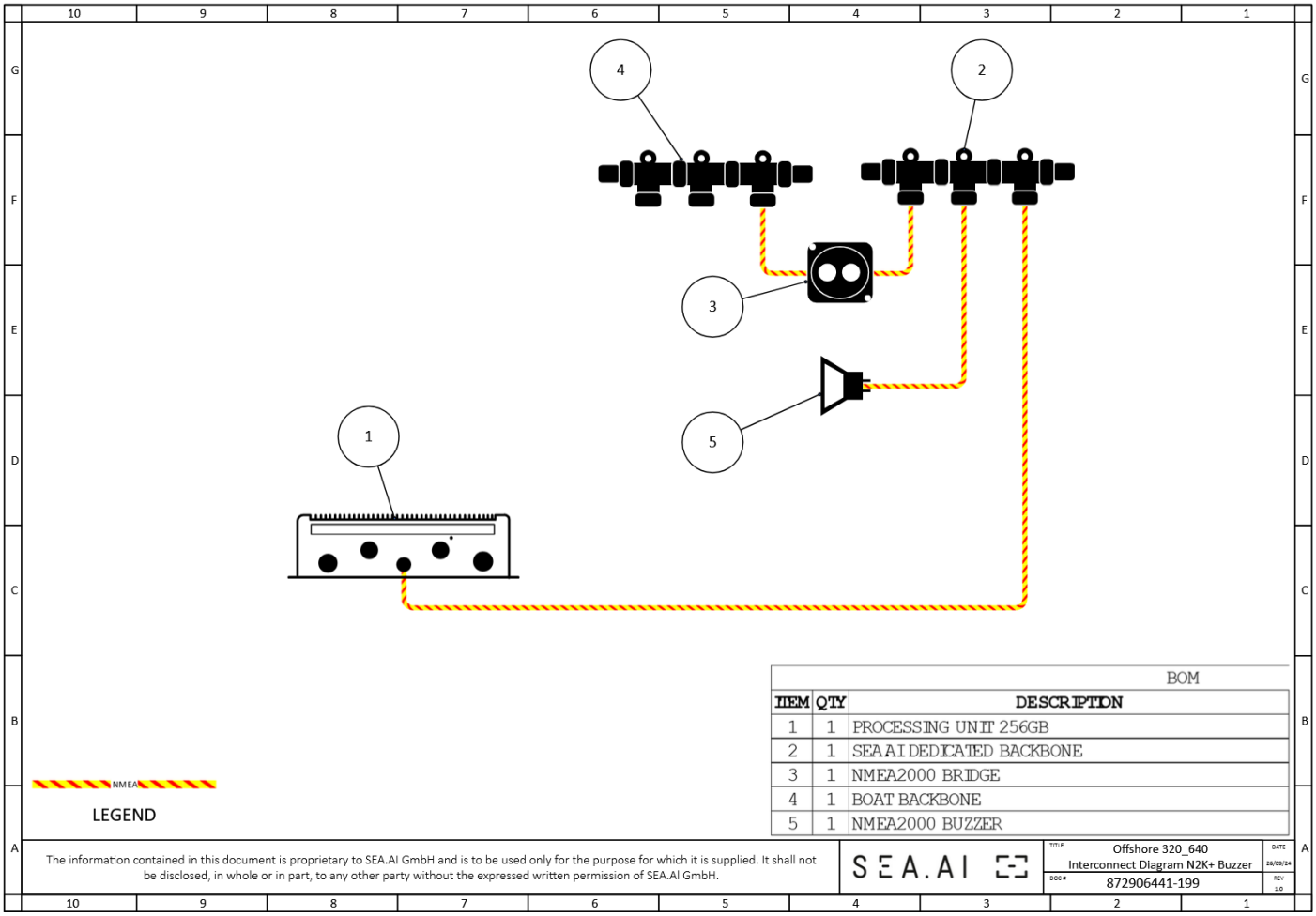
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TITLE: Offshore 320_640 Data Harness A03146
DOC#: 872906441-196
DATE: 25/09/24
REV: 1.0

Connect **Art No. F00030** Processing Unit at socket **J3** (Processing Unit front view mark**5**) to the NMEA2000 network.
An NMEA2000 bridge connection to the boat backbone is highly recommended.

For external alarm integration, connect Raymarine® buzzer Art N°A80614 to the NMEA2000 network (SEA.AI Offshore 320_640 are using Raymarine® PGNs, no setup required).



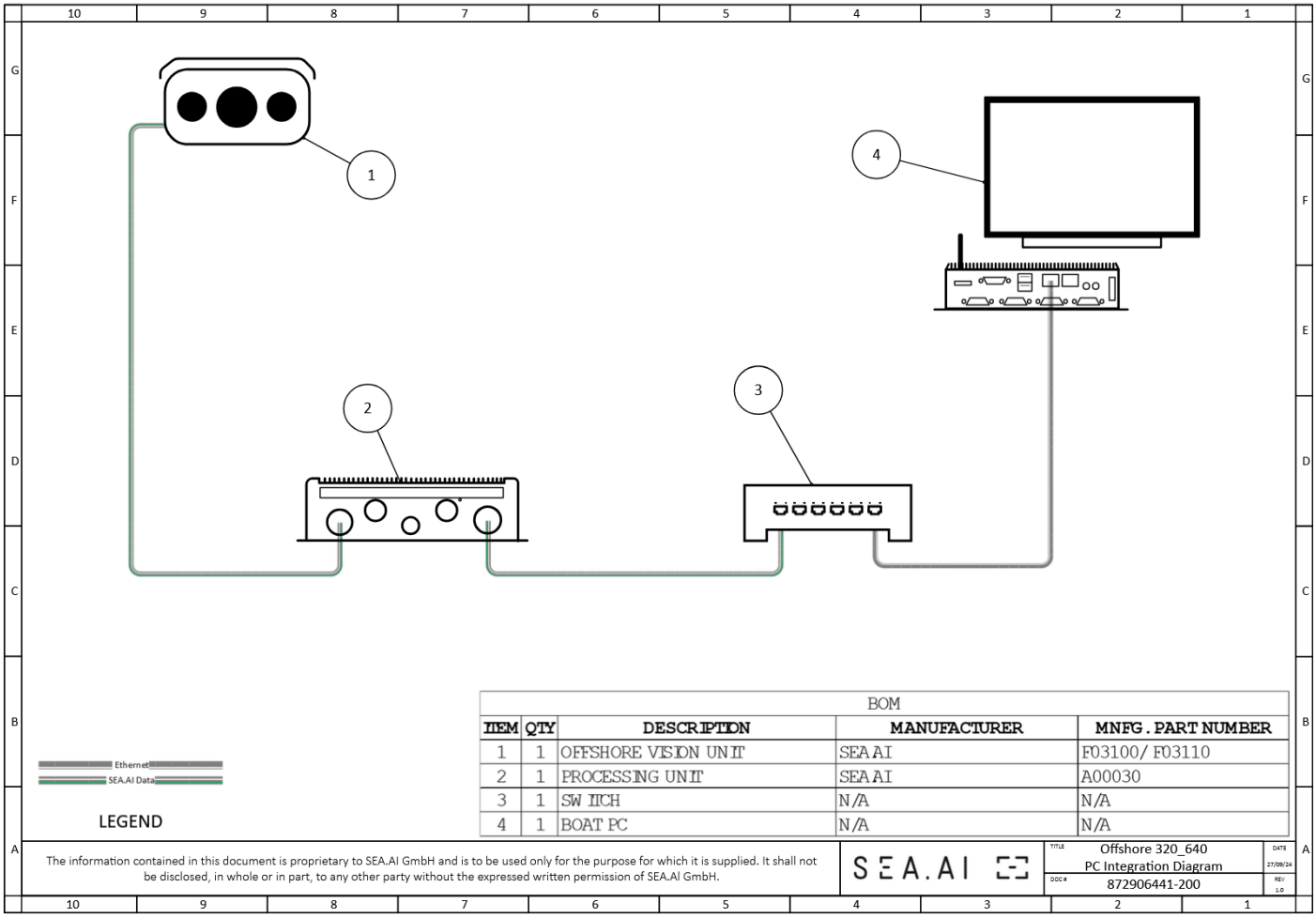
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7 INTEGRATION EXAMPLES

PC Integration:

For direct PC Integration, set the computer's Ethernet port used for SEA.AI, on the same static IP address range (IPV4) Than Offshore 320_640.

OFFSHORE 320_640 IP ADRESS: 192.168.17.21



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	OFFSHORE VISION UNIT	SEA AI	F03100/ F03110
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	SW HUB	N/A	N/A
4	1	BOAT PC	N/A	N/A

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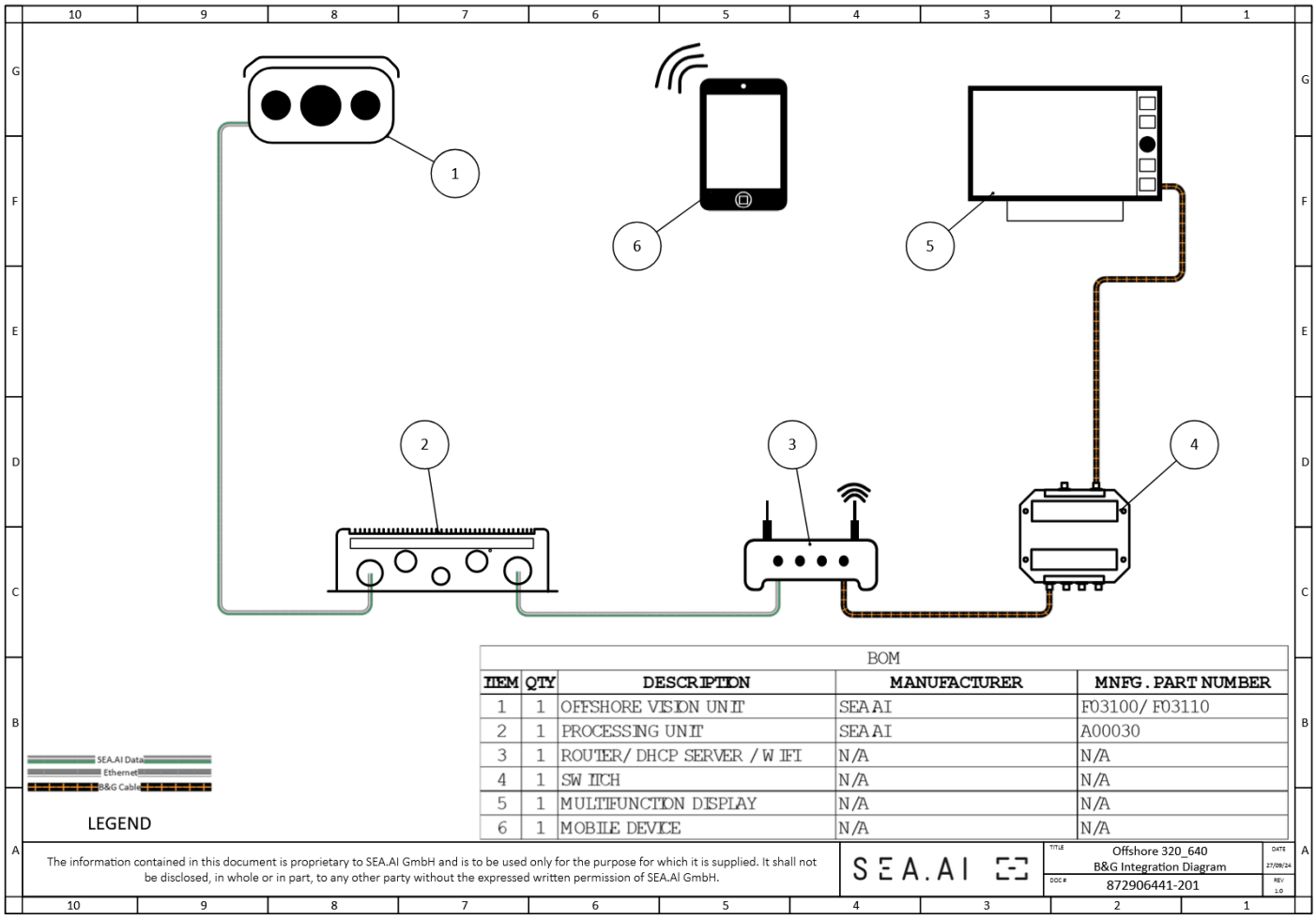
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TITLE: Offshore 320_640 PC Integration Diagram
DOC #: 872906441-200
DATE: 27/09/24
REV: 1.0

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B&G® Integration:

For B&G® Network Integration, a router with DHCP server functionality must be added to integrate B&G's MFD.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	OFFSHORE VISION UNIT	SEA AI	F03100/ F03110
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER/ DHCP SERVER / WIFI	N/A	N/A
4	1	SWITCH	N/A	N/A
5	1	MULTIFUNCTION DISPLAY	N/A	N/A
6	1	MOBILE DEVICE	N/A	N/A

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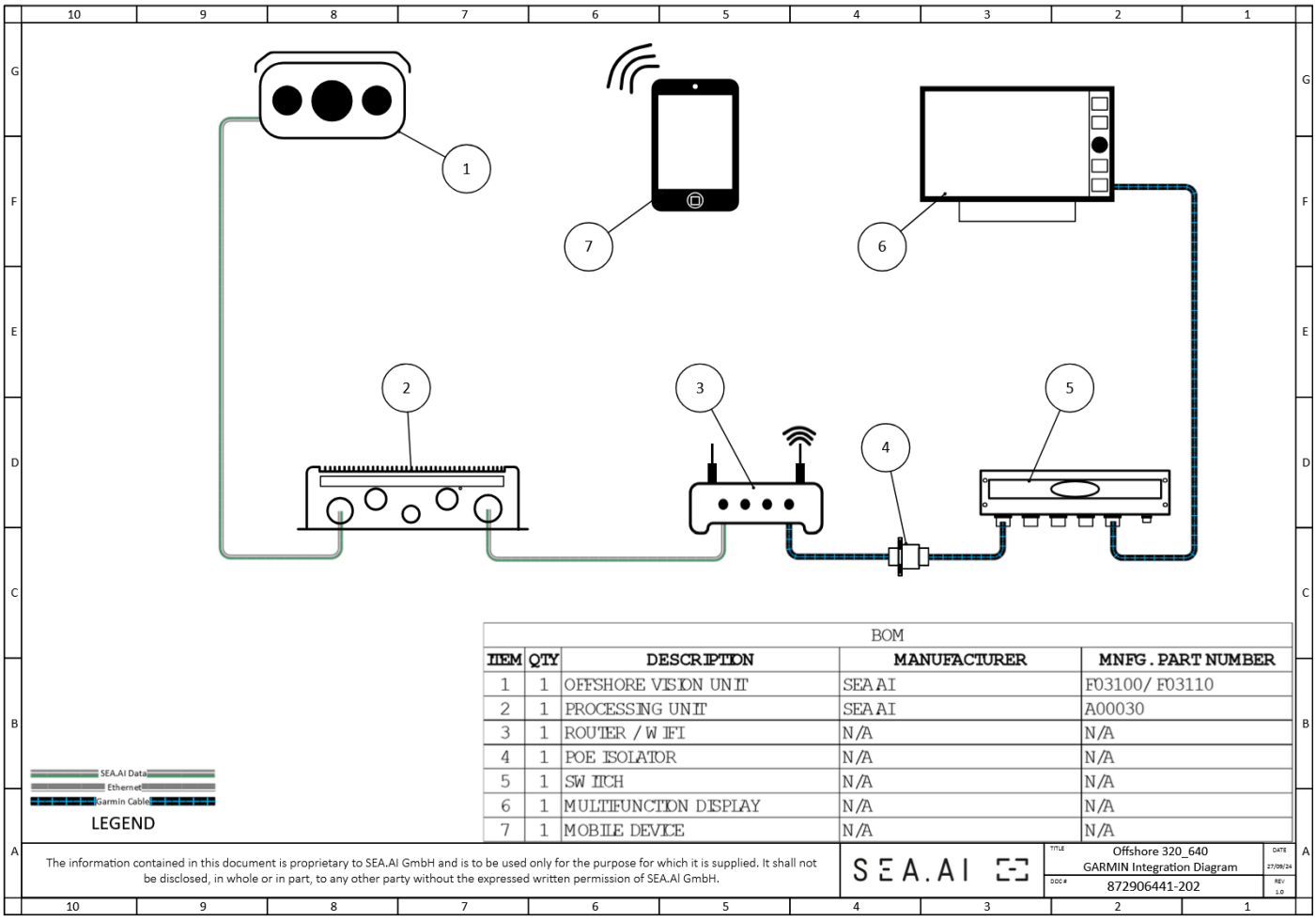
SEA.AI

TITLE: Offshore 320_640 B&G Integration Diagram
DOC #: 872906441-201
DATE: 27/09/24
REV: 1.0

GARMIN® Integration:

For GARMIN® Network Integration, a POE isolator must be added to the GARMIN® network switch port used for SEA.AI.

For mobile devices use, a WIFI router could be integrated with DHCP FUNCTION OFF, to avoid DHCP conflict with MFD.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	OFFSHORE VISION UNIT	SEA AI	F03100/ F03110
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER / WIFI	N/A	N/A
4	1	POE ISOLATOR	N/A	N/A
5	1	SWITCH	N/A	N/A
6	1	MULTIFUNCTION DISPLAY	N/A	N/A
7	1	MOBILE DEVICE	N/A	N/A

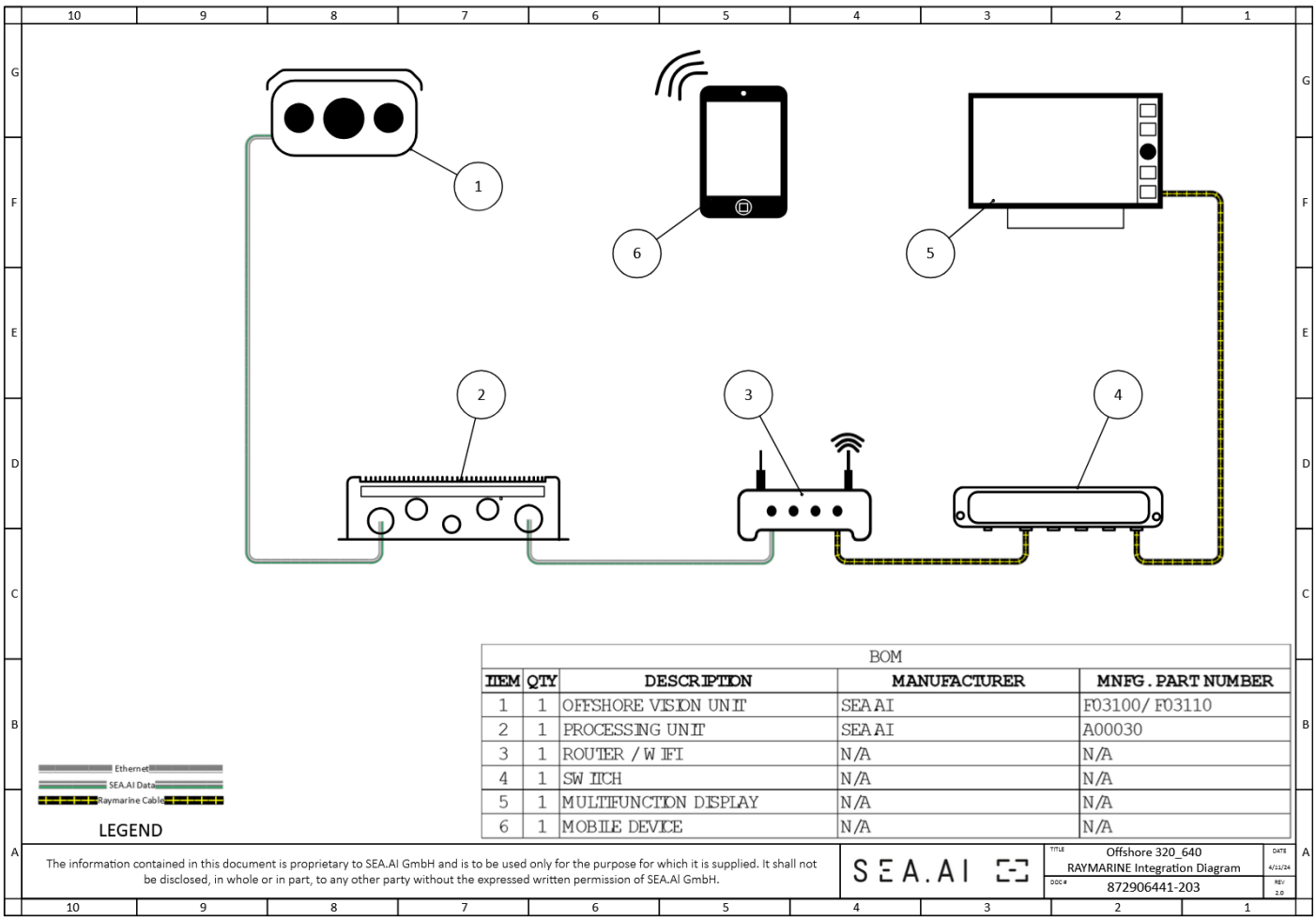
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TITLE: Offshore 320_640 GARMIN Integration Diagram
DOC #: 872906441-202
DATE: 27/09/24
REV: 1.0

RAYMARINE® Integration:

For mobile devices use, a WIFI router could be integrated with DHCP FUNCTION OFF, to avoid DHCP conflict with MFD.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	OFFSHORE VISION UNIT	SEA AI	F03100/ F03110
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER / WIFI	N/A	N/A
4	1	SWITCH	N/A	N/A
5	1	MULTIFUNCTION DISPLAY	N/A	N/A
6	1	MOBILE DEVICE	N/A	N/A

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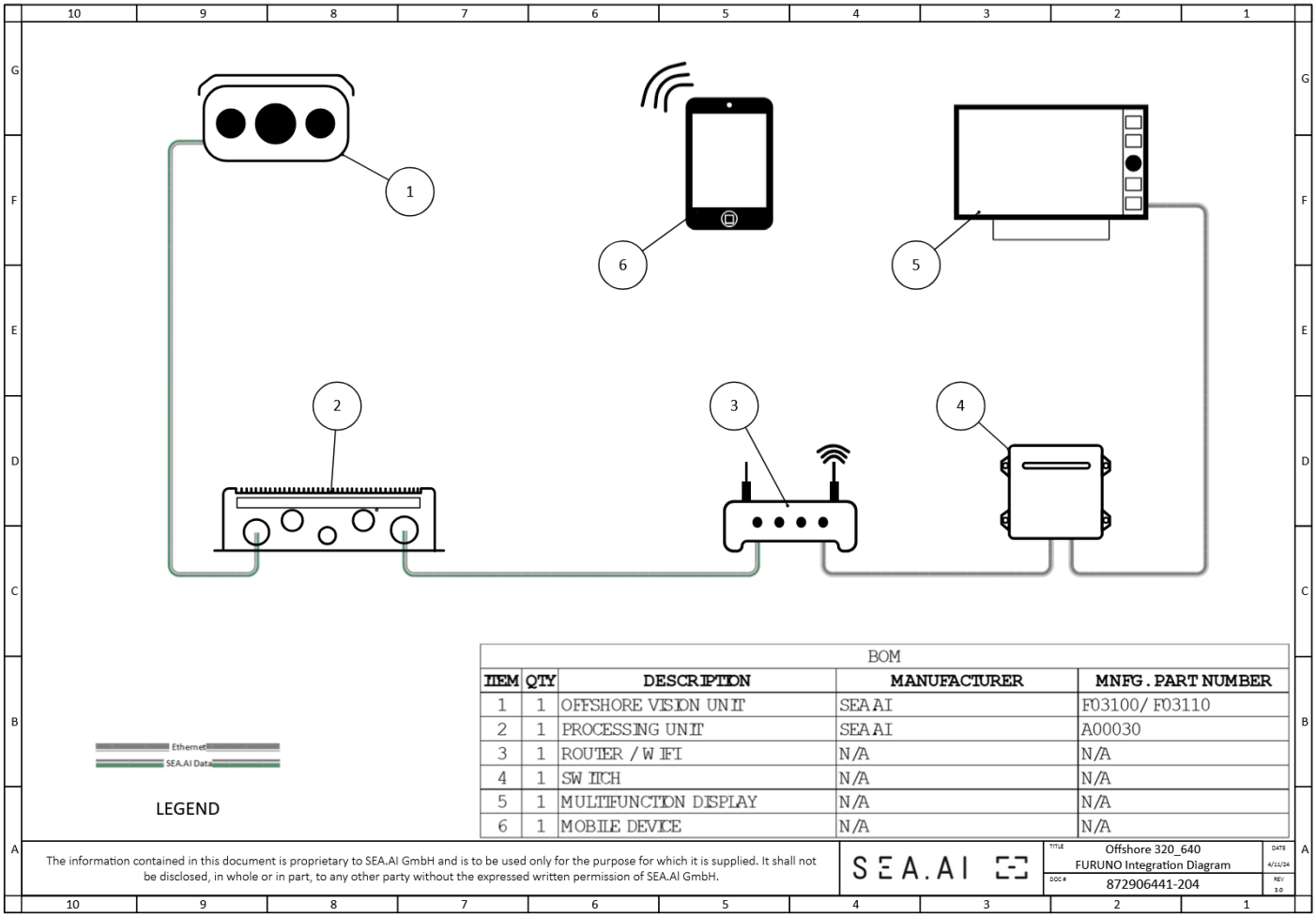
SEA.AI

TITLE: Offshore 320_640 RAYMARINE Integration Diagram
DOC#: 872906441-203
DATE: 4/11/24
REV: 2.0

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FURUNO® Integration:

For mobile devices use, a WIFI router could be integrated with DHCP FUNCTION OFF, to avoid DHCP conflict with MFD.



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	OFFSHORE VISION UNIT	SEA AI	F03100/ F03110
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER / WIFI	N/A	N/A
4	1	SWITCH	N/A	N/A
5	1	MULTIFUNCTION DISPLAY	N/A	N/A
6	1	MOBILE DEVICE	N/A	N/A

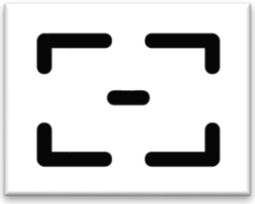
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SEA.AI

TITLE: Offshore 320_640 FURUNO Integration Diagram
DOC#: 872906441-204
DATE: 4/11/24
REV: 3.0

8 COMMISSIONING & CONFIGURATION

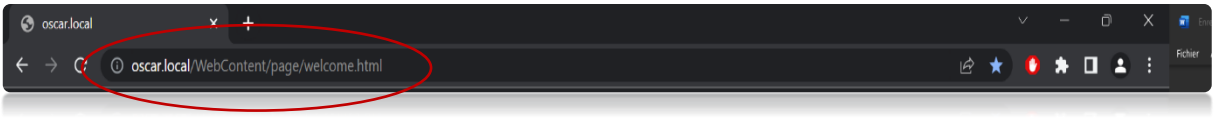
SEA.AI Icon



- Turn on the SEA.AI system (start-up time is approximately two minutes).
- On MFD, the access to the application is done via the SEA.AI icon (appears automatically).
- From a computer, use the following links to access the SEA.AI home screen.

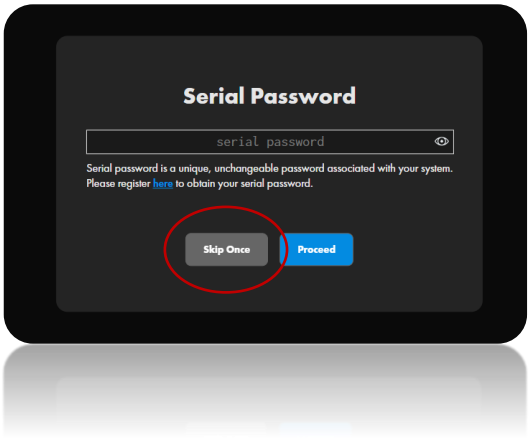
-System integrated in a network with DHCP server (router) :
http://oscar-2.local/WebContent/page/welcome.html

-System directly connected to a computer (static IP address) :
http://192.168.17.21/WebContent/page/welcome.html



An installer mode is available for settings and parameters of the SEA.AI system (pages 23 & 24) in the absence of a serial password.

This unique access is available via the Serial Password, Skip Once page.

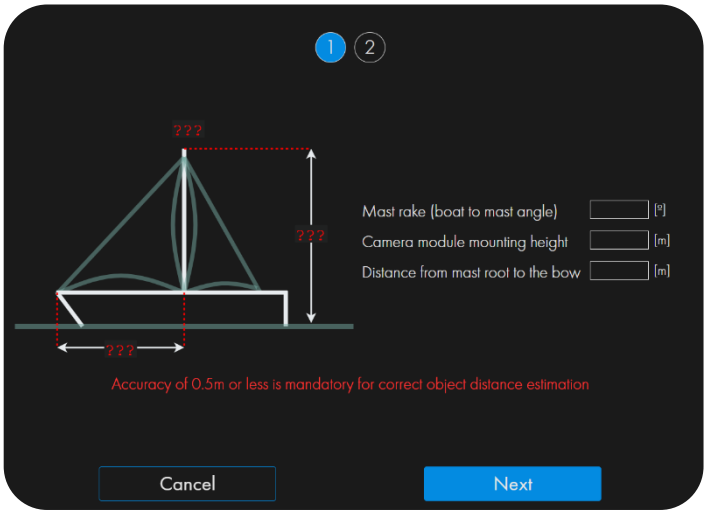


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Fill in the position of the vision unit (VU) on the boat with the following information:

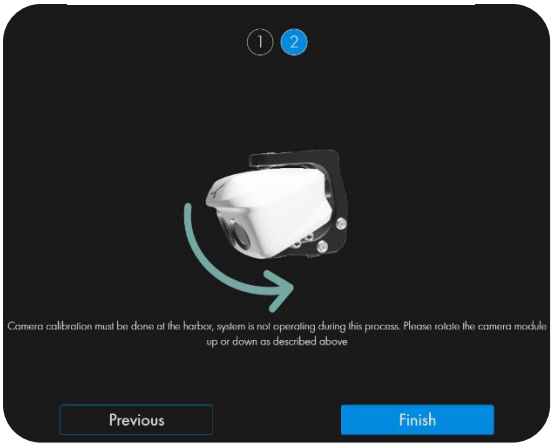
- Mast rake
- Height of the Vision Unit above sea level
- Distance from mast bottom to bow

Valid by pressing **"Next"** button

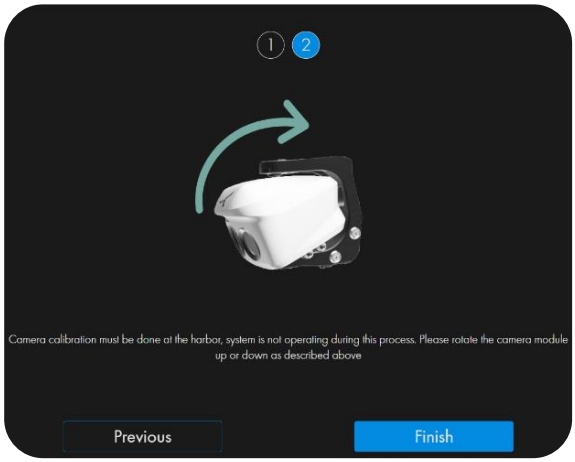


Adjust the angle of the vision unit as indicated on the interface. (needs 2 technicians: one on top of the mast; one at the display).
Vision Unit tightening torque: 2.5Nm
After Vision Unit tightening, valid by pressing "Finish" button

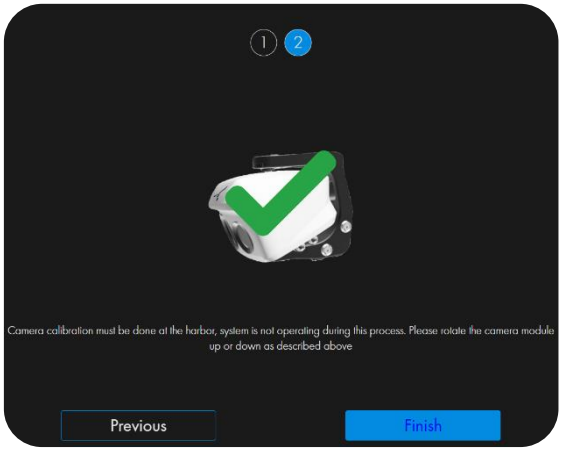
Too high, rotate Vision Unit down.



Too low, rotate Vision Unit up.

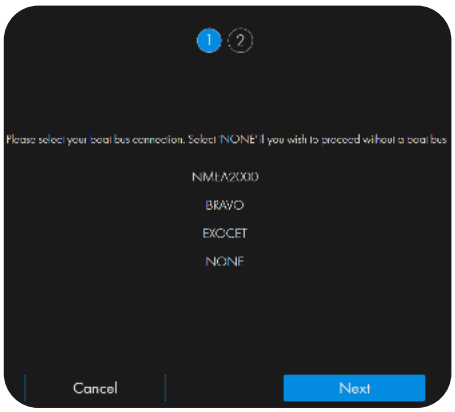


Correct Vision Unit angle.

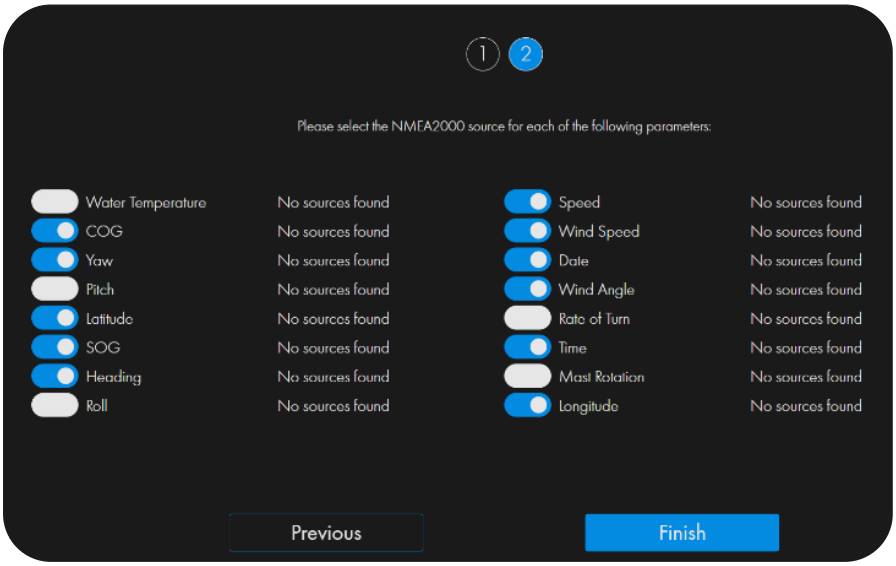


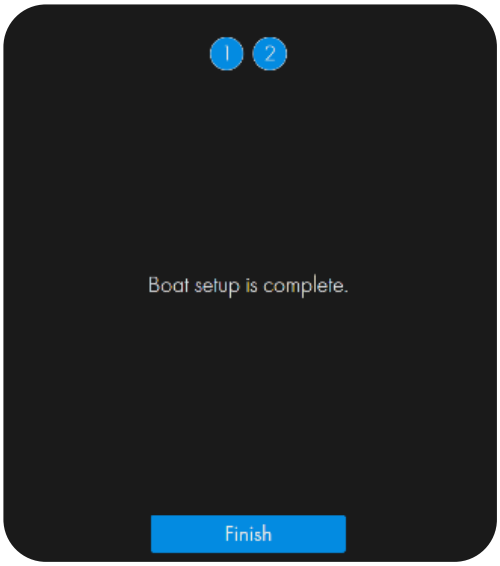
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Configure SEA.AI with the onboard information network.
Select the network type (NMEA 2000, BRAVO, EXOCET, NONE).
Select the information to be displayed
If multiple sources of same type of data available, chose the instrument to be used



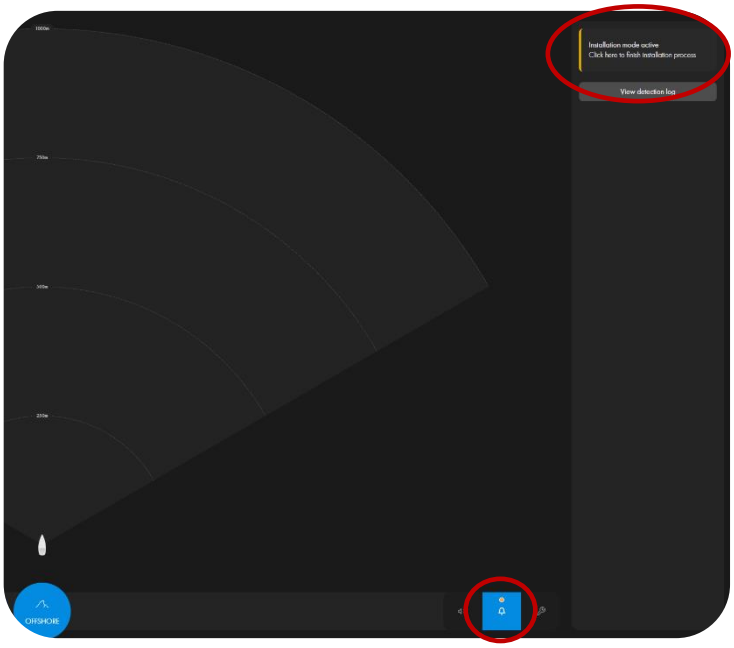
NOTE: Uncheck "No sources found" data parameters.





Once all settings and parameters have been completed, you can log out of installer mode by clicking on the "**Click here to finish installation process**" button on the **notification page**.

Following this action, the next connection to the SEA.AI system must be made using the Serial Password.



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PGN List.

PGN	Description
Water Temperature	130311
Course over ground	129026
Yaw	127257
Pitch	127257
Latitude	129025
Speed over ground	129026
Heading	127250
Roll	127257
Speed over water	128259
Wind speed	130306
Date	126992
Wind angle	130306
Rate of turn	127251
Time	126992
Mast rotation	65330
Longitude	129025

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9 MFD COMPATIBILITY

One, Offshore, Competition					
Brand	**Model**	**App Running**	**internal MFD Alarm**	**NMEA Buzzer**	**Comments**
B&G	Zeus3	☑	☑	reccomended	App is running but very slow performance due to slow MFD HW , wifi router necessary
	Zeus3S	☑	☑	reccomended	wifi router necessary
	Vulcan	☑	☐	reccomended	App is running but very slow performance due to slow MFD HW , wifi router necessary
	Nemesis	☐	☐	reccomended	
Simrad	evo3	☑	☑	reccomended	wifi router necessary
	evo3S	☑	☑	reccomended	wifi router necessary
Garmin	One Helm compatible MFDs	☑	☑	reccomended	
Furuno	TZtouch3 series: TZT9F/12F/16F/19F	☑	☐	required	
	TZtouch2 series: TZT2BB/TZTL12F/15F	☑	☐	required	
Raymarine	Axiom	☑	☐	required	LIGHTHOUSE 3 - Edgartown - v3.13 or higher Update
	Axiom Pro	☑	☐	required	LIGHTHOUSE 3 - Edgartown - v3.13 or higher Update
	Axiom XL	☑	☐	required	LIGHTHOUSE 3 - Edgartown - v3.13 or higher Update

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10 MAINTENANCE

The system should always be updated to the latest available software version.
You should update your software frequently to benefit from all the improvements.
The software can be updated with the SEA.AI Navigation application.
The Vision Unit (VU) and camera lenses should be cleaned periodically, clean the lenses if you notice a decrease in image quality or dust accumulation.

WARNING:



- DO NOT SCRUB the lenses with a dry cloth or abrasive material such as paper or brushes as this may damage the protective coating.
- DO NOT use acid or ammonia-based products.
- DO NOT EXERCISE EXCESSIVE PRESSURE when cleaning

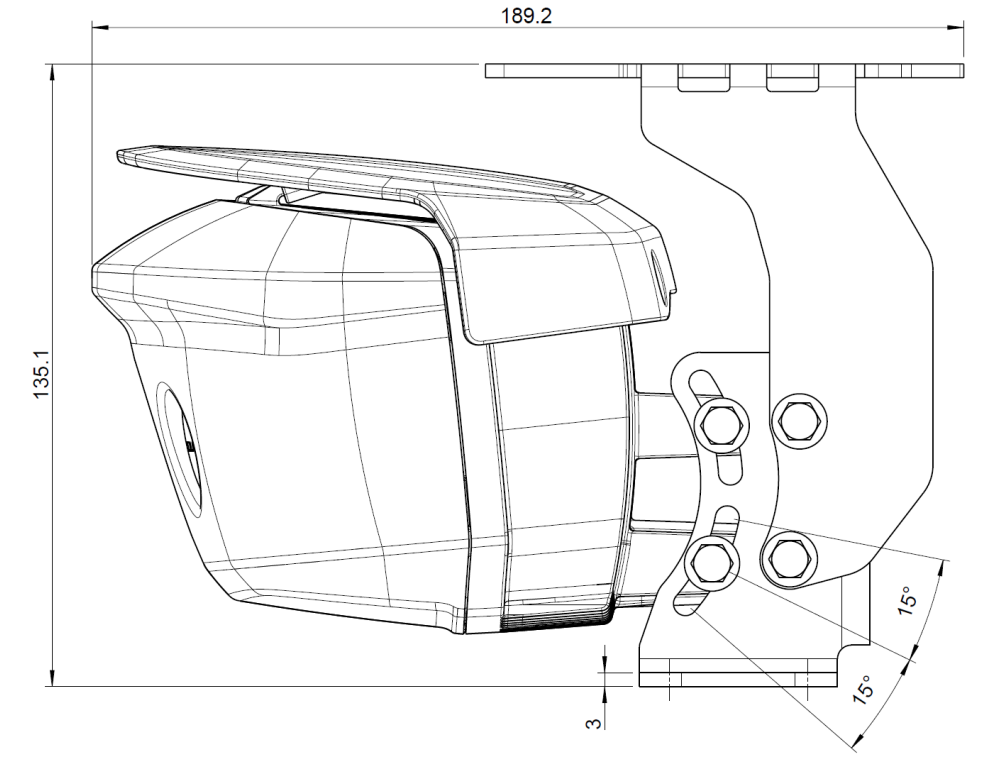
Be especially careful when cleaning the lenses. The anti-reflective coating could be damaged by improper cleaning.

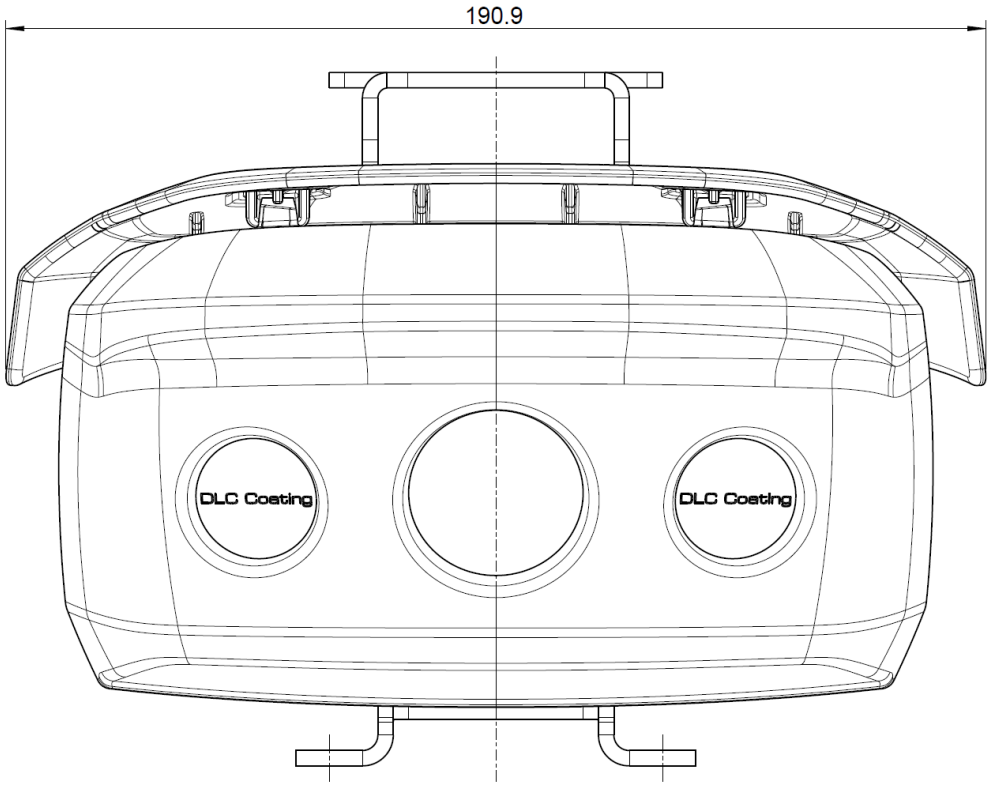
- Clean the vision unit housing with a soft, clean cotton cloth. You can dampen the cloth and use a mild detergent if necessary.
- Rinse the camera lenses with clean water to remove dust particles and salt deposits. Allow to dry naturally.
- If stains or streaks remain. Gently rub the lenses with a clean microfiber cloth or soft cotton cloth.
- If necessary, use isopropyl alcohol or a mild detergent to clean up any remaining traces.

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11TECHNICAL DATA

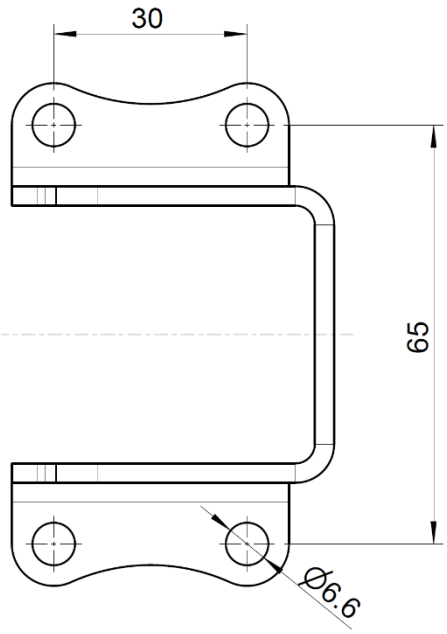
F01100 Vision Unit View

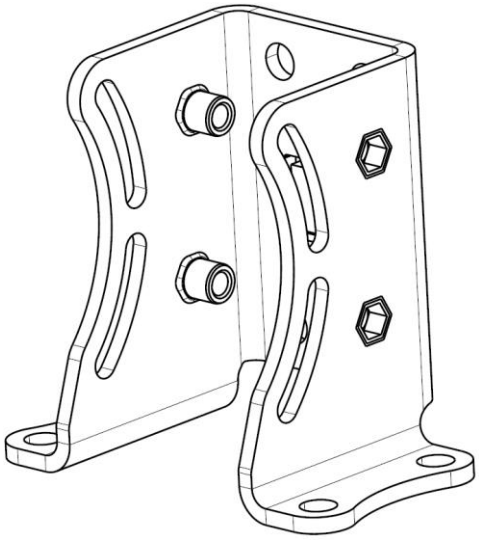




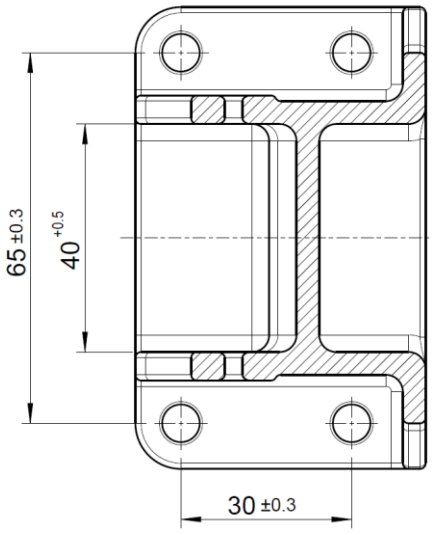
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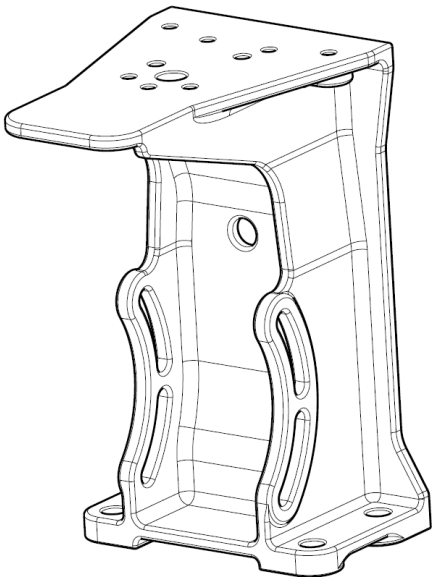
A01271 Vision Unit bracket view





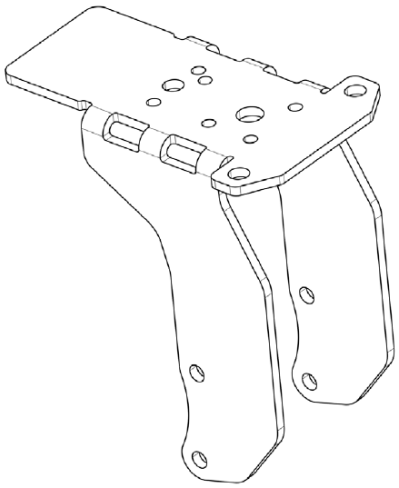
A01345 Vision Unit isolated bracket view (optional)

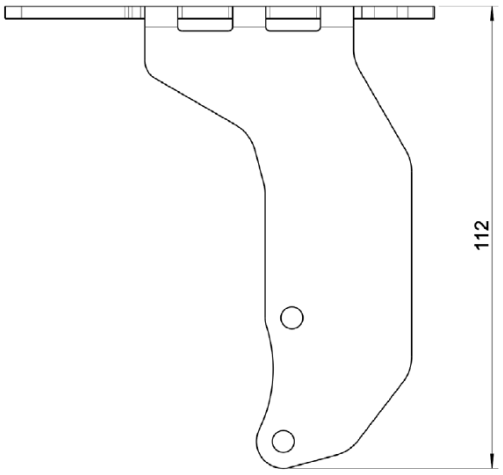




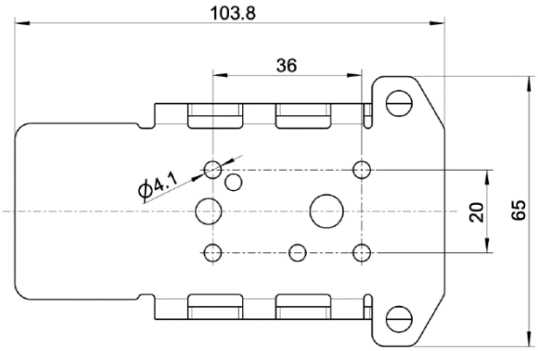
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A01350 Wind sensor bracket view

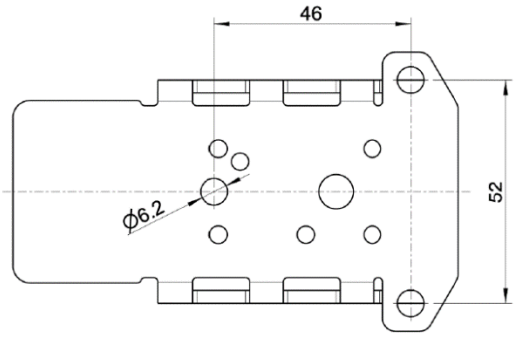




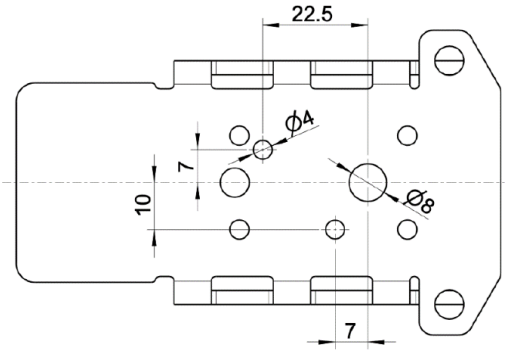
B & G



GARMIN

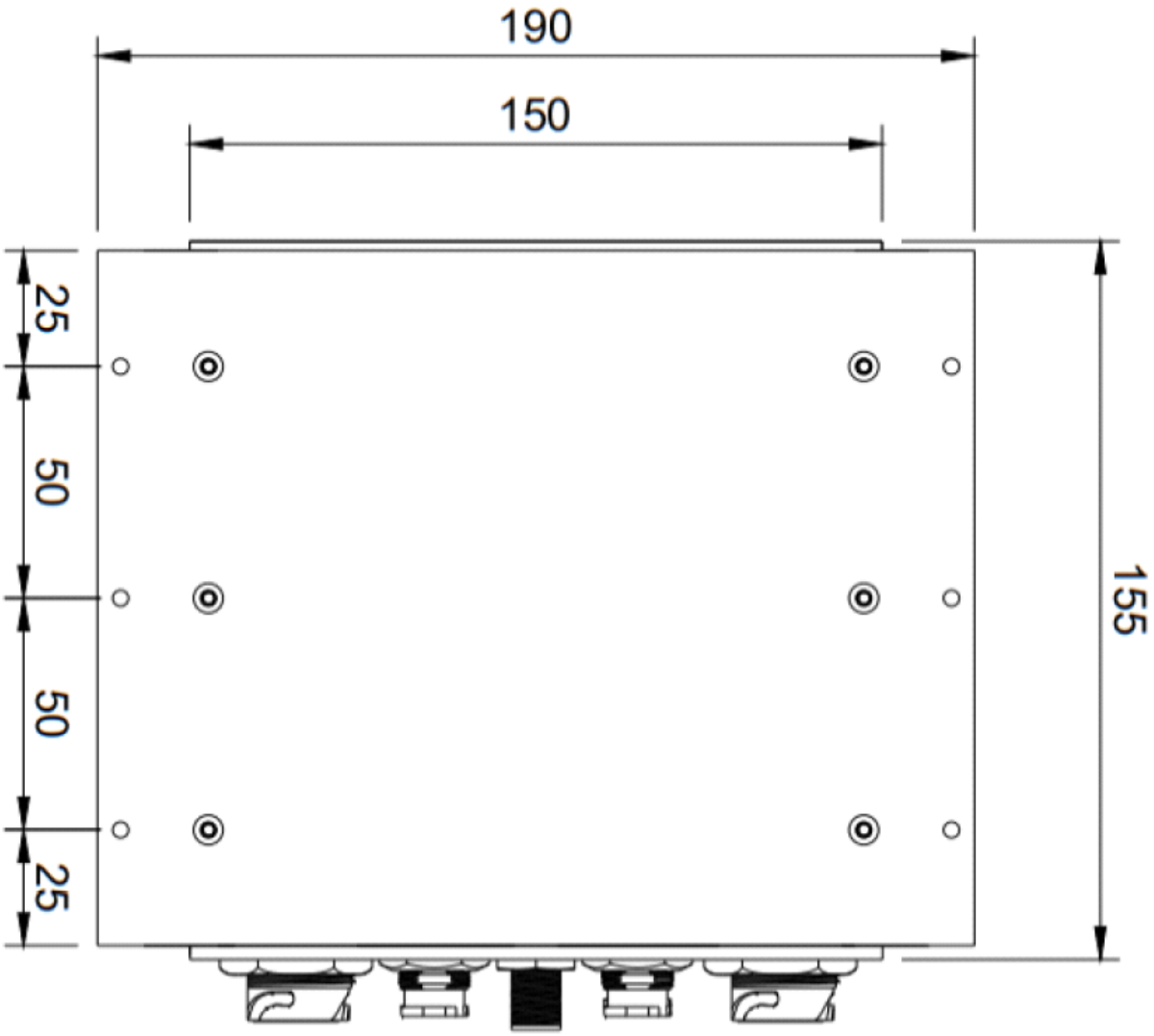


RAYMARINE



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A00030 Processing Unit View



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12TECHNICAL SUPPORT

SEA.AI provides a range of technical support options:

Online Documentation: Offshore

E-mail: service@sea.ai

The preferred method of contacting Support is via e-mail, which ensures proper dispatching and tracking to address your questions promptly.

When contacting Support, please provide the following information:

- Offshore 320_640 serial number
- Offshore 320_640 installation date
- Description of the issue / problem

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Notes:

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