SEA.AI

SEA.AI COMPETITION

INSTALLATION MANUAL



SEA.AI Professional Services

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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.



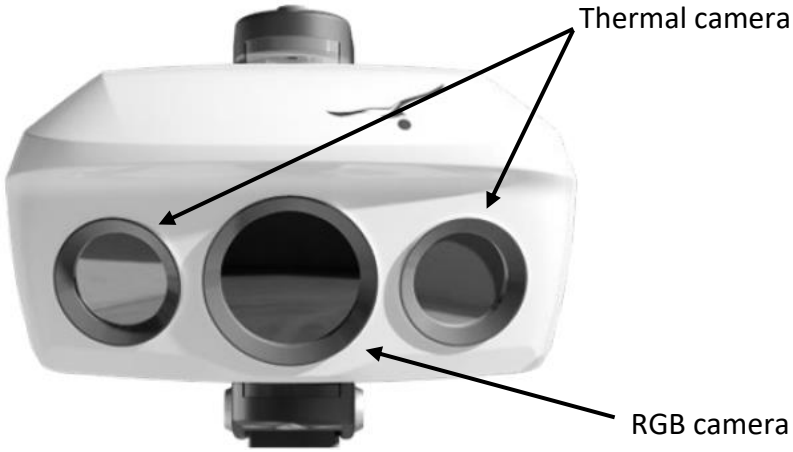
WARNING

• Working at heights requires that safety instructions be followed.

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2 GENERAL INFORMATIONS

- SEA.AI Competition 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	Competition 320	Competition 640
Thermal camera	2x FLIR BOSON™ 320 x 256 px, 50°	2x FLIR BOSON™ 640 x 512 px, 50°
RGB camera	2 Mpx low light vision 1920 x 1080 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 & RGB	Thermal & RGB
Horizontal rotation	+-50°	+-50°
Weight	750 g	750 g
Dimensions	144x 114 x 96 mm	144 X 114 x 96 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
F02200	Vision unit Competition 320	1
F02210	Vision unit Competition 640	1
A00030	Processing unit 256GB	1
A02360	Data Cable V3-L-2TP-45	1
A02410	Power cable V3-L-15-45	1
A00950	MAST BRACKET ADJUSTABLE PART 1	1
A01000	SOCKET HEAD SCREW DIN7984 M4x10 A4	6
A00990	SPRING WASHER DIN127 4 A4	6
A00960	MAST BRACKET ADJUSTABLE PART 2	1
F03146	Ethernet cable PU (2nd gen) universal (RJ45) 6m	1
A00970	HEXAGON SCREW FLANGED DIN 6921 M5x40 A4	2
A00980	HEXAGON NUT FLANGED SELF LOCKING DIN 6926 M5 A4	2
A02980	RJ45 connector Cat 6 Ethernet Stecter	1
A02920	Power IN cable with bayonet lock connector	1
Document	Competition user guide	1

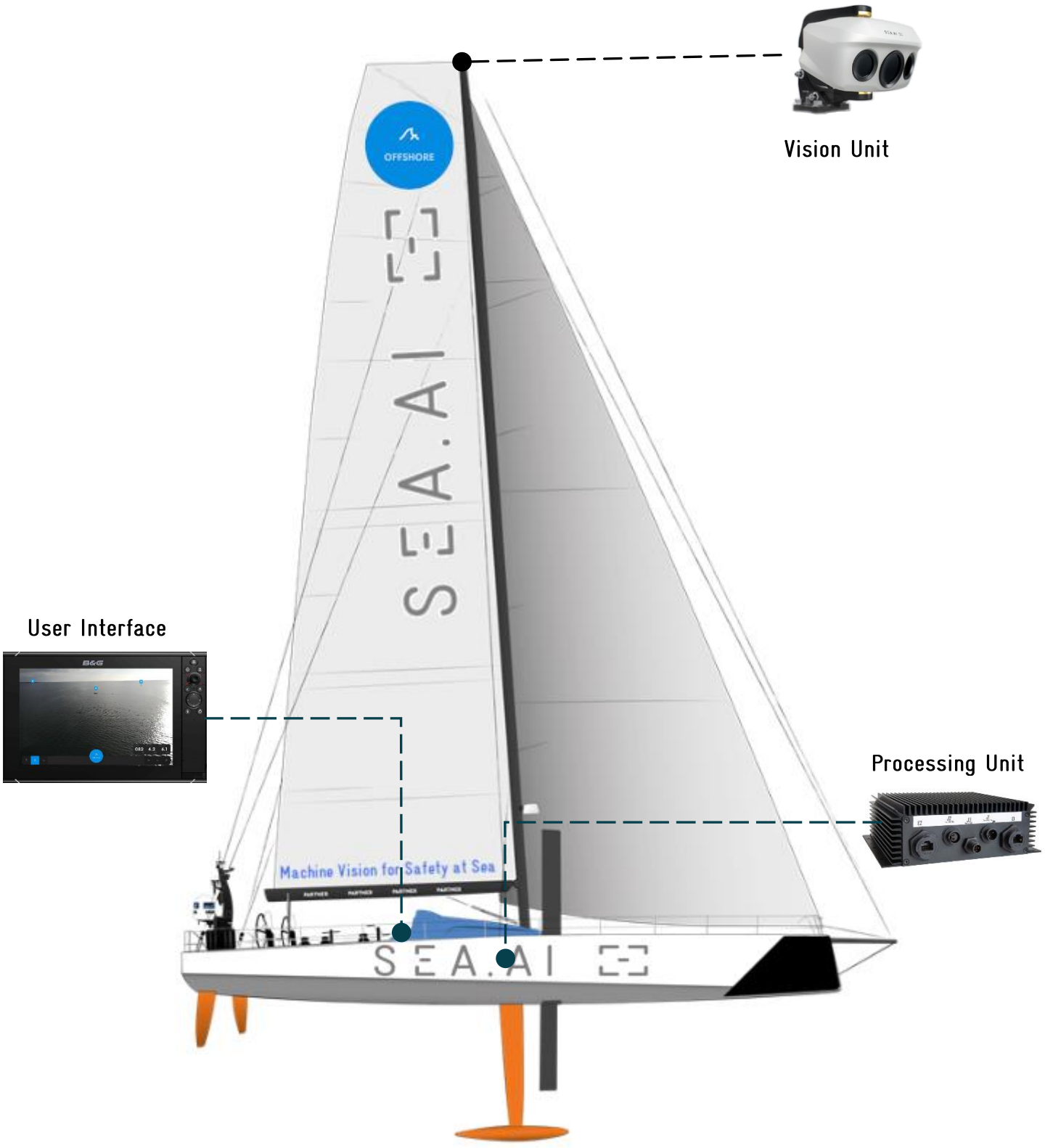
5 TOOLS & EQUIPMENT NEEDED

- 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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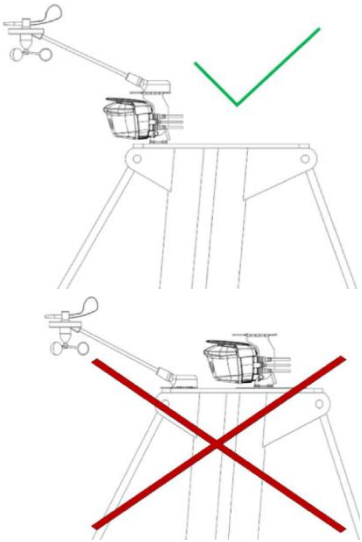
6 INSTALLATION

6.1 General view of the installation



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6.2 Vision Unit installation (VU)



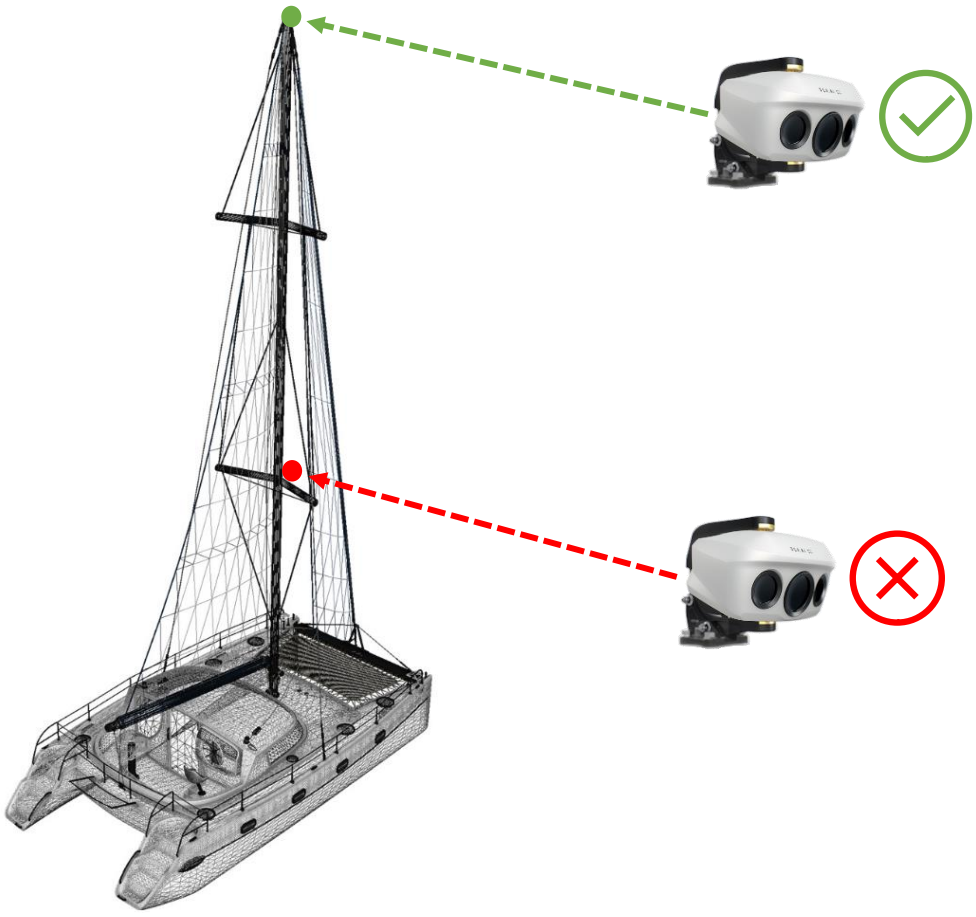
The installation of the vision unit requires the following tools:

- 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.

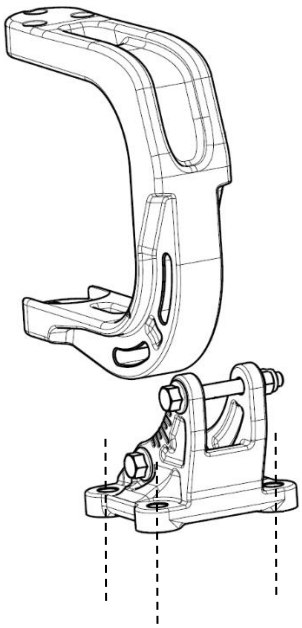
NOTE: Sufficient space at the rear of the VU must be provided for the proper handling of cables and electrical connectors.



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

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6.3 Attaching the vision unit (VU) bracket

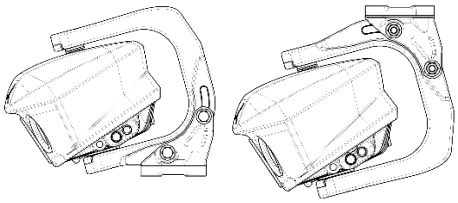


The following point must be observed when mounting the vision unit:
The Art N°A00960 VU MAST BRACKET ADJUSTABLE PART 2 must
Be fixed with four M6 screws (not included)

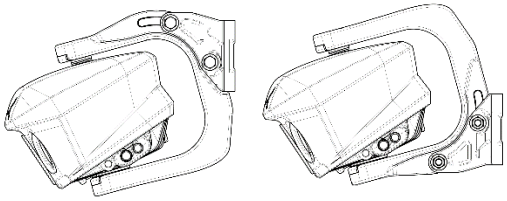
Adapted to the characteristics of the support on which it is mounted

(drawings of the bracket available on page 7 & 30).

Horizontal mounting



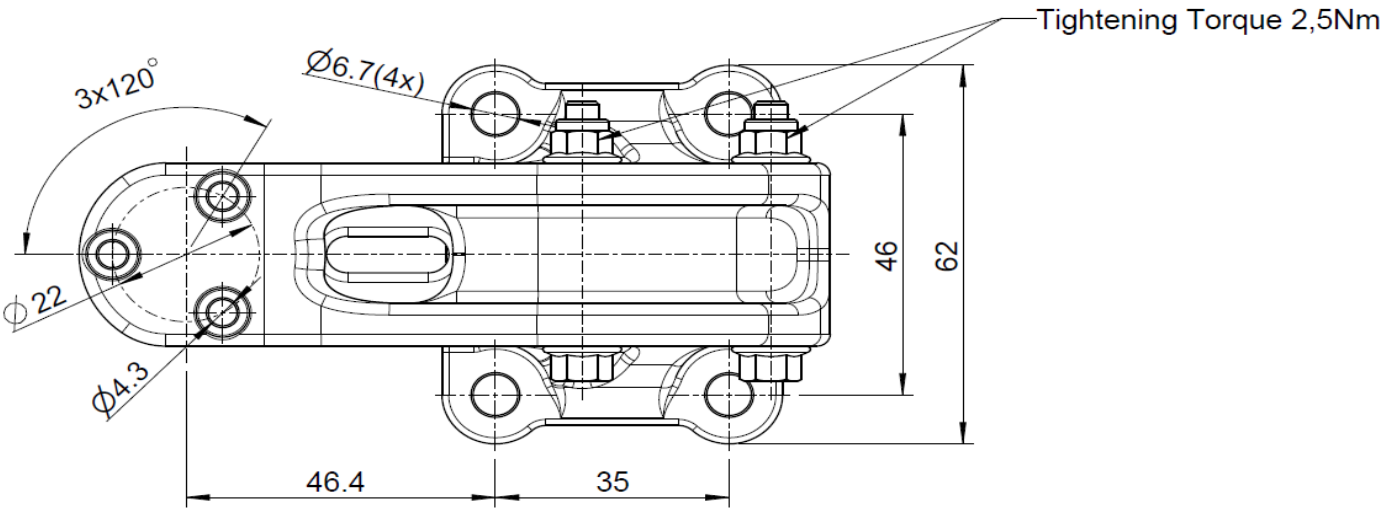
Vertical mounting



Mounting and Hole Pattern

The basic mounting pattern uses four screws. The mounting holes are not tapped. All four mounting screws must be used, and the mount must be strong to support the weight of the system as well as any additional forces exerted on it.

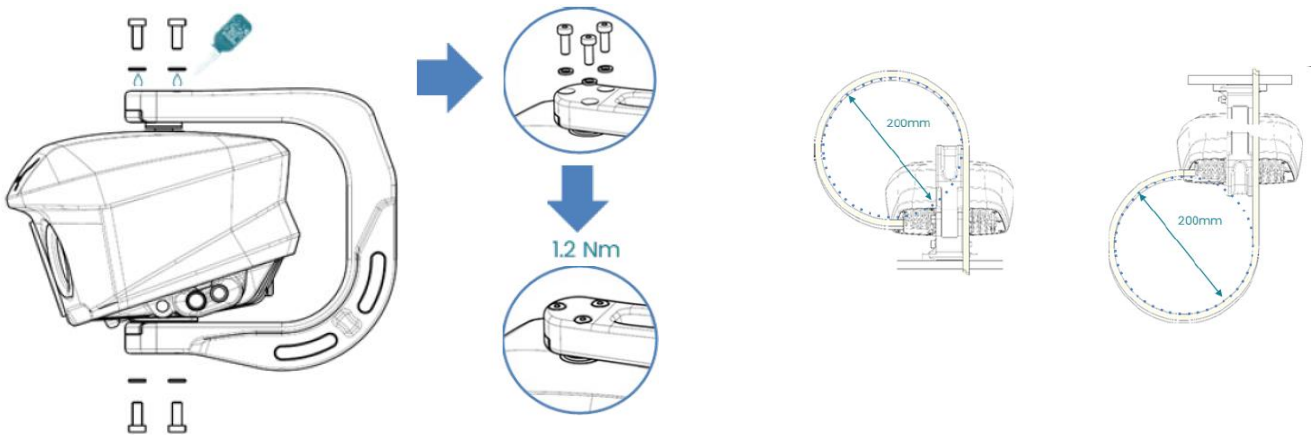
Vision Unit Bracket View from Top



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6.4 Mounting the vision unit (VU) on the bracket

To attach the Vision Unit to the bracket Art N°A00950, use the six 4mm screw/washer (Art N°A01000/A00990) sets provided in the installation kit, put medium screw adhesive (e.g Loctite 243) on each screw and tighten with 1.2Nm.

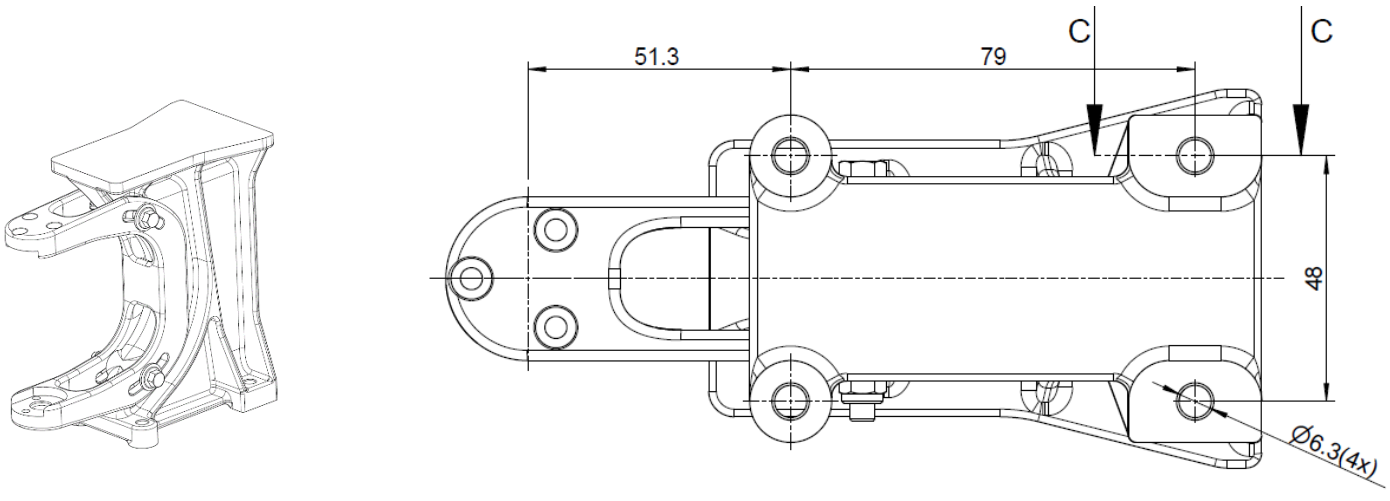


Secure the cables properly with a cable tie. The Vision Unit needs to rotate freely without harming the cables nor interfere with the view of the cameras.

- Do not bend the cables excessively
- Leave enough cable for the Vision Unit to be able to horizontally rotate in a range of +/- 50° without stretching the cables

NOTE : If necessary, a wind sensor bracket Art N°A01351 (optional), can be installed in place of the conventional bracket Art N°A00960.

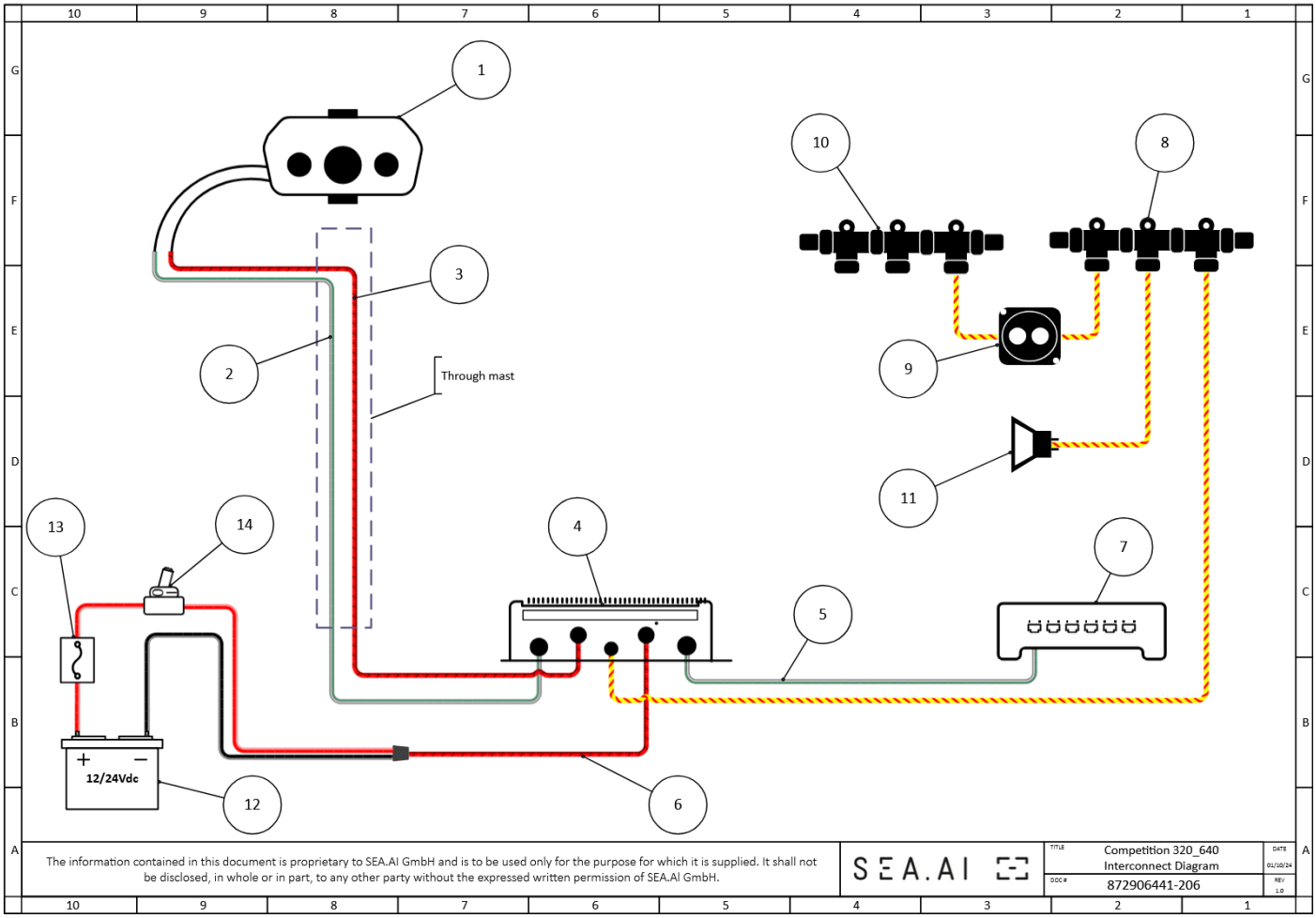
A01351 Wind sensor Bracket View from Bottom



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

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Wiring Competition 320_640



SEA.AI Data
SEA.AI Power
DC +
DC -
DC Power
Ethernet
NMEA

LEGEND

BOM			
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	COMPETITION VISION UNIT	F02200 /F02210
2	1	DATA CABLE V3-L-2TP-45	A02360
3	1	POWER CABLE V3-L-15-45	A02410
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 (VU).

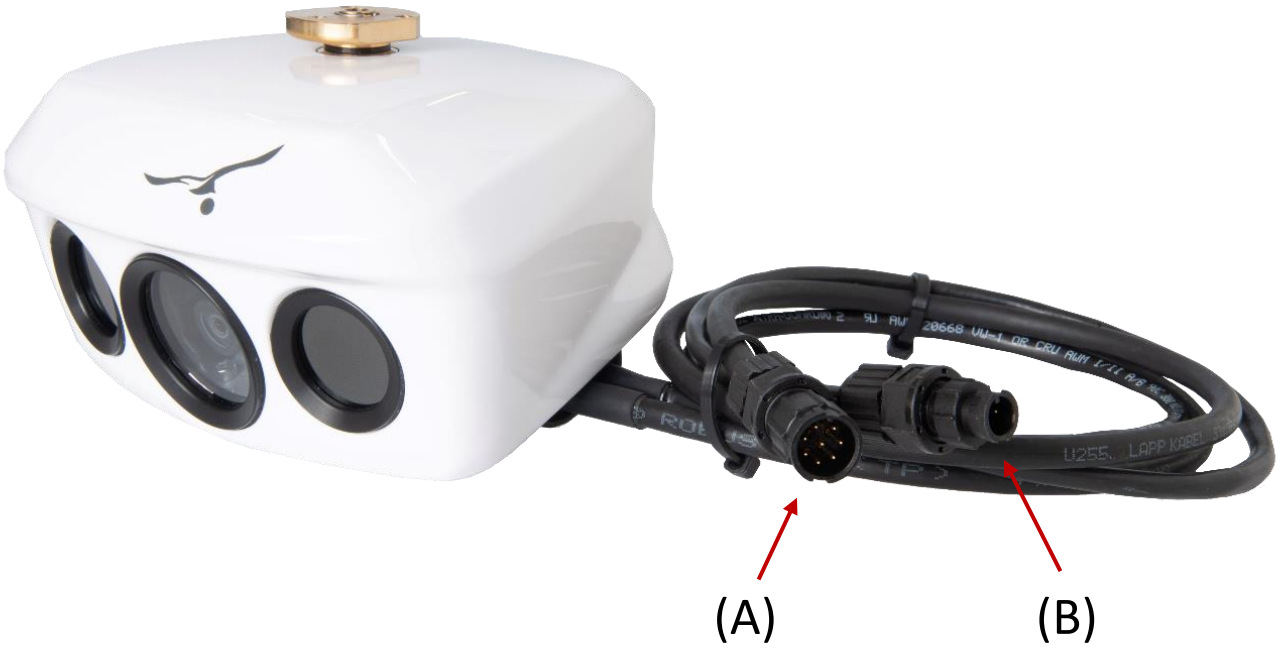
After routing the cables, connect the data cable Art N°A02360 (label **A**) and the power cable Art N°A02410 (label **B**) to the corresponding VU connectors.

A Art N°A02360



B Art N°A02410





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)

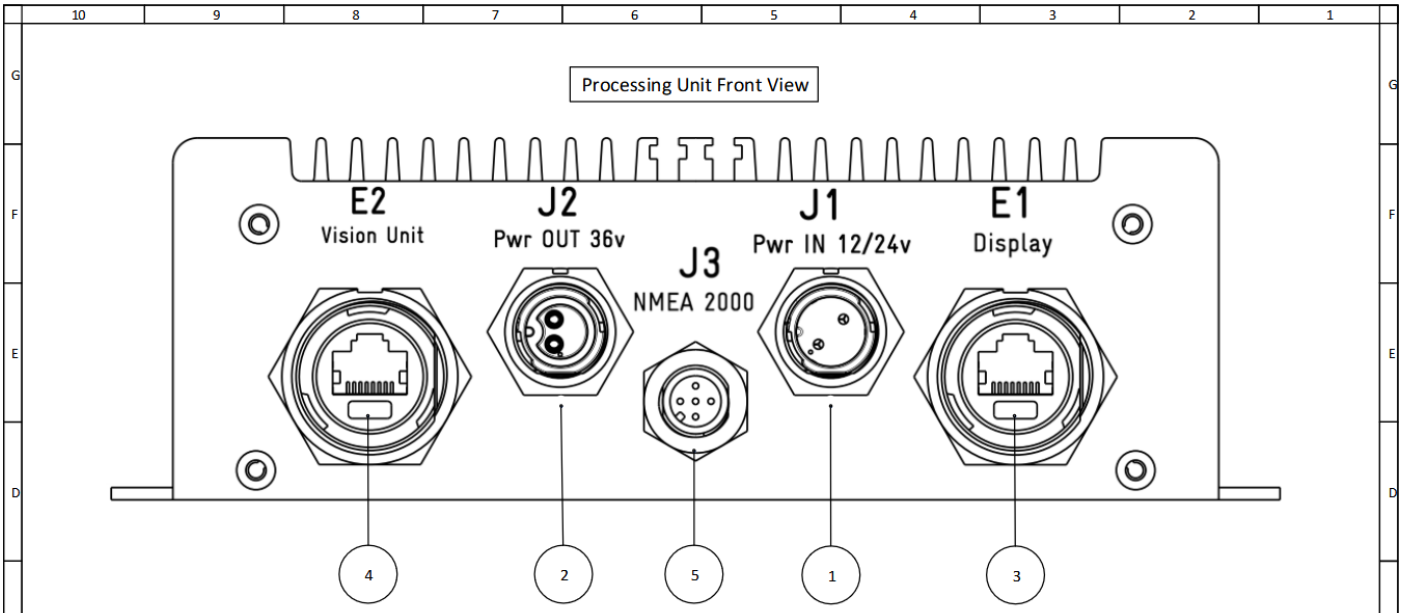
The Processing Unit must be fixed by means of six screws (not supplied) on suitable support. The installation of the PU must correspond to the following points:

- 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 Competition 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

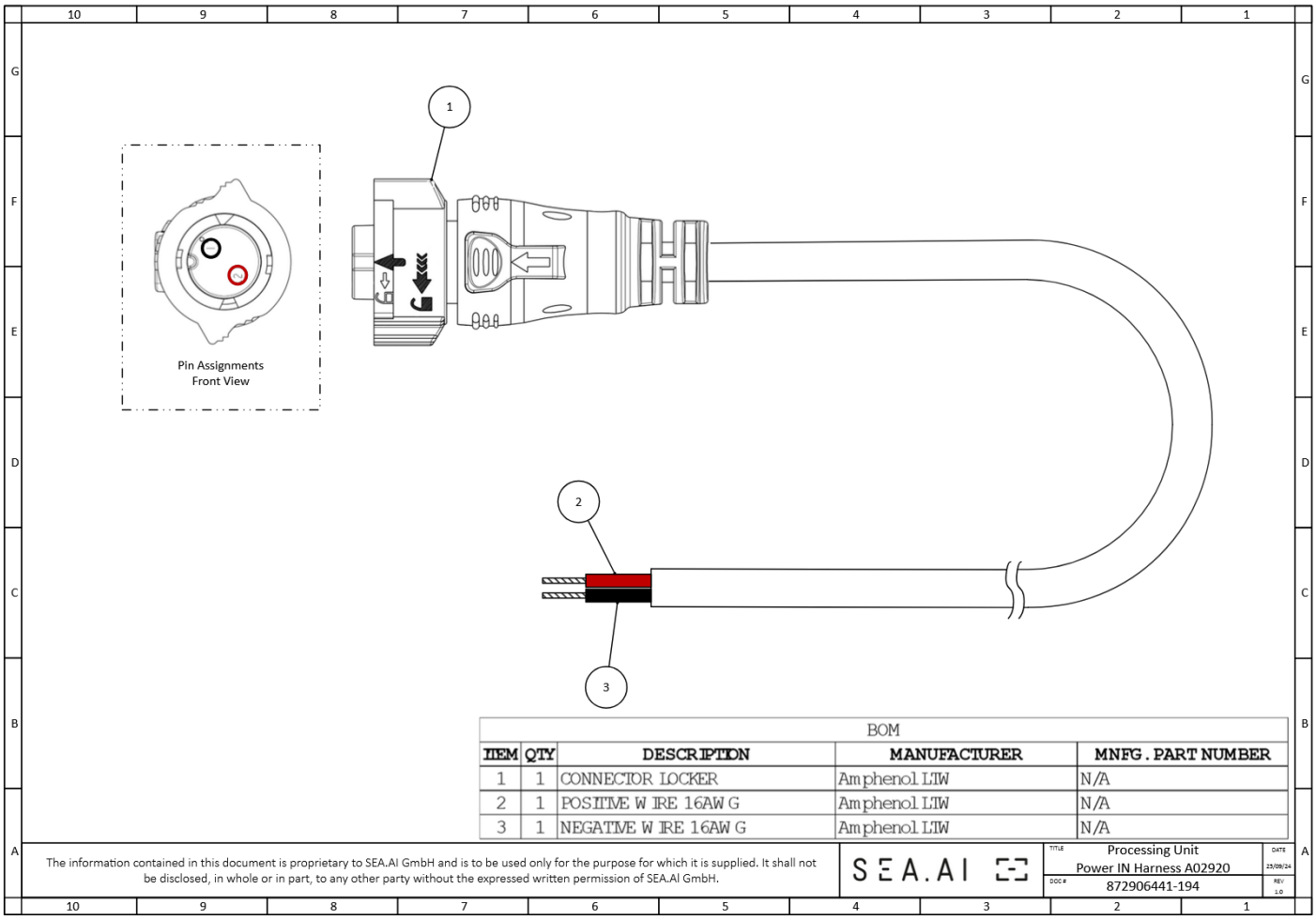
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SEA.AI | TITLE: Competition 320_640 Processing Unit | DOC#: 872906441-207 | DATE: 03/03/24 | REV: 2.0

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Connect Art N°**A02920** Power IN cable to the boat's electrical system, then to the Processing Unit at socket **J1** (PU 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

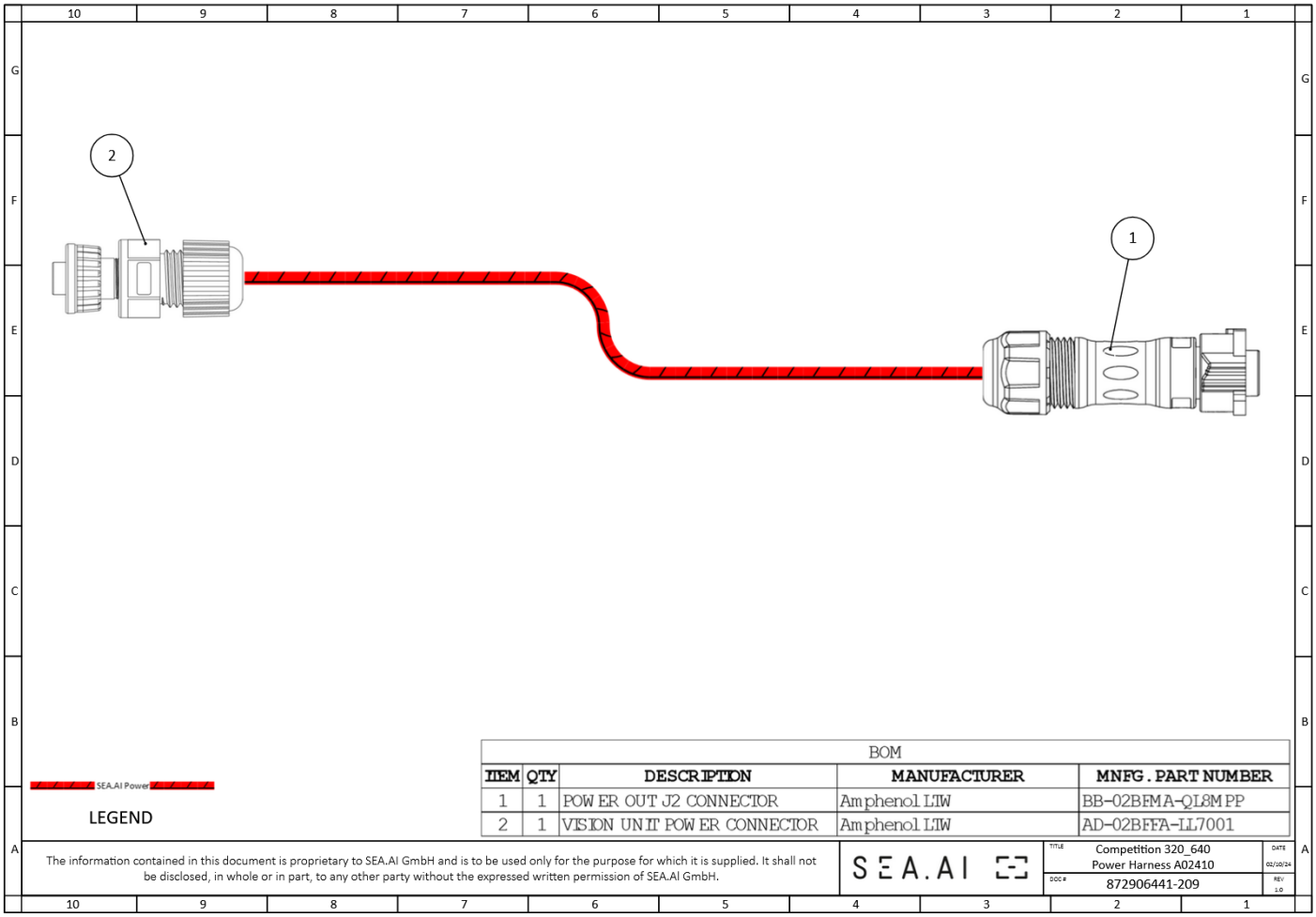
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SEA.AI

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

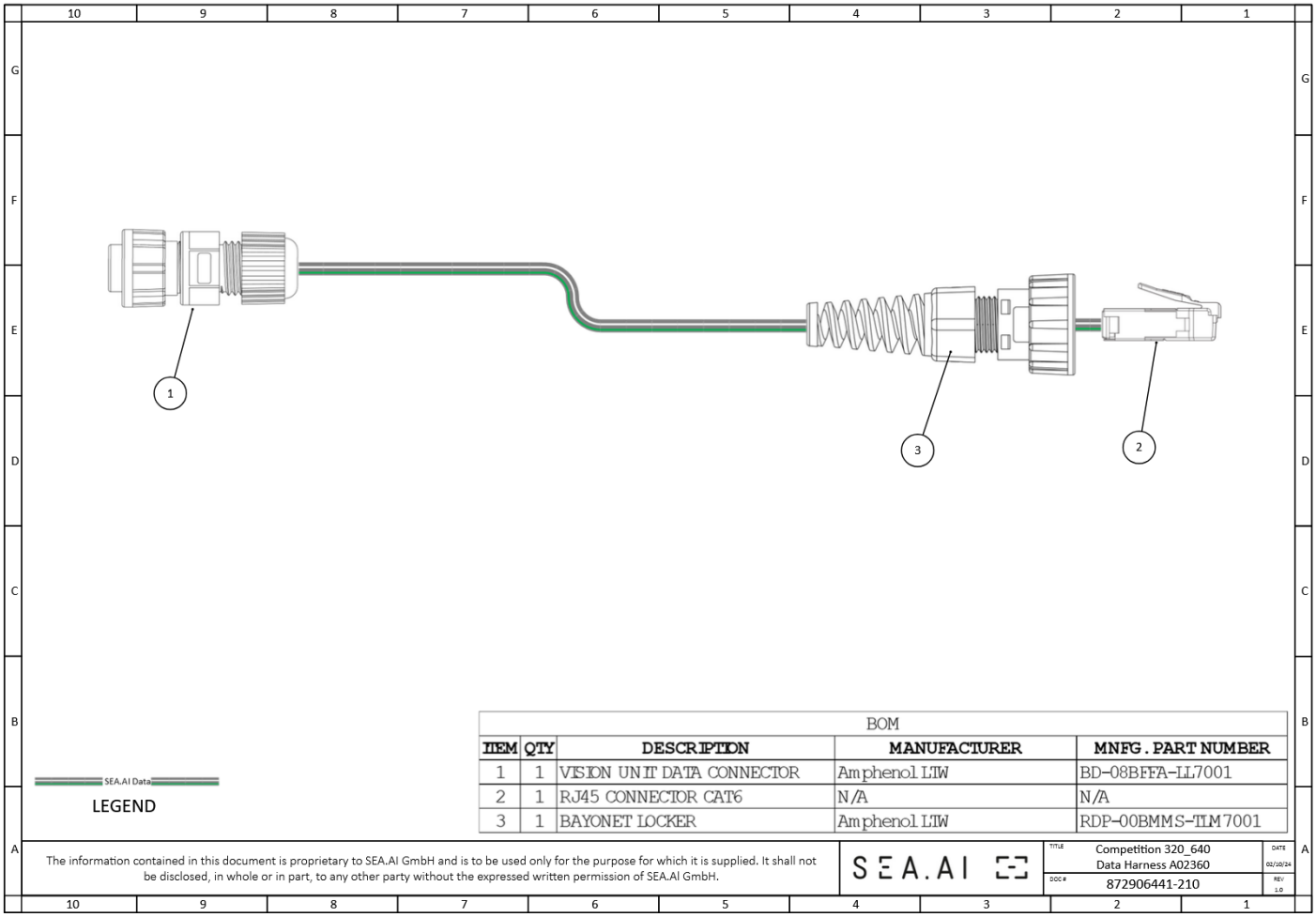
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Connect Art N°**A02410** Power cable, to the Vision Unit, then to the Processing Unit at socket **J2** (PU front view mark **2**) until you hear a "click."



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Connect Art N°**A02360** data cable from the Vision Unit to the Processing Unit at socket **E2** (PU front view mark **4**). Ensure that the RJ45 connector is securely fastened with its locking bayonet.



BOM

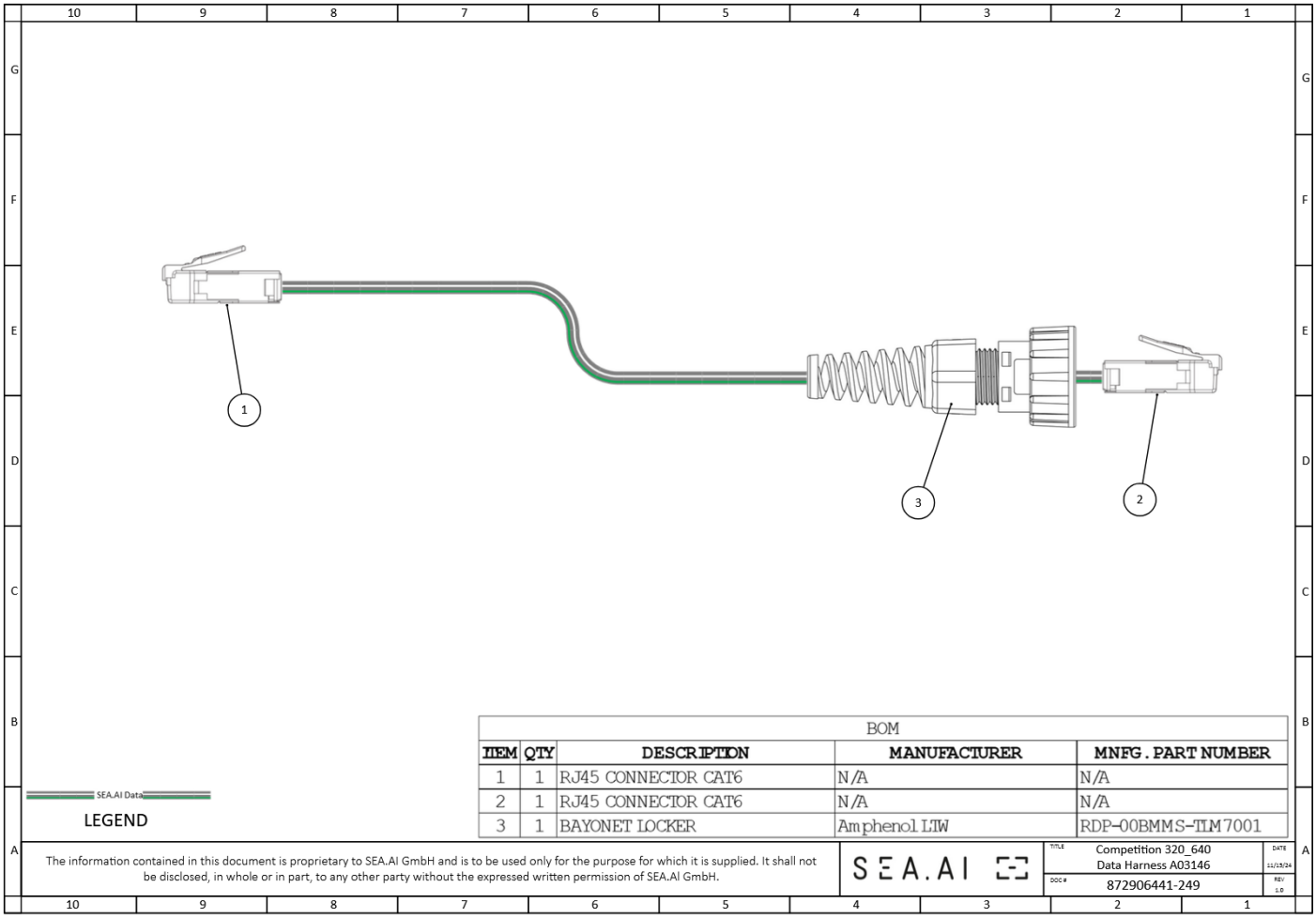
ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	VISION UNIT DATA CONNECTOR	Amphenol LTW	BD-08BFFA-LL7001
2	1	RJ45 CONNECTOR CAT6	N/A	N/A
3	1	BAYONET LOCKER	Amphenol LTW	RDP-00BMMS-TLM7001

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SEA.AI

TITLE: Competition 320_640 Data Harness A02360
DOC #: 872906441-210
DATE: 02/10/24
REV: 1.0

Connect Art N°**F03146** data cable to the Processing Unit at socket **E1** (PU 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 LTW	RDP-00BMMS-TLM7001

SEA.AI Data

LEGEND

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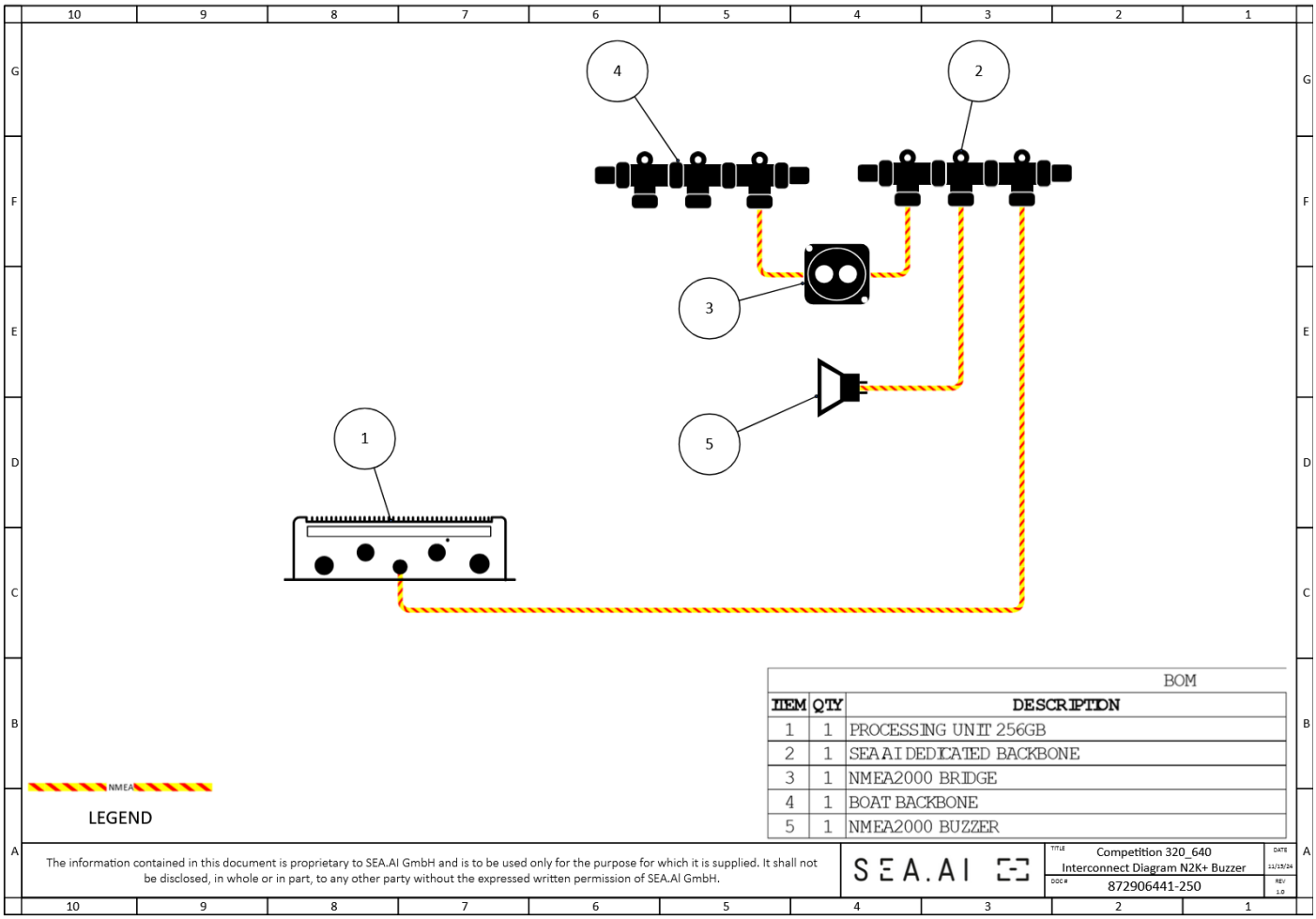
SEA.AI

TITLE: Competition 320_640 Data Harness A03146
DOC #: 872906441-249
DATE: 11/15/24
REV: 1.0

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Connect Art N°**F00030** Processing Unit at socket **J3** (PU 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).



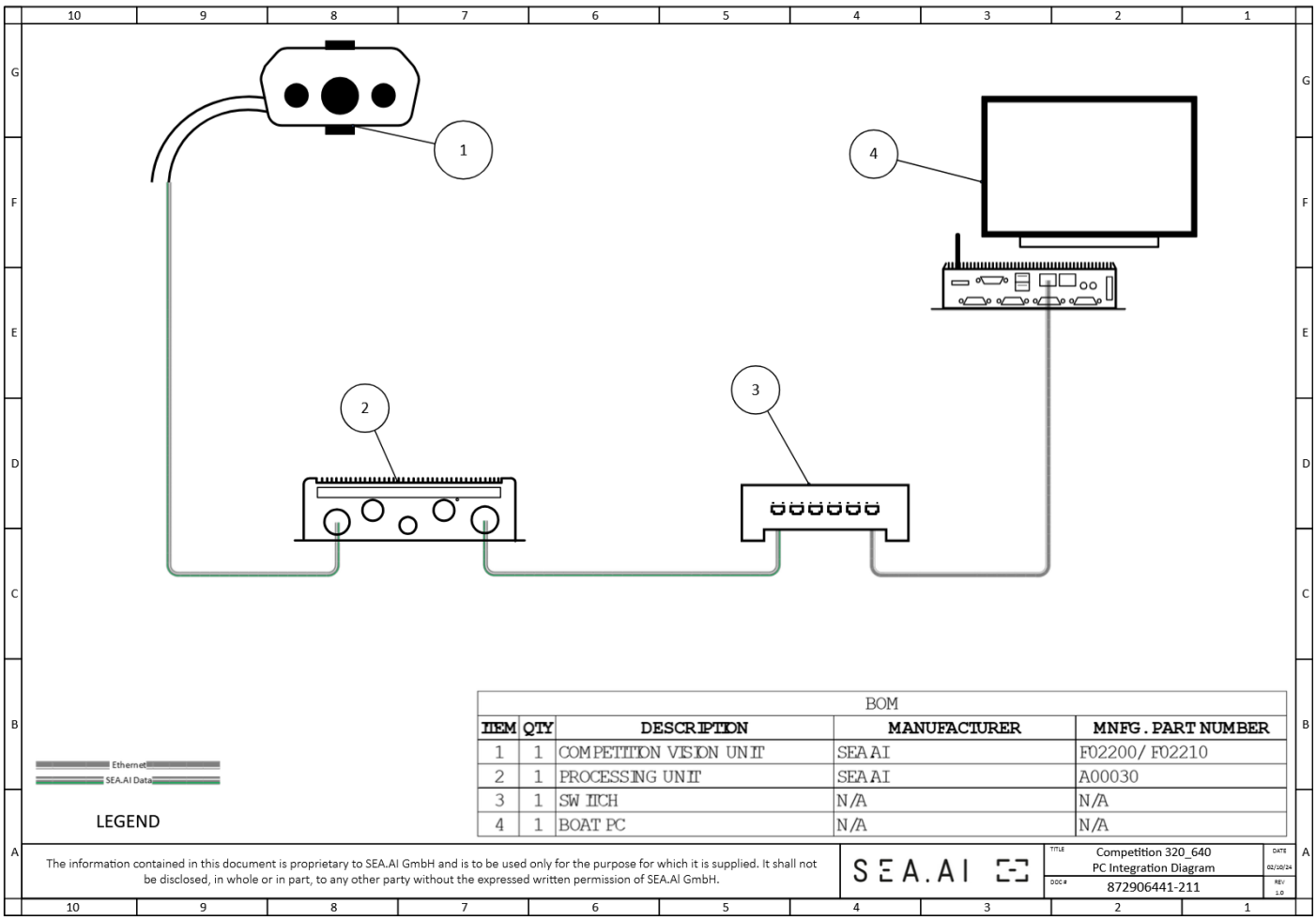
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7 INTEGRATION EXAMPLES

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 competition 320_640.

Competition 320_640 IP ADRESS: 192.168.17.21



BOM

ITEM	QTY	DESCRIPTION	MANUFACTURER	MNFG. PART NUMBER
1	1	COMPETITION VISION UNIT	SEA AI	F02200/ F02210
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	SW ITCH	N/A	N/A
4	1	BOAT PC	N/A	N/A

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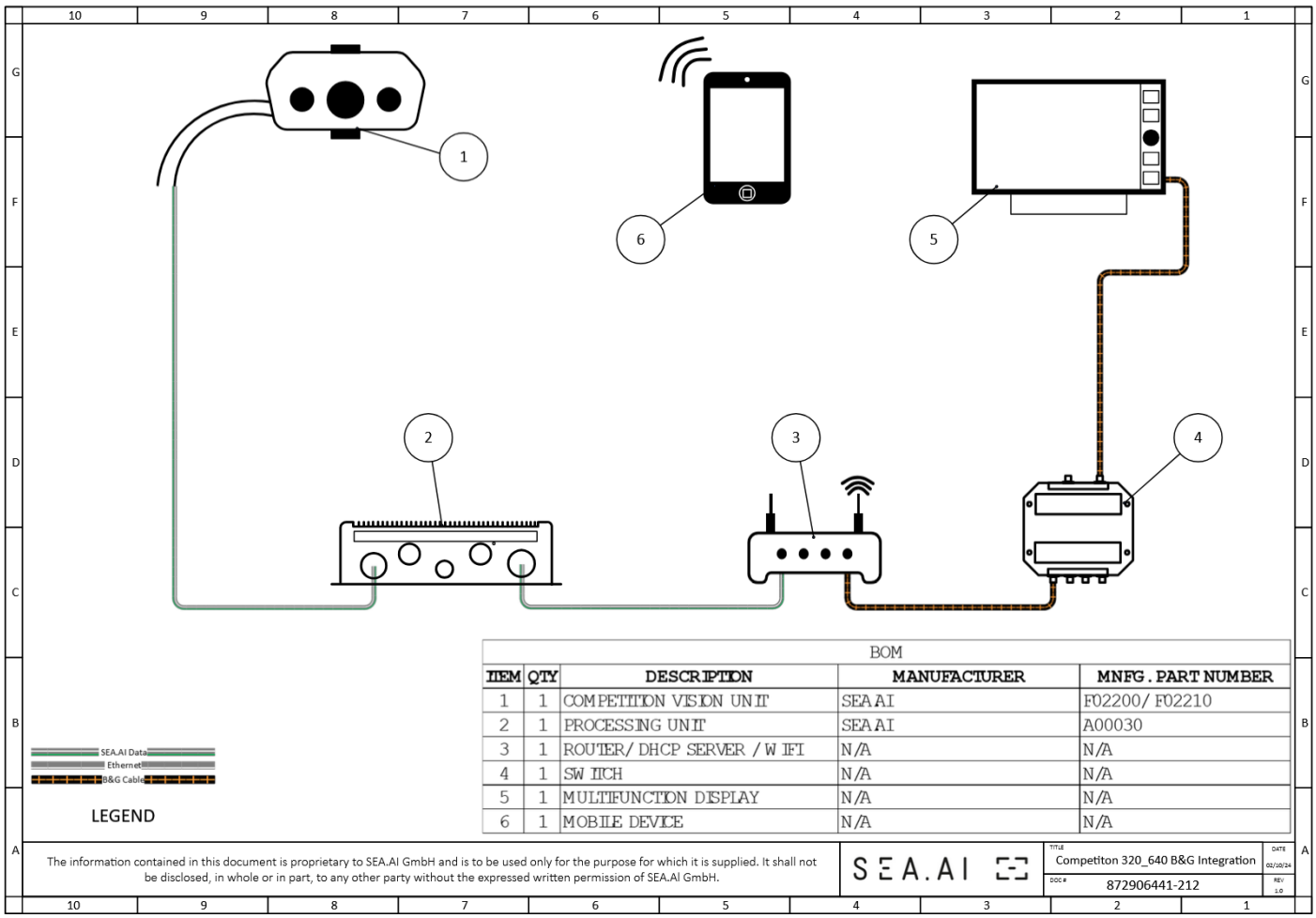
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TITLE: Competition 320_640 PC Integration Diagram
DOC#: 872906441-211
DATE: 02/10/24
REV: 1.0

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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	COMPETITION VISION UNIT	SEA AI	F02200/ F02210
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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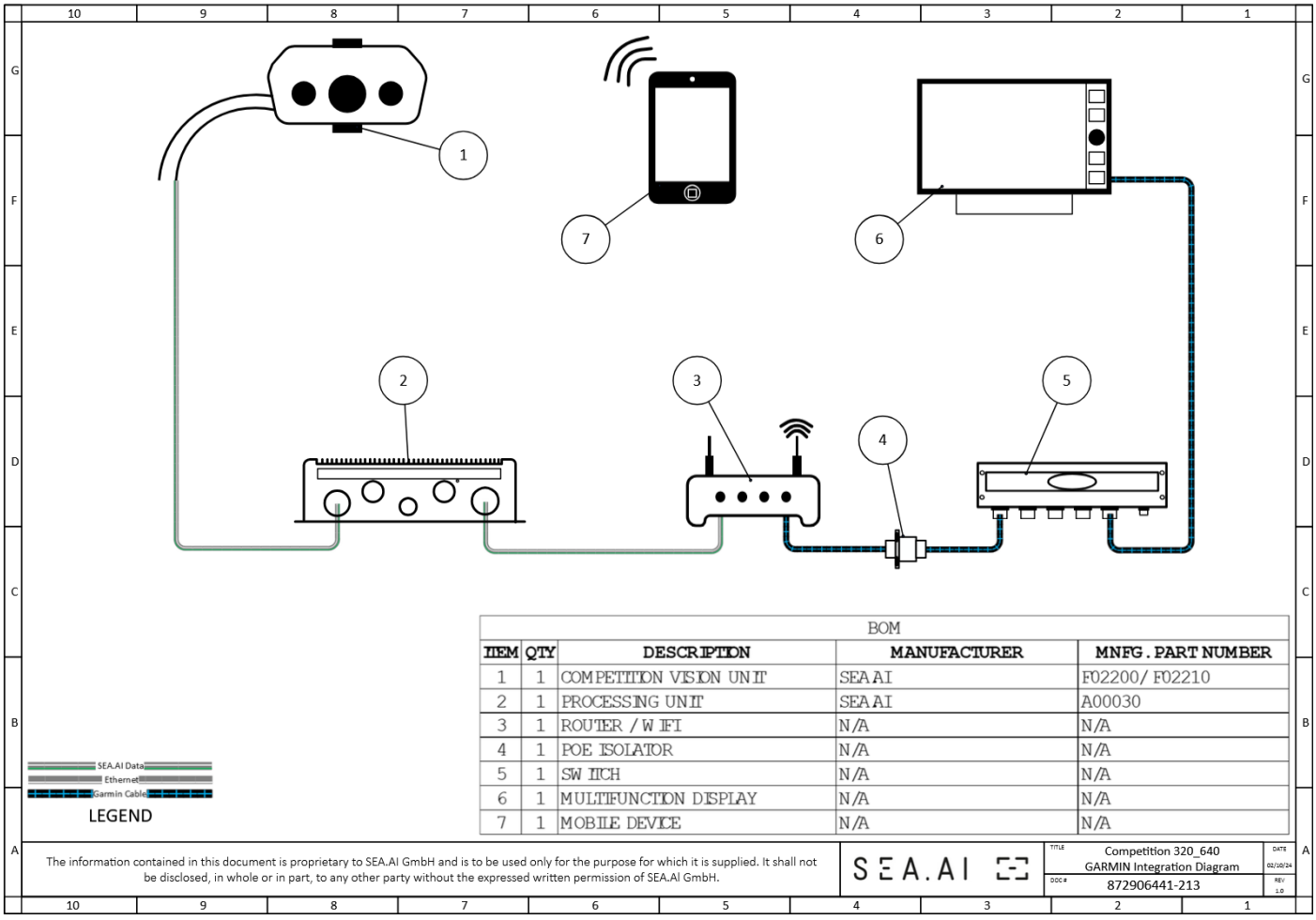
SEA.AI

TITLE: Competiton 320_640 B&G Integration
DOC #: 872906441-212
DATE: 02/10/24
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	COMPETITION VISION UNIT	SEA AI	F02200/ F02210
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

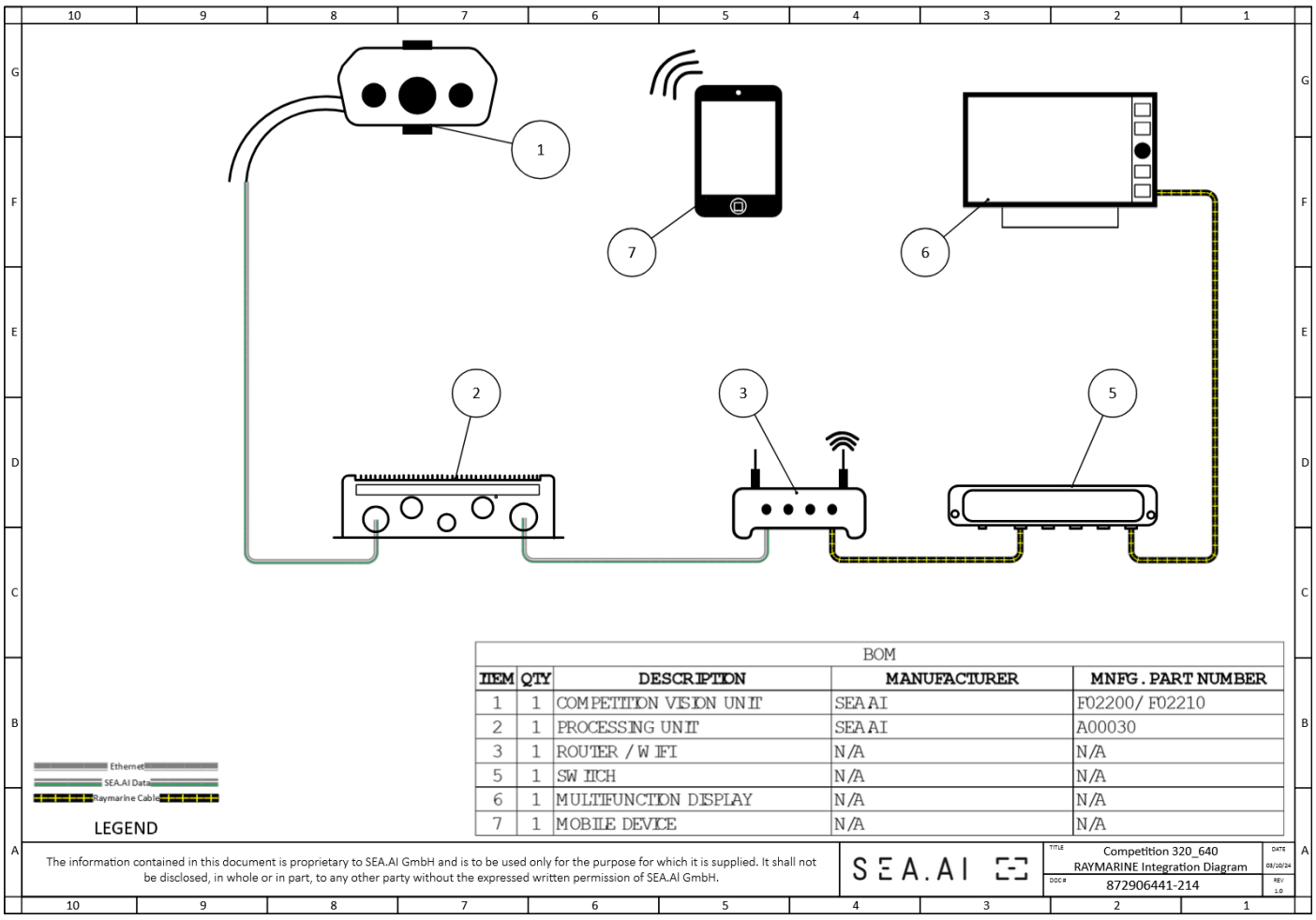
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SEA.AI

TITLE: Competition 320_640 GARMIN Integration Diagram
DOC #: 872906441-213
DATE: 02/10/24
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	COMPETITION VISION UNIT	SEA AI	F02200/ F02210
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER / WIFI	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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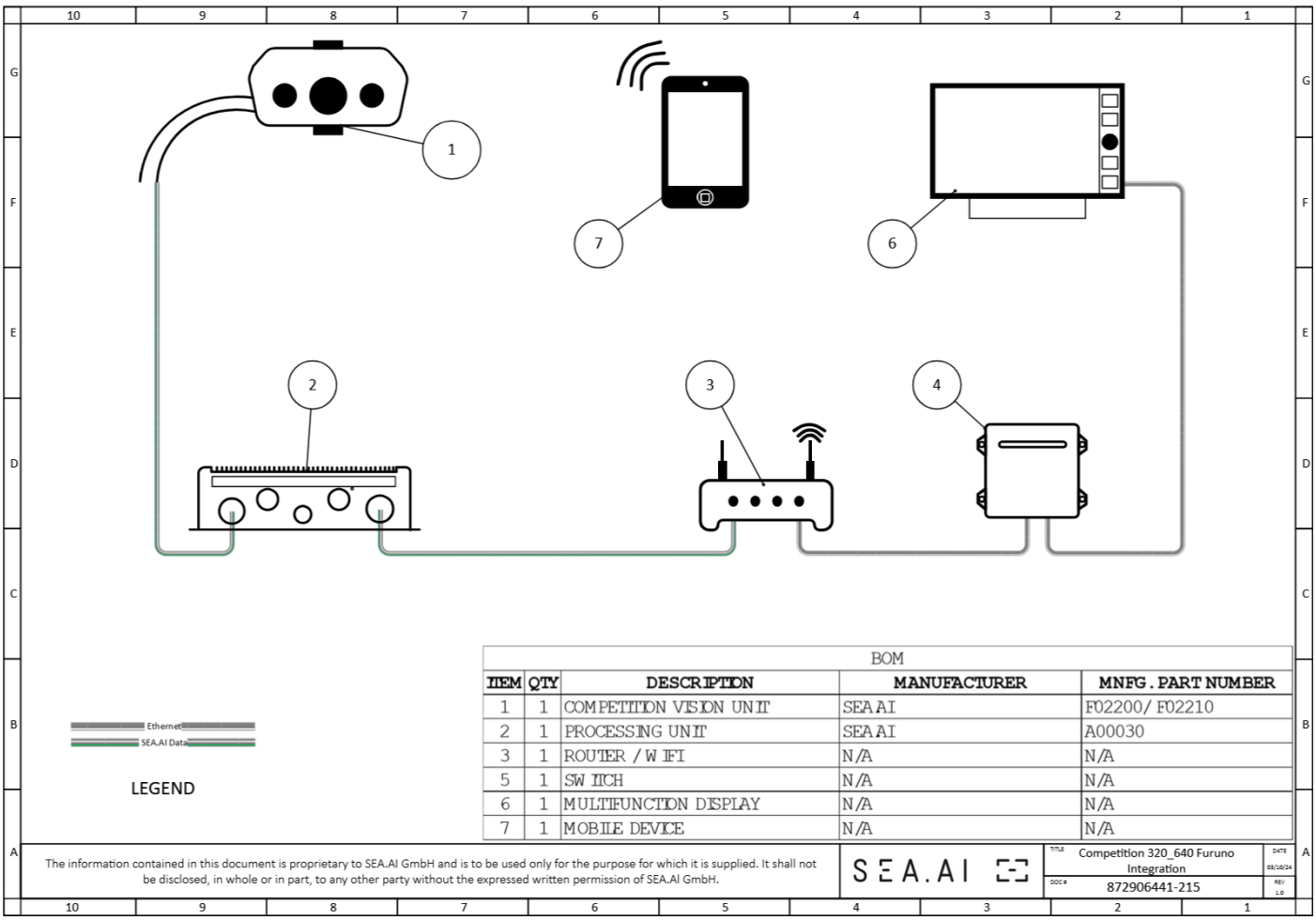
S E A . A I

TITLE: Competition 320_640 RAYMARINE Integration Diagram
DOC#: 872906441-214
DATE: 03/10/24
REV: 1.0

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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	COMPETITION VISION UNIT	SEA AI	F02200/ F02210
2	1	PROCESSING UNIT	SEA AI	A00030
3	1	ROUTER / WIFI	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

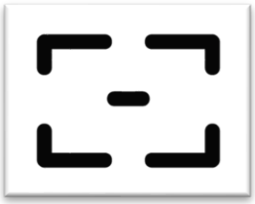
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SEA.AI | TITLE: Competition 320_640 Furuno Integration | DOC#: 872906441-215 | DATE: 03/10/24 | REV: 1.0

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8 COMMISSIONING & CONFIGURATION

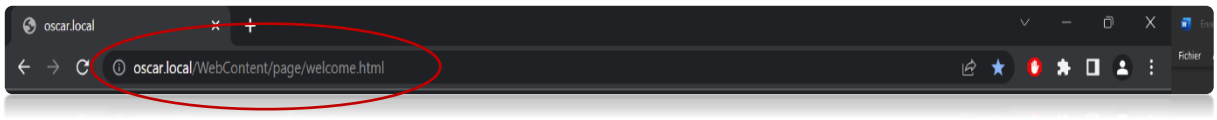
SEA.AI Icon



- 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.

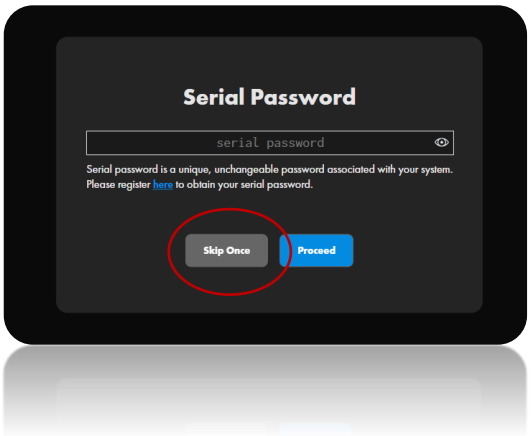
-System integrated in a network with DHCP server (router) :
http://oscar.local/WebContent/page/welcome.html

-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 14 & 15) in the absence of a serial password.

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

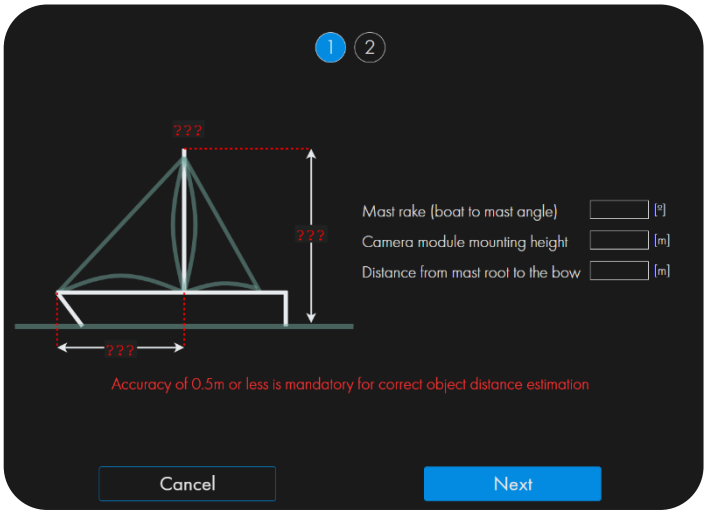


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Fill in the position of the vision unit (VU) on the boat with the following information:

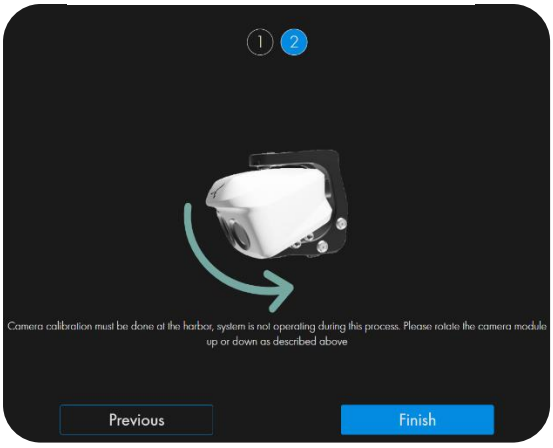
- Mast rake
- Height of the Vision Unit above sea level
- Distance from mast bottom to bow

Valid by pressing **"Next"** button

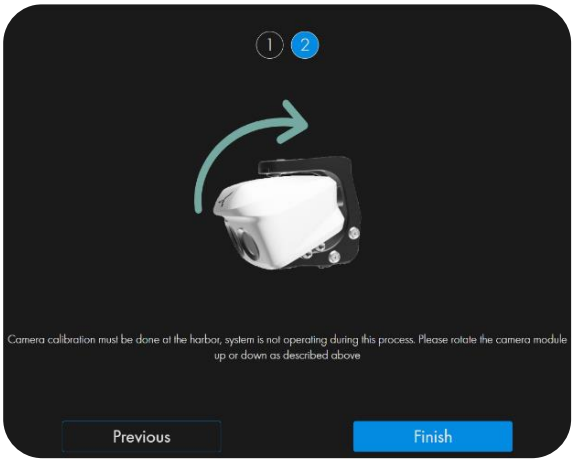


Adjust the angle of the vision unit as indicated on the interface. (needs 2 technicians: one on top of the mast; one at the display).
Vision Unit tightening torque: 2.5Nm
After Vision Unit tightening, valid by pressing "Finish" button

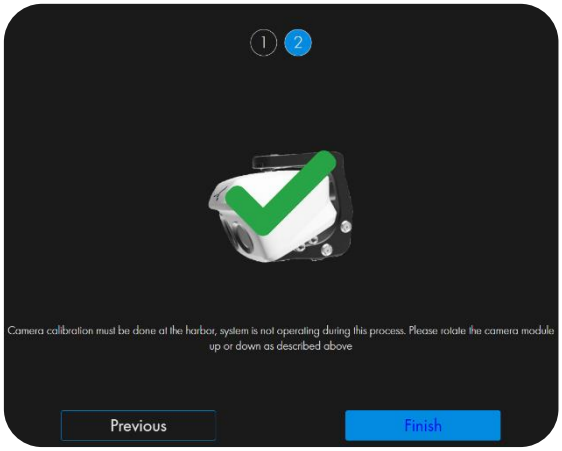
Too high, rotate Vision Unit down.



Too low, rotate Vision Unit up.

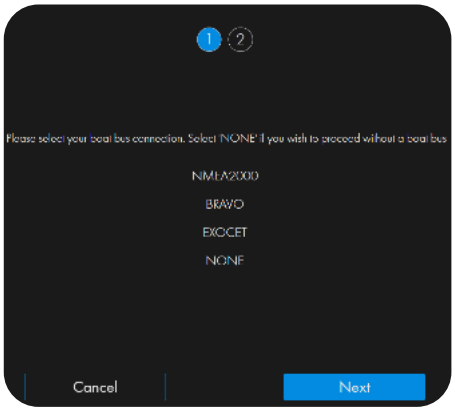


Correct Vision Unit angle.

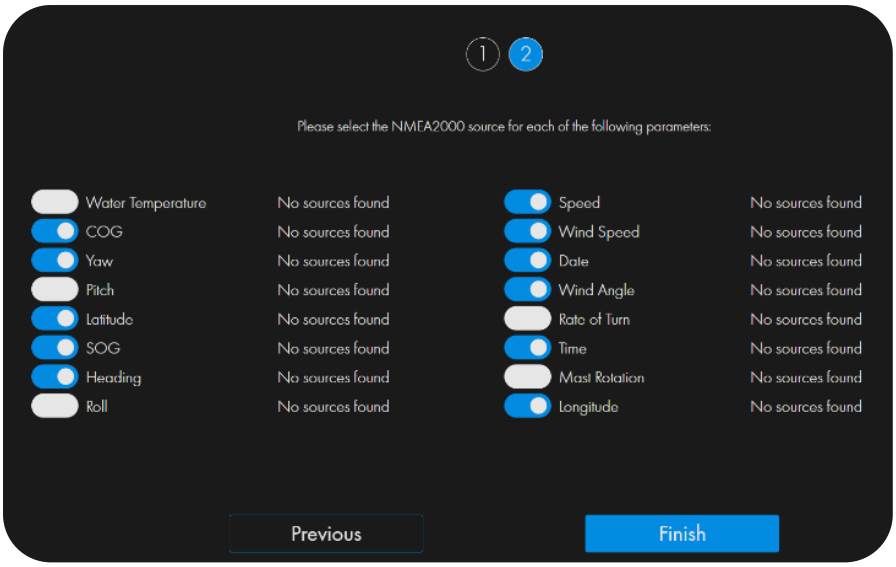


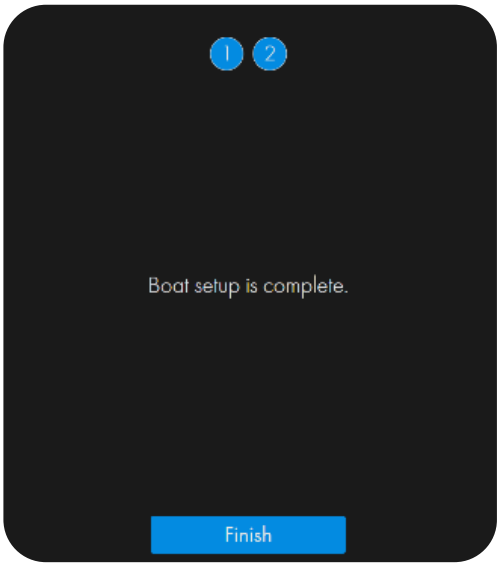
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Configure SEA.AI with the onboard information network.
Select the network type (NMEA 2000, BRAVO, EXOCET, NONE).
Select the information to be displayed
If multiple sources of same type of data available, chose the instrument to be used



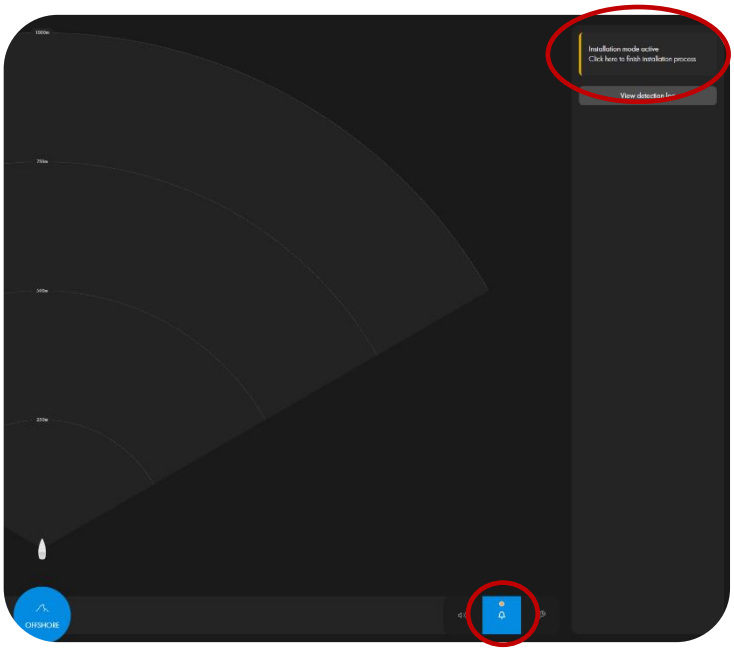
NOTE: Uncheck "No sources found" data parameters.





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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10MAINTENANCE

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

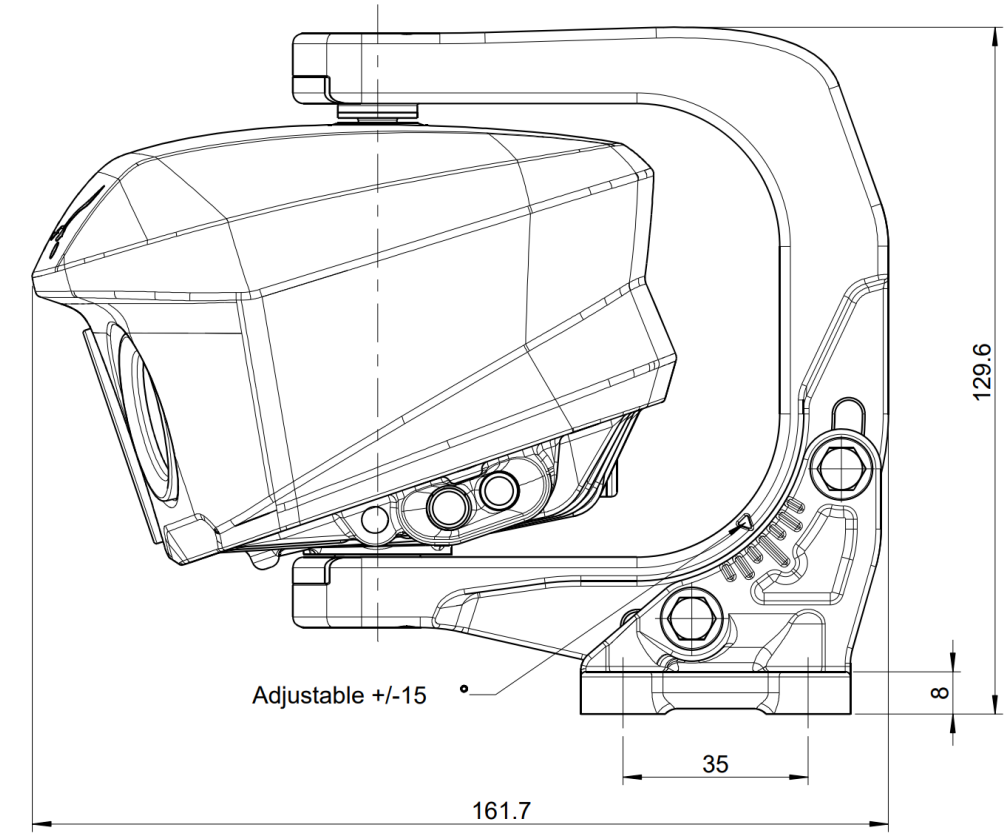
Be especially careful when cleaning the lenses. The anti-reflective coating could be damaged by improper cleaning.

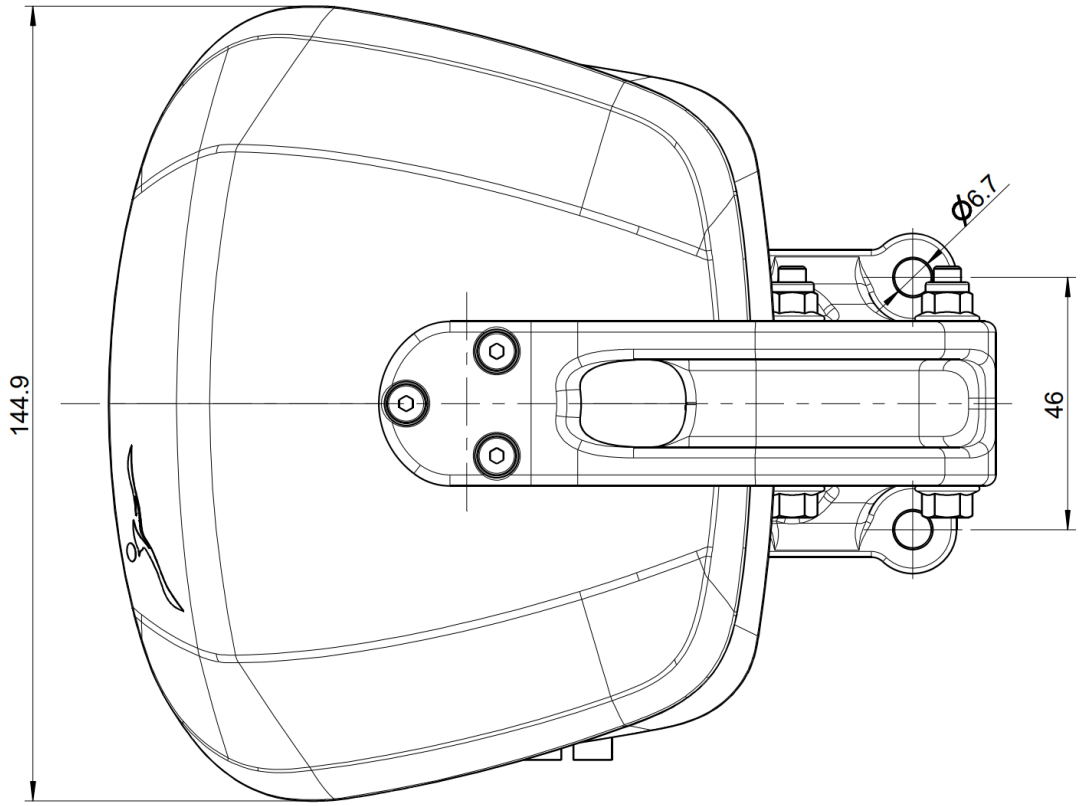
- Clean the vision unit housing with a soft, clean cotton cloth. You can dampen the cloth and use a mild detergent if necessary.
- Rinse the camera lenses with clean water to remove dust particles and salt deposits. Allow to dry naturally.
- If stains or streaks remain. Gently rub the lenses with a clean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

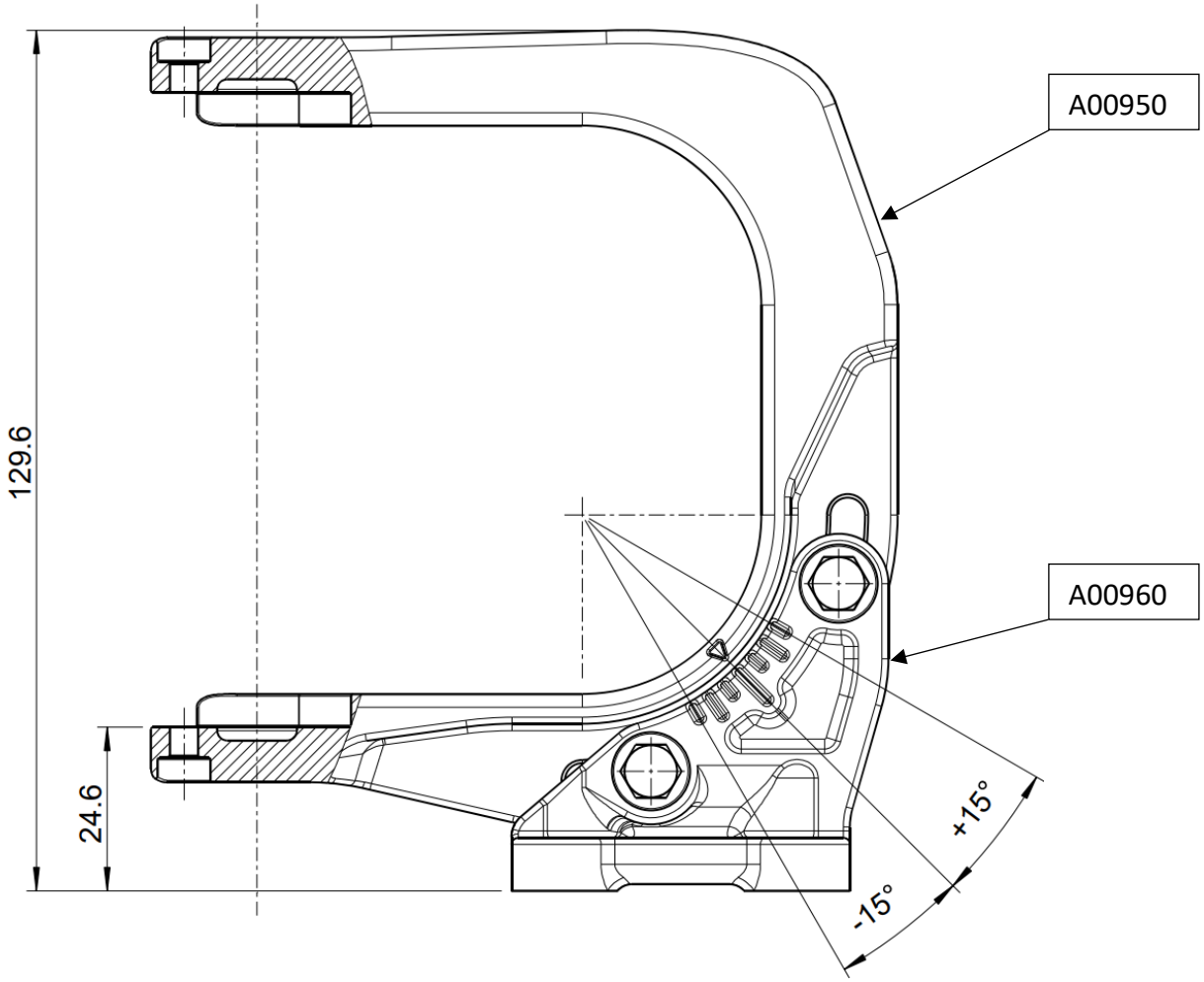
F02200/F02210 Vision Unit View

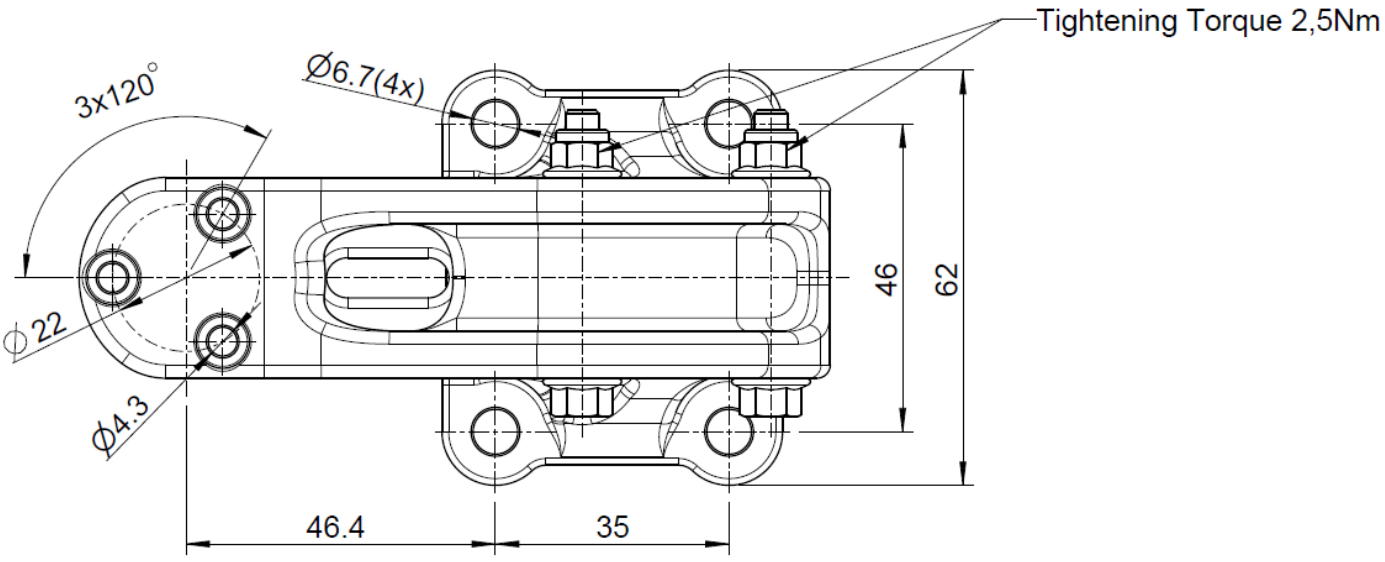




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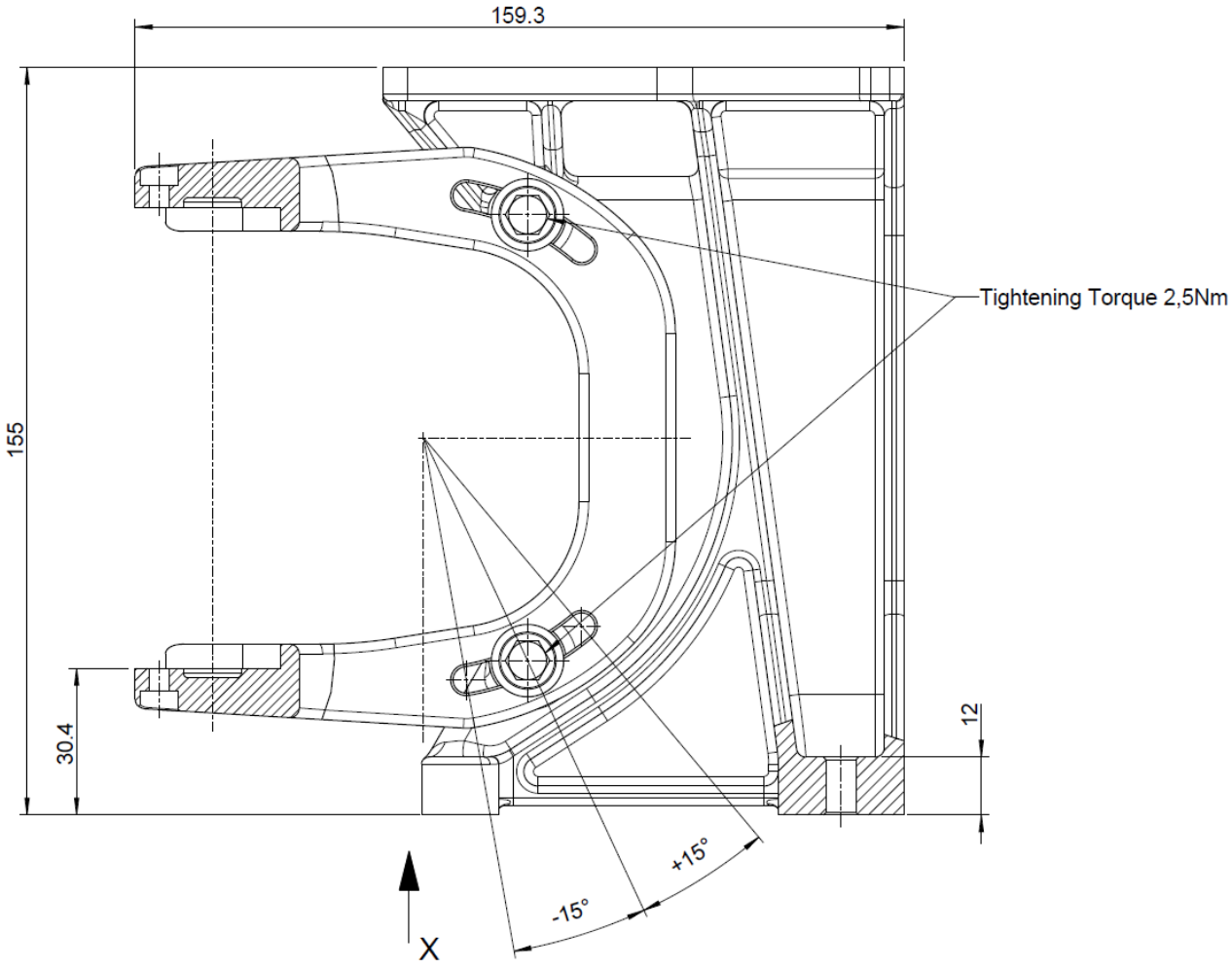
A00950/A00960 Vision Unit bracket view

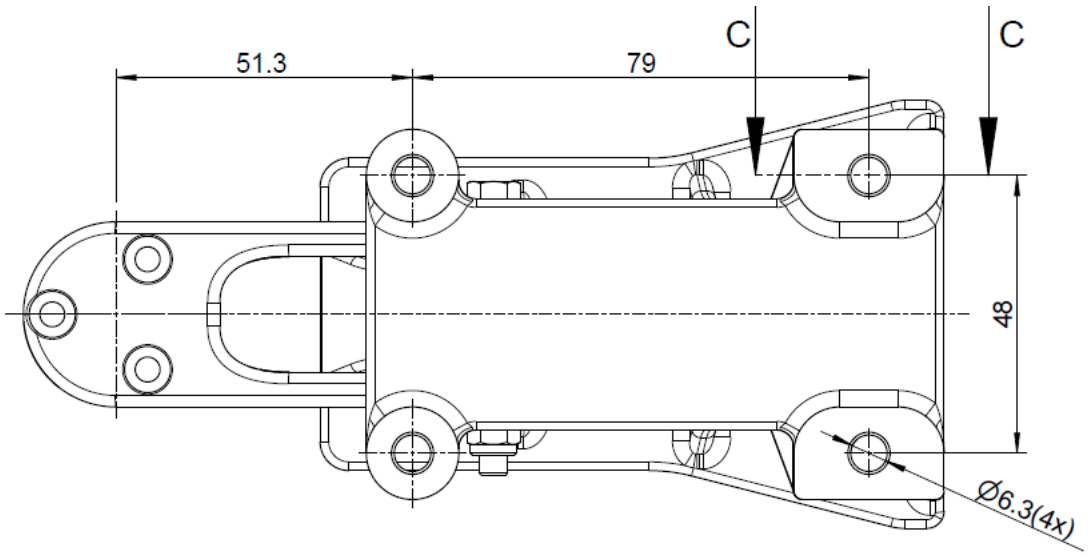




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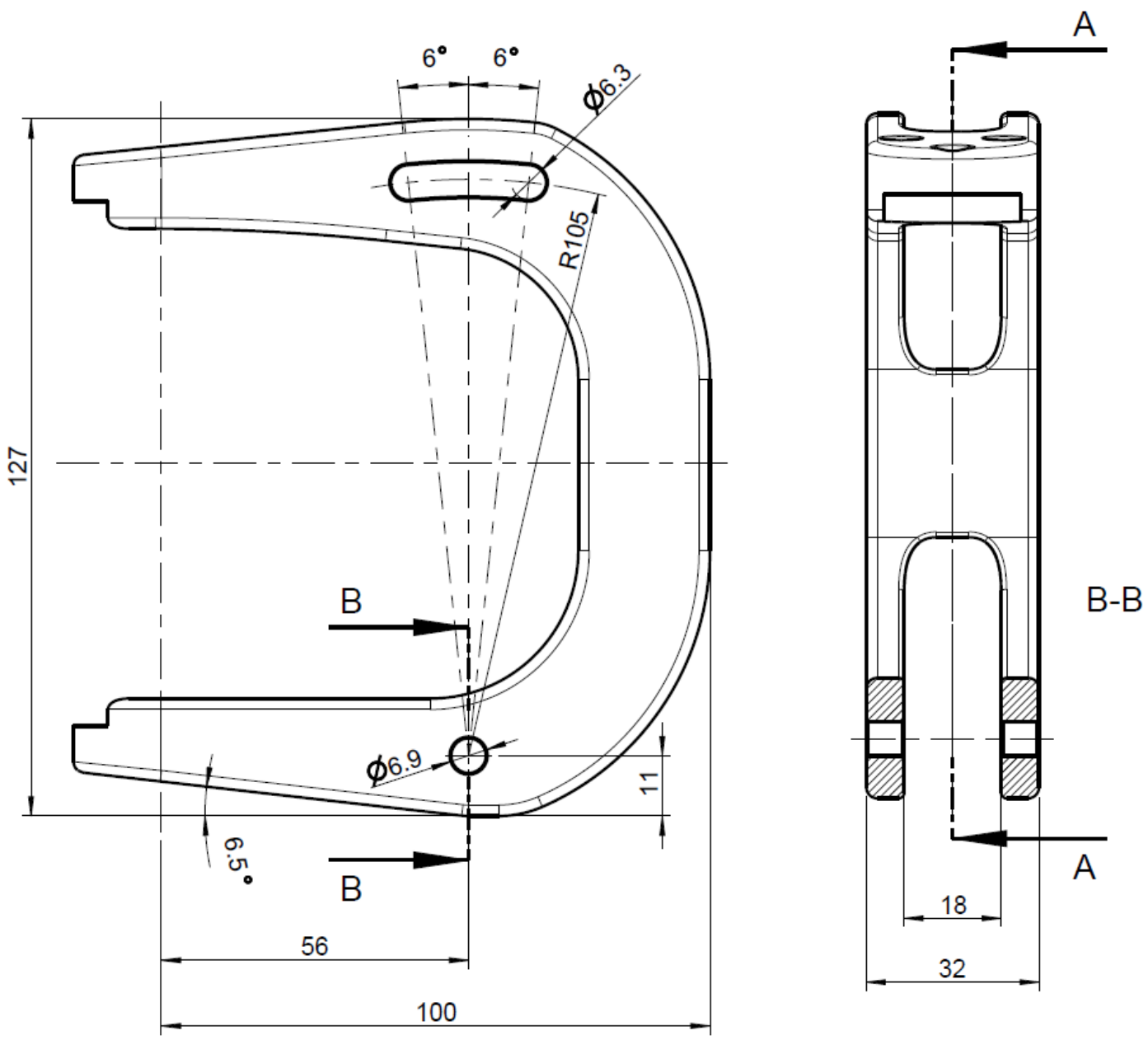
A01351 Windsensor Bracket view (optional)





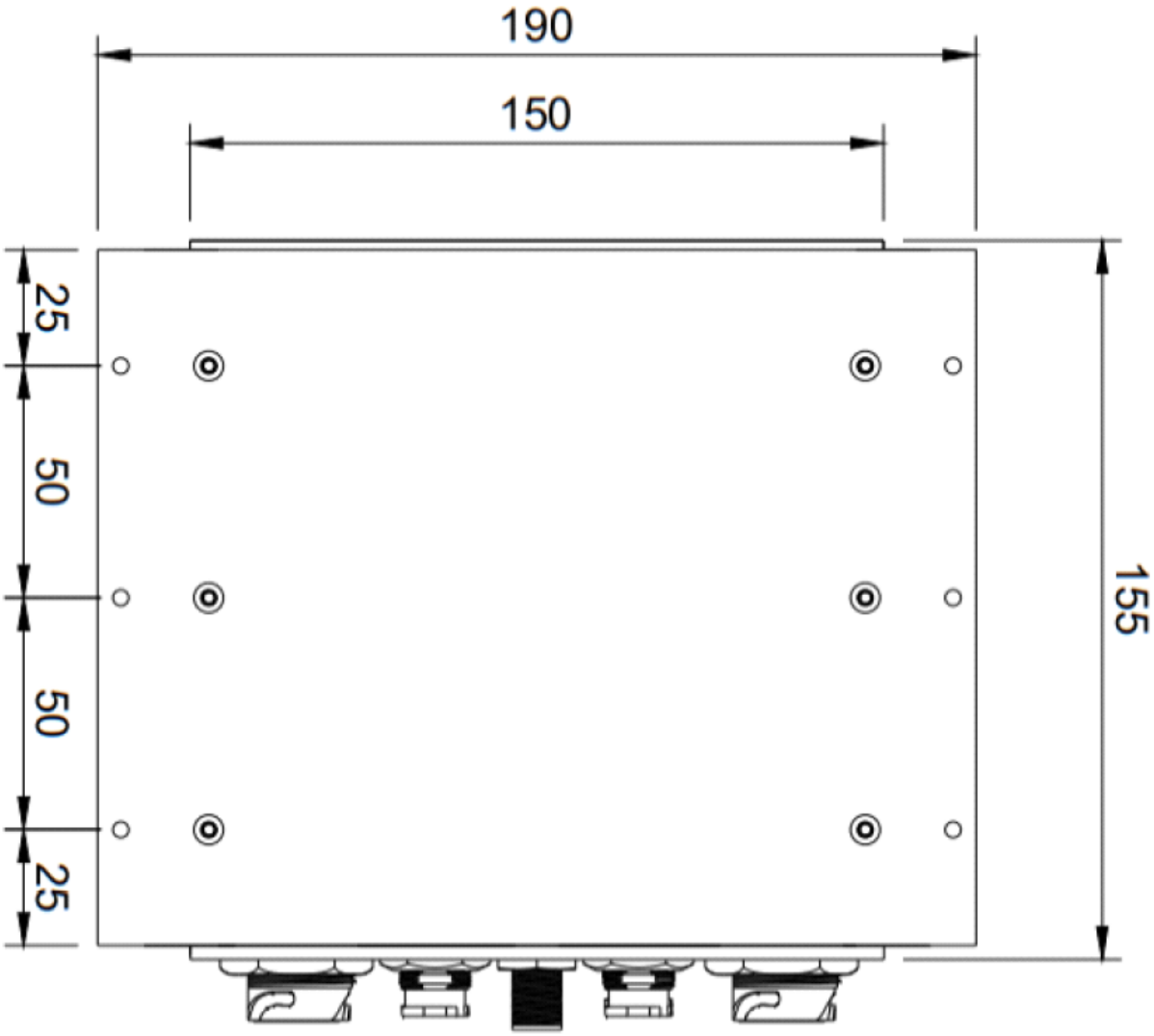
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A01010 Imoca Mast Bracket (optional)



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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: Competition

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:

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

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Notes:

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