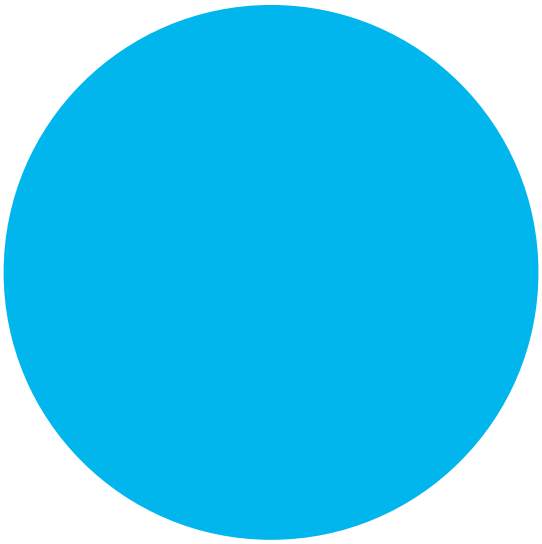

SeapiX

Installation Manual

iXblue

Revision History

Edition	Date	Comments
A	01/2020	Creation

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Extended **M**aintenance **A**greements – E.M.A. – may be purchased to extend the product maintenance after the warranty period. An E.M.A. shall be applied to every software license that will be maintained and upgraded.

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Technical support is available free of charge during the warranty period:

- On iXblue website: http://www.ixblue.com/
- By dedicated e-mail box: support@ixblue.com
- 24/7 hotline: +33 1 30 08 98 98 (EMEA-LATAM), +1 617 861 4589 (NORAM), +65 6747 7027 (APAC)

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iXblue will notify reception of payment by electronic mail.

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Warranty period

iXblue guarantees that the software will perform substantially in accordance with the accompanying written materials for a period of two (2) years from the date of shipment.

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iXblue's entire liability and your exclusive remedy shall be, at iXblue's option, repair or replacement of the software that does not meet iXblue's Limited Warranty. Warranty service is F.O.B. iXblue France. All shipping and insurance costs to iXblue are paid for by the Buyer; shipping and insurance costs returning to the Buyer will be paid for by iXblue.

On-site Customer Service and Warranty Repair may be provided by iXblue, at its own discretion. Travel and accommodation (including travel hours, transportation, lodging and meals) will be charged by iXblue to the Buyer at cost plus ten (10) per cent. However, actual labor hours to provide this service or repair will be free of charge to the Buyer. This Limited Warranty is void if failure of the software or hardware has resulted from accident, abuse, or misapplication. Any replacement software or hardware will be guaranteed for the remainder of the original warranty period or thirty (30) days, whichever is longer.

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Liability

iXblue's liability is excluded in case of misuse of the software or any use in contradiction with iXblue's instructions. This application program is only to be used in order to help optimize fishing and shall not exempt the skipper of his responsibilities in terms of navigation security and respect for law enforcement.

Dongles

iXblue will not replace lost dongles free of charge, neither offer discounted pricing terms for replacement dongles.

iXblue strongly recommends that you insure your iXblue products against loss, theft or damage where applicable.

iXblue will propose the replacement of damaged dongles only for a limited fee, provided that the damaged dongle units are returned to iXblue. All shipping and insurance costs are paid for by the buyer.

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Export of the products and services described in this document may be subject to different national rules and regulations related to export control.
iXblue products and services shall not be exported, re-exported or used in the following countries (including their territorial waters): Cuba, Iraq, Iran, North Korea, Sudan and Syria.
The following export control guidelines shall apply as related to French rules and regulations.

Free export This product or service can be freely exported.

Manual Overview

This manual is the Installation Manual for SeapiX manufactured by iXblue. It is intended for qualified installing technicians. It must be read and understood prior to using SeapiX. The manufacturer shall in no case be held liable for any application or use that does not comply with the stipulations in this manual.

It is divided into several chapters:

- Part 1: Introduction

This part contains a general descrition of SeapiX and provides information about the theory of operation.

- Part 2: Technical Characteristics

This part gives details on mechanical, acoustic and electrical characteristics of the SeapiX components.

- Part 3: SeapiX Pack

This part details a typical SeapiX pack and its contents; it also gives some recommendations.

- Part 4: Installation Process

This part details SeapiX installation process.

- Part 5: SeapiX Commissioning

This part details how to set up SeapiX for the first time.

- Part 6: SeapiX Configuration

This part details which parameters to set prior to using SeapiX.

- Part 7: Shutdown Procedure

This part explains how to shut down SeapiX system properly.

- Part 8: Software Upgrade

This part explains how to upgrade SeapiX programs.

- Part 9: Preventive Maintenance

This part describes the preventive maintenance tasks.

- Part 10: Troubleshooting

This part provides a table helping to solve minor problems encoutered while using SeapiX.

- Part 11: Support through TeamViewer

This part provides support contacting information through TeamViewer.

- Appendices

It contains the detailed drawings and diagrams.

Warning: SeapiX is NOT a navigation tool. SeapiX is a fishing tool and it must be used as such.

The abbreviations and acronyms used in this manual are listed hereafter.

Abbreviations and Acronyms

BFU	Beam Former Processor Unit
CSV	Plain text format file
ETA	Estimated Time of Arrival
FEBL	Tool showing the Range Bearing Line
GUI	Graphical Interface Unit
ITU	Interface Unit
GNSS	Global Navigation Satellite System (including GPS, ...)
MRU	Motion Reference Unit
RX	Reception
SAT	Sonar Axial Tiltable mode
SATA	Data transfer format
SAU	Sonar Antenna Unit
SAV	Sonar Axial Volumetric mode
SED	Single Echo Detection
SLI	Sonar Lateral Imaging mode
STT	Sonar Transverse Tiltable mode
STV	Sonar Transverse Vertical mode
SV	Scattered Volume; in acoustics, fish shoal measurement mode (in dB)
TS	Target Strength; in acoustics, single fish measurement mode (in dB)
TX	Transmission
VPU	Viewer Processor Unit

Text Usage

Bold	Bold text is used for items you must select or click in the software. It is also used for the field names used into the dialog box.
`Courier`	Text in this font denotes text or characters that you should enter from the keyboard, the proper names of disk Drives, paths, directories, programs, functions, filenames and extensions.
Italic	Italic text is the result of an action in the procedures. It is also used for referencing to other document titles.

Icons

The **Note** icon indicates that the following information is of particular interest and should be read with care.

Important

The **Important** mention indicates that the following information should be read to forbid or prevent a product dysfunction or a faulty operation of the equipment.

The **Caution** icon indicates that the following information should be read to forbid or prevent product damage.

The **Warning** icon indicates that possible personal injury or death could result from failure to follow the provided recommendation.

The **Advanced/Expert** icon indicates that the described procedure/action is reserved to advanced level of operation.

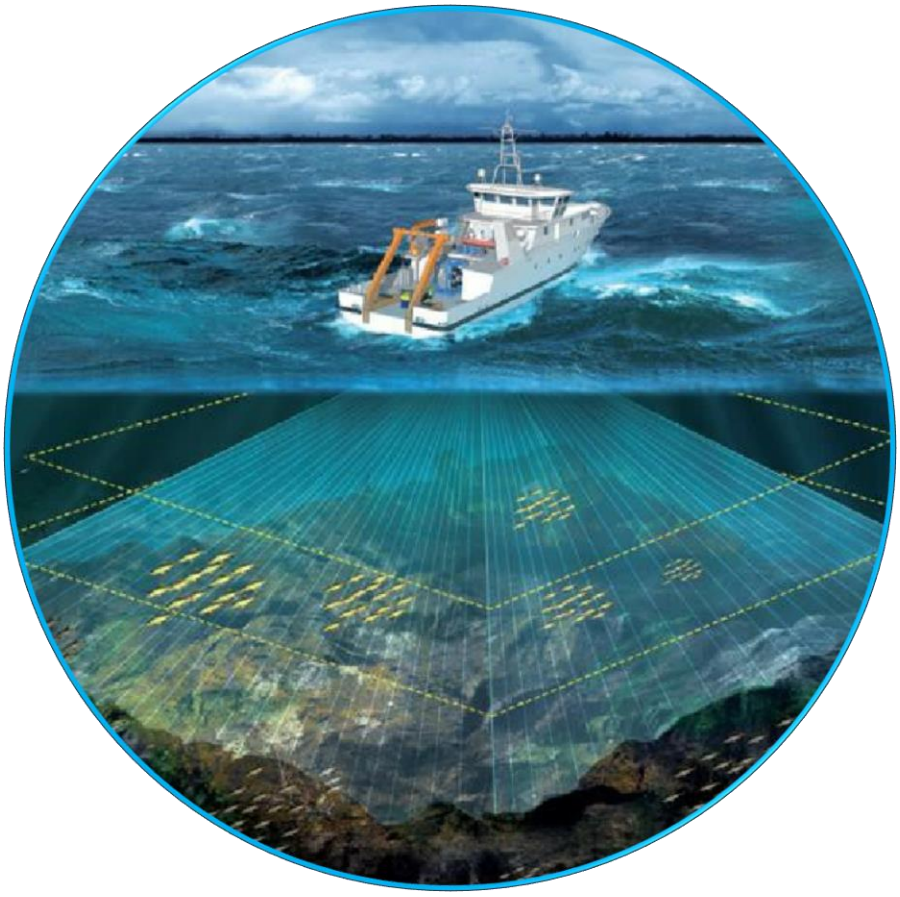
Table of Contents

1 Introduction

1.1 SeapiX System Overview

SeapiX is a volumetric 3D Sonar dedicated to the fishing industry. It provides a realistic fish evaluation together with a full ecosystem description. Composed of a dual Mills Cross multibeam sonar array, this compact system is able to generate one or more scan swaths along or across a vessel axis. The result is a total three-dimensional coverage of the water column; it also provides a bathymetric profile of the seabed and the identification of the sediment type.

SeapiX is connected to the vessel navigation system for real-time geo-referenced data generation. it is used with SeapiX Surface Software for configuration, control and visualization of data.



1.2 SeapiX Principle

SeapiX is a volumetric multibeam echosounder which can operate:

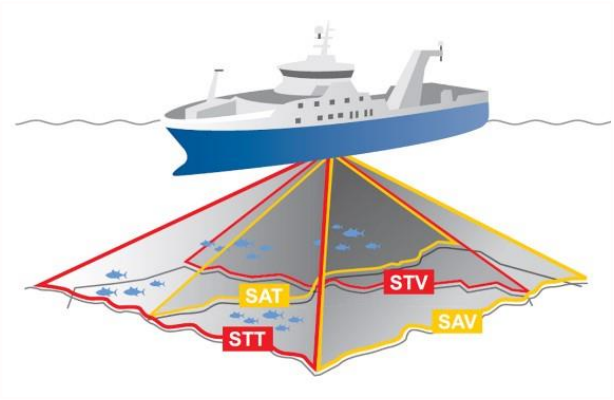
- downward-looking,
- forward-looking,
- side-looking.

Each multibeam swath is proposed along and across the vessel track (is either “axial” or “transverse”). Swaths are tiltable to control the biomass all around the vessel. For each swath, 3 echogram sectors are formed from 1° to 120° beam aperture.

On board a fishery vessel, the skipper watches the shoal behavior and steers the vessel to perform catches.

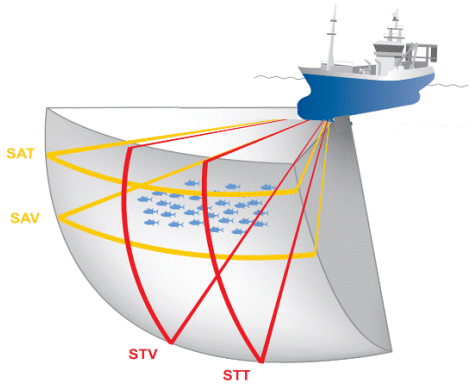
Warning: SeapiX is NOT a navigation tool. **SeapiX is a fishing tool** and it must be used as such.

1.2.1 DOWNWARD-LOOKING SWATH



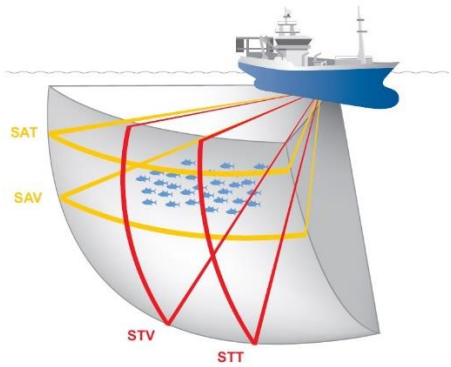
Downward-looking swath (axial & transverse)

1.2.2 FORWARD-LOOKING SWATH



Forward-looking swath (axial & transverse)

1.2.3 SIDE-LOOKING SWATH



Side-looking swath (axial & transverse)

Axial swaths correspond to **SAT** or **SAV** sonar modes.

Transverse swaths correspond to **STT** or **STV** sonar modes.

2 Technical Characteristics

Seapix is available in 3 versions:

- SeapiX-F for fishery
- SeapiX-R for fishery research
- SeapiX-L for marine science and fish farming

2.1 SeapiX-F

SeapiX-F is dedicated to the fish industry and is installed on fishery vessels.

SeapiX-F SAU

Applications	Fishery
Frequency	150 kHz
Modulation	CW and Chirp
Across-track multibeam swath	64 channels, stabilized
Along-track multibeam swath	64 channels, stabilized
Beam stabilization	TX + RX, built-in MRU
Beam resolution	1.6° angular / 7.5 cm radial
Triple echograms from all swaths	Adjustable from 1° to 120° each
Typical range	Biomass 400m, Bathymetry 600 m
Volume resolution	0,6 m^3 @100 m
Volume coverage	120° X 120°
Signal processing	SV, TS, NORMALIZED
SED fish extraction	Up to 200.000 single fish detection
Transmission power	2 kW (4 kW as an option)
Scientific pack	(option)
Sonar Antenna Unit (SAU) cable	20 m
SAU weight	61.5 kg

2.2 SeapiX-R

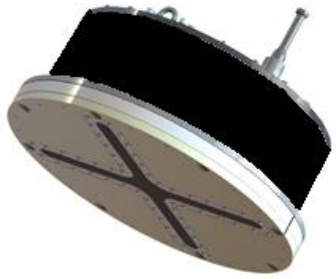
SeapiX-R is dedicated to fishery research and is installed on large fishery research vessels.

SeapiX-R SAU

Applications	Fishery research
Frequency	150 kHz
Modulation	CW and Chirp
Across-track multibeam swath	64 channels, stabilized
Along-track multibeam swath	64 channels, stabilized
Beam stabilization	TX + RX, built-in MRU
Beam resolution	1.6° angular / 7.5 cm radial
Triple echograms from all swaths	Adjustable from 1° to 120° each
Typical range	Biomass 400 m, Bathymetry 600 m
Volume resolution	0,6 m^3 @100 m
Volume coverage	120° X 120°
Signal processing	SV, TS, NORMALIZED
SED fish extraction	Up to 200.000 single fish detection
Transmission power	4 kW
Scientific pack	yes
Sonar Antenna Unit (SAU) cable	20 m
SAU weight	61.5 kg

2.3 SeapiX-L

SeapiX-L is a mobile research version dedicated to marine Science and fish Farming; it can be mounted on a pole and used on an “opportunity vessel”.



SeapiX-L SAU

Applications	Marine science and fish farming
Frequency	150 kHz
Modulation	CW and Chirp
Across-track multibeam swath	64 channels, stabilized
Along-track multibeam swath	64 channels, stabilized
Beam stabilization	TX + RX, built-in MRU
Beam resolution	1.6° angular / 7.5 cm radial
Triple echograms from all swaths	Adjustable from 1° to 120° each
Typical range	Biomass 400m, Bathymetry 600 m
Volume resolution	0,6 m^3 @100 m
Volume coverage	120° X 120°
Signal processing	SV, TS, NORMALIZED
SED fish extraction	Up to 200.000 single fish detection
Transmission power	2 kW (4 kW as an option)
Scientific pack	yes
Sonar Antenna Unit (SAU) cable	20 m
SAU weight	24 kg, floating

3 SeapiX Pack

3.1 Pack Contents

The shipping pack contains a Packing List detailing all delivered items. This Packing List has been completed and checked for by iXblue shortly before shipment and should match the content of the pack that you have received.

CAUTION: PACK NON-CONFORMITY OR DAMAGE

It is recommended to check the content of the pack and all equipment items immediately after reception. Specifically, you should check that all items referred to in the Packing List are present and that none has sustained damage.

If you observe any non-conformity or damage, please inform the carrier and iXblue without delay by certified mail describing in detail the problem encoutered.

iXblue | SEAPIX | KAA00493 PACKING LIST | N° : Edition : Date :

Confidentiel iXBlue

		Requested	Checked
Box #1 : ANTENNA CONTAINER			
➢	SONAR ANTENNA UNIT S/N° :	X	
➢	INTERFACE PLATE	X	
➢	20M SUBSEA CABLE S/N :	X	
➢	DNV CABLE GLAND	X	
➢	INTERFACE UNIT S/N :	X	
➢	ITU AC POWER CABLE	X	
➢	RJ45 CONNECTOR	X	
➢	BFU-VPU 10M ETHERNET CABLE	X	
➢	ITU-BFU 30M ETHERNET CABLE	X	
➢	ITU-BFU 30M CONTROL COMMAND CABLE	X	
➢	CE DECLARATION OF CONFORMITY	X	
➢	CERTIFICATE OF WARRANTY	X	
➢	QUICK START GUIDE ED N° :	X	
➢	CUSTOMER SATISFACTION SURVEY	X	
Box #2 : ACCESSORIES CONTAINER			
BEAM FORMER PROCESSOR UNIT BOX			
➢	BEAM FORMER PROCESSOR UNIT S/N :	X	
➢	BFU AC POWER CABLE	X	
➢	BFU CD & USER'S MANUALS	X	
➢	BFU KEYS	X	
VIEWER PROCESSOR UNIT BOX			
➢	VIEWER PROCESSOR UNIT S/N :	X	
➢	VPU AC POWER CABLE	X	
➢	VPU USER'S MANUALS	X	
➢	SOFTWARE PROTECTION KEY S/N :	X	
➢	KEYBOARD	X	
➢	TRACKBALL	X	

Auteur	Guillaume BANGHALA	Approbateur & visa		Etat du document	~~Draft~~ / Approuvé
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N° GIX-M-FO-QUAL-105A

Example of a SeapiX Packing List

CAUTION: DO NOT LOSE ANY SMALL PACK ITEM

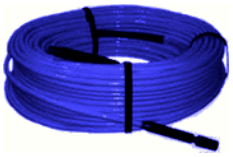
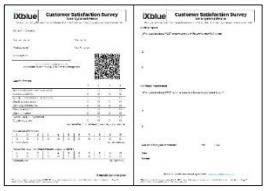
Before disposing of the packaging, carefully check that no small pack item - such as a key or a dongle – has been left; otherwise, it would prevent the system from working.

If any part is lost at that stage, you will have to order and pay for it.

3.2 Description of the Pack Items

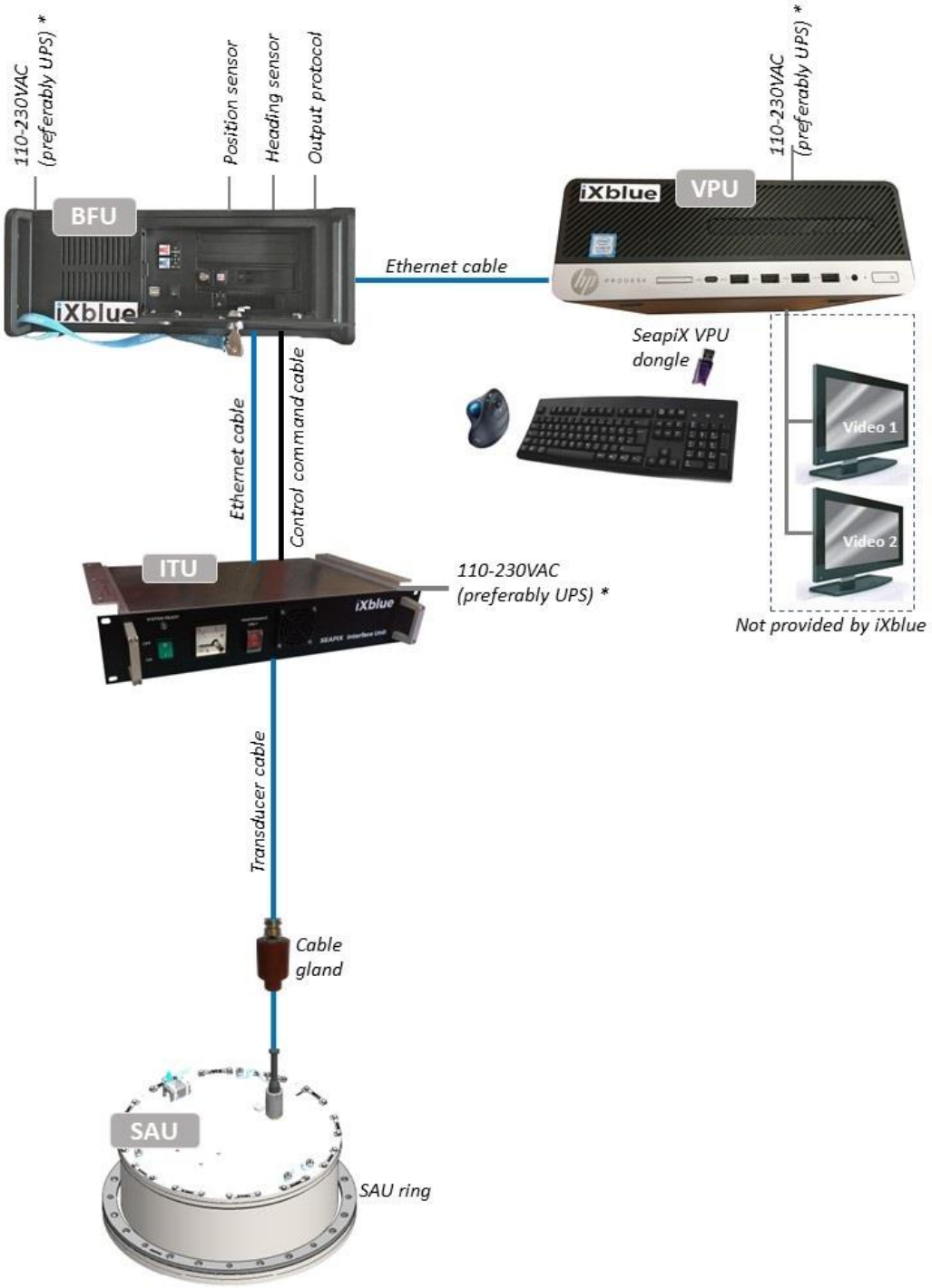
Item	Reference	Designation
either 	SMI01628	Sonar Antenna Unit (SAU) for SeapiX-F and SeapiX-R
 including	MDI04776	SAU ring (interface plate)

 or	SMI04796	Sonar Antenna Unit (SAU) for SeapiX-L
 optional	MDI07607	Mounting flange
	SMI01632	Interface Unit (ITU) + AC power cable
	SEL00140	Beam Former Processor Unit (BFU) + 2 sets of keys (front door & disk lock-up) + USB to RS-232 converter cable + AC power cable
	SMI02373	Viewer Processor Unit (VPU) + AC power cable

		Wireless QWERTY Keyboard (for VPU)
		Wireless Trackball (for VPU)
	SCA00162206-A *(former ref: SCA00130)*	Transducer Cable (20 m)
	SME00573	Cable Gland
	SCA00132	ITU-BFU Ethernet Cable (30 m)
	SCA00131	ITU-BFU Control Command Cable (30 m)
	IOP00122	SeapiX VPU Dongle
	FCO00212	BFU-VPU Ethernet Cable (10 m)
		CE Declaration of Conformity
		Certificate of Warranty
		Customer Satisfaction Survey

4 Installation Process

This chapter explains how to connect the different units together and how to interface with the vessel ancillaries and servitudes.



Simplified SeapiX architecture

** UPS is recommended to protect electronic devices. The UPS model must have a 'pure sine' output. Other output wave forms are not SeapiX compatible.*

4.1 Installation Checklist

As part of the Installation process, a checklist must be completed (see next two pages).

CAUTION: INSTALLATION CHECKLIST TO BE DETACHED AND COMPLETED

When setting up your SeapiX, the Installation Checklist must be completely filled in and sent back to iXblue. This is compulsory.

Otherwise, your SeapiX system will not be covered by iXblue warrantee.

Fill in the Installation Checklist (see next two pages):

- Enter names and references
- Circle the correct answers when there are Y / N (yes or no) proposals
- Complete your answer with photo(s) when there is a camera icon:
- Complete your answer with screenshot(s) when there is a selection icon:
- Check the boxes when the operation (either check or installation) described has been done
- Make comments, if any
- Enter your ID, date it and sign it.

When the Installation Checklist has been filled in, scan it (both sides).

Gather all your photos and screenshots in a folder, add the scanned checklist, then compress it all (make a zip file).

Send a mail to **ix-support-seapix@ixblue.com**:

- Subject: “Installation Checklist / NameOfShip / Date”,

and attach the zip file.

Fill in the form. = *Make a photo.* = *Make a screenshot.*

Then e-mail it all ***to ix-support-seapix@ixblue.com***

Vessel Information

Name:	Gross Tonnage:
IMO:	Length:
MMSI:	Skipper Name:
Call Sign:	Contact:
Flag:	TeamViewer ID:
Home port:	Y / N: The vessel is connected to internet

Mechanical installation (hull-mounted)

Type:

- Downward
- Side (port/starboard)

Y / N: An anti-fooling has been applied to the SAU, ref. .....

❑ Position on hull:

❑ Onboard source interferences:
❑ Grease has been applied on transducer cable connector
❑ The SAU has been installed in a part not exposed to slamming
❑ Screws and washers are in A4-70 material
❑ The transducer cable is securely attached to the SAU antenna
❑ The SAU is protected by anodes located outside and inside the hull
❑ Anodes are in water and electrically linked to the SAU
❑ The SAU is fully immerged, surrounding water is flowing

Electrical installation

ITU Location:
Y / N: The ITU is powered by UPS, ref. .....
Y / N: ITU Sync is used (master / slave / RTC)
❑ "ITU Maintenance Only" button is in OFF position
BFU Location:
Y / N: The BFU is powered by UPS, ref. .....
BFU-ITU distance:
Y / N: The BFU-ITU Ethernet cable is an iXblue deliverable
Y / N: The BFU-ITU Control command cable is an iXblue deliverable
VPU Location:
Y / N: The VPU is powered by UPS, ref. .....
Y / N: The BFU-VPU cable is an iXblue deliverable

Installation Checklist (page 1/2)

VPU Screens Configuration

❑ Screen #1: VPU graphical board port: ; Model: ;Resolution:
Y / N: Screen #2 : VPU graphical board port: ; Model: ;Resolution:
Y / N: Screen #3 : VPU motherboard port: ; Model: ;Resolution:
Y / N: Screen #4: VPU motherboard port: ; Model: ;Resolution:
(VPU port: HDMI / DVI / VGA / ...)

Checkup, Commissioning and Configuration

Y / N: Assisted by iXBlue technician - name:

❑ The SAU is in the water (do not continue if not)
❑ All SeapiX elements have been installed, tested and connected properly
❑ The power supply voltage has been checked and the power cords connected
❑ Check that the ITU is shut down
❑ Power on the BFU
❑ Power on the ITU
❑ Power on the VPU
❑ Configure the offsets and check them
❑ Set the inputs and check them:
  ❑ Heading (port)
  ❑ Attitude (port)
  ❑ Heave (port)
  ❑ Position (port)
❑ Set the outputs and check them
❑ VPU Dongle is inserted, ref. .....
❑ Launch SeapiX Software
❑ Ping? Preferred settings according to fishery?

Port Configuration:
Port A
Port B
Port C
Port D

Crew Training: The following instructions have been given to the crew members
❑ Do not power up the ITU while in the air
❑ Before dry docking, switch off the ITU
❑ Check the anodes every 6 months
❑ Power up and down the system

Remarks:

Installed by: Date: Location:	❑ I hereby certify that the information supplied above is correct Signature:

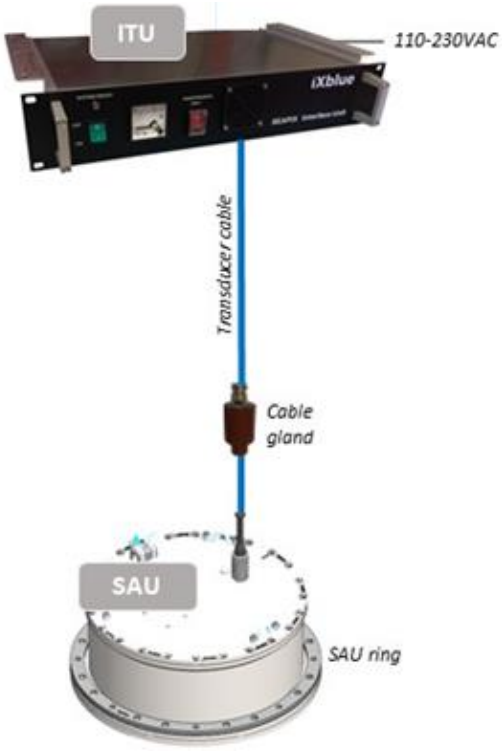
Installation Checklist (page 2/2)

4.2 Cabling and Wiring

CAUTION: CRITICAL DAMAGE TO SEAPIX IN CASE OF WRONG WIRING

Wiring shall be made by qualified persons. Any error may induce critical damages to the SeapiX system and/or equipment onboard the vessel.

4.2.1 TRANSDUCER CABLE (SAU↔ITU)



The transducer cable ensures the powering and the synchronization between the SAU and the ITU, and the data communication between the SAU and the BFU - through the ITU. It has been designed and built to work in vessel environment and shall be carefully manipulated and installed to avoid any system malfunction. The following characteristics and constraints shall be considered.

CAUTION: DAMAGE TO THE TRANSDUCER CABLE IF EXCESSIVE STRESS OR TENSION OR IF NOT PROPERLY SECURED

No excessive stress or tension shall apply on the transducer cable.

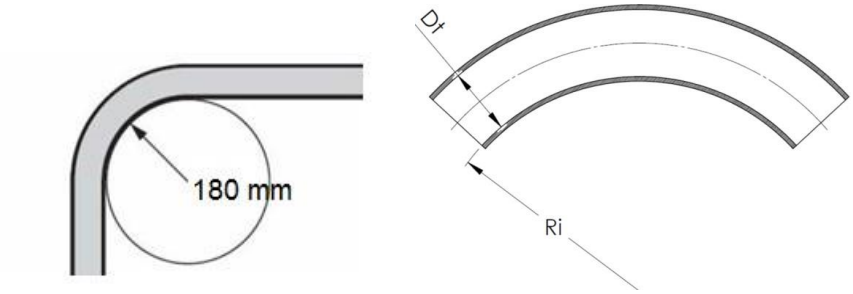
It shall be secured in such a way that it does not get damaged during cruise in rough conditions.

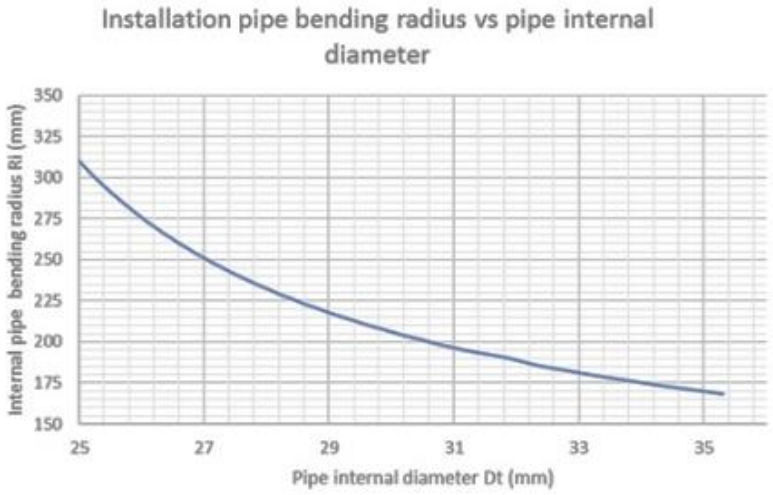
CAUTION: FOR OPERATIONAL REASONS, NEVER CUT A TRANSDUCER CABLE

When installing a transducer cable within a pipe, it may happen that the pipe is too narrow, and you could be tempted to cut the cable to facilitate the cable path. Please note that it is prohibited to cut the cable as it is part of the EMC protection.

If any cable size issue, please contact iXblue Support.

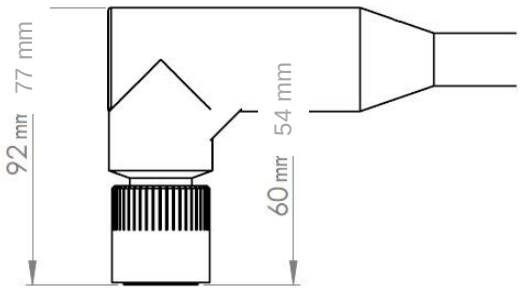
4.2.1.1 Bending Radius





4.2.1.2 Connectors

<u>On SAU side</u>, the connector is un/pluggable underwater.



Transducer connector, SAU side

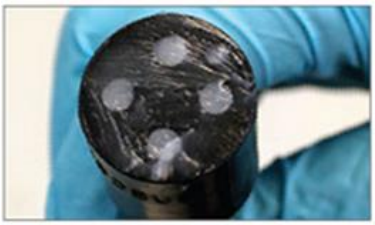
A fluorescent “CABLE” sticker indicates the way the connector shall be positioned.

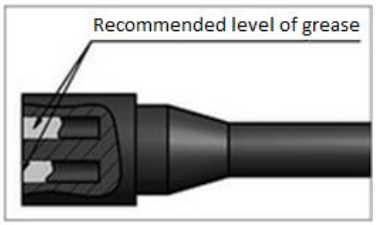
Before plugging, please follow the cable manufacturer's recommendations.

1. Grease the connectors with Molykote 44 Medium (or Novagard Versilube G624) before mating.

   A layer of grease corresponding to approximately 1/3 of the socket depth should be applied to the female connector.

   All sockets should be completely sealed, and a transparent layer of grease left visible on the connector face.





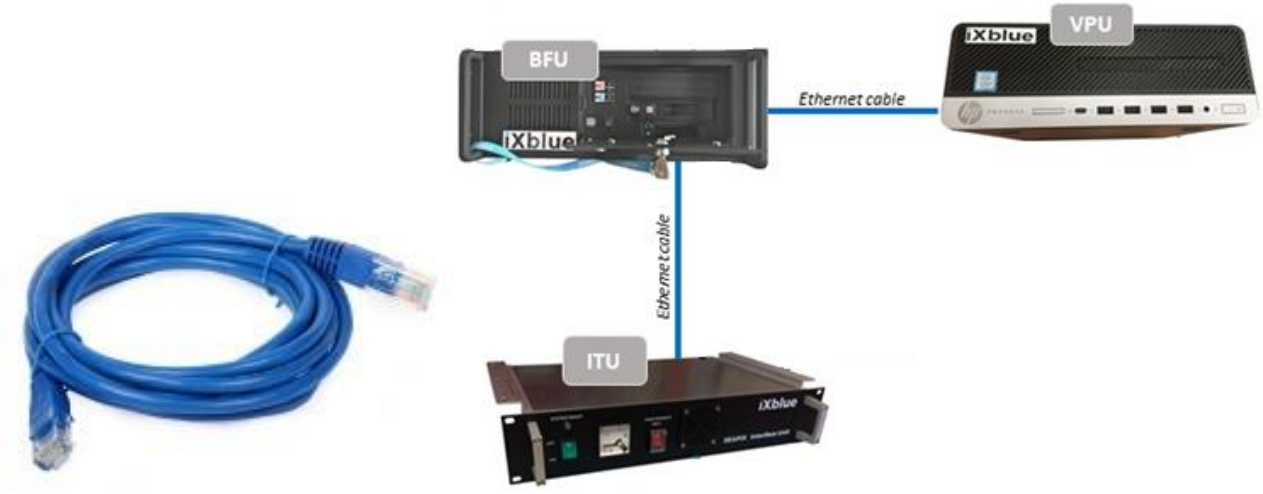
2. After greasing, fully mate the male and female connectors and remove any excess grease from the connector joint.

On ITU side, the connector's dimensions shall be considered when the cable is running through tubes inside the hull.

To plug the cable onto the ITU, please note that the red dot on top of the cable connector needs to match the red dot on top of the transducer port on the ITU:

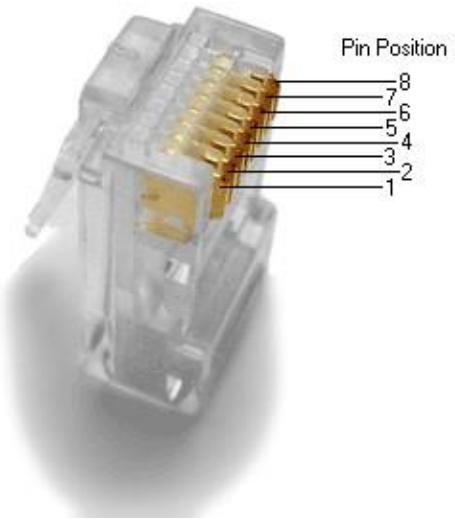
Transducer connector, ITU side

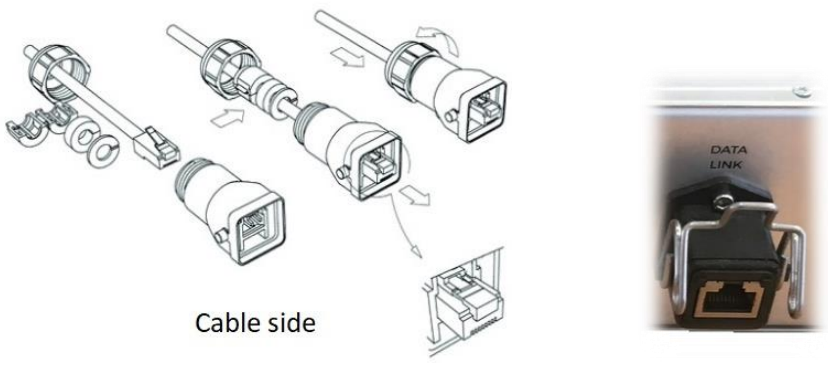
4.2.2 ETHERNET CABLES (ITU↔BFU AND BFU↔VPU)



Both Ethernet cables (ITU↔BFU and BFU↔VPU) shall be terminated during the installation as per the following instructions.

Pin	Pair	Wire	Color
1	2	1	white/orange
2	2	2	orange
3	3	1	white/green
4	1	2	blue
5	1	1	white/blue
6	3	2	green
7	4	1	white/brown
8	4	2	brown

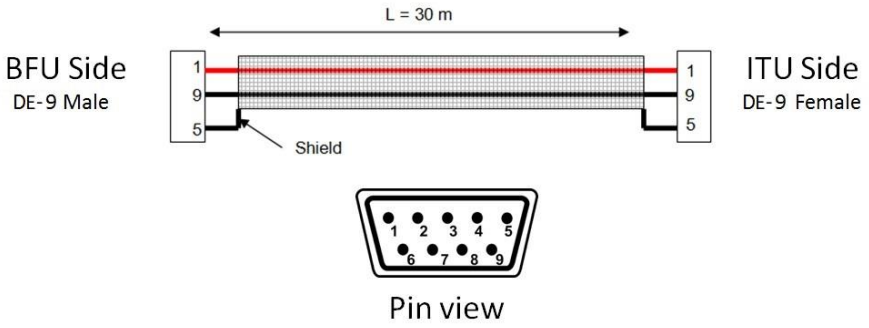




Ethernet cable locking system onto the Interface unit (ITU)

4.2.3 CONTROL COMMAND CABLE (ITU↔BFU)

ITU↔BFU Control Command cable shall be terminated during the installation as per the following instructions.



4.3 Checking the System before Installing

We advise you to check the system before installing SeapiX on board the vessel. This operation shall be done in a clean, dust-free and protected room. Please go to next chapters and run SeapiX Commissioning (chapter 5) and SeapiX Configuration (chapter 6).

If any anomalies, it will be detected during the check. iXblue recommands to perform it with its Support Service through **TeamViewer** (see Support through TeamViewer, chapter 11).

In the example below, the SAU is immersed for testing into a (green) water tank.
We suggest test sequences no less than 15mn long.

Typical test bench including a water tank

4.4 Installing SeapiX Antenna Unit (SAU)

To help for assembly, refer to SAU drawings from design office appended in Mechanical and Electrical Drawings:

- For any details about SeapiX-F or SeapiX-R antenna, go to PLA02664 AG.
- For any details about SeapiX-L antenna, go to PLA14711-AA.

4.4.1 Considering the Slamming

Please note that the SAU must always be fully immersed – whatever the vessel's motion.

CAUTION: SLAMMING COULD DAMAGE THE ANTENNA (SAU)

The SAU must be installed in a part not exposed to slamming.

There is a risk the SAU could be distorted - which would not be covered by iXblue warrantee.

If any slamming risk, it is under the installer's / shipyard's responsability. Please refer to 4.1 Installation Checklist and the following box to check:

❑ The SAU has been installed in a part not exposed to slamming

4.4.2 Cooling Down the SAU

Please note that the SAU must always be fully immersed.

CAUTION: DAMAGE TO THE ANTENNA (SAU)

When using SeapiX, as the SAU is cooled down by thermal dissipation on its rear face, it is mandatory to have the SAU completely immersed all the time and to insure enough water flow.

There is a risk the SAU electronics could be damaged because of overheating - which would not be covered by iXblue warrantee.

4.4.3 Corrosion Protection of the SAU

SeapiX SAU is made of marine grade stainless steel (SAE 316 L). When immersed, it shall be protected against corrosion by anodes:

- an anode is positioned on the SAU rear face,
- a witness anode is positioned on the SAU front face, oriented to the back to avoid turbulences.

CAUTION: SAU CORROSION IF WORN ANODES

The customer must ensure the anode protection efficiency and its maintainance over time.

Lack of protection may result in severe damage to the SAU and would not be covered by iXblue warranty.

Please refer to 4.1 Installation Checklist:

The following boxes must be checked:

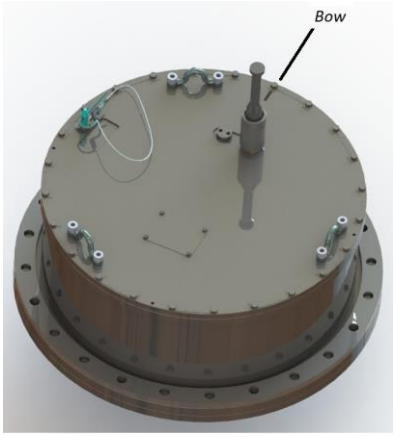
❑ The SAU is protected by anodes located outside and inside the hull
❑ Anodes are in water and electrically linked to the SAU

Then

❑ Check the anodes every 6 months

See also ANODES table in 9 Preventive Maintenance.

4.4.4 HULL-MOUNTING AN SAU STEP BY STEP

Step	Action
1.	Check that the mounting flange has been welded to the boat's hull to host the SAU.  
2.	Position the plastic ring on the SAU and screw it: 
3.	Check the orientation of the SAU: the indicator located on the SAU rear side shall be pointing towards the bow. There is also a fluorescent arrow on the SAU front face.  

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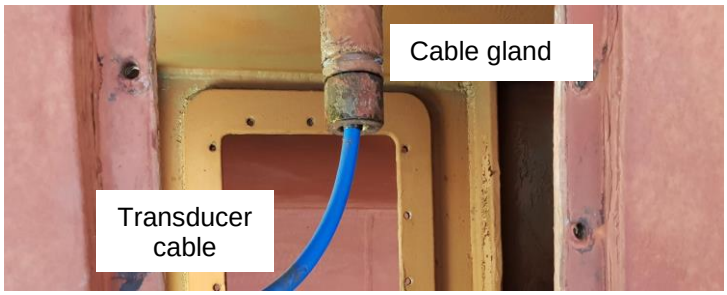
Step	Action

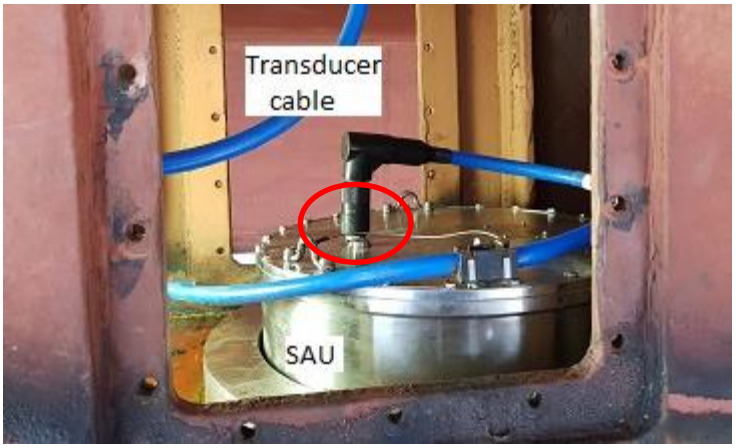
4. Pass the transducer cable through the hull. To tighten it and ensure watertightness, use iXblue-delivered cable gland: refer to plans PLA05712 AA and PLA06149 AA.



Caution

The installation of the cable gland and its qualification are under the shipyard/customer responsability. The cable gland delivered has been designed for steel hull configuration.

5. Connect the transducer cable onto the SAU; screw it completely but without forcing.



Refer to plan 00162207-A and to 4.2.1 Transducer Cable (SAU↔ITU) to have information on the authorized bending radius and the connectors' lubrication and screwing.

6. Clip the cable into the SAU clipping device then attach it with tie-wraps all along the compartment to prevent excessive movement during operations.

7. Fix the SAU onto the ship's hull, inside the mouting flange: using a flat wrench and an Allen wrench, screw the eight (8) M10-screws and washers (inox A4-70). The appropriate torque is 30N.m ± 10%.

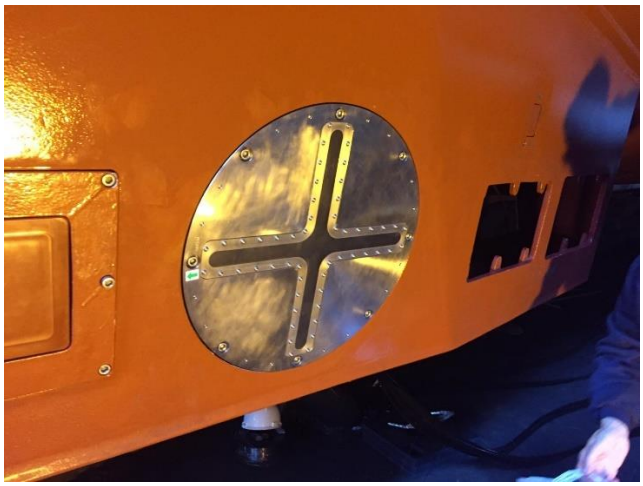
Important

The SAU installation can be done in dry dock or by divers.

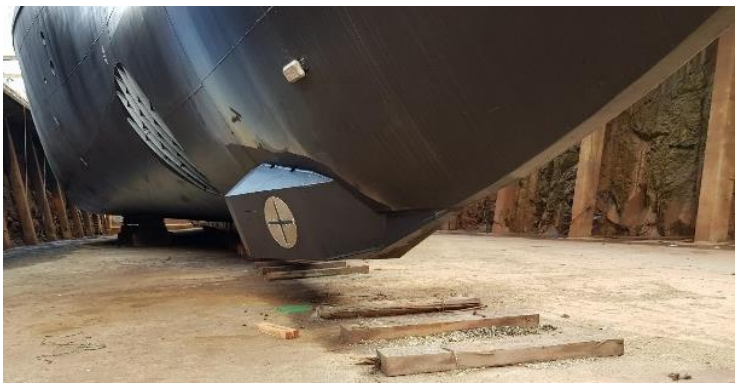
4.4.4.1 Views of Hull-Mounted Antennas

The antenna (SeapiX-F or SeapiX-R SAU) can be installed in different places on a ship's hull; it can be **side-looking** or **down-looking**.

Here are a few examples of **side-looking** antennas:



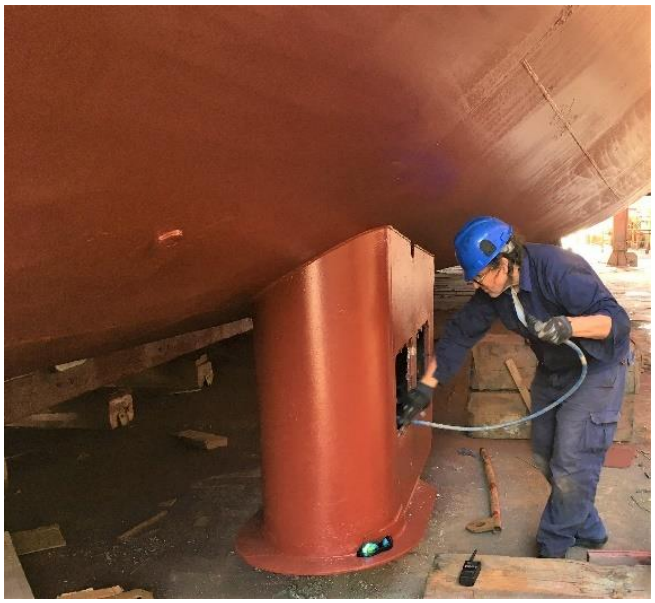
Side keel blister



Side blister

Bulb

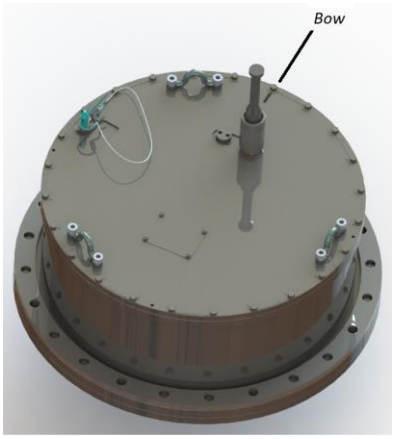
Here are a few examples of **downward-looking** antennas:



Side blister

Side keel blister

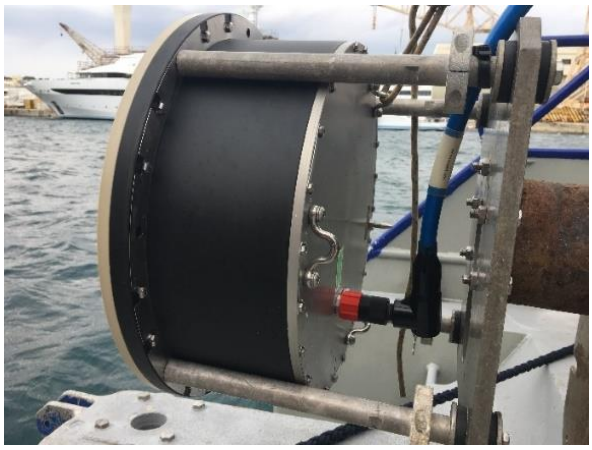
4.4.5 POLE-MOUNTING AN SAU STEP BY STEP

Step	Action
1.	Position the plastic ring on the SAU and screw it: refer to PLA02664 AG 
2.	Check the orientation of the SAU: the indicator located on the SAU rear side shall be pointing towards the bow. There is also a fluorescent arrow on the SAU front face.  
3.	Connect the transducer cable:  • refer to plan 00162207-A and to 4.2.1 Transducer Cable (SAU↔ITU) to have information on the authorized bending radius and the connectors' lubrication. • Screw it completely without forcing.
4.	Using brackets, fix the SAU to the interface.
5.	Let the transducer cable run through the pole and attach the interface to the pole.

Steps 4 and 5 are not under iXblue responsability.

4.4.5.1 Views of Pole-Mounted Antennas

Examples of pole-mounted SAUs:



4.5 Installing the Interface Unit (ITU)

Once connected to the SAU, passed through the hull and tightened by a cable gland, the transducer cable must be connected to the Interface Unit (ITU).

Location

The ITU is installed either in a dedicated sonar room or into a technical room, fairly close to the SAU (transducer cable length = 20 m).

CAUTION: CLEARANCE SPACE NEEDED AT THE REAR OF THE ITU

Enough space shall be available at the rear of the ITU for cable connections

The connectors are located at the back of the ITU:

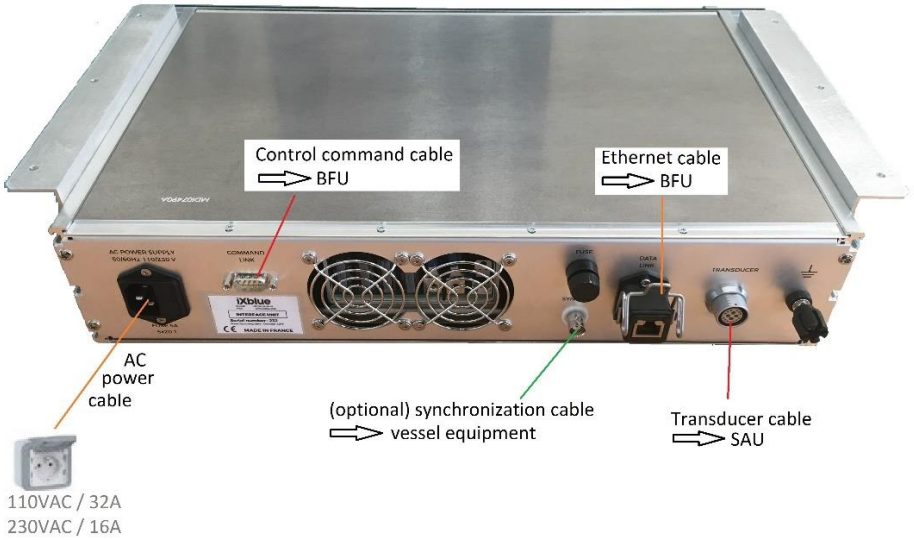


Figure 1 - ITU back face and connections

- The ITU power cable is plugged into a 110VAC or 230VAC electrical outlet.
- The ITU-BFU control command cable - with DE-9 female termination on ITU side - is connected to the DE-9 male port *(labeled COMMAND LINK)*.
- The ITU-BFU Ethernet cable is connected to the RJ45 port *(labeled DATA LINK)* – which is secured by a clipping system.
- The transducer cable from the SAU is connected to the Fischer port *(labeled TRANSDUCER)* – both red dots matching upwards.

4.6 Installing the Beam Former Unit (BFU)

Once connected to the ITU, the control command and Ethernet cables have been connected to the Beam Former Unit (BFU).

Location

The BFU is installed on the bridge, often close to the VPU.

The connectors are located at the back of the BFU:

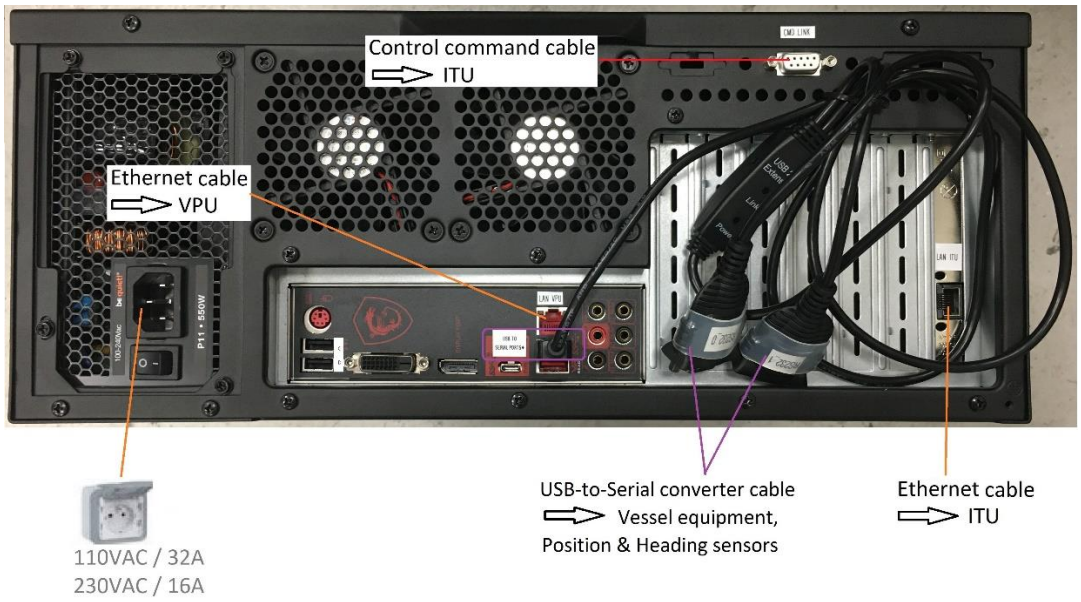


Figure 2 - BFU back face and connections

- The BFU power cable is plugged into a 110VAC or 230VAC electrical outlet.
- The ITU-BFU control command cable - with DE-9 male termination on BFU side - is connected to the DE-9 female port *(labeled CMD LINK)*.
- The ITU-BFU Ethernet cable is connected to the Ethernet port *(labeled LAN ITU)*.
- The USB-to-RS-232 converter cable - linked to vessel equipment for navigation: e. g. GPS and Heading sensor - is connected to a USB port *(labeled USB TO SERIAL PORTS)*.
- The BFU-VPU Ethernet cable is connected to the Ethernet port *(labeled LAN VPU).*

4.7 Installing the Viewer Processor Unit (VPU)

Once connected to the BFU, the Ethernet cable has been connected to the Viewer Processor unit (VPU).

Location

The VPU is installed on the bridge.

The connectors are located at the back of the VPU:

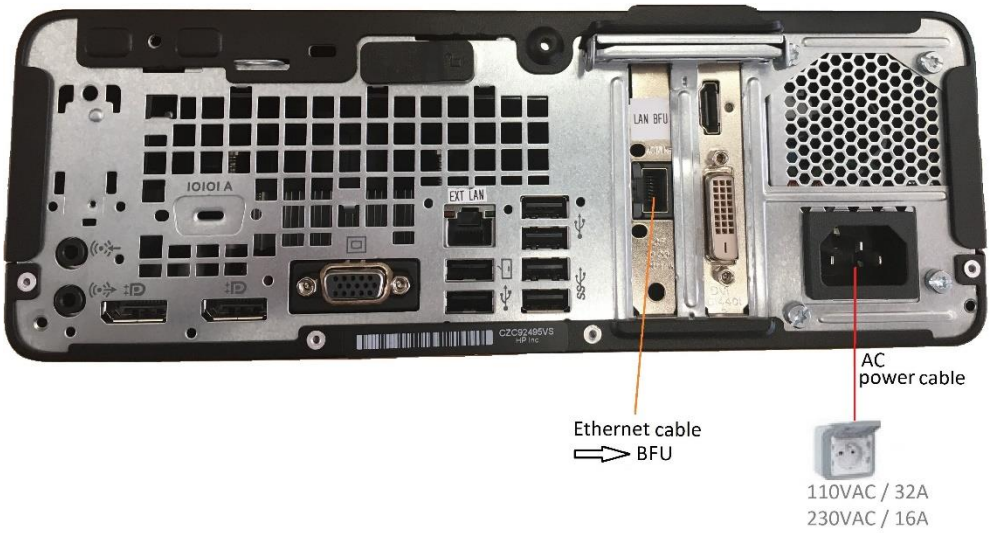


Figure 3 - VPU back face and connections

- The VPU power cable is plugged into a 110VAC or 230VAC electrical outlet.
- The BFU-VPU Ethernet cable is connected to the RJ45 port *(labeled LAN BFU).*
- An Ethernet cable to connect to the vessel network is inserted into the RJ45 port *(labeled EXT LAN)*.
- 2 USB keys for the wireless keyboard and trackball are inserted into 2 USB ports – or just 1 USB key for both is inserted into either port.
- The SeapiX VPU dongle is inserted into any USB port.

In case the VPU back face would not be easy to reach, please note that ports are available on its front face.

4.7.1 SEAPIX SOFTWARE INSTALLATION

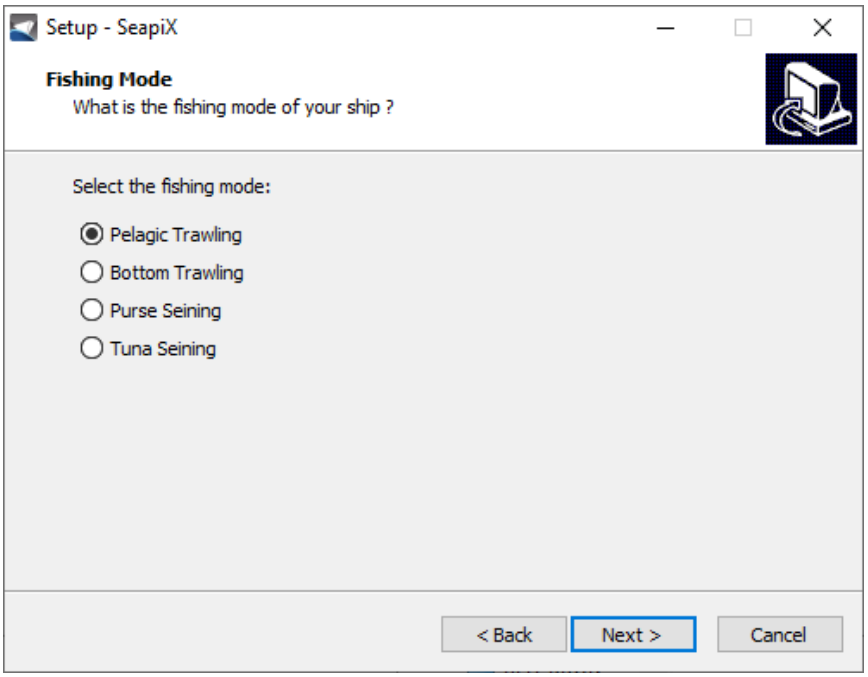
SeapiX software has been factory-installed and set for a specific use (a fishing mode).

If needed to reinstall it – for instance to change settings – go to 4.7.2.

4.7.2 SEAPIX SOFTWARE REINSTALLATION

SeapiX software can be reinstalled on a VPU.

Follow the different steps; then, at some point, the **Fishing Mode** window will open:



You can select only 1 fishing mode out of 4. Check the fishing mode used on the vessel:

- Pelagic Trawling (PT), or
- Bottom Trawling (BT), or
- Purse Seining (PS), or
- Tuna Seining (TS).

Then click **Next >** to finish up the software installation.

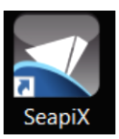
Important

To get the reinstallation procedure, please contact SeapiX Support.

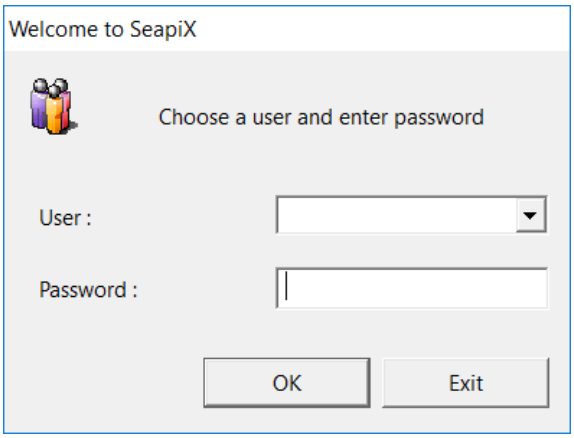
5 SeapiX Commissioning

When SeapiX is used for the first time, follow the step-by-step commissioning process described below:

Warning: Before proceeding, make sure that the SAU is in the water. Otherwise, severe damage can occur to SeapiX system.

Step	Action
1.	Check that the different elements of the SeapiX system have been tested, installed and connected properly: see 4 Installation Process.
2.	Check the power supply voltage and connect the power cords.
3.	Check that the **ITU** is shut down.
4.	Power on the **BFU**.
5.	Power on the **ITU**. The **ITU** shall start: on its front face, the **blue LED** switches on and a **peak consumption** (up to 10A) is visible on the current indicator. 
6.	Power on the **VPU**. At that stage, SeapiX is ready to be configured.
7.	Check that the VPU dongle is inserted.
8.	Configure the Offsets and the Inputs / Outputs and check them (see SeapiX Configuration).
9.	From Windows® desktop on the **VPU**, double-click the **SeapiX** icon to launch **SeapiX software**: 

10. In the **Welcome to SeapiX** window which opens, select **Administrator** as the **User** - and a **Password**, if needed:



Click **OK** to validate.

11. From the main menu on top of the display, select **SeapiX** > **Service information** to check the connection status.

Note: If any **No Connections** text shows in red, please check the BFU-to-VPU connection (see Troubleshooting).

To use SeapiX software, refer to ***SeapiX Operation Manual***, *SeapiX Graphical User Interface (GUI) section*.

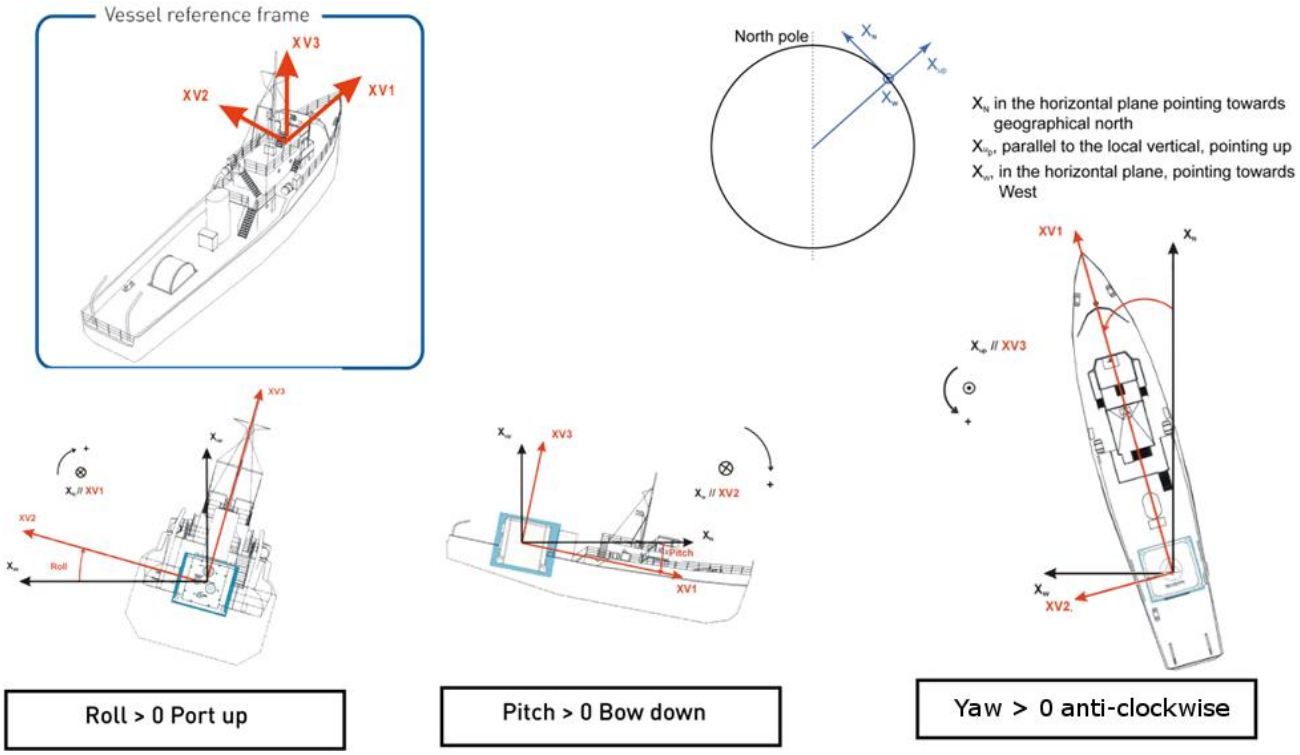
6 SeapiX Configuration

Connect to the web via a browser - Chrome for instance – then type in `192.168.16.9:8989`

A program opens which lets you set different controls: start with the **Offsets** tab, then the **Inputs** tab and the **Outputs** tab. You can then check them all through **Main controls** tab.

6.1 Setting the Offsets

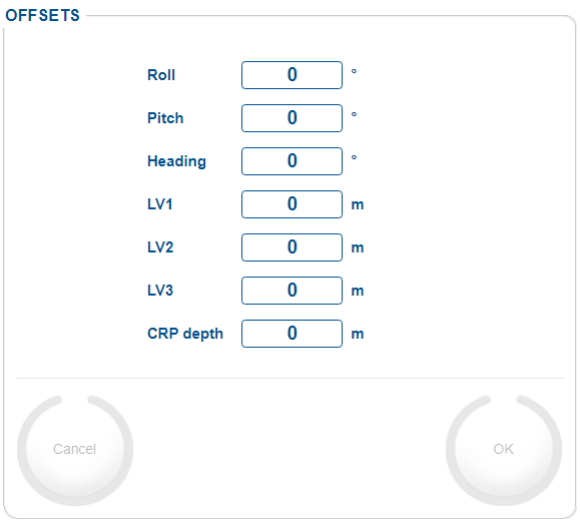
6.1.1 Offset Conventions



Where, in SeapiX menu, LV1 = XV1, LV2 = XV2 and LV3 = XV3.

6.1.2 Offsets Menu

Click **OFFSETS** to open the following window:



All distance values are defined as compared with a Central Reference Point (**CRP)**, which can be the vessel CoG.

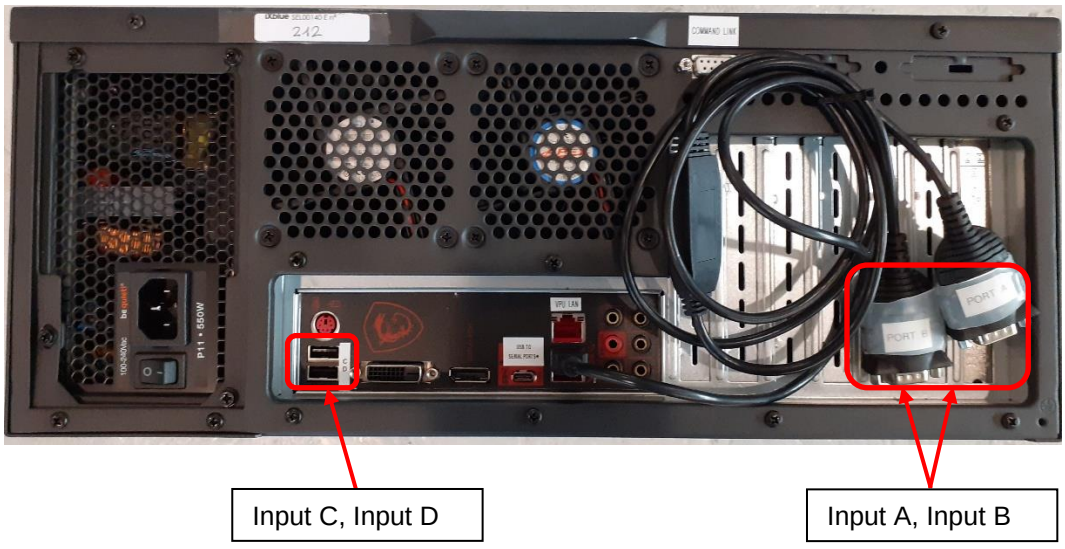
Before filling in the offset values, make sure the SeapiX is not pinging.

- **Roll**, **Pitch** and **Heading** angular values correspond to the installation angles of SeapiX as compared to the vessel axes.
- **LV1**, **LV2** and **LV3** metric values correspond to SeapiX position – the distance between the SAU central point and the CRP, projected in the vessel frame.
- **CRP depth** metric value corresponds to the immersion value of the reference point (positive values increasing as going deeper).

When all settings are done, click **OK** to validate.

6.2 Setting the Inputs

SeapiX system uses the navigation information from the vessel in order to geo-reference data. These inputs are connected to the BFU serial ports or Ethernet port:



- Inputs A and B are the serial ports provided.
- Inputs C and D will only be used If a 3rd or a 4th port is needed, after connecting a USB-to-single-serial port converter.

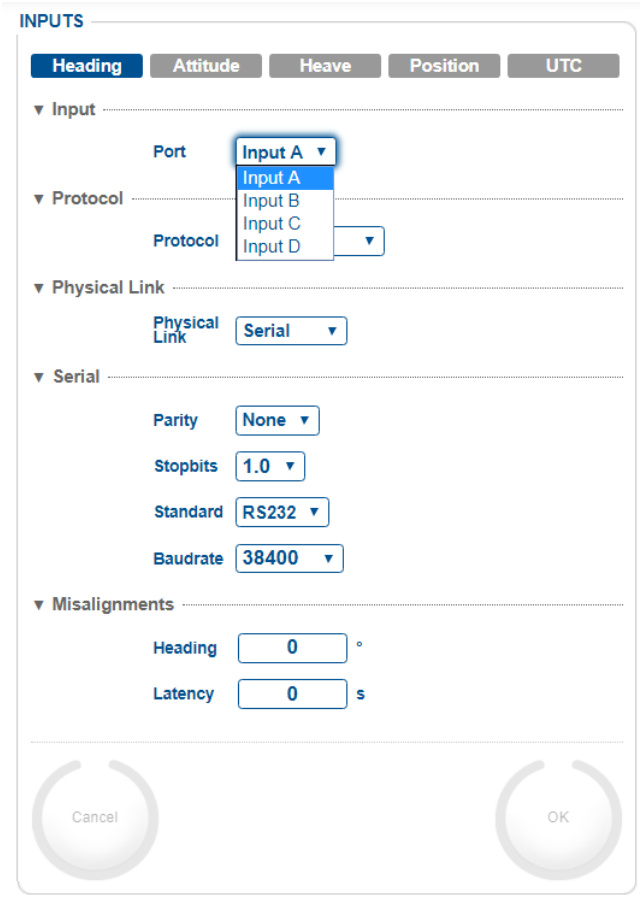
Inputs A, B, C and D can also be configured as Ethernet ports, if they are not used as serial ports.

CAUTION: RISK OF SYSTEM CRASH IF WRONG INPUT DATA

The recurrence of navigation data incoming on the BFU must be between 1 Hz (1 value per second) and 10 Hz (10 values per second).

Outside this range, there is a risk that the system would crash or behave unexpectedly.

Inputs **Heading** tab lets you set the connections:



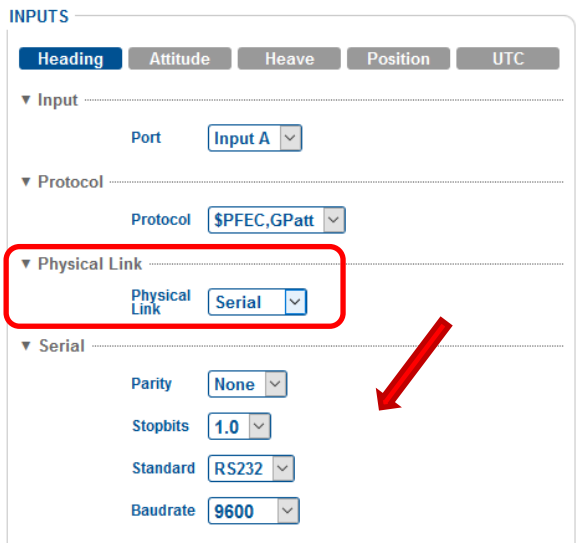
Choose a **Protocol** among:

- $PFEC,GPatt
- $xxHDT

Select on which device the data will be transmitted in the **Physical Link** drop-down list:

- **Serial** or **Ethernet**: data is transmitted via the serial or the Ethernet stream

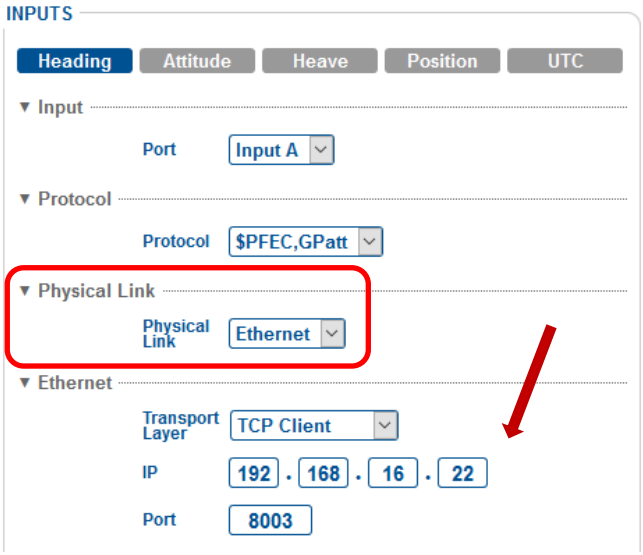
When **Serial** physical link is selected :



Set the following parameters:

- **Parity**: from None, Even, or Odd
- **Stopbits**: from 1.0 or 2.0
- **Standard**: electric standard for serial output (RS232)
- **Baudrate**: from 4800 bauds up to 115200 bauds

When **Ethernet** physical link is selected:



Set the following parameters:

- **Transport Layer**: TCP Server, TCP Client, UDP, UDP Broadcast.
  - > **"**TCP Server**"** requires a client to establish the connection to the BFU software.
  - > With **"**TCP Client**"**, the address specified is that of the server which sends or receives data. The BFU software will establish the connection to the server.
  - > With "UDP", the address specified is that of the terminal which sends or receives data. The specific terminal will need to send or listen to data from the BFU software.
  - > With "UDP Broadcast", the address specified is a broadcast address limited to the subnet mask. For example, if the subnet mask is 255.255.0.0 and the system IP is 192.168.16.9, the broadcast address will be 192.168.255.255. All connected terminals will be able to receive the same data simultaneously by opening the same port to listen to data.
- **IP**: IP address of the target (only used in UDP and TCP client)
- **Port**: port socket number
  - > You can select any 4-digit number above 1024 as the port number.

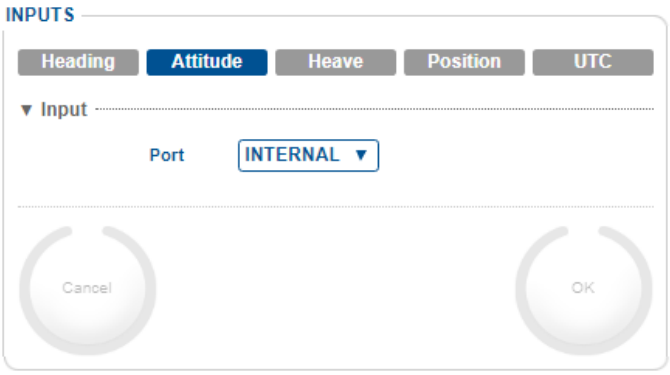
Important

To prevent conflicts with other systems or applications, it is important that no identical numbers are used and that reserved ports are not used.

You can manage **Misalignments**:

- **Heading misalignment** (-180° / +180°) is the angle between the vessel longitudinal axis and the heading sensor reference.
- When sensor information is not time-stamped, **Latency misalignment** is a positive value used to estimate the exact timing of the information received.

Inputs **Attitude** tab lets you select a port:

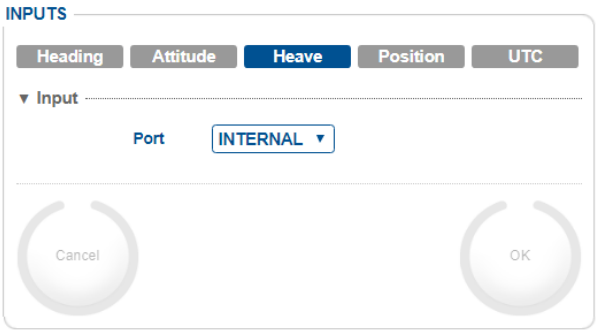


If **internal** port: nothing to do.

If **external** port (Input A, B, C, D), fill in the menu which opens (similar as Heading) and choose a **protocol** among:

- $PFEC,GPatt
- $PIXSE,ATTITUD
- TSS1

Inputs **Heave** tab lets you select a port:



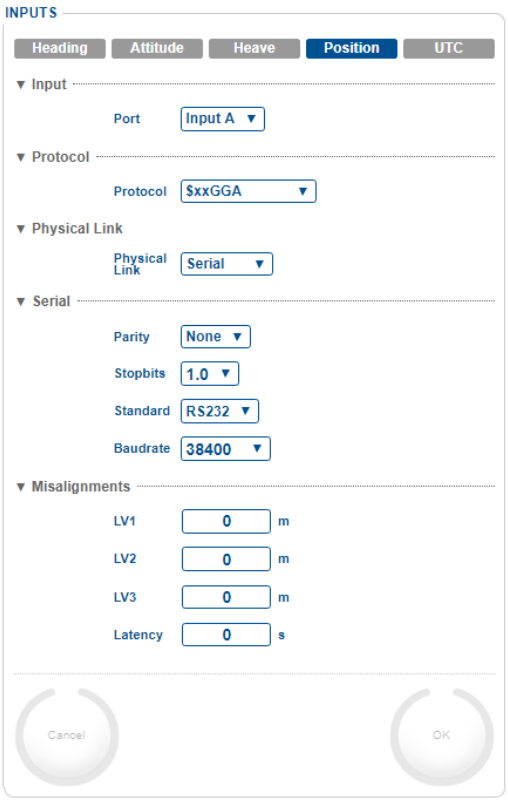
If **INTERNAL** port: nothing to do.

If **EXTERNAL** port (Input A, B, C, D), fill in the menu which opens (similar as Heading) and choose a **protocol** among:

- $PFEC,GPhve
- $PIXSE,HEAVE_
- $xxLIN
- TSS1
- $xxHEV

If port is **none**, the heave is considered as zero.

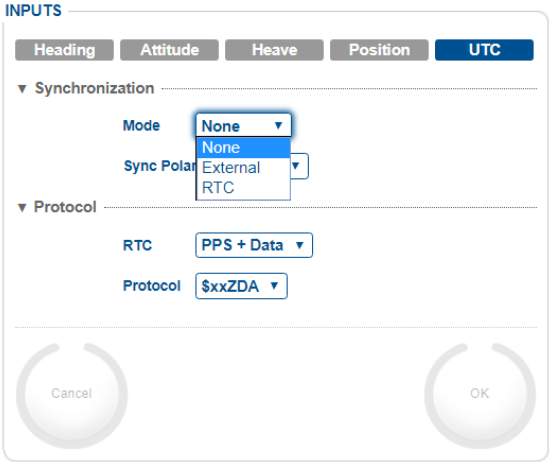
Inputs **Position** tab lets you set different connections (Input A, B, C, D):



Choose a **protocol** among:

- $xxGGA
- $xxRMC
- $PIXSE,POSITI

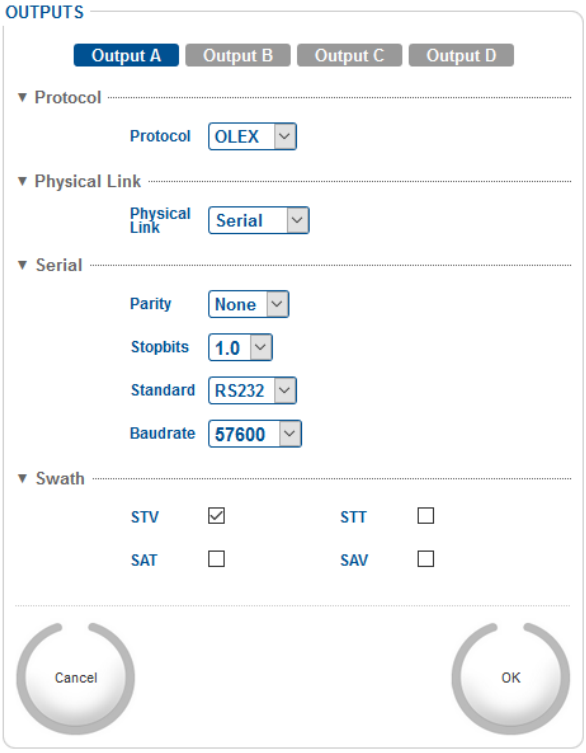
Inputs **UTC** tab lets you configure SeapiX according to different modes:



- If **None**: SeapiX is the master and there is no synchronization of its internal clock.
- If **External**: SeapiX is a slave and cannot ping unless it receives a TTL signal.
- If **RTC**: SeapiX is the master and it sets its internal clock through PPS and timeframe (only $xxZDA **protocol** is available). Better use it for all applications needing precision bathy.

6.3 Setting the Outputs

The output tabs (**Output A** to **D**) let you edit the protocols associated to each one:



The outputs available as a stream from SeapiX are:

- **OLEX**: protocol read by OLEX software, system for navigation and charting developed by the norwegian company OLEX AS
- **DELPH**: XTF protocol read by DELPH software

Caution: If the port you choose has been already configured as an INPUT, there could be a compatibility issue.

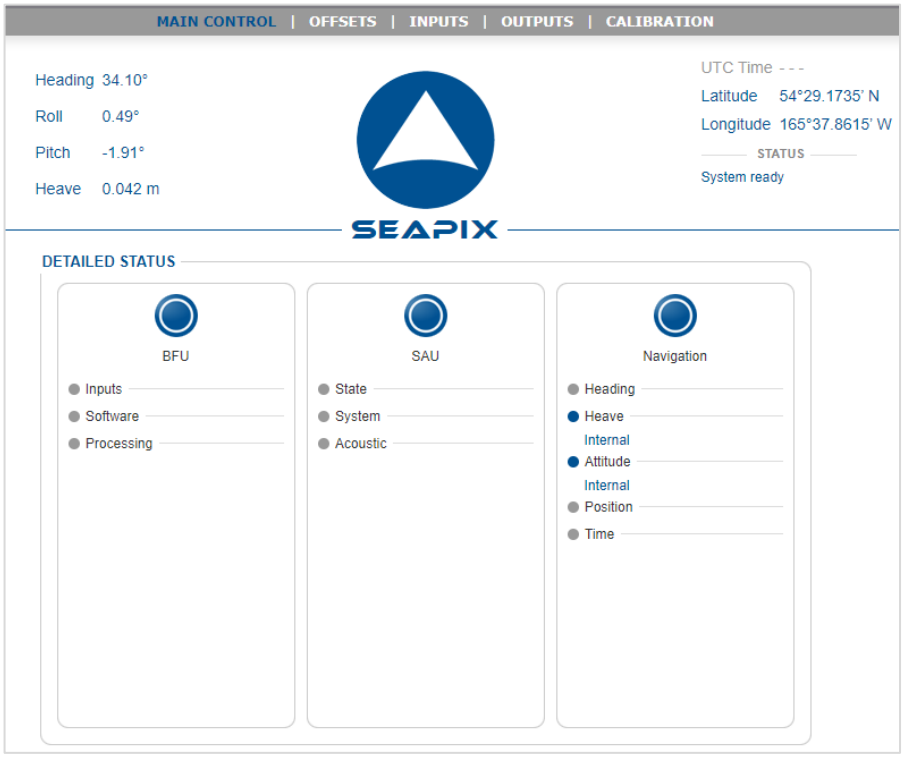
If this happens, choose another output.

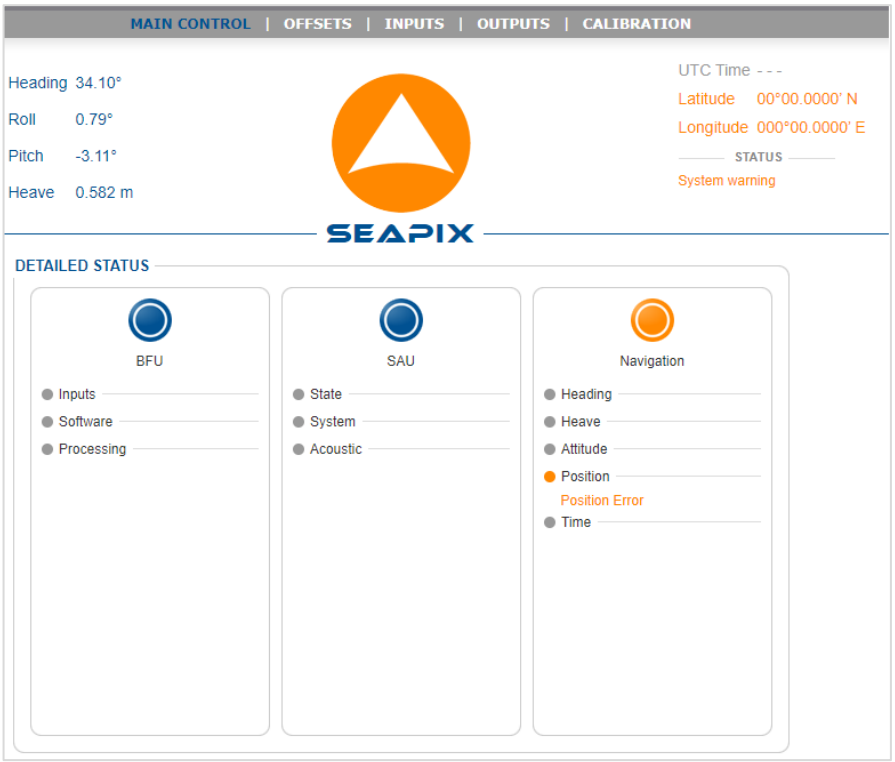
6.4 Checking Status through Main Controls

Once all settings have been done, click **MAIN CONTROL** to check the BFU, SAU and navigation status:

Correct. Problem to fix or just a warning. Critical issue - Not working.

Below are examples without warnings then with warnings:

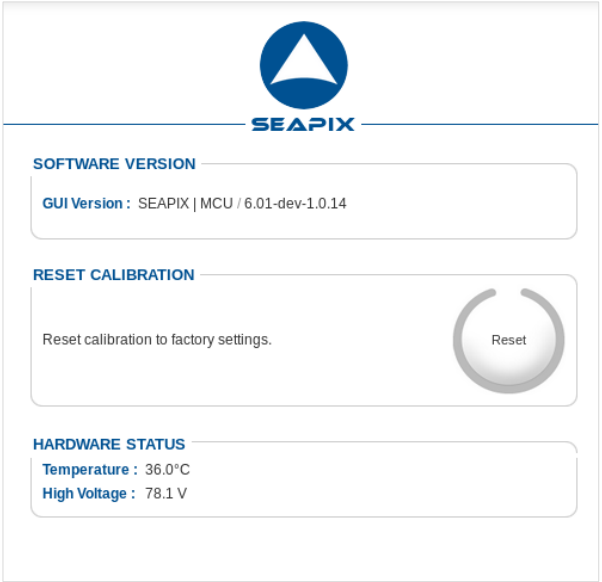




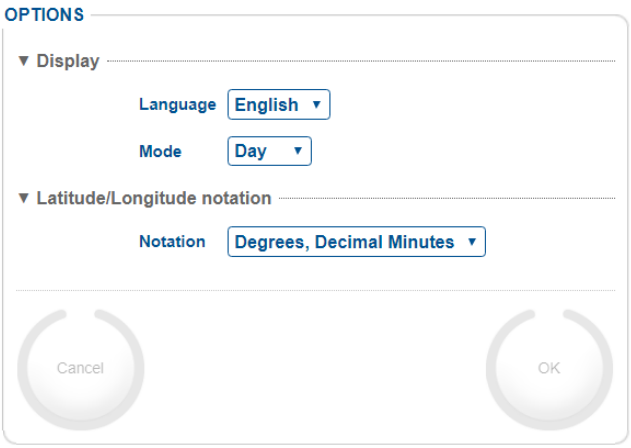
6.5 Software Version & Units

To the right side of the top menu, Maintenance | Options let you:

When clicking **Maintenance**, you can check the software version, reset the calibration, or check the temperature and high voltage hardware status:



When clicking **Options**, you can change different basic parameters (language, day/night mode, latitude/longitude notation):



7 Shutdown Procedure

If you need to shutdown SeapiX system, follow the step-by-step shutdown process described below:

Step	Action
1.	Stop pinging (pressing Start button in SeapiX Software, on the VPU)
2.	Shut down the BFU (press the push-button)  **Note:** At that stage, the ITU & SAU should be shut down too.
3.	Check that the ITU is not powering the SAU (the blue LED is off).
4.	If any long stop (dry dock, ...) or maintenance operation, switch off the ITU 
5.	Close SeapiX program.
6.	Shut down the VPU.

8 Software Upgrades

SeapiX software is continuously improved with bug fixes and new features development. To make sure you are running the latest software version, visit our Downloads section on iXblue web site then click **Downloads** button:

Each release usually consists in:

- An `Upgrade Note` to explain how to upgrade your SeapiX. Please note that the procedures might change depending on which version you are currently running.
- A `VPU Software Setup File` to update the VPU software.
- A `BFU Software installation File` to update the BFU software.

Download the software upgrade pack then follow the process.

9 Preventive Maintenance

The tables below summarize when and how the different items of the SeapiX system shall be maintained – with typical values.

Important

Please note that harsh environmental conditions can increase the maintenance tasks and shorten the periodicity.

Caution: Always perform the maintenance tasks requested. Otherwise, it could impact the SeapiX operation as well as its warranty.

SAU ANTENNA CLEANING

Place	Periodicity	Time needed	Maintenance task
Dry dock	Every year	2 hours needed	Clean the SAU front face using vinegar-type liquid and a scraper: remove seaweeds, shells, ... Caution While scraping the stainless-steel part, be careful when approaching the cross - clean it carefully as the black rubber part is fragile.

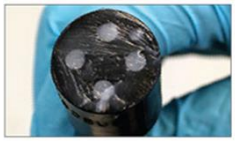
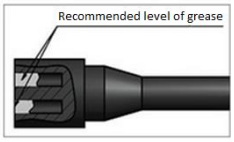
ANODES

Place	Periodicity	Time needed	Maintenance task
Dry dock or Underwater	Every 6 months	5 mn to check, 2 hours to change	Inspect the anodes and change them if necessary Check the witness anode on the SAU front face: • if its integrity is > 30%: no action. • if it is worn out (integrity ≤ 30%), change the witness anode then change the anode located on the rear side of the SAU: > Take new anodes from the spare parts. [witness anode] [main anode] > Unscrew each anode. > Replace it by a new one. > Screw it again.

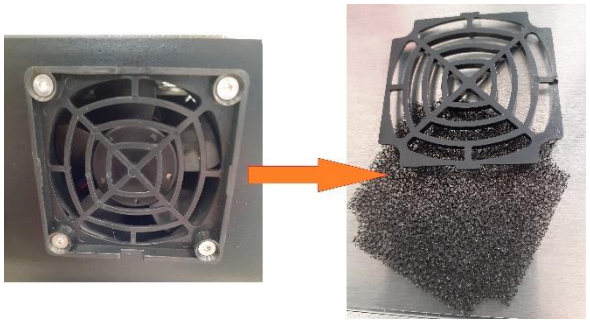
ANTIFOULING

Place	Periodicity	Time needed	Maintenance task
Dry dock	At commissio-ning then at every dry docking		Apply antifouling *Gummipaint A/F 6435*  (.153 white, or .714 grey, or .708 black). • Degrease the SAU surface to be treated with an appropriate solvent or detergent (e.g. *Detersil*™); if necessary, sand down using abrasive paper P150-180 (or G150), apply primer on all the surface then blow with fresh and dry air. • Mix the antifouling for a few minutes to have a complete homogeneity. • Apply the antifouling (4 coats recommended, at least 8h. overcoating interval) by: > Brush. Dilute it with *Thinner 6380* up to 5-10% in volume. Brush it by making horizontal strokes with a uniform and constant thickness. > Spray. Dilute it with *Thinner 6380* between 20-30% in volume. Spray it. Wait at least 24 hours before launching the SAU.

SAU ANTENNA AND TRANSDUCER CABLE

Place	Periodicity	Time needed	Maintenance task
Dry dock or Underwater	Every time the transducer cable is disconnected from the SAU		If SAU maintenance operation with transducer cable disconnection: • Grease the connectors with *Molykote 44 Medium* (or *Novagard Versilube G624*) before mating. A layer of grease corresponding to approximately 1/3 of the socket depth should be applied to the female connector. All sockets should be completely sealed, and a transparent layer of grease left visible on the connector face.   • After greasing, fully mate the male and female connectors and remove any excess grease from the connector joint.

ITU

Place	Periodicity	Time needed	Maintenance task
Aboard the vessel, in a dedicated sonar room or in a technical room	Every 3 months	10 min.	Clean the filter on the ITU front face: • unclip and remove the filter cover.  • Remove the filter and dust it with a brush. • Clip the cover.
		5 min.	Check the control-command DE-9 connection on the ITU rear face: tighten the screws if loosened.

BFU

Place	Periodicity	Time needed	Maintenance task
Aboard the vessel, on the bridge	Every 3 months	10 min.	Clean the filter on the BFU front face: • unclip and slide the filter cover.  • Remove the filter and dust it with a brush. • Slide and clip the cover.
		5 min.	Check the control-command DE-9 connection on the ITU rear face: tighten it if loose screws.

VPU

Place	Periodicity	Time needed	Maintenance task
Aboard the vessel,on the bridge	Every 3 months	5 min.	• Clean the VPU front face with a soft cloth.
		5 min.	• Check the connections on the VPU rear face.

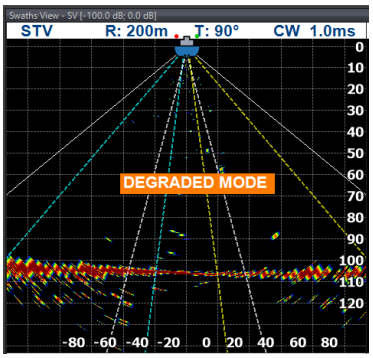
10 Troubleshooting

If you encounter a problem when using SeapiX, please refer to the following table:

Problem	Possible cause	Solution
SeapiX Software does not start correctly.	The SeapiX VPU dongle is not connected.	1. Connect the SeapiX VPU dongle. It may take a few minutes for the driver to install. 2. If it still doesn't work, try another USB port.
	The license files are not correctly set.	If you updated your software recently, check that you have copied the license files in the new software installation folder.
SeapiX Software **Start** button  is not available (appears in grey and is not clickable).	**BFU-VPU connection problem:**	From **SeapiX** menu, click **Service Information** item: **No Connections** lines show up.
	• The Ethernet link between VPU and BFU is broken.	1. Check that the BFU is powered. 2. Check that the BFU LAN board is connected to the VPU: it shall be blinking. 3. Check that the Ethernet cable between VPU and BFU is connected. 4. Reset the BFU.
	• The BFU system has encountered a fatal error.	1. Reset the BFU. 2. If it is still not working, connect a screen at the rear of the BFU for error and status monitoring.

Problem	Possible cause	Solution
	Problem other than BFU-VPU connection:	From **SeapiX** menu, click **Service Information** item: no **No Connections** lines show up.
	• The Ethernet link between BFU and SAU is broken.	1. Check that the ITU is powered and that the blue LED is ON. 2. Check the Ethernet cable between ITU and BFU. 3. Check the transducer cable connection into the ITU. 4. Reset the BFU.
	• The SAU does not start	1. Check that the ITU is powered and that the blue LED is ON. 2. Check that the current meter is showing a consuming device. If any doubt, restart the ITU – you shall see a 10A peak consumption a few seconds after startup.
SeapiX Software **Start** button is blue but SeapiX is not pinging.	SeapiX is set in slave mode and does not receive TTL signal.	1. If slave mode is expected, check the signal entering the ITU. 2. If slave mode is not desired, go to *SeapiX Configuration*: check the status on **Main Control** window, then edit the inputs in question.

Problem	Possible cause	Solution
The ITU (blue) LED does not light up.	The ITU main switch is off.	Turn on the ITU main switch: 
	The BFU is off.	Power on the BFU.
	The control-command cable is not correctly plugged in or wired. This can be tested by switching on the ITU MAINTENANCE ONLY button:  If the ITU (blue) LED lights up, the problem is related to the control-command link.	If the control-command cable is new and has never been tested, check its pinout. If the cable was working before, check its ITU and BFU connections and check its integrity: you should get a +12VDC voltage between pin 9 and pin 1.
	The ITU internal AC/DC power supply is faulty.	Contact iXblue Support.
The Echogram is not showing progression.	The Echogram is set in History mode.	Click the **History** button (it shall be unselected for the echogram to be in real time configuration).
	The selected swath is not pinging.	Open swaths view and activate the swath or change echogram source.
The Bathymetry map is not generated.	The Range setting is not sufficient.	Increase the swath range.
	The Pulse Power setting is too low.	Increase the swath pulse power.
	The selected Bathymetry swaths sources are not pinging.	Check the bathymetry sources in **Seapix** > **Settings** > **Sources**
	The system is in degraded mode - as can be seen on display:	Refer to *SeapiX Configuration*: 1. Check the status on **Main Control** window.

Problem	Possible cause	Solution
		2. Edit the inputs in question.
	The Bathymetry display is set to OFF.	Click the  button.
	The Acquisition is not selected.	Click the  button.
	The map is not well centered.	Click the  button.
	Bathymetry data from SeapiX is not selected.	Check **SeapiX** box from **Bathy**>**Bathy Data** menu.
	The seabed is too deep.	Verify that the expected depth is not out of SeapiX specifications.
No biomass data is shown.	Biomass data is not selected.	Click the  button.
	The selected Biomass swaths sources are not pinging.	Check the sources of biomass in **Seapix** > **Settings** > **Source**
	The 2D chart is not displaying in the biomass data location.	Center or zoom out the 2D view in order to display the Biomass location.
	The filters are not set correctly.	Check the applied filters in the distribution window accessible by clicking  (TS/SV range, layers depths)

If you cannot solve the problem, please contact either your SeapiX retailer/dealer or IXblue support – Preferably through TeamViewer (see Support through TeamViewer).

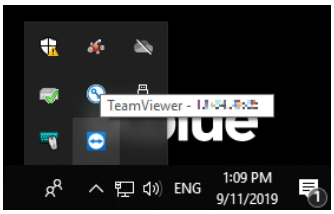
11 Support through TeamViewer

iXblue Support is available through **TeamViewer**. Free of charge, this service has been installed on your SeapiX VPU. Your ID and password have been recorded by iXblue Support.

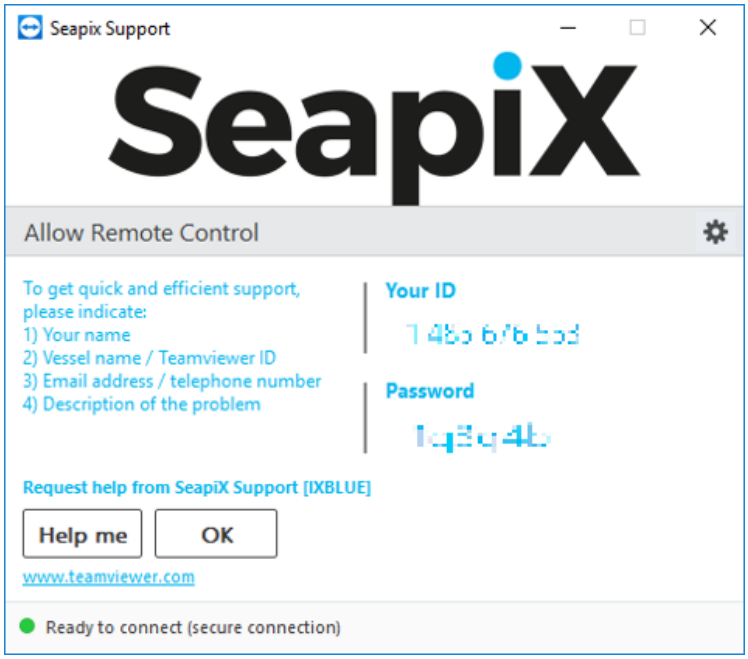
11.1 Using TeamViewer

if you need iXblue support, you can directly use **TeamViewer** interface and follow the process:

1. From Windows® desktop on the VPU, go to the notification area and click the **TeamViewer** icon:

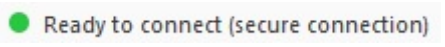


2. The Host interface opens:

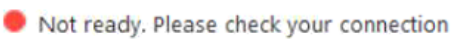


As you can see, your ID and password (blurred here for confidentiality reasons) automatically show up.

Have a look at the lower part of the window:

If 

shows up, as in the example above, click **Help me**.

If 

shows up, it means that no internet connection is available: you will have to fix it. When it is ready, click **Help me**.

3. The **Get help** window opens:

After entering your name (blurred here for confidentiality reasons), fill in the **Description** field as follows:

- Vessel's name / TeamViewer ID
- Email address / Telephone number
- Description of the problem.

Then click **Request support**.

Important

At step **3**, fill in the **Description** field completely to ensure you will be contacted soon by iXblue support team.

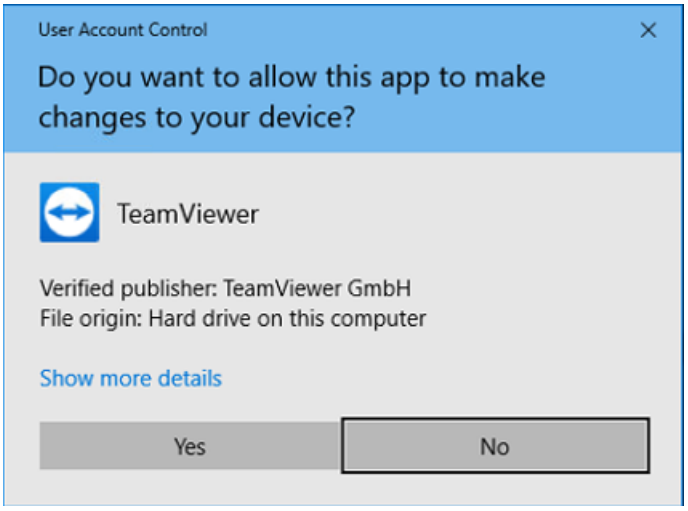
11.2 Reinstalling TeamViewer

If needed, TeamViewer can be reinstalled through the following network link:

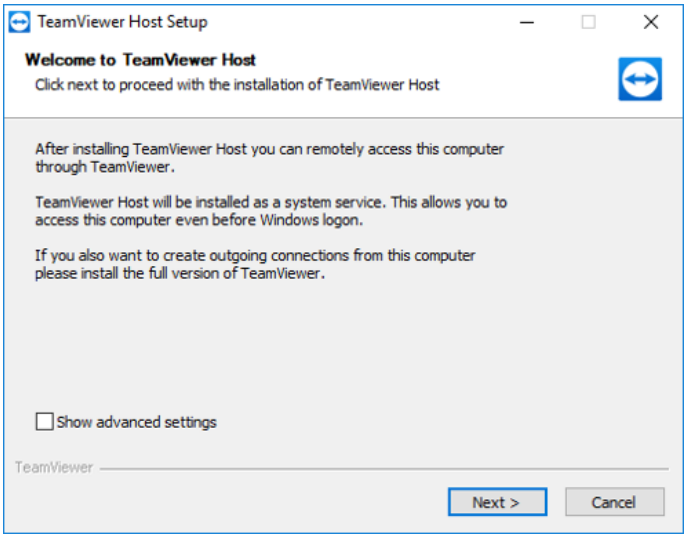
`https://get.teamviewer.com/seapix`.

You will have to follow the process described below.

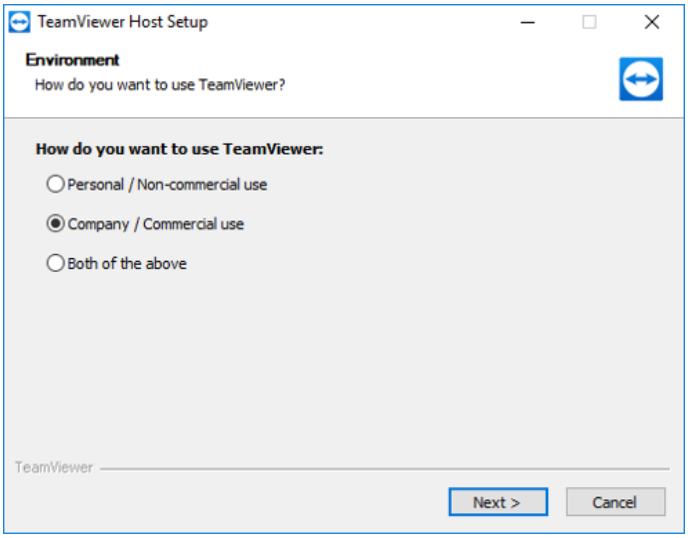
1. Connect `[USB_1]` into the VPU.
2. In the *`C:\IXBLUE\SeapiX\`* folder, copy the `TeamViewer_Host_Setup.exe` file from `[USB_1]`
3. Run the `TeamViewer_Host_Setup.exe` file, then click **Yes**.



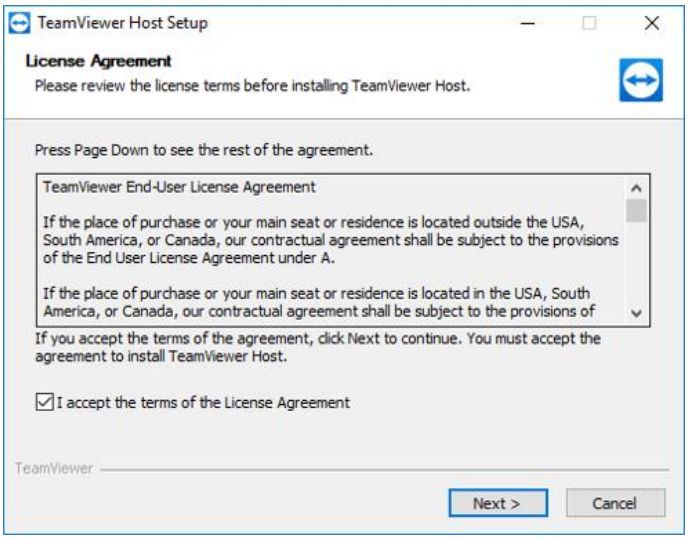
4. Leave **Show advanced settings** unchecked, then click **Next**:



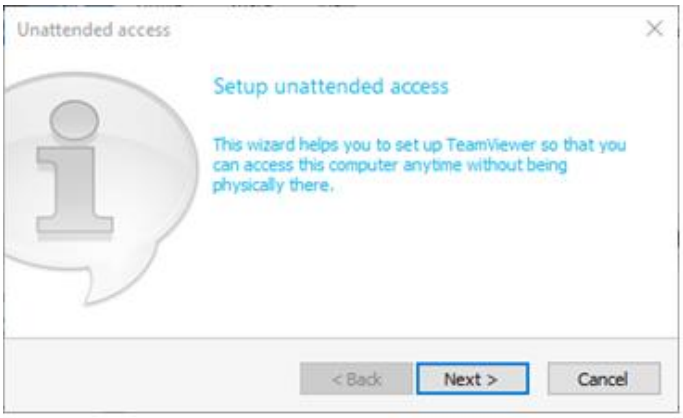
5. Select **Company / Commercial use** and click **Next**:



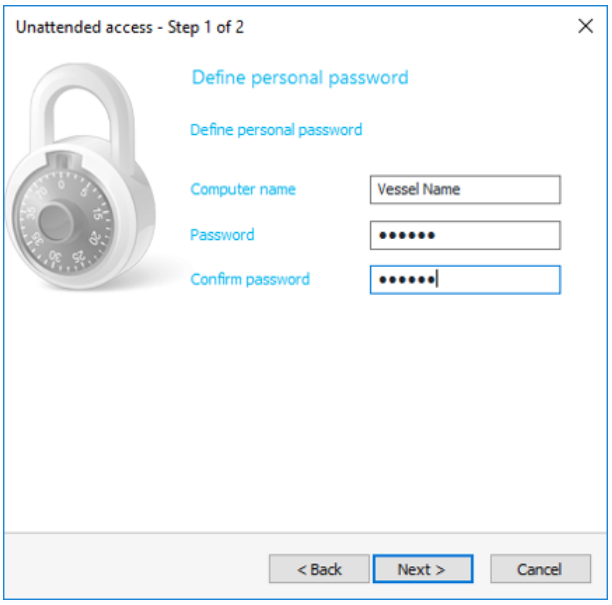
6. Check **I accept the terms of the Licence Agreement** and click **Next**:



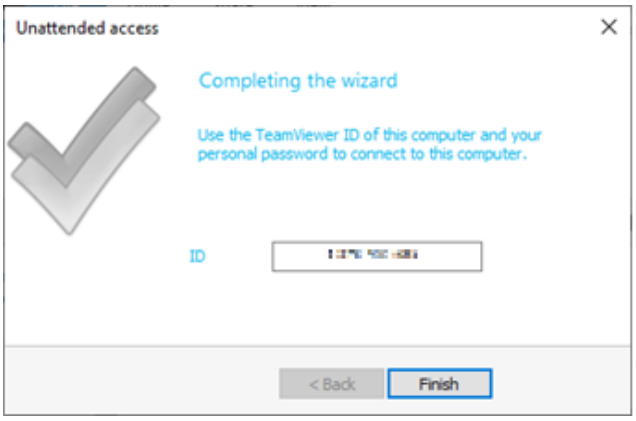
7. After a few seconds, **TeamViewer wizard** appears. Click **Next**:



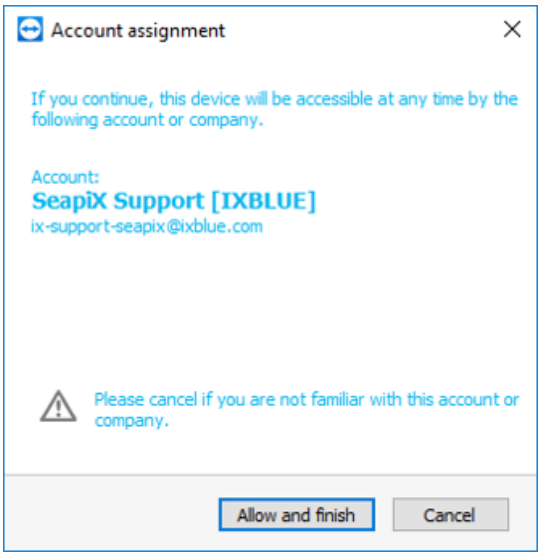
8. Fill in the fields: **Computer name** with the vessel name, and **Password** / **Confirm password** with **ixblue**; then click **Next**:



9. The vessel ID (blurred here for confidentiality reasons) is displayed. Click **Finish**:



10. Click **Allow and finish**:



11. Main **TeamViewer** host window appears. Click **OK**:

12. A pop-up informs you that **TeamViewer** is still running: click this message to disable it in the future:

Next time the VPU is switched off then on, the following window will open:

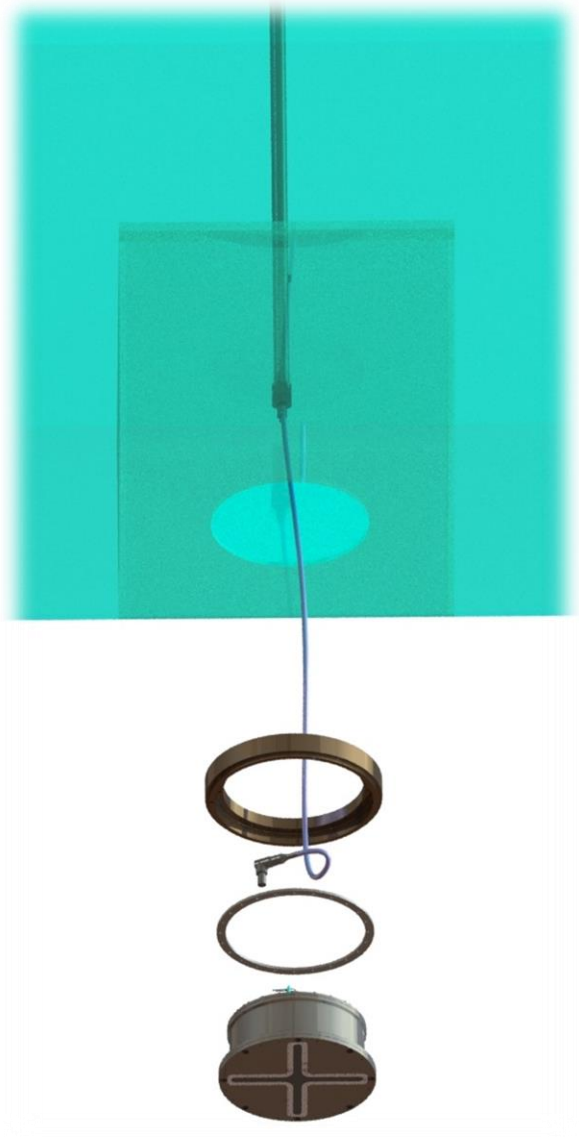
Check the **Don't show this dialog again** box then click **OK.**

Once TeamViewer has been reinstalled, go to *Using TeamViewer*.

Appendices

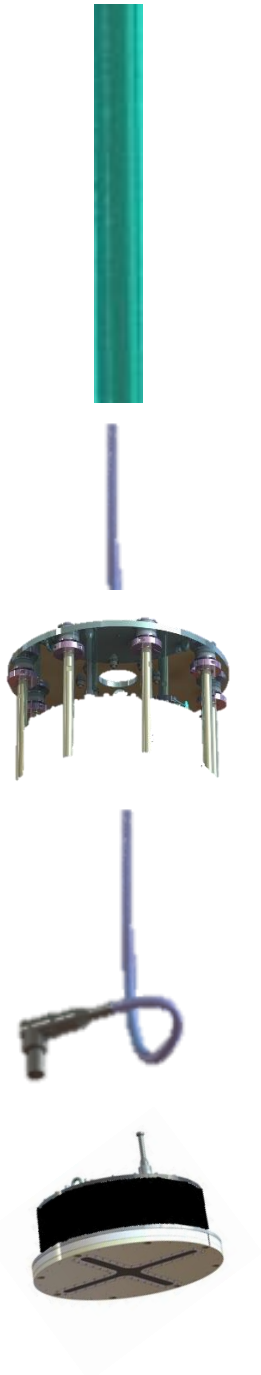
A MECHANICAL AND ELECTRICAL DRAWINGS

Here is an exploded drawing of a **hull-mounted SAU** (permanent installation):



Item	Drawing nb	Reference
SAU Interface Control	PLA12021 AA	MDI08307
Cable Gland	PLA05712 AA	MDI05698
Cable Gland Assembly	PLA06149 AA	SME00573
Mounting Flange	PLA10550 AA	MDI07607
Transducer Cable	00162207-A	SCA00162206-A
SAU Ring (interface plate)	PLA02649-AD	MDI04776
SeapiX Antenna Unit (SAU)	PLA02664 AG	SMI01628

Here is an exploded drawing of a **pole-mounted SAU** (provisional installation):

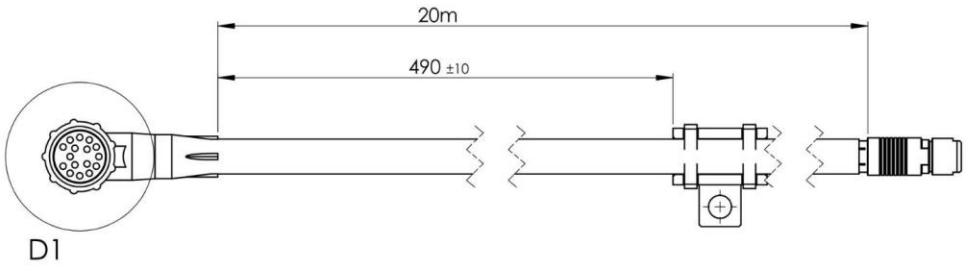


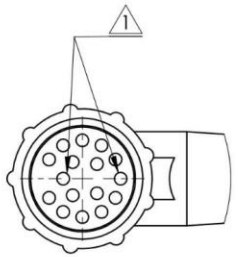
Item	Drawing nb	Reference
Pole	*Not provided*	
Transducer Cable	00162207-A	SCA00162206-A
Interface	*Not provided*	
(optional) Bracket	-	-
Light-weight SeapiX Antenna Unit (SAU)	PLA14711-AA	SMI04796

1 Orientation imposée des pins par rapport à la direction de sortie du câble.Pins 5 et 11 dans l'axe du câble.

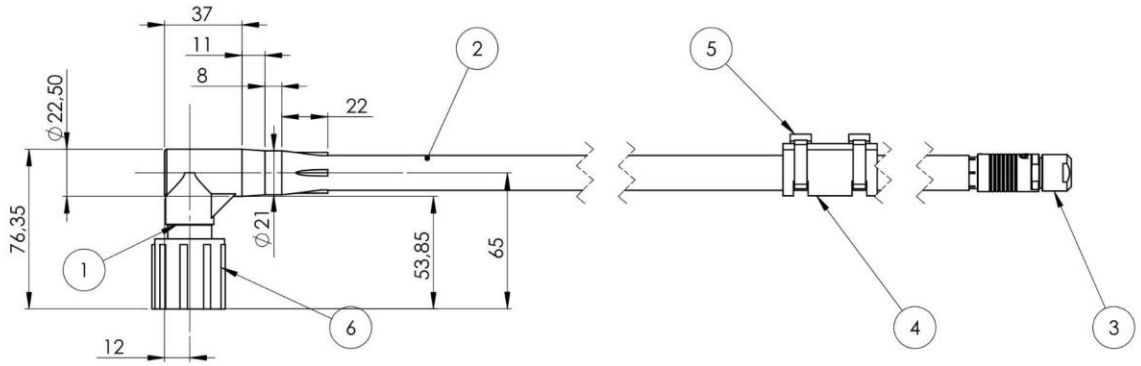
2 Câblage réalisé suivant plan Macartney PFR1904982-001

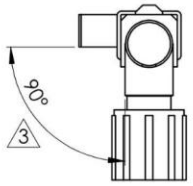
3 Position et orientation de la bride serre câble par rapport au connecteur à respecter





D1 (1 : 1)

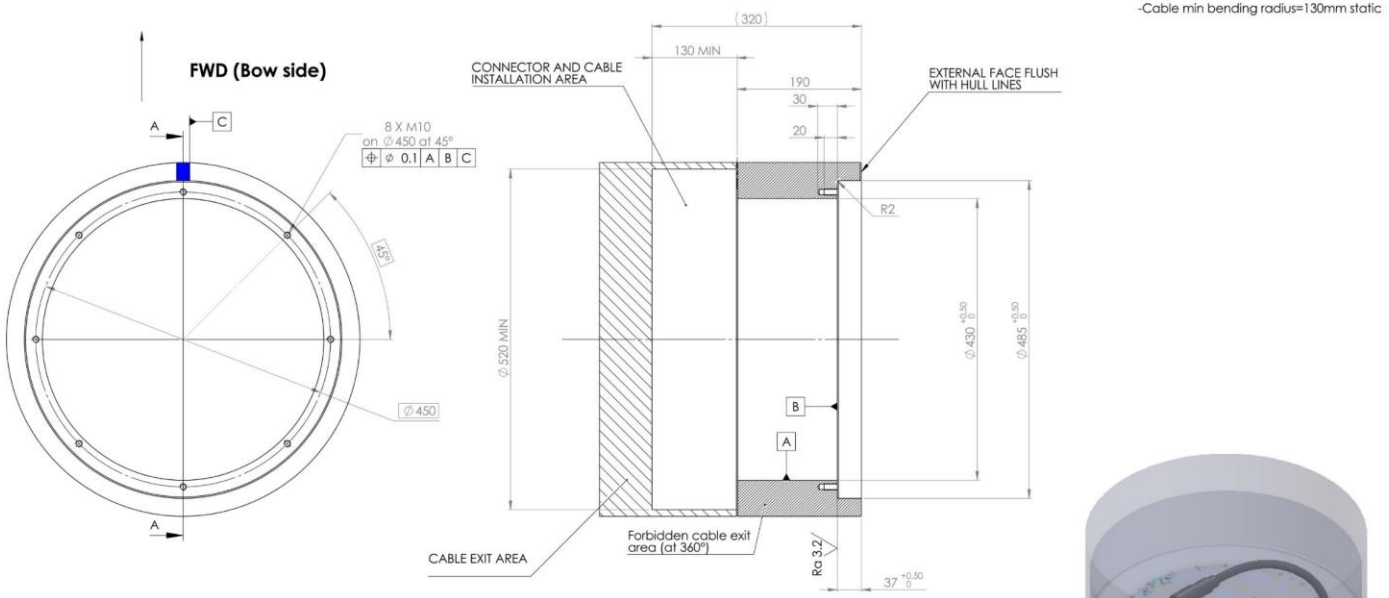


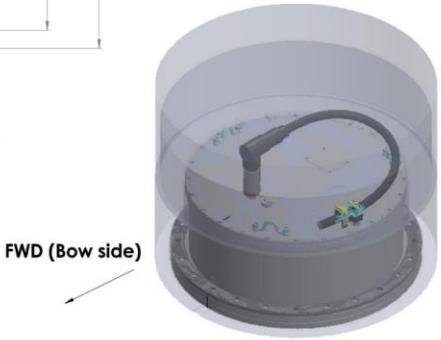


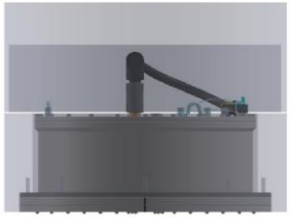
Transducer Cable
00162207-A
12/2019

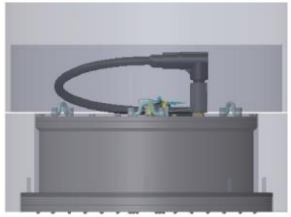
-Assembly of Seapix multibeam with eight M10 inox A4-70 screws/ Washers

-Cable min bending radius=130mm static









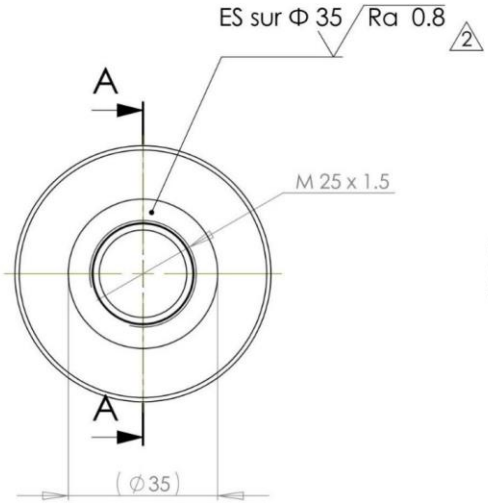
FWD (Bow side)

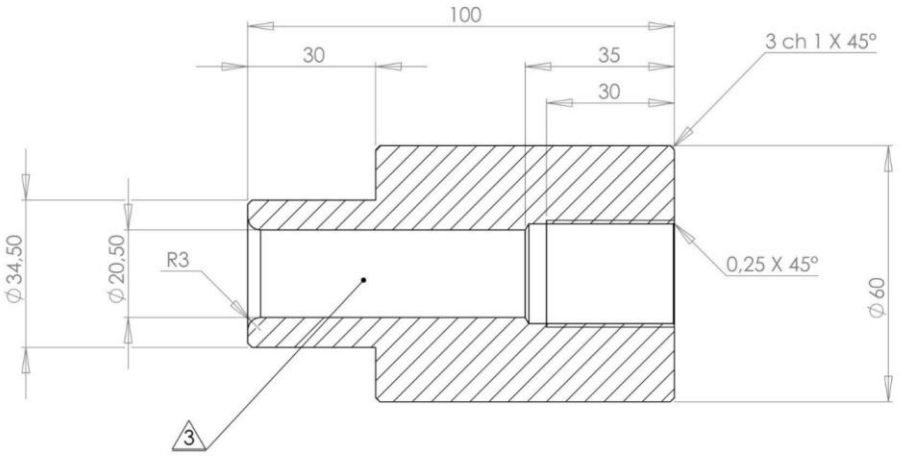
1 Traitement de surfaces extérieures:
- Casser les arêtes vives pour un rayon équivalent de 1mm
- Sablage suivant SA 2.5.
- Application de primaire type red ferric oxide

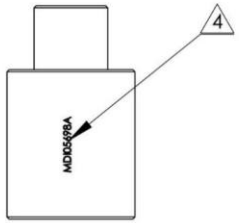
2 Epargne de peinture sur ⌀35.
- ES: étancheité statique. Absence totale de rayure.

3 Surfaces intérieures non peintes.

4 Marquage MDI05698A profondeur maxi 0.5mm.







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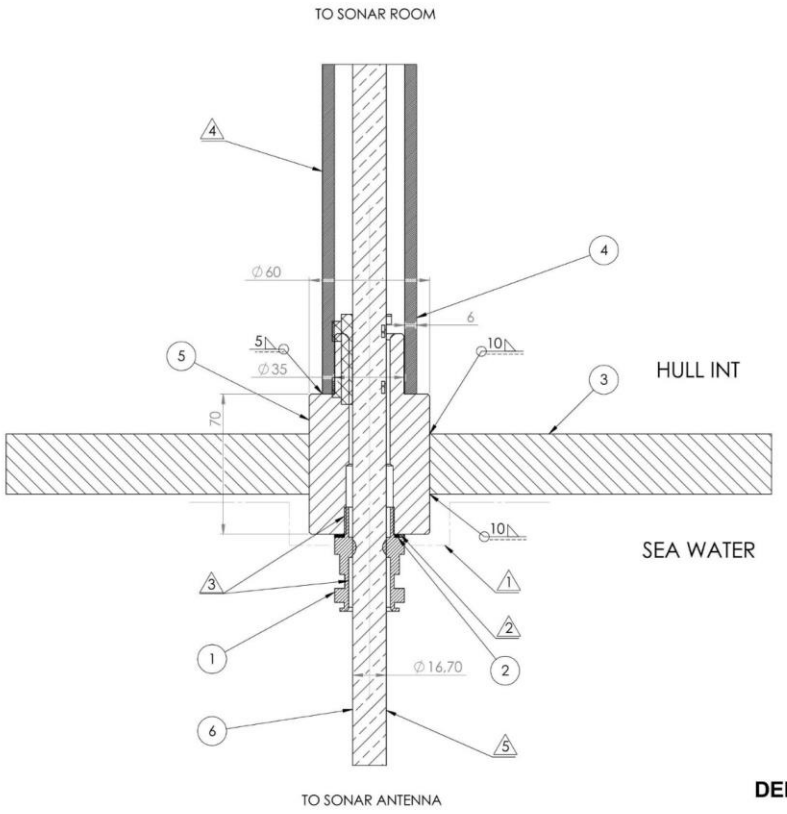
Cable Gland
PLA05712 AA

03/2016



1 Surface treatment after welding:
- Sand blast the part to SA 2.5.
- Protect part with one coat of red ferric oxide primer.
- Cover the seal landing during the surface treatment.

2 Before cable gland assembly:
- Clean and inspect carefully the seal landing area. It must be free from any stripes, dust or paint.
- Check the seal condition.

3 Cable gland installation according to CAPRI ADE1-F2 requirements.

4 Sonar room extremity of the inner pipe must extend over the waterline.

5 Wire arrangement not shown. Refere to manufacturer data sheet for details

WARNING:

CABLE GLAND HULL ASSEMBLY PRINCIPLE.

DEFINITIVE INSTALLATION IS NOT IN ANYWAY UNDER IXBLUE RESPONSIBILITY, AND MUST BE VALIDATED BY CERTIFIED SURVEYOR ACCORDING TO LOCAL SHIP APPLICABLE RULES

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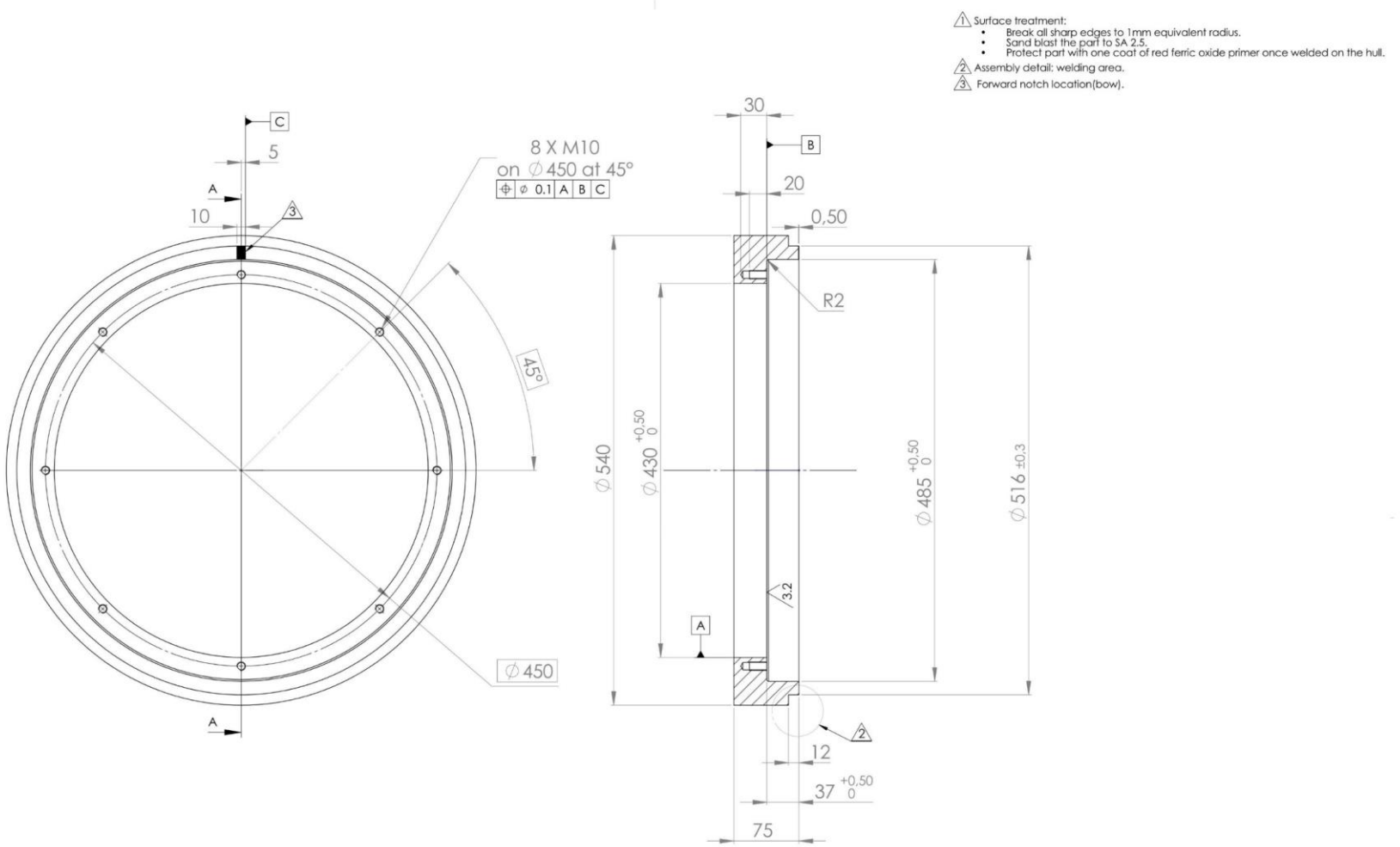
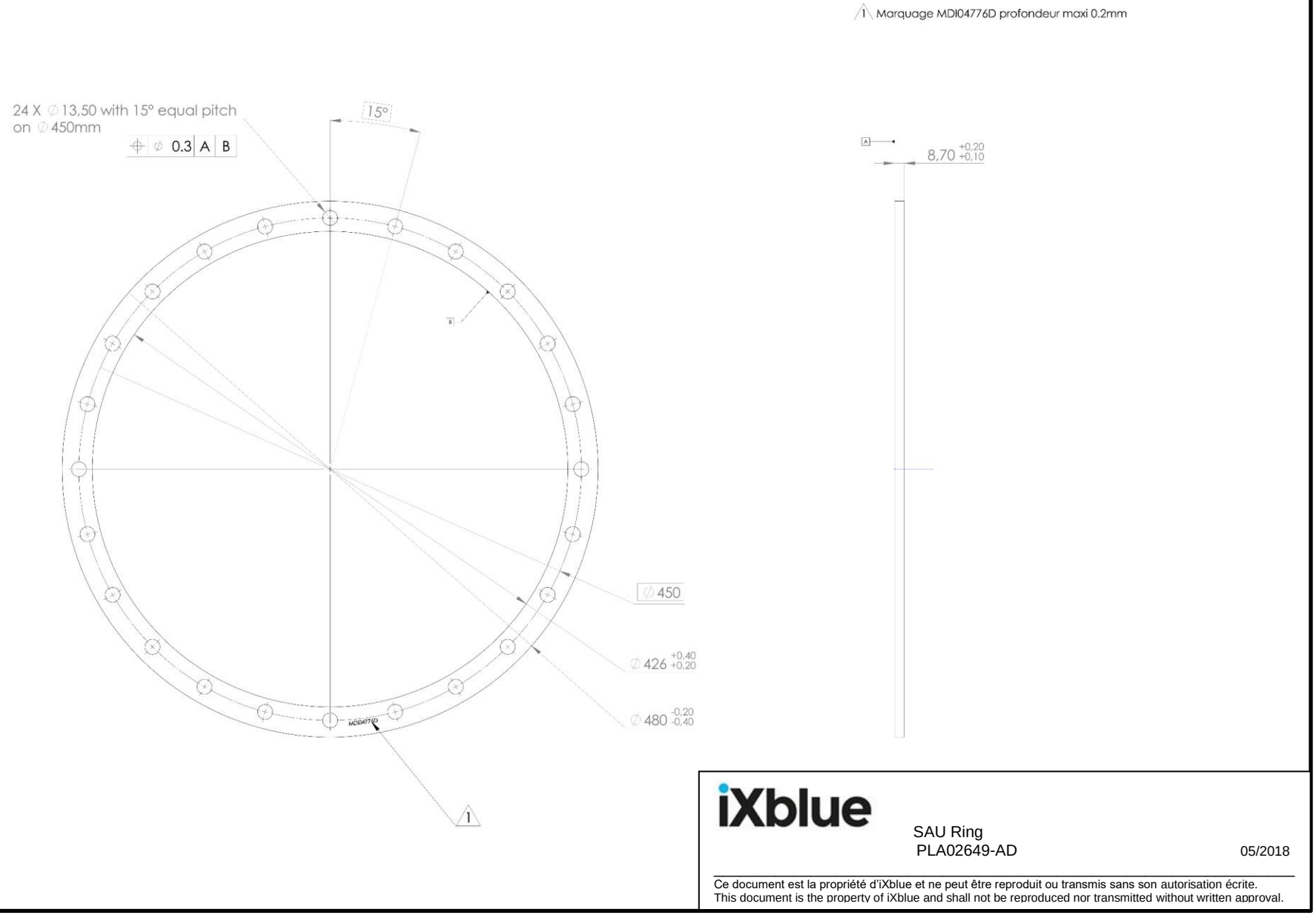
Cable gland assembly
PLA06149 AA 08/2014



Mounting Flange
PLA10550 AA

03/2017


1 Marquage MDI04776D profondeur maxi 0.2mm
24 X ∅13,50 with 15° equal pitch
on ∅450mm
⌖ ∅ 0.3 A B
15°
8,70 +0,20 +0,10
∅450
∅426 +0,40 +0,20
∅480 -0,20 -0,40
MDI04776D
1
SAU Ring
PLA02649-AD
05/2018
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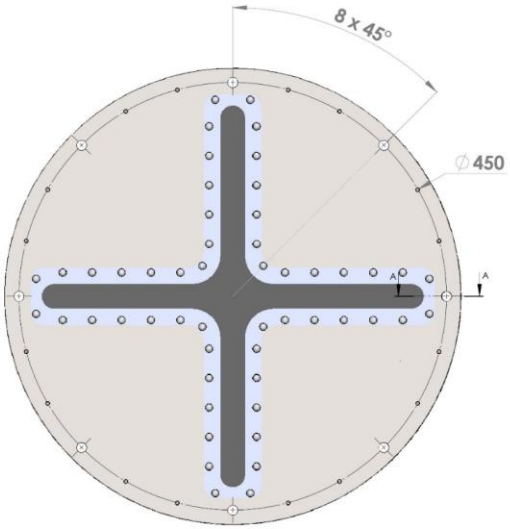
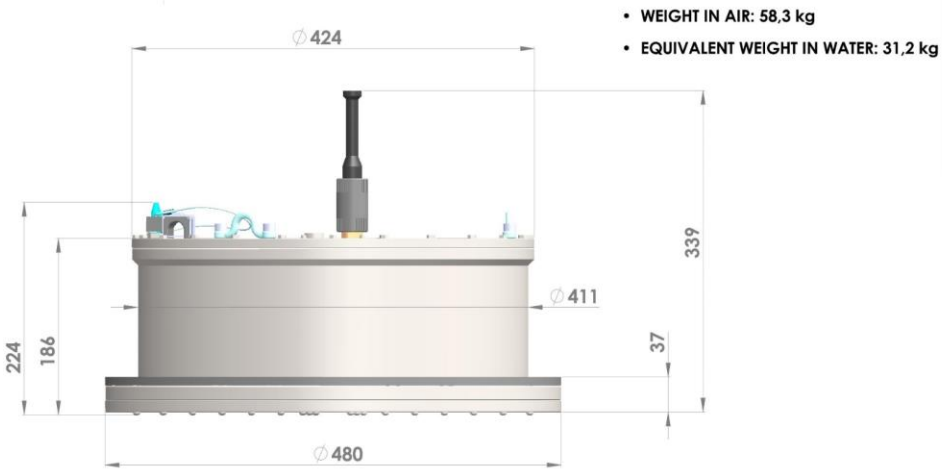
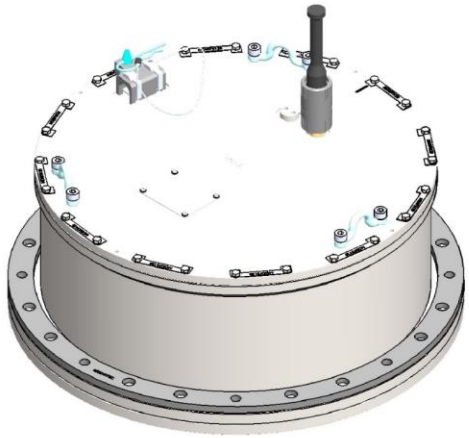
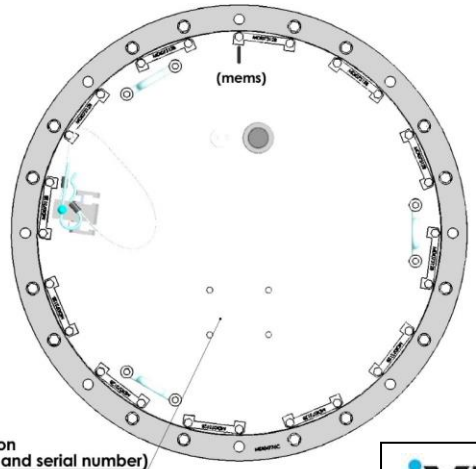




- WEIGHT IN AIR: 58,3 kg
- EQUIVALENT WEIGHT IN WATER: 31,2 kg

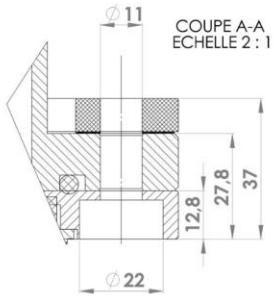


BOW SIDE



Identification
(reference and serial number)

MECHANICAL INTERFACE



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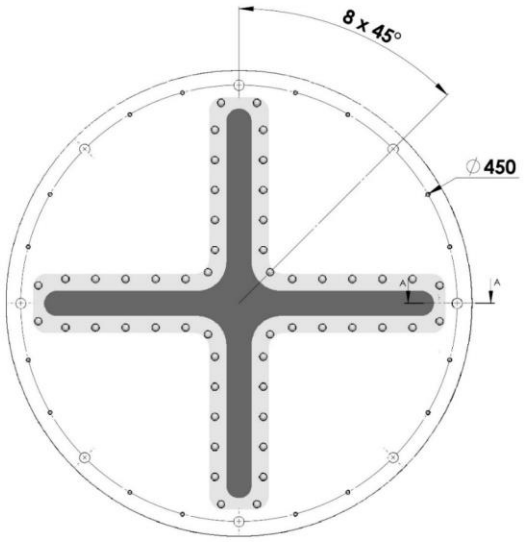
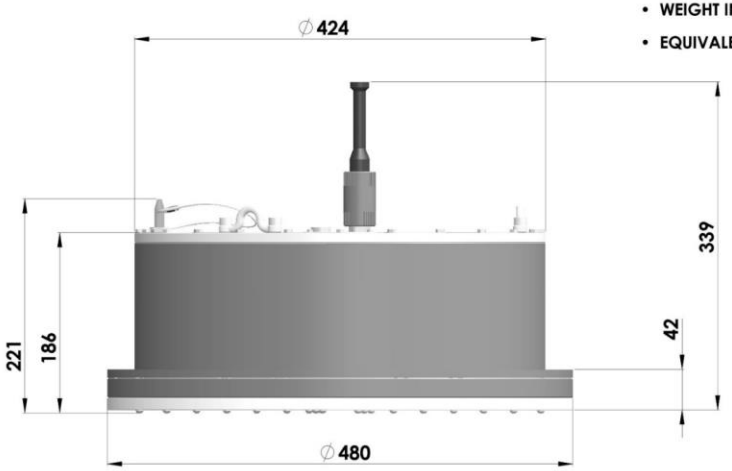
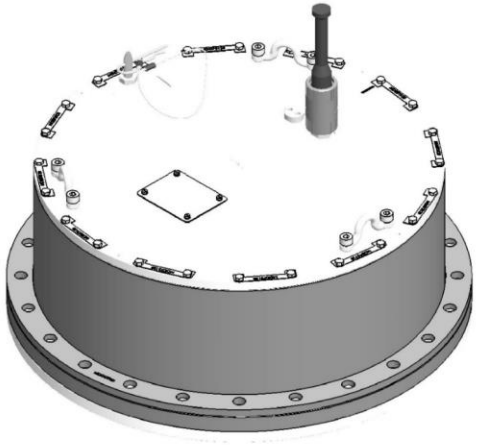
SeapiX Antenna Unit (SAU)
PLA02664 AG

12/2016

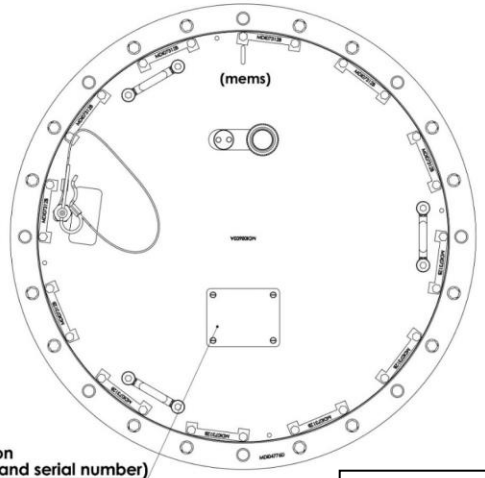




- WEIGHT IN AIR: 24.6 kg
- EQUIVALENT WEIGHT IN WATER: -2.5kg

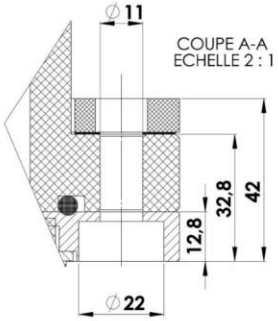


BOW SIDE



Identification
(reference and serial number)

MECHANICAL INTERFACE



iXblue

Light-weight SAU
PLA14711-AA

12/2018

iXblue CONTACT - SUPPORT

For non-URGENT support:

- by email: support@ixblue.com or ix-support-seapix@ixblue.com
- using the form on the iXblue web site: www.ixblue.com

For 24/7 URGENT SUPPORT:

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- Asia Pacific / APAC
  +65 6747 7027

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- contacting one of SeapiX authorized retailers and dealers listed on iXblue web site: www.ixblue.com, FISHERY menu

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