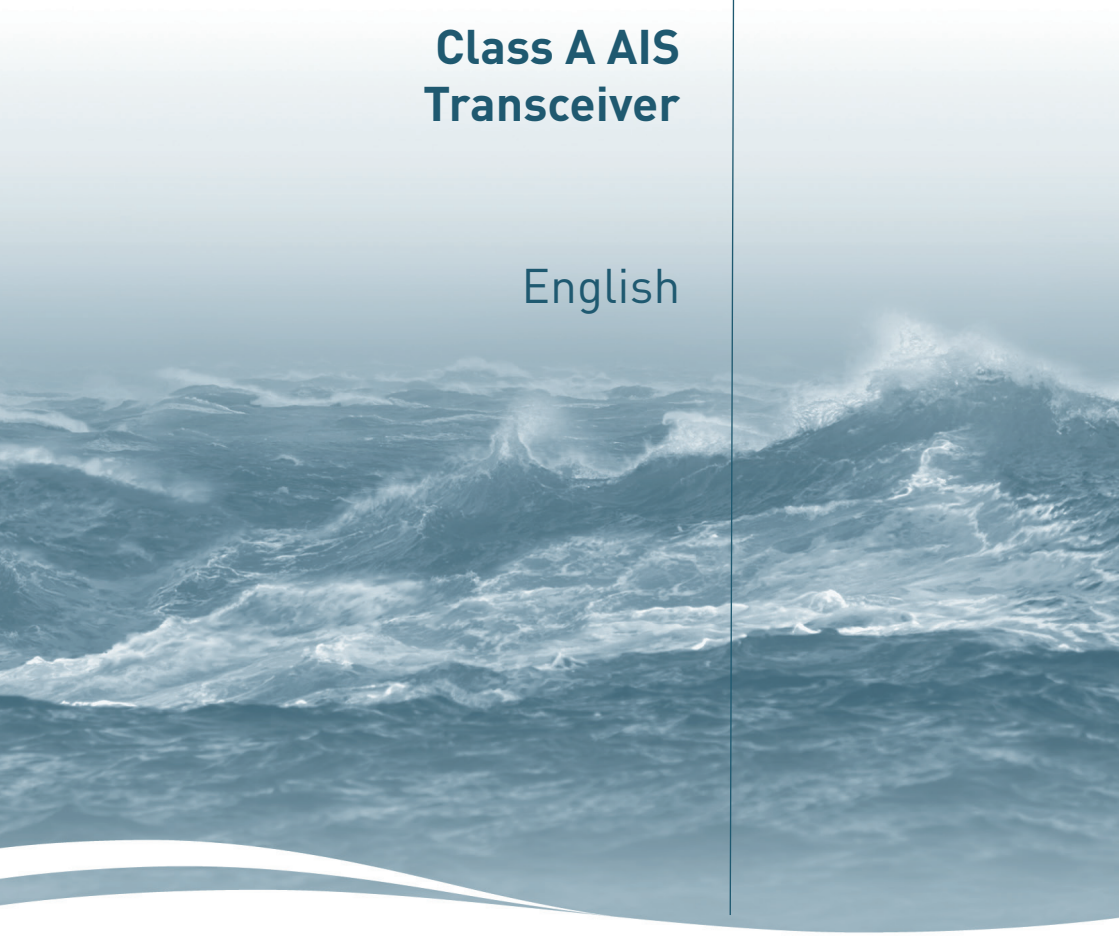
ocean SIGNAL

Installation Manual

ATA100

Class A AIS Transceiver

English



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ADDITIONAL INFORMATION

ATA100 USER MANUAL	**912S-02691**
ATA100 QUICK START MANUAL	**912S-03496**
ATA100 INLAND WATERWAYS SUPPLEMENT	**912S-03334**

1. GENERAL

1.1 Exposure to RF Electromagnetic Energy

This product complies with EN62311 and RSS-102 (Canada).

This product has been evaluated for compliance with the FCC RF exposure limits given in CFR 47 part 1.307(b) at a distance greater than 50cm from the antenna.

1.2 ATA100 Overview

1.2.1 AIS Explained

The Automatic Identification System (AIS) was designed as an aid to collision-avoidance in the marine industry and is a significant development in navigational safety. It is now widely used at sea to provide vessels with a live accurate picture of marine traffic in the surrounding area.

The ATA100 from Ocean Signal is a fully compliant AIS Class A Transceiver. It has both flush panel and free standing mounting options for easy installation into almost any position and location ensuring optimal use of bridge space.

The ATA100 automatically sends continuous transmissions of your vessels information using a common VHF frequency which can be received by all other AIS equipped vessels and shore-based stations within its range. Vital information such as MMSI, GNSS location, position, speed, course, etc. is shared and displayed on the rapid response, full colour LCD display. This information helps to provide situational awareness and can significantly assist in collision avoidance.

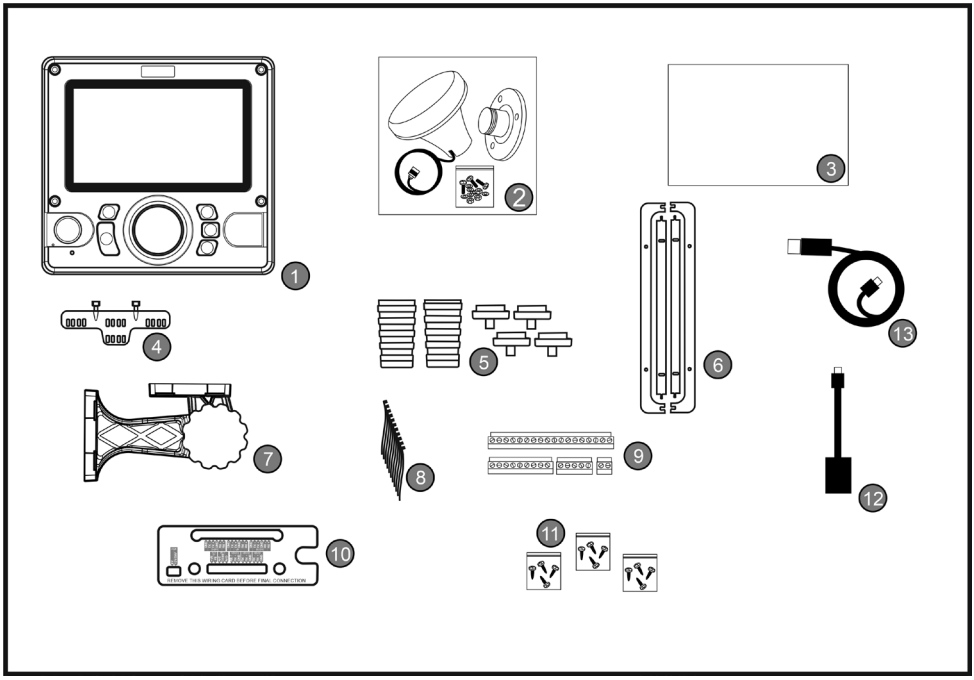
The ATA100 from Ocean Signal is a universal Class A transceiver capable of exchanging dynamic and static ship data with other AIS systems. The dynamic data such as location, speed over ground, course over ground, heading, rate of turn is calculated automatically using the internal GNSS receiver. The static data such as MMSI, call sign and name, type of ship, length and beam is programmed into the AIS receiver after installation. Voyage-related data such as destination, ETA, hazardous cargo and ship's draught can also be programmed into the ATA100 when appropriate.

1.3 Warnings

This product is designed to assist navigation and should not be used in the place of appropriate navigational judgement. AIS should be used as a complement to navigation and should not be used to replace installed equipment such as RADAR or ECDIS.

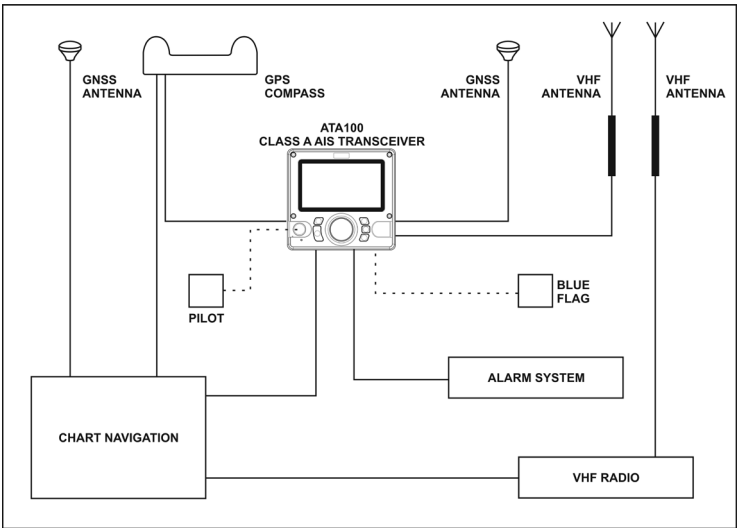
- **It is highly recommended that the operator of the ATA100 read and follow the operation instructions within this manual to ensure accurate operation. Failure to do so may impair proper functionality.**
- **The coastal mapping on this device is provided for guidance purposes only. It has not been verified or approved for navigational use by any marine or waterway authority and therefore must only be used for reference purposes or in conjunction with other approved navigational mapping sources.**
- **This product is designed to assist navigation and should not be used in the place of appropriate navigational judgement. AIS should be used as a complement to navigation and is not a replacement for installed RADAR or ECDIS equipment.**
- **AIS devices such as the ATA100 from Ocean Signal can only monitor other AIS equipped vessels and the Officer of the Watch (OOW) should always be aware that other surrounding vessels may not fitted with AIS equipment.**
- **The ATA100 should be installed by a qualified installer or technician and the installation instructions included in this manual must be followed succinctly and carefully without deviation.**
- **The AIS antenna emits low levels of electromagnetic radio frequency radiation which can be hazardous to health. All persons must maintain safe distance of 3m horizontally and 1m vertical from the AIS antenna whilst transmitting.**
- **It is recommended that the Ocean Signal ATA100 is used in conjunction with the supplied GNSS antenna. Use of an alternative GNSS antenna may impair the functionality of the Ocean Signal ATA100.**
- **All maintenance and/or repair work should be carried out by trained persons authorized by Ocean Signal. Do not attempt to disassemble this equipment as doing so may cause fire, electrical shock, serious injury or malfunction of equipment. This product contains no user-serviceable parts.**
- **Do not install the ATA100 in a flammable atmosphere such as an engine room or near to fuel tanks.**
- **Do not install the ATA100 in a location subject to excessive solar heat such as in direct sunlight or underneath a windshield.**
- **The ATA100 is a maritime radio transmitter and is subject to radio licensing laws. Please contact the relevant authority in your country for further information regarding radio license requirements.**
- **False information transmitted by the ATA100 can result in risk to other vessels as well as your own. It is the user's responsibility to ensure that vessel sensors are configured and calibrated correctly and that all AIS transmission information from your vessel is accurate and up to date.**

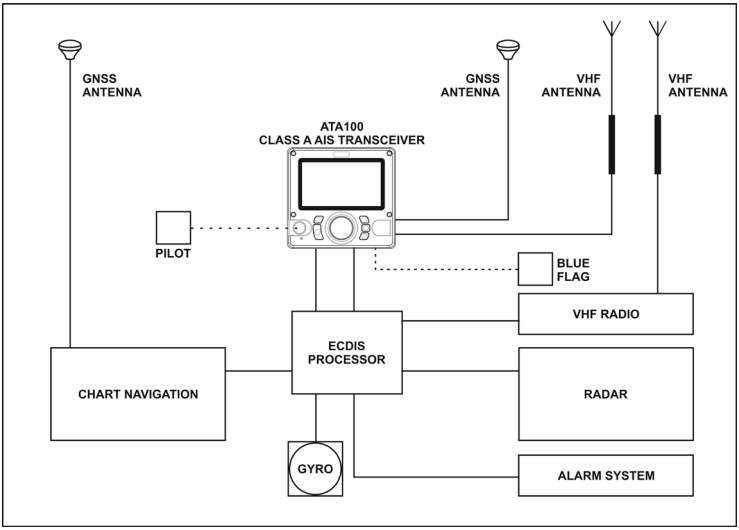
1.4 ATA100 Box Contents



No.	Item	No.	Item
1	ATA100	8	Cable Ties (10)
2	GNSS Antenna (inc. 10m cable & mount)	9	Terminal Connectors (18, 9, 5 and 2 way)
3	Documentation	10	Wiring Card
4	Cable Support	11	Mounting Screws
5	Coax Cable Boots and seals	12	USB On-the-Go Cable
6	Mounting Gasket (2)	13	USB Cable
7	Mounting Bracket Assembly		

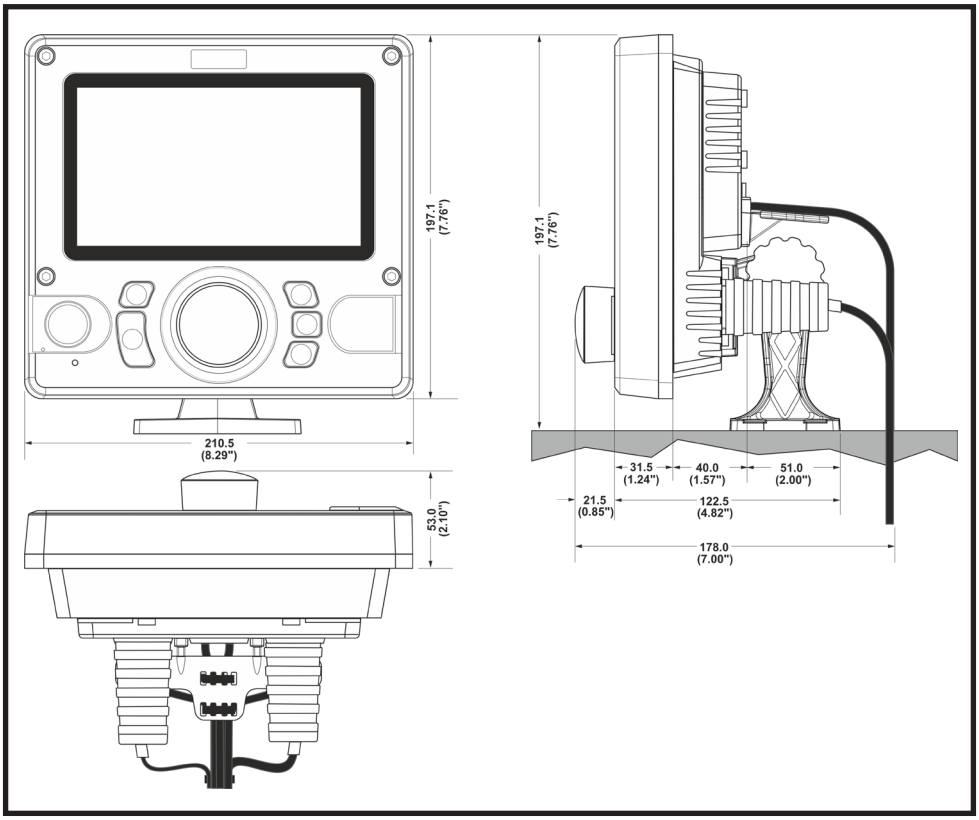
1.5 Example Systems





2. INSTALLATION

2.1 Unit Dimensions



Installation templates are on the centre pages of this manual.

2.2 Power Requirements

Connection to an emergency power source is an IMO requirement for SOLAS vessels.

The power supply current ratings and recommended fusing or circuit breaker currents are as follows:

- A 12VDC supply should be able to provide 4.0A and be fused at 8.0A.
- A 24VDC supply should be able to provide 2.0A and should be fused at 4.0A.

2.2.1 Cable protection and retaining

The rear case of the ATA100 unit has been created to allow for simple and effective installation of the connecting cables to allow for maximum protection and robustness.

It is advisable to insert the required cables into the rear cover BEFORE installation.

The two coaxial cables (VHF antenna and GNSS antenna) are secured through rubber boots and the interface cables are passed through rubber grommets and secured to the cable support. Select the appropriate boot ends for the cable being used and feed the cables through the boots

Plan what interface cables are required and use a pair of long nosed pliers to remove the required water seal plugs from the retaining grommets. Pass the cables through the grommets and secure with cable ties leaving appropriate length for the connections.

VHF Antenna Connector

The rubber boot caps supplied are suitable for up to 10mm diameter coaxial cable, select the appropriate cap and pass it over the cable followed by the boot before connecting the cable to a suitable PL259 plug. Pass the plug and cable through the hole in the rear cable cover and insert the boot and boot cap ready for final installation.

GNSS Antenna Connector

The rubber boot caps supplied are suitable for 3mm or 6mm diameter coaxial cable. If the supplied cable is long enough to connect directly then cut the boot cap and slot it around the cable. If a cable extension has been used select the appropriate cap and pass it over the cable followed by the boot before connecting the cable to a suitable TNC plug. Pass the plug and cable through the hole in the rear cable cover and insert the boot and boot cap ready for final installation. If the boot cap has been cut secure it around the cable with a cable tie.

Data Cables

Cut and remove the plastic plugs from the appropriate access grommets on the rear cable cover.

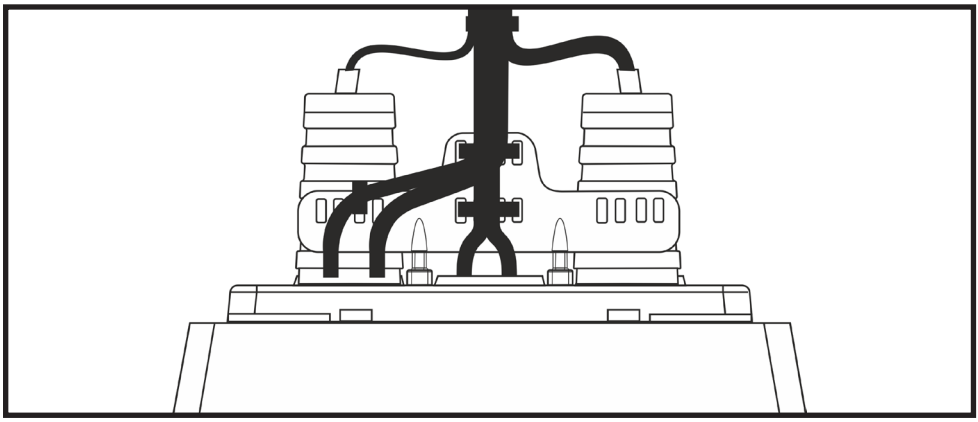
NOTE: Only remove the plastic plugs required leaving the others in place to prevent water access to the rear of the main unit.

The grommets are suitable for cable diameters between 4mm and 6mm. Pass the required cables through the grommets and secure with the cable ties provided.

Cable Restraint Bracket

Attach the restraint bracket to the rear case using the two self tapping screws supplied.

Once all the antenna and data connectors have been routed to the ATA100 and cut to length use the supplied cable ties to secure all cables to the restraint bracket.



2.2.2 Surface Mounting the Transceiver

The transceiver unit can be mounted directly to a suitable flat mounting surface where access to the rear for cable connection is possible.

Before mounting to an existing surface check the viewing angle details. If uncertain apply power to the unit and test for view-ability before installation.

Create a cut-out using the template in the centre of this manual and drill 8x mounting screw holes suitable to take No.6 (3.5mm) self tapping screws(supplied).

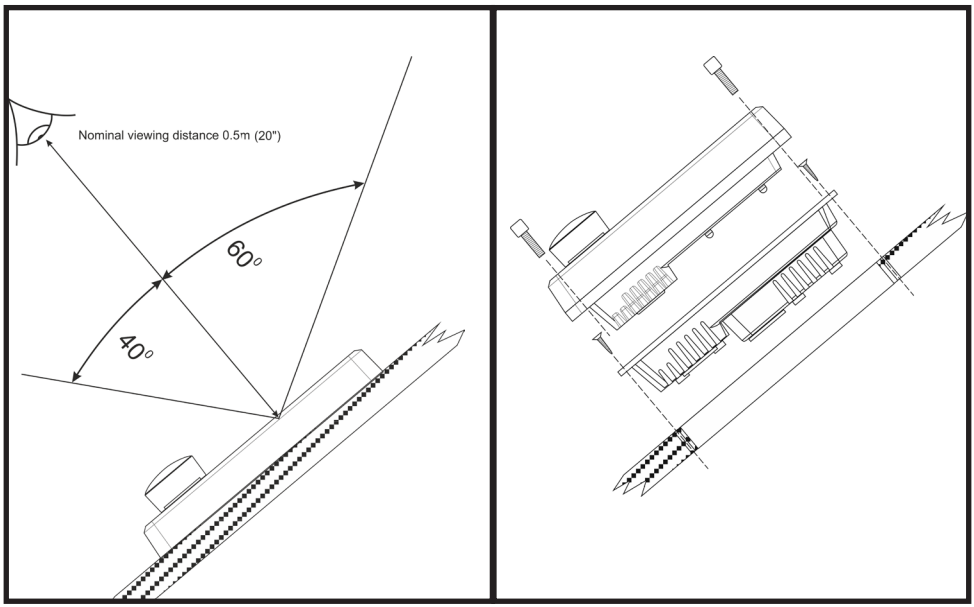
NOTE: If the mounting surface is too thin or of unsuitable material for self tapping screws it is advisable to use M4 stainless steel bolts with nuts and shake proof washers.

Attach the 4 gasket strips to the rear of the rear cable cover ensuring the tabs locate correctly to provide a seal.

Feed the required cables through the cable management system and secure leaving appropriate length to complete the connections. Secure the cables to the cable restraint and then secure the rear cable cover to the mounting surface using the appropriate screws or bolts.

Take care not to over-tighten the fixing screws to prevent damage to the plastic.

See section 2.2 Making the Connections on page 13 of this manual.



2.2.3 Bracket Mounting the Transceiver

The Transceiver can be mounted to a flat surface using the supplied mounting bracket.

Secure part A of the bracket to the rear case using one set of four attachment points depending on whether the unit is to be mounted above of below the mounting surface,

Using the supplied template in the centre of this manual ensure there is appropriate space around the mounting position before drilling 4x mounting screw holes suitable to take No.6 (3.5mm) self tapping screws(supplied).

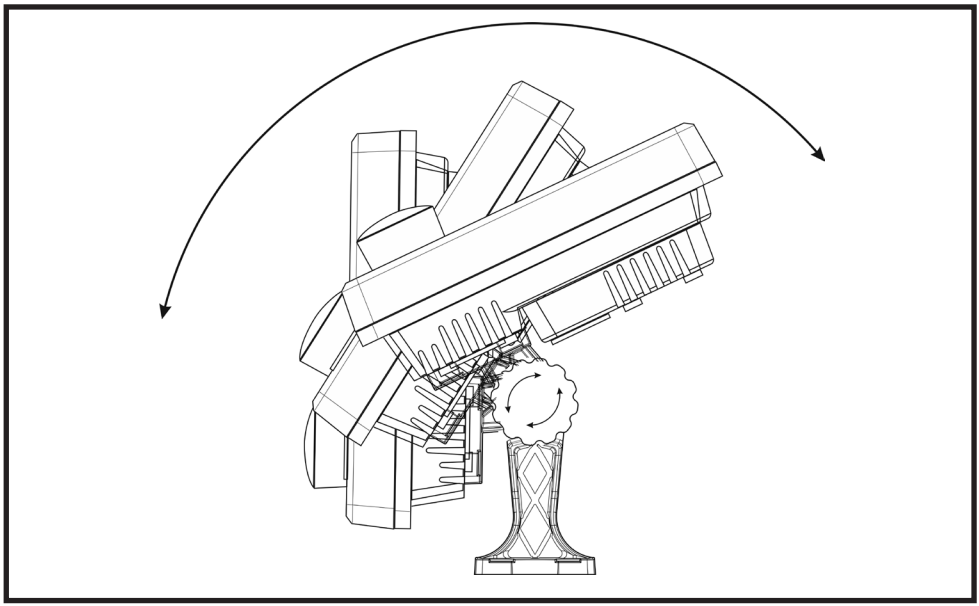
NOTE: If the mounting surface is too thin or of unsuitable material for self tapping screws it is advisable to use M4 stainless steel bolts with nuts and shake proof washers.

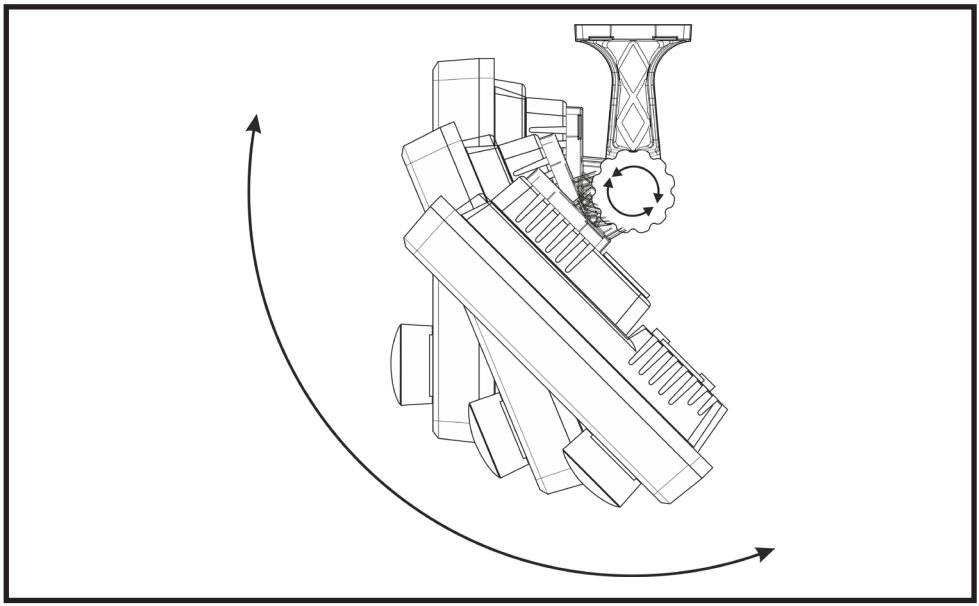
Secure part B of the mounting bracket to the mounting surface using the appropriate screws or bolts.

Use the supplied bolt and adjustment knob to attach the rear case and mounting assembly to the mounting base and secure in a suitable position (see diagrams over page).

Feed the required cables through the cable management system leaving appropriate length to complete the connections and secure the cables to the cable restraint.

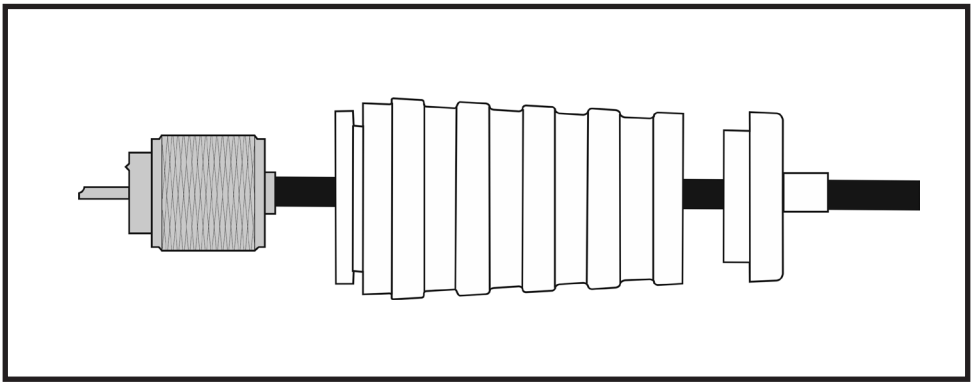
See section 2.2 Making the Connections on page 13 of this manual.





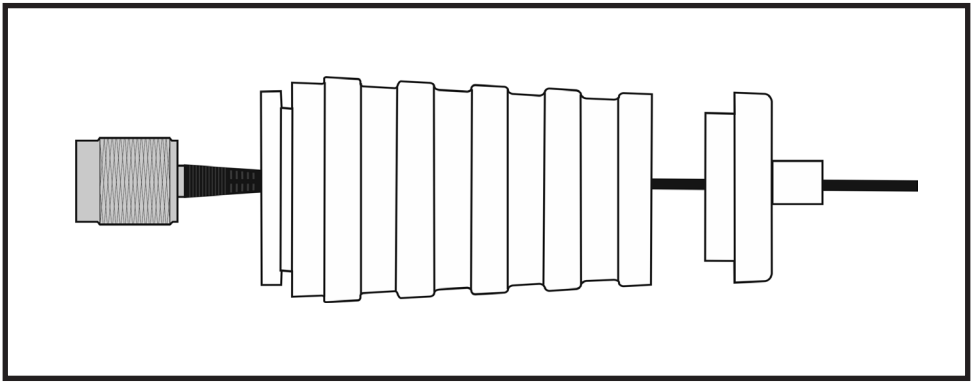
2.3 Making the Connections

2.3.1 VHF Antenna Connection



PL259 Plug (Not Supplied)

2.3.2 GNSS Antenna Connections



TNC Male supplied pre-connected to the GNSS Antenna. Suitable TNC Male connector required if the cable is to be extended.

NOTE: It may be necessary to cut the rubber grommet if the cable is not being extended. In this case secure the grommet with a cable tie following installation.

2.3.3 Data Ports

There are multiple data Input and Output ports available for connection via the rear connector panel. The ports use IEC-61162-1/2 (NMEA0183) and can be configured for 4800, 9600 or 38400 baud.

Port	Output	Input
Sensor 1	ABK, ACA, ACS, ALC, ALF, ALR, ARC, EPV, GBS, GGA, GSA, GSV, HBT, LR1, LR2, LR3, LRF, RMC, SSD, TRL, TXT, VDM, VDO, VER, VSD	ABM, ACA, ACK, ACN, AIQ, AIR, BBM, DTM, EPV, GBS, GGA, GNS, GSA, GSV, HBT, HDG, HDT, LRF, LRI, RMC, ROT, SSA, SSD, SPW, THS, VBW, VSD, VTG
Sensor 2		
Sensor 3*		
DGPS		
ECDIS		
LR		

Talkers:	GP,GN,GA	Incoming DGNSS sentences
	LC,IN	Incoming EPFS sentences
	AI	Outgoing AIS Sentences
	GP	Outgoing Internal GPS Sentences

All other sentences may be presented from any talker.

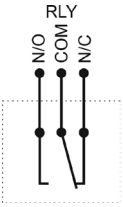
All of the ports may be used concurrently, however in the case that the same TALKER/ SIGNATURE combination is received though two or more ports, the port that first received the sentence takes precedence until such time as the sentence has not been received on that port for 5 seconds at which point precedence will revert to the next port the sentence is received on.

* Sensor 3 can also be used for RTCM SC104 V2.3 data from a differential GNSS receiver.

NOTE: All Inputs and Outputs can be configured in the Settings - System - Input/ Output section covered on page 30 of this manual.

2.3.4 Relay Connections

To enable the operation of an external system or device the ATA100 is equipped with relay contacts that activate when an alarm is activated. There is a common connection with one normally open contact and one normally closed contact.
The contacts operate simultaneously and are rated at 2 Amps continuous.



Max. switching voltage:125VAC, 60VDC
Max. switching current: 1A

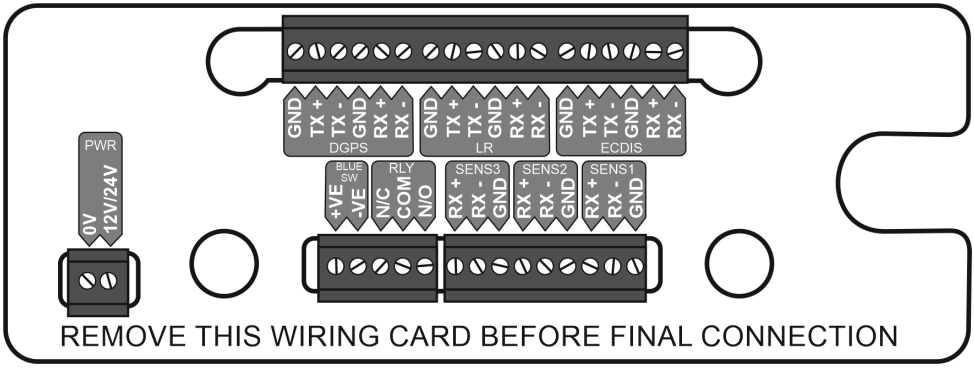
2.3.5 Data Connections

With the cables secured to the cable restraint system and passed through the grommet seals ensure the supplied wiring card is fitted correctly to the lower section of the rear cable cover. Insert the 4 green multi connectors into the appropriate slots in the cover.

NOTE: The connectors will only fit in the correct orientation. DO NOT force them.

The cables can now be cut, stripped and connected to the appropriate terminals on the connectors using the template. By wiring to the connectors in this position the cable lengths are all cut to a length suitable for final connection to the AIS main unit.

Use a 2mm or 2.5mm screwdriver to tighten the connectors. Using a larger screwdriver will damage the connector.



When all the required cables are secure pull the connectors from the rear case and remove the Cable Template.

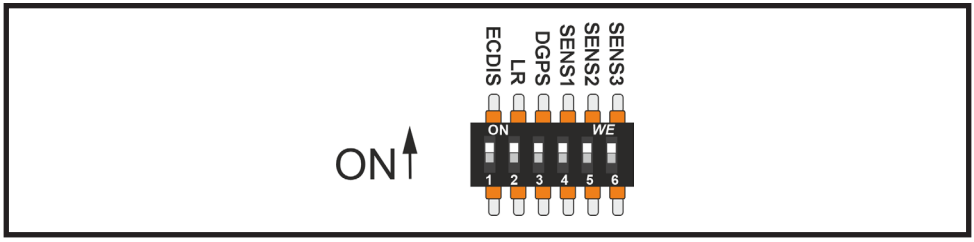
2.3.6 Blue Sign Switch

When operated in the Inland Waterways mode an external Blue Sign switch can be connected to allow for easy selection of the Blue Sign Mode.

Switch above is shown with Blue sign active.
See the separate Inland Waterways Manual for further information.

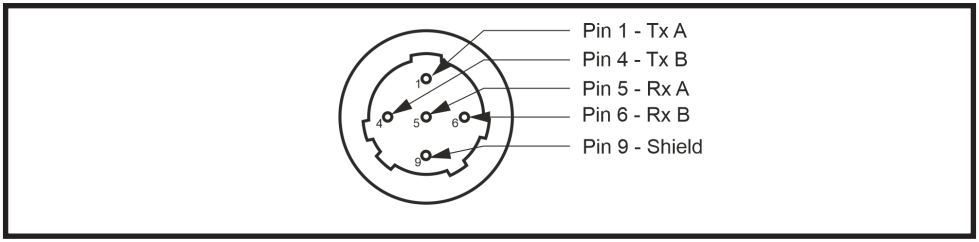
2.3.7 Data Termination Switches

DIP switches select a 120Ohm termination to the serial ports. If a port requires termination push the appropriate switch to the ON position.



2.3.8 Pilot Plug Connector

On the front panel (under a rubber cover) there is a standard "Pilot Plug" connection.
The connector is suitable for an AMP/Receptacle, shell size 11, 9-pin plug.



2.3.9 USB Socket

The front panel Micro USB socket can be used for:

- Data logging (insert a USB stick using the supplied USB On-the-Go cable (see section 1.4 item12 in ATA100 Box Content)
- Data input / output
- Firmware updates (see section 8.3 on page 46 of this manual)

ENSURE any equipment connected to this port is isolated from any external earth connections

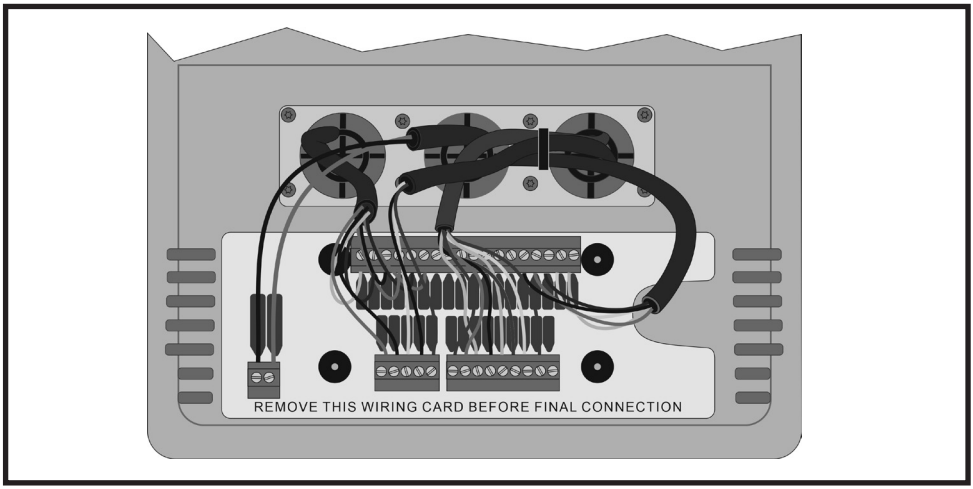
2.3.10 Cable Sizes and Specifications

Data cables should be suitable for the vessel on which the AIS Transceiver is being installed taking note of any restricted areas that may have specific cable requirements. Each port has a +ve, -ve and ground connection which should all be connected to ensure there is no interference cause by external influence.

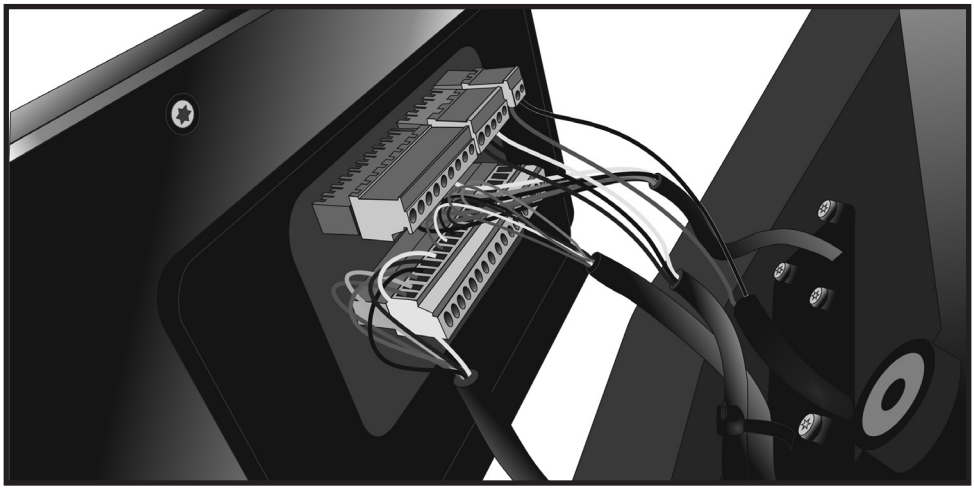
Do not connect the shield of both the external equipment and the junction box. Connect at one end only.

2.3.11 Final Assembly

Connect the prepared VHF (PL259) and GNSS (TNC Type) plugs to the sockets on the rear of the main unit



Turn over the green data connectors and carefully plug to the sockets on the rear of the main unit before placing the main unit into the rear cable cover and securing with the 4x supplied M5 stainless steel bolts



The ATA100 Class A AIS Transceiver is now ready for power up and initial set-up.

2.4 Antenna Installation

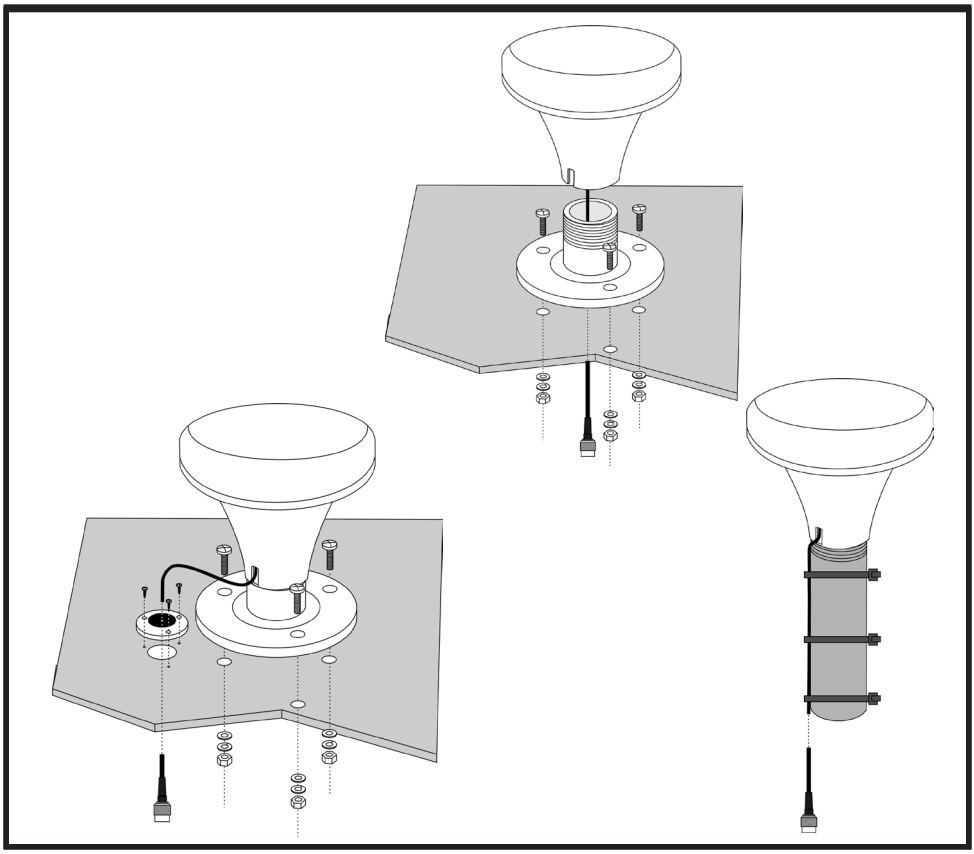
2.4.1 GNSS (GPS) Antenna

The GNSS Antenna should be installed with a clear and unobstructed view of the sky, it should NOT be positioned or mounted on a mast that can cause the antenna to swing and potentially reduce the accuracy of the GNSS position and it should NOT be positioned in the direct path of a radar transmitter.

The GNSS antenna can be mounted either on a flat horizontal surface or on a suitable pole mount (not supplied).

- If you intend to surface mount the antenna, ensure you have access to the underside of the mounting surface.

- If you intend to pole-mount the antenna, the mount requires a 1 inch 14 TPI thread.



After fixing the GNSS antenna to an appropriate location, route the 10m cable to your AIS transceiver unit, adding extension cable as necessary.

- **DO NOT cut the GNSS Antenna cable to shorten. Neatly coil and tie excess cable**
- **The cable may be extended using any suitable low loss RF co-axial cable up to a maximum total length of 20m. Ensure all connections are made correctly using connectors suitable for the RG174 cable and tested for continuity.**
- **Extension cables must be terminated with a TNC connector suitable for connection to the ATA100**

Connect the cable to the GNSS connector on the ATA100

2.4.2 VHF Antenna

Connection of a suitable VHF antenna will be required for the AIS transceiver to operate. A standard wide band marine VHF antenna such as that used with VHF voice radios is sufficient. The antenna cable should be terminated with a PL-259 (UHF) connector.

- It is recommended that VHF antennas are mounted as high as possible on a vessel to maximise range.
- It is recommended that VHF antennas are mounted a minimum of 3m from other VHF antennas that may be in use on a vessel.

For SOLAS and Inland waterways registered vessels there may be regional requirements for dedicated AIS antennas

Always follow the manufacturers' instructions to ensure the correct installation of the antenna.

2.5 Mounting Templates

Use the centre pages of this manual to assist with the mounting positions and cut-outs required for the correct positioning of the ATA100 unit.

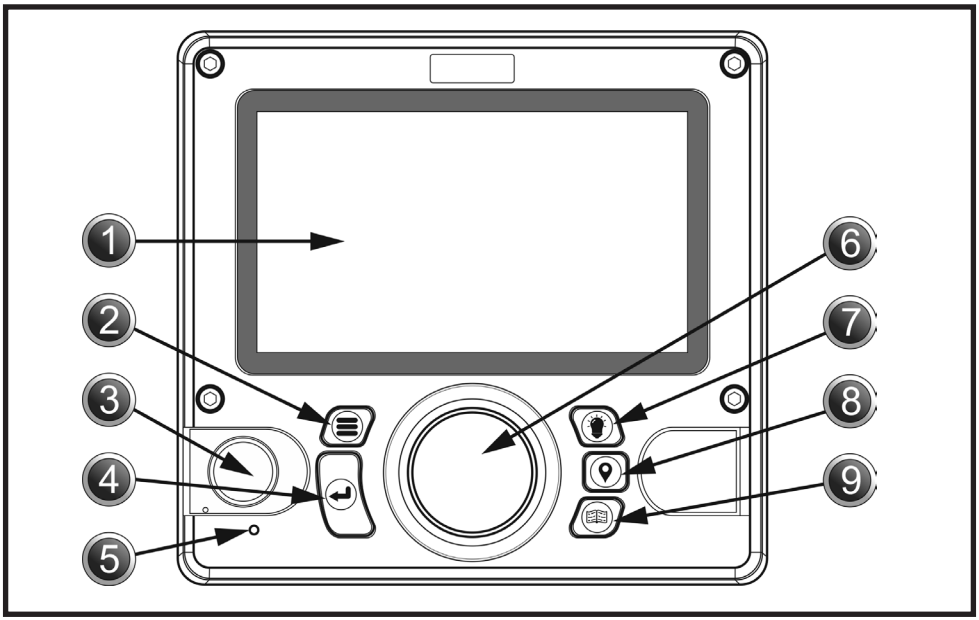
Take great care to check the dimensions as printed on the supplied templates to ensure accuracy has not been affected by the printing process.

Every effort has been taken to ensure the dimensions shown are correct, however it is the installer's responsibility to carefully check the environment surrounding the unit to ensure adequate cable access and user interaction space.

Check carefully the viewing angles shown on page 10 of this manual to ensure visibility during normal operation of the vessel at sea.

3. BASIC OPERATION

3.1 Front Panel



No.	Item	No.	Item
1	LCD Screen	6	Jog Stick/Control Knob
2	Menu Key	7	Display Brightness Key
3	Pilot Plug (under cover) USB Socket (under cover)	8	Voyage Data Input Key
4	Enter Key	9	Page Key
5	Indicator LED		

3.2 Front Panel Controls Explained

1. LCD Panel Display

The ATA100 incorporates a 7-inch full-colour LCD Display allowing for visibly pleasing maps and screens, ensuring a user-friendly experience and ease-of-use.

2.  **Menu Key**

Pressing the menu key will access the ATA100 menu system. The menu screen that appears will depend on the screen in use when the menu key is pressed. The menu key can also be used to close the menu system.

3. Pilot Plug

The pilot plug allows pilots and other mariners to connect a laptop PC or other portable device directly into the ATA100 giving access to the AIS information of the vessel including necessary dynamic and static vessel information.

4.  **Enter Key**

The enter key on the ATA100 allows the user to select a highlighted field and either see information or enter information as necessary. This entering process can also be achieved by depressing the jog stick on the front panel.

5. Indicator LED

Green - Power on (blinks off each transmit)
Amber - Silent Mode
Red - Transmit fail

6.  **Jog Stick**

The jog stick allows the user to navigate through the different screens and menus of the ATA100 using directionality of up, down, left and right and also by rotating clockwise and anticlockwise. The jog stick can also be depressed as an alternative to using the enter key.

7.  **Display Brightness Key**

Pressing the display brightness key on the front panel will access a brightness level indicator. Rotate the jog stick to increase or decrease the light level.

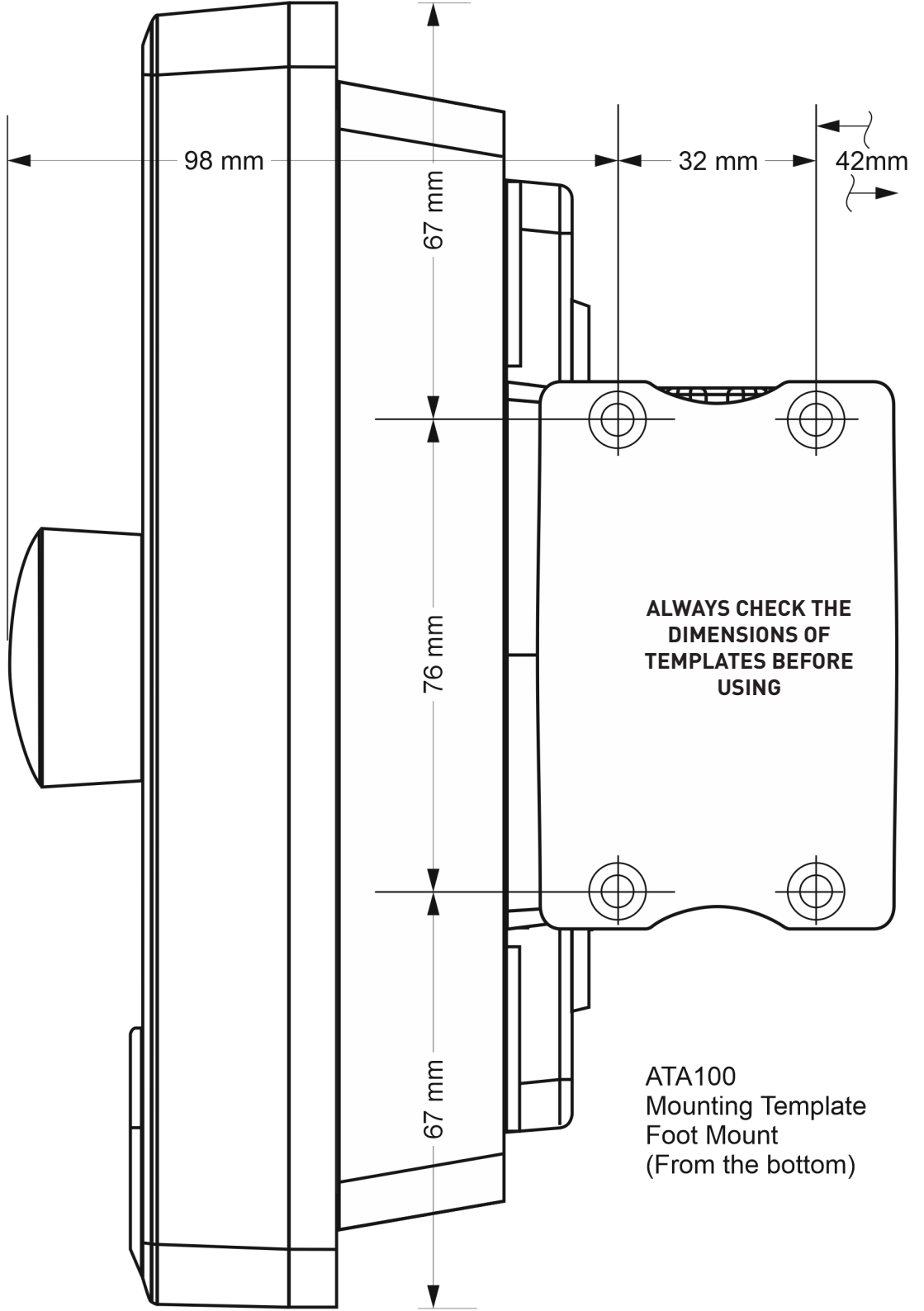
8.  **Voyage Data Input Key**

Pressing the voyage data input key allows quick access to update variable voyage information such as navigational status and estimated time of arrival.

9.  **Page Key**

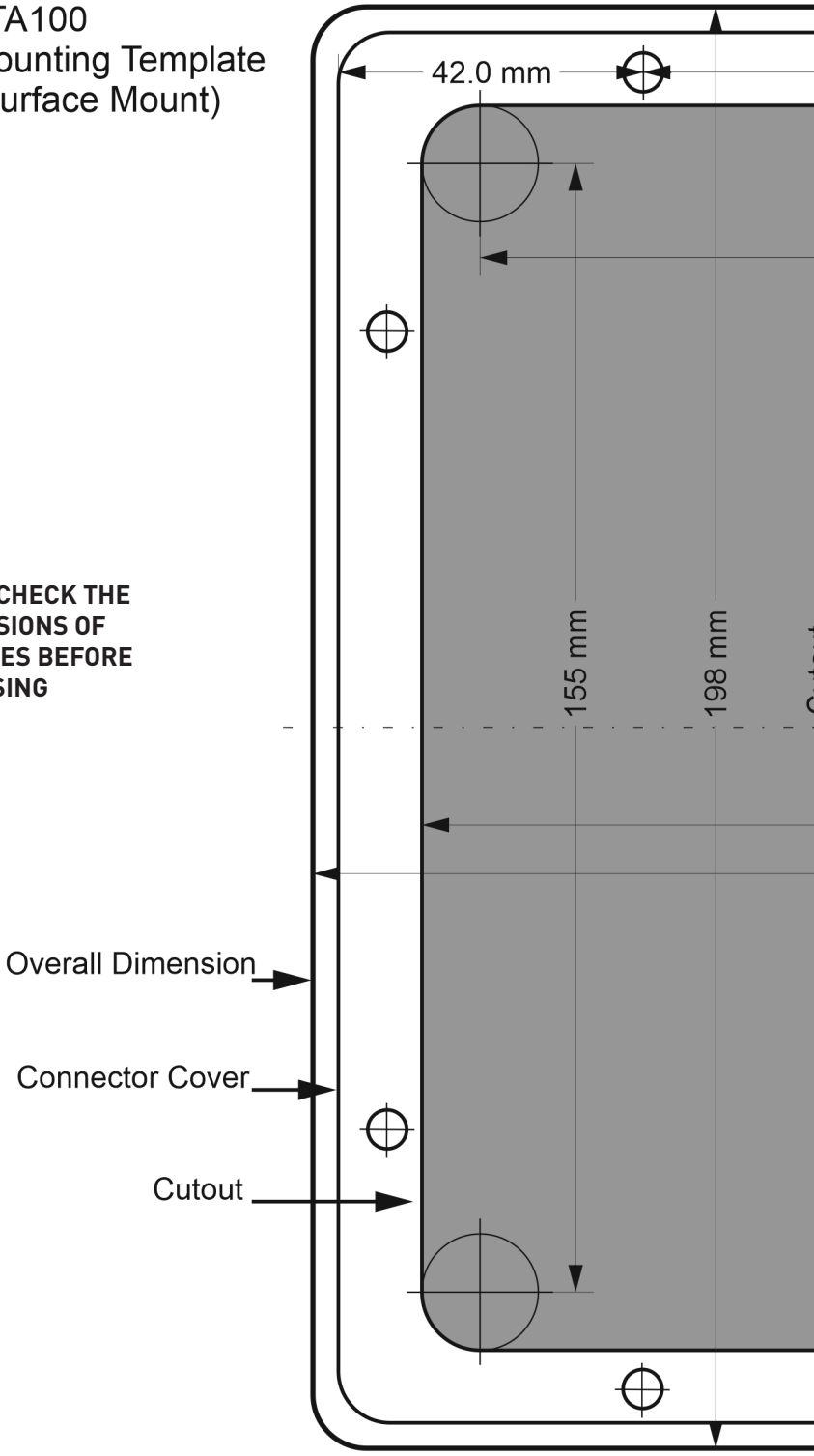
Pressing the Page key will allow the user to alternate between three target view screens. These are Map Screen, Target List Screen and Target Radar Screen. Pressing the page key will close all open menus and windows (except for Alarm pop-up windows) and revert back to the last active target view screen.

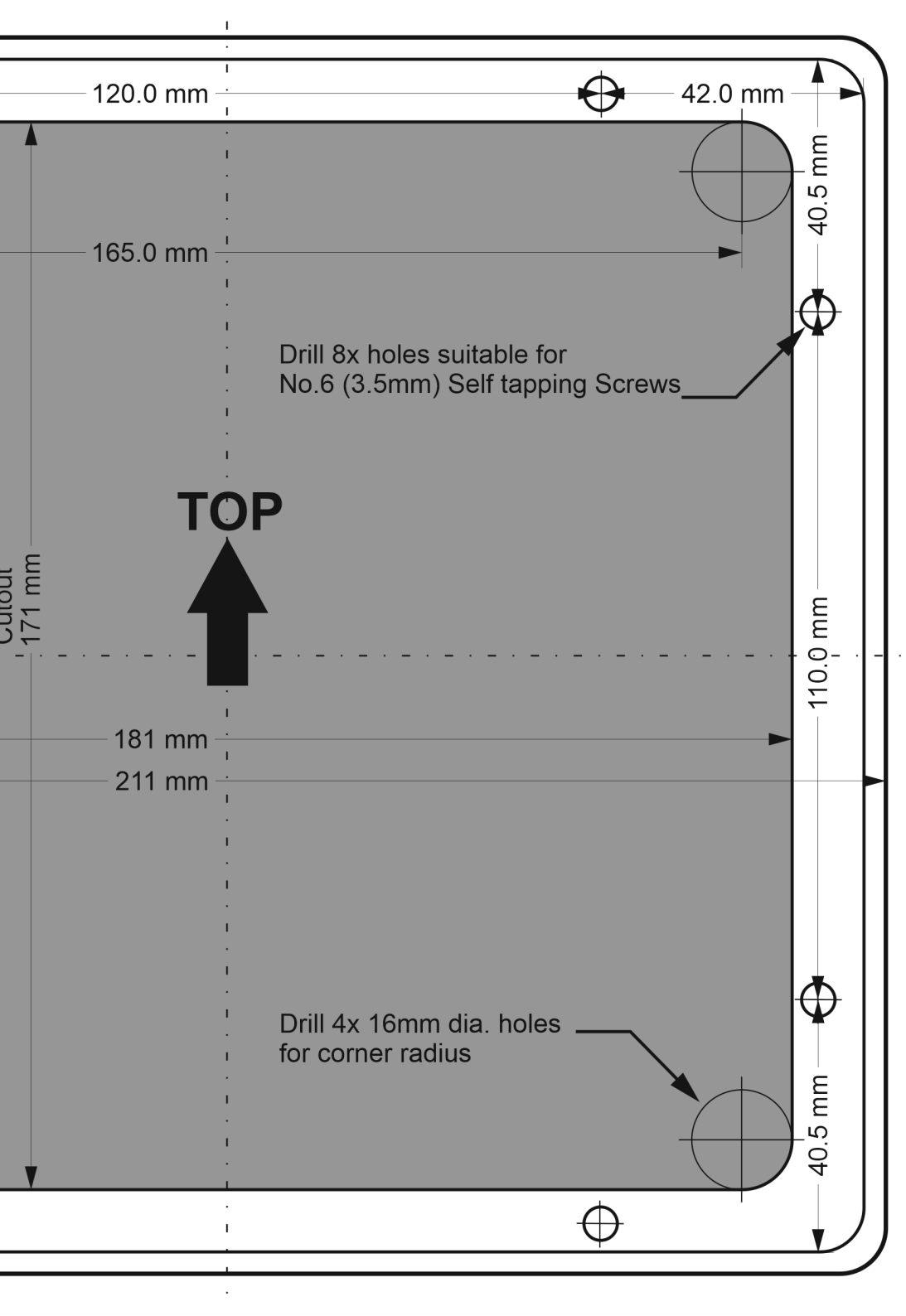
TEMPLATES

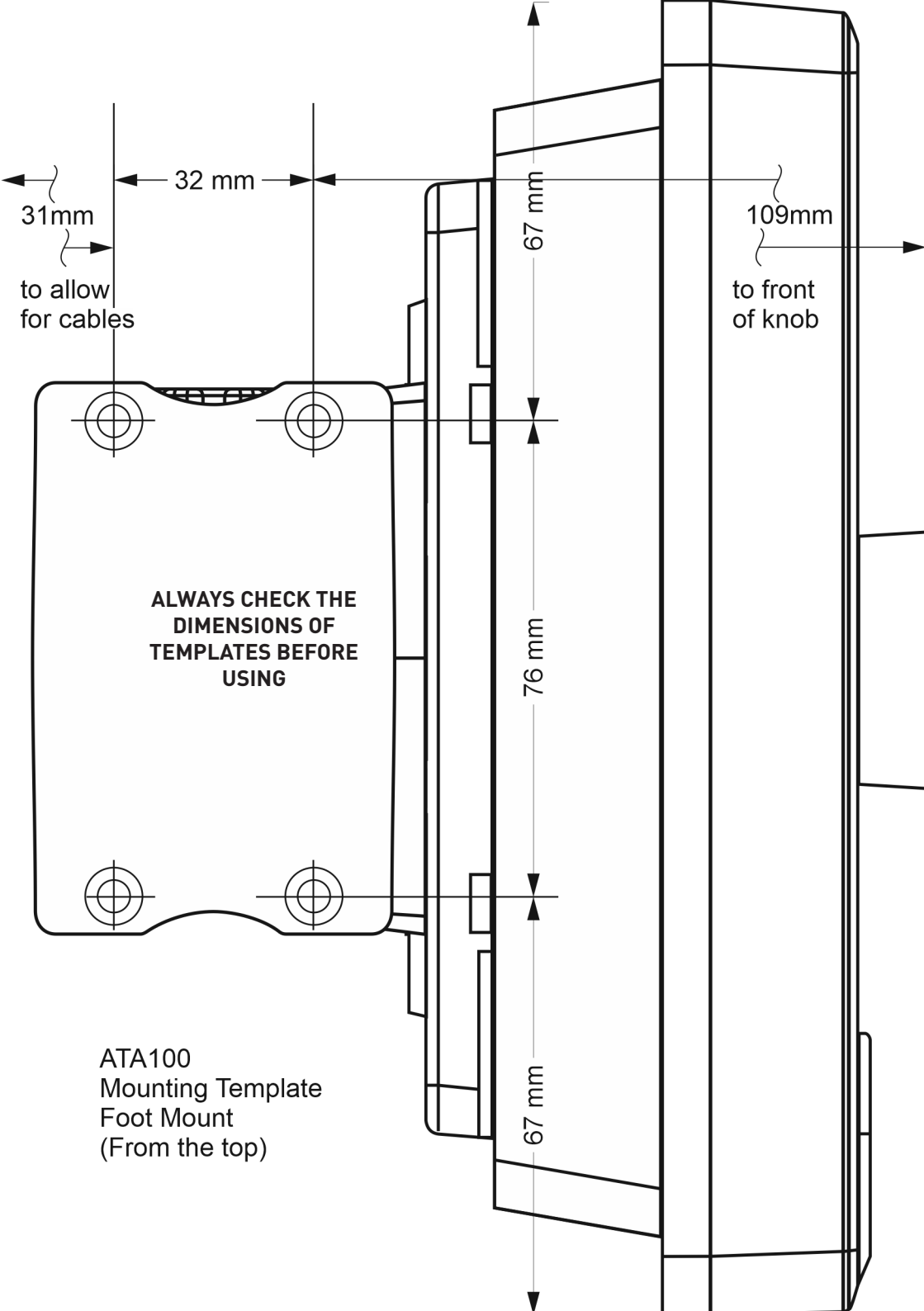

98 mm
67 mm
32 mm
42mm
76 mm
67 mm
ALWAYS CHECK THE DIMENSIONS OF TEMPLATES BEFORE USING
ATA100
Mounting Template
Foot Mount
(From the bottom)

ATA100
Mounting Template
(Surface Mount)

ALWAYS CHECK THE DIMENSIONS OF TEMPLATES BEFORE USING




120.0 mm
42.0 mm
40.5 mm
165.0 mm
Drill 8x holes suitable for
No.6 (3.5mm) Self tapping Screws
TOP
Cutout
171 mm
110.0 mm
181 mm
211 mm
Drill 4x 16mm dia. holes
for corner radius
40.5 mm

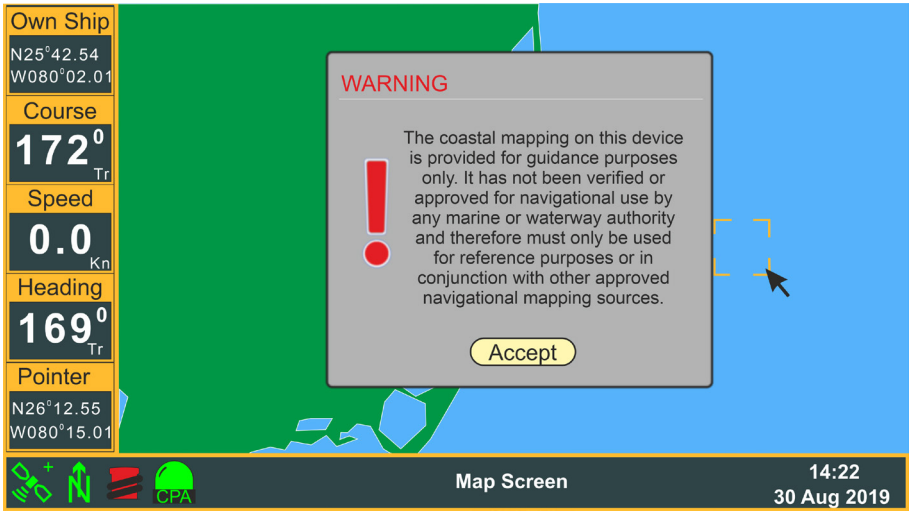


ATA100
Mounting Template
Foot Mount
(From the top)

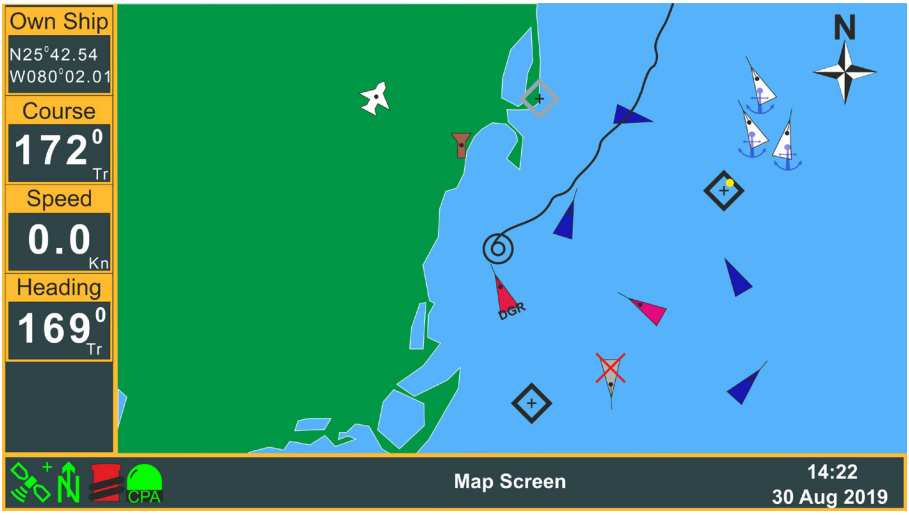
TEMPLATES

3.3 User Interface Overview

When the ATA100 is powered on for the first time, a map warning will be displayed. To remove this window it must be accepted to confirm that it has been read and understood. This window will appear once every 24 hours and will need to be accepted to remove it.



Press ↵ to accept



3.4 Menu Structure

Pressing the (Menu) key activates the on-screen menu.

Options with > show access to a further menu level.

Options with ... show access to a set-up screen.

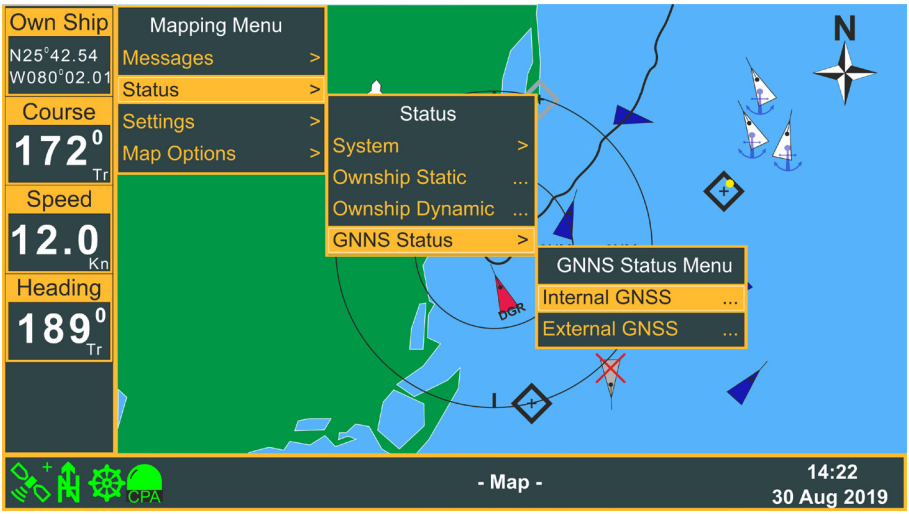
Rotate the (Jog Stick) to highlight your selection and then press (Enter) to display the next menu level.

When a selection has no > or ... then pressing (Enter) will select that option.

Pressing the (Jog Stick) is an alternative to pressing (Enter).

For example:

Status GNSS Status will show the menu below



Pressing will then select the Internal GNSS Status page.

4. COMMISSIONING

4.1 Advanced Settings

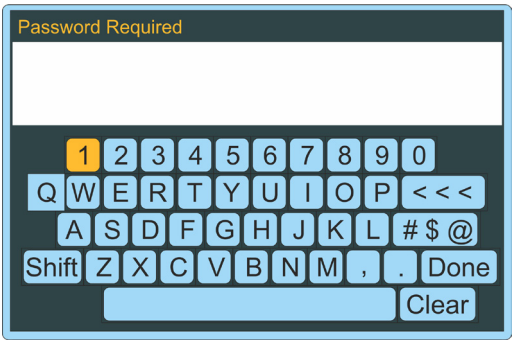
There are two passwords available in the ATA100:

User Password - Default: 0000 **Vessel:**

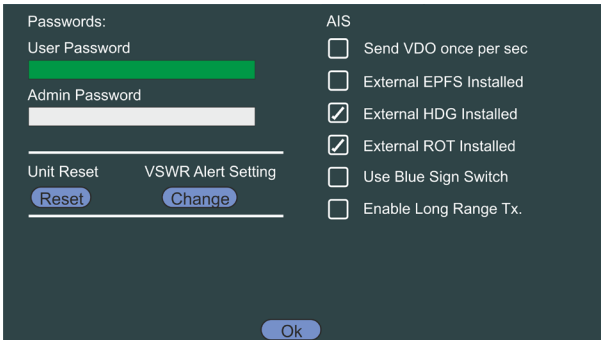
This password protects the set-up pages containing the Ships default Static Data. It is recommended that this password is changed to prevent unauthorised access to the data being transmitted by the AIS.

Admin Password - Default: 1111 **Vessel:**

This password protects the set-up pages containing the MMSI number and Ships Own Data. It is recommended that this password is changed to prevent unauthorised access to the data being transmitted by the AIS.



Use or and or to enter the password and select "Done" to continue.



4.1.1 Change the User and Admin passwords

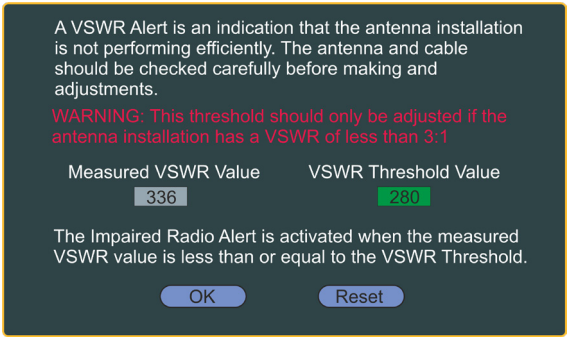
Record the changes for future reference.

4.1.2 Unit Reset

Click this button to reset the ATA100 to factory default settings. You will be asked to confirm this operation.

4.1.3 VSWR Alert Setting

The ATA100 measures the VSWR Coefficient during transmission and will report an "Impaired Radio" alert if the VSWR appears to be high. For installations where the antenna performance is marginal it is possible to adjust the threshold to prevent the alert being issued. If the "Impaired Radio" alert is being triggered along with an amber LED indication select and press Change to view the adjustment pop-up.



Adjust the VSWR Threshold Value so that it is just above that of the Measured Value. Do not select a value far above the Measured Value as this may prevent a warning of a deteriorating antenna installation.

NOTE: A VSWR Alert is an indication that the Antenna installation is not performing efficiently. The antenna and cable should be checked carefully before making any adjustment.

4.1.4 Send VDO once per second - Default: ☐ (Off)

Select this to force the ATA100 to transmit your information once every second regardless of the Navigation Status. If left unchecked then the ATA100 will transmit once every:

Navigation Status	Transmits once every
Moored or Anchored	3 minutes (when moving > 3 knots 10 seconds)
Under Way (0-14kn)	10 seconds (when turning 3.33 seconds)
Fast Moving (14-23kn)	6 seconds (when turning 2 seconds)
Very Fast Moving (>23kn)	2 seconds (when turning 2 seconds)

4.1.5 External EPFS Installed - Default: ☑ (On)

Deselect this if there is no secondary Electronic Position Fixing System connected to your ATA100. If this is selected and there is no EPFS then an alarm will sound indicating loss of communication.

4.1.6 External HDG Installed - Default: ☑ (On)

Deselect this if there is no external Heading source connected to your ATA100. If this is selected and there is no Heading information available then an alarm will sound indicating loss of communication.

4.1.7 External ROT Installed - Default: ☑ (On)

Deselect this if there is no external Rate of Turn source connected to your ATA100. If this is selected and there is no Rate of Turn information available then an alarm will sound indicating loss of communication.

4.1.8 Use Blue Sign Switch

Setting for Inland Waterways use (see the separate Inland Waterways Supplement).

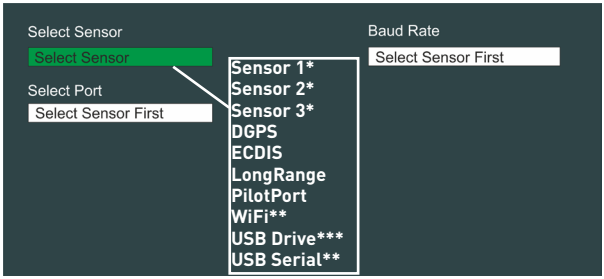
4.1.9 Long Range Message - Default: ☑ (On)

Deselect this if you do not wish the ATA100 to transmit the Message 27 Long Range information used for the satellite AIS system.

Select and press "OK" when the information on the screen is correct

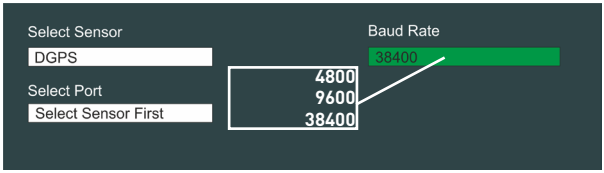
4.2 Input / Output Set-up

Settings → System → Input/Output → Password



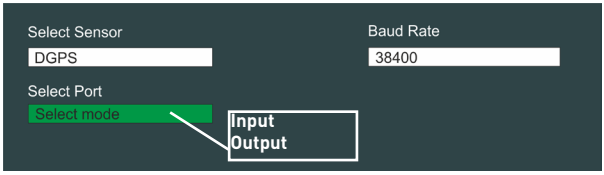
to select the port

Example



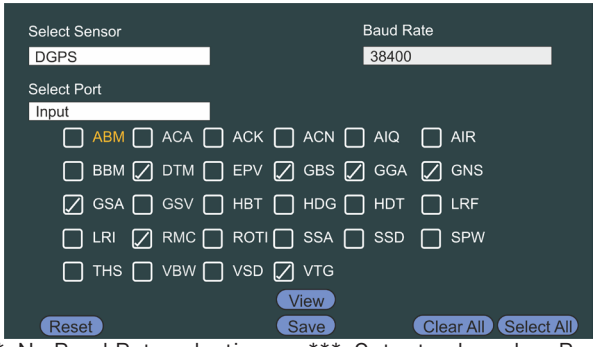
to select the Baud Rate

Example



to select the Port mode

Example

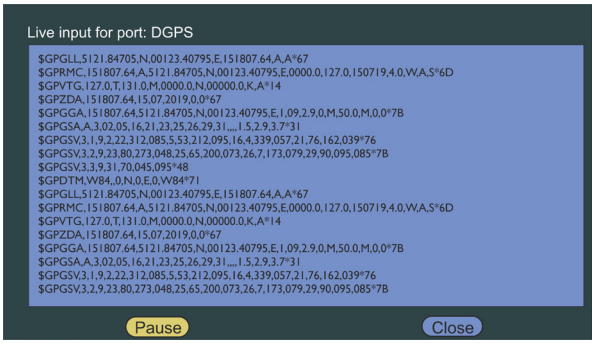


* Input only, ** No Baud Rate selection, *** Output only and no Baud Rate selection

to select or deselect each sentence

Selecting "View" will show a live input screen indicating the raw data that is being received on that particular port

Example



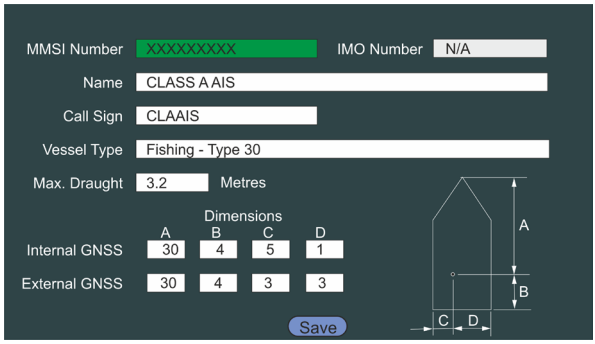
Port name	Data Baud Rate	Transmit sentences	Receive sentences
DGPS[1] Long Range[2] ECDIS[3] PilotPort[3]	Default 38400	ABK[3], ACA[3], ACS[3], ALC[3], ALF[3], ALR[3], ARC[3], EPV[3], GBS[1,3], GSA[1,3], GGA[1,3], GSV[1,3], HBT[3], LR1[2], LR2[2], LR3[2], LRF[2], RMC[1,3], SSD[3], TRL[3], TXT[3], VDM[3], VDO[3], VER, VSD, VTG[1,3]	ABM[3], ACA[3], ACK[3], ACN[3], AIQ[3], AIR[3], BBM[3], DTM[1,3], EPV[3], GBS[1,3], GGA[1,3], GNS[1,3], GSA[1,3], GSV, HBT[3], HDG, HDT, LRF[2], LRI[2], RMC[1,3], ROT, SSA[3], SSD[3], SPW[3], THS, VBW, VSD[3], VTG[1,3]
WiFi[4] USB Serial[5] USB Drive[6] (Tx only)	N/A	ABK[4,5], ACA[4,5], ACS[4,5], ALC[4,5], ALF[4,5], ALR[4,5], ARC[4,5], EPV[4,5], GBS[4,5], GSA[4,5], GGA[4,5], GSV[4,5], HBT[4,5], LR1, LR2, LR3, LRF, RMC[4,5], SSD[4,5], TRL[4,5], TXT[4,5], VDM[4,5], VDO[4,5], VER, VSD, VTG[4,5]	ABM[4,5], ACA[4,5], ACK[4,5], ACN[4,5], AIQ[4,5], AIR[4,5], BBM[4,5], DTM[4,5], EPV[4,5], GBS[4,5], GGA[4,5], GNS[4,5], GSA[4,5], GSV[4,5], HBT[4,5], HDG[4,5], HDT[4,5], LRF[4,5], LRI[4,5], RMC[4,5], ROT[4,5], SSA[4,5], SSD[4,5], SPW[4,5], THS[4,5], VBW[4,5], VSD[4,5], VTG[4,5]
Sensor 1[7] Sensor 2[7] Sensor 3[7]	Default 4800	NONE Sensor 3 can be set to RTCM104 to receive Differential GPS	ABM, ACA, ACK, ACN, AIQ, AIR, BBM, DTM[7], EPV, GBS[7], GGA[7], GNS[7], GSA[7], GSV, HBT, HDG[7], HDT[7], LRF, LRI, RMC[7], ROT[7], SSA, SSD, SPW, THS[7], VBW[7], VSD, VTG[7]

[no] Indicates deselected by default

Identifiers:
GP,GN,GA - Incoming DGNSS sentences, LC,IN - Incoming EPFS sentences,
AI - Outgoing AIS Sentences, GP - Outgoing Internal GPS Sentences.
All other sentences may be presented from any talker.
More detailed input/output information is printed in Section 5 of this manual.

Select and press "Save" when the information on each screen is correct

4.3 Ships Static Data Set-up



4.3.1 MMSI Number

The MMSI Number can only be accessed if you entered the Admin Password. Enter here the MMSI number issued to the vessel by the national radio licensing authority. An MMSI number is nine digits long. Invalid numbers will not be accepted.

4.3.2 IMO Number

Enter here the IMO number issued to the vessel by the national radio licensing authority. An IMO number is nine digits long. Invalid numbers will not be accepted.

4.3.3 Name

Enter the name issued to vessel by the national radio licensing authority.

4.3.4 Call Sign

Enter the radio call sign issued to vessel by the national radio licensing authority.

4.3.5 Vessel Type

Select from the drop-down list the Vessel Type.

4.3.6 Max. Draught

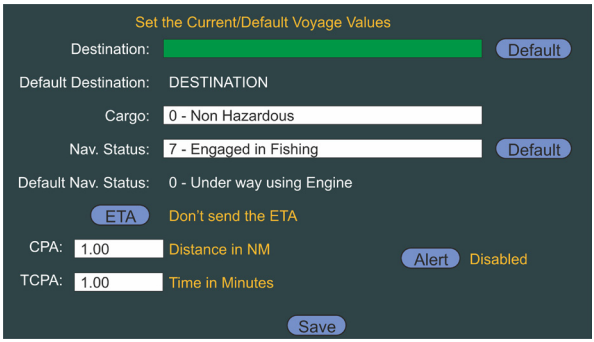
Enter the vessel's maximum draught (X.Xm).

4.3.7 Dimensions

The dimensions indicate the position of the vessel's GNSS antennas with regard to the overall size of the vessel. Entries should be made for both the Internal GNSS (that is the antenna connected directly to the ATA100) and the External GNSS (that is the antenna connected to the vessels GMDSS navigation system). All dimensions are entered in whole metres.

4.4 Default Voyage Settings

Settings → AIS → Voyage



4.4.1 Destination

Enter the vessel's destination port. Select and press "Default" if this is a regular destination.

4.4.2 Cargo

Select the cargo definition from the drop-down list .

4.4.3 Nav. Status

Select the vessel's Navigation Status from the drop-down list. Select and press "Default" if this is a regularly used Navigation Status.

4.4.4 ETA

Select whether to transmit the vessel's Estimated Time of Arrival (set in Quick Nav.).

4.4.5 CPA/ TCPA

Set a distance at which the Closest Point of Approach alert will sound and a time at which the Closest Point of Approach alert will sound. Select Enable or Disable for the CPA/TCP alert.

Select and click "Save" when all the information is correct

The ATA100 Class A AIS Transceiver is now ready to operate. Please refer to the Quick Reference and full User Manual for further operating instructions.

5. INPUT / OUTPUT SENTENCES

5.1 IEC-61162 (NMEA0183) Sentences Supported

Signature	Description	Normal Source	Normal Talkers	Category
ABM	**Addressed Binary Message** To initiate the sending of an addressed Binary or Safety related Message	PILOT ECDIS	AI	AIS
ACA	**AIS channel management information source** To Add a new or change an existing Channel Management Region	PILOT ECDIS	AI	AIS
ACK	**Acknowledge** To Acknowledge an Alarm	PILOT ECDIS	AI	AIS
ACN	**Alert command** Bridge Alert Management Command used	PILOT ECDIS	CA	BAM
AIQ	**AIS Query** Initiate a query for information (see table below for supported types)	PILOT ECDIS	AI	AIS
AIR	**AIS interrogation request** Initiates an interrogation of another target	PILOT ECDIS	AI	AIS
BBM	**Broadcast Binary Message** To initiate the sending of an broadcast Binary or Safety related Message	PILOT ECDIS	AI	AIS
DTM	**Datum reference** Indicated the Datum that is being used by the GNSS (Only WGS84 is accepted	DGPSS	GP, GN, GL, GA	GNSS
EPV	**Equipment Property Value** Sets a system mode or property (see table below for supported values), requires authentication in the form of SPW or SSA	PILOT ECDIS	AI	AIS
GBS	**GNSS satellite fault detection** Used to determine RAIM and Position Accuracy	DGPSS	GP, GN, GL, GA	GNSS
GGA	**Global positioning system fix data** Used to determine the differential correction station information	DGPSS	GP, GN, GL, GA	GNSS
GNS	**GNSS fix data** Used to determine the position of the Vessel	DGPSS	GP, GN, GL, GA	GNSS
GSA	**GNSS DOP and active satellites** Used to determine the DOP and the identities of the satellites in use	DGPSS	GP, GN, GL, GA	GNSS
GSV	**GNSS satellites in view** Used to display the Identification, Azimuth, Elevation and Signal strength of the satellites in view	DGPSS	GP, GN, GL, GA	GNSS

HBT	**Heart beat** Sent by the Bridge Alert Management system to indicate that the connection is still valid	PILOT ECDIS	EI	BAM
HDG	**Heading, deviation and variation** Used to determine the magnetic heading and magnetic variation of the vessel	SENSOR 1 SENSOR 2 SENSOR 3	HE	SENSOR
HDT	**Heading true** Used to determine the true heading of the vessel	SENSOR 1 SENSOR 2 SENSOR 3	HE	SENSOR
LRF	**AIS long-range function** Used in conjunction with LRI to Initiate a long range Message Request	LR	AI	LONG RANGE
LRI	**AIS long-range interrogation** Used in conjunction with LRF to Initiate a long range Message Request	LR	AI	LONG RANGE
RMC	**Recommended minimum specific position data** Used to determine the position, speed and course of the Vessel	DGPS SENSOR 1 SENSOR 2 SENSOR 3	GP, GN, GL, GA, LC, IN	DGNSS GNSS EPFS
ROT	**Rate of Turn Indicator** Used to determine the rate of turn	SENSOR 1 SENSOR 2 SENSOR 3	TI, HE	SENSOR
SSA	**Sender Signature Authentication** Used to provide an MD5 Hash used for authentication	PILOT ECDIS	AI	AIS
SSD	**AIS ship static data** Used to program the units static data, requires authentication in the form of SPW or SSA	PILOT ECDIS	AI	AIS
SPW	**Security password sentence** Used to provide a password for authentication	PILOT ECDIS	AI	AIS
THS	**True Heading and Status** Used to determine the true heading of the vessel	SENSOR 1 SENSOR 2 SENSOR 3	HE	SENSOR
VBW	**Dual ground/water speed** Used in conjunction with heading data to calculate course and speed	SENSOR 1 SENSOR 2 SENSOR 3	VW, VD, II	SENSOR
VSD	**AIS voyage static data** Used to program the units voyage data, requires authentication in the form of SPW or SSA	PILOT ECDIS	AI	AIS
VTG	**Course over ground and ground speed** Used to provide the vessels course over ground and speed over ground	DGPS	GP, GN, GL, GA	GNSS

5.2 Sentence Priority and input filtering

Each of the ports has a filter that can be configured to determine which signatures are accepted through that port. By default they will be set up as follows:

Port Name	Baud	Signatures
SENSOR 1	4800	DTM, GBS, GGA, GNS, GSA, HDG, HDT, RMC, ROT, THS, VBW, VTG
SENSOR 2	4800	DTM, GBS, GGA, GNS, GSA, HDG, HDT, RMC, ROT, THS, VBW, VTG
SENSOR 3	4800	DTM, GBS, GGA, GNS, GSA, HDG, HDT, RMC, ROT, THS, VBW, VTG
DGPS	38400	DTM, GBS, GGA, GNS, GSA, RMC, VTG
LR	38400	LRF, LRI
ECDIS	38400	DTM, GBS, GGA, GNS, GSA, RMC, VTG ABM, ACA, ACK, ACN, AIQ, AIR, BBM, EPV, HBT, SSA, SSD,SPW,VSD
PILOT	38400	ABM, ACA, ACK, ACN, AIQ, AIR, BBM, EPV, HBT, SSA, SSD,SPW,VSD

In addition to the port filtering, the following rules are applied in the event that the same signature is received over multiple ports:

All of the ports may be used concurrently, however in the case that the same TALKER/ SIGNATURE combination is received though two or more ports, the port that first received the sentence takes precedence until such time as the sentence has not been received on that port for 5 seconds at which point precedence will revert to the next port the sentence is received on etc.

5.3 Signature Requests supported for AIS Query ($AIAIQ,xxx)

Signature	Description
ACA	Lists all defined channel management regions including the default open seas region
EPV	List the current settings for all EPV properties with the exception of passwords
SSD	Returns the current static data settings for both internal and external GNSS
TRL	Returns the stored AIS transmitter-non-functioning log information
TXT	Returns all the Status TXT messages that are currently active
VER	Returns the system version number information
VSD	Returns the current voyage static data settings

5.4 Property Values supported by the EPV sentence

Property Number	Description	Auth. Required	Accepted Values	Default Value
101	Sensor 1 Baud Rate	Yes	4800,9600,38400	4800
102	Sensor 1 Baud Rate	Yes	4800,9600,38400	4800
103	Sensor 1 Baud Rate	Yes	4800,9600,38400	4800
104	Long Range Port Baud Rate	Yes	4800,9600,38400	38400
105	DGNSS Port Baud Rate	Yes	4800,9600,38400	38400
106	Set the MMSI Number	Yes	All Valid	000000000
107	Set the IMO Number	Yes	0000000-9999999	0000000
108	Long Range communications interface	Yes	'A' = Automatic 'M' = Manual	A
109	Long Range Broadcast Channel 1	Yes	As per ITU-R M.1084-5	1075
110	Long Range Broadcast Channel 2	Yes	As per ITU-R M.1084-5	1075
111	Change Admin Password	Yes	Any Alphanumeric value up to 30 letters	1111
112	Change User Password	Yes	Any Alphanumeric value up to 30 letters	2222
113	Locating Device Test Mode	No	0 = Normal Mode 1 = Display and output locating devices in test mode	0
114	AIS Silent Mode	No	0 = Normal Mode 1 = Receive Only	0
115	Activation of location devices	No	0 = No alert from location devices 1 = Alerts from location devices	1
116	Sensor Alert Configuration	Yes	Bit Fields: Bit 2 – External EPFS Bit 1 – Heading Bit 0 – Rate of turn	7 (all on)
117	Pilot Port Access Mode	Yes	0 = Normal Access 1 = Restricted Access	0
150-151	Extended Dimension EA	No	0 – 511	0
152-153	Extended Dimension EA	No	0-63	0

5.5 IEC-61162-1 (NMEA0183) Sentences Output

Signature	Description	When Sent
ABK	Addressed and binary broadcast acknowledgement	In response to an ABM or BBM message
ACA	AIS channel assignment message	When the unit enters or exits a channel management region In response to a change in Channel Management information In Response to an AIQ request
ACS	AIS channel management information source	
ALC	Cyclic alert list	Sent out every 30 seconds
ALF	Alert sentence	Sent out whenever an alert status changes or on request
ALR	Set alarm state	When a an alarm message is activated, cleared or acknowledged, repeated every 30 seconds or once per minute when not alarms are active
ARC	Cyclic alert list	Sent out every 30 seconds
EPV	Report equipment property value	In response to a AIQ request
GBS	GPS satellite fault detection	Sent every second from the internal GPS Receiver
GSA	Global positioning system fix data	Sent every 3 seconds from the internal GPS Receiver
GGA	Global positioning system fix data	Sent every 3 seconds from the internal GPS Receiver
GSV	GPS satellites in view	Sent every 3 seconds from the internal GPS Receiver
HBT	Heartbeat	Send out once per second when enabled
LR1	AIS long-range reply sentence 1	Sent in response to a long range message request LRM and LRF
LR2	AIS long-range reply sentence 2	
LR3	AIS long-range reply sentence 3	
LRF	AIS long-range function	
NAK	Negative acknowledgement	Send in response to a command that cannot be processed

RMC	Recommended minimum specific position data	Sent every second from the internal GPS Receiver
SSD	AIS ship static data	In Response to an AIQ request
TRL	AIS transmitter-non-functioning log	In Response to an AIQ request
TXT	Text transmission	In Response to an AIQ request
VDM	AIS VHF data-link message (Incoming)	On receipt of and AIS VDL message on Channel A or B
VDO	AIS VHF data-link message (Outgoing)	On transmission of a own ship VDL message on Channel A or B
VER	Version	In Response to an AIQ request
VSD	AIS voyage static data	In Response to an AIQ request
VTG	Course over ground and ground speed	Sent every second from the internal GPS Receiver

In addition to these, the following sentence received on the Sensor ports will be echoed over the Pilot port and the ECDIS port.

Signature	Description
HDG	Heading, deviation and variation
HDT	Heading true
THS	True Heading and Status
ROT	Rate of Turn

5.6 Sentence output filtering

Each of the ports has a filter that can be configured to determine which signatures are outputted though that port. By default they will be set up as follows:

Port Name	Baud	Signatures
DGPS	38400	RMC, GBS, GGA, GSA, GSV, VTG (All from Internal GNSS)
LR	38400	LRF, LR1, LR2, LR3
ECDIS	38400	RMC, GBS, GGA, GSA, GSV, VTG (All from Internal GNSS) HDG,HDT,THS,ROT (echoed from sensor ports - Unfiltered) ABK, ACA, ACS, ALC, ALF, ALR, ARC, EPV, HBT, RMC, SSD, TRL, TXT, VDM, VDO, NAK (Unfiltered)
PILOT PORT	38400	RMC, GBS, GGA, GSA, GSV, VTG (All from Internal GNSS) HDG, HDT, THS, ROT (echoed from sensor ports - Unfiltered) ABK, ACA, ACS, ALC, ALF, ALR, ARC, EPV, HBT, RMC, SSD, TRL, TXT, VDM, VDO, NAK (Unfiltered)

6. GLOSSARY AND ABBREVIATIONS

AIS	Automatic Identification System	LED	Light Emitting Diode
AtoN	Aid to Navigation	LEN	Load Equivalence Number
AWG	American Wire Gauge	LRM	Long Range Messaging
BRG	Bearing	MED	Marine Equipment Directive
COG	Course Over Ground	MFD	Multi-Function Display
CPA	Closest Point of Approach	MMSI	Maritime Mobile Service Identity
DSC	Digital Selective Calling	MOB	Man Over Board
ECDIS	Electronic Chart Display and Information System	NMEA	National Marine Electronics Association
ENI	Electronic Navigation Industries	PGN	Parameter Group Number
EPFS	Electronic Position Fixing System	RAIM	Receiver Autonomous Integrity Monitoring
ETA	Estimated Time of Arrival	RNG	Range
EU	European Union	ROT	Rate of Turn
FCC	Federal Communications Commission	RTCM	Radio Technical Commission for Maritime
GLONASS	Global Navigation Satellite System	SART	Search And Rescue Transponder
GNSS	Global Navigation Satellite System	SOLAS	Safety of Life at Sea
GPS	Global Positioning Satellite	TCPA	Time to Closest Point of Approach
HDG	Heading	USB	Universal Serial Bus
IMO	International Maritime Organization	VHF	Very High Frequency
LCD	Liquid Crystal Display	VSWR	Voltage Standing Wave Ratio

7. FAULT FINDING

Error Message	Potential Reason
Missing EPFS	Information from an External EPFS source is not being received. Check the external EPFS is operational and the connection is good. If there is no connected EPFS then go to Settings>System>Advanced and un-check the External EPFS Installed box. See Section 4.1.5 for details.
Missing Heading	Information from an External Heading source is not being received. Check the external Heading Sensor is operational and the connection is good. If there is no connected Heading Sensor then go to Settings>System>Advanced and un-check the External HDG Installed box. See Section 4.1.6 for details.
Missing ROT	Information from an External ROT source is not being received. Check the external ROT sensor is operational and the connection is good. If there is no connected ROT sensor then go to Settings>System>Advanced and un-check the External ROT Installed box. See Section 4.1.7 for details.
Impaired Radio	The VHF antenna system is not performing efficiently. Check the connected antenna and cable. Go to Settings>System>Advanced and click Change VSWR Alert Setting for minor adjustment to the parameters. See Section 4.1.3 for details.
Transceiver fail	The unit has not been programmed with a valid MMSI number or a hardware fault is preventing transmission.
Wrong Nav Status	There is a difference between a received External Position Fix and the Internal GNSS Position Fix. Check the GNSS antenna and the External Position Fix source for faults.
Lost Position	The AIS has lost both Internal and External Position information and will be unable to transmit the vessels location information to other vessels
Sync in fallback	The AIS has lost its internal GNSS Position Fix. If there is no Lost Position or Lost COG/SOG message then the ATA100 will still have a position fix from an external source but imprecise time source will affect the SOTDMA operation.

8. SPECIFICATIONS

Transmitter	
Transmit Power	12.5/1Watts
Frequency Range	156.025 – 162-025MHz
Modulation AIS	GMSK: BT 0.4
DSC	FSK: Mod Index 2
Receiver	
Sensitivity	-107dBm for 20% packet error rate
Frequency Range AIS RX1 and RX2	156.025 – 162.025MHz
DSC	156.525MHz
General	
Dimensions	214 x 211 x 150mm (8.5" x 8.3" x 5.9")
Nominal viewing distance	0.5m (20")
Temperature Range	-15°C to +55°C (5°F to 131°F)
Waterproof	IPx7 (1metre for 30 minutes)
Equipment Category (Display Unit)	Protected
Equipment Category (GNSS Antenna)	Exposed
Supply Voltage Range	9.6V to 31.2V
GNSS Receiver	High sensitivity
Channels	99 acquisition/33 tracking
Interfaces	
Serial ports	IEC61162-1, -2 3 Rx only, 3 Rx/Tx, Pilot plug USB[1]
Blue switch input	Isolated
Alarm Relay	Normally Open/Normally closed: 2A max.
Compliance	
Standards	IEC61993-2, IEC60945, IEC62288[2]

[1] For maintenance/configuration
[2] AIS operation only

9. SPARES AND ACCESSORIES

Part Number	Description
763S-02845	GNSS Antenna (with 10m cable)
763S-03089	USB On-The-Go Cable
763S-03090	USB A to USB Micro Cable
761S-02758	Pilot Plug Cover
761S-03498	Display Mounting Foot
761S-02760	Cable Support and Seal Kit

10. MAINTENANCE

10.1 Product Cleaning

- Lightly rinse or flush with clean, cool fresh water.
- Do NOT wipe the screen with a dry cloth, as this could scratch the window.
- Do NOT use: abrasive, acidic, ammonia, solvent or chemical based cleaning products.
- Do NOT use a jet wash.

10.2 Service and Maintenance

This product contains no user serviceable components. Please refer all maintenance of the product to Ocean Signal Ltd.. Unauthorised repair may affect your warranty.

FCC Warning (Part 15.21)
Changes or modifications to this equipment not expressly approved in writing by Ocean Signal Ltd. could violate compliance with FCC rules and void the user's authority to operate the equipment.

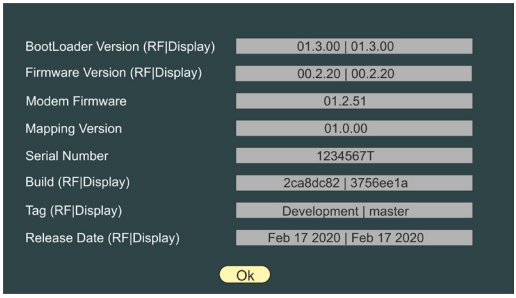
10.3 Firmware Updates

Ocean Signal reserves the right to produce Firmware updates as required. These updates will be made available to download from www.oceansignal.com and will be accompanied with relevant documentation including updated User Manuals.

10.3.1 To update Firmware

Download the relevant file and copy it to a blank USB stick. Power down the ATA100 and use the supplied USB on-the-go cable to connect the USB stick to the USB port on the front of the unit. Power on the ATA100 and the firmware will be loaded into the unit automatically with progress reported visually on the screen. On completion power down the ATA100 and remove the USB on-the-go cable before powering up once more.

Firmware versions loaded can be viewed:



10.4 Routine equipment checks

It is recommended that you perform the following routine checks, on a regular basis, to ensure the correct and reliable operation of this equipment:

- Examine all cables for signs of damage or wear and tear.
- Check that all cables are securely connected.

11. APPROVALS

11.1 EU Marine Equipment Directive

The ATA100 is approved under the EU Marine Equipment Directive under MED/4.32 of the current implementing regulation. The Declaration of Conformity can be downloaded from: www.oceansignal.com/products/ATA100

11.2 United States of America

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

11.3 Canada

This AIS class A digital apparatus complies with Canadian ICES-003.

12. INSTALLATION RECORD

12.1 Vessel Details

SOLAS

Vessel Name			
MMSI Number		IMO Number	
Call Sign		Vessel Type	
Internal GNSS antenna location (all dimensions in whole meters)			
A=	B=	C=	D=
External GNSS antenna location (all dimensions in whole meters)			
A=	B=	C=	D=
Vessel Length (A+B)		Vessel Beam (C+D)	
Max. Draught (X.Xm)			

Inland Waterways

Vessel Name			
MMSI Number		ENI Number	
Call Sign		Vessel Type	
Internal GNSS antenna location (all dimensions X.Xm)			
BI=	CI=		
External GNSS antenna location (all dimensions X.Xm)			
BI=	CI=		
Vessel Length (X.Xm)	LS=	Vessel Beam (X.Xm)	BS=
Max. Draught (X.XXm)			

12.2 AIS Transceiver Information

AIS Transceiver Serial Number		
AIS Transceiver Firmware version		Updated Yes / No
AIS Transceiver Release Date		
User Password (if changed)		
Admin Password (if changed)		

12.3 Connected Equipment

External (D)GPS receiver	
External EPFS	
External Heading source	
External ROT source	
Power Supply	

The following drawings should be provided and attached to this installation record:

- Antenna layout for VHF and GNSS antennas
- AIS arrangement drawing
- Block diagram showing interconnection of equipment

12.4 Installer Details

Installed by (name)		
Installation Company		
Date of commissioning		
Vessel location at installation		
The installer is approved by competent authority	Yes	No
Signature of installer		

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