8 Installation

8.1 Mechanical Mounting

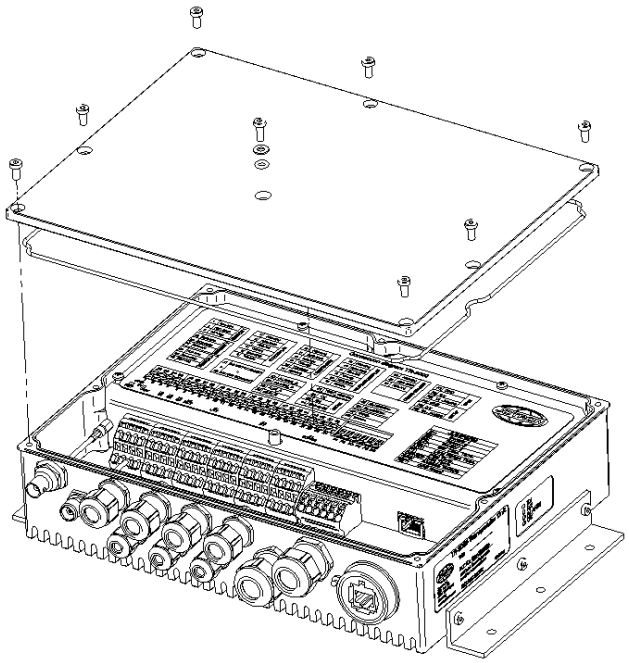
8.1.1 Transponder unit

Use the standard Mounting Kit. For dimensions and positioning of holes see *Figure **14-1** TR-8000 Transponder Unit- mechanical dimensions*

When selecting a mounting location for the Transponder the following guidelines apply:

1. Keep the transponder out of direct sunlight.
2. Do not mount the transponder were it can be directly exposed to seawater as corrosion then may appear and cause leakage.
3. The unit must not be mounted near exhaust pipes and vents.
4. Even though the transponder is a robust unit, it is advised that it should be mounted were shock and vibration are minimal.
5. Unit shall not be located near electromagnetic field generating equipment
6. Leave sufficient space at the sides and top of the unit for maintenance and repair. Also leave slack in cables for the same reason.
7. Do not mount transponder unit too close to a magnetic compass :

Compass safe distance:	Standard Compass:	95cm
	Steering Compass:	65cm



The TR-8000 transponder unit can be mounted in all directions, either on a wall, roof or floor. The unit is very robust and made of cast aluminum coated with black paint for best type of protection

For detailed mechanical drawings, see chapter 14,"Outline Drawings"

Figure 8-1 Transponder Unit, exploded view. Opening of outer Lid

8.1.2 Display Unit

The display unit can be installed as desktop mounted, roof mounted or flush mounted in a panel. Installation shall be near the conning position.

When selecting a mounting location for the Display Unit the following guidelines apply:

1. Do not mount the display unit were it can be directly exposed to seawater as corrosion then may appear and cause leakage.
2. The unit must not be mounted near exhaust pipes and vents.
3. Even though the transponder is a robust unit, it is advised that it should be mounted were shock and vibration are minimal.
4. Unit shall not be located near electromagnetic field generating equipment
5. Leave sufficient space at the back for connection to necessary cables.
6. Do not mount transponder unit too close to a magnetic compass :

Compass safe distance:	Standard Compass:	30cm
	Steering Compass:	14cm

8.1.2.1 Desktop Mounting

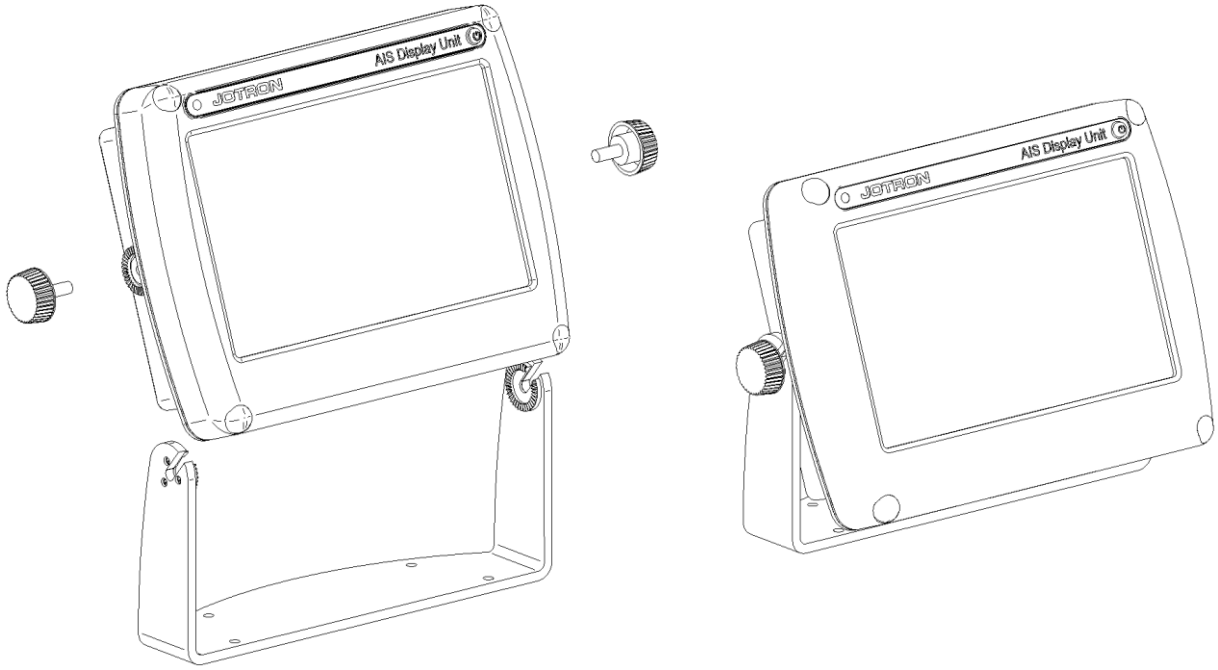
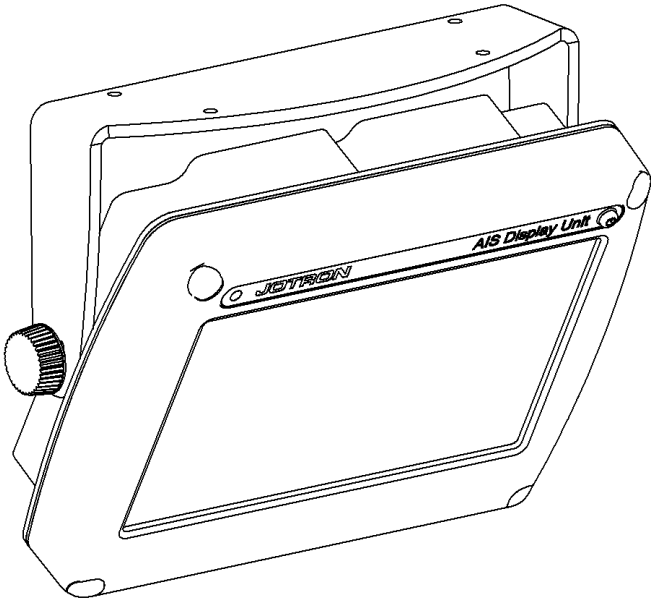


Figure 8-2 Desktop mounted Display Unit

For detailed mechanical drawings, see chapter 14,"Outline Drawings

8.1.2.2 *Roof Mounting*



When display unit is mounted overhead/roof, it might be necessary to adjust Contrast/Brightness, see chapter ***7.5*** *Display* Settings

Figure 8-3 Roof mounted Display Unit

For detailed mechanical drawings, see chapter ***14*** *Outline Drawings*

8.1.2.3 *Flush/ Panel Mounting*

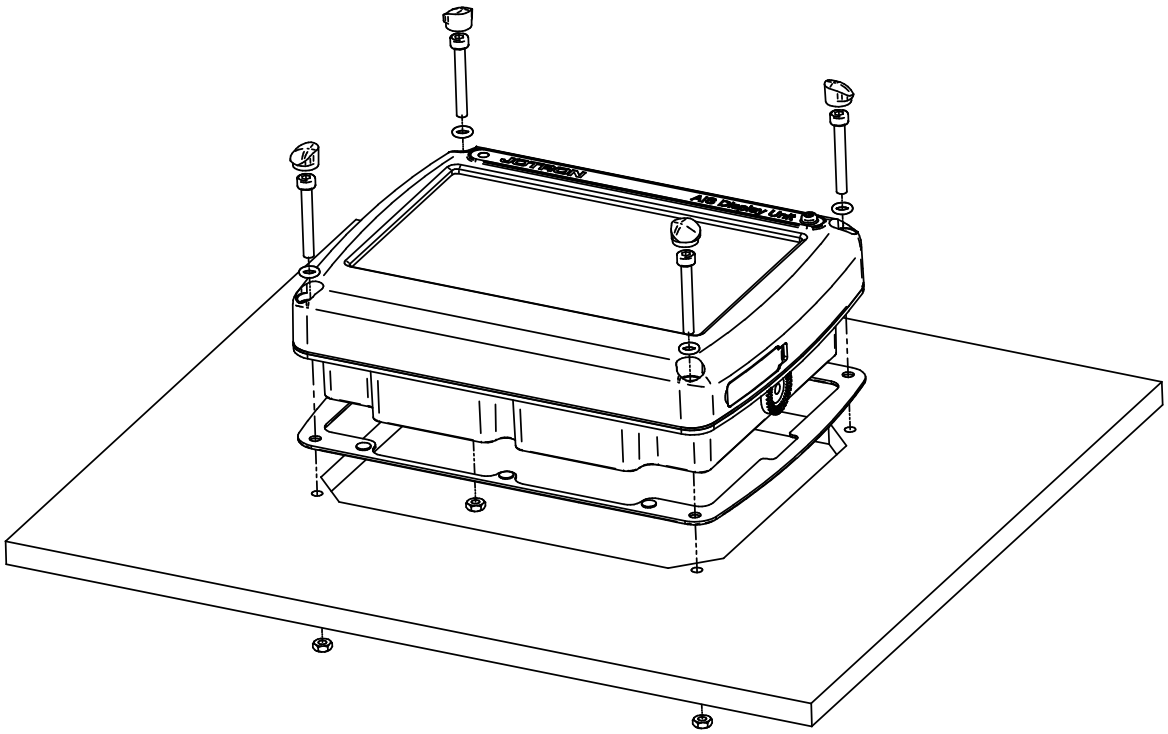


Figure 8-4 Flush mounted Display Unit, exploded view.

For detailed mechanical drawings, see chapter ***14*** *Outline Drawings*

8.1.3 Antennas

As a general rule, longer horizontal distances to other antennas will minimize the interference and improve reception on all antennas.

Minimum distance is described in the figures below:

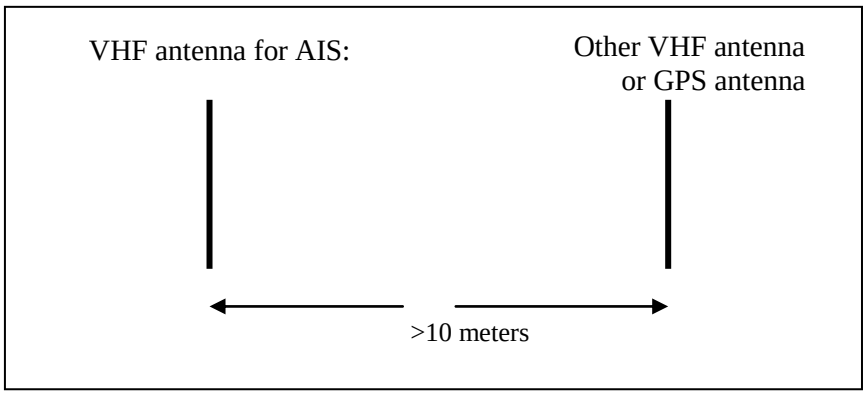


Figure 8-5 Horizontal separation distance.

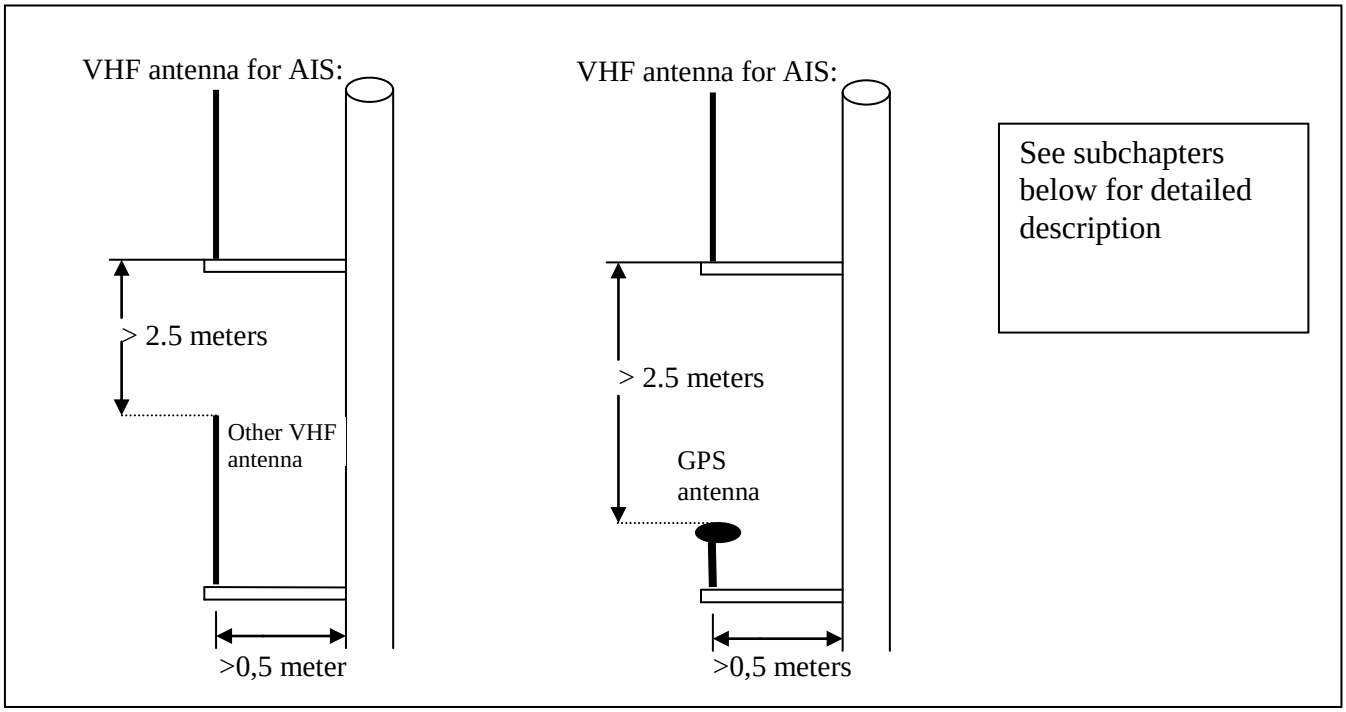


Figure 8-6 Vertical separation and distance from mast or other object of metal. For best isolation between antennas, place directly underneath with no horizontal separation.

8.1.3.1 GPS Antenna

When selecting a mounting location for the antenna, keep in mind the following points.

1. Select a location out of the radar beam. The radar beam will obstruct or prevent reception of the GPS satellite signal.

2. There should be no interfering object within the line-of-sight to the satellites. Objects within the line-of-sight to a satellite, for example a mast, may block reception or prolong acquisition time.

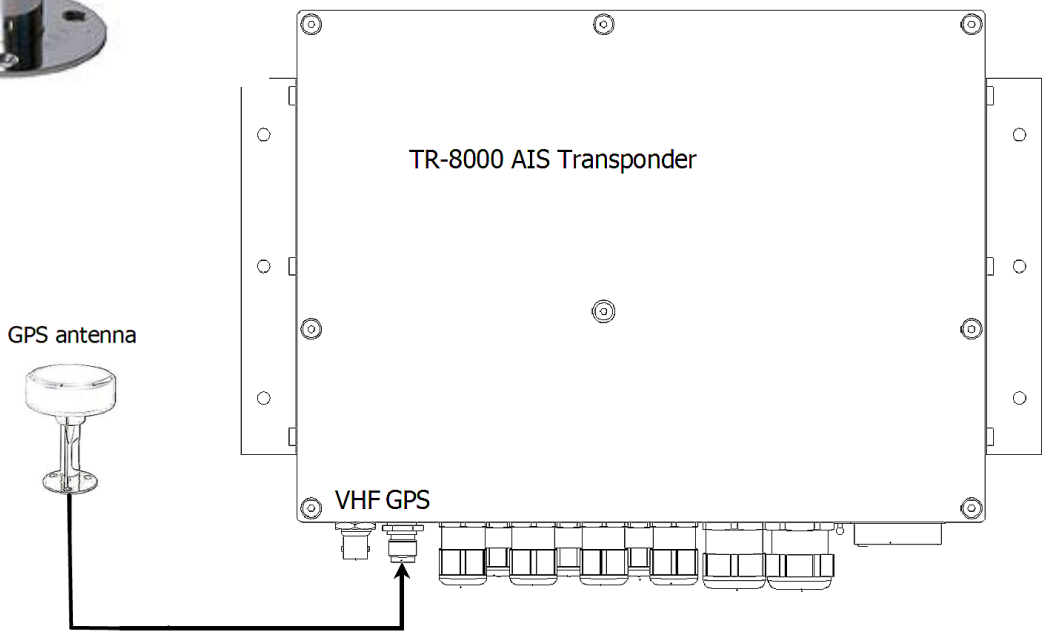
3. Mount the antenna unit as high as possible to keep it free of interfering objects and water spray, which can interrupt reception of GPS satellite signal if the water freezes.

8.1.3.1.1 Standalone type

TR-8000 is delivered as standard with a Sanav SA-200 GPS antenna with stainless steel stand and 15 meter cable with TNC connectors in both ends for direct connection between transponder and antenna.

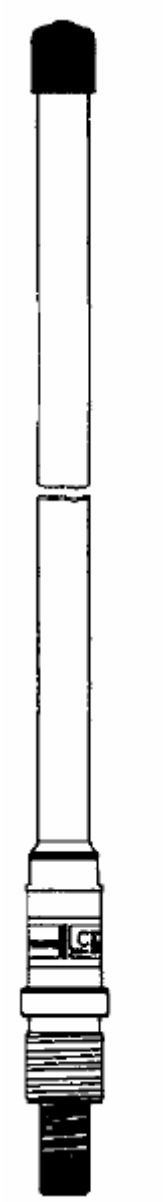
The antenna can be mounted with three 6 mm bolts.

When Standalone GPS antenna is used, an additional VHF antenna must also be connected
For detailed description of this antenna, see Chapter *14 Outline Drawings*



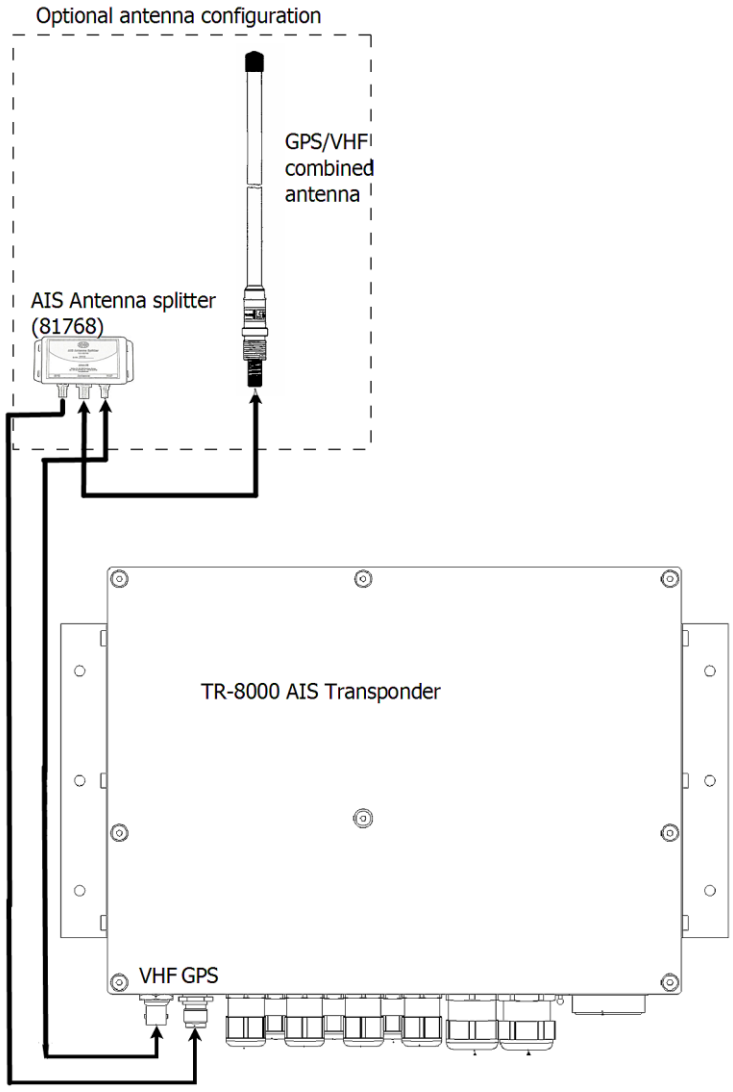
Calculation of cable length/attenuation etc is described in chapter 8.2

8.1.3.1.2 Combined VHF/AIS



As an option to the individual VHF and GPS antennas, a combined antenna may be used in conjunction with a signal splitter which will provide a common cable between the signal splitter and the antenna, and two short jumper cables between splitter and transponder.

The combined antenna is delivered with a mounting bracket to be mounted on a mast .

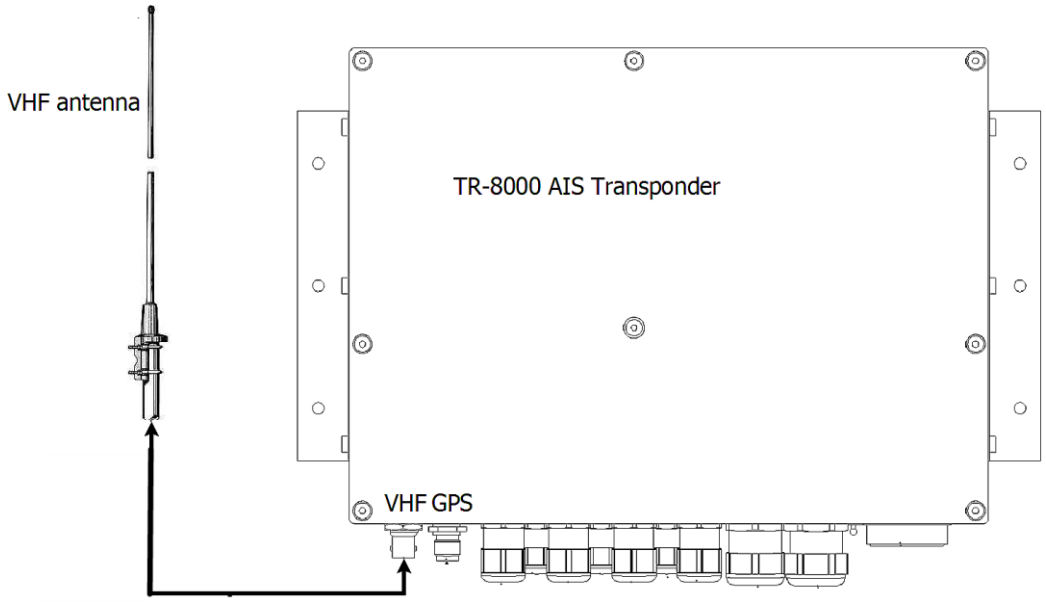


Calculation of cable length/attenuation etc is described in chapter **8.2**

8.1.3.2 *VHF Antenna*

When individual GPS antenna is used, the additional VHF antenna must also be connected
For detailed description of this antenna, see Chapter *14 Outline Drawings*

Location of the mandatory AIS VHF-antenna should be carefully considered. Digital communication is more sensitive than analogue/voice communication to interference created by reflections in obstructions like masts and booms. It may be necessary to relocate the VHF radiotelephone antenna to minimize interference effects.
Install the VHF antenna referring to drawings in beginning of this chapter



The antenna should be connected using RG214 cable or better using the connectors in the “Plug Kit” which is delivered with the units.

Calculation of cable length/attenuation etc is described in chapter **8.2**

8.2 Cabling

All outdoor installed connectors on coaxial cables should be fitted with preventive isolation such as vulcanizing tape to protect against water penetration into the antenna cable.

Coaxial cables should be installed in separate signal cable channels/tubes and at least 10 cm away from power supply cables. Crossing of cables should be done at right angles (90°). The minimum bend radius of the coaxial cable should be 5 times the cable's outer diameter.

The cables should be kept as short as possible to minimize signal attenuation.

The type of cables used onboard vessels should be:

- Halogen free
- Fire resistant or Flame retardant type
- Low smoke

8.2.1 GPS antenna

The table below gives recommendations on cables that can be used for the GPS antenna connections:

Type	Attenuation @1.5 GHz (dB/100m)	Remark
RG58	90	Default for use if length< 20 m and antenna = Procom GPS4 or SANAV SA-200
RG214	35	If combined GPS/VHF antenna from either AC-Marine, Procom or Comrod is used, this or better can be used
RG225	30	Cable with lower loss

For optimum performance of the transponder approximately +10dB gain should be available when the cable attenuation has been subtracted from the GPS antenna preamplifier gain. Note that Procom AIS2/GPS and Comrod AC17-AIS are combined VHF/GPS antennas and additional attenuation from connectors/ diplexer must be taken in consideration. Some examples below:

Cable Type	Antenna	Preamplifier Gain (dB/100m)	Recommended cable length (m)
RG58	Procom GPS4	30	<20 meter
RG214	Procom AIS2/GPS	28	10-30 meter
	Comrod AC17-AIS	20	10-20 meter
	AC Marine VHF/GPS-B	18	10-20 meter
RG225	Procom AIS2/GPS	28	10-40 meter
	Comrod AC17-AIS	20	10-30 meter
	AC Marine VHF/GPS-B	18	10-30 meter

8.2.2 VHF antenna

The table below shows the attenuation on the VHF frequencies with different cable types:

Cable Type	Attenuation @150 MHz (dB/100m)	Diameter (mm)	Weight (kg/100m)
RG214	7	10,8	18,5
RG225	8	10,9	23,3

Example: A RG 214 cable with length of 40 meters will have an attenuation of 2,8 dB.

Please keep the cables as short as possible, and be aware that 3 dB losses mean only half the output power. If you have a transmitter delivering 12,5 W, and you have 3 dB losses in the cable, only 6,25 Watts will be at the antenna.

8.2.3 Cable between Transponder and Display Unit

The cable connecting the Transponder and the Display Unit has specially designed connectors on each end for waterproofing. The cable itself is a standard CAT-5 network cable

In order to ease wiring and installation, an optional cable is available with one end open, delivered with a small kit for post wiring assembly.

If the specified cable type is not used, the splash proofing of the unit is seriously degraded and the warranty is void if used in humid environment.

Figure 8-7 Connection cable for interconnection between the Transponder and the Display Unit

NOTE! If the units are mounted indoors in a warm dry environment without any need for water tightness, a standard CAT-5 or CAT-6 network cable may be used between the Transponder and the Display unit

8.3 Wiring and Connections

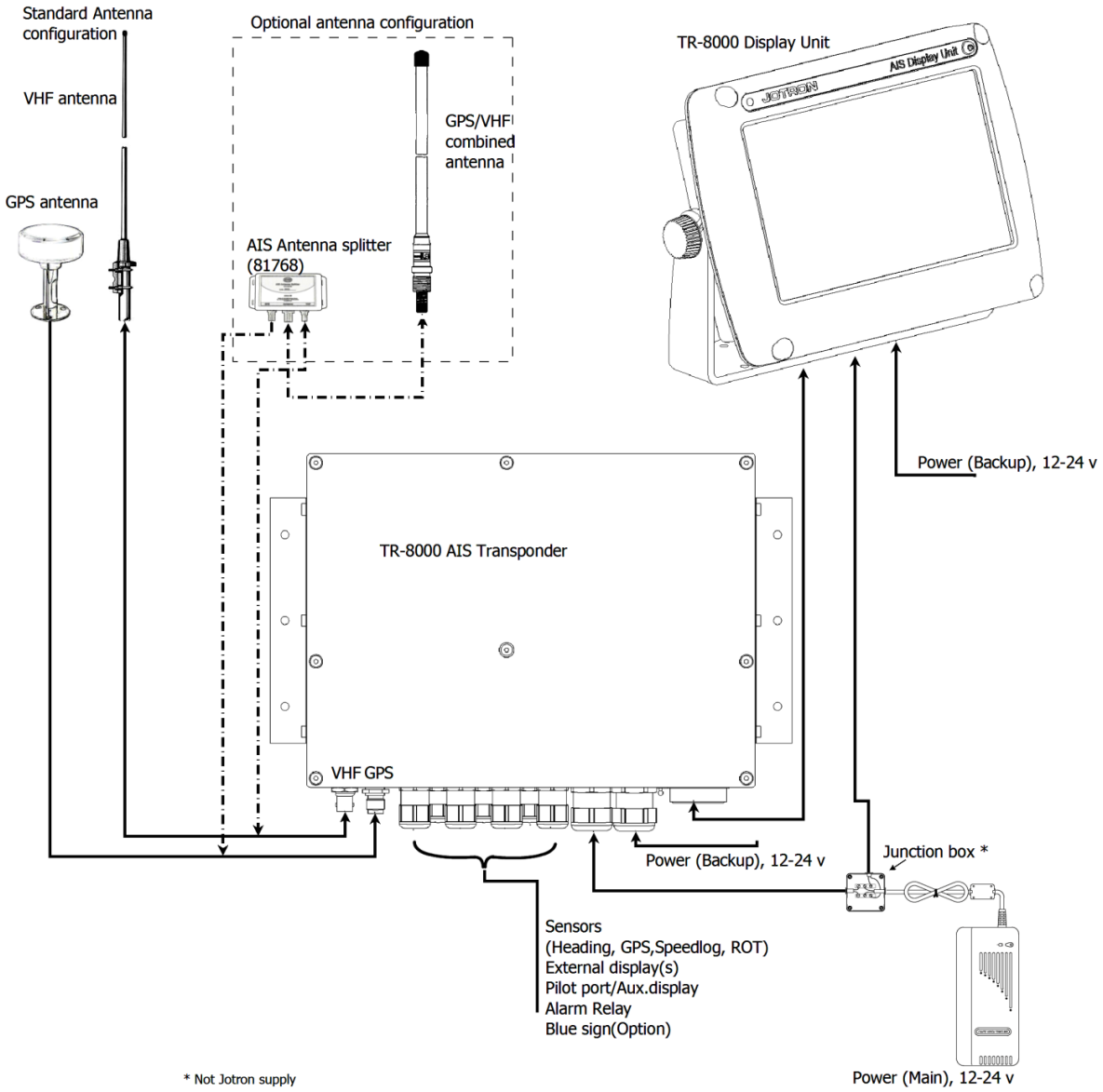


Figure 8-8 Block diagram of typical connections

Wiring and connection of Antennas (GPS + VHF) are described in chapter **8.1.3**

8.3.1 Transponder

In order to connect all sensors and external connections to the Transponder Unit, the lid must be removed by removing the screws on top of the unit. Pay attention to the seal gasket on the inside of the lid and the small o-ring positioned on the center screw. These gaskets need to be in place when mounted in order to keep the unit waterproof. When the lid is off, the connections to sensors, ECS etc can be made. The inner lid shall not be removed by user.

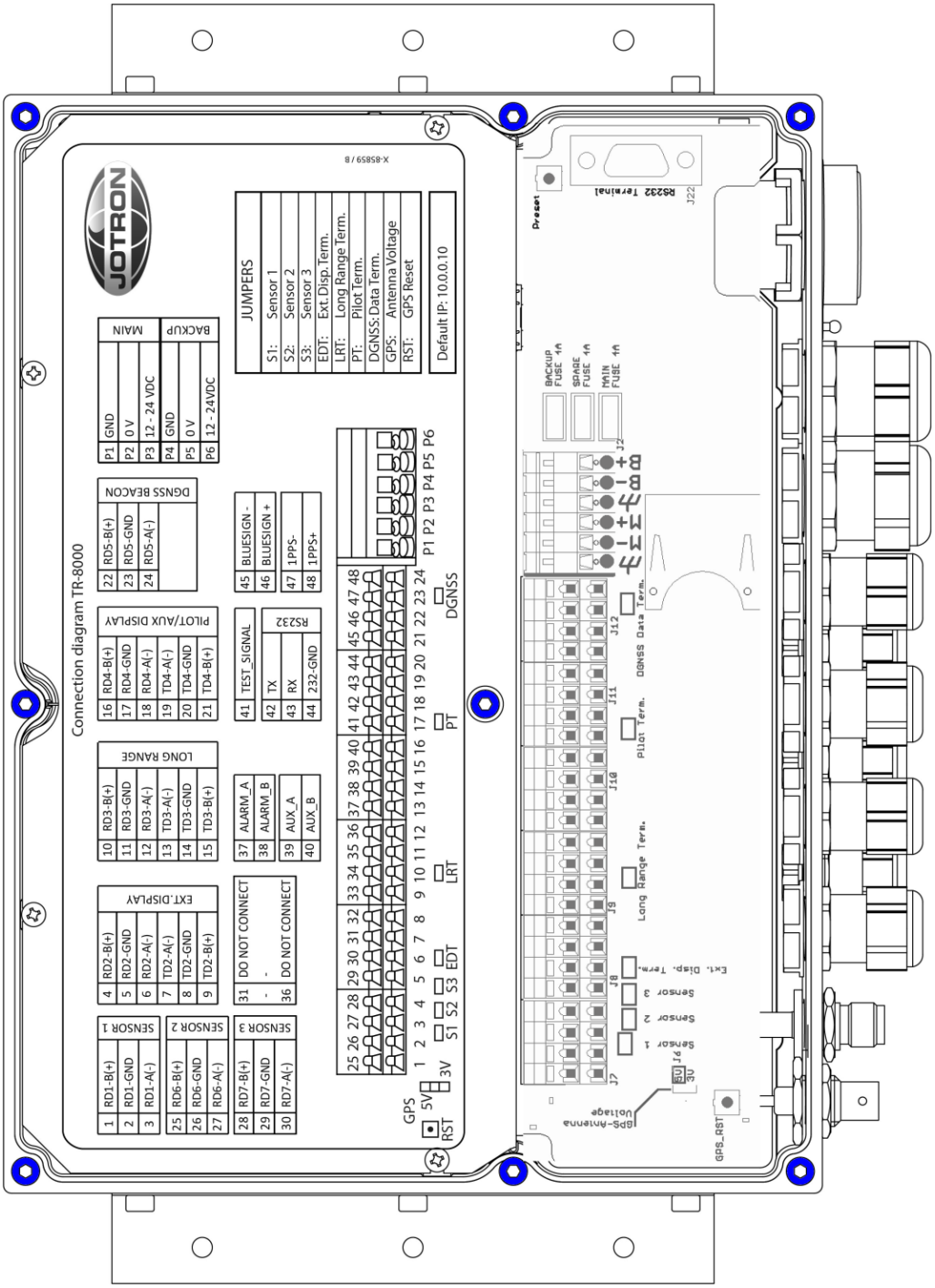


Figure 8-9 Transponder with lid removed, lid screws highlighted

8.3.1.1 *Pictorial display of typical connections to the transponder*

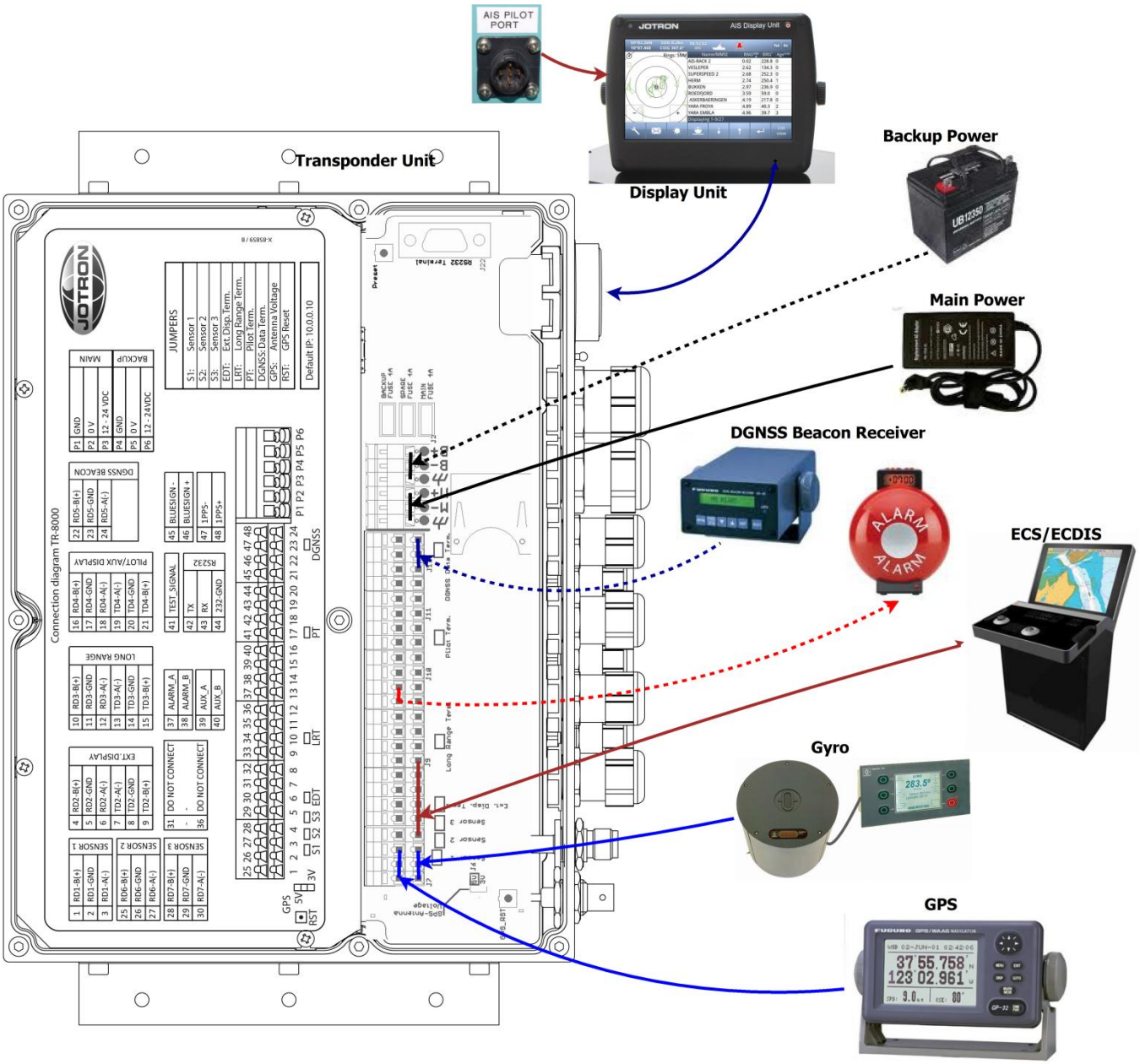
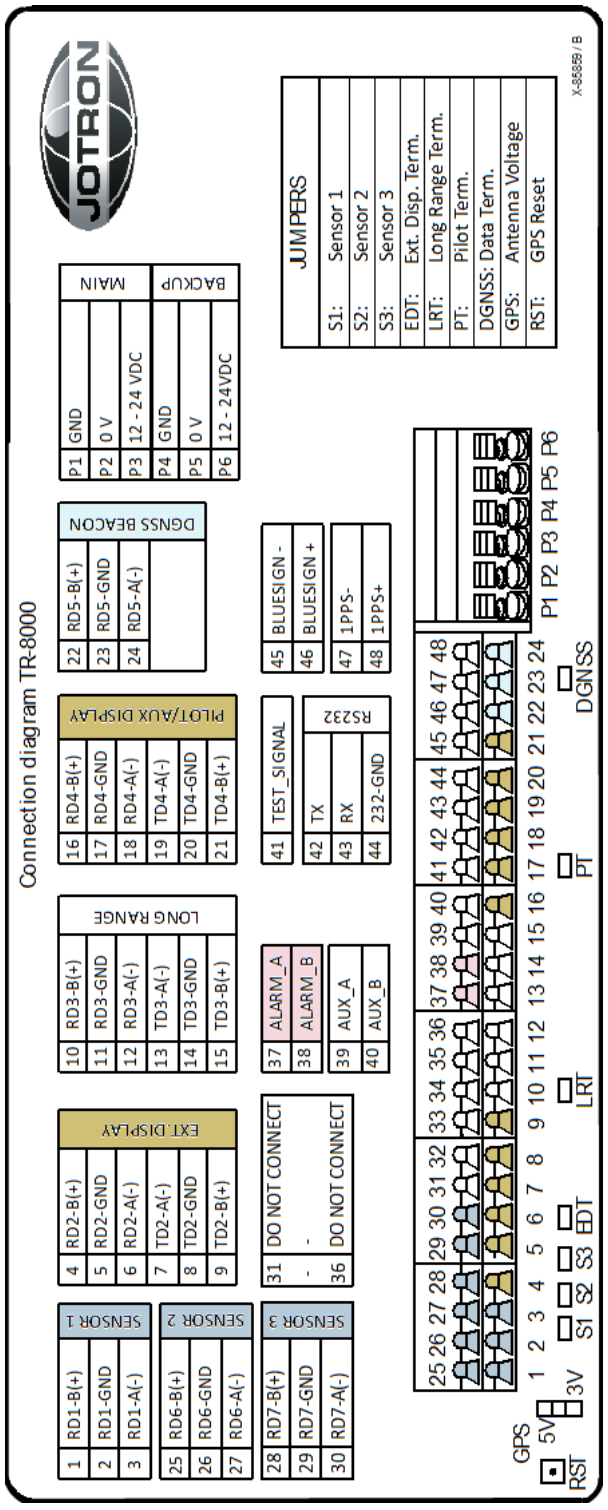


Figure 8-10: Typical connections to a TR-8000 transponder, dashed lines shows options

8.3.1.2 *Label in transponder with connection tables*

Label:



Connections table (Except power):

#	In/ Out	Type	Usage	Name
1	In	IEC61162-1 (RS422)	**Sensor 1**	RD1-B(+)
2				RD1 -GND (Iso Gnd)
3	In			RD1-A(-)
4	In	IEC61162-2 (RS422)	**External Display**	RD2-B(+)
5				RD2-GND (Iso Gnd)
6	In			RD2-A(-)
7	Out			TD2-A(-)
8				TD2-GND (Iso Gnd)
9	Out			TD2-B(+)
10	In	IEC61162-2 (RS422)	**Long Range**	RD3-B(+)
11				RD3-GND (Iso Gnd)
12	In			RD3-A(-)
13	Out			TD3-A(-)
14				TD3-GND (Iso Gnd)
15	Out			TD3-B(+)
16	In	IEC61162-2 (RS422)	**Pilot / Aux Display**	RD4-B(+)
17				RD4-GND (Iso Gnd)
18	In			RD4-A(-)
19	Out			TD4-A(-)
20				TD4-GND (Iso Gnd)
21	Out			TD4-B(+)
22	In	IEC61162-1 (RS422)	**DGNSS Beacon**	RD5-B(+)
23				RD5-GND (Iso Gnd)
24	In			RD5-A(-)
25	In	IEC61162-1 (RS422)	**Sensor 2**	RD6-B(+)
26				RD6-GND (Iso Gnd)
27	In			RD6-A(-)
28	In	IEC61162-1 (RS422)	**Sensor 3**	RD7-B(+)
29				RD7-GND (Iso Gnd)
30	In			RD7-A(-)
31-36	NC			
37	Out	Relay (NO)	**Alarm**	ALARM_A
38	Out			ALARM_B
39	Out	Relay (NO)	**Auxiliary Relay**	AUX_A (Don't connect)
40	Out			AUX_B (---"---)
41	NC	Test signal	**Test signal**	(not isolated)
42	Out	RS232C	**RS232**	TX (Transmit)
43	In			RX (Receive)
44				232-GND(Ground)
45	In	Optoisolated (Connect + and – for activation)	**Bluesign**	BLUESIGN **-** (Inland functionality)
46	In			BLUESIGN **+** (---"---)
47	In	(---"---)	**1PPS**	1PPS **-** (Don't connect)
48	In			1PPS **+** (---"---)

Figure 8-11: Label inside transponder with corresponding table showing details about each connection. It is coloured to differentiate sensors, display/pilot, alarm and DGNSS beacon interface

8.3.1.3 Power connection

Table showing connection of main and backup power

Connection	Function
P1	GND (Chassis)
P2	**MAIN** 0V
P3	MAIN 12 - 24 VDC
P4	GND (Chassis)
P5	**BACKUP** 0V
P6	BACKUP 12 – 24 VDC

See also figure Figure **8-10**

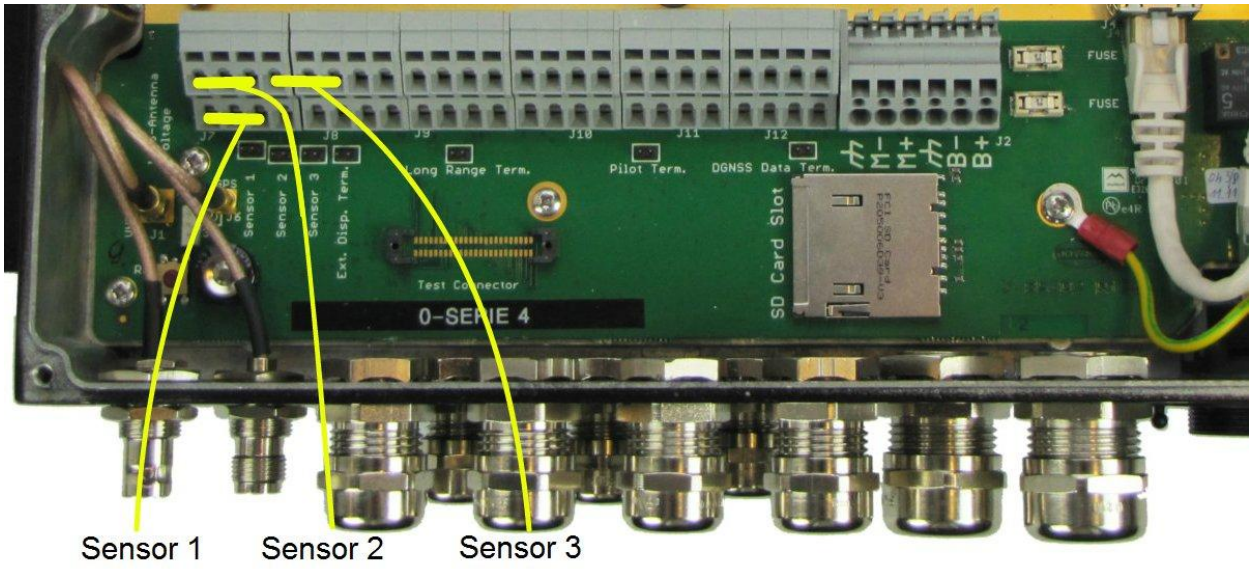
Allowed voltage levels of the power supply to be connected with the transponder:

- Minimum = 10.8 volt
- Maximum = 31.2 volt

Recommended cable diameter: 2.5 – 4 mm^2

8.3.1.4 *Sensor connections*

Sensors like GPS, Gyro, Speed log etc may be connected to the 3 different sensor inputs in the TR-8000 Transponder unit.



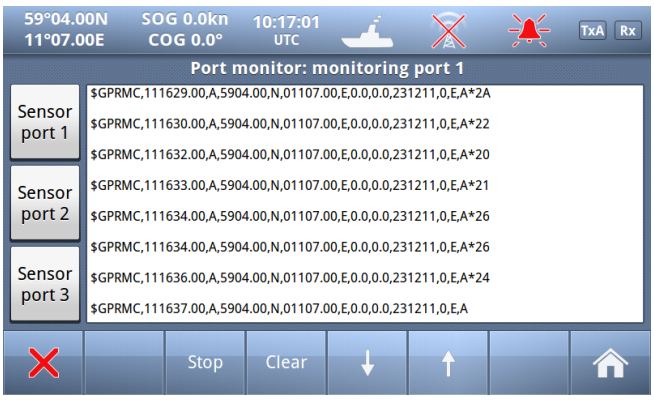
Recommended cable diameter: 0.25 - 2.5mm^2

#	In/ Out	Type	Usage	Name
1	In	IEC61162-1 (RS422)	**Sensor 1**	RD1-B(+)
2				RD1 -GND (Iso Gnd)
3	In			RD1-A(-)

25	In	IEC61162-1 (RS422)	**Sensor 2**	RD6-B(+)
26				RD6-GND (Iso Gnd)
27	In			RD6-A(-)
28	In	IEC61162-1 (RS422)	**Sensor 3**	RD7-B(+)
29				RD7-GND (Iso Gnd)
30	In			RD7-A(-)

The TR-8000 also offers a unique feature of troubleshooting sensor problems as it has a built in "Port monitor" which will display all raw sensor data in the Display Unit.

How to use this monitor, is described in chapter **10.2.1.6**



8.3.1.5 *External display – ECDIS/Radar connections*

The TR-8000 have a very flexible solution when it comes to connecting ECS/ECDIS, Modern Radar or Chart plotter for displaying AIS data on a more advanced display than the TR-8000 Display unit, which only gives you basic text/graphic information.
On modern ECS, Radars, Chart plotters etc. the vessels received by the TR-8000 will be shown as a separate "Layer" or "Overlay" with configurable alarms on collision probability (CPA/TCPA) together with high resolution accurate charts.

The TR-8000 Transponder unit can be connected in three different ways:

1. RS422 (Default) , connections 4-9
2. RS232 , connections 42-44
3. Ethernet (UDP), connected either instead of the TR-8000 display unit, or together with a network Switch in parallel with the Display Unit

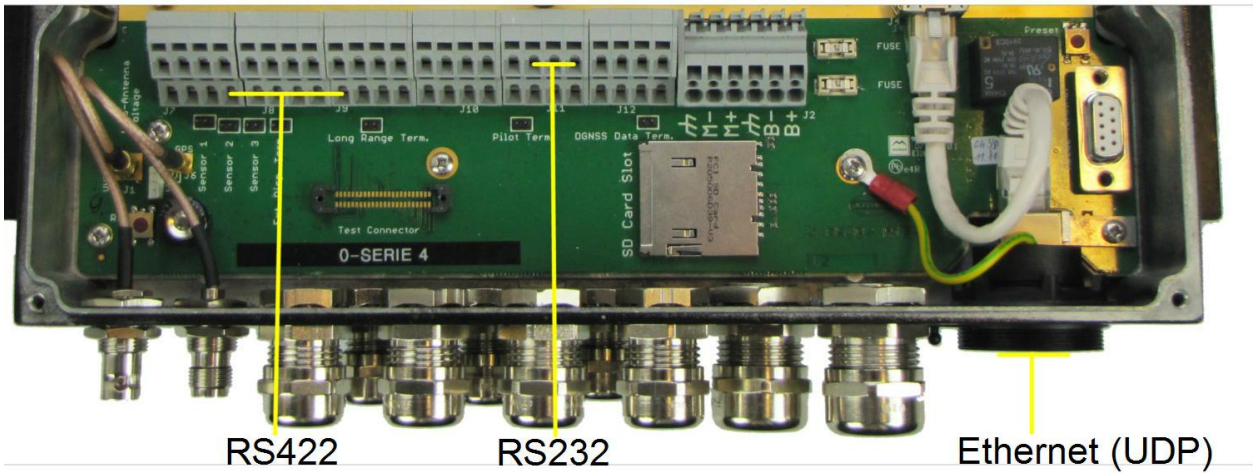


Figure 8-12 External display connections

See also chapter 10.2.1.2 which describes how to configure "External Display" options and table in chapter 8.3.1.2 for details of pinouts

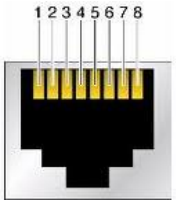


Figure 8-13 Ethernet RJ45 connector

Default speed on this port is 38400 baud.

#	In/Out	Type	Usage	Name
4	In	IEC61162-2 **RS422**	**External Display**	RD2-B(+)
5				RD2-GND (Iso Gnd)
6	In			RD2-A(-)
7	Out			TD2-A(-)
8				TD2-GND (Iso Gnd)
9	Out			TD2-B(+)

42	Out	**RS232**	**External Display**	TX (Transmit)
43	In			RX (Receive)
44				232-GND(Ground)

#	In/Out	Type	Usage	Name
1	**Out**/In	**Ethernet (UDP)** 100Base-T	**TR-8000 Display Unit Or External Display**	**TX+** / RX+
2	**Out** /In			**TX-** / RX-
3	**In**/Out			**RX+** / TX+
4	-			-
5	-			-
6	**In**/Out			**RX-** / TX-
7	-			-
8	-			-

Please note! The "Ethernet" interface is auto detecting RX and TX similar as a network switch. You don't need to think about crossed cable or not !

8.3.1.6 *Pilot / Aux. Display connection*

This Port may be mandatory to be used with Pilot port connector (See picture below) on some kind of vessels. Otherwise, this port may be used to connect a secondary display (Maybe ARPA radar, if "External display" is connected to ECS/ECDIS)

This port is one of two options to connect a Pilot connector, as it is also possible to connect Pilot port cable to the TR-8000 Display Unit, see chapters 8.3.2 and 10.2.1.3

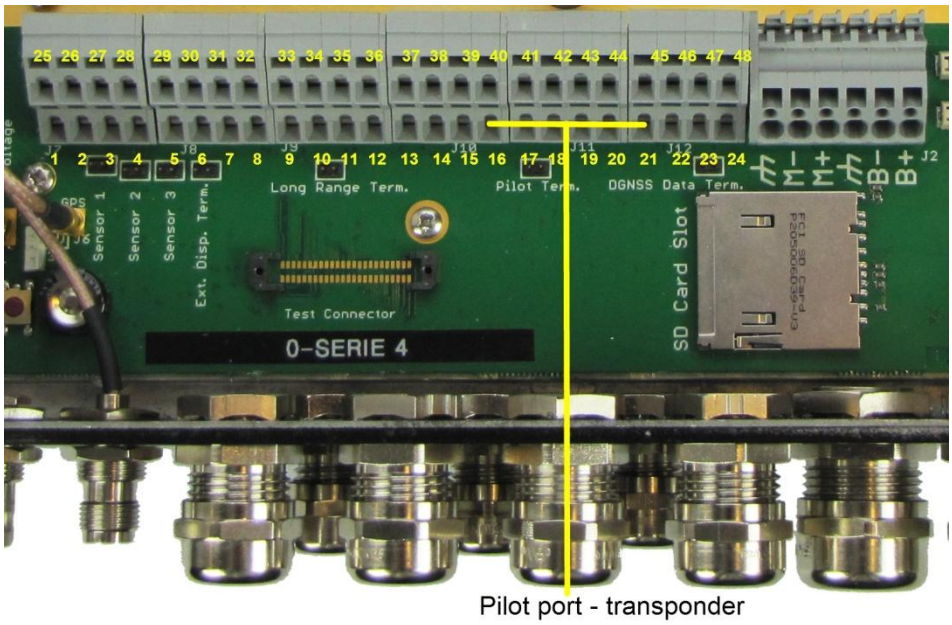


Figure 8-14 Pilot plug with cable

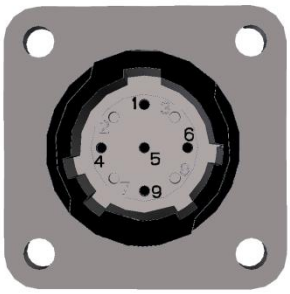


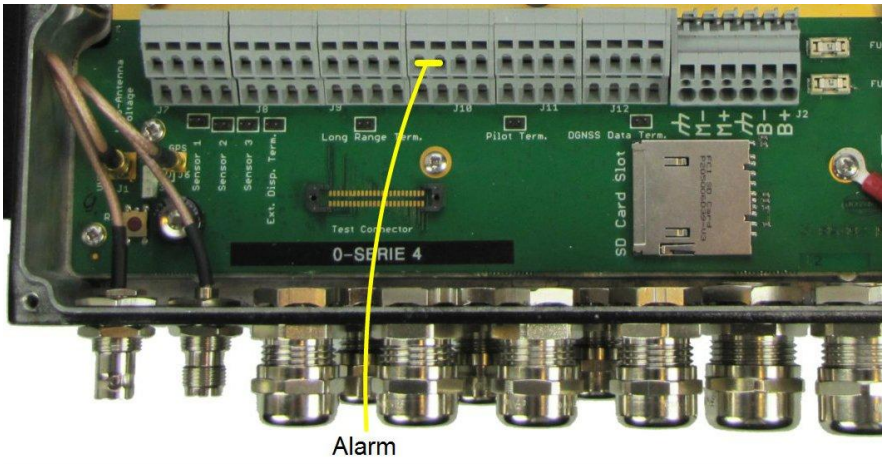
Figure 8-15 AMP 206486-1 (Pilot Plug) pinout

Default speed on this port is 38400 baud.

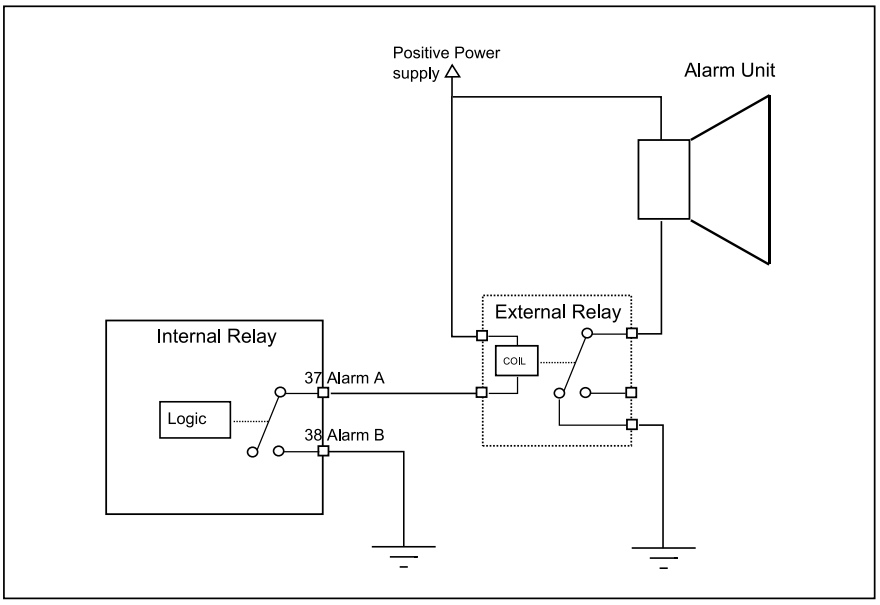
#	In/Out	Type	Usage	Name	Connects to AMP 206486-1 Pin no:
16	In	IEC61162-2 (RS422)	**Pilot / Aux Display**	RD4-B(+)	**6**
17				RD4-GND (Iso Gnd)	**9**
18	In			RD4-A(-)	**5**
19	Out			TD4-A(-)	**1**
20				TD4-GND (Iso Gnd)	
21	Out			TD4-B(+)	**4**

8.3.1.7 *Alarm Connection*

Below picture shows where to connect external alarm to TR-8000



#	In/Out	Type	Usage	Name
37	Out	Relay (NO)	**Alarm**	ALARM_A
38	Out			ALARM_B



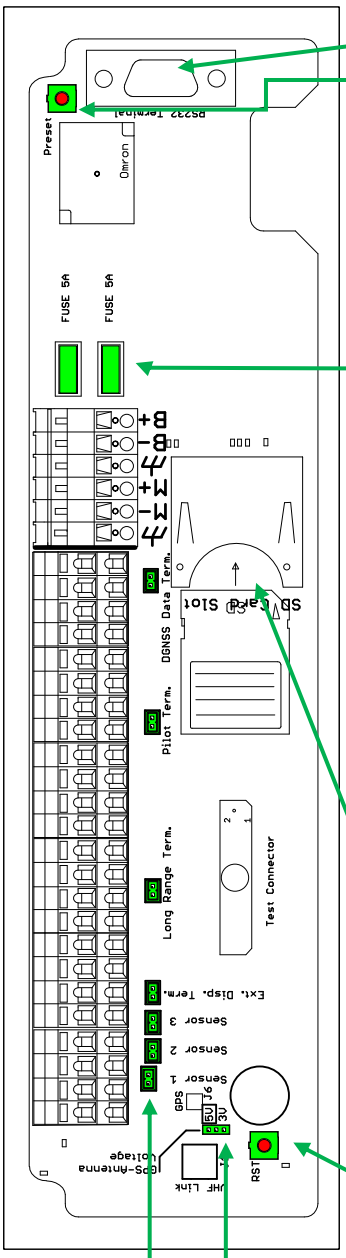
In this configuration, both the external relay and the alarm unit are powered from external power source, and the alarm unit is grounded through the external relay if an alarm occurs or the main power to the AIS is removed or defective.

Other configurations may be used, but remember that the Alarm must function both on AIS Alarm conditions, and power failure to the AIS.

Figure 8-16 Typical Alarm connection

The Alarm relay is a normally open earth free relay contact, provided as an independent and simple method for triggering an external alarm. The alarm relay is active in case of power off and is capable of driving a 2A current. The maximum voltage over the alarm relay must not exceed 48V. The alarm relay is deactivated upon acknowledgment of an alarm, either internally on the display unit, or by an externally provided ACK sentence. If the Transponder power is lost, and the Alarm relay has power, the alarm will be triggered. In this case, the only way to deactivate the Alarm is to power the Transponder unit or disconnect the power source of the Alarm relay.

8.3.1.8 *Detailed description of connections, fuses, factory reset etc.*



1 The RS-232 terminal is only for factory use

2 The upper right preset button can be used to restore factory settings at two levels. It is assumed that no SD card is present in the transponder SD card reader.

a. To reset the IP settings for the transponder and the connection to the display to default values if these setting have been reconfigured and are unknown:

- Press the upper right preset button and apply power. Keep the button pressed until the alarm LED starts flashing after approx. 10 seconds. Then release the button immediately .
- The IP settings are now reset to factory default

b. To restore the complete factory setting, all programmed parameters are lost:

- Press the upper right preset button and apply power. Keep the button pressed.
- Watch the alarm LED carefully, after approx. 10 sec it should start flashing for 5 seconds and then stop. After some seconds it will flash a sequence rapidly.
- The preset button should now be released, and the factory settings are now restored.

3 There are two fuses connected in series with the Main and Backup power. There is no visual indication on fuse failure, but a quick voltage measurement on each side of the fuse should give an indication. If a fuse is blown, consider possible reasons for fuse failure and replace the fuse if the reason for failure is repaired. Spare fuses are provided. If all spares are used, contact distributor. Replace fuses with identical fuses only. Use of other fuses or such will make all warranty void.

4 The SD card reader is used for Software upgrades provided by Jotron only. This must be performed by Jotron trained Dealers/Distributors/Service Agents

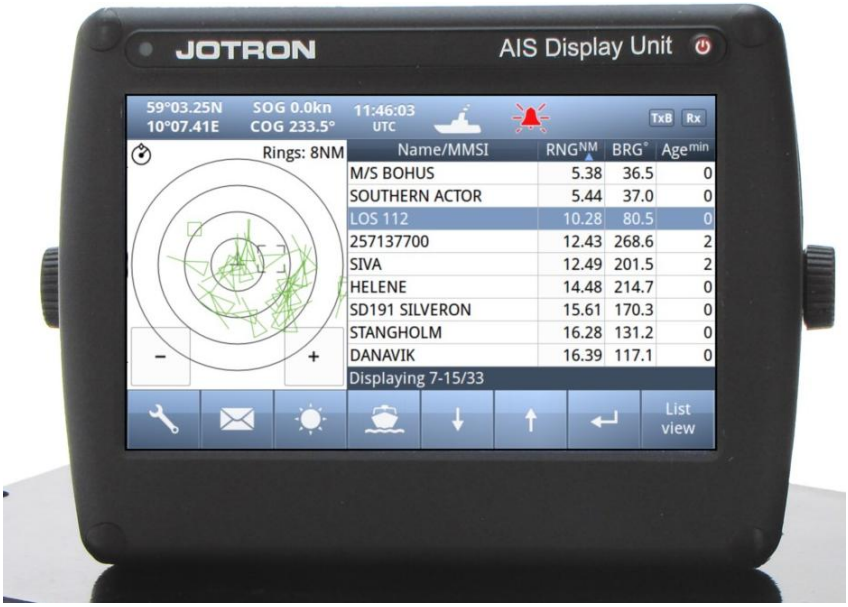
5 The RST button is used to reset the almanac data of the internal GPS in case of error. In order to reset the almanac, power off the unit and then press the RST button for approximately 2s. When you power up the unit again, the internal GPS will use some time to obtain a fix. Approximately up to 15 minutes.

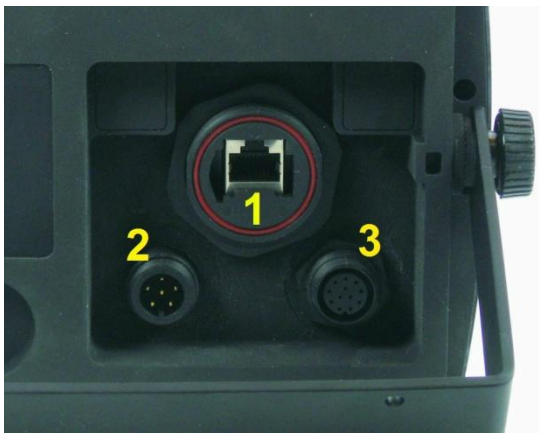
6 The GPS-Antenna Voltage jumper is used to select phantom feed for an active antenna either 5 or 3.3V. The maximum recommended current drawn from these ports is 50 mA.

7 The termination jumpers for the sensors, external display, pilot terminal and DGNSS beacon are made available in order to lower the differential input resistance of the port in order to enable for longer cables. The differential input resistance is approximately 7700 Ohm without jumper and 240 Ohm with the jumper connected.

8 Default Transponder IP address: 10.0.0.10
9 Default Display IP address:10.0.0.11

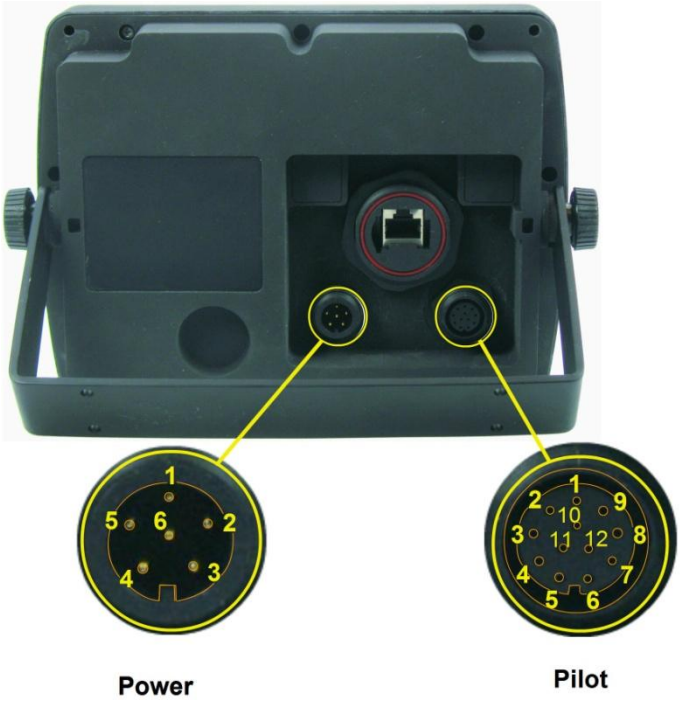
8.3.2 Display Unit:





The TR-8000 Display Unit has three different connectors on the rear

#	Description	Type	Pins	Mating Plug/Socket	Manufacturer	Other
1	**Transponder**	Ethernet Buccaneer/ Jotron	8	Jotron Partno: **86145**	Bulgin	Std delivery: 5m cable with Ethernet Buccaneer in each ends. See **8.2.3**
2	**Power**	Buccaneer	6	PX0410/06/S	Bulgin	Jotron made cable, Partno: **86581**
3	**Pilot**	Buccaneer	12	PX0410/12/P	Bulgin	Jotron made cable, Partno: **86870**



The cable between transponder and display is described in chapter **8.2.3** and below is the "Power" and "Pilot" connectors described.

The type of mating connectors are described in the table on previous page, and for both these connections, a prefabricated cable is a part of standard delivery of a Jotron TR-8000 AIS.

Figure 8-17 Partno.: 86870, Pilot plug cable, Display Unit

Figure 8-18 Partno.: 86581, Power cable, Display Unit

Below is a table showing pinouts for the two connectors:

Power (86851):

#	Name	Colour
1	MAIN 12 - 24 VDC	Green
2	GND (Chassis)	Shield
3	BACKUP 12 - 24 VDC	Yellow
4	BACKUP 0 VDC	Brown (common with 5)
5	MAIN 0 VDC	Brown (common with 4)
6	Do Not connect	

Pilot (86870):

#	Name	Connects to AMP 206486-1 Pin no:
1	Floating Ground	
2	TDA Out	**1**
3	TDB Out	**4**
4	Floating Ground	**9**
5	RDA In	**5**
6	RDB in	**6**
7-12	Do Not Connect	

The Pilot connector may either be connected to the Display Unit as described here, or to the transponder unit as described in chapter **8.3.1.6**

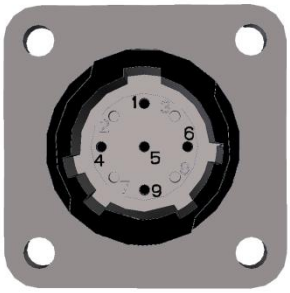


Figure 8-19 AMP 206486-1 Pinout

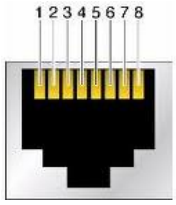


Figure 8-20 Ethernet RJ45 connector

Transponder (RJ45):

#	In/Out	Type	Usage	Name
1	**Out**/In	**Ethernet (UDP)** 100Base-T	**TR-8000 Display Unit Or External Display**	**TX+** / RX+
2	**Out** /In			**TX-** / RX-
3	**In**/Out			**RX+** / TX+
4	-			-
5	-			-
6	**In**/Out			**RX-** / TX-
7	-			-
8	-			-

Please note! The Transponder "Ethernet" interface is auto detecting RX and TX similar as a network switch. You don't need to think about crossed cable or not !

9 Initial configuration

9.1 Short reference for initial configuration

- Fill in **Own Ship** (Ch. **10.1.1**)
  - Ship Name
  - IMO number
  - MMSI –"-
  - Call Sign
  - GPS antenna positions (Internal & external)
  - Type of Vessel

- Check **GPS and position**:
  - internal GPS signal strength (ref ch. **10.2.4**)
  - Current position: (Ref ch.**10.2.8**)

- Configure **External Display Interface**(ch. **10.2.1.2**)
  - RS422, RS232 or Ethernet

- Configure **Pilot port interface**(ch. **10.2.1.3**)
  - Display or Transponder

- Check **External Sensor communication**
  - Indicators (ch. **10.1.4**) - shows Sensors detected
  - Port Monitor (ch. **10.2.1.6**) – shows RAW data from Sensor 1 to Sensor 3

- Check **External Display** communication (ch.**8.3.1.5**)
- Check C**ommunication test** (ch**. 10.2.2.5**)
- Fill in **Voyage Settings** (Ch. **7.3**)
  - Navigational status
  - Destination
  - ETA
  - Draught
  - Cargo Category
- Check **reception of ship in ship list** – normal operation (ch. **7.2.6**)

9.2 Not all ships carry AIS

It is important to remember that not all ships carry AIS, in particular leisure crafts, fishing boats, warships and some coastal shore stations including Vessel Traffic Service Centers.

9.3 Use of AIS in collision avoidance

As an anti-collision aid the AIS has some advantages over radar:

- Capable of instant presentation of target course alternations.
- Not subject to target swap.
- Not subject to target loss in clutter.

- Not subject to target loss due to fast manoeuvres.
- Able to detect ships within VHF/FM coverage.

IMPORTANT

When using the AIS for anti-collision purposes it is important to remember that the AIS is an additional source of navigation information. It does not replace other navigational systems. The AIS may not always give the right picture of the traffic in your area separately.

9.4 Erroneous information

Erroneous information implies a risk to other ships as well as your own. Incorrectly configured or calibrated sensors might lead to transmission of incorrect information. It is the user's responsibility to ensure that all information entered into the system is correct and up to date.

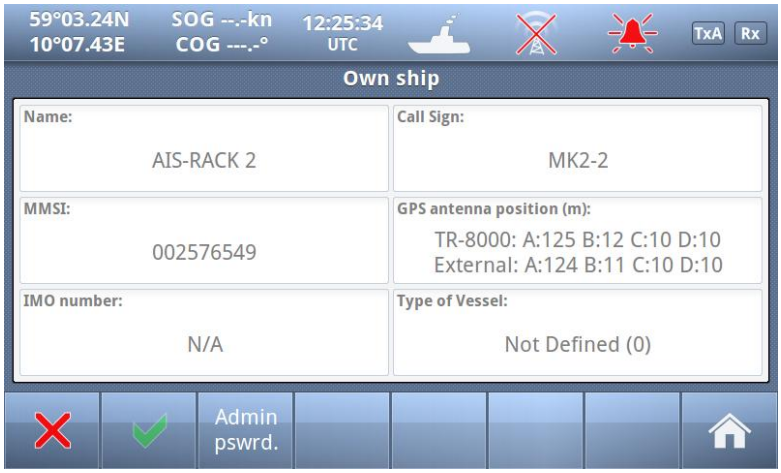
10 Operation Instructions

10.1 Configuration Menu

The AIS configuration menu consists of six menus, containing the settings and configurations most applicable to the user. Some settings are write-protected by administrator password, but the user is always allowed to view the current settings.

10.1.1 Own Ship

The own ship configuration is for setting the static data of the ship and is primarily only used during setup/installation but should also be checked regularly (at least once a month).



See available settings on the display shown here

To be able to change values, the **Admin pswrd** button must be pressed and the password must be entered (Default: SE)

Vessel name, Call sign, MMSI and IMO are all text or numbers and may entered easily

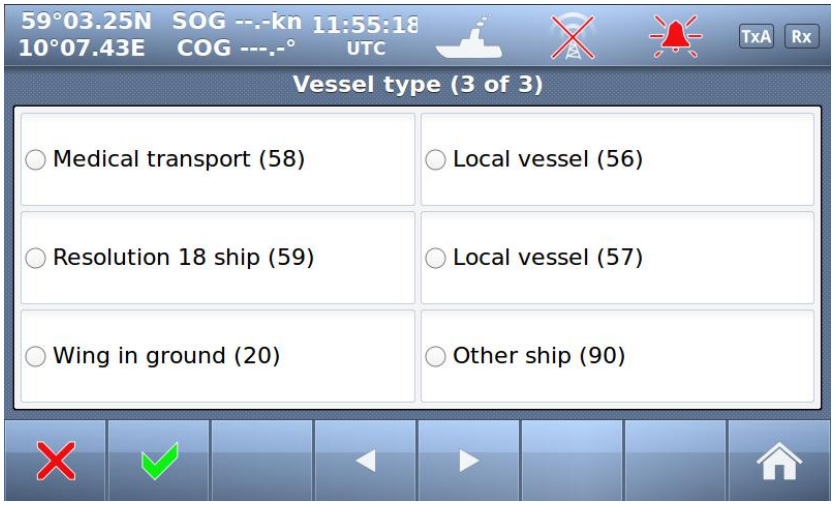
10.1.1.1 Type of Vessel

- Select Type of Vessel
- Confirm with 

Or if not in the list, continue to next page with 

- Select Type of Vessel
- Confirm with 

Or if not in the list, continue to next page with 



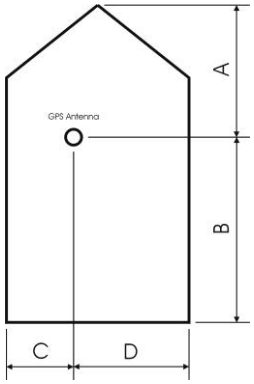
- Select Type of Vessel
- Confirm with 

Or if not in the list, continue to next page with 

10.1.1.2 Ship Dimension and Antenna Position

In order to calculate the correct location of own ship relative to other ships, the exact position of the GNSS antennas and the dimension of the ship need to be specified.

The setting of the Ship Dimensions and the Antenna positions are combined as follows:



A: Distance from bow to GPS antenna position in meters.

B: Distance from stern to GPS antenna position in meters.

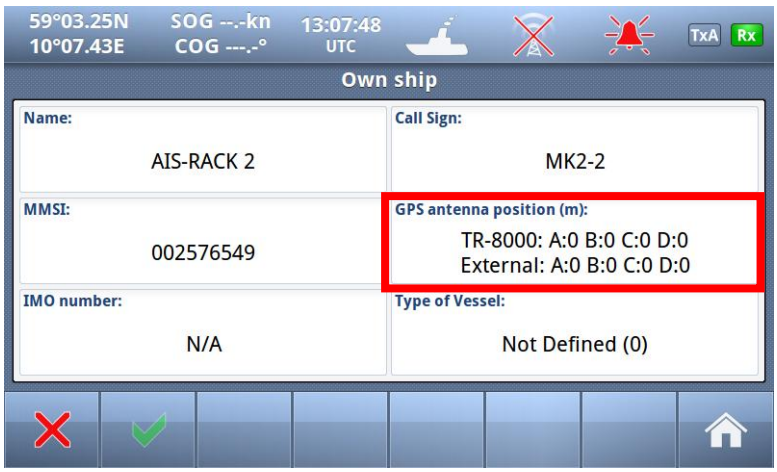
C: Distance from port to GPS antenna position in meters.

D: Distance from starboard to GPS antenna position in meters.

Figure 1: Ship Dimension and GPS antenna position.

Both the position of the internal and the external GPS antenna need to be set

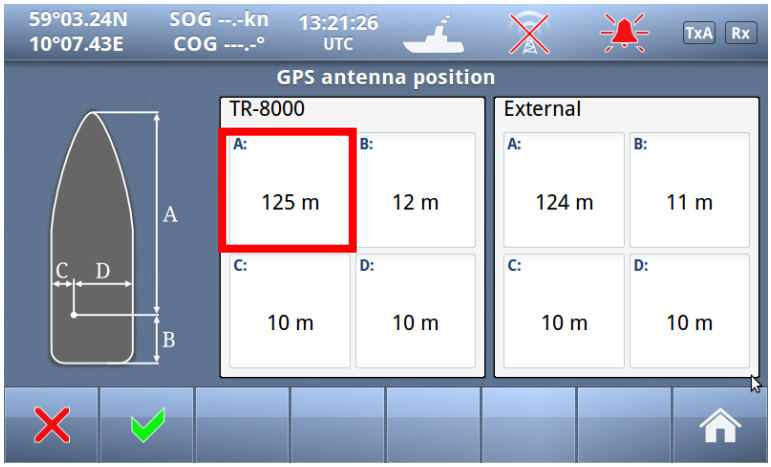
To configure "GPS Antenna position", select directly on the Touch screen:



Red square shows button selected to get to next menu

TR-8000 -> means position of the antenna connected directly or via a signal splitter to the transponder.

External -> means the position of the GPS antenna which is connected to an external GPS which feeds IEC 61162-1 messages to the transponder.

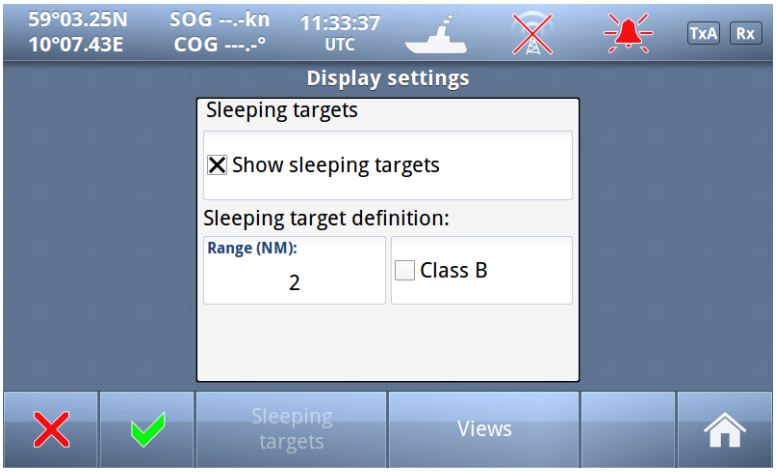


Click on "A"-"D" for "TR-8000" and "External" and input correct values. Then the length and width of the ship will also be defined

10.1.2 Display Settings

Red square shows
button selected to get to next menu

10.1.2.1 Sleeping Targets



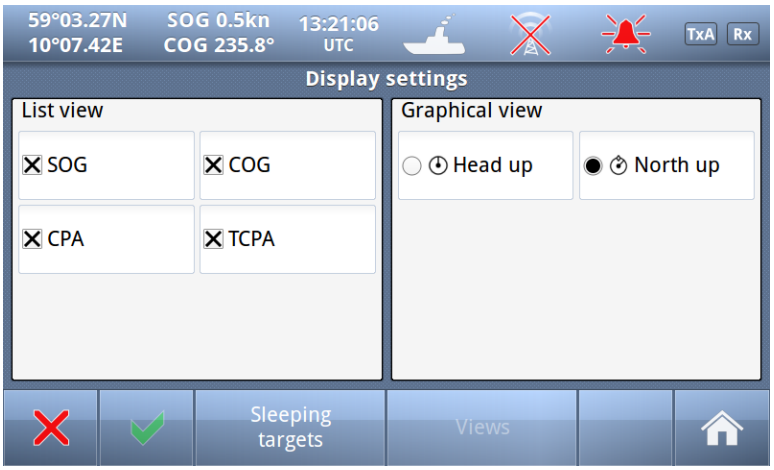
The first “Display settings” menu configures “Sleeping targets” based on:

- Range
- Class B

The “sleeping targets” may not be shown

“Views” may be configured by pressing this button on the “Button Bar”

10.1.2.2 Views



Here we can configure which columns shall be shown in “Ships List” (chapter **7.2.6)** and if we want “Head up” or “North up” in “Graphical view”(chapter **7.2.7**).

10.1.3 Regional Settings

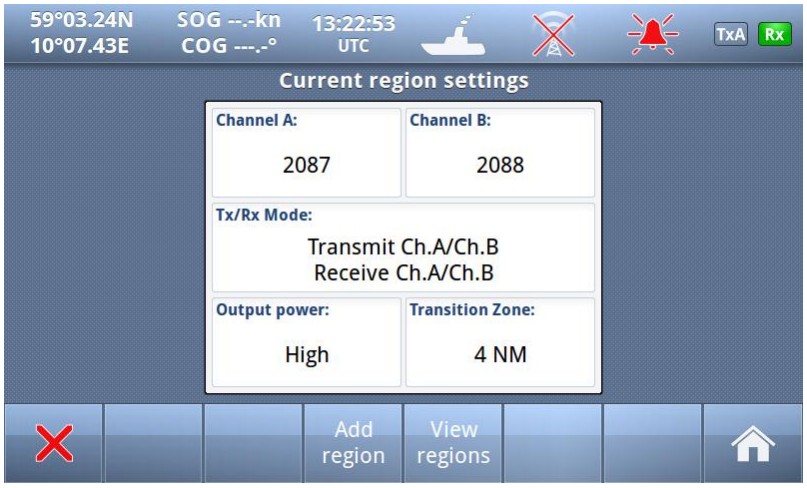
The Regional Settings are primarily used by local base stations to assign special frequencies or transmitter configurations for certain areas. It is also allowable to add or edit the regions, **but this should be done with caution, as incorrect frequency settings for an area will disable the functionality of the AIS system**. Altering the regional settings is protected by a user password. The Area named HIGH SEA, is the default area and contains the whole world, except from the other regions, if defined.

Each Region is defined by the following parameters:

- Area, defined as North East corner and South West corner
- Two channels used for VHF communications
- Rx/Tx mode is used to restrict the transmission to one of the two channels.
- Output Power is chosen between High or Low setting (1W or 12.5W)
- Transitional zone defines the area surrounding an area in order to switch the frequencies in a step by step order. The transitional zone defined between 1 and 8 NM

Red square shows
button selected to get to next menu

10.1.3.1 Current Region settings



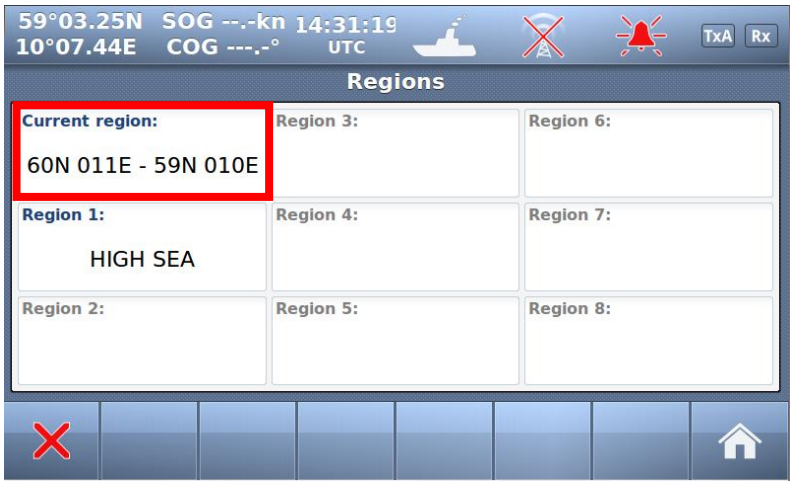
This is “Current Region settings” the TR-8000 is using now

From here, we can either “View” or “Add region”

10.1.3.2 View Regions

It is possible to view the settings of a given region by selecting a region in the regions list and pushing the View Region button.

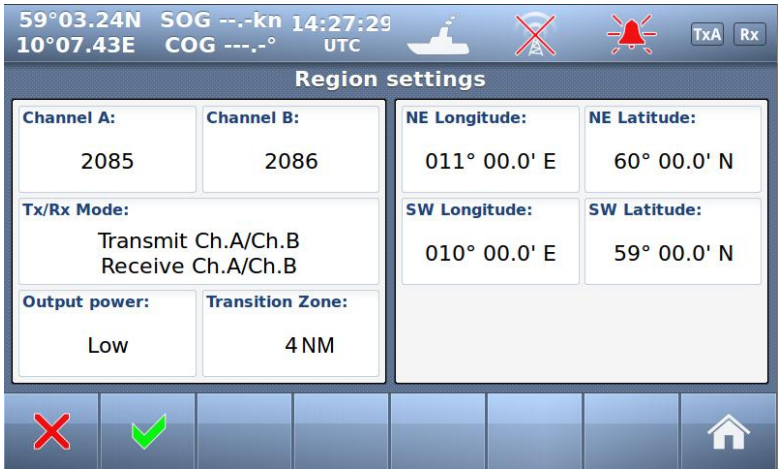
Example of standard TR-8000 without any extra Regions defined



Example configuration with one extra Region defined

Red square shows button selected to get to next menu

10.1.3.2.1 View Custom defined Regions



For Custom defined Regions (Either configured by the user of TR-8000 or configuration is received from an AIS Base Station in a special message) the Region have in addition North East position and a South West position defining the area in which the special settings of :

- Channels
- Tx/Rx mode
- Power
- Transition zone