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List of Abbreviations

Age – time elapsed since a certain moment
AtoN – aid to navigation;
BRG – bearing;
BTW – bearing to waypoint – bearing to the current waypoint;
COG – course over ground;
CPA – closest point of approach – calculated distance to the point where the target will be at the minimum distance from your ship;
CRS – course;
DIST – distance;
DTW – distance to waypoint – distance to the current waypoint;
HDG – heading (direction of the ship centreline plane);
HDOP – horizontal dilution of precision;
LAT – latitude coordinate;
LON – longitude coordinate;
MOB – Man Overboard;
RAD – radius;
RDV – rendezvous;
RMS – route mean square;
ROT – rate of turn;
RTK – real time kinematic;
SBAS – satellite based augmentation system;
SOG – speed over ground;
SPD – speed;
TCPA – time to closest point of approach – calculated time to the moment when the target will be at the minimum distance from your ship;
TTG – time to go – estimated time of sailing for return to the MOB marker position;
UKC – underkeel clearance;
WP [*] – waypoint – waypoint number and name of the currently monitored waypoint;
XTD – cross track distance – actual value of deviation from the plotted course line;

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1. General Information

Transas Pilot PRO for iOS iPad is a navigational application developed for pilot organizations and maritime professionals. The system is designed to assist in navigation and pilotage.

1.1. Hardware Requirements

Transas Pilot PRO version 2.4.0 and higher operates on the devices with Apple iOS 9.3.0 and higher. Old devices like iPad 1 with iOS 5.x.x и 8.x.x are not supported.

It is recommended that the following Apple iPad GSM/Cellular/LTE versions with the built-in GPS be used:

- iPad 2, iPad 3, iPad 4
- iPad Air, iPad Air 2
- iPad mini 2, iPad mini 3, iPad mini 4
- iPad Pro 9.7”, iPad PRO 10.5”, iPad Pro 12.9”
- iPad 2017

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2. How to Install Transas Pilot PRO

► Connect your device to the Internet via the Wi-Fi.
► Open the App Store:

► Find and install the Transas Pilot PRO application by using your Apple ID and password:

ATTENTION: Check that your iTunes [Apple ID] account is active on the device. Apple ID password may be requested.
3. Transas Pilot PRO App First Start

- Run the Transas Pilot PRO application. Upon the first start you will see the following:

![Transas Pilot PRO application screen](image)

- Enter your Pilot PRO login and password provided by Transas. Access to the Transas Pilot PRO application is only available to the registered Transas users. Get registered at [sales@transaspilot.com](mailto:sales@transaspilot.com).

**NOTE:** The login and password requested at this step are different from your Apple ID login and password!

- To activate the application, tap the **Activate** button. Activation requires an Internet connection!

  The first start will be terminated if an incorrect login or password ([Login & Password](#)) is entered for the Transas Pilot PRO application.

![Login Failed](image)

- Tap the **Allow** button to activate the Apple iOS Location Services for the Transas Pilot PRO application:

![Allow iOS Location Services](image)

  This permission is compulsory for operation with the built-in GPS or an external Bluetooth receiver!

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- Swipe right-left top pages or close the window by using the Done button.

Tips can be used for familiarizing oneself with the Transas Pilot PRO functions and control. Tips can subsequently be activated via the Settings / Tips and User Manual menu item.

After the first start, the Transas Pilot PRO application screen looks as follows:
4. How to Install Charts and Updates

For the charts and chart updates to be installed from the Pilot PRO Chart Server, the Internet connection is required. Wi-Fi connection is recommended!

Chart installation normally takes several minutes, but the process is sometimes interrupted by network failures or exit from the program, etc. Do not close the application until the chart folio loading process is completed!

► Tap the icon in the right bottom corner. The Settings screen will open. Select the Chart Folios & Updates menu item:

You will see the TX-97 chart folios available for your Transas Pilot PRO account.

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4.1. Installation of TX-97 Format Charts

- Tap the Download All button in the bottom part of the window to install all the available chart folios.

To install one chart folio, tap the Download button in the row of the required folio:

- Wait until the chart installation is completed. In the course of installation, you will see the following installation status messages:
  - Waiting
  - Loading
  - Installing
  - Install

- Check the installed folio in the Transas Pilot PRO:

4.1.1. Installation of Chart Updates

Chart updates are installed in much the same way as the charts.

The icon indicates availability of updates.

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- Tap the **Update All** button in the bottom part of the window to install all the updates.

  To install updates for only one chart folio, tap the **Update** button in the required folio row.

The ![icon](image) icon disappears after all the updates have been installed.

Installation of updates is associated with a data correction notification from the **Pilot PRO Chart Server** application:

---

### 4.2. Installation of S-57 (S-63) Format Charts ENC

- In the **Chart Folios & Updates** menu, tap **Select Chart Format** and select the S-57 [S-63] ENC item:

- In the bottom part of the **Chart Folios & Updates** menu, select the S-63 User Permit Management menu item:

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The S-63 User Permit menu item:
- Assigns an individual user number used during the purchase and installation of S-63 charts;
- Provides copy protection of bought S-63 ENC charts;
- Operates on only one device. If it is installed on another device, the previous one is locked.

Chart installation settings:
- Use the Catalog.031 = ON file:
  - An archive with charts which contains the Catalog.031 file (S-57) is installed;
  - During the encoded charts installation (S-63).
- Use the Catalog.031 = OFF file:
  - A single “file.000” with a chart (S-57) is installed;
  - The installed archive does not contain the Catalog.031 file (S-57).
- Support of S-63 charts requires the S-63 Service – an annual subscription permits the use of S-63 charts from the third-party suppliers.
- Support of S-57 charts is available free of charge.
- S-57 / S-63 charts operate on 64-bit devices only:
  - iPad mini of the second generation and higher
  - iPad Air of the first generation and higher.

Charts are installed by importing to the application. File import is via the e-mail or iTunes (for details see Chapter 10, User Files: Import and Export).
- To install S-57 / S-63 ENC via a link to an external web server, use the following procedure.
  - Open an e-mail client with a link to an external S-57 / S-63 chart folio. [The Primar Chart server is given in an example below]
- Tap the link which will open in the Safari browser:

- Tap the Open in button and select a link to the Transas Pilot PRO:
For chart import to the Transas Pilot PRO see [Chapter 10].

To focus the device screen on the necessary chart, tap this chart row in the list.
5. Positioning Sources

The Transas Pilot PRO application determines position, heading and speed by using the following positioning sources:

- GPS built into the iPad (available in the Cellular/3G/LTE models only)
- External Bluetooth GPS
- AIS data received via the Pilot Plug connected to the Wi-Fi router
- External NMEA devices via the Wi-Fi (e.g., Channel Pilot Mk II by Navicom Dynamics and others)
  - Built-in GPS unit or an external Bluetooth GPS operates via the Apple’s location service
  - AIS (via the Pilot Plug and Wi-Fi connection) provides own ship data in VDO1,2,3,5 binary sentences
  - NMEA devices (via the Wi-Fi connection) provide data in the NMEA 0183 (or IEC 61162-1 Ed 4.0) standard sentences.

Data sensors block diagram:
5.1. Positioning via iOS Location Services

The Transas Pilot PRO app can receive a signal on the current geographic position from the cell towers, Apple’s internal GPS receiver or external Bluetooth GPS that can also operate via the iOS internal location service.

There are two iPad models:

- **iPad Wi-Fi or iPad mini Wi-Fi** (without integrated GPS chip). To be compatible with Transas Pilot PRO it requires additional connection to an external Bluetooth GPS or NMEA GPS via Wi-Fi. Such devices are suitable for connection to the Class A AIS via a Pilot Plug or external NMEA sensors over a Wi-Fi connection.

- **iPad Wi-Fi + Cellular/LTE or iPad mini Wi-Fi + Cellular/LTE** (with the built-in GPS receiver). These devices are recommended for the Transas Pilot PRO application. The internal GPS can be used for backup positioning purposes.

For the Transas Pilot PRO application to operate on the iPad Wi-Fi models without internal location service, it is necessary to use one of the following Bluetooth GPS devices:


- Turn on the Location Services for the Transas Pilot PRO app:

![Settings](image)

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IMPORTANT: The Assisted GPS system (A-GPS or AGPS) is a fast-acting GPS satellite-based system which improves the system startup performance or enables cold start for a device with a built-in positioning system. Operation of an integrated GPS receiver in an iPad device located inside the ship, boat, etc. depends on the individual material properties of the hull, which in some cases can block radio signals from GPS satellites on their path to the Apple device.

- Open the Settings panel and select the Sensors menu item.

  For operation with a built-in GPS receiver or an external Bluetooth GPS receiver as the primary positioning system, select iOS:

  ![iOS Sensor](image)

  On the Monitoring panel or on the Docking panel, you will GPS: iOS as the primary positioning source. The Apple iOS location service provides latitude, longitude, course-over-ground and speed-over-ground:

  ![iOS Location](image)

5.2. Positioning by NMEA Sensors via Wi-Fi Connection

The Transas Pilot PRO application supports positioning based on the NMEA format GPS data from the third-party supplier devices (e.g., Channel Pilot MkII by Navicom Dynamics or other devices). The application receives the following NMEA data via a Wi-Fi connection: $xxGGA, $xxGLL, $xxRMC and $xxVTG.

- Open the Settings panel and select the Sensors menu item.

  For operation with the Wi-Fi connected NMEA sensors as the primary positioning system, select NMEA:

  ![NMEA Sensor](image)

  On the Monitoring or Docking panel you will see GPS: NMEA as the positioning source. Positioning accuracy is based on the horizontal dilution of precision (HDOP) data received from the incoming $xxGGA data or status received from the incoming $xxGLL or $xxRMC data:

<table>
<thead>
<tr>
<th>HDOP FROM INCOMING GGA</th>
<th>ACCURACY FIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>'Ideal'</td>
</tr>
<tr>
<td>1-2</td>
<td>'Exc.' – Excellent</td>
</tr>
<tr>
<td>2-5</td>
<td>'Good'</td>
</tr>
<tr>
<td>5-10</td>
<td>'Mod.' – Moderate</td>
</tr>
<tr>
<td>10-20</td>
<td>'Fair'</td>
</tr>
<tr>
<td>&gt;20</td>
<td>'Poor'</td>
</tr>
<tr>
<td>Status from incoming RMC/GLL</td>
<td>Accuracy field</td>
</tr>
<tr>
<td>A</td>
<td>'Aut’ – Autonomous</td>
</tr>
</tbody>
</table>

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### 5.3. Positioning by Class A AIS via Wi-Fi Connection

The Transas Pilot PRO application supports positioning by the AIS GPS data via the Pilot Plug, and a real-time display of AIS targets (Class A, Class B, AtoN and shore-based stations) from the AIS transponder.

VDO 1, 2, 3 binary sentences (from the Class A AIS transponder) can be used for the own ship positioning by the AIS GPS data. Data can be received via the TCP protocol (in the case of a single device) or the UDP (for multiple devices). AIS Target data is based on incoming VDM 1, 2, 3, 4, 5, 18, 19, 21, 24a, 24b binary sentences.

In addition, the ship heading (with the ROT if available) can be received over the Wi-Fi connection from the connected Class A AIS transponder.

- Open the **Settings** panel and select the **Sensors** menu item.

  For operation with the Wi-Fi-connected Class A AIS transponder as the primary positioning system, select **AIS**:

  ![Sensors Menu](image)

  On the **Monitoring** or **Docking** panel you will see **GPS: AIS** for the positioning source. Positioning accuracy is based on the information from incoming VDO1,2,3 sentences. There may be only two possible accuracies: **High (<10 m)** or **Low (>10m)** according to the AIS IEC 61993 standard:

  ![GPS: AIS](image)

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5.4. How to Connect Apple iPad to Wi-Fi Sensors

- Run the Settings menu on the iPad:

- Enable the Wi-Fi option;

From the list of Wi-Fi net connections, select the necessary network (e.g., PilotsTECH-V3) or the Wi-Fi NMEA sensor:

![Wi-Fi Settings Screen](image)

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5.5. How to Connect Pilot PRO to Wi-Fi Sensor

- Open the Settings panel and select the Sensors menu item.
  
  From the Sensors menu, select Connection Settings:

- Tap the Add Connection menu item:

- Specify sensor connection settings: connection name, protocol, IP address, port.

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Check the entered data and tap the Back button.

Wait until connection with the sensor is established.

To delete a sensor connection, go to Connection Settings and swipe right-left on the connection until the Delete button appears:
5.5.1. Trace Logger

The trace logger is intended for recording and sending data to the support service should there be any problems with receiving data from NMEA or AIS sources:

- To open the Trace Logger menu, open the Settings panel and select the Sensors item. From the Sensors menu, select Connection Settings:

- Open the Trace Logger

The following operations are available from the Trace Logger menu item:

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- Message filter setup:
  - All
  - Reception
  - Transmission

- Data recording control:
  - Recording
  - Recording time (from 1 to 120 minutes)
  - Pause

  To start the logger operation, use the following procedure:
  - Set the recording time
  - Tap the **Record** button

  The panel will change, a timer with time count will appear:

  Upon expiry of the set time, the following buttons will appear:
  - Export
  - Delete

  For the description of the export procedure, see [Chapter 10](#).

### 5.6. AIS Targets Presentation

- To turn on the AIS targets on-chart display, open the **Settings** panel, select the **Sensors / AIS** menu item and set the **Display Targets** switch to the **ON** position:

  The AIS target symbol colour depends on the ship type:
- **Class A AIS** – standard green targets on small chart scales:

- **Class B AIS** or **Class A AIS** targets – according to the ship type: pleasure craft or sailing ship (blue):

- **Class A AIS** - according to the ship type: pilot boat, tugboat or port tender (dark orange)

  - To obtain information on an AIS target, use the free cursor to tap the target symbol:

You will see the bearing and distance from the own ship to the AIS target, distance or time to the closest point of approach (CPA/ TCPA) for the dangerous targets, and speed over ground (SOG) for the selected AIS target.

In the pop-up window, tap the icon. Information on the AIS target will appear. Use scrolling to view information:

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AIS targets constituting a danger according to the entered CPA / TCPA values for the activated CPA-TCPA alarm are shown in red. A tap on an AIS target posing a danger, causes the CPA - TCPA to be shown instead of the default BRG – DIST values:

Lost AIS targets are marked with a red cross:

The loss of an AIS target means that the target information has not been updated for the Timeout for Data Loss time specified in the table below. The Lost AIS target symbol disappears from the chart area upon expiry of the Timeout for Data Loss time.

<table>
<thead>
<tr>
<th>AIS TARGET TYPE</th>
<th>VDM SENTENCE</th>
<th>DATA LOSS TIMEOUT</th>
<th>DATA DROP TIMEOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>SOG &lt; 2 kt: 380 s SOG &gt; 2 kt: 70 s</td>
<td>SOG &lt; 3 kt: 410 s SOG &gt; 3 kt: 100 s</td>
</tr>
<tr>
<td>Class B</td>
<td>VDM 18, 19</td>
<td>SOG &lt; 2 kt: 380 s SOG &gt; 2 kt: 70 s</td>
<td>SOG &lt; 2 kt: 410 s SOG &gt; 2 kt: 100 s</td>
</tr>
<tr>
<td>Base station</td>
<td>VDM 4</td>
<td>Not applicable</td>
<td>30 min</td>
</tr>
<tr>
<td>AtoN</td>
<td>VDM 21</td>
<td>Not applicable</td>
<td>30 min</td>
</tr>
</tbody>
</table>

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Table 1 AIS target tune transmission interval according to the AIS IEC 61993-2 Ed 1.0 standard

<table>
<thead>
<tr>
<th>AIS TARGET TYPE</th>
<th>MESSAGE</th>
<th>PROPERTIES</th>
<th>REPORTING INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>AIS nav. status “At anchor” or “Moored” SOG &lt; 3 kt</td>
<td>3 min</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>AIS nav. status “At anchor” or “Moored” SOG &gt; 3 kt</td>
<td>10 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG: 0 – 14 kt.</td>
<td>10 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG: 0 - 14 kt and ROT&gt;10 deg/min</td>
<td>3.3 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG: 14 – kt</td>
<td>6 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG: 14 – 23 kt and ROT&gt;10 deg/min</td>
<td>2 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG &gt; 23 kt</td>
<td>2 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 1, 2, 3</td>
<td>Any other AIS status and SOG &gt; 23 kt and ROT&gt;10 deg/min</td>
<td>2 s</td>
</tr>
<tr>
<td>Class A AIS</td>
<td>VDM 5, 24a, 24b</td>
<td>Voyage and static data</td>
<td>6 min and data has changed</td>
</tr>
<tr>
<td>Class B AIS “CS”</td>
<td>VDM 18</td>
<td>SOG &gt; 2 kt</td>
<td>30 s</td>
</tr>
<tr>
<td>Class B AIS “CS”</td>
<td>VDM 18</td>
<td>SOG &lt; 2 kt</td>
<td>3 min</td>
</tr>
<tr>
<td>Class B AIS “CS”</td>
<td>VDM 19, 24a, 24b</td>
<td>Voyage and static data</td>
<td>6 min and data has changed</td>
</tr>
<tr>
<td>Base station</td>
<td>VDM 4</td>
<td>Static data</td>
<td>10 s</td>
</tr>
<tr>
<td>AtoN</td>
<td>VDM 21</td>
<td>Static data</td>
<td>3 min by default, can be configured by base stations (VDM 23)</td>
</tr>
</tbody>
</table>
6. Application Settings Panel

To open the Settings panel, tap the button.

The Settings panel contains the following menu items:

- Colour Palettes: Daytime, Dusk, Night (see Chapter 6.1)
- Chart Folios and Updates (see Chapter 4)
- Ship Settings (see Chapter 6.2)
- Sensors (see Chapter 6.3)
- Alarms (see Chapter 6.4)
- Chart Settings (see Chapter 6.5)
- Import (see Chapter 6.6)
- Export (see Chapter 6.7)
- Units and Languages (see Chapter 6.8)
- User Info (see Chapter 6.9)
- Feedback (see Chapter 6.10)
- Tips and User Manual (see Chapter 6.11)
- About (see Chapter 6.12)

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6.1. Colour Palettes

The **Day**, **Dusk** and **Night** button permit selection of the screen presentation mode:

![Colour Palettes](image)

Examples of the Day/Dusk/Night presentations:
6.2. Ship Settings

The **Ship Settings** menu item enables the following operations and settings:

- **Own ship MMSI**

  Supplied to the Transas Pilot PRO via the connection to the AIS Pilot Plug In AIVDO and is used exclusively in the primary GPS: [AIS] (for more details see Chapter 6.4, Sensors menu).

  Set the MMSI as of the own ship in the AIS target information by using the Internet AIS Service (see Annex I).

  Gyro/ROT data is sent to the Navicom Dynamics Channel Pilot Mk2 sensor over the Wi-Fi connection (see Annex II - “Channel Pilot Mk2 Sensor”). The MMSI can be entered manually in the menu item or by using the **Set as Own Ship** button in the bottom part of the AIS target data card:

  ![AIS Target Data Card]

  If the **Reset for New Ship** option is enabled, there will be a warning that the own ship MMSI will change:

  ![Warning Message]
To reset the previous ship settings, tap the OK button.

To save the current ship settings, tap the Cancel button.

- **Ship Draft**
  
  This setting is intended for adjusting the own ship maximum draft and can be used for calculating tides and currents (see Annex I).

- **UKC – Underkeel Clearance**
  
  This setting is intended for adjusting the own ship underkeel clearance and can only be used for calculating tides and currents (for details see below Annex I – Advanced Data Module).

- **Ship Dimensions**

  These settings are intended for specifying the own ship dimensions (length and breadth) in the manual or automatic mode (from the class A AIS data) and position of the GPS antenna and conning station in use:

  For the Class A AIS own ship data is updated every 6 minutes.

Date of issue: Version 2.4.0. May 2018
- Set the **Get Dimensions from AIS** to the **ON** position and wait until the AIS system GPS position is received from the Class A AIS transponder. The received data will be shown in white fonts, data that has not been updated for a long time is shown in red.

- Set the **Get Dimensions from AIS** to the **OFF** position for the manual adjustment and updating of the automatically received data.

- **Distance Base Points**

  These settings are intended for specifying four distance reading reference points (bow port, aft port, bow starboard and aft starboard) that can be used as part of the distance line functionality [see Chapter 8.1](#).

![](image)

**NOTE:** Base points on the bow, stern, mid portside and mid starboard have definite positions and cannot be edited.

For a reset to the default values for the editable distance base points, use the **Reset All** button.

- **Vectors**

  To set the COG-SOG and HDG-SOG vector length for the own ship and displayed AIS targets;

- **Autoscaling**

  To set a fixed size for the own ship and AIS target vectors on different chart scales.

  These settings are not applicable to the following vectors in the docking mode: resulting COG vector and speed vectors (fore and aft). These vectors have their own speed scale [see Chapter 8.1](#).

- **Own ship position predictor settings:**
  - **Predictor: Time Ahead** – time ahead value for the pre-calculated positions within the range of 15 seconds to 6 minutes, the time step is 15 seconds;
  - **Predictor: Number of Symbols** – number of displayed ship symbols for the specified time ahead: from 1 to 10 symbols. The **Symbols** prediction type is applicable exclusively to the motion prediction: number of symbols.

**Date of issue:** May 2018
- **Predictor Type: Symbols or Contour** – presentation of the own ship position prediction type: by using the ship symbols or points, or by using an outlined ship contour and one predicted ship symbol in accordance with the specified time ahead value.

![Predictor Type Diagram]

### 6.3. Sensors

The **Sensors** menu item permits the following operations and settings:

![Sensors Menu]

**Primary GPS:**
- **iOS** – positioning from the Apple iOS Location Service (from the built-in or external Bluetooth GPS receiver);
- **AIS** – positioning from Class A AIS system via Wi-Fi
- **NMEA** – positioning from the third party NMEA devices via Wi-Fi.

**Heading sensor** – to select the heading data source:
- **OFF** – heading data is not available
- **AIS** – from Class A AIS system via Wi-Fi
- **NMEA** – from the third party NMEA devices via Wi-Fi.

**Rate-of-Turn data** – to select the rate-of-turn data source:
- **OFF** – rate-of-turn data is not available
- **AIS** – from Class A AIS system via Wi-Fi
- **NMEA** – from the third party NMEA devices via Wi-Fi.
- **CALC** (calculation) – to use calculated rate-of-turn data, calculations based on the incoming heading data, representing an average value from 10 most recent heading readings.

![Connection to AIS & NMEA]

**Connection to AIS and NMEA** – to adjust settings of connection to an external AIS system via the Pilot Plug over the Wi-Fi or to the sensor of third party NMEA devices [see Chapter 5.5].

---

**Date of issue:** Version 2.4.0. May 2018
NMEA—adjustment of incoming NMEA data filters:

- **Position** – to select processing of the incoming NMEA messages from the Primary GPS: NMEA. The ALL setting means that all the supported NMEA sentences will be processed. The alternative option enables selection of a particular NMEA sentence for positioning purposes: GGA, GLL or RMC.

- **COG & SOG** – to select processing of the incoming NMEA messages from the Primary GPS: NMEA sensor. The ALL setting means that all the supported NMEA sentences will be processed. The alternative option enables selection of a particular NMEA sentence for obtaining data on the course over the ground: VTG or RMC.

- **Heading sensor** – select processing of the incoming NMEA messages from the Compass: NMEA sensor. The ALL setting means that all the supported NMEA sentences will be processed. The alternative option enables selection of a particular NMEA sentence for obtaining heading data: HDT (recommended), THS (recommended), VHW [True], VHW [Magnetic], HDM [Magnetic], HDG [True] or HDG [Magnetic].

- **Calculated COG & SOG** – this parameter permits the use of the COG & SOG calculated from changes in the LAT & LON. This setting is recommended with the use of the Navicom Dynamics ChannelPilot during the low-speed operations.

- **Wind sensor** – to obtain true and relative wind data from NMEA wind speed indicator via the Wi-Fi connection (TCP or UDP) and the following NMEA sentences: MWD [true], MWV [true], MWV [rel.] and VWR [true].

- **Echo Sounder** – to obtain water depth and temperature data from NMEA echo sounder via the Wi-Fi connection (TCP or UDP) and DPT, DBT, DBS and DBK NMEA sentences.

AIS is intended for handling AIS targets:

- **Display targets** – to turn ON / OFF the display of AIS targets on the chart.

- **ID for AIS targets** – to set up presentation of AIS target labels in the chart area. There may be the following settings:
  - **NONE** – no label

Date of issue: May 2018
NAME – the ship name in the AIS system is provided next to the target symbol

CALL - the ship Call Sign in the AIS system is provided next to the target symbol

MMSI NAME - the ship MMSI name in the AIS system is provided next to the target symbol.

Internet ‘AIS’ Service – to turn ON / OFF the display of Internet AIS targets (option) [see Annex 1].

DR for Targets – to update target positions on the chart.

Advanced Data Logging is used for recording and exchanging a full set of track data:

- ship position
- speed
- heading
- course
- sounder data
- rate of turn
- nearby AIS targets
- data sources
- monitored route
- current alarms and their parameters.

To enable data logging, set the Data Recording switch to the ON position:

Additional data will not be logged unless the track is recorded (see Chapter 8.2.4, Track Recording).

Transas Pilot PRO does not delete the recorded data automatically. If the stored data occupies too much space, tap Storage Auto-Deletion to determine how long the advanced data will be stored. The possible values are within the range of 2 days to 6 months or Never.

iOS - setting for operation with the internal built-in GPS or external Bluetooth GPS via the Apple iOS Location Service:

Background position tracking – to turn ON/OFF position tracking in the Transas Pilot PRO application background mode. It is only used for the primary positioning system (PrimaryGPS:iOS)

ATTENTION: In this mode, your device batteries will discharge faster.
6.4. Alarms

**Alarm**—continuous audio and red visual signal announcing a condition requiring immediate operator attention or action.

**Warning**—time-limited yellow visual signal announcing a condition requiring operator’s attention for precautionary reasons.

**To Turn Alarm ON**

To turn the alarm on, set the switch to the **ON** position.

The following list of alarms and warnings will appear:

![Alarm and warning list](image)

Alarm and warning generation conditions are described below.

- **Primary GPS Fail** alarm

<table>
<thead>
<tr>
<th>PRIMARY GPS</th>
<th>ALARM GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS</td>
<td>No position data supplied by the iOS for 1 minute, accuracy is worse than 20 metres</td>
</tr>
<tr>
<td>AIS</td>
<td>No valid position report (VD01, 2, 3) from Class A AIS for the last 15 seconds. NOTE: Class A AIS system is required to transmit position report (VD0,1 message) via the Pilot Plug once a second.</td>
</tr>
</tbody>
</table>

Date of issue: May 2018
### NMEA

| NMEA | No valid position report [GGA, GLL or RMC] from the external NMEA device GPS sensor for the last **15 seconds** |

#### Wi-Fi: Connection Lost alarm – to turn ON/OFF alarm generation:

<table>
<thead>
<tr>
<th>AIS OR NMEA SENSOR</th>
<th>ALARM GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wi-Fi connection</td>
<td>Loss of Wi-Fi connection to an external sensor [AIS or third party NMEA devices]. This alarm is not enabled unless there is a TCP connection, and is not applicable to the UDP mode.</td>
</tr>
</tbody>
</table>

#### Anchor Watch alarm – to turn ON/OFF alarm generation

<table>
<thead>
<tr>
<th>ANCHOR WATCH</th>
<th>УСЛОВИЯ ПОЯВЛЕНИЯ АЛАРМА</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset radius of the anchor watch circle</td>
<td>The ship position from the primary positioning system us beyond the user-set anchor watch circle</td>
</tr>
</tbody>
</table>

#### Navigational danger alarm – to turn ON/OFF alarm generation.

<table>
<thead>
<tr>
<th>NAVIGATIONAL DANGER</th>
<th>ALARM GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset radius of a circle around the ship identifying dangers within the range.</td>
<td>Crossing: Dangerous Depth [the red colour]; Safety Contour [the red colour]; All the charts under the ship are analysed.</td>
</tr>
</tbody>
</table>

#### Out of XTD alarm – to turn ON/OFF alarm generation:

<table>
<thead>
<tr>
<th>XTD</th>
<th>ALARM GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check XTD settings for the selected route</td>
<td>When the actual XTD value exceeds the preset width of an XTD lane for the selected route</td>
</tr>
</tbody>
</table>

#### CPA-TCPA (distance to the point of closest approach – time to the point of closest approach) alarm – to turn ON/OFF alarm generation:

<table>
<thead>
<tr>
<th>CPA-TCPA</th>
<th>ALARM GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dangerous AIS target</td>
<td>When an approaching AIS is at a distance closer than the CPA, or when the time to closest point of approach is shorter than the TCPA</td>
</tr>
</tbody>
</table>

#### Primary GPS Low Accuracy warning – to turn ON/OFF warning generation:

<table>
<thead>
<tr>
<th>PRIMARY GPS SYSTEM</th>
<th>WARNING GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>iOS</td>
<td>iOS Location Service provides position with an accuracy worse than <strong>20 meters</strong></td>
</tr>
<tr>
<td>AIS</td>
<td><strong>Low Accuracy &gt; 10 m</strong> message is received from Class A AIS [VD01,2,3].</td>
</tr>
<tr>
<td>NMEA</td>
<td>HDOP&gt;10 message is received from the external NMEA sensor [GGA.]</td>
</tr>
</tbody>
</table>

#### Approach to Waypoint warning – to turn ON/OFF warning generation:

<table>
<thead>
<tr>
<th>DISTANCE TO WAYPOINT</th>
<th>WARNING GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set distance-to-waypoint value</td>
<td>The warning is generated if the distance to the next waypoint is smaller than the set value. Distance to the radius origin point is used instead of a distance to the waypoint if the turn radiuses were set for the route in question.</td>
</tr>
</tbody>
</table>

Date of issue: Version 2.4.0. May 2018
Switching to the Next WP warning – to turn ON/OFF warning generation:

<table>
<thead>
<tr>
<th>WAYPOINT SWITCHING</th>
<th>WARNING GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable or disable switching-to-next-WP warning</td>
<td>This warning is generated when the ship passes the current WP in the monitored route. The warning is generated after passing of the radius origin point if turn radiiuses were set for the given route waypoints.</td>
</tr>
</tbody>
</table>

Parking System signal – to turn ON/OFF

<table>
<thead>
<tr>
<th>PARKING SYSTEM</th>
<th>SIGNAL GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets a safe distance</td>
<td>The acoustic signal is generated when the range to the enabled distance lines is smaller than the set safe distance value.</td>
</tr>
</tbody>
</table>

ROT signals – to turn ON/OFF

<table>
<thead>
<tr>
<th>ROT</th>
<th>SIGNAL GENERATION CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn radius monitoring</td>
<td>The signal is generated with the ROT value of &gt; 3 deg.</td>
</tr>
</tbody>
</table>

6.5. Chart Settings

The Chart Settings menu item permits the following settings to be made:

- **Chart presentation**
  - **Zoom buttons on chart** – to turn ON / OFF the zoom-in (Plus) or zoom-out (Minus) functionality on the chart layer.
  - **User objects** – to turn ON / OFF the display of user-set objects on the chart layer.
  - **Tides & Currents** – to turn ON / OFF presentation of the tidal reference points and tidal current vectors (see Annex I).
  - **AIS Meteo Symbols** – setting for the display of weather data symbols on the chart (Off, simple, Current, Wind and current)

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Navigational Warnings – to turn ON / OFF the on-chart display of S-124 navigational warnings.

Cancelled Warnings – to turn ON / OFF the on-chart display of cancelled S-124 navigational warnings.

NavWarning Text – to turn ON / OFF the on-chart display of S-124 navigational warning texts.

Chart settings

Tap the Chart Settings item. The Chart Settings panel will appear:

Chart boundaries – to turn on/off the display of chart boundaries.

Spot Soundings to – to set a certain maximum for the depth presentation on the chart layer. Parameter settings: Show All (all depths presented on the chart layer), or 5.0 – 1000.0 meters, Step: variable.

Dangerous Depth – to set value for the dangerous depth presentation in the bold font. Parameter settings: OFF, 1.0 – 50.0 metres, Step: 1 metre.

Safety Contour – depths of less than or equal to the set safety depth are filled with light blue colour up to the closest value contour.

Use SCAMIN – ON by default: with the scale decreasing, charts stop to display objects whose scale was exceeded. At the minimum distance, all the objects are displayed. OFF: all the chart objects are displayed on any scale.

Plain Areas – ON: area boundaries on the chart are shown with an even dashed line. OFF: area boundaries on the chart are shown with a dashed line with symbols.

Simplified Symbols – ON: point type objects on the chart have a simplified presentation. OFF: chart objects are shown in much the same way as on the paper charts.

Show Light Description – to turn on/off the display of characteristics of lighthouse light and the rest of objects on a chart layer, by which they can be identified.
**Full Light Sectors** – **ON**: lines of lights are displayed in full. **OFF**: lines of lights are truncated.

**Show Light Sectors** - to turn on/off the display of light sectors on the chart.

**Accuracy symbols** – to turn on/off the display of accuracy symbols on the chart.

**Show corrections from** – to enable/disable the installed updates filter by the set date, updates installed after the set date will be highlighted in orange.

**Depth Contour labels** – to turn on/off the on-chart display of depth contour numeric values.

**Depth Contours** – to turn on/off the on-chart display of depth contours.

**Cables and Pipelines** – to turn on/off the on-chart display of cables and pipelines.

**Isolated Danger** – to turn on/off the on-chart display of isolated dangers.

**TSS, Recommended & Ferry Routes** – to turn on/off the on-chart display of recommended routes.

**Names** – to turn on/off the on-chart display of names.

**Prohibited and Restricted Areas** – to turn on/off the on-chart display of prohibited zones.

**Drying line** – to turn on/off the on-chart display of drying lines.

**Shallow Pattern** – to turn on/off infill in the drying area and danger depth zones.

- **Route**

  **XTD area** – to turn **ON** / **OFF** the display of plotted route cross track distance zone (zones).

  **CRS & DIST on Leg** – to turn **ON** / **OFF** the display of courses and distances on the route legs.

### 6.6. Import

Use the **Import** menu for importing routes, tracks or user objects to the Transas Pilot PRO application; import is available via the e-mail or the iTunes application (see Chapter 10).

### 6.7. Export

The **Export** menu item is intended for exporting local routes, tracks or user objects from Transas Pilot PRO to the external application (Transas Pilot PRO, Transas iSailor, etc.); export is available via the e-mail or the iTunes application (see Chapter 10).

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6.8 Units and Languages

The **Units and Language** menu item permits the following settings to be made:

- **Coordinates Format**: presentation of the own ship, AIS targets and cursor coordinates in three possible modes:
  - degrees and tenths of a degree
  - degrees, minutes and tenths of a minute
  - degrees, minutes, seconds and tenths of a second.

- **Depth, draft and height units**: presentation of depths, ship draft, tides (option) and heights on Transas charts (applicable also to the depth type objects):
  - metres
  - feet
  - fathoms.

- **Short distances of up to 1 nm**: presentation of short distances (of up to 1 nautical mile) in the route, ERBL cursor data, etc.:
  - Metres, feet, nautical miles - 3 digits after the decimal point

To find out, which distances are considered as short, tap **’Short’ Distance Units Threshold** and select a value within the range of 200 to 5000 metres (500-12000 ft or 0.1-3.0 nm).

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- **Distances of less than 1 nm**: presentation of long distances (of more than 1 nautical mile) in the route data, ERBL cursor data, etc.:
  - Kilometre, nautical mile, statute mile.
- **Speed**: presentation of own ship speed, AIS target speed data, tracking data, etc.:
  - km/h, knots.
- **Language**: to select Transas Pilot PRO application’s user interface language:
  - English, German, French, Italian, South Korean, Russia, Chinese (simplified).

### 6.9. User Info

The **User Info** menu item contains information on the Transas Pilot PRO current user account and ordered options:

![User Info]

- **Organization**: optional field for private customers;
- **Name**: user first and second name;
- **Login**: user login (typically the registered e-mail address);

### 6.10. Feedback

The **Feedback** menu item provides a capability to send a comment or receive technical support:

![Feedback]

- **Send Feedback** – use this button to send your wishes, comments or your stories related to the Transas Pilot PRO app and about how you used it onboard or during the pilotage.

Date of issue: May 2018
Report a problem – use this button to report your problems in handling the Transas Pilot PRO application. Our service support team will in the shortest possible time revert with explanation, prompt or advice.


The Tips and User Manual menu item provides access to the following documents:

- The Run Tips button is intended for activating interactive tips in which drawings show the Transas Pilot PRO application’s major functionality. This menu contains the following buttons and functions:
  - Done – use this button to close the tips window;
  - Page control prompts in the bottom part show numbers of pages with tips as well as the currently selected page. Shift the selected page to the right (or to the left) to view all the available tip pages.
  - The Open User Manual button opens the Transas Pilot PRO User Manual if the Internet connection is available.

6.12. About

This menu item contains information on the manufacturer and the currently installed Transas Pilot PRO application.
7. Buttons and Toolbars

Transas Pilot PRO application’s main screen:

7.1. Ship Button

The button is intended for focusing the screen on the own ship position. The ship symbol is moving in the direction opposite to the course over ground.

7.2. Alarms and Warnings Button

The Alarms and Warnings button is intended for the display of active alarms and warnings. Alarms and warnings may be active and non-active.

To set up alarms and warnings, use the Settings / Alarms menu item (see Chapter 6.5 Alarms)

The button may look as follows:

Date of issue: Version 2.4.0. May 2018
<table>
<thead>
<tr>
<th>ALARM STATUS</th>
<th>LIST OF ALARMS</th>
<th>SOUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active unacknowledged alarms [no operator response]</td>
<td>14:38 Out of XTD</td>
<td>Continuous sound signal</td>
</tr>
<tr>
<td>Active acknowledged alarms</td>
<td>14:38 Out of XTD</td>
<td>None</td>
</tr>
<tr>
<td>Active unacknowledged warnings</td>
<td>14:40 Switching to the Next WP</td>
<td>Sound signal lasting 2-3 seconds</td>
</tr>
<tr>
<td>Active acknowledged warnings</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Non-active alarms and warnings (regardless of acknowledgement status)</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

- There is at least one active alarm or warning.
- There is at least one warning and no active alarms.
- No active alarms or warnings.
- Monitoring of alarms and warnings is disabled (the button is inactive).

To open the list of alarms, tap the **Alarms and Warnings** button. The list contains active alarms and warnings. Alarms are shown against the red background, and warnings – against yellow. Generation time is specified on the left (local iPad time).

Alarms are associated with an intermittent sound signal which lasts until the acknowledgement. Warnings are associated with a sound signal which lasts for 2-3 sec.

Acknowledgement of active alarms and warnings implies that the user has seen and is aware of them. To acknowledge an active alarm, tap the alarm list and then tap the alarm or warning row. After the acknowledgement, the alarm sound for the active alarm is turned off. A warning is fully cancelled after the acknowledgement.

The principles of displaying alarms and warnings in the Alarms List are set forth in the table below:

Date of issue: May 2018
<table>
<thead>
<tr>
<th>ALARM STATUS</th>
<th>LIST OF ALARMS</th>
<th>SOUND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active unacknowledged alarms (no operator response)</td>
<td>14:38 Out of XTD</td>
<td>Continuous sound signal</td>
</tr>
<tr>
<td>Active acknowledged alarms</td>
<td>14:38 Out of XTD</td>
<td>None</td>
</tr>
<tr>
<td>Active unacknowledged warnings</td>
<td>14:40 Switching to the Next V</td>
<td>Sound signal lasting 2-3 seconds</td>
</tr>
<tr>
<td>Active acknowledged warnings</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Non-active alarms and warnings (regardless of acknowledgement status)</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

7.3. Position Predictor Button

This button is intended for turning **ON / OFF** the own ship predictor functionality.

To adjust the own ship position predictor, use the **Settings / Ship Settings** menu item (see [Chapter 6.3 Ship Settings](#)).

The own ship position prediction requires valid data from the following sensors:
- **GPS**: LAT / LON / COG / SOG;
- Heading data;
- Rate of turn – from a sensor or calculated;
- Precise ship dimensions and settings of the reference point of the GPS system in use

Otherwise, the button will have the “inactive” status.

7.4. Settings Button

The button is intended for activating the **Settings** panel (see [Chapter 6. Settings](#)).

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8. Operational Panels

8.1. Docking Panel

Tap the Docking panel tab:

8.1.1. Position Data

The Position Data widget presents the following information:

GPS – display of the positioning system in use and position data it provides: latitude and longitude [see above Sections 5.1, 5.2 and 5.3];

Acc. – accuracy of positioning from the selected source;

The Chart Orientation button – selected chart orientation mode [see the chapter below].

To open other widgets, swipe the current widget to the right or to the left.

Date of issue: May 2018
8.1.2. Chart Orientation

For the chart orientation use the following buttons:

- **North Up** - chart oriented to the True North;
- **Head Up** - chart oriented along the ship heading (heading data is required);
- **COG Up** - chart oriented along the course over-ground (GPS COG data is required);
- **Route Up** - chart oriented along the current route leg direction (route is required).

8.1.3. Position and Heading Data

The **Position Data** widget provides the following information:

- **Delta LAT**: 0.0 m
- **Delta LON**: 0.0 m
- **Delta HDG**: 000.0°

- **Delta LAT** – latitude correction / offset (+/- 250 meters in latitude);
- **Delta LON** – longitude correction / offset (+/- 250 meters in longitude);
- **Delta HDG** – heading correction / offset (+/- 20 degrees)

8.1.4. Position and Heading Data Offset

To adjust the incoming position and heading data setoff, tap the icon:

- **Delta LAT**: ±250.0 m
- **Delta LON**: ±250.0 m
- **Delta HDG**: ±20.0°

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To cancel all the manually entered position and heading data corrections, use the Reset All button.

In the Position Data widget, corrected position and heading data is marked with the Δ sign:

- Position with the set offset:

- Heading with the set offset:

8.1.5. Sensor Data on Docking Panel

The Sensor Data widget on the Docking Panel provides the following information:

- HDG – ship heading data, heading offset symbol (if applicable). Source: AIS or NMEA Heading Sensor.
- ROT – ship rate-of-turn and direction data. Source: AIS, NMEA HDG or ROT sensor, calculated ROT.

The calculated ROT is shown in yellow.

- COG – ship course-over-ground. Source: AIS, NMEA GPS or iOS.
- SOG – ship speed-over-ground. Source: AIS, NMEA GPS or iOS.

The red colour is used for showing invalid data (or no input data, or the last valid data). A dashed red line shows the absence of data.

Date of issue: May 2018
8.1.6. Speed Data and Conning Display

The **Speed Data and Conning Display** widget provides the following information:

- **BOW (Fore)** – traverse speed on the fore and its direction (port or starboard);
- **Longitudinal Speed** – longitudinal speed vector referenced to the ship centre point;
- **AFT (Aft)** – traverse speed on the aft and its direction (port or starboard)

- to activate the **Conning Display** mode/

- **Speed vectors** – to activate the display of speed vectors (Fore’n’Aft) on the chart layer;
- **Resulting COG** – to activate the display of resulting course-over-ground vectors.

- to activate the display of distance lines.

- fender lines.

8.1.6.1. Conning Display Mode

Tap the **icon** to activate the **Conning Display**:
There are several sections in the Conning Display:

- **Top part**: heading data card with the ROT indicator and value. Course and speed-over-ground values for the primary positioning source;

- **Middle part**: ship contour with the calculated Fore’n’Aft speed values. This screen is identical to the Speed Data widget described above.

- **Bottom Part**: the Port and Stbd buttons that can be used for activating four main distance lines (Bow Port, Aft Port, Bow Stbd, Aft Stbd). This functionality is synchronized with the Distance Lines functionality, described in the next chapter of this document.

To exit from the Conning Display, tap the button in the right bottom corner.

When the Docking panel is minimized, a pane with the COG, SOG, HDG, ROT data appears in the top part of the screen:

![Conning Display](image)

**NOTE**: The resulting COG and SOG have their own presentation scale in a chart layer, that does not depend on the standard settings for the COG-SOG and HDG-SOG vectors [see Chapter 6.3 Ship Settings]. The resulting COG and SOG scale is 1 knot = 1.5 x Beam-Over-All (ship maximum breadth in metres or pixels).

Date of issue: May 2018
8.1.6.2. Distance Lines

Tap the **Distance Lines** button to activate this functionality:

![Distance Lines Button]

Four traverse distance lines (Bow Port, Aft Port, Bow Stbd, Aft Stbd) will be plotted on the chart layer if the following chart objects are detected within the range of 1 nm:

- coastline
- pier, jetty line
- bridge line
- low level line

Additional four distance lines (Bow, Aft, Middle Port, Middle Stbd) can be activated manually for operation in the automatic mode with a **double tap** on the relevant data base point:

To remove a distance line from the chart, double tap the line endpoint.

To manually adjust a distance line, tap once this line **endpoint** and then drag and drop the selected line.

**Example of manually adjusted distance lines:**

![Distance Lines Example]

- **Automatic mode:**
  - position recalculations once a second over the set marker.
  - detection of the **shortest distances** to a point along the **perpendicular line from the shore**, or to curved objects, where a perpendicular line from the object cannot be defined.
  - positions of the four main data base points (Bow Port, Aft Port, Bow Stbd, Aft Stbd) can be edited manually if required (see **Chapter 6.3**).
  - four main distance lines (Bow Port, Aft Port, Bow Stbd, Aft Stbd) are integrated in the **Conning Display** mode.

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8.1.6.3. Fender Lines

Fender lines are used in handling the Distance Lines functionality.

To open the fender line table, tap the icon.

Search – search by the line name.

Number of fender lines – total number of lines in the table.

Create new – to turn on the graphic mode of creating a fender line.

Activate all – to turn on/off the on-chart display of all the created fender lines.

Export all – (see Chapter 10).

Delete all – to delete all the fender lines.

To turn on the on-chart display of a fender line and to focus on it, tap the line row in the list.

To view information on a fender line, tap the Info button. A page with the following information will appear:

- Name (editable)
- Description (editable)
- Date when created
- Number of points

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8.2. Monitoring Panel

Tap the Monitoring panel tab:

The Position Data, Position and Heading Offset, Chart Orientation are identical to the Docking panel widgets.

8.2.1. Sensor Data Widget

The Sensor Data widget provides the following information:

Option 1:

<table>
<thead>
<tr>
<th>COG: 033.0°</th>
<th>COG: --.--°</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOG: 7.0 kt</td>
<td>SOG: --.--  kt</td>
</tr>
</tbody>
</table>

COG – ship course over ground. Source: AIS, NMEA GPS or iOS.

SOG – ship speed over ground. Source: AIS, NMEA GPS or iOS.

Invalid data is shown in red or with a dashed line. The drawing shows absence of the COG & SOG data in its right part.

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Option II:

HDG – ship heading data, heading correction sign. Source: AIS or NMEA heading sensor.

ROT – data on the ship rate of turn and direction. Source: AIS, NMEA HDG, NMEA heading or rate-of-turn sensor, calculated rate of turn

The Calculated ROT value is shown in yellow:

Option III:

8.2.2. Route Data Widget

The Route Data widget provides the following information:

WP[*] – waypoint number and the name of the currently monitored WP;

BTW – bearing to the current waypoint;

DTW – distance to the current waypoint;

XTD bar – actual cross track distance and limits of the cross-track distance for the current route leg;

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XTD - actual cross track distance value;
Route – monitored route name.

8.2.3. Schedule Information Widget

The Schedule Information widget provides the following data:

<table>
<thead>
<tr>
<th>WP4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTG: 3m 5s</td>
</tr>
<tr>
<td>ETA: 19.01.2018, 18:17</td>
</tr>
<tr>
<td>DTW: 192 m</td>
</tr>
</tbody>
</table>

TTG – time to go to the currently monitored waypoint (by default) or to a WP selected from the list;
ETA – estimated time arrival at the currently monitored waypoint or at a WP selected from the list.
DTW – distance to the current waypoint

To select the necessary waypoint, tap the WP(*) button. It is only the current waypoint and ones follow it that can be selected. Calculations for the current waypoint are based on the actual DTW and SOG data.

8.2.4. Track Recording Widget

The Start track recording button is intended for activating the own ship track recording.

When the track recording is activated, the button assumes the following form:

| Track: 30s |

To stop track recording, tap this button and in the warning window which will appear, confirm the end of recording.

Track recording can also be stopped on the Planning Tools/Track Page panel. To this end, tap the active track line with the Recording status. For details see Chapter 8.4.7 Track Page.
8.2.5. Man Overboard Function

The **MOB** function permits the chart position to be promptly plotted on the chart in an emergency.

To activate this function, use the following procedure:

- Tap the own ship symbol.
  - In the pop-up window which will appear, select the life ring sign:

![MOB symbol on chart]

- Select **Activate** in the warning window:

```
Activate MOB
Are you sure you want to activate the local Man Over Board mode?

[Activate] [Cancel]
```

The **MOB** symbol in the form of a red and white life ring will appear on the chart:

![MOB symbol on chart]

The Monitoring panel displays the **MAN OVER BOARD** message, a message that the **MOB** mode is active and the following information on the **MOB** marker position:

- **BRG**: direction from the own ship to the **MOB** marker position
- **RNG**: distance from the own ship to the **MOB** marker position.
- **Age**: time since the moment when the **MOB** mode was activated.
- **TTG**: time to go for returning to the **MOB** marker position.
- **LAT** and **LON**: **MOB** marker position coordinates

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While the **MOB** mode is active, the mark will remain on the chart, whereas the life ring symbol in the pop-up ship info window will be marked with green:

To disable the **MOB mode**, perform one of the following operations:

- On the **Monitoring** panel press the **Deactivate MOB mode** button and select **Deactivate** in the warning window:

  ![Deactivate MOB](image)

- In the pop-up ship info window, press the green-coloured **MOB symbol**

The **MOB** marker can also be set in the **Virtual Boarding** mode.

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8.3. AIS Target Panel

The AIS Targets panel displays information on the surrounding AIS targets and AIS targets selected for monitoring.

To obtain AIS target data, it is necessary to set up one of the following Wi-Fi connection options:

- to the Pilot Plug
- to an external sensor, e.g., Navicom Dynamics ChannelPilot MkII
- to the Internet AIS Service if the 3G / 4G is connected

AIS target symbols have colours according to their type (see Chapter 5.6. AIS Targets Presentation).

The panel contains the following tabs:

- **Table** – AIS targets table
- **AIS RDV** – list of AIS targets selected for monitoring

### 8.3.1. AIS Targets Table

The **Table** tab displays the AIS targets table.

- To focus a chart area on the selected AIS target, tap the AIS target row in the table.
To obtain full information on an AIS target, press the **INFO** button in the AIS target row. The table displays information on the ship, its coordinates, heading and speed, as well as the following AIS information:

**BCR / BCT** – distance and time to the point of crossing the own ship route.

**CPA / TCPA** – distance and time to closest point of approach to the own ship.

**BRG / RNG** – bearing and range

**Last update** – time of the most recent AIS data update for this target.

**Age** – time during which AIS data for this target has not been updated.

**AIS type** – AIS data source.

Information on the Lighthouse AIS target looks as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>ST-PETERSBURG PT LEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMSI</td>
<td>99731000</td>
</tr>
<tr>
<td>AbSH Type</td>
<td>Loading light rear</td>
</tr>
<tr>
<td>Own / Virtual</td>
<td>Real</td>
</tr>
<tr>
<td>Status</td>
<td>On Position</td>
</tr>
<tr>
<td>CPA / TCPA</td>
<td>n/a</td>
</tr>
<tr>
<td>BRG / RNG</td>
<td>105.2° - 72.23 km</td>
</tr>
<tr>
<td>Last update</td>
<td>19:05:35 4m 29s</td>
</tr>
<tr>
<td>AIS type</td>
<td>Aids To Navigation</td>
</tr>
<tr>
<td>Latitude</td>
<td>53° 52.669’ N</td>
</tr>
<tr>
<td>Longitude</td>
<td>030° 12.684’ E</td>
</tr>
<tr>
<td>Length</td>
<td>3.0 m</td>
</tr>
<tr>
<td>Beam</td>
<td>3.5 m</td>
</tr>
</tbody>
</table>

---

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To return to the list of AIS targets, press the Back button.

The list of AIS targets can be filtered by the following parameters:

- AIS target name, MMSI, callsign or IMO number.

Enter the name, MMSI, MMSI, callsign or IMO number in the line.

The **Number of AIS targets** row will specify the number of targets found by request.

For all the AIS targets to be displayed, tap the X button in the search line.

- Object type.

  - All – all the AIS target types are displayed
  - Class A – objects with Class A transponders are displayed
  - Class B – objects with Class B transponders are displayed
  - Base station – base stations are displayed
  - Meteo station – weather stations are displayed
  - AtoN – aids to navigation are displayed
  - e-Nav objects – e-Navigation objects are displayed
  - AIS Internet targets – objects received via the Internet AIS service are displayed

To select an object type, press the **Select Object Type** button:

The list of AIS targets can be sorted. To sort, use buttons in the bottom part of the panel:

- **Name (A-Z)** – in the alphabetical order by the AIS target name.
- **Range** – by the distance from the own ship.
- **TCPA** – by the time to the closet point of approach relative to the own ship.
8.3.2. AIS RDV

The AIS RDV panel displays a list of AIS targets set for monitoring.

- To select an AIS target for monitoring, double-tap the target symbol on the chart. The target symbol will be set in a circle, and information on the ship will appear on the AIS RDV panel:

Up to eight AIS targets can be simultaneously selected for monitoring. Each target will be marked with a unique circle colour.

- To cancel the target selection, double-tap its symbol in the chart area

For each monitored AIS target, the following parameters are calculated: CPA, BCR, BRG, T-RDV (Time to RDV).

- To adjust the on-chart display of the monitored AIS data, press the Show button.

RDV – to enable or disable the marker of possible crossing on the chart. RDV markers are displayed if there is an active route [see 8.4.1, Route].

RDV markers have a form of a cross of the same colour as the monitored AIS target circle. The RDV marker is placed on an active route predicting the point of approach between the own ship and the monitored AIS target:

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**CPA** – to turn on or off the display of the closest point of approach for the own ship and the monitored AIS target. Points are shown on the chart in the form of two diamond shaped markers:

**BCR** – to turn on or off the display of a distance to the crossing of the monitored AIS target and own ship routes. The distance is shown by a dot at the end of the speed vector:

Any combination of the **RDV, CPA** and **BCR** can be displayed at the same time.

When the **AIS RDV** panel is opened, the chart displays a window with the own ship **SOG** value:

Use the plus or minus buttons for re-calculating possible crossing of the monitored AIS target and own ship routes by changing the own ship SOG.

The SOG change will cause the **RDV, CPA** and **BCR** re-calculation.

To reset the **SOG** to its actual value, press the button.

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8.4. Planning Tools Panel

8.4.1. Routes Page

Open the **Planning Tools** panel and select the **Routes** page:
The **Routes** page is intended for handling the existing routes and creating new ones.

The list of routes is intended for work with routes, editing them and selecting a route for monitoring. Tap any route from the list to turn on its display on the chart:

- To filter routes by their names, tap the **Search** line and enter several letters:

  ![Search routes](image)

  Press X to cancel the filter; all the available routes will reappear on the list.

- To delete all the routes, tap the **Delete** button.

  ![Delete all routes](image)

  Confirm deleting in the warning window which will appear. All the routes will be deleted.

- To copy a route from the list, tap the **Copy** button. The selected route copy will appear on the list of routes:

  ![Copy route](image)

- To export all the routes by e-mail or via iTunes in the dedicated *.GPX, *.KML, *.KMZ, *.RTZ, *.RTZP export format, tap the **Export** button (see Chapter 10).

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8.4.2. Route Information Window

To open the route information window, tap the **Info** button in the route row:

![Route Information Window]

By default, the route name includes the route creation time.

- To change the route name, tap the row with the route name:

![Route Data]

- To create a route with the WP order reverse to that in the selected route, tap the **Reverse Route** button.

  ![Reverse Route]

- To delete the **selected** route, tap the **Delete Route** button:

- To export a route, tap the **Export Route** button (see Chapter 10)

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8.4.2.1. Schedule Calculations

Tap the **Time of Departure** line. Set the time of departure.

The **time of arrival** will be calculated automatically based on the average speed value from the route table. It is possible to set one speed for all the route legs or adjust the speed separately for each route leg.

Date of issue: May 2018
8.4.2.2. List of Waypoints

Press **Route Waypoints** to open the list of waypoints.

The list of waypoints includes all the waypoints on the route and their data:

- **WP** – waypoint number and name (with a manual editing capability);
- **LAT** – WP latitude coordinate;
- **LON** – WP longitude coordinate;
- **CRS** – course from the previous WP to the current WP;
- **DIST** – distance from the previous WP to the current WP;
- **XTD** – cross track distance on the current route for the current WP (set manually);
- **RAD** – manually set turn radius to the current WP;
- **SPD** – speed on the route leg from the previous WP to the current WP.

8.4.2.3. Waypoint Editing

For routes, waypoints can be edited manually in the digital form.

- Open the **Waypoints** list.

  Tap the waypoint row. The chart will be automatically focused on the selected waypoint.
Change the waypoint name as required:

- Tap the LAT or LON line to edit the waypoint latitude or longitude.

- Drag the slider in the CrossTrack Distance section to set the necessary XTD zone.

To apply the XTD zone settings to all the waypoints, tap the Apply to All Waypoints button:

- To confirm changes in the waypoint settings, press Confirm the Action.

If required, set another cross-track distance (XTD) separately for each route leg:

- Drag the slider in the Speed on Leg and Turn radius section to edit relevant values:

Date of issue: May 2018
8.4.3. Tracks Page

The page contains a list of tracks recorded in the Transas Pilot PRO application or imported from other sources.

The track recorded with Advanced Data Logging ON is marked with the \( \text{ON} \) symbol.

The track recorded with Advanced Data Logging OFF is marked with the \( \text{OFF} \) symbol.

To obtain additional information on the Advanced Data logging process see Chapter 6.4, the Sensors menu item.

- Tap Search and enter several characters from the name of the track to be found:

To delete the entered data, press X in the search line: all the tracks will appear on the list.
8.4.3.1. Track Information

To obtain track information, tap the **Info** button in the selected track row:

![Track Information](image)

By default, the track name consists of its creation date and time. To edit the name, tap the row with the track name.

To focus the chart on the track, tap the **Focus on Track** button.

![Focus on Track](image)

To change the selected track colour, tap the necessary colour button.

![Track Colour](image)

To reproduce the track, press the **Playback mode** button;

![Playback Mode](image)

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During the track playback, in the top left corner of the screen, there is the PB indicator.

The bottom part of the screen displays the following playback controls:

- recording duration;
- wind backward and forward buttons;
- playback / pause buttons
- playback speed control. By default, the switch is set to the x1 position – actual speed during the track recording. Playback can be set to up to 60 times faster.

To exit from the playback mode, press the **Stop Playback mode** button:

To delete the selected track, press the **Delete track** button.

To export the selected track, press the **Export Track** button. For the description of the track export see Chapter 10. *User Files; Import and Export.*

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8.4.4. Objects Page

The **Objects** page is designed for enabling the user to work with objects:

The list of objects is intended for the selection and display of created or imported objects. To search for objects, tap the search line and enter several characters from the object name:

The filtered-off list will display all the objects whose names include the entered characters. The list can include objects of all the types, or objects of only one of the following types:

- All;
- Symbol;
- Text;
- Depth;
- Waypoint;
- Point of interest.

- Tap the **Select Object Type** button and select the object type, e.g., **Symbol**:

---

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The list of objects will display all the **Symbol** type objects:

![Symbol Object List]

- To delete all the objects, tap the **Delete all** button:

  ![Delete All Button]

- To delete all the selected type objects, press the **Delete** button:

  ![Delete Warning]

To export the selected type objects, press the **Export** button. For the description of the object export see **Chapter 10**. User Files: Import and Export.

**8.4.4.1. Object Editing**

- Use the free cursor to create an object (see **Chapter 9** Handling the Cursor).
- Tap the **Info** button in the object row:

  ![Object Detail]

The object properties page will appear:

![Object Properties]

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To change the object type, tap the row with the object symbol:

Select the object type from the menu, e.g., a **Wreck showing any part of hull**, and tap it:

To edit the object name, tap the **Name** row:

To correct the object position, use the **LAT** and **LON** rows

To correct additional information, use the **Comment** row.

To delete the selected object, tap the **Delete** button. To confirm the deleting, press the **Delete** button in the warning window which will appear:

To export the selected object, use the **Export** button (see Chapter 10. User Files: Import and Export):

To add photographs or pictures to the object, press the **button (see Chapter 9.6. Creating Object).
9. Handling Cursor

9.1. Free Cursor and Pop-up Windows

The free cursor and pop-up windows are intended for the following purposes:

- obtaining information on the selected point distance, direction, latitude and longitude;
- creating object;
- calling the ERBL function;
- creating the ToGo route.

For the free cursor to appear, tap the screen slightly.

Position the free cursor on the necessary object:

Tap the free cursor to activate a pop-up window:

The pop-up window displays the cursor position coordinates.

To obtain information on the object under the cursor, press

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To select additional functions, press \( \Rightarrow \). The Plot Object, Point-to-Point ERBL and Create New Route tools will appear in the pop-up window.

### 9.2. Info Function

The \( \text{ } \text{ } \text{ } \text{i} \) function is intended for obtaining information on electronic chart objects under the free cursor.

- Position the free cursor on the necessary point:

- Tap the cursor in the window which will appear, press \( \text{ } \text{ } \text{ } \text{i} \):

The panel with information on the object will appear:

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To obtain information on the object, tap the necessary menu item:

To return to the main menu, tap the Back button, or close the information window with a tap in the chart area.

9.3. Point-to-Point ERBL Function

The function is intended for obtaining bearing and distance from the centre of the free cursor to the selected point.

For the point-to-point ERBL operation use the following procedure:

► Position the free cursor on the necessary object;

► Press.

► Press.

A circle and the cursor reference point will appear:

The circle origin point and reference point can be moved
As any of the points moves, the bearing/reverse bearing, distance from the circle origin to the reference point changes.

► To see the cursor reference point coordinates, tap.
Tap the cursor origin point to see the coordinates:

To turn off the Point-to-Point ERBL, tap 🔄 in the pop-up window.

### 9.4. Own Ship ERBL Function

The own ship ERBL is intended for obtaining values of bearing and distance from the own ship to the selected point. As the own ship moves, the reference point moves together with the ship or is fixed in a certain geographic point.

To use the ERBL, tap the own ship symbol, and in the pop-window tap 🔄:

A circle and a reference point will appear:

Values of the bearing and distance from the own ship to the geographic coordinates on the circle will be displayed in the pop-up window on the screen, the own ship motion taken into account.

The 🔄 icon is intended for switching the own ship ERBL to the "movable" mode for detecting, if required, a dangerous target by its bearing value.

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As the cursor reference point moves on the chart together with the own ship, values of bearing and distance from the own ship position to the cursor reference point will remain. In this mode, the ERBL is not referenced to geographic coordinates.

To turn off the own ship ERBL, tap in the ERBL pop-up window.

9.5. Create New Route Function

This function is intended for creating a passage route. The route automatically appears on the Monitoring panel and on the list of routes.

- Position the free cursor on the necessary point of the chart screen;
- Tap the cursor;
- Press ;
- Press the Make GotTo Route icon

One route leg will be plotted to the selected point from the own ship:

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9.6. User Object Creation Function

This function is intended for creating objects on the chart.

- Position the free cursor in the necessary coordinates.
- Tap the cursor;
- Press ;
- Press the object creation icon.

By default, the newly created object will be assigned to the Route Point type. The object type can be changed as required:

To set a picture for the object, use the icon. Make a snapshot of the object or select a picture from the iOS album:

By default, the object creation time is used for its name.

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The object name and additional information can be changed, its position corrected:

Tap any point within the chart area to close the pop-up window.

9.7. How to Delete User Object from Chart

► To delete a user object, position the free cursor on the object to be deleted.

► Tap the cursor. A pop-up window will appear:

► In the pop-up window, tap . A panel with information on the object will appear:

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Tap next to the necessary object. A panel with object properties will appear:

Press the Delete button.
To confirm the deleting, tap the Delete button in the warning window which will appear:

Tap any point on the chart screen to close the pop-up window.

9.8. How to Create Route

Open the Planning Tools /Routes panel, select Create New Route:

The first waypoint [WP0] will be automatically placed in the centre of the screen:

Move the cursor to the exact position of the first waypoint and press the button. The new route will appear on the list of routes.

An incorrectly set waypoint can be deleted by using the button:

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To plot the second waypoint, tap the cursor in the necessary place on the chart. Check the bearing and distance from waypoint WP0 to waypoint WP1 in the cursor pop-up window:

Waypoint WP1 will be plotted after confirmation with the aid of the button:

To complete the route creation, press in the pop-up window:
9.9. How to Change Coordinates of Existing Waypoint

- Tap a waypoint, a pop-up window will appear:

Tap the Route Editor button:

- Drag the selected waypoint to a new position.
- To complete the editing, press ✅

9.10. How to Add New Waypoint

- Select any waypoint and press the Route Editor button.
To create a new waypoint on a route leg, use the free cursor to select a place on the chart and press.

The first and last waypoints can also be edited.

### 9.11. How to Delete Existing Waypoint

- Select any waypoint and press the **Route Editor** button:

- To delete a waypoint, press the **icon**:

The newly made route leg is shown with a solid line, the deleted leg – with a dashed line:

---

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9.12. Virtual Boarding

The Virtual Boarding mode is intended for the real-time monitoring of an AIS target as the own ship. To activate the Virtual Boarding mode, select an AIS target in the chart area.

Press 🔄 in the pop-up window:

A window with ship information will appear:

- In the bottom part of the window, press the Enable Virtual Boarding button.

The ship contour will be shown in grey, and the in the top left corner of the chart, the 'VB' sign appears notifying about the use of the Virtual Boarding mode:

In the Virtual Boarding mode, the AIS target navigation data will be displayed on the Monitoring and Docking panels:

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If an active route is available, distance to the waypoints and the XTD is displayed on the Monitoring panel. With the **Virtual Boarding** mode ON, the AIS target track recording is available:

- To exit from the **Virtual Boarding** mode, press the 'VB' notification sign in the top left corner of the chart. In the warning window which will appear, press **OK**.
10. Files: Import and Export

10.1. How to Export Data from One Device and Import It to Another Device

Routes, tracks, fender lines and user objects can be exported and imported by e-mail and via iTunes.

- To export a route, track, fender line or user object from Transas Pilot PRO, open the Settings panel and select the Export menu item:

- Select the necessary route, track, fender line or an object from the list.

- Select an export format:
  - For tracks, fender lines and objects:
    - GPX
    - KML
    - KMZ
  - For tracks recorded with the Advanced Data Logging ON:
    - ZIP
    - GPX
    - KML
    - KMZ
  - For routes:
    - GPX
    - KML
    - KMZ
    - RTZ ECDIS
    - RTZP ECDIS

- Select the export method:

- Then tap Save in iTunes;
  Exported files are saved in the iOS device memory.

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- Send by e-mail:
  - Enter the e-mail address
  - Press the Send button.

- To export a route, track, fender line or an object to Transas Pilot PRO, open the letter with exported files (*.GPX, *.KML, *.KMZ, *.RTZ or *.RTZP).

Tap the attached file and select Copy to Pilot Pro:

The Transas Pilot PRO application will be automatically started.

- Select a file to be imported and press the Import button in the bottom part of the window.
**Transas Pilot PRO** will automatically recognize and identify the imported file contents. Select data for import and press **Import**:

- Check that the data has been imported and press the **Done** button to close the **Import** window.

### 10.2. How to Export Data via iTunes Application on Mac Device or PC

You can export external data via the connected MAC device or PC with the **iTunes** application. The **import** format is described in Chapter 10.1 How to Export Data from One Device and Import It to Another Device.

- Open the **Settings** panel and select the **Export** menu item:

![Export Menu Item](image)

- From the list, select the necessary object or group of objects to be exported:

![Export Selection](image)
Select the exported file format:

Tap the Save in iTunes button:

Tap the OK button:

10.3. Data Import Using iTunes Application via Mac Device or PC

You can import external data via an iPad connected to the Mac device or PC with the aid of iTunes.

Run the iTunes application on your Mac device or PC.

Connect your iPad by using the USB cable, check that iTunes has recognized the device:

The <!-- button shows that the Apple device is connected to the PC.

Press <!-- and select the Apps (common files) page:

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Select Transas Pilot PRO in the Apps section:

Press the Add file... button:

In the example, the NO_chart.zip file is added to the Transas Pilot PRO documents:

Press the Sync (synchronizing) button in the iTunes right bottom part:

Wait until the iTunes and iPad are synchronized

Check the synchronizing status in the iTunes on the PC.

Run Transas Pilot PRO.

Open the Settings panel and select the Import item/

*.GPX, *.KML, *.KMZ, *.RTZ, *.RTZP format will be automatically identified and available for import on the File Manager page:

Select the necessary file and tap the Import button.

Check the imported files.

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11. Advanced Data Module

General Information

The Advanced Data Module option is available as a yearly subscription and includes the following functionality:
- Weather service (Internet connection is required)
- Tides and tidal currents database
- Internet AIS service (Internet connection is required).

11.1. Weather Service

The Weather Service is a real-time weather forecast service from Theyr.com.

The Weather Service enables reception of the following weather forecast data: Wind Speed and Direction, Atmospheric Pressure, Wave Height, Precipitation (combined data: Wind and Wave, Wave and Pressure, Wind and Pressure):

![Weather map]

The table below specifies weather data by regions, forecast resolution and duration:

<table>
<thead>
<tr>
<th>REGION NAME</th>
<th>AVAILABLE PARAMETERS</th>
<th>RESOLUTION</th>
<th>FORECAST DURATION</th>
<th>STEP</th>
<th>UPDATE CYCLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global forecast</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.50 deg</td>
<td>144 hours / 6 days</td>
<td>3 / 6 hours</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>REGION NAME</th>
<th>AVAILABLE PARAMETERS</th>
<th>RESOLUTION</th>
<th>FORECAST DURATION</th>
<th>STEP</th>
<th>UPDATE CYCLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe, North Atlantic</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.10 deg</td>
<td>96 hours / 4 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>English Channel</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.010 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>East / Centre USA</td>
<td>Wind, pressure, precipitation</td>
<td>0.045 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>West / Centre USA</td>
<td>Wind, pressure, precipitation</td>
<td>0.045 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>Alaska</td>
<td>Wind, pressure, precipitation</td>
<td>0.045 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>24 hours</td>
</tr>
<tr>
<td>South America</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.080 deg</td>
<td>60 hours / 2.5 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>South America</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.080 deg</td>
<td>60 hours / 2.5 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>South-East Australia / New Zealand</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.080 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>East Australia</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.080 deg</td>
<td>60 hours / 2.5 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>West Australia</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.080 deg</td>
<td>60 hours / 2.5 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>West Europe</td>
<td>Wind, pressure, precipitation, waves</td>
<td>0.040 deg</td>
<td>48 hours / 2 days</td>
<td>1/3/6 hours</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

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11.1.1. Use of Weather Service

Open the Environmental Data panel.

The top part of the panel displays the selected route data (see Chapter 8.4.4) Press the Parameters button and select a weather parameter, e.g., Waves and pressure.

Press . A legend for the selected parameter will appear:

The weather forecast for the selected parameter and actual data will be shown in the chart area.

Download Full Forecast

To download full forecast, it is necessary:

- to open the Environmental Data panel

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to press the Download Full Forecast button in the bottom part of the panel

- downloading of a week forecast for the selected chart section with a capability to play forward with a step of 6 minutes, to rewind and select data:

For a better view, tap the Environmental Data panel tab to hide the panel.

The downloaded forecast can be used without Internet connection.

11.2.  Tides and Currents

Tides are calculated from four main harmonics as well as the shallow water corrections. The calculation process is based on the Simplified Harmonic Method.

Results of the method in use may have minor differences from the published Admiralty Tide Tables or other weather prediction software.

- Check that in the Chart Settings item, the Tides & Currents option is enabled:

11.2.1.  How to Use - Tides:

- Check tidal reference points in the chart area:

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Tidal reference points are shown with tidal levels and names of these points.

- By selecting any of the tidal reference point you can obtain the following information:

  ![Tidal Chart Image]

  On the first page, you will see the following textual data:
  - Tidal point name
  - **Date Selection Control**: Day Back and Day Ahead buttons
  - HW1, HW2 (if available) – high water level and time
  - LW1, LW2 (if available) – low water level and time
  - **Ship Draft** – user-specified own ship draft
  - **UKC [Under Keel Clearance]** – user-specified UKC value
  - **Min Chart Depth** – user-specified minimum charted depth in the area
  - **Tidal Graph** button – to switch to the graphics mode.

**NOTE:** Check that in the **Settings / Ship Settings** menu you have entered the correct ship draft and UKC values.

---

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The following formulae and used for calculating high water and low water:

- **Ship draft**: 0 m, **UKC**: 0 m, **Min Chart Depth**: 0 m – original tidal heights are presented.
- **Or**: Depth of Water, m = \( HW(LW) \), m + [Min Chart Depth, m]
- The application is always referenced to the local time on the iPad device.
  
  If necessary, set the GMT/UTC time in the **Settings** menu.

- To check tidal data in the graphics mode, tap the **Tidal Graph** button:

  ![Tidal Graph](image)

  Tap the vertical line and drag it left – right to check the tidal level at the specified time.

The bottom part shows time marks for the selected data 10hrs – 6hrs – 12hrs – 18hrs – 23:59

The horizontal mark with the ship symbol means the own ship **Max Draft level** which includes the **Draft** and **UKC** parameters:

\[
\text{Max Draft level, m} = \text{Ship Draft, m} + \text{UKC, m}
\]

In accordance with the specified ship draft and UKC values, the zones in the graph are highlighted as follows:

**Red dangerous** zone:

Depth of Water, m – Max Draft level, m <= 0 m

**Blue safe** zone:

Depth of Water, m – Max Draft level, m > 0 m

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● Tap the **Environmental Data** panel.

● Tap the **Parameters** button and select **Tides & Current**. Tap ![legend](image) to view the legend:

Tides and tidal currents for the actual date and time will be shown in the chart area.

- Use the **Player** button to view tides and current with a time step of 6 minutes, or select the necessary date by pressing ![date](image).

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11.3. Internet AIS Service

The Internet AIS Service enables real-time on-chart viewing of ships via the Pocket Mariner global Internet AIS Service. Class A AIS, Class B AIS, AtoNs and Base Stations are supported. The library of ship photographs from shipspotting.com is available for most of the received targets.

The Internet AIS Service provides the AIS data coverage showing 40000 or more live ship movements at any one time, the database including over 150000 ships worldwide. This coverage is continuously increasing and if you wish to help by adding coverage for your area or ship, please let us know.

First check the coverage of your area or contact us at support@transaspiilot.com if you have any questions.

![Internet AIS Service coverage map](image)

This functionality is identical to the presentation of standard AIS targets received via the connected Class A or Class B AIS transponder (see Chapter 5.6). The principal difference consists in that Internet AIS Service requires the Internet connection.

Before using this option, perform the following procedure:

- In the iOS settings, check if the data and time are set correctly:

![iOS settings](image)

The Set Automatically switch should be in the ON position.

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11.3.1. AIS Target Information Window

In the AIS Target Information Window (see Chapter 8.3.1), there may be a photograph for the selected ship:

Tap the photo if it is necessary to check the photograph on the shipspotting.com site:

You can activate a filter for the own ship AIS target received in the Transas Pilot PRO via the Internet AIS Service to avoid controversy between the data on your ship actual position and data from the Internet AIS Service. You can do this in one of the following ways:

1. Specify the own ship MMSI number in the Settings / Ship Settings menu item:
2. Use the Set as Own Ship button in the bottom part of the selected AIS Target Information window:

3. Filtering can be disabled by deleting the own ship MMSI number with the aid of the button:

**AIS data update interval – data request to server:**

- Once in 30 seconds for the centre of the selected chart area (when the chart area is static);
- By any chart area re-draw command;
- By changing the display scale;

In the case of a request for the AIS data, the **data request** icon will appear on your device:

The **Last update** and **Age** fields:

- The **Last update** field shows the time of the most recently selected target positioning from the Internet AIS server;

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- The **Age** field shows the time elapsed since the most recent update time.

The *Transas Pilot PRO* application processes only updated AIS targets from the *Pocket Mariner* server and does not process AIS targets whose last received navigation data **Age** is more than **30 minutes**.

Timeout for dropping targets from the Internet AIS Service:

<table>
<thead>
<tr>
<th>AIS TARGET TYPE</th>
<th>VDM MESSAGE</th>
<th>TARGET LOSS TIMEOUT AFTER THE LATEST DATA</th>
<th>TARGET DROP TIMEOUT AFTER THE LATEST DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A AIS</td>
<td>Internet AIS</td>
<td>Not applicable</td>
<td>3 minutes of the <strong>Age</strong> parameter &gt; <strong>30 min</strong></td>
</tr>
<tr>
<td>Class B AIS</td>
<td>target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Station</td>
<td>Internet AIS</td>
<td>Not applicable</td>
<td><strong>30 min</strong></td>
</tr>
<tr>
<td>CHO</td>
<td>target</td>
<td>Not applicable</td>
<td><strong>30 min</strong></td>
</tr>
</tbody>
</table>
11.4. AIS Text Messages

The AIS Messages function enables the exchange of messages among the ships.

To receive and transmit messages, Transas Pilot PRO is required to be connected to the Class A AIS transponder via the Pilot Plug.

In the Data Type connection setting (see Chapter 5.5), set the AIS Text messages switch in the ON position:

- To open the Messages panel, open the User Info or Weather panel and tap the icon:

  ![Messages Panel](image)

- Select Messages. The Messages panel icon will replace the User Info or Weather panels:

  ![Messages Panel](image)

The Messages panel displays the following information:

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- **Inbox** messages
- **Outbox** messages

Transas Pilot PRO stores not more than fifty messages of each type. When the number of **Inbox/Outbox** messages reaches fifty, each new message automatically replaces the oldest of the messages.

- To create a new message, press the **New Message** button:

- Select the type of the message that you wish to send. Depending on its type, the message can contain from 151 to 161 characters.

- **Outgoing addressed messages:**

- **Received messages:**

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The number of unread messages is shown on the panel **Messages** tab:

- To send a message with ship information, open the AIS target information, tap the icon.

- For a reply to the received message, press.

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To delete all the message, tap Delete History:

To confirm deleting, press the Delete button in the warning window which will appear:

11.5. E-Navigation Module

The E-Navigation Module is available to the Transas Pilot PRO clients on the yearly subscription conditions. The module includes the following functions:

- Secured AIS data
- AIS meteo data
- IHO S-124 navigation warnings
- VTS ARPA targets support
- Routes AIS transmission

11.5.1. Secured AIS Data

The Secured AIS data function permits Transas Pilot PRO to be connected to the Navi-Harbour system Transas Vessel Traffic Service, Transas Client Server for receiving AIS data via the safe Internet connection.

To establish a safe connection:

- Open the Settings / Sensors / Connection Settings menu item
- Tap Add Connection and turn on Secured AIS Data

The Connection menu will be modified for handling the Secured AIS Data.

- Example of safe connection settings:

- Connection name;

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Address: coastal VTS server IP address;
Port: port number for the server;
Login: user login;
Password: user password;

Press the Back button and check that the VTS connection has been successfully established:

11.5.2. AIS Meteo Data

The AIS Meteo Data functionality permits processing of weather data received from the coastal weather stations and buoys. For the functionality to be used, on-board connection to the AIS receiver, AIS transponder is required, or TCP/IP connection with the coastal station over the Internet.

Information on weather stations is displayed on the AIS target Table page (see Chapter 8.3.1).

AIS Meteo Data functionality:

- Display setup in the Chart Settings / AIS Meteo Symbols menu item:

- The chart displays AIS Meteo with the wind and current direction if available:

- Search, sorting (by name, distance, TCPA) or weather station filtering in the AIS target table.

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To focus the application screen on a weather station, press on the weather station of interest in the AIS target table.

- To obtain information on an object, press the **Info** button:

- Tap **🔍** in the information menu for the selected weather station to open the selected station’s weather data display:
To view the weather data history for the selected weather station, use the icon.
11.5.3. IHO S-124 Navigation Warnings

The service permits S-124 format navigation warnings received from the VTS via e-mail to be imported to Transas Pilot PRO [see Chapter 10].

Upon the end of import, S-124 standard objects will be displayed on a list in the Objects menu, Nav Warnings submenu (object, text) in the relevant coordinates in the chart area:

- Navigation warnings are grouped as follows:
  - Navigation warnings (object) – contain geometry and the warning descriptive part.
  - Navigation warnings (text) – contain only the warning descriptive part

- Nav warning status:
  - Current, shown in the orange colour

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- Expired, shown in the grey colour

- Current warnings assigned with a [Danger] attribute are shown in red

Information on a navigation warning is available in the Objects table and in the chart area:
11.5.4. VTS ARPA Service

The service permits reception from the coastal VTS of AIS targets (ARPA) transmitted via the IP channel, which guarantees availability of information on such targets in the ship pilotage area in the absence of data from the shipboard AIS.

Preliminary Settings:

► Connect Transas Pilot PRO to the secure IP data transmission channel (see Chapter 11.5.1)
► Enter the connection data (name, address, port, login, password)

Data on targets is shown on the Transas Pilot PRO screen in the form of blue-coloured AIS targets. The full list of VTS ARPA targets received via the AIS channel can be viewed on the AIS Targets panel, the E-Nav Objects submenu:

Information on a VTS ARPA target can be viewed in the table of AIS targets and in the chart area:

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11.5.5. Ship-to-Ship Exchange of Planned Routes via AIS Channels

The service for the ship-to-ship exchange of routes via the AIS channels permits Transas Pilot PRO to receive motion routes from other ships, to correct the own route to take into account the received information thus ensuring safe collision avoidance.

- To receive a route from another ship, it is necessary:
  - to take information on the ship from the chart area or targets table.
  - to tap the Interrogate Route button in the bottom part of the selected ship information window:

    ![Interrogate Route Button](image)

    - Select the requested route type, the Interrogate Route button will change its colour to blue
      - ECDIS IMO type
      - ECDIS STM type
      - VDES STM type
    - Wait until the reception of the requested route type.

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The route received via the AIS channel is automatically displayed in the chart area:

The **Interrogate Route** button has changed to the **Show Route** button:

The **Show Route** button – to turn on/off the requested route display in the chart area.
12. CHANNEL PILOT MKII Sensor

12.1. General Information

The Navicom Dynamics Channel Pilot sensor provides GPS positioning and highly accurate rate-of-turn data with semi-independent heading data, as well as the independent AIS data reception.

Transas Pilot PRO can operate with Channel Pilot via the Wi-Fi connection (for details see Chapter 5.5 and Chapter 16.3).

Transas Pilot PRO detects the Channel Pilot and automatically connects to it. With the device connected, the Docking and Monitoring panels display its battery charge status:

The battery charge status is shown as follows:

- **Green** - 60-99%. **Operation time**: 9-15 hrs.
- **Yellow** - 20-60%. **Operation time**: 3-9 hrs
- **Red** - 20%. **Operation time**: less than 3 hrs.

12.2. CHANNEL PILOT MKII Sensor Calibration

**NOTE:** Before use, check that Channel Pilot battery is fully charged. Depending on the battery discharge state, the Channel Pilot charging may take from 1 hour to several hours.

Date of issue: May 2018
Connect the AIS antenna to the Channel Pilot device, check that it is fully seated and not cross threaded. It is recommended that the Channel Pilot be operated in the open air for the optimum performance. On the bridge wing, locate the best position (this is normally a place with a clear view of the sky and away from overhead structures or awning framing) for the Channel Pilot and place down using its magnetic base to hold it in position. Make a note of the Channel Pilot’s physical position with respect to bridge-bow datum mark (offsets) as these are needed for the charting software.

**ATTENTION!** Do not switch on the Channel Pilot until it has been placed in the operating location as the device has to be calibrated after the switching on. Failure to observe this precaution will cause the Channel Pilot to give an incorrect or unstable heading.

To turn on the device, press and hold the power supply button for approximately 4 seconds until the battery and connection indicators light up. Pressing the power button for another 4 seconds will switch the unit off.

The Channel Pilot will not transmit the heading or ROT until the MMSI number is set in the Transas Pilot PRO application [see Chapter 6.2](#).

For initializing, the Channel Pilot device should be advised the involved ship’s MMSI number. The following procedure is used:

- After Channel Pilot is turned on, it will be transmitting its GPS position. For heading and rate of turn, it is waiting for the MMSI number. It is important that Channel Pilot should receive, via its internal AIS receiver, the MMSI of the vessel in question.

- Enter the ship MMSI by using one of the following procedures:

  - Manually: specify the own ship MMS number in the “Settings”/“Ship Settings” menu item by using the iOS keyboard and confirm via the “Back” button:

    ![Ship Settings](image)

    If you send an MMSI message before the Channel Pilot receives an AIS message from that ship, calibration will fail and you will have to start anew.
- **Recommended:** use the **Set as Own Ship** button in the bottom part of the selected AIS target information window:

Filtering of the own ship AIS **Target Presentation** will be enabled automatically. Filtering can be disabled by deleting the **Own Ship MMSI** number by using the X sign in the "Settings"/"Ship Settings" menu item:

- Once the **Own ship MMSI** has been received, the **Channel Pilot** goes into a (minimum) 2-minute calibration routine. During this time, no heading or rate of turn is transmitted

- After 2 minutes of AIS messages, but only if it has received at least 2 of these from the ship in question, the **Channel Pilot** unit is calibrated and starts transmitting the **Heading** and **Rate-of-turn**

---

**NOTE 1:** Re-sending the same MMSI number at any time, including the calibration time, will be ignored – it neither speeds up nor re-starts the process. If you find out that you have sent an incorrect MMSI number (e.g., if you accidentally chose a wrong vessel with the cursor), then sending a new or different MMSI number will restart the calibration process, and no heading or rate of turn will be transmitted until the new calibration is completed.

**NOTE 2:** If you are on a stationary vessel (the ship’s AIS in the alongside mode at the birth) from which AIS messages are only transmitted over 3-minute intervals, calibration will take at least 6 minutes as it needs at least two valid AIS messages to complete the calibration.

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Date of issue: May 2018
13. Standard External Sensors

This annex provides description of different sensors and their settings for connection to Transas Pilot PRO.

**ATTENTION:** Information is taken from official manufacturer sites and Internet and may be outdated. User the manufacturer’s current information!

13.1. Connection to External Bluetooth GPS

There are different products on the market: GNS2000, Garmin GLO, Dual Nav X160, BadElf, etc;

**NOTE:** The GPS receiver is required to be compatible with Apple devices, as it operates via the Apple iOS dedicated protocol (Apple Location Services) which provides data in a special (non-NMEA) format.

**Purpose:**

Positioning (LAT – latitude, LON- longitude, COG- course over ground, SOG- speed over ground) using an external Bluetooth GPS receiver as the main or backup sensor:

![Bluetooth GPS receivers](image)

**Standard connection settings:**

Paired Bluetooth connection (for details see the manufacturer documentation).

Transas Pilot PRO settings on the Settings panel, the Sensors menu item:

- Primary GPS: iOS
- Heading sensor: Off
- Rate of turn: Off.

Sensor accuracy:

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Variable, depends on the sensor and its chip (GPS, GLONASS, WAAS, etc.).

**Internal battery** (autonomous operation):
Available.

### 13.2. Connection to AIS Pilot Plug Wi-Fi Router

- **Manufacturer and Models**: different on the market;
- **Main purpose**: Wi-Fi router for connection to the shipboard Class A AIS transponder via the Pilot Plug;

![Image of Pilot Plug and Wi-Fi Router]

- **Standard connection settings**: Wi-Fi over TCP or UDP *(for details see the manufacturer documentation)*;
- **Transas Plot PRO** device settings on the **Settings** panel, the **Sensors** menu item:
  - primary positioning system: AIS
  - heading sensor: AIS
  - rate of turn: AIS (on very rare occasions absence of rate-or-turn data from the shipboard class A AIS) or CALC (Calculated) *(Recommended when there is no ROT data from the AIS)*.
- **Sensor accuracy**: variable, depends on quality of the ship sensors connected to class A AIS transponder: AIS GPS, Gyro Compass – gyro and ROT data (on very rare occasions). Heading data is transmitted from the AIS without decimals.
- **Weight**: variable, hundred grams – a very light and compact device.
- **Internal Battery** *(autonomous operation)*: available, different options on the market.

### 13.3. Connection to CHANNEL PILOT MKII Device

- **Manufacturer**: Navicom Dynamics

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Date of issue: May 2018
Main purpose: fully autonomous sensor and AIS receiver for pilot operations

Standard Connection Settings: Wi-Fi via TCP (for details see the latest Navicom Dynamics documentation. Also available on the market are versions for operation with the Bluetooth, but these are not supported by the Transas Pilot PRO device). Standard connection settings for the Transas Pilot PRO application:

- **Connection type**: TCP
- **TCP/IP address**: 192.168.2.X (where X are the digits after zeros in the unit serial number).
  
  **Example**: Serial number = CP20032-WS = IP 192.168.2.32

- **Port number**: 5003

Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:

- **primary positioning system**: NMEA
- **heading sensor**: NMEA
- **rate of turn**: NMEA

Built-in AIS receiver: available, operating range is more than 10 nautical miles (standard)

Sensor accuracy:

- **GPS**: < 2.5 m (uncorrected), less than 1 m (SBAS – satellite based augmentation system), MF beacon antenna (optional)
- **HDG (heading)**: +/- 0.5°
- **ROT – rate of turn**: < 0.5 deg/min
- **Weight**: 850 g (optional MF beacon unit – 1 kg)
- **Internal battery (autonomous operation)**: Available. Battery life time: > 15 hours. Li-Ion rechargeable.

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13.4. Connections to HARBOUR PILOT Device

- **Manufacturer**: Navicom Dynamics;
- **Main purpose**: fully autonomous sensor and AIS receiver for pilot operations;

- **Standard Connection Settings**: Wi-Fi via TCP (for details see the latest Navicom Dynamics documentation. Also available on the market are versions for operation with the Bluetooth, but these are not supported by the Transas Pilot PRO device). Standard connection settings for the Transas Pilot PRO application:
  - Connection type: TCP
  - TCP/IP address/ Port number: for details see the latest Navicom Dynamics documentation.
- **Transas Pilot PRO device settings on the Settings panel, the Sensors menu item**:
  - primary positioning system: NMEA
  - heading sensor: NMEA
  - rate of turn: NMEA
- **Built-in AIS receiver**: available, operating range is more than 7 nautical miles (standard)
- **Sensor accuracy**:
  - GPS/GLONASS L1: DGPS +/- 0.5 m, RTK +/- 0.01 m
  - HDG Accuracy: +/- 0.02°, Heading precision: +/- 0.01°
  - Rate of turn: +/- 0.5 deg/min
  - Speed: +/- 0.02 m/s (0.05 knot)
- **Weight**: < 3 kg
- **Internal battery [autonomous operation]**: Available. Battery life time: > 15 hours. Li-lon rechargeable.

Date of issue: May 2018
13.5. Connection to GYRO PILOT Device

Manufacturer: Navicom Dynamics.

Purpose: GPS sensor, rate-of-turn sensor and Wi-Fi router for connection to the ship Class A AIS transponder via the Pilot Plug.

- **Standard Connection Settings:** Wi-Fi via TCP (for details see the latest Navicom Dynamics documentation. Also available on the market are versions for operation with the Bluetooth, but these are not supported by the Transas Pilot PRO device). Standard connection settings for the Transas Pilot PRO application:
  - Connection type: TCP
  - TCP/IP address / Port number for details see the latest Navicom Dynamics documentation.
- **Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:**
  - primary positioning system: AIS (positioning from the AIS GPS) or NMEA (Gyro Pilot device internal Backup GPS)
  - heading sensor: NMEA
  - rate of turn: NMEA
- Built-in AIS receiver: none
- Sensor accuracy:
  - **GPS:** variable, depends on the GPS sensor selected above (AIS or 33 channel built-in GPS unit)
  - **Heading accuracy:** ship heading via AIS is rounded to the nearest 0.1°
  - **Rate of turn:** 0.5 deg/min (2 sigma, provisional).
- **Weight:** <300 g
- **Internal battery (autonomous operation):** Available. Battery life time: > 15 hours. Li-Ion rechargeable.

13.6. Connection to E-SEA FIX CAT ROT & CAT I Device

Manufacturer: Marimatech;

Date of issue: Version 2.4.0. May 2018
Main purpose: GPS [CAT ROT v2 with CAT l only], rate-of-turn sensor and Wi-Fi router for connection to the ship class A AIS transponder via the Pilot Plug GPS;

13.6.1. CAT ROT v1

iOS iPad settings:
- Wi-Fi: “routing” network
- Enable the automatic connection
- Set the static IP: 192.168.3.xxx (to be specified or should correspond to the hardware serial number)
- Set the subnet: 255.255.255.0

Connection type 1 – “TCP”

Pilot PRO Settings:
- Connection type: TCP
- TCP/IP address: 192.168.3.yy
- Port number: 5000 (to obtain position, HDG and ROT using the incoming VDO sentences from AIS)
  Alternatively, port number: 5001 (to obtain position using the incoming VDO sentences from AIS, HDG and ROT via NMEA sentences from the internal sensor. Recommended!)

Connection type 2 – “UDP”

Pilot PRO Settings:
- Connection type: UDP
- Port number: 17609 (to obtain position, HDG and ROT using the incoming VDO sentences from AIS)
  Alternatively, port number: 17608 (to obtain the position using the incoming VDO sentences from AIS, HDG and ROT via NMEA sentences from the internal sensor. Recommended!)

Date of issue: May 2018
ATTENTION: The aforementioned settings may differ from settings in the latest versions of CAT ROT sensors! Information here is based on the CAT ROT v1 device and is provided exclusively for information purposes.

13.6.2. CAT ROT v2

iOS iPad Settings:

- Network: “MARIMATECH” (Password: 86912255)
- Enable the automatic connection
- It should be noted that the CAT ROT v2 device is configured as an access point and automatically provides the IP address to the iPad/PC. The CATI GPS sensor will be automatically connected to the CAT ROT v2 device.

ATTENTION! The Transas Pilot PRO application operates via the specified IP address and the Port number. You may try to use the static IP address and settings specified above under section CAT ROT v1, but without any guarantee at the moment, since we have no feedback on this configuration and its fitness for service.

- Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:
  - primary positioning system: AIS (positioning by the AIS GPS) or NMEA (positioning by the CAT I device GPS receiver)
  - heading sensor: NMEA
  - rate of turn: NMEA
  - Built-in AIS receiver: none
  - Sensor accuracy:
    - GPS: variable, depends on the selected sensor (ship instruments, RMS < 0.8 m CAT I GPS)
    - Heading accuracy: ship heading by AIS, resolution of 0.1°
    - Rate of turn: < 0.5 deg/min

- Weight: <300 g

- Internal Battery [Autonomous operation]: available. 22 hours for CAT ROT, 16 hours for CAT I GPS, rechargeable.
13.7. Connection to E-SEA FIX CAT II Device

Manufacturer: Marimatech;
Main purpose: fully autonomous sensor and AIS receiver for pilot operations;

Standard connection settings: Wi-Fi over TCP (for details see the Marimatech technical documentation).

iOS iPad Settings:
- Wi-Fi network: “E_Sea_Fixx” (where x is your device identifier)
- Set the static IP: should be specified on the HW
- Set the subnet: 255.255.255.0

Pilot PRO Settings:
- Connection type: TCP
- TCP/IP address / Port number: should be in the same IP group as in in the iOS setting
- Wi-Fi “Static IP”. No feedback on this configuration, for details see the Marimatech technical documentation.

Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:
- primary positioning system: NMEA
- heading sensor: NMEA
- rate of turn: NMEA
  - Built-in AIS receiver AIS: available
  - Sensor accuracy:
    - DGPS/GLONASS L1: GPS mode: < 1.5 m, SBAS mode: < 0.6 m, RT 2: 0.02 m, RT 20: 0.20 m, Standard: 0.45 m
    - Heading accuracy: RMS <0.05°, heading precision: 0.01°
    - Rate of turn: < 0.5 deg/min
    - Speed: 1 cm/s (0.025 knot)
- Weight: 3.75 kg
- Internal battery (autonomous operation): available. 9 hours.

Date of issue: May 2018
13.8. Connection to E-SEA FIX CAT III Device

Manufacturer: Marimatech;

Main purpose: fully autonomous sensor for pilot operations

Standard connection settings: Wi-Fi over TCP (for details see the Marimatech technical documentation).

Standard settings for the Transas Pilot PRO application:

iOS iPad settings:
- Wi-Fi network: “E_Sea_Fixx” (where x is your device identifier)
- Set the static IP: should be specified on the HW
- Set the subnet: 255.255.255.0

Pilot PRO settings:
- Connection type: TCP
- TCP/IP address / Port number: should be in the same IP group as in the iOS Wi-Fi Static IP settings. 
  No feedback on this configuration, for details see the Marimatech technical documentation.
- Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:
  - primary positioning system: NMEA
  - heading sensor: NMEA
  - rate of turn: NMEA
  - Built-in AIS receiver: none
  - Sensor accuracy:
    - DGPS/GLONASS L1/L2 RTK base station: < 2 cm
    - Galileo-ready, SBAS (EGNOS, WAAS, MSAS, GAGAN)
    - Roll sensor, precision: 0,1°
    - Pitch sensor, precision: 0,1°
    - Heave sensor, precision: 3-5 cm

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- Heading accuracy: 0.05°, heading precision: 0.01°
- Rate of turn: 0.3 deg/min
- Speed: 1 cm/s (0.025 knot)
- Weight: 3.75 kg
- Internal battery [autonomous operation]: available.

### 13.9. Connection to ADX XR Sensor

**Manufacturer:** AD Navigation;

**Main purpose:** fully autonomous sensor for the pilot operations;

![Connections](image)

**Standard connection settings:** Wi-Fi over TCP [For details see the AD Navigation technical documentation].

Standard connection settings from the Transas Pilot PRO application:

For detailed information on the connection, see the AD Navigation technical documentation!

- **Transas Pilot PRO** device settings on the **Settings** panel, the **Sensors** menu item:
  - primary positioning system: NMEA
  - heading sensor: NMEA
  - rate of turn: NMEA
- Built-in AIS receiver: no information
- Sensor accuracy:
  - Position: 1-2 cm (RTK mode)
  - Positioning by EGNOS, WAAS: 0.8 m
  - Heave /Squat: 2-3 cm (RTK mode)
  - Heading accuracy: 0.01° (20 m with the POD separation)
  - Rate of turn: 0.1 deg/min
  - Bow and stern speed: 1 cm/s (0.02 knot)
- Weight: 4.2 kg [all the three pods]
- Internal battery [autonomous operation]: available. 11 hours (UHF), 7 hours (dual modem).

Date of issue: May 2018
13.10. Connection to ‘ADX DUO’R Sensor

**Manufacturer:** AD Navigation;

**Main purpose:** fully autonomous sensor and AIS receiver for the pilot operations

**Standard connection settings:** Wi-Fi over TCP [For details see the AD Navigation technical documentation]. Standard connection settings from the Transas Pilot PRO application:

For detailed information on the connection, see the AD Navigation technical documentation!

- **Transas Pilot PRO device settings** on the Settings panel, the Sensors menu item:
  - primary positioning system: NMEA
  - heading sensor: NMEA
  - rate of turn: NMEA

- **Built-in AIS receiver:** available. 5 nautical miles

- **Sensor accuracy:**
  - Position: 11.8 cm [uncorrected]
  - Positioning by EGNOS, WAAS: 0.5 m
  - Heading accuracy: 0.01°
  - Rate of turn: 0.2 deg/min
  - Bow and stern speed: 1 cm/s (0.02 knot)

- **Weight:** 1.3 kg [each pod]

- **Internal battery [autonomous operation]:** available. 15 hours.

13.11. Connection to CADDEN GEOD 100 Sensor

**Manufacturer:** Cadden;

**Main purpose:** fully autonomous sensor for pilot operations;

Date of issue: Version 2.4.0. May 2018
Standard connection settings: Wi-Fi over TCP (For details see the CADDEN technical documentation). Standard connection settings from the Transas Pilot PRO application:

Pilot PRO Settings:
- Connection type: TCP
- TCP/IP address: 192.168.1.10
- Port number: 10001
- Transas Pilot PRO device settings on the Settings panel, the Sensors menu item:
  - primary positioning system: NMEA
  - heading sensor: NMEA
  - rate of turn: NMEA
- Built-in AIS receiver: none
- Sensor accuracy:
  - DGPS/GNSS: < 0.6 m (95% confidence)
  - Built-in EGNOS, WAAS
  - Heading accuracy: 0.2° (RMS)
  - Rate of turn: < 0.5 deg/min
  - Speed over ground: < 0.1 kt
- Weight: 4.5 kg
- Internal battery (autonomous operation): Available. > 6 hours.

Date of issue: May 2018
14. Troubleshooting

14.1. No COG or SOG Data from Primary Positioning System: iOS

On the Monitoring panel, you can sometimes see the screens shown below. It means the following: Apple iOS Location Service provides invalid data or only position data (without COG and SOG or without SOG only), based on the Wi-Fi trilateration or 3G triangulation positioning:

In this case it would be most rational to assume that it is impossible to use positioning by the Internal GPS (for iPad Wi-Fi + Cellular or iPad mini Wi-Fi + Cellular models) or by an external GPS (connected to the device via Bluetooth, if available) due to the following possible reasons:

- external Bluetooth GPS unit is turned off;
- GPS satellites are out of visibility (e.g., within the buildings) or obscured by structures, and cannot be used for positioning by internal or external GPS.
- Apple iOS Location Service uses only Wi-Fi or 3G masts for the positioning purposes.

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