Operator Manual

KONGSBERG

XPR 100

Long-Range Relative Positioning System

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XPR-D-User/6.0

Document information

- Product: XPR 100
- Document: Operator Manual
- Document part number: XPR-D-User

Copyright

Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. You must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment.

Kongsberg Seatex disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

Disclaimer

Kongsberg Seatex AS endeavours to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

Support information

If you require maintenance or repair, contact Kongsberg Maritime's support organisation. You can contact us using the following address: km.support.seatex@km.kongsberg.com. If you need information about our other products, visit http: //www.kongsberg.com.

Table of contents

About this manual

Purpose of manual

The purpose of this manual is to provide the descriptions and procedures required to operate, troubleshoot and maintain the XPR system.

Target audience

This manual is intended for navigators and other personnel working on the bridge.

License information

The XPR 100 system is not a licensed product. The product is a radio transmitting device. A national license for the use of radio frequencies is required for operation.

Maintenance purposes

This manual is also intended as reference material for the maintenance personnel. Keep this manual for later use.

XPR 100

Topics

System description

XPR 100 is a microwave-based solution developed for Dynamic Positioning (DP) applications in need of long-range relative positioning. It operates in the 9.2 to 9.3 GHz band. Each light weight Sensor Unit has an opening angle of 100 degrees.

XPR 100 can be deployed as an omni directional system using several sensor units. This will give the system an extended operational area of up to 280°. It will also avoid blind angles.

The system can be interfaced to remote systems such as Dynamic Positioning. Either through Ethernet or serial lines. Configuration and operation of the system is done through the application software.

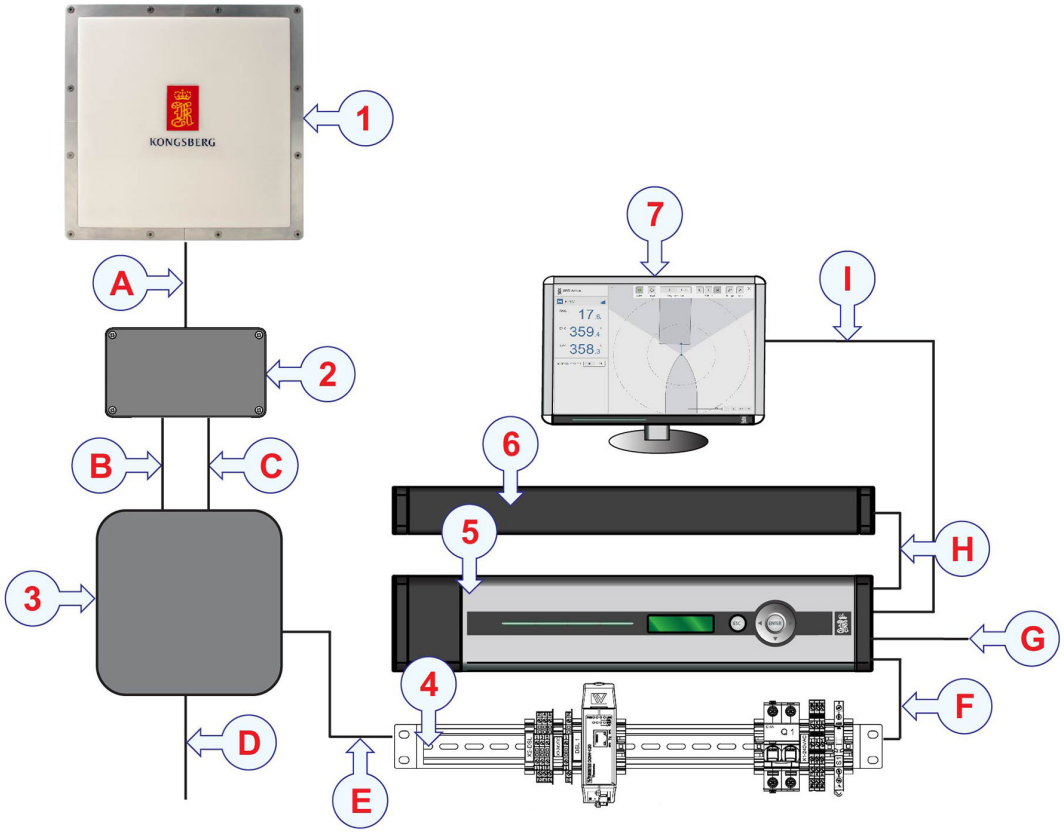
The system has automatic target selection, built-in system test and verification.

The system can be set up to operate as an interrogator or a transponder.

XPR 100 meets the requirements specified by IMO for DP Class 2 vessels.

System diagram

The system diagram identifies the main components of a basic XPR 100 system. The illustration shows a system installation with a single Sensor Unit. Some mains cables are not shown in the diagram.



Main system units

1 *XPR Sensor Unit*

(Set up as Interrogator or Transponder)

2 *Junction box*

3 *Remote interface cabinet (RIFC)*

4 *Local interface rail (LIFR)*

5 *Processing Unit*

6 *Keyboard and mouse*

7 *Display*

Cables

A *Power and data cable, Pigtail fixed to Sensor Unit*

B *Power cable (Junction box to RIFC)*

C *Ethernet cable (Junction box to RIFC)*

D *Power cable to RIFC (input)*

E *Data cable (RIFC to LIFR)*

F *Ethernet cable (LIFR to Processing Unit*

G *RS-422 to DP*

H *Keyboard/mouse cable*

I *VGA cable*

You can also have an XPR system with two or three Sensor Units for extended operation area. Then you need a Junction box for each of the Sensor Units. Or you can use a triple Junction box.

Product restrictions

Topics

Restrictions in guarantee

Changes or modifications to the product not explicitly approved by Kongsberg Seatex AS will void the guarantee.

The liability of Kongsberg Seatex AS is limited to repair of this product only under the given terms and conditions stated in the sales documents. Consequential damages such as customer's loss of profit or damage to other systems traceable back to this product's malfunctions, are excluded.

The warranty does not cover malfunctions of the product resulting from the following conditions.

- Incorrect power connection.
- The Sensor Unit housing has been opened by the customer in an attempt to carry out repair work.
- The Processing Unit housing has been opened by the customer.

Restrictions in use

The operation sector of the Sensor Units is 100 degrees. If the vessel goes beyond the operating sector, the system will output range and bearing with decreased precision until the signal is completely lost.

XPR radio frequencies

XPR systems with operating frequencies in the range 9.2 – 9.3 MHz are compliant to relevant parts in the standard ETSI EN 302 248 v2.1.1.

Use of these radio frequencies in territorial waters may be subject to the national regulations of the administration concerned.

Radio frequency license

This product contains a radio transmitting device. A frequency license for the use of radio frequencies is required for operation. Use in national waters will require a frequency license issued by the relevant national authorities. The owner and user of the equipment are responsible for obtaining such a license prior to switching the product ON.

It may be required to switch the product OFF when the product is brought close to shore (closer than 12 NM).

Possible radio frequency interference

This equipment generates, uses and can radiate radio frequency energy. If the equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communication or other electronic equipment. However, there is no guarantee that interference will not occur in a particular installation.

You can determine if this equipment causes harmful interference by turning the equipment off and on.

If this equipment causes harmful interference to radio or television reception, try to correct the interference by one or more of these measures.

- If possible, reposition or relocate the electronic equipment.
- Increase the separation between this equipment and the receiver.
- Connect this equipment to an outlet on an electronic circuit different from the one to which the disturbed equipment is connected.
- Consult the manufacturer or dealer for help.

Weather hazards

Strong winds and hail may be environmental hazards for the equipment.

In the event of a weather forecast for severe storms, the equipment should be switched off. After the storm, the equipment should be inspected for possible damage before the power to the equipment is turned back on.

Note

According to meteorological reports, severe hailstorms with large hailstones are less likely to occur in an offshore environment. Severe hailstorms are more frequent in continental regions. Care should always be taken when there are severe weather forecasts.

After severe weather exposure the equipment should be switched off. Look for possible physical damage to the Sensor Unit cover. If there is any damage, the power must not be turned back on until the Sensor Unit has been replaced.

Network security

If the XPR 100 product is connected to a local area network, data security is important.

Equipment manufactured by Kongsberg Seatex is frequently connected to a local area network (LAN). When you connect a computer to a local area network you will always expose the data on that computer. All other computers connected to the same network may be able to access your data. Several threats may immediately occur:

- Remote computers can read the data.
- Remote computers can change the data.
- Remote computers can change the behavior of the computer, for example by installing unwanted software.

Usually, two parameters are used to define the threat level:

1 The likelihood that any remote computer will do any of the above.

2 The damage done if a remote computer succeeds doing this.

Kongsberg Seatex has no information regarding the complete system installation. Systems provided by Kongsberg Seatex are regarded as stand-alone offline systems. They are stand-alone even though they may be connected to a network for sensor interfaces and/or data distribution.

Note

No network safety applications are installed on Kongsberg Seatex computers. The computers are therefore not protected against viruses, malware or unintentional access by external users.

Securing the XPR 100 itself has no meaning unless there is a policy in place that secures all computers in the network. This policy must include physical access by trained and trusted users. The customer/end user of the XPR 100 will always be in charge of defining and implementing a security policy, and providing the relevant network security applications.

Note

Kongsberg Seatex will not accept any responsibility for errors and/or damages caused by unauthorized use of or access to the XPR 100.

Support information

If you need technical support for your product you must contact Kongsberg Seatex AS or a Kongsberg Maritime office. A list of our offices is provided on our website.

- **Company name**: Kongsberg Seatex AS
- **Address**: Havnegata 9, 7010 Trondheim, Norway
- **Telephone**: +47 73 54 55 00
- **Telephone, 24h support**: +47 33 03 24 07
- **E-mail address**: km.support.seatex@km.kongsberg.com
- **Website**: http://www.kongsberg.com/maritime

Operation

Topics

Turning the XPR system on/off

Topics

Turning on the XPR system

To use the XPR 100 system, you must turn it on. You must first turn on the display and the computer.

Context

After it has been turned on, the Processing Unit will go through an initialization phase. Then the leftmost LED is red. This will turn green when the system is operational.

The software is pre-installed and the system will start automatically after it has been turned on.

Procedure

1 Turn on the display.

2 Turn on the Processing Unit by pressing the power switch located under the lid at the front of the unit.

When the Power/SW LED turns green, the unit is running.

Result

The system will start up automatically in *Standby* mode.

Turning off the XPR system

If the XPR system is not required for a longer period, turn off the entire system.

Context

Note

If the XPR system is not required for a shorter period, you can set it to **Standby** *mode.*

Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Shutdown**.

2 Type the password: **stx**. Select **OK**.

3 Wait 30 seconds.

4 Turn off the display.

5 Turn off the Processing Unit by pressing the power switch located under the lid at the front of the unit.

6 Turn off the power to the Sensor Unit.

Related topics

Setting the system to Active or Standby mode manually, page 22
Confirming that the XPR system is active, page 18
Solving zero calibration failure, page 79
Shutdown, page 58

Restarting the XPR system

Sometimes it may be necessary to restart the XPR system. For example if an unexpected event should occur.

Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Reboot**.

2 Type the password: **stx**. Select **OK**.

3 Wait for the system to restart.

Result

The Processing Unit will restart. The system will start up automatically in *Standby* mode.

Related topics

Reboot, page 58

Operating procedures

Topics

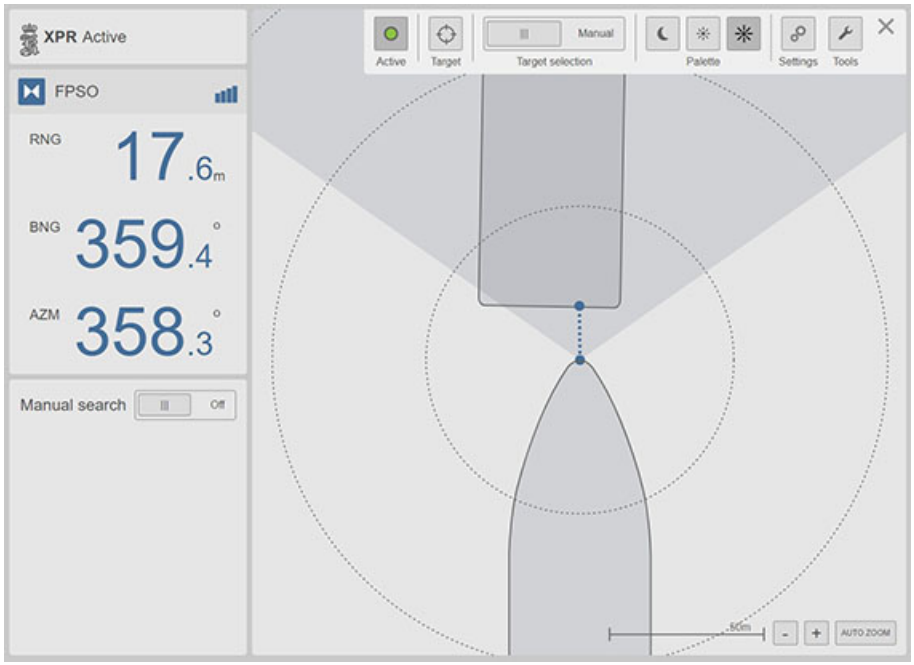
Confirming that the XPR system is active

For the XPR system to be operational, it must be in *Active* mode.

Context

The **Active** button on the **System menu** toggles the Sensor Unit between *Active* or *Standby* mode. The LED is green when the system is in *Active* mode. This is the mode for normal operation.

The LED is grey when the system is in *Standby* mode. In this mode the Sensor Unit will not transmit any radio signals. It is recommended that you switch to *Standby* mode when the system is not in operation.



Procedure

1 Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu.

2 Observe that the **Active** button is green.

Related topics

Turning off the XPR system, page 16
Active, page 42

Selecting a target

Select a target to specify the frequency pair and address code you want to use. If you want to use a specific pair and address code, you must create a new target before you can select it.

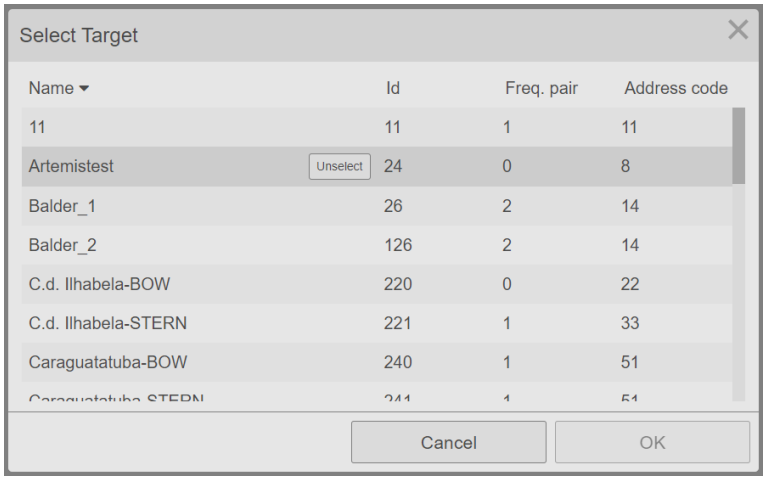
Prerequisites

This item is only available when the system is set up to operate as an interrogator.

The targets in the **Target list** are pre-installed by the manufacturer. If you need a target which is not in the **Target list**, you can add a new target.

Context

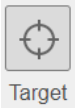
The Sensor Unit on the shuttle tanker must be set to the same frequency pair and address code as on the Floating Production Storage and Offloading vessel (FPSO)/Floating Storage Unit (FSU). This is done by selecting a target.



Procedure

1 Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu.

2 Select **Target**.



3 Select the preferred target site from the list.

4 Select **OK**.

Related topics

Target, page 42
Select Target, page 43

Adding a new target

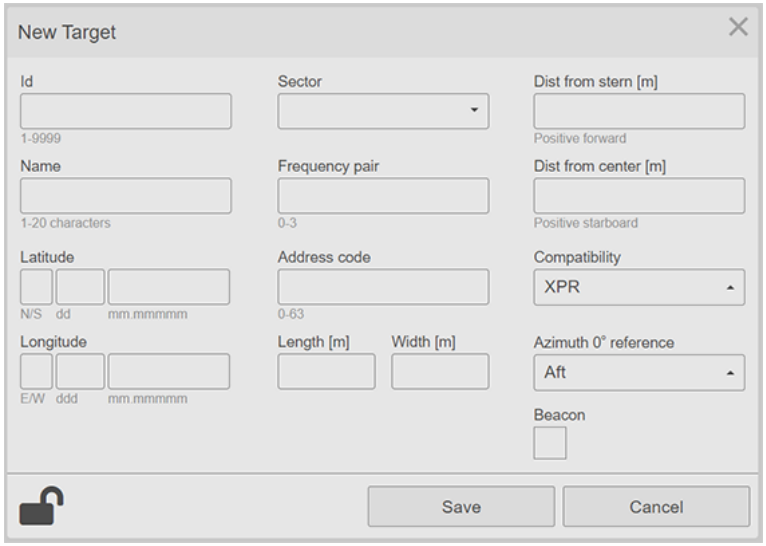
If you need a target which is not in the **Target list**, you can add a new target.

Prerequisites

This item is only available when the system is set up to operate as an interrogator.

Context

Azimuth 0° reference is the reference for the angle (azimuth) reported from the transponder Sensor Unit to the interrogator Sensor Unit. For transponder Sensor Units mounted in the stern this should be set to **Aft**. For transponder Sensor Units mounted in the bow, this should be set to **Fwd**. If the remote vessel is displayed 180 degrees wrong, change this setting.



Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Target Editor**.

2 Select **New**.

3 Enter values in each box.

Important

The **Id** parameter must be unique. The **Frequency pair** and **Address code** parameters must be correct for the system to function properly.

4 For **Compatibility**, select the type of transponder Sensor Unit which is located on the target.

5 For **Azimuth 0° reference**, select the location of the transponder Sensor Unit on the vessel.

6 Select **Beacon** if the target is an Artemis Beacon Unit.

7 Select **Save**.

Related topics

New Target / Edit Target, page 56
Correcting heading error for target vessel, page 74

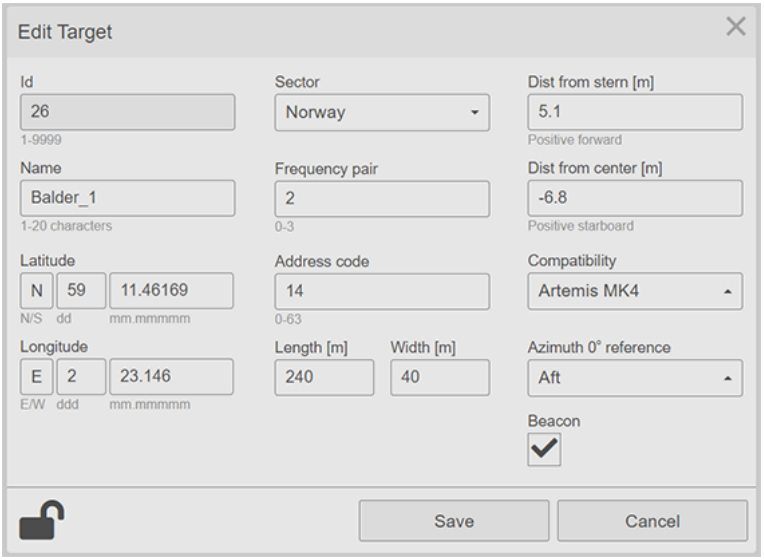
Editing a target

If some information about a target in the **Target list** has been changed, you can edit the target information.

Prerequisites

This item is only available when the system is set up to operate as an interrogator.

Context



Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Target Editor**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select the target you want to edit.

4 Select **Edit**.

5 Edit the values you want to change.

Important

The **Id** parameter cannot be changed. The **Frequency pair** and **Address code** parameters must be correct for the system to function properly.

6 Select **Save**.

Related topics

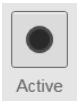
New Target / Edit Target, page 56
Target Editor, page 55
Correcting heading error for target vessel, page 74
Correcting unknown target from dynamic positioning (DP) system, page 76

Setting the system to Active or Standby mode manually

The Sensor Unit on the shuttle tanker is by default set to *Standby* mode. It must be activated to start measuring range and bearing to the Floating Production Storage and Offloading installation (FPSO)/Floating Storage Unit (FSU).

Context

You activate the Sensor Unit by enabling or disabling the **Active** button. A green circle in the **Active** button indicates that the system is active and operational. After some time without reception of any data, the XPR system will automatically return to *Standby* mode.

***Active* mode**	***Standby* mode**
	

Procedure

1 Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu.

2 Select the **Active** button.

Related topics

Turning off the XPR system, page 16
Active, page 42
Solving zero calibration failure, page 79

Searching for a target manually

If the system tries to track a known target but is unable to find it, you can narrow down the search area to a specific sector.

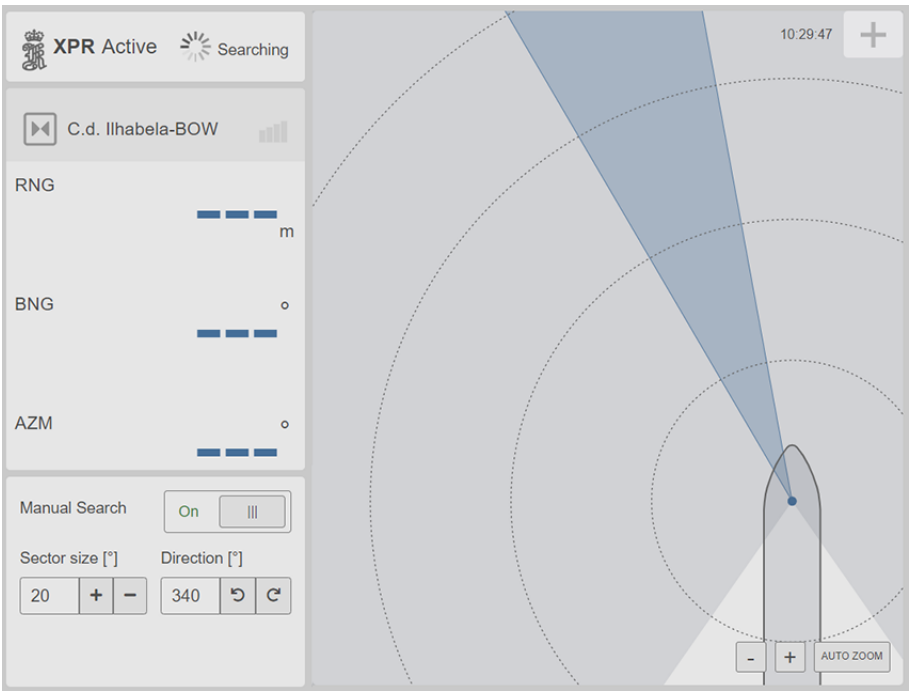
Prerequisites

The **Manual search** option must be enabled in the **Display** page.

This item is only available when the system is set up to operate as an interrogator.

Context

Signal reflections and other disturbances might cause problems with range and bearing. In some situations it might help to aid the search sector manually. If the system is in **Active** mode, and a target cannot be found automatically, you can enable manual search of a target.



Procedure

1 Set **Manual search** to **On**.

2 Select the sector size.

3 Select the direction.

Related topics

Display, page 46
Enabling display of manual target search, page 29

Setting the azimuth offset value

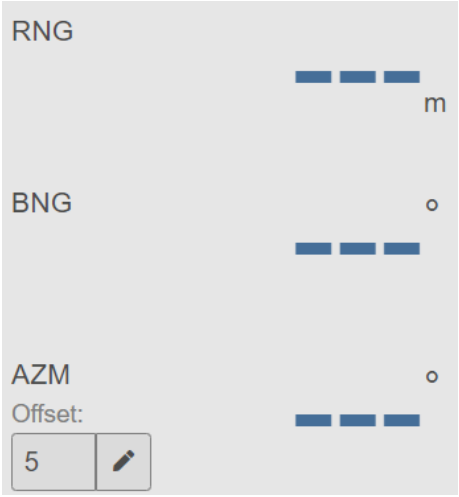
You can use the **Azimuth offset** option to adjust minor errors in the reported angle between the transponder Sensor Unit and the interrogator Sensor Unit.

Prerequisites

The **Display azimuth offset** option must be enabled in the **Display** page.

Context

The azimuth offset is set to 0 whenever a new target is selected. The azimuth offset will also affect the azimuth value sent to the dynamic positioning (DP) system.



Procedure

1 In the **Range and bearing** view, select the pencil and type the offset value in degrees.

2 Select **OK**.

Related topics

Display, page 46
Enabling display of azimuth offset, page 29

Checking the system status

The **System status** box shows the overall XPR system status. The System status is located at the top left of the **Main** view. Here you can observe if the system is operating as intended.

Context

Status text colour

The colour of the text in the **System status** box indicates how the system is operating.

- **Red**:The system is not operating as intended.
- **Yellow**: The system has detected warnings or reduced operability.
- **Grey**: Info message or inactive Warning/Alarm.

The **System status** view with the **Event list** can be observed for more details on the system status.

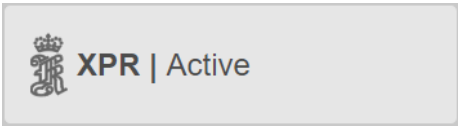
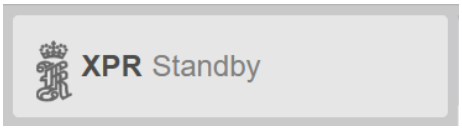
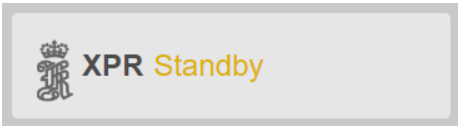
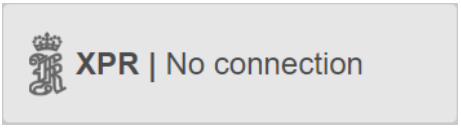
Alarm situation

Red and yellow events are currently active. The time stamp in the **Event list** is the time of last activation. The counter indicates how may times the event has been activated since system startup.

Severity levels

- **Alarm**: High priority.
- **Warning**: Medium priority.
- **Info**: Information messages. Low priority.

The table describes the various states of the XPR system.

System status	Description
	The system is active and operational. It will search for transponders which are within range. If a transponder is within range, the system will display data.
	The system is standby and it is operational. There is no tracking of transponders. No data are displayed.
	The system is standby but one or more warnings are present. See the **Event list** for details.
	The system is active but one or more warnings are present. See the **Event list** for details.
	There is no connection between the XPR graphical user interface (GUI) application and the processing application on the Processing Unit.
	The Processing Unit is unable to connect to the XPR sensor(s).

Procedure

1 Select the **System status** box to open the **System status** view.

2 Observe the system status description and details about the events which have occured.

3 Close the **System status** view.

Related topics
System status, page 36

User preference procedures

Topics

Selecting colour palette for display

You can select a colour scheme for the display which suits your current light conditions.

Context
The **Palette** function provides colour schemes for the display presentation. Three palettes are available, as indicated in the **Palette** group of the **System** menu. Night, Day black and Day white.

Procedure

1 Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu.

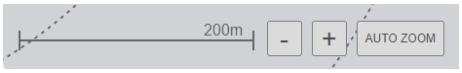
2 Under **Palette**, select the colour scheme you want to use.

Related topics
Palette, page 45

Scaling the Radar view

Use the zoom function to change the scale of the view.

Context



Procedure

1 Select the **[+]** button or the **[–]** button to zoom the **Radar** view one step in our out, respectively.

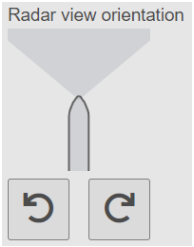
2 Select **Auto zoom**. The system will automatically keep own vessel and remote vessel in the view.

Deselect **Auto zoom** by selecting the**[+]** button or the**[–]** button.

Selecting Radar view orientation

You can select the orientation of the **Radar** view to four different orientations. This can be done to fit how the display is installed on the vessel.

Context



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select the **Right** or **Left** arrow to change the vessel orientation in steps of 90 degrees.

Related topics
Display, page 46
Activating the configuration parameters, page 32

Selecting measurement unit in display

You can select which measurement unit you want to use in the display.

Context

Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select **Metric** to select metres as measurement unit or select **Imperial** to select feet as measurement unit.

Related topics

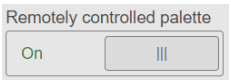
Display, page 46
Activating the configuration parameters, page 32

Enabling remotely controlled palette

You can enable the colour palette for the display presentation to be changed from a remote system.

Context

You can manually select any colour palette for the display presentation directly on the XPR system. You can also enable the colour palette to be controlled from the dynamic positioning (DP) system. It a new colour palette is selected on the DP system, the XPR palette will change automatically.



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Set **Remotely controlled palette** to **ON**.

Related topics

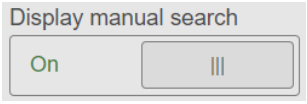
Display, page 46

Enabling display of manual target search

You can enable the **Manual search** option to be visible in the display presentation.

Context

Signal reflections and other disturbances might cause problems with range and bearing. In some situations it might help to aid the search sector manually. If the system is in **Active** mode, and a target cannot be found automatically, you can enable manual search of a target.



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Set **Display manual search** to **On**.

Related topics

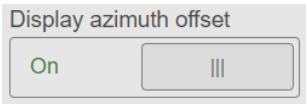
Display, page 46
Searching for a target manually, page 22

Enabling display of azimuth offset

You can enable the **Display azimuth offset** option to be visible in the display presentation.

Context

To adjust minor errors in the reported angle between the transponder Sensor Unit and the interrogator Sensor Unit, use azimuth offset. This offset is set to 0 whenever a new target is selected. The azimuth offset also affects the azimuth value sent to the dynamic positioning system (DP).



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Set **Display azimuth offset** to **On**.

Related topics

Setting the azimuth offset value, page 23
Display, page 46

Enabling display of remote heading or azimuth

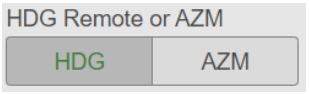
You can choose if you want to display remote heading or azimuth in the display presentation.

Prerequisites

This item is only available when the system is set up to operate as a transponder.

For the system to be able to display remote heading, heading must have been enabled. Either via **Input** page, **Vessel** page or through **DP** interface.

Context



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select either **HDG** or **AZM**.

User interface

Topics

Operational principles

The XPR 100 has a graphical configuration and user interface.

The system can be operated using a mouse and keyboard or via a touch display. A mouse is the recommended interaction unit but keyboard support is also implemented. This document will focus on mouse operation.

Note

The mouse cursor will disappear after some time of mouse inactivity. Simply move the mouse to make the cursor reappear.

Keyboard interaction is described in a separate section.

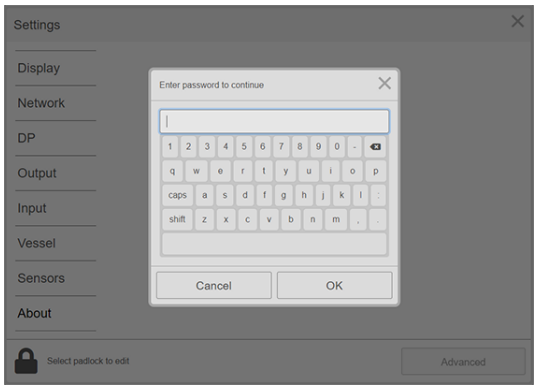
Interaction with a single touch display is by tapping object with a finger. This is equivalent to a mouse click.

The XPR 100 is operated and configured from the **System** menu. Some system settings may be password protected.

Activating the configuration parameters

You must unlock the configuration **Settings** to be able to make changes to the parameters. This is to avoid unintentional changes to the parameters.

Context



Procedure

1 Select the **System** menu **[+]** —> **Settings**.

2 Select the **Padlock** symbol. Type the password: **stx**.

Note

The password is case sensitive.

3 Select **OK** to close the dialog box.

Related topics

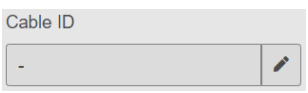
Selecting Radar view orientation, page 27
Selecting measurement unit in display, page 28

Editing in text boxes

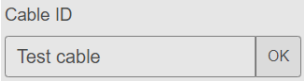
Changes to the configuration are sometimes done in text boxes.

Procedure

1 Select the **Pencil** next to the box to modify the value.



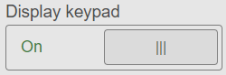
2 Select **OK** when the correct information is entered.



Displaying the keypad

If you do not use a mouse and keyboard you can select to display a keypad on the screen for entering values.

Context



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Display**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select **Display keypad** ON or OFF.

Related topics

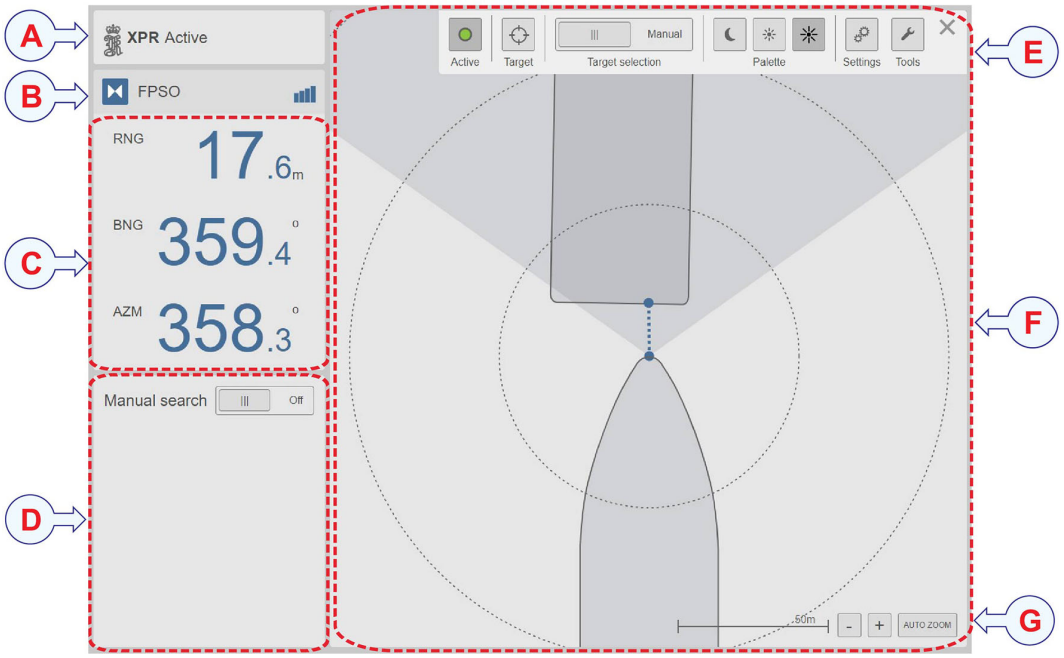
Display, page 46

Confirming parameter changes

If you change a parameter, you are not always prompted to confirm the changes. The new values are saved when you exit the page or dialog box.

Display organisation

The display is made up of three main parts. Information about the status of the overall system, target signal strength, **Radar** view or **Range and bearing** view to the left. **Manual search** is visible if it has been enabled . A hideable **System** menu, from which you operate and configure the system, in the top right. The **Main** view, which can be toggled between the **Range and bearing** view and the **Radar** view. The **Main** view also holds the **System** menu.



A **System status**

It shows the overall XPR system status.

B **Target information**

It shows the name of the selected target and its signal strength.

C **Range and bearing view**

This view shows range and bearing from own vessel to the selected target. It also shows Azimuth. Azimuth is the bearing measured from the selected target to own vessel.

*You can toggle the **Range and bearing** view and the **Radar** view.*

D **Manual search**

When this option is enabled, the system searches for the selected target within a limited sector. Instead of the whole operating sector.

E **System menu button**

*It provides various system settings and operational functions. The **Target** and **Target selection** buttons are only available when the system is set up to operate as an interrogator.*

F **Main view**

*The **Main** view shows the **Radar** view in this illustration. You can toggle the **Range and bearing** view and the **Radar** view.*

G **Zoom buttons and Auto zoom**

*Use the **+/-** buttons to zoom the **Radar** view in or out. The **Auto zoom** function will automatically keep the two vessels in view.*

Menu system

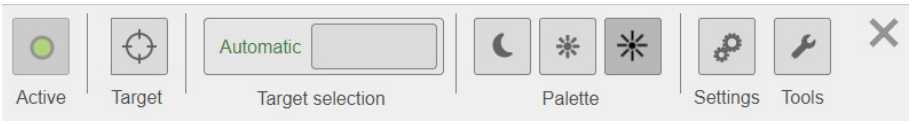
Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu. When the **System** menu is open, this button changes to a **Close** button **[x]**. Select the **Close** button to close the **System** menu.

The menu provides various system settings and operational functions.

Note

The appearance of the **System menu** *depends on which operation mode the system is set to operate in. It can be set up to operate as an interrogator or a transponder. The* **Target** *and* **Target selection** *buttons are only available when the system is set up to operate as an interrogator.*

Interrogator



Transponder

Related topics

About the System menu, page 41

Display views

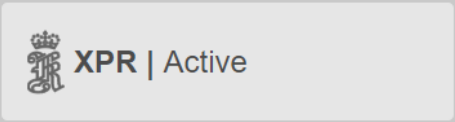
Topics

System status

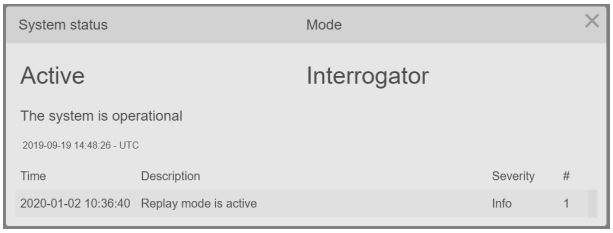
The **System status** box shows the overall XPR system status. Here you can observe if the system is operating as intended.

How to open

The System status is located at the top left of the **Main** view.



Select the **System status** box to open the **System status** view.



Description

The colour of the text in the **System status** box indicates how the system is operating.

- **Red**:The system is not operating as intended.
- **Yellow**: The system has detected warnings or reduced operability.
- **Grey**: Info message or inactive Warning/Alarm.

The **System status** view with the **Event list** can be observed for more details on the system status. If there are any events, they will be listed with date and time of the occurrence. Information messages, or inactive warnings or alarms, will be displayed in grey. Active warnings will be displayed in yellow. Active alarms will be displayed in red.

Details

Mode

It indicates if the XPR system is in Interrogator or Transponder mode.

Time

It indicates the time when the event occurred.

Description

It describes the event which occurred.

Severity

It indicates the severity level of the event. The severity can be **Alarm**, **Warning** or **Info**.

Number (#)

It indicates the number of times the event has occurred.

Related topics

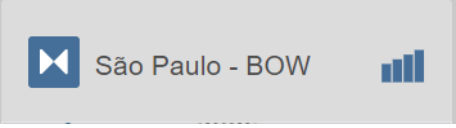
Checking the system status, page 24
Checking the product version, page 63

Target information and Target history

The **Target information** box holds the name of the selected target and its signal strength.

How to open

The **Target information** is located to the left in the **Main** view.



Select the **Target information** box to open the **Target history** view.

Details

Frequency pair

This is a number which identifies the transmit and receive frequencies of the XPR system.

Address code

This is a number which is used to separate systems which use the same frequencies.

Signal

This graph shows the signal strength.

RNG

This graph shows the distance to target for the last 30 minutes.

BNG

This graph shows the bearing to target for the last 30 minutes. You can select if you want to display the bearing as **0 - 360°**, **+/-180°** or **Auto**.

Range and bearing view

This view shows range and bearing from own vessel to the selected target. It also shows Azimuth. Azimuth is the bearing measured from the selected target to own vessel.

How to open

The **Range and bearing** view is located to the left in the **Main** view. This view is always open.

You can toggle the **Range and bearing** view and the **Radar** view. Click or tap in the view to toggle the views.

Details

RNG

This is the range, or distance, from the Sensor Unit on own vessel to the other vessel.

BNG

This is the relative bearing from the Sensor Unit on own vessel to the Sensor Unit on the other vessel.

AZM

This is the Azimuth, which is the relative bearing from the Sensor Unit on the other vessel to the Sensor Unit on own vessel.

HDG Remote

This is the heading of the remote vessel. The vessel with the Interrogator Sensor Unit.

When the system is set up to operate as a transponder, you can select to display remote heading instead of Azimuth. For the system to be able to calculate remote heading, input of heading must have been enabled.

Related topics

Radar view, page 39

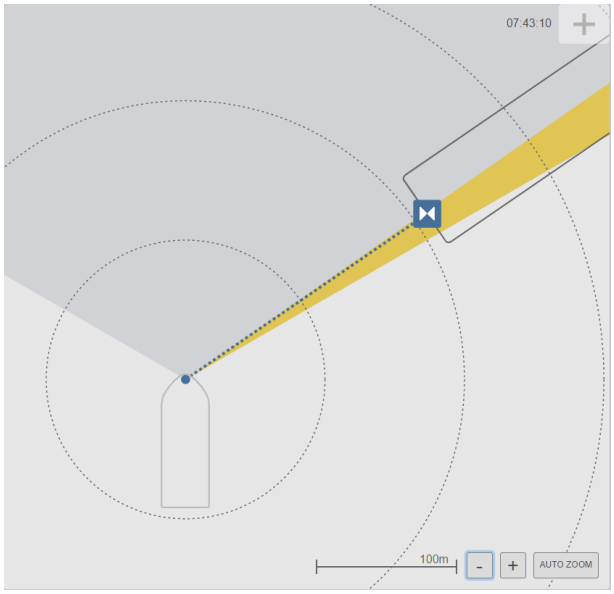
Radar view

The **Radar** view shows own vessel with heading up. Or in the direction selected for **Radar** view orientation in the **Display** page. The vessel is shown relative to own vessel.

How to open

The **Radar** view is the main view in this system. This view is always open.

You can toggle the **Range and bearing** view and the **Radar** view. Click or tap in the view to toggle the views.



Description

If the remote vessel comes within 5 degrees of the operating angle of the XPR system, this will be indicated with a yellow sector as a warning to the operator.

If the remote vessel moves outside the operating angle, the XPR system will not be able to indicate range or bearing. The remote vessel will then disappear from the **Radar** view.

If the vessel moved inside the operating angle again, it will reappear and bearing will be indicated.

Related topics

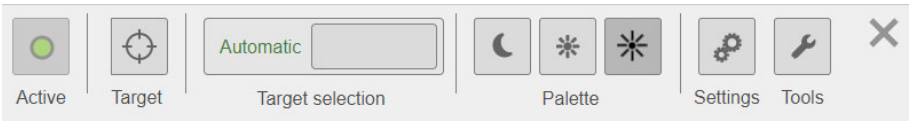
Range and bearing view, page 38

Menu system

About the System menu

Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu. When the **System** menu is open, this button changes to a **Close** button **[x]**. Select the **Close** button to close the **System** menu.

The appearance of the **System menu** depends on which operation mode the system is set to operate in. It can be set up to operate as an interrogator or a transponder.



The **System** menu provides access to six groups of functions.

Active

Active shows the XPR operation mode. When you select **Active**, you can toggle between *Active* and *Standby* mode. Setting the system in *Active* mode will make the system search for the selected target and start to track it.

Target

Target allows you to select which target you want to search for and track. This item is only available when the system is set up to operate as an interrogator.

Target selection

Target selection allows you to select between *Automatic* and *Manual* mode. When you are in *Manual* mode, use the **Target** and **Active** buttons to select a target and start tracking. This item is only available when the system is set up to operate as an interrogator.

Palette

Palette provides you with colour schemes for the display presentation. Select the colour scheme which suits your light conditions.

Settings

Settings provides pages with parameters for configuration of the XPR system.

Tools

Tools provides a set of tools to assist in various configuration and diagnostic tasks.

Related topics

Menu system, page 35

Active

Active shows the XPR operation mode.

How to open

Active is located on the **System** menu **[+]**.

Description

When you select **Active**, you can toggle between *Active* and *Standby* mode. The LED is green when the system is in *Active* mode. This is the mode for normal operation.

Related topics

Confirming that the XPR system is active, page 18
Setting the system to Active or Standby mode manually, page 22

Target

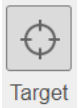
Target allows you to select which target you want to search for and track.

Note

This item is only available when the system is set up to operate as an interrogator.

How to open

Target is located on the **System** menu **[+]**.



Description

Selecting **Target** opens the **Select target** dialog box. Here you can select the target you want to search for and track from a list of available targets.

Related topics

Selecting a target, page 19

Select Target

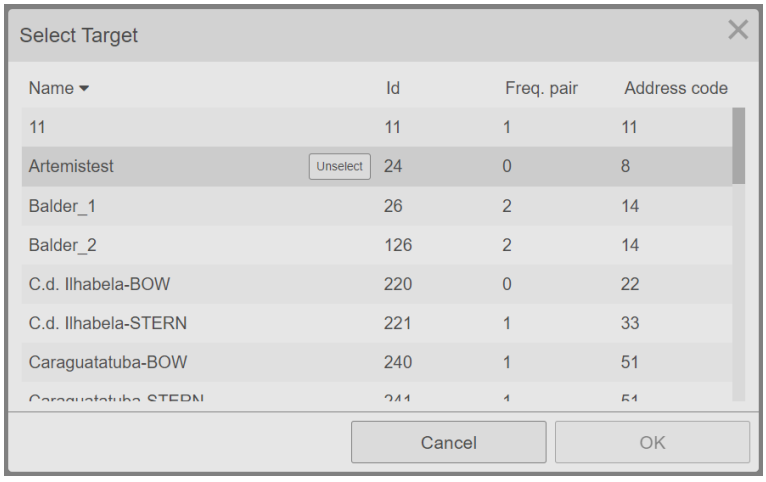
Here you can select the target you want to search for and track from a list of available targets.

Note

This item is only available when the system is set up to operate as an interrogator.

How to open

To open **Select Target**, select **Target** on the **System** menu **[+]**.



Details

Name

This is the name of the target.

Id (identification)

Each target has a unique identification (ID). This ID is the same as the one used on the DP system (Dynamic Positioning) or the DARPS system (Differential Absolute and Relative Positioning). This will be the **Bouy ID** on the DP system and the **Target ID** on the DARPS system.

Frequency pair

This is a number which identifies the transmit and receive frequencies of the XPR system.

Address code

This is a number which is used to separate systems which use the same frequencies.

Related topics

Selecting a target, page 19

Target selection

Target selection allows you to select between *Automatic* and *Manual* mode for target selection and target tracking.

Note

This item is only available when the system is set up to operate as an interrogator.

How to open

Target selection is located on the **System** menu **[+]**.

Details

Automatic

In *Automatic* mode the target selection is performed on the DP system (Dynamic Positioning) or the DARPS system (Differential Absolute and Relative Positioning). It is then automatically transferred to the XPR system. The XPR system will also automatically switch from *Standby* to *Active* mode when approaching the target. When the distance is less than 10 kilometres to the target. When a target is deselected in the DP system or DARPS system, the XPR system will automatically enter *Standby* mode.

Manual

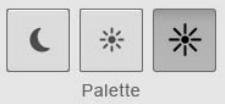
Manual mode enables you to select a target manually. And to manually set the system in either *Standby* or *Active* mode.

Palette

The **Palette** function provides colour schemes for the display presentation.

How to open

Palette is located on the **System** menu **[+]**.



Description

You can select a colour scheme for the display which suits your current light conditions. Night, Day black and Day white.

Related topics

Selecting colour palette for display, page 26

Settings

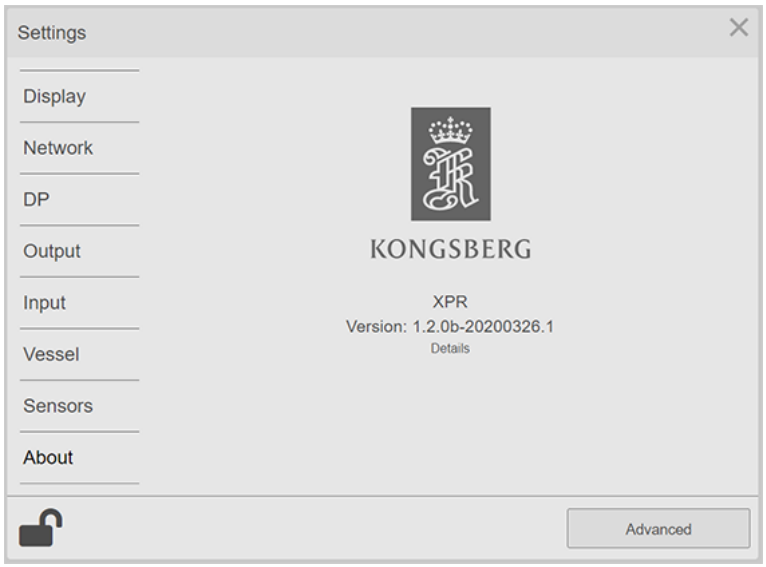
Settings provides pages with parameters for configuration of the XPR system.

How to open

Settings is located on the **System** menu **[+]**.

Description

Here you can set up the display presentation, the network communication, the output and input telegrams, the Sensor Unit bracket location and you can enter vessel details.

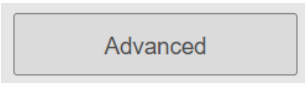


Advanced

Advanced holds advanced system parameters.

How to open

To access the **Advanced** system settings, select the **System** menu **[+]** —> **Settings**.



Description

The **Advanced** button is displayed on all configuration pages. These settings are for experienced users only. They are not intended for use under normal conditions. Therefore, they are not described in this document.

Caution

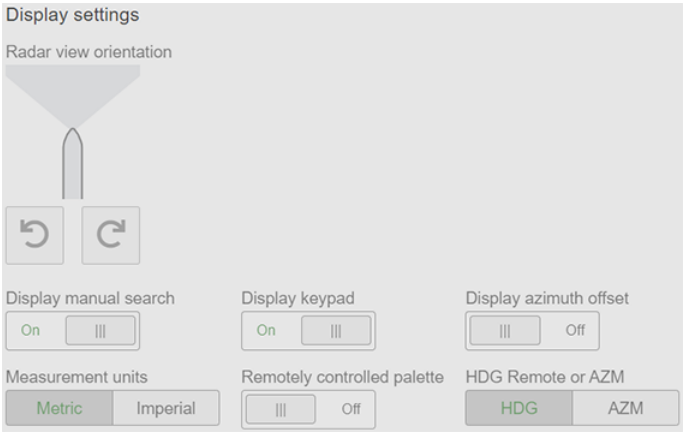
This is an expert feature and should be used with extreme care. Do not change or delete information without consulting Kongsberg Seatex AS customer support.

Display

This page allows you to select several settings for the display presentation.

How to open

To open **Display**, select the **System** menu **[+]** —> **Settings** —> **Display**.



Details

Radar view orientation

In order to make the view more intuitive, you can select which orientation the display is mounted on the vessel.

Display manual search

If the system tries to track a known target but is unable to find it, you can narrow down the search area to a specific sector.

Display keypad

If the system is operated from a touch display without a keyboard, you can turn on **Display keypad**. Then a keypad will appear on the screen whenever a box which requires user input is selected.

Display azimuth offset

If there is an obvious error in the azimuth angle received from the FPSO, you may enter an offset to correct the azimuth value. The entered value is added to the received value. A correct azimuth value will make sure that the FPSO is drawn correctly and that correct azmiuth angle is transmitted to the DP.

Measurement units

Select which measurement units you want to use in the display. You can select between metres or feet.

Remotely controlled palette

When this option is turned on, the XPR system will automatically change palette when the palette is changed on the external system which transmits the palette information. This is controlled by the NMEA DDC sentence. You can manually override the palette at any time.

HDG Remote or AZM

This item is only available when the system is set up to operate as a transponder. You can choose if you want to display remote heading or azimuth in the display presentation.

Related topics

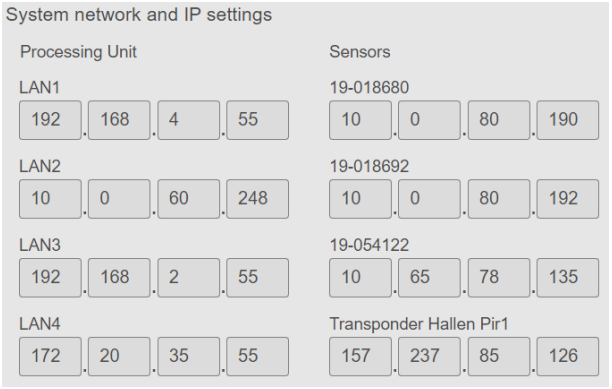
Searching for a target manually, page 22
Setting the azimuth offset value, page 23
Selecting Radar view orientation, page 27
Selecting measurement unit in display, page 28
Enabling remotely controlled palette, page 28
Displaying the keypad, page 33
Enabling display of manual target search, page 29
Enabling display of azimuth offset, page 29

Network

Here you can set up the Processing Unit for communication with the Sensor Unit. In this product the network communication parameters are set up by the manufacturer.

How to open

To open **Network**, select the **System** menu **[+]** —> **Settings** —> **Network**.



Details

Processing Unit

The Processing Unit has 4 Ethernet ports. LAN 1 to LAN4 show the internet protocol (IP) address for these ports.

Sensors

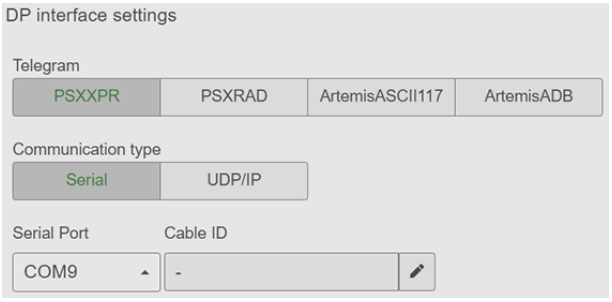
These are the internet protocol (IP) addresses for the selected Sensor Units.

DP

This page allows you to select output telegrams from the XPR system to the dynamic positioning system (DP). You can also select which communication interface you want to use.

How to open

To open **DP**, select the **System** menu **[+]** —> **Settings** —> **DP**.



Details

Telegram

This is the telegram type which shall be sent to the dynamic positioning system (DP).

Communication type

Select which communication type you want to use. Select between Serial communication or UDP/IP broadcast.

Serial port/UDP/IP port

This is the port you want to use for the communication. Depending on the communication type you selected.

Cable ID

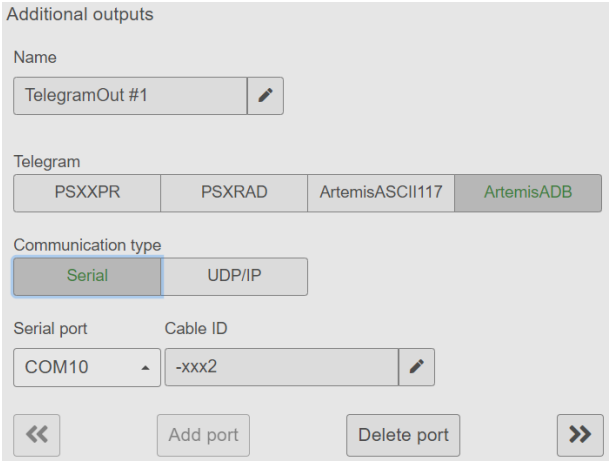
You can give the cable a name for identification purposes.

Output

This page allows you to control output from the XPR system to other systems.

How to open

To open **Output**, select the **System** menu **[+]** —> **Settings** —> **Output**.



Details

Name

You can give the output a name for identification purposes.

Telegram

This is the telegram type which shall be sent to the dynamic positioning system (DP).

Communication type

Select which communication type you want to use. Select between Serial communication or UDP/IP broadcast.

Serial port/UDP/IP port

This is the port you want to use for the communication. Depending on the communication type you selected.

Cable ID

You can give the cable a name for identification purposes. This is optional.

Add port

Select **Add port** to add more output ports. You can add two output ports.

Delete port

Select **Delete port** to delete an output port.

Arrow button

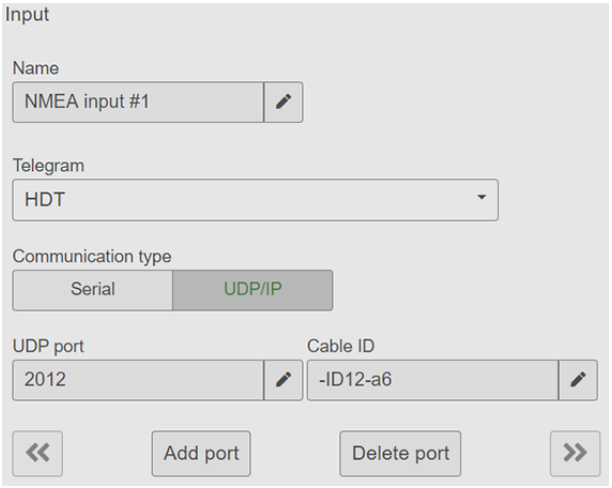
Use the **Arrow** buttons to change between telegrams.

Input

This page allows you to set which input from external sources the XPR system should use.

How to open

To open **Input**, select the **System** menu **[+]** —> **Settings** —> **Input**.



Details

Name

You can give the input a name for identification purposes.

Telegram

This is the telegram type which shall be received from external sources.

Communication type

Select which communication type you want to use. Select between Serial communication or UDP/IP broadcast.

Serial port/UDP/IP port

This is the port you want to use for the communication. Depending on the communication type you selected.

Cable ID

You can give the cable a name for identification purposes.

Add port

Select **Add port** to add more input ports.

Delete port

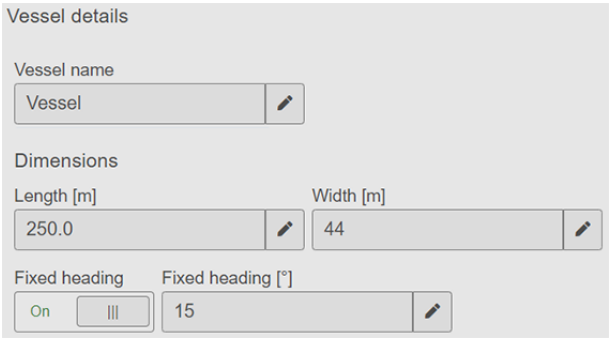
Select **Delete port** to delete an input port.

Vessel

Under **Vessel** you can identify your vessel with the vessel name and enter vessel dimensions.

How to open

To open **Vessel**, select the **System** menu **[+]** —> **Settings** —> **Vessel**.



Details

Vessel name

Type a suitable name for your vessel.

Length

This is the length of your vessel. The measurement unit is metres.

Width

This is the width of your vessel. The measurement unit is metres.

Fixed heading

Heading is used to keep track of the direction of signals when the vessel is rotating. When the system is set up as a transponder, heading is also used to calculate remote heading. If heading is not received through Input, a fixed heading can be used.

Fixed heading [°]

If **Fixed heading** is set to **On**, the value entered here is used.

Sensor

This page allows you to set up which Sensor Units to use in the XPR operation.

How to open

To open **Sensor**, select the **System** menu **[+]** —> **Settings** —> **Sensor**.

Details

Enabled

Select **Enabled** to enable a Sensor Unit for operation.

Name

This is the name of the Sensor Unit. This name cannot be changed. In a 3–sensor system Sensor1 must be positioned at 9 o'clock, Sensor2 at 12 o'clock and Sensor3 at 3 o'clock.

Address

This is the internet protocol (IP) address for the Sensor Unit you want to use. It is only the IP addresses for the detected Sensor Units which are shown here.

Serial

This is the serial number for the selected Sensor Unit.

Distance from stern [m] positive forward

This is the mounting bracket location measured from vessel stern.

Distance from center [m] positive starboard

This is the mounting bracket location measured from vessel centre line.

Distance from keel [m] positive downwards

This is the mounting bracket location measured from vessel keel.

Yaw angle [°]

This is the yaw angle for the mounting bracket.

About

This page holds the XPR system product version. As well as other system details. For software updates, or contact with customer support, it is useful to know the product version of this product.

How to open

To open **About**, select the **System** menu **[+]** —> **Settings** —> **About**.

Details

Details

Select **Details** to view more detailed information about the system. Such as serial numbers, software version, firmware version etc.

Related topics

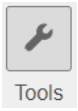
Updating the system software, page 62

Tools

Tools provides a set of tools to assist in various configuration and diagnostic tasks.

How to open

To open **Tools**, select the **System** menu [+] —> **Tools**.



Description

This page is divided into **Utilities** tools and **Diagnostics** tools.

Important

The **Diagnostics** tools are for experienced users only. They are not intended for use under normal conditions. Therefore, they are not described in this document.

Target Editor

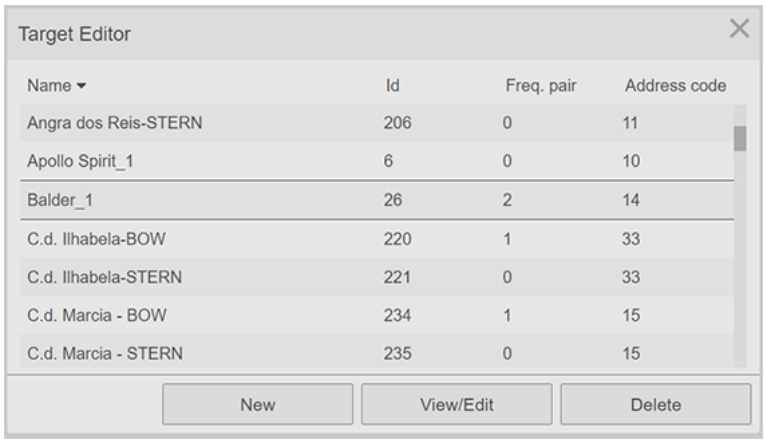
The **Target Editor** allows you to add a new target to the **Target list**, to change the parameters for a target and to delete a target.

Note

This item is only available when the system is set up to operate as an interrogator.

How to open

To open the **Target Editor**, select the **System** menu **[+]** —> **Tools** —> **Target Editor**.



Details

Name

This is the name of the target.

Id (identification)

Each target has a unique identification (ID). This ID is the same as the one used on the DP system (Dynamic Positioning) or the DARPS system (Differential Absolute and Relative Positioning). This will be the **Bouy ID** on the DP system and the **Target ID** on the DARPS system.

Frequency pair

This is a number which identifies the transmit and receive frequencies of the XPR system.

Address code

This is a number which is used to separate systems which use the same frequencies.

Related topics

Editing a target, page 21

New Target / Edit Target

If you need a target which is not in the **Target list**, you can add a new target. If some information about a target in the **Target list** has been changed, you can edit the target information.

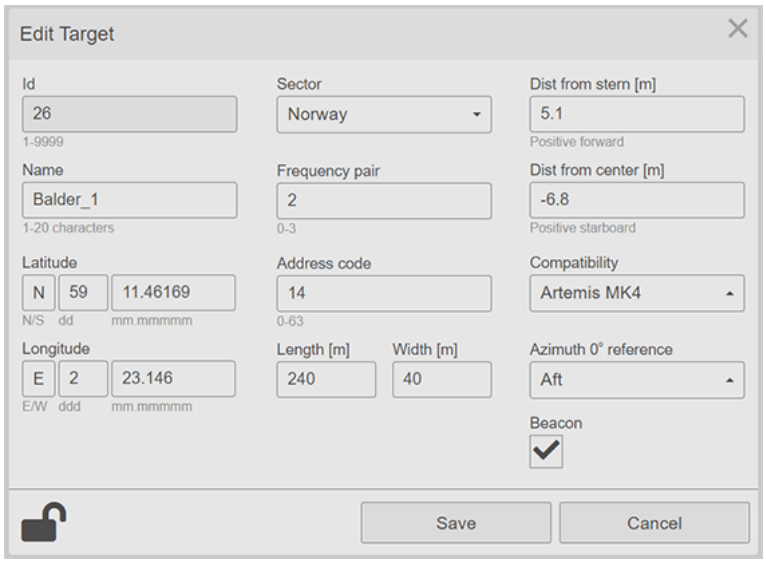
Note

This item is only available when the system is set up to operate as an interrogator.

How to open

To open **New Target**, select the **System** menu —> **Tools** —> **Target Editor** —> **New**

To open **Edit Target**, select the **System** menu —> **Tools** —> **Target Editor** —> **Edit**



Description

Both **New Target** and **Edit Target** have the same parameters.

Details

Id (identification)

Each target has a unique identification (ID). This ID is the same as the one used on the DP system (Dynamic Positioning) or the DARPS system (Differential Absolute and Relative Positioning). This will be the **Bouy ID** on the DP system and the **Target ID** on the DARPS system.

Name

This is the name of the target.

Latitude/Longitude

These are the geographical co-ordinates of the target.

Sector

This is the geographical area of the target.

Frequency pair

This is a number which identifies the transmit and receive frequencies of the XPR system.

Address code

This is a number which is used to separate systems which use the same frequencies.

Length/Width

This is the length and width of the target.

Compatibility

This is the type of transponder which is located on the target.

Distance from stern/center/keel

This is the location of the Sensor Unit of the remote vessel. Relative to stern, centre line and keel.

Azimuth 0° reference

Azimuth 0° reference is the reference for the angle (azimuth) reported from the transponder Sensor Unit to the interrogator Sensor Unit.

Beacon

Select **Beacon** if the target is an Artemis Beacon Unit. As a beacon unit does not have any directional information, the target will be presented as a small circle.

Related topics

Adding a new target, page 20
Editing a target, page 21

SW Update

SW Update allows you to update the system software.

How to open

To open **SW Update**, select the **System** menu **[+]** —> **Tools** —> **SW Update**

Details

XPR

This shows the system and the software version ready to be installed.

Show Log

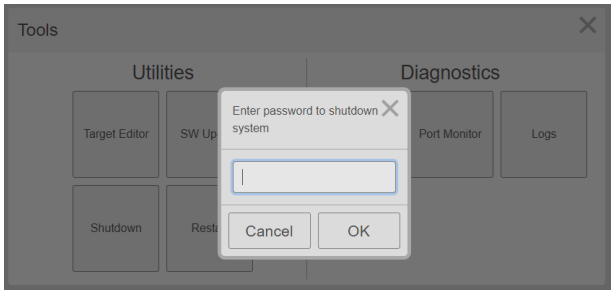
Here you can see a log over the previous software updates and the update process. Support personnel may request to open the update log during problem solving.

Shutdown

Shutdown allows you to turn off the XPR system in a controlled way.

How to open

To open **Shutdown**, select the **System** menu [+] —> **Tools** —> **Shutdown**.



Related topics

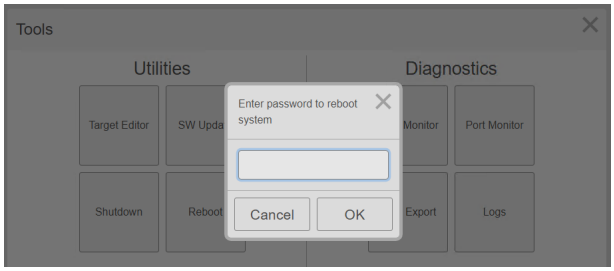
Turning off the XPR system, page 16

Reboot

Sometimes it may be necessary to restart the XPR system. For example if an unexpected event should occur.

How to open

To open **Reboot**, select the **System** menu [+] —> **Tools** —> **Reboot**.



Related topics

Restarting the XPR system, page 17

Maintenance

Topics

About maintenance

Important

This system is delivered both as a standard version and an Ex version. The Ex version has specific safety requirements for the Ex system parts. It is very important that these requirements are strictly adhered to.

The XPR system consists of both software and hardware. The software part can be reinstalled or updated to the latest version in the field by loading a software update into the Processing Unit.

Service of the XPR hardware in the field can consist of:

- Replacing damaged cables and/or connectors
- Replacing Sensor Unit and/or Processing Unit
- Checking the fuse:
  - Within the power connector on the Processing Unit

Periodic maintenance should be carried out to make sure that system components are not damaged. The periodic maintenance interval depends on the environmental conditions where the system is installed. Damaged components may degrade the system performance. Damaged components may also pose a hazard. If damaged components are observed, they must be replaced.

The Processing Unit and the Sensor Unit are not designed for service in the field. Opening the unit housing will result in damage or degradation of the units and void the warranty. Damaged units have to be shipped back to Kongsberg Seatex AS for repair.

Note

Original shipping boxes must be used for all transport. Equipment containing Lithium batteries shall be returned in the original packaging with the proper labelling.

During the time a damaged unit is in for repair, you can rent a spare unit from Kongsberg Seatex AS if needed.

For replacement procedures, see the XPR *Installation Manual* for installation of the respective units.

Related topics

Periodic maintenance Ex system parts, page 64
Periodic maintenance non-Ex system parts, page 67

Returning equipment to manufacturer

Malfunctioning equipment should be returned to the manufacturer for repair.

Context

When you contact the customer support department, you will receive an RMA number (Return Material Authorisation) which will identify your service request. Use this number for all correspondence regarding your service request.

Procedure

1 Contact the manufacturer's customer support department
   - by phone: +47–33032407
   - by e-mail: km.support.seatex@km.kongsberg.com

2 Provide information about the equipment to the customer support department
   - what type of equipment you want to return
   - the serial number for this equipment
   - why you want to return the equipment
   - your company name and address

3 In return you will receive an RMA number (Return Material Authorization) for reference purposes.

4 Include this RMA number as a reference with the equipment when you send it back to the manufacturer.

Updating the system software

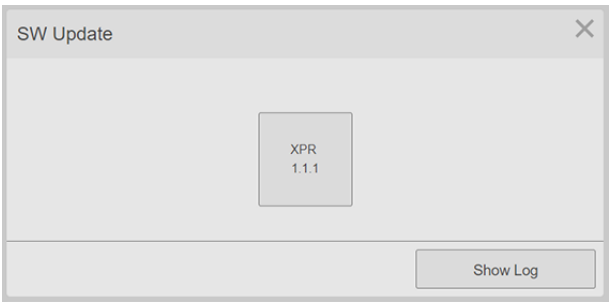
We recommend that you keep your product updated with the latest software version.

Prerequisites

You have received a USB flash drive with the latest software from Kongsberg Seatex AS. The software must be stored in a folder named **XPR**.

Context

This procedure will update both the Processing Unit and the Sensor Unit software.



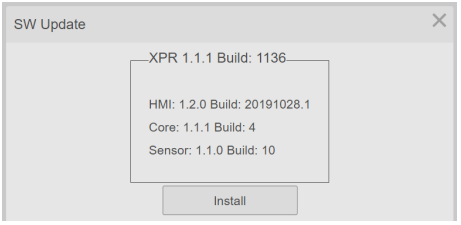
Procedure

1 Insert the USB flash drive with the software update into the USB port at the front of the Processing Unit.

2 Select the **System** menu **[+]** —>**Tools** —> **SW Update**.

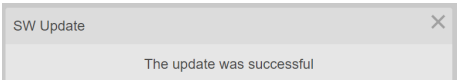
3 Select the new software version.

4 Select **Install**.



The software update process will start.

5 Wait for the software update process to finish.



The Processing Unit will automatically restart when the update procedure is finished.

6 Close the dialog box by selecting [**X**] in its top right corner.

Related topics
About, page 53

Checking the product version

For software updates, or contact with customer support, it is useful to know the product version of the Sensor Unit.

Context

Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **About**.

2 Observe the current XPR system product version.

3 Select **Details** to view more detailed information about the system. Such as serial numbers, software version, firmware version etc.

Related topics
System status, page 36

Periodic maintenance Ex system parts

Topics

Cleaning the Sensor Unit cover

It is important to keep the Sensor Unit plastic cover clean in order to maintain a fully operational and accurate system.

Context

WARNING

The cloth used to clean the Sensor Unit cover must be anti-static due to a possible electrostatic hazard.

Procedure

- Clean the Sensor Unit cover with a moist anti-static cloth.

Inspecting the Sensor Unit after weather hazards

Strong winds and hail may be environmental hazards for the equipment.

Context

In the event of a weather forecast for severe storms, the equipment should be switched off. After the storm, the equipment should be inspected for possible damage before the power to the equipment is turned back on.

Procedure

1 Inspect the Sensor Unit cover for possible damage.

2 If there is any damage, the Sensor Unit must be replaced.

3 Turn on the equipment again when the Sensor Unit has been replaced.

Inspecting the Sensor Unit cable and cable gland

Inspect the Sensor Unit for any possible damage which may affect the system performance.

Context

The Sensor Unit pigtail cable is attached to the Sensor Unit. A damaged cable may degrade the system performance.

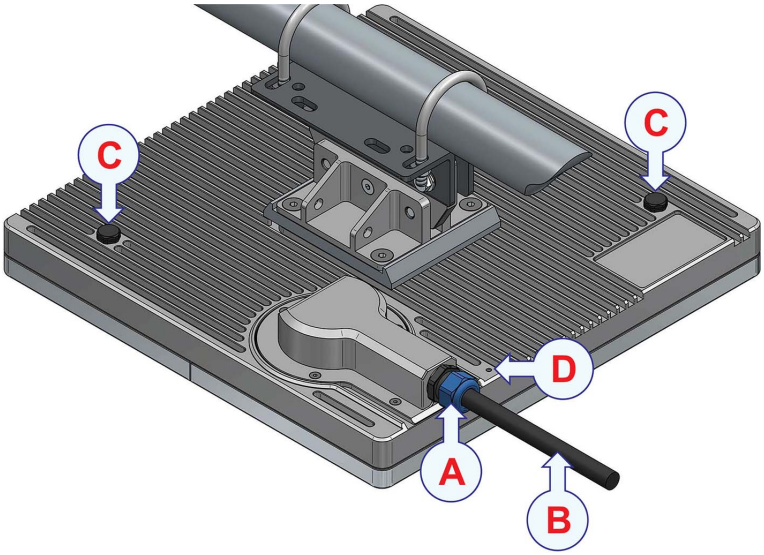
In a dual/triple XPR system, make sure that the ground cable is properly fastened and that it is not damaged.

WARNING

Any damage to the cable may violate the Ex safety requirements.

The pressure compensation elements provide protection from particles, water, oils, and liquids while allowing pressure and temperature equalization of the Sensor Unit.

Refer to the *XPR 100 Ex Installation Manual* for torque values.



A *Cable gland*

B *Pigtail cable*

C *Pressure compensation element*

D *Ground cable terminal*

Procedure

1 Inspect the Sensor Unit pigtail cable for possible damage.

2 Make sure that the cable gland for the pigtail cable is properly tightened. In order to avoid possible water ingress.

3 Make sure that the pressure compensation elements are properly tightened.

Inspecting the Sensor Unit screws

The Sensor Unit has screws at the front and at the rear.

Context

Refer to the *XPR 100 Ex Installation Manual* for torque values.

Procedure

1 Check that the screws are properly tightened. Including the grounding terminal screw at the rear of the Sensor Unit.

2 Check that there is no noticeable corrosion on metallic parts. Including the grounding terminal. Apply corrosion prevention if required.

Related topics

Inspecting the Sensor Unit cable and cable gland, page 68

Inspecting the Junction Box

The items installed in the Junction Box must be inspected. Any damage to these components may affect the system performance.

Context

WARNING

Turn off the power to the Sensor Unit in the Remote Interface Cabinet before opening the Junction Box lid.

Refer to the *XPR 100 Ex Installation Manual* for torque values.

Procedure

1 Check that there is no evidence of water ingress in the enclosure.

2 Check that there is no evidence of dust in the enclosure.

3 Check that the unused and used terminals are tightened.

4 Check that there is no damage to the wires and cables.

5 Check that the cable glands are properly tightened.

6 Check that the earthing connections are satisfactory.

7 Check that the integrity of the conduit system is maintained.

8 Check that there is no noticeable corrosion on metallic parts.

Inspecting product labels

Product labels may contain important information about the product. It must be possible to read the product labels at any time.

Procedure

1 Observe where the product labels are located on your product.

2 Clean the labels at regular intervals.

Periodic maintenance non-Ex system parts

Topics

Cleaning the Sensor Unit cover

It is important to keep the Sensor Unit plastic cover clean in order to maintain a fully operational and accurate system.

Context

WARNING

The cloth used to clean the Sensor Unit cover must be anti-static due to a possible electrostatic hazard.

Procedure

- Clean the Sensor Unit cover with a moist anti-static cloth.

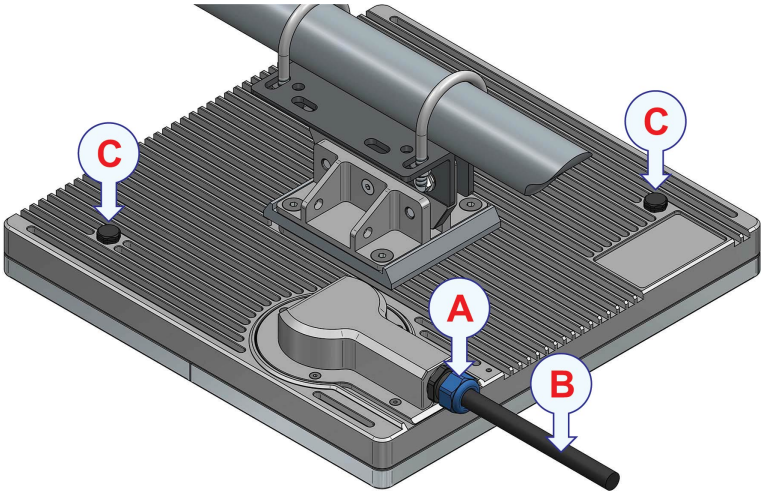
Inspecting the Sensor Unit cable and cable gland

Inspect the Sensor Unit for any possible damage which may affect the system performance.

Context

The Sensor Unit pigtail cable is attached to the Sensor Unit. A damaged cable may degrade the system performance.

The pressure compensation elements provide protection from particles, water, oils, and liquids while allowing pressure and temperature equalization of the Sensor Unit.



A *Cable gland*

B *Pigtail cable*

C *Pressure compensation element*

Procedure

1 Inspect the Sensor Unit pigtail cable for possible damage.

2 Make sure that the cable gland for the pigtail cable is properly tightened. In order to avoid possible water ingress.

3 Make sure that the pressure compensation elements are properly tightened.

Related topics

Inspecting the Sensor Unit screws, page 66

Inspecting the Sensor Unit screws

The Sensor Unit has screws at the front and at the rear.

Procedure

1 Check that the screws are properly tightened.

2 Check that there is no noticeable corrosion on metallic parts.

Inspecting the Junction Box

The items installed in the Junction Box must be inspected. Any damage to these components may affect the system performance.

Context

WARNING

Turn off the power to the Sensor Unit in the Remote Interface Cabinet before opening the Junction Box lid.

Procedure

1 Check that there is no evidence of water ingress in the enclosure.

2 Check that there is no evidence of dust in the enclosure.

3 Check that the unused and used terminals are tightened.

4 Check that there is no damage to the wires and cables.

5 Check that the cable glands are properly tightened.

6 Check that the earthing connections are satisfactory.

7 Check that the integrity of the conduit system is maintained.

8 Check that there is no noticeable corrosion on metallic parts.

Inspecting the Remote Interface Cabinet

Maintenance must be performed at regular intervals depending on use and ambient conditions.

Context

We recommend that you inspect the cabinet at least once a year.

Procedure

1 Check the door hinges for ease of movement. Spray with a suitable water-free lubricant.

2 Check the door lock for ease of movement. Spray with a suitable water-free lubricant.

3 Check the gasket in the contact edge area. Replace the gasket if it is damaged.

Common talcum, vaseline or wax can be used to prevent damage due to the gasket freezing because of low temperatures.

4 Check all components and surfaces for external damage.

5 Check for traces of corrosion.

Cleaning of Processing Unit air inlet

The air inlet at the rear of the Processing Unit needs to be cleaned regularly to avoid overheating of the unit.

Context

The period between each cleaning is dependent on the air quality at the location. We recommend that the filter is cleaned at least every six months.

Procedure

1 Remove the plastic cover with a screw driver or similar.

2 Remove the filter and clean it by washing it with a mild detergent or use a vacuum cleaner.

If the filter is very dirty, replace it with a new one.

3 Replace the plastic cover with the clean filter.

Repairs and parts replacement

Topics

Repairing the Sensor Unit

The Sensor Unit is not designed for repair in the field. All repairs and modifications of the unit must be done by qualified personnel. A failed Sensor Unit should be shipped back to Kongsberg Seatex AS or other agreed service point for repair.

Replacing the Sensor Unit

If the unit fails, it can be replaced by a spare unit. Local repair is not possible.

Procedure

1 Disconnect the data and power cables in the Junction Box.

2 Remove the Sensor Unit from the mounting bracket.

3 Connect the data and power cables of the replacement Sensor Unit.

4 Lift the replacement Sensor Unit and hook it onto the mounting bracket.

5 Refasten the Sensor Unit.

6 Refasten the safety wire. If you have used one.

Configuring a replacement Sensor Unit

If the IP address of the replacement Sensor Unit is identical to that on the replaced Sensor Unit, it will be added to the configuration automatically. If not, you must configure the replacement Sensor Unit. Refer to the *Selecting Sensor Units for operation* section in the *XPR Installation Manual* to configure the replacement unit.

If the IP address of the replacement Sensor Unit conflicts with an existing Sensor Unit's IP address, you must change IP address of the replacement Sensor Unit. Refer to the *Changing the Sensor Unit IP address* section in the *XPR Installation Manual* to configure the replacement unit.

Repairing the Processing Unit

The Processing Unit is not designed for repair in the field. All repairs and modifications of the unit, except for installation of new software versions and system setup, must be done by qualified personnel. A failed unit should be shipped back to Kongsberg Seatex AS or other agreed service point for repair.

Replacing the Processing Unit

If the unit fails, it can be replaced by a spare unit. Local repair is not possible.

Context

The spare unit will have the latest version of the product software.

Refer to the XPR *Installation Manual* for the System backup and restore procedures.

Procedure

1 If possible, backup the recent configuration on your Processing Unit to a USB flash drive.

   Follow the procedures in the XPR *Installation Manual, System Backup and Restore*.

2 Follow the shutdown procedure to turn off the Processing Unit.

3 Remove all cables from the damaged unit.

4 Mount the spare unit with the existing mounting equipment.

5 Connect all cables to the spare unit as they were on the original unit.

6 Turn on the unit.

7 Insert the USB flash drive with the configuration copy into the spare unit.

   Follow the procedures in the XPR *Installation Manual, System Backup and Restore*.

Replacing cables or connectors

It is recommended to inspect the cables and connectors for possible damage. A damaged cable or connector may degrade the system performance.

Procedure

1 Turn off power to the equipment.

2 Disconnect the damaged cable or connector.

3 Replace the damaged cable or connector with a new one.

4 Turn the power to the equipment back on.

Changing fuse in Processing Unit power inlet

If the unit does not receive power, it could be because of a blown fuse in the power inlet.

Context

The power inlet has a 5 x 20 mm replaceable glass tube fuse. 2 A, L250. If you have replaced the fuse it is recommended to buy a new spare fuse. The fuse must be compliant to the safety standard for fuses.

WARNING

If the fuse is blown, the cause for the fuse failure must be investigated.

Procedure

1 Disconnect the power connector.

2 Open the fuse holder below the power inlet gently with a screw driver.

Within the holder there are two fuses. One which is in use and one spare.

3 Remove the innermost fuse and replace it with the spare fuse.

4 Close the fuse holder.

5 Reconnect the power connector. Turn on the power switch.

Troubleshooting

Topics

Checking the signal history, page 74

Correcting heading error for target vessel, page 74

Correcting heading error for own vessel, page 76

Correcting unknown target from dynamic positioning (DP) system, page 76

Exporting log data, page 78

Solving zero calibration failure, page 79

Setting the correct display resolution, page 80

Checking the signal history

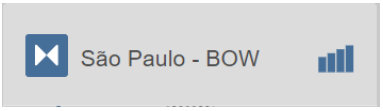
If you are experiencing an unstable signal from the XPR system, you can check the signal, range and bearing history.

Context

The **Target history** view displays signal, range and bearing graphs for the last 30 minutes. If the signal is unstable, periods with invalid measurements are indicated with graphs in the data range.

Procedure

1 Select the **Target information** box.



2 Observe the graphs for information on signal, range and bearing.

3 Close the **Target history** view when finished.

Correcting heading error for target vessel

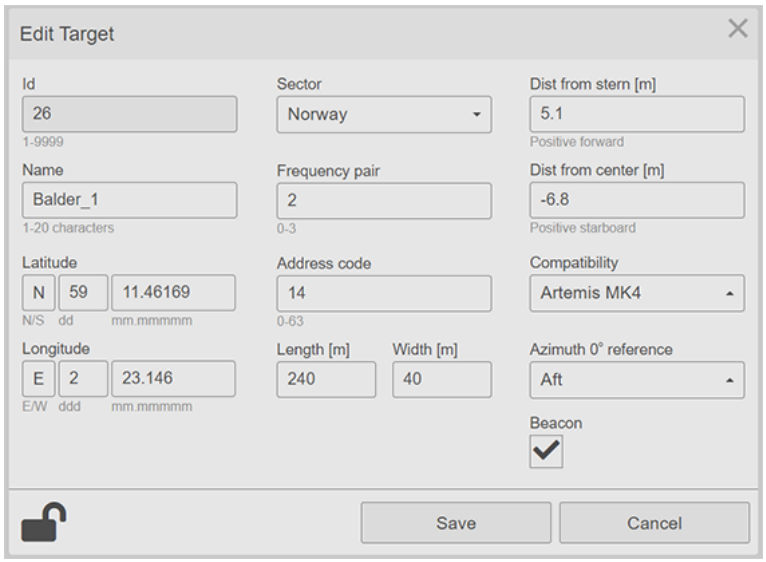
If the remote vessel, target, is shown with a 180-degree error in the display presentation, the azimuth setting is wrong.

Prerequisites

This item is only available when the system is set up to operate as an interrogator.

Context

Azimuth 0° reference is the reference for the angle (azimuth) reported from the transponder Sensor Unit to the interrogator Sensor Unit. For transponder Sensor Units mounted in the stern this should be set to **Aft**. For transponder Sensor Units mounted in the bow, this should be set to **Fwd**. If the remote vessel is displayed 180 degrees wrong, change this setting.



Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Target Editor**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select the target you want to edit.

4 Select **Edit**.

5 Change the **Azimuth 0° reference** value.

6 Select **Save**.

Result

The display presentation should show the target vessel with the correct heading.

Related topics

Editing a target, page 21
Adding a new target, page 20

Correcting heading error for own vessel

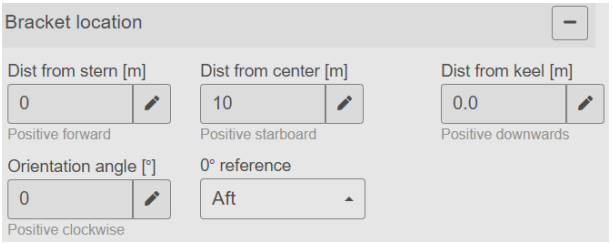
If own vessel is shown with a 180-degree error in the display presentation, the azimuth setting is wrong

Prerequisites

This item is only available when the system is set up to operate as a transponder.

Context

Azimuth 0° reference is the reference for the angle (azimuth) reported from the transponder Sensor Unit to the interrogator Sensor Unit. For transponder Sensor Units mounted in the stern this should be set to **Aft**. For transponder Sensor Units mounted in the bow, this should be set to **Fwd**. If own vessel is displayed 180 degrees wrong, change this setting.



Procedure

1 Select the **System** menu **[+]** —> **Settings** —> **Sensor**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Change the **Azimuth 0° reference** value.

4 Select **Save**.

Result

The display presentation should show the target vessel with the correct heading.

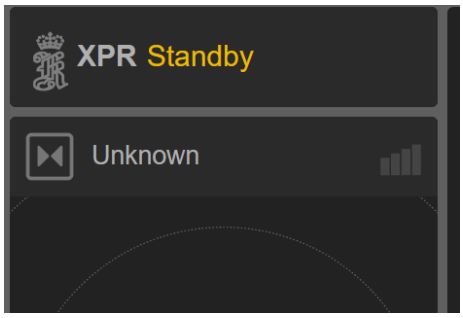
Correcting unknown target from dynamic positioning (DP) system

If the **Target information** box shows **Unknown**, some target information is missing. The system will go to **Standby** mode and is unable to go to **Active** mode.

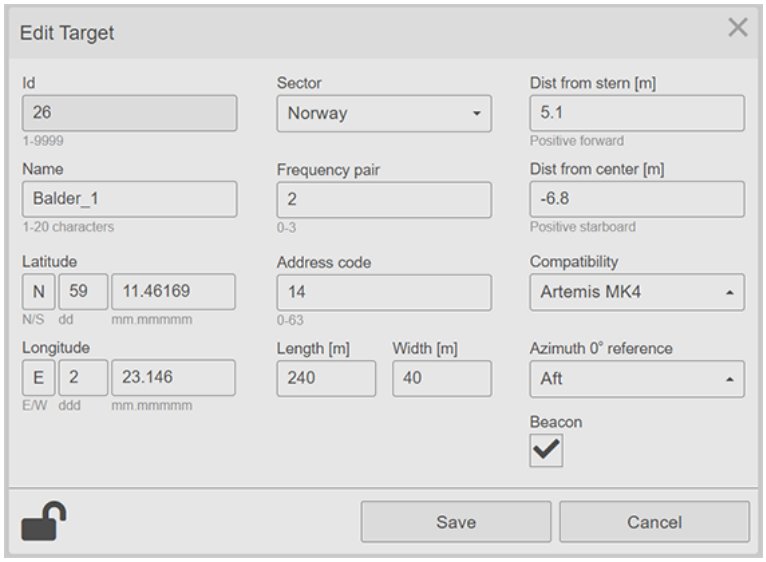
Prerequisites

This item is only available when the system is set up to operate as an interrogator.

Context



If the XPR system is set to **Automatic** target selection and a target is selected on the dynamic positioning (DP) system, the DP sends a target selection telegram to the XPR. If this target does not exists in the XPR system, a new target will be created. This new target contains only the correct **Id** and location (**Latitude**/**Longitude**), all the other parameters have to be entered.



Procedure

1 Select the **System** menu **[+]** —> **Tools** —> **Target Editor**.

2 Select the **Padlock** and type the password: **stx** to activate the parameters.

3 Select the target you want to edit.

4 Select **Edit**.

5 Enter the missing values for this target.

The **Frequency pair** and **Address code** parameters MUST be set.

6 Select **Save**.

Related topics

Editing a target, page 21

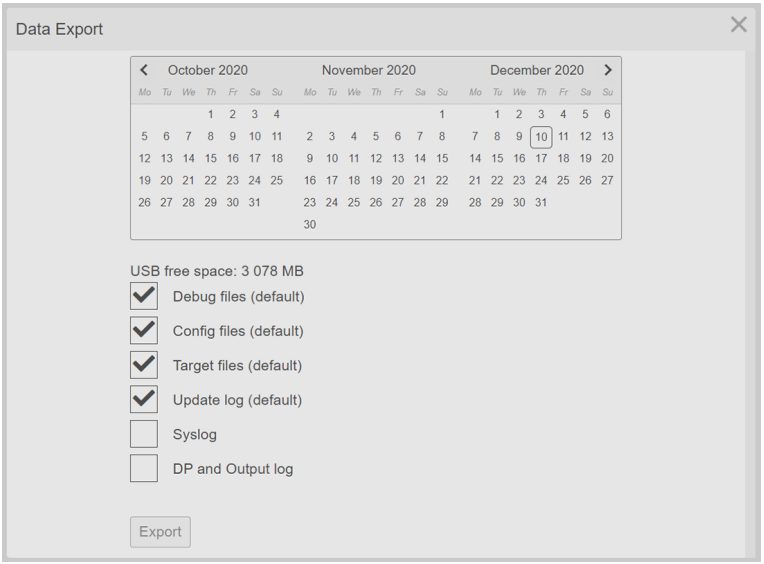
Exporting log data

The **Data Export** tool is used to retrieve log data from the XPR system.

Prerequisites

A USB flash drive with FAT/FAT32 format.

Context



Procedure

1 Insert a USB flash drive into the USB port at the front of the Processing Unit.

2 Select the **System** menu **[+]** —> **Tools** —> **Data Export**.

3 Select the first date for which you want to export data.

4 Select the last date for which you want to export data.

5 Select **Export**.

A dialog box with the export progress appears. The message `Data exported successfully` appears when the export process is finished.

6 Select **OK** to close the dialog box.

7 Remove the USB flash drive.

Result

The log files are now stored on the USB flash drive: `<usb>\DataExport\<vessel name>\DataExport-<vessel_name>.tar.gz`.

Solving zero calibration failure

Zero calibration may fail on the Sensor Unit if it experiences some sort of interference during the calibration process.

Context

Interference can be cause by external radio frequency (RF) sources such as another XPR or Artemis system, radar etc. A bad location of the Sensor Unit can also create a self-interference that can interfere with the calibration process.

A zero calibration is performed when the system goes from *Standby* mode to *Active* mode. When the zero calibration fails, try and set the system back to Standby and then to Active again, until the zero calibration works. You may have to do this several times.

If switching between *Active* and *Standby* mode fails to obtain a zero calibration, you must shutdown and restart the system.

Procedure

1 Switching between *Active* and *Standby* mode:

   a Select the **System menu** button **[+]** in the top right corner of the **Main** view to open the **System** menu.

   b Select the **Active** button.

   The system will switch to *Standby* mode.

   c Repeat the switching from Active to Standby several times, if necessary.

   If a zero calibration is not achieved, shut down and restart the system.

2 Shutting down and restarting the XPR system:

   a Select the **System** menu **[+]** —> **Tools** —> **Shutdown**.

   b Type the password: **stx**. Select **OK**.

   c Wait 30 seconds.

   d Turn off the Processing Unit by pressing the power switch located under the lid at the front of the unit.

e Turn off power to the Sensor Unit(s) by turning off the S1 switch on the Local Interface Rail.

A *S1 power switch in Remote Interface Cabinet.*

f Turn the system units back on again.

Related topics

Turning off the XPR system, page 16
Setting the system to Active or Standby mode manually, page 22

Setting the correct display resolution

It is important for the operation of the XPR system that the display resolution is correct.

Context

If you experience that the text in the display appears too small or too large, it may be that you have the wrong display resolution. Another indicator is that the display presentation appears to be outside the screen. It is also possible that your display does not support the default display resolution.

Procedure

1 Turn on the display.

2 Turn on the Processing Unit by pressing the power switch located under the lid at the front of the unit.

3 Press and hold the **SHIFT** key while the system is starting up.

A list with selections appears.

4 Use the **Up/Down** arrow button and select **Set display**.

5 Press **Enter**.

The system will restart. A list with screen resolutions appears. **Automatic** is the default selection.

6 Select the number for the wanted display resolution.

7 Press **Enter**.

The system will restart and start up with the selected resolution.

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