Operator Manual

Simrad ST90

Fish finding sonar

SIMRAD

TECHNOLOGY FOR SUSTAINABLE FISHERIES

www.simrad.com

SIMRAD

Simrad ST90
Fish-finding sonar
Operator Manual
Release 3.1.4

The purpose of this manual is to provide the descriptions and procedures required to allow for efficient use of the Simrad ST90. This manual is intended for all regular users of the ST90. Due to the nature of the descriptions and the level of detail provided by this manual, it is well suited for those who use the ST90 on a daily basis, and have access to expert users for advice.

Caution

You must never start ST90 transmissions (pinging) when the ship is in dry dock. The transducers may be damaged if they transmit in open air.

All end-user manuals provided for operation and installation of your Simrad ST90 can be downloaded from our website.

- https://www.simrad.com

457420/A
February 2020 © Kongsberg Maritime AS

Document information

- **Product**: Simrad ST90
- **Document**: Operator Manual
- **Document part number**: 457420
- **Document ISBN number**: N/A
- **Revision**: A
- **Date of issue**: 26 February 2020

Copyright

The information contained in this document remains the sole property of Kongsberg Maritime AS. No part of this document may be copied or reproduced in any form or by any means, and the information contained within it is not to be communicated to a third party, without the prior written consent of Kongsberg Maritime AS.

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

Disclaimer

Kongsberg Maritime 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 your local dealer. You can also contact us using the following address: simrad.support@simrad.com. If you need information about our other products, visit https: //www.simrad.com. On this website you will also find a list of our dealers and distributors.

Table of contents

ABOUT THIS MANUAL 7
SIMRAD ST90 8
Important 8
System description 10
System diagram 12
General safety rules 13
Support information 13
GETTING STARTED 16
Operating Panel description 17
Starting normal operation 20
Turning on the ST90 for normal use 20
Getting to know the user interface 21
Getting to know presentation modes and views 23
Selecting *Normal* mode to start "pinging" 27
Adjusting the radius of the search area 28
Adjusting the echo sensitivity 29
Changing the vertical angle of the sonar beams 31
Adjusting the horizontal direction of the sonar beam 33
Turning off the ST90 35
Basic operating procedures 36
Selecting the language displayed in the menus and dialog boxes 36
Selecting operating frequency for minimum noise 37
Hiding the menu system when you do not need it 38
Saving single or sequential screen captures 38
Saving the current user settings 40
Defining the ping (transmission) modes 41
OPERATING PROCEDURES 43
Getting started 44
Turning on the ST90 44
Lowering and hoisting the transducer from the user interface 45
Turning off the ST90 46
Choosing operating mode and key transmit parameters 48
Selecting *Normal* mode to start "pinging" 48
Selecting *Replay* mode 49
Selecting *Inactive* mode 50
Setting up the ST90 for maximum echo refresh rate 51
Transmitting single pings 52

Transmitting with fixed-time intervals 52
Adjusting the output power to match varying conditions 53
Selecting the best operating frequency 54
Controlling the gain and range settings 56
Adjusting the gain (echo sensitivity) 56
Adjusting the TVG (Time Variable Gain) setting 58
Adjusting the sonar range 58
Adjusting the intensity of the echo presentations 60
Changing the tilt 60
Adjusting the bearing 62
Using the markers and tracking features 64
Starting a position track 64
Starting a target track 65
Placing a new marker 66
Deleting a marker 67
Measuring the size of a school relative to the purse seine 68
Using visual aids during the purse seine catch phase 68
Choosing the fishing gear in use 70
Changing the fishing gear properties to match your own equipment 71
Improving the recognition of fish and schools using receiver filters 72
About the receiver filter sequence in the ST90 72
Reducing noise and reverberation with the AGC (Automatic Gain Control) function 73
Reducing propeller noise and interference with the Noise Filter 74
Reducing bottom and surface reverberation with the RCG (Reverberation Controlled Gain) function 75
Reducing noise and false echoes with the Ping-Ping Filter 77
Reducing noise and reverberation with the AGC (Automatic Gain Control) function 78
Adjusting the intensity of the echo presentations 79
Recording and replaying echo data 80
Defining the file and folder settings for data recording 80
Recording echo data 81
Selecting *Replay* mode 82
Choosing which echo data file(s) to replay 83
Accessing the echo data files to delete, move or copy them 84
Setting up presentation modes and views 86
Moving a view to another display 86
Rearranging the layout of the ST90 presentation 87
Restoring the locations and sizes of the views 88
Defining settings related to user preferences and individual customizing 89

Selecting menu language 89
Hiding the menu system 90
Placing the menu on the left side of the ST90 presentation 91
Selecting the information to appear on the top bar 91
Enabling Coordinated Universal Time (UTC) on the bottom bar 92
Selecting which tooltips to appear in the user interface 92
Adjusting the backlight intensity on the Operating Panel 93
Reducing the light emitted from the display presentation 94
Increasing the visibility of the information panes 94
Changing the colour palette ("skin") used in the ST90 presentations 95
Choosing the colours used to present the echoes 96
Selecting measurement units 96
Configuring the environmental parameters 97
Setting up the alarm limits for system protection 98
Defining the middle position of the transducer 99
Saving, retrieving and handling user settings 101
Saving the current user settings 101
Choosing previously saved user settings 102
Renaming existing user settings 103
Deleting user settings that are no longer used 104
Choosing ST90 factory default settings 105
Defining the user-selected features on the Operating Panel 106
Selecting which Operating Panel to use 106
Assigning custom user settings to the Operating Panel 107
Assigning functions to the rotary switches on the Operating Panel 109
Assigning functions to F1, F2 and F3 on the Operating Panel 110
Lowering and hoisting the transducer from the sonar room 112
Lowering and hoisting the transducer using the Hoist/Lower Switch 113
Lowering and hoisting the transducer using the hand crank 115
Emergency lowering and hoisting using the two contactors 117
Setting up the interfaces to peripheral devices 119
Installing navigation sensors and other sensors 119
Defining the serial and Ethernet (LAN) port parameters 120
Setting up the input from a navigation system (GPS) 122
Setting up the interface for speed log input 124
Setting up the interface for course gyro input 126
Configuring the sensor interface 129
Setting up the input from a motion reference unit (MRU) 130
Setting up the ST90 in a synchronized system 132
MENU SYSTEM 135

About the menus and menu buttons....136
Using the “smart” menu buttons....136
Main menu....139
Operation menu....141
Display menu....143
Setup menu....146
Active menu....150
Objects menu....153
Visual Objects menu....157
Cosmetics menu....160
Shortcut menus....162

About this manual

The purpose of this manual is to provide the descriptions and procedures required to allow for efficient use of the Simrad ST90. The manual does not contain detailed information about functions, dialog boxes and operating parameters.

Target audience

This manual is intended for all regular users of the ST90. Due to the nature of the descriptions and the level of detail provided by this manual, it is well suited for those who use the ST90 on a daily basis, and have access to expert users for advice. We assume that you are familiar with the basic acoustic principles of sound in water. We also expect that you have some experience with sonar operation.

Software version

This ST90 Operator Manual complies with software version 3.1.4.

Registered trademarks

Observe the registered trademarks that apply.

Simrad®, SIMRAD® and the Simrad® logo are either registered trademarks, or trademarks of Kongsberg Maritime AS in Norway and other countries.

Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

We want your feedback

We want to improve ST90 continuously. We also want our end-user documentation to be comprehensive and relevant. You can help. Please provide comments, suggestions or constructive criticism to any of our support offices.

Online information

All end-user manuals provided for operation and installation of your Simrad ST90 can be downloaded from our website. Our website also provides information about other Simrad products.

- https://www.simrad.com/st90

Simrad ST90

Topics

Important, page 8

System description, page 10

System diagram, page 12

General safety rules, page 13

Support information, page 13

Important

The ST90 is an advanced product. It is used with other advanced products. There is important information that you need to know.

Before you turn on the ST90

Before you turn on the ST90, make sure that you have sufficient water depth to lower the transducer!

Caution

You must never turn on the ST90 when the ship is in dry dock. The transducer may be damaged if it transmits in open air.

When the ST90 is not used

When you do not use the ST90, turn off the entire system.

Note

You must never turn off the ST90 by means of the on/off switch on the Processor Unit. You must ALWAYS use the Operating Panel.

When you are docking your vessel

You must never set the ST90 to normal operation when the ship is in dry dock. The transducer may be damaged if it transmits in open air. To prevent inadvertent use of the ST90, pull out the mains plug on the Processor Unit whenever your vessel is in dry dock. Additional precautionary measurers should be considered.

If something breaks down

If you believe that something has broken down, contact your local dealer. A list of all our dealers is provided on our website.

- https://www.simrad.com

If you are unable to contact a dealer, observe the support information in this publication.

When you want to turn off the ST90

You must never turn off the ST90 by means of the on/off switch on the Processor Unit. When you do not use the ST90, turn it off with the **Power** button on the Operating Panel. If the transducer is lowered when you turn off the ST90, it is automatically retracted to its upper position.

Note

If you turn off the ST90 by means of the on/off switch on the Processor Unit you may damage the software and the interface settings used to communicate with external devices.

Manual operation of the hull unit

In the event of improper operation, the powerful electric motor on the hull unit may cause serious damage to the equipment and/or injury to personnel. Therefore, before you start manual operation, read carefully through the relevant operating procedures.

Note

You must familiarize yourself with the correct handling methods and the relevant safety requirements.

Rules for transducer handling

A transducer must always be handled as a delicate instrument. Incorrect actions may damage the transducer beyond repair. A physical blow to the transducer face may easily damage one or more elements. Observe these transducer handling rules:

- **Do not** activate the transducer when it is out of the water.
- **Do not** handle the transducer roughly and avoid impacts.
- **Do not** expose the transducer to direct sunlight or excessive heat.
- **Do not** damage the outer protective skin of the transducer.

- **Do not** use high-pressure water, sandblasting, metal tools or strong solvents to clean the transducer.
- **Do not** step on the transducer cables.
- **Do not** damage the transducer cables, and avoid exposure to sharp objects.

System description

The Simrad ST90 is a long range and low frequency fish finding sonar with a 360 degrees coverage. The ST90 is designed for medium and large sized fishing vessels.

If high performance is your number 1 criteria when choosing a sonar; such as long range, high resolution, narrow beams and high source levels, this is your natural choice. We made no compromises during the design of the ST90. Our goal was simply to make the ultimate high performance fish finding sonar. With the Simrad ST90, we use lower frequencies than the SX90 and SU90 sonars. In order to achieve this, a completely new transducer has been designed. Each element is larger than the previous SX90 and SU90 elements, but the number of elements is the same as the SU90. This allows for the same narrow beam, and ultimately a longer range. The ST90 has been designed to search with very long ranges in all weather and sea conditions. Whether it is heavy weather, hard bottom, open waters, weak targets - all echoes are handled by the ST90 due to the fully stabilized and very narrow beams combined with the cutting edge signal processing.

The centre operational frequency is 19 kHz, but you can select any operational frequency from 14 to 24 kHz in steps of 1 kHz. The cylindrical multi-element transducer allows the omnidirectional sonar beams to be tilted electronically from -10 to +84 degrees. This allows you to automatically track schools of fish, and to observe the whole water volume around the vessel.

The ST90 provides a number of standard interface lines for communication with peripheral devices and sensors. Typical inputs are geographical information from a positioning system, vessel speed and current heading. By default, the ST90 uses a built-in motion sensor. For improved operational accuracy, an external motion reference unit (MRU) can be connected.

The narrow beam opening angle (6.5° @ 17 kHz) and the high source level makes the ST90 a very powerful and high resolution low frequency sonar. The narrow beams provided by the ST90 give you several advantages.

- They increase the range and resolution, and offer a vertical view with additional details and a clearer picture.
- They make the ST90 even more ideal when you need to search for fish close to the sea bottom, or close to the surface, at long ranges.
- They provide a far better vertical view with less "bottom climbing" that what is seen on sonars with a wider beam.
- The narrow beams also decrease the noise level.

The ST90 offers the same user interface and operating software as our other sonars, echo sounders and catch monitoring systems. This enables easier and faster training of new users.

The ST90 echo presentations are optimized for multiple displays. Provided that you have connected additional displays to your Processor Unit, you can use the **Docking Views** function to take any sonar view and place it on a separate display. When you move a view to another display, it will automatically be scaled for the best possible result.

It is common for sonars to require many pings to build the various views in the echo presentation. These sonars may for example need one ping to build the 360 degrees omni view, and then several additional pings to fetch the echoes for the vertical views. On the ST90, all the sonar views in the presentation are built using the echoes from one single ping. This dramatically improves the update rate and provides better real-time information.

The ST90 permits you to record real-time sonar situations. This allows you to replay complete sequences. The playback contains the exact same echo information, and can be used for mission history, training or troubleshooting purposes.

Great emphasis has been placed on an intuitive user interface and the best possible sonar presentations on a high resolution colour display.

The ST90 is equipped with the celebrated signal processing software developed by Kongsberg Maritime. The ST90 offers several pulse types. This includes Hyperbolic FM (HFM) transmissions. This pulse type is also known as "chirp". It ensures a clutter free picture with very high resolution in range. The signal processing and beamforming is performed in a fast digital signal processing system using the full dynamic range of the signals.

System diagram

The system diagram identifies the main components of a basic ST90 system. Only the main connections between the units are shown. Detailed interface capabilities and power cables are not shown.

A *Display (The second display is optional.)*

B *Processor Unit*

C *Operating Panel*

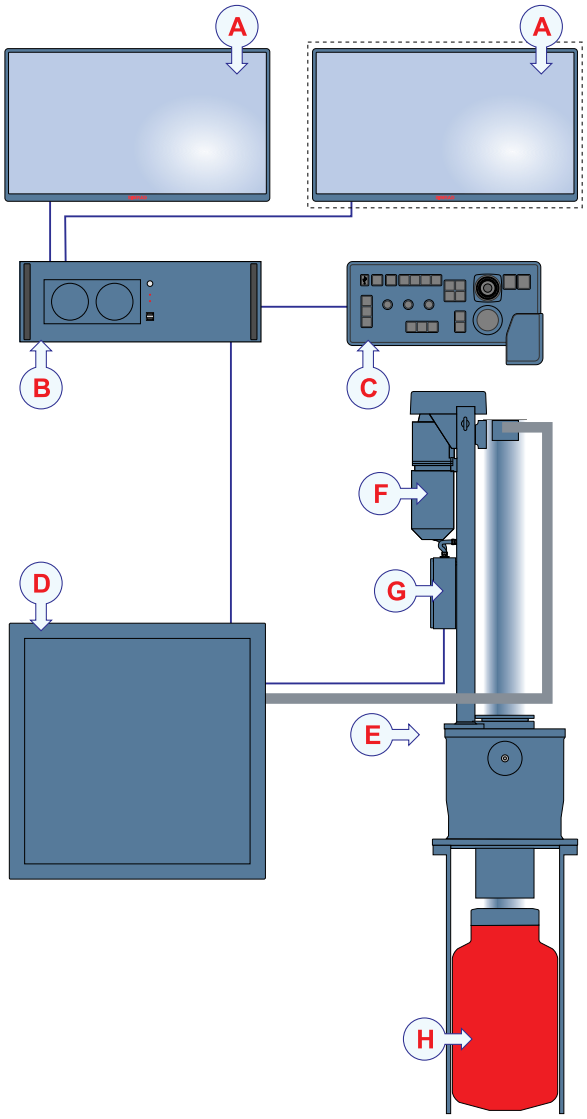
D *Transceiver Unit*

E *Hull Unit*

F *Hoist motor*

G *Motor Control Unit*

H *Transducer*



In this publication, the computer is referred to as the Processor Unit.

Unless otherwise specified in a contract, the display is not included in the standard delivery from Simrad. This is a commercial item that can be purchased locally.

A choice of hull units is available for the ST90 Fish-finding sonar. The hull units offer different lowering depths and cable lengths. The same transducer is used on all hull unit types. The same installation trunk is used on all hull unit types.

General safety rules

Safety is important. The safety precautions must be followed at all times during installation and maintenance work.

WARNING

The ST90 operates on 115 VAC and/or 230 VAC at 50/60 Hz. This voltage is lethal! You must never work alone on high-voltage equipment!

The hull unit is powered by a 3-phase high voltage.

This equipment must be serviced only by qualified personnel familiar with the construction and operation of the ST90, as well as the potential hazards involved. Failure to observe this precaution could result in bodily injury.

1 You must always switch off all power before installation or maintenance work on the ST90 system.

   Use the main circuit breaker, and label the breaker with a warning sign that informs others that maintenance or installation work is in progress on the system.

2 For safety reasons, two persons must always be present during troubleshooting with power ON.

3 Read and understand the applicable first aid instructions related to electric shock.

4 Whenever maintenance is in progress, it is essential that a first aid kit is available, and that all personnel are familiar with the first aid instructions for electrical shock.

5 The various parts of the system may be heavy.

   Make sure that the appropriate tools and certified lifting equipment are available. The personnel must be trained in relevant installation and maintenance work.

Support information

If you need technical support for your Simrad ST90 you must contact your local dealer, or one of our support departments. A list of all our offices and dealers is provided on our website. You can also contact our main support office in Norway.

Norway (main office)

- **Company name**: Kongsberg Maritime AS / Simrad
- **Address**: Strandpromenaden 50, N-3190 Horten, Norway
- **Telephone**: +47 33 03 40 00
- **Telefax**: +47 33 04 29 87
- **Website**: https://www.simrad.no
- **E-mail address**: simrad.support@simrad.com

Spain

- **Company name**: Simrad Spain S.L.U
- **Address**: Partida Atalayes 20, 03570 Villajoyosa, Spain
- **Telephone**: +34 966 810 149
- **Telefax**: +34 966 852 304
- **Website**: http://www.simrad.es
- **E-mail address**: simrad.spain@simrad.com

France

- **Company name**: Simrad France
- **Address**: 5 rue de Men Meur, 29730 Guilvinec, France
- **Telephone**: +33 298 582 388
- **Telefax**: +33 298 582 388
- **Website**: http://www.simrad.fr
- **E-mail address**: simrad.france@simrad.com

USA

- **Company name**: Kongsberg Underwater Technology Inc / Simrad Fisheries
- **Address**: 19210 33rd Ave W, Suite A, Lynnwood, WA 98036, USA
- **Telephone**: +1 425 712 1136
- **Telefax**: +1 425 712 1193
- **Website**: https://www.simrad.com
- **E-mail address**: fish.usa.support@simrad.com

Canada

- **Company name**: Kongsberg Mesotech Ltd.
- **Address**: 1598 Kebet Way, Port Coquitlam, BC, V3C 5M5, Canada
- **Telephone**: +1 604 464 8144
- **Telefax**: +1 604 941 5423
- **Website**: https://www.simrad.com
- **E-mail address**: simrad.canada@simrad.com

Malaysia

- **Company name**: Kongsberg Maritime Malaysia Sdn. Bhd
- **Address**: Unit 27-5 Signature Offices, The Boulevard, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia
- **Telephone**: +65 6411 7488
- **Telefax**: +60 3 2201 3359
- **Website**: https://www.simrad.com
- **E-mail address**: simrad.asia@simrad.com

Korea

- **Company name**: Kongsberg Maritime Korea Ltd
- **Address**: #1101-Harbor Tower, 113-1, Nampodong 6-Ga, Jung-Gu, Busan 600-046, Korea
- **Telephone**: +82-51-242-9933
- **Telefax**: +82-51-242-9934
- **Website**: https://www.simrad.com
- **E-mail address**: simrad.korea@simrad.com

China

- **Company name**: Kongsberg Maritime China Ltd
- **Address**: 555 Chuanqiao Road, China (Shanghai) Pilot Free Trade Zone, 201206, China
- **Telephone**: +86-21-3127-9888
- **Telefax**: +86-21-3127-9555
- **Website**: https://www.simrad.com
- **E-mail address**: simrad.china@simrad.com

Getting started

Topics

Operating Panel description, page 17

Starting normal operation, page 20

Basic operating procedures, page 36

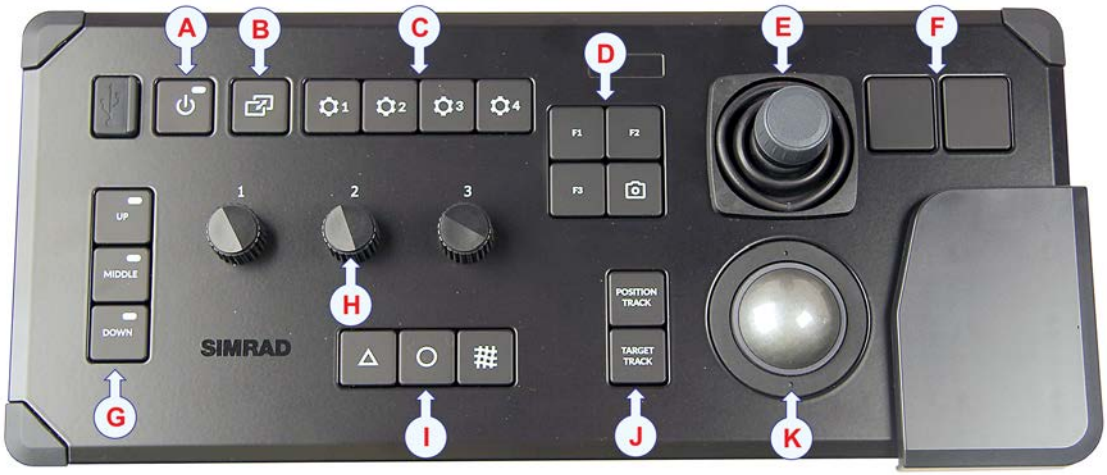
Operating Panel description

The ST90 Operating Panel is the most important device for fast and efficient user interface.The Operating Panel offers all necessary control functions for normal operation of the ST90.

The controls provided by the Operating Panel are arranged in logical functional groups. This offers you clear and easy operation with fast access to key functionality. The majority of the ST90 functions can be accessed using the trackball on the Operating Panel and the menu system shown in the ST90 presentation. The Operating Panel allows you to assign certain functions to dedicated buttons and switches.

Tip

A USB socket is provided in the top left corner of the Operating Panel. Use this socket to connect a computer keyboard, a mouse or a USB flash drive.



A **Power**: Press this button to turn the ST90on and off.

- Before you turn on the ST90, make sure that you have sufficient water depth to lower the transducer!
- You must never turn on the ST90 when the ship is in dry dock. The transducer may be damaged if it transmits in open air.
- You must never turn off the ST90 by means of the on/off switch on the Processor Unit. You must ALWAYS use the Operating Panel.

B **Sonar Select**: Since the Operating Panel uses Ethernet to communicate with the Processor Unit, you can use one single panel to control more than one sonar system. To change which sonar to control, press **Sonar Select** on the Operating Panel. If you use your Operating Panel to control more than two sonars, press **Sonar Select** repeatedly to select.

C **User Settings**: Press one of the **User Settings** buttons to apply a predefined user setting. To choose *which* function to apply open the **Operating Panel** page.Under

User Setting Buttons, assign one predefined setting to each button on the Operating Panel. The **Operating Panel** page is located in the **Installation** dialog box.

D **F1 F2 F3**: Press one of the **Fx** buttons to apply a predefined function. To choose *which* function to apply open the **Operating Panel** page. Under **Button Options**, assign one function to each **Fx** button on the Operating Panel.

Screen Capture: Press this button to make a copy of the current ST90 presentation. You can choose either a single screen capture or a sequence with multiple screen captures. Open the **Screen Captures** dialog box to select screen capture mode.

E **Joystick**: Press the joystick forward to increase the tilt angle in the active view. Turn the button on the top of the joystick to change the bearing in the active view.

F **Mouse buttons**: These buttons correspond to the two most common buttons on a standard computer mouse. When an instruction tells you to "select" or "left-click", press the left button. When an instruction tells you to "right-click", press the right button.

G Use these buttons to lower and hoist the transducer. While the transducer is moving the indicator lamp flashes, and an audible signal is sounded. When the requested position has been reached, the indicator lamp is lit, and the audible signal stops.

- **Up**: Press **Up** to hoist the transducer to its upper position.
- **Middle**: Press **Middle** to place the transducer in a predefined middle position.
- **Down**: Press **Down** to lower the transducer to its bottom position.

H **Rotary switches**: Turn a rotary switch to apply a predefined function. To choose *which* function to apply open the **Operating Panel** page. Under **Rotary Switch Options**, assign one function to each rotary switch on the Operating Panel.

I Use these buttons to place markers in the current active view.

- **Marker**: Press **Marker** to place a generic marker in the active view. One or more markers can be placed in the view to identify specific echoes. Each marker is shown as a small triangle with or without a short identifying label. It is positioned based on the two known axes in the view as well as the tilt and bearing of the current ping.
- **Circle Marker**: Press **Circle Marker** to place a circular marker in the active view. The circle is drawn with the same diameter as your purse. By means of the circle you can see the size of the school relative to your purse.
- **Gear**: Press **Gear** to place a gear symbol in the active view. The gear symbol is provided as a tool to help you plan and shoot the purse seine. The symbol is intended to be used in a structured sequence that starts when you plan to shoot the purse seine.

J Press these buttons to start position or target tracking.

- **Position Track**: Use the trackball to control the cursor in the ST90 user interface.A position track permits the ST90 to automatically control the tilt and bearing based on the movements of your vessel. It locks on a position defined by its latitude, longitude and depth. The bearing and tilt settings are automatically adjusted to compensate for the movements of your vessel.

- **Target Track**: A target track permits the ST90 to automatically control the tilt and bearing based on the movements of the chosen target. It locks on the target defined by its position, heading and speed. The bearing and tilt settings are automatically adjusted to follow the movements of the tracked target.

A new tracked object is automatically given priority status. Relevant information about the priority object can be found in the lower left corner of the view. If you change the tilt or bearing settings manually the priority status is lost.

K **Trackball**: Use the trackball to control the cursor in the ST90 user interface.

Note

The ST90 supports two different operating panels. These are referred to as "Mk1" and "Mk2". In this publication all descriptions and references are related to "Mk2".

Before you can change the settings related to a view, you must click inside the view to activate it. The changes you make are by default only valid for the active view. Several of the functions offer **Apply to All**. If you select **Apply to All** your setting is applied to *all the views* in the current presentation mode.

Starting normal operation

Topics

Turning on the ST90 for normal use, page 20

Getting to know the user interface, page 21

Getting to know presentation modes and views, page 23

Selecting *Normal* mode to start "pinging", page 27

Adjusting the radius of the search area, page 28

Adjusting the echo sensitivity, page 29

Changing the vertical angle of the sonar beams, page 31

Adjusting the horizontal direction of the sonar beam, page 33

Turning off the ST90, page 35

Turning on the ST90 for normal use

In order to use the ST90, you must first turn it on. To turn on the ST90 use the **Power** button on the Operating Panel. The ST90 program starts automatically when the Processor Unit is turned on.

Caution

You must never start ST90 transmissions (pinging) when the ship is in dry dock. The transducer may be damaged if it transmits in open air.

Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

2 Turn on the display(s).

If required, refer to the instructions provided by the display manufacturer.

3 On the Operating Panel, press **Power**, and keep it depressed for a few seconds.

The blue indicator light in the button flashes while the Operating Panel establishes contact with the Processor Unit. When the connection has been made, the blue indicator light is lit permanently.

Wait while the operating system and ST90 program is loaded and started. Both the Processor Unit and the Transceiver Unit are turned on automatically.

4 Observe that the **Transceiver On/Off** dialog box opens automatically.

The dialog box offers progress information. You can monitor the progress as the Transceiver Unit is turned on. A blue circle on the hull unit symbol means that your ST90 Processor Unit communicates with the Motor Control Unit.

5 Once the program has started, observe that the presentation fills the entire screen.

The program starts up using the same settings as the last time you used it. If these settings are acceptable, continue operation. If you wish to alter any of the settings, see the relevant procedures.

6 To lower the transducer, press **Down** on the Operating Panel.

While the transducer is moving the indicator lamp flashes, and an audible signal is sounded. When the requested position has been reached, the indicator lamp is lit, and the audible signal stops.

Alternatively, use the **Hull Unit** function on the top bar to lower the transducer.

7 At the bottom of the **Main** menu, observe that the **Operation** icon is flashing.

The icon is flashing to indicate that even if the ST90 is turned on, "pinging" is disabled. The ST90 is in *Normal* mode, but **TX Power** is set to *Off* to prevent transmissions. This is for safety reasons.

8 Set **Tx Power** to *Maximum* (or any other power rating) to start pinging.

Related topics

Starting normal operation, page 20
Turning off the ST90, page 35

Getting to know the user interface

The ST90 consists of specific visual elements that work together. The visual elements provide you with the echo information you need, they help you to control the functionality needed to understand this information, and finally, they allow you to control the operational parameters. By default, the ST90 presentation covers the entire screen.

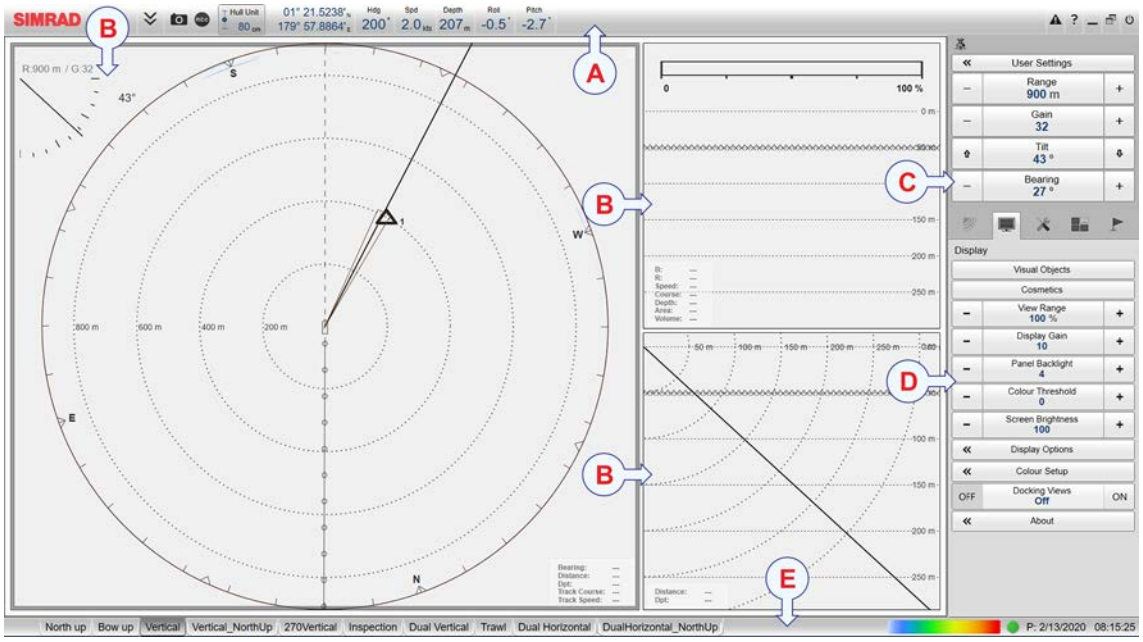
Context

All echoes offered by the ST90 are shown in rectangular *views*. Each view has a specific purpose, and it can be set up with independent operational settings. Combinations of these views are organized in *presentation modes*, which you can select on the bottom bar. You can change the physical size of any view.

Tip

The **Docking Views** *function provided by the ST90 allows you to rearrange the physical positions of the views, and change their sizes.*

A comprehensive menu system allows access to all ST90 functionality. The menu system is by default located on the right side of the ST90 presentation.



A *Top bar*

B *Sonar views*

C *Menu system*

D *Secondary menus*

E *Bottom bar*

Procedure

1 Move the cursor to the top bar, and investigate the functions provided.

The ST90 top bar is located at the top of the display presentation and stretches from the far left to the far right. The top bar gives you fast access to key functionality and navigational information. It provides buttons for hiding and showing the menu, making screen captures, opening the **Messages** dialog box, and opening context-sensitive help.

2 Move the cursor to the menu system on the right side of the ST90 presentation.

The **Main** menu is located at the top of the menu structure. It offers the most common functions for efficient use of the ST90. Below the **Main** menu, a set of dedicated icons are used to open the secondary menus. Select the icon one more time to close the menu.

3 Move the cursor to the bottom of the ST90 presentation.

The bottom bar is located at the bottom of the ST90 presentation and stretches from the far left to the far right. It allows you to choose presentation mode (view combinations). It also shows you the colour scale you are using, as well as current time and date. You can further monitor the operational status of the transceiver.

4 Move the cursor to the views in the main ST90 presentation.

The various presentation modes selected on the bottom bar gives you different view configurations. By default, the views are arranged automatically in the ST90 presentation. You can change the physical size of any view. Click on the view border, hold the button depressed, then drag the border to create a smaller or larger rectangle. Note that the size of the other views are changed accordingly!

5 Click inside one of the views.

Before you can change the settings related to a view, you must click inside the view to activate it. The changes you make are by default only valid for the active view. Observe that the border lines of the active view are drawn with a thicker line.

Several of the functions offer **Apply to All**. If you select **Apply to All** your setting is applied to *all the views* in the current presentation mode.

Related topics

Starting normal operation, page 20

Getting to know presentation modes and views

The ST90 presentation offers several views. Different combinations of views are organized in presentation modes.

Context

The ST90 presents the echo data in different views. All information from each ping is shown in all the views simultaneously. Each view uses its individual transmit frequency, and you set up the different views with different operating parameters. The behaviour of the echoes in each view is controlled by your course and speed combined with the movements of the target(s).

The following views are available:

- *Horizontal*
- *Vertical*
- *270 Vertical*
- *Catch*
- *Echogram*
- *Plane*

Tip

With the various beams provided by the ST90, it may be difficult to understand the concept. How do these beams "behave" in the water? By means of a graphic presentation, the **Beam Visualization** *dialog box attempts to give you a better understanding of how the acoustic beams are transmitted into the water. Open the* **Beam Visualization** *dialog box from the* **Setup** *menu.*

Procedure

1 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Horizontal* view.

The view presents the 360 degrees area around your vessel in bird's eye view. The current bearing is shown with a continuous line pointing out from the vessel position. You can change the angle by means of the **Bearing** function on the **Main** menu. You can also select the bearing line and drag it sideways.

The bow marker is shown as a dotted line drawn from the bow of the vessel symbol. The line reflects your vessel's current heading. The bow marker can be enabled or disabled on the **Visual Objects** menu.

The distance from the vessel symbol in the centre of the circle to the outer ring corresponds to the currently selected range.

- The current settings for range, gain and tilt are shown in the upper left corner of the view. When you change the tilt a dotted line presents the requested tilt while the solid line presents the actual tilt. You can change the tilt angle by means of the **Tilt** function on the **Main** menu. You can also click on the tilt line in a *Vertical* view and drag it up and down.
- The position (bearing and distance) and depth of the cursor location is shown in the lower right corner of the view. The depth is calculated from the current tilt and the distance from the vessel.
- The course and speed of the latest marker is found in the lower right corner of the view. The values are calculated based on the last two markers you placed and the time between each placement.
- Relevant information about a priority object can be found in the lower left corner of the view.

The **Cosmetics** menu controls which graphical elements that are shown.

2 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Vertical* view.

The view shows you a "vertical slice" of the echo data. The slice is made at the current bearing. The area covered by the vertical beam is shown as a triangle in the *Horizontal* view. You can change the bearing on the **Main** menu. You can also select the bearing line in a *Horizontal* view and drag it sideways.

The upper horizontal line in the view represents the water surface.

- Horizontal dotted lines show the depth intervals. Use **Depth Dividers** on the **Cosmetics** menu to toggle these lines *On* or *Off*.
- The selected range is divided into identical distances. These are shown as dotted circles. They are referred to as *range rings*.
- The distance and depth of the cursor location is shown in the lower right corner of the view.

The current tilt is shown with a solid line. You can change the tilt angle by means of the **Tilt** function on the **Main** menu. You can also click on the tilt line and drag it up and down.

A line of X'es in the vertical views shows the bottom of the purse seine. The depth is defined for the fishing gear you have chosen. Under **Fishing Gear**, select **Fishing Gear Setup** to open the dialog box. For the selected purse, select a depth value. Use **Purse Depth** on the **Cosmetics** menu to toggle this line *On* or *Off*.

The **Cosmetics** menu controls which graphical elements that are shown.

3 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *270 Vertical* view.

The *270 Vertical* view is designed for purse seining. The view combines a horizontal "bow up" presentation with a vertical slice. The vertical half slice is displayed in the lower left corner for when the net is set out on the starboard side. If the net is set on the port side, the vertical slice is displayed in the lower right hand corner. The area covered by the vertical beam is shown as a triangle in the *Horizontal* view.

This view makes it easy to keep contact with the school. You can determine its size distribution, and monitor the position the school relative to the bottom.

The throw side is defined for the fishing gear you have chosen. Under **Fishing Gear**, select **Fishing Gear Setup** to open the dialog box. For the selected purse, set throw side to *Port* or *Starboard*.

4 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Catch* view.

Use the information in the *Catch* view to monitor the progress of the purse seine operation. The view does not offer any echo data.

The progress bar at the top of the *Catch* view shows you the amount of net that has been spent. The sequence starts when you shoot the net. You must then press **Gear** on the operating panel or select **Place Gear Symbol** on the shortcut menu.

The estimated depth of the purse seine is shown under the progress bar. The depth is calculated from the sink rate you have defined for the fishing gear. Under **Fishing Gear**, select **Fishing Gear Setup** to open the dialog box. For the selected purse, set the sink rate.

- Horizontal dotted lines show the depth intervals. Use **Depth Dividers** on the **Cosmetics** menu to toggle these lines *On* or *Off*.
- Relevant information about a priority object can be found in the lower left corner of the view.

A line of X'es in the vertical views shows the bottom of the purse seine. The depth is defined for the fishing gear you have chosen. Under **Fishing Gear**, select **Fishing Gear Setup** to open the dialog box. For the selected purse, select a depth value. Use **Purse Depth** on the **Cosmetics** menu to toggle this line *On* or *Off*.

If you have connected a compatible catch monitoring system to your ST90, information from these sensors are shown in the *Catch* view.

5 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Echogram* view.

The *Echogram* view provides echo data from a horizontal beam in a common echogram presentation. The echo data is taken from the current bearing and tilt. The beam used to provide data is identified in the top left corner of the view. Horizontal dotted lines show the depth intervals.

- You can change the bearing on the **Main** menu. You can also select the bearing line in a *Horizontal* view and drag it sideways.
- You can change the tilt angle by means of the **Tilt** function on the **Main** menu. You can also click on the tilt line in a *Vertical* view and drag it up and down.

Left-click in the *Echogram* view to open the tooltip. The tooltip provides the cursor location in the echogram (slant range, true range and depth) as well as the current pulse duration and time.

The **Horizontal Scroll** function controls how fast the echo presentation shall move from right towards left in the *Echogram* view. The "speed" is controlled by adjusting the number of pixels used to present each ping. A higher speed reduces the resolution.

6 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Plane* view.

The *Plane* view presents the echo data in a horizontal sector ("fan"). The sector direction can be changed in both vertical and horizontal directions. The tilt is drawn in the *Vertical* and *Horizontal* views as two dotted lines. The same dotted lines are shown in the *Horizontal* view as a dedicated bearing line to visualize the direction of the plane beam.

- You can change the bearing on the **Main** menu. You can also click on the dedicated dotted bearing line in a *Horizontal* view and drag it.
- You can change the tilt angle by means of the **Tilt** function on the **Main** menu.

Horizontal Tx Sector defines the opening angle of the sector. It can be set to 180, 120, 90, 60 or 30°.

- The selected range is divided into identical distances.
- The distance and depth of the cursor location is shown in the lower right corner of the view.
- The current settings for range, gain and tilt are show in the lower left corner of the view.

Tip

To fully understand how the beams behave in this view, use the **Beam Visualization** *dialog box.*

Related topics

Starting normal operation, page 20

Selecting *Normal* mode to start "pinging"

In order to transmit ("ping") you must set the ST90 to *Normal* operating mode. This is the default mode when the ST90 is turned on.

Context

The **Operation** function controls the operating mode of the ST90. You can set it to *Normal*, *Replay* or *Inactive*. *Normal* mode allows the ST90 to transmit ("ping") through the water, and to receive the echoes.

Caution

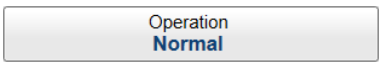
You must never start ST90 transmissions (pinging) when the ship is in dry dock. The transducer may be damaged if it transmits in open air.

Once started, the ST90 transmissions are controlled by the **Transmission Mode** and **TX Power** functions.

Procedure

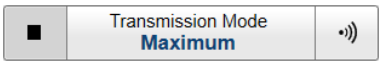
1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.



The **Operation** function controls the operating mode of the ST90. *Normal* mode allows the ST90 to transmit ("ping") through the water, and to receive the echoes.

3 Set **Transmission Mode** to *Maximum*.



The **Transmission Mode** function enables or disables the ST90 transmissions into the water. If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible. This gives you the maximum refresh rate.

The ping rate is normally limited by the maximum range settings. It will also be dependant on hardware issues. This may be, for example, how fast your Processor Unit can handle the information from each ping, how fast your system

communicates with external peripherals, or how long time the system uses to save data.

4 Set **Tx Power** to *Maximum*.

Result

The ST90 is now transmitting acoustic pulses ("pinging") into the water.

Related topics

Starting normal operation, page 20

Adjusting the radius of the search area

Some echoes are close, others are further away. It is often necessary to adjust the radius of the search area. On the ST90, this is referred to as *range*.

Context

The **Range** setting defines how "far" you wish the ST90 to detect echoes. In other words, you specify the horizontal or vertical distance from the vessel to the outer edge of the search area.

Note

The range value selected and shown is by default only used by the active view.

Even though you can choose a large range value, that does not mean that you can detect your targets on the same range. The range value only defines the range that is shown in the views. Actual target detection will always depend on the operational environment, such as water temperature, salinity, interference and layers in the water column.

The selected range is divided into identical distances. These are shown as dotted circles. They are referred to as *range rings*.

Tip

An adjustable range ring can be added to the Horizontal and Vertical views. This ring is referred to as the variable range ring.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

Tip

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

4 Select **Range**.

5 Make the necessary adjustment.

Select [+] or [-] to choose the requested setting.

or:

Place the cursor on the button. Press and hold the left mouse button. Move the cursor horizontally over the button. Release the mouse button when requested value is shown.

or:

Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

or:

Select the middle of the button to open it. Select a value from the options provided.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Starting normal operation, page 20

Adjusting the echo sensitivity

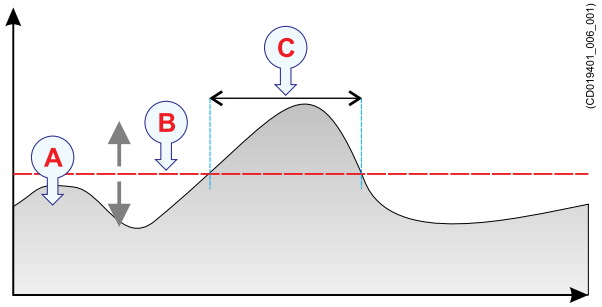
Some echoes are weak while others are stronger. To compensate for this it is often necessary to adjust the sensitivity of the ST90. This adjustment is commonly referred to as *gain*.

Context

You can compare this gain setting with the volume control on your car radio. When the gain is increased, the echoes will appear stronger. Weak echoes will be easier to

see. However, since you also increase the acoustic noise in the reception, the ST90 presentations will also show this noise. Too much gain may therefore "distort" the presentation.

Comparing the gain function with the volume control on your car radio is not very accurate. In fact, the gain in the ST90 is constant. The **Gain** function is used to adjust the sensitivity. This done by controlling the minimum level of detection. When you *increase* the gain level (more positive number) , you reduce the minimum level, and thus *increase* the sensitivity.



*The echo strength (A) changes with time. The minimum level of detection (B) is adjusted up or down with the **Gain** function. Increasing the **Gain** with a more positive number reduces the minimum level, and this increases the sensitivity. Only echoes over the minimum level are shown in the echogram (C).*

Do not confuse this **Gain** setting with the **TVG** (Time Varied Gain) setting.

Tip

During normal operating conditions we recommend that you keep the gain between 15 and 30. If you need to adjust the gain "from scratch" disable AGC (Automatic Gain Control) and RCG (Reverberation Controlled Gain) to see the immediate effect of the gain adjustments. While you adjust the gain you may find it useful to have a known target (for example an island) as reference.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

Tip

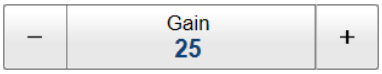
The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

4 Select **Gain**.



5 Make the necessary adjustment.

Select [+] or [-] to choose the requested setting.

or:

Place the cursor on the button. Press and hold the left mouse button. Move the cursor horizontally over the button. Release the mouse button when requested value is shown.

or:

Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Starting normal operation, page 20

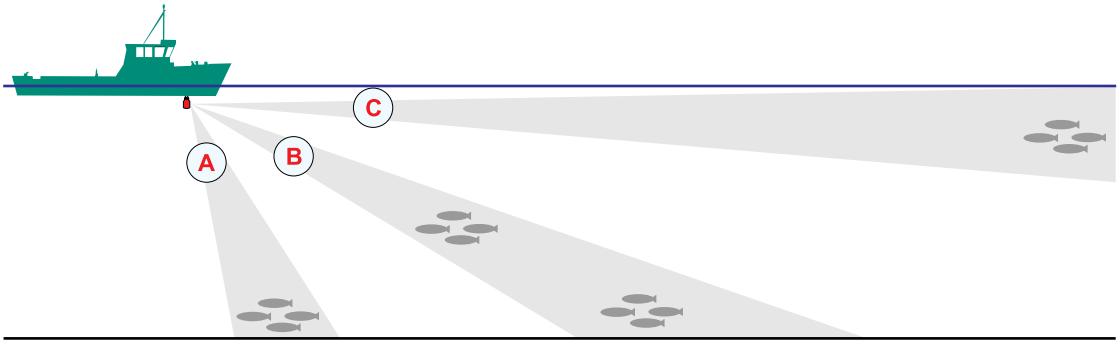
Changing the vertical angle of the sonar beams

In order to detect fish or schools in the water column you may need to change the angle of the sonar beams. The sonar beams can be tilted electronically from -10 to +84 degrees.

Context

The current tilt is shown with a solid line in the *Vertical* view. In the *Horizontal* view, the current settings for range, gain and tilt are shown in the top left corner of the view.

At 0° tilt the sonar beam is transmitted parallel with the sea surface, while 84 degrees tilt will direct it towards the bottom.



The challenge is to find a tilt that prevents the fish echoes to be "buried" in reverberation and bottom echoes.

- If you use a high tilt value (A) the fish are easily disguised by bottom echoes. A strong RCG (Reverberation Controlled Gain) setting will remove the bottom echoes. As the distance from the bottom to the fish increases, the fish echoes become clearer. However, this assumes that the fish echoes are considerably stronger than the bottom echoes.
- If you use a very small tilt (C) you are not bothered by bottom echoes. However, if the sea surface is gusty you will see echoes from the waves. These echoes are normally rather weak, and they hardly move in relation to your vessel.
- By means of a medium tilt angle (B) you are able to pick up scattered fish or schools if these are located at some distance above the bottom. The upper school in the illustration appears on the sonar picture before the bottom echo, while the lower school will easily be disguised by the bottom echoes. Once again you can activate the RCG function to improve the reading.

Tip

With the various beams provided by the ST90, it may be difficult to understand the concept. How do these beams "behave" in the water? By means of a graphic presentation, the **Beam Visualization** *dialog box attempts to give you a better understanding of how the acoustic beams are transmitted into the water. Open the* **Beam Visualization** *dialog box from the* **Setup** *menu.*

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 In a *Vertical* view, click on the tilt line, keep the mouse button depressed, and drag the line up or down.

Optionally:

3 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

4 Select **Tilt**.

5 Make the necessary adjustment.

Select either side of the button to choose a value. Keep the mouse button depressed to change the value faster.

or:

Place the cursor on the button. Press and hold the left mouse button. Move the cursor horizontally over the button. Release the mouse button when requested value is shown.

or:

Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Starting normal operation, page 20

Adjusting the horizontal direction of the sonar beam

The *Horizontal* view in the ST90 presentation covers the entire 360° omnidirectional sector For the other views you must define the horizontal direction of the beam.

Context

In the *Horizontal* view the current bearing is shown with a continuous line pointing out from the vessel position. The area covered by the vertical beam is shown as a triangle in the *Horizontal* view.

Note

The choice you make is by default only applied to the currently selected (active) view. The active view is identified with a thicker border.

A new tracked object is automatically given priority status. The priority is identified with a "P". The bearing and tilt settings are automatically adjusted to follow the movements of the tracked target. The bearing line is automatically locked on the object to reflects its bearing.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

Tip

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 In a *Horizontal* view, select the bearing line and drag it sideways.

Optionally:

4 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

5 Select **Bearing**.

6 Make the necessary adjustment.

Select [+] or [-] to choose the requested setting.

or:

Place the cursor on the button. Press and hold the left mouse button. Move the cursor horizontally over the button. Release the mouse button when requested value is shown.

or:

Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

7 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Starting normal operation, page 20

Turning off the ST90

Select **Power Off** on the top bar to turn off the ST90. You can also use the **Power** button on the Operating Panel. You must never turn off the ST90 by means of the on/off switch on the Processor Unit.

Context

When you do not use the ST90, turn off the display and the Processor Unit.

Procedure

1 Select **Power Off** on the top bar.

In the **Power Off** dialog box, select **Power off** or **Exit to Operating System**.

- **Power Off** turns off the Processor Unit and the Transceiver Unit.
- **Exit to Operation System** closes the ST90 program, and turns off the Transceiver Unit.
- Both functions will also retract the transducer.

or:

2 On the Operating Panel, press **Power**, and keep it depressed for a few seconds.

In the **Power Off** dialog box, select **Power off** or **Exit to Operating System**.

3 Wait while the ST90 program closes and theTransceiver Unit is turned off.

4 Turn off the display.

If required, refer to the instructions provided by the display manufacturer.

Related topics

Starting normal operation, page 20

Basic operating procedures

Topics

Selecting the language displayed in the menus and dialog boxes, page 36

Selecting operating frequency for minimum noise, page 37

Hiding the menu system when you do not need it, page 38

Saving single or sequential screen captures, page 38

Saving the current user settings, page 40

Defining the ping (transmission) modes, page 41

Selecting the language displayed in the menus and dialog boxes

You may prefer to use the ST90 with a user interface in your own language. The **Language** function allows you to select the language to be used in the ST90 presentations, menus and dialog boxes.

Context

With a few exceptions, the chosen language will also be used for all other text on the ST90. The ST90 help may not be available for the language you choose. If your language is not supported, the English help is provided.

Procedure

1 Open the **Setup** menu.

2 Select the middle of the **Language** button to open the list of available options.

3 Select the language you wish to use.

Result

All the texts in the user interface are changed to the selected language.

The context sensitive on-line help may also be available in your language. To change the language in the on-line help, you may need to restart the ST90.

Related topics

Basic operating procedures, page 36

Selecting operating frequency for minimum noise

The **Frequency** function is used to control the centre frequency of the acoustic transmissions (pings). The centre frequency can be changed from 14 to 24 kHz in steps of 1 kHz. All types of noise matter when you wish to find the best operating frequency.

Context

A lower frequency gives you a better detection range because the attenuation loss is smaller. A higher frequency gives you better range resolution. A higher frequency also gives you narrower beams and a "sharper" image".

Noise from internal and external sources have an impact on the choice of operating frequency. One specific frequency may perform better than the others on your vessel. To measure the noise level, observe the value presented on the **Noise** page in the **BITE** dialog box.

We recommend that you do this test twice. First, do the test with all other hydroacoustic systems (echo sounders, ADCP, sonars) turned off. Second, do the test with normal operating conditions. This allows you to see how the other hydroacoustic systems affect the ST90 operation.

Procedure

1 On the **Main** menu, select **User Settings**.
   a Select **ST90 Factory Default**.
   b Select **Activate Selected Setting**.
   c Select **OK** to apply your changes and close the **User Settings** dialog box.
2 On the **Main** menu, set **Range** to *1000 m*.
3 Open the **Operation** menu. Set **Tx Power** to *Off*.
4 Open the **Active** menu. Set **Pulse Type** to *CW Medium*.
5 Open the **Setup** menu.
6 Select **BITE** to open the dialog box.

   a Select **Noise** to open the page.
   b Select **Start Noise Measurements**.
   c On the **Active** menu, change the **Frequency** setting while observing the noise value.
   d Note frequencies with high noise levels, and try to avoid using them.

Tip

The factory default settings include operating frequency. If you apply these settings remember to make the appropriate changes afterwards.

Related topics

Basic operating procedures, page 36

Hiding the menu system when you do not need it

Unless you need to make frequent changes to the operating parameters, you may want to hide the menu from the ST90 presentation. This gives you more space for echo information.

Context

The menu system is by default located on the right side of the ST90 presentation. The menus are organized in a tree structure with a main menu, a set of secondary menus, and several menu buttons.

Tip

The **Menu on the right side** *option is provided in the* **Display Options** *dialog box. By deselecting this function, the entire menu system is placed permanently on the left side of the ST90 presentation.*

Procedure

1 To hide the menu, select **Menu** on the top bar.

When the menu is hidden, it is temporarily shown on the left or right side of the ST90 presentation if you move the cursor to that position.

2 To retrieve the menu, select **Menu** one more time.

Related topics

Basic operating procedures, page 36

Saving single or sequential screen captures

While using the ST90 you may wish to make a screen capture to save an instantaneous copy of the current presentation. Each screen capture you make is saved in `.jpg` format on the Processor Unit hard disk.

Context

You can choose either a single screen capture or a sequence with multiple screen captures. Each screen capture you make is saved in `.jpg` format on the Processor Unit hard disk. The file name reflects the current date and time.

Screen Capture on the top bar allows you to make a copy of the current ST90 presentation. You can also use the **Screen Capture** button on the Operating Panel.

Procedure

Choosing screen capture mode:

1 Open the **Setup** menu.

2 Select **Screen Captures**.

   a Select screen capture mode.

   - Single: In *Single* mode one screen capture is every time you select **Screen Capture** on the top bar.
   - Sequence: In *Sequence* mode a new screen capture is created for every ping.

   b Select **Close** to save the chosen settings and close the dialog box.

Saving a single screen capture:

3 Observe **Screen Capture** on the top bar.

4 Select **Screen Capture** to make a copy of the current ST90 presentation.

Every time you do this a new image file is created.

You can also use the **Screen Capture** button on the Operating Panel.

Saving a sequence of screen captures:

5 Select **Screen Capture** on the top bar to start the sequence.

6 Select **Screen Capture** one more time to stop the sequence.

Related topics

Basic operating procedures, page 36

Saving the current user settings

When you have spent some time working with the ST90, you are probably using specific settings that you know are efficient for your purpose. It is a good idea to save these settings.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved.

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.

3 Select **Save Current Setting**.

A small dialog opens to accept the name of the new setting.

4 Type a name for the user setting.

Note

If you do not have a computer keyboard connected to your ST90 system, select the **Keyboard** *button to open an on-screen keyboard.*

5 Select **OK** to save the chosen name.

6 Observe that the name you have chosen appears on the **Saved Settings** list.

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

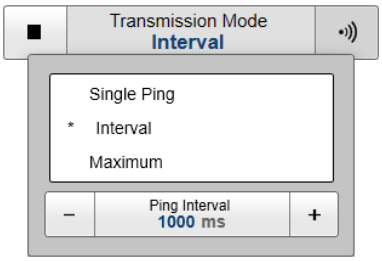
Related topics

Basic operating procedures, page 36

Defining the ping (transmission) modes

You can easily control how often the ST90 shall transmit acoustic energy (a ping) into the water. You can disable the transmission altogether, set it to operate as fast as possible, or select a time interval.

Context



Once pinging is *On*, use **Transmission Mode** to choose *how often* the ST90 shall transmit (ping). Use it to control the *behaviour* of the transmissions (pinging).

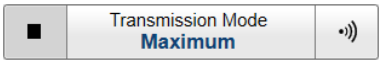
- *Single Ping*: The ST90 transmits (pings) only when you select the symbol on the right side of the button.
- *Interval*: The ST90 transmits (pings) with a fixed time interval. **Ping Interval** permits you to choose the time (in milliseconds) between each transmission (ping).
- *Maximum*: The ST90 transmits (pings) as frequent as possible.

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.

3 Set **Transmission Mode** to *Maximum*.



- Select the symbol on the right side of the button to start pinging.
- Select the symbol on the left side the button to stop pinging.
- Select the middle of the button to open it.

If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible. This gives you the maximum refresh rate. The time between each ping (the *ping rate*) depends mainly on the current range. In some systems, a low performance Processor Unit and/or a slow hard disk may reduce the ping rate. How fast your Processor Unit communicates with external peripherals may also have an effect on the ping rate.

or:

4 Set **Transmission Mode** to *Interval*.

Specify the interval between each ping.

Select either side of the button to choose a value. Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

You can also change the value by selecting - and holding - the middle of the button, and move the cursor sideways. Drag the cursor sideways to increase or decrease the value. Release the mouse button when requested value is shown.

or:

5 Set **Transmission Mode** to *Single Ping*.

The ST90 transmits (pings) only when you select the symbol on the right side of the button.

Related topics

Basic operating procedures, page 36

Operating procedures

Topics

Getting started, page 44
Choosing operating mode and key transmit parameters, page 48
Controlling the gain and range settings, page 56
Using the markers and tracking features, page 64
Improving the recognition of fish and schools using receiver filters, page 72
Recording and replaying echo data, page 80
Setting up presentation modes and views, page 86
Defining settings related to user preferences and individual customizing, page 89
Saving, retrieving and handling user settings, page 101
Defining the user-selected features on the Operating Panel, page 106
Lowering and hoisting the transducer from the sonar room, page 112
Setting up the interfaces to peripheral devices, page 119

Getting started

Topics

Turning on the ST90, page 44

Lowering and hoisting the transducer from the user interface, page 45

Turning off the ST90, page 46

Turning on the ST90

In order to use the ST90, you must first turn it on. To turn on the ST90 use the **Power** button on the Operating Panel. The ST90 program starts automatically when the Processor Unit is turned on.

Caution

You must never start ST90 transmissions (pinging) when the ship is in dry dock. The transducer may be damaged if it transmits in open air.

Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

2 Turn on the display(s).

If required, refer to the instructions provided by the display manufacturer.

3 On the Operating Panel, press **Power**, and keep it depressed for a few seconds.

The blue indicator light in the button flashes while the Operating Panel establishes contact with the Processor Unit. When the connection has been made, the blue indicator light is lit permanently.

Wait while the operating system and ST90 program is loaded and started. Both the Processor Unit and the Transceiver Unit are turned on automatically.

4 Observe that the **Transceiver On/Off** dialog box opens automatically.

The dialog box offers progress information. You can monitor the progress as the Transceiver Unit is turned on. A blue circle on the hull unit symbol means that your ST90 Processor Unit communicates with the Motor Control Unit.

5 Once the program has started, observe that the presentation fills the entire screen.

The program starts up using the same settings as the last time you used it. If these settings are acceptable, continue operation. If you wish to alter any of the settings, see the relevant procedures.

6 To lower the transducer, press **Down** on the Operating Panel.

While the transducer is moving the indicator lamp flashes, and an audible signal is sounded. When the requested position has been reached, the indicator lamp is lit, and the audible signal stops.

Alternatively, use the **Hull Unit** function on the top bar to lower the transducer.

7 At the bottom of the **Main** menu, observe that the **Operation** icon is flashing.

The icon is flashing to indicate that even if the ST90 is turned on, "pinging" is disabled. The ST90 is in *Normal* mode, but **TX Power** is set to *Off* to prevent transmissions. This is for safety reasons.

8 Set **Tx Power** to *Maximum* (or any other power rating) to start pinging.

Related topics

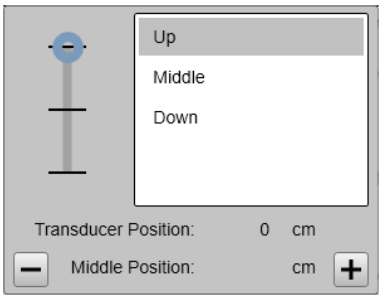
Getting started, page 44
Lowering and hoisting the transducer from the user interface, page 45
Turning off the ST90, page 46

Lowering and hoisting the transducer from the user interface

The Operating Panel controls the lowering and hoisting of the transducer. Dedicated buttons are provided for the physical transducer locations. You can also control the transducer movements from the top bar on the ST90.

Context

The **Hull Unit** dialog box allows you to lower and hoist the transducer. The dialog box also provides status information about the transducer position. You can monitor the current position of the transducer, and make changes to the position defaults.



Caution

If the transducer hits larger objects or bottom, the transducer shaft may be bent, or - in worst case - it can be broken off. A broken transducer shaft will cause water leakage through the top of the shaft. If you suspect that the transducer shaft is seriously damaged with holes, do not retract the transducer to its upper position.

To prevent serious damage to the vessel or the vessel stability, you must have a water pump and a warning system in the sonar room.

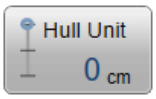
Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

2 Select **Hull Unit** on the top bar to open the **Hull Unit** dialog box.

3 To lower the transducer select **Down**.

4 To hoist the transducer select **Up**.



5 To move the transducer to its predefined middle position, select **Middle**.

Retracting the transducer to a middle position may be useful if you use the ST90 simultaneously with other sonars. A higher position will permit you to increase the vessel speed. If you operate in very shallow waters, you may also reduce the risk of hitting bottom. However, placing the transducer immediately under the hull may increase the flow noise.

Related topics

Getting started, page 44
Turning on the ST90, page 44
Turning off the ST90, page 46

Turning off the ST90

When you do not use the ST90, turn off the entire system. To power down the three Power Supply Units and the Transceiver Unit, use the functionality in the ST90 program.

Context

When you do not use the ST90, turn off the display and the Processor Unit.

Procedure

1 Select **Power Off** on the top bar.

In the **Power Off** dialog box, select **Power off** or **Exit to Operating System**.

- **Power Off** turns off the Processor Unit and the Transceiver Unit.
- **Exit to Operation System** closes the ST90 program, and turns off the Transceiver Unit.
- Both functions will also retract the transducer.

or:

2 On the Operating Panel, press **Power**, and keep it depressed for a few seconds.

In the **Power Off** dialog box, select **Power off** or **Exit to Operating System**.

3 Wait while the ST90 program closes and theTransceiver Unit is turned off.

4 Turn off the display.

If required, refer to the instructions provided by the display manufacturer.

Related topics

Getting started, page 44
Turning on the ST90, page 44
Lowering and hoisting the transducer from the user interface, page 45

Choosing operating mode and key transmit parameters

Topics

Selecting *Normal* mode to start "pinging", page 48

Selecting *Replay* mode, page 49

Selecting *Inactive* mode, page 50

Setting up the ST90 for maximum echo refresh rate, page 51

Transmitting single pings, page 52

Transmitting with fixed-time intervals, page 52

Adjusting the output power to match varying conditions, page 53

Selecting the best operating frequency, page 54

Selecting *Normal* mode to start "pinging"

In order to transmit ("ping") you must set the ST90 to *Normal* operating mode. This is the default mode when the ST90 is turned on.

Context

The **Operation** function controls the operating mode of the ST90. You can set it to *Normal*, *Replay* or *Inactive*. *Normal* mode allows the ST90 to transmit ("ping") through the water, and to receive the echoes.

Caution

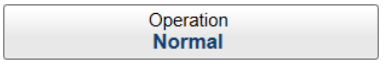
You must never start ST90 transmissions (pinging) when the ship is in dry dock. The transducer may be damaged if it transmits in open air.

Once started, the ST90 transmissions are controlled by the **Transmission Mode** and **TX Power** functions.

Procedure

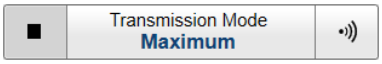
1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.



The **Operation** function controls the operating mode of the ST90. *Normal* mode allows the ST90 to transmit ("ping") through the water, and to receive the echoes.

3 Set **Transmission Mode** to *Maximum*.



The **Transmission Mode** function enables or disables the ST90 transmissions into the water. If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible. This gives you the maximum refresh rate.

The ping rate is normally limited by the maximum range settings. It will also be dependant on hardware issues. This may be, for example, how fast your Processor Unit can handle the information from each ping, how fast your system communicates with external peripherals, or how long time the system uses to save data.

4 Set **Tx Power** to *Maximum*.

Result

The ST90 is now transmitting acoustic pulses ("pinging") into the water.

Related topics

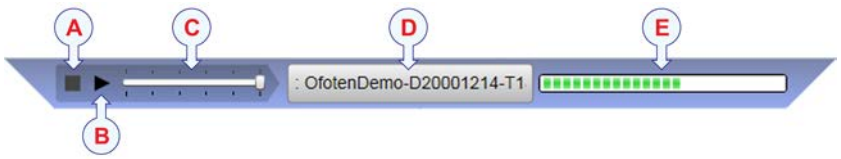
Choosing operating mode and key transmit parameters, page 48
Selecting *Replay* mode, page 49
Selecting *Inactive* mode, page 50

Selecting *Replay* mode

Replay mode allows you to play back previously recorded raw data. The ST90 can not operate normally while in *Replay* mode. Neither transmission nor reception takes place.

Context

All playback is controlled by the replay bar.



A ***Stop****: Select this button to stop the playback.*

B ***Play/Pause****: Select this button to start the playback, or to pause it.*

C ***Replay Speed****: Select this slider and move it sideways to adjust the replay speed.*

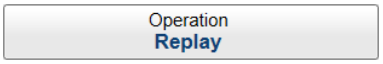
D ***Replay File****: The button shows you which file you are replaying. Select the button to open the* ***Replay File*** *dialog box.*

E ***Playback Progress****: This bar shows you the progress of the replay sequence. If you have chosen to restart the replay file(s) automatically (in a loop), the green indicator starts from left every time the file restarts.*

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Replay*.



The replay bar opens automatically. It is positioned directly below the top bar at the top of the ST90 presentation.

If you need to select which files to replay, select **Replay File** under the **Operation** button. You can also select the large button in the middle of the replay bar.

3 Select **Play/Pause** to start the playback.

4 To stop the replay choose any other operating mode.

Related topics

Choosing operating mode and key transmit parameters, page 48
Selecting *Normal* mode to start "pinging", page 48
Selecting *Inactive* mode, page 50
Recording and replaying echo data, page 80
Choosing which echo data file(s) to replay, page 83

Selecting *Inactive* mode

Inactive mode is provided to pause the ST90 operation temporarily. Neither transmission nor reception will take place. The current echoes will be removed from the presentation.

Context

The **Operation** function controls the operating mode of the ST90. You can set it to *Normal*, *Replay* or *Inactive*.

Note

Note that Inactive operating mode is not the same as Passive mode. While Inactive mode stops both transmission and reception, Passive mode will still allow the ST90 to receive echoes. To select passive mode set **Operation** *to Normal and* **Tx Power** *to Off.*

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Inactive*.

When the ST90 has been disabled using this function, it will stop. The transmission ("pinging") stops.The current echoes will be removed from the presentation.

Related topics

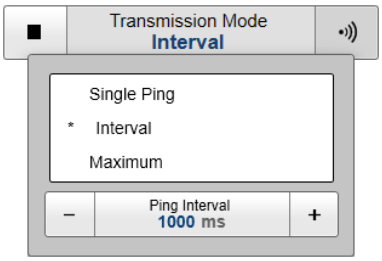
Choosing operating mode and key transmit parameters, page 48
Selecting *Normal* mode to start "pinging", page 48
Selecting *Replay* mode, page 49

Setting up the ST90 for maximum echo refresh rate

You can set up the ST90 to transmit (ping) as often as possible. This gives you the maximum refresh rate.

Context

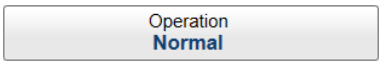
Use **Transmission Mode** to control how often the ST90 shall transmit its energy into the water. For normal use, choose *Maximum*. If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible.



Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.



3 Set **Transmission Mode** to *Maximum*.

The time between each ping (the *ping rate*) depends mainly on the current range. How fast your Processor Unit communicates with external peripherals may also have an effect on the ping rate.

Related topics

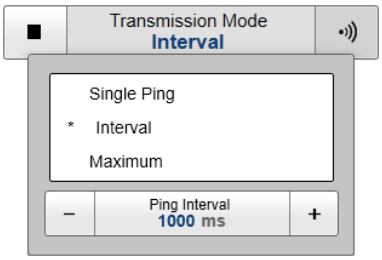
Choosing operating mode and key transmit parameters, page 48
Transmitting single pings, page 52
Transmitting with fixed-time intervals, page 52

Transmitting single pings

You can set up the ST90 to transmit a single ping only when you select the **Transmission Mode** button.

Context

Use **Transmission Mode** to control how often the ST90 shall transmit its energy into the water. For normal use, choose *Maximum*. If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible.



If you choose *Single Ping*, you can transmit single pings by selecting the ping symbol on the right side of the button.

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.

3 Set **Transmission Mode** to *Single Ping*.

4 Select the ping symbol on the right side of the button to transmit one single ping.

Related topics

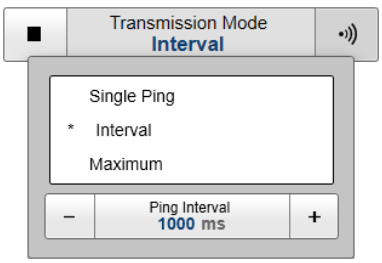
Choosing operating mode and key transmit parameters, page 48
Setting up the ST90 for maximum echo refresh rate, page 51
Transmitting with fixed-time intervals, page 52

Transmitting with fixed-time intervals

You can set up the ST90 to transmit pings with a fixed time interval.

Context

Use **Transmission Mode** to control how often the ST90 shall transmit its energy into the water. For normal use, choose *Maximum*. If you choose *Maximum*, the ST90 will transmit (ping) continuously and as often as possible.

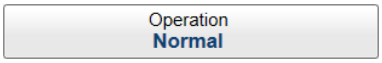


If you choose *Interval*, you must define the time between each ping with the **Ping Interval** function. **Ping Interval** permits you to choose the time (in milliseconds) between each transmission (ping).

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Normal*.



3 Set **Transmission Mode** to *Interval*.

4 Specify the interval between each ping.

   a Select either side of the button to choose a value.

   b Select the middle of the button to open it.

   If you have a keyboard connected to the ST90, you can type the requested value.

   You can also change the value by selecting - and holding - the middle of the button, and move the cursor sideways. Drag the cursor sideways to increase or decrease the value. Release the mouse button when requested value is shown.

Related topics

Choosing operating mode and key transmit parameters, page 48
Setting up the ST90 for maximum echo refresh rate, page 51
Transmitting single pings, page 52

Adjusting the output power to match varying conditions

You are permitted to adjust the output power from the ST90. **Tx Power** is used to control the amount of power that is transmitted with each ping.

Context

Most users operate the ST90 with **Tx Power** set to *Maximum*. This allows for maximum range, and works well in open waters with sufficient depth. Certain operating conditions may make it appropriate to adjust the output power. Use **Tx Power** to reduce the transmitted acoustic energy compared to the maximum output.

Tip

If you work in shallow and/or confined waters you may find it useful to reduce the output power to avoid reverberation.

Some of our users claim that reducing the output may be useful if you are looking for scattered fish.

If you operate in the close vicinity of other vessels that are also using the ST90, interference may cause problems. Reducing the output power is not a practical way to deal with interference. It is more efficient to change the operating frequency.

To investigate unknown and/or unfamiliar targets, some user prefer to "reset" the ST90 by turning off all the receiver filters and adjust the output power.

Sea conditions vary, sometimes drastically. The acoustic conditions are also changing. Temperature and salinity layers differ from one day to the next, and from one position to another. It is not possible to identify settings that will provide the best data at all times.

Procedure

1 Open the **Operation** menu.

2 Select **Tx Power**.

3 Select the requested output power.

Select either side of the button to choose a value.

Select the middle of the button to open a small menu with the available options.

Related topics

Choosing operating mode and key transmit parameters, page 48

Selecting the best operating frequency

The **Frequency** function is used to control the centre frequency of the acoustic transmissions (pings). The centre frequency can be changed from 14 to 24 kHz in steps of 1 kHz. All types of noise matter when you wish to find the best operating frequency.

Context

A lower frequency gives you a better detection range because the attenuation loss is smaller. A higher frequency gives you better range resolution. A higher frequency also gives you narrower beams and a "sharper" image".

Noise from internal and external sources have an impact on the choice of operating frequency. One specific frequency may perform better than the others on your vessel. To measure the noise level, observe the value presented on the **Noise** page in the **BITE** dialog box.

We recommend that you do this test twice. First, do the test with all other hydroacoustic systems (echo sounders, ADCP, sonars) turned off. Second, do the test with normal operating conditions. This allows you to see how the other hydroacoustic systems affect the ST90 operation.

Procedure

1 On the **Main** menu, select **User Settings**.

   a Select **ST90 Factory Default**.

   b Select **Activate Selected Setting**.

   c Select **OK** to apply your changes and close the **User Settings** dialog box.

2 On the **Main** menu, set **Range** to *1000 m*.

3 Open the **Operation** menu. Set **Tx Power** to *Off*.

4 Open the **Active** menu. Set **Pulse Type** to *CW Medium*.

5 Open the **Setup** menu.

6 Select **BITE** to open the dialog box.

   a Select **Noise** to open the page.

   b Select **Start Noise Measurements**.

   c On the **Active** menu, change the **Frequency** setting while observing the noise value.

   d Note frequencies with high noise levels, and try to avoid using them.

Tip

The factory default settings include operating frequency. If you apply these settings remember to make the appropriate changes afterwards.

Related topics

Choosing operating mode and key transmit parameters, page 48

Controlling the gain and range settings

Topics

Adjusting the gain (echo sensitivity), page 56

Adjusting the TVG (Time Variable Gain) setting, page 58

Adjusting the sonar range, page 58

Adjusting the intensity of the echo presentations, page 60

Changing the tilt, page 60

Adjusting the bearing, page 62

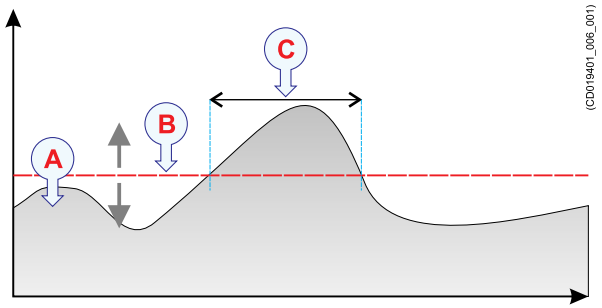
Adjusting the gain (echo sensitivity)

Some echoes are weak while others are stronger. To compensate for this it is often necessary to adjust the sensitivity of the ST90. This adjustment is commonly referred to as *gain*.

Context

You can compare this gain setting with the volume control on your car radio. When the gain is increased, the echoes will appear stronger. Weak echoes will be easier to see. However, since you also increase the acoustic noise in the reception, the ST90 presentations will also show this noise. Too much gain may therefore "distort" the presentation.

Comparing the gain function with the volume control on your car radio is not very accurate. In fact, the gain in the ST90 is constant. The **Gain** function is used to adjust the sensitivity. This done by controlling the minimum level of detection. When you *increase* the gain level (more positive number) , you reduce the minimum level, and thus *increase* the sensitivity.



*The echo strength (A) changes with time. The minimum level of detection (B) is adjusted up or down with the **Gain** function. Increasing the **Gain** with a more positive number*

reduces the minimum level, and this increases the sensitivity. Only echoes over the minimum level are shown in the echogram (C).

Do not confuse this **Gain** setting with the **TVG** (Time Varied Gain) setting.

Tip

During normal operating conditions we recommend that you keep the gain between 15 and 30. If you need to adjust the gain "from scratch" disable AGC (Automatic Gain Control) and RCG (Reverberation Controlled Gain) to see the immediate effect of the gain adjustments. While you adjust the gain you may find it useful to have a known target (for example an island) as reference.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

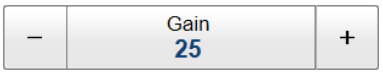
Tip

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 Observe the **Main** menu.

4 Select **Gain**.



5 Make the necessary adjustment.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Controlling the gain and range settings, page 56

Adjusting the TVG (Time Variable Gain) setting

When an acoustic pulse is sent through the water, it will gradually lose its energy. The greater the distance between the transducer and the target(s), the greater the loss of energy. **TVG** (Time Variable Gain) compensates for the loss of acoustic energy due to geometric spread and absorption.

Context

The TVG (Time Varible Gain) compensation is designed to counteract the natural phenomena of geometric spread and absorption loss. In the ST90, the TVG compensation is made using digital signal processing software. The TVG compensation is expressed as a logarithmic curve. Each curve has a different slope creating a different gain compensation. Each curve is identified with the equation *X log TVG*. The coefficient "*X*" is an integer. Typical values for "*X*" are 10 to 40.

Procedure

1 Click in the view you want to activate.

The setting you choose will only be valid for the active view. The active view is identified with a thicker border.

2 Open the **Active** menu.

3 Locate the **TVG** button.

4 Select [+] or [-] to choose the requested setting.

Related topics

Controlling the gain and range settings, page 56

Adjusting the sonar range

Some echoes are close, others are further away. It is often necessary to adjust the radius of the search area. On the ST90, this is referred to as *range*.

Context

The **Range** setting defines how "far" you wish the ST90 to detect echoes. In other words, you specify the horizontal or vertical distance from the vessel to the outer edge of the search area.

Note

The range value selected and shown is by default only used by the active view.

Even though you can choose a large range value, that does not mean that you can detect your targets on the same range. The range value only defines the range that is shown in the views. Actual target detection will always depend on the operational environment, such as water temperature, salinity, interference and layers in the water column.

The selected range is divided into identical distances. These are shown as dotted circles. They are referred to as *range rings*.

Tip

An adjustable range ring can be added to the Horizontal and Vertical views. This ring is referred to as the variable range ring.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

Tip

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 Observe the **Main** menu.

4 Select **Range**.

5 Make the necessary adjustment.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Controlling the gain and range settings, page 56

Adjusting the intensity of the echo presentations

The effect of the **Gain** adjustment is minimized if you apply **RCG** (Reverberation Controlled Gain) and **AGC** (Automatic Gain Control). The **Display Gain** is applied towards the end of the filter sequence in the ST90. This means that you can use **Display Gain** if you are not completely satisfied with the results of the automatic gain functionality.

Context

Display Gain controls the "amount" of echo that is displayed, in other words the "strength" or "intensity" of the echo presentation. The function thus increases or decreases the presentation of the echo colours. Use this parameter together with **Gain** to adjust the ST90 sensitivity.

For all practical purposes, adjusting **Display Gain** has the same effect as adjusting **Gain**. Adjust the **Display Gain** so that you can see the targets without too much noise and reverberation. The chosen setting is a matter of personal preferences.

Procedure

1 Open the **Display** menu.

2 Select **Display Gain**.

3 Adjust the setting to fit your requirements.

To change the setting, move the cursor to either side of the button. Select the *left* side of the button to *decrease* the value. Select the *right* side of the button to *increase* the value. Select the middle of the button to open it.If you have a keyboard connected to the ST90, you can type the requested value.

Related topics

Controlling the gain and range settings, page 56
Improving the recognition of fish and schools using receiver filters, page 72

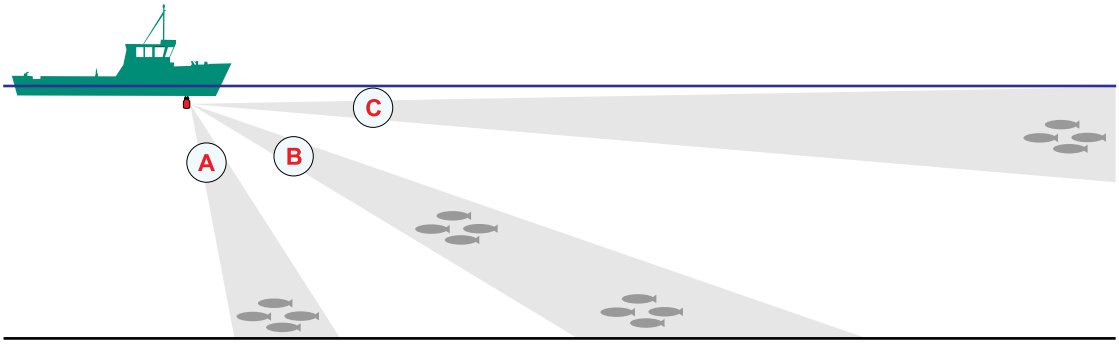
Changing the tilt

In order to detect fish or schools in the water column you may need to change the angle of the sonar beams. The sonar beams can be tilted electronically from -10 to +84 degrees.

Context

The current tilt is shown with a solid line in the *Vertical* view. In the *Horizontal* view, the current settings for range, gain and tilt are shown in the top left corner of the view.

At 0° tilt the sonar beam is transmitted parallel with the sea surface, while 84 degrees tilt will direct it towards the bottom.



The challenge is to find a tilt that prevents the fish echoes to be "buried" in reverberation and bottom echoes.

- If you use a high tilt value (A) the fish are easily disguised by bottom echoes. A strong RCG (Reverberation Controlled Gain) setting will remove the bottom echoes. As the distance from the bottom to the fish increases, the fish echoes become clearer. However, this assumes that the fish echoes are considerably stronger than the bottom echoes.
- If you use a very small tilt (C) you are not bothered by bottom echoes. However, if the sea surface is gusty you will see echoes from the waves. These echoes are normally rather weak, and they hardly move in relation to your vessel.
- By means of a medium tilt angle (B) you are able to pick up scattered fish or schools if these are located at some distance above the bottom. The upper school in the illustration appears on the sonar picture before the bottom echo, while the lower school will easily be disguised by the bottom echoes. Once again you can activate the RCG function to improve the reading.

Tip

With the various beams provided by the ST90, it may be difficult to understand the concept. How do these beams "behave" in the water? By means of a graphic presentation, the **Beam Visualization** *dialog box attempts to give you a better understanding of how the acoustic beams are transmitted into the water. Open the* **Beam Visualization** *dialog box from the* **Setup** *menu.*

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 In a *Vertical* view, click on the tilt line, keep the mouse button depressed, and drag the line up or down.

Optionally:

3 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

4 Select **Tilt**.

5 Make the necessary adjustment.

Select either side of the button to choose a value. Keep the mouse button depressed to change the value faster.

or:

Place the cursor on the button. Press and hold the left mouse button. Move the cursor horizontally over the button. Release the mouse button when requested value is shown.

or:

Select the middle of the button to open it. If you have a keyboard connected to the ST90, you can type the requested value.

6 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Controlling the gain and range settings, page 56

Adjusting the bearing

The *Horizontal* view in the ST90 presentation covers the entire 360° omnidirectional sector For the other views you must define the horizontal direction of the beam.

Context

In the *Horizontal* view the current bearing is shown with a continuous line pointing out from the vessel position. The area covered by the vertical beam is shown as a triangle in the *Horizontal* view.

Note

The choice you make is by default only applied to the currently selected (active) view. The active view is identified with a thicker border.

A new tracked object is automatically given priority status. The priority is identified with a "P". The bearing and tilt settings are automatically adjusted to follow the movements of the tracked target. The bearing line is automatically locked on the object to reflects its bearing.

Procedure

1 Click in the view you want to activate.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Turn the relevant rotary switch to make the adjustment.

Tip

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing. Investigate the functionality provided on the **Operating Panel** *page. This page is located in the* **Installation** *dialog box.*

Optionally:

3 In a *Horizontal* view, select the bearing line and drag it sideways.

Optionally:

4 Observe the **Main** menu.

5 Select **Bearing**.

6 Make the necessary adjustment.

7 Open the button and select **Apply to all** if you wish to use the chosen setting in all the views in the current presentation mode.

Related topics

Controlling the gain and range settings, page 56

Using the markers and tracking features

Topics

Starting a position track, page 64

Starting a target track, page 65

Placing a new marker, page 66

Deleting a marker, page 67

Measuring the size of a school relative to the purse seine, page 68

Using visual aids during the purse seine catch phase, page 68

Choosing the fishing gear in use, page 70

Changing the fishing gear properties to match your own equipment, page 71

Starting a position track

A position track permits the ST90 to automatically control the tilt and bearing based on the movements of your vessel.

Context

The position track locks on a position defined by its latitude, longitude and depth.

> The phrase *position* is used to identify a fixed echo in the ST90 presentation that you wish to act upon. The echo may for example be from a shallow, reef or rock. You must decide which echoes that shall be classified as positions, and wether you shall start position tracking.

The bearing and tilt settings are automatically adjusted to compensate for the movements of your vessel. The bearing line is automatically locked on the object to reflects its bearing. The marker is stationary. If the echo moves in the ST90 presentation the marker will not follow.

Tip

A new tracked object is automatically given priority status. Relevant information about the priority object can be found in the lower left corner of the view. If you think the text is small and hard to read, double-click on the text field. This will increase the text size.

Procedure

1 Place the cursor over the echo you wish to track.

2 Press **Position Track** on the Operating Panel.

Result

The marker is shown as a small triangle with or without a short identifying label. Once an echo has bee provided with a marker in the ST90 presentation it is regarded as an *object*.

Note

If you change the tilt and bearing settings manually, the position track is disabled. If you create a new marker and give this priority, the position track is disabled. The same applies if you start a new target track.

Related topics

Using the markers and tracking features, page 64

Starting a target track

During normal operation, some echoes are clearly more interesting than others. In many situations specific echoes may be regarded as *targets*, and it can be useful to receive continuous information about the location, speed and heading of such targets. To set up the ST90 to provide such information, you can start *target tracking*.

Context

A target track permits the ST90 to automatically control the tilt and bearing based on the movements of the chosen target. It locks on the target defined by its position, heading and speed. The tracked target is regarded as an *object*, and it is identified with a circle and two lines. The two lines reflect the size of the current tracking area.

> The phrase *target* is used to identify an echo in the ST90 presentation that you wish to act upon. The echo may be from a material item, a shallow, reef or rock, or from fish, fish schools or mammals. In most cases, the target will move and continuously change its position relative to your own vessel. You must decide which echoes that shall be classified as targets, and wether you shall start manual or automatic target tracking.

The bearing and tilt settings are automatically adjusted to follow the movements of the tracked target. The bearing line is automatically locked on the object to reflects its bearing.

Note

If you change the tilt or bearing settings manually the priority status is lost. The ST90 will still attempt to track the target, but the tilt and bearing settings are not adjusted.

A new tracked object is automatically given priority status. The priority is identified with a "P". Only one single object can be given priority status. If you start tracking a *new* target the first target will loose its priority. The same applies if you give priority to another marker. The tracking of the first target will however not stop, and the target marker is still shown.

Tip

Relevant information about the tracked object can be found in the bottom left corner of the view. If you think the text is small and hard to read, double-click on the text field. This will increase the text size.

Procedure

1 Place the cursor over the echo you wish to track.

2 Press **Target Track** on the Operating Panel.

or:

3 Place the cursor over the echo you wish to track.

4 Right-click to open the shortcut menu.

5 Select **Initiate Track**.

Further requirements

Under certain circumstances the target tracking may not follow the intended echo. This may for example happen if the tracking area is too large. You can initiate manual tracking by placing multiple markers on your target echo as it moves in the view. This location of the markers in the view will then show you the historic path of the target.

Related topics

Using the markers and tracking features, page 64

Placing a new marker

One or more markers can be placed in the view to identify specific echoes. Each marker is shown as a small triangle with or without a short identifying label.

Context

Each marker is positioned based on the two known axes in the view as well as the tilt and bearing of the current ping.

Example

When you are manoeuvring close to the coastline, or in otherwise working in confined waters, you may wish to avoid shallow waters and reefs. To keep track of potentially dangerous places, you place markers on them.

The marker is stationary. It has a specified range, bearing and depth related to your own vessel. If the echo moves in the ST90 presentation the marker will not follow.

Procedure

1 Place the cursor over the echo in the ST90 presentation.

2 Press **Marker** on the Operating Panel.

Result

Once an echo has bee provided with a marker in the ST90 presentation it is regarded as an *object*. The **Objects** menu provides a list of all current objects. This includes all types of objects including those classified as targets.

Related topics

Using the markers and tracking features, page 64

Deleting a marker

There are two ways to delete a marker.You can use the shortcut menu, or select **Delete** in the **Objects** menu.

Context

You can delete a single marker, or multiple markers simultaneously, by selecting **Delete** in the **Objects** menu. If you use **Delete Marker** on the shortcut menu you can only remove one marker at a time.

Procedure

1 Open the **Objects** menu.

2 In the list of objects, check the box for the object(s) you wish to delete.

Check **Select All** to select all the markers in the list.

3 Select **Delete**.

or:

4 Place the cursor on the marker you wish to delete.

5 Right-click to open the shortcut menu.

6 Select **Delete Marker**.

Related topics

Using the markers and tracking features, page 64

Measuring the size of a school relative to the purse seine

Estimating the size of a school can sometimes be challenging. A single circle marker can be placed in the ST90 presentation. The circle is drawn with the same diameter as your purse. By means of the circle you can see the size of the school relative to your purse.

Prerequisites

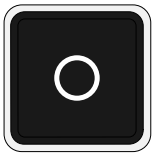
To provide an accurate visual presentation, the ST90 needs to know the size of your gear.

The **Fishing Gear** function allows you to define the size of your trawl or purse seine. This function is opened from the **Setup** menu.

Context

You can only add one circle marker to the ST90 presentation.

Procedure



1 Position the cursor where you wish to place the circle marker.

2 Press **Circle Marker** on the Operating Panel.

or:

Right-click and select **Place Circle Marker** on the shortcut menu.

The size and location of the marker is defined by the choices you have made with the **Fishing Gear** function.

Further requirements

To delete the circle marker, press **Circle Marker** on the Operating Panel, or right-click to select **Remove Circle Marker** on the shortcut menu.

Related topics

Using the markers and tracking features, page 64

Using visual aids during the purse seine catch phase

The gear symbol is provided as a tool to help you plan and shoot the purse seine. The symbol is intended to be used in a structured sequence that starts when you plan to shoot the purse seine.

Prerequisites

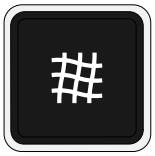
To provide an accurate visual presentation, the ST90 needs to know the size of your gear.

The **Fishing Gear** function allows you to define the size of your trawl or purse seine. This function is opened from the **Setup** menu.

Context

Use the information in the *Catch* view to monitor the progress of the purse seine operation. If you have connected a compatible catch monitoring system to your ST90, information from these sensors are shown in the *Catch* view.

Procedure



1 At the bottom of the ST90 presentation, select a suitable presentation mode, and activate the *Catch* view.

2 To start the process: Press **Gear** on the Operating Panel.

or:

Right-click and select **Show Gear Symbol** on the shortcut menu.

This places a circle marker in the view. The size and location of the marker is defined by the choices you have made with the **Fishing Gear** function. Until you proceed, the marker follows the movements of the vessel by keeping its relative location to the bow. This allows you to position your vessel in the best possible location before you shoot the purse seine.

3 When you shoot the net: Press **Gear** on the Operating Panel.

or:

Right-click and select **Show Gear Symbol** on the shortcut menu.

A rectangular marker is placed in the view, and marks the position where the purse seine was shot. The circular marker is disconnected from the vessel movements, and acts as a guideline for your manoeuvring. The history line shows the movements of your vessel. Since the ST90 knows the length of your net, it places a second marker on this line when half the length has been spent. When the entire net has been spent, a third rectangular marker is shown.

The progress bar at the top of the *Catch* view shows you the amount of net that has been spent. The sequence starts when you shoot the net. The estimated depth of the purse seine is shown under the progress bar. The depth is calculated from the sink rate you have defined for the fishing gear.

- Horizontal dotted lines show the depth intervals.
- Relevant information about a priority object can be found in the lower left corner of the view.

A line of X’es in the vertical views shows the bottom of the purse seine. The depth is defined for the fishing gear you have chosen.

4 When the process is finalized: Press **Gear** on the Operating Panel.

or:

Right-click and select **Remove Gear Symbol** on the shortcut menu to delete the markers from the view.

Related topics

Using the markers and tracking features, page 64
Choosing the fishing gear in use, page 70
Changing the fishing gear properties to match your own equipment, page 71

Choosing the fishing gear in use

By defining the type of fishing gear you are using, the ST90 may provide more accurate visual presentations. The **Fishing Gear** function allows you to define the size of your trawl or purse seine.

Prerequisites

Use the **Fishing Gear Setup** dialog box to change the fishing gear properties to match your own equipment.

Context

Accurate fishing gear properties are important for the following functionality:

- Circle Marker
- Gear Symbol
- Catch view

Procedure

1 Open the **Setup** menu.

2 Select **Fishing Gear**.

3 Select an option from the list provided.

Related topics

Using the markers and tracking features, page 64
Using visual aids during the purse seine catch phase, page 68
Changing the fishing gear properties to match your own equipment, page 71

Changing the fishing gear properties to match your own equipment

Use the **Fishing Gear Setup** dialog box to change the fishing gear properties to match your own equipment.

Context

Accurate fishing gear properties are important for the following functionality:

- Circle Marker
- Gear Symbol
- Catch view

Procedure

1 Open the **Setup** menu.

2 Under **Fishing Gear**, select **Fishing Gear Setup** to open the dialog box.

3 If the relevant gear is not listed, select **Add Fishing Gear**.

   a In the **Add Fishing Gear** dialog box, select gear type and gear name.

   b Select **OK** to save the selected settings and close the dialog box.

4 On the list of available fishing gears, select the gear you wish to set up.

5 For the selected gear, select a depth value.

   The depth value defines how deep the gear will sink when it is fully deployed.

6 Select the length of the fishing gear.

7 Set throw side to *Port* or *Starboard*.

8 Set the sink rate.

   The sink rate defines how fast the gear will sink.

9 Select **OK** to save the selected settings and close the dialog box.

Related topics

Using the markers and tracking features, page 64
Using visual aids during the purse seine catch phase, page 68

Improving the recognition of fish and schools using receiver filters

Topics

About the receiver filter sequence in the ST90, page 72

Reducing noise and reverberation with the AGC (Automatic Gain Control) function, page 73

Reducing propeller noise and interference with the Noise Filter, page 74

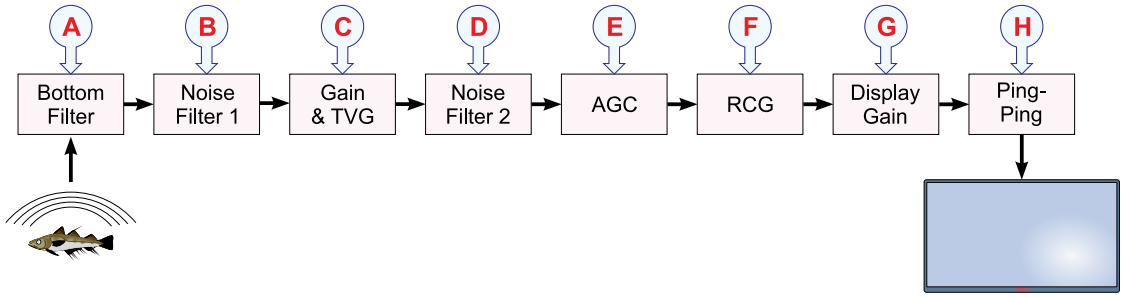
Reducing bottom and surface reverberation with the RCG (Reverberation Controlled Gain) function, page 75

Reducing noise and false echoes with the Ping-Ping Filter, page 77

Adjusting the intensity of the echo presentations, page 79

About the receiver filter sequence in the ST90

The filters in the ST90 are implemented in “series”. Any changes to a filter setting may therefore have an effect on subsequent filters.



A *Bottom Filter*

B *Noise Filter (1)*

C *Gain & TVG (Time Variable Gain)*

D *Noise Filter (2)*

E *AGC (Automatic Gain Control)*

F *RCG (Reverberation Controlled Gain)*

G *Display Gain*

H *Ping-Ping Filter*

Note that **Gain**, **TVG** (Time Varied Gain) and **Display Gain** are not filters, but included only to illustrate the complete "signal path".

Related topics

Improving the recognition of fish and schools using receiver filters, page 72
Reducing noise and reverberation with the AGC (Automatic Gain Control) function, page 73
Reducing propeller noise and interference with the Noise Filter, page 74
Reducing bottom and surface reverberation with the RCG (Reverberation Controlled Gain) function, page 75
Reducing noise and false echoes with the Ping-Ping Filter, page 77
Adjusting the intensity of the echo presentations, page 79

Reducing noise and reverberation with the AGC (Automatic Gain Control) function

Identifying echoes from fish and schools can often be challenging when they are hidden by noise and reverberation. When sonar conditions are poor, effective tuning of the filters in the ST90 may be necessary to achieve a satisfactory result. Automatic Gain Control (AGC) is one of the tools provided by the ST90 to remove noise and reverberation from the echo presentation.

Context

The **AGC** (Automatic Gain Control) function runs an automatic analysis of the echo strength. Based on this analysis the ST90 maintains a proper dynamic range based on all the current echo values. This is done by automatically reducing the gain if you have reverberation and noise, or increasing the gain if the acoustical conditions permit it.

Tip

The most practical way to use the AGC (Automatic Gain Control) is to first switch it off. Adjust the echo presentation using the normal gain functionality until you have the best possible result, then activate the AGC.

The AGC works best with even background (homogenous noise conditions) and pronounced targets. With uniform environmental conditions you may benefit from strong compensation. However, if you are looking at scattered fish, reduce the automatic gain control, and try to add normal gain instead.

If you work close to other vessels, the noise from their propellers may be misinterpreted as echoes. This will also reduce the visibility of other echoes. The same applies if the bottom conditions place your vessel with decreasing depth on one side of the vessel and your targets on the other side. Reduce the automatic gain control.

If you have a large school located close to your vessel (typically closer than 150 meters) the school gives you a strong echo. The AGC may misinterpret the school echo for noise. Reduce or disable the automatic gain control.

The filters in the ST90 are implemented in “series”. The gain compensations are made before the AGC. For this reason, your current gain setting will always have an effect on the automatic gain control.

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border.

2 Open the **Active** menu.

3 Select **AGC** (Automatic Gain Control).

4 Select a value from the options provided.

The choice you make is by default only applied to the currently selected (active) view.

Select the middle of the button to open a small menu with the available options. Select the *left* side of the button to select a "lower"' menu choice. Select the *right* side of the button to select a "higher"' menu choice.

Related topics

Improving the recognition of fish and schools using receiver filters, page 72

Reducing propeller noise and interference with the Noise Filter

Unless you synchronize the transmissions from your other hydroacoustic systems you may have an issue with interference. Even with synchronization activated the noise from other nearby vessels may cause noise.

Context

The **Noise Filter** is used to minimize the interference from other acoustics systems (sonars and echo sounders) on your own and/or other vessels. The filter also suppresses noise from your propellers, and from other similar noise sources. The **Noise Filter** is very effective if you are bothered by strong noise or interference, especially from your own vessel, or even from other vessels operating near you.

Tip

Use weak filtering - or turn the filter off - if you have strong echoes on short ranges. The filter may then be too powerful, and distort the echo presentation.

The filters in the ST90 are implemented in “series”. The noise filtering is done in two stages early in the receiver process.

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border.

2 Open the **Active** menu.

3 Select **Noise Filter**.

4 Select a value from the options provided.

The choice you make is by default only applied to the currently selected (active) view.

Related topics

Improving the recognition of fish and schools using receiver filters, page 72

Reducing bottom and surface reverberation with the RCG (Reverberation Controlled Gain) function

When you transmit an acoustic pulse into the water to search for a target, echoes will also be returned from any other objects in the beam. The energy reflected from these "unwanted" objects is referred to as *reverberation*. Reverberation is often a limiting factor, especially if you are searching for smaller targets.

Context

The **RCG** (Reverberation Controlled Gain) controls the receiver processing. The algorithm handles each receiver beam individually. The filter reduces the unwanted echoes from the bottom and from the sea surface. This enhances the visibility of schools.

Note

The numerical settings do not express an increasing filter strength. They represent specific settings using different algorithms.

The algorithms in the filter may interpret scattered fish as reverberation. Use reverberation controlled gain carefully if you wish to detect scattered fish.

Tip

We recommend that the reverberation controlled gain is active all the time, but be careful in the vertical presentation.The filter works best on small schools. This rough guide to the settings can be used as a starting point for own experiments.

1 *Use for schools.*

2 *Use for schools with higher density.*

3 *Use for schools close to bottom. This setting will also reduce the bottom echoes.*

4 *Use for scattered fish.*

5 *Use for scattered fish. This setting uses a slightly different algorithm than the other scattered fish settings.*

6 *Use for schools. This setting uses a slightly different algorithm than the other school settings.*

7 *Use for schools. This setting uses a slightly different algorithm than the other school settings.*

8 *Use for scattered fish. This setting uses a slightly different algorithm than the other scattered fish settings.*

9 *Use for scattered fish. This setting uses a slightly different algorithm than the other scattered fish settings.*

The filters in the ST90 are implemented in "series". The reverberation controlled gain adjustment is made late in the sequence, so any changes to the preceding filters may have an effect on how it works.

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border. Unless you use the **Apply to all** function, all changes you make will only be applied to this view.

2 Open the **Active** menu.

3 Select **RCG** (Reverberation Controlled Gain).

4 Select a value from the options provided.

The choice you make is by default only applied to the currently selected (active) view.

Related topics

Improving the recognition of fish and schools using receiver filters, page 72

Reducing noise and false echoes with the Ping-Ping Filter

The **Ping-Ping Filter** analyses the historical information from previous consecutive pings in order to remove unwanted noise and false echoes from the ST90 presentation.

Context

The following filter options are provided.

- **Off**: Select *Off* to disable the filter. The historical information from previous transmissions ("pings") are not used to remove noise and unwanted echoes.
- **Weak**: Select *Weak* to allow the filter to compare the echoes from the latest two pings. For the current echo to be shown, it must be present in both of these pings.
- **Medium**: Choose *Medium* to compare the echoes from the latest four pings. For the current echo to be shown, it must be present in *all* of these pings.
- **Strong**: Select *Strong* to allow the filter to compare the echoes from the latest eight pings. For the current echo to be shown, it must be present in *all* of these eight pings.

The filters in the ST90 are implemented in “series”. The **Ping-Ping Filter** is the last filter in the sequence, so any changes to the other filters may have an effect on how it works.

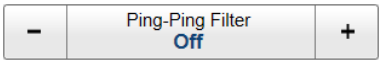
Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border.

2 Open the **Active** menu.

3 Select **Ping-Ping Filter**.



4 Choose the required setting.

The choice you make is by default only applied to the currently selected (active) view.

Related topics

Improving the recognition of fish and schools using receiver filters, page 72

Reducing noise and reverberation with the AGC (Automatic Gain Control) function

Identifying echoes from fish and schools can often be challenging when they are hidden by noise and reverberation. When sonar conditions are poor, effective tuning of the filters in the ST90 may be necessary to achieve a satisfactory result. Automatic Gain Control (AGC) is one of the tools provided by the ST90 to remove noise and reverberation from the echo presentation.

Context

The **AGC** (Automatic Gain Control) function runs an automatic analysis of the echo strength. Based on this analysis the ST90 maintains a proper dynamic range based on all the current echo values. This is done by automatically reducing the gain if you have reverberation and noise, or increasing the gain if the acoustical conditions permit it.

Tip

The most practical way to use the AGC (Automatic Gain Control) is to first switch it off. Adjust the echo presentation using the normal gain functionality until you have the best possible result, then activate the AGC.

The AGC works best with even background (homogenous noise conditions) and pronounced targets. With uniform environmental conditions you may benefit from strong compensation. However, if you are looking at scattered fish, reduce the automatic gain control, and try to add normal gain instead.

If you work close to other vessels, the noise from their propellers may be misinterpreted as echoes. This will also reduce the visibility of other echoes. The same applies if the bottom conditions place your vessel with decreasing depth on one side of the vessel and your targets on the other side. Reduce the automatic gain control.

If you have a large school located close to your vessel (typically closer than 150 meters) the school gives you a strong echo. The AGC may misinterpret the school echo for noise. Reduce or disable the automatic gain control.

The filters in the ST90 are implemented in “series”. The gain compensations are made before the AGC. For this reason, your current gain setting will always have an effect on the automatic gain control.

Procedure

1 Click in any view to make it active.

The active view is identified with a thicker border.

2 Open the **Active** menu.

3 Select **AGC** (Automatic Gain Control).

4 Select a value from the options provided.

The choice you make is by default only applied to the currently selected (active) view.

Select the middle of the button to open a small menu with the available options. Select the *left* side of the button to select a "lower"' menu choice. Select the *right* side of the button to select a "higher"' menu choice.

Related topics

Improving the recognition of fish and schools using receiver filters, page 72

Adjusting the intensity of the echo presentations

The effect of the **Gain** adjustment is minimized if you apply **RCG** (Reverberation Controlled Gain) and **AGC** (Automatic Gain Control). The **Display Gain** is applied towards the end of the filter sequence in the ST90. This means that you can use **Display Gain** if you are not completely satisfied with the results of the automatic gain functionality.

Context

Display Gain controls the "amount" of echo that is displayed, in other words the "strength" or "intensity" of the echo presentation. The function thus increases or decreases the presentation of the echo colours. Use this parameter together with **Gain** to adjust the ST90 sensitivity.

For all practical purposes, adjusting **Display Gain** has the same effect as adjusting **Gain**. Adjust the **Display Gain** so that you can see the targets without too much noise and reverberation. The chosen setting is a matter of personal preferences.

Procedure

1 Open the **Display** menu.

2 Select **Display Gain**.

3 Adjust the setting to fit your requirements.

To change the setting, move the cursor to either side of the button. Select the *left* side of the button to *decrease* the value. Select the *right* side of the button to *increase* the value. Select the middle of the button to open it.If you have a keyboard connected to the ST90, you can type the requested value.

Related topics

Controlling the gain and range settings, page 56
Improving the recognition of fish and schools using receiver filters, page 72

Recording and replaying echo data

Topics

Defining the file and folder settings for data recording, page 80

Recording echo data, page 81

Selecting *Replay* mode, page 82

Choosing which echo data file(s) to replay, page 83

Accessing the echo data files to delete, move or copy them, page 84

Defining the file and folder settings for data recording

A useful function of the ST90 is it ability to record echo data. You can save the data to the Processor Unit hard disk, or onto an external storage device. To retrieve the data files you need to know where they are, and which file names that have been used. The data files can be played back on the ST90. The data files can later be deleted, copied or moved to another storage device. You can keep the recorded files for future reference, or for training purposes.

Context

Before you start recording, make sure that you have defined where you wish to store the data files. If you wish to save your recorded data on an external hard disk, make sure that it is connected to the Processor Unit.

Tip

Unless you really need to record data for playback and/or training purposes, you should use this function with care. The data files will fill you hard disk very fast!

File Setup controls how and where the recorded files are saved on the Processor Unit hard disk, or on an external storage device. By adding a prefix to the file names you can identify the files you have recorded during a specific mission or survey. You can also define a maximum size of the files.

Note

The data files will normally become very large. If you wish to record large amounts of ST90 data, make sure that you have enough space on your hard disk. The ST90 is not provided with unlimited disk capacity. We recommend that you save the data files to an external storage device.

If the current file size gets too big during recording, select **Split File** on the **Record** button. This will close the current file, and then automatically continue recording to a new file.

Procedure

1 Open the **Operation** menu.

2 Locate the **Record** button.

3 Select the middle of the button to open it and see the available options.

4 Select **File Setup** to open the dialog box.

5 Choose the required settings.

6 Select **OK** to save the selected settings and close the dialog box.

Related topics

Recording and replaying echo data, page 80
Recording echo data, page 81

Recording echo data

Use the data recording functionality provided by the ST90 to save echo data. The data files can be copied or moved to an external storage device. You can keep the recorded files for future reference, or for training purposes. The recording is controlled by the **Record** function.

Prerequisites

Before you start data recording, make sure that you have defined where to store the files. To define which disks and folders to use to save the data files, select **File Setup**. If you wish to save your recorded data on an external hard disk, make sure that it is connected to the Processor Unit.

Tip

You are permitted to define the maximum file size for each recorded file.

Context

Unless you really need to record data for playback and/or training purposes, you should use this function with care. The data files will fill you hard disk very fast!

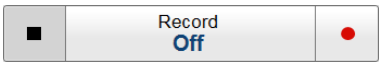
Note

The data files will normally become very large. If you wish to record large amounts of ST90 data, make sure that you have enough space on your hard disk. The ST90 is not provided with unlimited disk capacity. We recommend that you save the data files to an external storage device.

Procedure

1 Open the **Operation** menu.

2 To start data recording, open the **Record** button, and select *On*.



or:

To start recording, select the red circle on the right side of the button.

The **Record** indicator on the top bar changes its colour to reflect that recording is active.

3 To stop recording, open the **Record** button, and select *Off*.

Alternatively, select the black rectangle on the left side of the button to stop the recording.

Related topics

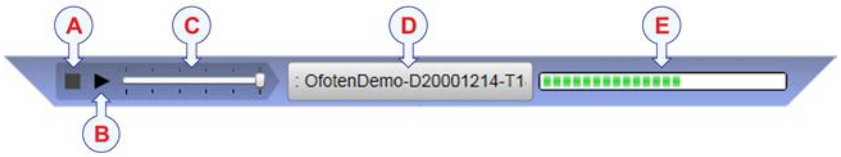
Recording and replaying echo data, page 80

Selecting *Replay* mode

Replay mode allows you to play back previously recorded raw data. The ST90 can not operate normally while in *Replay* mode. Neither transmission nor reception takes place.

Context

All playback is controlled by the replay bar.



A ***Stop****: Select this button to stop the playback.*

B ***Play/Pause****: Select this button to start the playback, or to pause it.*

C ***Replay Speed****: Select this slider and move it sideways to adjust the replay speed.*

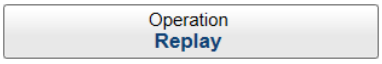
D ***Replay File****: The button shows you which file you are replaying. Select the button to open the* ***Replay File*** *dialog box.*

E ***Playback Progress****: This bar shows you the progress of the replay sequence. If you have chosen to restart the replay file(s) automatically (in a loop), the green indicator starts from left every time the file restarts.*

Procedure

1 Open the **Operation** menu.

2 Set **Operation** to *Replay*.



The replay bar opens automatically. It is positioned directly below the top bar at the top of the ST90 presentation.

If you need to select which files to replay, select **Replay File** under the **Operation** button. You can also select the large button in the middle of the replay bar.

3 Select **Play/Pause** to start the playback.

4 To stop the replay choose any other operating mode.

Related topics

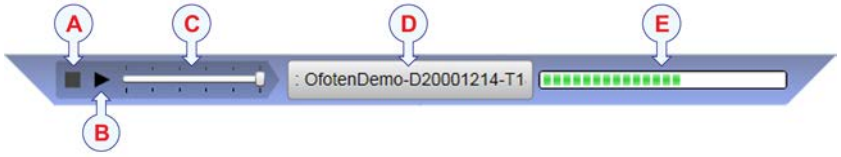
Choosing operating mode and key transmit parameters, page 48
Selecting *Normal* mode to start "pinging", page 48
Selecting *Inactive* mode, page 50
Recording and replaying echo data, page 80
Choosing which echo data file(s) to replay, page 83

Choosing which echo data file(s) to replay

Every time you record echo data, the information is stored on the Processor Unit hard disk. Depending on your initial settings, the files may also be stored on a USB hard disk or even a network disk. The echo data files can be retrieved, and played back on the ST90.

Context

All playback is controlled by the replay bar.



A ***Stop****: Select this button to stop the playback.*

B ***Play/Pause****: Select this button to start the playback, or to pause it.*

C ***Replay Speed****: Select this slider and move it sideways to adjust the replay speed.*

D ***Replay File****: The button shows you which file you are replaying. Select the button to open the* ***Replay File*** *dialog box.*

E ***Playback Progress****: This bar shows you the progress of the replay sequence. If you have chosen to restart the replay file(s) automatically (in a loop), the green indicator starts from left every time the file restarts.*

Procedure

1 Open the **Operation** menu.

2 Select **Operation** to see the available choices.

3 Select **Replay File** to open the dialog box.

The **Replay File** dialog box allows you to choose which file(s) to play back. The file names were generated automatically during recording, and each file is identified with the time and date it was made.

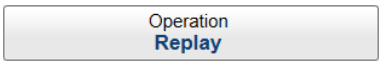
4 Select **Add** to choose a replay file.

A standard operating system dialog box is used to locate and select the files you wish to use.

5 If you wish to replay the selected files in an "endless" loop, select **Loop**.

6 Select **OK** to save the selected settings and close the dialog box.

7 Set **Operation** to *Replay*.



The replay bar opens automatically. It is positioned directly below the top bar at the top of the ST90 presentation.

Related topics

Recording and replaying echo data, page 80

Accessing the echo data files to delete, move or copy them

Use the data recording functionality provided by the ST90 to save echo data. You can save the data to the Processor Unit hard disk, or onto an external storage device.

Prerequisites

It is assumed that you are familiar with the Microsoft® operating system utilities for file handling.

You need a data storage device. This is typically a large capacity USB flash drive or a small portable hard disk. You can also connect the Processor Unit to a network, and copy the files to a server.

Procedure

1 Connect a suitable storage device to the Processor Unit.

2 Select **Minimize** on the right side of the top bar.

3 From the Windows® **Start** button, right-click to open Windows Explorer.

4 In the file manager utility, locate the folder you defined in the **File Setup** dialog box.

5 Use the functionality provided by the operating system to delete the files, or to copy or move them to the storage device.

6 Close the file manager utility.

7 Disconnect the storage device.

8 Resume normal operation.

Related topics

Recording and replaying echo data, page 80
Defining the file and folder settings for data recording, page 80

Setting up presentation modes and views

Topics

Moving a view to another display, page 86

Rearranging the layout of the ST90 presentation, page 87

Restoring the locations and sizes of the views, page 88

Moving a view to another display

Each operating mode is presented with a set of views. These are placed at different positions with different sizes. If you have several displays connected to your Processor Unit you can even move selected views to another display. With the **Docking Views** function you can move and re-size the views in the ST90 presentation.

Context

The physical location and size of each view can be changed individually. The content in a view that changes size will automatically be adjusted to take full advantage of the space available.

Procedure

1 Open the **Display** menu.

2 Set **Docking Views** to *On*.

3 Click in the title bar of the view that you want to move.

The frame of the selected view will change colour to indicate that it has been selected.

4 Press the mouse button, and keep it depressed to drag the selected view to another display.

Further requirements

To move a view back onto the main display, select it, and drag it over. Place the view among the other views as indicated by the docking positions.

Related topics

Setting up presentation modes and views, page 86
Rearranging the layout of the ST90 presentation, page 87
Restoring the locations and sizes of the views, page 88

Rearranging the layout of the ST90 presentation

Each operating mode is presented with a set of views. These are placed at different positions with different sizes. With the **Docking Views** function you can move and re-size the views in the ST90 presentation.

Context

The physical location and size of each view can be changed individually. The content in a view that changes size will automatically be adjusted to take full advantage of the space available.

Procedure

1 We recommend that you first save your current user settings.

When a complete reorganisation of the view positions and sizes have been completed , you may wish to restore the ST90 presentation to what it was *before* you changed it. You must use the **User Settings** dialog box to do this. We suggest that you save your current user settings before you activate the **Docking Views** function.

a Observe the **Main** menu.

b Select **User Settings**.

c Select **Save Current Setting**.

d Type a name for the user setting.

e Select **OK** to save the chosen name.

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

2 Open the **Display** menu.

3 Set **Docking Views** to *On*.

4 Click in the title bar of the view that you want to move.

The frame of the selected view will change colour to indicate that it has been selected.

5 Press the mouse button, and keep it depressed to drag the selected view to another position in the ST90 presentation.

The docking positions show you where to drag and drop the selected view. Any view can selected, and then repositioned as indicated by the docking positions.

Related topics

Setting up presentation modes and views, page 86
Moving a view to another display, page 86
Restoring the locations and sizes of the views, page 88

Restoring the locations and sizes of the views

If you have used **Docking Views** to rearrange the position and size of your views, you must use **User Settings** to restore all the views to their default positions.

Context

With the **Docking Views** function you can move and re-size the views in the ST90 presentation. When a complete reorganisation of the view positions and sizes have been completed , you may wish to restore the ST90 presentation to what it was *before* you changed it.

Procedure

1 On the **Main** menu, select **User Settings**.

2 Select the default settings.

Note

These settings are the default values provided with the Simrad ST90. All current settings are lost when the default factory settings are applied. There is no "undo".

3 Select **Activate Selected Setting**.

Result

All views are placed back to their original positions and sizes.

Related topics

Setting up presentation modes and views, page 86
Moving a view to another display, page 86
Rearranging the layout of the ST90 presentation, page 87

Defining settings related to user preferences and individual customizing

Topics

Selecting menu language, page 89
Hiding the menu system, page 90
Placing the menu on the left side of the ST90 presentation, page 91
Selecting the information to appear on the top bar, page 91
Enabling Coordinated Universal Time (UTC) on the bottom bar, page 92
Selecting which tooltips to appear in the user interface, page 92
Adjusting the backlight intensity on the Operating Panel, page 93
Reducing the light emitted from the display presentation, page 94
Increasing the visibility of the information panes, page 94
Changing the colour palette ("skin") used in the ST90 presentations, page 95
Choosing the colours used to present the echoes, page 96
Selecting measurement units, page 96
Configuring the environmental parameters, page 97
Setting up the alarm limits for system protection, page 98
Defining the middle position of the transducer, page 99

Selecting menu language

You may prefer to use the ST90 with a user interface in your own language. The **Language** function allows you to select the language to be used in the ST90 presentations, menus and dialog boxes.

Context

With a few exceptions, the chosen language will also be used for all other text on the ST90. The ST90 help may not be available for the language you choose. If your language is not supported, the English help is provided.

Procedure

1 Open the **Setup** menu.

2 Select the middle of the **Language** button to open the list of available options.

3 Select the language you wish to use.

Result

All the texts in the user interface are changed to the selected language.

The context sensitive on-line help may also be available in your language. To change the language in the on-line help, you may need to restart the ST90.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Hiding the menu system

Unless you need to make frequent changes to the operating parameters, you may want to hide the menu from the ST90 presentation. This gives you more space for echo information.

Context

The menu system is by default located on the right side of the ST90 presentation. The menus are organized in a tree structure with a main menu, a set of secondary menus, and several menu buttons.

Tip

The **Menu on the right side** *option is provided in the* **Display Options** *dialog box. By deselecting this function, the entire menu system is placed permanently on the left side of the ST90 presentation.*

Procedure

1 To hide the menu, select **Menu** on the top bar.

When the menu is hidden, it is temporarily shown on the left or right side of the ST90 presentation if you move the cursor to that position.

2 To retrieve the menu, select **Menu** one more time.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Placing the menu on the left side of the ST90 presentation

Context

The **General** page offers a range of "on/off switches". You use them to enable or disable the relevant functions.

Procedure

1 Open the **Display** menu.

2 Select **Display Options** to open the dialog box.

3 Select **General** to open the page.

4 Deselect **Menu on the right side**.

5 Select **OK** to save the selected setting and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Selecting the information to appear on the top bar

The top bar can contain various information. You can select which elements that will be shown at the top of the ST90 presentation.

Context

The **General** page offers a range of "on/off switches". Some of these "on/off switches" are used to enable or disable the information shown on the top bar.

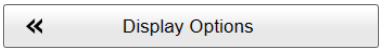
Note

The information shown on the ST90 top bar must not be used for vessel navigation.

Procedure

1 Open the **Display** menu.

2 Select **Display Options**.



Observe that the **Display Options** dialog box opens.

3 Select **General** to open the page.

4 In the **Top Bar** list, select the information you want to see on the top bar.

5 Select **OK** to save the selected settings and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Enabling Coordinated Universal Time (UTC) on the bottom bar

You can set up the ST90 to show Coordinated Universal Time (UTC). When disabled, the software will use local time.

Prerequisites

To enable UTC time, your ST90 Processor Unit must be set up to accept the NMEA ZDA datagram. The NMEA ZDA datagram contains the universal time code (UTC), day, month, year and local time zone.

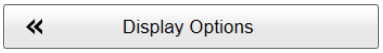
Context

This is an "on/off" switch. The time is shown on the bottom bar of the ST90 presentation.

Procedure

1 Open the **Display** menu.

2 Select **Display Options**.



Observe that the **Display Options** dialog box opens.

3 Select **General** to open the page.

4 Select **UTC Time** to enable Coordinated Universal Time (UTC).

5 Select **OK** to save the selected settings and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Selecting which tooltips to appear in the user interface

When you move the cursor over the echoes in the ST90 presentation, small "tooltips" are shown to provide additional information. The **Tooltip** page controls which tooltips that are shown.

Context

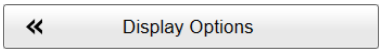
Several tooltips can be shown in the ST90 presentation. When a tooltip is enabled, the cursor location is detected and a small information box is shown. By default, the information is related to the exact position of the cursor. Each tooltip represents a specific piece of information, and they are listed separately.

The **Tooltip** page offers a range of "on/off switches". Each tooltip is presented in the list, and you can enable or disable each of them independently.

Procedure

1 Open the **Display** menu.

2 Select **Display Options**.



Observe that the **Display Options** dialog box opens.

3 Select **Tooltip** to open the page.

4 In the list of tooltips, select the tooltips you want to see.

5 Select **OK** to save the selected settings and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Adjusting the backlight intensity on the Operating Panel

The buttons on the Operating Panel have built-in backlight to improve visibility on a dark bridge.

Context

Use **Panel Backlight** to control the intensity of the lights.

Procedure

1 Open the **Display** menu.

2 Select **Panel Backlight**.

3 Adjust the background illumination to suit your preferences and the ambient light conditions.

To change the setting, move the cursor to either side of the button. Select the *left* side of the button to *decrease* the value. Select the *right* side of the button to *increase* the value. Select the middle of the button to open it.If you have a keyboard connected to the ST90, you can type the requested value.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Reducing the light emitted from the display presentation

When the bridge is dark, the light emitted by the ST90 display can affect your night vision. In order to compensate for this, you can reduce the intensity

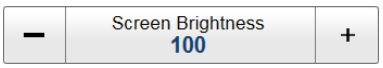
Context

The intensity of the light given off by the ST90 presentation can be adjusted. You can use this function to increase or decrease the light from the screen to match the ambient light. The intensity of light emitted by the display can be reduced from 100% to 0% in steps of 1.

Procedure

1 Open the **Display** menu.

2 Select a **Screen Brightness** setting that fits your requirements.



To change the setting, move the cursor to either side of the button. Select the *left* side of the button to *decrease* the value. Select the *right* side of the button to *increase* the value. Select the middle of the button to open it.If you have a keyboard connected to the ST90, you can type the requested value.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Increasing the visibility of the information panes

When you open an information pane, you will see that it is transparent. This transparency allows you to see the echoes behind the pane, but it may also reduce the visibility of the information in it.

Context

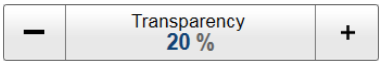
The information panes provided by the ST90 can be placed anywhere on top of the *Inspection* views in the presentation.

In order not to loose information, the panes have been designed so you can see through them. The degree of transparency can be controlled with this **Transparency** function. You can adjust the setting from 0% (no transparency) to 90% (almost full transparency) in steps of 1%.

Procedure

1 Open the **Display** menu.

2 Select a **Transparency** setting that fits your requirements.



The chosen transparency percentage is used on all open information panes.

To change the setting, move the cursor to either side of the button. Select the *left* side of the button to *decrease* the value. Select the *right* side of the button to *increase* the value. Select the middle of the button to open it.If you have a keyboard connected to the ST90, you can type the requested value.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Changing the colour palette ("skin") used in the ST90 presentations

Depending on the ambient light, it is possible to change the ST90 presentation colours to help you see the information. The **Palette** function allows you to choose which colour theme ("skin") to be used by the ST90.

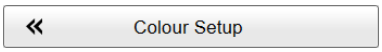
Context

Select a palette to suit the ambient light conditions and your personal preferences. The choice you make does not have any effect on the ST90 performance.

Procedure

1 Open the **Display** menu.

2 Select **Colour Setup**.



3 Select the colour palette ("skin") you want to use.

4 At the bottom of the dialog box, select **Apply** to preview your choice.

5 Select **OK** to save the selected setting and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Choosing the colours used to present the echoes

Several different colour scales are predefined and available for the presentation of the echoes. You can easily choose which colours to use. The presentation colours have no effect on the operational performance of the ST90.

Context

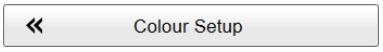
Which colour scale to use is mainly a personal preference based on ambient light conditions, the nature of the echoes and your own experience. Keep in mind that in the basic scale with 12 colours, each discrete colour represents a 3 dB range of echo signal strength. This implies that the next colour is selected every time the echo strength is doubled. If you choose to use many colours, the resolution of the ST90 presentation is greatly improved. It is then easier to distinguish the difference between the various echoes of different size and/or target strength.

The **Smooth Echosounder** scale is based on the standard 12-colour scale. Additional colours have been added between them to make smoother colour transitions.

Procedure

1 Open the **Display** menu.

2 Select **Colour Setup**.



Observe that the **Colour Setup** dialog box opens.

3 Under **Echo Colours**, choose the colour scale you want to use.

4 Under **Colour Brightness**, choose how intense you want these colours to appear.

5 At the bottom of the dialog box, select **Apply** to preview your choice(s).

6 Select **OK** to save the selected setting and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Selecting measurement units

The ST90 is prepared to work with several international standards for units of measurements. From the **Units** page you control which units of measurements that are used.

Context

The ST90 user interface presents many measurements. These measurements are for example related to depth, range and distance. Use the **Units** options to select the units of measurements you want to work with. The ST90 uses them in all presentations. You only need to define them once.

Note

When you work in the **Installation** *dialog box, you must always select* **Apply** *to save the changes made on a page. You must do this before you continue working on a different page.*

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Units**.

4 Adjust the settings to fit your requirements.

5 At the bottom of the page, select **Apply** to save your settings.

6 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Configuring the environmental parameters

Environmental parameters such as salinity, and sound speed play an important part to present accurate echo data. Use the **Environment** parameters to define these values. Depending on the current sea and weather conditions, you may need to change these values frequently.

Context

In order to obtain accurate echoes, it is very important that the sound speed through the water is set correctly. Several parameters are required to calculate the correct sound speed value. If these parameters are not known to you, use the default value 1494 m/s. This is a typical mean value for sound speed.

Procedure

1 Open the **Setup** menu.

2 Select **Environment**.

Observe that the **Environment** dialog box opens.

3 Specify if you work in fresh or salt water.

4 Specify the sound speed.

5 Select **OK** to save the selected settings and close the dialog box.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Setting up the alarm limits for system protection

Safe operation of the ST90 is made possible using multiple sensors that monitor the operation and the performance. Whenever a suspicious event takes place, a relevant message, warning or alarm is provided. Selected alarm limits may be adjusted to fit your operational requirements.

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **System Protection** to open the page.

4 Define the relevant parameters.

- **Tx Inhibit Hull Unit Position**: With the transducer fully retracted, no transmissions ("pings") take place. When you lower the transducer into the water, you can specify a vertical position for when the transmissions start. When the transducer is retracted, transmissions will stop when the transducer reaches the same position.
- **Tx Inhibit Power**: The high voltage supplied to the transceiver boards is monitored. If this voltage differs from the defined tolerances, an alarm message will be initiated. You are not permitted to change the limit values.
- **Tx Inhibit Firmware**: The firmware on the transceiver boards is checked to verify compatibility with the ST90 operational software. The alarm is provided to make sure that the functionality offered by the ST90 can be supported by the transceiver boards. A mismatch will trigger a "firmware not accepted" alarm.
- **Tx Inhibit Operation Mode**: This feature activates the system protection to make sure that the ST90 does not transmit ("ping") when you have chosen *Replay* or *Inactive* mode.
- **Vessel Speed**: When the transducer is fully lowered, the speed of the vessel must not exceed the maximum speed permitted by the hull unit. This maximum speed depends on the size of the transducer, the mechanical construction of the hull unit, and how far down the transducer has been lowered. The **System Protection** page allows you to define an "Upper Warning Limit" that initiates the alarm.

5 At the bottom of the page, select **Apply** to save your settings.

6 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Defining the middle position of the transducer

The hull unit provided with the ST90 is designed to lower the transducer down below the ship's hull when the ST90 shall be used. When the ST90 is switched off, the transducer is hoisted for protection. The ST90 allows you to define a middle position for the transducer.

Prerequisites

The physical properties of the hull unit installation are known.

The correct type of hull unit is selected.

The vessel is berthed or at sea.

Context

The middle position is not a fixed length. The physical middle position depends on which type of hull unit you are using with the ST90.

Retracting the transducer to a middle position may be useful if you use the ST90 simultaneously with other sonars. A higher position will permit you to increase the vessel speed. If you operate in very shallow waters, you may also reduce the risk of hitting bottom. However, placing the transducer immediately under the hull may increase the flow noise.

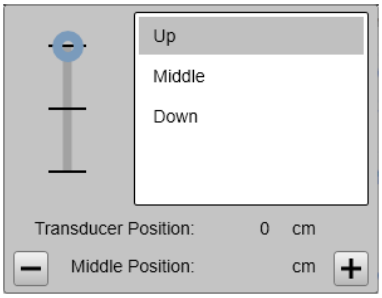
Caution

If the transducer hits larger objects or bottom, the transducer shaft may be bent, or - in worst case - it can be broken off. A broken transducer shaft will cause water leakage through the top of the shaft. If you suspect that the transducer shaft is seriously damaged with holes, do not retract the transducer to its upper position.

To prevent serious damage to the vessel or the vessel stability, you must have a water pump and a warning system in the sonar room.

Select the middle position carefully. The position is normally selected to place the transducer just under the keel, but low enough to prevent echoes from the trunk. Once the position is selected, make sure that the system protection functionality does not inhibit transmission.

Procedure



1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

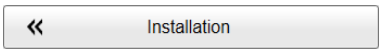
2 Open the **Operation** menu.

3 On the top bar, select **Hull Unit** to access the control settings.

4 Select [+] and [–] to adjust the middle position.

5 Open the **Setup** menu.

6 On the **Setup** menu, select **Installation**.



Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

a On the left side of the **Installation** dialog box, select **System Protection** to open the page.

b Make sure that the upper limit of the **Tx Inhibit Hull Unit Position** does not exceed the middle position.

c Adjust the setting if it is necessary.

d At the bottom of the page, select **Apply** to save your settings.

e Close the **Installation** dialog box.

7 Lower the transducer to its middle position.

8 Start normal operation.

9 Make sure that the ST90 operates normally without transmitting into the installation trunk.

Related topics

Defining settings related to user preferences and individual customizing, page 89

Saving, retrieving and handling user settings

Topics

Saving the current user settings, page 101

Choosing previously saved user settings, page 102

Renaming existing user settings, page 103

Deleting user settings that are no longer used, page 104

Choosing ST90 factory default settings, page 105

Saving the current user settings

When you have spent some time working with the ST90, you are probably using specific settings that you know are efficient for your purpose. It is a good idea to save these settings.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved.

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.

3 Select **Save Current Setting**.

A small dialog opens to accept the name of the new setting.

4 Type a name for the user setting.

Note

If you do not have a computer keyboard connected to your ST90 system, select the **Keyboard** *button to open an on-screen keyboard.*

5 Select **OK** to save the chosen name.

6 Observe that the name you have chosen appears on the **Saved Settings** list.

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

Related topics

Saving, retrieving and handling user settings, page 101

Choosing previously saved user settings

User settings that either you or any of your colleagues have saved can easily be retrieved and put to use. This shortens down the time it takes to get started with the ST90.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved. To activate either a factory or a saved setting, click the relevant name in one of the lists, then click the **Activate Selected Setting** button.

Tip

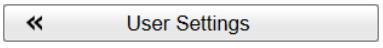
The Operating Panel allows you to assign certain functions to dedicated buttons and switches. This includes user settings. Once the requested functionality has been defined, simply press the button to make your choice. The **Operating Panel** *page is used to assign functionality to the programmable buttons. This page is located in the* **Installation** *dialog box.*

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.



3 Observe the list of previously saved user settings in the **Saved Settings** list.

4 Select the setting you wish to use.

5 Select **Activate Selected Setting**.

6 Select **OK** to apply your changes and close the **User Settings** dialog box.

Related topics

Saving, retrieving and handling user settings, page 101

Renaming existing user settings

An existing user setting can easily be renamed.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved. To rename a user setting, select its name in the list, and then select **Rename**. The factory settings can not be renamed.

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.

Observe that the **User Settings** dialog box opens.

3 Observe the list of previously saved user settings in the **Saved Settings** list.

4 Select the setting you wish to rename.

5 Select **Rename**.

A small dialog box opens to accept the new name.

6 Type a name for the user setting.

Note

If you do not have a computer keyboard connected to your ST90 system, select the **Keyboard** *button to open an on-screen keyboard.*

7 Select **OK** to save the chosen name.

8 Observe that the name you have chosen appears on the **Saved Settings** list.

9 Select **OK** to apply your changes and close the **User Settings** dialog box.

Related topics

Saving, retrieving and handling user settings, page 101

Deleting user settings that are no longer used

When you save the user settings, the files you have created are shown on the **Saved Settings** list. The list may be too long. User settings that you do not need can be deleted.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved. To delete a user setting, select its name in the list, and then select **Delete**. The factory settings can not be deleted.

Note

There is no "undo".

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.

Observe that the **User Settings** dialog box opens.

3 Observe the list of previously saved user settings in the **Saved Settings** list.

4 Select the setting you wish to delete.

5 Select **Delete**.

A small dialog box opens so that you can verify your choice. There is no "undo".

6 Observe that the name you have chosen is removed from the **Saved Settings** list.

7 Select **OK** to apply your changes and close the **User Settings** dialog box.

Related topics

Saving, retrieving and handling user settings, page 101

Choosing ST90 factory default settings

Sometimes it may be useful to reset the ST90 to work with a set of known user settings. A set of "factory settings" is provided for this purpose. The settings may be put to use if you are uncertain of which values to use. They offer "best practice" settings for typical use.

Context

The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. All the settings you have chosen using functions and dialog boxes in the ST90 user interface are saved. To activate either a factory or a saved setting, click the relevant name in one of the lists, then click the **Activate Selected Setting** button. The factory settings cannot be altered.

Note

Unless they are saved, all your current settings are lost when the factory settings are applied. There is no "undo".

Procedure

1 Observe the **Main** menu.

Its default location is on the right side of the ST90 presentation.

2 Select **User Settings**.

Observe that the **User Settings** dialog box opens.

3 Observe the **Factory Settings** list.

4 Select the setting you wish to use.

5 Select **Activate Selected Setting**.

6 Select **OK** to apply your changes and close the **User Settings** dialog box.

Related topics

Saving, retrieving and handling user settings, page 101

Defining the user-selected features on the Operating Panel

Topics

Selecting which Operating Panel to use, page 106

Assigning custom user settings to the Operating Panel, page 107

Assigning functions to the rotary switches on the Operating Panel, page 109

Assigning functions to F1, F2 and F3 on the Operating Panel, page 110

Selecting which Operating Panel to use

The Operating Panel offers all necessary control functions for normal operation of the ST90.

Context

The controls provided by the Operating Panel are arranged in logical functional groups. This offers you clear and easy operation with fast access to key functionality. The majority of the ST90 functions can be accessed using the trackball on the Operating Panel and the menu system shown in the ST90 presentation.

Tip

You can also use a standard computer mouse to control the ST90. The mouse can be connected to either the Operating Panel or directly to the Processor Unit.

The ST90 supports two different operating panels. These are referred to as "Mk1" and "Mk2".

- **Mk1**: The Operating Panel is connected to the Processor Unit with three cables. The dual interface cable provides power and serial communication. The USB interface cable is used to read the trackball movements. A small commercial power supply is used to provide power to the ST90 Operating Panel.
- **Mk2**: A dedicated Ethernet cable is used to connect the Operating Panel to the Processor Unit. The Operating Panel is provided with a built-in power supply.

To select which operating panel to use, open the **Operating Panel** page in the **Installation** dialog box. The **Installation** dialog box is located on the **Setup** menu.

Tip

When you work in the **Installation** *dialog box, you must always select* **Apply** *to save the changes made on a page. You must do this before you continue working on a different page.*

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Operating Panel**.

4 Select which operating panel to use.

5 At the bottom of the page, select **Apply** to save your settings.

6 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining the user-selected features on the Operating Panel, page 106

Assigning custom user settings to the Operating Panel

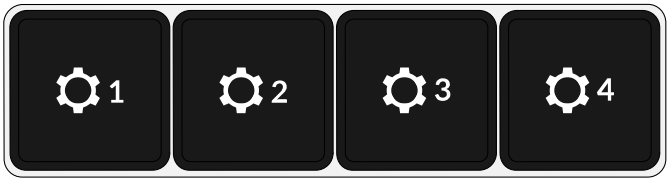
The **User Settings** dialog box is used to store your favourite ST90 settings. These settings can be related to different operations, environmental conditions or basic personal preferences. You can use different settings to create as many user profiles as you like, and give them any name. The Operating Panel allows you to assign certain functions to dedicated buttons and switches. This includes user settings.

Prerequisites

Before you can assign custom user settings to the operating panel, a selection of settings must be available from the **User Settings** dialog box. The **User Settings** dialog box is located on the **Main** menu.

Context

The four buttons on the "top" of the operating panel are dedicated for user settings.



The **Operating Panel** page is used to select which physical hardware panel you use on your ST90, and to assign functionality to the programmable buttons. This page is located in the **Installation** dialog box. The **Installation** dialog box is located on the **Setup** menu.

Note

The ST90 supports two different operating panels. These are referred to as "Mk1" and "Mk2". In this publication all descriptions and references are related to "Mk2".

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** menu opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Operating Panel**.

4 Select Operating Panel Mk2.

5 Under **User Setting Buttons**, assign one predefined setting to each button on the Operating Panel.

6 At the bottom of the page, select **Apply** to save your settings.

7 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining the user-selected features on the Operating Panel, page 106

Assigning functions to the rotary switches on the Operating Panel

The Operating Panel is fitted with three rotary switches. The switches are identified with numbers. Each switch can be assigned a function related to range, gain or bearing.

Context

The **Operating Panel** page is used to select which physical hardware panel you use on your ST90, and to assign functionality to the programmable buttons. This page is located in the **Installation** dialog box. The **Installation** dialog box is located on the **Setup** menu.

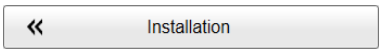
Note

The ST90 supports two different operating panels. These are referred to as "Mk1" and "Mk2". In this publication all descriptions and references are related to "Mk2".

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.



Observe that the **Installation** menu opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Operating Panel**.

4 Select Operating Panel Mk2.

5 Under **Rotary Switch Options**, assign one function to each rotary switch on the Operating Panel.

The following functions can be controlled:

- *Horizontal Range*: Range setting in the horizontal views.
- *Vertical Range*: Range setting in the vertical views.
- *Inspection Range*: Range setting in the inspection views. This function is currently not supported by the ST90.
- *Active Ping Range*: Range setting in the active view.
- *Active Ping Gain*: Gain setting in the active view.
- *Active Ping Bearing*: Bearing setting in the active view.

6 At the bottom of the page, select **Apply** to save your settings.

7 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining the user-selected features on the Operating Panel, page 106

Assigning functions to F1, F2 and F3 on the Operating Panel

The Operating Panel is fitted with three function buttons. The buttons are identified as **F1**, **F2** and **F3**. Each button can be assigned a dedicated function.

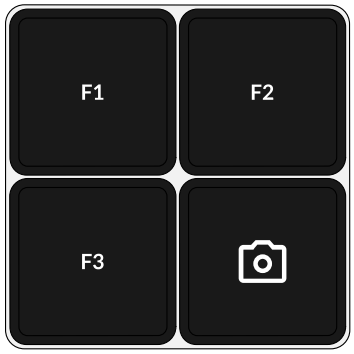
Context

The **Operating Panel** page is used to select which physical hardware panel you use on your ST90, and to assign functionality to the programmable buttons. This page is located in the **Installation** dialog box. The **Installation** dialog box is located on the **Setup** menu.

The three function buttons are grouped with the **Screen Capture** button.

Note

The ST90 supports two different operating panels. These are referred to as "Mk1" and "Mk2". In this publication all descriptions and references are related to "Mk2".



Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** menu opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Operating Panel**.

4 Select which operating panel to use.

5 Under **Button Options**, assign one function to each **Fx** button on the Operating Panel.

The following functions can be controlled:

- *Auto Tilt*: This is an "on/off" function. In *Auto Tilt* mode the beam automatically changes the tilt angle for each ping. The centre of the tilt sector is defined by the chosen tilt angle just before the *Auto Tilt* mode is started. The chosen tilt sector is shown on the tilt indicator in the *Horizontal* view using a shaded background.
- *Off Centre*: This is the same function as **Set New Ship Centre** on the shortcut menu. Place the cursor anywhere in the view and press the button. The function moves the vessel symbol to the selected position.
- *Zoom*: Place the cursor anywhere in the view, right-click and select **Zoom**. Only one zoom level is provided. Select **Zoom** one more time to restore the original view.

- *Menu Off*: This is an "on/off" function. Unless you need to make frequent changes to the operating parameters, you may want to hide the menu from the ST90 presentation. This gives you more space for echo information.
- *Audio*: Select **Audio** to turn the audio output on or off.
- *Own Ship*: This is the same function as **Place Own Ship Marker** on the shortcut menu. Select this function to add a square symbol to the vessel's current position in the ST90 presentation. The own ship marker is now regarded as an *object*. All information about the object is shown in the **Objects** menu listed as "OSM". Use **Delete Own Ship Marker** on the shortcut menu to delete the marker from the current view.

6 At the bottom of the page, select **Apply** to save your settings.

7 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Defining the user-selected features on the Operating Panel, page 106

Lowering and hoisting the transducer from the sonar room

Topics

Lowering and hoisting the transducer using the Hoist/Lower Switch, page 113

Lowering and hoisting the transducer using the hand crank, page 115

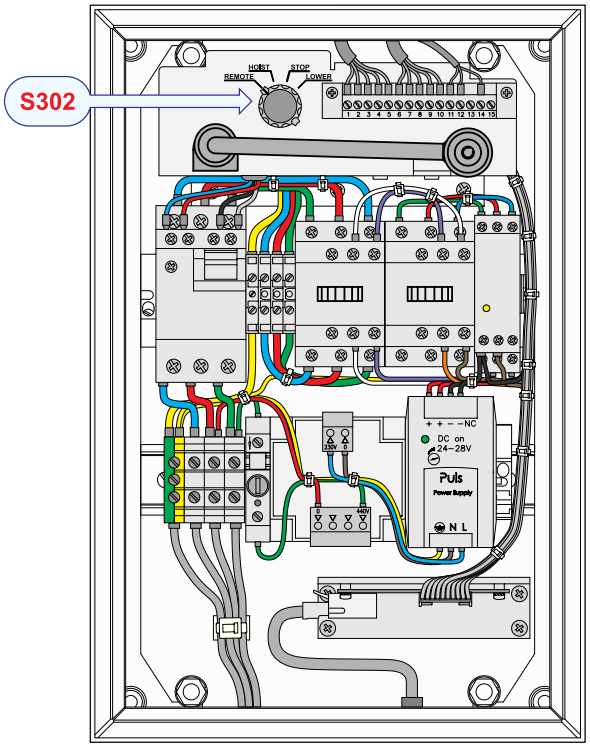
Emergency lowering and hoisting using the two contactors, page 117

Lowering and hoisting the transducer using the Hoist/Lower Switch

The Operating Panel controls the lowering and hoisting of the transducer. Dedicated buttons are provided for the physical transducer locations. You can also do this from the Motor Control Unit. Local control is useful for maintenance purposes.

Prerequisites

You need a suitable screwdriver or a large coin to open the Motor Control Unit cabinet. 3-phase voltage for the hoisting motor and +24 VDC from the internal power supply are available. Both indicator LEDs inside the Motor Control Unit are lit.



Context

Use **Hoist/Lower Switch** (S302) in the upper part of the cabinet to control lowering and hoisting. For normal operation from the Operating Panel, the switch must be set to *REMOTE*.

Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

If your vessel is in dry dock, make sure that you have sufficient height between the hull and the dry dock floor. The space under the hull must be free from tools, scaffolding, personnel and other obstacles.

2 Open the cabinet door.

WARNING

High voltages are used. This equipment must be serviced only by qualified personnel familiar with high-voltage equipment and the potential hazards involved. Failure to observe this precaution could result in bodily injury.

3 Locate the **Hoist/Lower Switch** (S302).

4 Lowering the transducer:

a Set the switch to position *LOWER*.

Lowering is automatically stopped when the **Lower Limit Switch** is activated. If necessary, the transducer can be stopped in any position by setting the **Hoist/Lower Switch** to *STOP*.

b Set the switch to position *STOP*.

5 Hoisting the transducer:

a Set the switch to position *HOIST*.

Hoisting is automatically stopped when the **Upper Limit Switch** is activated. If necessary, the transducer can be stopped in any position by setting the **Hoist/Lower Switch** to *STOP*.

b Set the switch to position *STOP*.

6 Locate the **Hoist/Lower Switch** (S302). Set the switch to position *REMOTE*.

Note

For normal operation from the Operating Panel, the switch must be set to REMOTE.

7 Close the cabinet door.

Related topics

Lowering and hoisting the transducer from the sonar room, page 112

Lowering and hoisting the transducer using the hand crank

The Operating Panel controls the lowering and hoisting of the transducer. In case of a power failure the transducer can be hoisted or lowered manually by means of a hand crank.

Prerequisites

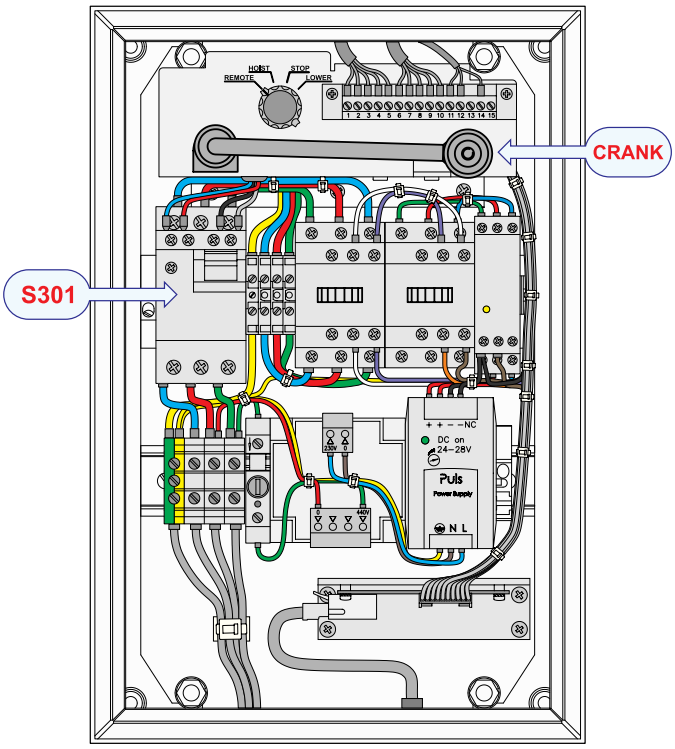
You need a suitable screwdriver or a large coin to open the Motor Control Unit cabinet. You also need a 4 mm Allen key.

Context

On larger hull units, the hoist motor is provided with a motor brake. The motor brake must be released before the transducer is manually lowered or hoisted.

Important

When not in use, the hand crank must always be placed inside the Motor Control Unit. When removed from its storage position the hand crank releases a safety switch which disables hull unit operation..



Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

   If your vessel is in dry dock, make sure that you have sufficient height between the hull and the dry dock floor. The space under the hull must be free from tools, scaffolding, personnel and other obstacles.

2 Remove the mains fuses for the hull unit.

3 Open the cabinet door.

4 Locate the **Motor Protecting Switch** (S301).

5 Deactivate the **Motor Protecting Switch** (S301) by pressing the operating handle to *OFF*.

6 Lowering the transducer

   a Locate the hand crank inside the Motor Control Unit.

b Remove the hand crank from its storage position.

c Remove the plastic plug on the top cover of the hull unit.

d Mount the hand crank onto the stub shaft through the hole in the top cover.

e Locate the brake release screw on the motor.

f Use an 4 mm Allen key to rotate the screw clockwise until the motor brake is released.

g Turn the crank until the transducer is fully lowered.

7 Hoisting the transducer

a Turn the crank until the transducer is fully retracted.

b Loosen the brake release screw to engage the motor brake.

c Check with the hand crank to ensure that the motor brake is engaged.

d Remove the hand crank from the stub shaft, and mount it in its storage position in the Motor Control Unit.

e Activate the **Motor Protecting Switch** (S301) by pressing the operating handle to *ON*.

8 Make sure that the **Hoist/Lower Switch** is set to *REMOTE*.

Note

For normal operation from the Operating Panel, the switch must be set to REMOTE.

9 Close the cabinet door.

10 Insert the mains fuses for the hull unit.

Related topics

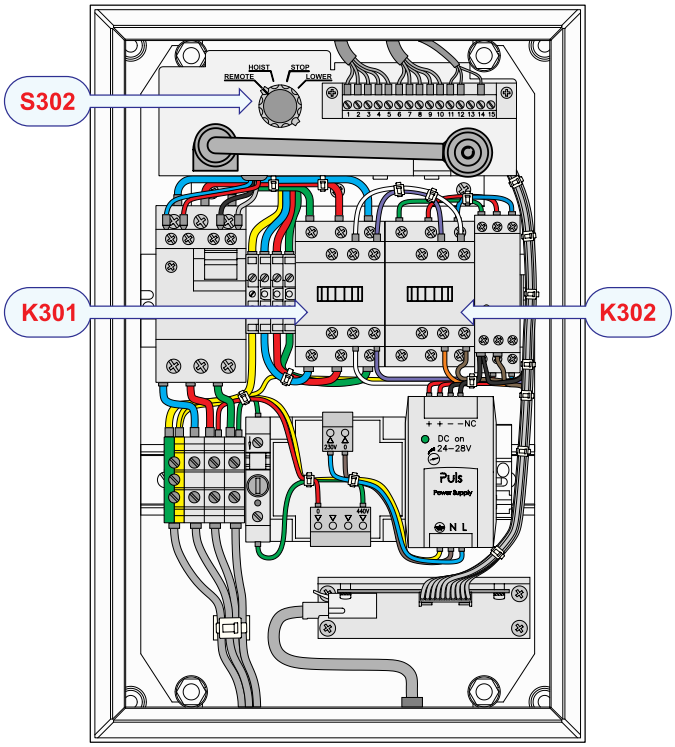
Lowering and hoisting the transducer from the sonar room, page 112

Emergency lowering and hoisting using the two contactors

In case of emergency it is possible to bypass the control logic in the Motor Control Unit. You can control the hoisting motor directly using the two designated contactors.

Prerequisites

You need a suitable screwdriver or a large coin to open the Motor Control Unit cabinet. You also need a small screwdriver. 3-phase voltage for the hoisting motor is available.



Context

The two contactors are identified as K301 and K302. The **Hoisting Contactor** (K301) and the **Lowering Contactor** (K302) are located on the upper DIN rail in the Motor Control Unit.

- **Left side**: When activated, the **Hoisting Contactor** (K301) starts the motor in order to hoist the transducer.
- **Right side**: The **Lowering Contactor** (K302) starts the motor to lower the transducer.

WARNING

This operation overrides the upper and lower limit switches. The contactors must be released before the transducer reaches upper or lower position. Failure to do so may result in serious mechanical damage to the hull unit.

Procedure

1 Make sure that you have sufficient water depth below the keel before you lower the transducer.

If your vessel is in dry dock, make sure that you have sufficient height between the hull and the dry dock floor. The space under the hull must be free from tools, scaffolding, personnel and other obstacles.

2 Open the cabinet door.

WARNING

High voltages are used. This equipment must be serviced only by qualified personnel familiar with high-voltage equipment and the potential hazards involved. Failure to observe this precaution could result in bodily injury.

3 Locate the **Hoist/Lower Switch** (S302). Set the switch to position *STOP*.

This is for safety reasons.

4 Lowering the transducer:

a Locate the **Lowering Contactor** (K302) on the right side.

b Open the transparent plastic cover on the front of the contactor.

c Use a small screw driver, and press the spring return actuator to apply voltage to the motor.

d Lower the transducer and STOP before you reach the bottom position.

5 Hoisting the transducer:

a Locate the **Hoisting Contactor** (K301) on the left side.

b Open the transparent plastic cover on the front of the contactor.

c Use a small screw driver, and press the spring return actuator to apply voltage to the motor.

d Hoist the transducer and STOP before you reach the upper position.

6 Locate the **Hoist/Lower Switch** (S302). Set the switch to position *REMOTE*.

Note

For normal operation from the Operating Panel, the switch must be set to REMOTE.

7 Close the cabinet door.

Related topics

Lowering and hoisting the transducer from the sonar room, page 112

Setting up the interfaces to peripheral devices

Topics

Installing navigation sensors and other sensors, page 119

Defining the serial and Ethernet (LAN) port parameters, page 120

Setting up the input from a navigation system (GPS), page 122

Setting up the interface for speed log input, page 124

Setting up the interface for course gyro input, page 126

Configuring the sensor interface, page 129

Setting up the input from a motion reference unit (MRU), page 130

Setting up the ST90 in a synchronized system, page 132

Installing navigation sensors and other sensors

For the ST90 to use and offer correct navigational information, one or more external sensors must be connected. Typical sensors are those that provide speed, heading and geographical position. To set up the communication parameters on the serial and LAN ports, use the **I/O Setup** page. To select which sensors to install, use the **Sensor Installation** page. The **Sensor Configuration** page allows you to define a datagram priority, so that the information from the "most reliable" sensor is used by the ST90. You can also define manual values in case a sensor is unserviceable, or not installed.

Prerequisites

The new sensor is physically connected to the ST90 using a serial or network cable.

Context

The **Sensor Installation** page allows your ST90 to communicate with external sensors and systems. However, in order to communicate with each sensor, you must first set up the relevant communication parameters. Once the communication has been established and the sensor is connected, you must define the datagram priority and finalize the configuration.

Note

Just making changes and selecting **OK** *at the bottom of the page will not install anything. Select what to install, define the relevant parameters, and then select* **Add**.

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 Set up the interfaces to the navigation sensors.

a On the left side of the **Installation** dialog box, select **I/O Setup**.

b Set up the relevant serial or Ethernet (LAN) communication parameters.

c At the bottom of the page, select **Apply** to save your settings.

d On the left side of the **Installation** dialog box, select **Sensor Installation**.

e Select the type of sensor you want to interface, and define the relevant parameters.

f Select **Add** to save the new sensor interface you have defined.

g On the left side of the **Installation** dialog box, select **Sensor Configuration**.

h Define the priority of the datagrams, and set up relevant configuration parameters.

i At the bottom of the page, select **Apply** to save your settings.

4 Repeat for each sensor interface that you need to set up.

5 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Setting up the interfaces to peripheral devices, page 119

Defining the serial and Ethernet (LAN) port parameters

For any sensor interface to work, the communication parameters must be set up correctly. The ST90 software automatically scans the Processor Unit to locate and identify the available communication ports. Once the software has established a list of valid interfaces, you can set up and control the communication parameters.

Prerequisites

This procedure assumes that:

- You have a vacant interface port on your Processor Unit.
- You are familiar with NMEA and other relevant datagram formats.
- You know how to set up the parameters for serial and local area network (LAN) communication.

- The communication parameters required for the sensor interface are known.

Context

The **I/O Setup** page provides two lists; one for serial ports and one for Ethernet (LAN) ports. Each list is supported with a set of functions to set up and monitor the communication ports. Select the port you want to work with and then select one of the buttons below the list.

Tip

The **Sensors** *page in the* **BITE** *(Built-In Test Equipment) dialog box provides an overview of all the communication lines and sensors in use. All relevant status information is provided. You open the* **BITE** *dialog box from the* **Setup** *menu.*

When you work in the **Installation** dialog box, you must always select **Apply** to save the changes made on a page. You must do this before you continue working on a different page.

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **I/O Setup**.

4 Observe that the available serial and network interface ports on the Processor Unit are listed.

5 Set up the relevant serial or Ethernet (LAN) communication parameters.

a Select the interface port you wish to set up.

b Select **Setup** below the list to open the **Serial Port Setup** or **LAN Port Setup** dialog box.

c Set up the relevant serial or Ethernet (LAN) communication parameters.

The communication parameters defined for **NMEA 0183** are:

- **Baud Rate**: 4800 b/s
- **Data Bits**: 8
- **Parity**: None
- **Stop Bits**: 1

Some instruments may offer other parameters and/or options. You must always check the relevant documentation provided by the manufacturer.

d Select **OK** to save the selected settings and close the dialog box.

6 At the bottom of the page, select **Apply** to save your settings.

7 Repeat for any other communication ports that you need to set up.

8 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Setting up the interfaces to peripheral devices, page 119

Setting up the input from a navigation system (GPS)

For the ST90 to use and offer correct navigational information, one or more external sensors must be connected. Typical sensors are those that provide speed, heading and geographical position. To select which sensors to install, use the **Sensor Installation** page. Your current position is shown on the top bar if you have enabled this in the **Display Options** dialog box.

Prerequisites

This procedure assumes that:

- You have a vacant interface port on your Processor Unit.
- You are familiar with NMEA and other relevant datagram formats.
- You know how to set up the parameters for serial and local area network (LAN) communication.
- The interface port is set up with the correct communication parameters.
- The ST90 system is turned on and operates normally.
- The new sensor is physically connected to the ST90 using a serial or network cable. It is switched on and in normal operation.

Neither tools nor instruments are required.

Context

The **Sensor Installation** page allows your ST90 to communicate with external sensors and systems. You must specify which communication port to use (LAN (Local Area Network) or serial port). You can type a custom name to identify the sensor import. In the list of valid datagram formats, select the format(s) to be accepted by the ST90. Once a sensor has been chosen, you must select the offset values that define the sensor's physical location relative to your vessel's coordinate system.

Note

Just making changes and selecting **OK** *at the bottom of the page will not install anything. Select what to install, define the relevant parameters, and then select* **Add**.

Procedure

1 Connect the navigation system to an available communication port on your Processor Unit.

This is described in the ST90 *Installation manual*.

2 Open the **Setup** menu.

3 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

4 On the left side of the **Installation** dialog box, select **Sensor Installation**.

5 For **Type**, select the *GPS* sensor to import information from a global positioning system.

6 Select which port you want to import the sensor information on.

7 If you want to check the communication parameters, select **Inspect Port**.

Note

*You cannot make any changes here. To change the communication parameters, use the **I/O Setup** page.*

8 If you want to check that the peripheral system is transmitting data to the ST90, select **Monitor**.

The **Port Monitor** dialog box provides one text box for incoming messages (**Rx Data**), and one for outgoing messages (**Tx Data**). Use these boxes and your knowledge of the data communication to investigate the datagrams. The **Port Monitor** dialog box is a tool for debugging purposes. It is neither required nor intended for normal operation of the ST90.

9 Type a custom name to identify the interface in other dialog boxes.

10 Select which datagram(s) you want to import from the sensor.

11 If relevant, specify a dedicated talker ID.

12 Provide the accurate physical location of the sensor (or its antenna) with reference to the vessel's coordinate system.

The position of certain sensors must be defined as an *offset* to the *Ship Origin* in the coordinate system to maximize performance. These offset values are all required to allow the ST90 to give you as accurate information as possible. The degree of accuracy offered by the ST90 is directly related to the accuracy of the information you enter on the **Sensor Installation** page.

a Select the offset value on the X axis (fore-and-aft direction) from the *Ship Origin*. Adjust with a positive value for X if the sensor is located ahead of the ship origin.

b Select the offset value on the Y axis (athwartship) from the *Ship Origin*. Adjust with a positive value for Y if the sensor is located on the starboard side of the ship origin.

c Select the offset value on the Z axis (vertical) from the *Ship Origin*. Adjust with a positive value for Z if the sensor is located under the ship origin.

13 Select **Add** to save the new sensor interface you have defined.

The sensor interface is added to the **Installed Sensors** list on the **Sensor Installation** page.

14 At the bottom of the dialog box, select **Apply** to save your settings.

15 Repeat for each sensor interface that you need to set up.

16 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Further requirements

On the left side of the **Installation** dialog box, select **Sensor Configuration**. Define the priority of the datagrams, and set up relevant configuration parameters.

Related topics

Setting up the interfaces to peripheral devices, page 119

Setting up the interface for speed log input

In order to operate correctly, the ST90 requires input from a speed log. In most cases a suitable sensor is already installed on the vessel. A global positioning system (GPS) with a compatible output format can also be used. To select which sensors to install, use the **Sensor Installation** page. The vessel speed is shown on the top bar if you have enabled this in the **Display Options** dialog box.

Prerequisites

This procedure assumes that:

- You have a vacant interface port on your Processor Unit.
- You are familiar with NMEA and other relevant datagram formats.
- You know how to set up the parameters for serial and local area network (LAN) communication.
- The interface port is set up with the correct communication parameters.
- The ST90 system is turned on and operates normally.
- The new sensor is physically connected to the ST90 using a serial or network cable. It is switched on and in normal operation.

Neither tools nor instruments are required.

Context

Note

The input from a speed log is essential for ST90 operation. Without speed information, the ST90 will neither be able to present correct navigational information, nor compensate for vessel movements. This lack of compensation will prevent the ST90 from providing correct echo information.

The **Sensor Installation** page allows your ST90 to communicate with external sensors and systems. You must specify which communication port to use (LAN (Local Area Network) or serial port). You can type a custom name to identify the sensor import. In the list of valid datagram formats, select the format(s) to be accepted by the ST90.

Note

Just making changes and selecting **OK** *at the bottom of the page will not install anything. Select what to install, define the relevant parameters, and then select* **Add**.

Procedure

1 Connect the speed log to an available communication port on your Processor Unit.

This is described in the ST90 *Installation manual*.

2 Open the **Setup** menu.

3 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

4 On the left side of the **Installation** dialog box, select **Sensor Installation**.

5 For **Sensor Type**, select *Speed Log* to import information from a global positioning system.

6 Select which port you want to import the sensor information on.

7 If you want to check the communication parameters, select **Inspect Port**.

Note

You cannot make any changes here. To change the communication parameters, use the ***I/O Setup*** *page.*

8 If you want to check that the peripheral system is transmitting data to the ST90, select **Monitor**.

The **Port Monitor** dialog box provides one text box for incoming messages (**Rx Data**), and one for outgoing messages (**Tx Data**). Use these boxes and your knowledge of the data communication to investigate the datagrams. The **Port Monitor** dialog box is a tool for debugging purposes. It is neither required nor intended for normal operation of the ST90.

9 Type a custom name to identify the interface in other dialog boxes.

10 Select which datagram(s) you want to import from the sensor.

11 If relevant, specify a dedicated talker ID.

12 Select **Add** to save the new sensor interface you have defined.

The sensor interface is added to the **Installed Sensors** list on the **Sensor Installation** page.

13 At the bottom of the dialog box, select **Apply** to save your settings.

14 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Further requirements

On the left side of the **Installation** dialog box, select **Sensor Configuration**. Define the priority of the datagrams, and set up relevant configuration parameters.

Related topics

Setting up the interfaces to peripheral devices, page 119

Setting up the interface for course gyro input

In order to operate correctly, the ST90 requires input from a course gyro. In most cases a suitable course gyro is already installed on the vessel. A global positioning system (GPS) with a compatible output format can also be used. To select which sensors to install, use the **Sensor Installation** page. The current heading is shown on the top bar if you have enabled this in the **Display Options** dialog box.

Prerequisites

This procedure assumes that:

- You have a vacant interface port on your Processor Unit.
- You are familiar with NMEA and other relevant datagram formats.
- You know how to set up the parameters for serial and local area network (LAN) communication.
- The interface port is set up with the correct communication parameters.
- The ST90 system is turned on and operates normally.

- The new sensor is physically connected to the ST90 using a serial or network cable. It is switched on and in normal operation.

Neither tools nor instruments are required.

Context

Note

The input from a course gyro is essential for ST90 operation. Without the input from a course gyro, the ST90 will not be able to present correct navigational information.This lack of compensation will prevent the ST90 from providing correct echo information.

The **Sensor Installation** page allows your ST90 to communicate with external sensors and systems. You must specify which communication port to use (LAN (Local Area Network) or serial port). You can type a custom name to identify the sensor import. In the list of valid datagram formats, select the format(s) to be accepted by the ST90. Once a sensor has been chosen, you must select the offset values that define the sensor's physical location relative to your vessel's coordinate system.

Note

Just making changes and selecting **OK** *at the bottom of the page will not install anything. Select what to install, define the relevant parameters, and then select* **Add**.

Procedure

1 Connect the gyro (or other heading sensor) to an available communication port on your Processor Unit.

This is described in the ST90 *Installation manual*.

2 Open the **Setup** menu.

3 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

4 On the left side of the **Installation** dialog box, select **Sensor Installation**.

5 For **Sensor Type**, select *Gyro* to import information from a global positioning system.

6 Select which port you want to import the sensor information on.

7 If you want to check the communication parameters, select **Inspect Port**.

Note

You cannot make any changes here. To change the communication parameters, use the ***I/O Setup*** *page.*

8 If you want to check that the peripheral system is transmitting data to the ST90, select **Monitor**.

The **Port Monitor** dialog box provides one text box for incoming messages (**Rx Data**), and one for outgoing messages (**Tx Data**). Use these boxes and your knowledge of the data communication to investigate the datagrams. The **Port Monitor** dialog box is a tool for debugging purposes. It is neither required nor intended for normal operation of the ST90.

9 Type a custom name to identify the interface in other dialog boxes.

10 Select which datagram(s) you want to import from the sensor.

11 If relevant, specify a dedicated talker ID.

12 Provide the accurate physical location of the sensor (or its antenna) with reference to the vessel's coordinate system.

The position of certain sensors must be defined as an *offset* to the *Ship Origin* in the coordinate system to maximize performance. These offset values are all required to allow the ST90 to give you as accurate information as possible. The degree of accuracy offered by the ST90 is directly related to the accuracy of the information you enter on the **Sensor Installation** page.

a Select the offset value on the X axis (fore-and-aft direction) from the *Ship Origin*. Adjust with a positive value for X if the sensor is located ahead of the ship origin.

b Select the offset value on the Y axis (athwartship) from the *Ship Origin*. Adjust with a positive value for Y if the sensor is located on the starboard side of the ship origin.

c Select the offset value on the Z axis (vertical) from the *Ship Origin*. Adjust with a positive value for Z if the sensor is located under the ship origin.

13 Select **Add** to save the new sensor interface you have defined.

The sensor interface is added to the **Installed Sensors** list on the **Sensor Installation** page.

14 At the bottom of the dialog box, select **Apply** to save your settings.

15 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Further requirements

On the left side of the **Installation** dialog box, select **Sensor Configuration**. Define the priority of the datagrams, and set up relevant configuration parameters.

Related topics

Setting up the interfaces to peripheral devices, page 119

Configuring the sensor interface

With several sensors connected to the ST90, many of them will provide the same datagrams. We cannot expect that the datagrams provide the same information. The **Sensor Configuration** page allows you to define a datagram priority, so that the information from the "most reliable" sensor is used by the ST90. You can also define manual values in case a sensor is unserviceable, or not installed.

Prerequisites

This procedure assumes that:

- The new sensor is physically connected to the ST90 using a serial or network cable.
- The interface port is set up with the correct communication parameters.
- The navigation sensor is installed into the ST90 software. The relevant interface parameters and physical location properties are defined.

Context

Any information in a datagram, for example the current depth, may be provided in different datagrams from several sensors. Due to a number of reasons (environmental conditions, installation, configuration, accuracy, etc.), the numerical values provided can be different from one sensor to another.

Several sensor are provided on the **Sensor Configuration** page, one for each type of information. Select the sensor you wish to configure in the **Sensor** list. For each type, you can define a priority sensor by rearranging the datagrams in a list. You can also define manual values in case a sensor is unserviceable, or not installed.

The ST90 can communicate with several different sensor types. On the **Sensor Installation** page you define which external sensors your ST90 will import information from. You must also decide which datagram formats that will be accepted.

Note

When you work in the **Installation** *dialog box, you must always select* **Apply** *to save the changes made on a page. You must do this before you continue working on a different page.*

Procedure

1 Open the **Setup** menu.

2 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

3 On the left side of the **Installation** dialog box, select **Sensor Configuration**.

Observe that the **Sensor Configuration** page opens.

4 Select the sensor you wish to configure in the **Sensor** list.

5 If you wish to use the built-in datagram priority, select **Auto**.

- With **Auto** *enabled*, the priority list is used. Information is imported from the sensor at the top of the list. If the sensor fails to provide information for more than 20 seconds, data from the next sensor is used.
- With **Auto** *disabled*, the priority list is not used. Information is imported from the sensor at the top of the list. All other sensors are ignored.

6 If you wish to control the datagram priority manually, *do not* select **Auto**.

To change the priority for a given datagram, select it, and change its location on the list using the arrow buttons.

7 If relevant, add a manual value for the sensor input.

8 At the bottom of the dialog box, select **Apply** to save your settings.

9 Repeat for each sensor interface that you need to set up.

10 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Setting up the interfaces to peripheral devices, page 119

Setting up the input from a motion reference unit (MRU)

The information from a motion reference unit (MRU) (normally heave, roll and pitch information) is imported into the ST90 to increase the accuracy of the echo data. The ST90 is provided with a built-in motion sensor. It is placed inside the Motor Control Unit. For improved operational accuracy, an external motion reference unit (MRU) may be used. This task is only applicable is you are using an external motion reference unit on your ST90.

Prerequisites

This procedure assumes that:

- You have a vacant interface port on your Processor Unit.
- You are familiar with NMEA and other relevant datagram formats.
- You know how to set up the parameters for serial and local area network (LAN) communication.
- The interface port is set up with the correct communication parameters.
- The ST90 system is turned on and operates normally.
- The new sensor is physically connected to the ST90 using a serial or network cable. It is switched on and in normal operation.

Neither tools nor instruments are required.

Context

A motion reference unit (MRU) measures the vessel's pitch and roll movements in the sea. The information provided by the motion sensor is used by the ST90 to stabilize the beams and the echo presentation.

Note

This task is only applicable is you are using an external motion reference unit on your ST90.

Procedure

1 Connect the motion sensor system to an available communication port on your Processor Unit.

This is described in the ST90 *Installation manual*.

2 Open the **Setup** menu.

3 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

Note

If you want to use a serial line to interface the motion sensor, and no COM ports are available, you must first release a port on the **I/O Setup** *page. If you choose a serial COM port to interface the motion sensor, make sure that you do not put the same COM port to other use on the* **I/O Setup** *page.*

4 Release an unused serial port (COM) port.

a On the left side of the **Installation** dialog box, select **I/O Setup**.

b Observe that the available serial and network interface ports on the Processor Unit are listed.

c If you have a vacant COM port, select it, then select **Remove** to delete it from the list.

d At the bottom of the page, select **Apply** to save your settings.

e Close the **Installation** dialog box.

f Restart the ST90.

Restarting allows the Processor Unit to "free" the port.

g When the ST90 has started, proceed to the **Motion Reference Unit** page to put the communication port to use.

5 On the left side of the **Installation** dialog box, select **Motion Reference Unit**.

6 Set up the interface.
   a Select the Ethernet port or serial port you want to use.
   b Select which protocol (datagram sentence) you want to use.
   c If you are using a serial line, define the baud rate.
7 At the bottom of the dialog box, select **Apply** to save your settings.
8 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Setting up the interfaces to peripheral devices, page 119

Setting up the ST90 in a synchronized system

If you want to use the ST90 as a master or slave in a synchronized system, you must set it up for such operation. To do this, you must select which communication port to use for the synchronization interface, and you must select the requested synchronization mode.

Prerequisites

This procedure assumes that:

- The vessel is berthed or at sea.
- You have an RS2-232 interface port on your Processor Unit that allows you to use the CTS/RTS connections.

For "slave" operation, a remote system (for example *K-Sync* or *Simrad TU40*) must be available to provide trigger pulses. For "master" operation, a remote hydroacoustic system (sonar, echo sounder) is connected. This remote system must be set up in "slave" mode.

Context

Whenever more than one hydroacoustic system is installed on a vessel, interference may occur. To avoid interference, you have these options:

- The systems are all connected to a common synchronization system.
- One of the acoustic systems is set up as "master", and controls the transmissions on the other systems.

The ST90 offers functionality for remote transmit synchronization. It can be set up to operate in either *Master* or *Slave* mode.

Note

When you work in the **Installation** *dialog box, you must always select* **Apply** *to save the changes made on a page. You must do this before you continue working on a different page.*

Procedure

1 Connect the synchronization cable from the remote system to an available communication port on your Processor Unit.

This is described in the ST90 *Installation manual*.

2 Turn on the ST90, and set it to normal use.

3 Open the **Setup** menu.

4 On the **Setup** menu, select **Installation**.

Observe that the **Installation** dialog box opens. This dialog box contains a number of pages selected from the menu on the left side.

5 On the left side of the **Installation** dialog box, select **Synchronization**.

6 Select **Synchronization Mode**.

- **Stand-alone**

  Synchronization is turned off.This synchronization mode is used if the ST90 is working by itself and with no synchronization required. This is the default setting. The ST90 operates using its internal ping interval parameters, independent of any trigger signals arriving at the synchronization port.

  The **Synchronization Delay** setting is not applicable when synchronization is switched off.

- **Master**

  Master mode is used if the ST90 is going to act as the controlling unit in a synchronized system. The peripheral hydroacoustic system(s) are only permitted to transmit when enabled by the ST90. When *Master* mode is selected, the ST90 will run using its internal ping interval parameters and send trigger signals to the peripheral system(s).

- **Slave**

  Slave mode is used if the ST90 is going to transmit only when permitted by a peripheral system. When *Slave* mode is selected, the ST90 does not transmit ("ping") unless an external trigger appears on the chosen synchronization port. The peripheral system may be any other hydroacoustic product (for example an echo sounder or sonar), or even a dedicated synchronization system.

7 Select **Synchronization Delay**.

This delay parameter is used differently depending on the chosen synchronization mode.

- **Stand-alone**

  The **Synchronization Delay** setting is not applicable when synchronization is switched off.

- **Master**

  In *Master* mode, the ST90 waits for the delay time after the external trigger signal has been sent to the slaves before transmitting the ping. This is often referred to as a *pre-trigger*.

  Note

  This delay will only work when the synchronization is set up using a serial port.

- **Slave**

  In *Slave* mode, the ST90 waits for the delay time after the external trigger signal has arrived before transmitting the ping. This is often referred to as a *post-trigger*.

8 From the list of ports available, select **Synchronization Port**.

  This is the interface port currently used to transmit or receive synchronization signals. It must be an RS-232 serial port. Since the synchronization function only uses the *Request To Send (RTS)* and *Clear To Send (CTS)* signals on a serial port, you can use a port that is already used for other purposes. For the same reason, you do not need to define any baud rate.

9 At the bottom of the page, select **Apply** to save your settings.

10 Continue your work in the **Installation** dialog box, or select **OK** to close it.

Related topics

Setting up the interfaces to peripheral devices, page 119

Menu system

Topics

About the menus and menu buttons, page 136
Using the “smart” menu buttons, page 136
Main menu, page 139
Operation menu, page 141
Display menu, page 143
Setup menu, page 146
Active menu, page 150
Objects menu, page 153
Visual Objects menu, page 157
Cosmetics menu, page 160
Shortcut menus, page 162

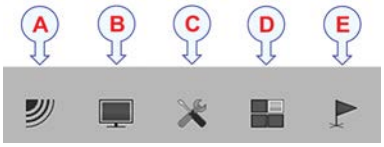
About the menus and menu buttons

To select operational parameters on the ST90, use the menu system. The menus are organized in a tree structure with a main menu, a set of secondary menus, and several menu buttons. The menus are organized in a tree structure with a main menu and a secondary menu. Some of the menu buttons open dialog boxes or submenus to offer additional choices.

Description

The **Main** menu is located at the top of the menu structure. It offers the most common functions for efficient use of the ST90. Unless you hide the entire menu system, the **Main** menu is visible at all times, even if you close the secondary menus.

Below the **Main** menu, a set of dedicated icons are used to open the secondary menus.



A **Operation menu**: The **Operation** menu allows you to control the operating mode, the recording functionality, and how the ST90 transmits (ping) into the water.

B **Display menu**: The **Display** menu provides basic functions related to the screen behaviour and presentation of ST90 data.

C **Setup menu**: The **Setup** menu provides basic functions related to the ST90 installation parameters and its communication with peripheral systems.

D **Active menu**: The **Active** menu offers parameters related to current views and data presentations shown by the ST90.

E **Object menu**: The **Objects** menu offers basic functionality related to markers and tracks that you are using in the ST90 presentation.

Tip

Unless you need to make frequent changes to the operating parameters, you may want to hide the menu from the ST90 presentation. This gives you more space for echo information. To hide the menu, select **Menu** *on the top bar. To retrieve the menu, select* **Menu** *one more time. When the menu is hidden, it is temporarily shown on the left or right side of the ST90 presentation if you move the cursor to that position.*

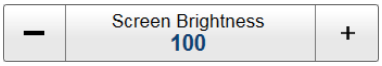
Using the "smart" menu buttons

Each menu provided by the ST90 contains several menu buttons. Each button shows the purpose of the button. Some of them also display the current setting.

Depending on the properties of each individual button, several methods can be used to change settings.

- Select the *left* side of the button to *decrease* the numerical value. Select the *right* side of the button to *increase* the numerical value.
- Press and hold the left mouse button. Move the cursor *right* to increase the value. Move the cursor *left* to decrease the value.
- Spin the scroll wheel in either direction to increase or decrease the numerical value.
- Type a numerical value. (You can only type a new value if a computer keyboard is connected to your ST90 Processor Unit.)
- Select the button to open the button menu. Choose the required setting.
- Select the button to open the dialog box.

Choosing a setting with the [+] and [–] buttons



1 To change the setting, move the cursor to either side of the button.

2 Observe that the background colour changes.

   a Select the *left* side of the button to *decrease* the numerical value.

   b Select the *right* side of the button to *increase* the numerical value.

Choosing a setting by moving the cursor horizontally

1 Place the cursor on the button.

2 Press and hold the left mouse button.

3 Move the cursor horizontally over the button.

   a Move the cursor *right* to increase the value.

   b Move the cursor *left* to decrease the value.

4 Release the mouse button when requested value is shown.

Choosing a numerical setting with the scroll wheel

1 Place the cursor on the button.

2 Spin the scroll wheel in either direction to increase or decrease the numerical value.

3 Release the scroll wheel when the requested value is shown.

Choosing a setting with the keyboard

1 Place the cursor on the button.

2 Click the button to open the text field.

3 Type a numerical value.

   If the value exceeds the permitted range, the frame turns red. Type a new value within the accepted range.

4 Press **Enter** on the keyboard.

Choosing a setting on the button menu

1 Place the cursor on the button.

2 Select the button to open the button menu.

3 Choose the required setting.,

The chosen setting is applied, and the menu closes automatically.

Tip

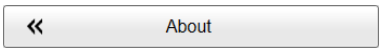
Several of the functions offer **Apply to All**. *If you select* **Apply to All** *your setting is applied to all the views simultaneously.*

4 Whenever applicable, you can make a selection by selecting the left or right side of the button. This method does not show you the menu choices.

a Select the *left* side of the button to select a "lower"' menu choice.

b Select the *right* side of the button to select a "higher"' menu choice.

Selecting settings using a dialog box



Select the button to open the dialog box.

Once you have made the necessary settings, most dialog boxes provide the following options:

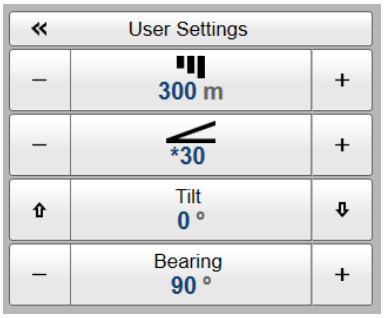
- Select **OK** to save the selected settings and close the dialog box.
- Select **Apply** to save your settings without closing the dialog box.
- Select **Cancel** to close the dialog box without making any changes.

Main menu

The **Main** menu is located at the top of the menu structure. It offers the most common functions for efficient use of the ST90. Unless you hide the entire menu system, the **Main** menu is visible at all times, even if you close the secondary menus.

How to open

By default, the **Main** menu is open. It is placed on the right side of the ST90 presentation.



Description

Only brief descriptions are provided. For detailed information about each function and dialog box, refer to the ST90 *Reference manual* or the context sensitive on-line help.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

Below the **Main** menu you find the icons for opening (and closing) the secondary menus. Select an icon to open the relevant menu, and reselect the icon to close the menu.

- **User Settings**

  The **User Settings** dialog box allows you to save the current user settings (your current selection of operational parameters), and to retrieve factory or previously saved user settings.

- **Range**

  The **Range** function allows you to specify the maximum distance from the transducer to the outer edge of the sonar beam. The range value shown and selected is by default only applied to the currently selected view.

- **Gain**

  The purpose of the **Gain** function is to adjust the echo level in the ST90 presentations. By adjusting the gain you can control how much amplification the ST90 applies to the received echoes. The setting is by default only applied to currently selected echogram. It is identified with a thick border.

- **Tilt**

  The **Tilt** function allows you to control the vertical angle of the sonar beams.

- **Bearing**

  The *Horizontal* view in the ST90 presentation covers the entire 360° omnidirectional sector For the other views you must define the horizontal direction of the beam. Use **Bearing** to adjust the horizontal angle referenced to the vessel heading.

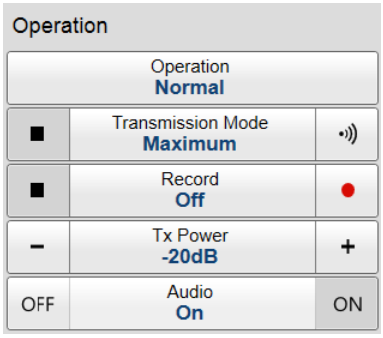
Operation menu

The **Operation** menu allows you to control the operating mode, the recording functionality, and how the ST90 transmits (ping) into the water.

How to open

Select the **Operation** icon.

The icon is located under the **Main** menu. Select the icon one more time to close the menu.



Note

Immediately after you have turned on the ST90, the **Operation** *icon is flashing. The icon is flashing to indicate that even if the ST90 is turned on, "pinging" is disabled. When the ST90 is turned on,* **Tx Power** *is by default set to Off. This is a safety precautions to prevent inadvertent transmissions when the vessel is in dry dock.*

Description

Only brief descriptions are provided. For detailed information about each function and dialog box, refer to the ST90 *Reference manual* or the context sensitive on-line help.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

- **Operation**

  The **Operation** function controls the operating mode of the ST90. You can set it to *Normal*, *Replay* or *Inactive*.

- **Transmission Mode**

  Transmission Mode allows you to control how often the ST90 shall transmit acoustic energy (ping) into the water.

- **Record**

  Record allows you to record echo data. You can save the data to the Processor Unit hard disk, or onto an external storage device. The data files can be played back on the ST90. You can keep the recorded files for future reference, or for training purposes.

- **Tx Power**

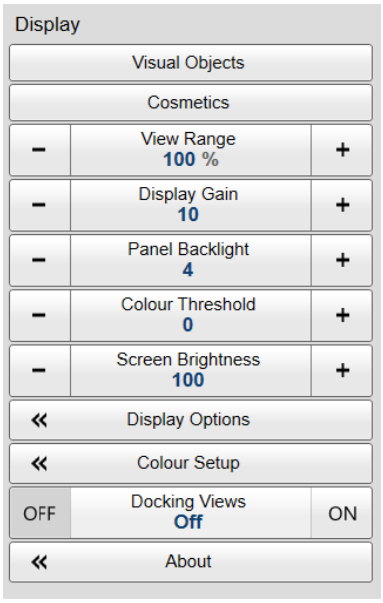
  Use **Tx Power** to increase or decrease the output power. The output power is selected from predefined steps.

- **Audio**

  Select **Audio** to turn the audio output on or off. The audio information is generated based on the echoes retrieved from the bearing defined by the bearing line. If you need to adjust the volume use the controls on the audio equipment you use.

Display menu

The **Display** menu provides basic functions related to the screen behaviour and presentation of ST90 data.



How to open

Select the **Display** icon.

The icon is located under the **Main** menu. Select the icon one more time to close the menu.

Description

Only brief descriptions are provided. For detailed information about each function and dialog box, refer to the ST90 *Reference manual* or the context sensitive on-line help.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

The choices in the this menu depends on which view in the ST90 presentation that is currently "active". The menu may therefore change from one view to another. The screen capture may not show you all the menu choices.

- **Visual Objects**

  Visual Objects is an "on/off" button used to open the **Visual Objects** menu. The **Visual Objects** menu controls which graphical elements that are shown in the different views. These graphic elements include markers, vectors and targets that are tracked. The majority of the functions are "on/off" buttons to enable or disable these graphic elements in the ST90 views.

  Visual Objects menu, page 157

- **Cosmetics**

  Use the functions on the **Cosmetics** menu to turn "cosmetic" elements in the ST90 presentation on or off. The majority of the functions are on/off buttons to enable or disable "cosmetic" elements in the ST90 presentation. This function is not available in all the views.

  Cosmetics menu, page 160

- **View Range**

  Use **View Range** to expand the range shown in the relevant views to any percentage of the original **Range** value. This function can be used if you wish to move your ship symbol to the bottom of the ST90 view. You can then expand the range without adding zoom.

- **Display Gain**

  Display Gain increases or decreases the strength of the echo presentation.

- **Panel Backlight**

  The buttons on the Operating Panel have built-in backlight to improve visibility on a dark bridge. Use **Panel Backlight** to control the intensity of the lights.

- **Colour Threshold**

  The **Colour Threshold** function allows you to reduce or increase the number of colours. This will provide a filtering effect that removes the weakest echoes.

- **Screen Brightness**

  The intensity of the light given off by the ST90 presentation can be adjusted. You can use this function to increase or decrease the light from the screen to match the ambient light.

- **Display Options**

  The top bar gives you fast access to key functionality and navigational information. It provides buttons to hide or show the menu, to monitor data recording, to open the **Messages** dialog box, and to open the context sensitive on-line help. Which navigation elements to see on the top bar is selected in the **Display Options** dialog box. It controls the location of the menu. You can also select which tooltips to appear when you move the cursor over the echo information.

  – **General**

    The **General** page in the **Display Options** dialog box controls the location of the menu. You can select which navigational information to be shown on the top bar. You can also choose to see Coordinated Universal Time (UTC) at the bottom of the presentation.

  – **Tooltip**

    When you move the cursor over the echograms in the ST90 presentation, small "tooltips" are shown to provide additional information. The **Tooltip** page controls which tooltips that are shown.

  – **Track Line**

    The track history line displays a line representing previous positions of own ship.On the **Track Line** page you can set the time (in minutes) for the history tracking line.

- **Colour Setup**

  The **Colour Setup** dialog box controls the presentation colours used by the ST90. This includes the palette ("skin"), the number of colours in use, and the colour scale when no TVG has been selected for the presentation

- **Docking Views**

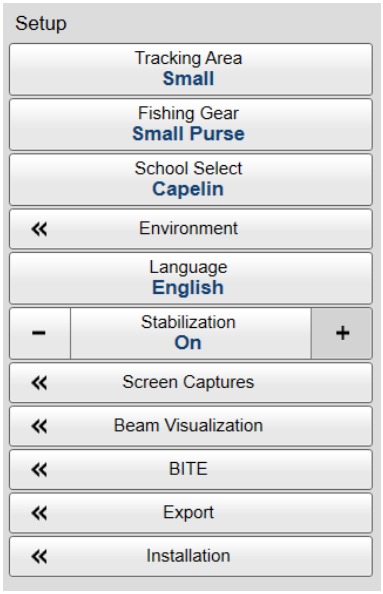
  Each operating mode is presented with a set of views. These are placed at different positions with different sizes. With the **Docking Views** function you can move and re-size the views in the ST90 presentation.

- **About**

  Every ST90 software release is uniquely identified. The **About** dialog box identifies the current ST90 software version with its release date. The version described in this Operator Manual is 3.1.4.

Setup menu

The **Setup** menu provides basic functions related to the ST90 installation parameters and its communication with peripheral systems.



How to open

Select the **Setup** icon.

The icon is located under the **Main** menu. Select the icon one more time to close the menu.

Description

Only brief descriptions are provided. For detailed information about each function and dialog box, refer to the ST90 *Reference manual* or the context sensitive on-line help.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

- **Tracking Area**

  Use **Tracking Area** to define the size of the area that you want to detect moving objects in. An invisible area - the tracking area - is created as an acquisition area. In order for the ST90 to find and lock on the intended target, it needs to be kept within this tracking area. If the intended target falls outside the area, the tracking can not be started.

- **Fishing Gear**

  By defining the type of fishing gear you are using, the ST90 may provide more accurate visual presentations. Use the **Fishing Gear Setup** dialog box to change the fishing gear properties to match your own equipment.

- **School Select**

  During normal operation, the detection and estimation of fish schools depends on the specie and the density of the school. **School Select** offers a selection of species. Based on your choice the ST90 will adjust its operating parameters to achieve optimal performance.

  Select **School Select Setup** to adjust the density for a given specie, or to create you own school parameters.

- **Environment**

  Environmental parameters such as salinity, sound speed and water temperature all play an important part to present accurate echo data. Use the **Environment** parameters to define these values. Depending on the current sea and weather conditions, you may need to change these values frequently.

- **Language**

  You may prefer to use the ST90 with a user interface in your own language. A selection of languages is provided. The **Language** function allows you to select the language to be used in the ST90 presentations, menus and dialog boxes.

- **Stabilization**

  The ST90 is provided with a built-in electronic stabilization of the sonar beams. In case of a faulty motion reference unit this functionality can be turned *Off*.

- **Screen Captures**

  While using the ST90 you may wish to make a screen capture to save an instantaneous copy of the current presentation. You can choose either a single screen capture or a sequence with multiple screen captures.

- **Beam Visualization**

  With the various beams provided by the ST90, it may be difficult to understand the concept. How do these beams "behave" in the water? The beam visualization feature simulates how the acoustic beams cover the seabed and the water column.

- **BITE (Built-In Test Equipment)**

  The ST90 is a computerized Fish-finding sonar. There are hardly any analogue circuitry, and the possibility of traditional troubleshooting is limited. In order to rectify this, a built-in software application is available to offer test and maintenance functionality. The **BITE** (Built-In Test Equipment) dialog box controls the test and diagnose program that checks the performance of the ST90.

  – **Processor**

    The **Processor** page offers an overview of the parameters related to software version, operation and network.

  – **Sensors**

    The **Sensors** page presents a table with all the sensors currently connected to the ST90. For each sensor, the status is provided.

  – **Transceiver**

    The **Transceiver** page offers key information about each transceiver in use by the ST90.

  – **Transducer**

    By means of the **Transducer** page, you can run a reception test to test the individual transducers. Any errors are then easily detected.

– **Noise**

  The operational performance of the ST90 Fish-finding sonar depends on the noise conditions. It is essential that the noise signature is as low as possible.

- **Export**

  The **Export** dialog box allows you to export user settings, configuration files, message logs and information related to the hardware and software troubleshooting.

- **Installation**

  Before you use the ST90 you must set it up to communicate with the relevant peripherals. This includes the transducer. Use the **Installation** dialog box to set up all interfaces with external devices, and to set up basic parameters related to installation and operation. In most cases, you only need to do this once.

  – **Sensor Installation**

    For the ST90 to use and offer correct navigational information, one or more external sensors must be connected. Typical sensors are those that provide speed, heading and geographical position. On the **Sensor Installation** page you define which external sensors your ST90 will import information from. You must also decide which datagram formats that will be accepted. Once a sensor has been chosen, you must select the offset values that define the sensor's physical location relative to your vessel's coordinate system.

  – **Sensor Configuration**

    With several sensors connected to the ST90, many of them will provide the same datagrams. We cannot expect that the datagrams provide the same information. The **Sensor Configuration** page allows you to define a datagram priority, so that the information from the "most reliable" sensor is used by the ST90. You can also define manual values in case a sensor is unserviceable, or not installed.

  – **I/O Setup**

    In order to communicate with peripheral devices, the Processor Unit offers several serial and/or Ethernet (LAN) ports. The number of communication ports depends on how your Processor Unit is set up and configured. The **I/O Setup** settings allow you to define which information is imported by the Processor Unit.For each port, you can set up the communication parameters, and monitor the data flow.

  – **Motion Reference Unit**

    A motion reference unit (MRU) measures the vessel's pitch and roll movements in the sea. Depending on make and type, some sensors will also measure heave. The information provided by the motion sensor is used by the ST90 to stabilize the beams and the echo presentation.

  – **Installation Parameters**

    The **Installation Parameters** pages allow you to define the relationship between the physical locations of the various sensors and the ST90 transducer. All relevant system units and sensors must be defined with their physical offset values in relation to the defined *Ship Origin* in the vessel's coordinate system. You will only need to define these installation parameters once.

- **Synchronization**

  The purpose of the **Synchronization** parameters is to set up the ST90 to operate alone, or as a master or slave in a synchronized system. Synchronization is required in order to avoid interference if the ST90 is used simultaneously with other hydroacoustic instruments within the same frequency range.

- **Units**

  The ST90 user interface presents many measurements. These measurements are for example related to depth, range and distance. From the **Units** page you control which units of measurements that are used.

- **Operating Panel**

  The Operating Panel must be connected to the Processor Unit through a serial port.

- **Beam Direction**

  The purpose of the **Beam Direction** function is to control the visual direction of the presentation in the *Inspection* views.

- **Hull Unit Configuration**

  A choice of hull units is available for the ST90 Fish-finding sonar. The hull units offer different physical properties and lowering depths. The hull unit must always be enabled. If you disable the hull unit, all hull unit functionality will be removed from the ST90.

- **System Protection**

  The **System Protection** parameters allows you to define your own warning limits for the ST90.

- **Fishing Gear**

  By defining the type of fishing gear you are using, the ST90 may provide more accurate visual presentations.

- **Transceiver Upgrade**

  The Transceiver Unit is fitted with 12 transceiver boards. Transceiver board firmware upgrades may be a part of a ST90 software update. For more information, refer to the relevant software release note.

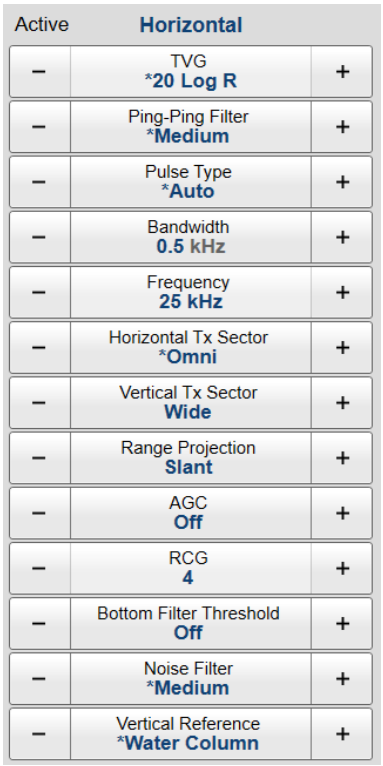
Active menu

The **Active** menu offers parameters related to current views and data presentations shown by the ST90.

How to open

Select the **Active** icon.

The icon is located under the **Main** menu. Select the icon one more time to close the menu.



Description

Only brief descriptions are provided. For detailed information about each function and dialog box, refer to the ST90 *Reference manual* or the context sensitive on-line help.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

The choices in the this menu depends on which view in the ST90 presentation that is currently "active". The menu may therefore change from one view to another. The name of the currently active view is identified at the top of the menu. The screen capture may not show you all the menu choices.

Note

Before you can change the settings related to a view, you must click inside the view to activate it. The changes you make are by default only valid for the active view. Several of the functions offer **Apply to All**. *If you select* **Apply to All** *your setting is applied to all the views in the current presentation mode.*

- **TVG (Time Variable Gain)**

  When an acoustic pulse is sent through the water, it will gradually lose its energy. The greater the distance between the transducer and the target(s), the greater the loss of energy. **TVG** (Time Variable Gain) compensates for the loss of acoustic energy due to geometric spread and absorption.

- **Ping-Ping Filter**

  The **Ping-Ping Filter** analyses the historical information from previous consecutive pings in order to remove unwanted noise and false echoes from the ST90 presentation.

- **Pulse Type**

  The **Pulse Type** function allows you to select the "shape" of the transmitted pulses ("pings"). Different shapes have different qualities. Which pulse type to use depends on the current environmental conditions, your range to the target(s) and the type and speed of the target(s) you are observing.

- **Bandwidth**

  The **Bandwidth** function allows you to select the frequency range in the Hyperbolic Frequency Modulated (HFM) transmissions.

- **Frequency**

  The **Frequency** function allows you set the centre frequency for the Hyperbolic Frequency Modulated (HFM) and Linear Frequency Modulated (LFM) transmissions (pings), and the operating frequency for the Continuous Wave (CW) pings.

- **Horizontal TX Sector**

  The ST90 transmits in a swath with maximum horizontal opening angle 360° omnidirectional. By means of the **Horizontal Tx Sector** function, you can change this opening angle to 180, 120, 90, 60 or 30°. The function is only available in the *Horizontal*, *Plane* and *Inspection* views.

- **Vertical TX Sector**

  The ST90 transmits in a swath with maximum vertical opening angle 94°. By means of the **Vertical Tx Sector** function, you can change this opening angle to N/A. The function is only available in the *Vertical* and *Navigation* views.

- **Range Projection**

  The distance to a target located anywhere in the water column can be measured in two ways. This can either be the horizontal distance to the target (*True*), or along the tilt angle (*Slant*). The **Range Projection** function defines how this distance is measured.

- **AGC (Automatic Gain Control)**

  The **AGC** (Automatic Gain Control) function runs an automatic analysis of the echo strength.

- **RCG (Reverberation Controlled Gain)**

  The **RCG** (Reverberation Controlled Gain) function removes unwanted reverberation from the bottom and or from the sea surface. This enhances the visibility of schools. It may however also remove scattered fish from the presentation.

- **Bottom Filter Threshold**

  The ST90 provides a bottom filter to reduce the sometimes powerful echo from the seabed. This filter is useful if you try to find fish close to the bottom. Select a **Bottom Filter Threshold** value to control the "strength" of the filter. A higher numerical increases the filter efficiency and reduces the bottom echo accordingly.

- **Noise Filter**

  The **Noise Filter** removes unwanted acoustic noise from the ST90 presentation. It reduces the interference from other acoustic systems (sonars and echo sounders), as well as the noise from the propellers.

- **Horizontal Scroll**

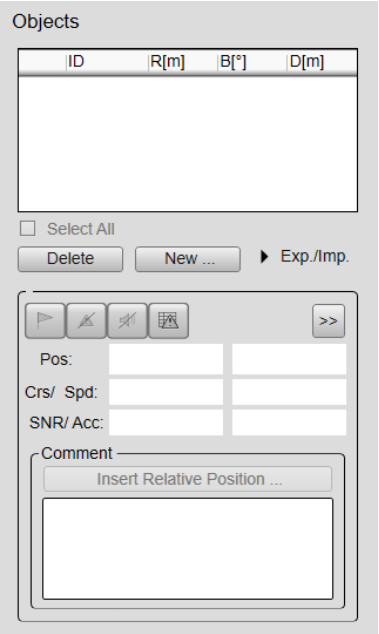
  The **Horizontal Scroll** function controls how fast the echo presentation shall move from right towards left in the *Echogram* view. The "speed" is controlled by adjusting the number of pixels used to present each ping. A higher speed reduces the resolution.

- **Vertical Reference**

  The function is only available in the *Vertical* view, as well as the vertical *Navigation* view.

Objects menu

The **Objects** menu is - in spite of its name and location - not a menu at all. This "menu" opens a small view to monitor and control the objects you have defined in the ST90 presentation. Each object is identified with a visual marker.



How to open

Select the **Objects** icon.

The icon is located under the **Main** menu. Select the icon one more time to close the menu.

Description

Once an echo has bee provided with a marker in the ST90 presentation it is regarded as an *object*. The **Objects** menu provides a list of all current objects. This includes all types of objects including those classified as targets.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation.

Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

In this context, the phrase *marker* is used to identify a visual symbol placed in the ST90 presentation. By placing a marker on the echo it is regarded as an *object* that you can act upon. If relevant, you can further classify the object as a *target*.

The phrase *target* is used to identify an echo in the ST90 presentation that you wish to act upon. The echo may be from a material item, a shallow, reef or rock, or from fish, fish schools or mammals. You must decide which echoes that shall be classified as targets, and wether you shall start position or target tracking.

If you have placed markers on several echoes to make them objects, you can select one of these and give it *priority* status. The bearing line in the relevant ST90 views will automatically be locked on the object with this priority to reflects its bearing. Only one single object can be given priority status. The priority is identified with a "P".

Objects list

Once an echo has bee provided with a marker in the ST90 presentation it is regarded as an *object*. The table at the top of the **Objects** menu shows you all the

objects that are currently identified with markers. Each marked object is listed with the following information:

- **ID**: This is the unique identification of each object marker.

  Each marker is numbered sequentially.

  Objects with allocated markers are identified with an "M" in the **Objects** menu. Objects that are subjected to target tracking are identified with a "T". One marker can be given priority status to identify the object as the most important target or position. The priority is identified with a "P".

- **R**: This is the range (in metres) from the vessel and to the object identified with the marker.
- **T**: This is the true bearing to the object.
- **D**: This is the object's depth (in metres) relative to the sea surface.

Each marker is specified by its geographical position (latitude and longitude) and its depth. Additional information is provided for objects that are subjected to target tracking.

- Select the check box on the left side of any object to mark it for deletion, or to save it.
- Select the object *line* to activate the control buttons, and to retrieve information about the object.

Select All

Click **Select All** to select all the markers in the list

Delete

Select **Delete** to delete all the markers you have selected in the objects list. Each marker is removed both from the list and from the ST90 presentation.

New

Select **New** to add a new marker manually. The **New Marker** dialog box opens to accept position and depth information.

Export/Import

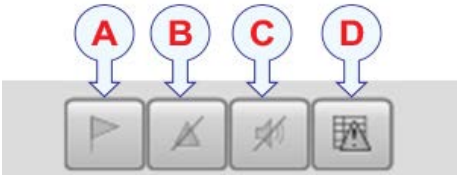
Once you have defined any number of objects, these can be saved to a file on the Processor Unit hard disk. If necessary, you can later retrieve the file for reuse. The file format is XML. The file is located in the following folder:

`c:\ProgramData\Simrad\ST90\Markers`

- **To External**: This function is not implemented on the ST90.
- **To File**: Select **To File** to save the currently selected objects to a file. The file name is built automatically using date and time information.
- **From File**: Select **From File** to retrieve the previously saved objects. The **Import Marker** dialog box offers a list to choose from.

Control buttons

In the object list, select the object *line* to activate the control buttons for that particular object.



A Priority

One marker can be given priority status to identify the object as the most important target or position. Select **Priority** to give the currently selected object a priority status. If another object has this priority, the status is transferred to the new object. The priority is identified with a "P".

B Disable Alarm

When you are tracking a moving target, certain target behaviour may trigger an alarm. Select **Disable Alarm** to disable alarms for the currently selected tracked target.

C Suppress Alarm Audio

When you are tracking a moving target, and the target behaviour triggers an alarm, you will hear an audio signal. Select **Suppress Alarm Audio** to disable the audio.

D Alarm History

All alarms are presented under the **Alarms** tab in the **Messages** dialog box. Select **Alarm History** to open the **Messages** dialog box.

Object information

In the object list, select the object *line* to retrieve object information about that particular object.Some information is only available for an object that is subjected to target tracking.

- **Position**

  Two fields present the geographical position of the currently selected object.

- **Course/Speed**

  In the list of objects, select an object on which you have started target tracking. Two fields present the course and speed of the tracked target.

- **SNR (Signal to Noise ratio)/Acceleration**

  In the list of objects, select an object on which you have started target tracking. One field presents the acceleration of the tracked target. The Signal to Noise ratio (SNR) gives the strength of the tracked target relative the noise floor defined by the reference cell in the CFAR filter.

Comment

A text field at the bottom of the **Objects** menu allows you to type comments. You can only do this if you have computer keyboard connected to your Processor Unit.

Insert Relative Position

Select **Insert Relative Position** to insert object information into the comment field. The information is inserted as a text string that contains the following information:

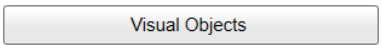
- UTC time
- Relative bearing
- Range to own ship
- Depth

Visual Objects menu

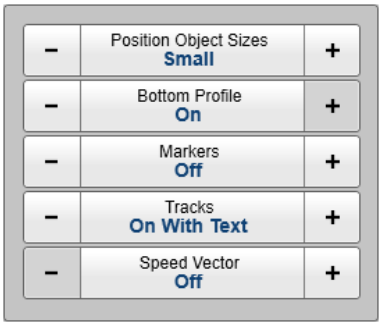
The **Visual Objects** menu controls which graphical elements that are shown in the different views. These graphic elements include markers, vectors and targets that are tracked. The majority of the functions are "on/off" buttons to enable or disable these graphic elements in the ST90 views.

How to open

Select **Visual Objects** to open the menu.



Visual Objects is located on the **Display** menu. The function is not available for the *Inspection* views.



Description

Only brief descriptions are provided.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation. Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

The choices in the this menu depends on which view in the ST90 presentation that is currently "active". The menu may therefore change from one view to another. The screen capture may not show you all the menu choices.

Note

Before you can change the settings related to a view, you must click inside the view to activate it. The changes you make are by default only valid for the active view. Several of the functions offer **Apply to All**. *If you select* **Apply to All** *your setting is applied to all the views in the current presentation mode.*

- **Position Object Sizes**

  The **Place Marker** function allows you to create a marker at the current position of the cursor. Each marker is shown as a small triangle with or without a short identifying label. When you start target or position tracking, a marker is used to identify the object. With this function you can increase or decrease the size of the markers.

  Use this function to find the object sizes that fit your preferences. This may for example depend on your physical distance from the screen. The choice you make is saved with the user settings.

- **Bottom Profile**

  For each ping transmitted for a vertical view, the ST90 offers bottom detection functionality. This is an "on/off" switch. Set **Bottom Profile** to *On* to see a bottom contour in the current view. Select **Apply to all** if you wish to use the chosen setting in all the vertical views in the ST90 presentation.

- **Minute Markers**

  In order to maintain a visual presentation of your vessel's previous movements, you can draw these with a line. This line is drawn after the vessel symbol in the ST90 presentation, and visualizes your past movements. The **Minute Markers** function adds markers to the line to indicate the travelled distance for each minute. The minute markers are shown as small circles on the vessel's track line.

  To draw the line use the settings on the **Track Line** page. The **Track Line** page is located in the **Display Options** dialog box. The **Display Options** dialog box is located on the **Display** menu.

- **Markers**

  The **Place Marker** function allows you to create a marker at the current position of the cursor. Each marker is shown as a small triangle with or without a short identifying label. Use this function to control if and how the marker symbols are shown in the currently active view. Select **Apply to all** if you wish to use the chosen setting in all the views in the ST90 presentation.

- **Tracks**

  When you start target or position tracking, a marker is used to identify the object. Each marker is shown as a small circle with or without a short identifying text. Use this function to control if and how the tracking markers are shown in the currently active view. Select **Apply to all** if you wish to use the chosen setting in all the views in the ST90 presentation.

- **Minute Markers Tracks**

  When you start a target track, a dedicated marker is used to identify the object you are tracking. When enabled, **Track History** draws a line after each tracked target. The line identifies the previous positions of the target. This function adds markers to the track history. These indicate the target's travelled distance for each minute.

- **Track History**

  When you start a target track, a dedicated marker is used to identify the object you are tracking. Each marker is shown as a small circle with or without a short identifying text. In most cases, the target will move and continuously change its position relative to your own vessel. When enabled, **Track History** draws a line after each tracked target. The line identifies the previous positions of the target. This allows you to manually predict its current heading.

- **Speed Vector**

  Speed Vector shows you the predicted course and speed of the tracked target. The prediction is based on target's current movements. The estimate is limited to one minute.

  The information is provided with a line indicating the target's course. The length of the line reflects its speed.

- **Bow Marker**

  This function displays a dotted line drawn from the bow of the vessel symbol. The line reflects your vessel's current heading.

  Do not confuse this line with the bearing line.

- **Current Vector**

  This function shows you the speed and direction of the water current under your vessel. The function draws a line starting under the vessel symbol. The direction of the line indicates the direction of the water current. The length of the line reflects its speed.

  For this function to work, a sea current meter must be connected to the ST90. The use of an ADCP (Acoustic Doppler Current Profiler) is recommended.

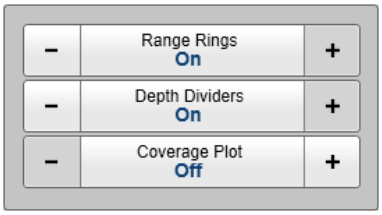
Cosmetics menu

Use the functions on the **Cosmetics** menu to turn "cosmetic" elements in the ST90 presentation on or off.

How to open

Select **Cosmetics** to open the menu.

Cosmetics is located on the **Display** menu. The function is not available for the *Inspection* views.



Description

Only brief descriptions are provided.

Tip

If you do not need to use the menu system, you can hide it. This allows more space for the ST90 presentation. Use **Menu** *on the top bar to hide or show the menu.*

When the menu system is hidden, it appears temporarily on the left or right hand side of the screen if you move the cursor to that position.

The choices in the this menu depends on which view in the ST90 presentation that is currently "active". The menu may therefore change from one view to another. The screen capture may not show you all the menu choices.

Note

Before you can change the settings related to a view, you must click inside the view to activate it. The changes you make are by default only valid for the active view. Several of the functions offer **Apply to All**. *If you select* **Apply to All** *your setting is applied to all the views in the current presentation mode.*

- **Range Rings**

  This function enables range rings to be shown on the ST90 presentation. Range rings are a set of concentric circles labelled by distance from the vessel position. The range rings are shown as dotted lines. Each ring has a range read-out on the left hand side. Use this function to toggle the range rings *On* or *Off*.

- **Variable Range Ring**

  An adjustable range ring can be added to the *Horizontal* and *Vertical* views. The ring is shown as a dotted circle with its centre on the vessel symbol. The current range is shown next to the circle. To change the range, left-click on the circle and drag to requested diameter. You can use **VRR Range** to manually define a range. The variable range ring can be used for any type of distance measurement relative to the vessel.

- **VRR Range** (Variable Range Ring Range)

  You can use **VRR Range** to manually define a range for the variable range ring.

- **Compass Cards**

  Activate **Compass Cards** to place evenly spaced compass markers on the outer range ring in horizontal views. The compass markers rotate based in the inputs from a navigation sensor. An update takes place when the vessel heading changes more than 1 degree.

- **Depth Dividers**

  Depth dividers are horizontal dotted lines used to indicate depth. You can only add these lines to vertical views. Use this function to toggle the depth divider lines *On* or *Off*.

- **Coverage Plot**

  When you operate with sector transmissions, the area covered by the sonar beams is limited by the chosen transmit sector angle. To make it easier to recognize the area limits, dedicated border lines may be added to the presentation. These lines are used to outline the sector. Use this function to toggle the coverage plot lines *On* or *Off*.

- **Purse Depth**

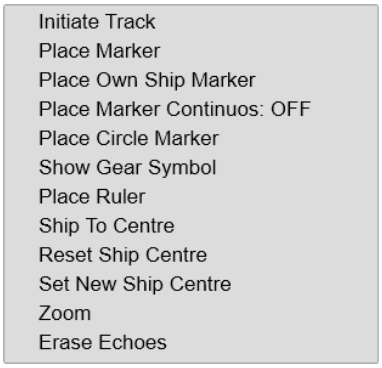
  A line of X’es in the vertical views shows the bottom of the purse seine. The depth is defined for the fishing gear you have chosen. Use **Purse Depth** on the **Cosmetics** menu to toggle this line *On* or *Off*.

Shortcut menus

Shortcut menus provide additional functionality for ST90 operation.

How to open

Right-click in the view to open the shortcut menu. The *Inspection* views do not provide shortcut menus.



Description

To make a choice, right-click in the view and select the relevant option on the shortcut menu.

Note

The functionality provided by the shortcut menus differ from one view to another depending on the view properties. The Inspection views do not provide shortcut menus. Functions from all shortcut menus are listed. The screen capture is provided as an example.

In this context, the phrase *marker* is used to identify a visual symbol placed in the ST90 presentation. By placing a marker on the echo it is regarded as an *object* that you can act upon. If relevant, you can further classify the object as a *target*.

The phrase *target* is used to identify an echo in the ST90 presentation that you wish to act upon. The echo may be from a material item, a shallow, reef or rock, or from fish, fish schools or mammals. You must decide which echoes that shall be classified as targets, and wether you shall start target tracking.

If you have placed markers on several echoes to make them objects, you can select one of these and give it *priority* status. The bearing line in the relevant ST90 views will automatically be locked on the object with this priority to reflects its bearing. Only one single object can be given priority status. The priority is identified with a "P".

- **Initiate Track**

  During normal operation, some echoes are clearly more interesting than others. In many situations specific echoes may be regarded as *targets*, and it can be useful to receive continuous information about the location, speed and heading of such targets. To set up the ST90 to provide such information, you can start *target tracking*.

  The **Initiate Track** function allows you to manually start target tracking.

  Place the cursor over the echo you wish to track. Select **Initiate Track**. The tracked target is regarded as an *object*, and it is identified with a circle and two lines. The bearing line is automatically locked on the object to reflects its bearing. A new tracked object is automatically given priority status. If another object has this priority, the status is transferred to the new object. The priority is identified with a "P".

- **Place Marker**

  The **Place Marker** function allows you to create a marker at the current position of the cursor. Each marker is shown as a small triangle with or without a short identifying label.

- **Delete Marker**

  Delete Marker allows you to delete a marker from the current view. Select **Delete Marker**.

- **Set Priority Marker**

  One marker can be given priority status to identify the object as the most important target or position. If another object has this priority, the status is transferred to the new object. The priority is identified with a "P" When a marker is given priority it can be regarded as a *position track*. Relevant information about the priority object can be found in the lower left corner of the view.

- **Place Own Ship Marker**

  Select **Place Own Ship Marker** to add a square symbol to the vessel's current position in the ST90 presentation. The own ship marker is now regarded as an *object*. All information about the object is shown in the **Objects** menu listed as "OSM".

- **Delete Own Ship Marker**

  Use **Delete Own Ship Marker** on the shortcut menu to delete the marker from the current view.

- **Place Marker Continuous**

  Place Marker Continuous is an on/off switch. When enabled, left-click in a ST90 view to add new marker. Each click produces a new marker.

- **Place Circle Marker**

  Press **Circle Marker** on the Operating Panel, or select **Place Circle Marker** to add a circular marker to the ST90 presentation. A circular symbol appears at the cursor position. The circle is drawn with the same diameter as your purse. By means of the circle you can see the size of the school relative to your purse. You can only add one circle marker to the ST90 presentation.

  The **Objects** menu does not provide any information about the circle marker.

  To delete the circle marker, press **Circle Marker** on the Operating Panel, or right-click to select **Remove Circle Marker** on the shortcut menu.

  The **Fishing Gear** function allows you to define the size of your trawl or purse seine. This function is opened from the **Setup** menu.

- **Show Gear Symbol**

  The gear symbol is provided as a tool to help you plan and shoot the purse seine.

- **Place Ruler**

  Place the cursor over the first echo. Right-click to open the shortcut menu, then select **Place Ruler**. The ruler starts wherever you place the cursor, and ends when you release the button. The length and relative bearing of the ruler is displayed next to it. Once a ruler has been established you can not make changes to it. You can place as many rulers as you like in the view.

  Select **Delete Ruler** or **Delete All Rulers** on the shortcut menu to delete the one or several rulers from the view.

- **Delete Ruler**

  Use **Delete Ruler** to remove one selected ruler from the view. Place the cursor on the line, right-click when the cursor turns into a finger, then select **Delete Ruler** from the shortcut menu.

- **Delete All Rulers**

  Delete All Rulers allows you to delete all the rulers in the current view.

- **Ship To Centre**

  Select **Ship to Centre** to move the own ship symbol back to the centre of the view. This function is typically used when you have used the **Set New Ship Centre** function to move the ship symbol away from the centre of the view.

- **Reset Ship Centre**

  This function is useful when you need to "reset" the view after using the **Set New Ship Centre** or **Zoom** functions. Right-click and **Reset Ship Centre** to move the vessel symbol to the centre of the presentation.

- **Set New Ship Centre**

  Place the cursor anywhere in the view, right-click and select **Set New Ship Centre**. The function moves the vessel symbol to the selected position.

- **Zoom**

  Place the cursor anywhere in the view, right-click and select **Zoom**. Only one zoom level is provided. Select **Zoom** one more time to restore the original view.

- **Erase Echoes**

  Select **Erase Echoes** to "refresh" the view by deleting all the current echoes.

Index

A

about
comments 7
constructive criticism 7
document downloads 7
feedback 7
online information 7
purpose of this manual 7
registered trademark SIMRAD 7
registered trademarks 7
software version 7
suggestions 7
target audience 7
activating
factory default settings 105
Active menu
how to open 150
adjusting
bearing 33, 62
echo sensitivity 30, 57
gain 30, 57
horizontal direction of sonar beam 33, 62
output power 53
sensitivity 30, 57
assigning
custom user settings 107
audience
this manual 7

B

backlight
adjusting the backlight on the Operating Panel 93
basic description
Operating Panel 17
bearing
adjusting 33, 62
assign function to rotary switches 109
block
diagram 12
book
purpose 7
target audience 7
bottom bar
enable Coordinated Universal Time (UTC) 92
Bottom Profile function
description 157
bottom reverberation
reducing 75
Bow Marker function
description 159
brightness
choosing colour brightness 96
reducing the light emitted by the display presentation 94
buttons
menu 136

C

choosing
factory default settings 105
the fishing gear in use 70
colour palette
changing 95
colours
choosing colour brightness 96
choosing colour scale 96
choosing echo colours 96
comments
send us 7
communication port
setting up the parameters 121
configuring
sensor interface 129
constructive criticism
send us 7
contactor
hoisting the transducer using Hoisting Contactor 117
lowering the transducer using Lowering Contactor 117
Coordinated Universal Time (UTC)
enable 92
copy
echo data files 84
Cosmetics menu
description 160
how to open 160
course gyro
setting up the interface 127
crank
hoisting the transducer using hand crank 115
lowering the transducer using hand crank 115
Current Vector function
description 159

D

data
defining the file and folder settings for data recording 80
recording echo data 81
recording raw data 81
recording sonar data 81
default settings
activating 105
defining
file and folder settings for data recording 80
delete
echo data files 84
Delete All Rulers function
description 164
delete marker
using Objects menu 67
using shortcut menu 67
Delete Marker function
description 163
Delete Own Ship Marker function

description 163
Delete Ruler function
description 164
deleting
existing user settings 104
description
Bottom Profile function 157
Bow Marker function..... 159
Cosmetics menu..... 160
Current Vector function 159
Delete All Rulers function..... 164
Delete Marker function 163
Delete Own Ship Marker function..... 163
Delete Ruler function..... 164
Display menu..... 143
Erase Echoes function..... 164
Initiate Track function..... 162
Main menu..... 139
Markers function..... 158
menu system..... 136
Minute Markers function 158
Minute Markers Tracks function..... 158
Objects menu 153
Operating Panel 17
Operation menu 141
Place Circle Marker function..... 163
Place Marker Continuous function 163
Place Marker function..... 162
Place Own Ship Marker function..... 163
Place Ruler function..... 163
Position Object Sizes function 157
Remove Ruler function 163
Reset Ship Centre function 164
Set New Ship Centre function..... 164
Set Priority Marker function 163
Setup menu 146
Ship To Centre function..... 164
shortcut menus 162
Show Gear Symbol function 163
Speed Vector function..... 158
system 10
Track History function 158
Tracks function..... 158
Visual Objects menu..... 157
Zoom function..... 164
direction of sonar beam
adjusting 33, 62
disable
Coordinated Universal Time (UTC)..... 92
navigational information on the top bar 91
tooltips in the user interface 92
display
reducing the light emitted by the display presentation 94
Display menu
description 143
how to open..... 143
Display Options dialog box
enable Coordinated Universal Time (UTC)..... 92
select navigational information on the top bar 91
selecting which tooltips to appear in the user interface..... 92
docking
important reminder 9
Docking Views
restoring original views 88
restoring previous views 88
documents
download from website 7
download
documents from website 7
www.simrad.com 7
drawing
system diagram..... 12

E

echo
recording data 81
echo colours
choosing..... 96
choosing colour brightness 96
echo sensitivity
adjusting 30, 57
echogram data
deleting, copying and moving data files 84
enable
Coordinated Universal Time (UTC)..... 92
navigational information on the top bar 91
tooltips in the user interface 92
environmental parameters
change 97
Erase Echoes function
description 164
Ethernet port
defining the communication port parameters..... 121

F

F1 F2 F3
assigning function 110
factory settings
activating..... 105
failures
support if something breaks down..... 9
false echoes..... 77
reducing..... 77
fast
ping rate..... 51
feedback
send us..... 7
file locations
defining the file and folder settings for data recording..... 80
file setup
defining the file and folder settings for data recording..... 80
fishing gear
choosing the fishing gear in use..... 70
folder locations
defining the file and folder settings for data recording..... 80
frequency
selecting best 37, 55
fresh water
changing environmental parameters..... 97
function

Bottom Profile function description 157
Bow Marker function description 159
Current Vector function description 159
Delete All Rulers function description 164
Delete Marker function description 163
Delete Own Ship Marker function description 163
Delete Ruler function description 164
Erase Echoes function description 164
Initiate Track function description 162
Markers function description 158
Minute Markers function description 158
Minute Markers Tracks function description 158
Place Circle Marker function description 163
Place Marker Continuous function description 163
Place Marker function description 162
Place Own Ship Marker function description 163
Place Ruler function description 163
Position Object Sizes function description 157
Remove Ruler function description 163
Reset Ship Centre function description 164
Set New Ship Centre function description 164
Set Priority Marker function description 163
Ship To Centre function description 164
Show Gear Symbol function description 163
Speed Vector function description 158
Track History function description 158
Tracks function description 158
Zoom function description 164
functional
diagram 12

G

gain
adjusting 30, 57
assign function to rotary switches 109
gear
choosing the fishing gear in use 70
general safety rules 13
global positioning system (GPS)
setting up the interface 122
GPS
setting up the interface 122
gyro
setting up the interface 127

H

hand crank
hoisting the transducer 115
lowering the transducer 115
handling
transducers 9
heading gyro
setting up the interface 127
help
support offices 13
hide
menu system 139
hiding
menu system 38, 90
high voltage
safety rules 13
hoist
transducer manually 9
Hoist/Lower Switch
hoisting the transducer 113
lowering the transducer 113
hoisting
the transducer from the sonar room 113, 115, 117
the transducer using hand crank 115
the transducer using Hoist/Lower Switch 113
the transducer using Hoisting Contactor 117
Hoisting Contactor
hoisting the transducer 117
Horizontal Scroll function
purpose 152
how to
activate factory default settings 105
adjust horizontal direction of sonar beam 33, 62
adjust sonar range 28, 59
adjust the backlight on the Operating Panel 93
adjust the bearing 33, 62
adjust the echo sensitivity 30, 57
adjust the gain 30, 57
adjust the output power 53
adjust the radius of the search area 28, 59
adjust the TVG 58
assign custom user settings 107
assign functions to F1, F2 and F3 110
assign functions to rotary switches 109
change the colour palette used in the presentation 95
change the environmental parameters 97
choose colour brightness 96
choose colour scale 96
choose echo colours 96
choose the fishing gear in use 70
configure the sensor interface 129
define the Ethernet (LAN) port parameters 121
define the file and folder settings for data recording 80
define the middle position of the transducer 99
define the serial port parameters 121
define the transmission (ping) modes 41
delete existing user settings 104
delete marker using Objects menu 67
delete marker using shortcut menu 67
delete, copy and move echo data files 84
enable Coordinated Universal Time (UTC) 92
hide the menu system 38, 90, 139
hoist the transducer from the sonar room 113, 115, 117
hoist the transducer using hand crank 115
hoist the transducer using Hoist/Lower Switch 113
hoist the transducer using Hoisting Contactor 117
increase the visibility of the information panes 94
install navigation and other sensors (summary) 119
lower the transducer from the sonar room 113, 115, 117

lower the transducer using hand crank 115
lower the transducer using Hoist/Lower Switch 113
lower the transducer using Lowering Contactor 117
measure the size of a school relative to the purse seine 68
move the view to another display 86
place a marker using operating panel 66
place the menu on the left side of the presentation 91
rearrange the layout of the presentation 87
record echo data 81
record raw data 81
record sonar data 81
reduce bottom and surface reverberation 75
reduce noise and false echoes 77
reduce noise and reverberation 73, 78
reduce propeller noise and interference 74
reduce the light emitted by the display presentation 94
rename saved user settings 103
replay raw data 50, 82
restore original views 88
restore previous views 88
save a screen capture 38
save sequential screen captures 38
save the current user settings 40, 101
select best operating frequency 37, 55
select inactive operating mode 50
select measurement units 96
select menu language 36, 89
select navigational information on the top bar 91
select normal operating mode 27, 48
select replay file 83
select replay operating mode 50, 82
select tooltips in the user interface 92
select which operating panel to use 106
set up synchronization 132
set up the GPS interface 122
set up the gyro interface 127
set up the motion reference unit (MRU) interface 131
set up the navigation sensor interface 122
set up the speed log interface 125
transmit single pings 52
transmit with fixed-time intervals 52
transmit with maximum ping rate 51
turn off 35, 46
turn on 20, 44
use previously saved user settings 102
use the menu buttons 136
how to open
Active menu 150
Cosmetics menu 160
Display menu 143
Main menu 139
Objects menu 153
Operation menu 141
secondary menus 139
Setup menu 146
shortcut menus 162
Visual Objects menu 157
hull unit
defining the middle position of the transducer 99

I

I/O Setup page
installing navigation and other sensors (summary) 119
illustration
system diagram 12
important
before you power up 8
hoist/lower transducer manually 9
if something breaks down 9
power off 9
reminders 8
switch off 9
transducer handling 9
when not in use 8
when you are docking your vessel 9
inactive operating mode
selecting 50
information
high voltage 13
online 7
support 13
information pane
increasing the visibility of the information panes 94
Initiate Track function
description 162
intensity
reducing the light emitted by the display presentation 94
interface
motion reference unit (MRU) setup 131
setting up GPS interface 122
setting up navigation sensor interface 122
setting up the gyro interface 127
setting up the motion reference unit (MRU) interface 131
setting up the speed log interface 125
interfacing a course gyro
Sensor Installation page 127
interfacing a gyro
Sensor Installation page 127
interfacing a heading gyro
Sensor Installation page 127
interfacing a navigation sensor
Sensor Installation page 122
summary 119
interfacing a speed log
Sensor Installation page 125
interference
reducing 74
interval
transmitting with fixed-time intervals 52
introduction
Operating Panel 17

K

K301
hoisting the transducer 117

K302
lowering the transducer 117
Kongsberg Maritime
support 13

L

LAN port
defining the communication port parameters 121
language
select 36, 89
layout
rearranging the presentation 87
left
placing the menu on the left side of the presentation 91
light
reducing the light emitted by the display presentation 94
logo
registered trademark 7
lower
transducer manually 9
lowering
the transducer from the sonar room 113, 115, 117
the transducer using hand crank 115
the transducer using Hoist/Lower Switch 113
the transducer using Lowering Contactor 117
Lowering Contactor
lowering the transducer 117

M

Main menu
description 139
how to open 139
manual
hoist/lower transducer manually 9
purpose 7
target audience 7
markers
deleting using Objects menu 67
deleting using shortcut menu 67
placing a marker using operating panel 66
Markers function
description 158
master
setting up synchronization 132
maximum
ping rate 51
measurement units
selecting 96
measuring
the size of a school relative to the purse seine 68
menu
Cosmetics menu description 160
Display menu description 143
hiding 38, 90
Main menu description 139
Objects menu description 153
Operation menu description 141
placing the menu on the left side of the presentation 91
Setup menu description 146
Visual Objects menu description 157
menu buttons
using 136
menu language
select 36, 89
menu system
description 136
hiding 139
menus
shortcut menus description 162
middle position
defining the middle position of the transducer 99
Minute Markers function
description 158
Minute Markers Tracks function
description 158
mode
defining the transmission (ping) modes 41
selecting inactive operating mode 50
motion reference unit (MRU)
setting up the interface 131
Motion Reference Unit (MRU) page
interfacing a motion sensor 131
move
echo data files 84
MRU
setting up the interface 131

N

navigation
selecting navigational information on the top bar 91
navigation sensor
installing navigation and other sensors (summary) 119
setting up the interface 122
noise 73, 77–78
reducing 73, 77–78
reducing bottom and surface reverberation 75
reducing propeller noise and interference 74
normal operating mode
selecting 27, 48
note
before you power up 8
important reminders 8
support if something breaks down 9
when the system not in use 8
when you are docking your vessel 9
when you wish to switch off 9

O

Objects menu
description 153
how to open 153
off
turn 35, 46
offices
support 13
on
turn 20, 44
online

information 7
open
Active menu 150
Cosmetics menu 160
Display menu 143
Main menu 139
Objects menu 153
Operation menu 141
secondary menus 139
Setup menu 146
shortcut menus 162
Visual Objects menu 157
operating frequency
selecting best 37, 55
operating panel
assigning custom user settings 107
assigning functions to F1, F2 and F3 110
assigning functions to rotary switches 109
placing a marker 66
selecting which operating panel to use 106
Operating Panel
adjusting the backlight 93
description 17
introduction 17
overview 17
purpose 17
operation
normal operating mode 27, 48
replay operating mode 50, 82
Operation menu
description 141
how to open 141
output power
adjusting 53
decrease 53
increase 53
overview
Operating Panel 17

P

palette
changing 95
pane
increasing the visibility of the information panes 94
ping
defining the transmission modes 41
transmitting single pings 52
transmitting with fixed-time intervals 52
transmitting with maximum ping rate 51
ping rate
transmitting with maximum ping rate 51
Place Circle Marker function
description 163
Place Marker Continuous function
description 163
Place Marker function
description 162
Place Own Ship Marker function
description 163
Place Ruler function
description 163
placing a marker
using operating panel 66
playback file
selecting 83
Position Object Sizes
description 157
power off
important reminder 9
power up
important reminder 8
presentation
changing the colour palette 95
enable Coordinated Universal Time (UTC) 92
placing the menu on the left side of the presentation 91
rearranging the layout 87
reducing the light emitted by the display presentation 94
select tooltips 92
problem
support if something breaks down 9
procedure
activating factory default settings 105
adjusting horizontal direction of sonar beam 33, 62
adjusting the backlight on the Operating Panel 93
adjusting the bearing 33, 62
adjusting the echo sensitivity 30, 57
adjusting the gain 30, 57
adjusting the output power 53
adjusting the radius of the search area 28, 59
adjusting the sonar range 28, 59
adjusting the TVG 58
assigning custom user settings 107
assigning functions to F1, F2 and F3 110
assigning functions to rotary switches 109
changing the colour palette used in the presentation 95
changing the environmental parameters 97
choosing colour brightness 96
choosing colour scale 96
choosing echo colours 96
choosing the fishing gear in use 70
configuring the sensor interface 129
defining the Ethernet (LAN) port parameters 121
defining the file and folder settings for data recording 80
defining the middle position of the transducer 99
defining the serial port parameters 121
defining the transmission (ping) modes 41
deleting existing user settings 104
deleting marker using Objects menu 67
deleting marker using shortcut menu 67
deleting, copying and moving echo data files 84
enabling Coordinated Universal Time (UTC) 92
hiding the menu system 38, 90, 139
hoisting the transducer from the sonar room 113, 115, 117
hoisting the transducer using hand crank 115
hoisting the transducer using Hoist/Lower Switch 113
hoisting the transducer using Hoisting Contactor 117

increasing the visibility of the information panes 94
installing navigation and other sensors (summary) 119
lowering the transducer from the sonar room 113, 115, 117
lowering the transducer using hand crank 115
lowering the transducer using Hoist/Lower Switch 113
lowering the transducer using Lowering Contactor 117
measuring the size of a school relative to the purse seine 68
moving view to another display 86
placing a marker using operating panel 66
placing the menu on the left side of the presentation 91
rearranging the layout of the presentation 87
recording echo data 81
recording raw data 81
recording sonar data 81
reducing bottom and surface reverberation 75
reducing noise and false echoes 77
reducing noise and reverberation 73, 78
reducing propeller noise and interference 74
reducing the light emitted by the display presentation 94
renaming saved user settings 103
replaying raw data 50, 82
restoring original views 88
restoring previous views 88
saving a screen capture 38
saving sequential screen captures 38
saving the current user settings 40, 101
selecting best operating frequency 37, 55
selecting inactive operating mode 50
selecting measurement units 96
selecting menu language 36, 89
selecting navigational information on the top bar 91
selecting normal operating mode 27, 48
selecting replay file 83
selecting replay operating mode 50, 82
selecting tooltips in the user interface 92
selecting which operating panel to use 106
setting up synchronization 132
setting up the GPS interface 122
setting up the gyro interface 127
setting up the motion reference unit (MRU) interface 131
setting up the navigation sensor interface 122
setting up the speed log interface 125
transmitting single pings 52
transmitting with fixed-time intervals 52
transmitting with maximum ping rate 51
turning off 35, 46
turning on 20, 44
using previously saved user settings 102
propeller noise
reducing 74
publication
purpose 7
target audience 7
purpose
Horizontal Scroll function 152
Operating Panel 17
this manual 7

R

range
adjusting 28, 59
adjusting the radius of the search area 28, 59
assign function to rotary switches 109
raw data
deleting, copying and moving echo data files 84
recording 81
replaying 50, 82
reader
this manual 7
record
defining the file and folder settings for data recording 80
recording
deleting, copying and moving echo data files 84
echo data 81
raw data 81
sonar data 81
reducing 73, 77–78
reducing interference 74
reducing propeller noise 74
reducing reverberation
bottom and surface 75
registered trademarks 7
reminder
before you power up 8
important 8
support if something breaks down 9
when the system not in use 8
when you are docking your vessel 9
when you wish to switch off 9
Remove Ruler function
description 163
renaming
saved user settings 103
replay file
selecting 83
replay operating mode
selecting 50, 82
replaying
raw data 50, 82
Reset Ship Centre function
description 164
reverberation 73, 78
reducing 73, 78
reducing bottom and surface reverberation 75
rotary switches
assigning functions 106, 109
rules
safety 13
transducer handling 9

S

S302
hoisting the transducer 113
lowering the transducer 113
safety rules 13
salinity

changing environmental parameters.....97
salt water
changing environmental parameters.....97
save
screen capture 38
sequential screen captures 38
saving
current user settings 40, 101
echo data 81
raw data 81
screen capture 38
sequential screen captures 38
sonar data 81
scale
choosing colour scale.....96
school
measuring the size relative to the purse seine 68
screen brightness
reducing the light emitted by the display presentation 94
screen capture
saving a screen capture.....38
saving sequential screen captures.....38
search area
adjusting the radius 28, 59
secondary menus
how to open..... 139
select
which operating panel to use 106
selecting
best operating frequency..... 37, 55
inactive operating mode.....50
measurement units.....96
navigational information on the top bar 91
normal operating mode..... 27, 48
replay file 83
replay operating mode..... 50, 82
tooltips in the user interface 92
sensitivity
adjusting 30, 57
sensor
configuring..... 129
Sensor Configuration page
configuring the sensor interface..... 129
installing navigation and other sensors (summary)..... 119
Sensor Installation page
installing navigation and other sensors (summary)..... 119
interfacing a course gyro..... 127
interfacing a navigation sensor..... 122
interfacing a speed log 125
sequential
saving sequential screen captures.....38
serial port
defining the communication port parameters..... 121
Set New Ship Centre function
description 164
Set Priority Marker function
description 163
settings
activating factory default settings 105
deleting existing user settings..... 104
renaming saved user settings..... 103
saving the current user settings 40, 101
using previously saved user settings 102
setup
select menu language..... 36, 89
Setup menu
description 146
how to open..... 146
Ship To Centre function
description 164
shortcut menus
description 162
how to open..... 162
show
Coordinated Universal Time (UTC).....92
Show Gear Symbol function
description 163
Simrad
registered trademark..... 7
support 13
SIMRAD
registered trademark..... 7
single ping
transmitting single pings.....52
size
measuring the size of a school relative to the purse seine.....68
slave
setting up synchronization..... 132
software
version..... 7
sonar
recording data 81
sonar beam
adjusting horizontal direction of sonar beam..... 33, 62
sonar range
adjusting 28, 59
sonar room
hoisting the transducer 113, 115, 117
lowering the transducer 113, 115, 117
sound speed
changing environmental parameters.....97
speed log
setting up the interface 125
Speed Vector function
description 158
suggestions
send us..... 7
support
if something breaks down 9
support information.....13
surface reverberation
reducing.....75
switch
off..... 35, 46
on 20, 44
switch off
important reminder 9
synchronization
setting up..... 132
system
description 10
diagram.....12
system not in use
important reminder 8

T

target audience
this manual 7
technical support
offices 13
temperature
changing environmental parameters 97
this manual
purpose 7
target audience 7
time interval
transmitting with fixed-time intervals 52
time variable gain
adjusting 58
tooltips
selecting tooltips in the user interface 92
top bar
selecting navigational information 91
Track History function
description 158
Tracks function
description 158
trademarks
registered 7
transducer
defining the middle position 99
hoist/lower manually 9
hoisting from the sonar room 113, 115, 117
hoisting using hand crank 115
hoisting using Hoist/Lower Switch 113
hoisting using Hoisting Contactor 117
lowering from the sonar room 113, 115, 117
lowering using hand crank 115
lowering using Hoist/Lower Switch 113
lowering using Lowering Contactor 117
transducer handling
important rules 9
transmission
defining the ping mode 41
transmit
with maximum ping rate 51
transmitting
single pings 52
transparency
increasing the visibility of the information panes 94
Transparency function
increase the visibility of the information panes 94
turn
off 35, 46
on 20, 44
TVG
adjusting 58

U

units
selecting measurement units 96
user interface
select language 36, 89
select tooltips 92
user settings
activating factory defaults 105
assigning 107
deleting 104
put to use 102
renaming 103
retrieve 102
save 40, 101
using
menu buttons 136
previously saved user settings 102
UTC
enable Coordinated Universal Time 92

V

version
software 7
view
moving view to another display 86
views
rearranging the layout of the presentation 87
restoring original views 88
restoring previous views 88
visibility
increasing the visibility of the information panes 94
Visual Objects menu
description 157
how to open 157

W

water temperature
changing environmental parameters 97
website
download documents 7
when not in use
important reminder 8
www.simrad.com
document downloads 7

Z

Zoom function
description 164

©2020 Kongsberg Maritime
ISBN N/A

Simrad ST90 Fish finding sonar
Operator Manual