OPERATOR'S MANUAL

FURUNO FINLAND
ICE RADAR FICE-100

www.furuno.fi

Furuno Finland Oy

Contents

FOREWORD

A Word to the Owner of the Furuno Finland Ice Radar FICE-100

Congratulations on your choice of the FURUNO Finland Ice Radar FICE-100.

Your equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly operated and maintained. Please carefully read and follow the operation and maintenance procedures set forth in this manual.

Thank you for considering and purchasing FURUNO Finland.

We would appreciate feedback from you, the end-user, about whether we are achieving our purposes.

Features

The Furuno Finland Ice Radar is a hybrid ice radar. It is based on the normal Furuno ARPA radar, and captures a copy of the raw radar signal from the ARPA processor. The normal operation of the ARPA radar is not affected.

The Ice Radar is <u>not a navigational device</u>. It is a supplementary system for the specific task of observing ice conditions by radar.

If you like to know more about the Ice Radar capabilities please contact to Furuno Finland Oy (www.furuno.fi).
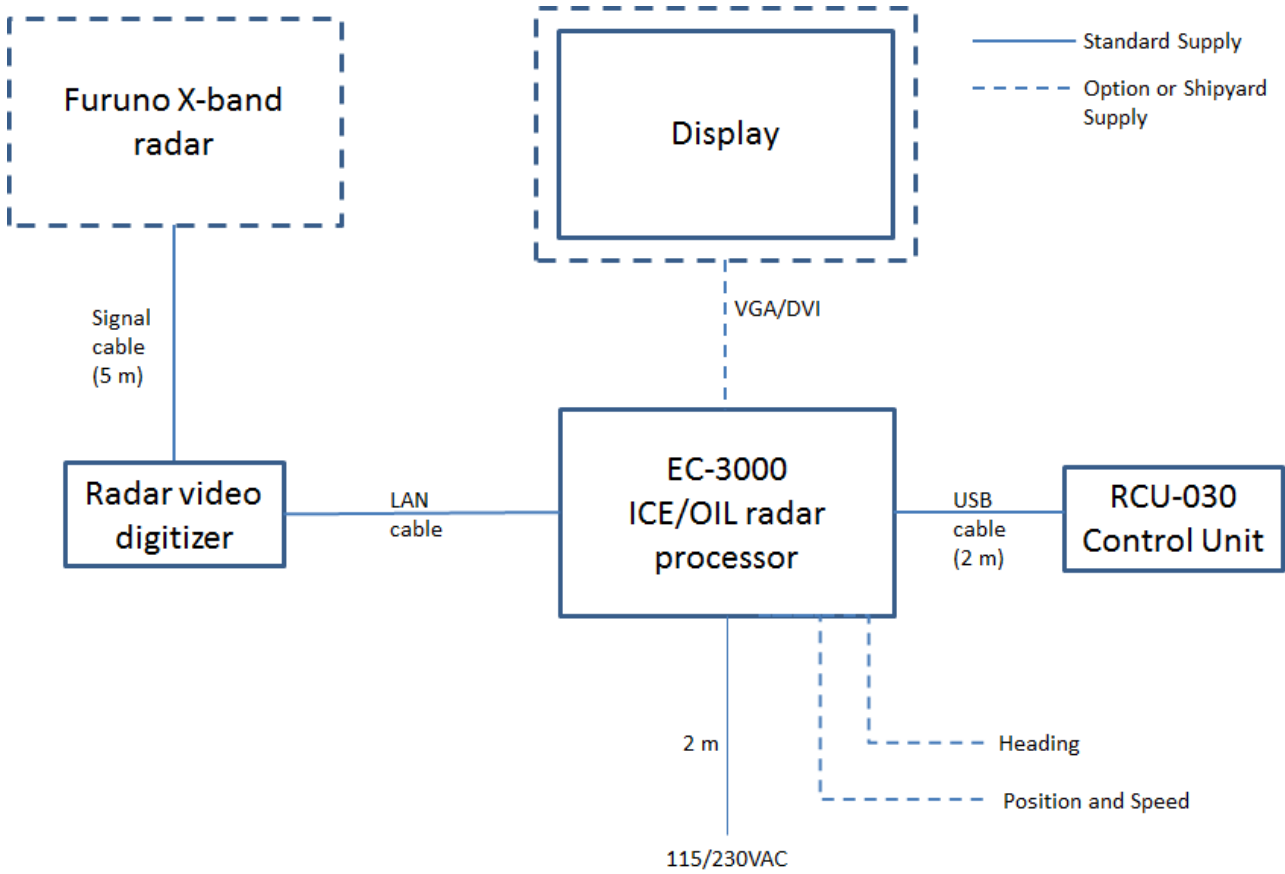
Software history
V1.00 Initial Release
V1.1 New release 01 FEB 2015
V2.00 New hardware

1. SYSTEM CONFIGURATION

Interconnection diagram

2. GRAPHICAL USER INTERFACE (GUI)

The Ice Radar graphical user interface (GUI) is based on a single screen.
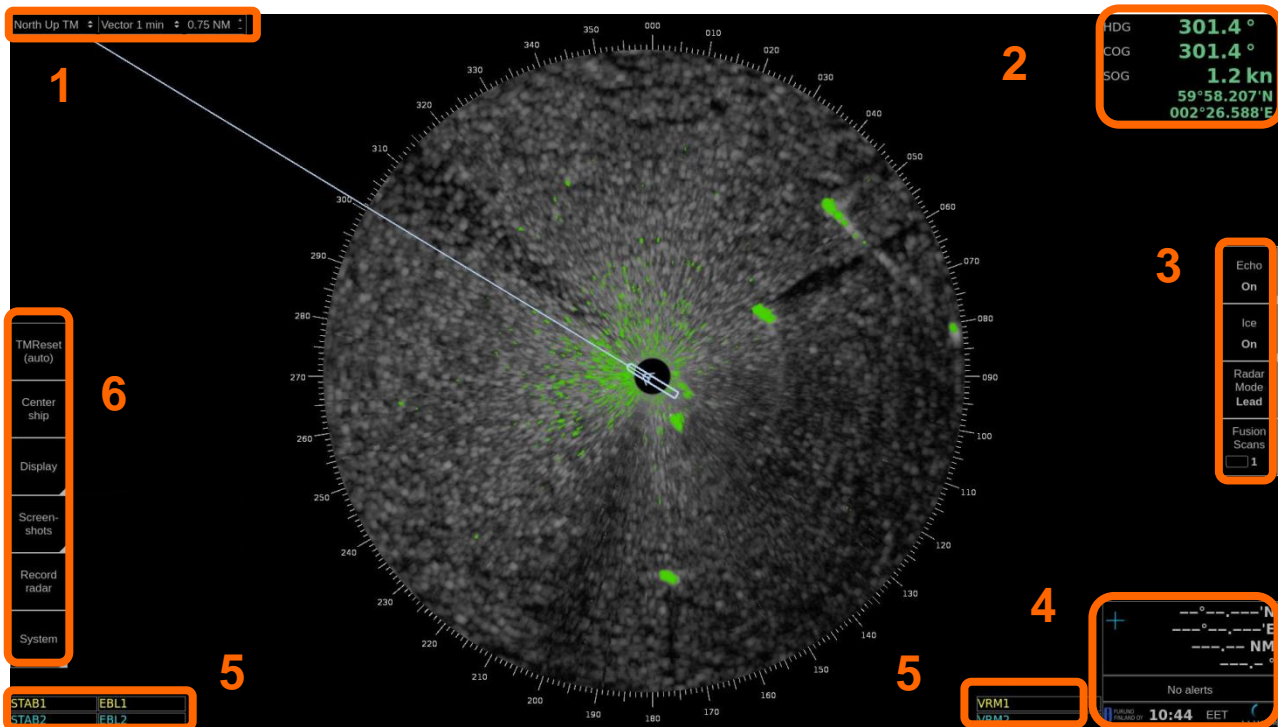
	User interface sections
1.	Heading mode, vector time selection and range/scale selection
2.	Navigational data
3.	Ice filter parameter adjustment
4.	Cursor position indicator, local time, software version number
5.	EBL/VRM indicators
6	TM reset, Center ship, Display palette selection, Screenshots and Record radar buttons

2.1 Operating mode selections
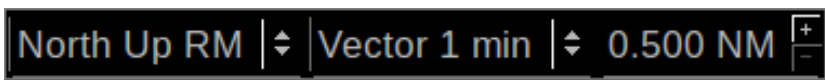
o.	Description

1.	Motion mode select - Available modes:
	  – Head Up TM
	  – Head Up RM
	  – North Up TM
	  – North Up RM

2.	Vector – Selection of vector length (Off, 1 min, 3 min, 6 min)
3.	Range/Scale indicator – Shows the range used in Radar display.

2.2 Navigational data

The indicators are passive repeaters of navigational data received from the sensors.
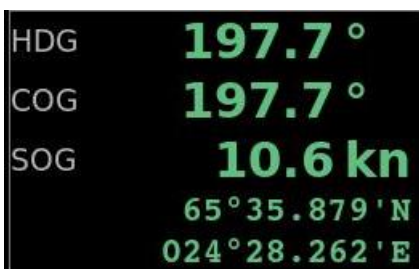
No.	
1.	HDG; Heading
2.	SPD; Speed through water (is shown only if source of speed log connected to radar)
3.	COG; Course over ground
4.	SOG; Speed over ground
5.	Position (Lat, Lon)

2.3 Ice filter parameter adjustments

These parameters affect the behavior of the Ice filter. The following items are explained later in this manual.
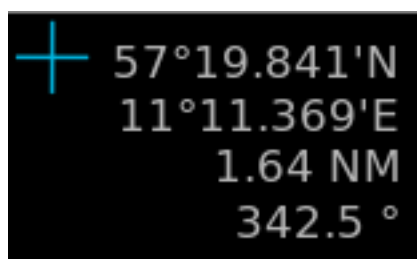
	Description
Echo On	**Echo** – toggle navigational radar echoes on/off when moving cursor over the text and click left mouse button. If moving cursor just over Echo box and click left mouse button, following controls appear: Treshold – adjust threshold for echoes Brightness – adjust brightness of navigational radar echoes
Ice On	**Ice** – toggle ice echoes on/off when moving cursor over the text and click left mouse button. If moving cursor just over Ice box and click left mouse button, following controls appear: Hue – choose color of ice layer Brightness – adjust brightness of ice layer. Contrast – adjust contrast of ice layer. Gamma – adjust linearity of ice color.
Radar Mode Lead	**Radar Mode**: Lead Iceberg For more information, see chapter 3.2.
Fusion Scans 1	Adjust number of scans – how many overlapping radar scans are used for the oil echoes Note, if Fusion mode is "Iceberg", Fusion scans is set as 1.

2.4 Cursor position indicator

57°19.841'N
11°11.369'E
1.64 NM
342.5 °

No.	Description
1.	Cursor position display (LAT, LON) and range and bearing from own ship position

2.5 Local time

To change between local time and UTC, move cursor over time zone indication and click left mouse button to toggle between local time zone and UTC.
Note, time adjustment is using ZDA sentence received from EPFS device.

2.6 EBL/VRM

There are two EBL/VRM measurement tools available. You can choose the operating modes of these tools by clicking in the STAB1 or STAB2 box with your mouse.

No.	Description
1.	blank – tool is disabled
2.	Ship – the measurements are done from the ship's conning position
3.	Gnd – the measurements are stabilized to ground

The EBL and VRM values are shown both on screen and in the respective boxes.

No.	Description
1.	Click on EBL1 or EBL2 will toggle the EBL between true (T) and relative (R) measurements
2.	Click on VRM1 or VRM2 will show or hide the VRM measurement
3.	Using the scroll wheel on any box will adjust that value.

EBL/VRM can be adjusted by dragging the intersection point on the screen.

Note: you choose the point to drag by clicking on the first point with the right mouse button. To release the drag you have to click with the right mouse button again after moving the point to the new position.

2.7 Display mode selections
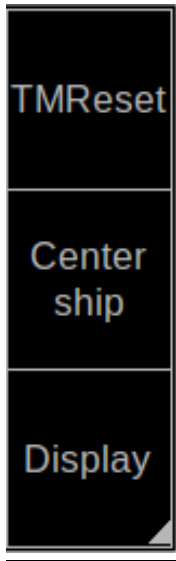
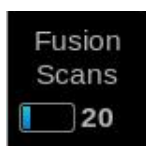| No.	Description
1.	Click on TMReset to reset vessel position to reset margin.
2.	Click on Center ship to place vessel on the center of screen.
3.	Use Display to select Day or night palette.

3. USE OF FUSION SCANS AND MODES

The surrounding weather condition, ice and sea state and of course the installation height of the radar antenna effects on the image processing on Ice radar. Ice radar FICE-100 has option "Lead" for Radar mode together with number of scans to process video image on screen. You can change between Lead and Iceberg Radar modes and see the result on real time on the screen. This is the best way to achieve the most efficient image to detect ice. Fusion scans are motion compensated.

You can also tune brightness, contrast and gamma. These controls affect the clarity of the image.

Below you will find instructions on how to adjust Fusion Scans, descriptions of the Radar Modes and some examples on how to use them.

3.1 Adjusting Fusion Scans

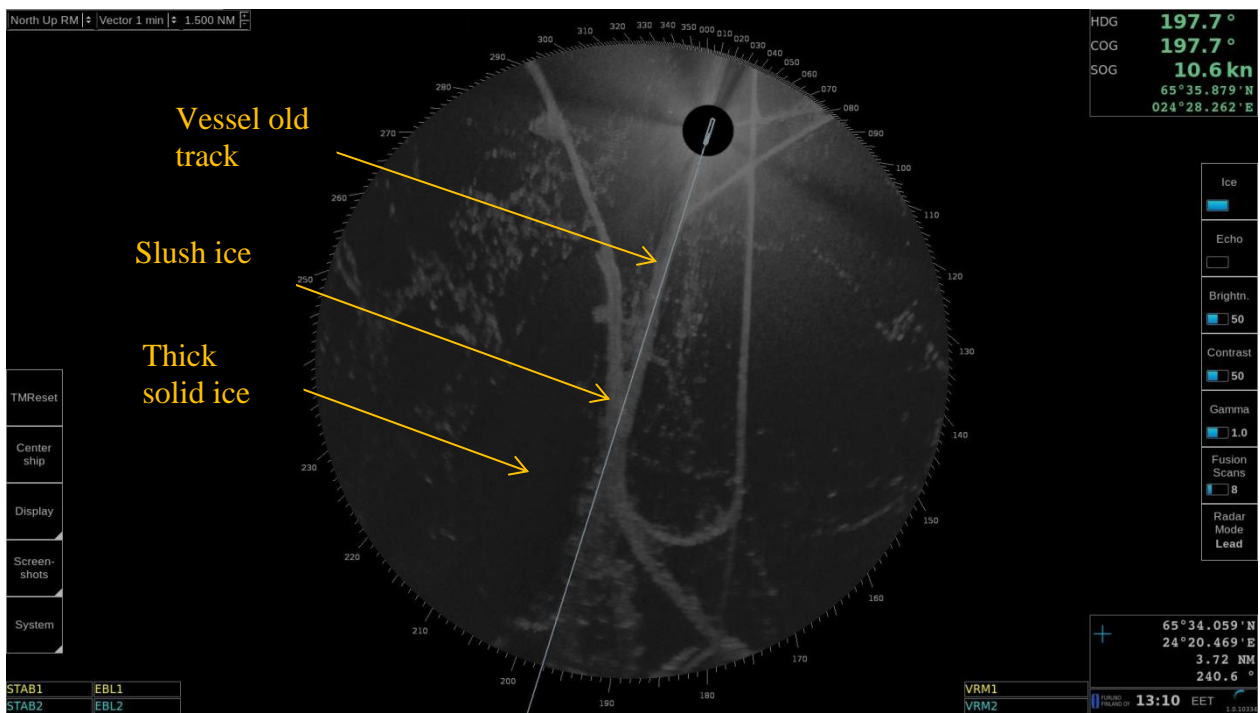| No.	Description
1.	You can adjust Fusion Scans by moving the cursor over Fusion Scans and selecting the number of Scans by using scroll wheel of mouse. Note: If Fusion Modes is set to iceberg, Fusion Scans cannot not adjust.

3.2. Radar Modes

Radar modes can be changed by moving the mouse cursor over Radar Modes and selecting the mode by using scroll wheel of mouse. Below you will find explanations for each Radar Mode.

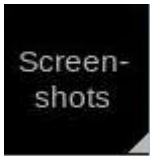| Mode	Description
Iceberg	This mode is used to find iceberg.
Lead	This mode is used to remove temporary noise. The edges of echoes are displayed. Note that moving echoes (objects) may be lost. This can be used for example when you need a sharp image of faint trails through ice.

3.2.2 Use of Radar mode Lead

Below you can find radar image where leads/old tracks can be seen:

4. SCREEN SHOTS

No.	Description
1	Click on Screenshots to capture single or multiple screenshots covering the whole display.

Screenshots –function allows you to capture single or multiple screenshots of the whole display in JPEG -format. These screenshots can be also exported to an external memory, such as an USB stick.

Screenshots –function is operated by clicking Screenshots with your mouse and selecting Take, Export or Delete all.

4.1 How to take screenshots
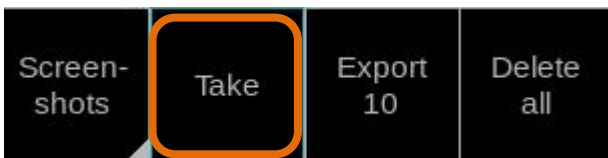
No.	Description
1.	Click on Screenshots to open the screenshots menu
2.	Click on Take to capture single or multiple screenshots. You can see the number of taken screenshots in the Export –box.

4.2 How to export screenshots

No.	Description
1.	Click on Screenshots to open the screenshots menu
2.	Click on Export to move the captured screenshots to an external memory, such as an USB stick. You can export the screenshots by following these steps: 1. Connect the external memory to your workstation 2. Click Screenshots and Export 3. The screenshots have been successfully moved to an external memory, when the number under Export goes back to zero. 4. On your external memory the screenshots can be found in folder "\exports\screenshots\". The filenames of screenshots indicate the date and time of capture e.g. "20140221T111738025UTC.jpg"

Note: Clicking Export moves the screenshots to an external memory and removes them from your workstation.

4.3 How to delete screenshots

No.	Description
1.	Click on Screenshots to open the screenshots menu
2.	Click on Delete all to delete all captured screenshots. If Delete all is selected, "Are you sure?" dialogue appears, and has to be clicked again for confirmation. After Deleting all, the number under Export will return to zero.

5. Other functions

5.1 How to change time zone

No.	Description
1.	Click on System to select time zone.
2.	Select the required time zone in the drop-down menu.

5.2 Shut down or restart of FICE-100 ice radar

No.	Description
1.	Click on System to open menu.
2.	Select "Shut down" to close the FICE-100 processor or "Reboot" close and start FICE-100 processor.

5.3 How to upgrade software

If you receive new software package from manufacturer (normally stored on USB memory stick), you can load software package to FICE-100 easily.

No.	Description
1.	Connect USB memory stick to upgrade new software for FICE-100.
2.	Click on System to open the System menu.
3.	Choose Upgrade sw.
4.	Follow instructions displayed during software upgrade.