

OPERATOR'S MANUAL

*FURUNO FINLAND
ICE RADAR FICE-100*

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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

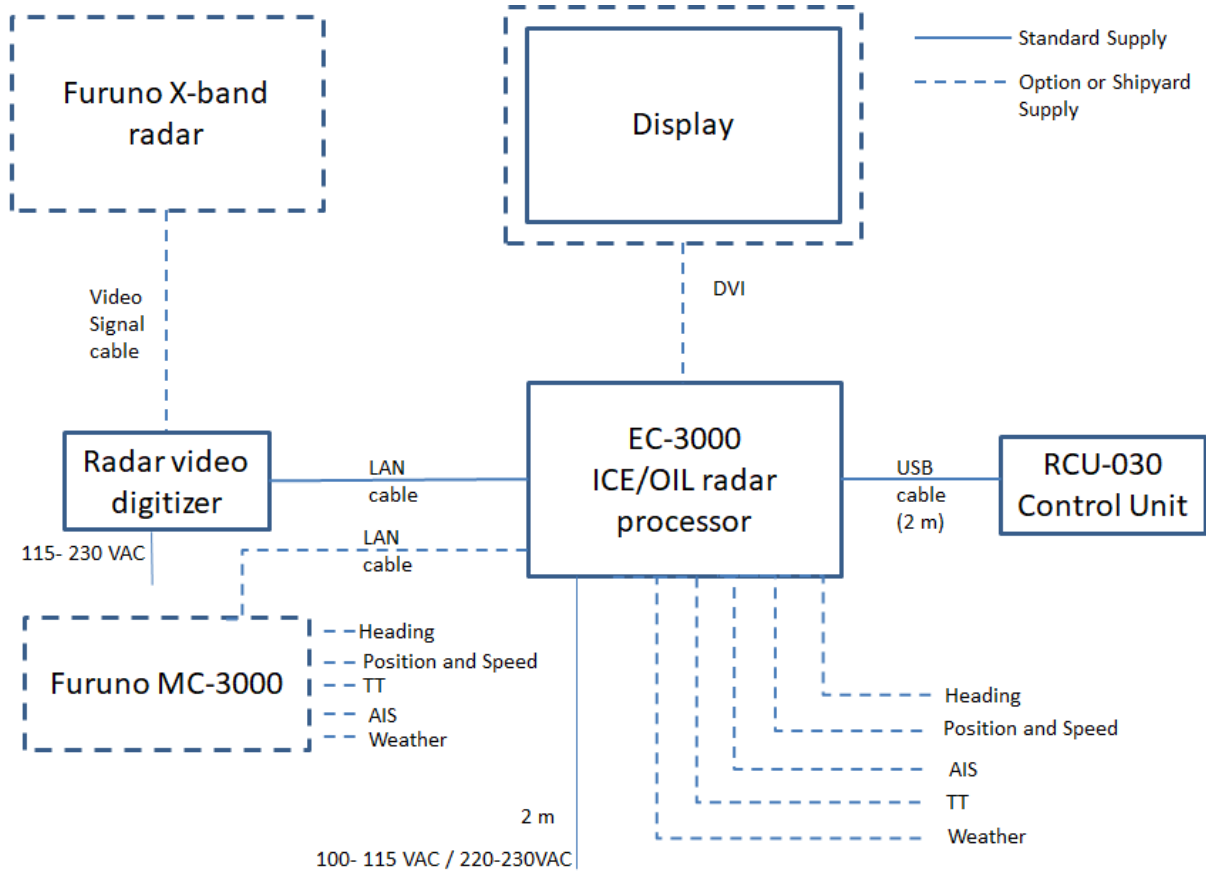
The Furuno Finland Ice Radar is a hybrid ice radar. It is based on the normal Furuno ARPA radar, and captures a copy of the raw radar signal from the ARPA processor. The normal operation of the ARPA radar is not affected.

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

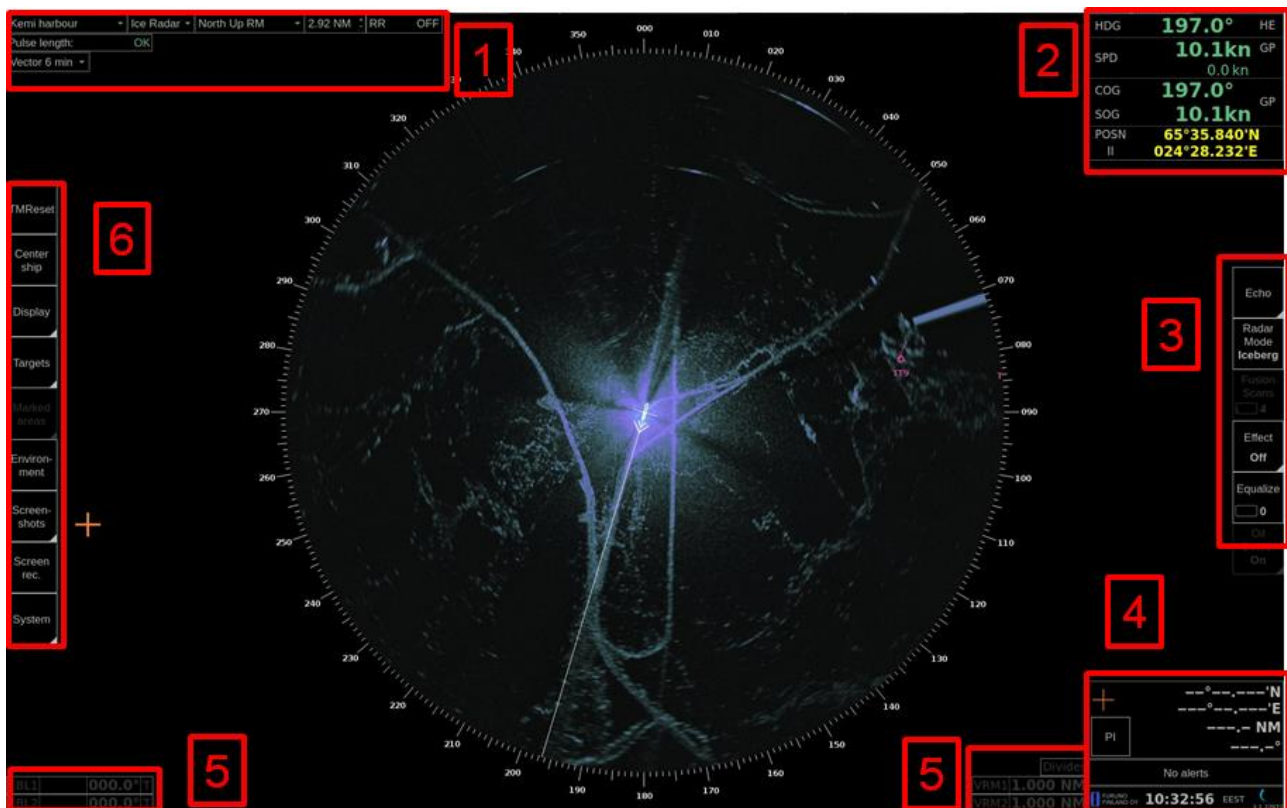
If you like to know more about the Ice Radar capabilities please contact to Furuno Finland Oy (www.furuno.fi).

1. SYSTEM CONFIGURATION

Interconnection diagram



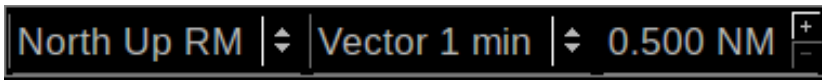
2. GRAPHICAL USER INTERFACE (GUI)



User interface sections

1.	Heading mode, vector time selection, range/scale selection and Range Rings ON/OFF
2.	Navigational data
3.	Ice filter parameter adjustment
4.	Cursor position indicator, Parallel Index lines settings, local time, software version number
5.	EBL/VRM indicators
6.	TM reset, Center ship, Display palette selection, Targets, Screenshots and Recording and System buttons

2.1 Operating mode selections



o.	Description
1.	Motion mode select - Available modes: <ul style="list-style-type: none"> - 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 Sensor Information

You can find sensor information on upper right corner of display.

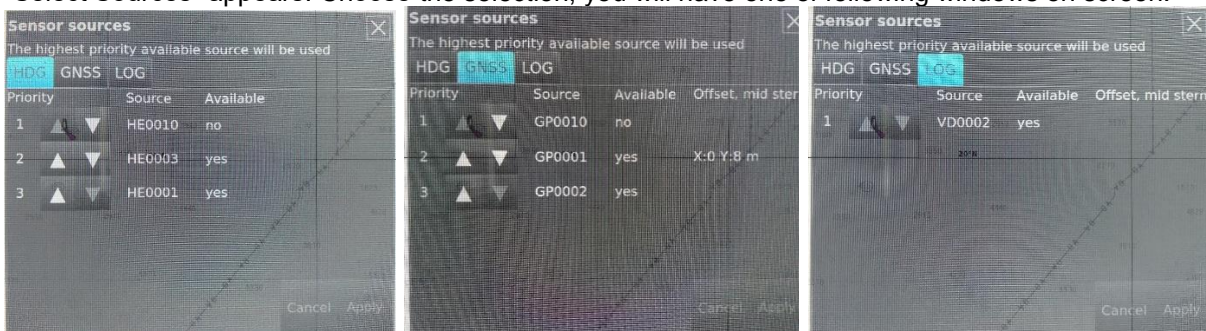
Note that available sensor information is depending on connected sensor.

	<p>Information available:</p> <p>HDG = Heading</p> <p>SPD = Speed (either ground stabilized or through water) bi-directional speed, if available from sensor.</p> <p>COG = Course over ground</p> <p>SOG = Speed over Ground</p> <p>POSN = Position</p>
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Selection of Sensor source

You can select source of sensor information for FICE-100.

Move cursor over sensor information area and click left mouse button to open menu. A menu with selection "Select Sources" appears. Choose the selection, you will have one of following windows on screen.



Use arrow up and down to select desired sensor in highest priority. Click **Apply** button to confirm your selections.

Dead reckoning

If no heading, speed and/or position information is received from sensors then those values can be entered manually.

HDG	240.0°	MAN
SPD	---kn	WT
COG	240.0°	MAN
SOG	12.0kn	MAN
POSN	59°55.035'N	
DR	024°58.846'E	
	59°41.875'N	
	025°01.575'E	
	13.27 NM	
	174.0°	

Touch sensor information area to open menu, select **Set Manual heading** and/or **Set Manual speed** to set them. See also chapter “Position Fixing” for more information about Dead reckoning.

2.3 Ice filter parameter adjustments

These parameters affect the behavior of the Ice filter. The following items are explained later in this manual.

Echo	Description Echo – Move cursor just over Echo box and click left mouse button, following controls appear: Brightness – adjust brightness of Ice layer Contrast – adjust contrast of ice layer. Gamma – adjust linearity of ice color. Palette – select color palette for ice layer.
Radar Mode Lead	Radar Mode: Lead Iceberg For more information, see chapter 3.2.
Fusion Scans <input type="text" value="4"/>	Adjust number of Scans – how many overlapping radar scans are used for the Ice echoes Note, if Fusion mode is “Iceberg”, Fusion scans is set as 1.
Effect 3D	Effect 3D and Edge to emphasis shapes of ice and to find easy going trails on ice.
Equalize <input type="text" value="0"/>	Equalize Balancing ice layer picture

2.4 Cursor position indicator

You can find cursor position on lower right corner of display.



Description	
	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 and VRM

2.6.1 Activation of EBL and VRM

There are two set of EBL/VRM which can be used to complete distance and direction measurements. To activate EBL1 take cursor next to EBL1 box and click left mouse button. Cursor is automatically moved to radar area where you can adjust EBL1. To fix EBL1 click again left mouse button. If you want to cancel adjustment click right mouse button. Do the same way with VRM1 to adjust and fix VRM1. Adjustment of EBL2 and VRM2 is done the same way.

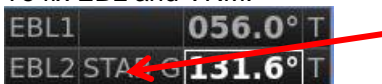
If you want adjust both EBL1 and VRM1 at the same time in activation use right mouse button.



T = reference North R = reference heading line

2.6.2 Fixing VRM and EBL

To fix EBL and VRM.



Take cursor next to text EBL and click right mouse button.



Choose desired presentation mode.

No.	Kuvaus
1.	Ship Center (empty) – fixed North Stab EBL.
2.	Ground Stab (STAB G) – geographical fixed EBL/VRM
3.	Heading Stab (STAB H) – EBL and VRM take to desired location to fix there. EBL and VRM will follow own ship movements changing EBL based on own ship heading line.
4.	North Stab (STAB N) – EBL and VRM take to desired location to fix there. EBL and VRM will follow own ship movements changing EBL based on north orientation.

2.6.3 Removing EBL and VRM from display

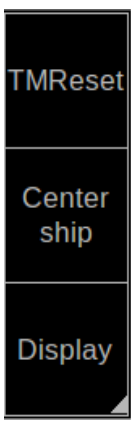
Take cursor either EBL1 or EBL2 text. Click right mouse button to open menu shown below.

EBL/VRM Off removes only selected tool on display.

All Off removes both tools on display.



2.7 Display mode selections



No.	Description
1.	Click on TMRReset 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.

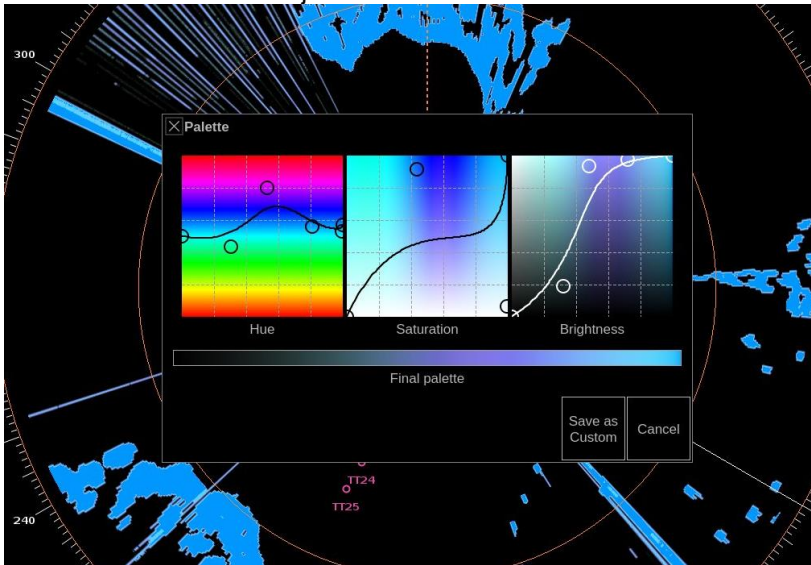
2.8 Color palette selections

2.8.1 Choosing Predefined palette

You can select predefined color palette for ice layer by clicking **Echo** button and select in Palette box by thumb wheel desired palette.

2.8.2 Customized palette

If you want to adjust palette (Hue, Saturation and Brightness) manually, click Palette button to open Palette window shown below. Adjust curves with cursor and then click **Save as Custom** button.



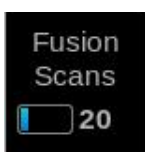
3. USE OF FUSION SCANS AND MODES

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

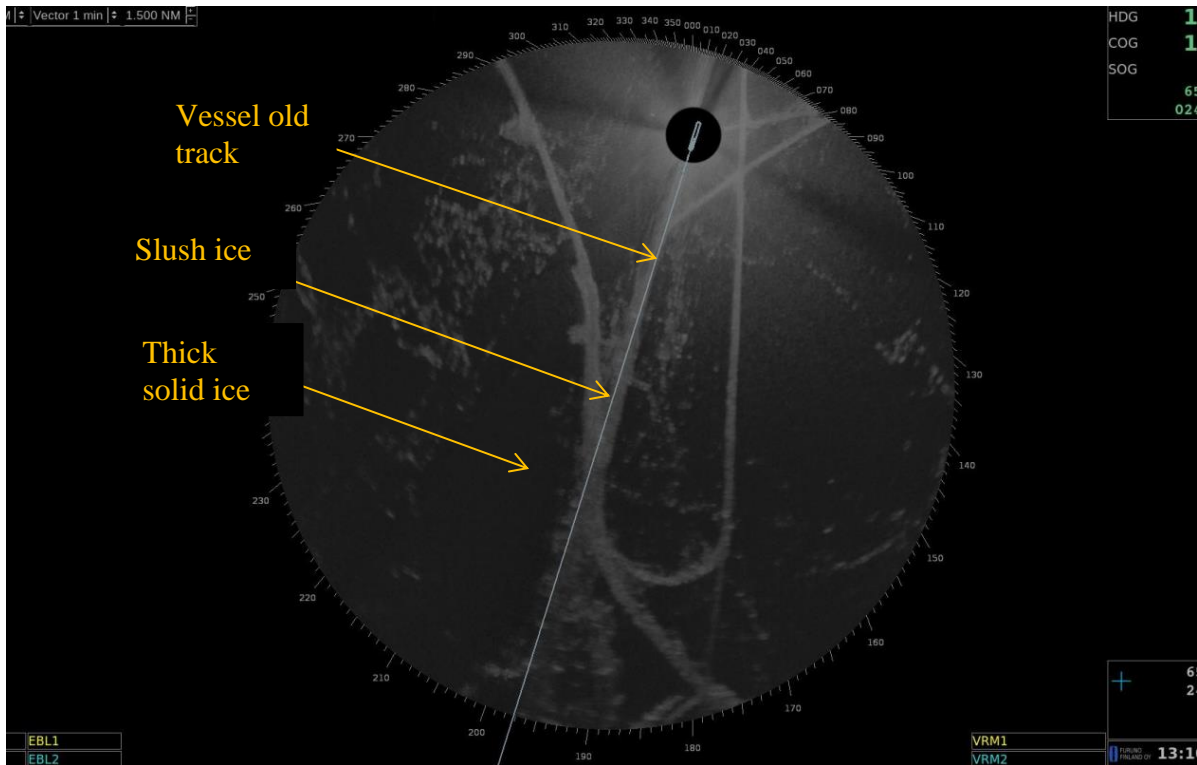


Radar modes can be changed by moving the mouse cursor over Radar Modes and selecting the mode by using scroll wheel of mouse. Below you will find explanations for each Radar Mode.

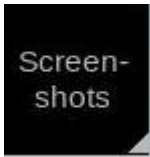
Mode	Description
Iceberg	This mode is used to find iceberg.
Lead	This mode is used to remove temporary noise. The edges of echoes are displayed. Note that moving echoes (objects) may be lost. This can be used for example when you need a sharp image of faint trails through ice.

3.2.2 Use of Radar mode Lead

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



4. SCREEN SHOTS

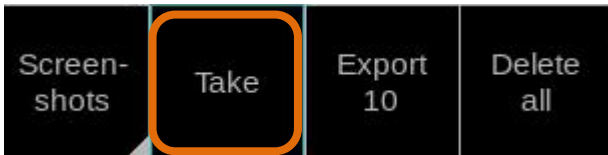


No.	Description
1	Click on Screenshots to capture single or multiple screenshots covering the whole display.

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: <ol style="list-style-type: none">1. Connect the external memory to your workstation2. Click Screenshots and Export3. 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.

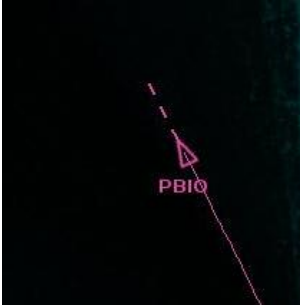
4.3 How to delete screenshots



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. TARGETS

On FICE-100 both Tracked Targets and AIS targets can be shown. Targets can be received from Furuno FAR-2xx7, FAR-2xx8, FAR-15x8 or FAR-3000 (TT) and AIS transponder (AIS target).



AIS target symbol



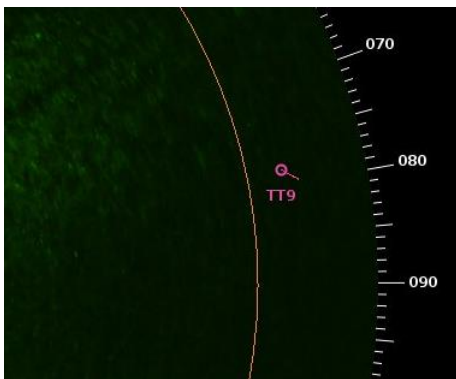
TT symbol

5.1 How to get targets on display

Description	
	<p>Click Targets and select Show/Hide.</p>

5.2 How to get target's information on display

Move cursor on desired target and click right mouse button, select Info from menu that appears.




Target	
Name	TT9
Radar	ice
Distance	2.1 NM
Bearing	78.3°
Latitude	65°31.155'N
Longitude	024°46.023'E
Course	191.3°
Speed	0.1 kn

5.3 How to get past track of target on display

Description	
	<p>Click Target and select Past track to get track ON/OFF. Length of target's past track is 15 min.</p>

5.4 How to create fixed target (FT)

Description	
	Click Targets and select Create fixed to define target desired location. Move cursor desired location and click left mouse button to create target. Fixed target's id is FT X (X = order number of target (1,2,3...)).

5.5 How to remove fixed target (FT)

Move cursor on fixed target (FT x) and click right mouse button. Select Cancel target from the menu.

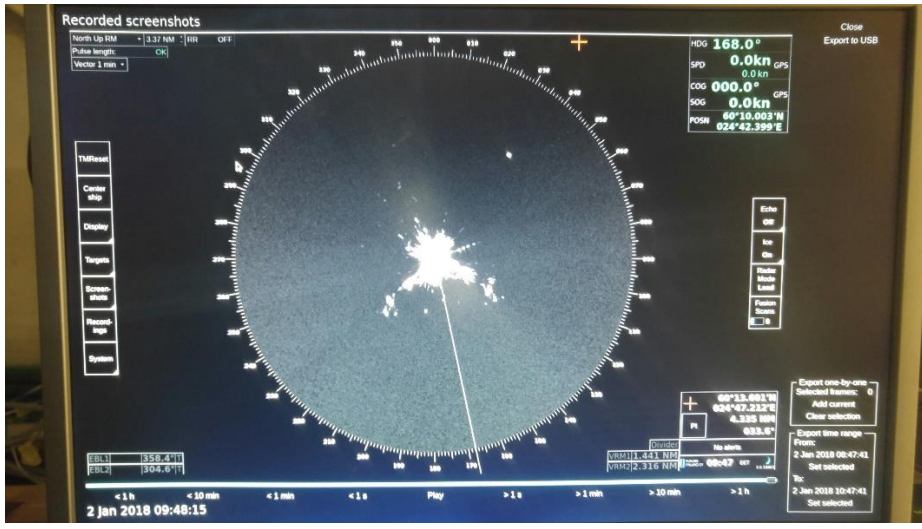
6. RECORDINGS

Recordings are done automatically on hard disk of system.

User can view recordings with the system or save them on external memory device for later use.

Description

Click **Screen rec** to open record viewer.



The screenshot shows a radar display interface. On the left is a vertical sidebar menu with buttons for: TMReset, Center ship, Display, Targets, Environment, Screen-shots, Screen rec., and System. The main display area is titled 'Recorded screenshots' and features a circular radar plot with a scale from 0 to 300. A bright white target is visible at the center. The interface includes several data readouts: 'North Up RM' (3.37 NM), 'Pulse length' (OK), 'Vector 1 min', 'HDG 168.0°', 'SPD 0.0kn', 'COG 000.0°', 'SOG 0.0kn', and 'POSN 60°10.003'N 024°42.399'E'. A 'Close' button and 'Export to USB' option are in the top right. A 'Play' button and a time range selector (from <1h to >1h) are at the bottom. A timestamp '2 Jan 2018 09:48:15' is displayed at the bottom left. A 'Target' box at the bottom right shows coordinates: '00011 4.1 NM' and '00012 2.316 NM'.

6.1 How to select date and time for record viewing

Use ruler on lower part of display to set desired date and time for record viewing.

6.2 How to view screen shots

Click "Play" button to start viewing. Click "Stop" button to stop viewing.

6.3 How to select time period for exporting recordings

Time period for copying recording(s) to external memory device is done following way:

1. Use ruler on lower part of display to set desired date and time define starting point for copying then click "Set selected" button in **From** field.
2. Use ruler on lower part of display to set desired date and time to define ending point for copying then click "Set selected" button in **To** field.

6.4 How to copy recordings to external memory

Copy of recordings is done following way:

1. Set desired time period for recordings (export range).
2. Click "Export to USB" button on upper right corner.
3. Next window you can check that time period is set correctly.
Note, that video recording which is longer than one hour is divided automatically one hour periods, i.e. there are more than one file for video recording.
4. Connect external memory to USB port.
5. Insert pass word for encryption. Files are compressed before they are stored to external memory.
6. Name of recordings on external memory are "date and time of selected period".
7. You can view recordings any other device. Before viewing uncompress recordings using some application (like, WinZip, 7-zip, etc.).

7. Other functions

7.1 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.

7.2 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.

7.3 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.