FT NavVision®

Radar Manual

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NOTICE

3. References

Not applicable.

4. Introduction

FT NavVision® is equipped with the possibility to show radar. This will be shown in a separate viewer. Although the operation and functionality of the radar is the same as every other radar, we will explain the separate issues in this manual.

5. Safety instructions

:

This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, it is essential to read and carefully follow the safety instructions.

The indications NOTE, CAUTION and WARNING have the following significance:

NOTE:
An operating procedure, practice or condition etc., which it is essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

6. Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
1.0	January 29, 2013		initial release

7. Radar

7.1 Radar button

Figure 7-1: Radar button

7.2 Radar display and control panel

The display is divided into two sections; on the left hand is the radar display which shows the radar picture and associated graphics, together with information on the radar and display settings on the top left hand corner.

Figure 7-2: Radar display & control panel

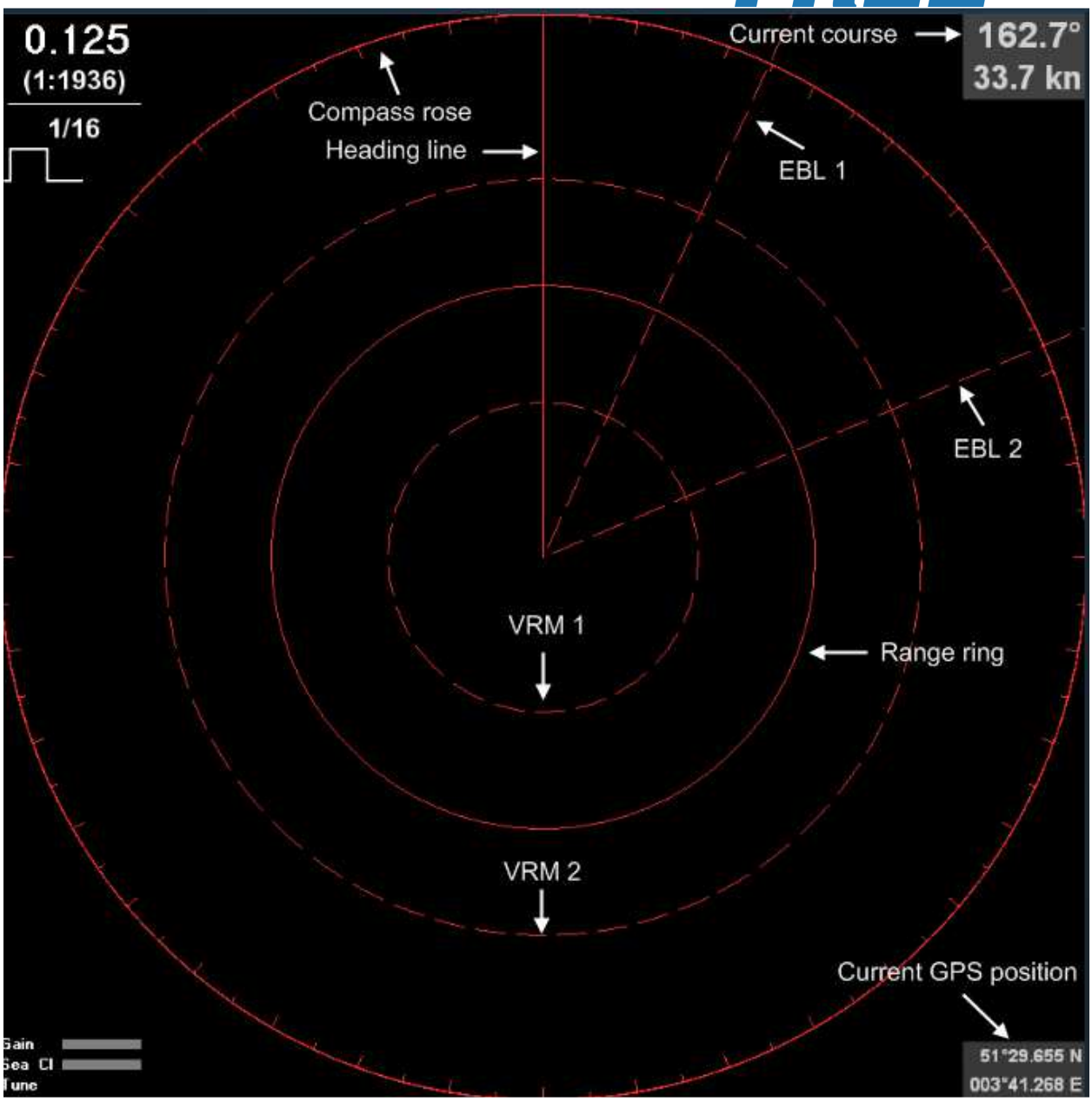

Figure 7-3: Radar display screen

7.3 Radar display indications

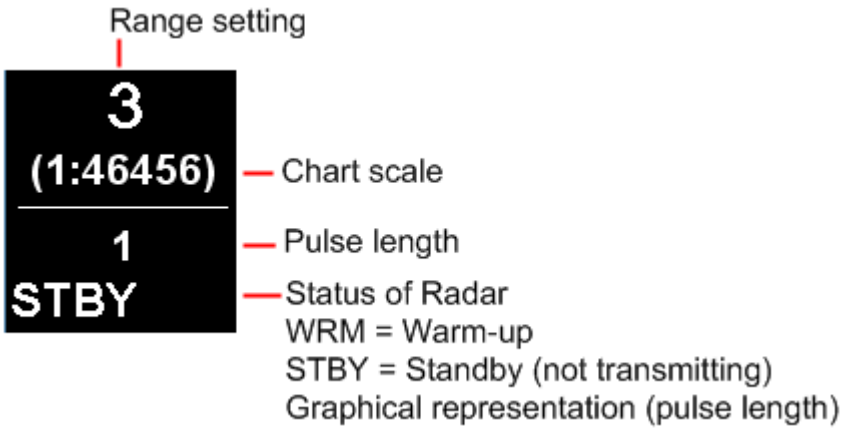

Figure 7-4: Display figures (left top corner)

The figures above the horizontal line (see Figure 7-4) are the range setting of the display and the scale of the charts respectively. The figure below is the interval of the range rings; if the range rings are turned off this figure is of course not shown. Underneath this figure is information on the pulse length of the radar; during warm-up the screen shows *"WRM"*, if it is not transmitting then the screen shows *"STBY"*, otherwise a graphical representation of the pulse length, short, medium or long, appears in this position.

Figure 7-5: Display figures (left bottom corner)

The settings of the *"Gain"*, *"Sea (Clutter)"* and *"Tune"* controls are shown on the bar graphs on the bottom left corner (Figure 7-5) of the radar display so that they are visible at all times, no matter which menu panel is selected on the control panel.

Radar control panel

The control panel for the radar and display (see Figure 7-6) allows access to the various radar and display controls and shows information via text panels and menu tabs.

Figure 7-6: Radar control panel

Radar controls and indications

Figure 7-7: Distance/bearing and absolute position

When the cursor is on the radar display its distance (bottom left, Figure 7-7) and bearing (top left) from the radar reference point and also its absolute position are shown in this panel.

Radar buttons

Figure 7-8: Radar buttons

Button	Description
Acquire	The acquire mode allows targets to be acquired manually by clicking on them with the cursor.
Off Centre	Shifts own ship position.
ReCentre	The *"Re-Centre"* button will return the radar origin to the centre of the screen after it has been offset using the *"Pan"* or *"Zoom"* controls (See the *"Tools"* menu below).
North Up	Compass-stabilized with reference to north
Chart Show	The radar display is superimposed on the charts without disturbing the chart observation. (requires separate license).

Figure 7-9: Control functions

Measurement tools (sliders)

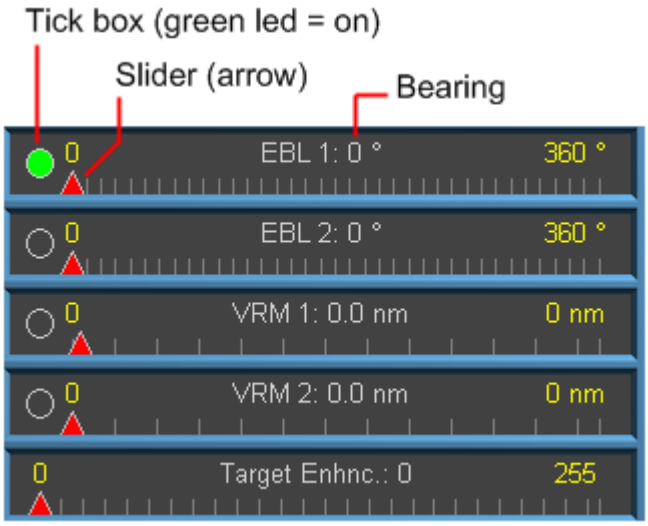

Figure 7-10: Display manipulation tools (sliders)

Slider	Description
EBL1 EBL2	Electronic Bearing Lines (EBL1 and EBL2) allow the user to measure the bearings of objects from the reference point. The bearing lines are enabled by clicking on the tick boxes (green led on) to the left of the title and appear on the radar display as dotted lines. Once enabled, they may be rotated by means of the sliders (arrows). The bearings of the lines are shown to the right of the title (see Figure 7-10) and when having the cursor on the bearing at the radar display.
VRM 1 VRM2	The two Variable Range Markers (VRM1 and VRM2) are enabled by clicking on the circular boxes (green led on) to the left of their titles; they appear on the radar display as dotted circles and are similarly controlled by their own sliders. Their ranges are shown to the right of their titles and on the radar display with the cursor on the VRM marker.
Target Enhnc (Enhancement)	The *"Target Enhnc"* slider will emphasize the brightness of moving targets with respect to fixed returns such as land. This is useful for the easy detection of moving targets but for safety reasons the control should not be used to remove fixed targets completely.

7.3.1 Display buttons

Figure 7-11: Radar buttons

The *"Display"* button contains the controls for adjusting the radar settings and the picture visible on the display. Once activated (green led on) the relevant control buttons become visible (see Figure 7-11). The *"Display"* button comes with the following functionalities:

- Standard Palette
- Head(ing) Line
- Range Rings
- Compass Rose
- Radar Tx.

7.3.2 Standard palette button

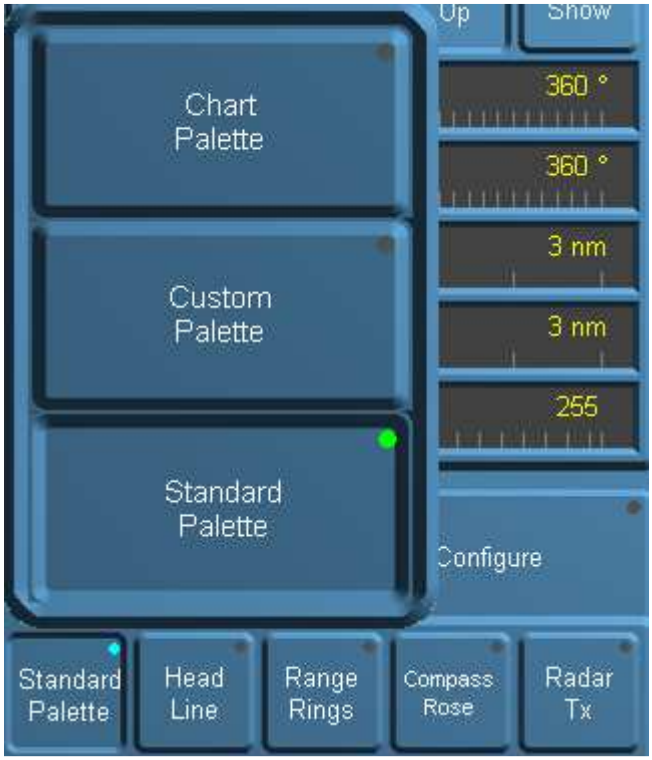

Figure 7-12: Standard palette button

Button	Description
Standard Palette	The *"Standard Palette"* button opens a window to select the level of detail shown on the charts. There are three (3) preset levels of detail available: • Chart palette • Custom palette • Standard palette
Head Line	To turn on and off the head line (or heading line) on the radar display. The heading line is a line from the own ship position to the outer edge of the radar display area and appears at zero degrees on the bearing scale in head-up mode; it changes the orientation depending on the ship orientation in north-up and true motion modes.
Range Rings	To turn on and off the range rings on the radar display.
Compass Rose	To turn on and off the compass rose on the radar display.
Radar Tx	After the required warm-up time *"STBY"* will be displayed in the top left corner. Select the *"Display"* button (green led on). Click on the *"Radar Tx"* button to go to transmit. The radar status indication at the top left corner of the screen changes from STDY to Tx (pulse length indicator).

Display sliders

Via the display sliders (see Figure 7-13) the radar display visibility can be manually adjusted.

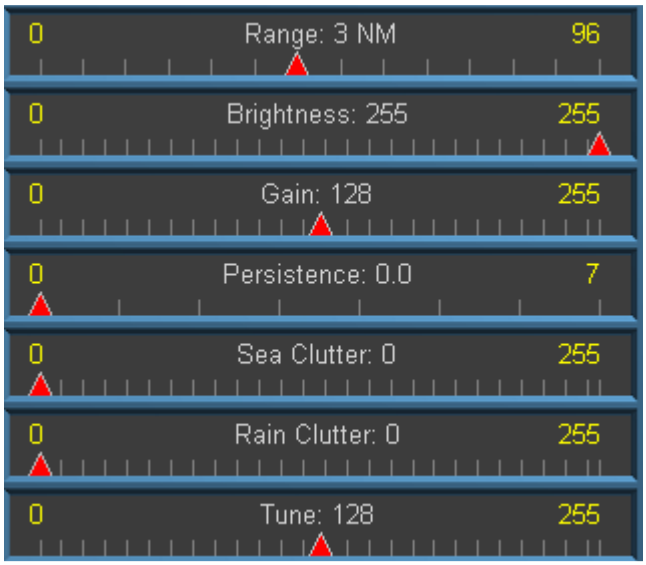

Figure 7-13: Display sliders

Slider	Description
Range	The “Range” slider sets the ranges (in NM) of the range rings.
Brightness	To control the radar display brightness at very low or very high light conditions.
Gain	The “Gain” slider sets the gain of the radar and hence the brightness of the radar returns.
Persistence	The “Persistence” slider sets a computer generated variable “afterglow” effect which produces trails behind moving targets.
Sea Clutter	The “Sea Clutter” slider reduces the strength of close in target returns to remove noise generated by sea clutter, but it should be noted that excessive sea clutter suppression can also remove small targets from the screen and so it should be used with care. Changes to the sea clutter setting frequently mean that changes also need to be made to the gain setting.
Rain Clutter	The “Rain Clutter” filter produces variable edge enhancement of the radar targets to minimize the effects of rain. The “Moving Target Enhancement” control will emphasize the brightness of moving targets with respect to fixed returns such as land. This is useful for the easy detection of moving targets but for safety reasons the control should not be used to remove fixed targets completely.
Tune	The “Tune” slider allows the manual adjustment of tuning.

7.3.3 Configure button

Figure 7-14: Configure button

Button	Description
Redraw	The *"Redraw"* button clears and renews the radar picture on the radar display.
Intf. Fltr	The *"Intf. Fltr (Interference filter)"* button reduces interference from other radars and should normally be selected on (green LED on).
Init Auto Tune	Automatic tuning is (init)ialized during the installation. However, if you feel that automatic tuning is not working properly try *"Init (initializing) Auto Tune"*.
Auto Tune	The *"Auto Tune"* button enables the auto tune function. During tuning, the *"Coarse Tune"* slider (bottom left of screen) will move back and forth until the optimum tuning position is found. The auto tune will then maintain optimum tune until another re-tune is initiated.
Radar Tx[1]	After the required warm-up time *"STBY"* will be displayed in the top left corner. Select the *"Display"* button (green led on). Click on the *"Radar Tx"* button to go to transmit. The radar status indication at the top left corner of the screen changes from STDY to Tx (pulse length indicator).

7.3.4 Configuration sliders

Selecting the *"Configure"* button activates the setup sliders (controls) which are normally only required during installation or maintenance, hence they are password protected.

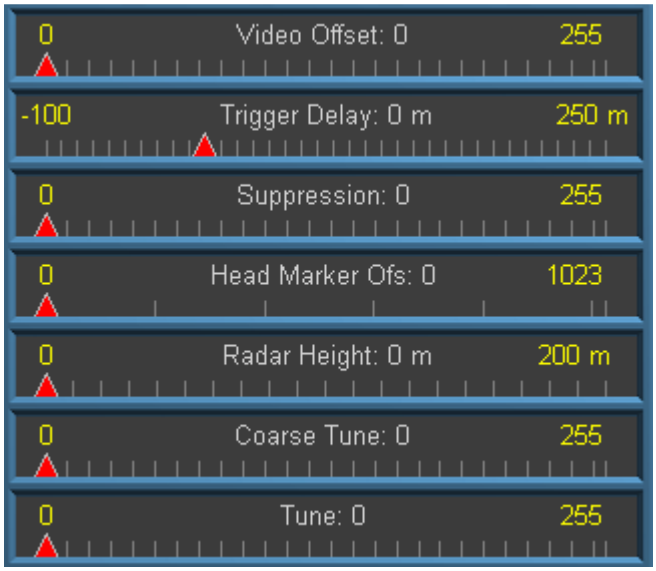

Figure 7-15: Configuration sliders

Video Offset

The *"Video Offset"* slider (see Figure 7-15) sets the threshold (noise floor) of the radar interface card. It should not need to be changed in normal operation.

[1] Tx = Transmit

Trigger Delay
The *"Trigger Delay"* slider (see Figure 7-15) sets the internal delay from the radar trigger to the start of an azimuth to compensate for cable lengths and delays in the electronics of the radar. It should only require adjustment on installation and possibly on a change of magnetron.

Suppression
The *"Suppression"* slider is used to filter out unwanted reflections i.e. ship's installation.

Heading Marker Ofs
The *"Heading Marker Ofs (Offset)"* slider (see Figure 7-15) rotates the picture to compensate for misalignment between the radar Heading Marker and North. It is set on installation and should not require further adjustment.

Radar Height
The *"Radar Height"* slider (see Figure 7-15) is used for setting up the correct radar position on installation. Once set, this should not be changed since this could affect the measurement accuracy of the system.
The maximum detecting range of the radar varies considerably depending on several factors such as, the height of the antenna above the waterline, the height of the target above the sea, the size, shape and material of the target, and the atmospheric conditions. Under normal atmospheric conditions, the maximum range is equal to the radar horizon or a little shorter.

Coarse Tune
Coarse tuning (see Figure 7-15) must be carried out to ensure that the optimum setting of the display control lies close to the centre of its travel. Move the *"Coarse Tune"* slider (back and forth) until the optimum tuning position is found.

Tune
The *"Tune"* slider (see Figure 7-15) enables the operator to carry out fine tuning of the receiver. The best tuning point is where the tune bar (left bottom of radar display) swings to a maximum.

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