FURUNO

FEA-2x07, FEA-2x07-D Series ECDIS Operator's Guide

About this Guide

The purpose of this Operator's Guide is to provide basic information for this equipment. For detailed information, see the operator's manual. The following information is presented in this manual:

- Description of ECDIS control units
- Information available on the ECDIS screen
- Set up before departure
- How to create a route, user chart and Notes
- Target Tracking (TT)
- Charts, datum and chart alerts
- How to update charts

Contents

Control Panel

Overview

Two control units are available: Control Head RCU-018 and TB Control Unit RCU-015. Each carries a mouse, power switch and at least two hot keys. The RCU-018 is additionally equipped with a keyboard. All functions of the ECDIS may be accessed with the mouse. To use the mouse, roll the trackball to select item desired, push the left or right mouse button as applicable then push the scrollwheel.
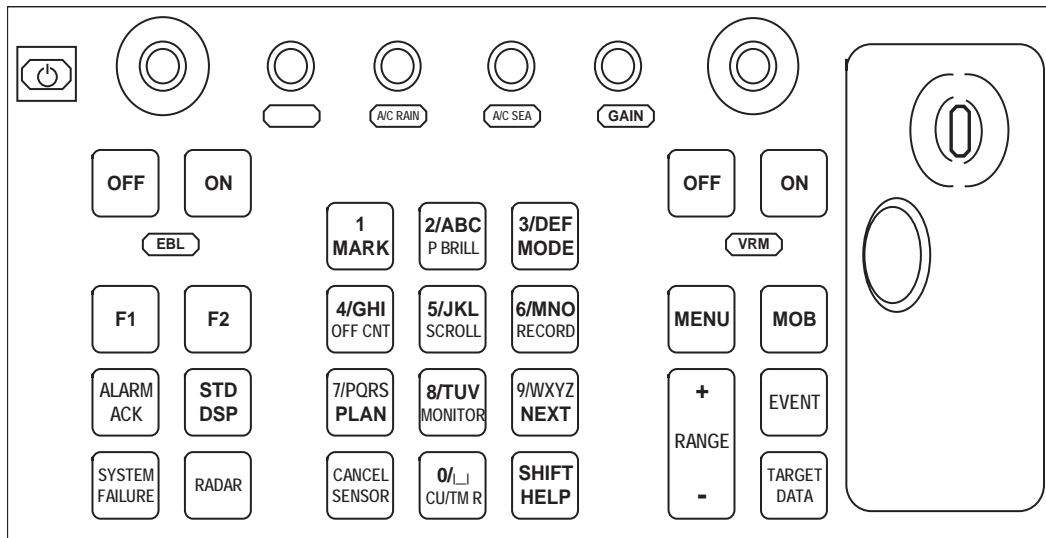
Control head RCU-018
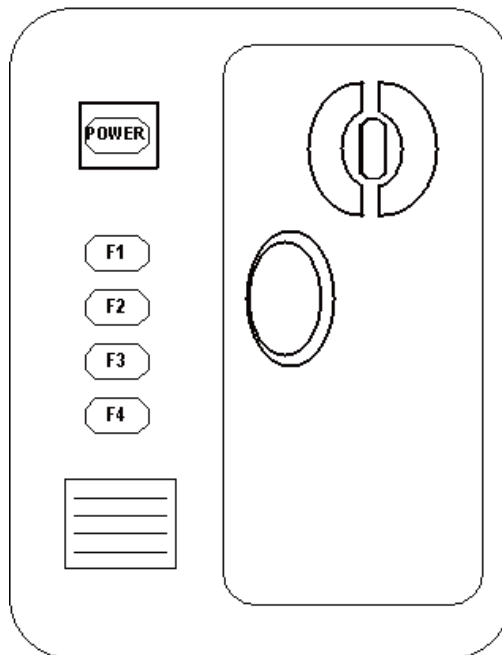
TB control unit RCU-015

Description of controls on Control Head RCU-018

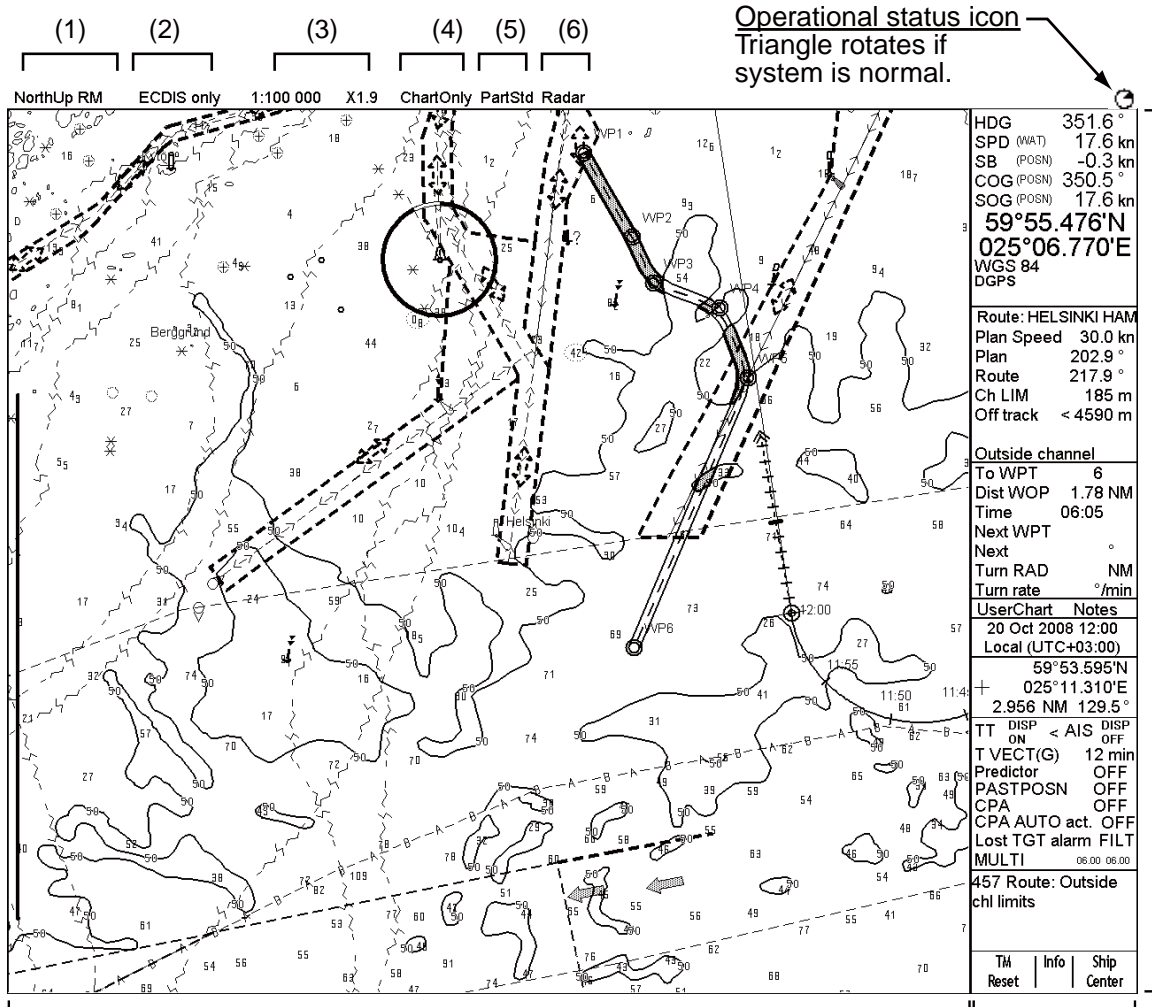| Key	Description
Power	Turns the system on/off. (This control does not switch the display on/off.)
VRM wheel	Adjusts active VRM.
VRM ON	Activates and displays VRM1 if no VRM is displayed or VRM2 is active. Activates and displays VRM 2 if VRM1 is active.
VRM OFF	Inactivates and erases VRM1 if both VRMs are displayed. Inactivates and erases VRM 2 if VRM1 is active.
EBL rotary encoder	Adjusts active EBL.
EBL ON	Activates and displays EBL1 if NO EBL is displayed or EBL2 is active. Activates and displays EBL2 if EBL1 is active.
EBL OFF	Inactivates and erases EBL1 if both EBLs are displayed. Inactivates and erases EBL2 if EBL1 is active.
F1	Activates user-defined function or menu.
F2	Activates user-defined function or menu.
ALARM ACK	Alarm acknowledgement for alarms and alerts generated by chart, navigation or steering calculation.
SYSTEM FAILURE	The red lamp behind the key lights and the buzzer sounds when system failure is found. Hit this key to silence the buzzer. The key remains lit until the reason for the problem is removed. System failure: ARCS drawing problem, S57 drawing problem, Human interface, INS communication, Voyage recording, and Access server.
RADAR	Displays Radar Overlay dialog box, which provides functions for adjustment of the radar picture.
STD DSP	Activates standard display presentation on the ECDIS.
1/MARK	Displays the Nav. Marks dialog box, which mainly provides for activation/deactivation of various markers.
2/ABC/P BRILL	Adjusts control head dimmer.
3/DEF/MODE	Selects presentation mode: North-up TM, Route-up RM, Course-up RM, North-up RM, Course-up TM.
4/GHI/OFF CNT	Offcenters own vessel position to cursor location on the ECDIS screen.
5/JKL/SCROLL	Enables scrolling on charts, with the trackball active.
6/MNO/RECORD	Opens Voyage Record sub menu.
7/PQRS/PLAN	Opens Plan Route dialog box.
8/TUV/MONITOR	Opens Monitor Route dialog box.
9/WXYZ/NEXT	Opens "Next" page in multi-page dialog box.
CANCEL/SENSOR	Opens Sensors dialog box; closes open dialog box or window.
0/space CU/TM R	Returns own vessel marker to screen center in TM and CU mode; inserts a space.

Description of controls on Control Head RCU-018

Key	Description
SHIFT/HELP	SHIFT: Shifts between lower case and upper case alphabets. HELP: Activates info/help. (Mouse must not be over input field.)
MENU	Displays the Main menu.
+ RANGE -	Adjusts charts scale.
MOB	Inscribes MOB mark on the screen.
EVENT	Records textual information fixed to own vessel position.
TARGET DATA	Shows target data for selected tracked target; provides data for selected chart area.
GAIN	Adjusts radar gain on the radar display.
A/C RAIN	Reduces rain clutter on the radar display.
A/C SEA	Reduces sea clutter on the radar display.

ECDIS Display

(1) Presentation mode
(2) ECDIS mode
(3) Chart scale

(4) Chart only switch
(5) Name of display settings (Base, PartStd, Std, All Other)
(6) Radar selection (TT/radar video source)

(1) (2) (3) (4) (5) (6)

Operational status icon —
Triangle rotates if
system is normal.

NorthUp RM   ECDIS only   1:100 000   X1.9   ChartOnly PartStd Radar

HDG	351.6 °
SPD (WAT)	17.6 kn
SB (POSN)	-0.3 kn
COG (POSN)	350.5 °
SOG (POSN)	17.6 kn

59°55.476'N
025°06.770'E
WGS 84
DGPS

Route: HELSINKI HAM	
Plan Speed	30.0 kn
Plan	202.9 °
Route	217.9 °
Ch LIM	185 m
Off track	< 4590 m

Outside channel	
To WPT	6
Dist WOP	1.78 NM
Time	06:05
Next WPT	
Next	°
Turn RAD	NM
Turn rate	°/min

UserChart Notes	
20 Oct 2008 12:00	
Local (UTC+03:00)	
	59°53.595'N
	025°11.310'E
	2.956 NM 129.5°

TT DISP ON	< AIS	DISP OFF
T VECT(G)		12 min
Predictor		OFF
PASTPOSN		OFF
CPA		OFF
CPA AUTO act.		OFF
Lost TGT alarm		FILT
MULTI		06.00 06.00

457 Route: Outside
chl limits

TM Reset	Info	Ship Center

Information area

Electronic chart area

Mouse functions area
(Current function of
left button, scroll-
wheel, right button)

* Base: When no options are checked on Standard page.
  PartStd: When some of options (not all) are checked on Standard page
  Std: When all options are checked on Standard page and no options are
       checked on Other1/Other2 pages.
  Other: When all options are checked on Standard page and some options (not all)
         are checked on Other1/Other2 pages.
  AllOther: When all options are checked on Standard page and all options are checked on
            Other1/Other2 pages.

Set up Before Departure

Update chart material

Update your ARCS and S57 chart material before you start a new voyage. See the chapter on Vector Chart Material and Raster Chart Material in the Operator's Manual.

Display and approve dates for S57 charts and manual updates

Set display until and approve until dates for S57 charts as current date.

There may be features which are date dependent or periodical in S57 charts. If you have not set display and approve dates as current date, you may get the wrong presentation or some features may completely be absent. For how to set Display Until and Approve Until dates, see section 8.11.3 "How to set "display until" date" and section 8.11.4 "How to set "approve until" date" in the Operator's Manual.

Create or update user chart

If necessary, create a new user chart or update an existing one. For how to create a user chart, see Chapter 15 "User Chart Control" in the Operators Manual and "Creating a User Chart" in this manual.
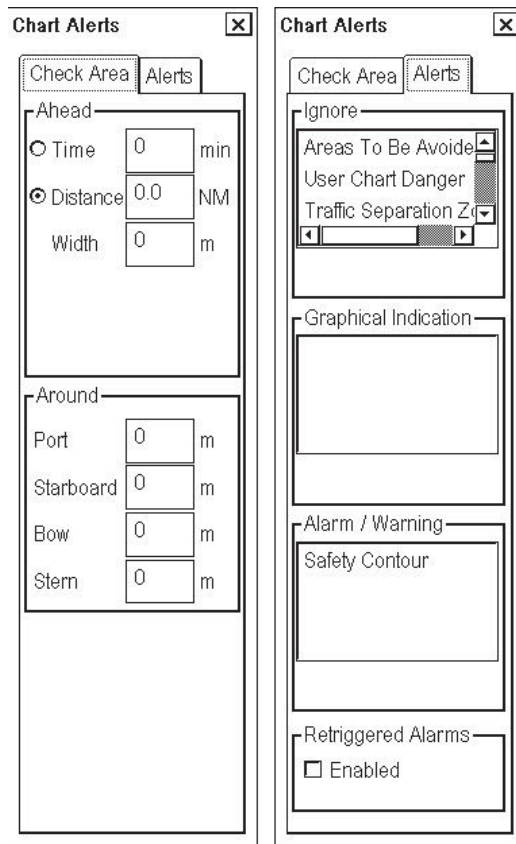
Create or update Notes

If necessary, create new Notes or update existing ones. For how to create Notes, see Chapter 16 "Notes" in the Operator's Manual and "How to create Notes" in this manual.

Set chart alert calculation

Set chart alert areas suitable for your coming voyage. For more information, see Chapter 11 "Chart Alerts" in the Operator's Manual.

To open the Chart Alerts dialog box, place the cursor on the chart scale indication, press the right mouse button, open the Initial Settings menu then select Chart Alerts parameters.

Create or update route

To access the menu for route planning, click Route in the information area, click the **Plan** button then put the cursor on the triangle in the dialog box.
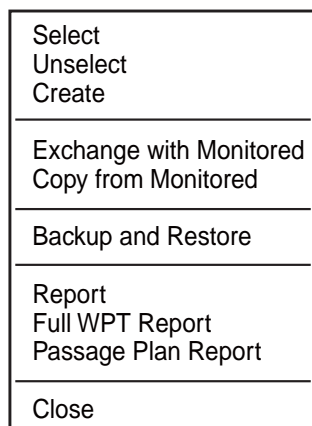
If necessary, create a new route or update an existing one. For how to create or update a route, see Chapter 13 "Route Planning" in the Operator's Manual and "Creating a route" in this manual.

Check your route against chart alerts

Before you sail your route, you should always check your route for chart alerts. This is important because your S57 charts and manual updates may contain date-dependent information. You can check chart alerts on the Check page in the Plan Route dialog box.

Recalculate timetable and ETA values

Recalculation can be done on the Parameters page in the Plan Route dialog box. Set at least ETD to correspond to departure time and perform desired optimization. Set at least ETD to date and time edit box in ETD/UTC field to correspond to departure time.


After checking chart alerts and setting ETD, cancel selection of the planned route in order to select it as the route to be monitored. Use, on the Route Plan menu, Unselect or Exchange with Monitored (to select it directly as monitored route).

Check and prepare route to monitor

Select a route for the next voyage; click Route in the information area, click the **Monitor** button then select recalculated route. For how to select a route to monitor, see section 14.2 "How to Select Route to Monitor" in the Operator's Manual.
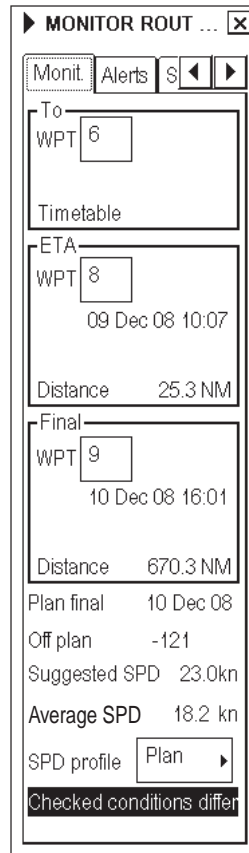
Select next waypoint

The system selects next waypoint automatically, so check that it is the correct one. Note that waypoint number 1 is not accepted. If you need to specify next waypoint, do so in the dialog box shown above.

Select final waypoint

This selection is used ONLY in case the last waypoint is different from the one defined last in your route. If you need to specify the last waypoint, do so in the dialog box shown above.

Check configuration of navigation sensors

The operator may select navigation sensors to use for navigation and view their current values, in the Sensors dialog box. To access this dialog box, place the cursor on the position indication and push the right mouse button.

Checkbox status shows whether to use the sensor for integrated navigation or not. If there is no value with a sensor it indicates that the sensor is not valid. The content of the pages in the Sensors dialog box depends on sensors which are in use on the ship.

Check speed settings

Select both Log and Dual log if they are available, or select the one that is available.

Note that Manual Speed should only be used when no other speed reference is available. Remember that position sensors are also available as speed reference sources.

Check radar settings

If neither Log nor Dual log is available, you can use radar as source for speed and course, by checking the Radar box.

Check gyro settings

Check box at Gyro1 if heading source is a gyrocompass. Use manual heading only when no other heading reference is available. Rate gyro is for connection of rate gyro, and is always automatically selected.

Check position sensors

You may check position sensors on the POSN page in the Sensors dialog box. The data field of a position sensor contains a label (here it is FURUNO and MX200) which indicates the type of the sensor, Primary-Secondary-OFF status that indicates if the sensor is included or not, position in local datum, speed and course. A DGPS position sensor has the additional text Diff, if the differential signal is in use.

Position sensors have priority, which is indicated using Primary and Secondary. Only one sensor can be primary while the others can be secondary or off position. After a sensor is turned OFF, its status is changed to Secondary state. When a position sensor state is changed to primary and another sensor was primary, the sensor formerly primary becomes secondary.

"Primary" = IS THE SENSOR WHICH IS CONSIDERED TO BE MOST RELIABLE.

"Secondary" = IS OTHER SENSORS

Check Kalman filter

The Kalman filter is an automatic process that calculates the most probable position based on data from all position sensors. The filter uses in its process all sensors that are not selected to OFF. For details about the Kalman filter, see section 19.8 "Filter Operation" in the Operator's Manual.

Check chart alignment

Chart alignment is used to move your vessel to the "Correct" position if position devices define an "incorrect" position. Normally switch off chart alignment in the start up procedure. For more information about alignment, see section 19.9 "Position Alignment" in the Operator's Manual.

Reset distance and trip counters

```
        [ Record ]
   Go Back
   Details Log
   Voyage Log
   Danger Target Log

   Alert Log
   Alert Queue

   Chart Usage Log

   Backup and Restore
   Settings
   Reset                  ▶
```

Record menu

```
        [ Reset ]
   Go Back
   Voyage Log
   Danger Target Log
   Distance Counter
   Trip Counter
   Logs + Counters
```
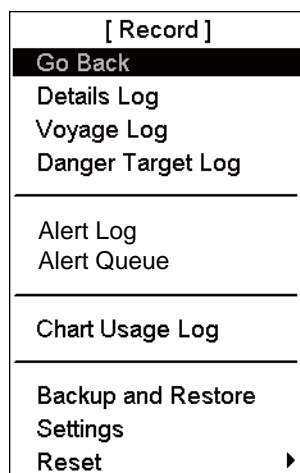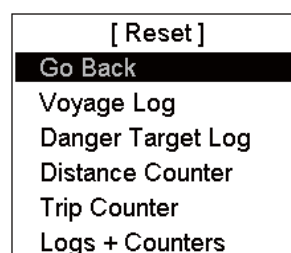
Reset menu

To reset the distance and trip counters to zero, do the following:

1. Spin the scrollwheel to show Menu/Info/Chart Menu in the mouse functions area then push the left mouse button.

2. Select Record then push the scrollwheel.

3. Select Reset then push the scrollwheel.

4. Select appropriate "Counter" item then push the scrollwheel. (The difference between Distance Counter and Trip Counter is Distance Counter is the total distance run and Trip Counter is the distance between random two points.)

5. A prompt asks you if you are sure to reset chosen counter. Click the **OK** button to reset. The prompt window disappears.

Check datum

Datum is used to select between different models of the earth.

If you use paper charts together with electronic chart material, we recommend that you use the same datum as your current paper chart to avoid misalignment between your electronic system and points taken or plotted on your current paper chart.

Once you have selected a datum, all numerical latitude-longitude position values are presented in your selected datum.

To select datum do the following:
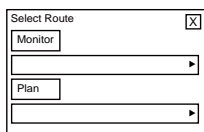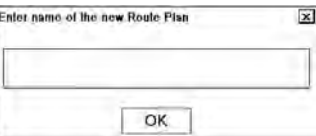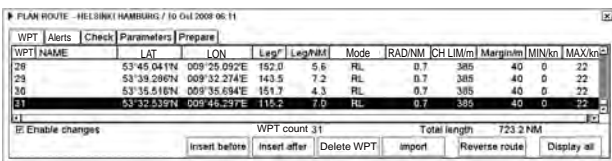
Select the datum indication in the top box in the information area. Spin the scrollwheel to select datum desired then push the scrollwheel.

```
60°04.836'N
024°53.424'E
WGS 84
DEADREC
```
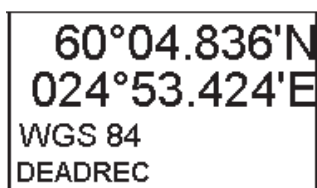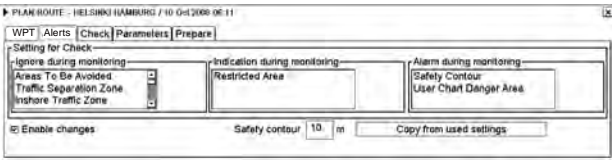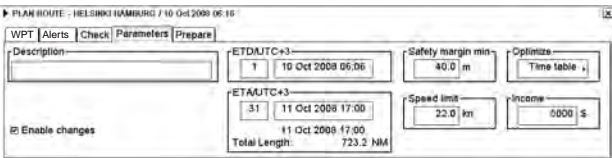
In the above example the datum is WGS-84.

Route, User Chart and Notes

How to create a route

To make a complete route for a voyage, do the following:

1. Place the cursor on Route in the information area then click the **Plan** button. Select Create from the Route Plan menu and push the scrollwheel.

2. Enter a name for the route by spinning the scrollwheel to select character desired and confirming desired character by pushing the scrollwheel. When name is ready, click the **OK** button.

3. Check Enable changes in the Plan Route dialog box. Select position of a waypoint by placing the cursor on the location desired on the electronic chart display then pushing the left mouse button. After entering a waypoint, edit Name, Steering mode, Radius, Channel limit and Speed (Min, Max) as appropriate in the Plan Route dialog box. (Place the cursor on an item, spin the scrollwheel to change value then push the scrollwheel.) Do this for all way-points of your route.

4. Use the Alerts page to define safety contour and other specified conditions for checking the route. Select item from a list then click the **Indication** (to get a visual indication), **Alarm** (to get the audible alarm) or **Ignore** (to remove check item) button as appropriate.

5. Use the Check page to detect areas where depth is less than the safety contour or where specified conditions exist. The ECDIS can examine chart database against planned route to make a list of alerts where a route crosses a safety contour or specified areas used in chart alerts. To create a list of alerts, click the **Start** button.

6. Use the Parameters page to enter Estimated Time of Departure (ETD) and Estimated Time of Arrival (ETA), if you are using Timetable optimizing. Select desired optimizing mode from the Optimize window.

To print a waypoint report, place the cursor on the triangle to show the Plan Route menu, select Report from the menu then push the scrollwheel. Click the **Print Text** button.

How to create a user chart

1. Select User Chart [X]
Monitor ⊙ DISP
▸
Plan ○ DISP
▸

[User Chart]
Go Monitor mode ▸

Select
Unselect
Create

Backup and Restore
Combine

Point report
Line report
Area report
Symbols report
Tidal report
Full report
Report for radar

Close

2. Enter name of the new User Chart [X]

[   ]

[OK]

3. ▸ PLAN USER CHA ... [X]
| Line | Area | Sy | ◂ ▸ |
[   ] / 14
Name
[URAGA]
Element type
[Navigation line ▸]
On Radar
☐ Danger Line
Start position
[35°12.522'N]
[139°47.415'E]
End position
[35°15.167'N]
[139°47.352'E]
☐ New start position
[Add] [Import] [Delete]
☑ Enable changes

4. ▸ PLAN USER CHA ... [X]
| Area | Symbol | ◂ ▸ |
[   ] / 87
Style
[SYMBOL ▸]
Symbol
[X]
Position
[35°17.087'N]
[139°44.459'E]
☑ Display on radar
☐ Danger Symbol
[Add] [Import] [Delete]
☑ Enable changes

5. ▸ PLAN USER CHA ... [X]
| Line | Area | Sy | ◂ ▸ |
Area
[   ] / 3
Name
[   ]
☐ On Radar
☐ Danger Area
[Add] [Import] [Delete]
Corner Points of Area
[3]
[59°46.861'N]
[024°02.500'E]
[Add] [Delete]
☑ Enable changes

6. ▸ PLAN USER CHA ... [X]
| Symbol | Tidal | ◂ ▸ |
[   ] / 2
Name
[   ]
Type
[Predicted ▸]
Position
[59°43.147'N]
[023°47.294'E]
Orientation [38.1] °
Strength [1.2] kn
Time
UTC +2:00
[06:00]
[Add] [Import] [Delete]
☑ Enable changes

7. ▸ PLAN USER CHA ... [X]
| Point | Line | Ar | ◂ ▸ |
[   ] / 8
Name
[   ]
Position
[59°47.659'N]
[024°09.365'E]
[Add] [Import] [Delete]
☑ Enable changes

To make a complete user chart, do the following:

1. Place the cursor on User Chart in the information area then click the **Plan** button.

2. Select Create from the menu then push the scrollwheel. Enter a name for the user chart; spin the scrollwheel to select character and push it to confirm character. Click the **OK** button to finish.

3. Click the Line tab then check Enable changes. Use the scrollwheel to enter a name for the line in the Name field. Spin the scrollwheel in the Element type box to select line type then push the scrollwheel. To start a new line from a new position, check "New start position". Check "Danger Line" if you want to use the line in the chart alert calculation. Use the cursor to specify position for line point then push the left mouse button.

4. Click the Symbol tab then check Enable changes. Click the **Add** button then Define Style (Symbol or Label), Name and Symbol character in case of symbol. "Display on radar" is automatically chosen; uncheck it if you do not want the symbol or label to appear on the radar. Check "Danger Symbol" to use the symbol in chart alert calculation. Use the cursor to select position for symbol or label then push the left mouse button.

5. Click the Area tab then check Enable changes. To make a new area, click the **Add** button in the Area field. Define Name for area, define also if it is displayed on Radar display (On Radar) and used in Chart Alerts calculation (Danger Area). Use the cursor to select position for points then push the left mouse button.

6. Click the Tidal tab then check Enable changes. To mark a tidal on the screen, use the mouse to located the cursor then push the left mouse button. Define Name, Type, Orientation, Strength and Time for Tidal. The Tidal symbol is displayed only on the ECDIS display.

7. Click the Point tab then check Enable changes. Use the cursor and left mouse button to define location of points.

How to create Notes

1.

```
Select Notes          [X]

  Monitor      ⊙ DISP

  _____ ▶

  Plan         ○ DISP

  _____ ▶
```

```
        [ Notes ]
Go Monitor mode      ▶

Select
Unselect
Create

Backup and Restore

Report

Close
```

3.

```
▶ PLAN NOTES - H... [X]

 Edit Record

  1        / 2

 LAT    32°35.909'S
 LON    060°57.930'E

 ┌Alert──────────
 │ when passing
 │
 │ within 10 NM
 └──────────────

 ┌Description────
 │ CALL VTS USE
 │ CHANNEL 71
 │
 │
 │
 │
 │
 └──────────────

 Add | Import | Delete
 ☑ Enable changes
```

2.

```
Enter name of the new Notes          [✕]


  HELSINKI HAMBURG

                    OK
```
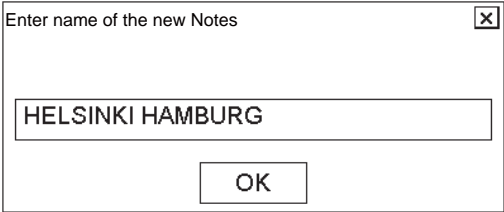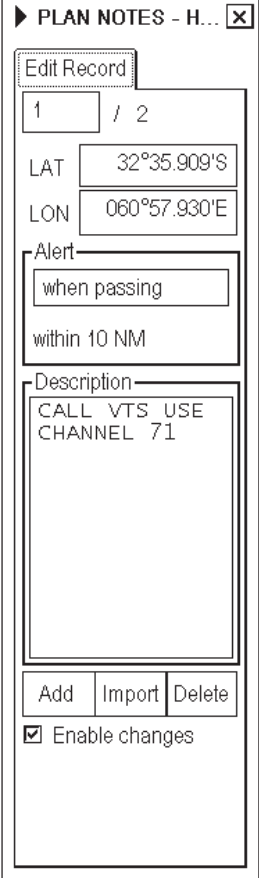
To create a new Notes, do the following:

1. Place the cursor on Notes in the information area then click the **Plan** button. Select Create from the menu then push the scrollwheel.

2. Enter a name for the Notes, using the scrollwheel. Spin the scrollwheel to select character then push the scrollwheel to confirm.

3. In the Edit Record page of the Plan Notes dialog box, check "Enable changes". Roll the trackball to place the cursor on the location desired for Notes then push the left mouse button. In the Range box, enter the range from own vessel at which to activate the Notes. To show a text message on the screen, enter the desired message in the text window; spin the scrollwheel to select a character and push the scrollwheel to confirm.

Own Ship, Tracked Target (TT)

Own ship

Position of own ship on chart display area

The functions below are accessed with the mouse.

TM/CU Reset: This will place the vessel at the position of automatic TM/CU Reset margin. (Note that this function may also be accessed from the keyboard with the **CU/TM R** key.)

ShipOffcenter: This will place the vessel at the position of the cursor.

Ship Center: This will place the vessel at the screen center.

Chart motion

You can use either true motion or relative motion. In true motion your own ship moves until it reaches the true motion reset borderline. Then it will jump back to an opposite position on screen based on vessel's course. In relative motion own ship stays in a fixed position while the chart under it moves on screen.

If you use true motion and access ShipOffcenter, your ship will go to cursor position on screen and continue true motion movement from that position. When it reaches true motion reset borderline it will automatically jump to true motion reset position.

If you use relative motion and access TM/CU Reset, your ship will immediately jump to true motion reset position and use that position as fixed position to stay on screen.

With relative motion, you can select a new fixed position for own ship by choosing the location with the cursor and accessing the ShipOffcenter function with the mouse.

To select desired display mode, place the cursor at the location circled below, spin the scrollwheel to select desired mode then push the scrollwheel to confirm.
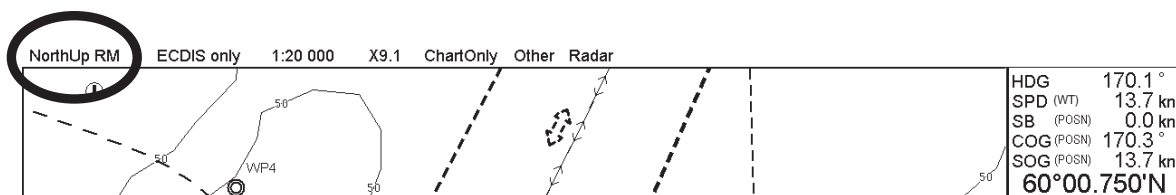
Own ship symbol

The vessel position is indicated by a circle, the centre indicating the conning position.

With a large scale, the vessel is indicated as true scale symbol, when size of symbol is larger than 6 mm.
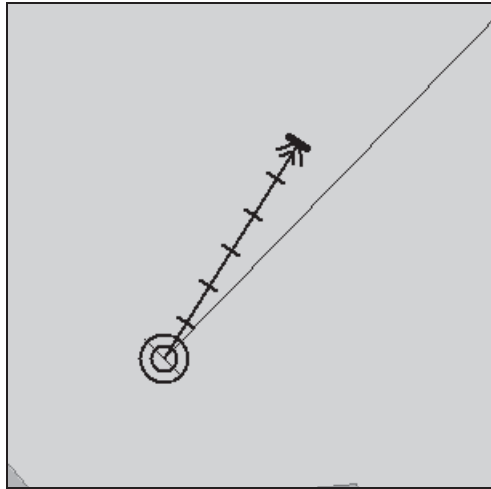
Own ship symbol on small chart scale
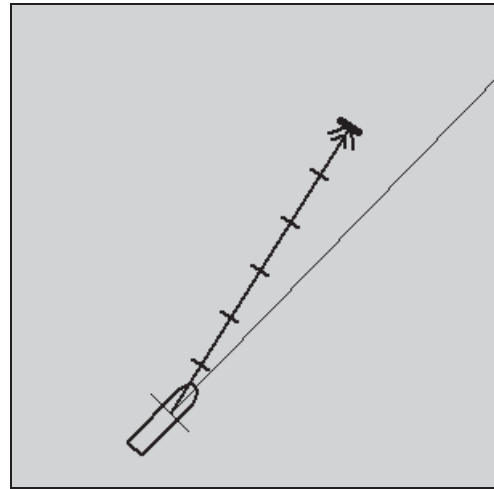
Own ship symbol on large chart scale

- Vessel heading (Gyro) is shown by a solid line over the chart.
- Speed over ground (SOG) and course over ground (COG) is shown by a vector which starts at conning position.

Tracked target

Tracked target symbol

The tracked target symbol is shown below.

- A dangerous tracked target is displayed as a blinking target symbol, in red. The ECDIS has its own definition for dangerous target limits (CPA, TCPA).
- A lost tracked target is displayed as a blinking target symbol, in colors of green and dark yellow alternately.

Vectors of own ship and tracked targets

Target vectors can be displayed relative to own ship's heading (RelVect) or with reference to the North (TrueVect). Both presentation modes can be used with relative motion (RM) or true motion (TM) of own ship display mode.
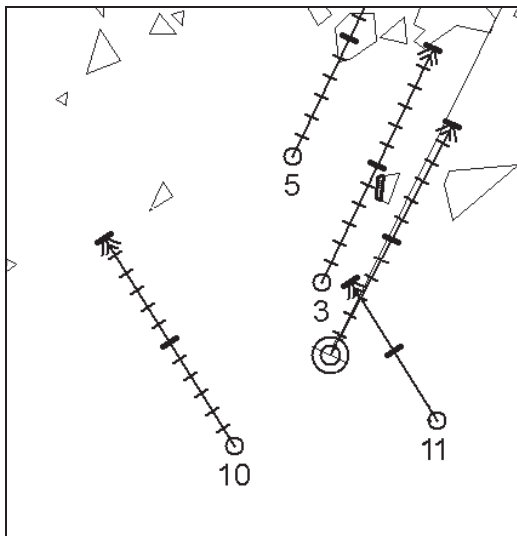
Presentation of true vector (TrueVect)
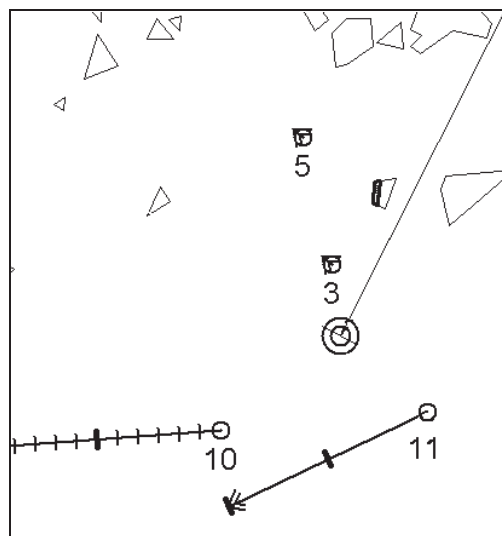
Presentation of relative vector (RelVect)

Vector time (or the length of vectors) and presentation mode can be set at the location shown in the figure below. Place the cursor on the time figure of T VECT (or R VECT), spin the scrollwheel to select setting then push the scrollwheel.

How to display target past positions, select style for target past positions

1. Put the cursor on the text "PASTPOSN OFF" then left-click to show a time value. Put the cursor on the time value, spin the scrollwheel to set a value then push the scrollwheel to set.
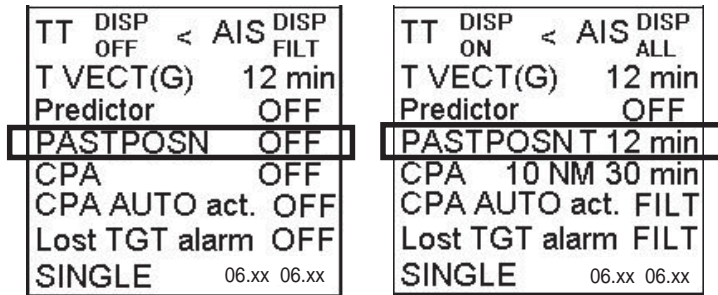
```
┌─────────────────────────┐   ┌─────────────────────────┐
│ TT  DISP  < AIS DISP     │   │ TT  DISP  < AIS DISP     │
│     OFF         FILT     │   │     ON          ALL      │
│ T VECT(G)    12 min      │   │ T VECT(G)    12 min      │
│ Predictor      OFF       │   │ Predictor      OFF       │
│═PASTPOSN═══════OFF══     │   │═PASTPOSN T 12 min══      │
│ CPA            OFF       │   │ CPA    10 NM 30 min      │
│ CPA AUTO act.  OFF       │   │ CPA AUTO act.  FILT      │
│ Lost TGT alarm OFF       │   │ Lost TGT alarm FILT      │
│ SINGLE      06.xx  06.xx │   │ SINGLE      06.xx  06.xx │
└─────────────────────────┘   └─────────────────────────┘
```

2. Spin the scrollwheel to display Symbol Display/Info in the mouse functions area then push the left button to show the Symbol Display dialog box.

```
┌──────────────────────┐
│ ▶ Symbol Display   ⊠ │
│ ┌Tracking┐ Target ◀ ▶│
│ ┌Own ship past tracks─│
│ │ ☑ System           │
│ │ ☑ Primary          │
│ │ ☑ Secondary        │
│ │                    │
│ │ Style   │ Tick   ▶││
│ │ Length  │ 20  │ min│
│ │ Labels  │ 5   │ min│
│ │                    │
│ ┌Target past positions│
│ │ Density │ Medium ▶││
│ │ Style │ Points   ▶││
│ │                    │
│ ┌Events──────────────│
│ │ ☐ User Event       │
│ │ ☐ Auto Event       │
│ │ ☐ Positions        │
│ │ Show               │
│ │ Newer than 3 months▶│
│ │                    │
└──────────────────────┘
```
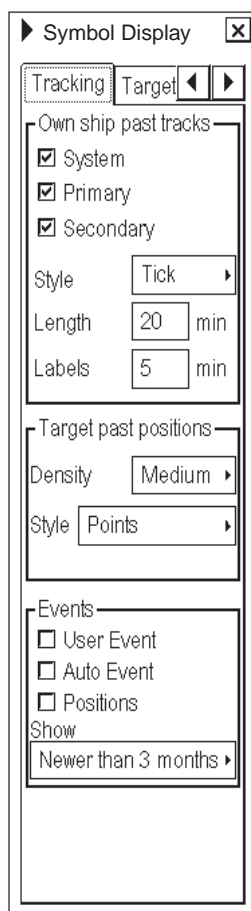
3. Click an arrow tab in the dialog box to select the Tracking page. Select Density (Sparse, Medium, Dense) to define density of points and Style to define points style (Points, Points and dots).

Charts, Datums and Alerts

Charts

Chart types

The user can select between two different chart types: ARCS raster chart or S57 (ENC) vector chart.

To select desired chart material, do the following:

1. Spin the scrollwheel to show Menu/Info/Chart Menu in the mouse functions area th3m right-click to show the Chart menu.
2. Select Activate ARCS chart or Activate S57 chart as appropriate then push the scrollwheel.
3. In the sub menu, Sync Scale opens a chart in the same scale as used for the current chart, and Ignore Scale opens the chart in the scale used the previous time the same type of chart was opened.

How to browse your charts

You may view S57 charts using different positions and different scales. The basic tools for browsing charts are **Range -**, **Range+**, **Set Chart Center**, **ShipOffcenter** and **TM/CU Reset**.

Set Chart Center allows you to look ahead from a place other than own ship's current position. Select Set Chart Center from the Main menu to display the dialog box shown below. Use the scrollwheel to set the latitude and longitude position for chart center then click the **Set Center** button.
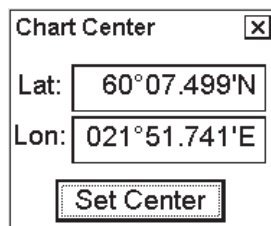
Note: The chart can also be centered (with less precise positioning) by placing the cursor at desired location, displaying Set Chart Center/Info/Activate Scroll in the dialog box and pushing the left mouse button.)

To turn off automatic true motion reset, display and click TM/CU Reset (in the guidance area). When true motion reset is off, the indication "Ship off screen" appears in the information area.

To restore own ship's position to the screen center, display TM/CU Reset/Info/ShipCenter in the mouse functions area then push the right mouse button.

Range - and **Range+** change the chart scale. If true motion reset is active, ZOOM IN and ZOOM OUT keep the relative position of the own ship with respect to the display. If true motion reset is on, ZOOM IN and ZOOM OUT keep the relative position pointed by the cursor with respect to the display.

The system automatically selects next larger or smaller scale. If a chart with larger compilation scale available at your current viewing position, the message "Larger Scale Data Exists" appears.

Presentation of ARCS material

ARCS charts are facsimile copies of BA paper charts, and as such share a common numbering system and the raster images are identical to the paper ones.

Presentation of S57 charts

You can familiarize yourself with the symbols used on S57 charts by browsing the IHO ECDIS Demo Chart 1, which is included in this ECDIS. Note that it behaves as any S57 chart and it follows your selections.

To open the IHO ECDIS Chart 1 on display, do the following:

1. Spin the scrollwheel to show Menu/Info/Chart Menu in the mouse functions area then push the right mouse button.

2. Spin the scrollwheel to select ECDIS Chart 1 from the menu then push the scrollwheel. The menu shown right appears.

3. Spin the scrollwheel to select desired item then push the scrollwheel.
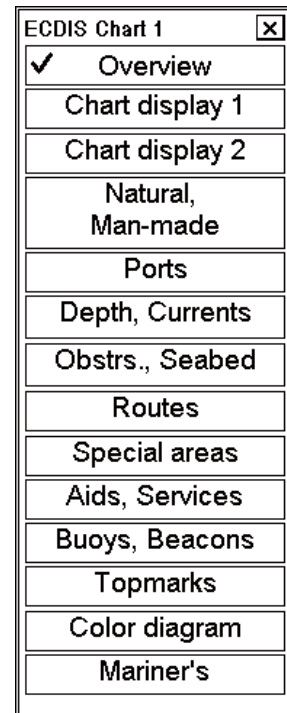
Display Base

A subset of chart features is called a Display Base. As required by IMO, these features cannot be made invisible under any user selection. The Display Base consists of following chart features:

• Coastline (high water)

• Own ship's safety contour, which is selected by the user.

• Indication of isolated underwater dangers of depths less than the safety contour, which lie within the safe waters defined by the safety contour.

• Indication of isolated dangers, which lie within the safe water defined by the safety contour such as bridges, overhead wires, etc., and including buoys and beacons whether or not these are being used as aids to navigation.

• Traffic routine systems

• Scale, range, orientation and display mode

• Units of depth and height

How to control chart features

The visibility of chart features which are not included in the Display Base can be controlled from the Standard, Other 1 and Other 2 pages in the Chart Display dialog box. You can show or hide chart features from these pages.

The Standard page includes chart features which IMO has defined to be displayed as the Standard Display. (These options will be displayed when the Standard Display feature is accessed, with the mouse or with the **STD DSP** key on the keyboard.

The Other 1 and Other 2 pages contain additional chart features. This information is turned off when the standard display is activated.
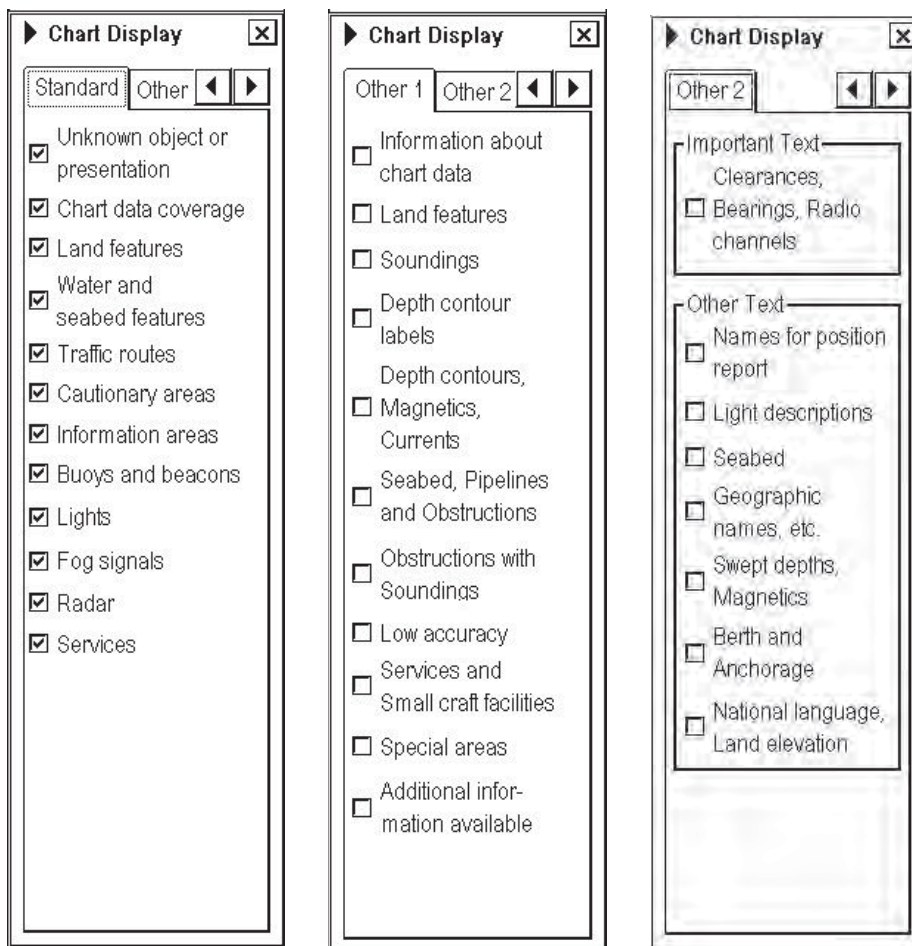
How to control navigation features

Visibility control of the navigation features is divided into three pages:

• **Mariner** page controls Notes, user chart and manual updates.

• **Route** page controls planned and monitored routes.

• **Tracking** page controls your ship's past tracks, target past positions and events.

To access these pages, spin the scrollwheel to display Symbol Display/Info in the mouse functions area then push the left mouse button. Navigate between pages by clicking the arrow buttons. See the illustration on the next page.
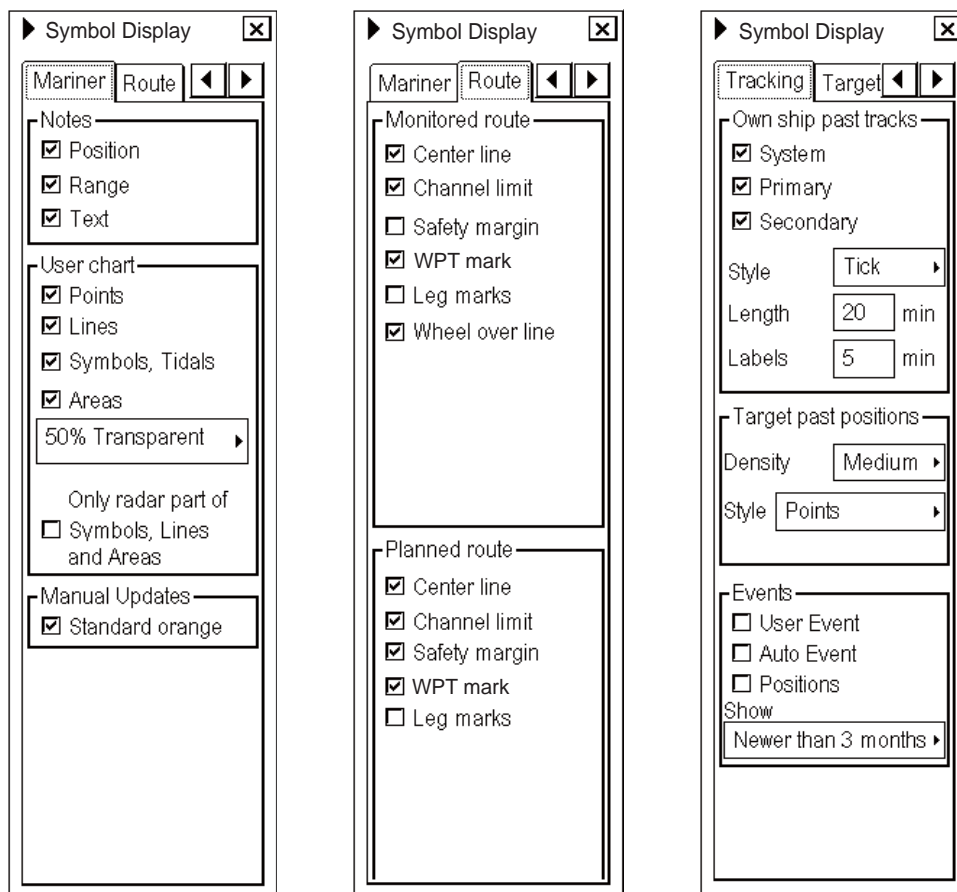
Symbol Display — Mariner

▶ Symbol Display ☒

| Mariner | Route | ◀ | ▶ |

Notes
- ☑ Position
- ☑ Range
- ☑ Text

User chart
- ☑ Points
- ☑ Lines
- ☑ Symbols, Tidals
- ☑ Areas

50% Transparent ▶

Only radar part of
- ☐ Symbols, Lines and Areas

Manual Updates
- ☑ Standard orange

Symbol Display — Route

▶ Symbol Display ☒

| Mariner | Route | ◀ | ▶ |

Monitored route
- ☑ Center line
- ☑ Channel limit
- ☐ Safety margin
- ☑ WPT mark
- ☐ Leg marks
- ☑ Wheel over line

Planned route
- ☑ Center line
- ☑ Channel limit
- ☑ Safety margin
- ☑ WPT mark
- ☐ Leg marks

Symbol Display — Tracking

▶ Symbol Display ☒

| Tracking | Target | ◀ | ▶ |

Own ship past tracks
- ☑ System
- ☑ Primary
- ☑ Secondary

Style	Tick ▶
Length	20	min
Labels	5	min

Target past positions
| Density | Medium ▶ |
| Style | Points ▶ |

Events
- ☐ User Event
- ☐ Auto Event
- ☐ Positions

Show
Newer than 3 months ▶

Chart datum

Chart datum of S57

The datum used in S57 charts is always WGS-84.

Chart datum of ARCS

The difference between ARCS chart local datum and WGS-84 datum is known as WGS-84 Shift. For most of the ARCS charts this is known and the system can do the conversion automatically. For some ARCS charts, however, this is unknown and the user must define the shift. For some ARCS charts this is partially known and the user define the shift for the unknown areas of partially known ARCS charts. For details see the section 9.2.1 "Difference between ARCS chart local datum and positions in WGS-84 datum" in the Operator's Manual.

See also the chapter called "Use with GPS" in the ARCS Navigator User Guide for a description of chart datum.

ECDIS datum

If you use paper charts together with electronic chart material, it is recommended that you use the same datum as your current paper chart to avoid misalignment between your electronic system and points taken or plotted on your current paper chart. This selection of the datum does not change anything inside the ECDIS for navigation calculation processes or for electronic sea chart display processes. However, it changes the numerical values of positions displayed on the ECDIS screen into the user-selected datum.

Alerts

There are three kinds of alerts generated by ECDIS and the autopilot connected to the ECDIS. To see a list of the alerts, see Chapter 30 "Alerts" in the Operator's Manual.

Alerts generated by navigation calculation

Navigation calculation generates the following alerts:

• Error detected in any sensor
• Radar communication error
• Software alerts, etc.

Alerts generated by chart calculation

Chart calculation generates the following alerts:

• New Notes notebook page available
• Chart alerts based on S57 charts
• Chart alerts based on user chart's dangerous symbols, lines and areas

Alerts generated by steering calculation

Note that all steering-related functions are available only if the ECDIS processor is connected to an autopilot. Some of the alerts such as Outside Channel limit are also available without an autopilot. Without an autopilot, all alerts generated by steering calculation appear in the same alert queue as alerts generated by navigation calculation.

Description of the alert priority system

The permanently visible alert is the most urgent alert at any moment. Alerts have priority from 1 to 10 to control urgency. Priority 1 is the highest. The list of alerts in Chapter 30 shows these priorities for each alert with the following syntax: "/1" at the end first line means priority = 1, "/1/8" at the end of first line means that priority is = 1, if unacknowledged and priority = 8, if acknowledged but the state of alert still exists. Unacknowledged alert is shown in black text (or white depending on color scheme) on red background and acknowledged alert which still exists is shown in orange text on white background.
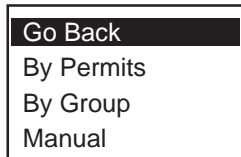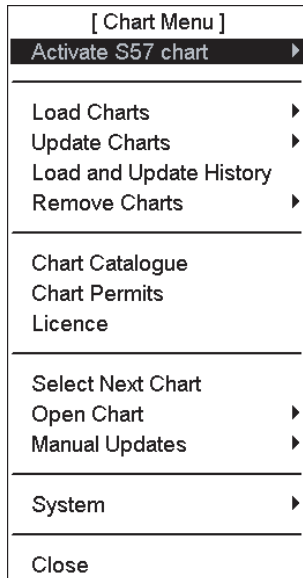
You may view the alerts in the Alert Queue. Place the cursor on the alert text then push the right mouse button. See the example below.
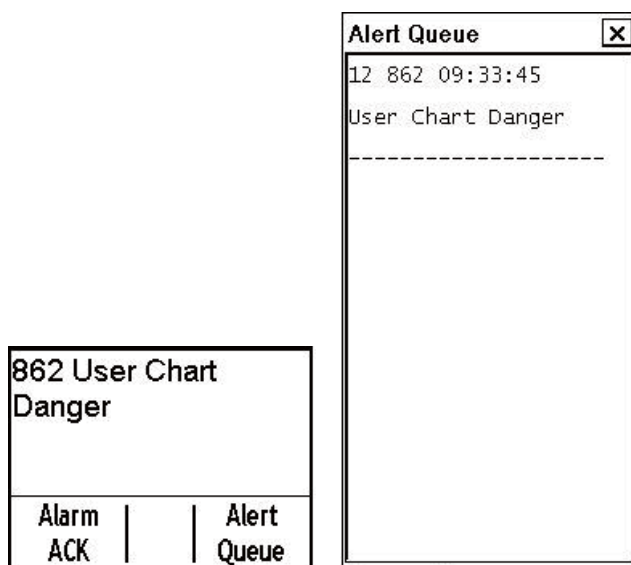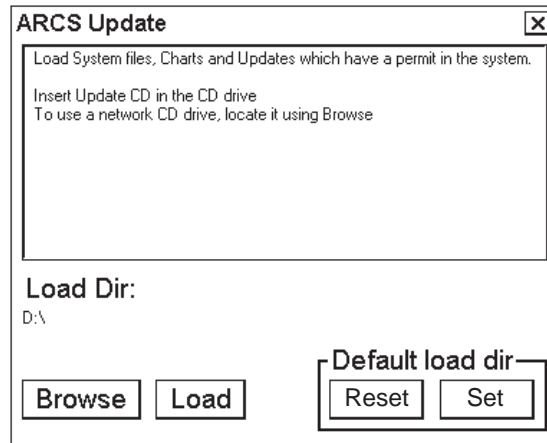
Updating Charts

ARCS charts

The updates are delivered separately in an Update CD ROM. To update ARCS format raster chart into the system, you have three choices, update by permit, update by active group or update manually. The procedure below shows how to update by permit.

```
[ Chart Menu ]
Activate S57 chart          ▶

Load Charts                 ▶
Update Charts               ▶
Load and Update History
Remove Charts               ▶

Chart Catalogue
Chart Permits
Licence

Select Next Chart
Open Chart                  ▶
Manual Updates              ▶

System                      ▶

Close
```

1. Spin the scrollwheel to display Menu/Info/Chart Menu in the mouse functions area then push the right mouse button.

2. Select Update Charts from the menu and By Permits from the sub menu.

ARCS Update

Load System files, Charts and Updates which have a permit in the system.

Insert Update CD in the CD drive
To use a network CD drive, locate it using Browse

Load Dir:
D:\

Browse   Load

Default load dir
Reset   Set

```
Go Back
By Permits
By Group
Manual
```
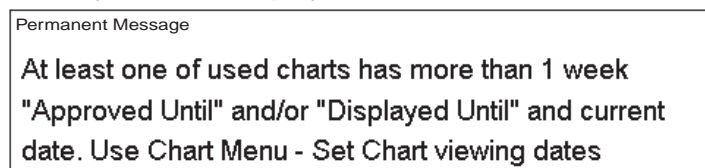
3. Insert Update CD ROM to drive then click the **Load** button. The system will automatically update charts for which you have a permit.

See section 9.10 "How to Update ARCS Charts" in the Operator's Manual.

S57 charts

Date dependency

If you currently use a chart which has Display Until and/or Approve Until dates (set in the Set Chart viewing dates in the Chart menu) more than 1 week from current system date, you have a permanent reminder on your chart display.

Permanent Message

At least one of used charts has more than 1 week "Approved Until" and/or "Displayed Until" and current date. Use Chart Menu - Set Chart viewing dates
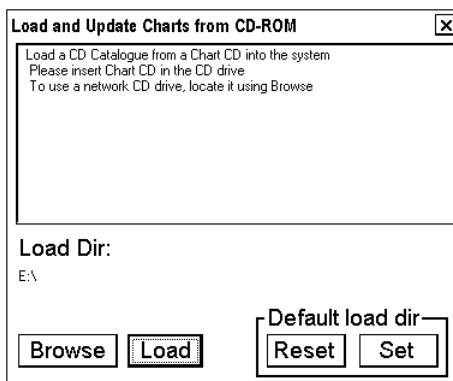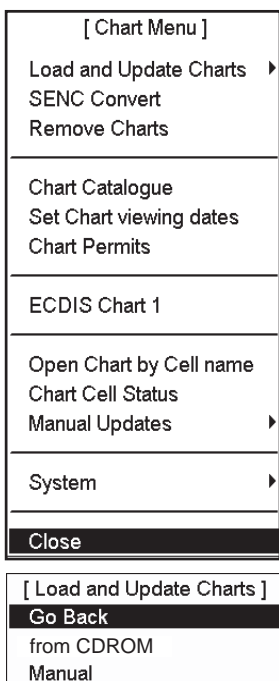
To remove this message, set "Approve Until" and/or "Display Until" as current system date. See section 8.11.3 "How to set "display until" date" and section 8.11.4 "How to set "approve until" date," in the Operator's Manual.

How to load S57 charts from a CD ROM

To update S57 with an Update CD ROM, do the following:

```
[ Chart Menu ]
Load and Update Charts    ▶
SENC Convert
Remove Charts

Chart Catalogue
Set Chart viewing dates
Chart Permits

ECDIS Chart 1

Open Chart by Cell name
Chart Cell Status
Manual Updates           ▶

System                   ▶

Close
```

```
[ Load and Update Charts ]
Go Back
from CDROM
Manual
```

1. Spin the scrollwheel to show Menu/Info/Chart Menu in the mouse functions area then push the right mouse button.

2. Select Load and Update Charts from the menu and "from CDROM" from the sub menu.

```
Load and Update Charts from CD-ROM          ✕

Load a CD Catalogue from a Chart CD into the system
Please insert Chart CD in the CD drive
To use a network CD drive, locate it using Browse



Load Dir:
E:\
                                  ┌Default load dir─┐
   Browse   Load                  │ Reset    Set │
                                  └──────────────────┘
```

3. Insert CD ROM into drive and click the **Load** button.

If you receive an Update CD from Hydrographic Office, see section 8.3.2 "How to load S57 charts from a CD ROM, floppy disk or LAN" in the Operator's Manual.

If you receive an Update CD from a RENC (Regional ENC Co-ordinating Centre), for more information, see section 8.7.5 "How to load an update CD ROM from an RENC" in the Operator's Manual.

Update of S57 charts using Telecomm

If you are using Telecomm services to keep your S57 charts up-to-date, see section 8.6 "S57 Chart Service from an RENC" in the Operator's Manual.

C-MAP charts

ECDIS users do not have possibility to connect to the internet directly from the ECDIS. They are able to create an update order file from the ECDIS and send this by e-mail directly to updates@c-map.no. This automatic e-mail server will process the update request, prepare the updates and automatically return them. The end user can then copy these updates floppy disk, USB memory stick or CD-ROM and apply them to the ECDIS.

How to create an update order file

1. Open the Chart menu and select C-MAP Ed 3 from the menu. Select Update Charts in C-MAP Ed 3 menu.

2. Select Zones (or Areas) to be updated.

3. Click the **Create** button then select the drive where to save the Chart Update Order file.
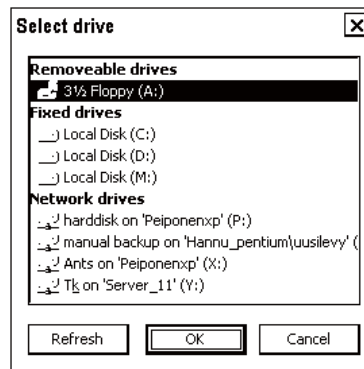

4. When Chart Update Order file is generated and saved to destination, a confirmation window appears.
5. Click the **OK** button. Update order file to address updates@C-MAP.no.
6. You will receive updates for your request automatically.

How to load chart updates from the file

When you have received an update file via e-mail, then you can load it to ECDIS.

1. Open the Chart menu and select C-MAP Ed 3 in the menu. Select Update Charts in C-MAP Ed 3 menu and Apply Updates from e-mail in Update charts menu.
2. In C-MAP RTU Update dialog box, click the **Apply Chart Update from Files** button.
3. In C-MAP Chart Update dialog box, select drive where updates are saved and click the **Apply Updates** button.
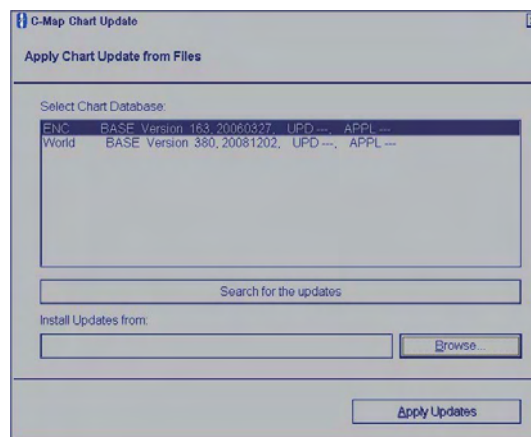
4. When completed, the following dialog box appears. Click the OK button.

How to review chart updates

You can see a list of changes for every updated chart as follows:

1. Open the Chart menu and select C-MAP Ed 3 in the menu. Select Update Charts in C-MAP Ed 3 menu and Apply Updates from e-mail in Update charts menu.
2. Review updates in text mode and click the **Review updates** button.
3. Select from the list shown below.
4. Select a chart from the list.
5. Click the X button.
6. In the RTU dialog box, click the X button.

How to view update status of CM93/3 charts

1. Open the Chart menu and select C-Map Ed 3 from the menu. Select C-Map Update Status in C-Map Ed. 3 menu to show the C-Map Database Update Status dialog appears.
2. Click OK to close the window.

How to view update history of CM93/3 charts

1. Open the Chart menu and select C-Map Ed 3 from the menu. Select C-Map Update Status in C-Map Ed. 3 menu.
2. Click OK to close the window.

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ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

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