The purpose of this Operator’s Guide is to provide basic operating procedures for this equipment. For detailed information see the Operator’s Manual.

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How to select an operating mode

Put arrow on the operating mode indication and left-click. The choices are Chart Radar, Radar and ECDIS.

- Chart Radar Mode: Radar display w/chart overlay
  - Range 0.125 - 24 nm
  - Orientation other than Head-up
- Radar Mode: Conventional radar display
- ECDIS Mode: Electronic chart display

Radar mode indications

System Status
(Sector rotates if system is normal.)

Heading

Speed

Transversal speed

Course over ground

Speed over ground

Position

Datum

Source of Position*

Route Data Box

WPT Data Box

User Chart, Notes Box

Date, Time Box

Cursor Data Box

Target List Box

Acquisition zone setting

Target Trail setting

True motion reset

Alert Box

Guidance area
(CURRENT button, scrollwheel function)

Acquistion Zone setting

Target Trail setting

True motion reset

*1
To adjust, put arrow on setting and left-click.

IR: Interference Rejector

ES: Echo Stretch

EAV: Echo Averaging

AUTO RAIN: Auto rain clutter reduction
ECDIS mode indications

(1) Presentation mode  (4) Chart only switch
(2) Operating mode    (5) Name of display settings
(3) Display scale

System Status
(Sector rotates if system is normal.)

Right click to select display

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<th>Route</th>
<th>Conning</th>
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Electronic chart area

Mouse function area.
(Current function of left button, scrollwheel, right button)

<Data from position-fixing sensor>
HDG  : Heading
SPD  : Longitudinal speed
SB   : Transversal speed
COG  : Course over ground
SOG  : Speed over ground
Position : Latitude and longitude
Geodetic datum: WGS-84, etc.
EPFS  : DGPS, GPS, etc.
Radar functions

Adjusting tuning
1. Roll the trackball to put the arrow on the TUNE level indicator at the top of the screen.
   - Tune MAN
2. Left-click to show AUTO TUNE to get automatic tune.

Adjusting sensitivity
1. Roll the trackball to put the arrow on the gain level indicator at the top of the screen.
   - Gain 30
2. Spin the scroll wheel downward to increase the gain or upward to decrease it.

Suppressing sea clutter
1. Use the trackball to put the arrow in the SEA AUTO box.
   - Sea AUTO
2. Push the left button to show SEA MAN.
3. Put the arrow on the A/C SEA level indicator.
4. While observing the radar image, spin the scrollwheel to suppress sea clutter.

Suppressing rain clutter
1. Put the arrow on the level indicator.
2. While observing the radar image, spin the scrollwheel to suppress rain clutter.

Radar picture adjustments
1. Left-click the PICTURE box. This box has 12 preset picture settings for sea state, navigation position, etc.
2. To adjust, right-click the box, and the display shown below appears.
   - Reject interference.
   - Magnify radar echoes.
   - Suppress unstable echoes.
   - Reject noise.
   - Auto sea clutter suppression.
   - Auto rain clutter suppression.
   - Adjust video contrast.
3. Select item's setting.
4. Spin the scrollwheel to select desired setting.
5. Push the scrollwheel.

Measuring range
1. Use the trackball to put the arrow in the VRM1 or VRM2 box, whichever VRM you want to use.
   - VRM1
   - VRM2
   - The guidance box reads "VRM ON."
2. Push the left button to turn on the VRM.
3. Spin the scrollwheel to put the VRM on the inner edge of the target.

Measuring bearing
1. Use the trackball to put the arrow in the EBL1 or EBL2 box, whichever EBL you want to use.
   - EBL1
   - EBL2
   - The guidance box reads "EBL ON."
2. Push the left button to turn on the EBL.
3. Spin the scrollwheel to bisect the target with the EBL.

To erase a VRM, select the appropriate VRM box and push the left button until the VRM disappears from the screen.

To erase an EBL, select the appropriate EBL box and push the left button until the EBL disappears from the screen.
**TT functions**

**Activating/deactivating TT**

Put the cursor on the TT setting in the information area then push the left mouse button to select an option (AUTO or MAN).

**Selecting automatic or manual acquisition**

1. Select the TT setting and push the right button.
   - Manual 100
   - Auto 25
   - Auto 50
   - Auto 75
   - Auto 100
   - Ref target vector
   - Cancel All

2. Choose a Manual or Auto option as applicable.
3. Push the left button.

**Manually acquiring a target**

1. With the arrow inside the effective display area, spin the scrollwheel to show Tgt Acquire in the guidance box.
2. Use the trackball to put the arrow on the target you want to acquire.
3. Push the left button to acquire the target.

**Terminating tracking a target**

1. Spin the scrollwheel to show Tgt Cancel/L=All in the guidance area.
2. Put arrow on target.
3. Push the right button.

**Displaying target data**

1. Put arrow on TT target.
2. Push scrollwheel.

To delete the target data, put the arrow on the target and push the scrollwheel.

**TT symbol color, size**

1. Left-click Symb DISP at the right side of the screen.
2. Click the Targets tab.

   ![Color box and Size box]

3. Set the arrow in the Color box.
4. Spin the scrollwheel to select color and push it to confirm selection.
5. Set the arrow in the Size box.
6. Spin the scrollwheel to select size and push it to confirm selection.
7. Click the Close button.

**Setting CPA and TCPA ranges**

1. Use the trackball to select the CPA setting.
   - Predictor OFF
   - PASTPOSN T 12 min
   - CPA 1.0 nm 6 min
2. Spin the scrollwheel to select the CPA setting desired and push the scrollwheel.
3. Use the trackball to select the TCPA setting.
4. Spin the scrollwheel to select TCPA value desired and push the scrollwheel.

**Setting vector length**

1. Spin the scrollwheel to select RelVect. T VECT(G) or T VECT(S) (whichever is displayed) at the right side of the screen.

   ![Vector length settings]

2. Spin the scrollwheel to display R VECT, T VECT(G) or T VECT(S) as appropriate.
3. Select the vector time setting.
4. Spin the scrollwheel to display time desired and push the scrollwheel.

**Setting an acquisition zone**

An acquisition zone can be used to enable automatic target acquisition in a specific area.

1. Left-click AZ at the bottom right corner.
2. Set the arrow at the upper left corner of the acquisition zone and left-click.
3. Drag the arrow to the lower right corner and left-click.

**To erase an acquisition zone**, put arrow on applicable AZ indication and push the left button until the guard zone disappears. If two acquisition zones are in use, the No.1 acquisition zone cannot be erased unless the No.2 acquisition zone is erased.
AIS functions

Turning AIS function on/off

Targets which are being tracked by an AIS transponder can also be displayed on the display. Put the cursor on the AIS setting in the information area then push the left mouse button to select an option (DISP OFF, DISP FILT, DISP ALL).

Activating targets

Activating specific target
1. Put the arrow on the AIS target and push the scrollwheel.
2. On the target data display, left-click the AIS check mark. Check mark present means activated target; no check mark indicates sleeping target.

Activating all targets
1. Put the arrow in the AIS DISP box at the right side of the screen.
2. Right-click to show the AIS DISP menu.

Sleeping all activated AIS targets
1. Use the trackball to select the AIS box at the right side of the screen.
2. Push the right button to open the AIS DISP menu.

Displaying target data

You may display an AIS target's data by selecting it on the display.

Basic data
Use the trackball to put the arrow on an AIS target symbol and push the scrollwheel.

Detailed target data
1. Use the trackball to put the arrow on the desired AIS Target in the data box at the right side of the screen.
2. Push the left button to show detailed data.

To erase detailed target data, put arrow in detailed target data and left-click.

Filtering AIS targets

1. Right-click the AIS setting indication to show the AIS filter dialog box.
2. At the top of the window, check the types of AIS targets to show.
3. Select max. count and max. range of AIS symbols to display.
4. Set filtering method (CPA, TCPA or RANGE) with Priority.
5. Set min. speed and max. length for displayed target.

Creating a safety message

1. Display Menu/Info/Chart Menu in the guidance box and push the left button to open the Main menu.
2. Select Safety Message from the menu and push the scrollwheel.
3. Put the arrow on the triangle in the menu to show the sub menu.
4. Select Create Message from the menu and push the scrollwheel.
5. Check Enable changes.
6. Put the arrow in the Address box. Spin the scrollwheel to select "Addressed to MMSI" or "Broadcast to All" as appropriate and push the scrollwheel. For Addressed to MMSI, enter MMSI of ship in the MMSI input box, in the Vessel window.
7. Select message type at Message type box.
8. Enter the text of your message in the box below the Channel box.
9. To send the message, put the arrow on triangle to show the sub menu, select Send Message and push the scrollwheel.
1. Set CD-ROM to drive, spin the scrollwheel to show Menu/Info/Chart Menu in the guidance box and then right-click.

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

3. Select the chart to load from the "Load or Update Charts from CDROM" dialog box.

4. Click the Load button to start loading.

   1) Before loading starts the message below appears.

   ![Load from CD](image)

   2) Click the Yes button to load chart. SENC conversion is done automatically and the SENC Convert window appears.

   ![SENC CONVERSION in progress](image)

   3) After the conversion is completed, the window shown below appears.

   ![CD History](image)

   4) Click the Close button to finish.
Display until and approve until dates

1. Open the Chart menu.
2. Choose Set Chart viewing dates from the menu.
3. Set the arrow in the Display Until field (Approve Until field), use the scrollwheel to set desired date, and push the scrollwheel.

Manual chart update

Do the procedures below to manually add objects (points, lines, areas, etc.) to electronic charts, to keep them up to date.

Inscribing new symbol

1. Spin the scrollbar to show Menu/Info/Chart menu in the guidance box.
2. Push the right button.
3. Select Manual Updates and push the scrollwheel. Select Planning and push the scrollwheel.
4. Click the New button.
5. Select Drawing type and Category.
6. Select symbol from symbol list box.
7. Click the Accept New Object button.
8. Click the Edit Properties button.
9. Click the Edit Position button.
10. Use the arrow and left button to place and input symbol. Click the Accept button.
11. Click the Accept button.
12. Click the "Accept Manual Updates as Permanent" button.
Creating a user chart

User charts are created and edited in the Planning mode. To display a user chart on ECDIS, set Points, Symbols & Tidals and Areas on the Mariner page in the Symbol Display menu.

1. Put the arrow on User Chart in the information area then click the Plan button.

2. Put the arrow on the triangle in the dialog box, choose Create from the menu and then push the scroll wheel. Enter a name for the user chart. Click the OK button to finish.

3. Click the Line tab and then check “Enable changes.” Click the Add button. Spin the scrollwheel in the Element type box to choose line type and then push the scrollwheel. To start a new line from a new position, check “New start position.”

4. Click the Symbol tab and then check “Enable changes.” Click the Add button. For symbol, set style (symbol or label). Use the arrow to select location for symbol or line and then left-click.

5. Click the Area tab and then check “Enable changes.” To make a new area, click the Add button in the Area field. Define Name for area. Use the arrow to select position for points and then push the left button.

6. Click the Tidal tab and then check “Enable changes.” To mark a tidal on the screen, use the mouse to locate the arrow and then push the left button. Define Name, Type, Orientation, Strength and Time for Tidal. The Tidal symbol is displayed on the chart radar and ECDIS displays.

7. Click the Point tab and then check “Enable changes.” Use arrow and left button to define location of point.
Creating Notes

1. Put the arrow on Notes in the information area and then click the Plan button to show the Notes dialog box. Select Create from the menu and then push the scrollwheel.

2. In the Notes name entry box, spin the scrollwheel to choose character, and then push the scrollwheel. Repeat to enter name desired and then click the OK button.

3. In the Edit Record page of the Plan Notes dialog box, check “Enable changes”.

4. Roll the trackball to put the arrow on the location desired for Notes and then push the left mouse button.

5. In the Range box, enter the range from own ship at which to activate the Notes.

6. To show text message on the screen, enter desired message in the text window; spin the scrollwheel to choose character and push the scrollwheel to confirm.

Displaying Notes

To show Notes on the chart, turn on Notes in the Mariner page of the Symbol Display dialog box.

There are four ways to show pilot data on the chart:
1. Position marker only
2. Position marker and alphanumeric information
3. Position marker, range ring
4. Position marker, range ring and alphanumeric information
Route planning

Creating a new route

1. Put the arrow on Route in the information area, and then click the Plan button to open the Plan Route dialog box with Route Plan menu. Select Create and push the scrollwheel.

2. Spin the scrollwheel to choose character, and then push the scrollwheel. Repeat to enter name desired and then click the OK button.

3. Check “Enable changes” in the Plan Route dialog box. Choose position of a waypoint by placing the arrow on the location desired on the electronic chart display and 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.

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

5. Open the Check page to detect areas where depth is less than the safety contour or where specified conditions exist. The chart radar can examine chart database against planned route to make a list of alarms where a route crosses a safety contour or specified areas used in chart alarms.

6. Open the Parameter page to enter Estimated Time of Departure (ETD) and Estimated Time of Arrival (ETA), if you are using Time table optimizing. Choose desired optimizing mode from the Optimize window.

Displaying planned route

1. Spin the scrollwheel to show Symbol Display/Info/ in the guidance box and left-click to show the Symbol Display dialog box.

2. Right click to show the Route page.

3. Check or uncheck required item (Center line, Channel limit, Leg marks, etc.).
**Route monitoring**

**Selecting route to monitor**

Set arrow on Route in the information area, click the Monitor button, spin the scrollwheel to select route then push the scrollwheel.

1. Open the Monitor Route dialog box, select route at the information area and click the Monitor button.
2. Set the arrow in the To WPT box, spin the scrollwheel to select waypoint.
3. Push the scrollwheel to confirm selection.

**Setting destination waypoint**

- Leg mark: Show planned speed and planned steering in nav route.
- Wheel over line: Show point where turn on next waypoint is to begin.

**Displaying route to monitor**

1. Spin the scrollwheel to show Symbol Display/Info/ in the guidance box and left-click to show the Symbol Display dialog box.
2. Click the arrow tab to show the Route menu.
   - Check or uncheck Center line, Channel limit, Leg marks, Wheel over line.
   (WPT mark is permanently checked.)
- Leg mark: Show planned speed and planned steering in nav route.
- Wheel over line: Show point where turn on next waypoint is to begin.
User has to choose safety depth suitable for the own ship. To choose suitable depth, do the following:

1. Set the safety contour.
   1) Spin the scrollwheel to display Chart Display/Info/Primary (Standard) Display in the guidance box and then left-click.
   2) Click the triangle to open the Chart page.
   3) Enter depth for safety contour.

   **Note:** If the chart does not contain chosen depth contour, the system will automatically select the next depth contour.

2. Enable display of chart alert.
   1) Show the Chart page of the Chart Display dialog box.
   2) Show OFF or ON in the Chart alert highlight box.

3. Selecting objects for use in chart alarms.
   1) Spin the scrollwheel to show Menu/Info/Chart Menu in the guidance area and then push the left button.
   2) Choose Initial Settings from the menu and then push the scrollwheel.
   3) Put the arrow on the triangle inside the Initial Settings dialog box to open the Initial Settings menu.
   4) Choose Chart Alert parameters and then push the scrollwheel.
   5) Click Alerts tab in Chart Alert dialog box.
   6) In the Ignore box at the top of the window, use the left button to click the alarm item you wish to process.
   7) Click the Indication button to display visual alarm, or Alarm/Warn button to get the audio alarm. The item chosen is moved from the Ignore box to the Indication or Alarm/Warning box as appropriate.
   8) To remove an alert, click it in the Indication or Alarm/Warning box with the left button and then click the Ignore button.
   9) To change an alarm alert method, click it in the Indication or Alarm/Warning box with the left button and then click the Indication or Alarm/Warn button as appropriate.

4. Set watch sector for own ship.
   1) Click the Check Area tab in the Chart Alerts dialog box.
   2) Set Ahead and Around for sector.
   3) Click the Close button to finish.
Navigation sensors

The operator can choose navigation sensors to use for navigation and view their current values on the Sensors dialog box. To access this dialog box, do as as follows place the cursor on the Position field in the information area then push the right button.

1. Put the cursor on the Position field in the information area.

2. Push the right button.

**SPD/CRS page**

**Manual speed**: If checked, user can enter value (kn) for speed. This is used only if there are no other speed or SOG sensors chosen.

**Log**: If checked, a log is used as water speed source. If you have a dual-axis doppler log which can measure both water and bottom track, then installation parameters can be set to receive water tracking as log device.

**Dual log (water)**: If checked, a dual log is used as speed and course source. "(water)" is used to indicate that this information is from water track of dual log.

**Dual log (bottom)**: If chosen, a dual log is used as speed and course source. "(bottom)" is used to indicate that this information is from bottom track of dual log.

**Ref tgt**: Speed according to reference target.

**Gyro1**: Heading source is a gyrocompass. "(mag)" means the source is magnetic heading. True heading source has no indication. If the source of Gyro1 is a gyro with synchro or stepper interface, the indication "(require set)" appears when you need to set a new initial value for the gyro.

**Rate gyro**: Heading source is a Rate of Turn gyro. "(calc.)" means the rate of turn is calculated from gyro movement.

**POSN page**

The field of a position sensor contains a label (here DGPS-GLL and GGA+ZDA) which indicates the name of the sensor; a status (primary/secondary/off) which indicates if the sensor is used or not; position at conning position and local datum; speed and course which has (MAG) if the course is referenced to magnetic north. A DGPS position sensor has additional text Diff, if differential signal is in use. Latitude and longitude values will appear in red and with additional text in the following conditions:

- Kalman filter has excluded the sensor from its estimated position. Additional text is "Excluded"

- Received position from position sensor is in another datum as set to be received in the chart radar. Additional text is "Datum"

- If position sensors have position discrepancy active. Additional text is "Discrepancy"