

SAFETY INSTRUCTIONS



This device's electronic chart system(ECS) is developed for the navigational aid only and chart itself does not obtain any approvals; has not been certified from the government authorities. If operator needs safe navigation then must use an official chart that has been approved by government agencies also operator is fully responsible for using this device.

Please read through this manual before the first operation. If you have any questions, please contact the customer service or your local dealer or distributor
Extensive exposure to heat may result in damage to the chart plotter.

Connection to the power source with reversed polarity will damage the chart plotter severely. This damage is not covered by the warranty.

Do not disassemble. The chart plotter contains dangerous high voltage circuits which only experienced technicians must handle

Exposure of the display to UV rays may shorten the life of the liquid crystals used in you plotter. This limitation is due to the current technology of the LCD display.

Avoid overheating which may cause loss of contrast and, in extreme case, a darkening of the screen. Problems which occur from over heating are reversible when temperature decreases.

Screen Cleaning Precautions

Cleaning your chart plotter screen is a very important operation and must be done carefully. The following is the cleaning procedure.

You use a tissue or lens tissue and a cleaning spray containing Isopropanol (a normal spray cleaner sold for PC screens. Fold the tissue or lens tissue into a triangular shape, moisten the tip and use the index finger behind a corner to move the tissue across the surface, in overlapping side to side strokes. If the tissue is too wet, a noticeable wet film will be left in its path and you will need to repeat the process. If too dry, the tissue won't glide easily, and may damage the surface.

If you require technical advice or assistance, contact your nearest samyung enc office or visit our website, www.samyungenc.com.

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1 Introduction

1-1 General Information

The chart plotter is a precision-crafted GPS chart Plotter with high-performance receiver for the Global Positioning System constellation of satellites, providing precise location data with a host of navigation features. Some functions require optional units and sensors installed on your boat.

The chart plotter can be connected to external devices with NMEA0183 and NMEA2000 interface and display information. Following are the examples.

- NAVTEX
- AIS receiver
- DSC VHF radio
- Transducer & sensors
- Autopilot

1-2 Specification

[NF5100]

GENERAL	
Category	Detail
Size	244mm(H) x 370mm(W) x 107mm(D)
Display	10.4 inch.
Supply Voltage	11 ~ 35 V DC Approx 40W
Temperature	Antenna : -30°C ~ +85°C, Main unit : -15°C ~ 55°C
ALARMS	
User set: Arrival radius, anchor, XTE, danger, low battery, loss of DGPS fix, dangerous AIS vessels	
GPS NAVIGATION	
Chart card	NAVIONICS SD card
User card	SD card
Waypoints	Up to 10,000
Routes	20 routes (1 route ~ 20 points)
Tracks	20000 tracks
Chart datums	216 Chart datums, One user-defined map shift.
Chart scale	0.2 to 500 nm for chart (chart dependent) down to 0.005 nm in plotter mode.
COMMUNICATIONS	
NMEA	NMEA 0183 Speed : 4800, 9600, 38400
NMEA 0183 Input	DBK, DBS, DBT, DPT, GGA, GLL, GN [□] GA, G [□] , HDG, HDT, MDA, MTA, MTW, MWD, MWV, RMC, IBPM, VHW, VTG, VWT, ZDA
NMEA 0183 Output	APA, APB, BWR, GGA, GLL, GSA, GSV, RMB, RMC, VTG, XTE, DBT, DPT, VHW, MTW, ZDA, PLT
Fish finder	
Depth	0 m ~ 1500 m
Output of transducer	Power : Maximum 600 W RMS 2 type frequency(50 kHz, 200 kHz [□])
Temperature	range : 0° ~ 37.7°C (32°F ~ 99.9°F)
Speed(Paddle wheel)	1 ~ 96.6 kph (57.5 mph, 50 kn).

1-3 Packing List

Item List	Model	
	N5100	NF5100
Display	NF5100-E	N5100-E
Bracket	ACC-PLOT-010-5	
Display Cover	NF5100-CC	
Power cable	SCN-3M-D3	
Bracket mounting screw	NF5100-BP	
Protection Cover	ACC-CABA-0105	
User manual	NF5100-ME	
GPS Antenna	SAN-60-10m	
Quick User Guide(Eng)	NF5100-BE	
B45 Transducer	B45	X

1-4 Optional Accessories

Model	Part number	list
GPS Antenna+ GPS Antenna support	SAN-60-20m	GPS Antenna+ BNC Plug
		GPS Antenna support
		GPS Antenna cable(20m)
GPS Antenna stand support	57745	GPS Antenna stand support
Remote	REM-350-E	specification
B45 transducer	B45	specification
SPARE FUSE	12V/7A, 24V/3A	3A : 2EA, 7A : 2EA

2 Getting Started

2-1 Installation

The chart plotter is supplied with bracket and flush mounting kit. You can choose a method of installation according to your preference.

2-1-1 Bracket Mounting

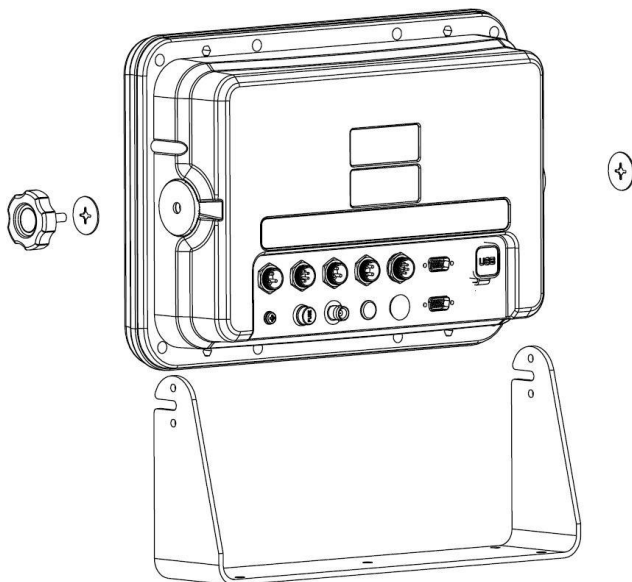
Before installing ensure the area the bracket is mounted to is strong enough to support the weight of the GPS chart plotter. After the location is found, attach the mounting base to the area using the supplied hardware.

Mounting the display Unit:

- 1 Hold the display unit and find a groove joint between the display unit and bracket.
- 2 Gently push the display unit into the groove of bracket
- 3 Turn the knob to clockwise to lock.

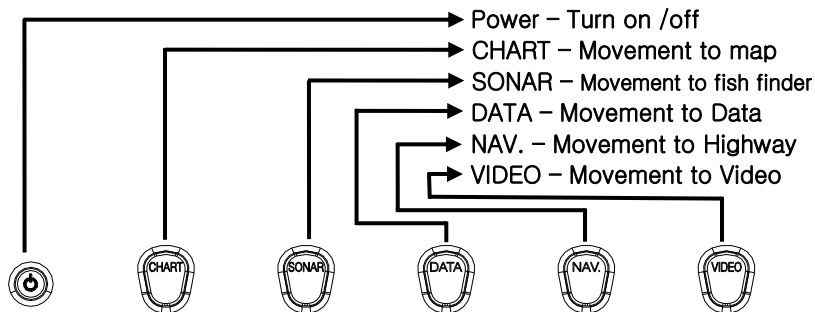
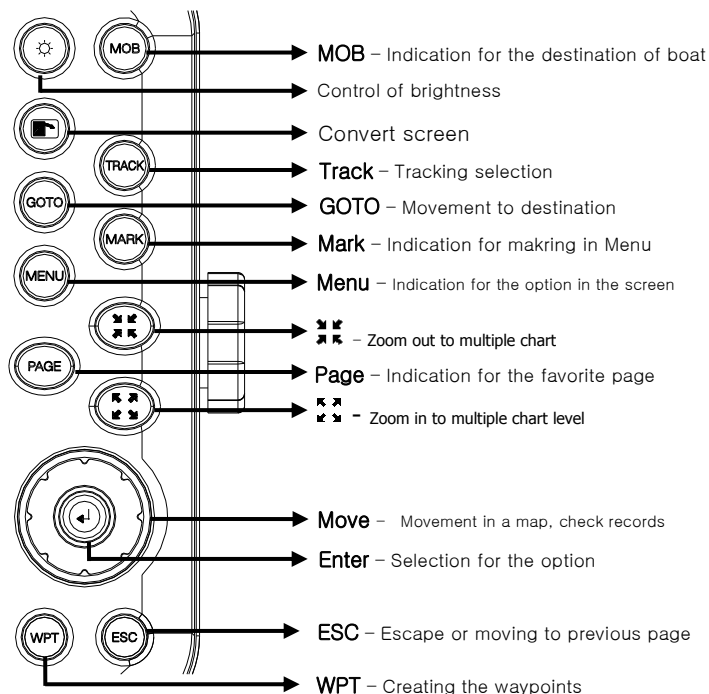
Removing the display unit:

- 1 Turn the unit off
- 2 Turn the knob to counter clockwise and pull the display unit out.

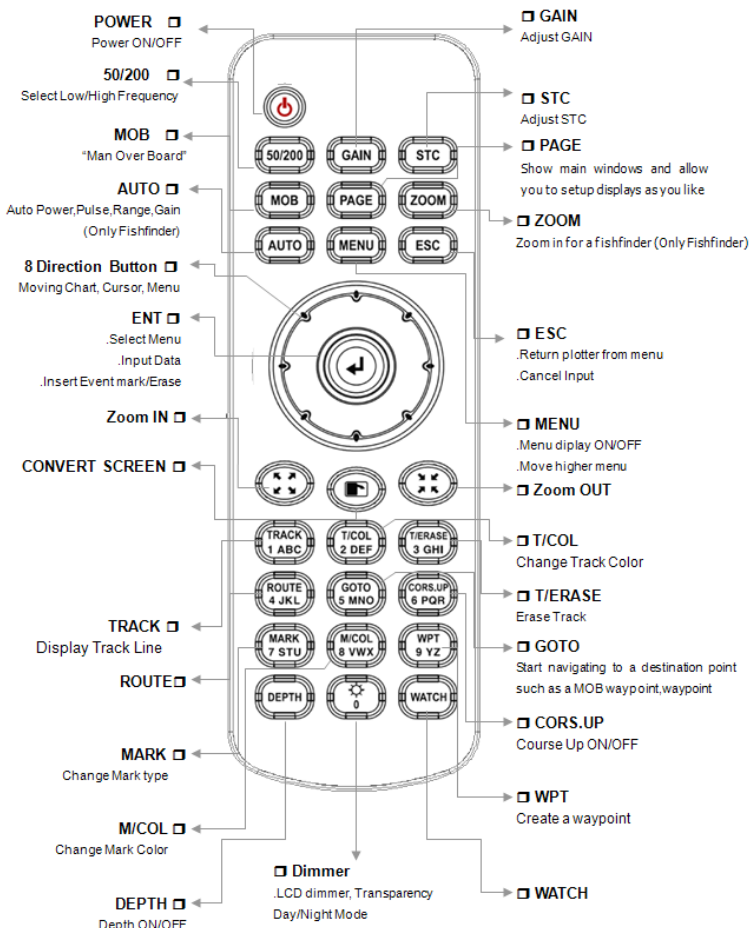


2-2 Keys

[FRONT]



[REM-350]



※ Remote control(REM-350) is Option device

2-3 NAVIONICS SD Card

This section provides instructions for inserting and removing NAVIONICS SD card procedure.

Inserting the SD Card

- 1 Hold the SD card so that you can see the NAVIONICS label.
- 2 Open the door, gently push the SD card into the slot; push the SD card in as far as you hear click sound, then close door.



Removing the SD Card

- 1 Turn off the unit.
- 2 Open the door and push in on the SD card until it is released.
- 3 Close the door.

	Insert NAVIONICS SD card correctly. (DO NOT FORCE) Close SD card door firmly all the times. Do not remove SD card during reading and writing.
---	---

2-4 Chart Selection

A user can select a map between NAVIONICS and S-MAP.

A user can select a map as follow instruction,

Chart Selection

- 1 Press and hold .
- 2 Select the system setting icon.
- 3 Select Chart then a chart you prefer.

	NAVIONICS SD is optional. User can purchase it themselves or contact Samyung agent for purchasing.
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2-5 Simulate Mode

Simulate Mode is great for practicing the actual use of a product when the satellites signals and internal alarms are not available. In the simulate mode, the unit turns the GPS receiver off and ignores data from all optional devices..

Two simulate modes are available as below.

- **Normal:** Allows a user to practicing the actual use of a product without satellites connection.
- **Demo:** boat travel alone given route at given speed and show different function of the unit

	Do not try to navigate in a simulate mode. While the simulate mode is turned on, the GPS receiver is not active.
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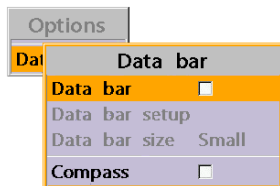
2-6 Data Bar

Data bar displays useful navigation information at the top of the display.

35°05.152'N	SOG	0.0	kn	03/Mar/11
129°04.278'E	COG	110	부시각	23:31

Displaying Data bar

- 1 Press **MENU** and select **Data bar**.
- 2 Select **Data bar**.



Setting the data displayed in data bar

- 1 Press **MENU** and select **Data bar**.
- 2 Select **Data bar** then **Data bar setup**.
- 3 Move the cursor key to highlight the data field you want to change then press **ENTER**.
- 4 Select **Data type**.
- 5 Select a desired data you want to display in the field then press **ENTER**.
- 6 Repeat above steps if necessary.

Selecting the Data bar size

- 1 Press **MENU** and select **Data bar**.
- 2 Select **Data bar** then **Data bar size**.
- 3 Select the desired size of data bar.

[Large]

300 310 320 330 340 350	N	10 20 30 40 50 60
40° 30.572'N + 073° 52.895'W + AIS Not connected		
COG ---	SOG --.-	kn/Volt 13.9 V
--/--/--	Time --:--	Depth ---.- ft

[Small]

300 310 320 330 340 350	N	10 20 30 40 50 60					
40°29.314'N	+	073°52.777'W	AIS	Not connected	Time	--:--	
COG	---	SOG	---	kn	Volt	13.8	
					V	HDG	---
--/--/--	Time	--:--	Depth	---	ft	SPD	0.3
					kn		

Tip: If you select None for all data fields, the data bar will disappear to save space for the chart.

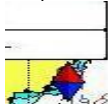
Tip: Even though you setup a data bar for specific window, the data bar is not apply to all other window.

2-7 Compass

The chart plotter computes compass direction from the constellation of GPS satellites. It show at the top of screen.



For easy reading and recognition, there is a compass needle at top right side.



When the compass is displayed, COG is always displayed in data field.
Also when you are navigating to a point, COG and BRG is always displayed in data bar.



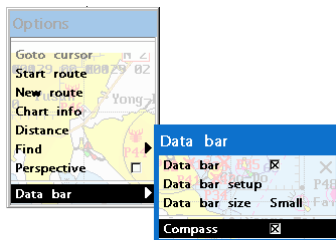
Tip

COG(Course Over Ground) – The course you vessel is heading.

BRG(Bearing) – The direction from your current position to a destination point.

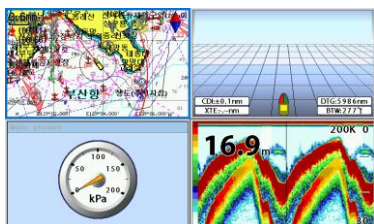
To turn the compass off or on:

- 1 Press **MENU** and select **Data bar**.
- 2 Select **Compass**.



2-8 Multi Window Display

The Chart plotter can display up to four windows at the same time.



Adding a window

- 1 Press **PAGE** and select **Add** icon.
- 2 Select an icon you want to add.



Changing window size

- 1 Press **PAGE** and select **Split** icon on bottom.
- Press **▲** or **▼** to change size of the windows.



Deleting a window

- 1 Press and hold **PAGE** to select a window you want to delete.
- 2 Press **PAGE** and select **Remove** icon to remove.

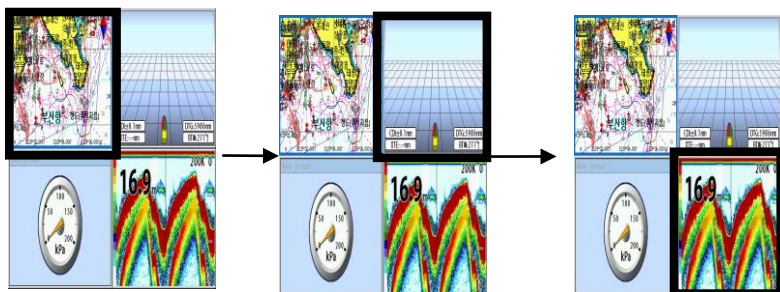


Replacing two windows on the display

- 1 Press and hold **PAGE** to active desired window you want to replace.
- 2 Press **PAGE**, select **Replace** icon.
- 3 Select icon you want to display then press **↓**.

Active Window

To distinguish an active window among windows, an orange border indicates the active window. To change the active window to the next window, press and hold **PAGE**.



It is important to notice which screen is on due to the multi screens which can be used each screen's function.

Favorite displays

The most commonly used windows are called favorite displays and up to six favorite windows can be saved. Also each favorite display can have data bar and compass.



Displaying a favorite display

- 1 Press **PAGE** twice.
- 2 when above window pops up select a desire display you want.



Adding a favorite display

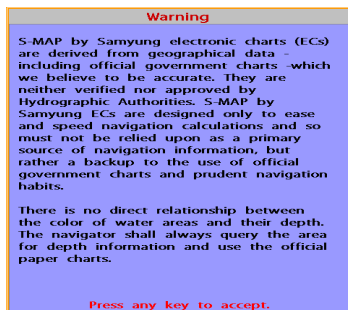
- 1 Organize a window as you want.
- 2 Press **PAGE** to show the main window.
- 3 Select **Save** icon at the bottom
- 4 Select an icon where you want to add your favorite display. If you add the new favorite display on existing favorite display new display will overwrite the old display.

3 General Operation

3-1 Power on and off

Manual power on

Press **[F1]** and hold until the display shows the start up page. When the Warning screen appears, press **[F2]** to accept.

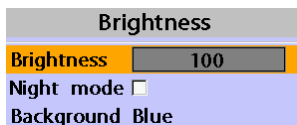


Manual power off

Press and hold **[F1]** for 5 seconds. A counter timer appears on the screen, if you release the button before the countdown timer reaches zero, the chart plotter will remain On.

3-2 Brightness, night mode and Background

You can change the screen setting for the display. To change settings, shortly press **[F1]**.



Brightness

To change the brightness, select **Brightness**, and press **[Left]** to dim or **[Right]** to brighten. Press **[ESC]** to return to the previous screen.

Night mode

The chart plotter has preprogrammed settings allowing you to customize the look of the **Chart** window. The default is daytime view. To select Night Mode, move to Night Mode and press **[Right]** or **[Left]**.

Tip: The screen will be difficult to read if the chart plotter is in **night mood** when the sun is too bright

Background

You can Changes the background color if necessary. This selection is a personal preference. Select the option that gives you the clearest viewing in your weather conditions and viewing angle.

3-3 The page window

Press **PAGE** to show the page window and select a function icon you want to display

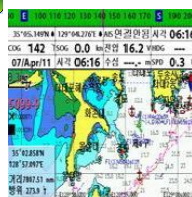


Note

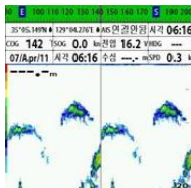
1 Some function icons require optional units and connected sensors.



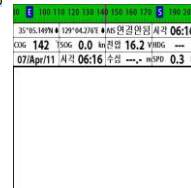
Chart



Echo Sounder



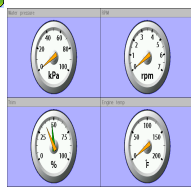
Video



Highway



Data



Waypoint

NAME	Latitude	Longitude	DIST	Unit	Depth
MC00000	47°42'22.00N	129°02'00.00E	0.4	mi	10.0
MC00001	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00010	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00012	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00022	47°42'22.00N	129°02'00.00E	0.5	mi	10.0
MC00023	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00024	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00025	47°42'22.00N	129°02'00.00E	1.8	mi	10.0
MC00026	47°42'22.00N	129°02'00.00E	1.8	mi	10.0

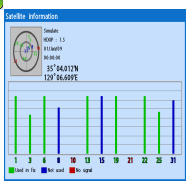


Routes

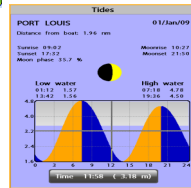
Name	Start	End	Log	Distance
ROUTE001	MC00001	MC00002	2	0.2
ROUTE002	MC00002	MC00003	3	1.6
ROUTE003	MC00003	MC00004	3	0.2



Satellites



Tide



AIS

Distance	Course	Speed	Heading	Altitude	Depth
0.40	180	1.0	180	10.0	10.0
0.74	180	1.0	180	10.0	10.0
1.33	180	1.0	180	10.0	10.0
1.69	180	1.0	180	10.0	10.0
1.94	180	1.0	180	10.0	10.0
2.10	180	1.0	180	10.0	10.0
2.63	180	1.0	180	10.0	10.0
2.69	180	1.0	180	10.0	10.0
3.23	180	1.0	180	10.0	10.0



DSC

Distance	Latitude	Longitude	Altitude	Depth
0.40	47°42'22.00N	129°02'00.00E	10.0	10.0
0.74	47°42'22.00N	129°02'00.00E	10.0	10.0



Navtex

Time	Latitude	Longitude	Altitude	Depth
10:11	47°42'22.00N	129°02'00.00E	10.0	10.0
12:02	47°42'22.00N	129°02'00.00E	10.0	10.0
13:10	47°42'22.00N	129°02'00.00E	10.0	10.0



Engine Faults

Engine	Fault	Status
Port	Over temperature	1
Port	Low fuel pressure	1
Port	Charge indicator	1
Port	Protest indicator	1
Starboard	Low oil pressure	1
Starboard	Low fuel pressure	1



3-4 Chart

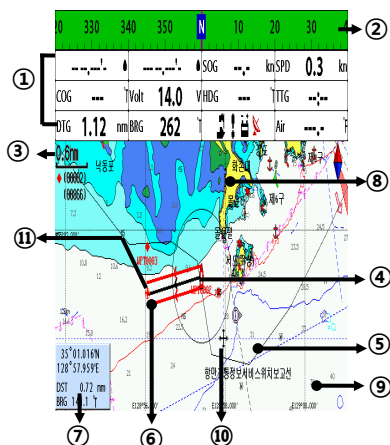
The **Chart** window mainly shows all relevant navigation data available on your preloaded maps, including buoys, lights, cables, depth soundings, marinas, and tide station in an overhead view.

3-4-1 Chart window

To go to the **Chart** window:

- Press **PAGE** and select **Chart** icon by pressing **↓**.

A typical Chart window shows:



- ① Data bar. To turn the data off or on or to change what data is displayed
- ② Compass
- ③ Chart scale
- ④ Boat position
- ⑤ Boat track
- ⑥ Boat course and CDI lines
- ⑦ Distance and bearing of cursor from boat
- ⑧ Land
- ⑨ Sea
- ⑩ The cursor
- ⑪ A typical waypoint

The built-in world chart does not show enough detail for navigation. When you use the Chart Plotter to navigate, always use a chart card which covers the region.(NAVIONICS)

3-4-2 Latitude and longitude

Latitude and longitude coordinates define a position on earth and can be displayed in data bar.

In the data bar, own ship position is shown as below:

- ▲ 47° 43.000' N or S Latitude
- ▲ 003° 21.656' E or W Longitude

47° 43.000'N	▲	003° 21.656'W	▲
--------------	---	---------------	---

However, if you move the cursor, then the latitude and longitude in the data bar is the cursor's position as below.

- ✚ 47° 43.325 N or S Latitude
- ✚ 003° 29.607 E or W Longitude

47° 43.325'N	✚	003° 29.607'W	✚
--------------	---	---------------	---

3-4-3 Chart scale

The chart scale change by pressing to show more detail information of chart and by to show wider view of the chart.

When you press or , the scale of chart is display in the chart on top left corner.

3-4-4 Finding a chart symbol

This function is only available when NAVIONICS SD card is inserted and NAVIONICS is selected.

To find a port by name

- Press .
- Select **Find** then **Port by name**.
- Press or to select a letter then press for next letter.
- Once you enter the name of port, press .
- After searching process, select a nearest port in the list then the cursor will place on the port you selected on the chart window.
- Repeat 2-3 steps of D section to display the information.

To find port & service

- Press .
- Select **Find** then **Port & service**.
- Select a service you want to find.
- After searching process, select a nearest service area in the list then the cursor will place on the service area you selected on the chart window.

Info

Latitude: Angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

Longitude: angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.



When reading the boat position, make sure the position is not the cursor position.



**S-MAP does not support this function.
(See 2-4 for chart selection)**

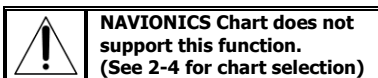


3-4-5 S-Map search

This function is available when NAVIONICS SD card is inserted and NAVIONICS is selected.

To find port & service

- 1 Press **MENU**.
- 2 Select **Find** then **Port**.
- 3 Press **▲** or **▼** to select a port then **↵**.
- 4 After searching process, select a nearest port in the list then the cursor will place on the port you selected on the chart window.



3-4-6 Chart symbols and information

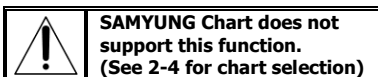
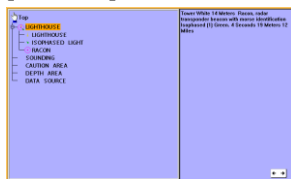
This function is only available when NAVIONICS SD card is inserted and NAVIONICS is selected.

Using NAVIONICS card allows you to show different kind of symbols and their information on chart plotter display. On some objects such as a port, you can see a picture of landscape layout.

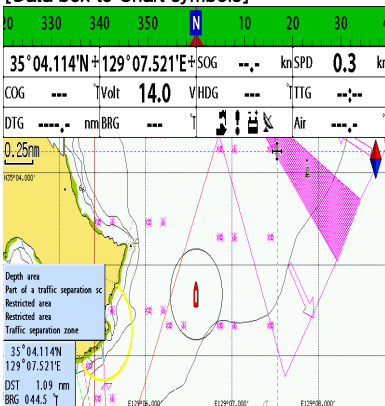
To display information

- 1 Move cursor on an icon to display its name.
- 2 Press **MENU** and select **Chart info**.
- 3 Move cursor key to highlight an item and press **↵**.
- 4 Information related to the item appears at the bottom window.

[Chart info]



[Data box to Chart symbols]



3-4-7 Introduction to navigating

Use the navigation chart to plan your course, view map information, and as a navigational aid. This unit has two ways of navigating, going straight to a waypoint or following a route (a group of waypoints).

3-4-8 Going to a waypoint or to a point on the chart

A waypoint is a particular location on a voyage whether it is a starting, intermediate or destination point. A waypoint is the simplest piece of information your equipment requires to get you to a destination. In the shortest distance possible. This unit can save up to 10,000 waypoints.

Go to Cursor Option

- 1 Press **PAGE** and select the **Chart** window.
- 2 Move the cursor to the destination point.
- 3 Press **MENU** and select **Go to cursor** to start navigating.

Goto WPT Option

- 1 Press **PAGE** and select the **Chart** window
- 2 Move the cursor to place cursor on a waypoint.
- 3 Press **MENU** and select **Goto WPT** to start navigating.

Cancelling navigating

- 1 Press **PAGE** and select the **Chart** icon.
- 2 Press **MENU** and select **Cancel Goto**.



Make sure the course does not pass over land or dangerous waters.

3-4-9 Following a route

Often a trip from one place to another involves several course changes, requiring a series of route points (waypoints) which you navigate to, one after another. The sequence of waypoints leading to the ultimate destination is called a route. You can save up to 100 routes and a route may consist of 100 waypoints..

Start Route Option

- 1 Press **PAGE** and select the chart window.
- 2 Press **MENU** and select **Start Route**.
- 3 Move cursor keys to select a route to start navigating.
- 4 Select **Forward** or **Reverse** to decide which direction you want to navigate.

Route Window Option

- 1 Press **PAGE** and select the routes window
- 2 In the route window, mover the cursor to highlight a route you want to start navigating to.
- 3 Press **MENU** and select **start**
- 4 Select **Forward** or **Reverse** to decide which direction you want to navigate.

Create Route Option

- 1 Press **PAGE** and select the chart window.
- 2 Select **New route**.
- 3 Name a route name.
- 4 Move cursor keys to select a waypoint.
(Repeat this step as much as you need)
- 5 Press **MENU** and select **Add**.
- 6 Press **ESC**.
- 7 Repeat 2-4 steps of Route window option.

Skipping a waypoint

- 1 Press **MENU** and select **Skip**.
- 2 Repeat above step if necessary.

Cancelling a route

- 1 Press **PAGE** and select the chart window.
- 2 Press **MENU** and select **Cancel route**.

3-4-10 Distance and bearing calculator

The unit can show the bearing and the length of leg and the total distance of legs.

Setting Legs

- 1 In the chart window, press **MENU** and select **Distance**. Information is displayed on window showing bearing/leg distance/total distance at bottom pop up at the bottom left side
- 2 Move the cursor to the start point which is start point of first leg and press **ENTER**.
- 3 Move the cursor to a point which is the end of first leg.
- 4 Repeat 2-3 steps for more legs.
- 5 Press **ESC** to exit.

Deleting the last leg

- 1 Press **MENU** and select **Remove**.
- 2 Repeat above step if you want to remove more legs.

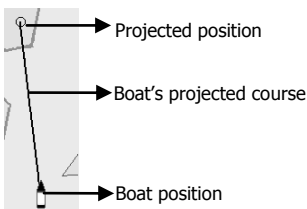
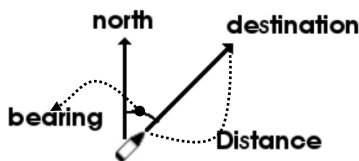
3-4-11 Projected course

The projected course shows you how far it can go at give time and speed. This function is very useful to avoid collusion with other vessels.

Saving as a route

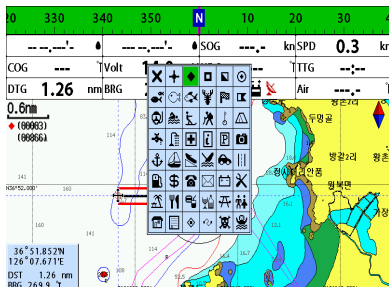
- 1 Once you set all the legs, press **MENU** and select **Save**.
- 2 Enter a route name by pressing **▲** or **▼** to select a letter then press **➤** for next letter.
- 3 Press **ENTER** to save the new route.

 **Tip:** Bearing and distance



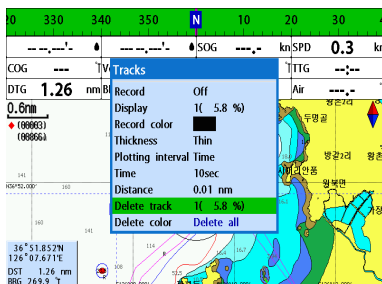
3-4-12 Finding a chart symbol

In the chart window, press and hold **ENTER** Or **MARK** then select destination chart symbol.



3-4-13 Tracks Settings in the chart window.

For tracks setting in the chart window, press and hold **ESC**. (See 4-5 Track Setting)



3-5 Video

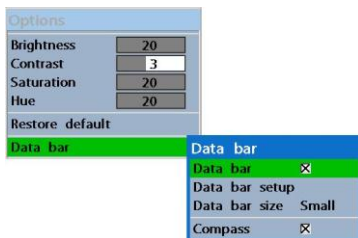
It's available to use video function when it's connected to Camera.

Please follow below process in order to this video function.

1 Press **MENU** long then select system setting.

2 Select additional function then select Video.

3 Press **ESC** then press **PAGE** then select video or press **VIDEO**.



3-5-1 Options

Brightness : Enable to control brightness.

Contrast : Enable to control contrast.

Saturation : Enable to control saturation.

Color : Enable to control color.

Default : set default.

Data bar : Please refer Compass(2-7)



3-6 Sonar

It is available to use a sonar function when this equipment is connected to an depth transducer.

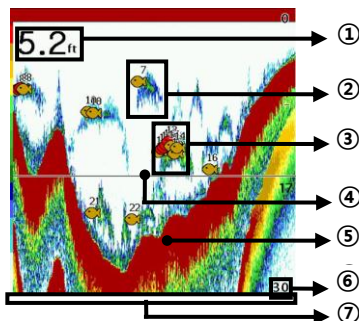
Please refer the following process to use Sonar.

1 Press **MENU** button longer and set system section.

2 Please add the page and select Sonar.

3 Press **ESC** button and press **PAGE** button on the main page and then select Sonar or press **SONAR** button.

3-6-1 Interpreting the display



- ① Depth
- ② Single fish : Fish symbols with depth.
- ③ School of fish
- ④ Depth line
- ⑤ Bottom : Hard bottoms such as rock and coral shown as wide bands. Soft bottoms such as mud, weed and sand show as narrow bands.
- ⑥ Range of display
- ⑦ Data from right to left.

3-6-2 Mode

There are two options you can select.

- Auto-mode: This is the most commonly used option. In this mode, settings are automatically adjusted for the best display of fish and bottom according to environment.
- Manual Mode: Use this option for manual setting. The option might bring you best result for your purpose.

To change a mode:

1 Press **MENU** then select Gain.

2 Select Mode then choose Manual or Auto mode.

3 Press **ESC** to exit until returning to the chart window.



3-6-3 Single and Dual frequency fish finding

Sonar frequencies

The unit has dual frequency, 200kHz and 50kHz to detect various bottom conditions.

To select the sonar frequency in sonar window:

- 1 Press **MENU**, select **Frequency**.
- 2 Select **frequency** and press **↓**.
- 3 Press **ESC** to exit.

High frequency (200kHz)

The higher ultrasonic signal, the better is the resolution. For this reason the 200 kHz frequency is ideal for detailed observation of fish schools.

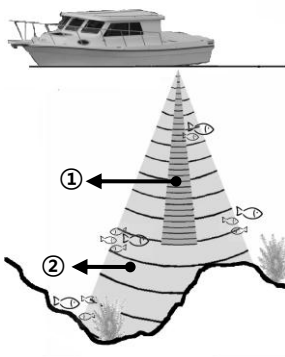
Low frequency (50kHz)

The lower frequency signal is, the wider is the detection area. Therefore, the 50kHz frequency is useful for general detection and judging bottom condition.

Mixed frequencies (200kHz / 50kHz)

The Mixed frequency combines the 200 kHz and the 50 kHz in the Sonar window. The 50kHz picture appears on the left and the 200kHz picture on the right.

The display is useful for comparing the same picture with two different frequencies.



① High Frequency (200 kHz)

② Low Frequency (50 kHz)

3-6-4 Range

Range is the depth of water displayed on the sonar window. The basic range may be chosen in Auto or manual mode.

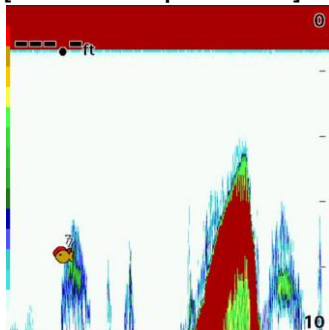
Auto: When the mode is set to **Auto**, the unit adjusts the depth automatically for the best performance. This option is recommended for normal operation.

Manual: When the mode is set to **Manual**, the unit only displays the depth of water at a given range. That means the sea bottom might not be displayed in the sonar window or it might display half of display in white because range is more important than sea bottom depth. As shown in below images.

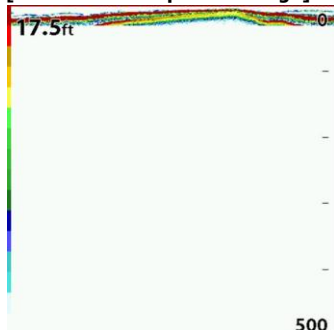
To set the manual mode in the sonar window:

- 1 Press **MENU**, select **Range**.
- 2 Select a mode you want and press **↓**.
- 3 If you select the manual mode, press **⏏** or **⏏** to change value of max displayed depth.

[When the set depth is too low]



[When the set depth is too high]



3-6-5 Gain

The gain menu

The gain is a signal strength received from the transducer and the threshold is the level of ultrasonic that is ignored by a set value. When you use the manual mode and threshold, the values of gain and threshold need to be set very carefully.

In the **Gain** window, you can set for a gain mode and threshold.

Gain	
Mode	Manual
200kHz	10
50kHz	10
Threshold	☐
200kHz	0%
50kHz	0%

To change a mode,

- 1 Press **MENU**, select **Gain**.
- 2 Select a mode.
- 3 If you select a **Manual** mode, adjust each frequency gain value by pressing **←** or **→**. Even though you select the **Auto** mode, it will be changed to manual mode if you change the values of frequency.

3-6-6 Sonar window display

Five sonar display windows are available and each display window has unique characteristics. Select a display window depending on your needs. The default display is No split.

To change a Sonar display window in the sonar window:

- 1 Press **MENU**, select Window mode.
- 2 Select the sonar display you want.

No split: Display Sonar history at a given frequency (50 or 200 kHz) (see section 3-5-7)

Split zoom: This mode expands chosen area of the normal picture in full vertical size on the left-half part of the window.

Full screen zoom: Display a zoomed section on full screen (see section 3-5-8)

Split bottom: Display Sonar history and a bottom trace focus in a zoomed section (see section 3-5-9)

Split 50/200: Display the 50 kHz sonar history on the left and the 200 kHz sonar history on the right. This display is useful for comparing the same history with two different frequencies. (see section 3-5-10)

Split A-Scope: Display Sonar history and echo strength (see section 3-5-11)
You can change the split ratio if the window is split.

- 1 Press **MENU** and select **Window split**.
- 2 Press **←** or **→** to adjust the ratio.
- 3 Press **↓**.

Options	
Window mode	Split A-scope
Window split	No split
Frequency	Split zoom
Range	Full screen zoom
Gain	Split bottom
Data bar	Split 50/200
Restore default	Split A-scope

3-6-7 No split

No split window displays a sonar history at a given frequency (50 or 200 kHz)

Low Frequency (50 kHz)

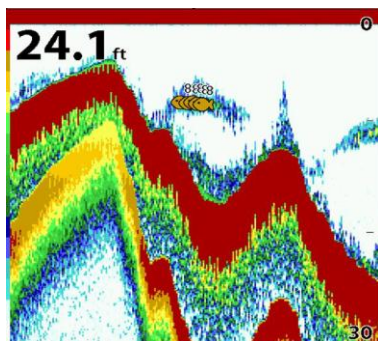
The 50 kHz frequency is ideal for detecting the wider area which means low frequency is useful for general detection and judging bottom condition.

High Frequency (200 kHz)

The 200 kHz frequency is ideal provide a better resolution which means it is ideal for the observation of fish or fish schools.

To set a frequency for this display:

- 1 Once you select **No split** window, Press **MENU**.
- 2 Select the sonar icon then **Frequency**
- 3 Select a desired frequency



You can also review old sonar records, press **←** and **→** to review the history. To return to current scanning, press **ESC**.

3-6-8 Split zoom and Full Screen zoom

Split zoom

Split zoom mode expands selected area of the single frequency by VRM(Variable Range Mark). The left side displays zoomed section of current sonar record. The VRM of right side indicates the zoom section area.

- Press **▲** or **▼** to change the zoom range.
- Press **⏏** or **⏏** to change the depth range.

Bottom lock

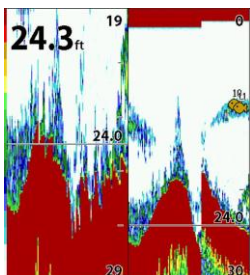
If **Bottom lock** is on, the zoom depth (the depth of the zoom section) is adjusted automatically so that the bottom is always displayed in the zoom section.

- To turn Bottom lock on or off press **MENU**

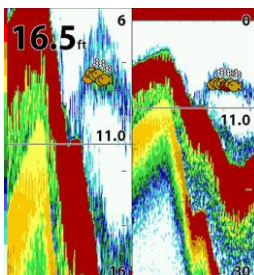
Full Screen zoom

Full screen zoom displays only the zoom section of split zoom.

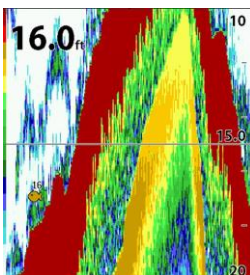
[Split zoom]



[Bottom Lock]



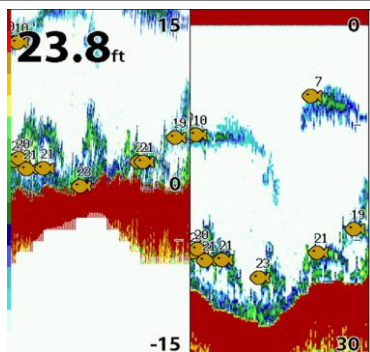
[Full screen zoom]



3-6-9 Split bottom

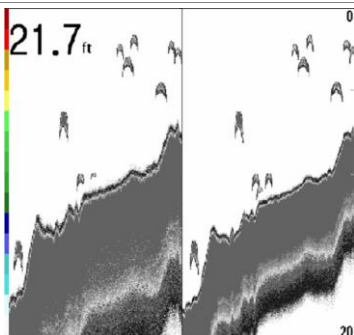
Split bottom display provides a normal picture on the right half and a selectable range over and below the bottom line is expanded onto the left half of the screen. This mode is useful for detecting bottom fishes.

- Use the **◀** or **▶** keys to adjust the zoom range.
- Press **⏏** or **⏏** to change the range
- The VRM moves up and down to calculate the bottom depth automatically.



3-6-10 Split 50/200

The 50 kHz display appears on the left and the 200 kHz appears on the right. This dual frequency display is very useful for comparing the same scanning with two different frequencies.

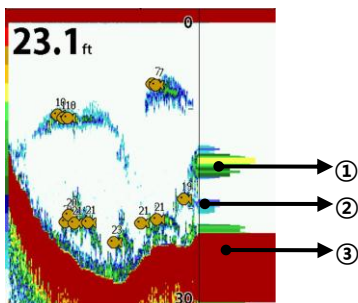


3-6-11 Split A-Scope

This display shows echoes at each transmission with amplitudes and colors proportional to their intensities; on the right of the screen it is useful for estimating the kind of fish schools and bottom nature.

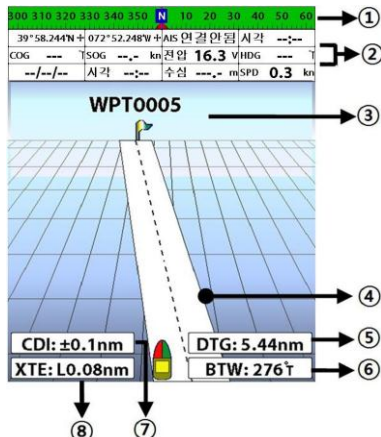
Echo strength color code varies from weakest (blue) to strongest (red).

- ① Echoes from fish and the bottom
- ② Unwanted noise echoes.
- ③ The strongest echo, usually from the bottom.





3-7 Highway



The **Highway** window shows a 3D view of the vessel traveling through the water when navigating to a destination point.

To go to the **Highway** window, press **PAGE** and select **Highway** icon.

The **Highway** window shows:

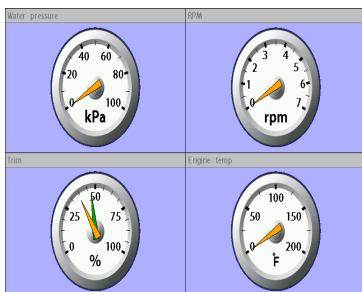
- ① Compass.
- ② Data bar.
- ③ Destination waypoint.
- ④ Boat's plotted course to destination.
- ⑤ DTG scale (Distance To Go).
- ⑥ BTW scale (Bearing to waypoint).
- ⑦ CDI (Course Deviation Indicator).
- ⑧ XTE scale (Cross Track Error).



3-8 Data

The Data window displays all the information you need during navigation such as water, engine, fuel related information, etc.

To select the data window, press **PAGE** or press **DATA** icon.



Selecting a data layout

The data window can show one of seven gauge layouts.

To select a layout from the data window:

- 1 Press **MENU** and select data Layout.
- 2 Select one layout.

Changing a gauge in one selected

To change a gauge displayed in a layout in Data display.

- 1 Press **MENU** and select Data Setup then the upper left side gauge will be highlighted.
- 2 Select a gauge you want to change and select Gauge type.
- 3 Select a data type you want to display.



3-9 Waypoints

A waypoint is a particular location on a voyage whether it is a starting, intermediate or destination point. A waypoint is the simplest piece of information the unit requires to get you to a destination in the shortest distance possible. This unit can save up to 10,000 waypoints.

To display waypoint list, press **PAGE** and select **Waypoint** icon.

Waypoints					
NAME	Latitude	Longitude	DST	rm	Dngr
			BRG	T	Disp
MOB0008	47° 42.293'N	003° 22.081'W	0.4		No
MOB0009	47° 43.693'N	003° 21.553'W	1.8		No
MOB0010	47° 43.242'N	003° 21.869'W	1.3		No
MOB0012	47° 43.693'N	003° 21.553'W	1.8		No
WPT0002	47° 41.852'N	003° 21.556'W	0.5		No
WPT0003	47° 41.073'N	003° 21.696'W	1.0		No
WPT0004	47° 41.315'N	003° 24.635'W	1.7		No
WPT0005	47° 42.899'N	003° 24.355'W	304.1		No
WPT0006	47° 41.051'N	003° 22.326'W	0.9		Yes
			182.3		No

3-9-1 Creating a new waypoint

To create a waypoint from the chart window

There are two ways to create a new waypoint from the chart window as described below:

- 1 Press **MENU** on at the current boat position.
- 2 Move the cursor to a point where you want to create a waypoint and press **↓**.

To create a waypoint from the waypoints window

- 1 Press **PAGE** and select waypoint
- 2 Press **MENU** and select **Create**.
- 3 Enter waypoint data, change alphanumeric name, choose between 48 icons, 16 colors and display option.
- 4 Select **Save**.

3-9-2 Moving a waypoint

To move a waypoint from the chart window

- 1 Move the cursor to place it on the waypoint you want to move. (If you move the cursor on the waypoint correctly, waypoint information will be displayed at the bottom left).
- 2 Press **MENU** and select **Move**.
- 3 Move the cursor to a point where you want to move and press **↓**.

To Move a waypoint from the waypoints window

- 1 Highlight a waypoint you want to move.
- 2 Press **MENU** and select **Edit**.
- 3 change the existing latitude and longitude to new position.
- 4 Select **Save**.

3-9-3 Editing an existing waypoint

To Edit a waypoint from the chart window

- 1 Move the cursor to the waypoint you want to edit. (If you move the cursor on the waypoint correctly, waypoint information will be displayed at the bottom left)
- 2 Press **MENU** and select **Edit**.
- 3 Edit waypoint data as you need and press **↓**.

To Edit a waypoint from the waypoints window

- 1 Move cursor key to highlight a waypoint you want to edit.
- 2 Press **MENU** and select **Edit**.
- 3 Edit waypoint data as you need and press **↓**.

3-9-4 Deleting a waypoint

To delete a waypoint from the chart window

- 1 Move the cursor to the waypoint you want to delete. (If you move the cursor on the waypoint correctly, waypoint information will be displayed at the bottom left)
- 2 Press **MENU** and select **Delete**.
- 3 Select **Yes**.

Deleting a waypoint from the waypoints window

- 1 Move cursor key to highlight a waypoint you want to delete.
- 2 Press **MENU** and select **Delete**.
- 3 Select **Yes**.



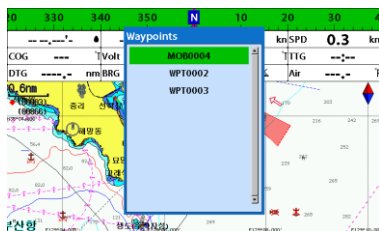
A waypoint can not be deleted if the final destination of navigation is the waypoint.

3-9-5 Find a waypoint

To find a waypoint from the chart window

Finding waypoints from the chart window is a simplified function.

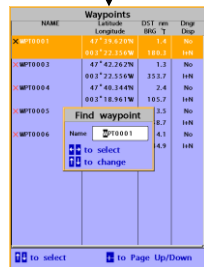
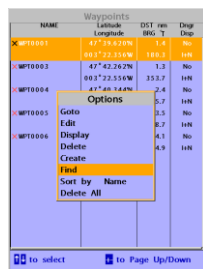
- 1 Press **MENU** and select **Find**.
- 2 Select **Waypoints**.
- 3 Move cursor key to highlight a waypoint you want to find and press **Enter**.



To find a waypoint from the waypoint window

Finding waypoints from the waypoint window is provided by a full function.

- 1 Press **MENU** and select **Find**.
- 2 Press **Up**, **Down**, **Left**, or **Right** to find a waypoint name.
- 3 Select **Enter**.



3-9-6 Sort Waypoints

To change the order of displayed waypoint list:

- 1 Press **MENU** and select **Sort by**.
- 2 Select a sort type.

3-9-7 Deleting all waypoints

- 1 In the waypoints window, press **MENU** and select **Delete all**.
- 2 Select **Yes**.



3-10 Routes

A trip from one place to another often involves several course changes, requiring a series of waypoints which you navigate to, one after another. The sequence of waypoints leading to the final destination is called a route. The unit can automatically advance to the next waypoint on a route. So you do not have to change the destination waypoint repeatedly.

The unit has the capability to store 100 routes with maximum of 100 waypoints each.

To display the **Routes** window, press **PAGE** and select the **Routes** window.

Routes				
Name	Start	End	Legs	DST(nm)
ROUTE 01	WPT0001	WPT0003	2	02.
ROUTE 02	WPT0003	WPT0006	3	10.
ROUTE 03	WPT0001	WPT0003	3	07.
ROUTE 04	WPT0003	WPT0006	3	10.

to select to Page Up/Down

3-10-1 Managing a route from the chart window

Creating a new route window

- 1 Press **MENU** and select **New route**.
- 2 Enter the new route name using cursor key and press **↓**.
- 3 On the **Chart** window, move the cursor to the position of the starting waypoint in the Route and press **↓**.
- 4 Move the cursor keys to the position of next waypoint and press **↓**.
- 5 Repeat step 4 to enter more waypoints.
- 6 Once you entered the last waypoint in the route, press **MENU** and select **End**.

Editing a waypoint in route while creating a route

- 1 Move the cursor to the waypoint you want to move.
- 2 Press **MENU** and select **Move**.
- 3 Move cursor to a position where you want to move the waypoint and press **↓**.

Deleting a last waypoint from the route while creating a route

- 1 Press **MENU** and select **Delete**.

Deleting a waypoint from the route while creating a route

- 1 Move the cursor to the waypoint you want to remove.
- 2 Press **MENU** and **Remove**.

Tip: Even though you deleted a waypoint in the route, the waypoint still remains in the waypoint list.

Inserting a waypoint while creating a route

- 1 If you want to insert a waypoint between waypoints which will be just after the one you want to insert.
- 2 Press **MENU** and select **Insert**.
- 3 Move the cursor to the new inserted waypoint and press **↓**.

Inserting a waypoint in front of starting waypoint while creating a route

- 1 Move the cursor to the starting waypoint
- 2 Press **MENU** and select **Insert**.
- 3 Move the cursor to the new start location and press **↓**.

Routes			
Name ROUTE 04			
Leg	Waypoint	Distance(nm)	Bearing(°)
1	WPT0003		
2	WPT0005	3.8	239.0
3	WPT000		114.9

Insert waypoint

WPT0001
WPT0003
WPT0004
WPT0005
WPT0006
WPT0007
WPT0008
WPT0009
WPT0010
WPT0011
WPT0012
WPT0013

to Page Up/Down to Page Up/Down



3-12 Tides

The **Tides** window is useful for boaters that are concerned about the height of the water or by fisherman that wish to know the tide and moon phase of a specific date.

Displaying a tide information from the chart window

- 1 In the **Chart** window, press **MENU**.
- 2 Select **Find** and **Tide station**.
- 3 Press **▲** or **▼** to move cursor and select a tide station
- 4 Press **▲**, **▼**, **◀** or **▶** to the position of selected tide station and press **↓**.
- 5 Select **Tide height station** to display the information
- 6 Press **ESC** to exit.

Displaying tide station information in the tides window

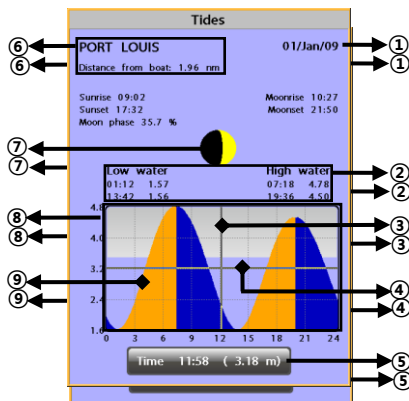
- 1 Press **PAGE** and select **Tides** window.
- 2 Select **Tide height station** to display the information.
- 3 Press **ESC** to exit.

Tip: The unit only displays the tide information nearest your boat in the tides windows.

Choosing the date of the tide information.

- 1 In the Tides window, Press **MENU** and select one of the following options.
 - **Set date:** manually set a date.
 - **Today:** automatically set the date of today.
 - **Next day:** automatically set the date of today.
 - **Prev day:** automatically set the date of yesterday
- 2 Press **ESC** to return to the window

The tides window shows data for the chosen date



- ① Current time and chosen date for display.
- ② Data for the chosen date.
- ③ Tide height cursor, a horizontal dotted line. Press **▲** or **▼** to move cursor up and down.
- ④ Time cursor, a vertical dotted line. Press **◀** or **▶** to move cursor sideways.
- ⑤ Time of cursor and tide height at that time.
- ⑥ Tide station name and distance from boat.
- ⑦ Moon phase for moon at the current time on the chosen date.
- ⑧ Tide chart.
- ⑨ Tide height.



In case of SAMYUNG MAP is already set, it (Please refer to 2-4 how to select a map)



3-13 AIS

AIS is an Automatic Identification System for identification and localization of boat. AIS provide a means for boats to exchange and share boat data including identification, position, course, etc. This information can be displayed on the screen of you unit. AIS is intended to assist you to monitor other boats movements to improve safety and prevent collision.

AIS functions require an optional AIS unit to be installed.

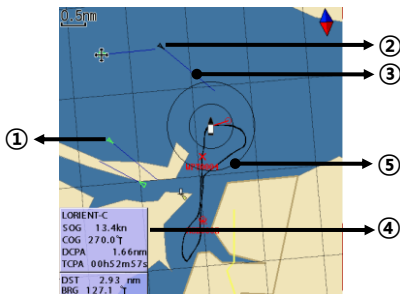
To activate AIS function:

- 1 Press and hold **MENU** and select **System Configuration** icon..
2. Press **ESC** and press display from the top page and select AIS.

3-13-1 Viewing AIS Vessels

When the unit is connected to AIS unit which support NMEA0183 or NMEA2000, you can check other vessel that are equipped with AIS unit on the screen. To check AIS information place the cursor on the AIS object then AIS information displays at the bottom of window.

- ① AIS equipped vessel
- ② Dangerous Vessel
- ③ Projected Course
- ④ AIS equipped vessel Data Box
- ⑤ Range Rings



3-13-2 AIS Windows

To display the AIS windows:

- 1 Press display, and select **AIS** icon.
- 2 Press and hold display to select one of the two tabs: **Vessels** or **Messages** tab.
 - **Vessel:** show you all the AIS equipped vessel around you. (up to 200 vessels)
 - **Message:** show you all the messages related to safety from other AIS equipped vessels.

Caution : The display can show information for 250 vessels as maximum.

Sorting Vessels

- 1 Press **MENU**, select **Sort by**.
- 2 Select one of the options

Displaying an AIS vessel on the chart

To overlay AIS equipped vessel on the chart window:

- 1 Press **▲** or **▼** to select a vessel you want to display in **AIS** window.
- 2 Press **MENU** and select **Display**

Displaying AIS equipped vessel Details

- 1 Press **▲** or **▼** to select a vessel you want to display full AIS detail in the **AIS** window.
- 2 Press **⏮** or press **MENU** and select **More Info**.
- 3 Press **⏪** or **⏩** to see more detail.

Vessel Info: PLASTIMO-C

Position	007° 57.005'N 000° 33.678'W
Heading	0°
ROT	0°/min
COG	45.0°
SOG	5.6kn
BRG	12.9°
DST	0.1nm

to select page 1/4

AIS			
Vessels			messages
DST(nm) CPA(nm)	SOG(kn) TCPA	BRG (°)	MMSI NAME
0.49	5.6	1	333333333
___	___h_m_s	___	PLASTIMO-C
0.76	1.2	22	111111111
___	___h_m_s	___	PLASTIMO-A
1.53	12.3	6	666666666
___	___h_m_s	___	LORENT-B
1.69	7.8	2	444444444
___	___h_m_s	___	PLASTIMO-D
1.94	3.4	25	222222222
___	___h_m_s	___	PLASTIMO-B
2.18	15.6	10	888888888
___	___h_m_s	___	LORENT-D
2.65	17.8	16	999999999
___	___h_m_s	___	LORENT-E
2.89	9.0	3	555555555
___	___h_m_s	___	LORENT-A
3.25	13.4	13	777777777

Vessel Info: PLASTIMO-C

Antenna Location

88ft

75ft

to select page

4/4

Time	MMSI
10:00:00	123456789
10:00:01	123456789
10:00:02	123456789
10:00:03	123456789
10:00:04	123456789
10:00:05	123456789
10:00:06	123456789
10:00:07	123456789
10:00:08	123456789
10:00:09	123456789
10:00:10	123456789
10:00:11	123456789
10:00:12	123456789
10:00:13	123456789
10:00:14	123456789
10:00:15	123456789
10:00:16	123456789
10:00:17	123456789
10:00:18	123456789
10:00:19	123456789
10:00:20	123456789
10:00:21	123456789
10:00:22	123456789
10:00:23	123456789
10:00:24	123456789
10:00:25	123456789
10:00:26	123456789
10:00:27	123456789
10:00:28	123456789
10:00:29	123456789
10:00:30	123456789
10:00:31	123456789
10:00:32	123456789
10:00:33	123456789
10:00:34	123456789
10:00:35	123456789
10:00:36	123456789
10:00:37	123456789
10:00:38	123456789
10:00:39	123456789
10:00:40	123456789
10:00:41	123456789
10:00:42	123456789
10:00:43	123456789
10:00:44	123456789
10:00:45	123456789
10:00:46	123456789
10:00:47	123456789
10:00:48	123456789
10:00:49	123456789
10:00:50	123456789
10:00:51	123456789
10:00:52	123456789
10:00:53	123456789
10:00:54	123456789
10:00:55	123456789
10:00:56	123456789
10:00:57	123456789
10:00:58	123456789
10:00:59	123456789
10:01:00	123456789

3-14 DSC

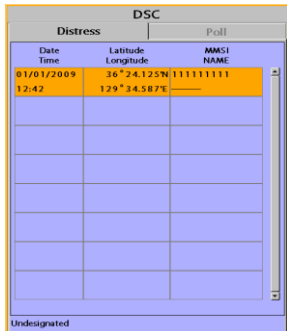
This feature requires connection to optional DSC VHF radio.

DSC window shows the distress and poll information received from other vessel through DSC VHF radio.

- 1 Press and Hold Menu, then select the system configuration.
- 2 Select the optional components and select DSC
- 3 Press **ESC** , press **PAGE** in the screen and select DSC.

3-14-1 Distress

During a distress situation, a vessel that is equipped with a DSC VHF radio and connected to GPS has the capability to transmit a DSC distress call with GPS position. When a compatible VHF radio receives a distress call, the distress call location is displayed on the screen and it is logged into **DSC Distress** window.



Displaying a distressed vessel in the chart window

- 1 Highlight a received distress call you want to display.
- 2 Press **MENU** and select **Display**.

Going to the distress position

- 1 Highlight a received distress call you want to navigate to.
- 2 Press **MENU** and select **Goto**.

Editing a distress waypoint

- 1 Highlight a received distress call you want to edit.
- 2 Press **MENU** and select **Edit Waypoint**.
- 3 Change data field and select **Save**.



Tip: When receiving a Distress call from other vessel, it creates a distress waypoint automatically. However, the waypoint you edit in option menu is a different waypoint from the distress waypoint

Deleting a Distress Call

- 1 Highlight a received distress call you want to delete.
- 2 Press **MENU** and select **Delete**.

Deleting all Distress Call

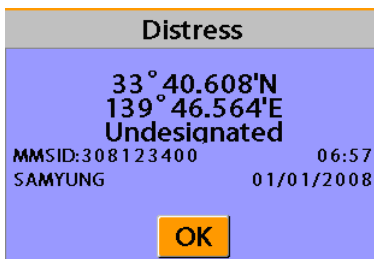
- 1 Press **MENU** and select **Delete all**.



 **Tip:** Even though you delete a DSC call, the DSC waypoints still exist.

Distress Message

When the distress message is received, the distress message will be popped up as below



Poll

A compatible radio with the unit can request the position of other DSC VHF radio equipped vessels around its position. When the position of a vessel is received, the location is displayed on the screen and it is logged into Poll window

Displaying an poll vessel in the chart window

- 1 Highlight a poll you want to display.
- 2 Press **MENU** and select **Display**.

- 1 Highlight a poll you want to go.
- 2 Press **MENU** and select **Goto**.

- 1 Highlight a poll you want to edit.
- 2 Press **MENU** and select **Edit Waypoint**.
- 3 Change data field and select **Save**

 **Tip:** When receiving a poll from other vessel, it does not create a waypoint as a distress call

- 1 Highlight a received distress call you want to delete.

- 2 Press **MENU** and select **Delete**.

1 Press **MENU** and select **Delete all**.

 **Tip:** Even though you delete a DSC call, the DSC waypoints still exist.

[illegible]



4 Settings

The system menu mainly consists of settings which do not require frequent adjustment. To go to system menu, press and hold **MENU** then select the icon you want.



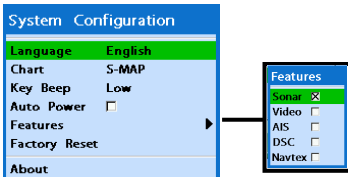
- ① System Configuration.
- ② Chart.
- ③ Communication.
- ④ GPS.
- ⑤ Track & Log.
- ⑥ Memory.
- ⑦ AIS.
- ⑧ Alarms.
- ⑨ Others.



4-1 System Configuration Settings

To go to **System configuration**:

- 1 Press and hold **MENU**.
- 2 Select the **system configuration** icon.



4-1-1 Language

Change the language for menus and data screens.

4-1-2 Chart Selection

Select a chart between S-MAP or NAVIONICS chart.

4-1-3 Beep volume

Select the level of beep sound.

4-1-4 Auto power

See section 3-1.

4-1-5 Features

When external devices are connected to the unit, the corresponding options need to be set.

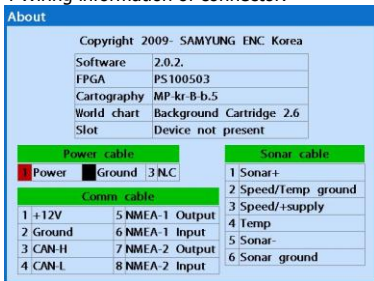
4-1-6 Factory reset

When this option is selected. All settings of this unit returns to default factory settings.

4-1-7 Unit information

The unit information window shows:

- 1 Software version and release date.
- 2 NAVIONICS version.
- 3 Stored waypoints, routes and tracks count
- 4 Wiring information of connector.

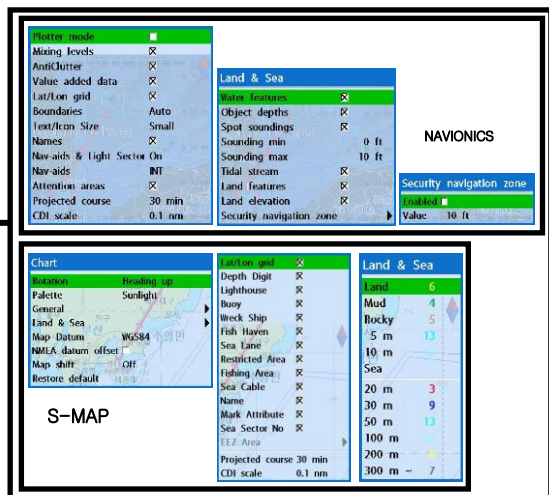




4-2 Chart settings

To go to the chart settings:

- 1 Press and hold **MENU**.
- 2 Select the chart icon.



4-2-1 Rotation

Three types of display presentations are provided. The default is heading up.

North up: North is at the top of the display.

Heading up: When course is set, the course is at the top of screen all the times.

Course up: When destination is set it is at the top of the screen.

4-2-2 Palette

Palettes are used to enhance the visibility of the display depending on the surrounding light environments. Four types of displays are provided; Normal, NOAA, Sunlight and Night.

4-2-3-1 General (NAVIONICS)

Plotter mode: this mode allows you to zoom in and out at scales where cartographic data are not available.

Mixing levels: when the map coverage at the current chart scale does not fill the entire display, the GPS chart plotter draws the rest of map using charts from above and below the current scale. When this function is turned on you will notice the display may redraw 2 to 3 times to show all the detail.

Nav-aids: The way to display fog, radar and radio station signals. (International and US)

Attention areas: Turns the displaying of Attention Areas where need to pay attention more) On or Off.

Text/Icon Size: change the size of text and icon on the chart.

Names: Display area names in the chart.

Nav-aids & Light Sector: Turns the presentation of Light, Signals, Buoys and Beacons On, Off, No Sector (Nav-Aids are shown, Light Sectors are hidden) or Animated (The lights are flashed).

4-2-3-2 Land & Sea (S-MAP)

Lat/Lon grid: Turns the displaying of Lat/Lon on or off

Depth Digit: Turns the displaying of water depth on or off

Lighthouse: Turns the displaying of Lighthouse on or off

Buoy: Turns the displaying of buoys on or off

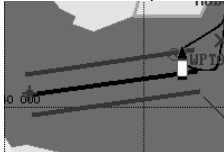
Wreck Ship: Turns the displaying of Wreck Ship on or off

Fish Haven: Turns the displaying of Fish Haven on or off

Sea Lane: Turns the displaying of Sea Lane

Projected course: Display the Projected course in given set time.

CDI scale: Set CDI (Course Deviation Indicator) scale which is a parallel line on either side of the plotted course.



AntiClutter: when this option is selected, less important information (names & icons) are hidden when they are overlapped.

Value added data: The Value Added Data (VAD) is a collection of additional cartographic objects which are not present on the original paper chart.

These objects have been obtained from other sources and then merged to the electronic charts in order to provide more information useful for the navigation.

Lat/Lon Grid: Turns the displaying of the latitude and longitude grid lines on or off on the chart window.

Boundaries: Turns the displaying of chart boundaries on, off or auto mode which shows the chart boundaries of the two charts below the current scale.

4-2-4-1 Land & Sea (NAVIONICS)

Water features: Turns the displaying of seabed nature and tide stations icon on or off.

Object depths: Turns the displaying of object depths on or off.

Spot soundings: Turns the displaying of spot sounding on or off.

Sounding min: Set the minimum depth limit to show depth sounding, bathymetric lines and depth area.

Sounding max: Set the maximum depth limit to show depth sounding, bathymetric lines and depth area.

Tidal stream: Turns the displaying of tidal streams on or off.

Land Features: Turns the displaying of land features on or off.

Land elevation: Turns the displaying of land elevations on or off.

Safe Navigation Area: Set the water depth for safe navigation and displaying safe navigation area in color.

on or off

Restricted Area: Turns the displaying of Restricted area on or off

Fishing Area: Turns the displaying of Fishing Area on or off

Sea Cable: Turns the displaying of Sea Cable on or off

Name: Turns the displaying of area name on or off

Mark Attribute: Turns the displaying of Mark Attribute on or off

Sea Sector No: Turns the displaying of Sea Sector No on or off

4-2-5 Map datum

This unit has a compatibility with most of major chart system and this option allows you to select a map datum. The default datum is WGS84.

Map datum Selection

- 1 Press and hold **MENU** and select chart icon
- 2 Select general and Map datum
- 3 Select a desired map datum

4-2-6 NMEA datum offset

When you select other Map datum different from WGS84, latitude and longitude will be different from WGS84'S coordinates and this might confuse other device such as VHF radio if connected to the unit. If this option is applied, latitude and longitude send on the unit NMEA output will be the same as coordinates in WGS84.

4-2-7 Map shift

Sometimes current position of own ship does not match with the current location on the chart. To correct this position error, you can apply a map shift.

Applying a map shift

- 1 In the Chart setup menu, press and hold **MENU** and select **Chart** icon.
- 2 Select Map shift to **ON**.
- 3 Move cursor to the actual position on the chart.
- 4 Press **MENU** and select **Set**.

Canceling a map shift

If you want to clear the map shift:

- 1 In the Chart setup menu, select **Map shift**.
- 2 Press **MENU** and select **Clear**.

4-2-7 Map shift

Sometimes current position of own ship does not match with the current location on the chart. To correct this position error, you can apply a map shift.

Applying a map shift

- 1 In the Chart setup menu, press and hold **MENU** and select **Chart** icon.
- 2 Select Map shift to **ON**.
- 3 Move cursor to the actual position on the chart.
- 4 Press **MENU** and select **Set**.

Canceling a map shift

If you want to clear the map shift:

- 1 In the Chart setup menu, select **Map shift**.
- 2 Press **MENU** and select **Clear**.



4-2-8 Restore default

Returns every chart settings to default.

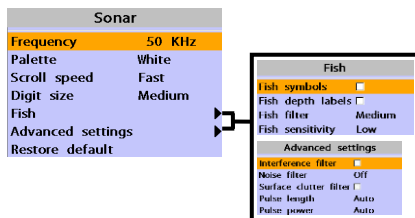


4-3 Sonar settings

Sonar feature requires a connection to depth transducer.

To go to the Sonar settings:

- 1 Press and hold **MENU**.
- 2 Select the sonar icon.



4-3-1 Frequency

You can select a sonar frequency among 200 kHz, 50 kHz or Mixed.

4-3-2 Palette

Palettes are used to enhance the visibility of the display depending on the surrounding light environments. Three types of displays are provided black, blue and white.

4-3-3 Scroll speed

You can set the scroll speed which determines how quickly the vertical scan lines run across the screen. Five speed options are provided; Very Fast, Fast, Medium, Slow and Pause.

4-3-4 Digit size

You can change the size of the depth window on the Sonar window. Three options are available Small, Medium or Large.

4-3-5 Fish

Fish symbols: Turn the fish symbol on or off.

Fish depth labels: Turn the fish depth value on or off.

Fish filter: Select a minimum fish size that will be displayed as a fish symbol.

Fish sensitivity

Select the minimum strength fish echo that will be displayed as a fish symbol.

4-3-6 Advance Settings

Interference filter: Interference from other equipment operating nearby or on your boat may show itself on the display. Use this option to remove interference.

Noise filter: If there is noise, the echo signal from transducer is not stable. This function remove noise and averages the echo signal. However, this option may also remove fish echoes.

Surface clutter filter: This filter removes surface noise. However, the function does not remove fish echoes.

Pulse length: You can select specific pulse length of transducer. A short pulse shows more detailed information but can't show deeply into the water because of less power. The Auto setting is recommended.

Pulse power: You can select specific pulse power of transducer. Low power shows a clear display but can't show deeply into the water. The Auto setting is recommended.

4-3-7 Restore default

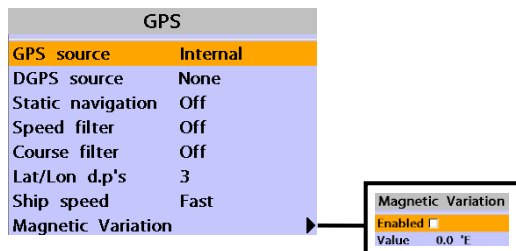
Returns every sonar settings to default.



4-4 GPS Settings

To go to the GPS settings:

- 1 Press and hold **MENU**.
- 2 Select the **GPS** icon.



When the GPS device is connected properly, the GPS settings provide the access to GPS functions and features connected with the satellites information used for further navigational information.

4-4-1 GPS Source

Select a source of GPS signals

Internal: Select this option when uses the internal GPS antenna.

NMEA0183 & NMEA2000: Select this option when using an external GPS or DGPS antenna via NMEA.

4-4-2 DGPS Source

Select WAAS/EGNOS when you want to utilize DGPS.

4-4-3 Static Navigation

This option is very useful when the boat stops or moves very slowly. This option allows you to set a minimum speed at which movement is assumed. The value range is from 0.00 to 9.99.

4-4-4 Speed Filter

Occasional waves and wind at sea affect the boat speed. In order to have stable boat speed, the unit calculates these factors to give the value of stable speed information.

4-4-5 Course Filter

Occasional waves and wind at sea affect the boat course. In order to have stable boat course, the unit calculates these factors to give the value of stable course information.

4-4-6 Lat/Lon d.p's

Select number of last digit of Lat/Lon to be sent to other marine electronics.

4-4-7 Ship speed

To have more precise boat speed and course, you can select your boat speed. Mid is highly recommended option for the most of common boat.

4-4-8 Magnetic Variation

This option compensates the difference between true north and magnetic north.



4-5 Track & Log Settings

To go to the tracking and long settings:

- 1 Press and hold **MENU**.
- 2 Select the **track & log** icon.

Track & Log

Tracks

Logs

Tracks	
Record	1 (100.0 %)
Display	1 (100.0 %)
Record color	0
Thickness	Thin
Plotting interval	Time
Time	10sec
Distance	0.01 nm
Delete track	1 (100.0 %)
Logs	
Reset trip dist	0.0 nm
Reset total dist	0.0 nm

The unit has the capability to store 10 individual tracks and record up to 15,000 track points. Before using the track function you will need to setup the track function that suits your boat.

4-5-1 Track

Record

Off: Stop a recording of Track
1 to 10 (select a track number): Start a recording of the boat's course.

Display

Off: Display no track on the chart.
1 to 10 (select a track number): Display a selected track on the chart.

Record color

Select the color of recording track.

Thickness

Select the thickness of recorded track.

Plotting Interval

Select the method of plotting interval between time and distance.

Distance

Select the distance of plotting interval.

Time

Select the time of plotting interval.

Delete track

Delete a selected track record.

Delete color

Select the color of deleting track.

4-5-2 Log

Reset trip dist

Shows you the trip distance. If you select this option it resets the trip distance.

Reset total dist

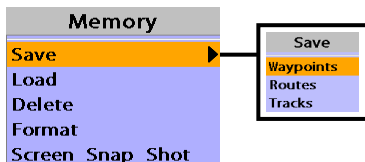
Show you the total trip distance. If you select this option it resets the total trip distance.



4-6 Memory Settings

To go to the memory settings:

- 1 Press and hold **MENU**.
- 2 Select the **Memory** icon.



A user card is an option SD card which you need to purchase additionally.

Before you use a user card it must be formatted. Note that formatting a user card erases all saved data.

4-6-1 Save

Select a data type you want to save in the user card then the data will be saved in the user card automatically.

- 1 If you select waypoint for saving data, enter the file name and press **↓**.
 - 2 If you select routes for saving data, enter the file name and press **↓**.
 - 3 If you select tracks for saving data, enter the file name and press **↓**.
- [Waypoint] [Route]



4-6-2 Load

Select a data you want to load into the load list then press **↓**.

Load		
NAME	Type	Time
FILE 01	Waypoint	00:00 00/09
FILE 02	Waypoint	00:00 00/09
FILE 03	Waypoint	00:00 00/09
FILE 04	Waypoint	00:00 00/09
FILE 05	Waypoint	00:00 00/09
FILE 06	Waypoint	00:00 00/09
Slot 1:		
Slot 2:		
Waypoints:	Track 3:	Track 7:
Routes:	Track 4:	Track 8:
Track 1:	Track 5:	Track 9:
Track 2:	Track 6:	Track 10:

4-6-3 Delete

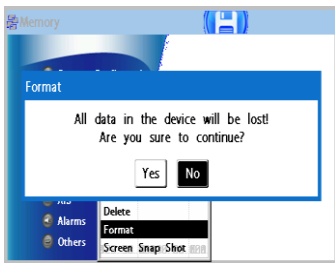
Select a data you want to delete then press **↓**.

Also, you can sort the file by name. Press **MENU** and select **sort by name**.

Delete		
NAME	Type	Time
FILE 01	Waypoint	00:00 00/09
FILE 02	Waypoint	00:00 00/09
FILE 03	Waypoint	00:00 00/09
FILE 04	Waypoint	00:00 00/09
FILE 05	Waypoint	00:00 00/09
FILE 06	Waypoint	00:00 00/09
Slot 1:		
Slot 2:		
Waypoints:	Track 3:	Track 7:
Routes:	Track 4:	Track 8:
Track 1:	Track 5:	Track 9:
Track 2:	Track 6:	Track 10:

4-6-4 Format

Erase all data in the user card. Format the user card before using it.



4-6-5 Screen Snap Shot

To take the snap shot of current screen, press **⓪** twice. To save the captured image, press **MENU** and select **Save** or **Save all** to save the captured images on the user card.

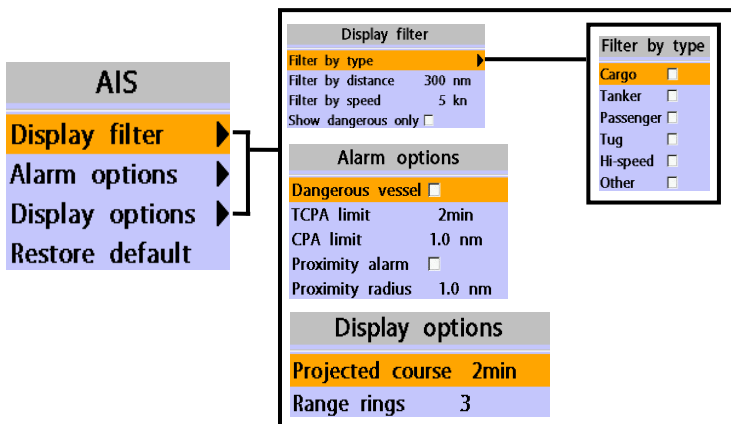
[illegible]

4-7 AIS Settings

AIS feature require an optional AIS receiver.

To go to the AIS settings:

- 1 Press and hold **MENU**.
- 2 Select the AIS Icon.



4-7-1 Display Filter

There are a couple of methods to filter AIS vessel in this unit as below.

Filter by Type : The type of vessel which is selected will not be displayed on the chart.

Filter by distance : Vessels outside the radius of selected distance from own ship is filtered.

4-7-2 Alarm Option

Dangerous Vessel Alarm : When this option is selected an alarm will activate. Even this option is not selected; dangerous vessels will still be on the chart.

TCPA Limit : Set the Time of Closet Point of Approach limit.

CPA Limit : Set the Closet Point of Approach limit.

Proximity alarm : Trigger an alarm when any AIS equipped vessel is within a set proximity radius.

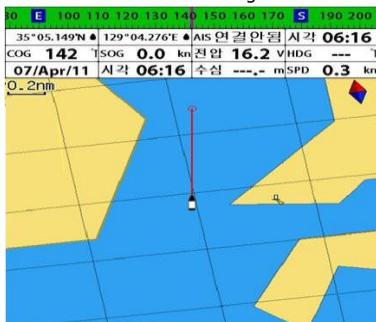
Proximity radius : Set a radius for proximity alarm.

Filter by speed : Vessels with speed below the set value are filtered.

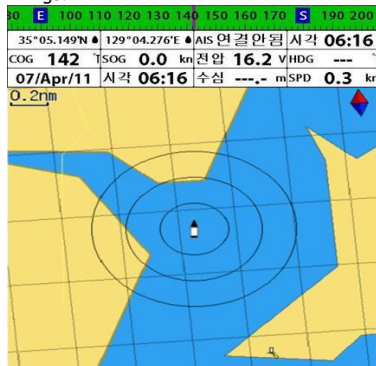
Show Dangerous Only : When this option is selected, it shows dangerous vessel only.

4-7-3 Display Option

Projected course : Set a time for projected course. The project course show the estimate course of vessel base on the given time.



Range rings : Select a number of Range rings.



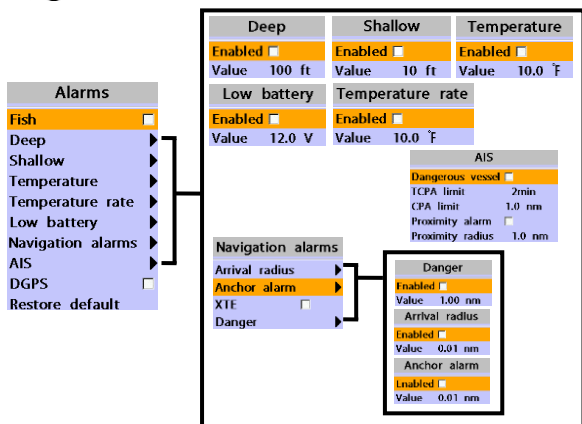
4-7-4 Restore Default

Returns every AIS setting to default.



4-8 Alarm Settings

Press long **MENU** then select **Alarms**:



A warning message with beep sound is displayed when an alarm condition is met by user setting. Press **ESC** to clear the alarm. However, the alarm will be displayed again when the alarm condition occurs again. The unit provides alarms for various functions.

4-8-1 Deep

Trigger an alarm when the depth value received from the transducer is deeper than a set value.

4-8-2 Shallow

Trigger an alarm when the depth value received from the transducer is shallower than a set value.

4-8-3 Temperature

Trigger an alarm when the reported temperature from the transducer is same as a set value.

4-8-4 Temperature rate

Trigger an alarm when the rate of temperature change from the transducer is same as a set value.

4-8-5 Low battery

Trigger an alarm when battery voltage is lower than a set value.

4-8-6 Navigation alarms

Arrival radius : Trigger an alarm when your boat is approaching the destination to set value

Anchor alarm : Trigger an alarm when your boat moves more than set value

XTE : Trigger an alarm when your boat moves off the current CDI scale.

Danger : Trigger an alarm when your boat is getting closed to dangerous point.

4-8-7 AIS

See the Alarm option of 4-7 (AIS Settings).

4-8-8 DGPS

Trigger an alarm when DGPS signal is not received.

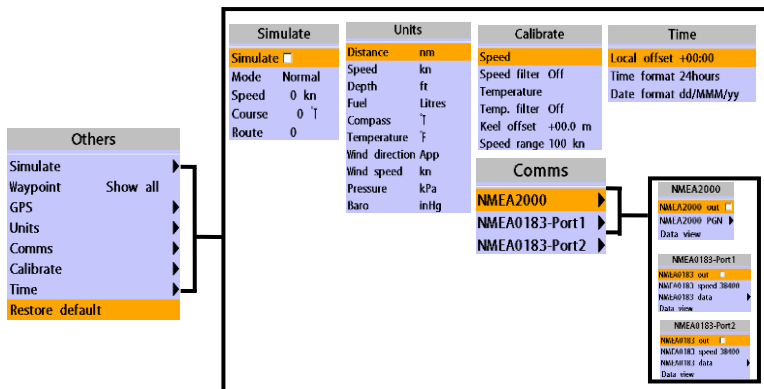
4-8-9 Restore default

Returns every alarm settings to default.



4-9 Other settings

Press long **MENU** then select **Others**:



4-9-1 Simulate

Simulate : Turn the simulate mode on or off.

Mode : See 2-5 Simulate Mode.

Speed : The simulated boat speed to use.

Course : The simulated course over ground.

Route : The route to follow.

4-9-2 Waypoint

Select a way to display waypoints.

4-9-3 GPS

See 4-4 GPS Settings.

4-9-4 Units

Select a unit of each measure.

Tip: Requires a optional VHF receiver with barometer connected: InHg or mB.

4-8-5 Comms.

Use this feature when the unit is connected to other marine electronics through any compatible NMEA instrument.

NMEA0183-1: This option to transmit NMEA sentences to other marine electronics.

NMEA0183-1 is generally used with third party marine electronics. Select a port (NMEA0183-Port 1), a communication speed and select a desired output data.

4-9-6 Time

Local offset : The time information supplied by the GPS satellites is in UTC (Universal Time Coordinates). To read the correct time, change the time of GPS chart plotter for daylight saving time start and end.

Time format : Select the format of time.

Date format : Select the format of date.

4-9-7 Restore default

Returns every other setting to default

5. INSTALLATION

Correct installation is important to the performance of the unit. It is vital to read the entire installation section of this manual and the documentation that comes with the antenna and any other units before starting installation. For further information, please contact Samyung ENC.

5-1 Options and Accessories

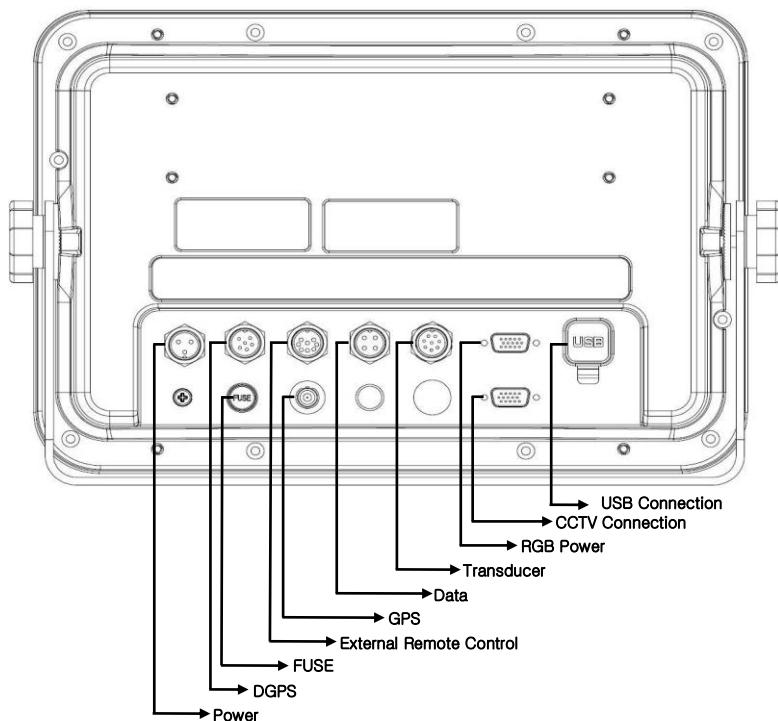
Optional sensors and instruments

- GPS or DGPS Antenna

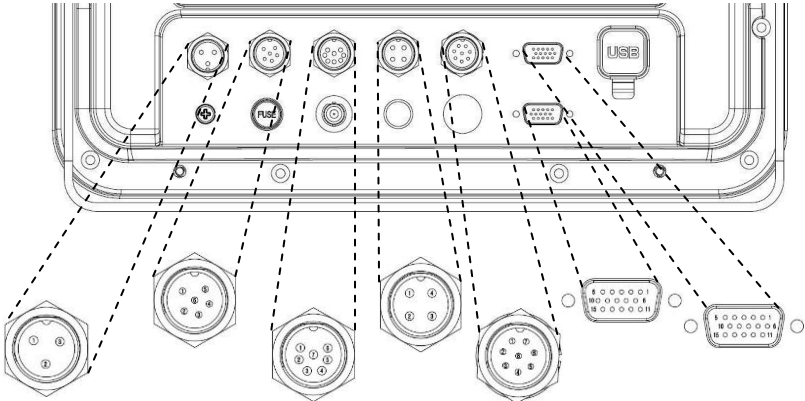
- DSC VHF Radio

- Other instruments: The chart plotter can receive data from other instruments and send data to other instruments by NMEA..

Connections



[Connectors Pin Number]



[Power]

Pin Number	Color	Details
1	White	+ Power, +11V ~ 36V
2		Unused
3	Black	- Power

[DGPS]

Pin Number	Details
1	+12V
2	GND
3	DGPS_OUT +
4	DGPS_IN +
5	DGPS_OUT -
6	DGPS_IN -

[External Remote]

Pin Number	Details
1	+5V
2	PGND
3	NC
4	RXD
5	LED_DIM
6	PWR_S.W
7	GND

[Data]

Pin Number	Details
1	IN +
2	OUT +
3	OUT -
4	IN -

[Transducer]

Pin Number	Details
1	TEMP GND
2	NC
3	TD1
4	GND
5	TD2
6	NC
7	TEMP
8	GND

[RGB Output]

Pin Number	Details
1	ANALOG_R
2	ANALOG_G
3	ANALOG_B
4	NC
5	GND
6	AGND
7	AGND
8	AGND
9	NC
10	Unused
11	
12	
13	
14	
15	

[CCT V Connection]

Pin Number	Details
1	VIDEO_1
2	VIDEO_2
3	VIDEO_3
4	VIDEO_4
5	VIDEO_5
6	VIDEO_GND
7	VIDOE_GND
8	DC +12V
9	DC GND
10	AUDIO_IN_R
11	AUDIO_IN_L
12	AUDIO_IN_GND
13	AUDIO_OUT_R
14	AUDIO_OUT_L
15	AUDIO_OUT_GND

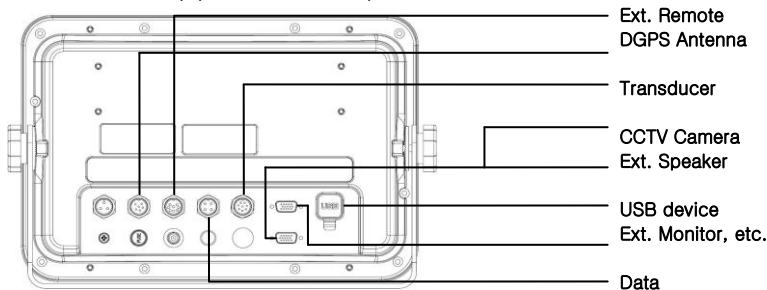
5-2 Connections

The GPS chart plotter has connectors that are used to connect to the power supply, GPS antenna and to NMEA devices such as VHF's AIS receivers, digital instruments and autopilots.

5-3 Other functional Cable Connections

Other functional cables

- Connect each equipment as the below picture for other connections.



5-4 GPS Antenna

5-4-1 External Antenna

It is available to connect to an external GPS Antenna with BNC type of Connector

Install an External Antenna

If an external antenna is required, install the antenna and fit the antenna cable back to the display unit. Follow the instructions in the manual supplied with the antenna. Fit an optional extension cable if required.

During setup, configure the data for the chosen antenna.

5-4-2 The Antenna by using NMEA/DGPS

Antenna by using NMEA/DGPS

The chart plotter can receive the GPS data from the compatible device (NMEA). The chart plotter can connect several devices to an external GPS.

- An optional differential beacon DGPS antenna to give enhanced accuracy within range of land based differential beacons in areas where WAAS or EGNOS are not available. Such a DGPS antenna has both a GPS receiver and a beacon receiver, and it automatically applies the beacon correction to the GPS position.

To set the DGPS options(None or WAAS/EGNOS):

Connect the GPS directly to the input. Set the option. The new setting will be displayed if it was successfully applied.



Note:

The chart plotter can apply the WAAS and EGNOS DGPS corrections to any GPS antenna.

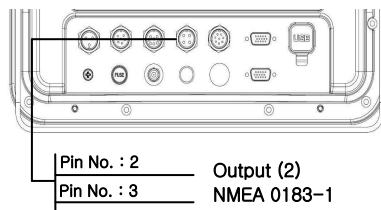
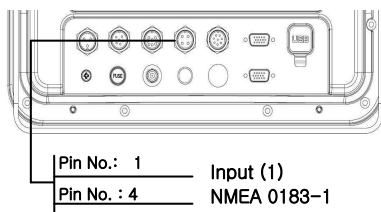
For more information, contact Samyung ENC.

5-5 NMEA 0183 – Port 1

This GPS chart plotter can be connected to external devices with NMEA0183-port 1 and display information such as followings.

DSC VHF Radio

- GPS antenna(NMEA 0183-1)
- Navtex
- AIS receiver



DSC VHF radio

Fit and set up the optional DSC VHF radio as above Pictures: NMEA 0183-1(1) IN and NMEA 0183-2(2) IN.

- The chart plotter can send GPS position and other navigation data to an autopilot or other instrument. An autopilot requires APB, APA and VTG sentences

Other NMEA instruments

NMEA is an industry standard for interconnecting instruments. The chart plotter can be connected to other NMEA instruments. Set up the optional NMEA instruments as above pictures.

- The chart plotter can receive and display depth, paddlewheel boat speed and water temperature from an optional compatible instrument.
- The chart plotter can receive data from an optional compatible GPS or GPS/DGPS source.

For information on sending NMEA data to the instrument, contact Samyung ENC.

During setup to send NMEA data to other instruments, set NMEA out and specify the NMEA data to send.

5-6 Setup and Test

- 1 Put a blanking cap on any unused connector on the back of the display unit. Ensure all connectors are plugged in and the display unit is in place.
- 2 If the display unit is bracket mounted, adjust tilt and rotation for best viewing and hand tighten the knob.
- 3 Insert any required NAVIONICS chart card.
- 4 Enter setup data to set up the chart plotter to your requirements and to set up any optional sensors or instruments.
- 5 At the satellite display, check that it picks up GPS satellites. Wait for the GPS receiver to start up and the GPS satellite to change to 'Used in fix'.

 SAMYUNG ENC 1 YEAR WARRANTY

Thank you for purchasing an SAMYUNG ENC product. This product has been thoroughly checked and is covered by the **Samyung ENC's warranty** for defects in materials and workmanship under normal use from the date of purchase.

This warranty provides for the free repair or replacement of defective parts from our Samyung ENC authorized dealer.

In the event that your SAMYUNG ENC product needs service, please return your SAMYUNG ENC product at your expense (shipping and insurance) to your Samyung ENC distributor or SAMYUNG ENC authorized Service Centres. SAMYUNG ENC will, at its discretion, repair or replace any defective products or its components at no cost to you. This is your exclusive remedy for defective products

Followings are not under Warranty .

1. Consumable items, including, but not limited to: fuses, impellers, impeller bearings, impeller shafts are specifically excluded from this warranty
2. All costs associated with transducer replacement, other than the cost of the transducer itself
3. As a result of incorrect installation, misuse, accident, water damage, abuse or other external causes
4. By modification or service other than by SAMYUNG ENC or authorized distributors, authorized Service Centres
5. If the serial number label on the unit has been removed, altered or mutilated

