

ONWA CHARTPLOTTER OPERATOR'S MANUAL

**For KP-38 series (KP-38, KP-38A, KP-39 and KP-39A) and
KCombo-7 series (KP-708, KP-708A, KCombo-7 and KCombo-7A)**

SAFETY INSTRUCTIONS

Safety Instructions for the Operator

WARNING
Do not open the equipment. Only qualified personnel should work inside the equipment.
Do not disassemble or modify the equipment. Fire, electrical shock or serious injury can result.
Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire. Continued use of the equipment can cause fire or electrical shock. Contact a ONWA agent for service.
Use the proper fuse. Use of a wrong fuse can damage the equipment or cause fire.
Be sure the power supply is compatible with the equipment. Incorrect power supply may cause the equipment to overheat.
The useable temperature range -5°C to 55°C for the display unit. Use of the equipment out of those ranges may damage the equipment.

Safety Instructions for the Installer

WARNING
Do not open the cover unless totally familiar with electrical circuits and service manual. Improper handling can result in electrical shock.
Turn off the power at the switchboard before beginning the installation. Fire or electrical shock can result if the power is left on.
Be sure that the power supply is compatible with the voltage rating of the equipment. Connection of an incorrect power supply can cause fire or equipment damage.
Use the proper fuse. Use of a wrong fuse can damage the equipment or cause fire.

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FOREWORD

ONWA Chartplotters are designed to be all-sealed and waterproof, can be rapid position-fixing and resistant to poor environment. The software is powerful by using the advanced processors, can be capable to display faster, and the design for operation is professional and reasonable, can be easy to use. The built-in Large-capacity map storage space provides intuitive and accurate indication to navigation. It's applicable to the navigation and position-fixing of various vessels at sea and rivers, as well as the hydrographic information collection, river management, etc. For the application for different types of the products please refer to the following:

FEATURES

- Easy to operate
- Ultra high brightness LCD, viewable under strong sunlight
- Compatible with multi-mapping system, C-MAP, Navionics, KChart2.0 and KChart3.0
- High resolution LCD
- Built-in Class B+ AIS module(For KP-38A, KP-39A, KP-708A and KCombo-7A only)
- Selectable NMEA0183 output baudrate and sentences
- Free to use ONWA detail worldwide coverage KChart system
- IPX66 waterproof

MAIN PERFORMANCE AND SPECIFICATIONS

Plotter

Waypoints/icons:	12000 user waypoints with name, symbol. 3 system waypoints: MOB, Start , Cursor 10 proximity waypoints
Routes:	Max 30 routes, up to 170 waypoints each
Tracks:	8000 points automatic track log; 10 saved tracks (up to 8000 track points each). Let you retrace your path in both directions
Drawing Marks:	1000
Drawing Lines:	2000
Drawing Placename:	1000
Color for drawing:	8
Alarms:	XTE, Anchor drag, arrival, speed, voltage, proximity waypoint, timer and AIS (CPA and TCPA) alarm
Palette:	Normal Daylight exposed to sunlight Night in dark environment NOAA paper chart color
Tides:	Built-in worldwide tide data
Position format:	LAT/LON
Basemap:	Worldwide
External Map:	Compatible K-Chart2.0, K-Chart3.0, C-MAP MAX and Navionics+
User data storage:	Internal backup of user settings or external SD card
Plot Intervals:	5sec to 60minutes or 0.01 to 10nm
Plotting scales:	0.001 to 700nm
Perspective View:	ON/OFF(for C-Map only)
Celestial:	Sunrise/Sunset Moonrise/Moonset
AIS	
Max number of AIS targets:	700 AIS targets display
AIS target tracking:	1000 Automatically saved tracks(100 points each) 10 Manually saved tracks(300 points each)
AIS alarm:	CPA and TCPA
AIS messaging:	ONWA AIS to ONWA AIS (For KP-708A and KCombo-7A only)

GNSS receiver

Receiver :	50 parallel channel GNSS receiver continuously tracks and uses up to 50 satellites to compute and update your position
GNSS :	Support GPS, Beidou, GLONASS and Galileo (For KP-38, KP-39, KP-708 and KCombo-7) Support GPS and Beidou (For KP-38A, KP-39A, KP-708A and KCombo-7A)
Acquisition time :	Cold start : 29 seconds Hot start : 1 second
Update rate :	1 sec or 0.1 sec. selectable (For KP-38, KP-39, KP-708 and KCombo-7) 1 sec. (For KP-38A, KP-39A, KP-708A and KCombo-7A)
Accuracy :	Position : 3 meters (95%) without S/A Velocity : 0.1 meter/sec. without S/A
Dynamics :	Altitude : 18,000 meters Velocity : 515 meter/sec.
Datum :	WGS84 User define (For KP-38, KP-39, KP-708 and KCombo-7)
SBAS:	Supported (For all models)
QZSS:	Supported (For KP-38, KP-39, KP-708 and KCombo-7)

ClassB+ AIS module (For KP-38A, KP-39A, KP-708A and KCombo-7A)

Frequency :	156.026MHz ~ 162.025MHz
Technology :	SOTDMA
Channel Bandwidth :	25KHz
Modulation :	GMSK
Data Rate :	9,600bps
No. of Transmitter :	1
No. of Receiver :	2
AIS Channel 1 :	CH 87B (161.975MHz)
AIS Channel 2 :	CH88B (162.025 MHz)
TX Power Output :	>5 Watt (37dBm +/-1.5dB)
RX Sensitivity :	<-123dBm @20%PER(for KP-708A, KCombo-7A), <-107dBm @20%PER(for KP-38A, KP-39A)
RX Message Format :	AIS Class A and B messages
Comply Standard :	IEC-62287 IEC-62287-2 Ed.2.0:2017

HD Fishfinder Characteristics (For KCombo-7 and KCombo-7A only)

- Echo Color16 colors (including background color) according to echo intensity. The background color is selectable from blue, light blue, white and black.
- Basic RangeMeters 5/10/20/40/80/150/200/300/600/1000
Feet 15/30/60/120/200/400/600/1000/2000/3000
Fathoms 3/5/10/20/40/80/100/150/300/600
- Range ShiftUp to 1000 meters (3000 feet, 600 fathoms)
- Zoom RangeTimes 2,3,4,6
- Bottom Lock Expansion5/10meters,10/20feet, 2/5fathoms
- Auto ModeAutomatic adjustment of range and gain
- Display ModeHigh Frequency (200KHz),Low Frequency (50KHz), Dual (200K and 50K 1/2display on each), Zoom (200KHz and 50KHz zoom) and A-scope Display
- Zoom DisplayMarker Zoom, Bottom Zoom and Bottom-lock Expansion
- Display Advance SpeedLines/TX:Freeze,1/8, 1/4, 1/2, 1/1, 2/1, 4/1, 6/1, 8/1, 10/1
- TX Frequency50 and 200kHz (alternately transmitted)
- Power Output600W
- Pulse-length/TX rate

Display End Depth (m)	5	10	20	40	80	150	200	300	600	1000
Pulse Length 200K (μs)	120	220	320	520	920	1020	1020	1020	1020	1020
Pulse Length 50K (μs)	170	270	370	570	970	1070	1070	1070	1070	1070
TX Rate (pulse/min)	2000	1333	706	353	171	98	75	53	38	27
TX period (millisecond)	30	45	85	170	350	610	800	1120	1580	2200

- Interference RejecterRejects unwanted signals by comparing last and present echoes in strength.
- AlarmFish and Bottom alarms, Temperature alarm (sensor required)

Power Supply

10.5VDC to 30VDC

Current drain at 12V : 1.0A max. (For KP-708, KP-38 and KP-39)
 1.5A max. (For KCombo-7, KP-708A, KP-38A and KP-39A)
 2.0A max. (For KCombo-7A)

GPS Interface

GPS Data : RS232 input/output, NMEA0183 V3.01 and V4.11
GPS Input Baudrate : Auto scan (4800, 9600, 19200 and 38400)
GPS Output Baudrate : Selectable among 4800, 9600, 19200 and 38400

AIS Interface

AIS Data : RS232 output, VDO, VDM, GGA, GSA, GSV and VTG
AIS Input Baudrate : 38400 from GPS input port (For KP-38, KP-39, KP-708
 and KCombo-7 only)
AIS Output Baudrate : 38400 (For KP-38A, KP-39A, KP-708A and KCombo-7A
 only)

NMEA Sentence supported

INPUT, auto scan baudrate

+ GGA, GLL, GSA, GSV, RMC, HDG, HDM, HDT
+ VTG, ZDA, MTW, VWR, VWT, MWD, VPW, VHW
+ TLL, TTM, VDO, VDM, GNS, MTA
+ RMA, DBT, DPT, MWV, BWC, XTE, ZDL, WPL, AAM,
APB, BOD, RMB, DSC, MDA, RPM, XDR.

OUTPUT, Baudrate : Selectable 4800, 9600, 19200, 38400

+ GGA, GLL, RMC, GSA, GSV, AAM, APA, APB, BOD, BWC, BWR,
DBT, DPT, HDT, MTW,
+ RMB, TLL, VTG, WPL, XTE, ZDA, ZTG, ZDL, MWD, VPW, VWR, VWT.

outputs for Autopilot: APA, APB, XTE, BOD

Physical

Size :

KP-38 & KP-38A : 169mm(H) X 198.1mm(W) X 77mm(D)
KP-39 & KP-39A : 187mm(H) X 250.1mm(W) X 88mm(D)
KP-708 & KP-708A : 155.2mm(H) X 243mm(W) X 84.6mm(D)
KCombo-7 & KCombo-7A : 155.2mm(H) X 243mm(W) X 84.6mm(D)

Weight :

KP-38 : 0.56Kg. KP-38A : 0.8Kg
KP-39 : 0.8Kg. KP-39A : 1.03Kg
KP-708 & KCombo-7 : 0.6Kg
KP-708A & KCombo-7A : 0.83Kg

Display:

KP-38 & KP-38A : 5 inches Color TFT day-view LCD 800 X 480 pixels
KP-39 & KP-39A : 7 inches Color TFT day-view LCD 800 X 480 pixels
KP-708 & KP-708A : 7 inches Color TFT day-view LCD 800 X 600 pixels
KCombo-7 & KCombo-7A : 7 inches TFT day-view LCD 800 X 600 pixels

Waterproofing : Display unit : IPX6

GPS antenna : IPX6

Temperature range : Display unit : -15°C to +55°C

GPS antenna : -25°C to +70°C

Equipment list :

- Display unit
- External GPS antenna with 4m cable (SMA connector)
- Mounting brackets
- Quick start and installation manual
- Standard accessories pack (one power/data cable, 2 spare fuses, 3 desktop mounting screws)

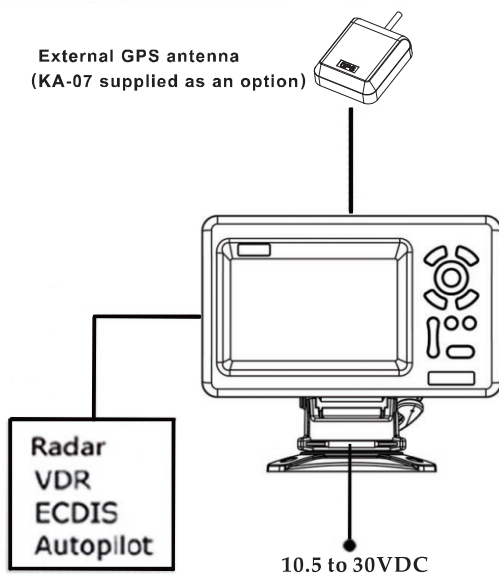
Options :

- 1) Onwa NMEA2000 converter : KC-2W
- 2) Onwa ultrasonic weather station: KW-360

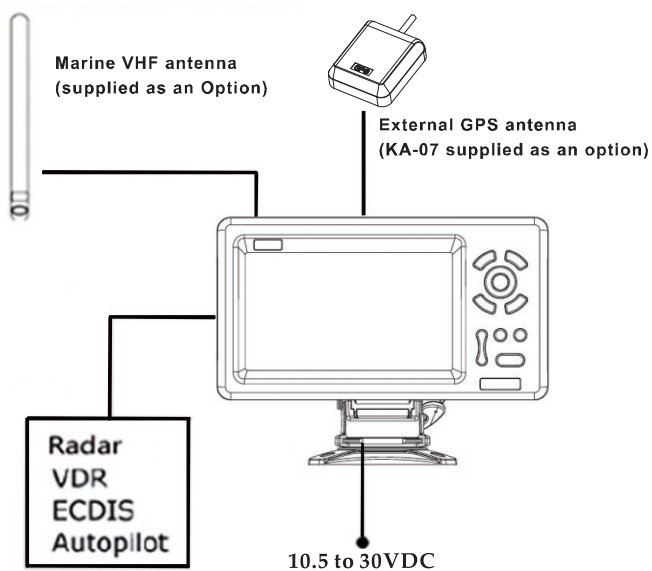
Option accessories :

- 1) Heading/GPS sensor : KA-GC9A
- 2) Fishfinder transducer :
(For KCombo-7 and
KCombo-7A only)
NBM40-50/200T through hull transducer
(Plastic, 600W dual frequency with
temperature sensor)
NMM40-50/200T through hull transducer
(Bronze, 600W dual frequency with
temperature sensor)
KTD-520 transom mount transducer (Plastic,
600W dual frequency with temperature sensor)

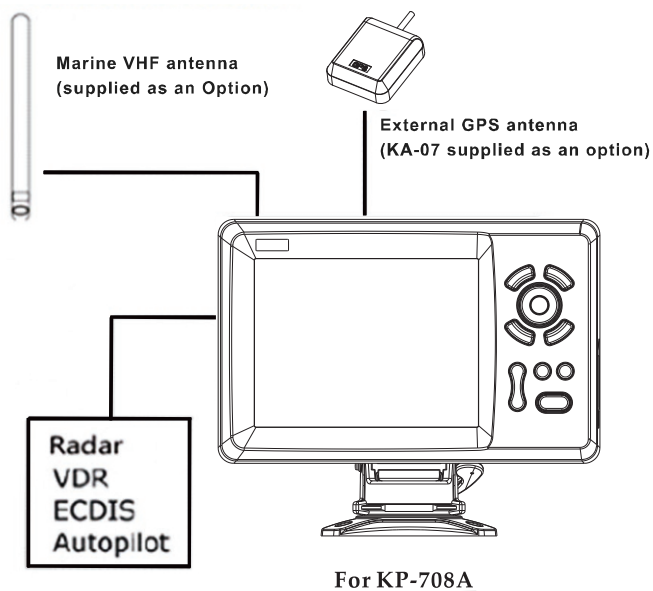
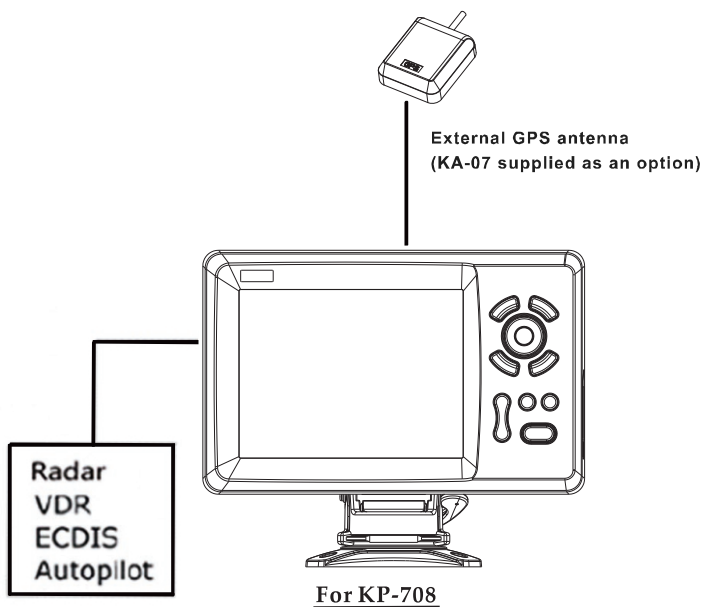
CONFIGURATION

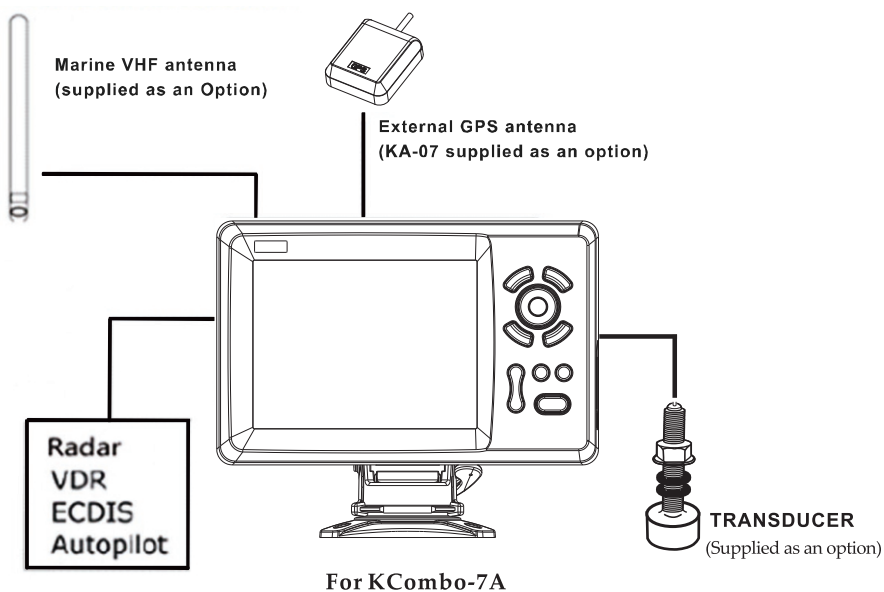
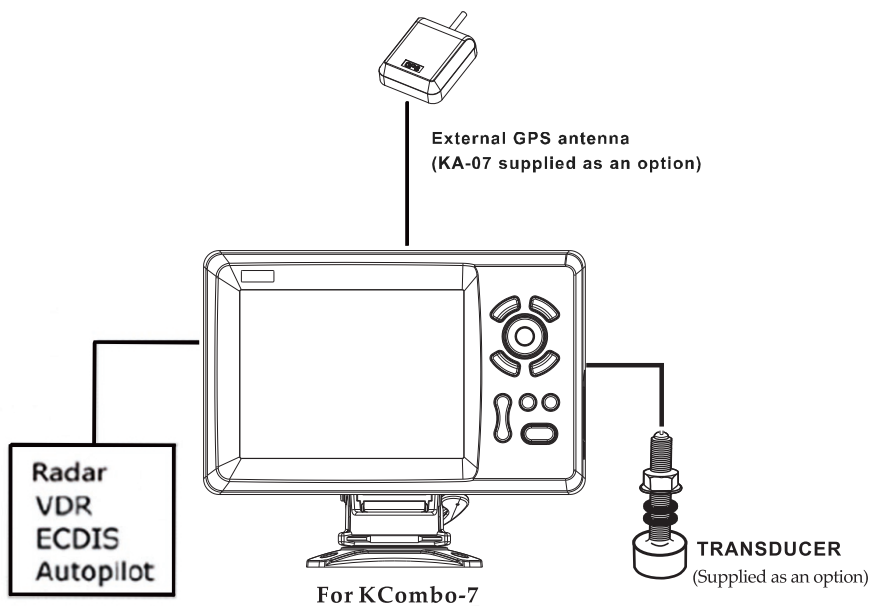


For KP-38 and KP-39



For KP-38A and KP-39A





1. OPERATION OVERVIEW

1.1 Keypad instruction

- ▲

Plotter function: Moving the cursor upward or to change the setting.

Sounder function: Moving the VRM upward.
- ▶

Plotter function: Moving the cursor to the right.

Sounder function:

Long Press - Activates feeding rate selection for picture advancement

Short Press - Setting the depth range (setting upper range limit).
- MENU

Pressing it once displays the menu of the current page, pressing it twice enters the main menu.

Plotter function: Press and hold to switch track ON/OFF.

Plotter + Sounder Function:

Long press - Activates split ratio selection.

Short Press - Displays the menu of the screen that has
>50% screen coverage.
- MODE

Display the seven main screens circularly, turn over the listed interfaces.

Plotter Function: Press and hold to change track color.

Sounder Function: Press and hold to activate sonar mode selection.
- ESC

Withdraw from an optional operation, or display the previous page in reverse-cycle order.

Long press - To activate graphic mode selection.
- ENT/▲

Confirms the input or data.

Plotter function: Long Press - Activates Drawing Mark option.

Short Press - Activates waypoint attribute edit window.

Sounder function: Long Press - To switch from manual gain to automatic gain and vice versa.

Short Press - To adjust gain level.
- ⏏

Plotter and AIS Function: Enlarges the scale of the maps and charts.

Sounder Function: Decreases the depth range for shallow waters.
- ⏏

Plotter and AIS Function: Reduces the scale of the maps and charts.

Sounder Function: Increases the depth range for deeper water.
- F 0

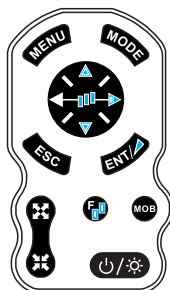
Plotter function: Display other function (GOTO, tide table, search, etc.) menu.

Sounder function: Provides signal level selection. Eliminates low intensity echoes (up to light-blue echoes) each level.
- MOB

The MOB mark denotes man overboard position.

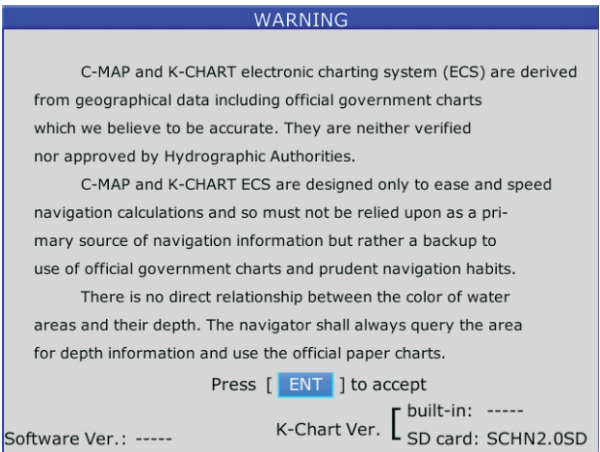
Long Press - Activate Man Overboard function.

Short Press - AIS detail list



1.2 Turning ON and OFF Power

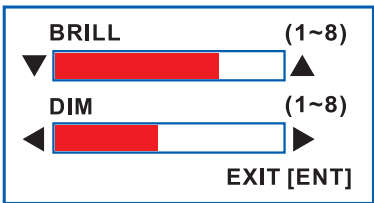
Turning on the power by press  key, the unit beeps and displays the "ONWA" logo. Wait for the unit totally boot up to show the below warning page and press [ENT] to enter working mode.



Turning off the power by press and hold  until the screen goes off.

1.3 Adjusting Brilliance and Dimmer

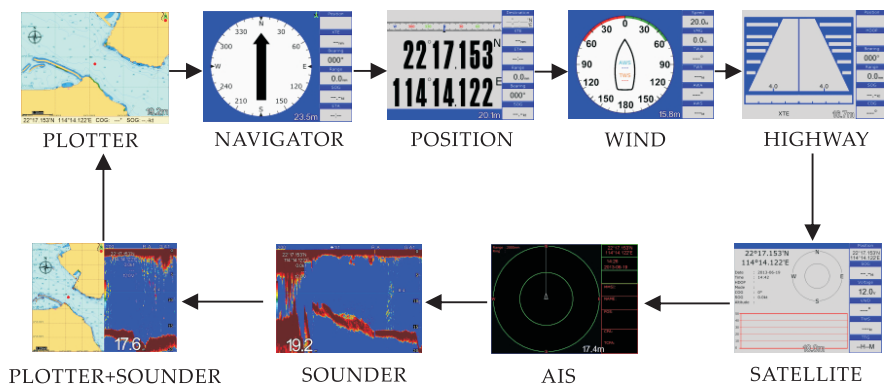
1. Short press the  key. The adjusting window appears.



2. Press [▲] or [▼] to adjust LCD display brightness.
3. Press [►] or [◄] to adjust keypad backlight.
4. Press the [ESC] key to confirm and exit.

1.4 How to select display mode

Selecting display modes by [MODE] and [ESC] key. Your unit has Nine display modes : PLOTTER, NAVIGATOR, POSITION, WIND, HIGHWAY, SATELLITE, AIS, SOUNDER, SOUNDER + PLOTTER.



Press the [MODE] key to choose a display mode. Each time the key is pressed, the display mode changes in the sequence shown above.

You can also press [ESC] key to choose a display mode in reverse sequence shown above. Example 1, if you are in PLOTTER mode when you press [MODE] the screen will go to COMPASS mode.



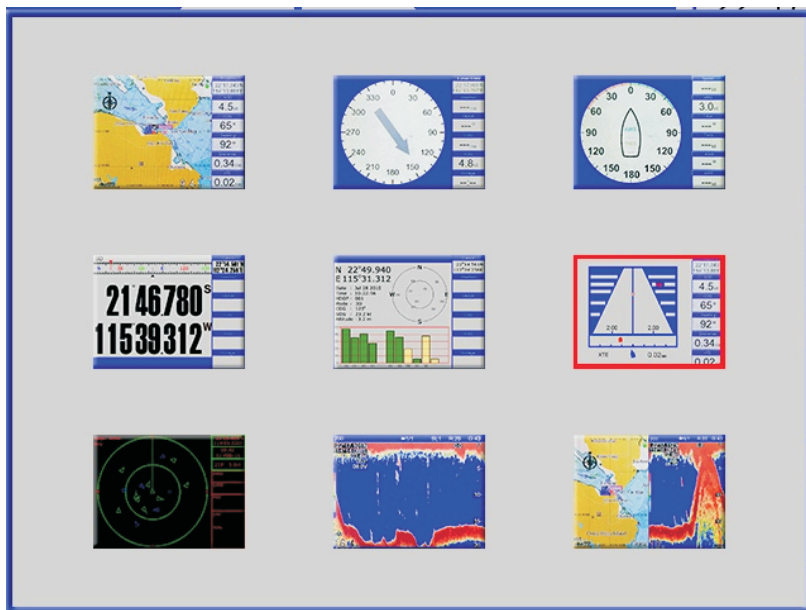
Example 2, if you are in PLOTTER mode when you press [ESC] key the screen will go to AIS mode.

Remark:

SOUNDER and PLOTTER+SOUNDER only available for KCombo-7 and KCombo-7A.

1.5 Selecting display mode by Icons

When you long press [ESC] in any display mode an Icon selection window will appear as below.



You can use arrow keys to choose a display mode and press [ENT] to enter that display mode.

Note : If some display modes cannot be selected (the Icon turns to grey color) please check

SETUP menu whether this display mode is turned off.

Remark:

SOUNDER and PLOTTER+SOUNDER only available for KCombo-7 and KCombo-7A.

2. PLOTTER DISPLAY OVERVIEW

2.1 Choosing the Zoom Display Range

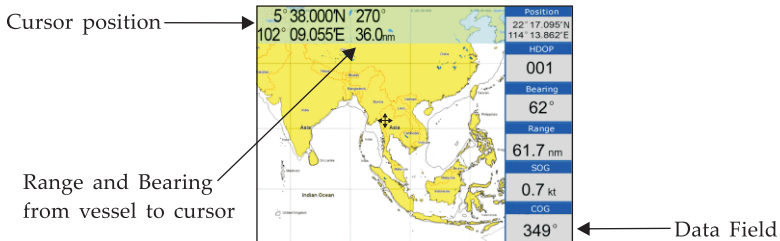
You may press  to Zoom In and  to Zoom Out as desired on the PLOTTER display.

2.2 Moving the Cursor

Press the cursor pad to move the cursor. The cursor moves in the direction of the pressed arrow. Whether up [, down [, left [, right [] or diagonal [].

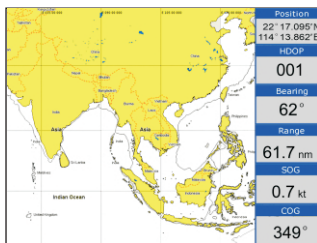
Cursor Position Turned On

Cursor position is displayed in latitude and longitude at the top left corner of the **PLOTTER** display when the cursor is on. The range and bearing from own ship to the cursor appears at the top left corner of the display too.



Cursor Position Turned Off

Press the [ESC] key to clear the cursor. Cursor position data will disappear when the cursor is off.



2.3 Panning the PLOTTER Display

Using the cursor, pan left, right, up or down on your desired area. Place the cursor at the edge of the screen to start panning. The display shifts in the direction opposite to cursor pad operation.

2.4 Centering Own Ship's Position

Press the [ESC] key for centering own ship's position.

2.5 Map

1. Press [MENU] key in PLOTTER screen.
2. Choose **Map** and then press [►] key to select.
3. Choose the layer "ON" or "OFF" as desired and then press [ENT] key to finish.

PLOTTER CONFIG			
Track			
Current track display: ON THIN			
Map			
Perspective	OFF	Place names	Small
Waypoint	All Large	Name tags	OFF
Heading line	OFF	Nav aids & Light	OFF
Cursor	Standard	Attention area	OFF
Icon	Small	Tides & Currents	OFF
Ship shape/color	Ship	Seabed type	OFF
Ship info.display	Auto	Ports & Services	OFF
Range circle	OFF	Tracks & Routes	OFF
Zoom step	Less	Depth range Min	0000m
Drawing		Depth range Max	0100m
Palette	Normal	Land elevations	OFF
Map direction	Normal	Land elev. values	OFF
Map choice	C-MAP	Roads	OFF
Map language	Local	POI	OFF
Low Resolution Map	OFF	Lat/Lon grid	ON
Data field		Chart boundaries	ON
Menu to MAIN MENU			

MAP	
Value-added data	ON
Chart lock	ON
Underwater obj.	0100m
Rocks	Icon
Obstructions	OFF
Diffusers	OFF
Wrecks	Icon
ALL	OFF

(K-Chart)

PLOTTER CONFIG			
Track			
Current track display: ON THIN			
Map			
Perspective	OFF	Deep point	ON
Waypoint	All Large	Obstructions	ON
Heading line	OFF	Danger	ON
Cursor	Standard	Place names	Small
Icon	Small	Port names	ON
Ship shape/color	Ship	Light	ON
Ship info.display	Auto	Communication	ON
Range circle	OFF	Reference points	ON
Zoom step	Less	Dock	ON
Drawing		Light line	ON
Palette	Normal	Water line	ON
Map direction	Normal	Help info.	ON
Map choice	K-CHART	Limit zone	ON
Map language	Local	Depth line 20m	ON
Low Resolution Map	OFF	Depth line 10m	ON
Data field		Route line	ON
Menu to MAIN MENU			

MAP	
Depth area 2m	ON
Depth area 5m	ON
LAT / LON grid	ON
Chart boundaries	ON
ALL	ON

(C-MAP)

MAP	
Deep point	ON
Obstructions	ON
Danger	ON
Place names	Small
Port names	ON
Light	ON
Communication	ON
Reference points	ON
Dock	ON
Light line	ON
Water line	ON
Help info.	ON
Limit zone	ON
Depth line 20m	ON
Depth line 10m	ON
Route line	ON
Depth area 2m	ON
Depth area 5m	ON
LAT / LON grid	ON
Chart boundaries	ON
ALL	ON

(K-Chart3.0)

MAP	
Spot Sounding	ON
Isolated dangers	ON
Navigable canals	OFF
Drying Line	OFF
Coast Line	OFF
Nav aids	ON
Light Sectors	ON
Recom.routes	OFF
Conspicuous feat	OFF
Char Boundaries	ON
Anchorage areas	ON
Restricted area	OFF
Intern. Boundaries	OFF
Nature of seabed	OFF
Additional wrecks	OFF
Other elements	OFF
Sonar Chart	OFF
Photo overlay	OFF
Language	English
Contour value	010.0
Safety value	005.0
Shallow value	002.0
Min fish range	003.0
Max fish range	007.0
SonarChartLiveDepth	007.0
SonarChartLiveColor	■
SonarChartLive	OFF
Auto route depth	003.0
Auto route width	003.0
Auto route height	006.0
Auto route	OFF
Tide correction	OFF
Community Edits	OFF
Sonar logs	OFF
ALL	ON

(Navionics+)

2.6 Perspective View

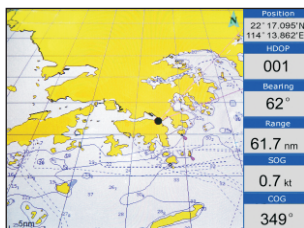
1. Press [MENU] key in PLOTTER screen.
2. Choose **Perspective** and then press [ENT] key to select.

PLOTTER CONFIG	
Track	
Current track display	ON Thin
Map	
Perspective	OFF
Waypoint	OFF Large
Heading line	ON
Cursor	Standard
Icon	Small
Ship shape/color	Ship ■
Ship info.display	Auto
Range circle	OFF
Zoom step	Less
Drawing	
Palette	Normal
Map direction	Normal
Map choice	C-MAP
Map language	English
Data field	
Menu to MAIN MENU	

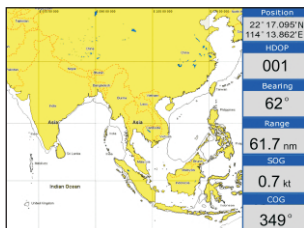
3. Choose "ON" or "OFF" as desired and then press [ENT] key to finish.

Note: Perspective View only available on C-Map.

4. Choose the layer "ON" as desired and then press [ENT] key to finish.

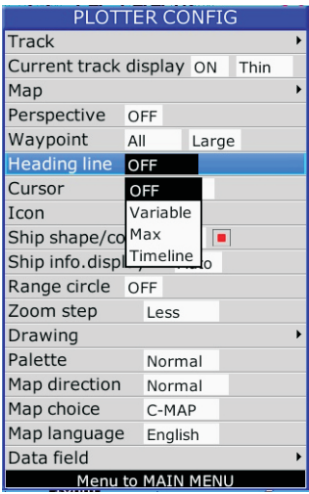


5. Choose the layer "OFF" as desired and then press [ENT] key to finish.



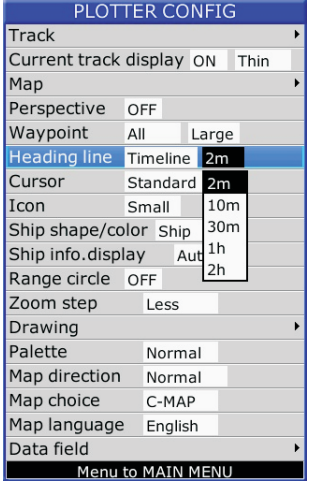
2.7 Heading Line

1. Press [MENU] key in **PLOTTER** screen.
2. Choose **Heading Line** and then press [ENT] key to select.



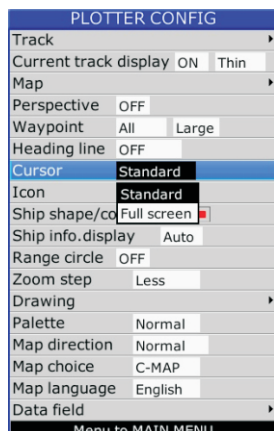
3. Choose "Off", "Variable", "Max" or "Timeline" as desired and then press [ENT] key to finish.
4. Heading Line option: "COG Time Line" selection

The length of heading line will vary according to the SOG to show the estimated point of destination after the set period. Example, if you set the COG Time Line to 10 minutes then the length of the heading line will point to the position that your boat will reach after 10 minutes.



2.8 Cursor

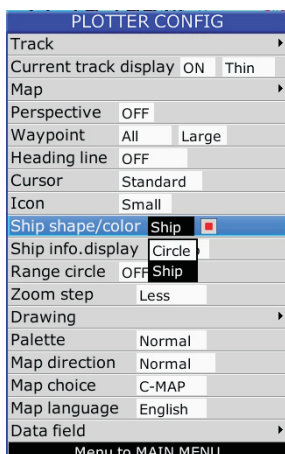
1. Press [MENU] key in **PLOTTER** screen.
2. Choose **Cursor** and then press [ENT] key to select.



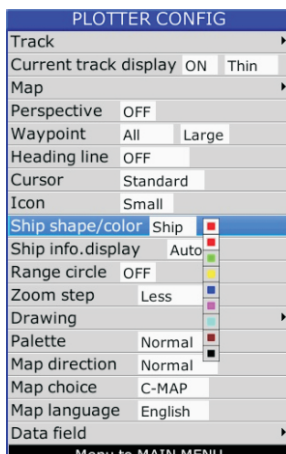
3. Choose "Standard" or "Full Screen" as desired and then press [ENT] key to finish.

2.9 Ship shape/color

1. Press [MENU] key in **PLOTTER** screen.
2. Choose **Ship shape/color** and then press [ENT] key to select.

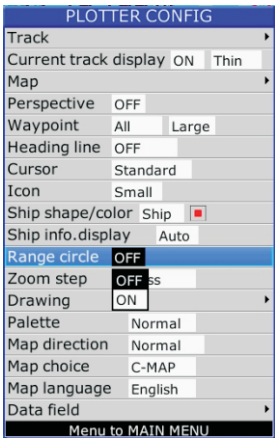


Press [▶] key
and then press
[ENT] key.



2.10 Range Circle

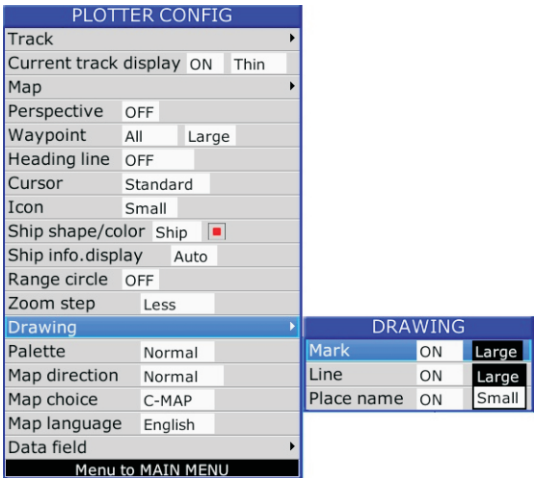
- 1. Press [MENU] key in **PLOTTER** screen.
- 2. Choose **Range Circle** and then press [ENT] key to select.



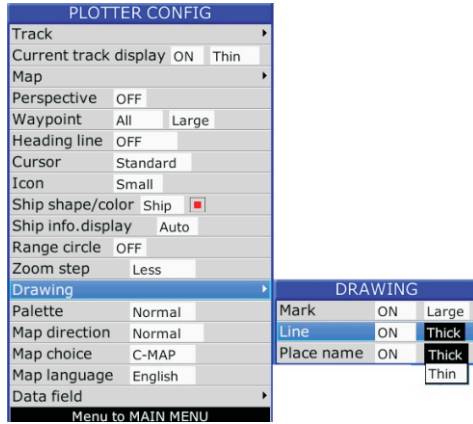
- 3. Choose "ON" (if you choose "ON", you need to input the radius of the circle manually), or "OFF" as desired and then press [ENT] key to finish.

2.11 Drawing

- 1. Press [MENU] key in **PLOTTER** screen.
- 2. Choose **Drawing** and then press [ENT] key to select.
- 3. Choose "Mark", "Line" or "Place name" as desired and then press [ENT] key to finish.
- 4. User can change the size of User Marks.

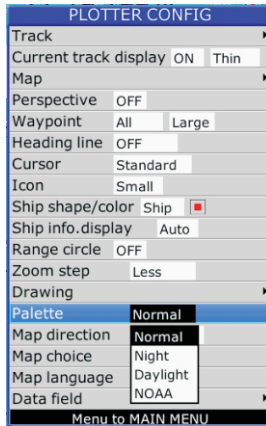


5. User can change the size of Drawing Lines.



2.12 Palette

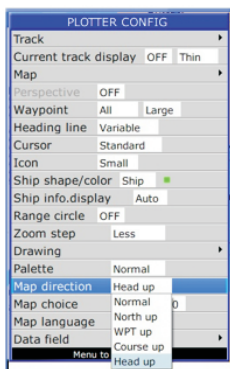
1. Press [MENU] key in **PLOTTER** screen.
2. Choose **Palette** and then press [ENT] key to select.



3. Choose "Normal", "Daylight", "Night" or "NOAA" as desired and then press [ENT] key to finish.

2.13 Map Direction

1. Press [MENU] key in PLOTTER screen.
2. Choose **Map Direction** and then press [ENT] key to select.



3. Choose "Normal", "North Up", "WPT Up", "COURSE Up" or "Head up" as desired and then press [ENT] key to finish.

Note :

Normal : It is similar to North up, map not move only own boat position move

North up : North is always on the top of the display, own boat not move only the map move

WPT up : Only available on GOTO mode when a waypoint is set as destination. The waypoint is always on the top of the display.

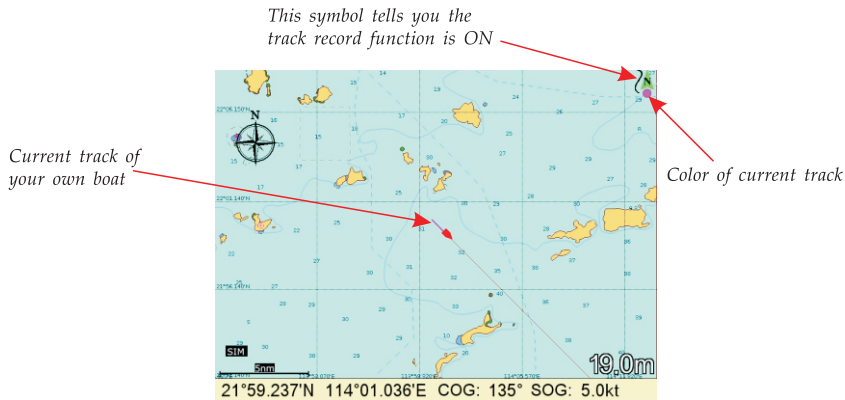
Course up : COG (Course over ground) is always on the top of the display

Head up : The heading of own boat is always on the top of the display.

It requires an external heading signal input.

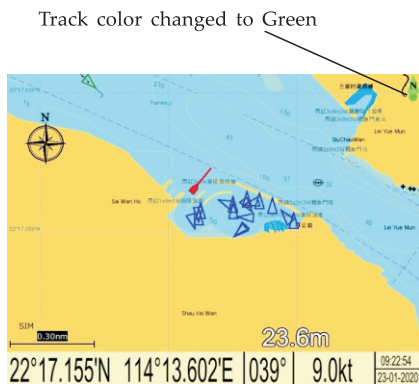
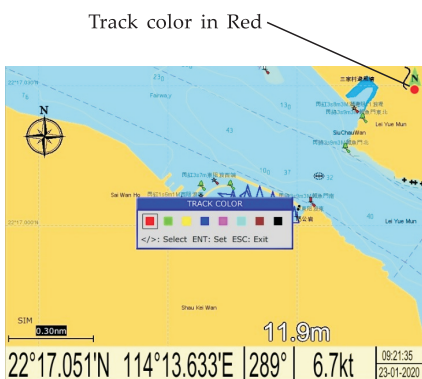
3. TRACK

In the following it teaches you how to manage the track of your own boat.



3.1 Change the color of current track

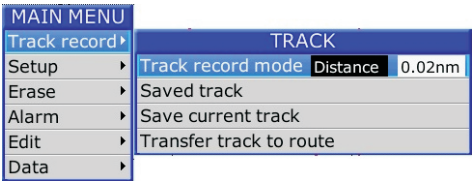
Press and hold [Mode] key on Plotter screen to change the color of current track of your own boat. Take an example : Change the track color from Red to Green.



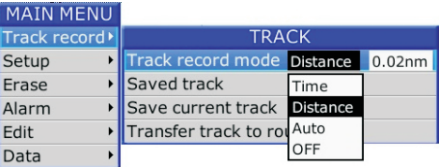
Press and hold [Mode] key until you see the track color box appear

3.2 Change plotting intervals of current track

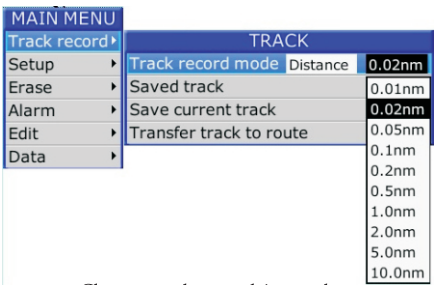
You can choose plotting intervals of the current track for your own boat as below:



Choose MAIN MENU->Track record->Track record mode



Choose the track record interval mode



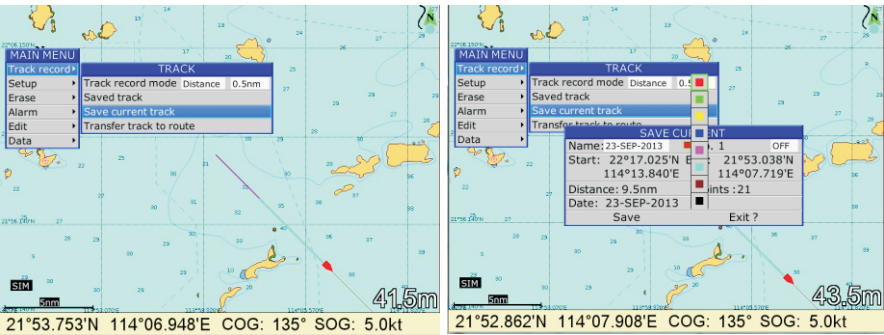
Choose track record intervals

Track record mode :

- Time : Track is recorded and plotted at the time interval set
- Distance : Track is recorded and plotted at the distance interval set
- Auto : Plotting and recording interval changes with plotter display range selected
- OFF : Track is neither recorded or plotted

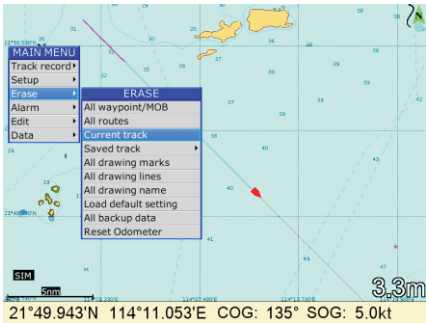
3.3 Save current track

You can save the current track of your own boat for future use.

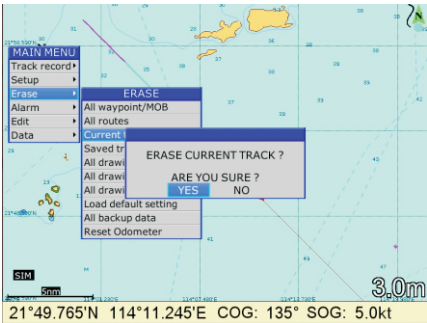


Choose MAIN MENU->Track record->Save current track You can change the color and the name before save

3.4 Erase current track



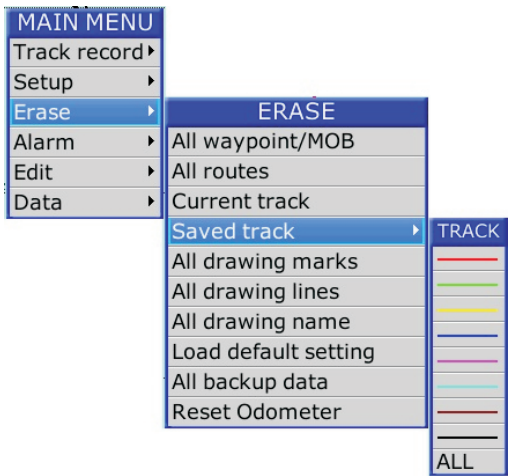
Choose MAIN MENU->Erase->Current track



To confirm erase or exit without erase

3.5 Erase saved track

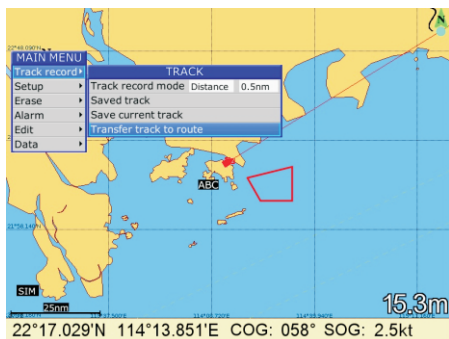
You can erase saved track by colors and erase all saved track.



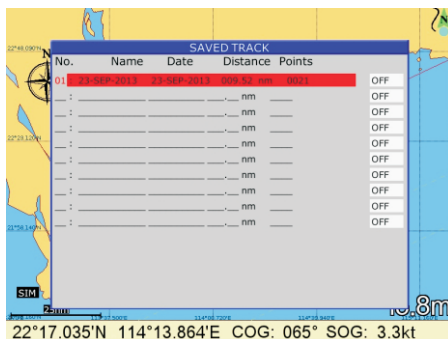
Choose MAIN MENU->Erase->Saved track

3.6 Transfer saved track to route

You can transfer the saved track of your own boat to a route for navigation purpose. You need to choose a starting point and an ending of a saved track before Transferring any part of the saved track into a route.



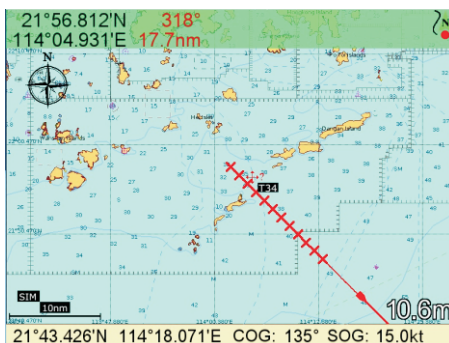
Choose MAIN MENU->Track record->Transfer track to route



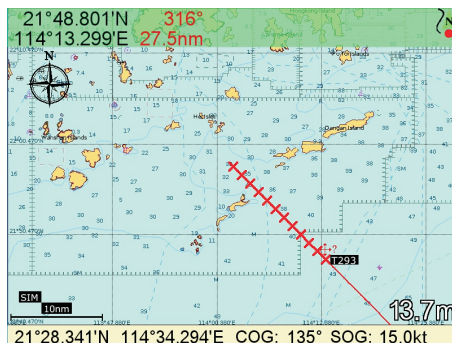
Choose a saved track from the list

After you choose a saved track from the list and press [ENT] to confirm. The plotter screen will jump to the location of this saved track and the cursor will change to red color with a “?” beside the cursor then you can carry out selection of starting point. Note : In any screen if you choose “Transfer track to route” it will jump back to plotter screen automatically.

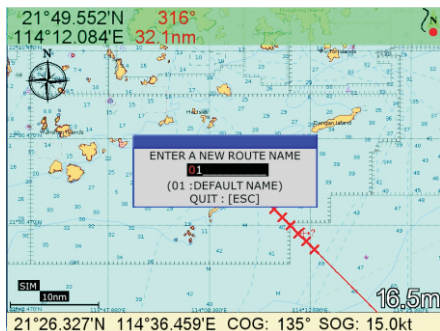
When you move the cursor close to the saved track you will see a number “TXXX” pop up beside the saved track. This number represent a saved track point in the saved track, smaller the number means earlier record.



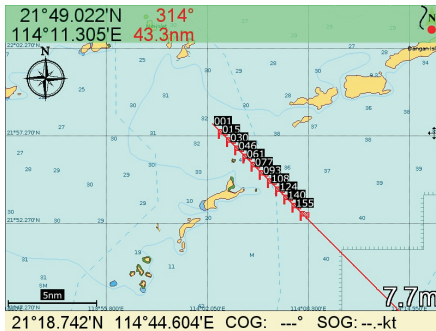
Move the cursor to the starting point and press [ENT]



Move the cursor to the ending point and press [ENT] again



Enter the name of the new route and press [ENT] to confirm



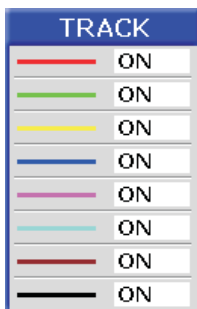
A new route is created

After finish transferring you need to press [ESC] to quit the “Transfer saved track to route” function.

Note : After it quits from “Transfer saved track to route” function the cursor will turn from RED color back to BLACK color.

3.7 Display saved track on the plotter screen

1. Press [MENU] key in **PLOTTER** screen.
2. Choose **Track** and then press [►] key to select.



3. Choose the color and if you want to turn it "ON" or "OFF".
4. Press [MENU] key to finish.

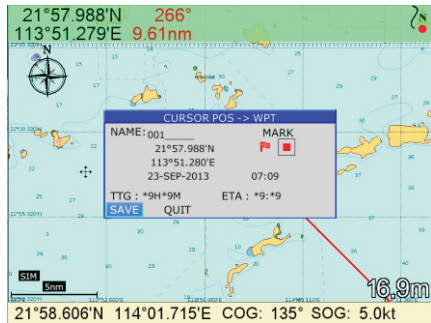
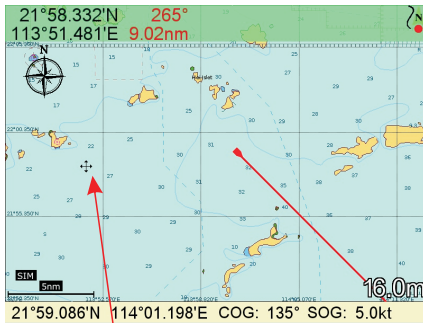
4. WAYPOINT/MOB

4.1 Entering Waypoints

Waypoints can be entered on the **PLOTTER** display in three ways: by cursor position, at own ship's position, and from the waypoint edit.

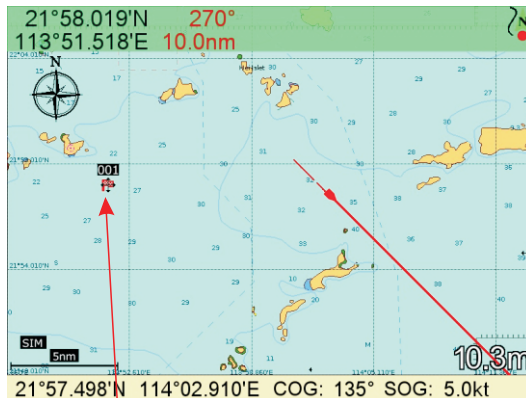
Entering a waypoint with the cursor

1. Use the cursor pad to place the cursor on the location desired for a waypoint.
2. Press the [ENT] key. The following window appears.



Move the cursor to the location desired for a waypoint Press [ENT] , choose "SAVE" and press [ENT] again

3. This window is where you can rename, edit LON and LAT, choose mark shape and color, and enter a comment.
4. Choose "SAVE" to finish.

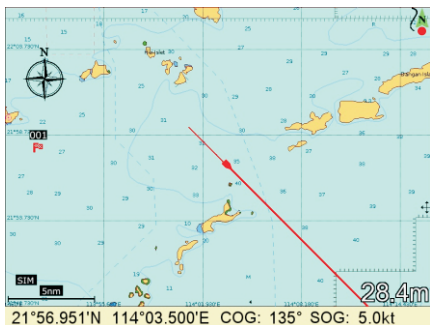


A waypoint is created on the cursor location

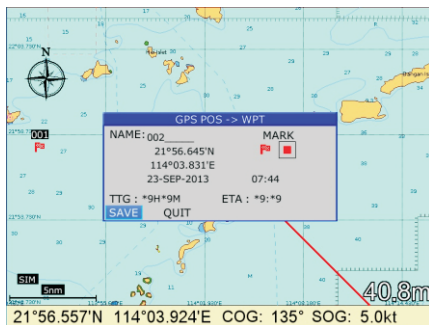
Entering a waypoint at own ship's position

1. Momentarily press [ENT] key when no cursor is seen. The following window appears.

Note: if you see a cursor on the plotter screen you can press [ESC] to make it disappear.

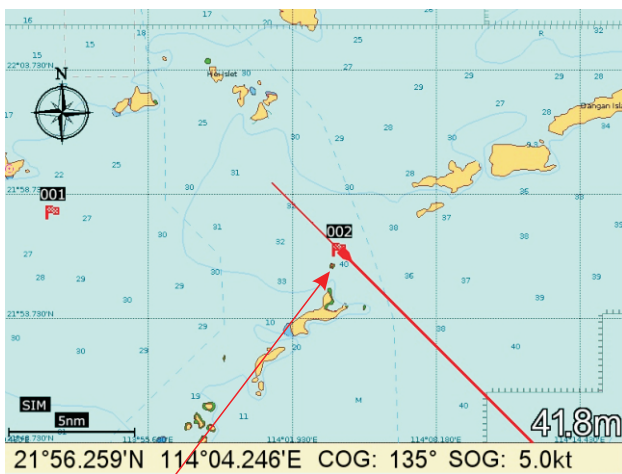


Make sure no cursor is seen on the plotter screen



Press [ENT], choose "SAVE" and press [ENT] again

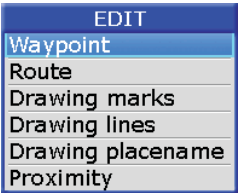
2. If you do not need to change anything, choose "SAVE" to finish.



A waypoint is created on your own boat location

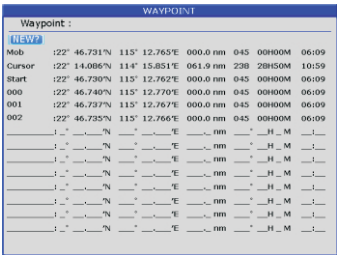
Entering a waypoint from the waypoint list

- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose **Edit** and then press [▶] key to select.



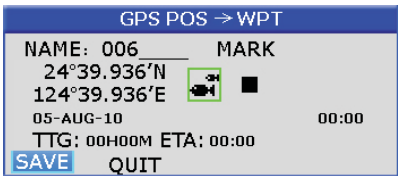
- 3. Choose **Waypoint** and then press [ENT] key.

The following window will appear



- 4. Choose **NEW** then press [ENT] key.

The following window appears.



- 5. If you do not need to change anything, choose "SAVE" to finish.

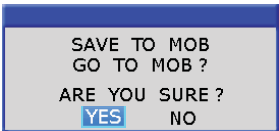
4.2 Entering the MOB Mark

Only one MOB mark may be entered.

Each time the MOB mark is entered, the previous MOB mark and its position data are over-written.

- 1. Long press the [MOB] key on any display mode.

The following display appears.



- 2. To set MOB position as destination, press [▶] to choose "YES" and then press [ENT] key. Choosing "NO" saves the position as a waypoint called "MOB".

4.3 Displaying Waypoint Name

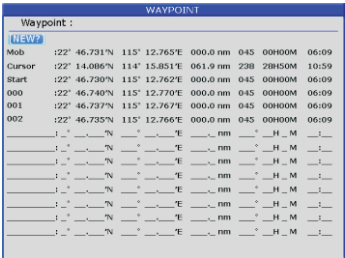
Please refer to section 2, PLOTTER CONFIG -> Waypoint.

4.4 Operation on the Waypoint Editing

Waypoint position, waypoint name, mark shape, mark color and comment can be edited from the Waypoint Edit.

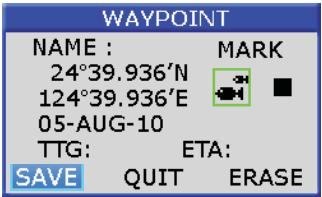
- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [▶] key to select.
- 3. Choose Waypoint and then press the [ENT] key.

The following window will appear.



- 4. Choose waypoint to edit and then press the [ENT] key.

The following window will appear.



- 5. Choose the object you want to edit and then press the [ENT] key to select.
- 6. Change name, position, mark shape, mark color, comment as desired.
- 7. Choose "SAVE" and then press [ENT] key to finish.

4.5 Erasing Waypoints

1. Press the [MENU] key twice to main menu.
2. Choose **Edit** and then press [►] key to select.
3. Choose **Waypoint** and then press the [ENT] key. The following window will appear.

Waypoint :									
Waypoint	:	22°	46.731'N	115°	12.765'E	000.0 nm	045	00H00M	06:09
Mob	:	22°	14.086'N	114°	13.851'E	061.9 nm	238	2BH50M	10:59
Cursor	:	22°	46.730'N	115°	12.762'E	000.0 nm	045	00H00M	06:09
Start	:	22°	46.740'N	115°	12.770'E	000.0 nm	045	00H00M	06:09
000	:	22°	46.737'N	115°	12.767'E	000.0 nm	045	00H00M	06:09
001	:	22°	46.737'N	115°	12.767'E	000.0 nm	045	00H00M	06:09
002	:	22°	46.735'N	115°	12.766'E	000.0 nm	045	00H00M	06:09
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00
	:	2°	0'N	0°	0'E	0.0 nm	000	00H00M	00:00

4. Select a waypoint and press [ENT] key.
5. The confirm window will appear. Choose "ERASE" and then press [ENT] key.

WAYPOINT	
NAME :	MARK
24°39.936'N	☒
124°39.936'E	☒
05-AUG-10	
TTG:	ETA:
SAVE	QUIT ERASE

6. Choose "YES" and then press [ENT] key to finish.

ERASE WAYPOINT 01 ?
ARE YOU SURE ?
YES NO

Erase All Waypoints

1. Press the [MENU] key twice to enter main menu.
2. Choose **Erase** and then press [►] key to select.
3. Choose **All waypoint/MOB** and then press [ENT] key.

The confirming window will appear.

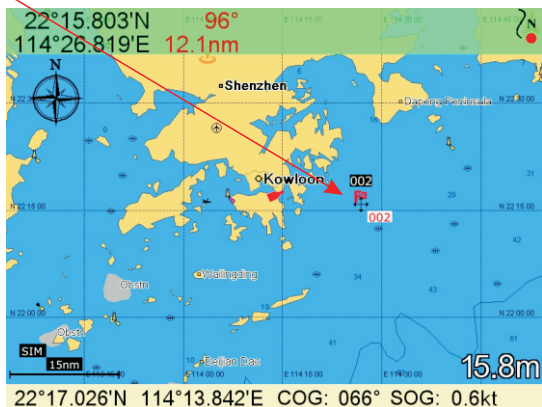
ERASE ALL WAYPOINT ?
ARE YOU SURE ?
YES NO

4. Choose "YES" and then press [ENT] key to erase all waypoints.

4.6 Editing Waypoints on plotter screen

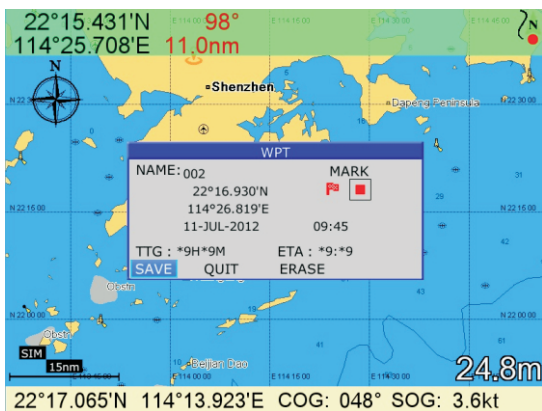
You can edit Waypoint on plotter screen.

1. Move the cursor close to a Waypoint you want to edit.



You will see a text box pop up with same name of the Waypoint you want to edit

2. Press [ENT] to confirm, the confirm window will appear.

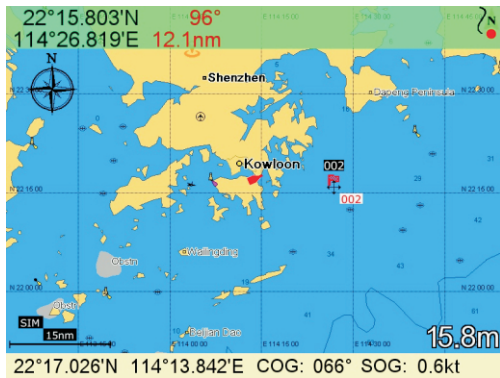


3. Choose the object you want to edit and then the [ENT] key to select.
4. Change name, position, mark shape, mark color, comment as desired.
5. Choose "SAVE" and then press [ENT] key to finish.

4.7 Erase Waypoints on plotter screen

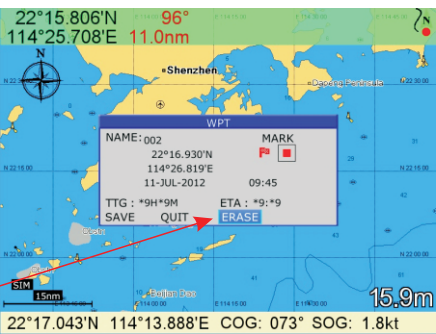
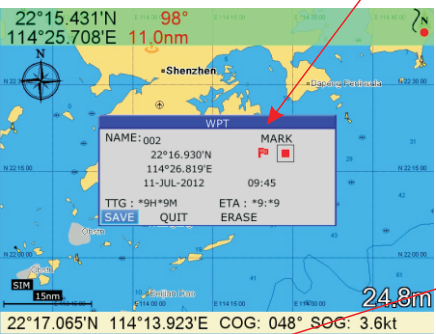
You can erase Waypoint on plotter screen

1. Move the cursor close to the Waypoint you want to erase.



You will see a text box pop up with same name of the Waypoint you want to erase

2. Press [ENT] to confirm, the confirm window will appear.



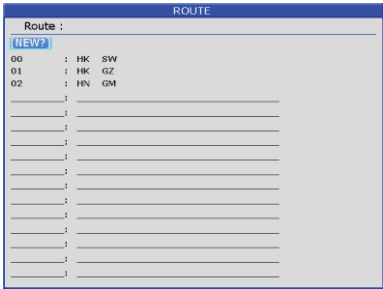
3. Choose "ERASE" and then press [ENT] key to finish erasing that Waypoint.

5. ROUTES

5.1 Creating Routes

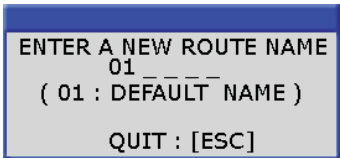
- 1. Press [MENU] key twice to enter main menu.
- 2. Choose **Edit** and then press [▶] key to select.
- 3. Choose **Route** and then press [ENT] key.

The following window will appear.



- 4. Choose "NEW" and then press [ENT] key.

The following window will appear.



5. Use [▲] or [▼] to enter the route name and then press [ENT] key to finish.
The following will appear.

The screenshot shows a screen titled "ROUTE". At the top, it says "Route v0" and "CMNT" with an "ERASE" button. Below this, it says "TOTAL DISTANCE: 0.0 nm". There is a table with 10 rows, each starting with a colon and followed by a series of blank fields for coordinates and distance.

Waypoint	Lat	Long	Dist	Time
:				
:				
:				
:				
:				
:				
:				
:				
:				
:				

6. Choose the location (e.g. 01) and then press [ENT] key.
A new window will open which will let you choose a waypoint.

The screenshot shows a screen titled "WAYPOINT". At the top, it says "Waypoint:" and "NEW?". Below this, there is a list of waypoints with their coordinates, distances, and times.

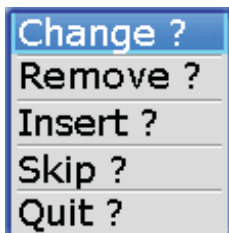
Waypoint	Lat	Long	Dist	Time
Mob	:22° 46.731'N	115° 12.765'E	000.0 nm	045 00H00M 06:09
Cursor	:22° 14.006'N	114° 15.051'E	061.9 nm	230 20H50M 10:59
Start	:22° 46.730'N	115° 12.762'E	000.0 nm	045 00H00M 06:09
000	:22° 46.740'N	115° 12.770'E	000.0 nm	045 00H00M 06:09
001	:22° 46.737'N	115° 12.767'E	000.0 nm	045 00H00M 06:09
002	:22° 46.735'N	115° 12.766'E	000.0 nm	045 00H00M 06:09

7. Choose the waypoint name that you want to include in the route and then press [ENT] key (e.g., 001). You can also create a new waypoint if needed.
8. Repeat step 6 and 7 until the route is complete.

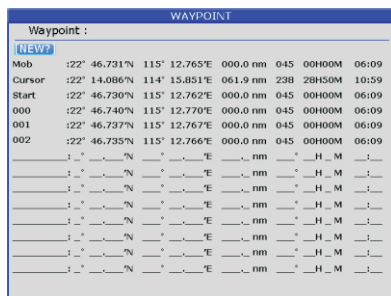
5.2 Editing Routes

Replacing waypoints in a route

1. Press the **[MENU]** key twice to enter main menu.
2. Choose **Edit** and then press **[▶]** key to select.
3. Choose **Route** and then press **[ENT]** key to select.
4. Choose the route to edit and then press **[ENT]** key.
5. Place the cursor on the waypoint to replace, press the **[ENT]** key to show the route options.



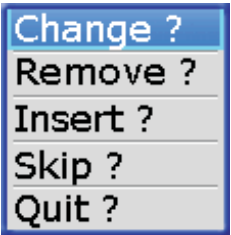
6. Choose "Change" and then press [ENT] key.
The waypoint select window will appear.



7. Choose the waypoint name that you want to include in the route and then press **[ENT]** key.
8. Repeat step 5 to 8 until finish edit.

Permanently deleting a waypoint from a route

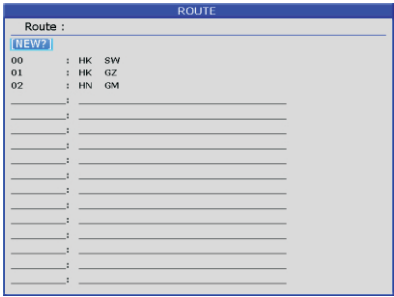
- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose **Edit** and then press the [►] key to select.
- 3. Choose **Route** and then press [ENT] key to select.
- 4. Choose the route desired and then press [ENT] key to select.
- 5. Choose the waypoint you want to delete and then press [ENT] key to show the route edit options.



- 6. Choose "Remove" and then press [ENT] key to finish.

5.3 Erasing Routes

- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose **Edit** and then press [►] key to select.
- 3. Choose **Route** and then press the [ENT] key. The following window will appear.



4. Select a route then press [ENT] key.
5. The confirm window will appear. Choose "ERASE" and then press [ENT] key.

ROUTE

Route v0

CMNT

TOTAL DISTANCE: 0.0 nm

1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

ERASE?

6. Choose "YES" and then press [ENT] key to finish.

ERASE ROUTE 01 ?

ARE YOU SURE ?

YES NO

Erase All Routes

1. Press the [MENU] key twice to enter main menu.
2. Choose **Erase** and then press [▶] key to select.
3. Choose **All routes** and then press [ENT] key.

The confirming window will appear.

ERASE ALL ROUTES ?

ARE YOU SURE ?

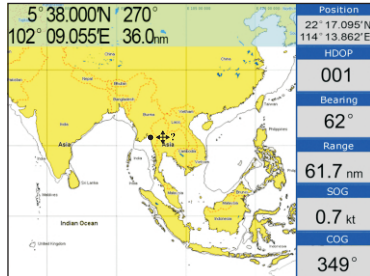
YES NO

4. Choose "YES" and then press [ENT] key to erase all routes.

6. DESTINATION

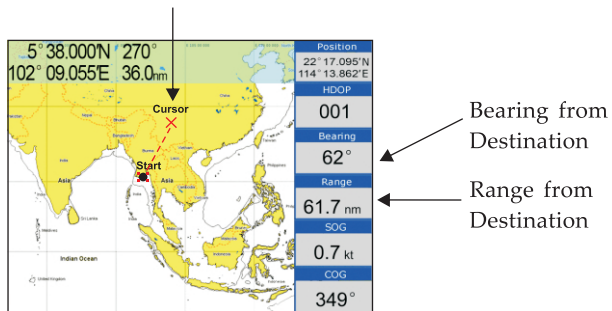
6.1 Setting Destination by Cursor

1. Press [F] key to display the **FUNCTION** window.
2. Choose **Goto cursor** and then press [ENT] key to select.
3. The cursor appears with "?".



4. Use the cursor pad to place the cursor on the location desired for destination.
5. Press the [ENT] key to mark destination.

CURSOR set as destination



6.2 Setting Destination by Waypoint (WPT)

1. Press the [F] key to display the **FUNCTION** window.



2. Choose **Goto WPT** and then press [ENT] key to select.
3. The **WAYPOINT** list appears.

A screenshot of the 'WAYPOINT' list. The title 'WAYPOINT' is at the top right. Below it, 'Waypoint :' is followed by a 'NEW?' button. The list contains several waypoints with their coordinates and times. The first few are: 'Mob :22° 46.731'N 115° 12.765'E 000.0 nm 045 00H00M 06:09', 'Cursor :22° 14.086'N 114° 15.851'E 061.9 nm 238 28H50M 10:59', 'Start :22° 46.730'N 115° 12.762'E 000.0 nm 045 00H00M 06:09', '000 :22° 46.740'N 115° 12.770'E 000.0 nm 045 00H00M 06:09', '001 :22° 46.737'N 115° 12.767'E 000.0 nm 045 00H00M 06:09', and '002 :22° 46.735'N 115° 12.766'E 000.0 nm 045 00H00M 06:09'. Below these are several empty rows with coordinate and time fields.

Waypoint	Lat	Long	Dist	Unit	Time
Mob	:22° 46.731'N	115° 12.765'E	000.0 nm	045	00H00M 06:09
Cursor	:22° 14.086'N	114° 15.851'E	061.9 nm	238	28H50M 10:59
Start	:22° 46.730'N	115° 12.762'E	000.0 nm	045	00H00M 06:09
000	:22° 46.740'N	115° 12.770'E	000.0 nm	045	00H00M 06:09
001	:22° 46.737'N	115° 12.767'E	000.0 nm	045	00H00M 06:09
002	:22° 46.735'N	115° 12.766'E	000.0 nm	045	00H00M 06:09
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _
	: ° 'N	: ° 'E	: nm	: °	: H _ M _

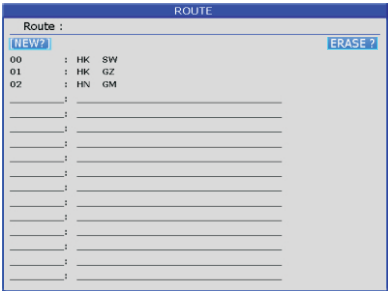
4. Choose a waypoint and then press [ENT] key to finish.

6.3 Setting Route as Destination

1. Press the [F] key to display the **FUNCTION** window.
2. Select **Goto route** and then press [ENT] key to select.



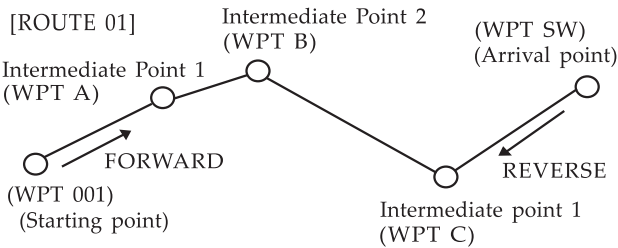
3. The **ROUTE** list appears.



4. Choose a route and then press [ENT] key. The following window appears.



5. Choose "Forward" or "Reverse" in order to traverse the waypoints in the route, and then press [ENT] key to finish.



Meaning of forward and reverse

6.4 Setting Track Data as Destination

Track Data can be used for navigation.

- 1. Press the [F] key to display the **FUNCTION** window.
- 2. Choose **Goto track** and then press the [ENT] key to select.



- 3. The **SAVED TRACK** window will appear.

SAVED TRACK				
No.	Name	Date	Distance	Points
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF
— : —	_____	_____	— . — nm	_____ OFF

- 4. Choose the track that you want to set as destination, and then press [ENT] key.



- 5. Choose Forward or Reverse to start Goto track navigation.

Once a Goto track has been activated, the track will divide it into segments. Up to 200 temporary waypoints are created (named T1,T2, T3, etc. and END) to mark the most significant features of the track, duplicating your exact path as closely as possible. To get the most out of the Goto track feature, remember the following tips:

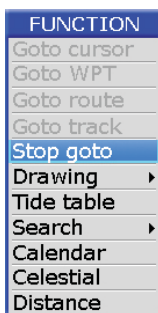
- Always clear the track log at the point that you want to go back to.
- There must be at least two track log points stored in memory to create a track route.
- If the receiver is turned off or satellite coverage is lost during your trip, it will draw a straight line between any point where coverage was lost and where it resumed.
- If your track's changes in distance and direction are too complex, 200 waypoints may not mark your path accurately.

The receiver then assigns the 200 waypoints to the most significant points of your track, and simplifies segments with fewer changes in direction.

6.5 Canceling Destination

You can cancel a destination as follows.

1. Press the [F] key to display the FUNCTION window.



2. Choose Stop goto and press [ENT] key to finish.

6.6 Distance

Measure the distance of several points and save it as a route.

1. Press [F] key in **PLOTTER** screen to display **FUNCTION** window.

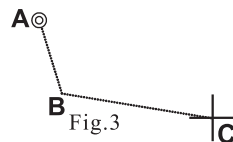


2. Select "**Distance**" and press [ENT] key to activate the distance measurement function.



Note:

- a) LON/LAT is the position of the cursor (point C)
- b) BRG is the bearing of cursor to the last point (point B)
- c) LEG is the distance of cursor to the last point (point B)
- d) DST is the total distance from the cursor to the starting point (AB + BC)
- e) M is Magnetic North, T is True North



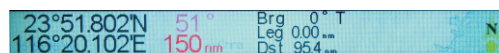
3. Move the cursor to the starting point (A) and press [ENT] to set up starting point. Now all BRG, LEG and DST are display 0.



4. Move the cursor to the next point (B). Now the BRG and LEG display the Bearing and Distance from point A to point B, DST=0.



5. Press [ENT] key, now DST= distance from point A to point B is shown, while BRG and LEG turns to 0.



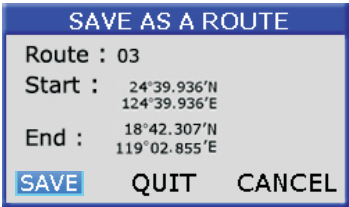
6. Move the cursor to the next point (C). Now the BRG and LEG displays the Bearing and Distance from point B to point C. DIST displays the total distance from point A to point B.



7. Press [ENT] key, now DIST = distance of point AB + distance of point BC is shown, while BRG and LEG turns to 0.



8. Repeat steps 3, 4 and 5 to measure the distance of several points.
 9. Press [ESC] key during the step 3, 4 or 5, the following menu will pop out.



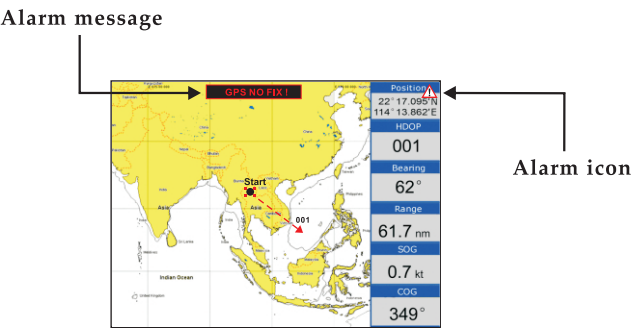
10. You can select :
- A) "SAVE" to save the measurement as a route.
 - B) "QUIT" to quit the distance measurement function without saving.
 - C) "CANCEL" to continue the distance measurement.

7. ALARM

There are six alarm conditions which generates both audio and visual alarms:
Arrival alarm, Anchor drag alarm, XTE (Cross-Track Error) alarm, Speed alarm, Voltage alarm and Timer alarm.

When the alarm setting is violated, the buzzer sounds and the name of the offending alarm and the alarm icon appears on the display.

You can silence the buzzer and remove the alarm name indication by pressing any key. The alarm icon remains on the screen until the reason for the alarm is cleared.



7.1 Anchor Drag Alarm

Anchor Drag Alarm informs you that own ship is moving when it should be at rest and when the ship moves out a certain set range.

1. Press [MENU] key twice to enter main menu.
2. Choose **Alarm** and then press [►] key to display **ALARM** menu.

ALARM			
Anchor	OFF	00.00	nm
Arrival	OFF	00.00	nm
XTE	OFF	00.00	nm
Speed	OFF	00.0	kt
Voltage	OFF	00.0	V
Timer	OFF	000	min
Buzzer	Short		
Warning message			

3. Choose Anchor and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	ON	00.00 nm
Speed	OFF	00.0 kt
Voltage	OFF	00.0 V
Timer	OFF	000 min
Buzzer	Short	
Warning message		

4. Press [▶] key to select the alarm value and then press [ENT] key to setup the value.
5. Choose "ON" and then press [ENT] key to enable the alarm.

7.2 Arrival Alarm

Arrival Alarm informs you that own ship is approaching your set destination.

1. Press [MENU] key to enter main menu.
2. Choose **Alarm** and then press [▶] key to display **ALARM** menu.
3. Choose **Arrival** and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	OFF	00.00 nm
Speed	ON	00.0 kt
Voltage	OFF	00.0 V
Timer	OFF	000 min
Buzzer	Short	
Warning message		

4. Press [▶] key to select the alarm value and then press [ENT] key to setup the value.
5. Choose "ON" and then press [ENT] key to enable the alarm.

7.3 XTE (Cross-Track Error) Alarm

XTE (Cross-Track Error) Alarm warns you when own ship is off its intended course.

1. Press [MENU] key twice to enter main menu.
2. Choose **Alarm** and then press [►] key to display **ALARM** menu.
3. Choose **XTE** and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	OFF	00.00 nm
Speed	OFF	00.0 kt
Voltage	ON	00.0 V
Timer	OFF	000 min
Buzzer	Short	
Warning message		

4. Press [►] key to select the alarm value and then press [ENT] key to setup the value.
5. Choose "ON" and then press [ENT] key to enable the alarm.

7.4 Speed Alarm

Speed Alarm provides visual and aural alerts when the ship's speed is higher or lower than the alarm range set.

1. Press [MENU] key twice to enter main menu.
2. Choose **Alarm** and then press [►] key to display **ALARM** menu.
3. Choose **Speed** and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	OFF	00.00 nm
Speed	OFF	00.0 kt
Voltage	OFF	00.0 V
Timer	High Low	000 min
Buzzer	Short	
Warning message		

4. Press [►] key to select the alarm value and then press [ENT] key to setup the value.
5. Choose "ON" and then press [ENT] key to enable the alarm.

7.5 Voltage Alarm

Voltage Alarm warns you when the input voltage in the unit is higher than the set value.

- 1. Press [MENU] key to enter main menu.
- 2. Choose Alarm and then press [▶] key to display ALARM menu.
- 3. Choose Voltage and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	OFF	00.00 nm
Speed	OFF	00.0 kt
Voltage	OFF	00.0 V
Timer	OFF	000 min
Buzzer	short	
Warning message		

- 4. Press [▶] key to select the alarm value and then press [ENT] key to setup the value.
- 5. Choose "ON" and then press [ENT] key to enable the alarm.

7.6 Timer Alarm

Timer Alarm provides audio and visual alarms when the time set has expired.

- 1. Press [MENU] key to enter main menu.
- 2. Choose Alarm and then press [▶] key to display ALARM menu.
- 3. Choose Timer and then press [ENT] key. The alarm options appear.

ALARM		
Anchor	OFF	00.00 nm
Arrival	OFF	00.00 nm
XTE	OFF	00.00 nm
Speed	OFF	00.0 kt
Voltage	OFF	00.0 V
Timer	OFF	000 min
Buzzer	OFF	
Warning message		

- 4. Press [▶] key to select the alarm value and then press [ENT] key to setup the value.
- 5. Choose "ON" and then press [ENT] key to enable the alarm.

7.7 Buzzer Type Selection

The buzzer sounds whenever an alarm setting is violated.

- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose **Alarm** and then press [▶] key to select.
- 3. Choose **Buzzer** and then press [▶] key to select.
- 4. Choose buzzer type desired and then press [ENT] key to finish.

ALARM			
Anchor	OFF	00.00	nm
Arrival	OFF	00.00	nm
XTE	OFF	00.00	nm
Speed	OFF	00.0	kt
Voltage	OFF	00.0	V
Timer	OFF	000	min
Buzzer	Short		
Warning	Short		
	Long		
	Constant		

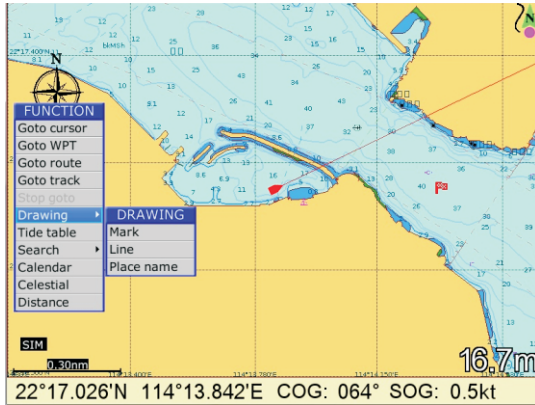
- Short: Two short beeps
- Long: Three long beeps
- Constant: Continuous beeps

Disabling the alarm

- 1. Press any key to disable the buzzer of any alarm.
- 2. The Alarm Icon will not disappear until the reason for the alarm is cleared.

8. DRAWING FUNCTION

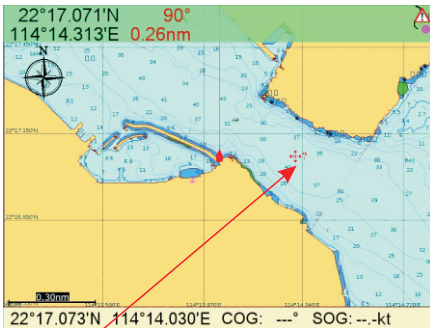
You can draw marks, lines and place names on the plotter screen. Press [F] key and choose “DRAWING” on the function menu.



8.1 Drawing Marks

Choose FUNCTION menu->Drawing->Mark

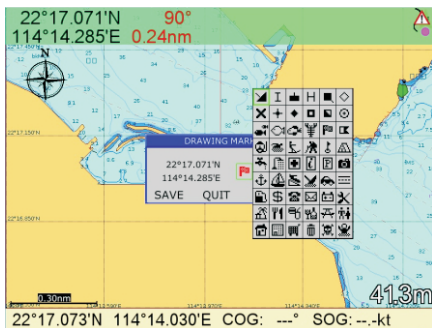
Note : You can also press and hold [ENT] key on Plotter screen to enable drawing mark function.



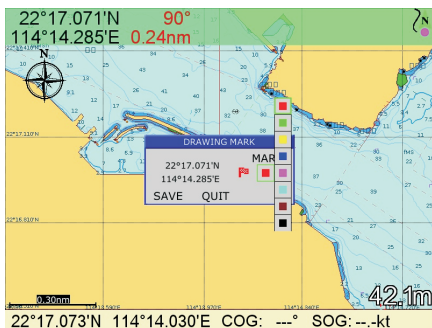
A “?” symbol will appear beside the cursor and the cursor will turn to red color



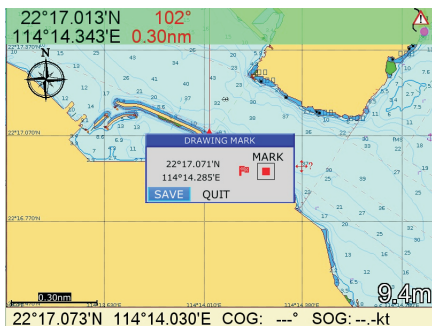
Move the cursor to the position you want to put the mark then press [ENT], a DRAWING MARK window will appear as shown



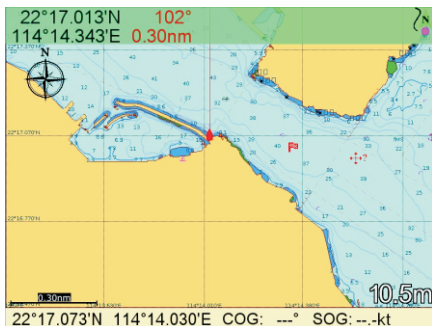
Choose the desire symbol for the drawing mark



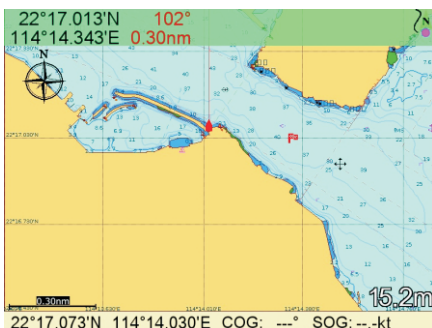
Choose the desire color for the drawing mark



Choose [SAVE] to save the drawing mark or choose [QUIT] to exit without save the drawing mark



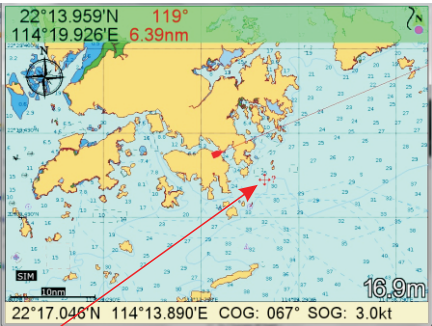
If you choose [SAVE] then you can see a drawing mark appear on the plotter screen with the symbol and the color you choose



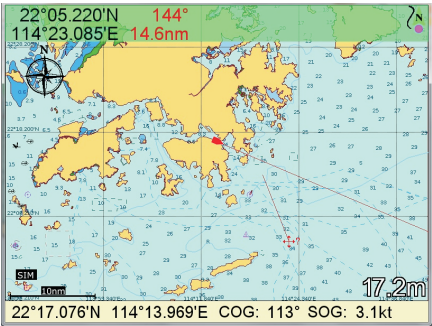
Press [ESC] after finish drawing mark to quit this function and the cursor will turn back to black color

8.2 Drawing line

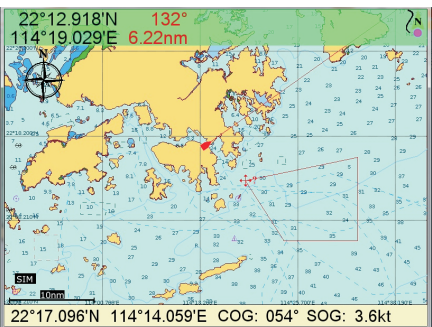
Choose FUNCTION menu->Drawing->Line



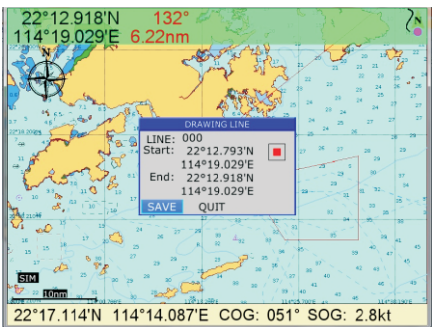
A “?” symbol will appear beside the cursor and the cursor will turn to red color



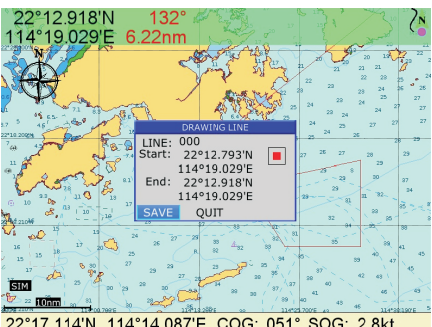
Move the cursor to a starting point of the line you want to draw and press [ENT] then move the cursor to the second point and press [ENT] again



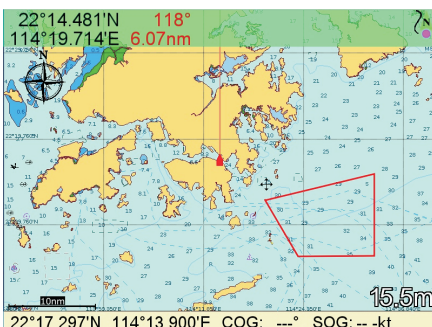
Continue to move the cursor and press [ENT] to draw any shape you like



Press [ESC] after you finish drawing lines, a DRAWING LINE window will appear as shown



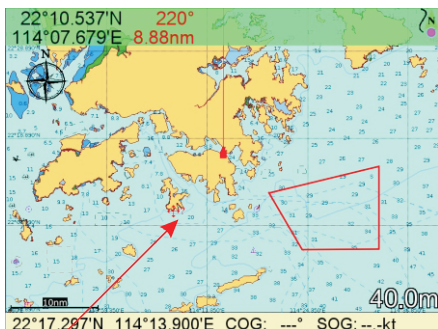
Choose [SAVE] to save the drawing line or choose [QUIT] to exit without save the drawing lines



If you choose [SAVE] the cursor will turn back to black color

8.3 Drawing

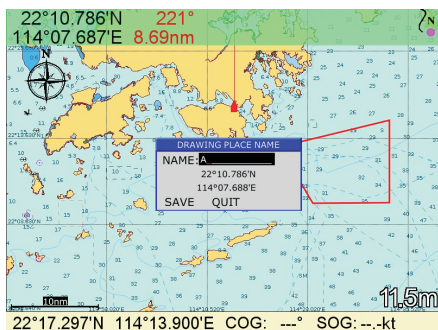
Choose FUNCTION menu->Drawing->Place name



A "?" symbol will appear beside the cursor and the cursor will turn to red color



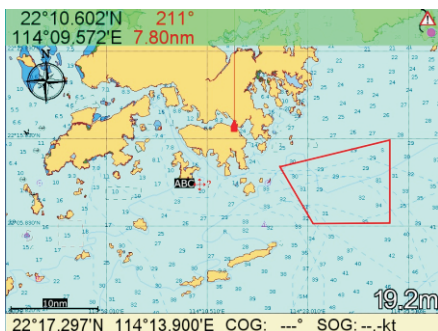
Move the cursor to the position you want to put the place name then press [ENT], a DRAWING PLACE NAME window will appear as shown



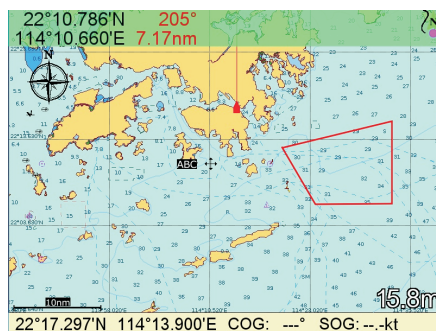
Move the cursor to the NAME and press [ENT] (the column will turn to black color from white) then start to enter the place name by the direction arrow keys



After finish entering place name press [ENT] and choose [SAVE] to save the drawing place name or choose [QUIT] to exit without save the drawing place name



If you choose [SAVE] then you will see place name appear on the plotter screen

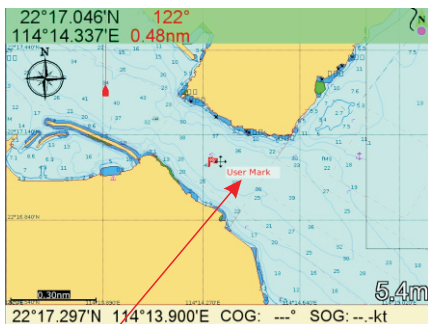


Press [ESC] after you finish drawing place name the cursor will turn back to black color

8.4 Erase or edit drawings

After drawing marks, lines or place name on the plotter screen you can erase or edit the drawings as describe below.

8.4.1 Erase or edit drawing mark



Move the cursor close to the mark you want to erase or edit, you will see a pop up text box “User Mark”

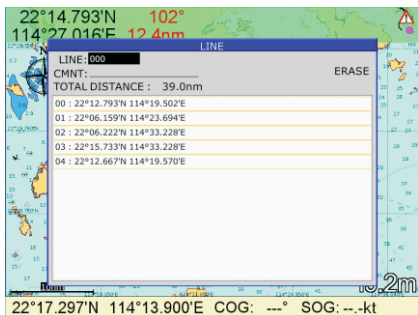


Press [ENT] to erase or edit the selected mark

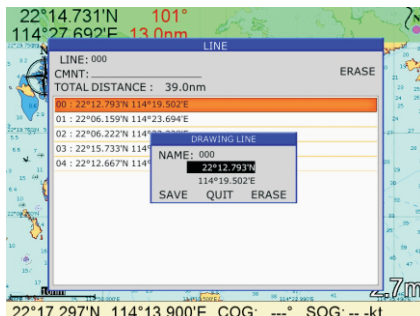
8.4.2 Erase or edit drawing line



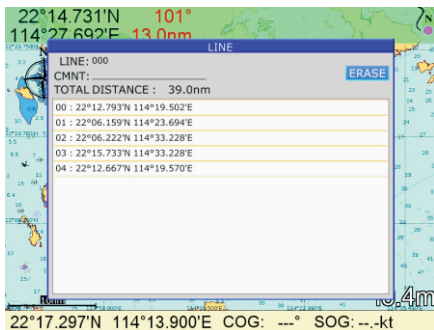
Move the cursor close to the lines you want to erase or edit, you will see a pop up text box of line's name e.g. “000”



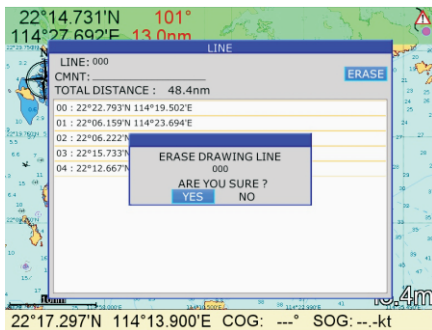
Press [ENT] to erase or edit the selected lines



Move the cursor to any point of the lines and press [ENT] to change the location or erase this point from the lines

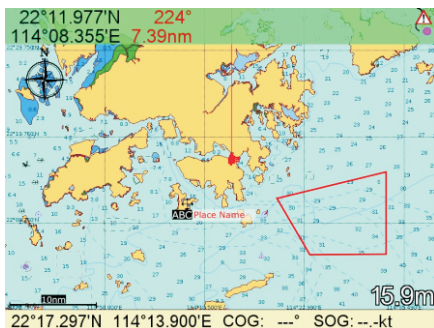


Or you can move the cursor to “ERASE” as shown to erase all points and lines



After you choose “ERASE” you need to confirm

8.4.3 Erase or edit drawing place name



Move the cursor close to the place name you want to edit or erase, you will see a pop up text box “Place Name”



Press [ENT] to erase or edit the selected place name

9. OTHER SETTING

9.1 Map Scale

You can change the map scale display format.

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.

SETUP			
Map scale	Miles	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

3. Choose Map scale and then press [ENT] key to select.
4. Choose "Miles" or "Ratio" as desired and then press [ENT] key to finish.

9.2 Unit of Measurement

Speed Unit

Distance/speed can be displayed in nautical miles/knots, kilometers/kilometers per hour, or statute miles/kilometers per hour.

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose **Speed unit** and then press [ENT] key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm, kt	Calibrate	
Depth unit	nm, kt	Map source	SD Card
Wind unit	km, kmh sm, kph	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

4. Choose "nm, kt", "km, kmh" or "sm, kph" as desired and then press [ENT] key to finish.

Depth Unit

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose **Depth unit** and then press [ENT] key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	feet	Map source	SD Card
Wind unit	feet	Languages	English
BRG. REF	fathom meter	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

4. Choose "feet", "fathom" or "meter" as desired and then press [ENT] key to finish.

9.3 Bearing Reference

Ship's course and bearing to a waypoint may be displayed in true or magnetic bearing. Magnetic bearing is true bearing plus (or minus) earth's magnetic deviation. Use the bearing reference in accordance with the compass interfaced: magnetic for magnetic compass, true for gyrocompass.

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose BRG. REF. and then press [ENT] key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	True Magnetic	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

4. Choose "True" or "Magnetic" as desired and then press [ENT] key to finish.

9.4 Magnetic Variation

The location of the magnetic North Pole is different from the geographical North Pole. This causes a difference between the true and magnetic north direction. This difference is called magnetic variation, and varies with respect to the observation point on earth.

Your unit is pre-programmed with all the earth's magnetic variation. However, you may want to enter variation manually to refine accuracy. Set **BRG. REF** on the **PLOTTER** screen to "Magnetic" to use magnetic variation.

- 1. Press **[MENU]** key twice to enter main menu.
- 2. Choose **Setup** and then press **[▶]** key to select.
- 3. Choose **MAG. VAR.** and then press **[ENT]** key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	Auto	Ais screen	OFF
Deviation Lon	Manual	Sonar screen	ON
Time	24H +00:00	NMEA data display	
TTG/ETA speed	Auto		

- 4. Choose "Auto" or "Manual" (if you choose "Manual", you need to input the value manually) as desired and then press **[ENT]** key to finish.

9.5 Deviation

You can input the deviation of the ship or map manually to correct the position error from GPS error or map error.

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [▶] key to select.
3. Choose **Deviation** and then press [ENT] key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

4. Input the value as desired and then press [ENT] to finish. To disable deviation, input "0" into the value.

9.6 Time

GPS uses UTC time. If you would rather use local time, enter the Time difference (range: -13:30 to +13:30) between it and UTC time.

You may display the time in 12 or 24 hour format.

1. Press [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [▶] key to select.
3. Choose **Time** and then press [▶] key to select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +07	NMEA data dispaly	
TTG/ETA speed	24H		
	12H		

4. Input the time difference as desired. Choose "24H" or "12H" as desired and then press [ENT] key to finish.

9.7 TTG/ETA speed

To calculate time-to-go and estimated time of arrival, enter your speed as below.

1. Press the [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose **TTG/ETA speed** and then press [ENT] key select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		
	Auto		
	Manual		

4. Choose "Auto" for automatic speed input (GPS calculated speed), or "Manual" for manual input.

9.8 Key beep

you can set the key sound

1. Press the [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose **Key beep** and then press [ENT] key select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	Key beep	OFF
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	ON
Deviation Lon	+00.000	Sonar sereen	ON
Time	24H +00:00	NMEA data dispaly	
TTG/ETA speed	Auto		

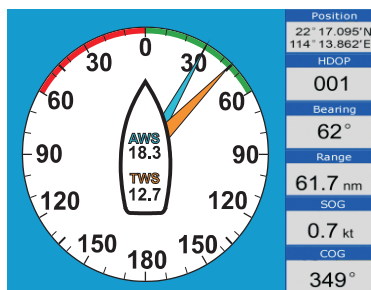
4. Choose "OFF" or "ON" and then press [ENT] key to finish.

9.9 Wind screen

1. Press the [MENU] key twice to enter main menu.
2. Choose **Setup** and then press [►] key to select.
3. Choose **Wind screen** and then press [ENT] key select.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	ON
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar screen	ON
Time	24H +00:00	NMEA data display	
TTG/ETA speed	Auto		

4. Choose **ON** and then press [ENT] key to finish. The following message appears



9.10 GPS setting

9.10.1 Choosing GPS output data

The unit's default is using an internal GPS module for position fixing. On the other hand, you can use external GPS data for position fixing.

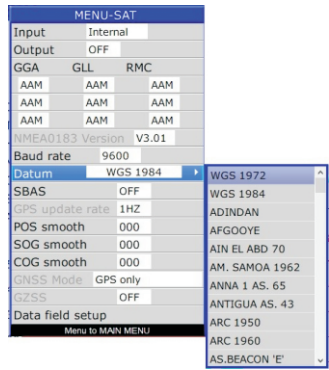
1. Press [MENU] key on the **SATELLITE** screen.
2. Choose **Output** and then press [ENT] key to select.

MENU-SAT			
Input	Internal		
Output	OFF		
GGA	GL	OFF	RMC
AAM	ON		AAM
AAM	AAM	AAM	
AAM	AAM	AAM	
NMEA0183 Version V3.01			
Baud rate	9600		
Datum	WGS 1984 ▶		
SBAS	OFF		
GPS update rate	1HZ		
POS smooth	000		
SOG smooth	000		
COG smooth	000		
GNSS Mode	GPS only		
GZSS	OFF		
Data field setup			
Menu to MAIN MENU			

3. Choose "ON" or "OFF" as desired and then press [ENT] key.
4. Press [►] key to select your desired output data, press [ENT] key to finish.

9.10.2 Datum setting

1. Press [MENU] on the **SATELLITE** screen.
2. Choose **Datum** and press [ENT] key to select.

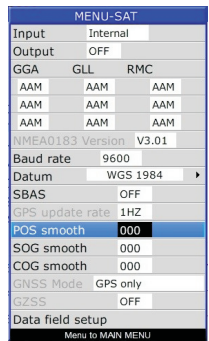


3. Choose your desired datum and press [ENT] key to confirm.

9.10.3 Smoothing

You can setup position smoothing, speed smoothing and course smoothing.

1. Press [MENU] key on the **SATELLITE** screen.



2. Choose **POS** smooth to enter position smoothing data.
3. Choose **SOG** smooth to enter speed smoothing data.
4. Choose **COG** smooth to enter course smoothing data.

Note : For slow vessel such as fishing boat the following smoothing settings are recommended :

POS smooth : 10

SOG smooth : 06

COG smooth : 10

9.10.4 GNSS settings

Global Navigation Satellite System (GNSS) refers to a constellation of satellites providing signals from space that transmit positioning and timing data to GNSS receivers. The receivers then use this data to determine location.

Onwa chartplotters are using GNSS module integrated with 4 global navigation systems, GPS, Beidou, GLONASS and Galileo.

The below items are only able to change in KP-38, KP-39, KP-708 and KCombo-7, for KP-38A, KP-39A, KP-708A and KCombo-7A the GNSS module is inside the Class B+ AIS module.

In Onwa Class B+ AIS module also use the same GNSS module and programmed the below settings as default :

1. Datum : WGS-1984
2. SBAS : ON
3. GPS update rate : 1Hz
4. GNSS mode : GPS + Beidou

9.10.4.1 SBAS

SBAS uses GNSS measurements taken by accurately located reference stations deployed across an entire continent. All measured GNSS errors are transferred to a central computing centre, where differential corrections and integrity messages are calculated. These calculations are then broadcast over the covered area using geostationary satellites that serve as an augmentation, or overlay, to the original GNSS message.

You can turn on SBAS to increase the accuracy of your position fixed.

9.10.4.2 GPS update rate

When using Onwa chartplotter on a speed boat you might want to increase the update rate of your position when you are riding your boat in high speed.

You can change GPS update rate to 10Hz to increase the position update rate by 10 times.

9.10.4.3 GNSS Mode

On some circumstance you might want to use different global navigation system (default is GPS + Beidou).

You can choose the below combination of global navigation systems:

One global navigation system : GPS only, Beidou only, GLONASS only or Galileo only

Two global navigation systems : GPS + Beidou, GPS + GLONASS, GPS + Galileo, Beidou + GLONASS, Beidou + Galileo, GLONASS + Galileo.

9.11 NMEA data display

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose **Setup** and then press [▶] key to select.
- 3. Choose **NMEA data display** and then press [ENT] key.

SETUP			
Map scale	Nm	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kt	Languages	English
BRG. REF	True	key beep	ON
MAG. VAR.	Auto	Wind screen	OFF
Deviation Lat	+00.000	Ais screen	OFF
Deviation Lon	+00.000	Sonar screen	ON
Time	24H +00:00	NMEA data display	
TTG/ETA speed	Auto		

- 4. NMEA data display is used during the installation to check whether the NMEA input and output data to and from other equipment onboard is normal. Press [↔] key to switch between the input and output ports. Press [ENT] key to stop scrolling of NMEA data and press [ENT] key again to restart NMEA data scrolling. Press [ESC] key to quit the NMEA data display.

NMEA DATA	
\$GPGLL.....V,N° 64	
\$GPRMC,, V.....N° 53	
\$GPVTG.....N° 30	
\$GPGGA.....0,00,99.99.....° 48	
\$GPGBA,A,1.....99.99.99.99.99° 30	
\$GPGSV,1,1,01.14...26° 79	
\$GPGLL.....V,N° 64	
\$GPRMC,, V.....N° 53	
\$GPVTG.....N° 30	
\$GPGGA.....0,00,99.99.....° 48	
\$GPGBA,A,1.....99.99.99.99.99° 30	
\$GPGSV,1,1,01.14...26° 79	
→ ENTER TO STOP	PORT : NMEA 1
→ ZOOM IN TO CHANGE PORT	

10. THE AIS FUNCTION

This chapter is for AIS functions of KP-38A, KP-39A, KP-708A and KCombo-7A or you already connected AIS input to KP-38, KP-39, KP-708 and KCombo-7.

10.1 Vessels list

1. Press [MENU] on the AIS screen.

MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	05 min
CPA/TCPA alarm	OFF
Status	In port
AIS detail list	
AIS TX	ON
AIS Message	
AIS vessel	Line Large
AIS track display	ON
AIS track record	
AIS name	OFF Small
Plotter AIS display	ALL
Menu to MAIN MENU	

2. Choose AIS detail list and then press [ENT] key. The AIS SHIP LIST window will appear.

Selected AIS targets 0				AIS SHIP LIST				Received targets 107			
No.	MMSI	NAME	DIST	COG	NAME	MMSI	CLASS				
009	934800049	KSGAMK2 0049	0.026	162		934800049					
001	900028754		0.530	198	COUNTRY						
002	477995779		0.531	51	SHIP-TYPE	Spare - Local Vesse					
003	412529061	SHANWEI0008	0.589	30	IMO NO	***					
004	009103927	ONWA3927	0.685	0	CALL SIGN	ABCD EFG					
005	412469345	SHANWEI0006	0.688	254	LAT	22°17.077'N					
006	412534943		0.706	163	LOIN	114°14.758'E					
007	808663857	6P4J2 AC118D-47*11	0.759	0	COG	262°	SOG	9.600kt			
008	412481891	ZHIDAN5223	0.781	205	RNG	0.03nm	BRG	83°			
009	412536074	SHENWAN2911	0.806	251	CPA	***	TCPA	***			
010	412529086	HUJAO3128	0.806	0	LENGTH	029	BEAM	017			
011	412482343		0.815	71	DRAUGHT	***					
012	412535697	SHENYAN8119	0.826	131	DEST						
013	412460993	TAISHA2715	0.832	0	ETA	***					
014	412461266	SHANWEI0302	0.843	157							
015	412463485	SHENWAN3168	0.848	108							

10.2 The collision alarm

1. Press [MENU] on the AIS screen.

MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	05 min
CPA/TCPA alarm	OFF
Status	In port
AIS detail list	
AIS TX	OFF
AIS vessel	Line
AIS track display	ON
AIS name	OFF Small
Plotter AIS display	NET
Menu to MAIN MENU	

2. Select CPA Limit or TCPA Limit then press [ENT] key to enter a value.
3. Select CPA Alarm or TCPA Alarm then press [ENT] key to choose "ON" or "OFF".

10.3 Own ship's information

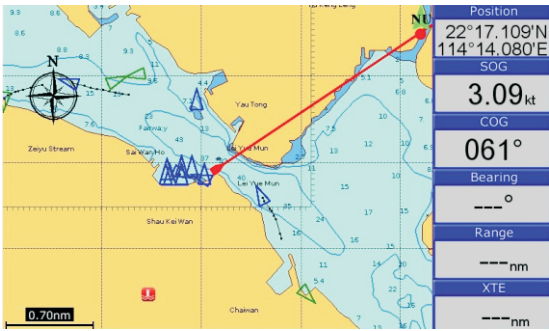
There are two ways to display "Own Ship Info"

- 1. Enter the "Vessels list", and press the [MENU] key, and then select the "Own Ship Info" to check all the information of your own ship.
- 2. Move the cursor to select your AIS Vessel on the chart screen and press the [ENT] key.

AIS SHIP LIST						SHIP INFORMATION													S: 147
No.	NATION	MMSI	NAME	DIST	COG	TYPE	No.	NAME	ONWA1635					TYPE					
000		009103635	ONWA1635	0.0	90.0	B	000	COUNTRY											
001		050000002	HOSN WANG WEI YI	21.8	0.0	NET	001	SHIP-TYPE	Pleasure Craft							NET			
002		808663857	6P432 ASM18D-47*11	0.0	0.0	B	002	MMSI	009103635							B			
003		100710991		0.0	290.4	B	003	CALL SIGN	100200							B			
004	CHINA	412102684	ONWA84	0.1	0.0	B	004									B			
005		009102242	ONWA242	0.2	113.6	B	005									B			
006		009010120	ONWA10120	0.2	0.0	B	006	POS	22°17.050'N				A	010		B			
007		009010623	TUNG HO 8	0.2	0.0	B	007		114°14.004'E				B	009		B			
008		009103057		0.2	0.0	B	008	COG	113.7				C	008		B			
009		009102217	ONWA217	0.2	***	B	009	SOG	2.9				D	007		B			
010		009010166	ONWA10166	0.3	0.0	B	010	CPA	***				LENGTH	019		B			
011		009103360		0.3	0.0	B	011	TCPA	***				0.0	BEAM	015				
012	CHINA	413467050		0.6	0.0	B	012	RNG	0.0				DRAUGHT	***		B			
013	CHINA	413902904	YUE GUANGHAI HUO8318	0.7	333.6	B	013												
014	BAHAMAS	309788000		1.0	259.0	A	014	BRG	248.6										
015	KIRIBATI	529402000		1.0	121.4	A	015												
							[ENTR]:mark [ESC]:exit												

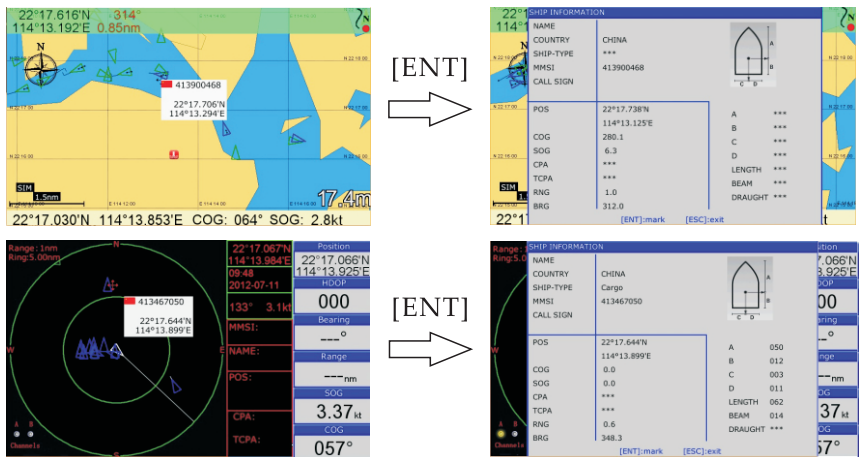
10.4 Chart Screen

Users can check all AIS vessels being received in real-time on the chart screen, as well as the specific position and track of your own ship on the charts. The track length of AIS vessels depends on the equipment memory space, generally not less than 20 track points.



10.5 View AIS vessels' information on Plotter and AIS screen

There are two ways to view AIS vessels' information: one is to move the cursor to select AIS vessel on the Plotter screen and AIS screen, and press the [ENT] key. The other is to select the AIS vessel from the AIS vessels list, and press the [ENT] key.

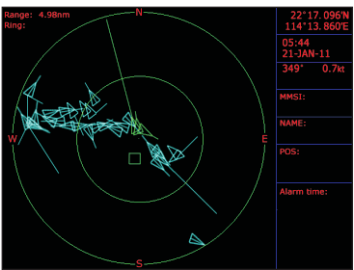


10.6 Check all AIS ships within the scope of Radar (AIS screen)

Displays all AIS ships within the current scope of the Radar. The current location of the own ship is at the center of the map, appearing as a white hollow triangle, and the vertex angle of the triangle stands for the current direction of your own ship. The blue hollow triangle stands for the vessels of CLASS B. The green hollow triangle stands for CLASS A vessels. The green hollow square stands for BASE STATION. Circle stands for no direction.

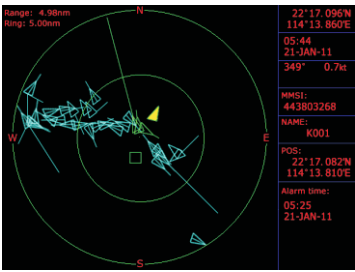
The collision alarm setting and the current scope of radar can be displayed on the upper left corner of the Radar, and the scope can be adjusted by pressing the [F4] key and [F5] key.

The message display frame on the upper right corner of the Radar displays the following information: the own ship's position, the current time, the current speed/direction of the own ship.



10.7 Emergency alarm

The information of the emergency alarm received is displayed on the bottom right corner. The emergency alarm is always available and can not be deleted, if the emergency alarm information is not read, after exiting the alarm menu, the "emergency alarm" window will pop up a little later. The warning ship displayed on the Radar will be yellow and flashing.



The relevant data (including the time, place, the relevant ship's information, etc.) will also be saved by the display terminals. It can be the basis of analysis in the event of any accident.

10.8 Entry/Departure setting

The Entry/Departure setting is for the temporary shut down or restart of the collision alarm. When entering the port, the collision alarm will be temporarily closed. When leaving the port, the collision alarm will be opened.

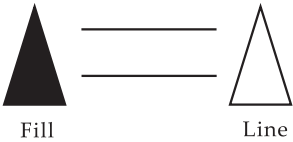
1. Press the [MENU] key at the AIS screen.
2. Choose **Status** then press [ENT] key to select.
3. Select "In Port" or "Out Port" as desired and press [ENT] key to finish.

MENU-AIS		
Activation ring	05.00 nm	
CPA limit	01.00 nm	
TCPA limit	15	min
CPA/TCPA alarm	OFF	
Status	Out port	
AIS detail list	In port	
AIS TX	Out port	
AIS vessel	Line	Large
AIS track display	ON	
AIS name	OFF	Small
Plotter AIS display	ALL	
Menu to MAIN MENU		

10.9 AIS Vessel

- 1. User can define the AIS vessel display as either "Fill" or "Line".
- 2. User can also select the size of the AIS Icon to either "Small", "Medium" or "Large".

MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	15 min
CPA/TCPA alarm	OFF
Status	Out port
AIS detail list	
AIS TX	ON
AIS vessel	Line Large
AIS track display	Line ON
AIS name	Fill Small
Plotter AIS display	ALL
Menu to MAIN MENU	



10.10 AIS track display

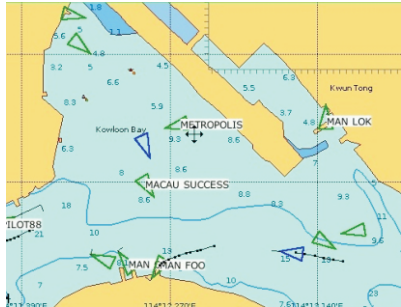
User can enable or disable the display of AIS track on plotter screen.

MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	15 min
CPA/TCPA alarm	OFF
Status	Out port
AIS detail list	
AIS TX	ON
AIS vessel	Line Large
AIS track display	ON
AIS name	OFF OFF
Plotter AIS display	ON
Menu to MAIN MENU	

10.11 AIS name

- 1. User can turn on the name of AIS targets on Plotter and AIS screen.
- 2. User can also adjust the size of AIS target names.

MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	15 min
CPA/TCPA alarm	OFF
Status	Out port
AIS detail list	
AIS TX	ON
AIS vessel Line	Large
AIS track display	ON
AIS name	OFF Small
Plotter AIS	OFF ALL
Menu to Name	MENU
Full	



10.12 Plotter AIS display

- User can choose to turn ON or OFF AIS targets display on Plotter screen.
- Note: User can also choose to display "NET" which is the Onwa AIS buoy on the Plotter screen.*

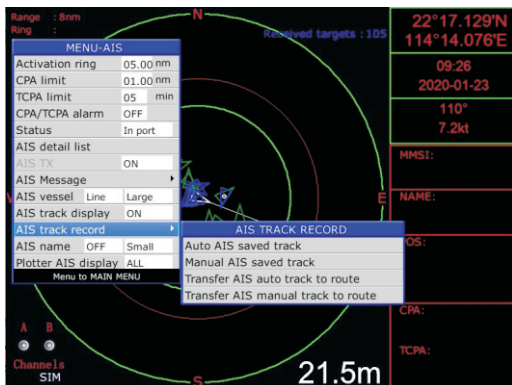
MENU-AIS	
Activation ring	05.00 nm
CPA limit	01.00 nm
TCPA limit	15 min
CPA/TCPA alarm	OFF
Status	Out port
AIS detail list	
AIS TX	ON
AIS vessel Line	Large
AIS track display	ON
AIS name	Name Small
Plotter AIS display	ALL
Menu to MAIN	ALL
	NET
	OFF

10.13 AIS track recording

There are two ways to record the AIS track :

1) Automatic AIS track record

When each time you power on the unit, the AIS targets track record within 0.5NM range of your own boat will be saved automatically in “AIS track record” as shown below.



The maximum number of Auto AIS saved track is 1,000 and if over the 1,000 records the earliest records will be replaced by the latest records.

2) Manual AIS track record

Under some circumstance you might want to save the track record of an AIS target. You can mark and save the track record of an AIS target on below screens :

- Plotter screen
- AIS screen
- AIS detail list

The maximum number of Manual AIS saved record is 10 so if the records are full you need to delete some Manual AIS saved record before you can save a new one.

10.13.1 How to do manual AIS track recording

In chapter 10.5 it already mentioned how to view the detail information of an AIS target. In the information box shown below there are a “Mark” function, when you press [ENT] then this AIS target is marked and its track is recording.

Selected AIS targets: 0			AIS SHIP LIST		Received targets: 95		
No.	MMSI	NAME	DIST	COG	NAME SHENNAN2911	CLASS B	
000	934	SHIP INFORMATION					
001	009	NAME	SHENNAN2911				
002	412	COUNTRY	CHINA				
003	808	SHIP-TYPE	Fishing				
004	412	MMSI	412536074				
005	412	CALL SIGN	0002911				
006	412						
007	412	POS	22°17.085'N		A	018	
008	412		114°13.859'E		B	006	
009	412	COG	307.4		C	005	
010	412	SOG	0.3		D	002	
011	412	CPA	0.1		LENGTH	024	
012	009	TCPA	1.0		BEAM	007	
013	412	RNG	0.2		DRAUGHT ***		
014	412	BRG	248.9				
015	412	[ENT]:mark		[ESC]:exit			

Once the AIS target is marked you can see a [] surrounds that AIS target and you can also see the marked AIS target or targets on the top of the AIS detail list in red color.



Selected AIS targets: 1				AIS SHIP LIST		Received targets: 95	
No.	MMSI	NAME	DIST	COG	NAME SHENNAN2911	CLASS	B
000	934800049	KISGAMK2 0049	0.007	46	NAME SHENNAN2911	CLASS	B
001	412529058	HUJANG2066	0.180	144	NAME SHENNAN2911	CLASS	B
002	412474879	SHENNAN3188	0.114	240	NAME SHENNAN2911	CLASS	B
003	412536115		0.121	176	NAME SHENNAN2911	CLASS	B
004	412536631		0.123	0	NAME SHENNAN2911	CLASS	B
005	412529657	SHENNAN7229	0.124	292	NAME SHENNAN2911	CLASS	B
006	412481432	SHENNAN-2733	0.148	0	NAME SHENNAN2911	CLASS	B
007	009010120	ONWAI0120	0.150	0	NAME SHENNAN2911	CLASS	B
008	412482119	SHENNAN2814	0.151	161	NAME SHENNAN2911	CLASS	B
009	412536118	SHENNAN2629	0.169	20	NAME SHENNAN2911	CLASS	B
010	412482597	SHEN-NAN-2839	0.183	0	NAME SHENNAN2911	CLASS	B
011	412475134	ZHUXIANG1352	0.200	302	NAME SHENNAN2911	CLASS	B
012	412460993	TAISHA2715	0.202	256	NAME SHENNAN2911	CLASS	B
013	412465707		0.215	274	NAME SHENNAN2911	CLASS	B
014	412529086	HUIAO3128	0.225	0	NAME SHENNAN2911	CLASS	B
015	412465545		0.227	224	NAME SHENNAN2911	CLASS	B

On the right top corner of Plotter and AIS screen it will show how many AIS targets are marked.

10.13.2 How to transfer saved AIS track record to a route

Under some circumstance you might want to turn a saved AIS track record into a route for navigation purpose.

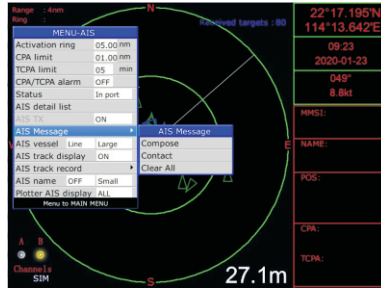
You just need simply select either “Transfer AIS auto track to route” or “Transfer AIS manual track to route” in order to transfer the saved AIS track record into a route. The operation is same as “Transfer saved track to route” in Chapter 3.6.



10.14 AIS message

This function is only available for KP-708A and KCombo-7A (built-in Class B+ AIS module).

You can exchange message with Onwa AIS plotter only but not only limited to KP-708A and KCombo-7A. The AIS message function is also available for ONWA AIS plotter KP-1299A and KP-1299X.



10.14.1 How to compose a message

On AIS screen press [Menu]->AIS Message->Compose, appear the below message box :

1.MMSI or Broadcast

2. Enter MMSI or
press [Zoom in] to
select MMSI in the list

4. Select “SEND”
after finish compose
the message

MESSAGE

Mode: MMSI

MMSI: 123456789 Press [Zoom in] key to list the available MMSI

Ship Name: _____

HOW ARE U

0	1	2	3	4	5	6	7	8	9
Q	W	E	R	T	Y	U	I	O	P
SEND	A	S	D	F	G	H	J	K	ENT
CAPS	L	Z	X	C	V	B	N	M	DEL
@	#	%	&	*	(	)	...	\	^
[	]	<	>	!	;	:	'	"	?
/	-	+	=	\$	SPACE	,			

Press [ESC] to quit and give up editing.

3. Compose the message

10.4.2 How to check message

When a message is received a message box will pop up on the screen, this message will not disappear until you acknowledge by choosing “EXIT” or “REPLY”.

MESSAGE

SENDER: 034800049

NAME: KSGAMK2 0049

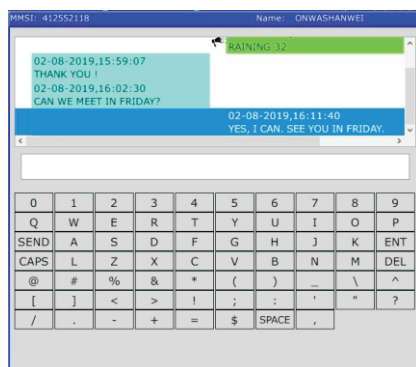
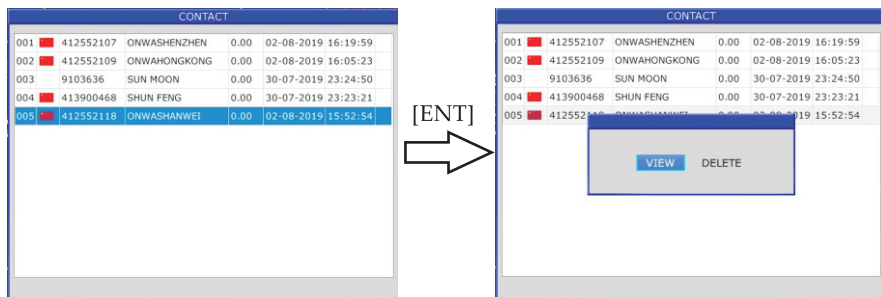
Date: 05-11-2019 Time: 06:03:34

NOTE

EXIT REPLY

If you want to check the history message you can switch to AIS screen then press [Menu]->AIS message->Contact.

Select the AIS target and press [ENT] key, a “VIEW” or “DELETE” option will appear select “VIEW” to read the conversation with that AIS target.



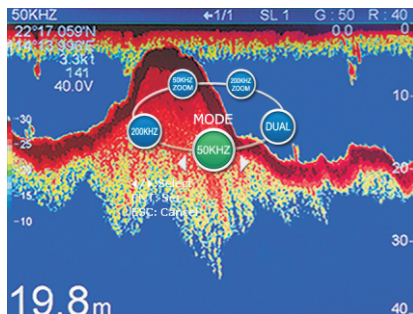
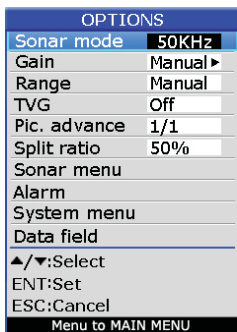
You can now check the conversation or compose a message.

11. THE FISHFINDER FUNCTION

This chapter is for KCombo-7 and KCombo-7A only.

11.1 Sounder Mode

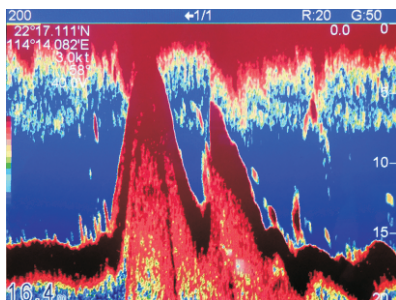
1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Sonar mode** and then press [ENT] key or press and hold [MODE] key in the **SOUNDER** screen. The following window will appear.



MODE	Function
200KHz	Provides the high frequency (200KHz)normal picture on the full screen.
50KHz	Displays the low frequency (50KHz)normal picture on the full screen.
DUAL	Displays the normal display for high frequency (200KHz) on the right half and low frequency (50KHz) on the left half.
200KHz ZOOM	Shows the normal display of the high frequency (200KHz) on the right half and its zoom display on the left half.
50KHz ZOOM	Provides the normal display of the low frequency (50KHz)on the right half and its zoom display on the left half.

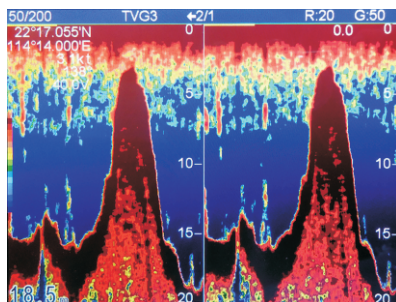
200KHz, 50KHz (high frequency, low frequency) mode

The sounder uses ultrasonic pulses to detect bottom conditions. The lower the frequency of the pulse the wider the detection area. Therefore, the 50KHz frequency is useful for general detection and judging bottom conditions, while the 200KHz frequency is useful for detailed observation of fish schools.



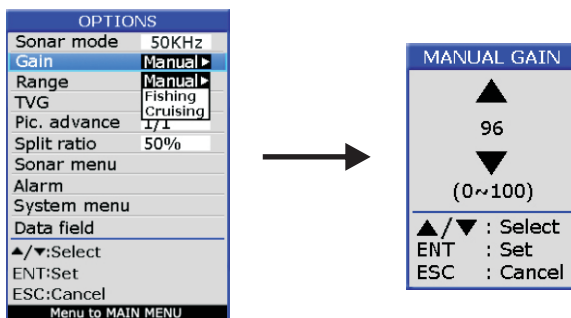
DUAL frequency mode

This mode provides the 50KHz picture on the left-half of the screen and the 200KHz on the right half, and is useful for detecting fish schools which have different reflection characteristics with frequency. For example, a school of tiny fish like minnow returns stronger echoes on a high frequency compared to a low frequency.



11.2 Gain

1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Gain** and then press [ENT] key, or press [ENT] key in the **SOUNDER** screen to adjust gain manually. The following window will appear.



3. Choose Manual, Fishing or Cruising as desired and then press the [ENT] key, or press and hold [ENT] key in SOUNDER screen. **AUTO 1** (fishing) mode is activated which is for ground fishing with automated gain adjustments. Press [ENT] key again to activate the **AUTO 2** (cruising) mode with automatic gain adjustments for cruising. Press and hold [ENT] key to return to manual gain mode.

11.3 Range

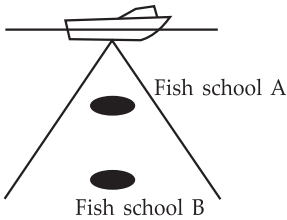
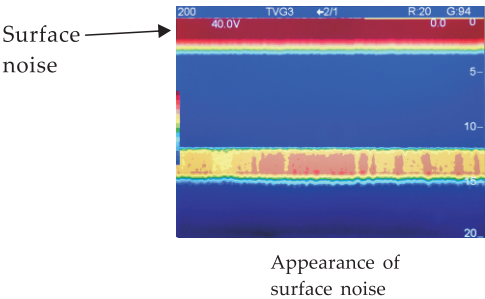
1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Range** and then press [ENT] key to select.
3. Choose "Manual" or "Auto" and then press the [ENT] key or when in the **SOUNDER** screen, press and hold [⌘] or [⌘] to change to Manual or Auto.
4. If you choose Manual, press the [ESC] key to return to **SOUNDER** screen. Press [⌘] or [⌘] to increase or decrease in the depth range.

11.4 TVG

- 1. Press [MENU] key in **SOUNDER** screen.
- 2. Choose **TVG** and then press [ENT] key. The following window will appear.

OPTIONS	
Sonar mode	50KHz
Gain	Manual▶
Range	Manual
TVG	Off
Pic. advance	Off
Split ratio	Manual Auto
Sonar menu	
Alarm	
System menu	
Data field	
▲/▼:Select	
ENT:Set	
ESC:Cancel	
Menu to MAIN MENU	

- 3. Choose "Off" or "Manual" as desired then press [ENT] key.
- The TVG compensates for propagation loss of sound, so that the echoes from the same fish school size are displayed in the same color. Normally, set it between "0" and "5". Avoid excessive TVG; weak echoes may not be displayed. The TVG is also useful for reducing surface noise.



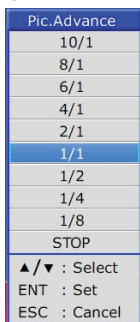
How TVG compensates for propagation loss of sound

Note: Surface noise appearing in the range of 0 to 40 m can be reduced by the Clutter function.

11.5 Picture advance

The picture advance speed determines how quickly the vertical scan lines run across the screen.

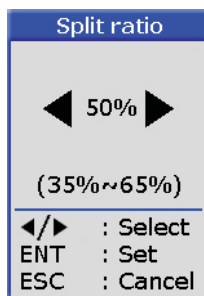
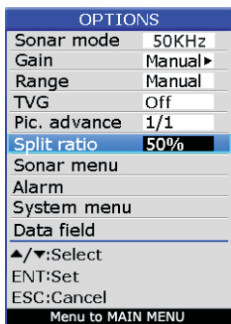
1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Pic. advance** and then press [ENT] key or press and hold [▶] key in **SOUNDER** screen. The following window will appear.



3. Press the [▲] or [▼] key to select speed: 10/1(FAST), 8/1, 6/1, 4/1, 2/1, 1/1, 1/2, 1/4, 1/8(SLOW) or STOP advance .

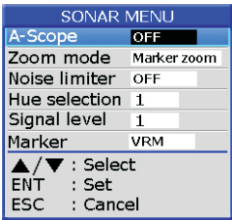
11.6 Split ratio

1. When in **PLOTTER+SOUNDER** screen and the **SOUNDER** screen is $\geq 50\%$, press [MENU] key.
2. Choose **Split ratio** and then press [ENT] key to setup split ratio, or press and hold [MODE] key in the **PLOTTER+SOUNDER** screen. The following window will appear.



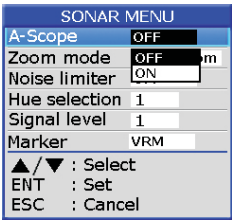
11.7 Sonar Menu

- 1. Press [MENU] key in **SOUNDER** screen.
- 2. Choose **Sonar menu** and then press [ENT] key. The following window will appear.

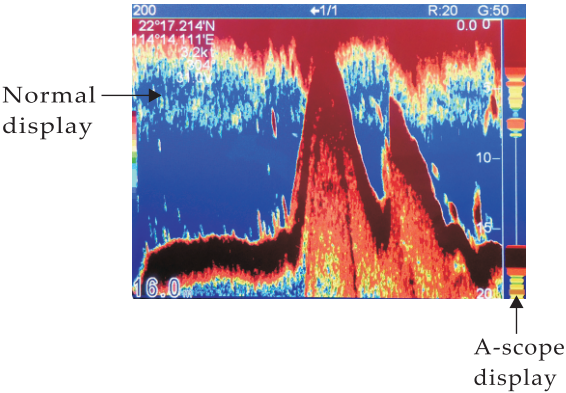


11.7.1 A-Scope

- 1. Press [MENU] key in **SOUNDER** screen.
- 2. Choose **Sonar menu** and then press [ENT] key to select.
- 3. Choose **A-Scope** and then press [ENT] key. The following window will appear.
- 4. Press the [▲] or [▼] key to enable or disable the A-Scope.

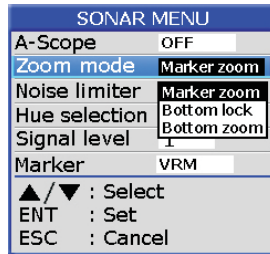


This display shows echoes at each transmission with amplitudes and tone proportional to their intensities, on the right 1/4 of the screen. It is useful for estimating the kind of fish school and bottom composition.

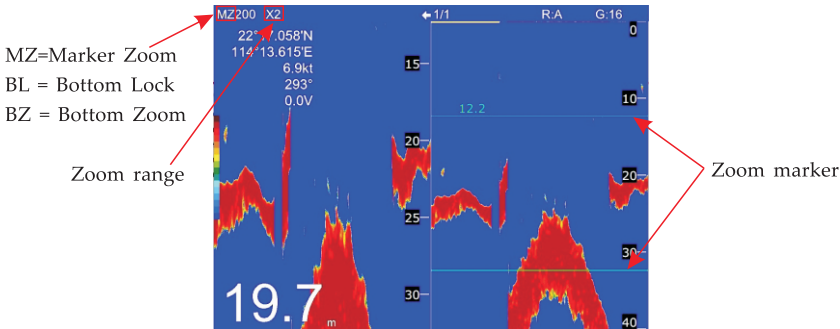


11.7.2 Zoom modes

1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Sonar menu** and then press [ENT] key to select.
3. Choose **Zoom mode** and then press [ENT] key. The following window will appear.

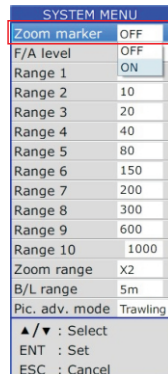


4. Choose "Marker Zoom", "Bottom lock" or "Bottom zoom" as desired then press [ENT] key to finish.



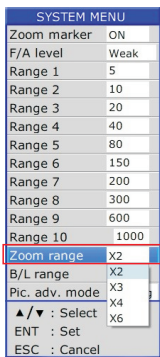
11.7.2.1 How to display zoom marker

If you want Zoom marker appear on zoom modes of sounder screen you need to turn on the Zoom marker in the SOUNDER MENU-> SYSTEM MENU.



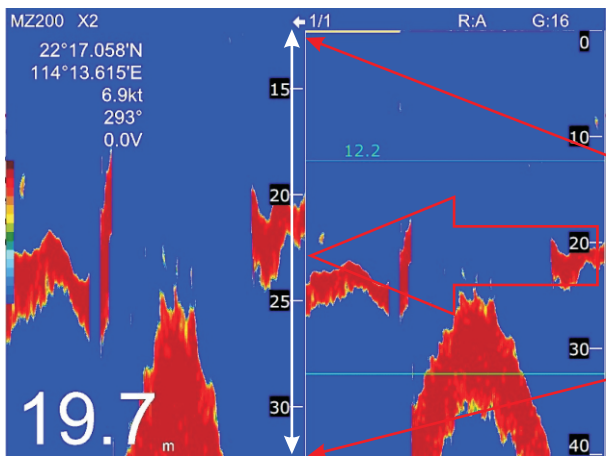
11.7.2.2 How to change the zoom range

You can choose to zoom the selected range to X2, X3, X4 and X6 in the SOUNDER MENU-> Zoom range.



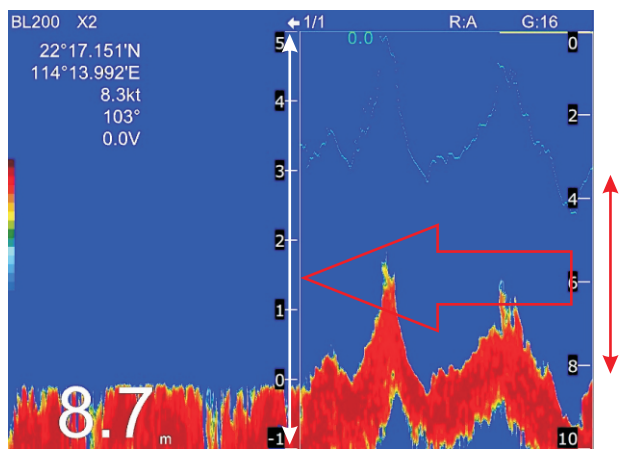
11.7.2.3 MARKER ZOOM

This mode expands selected area of the normal picture to full vertical size of the screen on the left-half window. You may specify the portion to expand with the VRM (Variable Range Marker), which you can shift with [▲] or [▼] key. The area between the VRM and the zoom range marker is expanded. The length of the segment is equal to one division of the depth scale.



11.7.2.4 BOTTOM LOCK

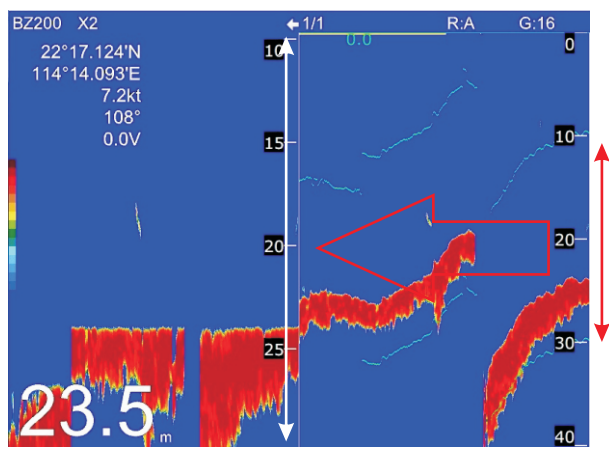
This zoom mode locks the sea bottom depth and zoom the area above the bottom to display on left hand side screen.



11.7.2.5 BOTTOM ZOOM

This zoom mode locks the sea bottom zoom the area including the sea bottom to display on left hand side screen.

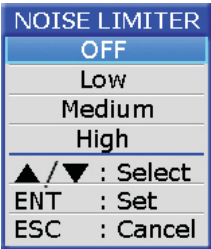
It is useful for determining bottom hardness. A bottom displayed with a short echo tail usually means it is a soft, sandy bottom. A long tail means a hard bottom.



11.7.3 Noise limiter

Light-blue dots may appear over most of the screen. This is mainly due to unclean water or noise. This noise can be suppressed by adjusting Clutter on the menu.

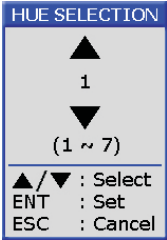
- 1. Press [MENU] key in **SOUNDER** screen.
- 2. Choose **Sonar menu** and then press [ENT] key to select.
- 3. Choose **Noise limiter** and then press [ENT] key. The following window will appear.



- 4. Choose "Off" , "Low" , "Medium" or "High" as desired and then press [ENT] key to finish.

11.7.4 Hue Selection

- 1. Press [MENU] key in **SOUNDER** screen.
- 2. Choose **Sonar menu** and then press [ENT] key to select.
- 3. Choose **Hue Selection** and then press [ENT] key. The following window will appear.

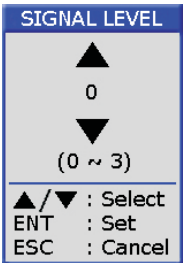


Hue Ho.	Background color	Echo color
1	Blue	7 colors, bottom reddish-brown
2	Blue	6 colors, bottom red
3	Black	7 colors, bottom reddish-brown
4	Black	6 colors, bottom red
5	White	7 colors, bottom reddish-brown
6	White	6 colors, bottom red
7	Black	Monochrome yellow, 8 intensities

- 4. Press the [▲] or [▼] key to select the background and press [ENT] key to finish.

11.7.5 Signal level

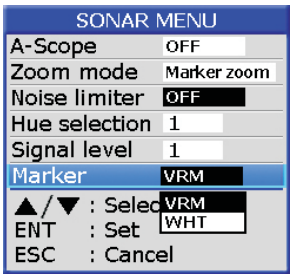
1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Sonar menu** and then press [ENT] key to select.
3. Choose **Signal level** and then press [ENT] key. The following window will appear.



4. Press the [▲] or [▼] key to select the signal level and press [ENT] key to finish.
- Short cut : it can also changes the signal level by press [F] key on Sounder screen.

11.7.6 Marker

1. Press [MENU] key in **SOUNDER** screen.
2. Choose **Sonar menu** and then press [ENT] key to select.
3. Choose **Marker** and then press [ENT] key. The following window will appear.



4. Choose "VRM" or "WHT" as desired and then press [ENT] key to finish.

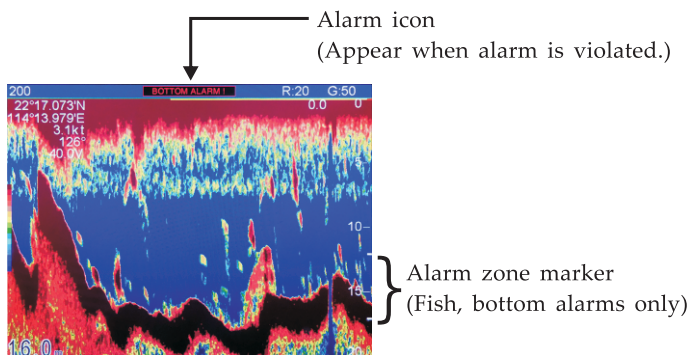
The white marker functions to display a particular echo color in white. For example, you may want to display the bottom echo (reddish-brown) in white to discriminate fish echoes near the bottom. Note that the bottom must be displayed in reddish-brown for the white marker to function.

11.8 Alarm

1. Press [MENU] key in **SOUNDER** screen.
2. Choose **ALARM** and then press [ENT] key. The following window will appear.

ALARM	
Bottom	OFF
From	0
Span	0
Fish	OFF
From	0
Span	0
Temperature	OFF
From	0
Span	0
▲/▼ : Select	
ENT : Set	
ESC : Cancel	

3. Press [▲] or [▼] key to select an alarm.
4. Press [ENT] key to select "OFF", "ON", "IN" or "OUT". (For the water temperature alarm, select "IN" to get the alarm when the water temperature is within the alarm zone range, or "OUT" to get the alarm when the water temperature is higher than the alarm zone range.)
5. Choose From then press [ENT] key to adjust alarm starting depth. Press [▲] or [▼] to adjust value.
6. Choose Span then press [ENT] key to adjust alarm range. Press [▲] or [▼] to adjust value.



7. To deactivate an alarm, select "OFF" at step 4 in the above procedure.

11.9 System Menu

- 1. Press [MENU] key in SOUNDER screen.
- 2. Choose **System menu** and then press [ENT] key. The following window will appear.

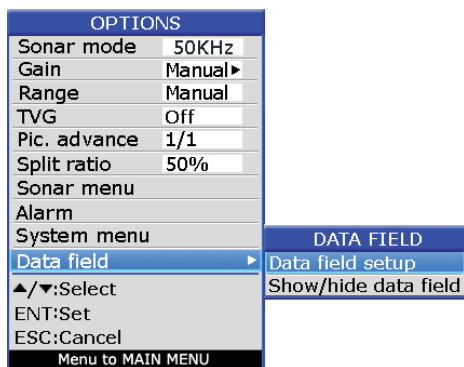
SYSTEM MENU	
Zoom marker	OFF
F/A level	Weak
Range 1	5
Range 2	10
Range 3	20
Range 4	40
Range 5	80
Range 6	150
Range 7	200
Range 8	300
Range 9	600
Range 10	1000
Zoom range	x2
B/L range	5 m
Temp	°C
▲/▼ : Select	
ENT : Set	
ESC : Cancel	

RANGE 1- 10: Activates or deactivates specific range scales. Default ranges are 5, 10, 20, 40, 80, 150, 200, 300, 600, and 1000 (meters). Setting area is 2m to 800m.

Note: Ranges must be set in numerical order. For example, if range 1 is 5 m and range 3 is 20m, range 2 should be between 6 and 19 m.

11.10 Data field

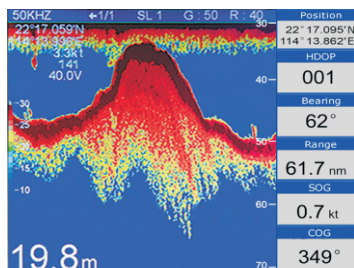
1. Press [MENU] key in **Sounder** screen.
2. Choose **Data field** and then press [ENT] key. The following window will appear.



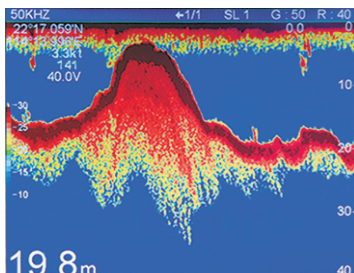
3. Data field setup

The Data Field will appear on the right-side of the screen. The black area is the data area of which may be changed.

- Press [ENT] key and a data table will appear.
- Press the [◀], [▶], [▼] or [▲] key to select the one you want to display on the data field, then press [ENT] to finish.



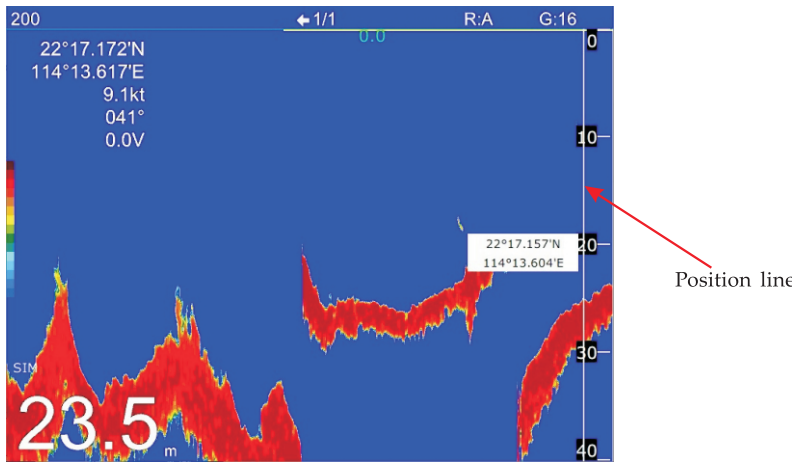
4. User can **Show/hide data field** as desired.



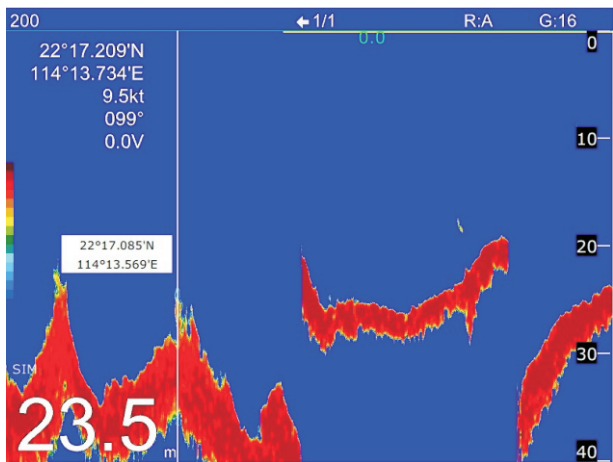
11.11 To save the position of a history echo into waypoint memory

Sometimes you might want to save a fishing ground or a wreck location into a waypoint memory.

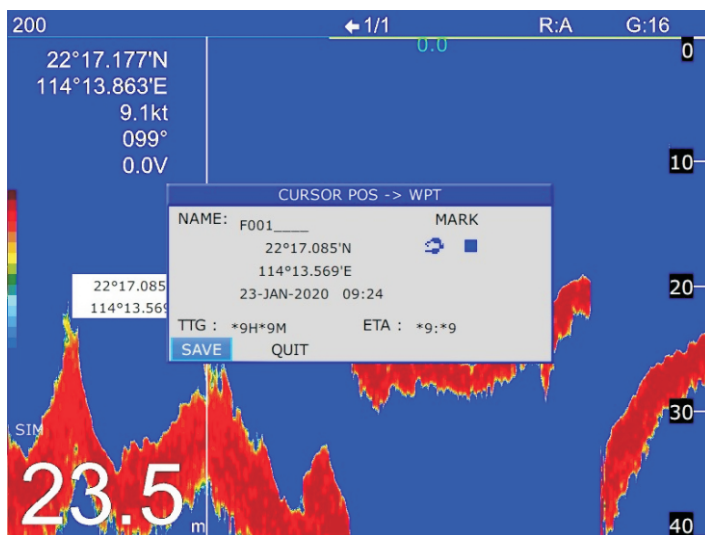
1. When you want to save the location of a history echo you just require to slightly press [►] arrow key then you will see a position vertical line appear as shown below :



2. After the Position line appears you can use Left and Right arrow keys to move the position line to the desire location that you want to save.



3. After the position line reach a desire location you can press [ENT] key then a message box will pop up as shown below. You can save it into waypoint memory after you edit the options.



4. When you finish you can press [ESC] to quit this function.

12. DATA

12.1 How to connect output data to external equipment

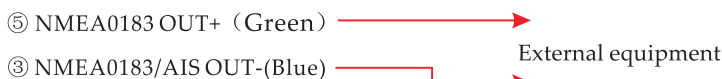
12.1.1 Output navigation data

The below NMEA0183 sentences can be selected output to external equipment :
GGA, GLL, RMC, GSA, GSV, AAM, APA, APB, BOD, BWC, BWR, DBT, DPT, HDT,
MTW, RMB, TLL, VTG, WPL, XTE, ZDA, ZTG, ZDL, MWD, VPW, VWR, VWT.
The below output baudrate can be selected : 4800, 9600, 19200 and 38400

12.1.1.1 Wiring output to external equipment

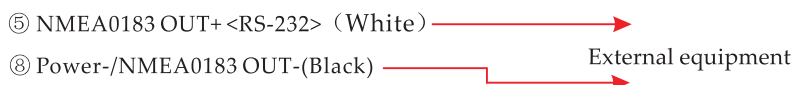
- For KP-38, KP-38A, KP-39, KP-39A :

Connect pin5+ (Green) and pin3- (Blue) to the input of external equipment as shown:



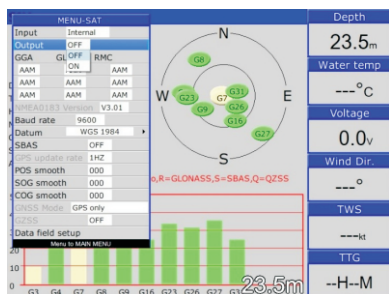
- For KP-708, KP-708A, KCombo-7 and KCombo-7A :

Connect pin5+ (White) and pin8- (Black) to the input of external equipment as shown:

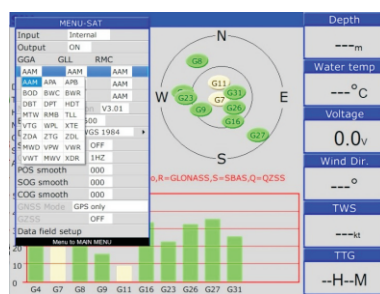


12.1.1.2 Select output sentences

Firstly you need to turn on the output in Satellite menu as shown in picture 12.1.1.2_1:



Picture 12.1.1.2_1



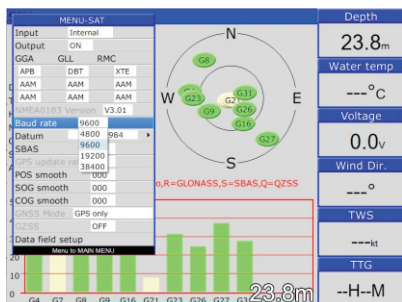
Picture 12.1.1.2_2

Then scroll the cursor to one of "AAM" below to select the desire output NMEA 0183 sentences.

Note : There are 3 default output sentences , GGA, GLL and RMC

12.1.1.3 Select output baudrate

There are 4 different baudrate provided for selection, 4800, 9600, 19200 and 38400.



12.1.2 Output AIS data (For KP-38A, KP-39A, KP-708A and KCombo-7A)

You can connect the AIS data output to external equipment as shown below.

There are no require any menu selection for AIS data ouput, once you connect AIS data output to external equipment you can find the AIS data appear on external equipment if the connection is correct and your external equipment can accept AIS data input.

12.1.2.1 AIS data sentences

The below NMEA0183 sentences output from AIS OUT port as default :
GGA, GSA, GSV, RMC, VTG, VDM, VDO

The baudrate from AIS OUT port : 38400

12.1.2.2 Wiring output to external equipment

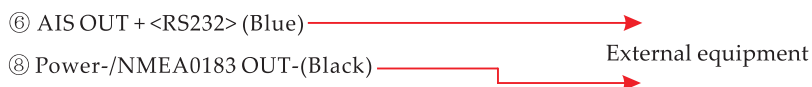
-For KP-38A and KP-39A

Connect pin4+ (Orange) and pin3- (Blue) to input of external equipment as shown:



-For KP-708A and KCombo-7A :

Connect pin6+ (Blue) and pin8- (Black) to input of external equipment as shown:



12.2 How to connect NMEA0183 sentences from external equipment

12.2.1 Input navigation data

The below NMEA0183 sentences can be accepted input from external equipment :
GGA, GLL, GSA, GSV, RMC, HDG, HDM, HDT, VTG, ZDA, MTW, VWR, VWT,
MWD, VPW, VHW, TLL, TTM, VDO, VDM, GNS, MTA, RMA, DBT, DPT, MWV,
BWC, XTE, ZDL, WPL, AAM, APB, BOD, RMB, DSC, MDA, RPM, XDR.

The below input baudrate is auto scan so no setting is required.
Supported auto scan baudrate : 4800, 9600, 19200, 38400

12.2.2 Wiring input from external equipment

- For KP-38, KP-39, KP-38A and KP-39A

Connect pin1+ (Yellow) and pin2- (White) to the output of external equipment as shown:



- For KP-708, KP-708A, KCombo-7 and KCombo-7A

Connect pin1+(Orange) and pin2-(Yellow) to the output of external equipment as shown:

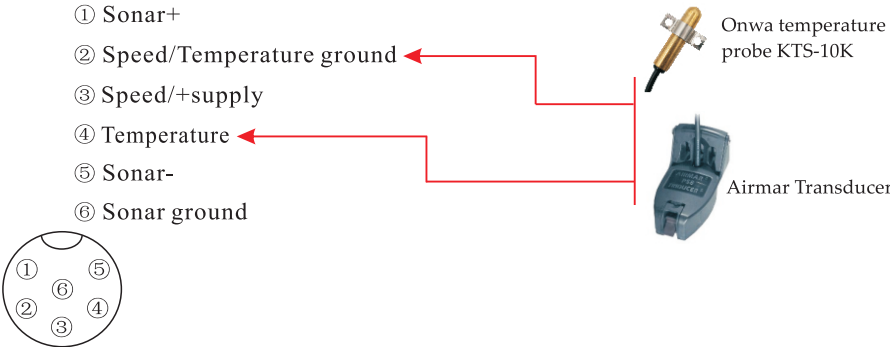


12.3. Connecting a temperature probe

A Onwa 10K (10K resistance at 20°C or 68°F) temperature probe or Airmar temperature sensor can be connected to the chartplotter as shown below to display temperature on sounder screen and data box.

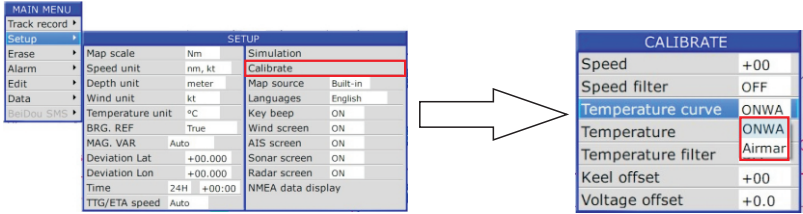
12.3.1 Wiring of temperature probe(For KCombo-7 and KCombo-7A only)

Connect a temperature probe to pin 2 and pin 4 as shown:



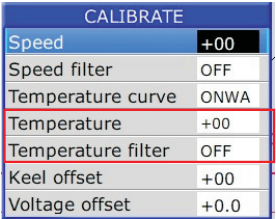
12.3.2 Selection of temperature probe

In order to select correct temperature probe after installation you need to access MAIN MENU-> SETUP->Calibrate->Temperature curve.



12.3.3 Calibrate temperature accuracy

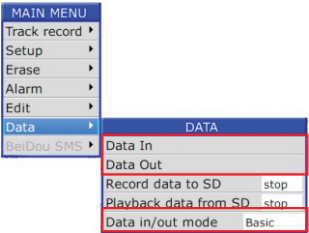
No matter Onwa temperature probe or Airmar temperature sensor it just provides a reference temperature reading. In some condition you might need to adjust the temperature accuracy or apply temperature filter.



12.4 Import and Export user data

All user data, such as waypoint, route, track, drawing mark, drawing line and drawing place names, can be import or export from Onwa chartplotter through a SD card.

12.4.1 Basic mode



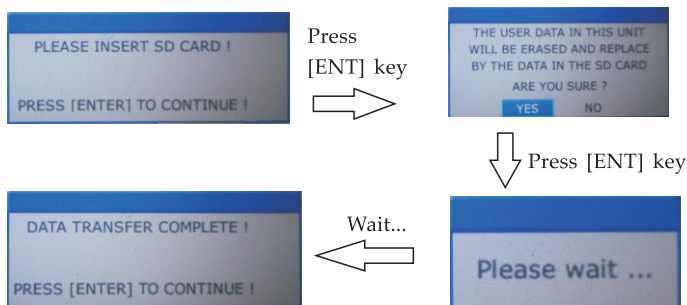
The format of import and export user data is called Onwa Data Format (ODF). You can import one type of user data, example : waypoint, or combine all user data into one file by using merging function of Onwa KDX PC software. You can download the KDX PC software from onwamarine website.

For the export function, all user data will be merged into one ODF file. You can convert ODF to GPX format (Google Earth format) by using KDX PC software.

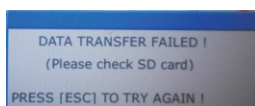
12.4.1.1 Import data in basic mode

Insert SD card contains user data (waypoint, routes etc.) in ODF format you want to transfer into chartplotter.

In any screen press [Menu] x 2 -> MAIN MENU -> Data -> Data In.



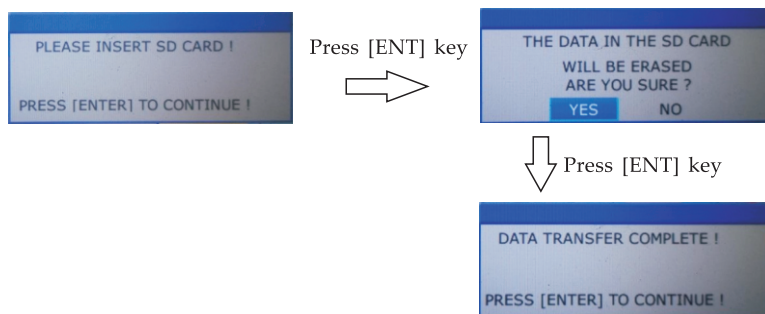
In case of import failed, appear the below message. It is either no ODF data in your SD card or SD card is not detected in the SD card slot. Please check and try again.



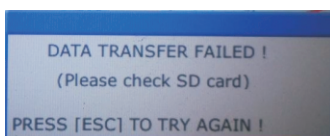
12.4.1.2 Export data in basic mode

Insert a SD card onto your chartplotter.

In any screen press [Menu] x 2 -> MAIN MENU -> Data -> Data Out.

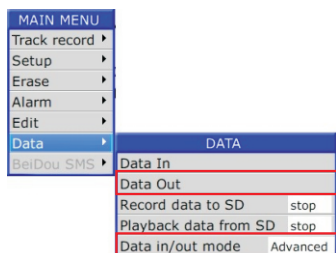


In case of export failed, appear the below message. Please check the SD card and try again.



12.4.2 Advance mode

In advance mode, beside direct export the user data you can add condition on export user data.



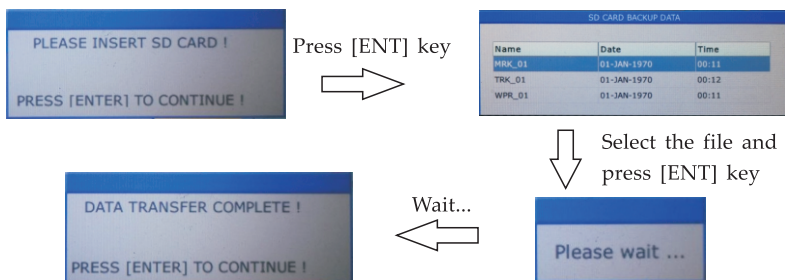
Instead of export all user data on basic mode, advance mode provides selection of user data types and range of data creation date

12.4.2.1 Import data in advance mode

Insert SD card contains user data (waypoint, routes etc.) in ODF format you want to transfer into chartplotter.

In any screen press [Menu] x 2 -> MAIN MENU -> Data -> Data In

The ODF files in the SD card will show up as below :

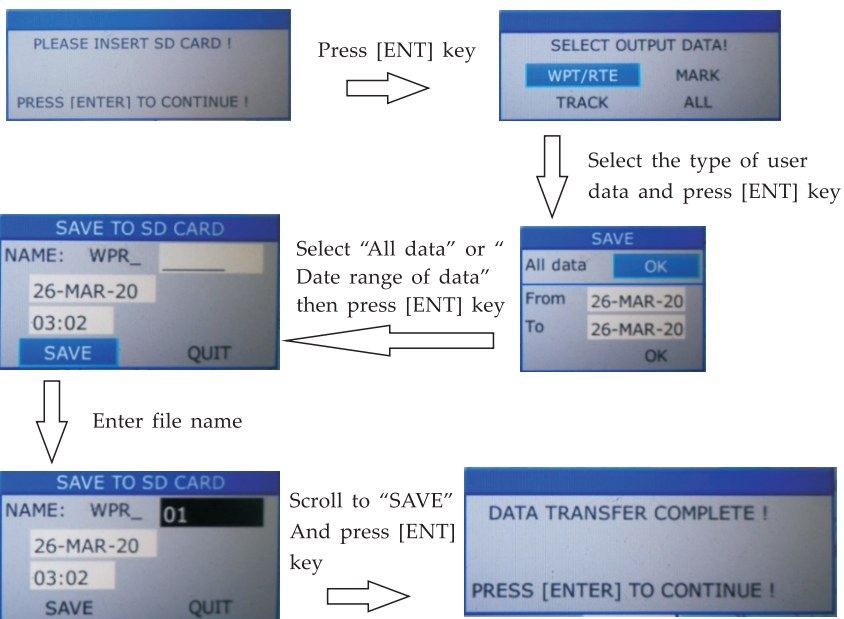


Note : The Import data in advance mode only accept filename with prefix of WPR (waypoints and routes), TRK (tracks) and MRK (drawing mark, drawing lines and drawing place names)

12.4.2.2 Export data in advance mode

Insert a SD card onto your chartplotter

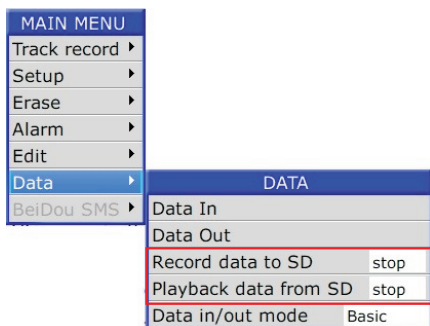
In any screen press [Menu] x 2 -> MAIN MENU -> Data -> Data Out



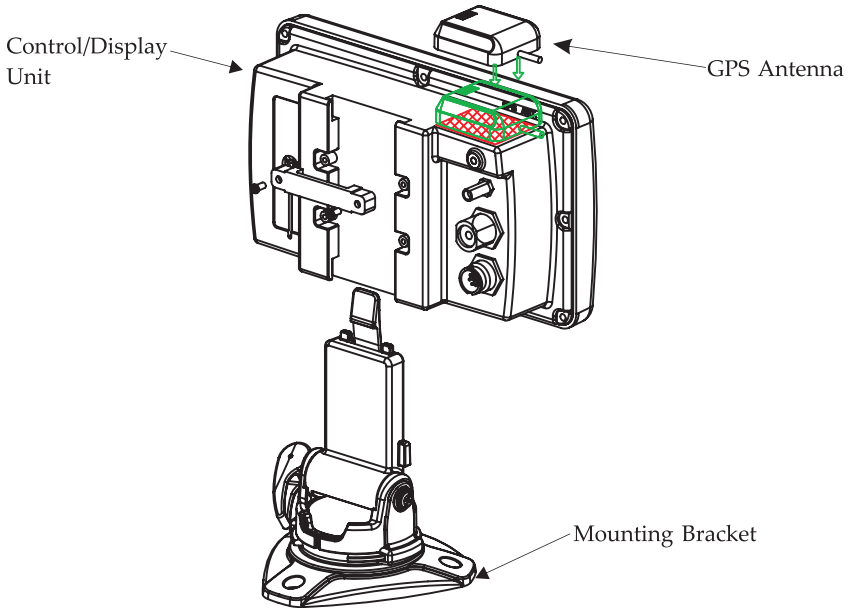
12.5 Record and Playback

In some condition you might want to record all navigational data, such as position, SOG, COG, AIS data and depth data, over a voyage or a certain period.

You can use the "Record data to SD" function to record the above navigational data in a SD card and you can use "Playback data from SD" function to playback the recorded navigational data at anytime you want.



13. INSTALLATION



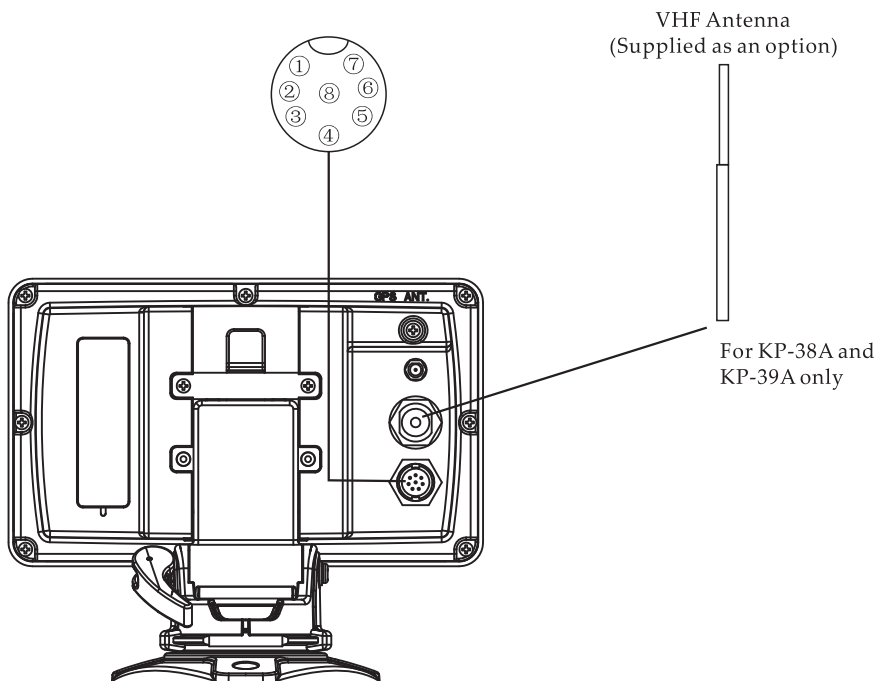
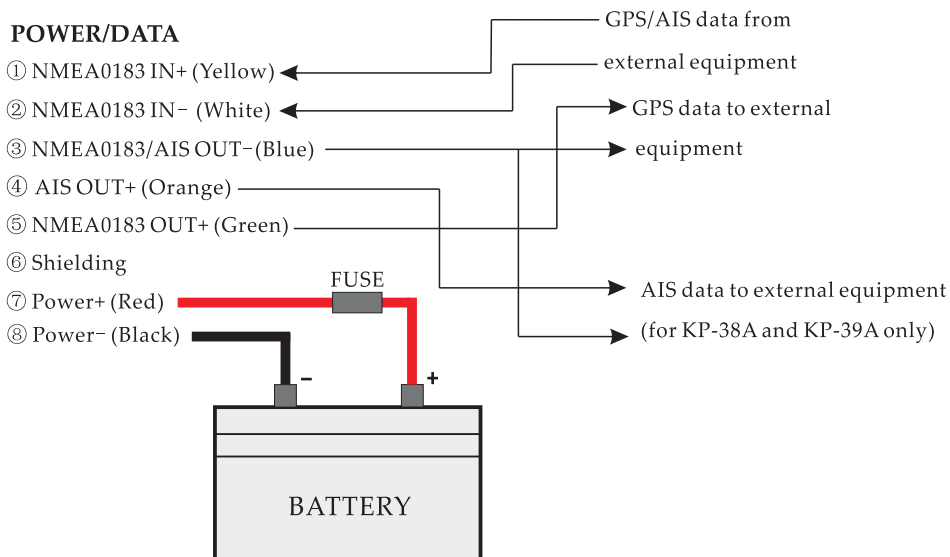
Notice: The unit should be mounted on a flat, solid surface for maximum stability. Be sure to fix the mounting bracket with screws. Otherwise, the display unit may fall down by the boat's pitching and rolling that may lead to fire or injury.

- (1) The mounting bracket should be fixed with 6mm screws.
 - Do not install the unit at the places that are affected by vibration or might be affected with spray or rain.
 - Avoid the places where there is sunlight because visibility might be limited and the unit will be exposed to heat too much.
 - Be sure that the space between the rear side of the unit and the wall is more than 10cm.
- (2) Fix the unit to the mounting bracket firmly with the knobs so as to prevent it to get out of the bracket while running.

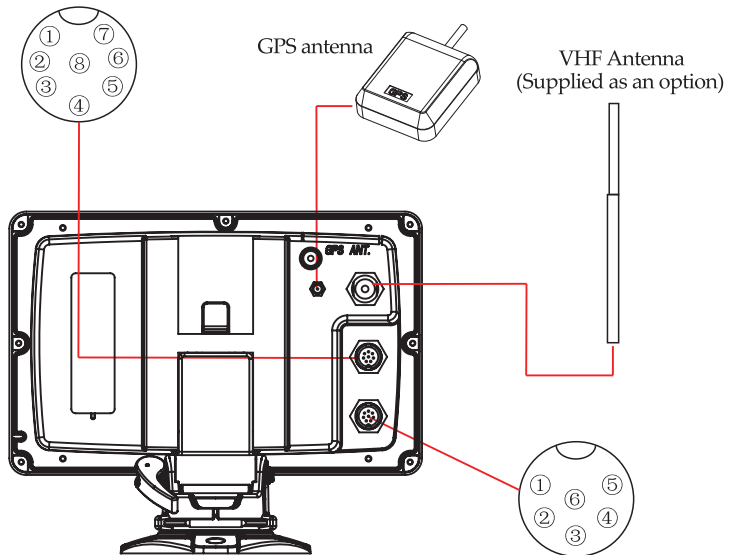
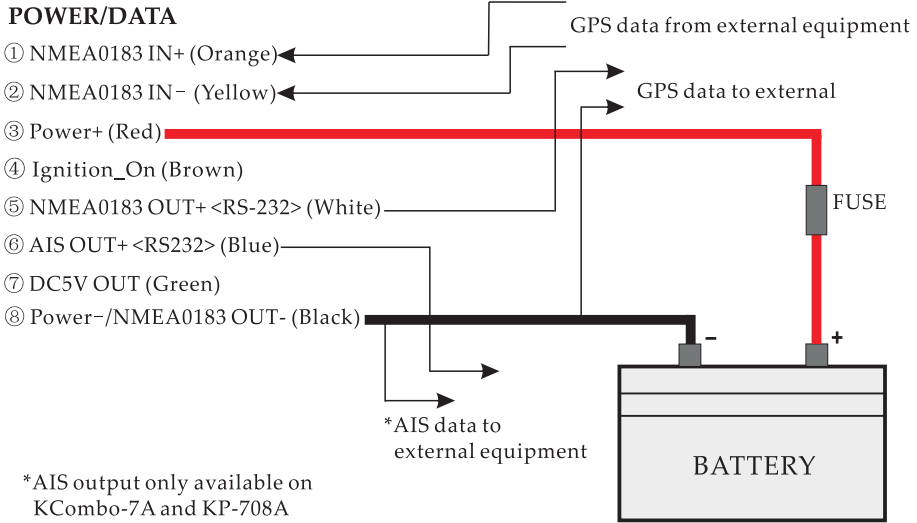
14. INTERCONNECTION DIAGRAM

14.1 For KP-38, KP-38A, KP-39 and KP-39A

POWER/DATA



14.2 For KP-708, KP-708A, KCombo-7 and KCombo-7A



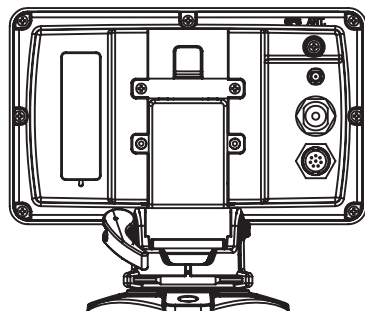
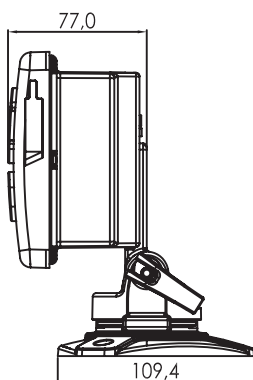
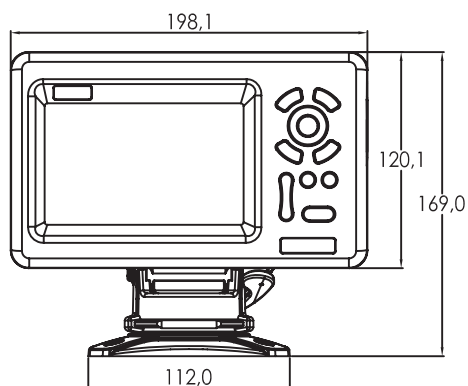
TRANSDUCER/TEMPERATURE/SPEED(For KCombo-7 and KCombo-7A only)

- ① Sonar+
- ② Speed/Temperature ground
- ③ Speed/+ supply
- ④ Temperature
- ⑤ Sonar-
- ⑥ Sonar ground

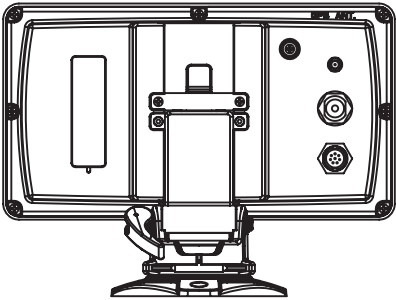
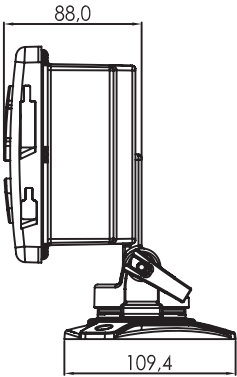
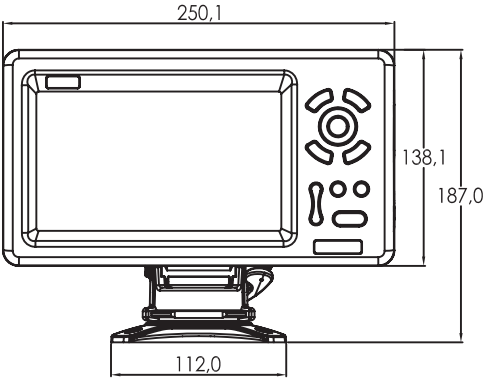


15. DISPLAY SIZE

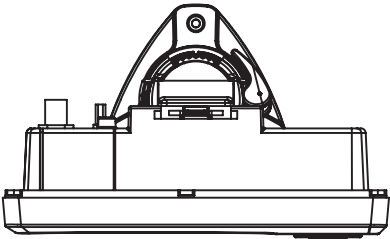
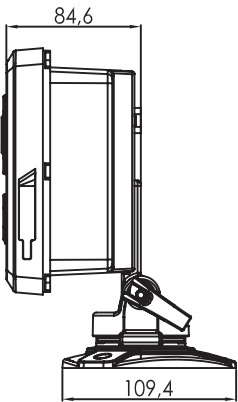
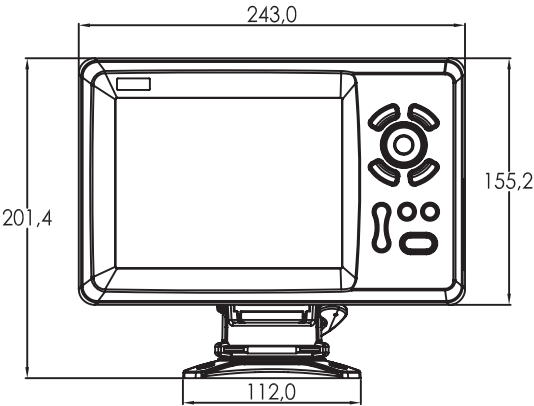
KP-38/KP-38A



KP-39/KP-39A



KP-708, KP-708A, KCombo-7 and KCombo-7A



16. SHORTCUTS

Shortcuts in Plotter screen

- 1) Press and hold [MODE] to change the track color.
- 2) Press and hold [Menu] to turn track recording ON/OFF.
- 3) Press and hold [ENT] to activate the User Mark drawing function.

Shortcuts in Fishfinder (Sounder) screen

- 1) Press and hold [MODE] to change the Sonar mode, 50KHz, 200KHz, DUAL, 50KHz/ZOOM and 200KHz/ZOOM.
- 2) Press and hold [ENT] key to switch between Auto and Manual gain.
- 3) On manual gain slightly press [ENT] key to adjust manual gain.
- 4) On auto gain slightly press [ENT] key to switch between Auto-1 and Auto-2 mode.
- 5) Press and hold either [] or [] key to switch between Auto and Manual range.
- 6) Slightly press [F] key to change Signal Level.
- 7) Press and hold [▶] key to adjust picture advance speed.
- 8) Slightly press [◀] [▶] key to shift range.
- 9) Slight press [▲] [▼] key to move VRM.
- 10) Slight press [▶] to activate position line.

Shortcuts in Plotter/Sounder mode

- 1) Press and hold [MENU] key to change the **PLOTTER** and **SOUNDER** screen split ratio.
- 2) When **SOUNDER** screen is $\geq 50\%$, all key functionalities are the same as in **SOUNDER** screen only.
- 3) When **PLOTTER** screen is $> 50\%$ all key functionalities are the same as in **PLOTTER** screen only.

Shortcuts in All modes

- 1) Press and hold [ESC] to enable graphic selection mode.

17. ABBREVIATIONS

Abbreviations	Word
ESC	Escape
ENT	Enter
SBAS	Satellite-based augmentation system
POS	Position
SOG	Speed Over Ground
COG	Course Over Ground
AWS	Apparent Wind Speed
AWA	Apparent Wind Angle
TWS	True Wind Speed
TWA	True Wind Angle
TWD	True Wind Direction
VMG	Velocity Made Good
INFO	Information
LAT	Latitude
LON	Longitude
TTG	Total Time to Go
ETA	Estimate Time of Arrival
XTE	Cross Track Error
HDOP	Horizontal Dilution of Precision
TVG	Time Variable Gain
PIC	Picture
B/L	Bottom Lock
F/A	Fish Alarm
MAG.VAR.	Magnetic Variation

18. GLOSSARY

ACA	(AIS) Regional Assignment Channel Assignment Message
ACK	Acknowledgement
ACS	(AIS) Channel management information source messages
AFSK	Auto frequency-shift keying
ALR	(AIS) Alarm Message
A to N	Aid to Navigation
AIS	Automatic Identification System
BIIT	Built In Integrity Testing
BNC	Bayonet fitting type Therefore connector
COG	Course over Ground
CR	Carriage Return
CS	Carrier Sense
CSTDMA	Carrier Sense Time Division Multiple Access
DC	Direct Current
DGNSS	Differential Global Navigation Satellite System
DSC	Digital Selective Calling
GLONASS	Global Navigation Satellite System
GNSS	Global Navigation Satellite System
GMSK	Gaussian Minimum Shift Keying
GPS	Global Positioning Satellite / System
HF	High Frequency
IMO	International Maritime Organization
IEC	International Electro technical Commission
LED	Light Emitting Diode
LF	Line Feed
LNA	Low-noise Amplifier
MF	Medium Frequency
MKD	Minimum Keypad and Display

MMSI	Maritime Mobile Service Identity
MPE	Maximum Permissible Exposure
NMEA	National Marine Electronics Association
PC	Personal Computer
PI	Presentation Interface
RF	Radio Frequency
RTCM	Radio Technical Commission for Maritime Services Commission
RX	Receive or Receiver
RFI	Radio Frequency Interference
SAR	Specific Absorption Rate
SELV	Separated Extra Low Voltage
SMS	Short Message System
SOG	Speed over Ground
SRM	Safety Related Message
TDMA	Time-division Multiple Access
TNC	Threaded type RF connector
TX	Transmit or Transmitter
UTC	Universal Time Co-ordinated
VDM	(AIS) VHF Data Link Messages
VDO	(AIS) VHF data link own vessel messages
VHF	Very High Frequency
VSWR	Voltage Standing Wave Ratio