

# KC OPERATOR'S MANUAL

### **GPS CHART PLOTTER WITH FISHFINDER**



## 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 $-15^{\circ}$ to $55^{\circ}$ 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

The KCOMBO ONWA GPS PLOTTER aid are specially designed for the vessel traffic management, ONWA is a professional brand of the domestic and foreign navigation products.

The products 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 ARM9 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
- . Compatiable with dual mapping system, C-MAP NT MAX and ONWA K-Chart
- Built-in GPS antenna, external antenna can be used as an option
- Digital HD fishfinder technology
- Built-in commercial fishfinder module which is widely using in worldwide commercial fishing bost
- IPX7 waterproof panel

### MAIN PERFORMANCE AND SPECIFICATIONS

#### **Plotter Char**

Waypoints/icons	12000 user waypoints with name, symbol. 3 system waypoints: MOB, Start , Cursor 10 proximity waypoints
Routes	Max 30 routes. And up to 170 points for each one
Tracks	8000 points automatic track log;
	10 saved tracks (up to 8000 track points each).
	Let you retrace your path in both directions
Alarms	XTE, Anchor drag, arrival, speed, voltage,
	proximity waypoint and time, AIS alarm.
Palette	Normal
	Daylight exposed to sunlight
	Night in dark environment
	NOAA paperchart colors
Tides	Tide data
Projection	Mercator projection
Position format	Degree of minutes and UTM
Basemap	Built-in Onwa K-Chart
External Map	SD Cards slot for C-Map MAX and ONWA K-Chart
User data storage	Internal backup of user settings,
	or external SD-card
Plot Interval	5s to 60min 0.01nm to 10nm Automatic way
Plotting scales	0.001nm to 1000nm
Nav Data	Inputs:
	\$GGA, \$GLL,\$GSA, \$GSV, \$RMC,
	\$VTG, \$ZDA, \$VWR,\$VWT,\$MWD, \$VPW
	Outputs:
	"GGA", "GLL", "RMC", "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:
	\$APB,\$BOD,\$XTE,\$APA
Perspective View	On/off
Celestial	Sunrise/Sunset Moonrise/Moonset

#### **Power Supply**

10.5 to 35VDC, current drain<1.0A at 12V

### Physical

Size:	243mm(H)X155mm(W)X82mm(D)
Weight:	0.6kg
Display:	7-inches ColorTFT day-view LCD $800 \times 600$ pixels
Input & Output Port:	one opto-isolated input Port
	one RS232 Output Port
Waterproofing:	Display unit: IPX5
Temperature range:	Display unit: -15°C to +55C
	Antenna unit: -25℃ to +7℃

#### **GPS Receiver Ch**

Receiver:	50 parallel channel GPS receiver continuously tracks and
	uses up to 50 satellites to compute and update your position
Acquisition time:	Cold start: 60 seconds average
	Hot start: 45 second average
Update rate:	1/second,continuous
	Position: 2.5 meters(95%) without S/A
	Velocity: 0.1 meter/sec without S/A
	Time: 100ns synchronized to GPS time
Dynamics:	Altitude: 50,000m Max
	Velocity: 500 m/s
	Acceleration: 4g Max
Datum:	WGS 84 and user define

#### **Equipment List**

Standard

- 1. Display unit
- 2. Operator manual
- 3. Installation materials and standard spare parts

#### AIS interface

Data input:NMEA 0183, RS232Baud rate:38,400

### **Option Accessories**

- 1) GPS antenna KA-07
- 2) Transducers

Dual Frequency Thru-Hull Transducer

- 600W Bronze NMM40-50/200
- 600W Plastic NBM40-50/200
- 600W Airmar Bronze Transducer w/Temp seosor B45

Dual Frequency Transom Mount Transducer

- 600W Onwa Transducer w/Temp seosor KTD-520\_TM
- 600W Airmar transducer w/Temp seosor P58

3) Temperature seosor

Onwa Thru-Hull temperature seosor KTS-10K\_TH

Onwa Transom Mount Temperature seosor KTS-10K\_TM

#### **HD** Fishfinder Ch

Echo Color	16 colors (including background color) according to echo
	intensity. The background color is selectable from blue,
	light blue, white and black.
Basic Range	Meters 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 Shift	80 meters, 200 feet, 100fathoms
Zoom Range	Times 2,3,4,6
Bottom Lock Expansion	5/10meters,10/20feet, 2/5fathoms
Auto Mode	Automatic adjustment of range and gain
Display Mode	High Frequency (200KHz),Low Frequency (50KHz), Dual
	(200K and 50K 1/2display on each), Zoom (200KHz and
	50KHz zoom) and A-scope Display
Zoom Display	Marker Zoom, Bottom Zoom and Bottom-lock Expansion
Display Advance Speed	Lines/TX:Freeze,1/8,1/4,1/2,1/1,2/1
TX Frequency	50 and 200kHz (alternately transmitted)
Power Output	600W
Pulse-length/TX rate	

Display End Depth (m)	5	10	20	40	80	150	200	300	600	1000
Pulse-Length (ms) 200K	0.12	0.22	0.32	0.52	0.92	1.02	1.02	1.02	1.02	1.02
Pulse-Length (ms) 50K	0.17	0.27	0.37	0.57	0.97	1.07	1.07	1.07	1.07	1.07
TX Rate (Pulse/min)	2400	1500	857	444	231	125	95	63	38	30

Interference Rejecter Rejects unwanted signals by comparing last and present echoes in strength. Alarm Fish and Bottom alarms, Temperature alarm (sensor

required)

### CONFIGERATION



### **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 + Sounder Function:
Long press - Activates split ratio selection.
Short Press - Displays the menu of the screen that has $(\bigcirc \bigcirc \bigcirc$
>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.
<b>ESC</b> Withdraw from an optional operation, or display the previous
page in reverse-cycle order.
Plotter function: Press and hold to switch track ON/OFF.
(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.
<b>F</b> D 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.
(小文) Long Press - Turn the power ON/OFF.
Short Press - Adjust the screen brightness and control panel dim

#### 1.2 Turning ON and OFF Power

#### Turning on the power

Press the  $[\bigcirc/\mit{?}]$  key. The unit beeps and displays the "**ONWA**" logo. After a few seconds, it starts up with the last used display mode.



#### Turning off the power

Press and hold down the  $[\bigcirc/ \dot{\times}]$  key until the screen goes blank (about four seconds).

#### 1.3 Adjusting Brilliance and DIM

You can adjust display brilliance as shown below.

1. Press the [0/x] 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 Display Modes

Your unit has eleven display modes: PLOTTER SCREEN, NAVIGATOR SCREEN, WIND SCREEN, POSITION SCREEN, SATELLITE SCREEN, HIGHWAY SCREEN, AIS SCREEN, SOUNDER SCREEN and PLOTTER + SOUNDER SCREEN. Press the [MODE] key to choose a display mode. Each time the key is pressed, the display mode changes in the sequence shown below.



### 2. PLOTTER DISPLAY OVERVIEW

#### 2.1 Choosing the Zoom Display Range

You may press (R) to Zoom In and (R) 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  $[\blacktriangle]$ , down  $[\lor]$ , left  $[\triangleleft]$ , right  $[\triangleright]$  or diagonal [B].

#### 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 PLOTT

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 Coordinates

Coordinate Systems are ways of splitting up the world in order to form transferable units (numbers) that relate to points on a map.

1. Press [MENU] key in PLOTTER screen.

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2. Choose Coordinates and then press [ENT] key to select.

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3. Choose "N/E" or "UTM" as desired then press [ENT] key to finish.

#### 2.6 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.

MAC				
Deep point	Off	Water line	CH	
Obstructions	OB	Help info.	C (CH	
Danger	OB	Limit zone	CH	
Place names	OIL	Depth line 20m	.CH	
Port names	OB	Depth line 10m	C.H	
Light	1.41	Route line	EH	
Communication	1.41	Depth area 2m	C.H	
Reference points	Off	Depth area Sm	CH	
Dock	UH	LAT / LON grid	CH	
Light line	CH.	ALL	C.H	

(K-Chart)

	Nt	NP .	
Place names	- DEF	Roads	128.8
Name tags	DEF	POI	118.8
Nav aids & Light	OFF	Lat/Lon grid	OFF
Attention area	OFF	Chart boundaries	OFF
Tides & Currents	EXP.P.	Value-added data	OFF
Seabed type	OFF	Chart lock	011
Forts & Services	OFF	Underwater obj.	000010
Track & Roubes	OFF	Rocks 041	6
Depth range Hin	0000 (8	Obstructions OH	
Depth range Max	0000 0	Diffusers on	Π.
Land elevations	OFF	Wrecks 011	P
Land elev. Values	OFF	ALL	OFF

(C-MAP)

#### 2.7 Perspective View

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

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

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.



#### 2.8 Heading Line

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

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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.

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#### 2.9 Cursor

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

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Track	
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Coordinate	N/E
Мар	
Perspective	OFF
Waypoint	ALL Large
Heading line	Man
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Ship info.displ	ay Auto
Range circle	OFF
Zoom Step	1895
Drawing	
Palette	Normal
Map direction	Normal
Hap choice	IC CHART
Flap Language	English.
Data field	
States in the	AN INCOMENT.

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

#### 2.10 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.

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#### 2.11 Rang

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

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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.

#### 2.12 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.

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5. User can change the size of Drawing Lines.

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Nap choice	K CHERT				
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Cata field		E.			
March 19	ALC: NOT THE OWNER.		-		

#### 2.13 Palette

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

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

#### 2.14 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" or "COURSE Up" as desired and then press [ENT] key to finish.

#### 3.1 Changing Track Pl

When the track memory becomes full, the oldest track is erased to make room for the latest.

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

TRACK	
Track record mode Time	55
Saved track	
Save current track	

3. Choose Track record mode and then press [▶] key select.

TR/	ACK	
Track record mode	Time	58
Saved track Save current track	Time	

4. Choose "Time", "Distance", "Auto" or "Off".

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 display range selected. Off: Track is neither recorded nor plotted.

- 5. For Time and Distance, enter the recording interval as follows:
  - a) Press the [▶] key to choose "5s", "10s", "30s", "1min", "5min", "10min", "30min" or "60min".
  - b) Use  $[\blacktriangle]$  or  $[\blacktriangledown]$  to select value.
- 6. Press [ENT] key to finish.

#### 3.2 Displaying the Tr

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

TRACK		
	ON	
	UN	
	ON	
	ON	
	ON	
	<b>DN</b>	
	ON	
	ON	

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

#### 3.3 Creating Track Data

- 1. Press the [MENU] key twice to enter main menu.
- 2. Choose Track Record and then press [▶] key to select.
- 3. Choose Save Current Track and then press [ENT] key. The following window will appear.

Name :	No.:	OFF
Start 5'36,000'N 102'45.200'E	End: 5"38 102.45.	
Distance : 0.0nm	Points : 1	62
Date :		
Save 7 Ex	t? (	

Track Data can be used for navigation.

#### 3.4 Erasing Track

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Erase and then press [ ] key to select.

FRASE	
All waypoint/HOB	
All roubes	
Current track	
Saved track	+
All drawing marks	
All drawing lines	
All drawing name	
Load default setting	
All backup data	

- 3. Choose Current track or Saved track.
- 4. If Saved track is chosen, press [▶] key to choose the color that you want to erase or choose ALL if you want to erase all tracks and then press [ENT] key. The following window will appear:

ERASE ALL SAVED TRACK ?
ARE YOU SURE ?
YES NO

#### 3.5 Erasing All Backup Data

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Erase and then press [ >] key to select.
- 3. Choose **All backup data** and then press **[ENT]** key. The following window will appear.



### 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.

CURSOR POS -> V	VPT.
NAME: 006MARK	<
24'39.936'N 📑 🔳	
05-AUC-10	00:00
TTG: OUHDOM ETA; UU:00	
SAVE QUIT	

- 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.

#### Entering a waypoint at own ship's position

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

GPS POS → WPT	
NAME: 006 MARK	n n
24°39.936'N	
124°39,936'E 💻 -	00000
05-AUC-10	00:00
TTG; muonsi ETA; on:on	
SAVE QUIT	

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

#### 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.

EDIT
Waypoint
Route
Drawing marks
Drawing lines
Drawing placename
Proximity

3. Choose **Waypoint** and then press [**ENT**] key. The following window will appear

					-	68 A.L.							
1.00	-												
100	1400		-	-	10	- C.A.	1.0		7.4	1.00	10.00	1.1	10.00
- 8	14	141	1.44		32	14		34		1.5	-		1.4
	1.0	114	-		10	26		-		0.0	inin'		1.00
16.1	12	1.60	1001	1.2	42	10.7	28	21		63.	30.00	64	100
280	.12	1.84	DH.	1.2	13	tre a	100	24		6.2	200	< 4)	Cat
41	1.0	***	in	1.0	27	267		-	۰.	1.84		12	1.4.
1911	1.0	44.1	5.11	1000	10	- 14	10.	38	8	114	10.0	12	1.15.
-	100		-	-	2	000	100	1.0	-	_		18	-
	199			0.00				1.		10.0	1.11	÷.	0.33
-	0.63	222	1	-	22	-		10	5	-	20.	2	1
				14		1.2		54	2	-	10	2	44
	- 68	1	8	- 0		199		24	9		14	82	
	- 95	10	34.			- 22		24	ę.		- 11	14	- 22
	- 14	-	22	- 14		24		1	2	100	- 14	94	100
	+	-	1					22				-	- 12

4. Choose NEW then press [ENT] key.

The following window appears.

GPS POS → WPT	
NAME: 006 MARK 24"39.936'N	
124*39,936'E • • • • • • • • • • • • • • • • • • •	00:00
SAVE QUIT	

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.

SAVE TO MOB GO TO MOB ?
ARE YOU SURE?

 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

You may display waypoint name as follows:

- 1. Press the [MENU] key on the PLOTTER screen.
- 2. Choose **Waypoint** and then press the **[ENT]** key. The following window will appear.

1880110	E COOP IS
truck.	Contraction at the set
Carrient trail.	Repairing the line of a
Coordinate	ANT COLLECT
Map.	1.
Perspective	URL SAME
Weppeerd	A Daries
Needing-Ime	Contra Contra
Cartar	A LA DE
stars shape look	Line 1
Mary Way down	ALCONG 1
Rande COLLER	And
doore 1840	100
Dratema	
Paletta	Conned U. 197
The direction	- normal
thep photoe	A CAMPT.
Hep Language	(Truba
Cata Seid	colat.
Suma in the local division of the local divi	ACCURATE AND ADDRESS OF

3. Choose "All", "Goto", "Route", "Icon" or "OFF" as desired and then press the [ENT] key. All: Displays all waypoint names.

Goto: Displays only the GOTO waypoint name.

Route: Displays all waypoint names when a route is set as destination.

OFF: Do not display any waypoint name.

4. User can change the size of Waypoint Marks

ESCIET.	ECCOPTS .
Track.	COLOR DATA
Carriert trailli	Repairing the line of the
Coordinate	-
Perspettive Vie joker	No. Contraction
The pool of	
Needing-Ime	that wanty
	If and not
	1000
state shippin/col	
Wap Selecidepte	NALANCE IN
Rance circle	OFF.
200 PP 1840	1.055
Drateing	
Paletta	contract (197
The direction	
thep photoe	
fleg Langedge	
	and the second
Cata field	
Manual No. 12	

#### 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.

1.788.998				1.000.000	1 at 10 100			-
10000								
-	100	46,0125	THE	Tridere.	00004488		minore l	-
teres :	100	11.0001-	110	ABBATE.	104.0-00	1.84	Designed.	- Davies
-	140	96.04Ph	ne	10.0400	10000-000		mented	-
-	40	46.34456	118	10-104	0000	100	second.	-
<b>1</b>	127	44,007%	11F	TENPE	000.0144	84	INCOME.	-
	-	44,22276	110	11.1444	1001-0-00	***	dimental.	-
							-8.M	1
	40			-	-		1.14	1.6
							100.04	
		1.74			-		1.14	
		-			-		1.14	
	100						1.00	1.5
	10.0	-			-		1222	
	iic.			-	1000		La la	

4. Choose waypoint to edit and then press the [ENT] key. The following window will appear.

	WAYPOI	NT
NAME	1	MARK
100000000	9.936'N	-
	9.936'E	
05-AU		4679
TTG:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TA:
SAVE	QUIT	ERASE

- 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.
- Choose Waypoint and then press the [ENT] key. The following window will appear.

	е.							
10000								
-	100	46,0175	TTE	Tribber.	000.0+88	100	minore.	(make
lore !	100	\$2.000 hr	338	ALBERT.	1061.0+00	144	Desired.	- Desire
1.0	140	96.060%	ne	10.167	interior in the second	***	distant.	- mark
	140	46.3445	11.0	10-1992	0000	***	SHOON.	( maintained
146 - C	100	4,005	11F	TANK	-000.0144	844	interest.	(mark)
	-	96,73276	110	11.1448	10011-01	***	<b>BRIER</b>	-
	-1-2				-		-1. M.	1.00
	140				-		1.14	0.63
			-				100.04	
		1.74		-			1.84.14	
					-		10.00	
	16.0				-		100.00	1.5
	10.0		-	-			100.00	
		100		-			LP. 4	1

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

V	VAYPDI	NT
NAME :	lenn ensen	MARK
	9.935'N	
124-39	9,936'E	
05-AU	G-10	
TTG:	E	TA:
SAVE	QUIT	ERASE

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



#### 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.

### 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.

1 × 41	MAU L	
(CONCRETE)	2.1	
**	14.~	
1		
	÷	

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.

	NAME.	
10.00 MJ		DESCR
mana		
=:==	====	
	22.2	
	27.7	
5	1 - E - F	
=	===	
1.15		

6. Choose the location (e.g. 01) and then press [ENT] key.

A new window will open which will let you choose a waypoint.

	_			100.001	1		
100	<b>1 1</b>		_		-		
1.00	10		1.1.1	100.000		00000000000	222
111	4:	# 20 P.	deal a	1001	000 m.	HC CHON	26.25
ana -	4:	2.361.	40.0	3 1017	49.20	201 214:04	15.3
Ares .		4					
	2.0		2.75	1.4	10.00	10.1.1.19	N 14
A 1	4:	4C 7371.	1.10	1001	204 C .m.	541 K04C04	24.05
10	41	40 mit.	1.0 .	1000	(24 C m)	HI CHON	3435
	100	1.00	1000		100		
	- 198	1.1	-		- N.M.	1.4	
	= 7				- 10		
	1.0	2. 2.1	-	12		1.4	1.1
	- 34	9 - 16 I	-	- 92	- A.		
	- 74	- 24	-	- 2	- 12		
	14	- 22		1.1	- 22		
	- 32	1.1	-		- 25		1.20
		0.3		2.0			- 50

- 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.

Change ?	
Remove ?	-
Insert ?	
Skip ?	
Quit ?	A REAL PROPERTY AND

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

	_				0.51	114	м.					
12,755	100	2010					14.1	-			-	
640	20		九田	112	145	n	386	24	40	82	314	25.0
Sec. 4.	- 29	10.	8.0		150	12	34.1	84	10.3	3.2	. 24	32.4
	100		1011	IIN	144			100	1.5	1.6	CH.	1.10
1 C 1	- 22	100	10.0	117	157	- 14	-	210	1.0	14.4	-	100
10 C	- 25.3	4.	1.01	0.8	30.5	-	-	100	44.	3.6	- 14	1.41.1
160	*	4.	8.13	HV.	12.5	30.		100		1.1	1.11	196.
	1.1	1.	380					100	0.00	1	29	
	22		-	-	-	20	-	1.17	100	-	- 14	-
	1.3	14			1.40	234		- 5 1	162	10.0	- 4	0.4
	1.1	- 1	1.4	- 3	14	28			612	904	0.04	2.1
	a *	2.			82			12.5	6.77	200	1.0	
	32	22	1.	_	1.2	14	1	10	020	65	24	10
								- 5		1.0	100	1.4
	10.1	1.4			1.14	24			ENV:	0.14	2.44	
	÷	÷.	1	•	÷.	3			ŧ.		4	

- 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  $[\blacktriangleright]$  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.

Change ?	
Remove ?	
Insert ?	
Skip ?	
Quit ?	

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.

	ROUTL	
N.88 1.2		Barsess.
training a	300	
1		
	2.1	
= =		
1.00		
•77		

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



#### 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 7
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  $\left[ ENT\right]$  key to mark 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.



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

## 6.3 Setting R

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

FUNCTION
Goto cursor
Goto WPT
Goto route
Goto track
Stop goto
Drawing •
Tide table Search
Calendar
Celestial
Distance

3. The **ROUTE** list appears.

	-500.0	
	12.0	EXE
-	<u>.</u>	=, 1
		=

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.

FUNCTION
Gaba curson
Gobs WPT
Gala route
Gobo track
Stop goto
Drawing +
Tide table
Search +
Calendar
Celestial
Distance

3. The SAVED TRACK window will appear.

0101010	5.85	IL COMPANY	
N. # F4	1494	10.01	51.40
		Contraction of the second	
		1	
			344
			344

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



5. Choose Forward or Reverese 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.

16 20102E 191... Es co-

**A**@

В

Fig.3

#### 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.

24 06049N	209 6 Leo 000 a Dat 105 a	8
-----------	---------------------------------	---

- 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.

SAVE AS A ROUTE		
Route :	03	A
Start :	24'39.936'¥ 124'39.936'E	
End :	18'42.307'N 119'02.655'E	
SAVE	QUIT	CANCEL

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.

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	OTT	100.00	FT9 -	
Arrival	OFF	00,00	nr	
XTE	OFF	00.00	nr.	
Speed	OFF	0.00	kl	
Volbage	OFF	0.00	Ψ.	
Timer	OFF	000	mn	
Buzzer	Short	- 10		
Warning	, mez	age		

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

ALARM				
Anchol	OFF	08.00	DEL	
Arrival	UFF	00.00	nm	
XTE	ON	00.00	F# 15	
Speed	OFF	00.0	kt	
Voltage	OFF	09.0	8	
Timer	DET.	OTH	111	
Guzzer	Short	- 15	1.5	
Warning	mes	sage		

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	011	00.00	inn	
Arrival	UFF	00.00	n m	
XTE	OFF	00.00	TELL	
Speed	UPP	00.00	kt.	
Voltage	TIFF	0.001	¥.	
Timer	OFF	000	mi-	
Buzzer	short	22.24C	100	
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	(IFF	011.00	111	
Amival	GFF	00.00	111	
XTE	OFF	00.00	m	
Speed	GFF	00.0	0	
Voltage	ON	on.u	$g_{\pm}$	
Timer	OFF	.000	min	
Guzzer	Short			
Warning	mees	age	-	

- 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		M
Anchor	OFF	00.00 11
Antval	OPE	00.00 11
XTE	OPF-	00.00 204
Speed	OFF	00.0
Voltage	1011	00.0
Timer	LOW	000 mm
Buzzer	Short	
Wanning	mez	age

- 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 Voltag

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	100.00	HL
Arrival	OFF	00.00	DT.
XTE	OFF	00.00	nne
Speed	OFF	0.011	kt
Voltage	OFF	0.00	10
Timer	THEF	000	mn
Buzzer	Sibre	1000	
Warning	mess	age	

- 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	UFF	00.00	111
Amival	nrr	00.00	iri.
XTE	OFF	00.30	пт
Speed	OFF	00.0	E.
Voltage	OFF	00.9	V.
Timar	UFF	009	еù
Buzzer	OFF		
Warning	THES	sage	

- 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.

	ALAR!	А
Anchor	OTT	00.00
Arrival	OFF	00.00 * m
XTE	OPE	00.00 001
Speed	OFT	00.0 0
Voltage	OFF	00.0 9
Timer	OFF	000 mi
Buzzer	Short	10.000
Warning	Short	1
CONTRACTOR OF	Consta	ant

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.

#### 8.1 Drawing Marks

- 1. Press [F] key to display the FUNCTION window.
- 2. Choose Drawing and then press [▶] key to select.
- 3. Choose Mark and then press [ENT] key.

The cursor appears with "+?" on the PLOTTER screen.



4. Use the cursor pad to place the cursor on the location desired, add a mark and then press [ENT] key. The following window appears.

DRAWING	MARK
	MARK
24°39.936'N 124°39.936'E	-
SAVE QUIT	

5. Edit Lat/Lon or mark, and then choose "SAVE" to finish.

#### Changing the Symbol and Color

- 1. Move the cursor to the mark and press [ENT] key to select.
- 2. Use  $[\blacktriangle]$  or  $[\lor]$  to select color or symbol then press [ENT] key.
- 3. Select "SAVE" to finish.

## 8.2 Drawing Lines

- 1. Press [F] key to display the FUNCTION window.
- 2. Choose Drawing and then press [▶] key to select.
- 3. Choose Line and then press [ENT] key. The cursor appears with "+?" on the **PLOTTER** screen.
- 4. Use the cursor pad to place the cursor on the location desired, add a point of the line and then press [ENT] key.
- 5. Repeat step 4 to complete the line.
- 6. Press [ESC] key to finish, and then the save confirmation window will appear.

DF	AWING LINE
LINE	: 001
Start :	24°39.936'N
and the second	124 39.936'E
End :	24"39.936'N
	124'39.936'E
SAVE	QUIT

7. Move the cursor to the color and press [ENT] key to modify the color, if required.8. Choose "SAVE" and then press [ENT] key to save the line.

## 8.3 Drawing Place name

- 1. Press [F] key to display the FUNCTION window.
- 2. Choose **Drawing** and then press [▶] key to select.
- 3. Choose Place name and then press [ENT] key.
- 4. The cursor appears with a "+?" on the PLOTTER screen.
- 5. Use the cursor pad to place the cursor on the location desired, add a name and then press [ENT] key. The save confirmation window will appear.

DRAWIN	IG PLACE NAME
NAME :	ABC
24°39	.936'N
124°39	9.936'E
SAVE	QUIT

6. Enter the name and then choose "SAVE" to finish.

## 8.4 Editing Drawing Marks

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [>] key to select.
- 3. Choose **Drawing marks** and then press **[ENT]** key. The following window appears.

	_		186477	
		2.266.26	NUMBER OF STREET	
2		97.795.538	Developments and the second seco	
21	14	2 3000 725	CB	
4	14	<1.0044121H	0.6 ×0.4	
1	×.	- 1 Ats (6)	Call Contract	
	10	Hannell	and an one	
		14	that many and	
	۰.		and an owned	
		Contraction M.		
	6	1 6 M	1 4 <b>1</b> 1	
	1.8.2	H		
	083		and an and	
	10	السب م		
	1	Hannah		
		- · · · · · · · · · · · · · · · · · · ·		

- 4. Select a mark then press [ENT] key to edit.
- 5. After editing, choose "SAVE" and then press [ENT] key to finish.

## 8.5 Editing Drawing Lines

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [>] key to select.
- 3. Choose Drawing lines and then press [ENT] key. The following window appears.



4. Choose the line that you want to edit and then press [ENT] key. The following window appears.

454	
an an Crist Trai Without - Juan - A County Internet	<b>Barren</b>
r sext fills	
- 100 100	
: :=:::::	

- 5. Choose the point that you want to edit and then press [ENT] key.
- 6. After editing, choose "SAVE" and then press [ENT] key to finish.

## 8.6 Editing Drawing Place Name

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [▶] key to select.
- 3. Choose Drawing placename and then press [ENT] key. The following window appears.



4. Choose the place name that you want to edit and then press [ENT] key. The following window appears.

DRAWI	ING PLACE NAME	
NAME	ABC	1
24°3	19.936'N	
124°3	39.936'E	
SAVE	QUIT	

5. After editing, choose "SAVE" and then press [ENT] key to finish.

## 8.7 Erasing Drawing Marks

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [▶] key to select.
- 3. Choose Drawing marks and the press [ENT] Key.
- 4. Choose the mark that you want to clear, and then press **[ENT]** key. The confirmation window will appears.



- 5. Choose "ERASE" and then press [ENT] key.
- 6. The confirmation window will appear then choose "YES" to finish.

Erasing All Drawing Marks

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose **Erase** and then press [▶] key to select.
- 3. Choose All drawing marks and then press [ENT] key. The confirmation window will appears.



4. Choose "YES" to erase all drawing marks.

## 8.8 Erasing Drawing Lines

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose Edit and then press [ >] key to select.
- 3. Choose Drawing lines and the press [ENT] key to select.
- 4. Choose the line that you want to erase, and then press [ENT] key.

The confirmation window appears.

1.55	
947 57 17727 (4) 9 8 1918 AC9011 2 2018 CC9011 2 2018 CC9011 8 2018 CC195 9 19 2 87 105	rse:

- 5. Choose "ERASE" and then press [ENT] key to select.
- 6. The confirmation window will appear then choose "YES" to finish.

Erasing All Drawing Line

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose **Erase** and then press [▶] key to select.
- 3. Choose All drawing lines and then press [ENT] key. The confirmation window will appear.

ERASE ALL DRAWING LINES ?
ARE YOU SURE?
YES NO

4. Choose "YES" to erase all drawing lines.

## 8.9 Erasing Drawing Place Name

- 1. Press [MENU] key twice to enter main menu.
- 2. Choose **Edit** and then press **[>]** key to select.
- 3. Choose Drawing placename and then press [ENT] key to select.
- Choose the place name that you want to erase, and then press [ENT] key. The confirmation window appears.



5. Choose "ERASE" and then press [ENT] key.

6. The confirmation window will appear then choose "YES" to finish.

#### Erasing All Drawing Place Name

- 1. Press [MENU] key twice to main menu.
- 2. Choose Erase and then press [ >] key to select.
- 3. Choose **All drawing name** and then press **[ENT]** key. The confirmation window will appears.



4. Choose "YES" to erase all place names.

# 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.

SF .	TUP
Magiscala Mies	Simulation
Speed unit min,kt	Calibrate
Depth unit meter	Map source SD Car
Wind unit kt	Languages English
BRG, REF Irue	key beep CN
MAG, VAR, Auto	Wind screen OFF
Deviation Lat+00.000	Ais screen OFF
Deviation Lon+00,000	Sonar screen UN
Tima 248 (10000)	NMEA data dispaly
TTG/ETA speed Auto	an contract of the factor

- 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.

S	TUP
Mapiscale Nm	Simulation
Speed unit inwy kt	Calibrate
Depth unit um kt	Map source SD Card
Wind unit km, kmt	Languages English
BRG. REF	key beep ON
MAG. VAR. Auto	Wind screen OFF
Deviation Lat +00,000	Als screen Off
Deviation Lon (00.000	Sonar sereen ON
Time 246 100:00	NHEA data dispaly
TTG/ETA speed Auto	a second second second second second

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.

Map scale	NIT	Simulation	
Speed unit	nm,kt	Calibrate	
Depch unit	feet	Nap source	SD Card
Wind unit	feet	Languages	English
BRG, REF	mortist	key beep	00
MAG. VAR.	hus	Wind screen	OFF
Deviation La	£+00.000	Ais screen	OFF
Deviation Lt	000.000 m	Sonar sereen	04
Time	2411 +00:00	NMEA date di	spaly
TTG/ETA spee	d Auto	2009-2003/2009	0.530/6

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.

and the second se	SE	TUP	
Map scale	NOT	Simulation	
Speed unit	nm,kt	Calibrate	
Depth unit	meter	Hap source	SD Card
Wind unit	kt	Languages	English
BRG, REF	True	key beep	CN
MAG, VAR.	1rin:	Wind screen	OFF
Deviation La	Magnetic	Ais screen	OFF
Deviation La		Sonar sereen	ON
Time	2411 +00:00	NMEA data di	spaly
TTG/ETA spee	d Auto	XORGANGER MODER	(1893) -

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.

	SE	THP	
Map scale	Not	Simulation	
Speed unit	nrn,kt	Calibrate	
Depth unit	meter:	Nap source	SD Card
Wind unit	kt	Languages	English
GRG REF	True	key beep	ON
MAG. VAR	ALLO	Wind screen	OH
Deviation La	Auta	Als screen	OFF
Deviation Lt	Marinal	Sonar sereen	ON
Time	24H +00.00	NMEA data di	spaly
TTG/ETA spee	d Auto		0861250

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.

	ŚF	THP	
Map scale	Nin	Simulation	
Speed unit	ara,kt	Celibrate	
Depth unit	meter	Map source	SD Card
wind unit	kt	Languages	Emplish:
BRG. REF	True	key beeg	UN
MAG. VAR	ALTO	Wind screen	ULL
Deviation La	1 100.000	Ats screen	OFF
Ceviation Lr	Sn 100.000	Sonar sercen	UN
Time	24H 100:00	NINEA data di	spaly
TTG/ETA spec	d Auto	and the second s	1.0110

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.

	8	FTLAP	
Map scale	Nrs	Simulation	
Spead unit	nm,kt	Calibrate	
Depth unit	meter	Map source	SD Card
Wind unit	kl	Languages	English
ERG. REF	True	key beep	01
MAG. VAR	AUDO	Wind screen	01
Deviation Lat	E 1.00.000	Als screen	01
Deviation Los	1100.000	Sonar sereen	603
Tima	24H 107	NMEA data di	spaly
TTG/ETA speed	2411	MENTERSON AND A	1000
	12H		

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

## 9.7 TTG/ET

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.

Wind unit iki Ushguages That BRG, REF Time Kay baab Of HAG, VAR, Auto Wind screen OFF Deviation Lat -00.000 Aus screen OFF Deviation Lan-00.000 Sonar screen Off	tap scale Hur	Simulation	
Wind unit iki Ushguages That BRG, REF Time Kay baab Of HAG, VAR, Auto Wind screen OFF Deviation Lat -00.000 Aus screen OFF Deviation Lan-00.000 Sonar screen Off	peed unit mm,kt	Calibrace	
BRG, REF Time Kay beas 04 HAG, VAR, Auto Wind screen OFF Deviation Lat =00.000 Avs screen OFF Deviation Lon=0.000 Screen 34	apth unit insider	Nap source	SII Care
HAG, VAR, Auto Wind screen OFF Deviation Lat +02.000 As screen OFF Deviation Lon-0.000 Screecen 04	Vind unit ki	Languages	Ingish
Deviation Lat =02.002 Ais screen Oct Deviation Lon=0.0000 Sonar screen OA	RG. REF line	kay beep	204
Deviation Lon-00.000 Schargereen 04	AG. VAR. Auto	Wind screen	OFF
Contraction of the second se	leviation Lat -00.000	Aissoneen	OFF
	eviation Lon-obloob	Sonar sereen	004
Time 248 Puctor MMEA data dispaly	me 248 300:00	MinEA cata di	spaly
Lite/Et/Asseed Anha	10-/h 1/h speed Auto	State and the state of the stat	

 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.

	51.	TUR	
Hep scale	- Kritt	S-mulation	
Speed unit	nm,kt	Calibrate	
Depth unit	20606	Map source	SD Dard
Wind unit	- al.	Languages	English
BRC. REF	hae	Key bdsp	CHE
MAG. VAR.	Auto	Wind screen	CON STR
Deviation La	t+00200	Als screen	GAG 1
Deviation La	000,001 1	Sonar sereen	I GN
Tme	241 100:00	R MEA data di	spary
<b>ETG/FTA spee</b>	di Autor	A STATE OF THE STA	09905

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.

		TUP	
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	DN
Deviation La	t + 00.000	Ais screen	ODEE
Deviation Lo	000.00+1	Sonar sereen	dow
Time	2411 +00:00	NMEA data di	spaly
TTG/ETA spee	d 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.



- 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

You can choose 6 types of data output at the same time.

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

M	NU-SI	AT	
Input	15	TERNAL	
Cutput	OF	Ŧ	
GGA	GLL	RMC	
AAM	AAH	AAM	
JAAN.	AAM	MAAM	
AAM	AAH	MAA	WIGG: EN72
Baud rat		4800	WG5 1984
Cetam		1000	ADINDAN
SBAS		OFF	AFGOOVE
POS smo	oth	010	ADMIR, AND 70
SOG sm	sath	006	AM SAMCA 19
COG sm	ooth	010	AV444.1 AS. 65
AWS smi	ooth	005	ANTIGUA AS.
AWA smi	ooth	800	ARC 1950
TWS sm	docth	000	ARC 1950
TWA smi	ridoe	000	COLOR PROPERTY.
TWD sm	ooth	010	
VMG smi	ooth	000	
Data fiel	d setu	p	
Manual	HATV	apari -	

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.

ME	NU-SI	AT .	
Input	INTERNAL		
Cutput	OF	P	
GGA	GLL	RMC	
AAM	AAM	AAM	3
AAN .	AAM	AAM	
AAM	AAH	MAA	
Baud rati		4200	
Datum		13.20	•
SBAS		OFF	4
POS smo		010	
SOG amo		005	
COG sint		010	
AWS smo	soth	005	
AWA smo	ooth	000	
TWS smo	xoth	000	
TWA sma	sobh	909	4
TWD sm	path	010	
VMG smo		001	
Data fiek	1 setu	p	
A DESCRIPTION OF	HARDS	episti	

- 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.

#### 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.

	SE	TUP	
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	08
MAG. VAR.	Auto	Wind screen	OFF
Deviation La	st +00,000	Ais screen	OFT
Deviation i.c	000.000 http://	Sonar sereen	ON
Time	24H 400:00	NMEA data de	spla y
TTG/ETA spec	ad 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.



#### 10.1 Vessels list

1. Press [MENU] on the AIS screen.

MENU - AIS		
Activation Ring	03.00 m	
CPA Limit	05.00 nm	
TCPA Limit	10 10	
CPA/TCPA Alarm	OFF	
Status	IN port	
AIS detail list		
AIS TX	OFF	
AIS Vessel	Line	
Neura to NATA M	ILNU .	

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



## 10.2 The collision alarm

1. Press [MENU] on the AIS screen.

MENU - AD	S	
Activation Ring	05.00 mm	
CPA Limit	05.00 nm	
TCPA Limit	10 (0)	
CPA/TCPA Alarm	OFF	
Status	IN port	
AIS detail list	2000000	
AIS TX	OFF	
AIS Vessel	Line	
New to NATA M	ICNU .	

- 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.

	a second
NAME : HAROLONGYPE	
VM51:123450785	Calls on t BOBF
IHC :	Position sensor: 1 CPC
90% : 15.3 d	from a staff
Prehind : 27:35.58219	1.0108.01
Ship type : Cargo ality-	
Destination (SHANGHA	
Nexigehon status : Mat	
Draft of ship 1, 4.5m	Dut on view notice
Sine an	and the states wind the
Estimated en var time :	13/05 20:00
	d 015m in ster Oten
	005m Ct date 009m
CRACK SEDIM	0171111.154
Dentilemente	(ESC) : stol

## 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 chart screen

There are two ways to view AIS vessels' information: one is to move the cursor to select AIS vessel on the charts 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 [X] key and [X] 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	
CPA Limit	05.00 111	
TCPA Limit	10 317	
CPA/TCPA Alarm	OFF	
Status	INport	
AIS detail list	Sectored 1	
AIS TX	OFF	
AIS Vessel	Line	
Menu to MALV M	ENU	

## 10.9 AIS Vessel

1. User can define the AIS vessel display as either "Fill" or "Line".

MENU -AIS		
Activation Ring	05.00 nm	
CPA Limit	05.00 mm	
TCPA Limit	10 111	
CPA/TEPA Alarm	OFF	
Status	IN port	
AIS detail list		
AIS TX	orr	
AIS Vessel	Line	
Neru te Main M	Eline	
-	Fill	



# **11. HD FISHFINDER OVERVIEW**

## 11.1 Sonar 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.

DPT IDES	
Soner mode	SOKH2
COT	Manuale
Range	Manual
TVG.	TO
Pic. advance	1/1
Split ratio	5047
Sonar menu	
Alarm	
System menu	
Date field	
▲/▼School	
LIVE Set	
ESC:Cancel	
Peno to PAI	N MENU



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.
- 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.



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.



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: 2/1(FAST), 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 ≥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.

A-Scope	CI-P
Zoom mode	eterker zoart
Lesse limiter	
Hue selection	6 T.
Signal evel	1
Marker'	0-97

#### 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  $[\blacktriangle]$  or  $[\lor]$  key to enable or disable the A-Scope.

9005788	VENU.
A-Scope	STATE OF STATE
Zoom mode Noise limiter	CN //
Hoeselection Signal level	1. 5.
Markai	0.091
▲/♥:Sele: ENT :Set ESC :Carc	:t 

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.

SONAR	MENU
A-Scope	OFF
Zoom mode	Marker zoom
Noise limiter Hue selection Signal level	Markerzoom Bottom lock Bottom zoom
Marker	VRM
▲/▼: Select ENT : Set ESC : Cano	

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

#### 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  $[\blacktriangle]$  or  $[\lor]$  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.



#### **BOTTOM LOCK**

This display provides a compressed normal picture on the top 2/3 of the screen and a 5 or 10 meter (10 or 20 feet) wide layer in contact with the bottom is expanded onto the bottom 1/3 of the screen. This mode is useful for bottom discrimination. Note that the seabed should be steadily and distinctly plotted in red or reddish-brown. Adjust the gain if necessary.

Note: The zoom marker can be turned on/off on the system menu.



**BOTTOM ZOOM** 

This mode expands bottom and bottom fish echoes two to five times to vertical size of the screen, and 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 echo tail means a hard bottom.

The zone automatically moves so that the bottom echoes locate on the lower half of the screen.

Note: The zoom marker can be turned on/off on the system menu.



#### 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

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.



Press the [▲] or [▼] key to select the signal level and press [ENT] key to finish.

#### 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.

SONAR	MENU
A-Scope	OFF
Zoom mode	Marker zoom
Noise limiter	OFF
Hue selection	1
Signal level	1
Marker .	VRM
▲/▼:Selec	
ENT : Set	(WHI
ESC : Cano	el

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.

ALARI	M
Bottom	OFT
From	0
Span	0
Fish	OFF
From	0
Span	0.
Temperature	OFF
From	0
Span	0
▲/▼:Seler	ct i
ENT : Set	
ESC : Cano	xel

- 3. Press [Aor [Vkey 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 M	ENU
Zoom marker	TIFF
F/A level	Weak.
Range 1	5
Range 2	16
Range 3	20
Range 4	40
Range 5	20
Range 6	150
Range 7	200
Range 6	300 OUC
Range 9	600
Range 10	1000
Zoom range	*1
B/L range	5 m
Temp	<sup>4</sup> C
▲/▼ : Select	
ENT : Set	
ESC : Cance	ł

**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.

OPTIC	INS	
Sonar mode Gain	SOKH2 Nenual>	
Range	Manual	
TVG	Off.	
Pio, advance	1/1	
Split reto	50%	
Goner menu		
Alarm		
System menu		DAIA HELD
Cota field		Data heid setup
▲/▼:Select		Show/hide data field
LNDSet		
LSC:Cancel		
Vienu ha VM	NNENU	

#### 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.





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 to the lead to the fire or the 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.

# **13. INTERCONNECTION DIAGRAM**



### 14. DISPLAY SIZE



#### Shortcuts in Plotter screen

- 1) Press and hold [MODE] to change the track color.
- 2) Press and hold [ESC] to turn track record on and 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 [**X**] or [**X**] 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  $[\blacktriangle]$   $[\lor]$  key to move VRM.

#### Shortcuts in Plotter/Sounder mode

- 1) Press and hold [MENU] key to change the PLOTTER and SOUNDER screen split ratio.
- When SOUNDER screen is ≥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.

# **16. DATA IN/OUT DESCRIPTION**



### **17. MENU TREE**











MENU-POS DATA FI	POSITION
DAIATI	HDOP
	BEARING
	RANGE
	SOG
	COG
	XTE
	ETA
	 TTG
	TIME
	VOLTAGE
	DESTNATION
	DATE
	LUNAR DATE







# **18. 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	Longtitude
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

# 19. 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