SEIWA

KINGFISH
BARRAMUNDI
BARRAMUNDI PLUS

designed for C-MAP NT+

User Manual

KINGFISH

Gray level chart plotter with *Video* Input
CODE: XSegsw11m621C784/220903

BARRAMUNDI

Color chartplotter with *Video* Input
CODE: XSegsw11c621C784/220903

BARRAMUNDI Plus

Sunlight Readable Display Color chartplotter with *Video* Input
CODE: XSegsw11c621C784/220903

USER MANUAL

Warning!

Electronic charts displayed by the chartplotter are believed to be accurate and reliable, but they are not intended to substitute for the official charts which should remain your main reference for all the matters related to the execution of a safe navigation.
For this reason we would like to remind you that you are required to carry on board and use the officially published and approved nautical charts.

Caution

- Please read through this manual before the first operation. If you have any questions, please contact the Company customer service or your local dealer.
- The chartplotter is not built water proof. Please give attention to avoid water intrusion into the chartplotter. Water damage is not covered by the warranty.
- Extensive exposure to heat may result in damage to the chartplotter.
- Connection to the power source with reversed polarity will damage the chartplotter severely. This damage may not be covered by the warranty.
- The chartplotter contains dangerous high voltage circuits which only experienced technicians can handle.
- The **C-MAP NT+** C-CARD are available from your local dealer.
- We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.
- Exposure of display to UV rays may shorten life of the liquid crystals used in your plotter. This limitation is due to the current technology of the LCD displays.
  Avoid overheating which may cause loss of contrast and, in extreme cases, a darkening of the screen. Problems which occur from overheating are reversible when temperature decreases.

Cleaning procedure for the plotter screen

Cleaning of the plotter screen is a very important operation and must be done carefully. Since the surface is covered by a antireflective coating, the procedure for cleaning all the surfaces can be performed using the following procedure: You need a tissue or lens tissue and a cleaning spray containing Isopropanol (a normal spray cleaner sold for the PC screen, for example PolaClear by Polaroid). Fold the tissue or lens tissue into a triangular shape, moisten the tip and use the index finger behind a corner to move the tissue across the surface, in overlapping side to side strokes. If the tissue is too wet, a noticeable wet film will be left in its path and you will need to repeat the process. If too dry, the tissue won't glide easily, and may damage the surface.

Table of Content

1
Introduction

Congratulations on your purchase of the KINGFISH/BARRAMUNDI/ BARRAMUNDI Plus!

If you have not used a position-finding instrument before and intend to use your chartplotter for navigating, we suggest you should read this User Manual and make sure you are familiar with its contents. The User Manual is related both to the gray level (KINGFISH) and color (BARRAMUNDI/BARRAMUNDI Plus) models of the chartplotter.

The User Manual is divided into three main parts. Chapter "Before You Begin" introduces you to the basic information to get you start using the chartplotter. Chapter "For the New User" should be read first to become familiar with your new instrument. Chapter "For the Experienced User" introduces the advanced features of the chartplotter.

1.1 CONVENTIONS

Throughout this User Manual, the labelled keys are shown in capitals letters enclosed between single inverted commas, for example 'MENU'; the software keys are shown in small capitals letters enclosed between single inverted commas, for example 'EDIT'.

Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example **'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER'** means: press the 'MENU' key, using the *Joystick* to select the ADVANCED menu and press 'ENTER' to go in it; then using the *Joystick* to select the FIX & COMPASS menu and press 'ENTER' to go in it.

Terms underlined, for example Target, are explained in the Appendix "Terms".

1.2 FEATURES

The chartplotter is a computer specifically designed for nautical use but, more precisely, to ease and speed up all calculations, which so far have been done manually. If connected to a positioning instrument, the chartplotter displays the current position, the speed, and the heading of the boat and its Track. The user information like Waypoints, Marks and Tracks can then be stored on a User C-CARD and can be recalled at any time. On the screen are shown navigation data and cartographic information obtained from electronic charts of **C-MAP NT+** C-CARD.

When the package containing the chartplotter is first opened, please check it for the following contents (if any parts are missing contact the dealer the chartplotter was purchased from):

- External bracket and I/O cable 1,5 mt/5.9"
- Chartplotter's protective cover
- Flush mounting kit
- Smart DGPS WAAS Receiver GPH00 with cable 15 mt/45 feet
- User Manual

Note **ONLY FOR COLOR CHARTPLOTTER**

Fuse 2 Amp. + fuseholder.

C-MAP NT+ C-CARD (cartography data cards) are available through your local dealer. For additional information on C-MAP Cartography visit web site at www.c-map.com.

1.2.1 SPECIFICATIONS

1.2.1.1 MAIN CHARACTERISTICS

Recordable Individual points

- User Points : 1000
- Type of User Points : 16

Routes

- Routes : 50
- Max User Points per Route : 50

Tracking

- Tracks : 5
- Points per Track : 5000
- Step by Distance : 0.01, 0.05, 0.1, 0.5, 1, 2, 5, 10 Nm
- Step by Time : 1, 5, 10, 30 Sec, 1 Min

Cartographic Functions

- Worldwide Background
- Detailed Map by using **C-MAP NT+** C-CARD
- Coordinates System (ddd mm ss, ddd mm.mm, ddd mm.mmm, UTM, OSGB, TD)
- Map Datum
- Data Window mode
- Display Mode (Full, Simple, Fishing, Low, Custom)
- Marine
  Names, Nav-Aids, Light Sectors, Attention Areas, Tides & Currents, Seabed Type, Ports & Services, Tracks & Routes, Underwater Objects
- Depth
  Depth Areas, Depth Areas Min/Max, Depth Lines & Sndgs, Depth Lines & Sndgs Min/Max
- Land
  Natural Features, Rivers & Lakes, Cultural Features, Landmarks
- Chart
  Lat/Lon Grid, Chart Boundaries, Cartography, Mixing Levels, Declutter, Map Presentation

Fix Functions

- WAAS
- Fix Correction (manual and automatic)
- Position Filter
- Speed Filter
- Map Orientation (North, Course)
- Fix Datum
- Compass Calibration
- Bearings True and Magnetic
- Variation user selectable
- Static Navigation

Report Functions

- Depth Graph page
- Depth Graph Full page
- Navigation Data page (change the fields)
- 3D Road page (change the fields)
- GPS Status page
- GPS Data page
- Wind Data Page
- Wind Speed Page

- Wind Direction Page
- User Points List page
- About page

Special Functions

- Auto Info
- Find

  Port Services, Port Tide Stations, Wrecks, Obstructions, Cursor, Coordinates, User Points
- R/B Function
- Navigation to Destination
- Speed Unit (Mph, Kts, Kph)
- Distance Unit (Km, Nm, Sm)
- Depth Unit (Ft, FM, Mt)
- Altitude Unit (Ft, FL, Mt)
- Date & Time Setup (Local, UTC)
- Keypad Beep selection
- Alarms Handling

  Arrival Alarm, XTE Alarm, Anchor Alarm, Depth Alarm, Grounding Alarm, Grounding Depth Limit, Grounding Alarm Range, Grounding Alarm Report
- MOB Function
- Simulation

  Speed, Heading, Date, Time, Cursor Control, Simulation On/Off

Auxiliary Memory

- User C-CARD 1MB (about 52,000 Track point; 26,000 User Points available)

Interface

- Three I/O ports

1.2.1.2 PHYSICAL CHARACTERISTICS

Chartplotter size (inch/mm)

- 13"x 9.1"x 1.9" (329mm x 230.5mm x 47mm)

Chartplotter weight

- Gray scale : 1,4 Kg
- Color : 1,6 Kg

LCD display

- Gray scale : transflective LCD *(active area 9.4")*
- Color : TFT trasmissive LCD *(active area 10.4")* / TFT transflective LCD *(active area 10.4")*
- Resolution : 640 x 480 pixels

Video Input (ONLY for COLOR WITH VIDEO INPUT chartplotter)

- PAL or NTSC video signals automatically selected

Power consumption

- Gray scale : 580mA max @12V
- Color : 1280mA max @ 12V
- Color with Camera connected : 1500mA max 12V

Power supply

- Gray scale : 10 - 35 Volt dc, 7 Watt
- Color : 10 - 35 Volt dc, 15 Watt max
- Color with Camera connected : 10 - 35 Volt dc, 18 Watt max

Operating Temperature Range

- From 0°C to 55°C (from 32°F to 131°F)

Memory

- Non volatile with battery back-up

Keyboard

- Backlighted, silicon rubber

1.3 BASICS

The chartplotter is controlled by using fourteen keys. Ten keys are labelled and are dedicated to specific functions. The other four are software keys (hereinafter named soft keys) and have different functions when you select different modes of operation: their labels are shown on the screen immediately above the keys (the user can customize the function associated, see Par. 2.1.1). There is also a *Joystick* to move a cursor across the screen.

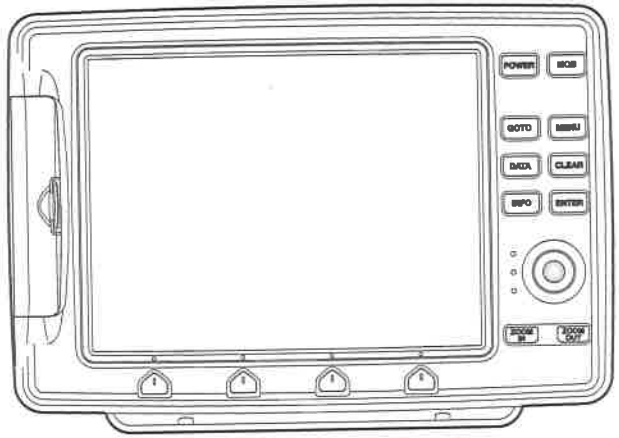


Fig. 1.3 - The chartplotter

As you press a key, a single audio beep confirms the key action; every time the key pressed is not valid, three rapid beeps sound indicates that no response is available. Note that it is possible to enable (On) or disable (Off) the keypad beep following the procedure:

➤ 'MENU' + "GENERAL" + 'ENTER' + "Keypad Beep" + 'ENTER'

2
Before You Begin

This chapter provides basic information to get you start using the chartplotter; it will help you to become familiar with the chart display and the functions of the controls before you start using the chartplotter.

2.1 THE KEYBOARD

The [POWER] key

Press 'POWER' to turn the chartplotter On. Press and hold 'POWER' down (once the chartplotter has been turned On) for 3 seconds turns the chartplotter Off. Press and immediately release 'POWER' to adjust the backlight and contrast of the display.

The [MOB] key

Press 'MOB' to insert the MOB (Man OverBoard). Press 'MOB' when the MOB is already present deletes it.

The [CLEAR] key

Press 'CLEAR' to exit from menu or to leave a menu without making changes. If you are not into a menu, sets the Navigate mode (Home).

The [ENTER] key

Press 'ENTER' to select the preferred option, to confirm selection, to create Objects (Mark, Waypoint, R/B).

Note **ONLY FOR COLOR CHARTPLOTTER**

Pressing 'ENTER' for 1 second or 'CLEAR' for 1 second activates respectly the Video Input 1 or the Video Input 2 (also it is possible to activate the Video Mode from menu, see Video Input menu in Par. 2.8). Once the Video Mode is active use the following keys to adjust video settings: press and immediately release 'POWER', use the 'CONTR+'/'CONTR-' and 'BRIGHT+'/'BRIGHT-' soft keys to adjust contrast and backlight; move the Joystick up/down to adjust brightness and left/right to adjust colors; press 'ZOOM IN'/ZOOM OUT' to adjust hue phase.

The [GOTO] key

Press 'GOTO' to select the Goto function.

The [DATA] key

Press 'DATA' to select the configuration you wish among cartography and text area, Depth Graph pages, GPS Data page, GPS Status Page, Navigation Data page, 3D Road Data page, Wind Data page, Wind Speed page, Wind Direction page.

Note **ONLY FOR COLOR CHARTPLOTTER**

If in the Video Input menu the item Select Video Input is set to Video 1, Video 2 or Auto Switch, then the Video Input image can be selected by pressing 'DATA'. When Select Video Input is set to Video 1, the image shown is the one from Video Input 1; when Select Video Input is set to Video 2, the image shown is the one from Video Input 2; when Select Video Input is set to Auto Switch, the image will change alternatively between Video Input 1 and Video Input 2 (also it is possible to activate the Video Mode from menu, see Video Input menu in Par. 2.8). Once the Video Mode is active use the following keys to adjust video settings: press and immediately release 'POWER', use the 'CONTR+'/'CONTR-' and 'BRIGHT+'/'BRIGHT-' soft keys to adjust contrast and backlight; move the Joystick up/down to adjust brightness and left/right to adjust colors; press 'ZOOM IN'/'ZOOM OUT' to adjust hue phase.

The [INFO] key

Press 'INFO' to select Info function.

The [ZOOM IN] and [ZOOM OUT] keys

Press 'ZOOM IN' shows more details of a smaller area, by changing the chart scale and zooming in on your display. Press 'ZOOM OUT' to operate similarly to the 'ZOOM IN', except in reverse, changing the scale and showing a wider, otherwise less detailed view.

The [MENU] key

Press 'MENU' to select the FUNCTIONS Menu. When in Functions Menu, moving the *Joystick* to the right enters a selection, moving the *Joystick* to the left clears the function.

If pressing 'MENU' for 3 seconds from chart and data page allows to customize all data fields shown in the selected page.

The *Joystick*

The *Joystick* moves the cursor about on the display screen, quickly and accurately. It also scrolls the preferred option in the menu page(s).

If in Navigate (Home) mode, it allows to exit from navigate mode.

The soft key

The software keys (hereinafter named soft keys) can have different functions when you select different operations, for example info on cartographic objects, management of Marks and Waypoints... . Also they are used from the chart screen or from the data pages to select one of the data pages available to allow faster access to the page selection executable from the Main Menu.

When the chart page is selected, the soft key labels are not shown. By pressing one of the four soft keys their labels for the current functions are shown on the screen immediately above the soft keys. When the soft key labels are shown, pressing the associated soft key the relative function is executed. Pressing 'CLEAR' the four soft key labels disappear.

2.1.1 SOFT KEYS CUSTOMIZATION

When the soft keys labels are shown the user can customize them. Pressing and holding down any of the four soft key shows a pop-up window on the top of the soft key pressed that contains all possible data pages assignable to the soft key pressed.

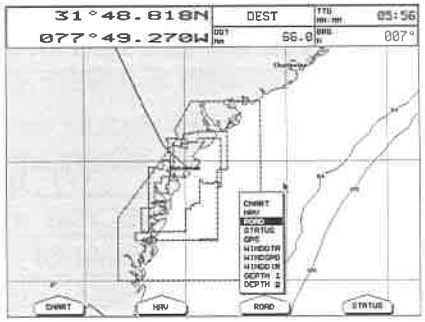


Fig. 2.1.1 - The soft keys labels customization

Move the *Joystick* up/down to place the selector on the preferred item; move the *Joystick* to the right or press 'ENTER' to set the selected item; move the *Joystick* to the left or press 'CLEAR' to close the pop-up window. The possible choices are:

CHART	'CHART'	(Chart and data page, see Par. 3.1.1)
NAVIGATION	'NAV'	(Navigation Data page, see Par. 3.1.3)
3D ROAD	'ROAD'	(3D Road page, see Par. 3.1.4)
GPS STATUS	'STATUS'	(GPS Status page, see Par. 3.1.5)
GPS DATA	'GPS'	(GPS Data page, see Par. 3.1.6)
WIND DATA	'WINDDTA'	(Wind Data page, see Par. 3.1.7)
WIND SPEED	'WINDSPD'	(Wind Speed page, see Par. 3.1.8)
WIND DIRECTION	'WINDDIR'	(Wind Direction page, see Par. 3.1.9)
DEPTH	'DEPTH 1'	(Depth page, see Par. 3.1.2)
DEPTH FULL	'DEPTH 2'	(Depth Full page, see Par. 3.1.2)

The default settings for the soft keys labels are: 'CHART', 'NAV', 'ROAD', 'STATUS'.

Note — **ONLY FOR COLOR CHARTPLOTTER**

It is possible to set the Video Input with any of the four soft keys. Pressing one of the soft keys, the soft keys labels are shown. Pressing and holding for 1 second one of the soft keys, the soft keys customization list will be shown. By selecting Video Input option it is possible to assign the soft key to execute the Video Input function. Once the soft key has been associated to video input, its label shows the message 'VIDEO'. If 'VIDEO' is pressed, the soft keys are be assigned this way: Video 1, Video 2, Switch. If no video signal was detected on the Video Input connectors, the three soft keys are grayed out in order to identify that they are not active. If only one video signal is detected on the Video Input connectors, the corrisponding soft key is shown with dark color and the other soft keys are shown with light color. (Note that it is possible to activate the Video Mode from menu, see Video Input menu in Par. 2.8). Once the Video Mode is active use the following keys to adjust video settings: press and immediately release 'POWER', use the 'CONTR+'/'CONTR-' and 'BRIGHT+'/'BRIGHT-' soft keys to adjust contrast and backlight; move the Joystick up/down to adjust brightness and left/right to adjust colors; press 'ZOOM IN'/'ZOOM OUT' to adjust hue phase.

WARNING

The following figures on this User Manual could not display the default soft keys labels.

2.2 TURNING THE CHARTPLOTTER ON AND OFF

Before powering On the chartplotter, check for the correct voltage (10-35 volt dc) and the correct connections with the positioning instrument:

POWER & I/O CONNECTOR		
PIN #	CABLE WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	+10-35 Vdc

Fig. 2.2 - Power On

2.2.1 TURNING ON

Press and hold 'POWER' for 1 second. The chartplotter emits one rapid beep sound, and a title page is opened:

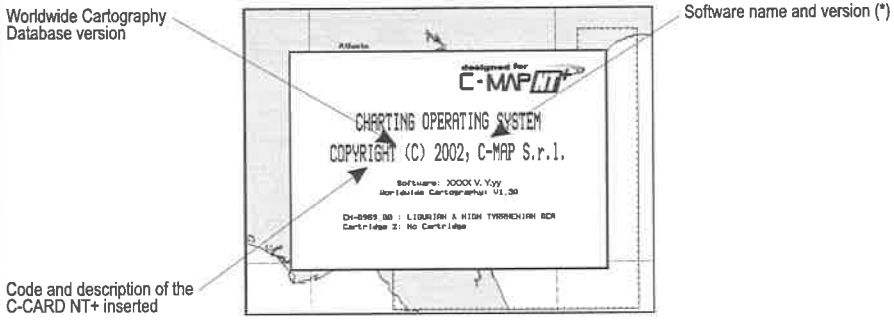


Fig. 2.2.1 - Title page

Note (*)

The software version is subject to change without notice. This User Manual is valid anyway.

After a few seconds, the first of the two Caution Notice pages is displayed, reminding you the chartplotter is only an aid to navigation and should be used with appropriate prudence. The electronic charts are not intended to substitute for the official charts. Then the cartographic screen is displayed.

2.2.2 TURNING OFF

Press 'POWER' and hold for 3 seconds: a countdown timer appears on the screen, if you release the key before the countdown timer reaches zero, the chartplotter will remain On.

2.3 CHANGING BACKLIGHT AND CONTRAST

Press and immediately release 'POWER' (do not press and hold the key, or the "power-off" message will be displayed!). Two sliders appear on the screen, showing the current settings for backlight and contrast.

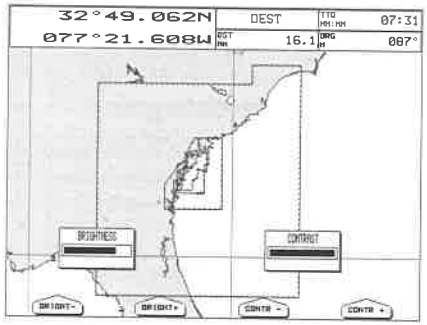


Fig. 2.3 - Brightness and Contrast control

The screen backlight can be controlled using the soft key 'BRIGHT -' and 'BRIGHT +': adjust the backlight to the required level; the backlight changes as you adjust the slider. Press 'ENTER' to confirm the new setting (this operation also clears the soft key and the graphical display). Alternately, you can press 'CLEAR' to exit without making any changes.

To change the contrast operate in the same mode, using 'CONTR -' and 'CONTR +'.

The new backlight and contrast levels are retained until you reset them or turn Off the chartplotter.

WARNING !!!

At very low temperatures the CCFL backlight may not glow properly. Allow a few minutes for it to warm up.

2.4 SELECTING THE LANGUAGE

It is possible to select the language in which you wish information to be displayed (for screen labels, menus and options, but it is not affect the map information). The default setting is English.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Language" + 'ENTER'

Choose the language you prefer and press 'ENTER' to confirm.

2.5 EXTERNAL CONNECTIONS

2.5.1 GPS CONNECTIONS

To connect the GPS to the serial Port 1 see the following picture:

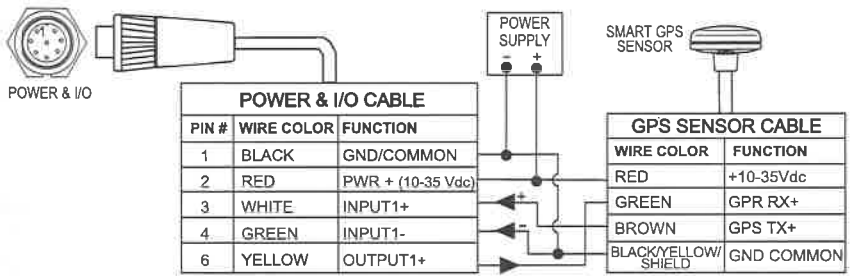


Fig. 2.5.1 - GPS Connection on Port 1

To choose your preferred setting follow the procedure:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1 Input" + 'ENTER'

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

If you are connecting the model Smart DGPS WAAS Receiver GPH00, select:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1 Input" + 'ENTER' + "NMEA-4800-N81-N" + 'ENTER'

Otherwise to connect the GPS to the serial Port 2 see the following picture:

Fig. 2.5.1a - GPS Connections on Port 2

To choose your preferred setting follow the procedure:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 2 Input" + 'ENTER'

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

If you are connecting the model Smart DGPS WAAS Receiver GPH00, select:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 2 Input" + 'ENTER' + "NMEA-4800-N81-N" + 'ENTER'

To connect the GPS to the serial Port 3 see the following picture:

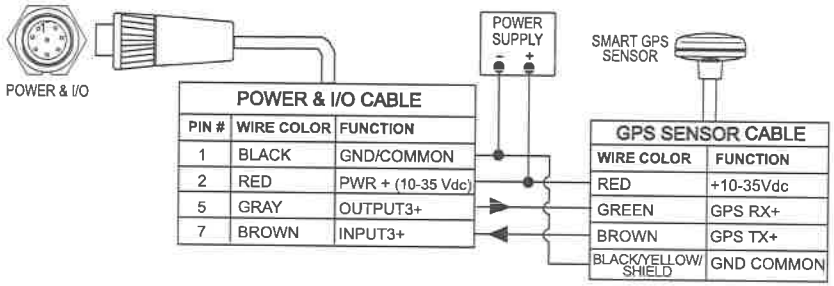


Fig. 2.5.1b - GPS Connections on Port 3

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 3 Input" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

If you are connecting the model Smart DGPS WAAS Receiver GPH00, select:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 3 Input" + 'ENTER' + "NMEA-4800-N81-N" + 'ENTER'**

2.5.2 AUTOPILOT CONNECTIONS

To connect the Autopilot to the serial Port 1 see the following picture:

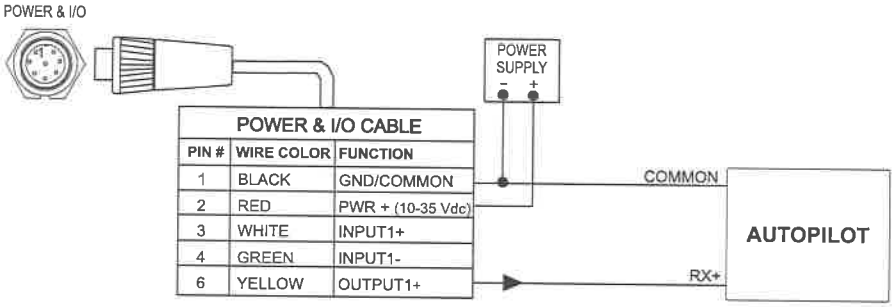


Fig. 2.5.2 - Autopilot Connections on Port 1

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1 Output" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings

NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX (the default setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

To connect the Autopilot to the serial Port 2 see the following picture:

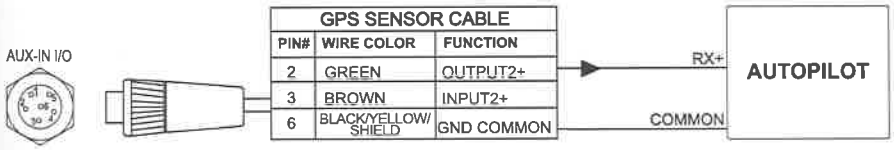


Fig. 2.5.2a - Autopilot Connections on Port 2

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 2 Output" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX (the default setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

To connect the Autopilot to the serial Port 3 see the following picture:

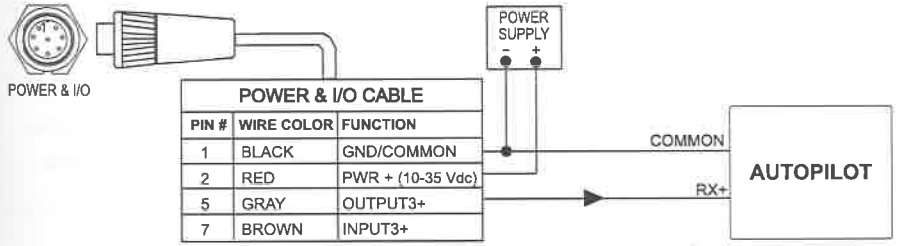


Fig. 2.5.2b - Autopilot Connections on Port 3

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 3 Output" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX (the default setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

2.5.3 EXTERNAL NMEA CONNECTIONS

To connect the External NMEA to the serial Port 1 see the following picture:

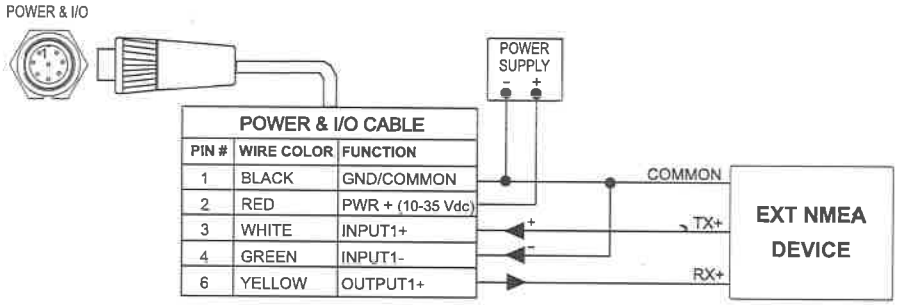


Fig. 2.5.3 - External NMEA Connections on Port 1

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1 Input" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

To connect the External NMEA to the serial Port 2 see the following picture:

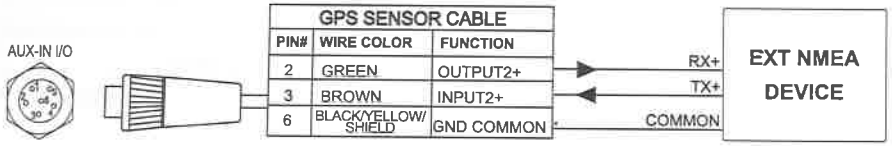


Fig. 2.5.3a - External NMEA Connections on Port 2

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 2 Input" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

To connect the External NMEA to the serial Port 3 see the following picture:

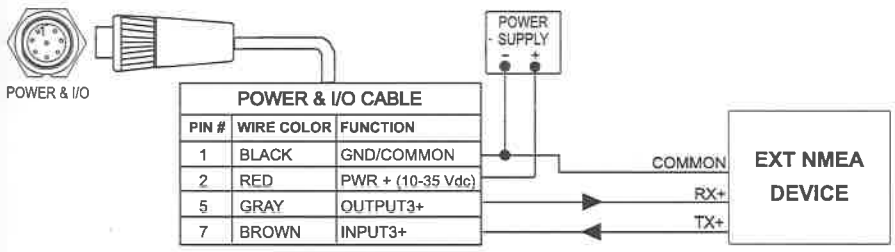


Fig. 2.5.3b - External NMEA Connections on Port 3

To choose your preferred setting follow the procedure:

➤ **'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 3 Input" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

2.5.4 C-COM CONNECTIONS

To connect the modem C-COM to the chart plotter follow the procedure:

1. Connect Power & I/O as follows:

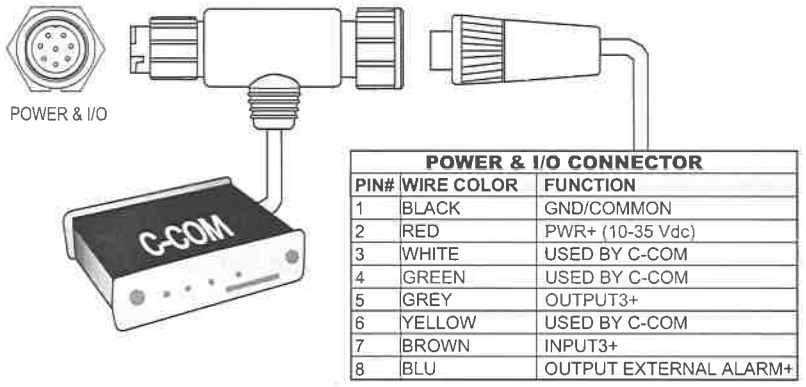


Fig. 2.5.4 - C-COM Connection

Note

The connection is valid for the C-COM IR and C-COM RS232 too.

2. Into the Input/Output menu, set the C-COM for Port 1 as follows:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 3 Input" + 'ENTER' + "C-COM" + 'ENTER'

Also the modem C-COM can be connected to the Port 2 and 3, in this case set the format for the selected Port.

2.5.5 EXTERNAL ALARM CONNECTION

To connect the External Alarm device see the following picture:

POWER & I/O CONNECTOR		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
8	BLUE	EXTERNAL ALARM OUTPUT+ (OPEN COLLECTOR)

Fig. 2.5.5 - External Alarm Connection

Once the connection is active, to enable the External Alarm follow the procedure:

➤ 'MENU' + "ALARMS" + 'ENTER' + "External Alarm" + 'ENTER' + "ON" + 'ENTER'

2.6 ADDITIONAL C-CARDS

The chartplotter uses two types of C-MAP cartridges: either a chart cartridge or a data storage cartridge. A chart cartridge, called C-CARD, contains detailed charts of the area covered. A data storage cartridge, called User C-CARD can be used to permanently store your Routes, Waypoints, Marks, Events and Tracks (see Par. 4.6).

2.6.1 INSERTING C-CARD

Hold the C-CARD by the short inclined side so that you can see the C-MAP label.

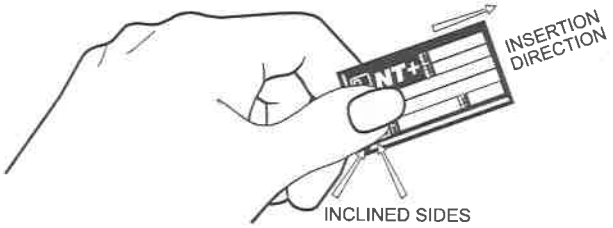


Fig. 2.6.1 - Inserting C-CARD (I)

Open the door (see left side of Fig. 2.6.1a), gently push the C-CARD into one of the two slots; push the C-CARD in as far as it will go, then close the door to hold fixed into the slot.

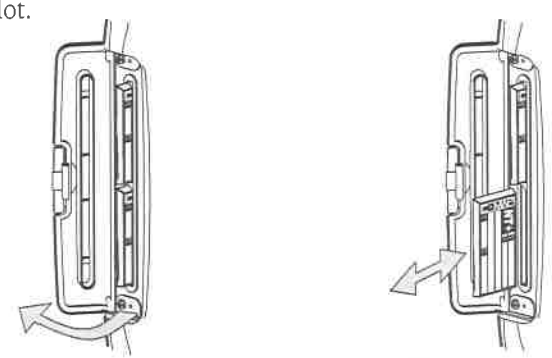


Fig. 2.6.1a - Inserting C-CARD (II)

2.6.2 REMOVING C-CARD

Open the door and remove the C-CARD out of one of the two slots (as shown in the right side of the previous Fig. 2.6.1a).

Note

C-MAP is continuously creating new charts and revising old ones. If you wish to receive information on the newest availbale charts, you can write for the catalog of available **C-MAP NT+** *C-CARD at your dealer.*

2.7 VIDEO INPUT ONLY FOR COLOR CHARTPLOTTER

By accessing this menu it is possible to see images on the chartplotter display captured from an external video signal source, if connected to the chartplotter. Not all color chartplotters are connectable to the external video signal. Please make sure that your chartplotter is equipped with a video input connection port.

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER'

2.7.1 SELECT VIDEO INPUT

Selects the preferred Video Input, among None, Video 1, Video 2 or Auto Switch. If Auto Switch is selected, choose the switching time.

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER' + "Select Video Input" + 'ENTER'

2.7.2 ACTIVATE VIDEO INPUT

Activate Video Input from menu :

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER' + "Activate Video Input" + 'ENTER'

Activates the Video Mode from the Video Input menu (also it is possible to activate Video Mode by pressing 'CLEAR' for 3 seconds). At the activation of the Video Mode the following messages are shown on a dedicated window: "Connnected Video Input Signal is XXXX. The Video Mode will be activated". XXXX can be PAL or NTSC: the software automatically detects the type of Video Input source connected. Once the Video Mode is active use the following keys to adjust video settings: press and immediately release 'POWER' , use the 'CONTR+'/'CONTR-' and 'BRIGHT+'/'BRIGHT-' soft keys to adjust contrast and backlight; move the cursor up/down to adjust brightness and left/right to adjust colors, press 'ZOOM IN'/'ZOMM OUT' to adjust hue phase. Pressing any other key exits from Video Mode.

2.7.2.1 Quick Activation

Pressing 'ENTER' for 1 second activates Video Input 1 and pressing 'CLEAR' for 1 second activates Video Input 2.

2.7.2.2 Video Input Display by Page selection

If in the Video Input menu the item Select Video Input is set to Video 1, Video 2 or Auto Switch, it is possible pressing 'PAGE' select respectively the display image shown from Video Input 1, from Video Input 2 or alternatively between Video Input 1 or from Video Input 2.

2.7.2.3 Video Input activation by soft keys

It is possible to set the Video Input with any of the four soft keys. Pressing one of the soft keys, the soft keys labels are shown. Pressing and holding for 1 second one of the soft keys, the soft keys customization list will be shown. By selecting Video Input option it is possible to assign the soft key to execute the Video Input function. Once the soft key has been associated to video input, its label shows the message 'VIDEO'. If 'VIDEO' is pressed, the soft keys are be assigned this way: Video 1, Video 2, Switch. If no video signal was detected on the Video Input connectors, the three soft keys are grayed out in order to identify that they are not active. If only one video signal is detected on the Video Input connectors, the corrisponding soft key is shown with dark color and the other soft keys are shown with light color.

2.7.3 SWITCHING TIMEOUT

Select the timeout for the Auto Switch option among 5, 10, 30 seconds, 1, 5, 10 minutes.

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER' + "Switching Timeout" + 'ENTER'

2.7.4 RESTORE DEFAULTS

Restores default values of Contrast, Brightness, Backlight, color saturation and Hue phase.

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER' + "Restore Defaults" + 'ENTER'

After pressing 'ENTER' on the screen a window is shown containing three options: Video 1, Video 2, All. If Video 1 or Video 2 is selected, their relative settings are set to the default values and the message "OK" is shown to the selected item. If the option All is selected, both the settings for Video 1 and Video 2 are restored to the default values and the message "OK" is shown next to Video 1, Video 2 and All.

2.8 MENU OPTIONS

You may select how the chartplotter displays primary information (such as how time is displayed) from the Functions Menu.

➤ 'MENU'

2.9 DATA ENTRY

Information is keyed into the chartplotter when editing a Waypoint, entering a Route or using the Fix Correction functions. When the field is highlighted:

- Enter or edit data by pressing up/down *Joystick* to step through the available characters until the preferred character is displayed.
- Press right *Joystick* to move the cursor to the right.
- Use left *Joystick* to move the cursor to the left.

3
For the New User

In order to get started using your chartplotter, you must do the following things:

1) Your chartplotter must have been installed properly according to the installation instruction on Par. 6.2.

2) You must have performed the proper settings for use with your positioning instrument (see Par. 2.5) and inserting the C-CARD for navigating in area you wish (see Par. 2.6).

3) You must have turned on the chartplotter and adjust the brightness and contrast of the display (see Par. 2.2 and 2.3).

Once this is done, you can use your chartplotter for navigation.

3.1 SCREEN DISPLAY CONFIGURATION

The screen display can be shown in different modes: Chart page, Depth Graph pages, Navigation Data page, 3D Road Data page, GPS Data page, GPS Status page, Wind Data page, Wind Speed page, Wind Direction page. See the following paragraphs.

3.1.1 CHART DISPLAY

It is very important to access the information you need as you need it and understand what is displayed on the screen.

- 'DATA' + "CHART DISPLAY" + 'ENTER'

or

- press any soft keys + 'CHART' (if it is present)

Shows the chart display and Text Area (if selected). With the following procedure:

- 'MENU' + "DISPLAY" + 'ENTER' + "Data Window Mode" + 'ENTER'

it is possible to customize the Text Area layout among Full Screen, Text

Area with 5 boxes and Text Area with 8 boxes.

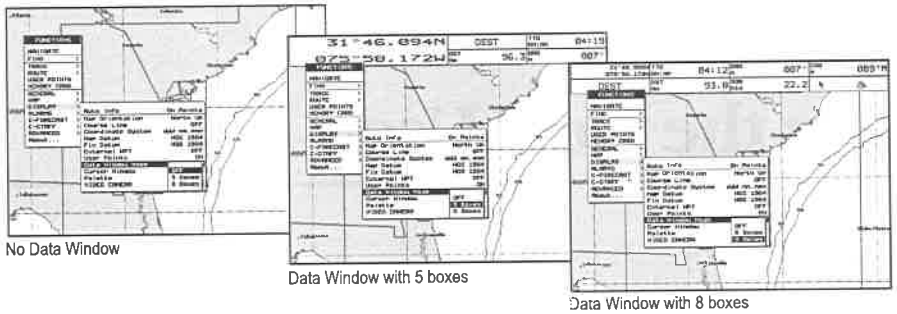


Fig. 3.1.1 - Text Area layout

It is also possible to edit fields shown in every screen configuration. Edit mode is activated directly from the chart display pressing 'MENU' for 3 seconds. Once the Edit mode is active, the first box with the label turns in reverse video screen. The user can choose the active box by moving the *Joystick* left or right. Pressing 'ENTER' the user can choose the data to be shown on the selected field by moving through the selections and pressing 'ENTER' again.

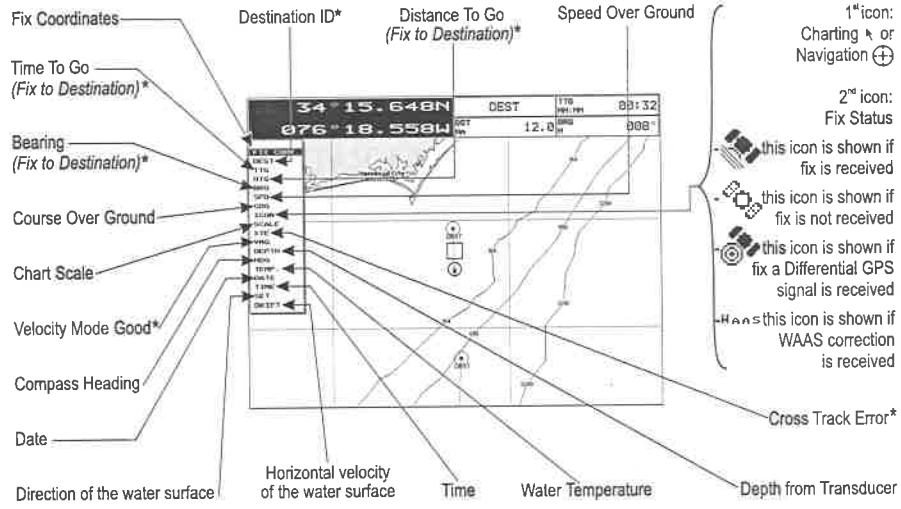


Fig. 3.1.1a - Edit mode

Note

(*) It will be shown only if the Destination is present.

Once 'ENTER' is pressed the data type is set. The selection window is closed and the Text Area changes according to the selected data type. Press 'CLEAR' to exit the Edit mode.

Note

The Display Menu can be selected only from the Chart Display page and the Depth Graph page in split mode.

3.1.2 DEPTH GRAPH PAGES

The Depth graph can be shown in two different modes. To select the Depth Graph in split mode:

➤ 'DATA' + "DEPTH GRAPH" + 'ENTER'

or

➤ press any soft keys + 'DEPTH 1' (if it is present)

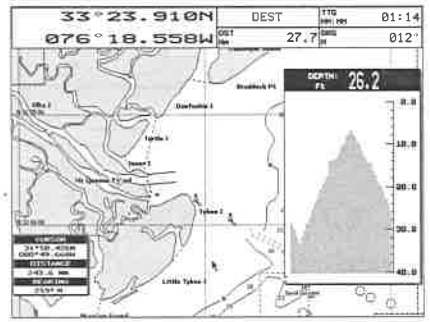


Fig. 3.1.2 - The Depth Graph in split mode

Otherwise selecting the Depth graph displayed at full screen:

➤ 'DATA' + "DEPTH GRAPH FULL" + 'ENTER'

or

➤ press any soft keys + 'DEPTH 2' (if it is present)

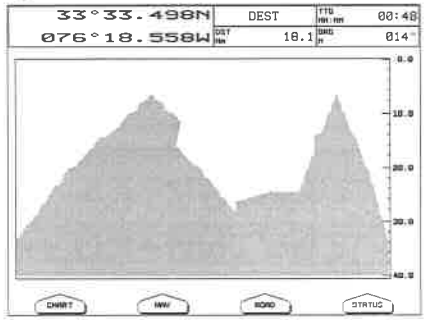


Fig. 3.1.2a - The Depth Graph Full

3.1.3 NAVIGATION DATA PAGE

The Navigation Data page shows information about the most relevant navi-

gation information, the status of the received signal and ship's coordinates. It is possible to customize the information contained in the page selecting the Nav Display menu (see Par. 5.2).

➤ 'DATA' + "NAVIGATION DATA" + 'ENTER'

or

➤ press any soft keys + 'NAV' (if it is present)

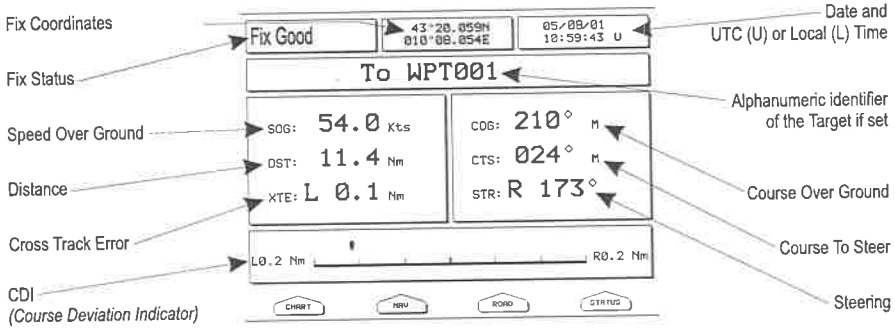


Fig. 3.1.3 - Navigation Data Page

3.1.4 3D ROAD PAGE

The 3D Road Data Page shows in graphic mode navigation data. It is possible to customize the information contained in the page selecting the Nav Display menu (see Par. 5.2).

➤ 'DATA' + "3D ROAD" + 'ENTER'

or

➤ press any soft keys + 'ROAD' (if it is present)

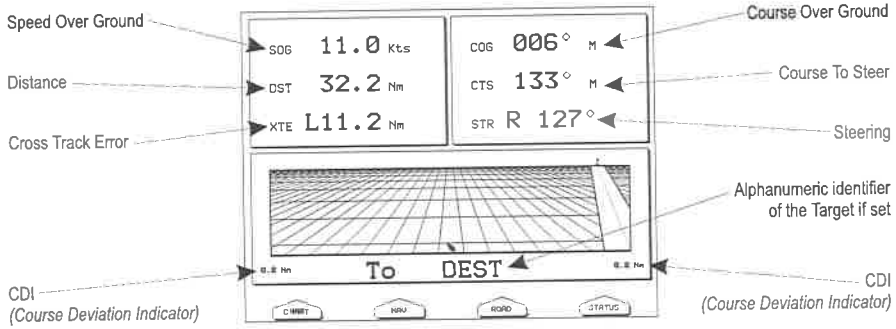


Fig. 3.1.4 - 3D Road Data Page

3.1.5 GPS STATUS PAGE

The GPS Status page shows in graphic mode GPS data.

➤ 'DATA' + "GPS STATUS" + 'ENTER'

or

➤ press any soft keys + 'STATUS' (if it is present)

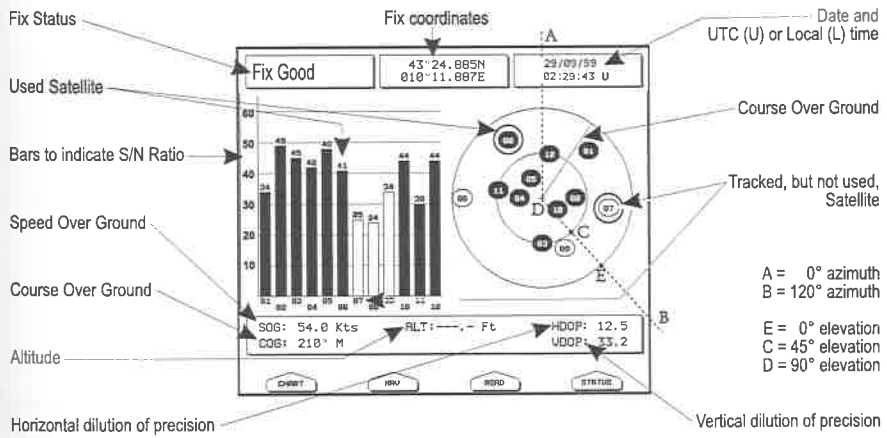


Fig. 3.1.5 - GPS Status Page

On the right side of the screen (see Fig. 3.1.5), there is a polar representation of the azimuth and elevation of each satellites. The circles contain a number indicating the PRN of the satellite and they are filled when they are used for the fix solution. On the left side there are histograms indicating the S/N ratio (SNR). The bar is filled when the satellite is used for fix solution. As example, the satellite with PRN=10 is used for fix solution with S/N=44, Azimuth=119degree and Elevation=70degree. When a valid fix is received, the Lat/Lon, Date, Time, HDOP, VDOP, ALT, COG, SOG are shown in the page.

3.1.6 GPS DATA PAGE

The GPS Data page shows the GPS data.

➤ 'DATA' + "GPS DATA" + 'ENTER'

or

➤ press any soft keys + 'GPS' (if it is present)

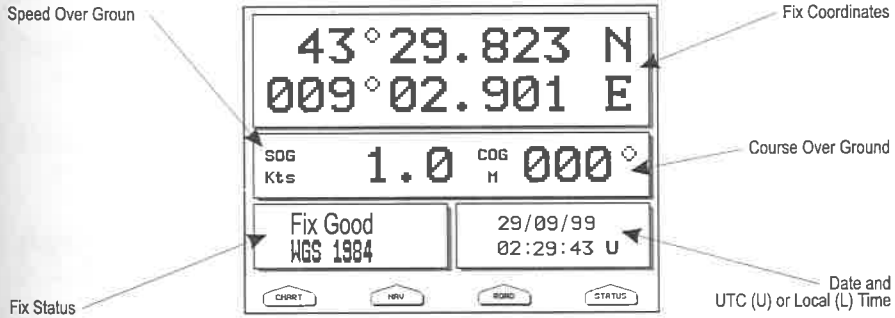


Fig. 3.1.6 - GPS Data Page

3.1.7 WIND DATA PAGE

The Wind Data Page shows data related to the wind.

➤ 'DATA' + "WIND DATA" + 'ENTER'

or

➤ press any soft keys + 'WINDDTA' (if it is present)

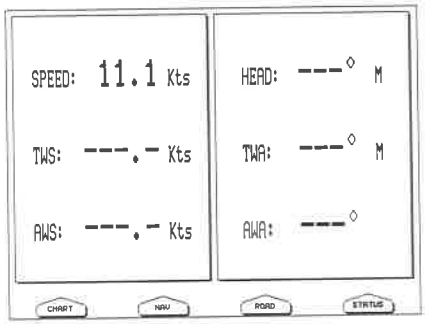


Fig. 3.1.7 - Wind Data Page

3.1.8 WIND SPEED PAGE

The Wind Speed page shows the True Wind Speed & Time Graph.

➤ 'DATA' + "WIND SPEED" + 'ENTER'

or

➤ press any soft keys + 'WINDSPD' (if it is present)

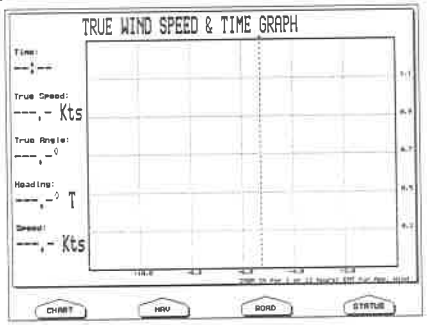


Fig. 3.1.8 - Wind Speed Page

3.1.9 WIND DIRECTION PAGE

The Wind Direction page shows the True Wind Direction & Time Graph.

➤ 'DATA' + "WIND DIRECTION" + 'ENTER'

or

➤ press any soft keys + 'WINDDIR' (if it is present)

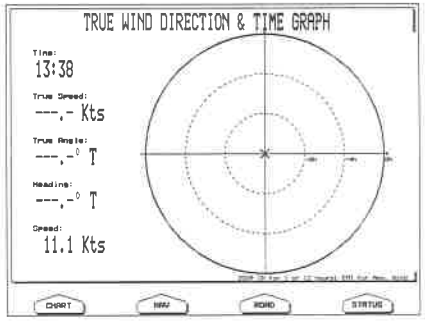


Fig. 3.1.9 - Wind Direction Page

3.2 GENERAL MENU

The General Menu provides access to the set up functions. Here you can choose the language you want (see Par. 2.4), the measure units, the date and time settings, enable or disable the Keypad Beep (see Par. 1.2) and select the Cursor Speed.

➤ 'MENU' + "GENERAL" + 'ENTER'

3.2.1 UNITS SELECTION

Allows to select the preferred unit for Distance, Speed, Depth and Altitude (altitude of GPS Antenna on the medium sea level).

Distance & Speed Units: Nm(Nautical Miles) & Kts(knots) / Sm(statute miles) & Mph(miles per hour) /Km(chilometres) & Kph(chilometres per hour). The default setting is Nm & Kts.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Dist&Speed Units" + 'ENTER'

Depth Unit: Ft(Feet)/FM(Fathoms)/Mt(Meters). The default setting is Ft.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Depth Unit" + 'ENTER'

Altitude Unit: Ft(Feet)/FL(Flight Level)/Mt(Meters). The default setting is Ft.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Altitude Unit" + 'ENTER'

3.2.2 TIME & DATE SETTING

Allows to select the preferred time and date.

Time Reference: Sets UTC or Local Time. The default setting is UTC.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Time Reference" + 'ENTER'

Time Format: Sets you preferred time between 12 hour and 24 hour. The default setting is 24 hour.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Time Format" + 'ENTER'

Date Format: Sets you preferred date between MM-DD-YY (month-day-year) and DD-MM-YY (day-month-year). The default setting is MM-DD-YY.

➤ 'MENU' + "GENERAL" + 'ENTER' + "Date Format" + 'ENTER'

3.2.3 CURSOR SPEED

Allows to select the preferred Cursor Speed among Low, Medium and High in Chart or into a Menu:

➤ 'MENU' + "GENERAL" + 'ENTER' + "Cursor Speed" + 'ENTER'

3.3 NAVIGATING TO A SINGLE DESTINATION

3.3.1 DISTANCE AND BEARING TO TARGET

Once you have positioned the cursor on your preferred location press 'GOTO'.

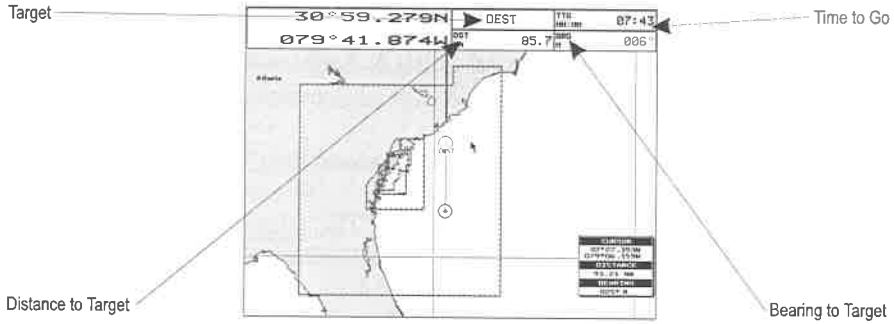


Fig. 3.3.1 - Navigation to a single destination

On the screen is shown a dotted line connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

3.3.2 TIME TO GO

When the Target is set the TTG value can be displayed in the Text Area (see Par. 3.1.1). Otherwise select the 3D Road Page (see Par. 3.1.4) where you can read TTG value:

➤ 'DATA' + "3D ROAD" + 'ENTER'

or

➤ press any soft keys + 'ROAD' (if it is present)

3.3.3 DELETING TARGET

Place cursor on Target icon then press 'STOP'. A window appears to confirm the stop of the navigation: press 'CONFIRM' and the symbol identifies Target disappears from the screen.

3.4 NAVIGATION ON A ROUTE

Sometimes it is preferable to define a series of locations, called Waypoints, in a sequence called a Route and navigate following a Route towards its end point.

3.4.1 ADDING WAYPOINT

To create a Waypoint place the cursor on position you want, press 'ENTER', select "WAYPOINT", press 'ENTER' again. The Waypoint appears on the screen and this becomes the first point on your first Route. An info window containing Route number, data and time, Waypoint name, symbol and Latitude/Longitude is shown.

3.4.2 CREATING A ROUTE

Repeat the "Adding Waypoint" procedure described in the previous Par. 3.4.1. The sequence of moving the cursor and pressing 'ENTER' is continued to create the Route, until you have reached the last Waypoint, your final destination. Segments connecting the Waypoints are shown and the starting point is identified by a circle surrounding the first Waypoint of the Route:

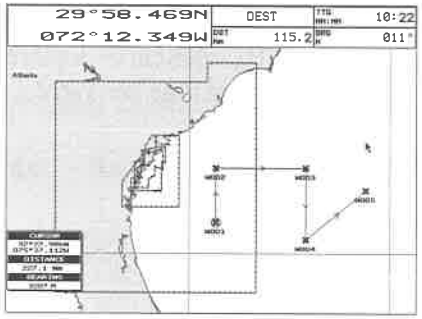


Fig. 3.4.2 - Route planning

3.4.3 DELETING WAYPOINT

Place the cursor on the Waypoint to be deleted:

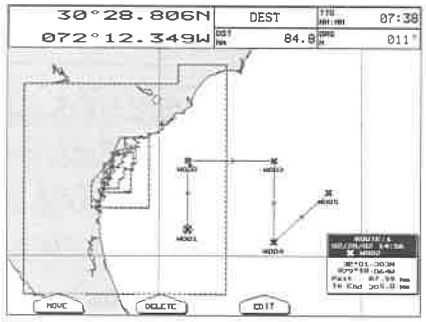


Fig. 3.4.3 - Deleting Waypoint (I)

Press 'DELETE'. A window is opened to advise that Waypoint is being used in a Route, "are you sure you want to delete it?": press 'CONFIRM' ('CANCEL' otherwise). The Waypoint is deleted and a new line between previous and next Waypoint is shown.

The deleted Waypoint remains shaded until the screen is redrawn.

3.4.4 DISTANCE AND BEARING TO TARGET

Once you have positioned the cursor on the preferred starting Waypoint (it could be the first Waypoint of the Route or another one) press 'GOTO'.

A circle surrounds the Waypoint symbol. A dotted line is shown, connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

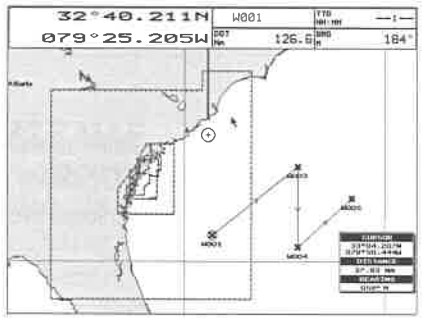


Fig. 3.4.4 - Selecting destination (Target)

The destination will automatically switch to the next Waypoint on the Route when you reach or pass the present destination.

3.4.5 TIME TO GO

When the Target is set the TTG value can be displayed in the Text Area (see Par. 3.1.1). Otherwise select the 3D Road Page (see Par. 3.1.4) where you can read TTG value:

➤ **'DATA' + "3D ROAD" + 'ENTER'**

or

➤ **press any soft keys + 'ROAD' (if it is present)**

3.4.6 DELETING TARGET

Place cursor on Target icon then press 'STOP'. A window appears to confirm the stop of the navigation: press 'CONFIRM'. The symbol that identifies Target disappears from the screen and the Waypoint remains.

3.5 C-MAP NT+ INFORMATION

As part of C-MAP's continuous Electronic Vector Chart product development and improvement program, **C-MAP NT+**, a natural evolution of our Electronic Chart technology, has been released.

The key points of NT+ can be divided into five main categories:

1. Coverage/Price
2. Chart/Display Presentation

3. New Features/Functions
4. Accessories
5. Compatibility

Looking at the chart displayed on the screen, you will see a variety of objects and symbols. Refer to the Cartography Reference Guide for their explanation.

The display can be customized for your personal preferences and needs (see the following paragraphes).

3.5.1 DISPLAY MODE

➤ 'MENU' + "MAP" + 'ENTER' + "Display Mode" + 'ENTER'

To simplify the customization of the chart display, the map settings are now re-organized in modes allowing the user to choose the preferred setting. Pre-programmed settings are user selectable from Full, Simple, Fishing, Low and Custom. The default setting is Custom. The custom selection allows the user to customize the chart to users preferences. The chart below shows the selections for each mode:

Setting	Full	Simple	Fishing	Low	Custom (Default values)
Names	On	On	On	Off	On
Nav-Aids	INT	INT	INT	INT	INT
Light Sectors	On	Off	Off	Off	On
Attention Areas	On	On	On	Off	On
Tides & Currents	On	On	Off	Off	On
Seabed Type	On	Off	On	Off	On
Ports & Services	On	On	Off	Off	On
Tracks & Routes	On	Off	Off	Off	On
Underwater Objects	On	Off	On	Off	On
Depth Areas	On	On	On	Off	On
Depth Areas >	0005	0005	0005	0005	00002 Mt
Depth Areas <	0030	0030	0030	0030	00009 Mt (*)
Depth Lines & Soundings	On	On	On	Off	On
Depth Lines & Soundings >	0000	0000	0000	0000	00000 Mt
Depth Lines & Soundings <	9999	0005	9999	0005	00305 Mt
Rivers & Lakes	On	On	Off	Off	On
Natural Features	On	Off	Off	Off	On
Cultural Features	On	Off	Off	Off	On
Landmarks	On	On	Off	Off	On
Lat/Lon Grid	On	Off	On	Off	On
Chart Boundaries	On	Auto	Off	Off	On
Cartography	On	On	Off	On	On
Mixing Levels	On	Off	On	Off	On
Declutter	Off	On	Off	On	Off
Map Presentation	Marine	Marine	Marine	Marine	Marine(**)

Note (*) _____ **ONLY FOR COLOR CHARTPLOTTER**
The item "Depth Areas >" is present only on color chartplotter.

Note (**) _____ **ONLY FOR GRAY LEVEL CHARTPLOTTER**
The item "Map Presentation" is present only on gray level chartplotter.

3.5.2 CUSTOMIZE MAP

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER'

This function allows the user to customize the following selections and is divided into the following setting menus: Marine Settings, Depth Settings, Land Settings and Chart Settings. If any of the settings are changed while in the Customize Map mode, when exiting the chartplotter will show a prompt "Do you want to change Display Mode to Custom?". Press 'CONFIRM' to accept.

Note
The Warning window appears only if Display Mode is not Custom.

3.5.2.1 Marine Settings

The Marine Settings menu controls the display on the map of the marine features.

Names: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Names" + 'ENTER'

Nav-Aids: US/US Simple/INT/INT Simple/Off. The default setting is INT. When selected it affects Lights, Signals, Buoys & Beacons display.

- **INT(ernational):** Draws Nav-Aids using international symbology. All components of Complex Objects are shown.
- **INT(ernational) Simplified:** Shows Complex Object with one icon only. Non-complex Nav-Aids are shown using international symbology.
- **US:** Draw Nav-Aids using NOAA symbology. All components of Complex Objects are shown.
- **US Simplified:** Shows Complex Object with one icon only. Non-complex Nav-Aids are shown using NOAA symbology.
- **Off:** Lights, Signals, Buoys & Beacons are no longer displayed on the charts.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Nav-Aids" + 'ENTER'

Light Sectors: On/Off. The default setting is On. Light Sectors are not displayed when Nav-Aids option is set to Simplified or Off (the display of Light Sectors is decided by the cartographic Library).

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Light Sectors" + 'ENTER'

Attention Areas: On/Off. The default setting is On. The Attention Areas will always be contour only when On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Attention Areas" + 'ENTER'

Tides & Currents: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Tides & Currents" + 'ENTER'

Seabed Type: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Seabed Type" + 'ENTER'

Ports & Services: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Ports & Services" + 'ENTER'

Tracks & Routes: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Tracks & Routes" + 'ENTER'

Underwater Objects: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + " MARINE SETTINGS" + 'ENTER' + "Underwater Objects" + 'ENTER'

3.5.2.2 Depth Settings

The Depth Settings menu controls the display on the map of the depth informations.

Depth Areas: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Areas" + 'ENTER'

Depth Areas >: Sets a min reference depth value. The default setting is 5 Ft.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Areas >" + 'ENTER'

Depth Areas <: Sets a max reference depth value. The default setting is 30 Ft (*).

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Areas <" + 'ENTER'

Note (*) ONLY FOR COLOR CHARTPLOTTER

The item "Depth Areas <" is present only on color chartplotter.

Depth Lines & Sndgs: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Lines & Sndgs" + 'ENTER'

Depth Lines & Sndgs >: Sets a min reference depth & soundings value. The default setting is 0 Ft.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Lines & Sndgs >" + 'ENTER'

Depth Lines & Sndgs <: Sets a max reference depth & soundings value. The default setting is 09999 Ft.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "DEPTH SETTINGS" + 'ENTER' + "Depth Lines & Sndgs <" + 'ENTER'

3.5.2.3 Land Settings

The Land Settings menu controls the display on the map of the terrestrial features.

Rivers & Lakes: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "LAND SETTINGS" + 'ENTER' + "Rivers & Lakes" + 'ENTER'

Natural Features: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "LAND SETTINGS" + 'ENTER' + "Natural Features" + 'ENTER'

Cultural Features: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "LAND SETTINGS" + 'ENTER' + "Cultural Features" + 'ENTER'

Landmarks: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "LAND SETTINGS" + 'ENTER' + "Landmarks" + 'ENTER'

3.5.2.4 Chart Settings

The Chart Settings menu controls the display on the map of the chart features.

Lat/Lon Grid: On/Off. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

Chart Boundaries: On/Off/Auto. The default setting is On.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Chart Boundaries" + 'ENTER'

Cartography: On/Off. The default setting is On. Used to zoom-in and pan everywhere regardless the existence of data. While in "virtual cartography" (Cartography Off) by setting Cartography On from menu, the chartplotter displays the previous scale level with charts. Again while in Cartography On, the chartplotter will work in the same way also when you exit from the charts coverage, panning with the cursor or because of a ship position change. When in Cartography Off, it is also possible to have virtual cartography between two subsequent scale levels with charts.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Cartography" + 'ENTER'

Mixing Levels: On/Off. The default setting is Off. When the map coverage at the current zoom level does not fill the entire screen, the chartplotter draws the rest of the map expanding the cartographic information read from, at most, two zoom levels above the current zoom level. For this reason the map is drawn three times: firstly it draws the two levels before the current level and then the current level. The area covered by the cartographic data read from the previous levels is identified by a dotted pattern. When the cursor is moved on an area not covered by data of the current level and the Cartography item is switched Off, the chartplotter zooms out to the first level covered by cartographic data. When the Cartography item is switched On, the cursor can be moved on the areas obtained from the previous levels but no information is provided on the objects found on that area since it is considered not suitable for navigation at that scale level.

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Mixing Levels" + 'ENTER'

Note

The Mixing Levels function works only with the new NT+ C-CARDs. It also affects the speed of the redraw of the screen. If this function is not used it maybe disabled.

Declutter: On/Off. The default setting is Off. When it is On removes overlapping text (e.g. Names, Spot Soundings etc.).

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Declutter" + 'ENTER'

Map Presentation: Marine/Terrestrial. The default setting is Marine (*).

➤ 'MENU' + "MAP" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "CHART SETTINGS" + 'ENTER' + "Map Presentation" + 'ENTER'

Note (*) **ONLY FOR GRAY LEVEL CHARTPLOTTER**

The item "Map Presentation" is present only on gray level chartplotter.

3.5.3 GETTING AUTOMATIC INFO

The type of Automatic Info is user selectable.

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Auto Info" + 'ENTER'

The possible settings are:

- **Off**: disabled, no automatic info shown at all.
- **On Points**: only on points. This is the default setting.
- **On All**: on all objects (points, lines, areas and text).

The Automatic Info On Points shows information when the cursor is placed on points (as Port Services, Tides, lights, wrecks, rocks, buoys, beacons, obstructions, land markers, etc.). The Automatic Info On All shows information when the cursor is placed on points, on lines (as Depth contours, Traffic Separation, Territorial Sea, Cartographic Lines etc.) on areas (Depth, Built-up, Sea, Attention, Restricted etc.) and on names (on the beginning of the text -hot spot- or on any of the characters of the name -name message box-).

The details on Land, Source of Data, Cartographic Area and Spot Soundings are not shown.

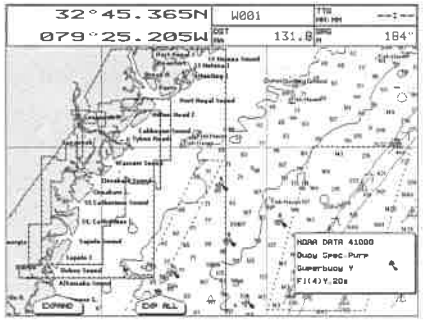


Fig. 3.5.3 - Automatic Info on Points window

If you press 'EXPAND' you get the information about that object.

Otherwise if you press 'EXP ALL' all available information about the cartographic point under the cursor will be shown (see Par. 3.5.4).

3.5.4 INFO TREE AND EXPANDED INFO PAGE

This page combines the Info Tree and the Expanded Info pages; this gives the advantage of showing the details of the object selected on the Info Tree while the cursor is moving through the Info Tree's items.

The upper side of the page contains the Info Tree and the Lower side contains the expanded information. While moving the cursor through the Info Tree, all the relevant information of the selected object is shown on the lower part of the page.

When the selected object is a Tide Height, pressing 'ENTER' the Tide page is shown.

Pressing 'CLEAR' the page is closed.

If the information shown exceeds the page size, the user may scroll the page down pressing 'PAGE DN'. The 'HOME' restart the Expanded Info.

3.5.5 INFO FUNCTION

Place the cursor in any place you want and press:

➤ 'INFO'
to show the Info Tree and Expanded Info page (see Par. 3.5.4).

3.5.6 GETTING PORT INFO

Upon viewing the chart of a port or harbour, you will see a Port Info icon that can be clicked on to query the available information immediately displayed with many details. The Port Info icon is visible only if the Ports & Services option is On (default setting).

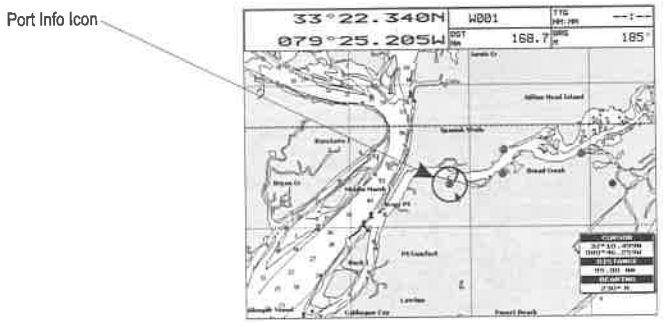


Fig. 3.5.6 - Port Info icon

The available information is shown in the Automatic Info window where icons of the available services are shown:

Fig. 3.5.6a - Automatic Info window

To expand information about that object press 'EXPAND' and to expand all available information for that cartographic point press 'EXP ALL'.

3.5.7 GETTING TIDE INFO

When you will see a Tide Info icon you can click on it to query the available information that will immediately be displayed.

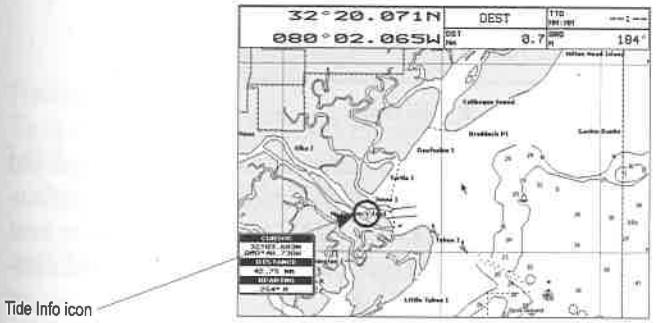


Fig. 3.5.7 - Tide Info icon

Place the cursor on the Tide symbol, a Automatic Info window is opened:

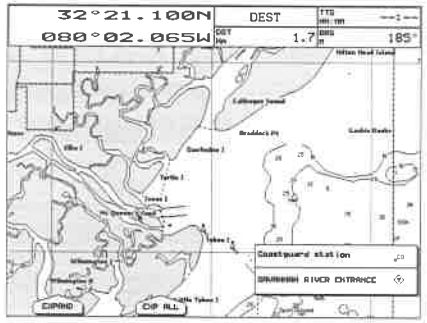


Fig. 3.5.7a - Automatic Info on Tide

To display the Tide Graph page, press 'EXPAND' (otherwise, press 'EXP ALL' to select all available information).

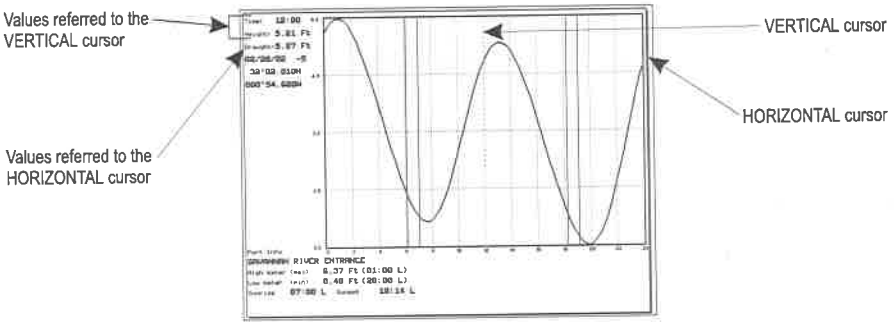


Fig. 3.5.7b - Tide Graph

Using the *Joystick*, it is possible to move the cursor anywhere on the graph and display the time, height (vertical cursor) and draught (horizontal cursor) on a particular graph point. Also use 'ZOOM IN' or 'ZOOM OUT' to go to previous or next day and 'ENTER' to set date (move the *Joystick* up/down to insert the preferred number and use it left/right to move cursor to left/right).

Note

Tide graphs are an approximation of the tide and they should be used in conjunction with traditional tide tables and navigational methods.

3.5.8 FIND FUNCTION

The chartplotter allows finding Port Services, Port By name, Tide Stations, Wrecks, Obstructions, Cursor, Coordinates and User Points.

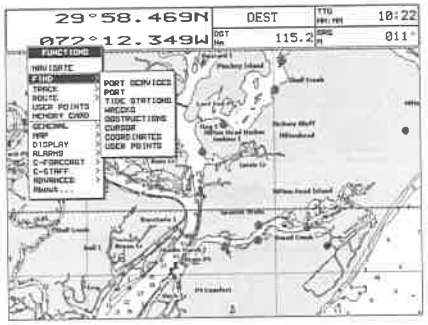


Fig. 3.5.8 - Find funtion

3.5.8.1 Finding Port Services

To locate and display the nearest available facilities of a particular type (i.e. the nearest Hospital, sailmaker, bank, etc.).

➤ 'MENU' +"FIND" + 'ENTER' + "PORT SERVICES" + 'ENTER'

The icons of the available services are shown.

Use the *Joystick* to select any facility and press 'ENTER' or 'FIND'. The list of the nearest ports (up to 10) containing the facility, will be shown on the screen.

Then choose the port you want and press 'ENTER' or 'FIND'.

3.5.8.2 Finding Nearest Ports

Shows the list of all (max 8 ports) placed near the cursor position.

➤ 'MENU' +"FIND" + 'ENTER' + "PORT" + 'ENTER'

Use the *Joystick* to select the port. Press 'ENTER' or 'FIND' to locate it.

Finding All Ports

To show the list of all ports stored on the C-CARD and to locate them on the map follow the procedure:

➤ 'MENU' +"FIND" + 'ENTER' + "PORT" + 'ENTER' + 'PORTS'

Use the *Joystick* to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' or 'FIND' to locate the selected port on the map.

Note

A Warning message is shown if there is not C-CARD inserted or there are not ports on the C-CARD.

Searching by name

➤ 'MENU' +"FIND" + 'ENTER' + "PORT" + 'ENTER' + 'PORTS' + 'NAME'

Use the *Joystick* to insert port name (max 15 characters). Press 'CONFIRM' or 'ENTER' to accept; press 'CANCEL' or 'CLEAR' to cancel name entry. If inserted name is found, the list with all ports containing the inserted name is shown. Repeat the operation to refine search or move through the list with *Joystick*. Press 'ENTER' to locate the port on the map.

Note

A Warning message is shown when the inserted name is not in the ports list.

Searching by list

➤ 'MENU' +"FIND" + 'ENTER' + "PORT" + 'ENTER' + 'PORTS' + 'LIST'

Rebuild and display the complete ports list. Use the *Joystick* to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' or 'FIND' to locate the selected port on the map.

3.5.8.3 Finding Tide Stations

Finds the nearest Tide Stations (up to 10) on the map, from the boat position - if a valid fix is received - or from the cursor position - if the received fix position is not good.

➤ 'MENU' +"FIND" + 'ENTER' + "TIDE STATIONS" + 'ENTER'

A new window will appear in few seconds. Choose the Tide Stations you want and press 'ENTER' or 'FIND' to display the Tide Graph page (see Par. 3.5.7b). Press

'CLEAR' to display the Tide Station chosen.

3.5.8.4 Finding Wrecks

Searches for Nearest Wrecks:

➤ 'MENU' +"FIND" + 'ENTER' + "WRECKS" + 'ENTER'

Use the *Joystick* to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' or 'FIND' to locate the selected Wreck on the map.

3.5.8.5 Finding Obstructions

Searches for Nearest Obstructions:

➤ 'MENU' +"FIND" + 'ENTER' + "OBSTRUCTIONS" + 'ENTER'

Use the *Joystick* to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' or 'FIND' to locate the selected Obstruction.

3.5.8.6 Finding Cursor

Centers the cursor on the screen:

➤ 'MENU' +"FIND" + 'ENTER' + "CURSOR" + 'ENTER'

3.5.8.7 Finding Coordinates

Allows to enter LAT/LON to locate a cartographic point:

➤ 'MENU' +"FIND" + 'ENTER' + "COORDINATES" + 'ENTER'

3.5.8.7 Finding User Points

Searches the User Points by name:

➤ 'MENU' +"FIND" + 'ENTER' + "USER POINTS" + 'ENTER'

3.6 MAN OVERBOARD (MOB)

It is an important function useful in the case someone or something falls overboard.

3.6.1 INSERTING MOB

Press 'MOB' to place MOB symbol at ship's coordinates: the message "MOB Activate" is shown for a few second, then disappears. Data displayed in Text Area are related to MOB.

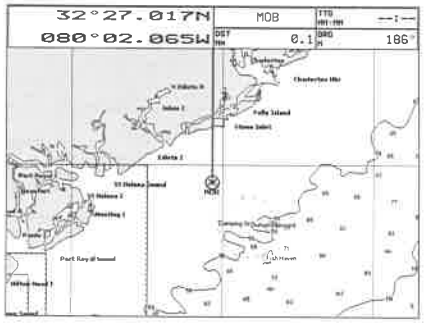


Fig. 3.6.1 - Man Overboard

3.6.2 DELETING MOB

Press 'MOB': a window to confirm the MOB deletion is shown, press 'CONFIRM' (or "CANCEL' to abort operation). The MOB symbol remains on the screen shaded until the next screen redraws.

4
For the Experienced User

Now that you are familiar with your new chartplotter, it is time to found about a large number of advanced features that you will find helpful.

4.1 MORE ABOUT CREATING AND USING ROUTES

At anytime, you may add or delete Waypoints, see a Route summary, reverse the direction of the Route or erase the entire Route.

4.1.1 ROUTES

The following functions are used for the Route management.

➤ 'MENU' + "ROUTE" + 'ENTER'

Note ONLY FOR COLOR CHARTPLOTTER

➤ 'MENU' + "ROUTE" + 'ENTER' + "COLOR" + 'ENTER'

It is possible to change Route color. After pressing 'ENTER' a window with 8 different colors appears. Use the Joystick to select the Route legs color and press 'ACCEPT' ('CANCEL' otherwise).

4.1.1.1 Selecting Route

➤ 'MENU' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER'

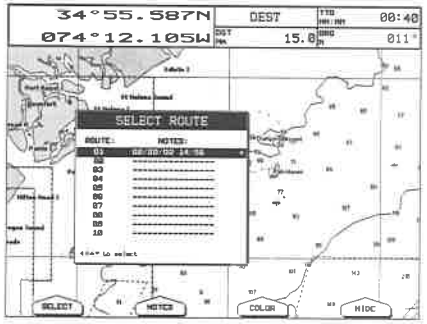


Fig. 4.1.1.1 - Select route window

Use the *Joystick* to select the preferred Route number. The following functions are available.

Note ONLY FOR COLOR CHARTPLOTTER

➤ 'MENU' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER' + 'COLOR'

It is possible to change color. After pressing 'COLOR' another window is shown: use the Joystick to choose the preferred color (among 8 colors) for the Route. Press 'ENTER' to confirm ('CANCEL' otherwise).

Displaying Route

➤ 'MENU' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER' + 'SELECT'

The Route, shown by straight segments, is centered on the screen, with the cursor on the central Waypoint.

Editing notes

➤ 'MENU' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER' + 'NOTES'

Another window is shown: use the *Joystick* to insert the notes (this is possible only if you have already created a Route). Press 'ENTER' to confirm ('CANCEL' otherwise).

Hide/Show Route

➤ 'MENU' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER' + 'HIDE/SHOW'

Allows to hide or show the selected Route on the screen.

4.1.1.2 Deleting Route

➤ 'MENU' + "ROUTE" + 'ENTER' + "DELETE" + 'ENTER'

A window is opened: press 'CONFIRM' to delete ('CANCEL' otherwise). The Route remains on the screen shaded until the screen is redrawn.

4.1.1.3 Finding information on Route: Route Report

➤ 'MENU' + "ROUTE" + 'ENTER' + "REPORT" + 'ENTER'

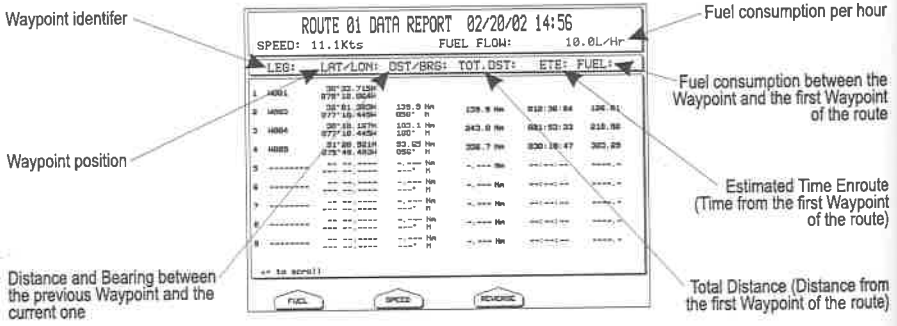


Fig. 4.1.1.3 - Route Data Report page

If there are more than nine Waypoint shown, use the *Joystick* to select another page.

Changing Speed & Fuel values

➤ 'MENU' + "ROUTE" + 'ENTER' + "REPORT" + 'ENTER' + 'FUEL'

➤ 'MENU' + "ROUTE" + 'ENTER' + "REPORT" + 'ENTER' + 'SPEED'

Insert value by using the *Joystick* and pressing 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' abort operation).

Reversing Route

➤ 'MENU' + "ROUTE" + 'ENTER' + "REPORT" + 'ENTER' + 'REVERSE'

Reversing a Route plan is most typically used to return to the point where the Route originally started.

4.1.2 WAYPOINTS

You may add Waypoints, delete Waypoints from a Route, move any Waypoint in the Route to another location, insert a Waypoint between two existing ones, find any Waypoint at anytime. Every time you place the cursor on a Waypoint the following functions are available.

4.1.2.1 Adding Waypoint

➤ 'ENTER' + "WAYPOINT" + 'ENTER'

The Waypoint appears on the screen on the cursor position. An info window is shown containing Route number, data and time, Waypoint name, symbol and Latitude/Longitude, information on previous and - if the Waypoint is not the last of the Route - also on the next Waypoint. To create a Route inserting additional Waypoints repeat the above described sequence.

4.1.2.2 Moving Waypoint

➤ Add Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on existing Waypoint

Press 'MOVE'. Use the *Joystick* to move the cursor: a dotted line, connecting the Waypoint to the new position, is shown:

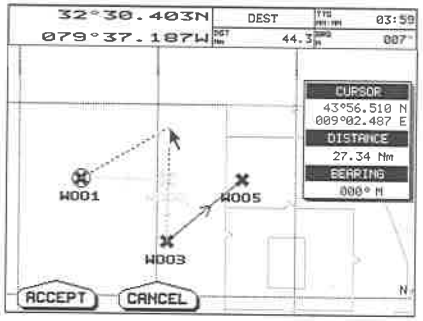


Fig. 4.1.2.2 - Moving Waypoint function (I)

To place the Waypoint in the new position, choose the new place and press 'ACCEPT' (or 'CANCEL' otherwise). The "old" Waypoint remains shaded until the screen is redrawn.

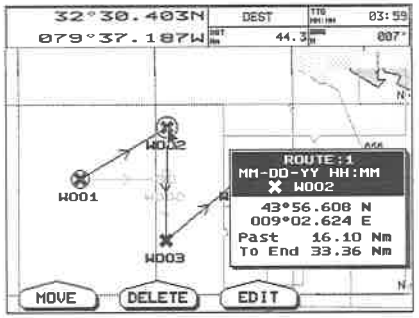


Fig. 4.1.2.2a - Moving Waypoint function (II)

4.1.2.3 Deleting Waypoint

➤ Add Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on existing Waypoint

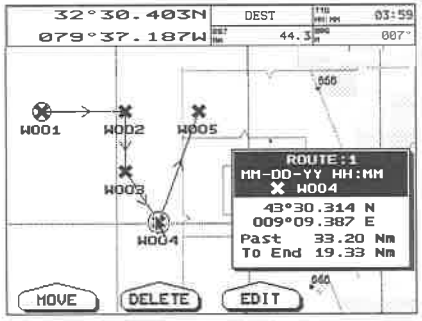


Fig. 4.1.2.3 - Deleting Waypoint (I)

Press 'DELETE'. A Warning message is shown to advise that Waypoint is currently used in a Route: press 'CONFIRM' to confirm deletion ('CANCEL' otherwise). The Waypoint is deleted and a new line between previous and next Waypoint is shown. The deleted Waypoint remains shaded until the screen is redrawn.

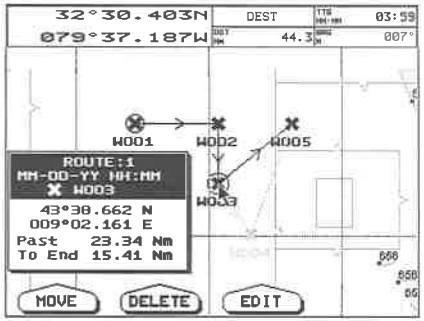


Fig. 4.1.2.3a - Deleting Waypoint (II)

4.1.2.4 Editing Waypoint

➤ Add Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on existing Waypoint

Press 'EDIT' to modify a Waypoint. A window will be shown with Name, Symbol and Latitude/Longitude of the Waypoint, advicing about what Waypoint data are modifiable:

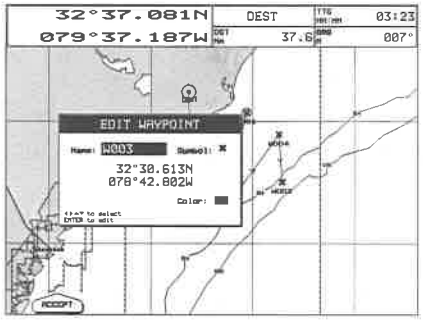


Fig. 4.1.2.4 - Edit Waypoint

Use the *Joystick* to select the field. If you have selected Name field, press 'ENTER': use the *Joystick* to insert the character (8 characters max), press 'ENTER'. If Symbol field is selected press 'ENTER', a window with 16 different symbols appears:

Fig. 4.1.2.4a - Waypoint symbols

Use the *Joystick* to select the Symbol and press 'ENTER'. If Coordinates field is selected, press 'ENTER' and then use the *Joystick* to insert the value. Then press 'ACCEPT'.

Note _____ **ONLY FOR COLOR CHARTPLOTTER**

It is possible to change Waypoint color. If you have selected Color field, press 'ENTER': a window with 16 different colors appears. Use the Joystick to select the color and press 'ENTER'.

4.1.2.5 Goto

➤ Add Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on existing Waypoint

Press 'GOTO': a circle encloses the Waypoint symbol. On the screen a straight line is shown, connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

4.1.2.6 Inserting Waypoint

Every time you place the cursor on the segment connecting two existing Waypoints of a Route the following function is available.

➤ Place cursor on Route leg

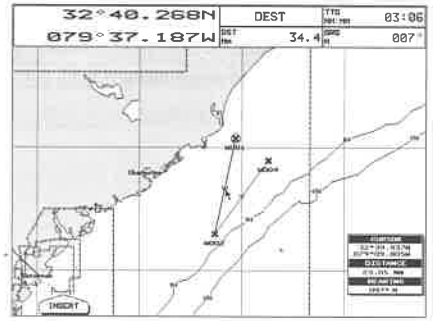


Fig. 4.1.2.6 - Placing Waypoint between two existing ones (I)

Press 'INSERT'. The line between the two Waypoints is turned into a dotted line: move the cursor to the new position. When the cursor is stationary for one second or two, the line will "rubber-band", drawing a dotted line between the last Waypoint and the cursor, and another dotted line between the cursor and the next Waypoint:

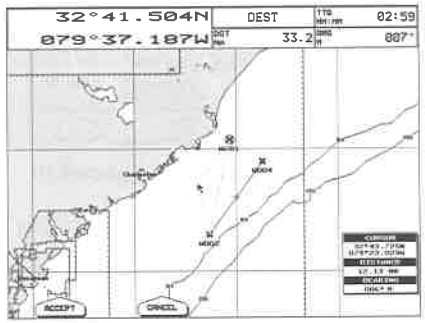


Fig. 4.1.2.6a - Placing Waypoint between two existing ones (II)

Once you have positioned the cursor at new location, press 'ACCEPT':

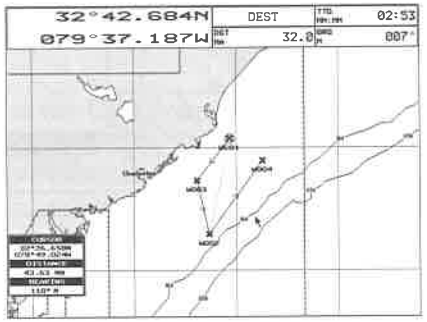


Fig. 4.1.2.6b - Placing Waypoint between two existing ones (III)

4.1.2.7 Finding Waypoint

➤ 'MENU' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'

A window is opened to find a stored Waypoint by entering its label:

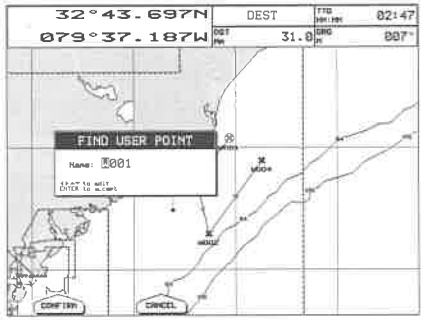


Fig. 4.1.2.7 - Finding Waypoint function (I)

Use the *Joystick* to insert the name and press 'CONFIRM' ('CANCEL' otherwise). For example, if the inserted name is W001, the cursor is placed on this Waypoint and the info window is shown:

Fig. 4.1.2.7a - Finding Waypoint function (II)

4.1.2.8 Finding information on Waypoints: User Points List page

➤ 'MENU' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points. Move up/down the *Joystick* to select the User Point you wish. If the page contains more than 11 User Points, the list continues in the next pages.

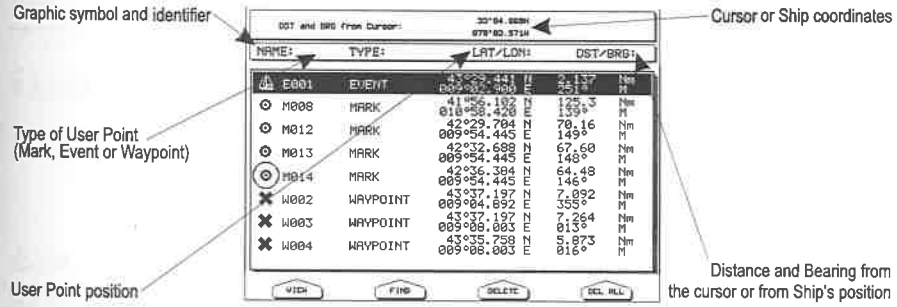


Fig. 4.1.2.8 - User Points page

Note

In the list to identify the current Target a circle encloses the User Point symbol.

Viewing Waypoint in map display

➤ 'MENU' + "USER POINTS" + 'ENTER' + 'VIEW'

The chartplotter exits from the User Points List page and redraws the chart. The selected point appears, with the cursor placed on it. Press 'CLEAR' to exit and return to User Point List page.

Finding Waypoint in the User Points List page

➤ 'MENU' + "USER POINTS" + 'ENTER' + 'FIND'

A window appears: insert the name by using the *Joystick*. Press 'ENTER': in the User Points List page the chartplotter shows the Waypoint in reverse video screen.

Deleting Waypoint

➤ 'MENU' + "USER POINTS" + 'ENTER' + 'DELETE'

A warning message is shown; press 'CONFIRM' ('CANCEL' othewise).

Deleting all stored User Points

➤ 'MENU' + "USER POINTS" + 'ENTER' + 'DEL ALL'

A warning message is shown, press 'CONFIRM' ('CANCEL' otherwise).

Note

If you try to delete any User Point used as GOTO a Warning window will appear, advicing that the User Point belongs to an active Route and cannot be deleted.

4.2 USING MARKS & EVENTS

You may place a Mark, as it is called, at your cursor position, while Event is created at your vessel position.

4.2.1 MARKS

You may tag a location on the chart with a Mark symbol and number, which you can record for later use. Every time you place the cursor on a Mark the following functions are available.

4.2.1.1 Adding Mark

➤ 'ENTER' + "MARK" + 'ENTER'

The new Mark appears on your cursor position. An info window containing Mark name, symbol and Latitude/Longitude is shown.

4.2.1.2 Moving Mark

➤ Add Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on existing Mark

Press 'MOVE'. By moving the cursor with the *Joystick*, a dotted line connecting the Mark with the new position is shown:

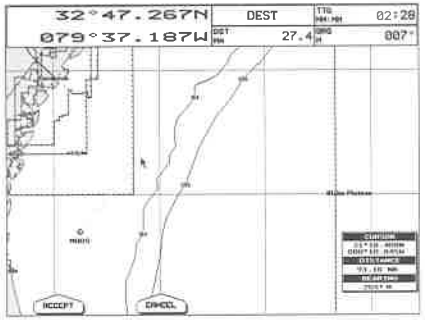


Fig. 4.2.1.2 - Moving Mark function (I)

Press 'ACCEPT':

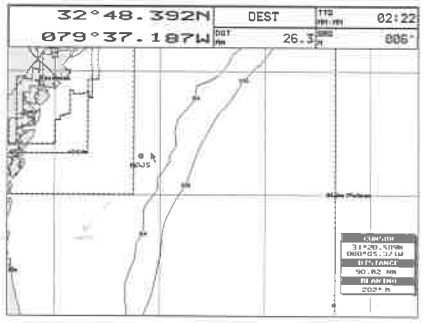


Fig. 4.2.1.2a - Moving Mark function (II)

The Mark is placed in the new position, the "old" Mark, remains on the screen shaded until the screen is redrawn.

4.2.1.3 Deleting Mark

➤ Add Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on existing Mark

Press 'DELETE': a window to confirm the deletion is shown. Press 'CONFIRM' ('CANCEL' otherwise): the Mark remains on the screen shaded until the next screen is redrawn.

4.2.1.4 Editing Mark

➤ Add Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on existing Mark

Press 'EDIT'. A window appears to modify Name, Symbol and coordinates of the existing Mark.

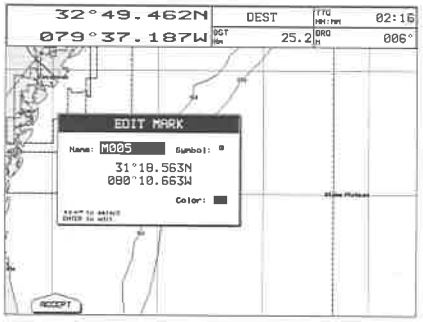


Fig. 4.2.1.3 - Graphic symbol setting

Use the *Joystick* to select the field. If you have selected Name field, press 'ENTER': use the *Joystick* to insert the character (8 characters max), then press 'ENTER'. If Symbol field is selected press 'ENTER': a window with 16 different symbols appears. Use the *Joystick* to select the symbol and press 'ENTER'. If Coordi-

nates field is selected, press 'ENTER' and then use the *Joystick* to insert the value. Then press 'ACCEPT'.

Note ONLY FOR COLOR CHARTPLOTTER

It is possible to change Mark color. If you have selected Color field, press 'ENTER': a window with 16 different colors appears. Use the Joystick to select the color and press 'ENTER'.

4.2.1.5 Goto

➤ Add Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on existing Mark

Press 'GOTO': a circle encloses the Mark symbol. A straight line is shown on the screen connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

4.2.1.6 Finding Mark

➤ 'MENU' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'

A window is opened to find a stored Mark by entering its label. Use the *Joystick* to insert the name and press 'CONFIRM' ('CANCEL' otherwise).

4.2.1.7 Finding information on Marks: User Points List page

➤ 'MENU' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points (Marks, Events and Waypoints). Move up/down the *Joystick* to select the User Point you wish. If the page contains more than 11 User Points, the list continues in the next pages. See Par. 4.1.2.8.

4.2.2 EVENTS

In Navigate mode you may place a location with an Event symbol and number, directly on the ship's position. Move the cursor to exit from Navigate mode; place the cursor on an Event to access the following functions.

4.2.2.1 Adding Event

➤ Select Navigate mode: 'MENU' + "NAVIGATE" + 'ENTER', then 'ENTER' + "MARK" + 'ENTER'

An Event is placed directly on the ship's position.

Note

It is possible to place an Event only if the chartplotter is making a valid position fix.

4.2.2.2 Deleting Event

➤ Place cursor on existing Event + 'DELETE'

A window to confirm the deletion is shown. Press 'CONFIRM' ('CANCEL' otherwise): the Event remains on the screen shaded until the next screen is redrawn.

Note

If you try to delete any User Point used as GOTO a Warning window will appear, advicing that the User Point belongs to an active Route and cannot be deleted.

4.2.2.3 Editing Event

➤ Place cursor on existing Event + 'EDIT'

A window appears to modify Name and Symbol the existing Event.

Fig. 4.2.2.3 - Editing Event

Use the *Joystick* to select the field. If you have selected Name field, press 'ENTER': use the *Joystick* to insert the character (8 characters max), press 'ENTER'. If Symbol field is selected press 'ENTER': a window with 16 different symbols appears. Use the *Joystick* to select the Symbol and press 'ENTER'.

If Coordinates field is selected, press 'ENTER' and then use the *Joystick* to insert the value. Then press 'ACCEPT'.

Note ONLY FOR COLOR CHARTPLOTTER

It is possible to change Event color. If you have selected Color field, press 'ENTER': a window with 16 different colors appears. Use the Joystick to select the color and press 'ENTER'.

4.2.2.4 Goto

➤ Place cursor on existing Event + 'GOTO'

A circle encloses the Event symbol. A straight line is shown connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

4.2.2.5 Finding Event

➤ 'MENU' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'

A window is opened to find a stored Event by entering its label. Use the *Joystick* to insert the name and press 'CONFIRM' ('CANCEL' otherwise).

4.2.2.6 Finding information on Events: User Points List page

➤ 'MENU' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points (Marks, Events and Waypoints). Move up/down the *Joystick* to select the User Point you wish. If the page contains more than 11 User Points, the list continues in the next pages. See Par. 4.1.2.8.

4.3 R/B FUNCTION

Selects the Range and Bearing, R/B, function.

4.3.1 INSERTING R/B

➤ 'ENTER' + "R/B" + 'ENTER'

A dotted line and a circle appears on the screen. A window with the DST and BRG values is shown. The origin of the line and the circle's centre is the cursor position: use the *Joystick* to move the dotted line in any direction you choose; in the same time the radius changes. Press 'ACCEPT' to confirm ('CANCEL' otherwise).

4.3.2 DELETING R/B

➤ 'ENTER' + "R/B" + 'ENTER' + 'ACCEPT'

Press 'DELETE' to delete the line and the circle.

4.3.3 EDITING R/B

➤ 'ENTER' + "R/B" + 'ENTER' + 'ACCEPT'

Press 'EDIT' to modify the line direction and the circle' radius. Use the *Joystick* to move the dotted line in any direction you choose; in the same time the radius changes. Press 'ACCEPT' to confirm ('CANCEL' otherwise).

4.4 USING THE TRACK FUNCTION

The chartplotter can be set up for recording your Track as you move and for plotting this Track on the chart.

4.4.1 ENABLING TRACK STORING

➤ 'MENU' + "TRACK" + 'ENTER' + "ACTIVATE" + 'ENTER'

To enable the Track storing. It is not possible to use the Track storing if you are not receiving a valid fix.

When Track storing is activated, to disable:

➤ 'MENU' + "TRACK" + 'ENTER' + "DEACTIVATE" + 'ENTER'

4.4.2 DELETING TRACK

➤ 'MENU' + "TRACK" + 'ENTER' + "DELETE" + 'ENTER'

Deletes all the Track or part of it. 'BEGIN', 'END' and 'WHOLE' allow to identify the start or the end point of the segment to delete.

4.4.3 TRACK SETTING MENU

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER'

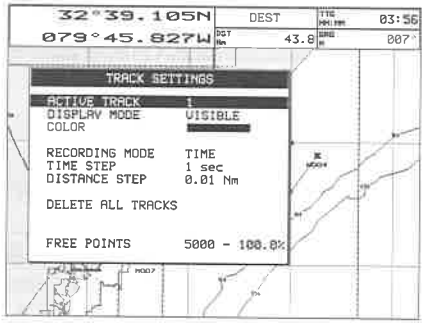


Fig. 4.4.3 - Track Settings menu

4.4.3.1 Selecting Active Track

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "ACTIVE TRACK" + 'ENTER'

Pressing 'ENTER' more times selects the number of the active Track. The default setting is 1.

4.4.3.2 Displaying Track

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISPLAY MODE" + 'ENTER'

Selects the displaying of the past course Visible or Hidden. The default setting is Visible.

4.4.3.3 Selecting Line Pattern

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "LINE PATTERN" + 'ENTER'

Press 'ENTER' as many times as needed to select the pattern for the selected Track.

Note ONLY FOR COLOR CHARTPLOTTER

It is possible to select the color for the Track. The item "Line Pattern" is changed to "Color".

4.4.3.4 Selecting Track memorizing type

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "RECORDING MODE" + 'ENTER'

Choose Distance (the chartplotter can store a fix when the distance from its last stored position is greater than a defined distance) or Time (the chartplotter can store a fix after a defined time). The default setting is Time.

4.4.3.5 Selecting Time Step

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "TIME STEP" + 'ENTER'

When the tracking function is On and the type of Track storing is Time, the chartplotter can store a fix after a defined time. Choose among 1, 5, 10, 30 sec, 1 min. The default setting is 1 sec.

4.4.3.6 Selecting Distance Step

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISTANCE STEP" + 'ENTER'

When the tracking function is On and the type of Track storing is Distance, you can store a fix when the distance from its last stored position is greater than a defined distance. Choose in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 Nm (the distance unit is selected by the user, see Par. 3.2.1). The default setting is 0.01 Nm.

4.4.3.7 Delete all Tracks

➤ 'MENU' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DELETE ALL TRACKS" + 'ENTER'

Deletes all the stored tracks. After pressing 'ENTER' a Warning window appears: press 'CONFIRM' (or 'CANCEL' to abort operation).

4.5 PAN FUNCTION

It is possible to select the pan function; pan allows you to shift area around the cursor or a remote position to the centre of the screen.

4.5.1 MOVING CURSOR TO THE SCREEN CENTER

➤ 'MENU' + "FIND" + 'ENTER' + "CURSOR" + 'ENTER'

The screen is redrawn and the cursor with the location you want to see will shift to the center of the screen.

4.5.2 PLACING CURSOR ON COORDINATES

➤ 'MENU' + "FIND" + 'ENTER' + "COORDINATES" + 'ENTER'

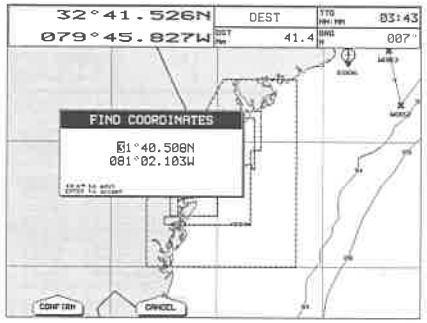


Fig. 4.5.2 - Pan on Coordinates function

Press the *Joystick* up/down to modify coordinates and the *Joystick* left/right to move cursor to left/right. Press 'CONFIRM' ('CANCEL' otherwise).

4.6 USER C-CARD MENU

The chartplotter allows to copy information to an User C-CARD. You can also return the information to internal memory at a later time. This allows virtually unlimited storage.

➤ 'MENU' + "MEMORY CARD" + 'ENTER'

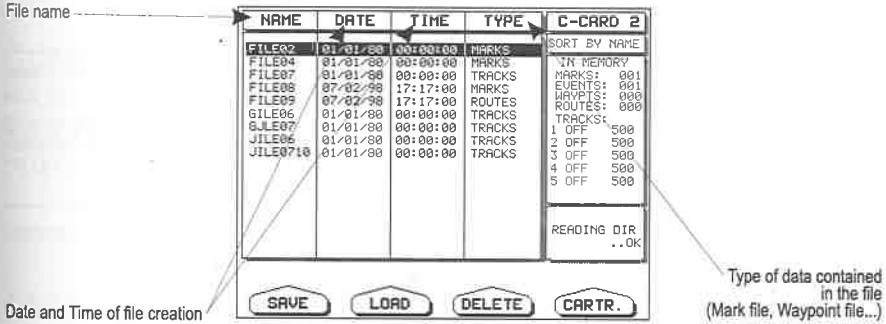


Fig. 4.6 - User C-CARD Menu

4.6.1 SAVING FILE

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'SAVE'

A window is opened to insert the file name and the type of data to save:

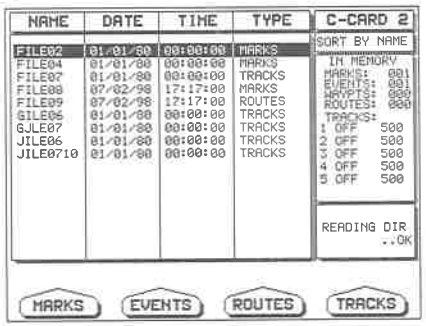


Fig. 4.6.1 - Save File function (I)

Choose the type of data to save by pressing the related 'MARKS', 'EVENTS', 'ROUTES' or 'TRACKS'. Then on the screen appears:

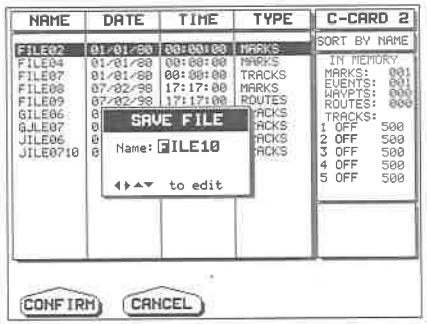


Fig. 4.6.1a - Save File function (II)

Choose the file name. At first a default name is shown: use the *Joystick* to insert the name. Press 'ENTER'.

Note

When naming a file, you may have trouble finding a name that uniquely identifies the file's contents. Dates, for example, are often used in filenames; however, they take up several characters, leaving you with little flexibility. The secret is to find a compromise, a point where you can combine a date with a word, creating a unique filename. The maximum length of the filename is 8 characters. The characters may be numbers (0, ..., 9), letters (A, ..., Z) and spaces (for example legal identifiers are "ABC", "AA", "12121212", "A B C", "1 A 1", and so on.

4.6.2 LOADING FILE

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'LOAD'

Before pressing 'LOAD', choose the file name in the list shown, using the *Joystick*.

4.6.3 DELETING FILE

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'DELETE'

Remove old or unnecessary files to clean up your User C-CARD. Remember that this option permanently erases the file.

4.6.4 USER C-CARD

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'CARTR.'

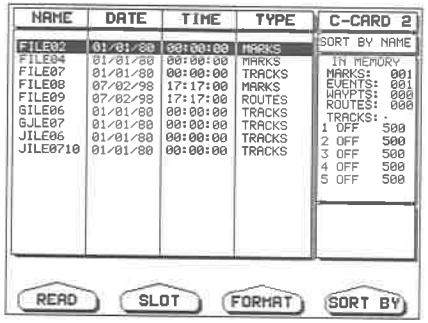


Fig. 4.6.4 - C-CARD functions

4.6.4.1 Reading the User C-CARD Directory

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'READ'

The list of the files present on the User C-CARD inserted into the slot appears.

4.6.4.2 Selecting slot

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'SLOT'

Selects the preferred slot where to insert the User C-CARD. If the User C-CARD is not present in the selected slot, a warning message appears.

4.6.4.3 Formatting User C-CARD

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'FORMAT'

In order to be able to use a new User C-CARD you must format it first: this operation prepares the User C-CARD to receive and store information.

4.6.4.4 Ordering the User C-CARD Directory

➤ 'MENU' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'SORT BY'

It is possible to order the file directory. This is possible in three different modes:

- Press 'NAME' to order by the filename;
- Press 'TIME' to order by the time of file creation;
- Press 'TYPE' to order by the type of data.

5
Menu Settings

There are other three menus, Display, Alarms and Advanced, to handle the chartplotter information. Once you are in the Menu, use your *Joystick* to highlight the item and press 'ENTER' to activate or to proceed to the next selection menu.

5.1 DISPLAY MENU

Display Menu allows you to change how the chartplotter displays information. It is possible to select this menu only when the active page is the Chart Display or the Depth Graph (in split mode); so firstly select one of these pages, for example Chart Display mode.

➤ 'DATA' + "CHART DISPLAY" + 'ENTER'

or

➤ press any soft keys + 'CHART' (if it is present)

Note ONLY FOR COLOR CHARTPLOTTER

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Video Input" + 'ENTER'

By accessing this menu it is possible to see images on the chartplotter display captured from an external video signal source, if connected to the chartplotter. Not all color chartplotters are connectable to the external video signal. Please make sure that your chartplotter is equipped with a video input connection port. See Par. 2.8 for more information about Video Input.

Note ONLY FOR COLOR CHARTPLOTTER

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Palette" + 'ENTER'

It is possible to set the palette used to enhance the visibility of the screen depending on the surrounding light condition. The possible choices are Normal, Classic, Night Vision and Sunlight. The default setting is Normal. **Normal** *is recommended when the chartplotter is not exposed to the direct sunlight. When this mode is set the maps are displayed in order to use colors as similar as possible to the ones used in the original paper charts.* **Classic** *is also recommended when the chartplotter is not exposed to the direct sunlight. The colors used are the same colors used on NT cartography.* **Night Vision** *is recommended when the environment is dark in order to reduce the glare of the display. The chartplotter displays maps and screen in darker colors.* **Sunlight** *is designed to enhance the visibility of the screen when the chartplotter is exposed to the sunlight. The maps are much brighter than in the other modes and the depth areas are filled with white color so different depth areas are not easily distinguishable.*

5.1.1 MAP ORIENTATION

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Map Orientation" + 'ENTER'

Selects orientation of your chart according to. The default setting is North Up.

- North Up: the map is shown with North upwards.
- Track Up: the map is shown with the ship's current heading upwards. If Track Up is selected, insert the Map Orientation Resolution angle by using the *Joystick* up and down in the range [5, 60] degrees (the default setting is 30°).

5.1.2 COURSE LINE

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Course Line" + 'ENTER'

The chartplotter will display a line with a circle at the end to indicate the position your ship will reach at the set time based on current direction of travel and speed. This is continuously updated to account for changes. Disables (Off) or sets time as : 2, 10, 30 min, 1, 2 hours, Infinite. The default setting is Infinite.

5.1.3 COORDINATE SYSTEM

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Coordinate System" + 'ENTER'

Sets your preferred Coordinate System among ddd mm ss, ddd mm.mm, ddd mm.mmm, UTM, OSGB, TD. The default setting is ddd mm.mmm.

If TD is selected a new TD Settings menu will be open on the screen:

➤ 'MENU' + "DISPLAY" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + 'TD' + 'ENTER"

Chain: Selects the preferred chain. The default setting is 9970.
Pair: Selects the pair of stations in the selected chain. The default setting is W X.
ASF 1/2: Sets the ASF (Additional Second Factor) for the slave in the selected chain. The default setting is 0.
Alter: Turns On/Off the Alternate Solution in the chain. The default setting is Off.

5.1.4 MAP DATUM

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Map Datum" + 'ENTER'

Selects the Map Datum among 130 items. WGS 1984 is the default Map Datum.

5.1.5 FIX DATUM

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Fix Datum" + 'ENTER'

Selects the Fix Datum among 130 items. WGS 1984 is the default Fix Datum.

5.1.6 EXTERNAL WAYPOINT

➤ 'MENU' + "DISPLAY" + 'ENTER' + "External WPT" + 'ENTER'

The coordinates of a Waypoint, received from a GPS connected to the chartplotter, can be stored into the chartplotter, if the GPS is NMEA0183 protocol compatible and support the $BWC sentence (this symbol remains on the screen for 30 seconds). You may save it by placing a Waypoint or a Mark onto that symbol. As soon as the chartplotter receives another $BWC sentence with the coordinates of a new Waypoint, the symbol moves to the new point. The default setting is Off.

5.1.7 USER POINTS

➤ 'MENU' + "DISPLAY" + 'ENTER' + "User Points" + 'ENTER'

Sets On (icon + label), Off or Icon (only icon) the displaying of User Point. The default setting is On.

5.1.8 DATA WINDOW MODE

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Data Window Mode" + 'ENTER'

Customizes the Text Area layout among Full Screen, Text Area with 5 boxes and Text Area with 8 boxes (see Par. 3.1.1). The default setting is 5 Boxes.

5.1.9 CURSOR WINDOW

➤ 'MENU' + "DISPLAY" + 'ENTER' + "Cursor Window" + 'ENTER'

Enables (On) or disables (Off) the display of the cursor window on the screen. The default setting is On.

5.2 NAV DISPLAY MENU

The Nav Display menu allows to select CDI Scale and Navigation Page. It is possible to display this menu only if the Navigation Data page or the 3D Road page has been selected; so firstly select one of this pages, for example Navigation Data page:

➤ 'DATA' + "NAVIGATION DATA" + 'ENTER'

or

➤ press any soft keys + 'Nav' (if it is present)

and then:

➤ 'MENU' + "NAV DISPLAY" + 'ENTER'

5.2.1 CDI SCALE

➤ 'DATA' + "NAVIGATION DATA" + 'ENTER' then:
➤ 'MENU' + "NAV DISPLAY" + 'ENTER' + "CDI Scale" + 'ENTER'

Select your preferred CDI (Course Deviation Indicator) Scale among 0.2, 0.5, 1.0, 2.0, 4.0, 10.0 Nm by using the *Joystick* and then press 'ENTER'. The default setting is 10.0 Nm.

5.2.2 NAVIGATION PAGE

➤ 'DATA' + "NAVIGATION DATA" + 'ENTER' then:
➤ 'MENU' + "NAV DISPLAY" + 'ENTER' + "Navigation Page" + 'ENTER'

A new window appears with six items. Using the *Joystick* select the item you want to change and press 'ENTER': another window appears, use the *Joystick* to select the preferred data to display in the Navigation Data page and in 3D Road page among BRG (Bearing), SOG (Speed Over Ground), COG (Course Over Ground), STR (Steering), CTS (Course To Steer), TRN (Turning), DTG (Distance To Go), VMG (Velocity May Good), SOA (Speed Of Advance), XTE (Cross Track Error), DRF (Drift), SET, DPT (Depth), TEMP (Water Temperature). When fished press 'ENTER'. The default setting is SOG, COG, DTG, CTS, XTE, STR.

5.3 ALARMS MENU

The chartplotter provides alarm settings for various functions. Here you can set the system for your navigational requirements.

➤ 'MENU' + "ALARMS" + 'ENTER'

5.3.1 AUTO OFF

➤ 'MENU' + "ALARMS" + 'ENTER' + "Auto Off" + 'ENTER'

You can enable (On) or disable (Off) the automatic shutdown of the alarms when the alarm condition disappears. The default setting is On.

5.3.2 ARRIVAL ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "Arrival Alarm" + 'ENTER'

Specifies the radius of a circle around the Waypoint of a Route: when your vessel reaches this circle the alarm sounds. After pressing 'ENTER' a box will appear with Off (00). Using the *Joystick* select the number preferred and press 'ENTER'. The default setting is 1.00 Nm.

5.3.3 XTE ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "XTE Alarm" + 'ENTER'

Specifies the distance your Cross Track Error (XTE) can vary before the sound of an alarm or disables the XTE Alarm (Off). After pressing 'ENTER' a box will appear with 00. Using the *Joystick* select the number preferred and press 'ENTER'. The default setting is Off (00).

5.3.4 ANCHOR ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "Anchor Alarm" + 'ENTER'

This function allows inserting of the limit of anchor dragging: beyond that, the alarm is activated. The chartplotter computes the distance between the current GPS position and the GPS position saved at the activation of the anchor alarm in the menu. If the computed distance exceeds the value set in the menu, the chartplotter shows the alarm message and starts the acoustic alarm. After pressing 'ENTER' a box will appear with 00. Using the *Joystick* select the number preferred and press 'ENTER'. The default setting is Off (00).

5.3.5 DEPTH ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "Depth Alarm" + 'ENTER'

Specifies the depth or disables the Depth Alarm. After pressing 'ENTER' a box will appear with 00. Using the *Joystick* select the number preferred and press 'ENTER'. The default setting is Off (00).

5.3.6 GROUNDING ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "Grounding Alarm" + 'ENTER'

The chartplotter is provided with a function that, by querying the map's data, verifies potential danger to navigation due to shallow water, land, rocks, obstructions and shoreline constructions. The maps are scanned periodically (every 10 seconds).

When the Grounding Alarm is active, the chartplotter scans an area in front of the boat. This area is identified by a triangle drawn in front of the boat icon whose direction is determined by the current boat heading. The length of the triangle is user selectable and its angle is 30 degrees. If any of the above objects are found, the chartplotter notifies the danger on a dedicated warning message box in the Grounding Alarm Report page (see Par. 5.2.8). The Grounding Alarm is switched Off by default after a Master Reset. Once the Grounding Alarm has been activated, a warn-

ing message is shown.

Note

The Grounding Alarm function only operates with the new NT+ C-CARDs. It also affects the speed of the redraw of the screen. If this function is not used it maybe disabled.

5.3.7 GROUNDING DEPTH LIMIT

➤ 'MENU' + "ALARMS" + 'ENTER' + "Grounding Depth Limit" + 'ENTER'

The user can enter the minimum depth.

5.3.8 GROUNDING ALARM RANGE

➤ 'MENU' + "ALARMS" + 'ENTER' + "Grounding Alarm Range" + 'ENTER'

Allows setting the length of the sector to be detected among 0.25, 0.5, 1.0 Nm. The default setting is 0.25 Nm. When any of the searched objects is found in the scanned area, a tick marker is printed on the relative box in the Grounding Alarm Report page (see Par. 5.2.8) to identify which dangerous objects have been currently detected.

5.3.9 GROUNDING ALARM REPORT

➤ 'MENU' + "ALARMS" + 'ENTER' + "Grounding Alarm Report" + 'ENTER'

Allows displaying the report of the dangerous objects currently detected.

5.3.10 EXTERNAL ALARM

➤ 'MENU' + "ALARMS" + 'ENTER' + "External Alarm" + 'ENTER'

Allows triggering an external alarm device. You can enable (On) or disable (Off) the External Alarm. The default setting is On.

5.4 ADVANCED MENU

The Advanced options are arranged in sub-menus. For example, all options that relate to the Fix functions are in Fix & Compass sub-menu.

➤ 'MENU' + "ADVANCED" + 'ENTER'

5.4.1 FIX & COMPASS MENU

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER'

The Fix & Comapss sub-menu contains options relating to GPS data input and display.

5.4.1.1 Fix Correction

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Fix correction" + 'ENTER'

Turns On/Off the Correction from the positioning system. If the new Correction is calculated, but the Correction is not enabled, the ship's position is not changed. The default setting is Off.

5.4.1.2 Compute Correction

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Compute correction" + 'ENTER'

Corrects fixes from the positioning instrument. By placing the cursor on the ship's real position and selecting this option, the error is calculated and internally memorized for appropriate correction, but not applied.

5.4.1.3 Correction Offset

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Correction Offset" + 'ENTER'

Manual correction of fix position.

5.4.1.4 Position Filter

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Position Filter" + 'ENTER'

Turns On/Off the Position Filter. In case of a jittering fix this option makes the ship' position more stable and the track smoother. The default setting is Off.

5.4.1.5 Speed Filter

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Speed Filter" + 'ENTER'

Turns On/Off the Speed Filter. When it is On, you can filter the speed of the ship, to optimize it. The default setting is Off.

5.4.1.6 Bearing

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Bearing" + 'ENTER'

Selects either degrees magnetic, Auto Mag, or True. If magnetic readings are selected the variation is computed automatically for every zone as soon as the chart is displayed. The default setting is Auto Mag.

5.4.1.7 Magnetic Variation

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "Magnetic Variation" + 'ENTER'

It is possible to calculate the Magnetic Variation in an Automatic or manual mode, by inserting the step for calculation of Magnetic Variation. The default setting is Automatic.

5.4.1.8 Calibrate Compass

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "CALIBRATE COMPASS" + 'ENTER'

The variation table is used to match magnetic value readout on the chartplotter comparable with the value given by the compass of the boat. In other words, since the compass of the boat must be compensated (due to the iron masses, ...), we use the same values given by the chartplotter. This means that, for example, if the BRG to the next Waypoint readout in the chartplotter display is "X" Mag degree, if you steer the boat reading "X" Mag degree from the compass, you are driving well toward the next Waypoint.

5.4.1.9 Static Navigation

➤ 'MENU' + "ADVANCED" + 'ENTER' + "FIX & COMPASS" + 'ENTER' + "STATIC NAVIGATION" + 'ENTER'

Sets up a threshold for the speed. When the speed received from the positioning device is under that threshold, the chartplotter displays zero speed. The default value is 0.1 Knots.

5.4.2 SIMULATION MENU

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER'

The built-in Simulator function allows you to become proficient in the use of the chartplotter. No current position fix is required because the chartplotter simulates position data internally.

5.4.2.1 Speed

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Speed" + 'ENTER'

To start the simulator you can insert the Speed value. Using the *Joystick* select the preferred Speed and press 'ENTER'. The default setting is 01.0 Kts.

5.4.2.2 Heading

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Heading" + 'ENTER'

To start the simulator you can insert the Heading value. Using the *Joystick* select the preferred Heading and press 'ENTER'. The default setting is 000° M.

5.4.2.3 Date and Time

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Date" + 'ENTER'

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Time" + 'ENTER'

Using the *Joystick* insert the preferred Date and Time and press 'ENTER'.

5.4.2.4 Cursor Control

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Cursor Control" + 'ENTER'

Enables (On)/disables (Off) the cursor control. The default setting is Off.

5.4.2.5 Simulation Mode

Once the settings are selected, turn on the Simulator:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Simulation Mode" + 'ENTER' + "On" + 'ENTER'

To turn On the Simulation select Off. The default setting is Off.

5.4.3 INPUT/OUTPUT MENU

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER'

5.4.3.1 Port 1/Port 2/Port 3 Input

Disables (selecting Off) or sets the format for the navigation data input serial Port1/2/3. For example to set the Port as NMEA-0183 (4800 Baud Rate, Parity None, 8 Bits Number, 1 Stop Bit and Normal Polarity) you must select 4800-N81-N. The available choice is among (1200-N81-N), (4800-N81-N), (4800-N82-N), (9600-O81-N), (9600-N81-N), C-COM (*). The default setting is (4800-N81-N).

➤ 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1/Port 2/ Port 3 Input" + 'ENTER'

Choose your preferred setting and press 'ENTER' to confirm.

Note (*)

The option C-COM defines on which Port (both Input and Output) the C-COM modem is connected. It is important to remark that this setting affects the Input and the Output of the selected Port. C-COM can only be set on one Port at time. If C-COM was already assigned to a Port and the user tries to set the C-COM to another Port, the chart plotter will show a message that warns the user about the current settings and asks if the new settings must overwrite the previous ones.

5.4.3.2 Port 1/Port 2/Port 3 Output

Disables (Off) or sets the interface as NMEA 0183, NMEA 0180, NMEA 0180/CDX.. The default setting is 0183.

- 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1/Port 2/ Port 3 Output" + 'ENTER'

5.4.3.3 Port 1/Port 2/Port 3 NMEA Output

The chart plotter allows customizing the NMEA-0183 sentence transmitted on each port. Each port can transmit a different set of sentences among: GLL, VTG, BOD, XTE, BWC, RMA, RMB, RMC, APB, WCV, GGA, HSL, HDG. The default setting is GLL, VTG, XTE, RMB, RMC, APB On and BOD, BWC, RMA, WCV, GGA, HSL , HDG Off.

- 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Port 1/ Port 2/Port 3 NMEA Output" + 'ENTER'

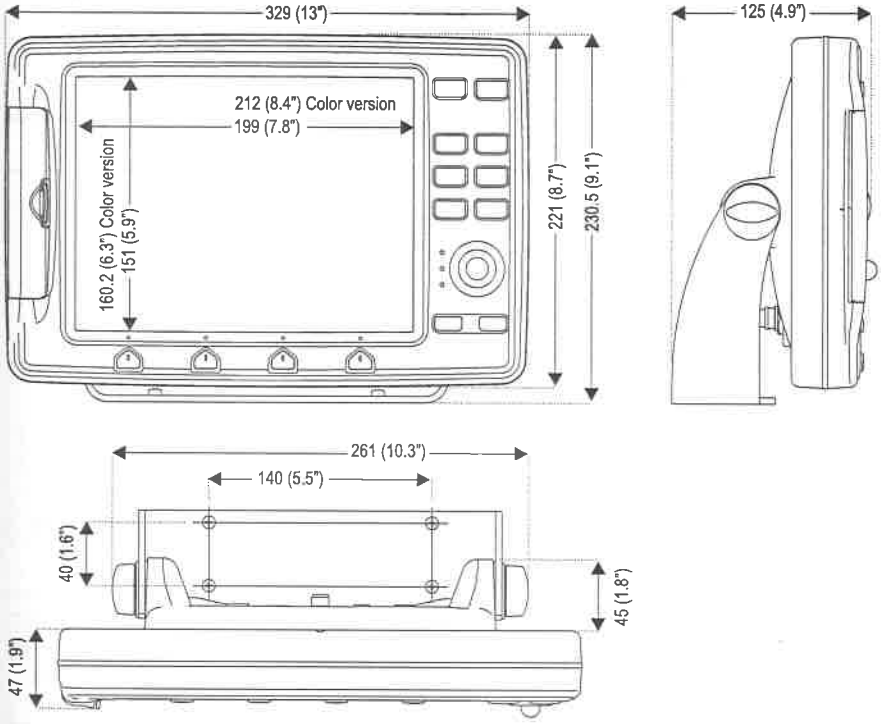
5.4.3.4 Cable Wiring Pages

Shows a window containing the inteface cable wiring. See Par. 6.3 and 6.4.

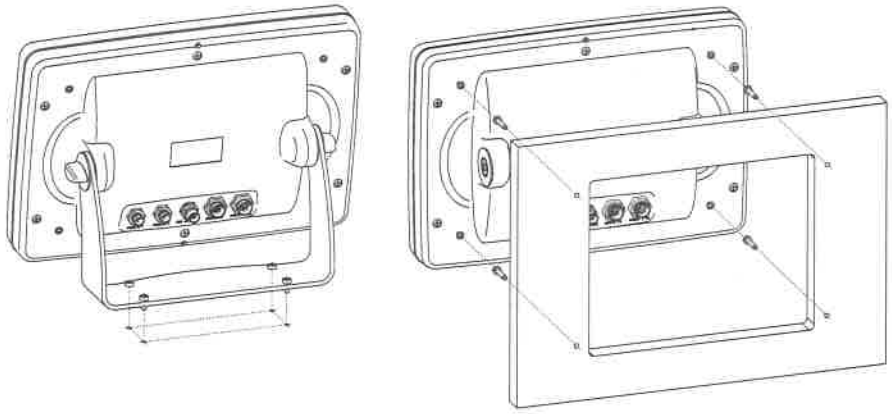
- 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Power I/O Cable Wiring" + 'ENTER'
- 'MENU' + "ADVANCED" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "Aux I/O Cable Wiring" + 'ENTER'

6
For the Technician

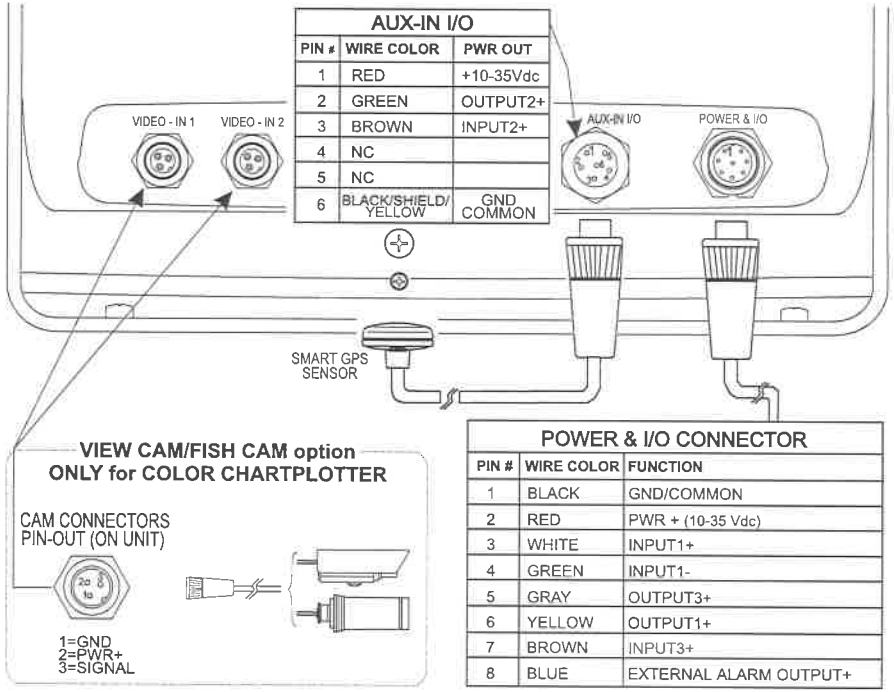
6.1 DIMENSIONS



6.2 INSTALLATION AND REMOVING



6.3 EXTERNAL WIRING

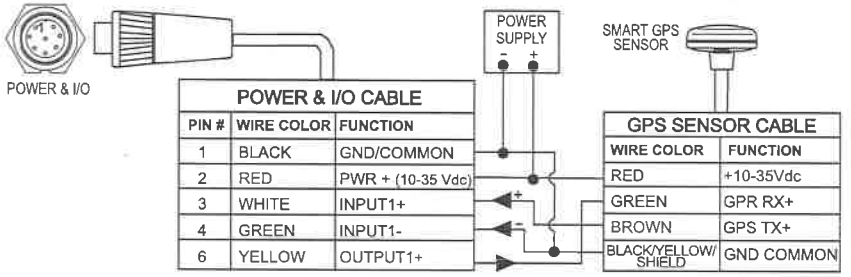


AUX-IN I/O		
PIN #	WIRE COLOR	PWR OUT
1	RED	+10-35Vdc
2	GREEN	OUTPUT2+
3	BROWN	INPUT2+
4	NC	
5	NC	
6	BLACK/SHIELD/ YELLOW	GND COMMON

POWER & I/O CONNECTOR		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT1+
4	GREEN	INPUT1-
5	GRAY	OUTPUT3+
6	YELLOW	OUTPUT1+
7	BROWN	INPUT3+
8	BLUE	EXTERNAL ALARM OUTPUT+

6.4 TYPICAL CONNECTION - "POWER & I/O" CONNECTOR

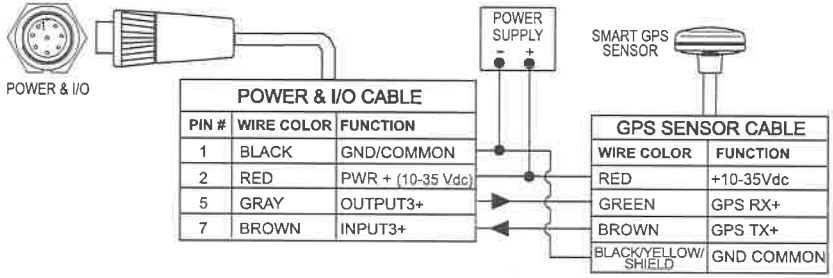
6.4.1 GPS CONNECTIONS



POWER & I/O CABLE		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT1+
4	GREEN	INPUT1-
6	YELLOW	OUTPUT1+

GPS SENSOR CABLE	
WIRE COLOR	FUNCTION
RED	+10-35Vdc
GREEN	GPR RX+
BROWN	GPS TX+
BLACK/YELLOW/ SHIELD	GND COMMON

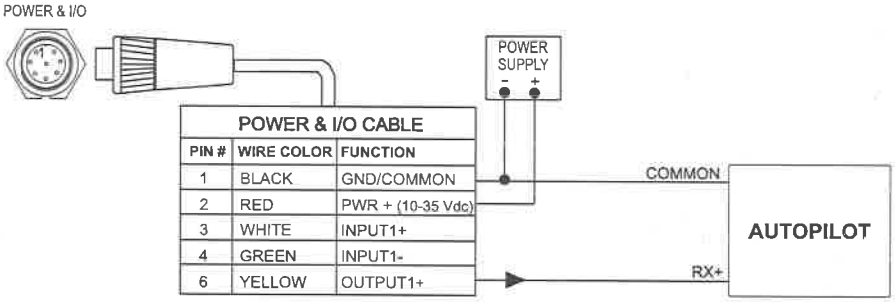
GPS SENSOR CABLE		
PIN#	WIRE COLOR	FUNCTION
1	RED	+10-35Vdc
2	GREEN	GPS RX+
3	BROWN	GPS TX+
6	BLACK/YELLOW/ SHIELD	GND COMMON



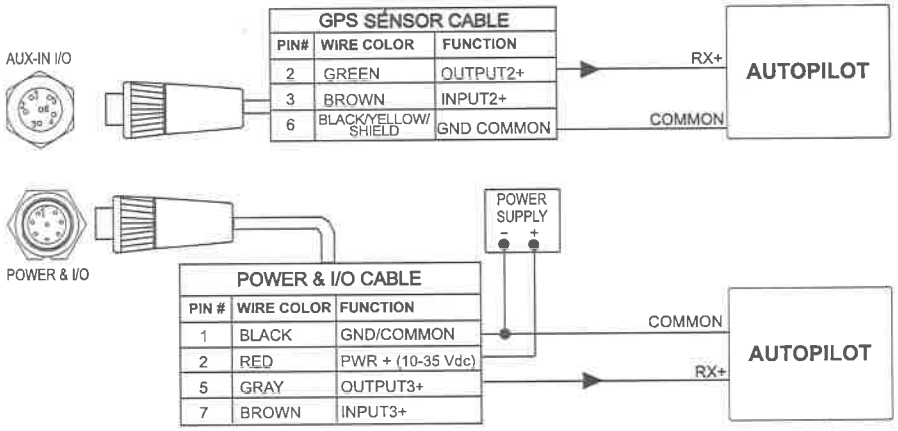
POWER & I/O CABLE		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
5	GRAY	OUTPUT3+
7	BROWN	INPUT3+

GPS SENSOR CABLE	
WIRE COLOR	FUNCTION
RED	+10-35Vdc
GREEN	GPS RX+
BROWN	GPS TX+
BLACK/YELLOW/ SHIELD	GND COMMON

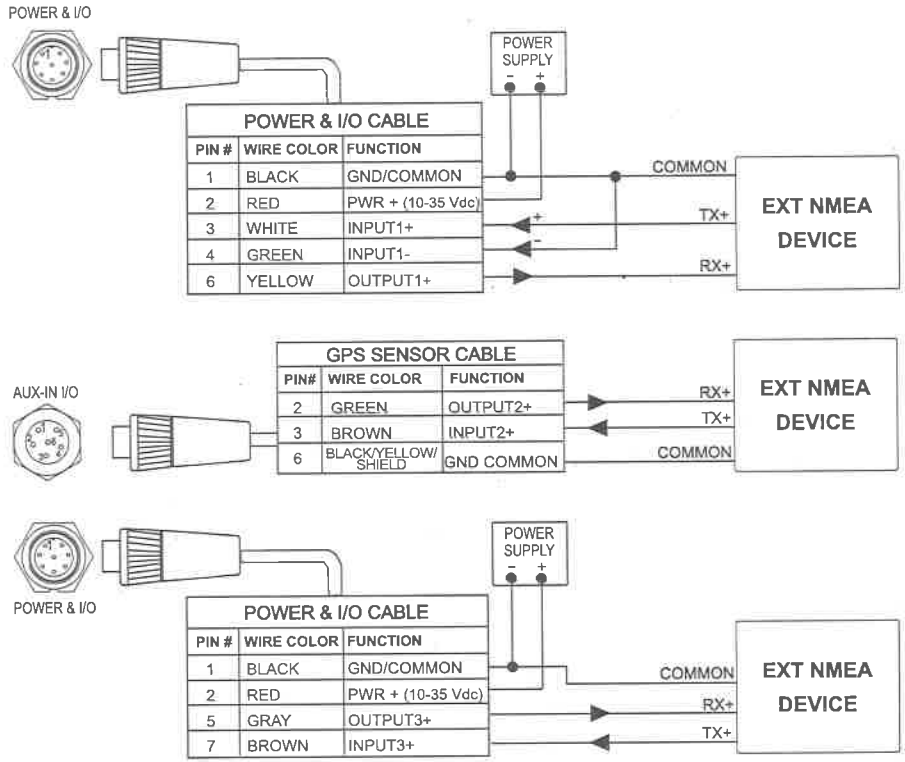
6.4.2 AUTOPILOT CONNECTIONS



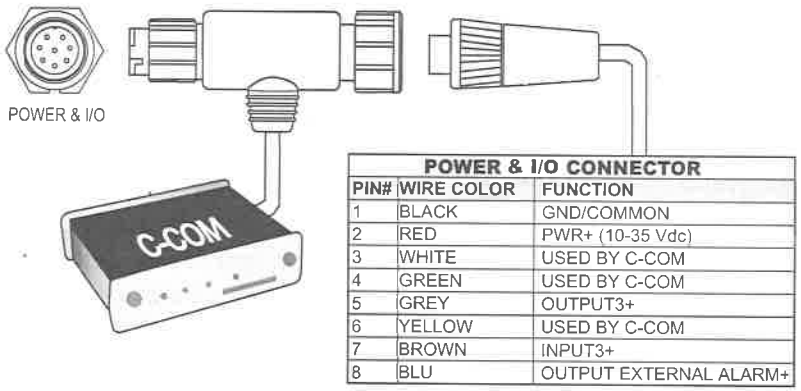
POWER & I/O CABLE		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT1+
4	GREEN	INPUT1-
6	YELLOW	OUTPUT1+



6.4.3 EXTERNAL NMEA CONNECTIONS



6.4.4 C-COM CONNECTIONS



6.4.5 EXTERNAL ALARM CONNECTION

POWER & I/O CONNECTOR		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
8	BLUE	EXTERNAL ALARM OUTPUT+ (OPEN COLLECTOR)

6.5 TROUBLESHOOTING

The following is a brief guide to some of the problems you may experience while using the chartplotter with common solutions.

6.5.1 PROBLEMS AND SOLUTIONS

The chartplotter does not turn On – Make sure that the correct voltage (10-35 volt dc) is present. Check also that the polarity is correct. Refer to the Par. 2.2.

The chartplotter does not turn Off – If, after a 'POWER' pressure (for at least 3 seconds) the chartplotter does not turn Off, then turn Off the voltage.

The chartplotter does not respond to any command – Try to turn Off, and then turn On. If the problem persists, erase the memory (see Par. 6.7.1).

The chartplotter does not get a valid fix – Make sure that no metal obstacle is placed around the chartplotter acting as a shield for the antenna. If, after 15 minutes, the chartplotter does not get the fix, turn it Off and On again.

The chartplotter screen becames very dark after a long exposure to direct sunlight – Control the contrast (see Par. 2.3).

6.5.2 WHEN NOTHING ELSE WORKS

The list above should allow you to solve most of the operating problems you are likely to encounter. Simply disconnecting the chartplotter from power for a moment may solve your problem as well.

If this does not help, you can try one additional memory clear option. This is a factory default RAM Clear that should only be tried after all other attempts have been made. When using the RAM Clear feature, you will loose all user stored information and the chartplotter will default to factory settings. Before this step, you have the option of saving user Marks, Track history and Routes to a User C-CARD (this is an optional purchase from your dealer). To perform a RAM Clear see Par. 6.7.1.

6.5.3 IF YOU NEED ASSISTANCE

If you still need assistance, call your local dealer, reporting the Software Release and Cartography information available in the About page.

➤ 'MENU' + "ADVANCED" + 'ENTER' + "About..." + 'ENTER'

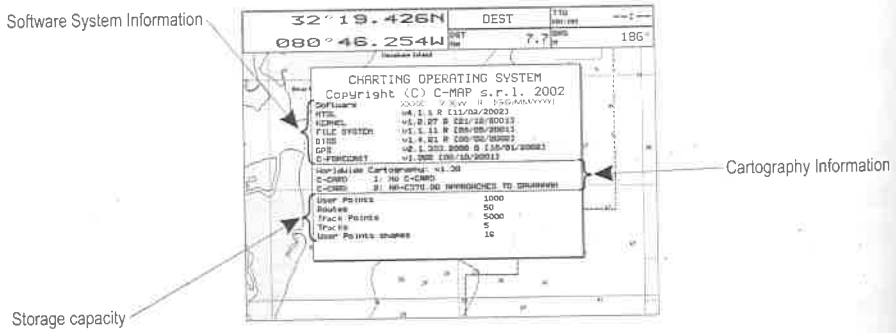


Fig. 6.5.3 - About Page

Note

The information shown on this page depends on the software running on the chartplotter and on the C-CARDs inserted.

6.6 SYSTEM TEST

If you have connected your position-finding device according to the instructions, and chosen the proper menu selection for your device, and are still having problems with your chartplotter, the extended auto-test should help determine the problem. Make sure the chartplotter is turned Off. While pressing and holding any other key, turn the chartplotter On. A new menu will appear on the display:

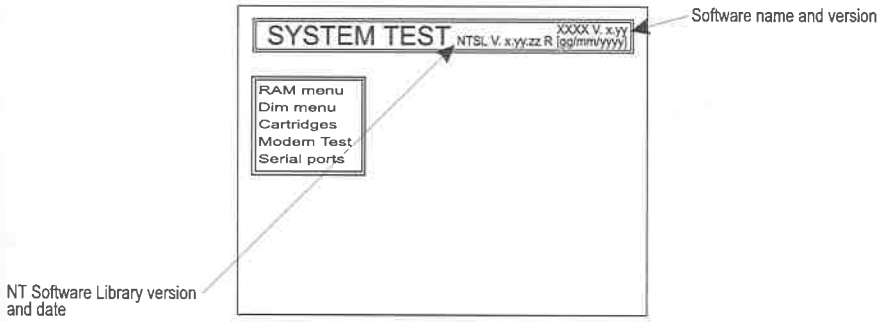


Fig. 6.6 - System Test

Use the *Joystick* to select the preferred test: this will display in reverse video and with the relative menu window. To choice the test press 'ENTER'. To exit from any submenu press 'CLEAR'. To exit from the System Test turn Off the chartplotter.

6.6.1 RAM menu

This test verifies the integrity of the memories and if preferred during this test all the internal memory can be erased and the default setting restored.

- **RAM Test**
  To verify the integrity of the RAM. If on the screen the message "ERROR" appears, the RAM is physically damaged.
- **RAM Clear**
  To clear internal memory. If the chartplotter exhibits unusual behaviour, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM.

This operation will erase all Marks, Events, Routes, stored track plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original default values. To confirm to clear RAM press 'ENTER' again (but if at this time you do not wish to clear RAM press 'CLEAR').

6.6.2 DIM menu

To select the preferred value for contrast and backlight.

- **Contrast**
  Each time you pressed the *Joystick* to right, the screen will decrease brightness, instead of to left it will increase brightness.

- **Backlight**
  To set the backlight. Operates in similar mode as Contrast.

6.6.3 CARTRIDGES

To check the C-CARD and its connector.

- **Background ROM**
  To test the WorldWideBackground. If there is not a malfunction, the code of the Background and the message "OK" are shown.

- **C-CARD Test**
  To test the C-CARD. There are the following possible situations:
  1. if there is a C-CARD inserted in the slot and there is not a malfunction, the name of the C-CARD zone and the message "OK" are shown.
  2. if there is a C-CARD inserted in the slot, but it is a damaged C-CARD, the name of the C-CARD zone and the message "Faulty" are shown.
  3. if there is not any C-CARD inserted in the slot, the message "not present" is shown.
  4. if there is an User C-CARD inserted in the slot, the message "USER C-CARD" is shown.

- **C-CARD Connector**
  Indicates if there is a malfunction in the connector. It is used only in production.

6.6.4 MODEM TEST

To check the Modem connections.

6.6.5 SERIAL PORTS

If you are having problems receiving data from the position-finding instrument, this test should help determine the problem.

- **Change Parameters**
  Allows to change the parameters of the serial interface. This menu allows to select the **Port** (Signal Source) between Port 1, Port 2 or Port 3 , the **Baud Rate** between 4800 or 9600, the **Data Bits** (Word Length) between 7 or 8, the **Parity** between even, odd or none, the **Stop Bits** between 1 or 2. Default settings are: Port = External Port, Baud Rate = 4800, Data Bits = 8, Parity = none, Stop Bits = 1.

- **Input Data Display**
  Allows the chartplotter to act as a computer terminal and display the incoming data exactly as it received.
  If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular receiver. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, you may have a broken connection and no data is being received.
  Use 'ZOOM IN' to stop (or continue after pause) data displaying, 'ENTER' to show data in hex or ASCII mode (normal or small) and 'CLEAR' to exit.

A
C-Forecast

C-Forecast is an innovative meteorological forecasting system with the ability to visualise the weather forecast, for a given area, directly on to the area related cartography on a chart plotter. The weather data is transferred very quickly to the plotter thanks to C-COM, a device for data-transfer via GSM developed by C-MAP.

In order to access the C-Forecast it is necessary to set up a subscription. The only other cost will be the GSM-call to the remote weather report server, normally lasting less then a minute.

With C-Forecast it is possible to receive weather information regarding the wind, speed and direction, as well as the height of the waves in the area. The weather data will be superimposed on to the C-MAP NT+ cartography and visualised directly on the plotter screen.

In order to access the C-Forecast, the plotter must have the necessary software to make the connection, through the GSM-modem (C-COM), with the weather data server.

The area covered by the weather information is determined by either the actual position and heading, given by the onboard GPS, or co-ordinates entered manually by the user. The user variable features can be pre-set through the C-Forecast menu on the plotter (see Fig. A) together with the level of detail. To see the area covered by the C-Forecast, please refer to the c-forecast.c-map.com web site.

The weather forecast is covering a period of 48-hours, within which the user can collect the information for any period of 6 hours (example: at 2 PM on the 21st of March 2002 a user's request a weather forecast, the forecast will cover the period for the following 6 hours based on the predicted weather situation at the time of collection, ending at 8 PM on the 21st of March 2002). The weather information on the C-Forecast server is revised every hour, covering the following 48 hours.

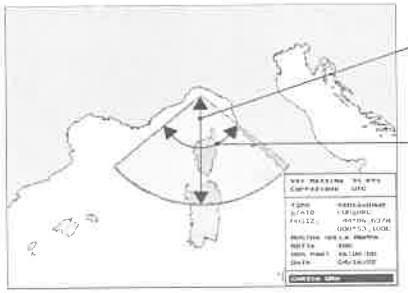


Fig. A - Preview of the area covered by the requested weather forecast

The coverage of the weather forecast in each instant is determined by the maximum speed of the boat given at the time of subscription (see Fig. A and table Aa below).

COVERAGE OF THE FORECASTING AREA

Maximum Speed(Knt)	Width in Degree	Travel Distance (Nm)
5	160	30
10	150	60
15	140	90
20	130	120
25	120	150
30	110	180
35	100	210
40	90	240

Fig. Aa - Table of the area covered by the forecast

A.1 PRESENTATION OF DATA

The information received from the weather data server consists of two type of information which will be shown on the plotter screen, represented by two different icons, one relating to wind and the other to waves.

The icon for wind is a circle with an arrow pointing towards the center where the arrow represents the direction of the wind, it will show a number this represents speed (shown in units according to measurements pre-set by the user - see the left column in Fig. A.1). It is possible to pre-set an upper limit for the wind speed and connect this limit to an alarm which will alert and request navigator action (see the right column in Fig. A.1).

Note ONLY FOR COLOR CHARTPLOTTER

The colour of the wind icon will change to red when the wind speed limit has been reached (preset by the user in the menu).

Fig. A.1 - Wind icon in condition: normal (left) and condition alarm (right)

The icon for the waves is a circle with a number representing the height of the waves (shown in units according to measurements preset by the user), see the left column of Fig. A.1a. It is possible to preset an upper limit for the height of the waves, and connect this limit to an alarm which will alert and request navigator action (see the right column in Fig. A.1a).

Note ONLY FOR COLOR CHARTPLOTTER

The colour of the wave height icon will change to red when the height limit has been reached (preset by the user in the menu).

Fig. A.1a - Icon for waves, condition: normal (left) and for alarm (right)

The weather information received from the C-Forecast server is saved in the chart plotter's memory. The information can be accessed and used in two ways, by using the chart plotter in 'navigation' mode or in 'browse' mode (see Fig. A.1.1).

For every point for which forecast data have been collected, the information saved to memory contains the data for the subsequent 6 hours from the time of collection. The area covered by the data in each instants is determined by the maximum speed of the boat indicated at the time of subscription.

Every point for which weather data have been received, the predictions will cover the maximum travel distance, if departure happens at the same time as receipt of the weather data, and the travel speed is at the maximum speed for the full 6 hours. The significance of this is that there is no need for collecting further information from the C-Forecast server, until the end of the 6th hour covered by every circle. As you can see from Fig. A.1b, from the time of collection, the travel time covered is reduced by an hour until the last hour where you will have to collect a new prediction covering the following 6 hours.

Hours of Navigation	Hours covered by the forecast
1ª	6
2ª	5
3ª	4
4ª	3
5ª	2
6ª	1

Fig. A.1b - Table of hours covered area by the weather forecast

A.1.1 PRESENTATION OF WEATHER INFORMATION

A.1.1.1 Viewing the information in Navigation mode

The Navigation mode allows the user to view on screen the weather information superimposed directly onto the cartography (the wind or the waves – not both simultaneously), the area shown is relative to the position of the boat (plotted by the onboard GPS, or in simulation mode given by the simulator). The data is relative to the time of day and information received or simulated. The type of information shown on the screen depends on the option chosen by the user in the menu: Video settings - the 3 options are: no information, wind or waves.

The information shown is presented as a serie of icons - wind or waves.

The amount of icons presented on screen, depend on the position from where the information was collected and the maximum travel speed.

- Example 1: If the boat is traveling at maximum speed all the icons will show up on the screen.
- Example 2: If the boat is laying still without moving position, no icons will show.

If the boat travels at maximum speed and reaches the area covered by the information of the 6th hour, the related '6th hour information' will be available on screen. However if the boat arrived at the same area covered by the '6th hour information', after the 6th hour, no information would shown, - the information saved in memory is regarded not up-to-date by the plotter after the 6th hour and discarded, and new weather information will have to be collected from the C-Forecast server.

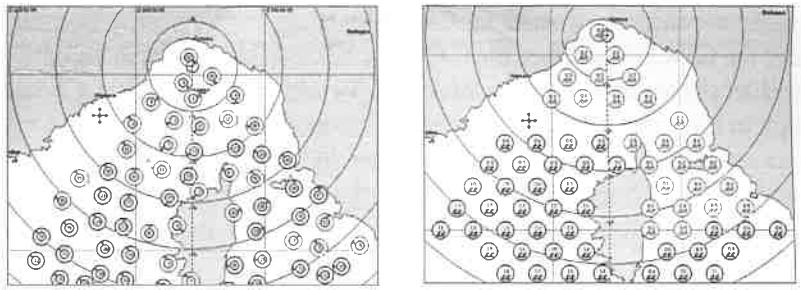


Fig. A.1.1.1 - Mode Navigation: icons showing wind (left) and icons for waves (right)

A.1.1.2 Viewing the weather information in Browse mode

The Browse mode allows the user to view on screen (superimposed onto the cartography) the information related to wind or waves. The user can directly choose the time and area covered in order to evaluate the situation at the time of arrival in the area.

To activate the Browse mode, simply choose in the menu - preview. As soon as the user has activated Browse mode, the cartography centers on the point to which weather information have been collected and saved. It is possible to use the cursor to move the 'view' around the area covered by the 6 hours weather forecast and change the view between wind and waves.

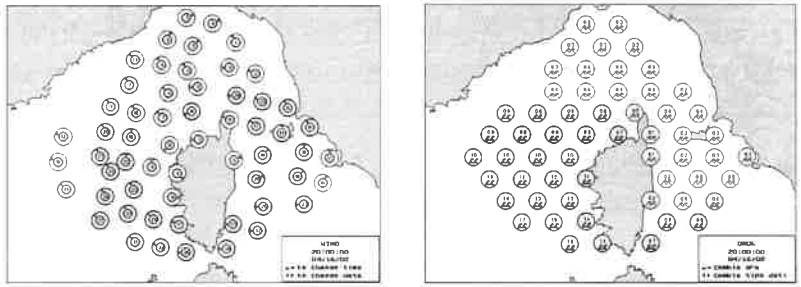


Fig. A.1.1.2 - Mode Browse: icons for wind (left) and icons for waves (right)

A.2 SYSTEM SET UP C-FORECAST

To set-up and access the C-Forecast weather forecasting system a serie of steps must be completed, please read the following carefully:

- Sign up for subscription with C-Forecast. Contact the local reseller or contact directly your local C-MAP office.

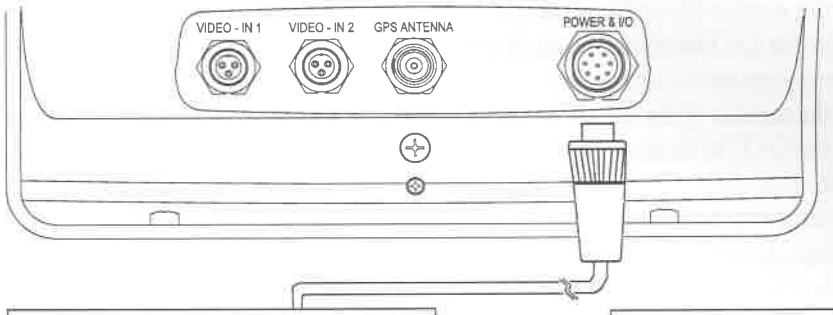
- Connect the chart plotter with the C-COM module.
- Insert the GSM SIM cart into the C-COM module (SIM-card not included).
- The chart plotter has two serial connections ports for exchange of data. Choose one of these to make the connection to the C-COM module.
- Open set-up in the menu of the chart plotter and insert the identification code of the subscription, included in the subscription documentation received from C-MAP.
- Insert also the telephone number for the C-Forecast server, included in the subscription documentation received from C-MAP.
- Remember to insert the SIM PIN number (received together with the SIM-card).

When the above steps have been completed, it will immediately be possible to receive weather information from the C-Forecast server in the following way:
- Insert the position from where the boat will depart (manually or by use of the GPS).
- Insert the direction in which the boat will travel.
- Insert the date and time of departure (ETA).
- Start the transfer of weather information.

A.2.1 INSTALLATION OF HARDWARE COMPONENTS

A.2.1.1 Electrical connection

The data connection between the C-COM module and the chart plotter is done by using a serial port (it is possible on some chart plotter to a port of your choice). To make the electrical connection refer to table below .



POWER & I/O CABLE		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	INPUT 1-
5	GRAY	OUTPUT 2+
6	YELLOW	OUTPUT 1+
7	BROWN	INPUT 2+
8	BLUE	EXTERNAL ALARM OUTPUT+

C-COM CABLE	
WIRE COLOR	FUNCTION
BLACK	PWR-
RED	+ 10-35 Vdc
YELLOW	OUTPUT+
BROWN	SIGNAL GND
GREEN	NOT USED
WHITE	INPUT+
GRAY	NOT USED

Fig. A.2.1.1 - Electrical connection to chart plotters with 8 pins connector

A.2.1.2 Verification of C-COM module

The Modem Test (can also read; SYSTEM TEST *) makes it possible to test the and verify a connection between the C-COM and the chart plotter.

Note (*)
To start the SYSTEM TEST switch on the chart plotter using 'POWER' and any other key.

The Modem Test controls that there is a communication between the chart plotter and the C-COM by for a short time transmitting a serie of diagnostic commands to the C-COM and verify the result.

If the chart plotter is build with two serial ports, it is possible to choose which port to use for connection with the C-COM module.

The diagnostic screen for Modem Test, will show the following information:

a. MODEM OK: #
b. MODEM ERROR: #
c. MODEM TIMEOUT ERROR: #

a. If the number (#) by the MODEM OK is different to 0, it is an indication that the connection between the chart plotter and the C-COM module is established and the C-COM is responding correctly. No problems have been found.

b. If the number (#) by the MODEM OK is different to 0, it shows that the connection to the C-COM module has not been made - the C-COM module may be defect.

c. If the number (#) by the MODEM TIMEOUT ERROR is different to 0, it shows that the C-COM module is responding but the link to the chart plotter has not been made.
The error may be for one of the following reasons:
- The C-COM is not connected or not connected correctly to the chart plotter.
- The C-COM module has not got a power supply.
- The serial port to which the link between the C-COM and the chart plotter is made, is not the correct port, to which the C-COM should be connected.

A.2.1.3 The GSM SIM-card

The GSM SIM-card must be of a type which will allow data transfer. The SIM-card must be inserted into the SIM-slot in the C-COM module. If the GSM SIM-card need a PIN-code inserted, for the SIM-card to be activated, then this can be done in the C-Forecast operation menu. The chart plotter does not accept deactivation of the PIN-code.

A.2.2 INSTALLATION OF SOFTWARE

A.2.2.1 Registrations of user ID

The user identification number is a string of 16 characters and numbers "####-####-####-####". The character "-" is not a part of the code and is only used to make the code more legible and is not to be inserted.

The code is supplied together with the subscription documents from C-MAP. The registration code can only be used in one (1) chart plotter. The C-Forecast server will associate the code and the chart plotter in which the code was first used. During the connection start-up, the C-Forecast server will compare the registration information and the code identifying the chart plotter and will only connect to a known chart plotter.

Note

The Registration Code is contained in the chart plotter and after insertion can not be changed by the user. However if the user whish to change the subscription, for the reason of change to an other chart plotter (for example: change to and other model or change because of faulty chart) it is nessesary to contact C-MAP directly in order to transfer the subscription to the new chart plotter.

A.2.2.2 Inserting the telephone number of the C-Forecast server

The telephone number through which the C-COM will make the connection with the C-Forecast server must be inserted in the menu part - C-Forecast set-up.

A.2.2.3 Activation of the serial port

Some chart plotters are build with more than one serial port, it is therefor necessary to choose which port is to be used. The user can do this in the menu part - C-Forecast set-up.

A.2.3 TRANSFER OF WEATHER DATA

Before the data transfer can start, it is necessary to insert: Time of departure (ETD), current position (PO) manually or obtained from the GPS and the heading. All the data transfer function are available in the menu - C-Forecast, Preview download.

A.2.3.1 Insert current date and time

Normally the chart plotter will receive date and time through the build in or attached GPS, or in simulation mode - manually. In case it is necessary to insert the date and time manually, before collection of data from C-Forecast, it is done in the menu - C-forecast, preview, date and time (ETD).

If the date and time are not inserted the server can not provide any information or the transferred information may be of no value for navigation.

A.2.3.2 Selection of an area from which to get weather data

The area covered by the weather data is variable according to the type of subscription, the point of departure and the heading.

Inserting of point of departure

The point of departure can be set by the user either directly from the GPS - actual or simulated position, by using cursor position or by inserting the numeric co-ordinates manually.

Inserting heading

The heading will represents the central line of the area covered by the weather information. The heading, is normally received from the GPS, but can manually be modified by the user.

A.2.3.3 Selecting type of weather information to be collected

It is possible to select the type of data to be collected from the options below:
- Wind: only the direction and pressure/speed
- Waves: only height
- Wind + Waves: both the above

A.2.3.4 Download of data

If the previous options/settings have been carried out, it is now possible to download the weather information using the menu item - C-Forecast; download preview.

When the download function is activated, the preview window will close and a window containing the current subscription detail will appear, you can have two types of subscription - Download or Period:

If the subscription is 'Period' the C-Forecast server will show the expiry data. Or if the subscription is 'Download' the C-Forecast server will show the remaining number of downloads available and the expiry date.

This information can be saved to the chart plotter's memory and the updated information will be shown before each download.

The first time the chart plotter is connected or after a 'Master Reset' the above information is not available, in this case the window will not show any information. At the following collection of weather information, the subscription information will be restored to the system.

Note

The date-format setting can be change by the user, in the chart plotter menu.

Error messages

A window will appear on screen in case of error, with a description of the error.

SIM-card PIN Error

- If the GSM SIM-card in use has PIN-code activation and the PIN-code has not been inserted in the set-up menu of C-Forecast, a message will appear "PIN SIM not entered".
- If the PIN-code inserted is not correct, a message will appear "incorrect PIN SIM".
- If the "incorrect PIN SIM" message appears more than 3 times, a message will appear "incorrect PIN SIM - SIM locked".

Other Errors

Subscription not found (user not registered).
Incorrect Password (for future use).
Incorrect Registration Code.
Licence not found.
Licence not active.
Licence expired.
Licence data not yet started.

No Download available (only subscription, Download).
Subscription not authorised (C-Forecast server not available).
Insufficient number of download available.

A.3 MENU SETTINGS

All menu settings are reached from the C-Forecast menu selected from the main Menu. The C-Forecast menu contains the following items: C-Forecast Set-Up, Download Preview and Browse.

A.3.1 C-FORECAST SETUP MENU

From the C-Forecast Set-Up menu it is allowed entering the information specified in the subscription and the other settings relative to the display of the weather information on the map. Once the main Menu is shown on the screen, to select the C-Forecast SetUp menu follow the procedure:

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'
The C-Forecast Setup menu is shown on the screen.

A.3.1.1Display

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "DISPLAY" + 'ENTER'

Display is the type of weather information to be shown on the map: Wind, Waves and Off. Wind and waves cannot be displayed simultaneously. The default setting is Off.

A.3.1.2 Wind Speed Alert

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "WIND SPEED ALERT" + 'ENTER'

Wind Speed Alert is the wind speed above which all icons are drawn in a different gray tone/shape. The value can be in the range from 0 to 250 k/h or it can be set Off. The default setting is Off.

Note **ONLY FOR COLOR CHARTPLOTTER**

All icons are drawn in a different color. The color icon becames red when the wind speed excedes the speed limit set by menu.

A.3.1.3 Waves Height Alert

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "WAVES HEIGHT ALERT" + 'ENTER'

Waves Height Alert is the wave height above which all icons are drawn in a different gray tone/shape. The value can be in the range from 0.1 to 25.0 Mt or it can be set Off. The default setting is Off.

Note ONLY FOR COLOR CHARTPLOTTER

All icons are drawn in a different color. The color icon becames red when the waves height excedes the height limit set by menu.

A.3.1.4 Wind Speed Unit

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "WIND SPEED UNIT" + 'ENTER'

Wind Speed Unit is the unit of measure used for the wind speed display: Kts; m/s; Kph; Bft; Mph. The default setting is Kph.

A.3.1.5 Wave Height Unit

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "WAVE HEIGHT UNIT" + 'ENTER'

Wave Height Unit is the unit of measure used for the waves height display: Mt, Ft. The default setting is Mt.

A.3.1.6 User Identifier

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "USER ID" + 'ENTER'

User Id is needed for the data transferring authorization and must match the data provided in the subscription.

A.3.1.7 Telephone Number

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "TELEPHONE NUMBER" + 'ENTER'

Telephone Number is the telephone number of the service provider. The maximum length of telephone number is 20 characters.

A.3.1.8 Sim Pin

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "SIM PIN" + 'ENTER'

Sim Pin is the PIN of the GSM SIM Card used in the GSM module. The Sim Pin is always shown. The maximum length is 8 digits. The default PIN is an empty string.

A.3.1.9 Max Speed

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "MAX SPEED" + 'ENTER'

Max Speed is the maximum vessel's speed declared in the subscription. The value can be in the range from 5.0 to 40.0 Kts. If a value lower than 5.0 Kts is entered, the chartplotter emits three beeps and sets the value to 5.0 Kts; if the entered value is greater than 40.0 Kts the chartplotter emits three beeps and sets the value to 40.0 Kts. The default setting is 15 Kts.

Note

The Max Speed is used to define the area covered by the weather information in the Preview display mode (see Par. A.3.2).

A.3.1.10 C-COM/Modem Port

➤ "C-FORECAST" + 'ENTER' + "C-FORECAST SETUP" + 'ENTER'+ "C-COM/MODEM PORT" + 'ENTER'

Available values are disabled, Port 1, Port 2 and Port 3.

A.3.2 DOWNLOAD PREVIEW

The Preview allows seeing the map area that will be covered by the weather information. Once the main Menu is shown on the screen:

➤ "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'

Once the Preview is activated the Main Menu is closed and the map is centered on the vessel's position if received from GPS or simulated. The map scale changes automatically to the zoom level that contains the whole area covered by weather information.

On the screen a sector is shown: the width of the area covered is proportional to the vessel's speed and depends on the maximum vessel's speed declared in the subscription (see Fig. Aa).

Once the Preview function is active a prompt is shown on the map display inside a dedicated window. The user can change the values in the prompt manually. Moving about the selections it's possible to set the starting position coordinates between Fix and Cursor. Max Speed and Local Time Offset are shown and cannot be changed.

A.3.2.1 Type

➤ "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "TYPE" + 'ENTER'

Type determines the type of data downloaded from the server. Type can be set to Wind (downloads only Wind information); Waves (download only waves information); Wind + Waves (download both types simultaneously). The default setting is Wind + Waves.

A.3.2.2 Mode and Position

- "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "MODE" + 'ENTER'

Available options are Fix and Cursor. If the active mode is Fix the coordinates field (Position) cannot be modified manually. If the GPS is not providing a valid fix position or the Simulation mode is not active, the active mode is Cursor, the starting position is at the cursor coordinates and it is not possible to switch to Fix mode. The default Lat/Lon is the current vessel's position (received from the GPS or simulated).

A.3.2.3 Show on Chart

- '"C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "SHOW ON CHART" + 'ENTER'

Show On Chart enables to display chart at full screen. By pressing 'CLEAR' from chart return to this menu.

A.3.2.4 Course

- "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "COURSE" + 'ENTER'

The default Course value is the one received from the GPS. If the GPS is not providing a valid data, the default Course is to be set to 000.

A.3.2.5 ETD and Date

- "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "ETD" + 'ENTER'
- "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "DATE" + 'ENTER'

ETD (Estimated Time of Departure) and Date: the default Date and ETD are received from the GPS. If they are not received the default Date and ETD are to be the last most recently received values; a Warning message is shown. In case Date and ETD have never been received the default Date is the software release date and the default ETD is 12:00. The value inserted is Local Time: The user is to make sure that the correct Local Time Offset was set. The software will check that the entered ETD is not after 18 hours from current time (because the system provides a valid forecast for 24 hours from current time). The test is valid only when the GPS is providing valid Date and ETD.

A.3.2.6 Download Now

- "C-FORECAST" + 'ENTER' + "DOWNLOAD PREVIEW" + 'ENTER'+ "DOWNLOAD NOW" + 'ENTER'

When the Download function is activated the Preview window is closed and

replaced by another window. Information contained in this window is related to the current contract status, that can be Download or Period.

A.3.3 BROWSE

Browse allows seeing the wind or waves figures referring to a specific hour only, amongst the 6 hours preview provided by the server.

Browse mode can only be selected if at least one of the two data types has been downloaded from the server. If neither wind nor waves information is present, the chartplotter emits three beeps and shows a warning message saying that the Browse cannot be activated. Browse mode allows showing only one data type at time; this means that wind icons and wave icons cannot be shown simultaneously. If both types are loaded the default type will be Wind. If only one data type is loaded, it will be the active selection of the browse and it will not be possible to switch to the other type. Once the main Menu is shown on the screen:

- "C-FORECAST" + 'ENTER' + "BROWSE" + 'ENTER'

When Browse is selected from the C-Forecast menu the chartplotter goes on chart display (full mode – all data windows must be removed) and selects the map scale that allows seeing the whole area covered by the weather icons.

On the side of the starting position (depending on its rotation) there will be shown a prompt where the user can select the preferred time and the type of information to be displayed. The default time is the time of the first data received. Supposing to have data from 10:00 AM to 3:00 PM the first time will be 10:00 AM and the icons shown on the map will be only the ones referring to 10:00 AM.

The user is allowed to change the time of the preview (among the 6 hours) and the type of data between Wind and Waves by acting on the cursor key. Cursor key up and down change the time. Cursor key left and right change the data type.

The time step is one hour. When the last or first hour is set and the user tries to increase or decrease the time the chartplotter sounds three beeps and does not change the selected time. Changing the time, all the icons referring to the selected time are displayed on the map. If the time is increased the number of icons shown will cover a wider area. If the time is decreased, the icons shown on the map display will decrease. In this case, in order to avoid the map redraw, the icons without information will be represented by empty spots (no value and arrow shown).

Changing the data type between Wind and Waves the map display will be redrawn. If the current type is Wind and there is no Waves information, the

chartplotter does not allow to set Waves. Sounds 3 beeps and shows the message: "Warning Waves information not present". On the other hand, changing from Waves to Wind when wind icons are not loaded, the warning will be "Warning Wind information not present".

Pressing 'CLEAR' the Browse mode is quitted and the map is restored to the normal display.

B
C-Staff

The C-Staff functions are based on STAFF Concept ® (Satellite Tracking Aided Fleet Fishing). The STAFF Concept ® is designed for professional fishing purpose to allow monitoring the position of the vessels of a fleet from each vessel (the fleet may have until 20 vessels max). Any fleet's member sends information on his position, speed and heading, so the C-Staff Server contains information on all fleet's members and it is enable to comunicate information to each others.

STAFF Concept ® is a network that allows information exchange between a fleet amongst a wide range of services:

- Exchange geographical position between fleet members
- Fax, SMS and e-mail
- Communicate with other network users
- Internet access

The fleet's members position is shown on the display of the connected chartplotters. The position of the vessel is represented on the chartplotter screen by icon, vessel index (univocal value for each vessel in the range from 1 to 20) and vessel name represented by an 8 characters string (optional).

Each position is shown on the chartplotter display for max 24 hours since the last valid position received. The chartplotter calculates the supposed (or estimated) position of the vessel on the basis of the received position, speed and heading.

The C-Staff functions are available only is the OBC - On Board Computer device is opportunely connected to the chartplotter . For more information contact the C-MAP Italia.

B.1 C-STAFF MENU

All menu settings are reached from the C-Staff menu:

➤ 'MENU' + "ADVANCED" + 'ENTER' + "C-STAFF" + 'ENTER'

The C-Staff menu contains the following items: Send Position and Position Request.

B.1.1 SEND POSITION

Sends to OBC the trasmission command of the vessel current position to the others fleet's members.

➤ 'MENU' + "ADVANCED" + 'ENTER' + "C-STAFF" + 'ENTER' + "SEND POSITION" + 'ENTER'

When the command is executed, the message "...OK" is shown next to the relative menu item.

B.1.2 POSITION REQUEST

Sends to OBC the request command to update the positions of all fleet's members.

➤ 'MENU' + "ADVANCED" + 'ENTER' + "C-STAFF" + 'ENTER' + "POSITION REQUEST" + 'ENTER'

When the command is executed, the message "...OK" is shown next to the relative menu item.

C
Terms

This section explains the terms that may be unfamiliar to the reader.

■ **Arrival Time**
The estimated time of day you will reach your destination, based on your current speed and track from GPS.

■ **Attention Areas**
Attention Areas are areas in which special attention by the mariner is required, because of natural or man-made hazards, or sailing regulations and restrictions. Moreover a special symbol (!) is placed inside the area selecting On option. This is valid also for the categories: FISHING FACILITY, MARINE FARM/CULTURE, MILITARY PRACTICE AREA, RESTRICTED AREA, SEAPLANE LANDING AREA. When the area is small, it is identified only by the boundary.

■ **AWA = Apparent Wind Angle**
Direction of the air relative to the moving ship.

■ **AWS = Apparent Wind Speed**
Speed ot the air relative to the moving ship.

■ **Azimuth**
The angular measurement from the horizon to a satellite or another object.

■ **Beacon**
A prominent, specially constructed object forming a conspicuous vertical mark as a fixed aid to navigation.

■ **BRG = Bearing**
It is the angle between the North (True or Magnetic) and a destination. It represents the direction to follow.

■ **Buoy**
A floating object moored to the sea bottom in a particular (charted) place, as an aid to navigation.

■ **Chain**
Selects the preferred chain. The Loran chains are groups of transmitting stations that use timed radio pulse transmissions. In each of these chains there is a master station and two or more slave or secondary stations. Stations belonging to a same chain transmit pulses in timing groups: a different time base identifies each chain. The time base of each chain is the Group Repetition Interval or GRI. This GRI identifies the chain in unique mode. For example the GRI = 4990 identifies the chain of Central Pacific zone.

■ **COG = Course Over Ground**
Direction of the path over ground actually followed by a vessel.

■ **Correction**
To compute fix error in automatic mode, place cursor on ship's real position and then follow the procedure (compute correction). It is also possible to compute the fix error in manual mode (correction offset). Once you computed the error, you can turn the fix correction On or Off.

■ **CTS = Course To Steer**
The optimum direction the boat should be steered in order to efficiently make headway back to the courseline while also proceeding toward the destination Waypoint.

■ **Cultural Features**
Any man-made topographic feature as built-up area, buildings, roads, ...

■ **Current**
Non-periodical movement of sea-water, generally horizontal, due to many causes such as different temperatures and prevalent winds. Some may be temporary, others permanent.

■ **Datum**
The Latitude and Longitude lines printed on any map are based on certain models of the shape of the earth: these models are called Datum or Coordinate Systems. There are many different Datum in use, each one gives different Lat/Lon positions for an identical point on the surface of the earth.

■ **Default**
Indicates a value or a setting which is used if the user has not defined a particular value. You can modify this value using the menu settings.

■ **Depth Contours**
Imaginary lines connecting points of equal water depth.

■ **DGPS = Differential GPS**
Provides even greater positioning accuracy than standard GPS.

■ **Drift**
Horizontal velocity of the water surface.

■ **DTG = Distance To Go**
The actual distance to reach the Target.

■ **Event**
User Point that refers to the ship's position. It is simply a way of marking where the boat is (see Par. 4.2).

■ **File**
Collection of information (of the same type) stored on a User C-CARD. Each file must have a unique name, ideally one that describes its contents. Filenames are kept in a directory on each User C-CARD (see Par. 4.6).

■ **GPS = Global Positioning System**
It is a satellite based navigation system operated by the US Department of Defense. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions.

■ **HDG/HEAD = Heading**
The horizontal direction in which a ship actually points or heads in any moment (see also COG).

■ **HDOP = Horizontal Dilution Of Precision**
It is the index for position-fixing accuracy. The smaller the HDOP value, the more accurately the position can be fixed

■ **Home**
In Operating mode (called also Navigate mode) all operations refer to the ship's position.

■ **Landmarks**
Any prominent object such as monument, buiding, silo, tower, mast, ..., on land which can be used in determining a location or a direction.

■ **Latitude**
The angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

■ **LAT/LON**
Coordinate system using Latitude and Longitude coordinates to define a position on earth.

■ **LOG**
Speed of the vessel relative to the water.

■ **Longitude**
The angular distance East or West of the prime meridian (Greenwich meridian) as measured by lines perpendicular to the parallels and coverging at the poles from 0° to 180°.

■ **Loran**
The Loran Chains are groups of transmitting stations that use timed radio pulse transmissions.

■ **Magnetic Deviation**
The angle between the Magnetic North and the Compass North.

■ **Magnetic Variation**
The angle between the magnetic and geographic meridians at any place, expressed in degrees West or East to indicate the direction of magnetic North from true North. It changes from point to point, and (at the same point) with time.

■ **Mark**
Reference points related to cursor position (see Par. 4.2).

■ **Natural Features**
Any topographic feature formed by the action of natural processes: coastlines, relief, glaciers, ...

■ **Navigate**
Operating mode (called also Home mode) all operations refer to the ship's position.

■ **NMEA-0183**
The NMEA-0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard that enables equipment from many different manufactures to be connected together and to share information.

■ **OSGB = Ordnance Survey of Great Britain**
A coordinate system describing only Great Britain. Generally used with GBR36 datum, which also describes only Great Britain. This coordinate system cannot be used in any other part of the world.

■ **Port Info**
The Port Info function is a combination of a new Port Info database containing all the relevant Safety and Navigational information normally found in good pilot books and a new presentation software which displays special Port Facility Symbols.

■ **Ports & Services**
Areas along shore with facilities for mooring, downloading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes... .

■ **Route**
Sequence of Waypoints connected by segments. Among the available Routes, only one is the active Route, which is shown by a straight line and arrows to indicate the direction. The first Waypoint of the

active Route is surrounded by a circle (see Par. 4.1.1).

■ **RTCM = Radio Technical Commission for Maritime Services**
The data format created by the Radio Technical Commission Maritime to transmit Differential GPS corrections.

■ **SET**
Direction of drift.

■ **Simulation**
Used in order to use your chartplotter without input data. It generates a display with a moving vessel, so that you can practice using the controls in safety.

■ **SNR = Signal to Noise Ratio**
The ratio of the magnitude of a signal that of the noise (interference).

■ **SOG = Speed Over Ground**
A calculation of the rate of movement of the ship over the ground.

■ **Speed**
The current velocity at which you are travelling, relative to a ground location.

■ **SPS = Standard Positioning Service**
The civilian-access signal broadcast by the GPS satellites.

■ **STR = Steering**
The difference between COG and CTS. If COG is 25° and CTS is 30°, then STR is 5° Right.

■ **TD = Time Difference**
Loran-C positions are determined by precise timing of the intervals between reception of pulses transmitted by pairs of stations in the selected chain. Between any two stations a ship must be located somewhere along a line of possible positions where the measured Time Difference, TD, between arrival of pulses from those stations would be observed. The TD is measured from the time of reception of the master station signal to the time of reception of the slave station signal.

■ **Tide**
The periodic rise and fall of the surface of oceans, bays, etc., due principally to the gravitational interactions between the Moon and Earth.

■ **Tide Info**
The Tide Info feature is the combination of a new tide heights database that will be included within new C-CARDs and new features which calculate the tide graph for all primary and secondary ports world-wide. This function can calculate the tide heights for any past or future date and as a by-product of this calculation will also display the Maximum and Minimum Tide height and time for the day selected plus the times of Sunrise and Sunset. At some chart levels, the chartplotter will display a new Tide Diamond Symbol for every Port or tide point in the database covered by that particular C-CARD (see Par. 3.4.4).

■ **Time Line**
The location where the ship will be after the time set by the user.

■ **Track**
As long as the chartplotter is connected to a positioning instrument, it stores all points in its memory. The chartplotter can store a fix when the distance from its last stored position is greater than a defined distance or after a defined time. A line connects such points and represents the past course, called the Track of the ship (see Par. 4.4).

■ **Tracks & Routes**
Recommended and established routes for ships at sea, including traffic separation schemes, deep water routes, ...

■ **TRN = Turning**
The difference between COG and BRG. If COG is 80° and BRG is 75°, TRN is 5° Left.

■ **TTG = Time To Go**
The estimated time needed to reach your destination, based on your current speed and the distance to destination.

■ **TWA = True Wind Angle**
Direction of the air relative to fixed point on the heart.

■ **TWS = True Wind Speed**
Speed of the air relative to fixed point on the heart.

■ **User C-CARD**
The chartplotter uses the optional User C-CARD to save user data: it is a convenient medium to store and retrieve your information. Before a new User C-CARD can be used, you must format it. The formatting function initializes the User C-CARD and prepares it for storing information. Remember that if an User C-CARD is not blank, formatting it will destroy any data already present on the User C-CARD (the User C-CARDs must be formatted in order to be reused, this operation means all old data memorized on the User C-CARD will be lost). Data stored on User C-CARD are grouped in files.

■ **User Point**
Place on the chart identified by its coordinates and displayed on the screen with a reference symbol (see Mark, Waypoint and Event).

■ **UTC = Universal Time Coordinated**
A time scale based on the rotation of the earth that is used by most broadcast time services.

■ **UTM = Universal Transverse Mercator**
Metric Grid system used on most large and intermediate scale land topographic charts and maps.

■ **VDOP = Vertical Dilution Of Precision**
It is the index for position-fixing accuracy.

■ **VMG = Velocity May Good**
The Velocity May Good is the component of the velocity that is in the direction of the destination.

■ **WAAS = Wide Area Augumentation System**
The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.

■ **Waypoint**
Any point to which one intends to navigate. A sequence of Waypoints makes up a Route plan (see Par. 4.1.2).

■ **WGS 1984 = World Geodetic System 1984**
Coordinates System or Datum developed by the Defense Mapping Agency (DMA).

■ **Zoom-In**
Shows more detail in a smaller area.

■ **Zoom-Out**
Operates similarly to zoom -in, but in the reverse, showing a wider but less detailed view.

■ **XTE = Cross Track error**
The distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation leg being traveled.

D

Smart DGPS WAAS Antenna & Receiver

This Smart DGPS WAAS receiver is based on a ultimate 12 channel GPS engine that delivers accuracy better than three meters by decoding the GPS correction signals from the satellite-based WAAS (*Wide Area Augmentation System*). The GPS engine, interface electronics and the passive antenna are enclosed inside the waterproof plastic housing. This provides advanced state of the art GPS performance in an easy to use package.

D.1 TECHNICAL SPECIFICATIONS

D.1.1 PYSICAL CHARACTERISTICS

Color	: Ivory white.
Dimensions	: 97mm in diameter x 32mm in height (flush mounted) or 61,5mm on flag-pole mount.
Weight	: 160 grams (without cable).
Cable GPH 00	: white 15 meter 8x28AWG cable with 6 pins female and 8 pins female connectors

D.1.2 ELECTRICAL CHARACTERISTICS

Input Voltage	: 10 Vdc to 35 Vdc unregulated
Input Current	: 112 mA @ 12 Vdc 60 mA @ 24 Vdc 45 mA @ 35 Vdc
GPS Receiver Sensivity	: -145 dBW minimum

D.1.3 GPS PERFORMANCE

Receiver : WAAS (North America), EGNOS (Europe), MSAS (Asia)
Geodetic Datum : WGS84
Channels : 12
Frequency : 1575.42MHz (L1, C/A code)
Acquisition Time (Approximate)
- Reacquisition : less than 1 second
- Hot start : 8 seconds (typical)
- Warm start : < 40 seconds (typical)
- Cold start : < 45 seconds (typical)

Accuracy
- Position : less than 10' (3m), 95% of the time
- Speed : 0.3 Knots RMS

NMEA Output messages/Update Rate
- GGA : 1 second
- GLL : 1 second
- VTG : 1 second
- RMC : 1 second
- GSA : 3 seconds
- GSV : 3 seconds
- PCMPD : 1 second

Interfaces

Asynchronous serial output compatible with RS-232 (TTL voltage levels)
RS-232 polarity, Baud Rate 4800, N81
NMEA 0183 Version 2.0

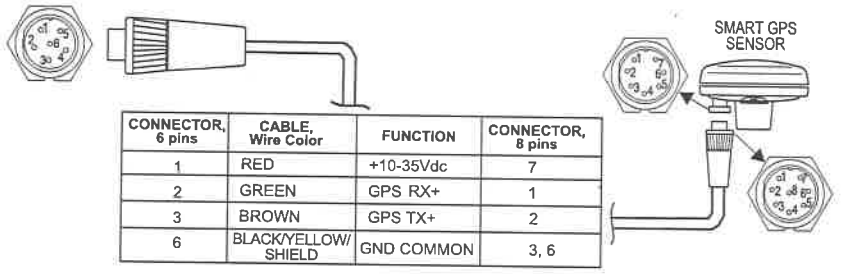
D.1.4 ENVIRONMENTAL CHARACTERISTICS

Operating Temperature : 0° C~ +60° C
Storage Temperature : -20° C~ +85° C
Relative Humidity : 95% non-condensing
Water Resistance : 100% waterproof

D.2 WIRING

See the following tables for a functional description of each wire in the GPS cable.

D.2.1 DIAGRAM FOR GPH00



CONNECTOR, 6 pins	CABLE, Wire Color	FUNCTION	CONNECTOR, 8 pins
1	RED	+10-35Vdc	7
2	GREEN	GPS RX+	1
3	BROWN	GPS TX+	2
6	BLACK/YELLOW/ SHIELD	GND COMMON	3, 6

Fig. D.2.1 - GPS Connection for GPH00

D.3 SOFTWARE INTERFACE

The GPS products interface protocol design is based on the National Marine Electronics Association's NMEA 0183 ASCII interface specification. These standards are defined in "NMEA 0183 Version 2.0" (for more information see NMEA, www..nmea.org).

D.3.1 TRANSMITTED NMEA0183 SENTENCES

This paragraph defines the sentences that are transmitted by the GPS. The NMEA 0183 Output list contains the following sentences: GPRMC, GPGGA, GPGSA, GPGSV, GPGLL, GPVTG, PCMPD. The transmission parameters are 4800, N, 8, 1.

Sentence	Transmission Rate
GPRMC	1 sec
GPGGA	1 sec
GPGSA	3 sec
GPGSV	3 sec
GPGLL	1 sec
GPVTG	1 sec
PCMPD	1 sec

Fig. D.3.1 - NMEA 0183 Output Sentence Rate

D.3.2 NMEA0183 SENTENCES DESCRIPTION

The following provides a summary explanation of the approved sentence structure:

AACCC,C- - - C*HH [CR][LF]

ASCII	DESCRIPTION
$	Start of Sentence.

AACCC Address Field.
Alphanumeric characters identifying type of TALKER, and Sentence Formatter. The first two characters identify the TALKER. The last three are the Sentence Formatter mnemonic code identifying the data type and the string format of the successive fields. Mnemonics will be used as far as possible to facilitate readouts by users.

"," Field delimiter.
Starts each field except address and checksum fields.

C---C Data Sentence block.
Follows address field and is a series of data fields containing all of the data to be transmitted. Data field sequence is fixed and identified by 3rd and subsequent characters of the address field (the "Sentence Formatter"). Data fields may be of variable length and are preceded by delimiters ",".

"*" Optional Checksum Delimiter.
Follows last data field of the sentence. It indicates that the following two alpha-numeric characters show the HEX value of the CHECKSUM.

HH Optional Checksum Field.
The absolute value calculated by exclusive-OR'ing the 8 data bits (no start bits or stop bits) of each character in the Sentence, between, but excluding "$" and "*". The hexadecimal value of the most significant and least significant 4 bits of the result are converted to two ASCII characters (0-9, AF) for transmission. The most significant character is transmitted first. The "CHECKSUM" field is optional, except when indicated as mandatory.

[CR][LF] Terminates Sentence.

D.3.2.1 RMC (Recommended Minimum Specific GPS/TRANSIT Data)

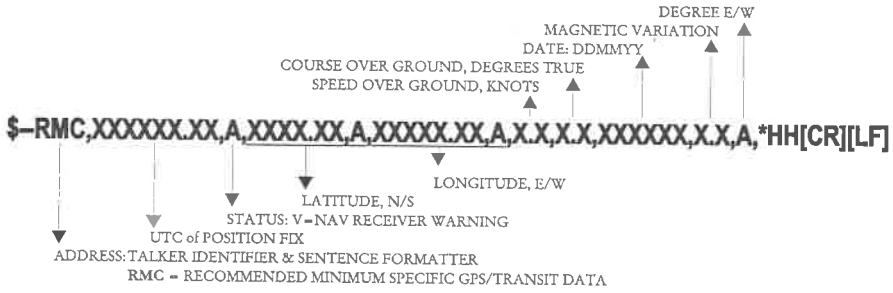


Fig. D.3.2.1 - RMC Sentence

D.3.2.2 GGA (Global Position System Fix Data)

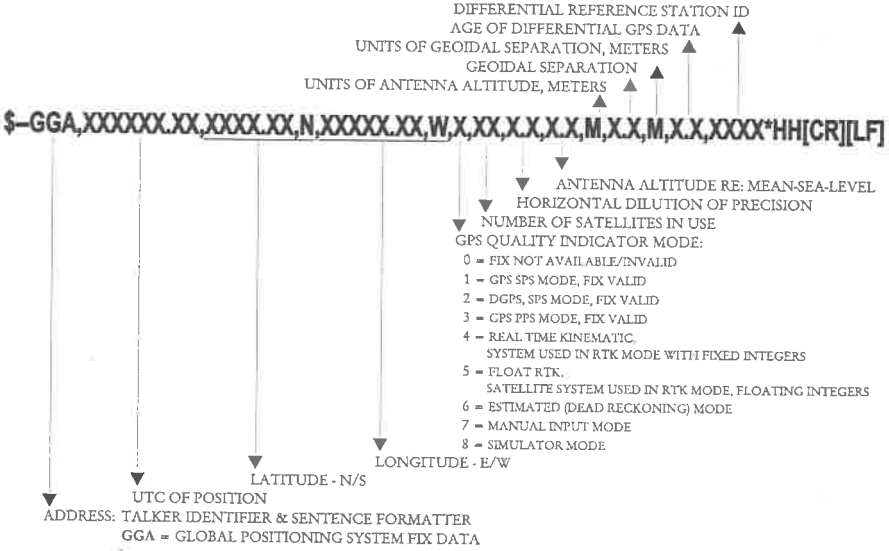


Fig. D.3.2.2 - GGA Sentence

D.3.2.3 GSA (GPS DOP and Active Satellites)

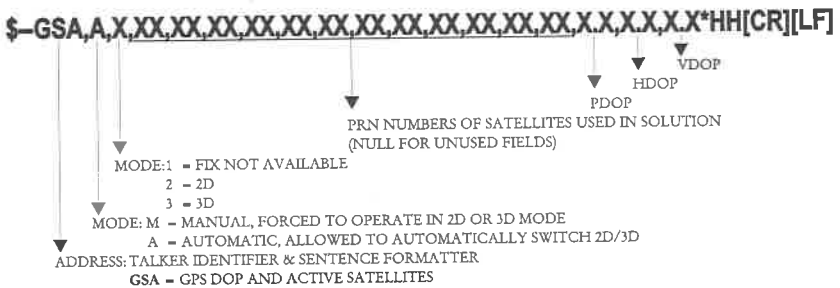


Fig. D.3.2.3 - GSA Sentence

D.3.2.4 GSV (1,2,3 GPS Satellites in View)

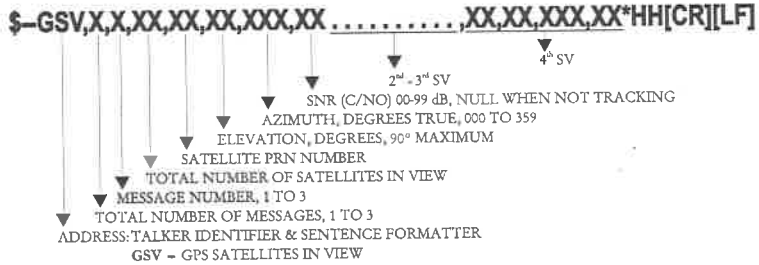


Fig. D.3.2.4 - GSV Sentence

D.3.2.5 GLL (Geographical Position Latitude/Longitude)

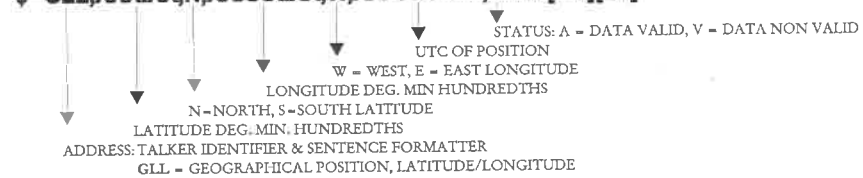


Fig. D.3.2.5 - GLL Sentence

D.3.2.6 VTG (Course Over Groung & Ground Speed)

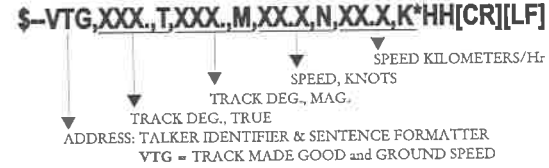


Fig. D.3.2.6 - VTG Sentence

D.3.2.7 PCMPD (C-MAP Proprietary Sentence D - Fix Correction Source Information)

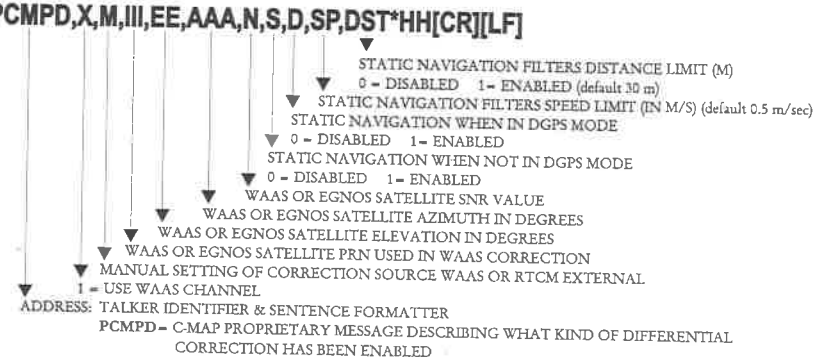


Fig. D.3.2.7 - PCMPD Sentence

D.4 MECHANICAL CHARACTERISTICS & MOUNTING GPH00 MODEL

D.4.1 INSTALLING

Choose a location for the antenna that has a clear view of the sky. Ensure there are no major obstructions or fixtures in the immediate proximity to the antenna. The antenna relies on direct "line of sight" satellite reception. If you are unsure that the chosen location is suitable it may be advisable to mount the antenna in a temporary manner to verify correct operation. The thread used on the antenna (1 inch, 14 TPI) is an industry standard thread used on a wide range of mounting brackets, including the swivel joints commonly used for angled surfaces. However due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.

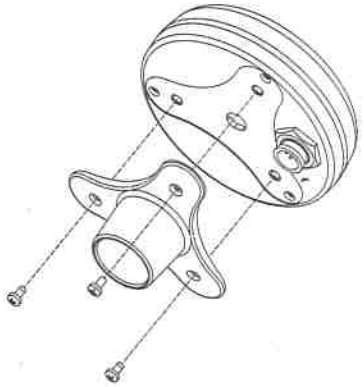


Fig.D.4.1 - Installing GPS Antenna (I)

The antenna design also allows for easy flush mounting.

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well.
2. Then, following template instruction, drill a 0,95 inch (24 mm) hole and three 0,155 inch (4 mm) holes.

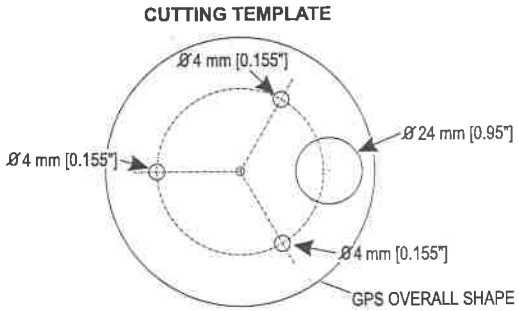


Fig.D.4.1a - Installing GPS Antenna (II)

3. Remove the template and let the cable go through the central hole.
4. Apply a small coat of RTV to the underside of the antenna.
5. Place the antenna and then screw it with the three M3 screws.

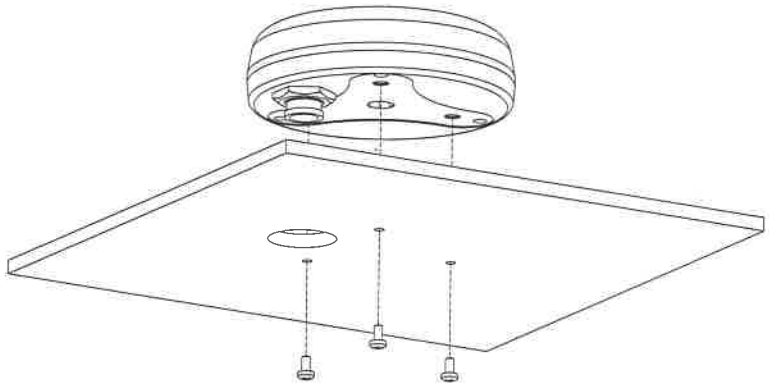


Fig.D.5.4.1b - Installing GPS Antenna (III)

D.4.2 DIMENSIONS

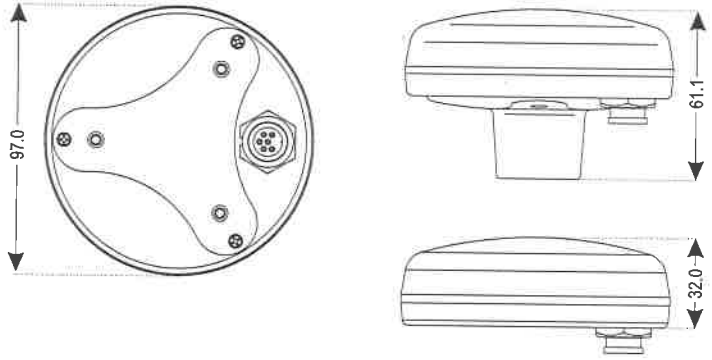


Fig.D.4.2 - GPS Antenna Dimensions

Analytical Index

NOTES

NOTES

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