LORENZ

MARINE ELECTRONICS

One Touch To Choose Your World

STARLIGHT PRO

CODE: S3egLZctcp 1011a970/090505

USER MANUAL

MAX
C-MAP NT

Warning!

Electronic charts displayed by the chartplotter are believed to be accurate and reliable, but they are not intended to replace 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's 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 is not covered by the warranty.
- The chartplotter contains dangerous high voltage circuits which only experienced technicians MUST handle.
- The **C-MAP** 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.

Table of Contents

1
Introduction

If you have not used a position-finding instrument before and intend to use your chartplotter for navigating, we suggest that you read this user manual and make sure you are familiar with its contents. Chapter 2 "Before You Begin" introduces you to the basic information to get you start using the chartplotter. Chapter 3 "For the New User" should be read first to become familiar with your new instrument. Chapter 4 "For the Experienced User" introduces the advanced features of the chartplotter. For all other information you wish please refer to the Chapter 5 "Terms and Functions".

Throughout this user manual, the keys are shown in capitals letters enclosed between single inverted commas, for example 'MENU'.

Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example '**MENU**' + "**BASIC SET-TINGS**" + '**ENTER**' + "**INPUT/OUTPUT**" + '**ENTER**' means: press the 'MENU' key, using the cursor key to select the Basic Settings menu, press the 'ENTER' key, using the cursor key to select the Input/Output menu and then press the 'ENTER' key.

Terms and functions underlined, for example <u>Target</u>, are explained in the Chapter 5.

1.1   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 <u>track</u>. The user information like <u>Waypoint</u>s, <u>Mark</u>s and <u>track</u>s can then be stored on a <u>User C-CARD</u>, and can be recalled at any time. On the screen are shown navigation data and cartographic information obtained from electronic charts of C-MAP C-CARD.

1.2   BASICS

The chartplotter is controlled by using 11 keys. There is also a cursor key to move a cursor across the screen. 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.
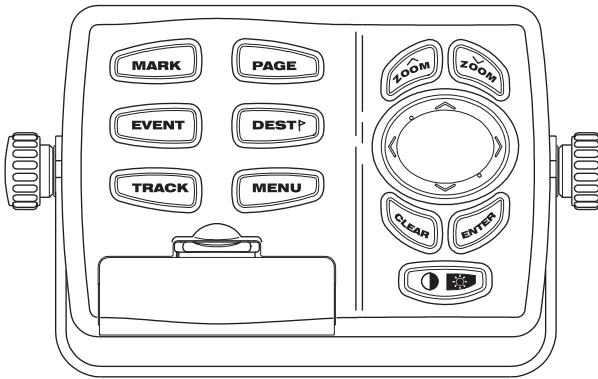
Fig. 1.2 - The controller

1.3   IF YOU NEED ASSISTANCE

If your chartplotter does not operate properly, go to the System Test on Par. 6.5. Most common operating difficulties can be diagnosed using these tests. If you still need assistance, call your local dealer, reporting the Software Release and Cartography information available in the About Page.
> **Select About Page: 'MENU' + "About..." + 'ENTER'**

1.3.1 WORLD BACKGROUND CHARTS

The internal background charts can be updated to include the MAX A and B level charts which provide improved marine data, rivers, lakes, terrestrial data (major streets , highways , railways, etc...), Nav-Aids, depth areas, territorial water areas, etc... by reading them from a special data C-CARDs (contact your local dealer). All units must have the WorldWide Background upload function that is activated from the system.

Worldwide Background Update

The System Update menu is entered from the About page. To select this menu follow the procedure:

➤ Plug the special data C-CARD + 'MENU' + "About..." + 'ENTER' + 'MENU' + "Update Worldwide Charts" + '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 the right side of 'POWER' down for 1 second to turn the chartplotter On. Press and hold the right side of 'POWER' down (once the chartplotter has been turned On) for 3 seconds turns the chartplotter Off.

Press and immediately release the right side of 'POWER' to adjust the keyboard brightness.

The ⌷MARK⌷ key

In <u>Basic Mode</u> pressing 'MARK' places <u>Mark</u> at cursor coordinates; in <u>Advanced Mode</u> places, deletes, edits and moves <u>Mark</u> and use it in a route.

The ⌷PAGE⌷ key

Press 'PAGE' to select the configuration you wish among cartography and text area in two different modes (text area on the right side or on the bottom line of the screen, full screen if Target has been inserted or with partial information on <u>SOG</u>), only cartography, <u>Depth Graph</u> 1/2 screen and 1/3 screen pages, <u>GPS Data page</u>, <u>Navigation Data page</u>, <u>Graphic Data page</u>, <u>Wind Data page</u> (See Par. 3.1).

The ⌷EVENT⌷ key

In <u>Basic Mode</u> pressing 'EVENT' places <u>Event</u> at ship's coordinates; in <u>Advanced Mode</u> places, deletes, edits and moves <u>Event</u> and use it in a route.. Pressing

'EVENT' for 2 seconds sets <u>MOB</u> (Man Overboard). Pressing 'EVENT' for 2 seconds when the MOB is placed to delete MOB.

The `DEST` key
Place the cursor and press 'DEST' to set <u>Target</u>.

The `TRACK` key
Pressing 'TRACK' enables or disables the <u>track</u> storing.

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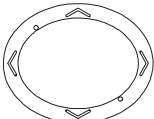
The `ZOOM` and `ZOOM` keys
Press 'ZOOM IN' shows more details of a smaller area, by changing the chart scale and zooming in on your display. Press 'ZOOM OUT' to operate similarly to the 'ZOOM IN', except in reverse, changing the scale and showing a wider, otherwise less detailed view.

The `CLEAR` key
Excluding specific situations, returns to the previous menu or leaves a menu without making changes. If you are not into a menu, if the <u>GPS</u> computing a valid fix position and the chartplotter is not in <u>Home</u> mode, pressing 'CLEAR' sets <u>Home</u> mode. When <u>Home</u> (called also <u>Navigate</u>) mode is set, the cursor is not shown anymore and all cartographic functions (zoom, scroll, etc.) are leaded by the fix position. The fix is centered in the map display and the map scrolls underneath as the fix position changes. To deactivate <u>Home</u> mode move the cursor. In <u>Basic Mode</u> deletes the A, B, C, D points, the <u>User Point</u> (<u>Mark</u>, <u>Event</u>, <u>Waypoint</u>), the <u>MOB</u>, the <u>Target</u> identified by the cursor.

The `ENTER` key
Selects the desired option, confirms selection; in <u>Basic Mode</u> places A, B, C, D points on the cursor coordinates, in <u>Advanced Mode</u> creates Objects (<u>Waypoint</u>, <u>EBL</u>/<u>VRM</u>, <u>A-B-C-D</u>).

The cursor key
Moves the cursor about on the display screen, quickly and accurately. The

cursor starts moving slowly the cursor key is initially pressed then accellerates after a while if the cursor key is pressed and hold. It also scrolls the desired option in the menu page(s): up/down move the current menu selection; right executes the function assigned to the active selection in the menu (same as 'ENTER'); left quit menu (same as 'CLEAR').

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

2.2 TURNING THE CHART PLOTTER 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 the right side of 'POWER' for 1 second. The chartplotter emits one rapid beep sound and a title page is opened.

After a few seconds, the first of the two Caution Notice pages is displayed, reminding you that the chart plotter 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 the right side of '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 chart plotter will remain On.

2.3 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 Italian.

➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "LANGUAGE" + 'ENTER' + Choose the <u>language</u> you want and press 'ENTER' to confirm.

2.4 EXTERNAL CONNECTIONS

2.4.1 GPS CONNECTIONS

Connects the GPS to the GPS Port (serial Port 3). To choose your preferred setting follow the procedure:

GPS SENSOR CABLE

PIN#	WIRE COLOR	FUNCTION
1	RED	POWER OUTPUT+ (10-35Vdc)
2	GREEN	GPS RX+
3	BROWN	GPS TX+
6	BLACK/YELLOW/SHIELD	GND COMMON
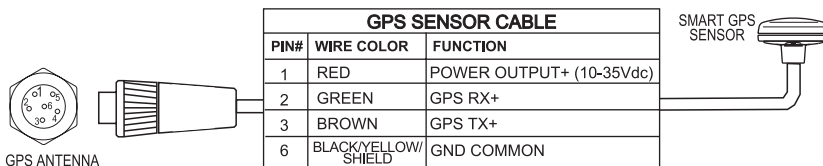
Fig. 2.4.1 - GPS Connection on Port 3

To choose your preferred setting follow the procedure:
➤ 'MENU' + "BASIC SETTINGS" + '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 <u>default</u> setting is 4800-N81-N) and press 'ENTER' to confirm.

If you are connecting the model Smart DGPS WAAS Receiver GPH00, select:
➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 3 INPUT" + 'ENTER' + "NMEA-4800-N81-N" + 'ENTER'

2.4.2 AUTOPILOT CONNECTIONS

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

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	INPUT 1-
6	YELLOW	OUTPUT 1+
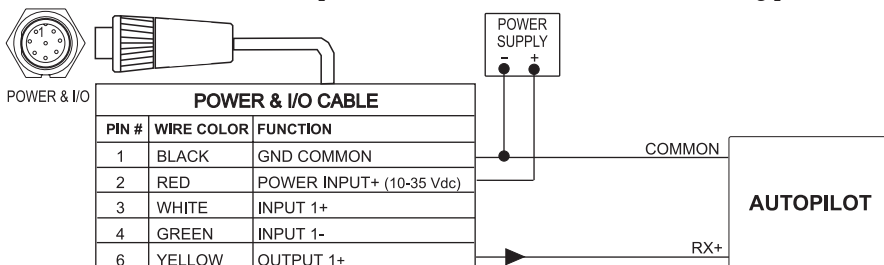
Fig. 2.4.2 - Autopilot Connections on Port 1

To choose your preferred setting follow the procedure:

➢ 'MENU' + "BASIC SETTINGS" + '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 <u>default</u> 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:

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+
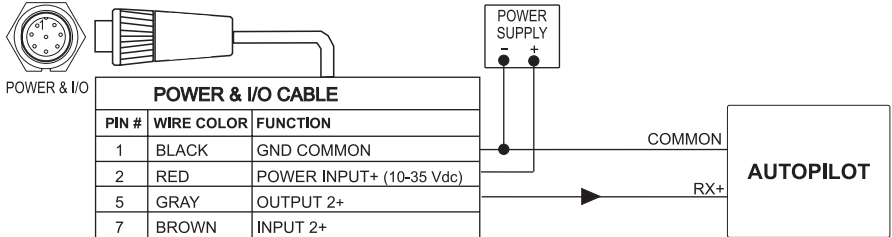
Fig. 2.4.2a - Autopilot Connections on Port 2

To choose your preferred setting follow the procedure:

➢ 'MENU' + "BASIC SETTINGS" + '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 <u>default</u> setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

2.4.3 EXTERNAL NMEA CONNECTIONS

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

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT1 +
4	GREEN	INPUT 1-
6	YELLOW	OUTPUT 1+
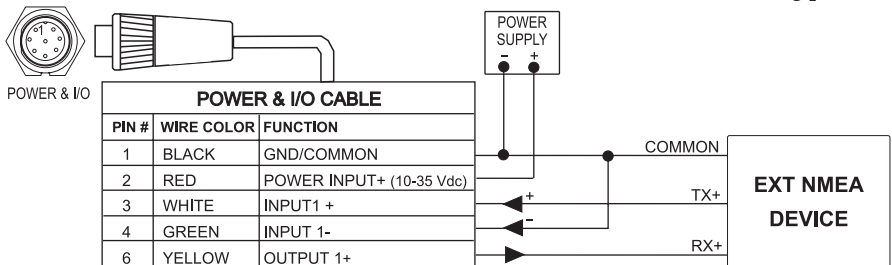
Fig. 2.4.3 - External NMEA Connections on Port 1

To choose your preferred setting follow the procedure:

➢ 'MENU' + "BASIC SETTINGS" + '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:
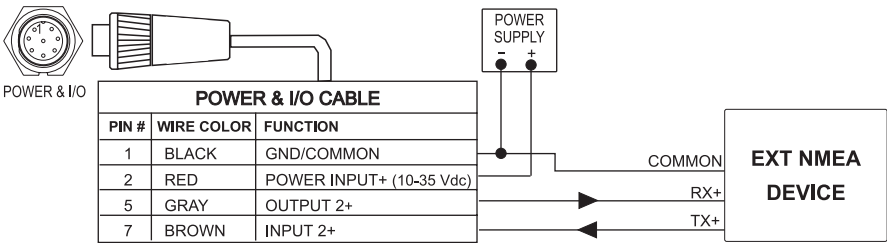
Fig. 2.4.3b - External NMEA Connections on Port 2

To choose your preferred setting follow the procedure:
➤ 'MENU' + "BASIC SETTINGS" + '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.

2.4.4 C-COM CONNECTIONS

To connect the modem C-COM to the chart plotter follow the procedure:
1. Connect Power & I/O as follows:
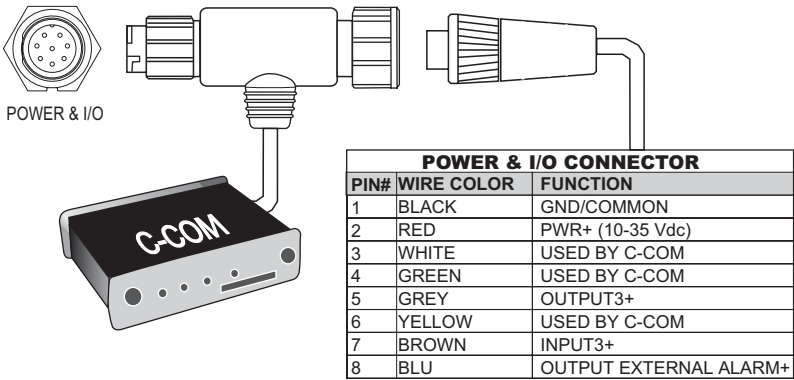
Fig. 2.4.4 - C-COM Connection

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' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1 INPUT" + 'ENTER' + "C-COM" + 'ENTER'

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

2.4.5 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	POWER INPUT+ (10-35 Vdc)
8	BLUE	EXTERNAL ALARM OUTPUT+ (OPEN COLLECTOR)

Fig. 2.4.5 - External Alarm Connection

Once the connection is active, to enable the External Alarm follow the procedure:
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "EXTERNAL ALARM" + 'ENTER' + "ON" + 'ENTER'

2.5   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 <u>User C-CARD</u> can be used to permanently store your <u>route</u>s, <u>Waypoint</u>s, <u>Mark</u>s, <u>Event</u>s and <u>track</u>s (see Par. 4.6).

Note
During normal operations the C-CARD should not be removed since the chart plotter may lock up.

2.5.1 INSERTING C-CARD
Hold the C-CARD by the short inclined side so that you can see the C-MAP label.
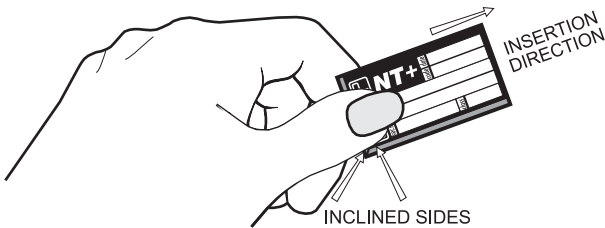
Fig. 2.5.1 - Inserting C-CARD (I)

Gently push the C-CARD into one of the two slots (1); push the C-CARD in as far as it will go, then move it to the bottom (2) to hold fixed into the slot (3).
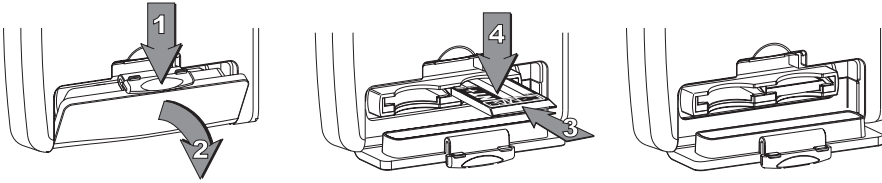
Fig. 2.5.1a - Inserting C-CARD (II)

2.5.2 REMOVING C-CARD

Press lightly the C-CARD you wish to remove (1) and move it to the top (2) until you hear a click: the C-CARD will ejected out of the slot (3).
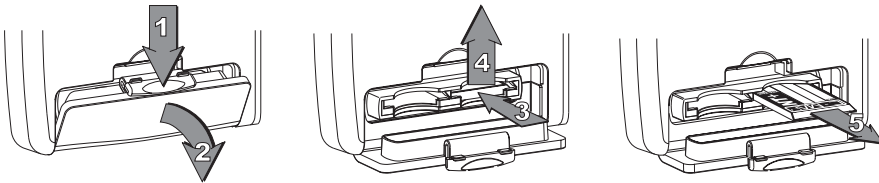
Fig. 2.5.2 - Removing C-CARD

Note

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

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 Power On to 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 8 different modes (wrap around) among cartography and text area in two different modes (text area on the right side or on the bottom line of the screen, complete if Target has been inserted or with partial information on SOG), only cartography, Depth Graph 1/2 screen and 1/3 screen pages, GPS Data page, Navigation Data page, Graphic Data page, Wind Data page.

To select the configuration you wish:
➤ 'PAGE' more times

3.1.1 CHARTS AND TEXT AREA
The charts and text area can be shown in two different modes. The first is with text area on the right side of the screen:

Fix received Indication - *if fix is not received the following icon is shown:* 🛰
        - *if a Differential GPS signal is received the following icon is shown:* 🛰

Charting 🛥
or Navigation (Home) 🅰

Ship icon 🛥 (if in Charting the
displayed icon is ✛)

Speed Over Ground

Map Datum selected

Cursor or Ship Coordinates

Course Over Ground

Distance and Bearing
from Ship to Cursor
(from Ship to Target
if Target is set,
from Ship to MOB if MOB is set)

Chart Scale

Fig. 3.1.1 - Charts and text area

The second is with text area on the bottom line of the screen (with partial information on <u>SOG</u>):

Cursor Coordinates

Distance and Bearing
from Ship To Cursor
(from Ship to Target if Target
is set, from Ship to MOB if
MOB is set)

Speed Over Ground
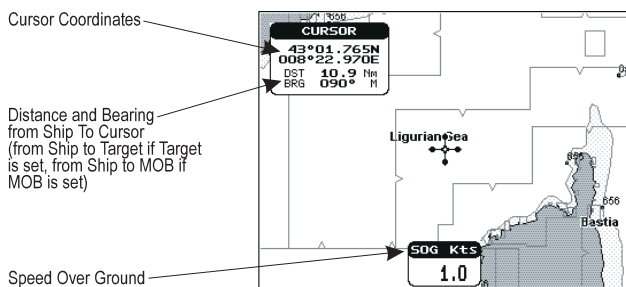
Fig. 3.1.1a - Charts and text windows

If <u>Target</u> is set, in the previous Fig. 3.1.1a instead of the only <u>SOG</u> information window, a text line with <u>DST</u>, <u>BRG</u>, <u>XTE</u>, <u>SOG</u> and <u>TTG</u> information appears.

Then it is possible to see on the screen only charts:
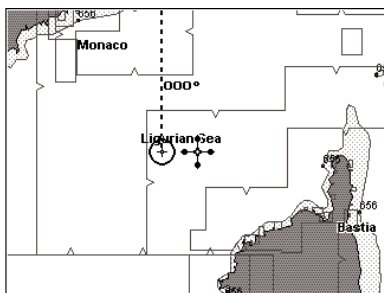
Fig. 3.1.1b - Full charts

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3.1.2 DEPTH GRAPH

The depth graph can be shown in two different modes. Depth graph displayed only on 1/3 of the screen:
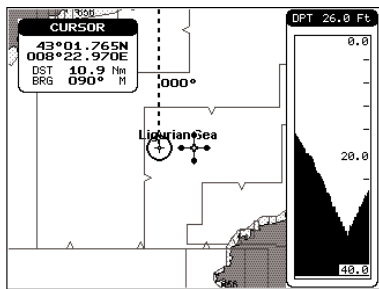
Fig. 3.1.2 - The Depth Graph 1/3 of the screen

or Depth graph displayed on 1/2 of the screen:
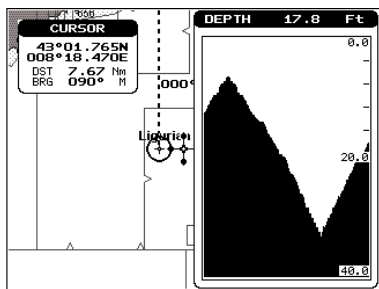
Fig. 3.1.2a - The Depth Graph 1/2 of the screen

3.1.3 GPS DATA PAGE

The GPS Data page shows in graphic mode GPS data.
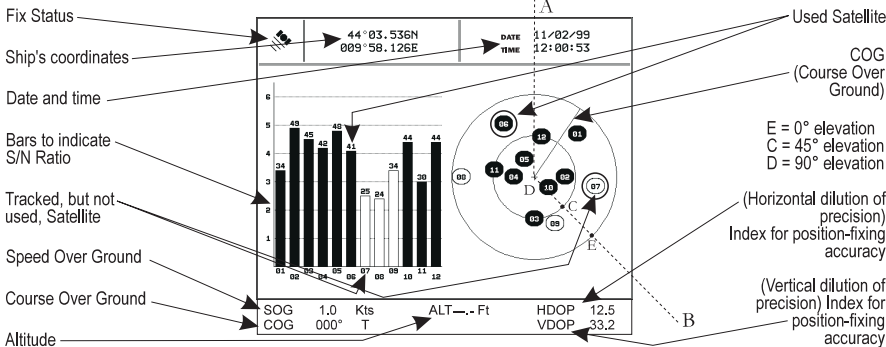
Fig. 3.1.3 - GPS Data Page

On the right side of the screen (see Fig. 3.1.3), there is a polar representation of the <u>azimuth</u> and elevation of each satellites. The circle contains a number indicating the PRN of the satellite and it is filled when it is used for the fix solution. On the left side there are histograms indicating the S/N ratio (<u>SNR</u>). The bar is filled when the satellite is used for solution. As example, the satellite with PRN = 10 is used for solution with S/N = 44, Azimuth = 127degree and Elevation = 70degree. When a valid fix is received, the Lat/Lon, Date, Time, <u>Altitude</u>, VDOP, <u>HDOP</u>, <u>SOG</u> and <u>COG</u> are shown in the page.

3.1.4 NAVIGATION DATA PAGE

The <u>Navigation Data page</u> shows information about speed (<u>SOG</u>) and course (<u>COG</u>) of the ship, status of the received signal, ship's coordinate and other general information.
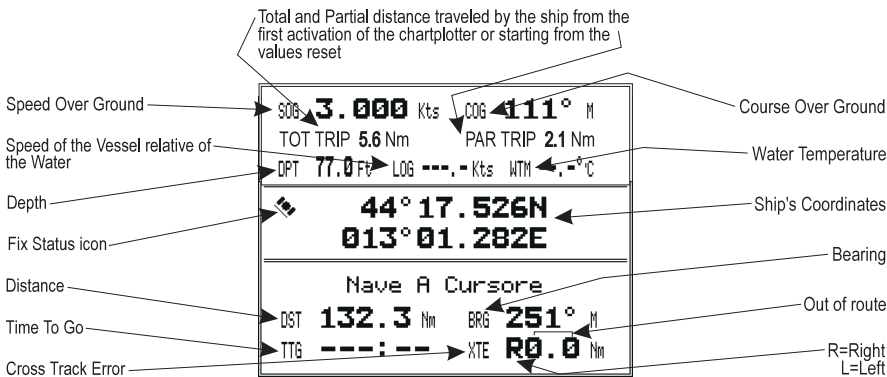
Fig. 3.1.4 - Navigation Data Page

3.1.5 GRAPHIC DATA (ROLLING ROAD) PAGE

The <u>Graphic Data Page</u> shows in graphic mode navigation data.
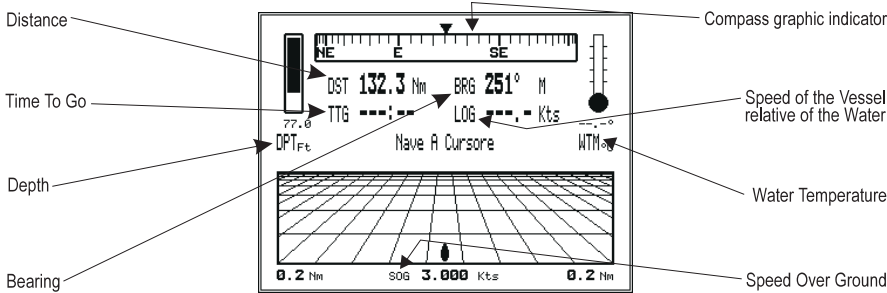
Fig. 3.1.5 - Graphic Data Page

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3.1.6 THE WIND DATA PAGE

The Wind Data page shows data related to the wind: TWS (True Wind Speed: Velocity of the Wind relative to a fixed point on the earth), AWS (Apparent Wind Speed: the Speed at which the Wind appears to blow relative to a moving point, also called Relative Wind Speed), TWA (True Wind Angle) and AWA (Apparent Wind Angle). Also SPEED (Ship Speed) and HEAD (Ship Heading) are shown.

Fig. 3.1.6 - The example of Wind Data page

3.2   A-B-C-D   FUNCTION

The A-B-C-D function allows you to create the A, B, C, D points and to delete them.

3.2.1 INSERTING THE A-B-C-D POINTS

Place the cursor on the desired position and press 'ENTER': on the screen the A point and an information window on A appear. Move the cursor and press 'ENTER' again: the B point appears, connected to A with a straight segment; an information window on A-B segment (distance (DST), bearing (BRG) and total distance from the first point) appears. Moving the cursor and pressing 'ENTER' places the C and D points:
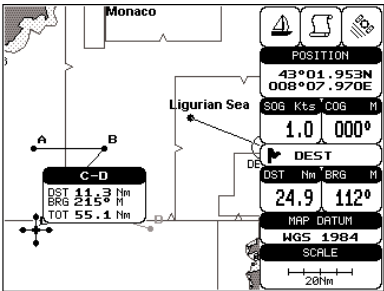
Fig. 3.2.1 - A-B-C-D points

3.2.2 DELETING THE A-B-C-D POINTS

Place the cursor on the desired point (A, B, C or D) and press 'CLEAR': the point is deleted. When the point is deleted, the cursor is placed on the previous point, if existed. The labels of the next points are renamed.

3.2.3 NAVIGATING ON THE A-B-C-D POINTS

If fix received is good, place the cursor on the desired point A, B, C or D and press 'DEST'. When the ship arrives to the Destination point, navigation follows to the next point (if existed).

3.3   NAVIGATING TO A SINGLE DESTINATION

3.3.1 DISTANCE AND BEARING TO TARGET

Once you have positioned the cursor on your desired location (a generic point on the map) press 'DEST'.
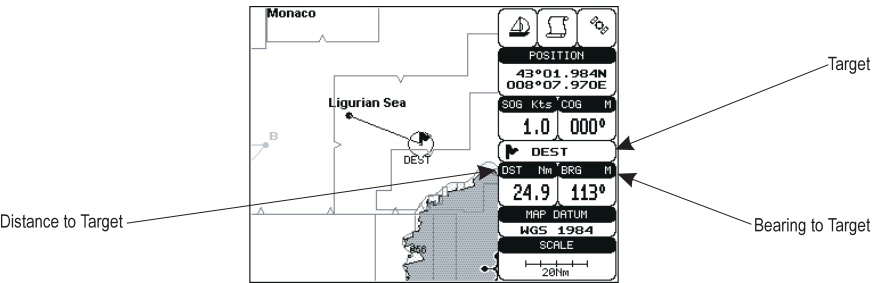
Fig. 3.3.1 - Navigation to a single destination

On the screen is shown a straight line connecting the Target (called DEST) with the ship's position and an information window with Target position, that disappears when the cursor is moved from the Target. When the Target is placed, all navigation data are referred to this Target.

Note
When the chartplotter is turned Off, the Target does not remain in memory.

3.3.2 TIME TO GO

When the Target is set the TTG value is displayed in the Graphic Data page (see Fig. 3.1.5):
➤   'PAGE' more times to select Graphic Data page

3.3.3 DELETING TARGET

Place cursor on <u>Target</u> icon, press 'CLEAR': the symbol identifies <u>Target</u> disappears from the screen.

Otherwise (when the cursor is placed in a generic position on the chart) press 'DEST'. A window appears to advise that the Destination is present: select the item "STOP" and press 'ENTER', the symbol identifies <u>Target</u> disappears from the screen.

Note _____

If you select the "START" item and press 'ENTER', the Target icon is moved on the new cursor position.

3.4 C-MAP NT MAX INFORMATION

MAX is a major evolution of the NT/NT⁺ product technology. Key points are:

New Data Features
- Tides and Currents (intuitive arrows show direction and strength)
- World Background Charts with terrestrial data
- Value Added Data (Pictures and Diagrams, Land Data)
- Enhanced Port Info

New Presentation Features
- Clear View (advanced legibility techniques providing more chart data on the screen)
- Clear Info (sophisticated "Human Disctionary" to translate Nav-Aid abbreviations found on paper cahrts)
- Dynamic Fonts and Symbols
- Dynamic Nav-Aids (an innovative and dynamic presentation mode)
- Flexi-Zoom (increased Under and Over Zoom between chart levels, resulting in optimal scale display for any situation)
- Dynamic Elevation Data (optimised palettes for chart plotters with 256 or more colors; inludes new NOAA palette for US market)
- Perspective View ("Real World" perspective view of the chart, updated realtime during navigation)

MAX and NT/NT+ C-CARD coexistence
- When NT+ data and MAX data cover different areas, the chart plotter gets data from both charts (depending on the current position).
- When NT+ data and MAX data cover the same area, the chart plotter gets data only from MAX chart.

3.4.1 MAP MENU
It is possible to select the Map Menu following the procedure:
➤ 'MENU' + "MAP SETTINGS" +'ENTER'

3.4.1.1 Perspective View
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Perspective View" + 'ENTER'
Chart data may be projected in perspective mode during navigation. This function allows setting the panoramic View of the chart.
As the upper side of the map is more compressed than the lower side, a wider map area is visible. The perspective view allows showing more chart information immediately ahead and around the cursor.
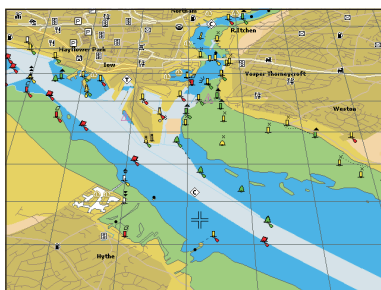
Fig. 3.4.1.1 - Perspective View

3.4.1.2 Palette
➤ 'MENU' + "MAP SETTINGS" +'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, NOAA, Night Vision and Sunlight. The default setting is Classic. **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** uses more vivid colors. **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. NOAA allows setting NOAA paper chart colors presentation.

3.4.1.3   Map Orientation

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Map Orientation" + 'ENTER'

Selects the orientation of your chart according to: North (the map is shown with North upwards), Head (the map is shown with the ship's current <u>heading</u> upwards), Course (the map is displayed with the currently selected course leg upwards). The <u>default</u> setting is North

It is possible to select the resolution angle for the Map Orientation.

3.4.1.4   Zoom Type

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + " Zoom Type" + 'ENTER'

This feature allows more expansions or compression of the chart scale while zooming in or out. Zoom Mode has two options; STANDARD (default) or FLEXI-ZOOM. When in FLEXI-ZOOM mode, a short 'ZOOM...' push causes a change of chart, whilst a long 'ZOOM...' push (press and hold) causes a pop-up window to be displayed on a corner of the screen. The window shows the current Zoom Factor.

By pressing 'ZOOM IN'/'ZOOM OUT' the map is expanded or compressed according to the zoom factor selected.

The Window is automatically closed if 'ZOOM...' is not pressed for 2 seconds and the selected zoom factor will be used at the next zoom in/out.

3.4.1.5   Fonts & Symbols

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Fonts & Symbols" + 'ENTER'

On MAX charts it is possible to set the size of all names and symbols drawn on the charts, selecting between Normal size (the regular characters size) and Large size.
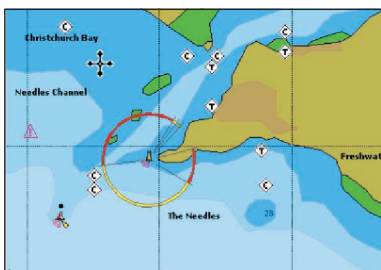
NORMAL size   **LARGE size**
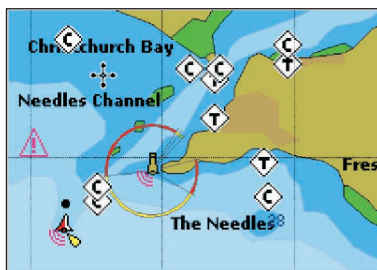
Fig. 3.4.1.5 - Example of Normal size (on the left side) and Large side (on the right side) settings

3.4.1.6   Dynamic Nav-Aids

➤   'MENU' + "MAP SETTINGS" +'ENTER' + "Dynamic Nav-Aids" + 'ENTER'

This function allows settings blinking lights on Nav-Aids. The blink period and color of each Nav-aid is read from the Nav-Aid attributes available on the data cartridge. When the ship is inside the Nav-Aid nominal range, the light of the Nav-Aid will start blinking.

3.4.1.7   Mixing Levels

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

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 the chartplotter zooms out to the first level covered by cartographic data. The <u>default</u> setting is Off.

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

3.4.1.8   Safety Status Bar

➤   'MENU' + "MAP SETTINGS" +'ENTER' + "Safety Status Bar" + 'ENTER'

This feature displays a status bar with six boxes showing the status of certain functions. Any warning or alarm condition is identified by the red colour to indicate possible risk.

①	②	③	④	⑤	⑥
NORMAL	BEST MAP	DATA OFF	DECLUT.	DANGERS	CAUTIONS

Fig. 3.4.1.8 - Safety Status Bar

Boxes definition is as follows:

① **Zoom**
- Normal: when the chart is displayed at normal scale.
- U. Zoom: red when the chart is under-zoomed out more than twice normal scale, gray otherwise.
- O. Zoom: red when the chart is over-zoomed in more than twice normal scale, gray otherwise.
- Chart Lock: red when the chart is zoomed in more than twice normaln scale, gray otherwise.

② **Best Scale**
Red when a more detailed chart is available under the cursor position.

③ **Data Off**
Red when at least one of the following objects or layers is turned off (by the user): Depths/soundings; Wrecks/obstructions; Tracks/routes; Attention areas; Nav-Aids.

④ **Clear View**
Displays when Clear View function is On.

⑤ **Dangers**
Red when "Guardian Technology" detects one of the following objects: Land, Intertidal, Depth Area, Rocks, Obstructions, Shoreline Constructions, Fishing Facility, Wrecks, Dragged area, Diffusion area, Mooring facilities, Pingos and Production installations.

⑥ **Caution**
Red when "Guardian Technology" detects cautionary or restricted area.

3.4.1.9   Currents Prediction
➤ **'MENU' + "MAP SETTINGS" +'ENTER' + "Currents Prediction" + 'ENTER'**
It is possible to see the variation of the Tidal arrows on the selected area at any given time. A window is shown on the low-left side of the chart, press 'ENTER' to set the date and time manually, 'MENU' to decrease time and 'GOTO' to increase time.

3.4.1.10   Other Map Configurations
➤ **'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER'**
This function allows the user to customize the following selections and is divided into the following setting: Marine Settings, Depth Settings, Land Settings and Chart Settings.

Display Mode: 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, Medium, Low, Radar, Tides, Custom. The default setting is Custom.
➤ **'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER'**
The following table shows the selections for each mode:

Setting	Full	Medium	Low	Radar	Tides	Custom (Default values)
Names	On	On	On	On	On	On
Buoys Name	On	Off	Off	Off	Off	On
Nav-Aids	On	On	On	On	Off	On
Light Sectors	On	Off	Off	Off	Off	On
Attention Areas	On	On	Off	Off	Off	On
Tides & Currents	On	Off	Off	Off	On	On
Seabed Type	On	Off	Off	Off	Off	On
Ports & Services	On	On	Off	On	Off	On
Tracks & Routes	On	Off	Off	Off	Off	On
Underwater Objects	On	On	Off	Off	Off	On
Depth Range	On	On	On	Off	On	On
Depth Range Min	3 Mt	3 Mt	3 Mt	3 Mt	3 Mt	3 Mt
Depth Range Max	10 Mt	10 Mt	10 Mt	10 Mt	10 Mt	10 Mt
Rocks >	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt
Rocks <	9999Mt	5 Mt	5 Mt	5 Mt	5 Mt	9999Mt
Land Elevation Data	On	Off	Off	Off	Off	On
Roads	On	Off	Off	Off	Off	On
POIs	On	Off	Off	Off	Off	On
Lat/Lon Grid	On	Off	Off	Off	Off	On
Chart Boundaries	On	Auto	Off	Off	Off	Auto
Mixing Levels	On	Off	Off	Off	Off	Off
Value Added Data	On	Off	Off	Off	Off	On

Names: On/Off. The <u>default</u> setting is On.
➤   'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Names" + 'ENTER'

Buoys Name: On/Off. The <u>default</u> setting is On. To identify better the Buoys, the name/number of the buoys is shown next to the icon on the chart.
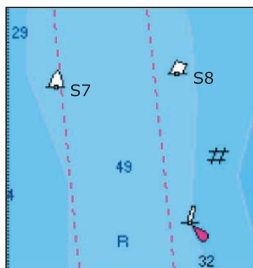
BUOYS NAME On   **BUOYS NAME Off**
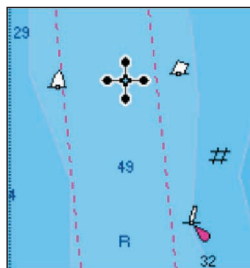
Fig. 3.4.1.10 - Buoy Name

On the left side of the previous figure the two buoys have their name shown on the right side. On the right side of the previous figure, the two buoys do not show the name.
➤   'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Buoys ID" + 'ENTER'

Nav-Aids: On/Off. The <u>default</u> setting is On. When selected it affects Lights, Signals, <u>Buoys</u> & <u>Beacons</u> display.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Nav-Aids" + 'ENTER'

Light Sectors: On/Off. The <u>default</u> setting is On.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Light Sectors" + 'ENTER'

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

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Attention Areas" + 'ENTER'

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

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Tides & Currents" + 'ENTER'

Seabed Type: On/Off. The <u>default</u> setting is On.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Seabed Type" + 'ENTER'

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

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Ports & Services" + 'ENTER'

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

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Tracks & Routes" + 'ENTER'

Underwater Objects: On/Off. The <u>default</u> setting is On.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Underwater Objects" + 'ENTER'

Depth Range: On/Off. The <u>default</u> setting is On.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Depth Range" + 'ENTER'

Depth Range Min: Sets a min reference depth value. The <u>default</u> setting is 3 Mt.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Depth Range Min" + 'ENTER'

Depth Range Max: Sets a max reference depth value. The <u>default</u> setting is 10 Mt.

➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Depth Range Max" + 'ENTER'

Rocks >: Sets a min reference rocks value.
➤ 'MENU' + "MAP SETTINGS" +'ENTER'+ "Other Map Configurations" + 'ENTER' + "Rocks >" + 'ENTER'

Rocks <: Sets a max reference rocks value.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Rocks <" + 'ENTER'

Land Elevation Values: the Land Elevation areas are always shown, but it is possible to set On/Off the Land Elevation display. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Lan Elevation Values" + 'ENTER'

Roads: On/Off. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Roads" + 'ENTER'

POIs (Points Of Information): On/Off. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "POIs" + 'ENTER'

<u>Lat/Lon</u> Grid: On/Off. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

Chart Boundaries: On/Off/Auto. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Boundaries" + 'ENTER'

<u>Value Added Data</u>: On/Off. The <u>default</u> setting is On.
➤ 'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Value Added data" + 'ENTER'

3.4.2 GETTING AUTOMATIC INFO

The type of Automatic Info is user selectable.
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' +"AUTO INFO" + 'ENTER'
The possible settings are:
- **Off**: disabled, no automatic info shown at all.
- **On Points**: only on points. This is the <u>default</u> setting.
- **On All**: on all objects (points, lines and areas).
The Automatic Info On Points shows information when the cursor is placed on points (as Port Services, <u>Tides</u>, lights, wrecks, rocks, <u>buoys</u>, <u>beacons</u>, obstructions, land markers, etc.). The Automatic Info On All shows information when the

cursor is placed on points, on lines (as <u>Depth contours</u>, 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.
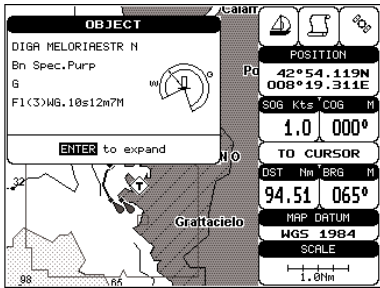
Fig. 3.4.2 -Automatic Info on Points window

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

3.4.2.1   Info on objects with Pictures

On the Quick Info, there will be the camera icon on the top bar of the window if at least one of the objects found has one or more pictures associated.
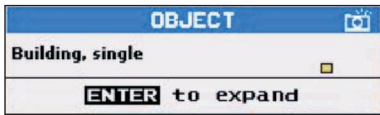
Fig. 3.4.2.1 - Example of Quick Info on objects with picture

On the Full Info, there will be the small camera icon on a corner of the square containing the object icon or a big photo icon centered on the square for the object without icon.
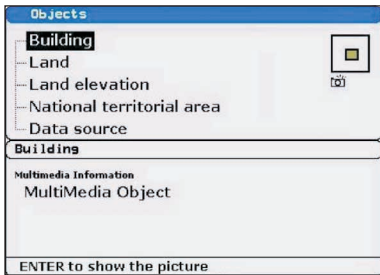
Fig. 3.4.2.1a - Example of Full Info on objects with picture

To see the picture press 'ENTER' when the object with a picture is highlighted.

Change Picture Size
When the picture is shown, it is possible to fit it to screen by pressing 'ENTER'.

3.4.3 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.

3.4.4 INFO FUNCTION

Place the cursor in any place you want and press:
➤ 'MENU + "INFO" + 'ENTER'
to show the Info Tree and Expanded Info page (see Par. 3.5.4).

3.4.5 GETTING PORT INFO

Upon viewing the chart of a port or harbour, you will see a <u>Port Info</u> icon that can be clicked on to query the available information immediately displayed with many details. The <u>Port Info</u> icon is visible only if the <u>Ports & Services</u> option is On (<u>default</u> setting).
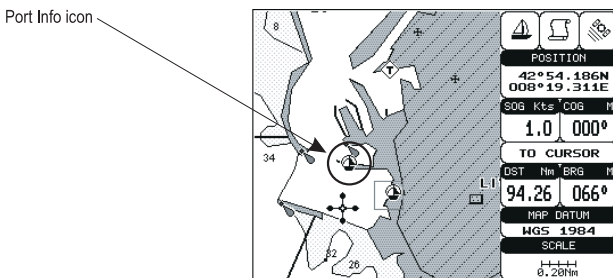
Fig. 3.4.5 - Port Info icon

The available information is shown in the Automatic Info window where icons of the available services are shown:
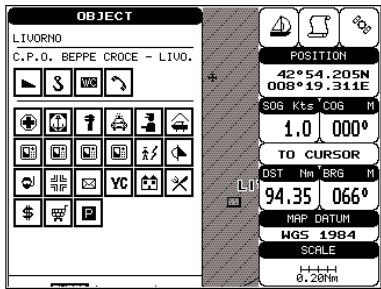
Fig. 3.4.5a - Automatic Info window

3.4.6 GETTING TIDE INFO

To obtain Tide Info:

Tide Info icon
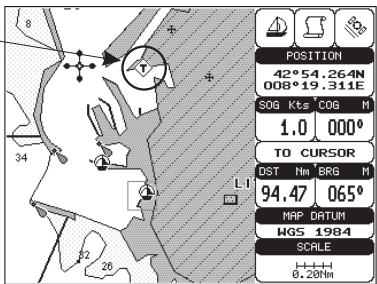
Fig. 3.4.6 - Tide Info icon

Place the cursor on the Tide symbol, a automatic Info window is opened:
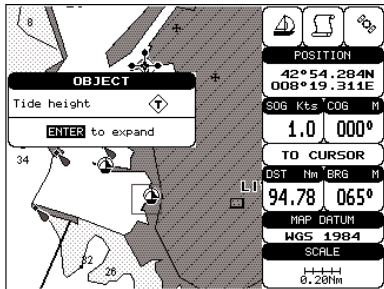
Fig. 3.4.6a - Automatic Info on Tide

To display the Tide Graph page press 'ENTER' for two times:
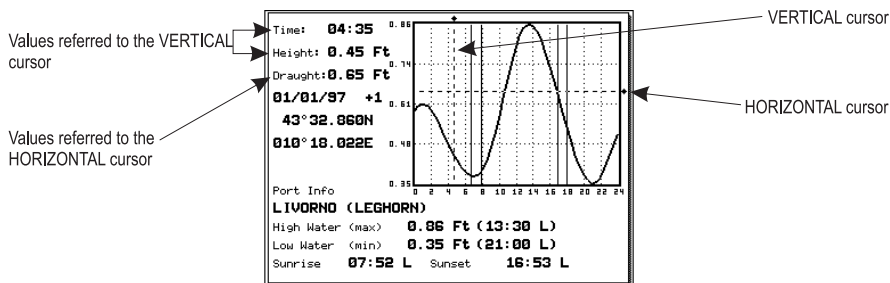
Fig. 3.4.6b - Tide Graph

Using the cursor key, 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 cursor key up/down to insert the desired 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.

3.4.7 FIND FUNCTION

The chartplotter allows finding <u>Nearest Services</u>, <u>Port By name</u>, <u>Tide Stations</u>, <u>Wrecks</u>, <u>Obstructions</u>.

3.4.7.1   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' + "NEAREST SERVICES" + 'ENTER'

The icons of the available services are shown. Use the cursor key to select any facility and press 'ENTER'. 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'.

3.4.7.2 Finding Nearest Ports

Shows the list of all ports stored on the C-CARD and allows to locate the ports on the map.

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

Note _____

A Warning message is shown if there is no C-CARD inserted or there are no ports on the C-CARD.

Searching by name

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

If the Range option is disabled (Off selected) the list of available ports ordered by name is shown; otherwise the list of available ports in the range is shown. Press 'MENU' and then use the cursor key to insert port name (max 15 characters). Press 'ENTER' to accept (press 'CLEAR' to close menu). 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 cursor key. Press 'ENTER' to show port on the map.

Searching port in the range

➤ 'MENU' +"FIND" + 'ENTER' + "PORT BY NAME" + 'ENTER' + "RANGE" + 'ENTER'

Finds port in the range. Use the cursor key to insert preferred value. Press 'ENTER' to accept.

3.4.7.3   Finding Tide Stations

Finds the nearest <u>Tide</u> 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 <u>Tide</u> Stations you want and press 'ENTER' or 'FIND' to display the <u>Tide</u> Graph page (see Par. 3.5.4). Press 'CLEAR' to display the <u>Tide</u> Station chosen.

3.4.7.4   Finding Wrecks

Searches for Nearest Wrecks:

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

Use the cursor key to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' to locate the selected Wreck on the map.

3.4.7.5   Finding Obstructions

Searches for Nearest Obstructions:

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

Use the cursor key to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' to locate the selected Obstruction.

4

For the Experienced User

Now you have had a chance to became familiar with your new chartplotter, there are a great number of advanced features that you will find helpful. First of all the use of the <u>Advanced Mode</u>.

The chartplotter can operate in two different modes: <u>Basic Mode</u> and <u>Advanced Mode</u>. In the first mode there is a restricted number of functions, while in <u>Advanced Mode</u> it is possible to have more available functions, for example it is possible to handle <u>Waypoint</u>s. To select the <u>Advanced Mode</u>:

➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER' + "ON" + 'ENTER'
   When Advanced Functions is Off the chartplotter operates in <u>Basic Mode</u>.

4.1   MORE ABOUT CREATING AND USING ROUTES

At anytime, you may add or delete <u>Waypoint</u>s, see a <u>route</u> summary, reverse the direction of the <u>route</u> or erase the entire <u>route</u>.

4.1.1 WAYPOINTS

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

4.1.1.1   Adding Waypoint
➤ Select Advanced Mode + 'ENTER' + "WAYPOINT" + 'ENTER'
   The <u>Waypoint</u> appears on the cursor position. An info window is shown containing <u>route</u> number, <u>Waypoint</u> name, symbol and <u>Latitude</u>/<u>Longitude</u>.
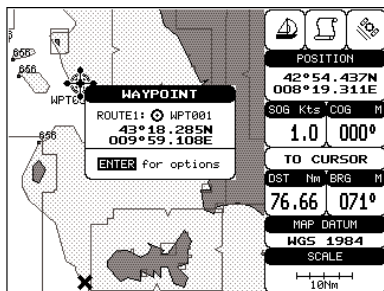
Fig. 4.1.1.1 - Waypoint placing

4.1.1.2   Creating a route

Repeat the "Adding Waypoint" procedure described in the previous Par. 4.1.1.1. The sequence of moving the cursor and pressing 'ENTER' is continued to create the <u>route</u>, until you have reached the last <u>Waypoint</u>, your final destination. Segments connecting the <u>Waypoint</u>s are shown, and the starting point is identified by a circle surrounding the first <u>Waypoint</u> of the <u>route</u>:
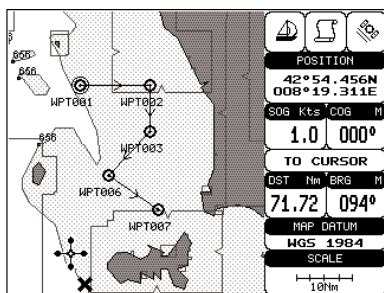
Fig. 4.1.1.2 - Route planning

4.1.1.3   Deleting Waypoint
➤ Select Advanced Mode + Adding Waypoint or Place cursor on Waypoint
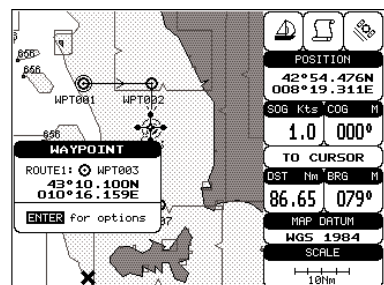
Fig. 4.1.1.3 - Deleting Waypoint (I)

Press 'ENTER'. Select "DELETE" and press 'ENTER'. 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.
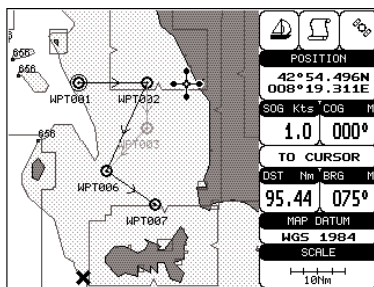
Fig. 4.1.1.3a - Deleting Waypoint (II)

4.1.1.4   Deleting route
➤ **Select Advanced Mode + Adding Waypoint or Place cursor on Waypoint**

Press 'ENTER'. Select "DELETE ROUTE" and press 'ENTER'. A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The route remains on the screen shaded until the screen is redrawn. To delete route see also Par. 4.1.2.2 and 4.1.2.4.

4.1.1.5   Distance and Bearing to Target

Once you have positioned the cursor on the desired starting Waypoint (it could be the first Waypoint of the route or another one) press 'DEST'. A circle surrounds the Waypoint symbol. A line is shown, connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.
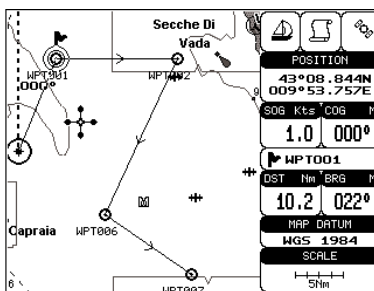
Fig. 4.1.1.5 - Selecting destination (Target)

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

Time To Go

When the <u>Target</u> is set the <u>TTG</u> value is displayed in the <u>Graphic Data page</u>:

➤ 'PAGE' more times to select Graphic Data page

Deleting Target

If in <u>Basic Mode</u> place cursor on <u>Target</u> icon and press 'CLEAR': the symbol that identifies <u>Target</u> disappears from the screen, but the <u>Waypoint</u> remains.

If in <u>Advanced Mode</u> (see Par. 3.4.3) place cursor on <u>Target</u> icon, press 'ENTER', select "STOP NAV" and press 'ENTER': the symbol that identifies <u>Target</u> disappears from the screen, but the <u>Waypoint</u> remains.

Note _____

If you select "NEXT"/"PREV" and press 'ENTER', the Target icon is moved on the next/ previous Waypoint in the route.

Otherwise in both Modes (when the cursor is placed in a generic position on the chart) press 'DEST'. A window appears to advice that the Destinetion point is present: select "STOP" and press 'ENTER', the symbol that identifies <u>Target</u> disappears from the screen, but the <u>Waypoint</u> remains.

Note _____

If you select "START" and press 'ENTER', the Target icon is moved on the new cursor position.

4.1.1.6 Moving Waypoint

➤ **Select Advanced Mode + Adding Waypoint or Place cursor on Waypoint**

Press 'ENTER'. Select "MOVE" and press 'ENTER'. Use the cursor key to move the cursor: a dotted line, connecting the <u>Waypoint</u> to the new position, is shown:
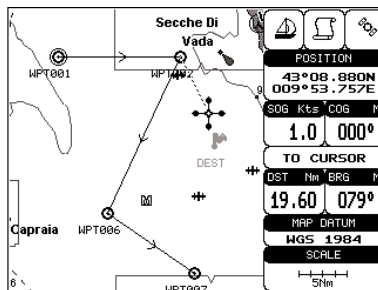
Fig. 4.1.1.6 - Moving Waypoint function (I)

To place the <u>Waypoint</u> in the new position, choose the new place and press 'ENTER' ('CLEAR' otherwise), <u>Waypoint</u> appears in the new position:
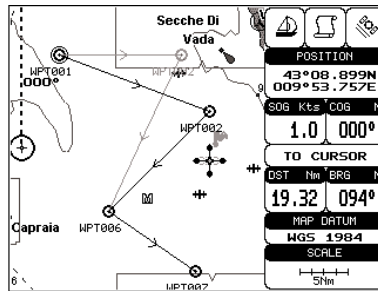
Fig. 4.1.1.6a - Moving Waypoint function (II)

4.1.1.7 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**
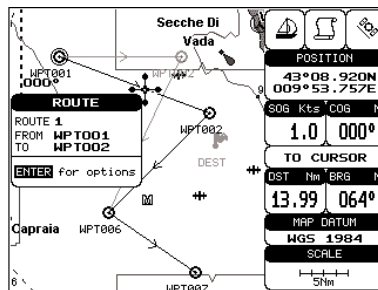
Fig. 4.1.1.7 - Placing Waypoint between two existing ones (I)

Press 'ENTER'. Select "INSERT" and press 'ENTER'. 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:
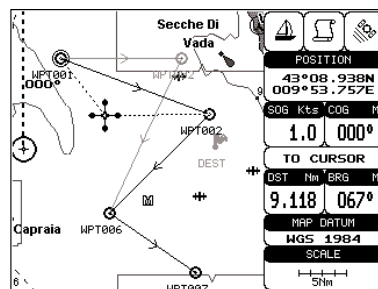
Fig. 4.1.1.7a - Placing Waypoint between two existing ones (II)

Once you have positioned the cursor at new location, press 'ENTER' (press 'CLEAR' to abort operation):
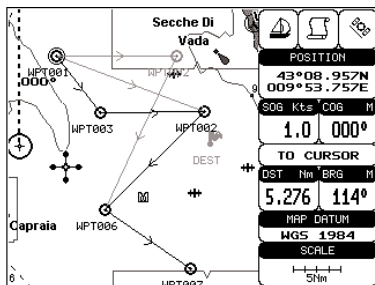
Fig. 4.1.1.7b - Placing Waypoint between two existing ones (III)

4.1.1.8 Editing Waypoint

➤ **Select Advanced Mode + Adding Waypoint or Place cursor on Waypoint**

Press 'ENTER'. Select "EDIT" and press 'ENTER' to modify a <u>Waypoint</u>. A window will be shown with Name, Symbol, Color and <u>Latitude</u>/<u>Longitude</u> of the <u>Waypoint</u>, advising about what <u>Waypoint</u> data are modifiable.
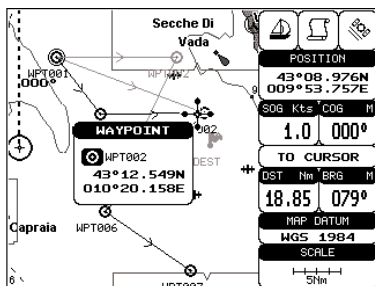
Fig. 4.1.1.8 - Edit Waypoint (I)

Use the cursor key to select the field. If you have selected Name field, press 'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'.

If Symbol field is selected press 'ENTER': a window with 16 different symbols appears:
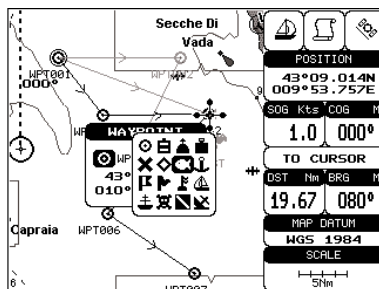
Fig. 4.1.1.8a - Edit Waypoint (II): Waypoint symbols

Use the cursor key to select the symbol and press 'ENTER'. If Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'. If select Coordinates field, press 'ENTER' and then use the cursor key to insert the value. Then press 'CLEAR'.
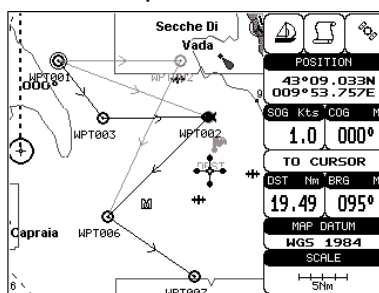
Fig. 4.1.1.8b - Edit Waypoint (III)

4.1.1.9 Finding information about Waypoints: User Points List page
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

Move up/down the cursor key to select the <u>User Point</u> you wish. If the page contains more than 12 <u>User Points</u>, the list continues in the next pages.

Finding User Points
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "FIND" + 'ENTER'

The chartplotter exits from the <u>User Points</u> List page and redraws the chart. The selected point appears, with the cursor placed on it.

Deleting selected User Point
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-ONE" + 'ENTER'

Deletes the selected <u>User Point</u>. A warning message appears, select "YES" and press

'ENTER' ('CLEAR' otherwise).

Deleting all User Points with the same symbol
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-SYM" + 'ENTER'

Deletes all <u>User Points</u> which have the same identifier of that shown in the selected row. A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise).

Deleting all User Points with the same type
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-TYP" + 'ENTER'

Deletes all <u>User Points</u> which have the same type of that shown in the selected row. A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise).

Deleting all stored User Points
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-ALL" + 'ENTER'

A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise) to delete all stored <u>User Points</u>.

Send/Receive User Points

Sends all User Points to an external device using the serial port:
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "SEND"

Reads all User Points from NMEA Input port:
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "RECEIVE"

4.1.2 ROUTES

The following functions are used for the <u>route</u> management. The chartplotter handles <u>routes</u> from 1-25, which are permanently stored in the memory as they are created. Only one <u>route</u> can be selected for work at any one time.

4.1.2.1 Selecting route
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "CURRENT ROUTE" + 'ENTER'

A window appears with the <u>route</u> number list and the related <u>route</u> name. Use the cursor key to scroll the list up/down. Pressing 'ENTER' the selected <u>route</u> becames the current <u>route</u>.

If there is the Target in the current route, it is not possible to change the current route. So if the "Current Route" item is selected, a Warning window appears because Target is placed in the current route.

4.1.2.2 Deleting route

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "DE-LETE ROUTE" + 'ENTER'

A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The <u>route</u> remains on the screen shaded until the screen is redrawn. To delete route see also Par. 4.1.1.4 and 4.1.2.4).

4.1.2.3 Reversing route

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "RE-VERSE ROUTE" + 'ENTER'

Reversing a <u>route</u> plan is most typically used to return to the point where the route originally started.

4.1.2.4 Selecting route Color

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

A window is opened: use the cursor keys to select the <u>route</u> color you want among the eight colors available. Press 'ENTER' to confirm. The <u>route</u> appears on the screen colored by the selected color. It is possible to select a different color for any <u>route</u>.

4.1.2.5 Finding information about a route: Route Report

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

If there are more than 12 <u>Waypoint</u>s shown, use the cursor key to select another page.

Fig. 4.1.2.5 - Route Data Report page

Selecting route
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "ROUTE #" + 'ENTER'

Use the cursor key to select the <u>route</u> number and press 'ENTER'. The <u>route</u>, shown by straight segments, is centered on the screen, with the cursor on the central <u>Waypoint</u>. See also Par. 4.1.2.1.

<hr>

Note

If there is the Target in the current route, it is not possible to change the current route. So if the "Route #" item is selected, the chart plotter emits three beeps.

<hr>

Changing Speed & Fuel values
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER'

It is possible to modify the Speed and Fuel consumption values, respectively by selecting "SPEED" and "FUEL". Insert value by using the cursor key and pressing 'ENTER'.

Reversing route
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "REVERSE" + 'ENTER'

Reversing a <u>route</u> plan is most typically used to return to the point where the route originally started. See also Par. 4.1.2.3.

Deleting route
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "CLEAR" + 'ENTER'

A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The <u>route</u> remains on the screen shaded until the screen is redrawn. To delete the <u>route</u> see also Par. 4.1.1.4 and 4.1.2.2.

4.1.2.6   Route Name
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE NAME" + 'ENTER'
Use the cursor key to insert the <u>route</u> name (max 16 alphanumeric char.).

4.1.2.7   Send/Receive Route
To transmit the Active Route information onto the NMEA output port.
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "SEND"
The NMEA WPL & RTE messages are sent to the output port.

To save Route information received from the NMEA input port.

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "RECEIVE"

The received route is saved on the Active route, overwriting it. The NMEA WPL & RTE messages are sent to the input port.

4.2   USING MARKS& EVENTS

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

4.2.1 MARKS

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

4.2.1.1   Adding Mark
➤ 'MARK'

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

4.2.1.2   Deleting Mark
➤ Select Advanced Mode + Adding Mark or Place cursor on Mark

Press 'ENTER'. Select "DELETE" and press 'ENTER': the <u>Mark</u> remains on the screen shaded until the next screen is redrawn.

Note

If you try to delete a Mark that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to delete the Mark, press 'ENTER'.

4.2.1.3   Goto
➤ Place cursor on Mark

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

4.2.1.4   Moving Mark
➤ Select Advanced Mode + Adding Mark or Place cursor on Mark

Press 'ENTER'. Select "MOVE" and press 'ENTER'. By moving the cursor

with the cursor key, a dotted line connecting the <u>Mark</u> with the new position is shown:
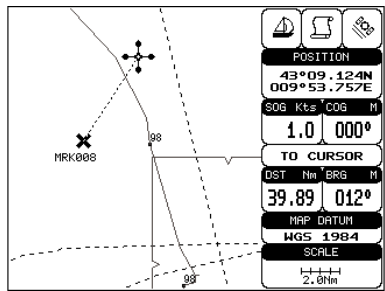
Fig. 4.2.1.4 - Moving Mark function (I)

Press 'ENTER':
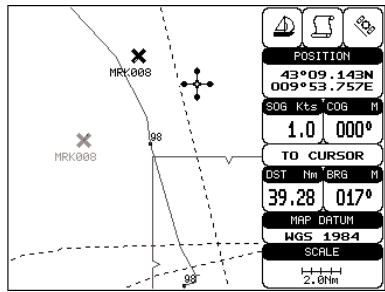
Fig. 4.2.1.4a - Moving Mark function (II)

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

Note

If you try to move a Mark that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to move the Mark, press 'ENTER'.

4.2.1.5 Editing Mark

➤ **Select Advanced Mode + Adding Mark or Place cursor on Mark**

Press 'ENTER'. Select "EDIT" and press 'ENTER'. A window appears to modify Name, Symbol, Color and coordinates of the existing <u>Mark</u>.

Fig. 4.2.1.5 - Edit Mark

Use the cursor key to select the field. If you have selected Name field, press 'ENTER': use the cursor key 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 cursor key to select the symbol and press 'ENTER'. If Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'. If Coordinates field is selected, press 'ENTER' and then use the cursor key to insert the value. Then press 'CLEAR'.

4.2.1.6 Finding information about Marks: User Points List page
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points (Marks, Events and Waypoints). Move up/down the cursor key to select the User Point you wish. If the page contains more than 12 User Points, the list continues in the next pages. See Par. 4.1.1.9.

4.2.1.7 Add to Route
➤ Select Advanced Mode + Place cursor on Mark

Press 'ENTER'. Select "ADD TO ROUTE" and press 'ENTER': the selected Mark is connected to the current route. The same Mark can be added in many routes.

Note _____
An existing Mark can be connected to the current route in another mode too. Place cursor on Mark, the information window related to the Mark appears, press 'CLEAR' to close the window and then press 'ENTER', select the Waypoint option and press 'ENTER'. The Mark is connected to the current route.
_____

4.2.2 EVENTS

In Navigate mode you may place a location with an Event symbol and num-

ber, directly on the ship's position. Move the cursor to exit from <u>Navigate</u> mode; place the cursor on an <u>Event</u> to access the following functions.

4.2.2.1   Adding Event
➤ 'CLEAR', then 'EVENT'
An <u>Event</u> is placed directly on the ship's position.

4.2.2.2   Deleting Event
➤ Place cursor on Event
Press 'ENTER'. Select "DELETE" and press 'ENTER': the <u>Event</u> remains on the screen shaded until the next screen is redrawn.

Note _____
If you try to delete a Event that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to delete the Event, press 'ENTER'.

4.2.2.3   Goto
➤ Place cursor on Event
Press 'DEST': a circle encloses the <u>Event</u> symbol. A straight line is shown on the screen connecting the <u>Target</u> with the ship's position. When the <u>Target</u> is placed, all navigation data are referred to this <u>Target</u>.

4.2.2.4   Editing Event
➤ Place cursor on Event
Press 'ENTER'. Select "EDIT" and press 'ENTER'. A window appears to modify Name, Symbol, Color of the existing <u>Event</u>.
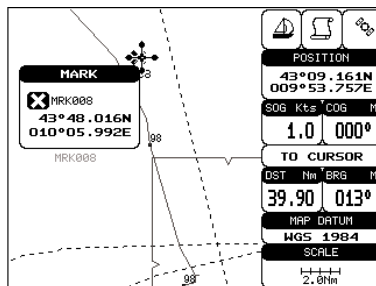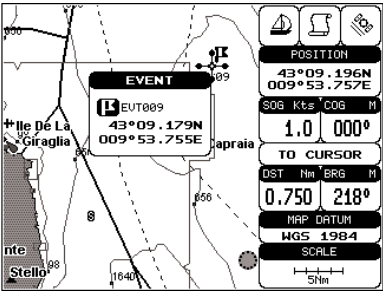

Fig. 4.2.2.4 - Edit Event

Use the cursor key to select the field. If you have selected Name field, press 'ENTER': use the cursor key 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 cursor key to select the symbol and press 'ENTER'. If

Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'. Then press 'CLEAR'.

4.2.2.5 Finding information about Events: List User Points page
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'
A full window is opened showing information about all stored <u>User Points</u> (<u>Marks</u>, <u>Events</u> and <u>Waypoints</u>). Move up/down the cursor key to select the <u>User Point</u> you wish. If the page contains more than 12 <u>User Points</u>, the list continues in the next pages. See Par. 4.1.1.9.

4.2.2.6 Add to Route
➤ Place cursor on Event
Press 'ENTER'. Select "ADD TO ROUTE" and press 'ENTER': the selected <u>Event</u> is connected to the current <u>route</u>. The same <u>Event</u> can be added in many <u>routes</u>.

Note
An existing Event can be connected to the current route in another mode too. Place cursor on Event, the information window related to the Event appears, press 'CLEAR' to close the window and then press 'ENTER', select the Waypoint option and press 'ENTER'. The Event is connected to the current route.

4.3   EBL & VRM FUNCTION

<u>EBL</u> & <u>VRM</u> function enables to create a dotted line and a circle respectly with direction and radius determined by the user.

4.3.1 PLACING EBL & VRM
➤ Select Advanced Mode + 'ENTER' + "EBL & VRM" + 'ENTER'
On the screen a dotted line and a circle appear: you can move in any direction you choose rotating the trackball. When the desired position is selected, press 'ENTER'. A window is shown containing the bearing value for the <u>EBL</u> and the radius value for the <u>VRM</u>.
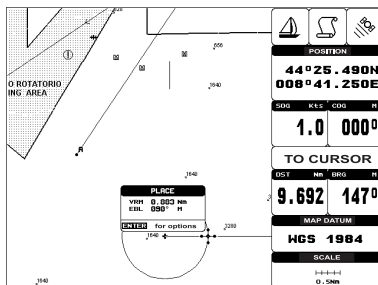
Fig. 4.3.1 - EBL & VRM

4.3.2 DELETING EBL & VRM

➤ **Select Advanced Mode + Place cursor on the cross EBL & VRM + 'ENTER'**
Select "DELETE" and press 'ENTER': the line and circle disappear from the screen.

4.3.3 EDITING EBL & VRM

➤ **Select Advanced Mode + Place cursor on the cross EBL & VRM + 'ENTER'**
Select "EDIT" and press 'ENTER': with the cursor key move the line and the circle, when the desired position is selected, press 'ENTER'. A window is shown containing the bearing value for the <u>EBL</u> and the radius value for the <u>VRM</u>.

4.4 MORE ABOUT A-B-C-D FUNCTION

The <u>A-B-C-D</u> function, explained in the previous paragraph 3.2, if <u>Advanced Mode</u> is selected, allows you not only to create the A, B, C, D points and to delete them, but also to modify and move them.

4.4.1 INSERTING THE A-B-C-D POINTS

Place the cursor on the desired position and press 'ENTER'. On the screen the Create window appears, by using the cursor key select "A-B-C-D" and press 'ENTER': the A point and an information window on A appear. Move the cursor, press 'ENTER', select "A-B-C-D" and press 'ENTER' again: the B point appears, connected to A with a straight segment; an information window on A-B segment (distance (DST), bearing (BRG) and total distance from the first point) appears. Moving the cursor, pressing 'ENTER', selecting "A-B-C-D" and pressing 'ENTER' places the C and D points (see previous Fig. 3.2.1).

4.4.2 DELETING THE A-B-C-D POINTS

When placing the cursor on the desired point (A, B, C or D) the information window appears. Press 'ENTER', select "DELETE" and press 'ENTER' again: the point is deleted. When the point is deleted, the cursor is placed on the previous point, if existed. The labels of the next points are renamed.

4.4.3 DELETING THE A-B-C-D SEGMENT

When placing the cursor on the desired point (A, B, C or D) or on segment between two points the information window appears. Press 'ENTER', select "DELETE ALL" and press 'ENTER' again: all points and connecting segments are deleted.

4.4.4 MOVING THE A-B-C-D POINTS

When placing the cursor on the desired point (A, B, C or D) the information window appears. Press 'ENTER', select "MOVE" and press 'ENTER': by the cursor key move the cursor, on the screen a dotted line connecting the point to move with the new position appears. By pressing 'ENTER' the point is placing in the new position.

4.4.5 INSERTING THE A-B-C-D POINTS

Placing cursor on the segment connecting two points, the information window appears. Select "INSERT" and press 'ENTER': by the cursor key move the cursor, on the screen a dotted line appears. By pressing 'ENTER' the new point is placing between the two existed points which are renamed.

4.4.6 NAVIGATING ON THE A-B-C-D POINTS

If fix received is good, place the cursor on the desired point A, B, C or D and press 'DEST'. When ship reaches the Destination point, navigation follows the next point (if exists). When Target is set, three options are available: STOP NAV, NEXT and PREV.

4.5   USING THE TRACK FUNCTIONS

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

4.5.1 SELECTING ACTIVE TRACK
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "AC-TIVE TRK" + 'ENTER'
Select the number of the active <u>track</u>. The <u>default</u> setting is 1.

4.5.2 ENABLING TRACK STORING
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TRACKING" + 'ENTER'
To enable (On) or disable (Off) the <u>track</u> storing. It is not possible to use the <u>track</u> storing if you are not receiving a valid fix. The <u>default</u> setting is On.

4.5.3 DISPLAYING TRACK
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "VISIBLE" + 'ENTER'
To enable (On) or disable (Off) the displaying of <u>track</u>. The <u>default</u> setting is Off.

4.5.4 SELECTING TRACK COLOR
Selects the desired color among the eight colors available for the selected <u>track</u>.
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "COLOR" + 'ENTER'

4.5.5 DELETING TRACK
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DISTANCE" + 'ENTER'
Deletes all <u>track</u>. After pressing 'ENTER' a warning window appears: select "Yes" and press 'ENTER' to confirm (select "No" otherwise).

4.5.6 DELETING SELECTED TRACK
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DELETE SELECTION" + 'ENTER'
Deletes the track selected. After pressing 'ENTER' a window appears: press 'ENTER' to set the first point , then press 'ENTER' to set the second point. A warning window appears: select "Yes" and press 'ENTER' to confirm the deletion (select "No" otherwise).

4.5.7 SELECTING TRACK MEMORIZING TYPE

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "STEP UNIT" + 'ENTER'

Choose Distance (Dist) - the chartplotter can store a fix when the distance from its last stored position is greater than a defined distance; Time - the chartplotter can store a fix after a defined time; Auto - the software decides when storing a position, on the basis of the straight or curved <u>track</u>. The <u>default</u> setting is Time.

4.5.8 SELECTING DISTANCE

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DISTANCE" + 'ENTER'

When the tracking function is On and the type of <u>track</u> storing is <u>Distance</u>, you can store a fix when the <u>distance</u> from its last stored position is greater than a defined <u>distance</u>. Choose in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 Nm (the <u>distance</u> unit is selected by the user, see Cap. 5). The <u>default</u> setting is 0.01 Nm.

4.5.9 SELECTING TIME

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TIME" + 'ENTER'

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

4.6   USER C-CARD MENU

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

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER'
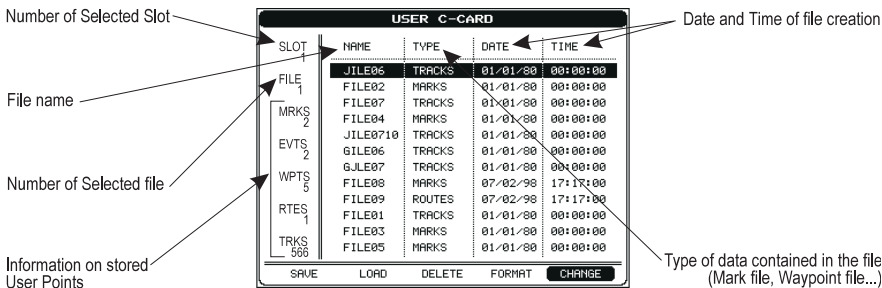
Fig. 4.6 - User C-CARD Menu

4.6.1 SAVING FILE

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "SAVE" + 'ENTER'

A window is opened to insert the <u>file</u> name and the type of data to save:
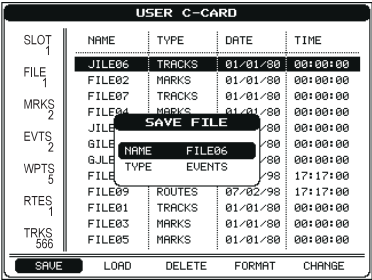
Fig. 4.6.1 - Save File function (I)

Select the <u>file</u> name. At first a <u>default</u> name is shown: use the cursor key to insert the name. Press 'ENTER'. Select the data type to save among "MARK", "EVENT", "ROUTE" or "TRACK".

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.

Press 'CLEAR'. On the screen appears:
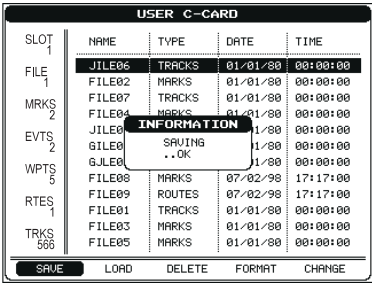
Fig. 4.6.1a - Save File function (II)

4.6.2 LOADING FILE

➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "LOAD" + 'ENTER'

Before pressing 'ENTER', choose <u>file</u> name in the list shown on the screen using the cursor key.

4.6.3 DELETING FILE
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "DELETE" + 'ENTER'

A warning window is shown, select "YES" and press 'ENTER' to confirm deletion (select "NO" otherwise). This operation remove old or unnecessary <u>files</u> to clean up your <u>User C-CARD</u>. Remember that this option permanently erases the <u>file</u>.

4.6.4 FORMATTING USER C-CARD
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "FORMAT" + 'ENTER'

A warning window is shown, select "YES" and press 'ENTER' to confirm the formatting (select "NO" otherwise). The <u>format</u> of <u>User C-CARD</u> must be done before using a new <u>User C-CARD</u>: this operation prepares the <u>User C-CARD</u> to receive and store information.

4.6.5 CHANGING USER C-CARD
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "CHANGE" + 'ENTER'

Allows to change the <u>User C-CARD.</u>

4.7 C-LINK

C-Link system is a feature which allows to sharing the same cartographic data between two chart plotter units (CP) linked via serial I/O port.

In order to activate C-Link function, a "MAX data C-CARD" (called REGULAR C-CARD) must be inserted into one of the two chart plotters and a special MAX data C-CARD (called MIRROR C-CARD) must be inserted on the other chart plotter.

The two MAX data C-CARDs must have the same code and revision. So, the MIRROR C-CARD can be utilized only on a chart plotter linked to another chart plotter provided with the equivalent REGULAR C-CARD.

It is important to point out that the two chart plotters must have the update s/w versions that allow C-Link function.

4.7.1 HOW C-LINK SYSTEM WORKS

When the CP is powered up, it switches into the "Stand-Alone Mode". In this work mode, the CP unit periodically scans all the available C-CARD slots searching for MIRROR C-CARDs. When one or more MIRROR C-CARD is found (in one or both CPs) a special connection is established between the CPs to abilitate the MIRROR C-CARDs.

If a regular C-CARD which has previously activated a MIRROR C-CARD is removed, even the MIRROS card will be not read anymore on the other unit.

4.8   C-LINK NAVIGATION DATA TRANSFER

This function allows transferring C-Link navigation data (Route Name, Destination ID & Position, Next Waypoint ID & Position, Total Route length, Fuel Consumption Rate, ETA, TTG etc.) (Hereinafter "c-link navigation data") between two chart plotters linked through the C-Link system.

The chart plotters can be set to operate in two modes:
- MASTER mode (Primary Chart Plotter that sends data)
- SLAVE mode (Secondary Chart Plotter that receives data)

When the navigation is activated on the Master chart plotter, the C-Link navigation data will be continuously sent to the Slave until the navigation is active. If the Master is navigating to a Single Destination, the Slave will show the Destination position and activate the navigation to it.

If the Master is navigating to a Route, the Slave will show the Route Leg composed by the Destination and the Waypoint after the Destination (Next Waypoint) and activate the navigation to it. Any variation to the current C-Link navigation data will be transferred from the Master to the Slave.

The Slave will be provided with a few dedicated pages to show the C-Link navigation data received from the Master.

4.8.1 OPERATIONS

4.8.1.1   Introductive elements

It is important remark, once more, that this function does not transfer the whole route but just the information relative to the navigation. Such information will be removed from the Slave Chart Plotter as soon as the navigation is terminated. C-Link navigation data is exchanged by using two NMEA-0183 C-MAP proprietary sentences: $PCMPN,1 and $PCMPN,2.

When the navigation is activated on the Master, it starts outputting the C-Link navigation data. If the Slave is connected, all c-link navigation data received are stored in its memory and the navigation is started.

The information sent by the Master consists of the following values:
- Navigation mode   (To Single Destination / to a Route)
- Route Name (*)
- Destination ID
- Destination Position
- Next Waypoint ID (*)
- Range from Destination to next Waypoint (*)
- Bearing from Destination to next Waypoint (*)
- Route Length (*)
- Distance from Destination to Last Route Waypoint (*)
- Remaining Route Legs (*)
- Planned Cruising Speed
- Average Fuel Consumption
- Initial Fuel Load

C-link navigation datacan refer to:
- Single Destination navigation
- Route Following navigation.

Values identified by (*) are sent only for Route Following navigation.

The Destination Icon, Navigation leg (Fix Position to Destination), the Next Waypoint Icon and all other relevant c-link navigation data will be shown on the Slave chart plotter. Any variation of the C-link navigation data on the Master will be communicated to the Slave so to keep data aligned on both devices.

4.8.1.2   C-Link serial connection

The two chart plotters should be connected via serial ports. Any of the available ports can be used, the software will recognize automatically the serial ports used. A typical connection is as follows:

```
CP1              CP2
TX    —————>  RX
RX    <—————  TX
GND   <————>  GND
```

4.8.1.3   Master Chart Plotter

Operating mode
To select the Master mode (Primary Station) follow the procedure:

➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Primary Station" + 'ENTER'

Master mode is the default factory setting. All regular chart plotters' functions are allowed.

As soon as the Destination is placed, the master chart plotter will start transmitting all c-link navigation data. In Master mode the C-Link navigation data received from the NMEA port is ignored. So, if the two chart plotters are both operating in Master mode, the C-Link navigation data sent by the other Chart Plotter never processed. Under such condition if the navigation is activated on one of the two Chart Plotters, a warning message will be shown to notify that the C-Link navigation data will be ignored by the other Chart Plotter.

4.8.1.4 Slave Chart Plotter

Operating mode
To select the Slave mode (Secundary Station) follow the procedure:
➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secundary Station" + 'ENTER'

When Slave mode is set, the chart plotter cannot manipulate the C-link navigation data anymore.

Stop current navigation
If the navigation was already active, it will be disabled as soon as Slave mode is set. An appropriate warning message will be shown to notify that the Navigation is already active and to confirm whether Slave mode can be set.

Inhibit Navigation operation
As soon as Slave mode is set, the destination cannot be placed anymore either the C-link navigation data is received from the Master or not. Also, when the C-link navigation data is received from the Master, it will not be allowed to deactivate the Navigation.

Inhibit Route following
While navigating to the route received from the Master the destination is reached (either applying distance or perpendicular criteria), the destination will not be moved to the next waypoint on the route.

MOB handling
If the Navigation to the external destination is active and the the MOB key is pressed

on the Slave Chart Plotter, the MOB is placed but the navigation to the MOB is not activated.

Notes
While navigating to the external destination the Operating Mode is switched to Master mode, the navigation to the external destination will be terminated. An appropriate warning message will be shown to notify that the Navigation to the external destination is active and to confirm whether Slave mode can be set. Setting Slave mode, the C-link navigation data will be deleted.
The C-link navigation data are deleted at Power Off.

4.8.1.5 C-Link navigation data: Acquisition and Display

As soon as the C-link navigation data is received, the Slave parses the information received and executes the relative actions depending on its current working status.

Important
When the Navigation to the external Destination is activated, the Slave Chart Plotter will show all relevant c-link navigation data exactly like when the destination is not the external one: (Destination Name, DST and BRG to Destination, calculate XTE, calculate TTG etc). These values will be displayed all places where required and they will be used to format NMEA-0183 output data.

4.8.1.6 Graphical representation on Map Display

D
WPT002

External Destination RED Icon

N
WPT003

Next Waypoint GREEN Icon

Navigation Leg RED Line

Fig. 4.8.1.6 - Graphical Displaying

4.8.1.7 Route Data Report

When the Navigation to the External Route is received, it will be possible to display the information related to the External Route by entering the Route Data Report.

Fig. 4.8.1.7 - External route on Route Data Report

- External Route : Name of the External Route (from PCMPN,0)
- Cruising Speed : Planned Cruising Speed (from PCMPN,1)
- Fuel Consumption Rate : Planned Fuel Consumption Rate (from PCMPN,1)
- Total Route length Route: Length from First to Last Wpt. (from PCMPN,1)
- Initial Fuel Load : Volume of Fuel available before the navigation was started (Liters)
- Total Fuel Consumption : Calculated Fuel consumption to navigate the whole route.
- Waypoints in Route : No. of Wpts in the Route (from PCMPN,1)
- Remaining Waypoints : No. of Wpts from Dest to Last Wpt (from PCMPN,1)
- Distance to Destination : Distance from Ship to Destination (Calculated)
- Distance to Next Wpt : Distance to travel from ship to the Wpt after the Destination (calculated: Distance to Dest + Next Route Leg length)
- Distance to Last Wpt : Distance to travel from ship to the End of the Route (Calculated: Distance to Dest + Distance From Dest to last Wpt received from PCMPN,1)
- TTG To Destination : Estimated Time to travel the "*Distance to Last Wptt*". Calculated using Cruising Speed.
- TTG To Next Wpt : Estimated Time to travel the "*Distance to Next Waypoint*" Calculated using Cruising Speed.
- TTG to Last Wpt : Estimated Time to travel the "*Distance to Last Wpt*". Calculated using Cruising Speed
- ETA to Destination : Estimate Time of Arrival to the Destination Point. Calculated: Current Time + "*TTG To Destination*"
- ETA to Next Waypoint : Estimate Time of Arrival to the Waypoint after the Destination. Calculated: Current Time + "*TTG To Next Waypoint*"

| - ETA to Last Wpt | : Estimate Time of Arrival to the End of the Route. Calculated: Current Time + *"TTG To Last Wpt"* |

4.8.1.8 Quick Info

Route Navigation: Quick Info on the Destination

Route Name, DESTINATION ID   Wpt1/4

Distance, TTG and Consumption from Ship to Dest
Distance, TTG and Consumption from Ship to Last Wpt

Fig. 4.8.1.8 - Quick Info on Destination

Quick info on Single Destination

Fig. 4.8.1.8a - Quick Info on Single Destination

4.9 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).
➤ 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "C-STAFF" + 'ENTER'
For more information see the specific User Manual.

4.10 C-METEO

To set up the information relative to the display of the weather information on the map.
➤ 'MENU' + "C-METEO" + 'ENTER'
For more information see the specific User Manual.

4.11 FISH FINDER MENU

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available.

➤ 'MENU' + "FISH FINDER SETUP" + 'ENTER'
For more information see the specific User Manual.

5
Terms & Functions

This section explains the terms that may be unfamiliar to the reader. The symbol ■ indicates that the term is followed only by an explanation, while the symbol ➤ indicates that the term is more widely explained; you will also find a briefly description on how to select the related menu option, listing the operation a keys sequence with the menu names enclosed between double apices. For example 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' means that you must press the 'MENU' key, using the cursor key to select the ADVANCED SETTINGS menu and press 'ENTER' key to access it; then use the cursor key to select the USER POINTS item and then press the 'ENTER' key to display the User Points page.

■ **A-B-C-D**
Select the A-B-C-D function that allows you to place the A, B, C, D points. In <u>Basic Mode</u> it is possible to place and delete them (see Par. 3.2), in <u>Advanced Mode</u> it is possible to place, move, navigate and delete them. (see Par. 4.4).

➤ **About (page)**
Selects a page that gives information on software and cartography version and general software specification (as user points number, routes number and so on). For more information see Par. 1.3.
'MENU' + "About..." + 'ENTER'

➤ **Activate Simulation**
Enables (On) or disables (Off) the <u>Simulation</u> mode. The <u>default</u> setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "ACTIVATE SIMULATION" + 'ENTER'

➤ **Active Track**
Selects the number of the active <u>Track</u>. The <u>default</u> setting is 1.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "ACTIVE TRK" + 'ENTER'

➤ **Additional Second Factor (ASF)**
Sets the ASF for the slave in the selected <u>chain</u>. The <u>default</u> setting is 0.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER' + "ASF1/2" + 'ENTER'

➤ **Advanced Functions**
When it is On the chartplotter works in <u>Advanced Mode</u>, otherwise when it is Off the chartplotter works in <u>Basic Mode</u>. The <u>default</u> setting is Off.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER'

➤ **Advanced Mode**

The chartplotter can operate in two different modes: Basic Mode and Advanced Mode. In Advanced Mode it is possible to have more available functions, for example it is possible to handle Waypoints.
'MENU' + "BASIC SETTINGS" + 'ENTER' "ADVANCED FUNCTIONS" + 'ENTER' + "On" + 'ENTER'

➤ **Advanced Settings (menu)**

Selects the Setup, Fix, Navigate, Track, Compass, Alarms, Simulation, Route menus and the User Points page and User C-Cards menu.
'MENU' + "ADVANCED SETTINGS" + 'ENTER'

➤ **Alarms (menu)**

Sets the desired value for the Arrival Alarm, XTE Alarm, Anchor Alarm, Depth Alarm, External Alarm. Also you can set the preferred value for the Grounding Alarm, Grounding Alarm Range, Grounding Alarm Report.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER'

➤ **Alter = Alternate Solution**

Turns On/Off the Alternate Solution in the chain. The default setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER' + "Alter" + 'ENTER'

➤ **Altitude (Unit)**

Sets the altitude (altitude of GPS Antenna on the medium sea level) unit among Ft = Feet, FL = Flight Level and Mt = Meters. The default setting is Ft.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "ALTITUDE" + 'ENTER'

➤ **Anchor Alarm**

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. The default setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "ANCHOR ALARM" + 'ENTER'

➤ **Arrival Alarm**

Specifies the radius of a circle around the Waypoint of a route: when your vessel reaches this circle the alarm sounds. You can disable (Off) the Arrival Alarm or insert value. The default setting is 1.00 Nm.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "ARRIVAL ALARM" + 'ENTER'

■ **Arrival Time**

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

➤ **Attention Areas**

Enables (On) or disables (Off) the displaying of the Attention Areas (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. 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. The default setting is Contour.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Attention Areas" + 'ENTER'

➤ **Auto Info**

The type of Automatic Info is user selectable. The possible settings are: **Off:** disabled, no automatic info

shown at all; **On Points**: only on points. This is the <u>default</u> setting. **On All**: on all objects (points, lines and areas).

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "AUTO INFO" + 'ENTER'

➤ AUX IN I/O Cable Wiring

Displays the Cable Wiring page for AUX IN I/O.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' +"AUX IN I/O CABLE WIRING" + 'ENTER'

■ Azimuth

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

➤ Basic Mode

The chartplotter can operate in two different modes: Basic Mode and <u>Advanced Mode</u>. In the first mode there is a restricted number of functions, and it is not possible to handle <u>Waypoints</u>, <u>Marks</u>, <u>Events</u> and <u>A-B-C-D</u> function.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER' + "Off" + 'ENTER'

➤ Basic Settings (menu)

Enables or disables <u>Advanced Functions</u> and <u>Depth Window</u>; selects the <u>Language</u>, sets the desired setting for <u>Distance</u>, <u>Speed</u>, <u>Depth</u>, <u>Temperature</u> and <u>Altitude</u> unit, <u>Nav Aids Presentation</u>, <u>Course Vector</u>, <u>User Points</u>, <u>Screen Amplifier</u> and select the <u>Input/Output</u> menu and <u>C-Voice</u> mode.

'MENU' + "BASIC SETTINGS" + 'ENTER'

■ Beacon

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

➤ Bearings

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

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER' + "BEARINGS" + 'ENTER'

➤ Beeper

Turns On/Off the sound after pressing a key ("beep"). The <u>default</u> setting is On.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "BEEPER" + 'ENTER'

■ 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.

■ Buoys & Beacons

<u>Buoys</u> and <u>Beacons</u> are used to indicate to mariners recommended or established routes, underwater dangers, restrictions and regulations. They can be lighted or not and - for the color chartplotter - are coloured according to their international code.

➤ Buoys Name

To identify better the Buoys, the name/number of the buoys is shown next to the icon on the chart. The <u>default</u> setting is On.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Buoys Name" + 'ENTER'

➤ Calibration

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 <u>BRG</u> to the next <u>Waypoint</u> 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.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER' + "CALIBRATION" + 'ENTER'

➤ **Chain**

Selects the 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. The default setting is 9970.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER' + "Chain" + 'ENTER'

➤ **Change (User C-CARD)**

Changes the current User C-CARD.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "CHANGE" + 'ENTER'

➤ **Chart Boundaries**

Enables (On) or disables (Off) the displaying of the Chart Boundaries. Selecting Auto instead, if we are in background charts only the first charts level contained in the C-CARD are displayed, if we are in a charts level contained in the C-CARD the next four charts level are displayed. The default setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Boundaries" + 'ENTER'

➤ **C-Link**

Selects the Master unit (Primary Station) or the Slave unit (Secundary Station):
'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secundary Station/Primary Station" + 'ENTER'

➤ **Clear (Track)**

To clear the stored track.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "CLEAR" + 'ENTER' + "YES" + 'ENTER'

■ **COG = Course Over Ground**

Direction of the path over ground actually followed by a vessel.

➤ **Color (Track)**

Selects the desired color for the track.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "COLOR" + 'ENTER'

➤ **Compass (menu)**

Sets the desired value for Bearing and Magnetic Variation, and selects the Calibration page.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS + 'ENTER'

➤ **Compute Correction**

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.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX " + 'ENTER' + "COMPUTE CORRECTION" + 'ENTER'

➤ **Coordinate System**

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.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER'

■ 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.

➤ Correction Offset

Manual correction of fix position.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "CORRECTION OFFSET" + 'ENTER'

➤ Course Vector

The Course Vector is a graphical indication of the direction in which the Vessel is heading. The Course Vector origin is the vessel's position so the time line movement is synchronized with the vessels Icon. Course Vector course is given by the value of COG (Course Over Ground) and its length is proportional to the SOG (Speed Over Ground). This option disables (Off) or sets time as : 2, 10, 30 min, 1, 2 hours, Infinite. The default setting is Infinite.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "COURSE VECTOR" + 'ENTER'

■ Cross Track error = XTE

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 travelled.

■ 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.

➤ Current Route

Selects the active route.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "CURRENT ROUTE" + 'ENTER'

➤ Currents Prediction

It is possible to see the variation of the Tidal arrows on the selected area at any given time.
'MENU' + "MAP SETTINGS" +'ENTER' + "Currents Prediction" + 'ENTER'

➤ Cursor Control

Enables (On)/disables (Off) the cursor control. The default setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "CURSOR CONTROL" + 'ENTER'

➤ C-Voice AVAILABLE ONLY IF THE CHARTPLOTTER IS CONNECTED TO THE VOICE NAVIGATION SYSTEM

The chartplotter has two different vocal modes, Navigation and Echosounder. According to what mode is selected the messages spoken from the chartplotter are different.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "C-VOICE" + 'ENTER'

➤ Date (simulation)

Sets the date of the simulated fix.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "DATE" + '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" + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "DATE FORMAT" + 'ENTER'

■ **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.

➤ **Dead Reckoning**

Enables (On) or disables (Off0 the Dead Reckoning. The default setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "DEAD RECKONING" + 'ENTER'

■ **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.

➤ **Delete (file)**

Deletes file from User C-CARD.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "DELETE" + 'ENTER'

➤ **Delete route**

To delete the selected route.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "DELETE ROUTE" + 'ENTER' + "YES" + 'ENTER'

➤ **Delete (Track)**

To clear the stored track.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DELETE" + 'ENTER' + "YES" + 'ENTER'

➤ **Delete Selection (Track)**

To clear the selected track.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DELETE SELECTION" + 'ENTER'

➤ **Depth (Unit)**

Sets the depth units among Ft = Feet, FM = Fathoms and Mt = Meters. The default setting is Ft.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "DEPTH" + 'ENTER'

➤ **Depth Alarm**

Turns On/Off the Depth Alarm. The default setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "DEPTH ALARM" + 'ENTER'

■ **Depth Contours**

Imaginary lines connecting points of equal water depth.

➤ **Depth Graph 1/2 screen**

Selects the Depth Graph displaying on 1/2 of the screen.
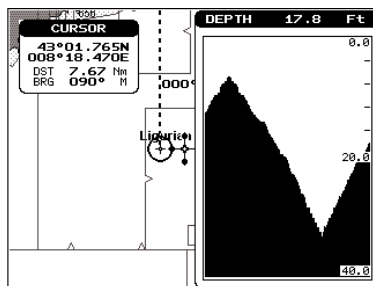**'PAGE' more times**

Fig. 5 - The Depth Graph 1/2 screen

➤ **Depth Graph 1/3 screen**
Selects the Depth Graph displaying on 1/3 of the screen.
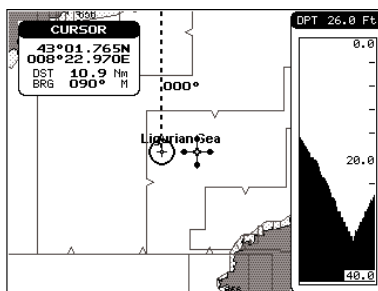**'PAGE' more times**

Fig. 5a - The Depth Graph 1/3 screen

➤ **Depth Range**
Turns On/Off the displaying of Depth Areas (imaginary lines connecting points of equal water <u>depth</u>).
The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Depth Range" + 'ENTER'

➤ **Depth Range Min**
Sets a min reference depth value. The <u>default</u> setting is 3 Mt.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Depth Range Min" + 'ENTER'

➤ **Depth Range Max**
Sets a max reference depth value. The <u>default</u> setting is 10 Mt.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Depth Range Max" + 'ENTER'

➤ **Depth Window**
Turns On/Off the display of Depth Window on the screen. The <u>default</u> setting is Off.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "DEPTH WINDOW" + 'ENTER'

■ **DGPS = Differential GPS**
Provides even greater positioning accuracy than standard <u>GPS</u>.

➤ **Dynamic Nav Aids**
This function allows settings blinking lights on Nav-Aids. The blink period and color of each Nav-aid is read from the Nav-Aid attributes available on the data cartridge. When the ship is inside the Nav-Aid

nominal range, the light of the Nav-Aid will start blinking.
'MENU' + "MAP SETTINGS" +'ENTER'   + "Dynamic Nav Aids" + 'ENTER'

➤ **Display Mode**

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, Medium, Low, Radar, Tides, Custom. The default setting is Custom.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER'

➤ **Distance (Track)**

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). The default setting is 0.01 Nm.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DISTANCE" + 'ENTER'

➤ **Distance (Unit)**

Sets the distance unit among Nm = nautical miles, Sm = status miles e Km = kilometers. The default setting is Nm.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "DISTANCE" + 'ENTER'

■ **DTG = Distance To Go**

The actual distance to reach the Target.

➤ **EBL = Electronic Bearing Line**

Dotted line with direction selectable by the user (see Par. 4.3).
Select Advanced Mode + 'ENTER' + "EBL & VRM" + 'ENTER'

➤ **Echosounder AVAILABLE ONLY IF THE CHARTPLOTTER IS CONNECTED TO THE VOICE NAVIGATION SYSTEM**

Enables (On) or disables (Off) the Echosounder C-Voice mode. If it is On, the Depth message is spoken. The message is spoken if a valid depth data is received by the chartplotter or if it is in Simulation mode. The default setting is Off.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "C-VOICE" + 'ENTER' + "ECHOSOUNDER" + 'ENTER'

➤ **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). An existing Event can be connected to the current route.
Inserting Event: 'CLEAR' + 'EVENT'
Deleting Event (Advanced Mode): Place cursor on Event + 'ENTER' + "DELETE" + 'ENTER'
Deleting Event (Basic Mode): Place cursor on Event + 'CLEAR'
Editing Event: Select Advanced Mode + Place cursor on Event+ 'ENTER' + "EDIT"+ 'ENTER' + Modify Symbol, Name, Color + 'CLEAR'
Add to Route: Select Advanced Mode + Place cursor on Event+ 'ENTER' + "ADD TO ROUTE" + 'ENTER'

➤ **External Alarm**

Allows triggering an external alarm device. You can enable (On) or disable (Off) the External Alarm. The default setting is On.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "EXTERNAL ALARM" + 'ENTER'

➤ **External Waypoint**

The coordinates of a Waypoint, received from a GPS or a LORAN connected to the chartplotter, can be stored into the chartplotter, if the GPS or the Loran are NMEA-0183 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.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "EXTERN WPT" + 'ENTER'

- ■ **File**

It is a 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).

- ➤ **Filter Dump**

Sets the Filter step. Move cursor key up/down to insert value in the range [500 - 12000], move it to the left/right to move the cursor, press 'ENTER'. A bigger value means on heavy filter and it is applied to both position and speed filter. The default value is 500.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "FILTER DUMP" + 'ENTER'

- ➤ **Find**

The chartplotter allows finding Nearest Services, Port By name, Tide Stations, Wrecks, Obstructions.

'MENU' + "FIND" + 'ENTER'

- ➤ **Fix (menu)**

Turns On/Off the Dead Reckoning, Fix Correction, the Position Filter and the Speed Filter, enables the Compute Correction and Correction Offset functions, sets the desired value for Filter Dump and Static Navigation.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER'

- ➤ **Fix Correction**

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.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "FIX CORRECTION" + 'ENTER'

- ➤ **Fix Datum**

Selects the Fix Datum. WGS 1984 is the default Fix Datum.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "FIX DATUM" + 'ENTER'

- ➤ **Fonts & Symbols**

On MAX charts it is possible to set the size of all names and symbols drawn on the charts, selecting between Normal size (the regular characters size) and Large size.

'MENU' + "MAP SETTINGS" +'ENTER' + "Fonts & Symbols" + 'ENTER'

- ➤ **Formatting**

The formatting of a User C-CARD must be done before using a new User C-CARD: this operation prepares the User C-CARD to receive and store information. Before you start the formatting procedure, insert a new User C-CARD into the slot. Be sure to label it; the label will remind you that you have formatted the User C-CARD, and will help you identify its contents. An used User C-CARD can also be formatted; if a used User C-CARD is formatted, however, all previously stored data on the User C-CARD will be completely deleted (see Par. 4.6).

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "FORMAT" + 'ENTER'

- ➤ **Goto**

Sets a particular mark on the map, called Target or Destination (see Par. 3.4, 4.1.1.4 and 4.2.1.3).

'DEST'

- ■ **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.

➤ **GPS Cable Wiring**
Displays the Cable Wiring page for GPS.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' +"GPS CABLE WIR-
ING" + 'ENTER'

➤ **GPS Data Page**
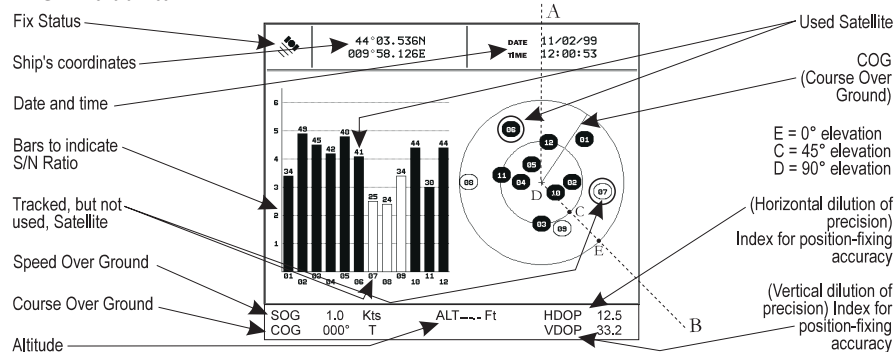The GPS Data Page shows in graphic mode GPS data.
'PAGE' more times

Fig. 5b - GPS Data Page

On the right side of the screen (see Fig. 5b), there is a polar representation of the azimuth and elevation of each satellites. The circle contains a number indicating the PRN of the satellite and it is filled when it is 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 solution. As example, the satellite with PRN = 10 is used for solution with S/N = 44, Azimuth = 127degree and Elevation = 70degree. When a valid fix is received, the Lat/Lon, Date, Time, HDOP, VDOP, SOG, COG and Altitude are shown in the page.

➤ **Graphic Data Page**
The Graphic Data Page shows in graphic mode navigation data.
'PAGE' more times
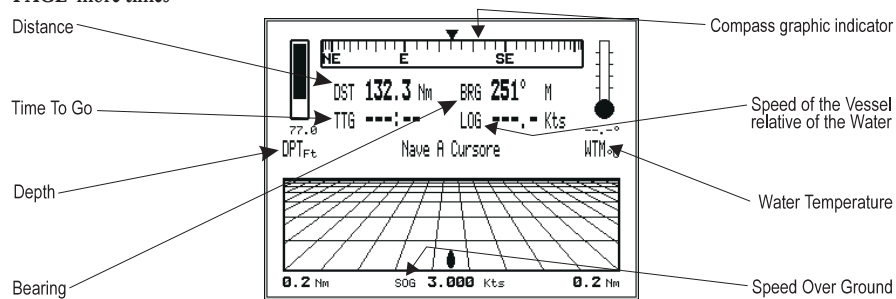
Fig. 5c - Graphic Data Page

➤ **Grounding Alarm**
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. The Grounding Alarm is switched Off by <u>default</u> after a Master Reset. Once the Grounding Alarm has been activated, a warning message is shown.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "GROUNDING ALARM" + 'ENTER'

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

➤ **Grounding Alarm Range**

Allows setting the length of the sector to be detected among 0.25, 0.5, 1.0 Nm. The <u>default</u> 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 <u>Grounding Alarm Report</u> page to identify which dangerous objects have been currently detected.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "GROUNDING ALARM RANGE" + 'ENTER'

➤ **Grounding Alarm Report**

Allows displaying the report of the dangerous objects currently detected.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "GROUNDING ALARM REPORT" + 'ENTER'

➤ **Heading (Simulation)**

Sets the desired value for <u>heading</u> in <u>Simulation</u> mode. The <u>default</u> setting is 000° M.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "HEADING" + 'ENTER'

■ **HDG = Heading**

The horizontal direction in which a ship actually points or heads in any moment (see also <u>COG</u>).

■ **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**

From the chart display, if the <u>GPS</u> computing a valid fix position and the chartplotter is not in Home mode, pressing 'CLEAR' sets Home mode. When Home (called also <u>Navigate</u>) mode is set, the cursor is not shown anymore and all cartographic functions (zoom, scroll, etc.) are leaded by the fix position. The fix is centered in the map display and the map scrolls underneath as the fix position changes. As soon as the cursor key is touched, Home mode is deactivated and the cursor symbol is shown. Note that altough the cursor symbol is not displayed when Home mode is active, its coordinates must be updated with the fix position coordinates.

If a valid fix position is not received and 'CLEAR' is pressed, the chartplotter emits a triple beep.

Activate Home mode (if not into a menu): 'CLEAR'
Exit from Home mode: move the cursor

➤ **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.

'MENU' + "INFO" + 'ENTER'

➤ **Input/Output (menu)**

Selects the proper format for the <u>Port1/2/3/4/5 Input</u>, <u>Port1/2/3/4/5 Output</u>, <u>Port1/2/3/4/5 Out-</u>

put Sentences. Displays also the <u>Power I/O Cable Wiring</u> , <u>GPS Cable Wiring</u> and <u>AUX IN Cable Wiring</u>. Selects also the C-Link and Send/Receive Marks & Routes ports.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER'

➤ Land Elevation Values
The Land Elevation areas are always shown, but it is possible to set On/Off the Land Elevation display. The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Lan Elevation Values" + 'ENTER'

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

➤ Language
Selects 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 <u>default</u> setting is Italian (see Par. 2.4).
'MENU' + "BASIC SETTINGS" + 'ENTER' + "LANGUAGE" + 'ENTER'

■ 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
<u>Coordinate system</u> using <u>Latitude</u> and <u>Longitude</u> coordinates to define a position on earth.

➤ Lat/Lon Grid
Turns On/Off the displaying of the <u>Latitude</u> and <u>Longitude</u> Grids. The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

➤ Light Sectors
Turns On/Off the displaying of Light Sectors. The <u>default</u> 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 SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Light Sectors" + 'ENTER'

➤ Load (file)
Loads <u>file</u> from <u>User C-CARD</u>.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "LOAD" + 'ENTER'

■ LOG
<u>Speed</u> 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 covering at the poles from 0° to 180°.

■ Loran
The Loran <u>Chains</u> 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.

➤ **Map Datum**

Selects the Map Datum. WGS 1984 is the default Map Datum.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "MAP DATUM" + 'ENTER'

➤ **Map Orientation**

Selects the orientation of your chart according to: North (the map is shown with North upwards), Head (the map is shown with the ship's current heading upwards), Course (the map is displayed with the currently selected course leg upwards). The default setting is North. See also par. 3.3.
'MENU' + "MAP SETTINGS" +'ENTER' + "Map Orientation" + 'ENTER'

➤ **Map Setting (menu)**

One of the many advantages of the C-MAP cartography is the ability to select the information you want to display. The user may choose either to display or not on the screen the selected objects, depending on his specific requirement. Use the Map Setting menu to select the cartographic objects to display on the screen.
'MENU' + "MAP SETTINGS" +'ENTER'

➤ **Mark**

Reference points related to cursor position (see Par. 4.2). An existing Mark can be connected to the current route.
Inserting Mark: 'MARK'
Deleting Mark (Advanced Mode): Place cursor on existing Mark + 'ENTER' + "DELETE" + 'ENTER'
Deleting Mark (Basic Mode): Place cursor on existing Mark + 'CLEAR'
Editing Mark: Select Advanced Mode + Place cursor on existing Mark + 'ENTER' + "EDIT" + 'ENTER' + Modify Symbol, Name, Coordinates, Color + 'CLEAR'
Moving Mark: Select Advanced Mode + Place cursor on existing Mark + 'ENTER' + "MOVE" + 'ENTER' + move cursor + 'ENTER'
Add to Route: Select Advanced Mode + Place cursor on Mark + 'ENTER' + "ADD TO ROUTE" + 'ENTER'

➤ **Marine Settings (menu)**

Turns On/Off the display of Names, Nav-Aids, Light Sectors, Attention Areas, Tides & Currents, Seabed Type, Ports & Services, Tracks & Routes, Underwater Objects.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "MAP SETTING" + 'ENTER' + "CUSTOMIZE MAP" + 'ENTER' + "MARINE SETTINGS" + 'ENTER'

➤ **Mixing Levels**

Turns On/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 the chartplotter zooms out to the first level covered by cartographic data. The default setting is Off.
'MENU' + "MAP SETTINGS" +'ENTER' + "Mixing Levels" + 'ENTER'

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

➤ **MOB = Man OverBoard**

It is an important function useful in the case someone or something falls overboard.
Inserting MOB
Press 'EVENT' for 2 seconds to place MOB symbol at ship's coordinates. On the screen the MOB symbol and a window to advise tha the MOB is activated appear, press 'CLEAR' to delete this window. Data displayed in Text Area are related to MOB. Placing the cursor on the MOB symbol an information
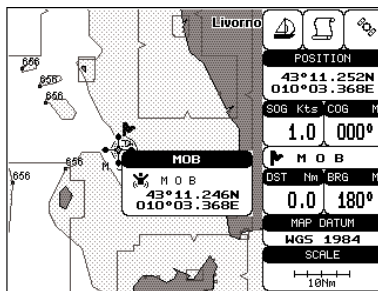
window appears:

Fig. 5e - Man Overboard

Note _____

In the information window the bottom side "ENTER for Options" appears only if the "Advanced Functions" item in the "Basic Settings" menu is activated (On).

Deleting MOB

Press 'EVENT' for 2 seconds, select 'CANCEL' and press 'ENTER' again. The MOB symbol remains on the screen shaded until the next screen redraws.

Note _____

If the "Advanced Settings" item in the menu "Basic Settings" is activated (On), placing the cursor on MOB the information window appears as shown in the previous Fig. 5e. Press 'ENTER', select "CANCEL" and press 'ENTER' again: the MOB symbol remains on the screen shaded until the next screen redraws.

➤ **Names**
Turns On/Off the displaying of the Names. The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Names" + 'EN-TER'

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

➤ **Nav Aids**
Turns On/Off the displaying of the Nav Aids. The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Nav Aids" + 'ENTER'

➤ **Nav-Aids Presentation**
SAllows to set the Nav Aids presentation as US or INTERNATIONAL. The <u>default</u> setting is IN-TERNATIONAL. When selected it affects Lights, Signals, <u>Buoys</u> & <u>Beacons</u> display.
INT(International): Draws Nav-Aids using international symbology. All components of Complex Objects are shown. **US**: Draw Nav-Aids using NOAA symbology. All components of Complex Objects are shown.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "NAV AIDS PRESENTATION" + 'ENTER'

➤ **Navigate (menu)**
Selects the desired setting for <u>Orientation Resolution</u>, <u>Coordinate System</u>, <u>Map Datum</u>, <u>Fix Datum</u> and <u>Roll Road Scale</u>. Enable the <u>Reset Total Trip</u> and <u>Reset Partial Trip</u> functions.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER'

➤ **Navigate (mode)**
In Operating mode (called also <u>Home</u> mode) all operations refer to the ship's position.

Enter Navigate: 'CLEAR'
Exit from Navigate: move the cursor

➤ **Navigation AVAILABLE ONLY IF THE CHARTPLOTTER IS CONNECTED TO THE VOICE NAVIGATION SYSTEM**

Enables (On), disables (Off) or insert the time (2, 5, 10, 15 min) for the Navigation C-Voice mode. If it is On, the message is always sent, as fast as possible. Instead if it is one among the available values, for example 2 min, the message is sent related to the selected time, in the previous example every 2 minutes.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "C-VOICE" + 'ENTER' + "NAVIGATION" + 'ENTER'

➤ **Navigation Data Page**

Shows information about speed (SOG) and course (COG) of the ship, status of the received signal, ship's coordinate and other general information.
'PAGE' more times
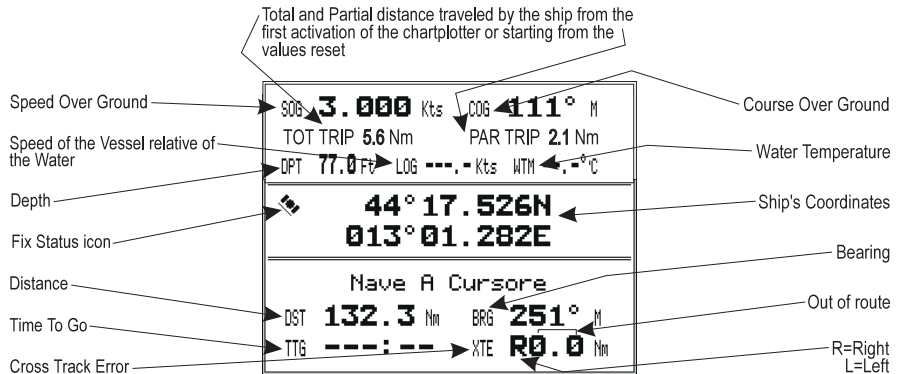
Fig. 5e - Navigation Data Page

➤ **Nearest Services**

To locate and display the nearest available facilities of a particular type (i.e. the nearest Hospital, sailmaker, bank, etc.). The icons list of the available services is shown on the screen (see Par. 3.5.5).
'MENU' + "NEAREST SERVICES" + 'ENTER'

■ **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.

➤ **Obstructions**

Finds the nearest Obstructions.
'MENU' + "FIND" + 'ENTER' + "OBSTRUCTIONS" + 'ENTER'

➤ **Orientation Resolution**

It is the resolution angle for the Map Orientation, range [5, 60] degrees. The default setting is 30°.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "ORIENT. RESOLUTION" + 'ENTER'

➤ **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.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "OSGB" + 'ENTER'

➤ **Other Map Configurations (menu)**

This function allows the user to customize the following selections and is divided into the following setting: Marine Settings, Depth Settings, Land Settings and Chart Settings.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER'

➤ **Output Port AVAILABLE ONLY IF THE CHARTPLOTTER IS CONNECTED TO THE VOICE NAVIGATION SYSTEM**

Selects the Output Port for the Voice function. The <u>default</u> setting is Port 1
'MENU' + "BASIC SETTINGS" + 'ENTER' + "C- VOICE" + 'ENTER' + "OUTPUT PORT" + 'ENTER'

➤ **Pair**

Selects the pair of stations in the selected <u>chain</u>. The <u>default</u> setting is W X.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER' + "Pair" + 'ENTER'

➤ **Palette**

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, NOAA, Night Vision and Sunlight. The default setting is Classic. **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** uses more vivid colors. **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. **Sunligh**t 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. NOAA allows setting NOAA paper chart colors presentation.
'MENU' + "MAP SETTINGS" +'ENTER' + "Palette" + 'ENTER'

➤ **Perspective View**

Chart data may be projected in perspective mode during navigation. This function allows setting the panoramic View of the chart. As the upper side of the map is more compressed than the lower side, a wider map area is visible. The perspective view allows showing more chart information immediately ahead and around the cursor.
'MENU' + "MAP SETTINGS" +'ENTER'   + "Perspective View" + 'ENTER'

■ **Pictures and Diagrams**

The MAX data format allows assigning one or more image to any cartographic object. These *Pictures* are typically used to facilitate the identification of cartographic objects or places around the map: they can be the landscape layout nearby a harbor, the shape of a bridge or of a buoy etc.
On some objects, such as bridges, the image associated can represent the *Diagram* representing the shape of the objects and the various characteristics (length, heigh, type of bridge etc.).
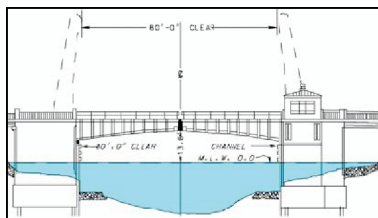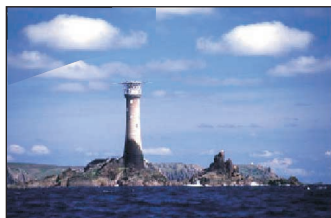
Fig.5f - Pictures and Diagrams

➤ **POIs**

Enables or disables the displaying of POIs (Points Of Information). The <u>default</u> setting is On.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "POIs" + 'ENTER

➤ **Port 1/2/3/4/5 Input**

Disables (selecting Off) or sets the format for the navigation data input serial Port1/2/3/4/5. For example to set the Port as <u>NMEA-0183</u> (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), NMEA (4800-N81-N), NMEA (4800-N82-N), NMEA (9600-O81-N), NMEA (9600-N81-N), C-COM. The <u>default</u> setting is (4800-N81-N).

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3/4/5 INPUT" + 'ENTER'

➤ **Port 1/2/3/4/5 Output**

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

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3/4/5 OUTPUT" + 'ENTER'

➤ **Port 1/2/3/4/5 Output Sentences**

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 <u>default</u> setting is GLL, VTG, XTE, RMB, RMC, APB On and BOD, BWC, RMA, WCV, GGA, HSL, HDG Off.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3/4/5 OUTPUT SENTENCES" + 'ENTER'

➤ **Port By Name**

To locate and display the port inserting the name. The icons list of the available services is shown on the screen (see Par. 3.5.6).

'MENU' +"FIND" + 'ENTER' + "PORT BY NAME" + 'ENTER'

■ **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 (see Par. 3.5.3).

➤ **Ports & Services**

Turns On/Off the displaying of Ports and Services (areas along shore with facilities for mooring, down-loading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes...). The <u>default</u> setting is On.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Ports & Services" + 'ENTER'

➤ **Position Filter**

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 <u>default</u> setting is Off.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "POSITION FILTER" + 'ENTER'

➤ **Power I/O Cable Wiring**

Displays the Cable Wiring page for Power and I/O.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' +"POWER I/O CABLE WIRING" + 'ENTER'

➤ **Receive Route**

Saves Route information received from the NMEA input port.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "RECEIVE"

➤ **Receive User Points**

Reads all User Points from NMEA Input port:

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "RECEIVE"

➤ **Reset Partial Trip**

Resets the partial distance traveled by the ship from the first activation of the chartplotter or starting from the values reset. The partial trip value is shown on the top of the <u>Navigation Page</u>.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET PARTIAL TRIP" + 'ENTER'

➤ **Reset Total Trip**

Resets the total distance traveled by the ship from the first activation of the chartplotter or starting from the values reset. The total trip value is shown on the top of the <u>Navigation Page</u>.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET TOTAL TRIP" + 'ENTER'

➤ **Rocks <**

Sets a max reference rocks value.
'MENU' + "MAP SETTINGS" +'ENTER'+ "Other Map Configurations" + 'ENTER' + "Rocks <" + 'ENTER'

➤ **Rocks >**

Sets a min reference rocks value.
'MENU' + "MAP SETTINGS" +'ENTER'+ "Other Map Configurations" + 'ENTER' + "Rocks >" + 'ENTER'

➤ **Roads**

Enables or disables the displaying of Roads on the screen.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Roads" + 'ENTER'

➤ **Rolling Road Scale**

Sets you preferred Rolling Road Scale among 0.2, 0.5, 1.0, 2.0, 4.0, 10.0. The <u>default</u> setting is 0.2.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "ROLL ROAD SCALE" + 'ENTER'

➤ **Route**

Sequence of <u>Waypoints</u> 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 <u>Waypoint</u> of the active route is surrounded by a circle (see Par. 4.1.2).
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER'

➤ **Route (menu)**

Allows <u>route</u> management
Selecting Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "CURRENT ROUTE" + 'ENTER'
Deleting Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "DELETE ROUTE" + 'ENTER'
Reversing Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "REVERSE ROUTE" + 'ENTER'
Route Report: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER'
Selecting Route Color: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE COLOR" + 'ENTER'
Selecting Route Name: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE NAME" + 'ENTER'

➤ **Route Color**

Selects color for the desired <u>route</u>.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE COLOR" + 'ENTER'

➤ **Route Name**

Selects name for the desired route.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE NAME" +
'ENTER'

➤ **Route Report**

Gives information on the selected route.
Selecting Active Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' +
"ROUTE REPORT" + 'ENTER' + "ROUTE #" + 'ENTER'
Inverting Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE
REPORT" + 'ENTER' + "INVERT" + 'ENTER'
Deleting Route: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE
REPORT" + 'ENTER' + "CLEAR" + 'ENTER'
Selecting Speed: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE
REPORT" + 'ENTER' + "SPEED" + 'ENTER' + insert value
Selecting Fuel: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE
REPORT" + 'ENTER' + "FUEL" + 'ENTER' + insert fuel

➤ **Route Reverse**

Reversing a route plan is most typically used to return to the point where the route originally started.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REVERSE" +
'ENTER'

➤ **Safety Status Bar**

This feature displays a status bar with six boxes showing the status of certain functions.
'MENU' + "MAP SETTINGS" +'ENTER' + "Safety Status Bar" + 'ENTER'

➤ **Save (file)**

Saves file on User C-CARD
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER' + "SAVE" + 'ENTER'

➤ **Screen Amplifier**

The Screen Amplifier function allows, when it is On and Home mode is set, to place map on the screen related to
the fix position and direction, so the map shown is that before the ship. The default setting is On.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "SCREEN AMPLIFIER" + 'ENTER'

➤ **Seabed Type**

Enables (On) or disables (Off) the displaying of the Seabed Type.
'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' +"Seabed Type" +
'ENTER'

➤ **Send/Receive Marks & Routes**

Sets the desired port used for transferring User Points and Routes functions:
'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "SEND/REC ROUTES
& MARKS" + 'ENTER' + "Port1/Port2/Port3/Port4/Port5" + 'ENTER'

➤ **Send Route**

Transmits the Active Route information onto the NMEA output port.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "SEND"

➤ **Send User Points**

Sends all User Points to an external device using the serial port:
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "SEND"

➤ **Setup (menu)**

Turns On/Off the Beeper, External Waypoint; selects the desired setting for Time Reference, Time
Format, Date Format, Wind Speed, Auto Info and Ship Icon Mode.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER'

➤ **Ship Icon Mode**

Sets the ship icon as Steady or Blinking. The <u>default</u> setting is Steady.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "SHIP ICON MODE" + 'ENTER'

■ **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.

➤ **Simulation (menu)**

Enables (On)/disables (Off) <u>Activate Simulation</u>; it is possible to insert desired values for <u>Speed</u>, <u>Heading</u>, <u>Date</u> and <u>Time</u> and selects the <u>Cursor Control</u> function.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER'

■ **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.

➤ **Speed Filter**

Turns On/Off the Speed Filter. When it is On, you can filter the <u>speed</u> of the ship, to optimize it. The <u>default</u> setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX " + 'ENTER' + "SPEED FILTER" + 'ENTER'

➤ **Speed (Simulation)**

Sets the value for speed in the <u>Simulation</u> mode. The default setting is 01.0 Kts.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "SPEED" + 'ENTER'

➤ **Speed (Unit)**

Sets the <u>speed</u> unit among Kts = knots, Mph = miles per hour e Kmh = kilometers per hour. The <u>default</u> setting is Kts.
'MENU' + "BASIC SETTINGS" + 'ENTER' + "SPEED" + 'ENTER'

➤ **Static Navigation**

Sets up a threshold for the <u>speed</u>. When the <u>speed</u> received from the positioning device is under that threshold, the chartplotter displays zero. The <u>default</u> value is 0.0 Kts.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "STATIC NAVIGATION" + 'ENTER'

➤ **Step Unit (Track)**

Choose <u>Distance</u> (Dist) - the chartplotter can store a fix when the distance from its last stored position is greater than a defined distance; <u>Time</u> - the chartplotter can store a fix after a defined time; Auto - the software decides when storing a position, on the basis of the straight or curved <u>track</u>. The <u>default</u> setting is Time.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "STEP UNIT" + 'ENTER'

■ **STR = Steering**

The difference between <u>COG</u> and <u>CTS</u>. If COG is 25° and CTS is 30°, then STR is 5° Right.

➤ **Target**

In order to tag on the chart the point, towards which the ship is Heading, you can use a special mark, called Target. When the Target is placed, all navigation data are referred to this Target (see Par. 3.4, 4.1.1.4, 4.2.1.3, 4.2.2.3).
Inserting Target : place cursor + 'DEST'
Deleting Target (Basic Mode) : place cursor on Target + 'CLEAR'

Deleting Target (Advanced Mode) : place cursor on Target + 'ENTER' + 'DELETE' + 'ENTER'

➤ **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.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER'

➤ **Temperature (Unit)**

Sets the temperature unit among C and F. The default setting is C.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "TEMPERATURE" + 'ENTER'

■ **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.

➤ **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 fix position is not good.

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

➤ **Tides & Currents**

Turns On/Off the displaying of Tides and Currents. The default setting is On.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Tides & Currents" + 'ENTER'

■ **Tide & Currents**

The new worldwide database with tidal stream information is now available with MAX C-CARDs. When data/time is available, Tidal stream arrows are shown on the charts, indicating the direction and strength of the Tide.
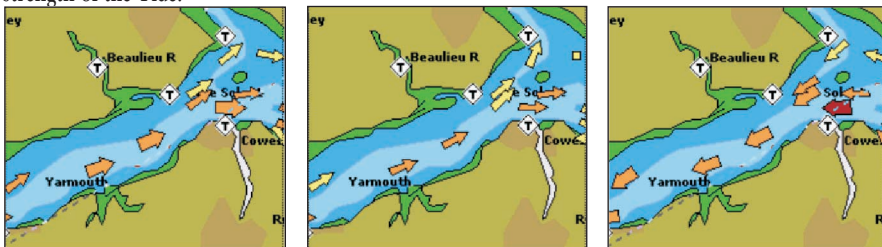
Fig. 5g - Tides & Currents

If no data/time is available from the GPS or the chart plotter is not in Simulation mode, the icon on the map is generic one.

The colour of the arrow denotes the strength of the current as follows:

Fig. 5h - Tides & Currents table

When the chart plotter receives a valid position fix, the Tide icons are shown on the charts on the basis of the current date and time: the screen displays and changes arrows as date/time changes.

➤ **Time (simulation)**
Sets the time of the simulated fix.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "TIME" + 'ENTER'

➤ **Time Format**
Sets you preferred time between 12 hour and 24 hour. The <u>default</u> setting is 24 hour.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "TIME FORMAT" + 'ENTER'

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

➤ **Time Reference**
Sets <u>UTC</u> or Local Time. The <u>default</u> setting is <u>UTC</u>.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "TIME REFERENCE" + 'ENTER'

➤ **Time (Track)**
When the tracking function is On and the type of <u>track</u> storing is Time, the chartplotter can store a fix after a defined time. Choose among 1, 5, 10, 30 sec, 1, 5, 10 min. The <u>default</u> setting is 1 sec.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TIME" + 'ENTER'

➤ **Track (menu)**
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. 4.5).
Active Track selecting: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "ACTIVE TRK" + 'ENTER'
Track storing ON/OFF: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TRACKING" + 'ENTER'
Visibile ON/OFF: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "VISIBLE" + 'ENTER'
Step unit selection: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "STEP UNIT" + 'ENTER'
Deleting Track : 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "CLEAR" + 'ENTER' + "YES" + 'ENTER'
Track color selecting: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "COLOR" + 'ENTER'

➤ **Tracking**
Turns On/Off the <u>track</u> storing. It is not possible to use the <u>track</u> storing if you are not receiving a valid fix. The <u>default</u> setting is On.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TRACKING" + 'ENTER'

➤ **Tracks & Routes**

Turns On/Off the displaying of Tracks and Routes (recommended and established routes for ships at sea, including traffic separation schemes, deep water routes, ...). The <u>default</u> setting is On.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Tracks & Routes"

■ **TRN = Turning**

The difference between <u>COG</u> and <u>BRG</u>. 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.

➤ **Underwater Objects**

Turns On/Off the displaying of Underwater Objects. (Diffuser, Obstruction, Wreck, Cable - submarine, Cable area, Pipeline area, Pipeline - submarine/on land. The <u>default</u> setting is On.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Underwater Objects" + 'ENTER'

➤ **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 <u>formatting</u> function initializes the user C-CARD and prepares it for storing information. Remember that if an user C-CARD is not blank, <u>formatting</u> 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 <u>files</u>.

Select USER C-CARD menu: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER'

■ **User Point**

Place on the chart identified by its coordinates and displayed on the screen with a reference symbol (see <u>Mark</u>, <u>Waypoint</u> and <u>Event</u>).

➤ **User Points**

Turns On/Off/Icon the displaying of the <u>User Point</u> Name. The <u>default</u> setting is On.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

➤ **User Points (List)**

Displays the <u>User Points</u> List page on the screen (see Par. 4.1.1.8).

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

■ **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.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "UTM" + 'ENTER'

➤ **Value Added Data**

The Value Added Data (VAD) is a collection of additional cartographic objects which are not present on the original paper chart (from which the electronic chart derives). These objects have been obtained from other sources (that C-MAP believes to be reliable) and then merged to the electronic charts in order to provide more information useful for the navigation.

VAD object can be any cartographic objects and it can be distinguished from the official-chart-objects from the Quick Info. A dedicated icon is shown on the Quick Info window to indicate that the object queried is a VAD.

The same icon is also shown on the Full Info page and in addition the extended text Value Added Data is shown on the details of the VAD object.

'MENU' + "MAP SETTINGS" +'ENTER' + "Other Map Configurations" + 'ENTER' + "Value Added data" + 'ENTER'

➤ **(Magnetic) Variation**

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.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS + 'ENTER" + "VARIATION" + 'ENTER'

➤ **Visible (Track)**

To enable (On) or disble (Off) the displaying of track. The default setting is On.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "VISIBLE" + 'ENTER'

➤ **VRM = Variable Range Marker**

Circle with radious selectable by the user (see Par. 4.3).
Select Advanced Mode + 'ENTER' + "EBL & VRM" + 'ENTER'

➤ **Waypoint**

Any point to which one intends to navigate. A sequence of Waypoints makes up a route plan (see Par. 4.1.1).
Inserting Waypoint: Select Advanced Mode + 'ENTER' + "WAYPOINT" + 'ENTER'
Moving Waypoint: Select Advanced Mode + Place cursor on existing Waypoint +'ENTER' + "MOVE" + 'ENTER' + move cursor + 'ENTER'
Deleting Waypoint (Basic Mode): Place cursor on existing Waypoint + 'CLEAR'
Deleting Waypoint (Advanced Mode): Place cursor on existing Waypoint + 'ENTER' + "DELETE" + 'ENTER'
Editing Waypoint: Select Advanced Mode + Place cursor on existing Waypoint + 'ENTER' + "EDIT" + 'ENTER' + Modify symbol, Cursor, Color and coordinates + 'ENTER'
Inserting Waypoint: Select Advanced Mode + Place cursor on route leg + 'ENTER' + "INSERT." + 'ENTER' + move cursor + 'ENTER'
Finding Waypoint: 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "FIND" + 'ENTER'

■ **WGS-84 = World Geodetic System 1984**

Coordinate System or Datum developed by the Defense Mapping Agency (DMA).

➤ **Wind Data page**

Selects the Wind Data page.
'PAGE' more times

Fig. 5i - The Wind Data page

➤ **Wind Speed (unit)**

Selects the Wind Speed unit amang Kts = Knots, m/s and Kmh = kilometers per hour. The default setting is Kts.
'MENU" + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "WIND SPEED" + 'ENTER'

➤ **Wrecks**

Finds the nearest Wrecks.
'MENU' +"FIND" + 'ENTER' + "WRECKS" + 'ENTER'

■ **Zoom-In**

Shows more detail in a smaller area. Expands map scale; scale value is refreshed. When <u>Plotter Mode</u> option is set On from the map configuration setup, it allows zooming into map scales not covered by cartographic details. Pressing and holding 'ZOOM IN' allows fast zoom function.

■ **Zoom-Out**

Operates similarly to <u>zoom -in</u>, but in the reverse, showing a wider but less detailed view. Compresses map scale; scale value is refreshed. When <u>Plotter Mode</u> option is set On from the map configuration setup, it allows zooming into map scales not covered by cartographic details. Pressing and holding 'ZOOM OUT' allows fast zoom function.

➤ **Zoom Type**

This feature allows more expansions or compression of the chart scale while zooming in or out.
'MENU' + "MAP SETTINGS" +'ENTER' + "Zoom Type" + 'ENTER'

➤ **XTE Alarm**

Disables the XTE Alarm (Off) or selects the desired value. The <u>default</u> setting is Off.
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "XTE ALARM" + 'ENTER'

6

For the Technician

6.1 TECHNICAL SPECIFICATIONS

- **Power consumption**   : 2.5 Watt max 35 Volt dc
- **Interface**   : NMEA0183
- **Autopilot Interface**   : NMEA-0180, NMEA-0180/CDX, NMEA-0183
- **Display Resolution**   : 640 x 480 or 800 x 600 or 1024 x 768 pixels user selectable
- **Cartography**   : **C-MAP C-CARD**
- **Operating temperature range** : 0/+55 degrees Celsius
- **Memory**   : Non volatile with battery back-up
- **Keyboard**   : Silicon rubber, backlight
- **Weight**   : 600 gr.
- **Accessories**   : External Bracket kit
  2 Fuses 1 Amp. + fuseholder
  I/O cable (CBC0FS0603)
  AUX IN I/O cable 1,5 mt/5.9"
  Power supply and I/O (CBC0FS0804)
  Video Cable (CBCHMS0700)
  User Manual
  Quick Reference Guide

- **Dimensions:** (mm[inch])   :

30.5 (1.2") 49.7 (2") 172.5 (6.8") 140 (5.5") 95 (3.7") 106.5 (4.2") 11.5 (0.5") 143.5 (5.6")
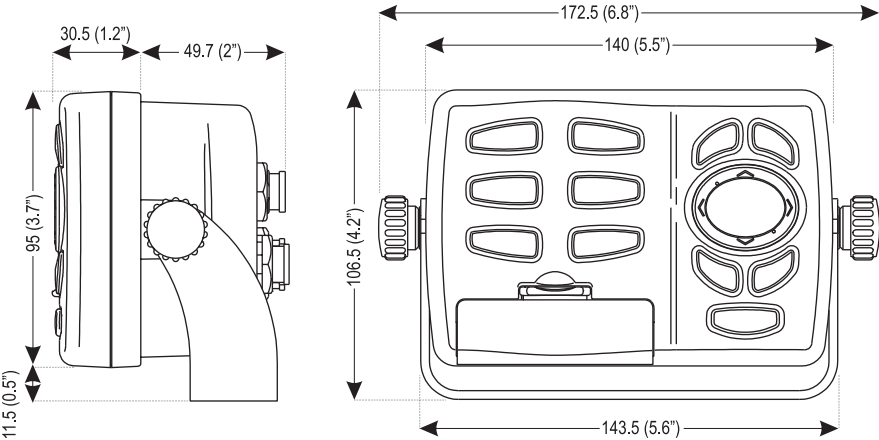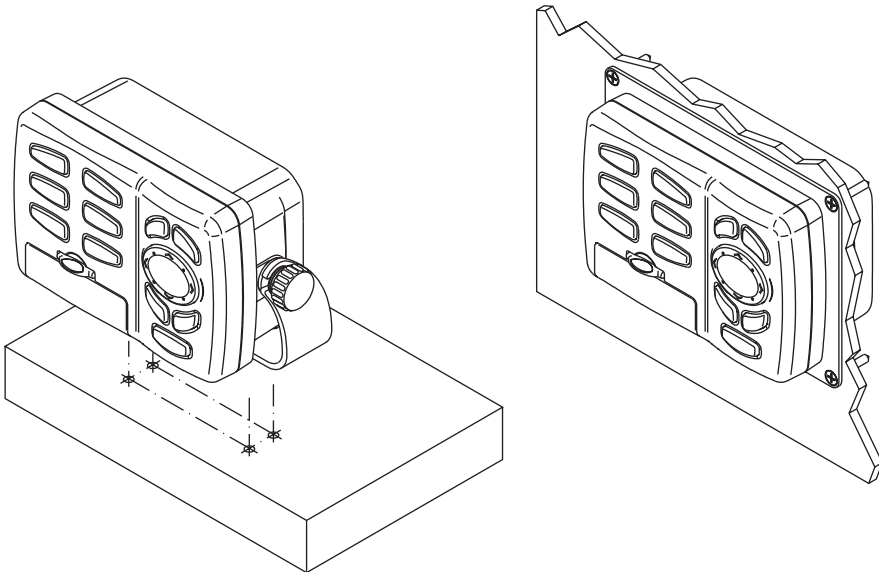
6.2   INSTALLATION

Fig. 6.2 - Installation types

6.3   EXTERNAL WIRING

SMART GPS SENSOR

GPS ANTENNA

PIN	WIRE COLOR	FUNCTION
1	RED	POWER OUTPUT+ (10-35 Vdc)
2	GREEN	OUTPUT 3+
3	BROWN	INPUT 3+
4	NC	
5	NC	
6	BLACK / YELLOW/ SHIELD	GND / SIGNAL RETURN

USB Port

Video OUTPUT

POWER & I/O

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (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+

AUX-IN I/O CABLE

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

6.4   TYPICAL CONNECTIONS - "POWER & I/O" Connector

6.4.1 GPS CONNECTIONS

POWER SUPPLY

SMART GPS SENSOR

POWER & I/O

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	INPUT 1-
6	YELLOW	OUTPUT 1+

GPS SENSOR CABLE

WIRE COLOR	FUNCTION
RED	POWER OUTPUT+ (10-35Vdc)
GREEN	GPR RX+
BROWN	GPS TX+
BLACK/YELLOW/ SHIELD	GND COMMON

GPS on Port 1

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+

GPS SENSOR CABLE

WIRE COLOR	FUNCTION
RED	POWER OUTPUT+ (10-35Vdc)
GREEN	GPS RX+
BROWN	GPS TX+
BLACK/YELLOW/SHIELD	GND COMMON

GPS on Port 2

GPS SENSOR CABLE

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

GPS on Port 3

6.4.2 AUTOPILOT CONNECTIONS

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	INPUT 1-
6	YELLOW	OUTPUT 1+

Autopilot on Port 1

POWER & I/O CABLE

PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+
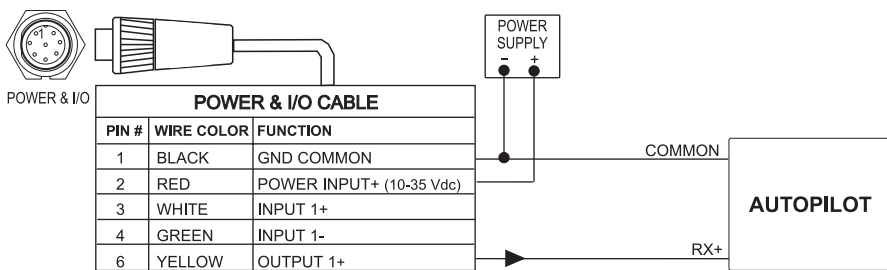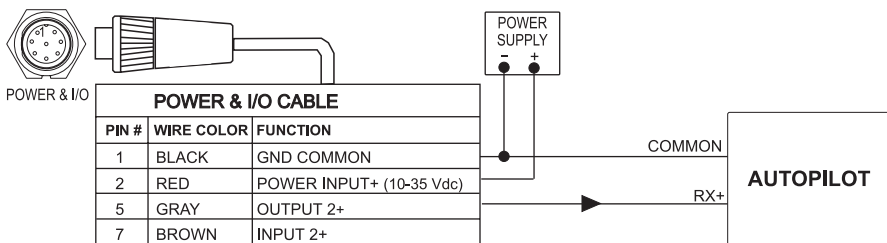
Autopilot on Port 2

6.4.3 EXTERNAL NMEA CONNECTIONS

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

External NMEA on Port 1

POWER & I/O CABLE		
PIN #	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	POWER INPUT+ (10-35 Vdc)
5	GRAY	OUTPUT 2+
7	BROWN	INPUT 2+
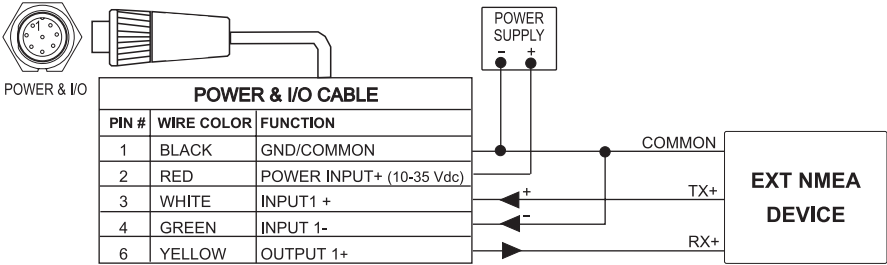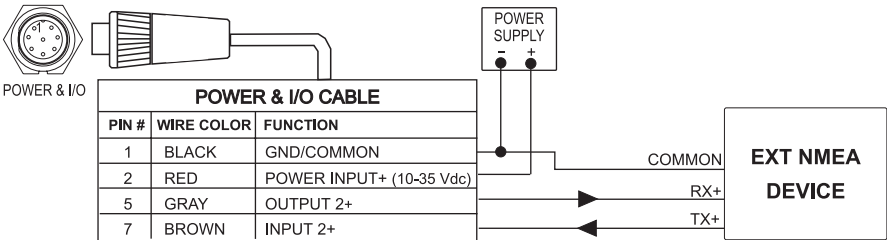
External NMEA on Port 2

6.4.4 C-COM CONNECTION

POWER & I/O CONNECTOR		
PIN#	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR+ (10-35 Vdc)
3	WHITE	USED BY C-COM
4	GREEN	USED BY C-COM
5	GREY	OUTPUT3+
6	YELLOW	USED BY C-COM
7	BROWN	INPUT3+
8	BLU	OUTPUT EXTERNAL ALARM+
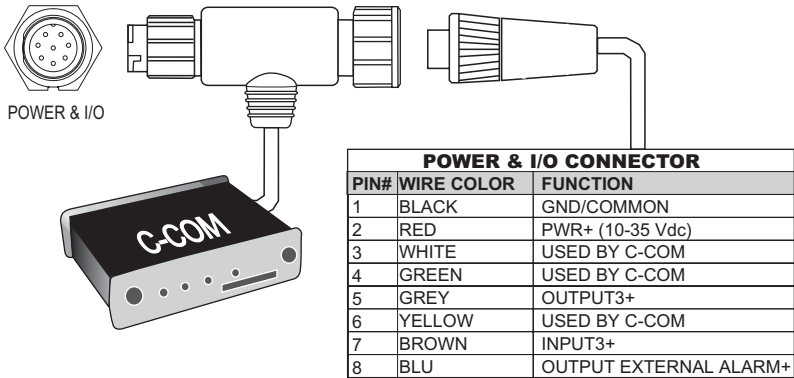
6.4.5 EXTERNAL ALARM CONNECTION

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

6.5 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:
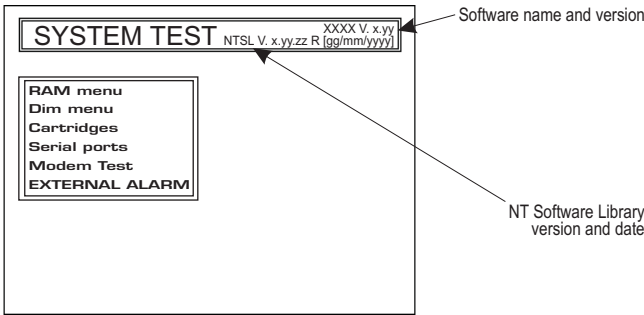
Fig. 6.5 - System Test

Use the cursor key to select the desired 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.

6.5.1 RAM MENU

This test verifies the integrity of the memories and if desired during this test all the internal memory can be erased and the <u>default</u> 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 <u>Marks</u>, <u>Events</u>, <u>Routes</u>, stored <u>track</u> plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original <u>default</u> values. To confirm to clear RAM press 'ENTER' again (but if at this time you do not wish to clear RAM press 'CLEAR').

6.5.2 DIM MENU
To select the desired value for keypad light.

- **Backlight**
  The second option allows to set the keyboard backlight. Each time you pressed the cursor key to right, the keyboard will decrease brightness, instead of to left it will increase brightness.

6.5.3 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, but if the Background is defective the message "Faulty" is shown.

- **C-CARD Test**
  To test the C-CARD. There are the 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 <u>User C-CARD</u> 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.

6.5.4 SERIAL PORTS

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

- **Change Parameters**
To change the parameters of the serial interface. This menu allows to select the **Port 1, 2, 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. <u>Default</u> settings are: Port = Port2, Baud Rate = 4800, Data Bits = 8, Parity = none, Stop Bits = 1.

- **Input Data Display**
To allow 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.

6.5.5 EXTERNAL ALARM

To check if the External Alarm has been trasmetted.

6.5.6 DISPLAY SETTINGS

To select the display resolution.

- **Resolution**
Sets the resolution among: 1024x768, 800x600, 640x480 (default).

- **Horizontal Size**
Allows entering the actual horizontal size of the screen. The value can be entered either in centimeters or inches (the default is 30.5 cm). The unit of measure is user selectable (see Screen Size Unit option). If the unit of measure is changed, the value is converted.

- **Screen Size Unit**
Allows entering the screen size unit among cm and inch. Centimeters is the default unit.

- **Apply settings**
  Sets the values Resolution and Horizontal size. When this function is executed the following message are shown: "The Display settings will be applied after power off. Do you want to restart the unit now?". If the display will not be visible, shut off the chart plotter again then power it up keeping pressed **'ZOOM-IN'** to set default resolution 640x480. Choosing **"YES"**, the chart plotter will be restarted and the new settings applied. Choosing **"NO"** the new settings will be applied only next time the chart plotter is powered up. Choosing **"ABORT"** will discarded all changes and nothing will be applied. The original values of Resolution and Horizontal Size are restored and displayed.

Note
It is possible to restore the lowest screen resolution (640x480) by pressing and holding 'ZOOM-IN' while the chart plotter is switched to ON. This is useful when the image is not shown on the screen for example as effect of changing the display or display not compatible with the set resolution.

A
Trouble shooting

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 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 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. 6.5.1).

Analytical Index