



MAGNUM PRO

CODE: S3egLZctcmp_0ww 1128d970+A01/160407

MAGNUM PLUS

CODE: S3egLZctcms_0ww 1128d970+A01/160407

USER MANUAL



Copyright 2007 LORENZ ELECTRONICS Italia.

All rights reserved. Printed in Italy. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without prior written permission of the publisher.

Warning!

Electronic charts displayed by the chart plotter 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 chart plotter 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 chart plotter severely. This damage is not covered by the warranty.
- The chart plotter 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	11
	1.1 FEATURES	11
	1.2 BASICS	12
	1.3 IF YOU NEED ASSISTANCE	12
	1.3.1 World Background Charts	13
	Worldwide Background Update	13
2	Before You Begin	15
	2.1 THE KEYBOARD	15
	2.2 TURNING THE CHART PLOTTER ON AND OFF	18
	2.2.1 Turning On	18
	2.2.2 Turning Off	18
	2.3 SELECTING THE LANGUAGE	18
	2.4 EXTERNAL CONNECTIONS	19
	2.4.1 GPS Connections	19
	2.4.2 Autopilot Connections	19
	2.4.3 External NMEA Connections	20
	2.4.4 C-COM Connections	21
	2.4.5 External Alarm Connection	21
	2.5 ADDITIONAL C-CARDS	22
	2.5.1 Inserting C-CARD	22
	2.5.2 Removing C-CARD	23
3	For the New User	25
	3.1 SCREEN DISPLAY CONFIGURATION	25
	3.1.1 Charts and Text Area	26
	3.1.2 Depth Graph	27
	3.1.3 GPS Data Page	28
	3.1.4 Navigation Data Page	28
	3.1.5 Graphic Data (Rolling Road) Page	29
	3.1.6 The Wind Data Page	29
	3.2 A-B-C-D FUNCTION	29
	3.2.1 Inserting the A-B-C-D points	30
	3.2.2 Deleting the A-B-C-D points	30
	3.2.3 Navigating on the A-B-C-D points	30
	3.3 NAVIGATING TO A SINGLE DESTINATION	30
	3.3.1 Distance and Bearing to Target	30
	3.3.2 Time To Go	31
	3.3.3 Deleting Target	31
	3.4 C-MAP NT MAX INFORMATION	32
	3.4.1 Map Menu	32
	3.4.1.1 Perspective View	32
	3.4.1.2 Palette	33
	3.4.1.3 Map Orientation	33

3.4.1.4	Zoom Type	34
3.4.1.5	Fonts & Symbols	34
3.4.1.6	Dynamic Nav-Aids	34
3.4.1.7	Mixing Levels	34
3.4.1.8	Safety Status Bar (DSI - Data Safety Indicator)	35
3.4.1.9	Currents Prediction	36
3.4.1.10	Other Map Configurations	36
3.4.2	Getting Automatic Info	40
3.4.2.1	Info on objects with Pictures	40
	Change Picture Size	41
3.4.2.2	Quick Info on Lakes	41
3.4.2.3	Full Info on Lakes	42
3.4.3	Info Tree and Expanded Info page	43
3.4.4	Info Function	43
3.4.5	Getting Port Info	43
3.4.6	Getting Tide Info	44
3.4.7	Find Function	45
3.4.7.1	Finding Port Services	45
3.4.7.2	Finding Ports By Name	45
3.4.7.3	Finding Ports By Distance	46
3.4.7.4	Finding Tide Stations	46
3.4.7.5	Finding Wrecks	46
3.4.7.6	Finding Obstructions	46
3.4.7.7	Finding POIs	46
3.4.7.8	Finding Lakes By Names	46
3.4.7.9	Finding Lakes Information	46

4	For the Experienced User	49
4.1	MORE ABOUT CREATING AND USING ROUTES	49
4.1.1	Waypoints	49
4.1.1.1	Adding Waypoint	49
4.1.1.2	Creating a route	50
4.1.1.3	Deleting Waypoint	50
4.1.1.4	Deleting route	51
4.1.1.5	Distance and Bearing to Target	51
	Time To Go	52
	Deleting Target	52
4.1.1.6	Moving Waypoint	52
4.1.1.7	Inserting Waypoint	53
4.1.1.8	Editing Waypoint	54
4.1.1.9	Finding info about Waypoints: User Points List page	55
	Finding User Points	55
	Deleting selected User Point	55
	Deleting all User Points with the same symbol	56
	Deleting all User Points with the same type	56
	Deleting all stored User Points	56
	Send/Receive User Points	56
4.1.2	Routes	56
4.1.2.1	Selecting route	56
4.1.2.2	Deleting route	57
4.1.2.3	Reversing route	57
4.1.2.4	Selecting route Color	57
4.1.2.5	Finding information about a route: Route Report	57

	Selecting route	57
	Changing Speed & Fuel values	58
	Reversing route	58
	Deleting route	58
	4.1.2.6 Route Name	58
	4.1.2.7 Send/Receive Route	58
4.2	USING MARKS & EVENTS	59
4.2.1	Marks	59
4.2.1.1	Adding Mark	59
4.2.1.2	Deleting Mark	59
4.2.1.3	Goto	59
4.2.1.4	Moving Mark	59
4.2.1.5	Editing Mark	60
4.2.1.6	Finding info about Marks: User Points List page	61
4.2.1.7	Add to Route	61
4.2.2	Events	61
4.2.2.1	Adding Event	61
4.2.2.2	Deleting Event	62
4.2.2.3	Goto	62
4.2.2.4	Editing Event	62
4.2.2.5	Finding info about Events: List User Points page	62
4.2.2.6	Add to Route	63
4.3	EBL & VRM FUNCTION	63
4.3.1	Placing EBL & VRM	63
4.3.2	Deleting EBL & VRM	64
4.3.3	Editing EBL & VRM	64
4.4	MORE ABOUT A-B-C-D FUNCTION	64
4.4.1	Inserting the A-B-C-D points	64
4.4.2	Deleting the A-B-C-D Points	64
4.4.3	Deleting the A-B-C-D Segment	65
4.4.4	Moving the A-B-C-D points	65
4.4.5	Inserting the A-B-C-D points	65
4.4.6	Navigating on the A-B-C-D points	65
4.5	USING THE TRACK FUNCTIONS	65
4.5.1	Selecting active Track	65
4.5.2	Enabling Track storing	66
4.5.3	Displaying Track	66
4.5.4	Selecting track Color	66
4.5.5	Deleting Track	66
4.5.6	Deleting Selected Track	66
4.5.7	Selecting Track memorizing type	66
4.5.8	Selecting distance	67
4.5.9	Selecting time	67
4.6	USER C-CARD MENU	67
4.6.1	Saving File	67
4.6.2	Loading File	68
4.6.3	Deleting File	69
4.6.4	Formatting User C-CARD	69
4.6.5	Changing User C-CARD	69
4.7	C-LINK	69
4.7.1	How C-Link system works	69
4.8	C-LINK NAVIGATION DATA TRANSFER	70
4.8.1	Operations	70

4.8.1.1	Introductory elements	70
4.8.1.2	C-Link serial connection	71
4.8.1.3	Master Chart Plotter	71
	Operating mode	71
4.8.1.4	Slave Chart Plotter	72
	Operating mode	72
	Stop current navigation	72
	Inhibit Navigation operation	72
	Inhibit Route following	72
	MOB handling	72
	Notes	73
4.8.1.5	C-Link navigation data: Acquisition and Display	73
4.8.1.6	Graphical representation on Map Display	73
4.8.1.7	Route Data Report	73
4.8.1.8	Quick Info	75
	Route Navigation: Quick Info on the Destination	75
	Quick info on Single Destination	75
4.9	AIS MENU	75
4.9.1	AIS SYSTEM DEFINITIONS	76
4.9.2	AIS MENU	77
4.9.2.1	Display	77
4.9.2.2	Activation range	77
4.9.2.3	CPA Alarm	78
4.9.2.4	CPA Limit	78
4.9.2.5	TCPA Alarm	78
4.9.2.6	TCPA Limit	78
4.9.3	TO SET THE CHART PLOTTER FOR RECEIVING AIS	78
4.9.4	QUICK INFO ON AIS TARGET	78
4.10	C-STAFF	79
4.11	C-WEATHER SERVICE	79
4.11.1C	WEATHER SERVICE MENU	80
4.11.1.1	Download	80
	Select Country to Call	80
	SIM PIN	80
	Download Area	80
4.11.1.2	Copy from USER C-CARD	81
4.11.1.3	Weather Forecast	81
4.11.1.4	Real Time View	81
4.11.1.5	Type of Data	81
4.12	DSC	82
4.12.1	Distress Call and Position Request	82
4.12.2	DSC Menu	83
4.12.2.1	DSC LOG	83
	Locate	83
	Delete	84
	Delete All	84
	Hide/Show	84
	Position Request/Distress Call	84
4.12.2.2	DSC DIRECTORY	84
	Edit	84
	Add	85
	Delete	85
	Delete All	85

4.12.3	Quick Info on DSC Icons	85
4.13	FISH FINDER MENU	85
4.14	RADAR SETUP MENU	86
5	Terms & Functions	87
6	For the Technician	113
6.1	TECHNICAL SPECIFICATIONS	113
6.2	INSTALLATION	114
6.3	EXTERNAL WIRING	114
6.4	TYPICAL CONNECTIONS - "POWER & I/O" Connector	115
6.4.1	GPS Connections	115
6.4.2	Autopilot Connections	115
6.4.3	External NMEA Connections	116
6.4.4	C-COM Connection	116
6.4.5	External Alarm Connection	117
6.5	SYSTEM TEST	117
6.5.1	RAM Menu	117
6.5.2	DIM Menu	118
6.5.3	CARTRIDGES	118
6.5.4	SERIAL PORTS	119
6.5.5	External Alarm	119
6.5.6	Display Settings	119
A	Trouble shooting	121
	Analytical Index	122

1

Introduction

If you have not used a position-finding instrument before and intend to use your chart plotter 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 chart plotter. 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 chart plotter. 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 SETTINGS" + '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 Target, are explained in the Chapter 5.

1.1 FEATURES

The chart plotter 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 chart plotter displays the current position, the speed, and the heading of the boat and its track. The user information like Waypoints, Marks and tracks can then be stored on a User C-CARD, and can be recalled at any time. On the screen are shown navigation data and cartographic information obtained from electronic charts of C-MAP C-CARD.

1.2 BASICS

The chart plotter is controlled by using 14 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.

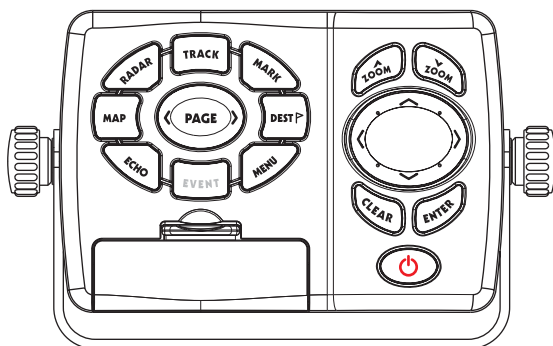


Fig. 1.2 - MAGNUM Pro

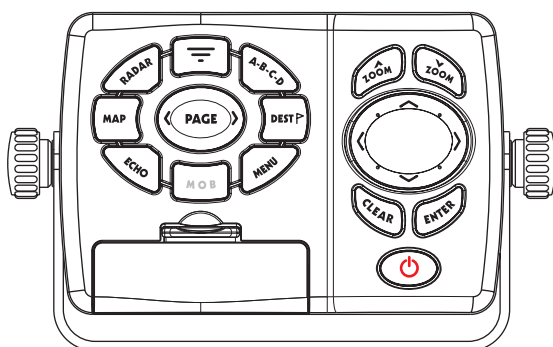


Fig. 1.2a - MAGNUM Plus

1.3 IF YOU NEED ASSISTANCE

If your chart plotter 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 chart plotter; it will help you to become familiar with the chart display and the functions of the controls before you start using the chart plotter.

2.1 THE KEYBOARD

The  'POWER' key

Press 'POWER' down for 1 second to turn the chart plotter On. Press and hold 'POWER' down (once the chart plotter has been turned On) for 3 seconds turns the chart plotter Off.

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

The  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 GPS computing a valid fix position and the chart plotter is not in Home mode, pressing 'CLEAR' sets Home mode. When Home (called also Navigate) 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 Home mode move the cursor. In Basic Mode deletes the A, B, C, D points, the User Point (Mark, Event, Waypoint), the MOB, the Target identified by the cursor.

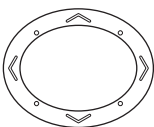
The  key

Selects the desired option, confirms selection.

ONLY ON **MAGNUM PRO** in Basic Mode places A, B, C, D points on the cursor


coordinates, in Advanced Mode creates Objects (Waypoint, EBL/VRM, A-B-C-D).

ONLY ON **MAGNUM PLUS** in Advanced Mode creates Objects (Mark, Event, Waypoint, EBL/VRM).

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 accelerates 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.

The  and  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  key ONLY ON **MAGNUM PLUS**

Press 'MOB' to place MOB (Man OverBoard). Pressing 'MOB' when the MOB is placed to delete MOB.

The  key ONLY ON **MAGNUM PRO**

In Basic Mode pressing 'EVENT' places Event at ship's coordinates; in Advanced Mode places, deletes, edits and moves Event.

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

The  key

Selects the Functions Menu.

The  key

Place the cursor and press 'DEST' to set Target.

The  key ONLY ON MAGNUM PLUS

Press 'A-B-C-D' to place the A, B, C, D points at cursor coordinates.

The  key ONLY ON MAGNUM PRO

In Basic Mode pressing 'MARK' places Mark at cursor coordinates; in Advanced Mode places, deletes, edits and moves Mark.

The  'FUNCTION' key ONLY ON MAGNUM PLUS

This key can be customized to have a quick access to the main functions. Press 'FUNCTION' for 1 second allows setting the shortcut to one of the following functions:

'WIND'	select Wind pages
'MARK'	place Mark
'EVENT'	place Event
'WAYPOINT'	place Waypoint
'EBL-VRM'	place EBL and VRM
'C-WEATHER'	shows C-Weather Forecast mode

Press and release 'FUNCTION' executes the function that was assigned.

Note

The selections Mark, Event, Waypoint and EBL, VRM are available even if Advanced Functions is Off.

The  key ONLY ON MAGNUM PRO

Pressing 'TRACK' enables or disables the track storing.

The  key

If Radar is connected, pressing 'RADAR' selects the Radar page and pressing 'RADAR' for 1 second selects the Radar menu.

The  key

Pressing 'MAP' selects the desired map page and pressing 'MAP' for 1 second selects the Map Settings menu.

The  key

If Fish Finder is connected, pressing 'ECHO' selects the Fish Finder page. and pressing 'ECHO' for 1 second selects the Fish Finder menu.

The  key

Pressing '<PAGE' or 'PAGE>' selects previous or next page

2.2 TURNING THE CHART PLOTTER ON AND OFF

Before powering On the chart plotter, 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 chart plotter 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 language 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:

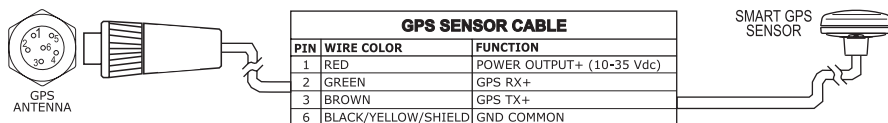


Fig. 2.4.1 - GPS Connection on Port 3

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 default 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:

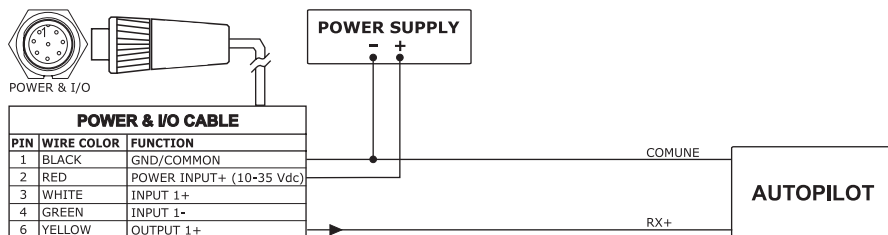


Fig. 2.4.2 - Autopilot Connections on Port 1

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 default setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

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

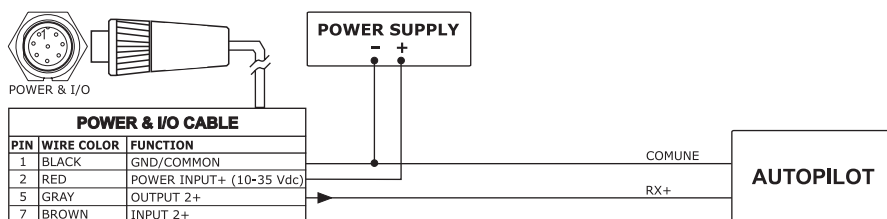


Fig. 2.4.2a - Autopilot Connections on Port 2

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 default 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:

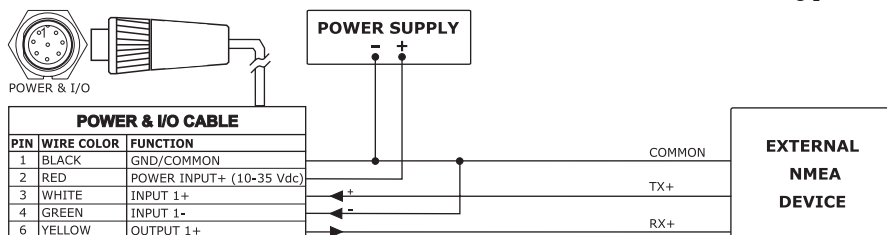


Fig. 2.4.3 - External NMEA Connections on Port 1

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:

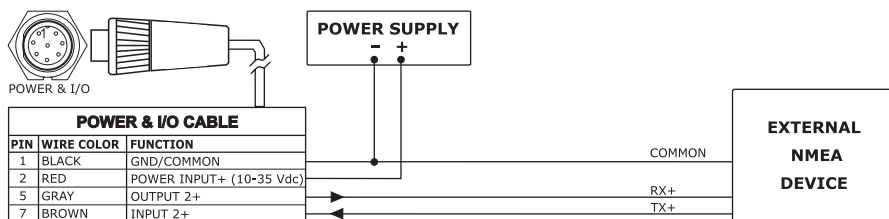


Fig. 2.4.3b - External NMEA Connections on Port 2

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:

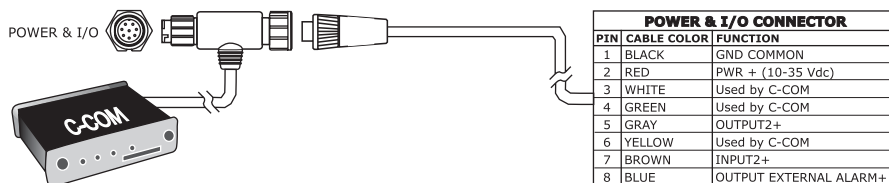


Fig. 2.4.4 - C-COM Connection

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:

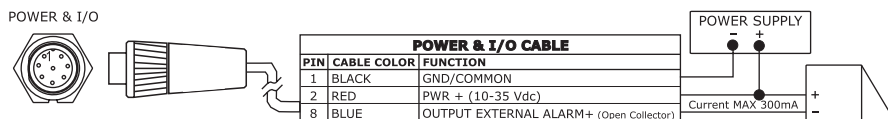


Fig. 2.4.5 - External Alarm Connection

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

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.

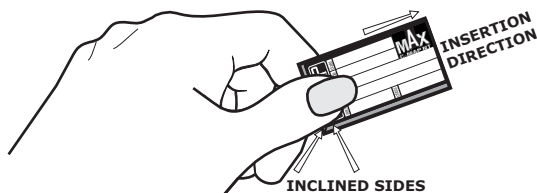


Fig. 2.5.1 - Inserting C-CARD (1)

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).

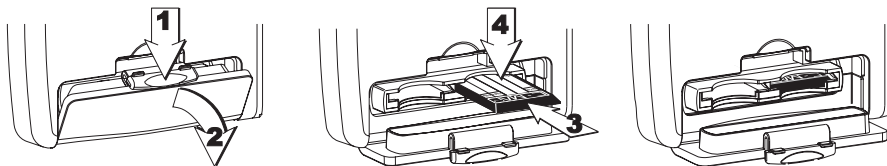


Fig. 2.5.1a - Inserting C-CARD (II)

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).

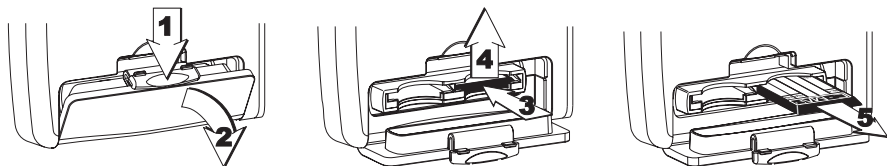


Fig. 2.5.2 - Removing C-CARD

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 chart plotter, you must do the following things:

1) Your chart plotter 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 chart plotter and adjust the brightness and contrast of the display (see Par. 2.2 and 2.3).

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

3.1 SCREEN DISPLAY CONFIGURATION

Use '<PAGE>' to select the desired page, in two different ways:

- 1) by showing the next or the previous page as the relative key is pressed
- 2) by selecting the page from the Page Selection menu

The desired way to select the page is set by changing "Page Preview" following the procedure:

➤ 'MENU' + "BASIC SETTINGS" + 'ENTER' + "PAGE PREVIEW" + 'ENTER'

When "Page Preview" is "Off", '<PAGE/'/'PAGE>' allows setting the previous/next page (1). When "Page Preview" is "On", '<PAGE>' opens the Page Selection menu (2), on which the icons representing the pages are shown: the icon of the currently selected page is identified by a bold frame; move the selection with the Cursor keys or '<PAGE>', the name of the currently selected page icon is shown in the lower side of the Page Selection menu. Pressing 'ENTER' the Page Selection menu is closed and the currently selected page is activated.

Note

If the Fish Finder or Radar is connected, other displaying pages are available too. See the Fish Finder or Radar User Manual for more information.

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:

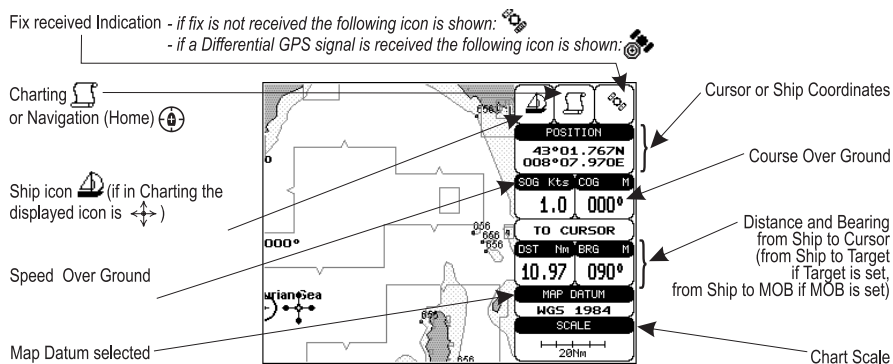


Fig. 3.1.1 - Charts and text area

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

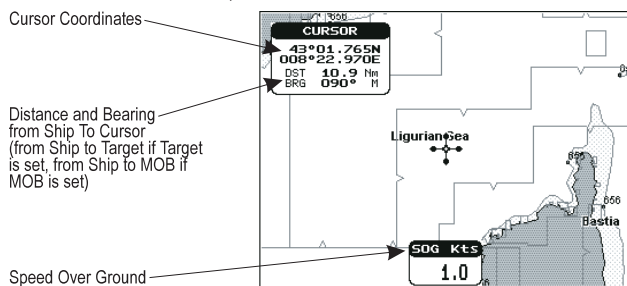


Fig. 3.1.1a - Charts and text windows

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

Then it is possible to see on the screen only charts:

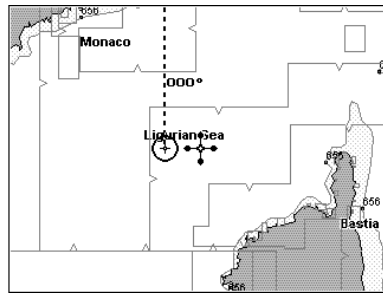


Fig. 3.1.1b - Full charts

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:

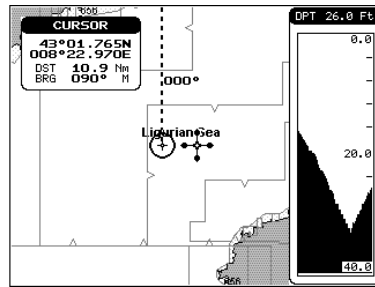


Fig. 3.1.2 - The Depth Graph 1/3 of the screen

or Depth graph displayed on 1/2 of the screen:

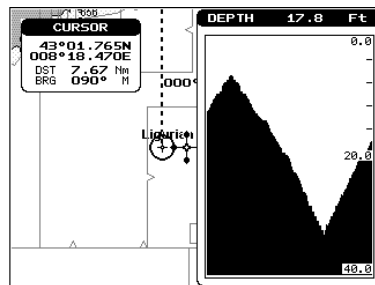


Fig. 3.1.2a - The Depth Graph 1/2 of the screen

3.1.3 GPS DATA PAGE

The GPS Data page shows in graphic mode GPS data.

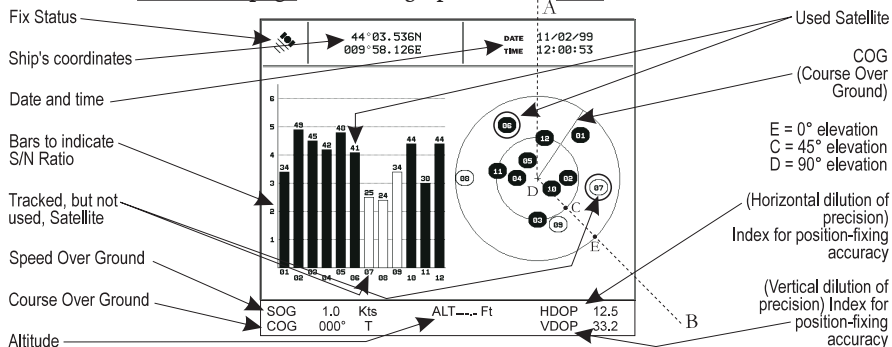


Fig. 3.1.3 - GPS Data Page

On the right side of the screen (see Fig. 3.1.3), there is a polar representation of the 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, Altitude, VDOP, HDOP, SOG and COG are shown in the page.

3.1.4 NAVIGATION DATA PAGE

The 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.

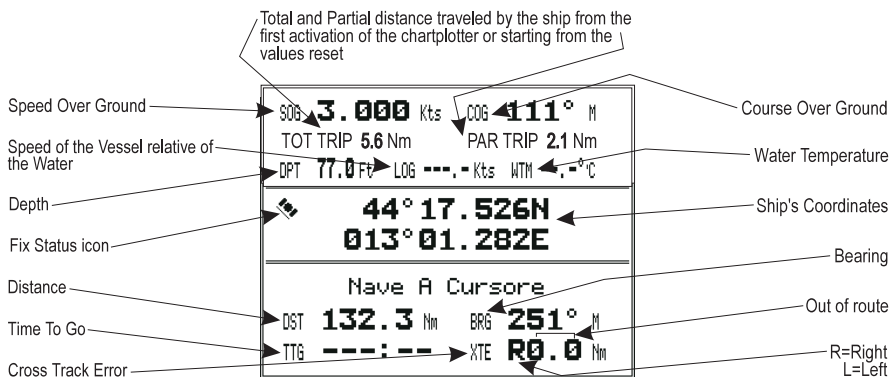


Fig. 3.1.4 - Navigation Data Page

3.1.5 GRAPHIC DATA (ROLLING ROAD) PAGE

The Graphic Data Page shows in graphic mode navigation data.

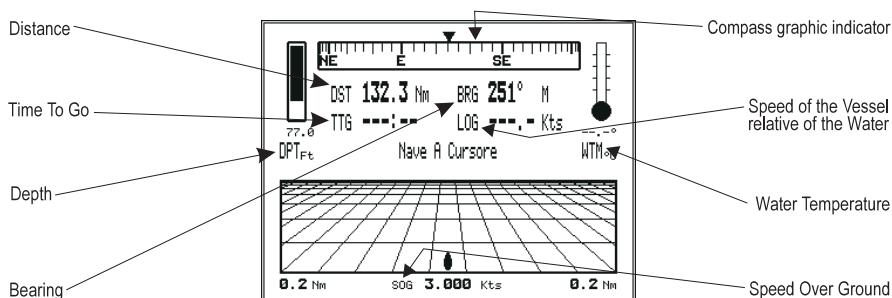


Fig. 3.1.5 - Graphic Data Page

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.

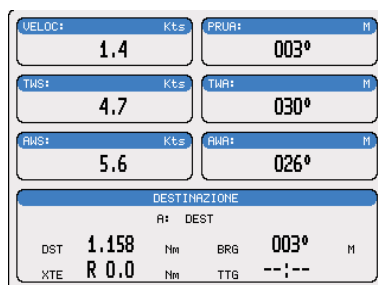


Fig. 3.1.6 - The example of Wind Data page

Note

ON MAGNUM PLUS: press 'WIND' to select the Wind Data page (if 'FUNCTION' is set as 'WIND' - see Par. 2.1)

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 **MAGNUM PRO** or 'A-B-C-D' on **MAGNUM PLUS**: on the screen the A point and an information window on A appear. Move the cursor and press ENTER' on **MAGNUM PRO** or 'A-B-C-D' ON **MAGNUM PLUS** 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' on **MAGNUM PRO** or 'A-B-C-D' ON **MAGNUM PLUS** places the C and D points:

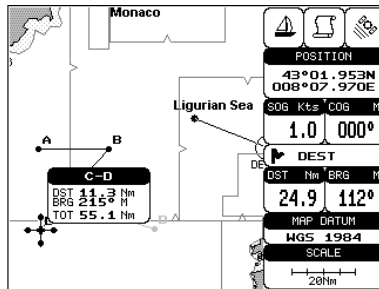


Fig. 3.2.1 - A-B-C-D points

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'.

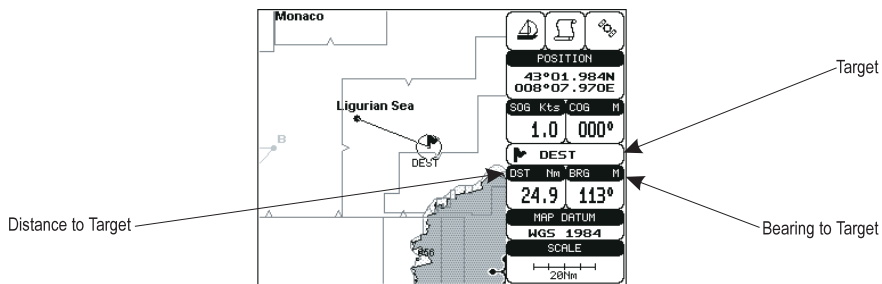


Fig. 3.3.1 - Navigation to a single destination

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 chart plotter 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>' to select Graphic Data page

Note

If SOG value is less than 1.0 knots or the BRG is greater than 90 degrees, the TTG value is not displayed.

3.3.3 DELETING TARGET

Place cursor on Target icon, press 'CLEAR': the symbol identifies Target 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 Target 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 Dictionary" to translate Nav-Aid abbreviations found on paper charts)
- 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 (optimized palettes for chart plotters with 256 or more colors; includes new NOAA palette for US market)
- Perspective View ("Real World" perspective view of the chart, updated real-time 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 in two modes:

- 'MAP' for 1 second

or

- 'MENU' + "MAP SETTINGS" + 'ENTER'

in the following paragraphs only the second mode is indicated.

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.

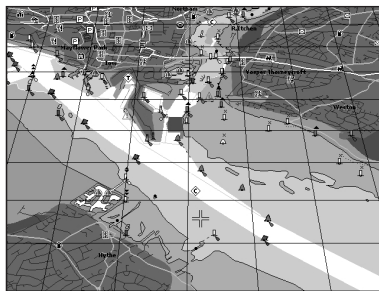


Fig. 3.4.1.1 - Perspective View

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 chart plotter 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 chart plotter displays maps and screen in darker colors. **Sunlight** is designed to enhance the visibility of the screen when the chart plotter 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 heading upwards), Course (the map is displayed with the currently selected course leg upwards). The default 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.

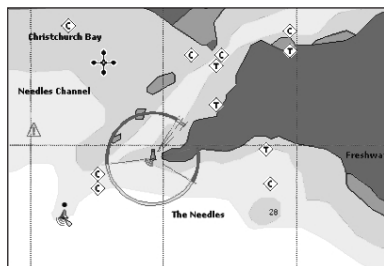
By pressing 'ZOOM IN'/'ZOOM OUT' the map is expanded or compressed according to the zoom factor selected. The Window is automatically closed if 'ZOOM...' is not pressed for 2 seconds and the selected zoom factor will be used at the next zoom in/out.

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

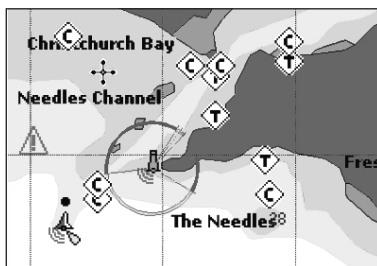


Fig. 3.4.1.5 - Example of Normal size (on the left side) and Large size (on the right side) settings

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. When Dynamic Nav-Aids option is set to On, when the flashing light is Off, or when fix position is out of the sector, the light color is displayed by using a faint light color.

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 chart plotter 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 chart plotter zooms out to the first level covered by cartographic data. The default 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 (DSI - Data Safety Indicator)

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

It is possible to choose between the three following options:

- ON : the Safety Status Bar is shown
- OFF : the Safety Status Bar is not shown
- ICON : the Safety Status Bar is not shown, but a warning alarm icon is shown on the corner of the map screen as soon as any item controlled by the DSI function returns an alarm condition. The Warning Icon remains displayed until the alarm condition persists. Placing the cursor over it, a quick help message is shown next to the DSI icon, allowing to show the DSI bar. In this case - when the DSI bar is opened via DSI alarm icon - it is allowed to obtain information about each “active” DSI box (the red ones): it is possible to select them by cursor movement left/right, and a list of active alarms is shown underneath the selected box. By pressing 'CLEAR', the DSI bar is removed from the screen.

When Safety Status Bar is On, 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 color to indicate possible risk.



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 normal 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 'DEST' 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)
Place Names	On	On	On	On	On	On
Name Tags	On	Off	Off	Off	Off	Off
Nav-Aids & Light Sectors	On	No Sector	No Sector	No Sector	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
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
Land Elevations	On	Off	Off	Off	Off	On
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
Chart Lock	On	On	On	On	On	On
Und. Objects Limit	9999Mt	10Mt	10Mt	10Mt	10Mt	10Mt
Rocks	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Obstructions	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Diffusers	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Wrecks	Icon+Depth	Icon	Icon	Icon	Icon	Icon

If Display Mode is Custom, it is possible to change the map settings as following:

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

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Place Names" + 'ENTER'

Name Tags: On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Name tags" + 'ENTER'

Nav-Aids & Light Sectors : On (Nav-Aids & Light Sectors are shown)/Off (Nav-Aids & Light Sectors are not shown)/No Sector (Nav-Aids are shown, Light Sectors are hidden). The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Nav-Aids & Light Sectors" + 'ENTER'

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

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

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

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

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

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

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

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

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

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

Depth Range Min: Sets a min reference depth value. The default 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 default setting is 10 Mt.

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

Land Elevations: On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Land Elevations" + 'ENTER'

Land Elevation Values: On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Land Elevation Values" + 'ENTER'

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

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Roads" + 'ENTER'

POIs (Points Of Information): On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "POIs" + 'ENTER'

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

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

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

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Boundaries" + 'ENTER'

Value Added Data: On/Off. The default setting is On.

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

Chart Lock: On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Lock" + 'ENTER'

Underwater Object Limit: Selects the max depth value to display Underwater Objects. The default setting is 10 Mt.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Underwater Object Limit" + 'ENTER'
- If value is set to 0 Mt, the Underwater Objects are not shown on the charts. Menu options are grayed out.
- If value is more than 0 Mt (i.e. 10 Mt), in the Range from 0 Mt to the selected value the Underwater Objects are displayed according to their setting below.

Rocks: Off/Icon/Icon+Depth (*). The default setting is Icon.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Rocks" + 'ENTER'

Obstructions: Off/Icon/Icon+Depth (*). The default setting is Icon.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Obstructions" + 'ENTER'

Diffusers: Off/Icon/Icon+Depth (*). The default setting is Icon.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Diffusers" + 'ENTER'

Wrecks: Off/Icon/Icon+Depth (*). The default setting is Icon.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Wrecks" + 'ENTER'

Note (*)

Choose the option:

- **OFF** : the object is not visible independently of the selected "Underwater Object Depth Value"
- **ICON** : the object icon is visible without tags, in the range selected from "Underwater Object Depth Value" option
- **ICON+DEPTH** : the object icon and tag is visible, in the range selected from "Underwater Object Depth Value" option

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

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

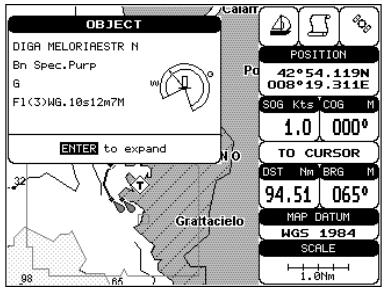


Fig. 3.4.2 -Automatic Info on Points window

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.

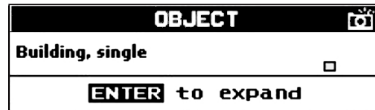


Fig. 3.4.2.1 - Example of Quick Info on objects with picture

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.

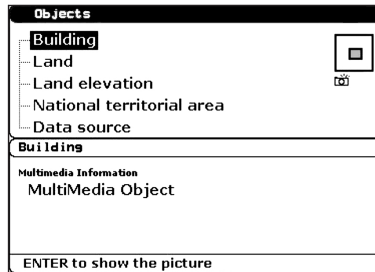


Fig. 3.4.2.1a - Example of Full Info on objects with picture

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'.

3.4.2.2 Quick Info on Lakes

Upon viewing the chart of a lake, you will click on to query the available information immediately displayed with many details. For example, see the following picture:

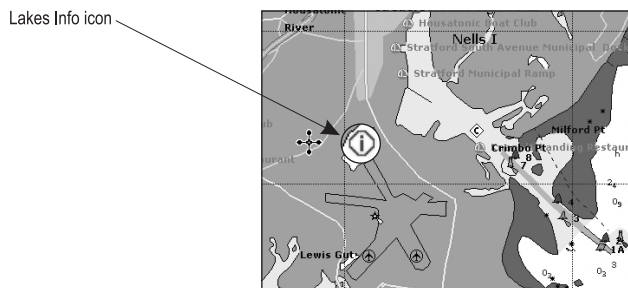


Fig. 3.4.2.2 - Example of Lakes info

When the cursor is placed over the icon, the icons of the available services are shown:

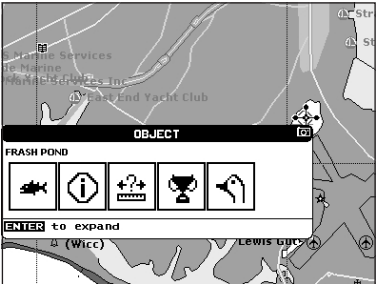


Fig. 3.4.2.2a - Quick Info: available services

If you press 'ENTER' all available information about the cartographic point under the cursor will be shown. See the next paragraph.

3.4.2.3 **Full Info on Lakes**

The following is an example of Full Info on Lakes:

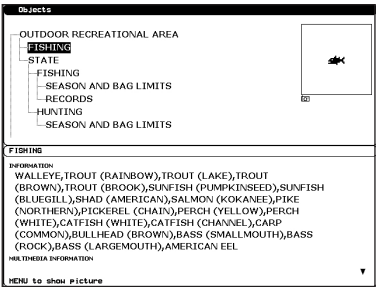


Fig. 3.4.2.3 - Example of Full Info page

To see the "Fishing" object press 'MENU' (when the "Fishing" object is highlighted). On the screen appears:

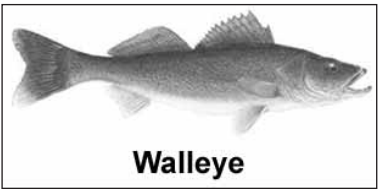


Fig. 3.4.2.3a - Example of picture associated to the Fishing object

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 Port Info icon that can be clicked on to query the available information immediately displayed with many details. The Port Info icon is visible only if the Ports & Services option is On (default setting).

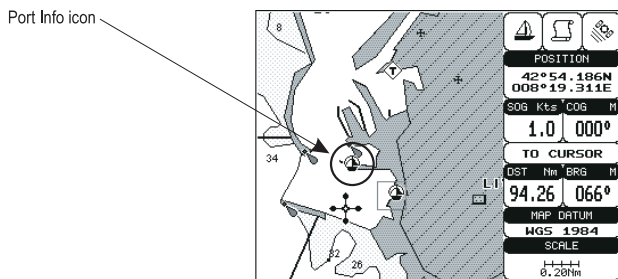


Fig. 3.4.5 - Port Info icon

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

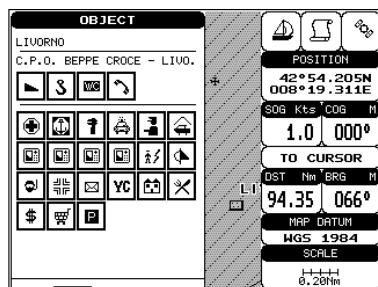


Fig. 3.4.5a - Automatic Info window

3.4.6 GETTING TIDE INFO

To obtain Tide Info:

Tide Info icon

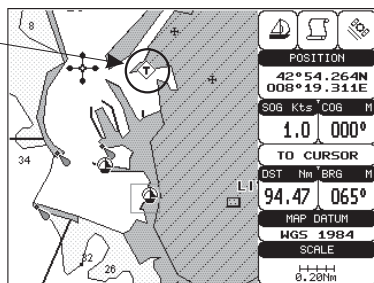


Fig. 3.4.6 - Tide Info icon

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

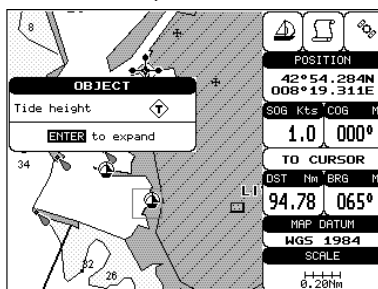


Fig. 3.4.6a - Automatic Info on Tide

To display the Tide Graph page press 'ENTER' for two times:

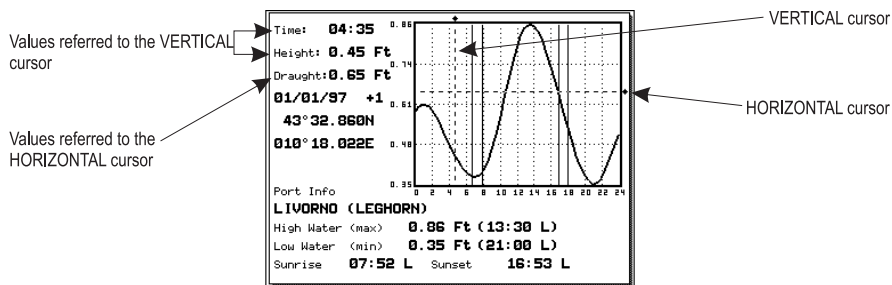


Fig. 3.4.6b - Tide Graph

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 chart plotter allows finding Nearest Services, Port By name, Port By distance, Tide Stations, Wrecks, Obstructions, Lakes info, POIs.

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 Ports By Name

To select the Ports By Name function following the procedure:

- 'MENU' + "FIND" + 'ENTER' + "PORTS BY NAME" + 'ENTER'

Shows the list of all ports stored on the C-CARD in alphabetical order and allows to search ports by name to locate the ports on the map.

3.4.7.3 Finding Ports By Distance

To select the Ports By Distance function following the procedure:

- 'MENU' + "FIND" + 'ENTER' + "PORTS BY DISTANCE" + 'ENTER'

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

3.4.7.4 Finding Tide Stations

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

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

A new window will appear in few seconds. Choose the Tide Stations you want and press 'ENTER' or 'FIND' to display the Tide Graph page (see Par. 3.5.4). Press 'CLEAR' to display the Tide Station chosen.

3.4.7.5 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.

3.4.7.6 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.

3.4.7.7 Finding POIs

Searches for Nearest Points Of Interest:

- 'MENU' + "FIND" + 'ENTER' + "POINTS OF INTEREST" + 'ENTER'

A sub-menu is opened to find different categories of POIs.

3.4.7.8 Finding Lakes By Names

Selects the Lakes By Names function:

- 'MENU' + "FIND" + 'ENTER' + "LAKES BY NAME" + 'ENTER'

Shows the list of all lakes stored on the C-CARD in alphabetic order. Pressing 'MENU' to insert the Lake name.

3.4.7.9 Finding Lakes Information

Searches for Nearest Lakes Info:

- 'MENU' + 'FIND' + 'ENTER' + 'LAKES INFORMATION' + 'ENTER'
It finds the Outdoor Recreational Area objects. See the following picture:

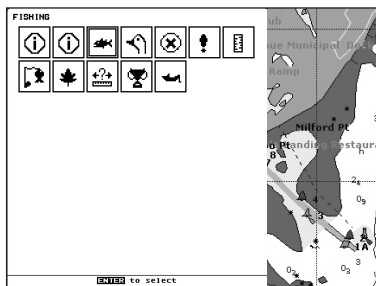


Fig. 3.4.7.9 - Outdoor Recreational Area objects

Use the cursor key to select any objects and press 'ENTER'. The list of the nearest lakes containing the facility will be shown on the screen.

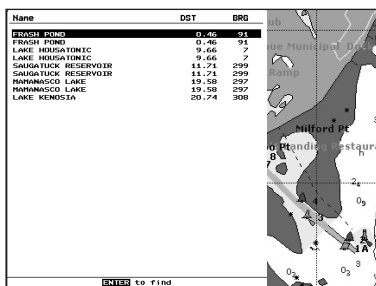


Fig. 3.4.7.9a - Nearest Lakes list

Then choose the lake you want and press 'ENTER': the Full Info page is shown.

4

For the Experienced User

Now you have had a chance to become familiar with your new chart plotter, there are a great number of advanced features that you will find helpful. First of all the use of the Advanced Mode.

The chart plotter can operate in two different modes: Basic Mode and Advanced Mode. In the first mode there is a restricted number of functions, while in Advanced Mode it is possible to have more available functions, for example it is possible to handle Waypoints. To select the Advanced Mode:

- 'MENU' + 'BASIC SETTINGS' + 'ENTER' + 'ADVANCED FUNCTIONS' + 'ENTER' + 'ON' + 'ENTER'

When Advanced Functions is Off the chart plotter operates in Basic Mode.

4.1 MORE ABOUT CREATING AND USING ROUTES

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

4.1.1 WAYPOINTS

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

4.1.1.1 Adding Waypoint

➤ Select Advanced Mode + 'ENTER' + 'WAYPOINT' + 'ENTER'
or ON MAGNUM PLUS:

- 'WAYPOINT' (if it is present)

The Waypoint appears on the cursor position. An info window is shown containing route number, Waypoint name, symbol and Latitude/Longitude.

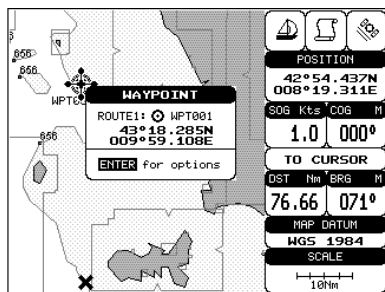


Fig. 4.1.1.1 - Waypoint placing

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 route, until you have reached the last Waypoint, your final destination. Segments connecting the Waypoints are shown, and the starting point is identified by a circle surrounding the first Waypoint of the route:

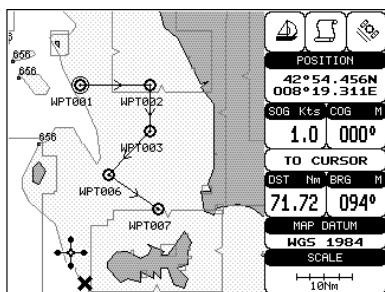


Fig. 4.1.1.2 - Route planning

4.1.1.3 Deleting Waypoint

- Select Advanced Mode + Adding Waypoint or Place cursor on Waypoint

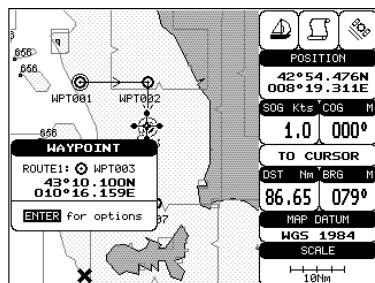


Fig. 4.1.1.3 - Deleting Waypoint (I)

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.

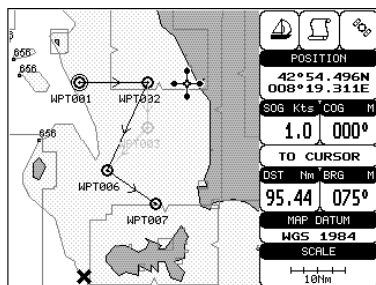


Fig. 4.1.1.3a - Deleting Waypoint (II)

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.

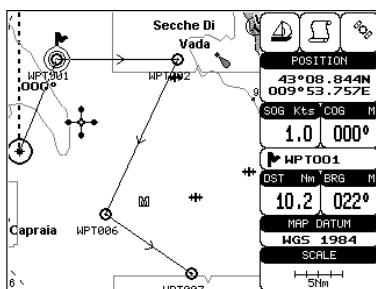


Fig. 4.1.1.5 - Selecting destination (Target)

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 Target is set the TTG value is displayed in the Graphic Data page:

- '<PAGE>' to select Graphic Data page

Note

If SOG value is less than 1.0 knots or the BRG is greater than 90 degrees, the TTG value is not displayed.

Deleting Target

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

If in Advanced Mode (see Par. 3.4.3) place cursor on Target icon, press 'ENTER', select "STOP NAV" and press 'ENTER': the symbol that identifies Target disappears from the screen, but the Waypoint 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 Destination point is present: select "STOP" and press 'ENTER', the symbol that identifies Target disappears from the screen, but the Waypoint 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 Waypoint to the new position, is shown:

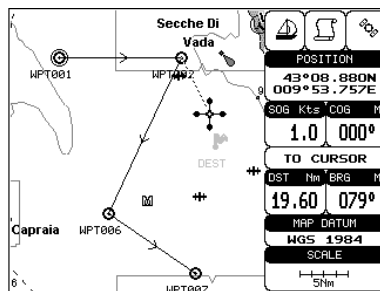


Fig. 4.1.1.6 - Moving Waypoint function (1)

To place the Waypoint in the new position, choose the new place and press 'ENTER' ('CLEAR' otherwise), Waypoint appears in the new position:

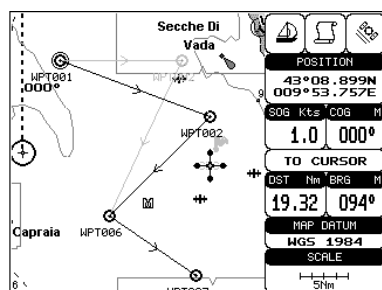


Fig. 4.1.1.6a - Moving Waypoint function (II)

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

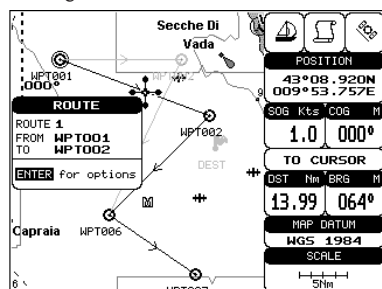


Fig. 4.1.1.7 - Placing Waypoint between two existing ones (I)

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:

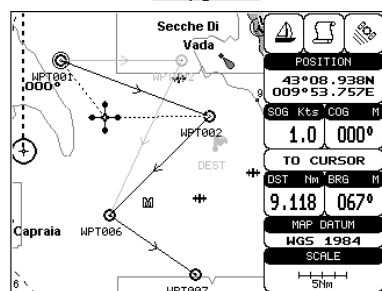


Fig. 4.1.1.7a - Placing Waypoint between two existing ones (II)

Once you have positioned the cursor at new location, press 'ENTER' (press 'CLEAR' to abort operation):

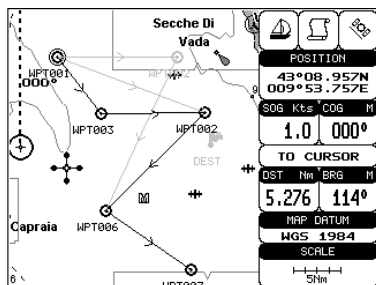


Fig. 4.1.1.7b - Placing Waypoint between two existing ones (III)

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 Waypoint.

A window will be shown with Name, Symbol, Color and Latitude/Longitude of the Waypoint, advising about what Waypoint data are modifiable.

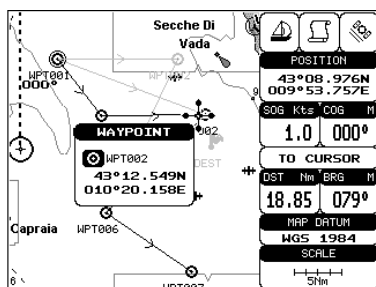


Fig. 4.1.1.8 - Edit Waypoint (I)

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:

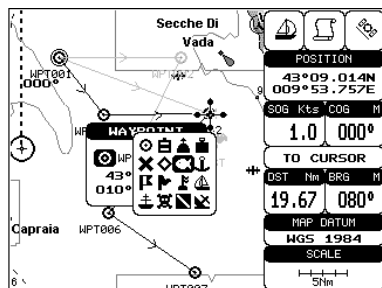


Fig. 4.1.1.8a - Edit Waypoint (II): Waypoint symbols

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'.

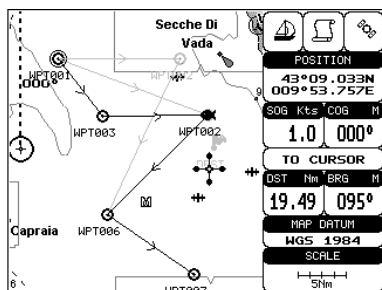


Fig. 4.1.1.8b - Edit Waypoint (III)

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 User Point you wish. If the page contains more than 12 User Points, the list continues in the next pages.

Finding User Points

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

The chart plotter exits from the User Points 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 User Point. 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 User Points 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 User Points 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 User Points.

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 route management. The chart plotter handles routes from 1-25, which are permanently stored in the memory as they are created. Only one route 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 route number list and the related route name. Use the cursor key to scroll the list up/down. Pressing 'ENTER' the selected route becomes the current route.

Note

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' + "DELETE ROUTE" + '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. 4.1.1.4 and 4.1.2.4).

4.1.2.3 Reversing route

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "REVERSE ROUTE" + 'ENTER'

Reversing a route 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 route color you want among the eight colors available. Press 'ENTER' to confirm. The route appears on the screen colored by the selected color. It is possible to select a different color for any route.

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 Waypoints shown, use the cursor key to select another page.

WAYPOINT	LATITUDE	LONGITUDE	BRG	LDST	TDST	TIME	FUEL
WPT001	43°13.510N	009°47.546E					
WPT002	43°13.510N	010°00.264E	097°	9.351	9.351	000:58	9.35
WPT003	43°05.835N	010°00.264E	180°	7.355	16.71	001:40	16.7

ROUTE 1 SPEED 10.0 Kts FUEL 10.0h REVERSE CLEAR

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 route number and press 'ENTER'. The route, shown by straight segments, is centered on the screen, with the cursor on the central Waypoint. See also Par. 4.1.2.1.

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.

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 route 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 route remains on the screen shaded until the screen is redrawn. To delete the route 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 route 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 Mark, as it is called, at your cursor position, while Event is created at your vessel position.

4.2.1 MARKS

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

4.2.1.1 Adding Mark

ONLY ON MAGNUM PLUS

- Select Advanced Mode + 'ENTER' + "MARK" + 'ENTER'

or:

- 'MARK' (if it is present)

ONLY ON MAGNUM PRO

- 'MARK'

The new Mark appears on your cursor position. An info window containing Mark name, symbol and Latitude/Longitude 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 Mark 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 Mark symbol. A straight line is shown on the screen connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

4.2.1.4 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 Mark with the new position is shown:

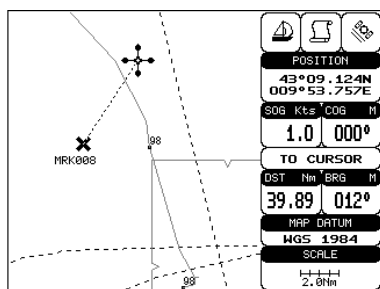


Fig. 4.2.1.4 - Moving Mark function (I)

Press 'ENTER':

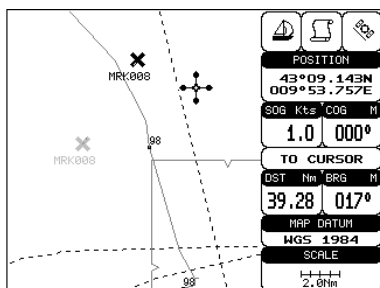


Fig. 4.2.1.4a - Moving Mark function (II)

The Mark is placed in the new position, the "old" Mark, 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 Mark.

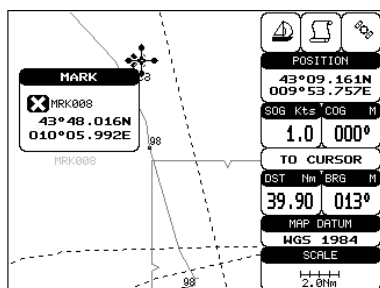


Fig. 4.2.1.5 - Edit Mark

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 number, directly on the ship's position. Move the cursor to exit from Navigate mode; place the cursor on an Event to access the following functions.

4.2.2.1 Adding Event

ONLY ON MAGNUM PLUS

- Select Advanced Mode + 'CLEAR', then 'ENTER' + "EVENT" + 'ENTER'

or:

- 'EVENT' (if it is present)

ONLY ON MAGNUM PRO

- 'CLEAR' + 'EVENT'

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

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.

4.2.2.6 Add to Route

- Place cursor on Event

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

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

EBL & VRM function enables to create a dotted line and a circle respectively with direction and radius determined by the user.

4.3.1 PLACING EBL & VRM

- Select Advanced Mode + 'ENTER' + "EBL & VRM" + 'ENTER'
- or ON **MAGNUM PLUS**:
- 'EBL-VRM' (if it is present)

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 EBL and the radius value for the VRM.

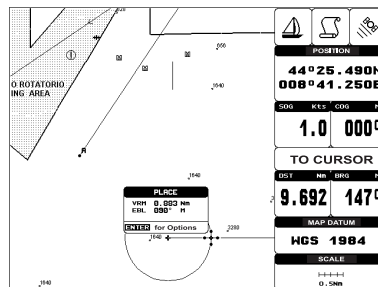


Fig. 4.3.1 - EBL & VRM

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 EBL and the radius value for the VRM.

4.4 MORE ABOUT A-B-C-D FUNCTION

The A-B-C-D function, explained in the previous paragraph 3.2, if Advanced Mode 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 ON **MAGNUM PRO** press 'ENTER' (on the screen the Create window appears), by using the cursor key select "A-B-C-D" and press 'ENTER'; ON **MAGNUM PLUS** press 'A-B-C-D'. The A point and an information window on A appear. Move the cursor, and ON **MAGNUM PRO** press 'ENTER', select "A-B-C-D" and press 'ENTER' again; ON **MAGNUM PLUS** press 'A-B-C-D', 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, following the above procedure the C and D points are placed (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 chart plotter 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' + "ACTIVE TRK" + 'ENTER'

Select the number of the active track. The default setting is 1.

4.5.2 ENABLING TRACK STORING

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TRACKING" + 'ENTER'

ONLY ON MAGNUM PRO

- 'TRACK'

To enable (On) or disable (Off) the track storing. It is not possible to use the track storing if you are not receiving a valid fix. The default 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 track. The default setting is Off.

4.5.4 SELECTING TRACK COLOR

Selects the desired color among the eight colors available for the selected track.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "COLOR" + 'ENTER'

4.5.5 DELETING TRACK

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

Deletes all track. 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 chart plotter can store a fix when the distance from its last stored position is greater than a defined distance; Time - the chart plotter

can store a fix after a defined time; Auto - the software decides when storing a position, on the basis of the straight or curved track. The default 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 track storing is Distance, you can store a fix when the distance from its last stored position is greater than a defined distance. Choose in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 Nm (the distance unit is selected by the user, see Cap. 5). The default 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 track storing is Time, the chart plotter can store a fix after a defined time. Choose among 1, 5, 10, 30 sec, 1, 5, 10 min. The default setting is 1 sec.

4.6 USER C-CARD MENU

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

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

Number of Selected Slot

File name

Number of Selected file

Information on stored User Points

Date and Time of file creation

Type of data contained in the file (Mark file, Waypoint file...)

SLOT	NAME	TYPE	DATE	TIME
FILE06	TRACKS	01/01/98	00:00:00	
FILE02	MARKS	01/01/98	00:00:00	
FILE07	TRACKS	01/01/98	00:00:00	
FILE04	MARKS	01/01/98	00:00:00	
FILE0710	TRACKS	01/01/98	00:00:00	
FILE06	TRACKS	01/01/98	00:00:00	
FILE07	TRACKS	01/01/98	00:00:00	
FILE08	MARKS	07/02/98	17:17:00	
FILE09	ROUTES	07/02/98	17:17:00	
FILE01	TRACKS	01/01/98	00:00:00	
FILE03	MARKS	01/01/98	00:00:00	
FILE05	MARKS	01/01/98	00:00:00	

SAVE LOAD DELETE FORMAT CHANGE

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 file name and the type of data to save:

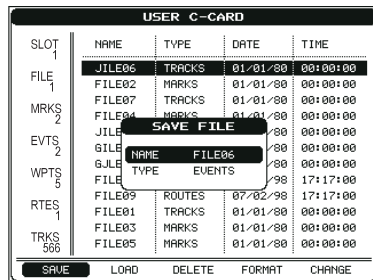


Fig. 4.6.1 - Save File function (I)

Select the file name. At first a default 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:

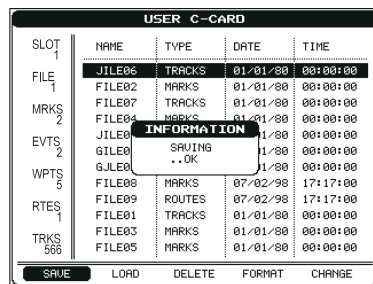


Fig. 4.6.1a - Save File function (II)

4.6.2 LOADING FILE

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

Before pressing 'ENTER', choose file 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 files to clean up your User C-CARD. Remember that this option permanently erases the file.

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 format of 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.

4.6.5 CHANGING USER C-CARD

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

Allows to change the User C-CARD.

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 MIRROR 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 data can 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 (Secondary Station) follow the procedure:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secondary 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 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




DESCRIPTION	SYMBOL
External Destination - RED Icon	
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.

External Route: ROUTE001			
Cruising Speed:	12.5 kn	Fuel Consumption Rate:	8.0 l/h
Total Route length:	71.19 Nm	Total Fuel Consumption:	45.5 l
Waypoints in Route:	4	Initial Fuel Load:	255 l
Remaining Waypoints:	4	Remaining Fuel:	209 l

	DST (nm)	TTG: (hh:mm)	ETA: (hh:mm)	Cons Lit
To Dest	11.93	00:57	11:54 AM	7.4
To Next Wpt	15.97	01:16	1:10 PM	12.3
To Last Wpt	83.12	05:41	6:54 PM	54.4

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

EXTERNAL Rte [ROUTE001]				Route Name, DESTINATION ID Wpt1/4	
	DST (nm)	TTG (hh:mm)	Cons Lit		
Dest	11.93	00:57	7.41	Distance, TTG and Consumption from Ship to Dest	
Last	83.12	05:41	54.4	Distance, TTG and Consumption from Ship to Last Wpt	
Route Length: 71.19 Nm					

Fig. 4.8.1.8 - Quick Info on Destination

Quick info on Single Destination

EXTERNAL DESTINATION WPT002	
DST 7.41 Nm	BRG 082° M

Fig. 4.8.1.8a - Quick Info on Single Destination

4.9 AIS MENU

AIS is an Automatic Identification System. It has been introduced to improve the safety of navigation by assisting in the efficient operation of ship-to ship, ship reporting and VTS applications. The system should enable operators to obtain information from the ship automatically, requiring a minimum of involvement of ship’s personnel, and should have a high level of availability. AIS transponders installed on IMO vessels use VHF frequencies to:

- Transmit details of their own vessel
- Receive details from other vessels or navigation aids within VHF range.

Information being transmitted from vessels over 300 tons that, due to recent worldwide legislation, are required to fit Class “A” AIS transponders.

Connecting to the chart plotter an AIS receiver (please contact your local dealer), vessels with AIS transponder within VHF range are displayed on screen giving the skipper or navigator a visual interpretation of the data of nearby vessels. This improves safety, and specifically for collision avoidance reasons.

4.9.1 AIS SYSTEM DEFINITIONS

- **Target**
It is a vessel equipped with AIS. Information about the targets is being received by AIS Receiver and displayed on the screen.
- **CPA**
Closest Point of Approach is the closest distance that will be achieved between your vessel and the tracked target, based on your vessel's speed and direction and the target's speed and direction.
- **CPA Limit**
This is the distance from your vessel that a target may reach before a target is deemed a threat.
- **CPA Alarm**
Occurs if CPA is less or equal to CPA Limit. This test is done for active targets only.
- **TCPA**
Time to closest Point of Approach is the time remaining until the CPA will occur.
- **TCPA Limit**
This is the time remaining before the CPA is reached.
- **TCPA Alarm**
Occurs if TCPA is less or equal to TCPA Limit. This test is done for active targets only and if CPA value is less or equal to CPA Limit.
- **Radio Call Sign**
International call sign assigned to vessel, often used on voice radio.
- **Name**
Name of ship, 20 characters.
- **MMSI**
Maritime Mobile Service Identity.
- **MMSI number**
A unique 9 digit number that is assigned to a DSC radio station. It primarily registers the boat information in the U.S. Coast Guard's national distress database for use in emergency situations.
- **Active Target**
Target located within the Activation Range. Active target is represented by oriented triangle with COG and Heading vectors. Rate of turn may also be displayed.
- **Dangerous Target**
Target detected by CPA or TCPA Alarm. Dangerous target is Active Target by definition. For better visibility Dangerous Target symbol is flashing.

- **Sleeping Target**
Target located outside the Activation Range. Sleeping target is represented by a small oriented triangle.
- **Lost Target**
When the AIS info is not received from that vessel for 3.5 minutes. The presentation will be a flashing black triangle with a cross through.
- **Activation Range**
Range around your boat where targets become active. AIS target become active within this range. Activation Range should be greater than CPA Limit by definition.

Note

A target is removed from the screen if data is not received for 10 minutes.

The maximum number of tracked targets is 100.

Depending on the scale the presentation of the targets change to remove clutter on the screen. This information is updated every 3 seconds to 6 minutes depending on speed and rate of turn, enabling the track of the vessels in range to be plotted.





TARGET STATUS	DESCRIPTION	SYMBOL
ACTIVE TARGET	Target located within the Activation Range.	
DANGEROUS TARGET	Target detected by CPA or TCPA Alarm. Dangerous Target is Active Target by definition.	
SLEEPING TARGET	Target located outside the Activation Range.	
LOST TARGET	Ais info is not received from that vessel for 3.5 minutes.	

Fig. 4.9.1 - AIS Symbols

4.9.2 AIS MENU

To configure the chart plotter to receive AIS data, follow the procedure:

- 'MENU' + 'AIS SETUP' + 'ENTER'

The AIS menu is shown on the screen, the items are described in the following paragraphs.

4.9.2.1 Display

- "MENU" + "AIS SETUP" + 'ENTER' + "DISPLAY" + 'ENTER'

Turns the display of AIS targets overlay on the cartography ON or OFF. The default setting is ON.

4.9.2.2 Activation range

- 'MENU' + 'AIS SETUP' + 'ENTER' + "ACTIVATION RANGE" + 'ENTER'

Defines the range from the fix within which the AIS Target becomes active. The values allowed are from 0.1 to 20 Nm. The default setting is 5 Nm.

4.9.2.3 CPA Alarm

- 'MENU' + "AIS SETUP" + 'ENTER' + "CPA ALARM" + 'ENTER'
Turns ON or OFF the alarm. The default setting is ON.

4.9.2.4 CPA Limit

- 'MENU' + "AIS SETUP" + 'ENTER' + "CPA LIMIT" + 'ENTER'
The values allowed are from 0.1 to 10 Nm. The default setting is 0.5 Nm.

4.9.2.5 TCPA Alarm

- 'MENU' + "AIS SETUP" + 'ENTER' + "TCPA ALARM" + 'ENTER'
Turns ON or OFF the alarm. The default setting is ON.

4.9.2.6 TCPA Limit

- 'MENU' + "AIS SETUP" + 'ENTER' + "TCPA LIMIT" + 'ENTER'
The values allowed are from 1 to 30 min. The default setting is 10 min.

4.9.3 TO SET THE CHART PLOTTER FOR RECEIVING AIS

Make sure that the AIS receiver is properly connected to the chart plotter. The chart plotter reads the AIS NMEA message VMD, type 1, 2, 3 and 5.

Select the used serial port and transmission speed by following the procedure:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT n INPUT" + 'ENTER' + "m" + 'ENTER'

Where: n = Port 1/Port 2/Port 3/Port 4/Port 5

m = NMEA-0183 4800-N81-N

NMEA-0183 38400-N81-N

according to the transmission speed of your AIS receiver.

4.9.4 QUICK INFO ON AIS TARGET

By placing the cursor over a AIS target icon, the following information is displayed:

- Vessel Name
- MMSI number
- Radio Call Sign
- SOG

- COG
- CPA and TCPA values

Note

The selected AIS target icon is surrounded by a square frame when user places the cursor over the icon.

4.10 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.

4.11 C-WEATHER SERVICE

C-Weather Service is an innovative meteorological forecasting system with the ability to visualize the weather forecast, overlaying it on cartography. The weather data is held on C-MAP's weather server, which can be accessed via a C-COM modem connected to the chart plotter or by using the C-MAP personal Suite (or the DPS - Dealer Programming System) saving the weather data on a User C-CARD. The weather data are overlaid on a map page as layers. The Weather format data available are:








Data Type	Display
WIND (Speed & Dir)	- 0 ➡
WAVE (Height & Dir)	- 1 ➡
TEMPERATURE (C°)	18°
HUMIDITY (%)	30
VISIBILITY (m)	20
WEATHER TYPE: Sun	
WEATHER TYPE: Rain	
WEATHER TYPE: Fog	
WEATHER TYPE: Snow	
WEATHER TYPE: Clouds	
WEATHER TYPE: Partly Cloudy	
WEATHER TYPE: Thunderstorm	

Fig. 4.11 - Weather data package

Note

Please check with Local C-MAP Office for the actual C-WEATHER coverage of your area.

4.11.1 C-WEATHER SERVICE MENU

To select the menu:

- 'MENU' + 'C-WEATHER' + 'ENTER'

or ON MAGNUM PLUS:

- 'C-WEATHER' (if it is present)

The C-Weather menu is shown on the screen, the items are described in the following paragraphs.

4.11.1.1 Download

- "MENU" + "C-WEATHER" + 'ENTER' + "DOWNLOAD" + 'ENTER'

Allows to connect the software to the C-MAP weather server and to download C-MAP weather data directly via C-COM.

Select Country to Call

Allows the selection of the country to call. The whole telephone number set is automatically updated after every download.

SIM PIN

Allows inserting of the PIN of the SIM.

Download Area

Allows the weather download: a squared grey area, where the weather data will be downloaded, is centered on cursor position. See the following picture.

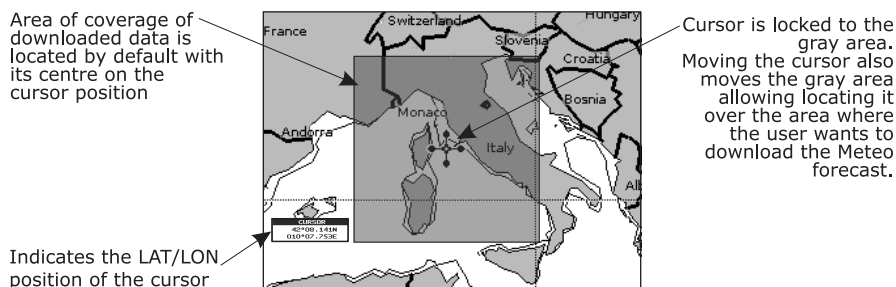


Fig. 4.11.1.1 - Download Area

Press 'ENTER' to activate the C-Weather Download: the whole data package (see the previous "Weather data package" table) are downloaded. 'CLEAR' al-

lows to interrupt the data download. At the end of the operation press 'CLEAR' to close the window.

4.11.1.2 Copy from USER C-CARD

- "MENU" + "C-WEATHER" + 'ENTER' + "COPY FROM USER C-CARD" + 'ENTER'
Allows the C-MAP WEATHER DATA loading from the User-CARD.

4.11.1.3 Weather Forecast

- "MENU" + "C-WEATHER" + 'ENTER' + "FORECAST" + 'ENTER'
Allows selecting the Layer of specific weather data to be displayed on the screen and to change date and time of the forecast preview.

The following functions are available:

- **Panning**
Default usage of the cursor key is the normal panning function.
- **Zoom In/Out**
Zoom in/out functions are allowed as usual by using 'ZOOM IN'/'ZOOM OUT'.
- **Set Date and Time**
'ENTER' to modify date and time values.
- **Layer Selection**
'PAGE' to cycle the weather layers.
- **Exit**
'CLEAR' to close the weather prediction page.

4.11.1.4 Real Time View

- "MENU" + "C-WEATHER" + 'ENTER' + "REAL TIME VIEW" + 'ENTER'
The following selections are available:

- **Real Time View On**
The data is shown (the area of the download) at the current date and time (received from the GPS)
- **Real Time View Off**
The Weather data is not displayed.

The layer displayed is the one selected into the previous menu item.

4.11.1.5 Type of Data

- "MENU" + "C-WEATHER" + 'ENTER' + "TYPE OF DATA" + 'ENTER'
Allows selecting the type of data, see the previous Fig. 4.11.1.1.

4.12 DSC

The DSC (*Digital Selective Calling*) is a method of establishing a VHF radio call; it is used to announce urgent maritime safety information broadcasts. This system allows mariners to instantly send Distress Call or/and Position Request to the other vessels equipped with a DSC transceiver within range of the transmission.

The Distress Call, that allows to receive a position of the vessel in distress, and the Position Request, a great feature for anyone wanting to know the location of another vessel - for example you buddy that is catching fish, or finding the location of a person you are cruising with, are performed by an external device, the DSC VHF radio. The chart plotter interfaced with a DSC VHF radio prompts the user to see the GPS position of the vessel in distress and also allows for easy navigation to the vessel.

The Distress Call and the Position Request icons that are displaying on the screen, are shown in the following table:



DESCRIPTION	SYMBOL
Position Request icon	
Distress Call icon	

Fig. 4.12 - Distress Call and Position Request icons

Note

The label can be the MMSI or the corresponding vessel's name. If in the DSC Directory the MMSI has been associated to its relative vessel name, the vessel's name is shown in the label instead of the MMSI.

4.12.1 DISTRESS CALL AND POSITION REQUEST

During a distress situation, a vessel that is equipped with a DSC VHF radio and connected to a GPS, has the capability to transmit a DSC Distress Call with GPS Position.

When the VHF radio receives a DSC Distress Call, the position information of the vessel in distress is transferred to the chart plotter. The chart plotter logs the Distress Call into the DSC Log and also marks the position of the vessel in distress on the Chart page. A pop-up screen advises the user that a Distress Call has been received. Within the pop-up screen it asks the user if he would like to view the call on the Chart page or exit the pop-up screen. By selecting the item "VIEW ON CHART" and press 'ENTER' two options are shown:

- GoTo Vessel

Activates the navigation to the Distress Call or Position Request icon. The chart plotter changes the map scale to allow showing the Distress Call (or Position Request) icon and the vessel's icon simultaneously on the screen. The chart plotter then verifies if there are obstructions (land or low water) between the two positions. If obstructions are found the chart plotter shows a pop-up screen saying that the navigation to the Distress Call cannot be set automatically and the user must define a route to avoid the obstacles.

- Stay on View

Exits the pop-up screen and remains on the selected map screen.

4.12.2 DSC MENU

To select the DSC menu:

➤ 'MENU' + "DSC" + 'ENTER'

The DSC menu is shown on the screen, the items are described in the following paragraphs.

4.12.2.1 DSC LOG

```
➤ "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER'
```

Selecting Log shows the Distress Call Log page or Position Request Log page (it depends which of the two was selected):

[illegible]

Fig. 4.12.2.1 - Exemple of DSC Log page

Press 'DEST' to set the navigation on the selected DSC point. Other available functions are:

Locate

➤ "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER' + "LOCATE" + 'ENTER'

Centers the map on the selected DSC position.

Delete

- ```
➤ "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER' + "DELETE" + 'ENTER'
```

Deletes selected DSC position.

## Delete All

- ```
➤ "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER' + "DELETE ALL" + 'ENTER'
```

Deletes all entries

Hide/Show

- ```
➤ "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER' + "HIDE/SHOW" + 'ENTER'
```

Allows hiding/showing the selected DSC position on the chart display.

### Position Request/Distress Call

- "MENU" + "DSC" + 'ENTER' + "LOG" + 'ENTER' + "POSITION REQUEST/  
DISTRESS CALL" + 'ENTER'

Shows Position Request/Distress Call page. When Position Request page is active this message changes to Distress Call.

#### 4.12.2.2 DSC DIRECTORY

- ```
➤ "MENU" + "DSC" + 'ENTER' + "DIRECTORY" + 'ENTER'
```

Selects the DSC Directory page. From this page the user can assign the Vessel Name, Contact Name and Phone number to any MMSI (*Maritime Mobile Service Identity*) so that, when a DSC Distress Call or Position Request is received, the name of the vessel is displayed in place of the MMSI number - a unique number that is assigned to a DSC radio station for use in emergency situations :

[illegible]

Fig. 4.12.2.2 - Example of DSC Directory page

Edit

- ```
➤ "MENU" + "DSC" + 'ENTER' + "DIRECTORY" + 'ENTER' + "EDIT" + 'ENTER'
```

Edit the fields of any existing entry in the Directory: Vessel Name, MMSI number, contact and phone number.

### **Add**

- "MENU" + "DSC" + 'ENTER' + "DIRECTORY" + 'ENTER' + "ADD" + 'ENTER'

Add a new entry to the Directory.

### **Delete**

- "MENU" + "DSC" + 'ENTER' + "DIRECTORY" + 'ENTER' + "DELETE" + 'ENTER'

Delete the selected entry.

### **Delete All**

- "MENU" + "DSC" + 'ENTER' + "DIRECTORY" + 'ENTER' + "DELETE ALL" + 'ENTER'

Deletes all entries in the page.

## **4.12.3 QUICK INFO ON DSC ICONS**

Placing the cursor on the Distress Call or Position Request icon, the following information is displayed:

- Vessel Name/MMSI Number
- Position
- Date and Time
- Distance and Bearing from current vessel's position

Pressing 'ENTER' it is possible, by selecting "DELETE" deletes the DSC icon from the DSC Log page, otherwise by selecting "DSC LOG" the DSC Log page is shown.

---

## **4.13 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'

ONLY ON **MAGNUM PLUS**

- 'ECHO' for 1 second

To select the Fish Finder pages:

- '<PAGE>' + cursr keys + 'ENTER' to select the desired Fish Finder page

ONLY ON **MAGNUM PLUS**

- 'ECHO'

For more information see the specific User Manual.

**Note**

*The Fish Finder display page is available only if the Fish Finder is connected and powered On.*

---

---

## **4.14 RADAR SETUP MENU**

---

The Radar consists of a scanner unit which illuminates targets with microwave energy and then collects the echoes from those targets. The scanner unit includes the Radar antenna, transmitter, receiver and necessary electronics. The scanner unit is connected to a chart plotter equipped with software capable of displaying the Radar functions.

- 'MENU' + "RADAR SETUP" + 'ENTER'

ONLY ON **MAGNUM PLUS**

- 'RADAR' for 1 second

To select the Radar pages:

- '<PAGE>' + cursr keys + 'ENTER' to select the desired Radar page

ONLY ON **MAGNUM PLUS**

- 'RADAR'

For more information see the specific User Manual.

**Note**

*The Radar display page is available only if the Radar is connected and powered On.*

---

# 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 Basic Mode it is possible to place and delete them (see Par. 3.2), in Advanced Mode 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 Simulation mode. The default setting is Off.  
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "ACTIVATE SIMULATION" + 'ENTER'

#### ► Active Track

Selects the number of the active Track. The default 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 chain. The default setting is 0.  
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER' + "ASF1/2" + 'ENTER'

#### ► Advanced Functions

When it is On the chart plotter works in Advanced Mode, otherwise when it is Off the chart plotter works in Basic Mode. The default setting is Off.  
'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER'

### ➤ Advanced Mode

The chart plotter 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'

### ➤ AIS

AIS is an Automatic Identification System. It has been introduced to improve the safety of navigation by assisting in the efficient operation of ship-to ship, ship reporting and VTS applications.

'MENU' + 'AIS' + '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 Width, 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 chart plotter 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 chart plotter 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 default 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 chart plotter can operate in two different modes: Basic Mode and Advanced Mode. In the first mode there is a restricted number of functions, and it is not possible to handle Waypoints, Marks, Events and A-B-C-D function.

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

### ➤ Basic Settings (menu)

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

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

### ➤ Beeper

Turns On/Off the sound after pressing a key ("beep"). The default 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

Buoys and Beacons 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 chart plotter - are colored according to their international code.

### ➤ Calibration

The variation table is used to match magnetic value readout on the chart plotter 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 chart plotter. This means that, for example, if the BRG to the next Waypoint readout in the chart plotter 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'

### ► Chart Lock

When Chart Lock is On, the available zoom scales are only the ones containing cartographic data. Instead when Chart Lock is Off, it is possible to zoom down into zoom scales not covered by cartographic data after the last available zoom scale covered by cartographic data. The DSI window, if present, will show "NO CHART", when an empty level is entered in the location of map expansion mode.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Lock" + 'ENTER'

### Warning

---

*When an empty level is entered, the message "No cartographic coverage" is shown on a window in a corner of the map display. The warning message is always displayed as long as the current zoom has no data coverage.*

---

### ► C-Link

Selects the Master unit (Primary Station) or the Slave unit (Secondary Station):

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secondary 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' + "ADVANCEDSETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "COMPUTECORRECTION" + '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 chart plotter has two different vocal modes, Navigation and Echosounder. According to what mode is selected the messages spoken from the chart plotter are different.

'MENU' + 'BASIC SETTINGS' + 'ENTER' + 'C-VOICE' + 'ENTER'

➤ **C-Weather Service**

C-Weather Service is an innovative meteorological forecasting system with the ability to visualize the weather forecast, overlaying it on cartography.

'MENU' + 'C-WEATHER' + 'ENTER'

➤ **Date (simulation)**

Sets the date of the simulated fix.

'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'SIMULATION' + 'ENTER' + 'DATE' + 'ENTER'

➤ **Date Format**

Sets your 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 (Off) 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 Areas

Depth Areas are the sea areas included in the user selectable range of minimum and maximum depth limits. The sea area that is **beyond** the selected range is filled by an uniform white color, the sea area that is **inside** the selected range is filled by ordinary multicolor shading. The Spot Soundings and Depth Contours are displayed on the range only.

## ■ 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>'

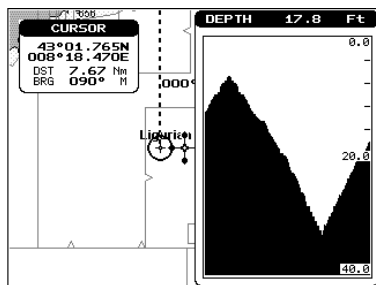


Fig. 5 - The Depth Graph 1/2 screen

### ➤ Depth Graph 1/3 screen

Selects the Depth Graph displaying on 1/3 of the screen.

'<PAGE>'

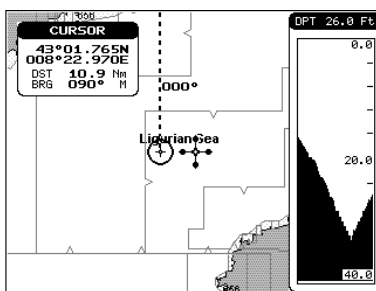


Fig. 5a - The Depth Graph 1/3 screen

### ➤ Depth Range Min

Sets a min reference depth value. The default 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 default 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 default setting is Off.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "DEPTH WINDOW" + 'ENTER'

### ■ DGPS = Differential GPS

Provides even greater positioning accuracy than standard GPS.

### ➤ 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'

### ➤ Diffusers

Turns Off (the object is not visible independently of the selected "Underwater Object Depth Value)/Icon (the object icon is visible without tags, in the range selected from "Underwater Object Depth Value" option)/Icon+Depth (the object icon and tag is visible, in the range selected from "Underwater Object Depth Value" option) the displaying of Obstructions. The default setting is Icon.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Diffusers" + '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 = statute 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.

### ➤ DSC

DSC (*Digital Selective Calling*) is a method of establishing a VHF radio call; it is used to announce urgent maritime safety information broadcasts. This system allows mariners to instantly send Distress Call or/and Position Request to the other vessels equipped with a DSC transceiver within range of the transmission.

'MENU' + "DSC" + 'ENTER'

### ➤ 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 chart plotter 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.

#### ➤ 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 Signal

Sets the External Output. Then choose your preferred setting among External Alarm (when activated, this pin goes to GND level. It is used to command an external buzzer), External Power (it is command switch for the Radar. It must be used in conjunction with the Radar Junction box device) and Off.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "EXTERNAL SIGNAL" + 'ENTER'

#### ➤ External Waypoint

The coordinates of a Waypoint, received from a GPS or a LORAN connected to the chart plotter, can be stored into the chart plotter, 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 chart plotter 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 chart plotter allows finding Nearest Services, Port By Name, Port By Distance, Tide Stations, Wrecks, Obstructions, Points Of Interest, Lakes By Name, Lakes Information.

'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 WIRING" + 'ENTER'

## ➤ GPS Data Page

The GPS Data Page shows in graphic mode GPS data.

'<PAGE>'

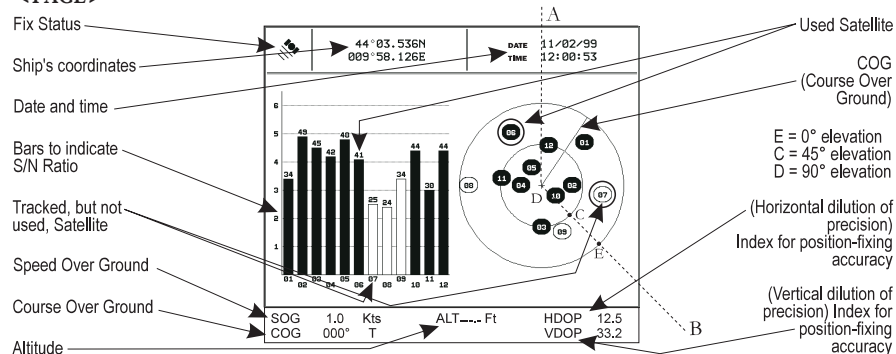


Fig. 5b - GPS Data Page

On the right side of the screen (see Fig. 5b), there is a polar representation of the azimuth and elevation of each satellite. 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.



## ■ HDG = Heading

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

## ■ HDOP = Horizontal Dilution Of Precision

It is the index for position-fixing accuracy. The smaller the HDOP value, the more accurately the position can be fixed.

### ➤ Home

From the chart display, if the GPS computing a valid fix position and the chart plotter is not in Home mode, pressing 'CLEAR' sets Home mode. When Home (called also Navigate) 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 although 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 chart plotter 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 Port1/2/3/4/5 Input, Port1/2/3/4/5 Output, Port1/2/3/4/5 Output Sentences. Displays also the Power I/O Cable Wiring, GPS Cable Wiring and AUX IN Cable Wiring. Selects also the C-Link, External Signal and Send/Receive Marks & Routes ports.

'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER'

### ➤ Lakes By Name

Shows the list of all lakes stored on the C-CARD in alphabetic order:

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

### ➤ Lakes Information

Searches for Nearest Lakes Information:

'MENU' + "FIND" + 'ENTER' + "LAKES INFORMATION" + 'ENTER'

### ➤ Land Elevation

It is possible to set On/Off the Land Elevation display. The default setting is On.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Land Elevation" + 'ENTER'

### ➤ Land Elevation Values

It is possible to set On/Off the Land Elevation Values display. The default setting is On.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Land 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 default 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**

Coordinate system using Latitude and Longitude coordinates to define a position on earth.

#### ➤ **Lat/Lon Grid**

Turns On/Off the displaying of the Latitude and Longitude Grids. The default setting is On.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

#### ➤ **Load (file)**

Loads file from User C-CARD.

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

#### ■ **LOG**

Speed of the vessel relative to the water.

#### ■ **Longitude**

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

#### ■ **Loran**

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

#### ■ **Magnetic Deviation**

The angle between the Magnetic North and the Compass North.

#### ■ **Magnetic Variation**

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

#### ➤ **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.

#### ➤ **Mixing Levels**

Turns On/Off. When the map coverage at the current zoom level does not fill the entire screen, the

chart plotter 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 chart plotter 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 ON MAGNUM PLUS 'MOB' and ON MAGNUM PRO 'EVENT' for 2 seconds to place MOB symbol at ship's coordinates. On the screen the MOB symbol and a window to advise that 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:

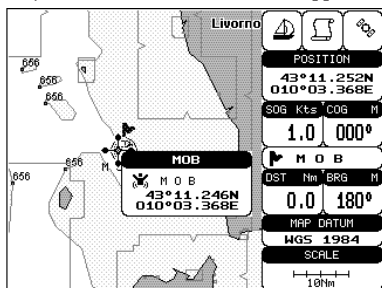


Fig. 5e - Man Overboard

## 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 ON MAGNUM PLUS 'MOB' and ON MAGNUM PRO '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.*

## ► Name Tags

Displays a tag for particular chart objects that either includes the Name of the chart object or the Depth of an Underwater chart object. Already available for Buoys, the feature has now been extended for Towers, Beacons and Port Marinas. The default setting is On.

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

## ■ Natural Features

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

### ➤ Nav Aids & Light Sectors

Turns On (Nav-Aids & Light Sectors are shown)/Off (Nav-Aids & Light Sectors are not shown)/No Sector (Nav-Aids are shown, Light Sectors are hidden) the displaying of the Nav Aids. The default setting is On.

'MENU' + 'MAP SETTINGS' + 'ENTER' + 'Other Map Configurations' + 'ENTER' + 'Nav Aids & Light Sectors' + 'ENTER'

### ➤ Nav-Aids Presentation

Allows to set the Nav Aids presentation as US or INTERNATIONAL. The default setting is INTERNATIONAL. When selected it affects Lights, Signals, Buoys & Beacons 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 Orientation Resolution, Coordinate System, Map Datum, Fix Datum and Roll Road Scale. Enable the Reset Total Trip and Reset Partial Trip functions.

'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'NAVIGATE' + 'ENTER'

### ➤ Navigate (mode)

In Operating mode (called also Home 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>'

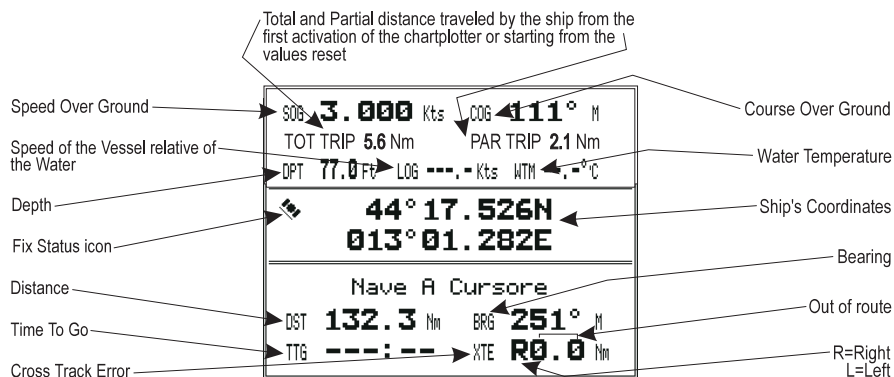


Fig. 5e - Navigation Data Page

### ➤ 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 manufacturers to be connected together and to share information.

### ➤ Obstructions

Finds the nearest Obstructions.

'MENU' + 'FIND' + 'ENTER' + 'OBSTRUCTIONS' + 'ENTER'

### ➤ Obstructions

Turns Off (the object is not visible independently of the selected "Underwater Object Depth Value"/Icon (the object icon is visible without tags, in the range selected from "Underwater Object Depth Value" option)/Icon+Depth (the object icon and tag is visible, in the range selected from "Underwater Object Depth Value" option) the displaying of Obstructions. The default setting is Icon.

'MENU' + 'MAP SETTINGS' + 'ENTER' + 'Other Map Configurations' + '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 settings lists: Marine Settings, Depth Settings, Land Settings, Underwater Objects 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 default setting is Port 1

'MENU' + 'BASIC SETTINGS' + 'ENTER' + 'C- VOICE' + 'ENTER' + 'OUTPUT PORT' + 'ENTER'

### ➤ Page Preview

When the "Page Preview" item is On, after pressing '<PAGE>' the Page Preview Menu is shown on the screen, with the icons of all available pages. By the cursor key it is possible to select the desired icon, when pressing 'ENTER' the page appears on the screen.

'MENU' + 'BASIC SETTINGS' + 'ENTER' + 'PAGE PREVIEW' + 'ENTER'

### ➤ Pair

Selects the pair of stations in the selected chain. The default 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 chart plotter 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 chart plotter displays maps and screen in darker colors. **Sunlight** is designed to enhance the visibility of the screen when the chart plotter 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, height, type of bridge etc.).

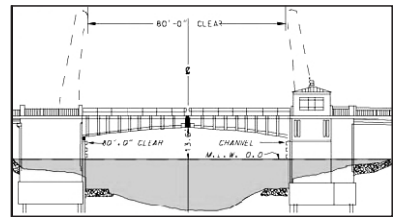


Fig.5f - Pictures and Diagrams

### ► Place Names

Turns On/Off the displaying of the Names. The default setting is On.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Place Names" + 'ENTER'

### ► POIs

Searches for Nearest POIs:

'MENU' + "FIND" + 'ENTER' + "POIs" + 'ENTER'

### ► POIs

Enables or disables the displaying of POIs (Points Of Information). The default 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 NMEA-0183 (4800 Baud Rate, Parity None, 8 Bits Number, 1 Stop Bit and Normal Polarity) you must select 4800-N81-N. The available choice is among (1200-N81-N), NMEA (4800-N81-N), NMEA (4800-N82-N), NMEA (9600-O81-N), NMEA (9600-N81-N), C-COM. The default 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 default 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 default 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 Distance

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

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

### ➤ Port By Name

Shows the list of all ports stored on the C-CARD in alphabetical order and allows to search ports by name to locate the ports on the map.

'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 default 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's position more stable and the track smoother. The default 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 travelled by the ship from the first activation of the chart plotter or starting from the values reset. The partial trip value is shown on the top of the Navigation Page.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET PARTIAL TRIP" + 'ENTER'

### ➤ Reset Total Trip

Resets the total distance travelled by the ship from the first activation of the chart plotter or starting from the values reset. The total trip value is shown on the top of the Navigation Page.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET TOTAL TRIP" + 'ENTER'

### ➤ Rocks

Turns Off (the object is not visible independently of the selected “Underwater Object Depth Value/Icon (the object icon is visible without tags, in the range selected from “Underwater Object Depth Value” option)/Icon + Depth (the object icon and tag is visible, in the range selected from “Underwater Object Depth Value” option) the displaying of Obstructions. The default setting is Icon.

'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 default setting is 0.2.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "ROLL ROAD SCALE" + 'ENTER'

### ➤ Route

Sequence of Waypoints connected by segments. Among the available routes, only one is the active route, which is shown by a straight line and arrows to indicate the direction. The first Waypoint of the active route is surrounded by a circle (see Par. 4.1.2).

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

### ➤ Route (menu)

Allows route 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 route.

'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 default setting is Steady.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "SHIP ICON MODE" + 'ENTER'

#### ■ Simulation

Used in order to use your chart plotter 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) Activate Simulation; it is possible to insert desired values for Speed, Head-



ing, Date and Time and selects the Cursor Control 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 speed of the ship, to optimize it. The default setting is Off.

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

➤ **Speed (Simulation)**

Sets the value for speed in the Simulation mode. The default setting is 01.0 Kts.

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

➤ **Speed (Unit)**

Sets the speed unit among Kts = knots, Mph = miles per hour e Kmh = kilometers per hour. The default setting is Kts.

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

➤ **Static Navigation**

Sets up a threshold for the speed. When the speed received from the positioning device is under that threshold, the chart plotter displays zero. The default value is 0.0 Kts.

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

➤ **Step Unit (Track)**

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

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

■ **STR = Steering**

The difference between COG and CTS. 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 chart plotter 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.

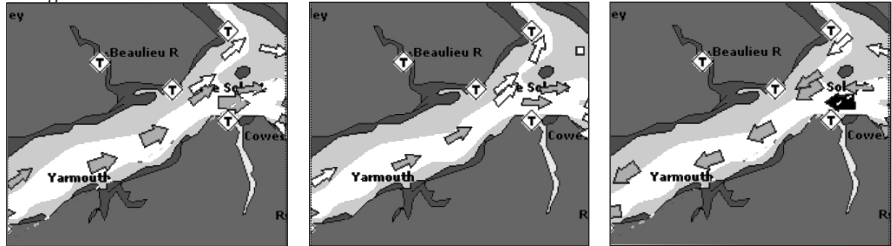


Fig. 5g - Tides & Currents

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 color of the arrow denotes the strength of the current as follows:

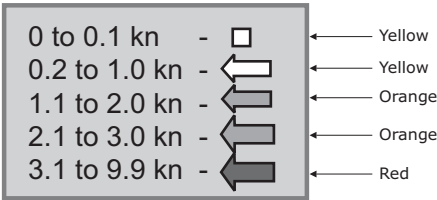


Fig. 5b - Tides & Currents table

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 your preferred time between 12 hour and 24 hour. The default 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 UTC or Local Time. The default setting is UTC.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "TIME REFERENCE" + 'ENTER'

➤ **Time (Track)**

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

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

➤ **Track (menu)**

As long as the chart plotter is connected to a positioning instrument, it stores all points in its memory. The chart plotter 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'

Visible 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 track storing. It is not possible to use the track storing if you are not receiving a valid fix. The default 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 default setting is On.

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

■ **TRN = Turning**

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

■ **TTG = Time To Go**

The estimated time needed to reach your destination, based on your current speed and the distance to destination.

### ➤ Underwater Objects Limit

Selects the max depth value to display Underwater Objects. If value is set to 0 Mt, the Underwater Objects are not shown on the charts. Menu options are grayed out. If value is more than 0 Mt (i.e. 10 Mt), in the Range from 0 Mt to the selected value the Underwater Objects are displayed according to their setting below.

'MENU' + "MAP SETTINGS" + 'ENTER' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "Underwater Object Limit" + 'ENTER'

### ➤ User C-CARD

The chart plotter uses the optional user C-CARD to save user data: it is a convenient medium to store and retrieve your information. Before a new user C-CARD can be used, you must format it. The formatting function initializes the user C-CARD and prepares it for storing information. Remember that if an user C-CARD is not blank, formatting it will destroy any data already present on the user C-CARD (the user C-CARDS must be formatted in order to be reused, this operation means all old data memorized on the user C-CARD will be lost). Data stored on user C-CARD are grouped in files.

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 Mark, Waypoint and Event).

### ➤ User Points

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

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

### ➤ User Points (List)

Displays the User Points 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 disable (Off) the displaying of track. The default setting is On.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "VISIBLE" + 'ENTER'

### ➤ VRM = Variable Range Marker

Circle with radius 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>'

|              |       |       |            |
|--------------|-------|-------|------------|
| VELOC:       | Kts   | PRUR: | M          |
| 1.4          |       | 003°  |            |
| TWS:         | Kts   | TWR:  | M          |
| 4.7          |       | 030°  |            |
| RWS:         | Kts   | RWR:  | M          |
| 5.6          |       | 026°  |            |
| DESTINAZIONE |       |       |            |
| R: DEST      |       |       |            |
| DST          | 1.158 | Nm    | BRG 003° M |
| XTE          | R 0.0 | Nm    | TTG --:--  |

*Fig. 5i - The Wind Data page*

### ➤ Wind Speed (unit)

Selects the Wind Speed unit among Kts = Knots, m/s and Km/h = kilometers per hour. The default setting is Kts.

'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "WIND SPEED" + 'ENTER'

### ➤ Wrecks

Turns Off (the object is not visible independently of the selected "Underwater Object Depth Value"/Icon (the object icon is visible without tags, in the range selected from "Underwater Object Depth Value" option)/Icon+Depth (the object icon and tag is visible, in the range selected from "Underwater Object Depth Value" option) the displaying of Obstructions. The default setting is Icon.

'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Wrecks" + '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 Plotter Mode 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 zoom-in, but in the reverse, showing a wider but less detailed view. Compresses map scale; scale value is refreshed. When Plotter Mode 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 default setting is Off.

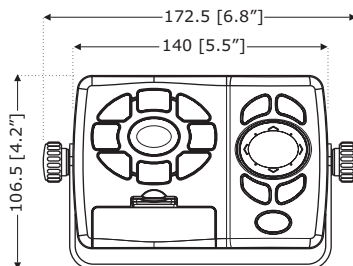
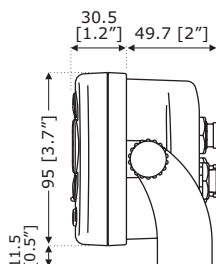
'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "XTE ALARM" + 'ENTER'

# 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]) :



## 6.2 INSTALLATION

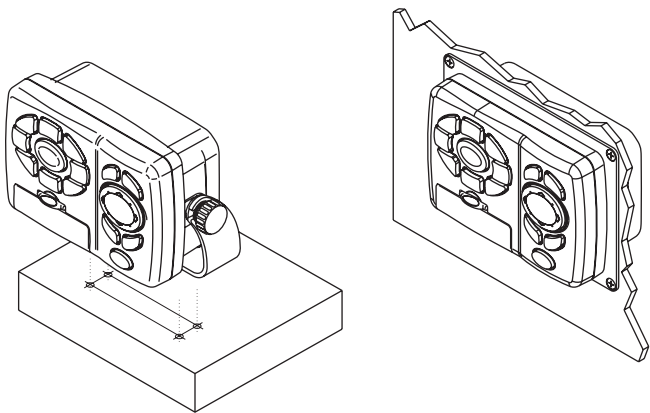
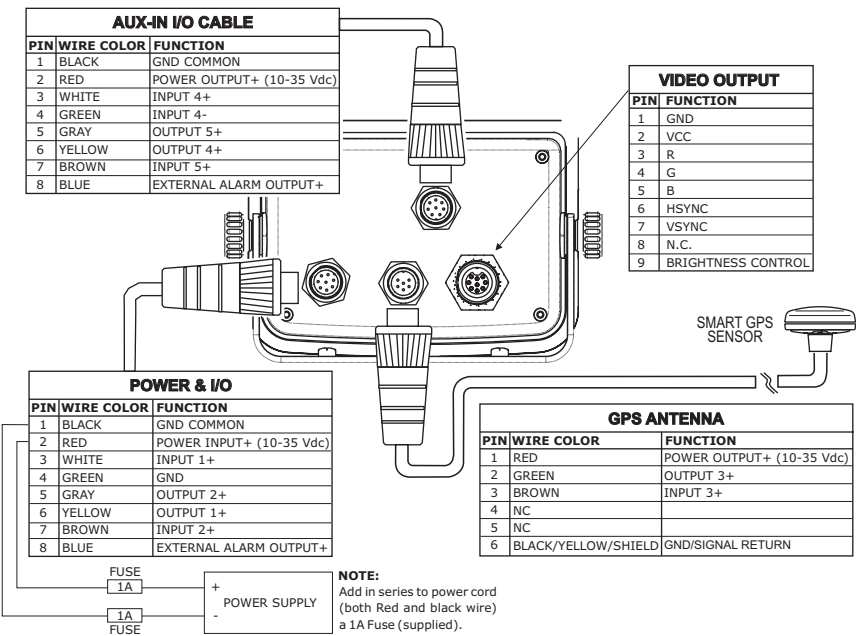


Fig. 6.2 - Installation types

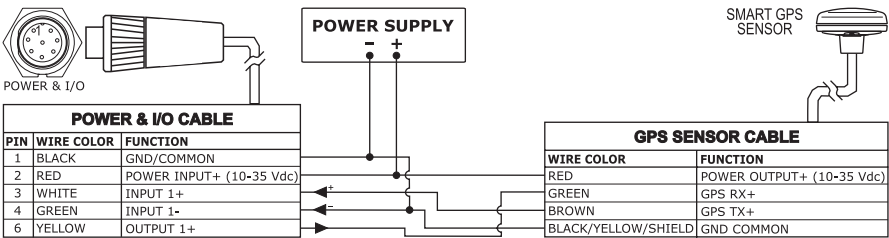
## 6.3 EXTERNAL WIRING



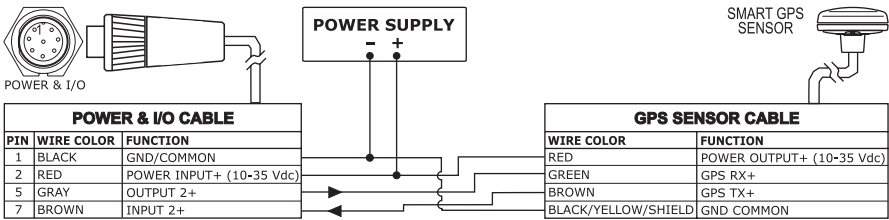


# 6.4 TYPICAL CONNECTIONS - "POWER & I/O" Connector

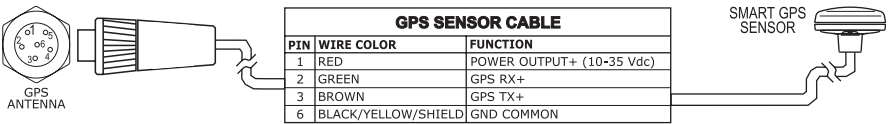
## 6.4.1 GPS CONNECTIONS



GPS on Port 1

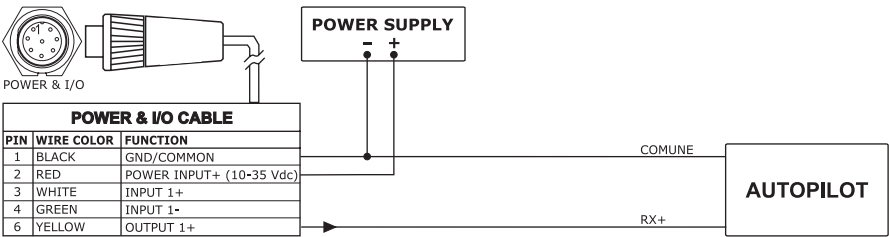


GPS on Port 2

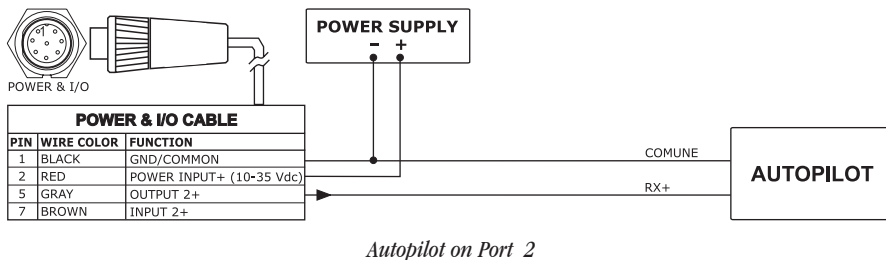


GPS on Port 3

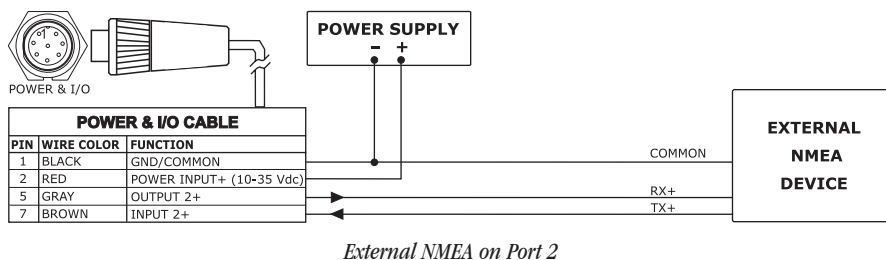
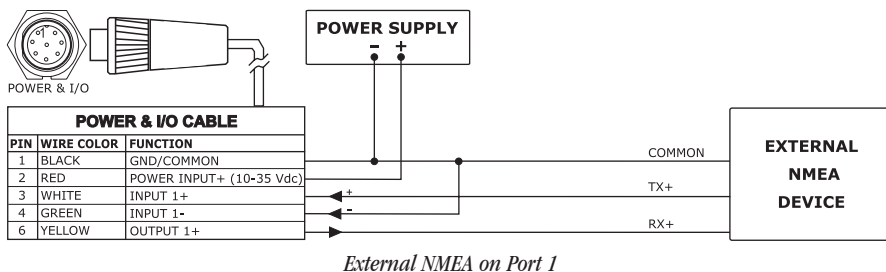
## 6.4.2 AUTOPILOT CONNECTIONS



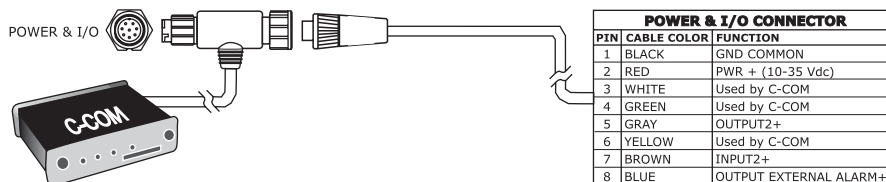
Autopilot on Port 1



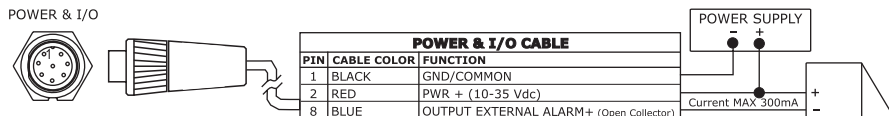
## 6.4.3 EXTERNAL NMEA CONNECTIONS



## 6.4.4 C-COM CONNECTION



## 6.4.5 EXTERNAL ALARM CONNECTION



## 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 chart plotter, the extended auto-test should help determine the problem. Make sure the chart plotter is turned Off. While pressing and holding any other key, turn the chart plotter On. A new menu will appear on the display:

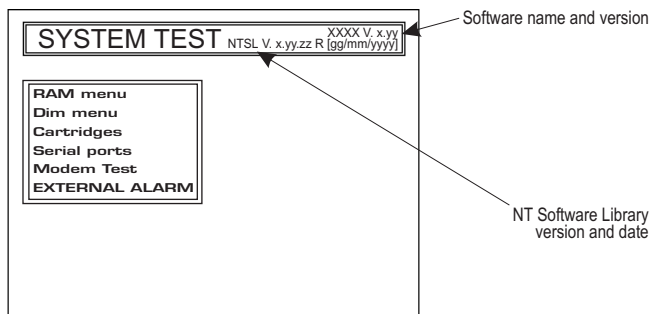


Fig. 6.5 - System Test

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 chart plotter.

### 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 default setting restored.

#### ■ RAM Test

To verify the integrity of the RAM. If on the screen the message "ERROR" appears, the RAM is physically damaged.

## ■ RAM Clear

To clear internal memory. If the chart plotter exhibits unusual behavior, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM.

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

## 6.5.2 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 User C-CARD inserted in the slot, the message "USER C-CARD" is shown.

## ■ C-CARD Connector

Indicates if there is a malfunction in the connector. It is used only in production.

### 6.5.4 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. Default settings are: Port = Port2, Baud Rate = 4800, Data Bits = 8, Parity = none, Stop Bits = 1.

#### ■ Input Data Display

To allow the chart plotter 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 transmitted.

### 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 CHART PLOTTER 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 CHART PLOTTER DOES NOT GET A VALID FIX**

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

### **THE CHART PLOTTER DOES NOT TURN OFF**

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

### **THE CHART PLOTTER 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

---

## A

|                                |                 |
|--------------------------------|-----------------|
| A-B-C-D .....                  | 29, 64, 87      |
| About Page .....               | 12, 87          |
| Accessories .....              | 113             |
| Active Track .....             | 65, 87, 109     |
| Add to Route .....             | 61, 63          |
| Adding Event .....             | 61              |
| Adding Mark .....              | 59              |
| Adding Waypoint .....          | 49              |
| Additional Second Factor ..... | 87              |
| Advanced Functions .....       | 49, 87          |
| Advanced Mode .....            | 49, 64, 88      |
| Advanced Settings (menu) ..... | 88              |
| AIS .....                      | 88, 94          |
| Alarm .....                    | 21, 88, 95, 117 |
| Alarms (menu) .....            | 88, 94          |
| Alternate Solution .....       | 88              |
| Altitude (Unit) .....          | 88              |
| Anchor Alarm .....             | 88              |
| Apply settings .....           | 120             |
| Arrival Alarm .....            | 88, 95          |
| Arrival Time .....             | 88              |
| ASF .....                      | 87              |
| Assistance .....               | 12              |
| Attention Areas .....          | 38, 88          |
| Auto-test .....                | 117             |
| Automatic Info .....           | 40, 89          |
| Autopilot .....                | 19, 115         |
| Autopilot Connections .....    | 19, 115         |
| Autopilot Interface .....      | 113             |
| AUX IN I/O Cable Wiring .....  | 89              |
| Azimuth .....                  | 28, 89, 96      |

## B

|                      |         |
|----------------------|---------|
| Background ROM ..... | 118     |
| Backlight .....      | 118     |
| Basic Mode .....     | 49, 89  |
| Basic Settings ..... | 89, 106 |
| Beacon .....         | 89      |
| Bearing .....        | 89      |
| Beep .....           | 12, 18  |
| Beeper .....         | 89      |
| BRG .....            | 89      |
| Buoy .....           | 89      |
| Buoys ID .....       | 37      |

|           |    |
|-----------|----|
| BWC ..... | 95 |
|-----------|----|

## C

|                             |                      |
|-----------------------------|----------------------|
| C-CARD .....                | 22, 90, 95, 110, 118 |
| C-CARD Connector .....      | 118                  |
| C-CARD Test .....           | 118                  |
| C-COM .....                 | 21, 116              |
| C-COM Connections .....     | 21, 116              |
| C-Link .....                | 69, 90               |
| C-Staff .....               | 79                   |
| C-Voice .....               | 92                   |
| C-Weather Service .....     | 92                   |
| Cartography .....           | 113                  |
| Cartridge .....             | 22, 110, 118         |
| Caution Notice .....        | 18                   |
| Chain .....                 | 87, 90, 102          |
| Change (User C-CARD) .....  | 69, 90               |
| Change Parameters .....     | 119                  |
| Changing Speed & Fuel ..... | 58                   |
| chart .....                 | 26                   |
| Chart Boundaries .....      | 39, 90               |
| Chart Lock .....            | 90                   |
| Chartplotter .....          | 12                   |
| Clear (Track) .....         | 90                   |
| Clear RAM .....             | 118                  |
| COG .....                   | 28, 90, 101          |
| Color .....                 | 57, 66, 90           |
| Compass (menu) .....        | 90                   |
| Compute Correction .....    | 91                   |
| Connections .....           | 18                   |
| Connector .....             | 118                  |
| Coordinate System .....     | 91, 111              |
| Correction .....            | 91, 95               |
| Correction Offset .....     | 91                   |
| Course Line .....           | 91                   |
| Course Over Ground .....    | 90                   |
| Course To Steer .....       | 91                   |
| Course Vector .....         | 91                   |
| Creating a route .....      | 50                   |
| Cross Track error .....     | 91                   |
| CTS .....                   | 91                   |
| Cultural Features .....     | 38                   |
| Current (Route) .....       | 91                   |
| Currents Prediction .....   | 36                   |
| Cursor Control .....        | 91                   |



|                                 |                 |
|---------------------------------|-----------------|
| Cursor Key .....                | 12, 16          |
| Cursor Position .....           | 99              |
| <b>D</b>                        |                 |
| Data Cartridge .....            | 118             |
| Data Storage Cartridge .....    | 22              |
| Data to Save .....              | 68              |
| Date .....                      | 45              |
| Date (simulation) .....         | 92              |
| Date Format .....               | 92              |
| Datum .....                     | 92, 95          |
| Dead Reckoning .....            | 92              |
| Default .....                   | 92              |
| Delete (file) .....             | 92              |
| Delete (route) .....            | 92              |
| Delete (Track) .....            | 92              |
| Delete Selection .....          | 92              |
| Deleting A-B-C-D .....          | 30, 64          |
| Deleting active route .....     | 57              |
| Deleting EBL & VRM .....        | 64              |
| Deleting Event .....            | 62              |
| Deleting File .....             | 69              |
| Deleting Mark .....             | 59              |
| Deleting route .....            | 51, 57, 58, 105 |
| Deleting Selected Track .....   | 66              |
| Deleting Target .....           | 31, 52, 107     |
| Deleting Track .....            | 66, 109         |
| Deleting User Point .....       | 55              |
| Deleting Waypoint .....         | 40, 50, 111     |
| Depth .....                     | 88, 92          |
| Depth Window .....              | 94              |
| Depth (Unit) .....              | 92              |
| Depth Area Range .....          | 93              |
| Depth Areas .....               | 93              |
| Depth Contours .....            | 93              |
| Depth Graph .....               | 27, 29, 93      |
| Depth Range .....               | 93              |
| Depth Range Max .....           | 93              |
| Depth Range Min .....           | 93              |
| Depth Unit .....                | 92              |
| Destination .....               | 51, 96          |
| Deviation .....                 | 99              |
| DGPS .....                      | 19, 94          |
| Diagrams .....                  | 103             |
| Differential GPS .....          | 94              |
| Diffusers .....                 | 39              |
| Digital Selective Calling ..... | 82              |
| DIM Menu .....                  | 118             |
| Dimensions .....                | 113             |
| Display .....                   | 101, 102        |
| Display Mode .....              | 32, 39, 94      |
| Display Resolution .....        | 113, 119        |

|                                      |        |
|--------------------------------------|--------|
| Display Settings .....               | 119    |
| Displaying Track .....               | 66     |
| Distance .....                       | 67     |
| Distance (Track) .....               | 94     |
| Distance (Unit) .....                | 94     |
| Distance and Bearing to Target ..... | 51     |
| Distance To Go .....                 | 94     |
| Distress Call .....                  | 82, 94 |
| DSC .....                            | 82, 94 |
| DSC Directory .....                  | 84     |
| DSC menu .....                       | 83     |
| DTG .....                            | 94     |
| Dynamic Nav Aids .....               | 34, 94 |

## E

|                                 |            |
|---------------------------------|------------|
| EBL .....                       | 63, 94     |
| EBL & VRM Placing .....         | 63         |
| Echosounder .....               | 94         |
| Editing EBL & VRM .....         | 64         |
| Editing Event .....             | 62         |
| Editing Mark .....              | 60         |
| Editing Waypoint .....          | 54, 111    |
| Electronic Bearing Line .....   | 94         |
| Event .....                     | 59, 61, 95 |
| Exit from Navigate .....        | 98, 101    |
| Expanded Info .....             | 43         |
| Extended Auto-Test .....        | 117        |
| External Signal .....           | 95         |
| External Alarm .....            | 95, 119    |
| External Alarm Connection ..... | 21, 117    |
| External Connections .....      | 19         |
| External NMEA Connections ..... | 20, 116    |
| External Waypoint .....         | 95         |
| External Wiring .....           | 114        |

## F

|                             |         |
|-----------------------------|---------|
| Features .....              | 32      |
| File .....                  | 95      |
| Filter .....                | 104     |
| Filter Dump .....           | 95      |
| Find .....                  | 95      |
| Find Function .....         | 45      |
| Finding Nearest Ports ..... | 45      |
| Finding Obstructions .....  | 46      |
| Finding Port Services ..... | 13, 45  |
| Finding Tide Stations ..... | 46      |
| Finding User Points .....   | 55      |
| Finding Waypoint .....      | 55, 111 |
| Finding Wrecks .....        | 46      |
| Fish Finder .....           | 85      |
| Fix (menu) .....            | 95      |
| Fix Correction .....        | 95      |

|                          |            |
|--------------------------|------------|
| Fix Datum .....          | 95         |
| Fix Position .....       | 91         |
| Fonts & Symbols .....    | 34, 94, 96 |
| Formatting .....         | 69, 96     |
| Fuel .....               | 58, 106    |
| Full Info .....          | 42         |
| Full Info on Lakes ..... | 42         |
| Functions .....          | 16         |

## G

|                                 |                     |
|---------------------------------|---------------------|
| Getting Port Info .....         | 43                  |
| Getting Tide Info .....         | 44                  |
| Global Positioning System ..... | 96                  |
| Goto .....                      | 59, 62, 96          |
| GPH00 .....                     | 19                  |
| GPS .....                       | 19, 28, 94, 96, 115 |
| GPS Cable Wiring .....          | 96                  |
| GPS Connections .....           | 19, 115             |
| GPS Data Page .....             | 28, 96              |
| Graphic Data Page .....         | 29, 31, 96          |
| GRI .....                       | 90                  |
| Grounding Alarm .....           | 97                  |
| Grounding Alarm Range .....     | 97                  |
| Grounding Alarm Width .....     | 97                  |

## H

|                                        |         |
|----------------------------------------|---------|
| HDG .....                              | 98      |
| HDOP .....                             | 98      |
| Heading .....                          | 98      |
| Heading (Simulation) .....             | 97      |
| Home .....                             | 98, 101 |
| Horizontal Dilution Of Precision ..... | 98      |
| Horizontal Size .....                  | 120     |

## I

|                               |              |
|-------------------------------|--------------|
| Info .....                    | 43, 98       |
| Info Function .....           | 43           |
| Info on Lakes .....           | 41           |
| Info Tree .....               | 43           |
| information on Event .....    | 62           |
| information on Mark .....     | 61           |
| information on route .....    | 57           |
| information on Waypoint ..... | 55           |
| Input Data Display .....      | 119          |
| Input/Output (menu) .....     | 98, 103, 104 |
| Inserting A-B-C-D .....       | 30, 64       |
| Inserting C-CARD .....        | 22           |
| Inserting MOB .....           | 100          |
| Inserting Target .....        | 107          |
| Inserting Waypoint .....      | 53, 111      |
| Interface .....               | 113          |
| Inverting Route .....         | 106          |

## K

|                |     |
|----------------|-----|
| Key .....      | 12  |
| Keyboard ..... | 113 |

## L

|                             |             |
|-----------------------------|-------------|
| Lakes By Name .....         | 46, 98      |
| Lakes Info .....            | 98          |
| Lakes Information .....     | 46, 98      |
| Land Elevation .....        | 98          |
| Land Elevation Values ..... | 38, 98      |
| Landmarks .....             | 38, 98      |
| Language .....              | 18, 98, 102 |
| Lat/Lon Grid .....          | 39, 99      |
| Latitude .....              | 99          |
| Light Sectors .....         | 37, 101     |
| List User Points .....      | 62          |
| List User Points Page ..... | 55, 61      |
| Load (File) .....           | 68          |
| Local Time .....            | 109         |
| LOG .....                   | 99          |
| Log page .....              | 83          |
| Longitude .....             | 99          |
| Loran .....                 | 90, 99, 107 |

## M

|                          |                |
|--------------------------|----------------|
| Magnetic Deviation ..... | 99             |
| Magnetic Variation ..... | 99             |
| Man OverBoard .....      | 16, 100        |
| Map .....                | 94, 99         |
| Map Datum .....          | 99             |
| Map Menu .....           | 32             |
| Map Orientation .....    | 33, 99         |
| Map Presentation .....   | 39             |
| Map Setting (menu) ..... | 94, 99         |
| Mark .....               | 59, 61, 62, 99 |
| MAX .....                | 32             |
| Memory .....             | 113            |
| Mixing Levels .....      | 34, 99         |
| MOB .....                | 100            |
| Modem Test .....         | 119            |
| Moving A-B-C-D .....     | 65             |
| Moving Mark .....        | 59             |
| Moving Waypoint .....    | 52, 111        |

## N

|                                |              |
|--------------------------------|--------------|
| Name Tags .....                | 100          |
| Names .....                    | 37, 101, 103 |
| Natural Features .....         | 101          |
| Nav-Aids .....                 | 34, 37, 101  |
| Nav-Aids & Light Sectors ..... | 38, 101      |
| Nav-Aids Presentation .....    | 101          |
| Navigate .....                 | 61, 101      |

|                             |             |
|-----------------------------|-------------|
| Navigate (menu) .....       | 101         |
| Navigate (mode) .....       | 101         |
| Navigating on A-B-C-D ..... | 30, 65      |
| Navigation .....            | 101, 102    |
| Navigation Data Page .....  | 28, 101     |
| Nearest Services .....      | 102, 108    |
| Nearest Tide Stations ..... | 108         |
| NMEA .....                  | 19, 20, 116 |
| NMEA Output Format .....    | 89, 104     |
| NMEA WPL & RTE .....        | 58          |
| NMEA-0183 .....             | 95, 102     |

## O

|                                        |         |
|----------------------------------------|---------|
| Obstructions 39, 46, 94, 102, 105, 111 |         |
| Orientation Resolution .....           | 102     |
| OSGB .....                             | 91, 102 |
| Other Map Configurations .....         | 36, 102 |
| Outdoor Recreational Area .....        | 47      |
| Output Port .....                      | 102     |

## P

|                                       |             |
|---------------------------------------|-------------|
| Page Preview .....                    | 102         |
| Pair .....                            | 102         |
| Palette .....                         | 33, 102     |
| Partial Trip .....                    | 104         |
| Perspective View .....                | 32, 103     |
| Pictures .....                        | 103         |
| Place Names .....                     | 37, 103     |
| Placing EBL & VRM .....               | 63          |
| POIs .....                            | 38, 103     |
| Port 1/2/3/4/5 Input .....            | 103         |
| Port 1/2/3/4/5 Output .....           | 104         |
| Port 1/2/3/4/5 Output Sentences ..... | 104         |
| Port By Distance .....                | 104         |
| Port By Name .....                    | 104         |
| Port Info .....                       | 43          |
| Port Services .....                   | 45, 104     |
| Ports & Services .....                | 38, 43, 104 |
| Ports By Distance .....               | 46          |
| Ports By Name .....                   | 45          |
| Position Filter .....                 | 95, 104     |
| Position Request .....                | 82, 94      |
| Positioning Instrument .....          | 18          |
| Power Consumption .....               | 113         |
| Power I/O Cable Wiring .....          | 104         |
| Power On .....                        | 18          |

## Q

|                           |        |
|---------------------------|--------|
| Quick Info .....          | 41, 85 |
| Quick Info on Lakes ..... | 41     |

## R

|             |    |
|-------------|----|
| Radar ..... | 86 |
|-------------|----|

|                           |                       |
|---------------------------|-----------------------|
| RAM Clear .....           | 118                   |
| RAM Menu .....            | 117                   |
| RAM Test .....            | 117                   |
| Receive Route .....       | 104, 106              |
| Receive User Points ..... | 104, 106              |
| Receiver .....            | 19                    |
| Removing C-CARD .....     | 23                    |
| Reset Partial Trip .....  | 104                   |
| Reset Total Trip .....    | 105                   |
| Resolution .....          | 113, 119              |
| Reversing Route .....     | 57, 58, 105           |
| Rivers & Lakes .....      | 38                    |
| Roads .....               | 38, 98, 103, 105, 110 |
| Rocks .....               | 39, 105, 111          |
| Rolling Road .....        | 29                    |
| Rolling Road Scale ....   | 98, 103, 105, 110     |
| ROM .....                 | 118                   |
| Route .....               | 49, 51, 56, 105, 111  |
| Route (menu) .....        | 105                   |
| Route Name .....          | 58, 105               |
| Route Report .....        | 57, 105               |
| Route Reverse .....       | 106                   |

## S

|                                |              |
|--------------------------------|--------------|
| Safety Status Bar .....        | 35, 106      |
| Save (file) .....              | 67, 106      |
| Screen Amplifier .....         | 106          |
| Screen Display .....           | 25           |
| Screen Size Unit .....         | 120          |
| Seabed Type .....              | 38, 106      |
| Selecting Route .....          | 56, 105      |
| Send Route .....               | 106          |
| Send User Points .....         | 104          |
| Send/Receive Marks & Routes    |              |
| 90, 104, 106                   |              |
| Send/Receive Route .....       | 58           |
| Serial Ports .....             | 119          |
| Setup (menu) .....             | 106          |
| Ship Icon Mode .....           | 106          |
| Simulation .....               | 97, 106      |
| Simulation (mode) .....        | 87, 106      |
| slot .....                     | 22           |
| Smart DGPS WAAS Receiver ..... | 19           |
| SNR .....                      | 107          |
| SOG .....                      | 28, 101, 107 |
| Speed .....                    | 58, 99, 107  |
| Speed & Fuel .....             | 58           |
| Speed (Simulation) .....       | 107          |
| Speed (Unit) .....             | 107          |
| Speed Filter .....             | 107          |
| Speed Over Ground .....        | 107          |
| Speed Simulation .....         | 107          |
| Speed Unit .....               | 107          |

|                           |     |
|---------------------------|-----|
| Static Navigation .....   | 107 |
| Steering .....            | 107 |
| Step Unit (Track) .....   | 107 |
| Step unit selection ..... | 109 |
| STR .....                 | 107 |
| Structure .....           | 36  |
| Surface Clutter .....     | 36  |
| System Test .....         | 12  |
| System Update .....       | 13  |

## T

|                                |                             |
|--------------------------------|-----------------------------|
| Target .....                   | 26, 30, 51, 83, 94, 96, 107 |
| TD .....                       | 91, 107                     |
| TECHNICAL SPECIFICATIONS ..... | 113                         |
| Temperature .....              | 113                         |
| Test .....                     | 12, 117                     |
| text area .....                | 26                          |
| Tide .....                     | 108                         |
| Tide Graph .....               | 44                          |
| Tide Info .....                | 44, 108                     |
| Tide Station .....             | 46, 102, 108, 111           |
| Tide Symbol .....              | 44                          |
| Tides & Currents .....         | 38, 108                     |
| Time .....                     | 67                          |
| Time (simulation) .....        | 109                         |
| Time (Track) .....             | 109                         |
| Time Difference .....          | 107                         |
| Time Format .....              | 109                         |
| Time Line .....                | 109                         |
| Time Reference .....           | 109                         |
| Time To Go .....               | 31, 52, 109                 |
| Title Page .....               | 18                          |
| Total Trip .....               | 105                         |
| Track .....                    | 65, 87, 90, 92, 109         |
| Track (menu) .....             | 109                         |
| Track memorizing type .....    | 66                          |
| Track storing .....            | 66, 109                     |
| Tracking .....                 | 109                         |
| Tracks & Routes .....          | 38, 109                     |
| TRN .....                      | 109                         |
| Trouble shooting .....         | 121                         |
| TTG .....                      | 31, 52, 109                 |
| Turning .....                  | 109                         |
| Turning Off .....              | 18                          |
| Type of Data .....             | 81                          |
| Typical Connections .....      | 115                         |

## U

|                                  |                 |
|----------------------------------|-----------------|
| Underwater Objects .....         | 110             |
| Underwater Objects Limit .....   | 39, 110         |
| Unit .....                       | 88              |
| Universal Time Coordinated ..... | 110             |
| User C-CARD .....                | 22, 67, 95, 110 |
| User C-CARD Menu .....           | 67              |
| User Point .....                 | 110             |
| User Point Name .....            | 110             |
| User Points (List) .....         | 110             |
| User Points List page .....      | 55, 61          |
| UTC .....                        | 109, 110        |
| UTM .....                        | 91, 110         |

## V

|                             |         |
|-----------------------------|---------|
| Value Added Data .....      | 39, 110 |
| Variable Range Marker ..... | 111     |
| Variation .....             | 99      |
| Visible .....               | 66      |
| Visible (Track) .....       | 110     |
| Voice .....                 | 92      |
| Voltage .....               | 18      |
| VRM .....                   | 63, 111 |

## W

|                               |                                  |
|-------------------------------|----------------------------------|
| WAAS .....                    | 19                               |
| Waypoint .....                | 49, 57, 61, 62, 88, 95, 105, 111 |
| Weight .....                  | 113                              |
| WGS-84 .....                  | 95, 99, 111                      |
| Wind .....                    | 29                               |
| Wind Data .....               | 29                               |
| Wind Data page .....          | 111                              |
| Wind Speed (unit) .....       | 111                              |
| World Background Charts ..... | 13                               |
| Wrecks .....                  | 39, 46, 111                      |

## X

|                 |         |
|-----------------|---------|
| XTE .....       | 91, 112 |
| XTE Alarm ..... | 112     |

## Z

|                 |             |
|-----------------|-------------|
| Zoom .....      | 112         |
| Zoom Type ..... | 34          |
| Zoom Type ..... | 94, 96, 112 |