

sible to display this menu only if the Navigation Data page or the 3D Road page has been selected; so firstly select one of this pages, for example Navigation Data page:

- 'DATA' + "NAVIGATION DATA" + 'ENTER'

or

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

and then:

- 'MENU' + "NAV DISPLAY" + 'ENTER'

5.2.1 CDI SCALE

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

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

5.2.2 NAVIGATION PAGE

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

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

5.3 ALARMS MENU

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

- 'MENU' + "ALARMS" + 'ENTER'

5.3.1 AUTO OFF

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

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

5.3.2 ARRIVAL ALARM

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

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

5.3.3 XTE ALARM

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

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

5.3.4 ANCHOR ALARM

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

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

5.3.5 DEPTH ALARM

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

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

5.3.6 GROUNDING ALARM

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

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

When the Grounding Alarm is active, the chartplotter scans an area in front of the boat. This area is identified by a triangle drawn in front of the boat icon whose direction is

determined by the current boat heading. The length of the triangle is user selectable and its angle is 30 degrees. If any of the above objects are found, the chartplotter notifies the danger on a dedicated warning message box in the Grounding Alarm Report page (see Par. 5.2.8). The Grounding Alarm is switched Off by default after a Master Reset. Once the Grounding Alarm has been activated, a warning message is shown.

Note

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

5.3.7 GROUNDING DEPTH LIMIT

- 'MENU' + "ALARMS" + 'ENTER' + "Grounding Depth Limit" + 'ENTER'
The user can enter the minimum depth.

5.3.8 GROUNDING ALARM RANGE

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

5.3.9 GROUNDING ALARM REPORT

- 'MENU' + "ALARMS" + 'ENTER' + "Grounding Alarm Report" + 'ENTER'
Allows displaying the report of the dangerous objects currently detected.

5.3.10 EXTERNAL ALARM

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

5.4 ADVANCED MENU

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

- 'MENU' + "ADVANCED" + 'ENTER'

5.4.1 FIX & COMPASS MENU

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

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

5.4.1.1 Fix Correction

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

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

5.4.1.2 Compute Correction

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

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

5.4.1.3 Correction Offset

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

Manual correction of fix position.

5.4.1.4 Position Filter

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

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

5.4.1.5 Speed Filter

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

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

5.4.1.6 Bearing

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

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

5.4.1.7 Magnetic Variation

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

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

5.4.1.8 Calibrate Compass

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

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

5.4.1.9 Static Navigation

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

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

5.4.2 SIMULATION MENU

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

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

5.4.2.1 Speed

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

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

5.4.2.2 Heading

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

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

5.4.2.3 Date and Time

- 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Date" + 'ENTER'
- 'MENU' + "ADVANCED" + 'ENTER' + "SIMULATION MODE" + 'ENTER' + "Time" + 'ENTER'

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

5.4.2.4 Cursor Control

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

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

5.4.2.5 Simulation Mode

Once the settings are selected, turn on the Simulator:

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

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

5.4.3 INPUT/OUTPUT MENU

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

5.4.3.1 Port 1/Port 2/Port 3 Input

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

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

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

Note (*)

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

5.4.3.2 Port 1/Port 2/Port 3 Output

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

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

5.4.3.3 Port 1/Port 2/Port 3 NMEA Output

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

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

5.4.3.4 Cable Wiring Pages

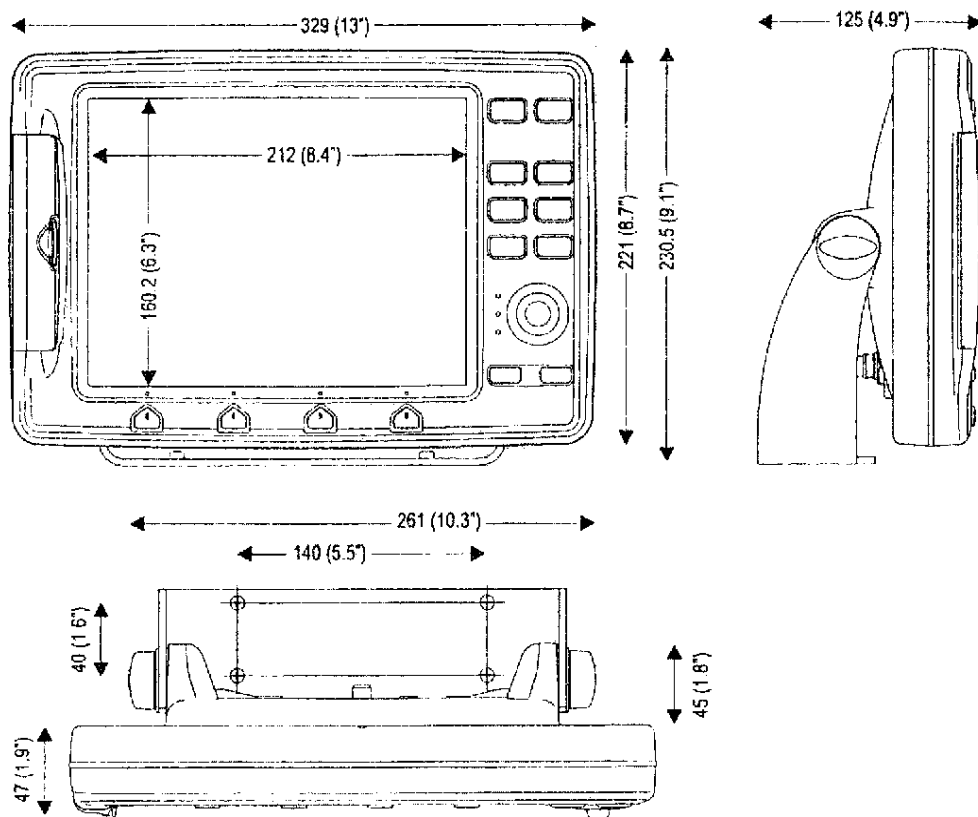
Shows a window containing the interface cable wiring. See Par. 6.3 and 6.4.

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

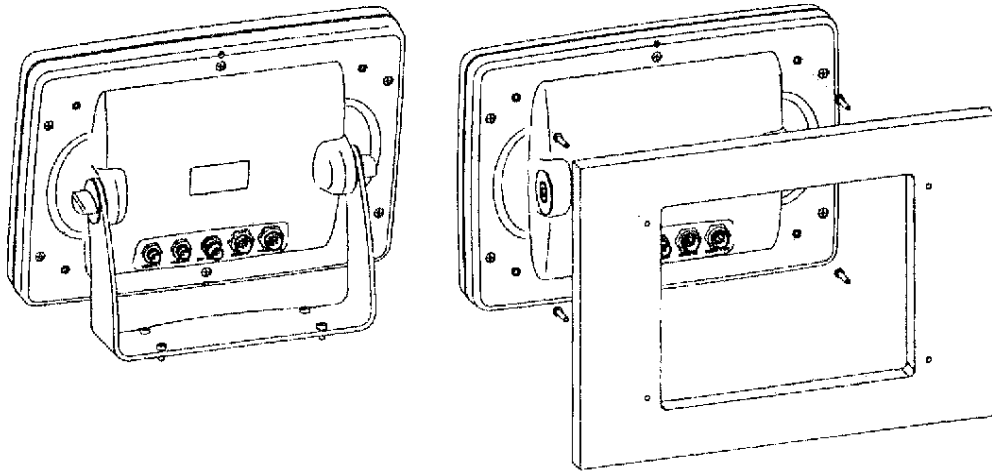
6

For the Technician

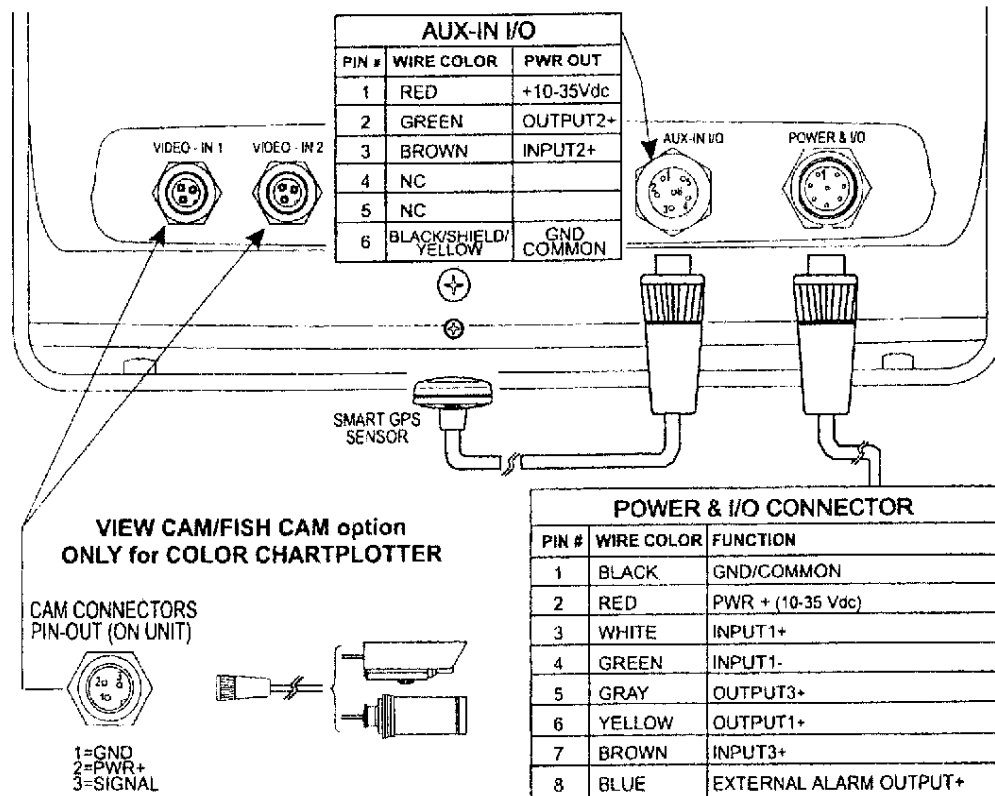
6.1 DIMENSIONS



6.2 INSTALLATION AND REMOVING

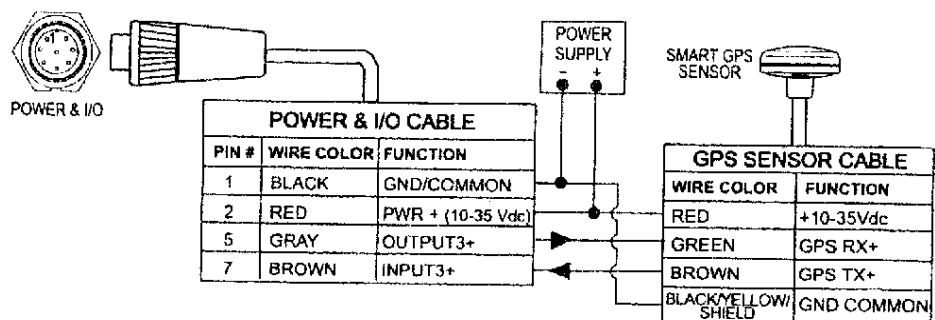
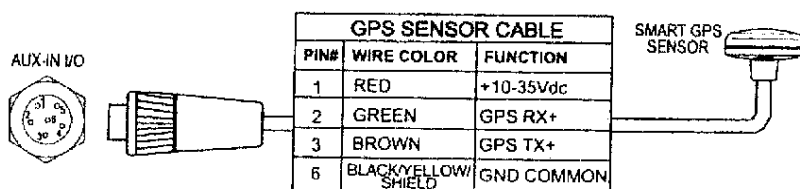
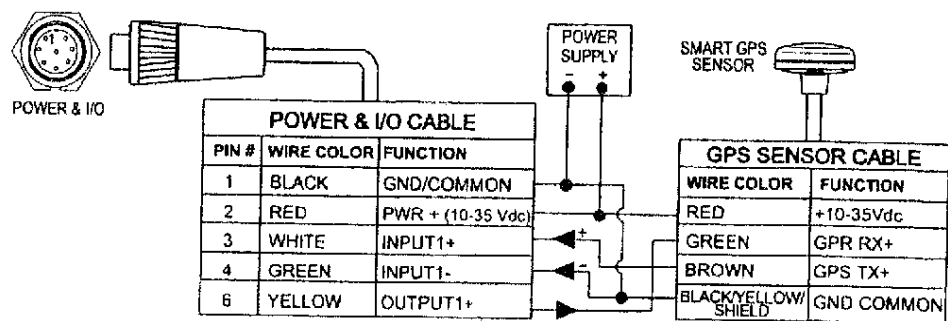


6.3 EXTERNAL WIRING

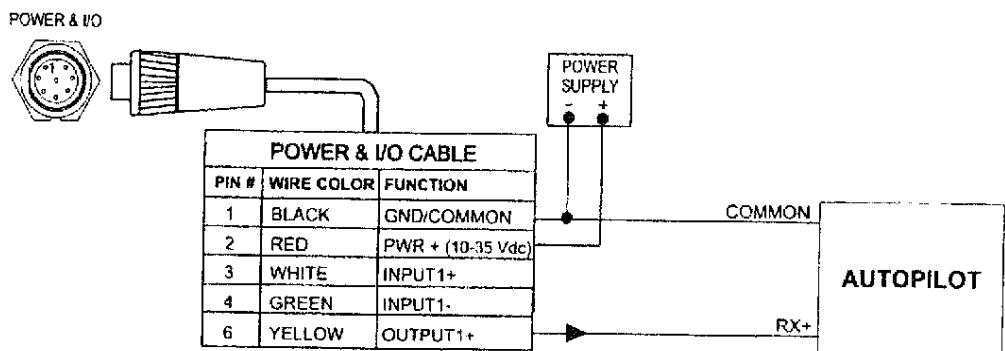


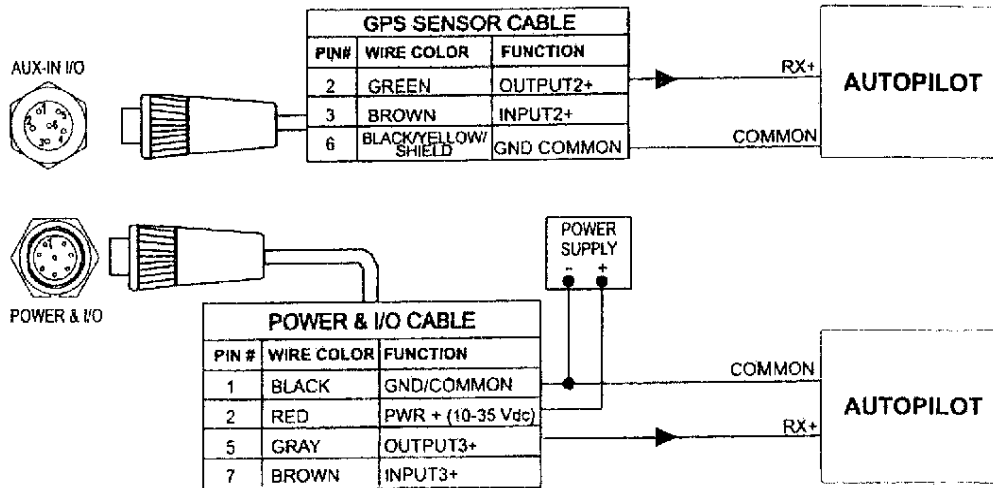
6.4 TYPICAL CONNECTION - "POWER & I/O" CONNECTOR

6.4.1 GPS CONNECTIONS

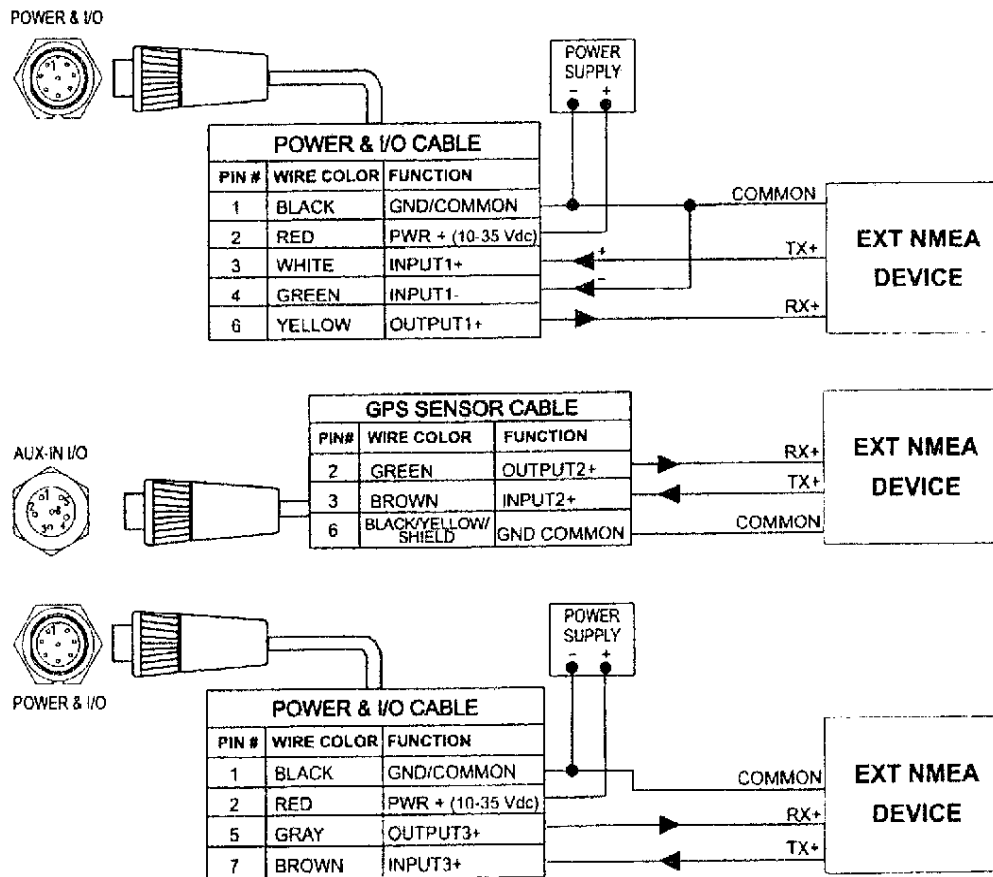


6.4.2 AUTOPILOT CONNECTIONS

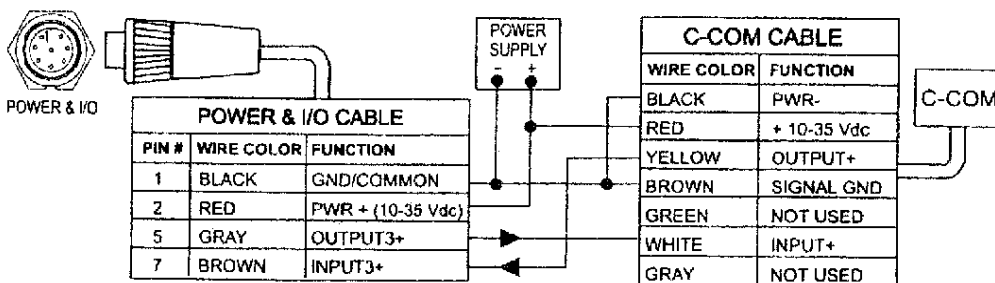
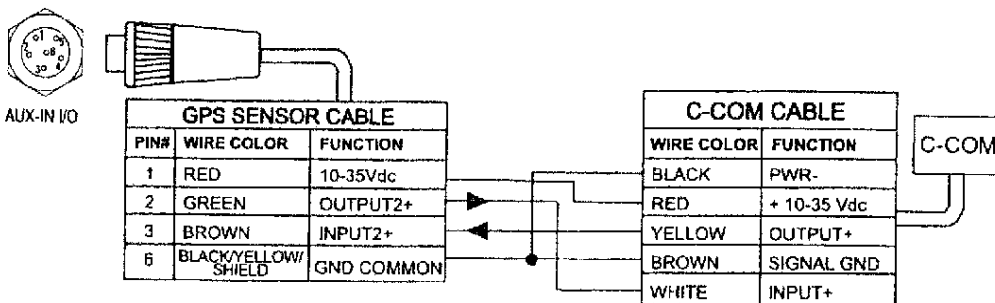
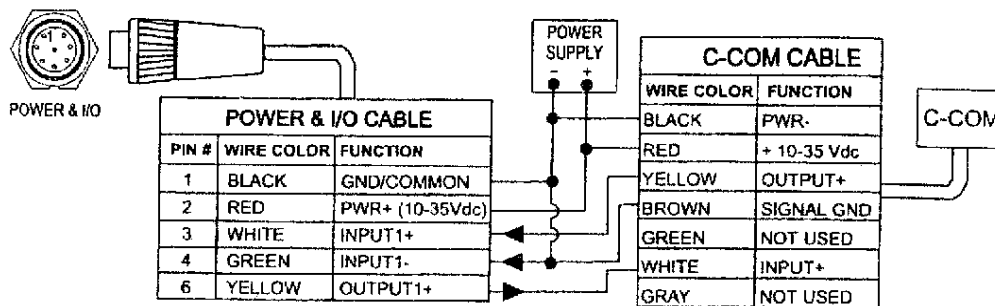




6.4.3 EXTERNAL NMEA CONNECTIONS



6.4.4 C-COM CONNECTIONS



6.4.5 EXTERNAL ALARM CONNECTION

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

6.5 TROUBLESHOOTING

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

6.5.1 PROBLEMS AND SOLUTIONS

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

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

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

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

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

6.5.2 WHEN NOTHING ELSE WORKS

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

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

6.5.3 IF YOU NEED ASSISTANCE

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

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

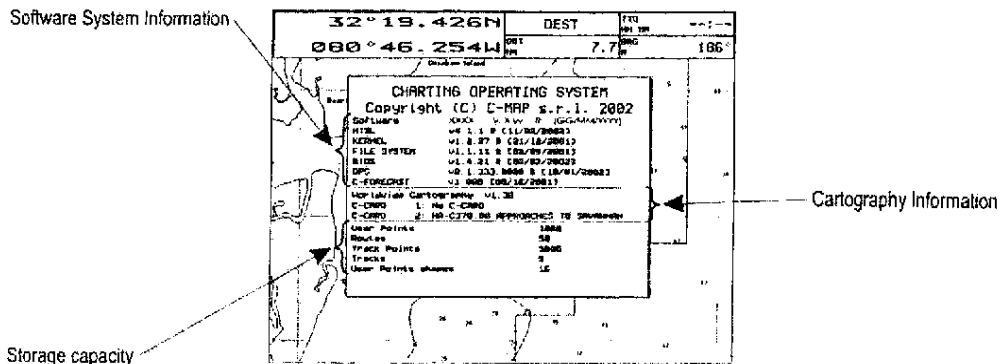


Fig. 6.5.3 - About Page

Note

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

6.6 SYSTEM TEST

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

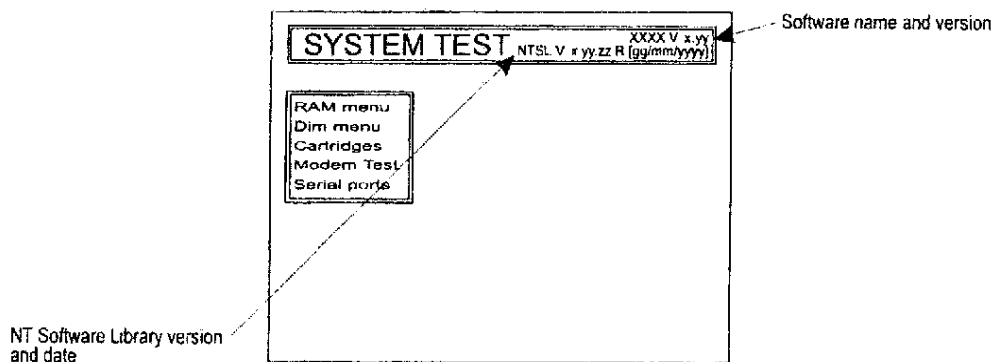


Fig. 6.6 - System Test

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

6.6.1 RAM menu

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

■ RAM Test

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

■ RAM Clear

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

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

6.6.2 DIM menu

To select the preferred value for contrast and backlight.

■ Contrast

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

■ Backlight

To set the backlight. Operates in similar mode as Contrast.

6.6.3 CARTRIDGES

To check the C-CARD and its connector.

■ Background ROM

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

■ C-CARD Test

To test the C-CARD. There are three possible situations:

1. if there is a C-CARD inserted in the slot and there is not a malfunction, the name of the C-CARD zone and the message "OK" are shown.
2. if there is a C-CARD inserted in the slot, but it is a damaged C-CARD, the name of the C-CARD zone and the message "Faulty" are shown.
3. if there is not any C-CARD inserted in the slot, the message "not present" is shown.

4. if there is an User C-CARD inserted in the slot, the message "USER C-CARD" is shown.

- **C-CARD Connector**

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

6.6.4 MODEM TEST

To check the Modem connections.

6.6.5 SERIAL PORTS

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

- **Change Parameters**

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

- **Input Data Display**

Allows the chartplotter to act as a computer terminal and display the incoming data exactly as it received.

If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular receiver. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, you may have a broken connection and no data is being received.

Use 'ZOOM IN' to stop (or continue after pause) data displaying, 'ENTER' to show data in hex or ASCII mode (normal or small) and 'CLEAR' to exit.

A

C-Forecast

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

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

With C-Forecast it is possible to receive weather information regarding the wind, speed and direction, as well as the height of the waves in the area. The weather data will be superimposed on to the C-MAP N°1st cartography and visualised directly on the plotter screen.

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

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

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

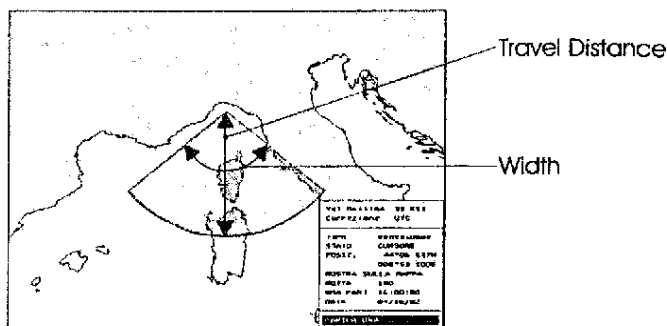


Fig. A - Preview of the area covered by the requested weather forecast

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

COVERAGE OF THE FORECASTING AREA

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

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

A.1 PRESENTATION OF DATA

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

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

alarm which will alert and request navigator action (see the right column in Fig. A.1). The color of the wind icon will change to red when the wind speed limit has been reached (preset by the user in the menu).



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

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



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

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

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

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

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

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

A.1.1 PRESENTATION OF WEATHER INFORMATION

A.1.1.1 Viewing the information in Navigation mode

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

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

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

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

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

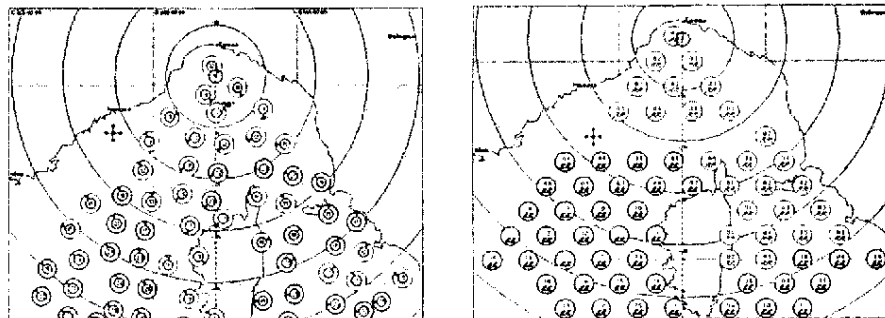


Fig. A.1.1.1 - Mode Navigation: icons showing wind (left) and icons for waves (right)

A.1.1.2 Viewing the weather information in Browse mode

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

To activate the Browse mode, simply choose in the menu - preview. As soon as the

user has activated Browse mode, the cartography centers on the point to which weather information have been collected and saved. It is possible to use the cursor to move the 'view' around the area covered by the 6 hours weather forecast and change the view between wind and waves.

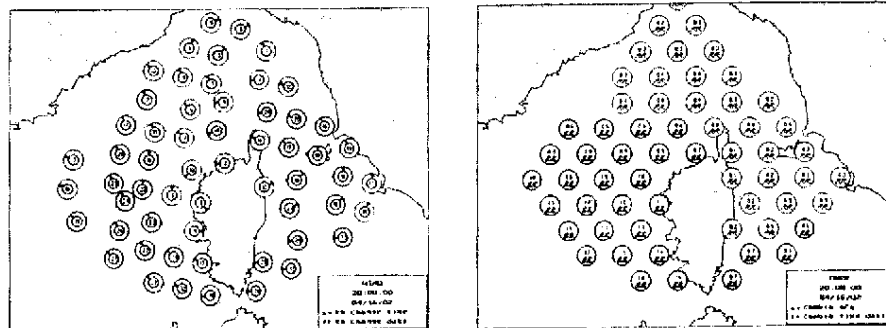


Fig. A.1.1.2 - Mode Browse: icons for wind (left) and icons for waves (right)

A.2 SYSTEM SET UP C-FORECAST

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

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

When the above steps have been completed, it will immediately be possible to receive weather information from the C-Forecast server in the following way:

- Insert the position from where the boat will depart (manually or by use of the GPS).
- Insert the direction in which the boat will travel.
- Insert the date and time of departure (ETA).
- Start the transfer of weather information.

A.2.1 INSTALLATION OF HARDWARE COMPONENTS

A.2.1.1 Electrical connection

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

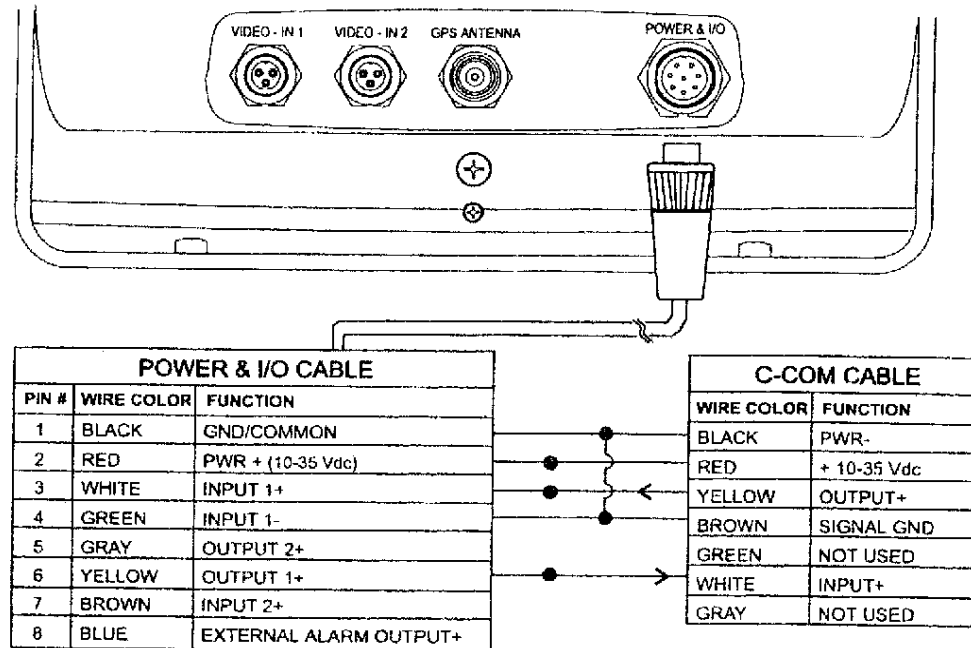


Fig. A.2.1.1 - Electrical connection to chart plotters with 8 pins connector

A.2.1.2 Verification of C-COM module

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

Note (*)

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

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

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

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

- MODEM OK: #
- MODEM ERROR: #

c. MODEM TIMEOUT ERROR: #

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

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

c. If the number (#) by the MODEM TIMEOUT ERROR is different to 0, it shows that the C-COM module is responding but the link to the chart plotter has not been made.

The error may be for one of the following reasons:

- The C-COM is not connected or not connected correctly to the chart plotter.
- The C-COM module has not got a power supply.
- The serial port to which the link between the C-COM and the chart plotter is made, is not the correct port, to which the C-COM should be connected.

A.2.1.3 The GSM SIM-card

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

A.2.2 INSTALLATION OF SOFTWARE

A.2.2.1 Registrations of user ID

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

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

Note

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

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

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

A.2.2.3 Activation of the serial port

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

A.2.3 TRANSFER OF WEATHER DATA

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

A.2.3.1 Insert current date and time

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

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

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

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

Inserting of point of departure

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

Inserting heading

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

A.2.3.3 Selecting type of weather information to be collected

It is possible to select the type of data to be collected from the options below:

- Wind: only the direction and pressure/speed
- Waves: only height

- Wind + Waves: both the above

A.2.3.4 Download of data

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

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

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

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

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

Note

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

Error messages

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

SIM-card PIN Error

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

Other Errors

Subscription not found (user not registered).

Incorrect Password (for future use).

Incorrect Registration Code.

Licence not found.

Licence not active.

Licence expired.

Licence data not yet started.

No Download available (only subscription, Download).

Subscription not authorised (C-Forecast server not available).

Insufficient number of download available.

A.3 MENU SETTINGS

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

A.3.1 C-FORECAST SETUP MENU

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

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

The C-Forecast Setup menu is shown on the screen.

A.3.1.1 Display

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

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

A.3.1.2 Wind Speed Alert

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

Wind Speed Alert is the wind speed above which all icons are drawn in a different color. The value can be in the range from 0 to 250 k/h or it can be set Off. The color icon becomes red when the wind speed exceeds the speed limit set by menu. The default setting is Off.

A.3.1.3 Waves Height Alert

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

Waves Height Alert is the wave height above which all icons are drawn in a different color. The value can be in the range from 0.1 to 25.0 Mt or it can be set Off. The color icon

becomes red when the waves height exceeds the height limit set by menu. The default setting is Off.

A.3.1.4 Wind Speed Unit

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

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

A.3.1.5 Wave Height Unit

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

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

A.3.1.6 User Identifier

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

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

A.3.1.7 Telephone Number

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

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

A.3.1.8 Sim Pin

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

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

A.3.1.9 Max Speed

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

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

Note

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

A.3.1.10 C-COM/Modem Port

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

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

A.3.2 DOWNLOAD PREVIEW

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

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

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

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

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

A.3.2.1 Type

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

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

A.3.2.2 Mode and Position

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

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

A.3.2.3 Show on Chart

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

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

A.3.2.4 Course

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

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

A.3.2.5 ETD and Date

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

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

A.3.2.6 Download Now

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

When the Download function is activated the Preview window is closed and replaced by another window. Information contained in this window is related to the current contract status, that can be Download or Period.

A.3.3 BROWSE

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

Browse mode can only be selected if at least one of the two data types has been downloaded from the server. If neither wind nor waves information is present, the chartplotter emits three beeps and shows a warning message saying that the Browse cannot be activated.

Browse mode allows showing only one data type at time; this means that wind icons and wave icons cannot be shown simultaneously. If both types are loaded the default type will be Wind. If only one data type is loaded, it will be the active selection of the browse and it will not be possible to switch to the other type. Once the main Menu is shown on the screen:

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

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

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

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

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

Changing the data type between Wind and Waves the map display will be redrawn. If the current type is Wind and there is no Waves information, the chartplotter does not allow to set Waves. Sounds 3 beeps and shows the message: "Warning Waves information not present". On the other hand, changing from Waves to Wind when wind icons are not loaded, the warning will be "Warning Wind information not present".

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

B

C-Staff

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

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

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

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

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

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

B.1 C-STAFF MENU

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

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

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

B.1.1 SEND POSITION

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

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

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

B.1.2 POSITION REQUEST

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

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

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

C

Terms

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

■ **Arrival Time**

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

■ **Attention Areas**

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

■ **AWA = Apparent Wind Angle**

Direction of the air relative to the moving ship.

■ **AWS = Apparent Wind Speed**

Speed of the air relative to the moving ship.

■ **Azimuth**

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

■ **Beacon**

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

■ **BRG = Bearing**

It is the angle between the North (True or Magnetic) and a destination. It represents the direction to follow.

■ **Buoy**

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

■ **Chain**

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

■ **COG = Course Over Ground**

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

■ **Correction**

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

■ **CTS = Course To Steer**

The optimum direction the boat should be steered in order to efficiently make headway back to the courseline while also proceeding toward the destination Waypoint.

■ **Cultural Features**

Any man-made topographic feature as built-up area, buildings, roads,

■ **Current**

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

■ **Datum**

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

■ **Default**

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

■ **Depth Contours**

Imaginary lines connecting points of equal water depth.

■ **DGPS = Differential GPS**

Provides even greater positioning accuracy than standard GPS.

■ **Drift**

Horizontal velocity of the water surface.

■ **DTG = Distance To Go**

The actual distance to reach the Target.

■ **Event**

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

■ **File**

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

■ **GPS = Global Positioning System**

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

■ **HDG/HEAD = Heading**

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

■ **HDOP = Horizontal Dilution Of Precision**

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

■ **Home**

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

■ **Landmarks**

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

■ **Latitude**

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

■ LAT/LON

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

■ LOG

Speed of the vessel relative to the water.

■ Longitude

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

■ Loran

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

■ Magnetic Deviation

The angle between the Magnetic North and the Compass North.

■ Magnetic Variation

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

■ Mark

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

■ Natural Features

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

■ Navigate

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

■ NMEA-0183

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

■ OSGB = Ordnance Survey of Great Britain

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

■ Port Info

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

■ Ports & Services

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

■ Route

Sequence of Waypoints connected by segments. Among the available Routes, only one is the active Route, which is shown by a straight line and arrows to indicate the direction. The first Waypoint of the active Route is surrounded by a circle (see Par. 4.1.1).

■ RTCM = Radio Technical Commission for Maritime Services

The data format created by the Radio Technical Commission Maritime to transmit Differential GPS corrections.

■ SET

Direction of drift.

■ **Simulation**

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

■ **SNR = Signal to Noise Ratio**

The ratio of the magnitude of a signal that of the noise (interference).

■ **SOG = Speed Over Ground**

A calculation of the rate of movement of the ship over the ground.

■ **Speed**

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

■ **SPS = Standard Positioning Service**

The civilian-access signal broadcast by the GPS satellites.

■ **STR = Steering**

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

■ **TD = Time Difference**

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

■ **Tide**

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

■ **Tide Info**

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

■ **Time Line**

The location where the ship will be after the time set by the user.

■ **Track**

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

■ **Tracks & Routes**

Recommended and established routes for ships at sea, including traffic separation schemes, deep water routes,

■ **TRN = Turning**

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

■ **TTG = Time To Go**

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

■ **TWA = True Wind Angle**

Direction of the air relative to fixed point on the chart.

■ **TWS = True Wind Speed**

Speed of the air relative to fixed point on the chart.

■ **User C-CARD**

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

■ **User Point**

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

■ **UTC = Universal Time Coordinated**

A time scale based on the rotation of the earth that is used by most broadcast time services.

■ **UTM = Universal Transverse Mercator**

Metric Grid system used on most large and intermediate scale land topographic charts and maps.

■ **VDOP = Vertical Dilution Of Precision**

It is the index for position-fixing accuracy.

■ **VMG = Velocity May Good**

The Velocity May Good is the component of the velocity that is in the direction of the destination.

■ **WAAS = Wide Area Augmentation System**

The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.

■ **Waypoint**

Any point to which one intends to navigate. A sequence of Waypoints makes up a Route plan (see Par. 4.1.2).

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

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

■ **Zoom-In**

Shows more detail in a smaller area.

■ **Zoom-Out**

Operates similarly to zoom-in, but in the reverse, showing a wider but less detailed view.

■ **XTE = Cross Track error**

The distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation leg being traveled.

D

Smart DGPS WAAS Antenna & Receiver

This Smart DGPS WAAS receiver is based on a ultimate 12 channel GPS engine that delivers accuracy better than three meters by decoding the GPS correction signals from the satellite-based WAAS (*Wide Area Augmentation System*). The GPS engine, interface electronics and the passive antenna are enclosed inside the water-proof plastic housing. This provides advanced state of the art GPS performance in an easy to use package.

D.1 TECHNICAL SPECIFICATIONS

D.1.1 PHYSICAL CHARACTERISTICS

Color	: Ivory white.
Dimensions	: 97mm in diameter x 32mm in height (flush mounted) or 61,5mm on flag-pole mount.
Weight	: 160 grams (without cable).
Cable GPH 00	: white 15 meter 8x28AWG cable with 6 pins female and 8 pins female connectors

D.1.2 ELECTRICAL CHARACTERISTICS

Input Voltage	: 10 Vdc to 35 Vdc unregulated
Input Current	: 112 mA @ 12 Vdc 60 mA @ 24 Vdc 45 mA @ 35 Vdc
GPS Receiver Sensivity	: -145 dBW minimum

D.1.3 GPS PERFORMANCE

Receiver : WAAS (North America), EGNOS (Europe), MSAS (Asia)

Geodetic Datum : WGS84

Channels : 12

Frequency : 1575.42MHz (L1, C/A code)

Acquisition Time (Approximate)

Reacquisition : less than 1 second

Hot start : 8 seconds (typical)

Warm start : < 40 seconds (typical)

Cold start : < 45 seconds (typical)

Accuracy

Position : less than 10' (3m), 95% of the time

Speed : 0.3 Knots RMS

NMEA Output messages/Update Rate

GGA : 1 second

GLL : 1 second

VTG : 1 second

RMC : 1 second

GSA : 3 seconds

GSV : 3 seconds

PCMPD : 1 second

Interfaces

Asynchronous serial output compatible with RS-232 (TTL voltage levels) RS-232

polarity, Baud Rate 4800, N81

NMEA 0183 Version 2.0

D.1.4 ENVIRONMENTAL CHARACTERISTICS

Operating Temperature : 0° C~ +60° C

Storage Temperature : -20° C~ +85° C

Relative Humidity : 95% non-condensing

Water Resistance : 100% waterproof

D.2 WIRING

See the following tables for a functional description of each wire in the GPS cable.

D.2.1 DIAGRAM FOR GPH00

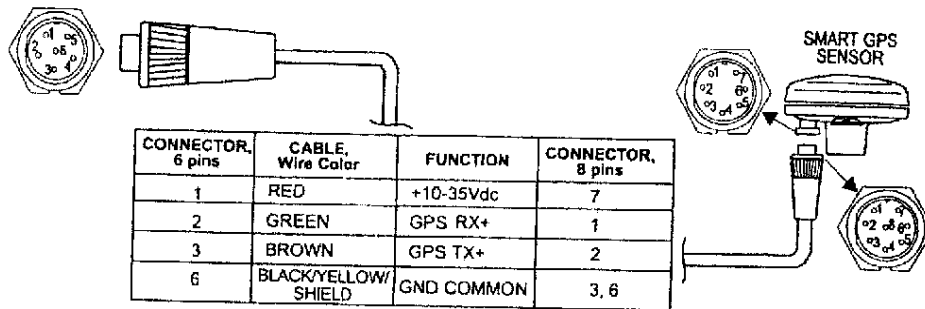


Fig. D.2.1 - GPS Connection for GPH00

D.3 SOFTWARE INTERFACE

The GPS products interface protocol design is based on the National Marine Electronics Association's NMEA 0183 ASCII interface specification. These standards are defined in "NMEA 0183 Version 2.0" (for more information see NMEA, www.nmea.org).

D.3.1 TRANSMITTED NMEA0183 SENTENCES

This paragraph defines the sentences that are transmitted by the GPS. The NMEA 0183 Output list contains the following sentences: GPRMC, GPGGA, GPGSA, GPGSV, GPGLL, GPVTG, PCMPD. The transmission parameters are 4800, N, 8, 1.

Sentence	Transmission Rate
GPRMC	1 sec
GPGGA	1 sec
GPGSA	3 sec
GPGSV	3 sec
GPGLL	1 sec
GPVTG	1 sec
PCMPD	1 sec

Fig. D.3.1 - NMEA 0183 Output Sentence Rate

D.3.2 NMEA0183 SENTENCES DESCRIPTION

The following provides a summary explanation of the approved sentence structure:

AACCC,C- - - C*HH [CR][LF]

<u>ASCII</u>	<u>DESCRIPTION</u>
--------------	--------------------

\$	<u>Start of Sentence.</u>
----	---------------------------

AACCC	<u>Address Field.</u>
-------	-----------------------

Alphanumeric characters identifying type of TALKER, and Sentence Formatter. The first two characters identify the TALKER. The last three are the Sentence Formatter mnemonic code identifying the data type and the string format of the successive fields. Mnemonics will be used as far as possible to facilitate readouts by users.

","	<u>Field delimiter.</u>
-----	-------------------------

Starts each field except address and checksum fields.

C---C	<u>Data Sentence block.</u>
-------	-----------------------------

Follows address field and is a series of data fields containing all of the data to be transmitted. Data field sequence is fixed and identified by 3rd and subsequent characters of the address field (the "Sentence Formatter"). Data fields may be of variable length and are preceded by delimiters ",".

"*"	<u>Optional Checksum Delimiter.</u>
-----	-------------------------------------

Follows last data field of the sentence. It indicates that the following two alphanumeric characters show the HEX value of the CHECKSUM.

HH	<u>Optional Checksum Field.</u>
----	---------------------------------

The absolute value calculated by exclusive-OR'ing the 8 data bits (no start bits or stop bits) of each character in the Sentence, between, but excluding "\$" and "*". The hexadecimal value of the most significant and least significant 4 bits of the result are converted to two ASCII characters (0-9, AF) for transmission. The most significant character is transmitted first. The "CHECKSUM" field is optional, except when indicated as mandatory.

[CR][LF]	<u>Terminates Sentence.</u>
----------	-----------------------------

D.3.2.1 RMC (Recommended Minimum Specific GPS/TRANSIT Data)

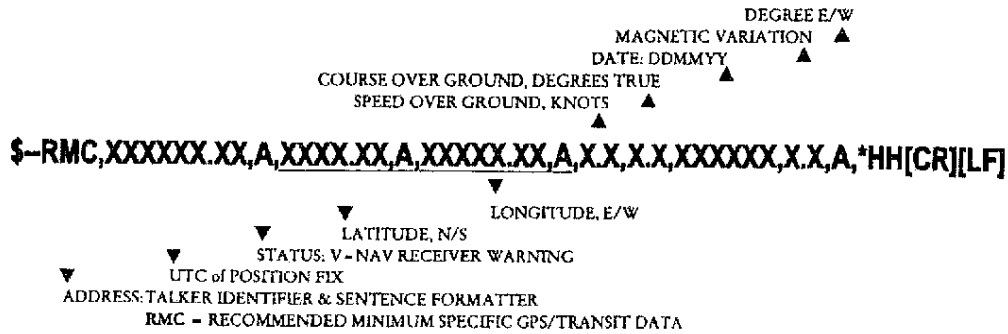


Fig. D.3.2.1 - RMC Sentence

D.3.2.2 GGA (Global Positioning System Fix Data)

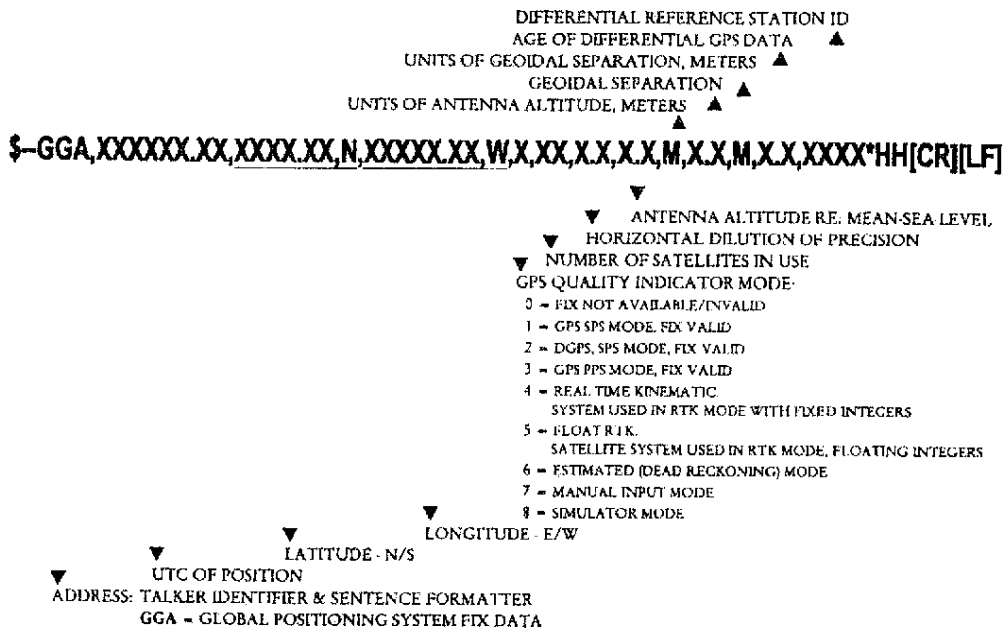


Fig. D.3.2.2 - GGA Sentence

D.3.2.3 GSA (GPS DOP and Active Satellites)

\$-GSA,A,X,XX,XX,XX,XX,XX,XX,XX,XX,XX,XX,X,X,X,X,X*HH[CR][LF]

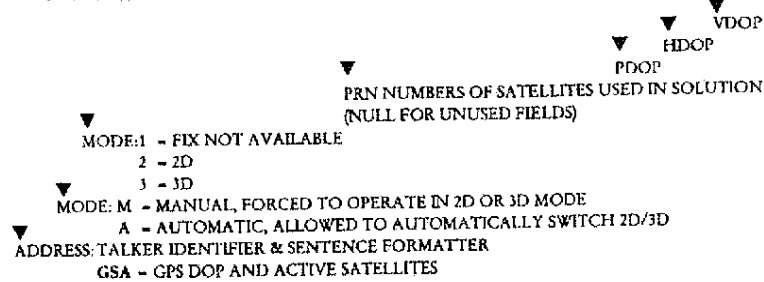


Fig. D.3.2.3 - GSA Sentence

D.3.2.4 GSV (1,2,3 GPS Satellites in View)

\$-GSV,X,X,XX,XX,XX,XXX,XX ,XX,XX,XXX,XX*HH[CR][LF]

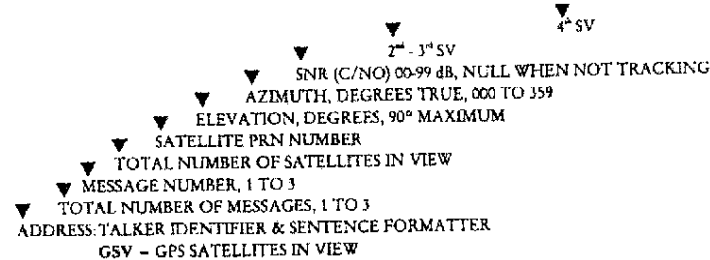


Fig. D.3.2.4 - GSV Sentence

D.3.2.5 GLL (Geographical Position Latitude/Longitude)

\$-GLL,XXX.XX,N,XXXXX.XX,W,XXXXXX.XX,A*HH[CR][LF]

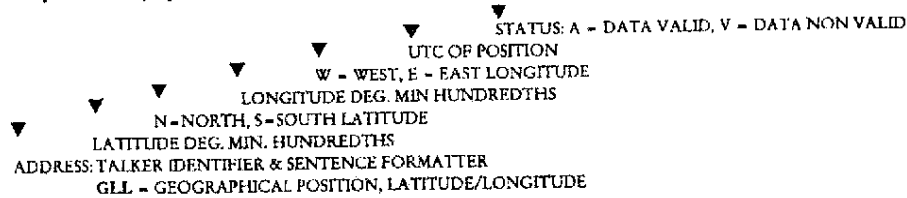


Fig. D.3.2.5 - GLL Sentence

D.3.2.6 VTG (Course Over Ground & Ground Speed)

\$-VTG,XXX.,T,XXX.,M,XX.X,N,XX.X,K*HH[CR][LF]

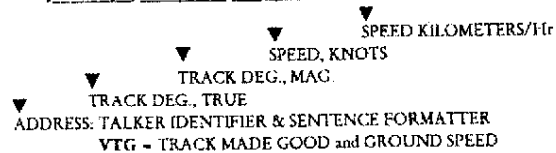
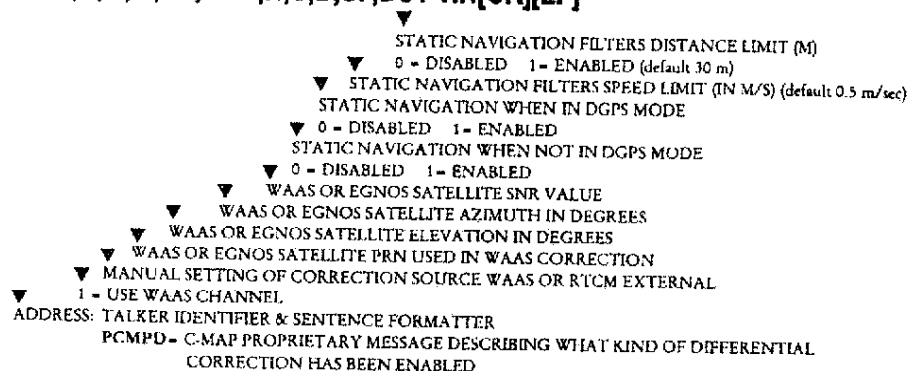


Fig. D.3.2.6 - VTG Sentence

\$-PCMPD,X,M,III,EE,AAA,N,S,D,SP,DST*HH[CR][LF]



D.4 MECHANICAL CHARACTERISTICS & MOUNTING

GPH00 MODEL

Choose a location for the antenna that has a clear view of the sky. Ensure there are no major obstructions or fixtures in the immediate proximity to the antenna. The antenna relies on direct “line of sight” satellite reception. If you are unsure that the chosen location is suitable it may be advisable to mount the antenna in a temporary manner to verify correct operation. The thread used on the antenna (1 inch, 14 TPI) is an industry standard thread used on a wide range of mounting brackets, including the swivel joints commonly used for angled surfaces. However due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.

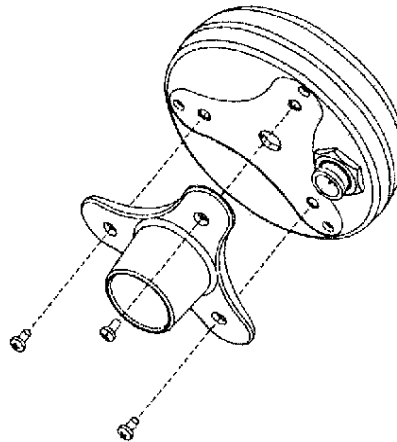


Fig.D.4.1 - Installing GPS Antenna (I)

The antenna design also allows for easy flush mounting.

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well.
2. Then, following template instruction, drill a 0,95 inch (24 mm) hole and three 0,155 inch (4 mm) holes.

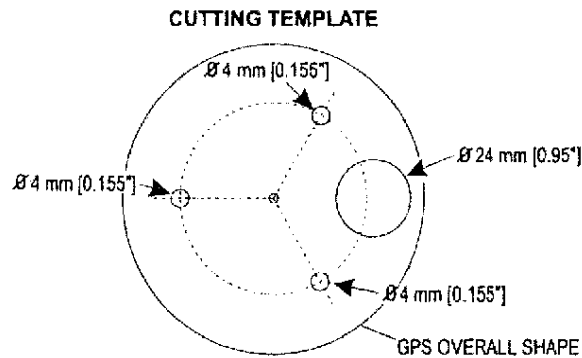


Fig.D.4.1a - Installing GPS Antenna (II)

3. Remove the template and let the cable go through the central hole.
4. Apply a small coat of RTV to the underside of the antenna.
5. Place the antenna and then screw it with the three M3 screws.

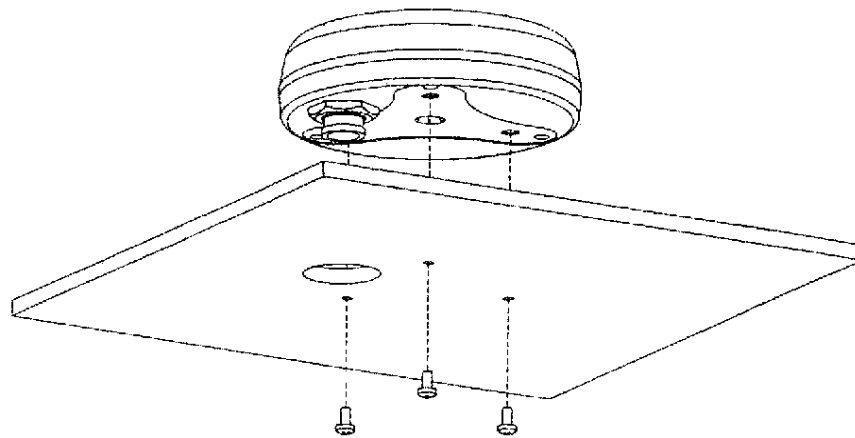


Fig.D.5.4.1b - Installing GPS Antenna (III)

D.4.2 DIMENSIONS

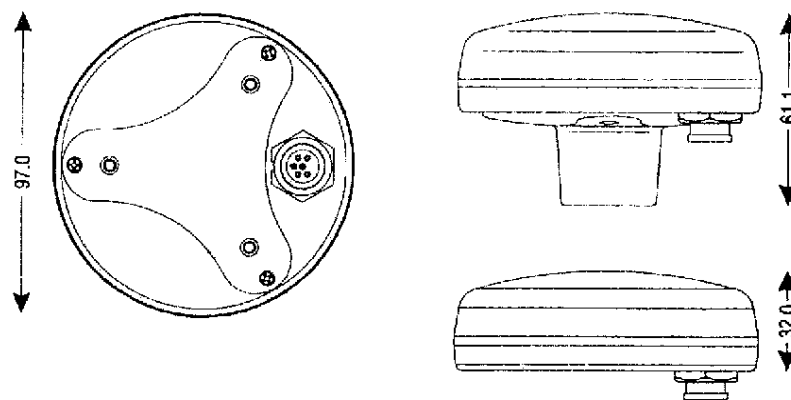


Fig.D.4.2 - GPS Antenna Dimensions

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CERTIFICATE OF LIMITED WARRANTY

Providing you present a valid proof of purchase, SI-TEX Marine Electronics Inc. warrants all parts of each new product against defect in material and workmanship under normal use and will repair or exchange any parts proven to be defective at no charge for a period of two years for parts and one year for labor from the date of purchase, except as provided below under Limited Warranty Exceptions.

Defects will be corrected during normal working hours by an authorized SI-TEX Marine Electronics Inc. dealer, service center, or at the SI-TEX office in St. Petersburg, Florida. There will be no charge for labor for a period of one year from the date of purchase, except as provided below under Limited Warranty Exceptions.

This Warranty and Proof of Purchase must be made available to the authorized SI-TEX Marine Electronics Inc. service location or dealer at the time of service.

LIMITED WARRANTY EXCEPTIONS

SI-TEX Marine Electronics Inc. will not be responsible for equipment which has been subjected to water or lightning damage, accident, abuse, or misuse nor any equipment on which the serial number label has been removed, altered or mutilated.

SI-TEX Marine Electronics Inc. assumes no responsibility for damage incurred during installation.

This Limited Warranty is effective only with respect to the original purchaser.

Any cost associated with transducer replacement, other than the cost of the transducer itself, is specifically excluded from this Limited Warranty.

Travel cost incurred will not be accepted for SI-TEX Marine Electronics Inc. products.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF.

SPECIFIC EXCLUSIONS

Charges for overtime, stand-by, holiday, and per diem are specifically excluded from the Limited Warranty.

Chart paper, stylus, stylus belt, lamps, and fuses are consumable items and are not covered by this Limited Warranty.

Installation workmanship or materials except as provided directly by SI-TEX Marine Electronics Inc. are not covered by this Limited Warranty.

SI-TEX Marine Electronics Inc. equipment or parts thereof which have been repaired or altered except by an authorized SI-TEX Marine Electronics Inc. dealer or service center are not warranted in any respect.

Transducer, software update, battery, microphone, magnetron, and microwave components and water damage on water resistant VHF radio are items excluded from the two-year warranty and are covered by warranty for a period of one year for both parts and labor.

SI-TEX Marine Electronics Inc. will not, at any time, assume any costs or labor charges for checkout or external line fuse replacement or problems not found to be at fault in equipment itself.

THERE ARE NO WARRANTIES OR GUARANTEES EXPRESSED OR IMPLIED WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. SI-TEX MARINE ELECTRONICS INC. HAS NO OTHER LIABILITY TO PURCHASE FOR DIRECT OR CONSEQUENTIAL DAMAGE OR ANY THEORY INCLUDING ABSOLUTE LIABILITY, TORT, OR CONTRACT. THIS LIMITED WARRANTY CANNOT BE ALTERED OR MODIFIED IN ANY WAY AND SHALL BE INTERPRETED IN ACCORDANCE WITH THE LAWS OF THE STATE OF FLORIDA. THIS WARRANTY IS LIMITED TO THE CONTINENTAL U.S.A., ALASKA, HAWAII, AND CANADA.

HOW TO OBTAIN SERVICE UNDER THIS WARRANTY

To provide better flexibility, SI-TEX Marine Electronics Inc. gives you the option of obtaining service under this warranty by either:

a) Contacting an authorized SI-TEX Marine Electronics Inc. service station (The closest service station may be found by contacting your dealer of purchase.)

or

b) Shipping your equipment prepaid via UPS or truck with insurance prepaid to SI-TEX Marine Electronics Inc. at the address provided below.

SI-TEX Marine Electronics Inc. will, whenever possible, make all repairs covered by Limited Warranty within two weeks of receiving the equipment in Florida and return same to you, freight prepaid.

c) You must present a copy of your Purchase Sales Slip at the time you request warranty service.

Shipping/Mailing Address:

SI-TEX Marine Electronics Inc.
11001 Roosevelt Blvd., Suite 800
St. Petersburg, FL 33716
727-576-5734

SI-TEX Marine Electronics Inc. offers a complete line of quality marine electronics including fishfinders, electronic charting systems, radars, autopilots, GPS/WAAS/Loran receivers, SSB receivers, direction finders, VHF radios, VHF marine & TV antennas, and integrated systems.

For more information, contact your SI-TEX dealer or the main office, located in St. Petersburg, Florida.



ADDENDUM FOR THE CHART PLOTTER MODELS

**COLOR MAX 11 (P/N:P1MF831VSX, P1MF831FSX)
EXPLORER II PLUS (P/N:P2DC5000SX)**

On the chart plotter/controller rear two new Serial Ports are available. In the User Manual, the following sub-paragraphes are to be substituted with the following ones.

3. User Setting Up

3.6.1 Input/Output Setup menu

<...>

Autopilot Connection

Connect the Autopilot to the serial Port 1, 2 and 3.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER] + "Port 1/2/3 Output" + [ENTER]. Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX) and press [ENTER] to confirm.

COLOR MAX 11/EXPLORER II Plus:

Connect the Autopilot to the serial Port 1, 2, 3, 4 or 5.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER] + "Port 1/2/3/4/5 Output" + [ENTER]. Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX) and press [ENTER] to confirm.

External NMEA Connection

Connect the External NMEA to the serial Port 1, 2 and 3.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER] + "Port 1/2/3 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-N81-N, NMEA 38400-N81-N and press [ENTER] to confirm.

COLOR MAX 11/EXPLORER II Plus:

Connect the External NMEA to the serial Port 1, 2, 3, 4 or 5.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER] + "Port 1/2/3/4/5 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-N81-N, NMEA 38400-N81-N and press [ENTER] to confirm.

NOTE *Doing connection remember that only the Port 1 is optoisolated in input.*

C-COM GSM Plus Connection

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

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Port 1 Input" + [ENTER] + "C-COM" + [ENTER]

The modem C-COM can be connected also to the Port 2, 3 (COLOR MAX 11/**EXPLORER II Plus**: it is possible to select the Port 4 and 5 too), in this case select the format on the used port.

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

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, HSC, HDG:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Port 1/2/3 Output Sentences" + [ENTER]

COLOR MAX 11/EXPLORER II Plus:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Port 1/2/3/4/5 Output Sentences" + [ENTER]

COLOR MAX WIDE E GPS/COLOR MAX WIDE I GPS/COLOR MAX 6:

Cable Wiring page

Shows a window containing the cable wiring related to the quick disconnect bracket:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Cable Wiring" + [ENTER]

COLOR MAX 11/EXPLORER II Plus/NAVMATE E/NAVMATE I:

Power I/O Cable Wiring page

Shows a window containing the Power I/O cable wiring.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Cable Wiring" + [ENTER] + "Power I/O Cable Wiring" + [ENTER]

COLOR MAX 11/EXPLORER II Plus/NAVMATE E:

GPS Cable Wiring page

Shows a window containing the GPS cable wiring.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Cable Wiring" + [ENTER] + "GPS Cable Wiring" + [ENTER]

COLOR MAX 11/EXPLORER II Plus:

AUX In I/O Cable Wiring page

Shows a window containing the AUX IN I/O cable wiring.

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "Cable Wiring" + [ENTER] + "AUX In I/O Cable Wiring" + [ENTER]

Send/Receive Routes & Marks

Sets the desired port used for transferring User Points and Routes functions:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "SEND ROUTES & MARKS" + [ENTER] + "Port 1/2/3" + [ENTER]

COLOR MAX 11/EXPLORER II Plus:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "Input/Output" + [ENTER]
+ "SEND ROUTES & MARKS" + [ENTER] + "Port 1/2/3/4/5" + [ENTER]

3.6.2 C-Link menu

Select the Primary or Secondary Station (see the dedicated Chapter):

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "C-LINK" + [ENTER]
+ "Secondary Station/Primary Station" + [ENTER]

3.9 FISH FINDER

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available. To select the Fish Finder menu, first select one of the four page related to the Fish Finder:

- [MENU] + [MENU] + "PAGE" + [ENTER] + "FISH FINDER" + [ENTER] + select the desired page + [ENTER]

COLOR MAX 11:

- [DATA] + "FISH FINDER" + [ENTER] + select the desired page + [ENTER]

Once the Fish Finder page is selected, access the Fish Finder menu by pressing:

- [MENU]

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.*

7. Maintenance

EXPLORER II Plus:

7.1.7 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.

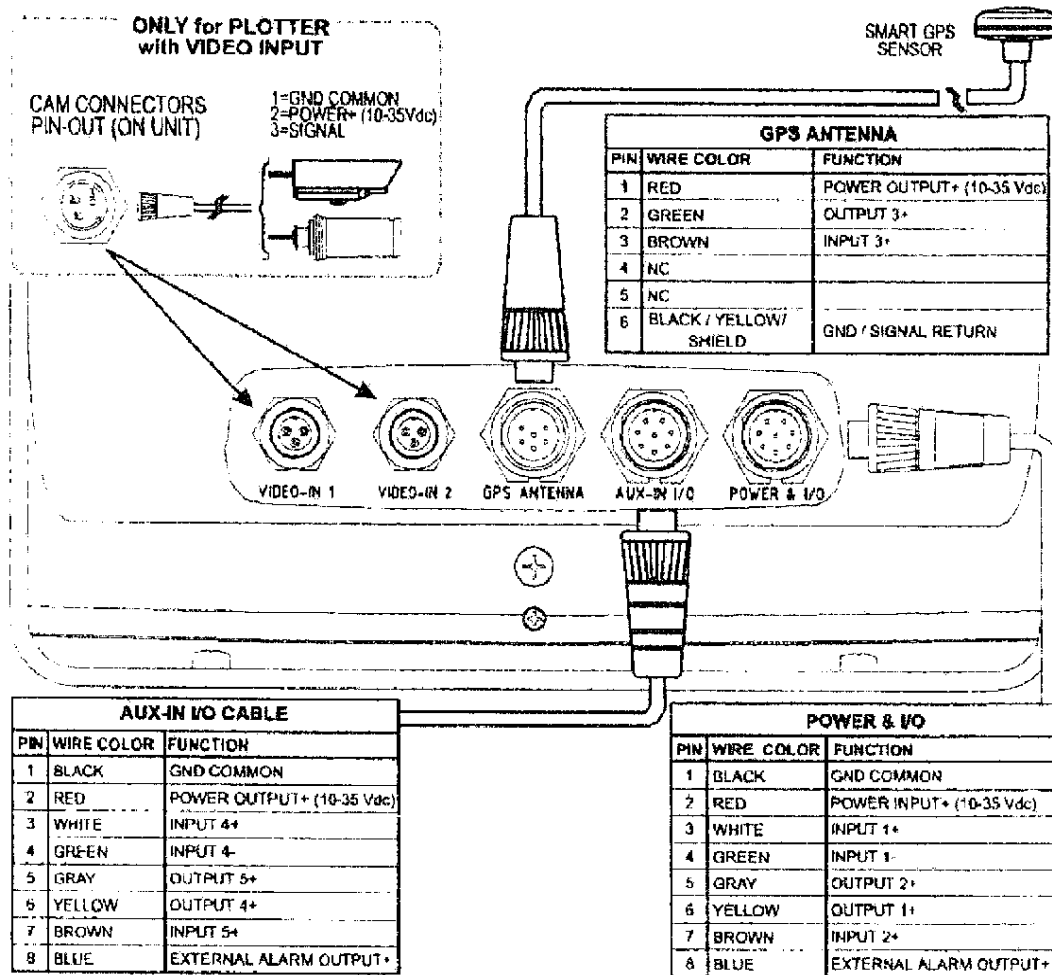
Screen Size Unit: Allows entering the screen size unit among cm and inch. Centimeters is the default unit.

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.*

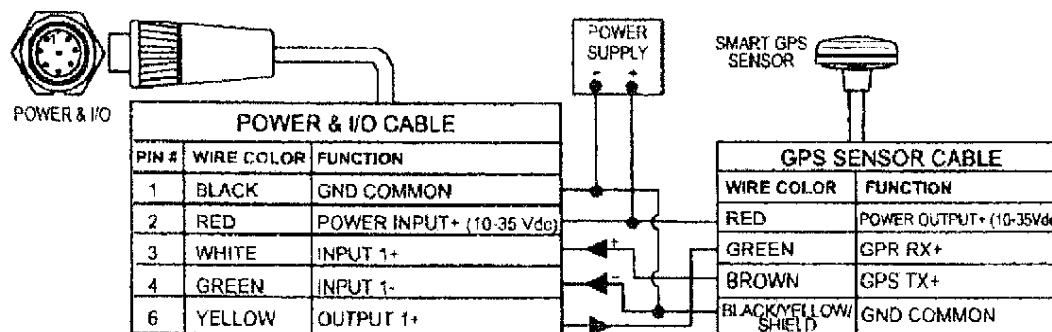
COLOR MAX 11

EXTERNAL WIRING

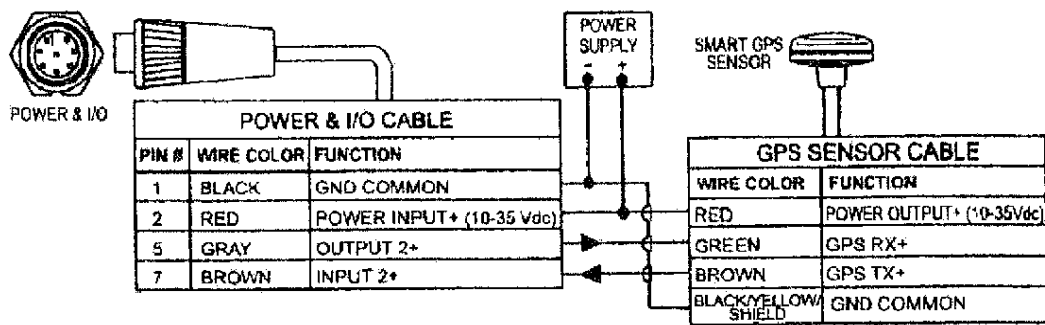


TYPICAL CONNECTIONS

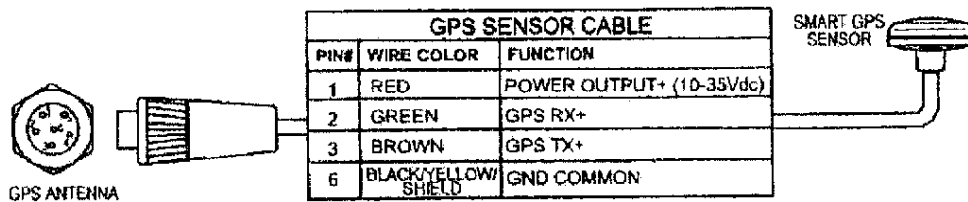
GPS Connection



GPS on Port 1

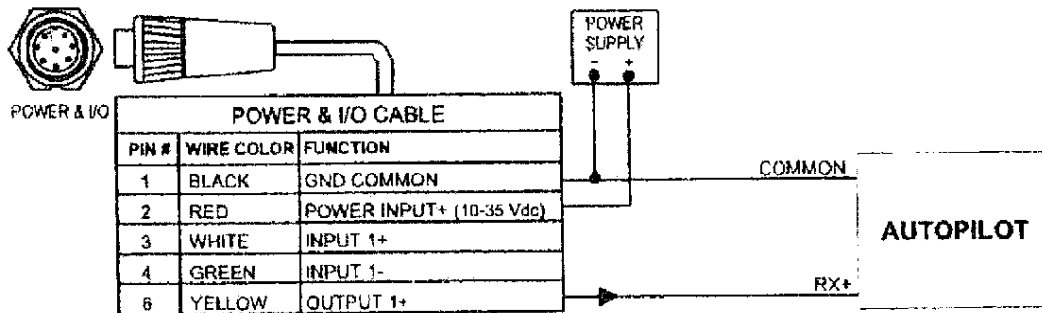


GPS on Port 2

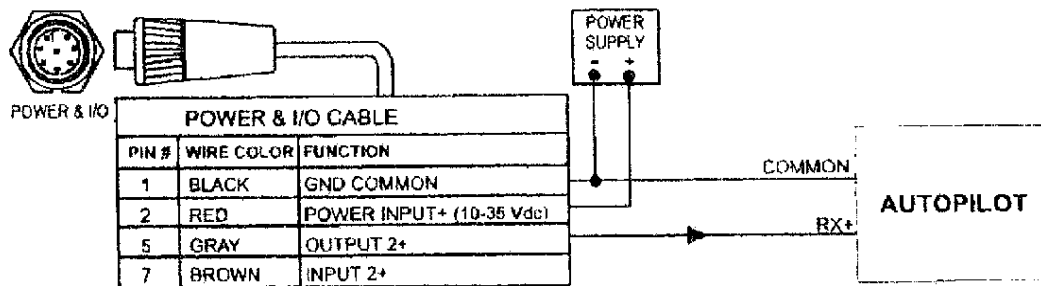


GPS on Port 3

Autopilot Connection

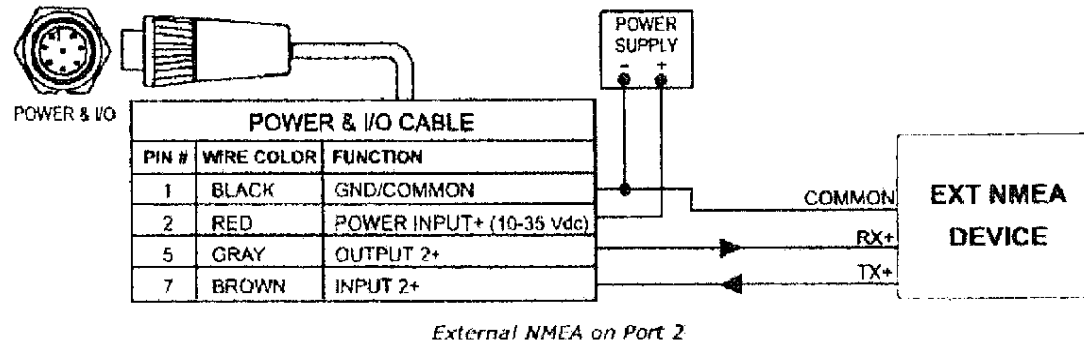
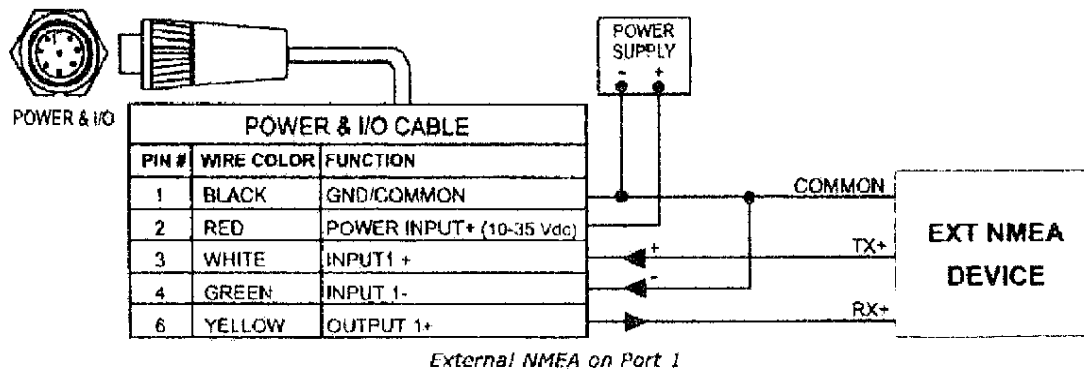


Autopilot on Port 1



Autopilot on Port 2

External NMEA Connection

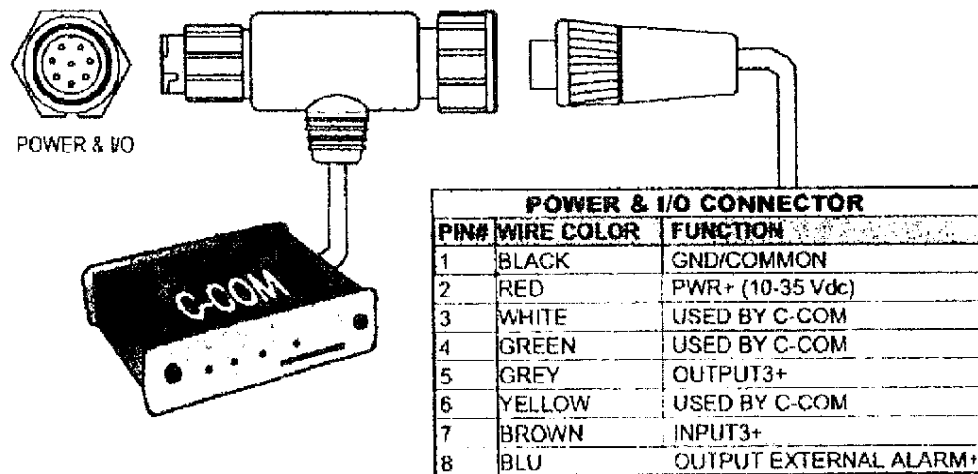


External Alarm Connection

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

External Alarm Connection

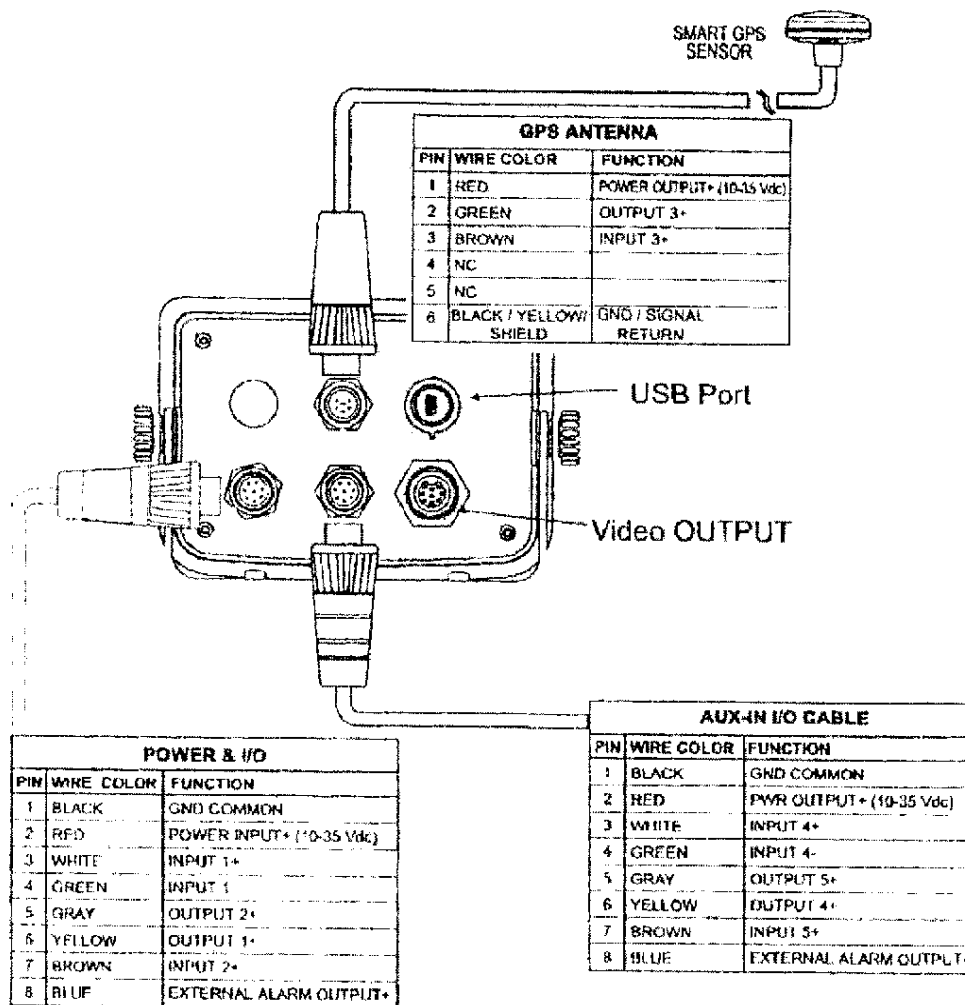
C-COM GSM PLUS Connection



C-COM Connection

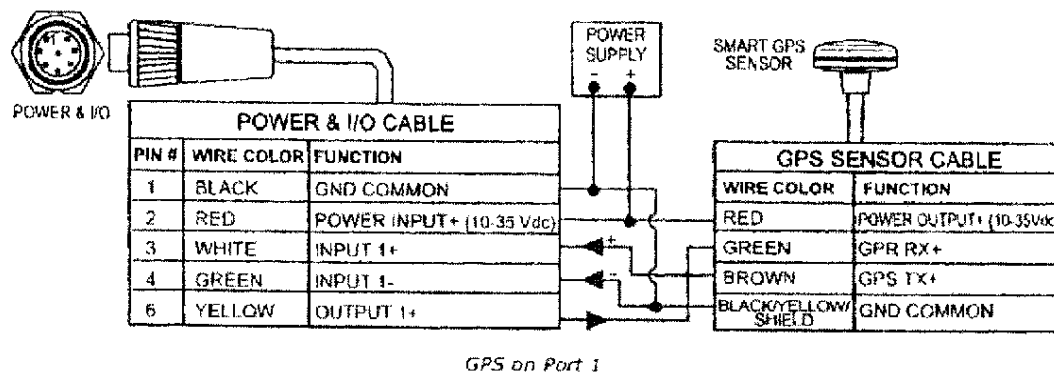
EXPLORER II Plus

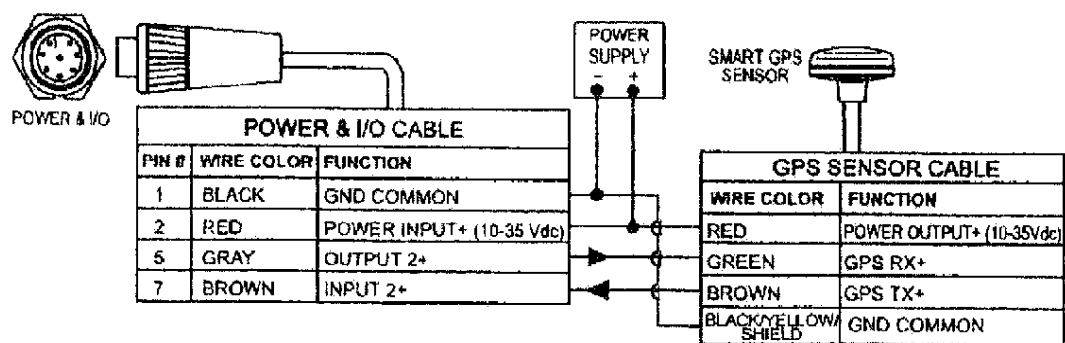
EXTERNAL WIRING



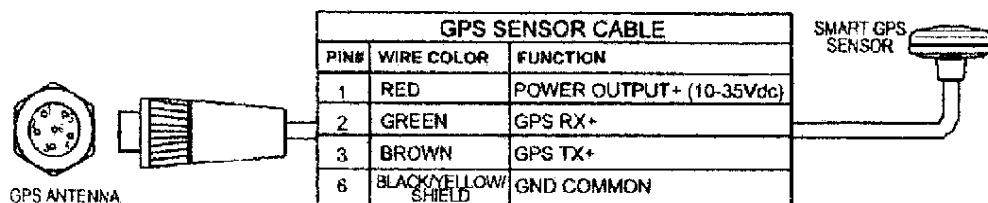
TYPICAL CONNECTIONS

GPS Connection



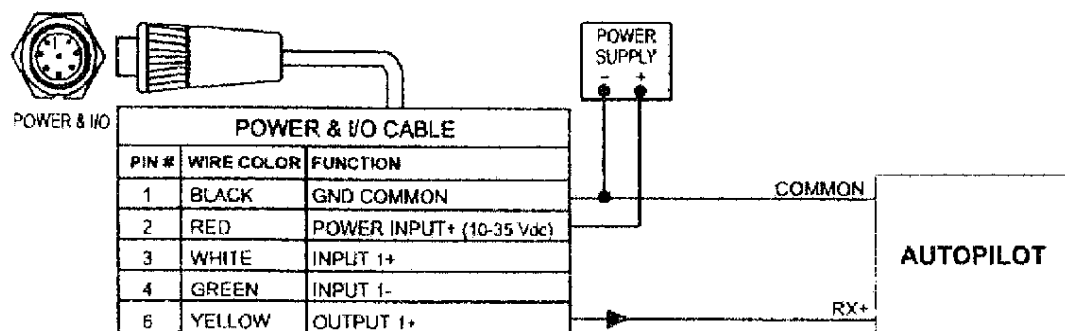


GPS on Port 2

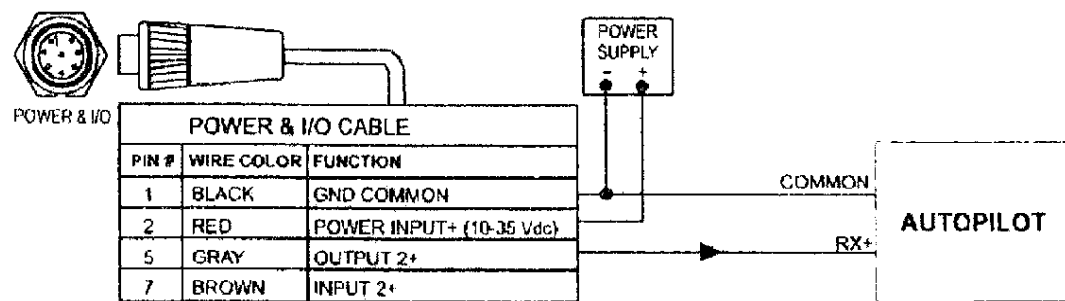


GPS on Port 3

Autopilot Connection

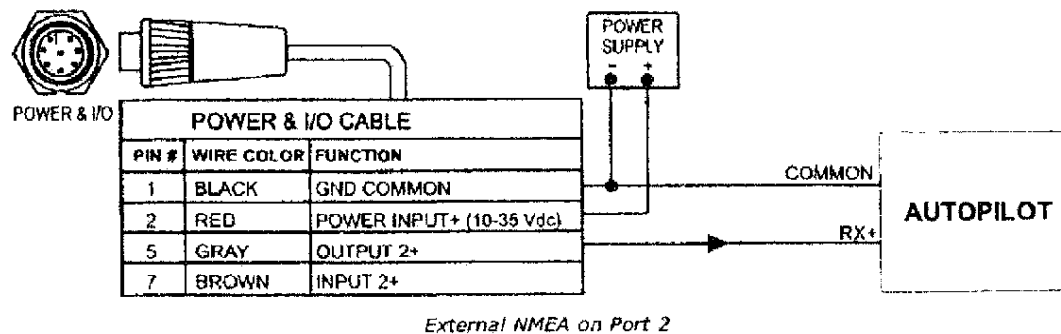
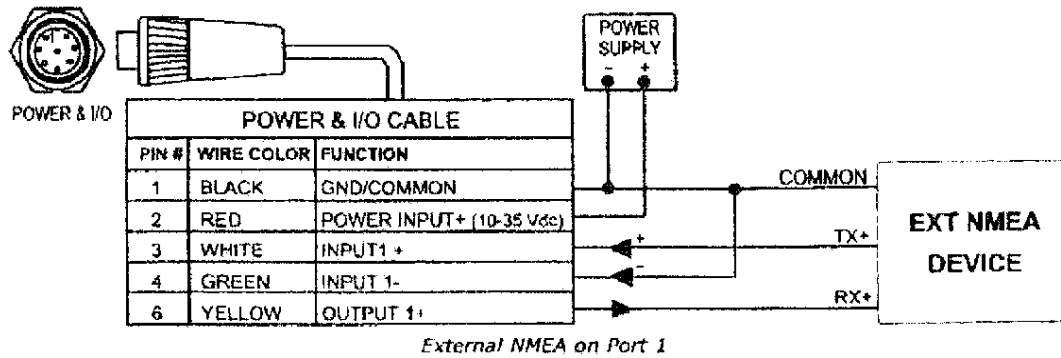


Autopilot on Port 1



Autopilot on Port 2

External NMEA Connection

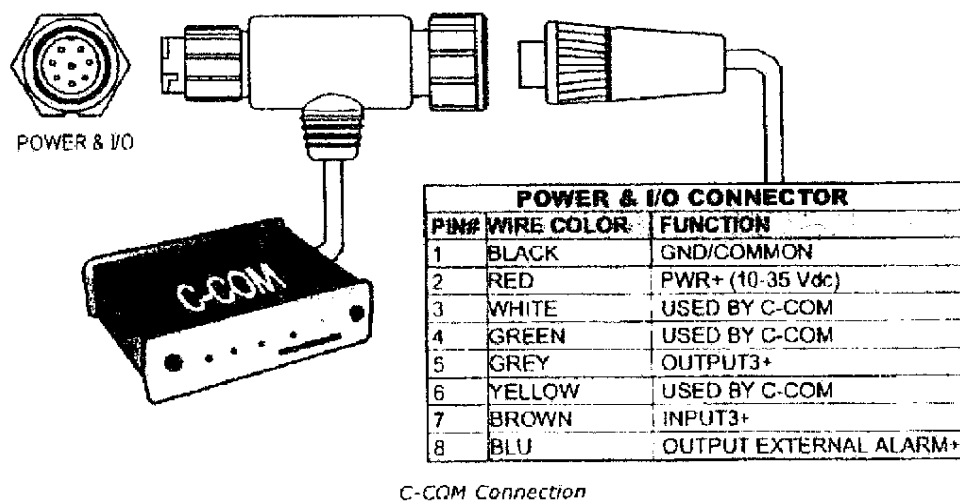


External Alarm Connection

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

External Alarm Connection

C-COM GSM PLUS Connection



Other changes are:

1. Getting Started

1.3 CHANGING BACKLIGHT AND CONTRAST

You can change the level of backlight and contrast for the screen.

- [POWER] + use [BRIGHT-]/[BRIGHT+] to adjust backlight levels and/or use [CONTR-]/[CONTR+] to adjust contrast levels + [ENTER]

EXPLORER II Plus:

- [POWER] + use [KEY-]/[KEY+] to adjust keys light levels + [ENTER]

Now you return to the chart screen with the new light levels retained.

1.6 USING C-MAP C-CARDS

The chart plotter has a built-in world map that can be used for Route planning. To use the chart plotter as a navigation aid, charts with detailed information for the area you wish to navigate are required. This chart cartridge is called C-CARD. See the Chapter related to your chart plotter for inserting/removing C-CARD procedure.

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

2. Operations

2.1 USER POINTS: MARKS AND WAYPOINTS

<...>

Deleting User Point

<...>

If in User Points List page:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "LIST" + [ENTER] + use the cursor to select the row with the desired User Point + [DELETE] + [CONFIRM]

The User Point is deleted.

It is also possible to delete all stored User Points. If in User Points List page:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "LIST" + [ENTER] + [DEL ALL] + [CONFIRM]

Locating User Point on Map

<...>

If in User Points List page:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "LIST" + [ENTER] + use the cursor to select the row with the desired User Point + [VIEW]

The User Points List is closed and the map is centered on the selected User Point.

Sending/Receiving User Point

To send all User Points to an external device through the serial port:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "SEND" + [ENTER]

To read User Points from the NMEA input port:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "RECEIVE" + [ENTER]

Selecting User Points List page

To give information and allow the editing of all stored User Points:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "LIST" + [ENTER]

In this page it is possible to find the User Point by entering its name:

- [MENU] + [MENU] + "USER POINTS" + [ENTER] + "LIST" + [ENTER] + [Find] + [ENTER] + use the cursor to insert name + [ENTER]

NOTE *It is not possible to edit/remove/move a Waypoint if it belongs to the active Route.*

2.2 ROUTES

<...>

Sending Route

To transmit the Active Route information onto the NMEA output port.

- [MENU] + [MENU] + "ROUTE" + [ENTER] + "SEND" + [ENTER]

The NMEA WPL & RTE messages are sent to the output port.

Receiving Route

To save Route information received from the NMEA input port.

- [MENU] + [MENU] + "ROUTE" + [ENTER] + "RECEIVE" + [ENTER]

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

due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.

3. User Setting Up

3.7 AIS

AIS is an Automatic Identification System. 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 world-wide 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.

3.7.1 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 3.5minutes. 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.

3.7.2 AIS Menu

To configure the chartplotter to receive AIS data, follow the procedure:

➤ [MENU] + [MENU] + "ADVANCED" + [ENTER] + "AIS" + [ENTER]

Display	: Turns the display of AIS targets overlay on the cartography ON or OFF (Default is ON).
Activation Range	: The values allowed are from 0.1 to 20 Nm (Default is 5 Nm).
CPA Alarm	: Turns ON or OFF the alarm (Default is ON).

CPA Limit	: The values allowed are from 0.1 to 10 Nm (Default is 0.5 Nm).
TCPA Alarm	: Turns ON or OFF the alarm (Default in ON).
TCPA Limit	: The values allowed are from 1 to 30 min (Default is 10 min).

3.7.3 Quick Info on AIS Target

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

- **Name**
- **MMSI number**
- **Radio Call Sign**
- **SOG**
- **COG**
- **CPA and TCPA values**

3.7.4 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 at the transmission speed of 4800 or 38400 baud.

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

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "INPUT/OUTPUT" + [ENTER]
+ "Port 1/2/3 Input" + [ENTER] + "NMEA-0183-4800-N81-N/NMEA-0183-
38400-N81-N" + [ENTER]

COLOR MAX 11/EXPLORER II Plus:

- [MENU] + [MENU] + "ADVANCED" + [ENTER] + "INPUT/OUTPUT" + [ENTER]
+ "Port 1/2/3/4/5 Input" + [ENTER] + "NMEA-0183-4800-N81-N/NMEA-
0183-38400-N81-N" + [ENTER]