Cetrek

AUTOPILOT & CONTROL SYSTEMS

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Registered to
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A Company committed to Quality.

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Cetrek

COMBI
User's Guide

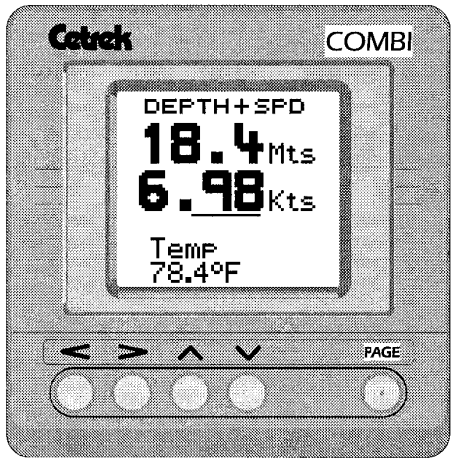
Cetrek

AUTOPILOT & CONTROL SYSTEMS

Introduction

Thank you for buying this C-net product. We wish you to enjoy your boating and intend that all C-net instruments enhance your pleasure.

The instruments are designed to present the information that you want in a clear, easy to read manner, safely and reliably.



The 930 352 C-net COMBI

If you are installing more than one instrument from the C-net range, the units can be networked together. This means that the instruments are all connected in a chain by the 5 way "C-net" cable (the C-net Bus). This cable carries power and shared data to all the other instruments connected in the chain.

This makes initial installation and subsequent system expansion quick and easy. If you want a second Display or Display Suite somewhere else on the vessel, all that needs connecting is the C-net cable.

Within the standard C-net system the COMBI unit is able to receive data in three ways. Firstly, as part of the system, the unit is able to receive, use and pass on data via the C-net Bus. It is also capable of transmitting information received from the C-net Bus as NMEA data.

Alternatively the unit may receive direct input from transducers. It will then display the appropriate data and put the information received from the transducers onto the C-net Bus (or out via an NMEA link) for other instruments in the system to access.

Finally the COMBI unit can accept NMEA data from an NMEA link. Again this data will be used and then output via the C-net Bus or via the NMEA link.

Further details on how to configure the C-net COMBI unit are given on page 24.

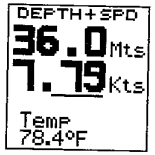
Note: Polarised sunglass lenses may cause viewing problems with these, or any other, Liquid Crystal Displays.

Using the Instrument

The C-net COMBI instrument combines Speed and Depth information in one unit. As well as depth readings the instrument can display the speed of water flowing past its impeller and the temperature of the sea. To compliment these functions the unit also features a Stopwatch, Race Timer and Trip Meter.

The information can be viewed in different ways to suit the varying situations and your personal choice.

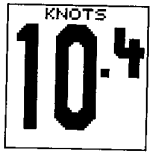
Pressing the **PAGE** button steps the display through its different page formats;



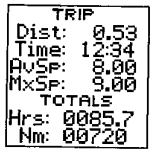
The first page shows a digital read-out of depth and speed at the top of the screen. If your system includes a suitable sensor a water temperature reading will be displayed below these figures in the lower left corner of the screen.

The lower right-hand area of the screen is used to display alarm messages. Each alarm condition has an individual symbol, or icon. When an alarm condition is triggered an additional page in the cycle will show the cause of the alarm. If all is well this section of the speed and depth screen will be blank.

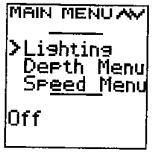
The second page uses the full height and width of the screen to display the depth reading in a clear, easy to read format.



Similarly, the third page uses a fullscreen format to display the vessel's current speed.



The fourth page in the cycle shows the Trip Meter, giving distance, time, average speed and maximum speed readings (since being reset). The bottom of the display shows the total hours and distance monitored by the instrument since installation.

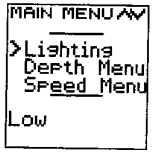


A fifth page, the Menu Page, provides access to the menus to allow the instrument's settings to be adjusted. The lower left section shows the present setting of the option highlighted above by the arrow. The lower right area is used to display alarm icons should an alarm condition arise.

This page concludes the normal page cycle. A further press of the **PAGE** button takes the display back to the start of the cycle, the speed and depth display.

Alarms, Warnings and Timers will add pages to the cycle when they are used or triggered. The alarms and warnings will be removed automatically from the page cycle when the alarm or warning condition is cleared.

The Menu Page



This page allows access to the menu system. By using the four direction buttons the various setting values can be viewed and adjusted.

The buttons are represented by the symbols ⊖ ⊕ ⊙ ⊙ in this manual.

The list overleaf shows the Menu Page Structure, with the submenus indented for easy reference.

Menu Page Structure

Lighting
Off, Low or High

Depth Menu

Alarm
Shallow
Set value or OFF
Deep
Set value or OFF
Anchor
Set ON or OFF

Programme
Offset
Set value (+ or -)
Depth Units
Set Metres or Feet

Speed Menu

Timers
Race Timer
Set OFF or ON (10 mins, 5 mins or Start/Stop)
Trip Reset
Reset Trip Meter
Stopwatch
Set OFF or ON (Lap, Go, Reset or Stop)

Programme
Speed Unit
Set Knots or Miles Per Hour
Temperature Unit
Set Fahrenheit or Celsius
Calibrate
AUTO (Value, Run or Adjust)
MANUAL (Value or Adjust)
Damping
Set value

The Menu Pages display up to three options at any one time. One of these options will have a right-hand arrow alongside it. If you wish to select one of the other options, use the ⊙ and ⊙ buttons to move the arrow up and down the menu. If further options are hidden from view, using the ⊙ and ⊙ buttons will scroll the menu list round so that they are revealed.

Important

Changed settings are only stored when the **PAGE** button is pressed. If adjustments have been made and the **PAGE** button has not been pressed before the unit is powered down, the changes will not be stored.

Lighting

The LIGHTING option is for adjusting the backlighting level of the display.

When the right-hand arrow is alongside the Lighting option the current setting will be shown in the lower left corner of the screen. Once the Lighting option is opened, using the ⊖ button, arrows will be displayed next to the setting indicated that this may now be adjusted.

Press the ⊙ or ⊙ button to cycle through the settings; OFF, LOW or HIGH, stopping at the one you wish to select.

If the backlighting is turned off, whenever the **PAGE** button is pressed the backlighting will still turn on for about 15 seconds.

Press the **PAGE** button to return to the speed and depth display, or press the ⊖ button to activate the main menu again.

The Depth Menu

Selecting the Depth Menu gives you two further options.

- Alarm
- Programme

a) Alarm

Selecting the ALARM option brings the User controlled Alarm Menu into view. The three options; Shallow, Deep and Anchor, are shown and the top choice has a right-hand arrow alongside it. The current status of that top alarm is displayed at the bottom left of the screen.

If you wish to select one of the other options, press the ⊕ or ⊖ button. The arrow moves to another option, shows its current setting (if appropriate) and makes it available for selection. If you press the ⊜ button you will access the settings for that alarm.

When the Shallow or Deep Alarm options are highlighted by the right-hand arrow, the current setting is displayed in the lower left corner of the screen. Once either of these options is accessed, using the ⊜ button, arrows will be displayed alongside the setting value. Press the ⊜ button to cycle through the Hundreds, Tens and Units, using the ⊕ or ⊖ button to change the relevant value. When the value reaches 0 the alarm is OFF.

The Anchor Alarm may be switched ON or OFF. However, it can only be switched ON if the Shallow and Deep Alarms are set.

Press the **PAGE** button to return to the speed and depth display, or press the ⊜ button repeatedly to step back through the menu system.

The Shallow Alarm will be triggered if a depth sounding of less than the set value is received. When triggered, the icon (shown left) will be displayed in the lower right section of the screen.

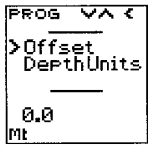
The Deep Alarm will be triggered if a depth sounding greater than its set value is received. When triggered the icon, shown to the left, will be displayed in the lower right-hand corner of the screen.

The Anchor Alarm will be triggered if a depth sounding of less than the Shallow or greater than the Deep set value is received. When triggered the icon, pictured left, will be shown in the lower right corner of the screen.

b) Programme

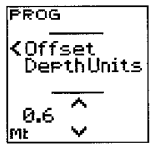
Selecting the PROGRAMME option will bring the Programme Menu into view. There are two options; Offset and Depth Units. The top choice has a right-hand arrow alongside it. The current setting of the highlighted option is shown in the lower left corner of the display.

Select the option you require by pressing the ⊕ or ⊖ button.



To change either of the settings, activate the option using the ⊜ button, then use the ⊕ and ⊖ buttons to adjust the setting.

Press the **PAGE** button to store the changed setting and return to the speed and depth display, or press the ⊜ button to return to the Programme Menu again.



Offset. The OFFSET option allows the instrument zero to be set as sea level, the bottom of the hull, or any other reference you want that is within the offset range. The offset range is from +3.0 metres (=9.9 ft) to -3.0 metres (-9.9 ft).

For example, if you wish zero to be the bottom of the keel and the transducer is mounted through the hull, 4 feet above the keel, an Offset of -4 feet can be entered to tell the instrument to subtract four feet from any sounding. Zero on the graph and digital read-out will then represent the bottom of the keel.

Depth Units. The UNITS option allows the depth display values to be set to either Feet or Metres. This setting is a global one, adjusting the depth units on one C-net Display will amend the depth units on all C-net Displays in the system that show depth data.

The Speed Menu

Selecting the Speed Menu gives you two further options.

- Timers
- Programme

a) Timers

Selecting the TIMERS option brings the Timers Menu into view. The three options; Race Timer, Trip Reset and Stopwatch, are shown and the top choice has a right-hand arrow alongside it. The current status of that top timer is displayed at the bottom left of the screen.

If you wish to select one of the other options, press the ⊙ or ⊙ button. The arrow moves to another option, shows its current setting (if appropriate) and makes it available for selection. If you press the ⊙ button you will activate the Timer and its page will be displayed.

Each Timer has its own page from where the settings can be adjusted or reset and timing can be initiated. On each of these pages the lower section of the screen show the available commands and the key presses required to execute them.

Race Timer. The RACE TIMER is a countdown from either 5 minutes or 10 minutes, as it passes zero it changes and counts up to time the actual race, to a maximum of 99 hours 59 minutes. There are audible warnings as zero is approached. Once selected, this page is added to the cycle of pages that the **PAGE** button steps through and it will remain in the cycle until it is turned off from the Timers Menu.

To set the Race Timer access the Timers Menu and select the Race Timer option. Then use the ⊙ and ⊙ buttons to select 10 or 5 minutes and press the ⊙ button to start the Timer. To exit the Race Timer display press the **PAGE** button.

Trip Reset. The TRIP RESET option is the reset facility for the Trip Meter, simply press the ⊙ button to reset the Trip Meter. From the Trip Reset display pressing the ⊙ button returns you to the Timers Menu, pressing the **PAGE** button takes you to the speed and depth display.

Stopwatch. Having accessed the STOPWATCH display, using the ⊙ button, on screen prompts indicate the button presses required to start, stop and reset the Stopwatch. The Stopwatch also has a Lap function. Press the LAP option (the ⊙ button) to freeze the display while the Stopwatch keeps timing. A second press returns the display to the Stopwatch time.

Once selected, the Stopwatch Display Page is added to the cycle of pages that the **PAGE** button steps through. The Stopwatch will continue to function while other pages are being viewed and the Stopwatch Page will remain in the cycle until it is turned off from the Timers Menu.

b) Programme

Selecting the PROGRAMME option brings the Programme Menu into view. There are four options, but only three can be seen on the display at one time. The top choice has a right-hand arrow alongside it, the current setting of that option is displayed in the bottom left corner of the screen.

If you wish to select one of the other options, press the ⊙ or ⊙ button and the arrow scrolls up or down the options. Scrolling through the options will also bring those that were previously hidden into view. The present setting of the option highlighted by the arrow is displayed in the bottom left of the screen.

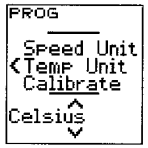
If you press the ⊖ button you will activate the setting for that option.

Press the **PAGE** button to store the changed setting and return to the speed and depth display, or press the ⊖ button to return to the Programme Menu.

Speed Units. This option set the speed displays to either Knots or Miles Per Hour. If Knots are selected any distances will be in Nautical Miles, if Miles Per Hour is selected distances will be in Statute Miles.

The setting is a global one, adjusting the speed units on one C-net Display, will amend the speed measurement units on all C-net Displays in the system which show speed data.

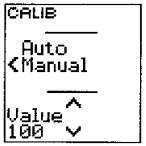
Use the ⊕ and ⊗ buttons to adjust the setting, the **PAGE** button to store the changes and return to the main display or the ⊖ button to return to the Programme Menu.



Temperature Units. To enable the C-net COMBI unit to display temperature information a suitable sensor must be connected to the system. If temperature data is available the unit can be set to display the information in either degrees Fahrenheit or Celsius.

The temperature units option also works globally so that altering the temperature units on one C-net Display will change the temperature units used on all C-net Displays in the system that show temperature data.

The setting is altered using the ⊕ and ⊗ buttons. To return to the Programme Menu use the ⊖ button.

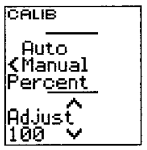


Calibrate. This must be done from the Master Unit that the transducer connects to and not from a Slave Repeater.

There are a further two options available here, AUTO or MANUAL. One or the other is used when calibrating the speed transducer to ensure that the instrument is giving an accurate reading.

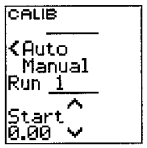
Calibration is achieved by travelling a known distance which should agree with the distance displayed by the C-net COMBI unit. If it does not agree the value is adjusted. The value is a percentage and is set to 100% when the units leave the factory.

When travelling the measured distance, remember to do so in both directions at a time when there is a constant tide.

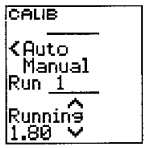


The MANUAL adjustment simply lets you adjust the percentage value directly. Select the option; the first press of the ⊕ or ⊗ button changes the text from "Value" to "Adjust" and subsequent pressing steps the value up or down. When this is done, press the ⊖ button and the instrument will display its new calculated value. It will use this new value from now on.

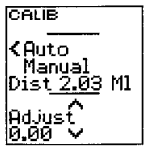
To manually calculate the percentage value, divide the Known Distance by the Measure Distance then multiply the answer by 100 to give the percentage value.



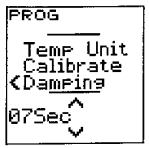
To use AUTO calibration, select the option and press one of the ⊕ or ⊗ (Start) buttons at the beginning of the first run. Travel the measured distance and press either the ⊕ or ⊗ button again at the end of the run.



Position the vessel for the return run (Run 2) and again press either the ⊕ or ⊗ button both at the start and finish of the second run. If a second run is not required simply press either the ⊕ or ⊗ buttons to step through the Run 2 commands.



The instrument shows the distance it measured. If the reading is incorrect, press the ⊕ or ⊗ button to adjust it to the actual distance it should show. When this is done, press the ⊖ button and the instrument will show its new calculated value. It will use this new value from now on.



Damping. If the speed readings are changing too fast for comfortable reading then they can be slowed down by increasing the damping setting. The range of settings is from a minimum of 1 second to a maximum damping of 10 seconds, in 1 second steps.

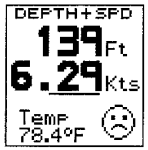
Remember...

... press the **PAGE** button to store any changed settings.

Alarms

There are two classifications of Alarms:

- Warnings that are not urgent, or
- Alarms that are urgent and need immediate correction.



If a Warning is triggered then the audible alarm will sound and a picture (known as an icon) will be displayed in the lower right-hand corner of the display. Note, this icon will not be shown on all pages.

At the same time a page is added to the page cycle with an explanation of the warning. These will be removed automatically once the fault condition has been cleared.

Note, the NOT LOCKED/NO SIGNAL Warnings give a visual display only, they do not trigger the audible alarm.

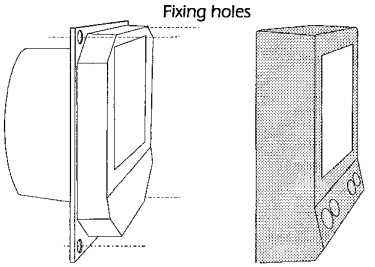
If an Alarm is triggered then the audible alarm will sound and an Alarm Page will be displayed immediately giving an explanation of the alarm. Pressing the **PAGE** button will remove the message from the display and stack it in the page cycle where it will remain until the fault is corrected. The audible alarm will stop but the icon, shown in the bottom right-hand corner of some display pages, will remain active until the fault is corrected.

Installation

The Display

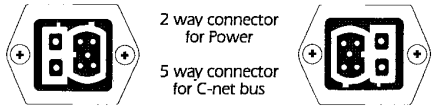
Decide where you are going to install the C-net COMBI unit, making sure that there is sufficient room to unclip the cover once the unit is installed. A "screwdriver" slot is provided at the bottom edge of the cover and a small right angled lever is available, Part Number 191 327, to allow removal of the cover in confined locations. Use the supplied template to help you position and cut the hole for the back of the unit.

Unclip the front cover of the C-net COMBI unit. Position the unit and fix it with four screws, one in each corner. Clip on the front cover, making sure that the buttons locate correctly. A gasket is supplied for fitting between the bulkhead and the back of the unit if that seal needs to be watertight.



Wiring

The two connectors on the rear of the C-net COMBI unit are connected in parallel so either can be used.

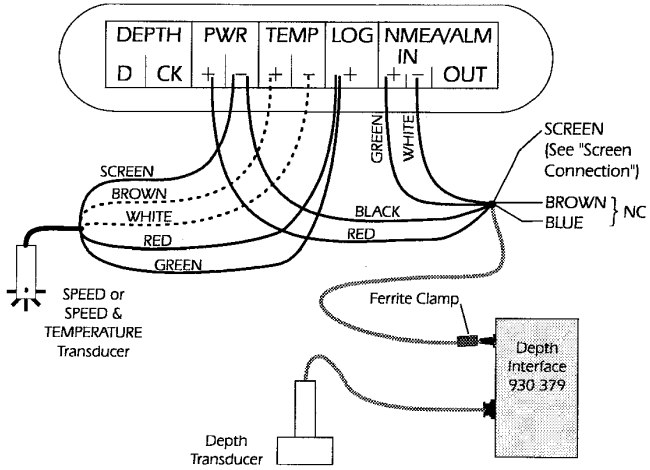


For a Single Unit Installation

Connect the unit to Ship's Supply positive and negative using the two wire power cable that plugs into the 2 way connector on the back of the display (Red to positive, Black to negative). The supply should come from the switched side of a Circuit Breaker and should be fused or protected at 5 Amps. The 5 way cable is not required for a single unit.

For 12V systems, connect the Red wire from the C-net Speed Transducer to the PWR+ connector on the 10 way terminal block. Note, the Speed Transducer may be damaged if this configuration is used on 24V systems.

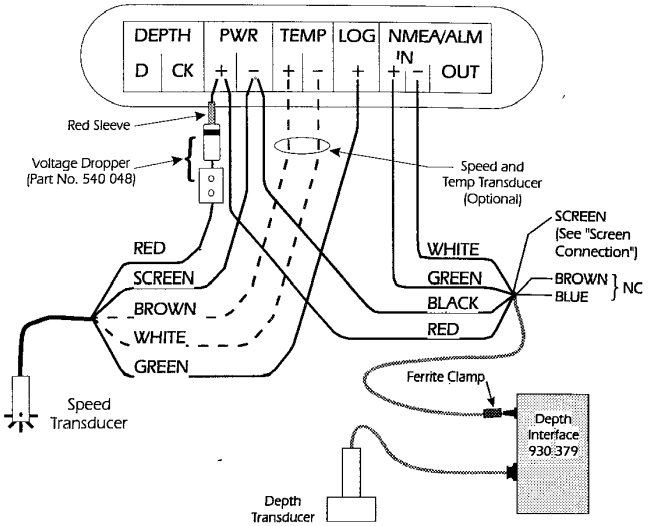
Standard Connections for 24V Systems



Alternative Connection Method for 24V Systems (With Voltage Dropper)

If after installation, the C-net COMBI unit gives an erratic speed reading, often caused by large amounts of electrical noise from petrol engines/alternators, a different wiring arrangement of the C-net Speed Transducer may be used to eliminate the problem. Note, a Voltage Dropper must be included in the positive line to avoid damage to the speed sensor.

On this 24V system (shown top right) connect the Red wire from the C-net Speed Transducer via the Voltage Dropper to the PWR+ connector on the 10 way terminal block (note Polarity). If necessary, the Voltage Dropper assembly may be obtained from Cetrek under Part Number 540 048. Alternatively a 10V 1W3 Zener Diode may be used.

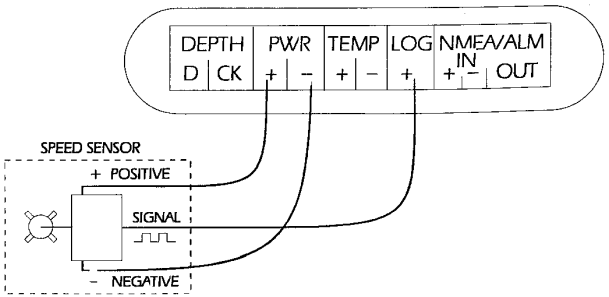


Screen Connection

Where a Screen/Chassis connection is available, (NOT SS-ve), connect the Screen of the 930 379 Depth Interface to this point. The Screen of any Speed/Temp Transducer should be connected to PWR- as shown in the preceeding diagrams.

Connections for Existing Speed Transducers

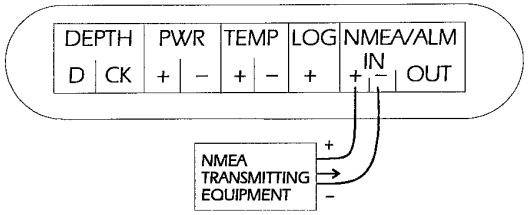
If it is necessary to use a C-net COMBI unit with an existing Speed Transducer equipped with three wires, it should be connected as shown below.



A system using an existing transducer will have to be calibrated before use (see page 14). Note, the calibration value generated may be outside normal limits as the pulse rate of the sensor is likely to be different from that supplied with the C-net system.

NMEA Input

Connect NMEA Input to the unit as shown below.



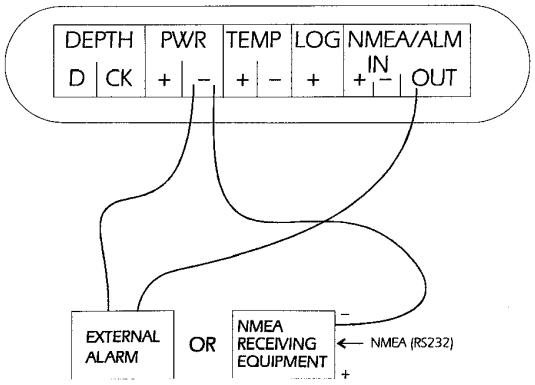
Note:

You cannot use NMEA Input on a COMBI or DEPTH Master because the Depth Interface uses that channel.

NMEA Output or External Alarms

External Alarms and NMEA receiving equipment are connected in the same way, as shown on the following diagram. For the alarms:

0 volt is a No alarm signal;
+5 volts is an alarm signal.



As the External Alarms and NMEA receiving equipment share the same connections it is impossible for one unit to use both functions. If an External Alarm is fitted the unit cannot be connected to NMEA receiving equipment and vice versa.

Once connected an External Alarm must be switched ON via the Customise Screen (during the Installation Settings) in order to operate, further details are given on page 25.

The External Alarm is triggered either when a fault on one unit affects the entire system or when a fault or alarm occurs on the individual unit to which the alarm is connected.

Installation Settings

Selection of Product Type

Having completed the mechanical installation of the C-net COMBI unit the next step is to complete the initial installation settings.

Each COMBI unit can be set up as either a Master, Slave, Demo (Demonstration) or NMEA Unit.

If the unit is to receive input directly from a transducer (or transducers) the unit should be set as a Master. This Master Unit will receive data from the transducer(s), display the information and pass the data on to the C-net Bus (the C-net network).

Note, however, that within the C-net system only one COMBI unit (the one with direct transducer input) can be set as a Master. Second and subsequent COMBI units connected to the network simply read the information put onto the C-net Bus by the Master and must be set as 'Slave' types.

If the transducer input is reaching the C-net Bus via a C-net SPEED or C-net DEPTH unit, the COMBI unit should be set as 'Slave' and the unit receiving the transducer input (ie SPEED and/or DEPTH) set to Master.

The Demo setting is for showroom use, it enables the unit to display typical data without the need for either transducer, C-net or NMEA input. This setting should not be used on working models.

Finally, the NMEA option defaults the unit to work directly from NMEA input, it will ignore any direct input from transducers. For this reason this Product Type is more suited to stand alone units and is not generally used within C-net systems.

The correct Product Type must be set once the unit has been fitted and wired. When first turned ON the Test Screen is displayed and this will show a number that counts down from 5 to 0. At the bottom of the screen the current Product Type setting is displayed.

If it needs changing, follow these steps.

Power the unit up and press the ⊖ and ⊕ buttons simultaneously before the Test Screen countdown reaches 0. The display will then change to a SPECIAL Menu.

Use the ⊗ button to move the arrow down until it lines up with the CUSTOMISE option.

Press the ⊕ button to display the Customise screen.

Use the ⊘ and ⊗ buttons to select the Product Type (Master, Slave, Demo or NMEA) as required.

Press the ⊕ button to turn the External Alarm option ON or OFF.

Press the **PAGE** button to change the language the display will use (English, Spanish, French, German or Italian).

Press the ⊖ button to return to the Special Menu.

Press the ⊗ button to select the EXIT option then press the ⊖ button to exit the Special Menu and return to the normal display pages.

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NMEA Eingänge:

Die Certek-Geräte übertragen in ihrem Bus nur die NMEA-Datensätze, die sie auch interpretieren können. Das bedeutet, an einem Combi können keine NMEA-Geber angeschlossen werden, die die Multi verstehen kann; ein Multi scheint dagegen alles lesen zu können.