# Remote Display

micronet

# EMC Conformance

All Tacktick equipment is designed to the best industry standards for use in the recreational marine environment. The design and manufacture of Tacktick equipment conforms to the appropriate Electromagnetic Compatibility (EMC) standards. Correct installation is required to ensure that performance is not compromised.

# Important

Due to the wireless communication systems used in Micronet instruments they are only recommended for use on boats up to 18 metres (60 ft.) **Before installing to a boat of aluminium or steel construction, please contact your Tacktick dealer.**

Like any other electronic instruments your Micronet system is designed to serve only as an aid to navigation and it remains the skippers responsibility to maintain a permanent watch and be aware of developing situations.

Any attempt to take a Micronet product apart will invalidate the warranty. The battery may only be replaced by a person trained and approved for this purpose.

# 1 Information

## 1.1 Introduction

Your Tacktick Remote Display provides a unique combination of features:

**Mobile display of instrument data**

All data available on your Micronet network can be viewed wherever you are located on your vessel.

**Remote control of Micronet displays**

The Remote Display can control the other Micronet displays on your network, i.e. Maxi, Dual Maxi and remote enabled models of the Digital, Dual Digital and Analogue displays.

**Solar Power**

Your Micronet display is powered for life by the environment. Although feature packed and highly visible in all conditions, current demand is so low, and the supply so efficient, that the solar-powered display is self sufficient. Combined with other displays in the Micronet range this display becomes part of a complete navigational system.

## 1.2 Specifications

| | |
|---|---|
| **Height of digits:** | 15mm (0.6 inches) |
| **Backlighting:** | 3 levels with daylight shutoff |
| | System-wide or local control |
| **Power:** | Solar Powered |
| | 300 hrs autonomy by day, 7 nights at brightest backlighting, |
| | 20 nights at economy backlighting without charge |
| **Units of display:** | Boat Speed (knots, km per hour, statute miles per hour) |
| | Distance (nautical miles, statute miles, kilometres) |
| | Depth (metres, feet, fathoms) |
| | Wind Speed (knots, metres per second, Beaufort) |
| **Alarm:** | Audible Alarm for Depth, Wind, Cross Track Error and Waypoint Arrival |
| **Weight:** | 135g (0.3 lbs) |
| **Operating Temp.:** | $-10^{O}$ to $+60^{O}$C ($14^{O}$ to $140^{O}$F) |
| **Frequency:** | 868 MHz or 916 MHz |

## 1.3 Power Management and Battery Life

What makes your Micronet display possible is Tacktick's revolutionary approach to power management. By reducing the amount of power being used by the electronics and maximizing the potential of the sun to provide power, a Micronet display becomes a virtually perpetual device.

Power status is indicated by two icons on the display:

Battery Level and Charge Rate

Used together these icons will show the condition of the power supply.

| | | |
|---|---|---|
| Bright Sunny Day  |  | Battery is charged and being topped up by the sun. (see Note) |
| |  | Battery is low and being charged by the sun. |
| Overcast Day  |  | Battery is charged and requires no further charging. |
| |  | Battery is low but maintaining it's level. |
| Night  |  | Battery is charged but is not charging. |
| |  | Battery is low with no charging. |
| LOW Power |  | It is recommended that the instrument be left in daylight for some time for the battery to recover. A fully discharged battery will recharge in approximately 12 hours of direct bright sunlight. |

If using the displays at night, power usage can be reduced dramatically by switching the Backlighting to level 1 or Off. If Backlighting is not required on displays located below decks it is best to set them to "Local" backlighting control (see page 28 S38) so that power is not being wasted in displays which may not be visible from the one being viewed.

**Note:** If the internal battery is fully charged then it does not matter how much the display is subjected to bright sunlight no further charging is required and the Charge Rate Indicator will remain low.

⚠ If the displays are to be stored for a long period of time before next use (Over Winter) ensure that the batteries are fully charged before storage.

### Pocket Mode

When Pocket Mode is enabled (see page 28 S35) the Remote display switches off the LCD panel after a user configured time delay. The unit remains connected to the network and pressing any button switches the display panel back on.

### Sleep Mode

If there is no boat speed or change in heading registered on the system for a period of 12 hours your Remote Display will switch off to conserve power. A "POWER SAVE" alarm will sound before the system switches off. Pressing any button within 10 seconds of the alarm sounding will allow the system to remain switched on.

Backlighting will automatically shut down/off when operated in daylight.

⚠ **Artificial light WILL NOT recharge the battery**. Placing your Micronet display close to an artificial light will seriously damage the display. Only recharge in natural daylight.

## 1.4 Safety and Disposal

Your Micronet display contains Manganese Lithium Dioxide batteries which should be disposed of correctly. Do not dispose of any instrument in domestic waste. Refer to regulations in force in your country.

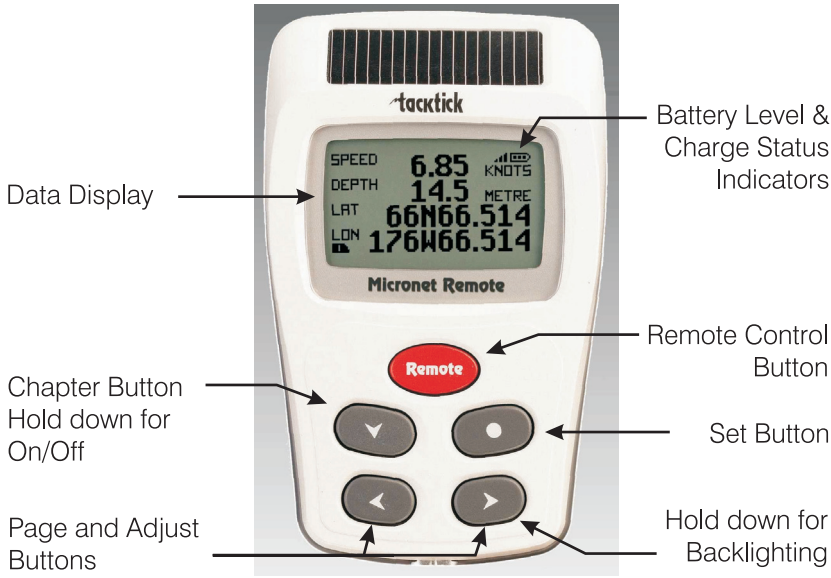
If in doubt return the instrument to Tacktick Ltd. for correct disposal.

# 2 Operation

## Important:

Ensure that the "Auto Network" procedure described on the yellow instruction sheet and full Setup and Calibration has been performed correctly before attempting to use your Micronet system.

## 2.1 Display Information




## 2.2 Switching the System On and Off

To switch your Micronet system on or off select any display and press the button for 2 seconds.

**Switch on**


**Switch off**

## 2.3 Information Display Operation

Information is displayed in a "Chapter and Page" format using the button to scroll through the chapters and the and buttons to move between the pages within a chapter. The diagram below shows the information format.

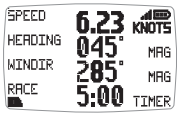
Pressing the button at any time moves to the next Chapter and the page last selected in that Chapter will be displayed. Both Chapter and Page selection will scroll back to the first page once a cycle has been completed.

Four chapters are available:

### Single line displays

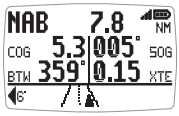

Eight pages, each displaying a single item of data. The data item to be displayed on each page can be selected in setup from the full list of data pages described in section 2.8.
See setup on page 25 S28.

### Four line displays




Four pages, each displaying four data items. The data items to be displayed on each page can be selected in setup from the full list of data pages described in section 2.8.
See setup on page 26 S29

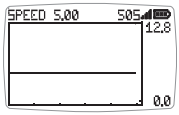
### Rolling Road display




A single page displaying the following navigation data: current waypoint name, distance to waypoint, course over the ground (COG), speed over the ground (SOG), bearing to waypoint, cross track error and turn angle.

A rolling road diagram illustrates the vessels course in relation to the direct track from the previous to the current waypoint and the direction to steer to return to the direct track.

### Graph Displays

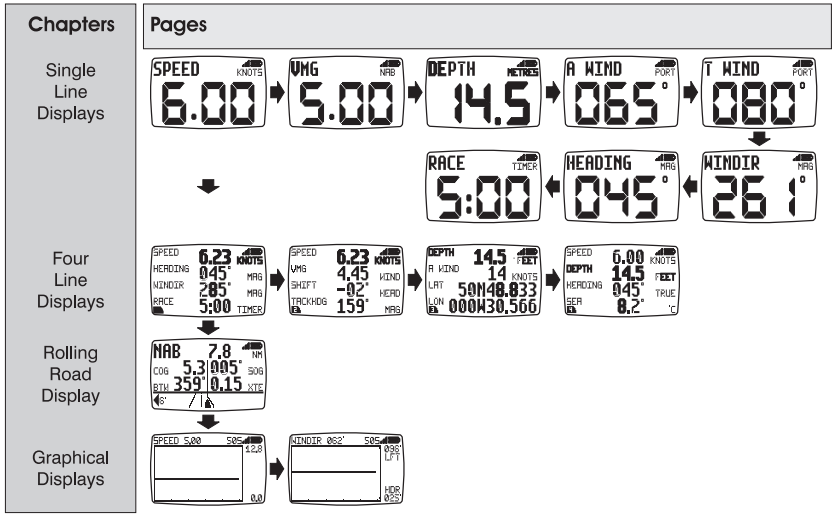



Two pages, each displaying a plot of a user selected data item against time. See setup on page 26 S30.
For the wind direction graph, LFT and HDR labels indicate the lift and header trend segments of the graph.

**To alter the time span of a graph:**

Press the button while the graph is displayed. The message “CHANGE TIME” appears at the top of the page. Use the and buttons to change the time span. Press again to confirm the selection.

## Default Chapter and Page diagram




## 2.4 Remote Control Operation

In this mode, the Remote Display is able to control the functions of other displays on the Micronet network.

All remote control screens are displayed in "reverse", with white text on a black background, to allow immediate recognition of remote control mode.

Remote control mode is cancelled if a period of thirty seconds elapses in which no key is pressed. The Remote Display automatically returns to information display mode.

**To enter Remote Control mode**


Press and hold the remote button.

The Remote Display builds a list of the Micronet displays on the network that are configured for remote control. This list allows the user to select a display to control with the Remote Display. The display that is currently selected for control is indicated by the ➡ and ⬅ markers around the display identifier.

The screen of the selected display will flash to indicate that it is under remote control.

Displays on the network can be added to or removed from the list and the order of the list can be modified. See setup on page 27 S32 for details on how to configure the list

**To select a different display for control**

Repeatedly press the remote button until the required display is highlighted.

The screen of the newly selected display will flash to indicate that it is under remote control.

**To control the selected display.**

Pressing the ▼, ●, ◄ or ► button on the Remote Display has the same effect as pressing that same button on the controlled display. For example, pressing the ▼ button will cause the controlled display to scroll to the next chapter.

The full range of operation and configuration functions on the controlled display is available by pressing keys on the Remote Display.

Note: The first press of ▼, ●, ◄ or ► on the remote display causes the screen of the controlled display to stop flashing but the controlled display remains under remote control until the Remote Display exits remote control mode.

**To exit Remote Control mode**

Press and hold the remote button. The Remote Display returns to information display mode.

If a period of thirty seconds elapses without a key press, remote control mode is automatically cancelled and the Remote Display returns to information display mode.

## 2.5 Backlighting

At any stage of the display's operation press and hold for 2 seconds the ► button to access the lighting control.


Pressing the ◄ and ► buttons will scroll through setting OFF, 1, 2 and 3 whilst changing the backlighting.

Depending on the display setup (see page 28 S38), Backlighting on the whole system or just the single display will be altered.

In Pocket Mode, backlighting will turn off automatically after a preset interval which can be configured in setup (see page 28 S35)

Backlighting is automatically switched off in daylight as part of the display's power saving feature and will not operate in daylight.

## 2.6 Keylock

The Keylock feature protects from accidental key presses.

You can enable or disable keylock as follows:

Press and hold ○ to enter setup

Press ▼ repeatedly to reach the OPTIONS chapter

Press ➤ to open the OPTIONS chapter.

Press ▼ repeatedly to bring the KEY LOCK sentence to the cursor


Press ○ to toggle between the ON/OFF options

Press and hold ○ to exit setup.

Once keylock is activated, pressing a key causes the unit to give the unlock key prompt. Press ◄ followed by ➤ to unlock the keys (this will allow the keys to function for one minute, after which the keys will automatically relock).

## 2.7 Audible Signals and Alarms

At stages during its operation your Micronet system will beep to indicate alarms or moments of importance.

**Power-up** Once operating as part of a network the display will issue a single beep as it is switched on by pressing the ▼ button for 2 seconds.

**Button Press** A single beep is issued each time a button is pressed. A second beep is issued after a 2 second hold down of the ○ button.

**Timer** A single beep will be issued at each minute of the countdown.
With 1 minute left to go a beep will sound every 10 seconds.
With 10 seconds to go a beep will sound every second.
Countdown complete will be indicated by a single burst of three beeps.

**Alarm** Continuous bursts of three beeps will indicate an alarm.
The alarm activated will be indicated on the display. Pressing any button will clear the alarm. See fault finding section on page 36.

**Depth Shallow Alarm**

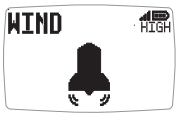

The water depth has fallen below the preset alarm level.
The depth value that triggers the alarm is affected by any keel or waterline offsets that have been added.
See page 21 S4 to set the alarm function.

This alarm does not sound as the depth increases above the preset alarm level.

### Depth Deep Alarm


The water depth has increased above or fallen below the preset alarm level. The depth value that triggers the alarm is affected by any keel or waterline offsets that have been added. See page 21 s5 to set the alarm function.

### Wind High Alarm




The wind speed has increased beyond the preset alarm level. See page 22 S6 to set the alarm function.
This alarm does not sound as the wind speed decreases below the preset alarm level.

### Cross Track Error Large Alarm

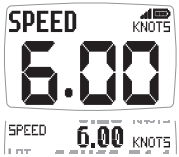

A large cross track error has been alerted by the GPS.
See page 22 S7 to set the alarm function.

### Waypoint Arrival Alarm


A waypoint arrival signal has been received from the GPS. The waypoint name is shown on the top line of the display.
See page 22 S8 to set the alarm function.

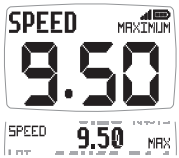
## 2.8 Information Display - Data Item Descriptions

### 1 SPEED



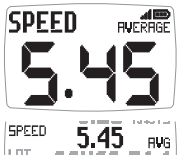

The vessel's actual speed through the water as measured by the Speed Transducer, displayed in the currently selected speed units. See page 22 S9 to set units.

### 2 SPEED MAX (Maximum Speed)



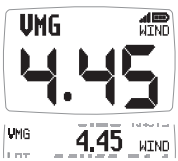

The maximum speed encountered since switch-on or since the last Maximum Speed Reset. To reset see page 21 S2.

### 3 SPEED AVG (Average Speed)



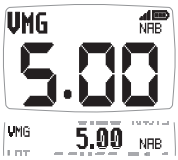

The average speed attained since switch-on or since the last Average Speed Reset. To reset see page 21S3.

**4 VMG WIND (Velocity made good to windward)**



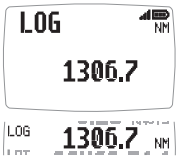

The vessel's calculated Speed Directly Upwind. This value is calculated by the display from the Boat Speed and True Wind Angle.

**5 VMG WP (Velocity made good to waypoint)**



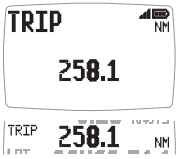

The vessel's speed directly towards the active Waypoint. This value is calculated by a GPS receiver or plotter.

**6 LOG (Total distance travelled)**



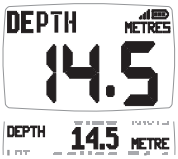

The total distance travelled by the vessel since installation of the display or since a Factory Reset. See page 29 S40 to reset.

**7 TRIP (Trip distance travelled)**



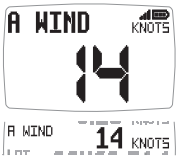

The distance travelled since the last Trip Reset. To Reset see page 21 S1.

**8 DEPTH**



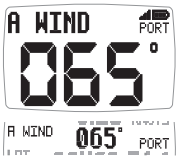

The actual depth beneath the vessel as measured by the Depth Transducer.
Displayed in the currently selected depth units.
See page 22 S10 to select depth units.
The displayed value will be affected by any keel or waterline offset added. See page 24 S18 to set an offset.

**9 A WIND KNOTS/M S (Apparent wind Speed)**



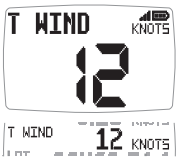

The apparent wind speed with respect to the vessel as measured by the Wind Transmitter, displayed in the currently selected wind units. See page 23 S11 to select wind units.

### 10 A WIND PORT/STBD (Apparent wind angle)



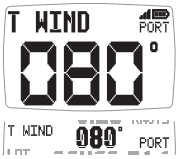

The apparent wind angle with respect to the vessel as measured by the Wind Transmitter.

### 11 T WIND KNOTS/M S (True wind speed)




The true wind speed with respect to the vessel, calculated by the display taking into account the vessels speed through the water. Apparent Wind Speed, Angle and Boat Speed must be available for this calculation.

### 12 T WIND PORT/STBD (True wind angle)

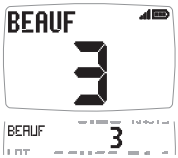



The true wind angle with respect to the vessel, calculated by the display taking into account the vessels speed through the water. Apparent Wind Speed, Angle and Boat Speed must be available for this calculation.

### 13 WINDIR (True wind direction)

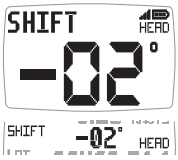

The true wind direction over the water, calculated by the display taking into account the vessels speed through the water and compass heading. Apparent Wind Speed, Angle and Compass Heading must be available for this calculation.

### 14 BEAUF (Wind speed on Beaufort scale)




The actual wind speed over the water displayed using the Beaufort scale, calculated by the display taking into account the vessels speed through the water and compass heading. Apparent Wind Speed, Angle and Compass Heading must be available for this calculation.

### 15 SHIFT (Wind shift angle, head or lift)




Indicates changes in the wind against a compass heading. Spotting these wind changes is the key to fast sailing upwind.

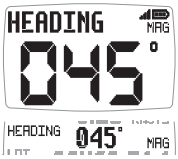
The system automatically detects the mean wind direction by averaging over a time period of 2 minutes to 60 minutes. This time period can be changed in setup, see page 24 S22.

To manually overide this automatic calculation and set the mean wind direction:

1. If a Wind Transmitter is included in your Micronet system then simply press the button; (the current wind direction is stored as the mean wind direction and displayed for 5 seconds during which time the and buttons may be used to adjust the value.)
   If the mean wind direction changes, press again.
2. If you do not have a Wind Transmitter included, sail close hauled and press the button then tack and, once close hauled, press the button again.
   If the mean wind direction changes then the display may be updated by pressing and holding the button while sailing on port tack, the button while sailing on starboard tack or the button while head to wind.

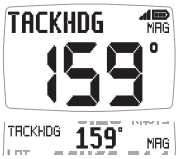
See Tacktick's "Using wind shifts to your advantage" sheet for further information, this is available on the Tacktick web site, www.tacktick.com.

**16 HEADING**



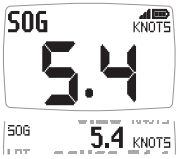

Current magnetic compass heading of the vessel as measured by the Compass Transducer.
The value displayed will be affected by the calibration routine for the compass (see page 34).
The heading is displayed as degrees Magnetic or True depending on the current compass setting.
See page 24 S24 to set.

**17 TACKHDG (Heading on opposite tack)**




Magnetic compass heading that the vessel will follow should it tack through the wind, calculated by the display. Apparent Wind Angle and Magnetic Heading must be available for this calculation to be made.

**18 SOG (Speed over the ground)**




The vessel's speed over the ground as calculated by the GPS Antenna or a GPS receiver.

### 19 COG (Course over the ground)


The vessel's course over the ground as calculated by the GPS Antenna or a GPS receiver.

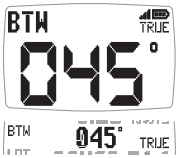
### 20 LAT (Latitude)


The vessel's current latitude as calculated by the GPS Antenna or a GPS receiver.

### 21 LON (Longitude)

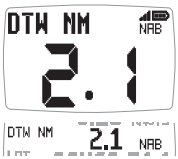

The vessel's current longitude as calculated by the GPS Antenna or a GPS receiver.

### 22 BTW (Bearing to waypoint)



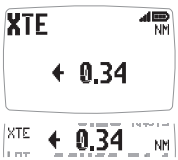

Bearing to (active) waypoint. The active waypoint being the one to which the GPS is currently navigating as defined by a GPS receiver or plotter.
The waypoint name will be displayed.

### 23 DTW (Distance to waypoint)




Distance to active Waypoint. The active waypoint being the one to which the GPS is currently navigating as defined by a GPS receiver or plotter.
The waypoint name will be displayed.

### 24 XTE (Cross track error)




The distance away from the direct track to the (active) waypoint as defined by a GPS receiver or plotter.
The arrow indicates the direction to steer to get back onto course to the waypoint.

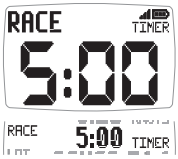
**25 TTG (Time to go to waypoint)**


The calculated time remaining before you will arrive at the (active) waypoint as calculated by a GPS receiver or plotter.

**26 SEA (Sea temperature)**


Current sea temperature as measured by the sensor in the Speed Transducer.
Displayed in the current temperature units.
See p 23 S13 to select units.

**27 RACE TIMER**




Countdown and elapsed time clock.

The timer can only be set and operated in single item display mode. In 4 line display mode the current state of the count down or elapsed time can be viewed but not modified.

To set the countdown period:

Press and hold for 1 second the button.

Use the and buttons to set the required countdown time in minutes.

Press the button quickly to prepare to start the countdown.

To operate the timer:

Press the button quickly to start the countdown.

The display will sound a single beep every 60 seconds until 1 minute remains when a beep will sound at 10 second intervals. The final 10 seconds will count down with a beep each second with "START" being indicated by a triple quick beep at 0 seconds.

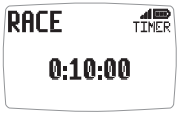
At any time during the countdown a quick press of the button will re-synchronise the timer to the nearest minute and commence countdown from that point.

After the countdown is completed, the timer will automatically start to count the elapsed time and this will continue until the button is pressed and held for 2 seconds.


Press and hold to enter the timer setup


Use and to select the desired countdown time


Press to store the countdown time




Press to start the countdown

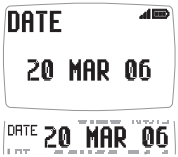

Countdown in progress


Press to reset timer to the nearest whole minute

**28 TIME**

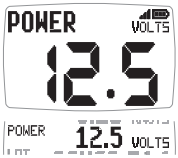

Current time as received from the GPS Antenna, corrected to local time if an offset has been added.
See page 28 S37 to set an offset.

**29 DATE**




Current date as received by the GPS Antenna.

**30 POWER**




The voltage connected to the Power input of the Hull Transmitter or the Wireless (NMEA) Interface.

**31** **FFD-1 to FFD-6 (Custom data displays)**

If you have a Wireless (NMEA) Interface connected to a PC with Tacktick proprietary NMEA output capability (PTAK) then your six user defined free format pages will be displayed in these custom data display pages. Typically used by racing sailboats to show "Time to Layline" or corrected True Wind Direction where the Upwash Correction Table is built into the PC.

**32** **OFF (Null data item)**

This item is used to mark a page of a single line display, or a line of a four line display as "hidden".

# 3 Setup and Calibration

## 3.1 Entering Setup and Calibration Mode

To enter the Setup and Calibration menu press and hold for 2 seconds the button.

**Note:** It is not possible to enter setup mode while the Race Timer is currently visible on a single item display page. Scroll to a different page in order to enter setup.

## 3.2 Setup and Calibration Chapter and Page operation

On entering setup mode a list of chapters is displayed, with the active chapter marked with the cursor .

**To change the active chapter:**

Press the button repeatedly until the desired chapter title is alongside the cursor.

**To enter the active chapter:**

Press the button. A list of pages is displayed with the active page marked with the cursor .

Press the button to return to the list of chapters.

**To change the active page:**

Press the button repeatedly until the desired page title is alongside the cursor.

**To enter the active page:**

Press the button. A list of parameters and current settings is displayed with the active parameter over the cursor .

Press the button to return to the list of pages.

**To change the active parameter:**

Press the button repeatedly until the desired parameter title is over the cursor .

## 3.3 Editing Parameter Values

Parameter values may be one of four types:

A user editable numeric value (for example, the shallow depth alarm may have the value 3.2).

A resetable numeric memory value (for example the minimum depth memory can be reset to the current depth).

A list of options (for example, the speed units parameter may have the values KNOTS/KPH/MPH).

An ON/OFF toggle (for example the Cross Track Error alarm can be either ON or OFF).

**To edit a numeric parameter value:**

Press the button. The value data will begin to flash.

Use the and buttons to adjust the value.

Press the button again to set the new value.

**To reset a memory value:**

Press the button. The parameter is reset.

**To select a parameter option from a list:**

Press the button. The parameter option will begin to flash.

Use the and buttons to select the option required.

Press the button again to set the new option.

**To toggle between ON/OFF parameter settings:**

Press the button. The setting will toggle between ON and OFF.

## 3.4 Setup Chapter and Page Organisation

The diagram below shows the Setup and Configuration chapter and page organisation.

For a full description of each setup parameter refer to items S1 to S47 on the following pages.