

mn100

Analog Display



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 14 meters (45 ft.) which are of glass, carbon, or wooden construction. 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.

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1 - Information

1.1 Introduction

Your Micronet instrument 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 instruments in the Micronet range this display becomes part of a complete navigational system.



1.2 Specifications

Height of digits:	7mm (0.28")
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:	Wind Speed (knots, meters per second, Beaufort)
Alarm:	Audible Alarm for Wind
Weight:	285g (0.63lbs)
Operating Temp.:	-100 to +600C (140 to 1400F)
Frequency:	868 MHz or 905 MHz















1.3 Power Management and Battery Life

What makes your mn100 instrument 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 mn100 instrument becomes a virtually perpetual device.

Power status is indicated by two icons on the instrument display:


Battery Level  and  Charge Rate

Used together these icons will show the condition of your instrument's power supply.

Bright Day	Sunny	 and 	Battery is charged and being topped up by the sun. *
		 and 	Battery is low and being charged by the sun.
Overcast Day		 and 	Battery is charged and requires no further charging.
		 and 	Battery is low but maintaining it's level.
Night		 and 	Battery is charged but is not charging.
		 and 	Battery is low with no charging.
LOW Power		 and  Flashing	It is recommended that the instrument be left in daylight for some time for the battery to recover, or charge from an external 9 - 24V power source. A fully discharged battery will recharge in approximately 12 hours of direct bright sunlight.

If using the instruments at night power usage can be reduced dramatically by switching the Backlighting to level 1 or Off. If Backlighting is not required on instruments located below decks it is best to set them to "Local" Backlighting control (see page 15 –s6) so that power is not being wasted in instruments which may not be visible from the one being viewed.

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

	<p>If the instruments are to be stored for a long period of time before next use (Over Winter) ensure that the batteries are fully charged before storage. If necessary connect to a 9 to 24v power supply for 24 hrs prior to storage.</p>
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If there is no boat speed or change in heading registered on the system for a period of 12 hours your Micronet instrument will switch off to conserve power. A "POWER SAVE" alarm will sound before the instrument system is switched 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 instrument close to an artificial light will seriously damage the instrument. Only recharge in natural daylight.

Applying External Power

In cases where instruments are mounted permanently below decks it will be necessary to apply an external power source to prevent complete discharge of the built in battery.

Connections on the rear of the instrument allow a 9V to 24V DC power source to be connected. Connections can be made to the vessels DC system or a 9V battery pack may be connected . It is recommended that permanent connection is only made when the instruments are permanently fixed to the vessel and not when the clip brackets are used.

Connection to a 9V (PP3) battery will fully recharge the internal battery over a period of 24 hours.

1.4 Safety and Disposal

Your Micronet instrument 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.

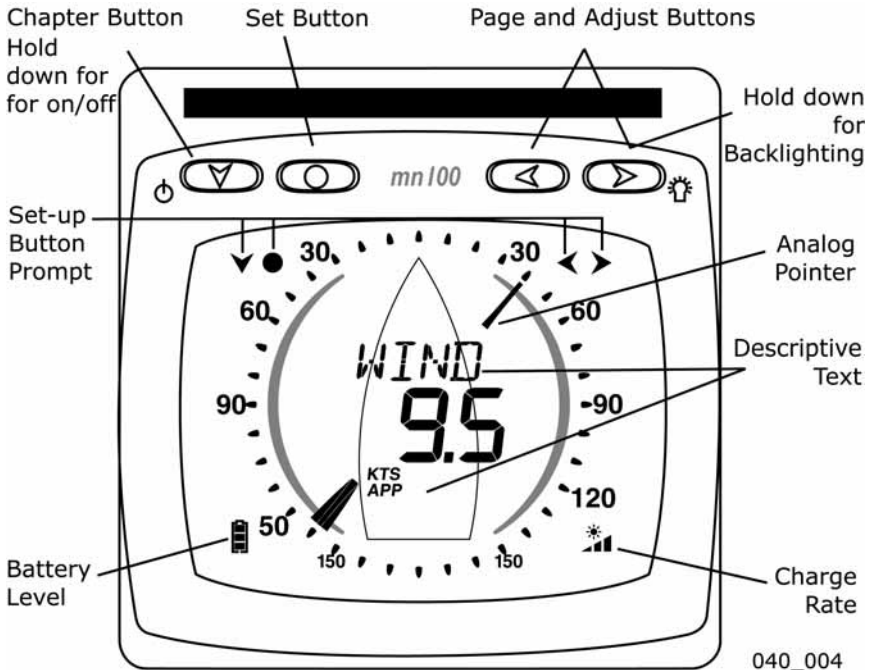
If in doubt return the instrument to Tacktick Ltd. for correct disposal.

2 – Operation


Important:

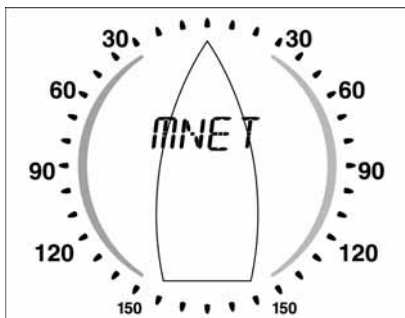
Ensure that the “Auto Network” procedure described on the yellow instruction sheet and full Setup and Calibration has been performed correctly before attempting to use your Micronet instruments for navigation purposes.

2.1 Instrument Display Information




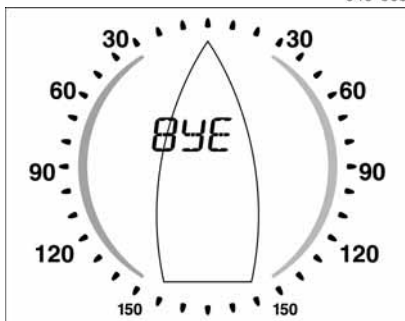
2.2 Switching the System On and Off

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






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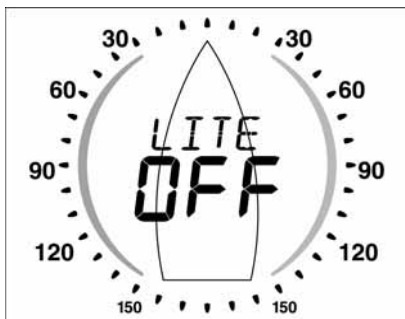
To switch off your Micronet system select any instrument and press and hold the  button for 2 seconds.



040_006

2.3 Backlighting

At any stage of the instrument'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 instrument setup (see page 16 -s5), Backlighting on the whole system or just the single instrument will be altered.






040_007





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

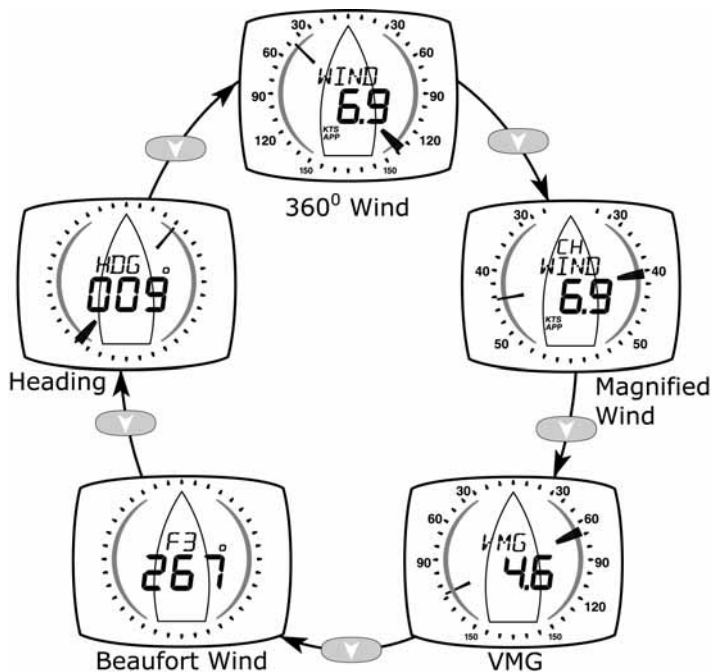
2.4 Audible Signals and Alarms

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

- Power-up** Once operating as part of a network the instrument will issue a single beep as it is switched on by pressing the  button for 2 second.
- Button Press** A single beep is issued each time a button is pressed. A second beep is issued after a 2 seconds hold down of the  button.
- Alarm** Continuous bursts of three beeps will indicate an alarm. The alarm activated will be indicated on the digital display, accompanied by the flashing  symbol. Pressing any button will silence the alarm.
- 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.

2.5 Chapter and Page Operation

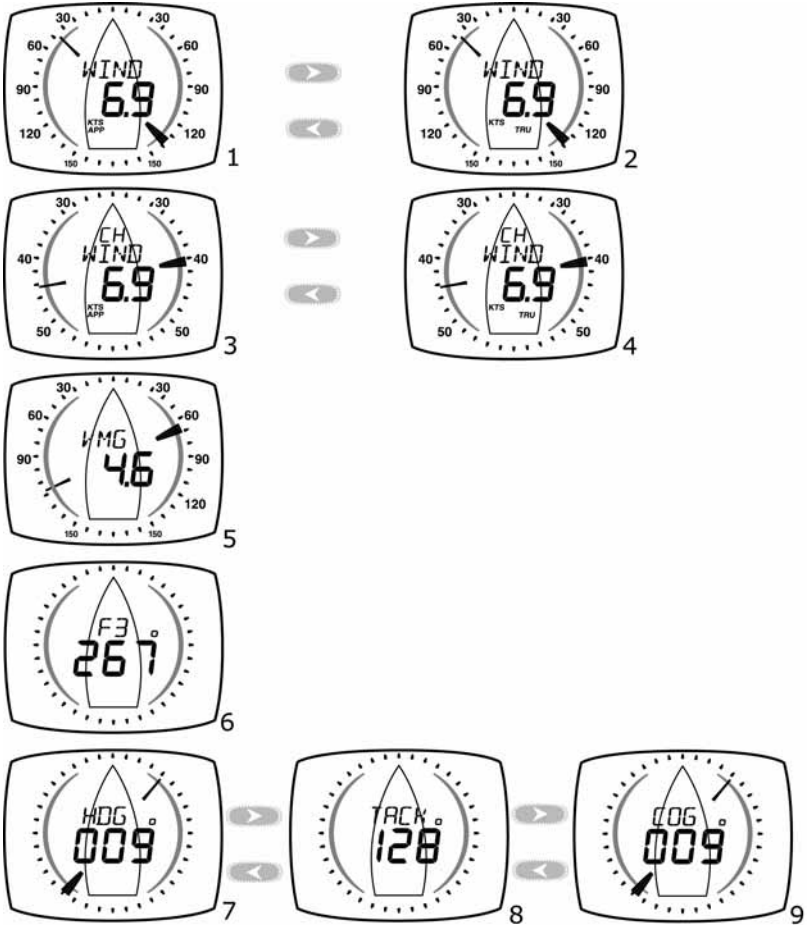
Instrument information is displayed in a “Chapter and Page” format using the  button to scroll through the Chapters and the  buttons to move between Pages. The diagram below shows the information format.



040_001

Default Chapter Selection

Pressing the button at any time will move on to the next Chapter and on scrolling through the Chapters 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.



040_002

Page Selection

For a full description of each page refer to items 1 to 8 on the following pages.

2.6 Chapter and Page Description

360° Wind Chapter

- (1) Apparent Wind Angle
The Actual Wind Angle with respect to the vessel as measured by the Wind Transmitter.
- and Apparent Wind Speed
The Actual Wind Speed with respect to the vessel as measured by the Wind Transmitter.
- (2) True Wind Angle
The True Wind Angle with respect to the vessel, calculated by the instrument taking into account the vessels speed through the water. Both Apparent Wind Speed, Angle and Boat Speed must be available for this calculation.
- and True Wind Speed
The True Wind Speed with respect to the vessel, calculated by the instrument taking into account the vessels speed through the water. Both Apparent Wind Speed, Angle and Boat Speed must be available for this calculation.

Magnified Wind Chapter

- (3) Magnified Apparent Wind Angle
The Actual Wind Angle with respect to the vessel as measured by the Wind Transmitter and displayed on a 0 to 60 degree scale.
- and Apparent Wind Speed (see above)
- (4) Magnified True Wind Angle
The True Wind Angle with respect to the vessel, calculated by the instrument taking into account the vessels speed through the water and displayed on a 0 to 60 degree scale. Both Apparent Wind Speed, Angle and Boat Speed must be available for this calculation.
- and True Wind Speed (see above)

VMG Chapter

(5) True Wind Angle (see above)

and Velocity Made good to Windward
The vessels calculated speed directly upwind. This value is calculated by the instrument from the Boat Speed and Apparent Wind Angle.

Beaufort Chapter

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

and True Wind Angle
The True Wind Angle with respect to the ground, calculated by the instrument taking into account the vessels speed through the water. Apparent Wind Speed, Angle, Boat Speed and Current Heading must be available for this calculation.

Heading Chapter

(7) Analogue Pointer Indicating the direction of North

and Magnetic 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.


(8) Tack Magnetic
Magnetic Compass Heading that the vessel will follow should it tack through the wind, calculated by the instrument. Apparent Wind Angle and Magnetic Heading must be available for this calculation to be made.

(9) Analog pointer indication of True North




and COG
The vessel's Course Over the Ground as calculated by the GPS Antenna.

3 - Setup and Calibration

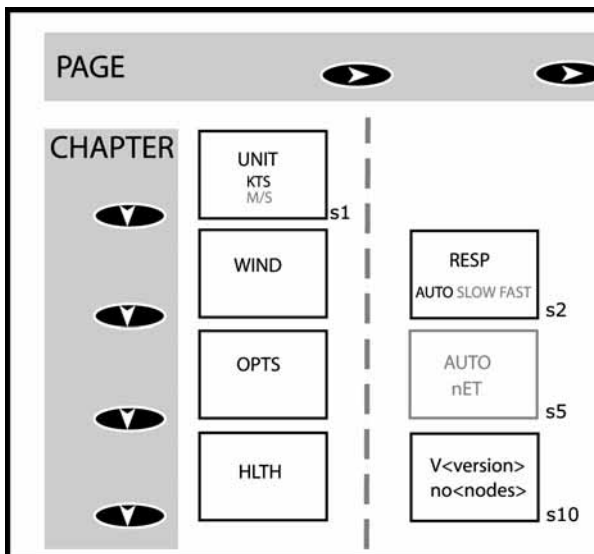
3.1 Entering Setup and Calibration Mode

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

3.2 Chapter and Page Setup and Calibration

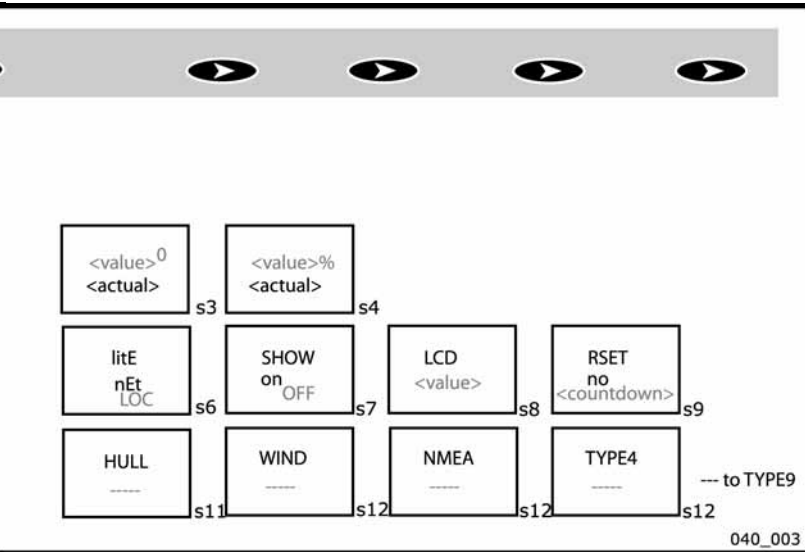
Instrument Setup and Calibration is displayed in a "Chapter and Page" format using the  button to scroll through the Chapters and the  and  buttons to move between Pages. The diagram below shows the information format.

Note: Unlike normal operation you must scroll to the Chapter heading page before moving to another chapter.







Editing Values

To adjust any settings press the  button. The setting will start to flash and the  and  buttons will change the value.







3.4 Setup Page Description

Units Chapter

Press the  button quickly to edit, press the  or  to change units and press the  button quickly to select the chosen units. Default values are shown in **bold**.






- (s1) Sets the units in which ALL Wind Speed related information is displayed. **Knots** or Meters per second (M/S).

Wind Chapter

Press the  button quickly to edit, press the  or  to change units and press the  button quickly to select the chosen units. Default values are shown in **bold**.

- (s2) **RESP**
Sets the update period of the Wind display.
Aut/Slow/Normal/Fast
- (s3) **Wind Angle Offset**
Aligns the displayed apparent wind angle with the actual wind direction with respect to the boat. See page 18 for calibration.
- (s4) **Wind Speed Calibration Factor**
Adds a percentage factor which corrects the information from the Wind Transmitter and ensures the Apparent Wind Speed is displayed correctly. See page 18 for calibration.

Options Chapter

Press the  button quickly to toggle the values between settings or press the  button quickly to edit, press the  or  to change values and press the  button quickly to select the chosen value. Default values are shown in **bold**.

- (s5) **AUTO nEt**
Only available on the instrument which was used to power up the system. Refer to the "Auto Network" sheet for further information.

- (s6) LITE
Tells the instrument to control the system Backlighting or just its own Backlighting. **nEt/LOC**.
- (s7) SHOW
Allows the instrument to display information when NOT installed as part of a Micronet system for demonstration purposes only. **Off/On**.
- (s8) LCD
Adjusts the viewing angle and contrast of the LCD display to improve visibility under varied mounting possibilities. 1 - 7 default 4.
- (s9) RSET
Returns all the calibration settings to the factory default values.

Health Chapter

- (s10) V / no
Displays the instrument's Software Version, battery level and charge rate to assist in troubleshooting and fault finding. If the instrument is the "Master" (the one used to switch on the system) then the number of items (nodes) in the system will be displayed. If the instrument is a "Slave" (was switched on by the system) then the signal strength to the "Master" will be displayed"
- (s11) HULL
Shows the signal strength and battery level of the Hull Transmitter to assist in troubleshooting and fault finding.
- (s12) WIND SIGNL (as above but for Wind Transmitter information)
- (s13) NMEA SIGNL (as above but for NMEA Interface information)
- (s14 --) TYPE 4 - Further signal strength indications will be displayed if available.

4 - Seatrial and Calibration

Once the Micronet Instrument system has been installed on the vessel and Autonetworking has been completed it is necessary to carry out calibration.




It is not safe to use the instruments for navigational purposes until calibration has been carried out correctly.


Wind Calibration

Both Wind Speed and Direction can be calibrated to ensure that readings from the Wind Transmitter are displayed accurately.


4.1.1 Wind Angle Offset



Motor the vessel directly into the wind.

Press and hold the  button for 2 seconds to enter Setup

Press the  button repeatedly to scroll to the "SETUP/WIND" Chapter


Press the  button to advance to "WIND/+0000" Page

Press the  button to enter Edit Mode

Press the  or  buttons to change the displayed value to 000.









The bottom digits will indicate the number of degrees of offset entered.

Press the  button to exit Edit Mode

Press and hold the  button to exit Setup and return to normal operation.

4.1.2 Wind Speed Correction

Note: Wind Speed reading is factory calibrated to display correctly and should not be altered unless external factors are thought to be causing incorrect readings. Correction should only be carried out if a known correct windspeed is available.

Press and hold the  button for 2 seconds to enter Setup
Press the  button repeatedly to scroll to the "SETUP/WIND"
Chapter
Press the  button to advance to "WIND/+0%" Page
Press the  button to enter Edit Mode
Press the  and  buttons to change the displayed value to the
required percentage.
The bottom digits will indicate the displayed Wind Speed.
Press the  button to exit Edit Mode
Press and hold the  button to exit Setup and return to normal
operation.

5 Installation

5.1 Tools Required and Parts List

- | | |
|--|-----------------------------|
| 1. 2mm or 5mm Drill Bit (7mm if power connection required) | 1. Mounting Template |
| 2. Power Drill | 2. Display Bracket |
| 3. Cross Head Screwdriver | 3. Mounting Screws (3) |
| | 4. Mounting Bolts (3) |
| | 5. M4 Studs & Thumbnuts (3) |
| | 6. Double Sided Tape |

5.2 Precautions and Positioning Advice

Ensure mounting surface is flat.

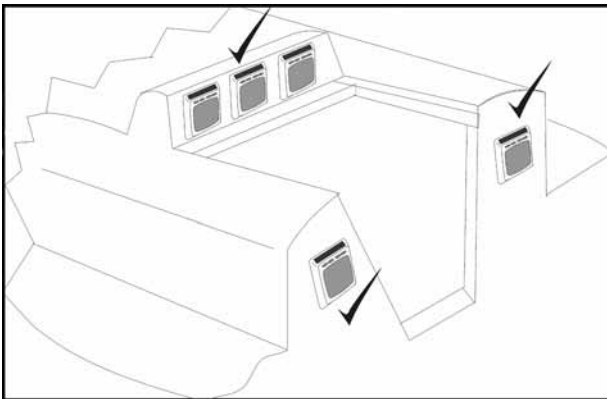
Leave space between instruments for sun covers.

Leave space to remove instrument from bracket (if used).

Avoid areas where damage may occur (winch handles, feet, warps etc.)

Select a flat, smooth, surface for mounting and use the Template provided to select a suitable position for mounting your Micronet instrument.

Check for clarity of vision and ease of access to the control buttons, it is recommended that instruments are positioned such that your arm does NOT pass through the spokes of the steering wheel when operating the buttons.

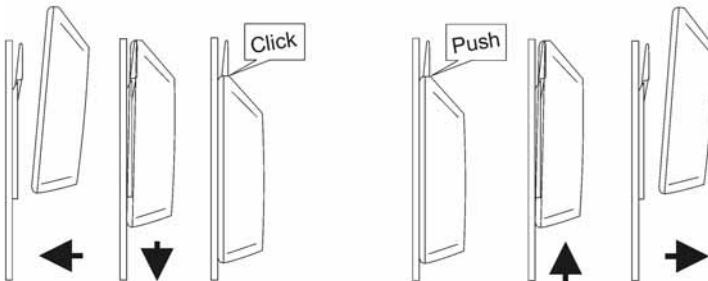
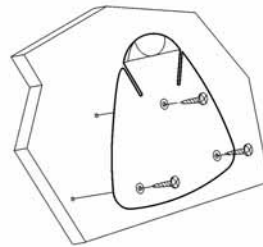
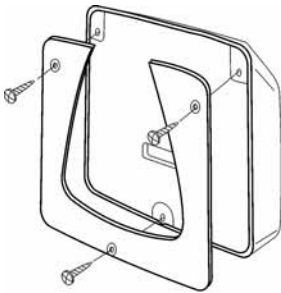


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5.3 Bracket Mounting (Preferred Method)

This method allows for the easy removal of an instrument as and when required, for either security reasons or to prevent damage or discomfort whilst not in use.

1. Using the three supplied M4 bolts attach the back plate to the rear of the instrument (Fig.1).
2. Drill three 2mm holes marked "BRACKET" on the Template and using the supplied self tapping screws attach the clip bracket to the mounting surface (Fig.2).
3. Place the instrument flat against the bracket slightly higher than the final position and slide gently down into position. There will be a small click as the bracket secures the instrument into position (Fig.3).
4. To release the instrument press lightly on the bracket tab and slide the instrument upwards (Fig.4).



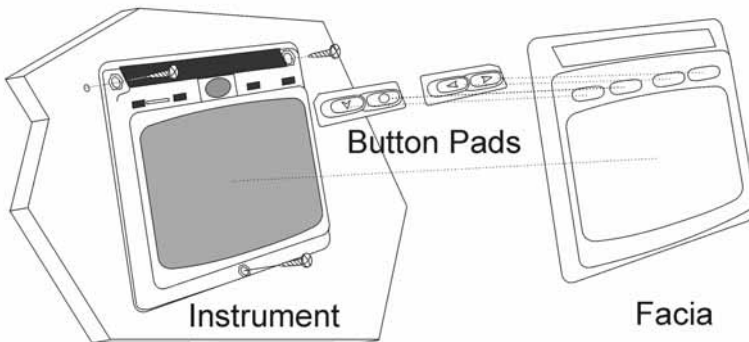
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5.4 Surface Mounting

5.4.1 Where there is no access to the rear of the mounting surface

Easy installation but will allow removal without gaining access to the boat. Position the supplied Template carefully before starting.

1. Drill three 2mm holes marked "SURFACE" on the Template
2. Carefully snap the fascia of the instrument off the main body taking care not to drop the button pads.
HINT – It may be useful to place a piece of sticky tape across the front of the buttons before removing the fascia to prevent them from falling out during the installation.
3. Remove the three captive M4 nuts from the plastic moulding and attach the instrument to the mounting surface using the three self tapping screws provided. Take care not to over tighten the screws as this may cause the moulding to crack.
4. Check the instrument is perfectly level, carefully position the button inserts into the correct slots and snap the fascia back into position.



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5.4.2 Temporary Mounting

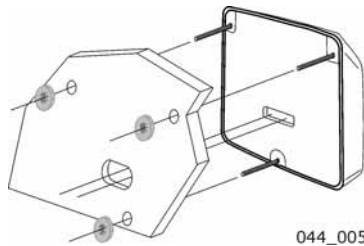
1. Use the double sided tape provided to secure the instrument to a suitable mounting surface. Press the instrument firmly against the surface until secure.

Note: This method is recommended for temporary use only.

5.4.3 Where access is available to the rear of the mounting surface

This method allows for maximum security of a permanently mounted instrument. Position the supplied Template carefully before starting.

1. Drill three 5mm holes marked "B" on the Template.
2. Screw the four M4 brass studs into the rear of the instrument.
3. Place the instrument in position pushing the three studs through the newly drilled holes.
4. Using the three supplied thumb nuts, secure the instrument to the surface making sure the instrument is level before final tightening.



5.5 External Power Connections

To connect an external 9 to 24 volt power supply to the instrument head from either a portable battery or the vessel's existing power system.

1. Drill two 7mm holes marked "P" on the Mounting Template and smooth them together with a sharp knife or small file.
2. Pass the supply cable through the new hole and attach the supplied crimp spade receptacles.
3. Remove the blanking plug from the rear of the instrument to expose the terminals.
3. Taking care to connect the correct polarity push the receptacles firmly onto the spades on the rear of the instrument.
4. Mount the instrument head securely in position.
5. Clamp the cable securely close to the instrument.

6 Maintenance and Fault Finding

6.1 Care and Maintenance

All Micronet products are totally sealed against water and are not serviceable. Any attempt to take a Micronet product apart will invalidate the warranty.

To clean, use only a damp, soft cloth. No detergents, solvents or abrasives should be used.

To avoid damaging a Micronet display unit we recommend storing in the supplied soft pack when not in use.



If the instruments are to be stored for a long period of time before next use (Over Winter) ensure that the batteries are fully charged before storage. If necessary connect to a 9 to 24v power supply for 24 hrs prior to storage.

6.2 Fault Finding and Technical Support

6.2.1 Power Save Alarm sounds.

There has been no significant data activity on the network. The alarm sounds to indicate that the instrument system will turn itself off. To continue using the system press any button to cancel the alarm.

6.2.2 Lost Network Alarm sounds.

On a single instrument this indicates that the particular instrument has lost communication with the Master*. Either there is a problem with the Master* instrument or the instrument in question has been moved out of effective range.

On several instruments this indicates that these instruments have lost communication with the Master*. Either there is a problem with the master or the Master* has been moved out of effective range. The instruments will power down shortly after sounding the alarm to save power.

6.2.3 A single instrument flashes the battery symbol and then switches off.

The battery level is low on the particular instrument affected. Connect to a 9 to 24V power source or leave in bright sunlight for 12 hours minimum to fully recharge the instrument's internal battery. If the particular instrument is the system Master* then the other instruments will sound the Lost Network Alarm. To continue using the rest of the system power down and restart the system from another instrument.

6.2.4 Low Battery Alarm Sounds.

The power level is low in the Hull Transmitter, NMEA Interface or Wind Transmitter. On any Digital Instrument enter setup and calibration mode (page 14) and scroll through to the Health Chapter.

Check the signal levels of the Transmitters and Interface Box. Connect the Hull Transmitter or NMEA Interface to a 9 to 24V power source for 12 hours minimum to recharge the internal battery. Leave the Wind transmitter in bright sunlight for 12 hours minimum to recharge its internal battery.

6.2.5 Data is shown as dashes.

The information is not been transmitted to the instrument displays. There may be lost communication between the Wind Transmitter or Hull transmitter and the instrument displays. On any Digital instrument enter setup and calibration mode (page 14) and scroll through to the Health Chapter. Check the signal levels of the Hull and Wind Transmitters

6.2.6 Wind speed reads 0.

Information being transmitted from the Wind Transmitter is being received with a Zero value. If the anemometer cups at the top of the mast are turning and the Wind Speed reads 0 then there is a problem with your Wind Transmitter.

6.2.7 No NMEA data showing on external instruments.

From any Instrument enter setup and calibration mode (page 14) and scroll through to the Health Chapter. Check the signal level and battery status of the NMEA Interface Box.

* The "Master Instrument" is the instrument which was used to power up the entire system. This instrument may be different each time the system is used. If you are fault finding and are uncertain which instrument is the master the switch off the system and switch on again. The instrument which you switched on is now the master

Warranty Information

Tacktick Limited or its authorized Distributors will repair or replace a Tacktick product free of charge where a manufacturing fault becomes apparent within two years of the purchase date provided:

1. No unauthorized attempt has been made to repair the product.
2. The product has not been misused, operated outside of its intended environment or operated in a manner which is incompatible with the written instructions supplied on purchase.

Proof of purchase date is required for the warranty period to be valid.

Due to the removable nature of the Tacktick product, on board service will only be available with prior consent from Tacktick or its authorized Distributors.

Failure within the warranty period:

Simply return the product to your nearest authorized Tacktick Distributor, together with proof of purchase date.

Failure outside the warranty period:

Simply return your product to the nearest authorized Tacktick Distributor and an estimation for repair will be provided.

Authorized Tacktick Distributor details can be found at www.tacktick.com, or on the back of Tacktick sales brochures.