



## **Micro Compass**

UU030 rev5

Congratulations on the purchase of your **Micro Compass**. Tacktick have combined technological innovation with feedback from top sailors around the world to bring you the ultimate sailboat-racing compass.

All Tacktick equipment and accessories are designed to the best industry standards for use in the leisure marine environment. Their design and manufacture is in compliance with CE Mark requirements, this includes electromagnetic compatibility.

Please read this User Guide carefully before using your **Micro Compass** and keep it for future reference.

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### **Package Contents**

Micro Compass

Soft Pack

Mounting Cradle

4 x M4 nuts, bolts & washers for the mounting cradle

User Guide

Warranty card

## **2 - Features and Benefits**

**Powered** for life with Tactick's unique solar system.

**Portable**, yet rugged with the Tactick snap in cradle.

No need to adjust for **southern hemisphere** effects.

Unique **tactical mode** makes reading wind shifts simple and minimises button pushing.

**Twin displays** which are easy to read even when hiking.

Easy to use **countdown** timer with resynchronisation function.

**Waterproof**, submersible to 10m.

Low battery indicator.

Automatic power down if no motion is detected after 7 minutes.

### 3 - Definitions and Terminology

#### True Wind Direction:

The instantaneous magnetic bearing of the true wind.

#### Mean Wind Direction:

The average true wind direction during the race.

#### Tacking Angle:

The angle through which the boat turns when changing from one tack to the next.

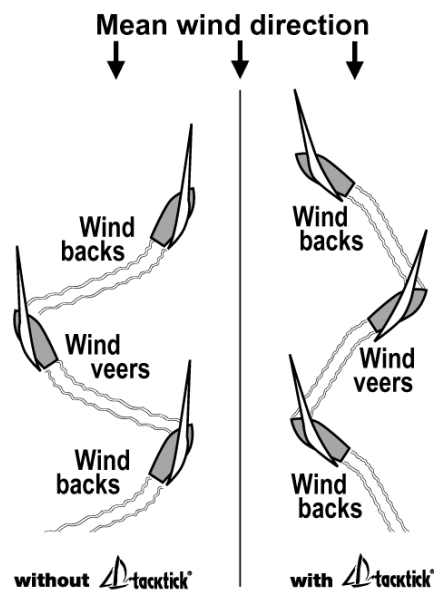
### 4 - Introduction

#### 4.1. Racing and wind shifts

Like most things in sailing, the wind does not remain constant in either strength or direction. The crew tend to react naturally to gusts but find wind shifts more difficult to detect. The wind does, however, tend to shift in regular patterns, oscillating between a back and a veer.

These oscillations give the sailor a chance to gain an advantage by sailing a shorter distance to the upwind mark.

In the diagram, the boat on the right sails a shorter course by tacking when headed and thereby sailing mostly in lifts.



## 4.2. What can Micro Compass do for me?

**Micro Compass** gives you a clear head-up display, which can show:

- compass heading
- tactical heading (for wind shift detection)
- countdown timer

In Compass mode, heading is displayed with digital precision. The 20mm high characters are larger and easier to read than the compressed scale of a compass card.

The Tactical mode is for use when beating (tacking up-wind). With a conventional tactical compass, which has port tack and starboard tack lubber lines, you are able to read the same number on either tack. In the same way, with **Micro Compass** the port and starboard displays show the heading with an offset applied (just like reading from offset lubber lines), so that you can read the same number on either tack. **Micro Compass** adds half the tack angle to the starboard display, and subtracts half the tack angle from the port display, so that you are always looking at the same number, whichever tack you are on. Now you decide whether the wind is backing or veering, and thus when to tack.

**Micro Compass's** start timer is simple to operate, yet flexible enough to deal with any starting sequence. Once past the start the timer will begin to count elapsed time.

## 4.3. Micro Compass layout

**Micro Compass's** twin display gives you an exceptionally wide viewing angle, allowing you to see critical race information from the cockpit or from the trapeze.

The **mode** and **set** keys are operated from the top of the unit, and are located to the side of the solar cell.



## 5 - Operating Instructions

### 5.1. Switching on and off

To switch ON **Micro Compass** automatically switches on when you take it out of the soft pack. This is because it responds to the increase in light level at the solar cell. To switch the unit on if the unit is already out of its soft pack, you must cover the solar cell with your hand, then uncover it. Note that indoor light may not be sufficient to make your unit switch on.

To switch OFF First put your **Micro Compass** into its softpack so that stray light cannot turn the unit back on again. Now press and hold down the mode key until the display clears (this will take 2 seconds)

If **Micro Compass** detects no movement for 7 minutes it will power down (this does not happen at sea).

### 5.2. Before the race

Before the race, you will need to set up the countdown timer. To move between the three modes (Compass, Timer and Tactics) press the mode key. To start the countdown timer, you need to be in Timer mode.

#### Setting the Countdown Timer

1. Check you are in Timer mode.
2. If you need to change the start time (eg from 6 minutes to 10 minutes), then “stab” both *mode* and *set* keys together (i.e. briefly press and release them). Adjust the time up or down with the *set* or *mode* key. When you have the right time, “stab” the *mode* and *set* keys again.

Look for the Timer mode indicator at the top of the display.



The *set* key can be used at any time whilst in Timer mode to resynchronise the timer to the nearest whole minute.

The countdown timer can be set up to 20 minutes. Between 10 and 20 minutes the display will show decimal minutes rather than seconds (e.g. 12:5 means 12 minutes, 30 seconds).

3. Press the *set* key to start the countdown. Audible beeps will count you down to the start.
4. If the initial gun was not timed accurately, press the set key at any subsequent gun to automatically **resynchronise** the timer to the nearest full minute.
5. When the countdown reaches zero, **Micro Compass** returns to the mode it was in, before the countdown timer was set.

For rolling starts, count the number of fleets ahead of your start, and multiply the start time accordingly. This procedure ensures you have an automatic transition to the main page at the start.

### **Establishing the wind patterns**

To establish the wind patterns, you will need to arrive in the starting area early and spend time sailing up the first beat. During this time, the **Micro Compass** should be in Tactical mode and you should:

Check the tack angle is correct for the conditions. If you find the wind direction reads higher on starboard tack than on port tack, you should reduce the tack angle and visa versa. To change the tack angle, press the set key once, then use the *set* or *mode* key to adjust the flashing “tack angle” up or down. After 5 seconds, the screen will automatically revert to Tactical mode.

Watch the wind direction for some time, to establish its average value and the size and frequency of changes.

### **Changing the resolution of the tactics scale**

Trials have shown that the optimum resolution for the tactics display is 5°. This allows sufficient resolution to detect meaningful wind shifts, but eliminates the distraction of small errors in the tack angle.

The adjustment range is 1°, 2°, 5° or 10°. To change the resolution, press AND HOLD the set key for 2 seconds, then use the *set* or *mode* key to adjust the flashing “resolution” up or down. After 5 seconds, the screen will automatically revert to Tactical mode.

### Establishing the line bias

With **Micro Compass** in compass mode, sail along the start line on starboard tack, and note the bearing. Add 90° and you have the *line direction*. Now point the boat towards the wind, stopping the turn when the **Micro Compass** shows a heading equal to the *line direction*. Now if the wind is coming from the starboard side, the line is right biased, if from the port side, it is left biased.

## 5.3. During the race

### Using the Compass mode

In Compass mode, the mode indicator shows “Compass” at the top of the display and your **Micro Compass** displays the magnetic heading <sup>1</sup>. You can use this precision heading reference to site marks, to check the line bias, or to detect wind shifts (although Tactical mode is recommended for detecting wind shifts).

### Reading wind shifts whilst beating upwind

Make sure the **Micro Compass** is in Tactical mode. On port tack look at the port display, and on starboard tack look at the starboard display. If the wind shifts, then you will see the displayed number change accordingly.

When on starboard, if the number gets smaller then you should tack (tack on -). When on port, if the number gets bigger then you should tack (tack on +).

### Elapsed time

Elapsed time can be accessed during the race by pressing the mode key until you see the Timer mode indicator at the top of the display.

## 5.4. The battery status

The battery status is shown for 5 seconds after the **Micro Compass** is switched on, or once every 4 minutes if the battery falls below 20 hours of charge remaining. The number indicates the hours remaining assuming the sun does not shine at all, and from a full charge this will be 200 hours. If the battery life is less than 50 hours, you should place your **Micro Compass** in **BRIGHT** sunshine for 2 days, with the solar cell facing directly the mid-day sun. Note that if the sun is hidden by thin cloud the effective charging time will be weeks rather than days and that under thick cloud the unit will not charge at all. Do not worry if the unit turns itself on during charging, **STRONG** sunshine charges the unit rapidly, even when its operating.

<sup>1</sup> There is no compensation for magnetic deviation, so do not site your Micro Compass near a conventional compass which is magnetic.



## 6 - Installation

Mount the **Micro Compass** within 20° of the vertical to ensure the compass is able to operate accurately. Mounting at a more extreme angle will cause deviation errors.

Mount the cradle to a bulkhead or a bracket supplied by Tacktick. Now simply clip your **Micro Compass** to its cradle each time you sail.

When you leave the boat, do remember to take your **Micro Compass** away with you **IN ITS SOFTPACK** to ensure it cannot switch itself on and discharge. Remember that **Micro Compass** switches on by responding to an increase in the light level at the solar cell.

## 7 - Maintenance

The **Micro Compass** is totally sealed against water and is not serviceable. Any attempt to take the **Micro Compass** apart, other than as described in this user guide, will invalidate the warranty.

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

To avoid damaging the **Micro Compass** and to ensure it remains switched off, always store the **Micro Compass** in its soft pack.

When sailing in bright sunlight it should not be necessary to recharge your **Micro Compass** after use. If the battery level falls below 50 hours, recharge by leaving on a windowsill facing outside towards the sun until the battery level is recharged to 200 hours.

### Approximate recharging times

Bright sun	2 days
Thin cloud	10 days
Dull days	no charging
Indoors	no charging

Ensure the mounting bracket is secure and check that the security bolts are tight before each race.

## 8 - Problem Solving

Problem	Possible cause	Action required
Micro Compass turns itself off	Micro Compass is on land and stationary	Turn Micro Compass on again and ensure movement every 7 minutes.
	Low battery power	Check battery status screen (battery status section). If battery power is close to zero recharge batteries (maintenance section).
Compass deviates from the expected heading	Micro Compass is not mounted correctly	Ensure the mounting angle is within 20° of the vertical.
	Magnetic objects are within 70cm (2ft)	Remove magnetic objects.
Micro Compass 'rattles' when shaken	The sound is the internal liquid damping system	No action required - this is normal.
Micro Compass loses power when stored	Unit is not being stored in its softpack.	Store Micro Compass in its soft pack, otherwise it will switch on when the light level increases.

## 9 - Specification

Character height	17mm
Waterproofing	Submersible to 10m
Heading resolution	1°
Heel & pitch angle	± 30°
Timer	1 second resolution, 1 to 20 minutes
Countdown alarms	Audible tones indicate time to start
Size	100 x 57 x 68mm
Weight	153g (6oz)
Battery charging	Solar power
Battery life	200 hours, automatic solar recharging