

## GPS USER MANUAL

What's in the Box:

1. GPS Unit
2. Stretcher attachment
3. Suction mount
4. NK compatible adaptor bracket
5. Lanyard & Neoprene case
6. USB lead
7. Quick start guide (not shown)



### 1. Some quick Tips to Set Up Your Unit

#### a. Stroke sensitivity:

- i. This will depend on your sport. We suggest as a starting point:

1. Rowing

- a. Normal stroke: very low
- b. Start stroke: low

2. Kayaking

- a. Normal stroke: high
- b. Start stroke: very high

- ii. Be prepared to try different settings, depending on your sport and the type of training you like to do (e.g. lots of high rating work versus low rating) the effectiveness of the settings will vary

#### b. Averaging:

- i. Again this will depend on your sport

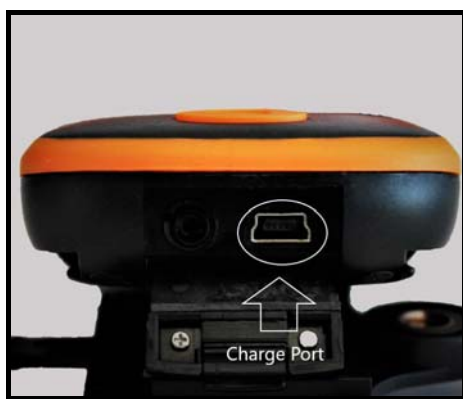
- ii. We suggest as a starting point setting all variables (speed/rating/ratio) to Auto
- iii. Be prepared to try different settings, depending on your sport and the type of training you like to do (e.g. lots of high rating work versus low rating) the effectiveness of the settings will vary

## 2. Introduction

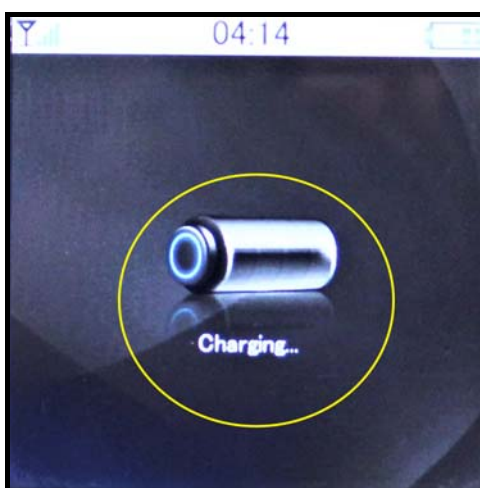
The Coxmate GPS is designed to provide performance monitoring for a variety of water sports. This manual provides an overview of the general operation of the Coxmate GPS. The support section of the Coxmate website offers additional resources for users. There is also the opportunity to subscribe to products news and updates on the website.

## 3. Charging

When you first receive the unit, connect it to a USB port on a computer or a USB charger, to charge the unit (image 2. Below). The connection port on the unit is under the cover at base of unit (image 1. below).



1. USB port to connect to computer



2. Charging icon will display when unit is charging  
(may also say USB connected when connected to a computer)

**IMPORTANT:** Whenever you close this cover, make sure it is pressed firmly and clicks into place. **THIS COVER PROVIDES A WATERPROOF SEAL WHEN CLOSED. IT IS VERY IMPORTANT IT IS KEPT CLOSED WHENEVER GPS HAS POTENTIAL TO GET WET.**

#### 4. Mounting Options

It is recommended that the lanyard is used as a safety strap. Simply loop it around a part of the vessel before mounting. For some sports a tether point is highly recommended. **If the GPS falls into water it will sink.**

There are three options for mounting the unit in most boats:

##### 4.1 NK adapter:

The rear of the adaptor bracket slides onto the standard 'T' bracket used by Coxmate HC and NK Speedcoach. Fit this to the unit (Images 1. & 2. below) then slide the unit into the standard 'T' bracket (image 3. below)



1. Insert bracket onto back of unit



2. Bracket attached to Unit



3. Insert unit/bracket onto existing NK mount

#### 4.2 Suction Mount:

Attach the adaptor bracket to the suction mount via the screw fitting (image 1. below) – be sure to tighten it securely in place. Slide the GPS unit down onto the bracket. Fit suction bracket (image 2. below) to the boat. This will require a clean smooth surface. Wet the suction cap, make sure the vacuum lever is up, place suction cup in target position and press vacuum lever down. The position of the GPS can be adjusted by loosening the thumb screw on the bracket – tighten it up once in correct position. Check unit is firmly attached and be sure to secure the unit with lanyard provided.



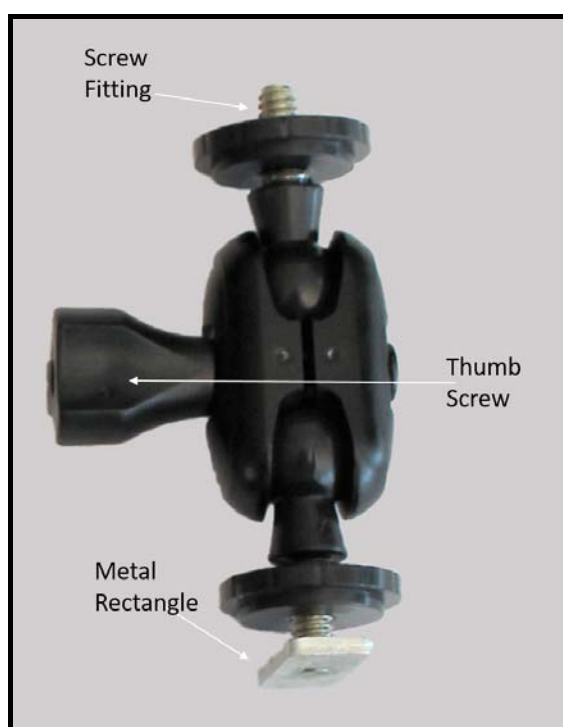
1. Screw fitting and vacuum lever



2. Suction Cup Mount with GPS unit attached

#### 4.3 Foot stretcher Rail Mount (rowing boats only):

Replace the suction mount with foot stretcher rail adaptor (image 1. below) – loosen thumb screw. Remove the foot stretcher if necessary. The metal rectangle slides into the stretcher adjustment rail. Tighten the locking ring on the bottom thread to secure the location of the mount on the preferred position on the foot stretcher rail (image 2. below). Position/angle adjustment is achieved by loosening the thumb screw, manoeuvring then tightening to secure position of unit for maximum visibility.



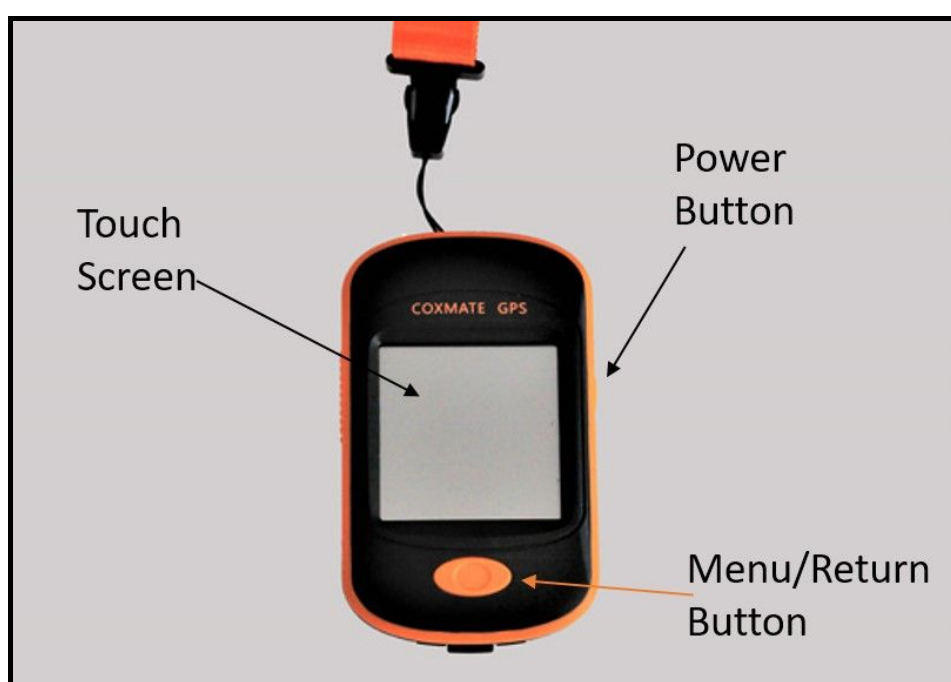
1. Foot stretcher rail mount



2. Position the mount as desired

## 5. Getting Started (see image 1. Below)

- a. **ON/OFF:** The power ON/OFF button is on the side. This button requires firm pressure to operate – to prevent it accidentally operating when it is in your kit bag. It needs to be held down for approximately one second. Depending on several factors it may take a couple of minutes to detect satellites, before it can give accurate readings. To turn unit OFF, hold finger on ON/OFF button for approximately 2 seconds
- b. **Menu/Return button** is below screen
- c. **Reset:** Press ON/OFF and Menu/Return buttons simultaneously
- d. **Touchscreen:** Used for operation and configuration

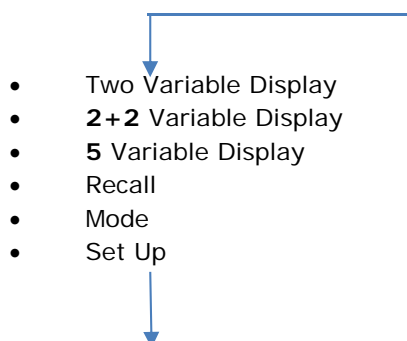


1. Button configuration with full touch screen

## 6. On Water

The top line provides status of satellites, heart rate belt connection (optional), battery remaining and time of day.

Repeated presses of the Menu/Return button will go through following:



### 6.1 Two Variable Display:

This is the opening display (image 1. Below). Rate and Speed will be displayed.



1. Two Variable Display (rating and speed)



## 6.2 2 + 2 Variable Display:

Rate and Speed will also be displayed. However if you start the *timer* (bottom of screen – image 1. below), time and distance will also be displayed – the display will alternate between rate/speed and time/distance each stroke.

The status of the *timer* is shown at bottom left box on the screen. Each time the screen is touched, it will progress through the following status points:

- **READY**
- **SET** - The timer will start if screen is touched, or, if motion is detected.
- **RUN** – timer running. Will stop if screen touched. Can also be programmed to stop after a defined period if no stroke detected. (see Auto Stop in menu options). When Record (menu option) is enabled the unit creates a file and records the session.
- **STOP** – timer stopped. Will reset time and distance to zero and go to READY if screen touched. The recorded file is saved.



1. 2 + 2 Variable Display: Rating/Speed will alternate each stroke with Time/Distance – note the bottom left panel to control the timer & recording

### 6.3 5 Variable Display:

If this is selected, then 5 variables can be displayed. These can be selected in **Set Up (Section 6.4 below)**. An example configuration is shown (image 1. Below). The timer (READY/SET/RUN/STOP) operates in the same as with the **2+2 variable** display.



Any 5 of the following variables can be selected:

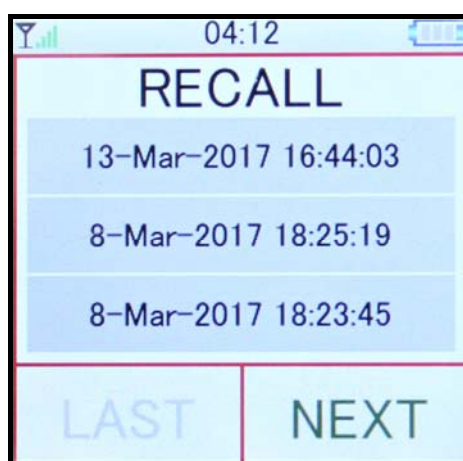
- Rate: Number of strokes taken per minute
- Speed (Split): Speed you are travelling in m/s (metres per second travelled) or Split/500m (time taken to travel 500m)
- Time: Elapsed time from the start of the piece/session
- Distance: Distance travelled from the start of the piece/session
- Distance/stroke: Distance travelled per stroke
- Average Speed: Average speed for the entire piece/session (in m/s or Split/500m depending on what is selected)
- Stroke Count: Number of strokes taken in piece/session
- Heart Rate (Optional - requires chest strap): Heart rate in beats per minute
- Pace Speed: Set your speed to race against a virtual boat
- Pace Distance: tells you how far ahead or behind virtual boat you are
- Navigation: if this selected unit will display how many metres you are from, and what direction you need to travel to get to, a pre-programmed route. Setting routes can be done via the Coxmate website
- Workout: Pre set your workout (done via menu screen);
  - Distance: set a distance over which you want to record a specific piece
  - Time: set the workout time for a specific piece
  - Strokes: set the piece to cover a number of strokes

- Rest: You can also set your workout rest by distance, time or strokes
- Intervals: You can set your workout by the number of intervals
- Display: When the unit is in Workout mode, the bottom right and middle right segments of the variable display will be taken over – see Workout section for details.

Time, Distance, Average Speed, Stroke Count, Pace Distance and Workout are all reset when timer is reset and only update when timer is running. Please Note: if Auto Stop is enabled the recording and workout functions will be reset each time Atop Stop is activated.

#### 6.4 RECALL

Recall displays time/date stamped records which are stored in unit – Each time the *timer* is stopped, a record is created - provided RECORD is ON (Got to Set UP/RECORD to turn RECORD ON/OFF). Each record is indexed with the time and date of the start. Selecting and viewing a record will show the how long record is (End Time) and the average rating and speed for this period. Pressing NEXT and PREV will show the detail of the record in 15 second increments. Records can be deleted. The option to delete all records is also available.



#### 6.5 SET UP

SET UP enables:

- UNITS to be selected for DISTANCE and SPEED:
  - Distance: metres, kilometres or miles
  - Speed: m/s, time/500m (Split), kph or mph
- DISPLAY: Each sector of the 5 Variable display can be selected from the options listed in 4.3.
- AUTO STOP: This enables the *timer* to stop after a period of time without a stroke. It can be set to 5,10,15,20,25 seconds or disabled. If set to disabled, the *timer* is stopped manually by touching screen. Please note each time the timer is stopped the recording for that session is completed and the next time the timer is activated it will create a new recording/file.



- **SENSITIVITY:** The stroke detection sensitivity level to Start the *timer* (Start Stroke) and detect stroke (Normal Stroke - for determining rating) can be adjusted. The higher the setting, the less acceleration is required to trigger signal. For rowing boats a setting of 'low' or 'very low' is generally the best. For **kayaks** and **dragon boats** a setting of 'high' is recommended. Special conditions e.g. rough water may require further adjustment.
- **AVERAGING:** You can smooth rate, speed and ratio readings by averaging the reading over a number of strokes – between 1 and 5. There is also an AUTO setting – the number of strokes the reading is averaged over will depend on the rating. It is generally recommended that the speed be set to AUTO.
- **DISPLAY COLOUR:** Black on White or White on Black. Typically, black on white works well in the daylight and white on black works well in darkness
- **Record:** On or Off. This allows you to record your pieces/sessions and recall/upload them at a later date
- **Seat Orientation:** This sets the navigation assist direction arrows to display correctly, depending on which way the unit is facing
- **Time Zone:** This enables the time to be set (24Hr). This will enable unit to identify time zone and set time precisely.

**Notes on PACE function:** This can be selected in display configuration. It enables you to race against a 'virtual' boat. To use it, you must have both Pace speed and Pace distance selected for display. You can then set a 'target' speed by touching the pace speed section of display. A drop down adjustment icon will appear. Select the speed you want. Once this is set, and the *timer* is started, the pace distance will show how far ahead or behind the pace boat you are.

**Heart Rate:** If you are wearing an Ant+ chest belt it will be automatically detected and your heart rate will be displayed. Please note this applies for models with the heart rate function only.

#### 4.4 MODE

When you start the unit by default it is in RUN mode. The configuration of the 5 Variable Display varies depending on the mode you are in. The middle right and bottom right hand corner of the display alters depending on the mode you are in.

There are 3 modes:

- **RUN** (Normal mode)
- **WORKOUT**
- **NAVIGATION**



### **RUN MODE:**

The default mode is the RUN mode. The unit will provide you with the standard variables on the 2 variable Display, 2+2 Variable display and the 5 Variable Display (those that you select – covered earlier). If recording is activated then the unit will record when the timer is activated. These files will then be available for recall or upload to a computer for analysis with the PC Analysis Software.

### **WORKOUT:**

If workout is selected it will enable you to choose and/or edit workout. 24 workout programmes are available (A-Z excluding 'I' and 'O'). The workouts can be programmed in Time, Distance or Strokes. Each increment in workout has a **Work** and a **Rest** phase. If you are training to a Workout programme then the bottom right display segment will show the phase of the session you are currently in: eg **B:7:W**, signifying programme **B**, interval **7** and in **Work** phase. The middle right display will show the remaining time/distance/strokes. Workout is started by starting *timer*.

Selecting **Route Select** will allow you to choose a pre-programmed route which has been downloaded from PC to GPS, or, NONE (no route). It is important to set the seat orientation correctly to ensure the navigation arrows guide you in the correct direction. The current route selected will be displayed in brackets.

### **Using Navigation Files:**

- If the unit is connected (via USB lead) to a PC, it will show up as a normal 'memory device'. All the files relevant to the Coxmate App are stored in the 'Coxmate' folder
- There are 3 file types which are stored: '.CMT' are the stored data files, '.CMC' are the programmed (Navigation) routes, and, 'Workout.DAT' contains all programmed workouts
- The only time the GPS requires files to be placed in this folder is for programmed routes ('.CMC'). Once a route has been programmed using Google© Maps, it can be saved to this folder.
- Some web browsers will allow the file to be placed directly into this folder. Others will require route to be downloaded to PC and then transferred to this folder.
- You can also download the route file from a timed piece for analysis on Google© Maps

**NOTE: The NAVIGATION function should only be used to assist in navigation and must never be relied on for safety or collision avoidance.**

## 7.0 Maintenance

- If unit is used in salt water, rinse unit, including mount, in fresh water to remove any salt. There are some metallic components on mount which may corrode if salt is not removed. Occasional light greasing with silicone grease of the metallic parts on mount will minimise any corrosion
- Periodically clean any accumulated dirt on the USB port on your Coxmate GPS by applying some silicone grease (available from the Coxmate website) and inserting/removal the cable into the port several times
- To clean case and display use a mild detergent and rinse with clean water – make sure access door is properly closed
- Store unit in clean dry environment. Do not subject it to excessive temperatures
- Battery Maintenance
  - The unit uses a Lithium polymer battery. DO NOT REMOVE OR TRY AND REPLACE BATTERY. IF UNIT IS TO BE DISPOSED OF, MAKE SURE IT IS DISPOSED OF ACCORDING TO LOCAL REGULATIONS.
  - The battery should be charged at least once every 4 months. **Charging:** If you are using a computer to charge unit, beware that PC's may turn power off on USB when PC goes into 'power save' mode.

## 8.0 PC Analysis Software

The PC Analysis Software and other resources are available at [www.coxmate.com.au/GPS](http://www.coxmate.com.au/GPS) . To access this software you will need the serial number of the GPS – at rear of unit (image 1. below). The Coxmate GPS comes with a 12 month software licence. Thereafter a nominal annual fee will be charged for those that find the software helpful for analysing and improving their performance.



1. Serial number of unit shown on reverse side

The basics of the PC Analysis Software:

- When the timer on the unit is activated it creates a unique files that is date/time stamped
- These files can be uploaded to your computer via the Coxmate PC Analysis Software
- When the unit is connected (via USB lead) to a PC and the PC Analysis Software is launched the files available for download will be available for download and analysis

- Further information on using the PC Analysis Software is available via the Coxmate website in the support section including a comprehensive user manual

## 9.0 Upgrading the Firmware

If you subscribe to email updates when notified of a firmware upgrade being available for your unit you will be provided with a link to a folder. Within that folder there are 2 two additional folders:

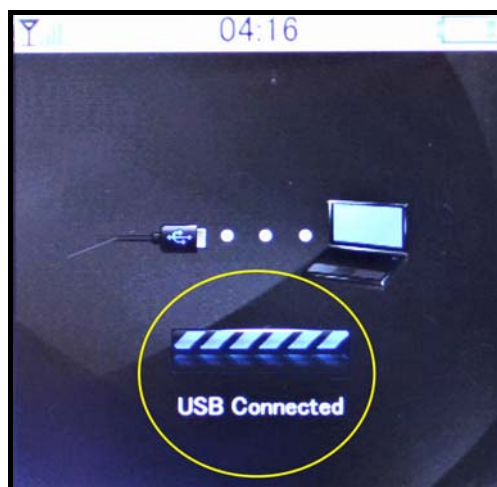
1. Programming Software (ProductTool\_V5.41)
2. Firmware Application (Product Tool - Files in this folder have .fwu suffix)

### Installing Programming Software

- Open the ProductTool\_V5.41 folder and click on the Setup.exe. Follow the prompts to install this.

To upgrade your firmware:

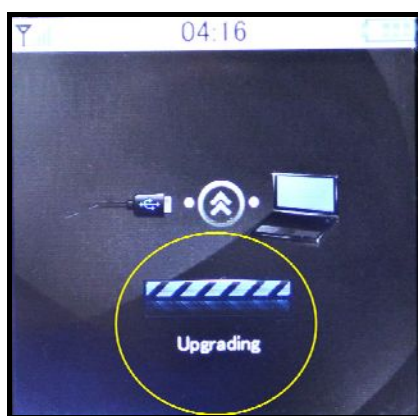
1. Connect the CoxmateGPS to the PC via USB cable provided when you purchased the unit (please connect the USB cable directly to your computer, not via external hardware such as USB hubs or keyboards – image 1. below)



1. Unit is connected to and identified by PC
2. In programme list, find folder titled 'Media Player Product Tool V5.41'
3. Open folder and click on 'Mass Product Tool' to start programming application.
4. Once the application has started, click Import Firmware
5. Select the new firmware update file, from the location where you saved the application file (.fwu suffix).
6. Select Replace and Confirm
7. Click Cancel on the "Import DRM File" dialog box



8. Connect the device to the PC, and it should eventually display "Found total 1 usb device: 1 disks. 0 ADFU" at the top of the screen.
9. Click download, and the program updating should start. After some time your GPS unit will go from Upgrading (image 2. Below), to Loading and then finally to USB connected (image 1. Above). You should then be able to disconnect from the USB port and test the new software – **please do not disconnect the unit or interrupt the process at any time during this stage**



2. Unit upgrading firmware

10. If programming does not start, hold both buttons down on GPS for 5 seconds, then release the button on front (just below screen) whilst continuing to hold down the other button (the On/Off button on the side) for another 5 seconds. The 'download' icon should turn a green/blue colour. Click on 'download'.

## 10.0 GPS Drift

GPS drift is caused by many external factors and consumer grade GPS devices cannot account for these. GPS drift causes the device to appear to be moving on its own. It is most obvious when looking at a track or when zoomed in all the way while at a standstill.

Satellites send their signal through the atmosphere down to earth. The atmosphere distorts this signal, and other environmental factors (such as trees, hills, mountains, buildings, cars, reflective surfaces and more) can further degrade the signal.

In the past, a satellite signal weakened by the environment caused a loss of position. High sensitivity chips were created so that it was no longer a question of if you had a position lock, but how accurate that position lock would be.

Now only the weakest signal prevents the device from locating your general position, but as a result, the decrease in accuracy that is introduced by the environment causes GPS drift. In other words, the device is more sensitive than the environment allows it to be accurate.