

# FACTOR001 Head Unit User Manual

## 1 Modifications

Date	Modifications	Author	Version	Modified Sheets	Approved		
					By	Date	Signed
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## 2 Introduction

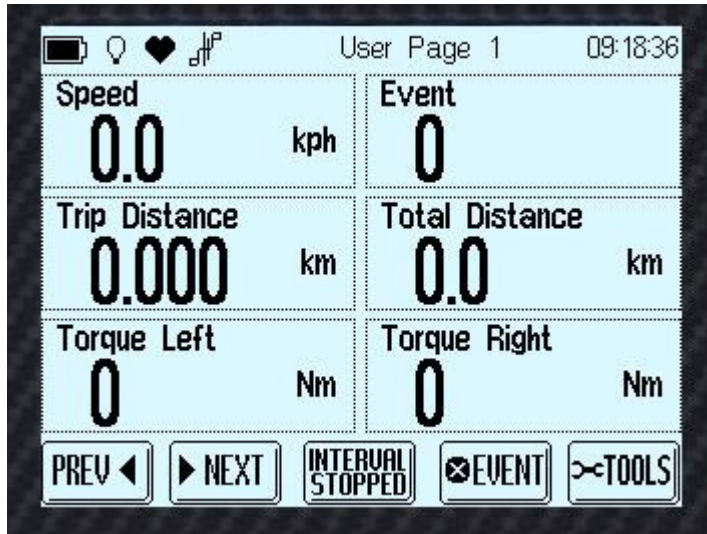


Figure 1 – FACTOR001 Head Unit Display

The FACTOR001 Head Unit is a portable data gathering and processing hub for monitoring the interaction of human with machine. Information from sensors mounted on the bike (such as wheel speed and crank position), from torque measurement gauges in the left and right bike cranks and from wearable heart rate monitoring (HRM) systems can be simultaneously monitored, analysed, interpreted, and displayed to the rider on the touch screen display.

A data logger can be connected to the Head Unit to record the data collected, and the Data Analysis software used for later graphical analysis of the data.

The touch screen display on the Head Unit is a transfective LCD display that combines the features of transmissive and reflective LCD displays, plus has the benefit of being sunlight readable.

This user manual describes the functionality of the FACTOR001 Head Unit.

## 3 Power on

To power on the Head Unit, ensure a charged battery pack is connected to the bike and then press and hold any part of the touch screen display for approximately one second. Power on is confirmed when the Welcome page is displayed on the touch screen display.

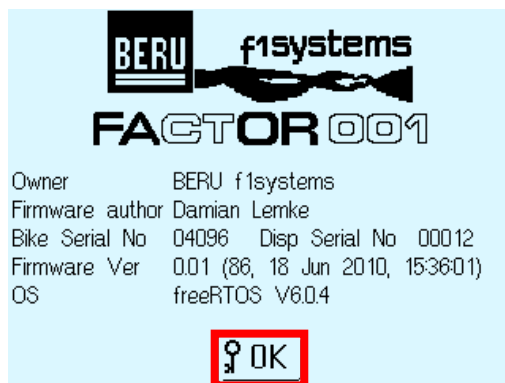


Figure 2 – Welcome Page

The Welcome page displays basic information about the bike and Head Unit.

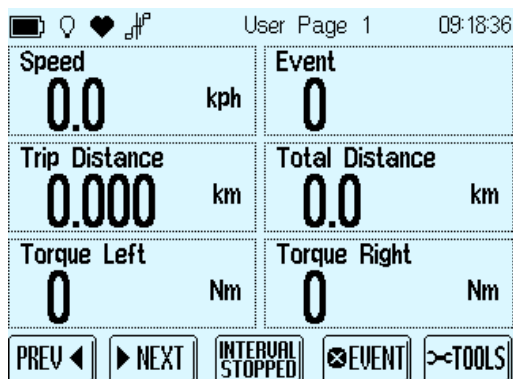
Info	Description
Owner	Owner of bike (if applicable)
Firmware Author	Author of Head Unit firmware
Bike Serial No	Serial number of bike
Disp Serial No	Serial number of Head Unit
Firmware Ver	Head Unit firmware version and build, date and time
OS	Name and version of Head Unit operating system

Press the **OK** button to proceed to the user pages.



**Figure 3 – Welcome Page**

The user pages appear immediately after the Welcome page.



**Figure 4 – User Page 1**

## 4 Power off

To power off the Head Unit, from the user pages press the Tools button.

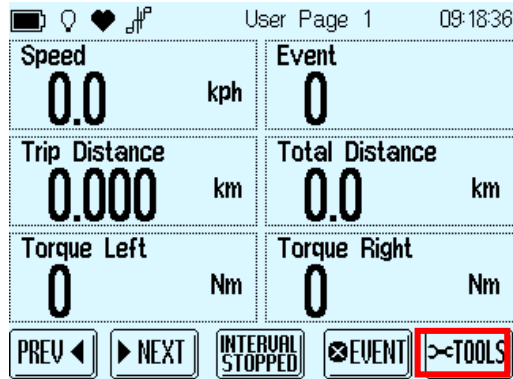


Figure 5 – User Page 1

The Tools 1 page is displayed. Press the Power Off button.

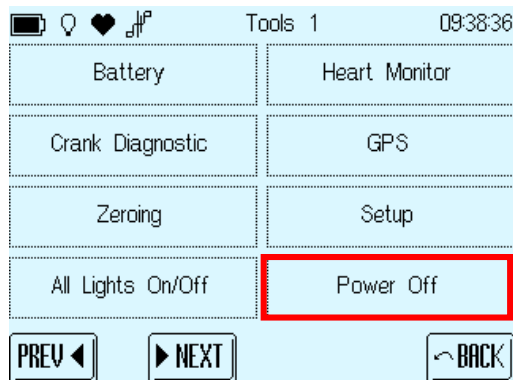


Figure 6 – Tools 1 Page

A confirmation popup window is displayed. Press the Yes button to power off the Head Unit or the No button to return to the Tools 1 page. If returning to the Tools 1 page, press the Back button to return to the user pages.

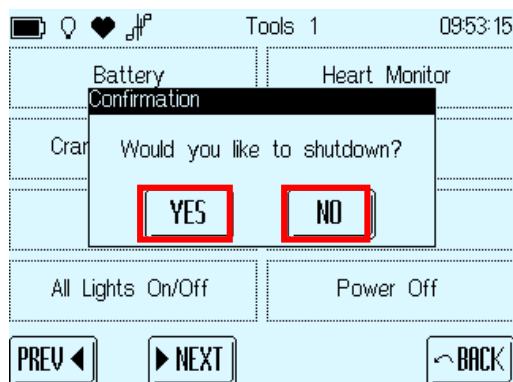


Figure 7 – Shutdown Confirmation Box

## 5 Layout of touch screen display

After the Welcome page, the touch screen display is divided into three areas:

- Status bar.
- Configuration area.
- Control area.

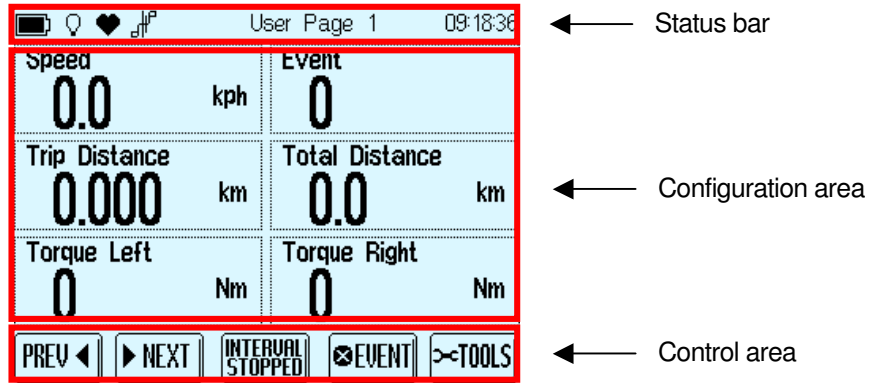


Figure 8 – User Page 1

These areas will now be described.

## 5.1 Status bar

The status bar displays the status of several components connected to, or associated with, the Head Unit and is always shown when the touch screen display is powered, except when the user is at the Welcome page. Moving from left to right, the status bar includes:

- Bike battery status.
- Frame lights and touch screen display backlight status.
- HRM system status.
- Left and right crank status.
- GPS status (GPS is disabled in picture below).
- Bluetooth status (bluetooth is disabled in picture below).
- Page description.
- Head Unit time.

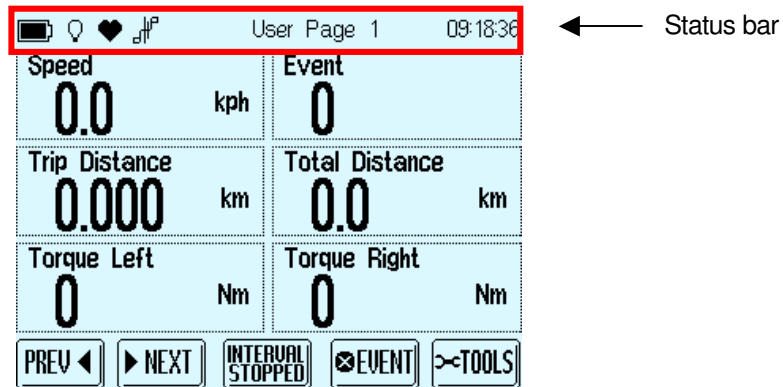


Figure 9 – User Page 1

### 5.1.1 Bike battery status

The bike battery status is represented by one of five icons.



Figure 10 – Battery Status

The icon for battery empty also flashes. When the bike battery is in this condition it must be charged or replaced to avoid disappointment during a ride.

### 5.1.2 Frame lights and touch screen display backlight status

The frame lights and touch screen display backlight status is represented by one of two icons.

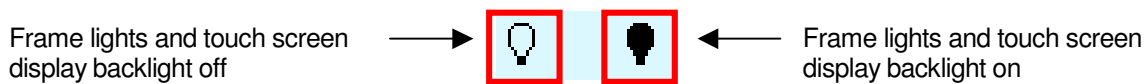


Figure 11 – Light Status

### 5.1.3 HRM system status

The HRM system status is not active in this application.

### 5.1.4 Left and right crank status

The left and right crank status is represented by one of four icons.

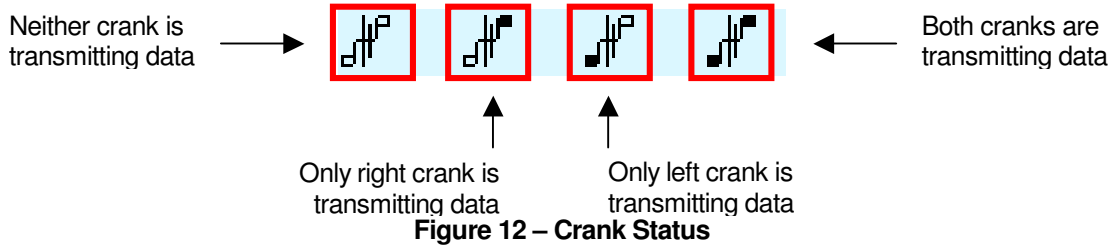


Figure 12 – Crank Status

### 5.1.5 GPS status

The GPS status is represented by only one icon.



Figure 13 – GPS Status

Icon	GPS status
Not shown	GPS is disabled in Head Unit
Flashing	Head unit is searching for satellites
Solid	Head unit has locked to satellites

### 5.1.6 Bluetooth status

The bluetooth status is represented by only one icon.



Figure 14 – Bluetooth Status

Icon	Bluetooth status
Not shown	Bluetooth is disabled in Head Unit
Flashing	Head unit is searching for bluetooth device
Solid	Head unit has locked to bluetooth device

The Head Unit uses Bluetooth to communicate with the Hidalgo HRM system (when worn by the rider) and can be enabled or disabled in the Head Unit. When Bluetooth is enabled, the Head Unit continuously searches for a Hidalgo HRM system (Bluetooth icon flashing). When a Hidalgo HRM system is found the Head Unit will attempt to pair with it. If pairing is successful the Bluetooth icon will go solid.

### 5.1.7 Page description

The page description indicates what page the user is currently viewing in the Head Unit. This is useful for navigating through the pages of the Head Unit. Each page is labelled with a unique page description.

The Welcome page at power on has no page description.

### 5.1.8 Head Unit time

The time is set manually by the user (see section 8.6 below).

## 5.2 Configuration and control area

The configuration and control area of the touch screen display change depending on the page being viewed.

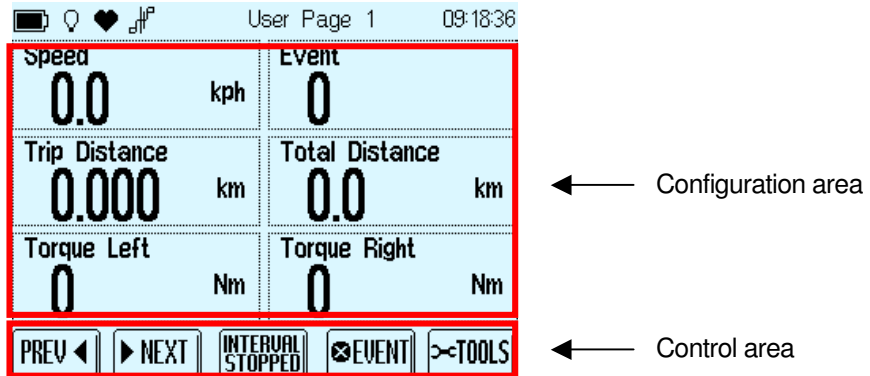


Figure 15 – User Page 1

## 6 User pages

### 6.1 Introduction

The user can configure each user page to display up to six available channels.

The touch screen display can show between 1 and 10 user pages each of which is configurable by the user. The quantity of pages viewable can be configured by the user as well. Each user page has a unique number (User Page 1, User Page 2, User Page 3, etc) to assist with navigation through the user pages.

The user is automatically taken to User Page 1 after the Welcome page. Pressing the Prev or Next button changes the user page.

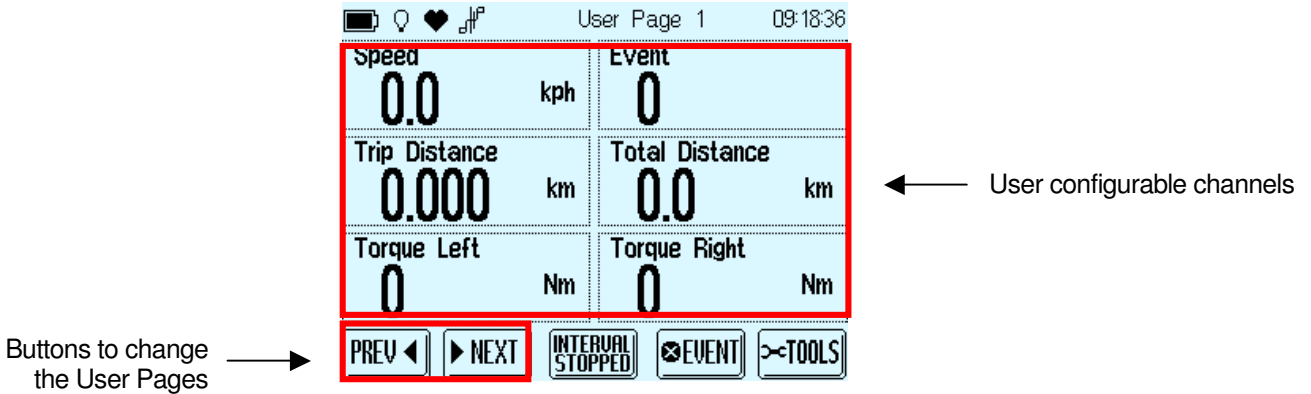


Figure 16 – User Page 1

The configuration area of the user pages always shows six channels and each has a common format.

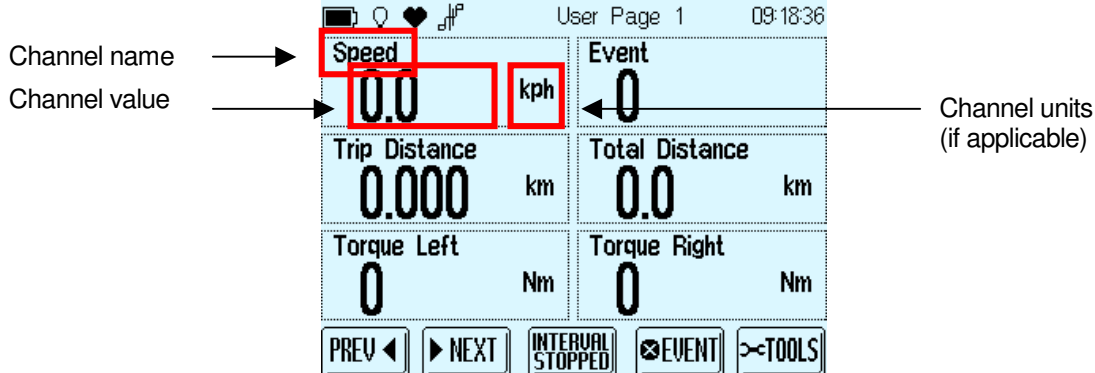


Figure 17 – User Page 1

Some channels do not have units (for example, the Event channel) so no units are not shown.

## 6.2 Changing channels

The channels displayed can be changed to any available channel. For example, to change the Speed channel on User Page 1 to the Humidity channel, press the Speed button.

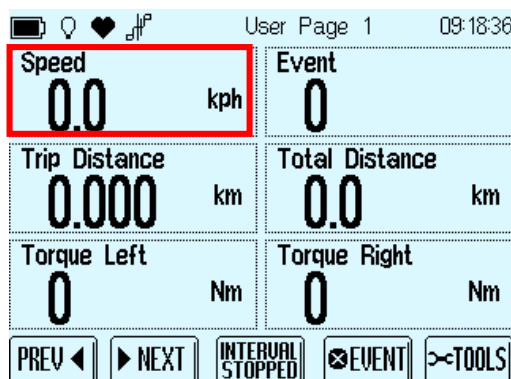


Figure 18 – User Page 1

The Channel Selection page is displayed. Press the Environmental button.

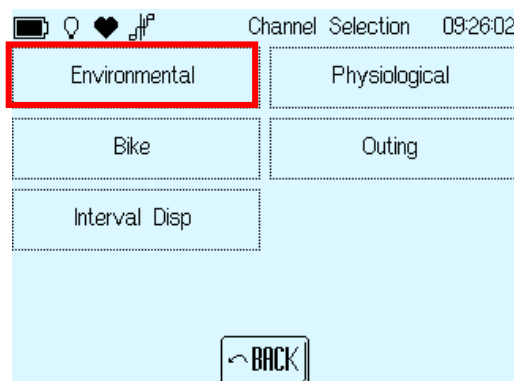


Figure 19 – Channel Selection Page

The Envir Channels page is displayed. Press the Humidity button.

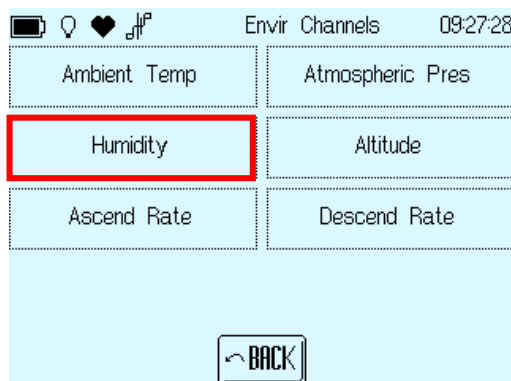


Figure 20 – Envir Channels Page

The touch screen display will automatically return to the last viewed user page (in this case User Page 1) with the Speed channel replaced with the Humidity channel in the previous position of the Speed channel.

The Head Unit will remember which channels are assigned in which positions in each of the user pages if the Head Unit is powered off or the bike battery becomes empty or is disconnected.

## 6.3 Channel groups

The available channels are grouped into one of five categories on the Channel Selection page. This is to assist with finding one specific channel quickly.

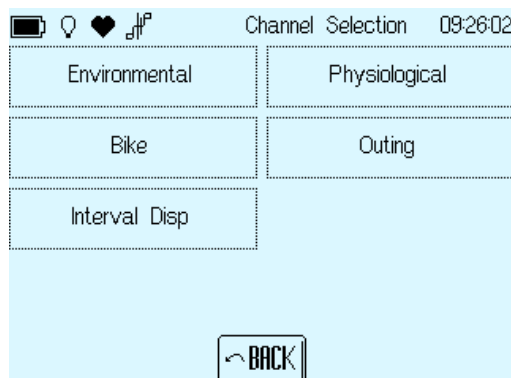


Figure 21 – Channel Selection Page

### 6.3.1 Environmental button

Pressing the Environmental button on the Channel Selection page reveals the list of available environmental channels.

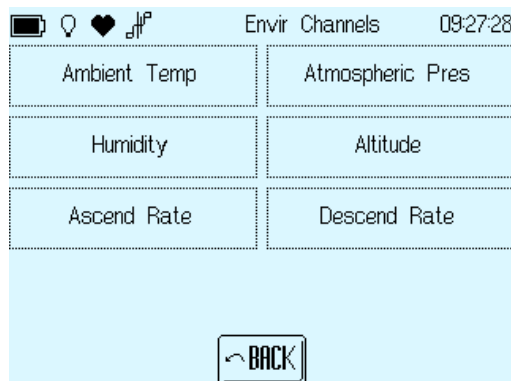


Figure 22 – Envir Channels Page

Channel	Description
Ambient Temp	Air temperature inside the Head Unit. This will read slightly higher than the actual ambient air temperature because of some self heating from the Head Unit electronics
Atmospheric Pres	Air pressure near Head Unit
Humidity	Humidity near Head Unit
Altitude	Height of Head Unit in relation to last altitude zeroing; altitude is calculated using atmospheric air pressure measurement, so any changes to the weather will cause altitude to change even if the Head Unit hasn't physically moved
Ascend Rate	Rate of vertical ascent of Head Unit; atmospheric air pressure measurement is used for this calculation
Descend Rate	Rate of vertical descent of Head Unit; atmospheric air pressure measurement is used for this calculation

### 6.3.2 Physiological button

Pressing the Physiological button on the Channel Selection page reveals the list of available physiological channels.

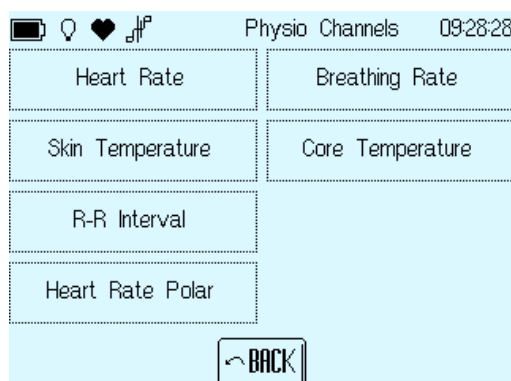


Figure 23 – Physio Channels Page

Channel	Description
Heart Rate	Heart rate reported from Hidalgo HRM system (when paired via Bluetooth)
Breathing Rate	Breathing rate reported from Hidalgo HRM system (when paired via Bluetooth)
Skin Temperature	Skin temperature reported from Hidalgo HRM system (when paired via Bluetooth)
Core Temperature	Core temperature reported from Hidalgo HRM system (when paired via Bluetooth and core temperature pill swallowed)
R-R Interval	R-R interval reported from Hidalgo HRM system (when paired via Bluetooth)
Heart Rate Polar	Heart rate reported from Polar HRM system (when paired)

### 6.3.3 Bike button

Pressing the Bike button on the Channel Selection page reveals the list of available bike channels. Since there are so many bike channels available, these are listed across several pages (Bike Channels 1 to Bike Channels 3). The Bike Channels 1 page is displayed by default when the Bike button is pressed on the Channel Selection page. Use the Prev or Next button to change the bike channels page.

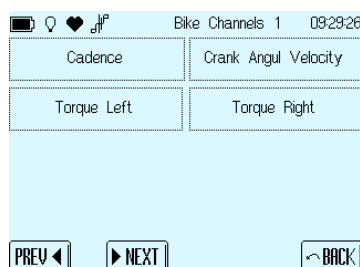


Figure 24 – Bike Channels 1 Page

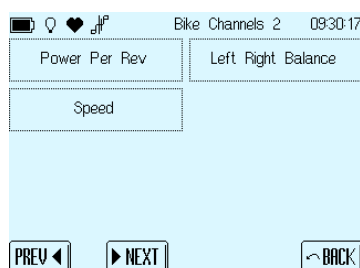
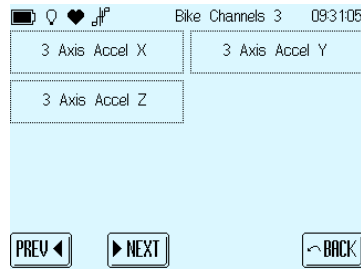


Figure 25 – Bike Channels 2 Page



**Figure 26 – Bike Channels 3 Page**

Channel	Description
Cadence	Number of crank revolutions per minute
Crank Angul Velocity	Angular velocity of crank
Torque Left	Torque on left crank
Torque Right	Torque on right crank
Power Per Rev	Not active in this application
Left Right Balance	Not active in this application
Speed	Bike wheel speed
3 Axis Accel X	Front to rear acceleration of Head Unit
3 Axis Accel Y	Side to side acceleration of Head Unit
3 Axis Accel Z	Up and down acceleration of Head Unit

### 6.3.4 Outing button

Pressing the Outing button on the Channel Selection page reveals the list of available outing channels. Since there are so many outing channels available, these are listed across several pages (Outing Channels 1 to Outing Channels 6). The Outing Channels 1 page is displayed by default when the Outing button is pressed on the Channel Selection page. Use the Prev or Next button to change the outing channels page.

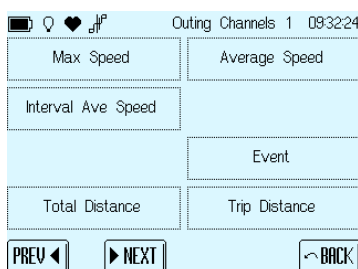


Figure 27 – Outing Channels 1 Page

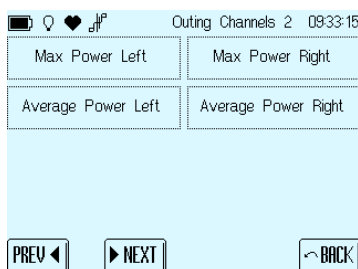


Figure 28 – Outing Channels 2 Page

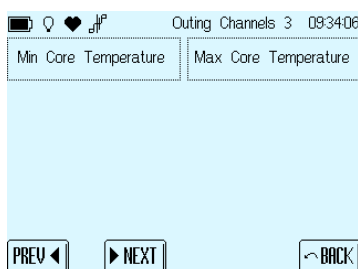


Figure 29 – Outing Channels 3 Page

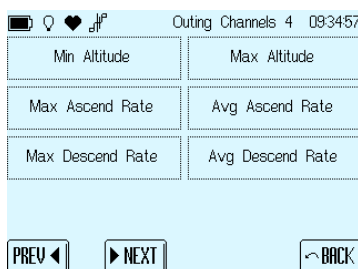


Figure 30 – Outing Channels 4 Page

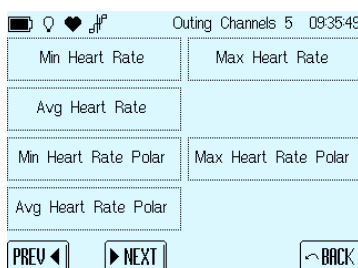


Figure 31 – Outing Channels 4 Page

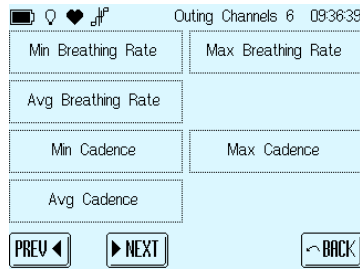


Figure 32 – Outing Channels 6 Page

Channel	Description
Max Speed	Not active in this application
Average Speed	Not active in this application
Interval Ave Speed	Not active in this application
Event	A counter of the number of times the user has pressed the Event button on the user pages
Total Distance	Not active in this application
Trip Distance	Not active in this application
Max Power Left	Not active in this application
Max Power Right	Not active in this application
Average Power Left	Not active in this application
Average Power Right	Not active in this application
Min Core Temperature	Not active in this application
Max Core Temperature	Not active in this application
Min Altitude	Not active in this application
Max Altitude	Not active in this application
Max Ascend Rate	Not active in this application
Avg Ascend Rate	Not active in this application
Max Descend Rate	Not active in this application
Avg Descend Rate	Not active in this application
Min Heart Rate	Not active in this application
Max Heart Rate	Not active in this application
Avg Heart Rate	Not active in this application
Min Heart Rate Polar	Not active in this application
Max Heart Rate Polar	Not active in this application
Avg Heart Rate Polar	Not active in this application
Min Breathing Rate	Not active in this application
Max Breathing Rate	Not active in this application
Avg Breathing Rate	Not active in this application
Min Cadence	Not active in this application
Max Cadence	Not active in this application
Avg Cadence	Not active in this application

### 6.3.5 Interval disp button

Pressing the Interval Disp button on the Channel Selection page reveals the list of available interval channels.

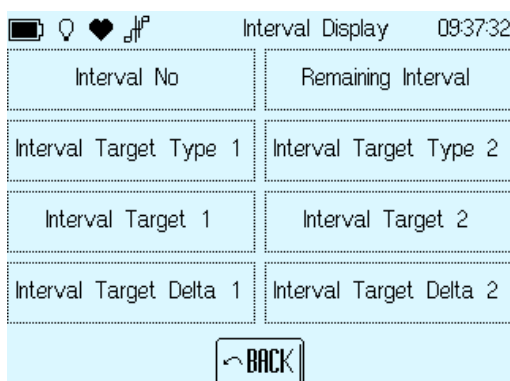


Figure 33 – Interval Display Page

Channel	Description
Interval No	Interval number (for interval sessions)
Remaining Interval	Time or distance remaining in the current interval (for interval sessions)
Interval Target Type 1	Type of interval (see section 10.2.1 below)
Interval Target Type 2	Type of interval (see section 10.2.1 below)
Interval Target 1	Target for interval 1 (see section 10.2.1 below)
Interval Target 2	Target for interval 2 (see section 10.2.1 below)
Interval Target Delta 1	Delta for interval 1 (see section 10.2.1 below)
Interval Target Delta 2	Delta for interval 2 (see section 10.2.1 below)

## 7 Other buttons on user pages

Interval session, event marking and tools pages are all accessible from the user pages.

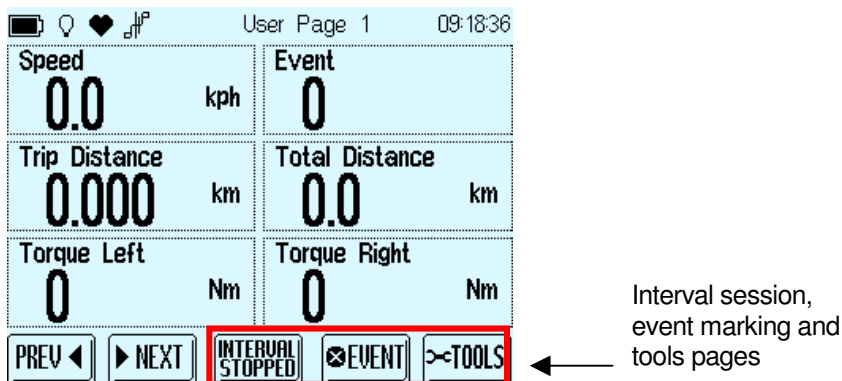


Figure 34 – User Page 1

## 8 Tools button

Pressing the Tools button on the user pages reveals the list of available tools. Since there are so many tools available, these are listed across two pages (Tools 1 and Tools 2). The Tools 1 page is displayed by default when the Tools button is pressed on the user pages. Use the Prev or Next button to change the tools page.

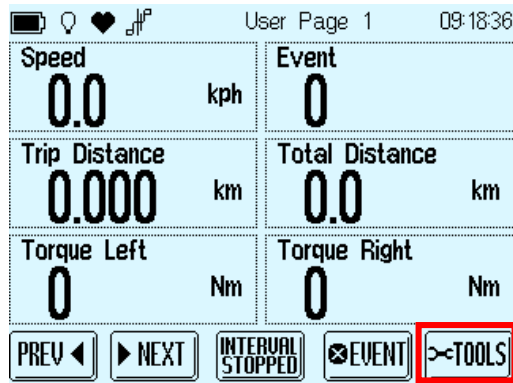


Figure 35 – User Page 1

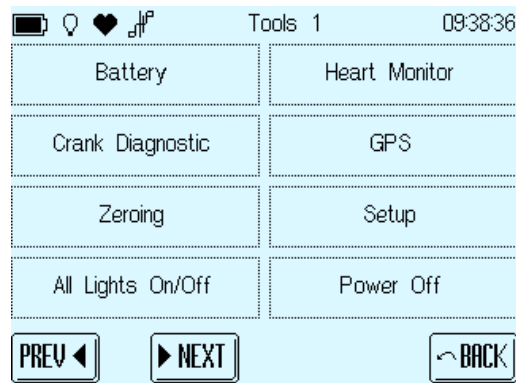


Figure 36 – Tools 1 Page

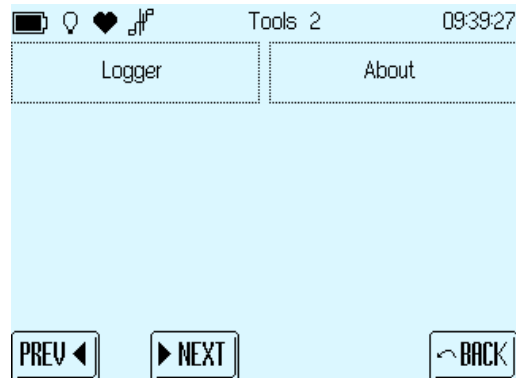


Figure 37 – Tools Page 2

## 8.1 Battery button

Pressing the Battery button on the Tools 1 page reveals the battery tools.

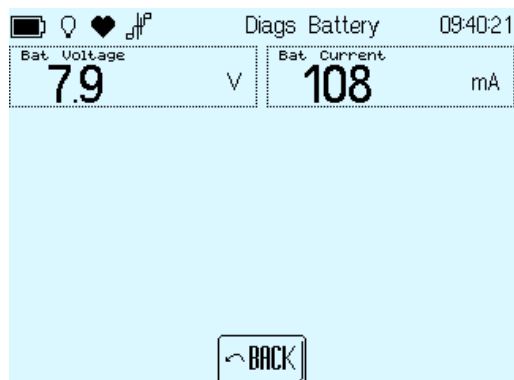


Figure 38 – Diags Battery Page

Field	Description
Bat Voltage	Displays battery voltage
Bat Current	Displays battery current

## 8.2 Heart monitor button

Pressing the Heart Monitor button on the Tools 1 page reveals the HRM tools.

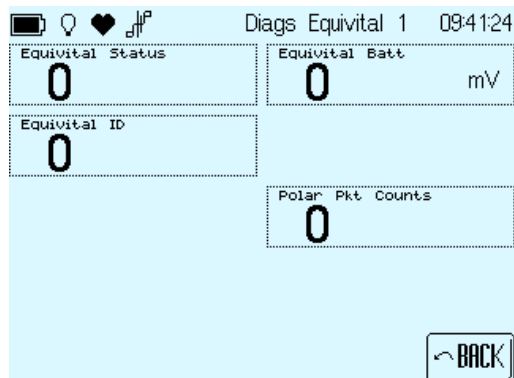


Figure 39 – Diags Equival 1 Page

Field	Description
Equival Status	Displays status of the Hidalgo HRM system (when paired via Bluetooth)
Equival Batt	Displays battery voltage of the Hidalgo HRM system (when paired via Bluetooth)
Equival ID	Displays identity of the Hidalgo HRM system (when paired via Bluetooth)
Polar Pkt Counts	Increments by 2 for every transmission received from Polar HRM system (when paired); resets to 0 when counter reaches 254 and continues counting again

## 8.3 Crank diagnostic button

Pressing the Crank Diagnostic button on the Tools 1 page reveals the crank diagnostic tools. These pages will help the Factor001 support team to diagnose any problem with the cranks. Since there are so many diagnostic tools available, these are listed across several pages (Diags Crank 1 to Diags Crank 6). The Diags Crank 1 page is displayed by default when the Crank Diagnostic button is pressed on the Tools 1 page. Use the Prev or Next button to change the diags crank page.

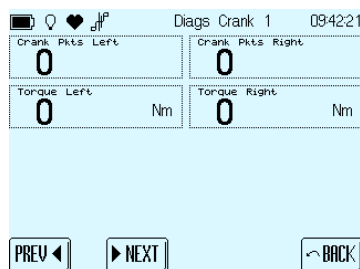


Figure 40 – Diags Crank 1 Page

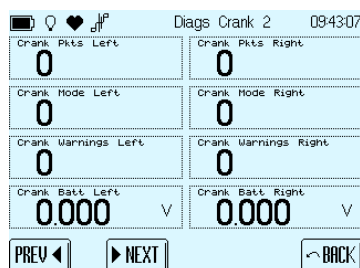


Figure 41 – Diags Crank 2 Page

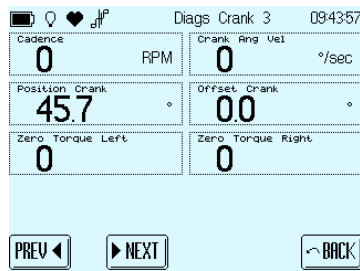


Figure 42 – Diags Crank 3 Page

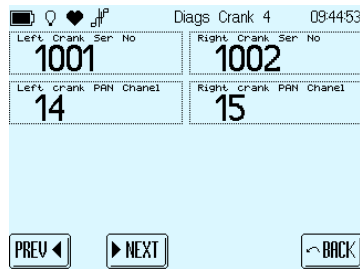


Figure 43 – Diags Crank 4 Page

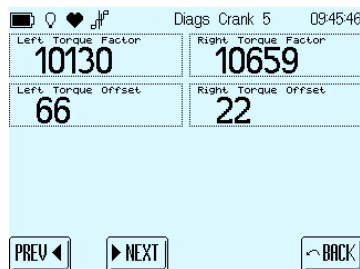


Figure 44 – Diags Crank 5 Page



Figure 45 – Diags Crank 6 Page

Field	Description
Crank Pkts Left	Number of packets per second received from the left crank
Crank Pkts Right	Number of packets per second received from the right crank
Torque Left	Current torque from the left crank
Torque Right	Current torque from the right crank
Crank Pkts Left	Number of packets per second received from the left crank
Crank Pkts Right	Number of packets per second received from the right crank
Crank Mode Left	Mode of left crank
Crank Mode Right	Mode of right crank
Crank Warnings Left	Warnings from left crank
Crank Warnings Right	Warnings from right crank
Crank Batt Left	Battery voltage of the left crank
Crank Batt Right	Battery voltage of the right crank
Cadence	Crank cadence
Crank Ang Vel	Crank angular velocity
Position Crank	Crank position
Offset Crank	Crank position offset
Zero Torque Left	Zero torque for left crank
Zero Torque Right	Zero torque for right crank
Left Crank Ser No	Serial number for left crank
Right Crank Ser No	Serial number for right crank
Left Crank PAN Chanel	PAN channel ID for left crank
Right Crank PAN Chanel	PAN channel ID for right crank
Left Torque Factor	Torque factor for left crank
Right Torque Factor	Torque factor for right crank
Left Torque Offset	Torque offset for left crank
Right Torque Offset	Torque offset for right crank
Crank Pos Calib Val	Displays calibration value for calibration point of interest
Prev Position	Displays the previous calibration point
Crank Angle	Displays the current calibration point of interest
Next Position	Displays the next calibration point

## 8.4 GPS button

Pressing the GPS button on the Tools 1 page reveals the GPS tools.

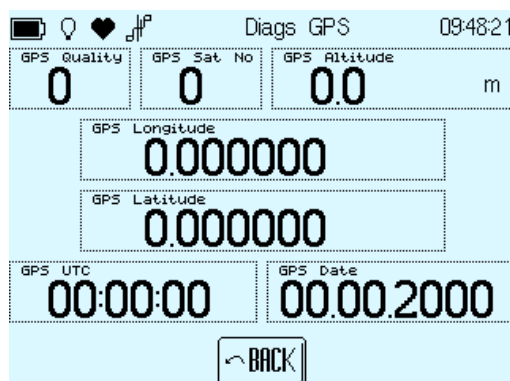


Figure 46 – Diags GPS Page

Field	Description
GPS Quality	Displays 0 for bad GPS signal; and 1 for good GPS signal
GPS Sat No	Number of GPS satellites used to calculate current position
GPS Altitude	Current altitude from GPS satellites
GPS Longitude	Current longitude from GPS satellites
GPS Latitude	Current latitude from GPS satellites
GPS UTC	Time from GPS satellites
GPS Date	Date from GPS satellites

## 8.5 Zeroing button

Pressing the Zeroing button on the Tools 1 page reveals the zeroing tools.

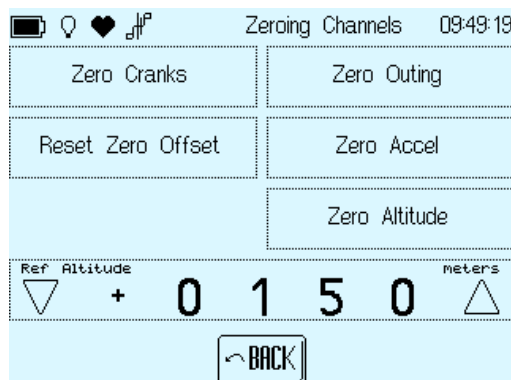


Figure 47 – Zeroing Channels Page

Field	Description
Zero Cranks	Press the Zero Cranks button to zero (remove any offset) both the crank torques (both cranks must be awake and transmitting) and press the OK button in the confirmation popup window to complete; if an error popup window is displayed then awake both cranks (see section 8.5.1 below) and press the Zero Cranks button again
Zero Outing	Press the Zero Outing button to reset the minimum, average and maximum values of the outing channel group (except Total Distance channel) and press the OK button in the confirmation popup window to complete
Reset Zero Offset	Press the Reset Zero Offset button to remove any offset from the crank zeroing and press the OK button in the confirmation popup window to complete
Zero Accel	Press the Zero Accel button to zero the accelerometers with the Head Unit in its current position and press the OK button in the confirmation popup window to complete
Zero Altitude	Press the Zero Altitude button to set the current altitude of the Head Unit to the value shown in the Ref Altitude field and press the OK button in the confirmation popup window to complete
Ref Altitude	Enter the current altitude value using the ▼ and ▲ buttons to change sign (+ or -) and numeric digits and press the Zero Altitude button

### 8.5.1 Procedure to wake cranks

Step	Current crank LED status (can be seen by looking at back side of cranks)	Description	To wake crank
1	Permanently off	Crank off	Connect crank operate plug and proceed to procedure number 2
2	Permanently off	Battery empty	Charge battery and proceed to procedure number 1
	Single flash	Crank asleep	Stand on pedal with it horizontal for more than 5 secs; crank is awake when double LED flash observed
	Double flash	Crank awake	Crank is awake

## 8.6 Setup button

Pressing the Setup button on the Tools 1 page reveals the setup tools. Since there are so many setup tools available, these are listed across several pages (Setup 1 to Setup 3). The Setup 1 page is displayed by default when the setup button is pressed on the Tools 1 page. Use the Prev or Next button to change the setup page.

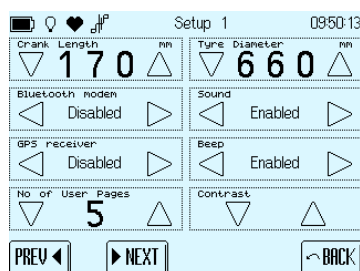


Figure 48 – Setup 1 Page

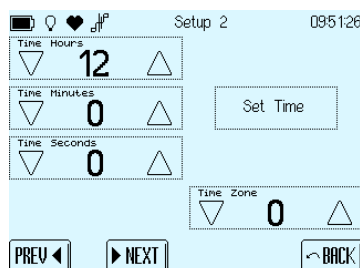


Figure 49 – Setup 2 Page

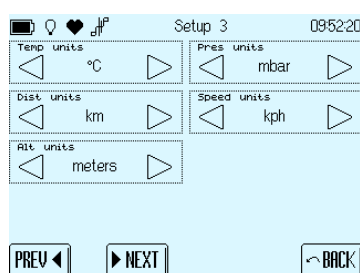


Figure 50 – Setup 3 Page

Field	Description
Crank Length	Allows crank length to be set; crank length is used to calculate torque
Tyre Diameter	Allows tyre diameter to be set; tyre diameter is used to calculate bike speed and distance
Bluetooth Module	Enables and disables Bluetooth module
Sound	Enables and disables continuous beep when user goes outside interval delta during an interval session
GPS Receiver	Enables and disables GPS receiver
Beep	Enables and disables beep when touch screen is pressed
No Of User Pages	Specifies number of user pages available (between 1 and 10)
Contrast	Modifies contrast of the touch screen display
Time Hours	Allows the hour within a day to be manually selected prior to pressing Set Time button
Time Minutes	Allows the minute within a hour to be manually selected prior to pressing Set Time button
Set Time	Pressing Set Time button applies the hours, minutes and seconds currently selected on Setup 2 page
Time Seconds	Allows second within a minute to be manually selected prior to pressing Set Time button
Time Zone	Sets world time zone
Temp Units	Allows temperature units to be set
Pres Units	Allows pressure units to be set
Dist Units	Allows distance units to be set
Speed Units	Allows speed units to be set
Alt Units	Allows altitude units to be set

## 8.7 All lights on/off button

There are forward and rearward facing lights on the bike frame and a backlight for the touch screen display. The frame lights and touch screen display backlight all power up when activated using the touch screen display or pressing the buttons on the left and right handlebar shifters simultaneously.

Pressing All Lights On/Off button on Tools 1 page toggles between all the lights being on/off. The light status is indicated by the bulb icon in the top-left of the status bar.

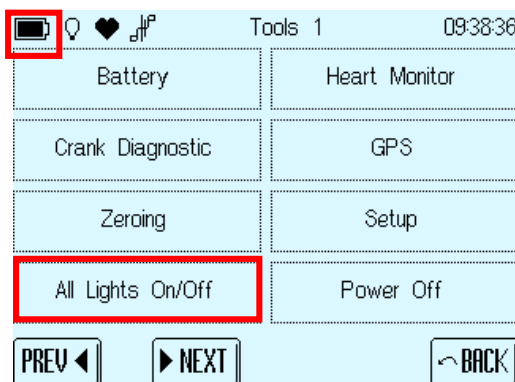


Figure 51 – Tools 1 Page



Figure 52 – Lights Status

## 8.8 Power off button

See Section 4 above.

## 8.9 Logger button

Pressing the Logger button on the Tools 2 page reveals the logger tools.

These pages will help the Factor001 support team to diagnose any problem with the logger.

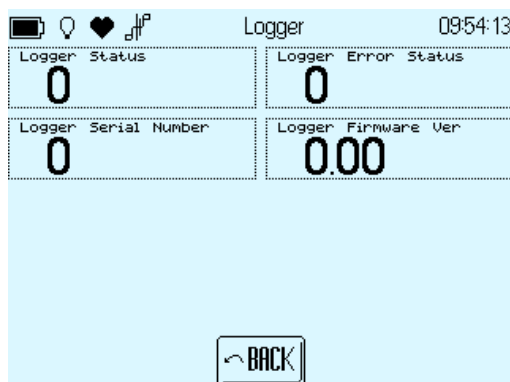


Figure 53 – Logger Page

Field	Description
Logger Status	Status of logger connected to Bike Heat Unit
Logger Error Status	Error status of logger connected to Bike Heat Unit
Logger Serial Number	Serial number of logger connected to Bike Heat Unit
Logger Firmware Ver	Firmware version of logger connected to Bike Heat Unit

### 8.9.1 Logger operation

To record channels from the Bike Heat Unit, simply plug the logger into the connector to the Head Unit. To stop recording channels simply unplug the logger from the connector to the Head Unit.

The LEDs on the GEMS DA1-64 have the following meaning:

LED	Green LED	Red LED
On	Data from Head Unit is being recorded	Power and no errors
Short on, long off (strobing)	Memory space full	Hardware error
½ Hz flash (1 flash per 2 secs)	25% of memory space remaining (only if loop data recording is not enabled)	Setup file corrupt
5 Hz flashing (5 flashes per sec)	5% of memory space remaining (only if loop data recording is not enabled)	
Off for 0.5 secs, then 3 short flashes	No data received from Head Unit	
On for 0.5 secs, then 3 short flashes	Not applicable for this application	

### 8.10 About button

Pressing the About button on the Yools 2 page reveals the same info contained on the Welcome page (see section 3 above).



Figure 54 – Welcome Page

## 9 Event button

Pressing the Event button on the user pages increments the Event channel by 1. The change in the value of the Event channel can be viewed on the touch screen display (when selected from Outing channel group) and in the logged data (when logger connected). This button can be pressed whenever the user wants the time of an event within logged data to be noted. The user must remember what the event was when the button was pressed.

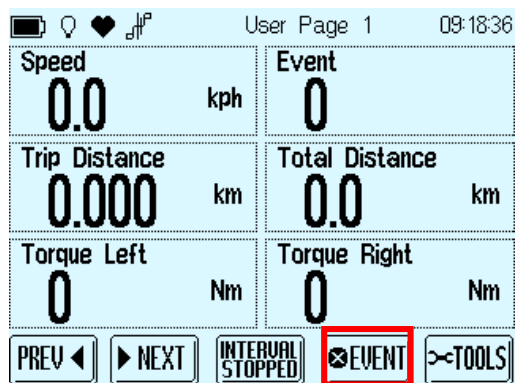


Figure 55 – User Page 1

## 10 Interval button

### 10.1 Introduction

The Interval button on the user pages is used to setup an interval session for the user. The Interval button can take one of three appearances.

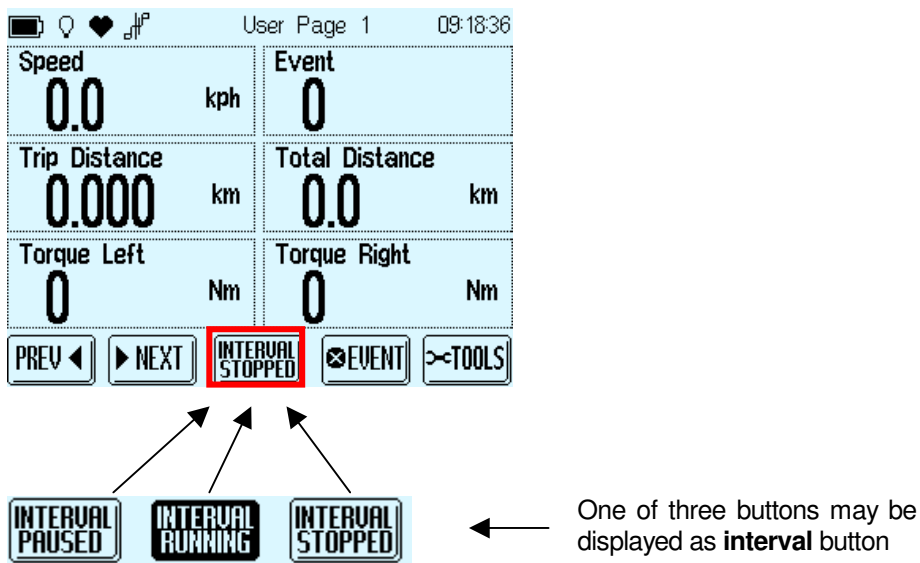


Figure 56 – User Page 1

Regardless of the appearance of the Interval button, pressing it reveals the Interval Sequence page.

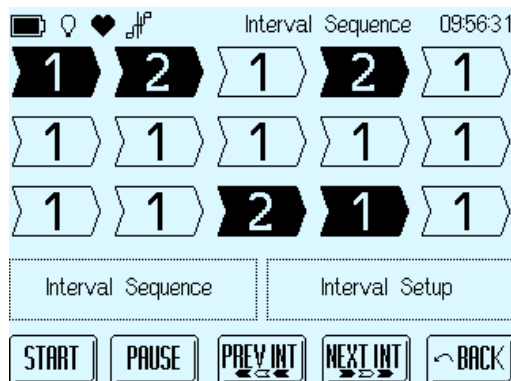


Figure 57 – Interval Sequence Page

The Interval Sequence page is divided into four areas:

- Status bar (see section 5.1 above).
- Interval session summary.
- Configuration area.
- Control area.

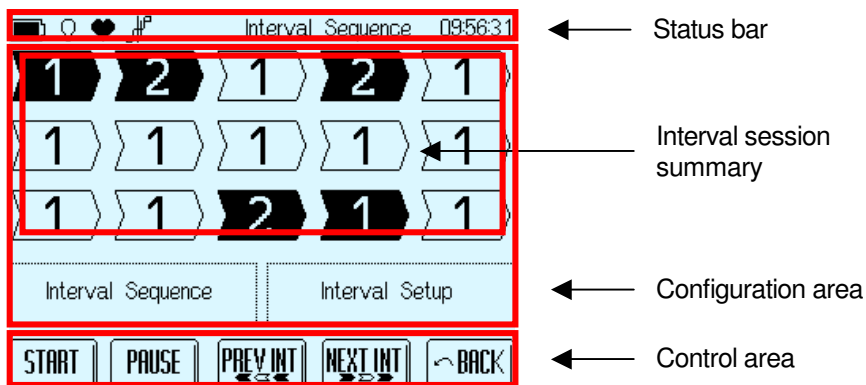


Figure 58 – Interval Sequence Page

## 10.2 Creating an interval session

The first stage to creating an interval session is to decide what must be monitored during each interval. Up to 2 target types can be monitored during each interval, and these are defined using the Interval Setup button.

### 10.2.1 Interval setup button

Pressing the Interval Setup button on the Interval Sequence page reveals the interval setup pages. Up to 15 different intervals can be setup. There is a dedicated page for the setup of each interval (Interval Setup 1 to Interval Setup 15). The Interval Setup 1 page is displayed by default when the Interval Setup button is pressed on the Interval Sequence page. Use the Prev or Next button to change the interval setup page.

Setup the intervals as required on the separate interval setup pages.

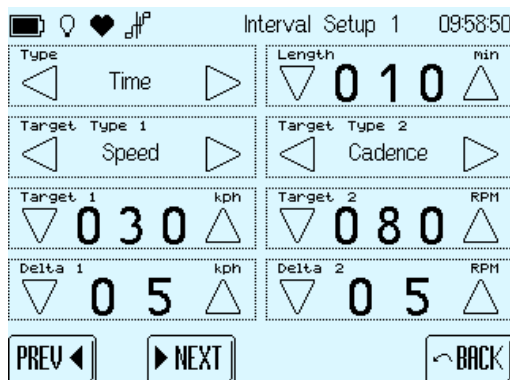


Figure 59 – Interval Setup 1 Page

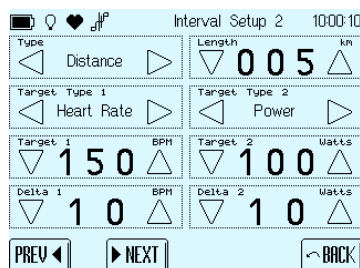


Figure 60 – Interval Setup 2 Page

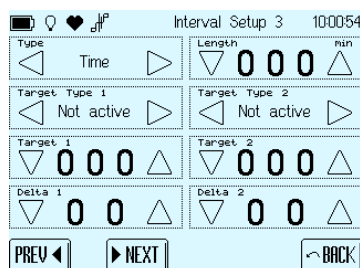


Figure 61 – Interval Setup 3 Page

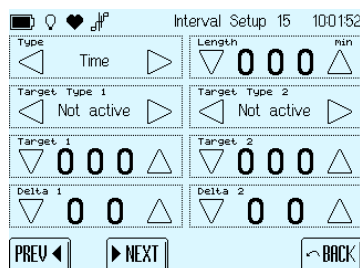


Figure 62 – Interval Setup 15 Page

Field	Description
Type	The interval can be set to either time or distance based using the ◀ and ▶ keys
Length	The length of the interval can be set to either minutes or kilometres / miles using the ▼ and ▲ keys; if interval type is: <ul style="list-style-type: none"> <li>• Time then interval length is the number of minutes for the interval</li> <li>• Distance then interval length is the number of kilometres / miles for the interval</li> </ul>
Target Type 1	Use the ◀ and ▶ keys to define the first target type to be monitored during the interval session; the following can be selected: <ul style="list-style-type: none"> <li>• Not active (Target Type 1 is not monitored)</li> <li>• Speed</li> <li>• Cadence</li> <li>• Heart Rate (Hidalgo HRM System)</li> <li>• Power</li> <li>• Breath Rate</li> <li>• Heart Rate P (Polar HRM System)</li> </ul>
Target Type 2	Use the ◀ and ▶ keys to define the second target type to be monitored during the interval session; the following can be selected: <ul style="list-style-type: none"> <li>• Not active (Target Type 2 is not monitored)</li> <li>• Speed</li> <li>• Cadence</li> <li>• Heart Rate (Hidalgo HRM System)</li> <li>• Power</li> <li>• Breath Rate</li> <li>• Heart Rate P (Polar HRM System)</li> </ul>
Target 1	Use the ▼ and ▲ keys to define the target value for target type 1
Target 2	Use the ▼ and ▲ keys to define the target value for target type 2
Delta 1	Use the ▼ and ▲ keys to define the allowed deviation (+ / -) from target 1 value
Delta 2	Use the ▼ and ▲ keys to define the allowed deviation (+ / -) from target 2 value

Any combination of configurations for target type 1 and target type 2 is allowed; and it is not necessary for both interval types to be setup during the same interval if the monitoring of only one interval type is required. It is also possible to set both targets types to Not Active and this may be used to create a Quiet Interval where time or distance will be measured but targets will not be monitored.

Before continuing, setup all your intervals (Interval setup 1 to Interval Setup 15; there is no requirement to complete all 15 interval setups; only complete the number you require) and then press the Back button to return to the Interval Sequence page.

### 10.2.2 Interval sequence button

Once the intervals have been setup, their occurrence during the interval session must be defined.

Pressing the Interval Sequence button on the Interval Sequence page reveals the Interval Seq Setup page. This page has been designed to provide flexibility for the user to define the sequence of intervals for the interval session.

The interval session summary from the Interval Sequence page is viewable on the Interval Seq Setup page. The interval session summary is a sequence made up of 15 steps flowing from top-left to bottom-right of the touch screen display.

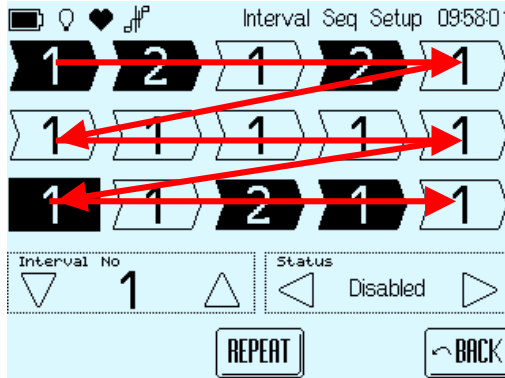


Figure 63 – Interval Seq Setup Page

The interval setups already defined can be assigned to any step along the sequence, in any order and to more than one step if required. The number on each step shows the interval setup assigned to that step.

Touching any step along the sequence turns the step from an arrow into a flashing rectangle. This step is now editable using the Interval No and Status fields.

Field	Description
Interval No	Displays the current interval setup assigned to that step; any of the 15 interval setups can be assigned to any step
Status	Shows whether the step is enabled or disabled; when enabled the step background remains black when another step is selected, else the background of the step remains clear to indicate the step is disabled

Button	Description
Repeat	Repeat the sequence continuously rather than stop the interval session when the last enabled step in the sequence has completed

Only enabled steps become part of the interval session; disabled steps are skipped during the interval session.

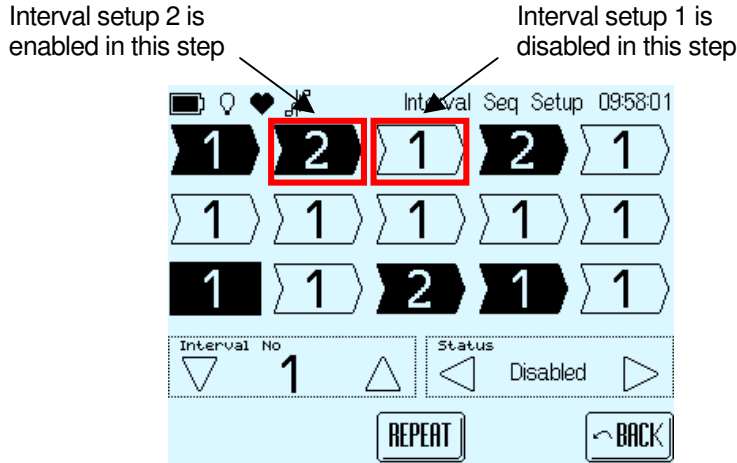


Figure 64 – Interval Seq Setup Page

### 10.2.2.1 Example of interval sequence setup

A user could setup the following interval sequence.

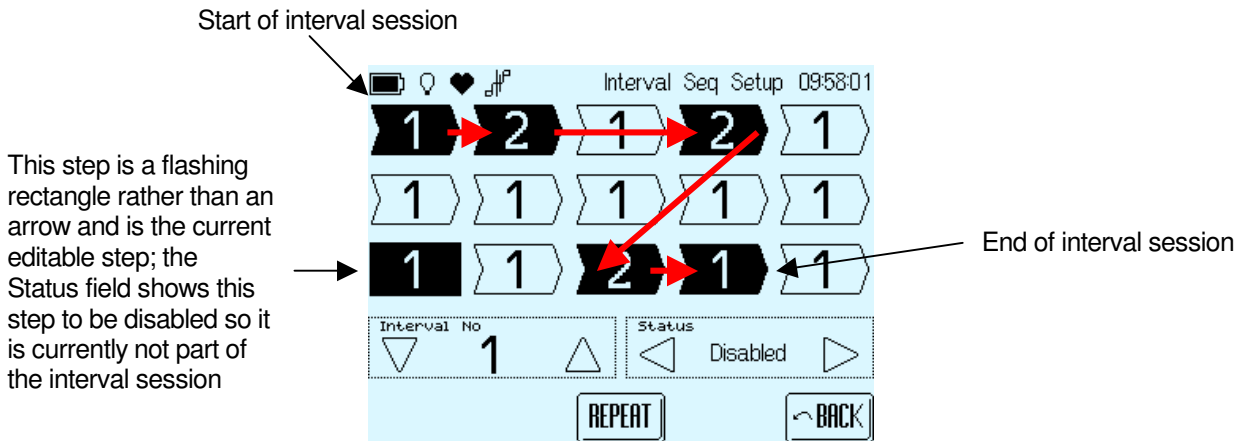


Figure 65 – Interval Seq Setup Page

In this example, the interval session will start with interval setup 1, and then continue with interval setup 2, 2, 2, and finish with interval setup 1.

If the user required the above example to be repeated continuously the Repeat button can be used. The Repeat button can take one of two appearances.



Figure 66 – Repeat Button

When the Repeat button background is clear the interval session will stop after the last enabled step in the sequence has finished.

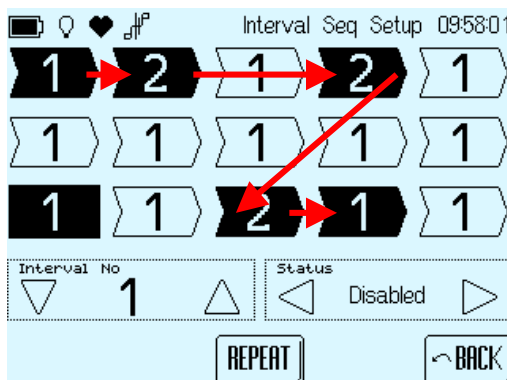


Figure 67 – Interval Seq Setup Page

When the Repeat button background is black the interval session will be repeated continuously after the last enabled step in the sequence has finished.

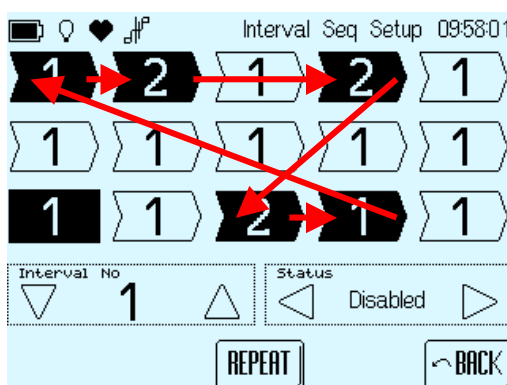


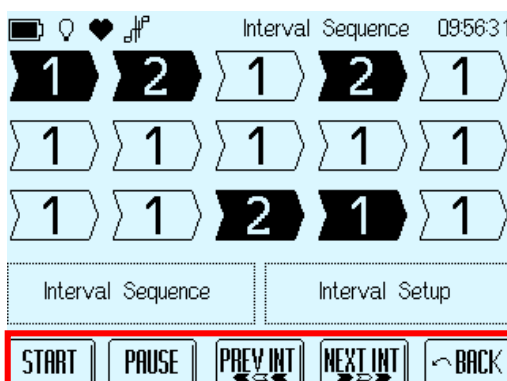
Figure 68 – Interval Seq Setup Page

Pressing the Back button returns the user to the Interval Sequence page.

The interval session summary on the Interval Sequence page shows the summary of how the interval session will proceed when started.

### 10.3 Running an interval session

An interval session is controlled using the five buttons at the bottom of the interval sequence page.

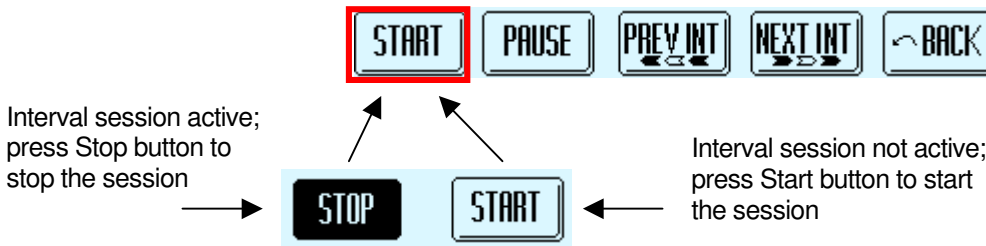


← Control area

Figure 69 – Interval Sequence Page

### 10.3.1 Start/stop button

Pressing the Start/Stop button starts or stops the interval session. When the Start/Stop button displays Start text the interval session is not active but can be started by pressing the Start button. When Stop text is displayed the interval session is active but can be stopped by pressing the Stop button.



When the interval session is started the step of the sequence that is currently active is displayed as a flashing arrow and the interval setup is shown inside the arrow. The Head Unit monitors the parameters defined for that interval setup.

#### 10.3.1.1 Targets for current active step

If the value of the channel being monitored as part of the interval session falls outside the defined range then a continuous beep will be sounded. The defined range is specified as:

Minimum allowable value for monitored channel = Target – Delta  
 Maximum allowable value for monitored channel = Target + Delta

The target and delta are defined in the interval setups (Interval Setup 1 to Interval Setup 15).

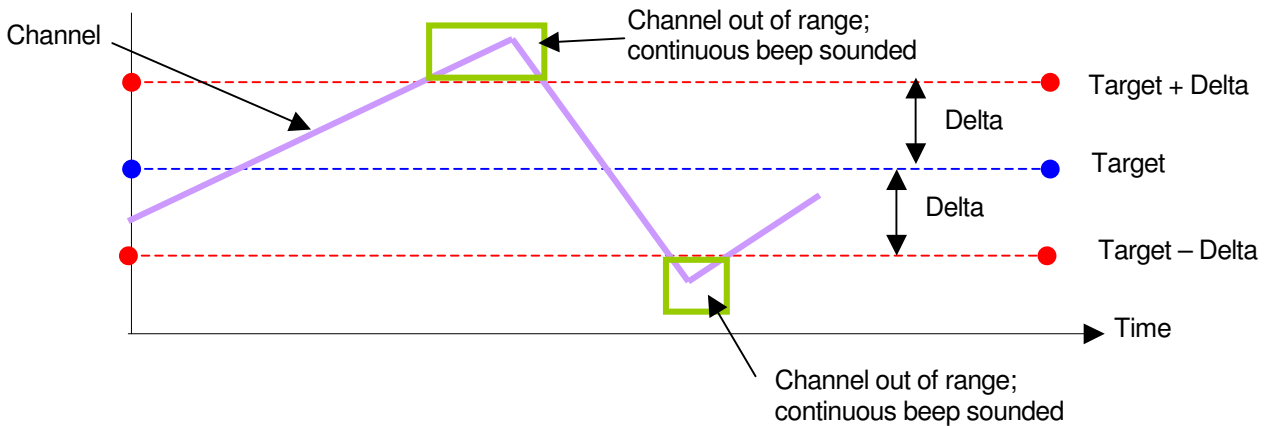


Figure 70 – Active Step Setup

### 10.3.2 Pause/paused button

The Pause button together with Start/Stop button allows the interval session to be paused.



Figure 71 – Start / Pause Buttons

When the Paused button is pressed the current active step is paused. When the Pause button is black the interval session is paused (indicated by Pause button changing to Paused), whilst if the Pause button is clear then the current active step depends on the Start/Stop button.

The following configurations are possible:



Figure 72 – Interval Not Active



Figure 73 – Interval Session Active



Figure 74 – Interval Session Paused

### 10.3.3 Prev int and next int buttons

Pressing the Prev Int button stops the current step and skips back to the start of the previous step in the sequence.



Figure 75 – Prev Int Button

Pressing the Next Int button stops the current step and skips to the start of the next step in the sequence.



Figure 76 – Next Int Button

### 10.3.4 Back button

The user can return to the user pages by pressing the Back button. The interval session will continue to run in the background, but the user can now monitor the channels (including those on which the interval setup is based if required).

# 11 Page navigation illustration

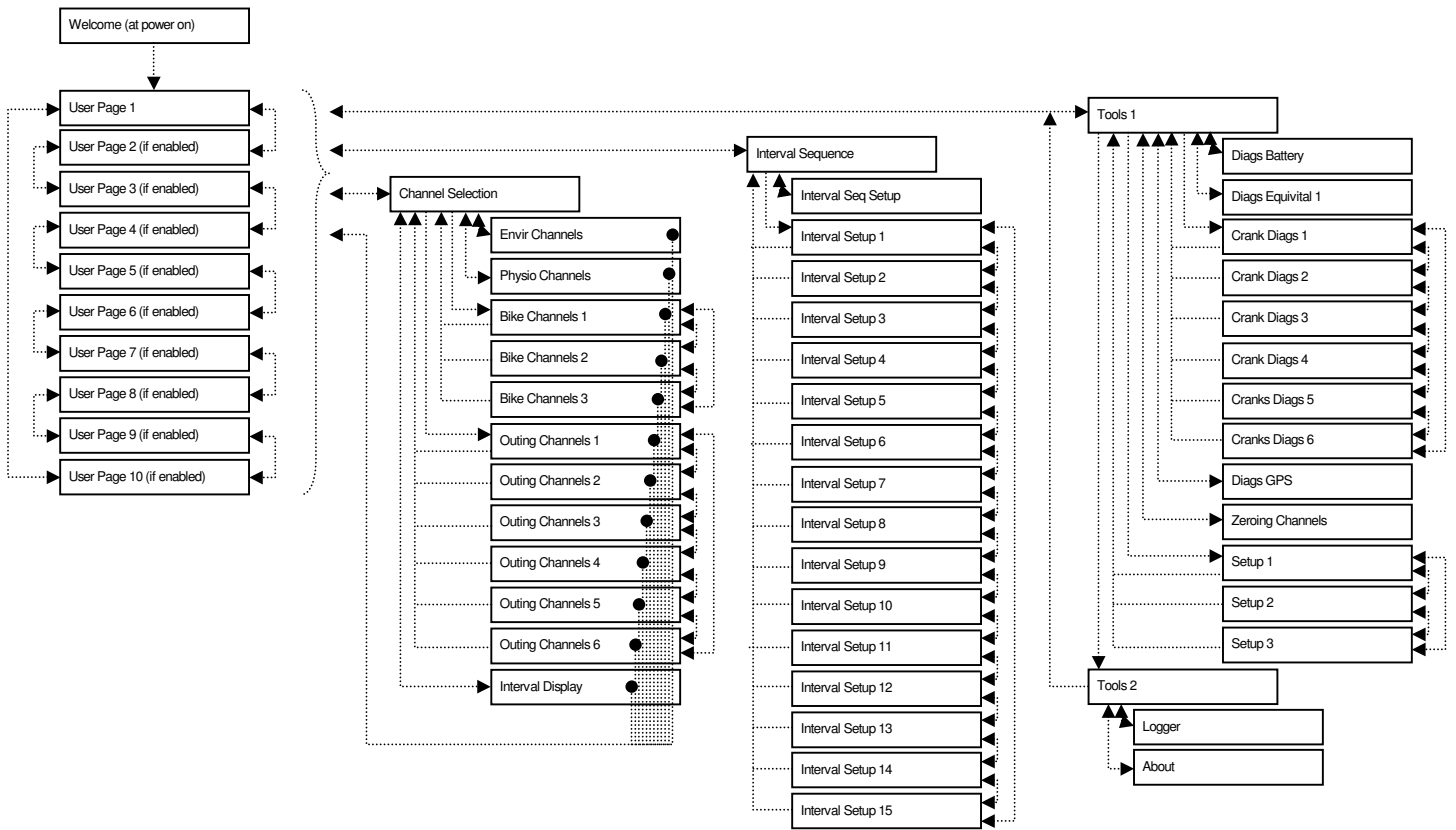


Figure 77 – Head Unit Page Structure