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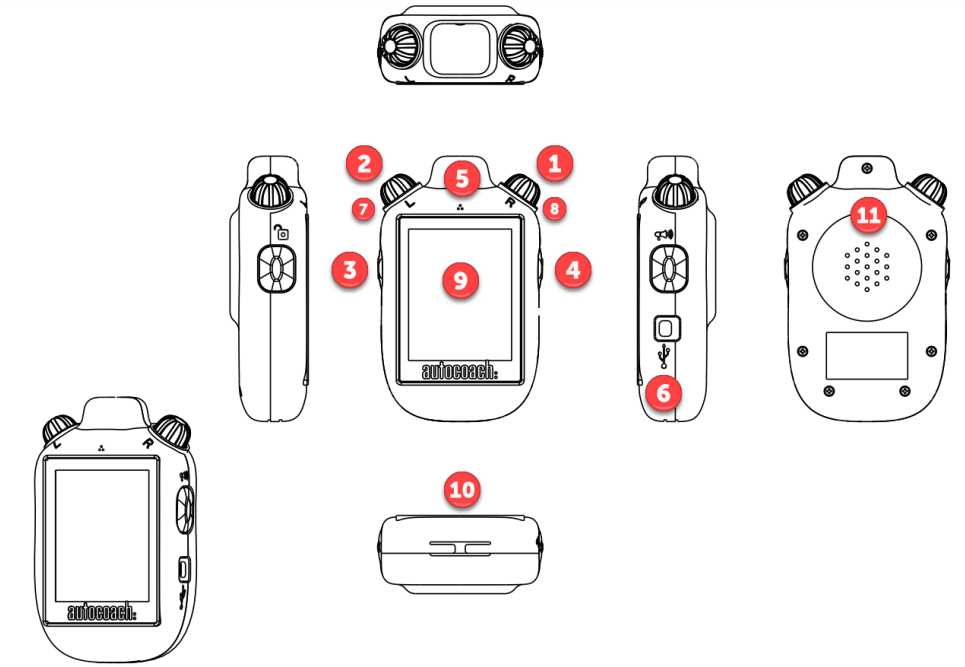
Smart Stopwatch Manual

Valid for ACS120 software version 1.37+

Table of Contents

Performance Stopwatch Controls & Indicators

Note: There are three types of button presses on buttons ① and ②. A “Short Press” is a single press generally lasting less than 0.5 seconds. A “Long Press” is a single press generally lasting more than 0.5 Seconds duration. A “Double Press” consists of two single presses in quick succession.



① Right Button

- Right Lane Watch Start/Stop/Split
- ON/OFF button (when Unlock is also pressed)

② Left Button

- Left Lane Stroke Rate/ Start/Stop/Split
- ON/OFF button (when Unlock is also pressed)

③ Unlock Button/ Left LED Indicator

- Required to use Menu and Select Dial functions
- Flashes when Left Lane Stopwatch is active
- Lights up when device is transmitting/receiving audio

④ Press to Talk Button (PTT)/ Right LED Indicator

- Activates talk feature
- Flashes when Right Lane Stopwatch is active
- Lights up when device is charging

⑤ Microphone

- Speak here to transmit audio to other devices

⑥ Charging Port

- Use supplied cable to charge stopwatch

⑦ Menu Dial

- Use to scroll through menu screens

⑧ Volume/ Select Dial

- Use to scroll through settings in each mode
- When rotated clockwise past full volume the device will speak aloud all times

⑨ Screen

- Displays all data
- Can be read in bright sunlight

⑩ Strap attach point

- Secures watch to lanyard

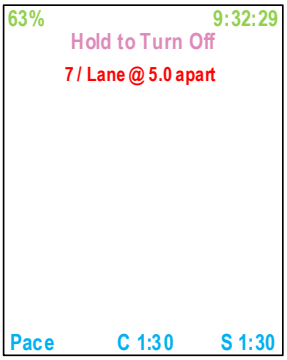
⑪ Speaker

- Audio output

1. Turning on and off

1.1: Turning Device On

To turn on the device, hold down the **Unlock Button ③ (left side button)** and either the **Right top Button ①** or the **Left top Button ②.** The device will turn on. The device will resume the last state it was in before it was turned off. If you have a name registered in your device, it will be displayed on this power-on screen.



1.2: Turning Device Off

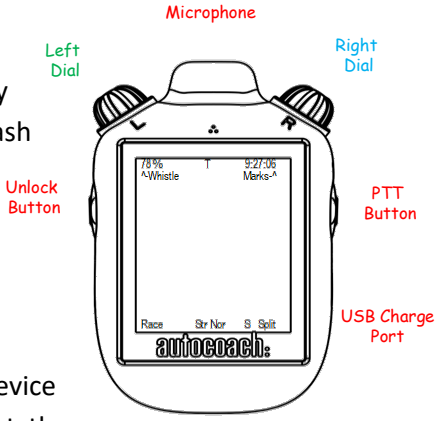
To turn off the device, hold down the **Unlock Button ③ (the left side button)** and either the **Right top Button ①** or the **Left top Button ②.** The device will warn the user that it will turn off by announcing "Shutdown". If you continue to hold the buttons down, the device will turn off while simultaneously announcing "Off". The unit will automatically turn off after approximately 45 minutes of inactivity.

1.3: Low Battery

When the battery level gets too low, a "Low Battery" icon will be displayed along with an announcement "Low Battery". Soon following, the device will announce "Off" while shutting down. It is recommended to recharge the device to prevent any loss of data.

1.4: Resetting the Device

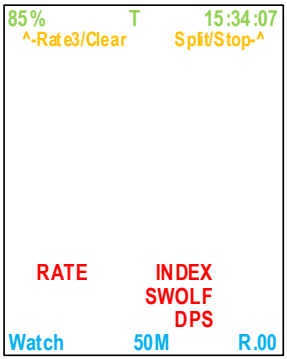
The unit can be reset to factory defaults holding down the **Right Dial** and **Left Dial** simultaneously until the top two LED indicators momentarily flash (between 4 and 10 seconds, depending on the model and hardware version).



When the two buttons are held down, the device announces “Rebooting!” to warn the user that the device will soon be reset. The boot screen displays the software build date and model number of the device.

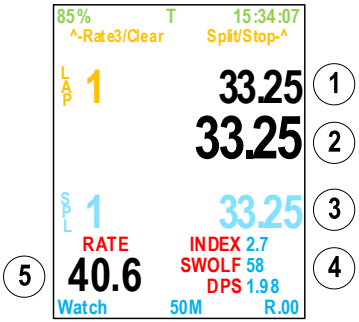
1.5: Display Layout and Information

The standard display layout is shown on the right for Watch and Speed Modes.



The top line shows the current battery level on the left side and the current time on the right side. The 'T' indicates that the stopwatch will transmit audio from split times recorded.

1.5.1: In Watch Mode:



① - Displays the lap number and the active timer (elapsed time).

② - Displays the last split recorded (in large font).

③ - Displays the split number and split time.

④ - The bottom right area are the efficiency metrics – (Stroke) Index, SWOLF (Swimming Golf) & DPS (Distance Per Stroke) numbers.

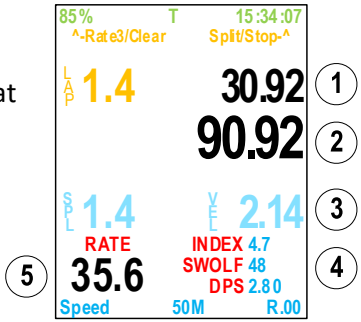
⑤ - The bottom left area is the stroke rate.

1.5.2: In Speed Mode:

① - The top left area displays the current lap number and split number (i.e. Lap 5.3 indicates the 3rd split of the 5th lap). The top right area displays the active timer (elapsed time).

② - Displays the last split recorded (in large font).

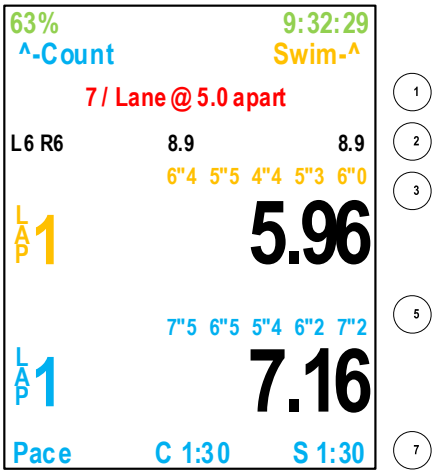
③ - The left area displays the last split recorded and the velocity of that split. For example, SPL 1.4, VEL 1.6 indicates that the swimmer was travelling at a velocity of 1.6 m/s on the fourth section of the first lap.



④ - The bottom right area is are the efficiency metrics – (Stroke) Index, SWOLF (Swimming Golf) & DPS (Distance Per Stroke) numbers.

⑤ - The bottom left area is the stroke rate.

1.5.3: In Pace Mode:



① - The number of swimmers set per lane and the interval apart between each swimmer.

② - The left side displays which swimmer number the split recorded belongs to in each lane. The right side shows the active timer (elapsed time).

③ - Displays each split that has been recorded for the right lane.

④ - The left side displays the current lap number. The right side displays the latest split for the right lane (in large font).

⑤ - Displays each split that has been recorded for the left lane.

⑥ - The left side displays the current lap number. The right side displays the latest split for the left lane (in large font).

⑦ - Displays the mode, current time cycle (C) & following time cycle that has been set (S).

For all Modes, the bottom line displays the current mode and settings. The current mode is shown in the bottom left and the mode settings are shown in the middle and/or right side.

The display is automatically dimmed after 40 seconds from last use (default), in order to conserve display and battery life. This can be changed in the Setup Mode. Pressing any button will re-activate display / backlight display, usually the Unlock Button is pressed for this purpose.

2. Watch Mode

2.1: Watch Mode

Watch mode is the main mode where the Stopwatch functions like a stopwatch. Pressing the Right Dial controls the timing stopwatch, pressing the left dial controls the stroke rate stopwatch. If a time and a rate is measured for a given lap, then the device will calculate and display SWOLF, Distance Per Stroke and Stroke Index in the bottom right of the display.

2.2: Selecting Watch Mode

When the device is on and no timing is active, hold the **Unlock Button ③ (Left side button)** and rotate the **Menu Dial ⑨ (top left button)** until the screen displays **Watch** in the lower left corner.

2.3: Using the Watch Mode

2.3.1: General Usage

The timer on the display counts to a maximum of 9h59m59s9 (9 hours, 59 minutes, 59.9 seconds). Although this time is rounded to 0.1 seconds, the stopwatch is actually being timed with a resolution of 1/1024th of a second. When

the Watch is not active, short press the **Right Dial** ① to immediately reset and start the Stopwatch. Pressing the **Left Dial** starts the stroke rate measurement, which can be done independently of the Stopwatch on the **Right Dial**. If a time and a rating are calculated on a given lap, the results are combined to calculate stroke efficiency and displayed as per section 2.6

When there are no active timers running, the display can be "cleared" by a long press on the **Left Dial**, and only the top status line will be displayed. The display can be "un-cleared" by pressing the left "unlock" button to re-display the time and/or rate.

2.3.2: Dual Watch Mode

The stopwatch is able to time two different swimmers independently. To access this function, go to Setup → Rate Count, and set this to "Dual Watch". Now, pressing the **Left Dial** will be unable to display stroke rates, but will now function exactly as the watch using the **Right Dial** does.

2.4: Operations

Rotate Left Dial	**Selects split number of current race**
Press Right Dial	**Press to start watch, short press to do Lap split, long press to stop watch**
Press Left Dial	**Used for stroke rate measurement over 1, 2 or 3 arm cycles**

When the stopwatch is running, short press the **Right Dial** to record a split time. While displaying the split times, the device will update the display to show both incremental and cumulative splits.

To view a past split, rotate the **Left Dial** to the selected split. This can be done whilst the watch is running or stopped. The watch mode records a maximum of 60 splits and or Stroke ratings.

2.5: Stopping the Watch

When the stopwatch is active, a Long Press on the **Right Dial** stops the timer. Upon stopping, the cumulative time(s) is displayed on the large font display area. To

manually clear the display, long press the **Left Dial** ②. To re-display the results after the display has been "cleared", press the **Unlock Button** ③.

2.6: Measuring Efficiency of an athlete for a given stroke

Once the lap time and stroke-rate for an athlete have been determined, various efficiency indexes can be automatically calculated and displayed. Firstly, to measure a swimmer's stroke rate while timing, short press the **Left Dial** ② at the instances a stroke cycle begins (e.g. hand entry). And then after 3 stroke cycles have completed press the **Left Dial** to complete the measurement. As stroke rates usually vary each lap, we recommend measuring stroke rate in the mid swimming segment of each lap. Stroke rates can be taken each lap for multi lap races and later recalled and displayed. The Stopwatch will calculate the average stroke rate and use this reading in the stroke efficiency calculations for that lap.

The main efficiency index is called **Stroke Index**, and is the product of distance per stroke (M) and athlete velocity (M/S). In addition, the **SWOLF** rating (stroke cycle count added to the lap time) and **Distance Per Stroke** are all displayed and recorded on the Stopwatch. Best accuracy can be obtained when using "Speed" mode as it uses data from the swim phase and excludes dive component of each lap.

2.7: Using efficiency measurements

For elite freestyle swimmers Stroke Indexes can be as high as 5.5, but for junior and smaller athletes, readings may be 3 or 4. Indexes should not be used to compare dis-similar athletes or between sprint and distance events. **SI i**s best use as an individual figure of merit and as a measure of individual progress.

Stroke indexes will be more accurate at long course pools, as they have a greater percentage per lap in the swim phase. Stronger kicking will result in improved indexes, but may not be maintained over longer distances. Athletes with longer arms should have higher efficiency, all other things being equal. Slower strokes such as breaststroke will have lower indexes (typically 1 to 3). Please note the past 100 swims recorded in Speed, Watch, Group or Race modes are ready to be downloaded by connection of a computer to the USB port, including all efficiency indexes.

2.8: DPS, SWOLF and Stroke Index Definitions:

Stroke: - A STROKE is a complete arm cycle for the given swim style. E.g., in freestyle a stroke includes both arm pulls.

Stroke Rate: - Is the number of strokes per minute calculated in the swim phase of the lap.

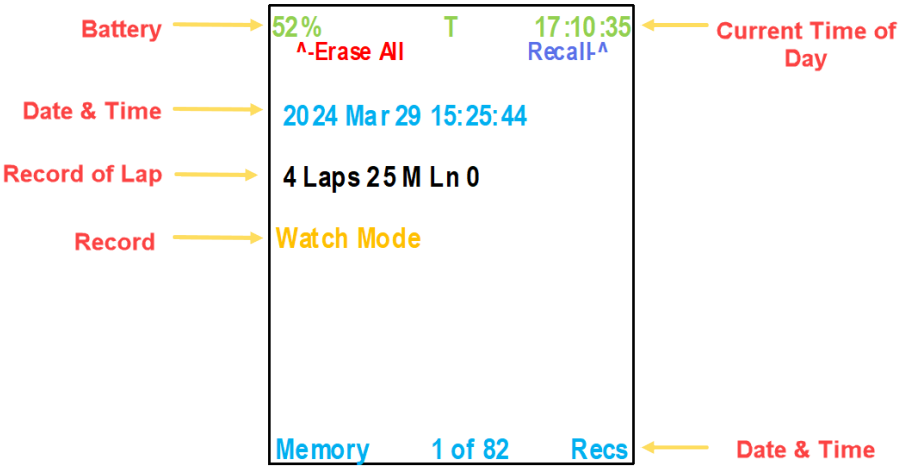
DPS: - Distance per stroke is the distance in meters covered per swim cycle. This is relevant only in the swim phase, not dive or turns.

SWOLF: - The Swimming Golf score is calculated as stroke count plus time (in seconds). Stroke count is computed from the stroke rate in the swim phase of a lap. Lower SWOLF scores indicate improved efficiency, and most pool gadgets define SWOLF for just 25M pools. 50M SWOLF will be a little more than double the 25M reading, as a greater proportion of the lap is in the swim phase.

2.9: Memory Recall Mode:

To recall data from a certain mode, scroll to the Memory screen. From here:

Rotate Left Dial	**Selects Memory Record Number to recall**
Press Right Dial	**Long Press to recall the selected record**
Press Left Dial	**Long press if record #0 is selected to ERASE all data**


Battery
52%
T
17:10:35
^-Erase All
Recall-^
Current Time of Day
Date & Time
2024 Mar 29 15:25:44
Record of Lap
4 Laps 25 M Ln 0
Record
Watch Mode
Memory
1 of 82
Recs
Date & Time

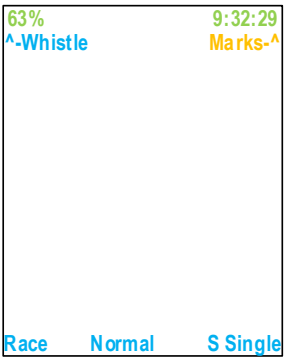
3. Race Mode

3.1: Race Mode

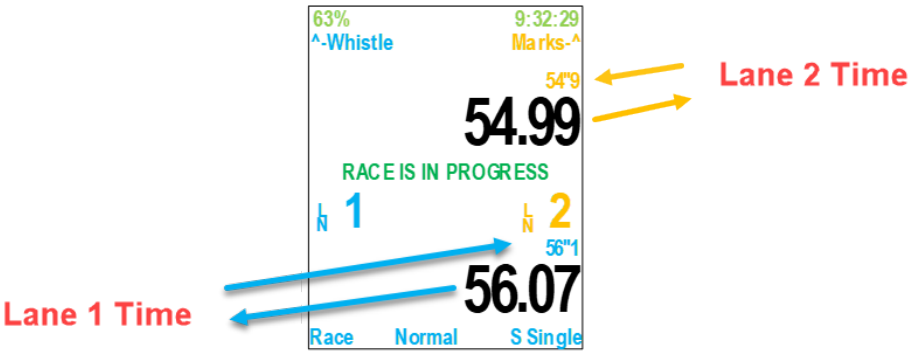
Race mode is the mode that can be used to simulate races. This mode is similar to the stopwatch mode except that it includes special functions designed specifically for races. In this mode, the Stopwatch can allow users to effortlessly start races. The sounds and times recorded can also be conveyed with the wireless connections of an AutoCoach LED Sign and an AutoCoach Wireless Speaker Hub. These features allow the user to easily start and time a race with minimal effort.

3.2: Selecting the Race Timing Mode

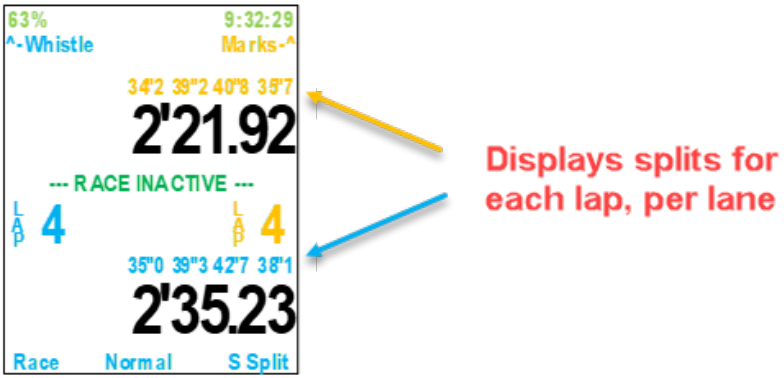
When the device is on and no stopwatches are active, hold the **Unlock Button ③ (the side left button)** and rotate the **Menu Dial ⑨ (top right button)** until the screen displays **Race** in the lower left corner. The bottom right corner of the screen is the race mode. There are three race modes available to choose.



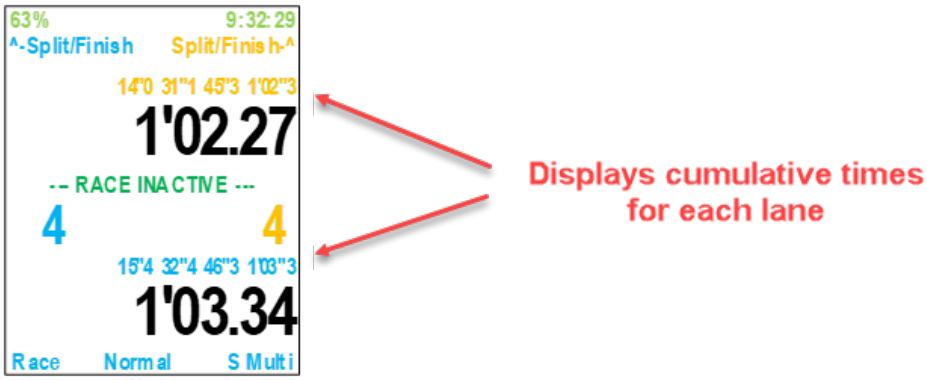
1) "Single" mode means no intermediate splits will be recorded only a single time will be recorded. The stopwatch will be stopped as soon as the corresponding button has been short pressed.



2) “Splits” mode allows the user to record split times. The operations to record a split or stop the stopwatch are the same as **Watch** mode (short and long press respectively).



3) “Multi” mode uses give cumulative times and is suitable for longer events.



The default for the Race Type is “Swim”, where starts generated are typical of a normal swim meet. In the **Setup** menu, this can be changed to “Athletics”, where start sounds are in line with track and field events.

3.3: Selecting the Race Modes of Operation

In addition to the three race timing types, there are five race meet modes available. These are selected under the "Setup" menu, as they are not commonly changed. When in the Setup menu, rotate the upper left button to find the starting method, and twist the upper right button till the desired mode is shown.

3.3.1: Normal Race Mode

In **Normal** race mode, the race starting signals, in addition to the exit whistles (in **Single** and **Split** race types only) are generated. The watch also times two lanes. This is default setting for race mode.

3.3.2: Over Top Race Mode

In **Ovr Top** race mode, the race start signals are generated, however these is are no exit whistles. This race mode is used for race meets where more events can be raced in a given time, but requires the swimmers to remain in the water holding onto a lane rope whilst the next race is started, then exiting the pool whilst the race is in progress. The watch also times two lanes.

3.3.3: Starter Top Modes

In **Str Top** mode, the watch only generates the start signals and does not perform timing functions. This mode will also not generate the exit whistle as it will operate where swimmers finish the race and remain in the water as the next race starts, as described above.

3.3.4: Starter Manual Mode

In **Str Man** Mode, the watch will generate the starting and exit whistle, but has no timing function. This mode is commonly used for race starting officials who act independently from race timing people.

3.3.5: Starter Normal Mode

In **Str Nor** Mode, the watch will not generate starting or exit whistles. It has no timing functions. The only operation is "Take Your Marks" on the **Left Button** and the start signal on the **Right Button**. This mode is commonly used if there is a separate official to blow the starting and exit whistles.

3.4: Race Operation

To sound the starting whistle, short press the **Left top Button ②.** For backstroke races, a second short press will sound the second whistle. A short press on the **Right top Button ①** will sound "Take Your Marks" and a following press on the **Right top Button** will sound the start beep and start both stopwatches.

3.5: Aborting a Race

If any ready signals have been sounded but the race has not started, the race can still be aborted. A long press with the **Left top Button ②** will generate the message "Stand Down" and abort the race.

For races where only a single athlete is timed, after stopping the desired stopwatch, a subsequent long press on the same **button** will abort the other timer and not display its result.

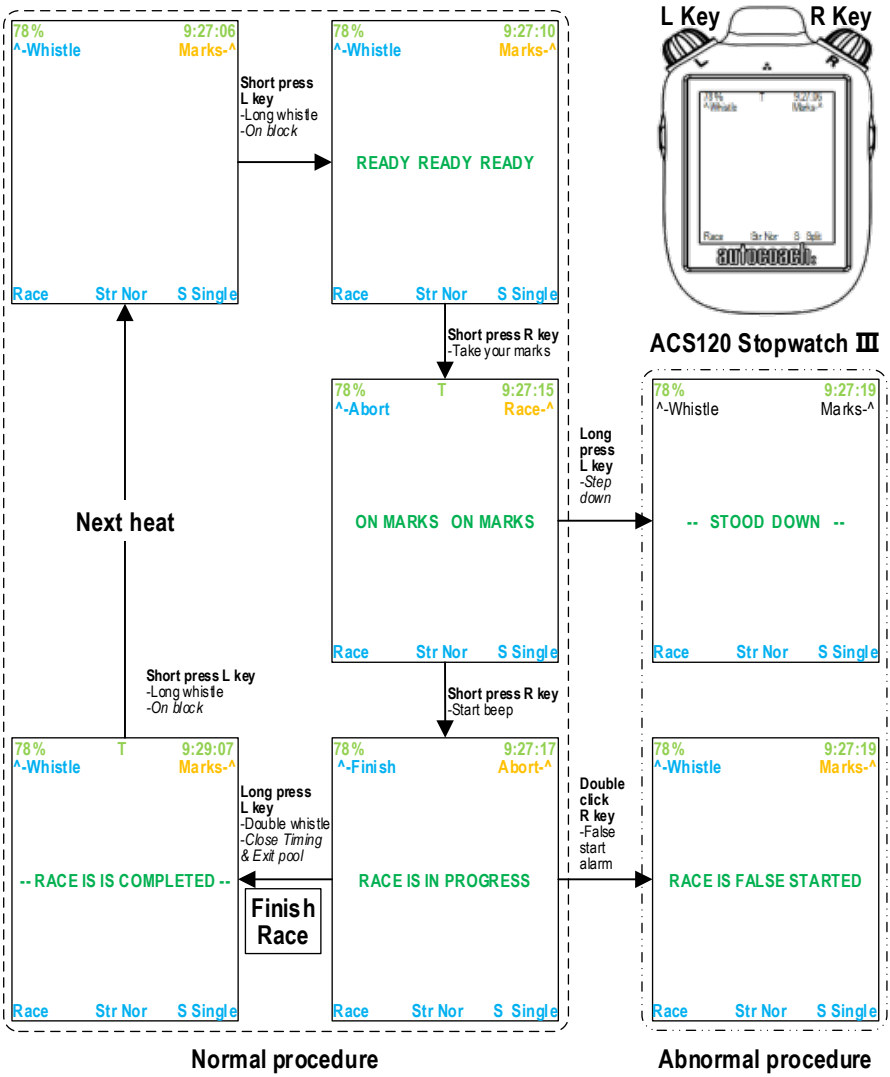
3.6: False Start

After a race has been started, a double press on the **Right top Button** will stop the race and start the "False Start" alarm sound.

3.7: Finishing a race

After a race has concluded, use a long press on the **Left top button** to signal the swimmers to exit the pool or move to the "over the top" position of the lane. This operation also saves the last race result file for use in importing into race management recording software.

Autocoach stopwatch race (Str Nor/Str Top/Str Man) procedure



3.8: Athletics Mode

Athletics mode is for track and field:

1) Left press signals “On your Marks!”
2) Right Press signals “Set!”
3) Second right press makes a starters Gun sound and start the race.

3.9: Multi Mode

“Multi” mode is a special mode that is included for the use of conducting races with many people such as open water swimming or triathlons. This mode operates very similarly to the “Splits” mode. The main differences are the starting announcements (in Athletics Mode) and the way the times are recorded.

3.9.1: Race Type: Swim

When the Race Type is set to Swim Mode, all starting commands are the same as when the watch is in “Splits” Mode.

Unlike “Splits” mode, “Multi” mode does not assume an individual is swimming laps in a pool. Instead, it assumes that there are many people swimming and display times and data respectively. In this mode, a short press on either **Top Button** while timing will display the cumulative time and the position of that time. Although only the cumulative times are displayed, the time differences are also recorded and can be viewed by scrolling the **left dial** when timing has closed.

3.9.2: Race Type: Athletics

When the Race Type is set to Athletics Mode and is in Normal, Over the Top, Starter Top or Starter Normal Modes, like “Splits” mode, a short press with the **Left Top Button** ② will sound “On Your Marks” (instead of “Take Your Marks”). After the “On Your Marks” announcement, a short press on the **Right Top Button** ① will sound “Set”. A consequent short press on the **Right Top Button** ① will sound the starting signal.

The Starter Manual mode for Athletics will commence with a short **Left Top Button** ② press for “On Your Marks”, followed by a short **Right Top Button** ① press for the staring signal when in “Multi” mode.

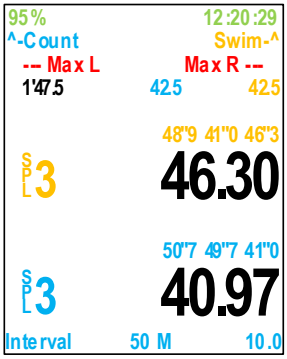
4. Interval Mode

4.1: Interval Mode

Interval Mode is a mode which can help the coach conduct interval training. With this mode, users can easily start interval training by simply pressing a top button. The Stopwatch also eliminates the need to constantly do mental arithmetic before conveying the time to a certain swimmer. When athletes need to have a periodic rest during sets, then it is suggested to use Pace Mode instead. Interval Mode is best for shorter intervals.

4.2: Selecting Interval Mode

When the device is on and no stopwatches are active, hold the **Unlock Button ③ (left side button)** and rotate the **Menu Dial ⑨** top left button until the screen displays **Interval** in the lower left corner.



4.3: Selecting Interval Time & Settings

To set the interval time, hold the **Unlock Button ③** and rotate the **Select Dial ⑧ (top right button)** to the desired interval duration. A special mode that can also be selected is the **Seconds Modulus** mode, indicated by a "[10]" (see section 4.6 for further details).

4.4: Interval Mode Operation

There are 2 basic types of interval training, beep starts and race starts. One of two different interval training modes can be selected according to the type of interval training desired.

To start a set with race starts, short press the **Right Top Button ①** five seconds prior to commence the interval. The announcement "Take Your Marks" and then will sound the starting signal. These will repeat at every interval until the user stops the set by long pressing the **Right Button ①**. To prevent athletes from trying to anticipate the start beep timing, there is a randomized time delay between the "Take Your Marks" announcement and the starting signal.

To start a set with beep starts, short press the **Left Top Button ②** 5 seconds prior to the commencement of the interval.

The first 2 beeps are lower in pitch and arrive in 1 second intervals before the final higher pitched start beep.

4.5: Appropriate Intervals and Parameters

Select the interval time based on how quickly you want to circulate swimmers in their queue and the range of swimmers' times. E.g. if you have many swimmers of similar ability then use 5- or 10-seconds intervals, if you have a few swimmers or freestylers mixed with breaststrokers then use longer interval times. In the event you have more than 2 lanes of swimmers or need rapid turnaround use the [10] interval setting, in which the system just indicates the truncated seconds of the measured times, and is suitable for the most rapid timekeeping. In this mode it is expected the swimmer will know the difference between 32.3 and 42.3 seconds!

Interval Mode is capable of displaying correct timings, even when there are gaps in the swimmer queue and a swimmer is absent on their turn. For this to occur, there is a calculation made for a valid range of times for each swimmer. This time is calculated as the first split time, plus half the starting interval time.

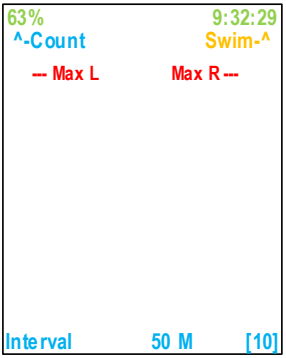
If the user tries to take a split time before the next interval should have started, the button press will be ignored.

E.g. At 10S start intervals, and first swimmer is 33.5, any time more than 38.5 would be assumed no swimmer was present and another 10 Seconds deducted from the timer. If you have a wide range of swimmers starting, ensure the Start interval is more than the difference between your slowest and fastest swimmers, and start with a slower swimmer (not the fastest one). E.g. Swimmers from 29 to 43 seconds, use 15 second intervals, and start the breaststroker first on the right lane.

4.6: Seconds Modulus Mode

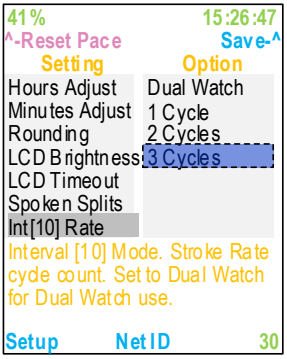
By pressing the side left **Unlock Button** ③ and turning the top right **Select Dial** ⑧ **(top right button)** anti clockwise to it furthest point, will indicate [10] interval.

There is a special interval mode that allows for more versatility while conducting interval training. Unlike the usual mode where an athlete's actual time is recorded, the mode only records the last two digits of the time that would have been recorded (e.g. 34.2 seconds would be recorded as 4.2; 29.6 seconds would be recorded as 9.6). It is assumed that the athlete should know how fast they should be. This mode is used when you have many athletes and only one Stopwatch, and allows you to get times for many athletes.

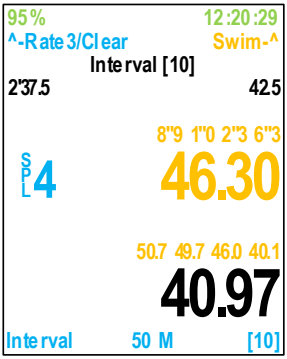


4.6.1: Seconds Modulus Mode – Stroke Rate Cycles

To set the desired stroke rate cycle count, go to the Setup Menu and select the rate count (1 Cycle, 2 Cycles, 3 Cycles).



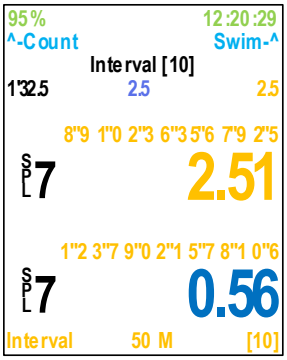
In Interval [10] mode, once timing has commenced, the **Right Top Button** ① will record splits, whilst the **Left Top Button** ② will take stroke rate. The split times are recorded on the top half of the screen and the stroke rate numbers are recorded on the bottom half of the screen. Once timing has stopped, use the **Menu Dial** ⑨ to scroll through split times and stroke rate numbers taken.



4.6.2: Seconds Modulus Mode – Dual Watch Mode

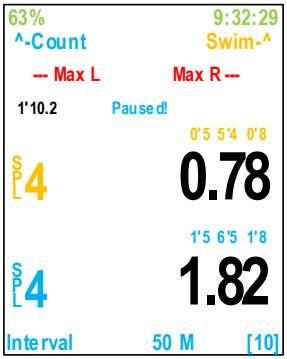
To set the two stopwatch function, go to the Setup Menu and select Dual Watch.

In Interval [10] mode, once timing has commenced, both the **Right Top Button** ① and **Left Top Button** ② will record split times. This setting is commonly used to time two lanes concurrently. Once timing has stopped, use the **Menu Dial** ⑨ to scroll through split times taken.



4.7: Pause Function

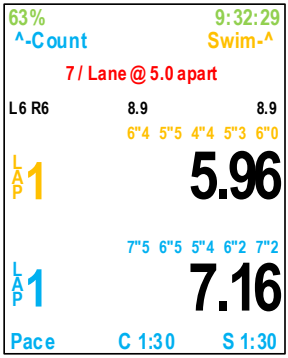
While conducting interval training, the user can pause the training by long pressing **Left top Button** ②. This feature allows coaches to let their athletes rest during a set or be briefed by the Coach. While paused, the timer will still continue running; however, the start beeps or the start announcements will be replaced by soft, muffled beeps that signal at every interval length from the Stopwatch as a reference for the Coach. These reference beeps will only be played from the Stopwatch. To recommence the beeps by long pressing the **Left Top Button** ②.



5. Pace Mode

5.1: Pace Mode

Pace Mode is a mode where the user can help athletes train at a target time cycle with periodic recovery or at a target race pace.

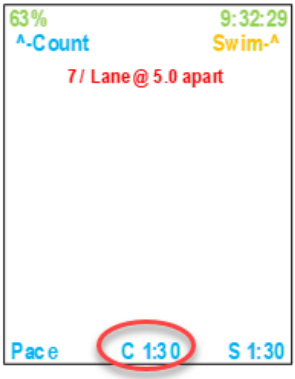


5.2: Selecting Pace Mode

When the device is on and no stopwatches are active, hold the **Unlock Button ③ (left side button)** and rotate the **Menu Dial ⑨ (top left button)** until the screen displays **Pace** in the lower left corner.

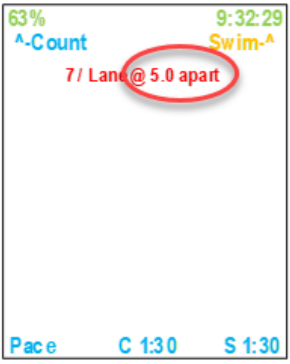
5.3: Selecting Target Cycle time

Rotate the Menu **Dial (top left button)** until the desired target set time is displayed. The target time cycle can be changed during operation, and the new time cycle will commence when the first swimmer leaves again. *Do not set the new time cycle so short as to unable accommodate the number of swimmers selected!*

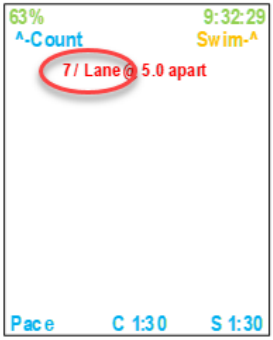


5.4: Adjusting Start Interval time

The default is 5 seconds between each swimmer, but can be adjusted by holding the **Unlock Button ③ (left side button)** and rotating the **Right Top Button ①.**



5.5: Max Swimmers per lane



The maximum number of swimmers per lane in pace mode is set by rotating the right dial. The top status line displays the time spacing (set in the setup menu) and the number of swimmers starting per lane. This setting is used to eliminate unnecessary beeping and enhance the valid range of lap times in Pace modes.

5.6: Commencement of a pace interval

To commence the pace interval, use the **top left button** for training sounds ("Eight, Nine, Go!") or the **top right button** for the race sounds ("Take Your Marks!"). The appropriate interval time will be deducted displaying the actual time for each swimmer. The stopwatch should be started (by a short press on either the top right or left button) 5 seconds prior to the timing start. That is, when used in conjunction with a pace clock, press either the left or right dial on the stopwatch on the 55", and the timing will start exactly on the black or red top.

When the athlete touches the wall, the user should press the corresponding button to record the actual lap/split time. These recorded times can be reviewed and compared with the target lap times for analysis. Prior to the next interval beginning, a "First, Ready" command will sound, signaling there is 5 seconds until the next interval begins.

5.7: In Water Start Pacing Session

Pressing the **Left top Button** ② starts the "training" sound ("count"). The first swimmer will be given the command "Lap <number>, Go" to begin each interval/lap, with the successive swimmers given a count of "8, 9, Go".

Pressing the **Right top Button** ② starts the "race" sound ("swim"). The first swimmer will be given the command "First, Ready" 5 seconds prior to the timing start, signaling that the interval will begin. The command will be a "Take Your Marks, BEEP" to initiate the start of the swim. This is the same command given to successive swimmers to begin their laps.

5.8: Timing selected swimmers per time cycle

A long press on the left button will set the display to immediately skip to the first swimmer on the next time cycle.

6. Speed Mode (Athletics and Swimming)

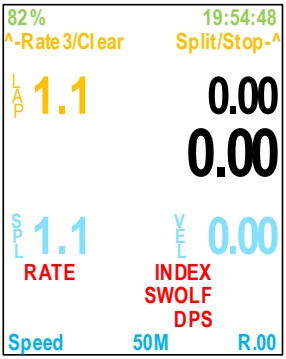
6.1: Speed Mode

Speed mode is the mode where the coach can monitor an athlete's speed over specific sections in a given course. These sections are broken down according to the specified course length. The common course types are 25m (short course) and 50m (long course). For athletics there is also a 400M length, designed for the 84M straights and the 116M ends of an athletics track. The 25Y, 25M & 33.3Y short course setting splits a lap at the 15m point and the end point. The long course pools are taking 4 splits a lap at the 15m, pool centerline, 15m before end and pool end. This will always indicate velocity in meters per second over the four given sections of each lap.

Commence by pressing the top right button. The lap indication is displayed as 1.1 where the first number indicates the lap number and the second number represents the split section. For a long course, this means "2.4" would be the 4th section (35m to 50m) of the 2nd lap. These intermediate split points are generally indicated by lane rope color markings. The **course settings** can be found in the **Setup** mode (see section 14.5 for further instructions).

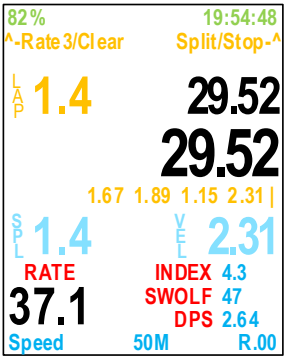
6.2: Selecting Speed Mode

When the device is on and no stopwatches are active, hold the **Unlock Button** ③ and rotate the **Menu Dial** ⑨ until the screen displays **Speed i**n the lower left corner. The **course setting** is shown in the bottom middle and the **Reaction Compensation Value** is shown on the bottom right.



6.3: Timing an Athlete

To start the stopwatch, short press the **Right Button** ① (same as **Watch** mode). Lap 1.1, shown in yellow, indicates the 1st split of the 1st lap has commenced. Once the swimmer's head passes the 15m mark, another short press on the **Right Button** ① advances the lap counter to Lap 1.2. The scrolling number section above the cumulative split time shows the speed split in meters per second (m/s). If Spoken Splits are enabled, this is what the stopwatch will read aloud. This speed is an indication for the "Start" phase of the race. After the athlete completes the second section and his/her head passes the next section split marker, another press of the **Right Button** ① advances the Lap Counter to Lap 1.3 (for 50Y, 55Y & 50M) or Lap 2.1 (for 25Y, 33Y & 25M).



6.4: Distance Per Stroke / stride

At the completion of each lap, if the stroke rate has been measured, the Distance per stroke will be calculated and displayed. For 50Y, 55Y & 50M pools setup, the last 35M of each lap time is used to calculate DPS more accurately than as described in **Watch Mode**. For 25Y, 33Y & 25M pools, the last 10M split time is used for the calculation.

6.5: Synchronizing Pace Clocks

When the watch is not active, a long press on the Left Button will reset any LED displays when used in "**Pace Clock**" mode for synchronizing to an existing pace clock. Note: Before synchronizing, please operate at least one race start in race mode, in order to set the internal clocks in the LED displays to that of the Stopwatch time and date.

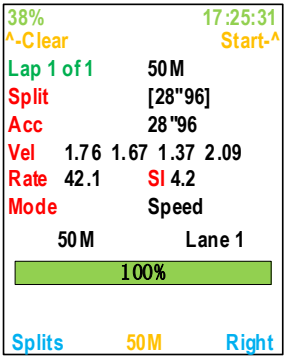
7. Splits Mode

7.1: Splits Mode

Splits mode is the mode where coaches can review data and results from the previously timed race or set. Many sorts of useful information can be reviewed such as split times, stroke rate, swim speed, and distance per stroke. This can be very useful as it can provide detailed information that would usually be much harder to obtain. Additionally, data and results can be reviewed for both the right lane and left lane Watches.

7.2: Selecting Splits Mode

When the device is on and no stopwatches are active, hold the **Unlock Button** ③ and rotate the **Menu Dial** ⑨ **top left button** until the screen displays **Splits** in the bottom left corner. All 60 splits times from both stopwatches can be reviewed, showing the incremental and cumulative split times. If recorded, the stroke rates and stroke index scores can also be reviewed.

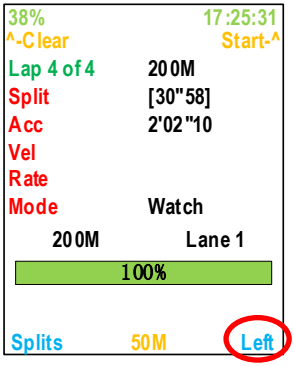


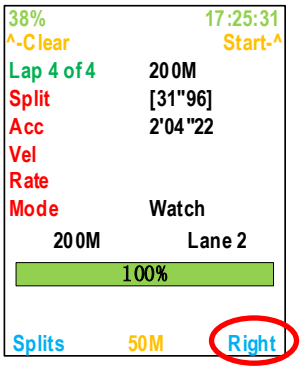
7.3: Split Lap Selection and Format

To scroll through the split times from one stopwatch, rotate the **Select Dial** ⑧. To scroll down the list, rotate the **Select Dial** ⑧ clockwise. To scroll up the list, rotate the **Select Dial** ⑧ anticlockwise. The time displayed on the first line inside the brackets is the split time per lap. The times below that is the accumulative split. Following the accumulative split is the velocity over each section of the race (as described in 6.1). If recorded, the stroke rate is indicated by "Rate" and the available Stroke Index will be identified next to "SI". "Mode" indicates the setting the stopwatch was in to take the times.

7.4: Selecting Right Watch or Left Watch Splits

If using the Watch Mode in Dual Mode, to switch between right lane and left lane results, short press the button for the corresponding stopwatch. To select the right lane Watch results, short press **Right Button** ①**.** To select the left lane Watch results, short press **Left Button** ②.





8. Graph Mode

8.1: Graph Mode

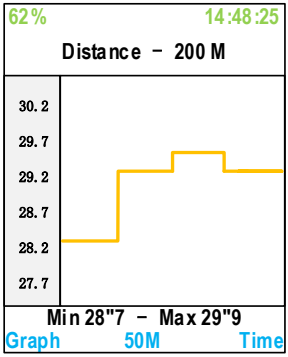
Graph mode is a mode that makes it easier to quickly analyze data by graphically displaying the results from the previously timed race or set. Instead of having to look at numbers and search for the fastest and slowest split times, users can quickly and easily access the information they have obtained. The relative information about a race or set can quickly be conveyed to the user saving time and energy allowing for more efficient coaching.

8.2: Selecting Split Graph Mode

When the device is on and no stopwatches are active, hold the **Unlock Button** ③ and rotate the **Menu Dial** ⑨ until the screen displays “Graph” in the lower left corner.

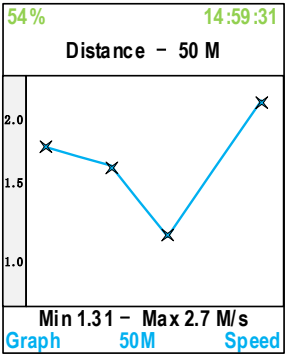
8.3: Split Graph Scale

This time graph is data from the Watch Mode. The two numbers shown at the bottom of the display are the minimum and maximum split times previously recorded. The bar graph is scaled with maximum +10% and minimum -10% of these times as upper and lower vertical axis limits. Each bar shown represents each of the split times recorded with the left most bar being the first split time and the right most bar being the last split time. If only one lap was timed and recorded, no graph is displayed as it conveys no useful data.



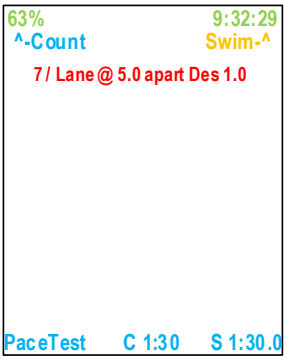
8.4: Split Graph Mode

This velocity graph is data from the Speed Mode. The two numbers shown at the bottom of the display are the minimum and maximum velocity measurements previously recorded. Each asterisk represents the velocity at each point a split was taken for the swimmer. If no speed data was recorded, the speed data is not displayed. The maximum and minimum speeds recorded (in meters per second) are displayed at the bottom of the display.



9. Pace Test mode

9.1: Pace Test Mode



Pace Test mode is similar in operation to Pace mode but the time cycle is reduced each cycle. This mode is commonly used as a standardized fitness or endurance test that allows swimmers performance to be monitored periodically. Like Pace mode, other watches in Group mode can expand this mode for multiple devices. In this mode, the lap number and swimmer's lane position are announced 2 seconds prior to each starting signal, so athletes know what level they are on. So "*4.3*" means the fourth repeat for the third swimmer in the lane.

9.2: Using Pace Test

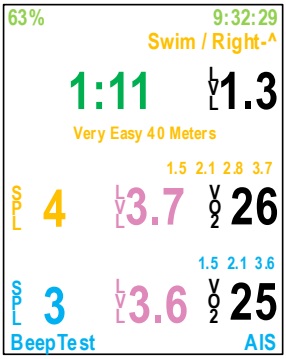
When used with the LED display, the lap number and current time cycle are displayed. Athletes simply swim till they can no longer keep up with the beeps, and record what level they achieved. Some clubs call this test "King of the Hill". Used for freestyle, typically starts at 1:30 reducing by 1 second each cycle. Form strokes may start at a longer cycle time. Normally, time splits etc. are not used, allowing the coach to encourage and observe the athletes. *Pace test mode will automatically stop when the Cycle time reduces down to the Set time, unless manually stopped by the watch operator with a long press right button*. To reduce annoying beeps, set max swimmers per lane to your max swimmers present in any lane by rotating the right dial to desired number first. ***Make sure no other Stopwatches you may have are in use in order to avoid prematurely stopping the set!***

10. Beep Test mode

10.1: Beep Test Mode

Beep Test mode is the standard 20 Meter shuttle run test used for dry land fitness evaluation. AutoCoach supports four modes – **AIS** (Australian Institute of

Sport) and **BNCF** (British National Coaches Federation), **WP10** and **WP20** are designed for water polo pool configuration fitness tests. The calculated VO2Max levels the ACS100 Watch displays are only valid for the AIS mode, and are of little value below approx. level 5. To change between the two Beep tests, hold the **Unlock Button** ③ and rotate the **Select Dial** ⑧**.**



10.2: Beep Test Operation

The Beep Test Level spoken or displayed is the last level completed, and when a "split" is taken after an athlete has failed to complete the run in time for the next beep, the Watch records the prior lap run as this was the highest successful run completed. The "Lap" number recorded is the Athlete number that has pulled out of the test. If you provide number cards to the athletes, advise them to take the next consecutive number when they drop out of the test, allowing you to later record names to their performance levels reached. The Left and Right Buttons allow two distinct groups to be recorded (e.g. male and female).

10.3: Setup for Beep Tests

Place markers 20M apart on level ground, allowing 5M further for deceleration. Running must be "Start-Stop" not continuous, with each athlete coming to a complete stop and not running till the next starting beep. Ensure they are warmed up and have shoelaces tightened before starting the test, and allow suitable space for the numbers participating. *A maximum of two groups of 64 athletes can be tested with an ACS100/ACS120*. After completing level 21 (never reached on a verified test!) the test will automatically terminate.

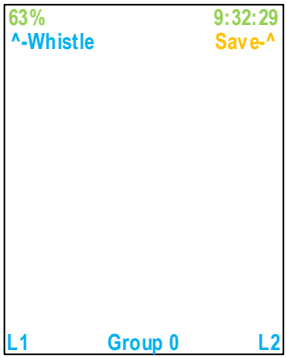
11. Group mode

11.1: Group Mode

Group mode is a special mode that allows multiple Stopwatches to be linked together wirelessly. With this feature, one Stopwatch can simultaneously start up

to five additional Stopwatches. This allows for accurate timing for race events or simply better synchronization for training procedures. Individual LED signs can also be assigned a Group number so that it will be synchronized with a specific Stopwatch. This mode can also be used to add extra lanes to the other modes (**Race** & **Interval and Pace**) that way more than two lanes can be used.

11.2: Selecting Group Mode

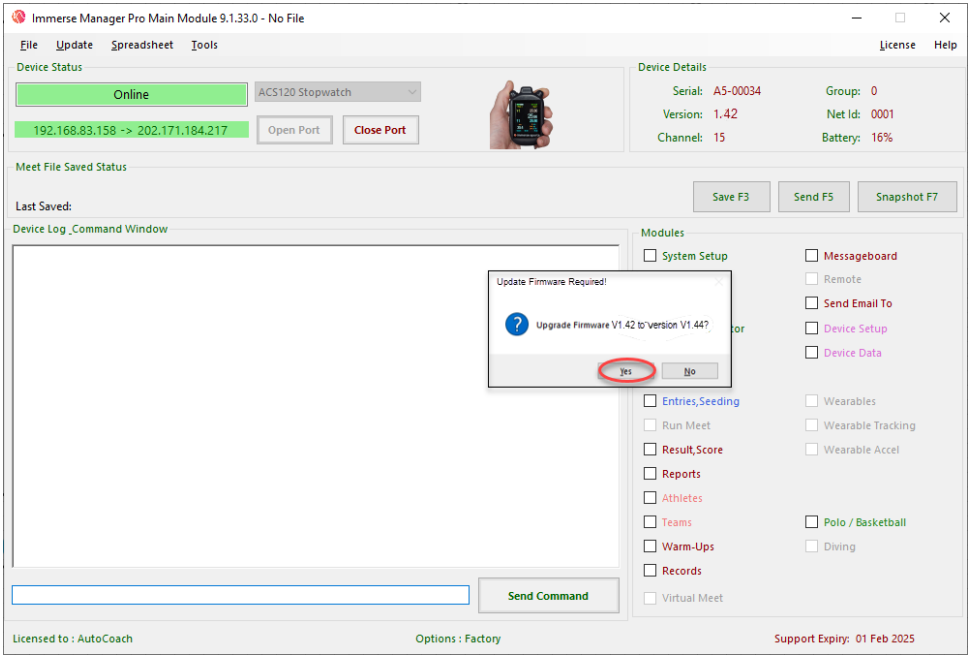


When the device is on and no stopwatches are active, hold the **Unlock Button** ③ and rotate the **Menu Dial** ⑨ **Top Left button** until the screen displays **Group #** (# is any digit from 0 to 4) in the lower left corner.

12. Updating Firmware

Either as part of the Immerse Manager installation (or AutoCoach for previous versions), or as an emailed or downloaded file you can update the firmware of an AutoCoach Device. Before upgrading, be sure to have at least 20 percent battery level remaining and do not operate any controls or other programs on your computer whilst the upgrade is in progress! After a successful upgrade, the unit will then reboot.

When new firmware is available, plugging in a powered on AutoCoach device will automatically prompt the user if an update is available. ***Be sure to update all of your devices when updating!***



Select “Yes” to update your device, and leave computer alone till update completed.

13. Setup Mode

13.1: Setup Mode

Setup mode is a mode where the user can change many various settings. Each AutoCoach device has a network ID unique to an organization. This allows different organizations to simultaneously use AutoCoach equipment in the same area without interfering with each other. This ID number can be seen in the bottom right corner of this mode.

13.2: Selecting Setup Mode

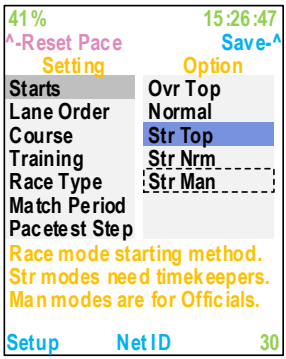
When the device is on and no stopwatches are active, hold the **Unlock Button** ③ and rotate the **Menu Dial** ⑨ until the screen displays **Setup** in the lower left corner.

13.3: Multiple Squad usage

If you wish to have multiple squads using different systems at the same venue simultaneously, please set each squad to a different channel at least 3 channels apart.

13.4: Starts Mode

The Race starting method is selected here (Ovr Top, Normal, Str Nor, Str Top, Str Man) as per description in **Race Mode**. Select the desired method and save it by long press on the **Right Button** ① until the device announces "Store" indicating that the setting has been saved.

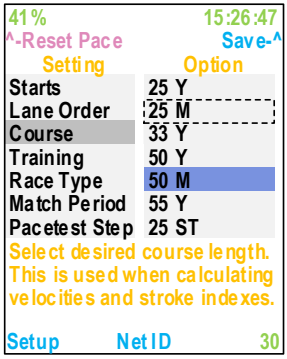


13.5: Lane Order

The system can be setup for 4 types of lane numbering. To change the lane numbering, rotate the **Menu Dial** ⑨ until Lanes is selected, then rotate the **Select Dial** ⑧until the desired lane numbering type and long press the **Right top Button** ① until the device announces "Store."

13.6: Course Type

The course type setting determines the length of distance used to calculate speed and distance per stroke. To change the course type, rotate the **Menu Dial** ⑨ until Course is selected, then rotate the **Select Dial** ⑧until the desired course type and long press the **Right Button** ① until the device announces "Store." The system can be setup up for 25y, 25m, 33.3y 50y, 55y & 50m pools. There are also 100m and 400m athletics track options.



13.7: Training Sounds & Race Type

Training sounds are started in Interval, Pace, Pace Test and Race modes using the Left top button with either beeps (Beep) or a spoken “Eight – Nine – Go!” (Count) sound. The Right top button will announce “Take Your Marks”.

Race Type is used for setting the sports mode the stopwatch will be configured for use with. Sounds are started in Interval, Pace, Pace Test and Race modes using the Right top button with either Athletics Race Sounds (“On Your Marks”, “Set”, “Bang”) or Swimming Race sounds (Whistle, “Take Your Marks”, Start Beep).

13.8: Match Period

This setting allows users to operate (run the clocks and score matches) water polo and basketball games remotely (i.e., without the need for an AC80 transmitter and laptop running Immerse Manager).

When the stopwatch is in Group 0, the Match Time will be whatever the time has been set to in this screen. Go to Score Mode to commence use.

When the watch is set to Group 1, this setting is now valid for setting the Shot Clock. The shot clock is the match period time divided by 60. So, if you want a 15 second shot clock, set 15 minutes and then go to Score Mode to commence use.

13.9: Pacetest Step

Here we select the decrease in interval for each level in pace test mode. Steps from 0.5 up to 5 seconds can be selected. E.g., at 2 seconds step size, starting at 1:30 pace test, the next 100 will be at 1:28, then 1:26 etc.

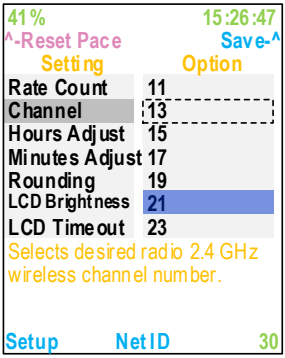
13.10: Rate Count

The “Rate Count” setting allows you to select how many arm cycles you would like the swimmer to complete before taking a rating. You may choose between 1, 2 or 3 arm cycles. Keep in mind that rate accuracy increases with the number of arm cycles taken.

The option “Dual Watch” allows you to take two individual times at once. Please note that by selecting this setting, you will be unable to take any stroke rates.

The secondary watch can be started, take splits, and stop independently. The left dial is used to perform these actions. This mode primarily acts as two stopwatches on the one screen.

13.11: Channel



On the rare occasion that other wireless signals such as WiFi and Bluetooth interfere with any AutoCoach network, the wireless channel used for communication can be changed. To change the channel, rotate the **Menu Dial** ⑨ until Channel is selected, then rotate the **Select Dial** ⑧until the desired course type and long press the **Right Button** ① until the device announces "Store." The Default Channel is Channel 15 and should be suitable for most environments.

13.12: Hours Adjust

The "Hours Adjust" setting allows you to change the hour on the watch's internal clock. This is particularly useful when travelling, or when daylight savings occurs.

13.13: Minutes Adjust

The "Minutes Adjust" setting allows you to change the minutes on the watch's internal clock. This is particularly useful when travelling, or when daylight savings occurs.

13.14: Rounding

The "Rounding" setting allows you to select whether you want the times taken in each mode to be rounded to the 100th second (E.g., 3.41, 7.99, etc.) or 10th second (E.g., 5.4, 14.9, etc.).

13.15: LCD Brightness

The screen brightness can be adjusted in this setting. Options include 25%, 50%, 75% or 100% screen brightness to suit the user's preference. Note: Lower brightness helps with preserving battery life of the watch.

13.16: LCD Timeout

This setting allows you to select the backlight timeout of the display. After the set amount of inactive time, the display will dim slightly. Full brightness (based on the setting mentioned above) will resume when any button or dial is pressed.

13.17: Spoken Splits

This setting enables or disables spoken time splits.

13.18: Int[10] Rate

This setting sets the stroke rate cycle count (1 Cycle, 2 Cycles or 3 Cycles) when operating in Interval [10] Mode. Once timing has started, the right button will record split times, the left button will record the stroke rate. Select Dual Watch mode for split timing function on both buttons (i.e. times can be recorded for two lanes from both the left and right buttons).

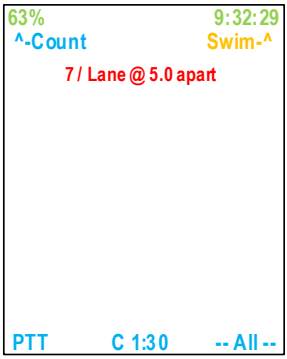
13.16: Language

Select the desired language for the device. The current languages available are English, Chinese, Japanese and Korean.

14. Talk Feature

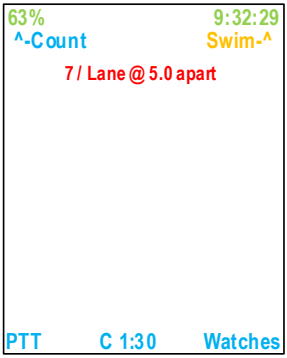
14.1: Talk Feature

The **Talk** feature is a special function that allows the user to transmit audio. This feature allows users to communicate with any other device in the system. The user can also choose the specific device or person they wish to communicate with. This useful feature can be used at any time, in any mode that there is a channel for communication.



14.2: Using the Talk Feature

Press the **Press to Talk button (PTT)** ④ to activate the talk feature. When the **PTT button** ④ is held, "PTT" will appear in the bottom left corner indicating that the talk feature is active. The bottom right of the screen shows the target audience (see below for more details). When the Stopwatch is receiving audio from another device, the top status line displays the signal strength and the device ID of the transmitting device.



- - All - All devices
- Speakers All speakers
- Watches All Stopwatches
- Athletes All athletes
- Lane #1-#2 Corresponding lane
- Athlete #0-#16 Corresponding individual athlete

15. Additional Functions and Features

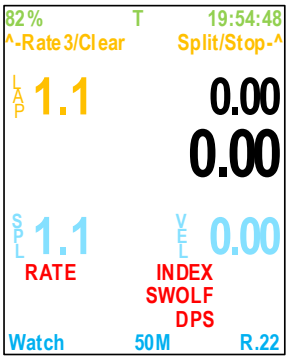
15.1: Additional Functions and Features

The Stopwatch comes with many additional features. These features are only included in certain modes. The data recorded from using these features will be recorded throughout all the modes and can be saved for future references.

15.2: Clear Screen and Recall Functions

After timing a race or set, the results are displayed on the screen. These results will be cleared from the screen after approximately 12 seconds. The user can manually clear the screen by long pressing the **Left Button** ②. To recall previous results not shown on the screen, press the **Unlock Button** ③. These functions can be used in any mode with timing capabilities.

15.3: Reaction Compensation Value



Timing with traditional stopwatches is usually out of time with official timings due to human reaction delays. Generally, human reactions take place around 0.18 to 0.24 seconds after the stimulus was received by the person. The Reaction Compensation Value will adjust the time at which the stopwatch starts timing. This means if the Reaction Compensation Value was set at 0.22, the stopwatch will start timing at 0.22 seconds instead of starting from 0.00 seconds. This will make stopwatch times closer to the times recorded by an automated system. If the user can anticipate the start of the timing (e.g. being the starter), no compensation is necessary.

In **Watch** and **Speed** mode, the Reaction Compensation Value is located in the bottom right corner. The Reaction Compensation Value in the format "R .##" can be adjusted by pressing **Unlock** ③ and rotating the **Select Dial** ⑧ only when there are no active operations (no timers or talk functions running). The reaction time can be set from 0 to 0.3 seconds.

15.4: Scrolling Through Splits

In **Watch**, **Speed**, **Interval**, and **Race** modes, the splits recorded can be quickly reviewed without having to switch modes. When there are no active stopwatches, rotate the Left Dial to browse through the splits. For a more detailed analysis of results, switch to **Splits** or **Graph** mode.

16. Tips & Suggestions

16.1: Hints for use in noisy and bright environments

If the user is managing a large group or wishes to focus on viewing swimmers whilst also taking split times, turn up the speaking volume on the stopwatch to hear the audio feedback from the watch without looking at the screen.

It is recommended that the ACS210/ACS260 SmartDisplay be used with the Stopwatch and for outdoor use as it is can be easily read in bright. The SmartDisplay has a Brightness adjustment, and for indoor use where possible, setting the brightness below 5 will more than double battery life.

It is also recommended that the SmartSpeaker be used during outdoor use as it can provide audio feedback if it becomes too hard to call out times in noisy environments. The Speaker can be set to “timing” mode so eliminating the need for anyone to look at the Stopwatch or SmartDisplay.

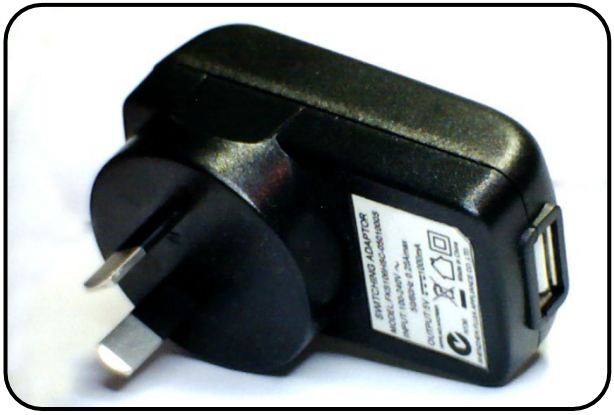
17. Fault Finding & System Setup

17.1: Default Settings

If you are unable to get your watch to communicate to other AutoCoach devices, firstly reboot each device to ensure all timing has closed and to restart the internal systems as described in 1.4. If still unable to communicate, please check the firmware versions are all the same, and that the network IDs are the same. By using Immerse Manager and plugging in your device, you can use the “ver” command to list all software version and settings. Please contact AutoCoach support if still unable to operate correctly.

18. Charging the Battery

The Stopwatch can be recharged with the supplied AC Adapter (5V 1000mA USB socket) or by connecting the device to a PC or MAC via the Male AUX Audio Jack to USB 2.0 Male Charge Cable.



From 0% battery level, charging usually completes within 3 hours. It is recommended to recharge when the battery level is below 30% to ensure there is enough power for a day's use.

Only use the supplied charging cable and insert into the socket on the right side of the Watch.

19. Caring for Your AutoCoach Device

19.1: Storage

Like a mobile phone or mp3 player, do not store in hot or humid places (i.e. besides the pool). Like most electronic devices, the Stopwatch is **NOT WATERPROOF**. The supplied lanyard or wrist strap can help prevent dropping the device in the water. If accidentally dropped into water, **IMMEDIATELY RETURN to AUTOCOACH** for repair. Immediately wipe any water off the unit in order to protect it from further water damage. Unscrew the back case of the stopwatch and leave to air dry for at least 24 hours. Spray the circuit board with WD-40 if available. Do not put device in rice. *Leaving a water damaged unit for a few days before repair may result in the circuit boards becoming corroded and un-repairable, whereas prompt return may be an inexpensive cleaning and moisture treatment.*

19.2: Handling

DO NOT place the Stopwatch with the display facing down on any hard surface as this could scratch the screen. Keep in a carrying case or soft pouch for best protection. A soft cloth may be used to wipe the screen if it requires any cleaning.

19.3: Resetting

If the program fails to respond or the device will not turn on, try performing a reset as describes in section 1.4. Please report any problems or errors encountered so that a solution may be found.

FCC Caution.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.