



WITTY

WIRELESS TRAINING TIMER

User Manual

Manual version 1.0

Firmware version 1.06.12

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1 DEVICE FUNCTIONS AND MAJOR FEATURES

WITTY is a training timing system ideal for all sports where assessing athletic performance through sprint, speed, endurance, reaction, shuttle tests, etc. is essential.

Thanks to the timer and photocell-integrated radio system (which do not require special official authorization), the large color display, the modern user interface featuring icons, and the practical padded backpack, setup and use is extremely easy and fast.

The system is largely expandable with the possibility to add (single or double) photocells for intermediate times, accessories such as starting pads, time displaying LED boards, direction indicators, etc.

The kit comes with a free Windows software (which can be downloaded from our website) called *Witty Manager* for importing data of performed tests and viewing it in numerical tables and graphs, managing a complete athlete personal data base (transferring the athlete's picture to the timer for fast identification), creating customized test types and updating the timer and photocell firmware.



1.1 CONTENTS OF THE KIT

Basic kit (art. £WIT001):

- 1 Witty timer
- 2 photocells
- 2 reflectors
- 4 tripods
- 1 backpack
- 1 wall power supply (with 4 different plugs for all world standards) + 3 USB cables for charging the timer and 2 photocells simultaneously
- 1 USB-PC cable
- 1 USB memory stick containing Witty manuals and Witty manager software
- 1 cord

The kit can be expanded purchasing more photocell and reflector pairs with tripod ('Lap Time Kit', art. £WIT002) for managing more lap times.

Both kits (Basic and Lap Time) are available with a 'Double Photocell' option (see chapter 2.4; the relevant article codes are £WIT003 and £WIT004)



2 MAIN FUNCTIONS

2.1 WITTY TIMER

The figure below shows the main parts of the Witty timer, which will be explained hereafter.



2.1.1 SWITCHING ON

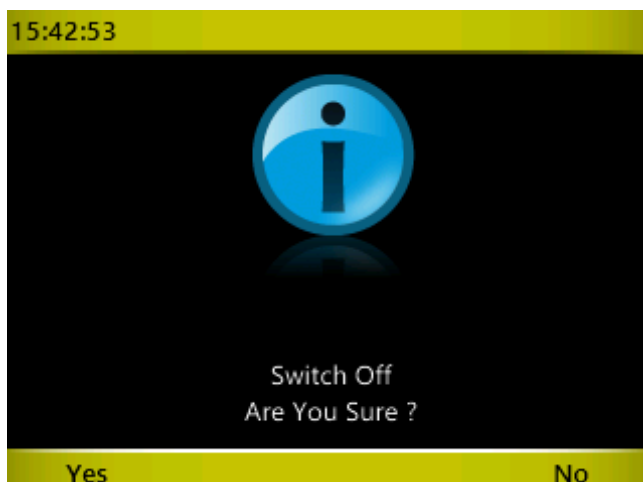
To switch on the Witty timer press the *<Microgate>* key. After a few seconds required by the boot loader, a screen is displayed showing the installed firmware version. Press any key to go to the Main Menu.



2.1.2 SWITCHING OFF

From any screen press the *<Microgate>* key and hold it for **5 seconds**.

Another screen prompts to confirm switching off the timer. Press *<F1>* to confirm or *<F4>* to cancel.



2.1.3 RESET

If the timer does not respond to any command, press the *<Microgate>* key and hold it for **at least 10 seconds**. When the key is released, the device will be reset and switched off. Press the key again to switch on.

2.2 PHOTOCELLS



To **switch on** the photocell press the ON button for one second; the status LED blinks with a green light (if the battery status is sufficient) or with an orange light (if the battery status is low). A continuous beeping sound is produced until the **correct alignment** with the reflector (or a similar reflecting surface) is found.



To **switch off** the photocell press the button until the LED turns red, then release it.

2.2.1 MOUNTING PHOTOCELLS AND REFLECTORS ON TRIPODS

To mount the photocells and the reflectors on the tripods supplied with the kit, proceed as follows: remove the little platform from the top of the tripod and screw it onto the photocells and under the reflectors (the platform is square-shaped and therefore allows 4 mounting directions with respect to the tripod). Mount the devices onto the top of the tripod inserting the front of the platform, and then the rear until the tab clicks into place.



Extend the tripod legs until the required height has been reached (usually the photocell must be interrupted by the chest of an athlete), and position the photocells and the reflectors at a distance of 1-7 meters (see also chap. 5.4.1.3 on setting 'Normal' or 'Strong' mode depending on the position).



2.2.2 LED STATUSES AND COLORS

PHOTOCELL OFF	
STATUS	STATUS LED
<ul style="list-style-type: none"> Battery charged/empty 	Off
<ul style="list-style-type: none"> External supply Battery charging 	Orange blinking light
<ul style="list-style-type: none"> External supply Battery charging completed 	Green steady light
PHOTOCELL ON	
STATUS	STATUS LED
NORMAL Mode <ul style="list-style-type: none"> Battery charged Battery empty 	Green - Pause Red - Pause
BOOTLOADER Mode <ul style="list-style-type: none"> The photocell has not been switched on pressing the ON/OFF button but by connecting the USB cable to a PC. This activates the BootLoader HID and the firmware can be updated. 	Red - Green
CONFIGURATION Mode <ul style="list-style-type: none"> When switching on, the ON/OFF button is pressed for at least 5 seconds and configuration mode is activated. 	Red blinking light

PAIRED PHOTOCELL Mode:	
Master photocell (higher serial number)	
<ul style="list-style-type: none"> Battery charged Battery empty 	<p>Green - Pause</p> <p>Red - Pause</p>
Slave photocell (lower serial number)	
<ul style="list-style-type: none"> Battery charged Battery empty 	<p>Green fast blinking light</p> <p>Red fast blinking light</p>

2.2.3 PAIRED PHOTOCELLS

To prevent the photocell being interrupted by an athlete's arm swinging forward, in official competitions or in any case when measurement must be as accurate as possible, the use of paired photocells is necessary.

This setup ensures that time is measured exactly when the athlete's chest crosses the line, as the impulse (start/stop/lap, depending on the position) is given only when both photocells are interrupted.

To mount the photocells, screw the C bracket onto the tripod platform, the photocells, and the reflectors, as shown in the figure (the photocells are mounted at 90° with respect to the C bracket).



Then mount the bracket onto the tripod and connect it with the photocells using the jack-jack cable. The **MASTER** photocell is the one with the higher serial number (see chap. 5.4.1.1) and blinks more slowly than the **SLAVE**. As the Master photocell transmits the signal to the timer, to ensure a wider aerial range, the latter should always be mounted on top.



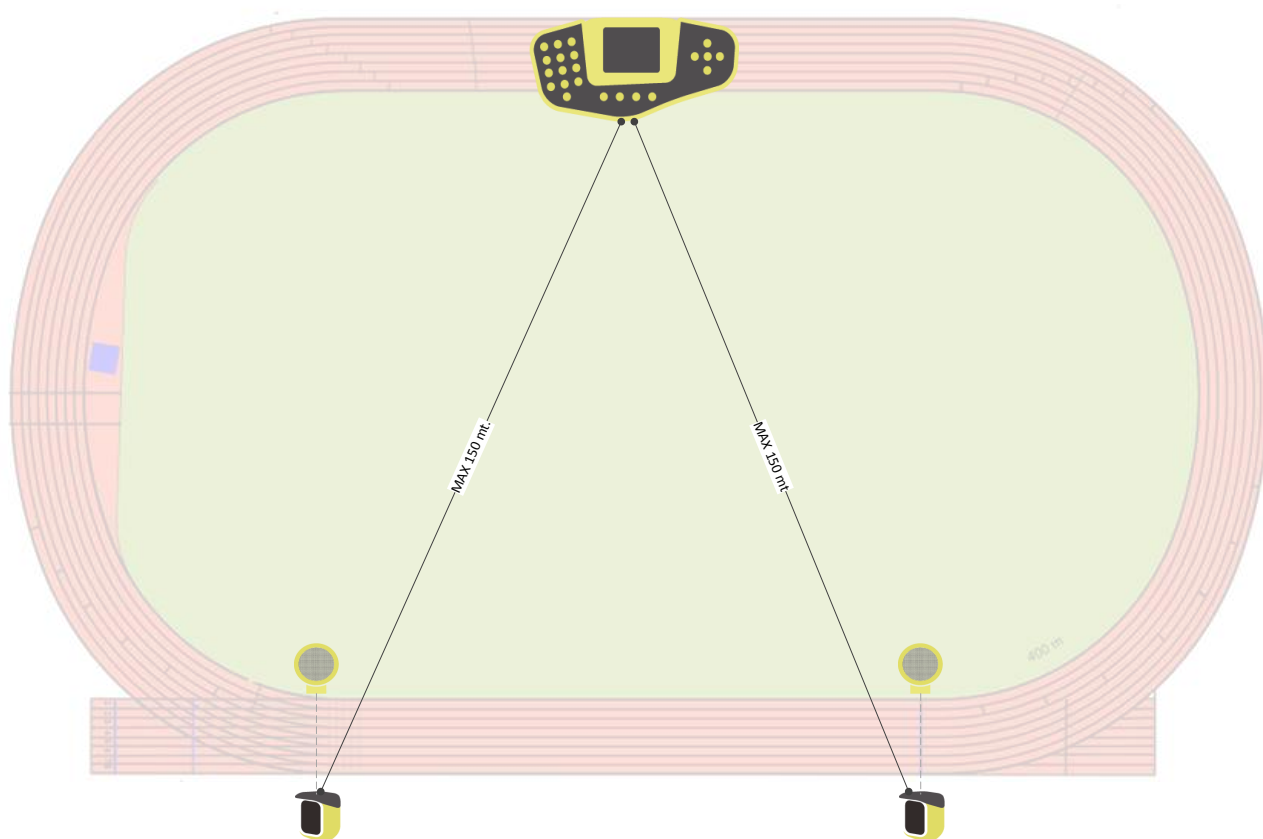
Master:
Higher S/N,
blinking at regular
speed.
Always on TOP!

Slave:
Lower S/N,
blinking fast.



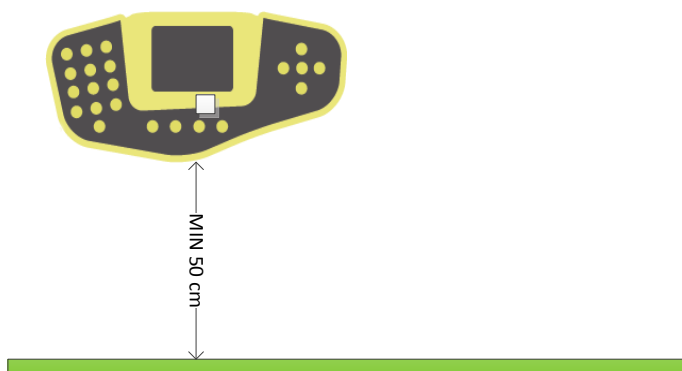
2.3 RADIO TRANSMISSION

The suggested maximum distance to keep in order to prevent reception problems is 150 meters. It is in any case advisable to check the signal quality with the procedure described in chapter 5.4.1.1.



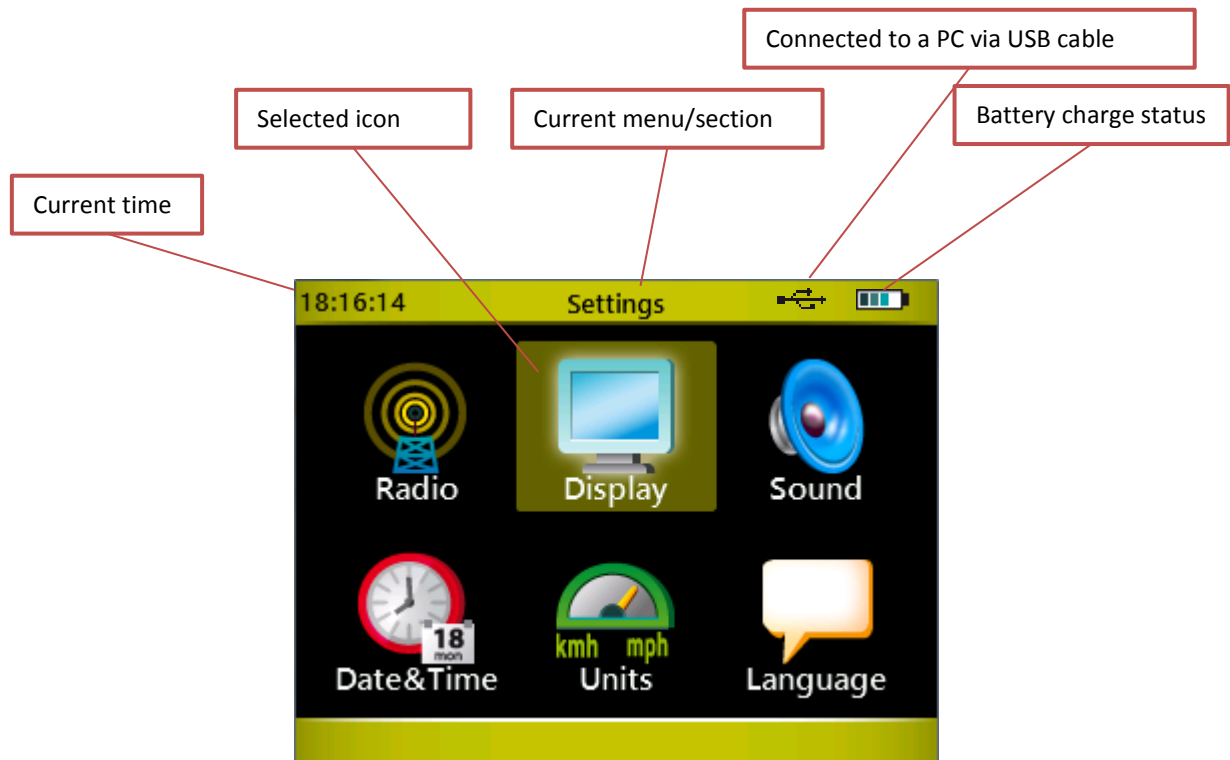
In **case of rainy weather** radio transmission can be disturbed by the water drops and therefore the maximum distance must be reduced.

In order to obtain excellent reception, position the Witty timer at **a height of at least 50 cm** (without touching the ground) and **do not place it on top of metal objects**.



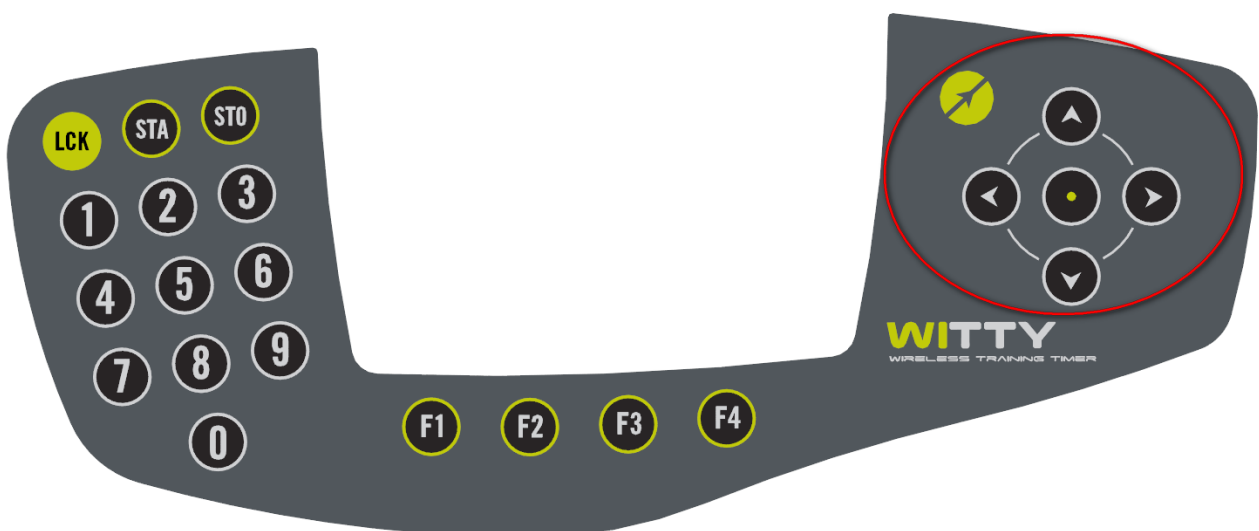
2.4 ELEMENTS OF THE GRAPHICAL USER INTERFACE

The Witty timer features an interface with icons and commands similar to those used in modern mobile phones and smartphones. Let's take a look at the main icons and how to use them.

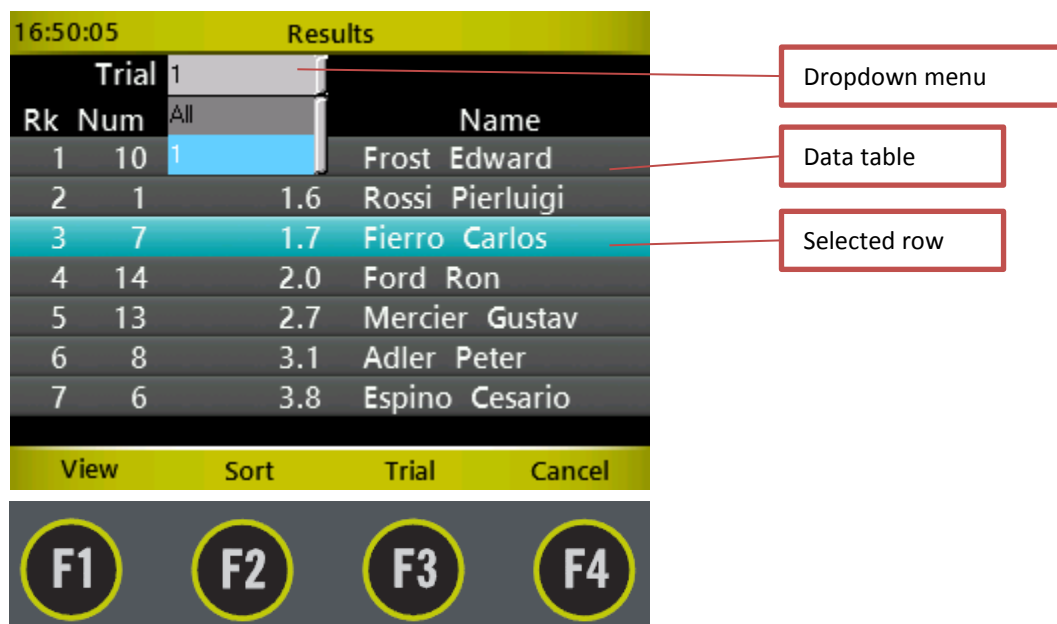


To browse the menus, use the four keys of the *<keypad navigator>*. When the icon of the required command is selected (icon outlined in yellow), press the center *<Confirm/OK>* key to access the relevant function.

To go back to the previous screen or in any case when the regular BACK or ESC function is needed, press the *<Microgate>* key.



When **commands** are shown in the lower part of the display (inside the yellow portion), they can be selected using the corresponding *<function key>*



16:50:05 Results

Rk	Num	Trial	Name
1	10	1	Frost Edward
2	1	1.6	Rossi Pierluigi
3	7	1.7	Fierro Carlos
4	14	2.0	Ford Ron
5	13	2.7	Mercier Gustav
6	8	3.1	Adler Peter
7	6	3.8	Espino Cesario

View Sort Trial Cancel

F1 F2 F3 F4

Dropdown menu

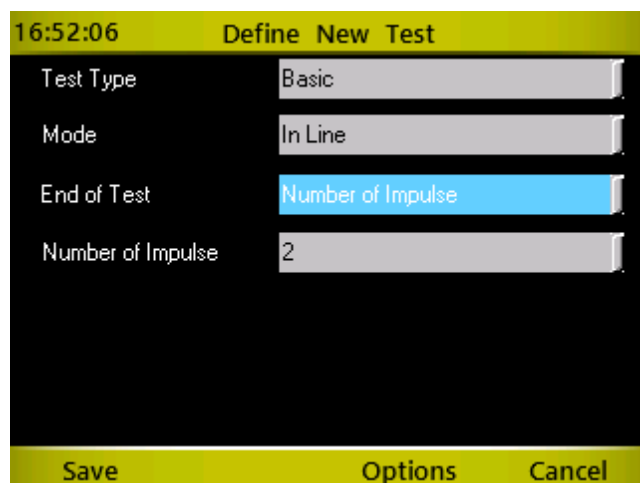
Data table

Selected row

If the **Data Tables** consist of one or more columns, the rows can be scrolled with the *<up>* and *<down>* arrow keys; the selected row is then highlighted in light blue. Press the *<OK>* key or one of the *<Fn>* keys to interact depending on the context. Pressing the *<right>* and *<left>* arrow keys has the same effect as the PgDn and PgUp keys on a PC, i.e. the list is scrolled down by pages.

In order to open a **dropdown list**, press the relevant function key (in this case *F3* labeled 'Test') or the *<up>* arrow key>; the dropdown menu opens showing all elements, which can be scrolled using the *<up>* and *<down>* arrow keys, and the required item confirmed with *<OK>*.

On screens having more than one dropdown menu, use the *<up>* and *<down>* arrow keys to select the desired dropdown menu, then press *<OK>* to open it. Again use the *<up>* and *<down>* arrow keys to scroll the items, and finally confirm the selected item by pressing *<OK>*.



16:52:06 Define New Test

Test Type Basic

Mode In Line

End of Test Number of Impulse

Number of Impulse 2

Save Options Cancel

16:53:29 Radio Channel

Channel #:

Insert a number between 1 and 8

5

Save Cancel

16:54:33 Set Date

Date 18 / 9 / 2012

(DD/MM/YYYY)

Save Cancel

If you need to **type a number**, the cursor is automatically positioned inside the field. Use the *<numeric keypad>* to enter the required number, and confirm with *<F1>* (Save) to save the data.

If there are several numeric fields (e.g. date or time input) confirm with *<OK>* in the various fields to go to the next one.

As there is no delete (Del/Backspace) key, in case of mistakes just retype the number. Depending on the context, the fields accept a finite number of digits (e.g. for a date only 2), so the entered data overwrites the previous one.

e.g. If you want to enter the number 18 in the day field, but you have typed 81, just type 18 again and you will obtain the following results:

Date 81

(DD/MM/YYYY)

press 1

Date 11

(DD/MM/YYYY)

press 8

Date 18

(DD/MM/YYYY)

For selecting items having **exclusive selection buttons (radio buttons)**, proceed as follows: with the *<up>* and *<down>* arrow keys select the required item, which turns light blue; press *<OK>* to set the option.

If you want to change the language from Italian (currently selected option) to Spanish

17:05:02 Language

Select:

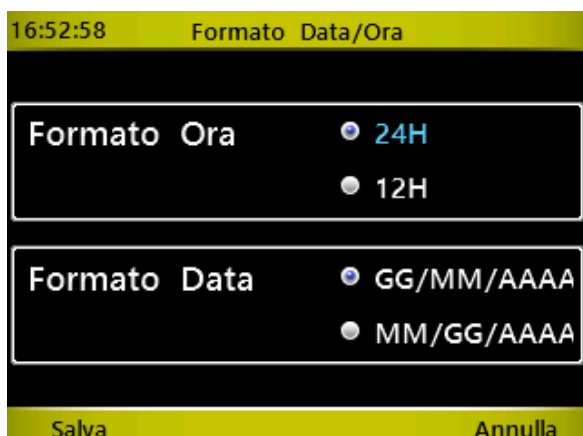
- ☒ English
- ☐ Italiano
- ☐ Deutsch
- ☐ Française
- ☐ Español
- ☐ Chinese
- ☐ Japanese

Save Cancel

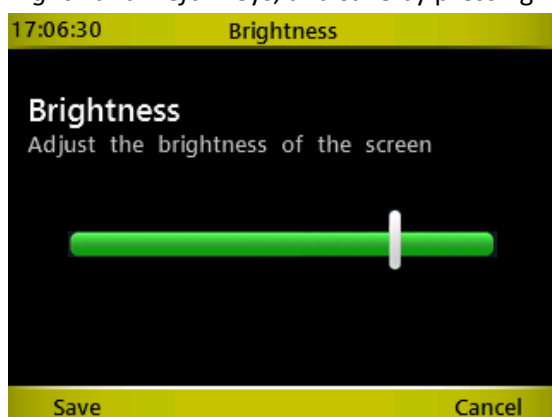
Move the cursor until the item is highlighted in light blue and press *<OK>*.

Remember to SAVE by pressing *<F1>*

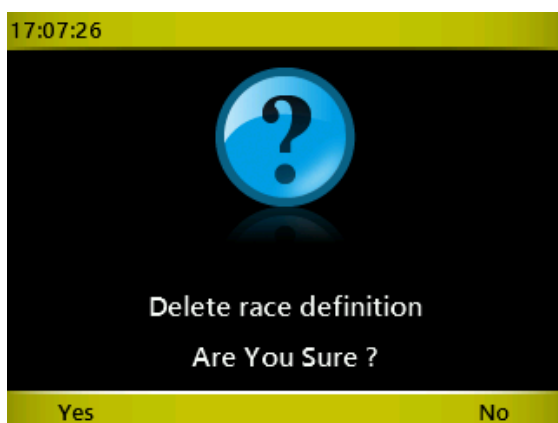
In case of **various radio button groups** on the same screen, follow the same steps.



If there are control items such as **sliders** (e.g. for setting the display brightness), move the arrow using the **<right>** and **<left>** keys, and save by pressing **<F1>**



As you might have already noticed from these screens, the **<F1>** and **<F4>** keys are often the opposite of each other and in general it is true that the **<F1>** always corresponds to Confirm, Save, Yes, whereas **<F4>** is used for Cancel, Back, No. Mainly in prompts requiring confirmation it is common to use **<F1> = YES** and **<F4> = NO**.



2.4.1 VIRTUAL KEYBOARD

After having defined a customized test type (see chap. 5.1.4) it can be named using the virtual keyboard.



Use the four <arrow> keys to hover over the required letter (highlighted in light blue) and press <OK> to enter.

Use the shift key (↑) to toggle between capital and small letters. Pressing it once, only the first letter is capital (e.g. the first letter of the name), whereas by pressing the <OK> key twice, the CAPS-LOCK function is enabled (all capital letters).

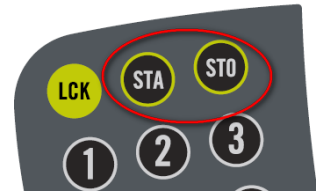


In order to delete a mistyped letter, press BackSpace



2.4.2 THE START (STA) AND STOP (STO) KEYS

In the top right corner of the timer there are the STA and STO keys simulating the events recorded by the photocells set as start and stop. These impulses can be given manually to:



- start a test manually giving the first impulse and then manage the following using the photocells (e.g. a counter test, where only one photocell is used to count repetitions)
- generate a lap time when the athlete passes in a certain point when using 2 photocells (press the STA key, which is also used as LAP)
- end a test manually, if for some reason an athlete has not interrupted the photocell (passing too close to or below it)
- 'play' with the timer learning how to use it in manual mode

2.4.3 THE LOCK KEY (LCK)

The Lock key interrupts radio impulse reception by the photocells and the inputs from the 3.5 mm jack. The keyboard (and therefore also the STA and STO keys) remain enabled.

If, for example, an undesired person is crossing the finish line (a judge, another athlete, etc.), reception can be interrupted simply by pressing the <LCK> key











A padlock on the header bar indicates that the timer's reception is 'locked'; to reactivate it press the <LCK> key again.



2.4.4 ICONS ON THE HEADER BAR

The top part of the timer (Header bar) displays the current time, as well as the a series of icons relevant to the current screen:



	Battery charged 100%
	Battery charged 75%
	Battery charged 50%
	Battery charged 25%
	Battery running low
	This indicates that the battery has been charged completely and the timer can be disconnected from the PC or the wall power supply.
	When charging, the battery gets very hot. Disconnect from the power supply and wait until it has cooled down.
	The timer battery is being charged via the PC or wall power supply.
	The timer is connected to the PC via USB cable.
	The LCK key has been pressed and photocell impulse reception, as well as 3.5 mm jack reception are disabled.

2.5 POWER SUPPLY AND CHARGING

When the device batteries are low they can be recharged simultaneously for as many as 4 devices.

The Witty Timer battery icon level decreases with the decreasing battery charge and turns red when the battery is almost empty.



Low battery charge on the photocells is indicated by the RED-PAUSE status LED (see chap. 2.2.2).

To recharge them use the power supply and connect the plug that is compatible with your national grid format (Europe, UK, USA, Australia). Connect the USB cables to the power supply and the devices to charge.



The plug icon on the Witty Timer next to the battery icon indicates the charging progress.


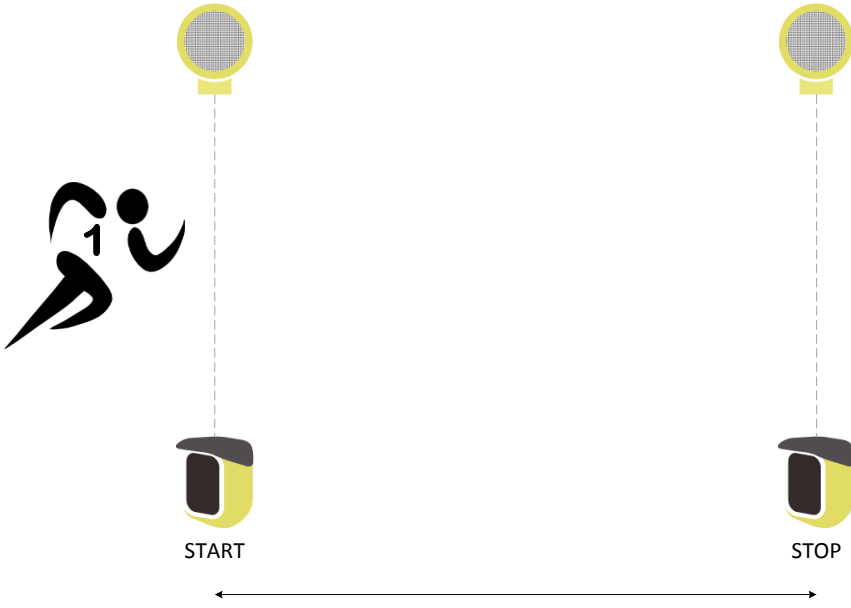
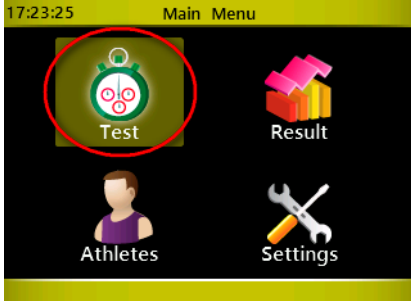
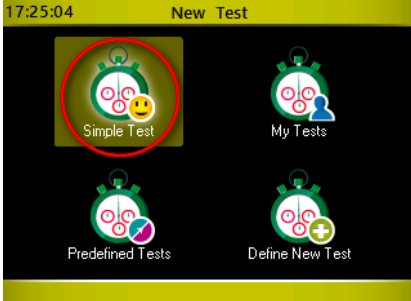


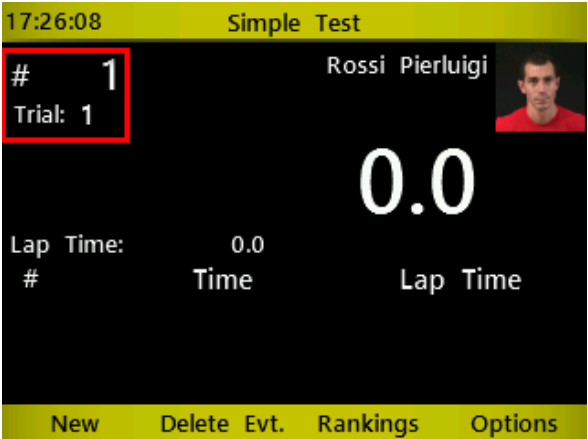
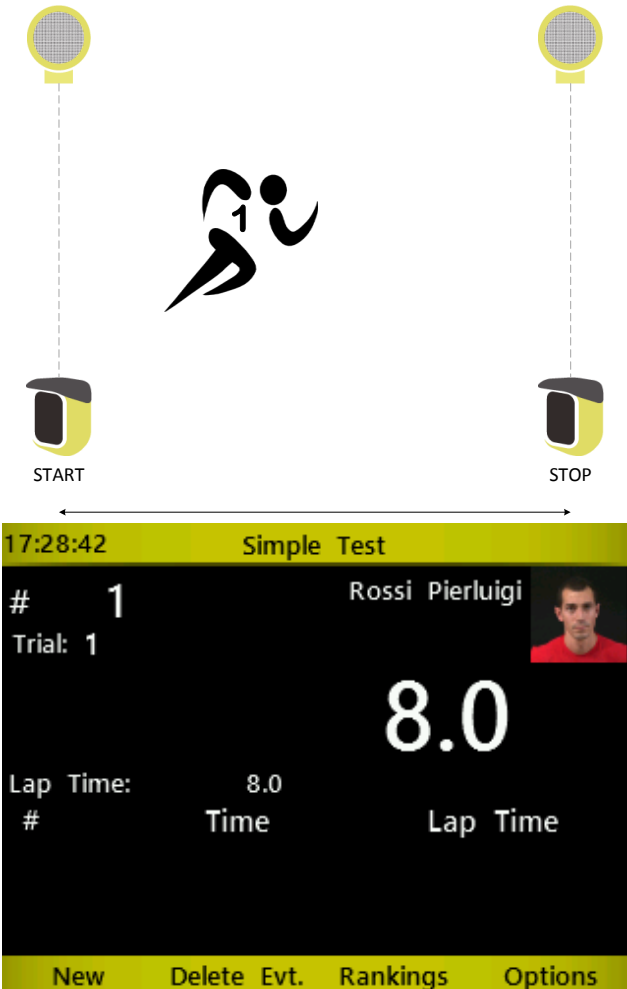
On the photocells (if switched off), the status LED turns orange and blinks.

Both devices can be charged connecting them both to a PC, but charging takes longer (480 mW instead of 800 mW of the wall power supply).

3 QUICK SETUP: HOW TO QUICKLY CARRY OUT YOUR FIRST TEST

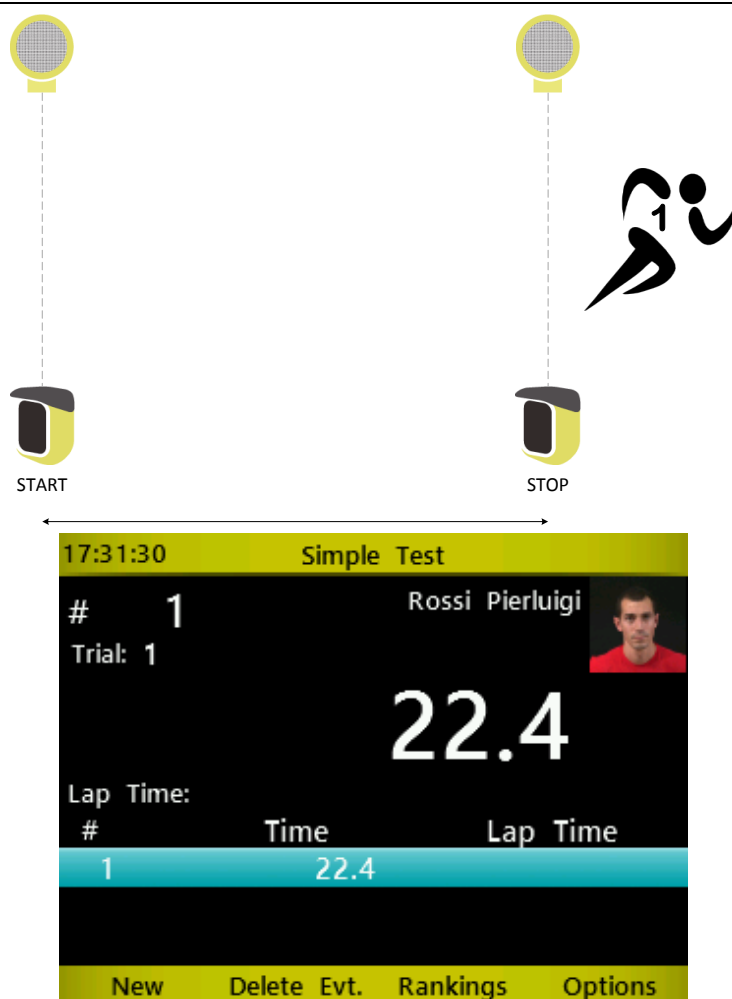
In a few steps we will show you how to carry out your first test:

<p>Switch the Witty Timer on (chap. 2.1.1).</p>	
<p>Mount the photocells onto the tripods and turn them on (chap. 2.2.1); position the start and finish photocells at a certain distance.</p>	
<p>From the main menu select Test and then Test Base.</p>	<div style="display: flex; justify-content: space-around;"> <div data-bbox="574 1406 986 1706"> <p>17:23:25 Main Menu</p>  </div> <div data-bbox="994 1406 1406 1706"> <p>17:25:04 New Test</p>  </div> </div>

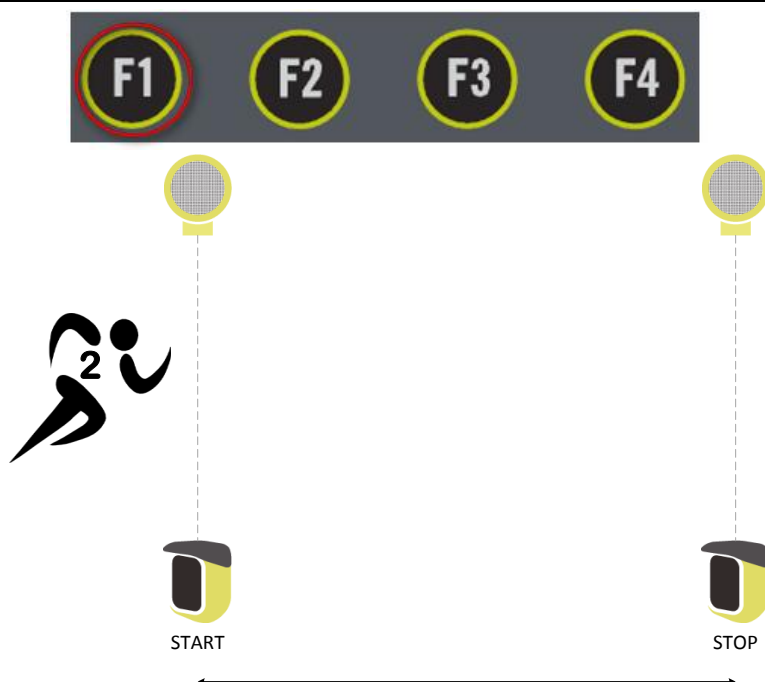
<p>In the top left corner the athlete's number as well as the athlete's trial number are displayed.</p>	
<p>The athlete starts and as soon as he crosses the first photocell timing begins.</p>	

When the athlete interrupts the finish photocell, timing is stopped and a line is generated in the table at the bottom of the screen.

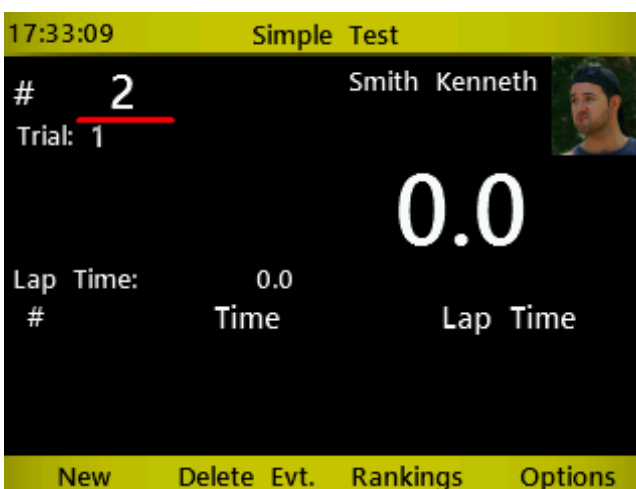
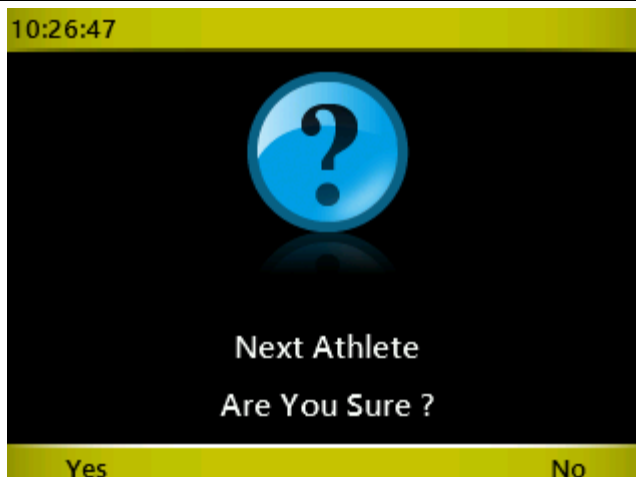
After 3 seconds timing continues, because as default all photocells are set as start photocells and do not receive a stop impulse, but this does not affect the performance of a test.



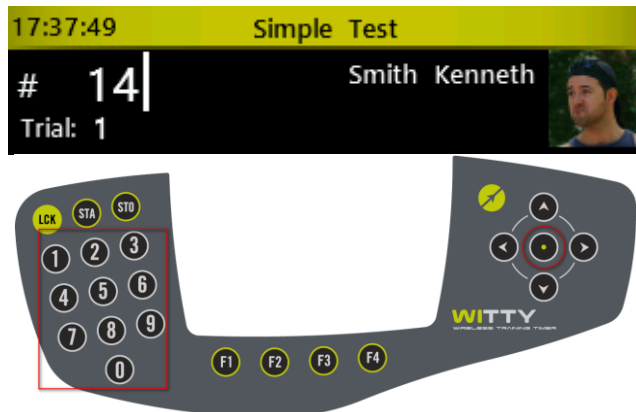
Press <F1> under 'NEW' for another athlete (in this case bib #2).



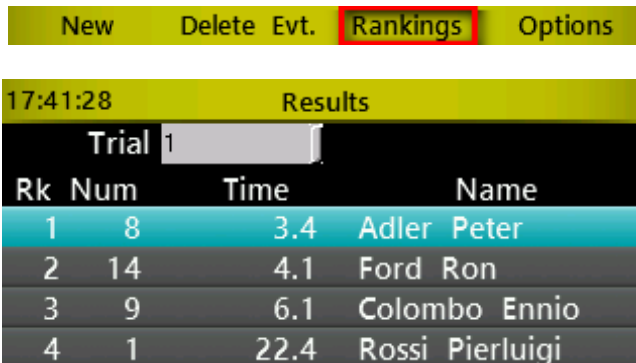
Press <F1> to confirm another athlete's start.



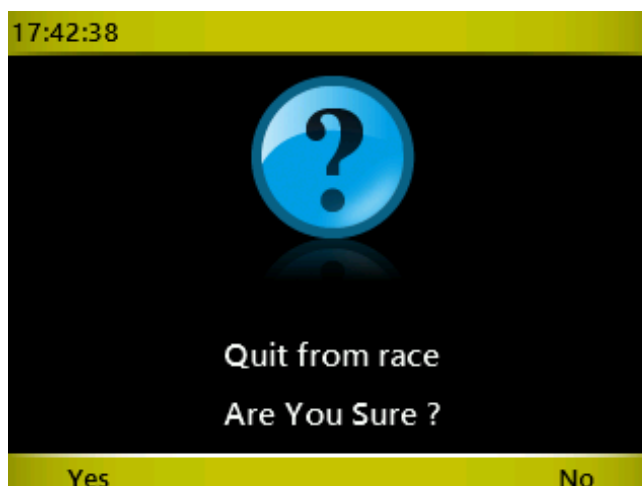
If the athlete has another bib number just enter the number using the numerical keypad and confirm by pressing <OK>.



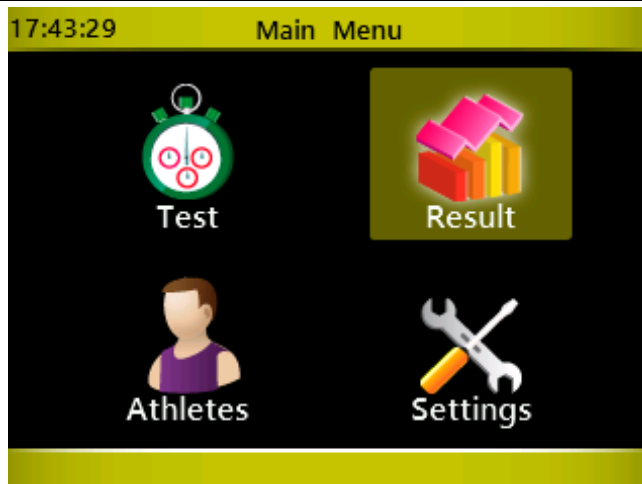
The <F3> Rankings button can be pressed at any time to show the temporary ranking of the test. Pressing the <Microgate> key (which can always be used for Back/Esc) or <F4> takes you back to the timing screen.



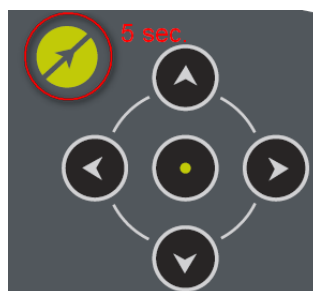
When all athletes have finished their test, press the <Microgate> key to exit the Test menu (confirmation required)



Press the <Microgate> key again to return to the main menu. It is possible to review the test (ranking), continue or delete it from the Result menu (see chap. 5.2)






When the test session has been completed, switch off the timer (chap. 2.1.2) and the photocells (chap. 2.2.1)



4 TEST TYPES:

Witty can handle various test types (sprint, shuttle, go & back, athlete groups, repetitions, etc.), which are described below.

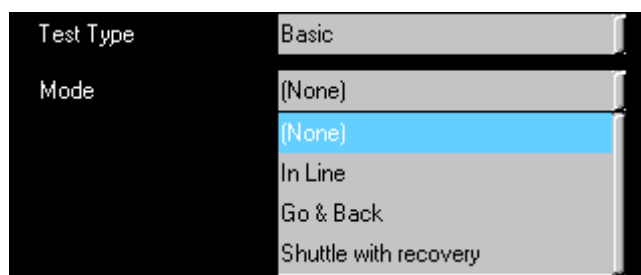
Tests are divided into the following main types:

Icon	Name	Description
	BASIC	Tests for in-line timing of single athletes (one after the other) in laps or circuits (sprint, shuttle, go & back, endurance, etc.).
	MULTISTART	Test for timing several athletes (max. 3) simultaneously.
	COUNTER	Test for timing or counting repeated actions.

The various options available for each main type are explained below.

4.1 BASIC

The basic tests are divided into different sub-types:



For every type it is necessary to define when and how the test is completed (**End of Test parameter**).

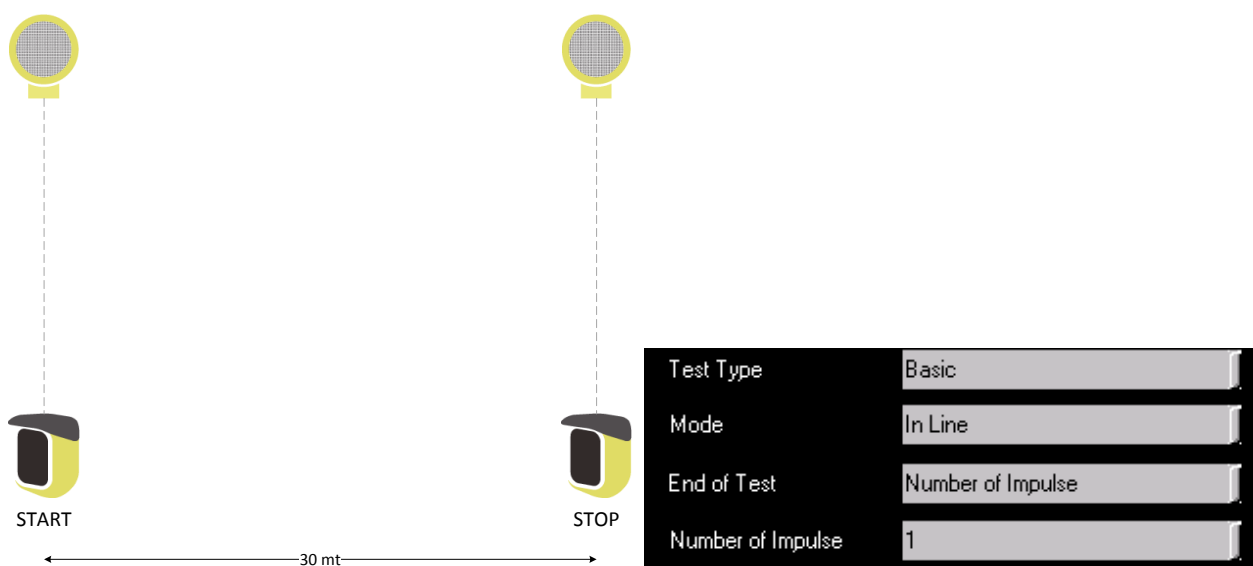
Possible options are:

Number of Impulses:	Choosing a finite number of impulses (e.g. 5) the test will be completed when the timer receives a number of events equal to the set parameter <u>except for the first Start event</u> . Leaving the parameter on '0' (undefined), the test never ends and the operator will decide when another athlete begins the test.
End of Time	Setting a time in minutes:seconds, the test will finish when the set amount of time is reached.
No. of Impulses or End of Time	Setting both parameters, the test ends when the first of the two conditions is reached.

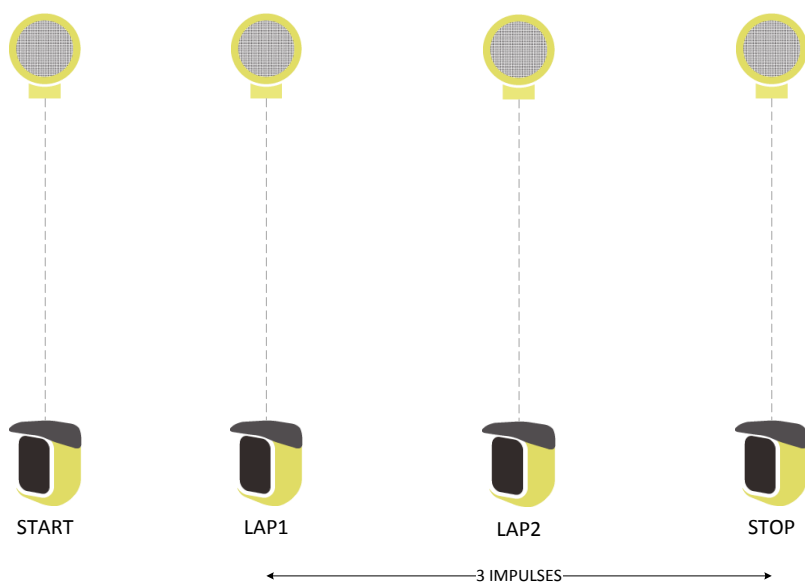
4.1.1 IN LINE

Basic / In Line tests are the simplest kind of tests and allow, for example, sprint timing over a certain distance.

Example 1a. To time a sprint test over 30 meters with Start and Stop it is enough to set the End of Test with 'Number of Impulses' equal to 1 (please note that the Start Impulse must never be counted).

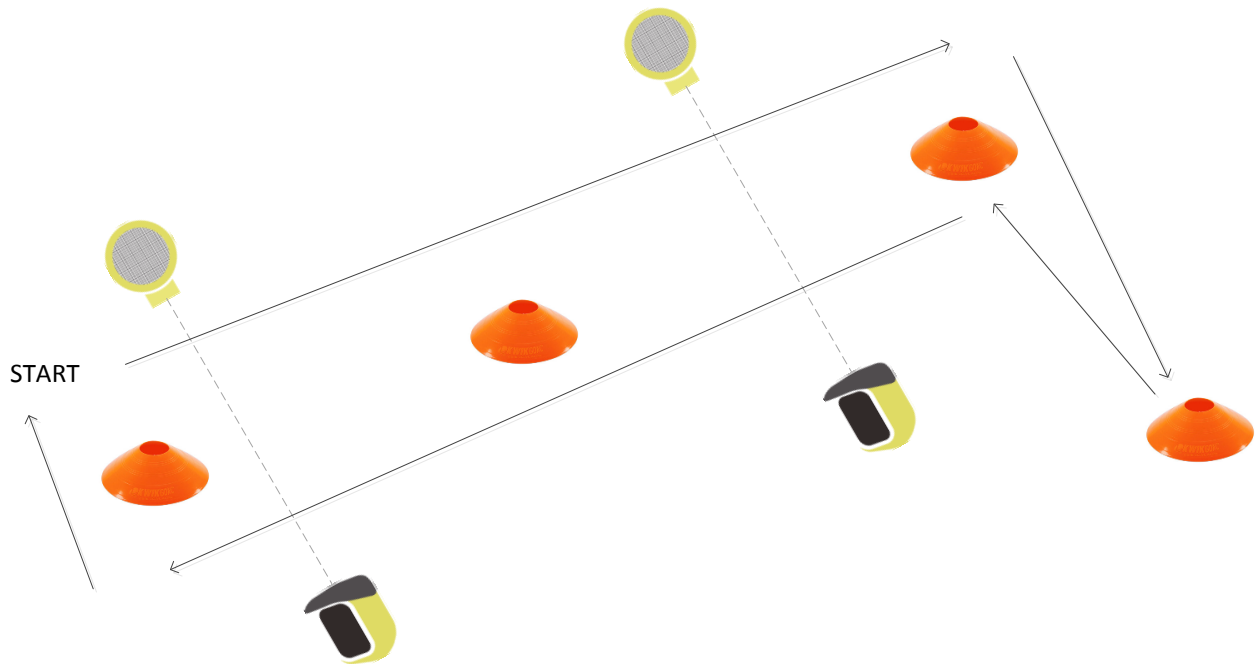


Example 1b. If you want to add one or more lap times, just increase the value of Number of Impulses.



Test Type	Basic
Mode	In Line
End of Test	Number of Impulse
Number of Impulse	3

Example 2: Checking how often photocells are passed within 30" of this course:

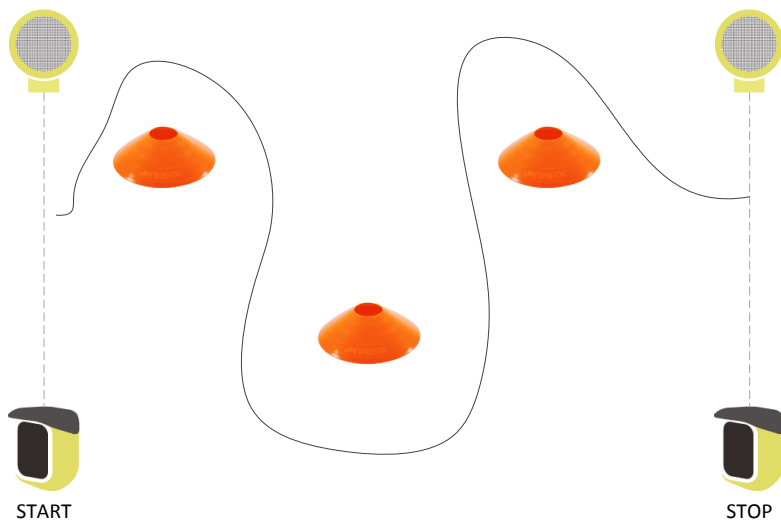


Test Type	Basic
Mode	In Line
End of Test	End of Time
End of Time	00 mm 30 ss

Microgate Srl

Bib 14 and 1 made six passages, whereas number 8 and 9 only five; the ones with the same amount of passages are ranked by time.

Example 3. If in a test an athlete must complete a circuit within 20" and there is only one start and stop, the end of test can be set as '**Number of Impulses or End of Time**'; if the athlete manages to perform the test, his time will be saved, otherwise the timer is stopped.



Test Type	Basic	#	1	Rossi Pierluigi
Mode	In Line	Trial:	1	Max time: 20s
End of Test	Number of Impulse or End of Time	18.8		
Number of Impulse	1			
End of Time	00 mm 20 ss	Lap Time:		
		#	Time	Lap Time
		1	18.8	

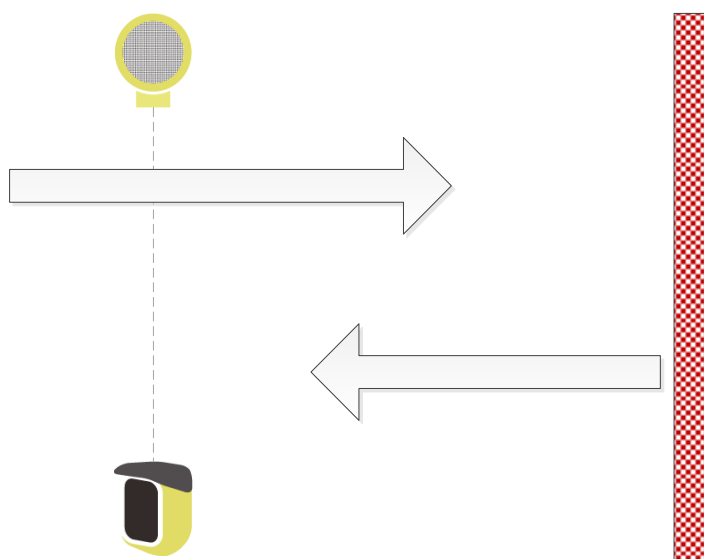
4.1.2 Go & BACK

The Go & Back test type is basically similar to the In-Line test, but is designed for a specific test type with only one photocell.

For example: place the photocell (which will be used as Start and Stop) at a certain distance from the wall and define the test as follows:

Test Type	Basic
Mode	Go & Back
End of Test	Number of Impulse
Number of Impulse	1

The athlete starts, crosses the photocell (which starts timing), touches the wall and crosses the same photocell again, which stops the time.



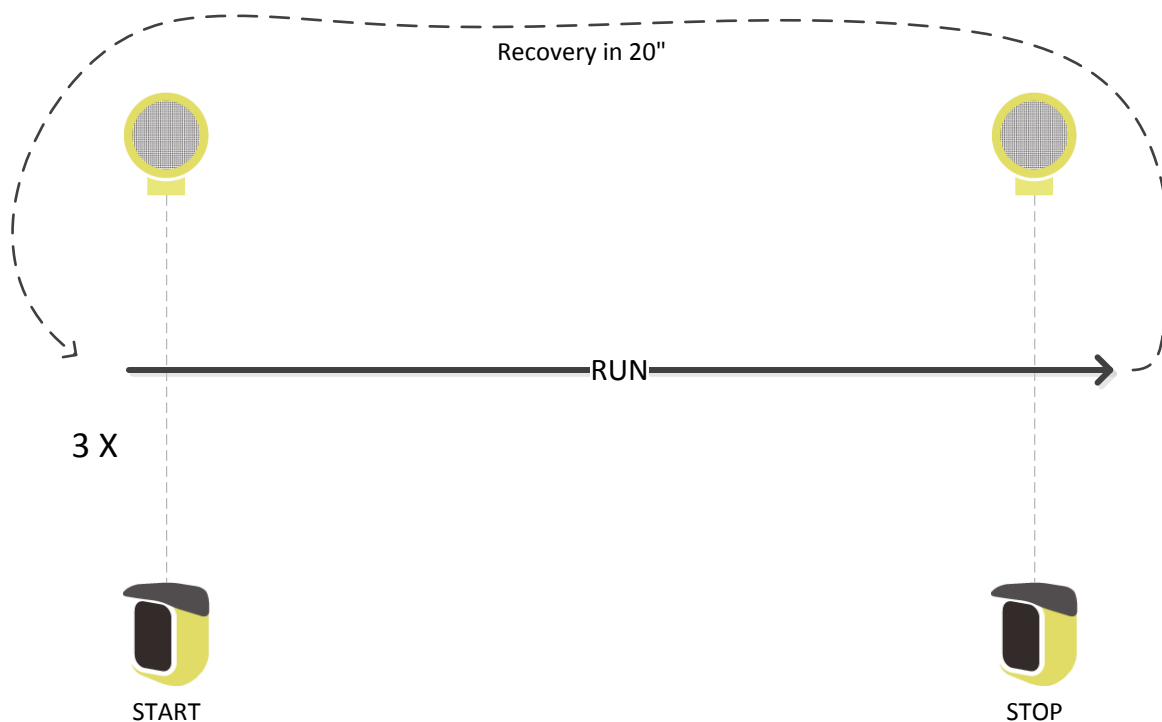
#	1	Rossi Pierluigi	
Trial:	1	Impulses: 1	
		3.6	
Lap Time:			
#	Time	Lap Time	
1	3.6		

Of course it is possible to complete various 'laps' simply by increasing the number of impulses. Similarly to the previous chapter several go&back exercises can be created with a maximum time or by matching maximum time / number of impulses.

4.1.3 SHUTTLE WITH RECOVERY

The Shuttle test (with or without recovery) allows to execute shuttle tests, where an exercise is carried out a certain amount of times with a given number of seconds for recovery between them.

e.g. **50-meter sprint to be performed 3 times with 20" recovery between one sprint and the other.**



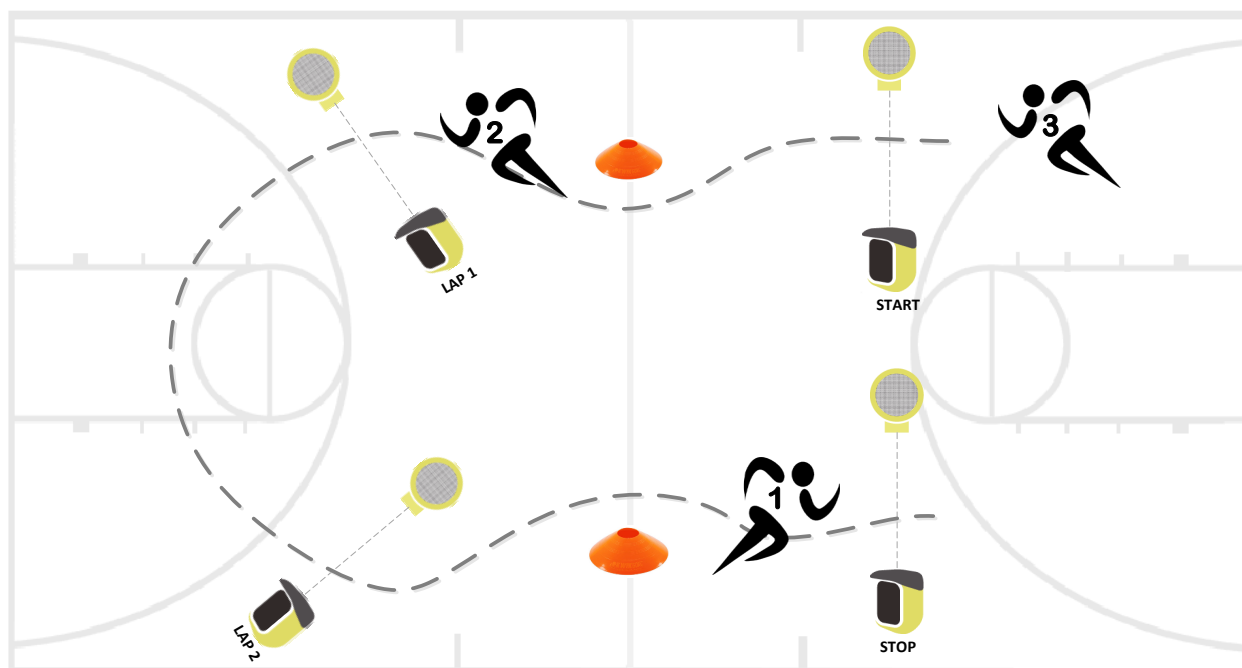
The test is set as follows:

Test Type	Basic
Mode	Shuttle with recovery
Number of Impulse	1
Number of Repetition	3
Pause Time	00 mm 20 ss

See chap. 5.1.2.4 for a timing example.

4.2 MULTISTART

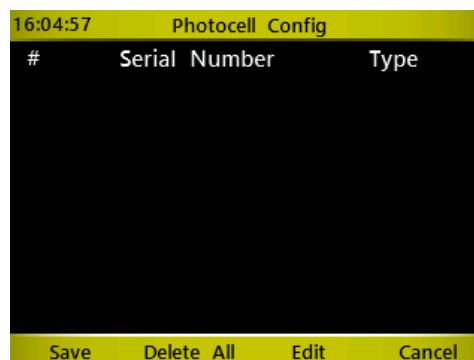
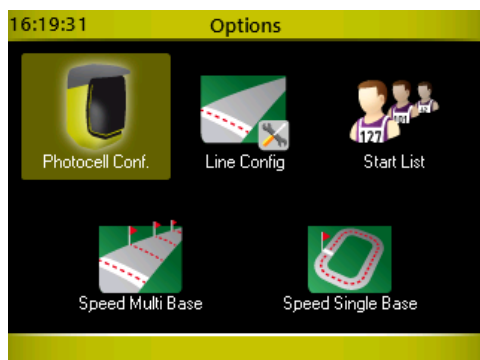
The MultiStart test allows to time circuits or courses carried out by several athletes at the same time (max. 3) from the start line to the finish line. The athletes must NOT start simultaneously (otherwise it would be impossible to associate events to bibs) but must start one after the other and in sequence. Even though, as we will see, it is possible to manage cases where one athlete passes another athlete, we suggest that you distance the athlete starts in order to prevent this. If a certain sequence of events connected to impulses is maintained (athlete 1 start-lap, athlete2 start-lap, etc.), it is much easier to manage the test.



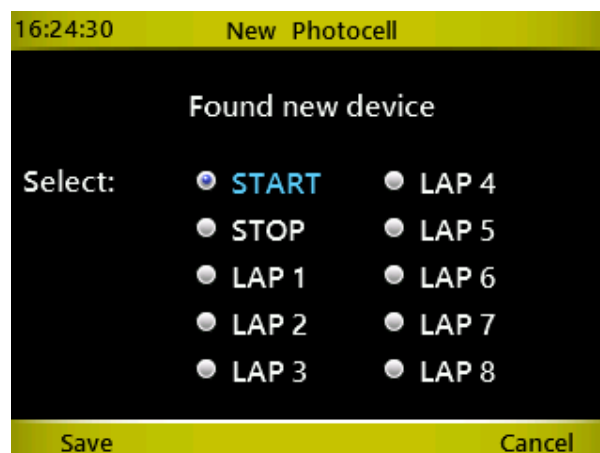
4.2.1 CONFIGURING THE PHOTOCELLS

While for other test types (Basic and Counter) the photocells are set in the same way (start), in MultiStart tests they must be identified and assigned (i.e. set which photocells are start, which are stop and which are lap-n). This assignment can be carried out when defining the test (it is advisable to mark the photocells with a piece of tape or a label for the following test sessions) or directly from the timing screen using the Options key.

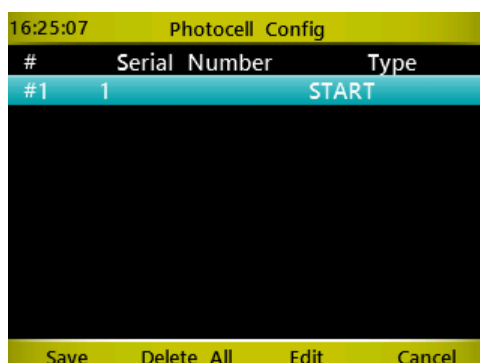
Create a MultiStart test as described in chap. 5.1.4. From test configuration, click on Options > Photocell Config, where an empty list is displayed:



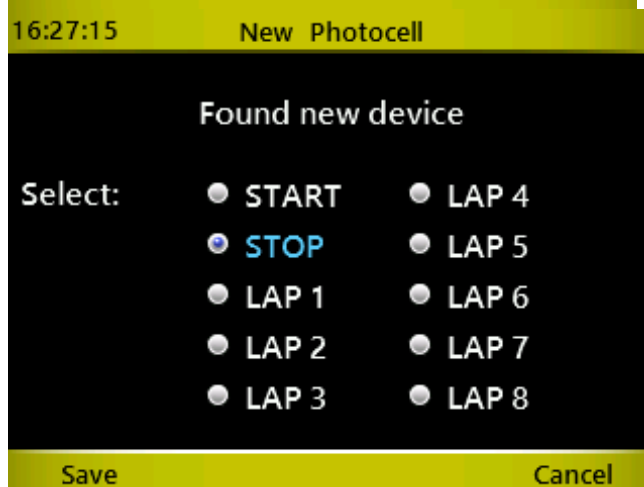
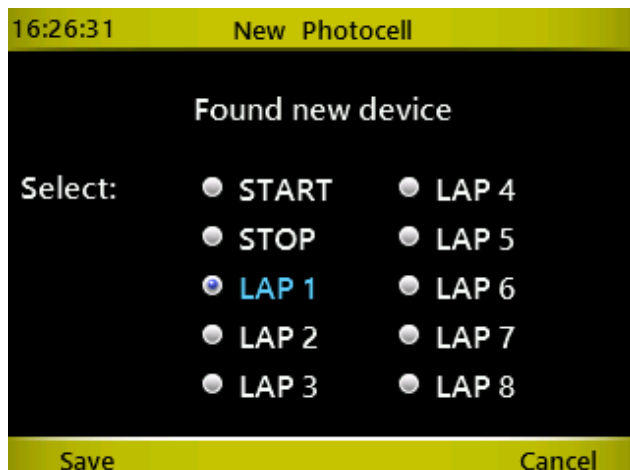
Assignment is very easy and consists of interrupting the photocell (having a unique serial number) with one hand and defining the required event type:



Scroll with the <up> and <down> arrow keys and select the event by pressing <OK>, then select <F1> to save. In the following example the photocell with the serial number 1 is associated to the START event.



Repeat the operation with the other available photocells (at least the stop photocell):



after which the situation will be the following (with more or less LAP photocells depending on how many are available):

16:27:42 Photocell Config		
#	Serial Number	Type
#1	1	START
#2	2	LAP1
#3	3	STOP
Save Delete All Edit Cancel		

Press <F1> to save the configuration! (By pressing <F4> or <Microgate> the previous screen is closed without saving, thus all entered data will be lost).

To change the event type associated to a photocell, go to the line (light blue color) of the required photocell and press <F3>. Similarly to the first photocell, choose the event type and save by pressing <F1>.

It is not possible to delete a single assignment, but only to reset the configuration (<F2> key) to begin a new assignment.

By closing the Test configuration screen it is possible to set a Max Time for completing the circuit/course. The field can be left undefined or you can set a value in minutes:seconds.

Test Type	Multistart	Test Type	Multistart
Max Time	(Undefined)	Max Time	00 mm 45 ss
	(Undefined)		
	(Insert...)		

4.3 COUNTER

The Counter test type counts a given number of actions/exercises or checks how long it takes to complete an exercise consisting of a certain number of repetitions.

The End of Test parameter can be defined as follows:

Number of Impulses: Choosing a number of impulses (e.g. 5) the test will be completed when the timer receives a number of events equal to the entered value, including the first Start event (not like in the Basic test type, where it is excluded).

End of Time Setting a time in minutes:seconds, the complete test will finish when the set amount of time is reached.

Timeout Setting a time in minutes:seconds, the test ends when the 'repetitions' are carried out in an amount of time that is higher than the one set.

Let's see some examples:


Example 1. Timing of how much time it takes to do 10 push-ups.



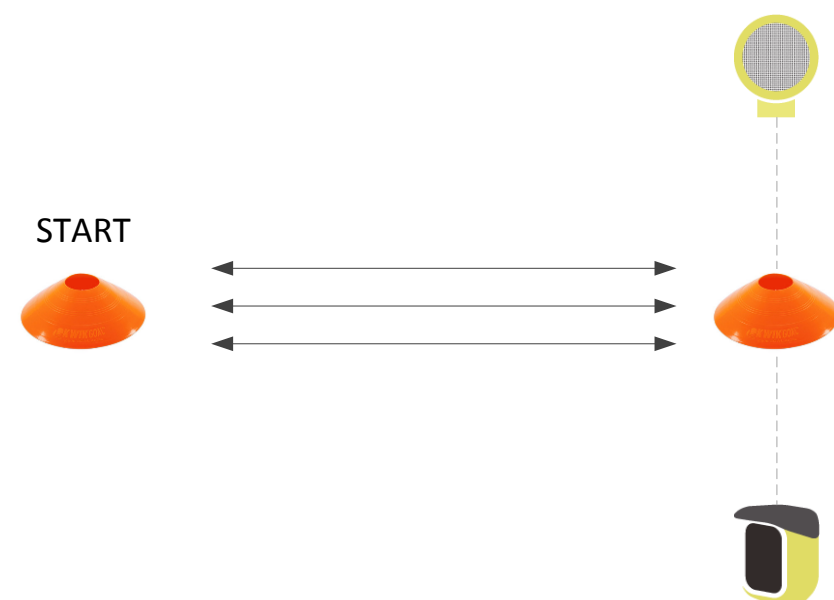
Set the test with End of Test=Number of Impulses and as parameter the desired number of push-ups:

Test Type	Counter
End of Test	Number of Impulse
Number of Impulse	10

While timing, the main parameter showing is the counter. In the table, for each repetition the progressive time and the amount of time of the single repetition is displayed.

17:07:58		10Counter	
#	1	Rossi Pierluigi	
Trial: 1		Impulses: 10	
			
		8	
Time	9.2		
#	Time	Lap Time	
8	6.1	1.9	
7	4.2	1.2	
6	3.0	0.5	
New	Delete	Evt.	Rankings Options

Example 2. Test for one minute and check how many times the action is performed during the total amount of time (e.g. go and back from two positions crossing a photocell). The winner is the one who has totaled more impulses within the maximum time (and in case of same number of impulses, within the shortest amount of time).



Test Type	Counter
End of Test	End of Time
End of Time	1 mm 00 ss

17:11:26


ScattoFreno1min

#1

Rossi Pierluigi

Trial: 1

Max time: 60s



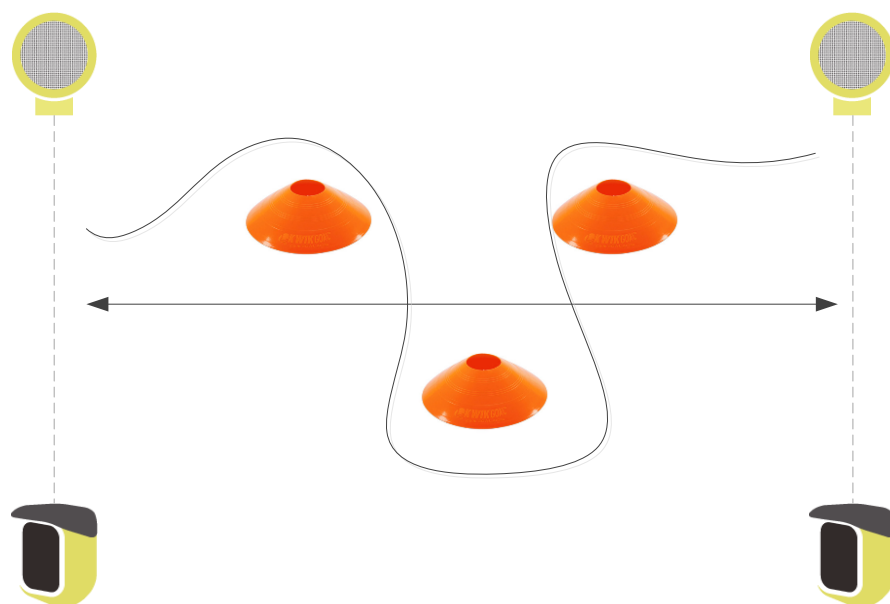
4

Time36.4

#	Time	Lap	Time
4	17.5	4.5	
3	13.0	4.6	
2	8.4	8.4	

NewDeleteEvt. RankingsOptions

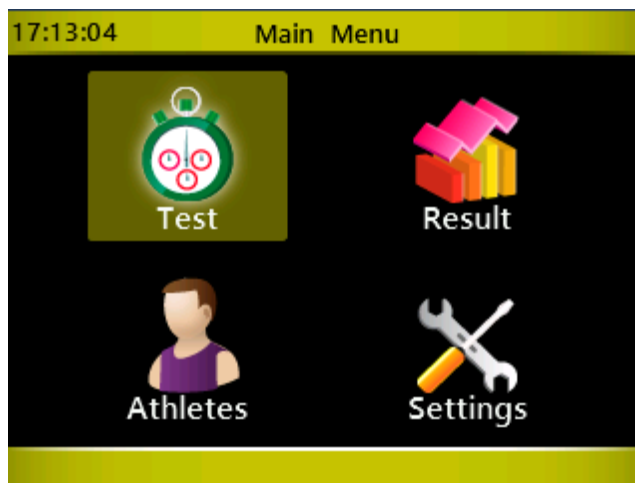
Example 3. A certain repetitive action must be carried out within 10 seconds (e.g. slalom through cones or a series of jumps). If the repetition takes longer than the set time, the test is stopped. The winner is the athlete performing the highest number of repetitions.



Test Type	Counter
End of Test	End of Time
End of Time	00 mm 10 ss

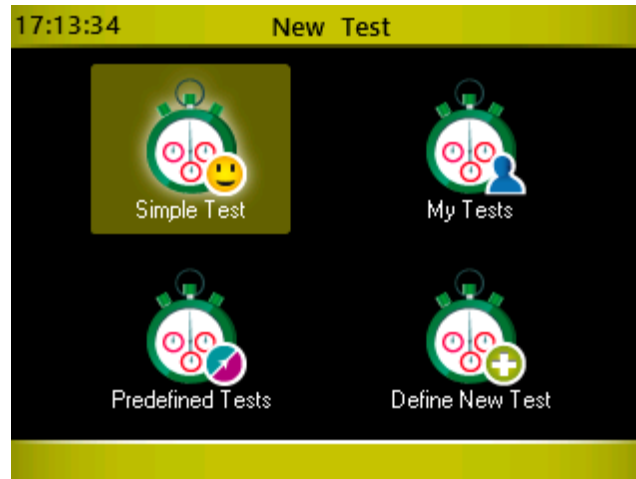
5 FUNCTIONS OF THE WITTY TIMER

The main menu displays the four macro areas, which will be described in the following chapters.



5.1 TEST

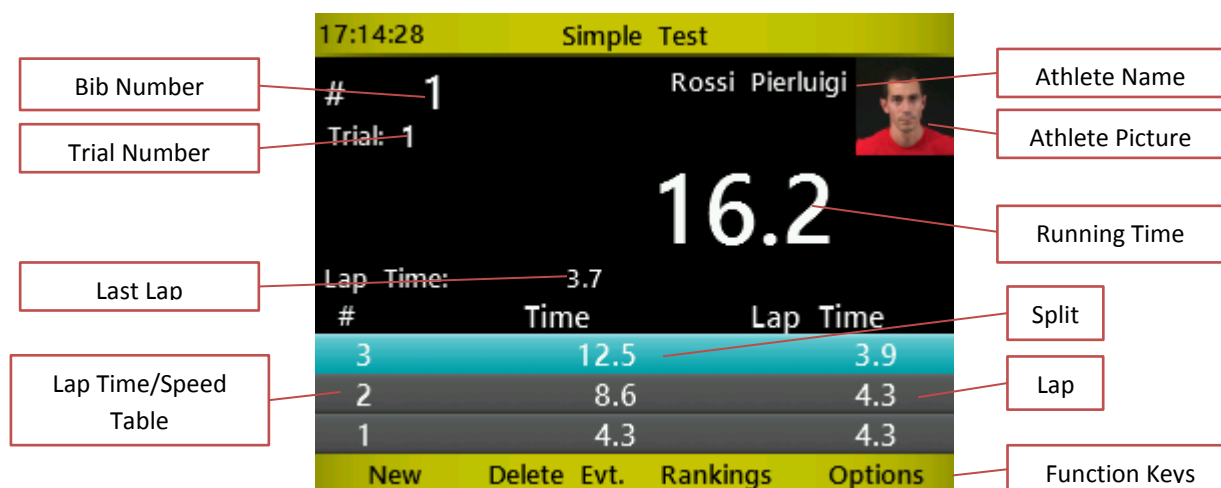
The Test section, the heart of the Witty software, allows to perform timing actions and define particular customized test types (this can also be carried out from the *Witty Manager* PC software).



5.1.1 SIMPLE TEST

The Simple Test is simply a 'Basic / In Line' test (see chap. 4.1.1) with a defined number of lap times (from 0 to n).

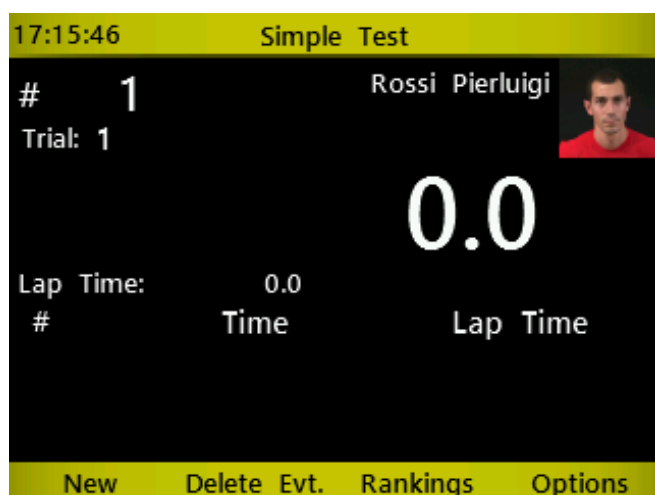
The elements displayed on the screen when timing are as follows:



In order to familiarize with the Witty timer functions, substitute the impulses received from the photocells by pressing the Start and Stop keys on the left side of the timer (lap times are simulated by pressing the <STA> key).

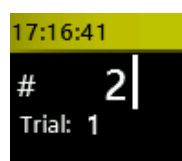


Press the Simple Test icon in the Test menu and access the timing function. If no start list and athlete names/pictures have been set with the WittyManager software, the displayed screen will appear as follows:



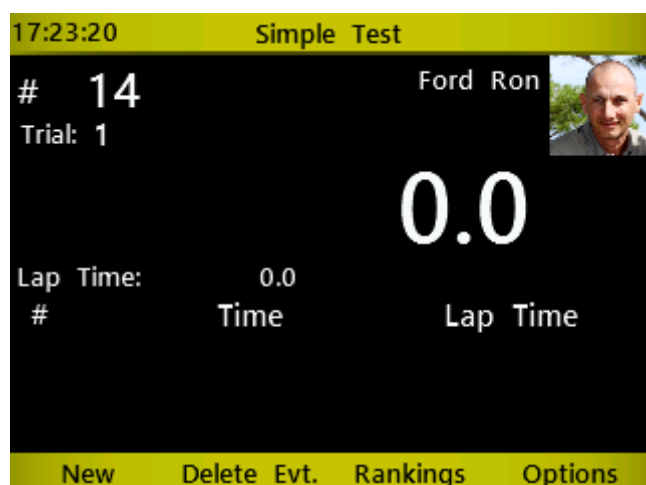
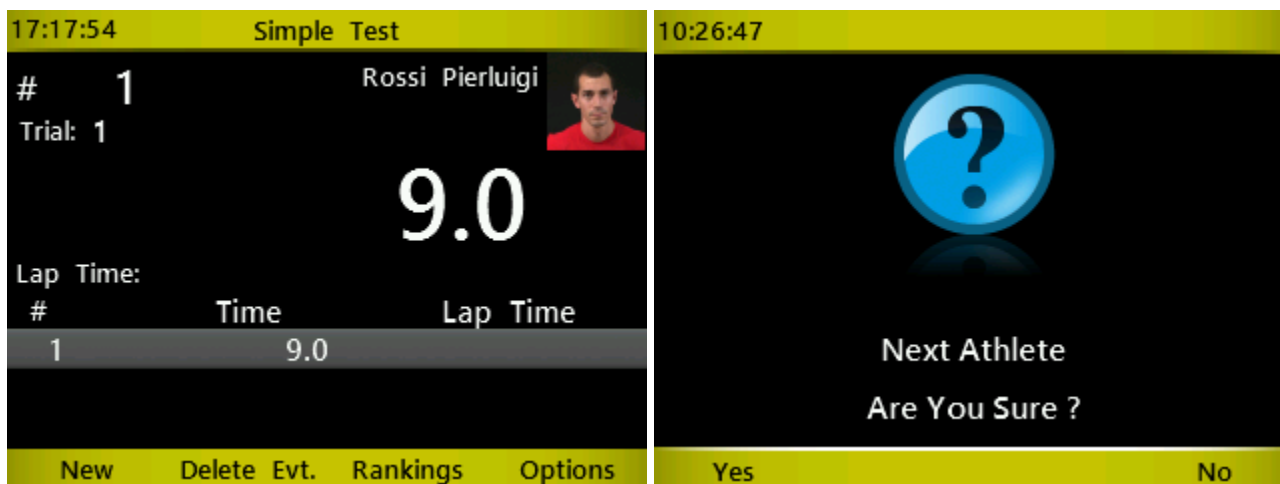
Now the athlete with bib number 1 can begin Trial number 1.

If another athlete is in starting position, enter his bib number using the numerical keypad and press <OK>.



Now have the athlete cross the Start photocell (or press the <STA> key) and timing will begin. When the photocell is interrupted for the second time, timing is stopped and the first line containing time and lap time (which of course are the same) appear in the table. After 3 seconds timing is resumed (as in this test type an undefined number of laps is possible and the photocells always give a Start/Lap impulse and never a Stop impulse).

Press <F1> New and the system asks, if you want to continue with another athlete. If so, the following athlete is suggested (bib no.+1 or, if a start list has been provided, the next one on the list).



If you enter the bib number of an athlete who has already carried out a trial, he will be accepted but the Trial number will be increased by one.



If there is more than one photocell for lap timing, the lap times are saved and displayed as a table which can be scrolled using the <up> and <down> arrows. The scrollbar on the right indicates that there are more lap times to scroll through.

17:14:28

Simple Test

#1

Rossi Pierluigi



Trial: 1

16.2

Lap Time: 3.7

#	Time	Lap Time
3	12.5	3.9
2	8.6	4.3
1	4.3	4.3

New

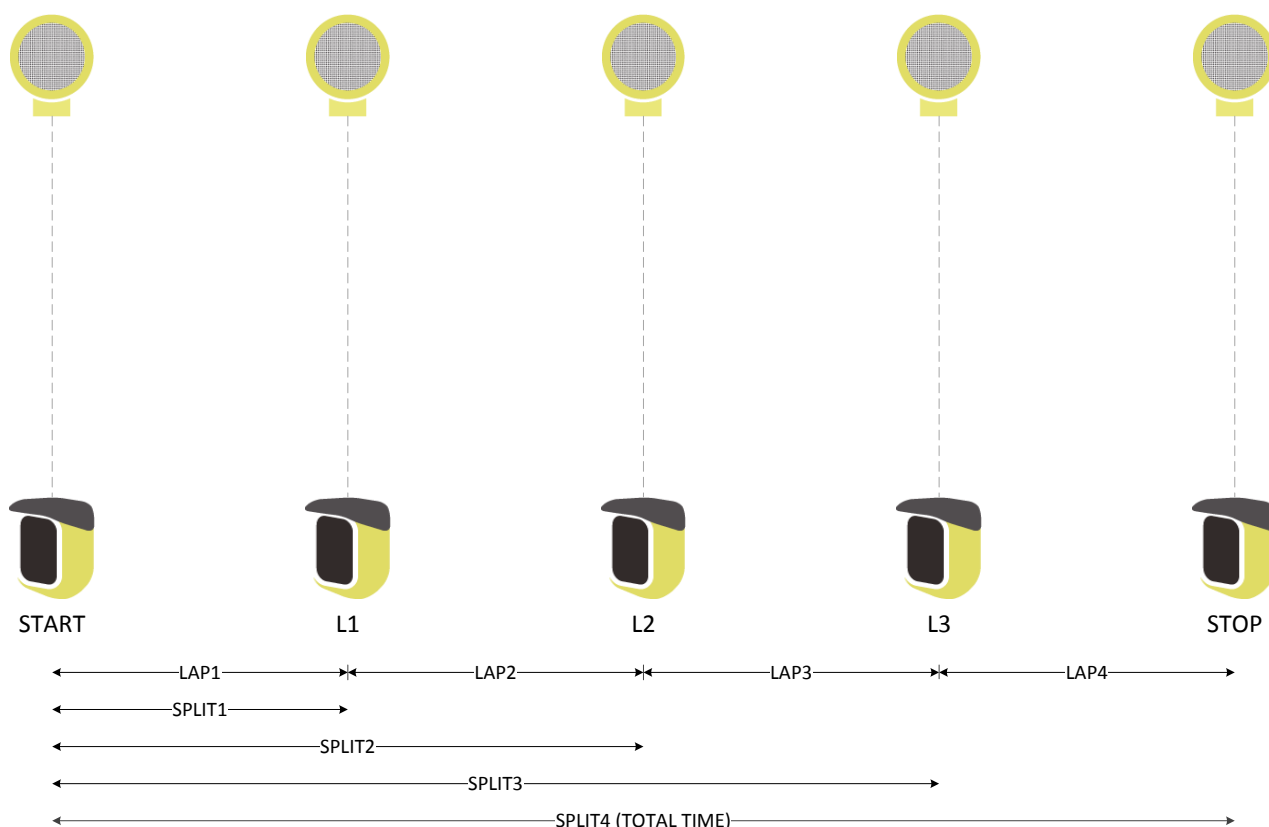
Delete

Evt.

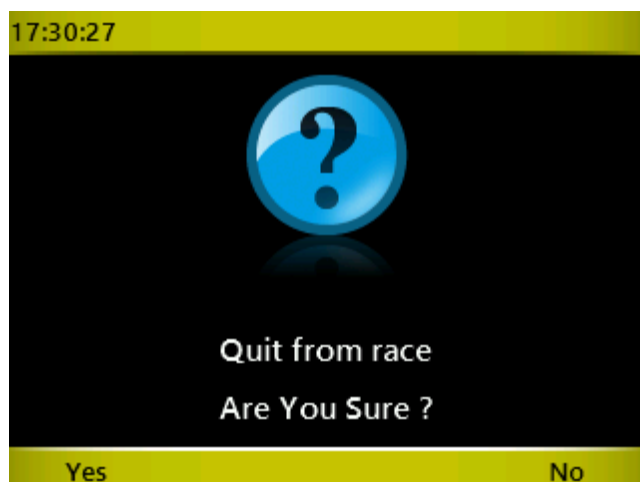
Rankings

Options

The Time column (SPLIT) is the running time beginning from the start, whereas the lap time (LAP) is the time of one single lap.



By pressing <Microgate> and confirming, the menu is closed.



If you want to begin a **New Test**, select the Simple Test icon again (or one of the other customized or predefined test types), whereas if you want to **continue the test** that you have just closed, use Continue in the Results menu, as described in chap. 5.2.

Now let's take a look at the various options that can be selected with the function keys:

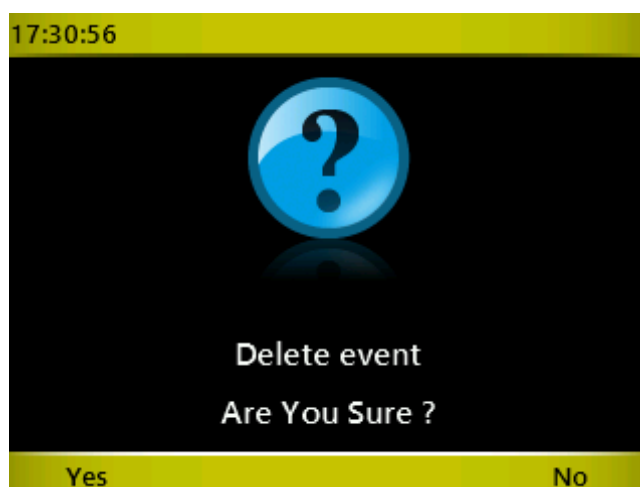
5.1.1.1 NEW

The next athlete (or the next on the start list) is suggested but confirmation is needed. A number may be forced by entering the digits and pressing <OK>.

5.1.1.2 DELETE EVENT

If an external element has interrupted a photocell causing an undesired impulse, the LAST EVENT (impulse) which has been received can be deleted by pressing <F2> Delete Event and confirmed by selecting Yes.

WARNING: The deleted item is always the last one, not the one highlighted in light blue in the table.



5.1.1.3 RANKING

Display the ranking of the current Trial (or of a given trial). A certain athlete's test can be displayed and the list can be sorted by time or bib number (to find an athlete).

17:33:06		Results	
Trial 1			
Rk	Num	Time	Name
1	6	0.5	Espino Cesario
2	9	0.5	Colombo Ennio
3	14	0.5	Ford Ron
4	8	0.6	Adler Peter
5	1	0.7	Rossi Pierluigi
6	7	0.7	Fierro Carlos
7	10	0.8	Frost Edward
View		Sort	Trial Cancel

Use the *<up>* and *<down>* arrow keys to scroll the ranking and *<F1>* (or *<OK>*) to display the selected test (in this example the test of athlete number 1, Rossi).

5.1.1.3.1 View

View the selected test with all lap times (if present).

5.1.1.3.2 Sort

Sort the ranking by Time *-<F1>* or Number (Bib) *-<F2>*.

5.1.1.3.3 Trial

Place the cursor on the 'Trial' dropdown menu in order to view a trial ranking or all trials together.

In this case the bib column (Num) has the format X.Y, where X is the bib and Y the trial (in the following example the athlete with the best time is athlete #1 in trial 1).

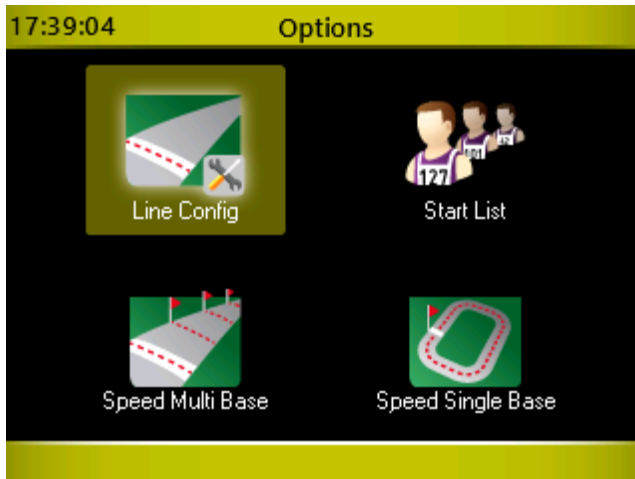
17:38:37		Results	
Trial All			
Rk	Num	Time	Name
1	1.1	2.9	Rossi Pierluigi
2	9.1	3.3	Colombo Ennio
3	14.1	3.8	Ford Ron
4	10.1	4.4	Frost Edward
5	8.1	5.0	Adler Peter
6	7.1	5.4	Fierro Carlos
7	6.1	6.2	Espino Cesario
View		Sort	Trial Cancel

5.1.1.3.4 Cancel

Press <F4> Cancel to return to the timing screen.

5.1.1.4 OPTIONS

Recall a menu for configuring lines, speed bases, and start lists:

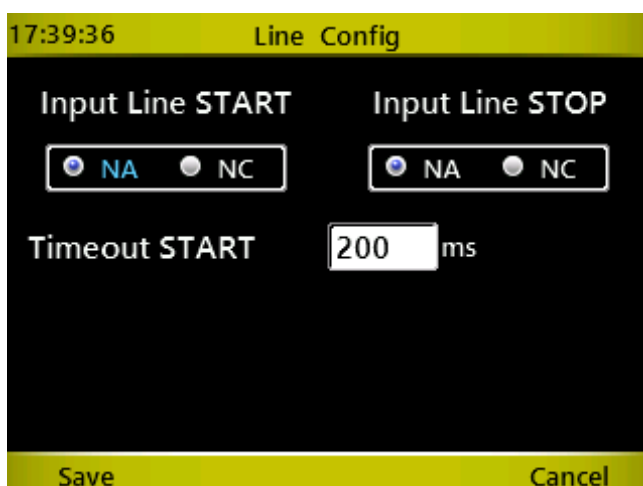


5.1.1.4.1 Line Configuration

Allows to configure the lines of possible peripherals connected via cable with the input jack on the back side.

It is possible to set the start and finish line to 'Normally Open' (NA) or to 'Normally Closed' (NC). For example a connected contact pad (Start Pad), which gives the start impulse when the athlete steps off it, is set to NC.

The start timeout is the so-called 'dead time'; setting it, for example, to 200 ms, after the start no other impulses will be considered within the first 2 tenths of a minute (this is useful to prevent false or spurious contacts).

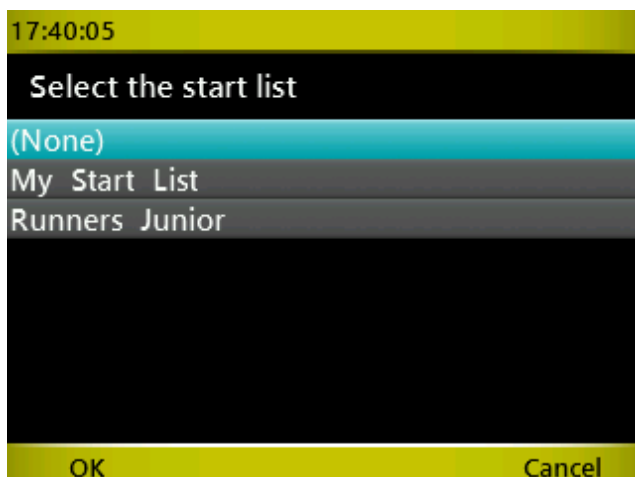


The screenshot shows the 'Line Config' screen with a yellow header bar displaying the time '17:39:36'. The screen is divided into two main sections: 'Input Line START' and 'Input Line STOP'. Each section has two radio buttons: 'NA' (Normally Open) and 'NC' (Normally Closed). In the 'Input Line START' section, the 'NC' button is selected. Below these sections is a 'Timeout START' field with a numeric input set to '200' and the unit 'ms'. At the bottom of the screen are two buttons: 'Save' and 'Cancel'.

5.1.1.4.2 Start Lists

If one or more Start Lists have been created with the Witty Manager software and transferred to the timer, with this option they can be chosen and used. From that moment the athletes will be placed in the order of the list and not of their bib number.

Choosing this option (None), the regular start order is used (1, 2, 3, 4, 5...).



The screenshot shows the 'Select the start list' screen with a yellow header bar displaying the time '17:40:05'. The screen has a black background with a list of options: '(None)', 'My Start List', and 'Runners Junior'. The '(None)' option is highlighted with a blue bar. At the bottom of the screen are two buttons: 'OK' and 'Cancel'.

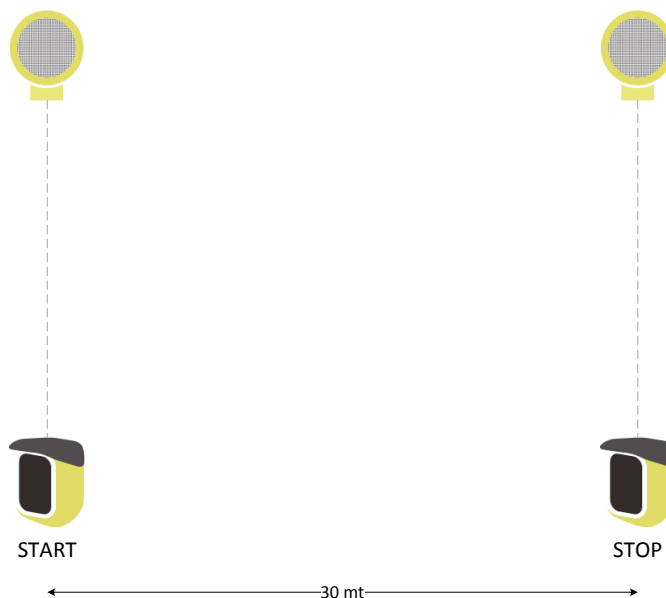
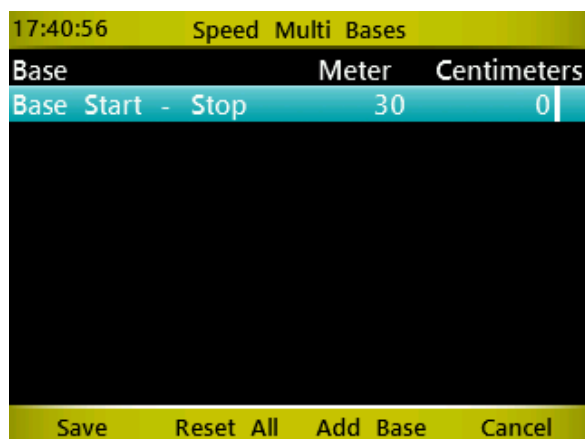
5.1.1.4.3 Multi Base Speed

This function (as well as the single Base) allows to define the distances between the photocells in order to determine the speed in the various trial laps. If the distances have been set in the time/lap table, the speed will be displayed (expressed in the chosen unit, see chap. 5.4.5.3).



The indication 'multi' does not mean that more than one base must be set. A classic sprint of n meters without lap can (and must) also be timed with this option. Let's see some examples:

30-Meter Sprint with Only One Start And Stop



Set the distance (in meters/centimeters or feet/inches depending on the settings of the measuring unit) between start and stop and press <F1> Save.

The diagram illustrates a linear track layout for a 60m race. It features four stations: START, L1, L2, and STOP. Each station is represented by a yellow car icon and a yellow circular light icon, connected by a dashed vertical line. The track is divided into three segments: LAP1 (10m), LAP2 (20m), and LAP3 (30m). The total distance from START to STOP is 60m.

Enter the Start-Stop Base as in the previous example.

Then press <F3> to add the Lap1 Base and enter the distance.

Do the same for the Lap2 and Lap3 bases.

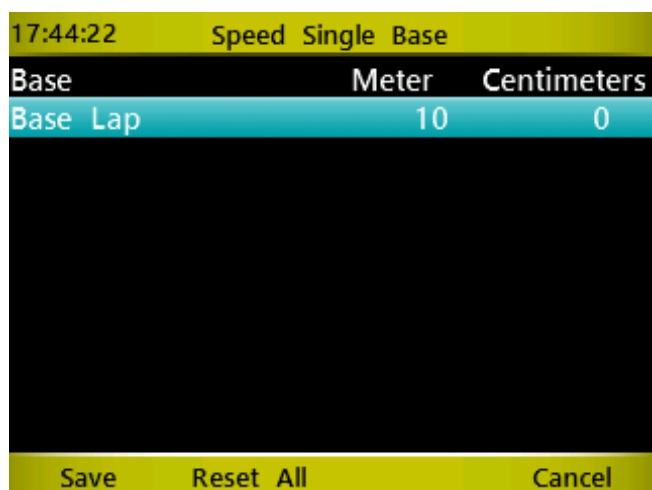
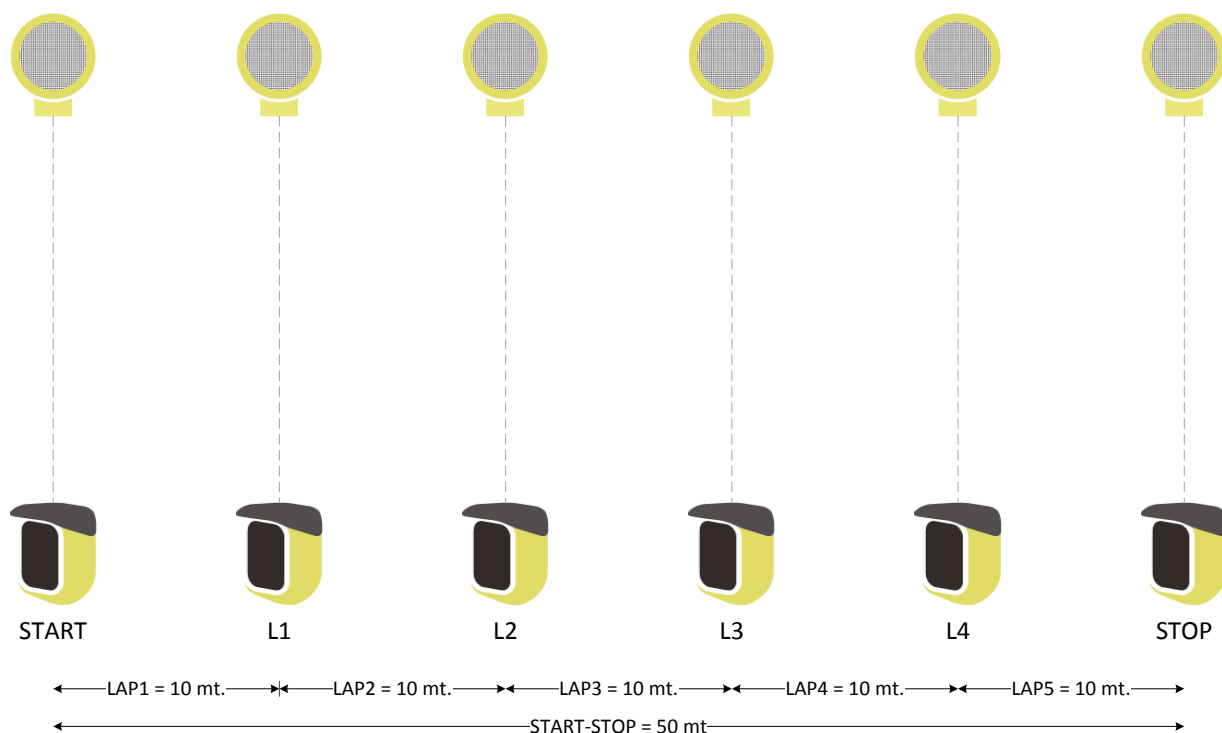
Remember to SAVE by pressing <F1>.

You can move around in the table to change the distance of a previously added Base.

To delete one or more bases, press <F2> to reset the list and enter new data.

The Speed Single Base can be used also when there are several lap time measures at equal distances. In this case it is not necessary to define a multi base with equal distances, but it is enough to define the single base once, e.g.

50-Meter Sprint with 10-Meter Lap Time.



Enter the Base Lap at 10 meters and save by pressing <F1>.

5.1.2 PRECONFIGURED TEST

On this screen there are 4 of the most common test types that *Microgate* has made available as examples



The tests are defined as follows:

Test Name	Description	Defined as	
Sprint Start-Stop	Sprint test with start and stop without lap times	Test Type	Basic
		Mode	In Line
		End of Test	Number of Impulse
		Number of Impulse	1
Go & Back	Go and back test with 1 photocell	Test Type	Basic
		Mode	Go & Back
		End of Test	Number of Impulse
		Number of Impulse	1
Shuttle 5x + 30"	Shuttle test with 5 repetitions and 30" recovery	Test Type	Basic
		Mode	Shuttle with recovery
		Number of Impulse	1
		Number of Repetition	5
		Pause Time	00 mm 30 ss
MultiStart Start-Stop	Generic group test	Test Type	Multistart
		Max Time	(Undefined)
Counter 10x	Test with 10 repetitions	Test Type	Counter
		End of Test	Number of Impulse
		Number of Impulse	10

5.1.2.1 LOAD

To begin a timing session of the desired type, select the line using the <up> and <down> arrow keys and press <F1> Load (or the <OK> key).

Now, thanks to these preconfigured tests, let's see an example for every test type:

5.1.2.2 SPRINT START-STOP: TIMING OF A BASIC IN-LINE TEST

The Test Base is this type of test; please refer to chap. 5.1.1 for further information.

5.1.2.3 GO & BACK: TIMING OF A BASIC GO & BACK TEST

The Go & Back test is also basically the same as an In-Line test; please refer to the latter for further information.

5.1.2.4 SHUTTLE 5x + 30": TIMING OF A BASIC SHUTTLE TEST

During the first sprint, the timer shows information as for an In-Line test; after crossing the stop photocell, a countdown starts for the amount of time set as recovery time:

10:32:21

navetta3x20"

1

Rossi Pierluigi

Trial: 1



- 16.8

PAUSE

Time Lap Time

1.1 5.6 5.6

New Delete Evt. Rankings Options

When the athlete starts again for the second sprint, the advance or delay (signaled by an intermittent beep) is calculated with respect to the recovery time; these times are highlighted on the data table with the letter R (Recovery). In the example below the athlete has begun the second sprint with an advance of -1.4, and the third with a delay of +1.6.

#1

Trial: 1

Rossi Pierluigi



21.3

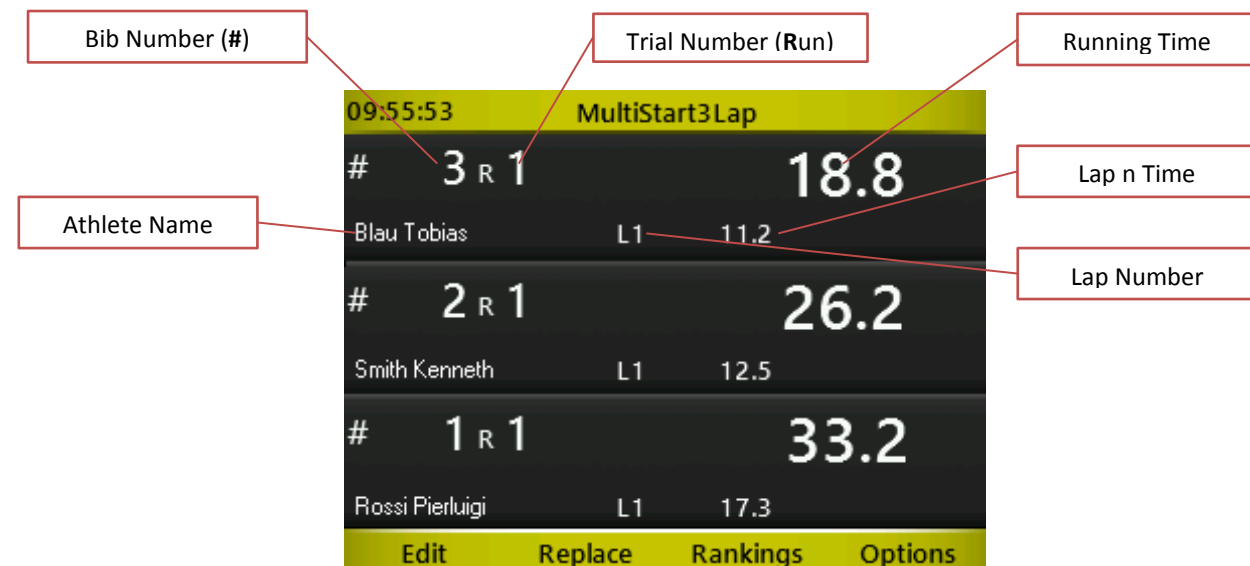
Lap Time: 21.3

#	Time	Lap Time
R 3	+1.6	
2.1	6.2	6.2
R 2	-1.4	

The ranking sums the times of n repetitions and does NOT consider the start delays or advances.

5.1.2.5 MULTISTART START-STOP: TIMING OF A MULTISTART TEST

Now let's take a look at the user interface of a multistart timing test.

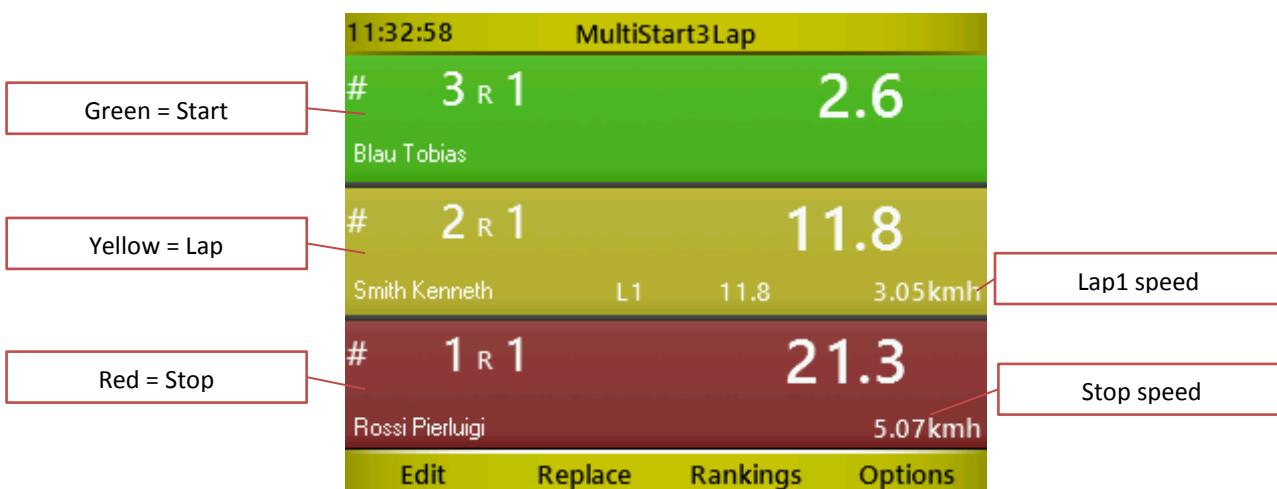


The screenshot shows the 'MultiStart3Lap' interface with a total time of 09:55:53. It lists three athletes with their bib numbers, trial numbers, and running times. Callouts identify the following fields:

- Bib Number (#)**: Points to the '#' symbol.
- Trial Number (Run)**: Points to the 'R' and the trial number.
- Running Time**: Points to the large time value on the right.
- Athlete Name**: Points to the athlete's name.
- Lap n Time**: Points to the 'L' and the lap time.
- Lap Number**: Points to the 'L' and the lap number.

Bib Number (#)	Trial Number (Run)	Athlete Name	Lap n Time	Lap Number	Running Time
3	1	Blau Tobias	11.2	1	18.8
2	1	Smith Kenneth	12.5	1	26.2
1	1	Rossi Pierluigi	17.3	1	33.2

Buttons at the bottom: Edit, Replace, Rankings, Options.

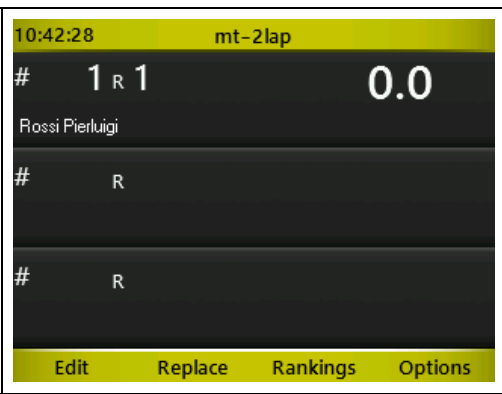
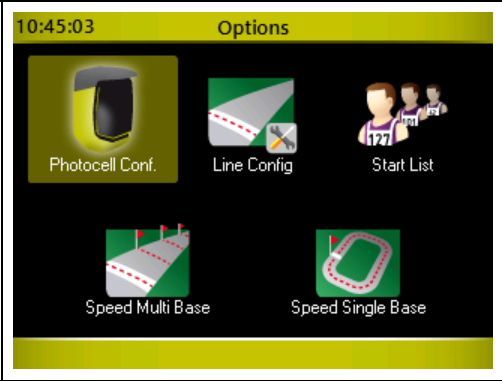
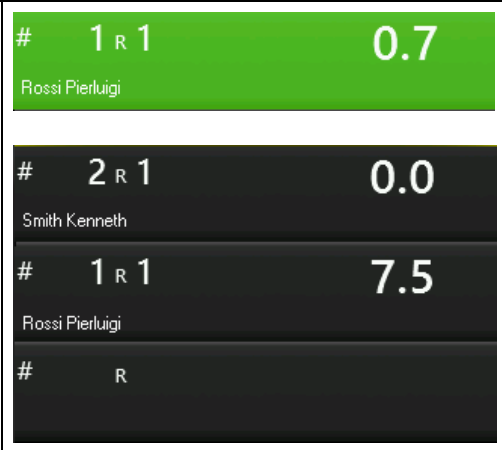
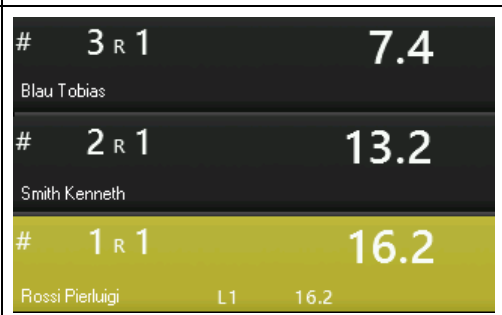


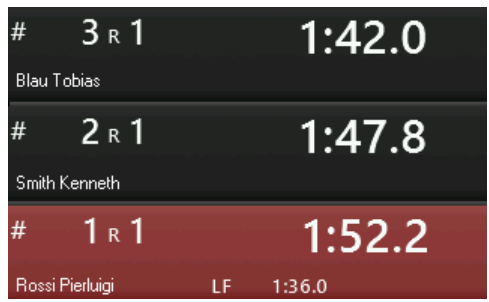
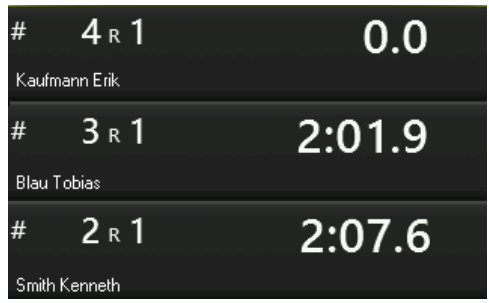
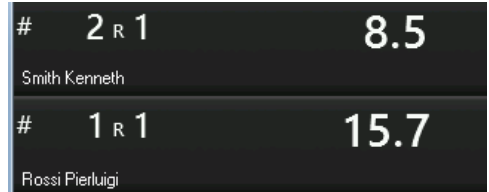

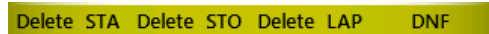

The screenshot shows the 'MultiStart3Lap' interface with a total time of 11:32:58. It lists three athletes with their bib numbers, trial numbers, and running times. Callouts identify the following fields:

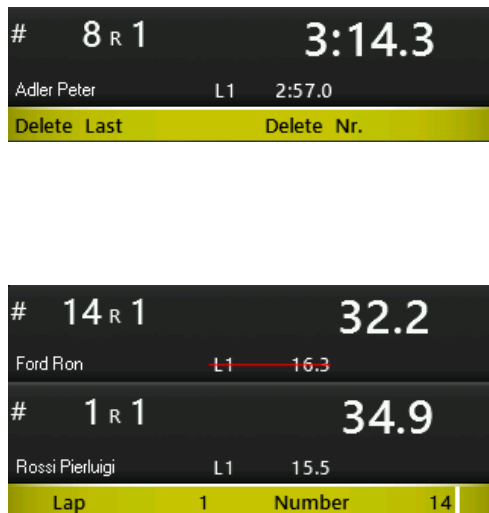
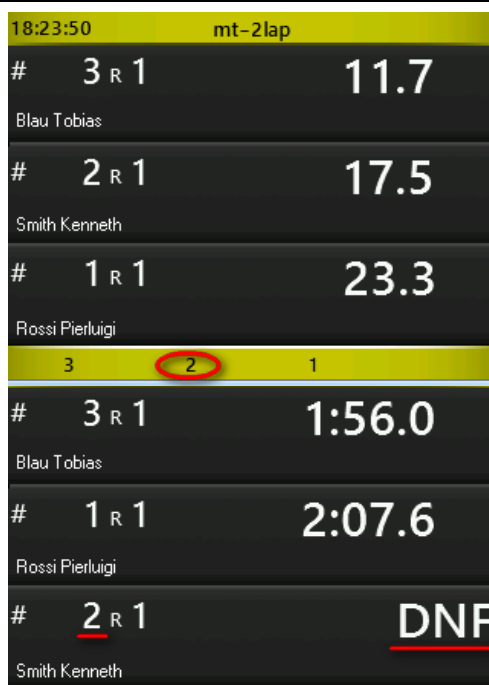

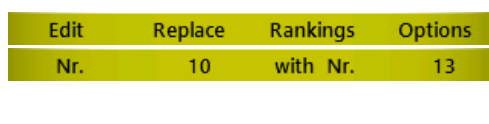
- Green = Start**: Points to the green background of the first athlete's row.
- Yellow = Lap**: Points to the yellow background of the second athlete's row.
- Red = Stop**: Points to the red background of the third athlete's row.
- Lap1 speed**: Points to the '3.05kmh' value.
- Stop speed**: Points to the '5.07kmh' value.

Bib Number (#)	Trial Number (Run)	Athlete Name	Lap1 speed	Stop speed	Running Time
3	1	Blau Tobias			2.6
2	1	Smith Kenneth	3.05kmh		11.8
1	1	Rossi Pierluigi		5.07kmh	21.3

Buttons at the bottom: Edit, Replace, Rankings, Options.


<p>At the beginning of the test, athlete #1 is ready to start (or the first of the Start List, if one has been set).</p> <p>If you want to force another bib number, just type it using the numerical keypad and confirm by pressing <OK>.</p>	
<p>If the photocells have not been configured in the test definition (see chap. 5.1.4), it must be done now. Press <F4> to access this option or other available options.</p>	
<p>Athlete #1 starts, his sector becomes green for 5 seconds and then scrolls down to get ready for the next athlete.</p>	
<p>Similarly, when number #3 starts, the first two athletes scroll down. If a LAP impulse is received, the sector of the athlete generating it turns yellow.</p>	

<p>When the athletes cross the finish line (stop impulse), the final time is showed in red for 5 seconds and then disappears to show the next athlete starting.</p>	 
<p>If an athlete passes the athlete in front of him, the athletes can be changed on the fly, while they are running, using the <up> and <down> arrow keys.</p> <p>For example, athlete #1 started before #2... after approx. 40 seconds, passing takes place and the impulses must be assigned to #2. Just press <down> to replace the athletes (press <up> to replace them again).</p>	 
<p>It is also possible to delete undesired events or consider an athlete as 'Not Arrived'; press <F1> Edit to access the following options:</p> <ul style="list-style-type: none"> <F1> Delete STArt <F2> Delete STOp <F3> Delete LAP <F4> NA (Not Arrived) 	
<p>Pressing one of the first 2 function keys, <u>the last</u> event of that type received (start or stop) is deleted. Confirmation is required and if you press Yes, the line status is reset to the previous status (if you delete a Start, the athlete is reset to the start, but if a Stop is deleted, his time starts running again).</p>	

<p>By pressing <F3> you can delete a Lap. You can choose to delete the last received Lap event or be more precise and indicate the Lap number and the athlete that it was assigned to.</p> <p>Press <F1> Delete Last to delete the last Lap (confirmation required)</p> <p>Press <F3> Delete Number and enter the Lap and Bib Number to delete a specific event (in the example Lap 1 of athlete #14 will be deleted).</p>	
<p>If you want to 'disqualify' an athlete (or consider him 'not arrived'), just press <F4> NA in the Edit sub menu. If there are several simultaneous athletes, you will need to confirm the one to be deleted. Using the keys F1 to F4 select the bib of the athlete to remove (in the example #2) .</p> <p>Instead of the arrival time the writing DNF (Did not finish) is displayed.</p>	
<p>The writing DNF is also displayed if in the Multistart test definition a maximum time has been set for finishing the execution and one of the athletes has exceeded that time.</p>	
<p>The times of two athletes can be replaced using <F2> Replace. Enter the bibs of the athletes we want to replace. All times of the first athlete (#10) will be assigned to the second one (#13).</p>	
<p>Press <F3> Rankings to view the ranking.</p>	

5.1.2.6 COUNTER 10X: TIMING OF A COUNTER TEST

The test starts when the first impulse is received and in the center the counter increases with every event. After 10 impulses (including start), the test is finished.

17:07:58		10Counter	
#	1	Rossi Pierluigi	
Trial: 1		Impulses: 10	
			
		8	
Time	9.2		
#	Time	Lap	Time
8	6.1	1.9	
7	4.2	1.2	
6	3.0	0.5	
New	Delete	Evt.	Rankings
Options			

The options available with keys <F1> to <F4> are similar to the ones for the Basic Test.

5.1.3 MY TESTS

In this screen you will find all customized test types defined by the user (directly on the timer or via the Witty Manager software).



The icon in front of the name indicates the test type (Basic, Multistart, Counter).

5.1.3.1 LOAD

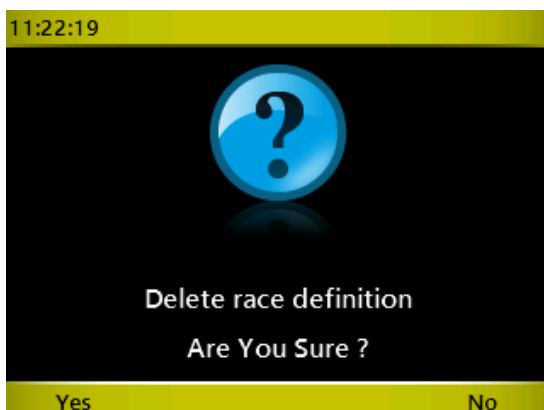
To begin a timing session of the desired type, select the line using the *<up>* and *<down>* arrow keys and press *<F1>* Load (or the *<OK>* key).

5.1.3.2 EDIT

Allows to display the general settings of the test type or edit the Options (configuration of lines, speed bases and, for multistart tests, photocell configuration). Editing of definition parameters is not available, because if trials of that type were already carried out, it would not be possible to compare them with the new ones.

5.1.3.3 DELETE

Delete the customized test type. Confirmation is required:



NB: Only the test definition is deleted; any possible trials of that type will NOT be deleted.

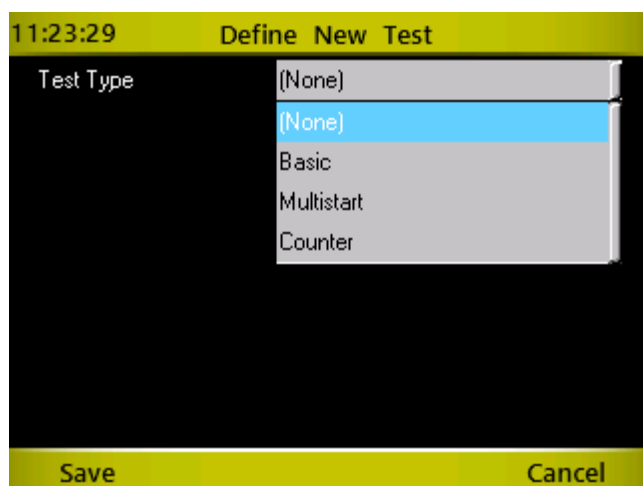
5.1.3.4 CANCEL

Exit the previous menu.

5.1.4 DEFINE NEW TEST

With this option new customized test types can be defined. Please refer to chap. 4 for further information on the various available test types and relevant options.

Choose the test macro type by pressing <OK> to open the dropdown menu, scroll up or down with <up> or <down>, and confirm with <OK>.



11:23:29 Define New Test

Test Type (None)

(None)

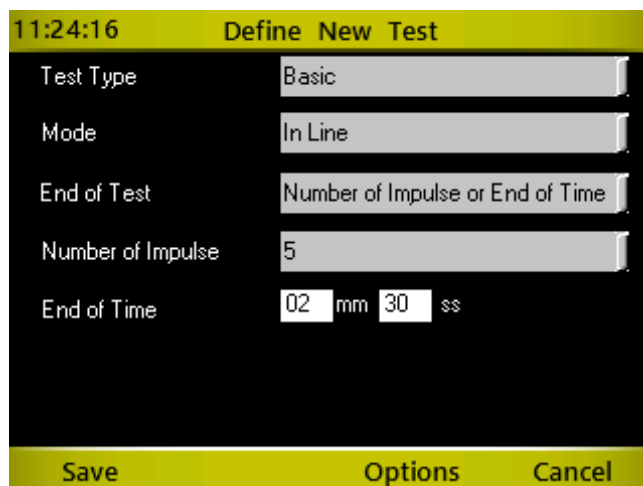
Basic

Multistart

Counter

Save Cancel

Depending on the chosen options, additional dropdown menus or numerical fields to be completed with the necessary information are displayed.



11:24:16 Define New Test

Test Type Basic

Mode In Line

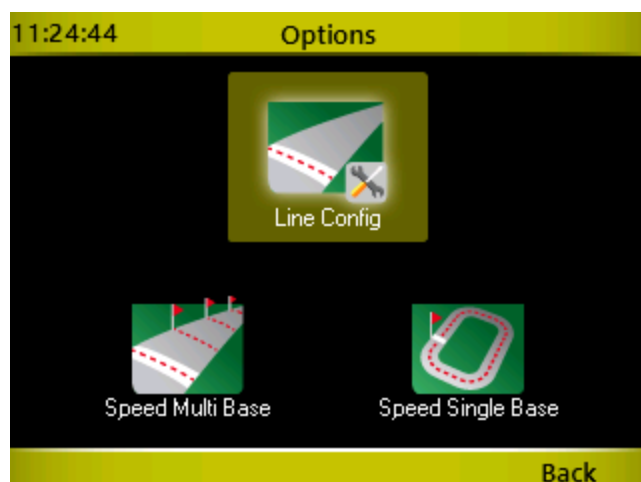
End of Test Number of Impulse or End of Time

Number of Impulse 5

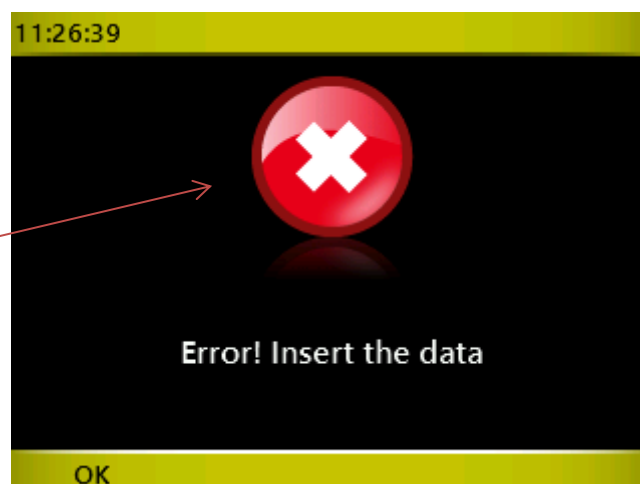
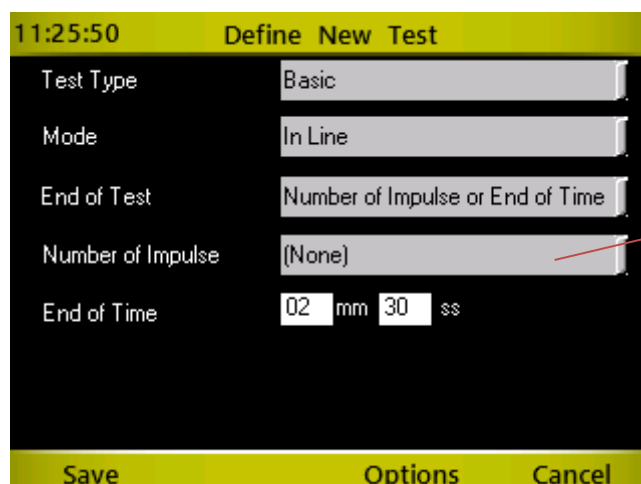
End of Time 02 mm 30 ss

Save Options Cancel

By pressing <F3> Options you can configure Lines and Speed Bases as explained in chap. 5.1.1.4. For MultiStart tests a menu item for configuring photocells will also be displayed.



Press <F4> Back to go back to the test definition.



Press <F1> to save the Test definition. A consistency check is carried out on the data and if any dropdown menu or field has not been filled, an error mask will warn the user. By pressing <F4> (after having confirmed) the screen is closed without saving.

If all fields have been completed correctly, after pressing Save the user will be asked to name the customized test definition.

A name such as MyTestTYPEnn is suggested. For example, MyTestBasic1, MyTestCounter2, etc.

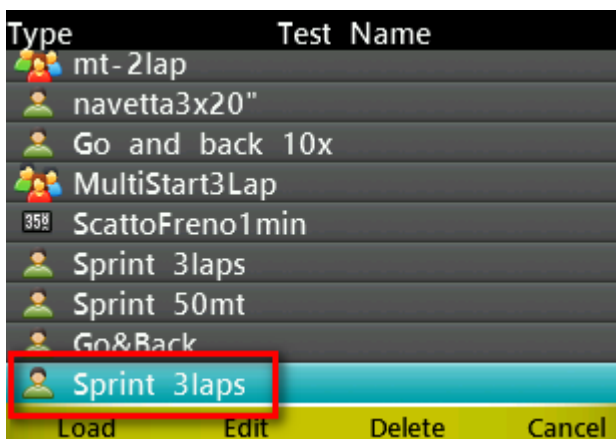
If the name is okay, confirm again by pressing <F1> Save, whereas if you want to change it to something easier to remember and more significant (recommended), use the virtual keyboard (remember that to make this easier it is possible to create definitions using the *Witty Manager* software and then transfer them via USB to the timer).

If you choose a name which has already been used in a previous test definition, the user will be prompted to choose another one (this happens also if you have deleted the previous definition but there are trials associated to that definition).

Please refer to chap. 2.4.1 for information on how to use the virtual keyboard.



After having saved the test with <F1>, it will be displayed with the same name in the list named 'My Test' (chap. 5.1.2).



5.2 RESULTS

This function allows to show the results of the tests carried out or to continue an interrupted trial.

11:32:47 Result List		
Type	Date-Time	Test Name
	24/10/12 10:32:12	navetta3x20"
	24/10/12 10:31:37	navetta3x20"
	24/10/12 10:30:59	MultiStart Start-St
	24/10/12 10:26:35	Simple Test
	23/10/12 17:53:02	Counter 10x
	23/10/12 17:50:54	Go & Back
	23/10/12 17:50:31	Sprint Start-Stop
	23/10/12 17:41:29	Simple Test
	23/10/12 17:36:36	Simple Test
Show Continue Sort/Filter Delete		

The data table displays 3 columns with the following:

- the test type (Basic, MultiStart, Counter)
- the date and time of the test start
- the test name (predefined or customized basic test)

Possible Options are:

5.2.1 SHOW

By selecting a test with the <up> or <down> arrow keys and pressing <F1>Show (or <OK>) you access the trial ranking. The available Options in the ranking are similar to those in the previous chapters.

5.2.2 CONTINUE

Access the timing screen of the selected test and continue the test from the last athlete ready to start (bib n+1, or the one selected from a start list, or the first athlete with trial number increased by 1).

5.2.3 SORT/FILTER

Select this option to access one of the two sub-options (<F1>Sort, <F2>Filter); press <F4> to go back to the previous menu.

Sort	Filter	Cancel
------	--------	--------

5.2.3.1 SORT

By selecting one of the three Options (<F1>By Type, <F2> By Date, <F3>By Name) the result list is sorted by the selected column.

By Type	By Date	By Name	Cancel
---------	---------	---------	--------

Sorting **by Type** the order is the following: Basic, MultiStart, and Counter.

By Date sorting is descending (most recent tests are at the top of the list).

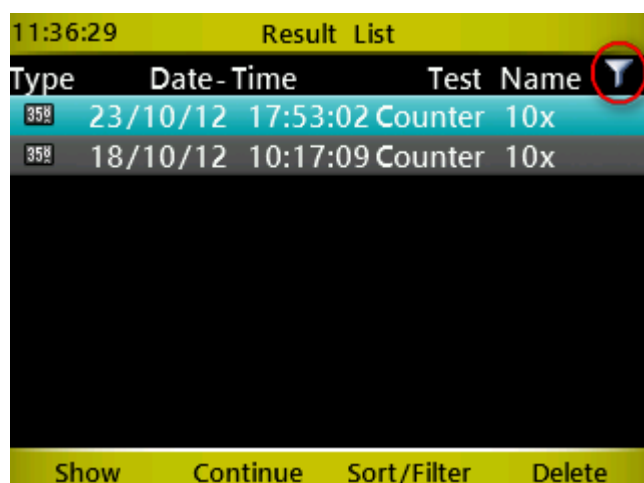
By Name sorting is alphabetical.

5.2.3.2 FILTER

In case of many tests it is possible to browse (filter) the list by test name or by date range (from... to...). The filter remains active even if you exit the main menu and then enter the Results item. To reset it and display all records, see chap. 5.2.3.3



An icon beside the column for which the list has been filtered (Test Name or Date) indicates that there is an active filter.



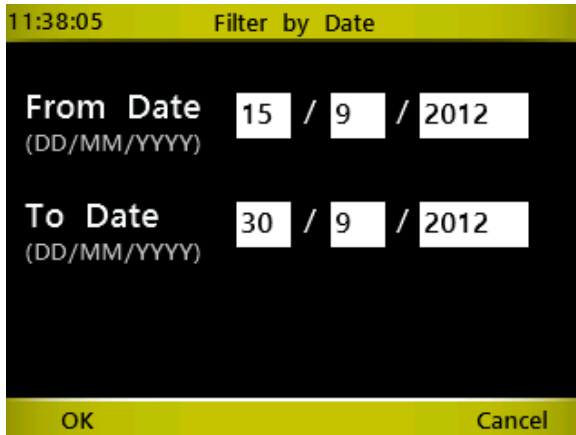
5.2.3.2.1 Filter by Name

A unique list of all present test names in the result list is displayed. Choose a name from the list by selecting it and pressing <F1> or <OK>. The Result List displays only the trials of that given type.



5.2.3.2.2 Filter by Date

Enter two dates (the second identical or subsequent to the first one) to find the trials carried out during that period of time. The filter is NOT cumulative (i.e. any filter by Name previously entered will be reset).



11:38:05 Filter by Date

From Date 15 / 9 / 2012
(DD/MM/YYYY)

To Date 30 / 9 / 2012
(DD/MM/YYYY)

OK Cancel

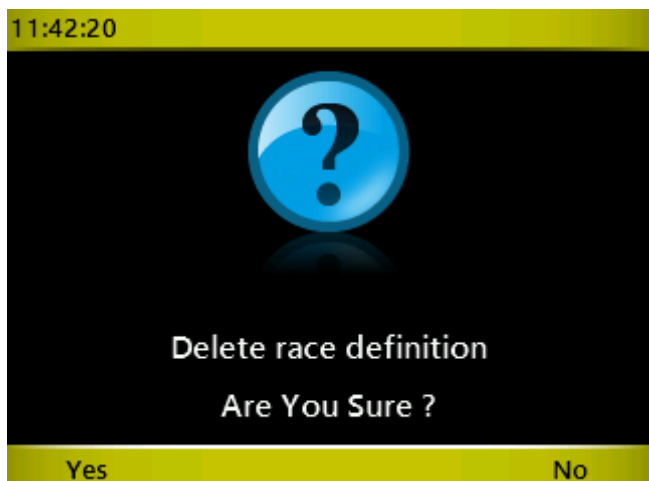
5.2.3.3 RESET FILTER

Resets all set filters and shows the complete result list.

5.2.4 DELETE

Deletes the selected trial. Confirmation is required.

WARNING: If the results have not been transferred to the PC via the *Witty Manager* software, the trial will be irreparably deleted and it will not be possible to recover it.



5.3 ATHLETES


If the athletes' personal data has been transferred via the Witty Manager software, this function allows to display them.

Accessing the Athlete List menu the list of available athletes with bib, name and birth date will be displayed.

11:42:49 Athlete List		
#	Name	Date
8	Adler Peter	05/04/1971
3	Blau Tobias	28/08/1973
15	Brunelle Nicolas	12/06/1973
9	Colombo Ennio	02/09/1973
11	Conti Aldo	30/10/1974
6	Espino Cesario	20/12/1975
7	Fierro Carlos	02/05/1972
14	Ford Ron	23/02/1969
10	Frost Edward	21/05/1972
View Sort Delete Cancel		

5.3.1 SHOW

Displays the athlete's personal data, including the picture and notes (if present). Press <F4> or <Microgate> to go back to the list.

11:43:19 Athlete	
First Name:	Pierluigi
Last Name:	Rossi
Birth Date:	22/01/1976
Gender:	M
	
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce fermentum aliquet ligula, in adipiscing orci semper nec. Ut nunc tortor, sodales id lobortis sed, euismod eu lacus.	
Cancel	

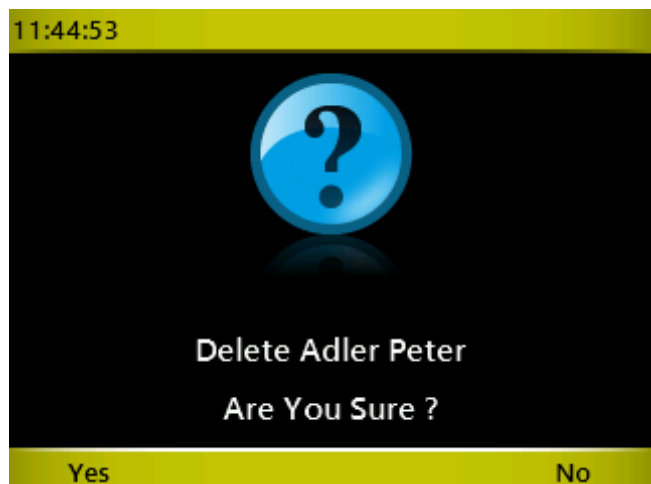
5.3.2 SORT

Press <F2> to display the various sorting options: <F1> = by name, <F2> by bib.

11:44:15 Athlete List		
#	Name	Date
1	Rossi Pierluigi	22/01/1976
2	Smith Kenneth	16/02/1974
3	Blau Tobias	28/08/1973
4	Kaufmann Erik	12/11/1976
5	Gamache Dominic	25/09/1972
6	Espino Cesario	20/12/1975
7	Fierro Carlos	02/05/1972
8	Adler Peter	05/04/1971
9	Colombo Ennio	02/09/1973
By Name By Bib Cancel		

5.3.3 DELETE

An athlete can be deleted from the list; therefore if his bib number is entered, it will not be associated to that name. Any tests that have already been carried out by that athlete are NOT deleted and will be associated to that name (i.e. the athlete's data is always written in the test, not only a link between the trial and the athlete is kept).

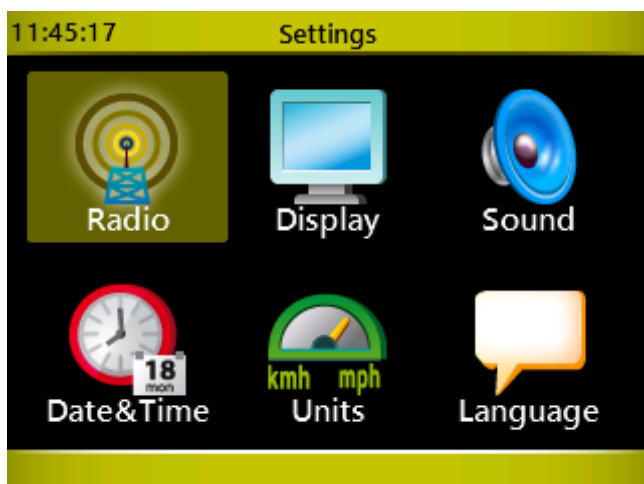


5.3.4 CANCEL

Go back to the main menu.

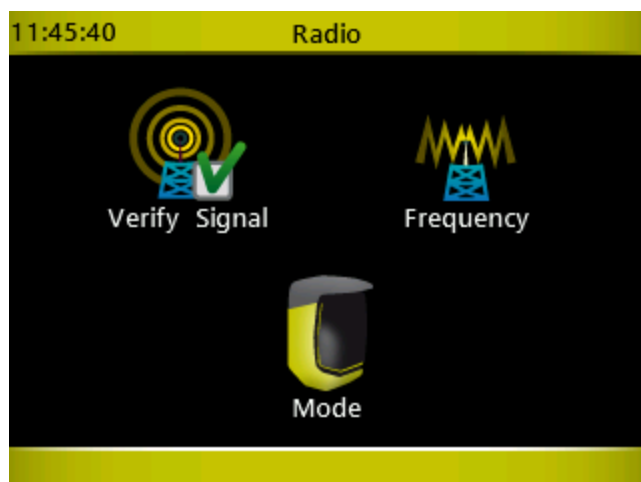
5.4 SETTINGS

This option allows to set and configure several parameters of the Witty system.



5.4.1 RADIO

In this section the wireless transmission between the Witty timer and the photocells is configured.



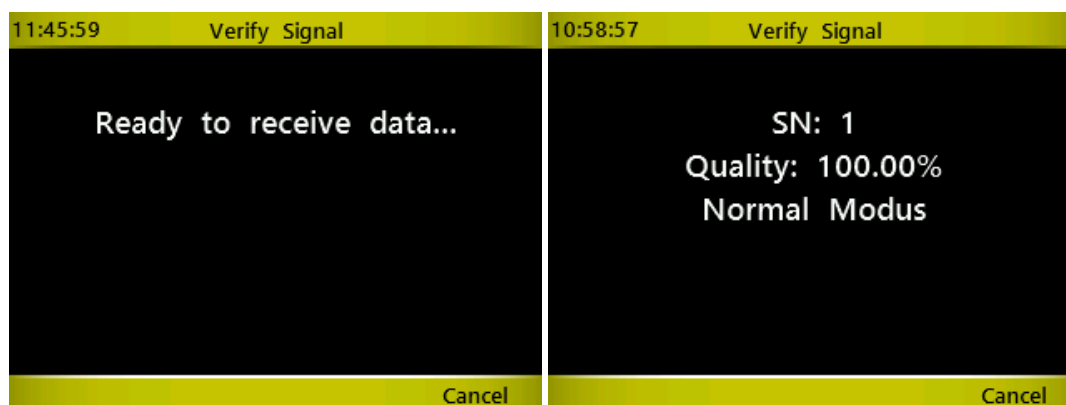
5.4.1.1 VERIFY SIGNAL

Once you enter the Verify Signal section, the timer awaits an impulse from the photocells.

Interrupt one photocell after the other with your hand to verify that they are functioning correctly.

After having received the impulse, the serial number of the photocell, the signal quality (100% = excellent), and the mode (*normal* or *strong*) to which it is set are displayed (see chap. 5.4.1.3).

If Witty does not display anything, it is possible that the transmission channel of the timer and the photocell differ. Please refer to chap. 5.4.1.2 to set the correct channel.

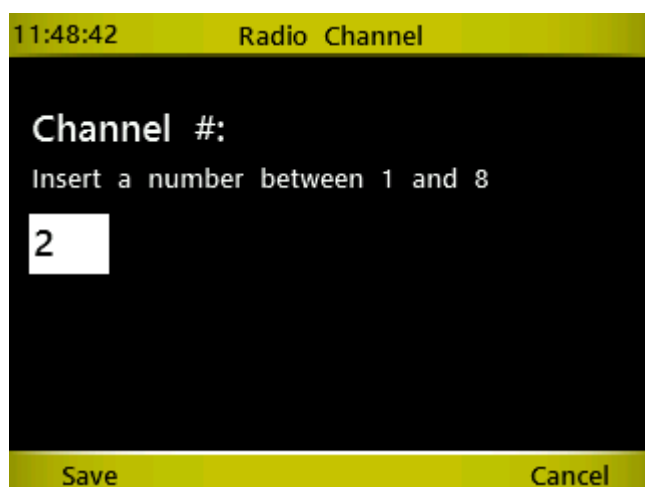


5.4.1.2 FREQUENCY

To prevent frequency collisions with other Witty Kits on the field, it is possible to change the transmission channel (of both the timer and photocells, which must of course have the same channel).

Put the n photocells that must be set into 'configuration mode': turn off the photocells and then press and hold the on/off button for 5 seconds (see chap. 2.2.2). When all photocells have a red blinking status LED, on the Witty timer enter the channel number using the numerical keypad (from 1 to 8) and press Save (*F1*).

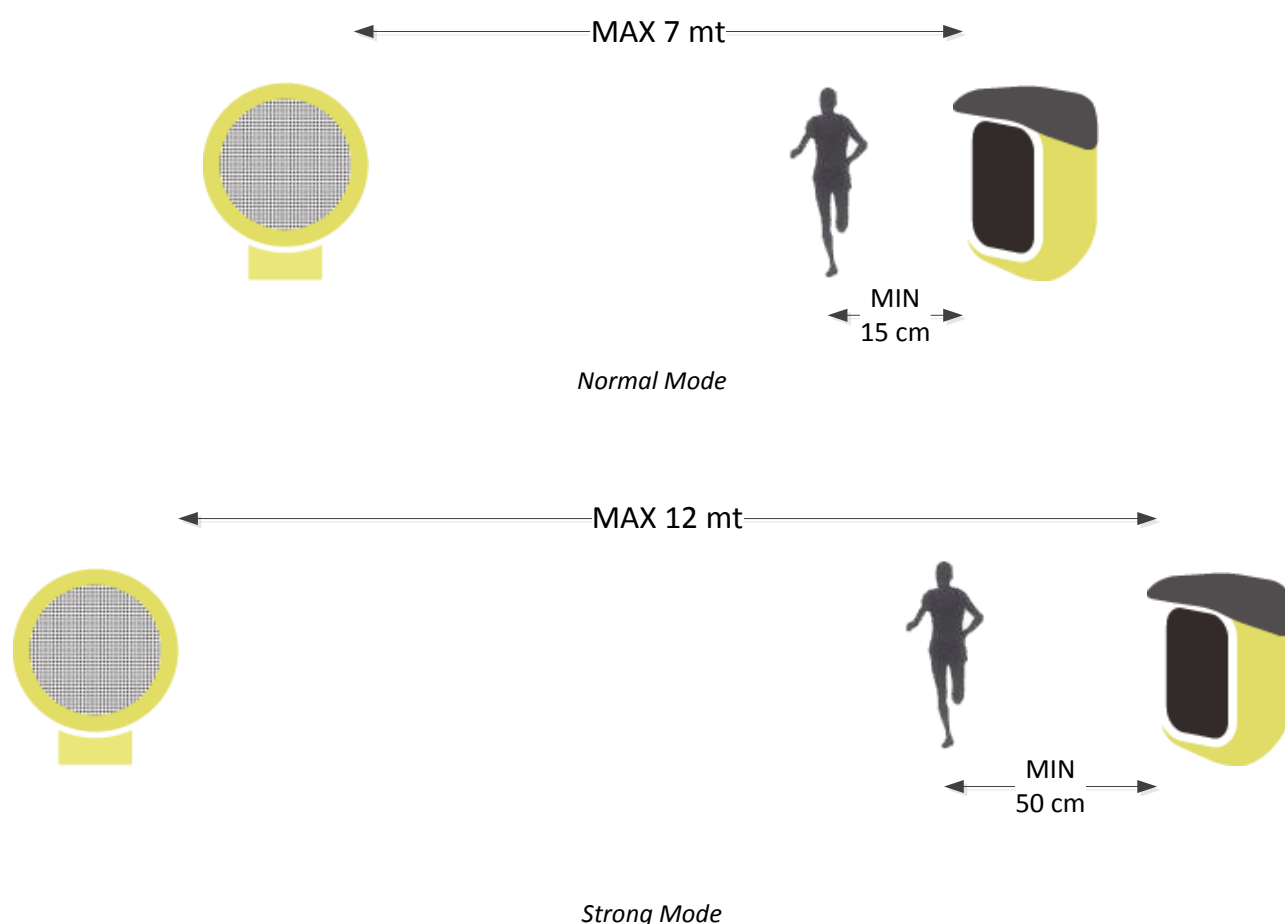
The photocells, which have just received the command, emit a two-tone beep, restart and are turned on in normal mode. Use the Verify Signal function (chap. 5.4.1.1) to ensure that the channels have been set correctly.



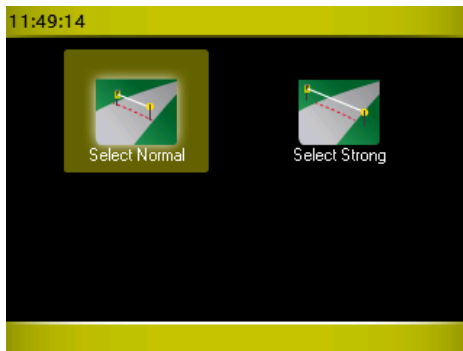
5.4.1.3 PHOTOCELL MODE

The photocells can be configured to function with two different modes depending on the minimum and maximum distance between them and the reflector. Depending on the position of the two tripods (e.g. outside the 8 lanes of an athletics track) and how close to the photocells the athletes will pass, the photocells can be set as follows:

In 'Normal' mode the maximum distance between photocell and reflector is 7 meters, whereas in 'Strong' mode it is 12 meters. The latter, though, does not record passages, if the athlete passes too close to the photocell (minimum distance of 50 cm).



To set one of the two modes, proceed as if changing the channel: put the photocells in configuration mode (when switched off press the On button and hold it for 5 seconds, see chap. 2.2.2), on the Witty timer choose one of the two modes and press *OK*. The same two-tone beep as before signals that the signal has been sent.



NB: When the mask is entered again, the cursor is still positioned on Normal Mode, even if Strong mode has been set.

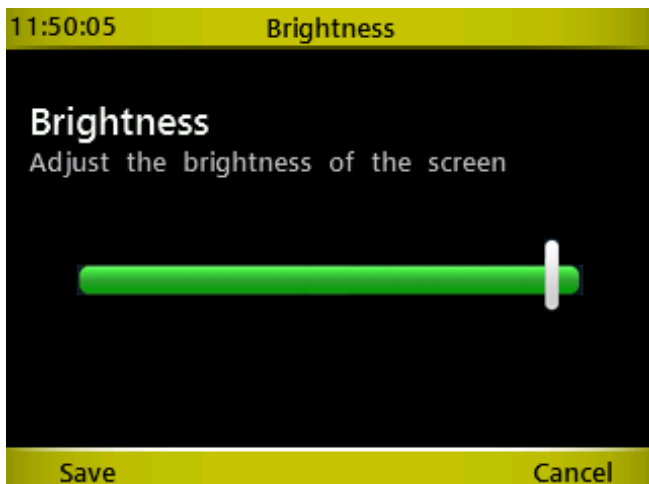
5.4.2 DISPLAY

Functions for setting the display brightness and its automatic reduction time.



5.4.2.1 BRIGHTNESS

Adjust the display brightness depending on the ambient conditions (e.g. in direct sun light it must be increased, whereas indoors it can be decreased to ensure longer battery life).



Press the right and left arrow keys to move the slider; press <F1> (Save) to confirm and exit. <F4> (Cancel) exits the function without changing the brightness configuration previously set.

5.4.2.2 SCREEN TIME-OUT

Set the time of inactivity after which the screen reduces its brightness to 5% (it is not turned off completely).

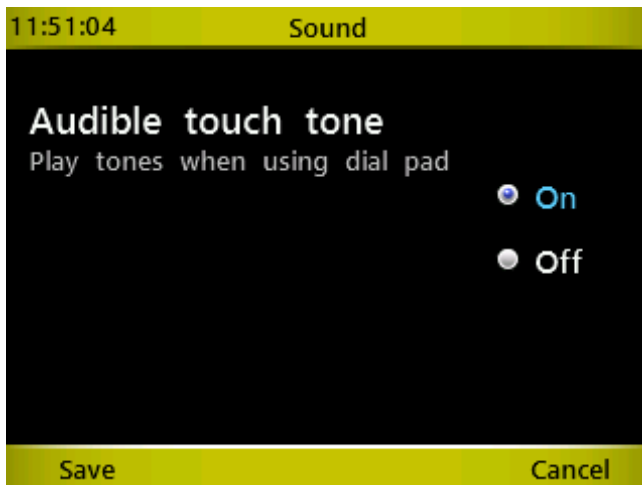


Using the up and down arrow keys choose an option and press <OK>. Press <F1> to save or <F4> to cancel.

After the set time (from the last operation carried out) has elapsed, the screen reduces its brightness to 5%. To reset it, press any key.

5.4.3 SOUND

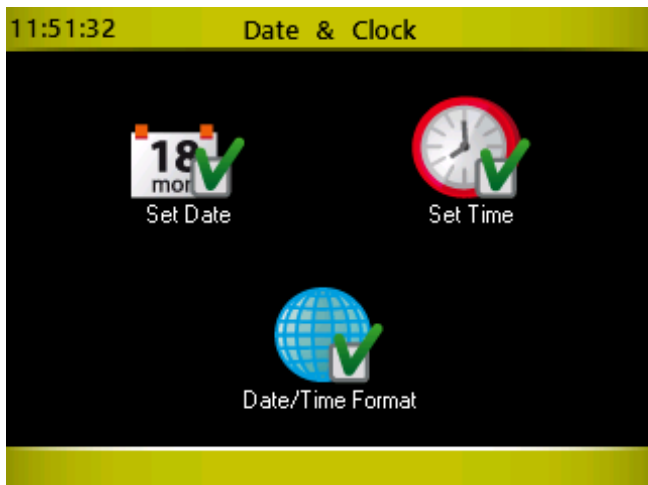
Enables or disables the beep tone emitted when pressing a key.



Using the *<up>* and *<down>* arrow key select one of the two options and press *<OK>*. Press *<F1>* to save or *<F4>* to cancel.

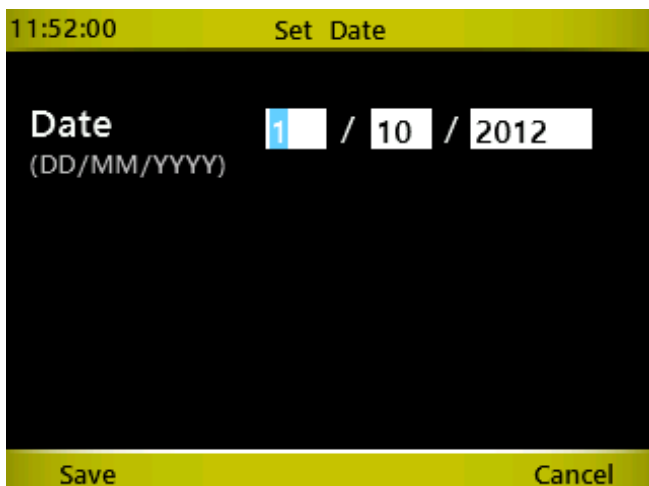
5.4.4 DATE & CLOCK

Functions for setting the Date, Time, and Format.

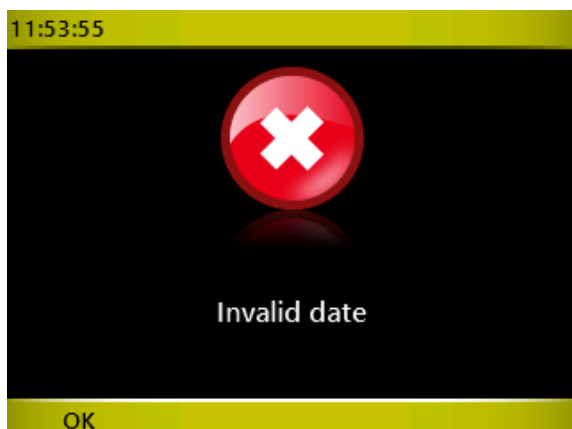


5.4.4.1 SET DATE

Enter Day, Month, and Year using the numerical keypad. Press <OK> to toggle between the fields. Press <F1> to save the data.

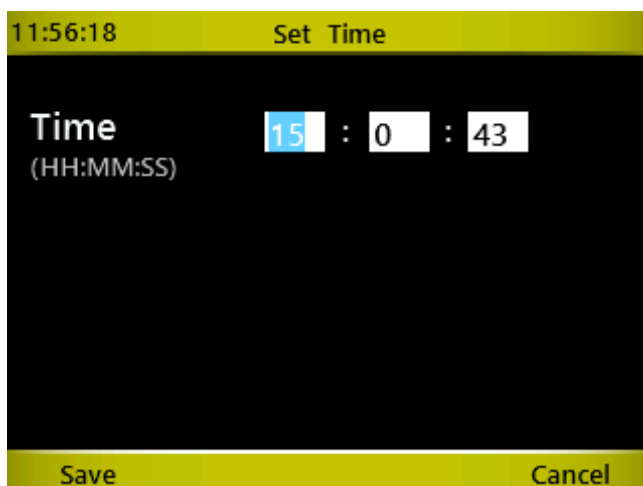


For dates containing incorrect values (e.g. day > 31 or month > 13) the user will be prompted with a relevant mask. Press <F1> to correct the invalid values.



5.4.4.2 SET TIME

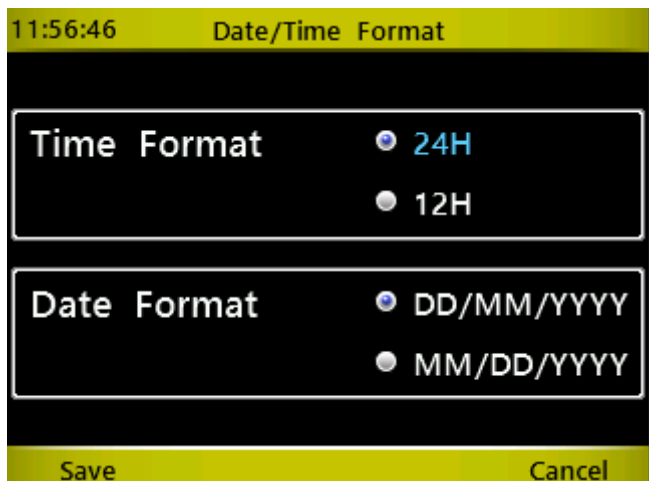
Enter Hours, Minutes, and Seconds using the numerical keypad. Press <OK> to toggle between the fields. Press <F1> to save the data.



For time containing incorrect values (e.g. hours > 24 or minutes > 60) the user will be prompted with a relevant mask. Press <F1> to correct the invalid values.

5.4.4.3 DATE/TIME FORMAT

Choose the Hour (24H/12H) and Date Format (international/American) using the <up> and <down> keys and confirm by pressing <F1> Save.



11:56:46 Date/Time Format

Time Format ☒ 24H
☐ 12H

Date Format ☒ DD/MM/YYYY
☐ MM/DD/YYYY

Save Cancel

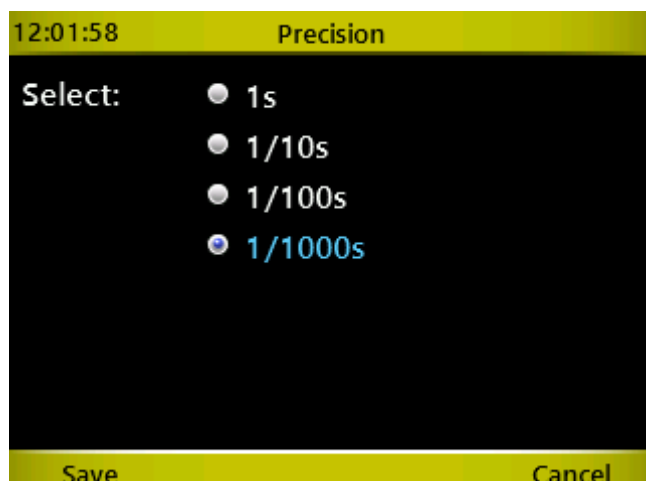
WARNING: this configuration sets only the viewing in Results. Setting of date and time on the timer, as explained in the chap. 5.4.4.1 and 5.4.4.2, is always in international format.

5.4.5.2 PRECISION

Choose the time displaying accuracy (seconds, tenths, hundredths, or thousandths) for timing, rankings, and result lists.

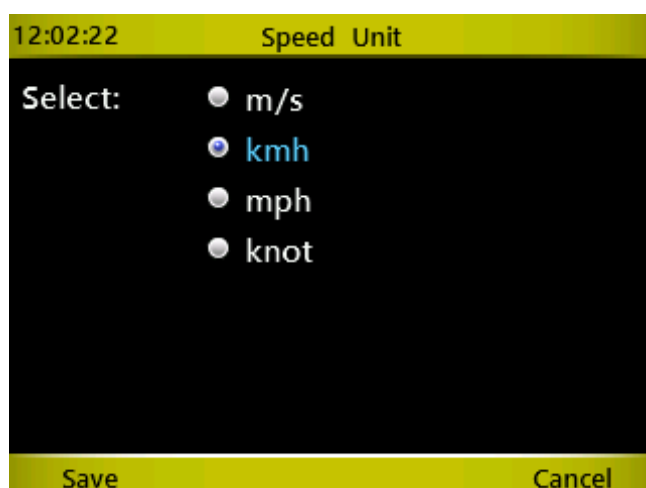
It is important to know that this configuration sets only the displaying of times, which are always calculated as accurately as possibly, regardless of the configuration (1/25000 seconds).

Similarly data exporting to PC via WittyManager software is also always carried out with the highest accuracy and will not be affected by this function.



5.4.5.3 SPEED

Enter the measurement unit (choosing between meters per second, km/h, miles/hour, and knots) for displaying the speeds, if the lengths have been entered in the relevant bases.



5.4.6 LANGUAGE

Select a language among the ones available to be used in the Witty timer user interface.



6 CONNECTING TO A PC VIA *WITTY MANAGER*

Witty Manager is a PC software for MS Windows (XP Sp3, Vista, Win7, Win8) for managing the trials timed with Witty, displaying rankings, graphs, histories, etc.

The main functions are:

- managing Athletes' Personal Data including pictures and divided into groups of categories
- managing the Start Lists
- creating Customized Test definitions
- downloading data from Witty and displaying Results in highly configurable tables and graphs
- updating the Witty and photocell firmware

For all details and user instructions, please refer to the User Manual of the software.



7 TECHNICAL DATA

7.1 WITTY TIMER

Weight	337g, battery included
Dimensions	214 x 100 x 36 mm
Operating temperature	0° C/+45°C
Unit of time measurement	Selectable 1 s – 1/10 s – 1/100 s – 1/1000s Selectable speed m/s – km/h – mph - knots
Measurement resolution	4 x 10 ⁻⁵ s (1/25000 s)
Display	Graphic color TFT display, visible area 59x44 mm, 320x 240 pixel, with backlight adjustment via software
Radio module	Multi-Frequency Transceiver 433-434MHz
Radio transmission	Digital FSK transmission; redundant code with information correctness verification and auto-correction
Radio frequencies	433.1125 MHz to 434.7375 MHz
Radio transmission power	10 mW
Processing unit	Two 32-bit microprocessors
Time base	12 quartz 8 MHz, stability ±10ppm between 0°C and +45°C
Power supply	Internal polymer lithium battery, external power supply 5VDC
Battery charging	Integrated intelligent charging device
Battery life	> 10 hours
Keypad	23-key membrane keyboard <ul style="list-style-type: none"> • Start-Stop keys • Numerical keypad • 4 function keys • 4 arrow keys and selection key • Home key • Key for line blocking
Connections	<ul style="list-style-type: none"> • MICRO USB type B connector for charging and connecting to a PC • Jack connector for external input

7.2 PHOTOCCELL

Weight	169g, battery included
Dimensions	75 x 103 x 48 mm
Operating temperature	0° C/+45°C
Minimum resolution	0.125 ms
Delay with respect to the event	1 ms
Optical range	12 m
Radio module	Multi-Frequency Transceiver 433-434MHz
Radio transmission	Digital FSK transmission; redundant code with information correctness verification and auto-correction
Radio frequencies	433.1125 MHz to 434.7375 MHz
Radio transmission power	10 mW
Impulse transmission accuracy	±0.4 ms
Radio transmission range	Approx. 150 meters
Processing unit	16-bit microprocessor
Time base	8 MHz quartz, stability ±30ppm between 0°C and +45°C
Power supply	Internal lithium ion battery, external power supply 5VDC
Battery charging	Integrated intelligent charging device
Battery life	> 10 hours
Connections	<ul style="list-style-type: none"> • MICRO USB type B connector for charging and connecting to a PC • Jack connector for external input connection or double photocells.

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The software and manuals are available in the following languages: Italian, English, German, French, Spanish.

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<http://www.microgate.it/Witty>