

Simple stopwatch Program

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1. Conventions:

In this manual the keys to be pressed are shown inside angled brackets. For example, press <**F1**> means the yellow key marked F1, while the options proposed by REI2 are indicated in bold type.

A time which is shown in *italics* on the display indicates that this time is running on the stopwatch.

An underlined figure indicates that the blinking cursor is in that position and the stopwatch is waiting for an input.

2. Starting

2.1. *Introduction:*

The best way to learn to use Microgate's REI2 stopwatch is to begin trying. Bear in mind that there is no sequence of keys which can damage your stopwatch. However, make sure you read this manual carefully before connecting any accessories.

This first section will guide you step by step through the management of a short athletics session with a 1,500 and a 100 meter race on track (400 m).

During this first time of use we will simulate the various stop and start impulses using the line keys. REI2 behaves in a similar way whether the impulse comes from the keyboard or from an external line.

Let's suppose that no displayboard is connected.

2.2. *Switching on and choosing the program:*

We start, of course, by switching on the stopwatch with the relative switch. For a moment the message ---SYSTEM BOOTING --- appears on the screen, and then some words of presentation and the version of the software installed.

If REI2's internal clock has not been synchronized, or has for some reason lost its synchronization, a message informs you of this (**The system has lost synchronization**). Similarly, a message appears if the data in the memory is no longer valid (**ATTENTION MEMORY NOT VALID**). Refer to the chap. **First switching on** of the **User manual** for the relative instructions.

The information about the software version is also shown on the printout. When this phase is over, the first menu appears.

Hh:mm:ss.d

```
A:New race
B:Delete/Retrieve stored race
C:Continue current race
D:Global memory deletion
  A      B      C      D      other
```

Let's select the **New race** option with <F1>. On the printout the choice we have just made will be shown, that is, NEW RACE, and REI asks us what type of race we are going to time.

Hh:mm:ss.d

```
Select the program:
A:Single starts
B:Group starts
C:Simple stopwatch
D:Parallel
  A      B      C      D      other
```

Pressing <F3> activates the **Simple stopwatch** program.

Hh:mm:ss.d

```
A:Delete previous configuration
B:Retain configuration of last race
  A      B
```

We select <F1> for **Delete previous configuration** and confirm our intention to delete the configuration with <F4>.

Hh:mm:ss.d

```
Select configuration
A:Athletics
B:Relay
C:Carving
D:Countdown
E:Motor Sport
  A      B      C      D      E
```

REI2 contains several recorded standard configurations for the various sports disciplines. Let's opt for **Athletics** with the <F1> key.

Hh:mm:ss.d

M 1

```
A:Timing
B:Rankings and other printouts
C:Synchronisation
D:Data Transmission to PC
  A      B      C      D      other
```

The choice we have made is shown on the printout again. Now we are ready to start the **Timing** session, which is done by pressing <F1> again.

From this moment on, the REI 2 display no longer operates in 'text' mode but switches to 'graphic' mode.

Let's pause for a moment to analyse in Figure 1 what now appears on the display.

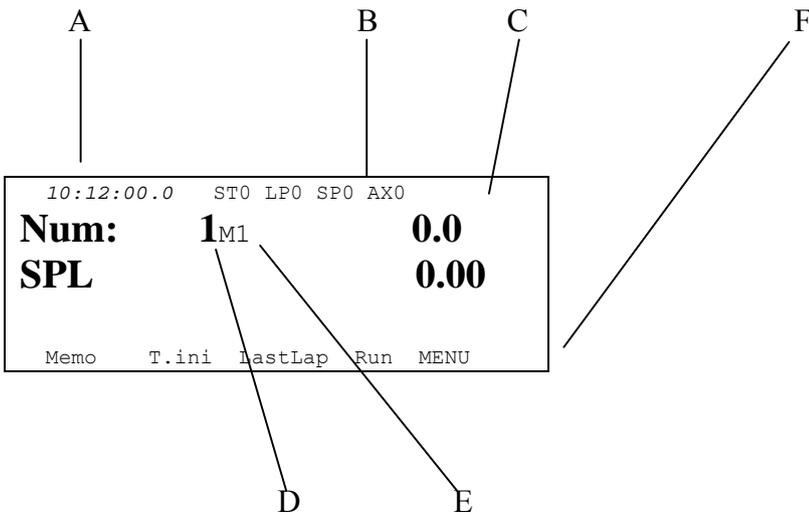


Figure 1

In the various positions we see:

- Running time of day
- Status of the lines
- Power status
- Identifying number
- Run number
- The options which can be activated with the function keys.

2.3. Timing

2.3.1. First race start:

We can now start our first race by pressing the <STA> key. On the printout the indication of the event is printed. As shown in Figure 2, on the graphic display new elements appear while others change, in particular:

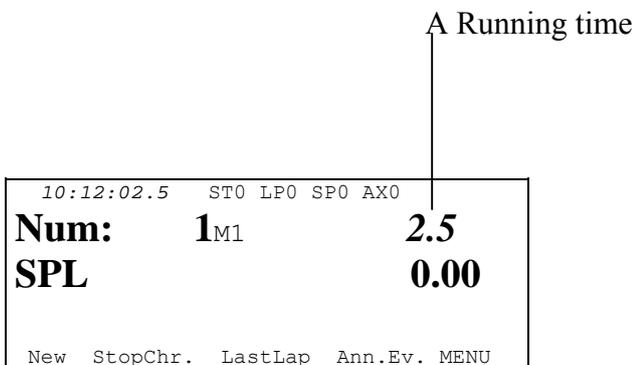


Figure 2

2.3.2. First lap:

To simulate the crossing of the finishing line after 300 metres, we press the <STO> key. On the display the time since the start of the race (split) and the lap time (lap) are shown. In this first time taking these are the same. The stop line is blocked for 40 seconds in order to take only the leader's time and the athletes coming after are ignored. So further <STO>s are ignored until the line becomes active again.

The display appears as below.

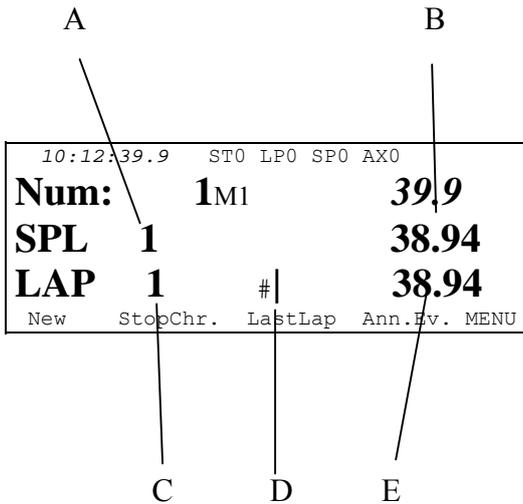


Figure 3

In the various positions we see:

- a) The Split number
- b) The Split time
- c) The Lap number
- d) Indication of 'logical' blocking of the line
- e) The Lap time

When line disactivation time (by default 40"), during which the block indicator bar grows smaller, finishes, the line is once again activated and the symbol # on the **LAP** line disappears.

2.3.3. Second lap.

When the stop line is reactivated, we can simulate completion of the second lap (700m), once again by pressing the <STO> key.

The display appears as below:

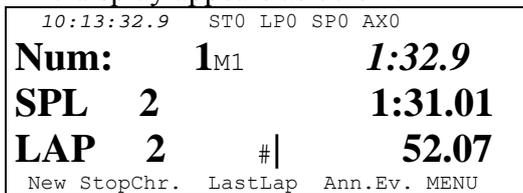


Figure 4

2.3.4. Thousand meters

To simulate the completion of a thousand meters, we press the <AUX> key. On the display only the **SPL** (split) time is shown. The **AUX** line is active even if the Stop line disactivation time is not yet completely finished.

Events acquired on the AUX line are not used for calculation of the Lap time.

As soon as the line is active again, we press <STO> to simulate the completion of 1100 meters.

2.3.5. Finish

We have seen that REI2 ignores all STOP events while the line is not active. If on the one hand this is useful for acquiring an event generated by the passing of the leader, on the other hand it would not allow us to take the times of the various athletes who reached the finish line after the first

To make this possible, we must indicate to REI2 that the event we want to acquire is the last lap. To do this we press the key <F3> **LastLap**. On the last line of the display the message **ATTENTION LAST LAP SELECTED** appears for a few seconds and on the printout the indication ******LAST **LAP ****** is printed. The first time the <STO> key is pressed, the same information we saw in the previous laps is shown on the display.

10:15:12.4			STO	LPO	SPO	AXO
Num:	1M1					3:12.4
SPL	4					3:12.25
LAP	4					49.23
New	StopChr.	LastLap	Ann.Ev.	MENU		

Figure 5

The next time the <STO> key is pressed, the Split time and the time separating the competitor from the first athlete to finish are shown.

10:15:12.6			STO	LPO	SPO	AXO
Num:	1M1					3:12.6
SPL	5					3:12.50
DST	2					0.23
New	StopChr.		Ann.Ev.	MENU		

Figure 6

By pressing the <STO> key a few times we can simulate other finishes and see them on the display.

10:15:12.7			STO	LPO	SPO	AXO
Num:	1M1					3:12.7
SPL	5					3:12.63
DST	3					0.36
New	StopChr.		Ann.Ev.	MENU		

Figure 7

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2.3.6. New race

Let's now prepare for the start of the second race.

We press the <F1> key for **New**. REI2 will ask us for confirmation with **Are you sure? Yes No**. We confirm with <F4> for **Yes**. At this point running time is set to zero and the event number moves up by one.

We immediately prepare the device to receive the finishes by pressing the <F3> **LastLap** key.

Pressing the <STA> key will start timing.

2.3.7. False start

The start just given must be annulled. To set the stopwatch to zero, we press the <F4> key for **Ann.Ev** and confirm with <F4> for **Yes**.

The count is set to zero and on the printout annulment of the event is indicated.

We reset to last lap with <F3> and press <STA> to start again.

To make the competitors finish we press the <STO> key a few times.

2.3.1. Quitting timing

Having finished our short race, we quit the timing function by pressing key <F5> to select the option **MENU**. The display has now returned to text mode.

3. Program characteristics

In the short race illustrated in ‘Starting’, we have used only a minimal part of the function features offered by the ‘Simple stopwatch’ program. In the following sections the various configuration possibilities and the various operations to be performed for particular events will be analysed.

REI2 stores all the events (start, intermediate, stop) and allows you to make all the modifications that may become necessary at any time, also of races/runs already finished. The values that depend on the modified events (net time, lap time, total times.....) are recalculated after each modification.

On the printout all the events recorded are shown with the indication of the type, number, run, channel type, channel and time and all the modifications made to them (annulments, variations, re-assignments...).

Firstly the functions available within the Timing function will be illustrated. Then the possibilities which can be accessed from the program menu will be illustrated.

The various choices possible, both as regards the various menus and options and the various modifiable values are assigned each time by the 5 function keys <F1> ...<F5>.

If not otherwise specified, times are taken with an accuracy of 1/25,000 of a second; they are printed and displayed with an accuracy of 1/10,000. All the calculations are made at 1/25,000 and then net times are rounded up or down as requested.

To meet special requirements, times can be taken and stored at lower levels of accuracy and adjusted to the same level required by the competition (e.g. relay races timed at 1/10).

It is possible to start a competitor in a run even if he/she has no time for previous runs.



The storage of all the events and the calculation of results when needed allows maximum flexibility of race management, such as the editing of events for previous runs, re-printing of the rankings of runs already completed, the simultaneous management of two or more runs or even starting competitors with their run order inverted.

This manual refers to version 1.07.9.

4. Timing

4.1. Functional context

The various functions are associated with the 5 function keys in different ways according to the events to be managed, the ‘virtual keyboard’ enabled and whether an operation on the ‘proprietary’ competitor number is necessary.

In the first sessions you are therefore advised to check the function associated with the different keys, which is always shown on the display, before pressing them.

Below are shown the various active functions within the various ‘statuses’ in which REI2 can operate during the timing session, and the section in which their use is described.

For the sake of simplicity functions in **Athletics, Relay races, Carving** and **Motor Sport** are described. This is followed by a description of functions in **Countdown** configuration.

Athletics, Relay race, Carving and **Motor Sport** configuration.

Statuses:

- **Normal:** there are no running times.
- **Running:** there are running times.

The active functions in ‘normal’ status are:

- **Memo** 4.4.1 Memo 16
- **T.ini** 4.4.2 T.ini 17
- **LastLap | NoLastLap** 4.4.4 LastLap | NoLastLap 18
- **Run** 4.4.3 Run 17
- **MENU** 4.10 Quitting timing 21

The active functions in ‘running’ status:

- **New** 4.4.5 New 18
- **StopChr** 4.4.6 StopCr. 18
 - **New** 4.4.5 New 18
 - **Return** 4.4.6 StopCr. 18
- **LastLap | NoLastLap** 4.4.4 LastLap | NoLastLap 18
- **Ann.Ev.** 4.4.7 Ann.Ev. 18
- **MENU** 4.10 Quitting timing 21

Countdown configuration

Statuses:

- **Normal:** there are no running times.
- **Running:** there are running times.

The active functions in ‘normal’ status are:

- **New**4.6.1 New 19
- **T.ini** 4.6.2 T.Ini 19
- **Cyclical | Single**.....4.6.4 Cyclical | Single 19
- **MENU** 4.10 Quitting timing 21

The active functions in ‘running’ status:

- **New**4.6.1 New 19
- **AnnStop** 4.6.3 AnnStop 19
- **Cyclical |Single**4.6.4 Cyclical | Single 19
- **MENU** 4.10 Quitting timing 21

4.2. Start of session

To begin a timing session (race), after you have chosen the option for the race a request appears asking you to select the program required.

This manual illustrates the functioning of the ‘Simple stopwatch’ program, so press key <F1> for **Simple stopwatch**.

If a previously used configuration is stored and you intend to use it (automatisms, truncations, holdoff times...), press <F2> for **Retain configuration of last race**.

If, on the other hand, you wish to change the configuration used, press <F1> for **Delete previous configuration**. To confirm that you wish to annul the set configuration, press <F4> for **Yes** and the function key corresponding to the new configuration to be used; in case of error, press <F5> for **No**.

Then to activate the session, press <F1> for **Timing**.

4.3. Race (Athletics, Relay, Carving, Motor Sport)

4.3.1. Starts

Before the start it is possible to set a race number by keying it in and confirming by pressing <ENT>. If a mistake is made, pressing the <ESC> key deletes the first number on the left, while keeping the <ESC> key pressed down (for more than a second) restores the number to the original value. The number is automatically moved up by one from one race to the next and can have a number from 1 to 59999.

When you receive a start impulse, you should consider the race as started.

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If there is a false start, it is possible to annul it by pressing the <F4> **Ann.Ev.** key and confirming with <F4> **Yes** in answer to the request **Are you sure?**

Running time can start from any positive or negative value. This value can be set by the user with the function 4.4.2 T.ini described on p.17.

You are asked if you want to manage or eliminate any Start events received before the stopwatch has been set to zero. To eliminate them press <F1> **Eliminate**, to manage them press <F2> for **Manage** and confirm the operation with <F4> **Yes**. In this way REI2 considers the race in progress terminated and starts again with a new race beginning with the Start received.

4.3.2. Transit

In Simple stopwatch, both transit and finish are connected to the STOP line. There is therefore no 'physical' difference between a LAP and a STOP but management is made logically on the basis of the activated mode (LastLap or NoLastLap). When a transit is received (and therefore a STOP in **NoLastLap** mode), REI2 disables the reception of other events on the STOP line for a time which can be set by the user with the function 8.1.3 LAP disactivation time see p.32.

Normally the **START** line is set for start event management only. By selecting the START configuration as a STOP event (see chap. 8.1.11 START like STOP event on p.33) as well as for the race start, it can likewise be used on the **STOP** line.

As well as crossings of the finish line, transits can be acquired on the AUX line. These transits, typically used for transits to be acquired at points other than the finishing line (e.g. 1000m in the 1500m) are not timed and are not used for the calculation of lap time. If the time count is positive, an event on the **LAP** line also causes it to be printed and a net time to be sent on the serial. This function is suitable for counting the number of times the finish line is crossed in athletics. The event acquired is subsequently annulled.

4.3.3. Reset.

If counting has been made to start from a negative value, as for example in carving competitions, it is possible to set the countdown part of the count to zero with a LAP impulse.

4.3.4. Finishes

As mentioned above, REI2 considers events acquired on the STOP line in **LastLap** mode as finishes. Unlike transits in which the line remains disabled for a certain period, during finishes there is no disactivation time and all the events are acquired. As well as printing the split time of all the competitors and the lap time of the first, REI2 calculates and prints the time separating the first competitor detected at the finish from the competitors coming after, indicating it as time lag.

4.4. *Functions (Athletics, Relay, Carving, Motor Sport)*

4.4.1. Memo

This function allows you to look at and reprint previously acquired races. On the display the same information which was shown when the retrieved event was acquired appears.

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The letters **F N S** on the first graphic line indicate that the information shown is for a finish (acquired in **LastLap** mode).

The enabled function keys are:

- **<Arrow up >**: Runs forward through the various races in the order in which they were made.
- **<Arrow down>**: Runs through the races in reverse order.
- **<F1> ←**: Runs backwards in reverse chronological order through the events of each race. After reaching the first event of a race, it goes back to the last event of the previous race.
- **<F2> →**: Runs through the events of each race in chronological order. After reaching the last event of a race it goes on to the first event of the next race.
- **<F3> Search**: Allows you to rapidly find the race you want. When the key is pressed, the cursor places itself next to the number and, after this has been inserted and confirmed, next to the run number. If the race searched for is not present, an error message is shown on the last line for a few seconds.
- **<F4> Print**: Gives a complete printout of the race selected.
- **<F5> Quit**: Returns to the timing function.

Attention: During use of this function, acquired events are ignored.

4.4.2. T.ini

With this function the value from which REI2 must begin to count time is set. This value, positive or negative, lies between 0 and 23^h 59' 59" 9999^{10.000}.

When you enter the function, either the last value inserted or, if no value was previously inserted, the default value, is proposed and the device sets itself up for insertion in the hours field.

To confirm each individual value (hours, minutes, ...) press **<ENT>**. When the value of the decimal part has been inserted and confirmed, you can specify if counting must take place upwards **<F1> Upwards** or downwards **<F3> Downwards**. In the latter case the symbol – appears next to the value set.

4.4.3. Run

If a competitor has to repeat the race, this can be done by leaving the race number unchanged and setting the run number.

The run times of the same competitor are NOT added together and no check is made on the number. Their only purpose is to distinguish between the various races which have the same race number.

When a run number has been set, this remains active also for numbers which have not made the previous run.

If the number of a run already made is set for a competitor number, an attention warning appears which indicates the competitor number and run. The possible options are: **<F1> Delete** to delete the data of the previous run; **<F3> Continue** to resume timing of the previous race in **Last Lap** mode; **<F5> Quit** to quit if an error has been made.

This function is not available in **Countdown** configuration.

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4.4.4. LastLap | NoLastLap

Each time the <F3> function key is pressed, one of the two alternatives **NoLastLap** to deactivate the finish functions and **LastLap** to activate the finish functions is proposed.

Activation of the finish function is indicated on the printout with the message ******LAST **LAP******, while deactivation is shown with **Ann. selection LastLap**. For details of the functioning of the two function modes see 4.3.2 Transit on p.16 and 4.3.4 Finishes on p.16.

4.4.5. New

This function sets the time count to zero and sets up REI2 for a new event acquisition. This function cannot be annulled so REI2 asks for confirmation of your intention to set to zero. To confirm that you intend to set to zero press <F4> for **Yes**, alternatively press <F5> for **No**.

4.4.6. StopCr.

This function ‘freezes’ the time count and the sensitivity of the lines, except the **Start** line. When it has been activated, REI2 ignores any events which may be acquired and sets the value shown on the display and displayboards to zero. There are two possible ways of quitting this status: **New** and **Reconnect**.

If any finishes have been taken (STOP with LastLap) the time of the first finisher is displayed. Otherwise the last event taken is shown.

The enabled function keys are:

- <F1> **New**: Sets the stopwatch to zero in exactly the same way as function 4.4.5 New described on p.18.
- <F2> **Reconnect**: Reconnects running time on the display and displayboards to the internal clock as if it had never been stopped.

If a START event is taken when this function is activated, running time is resumed starting from the value shown on the display, whether this is an intermediate time or the time of the first finisher. The time passed between the displayed event and the START impulse taken is printed on the printed strip.

4.4.7. Ann.Ev.

This function annuls the last event acquired, whatever it is, indicating this on both the printout and the display. Each time the <F4> key is pressed, the most recent event still valid is annulled. Confirmation is requested in the case of annulment of a START impulse. No confirmation is requested for the annulment of events which are not START.

4.5. **Race (Countdown)**

The configuration **Countdown** is immediately recognizable by the indication of the letters **Cntdwn** on the first graphic line of the display.

Race numbers cannot be inserted in this configuration.

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4.5.1. Start

The Start event sets the countdown running from the value previously set with the function 4.6.2 T.Ini (p.19).

A START impulse received after a STOP restarts countdown from where it was previously stopped.

When the value 0 is reached, REI2 emits a beep and prepares itself to receive a new START.

4.5.2. Reset

The reception of a LAP or AUX impulse resets the countdown with the count value being reset to the value set as the start value. The value the countdown had at the moment the impulse was received is printed on the printout with the indication **Reset**. LAP and AUX events cannot be annulled.

4.5.3. Suspension

A STOP suspends the countdown in progress. On the printout the value of the countdown when the STOP (**SPLIT**) was received and the time which has passed since the last STOP managed (**LAP**) are printed. The same information is shown on the display. Unlike LAP and AUX events, STOP does not set the count to zero but freezes it. A START impulse restarts the count from where it was interrupted. The STOP event can be annulled with the <F2> **AnnStop** function.

4.6. *Functions (Countdown)*

4.6.1. New

This function sets the time count to zero and sets up REI2 for a new event acquisition. This function cannot be annulled so REI2 asks for confirmation of your intention to set to zero. To confirm you intend to set to zero press <F4> for **Yes**, alternatively press <F5> for **No**.

4.6.2. T.Ini

With this function the value from which REI2 must begin to count time is set. This value, positive or negative, lies between 0 and 23^h 59' 59" 9999^{10.000}.

When you enter the function, either the last value inserted or, if no value was previously inserted, the default value, is proposed and the device sets itself up for the insertion of hours.

To confirm each individual value (hours, minutes, ...) press <ENT>.

4.6.3. AnnStop

This function annuls the STOP event acquired, showing it on the printout, and reconnects both the display and the displayboard to the countdown in progress before the STOP event. Confirmation of annulment is not requested.

4.6.4. Cyclical | Single

Each time the key is pressed, one of the two countdown modes **Cyclical** or **Single** is activated.

In **Single** mode the stopwatch does not automatically restart the count when 0 is reached but only repropose the initial value and waits for a **START**.

In **Cyclical** mode REI2 automatically restarts the count when zero is reached.

4.7. *Displayboard management*

REI2's management of the displayboard/displayboards is very sophisticated. The configuration potentialities of the displayboards installed are explained in the section Displayboard configuration on p. 36.

If the frequency of acquisition of the events to be displayed is too rapid to allow easy reading, REI2 delays data display for a time preset in the configuration.

If the number of events still to be displayed exceeds 4, display time is halved until 4 or fewer events remain to be displayed.

4.8. **Lock keys**

The two **<LCK>** keys have similar function features. The only difference is that, while the **<LCK>** key over the **<Stop>** button operates only on the **STOP** line, the key over the **<Start>** key can be configured in whatever way the user likes (see the section Line exclusion configuration on p. 45).

The last five impulses acquired on the lines placed in lock status are nevertheless stored.

Pressing a second time on the **LCK** key reactivates the line (and turns off the relative led). At this point, if at least one event has been acquired, the message '**Annull.nn events xxx ? Yes No**' appears on the last line of the display, where **nn** is the number of events acquired and **xxx** is their type. Reply **Yes** with **<F4>** to irreversibly eliminate the acquired events. Reply **No** to operate one at a time on the events in question, deciding whether to annul them or manage them.

If necessary, it is possible to reactivate the lock, once again with the **<LCK>** key, without losing any events. The next time the **<LCK>** key is pressed, you are offered the chance of managing both the events acquired in the previous lock phase and those in this one.



Note that the lock keys act on all the inputs (line, LinkPod ©, radio) assigned to the blocked logical channel but have no effect on the line keys.

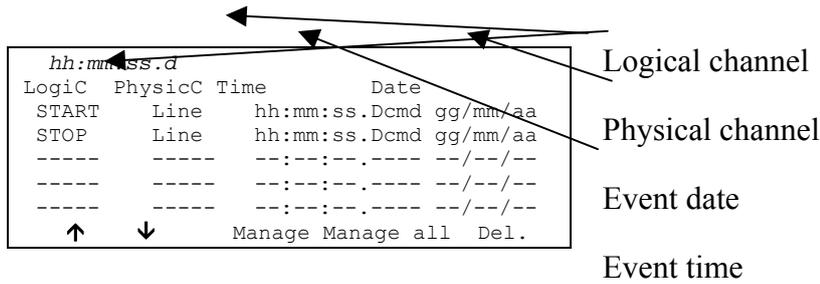


The last event discarded can be retrieved by pressing the key **<START/STOP>** and then by pressing the key **<F4>** in reply to the question '**Manage XXX Sure? Yes No**'. Alternatively the last 5 discarded events can be displayed and/or managed by pressing **<Start/stop>+<ALT>**.

The key **<LCK>** over the **<Start>** key also operates on the **STOP** line..

4.8.1. Discarded events management

This function allows you to retrieve or delete the last 5 events discarded because of the line block.



Options available:

- <F1> ↑ to scroll up the list of the 5 choices available
- <F2> ↓ to scroll down the list of the 5 choices available
- <F3> **Manage** manages the event selected and quits automatically
- <F4> **Manage all** manages all the events proceeding from the bottom to the top and quits automatically
- <F5> **Del.** to delete the event from the list
- <ESC> to quit the management of discarded events menu.



If you choose to manage or delete an event, this is removed from the list of discarded events.



If other events are discarded while you are operating inside this menu, the list is updated only when you quit.

4.9. Holdoff time disactivation keys

The two <Rearm> keys have similar function features. The only difference is that, while the <Rearm> key over the <Stop> button operates only on the stop line, the key over the <Start> key can be configured in whatever way the user likes (see the Line exclusion configuration on p. 45).

Pressing the key once annuls the waiting time set for the lines on which it is configured. In this way REI2 can be set up to receive impulses without waiting for the end of the holdoff time set (see section 10.2 Line disactivation times on p. 44). Annulment of holdoff time, shown by the blinking of the led on the key, remains active until the <Rearm> key is pressed again. Of course, the key has no effect on the holdoff times set on the peripherals (e.g. Polifemo cell).

4.10. Quitting timing

To return to the competition menu at the end of the timing session press the <F5> key for **MENU**.

It is possible to quit the timing menu, make changes and return to timing also during the race. Of course, all the data are retained.

If some events, for example a STOP, are acquired when you return to the timing function, the message **'Some events have been acquired. Do you want the events acquired to be deleted?'** appears. To cancel the stored events press the <F1> key and then confirm the decision to delete with the <F4> key for **Yes**. If you press <F2> you will return to timing, with the events ready to be managed.

4.11. *Printout of time events*

REI2 makes a printout of all the events, results and operations made. When there is a START, a few lines of information about the race in progress are printed, as in the example below for the first run of race (or competitor) number 123.

```
N 123
Run N.1
```

Other 'informative' notes concern activation of the last lap and its disactivation.

```
****LAST**LAP****
Ann. Selection LastLap
```

Or the annullmentof an acquired event.

```
Event annulled !
```

For each intermediate or final impulse acquired, two or more lines containing the values of the result obtained are printed.

Let's look in detail:

A	B	C	D	E
		/	/	/
N 1				
SLM	4		9.15	
LAP	4		2.65	
Vsp1	= 39.34 Km/h			
Vlap	= 135.84 Km/h			

A: letter N for number

B: Consecutive number of finish impulse

C: Type of result; this can have one of the following values:

- **SLM** split time
- **LAP** lap time
- **DIST** time behind the first finisher
- **RESET** countdown set to zero
- **Vspl** speed value calculated on split
- **Vlap** average race speed value

D Consecutive result number of same type (consecutive Lap, consecutive finish...).

E: Value of result obtained and possibly unit of measurement used if this is not in hours, minutes, seconds and fractions (e.g. m/s → meters a second)

5. Rankings and other printouts

5.1. Printing/Display of rankings

This function offers a wide range of choice for the data to be shown on the display or the ranking printout.

The following options are always available:

- <ESC> to quit this choice
- <ENT> to show the list on the display
- <ALT>+<ENT> to print the selected ranking.
- <F3> Run, to set the run number to refer to
- <F4> Group, to select the group whose ranking is required (0 for all the athletes inserted).

Each time the <F1> **Ranking** key is pressed, a different ranking type is proposed.

The functioning of the <F2> and <F5> keys changes according to the choice made with <F1>. The following table summarises the various combinations possible:

<F1> value	<F2> options	<F5> options	Notes
Finish times	Total times	---	Ranking calculated on the total time of runs
Finish times	Run times	---	Ranking of the run set
Intermediate times	LAP	Intermediate number	----
Intermediate times	SPLIT run	Intermediate number	----
Intermediate times	Total of SPLITS	Intermediate number	----
Speed	Average speeds	Base	----
Speed	Radio speed	Base	----

If you decide to consult the ranking on the display, you can run through the whole list or search for a specific competitor number at a specific position in the ranking.

Options available:

- <ESC> to return to the choice of time limits
- <F1> to scroll one event back on the list
- <F1> when pressed for over 2 seconds, scrolls quickly back up the list
- <F2> to scroll one event down

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- <F2> when pressed for over 2 seconds, scrolls quickly down
- <F3> allows you to specify the competitor whose position you want to find
- <F4> allows you to specify the position for which you want to find the competitor, for example, to look for the 15th in the ranking
- <F5> to return to the previous menu.

5.2. *Other printouts*

This function is not available in the current version of this software.

5.3. *Printout and Visualization mode*

This function allows you to set a few preferences concerning what you wish to print.

The options available are:

- <F1> **Data visualization:** each press alternates between **Complete** and **Selection**. If the choice **Selection** is activated, only the times considered for the ranking calculation are shown on the display. If the choice **Complete** is activated, also those times which are of no significance for the ranking displayed are presented
- <F2> **Print gap:** each press alternates between **Disabled** and **Enabled**. If enabled, the time lag from the first athlete in the rankings is printed
- <F3> **Sort same time:** Each press switches between **Start order** and **Start order reversed**. In the first case, that is, according to start order, if two competitors have the same time, the first to have started wins (e.g. Nordic ski). In the second case, the second to have started wins (e.g. Alpine ski). So the calculation is not based on the competitor number but on the start time. The competitor number is only considered if two or more competitors start at the same moment.
- <F4> **Send printout on serial:** each pressing of the key changes the serial port on which to send a copy of the printed data. The possible alternatives are **NOTHING**, **SERIAL A**, **SERIAL B**, **ALL**. The data are printed in the same format in which they are sent. Empty lines are not always sent.

(other...)

- <F1> **Take previous laps:** this function is suitable for relay races or races in which the competitors must run more than one lap. If enabled, also those athletes who have not completed the full number of laps appear in the rankings on printouts and displayboards together with the number of laps by which they are behind.
- <F2> **Max athlete in rank.:** makes it possible to set the maximum number of competitors who must appear in the ranking. To include all the competitors, set to **0**
- <F3> **Printout competitors' name:** each press alternates between **Disabled** and **Enabled**. If enabled, the competitor's name is printed in the rankings
- <F4> **Printout competitors' nation:** each press alternates between **Disabled** and **Enabled**. If enabled, the competitor's nation is printed in the rankings.

5.4. *Print/Show climatic data*

This function is for managing the Microgate climatic sensor, the light sensor and the wind gauge. The climatic sensor measures the temperature and humidity of the air and the snow temperature. The wind gauge takes the direction and speed of the wind in the area. The light sensor gives the intensity of light as a percentage. For information about the use of the sensors, the wind gauge and the relative consult the relative manual.

5.4.1. View current climatic data

This function continuously reads the climatic sensor and shows the data taken on the display. It also shows the data taken when the various competitors finish if activated with the function 5.4.3 Print climatic data: (p.26)

Hh:mm:ss.d		
Current Air temp. =	-10,2 C	← Current climatic data
Current Snow temp.=	-13,5 C	
Current Air humid.=	35 %RU	
Store data	Air temp. =-11,5 C	← Climatic data measured at the moment the competitor finishes
Number 7	Snow temp =-13.7 C	
Run 1	Air humid.= 37 %RU	
↑ ↓	Print Rep:--:--:--	← Competitor number and run for which the data have been taken
	quit	

Options available:

- <F1> ↑: to visualize the previous data acquisition
- <F2> ↓: to visualize the next data acquisition
- <F3> **Print**: to print the data on the display
- <F4> **Rep**: to insert the frequency, in hours, minutes and seconds, with which to read the sensor and the printout of the data
- <F5> **Quit** to return to previous menu

5.4.2. View current wind data

This function continuously reads the wind gauge and shows the data taken on the display. If the function Print climatic data: has been activated, it also shows the data taken when the various competitors finish.

Hh:mm:ss.d		
Current air speed=	10,2m/s	← Wind gauge data taken for current moment
Current direction=	13,5°	
Current lux =	35 %	
Stored data	Air speed= 11,5m/s	← Wind gauge data taken when competitor finished.
Number 7	Direction= 13.7°	
Manche 1	Lux = 37 %	
↑ ↓	Print Rep:--:--:--	← Number of competitor and run for which data was taken.
	quit	

Options available:

- <F1> ↑: display previous set of data
- <F2> ↓: display next set of data
- <F3> **Print**: print data on display
- <F4> **Rep**: insert in hours, minutes and seconds the frequency with which the sensor is to be read and the data taken printed.
- <F5> **Quit**: return to previous menu

5.4.3. Print climatic data:

Pressing the key <F2> switches between **Yes** and **No**, activating or deactivating measurement and printing on the printed strip of the climatic data taken at the moment each competitor finishes.

6. Synchronization

REI2 can be synchronized by means of the keyboard, the external line or via radio with the LinkGate system. If necessary, synchronization can be corrected by putting the internal clock forward or back.

6.1. Synchronization

Through this function, REI2's internal clock is synchronized. The operation is performed by inserting the time of synchronization, confirming each field (hour, minutes,) with the <ENT> key and then the date.

Attention: to be able to carry out synchronization the START line must be 'at rest' when <F4> is pressed (open for line N/O, closed for line N/C). If the line is not 'at rest', the message '!!!!ATTENTION !!!! START line unable to give synchronization impulse.....' will appear.

With

- <F2> the inserted data can be modified if a mistake has been made
- <F4> to confirm synchronization data. With the next START impulse, the internal clock starts
- <F5> returns you to the previous menu.

6.2. Editing synchronization value

In certain situations it may be necessary to change the synchronization of REI2 to align it with other devices which cannot be resynchronized. After establishing the gap in synchronization between the two devices (for example with a STOP in parallel), insert the value as 'Time change' (paying attention to the alignment; for example, 3 hundredths should be inserted as 3000 ten-thousandths). The date can also be changed. Each value should be confirmed with <ENT>.

The enabled function keys are:

- <F1> **Time** + to change the sign of variation; with each press it enables the increase or reduction of values
- <F3> **Correct** to change any incorrectly inserted data
- <F4> **OK** to carry out correction of synchronization
- <F5> **menu** to quit the function

6.3. Synchronization verify

Calling up this function makes REI2 ready to receive an impulse from a line (main or LinkPod) or the LinkGate system

The message SYNCHRONIZATION VERIFY – Wait for impulse... appears on the display. When REI2 receives an impulse, the channel the impulse comes from and the date and time when it was acquired are printed on the printed strip.

6.4. Signal

With this function a synchronization impulse for the synchronization of other devices can be generated. When the function is activated, a request is made for the time and date for generation of the impulse. Every value must be confirmed with <ENT>.

The signal is generated by switching pin 6 of the I/O digital port to level 0.

7. Data transmission to PC

When a competition is in progress or at its end the transmission of data to the electronic processors may be requested without the processor itself requesting this. The port to use and the transmission velocity can be specified with function Serial configuration (see section 8.3 on p. 34).

There are two data transmission modes,,: ‘Off Line’ and ‘On Line’.

The data which can be sent are:

- **Time events:** all the events recorded
- **T Totals:** total times (disabled)
- **T Run:** the times of individual runs
- **T Lap:** intermediate times
- **NP,NA,SQ:** all the competitors not in the competition such as non-starters, non-finishers and disqualified competitors (only off line) (disabled)
- **Skipped:** all skipped events and those not yet assigned (for off line) or skipped on acquisition (for on line) (disabled)
- **Speeds:** calculated speeds, both average and instant time.

7.1. Off Line data transmission

With this function it is possible to select the data to be sent to the PC and to begin their transmission. The data indicated with On will be sent to the PC through the specified serial port. It is possible, if required, to specify the run and/or group of competitors whose data are to be sent (the value 0 indicates all).

The enabled function keys are:

- <F1> ↑: to move the cursor up
- <F2> ↓: to move the cursor down
- <F3> **Edit:** allows you to change the **Run** number or to select (**On**) / deselect (**Off**) the data type, indicated by the arrow (→), to be transmitted
- <F5> to return to the previous menu.

During transmission the message ‘Transmission.....in progress’ appears on the display and for each type of data requested, the type and number of records transmitted.

7.2. Configuration of On Line data output

This function allows you to specify the data to be sent to the processor in the instant in which REI2 stores them in its memory. Some of these, such as the START (in standard setting) are immediately stored and then transmitted. Others, like the STOP, must be confirmed by the operator and are then sent only after the user has given confirmation.

The enabled function keys are:

- <F1> ↑: moves the cursor up
- <F2> ↓: moves the cursor down
- <F3> **Edit:** allows you to select (**On**) / deselect (**Off**) the data type, indicated by the arrow (→), to be transmitted
- <F5> to return to the previous menu.

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On Line data transmission can be activated and deactivated as you desire while a competition is in progress. You should keep in mind, however, that REI2 does not transmit calculated events and values on line while transmission was deactivated.

7.3. Data output protocol

This allows you to choose which protocol to use for data transmission to PC. Each time a selection is made, one of the possibilities is activated, namely:

- **‘Microgate’**: All the potentialities of the `stopwatch` are exploited
- **‘Alge 4000’**: Data is transmitted using the same protocol as for Alge 4000. The choice of data which can be transmitted with this protocol (see chap. 7.1 Off Line data transmission on p. 29 and 7.2 Configuration of On Line data output on p.29) is limited to net times only.
- **‘Radio Mod.’** Two REI2s can be connected through the Computer B output with a crossed cable. All the data are exchanged between the two stopwatches. The principle on which functioning is based is similar to Rei2Net with the difference that only two stopwatches can be connected, but the connection can also be made via modem and so at greater distances. On serial A, however, the Microgate protocol is used for data output.

For greater completeness and flexibility, we recommend that you use the Microgate protocol and that you use the Alge protocol only if there are problems of computing with the software used for data processing.

Transmission velocity is automatically set to 2400 for both serial ports (see chap. 8.3 Serial configuration on pag. 34).

8. REI2 configuration

The various configuration menus allow you to edit the numerous settings that affect the way REI2 functions. When you decide to delete the configuration at the start of a new race or select Editing basic configuration (see relative section 17 on p.56) and select the configuration most suitable for the timing session, all the parameters will be set to those values most suitable in the greatest number of cases.

8.1. Software configuration

This menu contains the settings which guide the functioning of the program.

8.1.1. Printing of intermediate times

Allows you to choose when to print the acquired times. Each time you press the <F3> key, one of two possibilities is activated, namely:

- ‘**at each event**’: the times are printed at the moment the event is acquired
- ‘**at the finish**’: all the times acquired are printed at the moment the new race is confirmed.

The time of day of the ‘intermediate’ event is printed, also in this case at the moment the event is confirmed.

8.1.2. Measurement precision

When you select this option, you are asked for the precision of the measurement to be used for the calculation of Lap and net time. Remember that all the time events are recorded with the maximum precision (1/25000 of a second), which is also used to make calculations, whatever precision is set, unless the time event truncation function is active.

The options available are:

- <F1> Each time you press this key, one of the 5 alternatives (1”, 1/10, 1/100, 1/1000 e 1/10000) is activated.
- <F2> allows you to insert the figure (first not significant) starting from which you pass to the significant unit above (e.g. with precision at 1/100 setting 4 xx.2842 becomes xx.29 while xx.2839 becomes xx.28). If you set 0, truncation is always carried out.
- <F3> activates the truncation of time events at the moment they are recorded. Each time you press the key, one of two alternatives is activated (**Yes** for truncation activated, **No** for no truncation). If truncation is activated, REI2 asks if truncation should be extended to all the time events of the race in progress and so also to those already recorded. With <F5> extension of truncation is not accepted, with <F4> irreversible truncation of all time events is accepted.

Time event truncation is useful in those races, such as the relay, in which, because of the various truncations, adding together the times of each relay runner can result in a total different from the total race time.



Truncation of chronological data is an irreversible operation. Once the intention to truncate the data present in the memory has been confirmed, it is no longer possible to retrieve the truncated part. Similarly, it is no longer possible to acquire the truncated part for all the new events recorded.

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8.1.3. LAP disactivation time

With this function the time is set, in seconds, in which REI2 must not acquire STOP events while in **NoLastLap** mode.

8.1.4. Setting countdown

With this function the value from which REI2 must begin to count time is set. This value, positive or negative, must lie between 0 and 23^h 59' 59" 9999^{/10.000}.

When you enter the function, either the last value inserted or, if no value was previously inserted, the default value, is proposed and the device sets itself up for insertion in the hours field.

8.1.5. Stop chrono after finish N.

With this function it is possible to set the number of finishers, in LastLap mode, after which REI2 must STOP counting. In practice, the function 4.4.6 StopCr. (see p.18.) is automatically activated after the number of finishers indicated and confirmed with <RET> once the function has been activated.

8.1.6. End count stop Active | Disactive

Each time the key is pressed, one of the two countdown modes **Cyclic** or **Single** is activated.

If you select **Single**, the stopwatch does not automatically restart the count when 0 is reached but only repropose the initial value and waits for a Start.

If you select **Cyclic**, REI2 automatically restarts the count when zero is reached.

8.1.7. Net times display

Every time the key is pressed, one of the two options **Run** or **Lap** is activated. If the option **Lap** is selected, the time count on the first line of the display resumes from 0 at each STOP.

8.1.8. Print only split time

If this function is active, REI2 only prints the split time and not the lap time.

8.1.9. Print Time of Day

If this function is active, REI2 prints the time of day as well as the net time.

8.1.10. Auto Lastlap

Each time the key is pressed, one of the two options **Active** or **Disactive** is activated. If the **Active** option is selected, for each new race REI2 automatically sets itself to **LastLap** status.

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8.1.11. START like STOP event

Each time the key is pressed, one of the two options **Yes** or **No** is activated. If this function is activated, as well as starting running time the START event functions in the same way as the LAP/STOP event.

8.1.12. New race after first STOP

Each time the key is pressed, one of the two options **Yes** or **No** is activated. If this function is activated, when the first competitor finishes the stopwatch automatically configures itself for the start of a new race.

8.1.13. Automatic Lastlap

Every time the key is pressed, one of the two options **Active** or **Disactive** is activated. If the option **Active** is selected, REI2 switches itself automatically to LastLap status for each new race.

8.2. *Hardware configuration*

This menu contains the settings which guide the functioning of the stopwatch.

8.2.1. LinkGate channel

Pressing key <F1> opens a submenu which shows the setting the dip-switches must have on the LinkGate®Encoder for the channel previously stored. Pressing <F2> **Modify** activates the cursor next to the channel number, from 0 to 127. Key in the number you intend to use. When you have inserted the number and pressed <ENT>, the new setting the dip-switches must have on the LinkGate®Encoder is shown.

The first dip-switch does not affect channel selection and so is shown as **LONG** or **SHORT**.

Pressing <F3>**Length** modifies the position of the first dip-switch shown, alternately, as **LONG** or **SHORT**

The <F5> **menu** key returns you to the hardware configuration menu.

Remember that it is absolutely essential that the channel set on REI2 and on LinkGate Encoder should coincide. For further information see the User Manual.

8.2.2. Printer: on/off

This, of course, allows you to turn the printer on/off. Each time the <F2> key is pressed, one of the two alternatives **Off** or **On** is activated.

8.2.3. Beep keys

This allows you to enable the emission of a beep each time a key is pressed. Each time the <F3> key is pressed, one of these two alternatives is activated: **Disabled**, no beep or **Enabled**, a short beep each time a key is pressed.

Beep emission always remains active.

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8.2.4. Display contrast

This allows you to vary the contrast on the display to improve its legibility in conditions of bad light. The <F2> key enables you to reduce contrast while the <F4> key enables you to increase it. By pressing the two keys <F1> and <F4> for more than 2 seconds, you can regulate contrast more rapidly.

Remember that you can activate back-lighting of the display with the <Light> key. Be careful not to quit this function when contrast on the display is regulated in such a way that it is impossible to read it.

The <F5> key returns you to the hardware configuration menu.

8.2.5. Duration of Linkgate transmission

Each time the <F1> key is pressed, one of the two alternatives **L** or **S** is activated. The setting chosen must correspond to the one made on the Linkgate Encoder (see user manual for further information). With transmission duration set to **S** signals from the same EncRadio channel can be transmitted in rapid succession.

This configuration is particularly suitable, for example, in the acquisition of intermediate times which are close together in evaluation tests during training sessions.

Key <F5> returns you to the hardware configuration menu.

8.3. Serial configuration

REI2 has two serials with protocol RS 232 for connection to data processors. The two serials, designated **Computer A** and **Computer B**, are individually configurable both for transmission velocity and the data presented. A few velocity combinations are, however, not available.

The configurable data are **Velocity** for transmission velocity, **On Line data** for sending data as soon as an event has occurred, **Off Line data** for sending data in response to a request by the processor and **Tick** for the sending of running time for every pre-set period.

When you enter configuration, the following function keys are activated:

- <F1> ↑ allows you to scroll up the various configurable features
 - <F2> ↓ allows you to scroll down the list
 - <F3> ⇔ to pass from serial A to serial B
 - <F4> **edit** to change the setting indicated by ▶ ; each time you press, one of the values possible is activated
- <ALT>+<F2> **Tick delay** makes it possible to set the delay in ten thousandths of a second, in which form the tick is sent on the serial. Using a LinkGate system for finishes this is advisable at the minimum 200 to prevent the time displayed from running backwards, while for LinkPods 150ms is recommended
- <F5> **menu** to return to the configuration menu.

The values which can be set are

- **Velocity** (in bps): 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200
- **On Line data**: Yes for transmission activated , No for transmission not activated

- **Off Line data:** Yes for transmission activated , No for transmission not activated
- **Radio In:** Yes to enable the serial for wireless reception of events and to modify the speed to 1200
- **Tick:** Disab. For no transmission, 1s, 1/10 and 1/100

The values set can be changed with the appropriate commands sent by the processor REI2. For details of transmission and reception protocol, consult 20 REI2 – PC communication protocols on p. 59.



Not all the combinations of Serial A and Serial B velocity are compatible. REI2 indicates this by putting a line through the speed which cannot be set (e.g.: Ser. A: 1200 Ser. B ~~115200~~).

8.4. Printing of configuration

With this function, which can be obtained by pressing the <F4> key **Printing of configuration**, you can get a complete printout of the configuration set on REI2.

9. Displayboard configuration

With this menu, the type of displayboards connected to REI2 can be set and some of their operational modes specified.

9.1. *Selecting displays*

REI2 can directly pilot up to 16 strings of Microgate μ TAB displayboards (each string is formed of a master displayboard and, if required, up to three slave displayboards) or μ GRAPH displayboards. This function allows you to select their type, number and the data to be presented on each of them.

When you have entered the configuration function with the <F1> key **Selecting displays**, a list is proposed in which the configuration currently set is indicated.

In the column '**ADDR**', the Address value to be set on the displayboard is indicated. Remember that the Address values of the displayboard must correspond to the value indicated in this first column.

In the '**DISPLAYBOARD**' column, the type of displayboard chosen is shown; a series of ---- indicates an inactive line.

In the column '**NUM.TAB**' the number of displayboards set for that address is indicated.

In the column '**DISPLAY**', the type of data which will be sent is shown with some abbreviations.

The active function keys are:

- <F1> \uparrow allows you to scroll up the list, providing this is compatible with the displayboard type and the number of items selected.
- <F2> \downarrow allows you to scroll down the list
- <F3> **edit** to change the displayboard setting to the 'address' indicated by \blacktriangleleft
- <F5> **menu** to return to the configuration menu.

When the **Edit** function has been selected, the configuration set for the line (address) selected is shown.

The active function keys are:

- <F1> \uparrow allows you to run through the list of configurations available in one direction
- <F2> \downarrow allows you to run through the list of configurations available in the other direction
- <F3> **Type Tab.** allows you to select the type of displayboard
- <F4> **N.Elem** allows you to select the number of displayboards on the line
- <F5> **menu** to return to the configuration menu.
- <ESC> **Quit without confirming** to return to the menu and the previous configuration

While you are choosing the configuration, inside some rectangles you are shown how the data will appear on the displayboard. In the table below, the variations currently available are listed.

Type Tab.	Num.	Abbreviation	Description
Microtab	1	Race time	Running time or net time
Microtab	1	Pos Num	Position in up to 3 figures and number in up to 5 figures
Microtab	1	P Pos N Num	Letter P , position in up to 2 figures, letter N and number in up to 3 figures
Microtab	1	SPLIT time	Split time
Microtab	1	LAP time	LAP time
Microtab	1	Average speed	Average race speed
Microtab	1	LAP speed	Speed over two laps
Microtab	1	T Race+Spl+Lap	Running race time. At the intermediate stage split time followed by lap and once again running time.
Microtab	1	Num Race T.	Competitor number and running time.
Microtab	1	L Lap N Num	Letter L , lap (intermediate) number, letter N and competitor number.
Microtab	2	Pos Num Trace	Position in up to 3 figures and number in up to 5 figures, Running time or net time
Microtab	2	Athlete's Name	Athlete's surname and name
Microtab	2	Ppos Nnum Trace	Letter P , position in up to 2 figures, letter N and number in up to 3 figures, Running time or net time
Micrograph	1	Pos Num Time	Medium-size characters: first line letter P , position in 3 figures, letter N , number in 5 figures; second line hours, minutes, seconds, tenths and hundredths.
Micrograph	1	Split lap time	Small characters: first line letter T and time, second line Split time and third line for Lap or to time difference if the first competitor has finished.

Type Tab.	Num.	Abbreviation	Description
Micrograph	1	V split V lap	Medium-size characters: first line Vsp and split speeds, second line Vlap and lap speeds.
Micrograph	1	Name Time	Using medium-size characters: first line name, second line time.
Micrograph	2	P N Num TimeG	First element with medium-size characters: first line letter P , position in up to 3 figures, letter N , number in up to 5 figures; second line First Name and Surname. Second element time in minutes, seconds and hundredths in full size.
Micrograph	2	Graphic time	Time in hours, minutes, seconds and hundredths with full-size characters.
Micrograph	2	Lag Graph	Time behind 1 st finisher.

The configuration chosen previously is activated as soon as you return to Displayboard configuration.

Let's look, for example, at how to set a configuration in which we have 4 MicroTab displayboards (2 masters and 2 slaves) on which we want to display the position, number (preceded, respectively, by P and N) and the time on the first pair and the personal details of the competitor on the second pair. For instructions concerning the connection and setting up of the displayboards, consult the MicroTab manual. (In the example displays, it is supposed that none of the displayboards have been previously configured).

After entering the function '**Selecting displays**', press the <F1> key until the cursor ◀ is positioned alongside the 0 in the **LINE** column, then press

```

Hh:mm:ss.d
LINE DISPLAYBOARD NUM.TAB DISPLAY
0◀ -----
1 -----
2 -----
4 -----

↑ ↓ Edit          other

```

<F3> for **Edit**

```

Hh:mm:ss.d
Displayboard=None N.Items = 0

-> -----

ESC=quit without confirming
↑ ↓ TypeTab I.Items Conf.

```

<F3> again for **Type Tab** until the message **Displayboard =Microtab** appears on the second line

```
Hh:mm:ss.d
Displayboard=Microtab      N.Items 1

      34:56.78

      Race time
ESC=quit without confirming
  ↑   ↓ TypeTab  I.Items  Conf.
```

Press <F4> for **N.Items** and set the number of items for line <2> and press <ENT>

```
Hh:mm:ss.d
Displayboard=Microtab      N.Items = 2

      123 45678 34:56.78

      Pos Num  T.Race
ESC=quit without confirming
  ↑   ↓ TypeTab  I.Items  Conf.
```

Press the <F2> key until the message '**Ppos Nnum TRace**' appears on the third line from the bottom

```
Hh:mm:ss.d
Displayboard=Microtab      N.Items = 2

      P12 N345 34:56.78

      PPos NNum T.Race
ESC=quit without confirming
  ↑   ↓ TypeTab  I.Items  Conf.
```

Confirm setting with <F5>. You automatically return to the configuration menu.

```
Hh:mm:ss.d
LINE DISPLAYBOARD NUM.TAB  DISPLAY
0◀ Microtab      2      Ppos Nnum TRace
1  ----- --      -----
2  ----- --      -----
4  ----- --      -----
  ↑   ↓ Edit      other
```

At this point, to set up the second line press <F2> to move next to N° 1, <F3> for **Edit**, <F3> again for **TabType** until the word **Microtab** appears on the second line, <F4> <2> <ENT> to set the two items and <F2> until the words **Name Athlete** appear on the third from bottom line.

```
Hh:mm:ss.d
Displayboard=Microtab N.Items = 2

      Surname  First Name

      Name      Athlete
ESC=quit without confirming
  ↑   ↓ TypeTab  I.Items  Conf.
```

Press <5> to confirm the setting and to return to the configuration menu.

```
Hh:mm:ss.d
LINE DISPLAYBOARD NUM.TAB  DISPLAY
0◀ Microtab      2      Ppos Nnum TRace
1  Microtab      2      Name Athlete
2  ----- --      -----
4  ----- --      -----
  ↑   ↓ Edit      other
```

Your configuration is now ready and you can quit the function with <5> **Menu**.

```
Hh:mm:ss.d
LINE DISPLAYBOARD NUM.TAB  DISPLAY
0◀ Microtab--  2      Ppos Nnum TRace
1  ----- --      -----
2  ----- --      -----
4  ----- --      -----
  ↑   ↓ Edit      other
```

At this point, to set the second line press <F2> to place yourself next to N° 1, <F3> for **Edit**, <F3> again for **TypeTab** until the word **Microtab** appears on the second line, <F4> <2> <ENT> to set the two items and <F2> until the words **Athlete's name** appear on the third line from the bottom.

```
Hh:mm:ss.d
Displayboard=Microtab      N.Items = 2

      Surname Name

      Athlete's name
ENT=select
↑ ↓ TypeTab I.Items      menu
```

Confirm the setting with <ENT> so that the arrow appears and press <F5> to return to the menu

```
Hh:mm:ss.d
LINE DISPLAYBOARD NUM.TAB DISPLAY
0 Microtab-- 2 Ppos Nnum TRace
1 Microtab-- -2 Athlete's name--
2 ----- -- -----
4 ----- -- -----

↑ ↓ Edit      other
```

Your configuration is now ready and you can quit the function with <F5> **Menu**.

9.2. Visualization pause

By pressing the <F2> key, it is possible, in the field with the indication **STOP**, to set the time the data of the finished competitor remains on the displayboard, and in the field with the indication **Lap**, the time the data of the competitor who has arrived at the intermediate stage remains. The times of display can be set from 1 to 60 seconds and confirmed with <ENT>. For the modes with which REI2 uses this item of data see Displayboard management on p.20.

Remember that when the value of the elements to be displayed has exceeded 4, the time they are shown for is halved until only 4 elements are in the queue.

This value must be set at a value which enables the competitor to read the displayboard, and avoids excessive queuing.

9.3. Serial speed displayboard

With this function you can set REI2's velocity transmission to the Microgate μ GRAPH displayboards. Remember that the velocity of the serial lines of the μ GRAPH displayboards can be configured by the user, while that of the μ TAB displayboards is fixed at 1200 (except for special versions).

Each time you activate the <F3> key, one of the possible options (1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600) is activated.

N.B.: The velocity set on REI2 must coincide with the velocity set on the displayboard.

9.4. Spot program

Every time selection is made the activation command and disactivation command of the 'Advertising' program are sent alternately to the displayboards. For further details, refer to the manuals for the Microgate Micrograph and Microtab displayboards.

9.5. Visualize competitor's nation

Every time selection is made the display of the competitor's nationality is activated/disactivated. The function is relevant only if the nationality of the individual competitors has been uploaded onto REI2 . (See chap. 20.1.1 List of athletes' names and nationalities on p.53)

9.6. Configuration line 485

Every time selection is made communication on the serial port RS485 is activated/disactivated (as well as on port RS 232). Refer to the **user manual** for further details.

9.7. Visualize time without point

Every time selection is made the emission of the time without the characters separating hours, minutes, seconds and fractions of a second is activated/disactivated while continuing to follow the dispositions described in Measurement precision (chap.8.1.2 p.29). If set to **No**, the display format is HH:MM:SS.DCMd, therefore with the separating characters ':' and '.'. If set to **Yes**, the display format is HHMMSSDCM.

9.8. Displayboard block after first finish

Every time selection is made, blocking of the displayboard after the first finish is activated/disactivated. If the blocking option is activated, the winner's time remains on the displayboard until a new race is prepared.

9.9. Max num in RollRank

This function is enabled if displayboards with rolling rankings are chosen. The maximum number of competitors in the rankings can be set by inserting a value which is not zero.

9.10. Displayboard available

This function makes it possible to select the displayboard to be used from the various alternatives and to assign it to an address.

Hh:mm:ss.d Displ. Available ~E				
NUM	DISP.TYPE	ADDR	NUM	VISUALIZATION
▶ 0	Microtab	--	1	Running Time
1	Microtab	--	1	Rank Num
2	Microtab	0	2	Rnk Num T.Race
3	Microtab	--	2	Athlet Name
↑		↓		Select
				Menu

Example of possible visualizations

In the column '**NUM**' the progressive configuration number is shown.

In the column '**DISP.TYPE**' the displayboard type is shown.

In the column '**ADDR NUM**' the Address value to be set on the displayboard is shown if the configuration has been selected, otherwise the symbol -- appears. Remember that the displayboard Address values must correspond to the value indicated in this column.

In the column '**NUM**' the number of displayboards set for the selected combination is shown.

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In the column ‘**VISUALIZATION**’ the type of data which will be sent is indicated with abbreviations.

The active function keys are as follows:

- <F1> ↑ to scroll the list up
- <F2> ↓ to scroll the list down
- <F3> **Select** sets the address for the configuration indicated by ▶ If an already used address is set, the configuration which previously had the same address is deselected.
- <F5> **menu** to return to the configuration menu.

9.11. Vis. delay dis./tick

This function makes it possible to set the delay with which the tick is sent to the serial in ten thousandths of a second. If a LinkGate system is used for finishes, the minimum of 200ms is advisable to prevent the time displayed from running backwards, while for LinkPods 150ms is recommended.

9.12. Displayb. Trans.length check

Setting this function activates control of the length of the data transmitted to the displayboard. If the displayboard viewing choices made involve too great a quantity of data for the serial speed set, REI2 will show a warning and give the minimum speed that can be set. In this case, if the function is active REI2 refuses to allow quitting of the menu until the speed of the displayboard has been modified.

9.13. Visualization pause RollRank

This function is enabled if displayboards with rolling rankings are chosen. The display pause between the displayboard scrolls can be set.

10. Configuring lines

REI2 can receive impulses through various channels. As well as the line keys, the main lines (START LAP AUX and STOP), the LinkGate radio system (with or without built-in radio system) and the LinkPod system can be used. For operational and connection modes, consult the User Manual.

10.1. Physical/Logical Channel Assignment

This menu allows you to specify how REI2 must interpret the signals coming from the various input devices.

10.1.1. Main lines and Keys assignment

This function allows you to change the types of events acquired both on the main lines (Start, Lap, Aux and Stop) and on the corresponding line keys.

The enabled function keys are:

- **<F1> c.logical** : each time you press, one of the possible options for the channel indicated by the symbol ◀ is enabled. The options possible are **STOP**, **N.ASS** for unassigned, **START**, **LAP** and **MANUAL** to only print the time event and not store it afterwards. If the LAP option is selected, REI2 asks which intermediate stage/lap, from 0 to 240, it must be assigned to. If set at 0, REI2 will automatically move the lap number forward with each impulse
- **<F2> ↑↓** allows you to scroll the list of physical channels
- **<F3> ⇄** allows you to pass quickly from the line management column to the key management column
- **<F5> menu** to return to the configuration menu.



Although it is possible to change assignment of the physical channel of the keys, you are advised to do this only in cases of absolute necessity, taking great care after the modification has been made not to be misled by the characters on the keys.

10.1.2. Radio Channel Assignment

This function allows you to change the event types acquired through the LinkGate radio system. The radio channels are presented on two distinct screen displays, the first from 0 (start) to 7 and the second from 8 to 15. (Stop).

Initial assignment of radio channels is as follows:

- radio channel **0** as logical Start channel
- radio channels from **1** to **9** as logical Lap channel from 1 to 9 and then, radio channels from **A** to **D** as logical channels from 10 to 13
- radio channel **E** as generic Lap (Lap 0)
- radio channel **F** as logical Stop channel.

The enabled function keys are:

- **<F1> c.logical** : each time you press, one of the possible options for the channel indicated by the symbol ◀ is enabled. The options possible are **STOP**, **N.ASS** for unassigned, **START**, **LAP** and **MANUAL** to only print the time event and not store it afterwards. If the LAP option

is selected, REI2 asks which intermediate stage/lap, from 0 to 240, it must be assigned to. If set at 0, REI2 will automatically move the lap number forward with each impulse

- <F2> ↑↓ allows you to scroll the list of radio channels
- <F3> ⇔ allows you to pass quickly from one column to another
- <F4> **Others** allows you to pass from the management of the channels from 0 (radio start) to 7 to the management of the channels from 8 to 15 (radio Stop)
- <F5> **menu** to return to the configuration menu.

10.1.3. Assigning LinkPod Channels

As better described in the User Manual, the Microgate LinkPod © system consists of a series of from 1 to 10 ‘concentraters’ (pods) connected via cable. Depending on the type, each concentrater has up to 8 inputs making up a total of 80 lines.

This function allows you to assign the physical channel corresponding to each of the single pod inputs to a logical channel. Each pod is presented on its own screen display.

The enabled function keys are:

- <F1> **c.logical** : each time you press, one of the possible options for the channel indicated by the symbol ◀ is enabled. The options possible are **STOP**, **N.ASS** for unassigned, **START**, **LAP** and **MANUAL** to only print the time event and not store it afterwards. If the LAP option is selected, REI2 asks which intermediate stage/lap, from 0 to 240, it must be assigned to. If set at 0, REI2 will automatically move the lap number forward with each impulse
- <F2> ↑↓ allows you to scroll the list of inputs of each LinkPod
- <F3> ⇔ allows you to pass quickly from one column to another
- <F4> **N.Pod** allows you to pass from the management of one LinkPod to another by inserting their respective numbers from 0, for the first, to 9
- <F5> **menu** to return to the configuration menu.

The number of LinkPods configured does not depend on the position of the cable but on the value set on each LinkPod.

10.2. Line disactivation times

This allows you to modify the disactivation times of inputs after the acquisition of an event. Each line can be configured individually.

The enabled function keys are:

- <F1> ↑↓: allows you to scroll through the list of the various configurable lines. The line selected is indicated by the character ◀ and the disactivation time expressed in milliseconds can be inserted immediately
- <F2> ⇔ allows you to pass quickly from one column to another
- <F5> **menu** to return to the configuration menu.

The last lap value (the one at the bottom on the right) can be configured for the channel number as well as for holdoff time’.

The disactivation value can adopt any value you like between 0 and 60,000 milliseconds (1 minute).

If you try to change the value for a channel for which there is no corresponding physical channel, for a few seconds the message ‘**Logical.chan not assigned to physical chan.!!!!**’ appears.

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10.3. Line exclusion configuration

The <LCK> key situated over the <STA> key can be configured so as to offer the user the possibility of operating on one or more logical channels of his/her choice. (Vice versa, the <LCK> key over the <STO> key acts exclusively on the Stop logical channel). From this menu it is possible to select the lines on which the key is active. It is advisable to set lines which can in fact be controlled by the operator.

The activation or disactivation of the <LCK> function on a line is shown by a full rectangle for lock enabled or an empty rectangle for lock disabled. A black blinking rectangle shows the position of the cursor.

The enabled function keys are:

- <F1> ←: allows you to move the cursor to the left on the various lines
- <F2> →: allows you to move the cursor to the right
- <F3> edit : pressing this enables or disables the sensitivity of the <LCK> key for the line on which the cursor is positioned
- <F4> N.lap allows you to set the lap number of the last rectangle on the right
- <F5> menu to return to the configuration menu.

The <Rearm> key situated next to the <LCK> key operates on the same lines set for the <LCK> key.

10.4. N/O N/C line configuration

REI2 is designed to accept commands from devices which have contacts which are normally (at rest) either open or closed. From this menu it is possible to select the type of contact present on each of the main lines, both those connected through banana jack sockets or through standard din sockets.

The enabled function keys are:

- <F1> START
- <F2> LAP
- <F3> STOP
- <F4> AUX
- <F5> menu to return to the configuration menu.

Each time the key associated with a line (from <F1> to <F4>) is pressed, one of the two options **Normally open** or **Normally closed** is enabled.

The LinkPod © inputs can be configured by acting directly on the device. For further information refer to the User Manual.

10.5. Noise filter principal lines

REI2 filters spurious events coming from external lines (e.g. start gates or switches).

The enabled function keys are:

- <F1> Start
- <F2> Lap
- <F3> Stop

- <F4> **Aux**
- <F5> **quit** to return to the configuration menu.

By default the noise filter is active on the Start line.

Every time the key assigned to a line is pressed (from <F1> to <F4>) one of the two options **Yes** – **No** is enabled.

11. Setting of speed bases

REI2 allows you to calculate both the average speed between two acquisition points (Start, Lap x and Stop) and 'instant' speed through the LinkGate system which, as well as sending the time acquired, is able to send the time taken to cover a specific base.

REI2 does not store speeds, but only the data necessary to calculate them, such as times taken to cover the distance between acquisition points and time taken to cover the bases, as well as the relative lengths.

The times taken to cover the LinkGate bases are acquired with the precision, typical of LinkGate modules, of 1/32,768s.

For details about installation of the LinkGate system, consult the User Manual.

11.1. Average speed base length

This function is used to set the distance between the various time acquisition points for the calculation of the average speed with which the distance is covered.

Interpretation of the base inserted is shown graphically on the display. Measurement of the distance is expressed separately, first for the part n metres (from 0 to 64,000) and then for the decimal part (cm) or alternatively in kilometers (from 0 to 9999) and meters according to the indications of 11.5 Speed base range on p.48.

The enabled function keys are:

- **<F1> Ltotal**: With this key you can set the length to be covered between the start and finish
- **<F2> Llap**: Each time the key is pressed, you are asked to insert the final intermediate (lap) time of the part of the course for which to calculate average speed, and, after confirmation with **<ENT>**, the relative length is displayed. For example, Base = 1 is the part of the course from the start to the first intermediate stage. Base = 2 is the part of the course from the 1st intermediate stage to the 2nd
- **<F3> LStop**. Displays the distance between the last intermediate stage (lap) and the finish line
- **<F4> Reset All** Cancels all the speed bases. Before canceling, REI2 asks for confirmation, which is given with **<F4> Yes**
- **<F5> menu** to return to the configuration menu.

During display of an intermediate or final base, the following function keys are active:

- **<F2> edit**: allows you to change the length of the base previously selected
- **<F5> menu**: to return to the previous display and where required, to set a new base.

See 11.4 Speed base type on p.48.

11.2. Radio speed base length

When using the Linkgate © radio acquisition system, two event-taking devices, typically photocells, can be connected to the EncRadio or Encoder module itself for the calculation of the average speed within a base. With this function the distance between the two event-taking points is set.

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Interpretation of the base inserted is shown graphically on the display. In addition, the position of the second device in relation to the acquisition point is indicated with **FTC_**. **FTC_R** indicates a device connected to LinkGate's red input, **FTC_V** a device connected to LinkGate's green input. The primary device for acquisition of the event (Start, Lap o Stop) should be connected to the input which remains free.

Measurement of the distance is expressed separately, first for the part n metres (from 0 to 65,000) and then for the decimal part (cm).

The enabled function keys are:

- **<F1> LStart**: with this function key you can set the length of the base connected to the Start
- **<F2> Llap**: each time the key is pressed, you are asked to insert the final intermediate (lap) time of the part of the course for which to calculate the speed, and, after confirmation with **<ENT>**, the relative length is displayed. For example, Base = 1 is the base between a device and the first intermediate stage. Base = 2 is the part of the course from the 1st intermediate stage to the 2nd. The number corresponds to the line setting on the Linkgate Encoder
- **<F3> Lstop**: displays the distance between the last auxiliary device and the finishing line
- **<F4> Reset All** Cancels all the speed bases. Before canceling, REI2 asks for confirmation, which is given with **<F4> Yes**
- **<F5> menu** to return to the configuration menu.

During display of an intermediate or final base, the following function keys are active:

- **<F2> edit**: allows you to change the length of the base previously selected
- **<F5> menu**: to return to the previous display and where required, to set a new base.

11.3. Unit of measurement

With this function you can specify the unit of measurement to use for the display/printing of the speeds acquired.

Each time you press the **<F3>** key, one of the available options is activated and that is: **m/s** for metres per second, **kph** for kilometres per hour **mph** for miles per hour (land) or **knt** for knots (nautical miles per hour).

11.4. Speed base type

This function is used to specify the LAP type to be used. Each time you press the **<F4>** key, one of the two options (**Multibase** | **Lap**) is activated. With the **Multibase** configuration, you must indicate the length of all the bases between the various intermediate points to have all the average values. With the **Lap** configuration, you only have to insert the length of a lap to have the average times of all the laps.

11.5. Speed base range

This allows you to set the measurement range for the bases on which to calculate average speeds. Each time you press the **<F4>** key, one of the two alternatives (**Kilometers/Meters** and **Meters/Centimeters**) is activated. Each time the range of the bases is changed, all the base measurement values which may already have been inserted are deleted and for this reason REI2 requests confirmation **Attention all values will be lost. Are you sure? Yes No** before accepting the change. Of course if you press **<F5>** for **No** the range is not changed.

12. Data reception from PC

12.1. Reception of competitor lists from PC

This function allows you to download the list of competitors generated by the Microgate Uploader © or Microrun ©. Press key <F1> for **Reception of lists from PC** and <F1> again for **Receive list of competitors from PC**. On the second line of the display the message **'Ready to receive.....'** appears and you have 20 seconds to start data transmission on the PC.

If no data are received in this period, the message **'Time Out Serial Reception Press a key'** appears. Press a key to continue. Press <ENT> to return to the group management menu.

After reception has been activated it is possible to interrupt it before time out by pressing the <F2> key for **Interrupt** and the <ENT> key again when the message **'Reception interrupted'** appears.

During correct reception, the data are rapidly listed on the screen. When reception is completed, the message **'End of reception. Press a key.....'** appears. Press <ENT> to return to the menu.

Detailed information about the data structure sent from PC to REI is given in section 20 REI2 – PC communication protocols on p.59.

For connection modes between REI2 and PC, consult the User Manual.

12.2. Printing of competitors' names

With this function the the list of names previously loaded on REI2 is printed with the numbers assigned and possibly also nationalities.

12.3. Deletion of competitor name list

This function allows you to delete the list of competitors' names. To confirm the decision to delete, press <F4> for **Yes**, otherwise annul deletion with <F5> for **No**. When confirmation of the decision to delete has been given, the message **'Competitor names deletion done!'** appears for a few moments on the penultimate line of the display.

13. Linkgate radio signal test

An essential condition for the correct use of the LinkGate system is a sufficiently high level of the quality of its radio signal. With this function, REI2 allows you to test its efficiency.

When you enter this function, the words **'RADIO SIGNAL QUALITY TEST'** appear, followed on the next line of the display by the message **'Ready to receive.....'**. At this point you can start a test transmission (for example, a start signal). After about 3 seconds from the start of transmission, during which the message **'Reception in progress.....'** is shown, the channel of the signal received and the quality of the signal expressed as a percentage are displayed. Naturally the higher the percentage, the higher the quality of reception.

Values above 40% are considered 'safe'.

If the channel set on the LinkGate Encoder does not coincide with the channel set on REI2 (see section LinkGate channel on p.33), the message **'RADIO XXXX – Channel xxx Signal= xxx% - Different channel received'** appears.

If the level of quality of the signal received is below 40%, one or more of the following steps can be taken:

- place both the transmitting and receiving radios (the radios connected to the Encoder) in an elevated upright position
- change the working frequency to avoid interference from the frequency used by other transmitters
- especially for the transmitting radio, use more efficient antennas such as $\frac{1}{4}$ or $\frac{5}{8}$ wave antennas instead of the normal 'charged' type

The antennas supplied with the integrated LinkGate EncRadio and LinkGate DecRadio transmission system already have a high level of efficiency.

Note: the quality signal test should preferably be performed with the 'short-long' selector of the LinkGate Encoder device in the 'Long' (L) position. If the selector is on 'Short' (S), the maximum 'quality' value indicated by the test is about 25%.

For further details about the LinkGate system, consult the User Manual.

With the **<F5> menu** function key, you return to the previous menu.

14. Calculator

REI2 has a sexagesimal calculator.

14.1. Normal

Key in the first time you wish to add or subtract (TA); then key in the second time (TB).

The enabled function keys are:

- <F1> **A+B**: adds TA to TB
- <F2> **A-B**: subtracts TB from TA
- <F3> **edit** allows you to change the two set times
- <F5> **menu** to return to the previous menu.

The times are 'normalised' to 24 hours; for example, 2:00:00.000+23:00:00.000 = 1:00:00.000 and not 25:00:00.000.

Be careful when keying in thousandths, especially if the times to add or subtract are expressed with an accuracy of a tenth or a hundredth; for example, to insert the time 1:02.84 (one minute, two seconds, 84 hundredths), you must key in:

<0> <ENT> (hours)

<1> <ENT> (minutes)

<2> <ENT> (seconds)

<8><4><0><0> <ENT> (^{1/10000}), and NOT <8><4> <ENT>.

14.2. Extended (day management)

Functioning is the same as for the normal calculator. In addition it offers you the possibility of inserting a figure for the day, thus allowing calculations on values which cover a number of days.

15. Battery recharge

During normal functioning, the presence of a valid external source of power supply (with a socket as symbol) or low battery condition (with the symbol of a battery) is shown in the display to the right of the first line. From the moment the symbol appears, about 90 minutes of autonomy remain.

Recharging of REI2's internal batteries is managed entirely by the microprocessor. In this way it has been possible to implement a recharge control which guarantees maximum efficiency of the batteries at all times, at the same time prolonging their operational life.

When you enter this function, the current state of power supply is shown on the sixth line of the display as follows:

- **'Batteries in use ...'** the internal batteries are being used
- **'Maintenance'** the stopwatch is supplied by the external power source and at the same time the efficiency of the batteries is maintained by a weak charge current but they are NOT recharged
- **'Discharge...'** the internal batteries are completely discharged before being subsequently recharged
- **'Recharge'** recharge in progress; on the right, the time remaining before the end of recharge is shown
- **'Recharge blocked'** recharge has been temporarily interrupted because of insufficient voltage. It will resume automatically as soon as a sufficient level of voltage is restored.

To recharge the batteries, connect a continuous 12-20 volt power source to the appropriate power point.



To recharge the batteries or completely discharge them, REI2 must remain switched on. During recharge it is possible to carry out every kind of timing. The important thing is not to switch it off.

15.1. Discharge/recharge

When this function is selected, the internal batteries are first discharged and then recharged. This is the most correct procedure for keeping the internal batteries at maximum efficiency.

The duration of the discharge phase depends on how fully the batteries are charged and can last up to about 3 hours.

The duration of the subsequent recharge phase is 7 hours, at the end of which the message **'RECHARGE OK!'** appears.

15.2. Immediate recharge

If it is not possible to charge or recharge in the correct way because of lack of time or for any other reason, it is possible just to recharge. In this way recharge time is reduced but this procedure is not recommended as it reduces the efficiency of the batteries.

15.3. Interrupt

With this function the discharge and recharge phases are interrupted. REI2 returns to maintenance status.

16. Race management

REI2 can memorise up to 8 different races and their relative configurations. It is possible to suspend a race at any moment, to manage a different one and then to retrieve the suspended race.

As soon as REI2 has finished checking synchronisation and memory content it activates the race management menu.

At the end of timing, no operation is necessary to memorise a race. All the data are automatically recorded in the stopwatch's memory and retained also when the machine is switched off. For stored data retention times, consult the User Manual.

16.1. New race

Selecting this option allows you to start a new race. You are asked for the program to be used and when you have selected this, you are given the indication '**NEW RACE**' and the number assigned on the printed strip.

If all the eight races available have been stored, the message '**ATTENTION! – Race Memory Full – Delete one or more races – Press a key to continue**' appears and you must delete one of the stored races to be able to continue.

16.2. Delete/Retrieve stored race

This option allows you to retrieve or delete a previously stored race from the list of races proposed.

In the column

- **RACE** the consecutive race number appears. The symbol * to the left of the number indicates the last active race, which is retrieved if Continue current race is selected.
- **DATE** the start date
- **START** the start time
- **TYPE** the type of program used for the race.

The positions which are free for memorisation of a race are indicated by '---'

The enabled function keys are

- <F1> ↑: to scroll up the race list
- <F2> ↓: to scroll down the list
- <F3> **Delete** deletes the race shown by the symbol. You are requested to confirm that you wish to delete the race, <F4> to delete, <F5> to annul deletion. If you select an unused race number, the message '**Impossible to delete**' appears
- <F4> **Retrive** retrieves the race indicated by the symbol ◀ and allows you to resume timing it. If you select an unused race number, the message '**Race not available**' appears.
- <F5> **menu** to return to the previous menu.

16.3. Continue current race

By selecting this option, you resume timing of the last race stored, and retain all its timings and configuration settings.

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16.4. Total memory deletion

Selecting this option allows you to delete all the data of all the stored races. On the display the message **‘***** ATTENTION ***** - All data and races will be irreversibly cancelled, proceed?’** Press <F4> for **Yes** to delete all the stored races, press <F5> for **No** to annul deletion.

17. Editing basic configuration

This function allows you to select which configuration, of the 4 proposed, is most suitable for the requirements of the event you intend to time. When you have selected the basic configuration, you can make whatever change you like to the configuration proposed.

The enabled function keys are:

- • <F1> **Athletics**
- • <F2> **Relay**
- • <F3> **Carving**
- • <F4> **Countdown**
- <F5> **Motor Sport**



Because of its special characteristics the data in the memory of the race in progress cannot be kept when you pass to **Countdown** configuration from a different configuration, but all the stored events are irreversibly deleted. REI2 informs you of this with the usual procedure of request and confirmation.

For the values set by REI2, see Pre-set configurations on p.58.

18. Line status

This function allows convenient management of the status lines connected to REI. To the right of their description, the main lines, START, LAP, STOP and AUX have a little circle which indicates their status. For the Pods of the LinkPod system, the status of each of the 8 inputs of each Pod is indicated.

The indicators mean:

- Empty circle Line at rest
- Full circle Line active
- Hyphen (only Pod) Pod not present or not correctly connected or line not physically present on the Pod (Pod with fewer than 8 inputs).

19. Pre-set configurations

The table below summarises the standard settings activated when one of them is selected:

	Athletics	Relay	Carving	Countdown	Motor Sport
Count start	0	0	-1'	-1'	0
Assignment of numbers	Yes	Yes	Yes	No	Yes
Printing of time lags at finish	Yes	Yes	Yes	No	Yes
Management of last lap	Yes	Yes	Yes	No	Yes
Last lap activated at start	No	No	Yes	--	No
Holdoff time transit	40	40	40	--	0
Setting to zero of part in countdown and restart from 0 with LAP	Yes	Yes	Yes	No	Yes
Resetting of countdown value with LAP	No	No	No	Yes	No
Suspension of count with STOP	No	No	No	Yes	No
Measurement precision	1/10	1/100	1/100	1/100	1/1000
Rounding up/down	Rounding up >.1	Truncate.	Truncate.	Truncate.	Truncate.
Tempi morti (Start, Lap, Aux, Stop)	500,200,200,200	500,200,200,200	500,200,200,200	500,200,200,200	50,50,50,50

20. REI2 – PC communication protocols

20.1. From PC

To transmit information about athletes' names and nationalities a special file must be compiled. Within each line the various values are separated by the ASCII Tab (09h) character and the various lines by the character CR (13) (0Dh). The key words (highlighted in **bold**) should be sent exactly as they are written.

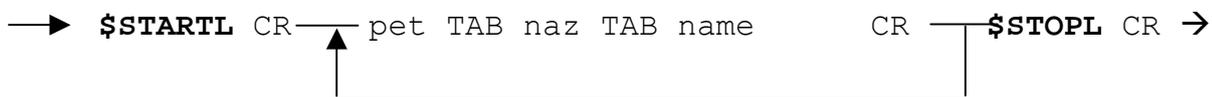
The data can only be sent to the Computer A output of the REI2 stopwatch. Transmission can also be made in background, so without the need to access the PC's data reception menu.

20.1.1. List of athletes' names and nationalities

The list of the athletes' names and nationalities specifies the assignment of a competitor number and a particular name. Each assignment is placed on a different line of the text, and the complete format is as follows:

\$STARTL	start of list of names, must be written exactly as it appears at the side
CR	Carriage Return (0Dh)
	the following information is repeated for each competitor inserted:
pet	athlete's number (e.g. 1)
TAB	Tabulator (09h)
naz	nation abbreviation of three characters (e.g. ITA)
TAB	Tabulator (09h)
name	First name and surname (max 24 characters), only one space is allowed between first name and surname (e.g. Isolde Kostner); compound names can also be sent by using _ to divide the name, e.g.: Marco_Andrea Di_Luca.
CR	Carriage Return (0Dh)
	end of repeated part of information about competitor
\$STOPL	end of list. Indicates to REI2 that the list of names is finished
CR	Carriage Return (0Dh)

→ **\$STARTL** CR — pet TAB naz TAB name CR — **\$STOPL** CR →



Example:

\$STARTL	Start of list of names, must be written exactly as it appears here!
1 ITA Isolde Kostner	Assignment of competitor number 1 to the Italian athlete Isolde Kostner.
\$STOPL	End of list. Indicates to REI2 that the list of names is finished.

20.2. For PC

By using appropriate protocols, it is possible to ask REI2 for a series of items of information stored in its memory, such as net times and time events, running times and the status of competitors. The details and specifications of communication are given in **Communication protocols**. No command sent through the connectors of computers A and B can change the data present in the stopwatch apart from those specified, which, in any case, have to be confirmed on REI2.

For connection between REI2 and computer, use the ports 'Computer A' and 'Computer B'. Connection of a computer to the 'Displayboard' port is possible, but its characteristics cannot be changed. You are advised not to make connections to the 'REI2 NET' and 'LinkPod' ports as incorrect instructions can corrupt REI2's memory.

21. Menu structure

The entries marked with (*) are not available in **Countdown** configuration. Those marked with (\$) are available only in **Countdown** configuration

21.1. Initial menu

- A: New race
 - A: Single starts
 - B: Group starts
 - C: Simple stopwatch
 - D: Parallel
- Other
 - A: Show jumping
 - B: Swimming
 - C: PC-ONLINE
- B: Delete/Retrieve stored race
- C: Continue current race
- D: Total memory deletion
- Others
 - A: Battery recharge
 - A: Discharge/recharge
 - B: Immediate recharge
 - C: Interrupt
 - B: LinkGate radio signal level test
 - C: Line status (main and pod)
 - D: Autotuning Battery

21.2. Race menu

(M 1)

- M 1.A: Timing 4 Timing 14
- M 1.B: Rankings and other printouts(*) 5 Rankings and other printouts 24
 - M 1/2 A: Printing/Display of rankings 5.1 Printing/Display of rankings 24
 - M 1/2 B: Other printouts (Disab.) 5.2 Other printouts 25
 - M 1/2 C: Print and display modes 5.3 Printout and Visualization mode 25
- M 1.C: Synchronization 6 Synchronization 27
 - M 1/3.A: Synchronization 6.1 Synchronization 27
 - M 1/3.B: Edit synchronization value 6.2 Editing synchronization value 27
 - M 2/1.C: Synchronization verify 6.3 Synchronization verify 27
 - M 2/1.D: Signal ... 6.4 Signal 28

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M 1/4 A: Off Line data transmission	7.1 Off Line data transmission 29
M 1/4 B: On Line data output configuration	7.2 Configuration of On Line data output 29
M 1/4 C: Serial configuration	8.3 Serial configuration 34
M 2/3 D: Data output protocol	7.3 Data output protocol 30

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M 2/1.A: Software configuration	8.1 Software configuration 31
M 2/1/1.A:Print intermediate times(*)	8.1.1 Printing of intermediate times 31
M 2/1/1.B:Measurement precision	8.1.2 Measurement precision 31
A: Measurement precision:...	8.1.2 Measurement precision 31
B: Rounding up/down (0=truncation) = ...	8.1.2 Measurement precision 31
C: Time event truncation	8.1.2 Measurement precision 31
M 2/1/1.C: LAP disactivation time(*)	8.1.3 LAP disactivation time 32
M 2/1/1.C: Set countdown(\$)	8.1.4 Setting countdown 32
M 2/1/1.D: Speed base range	11.5 Speed base range 48
M 2/1/1.D: End count stop: Active Disactive	8.1.6 End count stop Active Disactive 32
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M 2/1/1b B: Automatic last lap (*)	8.1.13 Automatic Lastlap 33
M 2/1/1b B: Print only split time	8.1.8 Print only split time 32
M 2/1/1b C: Print Time of Day	8.1.9 Print Time of Day 32
M 2/1/1b D: Auto Lastlap : ... (*)	8.1.13 Automatic Lastlap 33
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M 2/1/1c A: START like STOP event	8.1.11 START like STOP event 33
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M 2/1/2.B: Printer	8.2.2 Printer: on/off 33
M 2/1/2.C: Beep keys	8.2.3 Beep keys 33
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M 2/2.B: Display pause	9.2 Visualization pause 40
M 2/2.C: Displayboard serial velocity	9.3 Serial speed displayboard 40
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M 2/2b B: Line 485 configuration	9.6 Configuration line 485 41
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M 2/2b D: Displayboard block after first finish(*)	9.8 Displayboard block after first finish 41
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M 5.C: Line status

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22. Editing history

The table below summarises the main changes made to this document.

Program version	Chapter	Page	Editing description
1.03	3	13	Point to stress inserted in Program characteristics.
1.03	5	24	New organization of Rankings and other printouts chapter.
1.03	5.1	24	Changed Printing/Display of rankings chapter numbering.
1.03	5.2	25	New chapter Other printouts.
1.03	5.3	25	New function Printout and Visualization mode.
1.03	9.2	40	Function Visualization pause changed.
1.03	9.7	41	New function Display time without punctuation.
1.03	21.2	61	Race menu updated
1.03	22	65	Insertion of Editing history chapter.
1.07.9			General edit for version 1.07.9

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