# Single Starts Program

## Summary

# 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 input.

'Start keyboard' and 'Finish keyboard' refer to the two logical operating modes of the keyboard which are activated in alternation by pressing the **<Start/Stop>** key.

## 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 the 'user manual' carefully before connecting any accessories.

This first chapter will guide you step by step through the management of a short race with competitors who start and finish individually, as might be the case in a ski race, a time trial in cycling or a timed climb in motor racing.

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, with the difference that in the former case the word 'key' appears on the printed strip next to the number the time event refers to. See Printout of time events on page 37.

Suppose we have a a starting order with the competitors Nos 1, 2, 4, 5, 6, 127, 8 and 9, who start in this order, all belonging to the same category, and that we do not connect a displayboard.

### 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 Similarly, a message appears if the data in the memory is no longer valid (**ATTENTION MEMORY CORRUPTED**). Refer to 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/Recall stored race
C:Continue current race
D:Clear all memory
   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 REI2 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 slalom

   A      B      C      D    other
```

Pressing <**F1**> again activates the **Single starts** program.

```
  Hh:mm:ss.d

A:Clear previous configuration
B:Keep last race configuration
```

For the third time we select <**F1**> for **Clear previous configuration** and confirm our intention to delete the configuration with <**F4**>.

```
  Hh:mm:ss.d
Select configuration:
A:Alpine ski
B:Cross-country ski
C:Endurance
D:Training

   A      B      C      D    other
```

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

```
  Hh:mm:ss.d          M 1

A:Timing
B:Insertion/printing of groups
C:Ranking and other printouts
D:Departure manager

   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 REI2 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.
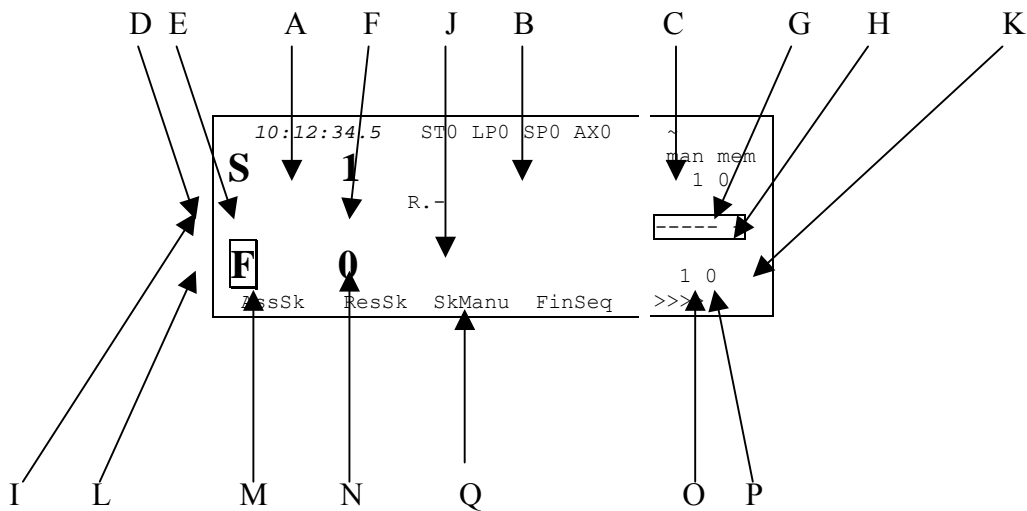
Figure 1

In the various positions we see:
a)  Running time of day
b)  Status of lines
c)  Power status
d)  The start area with
  e)  The indicator for 'start keyboard' disactivated
  f)  The number of the competitor ready at the Start
g)  The run number of the competitor at the Start
h)  The number of start impulses in the memory
i)  The area with the next competitors to Start and finish with
  j) The next finisher numbers
k)  The displayboard indicator
l)  The finish area with
  m) The 'finish keyboard' active
  n)  The number set at the finish
o)  The run of the competitor at the finish
p)  The finish impulses in the memory
q)  The options which can be activated with the function keys.

### *2.3 Timing*

#### 2.3.1 Start of first competitor

We can now start competitor N° 1 by pressing the **<STA>** key. On the printout the record of the event is printed. As shown in Figure 2, on the graphic display new elements appear while others change, in particular:
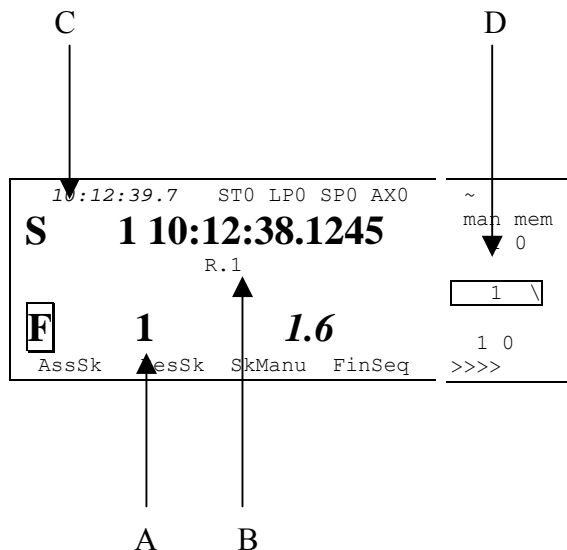


Figure 2

a) The running time of competitor N° 1
b) The number 1 to the right of the letter R
c) A vertical bar (for 6 seconds) next to the letter S and the time of day of the competitor's start to the right of the number. After 6 seconds, during which the bar becomes smaller, the number is changed to 2 and the start time is deleted from the display
d) The number 1 and a 'revolving' character in the displayboard indicator.

Now let's start competitor N° 2, once more by pressing the **<STA>** key. We see that N° 2 is added on after No. 1 in the finish area.

#### 2.3.2 Finish of first competitor

To simulate the finish of competitor N° 1 we press the **<STO** key. The competitor's net time is shown inside the finish area, and a blinking bar between the number and the time informs us that we must confirm the assignment of the time by pressing the **<ENT>** key, after which we obtain the printout of the finish time and net time and the finish number is replaced by the next competitor.

#### 2.3.3 Moving forward the start number

Competitor N° 3 is not in the race. REI2 presents N° 3 in the start area as the next number. To change it, we do as follows:

We activate the 'start keyboard' by pressing the **<Start/Stop>** key so that the square which previously contained the letter **F** now contains the letter **S**, and we press the **<Arrow down >** key**.** The start number is increased by 1 and so becomes 4. By pressing on the **<Start/Stop>** key another time, we can use the 'finish keyboard' again.

Let's make the competitor with number 2 finish, once again with the **<STO>** key and confirming with **<ENT>**. As no other competitors are running in the finish area, N° 0 is shown and no number appears to the right of the letter **R**.

### 2.3.4  Non-starters

Number 4 starts regularly by pressing **<STA>**. N° 5, however, does not appear at the start and will have to be 'marked' as not having started. To do this, as soon as N° 5 is proposed at the start, we re-enable the start keyboard with the **<Start/Stop>** key and press the **<ENT>** key to confirm our intention of operating on the number proposed at the start. As a result, the options associated with the function keys change. We select **NS** with the **<F3>** key.

REI2 will propose N° 6 at the start, noting on the printout that N° 5 has been declared a non-starter with the record of the time at which this was done.

Let's leave the 'start keyboard' active and see what happens if there is a finish with the 'start keyboard' activated. By pressing the **<STO>** key we simulate the finish of competitor N° 4. We note that the 'finish keyboard' is immediately activated and we are asked for confirmation, which we give with the **<ENT>** key.

### 2.3.5  Changing the Start number

We start N° 6 by pressing **<STA>**. The next start number is 127. To move forward the start number in the same way as previously would be an extremely long operation so we set the number directly, using the keyboard after N° 7 has been proposed at the start. First we reactivate the 'start keyboard' with the **<Start/Stop>** key, then we set the number by pressing **<1> <2>** and **<7>** and we confirm the change with **<ENT>**.

When the next impulse is given with the **<STA>** key, competitor 127 starts and after 6 seconds N° 128 is proposed at the start. By pressing key **<8>** and **<ENT>** we set the next competitor to start. By pressing **<STA>** we start N° 8 and after about 10 seconds we start the last competitor by pressing **<STA>**.

In the area for showing the next finish numbers, we see that the numbers 6, 127, 8 and 9, in this order, are expected at the finish.

### 2.3.6  Non-finishers

Previously we saw how to set a competitor as NS. Now we will set competitor N° 127 as NF.

Now the 'start keyboard' is active. To pass to the 'finish keyboard' we press the **<Start/Stop>** key. The competitor proposed at the finish is number 6. To operate on the number we are interested in (127), we can scroll the list of competitors expected at the finish by pressing the **<Arrow down>** key. The competitor proposed at the finish is now 127. As previously, we press the **<ENT>** key to activate the functions connected to the finish number and we set **NF** by pressing the **<F3>** key. Also for the NF the time of the operation is shown on the printout.

### 2.3.7  Inversions at the finish

As soon as designation of NF has been confirmed, REI2 again proposes the first number of the list of competitors expected at the finish, in this case N° 6. We know that the next to finish will not be number 6 but number 8. We can change the number at the finish simply by pressing **<Arrow**

**down>**. The impulse obtained with the **<STO>** key will be assigned to N° 8. When confirmation is made with the **<ENT>** key, number 9 will be proposed at the finish again.

Number 9 is presented at the start before number 6, even if the latter started first, as it is considered the most likely number at the finish. N° 8 is already late when N° 8 finishes.

By pressing the keys **<STO> <ENT> <STO>** and **<ENT>** consecutively, we simulate the finishes of the last two competitors (N° 9 and N° 6).

### 2.3.8 Quitting timing

Having finished our short race, we quit the timing function by pressing key **<F5>** to select the option **other**, and we return to the menu with key **<F4>**. The display has now returned to text mode.

## *2.4 End of race operations*

### 2.4.1 Disqualifications

```
 Hh:mm:ss.d          M 1

A:Timing
B:Input/Printout groups
C:Ranking and other printouts
D:Start manager

   A      B      C      D    other
```

To insert a disqualification, for example, N° 8, we scroll the menu (**other**) with the **<F5>** key

```
Hh:mm:ss.d          M 2

A:Synchronization
B:Disqualifications
C:Download data to PC
D:Upload data from PC

   A      B      C      D    other
```

and we select **Disqualifications** with the **<F2>** key

```
 Hh:mm:ss.d          M 2/2
    ATHLETE DISQUALIFICATIONS MANAGEMENT

  Number =     0  Run =  ---

  Status =

Modify     Other                  menu
```

The cursor appears next to the word **Number** and we press **<8> <ENT>**

```
Hh:mm:ss.d          M 2/2
    ATHLETE DISQUALIFICATIONS MANAGEMENT

  Number =     8  Run =  ---

  Status =

Modify     Other                  menu
```

The cursor appears next to the word **Run** and we press **<1> <ENT>**

```
Hh:mm:ss.d          M 2/2
    ATHLETE DISQUALIFICATIONS MANAGEMENT

  Number =     8  Run =  1

  Status =   QUALIFIED

Modify     Other                  menu
```

REI2 has searched for the status of the specified competitor for the specified run. We mark the competitor as disqualified by pressing **<F1> Modify**

```
Hh:mm:ss.d          M 2/2
     ATHLETE DISQUALIFICATIONS MANAGEMENT

  Number =     8 Run =  1

   Status =   DISQUALIFIED

Modify    Other              menu
```

We insert the disqualification by pressing **<F5> menu** to quit and then **<ESC>** to return to menu number 1.

## 2.4.2  End of race lists

```
 Hh:mm:ss.d            M 1

A:Timing
B:Input/printout of groups
C:Ranking and other printouts
D:Start management

   A      B      C      D     other
```

To print the lists of NS, NF, disqualified competitors and also the ranking, we select **Ranking and other printouts** with the **<F3>** key.

```
Hh:mm:ss.d            M 1/3

A:Print/Show rankings
B:Other printouts
C:Printout and Visualization mode
D:Print/Show climatic data

   A      B      C      D     quit
```

We begin by printing the list of non-starters, so we select **Other printouts** with key **<F2>**,

```
Hh:mm:ss.d            M 1/3/2

A:Time of day
B:NS/NF/Disqualified
C:Skipped
D:Bibs running (started not arrived)

   A      B      C      D     other
```

**NS/NF/Disqualified**, again with key **<F2>**

```
Hh:mm:ss.d

A:Not Started Printout
B:Not Finished Printout
C:Disqualified Printout
D:Run    0   (0=all runs)

   A      B      C      D     quit
```

and finally, **Not Started Printout** with the **<F1>** key. The list of non-starters is printed. To print non-finishers select **Not Finished Printout** with the **<F2>** key and then **<F3>** for disqualified competitors.

```
 Hh:mm:ss.d            M 1/3/2

A:Time of day
B:NS/NF/Disqualified
C:Skipped
D:Bibs running (started not finished)

   A      B      C      D     other
```

Now we return to the previous menu level by pressing the **<F5>** key

and **<F5>** again

```
 Hh:mm:ss.d            M 1/3

A:Print/Show rankings
B:Other printouts
C:Printout and Visualization mode
D:Print/Show climatic data

   A      B      C      D     quit
```

Now we select **Print/Show rankings** with the **<F1>** key.

```
  Hh:mm:ss.d
A:Ranking _____   Stop Times
B:Based on_____   Total Times
C:Run _____    1
D:Group (0=all bibs)_    0

   ESC=quit ENT=show  ALT+ENT=print
    A        B        C        D
```

A panel is presented for selecting the type of ranking. For the moment we will just print by pressing <**ALT**>+<**ENT**>. On the printout the contents of the panel will be given, followed by the printout of the ranking.

To conclude this first overview we press the <**ESC**> key, **quit**, to return to the printout menu and then

```
  Hh:mm:ss.d            M 1/3

A:Print/Show rankings
B:Other printouts
C:Printout and Visualization mode
D:Print/Show climatic data

   A      B      C      D    quit
```

<**F5**> for **quit**

We have now returned to the main menu and can switch off our REI2 with the relative switch..

```
  Hh:mm:ss.d

******************************************
Are you sure you want to switch off the
stopwatch?
******************************************

SW OFF         STANDBY        CONTINUE
```

Before switching off, REI2 asks for confirmation, which is given by pressing the <**F1**> key for **SWITCH OFF.** With <**F3**> **STANDBY** the stopwatch switches off while retaining the synchronization time. However this involves minimal battery consumption.

# 3   Program characteristics

In the short race illustrated in 'Starting', we have used only a minimal part of the function features offered by the 'Single starts' program. In the following sections the various configurations and the various operations to be performed for particular events will be analysed.

REI2 stores all the events (start, lap, stop) and allows you to make all the modifications that may become necessary at any time, also of finished runs. 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, competitor 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**> <**F2**> <**F3**> <**F4**> <**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 the previous runs. In this case, the note **NO TOT** is shown next to the competitor's running time. All the events remain in the memory and available even if they refer to 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 'proprietory' start 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.

The choices for start, intermediate and finish configurations and the command to quit timing are grouped together in a submenu (other) with the **<F5>** key. If a choice is not made within 5 seconds or an event to be managed is detected, REI2 quits configuration selection and returns to the main timing menu. To quit the individual configurations and return to the main menu, press **<F5>** (<<<<).

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.

Statuses:

- **Normal:**                                  there are no events to change or numbers to confirm/change.
- **start number**:                     after selecting the intention to operate on the competitors at the start, a start number is selected.
- **Modify start event**:          REI2 has acquired a start impulse and a request is made as to what to do with it.
- **Modify Lap event:**            a lap impulse has been taken and a request is made as to how to manage it.
- **Modify finish number**:     after selecting the intention to operate on the competitors at the finish, a number is selected.
- **Modify finish event**:        REI2 has acquired a STOP impulse and a request is made as to what to do with it.

The active functions in 'normal' status are:

The active functions in 'modify start number' status, are:

The active functions in 'modify start event' status, are:

The active functions in 'modify Lap event' status, are:

The active functions in 'modify number at finish' status are:

The active functions in 'modify finish event' status are:

The functions marked (*) can be accessed by pressing the **<ALT>** key and the **<F5>** key together.

The function marked (**) can be accessed only if the start light is active.

## 4.2   Starting a 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 'Single start' program, so press key **<F1>** for **Single starts**.

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

If, on the other hand, you wish to change the configuration used, press **<F1>** for **Clear 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   Starts*

REI2 offers various options for the management of starts. These include lists managed manually, lists calculated on the total results or on the previous runs, and lists uploaded from PC. In every type of list, the automatic 'proposal' of the following consecutive number at the start can be excluded. For details of the management of start lists, consult 7.2 Start order calculation on p.50.

The start time of the competitors can be automatically assigned either with the 'Automatic starts' function (see p.54) or by uploading it from PC.

Data concerning the competitor at the start is shown in the 'starts' area of the display. To operate on the competitor at the start you must activate the 'start keyboard', if it is not already active, by pressing the **<Start/Stop>** key. Activation of the 'start keyboard' is shown by the letter **P**  inside a square (and only the outline of the letter A). If starting lists are used, the next competitors waiting to start are listed on the following line next to the letter L.

As will be better illustrated later, REI2 allows you to change start times and numbers both immediately after the competitor's start and also later for competitors who in the meantime have already reached the finish. All the data acquired (net time, lap times, speed, etc.) will be recalculated by REI2 without further operations by the user.

### 4.3.1   Start

When REI2 receives a start impulse, it presumes that the competitor has started regularly and writes the real time of the start next to the number unless:
- you intervene within 6 seconds to modify the starter's number
- you annul, skip or re-assign the impulse within 6 seconds
- you are already in the process of changing a number at the Start
- N° 0 is proposed at the start (Manual search)

If no action is performed, REI2 proposes the next consecutive number of the start list at the start unless the 'Automatic search' has been disabled.

The passing of 6 seconds is shown by a bar next to the letter P whose height decreases as the time passes. It is possible to interrupt the count by:
- pressing **<Start/Stop>** to activate the 'start keyboard' if it is not already active
- pressing any number key or an arrow key if the 'start keyboard' is already active.

Pressing the **<ENT>** key during the 6-second count immediately confirms the event.

This particularly functional mode of operation frees the timekeeper from the need to operate on 'normal' starts, instead leaving him/her sufficient time to intervene in case of necessity (false impulses, number changes…).

### 4.3.2 Changing the start number

Various methods are available for changing the number proposed at the start (once again with the 'start keyboard' activated):
- by keying in the required number on the keyboard and pressing **<ENT>**
- by scrolling the start list with the arrow keys
- by pressing **<ENT>**, the arrow keys, and then **<ENT>** again.

After the start of the changed number, the 'Automatic search' function will propose the number which follows it as the next starter, providing, of course, that an uploaded list is used, or else the next number not yet started.

Remember that a bar to the right of the number at the start means that an **<ENT>** is needed to confirm it.

### 4.3.3 False impulse (to be annulled)

We can distinguish between two cases: we realise before the 6 seconds are up, so with the number at the start and the relative time on the display, or after.

To annul within 6 seconds, press the **<F1>** key. REI2 immediately returns the competitor to the start.

To annul after 6 seconds have passed: key in the start number to which the impulse refers and press **<ENT>**. When REI2 requests **'START exists!'** (where nn is the competitor number) press **<F4>** for **cle.ev.;** in case of error it is possible to quit annulment by pressing **<F5>** for **exit**. If you intervene on a number which has no starting events to annul, the message **'Number n not assigned!'** appears for a short time.

### 4.3.4 Uncertain Impulse

It can happen that a particular impulse cannot be assigned immediately to a specific competitor number and that we intend to do it later at a quieter moment. This particular function feature is called Skip. An impulse can be skipped only within 6 seconds from occurring by pressing the **<F2>** key for **Skip.** It is therefore not possible to skip a confirmed event.

### 4.3.5 'Shared' impulse

If necessary, the same impulse can be assigned to more than one competitor by pressing the **<F3>** **Reass** key. In this way, the time of day is assigned to the competitor proposed at the start (possibly reinserted with the keyboard) and shown again next to number 0 until a new start number is keyed in.

There is still time for re-assignments before confirmations are given with the **<F3>** key. Pressing the **<ENT>** key informs REI2 that it is no longer necessary to re-assign this time.

The first press on the **<F3>** key must be made within a time limit of 6 seconds from the event.

However, it is possible to re-assign a time to a start number which already has its start time by annulling the previous start event (see above).

## 4.3.6  Correction of time event

Another management possibility is the manual correction of a time event either within 6 seconds, and therefore on the number and time on the display in the interval for confirmation, or by retrieving a competitor number which has previously started.

To activate the correction function within the 6 seconds, press **<F4>**. To operate on the assignment of events already confirmed, key in the start number to which the event refers and press **<F4>**. It is now possible to insert the correct time event. The following functions are also available:

- **<F1> C.Data** to change the date of the event
- **<F2> Run** to change the run number to which the event refers
- **<F3> Reass.** to re-assign the event changing various data for it.

If the re-assignment option is selected, REI2 asks for the number to which the event is to be assigned, the run number and the type of event, in this order. To change the type of event, press the **<Arrow>** keys until the type of event required is proposed. If Lap is selected, you are asked for the Lap number to be assigned. All values are confirmed with **<ENT>**. When re-assignment is finished, you are asked if you wish to annul the event re-assigned with **<F4>** or retained with **<F5>**. When the same event is assigned to the number you are operating on in the same run, you are asked to confirm deletion of the event previously assigned.

## 4.3.7  Substitution

When checking that operations have been correctly made, you could find that a start event has been assigned to the wrong competitor number. REI2 makes it easy for you to perform the necessary corrections. After keying in the competitor number to which the event has been wrongly assigned, press the **<F2>** key for **Subst**. The message **'Substitute N. nn with N.'** appears. Insert the number to which the impulse really refers and confirm with **<ENT>**.

If the new number inserted has no starting time, the operation finishes without further requests. If it has, REI2 informs us that **'mm EXISTS!'** (where mm is the new number) and offers us 3 ways of intervening:

- <F3> (**Delete**) to annul the previously assigned event
- <F4> (**nn<>mm**) to invert the events from one number to the other
- <F5> (**quit**) to quit the operation.

Substitution can only be effected on events already confirmed.

A few examples (remember that to operate on start events, the 'start keyboard' must be activated if it is not already active):

The starting time has been wrongly assigned to number 165 instead of number 175, who never started.

- **<1><6><5>** to activate editing of number 165
- **<F2>** to activate the **Subst.** function

On the last line of the display the message **'Substitute N° 165 with N.'** appears and the blinking cursor appears next to the prompt

- **<1> <7> <5>** to insert the number the time is to be assigned to
- **<ENT>** to confirm the operation, which is shown on the printout.

The starting time has been wrongly assigned to 205 instead of 204, who has a start impulse which must be deleted.

- **<2><0><5>** to activate editing of number 205
- **<F2>** to activate the **Subst.** function

On the last line of the display the message **'Substitute N° 205 with N.'** appears and the blinking cursor appears next to the message

- **<2> <0> <4> <1> <7> <5>** to insert the number the time is to be assigned to. Press **<ENT>**

The message is replaced by **'204 EXISTS! Delete 205<>204 quit'**

- **<F3>** to annul the wrong impulse previously assigned to N° 204 and to assign the correct one. On the printout the annulment of the previous event assigned to 204 and the assignment of a new value are shown.

Two competitor numbers at the start, 65 and 66, have been wrongly inverted.

- **<6><5>** to activate editing of number 65
- **<F2>** to activate the **Subst.** function

On the last line of the display the message **'Substitute N° 65 with N.'** appears and the blinking cursor appears next to the prompt

- **<6> <6>** to insert the number the time event is to be assigned to. Press **<ENT>.**

The message is replaced by **'66 EXISTS! Delete 66<>65 quit'**.

- **<F4>** to assign to number 66 the time previously assigned to 65 and 66's time to 65. The two substitutions are shown on the printout.

## 4.3.8 Run

The functions of modification and correction described above operate on the run set. To change the run you wish to operate on, after setting the competitor number press the **<F5> Run** key. The number of the run being operated on appears in the column 'man'.

## 4.3.9 Non-starters

To insert a competitor in the list of non-starters, key in his/her number or press **<ENT>** if the number is already at the start or has been selected by pressing the **<Arrow>** keys, and press the **<F3>** key for **NS**.

To remove a number from the **NS** list, insert the number at the start, confirming deletion of the event with **<F4>**.

If it turns out that the competitor has already left, the message **'START N.nnnnnn exists. Ann.?'** appears on the last line of the display. Press **<F4> Yes** to 'mark' the competitor as 'NS' or **<F5>** to leave the competitor's status unaltered.

## 4.3.10 Run in progress

The run in progress to which all the events and all the operations performed refer is set in this way:
- press the **<F5> Others**
- press the **<F1> C.Start** key
- press the **<F2>** key for **Run**
- insert the number of the run in progress and **<ENT>** to confirm.

#### 4.3.10.1 Run 0

> Setting 0 (zero) as the run number activates a special REI2 automatism which moves forward the competitor's run number by one simply by inserting his/her start number, both before and after the reception of a START impulse.

In practice the first time that a competitor is placed at the start, run 1 will be taken as being the run in progress for that particular athlete, the second time run 2 and so on. Naturally the existing start control is disabled while all the other automatisms remain active. Different competitors can do different runs.

This function is particularly useful in training or test sessions in which the competitors do timed trials a number of times.

### 4.3.11 Automatic/manual search

Automatic search for the next start number can be activated or disactivated at any moment.
- press the **<F5>** key >>>>
- press the **<F1> C.Start** key
- press the **<F3>** key to change your choice. A different choice is proposed each time you press the key.

### 4.3.12 Forerunner mode

After you have entered the **Starts** configuration with **<F5> >>>>** and **<F1> C.Start**, each time you press the **<F4> Forerunner** key, the 'forerunner' mode is activated or disactivated. For each mode change, confirmation is requested with the question **'Enable forerunner mode?'** or **'Disable forerunner mode?'** Confirm with **<F4> Yes** to change the status or **<F5> No** to annul the change. Each status change is shown on the printout, framed by asterisks so that it can be quickly ascertained.

While the forerunner mode is active, an **A** is shown to the right of the letter **P** in the start area. The displayboard is disactivated and the relative red led on the `stopwatch` blinks (it is possible however to reactivate the displayboard). The management of the forerunner remains exactly the same as for normal management with the difference that the forerunner does not appear in the ranking.

> When you have quit the forerunner mode, the relative data is canceled from REI2's memory.

### 4.3.13 Start event memory

Any start impulses which arrive while you are operating on a competitor are 'parked' in a memory provided for this purpose. The number of impulses recorded is shown by the number under the indication **'mem'**. REI2 stores up to 127 events and presents them to the operator in the order in which they took place.

For the parking of impulses in the memory, the 6-second count made by REI2 is treated like an operation performed on the competitor. When the 6 seconds are up and the event has been automatically confirmed, REI2 takes the next event from the memory.

You are strongly advised to keep the start memory empty.

## 4.3.14 Finish priority

A Stop event automatically enables the 'stop keyboard' and disables the 'start keyboard' if this is only activated and you are not operating on a competitor.

Automatic selection of the field finished when a stop impulse occurs can be activated or disactivated at any moment.
- press the key **<F5> other**
- press the key **<F1> C.Start**.

Press the key <**ALT**> + <**F1**> to change the selection. Each time the key is pressed an alternative choice is proposed.

### *4.4 Finishes*

REI2 constructs a list of competitors expected at the finish and shows the first ones next to the letter R.

As with starts, a specific zone of the display is reserved for the display of information about competitors at the finish. To be able to operate on this data the 'finish keyboard' must be activated, if it is not already active, by pressing the **<Start/Stop>** key. Activation of the 'finish keyboard' is shown by the letter 'F' inside a square (and the letter 'S' only in outline).

## 4.4.1  Finish

The management of stop impulses by REI2 differs according to whether automatic 'assignment' and 'search' are activated.

Automatic 'assignment' is not normally active for every type of race, while automatic 'search' is active for alpine skiing and disactivated for cross-country skiing (see the table summarising configurations).

The following table summarises the various ways of functioning for the configurations set.

| Assignment | Search | Function features |
|---|---|---|
| Active | Active | The competitor who follows the last competitor to have finished in the list of those expected at the finish is proposed with the net time alongside. You have the time specified with the function Confirmation time for Stop (chap. 12.1.10 on p.71) to make any variations, at the end of which the impulse is confirmed and the next number in the list is proposed at the finish. Procedures are the same as for the start. |
| Disactive | Active | The competitor who follows the last competitor to have finished in the list of those expected at the finish is proposed with the net time alongside. The blinking cursor next to the number reminds you that assignment of the impulse must be confirmed with the key **<ENT>**. When assignment has been confirmed, the next competitor in the list is proposed at the finish. |

| Disactive | Disactive | The finish time is shown and the cursor appears next to the number 0 to ask for insertion of the number. The first time the **<ENT>** key is pressed, the number is confirmed and the net time is presented. The second time the **<ENT>** key is pressed, assignment is confirmed. No numbers at the start are proposed (0 on the display). |
|---|---|---|
| Active | Disactive | As for the previous configuration. |

### 4.4.2  Similarities

The following functions operate on the finish events, with exceptions managed in the same way in which analogous functions operate on starts. The function keys from **<F1>** to **<F4>** (**Ann.Ev. Skip [Subst.] Reass.[NS/NF] C.Chrono**) to be used are the same for the various functions both at the start and finish.

You should keep in mind that normally start events are confirmed automatically after 6 seconds while finish events must normally be confirmed manually (see chap. 4.4.15 Automatic/manual assignment on p.28).

### 4.4.3  Changing the finish number

The finish number is changed in the same way as the start number. That is, you:
*   key in the number you have chosen on the keyboard and press **<ENT>**
*   scroll the finish list (R) with the arrow keys
*   press **<ENT>**, the **arrow keys** and **<ENT>** again.

Contrary to what happens at the start, the 'Automatic function' key will always propose the first number in the list of competitors expected at the finish.

Remember that a bar to the right of the number at the start means that **<ENT>** is necessary for confirmation.

### 4.4.4  False impulse (to be annulled)

We can distinguish between two cases: we realise before confirmation of the event, so with the number at the finish and the relative time on the display, or after.

To annul an unconfirmed event, press the **<F1>** key. REI2 immediately returns the competitor to the finish.

To annul a confirmed event: key in the finish number to which the impulse refers and press **<ENT>**. When REI's request **'Annul event nn.?'** appears (where nn is the competitor's number), press **<F4>** for **Yes;** in case of error it is possible to quit annulment by pressing **<F5>** for **No**. If you operate on a number which has no finish events to annul, the message **'Number n not assigned!'** appears for a short time.

### 4.4.5  Uncertain Impulse

It can happen that a particular impulse cannot be assigned immediately to a specific competitor number and that you intend to do it later at a quieter moment. This particular function feature is called Skip. An impulse can be skipped only before being confirmed by pressing the **<F2>** key for **Skip.** It is therefore not possible to skip a confirmed event.

## 4.4.6  'Shared' impulse

If necessary, the same impulse can be assigned to a number of competitors, for example, when they cross the finishing line simultaneously, by pressing the **<F3> Reass** key. In this way, the real time is assigned to the competitor proposed at the finish (possibly reinserted with the keyboard) and shown again next to number 0 until a new finish number is chosen.

There is time for re-assignments before confirmations are given with the **<F3>** key. Pressing the **<ENT>** key informs REI2 that it is no longer necessary to re-assign this time.

The first press on the **<F3>** key must be made within a time limit of 6 seconds from the event.

However, it is possible to re-assign a time to a number which already has its finish time by annulling the previous finish event (see above).

## 4.4.7  Correction of time event

Another way of intervening is by manually correcting a time event either before confirmation, and therefore on the number and time on the display, or by retrieving the number of a previous finisher.

To activate the correction function within the 6 seconds, press **<F4>**. To operate on the assignment of events already confirmed, key in the start number to which the event refers and press **<F4>**. It is now possible to insert the correct time event. The following functions are also available:
- **<F1> C.Data** to change the date of the event
- **<F2> Run** to change the run number to which the event refers
- **<F3> Reass.** to re-assign the event changing various data concerning it.

If the re-assignment option is selected, REI2 asks for the number to which the event is to be assigned, the run number and the type of event, in this order. To change the type of event, press the **<Arrow>** keys until the type of event required is proposed. If Lap is selected, you are asked for the Lap number to be assigned. All values are confirmed with **<ENT>**. When re-assignment is finished, you are asked if you wish to annul the event re-assigned with **<F4>** or retained with **<F5>**. When the same event is assigned to the number you are operating on in the same run, you are asked to confirm deletion of the event previously assigned.

For example: in a cross-country ski race, competitor N° 23 has crossed the finishing line instead of the first intermediate point and continues his/her race regularly. To re-assign, after the finish has been confirmed press the keys:
- **<2><3><F4>** to activate **C.Chrono**
- **<F3>** for **Reass.**

In the central line REI2 shows the activated function **'REASS.TIME:….'** with the item of data to be inserted while in the last line the string **'N. 23 Man. 1 C.Log.STOP'** appears
- **<ENT> <ENT>** to confirm the number and run
- press **<Arrow down >** until the last part of the string on the last line becomes **'C.Log.Lap'**
- **<1> <ENT>** to insert intermediate 1 and confirm
- **<F4>** to delete the original event.

On the printout deletion of the stop time event and insertion of the Lap 1 time appear. The competitor is put back in the race.

## 4.4.8  Substitution

When checking that operations have been made correctly, you could find that a finish event has been assigned to the wrong competitor number. REI2 makes it easy for you to perform the

necessary corrections. After keying in the competitor number to which the event has been wrongly assigned, press the **<F2>** key for **Subst**. The message **'Substitute N. nn with N.'** appears. Insert the number to which the impulse really refers and confirm with **<ENT>**.

If the new number inserted does not have a finishing time, the operation finishes without further requests. If it has, REI2 informs us that **'mm EXISTS!'** (where mm is the new number) and offers us 3 ways of intervening.
- **<F3>** (**Delete**) to delete the previously assigned event
- **<F4>** (**nn<>mm**) to invert the events between two numbers
- **<F5>** (**quit**) to quit the operation.

Substitution can only be effected on events already confirmed.

## 4.4.9 Run

The functions of editing and correction described above operate on the run set. To change the run you wish to operate on, press the **<F5> Run** key. The number of the run being operated on appears in the column 'man'.

## 4.4.10 Automatic/manual search

Automatic search for the next finish number can be activated or disactivated at any moment.
- press the **<F5>** key **other**
- press the **<F3>C.Finish** key
- press the **<F3>** key to change your choice. A different choice is proposed each time you press the key.

## 4.4.11 Finish event memory

Any finish impulses which arrive while you are operating on a competitor are 'parked' in a memory provided for this purpose. The number of impulses recorded is shown by the number under the indication '**mem'**. REI2 stores up to 127 events and presents them to the operator in the order in which they took place.

If the 'assignment' function is active, for the parking of impulses in the memory the 6-second count made by REI2 is treated like an operation performed on the competitor. When the 6 seconds are up and the event has been automatically confirmed, REI2 takes the next event from the memory.

You are strongly advised to keep the finish memory empty.

## 4.4.12 Finish priority

A Stop event automatically enables the 'stop keyboard' and disables the 'start keyboard' if this is only activated and you are not operating on a competitor.

## 4.4.13 Non-finishers

To insert a competitor in the list of non-finishers, key in his/her number or press **<ENT>** if the number is already at the start or has been selected by pressing the **<Arrow>** keys, and press the **<F3>** key for **NF**.

To remove a number from the **NF** list, insert the number at the finish, confirming deletion of the event with **<F4>**.

If it turns out that the competitor has already finished, the message **'STOP exists!?'** appears on the last line of the display. Press **<F4> ann.ev.** to 'mark' the competitor as 'NF' or **<F5> quit** to leave the competitor's status unaltered.

## 4.4.14 Differences

The following functions are not present at the start and are specific to the management of finishes.

## 4.4.15 Automatic/manual assignment

Automatic assignment of the finish impulse to the competitor proposed at the finish can be activated or disactivated at any moment.
- press the **<F5>** key **other**
- press the **<F3>C.Finish** key
- press the **<F2>** key to change your choice. Each time you press the key, a choice which alternates between '**Ass:Manu**' for manual assignment and '**Ass:Auto**' for automatic assignment appears.

## 4.4.16 Activated/Disactivated position in ranking

REI2 allows you to activate and disactivate the display of a position in the ranking on the displayboard. To activate and disactivate this function:
- press the **<F5>** key **other**
- press the **<F3>C.Finish** key
- press the **<F4>** key to change your choice. Each time you press the key, a choice which alternates between '**Rank no**' for disactive and '**Rank yes**' for active appears.

The position in the ranking is calculated by scrolling the various groups (see section Group management on p.40) starting from group N° 1. The search finishes when REI2 finds the first group containing the finisher. The position is calculated as a position for that particular group and all subsequent groups are ignored.

For example, if for printing of the final rankings we have inserted competitor N° 12 in groups N° 1 (e.g. male), N° 2 (e.g. junior) and N° 3 (e.g. foreigners), he appears on the displayboard with a position in relation to all the males. Viceversa, if we want his position in relation to the foreigners to appear, we define the groups in the order N° 1 (foreigners) N° 2 (males) and N° 3 (juniors).

## 4.4.17 Finish sequence

Amongst the various functions offered by REI2 there is the chance to arrange for a sequence of numbers at the finish so that by pressing once on a function key, an impulse is assigned to a set number. This function can be employed in cases where, in a race with finishes following close on one another, such as a cross-country ski race, we have advance notice about the finish.

The first operation is to activate the function with the **<F4>** for **FinSeq** key. Then insert the numbers expected at the finish, pressing **<ENT>** between one number and another. The list is shown on the last line with the inserted numbers separated by a comma. Press the **<ENT>** key with the competitor number 0 to finish insertion of the list.

At this point, the first competitor numbers inserted are shown above the various function keys.

When a stop impulse is received, to assign the time immediately to the competitor number you only need to press the function key corresponding to the number at the finish. Any numbers assigned to function keys to the right of the one selected will be moved one place to the left.

If the function key corresponding to the competitor number is pressed before the event takes place, the competitor's time is shown on the displayboard and is assigned automatically when the finish impulse is received.

If the same impulse is to be assigned to more than one competitor, after assigning as previously described you need only press the **<ALT>** key at the same time as the function key concerned to retrieve the last time event processed. The process can be repeated on the same event as many times as required.

If, on the other hand, the impulse received is to be skipped, this can be done by pressing the keys **<ALT>** + **<ESC>**. If necessary, a skipped event can also be reassigned as described above.

If a number you have not already been informed of arrives at the finish, you can insert it at the top of the list simply by keying it in and pressing enter.

REI2 quits list management when the last number in the list has been used. However, it is possible to quit list management at any moment by pressing the **<ESC>** key. Once you have quit the list with **<ESC>**, the numbers previously uploaded are not shown when you return to the function list.

Note that if a number which has already finished is inserted, you are of course asked to confirm the deletion of the previous event.

### *4.5  Intermediate times*

As the way of managing intermediate times is similar to the management of finishes, they are dealt with after finishes.

In this chapter (4.5), unless otherwise specified the term intermediate refers to both intermediate time in the true sense of the word and to lap time.

With REI2 up to 240 intermediate events (Laps) for each competitor can be managed in a complete and flexible way, whether they be lap times or true intermediate times. Management of intermediate times can be performed by the user by operating on the device or assigned wholly or in part to REI2 by setting specific function modes. At the end of the description of the various functions, a few examples of configuration are given. (4.5.4 Intermediate times: examples of configuration p.31).

### 4.5.1  Intermediate times: Automatism modes

The management mode of intermediate times can be modified at any moment. The modes available are 'Manual', 'Number priority' and 'Lap priority'.

To access the function:
* press the **<F5>** key **other**
* press the **<F2>C.Inter.** key
* press the **<F2>** key to change your choice. Each time you press the key, a choice which alternates between **Manual, Pri.Num, Pri.Lap** is proposed.

The meaning of the various modes is as follows:
* **Manual:** No automatism is set. Assignment of the correct intermediate time is left to the operator.

- **Number Priority:** For the competitor number set, a search is made for the following intermediate number so as to take a time within the limits of reference.
- **Lap priority:** For the intermediate number set, a search is made for the competitor who started after the last one with that Lap number, so as to take a time within the limits.

The two automatic modes are useful in different ways depending on whether competitions take place on linear or circuit courses.

## 4.5.2  Intermediate times: Priority assignment

With this function you can specify whether, in the case of the acquisition of a lap event, you wish REI2 to show on the display the data for that time for confirmation by the operator, or whether it must determine the correct assignment of the time and should assign it automatically.

To access the function:
- press the **<F5>** key **other**
- press the **<F2>C.Inter** key
- press the **<F3>** key to change your choice. Each time you press the key, a choice which alternates between **Priorit,NotPrior** is proposed.

The meaning of the various modes is as follows:
- **NotPrior:** Guided by the settings selected by the user, REI2 determines the competitor number and intermediate number and if they correspond, assigns them automatically or skips them. Non priority management is possible only if the 'Pri.Num.' or 'Pri.Lap' modes are enabled (see chap. 4.5.1 Intermediate times: Automatism modes on p.29)
- **Priorit:** The data for the acquired lap time are shown and REI2 completes them according to the automatisms set and waits for their confirmation.

## 4.5.3  Intermediate times: Reference

Validity limits (ranges) can be set for the times acquired for each individual competitor for the various intermediate events or laps. The time limits are calculated as the best or worst performance expressed as a percentage compared to a competitor who stands as a reference.

To access this function:
- press the **<F5>** key **other**
- press the **<F2>C.Inter** key
- press the **<F4> Ref.** key again.

The enabled function keys are:
- **<F2> Run** to set the limits for lap time. After pressing the key you are asked for the competitor number to be used as a reference (the last finisher is proposed). On the printout are printed the lap times of references and the minimum and maximum values which will be presumed correct
- **<F3> Race** to set the limits for events which are intermediate in the real sense of the word. After pressing the key you are asked for the competitor number to be used as a reference (the last finisher is proposed). On the printout are printed the minimum and maximum times which will be presumed correct for each intermediate event. If the answer **Yes** is given to the **Run time reference** request, those competitors who have times above the set limit will be substituted as the next competitor expected at the finish with the following competitor expected at the finish
- **<F4> Delete** to delete the limits set
- **<F5> Quit** to return to the previous menu.

At any moment a new competitor can be selected as 'reference' without any effect on stored data. For example, the competitor used as reference can be changed each time the category or merit group is changed.

The function Manual input of reference times (chap. 12.1.6 on p.69) allows you to manually insert the reference times and change the validity percentage values.

However, the possibility of assigning an intermediate time outside the limits remains active. In this case, if a generic Lap time is assigned, the words **'Suspicious Time'** are printed on the printout.

> The reference times are calculated and printed on the basis of Lap times and not on the basis of split times. For example, if the first intermediate event takes place 30 seconds into the race (split) and the second 1' 30'' into the race (split), the validity range for the second intermediate event is calculated on the minute which passes between the two intermediate events (lap) and not on the minute and thirty seconds. So with a shift of 15% the second intermediate time must be measured between 51" and 1'09" after the first intermediate time and not between 1' 16" 50/100 and 1'43" 50/100 from the start. The limits for the run time on the other hand are calculated on the Split time.

> If there is no previous intermediate time, REI2 is still able to maintain the management automatisms of the intermediate times by using the lap time between two known events. For example, if it acquires a fourth intermediate time and the third is missing, it recalculates the range between the second and the fourth.

### 4.5.4 Intermediate times: examples of configuration

**Example 1: an Alpine ski race with two intermediate times**

Let's suppose we are dealing with an Alpine ski race with competitors of similar level and forerunners of similar level to the competitors. Also check that line configuration is set to **LAP 1** for **LAP** and **LAP 2** for **AUX**.

We will use the forerunner as the competitor for reference with 4.5.3 Intermediate times: Reference p.30 selecting **T.Typical** for **Race**. REI2 will use the intermediate times of the forerunner to calculate the validity ranges of the intermediate times. When setting the '**Priority Lap**', on acquisition of an intermediate impulse REI2 will propose the competitor whose time is within the limits of reference as the 'owner' of the intermediate time. At this point, if we have set with 4.5.2 Intermediate times: Priority assignment p.30 **Priorit.**, each time confirmation of the data acquired will be requested. If, on the other hand, we have set **NotPrior**, the data will be accepted immediately. In the second case, times which do not lie within the ranges of reference are automatically skipped.

**Example 2: a circuit race with reference times**

Let's suppose we have a circuit race in which the competitors must run 10 laps, once again with competitors of similar level. The intermediate line is in **AUX**. (Check that the line configuration is set to **LAP 0** for **AUX** for autoincrement).

We set REI2 with 4.5.2 Intermediate times: Priority assignment p. 30 **NotPrior.** and **Priorit. Num**. At the end of the first lap (before the transit of every competitor over the lap line) we will have to manually assign both the competitor number and the lap number to the various competitors. The first moment we are free we will assign the time of a significant competitor (for example, one a third of the way down the ranking) as the reference time. From that moment on, REI2 will ask (before the transit of every competitor over the lap line) only for the competitor number and will

calculate automatically the lap number to be referred to. If the competitor's time does not fall within the pre-set parameters, he/she will automatically be skipped.

If the number of laps to be completed has been set with the function 12.1.5 Last relay lap (Lap>>Stop) on p. 69, REI2 will assume that the impulse from the **LAP** channel for the last lap has come from the **STOP** channel.

### 4.5.5  Management of intermediate events

At the same moment that REI2 acquires an intermediate impulse, the most likely competitor for the intermediate time acquired is shown on the display next to the letter **L** (Lap). This number can be changed with the usual operation. Press **<ENT>** to confirm assignment. The time of day of the event and the relative channel are shown on the printout.
The time values of of the last event (LAP) and start time (SPLIT) are printed either when the competitor finishes or immediately according to the settings specified with  Printing of intermediate times (see section 12.1.3 on p.68 ).

Any radio speeds or averages are also printed.(see chap. 15 Speed bases Setup on p.85).

### 4.5.6  False impulse (to be annulled)

To annul an intermediate time, press the **<F1>** key.

### 4.5.7  Uncertain impulse

An intermediate impulse can be skipped by pressing the **<F2>** key. The management of skipped events remains the same as that for start and finish skips.

### 4.5.8  'Shared' impulse

If necessary, the same impulse can be assigned to more than one competitor, for example when they pass the finishing line at the same time, by pressing the **<F3> Reass** key. In this way, the time of day is assigned to the competitor proposed at the finish (possibly reinserted with the keyboard) and re-proposed next to number 0 until a new finish number is keyed in.

The time is available for re-assignment before confirmations are given with the **<F3>** key. Pressing the **<ENT>** key informs REI2 that it is no longer necessary to re-assign this time.

The first press on key **<F3>** must be made within a time limit of 6 seconds from the event.

However, it is possible to re-assign a time to a competitor number which already has its finish time by annulling the previous finish event (see above).

### 4.5.9  Correction of time event

Another management possibility is the manual correction of an intermediate time before confirmation and therefore on the number and time in the display.

To activate the correction function before confirming the time event, press **<F4>**. It is now possible to insert the correct time event. The following functions are also available:
- **<F1> C.Data** to change the date of the event
- **<F2> Run** to change the run number to which the event refers
- **<F3> Reass.** to re-assign the event changing various data for it.

If the re-assignment option is selected, REI2 asks for the number to which the event is to be assigned, the run number and the type of event, in this order. To change the type of event, press the **<Arrow>** keys until the type of event required is proposed. If Lap is selected, you are asked for the Lap number to be assigned. All values should be confirmed with **<ENT>**. When re-assignment is finished, you are asked if you wish to annul the event re-assigned with **<F4>** or retained with **<F5>**. When the same event is assigned to the number you are operating on in the same run, you are asked to confirm deletion of the event previously assigned.

## 4.5.10 Intermediate number

On receiving an intermediate impulse it is possible to specify the lap number (lap) you wish to refer to by pressing the **<F3> N.Lap** key. The cursor will appear over the letter **L** next to the word **LAP** and wait for the insertion of the intermediate number and its subsequent confirmation with **<ENT>**.

## 4.5.11 Run of intermediate event

By pressing the **<ALT>** and **<F5>** keys simultaneously, it is possible to modify the run number the intermediate event taken refers to. The cursor places itself on the active run number (at the bottom right of the display). Key in the new run number and press **<ENT>** to confirm.

## 4.5.12 Modifying intermediate events (later)

All the modifications to acquired intermediate values are possible after confirmation of the individual events acquired and also after confirmation of the competitor's finish.

To modify an acquired intermediate event, with the 'finish keyboard' activated insert the number of the competitor you want to operate on and without confirming the number, press the **<ALT>** and **<F5>** keys together.

At this point REI2 asks for the Lap number you wish to operate on. Note that the number 0 corresponds to the event Stop. When the lap number has been inserted (confirmation with **<ENT>** is optional), the Lap management functions previously described are activated.

It is also possible to operate on a different competitor number by inserting the new number instead of the one proposed. (In this case, the Lap number must be confirmed).

If the number is confirmed with **<ENT>**, you are asked if you wish to annul the relative event. Press **<F4> Yes** to annul the event or **<F5>** to keep it.

## *4.6 Skip*

We have seen previously how it is possible to skip an event so as to be able to manage it later with greater calm. (For example, in the case of the finish of a group of athletes with illegible numbers).

All skipped impulses are marked **SK** on the printed strip and identified by a consecutive number situated next to them.

### 4.6.1 Assignment

To assign a skipped event, do as follows:
• Press the **<F1>** key for **AssSk**
A rectangle appears showing the number of skipped events, the consecutive number of the skip, the time of day, the type of event and the run number

- Select the Skip number you wish to operate on either by keying in the number or by scrolling the Skips with the arrow keys, and press **<ENT>.**

A request for the competitor number to which the skipped event should be assigned appears. (For some events REI2 proposes the number).

- Press the **<ENT>** key to confirm assignment or
- Press the **<F2>** key to change the run you wish to refer to and confirm.

During this phase you can annul the skipped event with the **<F1>** key or quit skip management with the **<F4>** key.

If there are no skipped events to manage, the message **'There are no skipped events!'** appears in the announcement rectangle.

## 4.6.2 Annulment

When all the 'useful' skipped events have been managed, it is possible to annul all the skipped events which are no longer necessary:

- Press the **<F2>** key for **ResSK**
- Press the **<F4>** key **Yes** to confirm annulment. In case of error, press **<F5>** for **No**.

On the printout the cancelation of the skipped events from the memory is shown.

After cancelation, the numbering of the skipped events restarts from 1.

## 4.6.3 AutoSkip activation/disactivation

All the stop and intermediate events can be skipped by enabling the AutoSkip function as follows:

- Press the **<F3>** key so the letters **SkAuto** appear.

From this moment on, all the stop and intermediate events will be automatically skipped. REI2 informs you that the function has been activated by blinking the announcement **'*** **AutoSkip enabled ***'** immediately above the finish area.

To disactivate the function, operate in a similar way:

- Press the **<F3>** key so the letters **SkManu** appear.

Note that while the Autoskip function is active, no stop impulse is presented to the operator for confirmation. This means that if there is a displayboard, it will continue to display running time also for athletes whose arrival at the finish has been regularly recorded.

## 4.6.4 An example

A practical example can better illustrate the use and usefulness of Skips.

Let's imagine a race over a distance long enough to allow the competitors to catch up with and overtake each other. After choosing new race, we enter timing. We start the first five competitors (from N° 1 to N° 5) by pressing the **<STA>** key 5 times. Suppose that at this point three competitors, number 5, a competitor with an illegible number and number 2 reach the finish very close together. Then other competitors approach the finish, so we press the **<STO>** key to simulate their finishes, we confirm N° 5's finish which we have correctly identified with **<5><ENT><ENT>** and at this point we do not know to whom to assign the second impulse and we 'freeze' it, skipping it with **<F2>**. We then confirm N° 2's finish with **<2><ENT><ENT>**.

In a later moment of calm we can 'retrieve' the missing number (by asking for it, by checking the finish lists) and we suppose it is N° 4. So we can carry out time assignment. On the printout we retrieve the Skip number assigned to the impulse (SK1) between N° 5 and N° 2, we press the **<F1> AssSk** key, we confirm our intention to operate on a STOP event in run 1, as shown on the display, and at the request **Nu**, for number, we put 4 with **<4>** and confirm with **<ENT>**. In this way we have assigned the previously 'frozen' finish time to number 4 without having to key in a time.

## *4.7  Displayboard management*

REI2's management of the displayboard/displayboards is very sophisticated. The configuration options of the displayboards installed is illustrated in section Displayboards setup on p.74. In this section, their management during timing will be illustrated.

Inside the 'displayboard indicator'(see **Figure 1** ), the competitor number shown to the public is displayed with the indication as to whether the time is a running time (revolving bar), a net time (T), a lap time (L) or whether a previous event request is being inserted. In addition, a series of ---- shows when the displayboard is switched off.

### 4.7.1  Normal functioning

During a normal timing session, data about the competitor expected at the finish are shown on the displayboard with the number and the revolving bar. At the moment the competitor reaches the finish, the net time data is sent to the displayboards. At this point, REI2 allows you to immediately change the number at the finish, for example, by confirming the assignment of the finish, and leaving the data about the competitor who has just finished visible for a time pre-set during configuration.

The passing of the pre-set display time is shown by a bar between the competitor's number and the letter T, which becomes shorter as the time passes.

### 4.7.2  Automatic queuing up

Any data to be displayed before the display time is over is queued up and subsequently displayed.

This function is particularly useful when finishes are close together, for example, in cross-country skiing events. In this way, the timekeeper can concentrate exclusively on the management of the finishes, leaving REI2 the job of showing the public for a convenient period of time data about the competitors who have finished.

If more than 4 athletes have yet to be displayed, display time is halved until only 4 or fewer events remain to be displayed.

### 4.7.3  Manual queuing up

It is possible to add the latest finishes to the queue of events to be displayed on the displayboards. The data queued up in this way will be displayed in the same way as for automatic queuing up. To queue up events, keep the **<ALT>** key pressed down and press the **<Arrow up>** key as many times as the number of finishes to be displayed. Each time the **<Arrow>** key is pressed, the number of the athlete placed in the queue appears in the displayboard indicator with the character **?** next to it.

It is also possible to queue up just the finishing time of an athlete who has arrived some time before by using the following sequence:
- Key in the number concerned

- Press the **<ENT>** key
- Press the **<F3 > display** key.

The functions of Disabling of displayboard and Priority competitor empty the queue of events to be displayed.

## 4.7.4  Disabling of displayboard

To disactivate the displayboard output so that no communication appears, press the **<ALT>** + **<Displayboard>** keys simultaneously. In the displayboard indicator the sign '**------**' appears and the red led of the key begins to blink rapidly (about two blinks a second). To reactivate the displayboard, press the **<ALT>** + **< Displayboard>** keys again. The indicator stops blinking.

## 4.7.5  Priority competitor

In particular conditions it is necessary to display the running time of an athlete whose race is in progress (priority) while other athletes are expected at the finish. To do this, operate as follows:
- Set the number of the 'interesting' athlete at the finish, keying it in and confirming it, or selecting it with the **<Arrow >** keys and pressing **<ENT>**
- Press the **<Displayboard>** key.

Now the 'priority' number appears in the displayboard indicator and the led blinks slowly (about 1 blink a second).

From this moment on, whatever number is set at the finish, the priority number is shown on the displayboard. To finish priority management of an athlete, press the **<Displayboard>** key again. The led stops blinking and the displayboard is linked up with the competitor at the finish.

## *4.8   Lock keys*

The two **<LCK>** keys have similar function features. The only difference is that, while the **<LCK>** key over the **<Stop>** key operates only on the stop line, the key over the **<Start>** key can be configured in whatever way the user likes (see section Line exclusion configuration on p. 83).

When activated by pressing, the red led corresponding to the button pressed begins to blink and the symbol # appears in front of the number of impulses in the memory.

All the impulses acquired at the locked line are 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 delete irreversibly the events acquired irreversibly. Reply **No** to deal one by one with the events in question, deciding whether to annul them or assign them to an athlete.

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 possibility of managing both the events acquired in the previous lock phase and those in the latest 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.

### 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>** key operates only on the stop line, the key over the **<Start>** key can be configured in whatever way the user likes (see section Line exclusion configuration on p.83).

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 Line holdoff times on p.82). 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 Start light management

REI2 can manage a start light and a sound signal device for start management.

During the timing session, without quitting it, the main control functions can be rapidly accessed by pressing the keys **<ALT>+<Light>**. The functions immediately available are: **<F1> Rep:** to set repetition frequency; **<F3>** to select the required sequence; **<F4> ON|OFF** to activate or disactivate the start light; **<F5> quit** to quit the function.

With the "start keyboard" active it is possible to disactivate or activate the start light by pressing the key **<F4> ON|OFF**. Each time the key is pressed, the start light is disactivated (with the message **OFF** on the display in a position corresponding to key **<F4>)** or activated (with the message **ON** in a position corresponding to key **<F4>)**.

Consult the relative manual for configuration details and connection instructions.

### 4.11 Quitting timing

To return to the competition menu at the end of the timing session:
*   Press the **<F5>** key for >>>>
*   Press the **<F4>** 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 is 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 wil return to timing, with the events ready to be managed.

### 4.12 Printout of time events

REI2 prints all the events, results and all the operations performed on the printed strip. All the data is printed on two or more lines. The first line allows you to identify the event or result, the next line or lines give the value or values associated with them. Every group of lines is separated from the next group by a white line.

Print modes depend on the setting of a number of configuration values in the menu Print time of day (see p.68).

There are two types of printout:
*   Printing of events

- Printing of results.

## 4.12.1 Printout of events

When an event takes place, two lines containing the information about the acquired event are printed.

Let's have a detailed look:
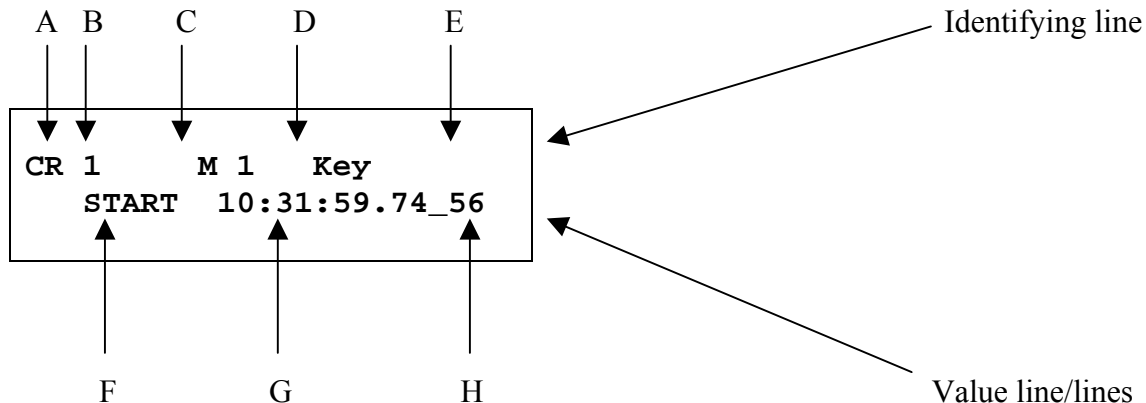
A:    Operation identifier. It can adopt one of the following values:
- AN         deletion of time event
- AS         automatically generated (only for programmed automatic starts)
- CC         time event correction
- CR         printing of time event for normal event acquisition
- NS         non-starter
- DF         non-finisher
- SU         substitution (printed together with deletion when the competitor number of a time event is substituted)
- SK         skipping of time event – in this case, instead of the competitor number, the consecutive identification number is printed

B:    Competitor number or skip number:
- T he competitor number to which the event refers for all the events assigned
- The consecutive number of the skip for the skipped events.

C:     Run number to which the event refers.

D:    Source identifier: channel through which the event shown arrived. It can adopt the following values:
- Key         manual using the Start, Lap, Aux or Stop keys
- Line         received from input lines
- Keyb         inserted using the keyboard, for example, manual insertion of a finish time.
- Auto         automatically generated (only for programmed automatic starts)
- Radio         received via radio
- Enc         acquired after a time interval through time event transfer from LinkGate Encoder
- Pod **n**         acquired via LinkPod from pod numero **n**

E:      Change: When the line refers to the change of a previously inserted item of data, the indicator '*M*' appears on the right of the first line.

F:      Event time type. It can adopt one of the following values:
   - START      start time event (start)
   - STOP       stop time event (stop)
   - Lap**nnn**      intermediate time event (lap) of lap number **nnn**
   - Dic.NS      competitor inserted into the non-starter list
   - Dic.NF      competitor inserted into the non-finisher list.

G:      Significant time. REI2 stores all events internally with the utmost precision (1/25,000 of a second) and presents them to the operator with a precision of 1/10,000 of a second regardless of the precision set.

H:      Part of time cut off by rounding up or down. The dash '_' shows the precision set. The values calculated which would be to the right of the dash are not shown or printed in net times.

During a timing session further information notes may be printed.

### 4.12.2 Printing of results

If the last event acquired and printed makes it possible to complete the calculation of a result (e.g. acquisition of intermediate event or stop), two or more lines containing the values of the result obtained are printed.

Let's have a detailed look:
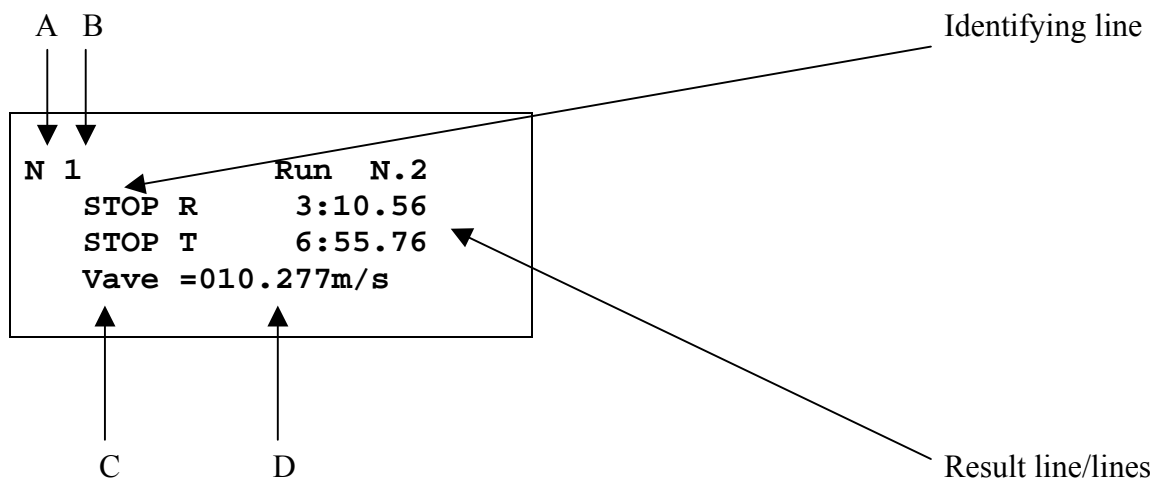


A:      Letter **N** for number

B:      Competitor number to which the results shown refer

C:      Type of result. It can adopt one of the following values:
   - STOP M      net run time
   - STOP T      net total time
   - Vlap n**nn**      average speed value relative to base number **nnn**
   - **Vmed**      average speed value
   - Vrad **nnn**      radio speed value relative to base number **nnn**

D:      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 per second)

# 5 Group management

Initial configuration is for a maximum 200 groups with the possibility of inserting up to 20 choices.; function 5.4 Groups structure:  (see p.41) can be used to change the number of groups and choices. The groups are used for the calculation of position in the ranking during timing, for the printing of rankings and for the calculation of the starting order of subsequent runs.

The same athlete can be inserted into 10 groups. The group numbers do not have to be consecutive but can be assigned as desired.

All group management is contained in the menu M 1 B → **Group insertion/printing** and the following instructions refer to this menu.

## 5.1  Input/Modify groups

This function allows you to specify the composition of the single groups.

```
 Hh:mm:ss.d
GROUP  N.  1  LAP  4  From N.   to N.
     Choice N.   1    -----    -----
     Choice N.   2    -----    ---
     Choice N.   3    ---      -----
     Choice N.   4    -----    ----
ENT=Modify ALT+ENT=Print ARR=Change Group
   ↑        ↓     Clear   Group N.  quit A
```

Group number.

Group's number of laps

Subgroup number (not editable).

Details of subgroup inserted.
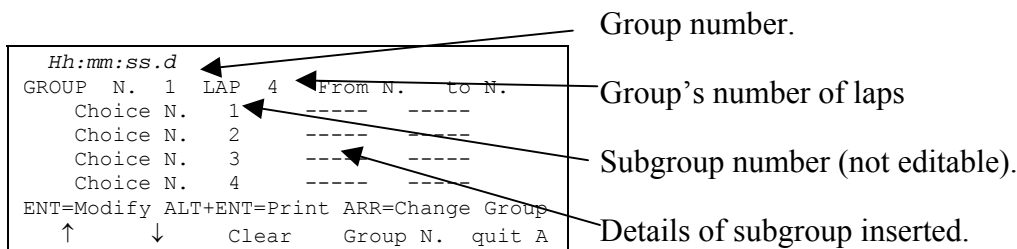
Options available:
- **<F1>** ↑ to scroll up the list of the choices available, within each group, towards choice  N° 1. The selected choice is indicated with the symbol  ▶  next to it
- **<F2>** ↓ to scroll down the list towards choice with maximum number
- **<F3> Delete** deletes the content of the choice selected by the symbol  ▶
- **<F4> Group N.** allows you to specify the group number (from 1 to 99) on which you intend to work
- **<F5> quit** quits the function
- **<ALT>+<F1> Choice** makes it possible to choose between insertion of **Double** to enter the minimum and maximum competitor numbers of the choices and **Single** to enter single competitor numbers.
- **<ALT>+<F3> Lap** makes it possible to insert a different number of laps for each group. This function is only active if the setting made in the choice Last relay lap (Lap>>Stop) (see chap. 12.1.5 on p. 69) is different from 0.
- **<ENT>** allows you to modify the values of the choice indicated
- **<ALT+ENT> Print** prints the composition of the groups
- **<Arrow up >** increases the group number
- **<Arrow down >** decreases the group number.

For example, suppose we want to define the following groups (categories):

| | |
|---|---|
| Group 1 | numbers from 1 to 10 |
| | number 15 |
| | numbers from 20 to28 |
| Group 2 | not used |
| Group 3 | numbers from 40 to 50 |

When we have entered the function 'Group insertion/modifying', we will then have to press the following sequence of keys:

- **<ENT>** to activate the edit mode of the first choice in group 1. The cursor moves to the column **From N.**
- **<1> <ENT>** for the first number in the group
- **<1> <0> <ENT>** to set the last number in the group. The cursor appears next to **Choice N° 2** in the same group.
- **<ENT>** to enable editing of choice 2 in the first group
- **<1> <5> <ENT> <1> <5> <ENT>** number 15 is a member of group 1
- **<ENT>**
- **<2> <0> <ENT> <2> <8> <ENT>** to insert numbers from 20 to 28
- **<Arrow up>** to set group 2 (which in this case is not used)
- **<Arrow up>** to set group N° 3
- **<ENT>** to activate editing of the first choice in group 3
- **<4> <0> <ENT> <5> <0> <ENT>** members of group 3
- **<ESC>** to quit group insertion.

To retrieve a group number, after returning to the 'Group insertion/modify' function scroll the various groups with **<Arrow up >** / **<Arrow down >** or select it directly with **<F4> Group N.** and insert the number when the request **Insert number N.=** is made. Then confirm with **<ENT>**.

REI2 reproposes the various values inserted in the different choices, giving the possibility of changing their content or inserting it all over again.

Although only the column **N** is shown on on the display when the choice **Single** is made, entering a value in this column is equivalent to entering the same value in the columns **From N.** and **To N**.

To delete a group you need only delete the various choices by pressing the **<F3> Delete** key after selecting them. REI2 keeps the choices numbered from 1 upwards consecutively and moves any choice with a higher number into the position of the one deleted.

### 5.2  Print groups structure

You can print the groups from the group management menu by pressing the **<F2>** key for **Printing of group structure**. The various groups inserted will be printed on the printed strip together with their composition.

### 5.3  Clear groups structure

To delete completely the composition of all the groups inserted, stay in the group management menu and press the **<F3>** key for **Delete groups**. To confirm the decision to delete, press **<F4>** for **Yes**, otherwise annul deletion with **<F5>** for **No**. When deletion has been confirmed, for a few moments the message **'Group deletion done'** appears on the penultimate line of the display.

### 5.4  Groups structure:

This function is used to specify the number of groups and relative choices you intend to use. The product of the group and choices cannot exceed 4000 (e.g. 100 groups times 40 choices = 4000).

After accessing the function, enter the number of groups required (from 1 to 999), confirming with **<ENT>** and enter the number of choices for each group (from 1 to 999) again confirming with **<ENT>**.

Modification of the structure deletes the data for the composition of groups so REI2 requests confirmation of the operation with the message **Attention all groups will be deleted!! – Are you sure?** Press **<F4> Yes** to confirm modification or **<F5> No** to annul the operation.

### 5.5   Upload group structure from PC

This function allows you to upload the structure of groups generated by the Microgate REI2 Uploader ©, Microrun © or MicroLink © programs. Press the key **<F4>** for **Upload group structure from PC**. On the second line of the display the message **'Ready to upload…….'** appears and you have 20 seconds to start data transmission on the PC.

If no data is 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 is 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 REI2 is given in section 26 Menu structureon p.98.

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

## 6   Rankings and other printouts

This menu contains the various printing options offered by REI2. Some printouts can be both consulted on the display and printed.

All print management is included in the menu M 1 C → **Rankings and other printouts** and the following instructions refer to this menu.

### 6.1   Printing/Show ranking

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 | LAP | Intermediate number at **0** | Ranking based on times obtained between last lap and the stop. |
| Intermediate times | SPLIT run | Intermediate number | |
| Intermediate times | Total of SPLITs | Intermediate number | |
| Speed | Average speeds | Base | |
| Speed | Radio speed | Base | |
| Finish sequence | Total times | | Total times list. The order is that of the transit of the competitors over the finishing line |
| Finish sequence | Run times | | |
| Finish sequence | Competitor num. | | |
| Finish times | Competitor num. | | Orders the various run times for the competitor number set |

If you decide to consult the ranking on the display, you can scroll 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
- **<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.

### 6.2 Other printouts

#### 6.2.1 Time of day

A complete record of time events can be consulted on the display or printed, or printing can be limited to the period between two times of day chosen by the user or to the time events regarding a specific logical channel.

Options available:
- **<ESC>** to quit this choice
- **<ENT>** to show the list on the display
- **<ALT>+<ENT>** to print the time events
- **<F1>** allows you to change any initial value
- **<F2>** allows you to change any final value
- **<F3>** reduces to zero the initial and final values
- **<F4>** allows you to select the type of event to print. ( **All**, **Start**. **Stop**, **Lap** )
**<F5>** returns you to the menu.

If you decide to consult the time events on the display, you have the possibility of scrolling the entire time event list or extracting a part of it by setting the competitor number and/or run. It is also possible to print a single time event line.

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
- **<F2>** when pressed for over 2 seconds, scrolls quickly down
- **<F3>** allows you to specify the competitor whose times you want displayed
- **<F4>** allows you to specify the relative run
- **<F5>** to print the time event indicated by the symbol ◄

#### 6.2.2 NS/DNF/Disqualified

This function contains the printouts of the competitors marked as non-starters, non-finishers and disqualified. These printouts refer to the run set with the **Run** function.

The options available are:
- **<F1> Not Started Printout**
- **<F2> Not Finished Printout**
- **<F3> Printout of disqualified athletes**
- **<F4> Run** to set the run number to refer to.

#### 6.2.3 Skipped

Impulses skipped during the timing session are recorded and retrievable on the display both when they have been subsequently assigned and when they have been 'ignored'. Assigned impulses are indicated with * on the printout and on the display.

Options available:
- **<ESC>** to quit this choice

- **<ENT>** to show the list on the display
- **<ALT>+<ENT>** to print the time events
- **<F1>** allows you to change any initial value
- **<F2>** allows you to change any final value
- **<F3>** to reduce to zero the initial and final values
- **<F4>** enables and disables the printing/display of subsequently assigned impulses
- **<F5>** returns you to the menu.

If you decide to consult the skipped impulses on the display, the same options available for time events are enabled.

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
- **<F2>** when pressed for over 2 seconds, scrolls quickly down
- **<F3>** allows you to specify the competitor whose times you want displayed
- **<F4>** allows you to specify the run concerned
- **<F5>** to print the time event indicated by the symbol ◀ .

### 6.2.4 Numbers of athletes currently running

With this function, it is possible to print competitors who have started but for whom there is no stop impulse or non-finisher indication.

Options available:
- **<ESC>** to quit this choice
- **<ENT>** to show the list on the display
- **<ALT>+<ENT>** to print the list
- **<F1>** allows you to change the competitor number with which to start the search
- **<F2>** allows you to change the competitor number with which to end the search, for example, by excluding the last 30 starters
- **<F3>** run number on which to carry out the search
- **<F4>** group number on which to carry out the search
- **<F5>** return to menu.

When the display is consulted, the following options are available:
- **<ESC>** to return to the choice of search limits
- **<F1>** to scroll one number back on the list
- **<F1>** when pressed for over 2 seconds, scrolls quickly back up the list
- **<F2>** to scroll one event down
- **<F2>** when pressed for over 2 seconds, scrolls quickly down
- **<F3>** allows you to specify the competitor on whom to carry out a search
- **<F4>** allows you to display the run concerned
- **<F5>** to print the time event indicated by the symbol ◀ .

## 6.2.5  Stop without Start

With this function the competitors who are found to have a STOP impulse without the corresponding START impulse can be printed.

Options available:
- **<ESC>** to quit this choice
- **<ENT>** to present the list on the display
- **<ALT>+<ENT>** to print the display
- **<F1>** allows you to change the competitor number from which to start the search
- **<F2>** allows you to change the competitor number at which to finish the search
- **<F3>** run number on which to perform search
- **<F4>** group number on which to perform search
- **<F5>** to return to menu.

The following options are available when you view the display:
- **<ESC>** to return to the selection of search limits
- **<F1>** to scroll the list behind a number
- **<F1>** when pressed for over 2 seconds, scrolls rapidly back through the list
- **<F2>** to move one number forward
- **<F2>** when pressed for over 2 seconds, scrolls rapidly forwards through the list
- **<F3>** allows you to specify the competitor on which to carry out a search
- **<F4>** allows you to specify the run concerned
- **<F5>** to print the event time indicated by the symbol ◀ .

## *6.3   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.

### 6.4 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.

#### 6.4.1 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 6.4.3 Print climatic data: (p.48)

```
 Hh:mm:ss.d
Current Air temp. = -10,2 C      ◄
Current Snow temp.= -13,5 C
Current Air humid.=  35  %RU          .
Store data         Air temp. =-11,5 C
Number   7         Snow temp =-13.7 C
Run      1         Air humid.= 37  %RU
   ↑     ↓      Print  Rep:--:--:    quit
```

Current climatic data

Climatic data measured at the moment the competitor finishes

Competitor number and run for which the data have been taken

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

#### 6.4.2 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      ◄
Current direction=  13,5°
Current lux      =  35  %            .
Stored data        Air speed= 11,5m/s
Number   7         Direction= 13.7°
Manche   1         Lux       = 37  %
   ↑     ↓      Print  Rep:--:--:    quit
```

Wind gauge data taken for current moment

Wind gauge data taken when competitor finished.

Number of competitor and run for which data was taken.

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

### 6.4.3 Print climatic data:

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

# 7  Start list

REI2 features various functions for the management of start lists. Up to 4 start lists for the same number of runs can be memorised at the same time. Every list can be uploaded from PC or calculated by REI2 on the basis of the acquired results or be generated automatically by REI2 on the basis of automatic start sequences. Once a list has been used, it can be deleted and the space freed re-used to memorise a new list for a subsequent run. The calculation system of the start lists offers a high level of flexibility for the construction of lists in the most varied ways.

## 7.1  Input start list

This function allows you to manually insert a starting order.

When you have activated the function, the lists available and their characteristics are shown.
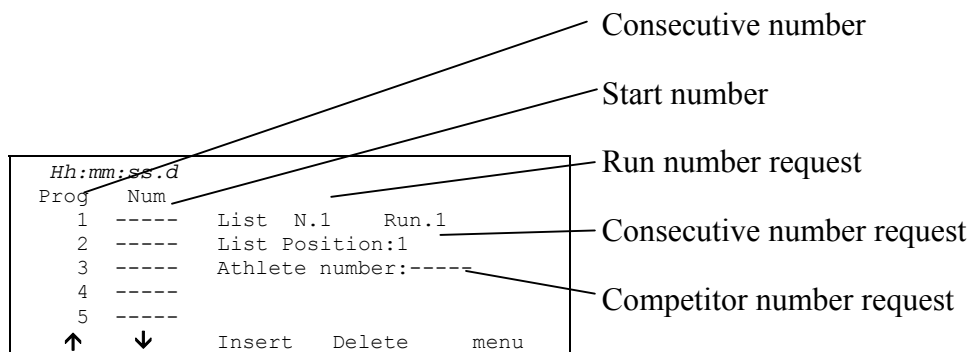
In the column:
- In the first the consecutive number of the list appears (from list 1 to list 4)
- **STATUS** in this column you are told if the list is **in use** or is **empty** according to whether or not it contains data
- **RUN** shows the run number the list refers to (eg: **S 2** start list for run 2, single start)
- **N.RECORD** number of competitors in the list.

The enabled function keys are:
- **<F1> ↑**: to scroll the list up
- **<F2> ↓**: to scroll the list down
- **<F3> Delete** deletes the list shown by the symbol ◄ . You are asked for confirmation of your intention to delete the list, **<F4>** to delete, **<F5>** to annul deletion
- **<F4>Delete All** deletes all the lists present. You are asked for confirmation of your intention to delete the list, **<F4>** to delete, **<F5>** to annul deletion
- **<F5>** to return to the previous menu.

When you have selected the list to be compiled, indicating it with the symbol ◄ , press the **<ENT>** key. If the run number is already present in the **Run** column, you enter editing of the run indicated, otherwise you are asked for the run number which should be confirmed with the **<ENT>** key.

Now the start list can be inserted.



```
 Hh:mm:ss.d
 Prog   Num
   1   -----    List  N.1    Run.1
   2   -----    List Position:1
   3   -----    Athlete number:-----
   4   -----
   5   -----
    ↑    ↓     Insert   Delete   menu
```

Consecutive number

Start number

Run number request

Consecutive number request

Competitor number request

To insert a sequence of numbers you only need to key them in and confirm then with **<ENT>**. The consecutive number automatically moves up. If necessary, it is possible to change a number by placing the cursor next to the relative consecutive number, keying in the new number and

confirming it with **<ENT>**. For corrections the consecutive number does not automatically move up.

The enabled function keys are:
- **<F1>** ↑: to scroll the list up
- **<F2>** ↓: to scroll the list down
- **<F3> Insert** to insert a new line before the progressive number indicated by the cursor and prepare for the insertion of a new number
- **<F5> Menu** Returns you to the previous menu
- **<ALT><F1> Del.last** to delete the last number inserted
- **<ALT><F3> AutoInser.** With this function, a consecutive sequence of numbers can be inserted. You are asked for the consecutive number from which to start (it must be the first free consecutive number), the consecutive number to go up to and the competitor number from which to begin assignment
- **<ALT><F4> Search** Allows you to search rapidly for a value in the list. There are various search modes:
    - **<F2> Prog.** to place the cursor next to the progressive start number indicated
    - **<F3> BibN.** to place the cursor next to the competitor number inserted
    - **<F4> Last Prog.** to place the cursor next to the last progressive number
    - **<F5> QUIT** to quit the search function
- **<ALT><F5> Run** Allows you to change the run number to which the list being prepared refers
- **<Arrow up>** like **<F1>**
- **<Arrow down>** like **<F2>.**

☞ In the case of automatic insertion starting from an already used consecutive number, all the numbers already present are replaced with the new numbers calculated. No check is made for double insertion of numbers. The consecutive numbers must be contiguous.

For example: Suppose we want to insert the following start order: 5,1,4,2,3,6,7,8,9,10. We enter **Input start list**, we delete all the lists with **<F4> Delete.All** and relative confirmation (**<F4>**), we select list 1 and press **<ENT>**.

The run number is requested, we insert **<1>** and press **<ENT>**. At this point we insert the numbers one after the other **<5> <ENT> <1> <ENT> <4> <ENT> <2> <ENT> <3> <ENT>**. Now we can insert the numbers from 6 to 10 in sequence. We press **<ALT>** and **<F5>** together. The request for the consecutive number from which to start appears. If REI2 does not propose 6, we insert it (**<6>**) and press **<ENT>**, we insert the final consecutive number **<1> <0> <ENT>** and we insert the competitor number **<6> <ENT>**. If we now scroll the list, we find our competitors ready to Start.

### *7.2 Start order calculation*

This function allows you to calculate a new start list. The list can be calculated using the ranking of a single run or the ranking obtained from the total times of the previous runs. After inversion of a chosen number of competitors (BIBO), the list thus obtained can be used as the start list of a chosen run.

The figure below shows the data request display.

```
   Hh:mm:ss.d Start order for:
A:Run                        1
B:Based on Ranking of      xxx
C:Relevant to run            1
D:Group (0=all bibs.)        0
E:Invert First(0=All)       15
ESC=quit ENT=exec. ALT+ENT=exec NF-NA-SQ
    A      B        C      D       E
```

Run number whose starting order must be calculated

Basis for calculation

Run on whose ranking the calculation must be made

Group to process

Number of competitors to invert for the group (BIBO)

The enabled function keys are:

- **<F1> Run** Pressing this key allows you to change the run number whose start order is to be calculated
- **<F2> Based on Ranking of** Each time you press, one of the two calculation methods is proposed: **Total times** or **Run times**
- **<F3> Relevant to run** Pressing this key allows you to change the run to be used for the calculation based on the run times or to set the last run number to be used for the calculation based on total times up to that run
- **<F4> Group (0=every number)** Pressing this key allows you to to select the group on which to carry out the list calculation. With 0 the calculation is made on all the competitors
- **<F5> Invert first:** with this key you can change the number of competitors to invert, BIBO regulation. If 0 is set, all the competitors in the ranking are inverted
- **<ESC> ESC=quit>** to quit the function
- **<ENT> ENT=execute** to make the calculation.
- **<ALT>+<ENT> ALT+ENT=** to make the calculation considering also the competitors not classified in the previous runs.

When you have set the correct values by pressing **<ENT>**, the list is calculated. When processing has finished, the message **'DONE!!!'** appears for an instant and the function keys are activated.

- **<F1> Print list** To print the list just calculated, return to list calculation
- **<F2> Other list** to return to the previous function and calculate a new start list or add to one just calculated
- **<F5> menu** to quit the start list calculation function.

If there already exists a start list for the run selected, the warning: **'ATTENTION!!! Starting list already exist for run number xxx!!'** appears and the function keys are activated.

- **<F1> Append the new list** to add the part of the list just calculated to the end of the list already present
- **<F2> Delete the list in the memory** to annul the part of the list already present, possibly after confirmation with the **<F4>** key, and replace it with the one just calculated.

If there are already 4 start lists in the memory, the warning **'ATTENTION!!! No list available. Proceed to deletion of at least one list'** appears and after a few seconds the list deletion function is activated. For details see section 11.3.3 Deletion of start lists on p.67.

For example (list memory empty):

In the second run the competitors of group 2 will start first with inversion of the first 9 and will be followed by the competitors of group 1 with inversion of the first 6. After activating the function **'Starting order calculation'** we proceed in the following way:

**<F1><2><ENT>** to set the calculation of the second run

**<F3><1><ENT>** to set the calculation of the first run (if this has not already been done)

**<F4><2><ENT>** to operate on the second group

**<F5><9><ENT>** to set the inversion of the first 9

**<ENT>** to make the calculation

**<F2>** for another list

The run data, ranking and run basis are already correct and do not need to be changed.

**<F4><1><ENT>**to set group one

**<F5><6><ENT>** inverts the first 6

**<ENT>** to process

**<F1>** to add on to the end of the previously processed list

If necessary, **<F1>** to print the list

**<ESC>** to quit the function.

Note how it is possible to calculate start lists even before the runs immediately before are finished. For example, it is possible to calculate the start of run 5, based on the results of the first 3, before run 4 takes place.

### 7.3  Starts with Gundersen method

If the Gundersen configuration has been set, there are two possible ways of calculating the start order: 7.3.1 Classic Start order calculation on p. 52 and 7.3.2 Pursuit Start order calculation on p. 52.
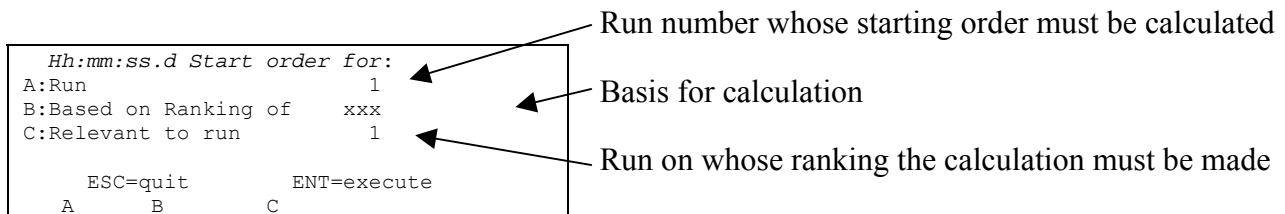
### 7.3.1  Classic Start order calculation

As in the function described in chap. : 7.2 Start order calculation on p.50.

### 7.3.2  Pursuit Start order calculation

This function allows you to calculate a new automatic start list using the ranking of a single run or the ranking obtained from the total times of the previous runs. The list thus obtained can be used as the automatic start list for a chosen run.

The figure below shows the display for the request of the data:

```
   Hh:mm:ss.d Start order for:
A:Run                         1
B:Based on Ranking of    xxx
C:Relevant to run             1

     ESC=quit          ENT=execute
   A        B          C
```

Run number whose starting order must be calculated

Basis for calculation

Run on whose ranking the calculation must be made

The enabled function keys are:
- **<F1> Run** Pressing this key changes the number of the run for which the start order is to be calculated

- **<F2> Based on Ranking of** Each time this key is pressed, one of the two calculation modes, **Total times** or **Run times**, is proposed
- **<F3> Relevant to run** Pressing this key changes the run to be used for calculation based on run times or to set the last run number to be used for the calculation based on total times up to that run
- **<ESC> ESC=esc** to quit the function
- **<ENT> ENT=execute** to make the calculation.

When the correct values have been set by pressing **<ENT>**, the number of the group for which the calculation is to be made is requested. When this has been confirmed, the competitor number to be assigned to the first of the group must be inserted if competitor numbers are reassigned during the new run. To leave unchanged the competitor numbers assigned, confirm **0**. The choice must always be confirmed with **<ENT>**.

If you want to have the printout of the start list, press **<F4>** for **Yes**, if not, **<F5>** for **No**.

When processing is finished, the message **'INSERTION DONE - PRESS ENTER !!!'** appears for an instant and the function keys are activated.

If for a specific run you try to assign to an athlete a competitor number already assigned, four choices are proposed:
- **Ignore**: ignores the previous competitor number and inserts the new one
- **Ignore all:** ignores the previous competitor number and inserts the new one If the same problem occurs again, the new competitor number is automatically inserted
- **Keep.prev.**: rejects insertion of the new competitor number
- **Quit**: quits without inserting other competitor numbers.

If the existence of a start list for the run selected or an excessive number of start lists stored is indicated, refer to the instructions in chap. 7.2 Start order calculation on p.50.

To make the start sequence calculation, at least one group must have been defined (see chap. 5 Group management on p.40), otherwise a default group including all the athletes is proposed.

## 7.4 Print start lists

With this option a previously inserted start list can be printed.

When you have activated the function, the lists available and their characteristics are shown.

In the column:
- In the first the consecutive number of the list appears (from list 1 to list 4)
- **RUN** shows the run number the list refers to (eg: **S 2** start list for run 2)
- **N.RECORD** number of competitors in the list.

The enabled function keys are:
- **<F1> ↑**: to scroll the list up
- **<F2> ↓**: to scroll the list down
- **<F3> Print** to print the list indicated by the symbol ◀
- **<F5>** to return to the previous menu.

### 7.5  Automatic starts

REI2 allows you to set up to 16 programmed start sequences at pre-set times. These sequences are particularly useful for managing races whose start times are theoretical.

All the management of automatci starts is included in the menu M 1 D → **Departure manager** and the following instructions refer to this menu.

### 7.5.1  Input/Modify of start lists

This function allows you to specify the characteristics of the various start sequences.

When the competitor's start time arrives, his/her start time is inserted in the event database and printed on the strip indicated by the letters **'AS'**. A sequence can be re-used when all the bib numbers inserted have started without losing any start data.

With REI2 it is possible to insert start sequences even after the competitors have actually started, even on different days. In this case the start time event is printed as soon as you quit this function.

```
 Hh:mm:ss.d
Automatic start setting

Sequence nn - Run
From N.____ to N.____ increment
Startxxxxx:time __:__.___ __/__/___
Interval:____ s
ENT=modify sequence
   ↑    ↓         delete all    quit
```

Sequence number.

Run referred to

First competitor number of sequence

Athlete number increment

Final number of sequence

Starting time of first competitor in sequence

Interval between one start and another

For example, let's suppose that we want to insert a sequence for a race in which competitors with numbers between 1 and 60 will start in pairs every minute with the first pair starting at 9:00:30.

After entering the 'Insertion/Modification of start sequence' function, we will have to press the following sequence of keys:
*   **<ENT>** to activate editing of the set sequence; REI2 proposes sequence N° 1
*   **<1> <ENT>** to confirm insertion of the data for run N° 1
*   **<1> <ENT>** to set the first number of the sequence
*   **<6> <0> <ENT>** to set the last number of the sequence
*   **<2> <ENT>** sets the increment of the number at the start at 2
*   **<9> <ENT> <0> <ENT><3> <0><ENT> <0> <ENT>** to insert the start time of competitor N° 1, shown to the left of the time request
*   **<ENT> <ENT> <ENT>** to confirm the current date
*   **<6> <0> <ENT>**  to set the start interval between the various competitors.

Having inserted the odd numbers, we now insert the even numbers with a similar sequence, changing only the name of the first competitor to start:

- **<ENT>** to activate editing of the sequence set; REI2 proposes sequence N° 1
- **<1> <ENT>** to confirm insertion of the data for run N° 1
- **<2> <ENT>** to set the first number of the sequence (even numbers)
- **<6> <0> <ENT>** to set the last number of the sequence
- **<2> <ENT>** to set the increment of the number at the start at 2
- **<9> <ENT> <0> <ENT><3> <0><ENT> <0> <ENT>** to insert the start time of competitor N° 2, shown to the left of the time request
- **<ENT> <ENT> <ENT>** to confirm the current date
- **<6> <0> <ENT>** to set the start interval between the various competitors.

The number increment can be of any value between 1 and 9999. If the first number value is greater than the final number value, REI2 uses the incremental value as a decremental value, placing the symbol − in front of it.

The start interval, expressed in seconds, can vary between 0 and 9999 (2 hours 46 minutes and 39 seconds).

When a competitor's programmed start time arrives, his/her start time event is inserted in the events database and printed on the printed strip with the indication **'AS'**. A sequence can be reused when all the competitor numbers have been inserted without losing any start data.

REI2 allows you to insert start sequences also after the competitors have actually started, also on different days. In this case the start time is printed as soon as you quit this function.

The options available are:

- **<ENT>** to edit the sequence shown on the display
- **<ALT>+<ENT>** to print the start sequences inserted
- **<ESC>** to quit the insertion/modification function
- **<F1> ⬆** to scroll one sequence back up the list
- **<F1> ⬆** when pressed for over 2 seconds, scrolls quickly back up the list
- **<F2> ⬇** to scroll one sequence down
- **<F2> ⬇** when pressed for over 2 seconds, scrolls quickly down the list
- **<F3>** to delete the sequence shown. If you wish to cancel the sequence, confirm with **<F4>** for **Yes**, alternatively **<F5>** for **No**
- **<F4>** to delete all the sequences inserted. If you wish to cancel all the sequences, confirm with **<F4>** for **Yes**, alternately **<F5>** for **No**
- **<F5>** to return to the automatic start menu and activate updating of the events memory and printing of competitors who have started.

## 7.5.2 Input auto start

With this function it is possible to insert automatic starts manually.

When you have activated the function, the lists available and their characteristics are shown.

In the column:

- In the first the consecutive number of the list appears (from list 1 to list 4)
- **STATUS** in this column you are told if the list is **in use** or is **empty** according to whether or not it contains data
- **RUN** shows the run number the list refers to (eg.: **S 2** start list for run 2, single start)
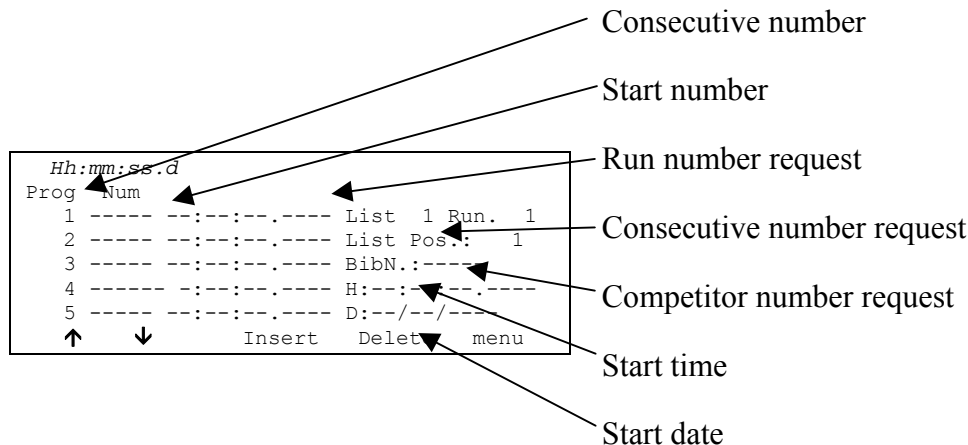
- **N.RECORD** number of competitors in the list.

The enabled function keys are:
- **<F1> ↑**: to scroll the list up
- **<F2> ↓**: to scroll the list down
- **<F3> Delete** deletes the list shown by the symbol ◀ **.** You are asked for confirmation of your intention to delete the list, **<F4>** to delete, **<F5>** to annul deletion
- **<F4>Delete All** deletes all the lists present. You are asked for confirmation of your intention to delete the list, **<F4>** to delete, **<F5>** to annul deletion
- **<F5>** to return to the previous menu.

When you have selected the list to be compiled, indicating it with the symbol ◀ , press the **<ENT>** key. If the run number is already present in the **Run** column, you enter editing of the run indicated, otherwise you are asked for the run number which should be confirmed with the **<ENT>** key.

Now it is possible to insert the start list.



```
             Consecutive number

             Start number

 Hh:mm:ss.d                          Run number request
Prog  Num
  1 ----- --:--:--.---- List  1 Run.  1
  2 ----- --:--:--.---- List Pos.:   1    Consecutive number request
  3 ----- --:--:--.---- BibN.:----
  4 ------ -:--:--.---- H:--:--.----       Competitor number request
  5 ----- --:--:--.---- D:--/--/--
  ↑    ↓     Insert  Delet  menu
                                         Start time

                                         Start date
```

To insert a sequence of numbers you only need to key them in and confirm then with **<ENT>**. Every time you insert a number, you are also asked to insert the start time and date. The consecutive number automatically moves up. If necessary, it is possible to change a number and the start time or date by placing the cursor next to the relative consecutive number, keying in the new number and confirming it with **<ENT>**. For corrections the consecutive number does not automatically move up.

The enabled function keys are:
- **<F1> ↑**: to scroll the list up
- **<F2> ↓**: to scroll the list down
- **<F3> Insert** to insert a new line before the progressive number indicated by the cursor and prepare for the insertion of a new number
- **<F5> Menu** Returns you to the previous menu
- **<ALT><F1> Del.last** to delete the last number inserted
- **<ALT><F4> Search** Allows you to search rapidly for a value in the list. There are various search modes:
  - **<F2> Prog.** to place the cursor next to the progressive start number indicated
  - **<F3> BibN.** to place the cursor next to the competitor number inserted
  - **<F4> Last Prog.** to place the cursor next to the last progressive number
  - **<F5> QUIT** to quit the search function

- **<ALT><F5> Run** Allows you to change the run number to which the list being prepared refers
- **<Arrow up>** like **<F1>**
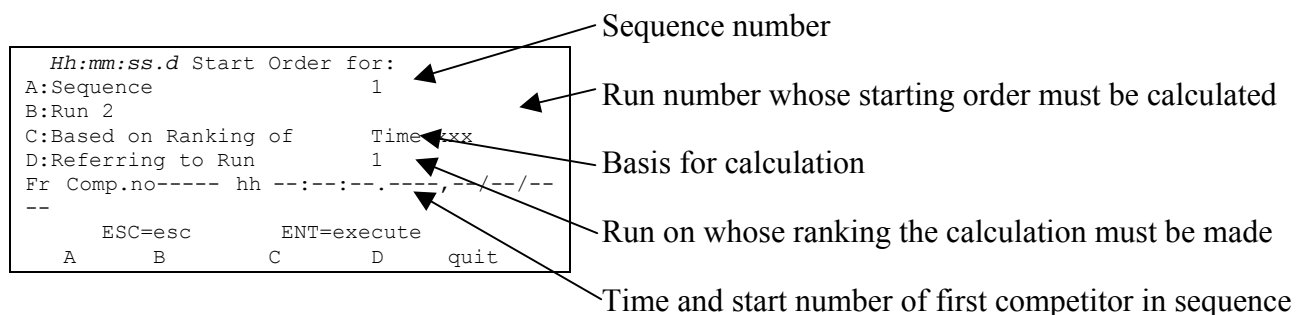- **<Arrow down>** like **<F2>**

☞ In the case of automatic insertion starting from an already used consecutive number, all the numbers already present are replaced with the new numbers calculated. No check is made for double insertion of numbers. The consecutive numbers must be contiguous.

## 7.5.3  Pursuit (Gundersen)

This function allows you to calculate a new automatic start list using the ranking of a single run or the ranking obtained from the total times of the previous runs. The list thus obtained can be used as the automatic start list for a chosen run.

The figure below shows the display for the request of the data:

The figure below shows the display for the request of data:

```
 Hh:mm:ss.d Start Order for:
A:Sequence              1
B:Run 2
C:Based on Ranking of   Time xxx
D:Referring to Run      1
Fr Comp.no----- hh --:--:--.----,--/--/--
--
     ESC=esc      ENT=execute
  A     B       C      D     quit
```

Sequence number

Run number whose starting order must be calculated

Basis for calculation

Run on whose ranking the calculation must be made

Time and start number of first competitor in sequence

The enabled function keys are:
- **<F1> Sequence** number of sequence
- **<F2> Run** Pressing this key changes the number of the run for which the start order is to be calculated
- **<F3> Based on Ranking of** Each time this key is pressed, one of the two calculation modes, **Total times** or **Run times**, is proposed
- **<F4> Relevant to run** Pressing this key changes the run to be used for calculation based on run times or to set the last run number to be used for the calculation based on total times up to that run
- **<ESC> ESC=esc** to quit the function
- **<ENT> ENT=execute** to make the calculation.

When the correct values have been set by pressing **<ENT>**, the number of the group for which the calculation is to be made is requested. When this has been confirmed, the competitor number to be assigned to the first member of the group to start must be inserted if competitor numbers are reassigned during the new run. To leave unchanged the competitor numbers assigned, confirm **0**. The choice must always be confirmed with **<ENT>**.

The next request concerns the start time of the first competitor in the group. Insert the time and date and confirm each value with **<ENT>**.

When processing is finished, the message **'INSERTION DONE - PRESS ENTER !!!'** appears. Then press ENTER to return to the automatic starts menu.

If you have decided not to reassign the competitor number, the following data is printed on the printed strip: the progressive start number in the column **#Sta**, the competitor number in the column **Num.** and the scheduled start time in the column **Starttime**.

If you have decided to reassign a start number, the new competitor number is printed in the column **New**, the old competitor number is printed in the column **Old** and the scheduled start time is printed in the column **Starttime**.

If for a specific run you try to assign to an athlete a competitor number already assigned, four choices are proposed:
- **Ignore**: ignores the previous competitor number and inserts the new one
- **Ignore all:** ignores the previous competitor number and inserts the new one If the same problem occurs again, the new competitor number is automatically inserted
- **Keep.prev.**: rejects insertion of the new competitor number
- **Quit**: quits without inserting other competitor numbers.

> To make the start sequence calculation, at least one group must have been defined (see chap. 5 Group management on p.40), otherwise a default group including all the athletes is proposed.

## 7.5.4   Upload automatic start list from PC

This function allows you to upload the start sequences generated by the Microgate REI2 Uploader ©, Microrun © or MicroLink ©. It is accessible both from the starts management menu (**<F4> Departure manager** in the menu **M1** followed again by **<F4>** and **<F2>** for **Upload of automatic startlist from PC**) and from the menu **Data upload from PC** (**<F4> Data upload from PC** from the menu **M2** followed by **<F1>**, **<F3>** and lastly, **<F2>).**

However, REI2 can receive the start sequences in background without the need to access this menu.

REI2 indicates how many start lists are free. If no list is free, the message **'ATTENTION! No list available………..'** appears and you enter function 21 Race management automatically (for the operational details concerning this, see the relative section on p.93). If at least one list is free, pressing:
- **<F1>** for the **Deleting lists menu** activates the start list deletion function; alternatively pressing (see section 11.1.5 Deletion of start lists on p. 66)
- **<F2>** for **Continue** activates data reception from PC.

On the second line of the display, the message **'Ready to upload……..'** appears and you have 20 seconds to start data transmission on the PC.

If no data is 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 automatic start 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 is 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 25 REI2 – PC communication protocols on p.98.

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

### 7.5.5  Print start lists

Prints the sequences inserted

### 7.5.6  Clear all start lists

Deletes all the sequences inserted. If you wish to delete all the sequences, confirm with **<F4>** for **Yes**, alternatively **<F5>** for **No**.

# 8 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.

## 8.1 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 can't provide a synchronization impulse……..'** will appear.

With:
- **<F2>** the inserted data can be edited 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.

## 8.2 Modify 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.
- 

## 8.3 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.

## 8.4 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.

# 9   Disqualifications

This function is used to insert any disqualified athletes and to put previously disqualified athletes back into the race. When you enter the function, you are asked for the race number and the run to which the disqualification refers. When you have inserted the data requested, it is possible to see the competitor's current status by pressing **<ENT>**.

The enabled function keys are:

- **<F1> Modify** Each time you press the key, the competitor passes from **Qualified** to **Disqualified** status
- **<F3> Other** to insert the number and run of another competitor
- **<F5> menu** to quit the function.

# 10 Download data 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 ports setup (see section 12.3 on p.73).

There are two data transmission modes,: 'Off-line' and 'On-line'.

The data which can be sent are:
- **Time of day:** all the events recorded
- **T Totals:** total times
- **T Run:** the times of individual runs
- **T Lap:** intermediate times
- **NS,NF,DSQ:** all the competitors not in the competition such as non-starters, non-finishers and disqualified competitors (only off-line)
- **Skipped:** all skipped events
- **Speeds:** calculated speeds, both average and instant time.

## 10.1 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 is 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> Modify:** allows you to change the **Run** or **Group** 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.

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

On-line data transmission can be activated and disactivated 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 disactivated.

## 10.3 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. 10.1 Off-Line data transmission on p.63 and Configuration of On-Line data output on p.63) 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. 12.3 Serial ports setup on pag. 73).

# 11 Upload data from PC

## 11.1 Upload of lists from PC

### 11.1.1 Upload competitor lists from PC

This function allows you to upload the list of athletes entered generated by the Microgate Uploder ©, Microrun © or MicroLink © programs. Press the key **<F1>** for **Upload data from PC** and **<F1>** again for **Upload competitor list from PC.** On the second line of the display the message **'Ready to upload…….'** appears and you have 20 seconds to start data transmission on the PC.

If no data is 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 lists 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 is 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.

However, REI2 can receive the competitor list in background without the need to access this menu.

Detailed information about the data structure sent from PC to REI is given in section25 REI2 – PC communication protocols on p. 98.

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

### 11.1.2 Upload groups structure from PC

This function is the same function present in the menu Input/Printout of groups – Reception of structure from PC. Consult section 5.5 Upload group structure from PC on p.42.

### 11.1.3 Upload start list from PC

This function allows you to upload the start orders generated by the Microgate REI2 Uploader ©, Microrun © or MicroLink © programs. Press the key **<F1>** for **Upload data from PC** , key **<F3>** for **Upload start list from PC** and **<F1>** again for **Upload start list from PC.** On the second line of the display the message **'Ready to upload…….'** 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 is 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.

However, REI2 can receive start orders in background without the need to access this menu.

Detailed information about the data structure sent from PC to REI is given in section section25 REI2 – PC communication protocols on p.98.

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

## 11.1.4 Print start lists

Retrieves the function described in 7.4 Print start lists on p.53.

## 11.1.5 Deletion of start lists

With this option it is possible to delete a previously calculated or uploaded start list, or all the lists present en bloc.

When the function has been activated, the lists available and their characteristic data appear on the display.

In the column:
* In the first column the progressive number of the list appears (from list 1 to list 4)
* **STATUS:** this column indicates whether the list is **in use** or is **empty**, depending on whether or not it contains data
* **RUN** shows the run number the list refers to (e.g. **S** 2 start list for run 2)
* **N.RECORD** the number of competitors in the list.

The enabled function keys are as follows:
* **<F1> ↑**: to scroll the list up
* **<F2> ↓**: to scroll the list down
* **<F3> Delete** deletes the list indicated by the symbol ◀ **.** You are requested to confirm whether you intend to delete the list, **<F4>** to delete, **<F5>** to annul deletion
* **<F4>Delete All** deletes all the lists present. You are requested to confirm whether you intend to delete the list, **<F4>** to delete, **<F5>** to annul deletion
* **<F5>** to return to the previous menu.

## *11.2 Print competitor lists*

Selection of this function allows you to print various lists.

The enabled function keys are:
* **<F1> Print competitors list** to print the list of those who have entered for the competition. On the printed strip the competitor number, nation and name are indicated
* **<F2> Print group structure** On the printout the various groups entered and their composition are printed
* **<F3> Print start list** Similar to the function described in section 7.4 Print start lists on p.53
* **<F5> menu** to quit the function.

## *11.3 Delete lists menu*

This function allows you to delete the various lists in REI2's memory.

## 11.3.1 Deletion of list of competitors' names

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 **'Competitors' names deletion done!'** appears for a few moments on the penultimate line of the display.

## 11.3.2 Deletion of group structure

This function allows you to delete the structure of the various groups inserted. 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 **'Groups structure cleared!'** appears for a few moments on the penultimate line of the display.

## 11.3.3 Deletion of start lists

Similar to the function described in section 7.5.1 Input/Modify of start on p.54.

# 12 REI2 setup

The various configuration menus allow you to modify 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 Modify basic configuration (see relative section 22 on p.95) 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.

## *12.1 Software setup*

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

### 12.1.1 Net times visualization

This allows you to choose whether to show total times of run or lap (Lap) on the screen display and displayboard. Each time you press the **<F1>** key, one of the three alternatives is shown.

### 12.1.2 Print time of day

Pressing the **<F2>** key allows you to activate/disactivate the printing of time events when the various events (Start, Lap, Stop) take place. When printing is disactivated, only net times are printed. Each time you press the key, one of the two alternatives is activated (**Yes** time event printing activated, **No** printing disactivated).

### 12.1.3 Printing of intermediate times

Allows you to choose when to print an acquired intermediate event. Each time you press the **<F3>** key, one of two possibilities is activated, namely:
- **'every event'**: the intermediate time is printed at the moment assignment of the intermediate event is confirmed
- **'at finish'**: the times of all of a competitor's intermediate events are printed before his/her relative total time at the moment total time is confirmed.

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

### 12.1.4 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, REI 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>** <u>irreversible truncation</u> 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.

## 12.1.5 Last relay lap (Lap>>Stop)

With this function, for use above all for circuit races or relay races, you set the number of laps of the competition in progress. When the number of laps set has been reached, REI2 considers the impulse coming from the generic LAP line as coming from the STOP line, indicating this on the printed strip. This makes it possible both to take all the lap times on the logical line LAP 0 without having to change the line of acquisition for competitors who finish the race and to 'mark' competitors as finished so as not to find them on the list of non-finishers.

On the timing printed strip a line of indication like the one in the following example will be printed, where **ppp** is the competitor number and **ggg** the lap number.

```
N ppp LAP ggg >>> STOP
```

When the function is selected, the cursor takes up position and waits for the insertion of the number of laps. The maximum value admissible is 240.

In races in which groups must complete a different number of laps, this piece of data can be modified separately for each group (see chap. 5.1 Input/Modify groups on p. 40)

## 12.1.6 Manual input of reference times

The following three functions allow you to specify the reference values and the percentages admissible for the calculation of intermediate events.

### 12.1.6.1 Net time acceptance range

By choosing this you can set the percentage value to be used for the calculation of ranges of admissibility for intermediate values. The values accepted range from 0 to 50%.

### 12.1.6.2 Setting of Run reference times

By choosing this you can insert intermediate reference times beforehand without having to wait for the finish of the first competitor and/or forerunner. The various Lap times are requested in

succession, one after the other. To finish insertion, when necessary, select **<F2>** for **T.Run** and when the time has been inserted, **<F5>** to finish.

The function reproposes any times which may have already been inserted. If there is no reference time for the lap indicated, the message **'NO REF. TIME'** appears**.**

When you quit this function, the reference times set, the deviation inserted, expressed as a percentage, and the minimum and maximum time accepted for each lap are printed.

**Note:** The times to be inserted are Lap times and not Split times.

The enabled function keys are:
• **<ENT>** Allows you to edit the reference time of the lap indicated
• **<F1> Lap N** Allows you to specify the intermediate number whose reference time is to be inserted
• **<F2> T.Run** Allows you to insert the reference time for the run
• **<F5> menu** to quit the function
• **<Arrow up>** to increase the Lap number indicated
• **<Arrow down >** to decrease the Lap number.

## 12.1.6.3    Setting of Lap reference times

With this function you can insert the Lap reference time beforehand without having to wait for the finish of the first competitor.

## 12.1.6.4    Clear reference times

With this function the reference times already inserted are canceled. It has no effect on acquired time events. To confirm cancelation, respond to the question **'Sure?'** by pressing key **<F4>** for **Yes**. If an error has been made, press **<F5>** for **No**.

## 12.1.7 Run selection for Total Time

REI2 allows you to exclude one or more run times from total time. When you enter this function, a panel is shown with the fixed indication of the first 9 runs and a panel with a run which can be set by the user.

The rectangles which are filled in represent the runs considered in the calculation of total time. The empty rectangles represent the excluded runs.

To activate or disactivate one of the runs from 1 to 9, press the keys **<F1>** or **<F2>** to run through the numbers of runs from right to left until the number of the run to be edited appears in a rectangle. At this point, pressing the **<F3>** key **Modify** excludes the run from the calculation, or alternatively, includes it. To operate on the runs above N° 9, press the **<F4>** key **N.Run**, key in the number (from 10 on), confirm with **<ENT>**, then exclude/include with the **<F4>** key.

Key **<F5>** returns you to the previous menu.

## 12.1.8 Time display mode

Allows you to set the format for displaying times. When it is selected, one of the two modes: HH:MM:SS.DCMd for hours minutes seconds and the decimal figures or SSSS.DCMd for seconds and decimals is activated.

## 12.1.9 AUX input for autoskip

This function allows you to avoid automatically skipping the impulses which come only from the Aux line if the autoskip is active (see chap. 4.6.3 AutoSkip activation/disactivation on p. 34).

After entering the function, with the arrow keys it is possible to change the logical channel to be coupled to the aux line physical channel or to disable the function.

The options available are:
- **STOP** for the logical channel Stop
- **Disab.** to disable the function
- **LAP** for intermediate event. In this case the cursor positions itself next to the letters **LAP** and waits for insertion of the lap number to be coupled. The number must be confirmed with **<ENT>**.

The enabled functions are:
- **<F5> quit** to quit the function
- **<Arrow up>** to scroll back through the list of options available
- **<Arrow down>** to scroll down through the list of options available.

## 12.1.10    Confirmation time for Stop

This function is used to indicate the length of time after which REI2 must automatically confirm assignment of the Stop event if the function Automatic/manual assignment (cha4.4.15 on p.28) is set to **automatic**. The value, in seconds, can range from 0 (immediate confirmation) and 600.

## 12.1.11    Ranking N best run:…

This function is for indicating the number of runs which must be taken into consideration for the calculation of the final ranking in the case of competitions in which the competitor does several runs and the one/ones in which he/she has obtained the worst results are discarded. REI2 calculates the ranking considering only the best runs of each competitor and discarding the worst results.

## 12.1.12    Ref time to first

Each time selection is made, one of the two modes for the calculation of the run started with the Gundersen method (therefore not automatically active for the first run) is activated:
- **Yes**:   times are calculated taking the start of the first competitor as the start time. So the initial handicap calculated on the basis of the difference of the net times of the first run truncated to the second is already added to each athlete.
- **No**:   times are calculated on the actual start time, for example to calculate the best pursuit stage result.

If this function is active, total times cannot be displayed. If it is disactivated, the total times of the second run are calculated by adding the actual net time of the second run to the net time, truncated to the second, of the first.

## 12.2  Hardware setup

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

## 12.2.1 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.

## 12.2.2 Printer

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

## 12.2.3 Keys Beep

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 and is not affected when the line keys are pressed.

## 12.2.4 Display contrast

This allows you to vary the contrast on the display to improve its legibility in conditions of bad light. The **<F2>** key allows you to reduce contrast while the **<F4>** key allows 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.

## 12.2.5 Linkgate transmission length

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.

## 12.3 Serial ports setup

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 the various configurable features up
- **<F2>** ↓ allows you to scroll the list down
- **<F3>** ⇔to pass from serial A to serial B
- **<F4> Modify** 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 REI2 processor. For details of transmission and reception protocol, consult 25 REI2 – PC communication protocols on p.98.

☞ 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).

## 12.4 Printing of configuration

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

# 13 Displayboards setup

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

## 13.1 Selecting displays

REI2 can pilot up to 16 strings of Microgate μTAB displayboards directly (each string is formed of a master displayboard and, if required, up to four slave displayboards) or μGRAPH 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 **'ADDR'** column the address value to which the displayboard is to be set is indicated. Remember that the Address values of the displayboard must correspond to the value indicated in the first column.

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

In the column **'NUM.DB'** 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> ↑** allows you to scroll the list up
- **<F2> ↓** allows you to scroll the list down
- **<F3> Modify** to change the displayboard setting on the Address indicated by ◄
- **<F5> menu** to return to the configuration menu.

When the **Modify** function has been selected, the configuration set for the line selected is shown.

The active function keys are:
- **<F1> ↑** allows you to run through the list of configurations available in one direction which are compatible with the displayboard type and the number of elements selected
- **<F2> ↓** allows you to run through the list of configurations available in the other direction
- **<F3> Disp.Type** allows you to select the type of displayboard
- **<F4> N.Elem** allows you to select the number of displayboards on the line
- **<F5> Conf.** to return to the menu, accepting the configuration currently set
- **<ESC> Quit without confirming** to return to the menu without making modifications.

While you are choosing configuration, inside some rectangles you are shown how the data will appear on the displayboard. In the table below, some of 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 | TRace+Spl+Lap | Running race time. At the intermediate stage split time followed by lap and once again running time. |
| Microtab | 1 | Num TRace | 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. |
| Microtab | 2 | Atl. Name Time | Athlete's name and running time. |
| Microtab | 4 | 1 Num TRace Name | Number **1**, Number, net time and name of competitor in first position. |
| Microtab | 4 | 2 Num TRace Num | As above but for second. |
| Microtab | 4 | 3 Num TRace Num | As above but for third |
| 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. |
| Micrograph | 1 | V split V lap | Using medium-size characters: first line **Vm** and |

| | | | split speed, second line **VlaP** and lap speed. |
|---|---|---|---|
| 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 | 1&2 N TRace Name | Medium-size characters: on the first line number **1,** number, net time and name of competitor in first position; on the second line **2** and the same information for the second. |
| Micrograph | 2 | 3&4 N TRace Name | As above but for the third and fourth with the numbers **3** and **4.** |
| Micrograph | 2 | 1&2&3 N TRace N | Small characters: on the first line number **1,** number, net time and name of competitor in first position; on the second and third line numbers **2** and **3** and the same information for the second. |
| Micrograph | 2 | 4&5&6 N RaceT N | As above but for the fourth, fifth and sixth with the numbers **4**, **5** and **6**. |

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 µTAB displayboards (2 masters and 2 slaves) on which we want to display the number, position (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 µTAB 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

**<F3>** for **Modify**

```
 Hh:mm:ss.d
LINE DISPLAYBOARD NUM.DB VISUALIZATION
  0◄ ---------- -- ---------------
  1  ---------- -- ---------------
  2  ---------- -- ---------------
  4  ---------- -- ---------------

 ↑    ↓   Modify          menu
```

MICRO GATE

```
 Hh:mm:ss.d
Displayboard=None N.Elements= 0

     -→ ---------


ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

**<F3>** again for **Disp.type** until the message **Displayboard =Microtab** appears on the second line

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

         34:56.78

          Race time
ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

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

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

     123 45678 34:56.78

        Ppos Nnum  T.Race
ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

Press the **<F2>** key until the message **'Ppos Nnum T.Race'** appears on the third line from the bottom

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

     P12 N345  34:56.78

        PPos NNum T.Race
ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

Confirm setting with **<F5>** and to return to the configuration menu.

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

   ---→P12 N345  34:56.78

        PPos NNum T.Race
ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

Then return to the configuration menu with **<F5>**

```
 Hh:mm:ss.d
LINE DISPLAYBOARD NUM.DB VISUALIZATION
  0◄ Microtab     2    Ppos Nnum TRace
  1  ---------   --   ---------------
  2  ---------   --   ---------------
  4  ---------   --   ---------------

↑    ↓   Modify           menu
```

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

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

     Surname  First Name

       Name     Athlete
ESC=quit without confirming
  ↑    ↓ Disp.type   E.Elem   Conf.
```

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

```
Hh:mm:ss.d
LINE DISPLAYBOARD NUM.DB VISUALIZATION
  0◂ Microtab    2    Ppos Nnum TRace
  1  Microtab    2    Name Athlete
  2  ----------  --   --------------
  4  ----------  --   --------------

  ↑     ↓   Modify          menu
```

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

## 13.2 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 (chap. 4.7 on p.35).

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.

## 13.3 Serial Speed displayboard

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

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

**Note:** The velocity set on REI2 must coincide with the velocity set on the displayboard.

## 13.4 Spot program

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

## 13.5 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. 11.1.1 Upload competitor lists from PC on p.65.).

## 13.6 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.

### 13.7 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 or between seconds and fractions is activated/disactivated while continuing to follow the modes described in Measurement precision (chap. 12.1.4 p.68) and Time display mode (chap. 12.1.8 p.70). If set to **No**, the display format is HH:MM:SS.DCMd or SSSSS.DCMd, therefore with the separating characters ':' and '.'. If set to **Yes**, the display format is HHMMSSDCMd or SSSSSDCMd.

### 13.8 Lap time display of every intermediate event

Every time selection is made the display of the lap time after the split time is activated/disactivated on displayboards set to display split time. If set to **No**, only the split time is displayed. If set to Yes, the lap time is also displayed after the split time.

### 13.9 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.

### 13.10 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 ~€
 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.

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.

### 13.11 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.

### 13.12 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.

### 13.13 Visualization pause RollRank

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

# 14 Input Lines Setup

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.

## 14.1 Physical/Logical Channel Assignment

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

### 14.1.1 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.

### 14.1.2 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.

## 14.1.3 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.

## 14.2  Line holdoff 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.

## 14.3 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 the lines which are in fact controllable by the user.

The activation or disactivation of the **<LCK>** function on a line is shown by a filled-in rectangle for lock enabled or an empty rectangle for lock disabled. A blinking black 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 on the various lines
- **<F3> Modify**: pressing this enables or disables sensibility to 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.

## 14.4 Lines N/O N/C 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.

## 14.5 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.

# 15 Speed bases Setup

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.

## 15.1 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 in meters (from 0 to 64000) and then for the decimal part (cm) or alternatively in kilometres (from 0 to 9999) and meters on the basis of what has been established in 15.5 Speed base range on p.86.

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 <u>final</u> 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 1$^{st}$ intermediate stage to the 2$^{nd}$
- **<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> Modify**: 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.

**Note:** the relative part for the setting of the bases between the various intermediate points is active only if the base type set is **Multibase**. Otherwise the lap length is requested directly. See: 15.4 Speed base type on p.86**.**

## 15.2 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.

On the display the position of the two devices is shown in graphic form together with the connection modes of the 'signal' cable. The indication **FTC_R** indicates that the signal cable of the device should be connected to the red banana jack socket of the encoder, while **FTC_V** indicates that it should be connected to the green banana jack socket. The signal of the other device should be connected to the banana jack socket, green or red, which remains free. Both the ground cables should be connected to the encoder's black banana jack socket.

Measurement of the distance is expressed separately, first for the part in meters (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 <u>final</u> 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 intermediatestage. Base = 2 is the part of the course from the 1$^{st}$ intermediate stage to the 2$^{nd}$. 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> Modify**: 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.

### 15.3  Units base

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 meters per second, **kph** for kilometers per hour, **mph** for miles per hour (land) or **knt** for knots (nautical miles per hour).

### 15.4  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.

### 15.5  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.

# 16 LinkGate data upload

Microgate LinkGate Encoder's device for radio transmission of impulses allows you to transmit all the event times and speeds obtained during timing (up to a maximum of 256 times and 256 speeds) to REI2. This possibility enhances reliability as it enables you to 'retrieve' after an interval of time any times which for one reason or another have not been transmitted via radio.

With this function the data present in the encoder can be transferred to REI2.

After disconnecting the decoder and connecting the encoder with the dedicated cable (seeUser Manual), press **<F1>** to activate reception on REI2 and activate transmission on the Encoder by pressing <2nd> and, keeping it pressed down, pressing the **<SERIAL>** key.

Within two seconds two counters will appear on the screen to indicate the number of times and speeds transmitted.

When you have finished transmission, on pressing <**ENT**> another menu will appear.

If you choose '**Absolute**' (**F1**), the event times are simply transferred and shown in the same way as when they were acquired. It is therefore essential that the LinkGate Encoder device and REI2 have been synchronized (consult the User Manual) before beginning the timing session (if you do not want to have to make a laborious series of calculations and corrections later.......).

If you choose <**F2**> **Synchronization. Automatic** the two devices are synchronized after an interval of time, when the data is transferred.

In this way times are given their correct values even if the LinkGate Encoder and Racetime2 have never been synchronized. This second option is usually the most convenient one. However, it is indispensable that no change be made to REI2's synchronization in the time between the end of the timing session and the moment when data transfer is made.Similarly, it is better to transfer data immediately after the end of the timing session so as to reduce the deviation caused by the inevitable slight divergence between the time bases of the two devices (see the technical specifications of LinkGate Encoder and REI2 for an estimate of possible divergences).

You can print the times and speeds transferred from LinkGate Encoder, pressing <**F1**> to facilitate the assignment of times.

After choosing the time reference, you automatically enter the assignment function. With this operation, you can assign an event time transferred from LinkGate Encoder to an athlete's number for a certain run. The transferred times are shown in the fourth line of the display. The event times immediately before and immediately after the acquired time are shown in the third and fifth line respectively. In this way, it is easier to 'orientate' yourself amongst the times until you find the time or times you wish to retrieve. To pass from one time to the next without assigning them, press <**ENT**>. To scroll backwards and forwards through the acquired times, press <**F1**> or <**F2**>. To assign a time to a competitor number, insert the number directly, confirm with <**ENT**> and then insert the run number. If you try to assign a time already used, the stopwatch will show a warning signal.

The enabled function keys are:
- **<F1> ↑**: allows you to scroll back through the list of events to be assigned
- **<F2> ↓**: allows you to scroll down through the list of events to be assigned
- **<F3> Homolo / All / Sta / Sto** Each time the key is pressed, one of the two time display modes is activated. **Homolo** displays only events of the same type (e.g. only Lap 1s, only starts, etc.). With **All**, the previous and following times are shown regardless of type
- type; with **Sta/Sto** only the start and finish events are displayed

- **<F5> menu** to quit the function.

Example of Lap 1 acquisition:

```
 Hh:mm:ss.d Reception from LinkGate:
Event      N. Man   Time
Lap   1    10    1  10:55:14.12_14
Lap   1                10:57:12.54_85
Lap   1    12    1  10:58:16.36_98
Number: _____  Run: ___

    ↑         ↓      Homolo        Menu
```

In the example, after the Lap 1 signal for number 10, an unassigned signal appears, and then a signal for number 12.

So the time probably refers to the intermediate time of competitor 11.

**Note:** it is convenient to have an approximate idea of the time of the missing time event/events, possibly with the help of a printout of previous times.

# 17 Linkgate radio signal level 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.72), 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 ¼ or 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.

# 18 Time Calculator

REI2 has a sexagesimal calculator.

## 18.1 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**: to add TA to TB
- **<F2> A-B**: to subtract TB from TA
- **<F3> Modify** 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>** (ten thousandths), and <u>NOT</u> **<8><4> <ENT>.**

## 18.2 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.

# 19 Set Modem

In this menu it is possible to communicate with a modem connected to REI2.

```
 Hh:mm:ss.d

Number:
Serial: COMPUTER A (  9600bps)
 ◊ = Change serial
In call…
Number  Insert   Close    Answer    Quit
```

— Number to be called

— Serial enabled for connection to modem

— Indicates modem status
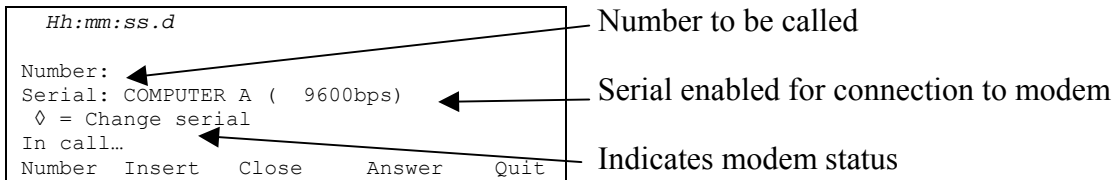
The active function keys are:
- **<F1> Number** allows you to insert the number to be called
- **<F2> Insert** to call the number inserted
- **<F3> Close** to interrupt communication with the modem
- **<F4> Answer** to reply to the external call
- **<F5> Quit** to return to the configuration menu.

To call an external number just connect the modem to the enabled serial output, insert the number to be called by pressing **<F1>** and keying in the single numbers in succession. Then when **<F2> Insert** is pressed, the text **In call…**. will appear. If the number called replies, the connection is automatically activated.

When there is an external call, the text **In answer…**. will appear. Press **<F4>** to activate connection to the modem.

# 20 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:

- **'Battery 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 trickle current but they are NOT recharged
- **'Discharge…'** the internal batteries are being 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.

## 20.1 Discharge/recharge

When this function is selected, the internal batteries are first completely 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.

## 20.2 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.

## 20.3 Break

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

# 21 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 synchronization 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.

## 21.1 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 – Please delete one or more races in order to procede– Press any key to continue'** appears and you must delete one of the stored races to be able to continue.

## 21.2 Delete/Recall 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 the race list up
- **<F2> ↓**: to scroll the list down
- **<F3>** to delete 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>** 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>** to return to the previous menu.

## 21.3 Continue current race

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

### 21.4 Clear all memory

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 deleted.Continue?'** Press **<F4>** for **Yes** to delete all the stored races, press **<F5>** for **No** to annul the deletion operation.

# 22 Modify 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> Alpine ski**
- **<F2> Cross-country ski**
- **<F3> Endurance**
- **<F4> Training**

(other..)
- **<F1> Relay**
- **<F2> Pursuit (Gundersen).**

For the values set by REI2, see Pre-set configurations on p.97.

## 23 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
- Filled-in circle      Line active
- Dash (only Pod)       Pod not present or not correctly connected or line not physically present on the Pod (Pod with fewer than 8 inputs).

## 24 Pre-set configurations

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

| | Alpine ski | Cross-country ski | Endurance | Training | Relay | Pursuit (Gundersen) |
|---|---|---|---|---|---|---|
| Automatic search for next starter | YES | YES | NO | YES | YES | YES |
| First run | 1 | 1 | 0 | 1 | 1 | 1 |
| Automatic search for finishers | YES | NO | NO | YES | NO | NO |
| Automatic assignment of finishers | NO | NO | NO | YES | NO | NO |
| Printing of time events | YES | YES | YES | NO | YES | YES |
| Printing of intermediate events | At the finish | At each event | At each event | At the finish | At each event | At each event |
| Measurement precision | 1/100 | 1/10 | 1/100 | 1/100 | 1/10 | 1/10 |
| Rounding off | Truncates | Truncates | Truncates | Truncates | Truncates + Truncates time events | Truncates |
| Holdoff times (Start, Lap, Aux, Stop) | 500,200,200,200 | 500,200,200,200 | 500,200,200,200 | 500,200,200,200 | 500,200,200,200 | 500,200,200,200 |
| Intermediate events: Priorities | Lap | Number | Manual | Manual | Number | Number |
| Intermediate event management | Not priority | Priority | Priority | Not priority | Priority | Priority |
| Ranking calculation | Yes | Yes | No | Yes | Yes | Yes |
| Speed base length | Meters/centimeters | Kilometers/ meters | Kilometers/ meters | Kilometers/ meters | Kilometers/ meters | Kilometers/ meters |
| Display of times | Totals | Totals | Run | Run | Run | Run |
| Group management | | | | | | At least one group |

# 25 REI2 – PC communication protocols

## 25.1 From PC
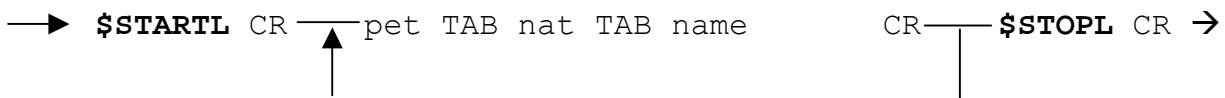
To transmit information about athletes' names and nationalities and the composition of groups, and start lists, a file must be compiled for each of these functions. Within each line the various values are separated by the ASCII Tab (09h) character and the various lines by the character CR (13) (0Dh). 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.

### 25.1.1 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:

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

→ **$STARTL** CR ⌐pet TAB nat TAB name      CR── **$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. |

## 25.1.2 List of groups and their composition

It is possible to define a list of groups and their composition and send it to REI2. The format is very similar to the list of names.

| | |
|---|---|
| **$STARTG** | Start of list of names, must be written exactly as it appears here |
| CR | Carriage Return (0Dh) |
| | For each group to be inserted the selection of the group should be repeated |
| **G** | Group marker |
| TAB | Tabulator (09h) |
| ng | Group number (max number allowed 200) |
| CR | Tabulator (09h) |
| | For each selection of each group specification of the details of the selection should be repeated |
| ni | Initial number of choice of group |
| TAB | Tabulator (09h) |
| nf | Final number of choice of group |
| CR | Carriage Return (0Dh) |
| | End of repeated part of information about choice of group |
| | End of repeated part of information about selection of group |
| **$STOPG** | End of group list. The maximum number of choices for each group is 10. The maximum number of groups which can be set is 98. Number 99 is reserved for internal use and means 'all groups' |
| CR | Carriage Return (0Dh) |

→ —— **$STARTG** CR ——**G** TAB ng CR——ni TAB nf CR—— **$STOPG** CR→
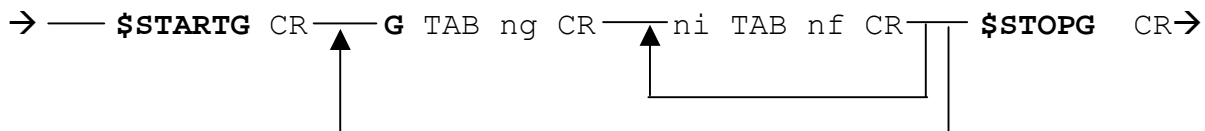
**Example:**

| | |
|---|---|
| $STARTG | Start of group list |
| G 1 | Definition of Group 1 |
| 1 100 | First choice group1: from 1 to 100 |
| 101 200 | Second choice group 1: from 101 to 200 |
| 251 300 | |
| 387 387 | |
| G 2 | End of group 1, start of group 2 |
| 400 415 | |
| 460 485 | |
| 500 530 | |
| 654 654 | 654 To insert an individual cometitor number, insert the same number twice |
| $STOPG | End of Groups list |

For Gundersen pursuit type races (e.g. Nordic combined event) a list of groups can be sent. The first competitor in each group is considered as the first to start for the respective group.

## 25.1.3 Start Lists

The start list specifies the athletes' starting order for each run of the race. A run can be defined as a run with single starts or group starts.

The format of the list is as follows:

| | |
|---|---|
| **$STARTP** | Start of start list |
| CR | Carriage Return (0Dh) |
| | For each run to load, repeat the following part |
| **MS** | Start of Run 1, for single starts |
| TAB | Tabulator (09h) |
| nm | Run number |
| CR | Carriage Return (0Dh) |
| | Repeat numbers at start |
| pet | Start: number at start |
| CR | Carriage Return (0Dh) |
| | End of repetition of number |
| | End of repetition of run |
| **$STOPP** | End of start list |
| CR | Carriage Return (0Dh) |

The maximum number of runs which can be set is 8. The runs can be either 'single' starts or group starts.

→ **$STARTP** CR ── **MS** TAB nm CR ──────────── pet CR ── **$STOPP** ── CR →
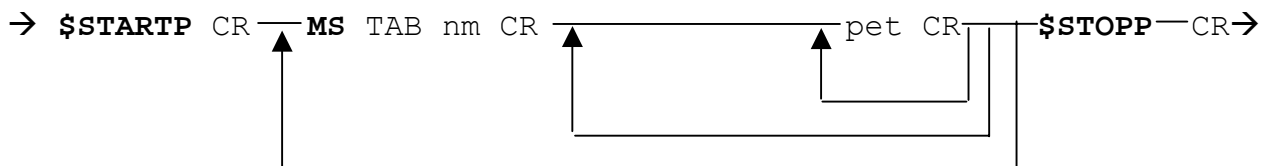
**Example:**

| | |
|---|---|
| $STARTP | Start of start list |
| MS   1 | Start of Run 2, for single starts |
| 1 | First Start: Competitor number 1 |
| 32 | Ssecond Start: Competitor number 32 |
| 31 | Third Start: Competitor number 31 |
| 40 | ... |
| 51 | |
| MG   2 | Start of Run 2, group starts |
| 1 | First Start: Group 1 |
| 2 | Second Start: Group 2 |
| $STOPL | End of start list |

## 25.1.4 Automatic Start Lists

The automatic start list specifies the start time of the athletes for the various runs.

The format of the list is as follows:

| | |
|---|---|
| **$STARTP** | Start of start list |
| CR | Carriage Return (0Dh) |
| | For each run to load, repeat the following part |
| **MS** | Start of Run 1, for single starts |
| TAB | Tabulator (09h) |
| nm | Run number |
| CR | Carriage Return (0Dh) |
| **DATE** | Where required for starts on different days |
| date | Date in dd/mm/yyyy format |
| | Repeat numbers at start |
| CR | Carriage Return (0Dh) |
| pet | Start: number at start |
| | Theoretical start time in the form HH:MM:SS.DCMM |
| CR | Carriage Return (0Dh) |
| | End of repetition of number |
| | End of  repetition of run |
| **$STOPP** | End of start list |
| CR | Carriage Return (0Dh) |

The maximum number of runs which can be set is 8. The runs can be either 'single' or starts.

→**$STARTA**-CR-**MS-**TAB-nm-CR-[**DATE**-date]-pet-TAB-Time-CR--**$STOPA**-CR→
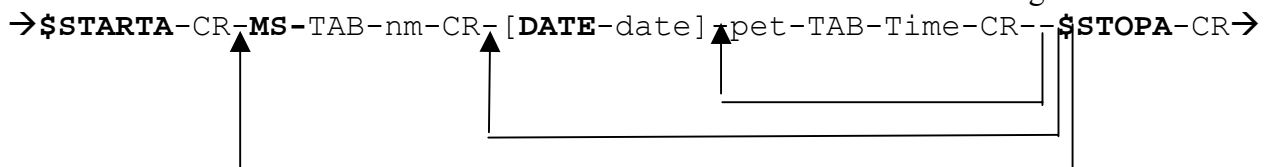
**Example:**

| | |
|---|---|
| $STARTA | Start of start list |
| MS   1 | Start of Run 1, for single starts |
| DATE 08/06/2001 | |
| 1   12:34:56.7890 | First Start: Competitor number 1 |
| 32  12:35:56.7890 | First Start: Competitor number 1 |
| DATE 09/06/2001 | |
| 111 12:34:56.7890 | First Start: Competitor number 111 |
| 132 12:35:56.7890 | First Start: Competitor number 132 |
| MG   2 | Start of Run 2, group starts |
| DATE 10/06/2001 | |
| 1   12:34:56.7890 | First Start: Competitor number 1 |
| $STOPA | End of starts list |

For Gundersen pursuit type races (e.g. Nordic combined event) a list of automatic starts can be sent. However, this must be associated with the second run.

## 25.2 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 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'.

# 26 Menu structure

The entries shown with (*) are not available in **Pursuit (Gundersen)** configuration. Those shown with ($) are only available in **Pursuit (Gundersen)** configuration.

## 26.1 Initial menu

A: New race
     A: Single starts
     B: Group starts
     C: Simple stopwatch
     D: Parallel Slalom
Other
     A: Show jumping
     B: Swimming
     C: PC-ONLINE
     D: Dual Time
B: Delete/Recall stored race
C: Continue current race
D: Clear all memory
Other
A: Battery recharge
     A: Discharge/recharge
     B: Immediate recharge
     C: Break
B: LinkGate radio signal level test
C: Line status (main lines and pod)
D: Autotuning Battery

## 26.2 Race menu

(M 1)

| | |
|---|---|
| M 1.A: Timing | 4 Timing 17 |
| | |
| M 1.B: Input/Printout groups | 5 Group management 40 |
| M 1/2.A: Input/Modify groups | 5.1 Input/Modify groups 40 |
| M 1/2 B: Print groups structure | 5.2 Print groups structure 41 |
| M 1/2 C: Clear groups structure | 5.3 Clear groups structure 41 |
| M 1/2.D: Groups structure:… | 5.4 Groups structure:  41 |
| Others | |
| M 1/2.A: Upload group structure from PC | 5.5 Upload group structure from PC 42 |
| | |
| M 1.C: Rankings and other printouts | 6 Rankings and other printouts 42 |
| M 1/3.A: Print/Show ranking | 6.1 Printing/Show ranking 42 |
| M 1/3.B: Other printouts | 6.2 Other printouts 44 |
| M 1/3/2.A: Time of day | 6.2.1 Time of day 44 |
| M 1/3/2.B: NS/DNF/Disqualified | 6.2.2 NS/DNF/Disqualified 44 |
| A: Not Started Printout | 6.2.2 NS/DNF/Disqualified 44 |

MICRO GATE

REI2
Single Starts Program

Doc: R2U_S_1079_001_E
Version: 1.07.9
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# 27 Editing history

The following table summarises the main modifications made to this document.

| Program version | Chapter | Page | Description of modification |
| --- | --- | --- | --- |
| 1.03 | | | Gundersen method starts management inserted |
| 1.03 | 4.4.1 | 24 | Editing of table summarising Finish configurations |
| 1.03 | 6.3 | 46 | Function changed. Printout and Visualization mode |
| 1.03 | 7.1 | 49 | Order of chapters changed. Input start list. |
| 1.03 | 7.2 | 50 | Order of chapters changed. Start order calculation. |
| 1.03 | 7.3 | 52 | New function. Starts with Gundersen method |
| 1.03 | 7.5.3 | 57 | New function. Pursuit (Gundersen) |
| 1.03 | 10.3 | 64 | New function. Data output protocol |
| 1.03 | 12.1.10 | 71 | New function. Confirmation time for Stop. |
| 1.03 | 12.1.12 | 71 | New function. Ref time to first |
| 1.03 | 13.2 | 78 | Function changed. Visualization pause |
| 1.03 | 13.7 | 79 | New function. Visualize time without point. |
| 1.03 | 13.8 | 79 | New function. Display lap time of every intermediate event. |
| 1.03 | 13.9 | 79 | New function. Max num in RollRank |
| 1.03 | 26.2 | 103 | Updated. Race menu |
| 1.03 | 27 | 108 | Chapter inserted. Editing history |
| 1.07 | 4.10 | 37 | New function Start light management |
| 1.07 | 7.5 | 54 | Modified chapter Automatic starts |
| 1.07 | 5.4 | 41 | New function Groups structure: |
| 1.07 | 6.3 | 46 | Send printout on serial chap. Printout and Visualization mode |
| 1.07 | 6.4 | 47 | New function Print/Show climatic data |
| 1.07 | 7.2 | 50 | Start order calculation considering also NP-NA and SQ |
| 1.07 | 8.3 | 60 | New function Synchronization verify |
| 1.07 | 8.4 | 60 | New function Signal |
| 1.07 | 12.3 | 73 | Delay in sending tick on serial chap. Serial ports setup |
| 1.07 | 12.1.11 | 71 | New function Ranking N best run:… |
| 1.07 | 13.10 | 79 | New function Displayboard available |
| 1.07.9 | | | General edit for version 1.07.9 |

## Copyright

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

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