RACETIME 2

PC-ONLINE TIMING PROGRAM

Revision 1.00

MICRO✱GATE

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"PC ON-LINE Timing" Software

"PC-ONLINE Timing" Software

In the PC 'On-line' Timing program, Racetime2 becomes a precise time base which memorises, prints and (through the serial port) transmits the event times for all the events acquired (start, stop, lap or auxiliary input). The events can be generated manually by using the keys on Racetime2, externally through the appropriate inputs or be transmitted via radio using the Microgate Linkgate system.
Clearly the PC 'On-line' program is meant for sports events at a high level at which the personal computer is used for the management of times while the chronometer is used as a system for acquiring times.
Several special functions, such as the possibility of repeating the transmission of the most recent events on the serial line or the possibility of transferring event times from the Linkgate Encoder after an interval of time, make Racetime2 especially reliable for this particular application.

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```
A:Timing
B:Synchronize
C:Data trasm.
 A    B     C   more
```

[F1] [F2]   [F3] [F4]
 1   2   3
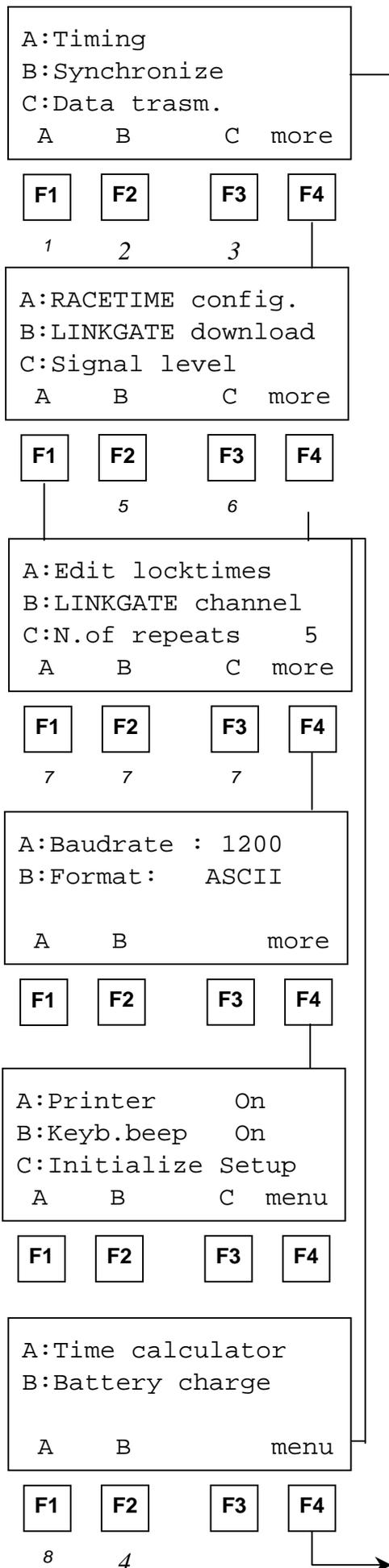
Select the items with the four function keys:
A. To enter timing mode
B. To synchronize the internal clock
C. Data transmission to PC
F4. To show the next menu

```
A:RACETIME config.
B:LINKGATE download
C:Signal level
 A    B     C   more
```

[F1] [F2]   [F3] [F4]
        5   6

Select the items with the four function keys:
A. Racetime configuration
B. Data reception from LINKGATE module
C. Radio signal quality test (Linkgate system)
F4. To show the next menu

```
A:Edit locktimes
B:LINKGATE channel
C:N.of repeats    5
 A    B     C   more
```

[F1] [F2]   [F3] [F4]
 7   7   7

Select the items with the four function keys:
A. Dead time management
B. LINKGATE system work channel
C. To edit the number of events already acquired which are retransmitted on the serial line when, during timing, F1 (repeat) is pressed.
F4. To show the next menu

```
A:Baudrate : 1200
B:Format:    ASCII


 A    B         more
```

[F1] [F2]   [F3] [F4]

Setting of serial transmission parameters
ATTENTION : this configuration is present only on versions 20.x.yy, 21.x.yy and 22.x.yy.
Press F1 to modify serial transmission velocity (1200, 2400, 4800 o 9600 bit/s).
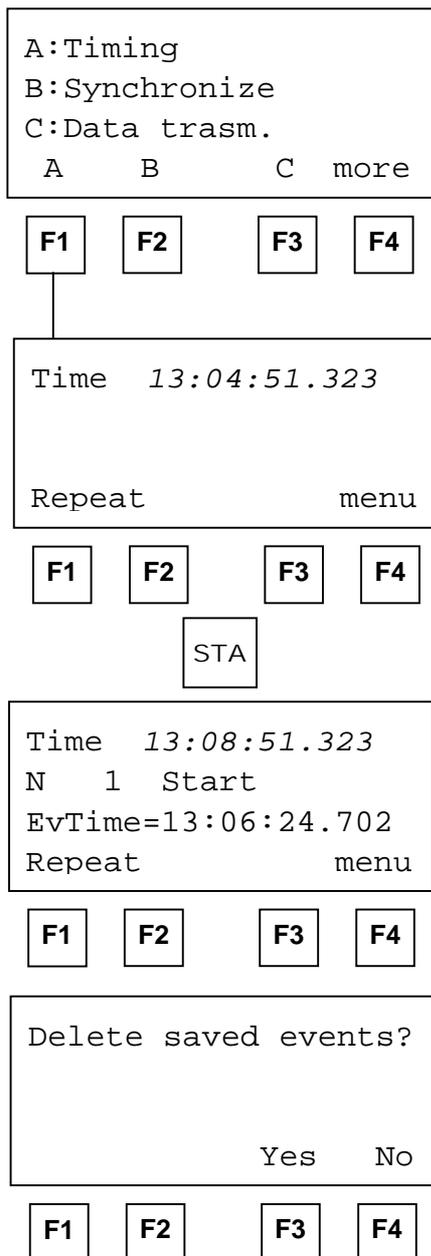Press F2 to choose between binary and ASCII for the data transmission format. The transmission protocols for the two modes are given in Appendix B.

```
A:Printer     On
B:Keyb.beep   On
C:Initialize Setup
 A    B     C   menu
```

[F1] [F2]   [F3] [F4]

Select the items with the four function keys:
A. Printer management
B. Management of beep keys
C. Reinitialization configuration
F4. To show the next menu

```
A:Time calculator
B:Battery charge


 A    B        menu
```

[F1] [F2]   [F3] [F4]
 8   4

Select the items with the four function keys:
A. Sexagesimal calculator
B. Management of battery recharge functions
F4. To return to the main menu

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```
A:Timing
B:Synchronize
C:Data trasm.
 A      B      C    more
```

| F1 | F2 | F3 | F4 |

```
Time   13:04:51.323



Repeat          menu
```

| F1 | F2 | F3 | F4 |

STA

```
Time   13:08:51.323
N   1   Start
EvTime=13:06:24.702
Repeat          menu
```

| F1 | F2 | F3 | F4 |

```
Delete saved events?



            Yes    No
```

| F1 | F2 | F3 | F4 |

Timing

To access the timing function, press F1 from the first screen display of the main menu.

On the display, the following information is shown:
Line 1: constantly shows the time of day (which can of course be synchronized - see chap. E2)
Line 2: shows a counter for the number of events for which times have been taken and the type of event (Start, Stop, Lap or Aux). In the case of times received via radio the letters 'rad' will appear and if an intermediate time is received, its number is shown (1..14)
Line 3: shows the time of day of the last event taken (EvTime)
Line 4: shows the operational choices which can be activated with the function keys

If you press the F1 key (Repeat), the most recently taken event times will be re-transmitted on the serial line. The number of repeated events depends on the relative setting (see para. E7.0).

To return to the main menu, press F4 (menu).

NOTE: If any event times are taken when the chronometer is in the main menu, on re-entering the 'Timing' function Racetime2 will show the following message

If the answer is 'Yes', the event times acquired while the chronometer was not in timing function will be eliminated. If the answer is 'No', the acquired event times will be treated like any other event times. (The buffer memory can contain a maximum 64 events).

During timing, if the printer is activated (see para. E7.3), event times will be printed in the following format:

Events prog.	**Event type**	**Progressive number for event type**
ST=Start	(iin this example, the time printed is the twelfth Lap acquired)	
	SP=Stop	LAP acquired)
	LP=Lap	
	AU=Auxiliary	
96	LPr	12
	1:25:32.281	
	Time event (HH:MM:SS.dcm)	

If the event time has been received via radio, the letter 'r' is printed after the event type.

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After every 20 events acquired, a control line is printed which indicates the last memorised event time (20°, 40°, 60° etc.). Simultaneously, the same event time is transmitted on the serial line with an appropriate event code.
For information about the data transmission protocol on the serial line, refer to appendix F2.

Synchronization

```
A:Timing
B:Synchronize
C:Data trasm.
 A    B     C   more
```

| F1 | F2 | F3 | F4 |
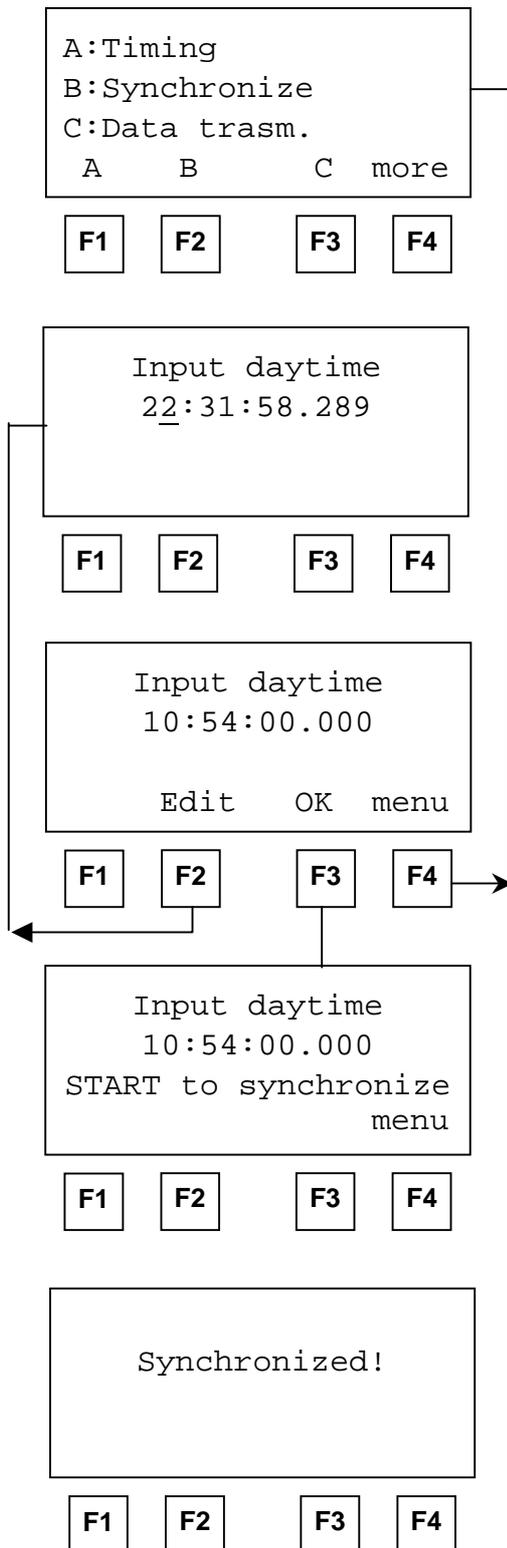
Insert the exact time:

For example: to synchronize RACETIME on 10.54 AM
Press:

1 0 ENTER 5 4 ENTER 0 ENTER 0 ENTER

```
   Input daytime
    22:31:58.289

```

| F1 | F2 | F3 | F4 |

To correct, press F2, otherwise press F3

```
   Input daytime
    10:54:00.000


    Edit   OK   menu
```

| F1 | F2 | F3 | F4 |

Press START to synchronize RACETIME on the time set.

```
   Input daytime
    10:54:00.000
START to synchronize
                menu
```

| F1 | F2 | F3 | F4 |

After receiving confirmation, you are automatically returned to the first menu.

```
   Synchronized!

```

| F1 | F2 | F3 | F4 |

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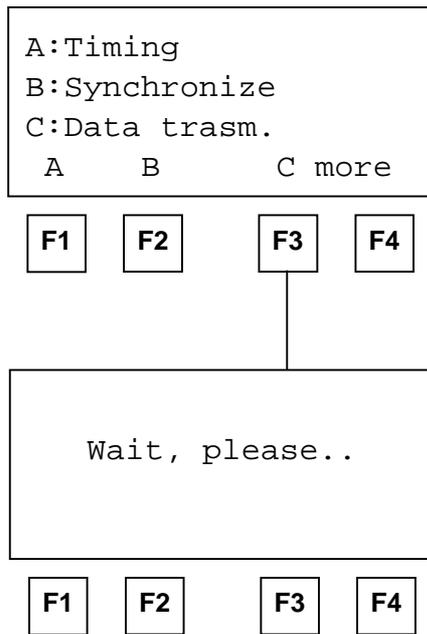
Off-line data transmission

```
A:Timing
B:Synchronize
C:Data trasm.
 A     B     C more
```

It is possible to transmit memorised times to a PC at any moment.

| F1 | F2 | F3 | F4 |

```
   Wait, please..
```

When all the data have been transmitted, you return automatically to the first menu.
The times are transmitted according to the protocol described in Appendix B.

| F1 | F2 | F3 | F4 |

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```
A:Time calculator
B:Battery charge

  A    B           menu
```

[F1] [F2]   [F3] [F4]

```
Trickle ch.
A:Rep.charge/disch.


A                  menu
```

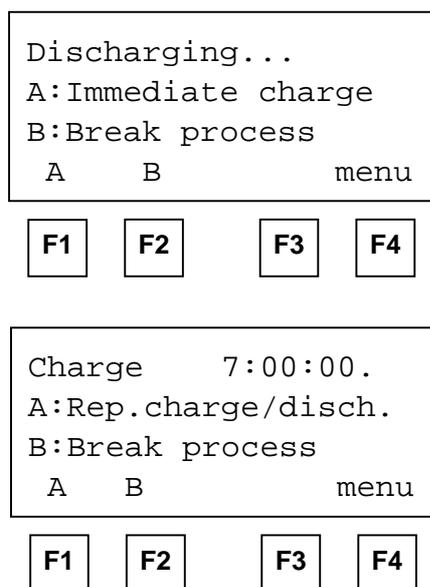[F1] [F2]   [F3] [F4]
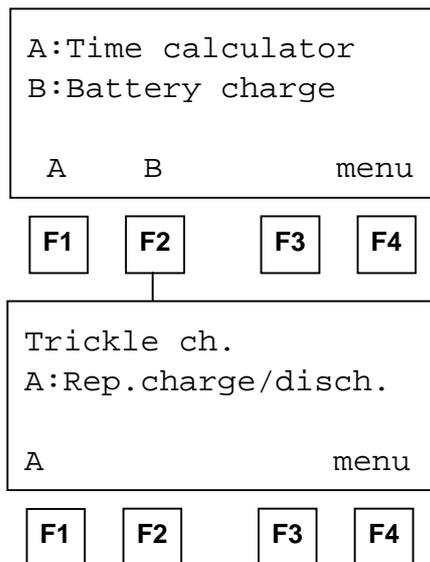
Battery recharge

Recharging of Racetime 2's internal batteries is managed entirely by the microprocessor which controls all of the chronometer's functions. Consequently it has been possible to implement a recharge control which guarantees maximum battery efficiency at all times, at the same time prolonging the chronometer's operational life.

To recharge the batteries, connect any 12 – 20 Volt power source (normally the AC/DC adaptor supplied in Racetime2's kit will be used) to the appropriate socket (Chap. A2).

If the chronometer is off, information about the current status of the battery recharge management function will immediately be shown on the display.

In particular, the following messages may appear on the first line of the display:

Status/message	Function description	LED status
Maintenance	the chronometer is supplied by an external power source and, at the same time, the batteries' efficiency is maintained by a weak recharge current	Brief blinking every four seconds
Discharge	at the beginning of the recharge cycle, the batteries are completely discharged before being recharged	LED continuously on
Recharge	recharge in progress. On the first line of the display blinks the time still to go until the end of recharge	Blinking LED

```
Discharging...
A:Immediate charge
B:Break process
 A    B           menu
```

[F1] [F2]   [F3] [F4]

```
Charge    7:00:00.
A:Rep.charge/disch.
B:Break process
 A    B           menu
```

[F1] [F2]   [F3] [F4]

If a blinking message 'Vext. Ins.' appears on the first line of the display, this means that the voltage supplied at the recharge/power supply input is insufficient. <u>Attention:</u> when external power is insufficient, recharging is interrupted and cannot be completed correctly or within the time anticipated.

If the chronometer is in 'Maintenance', press 'A :Repeat discharge/recharge' (F1) to begin a new charge cycle. This will start immediate discharging of the batteries. The duration of this discharge phase is variable and depends on the charge status of the batteries at that moment (The time for discharging can last up to about four hours).
After discharging the batteries, Racetime2 will automatically begin to recharge. This takes seven hours. When this time is over, the words 'End of Charging – OK' indicate that the process has been correctly completed. If, however, battery malfunction has caused premature interruption of charging, the messages 'Err. Batteries – LV' (insufficient battery voltage) or 'Err. Batteries –HV' (battery voltage too high)

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will appear. During recharging the time needed to complete the process will appear on the display.

During discharging, it is possible at any time to pass directly to charging by pressing 'A: Rep. charge/discharge.' (F1). This will shorten the time needed for recharging. However, you are advised not to charge the batteries without first discharging them as this could cause a reduction in their capacity (memory effect).
At any moment, you can interrupt discharging/recharging by pressing 'B: Break process' (F2).

Note 1: If the external power source is cut off during charging, charging will be interrupted and resumed from the same point it had reached before being interrupted when the power source has been restored. This represents an extra guarantee of the reliability of the recharge system.

Note 2 : During discharging and recharging, Racetime2 becomes slightly but noticeably warm. This is absolutely normal. However, avoid covering the device with insulating materials (blankets or others).

It is also possible to access these functions when the chronometer is on. In this way, you can begin to recharge the device without interrupting a timing session.
To access recharge management, choose A: 'Battery recharge' from the fourth display of the main menu.

Low battery signal

When the batteries have nearly run down completely and an external power source is not connected, a warning symbol blinks at the top of the display. From the moment this symbol begins to blink, you still have a considerable amount of time to finish your work, nearly two hours without using the printer but much less if the printer is often used If it is not possible to quickly connect the chronometer to an external power source, it might be advisable to disconnect the printer (see par.D7.3) in order to increase remaining operational autonomy.

```
A:Timing              ▯
B:Synchronize
C:Data trasm.
 A     B      C    menu
```

Remember that when fully charged, the batteries can be used continuously for approximately 8-9 hours if on average a printout is made every 20 seconds. Length of duration may be less in particularly harsh climatic conditions or if the batteries are worn out. It is absolutely normal for battery efficiency to decline after approximately 500-1000 recharge cycles. If you notice a significant reduction in the duration of the batteries, please contact Microgate for replacements.
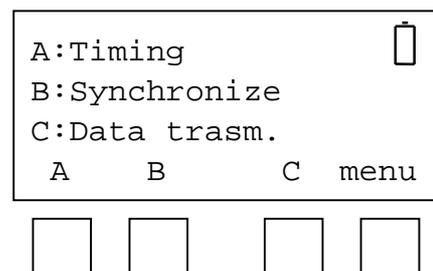
Memory limits

Racetime2's memory is large enough to store about 1350 events. If the memory's limits are exceeded, a message appears on the display. It is possible to continue with timing, but the data will not be stored.

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```
A:RACETIME
B:LINKGATE download
C:Signal level
 A    B     C  menu
```

| F1 | F2 | F3 | F4 |

```
Connect LINKGATE
  Start trasmiss.:
   (2nd + SERIAL)
              menu
```

| F1 | F2 | F3 | F4 |

```
Receiving from
Lap 1
Time  4   Speed  2
End  -  Press Enter
```

| F1 | F2 | F3 | F4 |

| ENT |

```
Time reference:
A: Absolute
B: Automatic synch.
 A     B
```

| F1 | F2 | F3 | F4 |

```
Print trasmitted
times ?

 Yes  No
```

| F1 | F2 | F3 | F4 |

Receiving data from LINKGATE

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 Racetime2. This possibility enhances reliability as it enables you to 'retrieve' later any times which for whatever problem have not been transmitted.

To access the data transfer function, select 'B:Rec.data LINKGATE' (F2) from the fourth screen display of the main menu. Then connect the LINKGATE Encoder with the cable specified for this (par. B3.9).

<u>IMPORTANT</u> : the LINKGATE Encoder device must not be connected to the socket during data transfer from the LINKGATE Encoder.

Press F1 to choose 'Recep' and then begin transfer. (Press '2ND' on LINKGATE Encoder and, keeping it pressed down, press 'SERIAL').

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

When you have finished transmission, if you press Enter another menu will appear.

If you choose 'Absolute' (F1), the event times are simply transferred and shown in the same way they were acquired. It is therefore essential for the LINKGATE Encoder device and Racetime2 to have been synchronized (see para. C6 and B3.8) before the beginning of the timing session (if you do not want to have to make a laborious series of calculations and corrections later.......).

If you choose 'Autom.Synch.' instead (F2), the two devices are synchronized later, when the data are transferred.

In this way the times will be restored to the correct values even if the LINKGATE Encoder and Racetime2 were never synchronized. This second option is usually the most convenient one. However, you must not switch off Racetime2 or change its synchronization in the time between the end of the timing session and the moment when data transfer is made. Also, 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 base times of the two devices (see the technical specifications of the LINKGATE Encoder and Racetime2 for an estimate of possible divergences).

The times and speeds transferred by the Linkgate Encoder can be printed to facilitate the assignment of times.

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```
<ST N   1 110345.789
L 1 N   0 110451.136
>SP N   1 110513.289
 ←    →  (0=Skp) menu
```

| F1 | F2 | F3 | F4 |

In the example a Lap 1 signal follows the start of athlete N°1 and precedes the finish of the same athlete. It is therefore probable that the time event acquired refers to the intermediate time of athlete 1

After choosing the time reference, you will automatically enter the assignment function. With this operation, you can assign an event time transferred from LINKGATE Encoder to an athlete's starting number for a certain run. The transferred times are shown on the second line of the display. The event times immediately before and immediately after the acquired time are shown on the first and third line respectively. In this way, it is easier to 'orientate yourself' amongst the times and find the time or times you wish to 'retrieve'. To pass from one time to the next without assigning them, press Enter. To run backwards and forwards through the acquired times, press → (F2) or ← (F1). To assign a time to a start number, insert the number directly, confirm with ENTER and then insert the run number on the fourth line of the display. If you try to assign a time already used, the chronometer will show a warning signal.

Note 1: it is better to have an approximate idea of when the missing event time or times took place. To this end it could be useful to print out the event times beforehand.

Note 2: for reasons of space, the event times are shown with only one dot separating the thousandths of a second. The display format is hours, minutes, seconds, thousandths of a second.

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```
A:Send stored data
B:LINKGATE download
C:Signal level
 A     B      C    more
```

| F1 | F2 | F3 | F4 |

```
Ready to receive !



             menu
```

| F1 | F2 | F3 | F4 |

```
Receiving...
    Start


```

| F1 | F2 | F3 | F4 |

```
Ready to receive !
      Start
Channel  4    S=100%
CHANNEL DIFF.!  menu
```

| F1 | F2 | F3 | F4 |

Radio signal quality

Racetime2's software is equipped with a function for the evaluation of the quality of the radio signal received. This *utility* is especially useful when the radio signal is considerably disturbed and it is therefore necessary to evaluate the transmission's degree of reliability.

To access the function, select 'C : Quality signal' (F3) from the fourth screen display of the main menu. The words 'Ready to receive !' indicate that the system is waiting to receive a radio transmitted impulse. 3 seconds after the start of signal reception (during reception 'Reception in progress....' is shown), the channel of the signal received and the quality of the signal in percentages are shown on the display. Obviously the closer the percentage is to 100%, the better the quality. Values greater than 40% are to be considered 'safe'.

If the channel set on the LINKGATE Encoder (see para. C10.19a and B3.9) does not coincide with the channel set on Racetime2, the message 'DIFF. CHANNEL' (channel difference) will appear on the screen. If reception is particularly difficult, several stratagems can be attempted:

- place both the transmitting and receiving radios (the radios connected to the encoder) in an elevated upright position
- if the disturbance is generated by interference from other transmitters operating on the same channel, change the frequency you are working on
- use more efficient antennas (1/4 wave or 5/8 wave, instead of the normal 'charged' type), especially for transmission radios.

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Configuration

```
A:Edit locktimes
B:LINKGATE channel
C:N.of repeats     5
 A      B      C   more
```

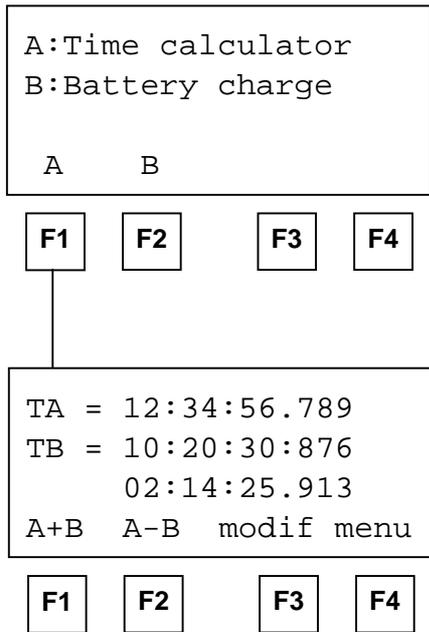[F1] [F2]   [F3] [F4]

Number of Repetitions : By pressing F3 you can modify the number of events already acquired which are retransmitted on the serial line when F1 (Repeat) is pressed during timing.

```
TM Start = 2000 ms
TM Stop  =  500 ms
TM Lap   =  500 ms
TM Aux   =  500 ms
```

[F1] [F2]   [F3] [F4]

Editing 'dead' times : allows you to modify separately the disactivation times of the inputs after the acquisition of an event for the Start, Lap, Stop and AUX lines.

```
LINKGATE channeò
   (S0000000)
   (1=ON,  0=OFF)
Modify         menu
```

[F1] [F2]   [F3] [F4]

LINKGATE channel: allows you to modify the LINKGATE system channel you are working with so you can move to another channel if necessary. On the display, the setting indication for the '*dip switch*' located on the LINKGATE Encoder will appear. The first selector does not affect channel selection (its function is to select signal length) and is therefore shown with the letter 'S'. Next, the status of the other switches is shown (1=switch up, 0=switch down). To modify the setting, press 'Edit' (F1). Remember once again that it is <u>absolutely essential that Racetime2 and the LINKGATE Encoder are set on the same channel</u> (see chap. B3).

```
A:Printer      On
B:Keyb.beep    On
C:Initialize  Setup
 A      B      C  menu
```

[F1] [F2]   [F3] [F4]

Activation/disactivation of the printer and of acoustic signalling when keys are pressed (to modify the settings press keys F1 and F2 respectively).
Configuration initialization: press F3 to restore standard configuration. This is equivalent to canceling the configuration in the initial settings of the device.

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```
A:Time calculator
B:Battery charge

  A    B
```

| F1 | F2 | F3 | F4 |

```
TA = 12:34:56.789
TB = 10:20:30:876
     02:14:25.913
A+B  A-B  modif menu
```

| F1 | F2 | F3 | F4 |

Sexagesimal calculator

To access the calculator function, select 'A : Calculator' (F1) from the third display of the main menu.

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

Select the operation to be carried out on the two times:

F1 (A+B) adds the two times

F2 (A-B) subtracts time B from time A (A-B)

To modify the times, press F3.

If you must modify only one of the times, the time which is not to be modified can be 'skipped' by pressing CE. In this way you avoid pressing ENTER four times.

Note 1 : times are 'normalized' at 24.00 hours; for example, 2 :00 :00.000+23 :00 :00.000 = 1 :00 :00.000 and not 25 :00 :00.000 ! ! !

Note 2 : pay attention when keying in the thousandths, especially if the times to be added or subtracted are expressed with an accuracy to the tenth or hundredth; for example, to insert the time 1:02.84 (one minute, two seconds, 84 hundredths of a second) you must key in

0 ENTER (hours)

1 ENTER (minutes)

2 ENTER (seconds)

840 ENTER (thousandths), and not 84 ENTER ! ! !

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