GENERAL USER’S MANUAL

3462.501.02
TIM022
Version 1.0
1 Introduction

The **PowerTime II** is a hand-held, battery powered timing device. The four line display, and 18 key keyboard make it very user friendly. Five plugs allow the device to be connected to various peripherals.

The **PowerTime II** reflects all the know how and experience of Swiss Timing Ltd, official timekeeper at more than 25 Olympic Games. Benefiting from the latest innovations in micro-electronic, the device more than meets the wishes of every user.

The **PowerTime II** is absolutely a futuristic device, whilst remaining very easy to use. New timekeeping programs developed to meet divers sporting disciplines may all be loaded from a personal computer.

The **PowerTime II** provides a practical solution for all disciplines requiring the measurement of time, including the time of day, the duration of a race, lap time, match time or speed.

The **PowerTime II** is characterised by its ease of use, its high precision, its compact size and low power consumption – making it suitable for every timekeeper, from amateurs to professionals, having already been used at the Olympic Games.

1.1 Safety Recommendations

To avoid all risk of electrocut ion, or damage to the device, never connect an external power supply directly onto the **PowerTime II** sockets; it is only permitted to connect a mains adaptor when it complies with all safety criteria.

Never use a solvent or aggressive detergent to clean your **PowerTime II**.

Never pull the paper through the printer in anything other than the direction.

Protect the **PowerTime II** from rain and water jets.

Never open the **PowerTime II** case due to risk of damaging the internal electronic circuits.
1.3 System peripherals

To carry out a totally automatic timing operation it is necessary to connect a start system and a device to detect arrivals. Any device having a volt free normally open or normally closed contact, can be used (for example start gates, start transducer, photocells, contact strips etc.)

For initial familiarisation with the device, or where high precision timing is not absolutely essential, the button allows direct entry of start and arrival impulses directly from the keyboard.

1.4 Keyboard: Use of the keys

- Paper Advance key
- START/STOP key: switches on the device and allows manual recording of starts and finishes.
- Correction key: this replaces the timekeepers pencil and allows the modification of times. Any correction is printed (change of competitor number, erasing a time, manual entry of a time).
- ON/OFF key: renders active/inactive (arming) the external channel shown by the cursor .
- Cursor keys: allow movement through the menus.
- ESC key: cancels a modification or exits a menu.

1.5 Switching the device on

Press and hold down the button until the end of the operation, during this time press the button briefly.

1.6 Switching the device off

Return to the main menu by pressing , then go to the Off selection and press the key.

1.7 Navigating through the menus

The actual selection is shown on the screen by means of the character . Use the cursor keys ( and ) to make a selection and the key to confirm. If a menu choice is no longer shown on the screen, the vertical arrows (↑ or ↓) on the top or bottom of the screen indicate that the screen display may be scrolled by the cursor keys.

2 Technical Specification

Data storage: even when switched off, the saves all data. For this, it uses a capacitor mounted on the main circuit board. This guarantees that no information is lost when changing the main batteries.

Memory: depending on the program that is installed, allows several hundred times and heats to be stored, with a maximum of 2000 results.

Distribution of information: the serial output allows results to be transmitted to a scoreboard or PC either during, or after, races.

3 General Functions

Note:

Some programs, not developed by Swiss Timing Ltd, may use different menus.

3.1 Type of contacts

A contact is defined by the change of state of an electric switch.

Take the case of a simple push button to explain this concept. To record an arrival signal, press the button then release it. Depending on the type of push button we have the two following possibilities:

- Normally closed (NC):
  - Press: 1
  - Release: 0

- Normally open (NO):
  - Press: 0
  - Release: 1

It is a fundamental feature of the device that the type of contact must be correctly interpreted: in other words will the timing pulse be recorded when the signal changes from 0 to 1 or from 1 to 0?

With regard to above diagram, it is easy to understand that if we configure the contacts incorrectly we will falsify the results by several tenths of a second. In this case the device will interpret the arrival time as the moment that the judge releases – rather than presses – the push button.

How to configure a contact:

Settings Contact Start/Stop ENTER
NO/NC ENTER

Where Start/Stop is the input you wish to configure and NO/NC defines whether the contact will be normally open or normally closed.
To help understand this concept, here is an example:
Take a 1500m where the finish times are recorded by a photocell. The race is about to start: the finish channel should be disarmed. An official walks in front of the cells, and the athletes are on their first lap; none of the times are recorded. On the last lap the finish channel is armed and all times are recorded. When the last athlete has passed, disarm the channel again. The result can now be printed.

The POWERTIME allows operation in manual arming mode, this means that the operator must press the OFF/ON key before the times can be recorded, or in automatic arming mode where the time will automatically be recorded after a pre-determined arming delay of x seconds. In the first case enter 0 as the arming time, alternatively the number of seconds before automatic rearming. If you enter 10, the POWERTIME arms the arrival channel 10 seconds after the start impulse is received.

Note that all events occurring when the inputs are disarmed are still stored in the memory (stack). The operator can see these times and select them by using the modification menu accessed by the « correction » key.

How to set an arming time:
Settings Enter Contacts Enter Arming Enter xx

Where xx is the arming time in seconds, in the range from 0 to 99.

3.4 Resolution and Rounding
The rules of the different sporting federations stipulate a timing resolution and method of rounding that can vary substantially.

Several examples:

<table>
<thead>
<tr>
<th>Type of race</th>
<th>Resolution</th>
<th>Rounding Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming</td>
<td>1/100</td>
<td>rounding</td>
</tr>
<tr>
<td>Athletics 100m</td>
<td>1/100</td>
<td>rounding IAAF</td>
</tr>
<tr>
<td>Athletics 20 Km walk</td>
<td>1/10</td>
<td>rounding IAAF</td>
</tr>
</tbody>
</table>

The POWERTIME can be used for each method of calculating a result by offering a resolution from 1/1000 of a second up to a whole second, and the following rounding methods:
- truncated (the fractional part is simply ignored)
- rounded (if the fractional part is equal or superior to 0.5, the whole part is increased by one)
- rounded IAAF (if the fractional part is more than 0.0, the whole part is increased by one)

How to configure the resolution:
Settings Enter Resolution Enter
Choose required resolution

How to configure the rounding mode:
Settings Enter Rounding Enter
Choose required rounding

3.5 Scoreboard and PC output
The POWERTIME allows the distribution of timing data on two separate lines – the scoreboard output and the PC output. The scoreboard output uses an RS422 protocol and the PC output uses an RS232 protocol.

The scoreboard output is defined by the data protocol used and the desired scoreboard format. Depending on the application, different protocols will be used, which allow the POWERTIME to control scoreboards of different types (refer to specific program manuals for further details).

The menu Settings Scoreboard allows the selection of the type of scoreboard as well as the manner in which the data will be displayed on the scoreboard.

How to select the type of scoreboard:
Settings Enter Scoreboard Enter Type Enter
Choose the type of scoreboard
As examples consider the Rollertime protocol scoreboard or the Multi-line protocol which enables the use of up to 8 lines of scoreboard at the same time (for example the Calypso or UNT7).

Settings Scoreboard Type Multiline
Enter number of lines Enter

Where the number of lines is a value between 1 and 8 corresponding to the number of scoreboard lines that are connected together.

The resolution of the scoreboard specifies which information will be transmitted. For example, consider a six digit scoreboard. If you are timing a track athletics event, the scoreboard should display minutes, seconds, tenths and hundredths (mm:ss:th). For the walk the display will be in hours, minutes, seconds and tenths (h:mm:ss:t). However, for a marathon, the display will be in hours, minutes and seconds (hh:mm:ss).

How to Configure the resolution of the scoreboard output:
Settings Scoreboard Resolution
Enter

Choose the resolution

Note that one of the resolution choices is OFF which disconnects the scoreboard output.

3.6 Printer
The POWERTIMEII printer is considered a vital tool in the provision of official results. All data « captured » during the event is printed in time of day; all relevant data (for example the finish time) is then processed and the POWERTIMEII prints the effective race time.

If printing during the event is not essential, the printer may be switched off and then reactivated at the end of the race to print the final result.

How to switch the printer ON and OFF
Settings Printer ON or OFF
Enter

3.7 Controlling the memory
The POWERTIMEII stores in its memory all the information recorded during all the timed competitions. This information will remain available until the operator decides that it is no longer required. At that point it will be necessary to clear the memory. An erase function is available to clear the data in the memory, but it should be noted that all the information will be permanently erased.

How to erase the memory
Settings Erase Yes or No
Enter

3.8 Corrections
Every timekeeper hopes for a trouble free event. However, in reality, it may be necessary to modify some of the data that has been automatically recorded by the device. For example, someone other than an athlete may pass through the finish line photocells. A bib number may be read incorrectly. Many other unpredictable situations can arise without warning.

In these cases, the POWERTIMEII has a menu that enables the operator to modify the registered data so that the final results are correct.

Note that all data modifications or manually entered start or finish times are indicated on the printer with an asterisk (*).

Use the key to enter the « modification » mode.

Normally, it is possible to modify or insert a start time, modify or insert a finish time, exchange times, or recover in the memory (stack) an information that was not considered as useful.

The POWERTIMEII stores in a special memory (the stack), all information that is not immediately required to produce a result. For example a finish time, when the arrival channel is not armed or a start time before the race has started. Note that access to this special memory (stack) is only possible if the data has been memorised.

4 Timekeeping

4.1 Before the Race
Before the races, it is necessary to check the basic set-up information:
- The date and time
- The type of contacts being used
- The timing resolution
- The presentation of information on the scoreboard
- The printer – switched ON or OFF
- Erase the results already in the memory from previous races

4.2 For each race
- Select the timing mode: for example by lane or single finish line.
- Select or edit the event and heat number.
- Arm or disarm the external start and stop channels.
- Edit the bib numbers (unless timing in lane mode)
- Make any corrections.
- Print the results.
- Exit the race.
5 Other functions

5.1 Paper Replacement
Open the paper compartment cover.

Lift out the remaining part of the existing paper roll and carefully cut the paper leaving a piece of paper several centimetres in length, which will help to load the new roll. 

Never try to pull the remaining paper through the print head with any force. This will damage the printer.

Make a diagonal cut at the end of the new paper roll.

Whilst pressing the paper advance key, slide the end of the new roll of paper into the paper guide on the printer.

Gently push the paper forwards until the advance mechanism grips it. Continue pressing the paper advance key until the paper is fed right through the printer. You may now – gently – pull about 10 cm of paper through the printer.

Pass the end of the paper between the main body of the device and the paper compartment cover.

Close the paper compartment cover.

Never use the printer when there is no paper, as this will damage the printer. If it is not possible to replace the paper immediately, then switch off the printer.

5.2 Battery Replacement

The POWERTIMEII works with 4 1.5 V alkaline batteries (1500 mAh, type AA / LR6 / UM3). It is also possible to use appropriate sized and rated rechargeable cells. Note that these cells cannot be recharged by the POWERTIMEII even if the mains adaptor is connected.

The POWERTIMEII allows you to change the batteries even when a race is in progress. However, the start and finish signals will not be registered whilst the actual battery replacement is under way. Having replaced the batteries, return to the race using the function menus.

Open the battery compartment cover.

Remove the four batteries. Do not throw these batteries into the dustbin but send them for recycling.

Insert four new batteries (never replace just some of the batteries – always four at the same time) and note the correct polarity as shown in the base of the battery compartment.

Close the battery compartment cover.

The internal Lithium battery must only be changed at a Swiss Timing Ltd service centre.

5.3 Loading new version

Different programs exist for the POWERTIMEII (for example Standard, Ski, Top-8). You can find these on the Swiss Timing Ltd web-site (www.swisstiming.com). Here are the step by step instruction of how to load a new version, or a new program into your POWERTIMEII:

- Connect your POWERTIMEII using the delivered cable to an available serial port on your computer. Be sure that this last is not used by any other running program. Note: an equivalent USB to Serial Port can also be used.
- Click on the line “Update your POWERTIMEII”, the installer will be loaded and the connection will be done automatically. When the connection between the computer and the POWERTIMEII is established an red icon with a POWERTIMEII is shown.
- The corresponding serial port will be found automatically.
- The connection is automatic, if an error occurs it means that the connected com port is not available, not correctly installed or already used by another PC application.
- The installation software will show you the serial port used for the connection and the version (1 or 2).
- To upload a new program set the radio button to “Software”, the list of available programs is shown. Select the desired program to load and then press “Download”.
- At the end of this process, the program asks you if you want to save changes; just answer YES.
6 Troubleshooting

- The **POWERTIME** won't switch on: check the battery condition.
- The display flashes: the battery voltage is too low – replace the batteries.
- The printer doesn't work: check that there is paper. Check that the printer is switched on (initialisation menu, printer). Note that the printer is automatically switched off if the battery voltage is low.
- The PC connection doesn't work: check the connection cable between the **POWERTIME** and the PC is connected and that the transmission protocol parameters are correctly selected (9600 Bauds, 8 data bits, 1 stop bit, no parity) and that the correct COM port is selected.
- There is no display: check the batteries are installed and that the polarity is correct, then press and hold the button until the end of the operation, during this time press the button briefly.
- The external start and stop channels are not working: check – on the display – that they armed. Test each input by creating a short circuit with a metallic object (key or nail).
- Menu access and operation impossible: press the RESET (located on the bottom of the device, just by the START identification) with the tip of a pen. Note: this will erase all results in the memory, and the setup process will need to be repeated. However, the date and time are not modified. The **POWERTIME** will display the boot program version (operating system of the **POWERTIME**).

If the problems continue, please contact your nearest service centre.

7 Accessories and options

The following accessories are available for the **POWERTIME** (this list is not exhaustive):

- **C1** 3361.603 Connection cable
- **C2** 3361.628 Dual output adaptor for SCB & PC
- **C3** 3361.626 SCB adaptor
- **C4** 3361.627 Adaptor for 2x SCB
- **C5** 3361.605 Start & Stop connection cable
- **F1** 3361.608 Extension box, 1xStart, 4x Stop or
- **F1** 3361.609 Extension box, 1x Start, 8x Stop
- **P2** 3361.610 PC adaptor (RJ 6p – Sub-D 9pF)
- **S1** 2872.003 Pushbutton with 3m coiled cable
- **S1** 3361.611 Swimming harness 1x Start, 8x Stop
- **9051.6042** Printer paper (1 roll)
- **9051.6042PK** Printer paper (20 rolls)
- **3449.961** GEMINI, 6 digits display using 7 segment amber LED digits (24cm) or
- **3449.991** GEMINI, 9 digits display using 9 segment amber LED digits (24cm)
- **3456.901** Marathon clock single-sided display using 8 segment amber LED digits (16cm) See photo below. Or
- **3456.902** Marathon clock double-sided display using 7 segment amber LED digits (16cm)

3399.911 Startime III, acoustic start system 230V. See photo below.

8 Cabling diagram

Note: To connect one of the extension boxes, you have to open the battery compartment cover.

Computer connection (PC) Scoreboard and computer connection

Scoreboard connection (SCB) Connection of 2 scoreboards
9 Technical Characteristics

Display
- LCD 4 lines of 16 alphanumeric characters

Keyboard
- 10 numeric keys, 8 function keys

Acoustic signal
- ~ 1 kHz

Printer
- 24 alphanumeric characters per line

Thermal paper
- width 58 mm, Ø < 29 mm

Time base
- thermally compensated
  Switched off: ± 1 ppm at 20°C; ± 10 ppm between -20°C and +40°C
  Turned on: ± 1 ppm between -10°C to +50°C

Resolution
- 1 sec to 1/1000 s

Memory capacity
- maximum 2000 competitors

External start
- mono jack socket, Ø 3.5 mm

External Stop
- mono jack socket Ø 3.5 mm

Extension of external sockets
- 10 pole RJ socket

Serial output for PC and scoreboard
- 6 pole RJ socket,
  - RS 232
  - GND
  - Telco:
    - pin 1 TxD+ (out)
    - pin 2 TxD- (out)
    - pin 3 TxD (in)
  - GND:
    - pin 4 pin 5

9600 Bauds, 8 data bit, 1 stop bit, no parity

Internal power
- 4 alkaline batteries 1.5 V, 1500 mAh, type AA/LR6/ UM3

Operating time
- Without serial output: >30 hours and
  2000 printed lines at 20°C
- With running time on PC and Scoreboard: >12 hours and
  2000 printed lines at 20°C

External power
- power jack plug Ø 3.5 / 1.9 mm
  for 9 V power adaptor

Operating temperature
- -10°C to +50°C

Weight
- 500 g with batteries

Dimensions
- 210 mm x 95 mm x 40 mm

Note: if the device is turned off, the 1/1000th of a second is lost.

Mains adapter
- Mains power
  - 230V AC 50 Hz
  - or 115V AC 60 Hz
  depending on model

Output voltage
- 9V DC 1.2A

PowerTime II
- software
  - CD-ROM, Windows™ compatible from 2000 up.

10 Description

These numbers refer to the drawing on the next page.

1. Paper compartment cover.
2. Paper cutter.
3. Paper compartment
4. correction menu
5. manual start/stop or switch on.
6. arm the start and stop channels
7. up cursor.
9. validation
10. escape without modification.
11. down cursor.
12. paper advance.
13. LCD screen.
15. External START socket.
17. Battery compartment cover.
18. Battery compartment
19. Socket for external power supply.
20. Socket for connection to PC and scoreboard.
21. Socket for extension of input channels
22. Cable route.
23. serial number
24. PowerTime II