

TRACKER



3442.500.02

Version 2.1

Edition January 2015



CAUTION

- ❑ **Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.**
- ❑ **Protect the equipment against splashing, rain and excessive sun rays.**
- ❑ **Never use the device if it is damaged or insecure.**
- ❑ **This program may be modified at any time without prior notification.**
- ❑ **If the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.**
- ❑ **The information contained within this document may be modified without warning.**
- ❑ **Swiss Timing LTD cannot be held responsible for errors within this document nor for any subsequent nor consequential damages (including loss of profit) arising from its provision, nor performance or use of products described herein, which will be covered by another guarantee, contract or other legal document.**
- ❑ **During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.**

The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.



This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources (valid in the EU member states and in any countries with corresponding legislation).

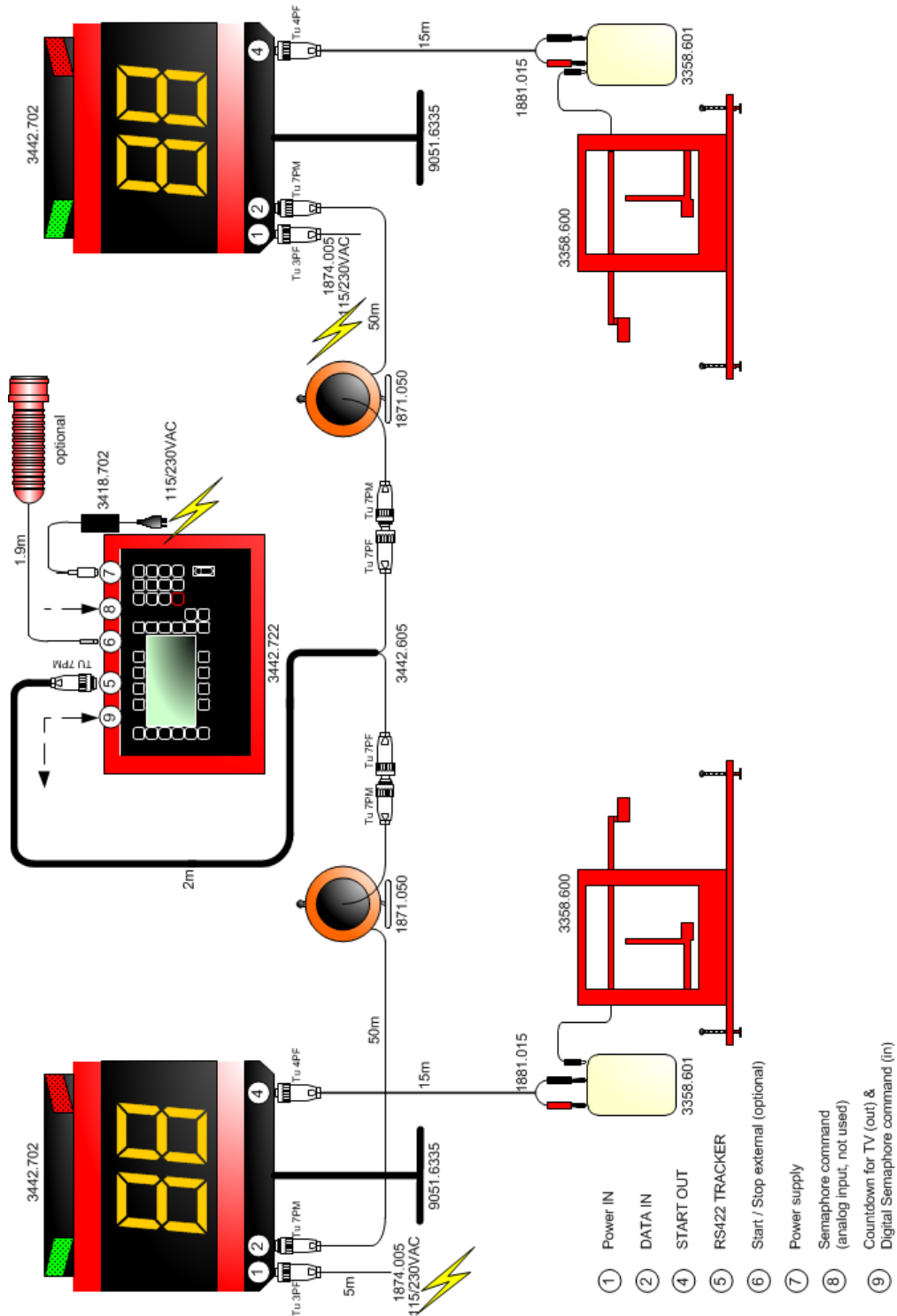
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1 INTRODUCTION

The TRACKER system is used to manage the start of pursuit races in track cycling events. It consists of two TRACKER boards and a main judge console. It displays the countdown and generates some sounds during the countdown. At the end of the countdown, it opens the optional starting gates and gives the start impulse to the main timing system. After the start, the TRACKER is used as lap counter and can indicate the leader with green and red semaphores.

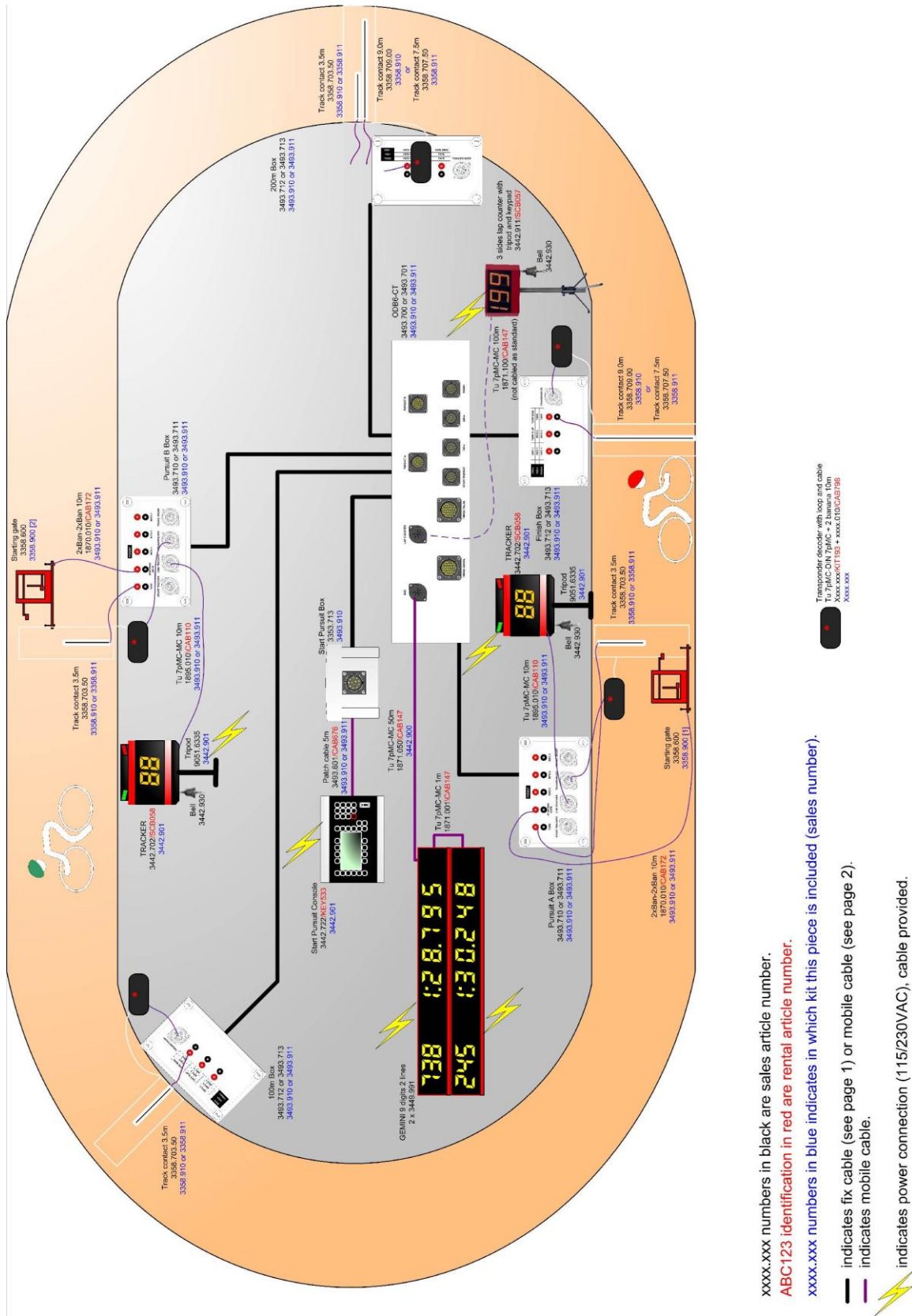
2 INSTALLATION

2.1 Mobile cabling



Please refer to document 3442.503 Tracker cabling (Quantum compatible).
 The starting gates (3358.600 & 3358.601) are not included in the TRACKER system (option).

2.2 Fix cabling

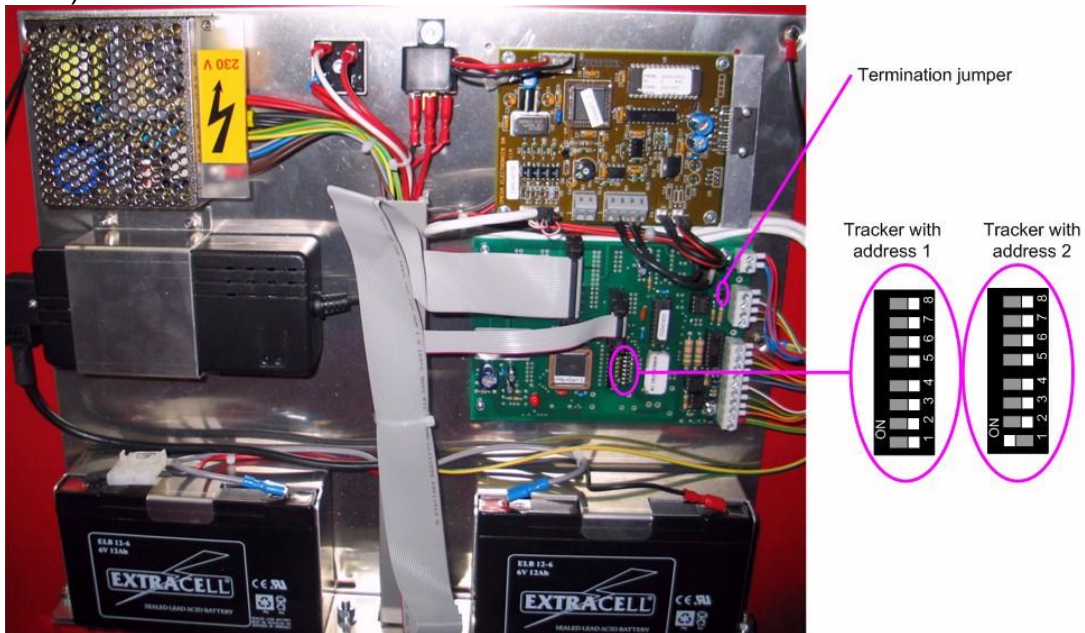


Please refer to document 3493.504 (Track cycling fix cabling).







2.3 TRACKER DIL switch

Each TRACKER must have its own unique address: one must have the address 1, the other the address 2. To select the TRACKER address, proceed as follows:

- Switch off the TRACKER and unplug the power cable.
- Open the rear of the TRACKER with the provided key.
- Select the TRACKER address with the DIL switch (use a small screwdriver to move them):



- On some specific cabling (long cables), a termination load may be requested to ensure correct data transmission between the main judge controller and the TRACKER; in this case, place a jumper on the pins designated in the above picture.
- Close the TRACKER.
- Connect the power cable and switch on the TRACKER; during boot, the TRACKER shows a sequence:






1.		
2.		Internal software version.
3.		
4.	 or 	Address of the tracker (1 or 2)
5.		Tracker ready to be detected and controlled by the main judge controller.

2.4 Power on

You must switch on both TRACKERS before switching on the main judge controller. Turn the volume control and switch to choose the volume of the sounds (beep). Please refer to chapter 5.1 to see where these switches are located.

2.5 TRACKER display

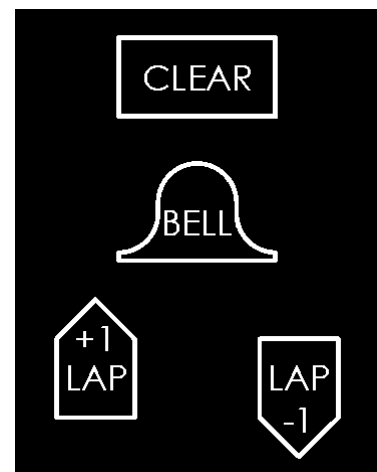
When the Tracker is switched on, the right digit must display something or the point (at the bottom right of the right digit) must be lit; this way you always know the Tracker is powered (by main power supply or internal battery). If the Tracker's switch is on the "1" (ON position) and no LED is switched on on the Tracker's front face, it indicates that the main power is not connected and the internal battery is discharged.

Count down running (Start/Stop switch on start position)		The red semaphore is ON
Count down stopped (Start/Stop switch on stop position)		The red semaphore is OFF
Count down reaches 0		The green semaphore is ON
Lap counter displayed		Semaphores depend on the external command
Lap counter cleared		Semaphores depend on the external command

2.6 TRACKER keyboard

The TRACKER keyboard can only be used when the main judge controller is in lap counter mode.

CLEAR	Clear the TRACKER display as long as the key is pressed.
BELL	Play the Bell sound as long as the key is pressed.
LAP +1	Increase the remaining lap counter.
LAP -1	Decrease the remaining lap counter.



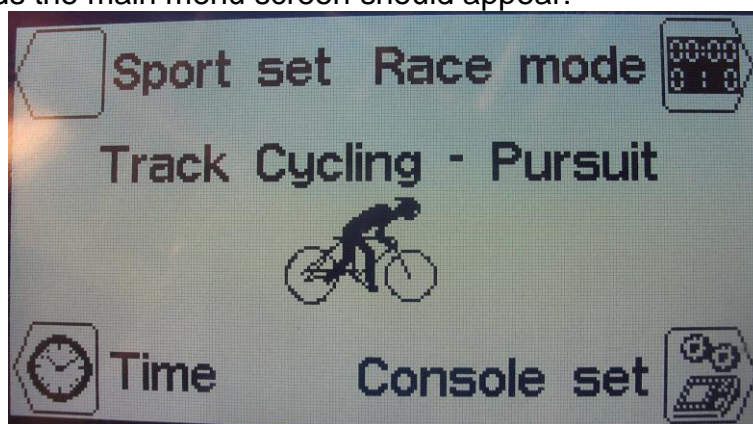
3 SOFTWARE

3.1 Main menu

After the TRACKER have been connected and switched on, switch on the main judge controller with the switch on the rear side.

If the messages “Tracker 1 missing” and/or “Tracker 2 missing” are displayed, verify the cabling and make sure the Tracker are powered and switched on; then you need to restart the main judge controller by switching it off and on again.

After a few seconds the main menu screen should appear:



From this screen, you can go, by pressing the corresponding key, to:

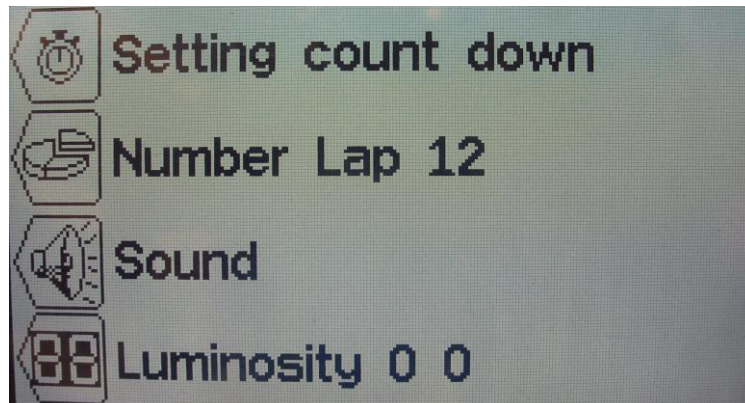
- ❑ Sport set(ing), see chapter [3.2](#).
- ❑ Race mode, see chapter [3.3](#).
- ❑ Time (& date) selection, see chapter [3.4](#).
- ❑ Console set(ing), see chapter [3.5](#).

In this software, when you need to enter or modify a number, you have two possibilities:

- ❑ by using the “up arrow” key to increase the value and the “down arrow” key to decrease the value, or
- ❑ by typing the number with the numeric keypad.

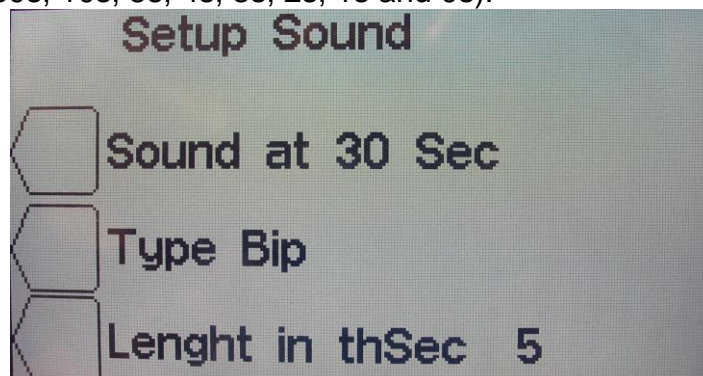
With both solutions, you then need to press the “Enter” key to validate the entry or the “ESC” key to cancel your modification and return to the previous value.

3.2 Sport setting



This mode allows you to select the parameters used for the Race mode:

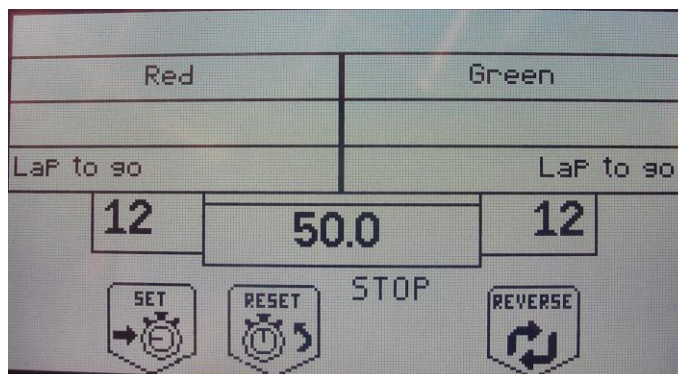
- "Setting count down" is used to select the starting value for the countdown before the start of the pursuit.
- "Number Lap xx" is used to select the number of laps to do (12 in above example).
- "Sound" allows to select which sound is played and its duration at fix value of the countdown (30s, 10s, 5s, 4s, 3s, 2s, 1s and 0s).



- The key "Sound at x Sec" allows to pass to the next fix value of the countdown (30 → 10 → 5 → 4 → 3 → 2 → 1 → 0 → 30 ...).
- The key "Type" allows to change the kind of sound: Bip (500Hz) → Beep (1000Hz) → Bang (gun simulation) → Bip ...
- The duration of the Bip and Beep can be entered in 1/10s with the "Length in thSec" key. Enter for example 5 for a duration of 0.5s. This parameter is ignored for the Bang sound.
- "Luminosity X Y" allows to select the luminosity of the Tracker LEDs. X represents the actual value for the Tracker 1 and Y the actual value for the Tracker 2. Values from 0 to 4 are possible:
 - 0: Luminosity automatically adjusted by the sensor of the Tracker.
 - 1: minimum luminosity (for low light condition).
 - 2: medium low luminosity.
 - 3: medium high luminosity.
 - 4: maximum luminosity (for strong light condition).

Use the "ESC" key to exit this menu.

3.3 Race mode



This mode is used during the pursuit competition. It is separated in two parts: first the countdown procedure and then the lap counter mode.

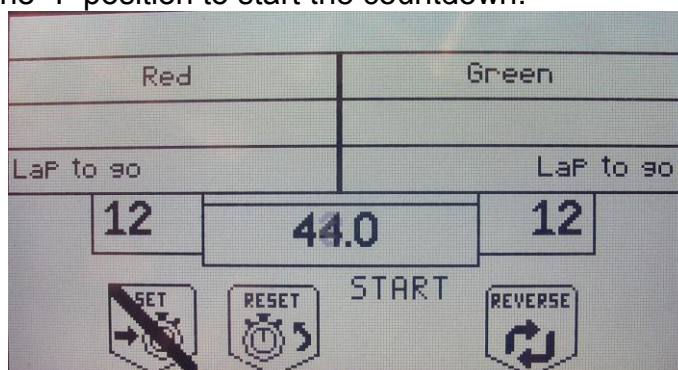
The screen shows you the remaining time to the start (countdown value), if the countdown is running (START) or stopped (STOP), the lap to go for each competitor/team and the position of the competitor/team (Red and Green) referring to the position of the Main Judge Controller. To invert the display on the controller, press the REVERSE key; the Green is now displayed on the left and the Red on the right:



REV is displayed in the bottom right corner to remind you the inversion. Press again the REVERSE key to go back to the original display.

The SET key allows to modify the parameters (change the number of laps for example). The RESET key sets back the countdown value to the defined value.

Place the switch on the "I" position to start the countdown:



When the countdown is started, the red semaphores are switched on and it is not possible to modify the settings.

When the countdown reaches 0, the start sound is played, the red semaphores are switched off, the green semaphores are switched ON and the start pulses are given (to open the starting gate and start the main timer). A few seconds later, the Trackers display the remaining laps and the controller display shows the race mode:



The lap counter can be modified on the Tracker (with its keyboard) or on the Main Judge Controller using the corresponding “-1 LAP” key or “Shift” and then “+1 LAP”.



The main judge can also play sounds on the Tracker with the BELL and BANG keys (these sounds will be played on both Trackers simultaneously).

To finish a race (to go from the lap counter mode to the countdown procedure) press the “ESC” key; the message “Would you exit the race mode ?” is displayed; confirm by pressing the “Yes” key. If the start/stop switch is not on the “O” position, a message asks you to switch it.

To exit the race mode (go back to the main menu), you must be in the countdown procedure and press the “ESC” key; the message “Would you exit ?” is displayed; confirm by pressing the “Yes” key.

3.4 Time

This menu allows you to introduce the date and day time. Select the needed function key:



For the selection of the date



For the selection of the hours








For the selection of the month




For the selection of the minutes



For the selection of the year

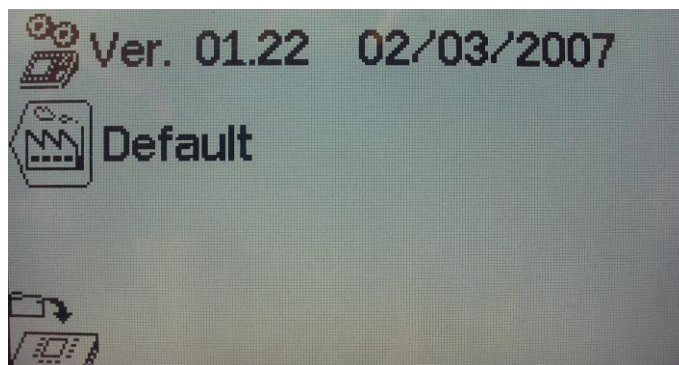
To modify the value, use the alphanumeric keyboard or the keys  (plus 1) and  (minus 1), then press the  key to confirm the entry. To go back to the initial value, press on the  key instead of the  key. Repeat this procedure until all the values match your requirements.

The synchronization of the clock must be done at 0 second by pressing the  key in the selection menu.

- An internal battery allows to keep the exact time and date during 30 days after the last switch off.
- The parameters of the console and sports always remain in the memory (not limited in time).

3.5 Console setting

This screen displays the software version, allows to change the software and set the default parameters:



Use the “ESC” key to exit this menu.

3.5.1 Default parameters

By pressing the “Default” key, the standard parameters are set for the software:



- 50s for the countdown
- 12 for the lap counter
- Bip of 0.5s at 30s
- Bip of 0.5s at 10s
- Bip of 0.3s at 5s
- Bip of 0.3s at 4s
- Bip of 0.3s at 3s
- Bip of 0.3s at 2s
- Bip of 0.3s at 1s
- Beep of 0.5s at 0s
- 0 (automatic) for the Tracker luminosity

This operation has to be done after a firmware upgrade.

3.5.2 Update the software

The Main Judge Controller allows the download of a new software version in case there are rule changes. Follow the procedure displayed on the screen.

Operating of the console:

- Connect the Main Judge Controller (3442.720, connector “PC”) to the serial port RS232 of the computer (Cable Sub-D 9 poles male-female pin to pin [article No. 9051.1307, provided with the Tracker system]).
- Switch on the console. If Trackers are not connected, pass through the “Tracker x missing” messages with the “Enter” key.
- Select menu “Console set . The screen shows the Swiss Timing logo, as well as the actual software version installed.
- Press function key  and follow the instructions:

Firmware upload


Actual version: **x.xx**

1)Connect serial cable

2)Press Program Flash on PC

3)When completed, turn power OFF and ON

Operating of the computer:

- Load the FlashSimple program (available on our internet site) and start it.
- Press on the “Flash” menu then “Setting” and introduce following values (only for the first use):
 - *H8S/2134F* for Device name
 - *Direct Connection* for Interface name
 - Port com: X (according to your computer’s serial port)
 - Baud rate 9600
 - USER mode
 Press OK to confirm the parameters.
- Press on the “Browse” button and download the software (Ex. 2054.602_123.fpr)
- Press on the “FLASH program” button and wait for the loading of the software to be finished; **the message “The device was successfully programmed” must appear**. This operation lasts for about 4 minutes.
- When loading is finished, switch the console off, then turn it on again, and check the update version (Ex. Ver 1.23).
- Select menu “Console set  Default” key and validate by pressing “Yes” in order to initialize the console with the factory values.

This last operation will erase your specific parameters, but it is essential to keep the new software version in correct working order.

4 OPTIONS

4.1 Starting gate

To ensure a fair start of both competitors, two cycling starting gates (article # 3358.900) can be connected to the system (one on each Tracker, with the provided cables).



4.2 External Bang button

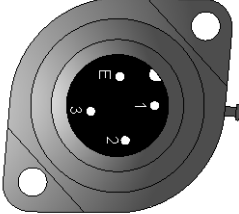
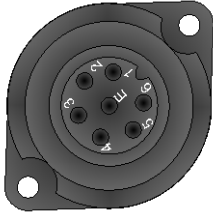
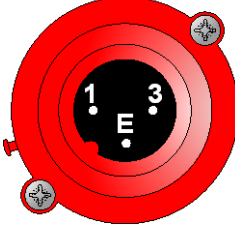
One or two external pushbuttons can be connected to the Main Judge Controller (on the "BANG" connector) to play the bang sound on both Trackers. So, for example, one judge can use the pushbutton and watch the arrival of the green competitor and another judge can use the BANG button of the keyboard and watch the red competitor to indicate the arrival of each competitor.



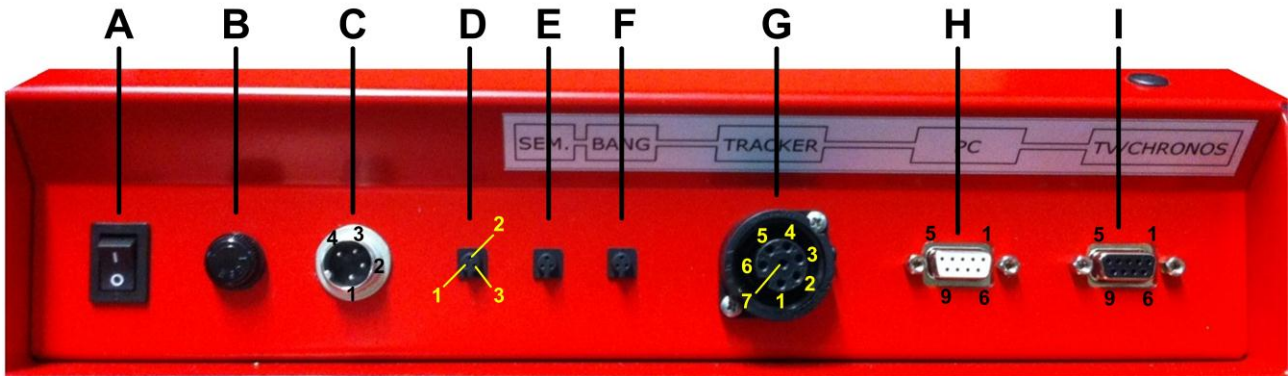
5 PROPERTIES

5.1 TRACKER connections



A	START OUT (Tuchel 4pMT)	2 normally open contacts to connect the starting gate and the timing device. Pinning: 1: GND 2: Start Out (+) 3: Start Out (-) E: +12VDC 
C	ON / OFF switch	O: switched OFF I : switched ON
D	Volume control and switch	Turn it to switch on the sound and then to control the volume of the sounds (beep).
E	Tripod fixation	To fix the Tracker on the tripod, allowing to turn it.
F	DATA (Tuchel 7pFT) [RS422]	Data connection to the main judge controller. Pinning: 1: START OUT - 2: START OUT + 3: Tx- 4: Tx+ 5: Rx- 6: Rx+ 7: Not connected 
G	POWER (Tuchel 3pMT)	1: L (115 - 230VAC) 3: N (115 - 230VAC) E: GND 

5.2 Main Judge Controller connections



A	ON / OFF switch	
B	Fuse	F 1A
C	Power input [DIN 4pM]	1: DC input+(9-18VDC) 2: GND 3: Not connected 4: Not connected
D		Not used
E	SEM.	Semaphore command: 1: Green semaphore command 2: Red semaphore command 3: GND
F	BANG	“Bang” sound command: Possibility to connect 1 or 2 normally open pushbutton First between pins 1 & 3, second between pins 2 & 3
G	TRACKER	Connection to TRACKER (RS422): 1: Not connected 2: Not connected 3: Tx- 4: Tx+ 5: Rx- 6: Rx+ 7: Not connected
H	PC	Connection to computer for firmware upgrade (RS232): 2: Tx 3: Rx 5: GND
I	TV/CHRONOS/Quantum	Count down output and/or CHRONOS/Quantum connexion for future use (RS422): 3: Tx- 4: Tx+ 5: Rx- (not used for count down output) 6: Rx+ (not used for count down output)

6 MAINTENANCE AND PROTECTION

6.1 TRACKER

Always store the TRACKER with the internal battery fully charged. If the TRACKER is not used for a long period, it is recommended to connect the TRACKER to the power supply during at least 4 hours every 6 months.

