BORINOS

Regularity Race Stopwatch
by DIGITECH
firmware > 3v00-beta01

English

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Warning

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CONTENT

Introduction

BORINO-S is a 1/1000th of a second stopwatch specifically designed for regularity race management.
It is the evolution of earlier stopwatch models. Up to 250 events can be programmed, such as Start Chronometric Test (SCT), Chronometric Test (CT), Theoretical Chronometric Test (TCT) and Time Control (TC), Restart (RS) and daily (START) events, Neutralization (NT) and Repeated Trials (RT).

The device has a permanent memory to store programmed settings also when it is turned off. Trials can be entered with travel and crossing times, also greatly in advance, at ease and without the pressure of the starting line.

Thanks to the high contrast OLED graphic display and the keyboard with numeric keypad you can use the device in an intuitive way.

The **AUDIO-CALIPER ®** function generates beeps at fractions of a second for perfect synchronisation when crossing the line.

The internal clock may be synchronised in traditional way using the key input or by using the internal GPS receiver – if this is installed - for easy synchronisation to UTC time to the millisecond.
Once synchronised, you can enable the key input to be used as an output: the closing of the synchronisation contact at the 0 second of each minute can be used to synchronise other stopwatches via the input line.

The mini-USB-connection can be used to download past trials to a PC and to upgrade the instrument using a specific program to solve any arising software issues.

The race programming can be easily transferred or downloaded from another **BORINO-S** via Bluetooth, and consequently without needing to connect using a wire.

Connectors

START/SPLIT input

BORINO-S has one external input (InPB) to START/SPLIT the countdown by means of a PB5/JG-A key. This allows to electrically synchronise the main clock by connecting it to a synchroniser.
When BORINO-S is in the “Clock Test” mode, on this connector you can enable the closing of the synchronisation contact at the 0 second of each minute.
In this way you can synchronize another stopwatch with the BORINO-S internal clock via the input line.

Headset output

A headset (of the CD player type, or the like) with 3.5 mm jack connector can be plugged into the specific socket to hear the beeps generated by the instrument also in noisy surroundings.

The internal speaker will be excluded if the headset is plugged in.

USB port

A mini-USB port can be used to connect the ***BORINO-S*** to a Personal Computer.
This connection can be used to upgrade the instrument firmware or to upload/download programming and past trial results by means of the specific program.

Upgrading is necessary, when available, to improve the stopwatch performance and correct software errors (see "Firmware Upgrade" chapter).

This connector can be used to power the stopwatch using emergency power systems for mobile phones.

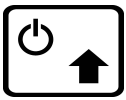
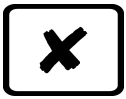
This is very useful on long races in the dark during which backlighting, which uses a great deal of power, stays on for the whole time.

In/Out port

The 3.5mm stereo jack is a *RS232* equivalent to the *USB port*.
It may be used instead of a UBS port.

Keypad

The keypad is of the membrane type with keys in relief. It is completely waterproof.
The functions of each key are illustrated briefly below.

	**[ON/OFF]** Press for longer than two seconds to turn the instrument on. **[SHIFT]** Touch once to activate the *SHIFT* function, show the "***Status Bar***" and enable the second function of some keys.
	***[UP]*** On a list, this moves the cursor upwards. When setting a time, it increases the blinking selection.
	***[DOWN]*** On a list, this moves the cursor downwards. When setting a time, it decreases the blinking selection.
	**[*VIEW*]** This changes the view on the display switching from *LIST* and *EDIT* mode.
	**[*INSERT*]** In LIST mode, it is used to insert the various trials. In RUN mode, it is used to change the duration time of the shown trial. In trials with given time, it is used to change the value.
	**[*ESC*]** This is used to exit a setting without changing its content or deleting the current setting.
	**[*ENT*]** This confirms the selection of the current setting. In "Clock Check" and RUN mode, this simulates an external button for splitting the time.
	**[*FLAG*]** If a "race" is programmed, in RUN mode this shows the countdown of the first incomplete trial.
	**[*TIME -*]** With countdown running, this is used to ***decrease*** the currently expiring trial time by the amount programmed in the "Race/Delta-Step" menu.
	**[*TIME +*]** With countdown running, this is used to ***increase*** the currently expiring trial time by the amount programmed in the "Race/Delta-Step" menu.

0 .... **9**	**[*PAD*]** Numerical keypad for various settings.
1	**[1]** In RUN mode, by pressing this button, the sound is set alternately from automatic (sound starts from less than XX seconds) to off (no sound emission) and vice versa.
2	**[2]** In RUN mode, if the running stage is concatenated to another one, by pressing this key the current view of “duration” and “error” is replaced by the number and duration of the next stage. This will be shown as long as the key is pressed.
3	**[3]** In RUN mode, press this key for 2 seconds so that the inputs will be disabled only in the next series of CTs. The activation is signalled by a message, which is activated for 2 seconds when you press the key, and by the writing "No IN", which replaces the CT start times. To deactivate it, press this key again without waiting. It stays active in the next series of CTs, which are connected to each other. This is deactivated at the end of the series, when there is no trial connected to the last trial in the series. You can enable this function ONLY if “All automatic CD” is already active. It is useful in case of very short concatenated trials: using this option you can avoid taking the time because of a “conditioned reflex”, even if the automatism is enabled.
4	**[4]** In RUN mode, hold this key to see the end time of the next TC instead of the start time. The dashes indicate that there is no programmed TC or that the TC end time is not available because there is no start.
5	**[5]** In RUN mode, hold this key to see the calculated end time of the running trial instead of the start time. The dashes indicate that the end time is not available because there is no trial start.
6	**[6]** In RUN mode, it enables the acoustic countdown, even if the countdown is not running. Just by pressing one of the push buttons, the acoustic countdown will switch to the set mode. The same will happen if the [6] key is pressed again.

7	**[*7*]** With the countdown running, hold this key to see on the two bottom lines of the display the previous trial error.
8	**[8]** With countdown active, hold this key to see, on the two bottom lines of the display, either the start times of the running countdown or the errors of the previous countdown (if present). If the exit times are not present, only “In A” and “In B” will be shown.
9	**[*9*]** In the “RUN” mode, it toggles the view either of the entry time of the stage of both push buttons, or the error of either push button regarding the previous stage.
.	**[*DOT*]** In time setup, to switch between HOURS – MINUTES – SECONDS – MILLISECONDS groups. With countdown running, it allows to set the calculated time using the start time and the trial duration as timing. This is useful if timing with buttons is not available.

External button simulation

In situations in which splitting is needed to determine a crossing, the *[ENT]* key can be used to simulate the action of the external button.

> ***ATTENTION: This function must be used with care: keypad scanning is slower than the external button check and consequently the measured times may be distorted.***

SHIFT function

Some keys have a second function which corresponds to the second symbol and/or writing under the main function.
This function is activated by briefly touching the [*ON]* key.
When activated, the word “*SHIFT”* will appear on the “*Status Bar*” on the bottom of the display (last two lines on the bottom).
Press [*ON*] again or press a key which does not have a second function to deactivate the function and to restore the previous display.

Quick setting menu

With the “Quick setting” menu you can adjust the headset volume, enable the countdown beeps during the countdown and set the duration time of the maximum display brightness.
Press [*SHIFT*] followed by [*MENU*] to activate this menu.

1 Headset volume

If you choose this option, the device enables the countdown beeps, so you can adjust the headset volume.
Press [UP] and [DOWN] to change the level.
Press [ENT] to confirm the setting and exit.
Press [ESC] to exit without changing.

2 Brightness

In order to increase the device battery life, you can set the display brightness to its minimum value, when you do not need it.
With this option you can choose how long the brightness stays at its maximum value after pressing a key or the external button.
After this period of time, the device sets again the brightness to its minimum value: in this way the power consumption decreases and the battery life increases.
By choosing “Always”, the brightness value stays always high.
By choosing “Off”, the brightness value stays always low, and so you can have the maximum battery life.

3 Beep CD

BORINO-S can emit one beep a second during the trial countdown to the end of the trial.
With this option you can choose between the following settings:

1 Off	Sound not active. No beep is heard once a second during a programmed event countdown.
2 Automatic (-10S.)	A beep is heard once a second during a programmed event countdown starting from the set “Countdown” value (see “Setup” paragraph). Beeping will stop when the trial has expired. The set value is in brackets.
3 Always	Sound always active. A beep is heard once a second during a programmed event countdown.

ATTENTION: every time a new race is programmed or the line inputs are cleared, the sound is set to “Automatic”.

The instrument generates the sound in the headset only (and not in the internal speaker) if the headset is connected.

Status Bar

When the [*ON*] key is pressed, the stopwatch status bar will appear on the bottom of the display. The bar shows some device states, as described below. Press the [*ON*] key again to deactivate the status bar.

High brightness:		
✱ON	**ON**	Maximum brightness always on
✱OFF	**OFF**	Maximum brightness always off
✱ 5Sec.	**When needed**	Automatic maximum brightness
Countdown status:		
▶On	**Internal speaker always on**	Speaker countdown beeps always on
▶Off	**Internal speaker off**	Speaker countdown beeps off
▶-10S.	**Internal speaker automatic**	Speaker countdown beeps on automatically
∩On	**Headset always on**	Beeps only headset always on
∩Off	**Headset off**	Beeps only headset always off
∩-10S.	**Headset automatic**	Beeps only headset automatically
Battery status:		
	Batt. OK	Battery charge OK
	Batt. LOW	Blinking symbol: very low battery charge. Every 30 seconds you will hear an acoustic signal. This signal is deactivated when the trial countdown reaches one minute. It is activated again after the zero.

Second function:

SHIFT	This indicates that the second function of some keys is active.
Main clock:	
✳12:24:55 ^ *correction on*	The main clock is set to seconds with applied time correction indicated, if any (symbol blinking).

Starting off

Batteries

To insert the batteries, remove the flap on the back of the instrument by operating the lever with a small screwdriver. Insert four AA batteries respecting the polarity shown on the bottom of the compartment. Check that the batteries are fitted correctly, then close the lid.

Turning on

To turn the instrument on, press the [*ON*] key until the message "*Load Info*" appears.
By releasing the key, the device will show some infos for 2 seconds and then will show the main menu (Start Menu).

Turning off

Select "Instrument Off" in the menu to switch the instrument off.
The instrument will save the settings and switch off.

Emergency shutdown

The instrument can be shutdown without removing the batteries if it freezes because of a firmware error. Simply hold the [*ON*] key pressed until the instrument switches off (approximately 6-7 seconds).
The last settings will not be saved.

Menus

The operative parameters of the instrument are managed by means of simple menus.
To select the required item, point to it using the [*UP*] and [*DOWN*] keys and press the [*ENT*] key to confirm or, more rapidly, press the key corresponding to the item directly on the numeric keypad.
Press [*ESC*] to exit from a menu.
BORINO-S has two main menus: **Start Menu** and **Race Menu**.
The *Start Menu* appears when the instrument is switched on and the *Race Menu* is available after starting a race by pressing the [*MENU*] key.

Start Menu

The Start Menu is shown as soon as the stopwatch is turned on.
The following items are available:

- **1 Set Time**:
  This is used to set and synchronise the main clock.
- **2 Race**:
  This is used to continue the race previously saved in memory or to start a new race.
- **3 Setup**:
  This is used to access some stopwatch parameter programming submenus.
- **4 Instrument off:**
  This is used to switch the instrument off.
- **5 Information**:
  This displays current race programming data.
- **6 COACH-pro:**
  training function with our COACH chrono/display
- **7 Default values:**
  Sets all the settings to default values, and clears and checks all the race data (see Appendix for default settings).
- **8 TRAINING**
  This option is meant for training, two input lines are used. You can choose between “Continue” or “Lap” mode. The temporization of the B input is automatically set to 2 seconds: setting such a temporization, the rear wheels on the sensor will not be detected when you connect a pressure sensor or a radio device to the input line.

Race Menu

The Race Menu can only be called up in Race mode, that is after having selected “*New Race*” or “*Continue Race*” in the Start Menu.
Press [*MENU*] to display the following list on the stopwatch:

- **1 Set Clock**:
  This is used to check and correct the main clock.
- **2 Edit**:
  This is used to start a new race, delete the current timing or select a given race and to program some parameters of the race itself.
- **3 Setup**:
  This opens the stopwatch parameter programming submenus.
- **4 Instrument off**:
  This is used to switch the instrument off.
- **5 Information**:
  This displays either current race programming data or start time, end time, programmed duration time and error of every single trial.
- **6 Coach-pro:**
  training function with our COACH chrono/display.

Set Clock

The main clock must normally be set before the race. The ***BORINO-S*** starts from 0.00 when it is switched on.

> ***It is important to note that the clock does not need to be set to program the stopwatch only. The exact time is only needed during the trial.***

Select "*Set Clock*" in the menus to check, set, synchronise and add a possible correction to the main clock.

Setting

The clock can be set/adjusted in two different manners according to the available instruments:

1. *Manually*, by setting the clock and starting it by hand, then checking synchronisation with another stopwatch and correcting as necessary.
2. *Automatically*, using the integrated GPS receiver (if this is installed).

Manual setting

In "Set Clock", press [*MENU*] to open the setting type selection menu.
Select "Manual": the new time request will appear.
Set current time plus one or two minutes: the clock can only be actually started later.
Set the blinking digits with the numeric keypad.
Press [*DOT*] to confirm the blinking selection.
Set the desired time and press [*ENT*] to confirm the setting and go to the "Ready to Start" step.
At the exact time signal, start the clock by pressing the external button connected to the Line input.
The stopwatch goes back to "Clock Test" after having started the clock.

Synchronisation check

To check that the clock is actually synchronised, ***BORINO-S*** must be split by actuating an external input with a key at the same time as the SPLIT key of another sample clock.
This will immediately shows discrepancies between the two clocks.
When the error is known, simply press the [*MENU*] key again and select "*Trimming*" (please see below).

Synchronisation from GPS

The instrument will switch on the GPS receiver when this function is selected.

Data reception from the available satellites will start after the first GPS initialisation step.

Satellite reception

Reception consists in searching for satellites in the visible portion of sky and then acquiring information needed to determine the position and synchronisation of the internal clock.
This time is variable according to the data already present in the module and the reception start time according to the data transmitted by the satellites.
The satellites transmit a data stream lasting 12.5 minutes.
This stream contains the almanac, the ephemeris and UTC time information.
Furthermore, every six months (on January 1 and July 1), the International Earth Rotation and Reference Systems Service (IERS) may decide to add a second to UTC time to synchronise it with Earth rotation.
In order to be able to receive the correct time, the GPS receiver must be able to receive the notification of this change. In order to do this, it must stay on for at least 12 minutes and a half.
For this reason, a -12.5 minute countdown will appear after the first switch-on or if the batteries are removed for longer than 1 minute and consequently GPS information is lost, or if the instrument is switched on after July 1 or January 1 to indicate the reception of this information.
When it is switched on again, the module (which stores the received information also when the device is off) will require less time to make internal clock lock on because it already has an assumption from which to start.

In case of poor or no reception from satellites, the instrument will report the problem after 5 minutes and advise to go to a location with better visibility of the sky.
After having changed position, press [ENT] to resume reception.

Internal clock lock on

After having acquired all the necessary data, the module locks the internal clock of the instrument onto the UTC time provided by the satellites.
A sound is heard when the clock locks on.
The GPS system transmits UTC time but the synchroniser must be adapted to use local time, which depends from the location where the device is used, for correct use. So, an offset to be added or subtracted from UTC time must be set to obtain the correct local time.
To do this, after locking, the instrument will display the current offset value with respective sign and resulting local time.
The hour group will blink indicating that the change is possible.
Adjust the offset value to obtain the correct local time using the [*UP*] and [*DOWN*] keys.
Programming is possible within a range of “-12:00” and “+12:00” hours.
Press [*ENT*] to confirm programming.

Simply press [*ESC*] to exit without saving changes.
After confirmation, the offset needed to obtain the local time is permanently stored in the memory of the instrument so that it will be ready the next time it is switched on.

> ***BORINO-S* does not switch to summer saving time and back automatically. This means that the time must be adjusted by manually setting the offset.**

DCF77 Synchronisation

Some races use the DCF77 standard instead of the UTC as official race time. Once the ***BORINO-S*** is synchronised with the GPS system, you can choose if the internal clock has to be locked either onto the UTC or onto the DCF system. If you choose the DCF system, the device sets automatically a **-74mSec** correction: this is signalled by a blinking asterisk next to the time on the status bar.

Trimming

It allows to trim the time adding or removing a certain amount of time.
To set the value, use the same procedure as in time setting.
To add the set time to the clock, use + with the [TIME +] key.
To remove the set time, use the – with the [TIME -] key.
By pressing [ENT] you exit confirming the correction.
By pressing [ESC] you exit without saving the correction.
The activated correction is indicated by a flashing asterisk before the clock that appears at the bottom right of the status bar.

> ***To remove the correction, just set a time with value 0.00.***

Synchronisation on InPB

In “Clock Test” you can transform the “InPB” connector from input to output: in this way you generate an impulse (closing contact) in order to start another stopwatch synchronously.
Press [MENU] and select “*Out_Sync*” to enable the impulse generation.
The following options are available:

1 Min.:	the port is operated at the beginning of the second “0” of every minute
1 Sec.:	the port is operated at the beginning of every second.
Off:	the port is disabled.

The default value is “Disabled”.

Setup

This opens a list of sub menus for programming the operative parameters of the stopwatch.
The selections made in this menu are saved in the permanent memory and consequently maintained also when the device is off.
The following submenus are available:

1 Display

Some parameters related to viewing on the display can be programmed here.

1 High brightness (5Sec.)

With this option you can choose how long the brightness stays at its maximum value after pressing a key or the external button.

2 LIST view (Large Font)

In LIST mode, this is used to plot the race using large characters (up to 4 lines) or small characters (up to 8 lines).

3 Language (English)

This is used to select the language for displaying texts and information of the stopwatch user interface.

4 View

Allows to customize, in the RUN mode for the input, what to show, choosing between the entry time of the running stage or the error of the previous stage (if it exists).
By choosing "*Split*", the time of the input of the incoming stage will be shown.
By choosing "*Error*", the error of the previous stage will be shown.
If the previous stage was of the IPC kind, the split time of the input will be shown.
If the countdown is running, by pressing [9] it is possible to toggle between the views.

2 Sound

This is used to program some parameters related to sound emission.

1 Beep from -xx Sec.

This is used to select from which second to start the countdown beeps and view in large digits during the countdown the time before the end of the trial.
The minimum programmable value is -3 seconds. The maximum value is -59 seconds.

2 Key_Tone (Yes)

The beep sound when you press a key may be annoying, particularly during programming.
Select this option to enable key sounds or not.
Select “Off” to turn off sounds generated when the keys are pressed or in case of programming mistakes. Select “On” to restore.

> ***The countdown beep state is not affected and depends on the programming selected by means of the [SPEAKER] key.***

3 Break_Sec in x pps

The ***Audio Caliper®*** function can be used to program beeps at fractions of a second during countdown beeps.
The following are available:
1 beep per second: no beeps within the second
2 beeps per second: one beep 1/2 of a second
3 beeps per second: beeps at 1/3 and 2/3 of a second
4 beeps per second: beeps at 1/25, 1/5 and 1/75 of a second

4 Break_Sec from -xx Sec.

This allows to set from which second to start the ***Audio Caliper®*** function during the countdown to the end of the trial.
The maximum programmable value corresponds to the set countdown beeps. The minimum value is 1 second.

5 Beep off

It turns the countdown beeps off.
This is disabled when you turn the device on, create a new race or cancel all split times of the current race: in this case, the countdown beeps is set to “*Beep from xx Sec*”.

6 Headset volume

With this option you can adjust the headset volume. The countdown beeps are enabled, with [UP] and [DOWN] you can adjust the volume.
Press [ENT] to confirm the setting, press [ESC] to exit without changing.

7 Wireless

Enables or disables the wireless data connection with another ***BORINO-S*** or ***BORA-S*** to copy a race, or to the wireless screen ***ECHO-S***.

Information

When switched on

This shows the current race programming data.
The firmware version installed on the instrument and the serial number are shown on the top.
The number of programmed, expired and free events is shown in the lower part.
The used quantity is shown for each available event type.
Press [*ESC*] to exit.

During the race

Three options are available:

1 Race info

This shows all the loaded race data.

2 Trials info

This shows a summary of all the events in the loaded race.
It is possible to choose between two sheets:

First sheet:

"start time" and "finish time" of each trial are shown

Second sheet:

"during time" and split error of each trial are shown

To toggle between the sheets use [VIEW] key.
Use [UP] and [DOWN] to scroll the trials.
Use [ESC] to go back to race.
Use [ENT] to enter the "Errors info", which shows the average error up to the selected trial.

3 Errors info

This shows the average split error of all the trials (*All*), of the chronometric tests (*CT*) or of the time controls (*TC*).
It is possible to choose between two sheets:

First sheet:

"AVG": shows the arithmetic mean of errors
"+/-": shows the trend of errors

Second sheet:

"-": shows the average of the "early" errors with the total of the "early" trials
"+":shows the average of the "delay" errors with the total of the "delay" trials

In both sheets, if the average value is over 9.999 seconds, this will be shown as ">9.999".

To toggle between the sheets use [VIEW] key.

Use [ESC] to go back to race.

The Race

Select “New Race” or “Continue Race” on the Start Menu to start race mode and new event programming.

> ***BORINO-S has got a permanent memory (data remains stored also when the stopwatch is off) and for this reason it may be programmed conveniently in advance with respect to the race, even days or weeks ahead.***

New Race

This consists in deleting all trials stored in the device memory to start programming a new race.
Press [*ENT*] to confirm deletion and go to the Race function. Press [*ESC*] to go back to the initial menu without changing anything.

Continue Race

This consists in using or programming previously inserted trials.
Also in this case, press [*ENT* [and [*ESC*] to confirm or cancel the request.

Viewing mode

Select one of the two previous options: the stopwatch will go to Race mode and a “LIST” type viewing mode:
BORINO-S can display stored data in three different modes allowing different operations.

1. List (LIST)
2. Detail (EDIT)
3. Countdown (RUN)

Use the [*VIEW*] and [*FLAG*] keys to change the viewing type.
Press the [*FLAG*] key to always go to RUN mode.
Press the [*VIEW*] key to alternatively switch between LIST and EDIT mode.

LIST mode

LIST mode shows an overview of the inserted events, showing in descriptive manner the beginning of each single trial and displaying the correlations between the various trials (horizontal dashes, thicker) in graphic mode by means of vertical lines which join them.
Press the [*UP*] and [*DOWN*] keys to scroll the list up and down.
Press “SHIFT” and [*UP*] to go to the beginning of the list.
Press “SHIFT” and [*DOWN*] to go to the end of the list.
Point to an event using the left side indicator and press [*ENT*] to enter EDIT mode of the concerned event.

> ***ATTENTION: Events can be inserted or deleted only in these modes.***

EDIT mode

The details of a single event are shown in the EDIT mode.
The start time or link to a previous trial and its duration time can be set in this mode. The crossing time can also be set, if available.
A theoretical crossing time is automatically calculated in case of events without crossing time by adding the start time and duration time.
Press [*VIEW*] to go to LIST mode.

RUN mode

RUN mode is used during the race.
The countdown before the end of the current trial is always shown (Time Trial and Checkpoints).
The delay is shown if the end of trial time has elapsed.

To enter RUN mode, press [FLAG] in LIST or EDIT mode.
The stopwatch will automatically point to the first available active trial.

Event addition (LIST Mode)

The first step before starting a race consists in programming the events.
Events are inserted in LIST mode.
At this point, press [*INSERT*] to open the “Add Trial” menu where you can select the required item.

> ***ATTENTION: Use the [UP] [DOWN] keys to point to the event immediately before the insertion point in order to add a new event between two existing events.***
> ***For example, to insert a trial between CT 3 and CT 4, point to CT 3, and then press [INSERT].***

Existing trial types

The following trial types are available:

CT:

(**C**hronometric **T**est): all trials, the start of which is freely chosen by the competitor. In case of free input, a **SCT** type event with the same number as the newly created **CT** event is generated.

TC:

(**T**ime **C**ontrol): this refers to the official race schedule checkpoints for which one whole minute is available for crossing (***BORINO-S*** shows “Crossing now...” for the entire minute).

NT:

(**N**eu**T**ralization): used in Sport Regularity between a **CT** and **TCT**. The default duration time of NTs is 4', but you can change this value by overwriting it.

TCT:

(Theoretical **C**hronometric **T**est**):** the crossing of which is set at a specified time.

START:

this is the day starting time of a stage. Only up to nine of these events can be inserted with sequential, non-programmable ID. This type of trial can only have a theoretic time. It works only as separator between trials if it is not set.

RS:

Restart:suspension within a stage.
This is similar to START but with the possibility of setting an ID number up to 999.

SCT:

Start **C**hronometric **T**est: it is the start of a **CT**

RT:

Repeated **T**rials

> *Available only in the “Series of...” sub menu.*

It is used in those track trials, where the first lap is meant to memorize the time for the next laps.
Programming a series of **RT**, the device automatically generates, before the series:
SRT: **S**tart **R**epeated **T**rials
RTL: **R**epeated **T**rial **L**ap; this is the first lap when the devices memorizes the lap time for the next laps. It starts from 0.00 and goes up from the moment the line is activated. Once the lap is over, and the line is activated again, ***BORINO-S*** stops counting up and stores the time to the next laps, immediately starting the countdown of the first **RT**.

Series of...
it is a quick way to insert many trials of the same kind. You can choose between **CT, TC, TCT, RT**.
We suggest you to try this option, as it allows to save a lot of time while programming the race; all you need will be to follow the requests on the display.

Connections between trials

The various trials may be connected to each other. There are three types of connections between trials:

1) Start at “SET TIME” (Race type). The trial is not connected to anything else in this case: the starting time is specified directly.
   A typical use is in the aforesaid theoretical start trials, i.e. trials in which there is no timing device on the trial starting line (no pressure switch or photocell, only a timekeeper who says “Go”). In this case, starting at a fixed time is assumed, regardless of the real starting time.
2) Start from “REAL END OF”. This is a typical case of concatenated time trials: each trial ends when the previous trial is actually completed. In this case, the stopwatch will assume the previous trial arrival line split as start of trial. The trial type can be changed to SET TIME and entered as start of the next trial if the crossing time measured by timekeepers is available after the crossing. This eliminates split inaccuracies.
3) Start from “THEORETICAL END OF”. this it the typical case of checkpoint trials. This is the case of races in which you need to make up for lost time if you are late at a checkpoint so that you arrive at the next checkpoint on time.

Active/non active trials

The stopwatch identifies two trial types to determine the first trial to be managed when opening RUN mode by pressing the [*FLAG*] key: active and not active.
Active trials are those which do not have an end time, are not managed by the user because the crossing splitting is missing or there is no manual setting.
Non active trials are those with an end time managed by the user and have a splitting or manual setting.

A non active trial is identified by the symbol "**x**" which appears close to its name (in the top right).
The end time must be deleted to switch a trial from non active back to active.

Event editing (EDIT mode)

To edit the details of an event, select EDIT mode by pressing the [*VIEW*] key or by pressing the [ENT] key.
From this point of view, the following fields are displayed according to the trial type:

- ***From*** (under the trial name): in case of connected trial start contains the type and trials to which it refers.
- ***Start*** (first line): start of trial time. In case of connected start, this is the end of the trial to which it refers.
- ***Time*** (second line): duration time of the trial.
- **End** (third line): split time of finish line crossing or theoretical calculated time.
- ***Err.*** (fourth line): In case of split, advance and delay with respect to set time.
- ***InPB. :*** split start time of trial A.

Press the [*UP*] and [*DOWN*] keys to point to the field to be edited and press [*ENT*].
After confirming the editing, the stopwatch will recalculate the times and display the new data.
Editing the "***From:***" field will be used to change the type of connection and the trial to which it refers.
The "***Start:***" field may only be edited if the trial type is with set or theoretical start time.
Editing the "***End:***" field allows to set the real crossing time determined by timekeepers, if available.
The "***End:***" field is also used to delete the split time making it an ***active trial*** again.
To go to the next or previous trial, simply enable *SHIFT* and then press [*UP*] or [*DOWN*]. The instrument goes to the new event always on the same field.

Event deletion (LIST Mode)

Open LIST mode to delete an event programmed by mistake or incorrectly positioned. The list of trials will appear.
Point the selection cursor onto the event to be deleted, press [ESC]: the stopwatch will ask if you want to delete the selected event.
Press [*ENT*] to confirm and delete it permanently. Press [*ESC*] to exit without making any changes.

If the trial you want to delete is used as start of one or more trials, a warning will appear informing you that it cannot be deleted.

To delete a series of connected trials, you have to start from the last one going upwards; by doing this, there will be no troubles caused by the reference of the trials.

During the race (RUN mode)

As mentioned, press the [*FLAG*] key to start race mode.
The stopwatch searches its memory and points to the first active event (not expired).
The following information is shown on the display:

- Top left: type and number of the selected event.
- In the top centre, type of connection and trials to which it refers.
- In the left centre, offset added to trial time set using the [TIME+] and [TIME-] keys.
- In the right centre, the current trial time.
- In the centre, indication of time before reaching the finish line.
- Bottom left: split time at the trial start, or the error of the previous trial (see “Setup-Display-View”).

Use the [*UP*] and [*DOWN*] keys to go to the next/previous trials.

> ***During the countdown, press [7] to replace the trial entrance timing with the previous trial error.***

Warnings

BORINO-S will beep once at one minute and thirty seconds before the countdown zero.
The last seconds are articulated one by one according to the programmed countdown beep.

> ***ATTENTION: the warning and last second articulation must be enabled to be heard (see “Beep countdown”).***

The countdown digits will appear larger during the last seconds:

> ***The seconds from the final count can be edited at any time (also during the race) by opening the Race menu and selecting the “Setup” item.***

Trial change

Splitting on the finish line automatically switches ***BORINO-S*** to the next event.

> ***ATTENTION: This means that splitting is always needed to go to the next trial.***

Once the countdown reaches zero, an indication of the “Delay” time will appear on the display: this is essential if you are actually late.

Trial change on START

If a **START** trial is stored with set expiration time, when the countdown reaches 0 it is possible, within the next 3 seconds, to split the time to move to the next trial.
Otherwise, after 3 seconds, the device will automatically move to the next trial.

No splitting (calculated time)

If you forget to split the stopwatch when you cross the finish line or if the external button is not working, the stopwatch can be instructed to use the theoretical crossing time, that is the time calculated using the actual start time and the theoretical duration time of the trial.
To do this, press [*DOT*] and then [*ENT*].
In this way, ***BORINO-S*** will consider the “calculated time” as an actual splitting of the key determining a net time of 0:00 and passing automatically to the next trial.

> ***ATTENTION: This mode will not work if the trial does not have a start time (dependent from another trial which is not yet managed) and for SCT (Start Chronometric Test) events.***

Timing error

Splitting in advance by mistake at any time, and consequently starting the next trial, can happen.
Simply press [*UP*] to correct this problem.
The stopwatch will go back to the previous trial and resume the correct time count.
The split and error times shown on the stopwatch are those of the incorrect previous timing and do not influence the time count.

> ***For a clear vision of the trial, the splitting can be cancelled by pressing the [ESC] key and confirm the deletion request that appears.***

Change duration time

If the duration time of the expiring trial is a set duration time (i.e. an **ST** or a **TC** starting from a previous event), by pressing the [INSERT] key you can change the duration time.
Once the new value is set, the device will automatically calculate the new expiration time and will show the updated countdown.

Change prescribed start time

If the beginning of the expiring trial is set to a given time (i.e. a **START** or a **TC** with a set time), by pressing the [INSERT] key you can change the value.
Once the new start time is set, the device will automatically calculate the new expiration time and will show the updated countdown.

Change TCT start time / duration time

If a **TCT** is expiring, by pressing the [INSERT] key it is possible to change its duration time.

By pressing [SHIFT] and then [INSERT] you can change the start time.

Edit Menu

During the race, press the [*MENU*] key to view the Race Menu.
This is identical to the Start menu, except for the “Edit” item, which contains the following items:

1 New Race

This consists in deleting all trials stored in the device memory to start programming a new race.
Press [*ENT*] to confirm deletion and go to the Race function. Press [*ESC*] to go back to the Start Menu without changing anything.

2 Delete Timing

Confirmation to delete all previous timing will be asked to make the race trials available again.
Also in this case, press [*ENT* [and [*ESC*] to confirm or cancel the request.

3 CO Automatici

Enables and disables the automatic TC function.
Sometimes, it may be useful to have this function enabled.
If this function is enabled, when the countdown reaches 0.00, the device will move automatically to the next **active trial**, assuming the split time is “0.000”.
This will be reminded on the display by “Calc.” shown.
Enabling the “Automatic TC” will be reminded on the display by “aTC” shown in the status bar next to “SHIFT”.

ATTENTION: this setting is saved in the permanent memory of the instrument. The "automatic TC" function will be active the next time the device is turned on.

4 All Automatic CD

It is possible to have all the countdowns set to automatic.
If enabled, any countdown, when reaching 0.00, will automatically move to the next **active trial** assuming the split time is "0.000".
This will be reminded on the display by "Calc.".
Enabling the "All Automatic CD" will be reminded on the display by "ALL" shown in the status bar next to "SHIFT".

ATTENTION: this setting may be "tricky" and is not saved in the permanent memory of the instrument. The "All Automatic CD" function will be active the next time the device is turned on.

5 Go to …

This is used to go to a given event. Select type and respective number. The instrument will point to the event in EDIT mode, if the selection was made in RUN or EDIT mode. Otherwise, it will remain in LIST mode.

6 Start Trial

While in the LIST or EDIT mode, this options allows to enter the RUN mode of the selected trial. All the previous trials will be "expired" and all the next trials will be waiting to start.
This will not work if the selected trial is connected to a previous one without a finish time.

7 Delta_Step (0.000)

This sets the value in milliseconds which is added or removed from the trial time in progress by pressing the [*TIME*+] and [TIME-] keys.
Programmable value from 1 to 999 milliseconds.

8 --> RUN mode xSec.

BORINO-S has an automatic feature for going back to RUN mode only after a given time when a trial is about to expire, to avoid remaining in a view other than RUN, e.g. for editing a time or a trial start time and consequently splitting without result.
For *RUN mode xSec* set a value comprised between 1 and 30 to make the instrument go back to RUN mode of the expiring trial after no keys have been pressed for a given number of seconds.
Set 0 to deactivate the automatic function ("*--> RUN mode: Not active*").

9 BORINO-S --> AVE-S

Using this option you can program length and prescribed average speed of a **CT**.
If you connect ***BORINO-S*** to ***AVE-S*** with a ***CV JK/JK*** cable, the device sends length and average when you start the trial (please see chapter “BORINO-S ---> AVE-S”).

Wireless

Through the wireless data connection it is possible to copy a race with another ***BORINO-S***, or to connect with the wireless screen repeater ***ECHO-S***.

Enable/Disable

To enable the wireless connection, the "*Enable*" option form the "*Wireless*" menu has to be selected.
Once enabled, ***BORINO-S*** shows more options in the options list, thus making possible to disable the connection.

> ***Enablig/disabling the wireless connection is saved in the settings, so when the BORINO-S is switched on, the wireless connection will be in the same status as when the BORINO-S was switched off last time.***

Visible/Invisible

To establish a connection, ***BORINO-S*** has to be "visible" to other devices, so it can be found and picked to copy a race from it or to be connected to ***ECHO-S***.
Once the connection is activated, every time the device is switched on, it will be "visible", therefore connectable, to other devices for 5 minutes.
During these 5 minutes, another ***BORINO-S*** or ***ECHO-S*** can find the device and connect to it.
After 5 minutes, the device will switch to "invisible".
To make it "visible" again, select the "*Make visible again*" option from the "*Wireless*" menu.

> ***The device being visible for 5 minutes when switching on is necessary to avoid any other BORINO-S to copy the race without permission.***

Once visible, it is possible to make the device "invisible" again just by selecting the "*Make not discoverable*" option.

Trial copy

Once connected, it is possible to copy the race from another device.

> ***ATTENTION: to copy the race from another BORINO-S, this last one has to be "visible" for the wireless connection.***
> ***To check this, enter the "Wireless" menu of the device you wish to copy the race from, and make sure it is "visible".***

Selecting the option “Trial copy”, the device starts to scan other visible devices.
Once finished, it shows a list of the devices found.

Occasionally it may happen that, due to background noise, no other device is found.
Just repeat the “Trial copy”.

Now it is necessary to choose the device which to copy the trials from with the [UP] and [DOWN] keys.
Select with [ENTER].
The device connects to the chosen ***BORINO-S*** and starts to copy the race.
Once copying is over, the race is stored in the device memory.
Then ***BORINO-S*** shows the “*LIST*” view of the loaded race.

Once the race has been copied, BORINO-S switches to “invisible”.

Connection to ECHO-S

If connected with the remote display ***ECHO-S***, ***BORINO-S*** allows you to choose what to show on the remote display.
With ***BORINO-S*** in *RUN* mode, the option “*Remote View*” has two options:

BORINO View:	Remote display is synchronised with ***BORINO-S*** display. Changing trial on ***BORINO-S***, it will change also on ***ECHO-S***.
CD View:	Remote display is linked to the running trial. Changing trial on ***BORINO-S***, it will not change on ***ECHO-S***, which will keep showing the countdown.

COACH-pro

Program that allows, with the use of our ***COACH-pro*** training kit, to easily train to the precision steps.
With a series given time trials, operating the push button when passing on the pressure sensor connected to the ***COACH-pro***, it is possible to check the error made, both on the ground (***COACH-pro***) and in the car (***BORINO-S***).
Choosing the option ***COACH-pro***, the device asks for the operating mode and then the value of the cycle period that should be used for the repetition of the trials.

ATTENTION: To be compatible with COACH-pro, the cycle time must be within increments of 10 seconds. In case of incorrect programming, the device sets the number of seconds to less than a multiple of 10 seconds.
For example, planning a 27-second cycle, the BORINO-S will set 20 seconds.

ATTENTION: the measurements made in this application are not stored in the device memory. So in case of accidental or forced exit, it will not be possible to scroll the results.

Operating modes

Two operating modes are available:

Lap

This mode programs a series of **CT**, connected one to the other, with same duration time.
After programming the duration time, the device moves to **SCT1**, waiting for a line to be activated.
After starting, the countdown begins.
When the line is activated, the device freezes the display on the advance or on the delay, while the countdown moves to the next **CT**.
Also start and finish time of the expired **CT** are stored.
After 5 seconds, the display is unlocked, displaying the countdown of the next trial.
The maximum number of CTs that can be stored is 250.
If this limit is reached, the instrument does not pass to the next test, but always remains on the same, overwriting the previous data.

Continue

This mode programs a series of CTs with a given time.

After programming the duration time, the device moves to "STOP" and shows the internal clock.
Pressing the [ESC] key, you will move to the "RUN" mode.
Now the device calculates the expiration time of the CT and shows the countdown.
For example, planning a duration time of 30 seconds, equal to the current time 10:10:15, the device shows a countdown of -15, -14, etc. that is, the time left to get to 10: 10: 30,000.
By operating the push button, the device stores and shows on display the advance or the delay and recalculates to the next CT deadline.
This will also store the time of the split.
After 5 seconds, the instrument moves to show the countdown of the next CT.
To go back to "STOP" just press [ESC].
The maximum number of CTs that can be stored is 250.
If this limit is reached, the device does not pass to the next CT, but always remains on the same, overwriting the previous data.

Visualization

Pressing the [VIEW] key, the ***BORINO-S*** switches to show the stored data for every single passage. Two views that show different figures are available.

View 1/2

Lap Mode: start and finish time of the **CTs** are shown.
Continue Mode: theoretical and actual time of a **CT** are shown.

View 2/2

The set time and the error are shown.

Menu

Pressing the [MENU] key, the following options are available.

1 Errors Average Info

Two views are available:
View 1/2:
"*AVG*" shows the arithmetical average of the errors
"*+/-*" shows the trend of the errors
View 2/2:
"-" shows the average of the advance errors with the number of trials
"+" shows the average of delay errors with the number of trials

In both pages, shall the average value exceed 9,999 seconds, "> 9999" is shown.

To move from one view to the other, use the [VIEW] key.
Press [ESC] to exit.

2 Change Period

It allows to change the cycle duration time.

> ***ATTENTION: by changing the cycle duration time, all previous impulses are cleared and BORINO-S goes to the first passage.***

3 Setup

You can enter the “Setup” menu (please see “***Setup***” chapter).

4 Finish

Exit the menu and goes back to main.

> ***ATTENTION: when you exit, all impulses are cleared and can not be recovered.***

TRAINING

Using this program you have a 1/1000 second resolution stopwatch with two input lines.
Only in this program, you have to use the I/O ⇄ connector with our ***CV BORINO S*** cable in order to have the second input line.

> ***ATTENTION: the temporization of this input line is automatically set to 2 seconds and this CANNOT be changed.***

Setting such a temporization, the rear wheels on the sensor will not be detected when you connect a pressure sensor to the input line.

> ***When you exit this program, the I/O connector goes back to its normal operating mode.***

> ***ATTENTION: this program cannot be used with ECHO-S.***
> ***If the connection is active, ECHO-S shows only the BORINO-S clock.***

Continue & Lap

Before you enter the program, you have to choose between two modes:
Continue: it shows the internal clock time every time you operate the input lines.
Lap: it shows the time elapsed since the previous operation on the same input line.

> ***Once you are in the stopwatch function, you can toggle from one mode to the other just by pressing [VIEW].***

Operating mode

Vengono visualizzate tre colonne:
- **Left column**: split times of A input (the button)
  In Lap mode, the time elapsed since the previous operation on the same input.
- **Right column**: split times of B input (the sensor)
  In Lap mode, the time elapsed since the previous operation on the same input.
- **Central column**: the “early” or “delay” error of the split time of A input compared to the split time of B input.

ATTENTION: in order to match the times on both input lines, the second splitting must be done within 2 seconds. This interval CANNOT be changed.

Press [UP] and [DOWN] to scroll the list.
When the line gets the impulse, the device positions itself automatically on the last split time.

The device can store max. 250 time pairs. Once you get to this limit, the new split times will replace the older ones.

Menu

You can choose between the three following options:

1 Errors info:

It shows these pieces of information:
#Tot.: number of complete passages (split times of A input and B input).
AVG Tot.:overall errors average (“early” or “delay” errors) of A input compared with B input.

#Plus: number of passages too late.
AVG Plus: average of “delay” errors.

#Minus: number of “early” passages.
AVG Minus: average of “early” errors.

2 Delete split times:

It deletes the times previously taken and the device shows again an empty list.

3 Finish:

The program is finished and the device goes back to Start Menu.
All split times are deleted and the race previously stored can be loaded again.

BORINO-S ---> AVE-S

Connecting ***BORINO-S*** to an ***AVE-S*** (**with firmware higher than 3v01**) with the ***CV JK/JK*** cable to the I/O connectors of both devices, you can send "length" and also "prescribed average speed" at the beginning of a Chronometric Test, so as to see the distance you still have to drive until the end of the trial or the error in average trials.

> ***You can program the length which has to be sent to AVE-S only for CTs.***

You can enable this option in the "RACE menu", where you have to choose "*Edit / BORINO-S ---> AVE-S / Length*".
If you set "*Length*" as "*Active*", this enables the programming and sending of the length.
If you set "*Average*" as "*Active*", this enables also the programming and sending of the prescribed average speed.
If you set "*Swap ECHO-S*" as "*Active*", ***ECHO-S*** (if this is used as "*Dual Device*") goes from the ***BORINO-S*** to the ***AVE-S*** view, when you send the length.

Enabled length

When you are entering a **CT**, after having programmed the duration time, ***BORINO-S*** asks for the trial "*Length*", if "Length" is enabled and "Average" is disabled.
You can set a number between 1 and 999999.
Confirm with [***ENT***] to store the number and go back to the normal programming.

When you are editing a trial ("Edit mode"), the length is shown at the top of the display, next to the trial name, and it is indicated by the letter "L" (Length).
To change this, select "L=*xxxxx*" (blinking writing) with the [*UP*] and [*DOWN*] keys and confirm with [*ENT*]: this is the same procedure you use to change also the other fields.

In "List mode", CTs with programmed length are indicated by the symbol "|-|" next to the trial start.

Once you have programmed the length, ***BORINO-S*** sends this datum to ***AVE-S*** when you start the trial.

AVE-S goes immediately to "*Trip mode*" and to *RUNtrip* state. It shows the name of the running trial and the distance counter on the upper line. On the lower line ("*PARTIAL*") it shows the number 0.
While you are driving your car through the route, the upper counter decreases, showing the distance until the trial end.
On the contrary, the lower counter increases, showing the distance you have driven.

With the [*RESTART*] key of ***AVE-S*** you can reset the counter on the lower line ("PARTIAL"), so as to have partial results that can be compared with the roadbook.

> ***If you set the number 0, for this trial you disable the length sending to AVE-S: as a result, AVE-S does not change its operating mode and state.***

If you have gone to the next trial by mistake and you go back on ***BORINO-S***, this piece of information is sent to ***AVE-S*** too: in this way the previous count goes forward.

Enabled average

When you are entering a new trial with "Length" and "Average" enabled, the device asks for the Length and after that for the Prescribed Average.

> ***In average trials, the duration time of the trial is not necessary and so you do not have to set it.***

For the Average you can set a number between 3000 and 199999.
In order to make the race management easier, ***BORINO-S*** converts ***CTs*** with programmed Average into ***AVG*** (*Average)* trials and uses another numbering: in this way the numbers referred to the CTs can be compared with those used in the roadbook.
If you enter a single average trial, the device generates a new ***sAVG*** (*Start Average*) trial.
When you start the trial, ***BORINO-S*** sends length and average.
AVE-S goes immediately to "AVG mode" in the *RUN* state. It shows name of the running trial, prescribed average speed, trial length ("Real"), virtual distance ("Virt.") and error ("Err.").
While you are driving your car through the route, the real distance counter decreases, showing the distance until the trial end.

> ***You can set the number 0 for the average: in this case, when you start the trial, BORINO-S sends only the length and AVE-S does what we have written above ("Enabled length").***

> ***ATTENTION: if you have gone to the next trial by mistake on BORINO-S, the fact that you go back will not affect in any way AVE-S. AVE-S will continue calculating using the previous values.***

During the average trial, the stopwatch shows only "Length" and "Average". You have to manage the trial using ***AVE-S***.
At the end of the average trial, you have to inform ***BORINO-S*** by operating the external button. In this way the stopwatch can go to the next programmed trial.

Examples:

Series of five CTs followed by an average trial. All trials are concatenated

To program this, you only need to enter a series of **CTs**.
When the device asks how many trials you want to enter, set the number 6 (five **CTs** plus one Average trial).
Choose a different “duration time”.
After you set the “duration time”, in the first five trials you can enter the value for the “Length” but the value for the “Average” must be 0.
Once you have programmed the **CT5**, the device will ask for the “duration time” of **CT6**: confirm without entering any value.
After that, set the “Length” and necessarily the prescribed “Average”: this informs the stopwatch to convert **CT6** into **AVG1**.
Back in the LIST view, the device shows the concatenated series of **CT1**,**2**,**3**,**4**,**5**, followed by **AVG1**.

Single not concatenated average trial

To enter a single not concatenated “Average” trial, you have to enter a CT with not concatenated start.
You must not program the “duration time”.
Set “Length” and “Average”.
The stopwatch converts the **CT** you have just programmed into an **AVG** and inserts automatically a **sAVG**: you need the **sAVG** to start the average trial and to send to ***AVE-S*** the trial's data.

Features

Inputs and outputs

Audio output

A ø 3.5 mm stereo jack is located on the left side of ***BORINO-S*** for connecting a headset.
The countdown beep will be heard if this function is enabled.

> ***The sound generated by the internal speaker will be deactivated by plugging in a headset.***

Ingresso pulsante esterno

BORINO-S has an external input for connecting a **PB5/JG-A** button to split the time.
When ***BORINO-S*** is in the “Clock Test” mode, on this connector you can enable the closing of the synchronisation contact at the 0 second of each minute.
In this way you can synchronize another stopwatch, for example by using the **CV JG/JG** cable.

USB port

A mini-USB port can be used to connect the ***BORINO-S*** to a Personal Computer.
This connection can be used to upgrade the instrument firmware or to upload/download programming and past trial results by means of the specific program.

In/Out port

3.5 mm stereo jack port for connecting to the RS232 serial port of a PC with the specific cable, or to an AVE-S with the ***CVJK/JGM*** cable.

> ***This replaces the USB connection via PC port in case of need.***

Battery life

The battery life of ***BORINO-S*** depends very much on the display brightness.
With alkaline batteries:

High brightness off:	> 150 hours.
High brightness always on:	> 75 hours.

A residual battery life indicator is shown on the status bar.

The battery indicator will start blinking when the battery charge drops under 10% and you will hear an acoustic signal.

The message “Battery Low” will appear briefly on the bottom of the display during normal operation with status bar when the batteries are low and you will hear an acoustic signal.
At this point, you will have a residual battery life of 5-10 hours if the “high brightness when needed” option is used and more than 30 hours if the high brightness is off.
Replace the batteries as soon as possible or connect to a power source via the USB connector!

ATTENTION: Remove the batteries from the device if you plan on not using BORINO-S for a long time.
This will avoid damage caused by battery leakage.

Warranty and assistance

Warranty

The ***BORA-S*** stopwatch is guaranteed free from material or manufacturing faults by Digitech S.r.l. for 24 months from date of delivery to the buyer.
During the warranty validity period faulty components will be repaired or replaced free of charge by sending the stopwatch ex-works to Digitech.
The warranty will be cancelled if the device was accidentally damaged as a result of misuse, negligence or tampering by any person not authorised by Digitech.
No other warranty is expressed or understood.
In no case may Digitech be liable for damage not included in this warranty.

Batteries and damage caused by batteries are not covered by the Digitech warranty. Contact the battery manufacturer for the battery warranty.

If the stopwatch needs to be repaired

If your instrument needs to be repaired, call our assistance service on +39 040 280 990 (from 9:00 to 12:00 and from 15:30 to 18:30, Mondays to Fridays).
Please include the following in the package you send:

- the address where to send the device back
- a short description of the problem and the procedure for reproducing it, if applicable
- if the device is still covered by warranty, include a copy of the purchase receipt and other documents which prove date of purchase.

The instrument and accompanying information must be sent in the original package or other equivalent packaging to prevent damage during shipment. This damage is not covered by the warranty.
Sending by insured mail is recommended.
Digitech will send back the repaired instrument using similar means.
Cost of sending to Digitech will be charged to the owner.
Any packages with mail charged to the receiver will be rejected.

Repair warranty

Repairs out of warranty are guaranteed free from material and workmanship faults for 90 days from the date of repair.
Repairs carried out under warranty do not extent the original warranty period in any manner.

Functional problem notification

If functional problems are found during use of ***BORINO-S*** and for questions related to instrument management, please contact us:

by mail to:

DIGITECH - Via Stazione di Prosecco 29/D - 34010 Sgonico (TS) - Italy
by email to:
info@digitechtiming.com
This will help us check and solve any problems as rapidly as possible.

Technical specifications

Technology:	ARM CortexM3 32 bit microprocessor
Dimensions and weight:	165 x 80 x 35 mm, 680 g, including batteries
Display:	Graphic LCD display, 240x64 pixel, type: OLED
Power supply:	Internal power supply: four 1.5 volt (AA) batteries External power supply: via mini-USB-connector
Consumption:	High brightness off: 25 mA High brightness on: 70 mA
Battery life:	More than 150 hours using alkaline batteries
Audio output:	For headset 2 x 32 Ohm on 3.5mm jack
USB port:	mini-USB port for connecting to PC or emergency external power supply
RS232 port:	3.5 mm jack for connecting to another device via RS232 protocol
Accuracy:	±0.5 ppm(±0,0018 sec./h).ppm from -10°C to +70°C
Programmable trials:	250 (SCT, CT, TCT and TC)
Connectable accessories:	External **PB5/JG-A** key (included) Personal Computer via: - mini-USB cable

Firmware upgrade

The following elements are needed to upgrade the stopwatch firmware:

- a ***mini-USB*** cable.
- a PC with Windows XP operating system or higher.
- "*Multi-Update_1v4.exe*" upgrade program or higher.
- "BORINO-S_*XvX.hex*" file, where "XvX" is the upgrade version

Remove the batteries from the device.

Connect the device to the PC using the mini-USB cable.

Wait for the computer to recognize the new hardware.

If required, install the drivers you can download from the website.

Turn the stopwatch on.

Go to "Clock Test".

Press [FLAG] and [ON], and keep these keys pressed.

Wait until the display turns itself off.

Launch the "*Multi-Update_1v4.exe*" program and open the "*BORINO-S_XvX.hex*" file using the "Open File" key.
The program will show the upgrade version.

Press "Connect" if the version is correct.

The program will search for the stopwatch among the PC devices.
After finding the stopwatch, the current installed firmware version will appear.

Press "Start" if everything is OK.

Upgrading will start.

After upgrading, if the procedure was successful, the instrument will be turned on normally and will be ready for use.

ATTENTION: Do not disconnect the stopwatch once upgrading has started.
The stopwatch will not work if the upgrade stops before completion.
In this case, the device must be sent to us for complete reprogramming.

DECLARATION OF CONFORMITY

According to EN45014 and ISO / IEC Guide 22 Publication

Manufacturer's name:	DIGITECH S.r.l.
Manufacturer's address:	Via Stazione di Prosecco, 29/d - 3401o Sgonico (TS) - Italy

declares that

Product type:	Programmable stopwatch
Product name:	***BORINO-S***

complies with the following directives

Directive 73/23/EEC Safety:	IEC950 : 1991 / EN60950 : 1993
Directive 89/336/EEC EMC:	EN55022 : Class B EN50082-1 : 1992 IEC801-2 : 1984 - 4kV CD - 8kV AD IEC801-3 : 1984 - 3V/m

Additional notes:
The ***BORINO-S*** programmable stopwatch was tested in a typical configuration with the DIGITECH **PB5/JG-A** key.

Trieste, 14 March 2017

Gustin Diego
QA Manager

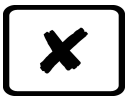
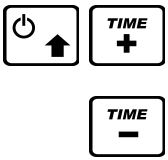
Appendix

Repeated Trials

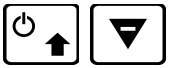
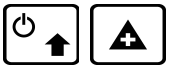
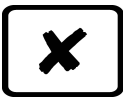
Sometimes, often in a track, these trials may be needed. This kind of trials request a free first lap, the time of which will be the given time of the other laps. ***BORINO-S*** can easily handle this trials simply by using the "*Series of RT*" option in the "*Insert*" menu.
Choosing this option, the device, after requesting the number of the laps and the id number of the first one, automatically generates the Start Repeated Trials (**SRT**), the Learn Repeated Trial (**LRT**) and the number of the Repeated Trials (**RT**) requested.
Then you can move to RUN mode and select the **SRT**.
You enter the track and start the first lap, starting it with the push button; the device will show a time running up, starting from 0.000. Once you reach the end of the "learn" lap, finishing it with the push button, the device will stop counting up and will immediately show the countdown of the first RT.

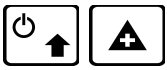
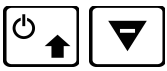
Keys summary

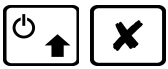
RUN Mode		
FUNCTION	*KEY*	*NOTE*
Set the theoretical start time, in case the line has not been activated	.	*Time will be calculated starting from the previous input and adding the given time*
Show the start time of the running trial or the errors of the previous trial referring to the given time	9	*Toggles between the two options*
Show the end times of the running trial (if present)	8	*Keep pressed to see the times. If there is no split time, only "In A" or "In B" will be shown*
Show the error of the previous trial (on the primary line)	7	*Keep pressed to see the error*
Enable the acoustic countdown in SCT events (Start Chronometric Test)	6	*Once the CT has started, the acoustic countdown will be turned off*
Show the calculated end time of the running trial. If the calculated time is not available, you will see some dashes	5	*Keep pressed to see the calculated end time of the running trial*
Show the calculated time of the next TC, if the TC is programmed. If the TC does not exist or the calculated time is not available, you will see some dashes	4	*Keep pressed to see the calculated end time of the next TC*
Enable/disable the inputs' blocking only in the CTs, when the function "All automatic CD" is enabled	3	*Keep pressed for 2 seconds to enable the blocking. Press the key again to remove it*

In RUN mode, by pressing this key the current view of "duration" and "error" is replaced by the number and duration of the next stage. This will be shown as long as the key is pressed.		Only for CT, TC, TCT, NT
Toggles the sound from "off" to "automatic" and viceversa		Allows to quickly enable/disable the sound without entering the "settings" menu
Clear the inputs of the running trial		*Shall the input be given accidentally, it clears it*
Move to the previous trial		*Shall the input be given accidentally, you can go back to the countdown*
Move to the next trial		*To see the trial data*
Increase the delta you have to add to the programmed duration time of the trial		*"Trim" the duration time if the input is inaccurate*
Decrease the delta you have to add to the programmed duration time of the trial		*"Trim" the duration time if the input is inaccurate*
Clear the delta setting of the running trial		*The programmed duration time of the trial is immediately set to the programmed value*
Simulate external button		*It generates an impulse simulating the main input line*
Change the duration time of the running trial		*Only in CTs or TCs, whose start is connected to a previous trial*

Change the given start time of a trial		*Only in trials with a given start time, i.e. a START or a TC with a given time*
*Move to **EDIT Mode***		*To edit the running trial*

EDIT Mode		
FUNCTION	*KEY*	*NOTE*
Move to next field		*To move from a field to another while programming*
Move to previous field		*To move from a field to another while programming*
Edit field		*To insert or change values in the field*
Move to the same field in the next trial		*To move to the next trial without needing to scroll all the fields*
Move to the same field in the previous trial		*To move to the previous trial without needing to scroll all the fields*
Clear an input		*Clears only the inputs of In A and In B.* *Other fields can be changed but not cleared*
*Move to **RUN Mode***		*Moves immediately to RUN mode, showing the countdown of the running trial*
*Move to **LIST Mode***		*To insert or clear trials*

LIST Mode		
FUNCTION	*KEY*	*NOTE*
Insert trials		*It inserts a new trial next to the position shown by the cursor*
Delete a trial		*Only trials which are not the beginning of a next one can be deleted*
Move to the next in list		*It moves the shown list one step up*
Move to the previous in list		*It moves the shown list one step down*
Move to the beginning of the list		*It moves the list to the first event in the list*
Move to the end of the list		*It moves the list to the last event in the list*
Edit the selected trial		*It moves to EDIT Mode to change the selected trial*
Move to ***EDIT Mode***		It moves to *EDIT Mode* of the selected trial
Move to ***RUN Mode***		*It moves immediately to RUN Mode, showing the countdown of the running trial*

Various		
FUNCTION	*KEY*	*NOTE*
Quick setting menu		*With this option you can adjust the headset volume, the display brightness and the activation of the countdown beeps*
Clear the value you are programming		*It clears the value being programmed*

Reminder MENU

Overview of the items available in the various menus:

1 Set Clock	
1 Manual	*Set value*
2 Trimming	*Set value*
3 From GPS	*Docking GPS satellite system*
4 Out Sync	*Enable synch output*
1 1 Min.	*Impulse at the second 0 of every minute*
2 1 Sec.	*Impulse at every second*
3 Off	*Impulse is disabled*
2 Race	
1 New Race	*Start a new race*
2 Continue Race	*Continue the previous race*
2 Edit	
1 New Race	*Delete the current scheduled race and start a new one*
2 Delete Timing	*Delete all split times of trials*
3 Automatic TC (No)	
1 Disable	
2 Enable	
4 All automatic CD (No)	
1 Disable	
2 Enable	
5 Go to ...	
6 Start Trial	
7 Delta Step (0.010)	*Set value*
8 → RUN Mode: Not active	*Set value*
9 BORINO-S ---> AVE-S	
1 Length	*Enables/Disables sending of length to AVE-*
2 Average	*Enables/Disables sending of prescribed*
3 Swap ECHO-S	*Enables/Disables swap on ECHO-S*

3 Setup

1 Display

1 High brightness

1 Always

2 Enable 5 Sec.

3 Enable 15 Sec.

4 Enable 30 Sec.

5 Disable

2 List View (Large Font)

1 Small

2 Large

3 Language

1 Italian

2 English

3 German

4 Spanish

2 Sound

1 Beep from -10 Sec.	*Set value*
2 Key Tone (Yes)	
1 Enable	
2 Disable	
3 Break Sec in 3pps	
1 1 Beep x Second	
2 2 Beep x Second	
3 3 Beep x Second	
4 4 Beep x Second	
4 Break Sec from -5Sec	*Set value*
5 Beep Off	
6 Headset volume	*Adjust value*

3 Wireless

- *1 Enable*
- *1 Disable*
- *1 Logout* — *Only if connection is active*
- *2 Make Visible for 5 Min* — *Only if connection is down*
- *2 Make not discoverable* — *Only if offline*
- *2 Remote View* — *Only if there's connection with **ECHO-S***
  - *1 BORINO View*
  - *2 CD View*
- *3 Trial Copy* — *Only if connection is down*

4 Turn off

5 Information

- *1 Race info*
- *2 Trials info*
- *3 Errors info*

Default parameters

Please see below the default parameters, which can be reset using the option “Set default values”.

General		
	High brightness	*5 Sec.*
	Acoustic countdown	*From -10 Sec.*

Display		
	List view	*Small font*
	Language	*Italian*

Sound		
	Beep from	*-10 Seconds*
	Key tone	*Enabled*
	Break_Sec in	*1 pps (parts per second)*
	Break_Sec from	*-3 Seconds*

Wireless		
	Enable	*Disabled*

Race		
	Automatic TC	*Not active*
	All automatic CD	*Not active*
	Delta Step	*0.010 Sec (1/100)*
	→ Run Mode	*Not active*
	BORINO-S ---> AVE-S	*Not active*