



@-GUN & StartTime V – ELECTRONIC START SYSTEM

USER'S MANUAL

3481.560.02 | Version 1.0 | July 2015



Caution and safety precautions

- 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 possibly cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are proper, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- This program may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- 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.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

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Environment



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.

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1 INTRODUCTION

1.1 Operation principle

The Electronic Start System *StartTime V* is used in several sports such as athletics (AT), swimming (SW) and Speed Skating (SS) with Start & Microphone unit (SMU) or @-GUN.

The electronic start system is composed of a flash gun and a sound generation box.

When the starter activates the gun trigger, simultaneously, a sound is played, a flash is emitted and a start pulse is given to the timing device.

By pressing the trigger a second time within a programmable delay, the false start sound will be played.

StartTime V can manage up to 3 different sports or disciplines.

It also features a multifunction LCD display, an enhanced internal amplifier, a keypad for selecting among the various setup possibilities, a high fidelity loudspeaker and an integrated optical new flash system.

A line out allows optional loudspeakers to be connected to deliver the start signal as close as possible and simultaneously to each athlete.

A microphone unit enables the starter to give the start signal while amplifying all the verbal commands.

Three LEDs indicators on the microphone unit show the status of the timer device.

StartTime V can be paired with @-GUN electronic starting device.

1.2 Starting equipment with Start & Microphone unit (SMU)

- 1x Electronic start system *StartTime V* (3481.770)
- 1x Start & Microphone unit (3481.772)
- 1x Charger 12VDC-2A (3418.753)
- 1x Cable AC power 2m depending on the country
 - Euro and CH (9051.3569)
 - UK (9051.3570)
 - US (9051.3571)
 - AUS (9051.3572)
- 1x User's Manual (DOC3481.560)

1.3 Starting equipment with @-GUN

- 1x Electronic Start System *StartTime V* (3481.770)
- 1x @-GUN Electronic Start Device (3481.704)
- 1x @-GUN Headset (9051.8155)
- 1x Charger 12VDC-2A (3418.753)
- 1x Cable AC power 2m depending on the country
 - Euro and CH (9051.3569)
 - UK (9051.3570)
 - US (9051.3571)
 - AUS (9051.3572)
- 1x Transportation case (9072.6001)
- 1x User's Manual (DOC3481.560)

1.4 Front panel

The front panel of the *StartTime V* is divided in two parts: on the left is the connection area and on the right the command keypad with display.



Connector	Description
FLASH	Connection to external flash(es)
LINE OUT	Connection to external amplifier with dedicated speaker
CHARGER 12V DCD	Charger input for internal battery
SPEAKER	Connection to external loudspeaker(s).
START	Connection to the main timing device (MAIN / PRIMARY)
E-GUN / MICRO	Connection to the @-GUN or SMU (Start & Microphone Unit)

Key	Description
	Power ON (>5 sec.) and Power OFF (>3 sec.)
	Allows field starter to force READY from control room
	Key to start race if @-GUN or SMU are not used (Independent operation)
	Key to adjust the microphone volume
	Key to adjust the speakers volumes (Internal, External, Line out and @-GUN headset)
	Keys to navigate through the menu or setup
	Key to enter in the menu or setup
	Key to select value in the menu or setup
	Key to go back in the menu or setup

LED	Description
	Green LED light up for <i>StartTime V</i> power ON status. Green LED blinking during battery charging. Red LED blinking to notify low battery.

1.5 Rear panel and cover



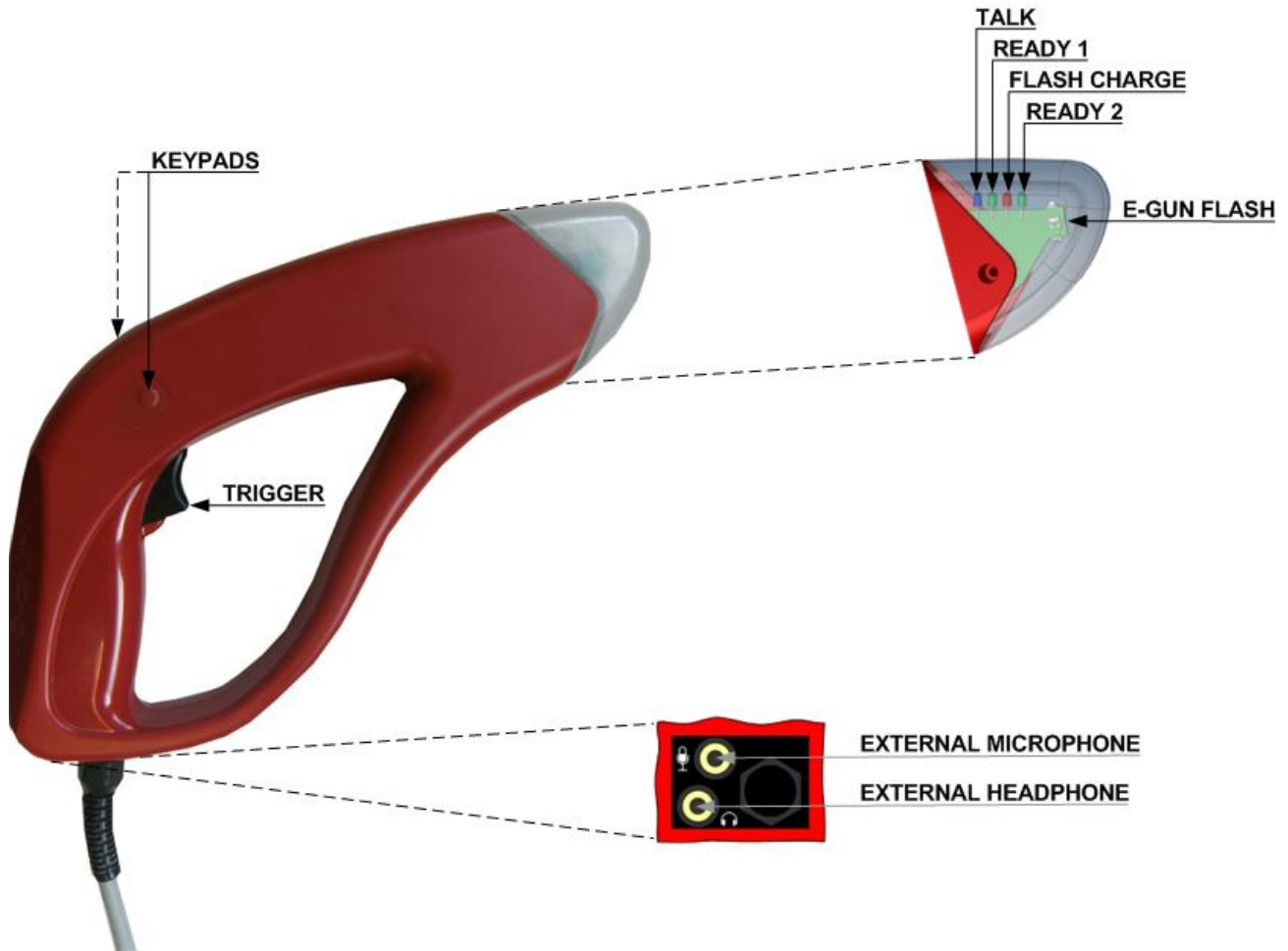
Item	Description
A	Internal flash
B	Internal speaker
C	Handle

1.6 Start & Microphone unit (SMU)



SPEAK	Allows starter to connect microphone to loudspeaker
START	Push to start the TIMER
READY 1	Ready status of TIMER 1
READY 2	Ready status of TIMER 2
LOW BAT.	Red LED blinking to notify low battery

1.7 @-GUN



LED / Key	Description
TALK	Indication of the selected audio channel ● Mode SPEAK selected
READY 1	Indication that the main timing device is ready (MAIN / PRIMARY)
READY 2	Indication that the additional timing device is ready (BACKUP / SECONDARY)
FLASH CHARGE	● Indication that the flash system is recharging (●) Mode TEST selected (without gun shot sound)
KEYPADS	Allow starter to select the audio channel ● 1x Mode SPEAK ● + ● 1x Mode TEST
TRIGGER	Allows starter to start the TIMER

2 INSTALLATION

2.1 Connecting the installation

Connections have to be made at the front of the *StartTime V*. Some connections are mandatory and some depend on the use:

2.1.1 Connections overview



2.1.2 External loudspeakers connection

The minimum recommended load per amplifier is 3.2 Ohms and the maximum is 16 Ohms.

It is possible to use a load of 2 Ohms but it will result in increased distortion and loss of output power.

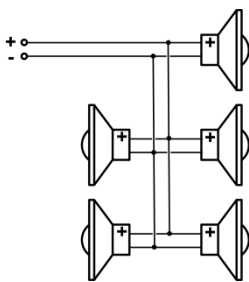
Any combination that gives a total load between 3.2 and 16 Ohms is acceptable.

Note the phase (+ sign or Red dot) of the speakers, or loss of sound quality will occur.

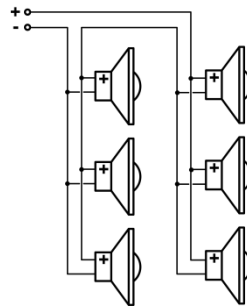
Note: never connect the two speaker outputs together in any way or connect them to ground.

This may cause severe damage to the amplifiers.

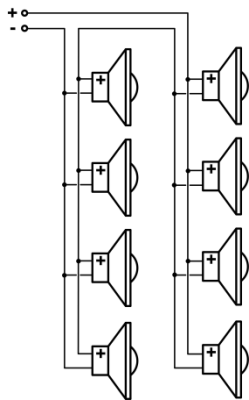
Examples of loudspeaker connection:



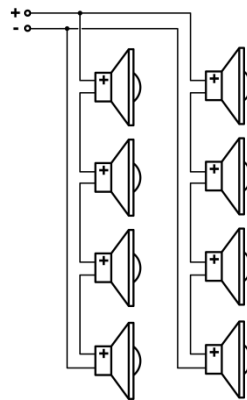
5 Speakers of 16 Ohms each
Total load of 3.2 Ohms



6 Speakers of 16 (8) Ohms each
Total load of 10.6 (5.3) Ohms



8 Speakers of 16 (8) Ohms each
Total load of 8 (4) Ohms



8 Speakers of 4 (8) Ohms each
Total load of 8 (16) Ohms

2.1.3 Extension cables

The **microphone cable** may be extended up to 30 meters.

If extended further, noise and "hum" may distort the signal.

There will be no damage caused to the unit.


The **loudspeaker cables** can be extended up to 30 meters with 0.75mm² cable or 50 meters with 1 or 1.5mm² cable.

If extended further, loss of sound quality may occur, but no damage will be caused.

Beware of polarity of speakers, or loss of sound quality will result.

2.2 Operation

2.2.1 Stand alone operation with TIMER (Quantum, ARES)

1. Connect @-GUN or SMU to E-GUN/MICRO
2. Connect the cable from TIMER to START.
3. Turn the unit ON by pressing the  key (5sec.).

SMU : LEDs are tested.

@-GUN : LEDs are tested.

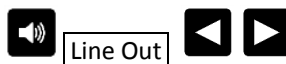
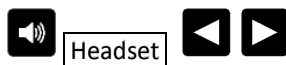
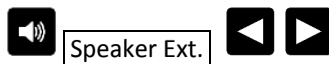
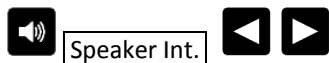
4. Select sport (Athletics, Swimming, Speed Skating or Custom).

After 5 seconds, the sport will be automatically selected based on the last use.

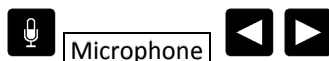
SMU : STV power ON status Green LED light up and red LED SPEAK in the microphone should be lit.

@-GUN : STV power ON status Green LED light up.

5. Adjust the OUTPUT VOLUMES on the *StartTime V* to an appropriate level



6. Adjust the INPUT VOLUME on the *StartTime V* to an appropriate level



7. Check if **READY** signal green LED (@-GUN / SMU) is ON or Check if EXTERNAL READY is written on the *StartTime V* display.
8. Press the **TRIGGER** (@-GUN) or **START** (SMU) button.
9. One signal should be emitted from the loudspeaker(s), and the TIMER should be activated.

If a false start is to be announced, press the **TRIGGER** (@-GUN) or **START** (SMU) button again within time selected in **False Start Setup** **Timeout** .

Timeout can be adjusted on the main unit in  **Setup**  **False Start Setup** **Timeout**   .

Repeat can be adjusted on the main unit in  **Setup**  **False Start Setup** **Repeat**   .

False Start Sound can be adjusted on the main unit in  **Setup**  **False Start Sound**   .



The false start Timeout signal is only functional if **Setup** is selected from **1** to **90** seconds. Select **False Start Setup** to **OFF** if false signal is not used.


The Repeat false start signal can be adjusted from **1x** to **5x** . Select **False Start Setup** to **OFF**

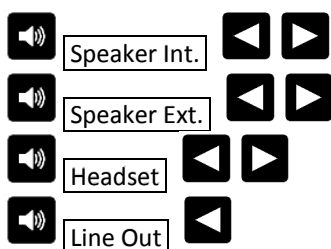
if false signal is not used.




2.2.2 Independent operation

It is possible to use the *StartTime V* without @-GUN or SMU.

In this case, it is only possible to carry out starts and false starts with the START button of the STV.





1. Turn the unit ON by pressing the  key (5sec.).
2. Select sport (Athletics, Swimming, Speed Skating or Custom).
3. After 5 seconds, the sport will be automatically selected based on the last use.
4. Adjust the OUTPUT VOLUMES on the *StartTime V* to an appropriate level



5. Press the  key before start.
6. Check if MANUAL READY is written on the *StartTime V* display.
7. Press the  key for the start.
8. If a false start is to be announced, press the  key again within time selected in **False Start Setup Timeout**.

Timeout can be adjusted on the main unit in  **Setup**  **False Start Setup Timeout**  .

Repeat can be adjusted on the main unit in  **Setup**  **False Start Setup Repeat**  .



False Start Sound can be adjusted on the main unit in  **Setup**  **False Start Sound**  .



The false start Timeout signal is only functional if **Setup** is selected from **1** to **90** seconds. Select **False Start Setup** to **OFF** if false signal is not used.
















The Repeat false start signal can be adjusted from **1x** to **5x**. Select **False Start Setup** to **OFF** if false signal is not used.

2.2.3 Power ON sequence





	Action on STV	Sequence of LEDs on STV	Sequence of LEDs on Start & Microphone unit	Sequence of LEDs on @-GUN
1	Switch ON the unit by pressing the  key during 5 seconds.	During the 5 seconds of switching on, the LED ON (green) lights up briefly and the backlight of the display lights up.	During the 5 seconds of switching on, the SPEAK button (red) flashes and then turns off.	The red LED flashes.
2	Release the key  after 5 seconds.	The 2 LEDs ON (green) and LOW BAT (red) light up alternately.		
3		The LED ON (green) stays on.		
4		The SWISS TIMING logo appears on the display.	The 3 LEDs LOW BAT (red), READY 1 and 2 (green) light up one after the other for a short time and then turn off one after the other. The SPEAK buttons (red) and START (green) flash twice at the same time.	The 4 LEDs light up one after the other and then turn off one after the other.
5		The WAITING READY message appears on the display.	The SPEAK button (red) lights up.	

2.2.4 Audio levels

It is possible to adjust 5 audio levels (without going through the Main Menu):

 <input type="text" value="Speaker Int."/>  	Level of internal loudspeaker
 <input type="text" value="Speaker Ext."/>  	Level of external loudspeakers
 <input type="text" value="Headset"/>  	Level of @-GUN headset
 <input type="text" value="Line Out"/>  	Level of LINE OUT
 <input type="text" value="Microphone"/>  	Level of microphone (SMU unit or Headset micro)

2.2.5 Battery level


	Battery is fully charged.
	Battery is half charged.
	Battery is empty; connect the charger as soon as possible.
	Red LED (LOW BATT) blinking to notify low battery. Battery is empty, connect the charger urgently.

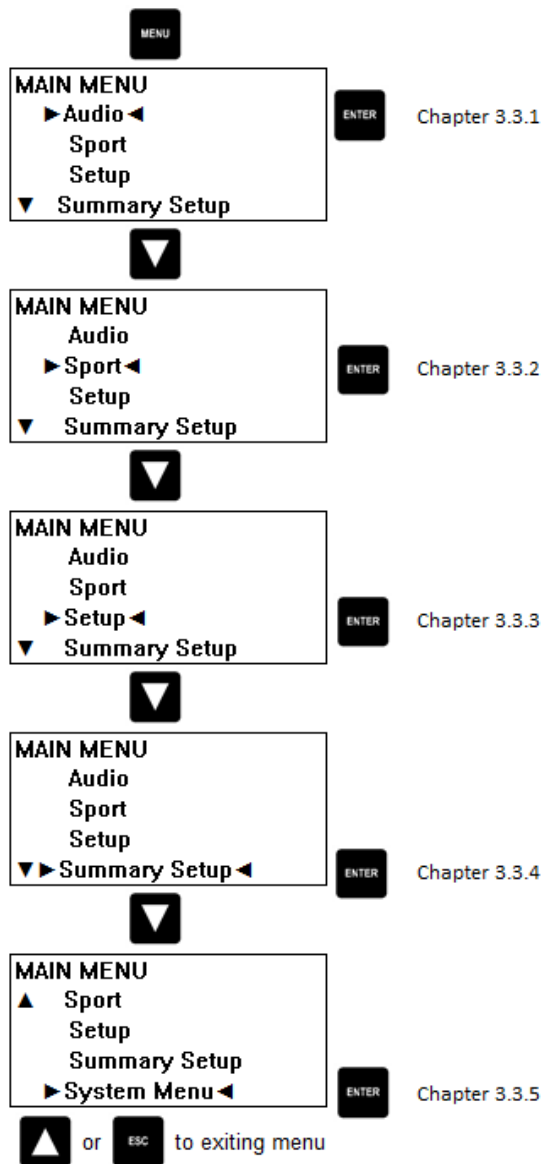
3 GETTING STARTED

3.1 First use

Read chapter 3, select desired configuration and connect the *StartTime V* charger.

3.2 Main menu





You can access the main menu by pressing  button.



3.3 Setup menu

Setup menu allows the user to define particular settings adapted to their own use.

To navigate in the menu, use following buttons:

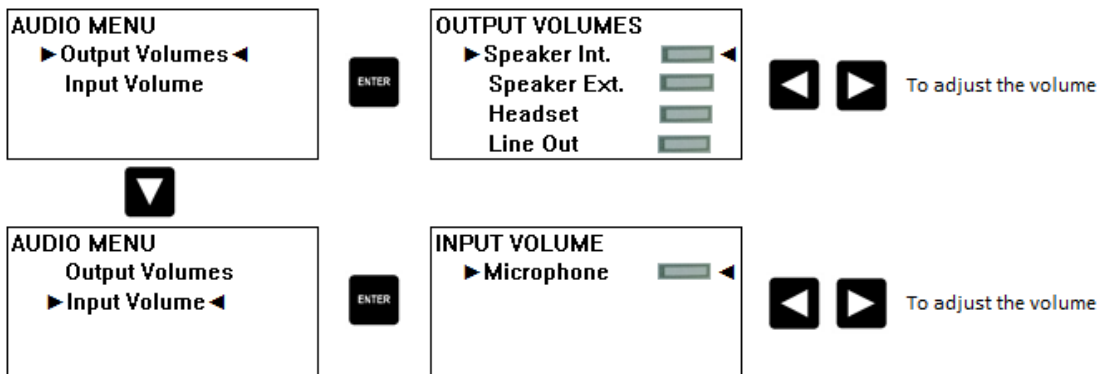
	To enter and exit the setup menu
	To move from one to another setup
	To select value in the setup menu
	To exit the setup menu



If setup is modified in AT, SS or SW, sport selection is automatically changed to CUS and Setup values are transferred.

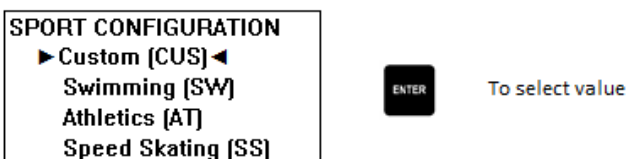
3.3.1 Audio menu

Allows to set the audio output parameters.



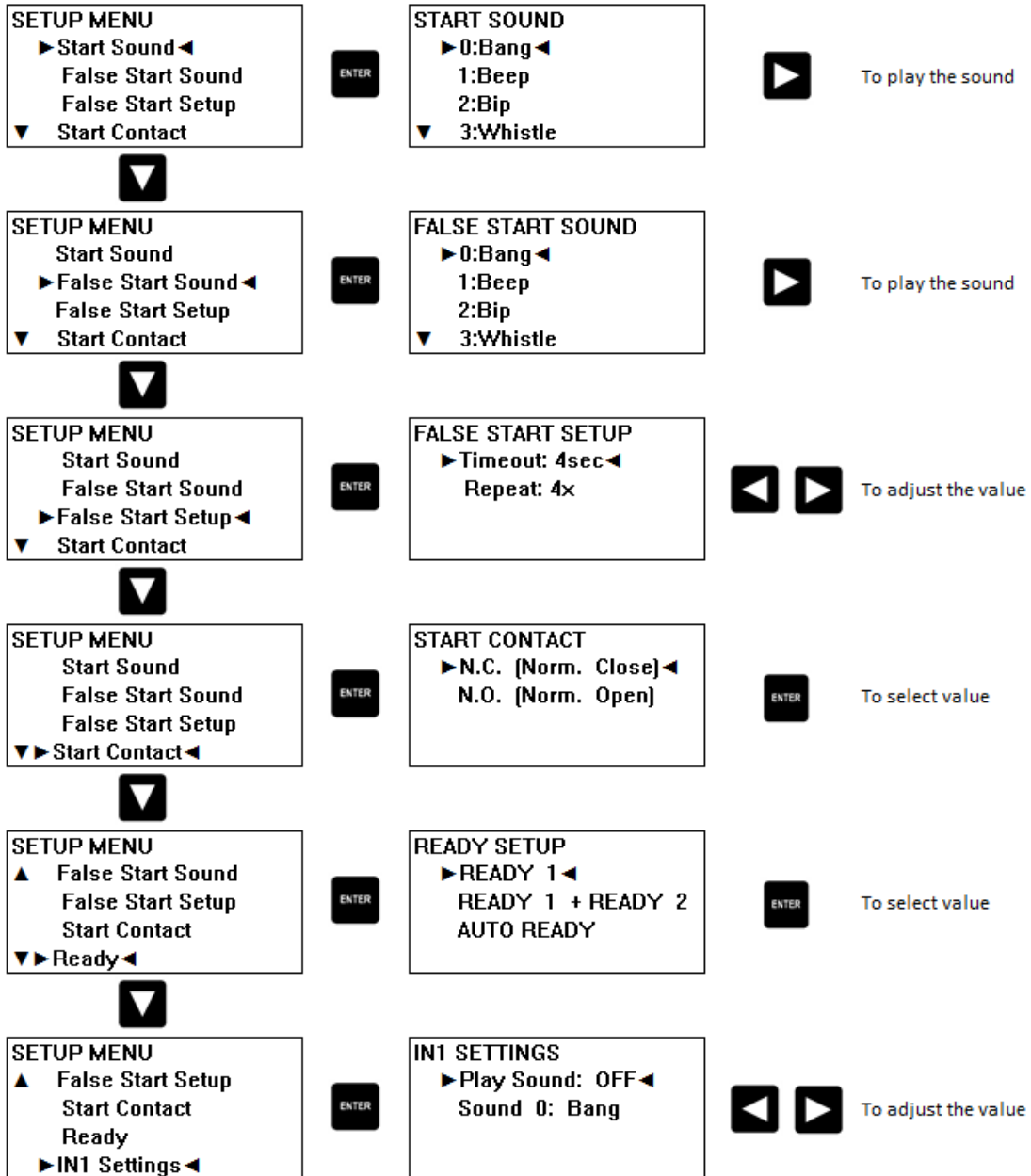
3.3.2 Sport configuration menu

Allows to change selected sport configuration.



3.3.3 Setup menu

Allows to set the different sound parameters such as start sound, recall sound and others.



3.3.4 Summary setup menu

Allows to verify the summary setup.

SETUP RESUME	
Start Sound	Bip
False Start	Beep
>Timeout	4s
▼ >Repeat	4x



SETUP RESUME	
▲False Start	Beep
>Timeout	4s
>Repeat	4x
▼Contacts	N.C.



SETUP RESUME	
▲ >Timeout	4s
>Repeat	4x
Contacts	N.C.
▼Ready	1



SETUP RESUME	
▲ >Repeat	4x
Contacts	N.C.
Ready	1
▼IN1	OFF



SETUP RESUME	
▲Contacts	N.C.
Ready	1
IN1	OFF
▼ >Sound	Bang



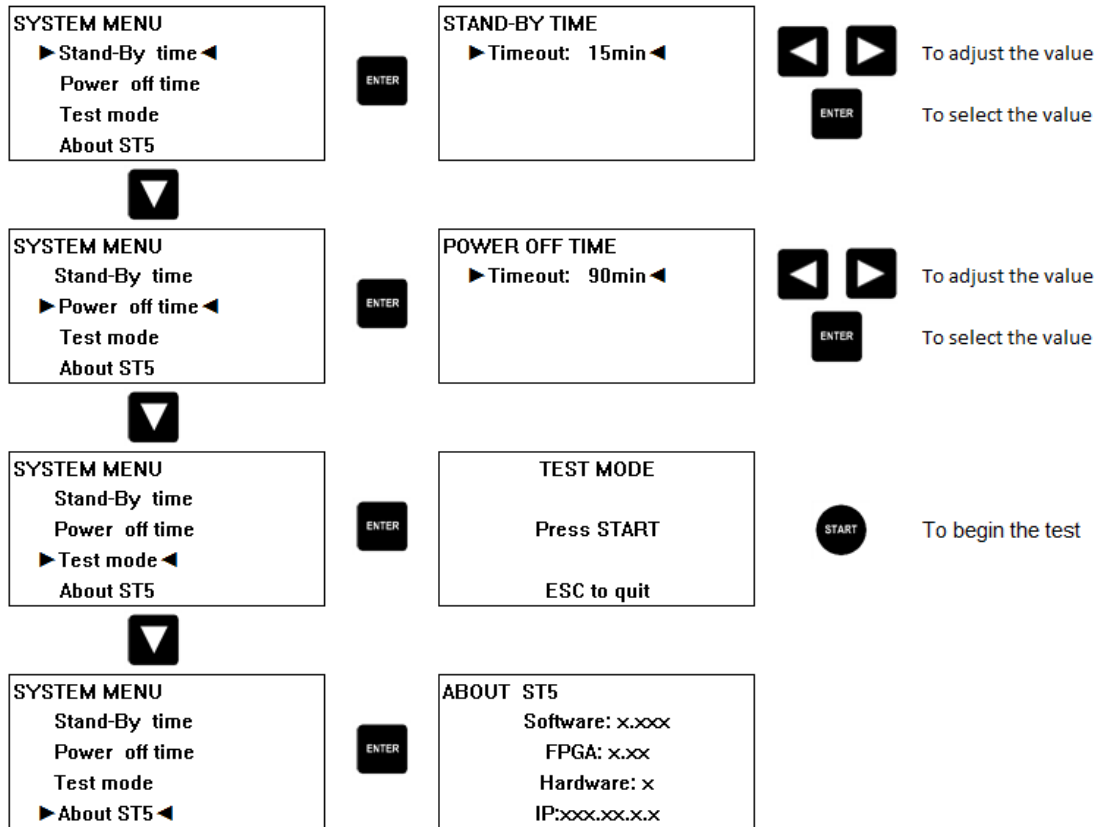
SETUP RESUME	
▲Ready	1
IN1	OFF
>Sound	Bang
▼Stand-By	15m



SETUP RESUME	
▲IN1	OFF
>Sound	Bang
Stand-By	15m
Power Off	90m

3.3.5 System menu

Allows to set the basic settings of the device.



3.3.6 Factory settings


Setup	Description	Protected Setup			CUS
		AT	SW	SS	
1	Start Sound:	BANG	BIP	BANG	
2	False Start Sound:	BANG	BEEP	WHISTLE	
3	False Start Timeout:	4 Sec.	4 Sec.	19 Sec.	
4	False Start Repeat:	1x	4x	1x	
5	Contacts:	N.C.	N.C.	N.O.	
6	Ready:	1	1	1	
7	IN1:	OFF	OFF	OFF	
8	IN1 Sound:	BANG	BANG	BANG	
9	Stand-By:	15 Min	15 Min	15 Min	
10	Power OFF:	90 Min	90 Min	90 Min	





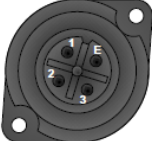
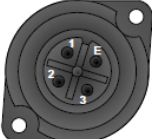


If setup is modified in AT, SS or SW, configurations sport selection is automatically changed to CUS and Setup values are transferred.

4 ELECTRICAL PROPERTIES

4.1 Power supply

Use only the original charger supplied by  **SWISS TIMING**. If you do not use the original charger, it may destroy the battery, cause damage to the unit, and possibly cause personal injury due to fire or/and electrical shock.

4.2 Connectors pinning

Description	Connector type (Front view)	Pin	Pin description
E-GUN / MICRO <i>This input allows the connection of the @-GUN or Start & Microphone unit (SMU). The StartTime V detects automatically which device is connected.</i>		A	Negative line of RS485
		B	Positive line of RS485
		C	Control signal of the flash positive side
		D	Control signal of the flash negative side
		E	Power supply +12VDC
		F	GND (Power)
		G	Audio line -
		H	Audio line +
		J	Actually not used
		K	Actually not used
		START <i>This connector is used to transmit the start pulse or to receive the ready signal.</i>	
2	Start output, positive side		
3	Start output, negative side		
E	Ready input, positive side		
FLASH <i>This output can be used to control an external flash. The connector is divided in two parts, a power supply and a control signal.</i>			
		2	Control signal of the external flash positive side
		3	Control signal of the external flash negative side
		E	GND (Power)
SPEAKER <i>This connector is used to transmit the sound signal to an external speaker. The connector is divided in two channels: channel left and right. Each channel has a RMS power of 20W.</i>		1	Left output of the speaker positive side
		2	Left output of the speaker negative side
		3	Right output of the speaker positive side
		E	Right output of the speaker negative side
LINE OUT <i>This XLR connector is used to transmit the sound signal to an external sound system. The external sound system must have a typical impedance of 10kΩ.</i>		1	GND
		2	Balanced line +
		3	Balanced line -
		4	GND (Shield connection, not shown on the figure)
CHARGER <i>This input is used to connect a battery charger. The internal battery is a 12V lead battery, 7Ah.</i>		1	Positive terminal of the charger
		2	Not connected
		3	GND

5 PROPERTIES

5.1 Specifications StartTime V

Dimensions (LxWxH):	395 x 192 x 160 mm with connectors
Weight:	5.8kg
Power supply:	Integrated 12VDC / 7Ah lead-acid battery
Charger:	Included, indoor use only 12VDC / 2Ah
Public address speaker:	Up to 2 x 20W output
Self-discharge time:	12 months if not in use
Battery autonomy:	1000 starts (with the devise in Stand-Alone without @-GUN)
Relative humidity:	(20%-80%) without condensation
Working temperature:	-10°C to +50°C
Storage temperature:	-20°C to +70°C
Protection class:	IP43
Certifications:	CE and RoHS compliant

5.2 Specifications @-GUN

Dimensions (LxWxH):	280 x 35 x 140 mm
Weight:	820g (with cable)
Cable length:	7 m
Power supply:	DC input, 7-18VDC
Flash duration:	0.1s
Flash visibility:	Sun visible >200m
Flash Viewing angle:	360° horizontal, 90° vertical
Working temperature:	-10°C to +50°C
Storage temperature:	-20°C to +70°C
Protection class:	IP64
Certifications:	CE and RoHS compliant

5.3 Specifications Start & Microphone unit (SMU)

Dimensions (LxWxH):	118 x 25 x 80 mm w/o buttons
Weight:	650g (with cable)
Cable length:	7m
Working temperature:	-10°C to +50°C
Storage temperature:	-20°C to +70°C
Protection class:	IP43
Certifications:	CE and RoHS compliant

6 OPTIONS

6.1 Auxiliary flash

Optical signalling device for the start connected directly to the *StartTime V*, it can be positioned to one's liking near the deaf athlete.

3481.951.25 OMEGA FLASH Start

6.2 External loudspeaker

External loudspeaker for the start connected directly to the *StartTime V*, it can be positioned to one's liking near the athletes for better sound.

3399.933.06	Set of 3 mobile loudspeakers with 6m cables
3399.940.03	Set of 10 mobile loudspeakers with 3m cables
3399.938.03	Set of 8 mobile loudspeakers with 3m cables
3399.936.03	Set of 6 mobile loudspeakers with 3m cables
3399.935.06	Set of 5 mobile loudspeakers with 6m cables
3399.935.03	Set of 5 mobile loudspeakers with 3m cables
3399.934.06	Set of 4 mobile loudspeakers with 6m cables
3399.934.03	Set of 4 mobile loudspeakers with 3m cables
3399.930	Mobile loudspeakers with cable for deckplate (5m)

7 MAINTENANCE AND PROTECTION

7.1 Fuses

F1 = FUSE FAST 125VAC, 125VDC 10A SMD

F2 = SPARE FUSE FOR F1

F3 = FUSE SLOW 125VAC, 125VDC, 5A, SMD



F4 = SPARE FUSE FOR F2



8 APPENDIX

8.1 Abbreviations and symbols

Abbreviations	
STV	<i>StartTime V</i>
SMU	Start & Microphone unit
CUS	Custom
AT	Athletics
AQ	Aquatics
SS	Speed Skating
SW	Swimming
TIMER	Quantum, ARES

Symbols	
@-GUN	Electronic gun
	Microphone
	Headset

8.2 Version history

Version	Date	Modifications since last version
1.0	14/07/15	Initial version

NOTES

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