# @-GUN & StartTime V – ELECTRONIC START SYSTEM

## USER'S MANUAL

**3481.560.02 l Version 1.2 l March 2018**

**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 possible 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.

**Documentation Updates**

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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.

## TABLE OF CONTENTS

# 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 Wireless Recaller (optional).

## 1.2 StartTime V 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 StartTime V 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 StartTime V Recaller with @-GUN

1x Electronic Start System *StartTime V with Recaller* (3481.773)
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)

## 1.5 Wireless Recaller

1x Wireless Recaller (3481.705)
1x Charger 5x USB (9051.6084)
1x Cable USB Type A – Micro USB Type B 1m (9051.1344)
1x Transportation case (9072.6001)

## 1.6 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) |
| **ANTENNA** | Antenna for Wireless Recaller (optional) |

| Key | Description |
|---|---|
| ⏻ | Power ON (>5 sec.) and Power OFF (>3 sec.) |
| MANUAL READY | Allows field starter to force READY from control room |
| START | 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 |
| MENU | Key to enter in the menu or setup |
| ENTER | Key to select value in the menu or setup |
| ESC | Key to go back in the menu or setup |

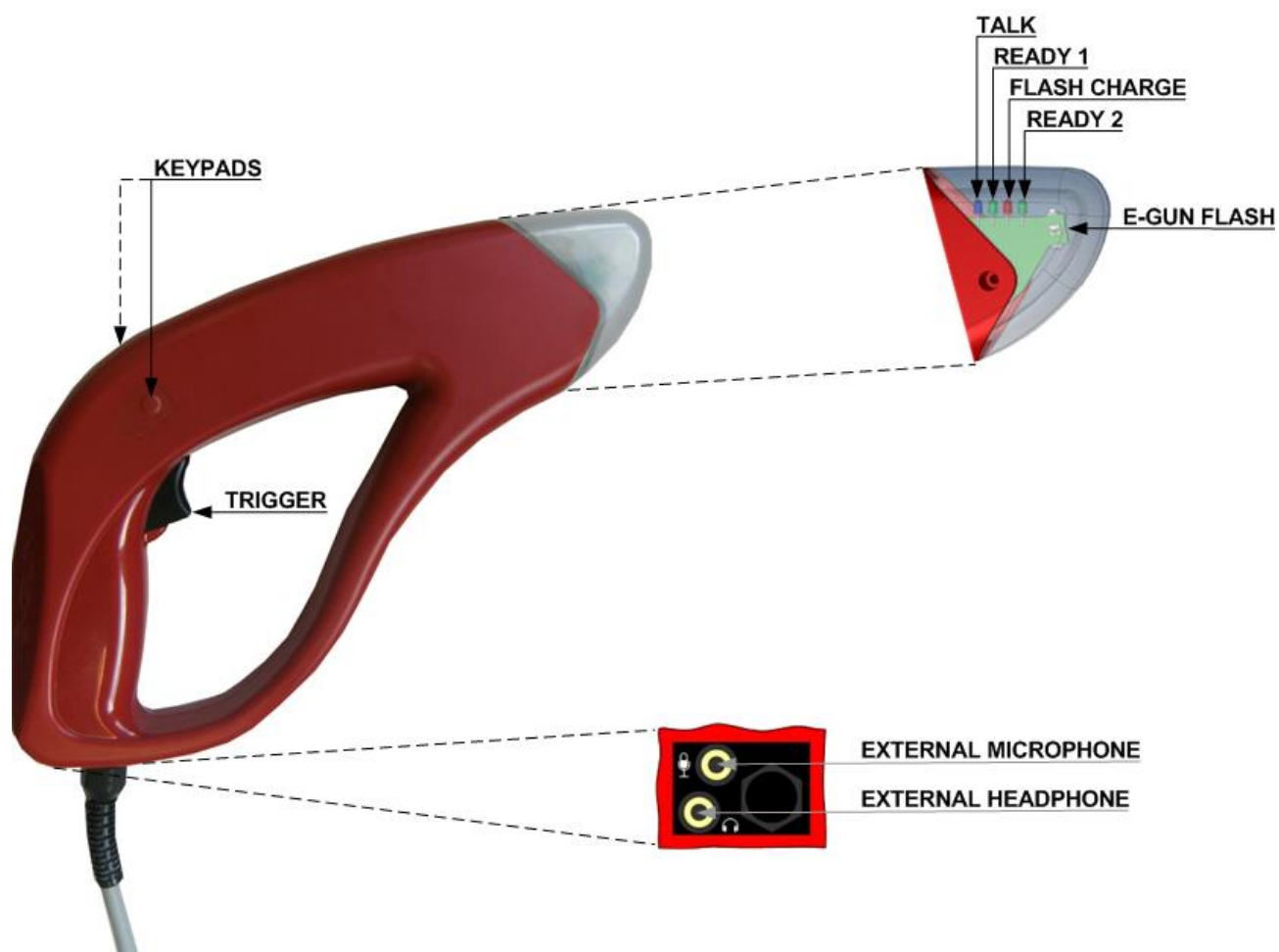| LED | Description |
|---|---|
| ● — ON --- CHARGING  ● --- LOW BATT | Green LED light up for *StartTime V* power ON status. Green LED blinking during battery charging. Red LED blinking to notify low battery. |

## 1.7 Rear panel and cover



| Item | Description |
|------|-------------|
| **A** | Internal flash |
| **B** | Internal speaker |
| **C** | Handle |
| **D** | Antenna for Wireless Recaller (optional) |

## 1.8 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 |

## 1.9   @-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 |

## 1.10  Wireless Recaller
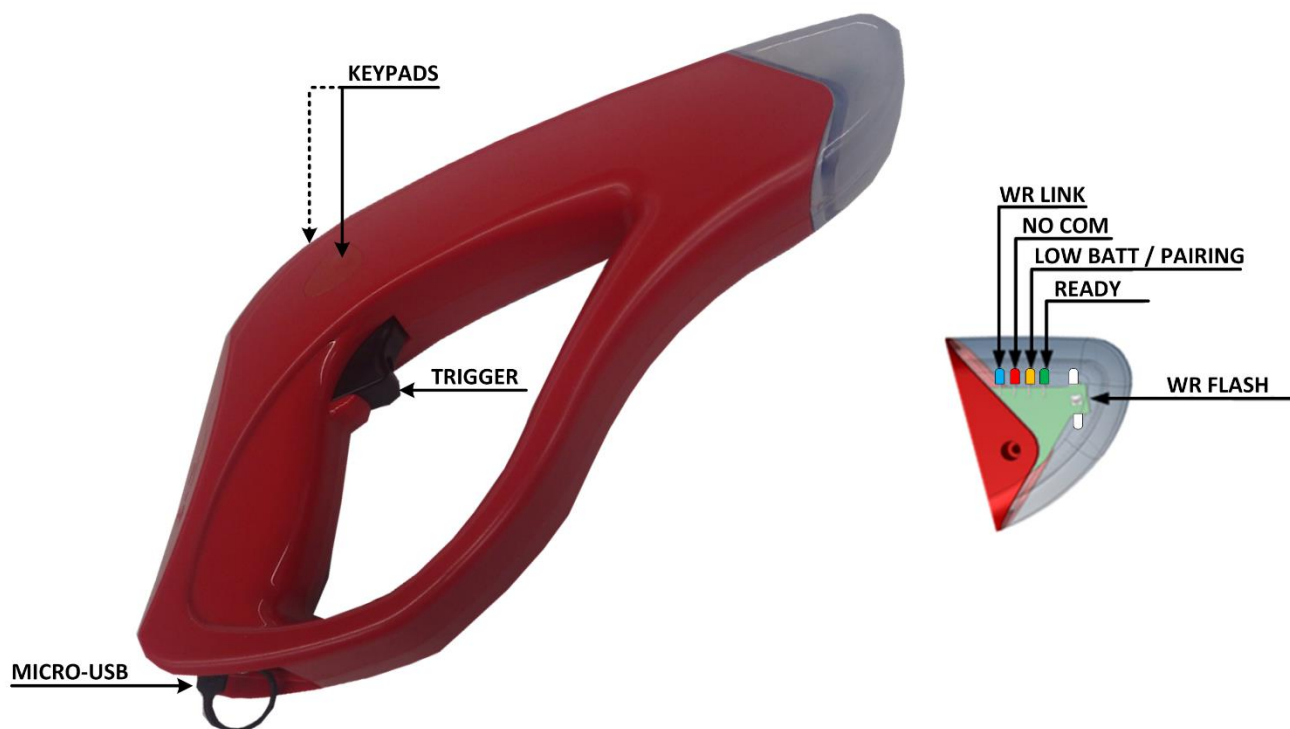


| LED / Key | Description |
|-----------|-------------|
| **WR LINK** | ((🔵)) → Wireless connection with STV |
| **NO COM** | ((🔴)) → No wireless communication with STV |
| **PAIRING** | 🟡 → Waiting for pairing |
| **CHARGING** | (🟡) → Battery is charging |
| **LOW BATT** | ((🟡)) → Battery level is low |
| **READY** | 🟢 → Main timing device is ready |
| **KEYPADS** | Allows judge to : |
| | 🔴 1x (~5s)  Switch off the WR |
| | 🔴 + 🔴 1x (~3s)  Mode PAIRING |
| **TRIGGER** | Power ON and false start |
| | Allows judge to make a recall |

# 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
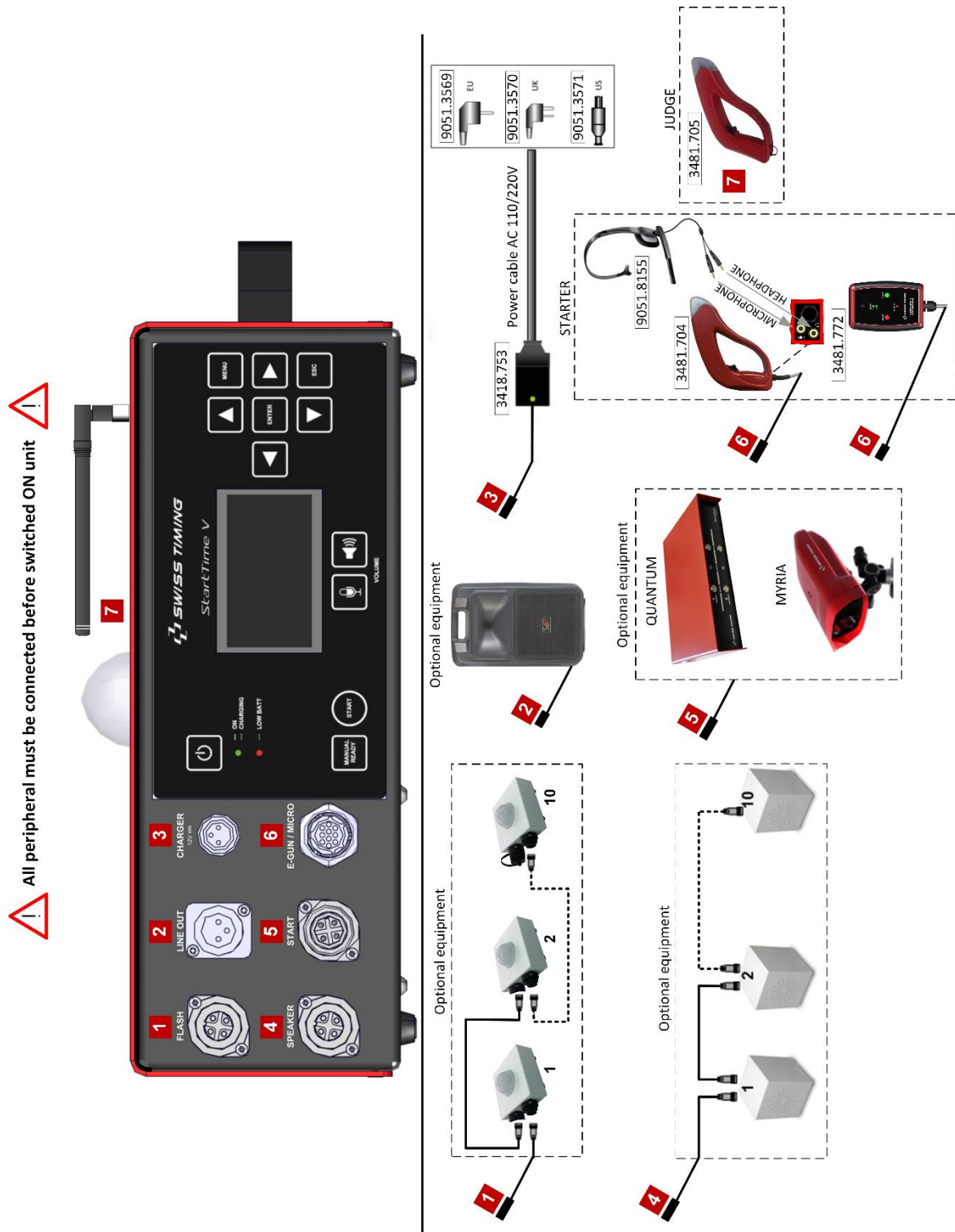
### 2.1.2 External loudspeakers connection

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

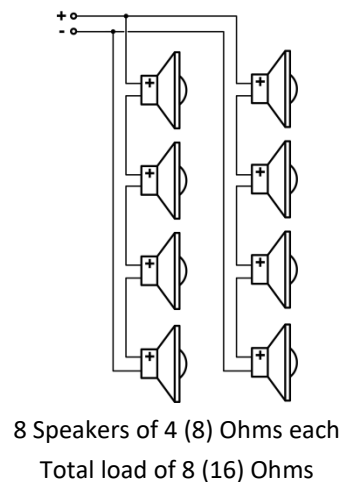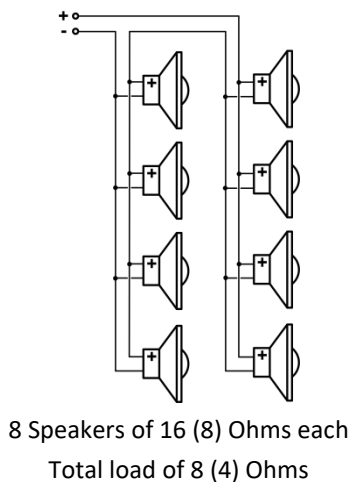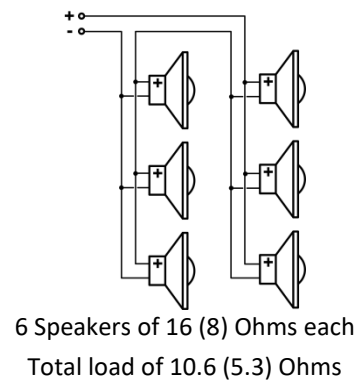It is possible to use a load of 2 Ohms but it will result in increased distortion and loss of output power.
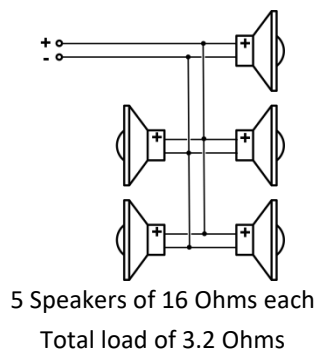
Any combination that gives a total load between 3.2 and 16 Ohms is acceptable.

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)

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.
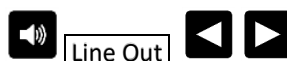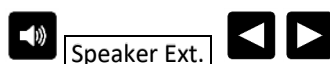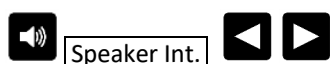
   @-GUN : LEDs are tested.

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

   🔊 [Speaker Int.] ◀ ▶

   🔊 [Speaker Ext.] ◀ ▶

   🔊 [Headset] ◀ ▶

   🔊 [Line Out] ◀ ▶

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

   🎤 [Microphone] ◀ ▶
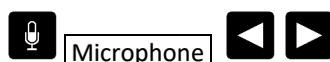
7. Check if **READY** signal green LED on @-GUN or SMU is ON.

8. Check if **EXTERNAL READY** is written on the *StartTime V* display.

9. Press the **TRIGGER** (@-GUN) or **START** (SMU) button.

10. 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 [MENU] [Setup] [ENTER] [False Start Setup] [Timeout] ◀ ▶ .

    Repeat can be adjusted on the main unit in [MENU] [Setup] [ENTER] [False Start Setup] [Repeat] ◀ ▶ .

    False Start Sound can be adjusted on the main unit in [MENU] [Setup] [ENTER] [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

   🔊 Speaker Int. ◀ ▶
   🔊 Speaker Ext. ◀ ▶
   🔊 Headset ◀ ▶
   🔊 Line Out ◀
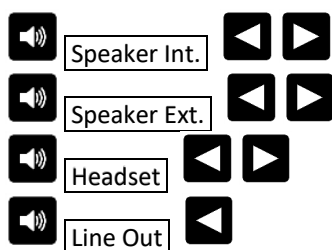
5. Press the MANUAL READY key before start and check if **MANUAL READY** is written on the *StartTime V* display.

6. Press the START key for the start.

7. If a false start is to be announced, press the START key again within time selected in False Start Setup Timeout

   Timeout can be adjusted on the main unit in MENU Setup ENTER False Start Setup Timeout ◀ ▶ .

   Repeat can be adjusted on the main unit in MENU Setup ENTER False Start Setup Repeat ◀ ▶ .

   False Start Sound can be adjusted on the main unit in MENU Setup ENTER 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 Recaller operation

⚠ **The StartTime V must be equipped with Recaller module in order to use this feature**

It is possible to use the *StartTime V* with wireless recaller (*WR*).

1. Connect ℮-**GUN** to **E-GUN/MICRO**

2. Turn the unit ON by pressing the ⏻ key (5sec.).

   ℮-**GUN** : LEDs are tested.

3. Select sport (Athletics, Speed Skating or Custom).

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

4. Switch on the WR by pressing the **TRIGGER** button (red LED flashes).

   *If pairing is necessary (first use), please follow chapter 4a to 4d.*

   a. Go to STV [MENU] [Wireless Recaller] [ENTER] [Pair] [ENTER] .

   b. Keep pressing both keypads on WR ( 🔴 + 🔴 ) for 3 seconds (orange LED switch on).

   c. Press [ENTER] , the message "*eGun paired…*" appears on *StartTime V* and blue LED flashes on *WR*.
   d. If you have more Wireless Recallers to pair, repeat the pairing procedure *4a to 4d*.

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

   🔊 [Speaker Int.] ◀ ▶

   🔊 [Speaker Ext.] ◀ ▶

   🔊 [Headset] ◀ ▶

   🔊 [Line Out] ◀ ▶
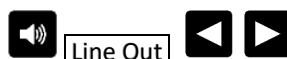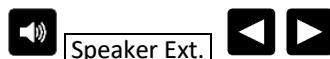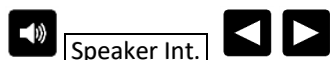
6. Adjust the INPUT VOLUME on the *StartTime V* to an appropriate level 🎤 [Microphone] ◀ ▶

7. Press the [MANUAL READY] key before start and check if **MANUAL READY** is written on the *StartTime V* display.

8. Check if **READY** signal green LED (℮-**GUN** and on **WR**) is ON and press the **TRIGGER** ℮-**GUN** button.

9. One signal should be emitted from the loudspeaker(s).

   If a false start is to be announced, press the **TRIGGER** on ℮-**GUN** or **TRIGGER** on WR button again within time selected in [False Start Setup] [Timeout] .

   Timeout can be adjusted on the main unit in [MENU] [Setup] [ENTER] [False Start Setup] [Timeout] ◀ ▶ .

   Repeat can be adjusted on the main unit in [MENU] [Setup] [ENTER] [False Start Setup] [Repeat] ◀ ▶ .

   False Start Sound can be adjusted on the main unit in [MENU] [Setup] [ENTER] [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 $\boxed{1x}$ to $\boxed{5x}$ . Select $\boxed{\text{False Start Setup}}$ to $\boxed{\text{OFF}}$ if false signal is not used.

### 2.2.4    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. | |

### 2.2.5  Audio levels

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

| | | |
|---|---|---|
| 🔊 Speaker Int. ◀ ▶ | Level of internal loudspeaker | |
| 🔊 Speaker Ext. ◀ ▶ | Level of external loudspeakers | |
| 🔊 Headset ◀ ▶ | Level of @-GUN headset | |
| 🔊 Line Out ◀ ▶ | Level of LINE OUT | |
| 🎤 Microphone ◀ ▶ | Level of microphone (SMU unit or Headset micro) | |

### 2.2.6  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 [MENU] button.
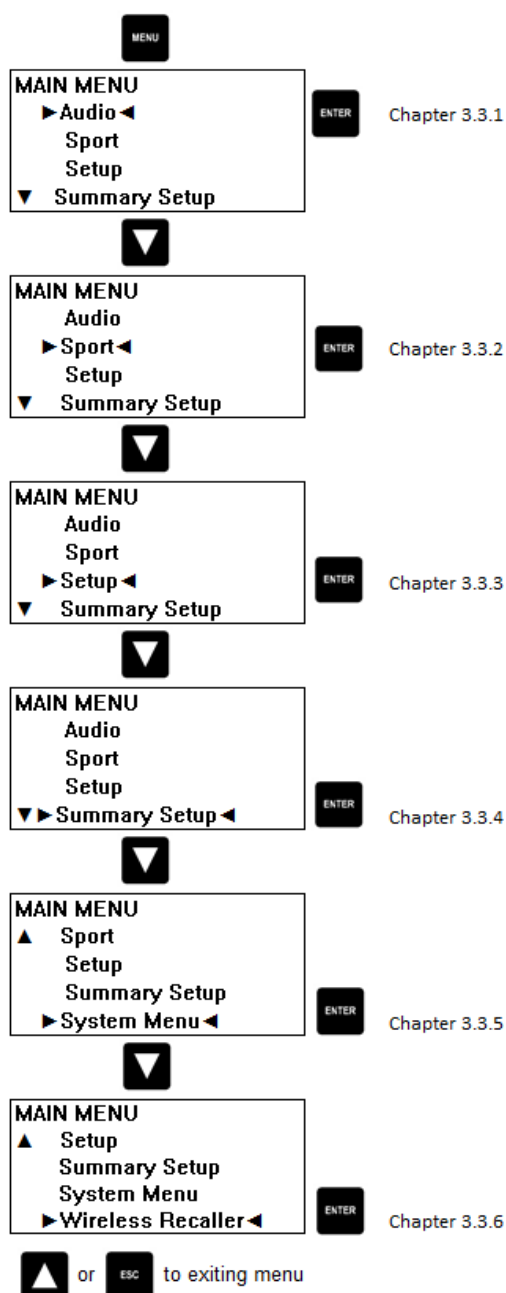


⚠ **The menu Wireless Recaller appears only if the STV is equipped with Recaller module**

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## 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:

| | |
|---|---|
| MENU | To enter and exit the setup menu |
| ▲ / ▼ | To move from one to another setup |
| ENTER | To select value in the setup menu |
| ESC | 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.
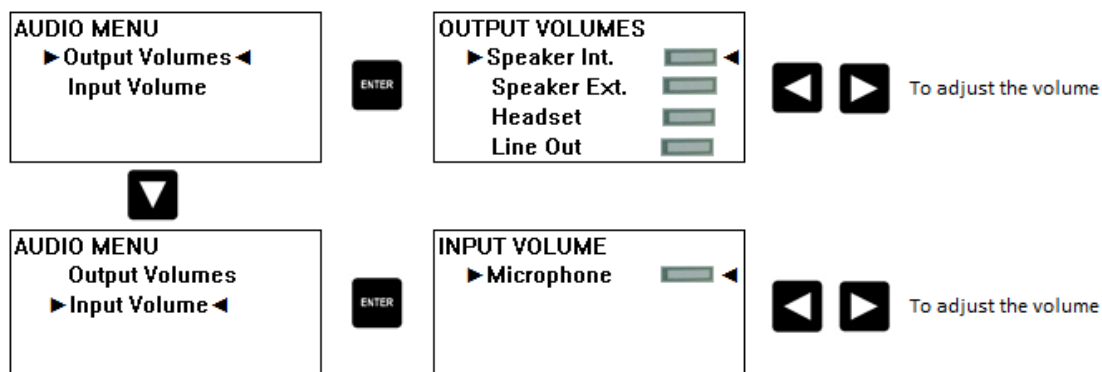


### 3.3.2 Sport configuration menu

Allows to change selected sport configuration.
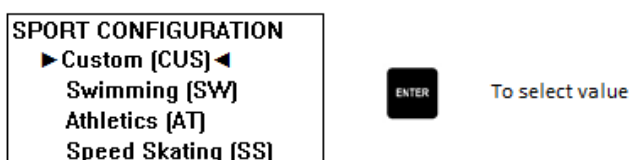
### 3.3.3 Setup menu

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

```
SETUP MENU                                START SOUND
  ►Start Sound◄             ENTER           ►0:Bang◄              ▶        To play the sound
    False Start Sound                         1:Beep
    False Start Setup                         2:Bip
  ▼  Start Contact                          ▼  3:Whistle

        ▼

SETUP MENU                                FALSE START SOUND
    Start Sound                             ►0:Bang◄              ▶        To play the sound
  ►False Start Sound◄        ENTER            1:Beep
    False Start Setup                         2:Bip
  ▼  Start Contact                          ▼  3:Whistle

        ▼

SETUP MENU                                FALSE START SETUP
    Start Sound                             ►Timeout: 4sec◄      ◄ ▶      To adjust the value
    False Start Sound         ENTER            Repeat: 4x
  ►False Start Setup◄
  ▼  Start Contact

        ▼

SETUP MENU                                START CONTACT
    Start Sound                             ►N.C. (Norm. Close)◄  ENTER   To select value
    False Start Sound         ENTER           N.O. (Norm. Open)
    False Start Setup
  ▼►Start Contact◄

        ▼

SETUP MENU                                READY SETUP
  ▲  False Start Sound                      ►READY 1◄            ENTER    To select value
    False Start Setup         ENTER            READY 1 + READY 2
    Start Contact                              AUTO READY
  ▼►Ready◄

        ▼

SETUP MENU                                IN1 SETTINGS
  ▲  False Start Setup                      ►Play Sound: OFF◄    ◄ ▶      To adjust the value
    Start Contact            ENTER             Sound 0: Bang
    Ready
  ►IN1 Settings◄
```

### 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.

| SYSTEM MENU | | STAND-BY TIME | | |
| --- | --- | --- | --- | --- |
| ►Stand-By time◄ | ENTER | ►Timeout: 15min◄ | ◄ ► | To adjust the value |
| Power off time | | | ENTER | To select the value |
| Test mode | | | | |
| About ST5 | | | | |

| SYSTEM MENU | | POWER OFF TIME | | |
| --- | --- | --- | --- | --- |
| Stand-By time | ENTER | ►Timeout: 90min◄ | ◄ ► | To adjust the value |
| ►Power off time◄ | | | ENTER | To select the value |
| Test mode | | | | |
| About ST5 | | | | |

| SYSTEM MENU | | TEST MODE | | |
| --- | --- | --- | --- | --- |
| Stand-By time | ENTER | Press START | START | To begin the test |
| Power off time | | | | |
| ►Test mode◄ | | ESC to quit | | |
| About ST5 | | | | |

| SYSTEM MENU | | ABOUT ST5 |
| --- | --- | --- |
| Stand-By time | ENTER | Software: x.xxx |
| Power off time | | FPGA: x.xx |
| Test mode | | Hardware: x |
| ►About ST5◄ | | IP:xxx.xx.x.x |

### 3.3.6 Wireless Recaller menu

⚠ **This menu appears only if the STV is equipped with Recaller module**

Allows to set the basic settings of the device.



### 3.3.7 Factory settings

| Setup | Description | Protected Setup | | | CUS |
| --- | --- | --- | --- | --- | --- |
| | | **AT** | **SW** | **SS** | |
| 1 | Start Sound: | BANG | BIP | BANG | |
| 2 | False Start Sound: | BANG | OFF | WHISTLE | |
| 3 | False Start Timeout: | 4 Sec. | NO | 19 Sec. | |
| 4 | False Start Repeat: | 1x | OFF | 1x | |
| 5 | Contacts: | N.O. | N.O. | N.O. | |
| 6 | Ready: | 1 | 1 | 1 | |
| 7 | IN1: | OFF | OFF | OFF | |
| 8 | IN1 Sound: | - | - | - | |
| 9 | Stand-By: | OFF | OFF | OFF | |
| 10 | Power OFF: | 90 Min | 90 Min | 90 Min | |
| | | **Wireless Recaller Setup** | | | |
| 1 | Radio Frequency | EMEA : 868 MHz | | EMEA : 868 MHz | |
| 2 | Power Off Time | 30 Min | | 30 Min | |

⚠ ⚠ **If setup is modified in AT, SS or SW, configurations sport selection is automatically changed to CUS and Setup values are transferred, excepted for Setup 9 & 10.**

# 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

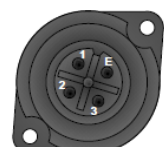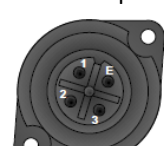| Description | Connector type (Front view) | Pin | Pin description |
|---|---|---|---|
| **E-GUN / MICRO** *This input allows the connection of the @-GUN or Start & Microphone unit (SMU). The StartTime V detects automatically which device is connected.* | UTS 10pFT | A | Negative line of RS485 |
| | | 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** *This connector is used to transmit the start pulse or to receive the ready signal.* | TUCHEL 4pMT | 1 | Ready input, negative side |
| | | 2 | Start output, positive side |
| | | 3 | Start output, negative side |
| | | E | Ready input, positive side |
| **FLASH** *This output can be used to control an external flash. The connector is divided in two parts, a power supply and a control signal.* | TUCHEL 4pFT | 1 | Power supply output (+12VDC) |
| | | 2 | Control signal of the external flash positive side |
| | | 3 | Control signal of the external flash negative side |
| | | E | GND (Power) |
| **SPEAKER** *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.* | TUCHEL 4pFT | 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** *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 10k$\Omega$.* | XLR 3pMT | 1 | GND |
| | | 2 | Balanced line + |
| | | 3 | Balanced line - |
| | | 4 | GND (Shield connection, not shown on the figure) |
| **CHARGER** *This input is used to connect a battery charger. The internal battery is a 12V lead battery, 7Ah.* | DIN 3pMT | 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 device 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 |

## 5.4 Specifications Wireless Recaller

| | |
|---|---|
| **Dimensions (LxWxH):** | 280 x 35 x 140 mm |
| **Weight:** | 320g |
| **Connection:** | Wireless to StartTime V Recaller |
| **Power supply** | Included battery with micro USB charger |
| **Full recharge time** | ~4h |
| **Battery autonomy** | ~10h |
| **Operating temperature:** | -10°C to +50°C |
| **Storage temperature:** | -20°C to +70°C |
| **Protection class:** | IP64 |
| **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 | *StartTime V* |
| SMU | Start & Microphone unit |
| CUS | Custom |
| AT | Athletics |
| AQ | Aquatics |
| SS | Speed Skating |
| SW | Swimming |
| TIMER | Quantum |
| WR | Wireless Recaller |

| Symbols | |
|---|---|
| @-GUN | Electronic gun |
| 🎤 | Microphone |
| 🎧 | Headset |

## 8.2 Version history

| Version | Date | Modifications since last version |
|---|---|---|
| 1.0 | 14/07/15 | Initial version |
| 1.1 | 08/04/16 | Protected setup modification (AT/SW/SS) |
| 1.2 | 12/03/18 | Wireless Recaller added |

**NOTES**