ALGE-TIMING

Version: E23-11-03

Start Judge

SJ2

Manual

Important Information

General

Before using your ALGE-TIMING device read the complete manual carefully. It is part of the device and contains important information about installation, safety and its intended use. This manual cannot cover all conceivable applications. For further information or in case of problems that are mentioned not at all or not sufficiently detailed, please contact your ALGE-TIMING representative. You can find contact details on our homepage www.alge-timing.com

Safety

Apart from the information of this manual all general safety and accident prevention regulations of the legislator must be taken into account.
The device must only be used by trained persons. The setting-up and installation must only be executed according to the manufacturer's data.
Never adjust the active speaker system to a very high volume. Permanent high volumes may damage your hearing! The human ear will get accustomed to high volumes which do not seem to be that high after some time. Therefore, do not further increase a high volume after getting used to it.

Intended Use

The device must only be used for its intended applications. Technical modifications and any misuse are prohibited because of the risks involved! ALGE-TIMING is not liable for damages that are caused by improper use or incorrect operation.

Power supply

The stated voltage on the type plate must correspond to voltage of the power source. Check all connections and plugs before usage. Damaged connection wires must be replaced immediately by an authorized electrician. The device must only be connected to an electric supply that has been installed by an electrician according to IEC 60364-1. Never touch the mains plug with wet hands! Never touch live parts!

Cleaning

Please clean the outside of the device only with a smooth cloth. Detergents can cause damage. Never submerge in water, never open or clean with wet cloth. The cleaning must not be carried out by hose or high-pressure (risk of short circuits or other damage).

Liability Limitations

All technical information, data and information for installation and operation correspond to the latest status at time of printing and are made in all conscience considering our past experience and knowledge. Information, pictures and description do not entitle to base any claims. The manufacturer is not liable for damage due to failure to observe the manual, improper use, incorrect repairs, technical modifications, use of unauthorized spare parts. Translations are made in all conscience. We assume no liability for translation mistakes, even if the translation is carried out by us or on our behalf.

Disposal

If a label is placed on the device showing a crossed-out dustbin on wheels (see drawing), the European directive 2002/96/EG applies for this device.
Please get informed about the applicable regulations for separate collection of electrical and electronical waste in your country and do not dispose of the old devices as household waste. Correct disposal of old equipment protects the environment and humans against negative consequences!

Table of contents

1 Control Elements

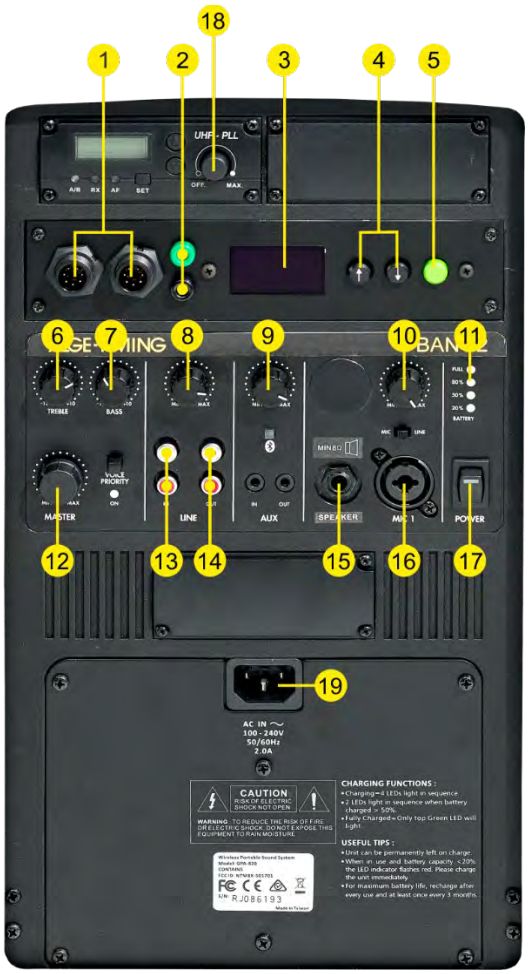
1.1 Control Elements of the Start Judge Controller SJC2

A ..... ON / OFF..... on/off switch
B ..... AUX IN ..... speaker in (cinch)
C ..... BANG/SU3 ..... socket to connect the cable 199-xx to Start Unit SU3 or BANG2
D ..... C0 / GND..... banana socket to connect start cable to timing device
E ..... POWER..... green LED shines when SJ2 is switched on
F..... CHARGE..... yellow LED shines when battery is charging
G ..... LOW BAT ..... red LED shines when battery is low
H ..... AC POWER..... green LED shines when SJ2 is connected to power supply (90 – 240 VAC)
I..... ..... power supply socket 85 – 264 VAC / 47 – 63 Hz
J..... FUSE..... fuse with T3, 15 A

1.2 Control Elements of Start Judge Sensors SJS2

a ..... data cable in
b ..... data cable out
c ..... rotation switch for radio team
d ..... on/off switch, numbering in wireless mode
e ..... LED indicator for battery
WTN-Operation (battery use):
green blinking ..... battery full
orange blinking ..... battery empty soon
red blinking ..... battery almost empty
Charging Battery:
green blinking ..... battery fully loaded
orange blinking ..... charging battery
f ..... LED indicator for radio reception
red blinking .....very bad radio reception
orange blinking .....bad radio reception
green blinking .....good radio reception
red.....no other radio device found

1.3 Control Elements of the BANG2



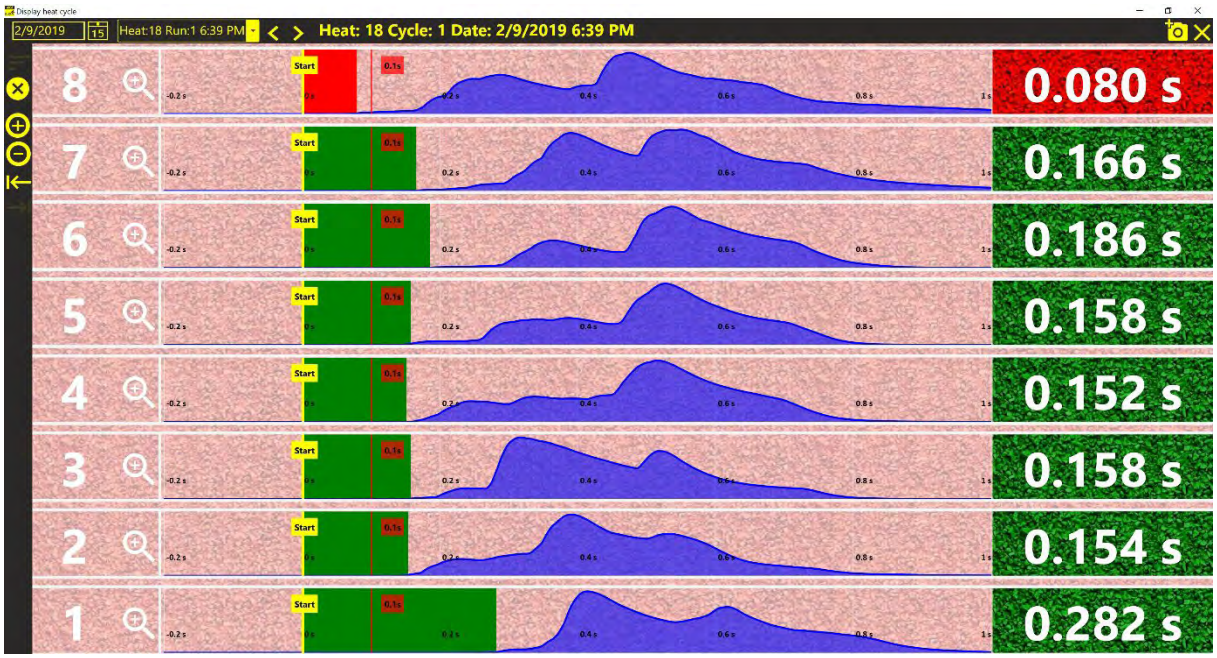
1 ..... 2 x LTW-socket for connection of timing and/or further speaker systems, e.g. BANG2, Start Unit SU2 or SU3, FLASH XL, SJ2, TM-SWIM
2 ..... banana socket (green – black) for start line to timing device (NOC, Open Collector)
3 ..... OLED display for status and settings
4 ..... navigation buttons (arrow buttons) for navigating the menu
5 ..... menu and confirmation button
6 ..... tone control TREBLE
7 ..... tone control BASS for mix signal
8 ..... volume control for LINE IN
9 ..... volume control for AUX
10 ..... volume control for microphone at input MIC IN (16)
11 ..... charging status of battery
12 ..... controller MASTER for total volume of active box
13 ..... input LINE IN (Cinch sockets) for stereo audio source with line output level, e.g. CD player
14 ..... input LINE OUT
15 ..... 6.3 mm jack socket for BANG-SPK
16 ..... input MIC IN (combination socket 6.3 mm jack/XLR, sym.) for connecting microphone
17 ..... on/off switch
18 ..... on/off switch for radio headset
19 ..... connection from mains cable (100 – 240 VAC, 50/60 Hz)

Note: Indicators/switches not described are irrelevant for timing.

2 General

The Start Judge SJ2 is a false start system for track & field to monitor the start of running competitions of up to 400 m.

The false start system works ideally in cooperation with the starter team and supports the starter team. Therefore, it is important to read the part of the manual that explains the output of the SJ2 and how to read the athletes' starting curves.



The Start Judge SJ2 consists of a Start Judge transport cart SJT2 with integrated controller and battery. The transport cart can store the complete system. The sensors SJS2 are mounted onto each starting block. The integrated loud speaker system enables the starter to give commands to the athletes. The starting tone (simulated start shot) is released through the speaker integrated in the start sensors and the BANG2. Thus, all athletes can hear the start tone at the exact same time.

With a radio push button WTN-PB you can move around and still trigger a false start at any time.

Systems are available in two versions: cable or radio.

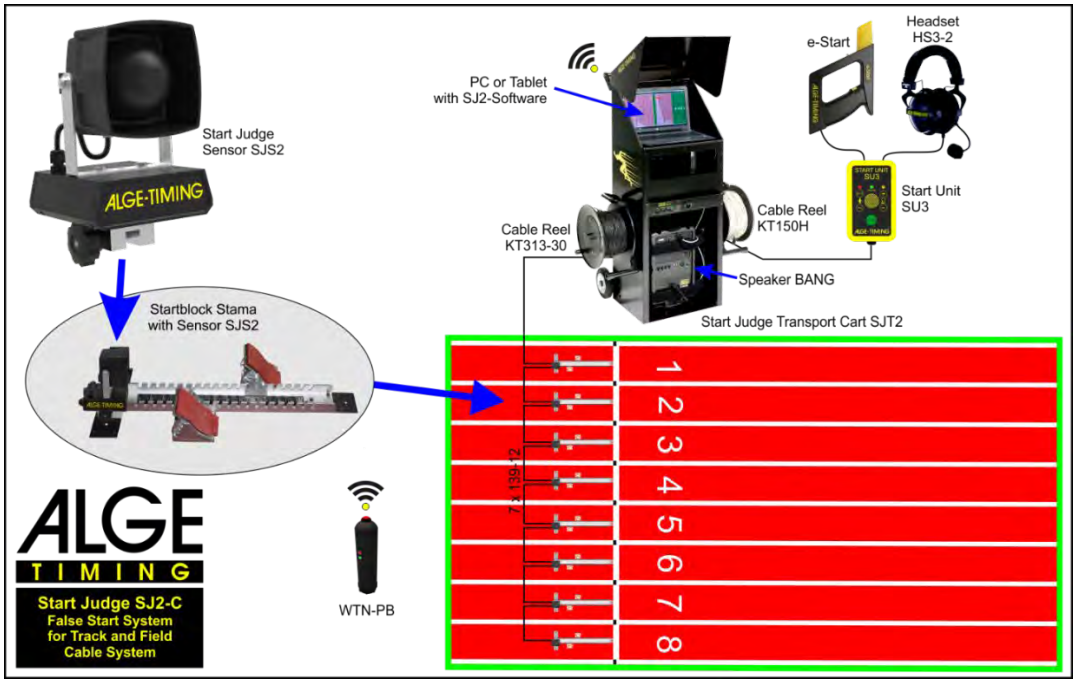
Attention:

If you operate the false start sensors SJS2 with radio (WTN), you also have to transmit the starting signal by radio (WTN). A wired start system would delay the false start sensor SJS2 by 0.1 seconds.

3 False Start System SJ2

The false start system SJ2 is designed to be operated by cable or radio. However, some of the cable system's components are different from the ones of the radio system. If you want to be able to work both with cable and with radio, you have to buy the missing components from the other system. Additional you can use the false start system as well for training.

3.1 Setup of the False Start System with Cable SJ2-C



3.1.1 Start Judge Controller System built into Transport Cart

The transport cart contains all necessary equipment for the cable version of the false start system consisting of:

1 x Start Judge transport cart SJT2 with integrated controller and battery
1 x electronic start gun e-Start
1 x Start Unit SU3
1 x headset HS3-2
1 x speaker system BANG2
1 x radio push button WTN-PB
1 x cable 199-20
1 x cable reel KT150H with 150 m cable
1 x cable reel KT313-30 with 30 m cable from SJT2 to SJS2
1 x start cable 000-01

Notebook or tablet for controlling the system is not included. You can acquire this yourself or order it from ALGE-TIMING. The notebook and tablet have to have a USB interface and Windows 10 must be installed.

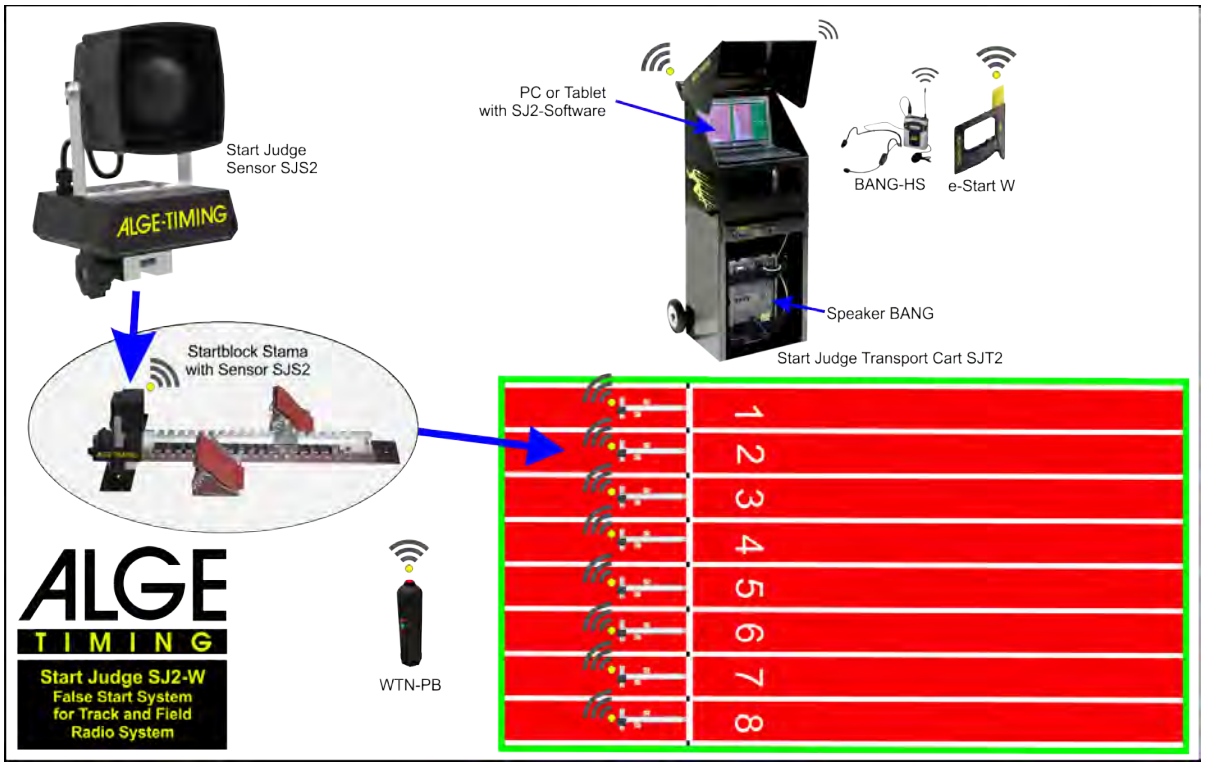
3.1.2 Lane Depending Start Judge Accessory

The quantities given below are minimum numbers for an 8 lanes track and field facility. We recommend at least one spare Start Judge Sensor SJS2 and connecting cable 139-12.
8 x SJS2 Start Judge Sensor with built-in speaker and sensor
8 x STAMA Olympic starting block for track and field (IAAF approved)
7 x 139-12 connection cable from SJS2 to SJS2 (12 m)

In addition to the standard cables above, we also offer the following cables:
- 139-02 connection cable from SJS2 to SJS2 (2 m)
- 139-02P connection cable from SJS2 to SJS2 (2 m) with protection hose
- 139-12P connection cable from SJS2 to SJS2 (12 m) with protection hose

The cables with protective hose have an additional plastic hose coating to protect the cables from being damaged by the spikes of the runners.

3.2 Components of False Start System with Radio SJ2-W



3.2.1 Start Judge Controller System with Transport Cart

The transport cart contains all necessary equipment for the wireless version of the false start system consisting of:

1 x Start Judge transport cart SJT2 with integrated controller and battery
1 x wireless electronic start gun e-Start W
1 x wireless headset BANG-HS
1 x speaker system BANG2
1 x radio push button WTN-PB
1 x cable 139-02

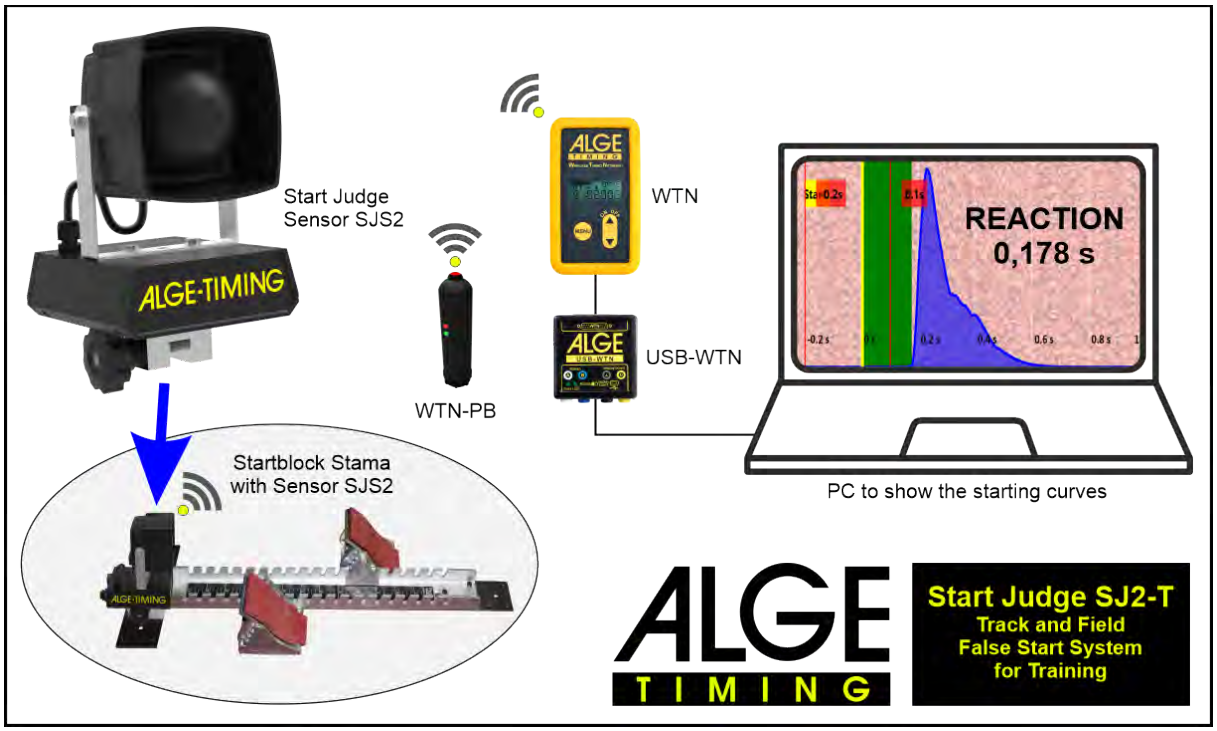
Notebook or tablet for controlling the system is not included. You can acquire this yourself or order it from ALGE-TIMING. The notebook and tablet have to have a USB interface and Windows 10 must be installed.

3.2.2 Lane Depending Start Judge Accessory

The quantities given below are minimum numbers for an 8 lane track and field facility. We recommend at least one spare Start Judge Sensor SJS2 and connecting cable 139-12.

8 x SJS2 Start Judge Sensor with built-in speaker and sensor
8 x STAMA Olympic starting block for track and field (IAAF approved)
7 x 139-12 Connection cable from SJS2 to SJS2 (12 m)

3.3 Components of the Training False Start System SJ2-T



3.3.1 Minimal Configuration Start Judge Trainings System (1 Lane)

1 x wireless electronic start gun e-Start W
1 x radio push button WTN-PB (only necessary for trainings system with “Starter”
1 x cable 139-02
1 x Starting Block STAMA
1 x Adapter USB-WTN Adapter with cable USB-mini and cable 280-03
1 x Power Supply PS24-70

Notebook or tablet for controlling the system is not included. You can acquire this yourself or order it from ALGE-TIMING. The notebook and tablet have to have a USB interface and Windows 10 must be installed.

3.3.2 Lane Depending Start Judge Accessory

The training system can be used for one or more lanes. The example above is given for one lane. Each additional lane needs a start judge sensor, a starting block and a charging cable for the sensor.

1 x SJS2 Start Judge Sensor with built-in speaker and sensor
1 x STAMA Olympic starting block for track and field (IAAF approved)
1 x 139-02 Connection cable from SJS2 to SJS2 (2 m)

4 Charging the Start Judge System SJ2

The complete Start Judge system can be operated independently from the mains with the integrated batteries of the devices.

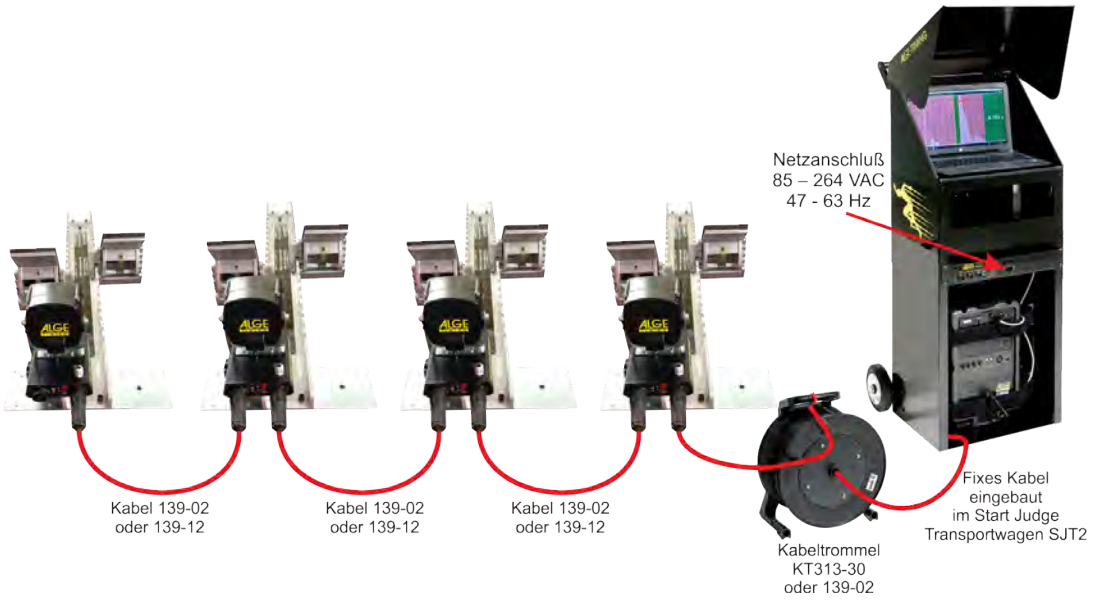
- Start Judge Transport Cart SJT2: lead-acid battery 12 V / 2.9 Ah
- Start Judge Sensor SJS2: 2 x lead-acid battery 6 V / 1.3 Ah
- Speaker BANG: 2 x lead-acid battery 12 / 2.9 Ah

The **charging time** for the full system is **about 8 hours**. All charging circuits have a charging protection. Charging the batteries for more than 8 hours is not harmful. However, we recommend unplugging the devices after full charge.

Charging the Start Judge SJ2 System:

- Connect the Start Judge transport cart to the power supply (85 – 264 VAC / 47 - 63 Hz).

- The green LED „AC-POWER“ lights up.
- The orange LED "CHARGE" lights up as long as the battery is being charged and turns off when the battery is fully charged
- Connect all Start Judge Sensors SJS2 to the controller (in a row as in the picture below).



- The Start Judge Controller SJC2 automatically turns on when connected.
- The left LED of the Start Judge Sensor SJS2 flashes red while charging and green when the battery is full.
- Check whether the mains plug of the SJT2 is connected to the BANG2.
- No device from the Start Judge SJ2 must be switched on for loading.
- All devices are being charged (battery in the SJT2 transport cart, all batteries in the Start Judge SJS2 sensors and the battery of the BANG2).
- The charging time is about 8 hours until all batteries are fully charged.
- After charging, the Start Judge Sensors SJS2 must be switched off (press the red button until the right LED turns off).

Hint: Do not connect more than 10 SJS2s to one SJT2.

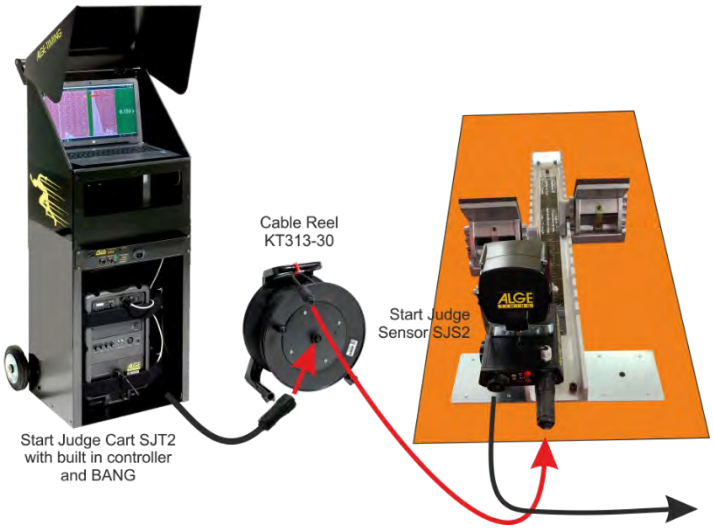
5 Installation of the Start Judge SJ2

5.1 Cable System

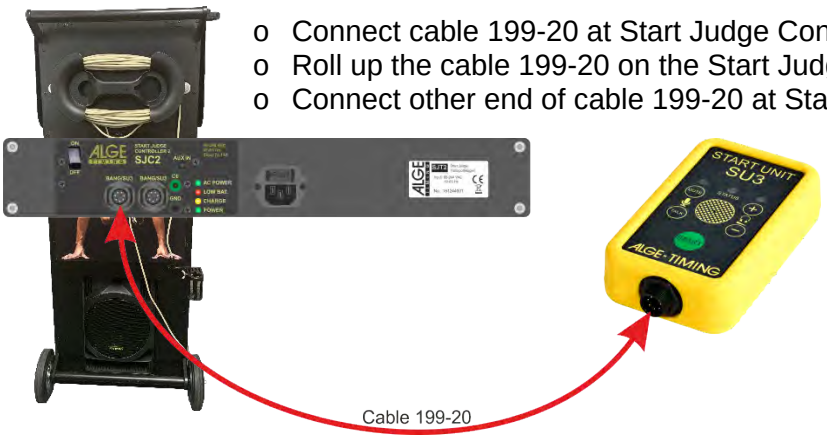
- Distribute starting blocks on the lanes.
- Screw Start Judge Sensor SJS2 onto the starting blocks.
  - o Open fastening screw far enough so that SJS2 fits onto a bridge of the start block.
  - o Secure SJS2 to starting block with rotary handle screw.

- Install cable 139-02 or 139-12 between the Start Judge Controllers.

- Connect Start Judge SJ2 with cable reel KT313-30 to next Start Judge Sensor SJS2



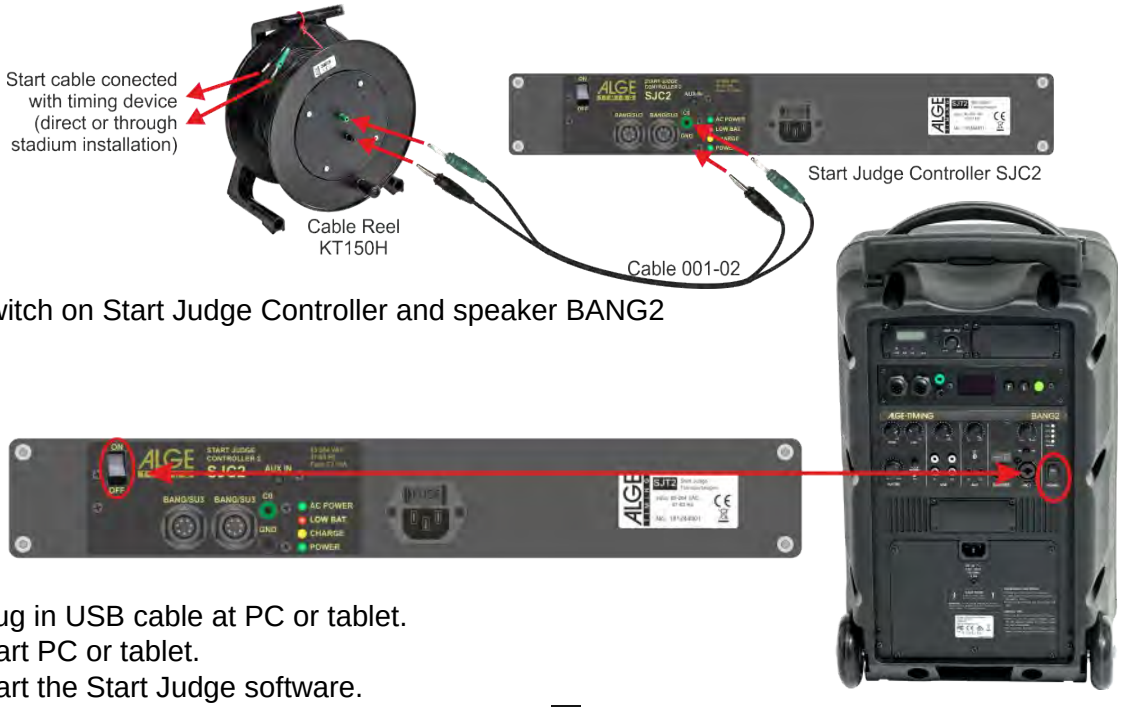
- Connect starting devices and headset.



- o Connect cable 199-20 at Start Judge Controller.
- o Roll up the cable 199-20 on the Start Judge Cart cable holder.
- o Connect other end of cable 199-20 at Start Unit SU3.

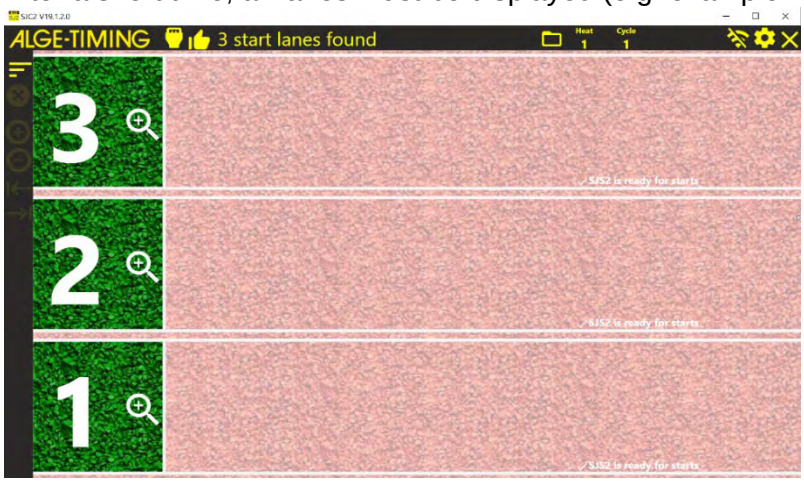
- Connect e-Start and headset (e.g. HS3-2) at Start Unit SU3.

- Connect start line that connects the timing device:
  - Connect cable reel KT150H at Start Judge Controller.
  - Connect cable reel KT150H at timing device (e.g. OPTIc3) or cabling system of the stadium:



- Switch on Start Judge Controller and speaker BANG2

- Plug in USB cable at PC or tablet.
- Start PC or tablet.
- Start the Start Judge software.
- Check if radio mode is switched off (the icon must show).
- After a short time, all lanes must be displayed (e.g. example with 3 lanes).



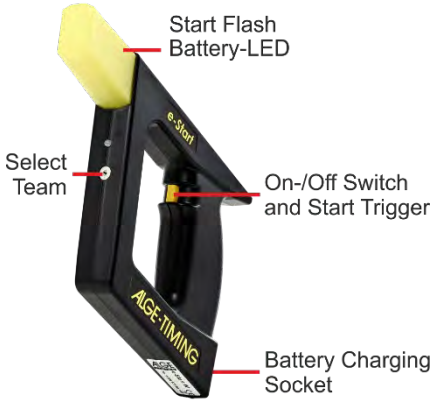
5.2 Radio System WTN

Attention:
If you operate the false start sensors SJS2 with radio (WTN), the starting signal must also be transmitted via radio (WTN). A wired starting system would delay the false start sensor SJS2 by 0.1 seconds.

- Distribute starting blocks on the tracks.
- Screw the Start Judge Sensor SJS2 onto starting blocks.
  - Open fastening screw far enough so that the SJS2 fits onto a bridge of the starting block.
  - Secure SJS2 to the starting block with rotary handle screw.

- Adjust radio team of all Start Judge Sensors SJS2.
  - Switch on all Start Judge Sensors SJS2.
  - Press red push button on Start Judge Sensor SJS2.
  - Both LEDs (battery and radio) must blink green.

- Prepare starting device e-Start W.
  - Adjust radio team.
  - Switch on e-Start W by shortly pressing the yellow trigger.
  - The LED in yellow front part of the e-Start W must blink green.
  - If you have to set the start channel c0 do as follows:
    - Switch on e-Start W by pressing red push button for five seconds until both LEDs blink green.
    - Release red push button – WTN-PB is now adjusted to channel 0 (start).

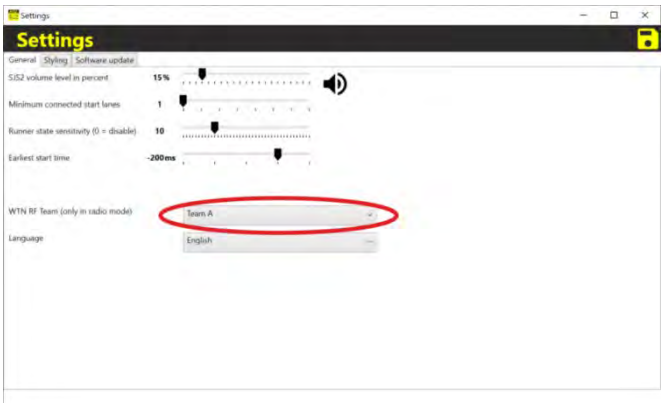


- Prepare false start radio push button WTN-PB.
  - Adjust radio team.
    - Remove battery cover and battery.
    - Adjust radio team with small screw driver.
    - Insert battery and screw on battery cover.

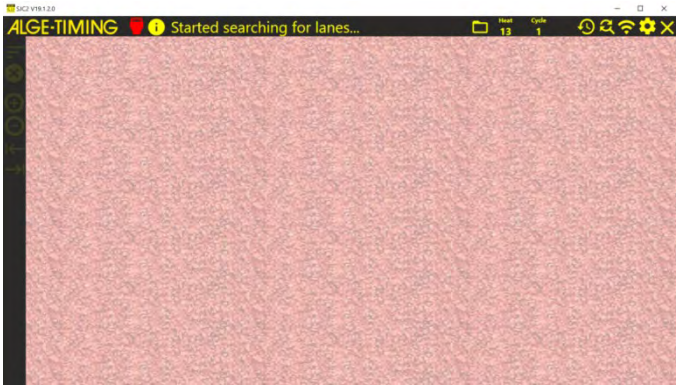
- Prepare BANG-HS and switch it on.

- Switch on Start Judge Controller

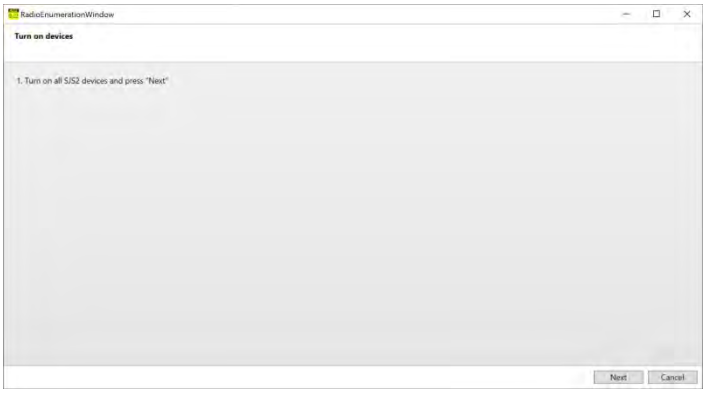
- Switch on speaker BANG2.
- Switch on radio microphone at BANG2.
- Connect USB cable to PC or tablet.
- Start PC or tablet.
- Start the SJ2 software.
- Check, if radio mode is switched on (icon must show).
- Check the radio team of the Start Judge Controller.
  - o Click on icon
  - o In the general setting the adjusted team is shown.
  - o Adjust the same team as for the Start Judge Sensors SJS2, e-Start W and WTN-PB.



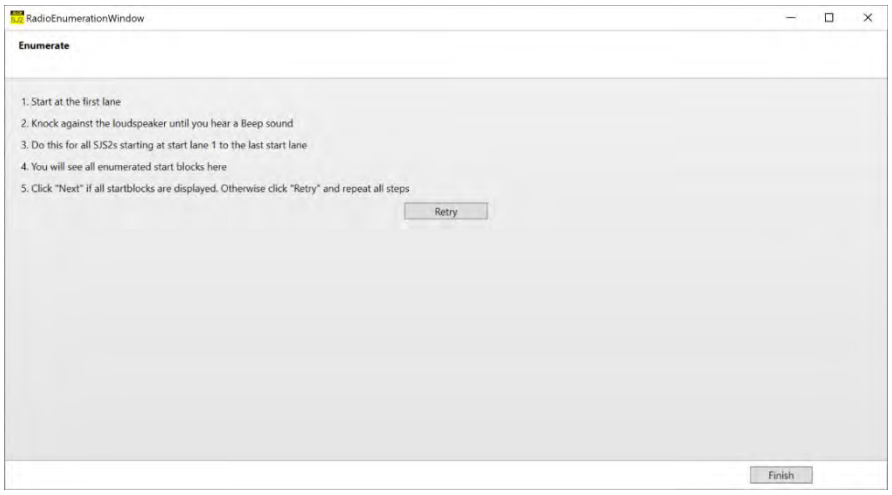
- the following is displayed



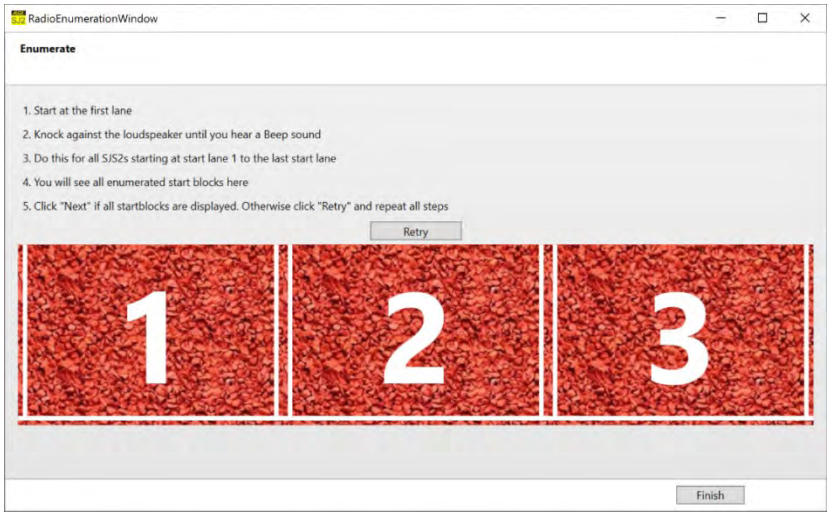
- if the Start Judge System was used with the same configuration before click on
- if the Start Judge System is used for the first time or never before with this configuration click on icon
  - o the following window opens:



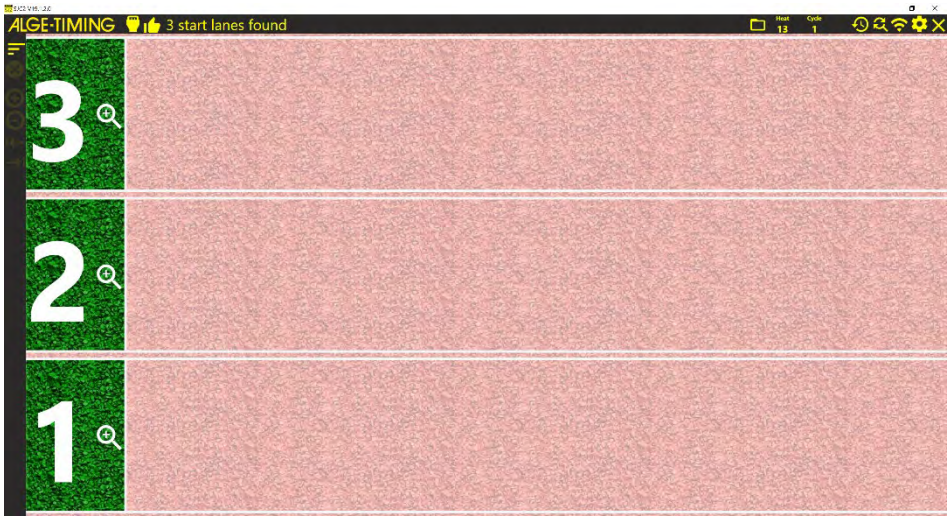
- o click on <Next>



- o press the red button on speaker of lane 1 – on the screen lane 1 is shown
- o press the red button on speaker of lane 2 – on the screen lane 2 as well
- o continue until all lanes are registerd (e.g. in the picture below for 3 lanes)



- o click on <Finish> if all lanes were detected correctly
- o the false start system is ready for the first start



5.3 Training System

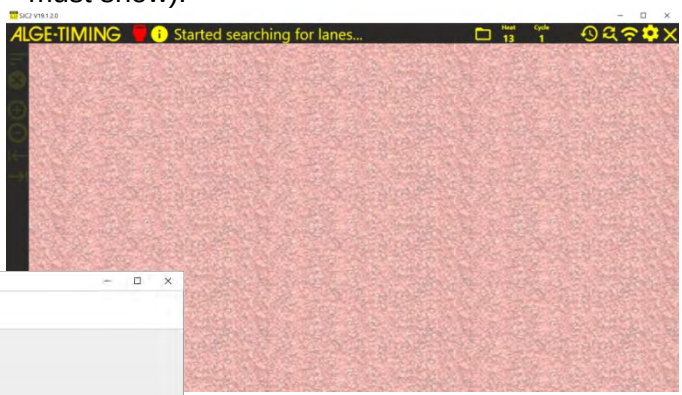
The Start Judge SJ2 can be used as a training start system with reduced equipment. It is possible to train with one lane or more lanes. The start sensor transfers the start curve including the reaction time by radio (WTN) to a PC. The setup is easy and quick.

- Distribute starting blocks on the tracks.
- Screw the Start Judge Sensor SJS2 onto starting blocks.
  - Open fastening screw far enough so that the SJS2 fits onto a bridge of the starting block.
  - Secure SJS2 to the starting block with rotary handle screw.

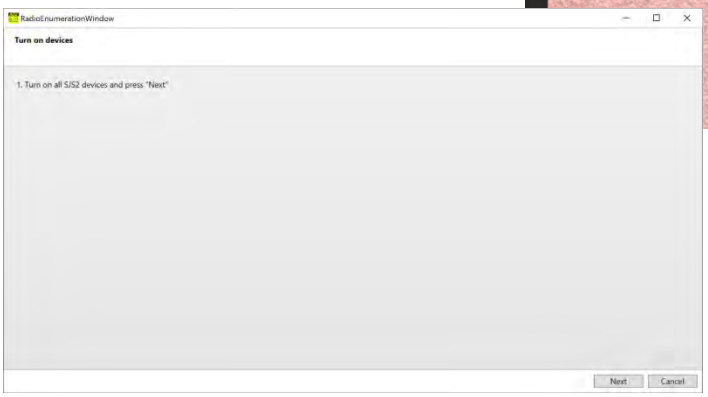
- Adjust radio team of all Start Judge Sensors SJS2.
  - Switch on all Start Judge Sensors SJS2.
  - Press red push button on Start Judge Sensor SJS2.
  - Both LEDs (battery and radio) must blink green.

- Prepare false start radio push button WTN-PB.
  - Adjust radio team.
    - Remove battery cover and battery.
    - Adjust radio team with small screw driver.
    - Insert battery and screw on battery cover.

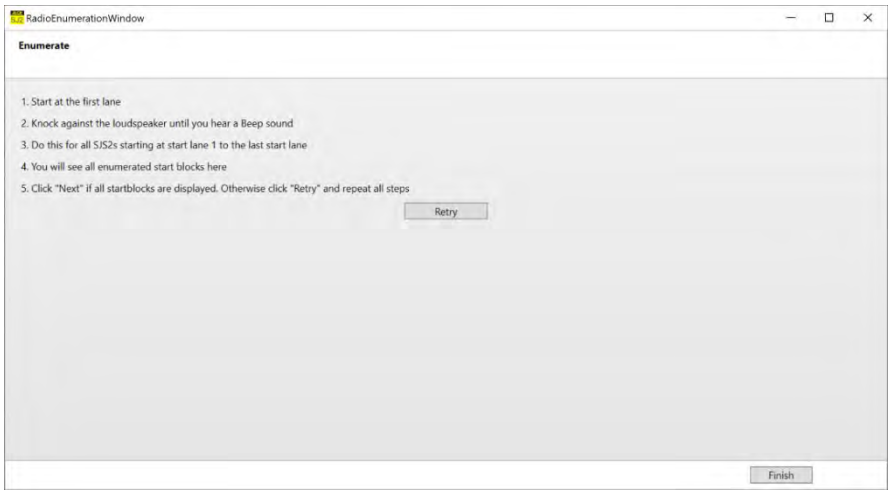
- Switch USB-WTN on RS485.
- Connect USB-WTN with USB-mini cable on PC.
- Connect USB-WTN with cable 280-03 to WTN.
- Start PC or tablet.
- Start the SJ2 software.
- Check, if radio mode is switched on (icon must show).
- the following is displayed



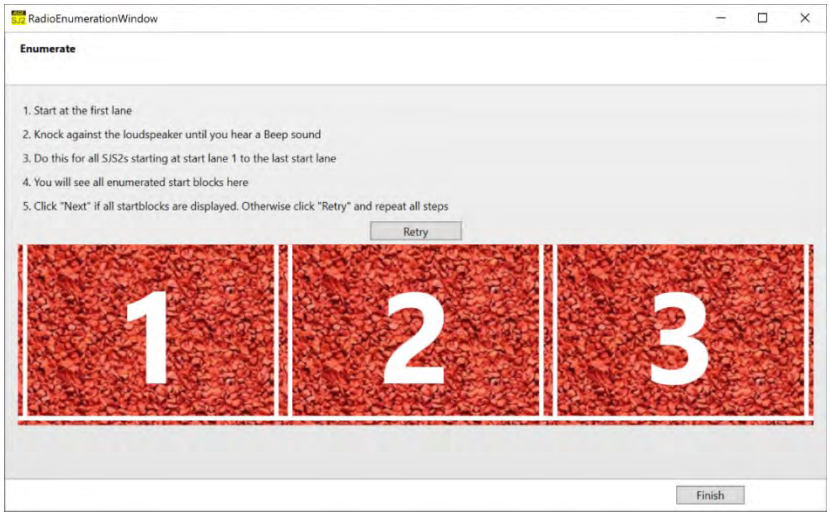
- if the Start Judge System was used with the same configuration before click on
- if the Start Judge System is used for the first time or never before with this configuration click on icon
  - the following window opens:



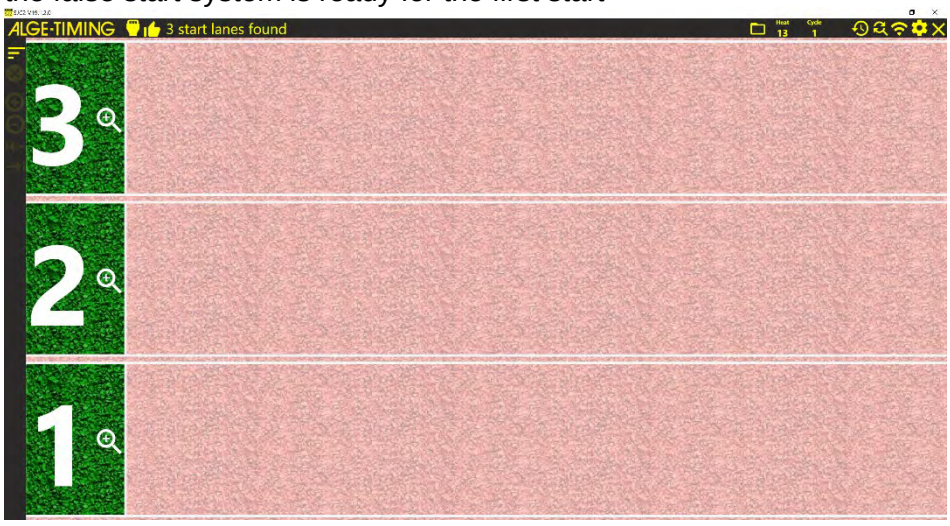
- o click on <Next>



- o press the red button on speaker of lane 1 – on the screen lane 1 is shown
- o press the red button on speaker of lane 2 – on the screen lane 2 as well
- o continue until all lanes are registerd (e.g. in the picture below for 3 lanes)



- o click on <Finish> if all lanes were detected correctly
- o the false start system is ready for the first start



- Adjust if you want to use the system for the training with a starter or without a starter (automatic).

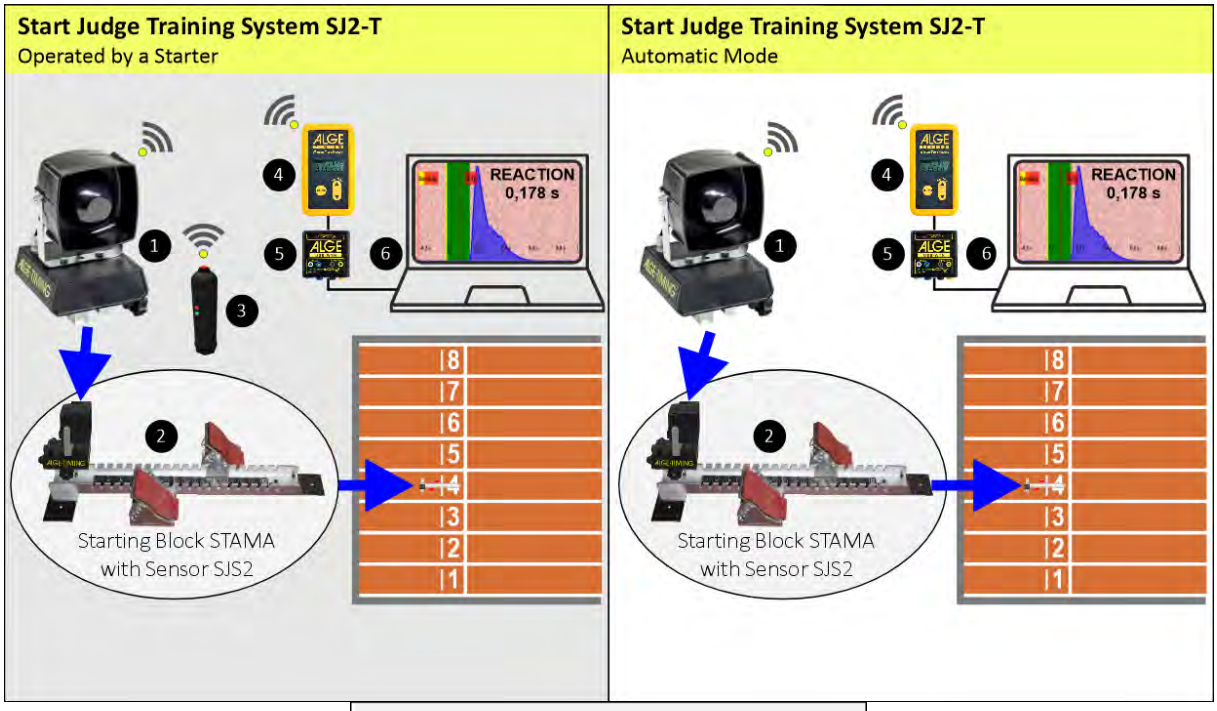
5.3.1 Start Training Using the Automatic Start mode

An integrated trainings mode allows the athletes to train the start without a starter by himself. The start commands are given by the system after clicking on the icon .

- Click with the mouse on to start the start sequence.
- After about 15 seconds a recorded voice from the speaker of the start judge sensor will give the following command: “Take your marks!”
- After further 5 seconds the speaker will give the command “Get Set!”.
- After a random time between 2 and 4 seconds the speaker will produce the start sound.
- The athlete(s) that train the start can check their performance at the PC-screen.

5.3.2 Training with a Starter

- The starter will give the start commands as used at races.
- If all athletes are ready the starter will trigger push button of the WTN-PB (alternative e-Start E) to produce the start sound.
- wenn der oder die Starter bereit sind löst er den Startschuss mit dem Handtaster WTN-PB (alternativ kann man auch den e-Start W verwenden) aus
- The athlete(s) that train the start can check their performance at the PC-screen.

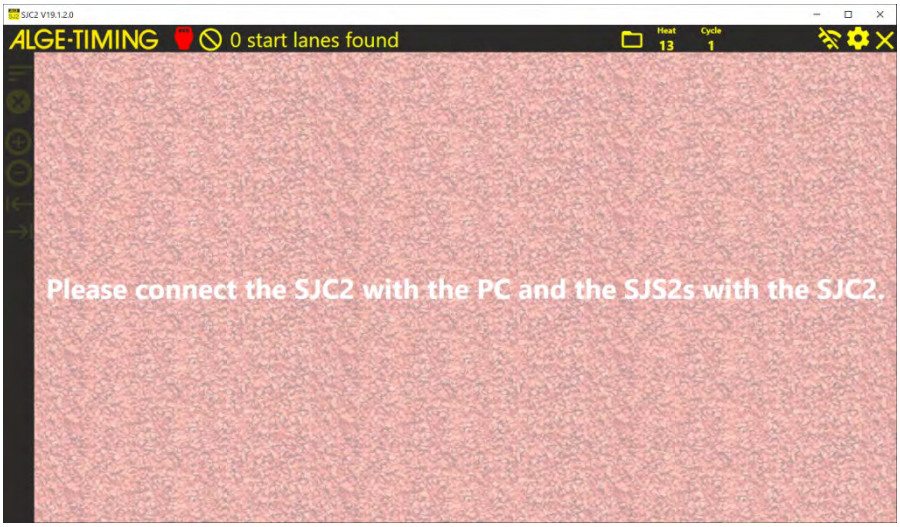


1. Start Judge Sensor SJS2
2. Starting Block STAMA
3. Radio Push Button WTN-PB
4. Wireless Timing Network WTN
5. Converter USB-WTN
6. Notebook for Start Judge SJ2-T

6 PC-Software SJ2

The software of the SJ2 can be installed on any Windows 10 devices (PC or tablet).

Software is started but no hardware is detected.



6.1 Icons

 ..... opens the window to load a saved heat

 ..... shows the heat number

 ..... shows the cycle number

 ..... creates an image of the loaded heat and opens the image with the default image viewer

 ..... shows only in radio mode:
tries to restore last saved lane configuration

 ..... shows only in radio mode:
starts the numbering of the radio mode

 ..... searching for start lanes

 ..... cable mode is active (WTN switched off)

 ..... WTN active (radio mode)

 ..... start with start (standard operation)

 ..... use of training system without a starter – automatic Start

 ..... opens the settings window

 ..... closes the application

 ..... saves the settings and closes the settings windows

 ..... starting blocks connected by cable

 ..... no USB connection between PC and Start Judge SJ2

 ..... set number of minimum starting blocks not found

 ..... connection with OPTIc3

 ..... no connection with OPTIc3

 ..... starting block sensor is quiet (no movement)

 ..... starting block sensor is active (movements)

 ..... no starting blocks found

 ..... information text

 ..... sorts the start lanes ascending

 ..... sorts the start lanes descending

 ..... clears all curves and reaction times from the screen

 ..... zoom in the acceleration curve graph

 ..... zoom out the acceleration curve graph

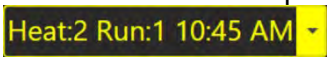
 ..... moves the acceleration curve graph to the left

 ..... moves the acceleration curve graph to the right

 ..... send the reaction times again out (e.g. to meet manager)

.... date of the currently shown heat

 ..... open calendar



.....heat and run number as well as start time of currently shown run

 ..... load previous heat cycle

 ..... load next heat cycle

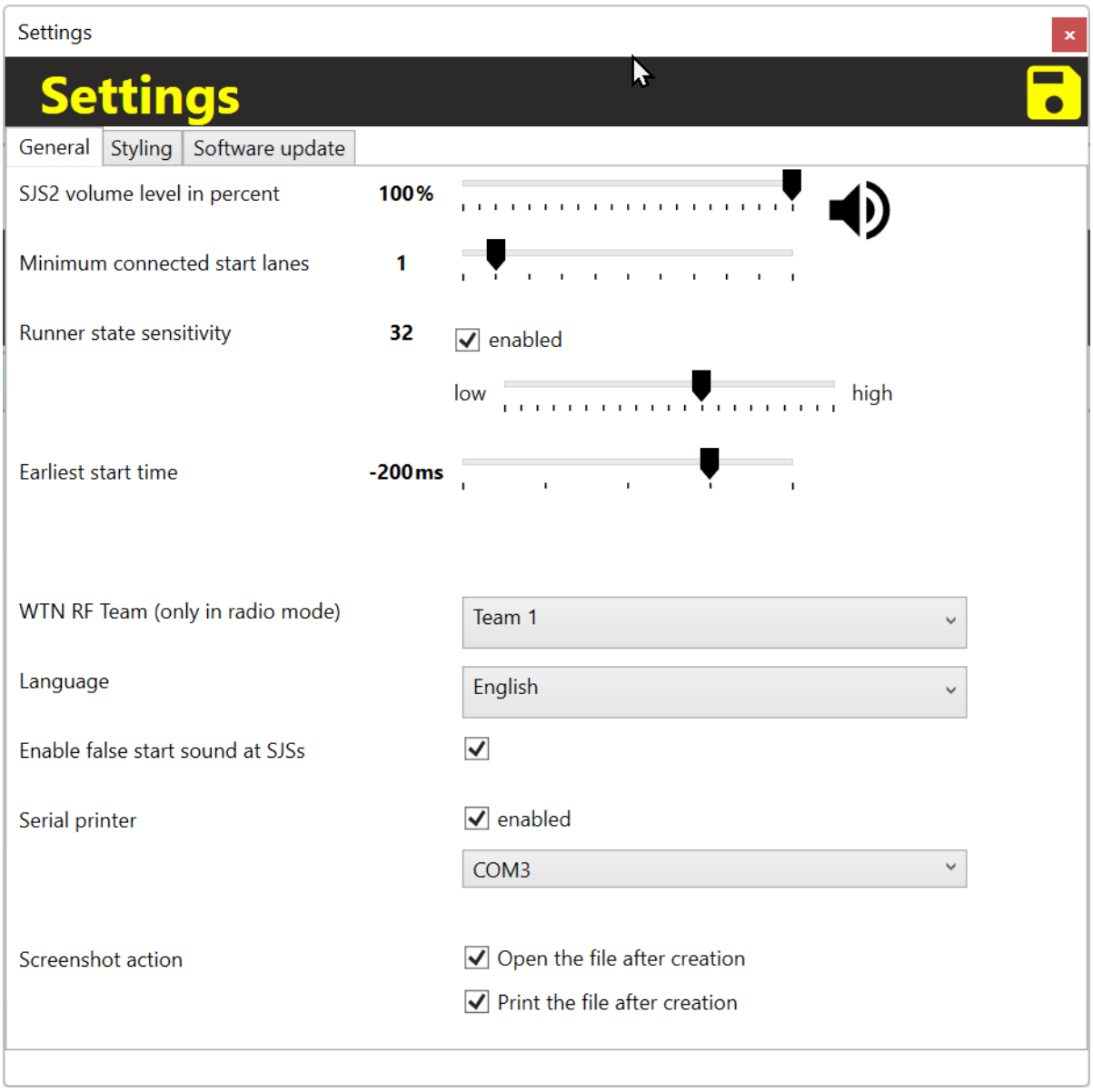
6.2 Settings

When you click on the icon the settings window opens. You can select between the following tabs

- General
- Styling
- Software Update

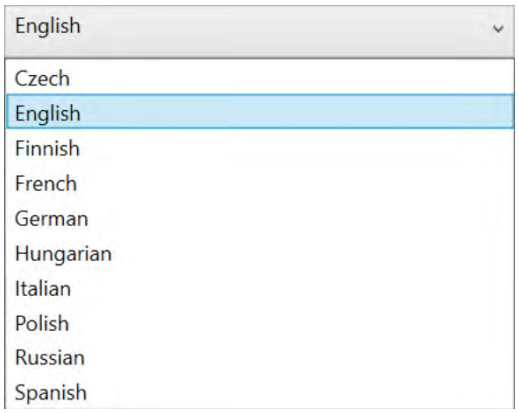
The adjustments are stored by clicking on in the upper right corner of the window.

6.2.1 General



- **SJS2 volume level in percent**
  You can set the volume of the horn speaker of the Start Judge Sensor SJS2.
  Factory setting: 100 %
- **Minimum of connected start lanes**
  Set the smallest number of lanes that you use. If the system finds fewer sensors than stated, the system shows a warning.
  Factory setting: 3
- **Runner status sensitivity**
  Before the start, each racer activates the start sensor of his track several times when he adjusts the starting blocks and takes the start position. The system uses this to activate the lane. If there is no movement before the start no acceleration curve of this lane is shown. The system assumes that this lane is empty. Of course, the acceleration curve is nevertheless recorded and can be shown by clicking on icon next to the lane number. This setting can generally be deactivated.
  Factory setting: enabled, 32

- **Earliest start time**
  Time that is used to evaluate the false start before the start is triggered. If this time is too high you might have false starts because the athletes were still moving in the blocks.
  Factory setting: -200 ms
- **WTN Team**
  Settings to adjust the team for radio mode. 16 different teams are adjustable. All parts in the system (sensors and controller) must have the same team adjusted.
  This is only active, if radio mode is selected.
- **Language**
  You can select from 10 languages



- **Activate false start sound on all SJS2**
  Here you can deactivate the false start tone for the SJS2 sensors.
  Factory setting: On

- **Serial printer**
  A serial protocol printer can be connected to the PC. If this is activated, a log is printed out on the selected interface after each start. A USB-RS232 adapter may be required for this. For a P5-9 or P6-9 you need an external power supply such as a PS-12.

6.2.2 Styling

The function ‘Styling’ enables you to change the graphic setup of the graphs.

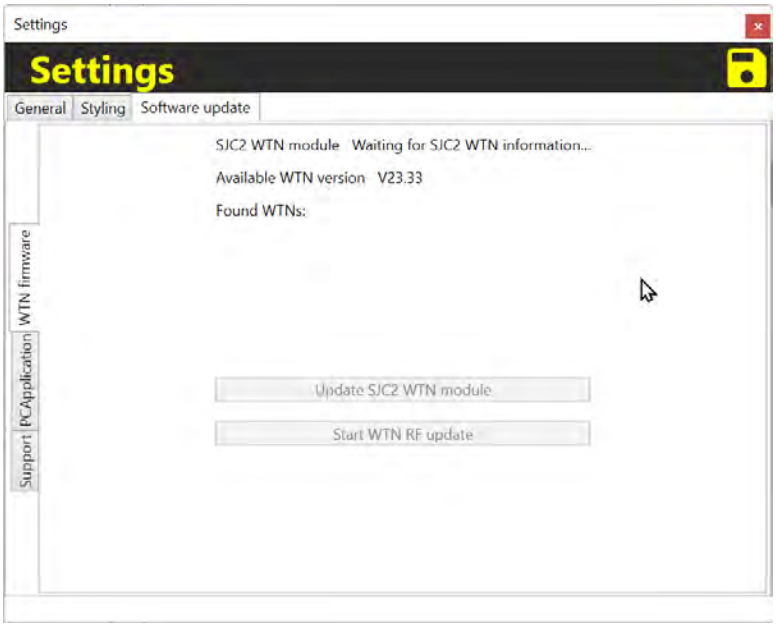
Graph scaling

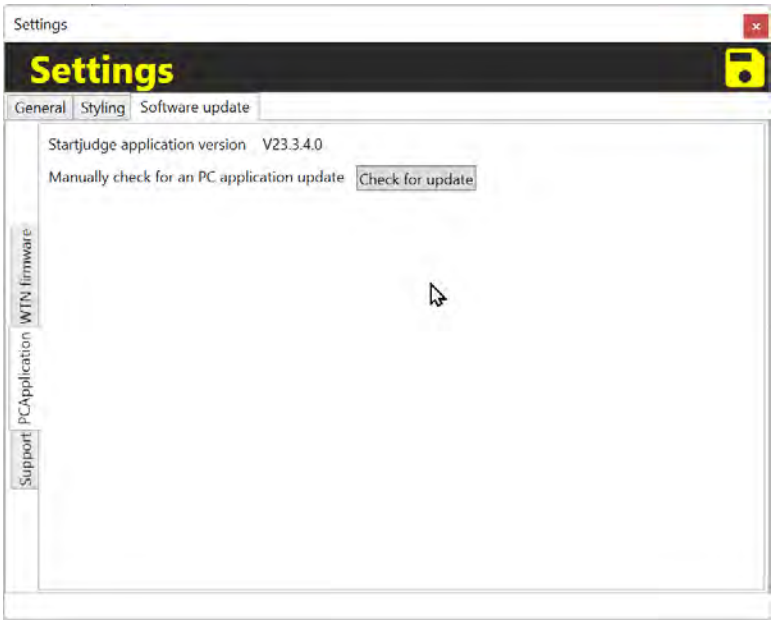
The sensor data can be scaled differently.

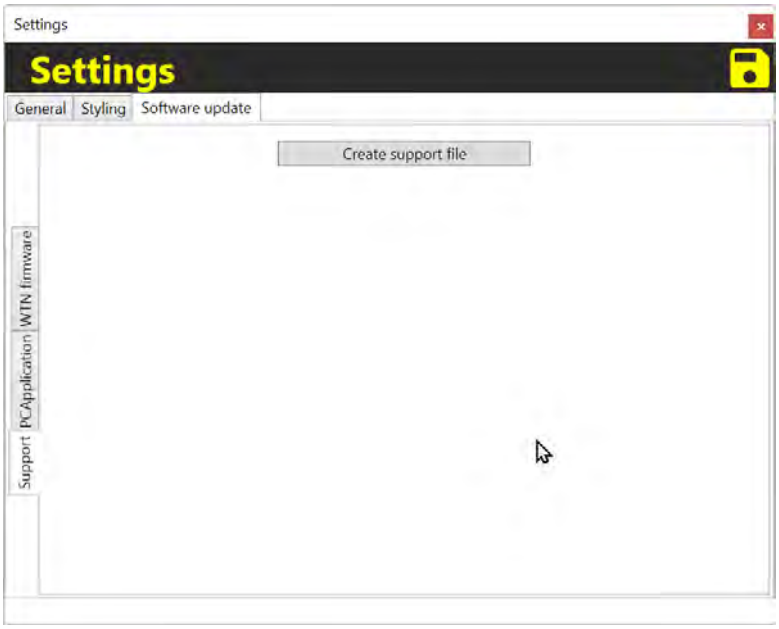
- Absolute scaling (standard): The highest measured value of all lanes is determined and the display of the sensor data is scaled equally on each track. The displayed sensor data can thus be easily compared with the other railways
- Relative scaling: Each lane is individually scaled to the highest sensor measured value. Small measured values are shown enlarged here.

6.2.3 Software Update

You can update the PC software and firmware of the devices. For this, the PC must be connected to the internet. The current version is detected and if necessary downloaded.


Settings
Settings
General
Styling
Software update
SJC2 WTN module Waiting for SJC2 WTN information...
Available WTN version V23.33
Found WTNs:
Update SJC2 WTN module
Start WTN RF update
WTN firmware
PCApplication
Support

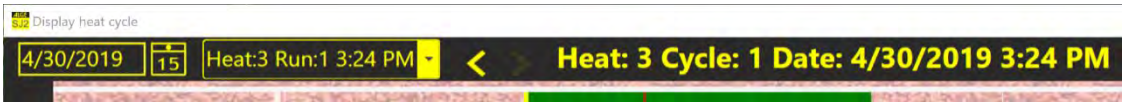

Settings
Settings
General
Styling
Software update
Startjudge application version V23.3.4.0
Manually check for an PC application update
Check for update
WTN firmware
PCApplication
Support


Settings
Settings
General
Styling
Software update
Create support file
WTN firmware
PCApplication
Support

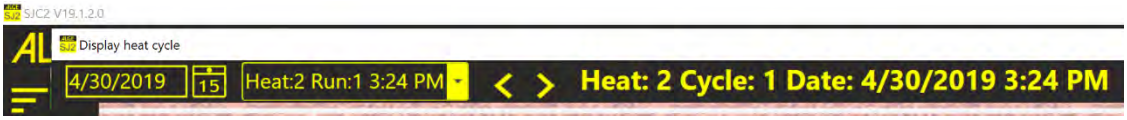
6.3 Check a Previous Start

If you want to see a previous start click on the icon .

- click on icon
- last start is shown in a new window
- click on icon to show previous start



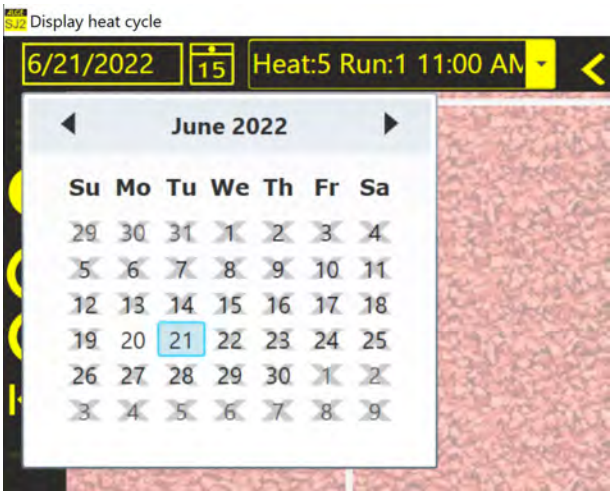
- click on icon to show following start



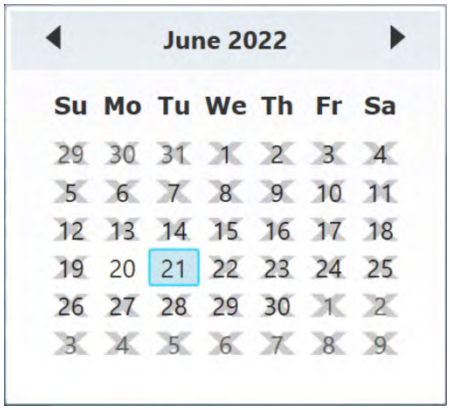
6.4 Check a Start from another Date

If you want to see a previous start from another date click on icon .

- click on icon
- last start is shown in a new window
- click on icon
- calendar opens



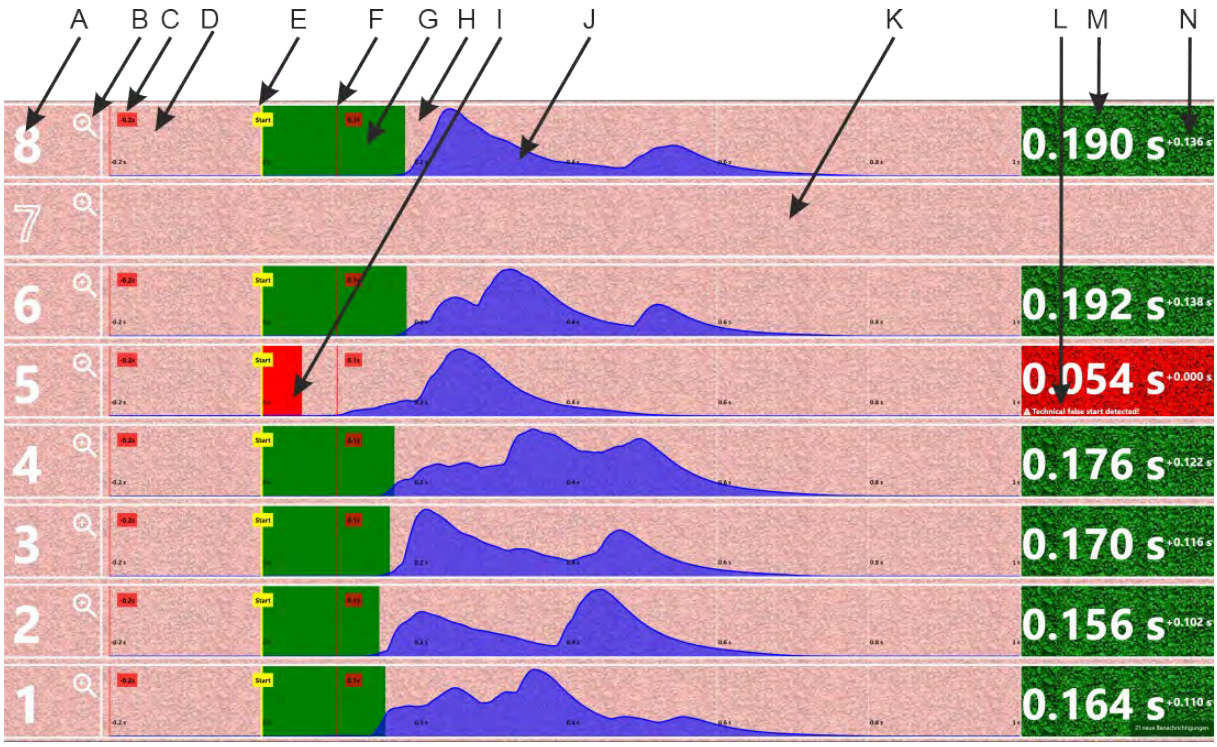
- click on right or left to select month
- days that are crossed out do not contain any data
- select day and click on it
- last start of this day is shown in the window
- select start by clicking on or



7 Evaluation of the Start Curves

7.1 Image Data

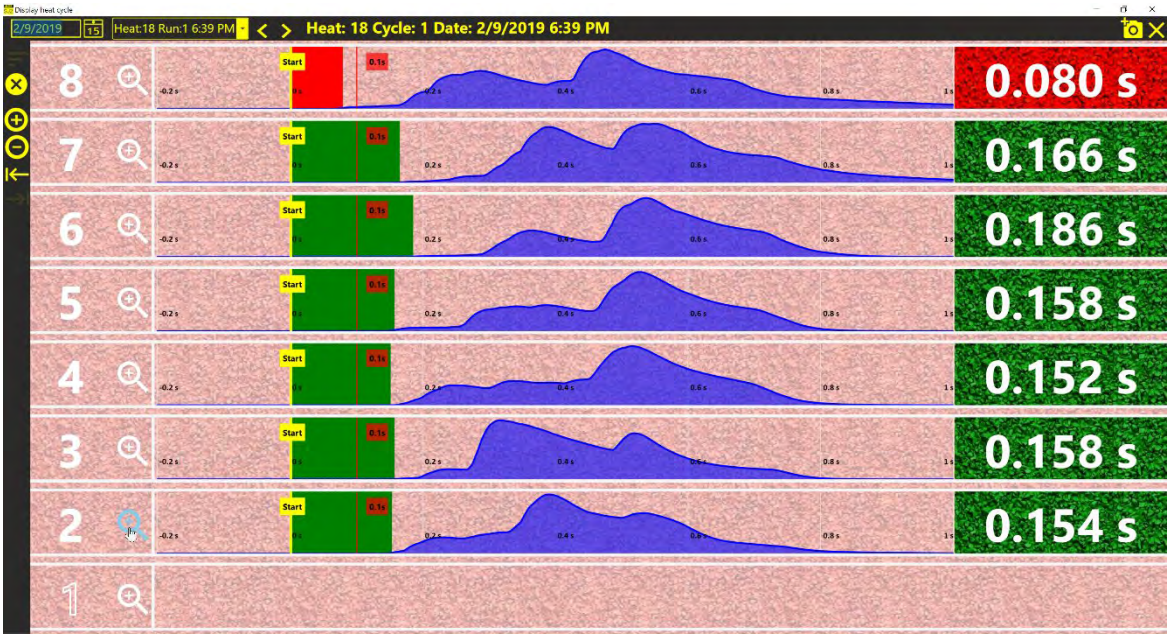
Below the recorded start curves for a race with 8 lanes are shown.



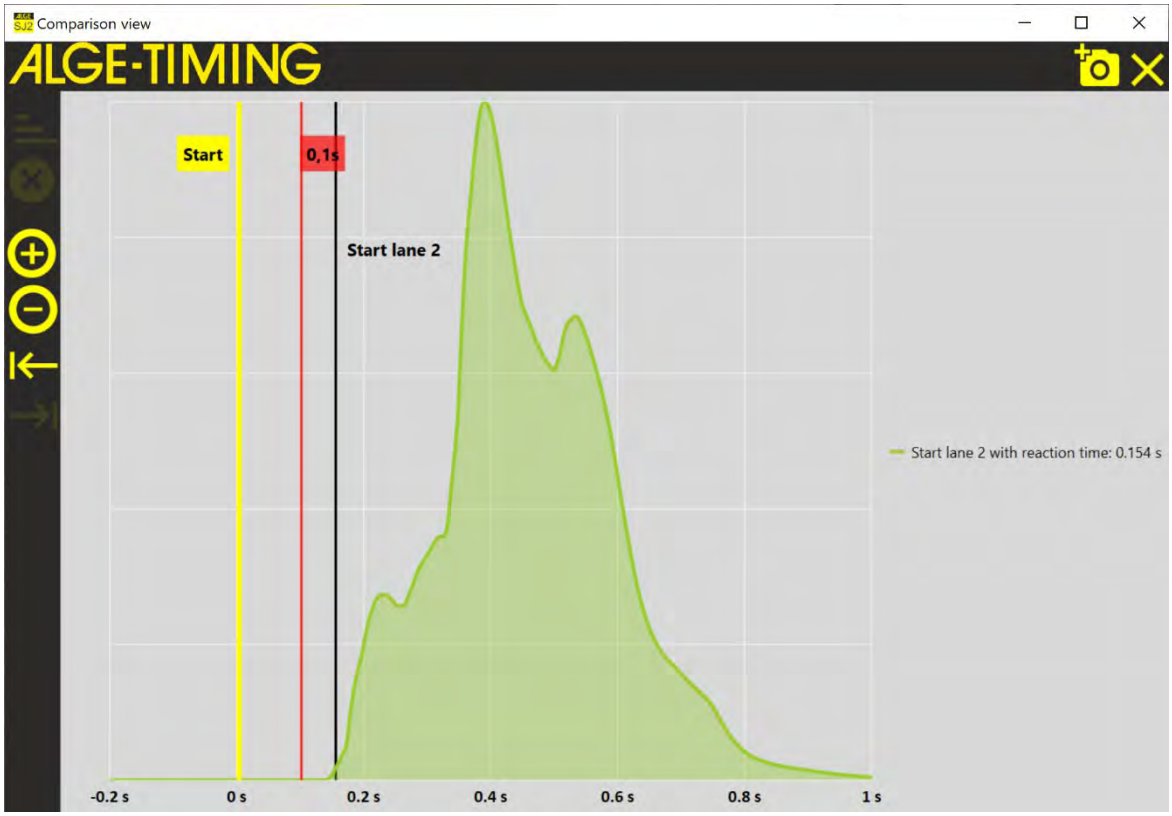
A.....track – by clicking on track number the view changes between showing and not showing the acceleration curve of this lane
B.....zoom for acceleration curve of this lane
click once to select this lane
click twice to zoom into selected acceleration curves
C.....start of measurement (in this case 0.2 s before the start)
D.....time before start impulse
E.....start trigger point
F.....minimum allowed reaction time (0.1 second)
G.....time after the reaction time (valid starts)
H.....valid start of lane 8 (is shown with green background)
I .....false start of lane 5 (is shown with red background)
acceleration curve starts before the end of 0.1 seconds
J.....acceleration curve of lane 8
K.....lane 7 was empty (no acceleration curve)
L .....reason for false start from system
M .....reaction time of each lane
red background = false start
green background = valid start
N.....time delay to the fastest start of this heat

7.2 Magnifying the Acceleration Curve of One Lane

- double click on 🔍 (next to lane number) to magnify the acceleration curve of this lane

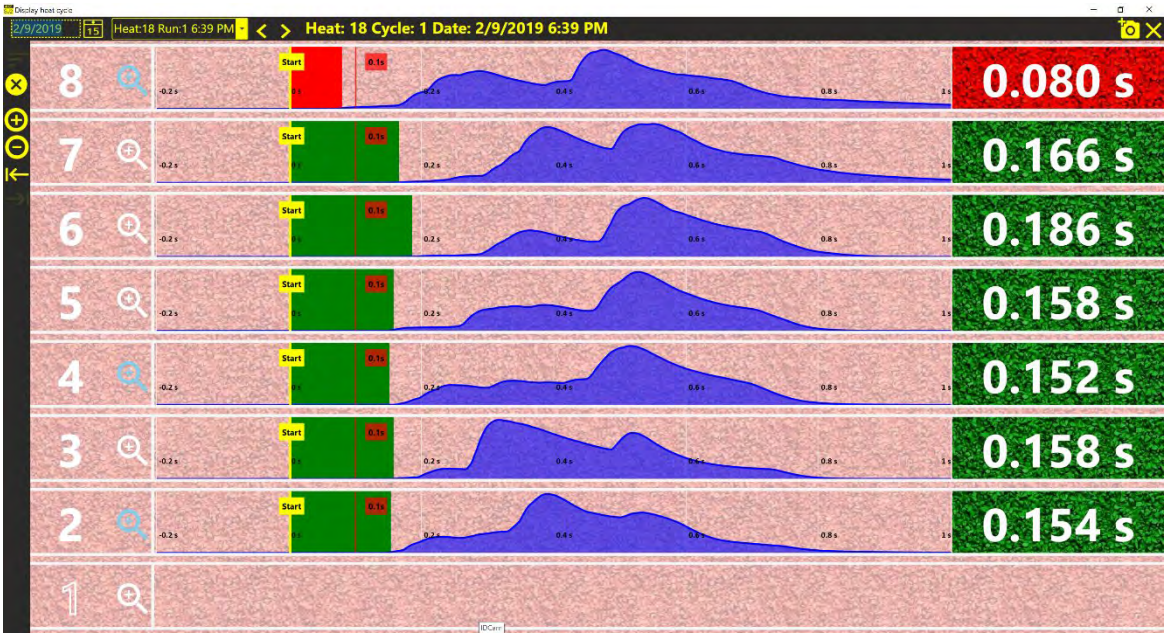


- The magnified acceleration curve of the lane (here lane 2) is shown.

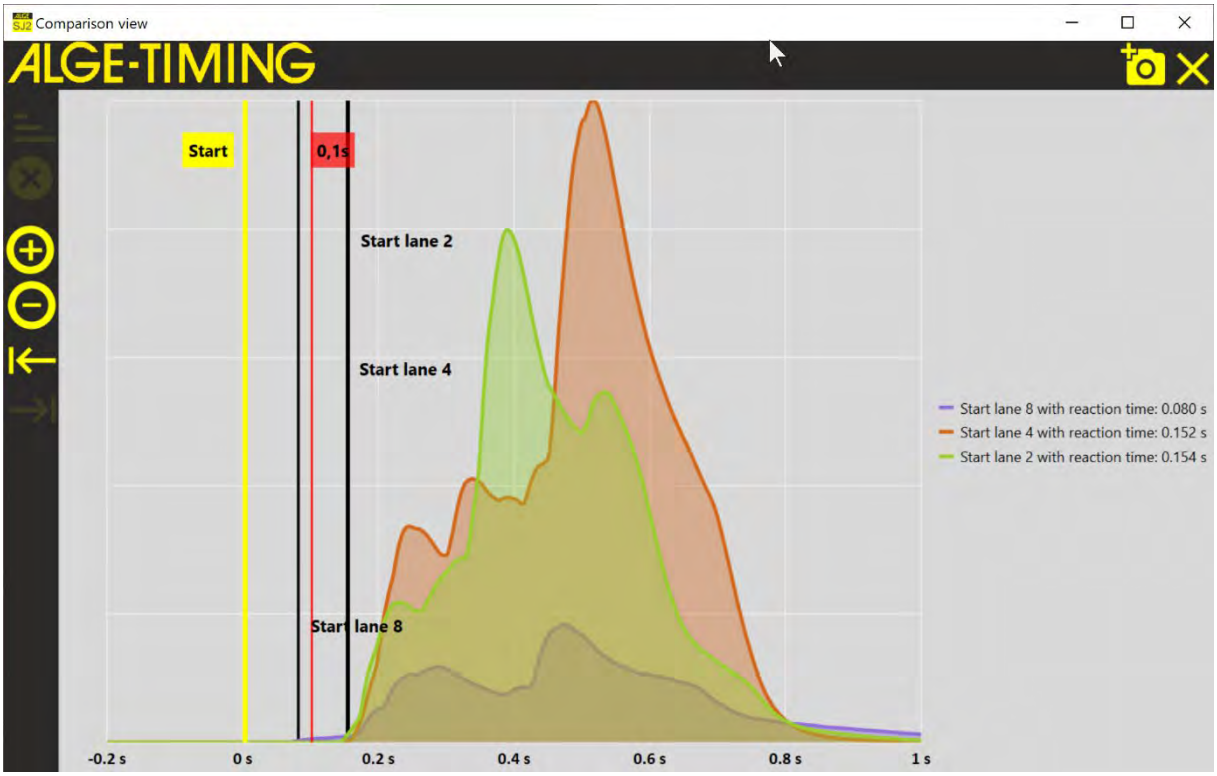


7.3 Magnifying the Acceleration Curve of Several Lanes

- click on 🔍 of all lanes that you want to magnify



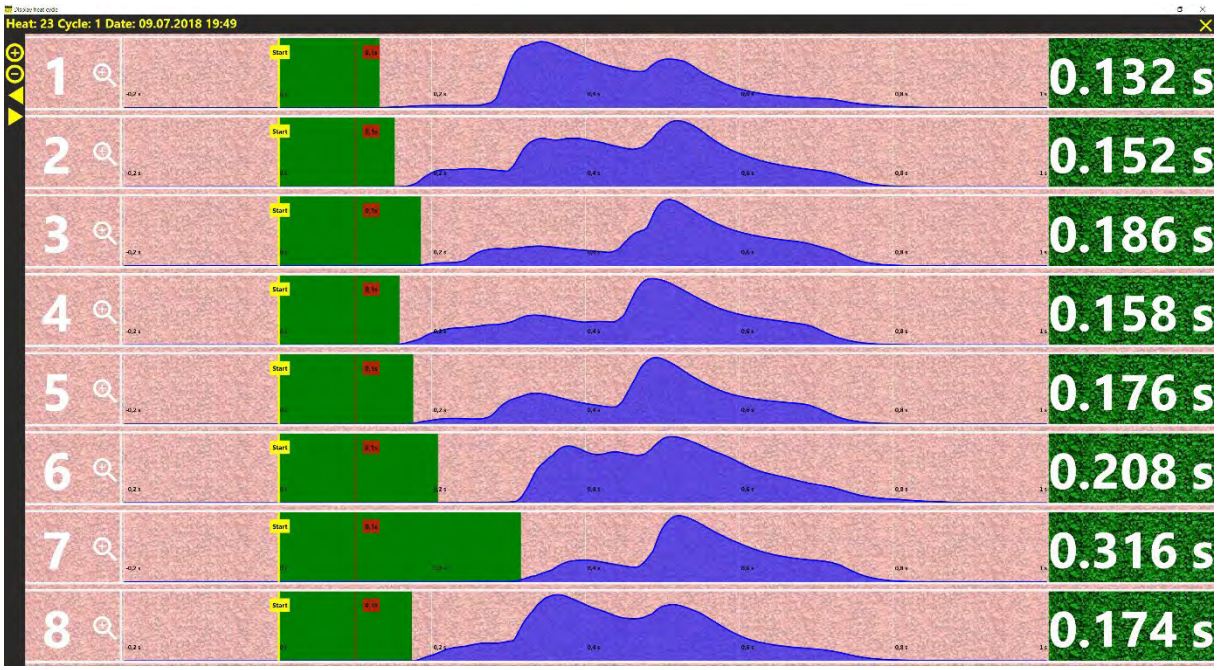
- double click on the 🔍 of one of selected lanes to magnify the acceleration curves



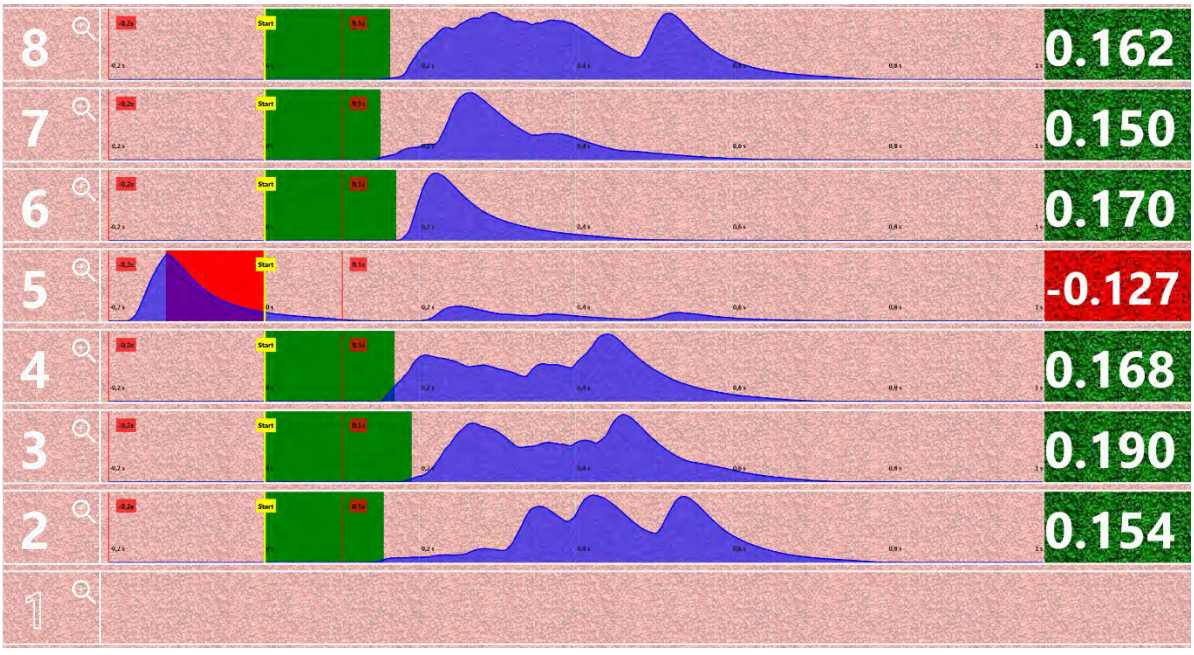
- The example above shows the magnified acceleration curves of lane 2, 4 and 8

7.4 Examples of Start Recording

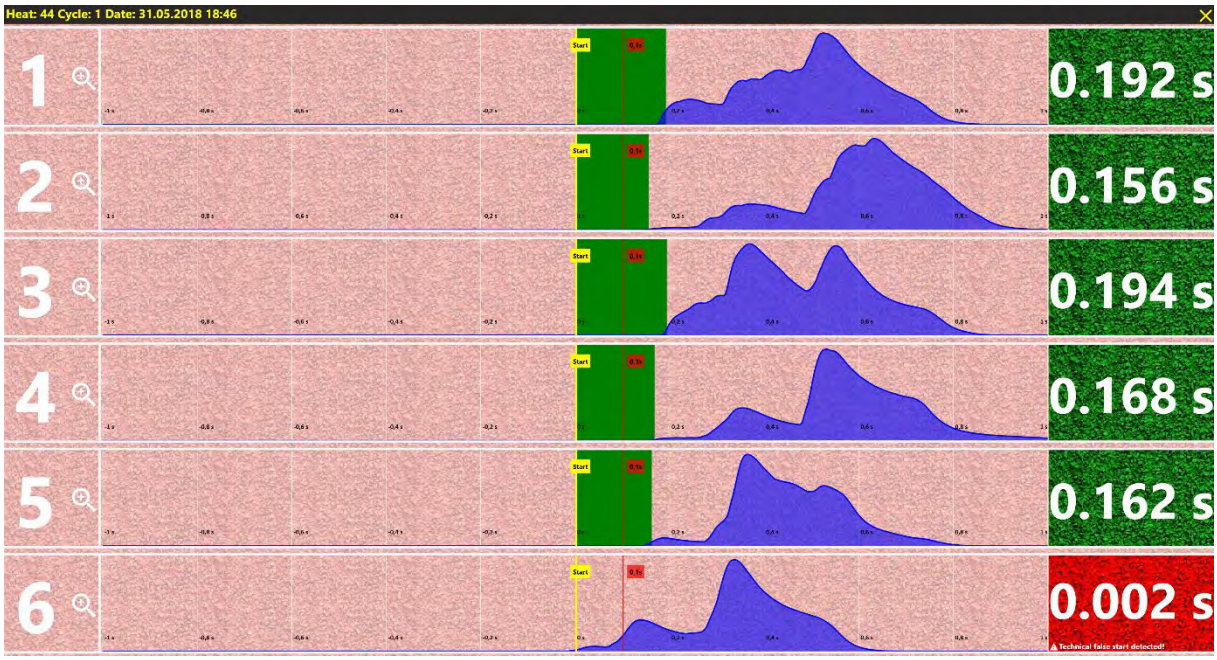
correct start, all lanes started after the allowed reaction time of 0.1 seconds



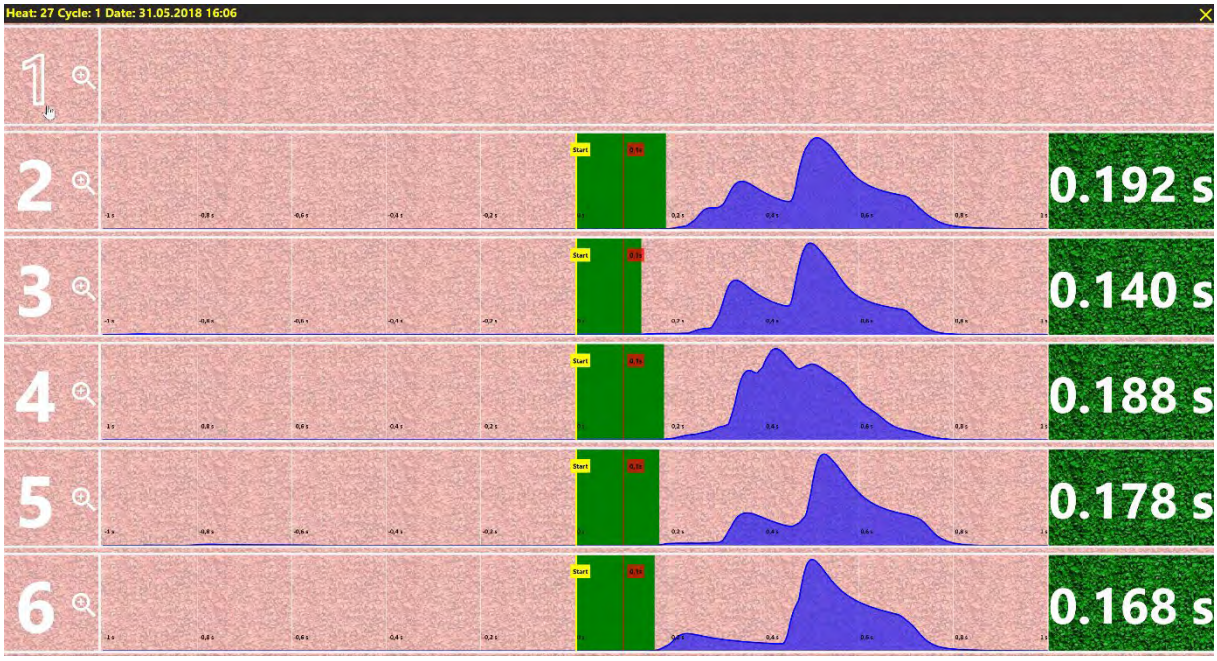
false Start of lane 5 – start was -0.127 seconds before the start signal



false start from lane 6 – start was 0.002 seconds after the start signal



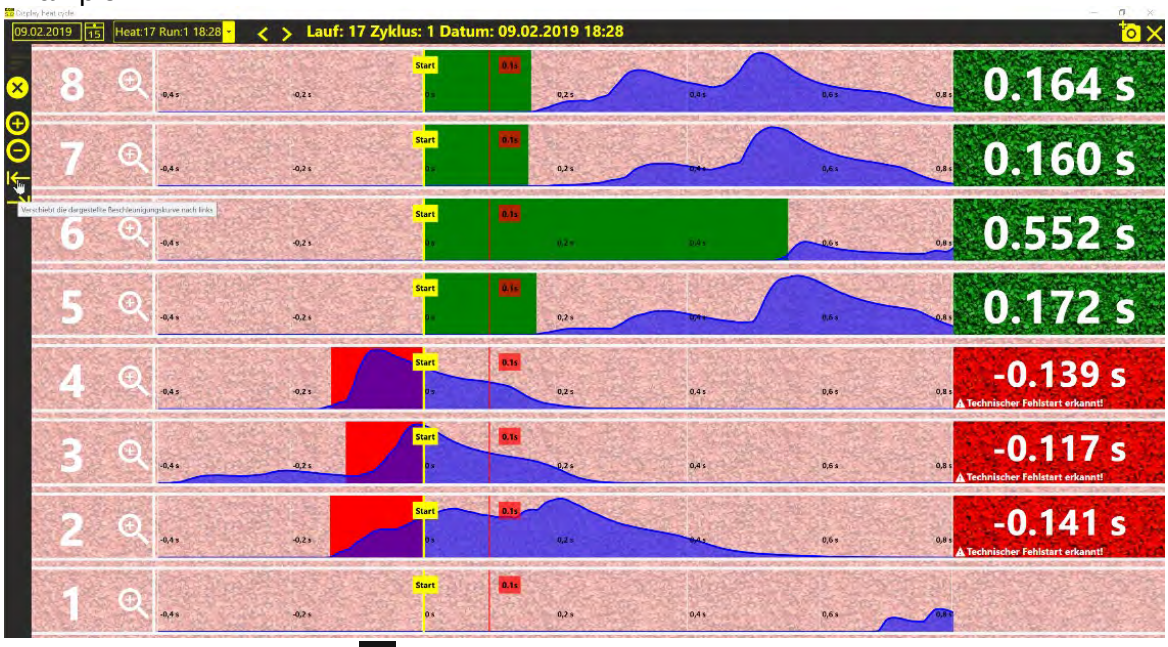
valid start, lane 1 is empty



7.5 Technical False Start

The false start system SJ2 can indicate a technical false start. This is the case if the system registers a movement before the false start. According to the regulations, the starter has to wait until all athletes are steady. Therefore, in the event of a false start, the system checks whether all runners were calm within a window of -0.3 to -0.1 seconds before the first movement. If a movement is already registered in this window, this is marked as a technical false start. The start referee decides whether the start is invalid or whether it is an actual false start by the athlete.

Example:



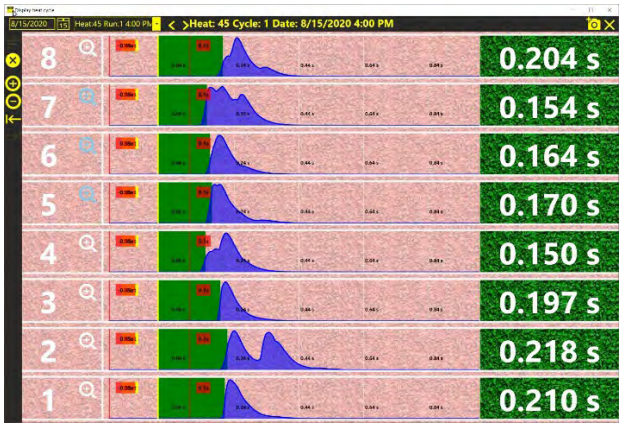
When clicking on the icon  you can show the acceleration curve before the adjusted 0.2 seconds (earliest start time).

8 Printing of Reaction Times or Curves

8.1 Printing the Reaction Times

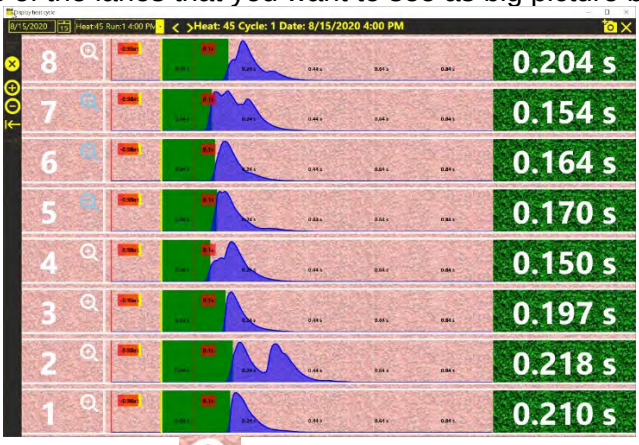
Select the heat in the file section that you want to print.

Click on the camera symbol to copy the picture in the standard photo tool of Windows and print it or store it in this software.

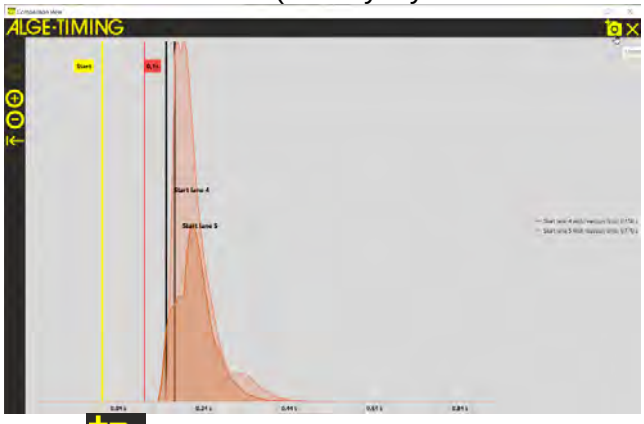


8.2 Printing Curves:

Select the start curves of the lanes that you want to see as big picture by clicking on



Double-click on one of the selected
It will open a big picture of the start curves (overlay if you show more curves).

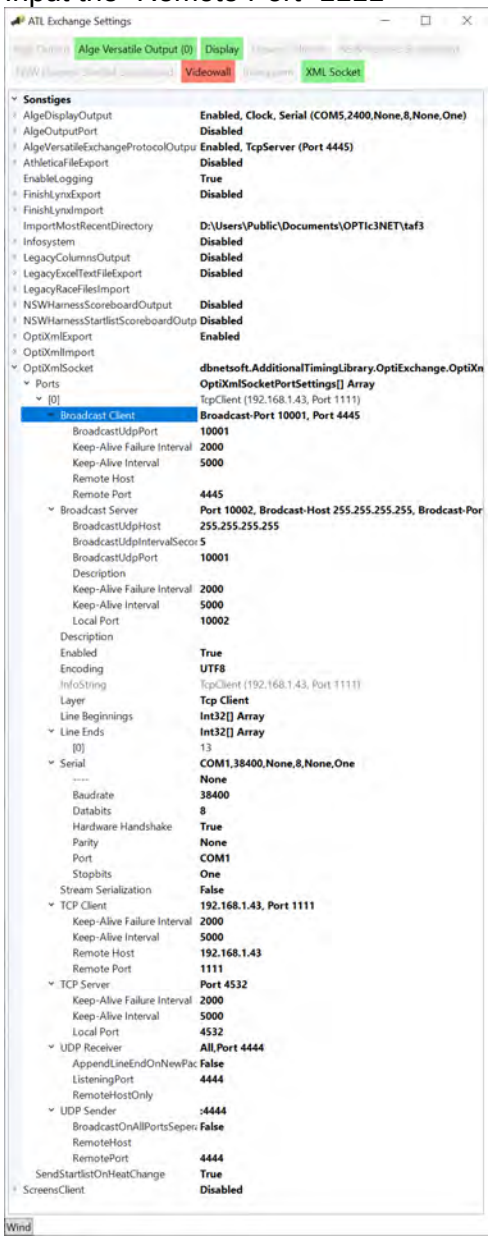


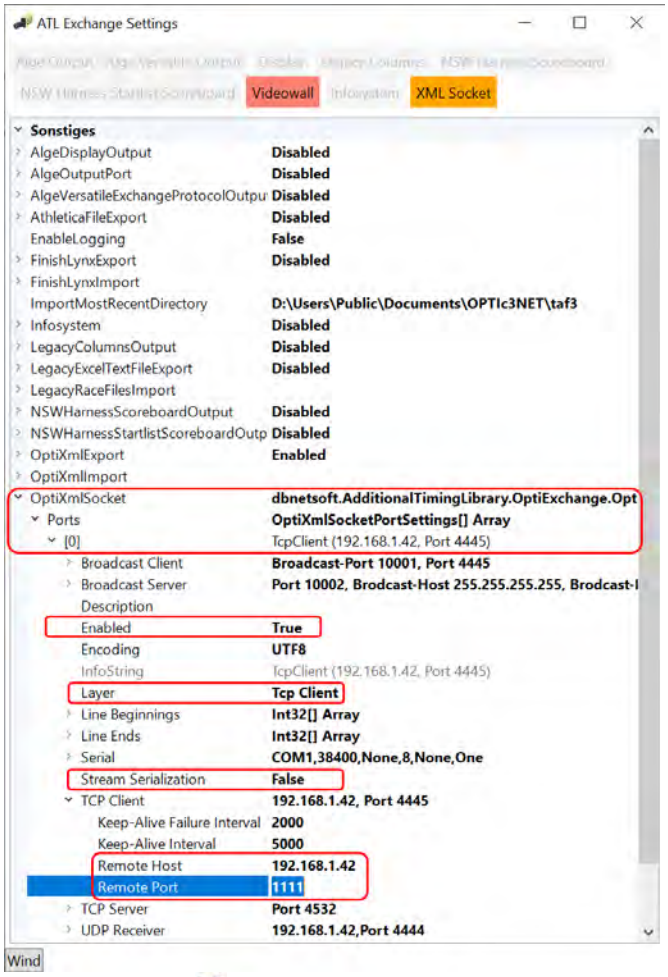
Click on the camera symbol to copy the picture in the standard photo tool of Windows and print it or store it in this software.

9 Data Transfer with Photo Finish OPTIc3

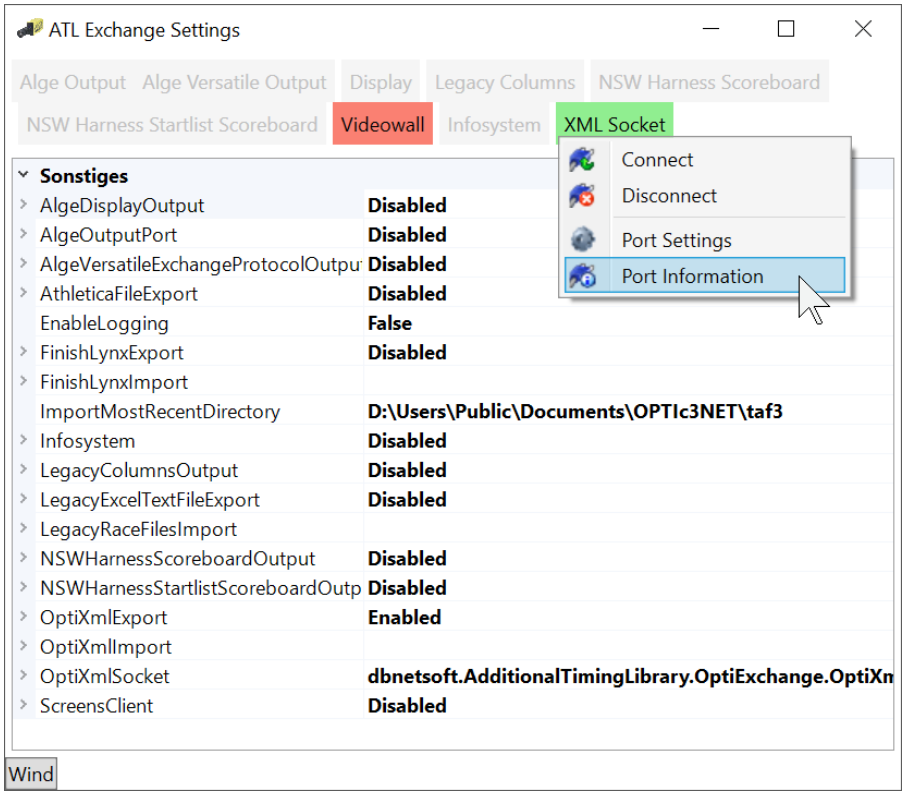
It is possible to transmit the competitor data from the OPTIc3 to the false start system SJ2. In this case you will see the name of the racers. After the start the reaction times are transmitted to the OPTIc3 and will be shown on the heat list.

- Open ATL Exchange Settings in the OPTIc3 software
- Open <OptiXmlSocket> by clicking on the arrow at the left border
- Open <Ports> by clicking on the arrow at the left border
- Open <[0]> by clicking on the arrow at the left border
- Select <True> for “Enabled”
- Input the IP-address of the “Remote Host” (e.g. 192.168.1.42)
- Input the “Remote Port” 1111



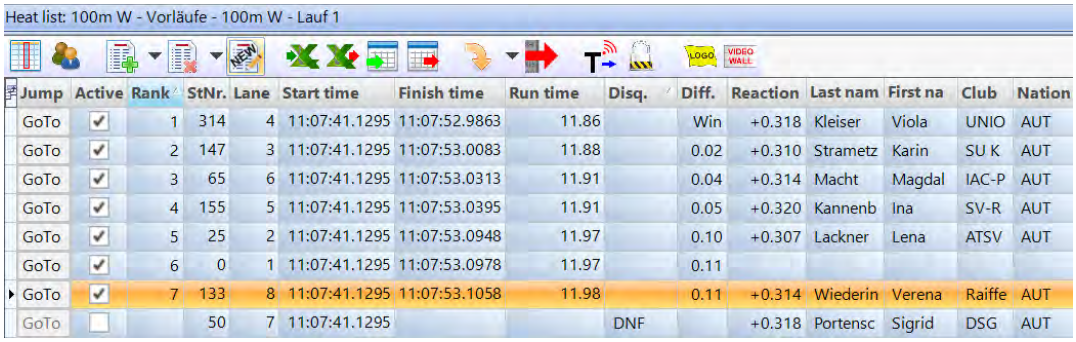


- If you close and open the ATL Exchange Settings the filed <XML Socket> must be green. Then it has a connection to the Start Judge SJ2 PC.
- You can open a log file with all activities on this port by pressing the right mouse button on the field <XML Socket>. Click now on the field <Port Information>



- In the following field it will show you the data traffic between the OPTIc3 and the SJ2 PC.

- To see the reaction times you have to activate the you have to open the field <Reaction Times> in your heat list. To activate it click on 



10 Technical Data

10.1 Start Judge Transport Cart SJT2

The Cart is made of Aluminum and has a built in Controller, Battery and Charger.

Dimensions: 500 x 500 x 1200mm
Weight: ca. 40kg

10.1.1 Controller SJ2C

1 x On/Off Switch
1 x AUX IN (Speaker Output)
2 x BANG/SU3 Socket

1 .....Chanel C0
2 .....Talk SU
3 .....GND
4 .....+12VDC
5 .....Status

1 x Start Input Channel (Green and Black Banana Jack)
1 x USB connector for PC (Notebook)
1 x Mains Connector (85 – 264 VAC / 47 – 63 Hz)
1 x Fuse T 3.15 A
3 x Mains Sockets to connect e.g. Notebook
1 x Wireless Timing Network WTN (build in)

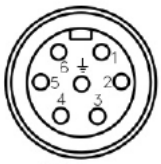
10.1.2 Battery and Charger

Built in Lead Battery with 12 V / 2.9 Ah

10.2 Start Judge Sensor SJS2

1 x Amphenol Socket 7-pin female (in)

6 .....A
7 .....B
8 .....Sound
9 .....Clock
10 .....Number in
11 .....+12 VDC
12 .....GND



Male

1 x Amphenol Socket 7-pin male (out)

1 .....A
2 .....B
3 .....Sound
4 .....Clock
5 .....Number out
6 .....+12 VDC
7 .....GND

Female

1 x Wireless Timing Network WTN (build in)
2 x Lead Battery 6V / 1.2 Ah
1 x Horn Speaker 25 W / 4 Ohm

10.3 BANG2

10.4 Amplifier and Loudspeaker

amplifier performance:	80 WMAX/50 WRMS	
frequency range:	70 – 16 000 Hz	
loudspeaker system:	20 cm woofer (8″) and 2.5 cm tweeter (1″)	
input MIC IN	sensitivity:	6 mV
	connection:	XLR/6.3 mm phone jack, sym.
input LINE IN	sensitivity:	800 mV
	connection:	cinch
output LINE OUT	level:	1 V
	connection:	cinch
output SPEAKER:	6.3 mm phone jack for passive loudspeaker system (impedance min. 8 Ω)	
tone control:	bass:	±15 dB/100 Hz
	treble:	±10 dB/10 kHz
temperature range:	0 – 40 °C	
power supply:	via mains voltage (100 - 240 V~ / 50 – 60 Hz / 2A)	
	or internal lead gel batteries (2 × 12 V / 5.2 Ah)	
battery operating time:	up to approx. 3 – 5 hours	
dimensions:	305 × 510 × 265 mm (w × h × d)	
weight:	approx. 14.8 kg	

10.5 Connections for Timing

2 x LTW socket: connection to start system and/or further loudspeaker systems, e.g. BANG2, SU2, SU3, FLASH XL, SJ2

1 x banana socket (green – black):
starting signal output (normally open contact)

10.6 Radio Module WTN for Timing

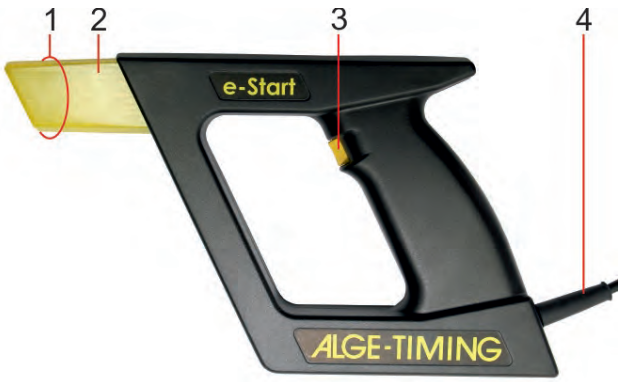
transmitting frequency:	2.4 GHz band, 16 adjustable teams
transmitting power:	10 mW
range:	approx. 300 m at free visibility

10.7 Radio Receiver for Headset Micro BANG-HS

Receiving Unit:	PLL- multifrequency receiver in diversity technique
Range:	ca. 30 m
Radio Frequency:	863.1 – 864.9 MHz, divided into 16 channels

Channel CH	Frequency		Channel CH	Frequency
1	863.1 MHz		9	863.2 MHz
2	864.1 MHz		10	864.2 MHz
3	863.6 MHz		11	863.7 MHz
4	864.6 MHz		12	864.7 MHz
5	863.3 MHz		13	863.4 MHz
6	864.3 MHz		14	864.4 MHz
7	863.8 MHz		15	863.9 MHz
8	864.8 MHz		16	864.9 MHz

11 Start Device e-Start



1 ..... flash
2 ..... status LED
3 ..... push button (impulse trigger)
4 ..... connection cable

11.1 Switching On and Off

The e-Start is automatically activated as soon as it is connected to a corresponding ALGE-TIMING device.

11.2 Status LED (2)

The status LED (2) has the following functions:

blinking green .....ready for start
blinking orange .....start has no ready signal (only with SU3)
blinking red .....start line has a short circuit (is triggered)

11.3 Start Signal

When the e-start is triggered (pressing the button (3)), a start pulse is output via channel 0 (C0). At the same time a flashlight (1) is triggered.

11.4 False Start Signal

If the push button (3) is triggered again within 5 seconds a false start signal is released (again impulse on channel 0 (C0) and three flash strobes (1) within a short time).
Attention: The false start signal only works when you adjust a short delay time at the timing device (e.g. 0.1 seconds).

No False Start Signal
If you do not want to output a false start signal you have to adjust a long delay time in the timing device (5 seconds or higher).

11.5 Technical Specifications

Flash:	4 x LED (Ultra Bright Power LED)
Operating Temperature:	- 20 - + 45° C
Pulse output:	NPN Transistor, Open Collector, active low
Maximum output load:	max. 250 mW max. 14 V max. 100 mA
Measurements:	265 x 150 x 35 mm
Weight:	ca. 0.3 kg
Connection:	fix cable with 2 m length and DIN-plug

1..... channel 0 (C0)
2..... status
3..... ground
4..... $+U_{in}$ (+8 to 12 VDC)
5..... empty

12 Start Device e-Start W

1 ..... flash
2 ..... status LED
3 ..... radio LED
4 ..... push button (impulse trigger)
5 ..... team switch
6 ..... charging socket

The e-Start W sends the timing impulse by radio to an ALGE-TIMING timing device or speaker system BANG W. An internal rechargeable battery supplies the e-Start W.

12.1 Integrated Radio System (Wireless Timing Network WTN)

The e-Start W has an integrated radio network system ALGE-TIMING WTN. This radio system can be used as a radio network. A system can include two or more devices of the WTN-series.

The network is designed that it can transmit data and timing impulses simultaneously.

12.2 Commissioning

The e-Start W has an internal battery. Before operating the device make sure that the rechargeable battery is charged. For charging the e-Start W use the power supply PS12A.

Before using the e-Start W with other devices, make sure that all radio devices of the WTN-series are set to the same team. It can be set at the team switch (5) with a small screw driver (see 2.3 Team Adjustment (Radio Frequency)).

Switching ON

- Press push button (4) until the status LED (2) shows green (the LED shows red first, then changes to green).
- Release the push button (4). The e-Start is ready.

Switching OFF

- Press push button (4) for about 5 sec. until the status LED (2) shows red without blinking.

12.3 Team Adjustment (Radio Frequency)

This function is to select the team number. You can select between 15 team numbers using a small screw driver. There are 9 single teams (single mode = different radio channels) and 6 joint teams (all = same radio channels). Position 0 is an internal factory test mode and has no function for the user.

Separate Teams <S> = SINGLE is used for completely independent networks. If you operate two networks next to each other both networks operate in this mode on different frequencies and do not communicate with each other.
Separate teams: position 1 to 9

Joint Teams <A> = ALL is used for networks that work independently next to each other. If different A teams with the same radio channel are operated, the other A teams can be used for data transmission. The data of the other team, however, is not used (e. g. for two show jumping grounds that are next to each other).
joint teams: position A to F

12.4 Timing Channel

It is possible to set different timing channels. The usual timing channel is C0 (start channel – factory setting). Adjustable is C0 (start), C1 (finish), C2, C3 and C4.

Setting the Timing Channel:

- Press push button (4) when switching device on for five seconds.
- The Radio LED (3) changes from blinking green to permanent green.
- Release push button (4) and channel C0 is adjusted.
- Other channels can be adjusted by pressing push button (4) shortly: 1 x for C1, 2 x for C2 etc.
- When pressing five times the push button (4), channel C0 is selected once again.
- If the push button (4) is not pressed for 5 seconds, the e-Start W switches to normal operational mode.

The adjusted channel is stored also after switching the e-Start off and on.

Adjusting Timing Channel C0:

Mostly channel C0 (start) is used with the e-Start W. If you press the push button (4) for 10 seconds when switching the device on, the default channel C0 is activated.

- e-Start W must be switched off.
- Press push button (4) for about 10 seconds until the radio LED (3) changes from green to red.
- Release push button (4).
- e-Start W executed a reset and channel C0 is set (factory setup of e-Start W).

12.5 LED Indication

During the operation the two LED (Status LED (2) and Radio LED (3)) show the following:

Status LED (2)
When pressing the push button (4) in operational mode (impulse) the status LED (2) indicates the following:

permanent red ..... channel is triggered (possible short circuit on channel)
permanent orange .... status of timing device is „not ready“ (only with SU3)
permanent green ..... channel is not triggered, after 3 seconds the LED switches to battery indication mode (blinking)

Battery Status:
blinking green ..... battery is full
blinking orange ..... battery is half full
blinking red ..... battery is almost empty

Radio LED (3)
The radio LED (3) is the RSSI indication; this means it shows the signal strength to the closest partner device.

red permanent off ..... no radio signal
orange blinking ..... sufficient radio signal
green blinking ..... perfect radio signal
red permanent on ..... signalization “Ready to switch off”

12.6 Start Signal

When the e-Start W is triggered (pressing push button (4)) a start impulse output is effected through the radio. At the same time the electronic flash (1) is triggered.

12.7 False Start Signal

If the push button (4) is triggered once again within 5 seconds a false start signal is released (again impulse of start channel by radio and three flash strobes (1) within a short time).
Attention: The false start signal works only when you adjust a short delay time at the timing device (e. g. 0.1 seconds).

No False Start Signal
If you do not want to output a false start signal you have to adjust a long delay time in the timing device (5 seconds or higher).

12.8 Rechargeable Battery

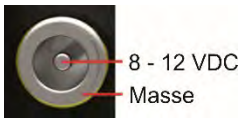
The e-Start W has a built-in rechargeable battery.

Indication of battery status with status LED (2):
blinking green ..... battery is full
blinking orange ..... battery is half full
blinking red ..... battery is almost empty

Charger socket
for charger

12.9 Technical Specifications

Flash:	4 x LED (Ultra Bright Power LED)
Connection:	charging Socket for charger PS12A
Operating Temperature:	-20 – 45 °C (-4 to 113 F)
Measurements:	265 x 150 x 35 mm
Weight:	ca. 0.4 kg (1.1 lb)



Radio Modem:

Frequency:	2.4 GHz Band, 16 adjustable frequencies
Power Output:	10 mW or 10 to 100 mW (adjustable)
Timing Channels:	5 different channels (c0 (start), c1 (finish), c2, c3, c4)
Range:	about 350 m at free sight

Battery:

Battery:	Li-Ion battery 3.6 V / 10.4 Wh (integrated)
Charging Duration:	~ 4 hours (charging temperature 0 to 45 °C (32 to 113 F))
Operating Duration:	~ 45 hours at 22 °C (72 F) and one impulse per minute
	~ 23 hours at -20 °C (-4 F) and one impulse per minute

13 Manual False Start Radio Push Button WTN-PB

For triggering a manual false start, the system includes a radio push button WTN-PB.
Setting: ..... channel 0
Team: ..... same team as adjusted in the Start Judge Controller SJC2.

For the initial operation you have to remove the transportation lock. For this you remove the battery cover and remove the plastic cover. Close the battery cover. The WTN-PB is now ready for operation. Re-insert this plastic cover for transportation or storage if you want to leave the battery inside the device. Otherwise remove the battery.

13.1 Switch On / Switch Off

Switch on: press the red button shortly, both LEDs must blink green
Switch off: keep the red button pressed for 5 seconds until both LEDs show red

13.2 Timing Channel

You can set different timing channels. Standard channel (factory setting) is C0 (start channel). This is used to trigger a false start. You can set C0 (start), C1 (finish), C2, C3 and C4.

You can set the timing channel as follows:

- Hold down the button for 5 seconds when switching on.
- Both LEDs shine green.
- Release the button. Now the channel is set co C0.
- Other channels can be set by pressing the button. Once for C1, twice for C2, …
- If you do not press the button for 5 seconds the WTN-PB returns to normal operation mode. The chosen channel will be stored even when you switch the device off and on

Adjust Channel 0

- WTN-PB must be switched off.
- Press button of WTN-PB for about 5 seconds until both LEDs show permanent green.
- Release button and wait until both LEDs blink green.
- Channel 0 is adjusted.

13.3 Team

This function is to select the team number of a WTN system. You can select between 15 team numbers. There are 9 single teams (Single Mode = different radio channels) and 6 joint teams (All = same radio channels). Position 0 is an internal factory test mode and has no function for the user.

Separate Teams = SINGLE is used for completely independent networks. If you operate two networks next to each other both networks operate in this mode on different frequencies and do not communicate with each other.

Joint Teams = ALL is used for networks that work independently next to each other. If different A teams with the same radio channel are operated, the other A teams can be used for data transmission. The data of the other team however is not used (e.g. for two show jumping grounds that are next to each other).

Adjustment:
The rotation switch to adjust the teams is hidden in the battery compartment in order to prevent changes that are not wanted. For changing the team, it is necessary to open the battery compartment and remove the battery. For the adjustment a small screwdriver is necessary (delivered by ALGE-TIMING with the WTN-PB).

13.4 Factory Setting

If you want to set the WTN-PB to factory settings you can reset it:

- Hold down the button for 10 seconds when switching on.
- Both LEDs shine red.
- The WTN-PB will be set to factory setting: Timing channel C1
- Release the button and the WTN-PB returns to normal operation mode.

In the normal operating mode, you can trigger a timing event by a short press to the button.

13.5 LED Signals

The two LEDs show the following operation modes:

Upper LED:
If you press the button in normal operation mode:

permanent red ..... channel is triggered
permanent green ..... channel is free again; after 3 seconds the LED returns to battery display mode (blinking)

Battery display mode:
blinking green ..... battery is full
blinking orange ..... battery is half full
blinking red ..... battery is nearly empty

Lower LED:
This LED shows the RSSI of the nearest neighbor device. The means it shows the strength of the radio signal of the next WTN partner device.

LED is off ..... no connection to any other device
blinking red ..... bad connection
blinking orange ..... normal connection
blinking green ..... good connection

13.6 Battery

The WTN-PB needs a 1,5V C battery for operation. You can change the battery by unscrewing the battery cover at the bottom.

If you do not use the WTN-PB for a longer time you should remove the battery to prevent leakage.

The battery life depends on several factors. Average lifetime is 52 hours at 20 °C. At low temperatures of -20 °C it is approximately 8 hours.

Subject to errors and misprints.

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