



# SPORTident Organiser Guide

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# 1. Introduction

This guide provides detailed information about the operation, use and configuration of the SPORTident timing system. The information is given for both the classic and the AIR+ system. For both cases, the system will be explained, followed by detailed instructions on how to set up the system with the configuration software Config+. The aim is to guide you gradually through the possibilities of the system, from the pure basics to the advanced features. SPORTident's slogan is **Make the most of your sport!** This guide supports you with that.

Both beginners and more experienced users of the SPORTident system will find useful information in this guide. All features are explained step by step to be able to get the most out of the system.

## The SPORTident Organiser Guide

This book is designed and written with the help of Luc Cloosterman. Made with [Asciidoctor](#).

We are looking forward to receive your feedback on the Organiser Guide. Please submit suggestions, improvements, and questions via the [feedback form on our website](#).

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## 2. Quick overview

### 2.1. Classic punching system



The SPORTident system is comprised of two basic elements: SI-Stations and SI-Cards. Most SI-Stations are technically identical and can be configured to fulfil different functions (such as START, FINISH, or control stations) by using the configuration software Config+. SI-Stations are placed at the start, at control points on the race track and at the finish line. Each control station has a unique control number. Every athlete carries his/her SI-Card, which records the time and control number as he or she passes the SI-Stations during the race.

#### SI-Cards

For competitors, usage of the SPORTident system is simple: with the SPORTident classic system, the athlete has to **directly punch** the station, i.e. insert the tip of the card into the hole of the control station to record the time and control number to his or her SI-Card. The data is stored in the competitor's card and backed up to the control stations.

#### SI-Stations

SI-Stations are working autonomously without battery change for several years. The athlete gets an immediate optical and acoustic feedback after a correct punch.

Before the start, some special stations must be punched by the athlete. The CLEAR station will empty the SI-Card. This step can be verified with the CHECK station, which will only give a feedback signal if the SI-Card is empty. Depending on the type of start, the START station has to be punched (with free start time) or not (with mass start or pre-allocated start time). At the end of the race, the FINISH station has to be punched.

#### Race evaluation

After the race, the SI-Card holds the athlete's start and finish times, as well as the split times with all control numbers. The system can be operated without a computer by printing out the data

directly on a small battery-operated thermal printer. Alternatively, the data can be evaluated by using one of the evaluation programs that are designed for SPORTident equipment.

As one of the key features, the SPORTident system produces an individual sheet of paper with results and split times right after the runner has passed the finish line.





## 2.2. Contactless punching system AIR+




The setup of the AIR+ system is similar to the classic system but offers the possibility of touch free punching. This removes the need for the athlete to slow down at the controls or check points. Regular SI-Stations can be configured to operate in 'beacon mode' to support touch free punching. For the athlete, a special SPORTident ActiveCard (SIAC) is needed to 'punch' the controls from a distance in this touch free punching mode.

This contactless punching system is especially well-suited for applications such as (sprint) orienteering, trail running, mountain biking, Nordic sports and other adventure sports. With this system it is no longer necessary to bring the card and station into direct contact. Time and control numbers are recorded to the athlete's SIAC as he or she passes the station in a distance of no more than 50 cm at a speed of max. 40 km/h.

With special stations (BS11), the maximum allowed distance can be increased up to six metres. When passing a control station, competitors using a SIAC will receive a series of vivid flashes and loud beeps as confirmation that the data has been recorded.

## 2.3. Types of SI-Cards




	<p><b>SIAC</b></p> <p>ActiveCard (SIAC) is compatible with the classic and the contactless punching system. This SI-Card can store up to 128 punches.</p>
	<p><b>SI-Card 8</b></p> <p>SI-Card 8 is compatible with the classic punching system. This SI-Card can store up to 30 punches.</p>
	<p><b>SI-Card 9</b></p> <p>SI-Card 9 is compatible with the classic punching system. This SI-Card can store up to 50 punches.</p>
	<p><b>SI-Card 10</b></p> <p>SI-Card 10 is compatible with the classic punching system. This SI-Card can store up to 128 punches.</p>

	<p><b>ComCard Pro</b></p> <p>ComCard Pro is compatible with the classic punching system. This SI-Card can store up to 128 punches.</p>
	<p><b>ComCard Up</b></p> <p>ComCard Up is compatible with the classic punching system. This SI-Card can store up to 30 punches.</p>
	<p><b>pCard</b></p> <p>pCard is compatible with the classic punching system. This SI-Card can store up to 20 punches.</p>









SI-Card 5, SI-Card 6 and SI-Card 11 are no longer produced and therefore not listed in this documentation.

## 2.4. Types of SI-Stations

	<p><b>BSF8-DB</b></p> <p>Base Station Field 8 (display bottom) features classic and contactless punching. The station is available in red or blue.</p> <p>Operating modes: CLEAR, CHECK, START, CONTROL, FINISH, SIAC Test, SIAC On, SIAC Off, SIAC Radio readout, SIAC Battery test, BC START, BC FINISH, BC CONTROL</p>
	<p><b>BSF8-DT</b></p> <p>Base Station Field 8 (display top) features classic and contactless punching.</p> <p>Operating modes: CLEAR, CHECK, START, CONTROL, FINISH, SIAC Test, SIAC On, SIAC Off, SIAC Radio readout, SIAC Battery test, BC START, BC FINISH, BC CONTROL</p>
	<p><b>BSF8-DT SI-Master</b></p> <p>Base Station Field 8 (display top) features classic and contactless punching.</p> <p>Operating modes: CLEAR, CHECK, START, CONTROL, FINISH, SIAC Test, SIAC On, SIAC Off, SIAC Radio readout, SIAC Battery test, BC START, BC FINISH, BC CONTROL</p>



	<p><b>BS11-BS</b></p> <p>Base Station 11 (beacon small) features contactless timing with a range of 180 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>
	<p><b>BS11-BL</b></p> <p>Base Station 11 (beacon large) features contactless timing with a range of 300 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>
	<p><b>BS11-LA</b></p> <p>Base Station 11 (loop antenna) features contactless timing with an external ground antenna of up to a length of 600 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>
	<p><b>BSM8-D-USB</b></p> <p>Base Station Main 8 (USB) is a readout station that can be connected to a computer via a USB cable. This station can work in direct mode (e.g. to read SI-Card data with a computer) or can be used to remote control SI-Stations BSF7, BSF8-DB, BSF8-DT, BSF8-DT SI-Master.</p>
	<p><b>BSF7-DB</b></p> <p>Base Station Field 7 (display bottom) features classic and contactless punching. The station is available in red or black.</p> <p>Operating modes: CLEAR, CHECK, START, FINISH, SIAC Test, SIAC On, SIAC Off, SIAC Radio readout, SIAC Battery test, BC START, BC FINISH, BC CONTROL</p>
	<p><b>BSM7-D-USB</b></p> <p>Base Station Main 7 (USB) is a readout station that can be connected to a computer via a USB cable. This station can work in direct mode (e.g. to read SI-Card data with a computer) or can be used to remote control SI-Stations BSF7, BSF8-DB, BSF8-DT, BSF8-DT SI-Master. The included battery allows autonomous usage without a connection to a computer. BSM7-D is also available as RS232 version for serial connection.</p>



## 3. Classic punching system

### 3.1. Description

The SI-Stations are active (battery powered) and the SI-Card is passive. Every station has a 24 hours clock, a day of week counter and a week counter. This makes it possible to use the SPORTident system without reservation in competitions that run past midnight, for example for night orienteering or rogaining.

#### 3.1.1. At the start

Competitors have to **clear** and **check** their SI-Card before entering the start box. The CLEAR station will empty the SI-Card and will provide a feedback signal (an audio signal and a blinking LED) upon completion of the process. This can be verified with the CHECK station, which will only provide a feedback signal if the SI-Card is empty. These stations shall be positioned clearly visible in the starting area.

At the start, the runner just punches the START station. His/her start time will be written on the SI-Card and he/she will get confirmation by a feedback signal. The start station will NOT give a feedback signal if the SI-Card is not empty! It is the runners' responsibility to pay attention to the start procedure. It is the organiser's responsibility to explain the start procedure to the participants.

For events with pre-allocated start times, where punching starts are not required, competitors do not need to punch on the start line. However, they must clear and check their SI-Card before the start line. The start time is based on the allocated start, and not on a start punch. In this case, it is important to ensure that the computers and start clocks are synchronised to the race time to get accurate and consistent timing.

The times of the actions clear, check and start are recorded on the SI-Card in special allocated fields and can always be verified afterwards.

#### Start clock feature

A **start clock** feature can be activated on all BSx7/8 station that are configured in **start** operating mode.

The feature can be **activated** with the **Service/Off** stick. When you punch a station in standby mode with your Service/Off stick, it will **cycle** between the following modes:

1. **Service mode** (Display "**SERVMO**")  
Displays the most important settings, switches back to standby mode after 5 minutes
2. **Start clock** (Display "**STACLK**")  
Displays toggles between device time and "**STACLK**" and stays in this mode according to the operating time
3. **Standby mode** (Display off)



When the device is in start clock mode, it starts **beeping** 4 seconds before every **full minute**: beep beep beep beep beeeep. The **start** operating mode is **still available** when a SPORTident Card is punched but it is not recommended to use it when start clock feature is active as participants could mix up the confirm signal of the card with the start clock signal. The battery consumption of the device is a bit higher than usual as every beep and blink consumes a bit more power.



When the start clock feature is enabled in the device, it disregards the optical/acoustical feedback settings and always beeps/blinks.

### 3.1.2. During the race

During the race, the competitor punches by inserting his/her SI-Card into the hole of the SI-Station. The SI-Station reads the SI-Card and writes the control code and time into the SI-Card's memory. The station reads the competitor's SI-Card again to verify that it has been written correctly and then beeps and flashes to provide confirmation to the athlete. SI-Card number and time are also written into the station's backup memory.

Depending on the type of SI-Card, from 20 to 128 data slots are available. If there are no empty data fields available on the SI-Card, the SI-Station will not write anything to the SI-Card. In this case, no feedback signal will be given. However, the failed punch will still be stored in the backup memory of the station (with an error flag).



Organiser and athletes need to ensure that the SI-Card's storage is big enough for the number of controls set on the course.

It is the competitor's responsibility to ensure that the SI-Card is fully inserted into the station and to check the station's feedback signal for confirmation of a correct punch.



Some newer SI-Cards will also provide a feedback. The SI-Card 11 flashes during a couple of seconds and the SIAC provides an audio feedback signal on top of that.





### 3.1.3. At the finish

The runner punches the FINISH station. The finish time is written to an allocated field on the SI-Card.

SI-Cards are downloaded onto a readout station after the finish to verify the punch sequence and provide time data which may be either printed directly or passed to a timing software on a computer.

## 3.2. Featured SI-Stations

SPORTident offers different types of SI-Stations. You will find detailed information in the datasheets (available on [our website](#)).

	<p><b>BSF8-DB</b></p> <p>Base Station Field 8 (display bottom), CLEAR, CHECK, START, FINISH or CONTROL.</p>
	<p><b>BSF8-DT</b></p> <p>Base Station Field 8 (display top), CLEAR, CHECK, START, FINISH or CONTROL.</p>
	<p><b>BSF8-DT SI-Master</b></p> <p>Base Station Field 8 (display top), SI-Master in combination with CLEAR, CHECK, START, FINISH or CONTROL</p>
	<p><b>BSM8-D-USB</b></p> <p>Base Station Main 8 USB, SPORTident readout station with USB cable.</p>



For BSx7 stations, functionalities are identical. The size of the station is different (115x62x32 mm compared to 101x51x19 mm for the BSF8 stations) due to the larger battery. BSM7-D-USB can be used autonomously without a computer.

### 3.3. Featured SI-Cards

SPORTident offers different types of SI-Cards. You will find detailed information in the datasheets (available on [our website](#)).

Card 8	Card 9	Card 10	ComCard Pro	ComCard Up	pCard
30 intermediate times	50 intermediate times	128 intermediate times	128 intermediate times	30 intermediate times	20 intermediate times

## SPORTident ActiveCard

The SIAC enables contactless punching. The successful punch is indicated by both an optical and acoustic feedback for the athlete. Card readout and record data format are the same as for classic cards, making the SIAC compatible with all existing software solutions. The SIAC stores up to 128 punches and registers a direct punch in 50 ms. With normal use, the battery life time is approximately four years. The battery can be replaced by SPORTident.



The SIAC is fully backward-compatible with the SPORTident classic system.

### *Older cards, still in use but no longer produced*



- SI-Card 5 can hold 30 punches with control code and time, 6 more with code and order of visiting only, plus start, finish and check times. Punching time is 330 ms. Card numbers range from 1 to 499999.
- SI-Card 6 can hold 64 punches with code and time (192 punches after adapting the configuration of the stations – see section [Config + / Advanced Settings](#)), plus start, finish, clear and check times. Punching time is 130 ms. Card numbers range from 500000 to 999999.

## 3.4. Basic accessories



### **Instruction card SERVICE/OFF**

Special SI-Card to put the stations in **standby** or in **service** mode.

### **Instruction card CLEAR BACKUP**

Special SI-Card to clear the backup memory of the SI-Stations

### **Coupling stick (not in the picture)**

Special graphite stick, to be put in the SI-Master station or USB-Station to make the communication with other stations possible.



## 4. Contactless punching system AIR+

### 4.1. Description

To enable contactless punching (i.e. punching at a distance from the control), SPORTident offers the extension **AIR+** to the existing (classic) stations. The stations operate in **beacon** mode and the runners need to use a SIAC within a punching range of about 50 cm with common stations. This SIAC (AC stands for **ActiveCard**) can hold 128 punches with code and time plus start, finish, check and clear times.

The tip of the SIAC flashes when a punch has been recorded and the SIAC emits an audible beep. The flashing continues while the SIAC is in the field of the control. The SIAC records a second punch if it has been outside of the beacon station's active field for at least 8 seconds and then is moved back in. The SIAC is compatible with the classic system as it can also be used for direct punching.

SI-Stations in beacon mode will NOT give a feedback signal when a SIAC registers a contactless punch. In contactless punching mode, the SIAC's optical and acoustic feedback signals confirm to the athlete that the control code and timestamp have been successfully written to the card. A contactless punch is only recorded onto the SIAC and is not recorded in the backup memory of the station.

As an active device, the SIAC contains a battery. It is important to check the SIAC's battery performance before the event. The expected life time of the battery is about 4 years. The SIAC's AIR+ feature is not always active so that power consumption can be reduced, and the battery can last longer. The AIR+ functionality becomes active if the athlete punches the **CHECK** station (after clearing the card) or the **SIAC ON** station. The SIACs AIR+ feature is switched off by punching a **FINISH** station. This is why it is important to avoid that runners pass the finish area accidentally while they are racing. SIACs also can be switched off by using a field station configured as **SIAC OFF**.

SPORTident AIR+ is fully backward-compatible with the classic system. Stations used in AIR+ mode implement the AIR+ functionality in addition to the classic direct punching. This means that passive cards (series 5/6/8/9/10/11) can be used for classic direct punching and SIAC can be used for contactless punching in the same event.

A direct punch with a SIAC is a fall-back option to register at controls if for any reason a station would not be in beacon mode. The SIAC will always work in direct punching mode, even if its battery is empty.

A SI-Station used in AIR+ mode uses about ten times more power than a similar station used only for direct punching. A BSF8 with a brand-new battery will operate for about 1500 hours (120 events) before the battery needs to be changed, a BSF7 about double that time. To reduce power consumption, it is strongly recommended to turn the stations into **standby** mode by using the instruction card **SERVICE/OFF** immediately after the event.

In Foot-O, the use of AIR+ is beneficial in particular in urban sprint and sprint relays where a whole group of competitors may arrive at a control at the same time with little space to place multiple punching units. The AIR+ system allows several runners to punch a single control at the

same time.

In Ski-O and MTBO, it is a little awkward for competitors to use traditional punching and it is easier for them to use contactless punching. The special BS11 stations are the ideal solution. Of course, for other sports with check points that are not easily accessible or with many participants, AIR+ offers many advantages.

## 4.2. SIAC activation / deactivation

With a CLEAR station, the SIAC's memory is cleared. With a CHECK station, this process is verified and the SIAC is switched on. The SIAC remains active for about 20 hours if it is not switched off. This timer is reset with each direct or proximity punch. The SIAC indicates an active state with a slowly blinking green LED. The SIAC is deactivated by a FINISH punch (with a classic punch or in the contactless way in beacon mode). The SIAC can also be turned off by a SIAC OFF station.



If a SIAC is not activated before the start of the race, it will not be possible to get any time records from a distance. In this case only direct punching will work.



There are two ways to activate the AIR+ functionality. For orienteering we recommend using a **CHECK** station as part of the starting procedure. Organisers need to make sure that there is a **CLEAR** station before the **CHECK** station. If a SIAC is not cleared, it will not be possible to switch it on with a **CHECK** station. For other sports we recommend using a field station configured as **SIAC ON**. In this case SIAC can be switched on without clearing the card in advance.



It is recommended to programme the CLEAR station with code 1. This will suppress the SIAC's feedback beeps and flashes when clearing. This way, the SIAC can punch the CHECK station without delay to activate contactless punching. If an alternative code is used for the CLEAR station, there is the possibility that the athlete will punch the CHECK station while the SIAC is still beeping and flashing. In this case the **CHECK** punch will **not** register, and contactless punching will not be activated for the SIAC.

## 4.3. SIAC mounting

### 4.3.1. For orienteers

There is no recommended best practice to attach and carry a SIAC. However, it is important that the athlete should be able to observe the SIACs feedback signals. For foot orienteering, the SIAC is generally carried as a finger stick. For orienteers who know the classic punch system, there is no need to change the common way of carrying the card.

#### 4.3.2. For trail runners

For trail running and other sports, we recommend that athletes carry the SIAC on their wrists. If there is no need for the athletes to punch the SIAC in the classic way and the card is activated before the race start, the wrist is the optimal position.

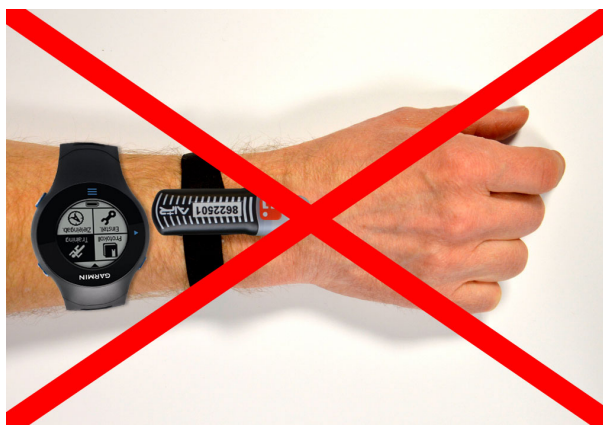
#### 4.3.3. For mountain bikers



For MTB applications we recommend carrying the SIAC on the wrist with a rubber band. For races where two transponders are used, one is mounted on each wrist.

#### 4.3.4. How not to mount the SIAC

GPS could influence SIAC signal



The AIR+ mode can be compromised by disturbances caused by third party equipment. The active antenna of some GPS watches can significantly reduce the SIAC's sensitivity. As a rule, a GPS watch and SIAC shall not be carried on the same arm.



## Battery packs could influence SIAC signal

Advanced LED lamps use a switching circuitry to modulate the lamp's brightness. Some lamp models are not properly protected against emission of these signals. Even the battery leads of these lamps can act as an antenna. Therefore, the LED lamp shall not be mounted next to the SIAC and battery leads should not be positioned near the SIAC.

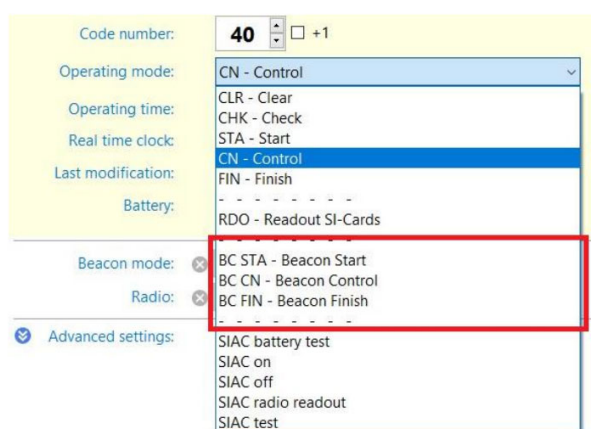
## 4.4. BSF7/8 for AIR+

The BSF7/8 stations can be used for contactless punching. The **operating mode** of the stations has to be changed with Config+ in the same way as for the classic system (see section [Config+ / Basic configuration](#)). The stations must be programmed in beacon mode. Possible operating modes are: Start (BC STA), Finish (BC FIN) and Control (BC CN).

### 4.4.1. Configuration of BSF7/8

1. Read the station in **remote** mode by clicking on **Settings**. For more information on how to do that, please refer to section [Config+ / Device connection](#).

2. Click on the field of the **operating mode**. The different options are shown. Choose the desired function.



The screenshot shows the 'Config+' interface for a station. The 'Code number' is 40. The 'Operating mode' dropdown menu is open, showing the following options: CN - Control (selected), CLR - Clear, CHK - Check, STA - Start, CN - Control (highlighted in blue), FIN - Finish, RDO - Readout SI-Cards, BC STA - Beacon Start (highlighted with a red box), BC CN - Beacon Control, and BC FIN - Beacon Finish. The 'Advanced settings' section is also visible, containing options like SIAC battery test, SIAC on, SIAC off, SIAC radio readout, and SIAC test.

3. To confirm, simply click the **Apply** button in the main toolbar.

4. A progress bar will pop up and confirm the configuration.

Operating mode	Functionality
<b>BC STA - Beacon Start</b>	Start time will be written on the SIAC in the contactless way. Subsequent start punches will overwrite the start time slot in the SI-Card memory, but the first start time will remain available in the start reserve slot.



Operating mode	Functionality
<b>BC CN - Beacon Control</b>	Works like a normal control station, but also in the contactless way. The SIAC can store up to 128 controls.
<b>BC FIN - Beacon Finish</b>	Finish time will be written on the SI-Card in the contactless way. Subsequent finish punches will overwrite the finish time slot in the SI-Card memory, but the first finish time will remain available in the finish reserve slot. The SIAC automatically turns off after receiving BC FIN.



Stations operating in beacon mode must be activated using a direct punch. It is very important that for competitive events 'real' competitors do not find the controls in **standby** mode because beacon mode is not active in standby mode and consequently contactless punching is not possible. Pre-runners must punch all the controls in the morning, first with a direct punch and then with a contactless punch by using an activated SIAC to ensure that they are indeed functioning correctly. Both punches can be registered with the same SIAC.



The operating time must be set so that the controls are still active when the first and the last real competitor visits the controls. Furthermore, it should be noted that contactless punching does not reset the operating time and thus needs to be set to last for the duration of the whole event. The default value for stations in beacon mode is 12 hours.

The stations will deactivate automatically at the end of the operating time, but to reduce power consumption it is strongly recommended to turn the SI-Stations into standby mode manually by using the instruction card **SERVICE/OFF** immediately after the stations are collected. A BSF7/8 station used in AIR+ mode uses more power than a similar station being used only for direct punching. After using the stations, they should be set back into normal mode if the beacon mode is NOT required for the next event. To handle this efficiently, it is helpful to use the software Config+ and the command **Apply default**.



Important notice: The SERVICE/OFF instruction card does NOT enable the beacon field of the station but switches to service mode/standby only.

#### 4.4.2. Special operating modes













Code number:	40 <input type="checkbox"/> +1
Operating mode:	CN - Control
Operating time:	CLR - Clear
Real time clock:	CHK - Check
Last modification:	STA - Start
Battery:	CN - Control
	FIN - Finish
	---
	RDO - Readout SI-Cards
Beacon mode:	BC STA - Beacon Start
Radio:	BC CN - Beacon Control
	BC FIN - Beacon Finish
Advanced settings:	SIAC battery test
	SIAC on
	SIAC off
	SIAC radio readout
	SIAC test

Stations can also be configured to fulfil a special function, linked to the SIAC. These stations do not perform any other action/mode (like CONTROL, START, ...). The procedure is identical as described above and the possibilities are shown below. SIAC special operating modes can be configured in BSF7, BSF8, BSM7-USB (or RS232) and BSM8-USB.

### SIAC Battery test

The battery voltage of the punched SIAC is measured and shown on the station's service display. An acoustic signal 'normal beep' indicates that the battery is **OK**. For voltages **below 2.72 Volts**, the station will show **WARN** (warning) and emit a **warning** signal – several beeps at higher frequency. In this case the battery is close to the end of life, but should easily last for the current event, unless a lot of data is being collected from the chip for live timing. In case of **FAIL** (failure) for voltages **below 2.44 Volts**, there is no feedback signal. In this case, the battery voltage is below the critical level and the SIAC cannot be used for contactless punching. Battery service is needed.

It is recommended to conduct the test before every event. SIAC Battery test stations should therefore be placed in the event centre, so that athletes can use them early before the start. The station's battery voltage evaluation software considers the temperature dependency of the battery voltage. Voltages measured are stored in the station's backup memory. Information consisting of SIAC ID and the battery voltage can be read out by using Config+ (see section [Config+ / Read backup](#)).

							
Home	Settings	Backup	Clock	Firmware	View punch	Read SI-Cards	Config SI-Cards
							
Re-read	Clear backup	Export...	Print...				
#	SIID	Control time	Voltage				
1	8655042	30-Sep-17 19:05:40	2.98 V				



## SIAC ON and SIAC OFF

Stations with SIAC ON / SIAC OFF operating modes activate and terminate the SIAC's AIR+ functionality.

In the context of an event usage cycle, the AIR+ functionality in orienteering is typically activated by the CHECK station and switched off by the FINISH station. With the typical procedure, the time of **check** and **finish** are written on the SIAC.

Using SIAC ON / SIAC OFF is an alternative way. The difference is that no record is written into the SIAC and that the SIAC is activated with SIAC ON even when the SIAC has not been cleared before. By means of these operating modes several training sessions with breaks in between are supported during one day. Data are collected over the day and a final evaluation can be done afterwards.



SIAC ON does not clear the card. It has to be ensured that this is done before the race or training.

## SIAC Radio readout

A station programmed in this working mode and punched directly by a SIAC triggers the SIAC (even when it is turned off) to send out all data records stored by its internal radio. This punch does not modify the card memory (i.e. data records on the SIAC are not deleted). To receive the data, a SI-SRR dongle or SIGSM-DN is needed (see chapter [Short range radio](#)). The radio dongle (SI-SRR USB Dongle) receives these records and supplies them to the computer for further evaluation. The GSM modem SIGSM-DN can be used to upload live data to SPORTident web services.

Radio readout is recommended when evaluations between single sections are required. For example, the procedure is very useful for evaluating promptly single split times during a training day.

Data read out are not stored in the Radio readout station's backup memory.




## SIAC test

Despite all precautions taken by the organiser, it might occur that a runner enters the start box without having activated his/her SIAC. This can easily be verified with the SIAC TEST station. When coming in range of the station (50 cm), the SIAC should react as for a normal punch. The SIAC TEST station will not write any data on the SIAC. The card remains empty and is thus still able to register the start time (the START will not work when a SI-Card is not empty). The same test is also useful for allocated start times.

The operating mode is shown as **AC TST** on BS7/8 and **AIRTST** on BS11.

## 4.5. BS11 for AIR+

Identification at check points in outdoor sport disciplines like trail, biking and skiing is slightly different than in orienteering. In general, passing speed is higher. The BS11 stations are specially adapted for these applications by enabling identification over the air over a larger distance. With the BS11-BL station, the SIAC can register the intermediate and start/finish times in a range of up to 3 metres.

	<p><b>BS11-BS</b></p> <p>Base Station 11 (beacon small) features contactless timing with a range of 180 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>
	<p><b>BS11-BL</b></p> <p>Base Station 11 (beacon large) features contactless timing with a range of 300 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>
	<p><b>BS11-LA</b></p> <p>Base Station 11 (loop antenna) features contactless timing with an external ground antenna up to a length of 600 cm.</p> <p>Operating modes: BC START, BC FINISH, BC CONTROL</p>

The **BS11-BS** (beacon small) and **BS11-BL** (beacon large) stations allow for contactless registration of time records over a distance of up to 1.8 and 3 metres, respectively. Both stations can easily be carried around and set up. They can be integrated in the AIR+ system without any special measures. These stations are mounted vertically on a holder instead of horizontally as the classic stations. The bigger antenna with an area of 185 mm x 240 mm generates a powerful low frequency radio field while keeping the power consumption low. This enables a highly mobile and flexible setting of the stations at any course and at any location without the need of any additional external equipment.

The BS11-BS/BL can be configured as start or finish or as a control point on the track. They are typically mounted at the side of the track and operate unattended once set up and switched on. The stations work with an unlimited number of SIACs simultaneously. The stations are especially useful as a start and finish for all sports and as a control in sports with a big number of participants (for example trail, running, etc.) or for sports where the distance of 50 cm for contactless punching (as for the normal stations) is too small to avoid stopping at the control to get into the data transfer range (for example MTBO, Ski-O, etc.).

They are the perfect solution for sports with different stages in terrains where it is difficult to install a lot of equipment (for example MTB Enduro). In most cases, the BS11-BS are used at the start of a stage and the BS11-BL at the finish. The functioning of the stations is basically identical to

the classic stations. The control codes and time records are transmitted and registered on the SIACs. There is no need to modify the timing software either.

Alternatively, a loop antenna (BS11-LA) can be used for lanes with widths of up to 6 metres, e.g. in ski orienteering. The loop antenna is put directly at the finish line and buried in the snow or covered with a thin carpet (no metal objects can be used as they would disturb the magnetic field).

#### 4.5.1. Charging

BS11 stations have a rechargeable battery and need to be charged before application. The stations are equipped with a standard mini USB connector. The stations need to be connected directly to a USB port of the computer or with an adapter to the socket. To assure waterproofness of the stations, the mini USB connectors are protected.



The mini USB connector is located at the short side for the BS11-BS under the rubber cap. The mini USB connector is located at the backside of the BS11-BL under the blue cap.

The charging progress is indicated by LED in the display:

- Yellow – Indicates (5 seconds only) that the station is successfully connected to a USB interface.
- Red – Indicates that the station is charging.
- Green – Indicates that the charging is completed.



A fully charged station BS11-BS will work for about 75 hours and a fully charged station BS11-BL for about 90 hours. To fully charge a BS11-BS takes about 5 hours, to fully charge a BS11-BL takes about 10 hours.



Since firmware 700, the BS11 features a battery status indicator that is active during the first 3 minutes after the station has been switched on. It will show **CAPxyz** where xyz is a number between 0 and 99. This indicates the battery consumption percentage. A fully charged battery will show 0, a almost empty battery will show 99. Also since firmware 700, the BS11 features a battery low warning icon in the display that is enabled at 3.5 volts. When the indicator is visible, you should charge your station as soon as possible.



Since firmware 700, the station will switch off when the battery voltage drops below 3.0 volts. When you want to switch on a station with a battery voltage below 3.0 volts, the station will beep shortly and switch off again. Please charge your station in this case.

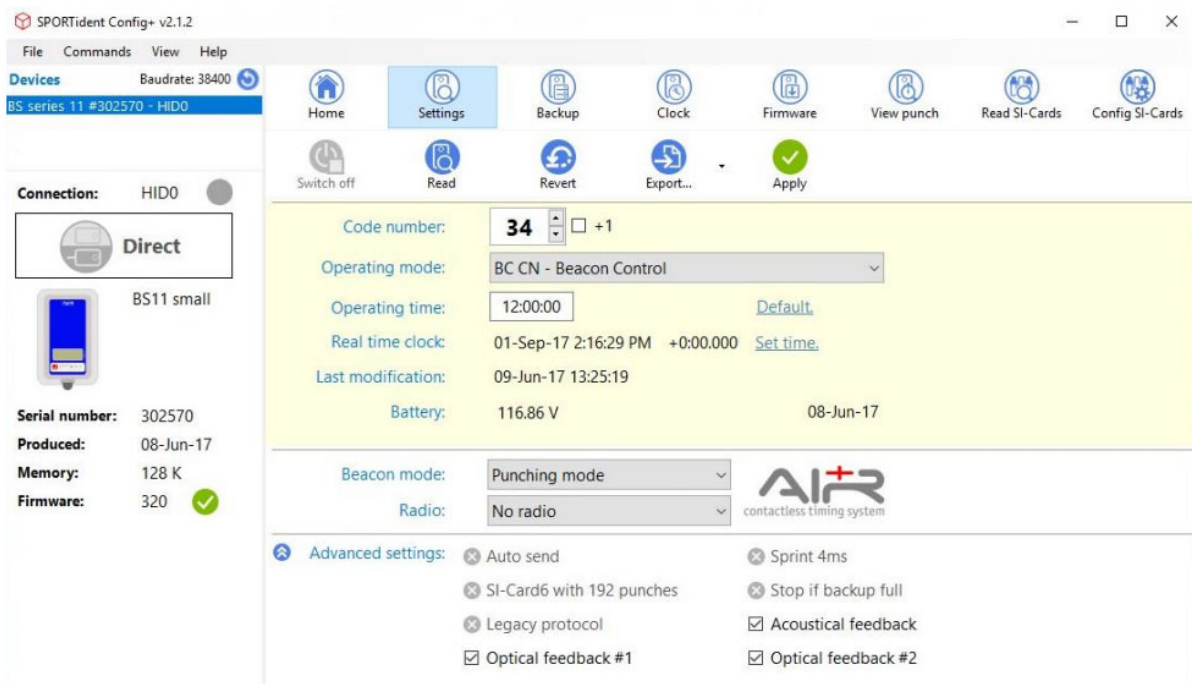
Please also refer to the [BS11 LCD information](#).

## 4.5.2. Configuration of BS11



After connecting a BS11 station with the USB cable to the computer, it can be configured with Config+. The station is read by double clicking on the device in the start-up screen (Direct and Remote are not active).

Config+ provides access to the full configuration of the station, allowing for flexible and advanced use cases. The configuration screen is similar to the classic stations, although some options are different.



The operating modes are limited to some functions that already have been explained for the BSF7/8 stations (see section [BSF7/8 for AIR+](#)) and their operation is identical.

## Operating time

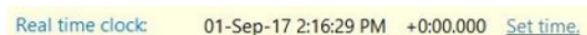
The operating time has to be set to last longer than the total time of the event. It is important to activate the station for a sufficient operating period as all punches will be contactless. The operating time is not extended automatically when a time record is registered with a SIAC.

A buffer of several hours is recommended to account for potential delays of the start. A default value of 12 hours is suggested by Config+. After the defined operating time, the station switches OFF automatically. The maximum operating time is 94 hours. The working time of a fully charged BS11 station is about 75 to 90 hours depending on the type of the station (BS11-BS or BS11-BL).



## Real time clock

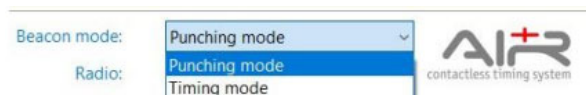
In a typical application, only the real time clock needs to be set before a race. Simply click on **set time** to synchronise the station with the computer time or use the **clock** button and **set time** (see [Config+ / Time synchronisation](#)).



You also can synchronise the time by clicking **Clock** on the main navigation bar.

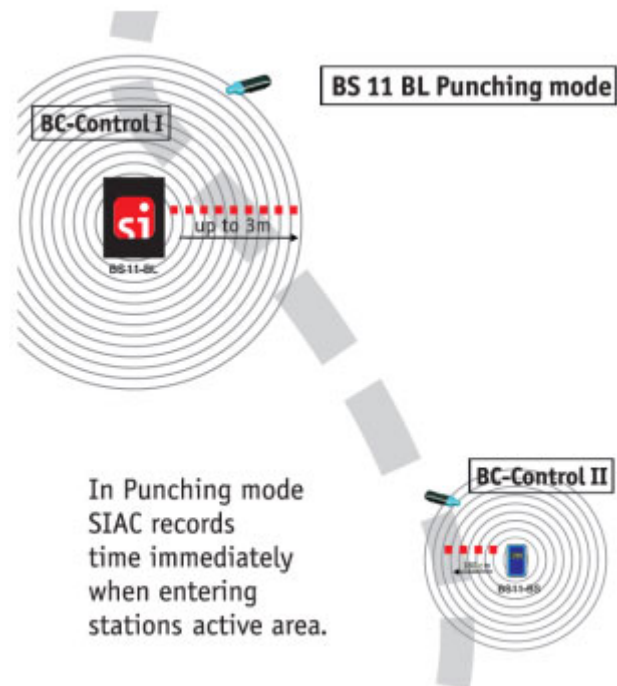
## Beacon mode

The BS11 stations can be programmed in Punching or Timing Mode.



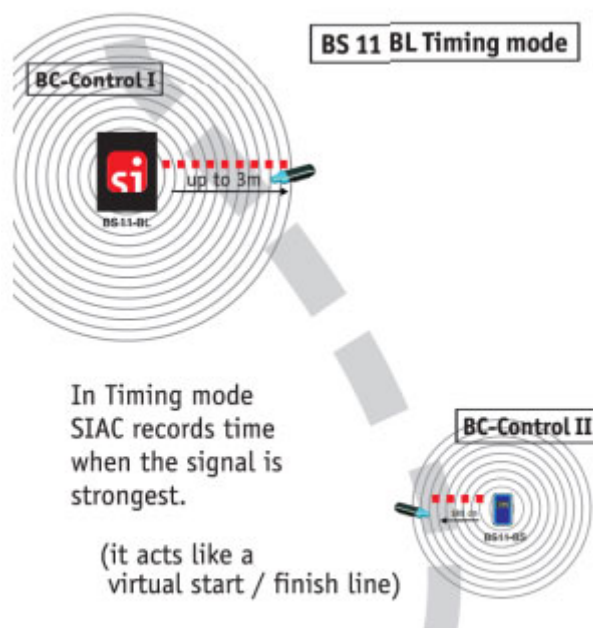
## Punching mode





In orienteering, **Punching mode** is recommended for all controls. The SIAC registers the time and station's code number when it enters the station's active field. The SIAC's feedback signals stay active while the SIAC stays in the station's active area.

Timing mode



In **Timing mode**, the punching time of the SIAC will be recorded at the maximal field strength. This method enables exact timing at START, FINISH (for any sport) or at every CONTROL point (for sports with different stages for example MTB Enduro). SIAC only provides a feedback after the athlete has left the field with a short flash and beep.



Because of the SIAC's late feedback in timing mode we recommend using an **AIR+ Signal Indicator** for testing purposes.

#### 4.5.3. Mounting

BS11-BS and BS11-BL stations should be secured according to the environment and event course. Make sure that there are no metal objects near the beacon stations, as it could interfere stations. The minimal distance between stations should be at least twice their working distance.

#### 4.5.4. Activation / deactivation

To **switch on/off** the BS11 stations, the on/off switch (a magnet) has to be held to the area marked **I/O** next to the LCD display. The left picture below shows a BS11-BS, the right picture a BS11-BL.



The stations initialise with an acoustic and optical signal. The display is active. Additionally, there are repeating short optical feedback signals while the station is active.



To deactivate the BS11 units, hold the **Switch On/off** at the **I/O** marked area, until a red LED light is blinking three times and the display is switched off.



The activation of the stations should be done on the course. Do not activate a station if another station is in range. If **ERROR** is shown on the display, deactivate and activate the unit once again.

#### 4.5.5. Gate mode

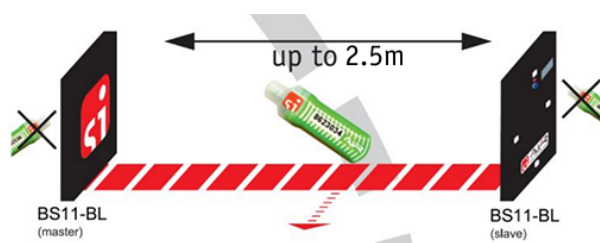
This section describes the behaviour of devices running firmware 700 and later.

It is possible to combine two BS11-BL station to a gate. This can be used to force athletes to pass between the two stations to trigger a timing record. Passing outside of the gate will not trigger a timing record.

A gate consists of a so called gate master and a gate slave. The gate master dictates the operating mode and time of day. The gate slave acts as a reflector for the signal.



The gate slave needs to be programmed in operating mode **Beacon Slave**. The automatic configuration of two equally programmed stations has been dropped since firmware 700 to prevent accidental configuration of a gate. A station with operating mode **Beacon Slave** is not operational without a master station in range.



**To create a gate as a finish:**



1. Prepare the gate master in Config+. Choose the following options
  - a. Use a BS11-BL station
  - b. Operating mode: Beacon Finish
  - c. Operating time: Should be sufficiently long for the event
  - d. Beacon mode: Timing mode
  - e. Do not forget to **set time** for the clock of the station.
2. Prepare the gate slave in Config+. Choose the following options
  - a. Use a BS11-BL station
  - b. Operating mode: Beacon Slave
  - c. Operating time: Should be sufficiently long for the event
  - d. All other options do not need to set and are dictated by the master
3. It is recommended to mark the stations accordingly.
4. Please mount the stations and switch on the master station first.
5. Switch on the slave station within the range of the master station. You can verify gate mode by checking if one display shows "Gate M" for the master and "Gate S" for the slave. Also both LEDs next to the stations display will blink synchronously and fast to indicate an operating gate mode.
6. The finish gate is now operational.



The gate mode is working for the beacon operating modes Control, Start and Finish of the BS11-BL stations.

## 5. Config+

The SPORTident Config+ software enables you to read out and configure your SPORTident equipment. The SPORTident USB driver is necessary to communicate with a readout station connected via USB to your computer. Config+ provides functionality to read and modify the station, as well as any station put on top of this station and SI-Cards inserted into the station.



In 90% of the cases, stations arrive pre-configured and labelled. For many sports or activities, no modification is needed. This guide is explaining possible modifications of the configuration that might provide you with extra possibilities for your sport.

Please [download](#) and install Config+ and the USB driver from the SPORTident website. When installing Config+, installation of the USB driver is proposed as an option. The easiest solution is to check the checkbox for the USB driver and install it right away. Follow the instructions on the screen.



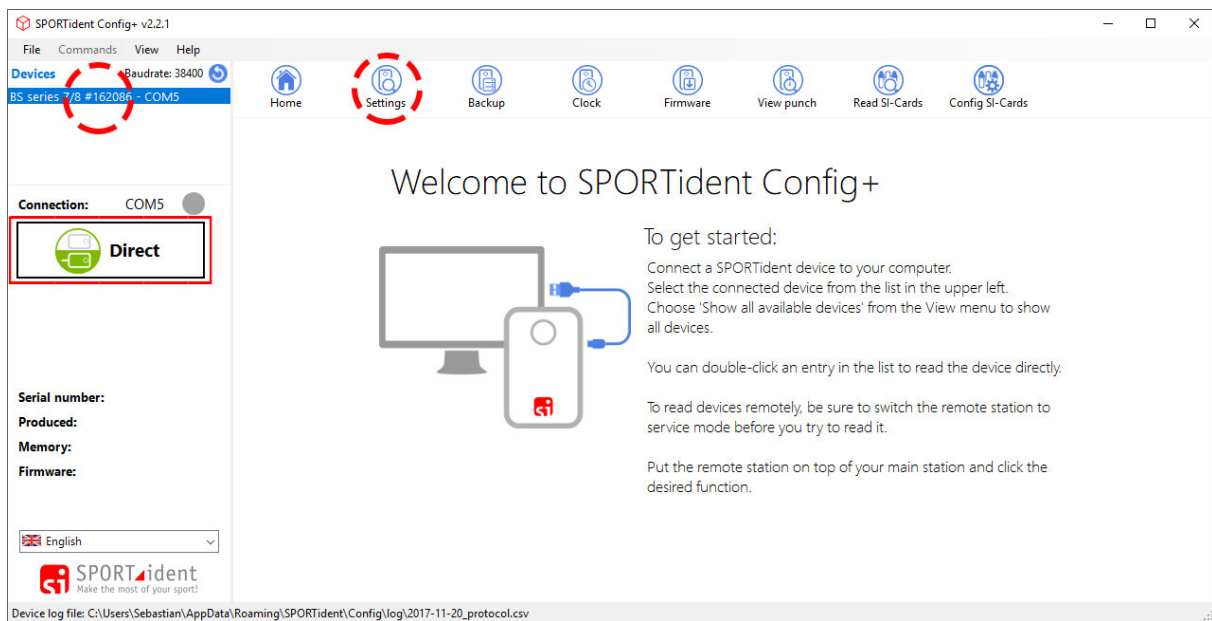
Config+ can be run in **portable** mode. This will not leave any traces on the machine it is running on. You can extract all files of the application into a folder on your thumb drive or memory card.



The use of the old SPORTident Config (Config classic) software is strongly **not** recommended. The software has been suspended several years ago and does not support later features of your SPORTident devices. You might even damage your devices using this software.

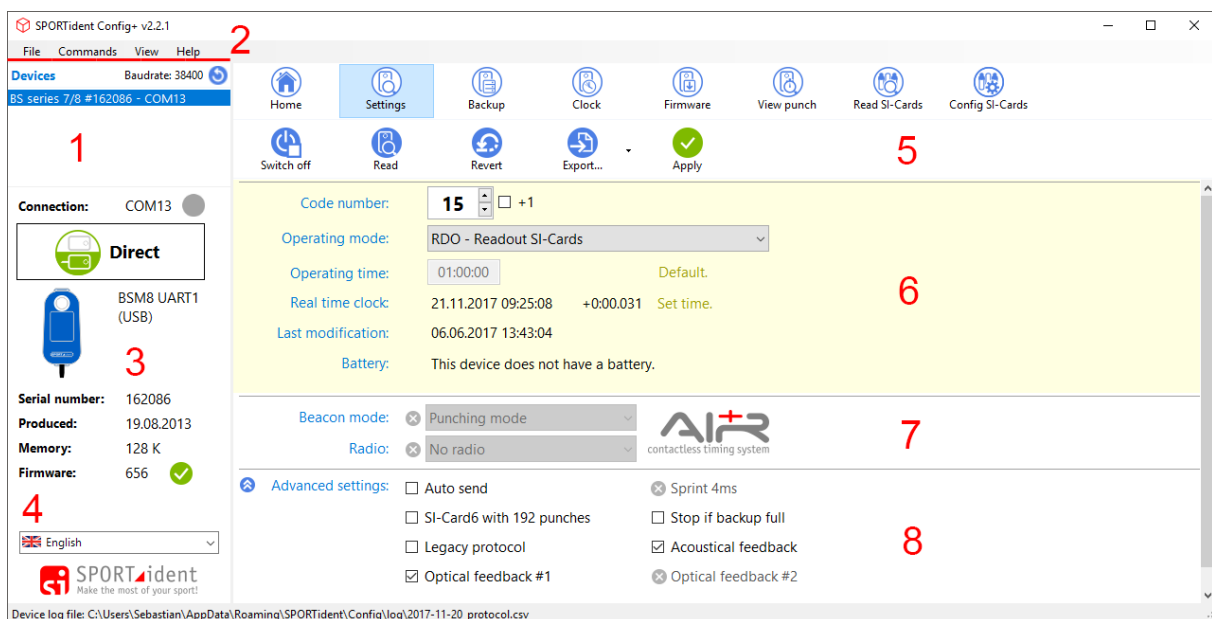
### 5.1. Device connection

#### 5.1.1. Direct mode



1. Connect the readout station (e.g. BSM8-USB or BSM7-USB) to the PC.
2. Start the Config+ software (the shortcut is usually on the desktop).
3. If not selected already, click on the **device** you want to read.
4. The button below connection needs to be on the position **Direct**.
5. Then click on 'settings'. The data of the station will be read and displayed.

### 5.1.2. Settings overview



1. The available device(s) and connection(s)

2. The menu bar
3. Information about the station and the installed firmware
4. The language selector. By clicking it, another language can be selected
5. The main toolbar
6. Station's basic settings area
7. Station's AIR+ settings area
8. Station's advanced settings area (can be shown/hidden by clicking the arrow left from 'Advanced settings')

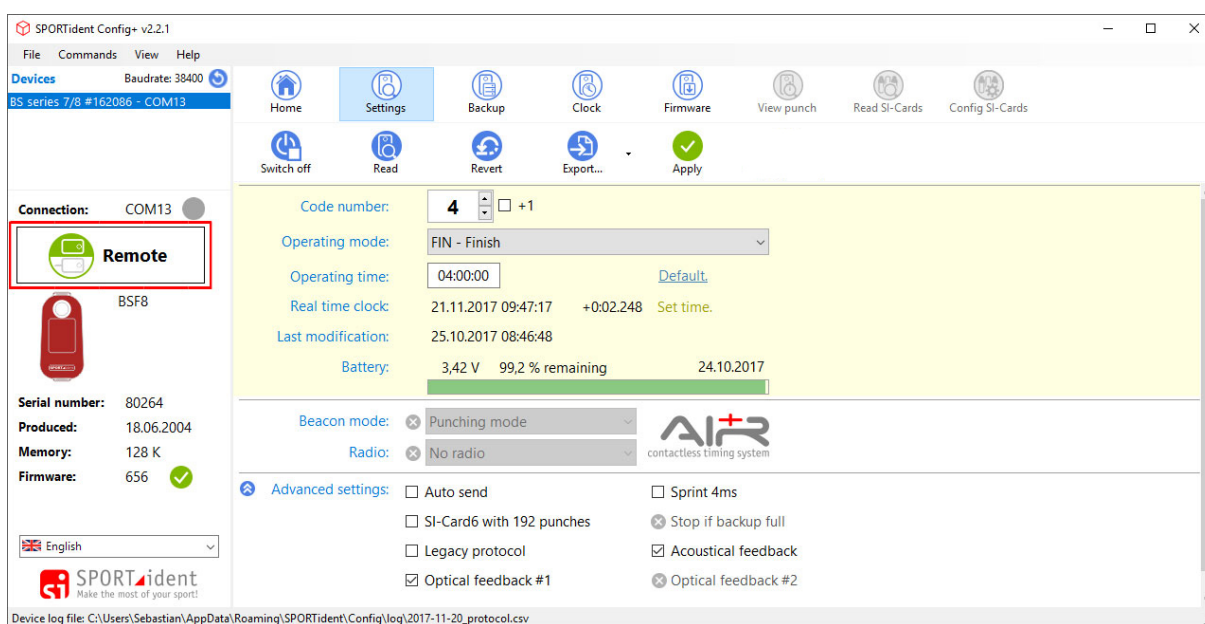
### 5.1.3. Remote mode

1. Connect the main station (e.g. BSM8-USB or BSM7-USB) to the computer.
2. Put the SI-Station you want to read out and/or configure in **service mode**. Place the **SERVICE/OFF** instruction card ONCE in the station. On the LCD display **SERVMO** is visible (afterwards the other data of the station are shown).
3. Start Config+.



Put the coupling stick (ferrite for faster transmission) into the USB station and place the station (in service mode) on top of it (this station becomes the slave station).

The **Direct** button needs to be toggled to **Remote**. If the button show 'Direct' click on it to toggle it. Click on **Settings** in the main toolbar. The data of the station will be read and displayed.



The layout of the screen is identical to the one in direct mode, although some action buttons are not active (inactive buttons are grey instead of blue).



In **direct mode**, the settings of the station connected to the computer can be read/modified. In **remote** mode, the settings of the station put on top of the main station can be read/modified.

## 5.2. Basic configuration

Most SPORTident stations are technically identical and can be assigned any of the available functions. For the basic setup, these functions are CLEAR, CHECK, START, CONTROL and FINISH. The other possibilities will be explained with the AIR+ system.

An SI-Card has allocated fields for the time of punching the stations CLEAR, CHECK, START and FINISH and a number of fields for the controls and the punching time.

Operating mode	Functionality
CLR - CLEAR	Removes all data from the SI-Card and provides a feedback signal upon completion.
CHK - CHECK	Verifies that the SI-Card is empty and provides a feedback signal only if this is the case.





Operating mode	Functionality
<b>STA - START</b>	Verifies that the SI-Card is empty and writes the start time on the SI-Card if this is the case. Provides a feedback signal if the start time has been written successfully. If the SI-Card is not empty, the old start time is not overwritten. If there are no controls punched yet, the start time is overwritten.
<b>CN - CONTROL</b>	Reads the competitor's SI-Card and writes the control code and time on the SI-Card. The SI-Station then reads the SI-Card again to verify that it has been written correctly and then beeps and flashes and writes the SI-Card number and time into the station's backup memory. If there are no data fields available anymore, the station will not write anything on the SI-Card (only in its backup memory) and will provide no feedback.
<b>FIN - FINISH</b>	Writes the finish time on the SI-Card (and overwrites a potential previous finish time, for example if somebody realized he/she had forgotten a control and went back) and confirms with a feedback signal.



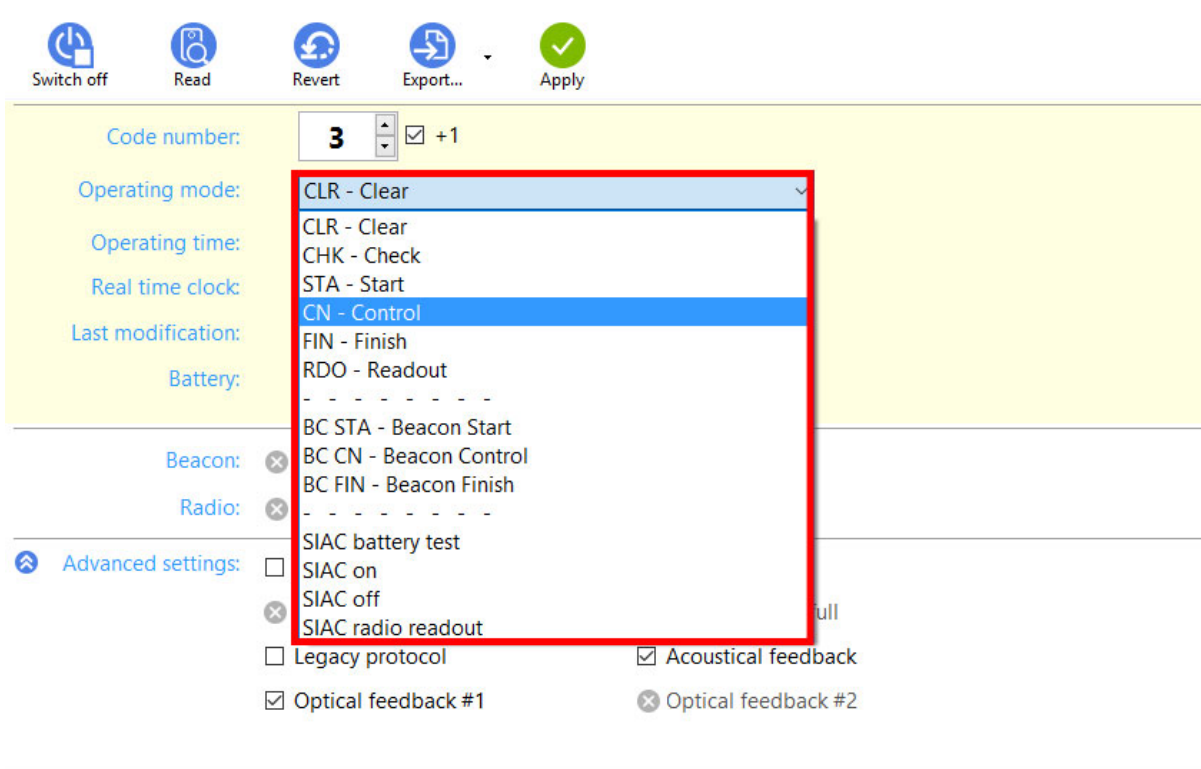
The SIAC has two allocated fields for clear, start and finish (a normal and a reserve field). The reserve field is never overwritten and always stores the first time when start or finish were punched.



The function of a station is defined by the choice of operation mode in Config+. The label on top of the station should match this setting or otherwise be modified to match the setting! The numbers used to label the SI-Stations are available separately.

### 5.2.1. Configuration procedure

1. Read the station in remote mode by clicking on **Settings**



2. Click on the field of the operating mode (below the control number). The different options are shown. Choose the desired function.

3. To modify the control number, just change the code by clicking on the arrows (up or down) or type in the desired number. Control numbers 1 to 511 are allowed, but typically the control numbers start at 31 (see remark below). Important: Most of the PC software for orienteering and the SI-Card 5 can only process numbers between 31 and 255.

Code number:  +1



The code numbers 1 to 30 are available but are most of the time only used for the **special** stations CLEAR, CHECK, START, FINISH and READOUT. Typically, these are numbered from 1 to 5 as this is the logical sequence for the use of the stations.



Apply

4. To confirm, simply click the **Apply** button in the main toolbar. A window with a progress bar will pop up and show the activity.

### 5.2.2. Switch off feature



If the **Switch off** button in the main toolbar is activated, the station will automatically go in **standby** mode when the **Apply** button is used.

### 5.2.3. Operating time

The SI-Station is always on and works in a low power **standby** mode. There is no need to switch on the SI-Station or to make any special preparation before the unit can be used. In **standby** mode the SI-Station is fully qualified to receive SI-Cards. The wake-up time is at most 1 second.

In standby mode, the SI-Station is scanning for SI-Cards every second, in **active** mode the interval is 40 ms. The wake-up time is variable and depends on where in the 1 second cycle the SI-Card is inserted. Once the SI-Station is in **active** mode, the reaction time to the insertion of subsequent SI-Cards is very quick. The SI-Station then operates in active mode until the set operating time is reached. Any further punches reset that countdown. For example, the unit only switches back to **standby** mode 4 hours after the last punch if the 4 hours default setting for the operating time is used.

#### Change operating time

To modify the operating time in Config+:

1. Read the station in **remote** mode by clicking on 'Settings'.
2. To modify the operating time, change the HH:MM:SS time or click on 'Default'. For the classic system, the default operating time of the stations is 4 hours. The minimum operating time is 2 minutes, the maximum operating time is 95 hours.

Operating time:

3. To confirm the changes simply click the **Apply** button in the main toolbar.



Clicking the **Apply** button always overwrite all information of the station. Any kind of backup data will be deleted.

### 5.3. Time synchronisation

All stations have an internal clock and their 'real time' has to be monitored. The station's real time clock system is calibrated and temperature compensated. This offers a high accuracy also at very high and very low temperatures. The internal time resolution is approximately 4 ms and the

deviation about 4 seconds per week.

It is vital that all stations and especially the start and finish stations are time synchronised before a race. That can be achieved by Config+ or by using the SI-Master station. If you use a SI-Master station for time synchronisation you do not need a computer, except to synchronise the SI-Master itself to computer time. The SI-Master station can transmit the time directly to the other stations.



Time synchronisation with the main computer used for evaluating the competition is strictly recommended before the race start.



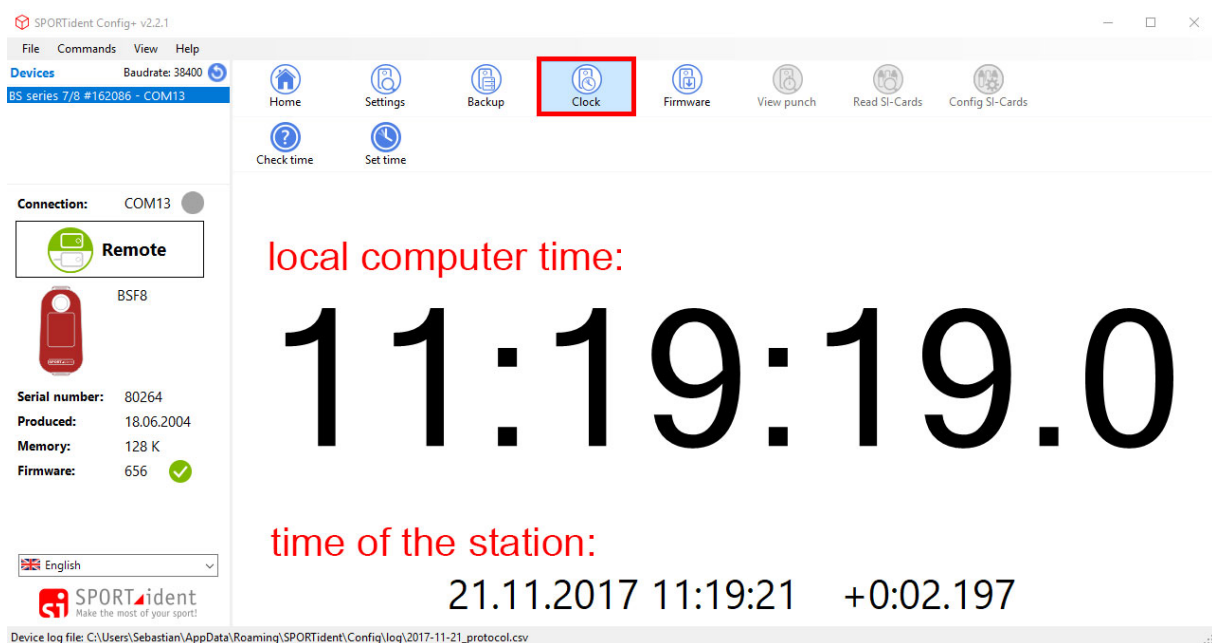
If you use multiple computers during an event, make sure that all computers run on the same local time.

The time of a SPORTident station will automatically set when:

1. ... you are **booting the firmware** of a SI-Station
2. ... you are **changing the configuration** of a SI-Station

### 5.3.1. Synchronisation with SI-Master

1. Put the SI-Master station on top of the USB station and read **remote** by clicking on **Settings**.
2. Click on **Clock**. Computer time (in big) and the station's time will be shown.



SPORTident Config+ v2.2.1

File Commands View Help

Devices Baudrate: 38400

BS series 7/8 #162086 - COM13

Home Settings Backup **Clock** Firmware View punch Read SI-Cards Config SI-Cards

Check time Set time

Connection: COM13

Remote

BSF8

Serial number: 80264

Produced: 18.06.2004

Memory: 128 K

Firmware: 656 ✓

English

SPORTident  
Make the most of your sport!

Device log file: C:\Users\Sebastian\AppData\Roaming\SPORTident\Config\log\2017-11-21\_protocol.csv

local computer time:  
**11:19:19.0**

time of the station:  
21.11.2017 11:19:21 +0:02.197



Make sure to have your PC's clock set to the right (official) time in the PC before setting the time in the station.

3. Click on **Set time** and the time of the station is modified to match the computer time. **Check**

**time** allows you to verify this afterwards.



Alternatively, it is possible to click on **Set time** in the settings area of the station. The clock will also be synchronised.



The station will remember the date of the last modification of the station settings but not of setting the time of the clock. In other words, the last modification is NOT the date of the last time synchronisation of the station.

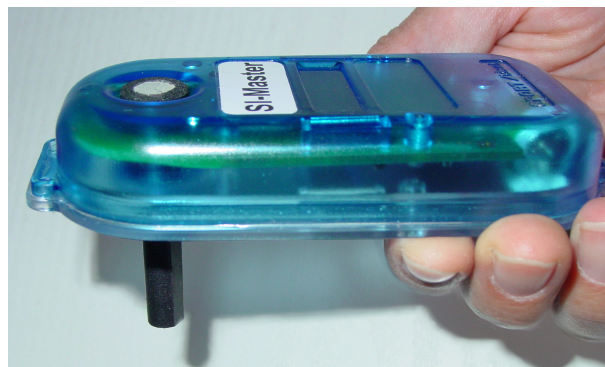


If the settings of a station are modified and applied by clicking the **Apply** button, the time of the clock is automatically synchronised.

4. Remove the SI-Master from the main station.

5. Put the **SERVICE/OFF** instruction card twice (with a very short time interval) in the SI-Master. On the front side of the SI-Master there is a small LCD display. On this screen **TIMEMA** must be shown. When you see this the station is ready.

6. Put the coupling stick in the SI-Master.



7. Place the **SERVICE/OFF** instruction card ONCE in the station you want to synchronise. On the LCD display **SERVMO** is visible (afterwards the other data of the station are shown).

8. Place the station on the coupling stick and the SI-Master. After some seconds there is a 'beep'. The time of the station is now adjusted.



9. Place the 'SERVICE/OFF' instruction card into the station until the LCD display is empty. The

station is now back in **standby** mode (it would automatically switch into **standby** mode after 5 minutes).



If the event is on the Sunday of the weekend when the clocks are adjusted for **daylight saving time**, special care must be taken. The SI-Stations will not be aware of the change!



In **ExtendedMaster** mode the SI-Master transmits its clock time to any other SPORTident station. Additionally, the SI-Master clears the backup memory of the coupled station and transmits its own active time to the coupled station. You can activate the **ExtendedMaster** by punching the **SERVICE OFF** three times in the SI-Master. The display will show **EXTMA**.

### 5.3.2. SI-Master additional features

The SI-Master station works both as a 'Time Master' and as a normal SI-Station, for example as a clear station. This means that there are two functions in one unit. The SI-Master is an extended control station. It works and can be configured the same way as any other SI-Station. Each action by an ordinary SI-Card immediately activates the station's base mode. All functionalities of the regular SI-Stations are available. However, as this station is about 50% more expensive, it is recommended not to use it as a regular SI-Station. When punching a SI-Master station in standby mode with the SERVICE/OFF instruction card, it will cycle between the following modes:

#### **Service mode (SERVMO):**

Displays the most important settings, switches back to standby mode after 5 minutes.

#### **Time master (TIMEMA):**

The station will synchronise and set the time of every coupled SI-Station (see section [Synchronisation with SI-Master](#)).

#### **Extended master (EXT MA):**

The station will not only synchronise and set the time of every coupled SI-Station but also change the operating time to the one of SI-Master station (see section [Operating time](#)) and clear the backup memory of the coupled station (see section [Read backup](#)). With these 3 actions executed at the same time, an organiser can save significant time when preparing the stations for a race.

#### **Standard master (STD MA):**

The station will synchronise and set the time of every coupled SI-Station and restore the **default** standard configuration for the station that has been set up in advance using Config+ and clear the backup memory of the coupled station. This is an ideal solution for stations frequently used by different persons.



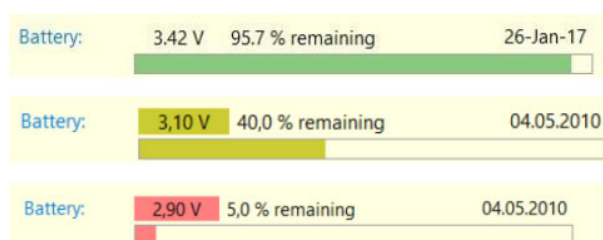
In extended master mode, the operating time of a station is set to a value of 12 hours if the coupled station is programmed in one of the beacon operating modes and the program value in Config+ is less than 12 hours. Higher values are disregarded (see chapter [Contactless punching system AIR+](#)).

## 5.4. Battery status

A lithium battery is soldered to the printed circuit board (size 1/2 AA in the BSF8 station, AA in the BSF7 station). The double size of the battery of the BSF7 stations provides an extended life time to the stations before battery replacement is required (4 to 7 years for the BSF7 stations against 3 to 5 years for the BSF8 stations). The listed life time is of course an average, and depends basically on the frequency of use of the stations, the number of participants and the use of AIR+.

The voltage of all stations should be checked (at least twice a year) to make sure that the batteries are OK. Check the voltage with Config+ or via the display of the station in **service mode**. For more information, see [LCD display information](#)).

1. Read the station in 'remote' mode by clicking on **Settings**.



2. The condition of the battery is indicated on the screen in the stations setting area. A colour code for the battery voltage indicates the battery condition:

- No color: A voltage of 3.2 Volts and higher is considered safe.
- Yellow: A voltage between 3.2 and 3.0 Volts is considered to be intermediate. The station might still be able to work for another event.
- Red: A voltage below 3.0 Volts is considered low. The station will beep 6 times with short intervals when it is switched to active mode. The station will also show a battery low indicator in the display. You should change the battery as soon as possible.



A battery voltage below 3.0 Volts is problematic as a lithium cell tends to lose voltage quite fast at this point. It is recommended to change the battery soon. At 2.60 Volts the station turns off. Reaching this voltage level can cause the beeper, display or controller to hang and might even damage the electronics.



The progress bar indicates the battery consumption level. This is a computed value and might not be as accurate as the actual measured battery voltage. You should always consider the battery voltage to estimate the battery health status.

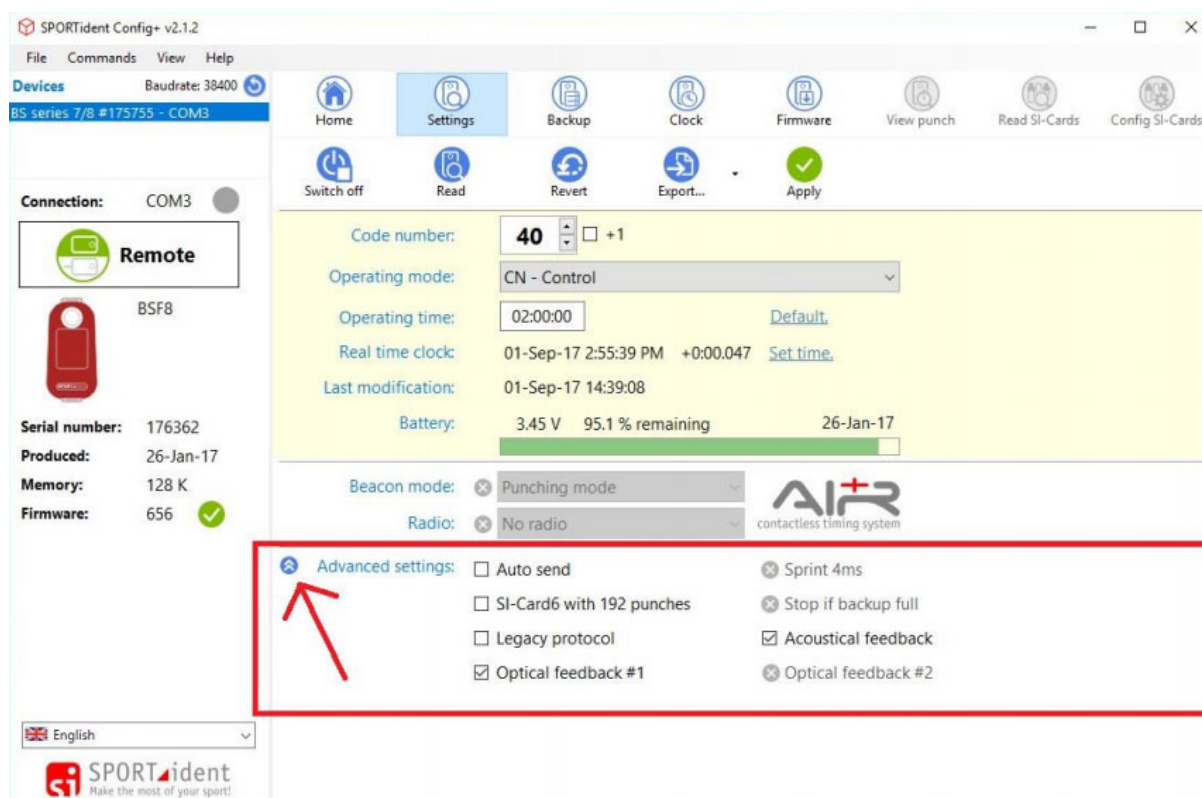
To have an idea of the age of the battery, the date of installation of the battery is also displayed.



Changing the battery is possible and can be done by SPORTident or one of its retailers.

## 5.5. Advanced settings

By clicking on the arrow next to **Advanced settings**, additional configuration options will be displayed. Depending on the configuration of the station, different options will be available. The picture below shows the options for a normal control station.



### Auto send

Basically, Auto send can be enabled for cabled stations with all operating modes. For stations without cable Auto send only makes sense for the BSF8-SRR or for the operating mode Readout. This causes the station to automatically read the card contents and store it in its backup memory. Later this backup memory of the station can be read to retrieve all card data. This is a useful feature to create backup data for the read SI-Cards.

### SI-Card 6 with 192 punches

The (old) SI-Card 6 checkbox means that the stations will continue to write data on a SI-Card 6 which will be able to store up to 192 punches.





All stations (including the readout station) must have this box checked to support registration of more than 64 records on a SI-Card 6.

### Legacy protocol

It is recommended not to activate this setting except for the use with old event software that does not support the new protocol.

### Optical feedback

With this option enabled the LED of a station will blink when punched. Checked is the default setting.

### Acoustical feedback

With this option checked, the station will emit a beep when punched. It can be useful to uncheck this box for night orienteering or special adventure races or raids. Checked is the default setting.

### Sprint 4ms

This option is only available with the start and finish stations. If this option is enabled, the SI-Station will write the time with 4 ms resolution instead of seconds resolution. Please note that the event software must support this feature, otherwise it makes no sense to check this box. This feature is especially useful in competitions where a race time is needed with a precision of 0.1 sec.



If Sprint 4ms is checked, the code number in the card memory will be exchanged with the sub second value. Therefore, the code number will not be available for evaluation.

### Stop if backup is full

This option is only available for the readout station. If this option is enabled, the station in operating mode **Readout SI-Cards** with 'auto send' enabled will turn off when the backup memory is full. This ensures that old backup memory will not be overwritten (as is the default case). This is useful if you are required to have a full backup set of read SI-Cards and old records should not be overwritten. The station will stop reading to prevent data loss. This will enable the operator to switch stations.

### Flip display

This option is only available for the BS11 stations. It will rotate the display information by 180 °.

## 5.6. Read backup

Every direct punch of a SI-Card is stored in the SI-Station's backup memory. Config+ can be used to read the backup memory. The data can then be inspected to check if a runner punched and if it was correctly done. The backup memory can hold up to 21802 punches or 1022 SI-Card data records. When full, the oldest data is overwritten. The operating mode of the station defines the

backup memory format.



It is the competitor's responsibility to ensure that the electronic punch is recorded on the SI-Card by not removing the SI-Card until the feedback signal has been received.



The SI-Station reads the competitor's SI-Card and writes the control code and time on the competitor's SI-Card. The station then reads the competitor's SI-Card again to verify that it has been written correctly. It then beeps and flashes and writes the SI-Card number and time into the station's backup memory.

It should be noted that even if a control is not recorded on the SI-Card, the SI-Card is most probably registered in the backup memory of the control station with an error code. It is almost impossible to insert an SI-Card into a station without the SI-Station having the time to read and record the number of the SI-Card. Error codes are given as ErrA to ErrF, depending on the moment of the interruption of the writing process.

The handling of complaints in orienteering about missing controls (see § 20 and appendix 4 of the IOF competition rules). If the competitor did not wait for the feedback signal when punching, there will be no punch record on the SI-Card. However, the punch will be stored in the station's backup memory with an error code. Usually the competitor will complain and assert that he had waited for the signal and thus should have this punch.

It is possible to download the stations from that control and search for this punch using the SI-Card number. Two cases are possible:

- There is a punch record with an error code. An error code proves that the runner did not wait for the signal. This means that he does not have a valid punch from that control.
- There is no punch record found. Then the runner did not punch at all at this control.

However, the IOF orienteering rules and almost all national competition rules strictly stick to what data is found on the chip and they do not allow for any evaluation by downloading punches from controls unless it can be established with certainty that the missing or unidentifiable punch is not due to the competitor's fault. In this exceptional circumstance, other evidence may be used to prove that the competitor visited the control, such as evidence from the read-out from the control unit.



We recommend clearing the backup memory of all stations before every race. Remember that every reconfiguration of a station, automatically clears the backup memory.

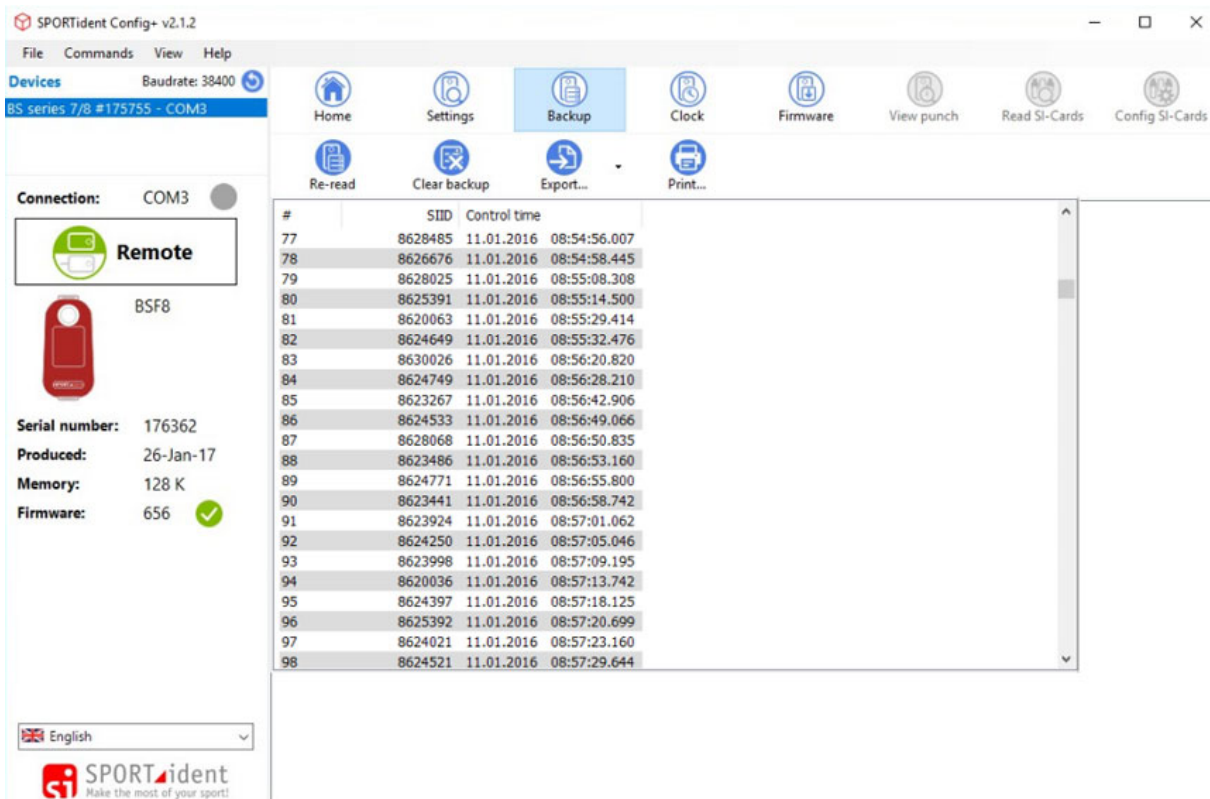


Reading a station's backup memory works in remote and direct device connection.

### Read backup procedure

1. In **remote** or **direct** mode, click the **Backup** button in the main toolbar.
2. A progress bar will show the activity.

3. A list of punches with SI-Card number and date/time will be available when there is some data in the backup memory. Otherwise the list will be empty.



#	SIID	Control time
77	8628485	11.01.2016 08:54:56.007
78	8626676	11.01.2016 08:54:58.445
79	8628025	11.01.2016 08:55:08.308
80	8625391	11.01.2016 08:55:14.500
81	8620063	11.01.2016 08:55:29.414
82	8624649	11.01.2016 08:55:32.476
83	8630026	11.01.2016 08:56:20.820
84	8624749	11.01.2016 08:56:28.210
85	8623267	11.01.2016 08:56:42.906
86	8624533	11.01.2016 08:56:49.066
87	8628068	11.01.2016 08:56:50.835
88	8623486	11.01.2016 08:56:53.160
89	8624771	11.01.2016 08:56:55.800
90	8623441	11.01.2016 08:56:58.742
91	8623924	11.01.2016 08:57:01.062
92	8624250	11.01.2016 08:57:05.046
93	8623998	11.01.2016 08:57:09.195
94	8620036	11.01.2016 08:57:13.742
95	8624397	11.01.2016 08:57:18.125
96	8625392	11.01.2016 08:57:20.699
97	8624021	11.01.2016 08:57:23.160
98	8624521	11.01.2016 08:57:29.644

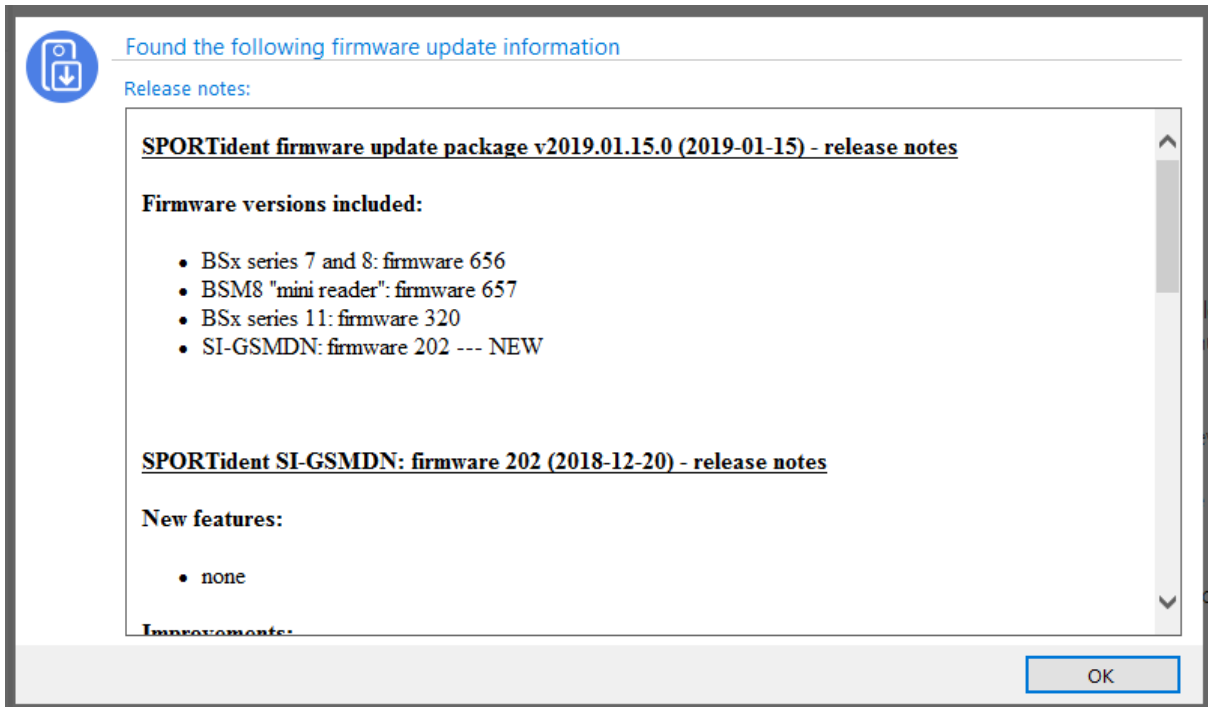
It is possible to search for a specific SI-Card by scrolling the list, to export the file (raw format or CSV format) or to print the list. If an error occurred during the punching process, the time will be replaced by the error code. It is easy to identify these errors on the screen as they are highlighted in red.



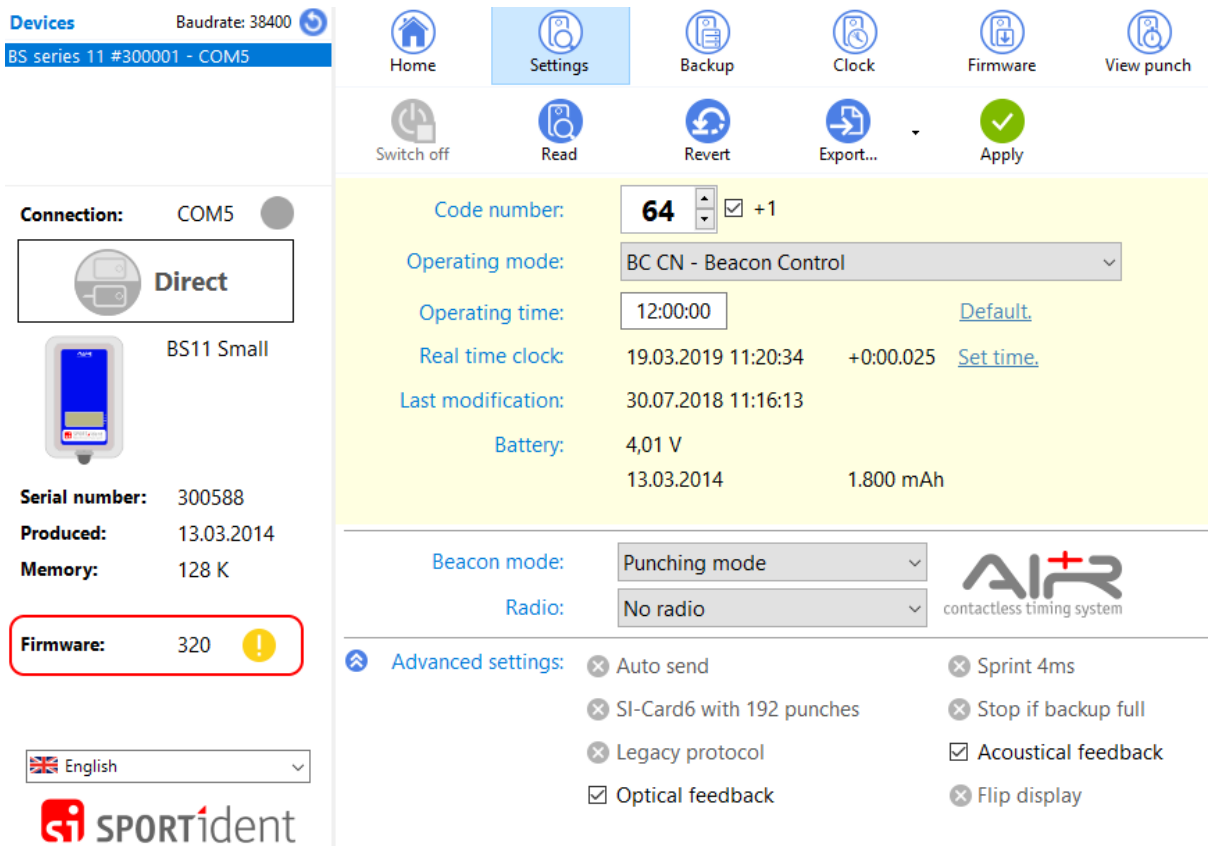
The buttons **Re-read**, **Clear backup**, **Export** and **Print** are available for further action if necessary.

## 5.7. Firmware update

SPORTident frequently updates the firmware of its devices. Firmware updates include new features and fix issues. New firmware is available through the firmware update features of SPORTident Config+. This software will frequently check for new firmware versions. You can also manually check for updates (Menu "Help"). If a new firmware version has been found and is ready to be installed, an information dialog will be shown:

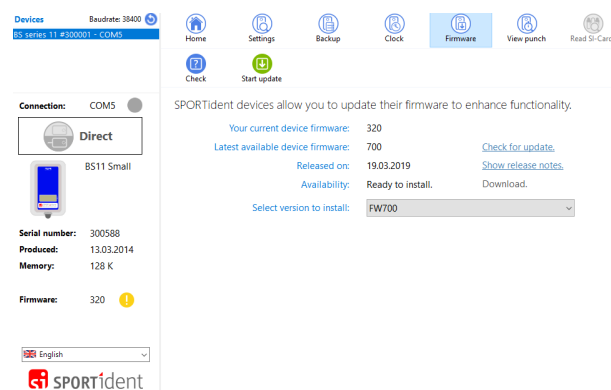


To check if you need to update your station to the new firmware, read the target device with Config+. The left view will indicate the firmware version. The yellow icon will tell you that your firmware is not up to date. A green icon will indicate that the firmware is up to date.

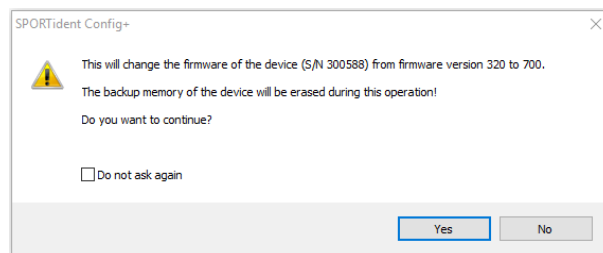


## How to perform the update

1. In Config+, read the settings of the device you want to update. Read **Remote** if you want to update a slaved station or **Direct** if you want to update a main station.
2. Open the firmware update view by clicking the **Firmware** button in the main toolbar.
3. The firmware update view will show which firmware is available for your device:



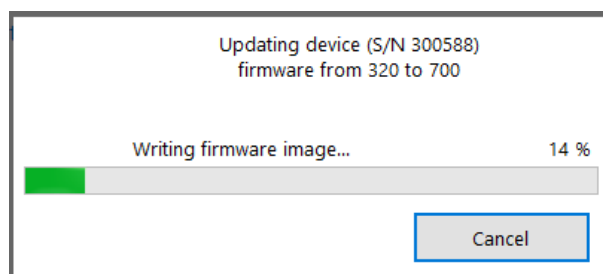
Click "Start update" to start the firmware update process. The device settings will be verified and Config+ will ask you to confirm the firmware update. Click Yes in the upcoming dialog.

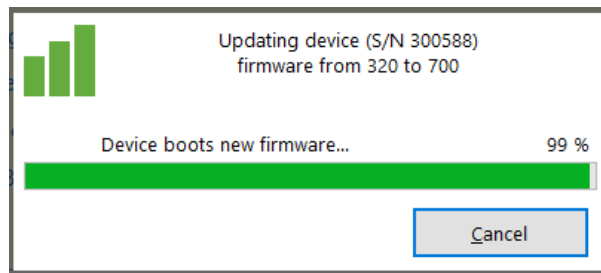


Be aware that the device backup memory will be cleared during the update.

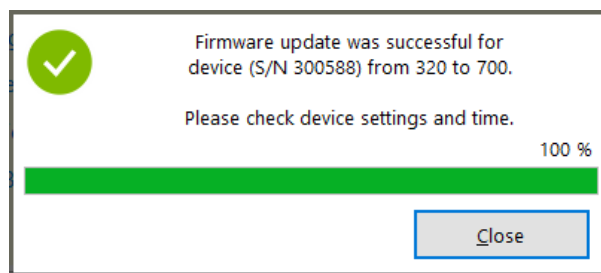
If you update a slaved station, keep it steady on the main station.

Wait for the process to complete. The coloured indicator shows the transmission quality of the firmware image. You can improve it by using a coupling stick if it turns yellow or even red.





When the update process has completed, you will see a message telling you that the update was successful.



- Done. You can now disconnect and switch off the device.



If you have used a RS232 master station or Printout station, the data transfer speed might have been changed from slow (4800 baud) to fast (38400 baud) to speed up the firmware update. Usually this speed will be reset after the update process. However, to make sure your station is working at the desired speed, check with Config+ and correct if necessary.



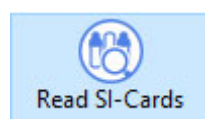
It is recommended to perform a full factory reset on the device (menu **Commands - Reset device to factory defaults**) and rewrite your desired station settings afterwards. If you use BS11, we also recommend you to fully charge the device before first use.



After the firmware update of your BS11 station, the battery voltage cannot be shown. Instead, Config+ will show "(invalid)". This is the normal case. If you want to check the battery voltage, please disconnect the device, switch it on (so it will measure its battery) and check the voltage either on the display or reconnect it to Config+.

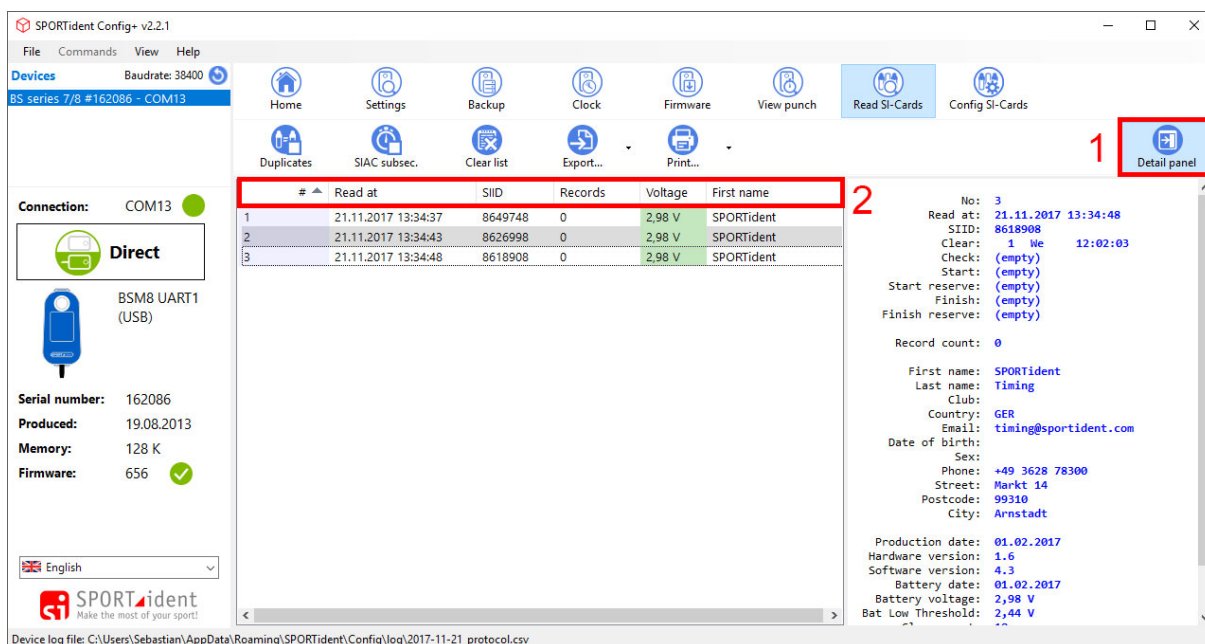
## 5.8. Read SI-Cards

With Config+ it is possible to show the raw data of a transponder and export it in different ways.



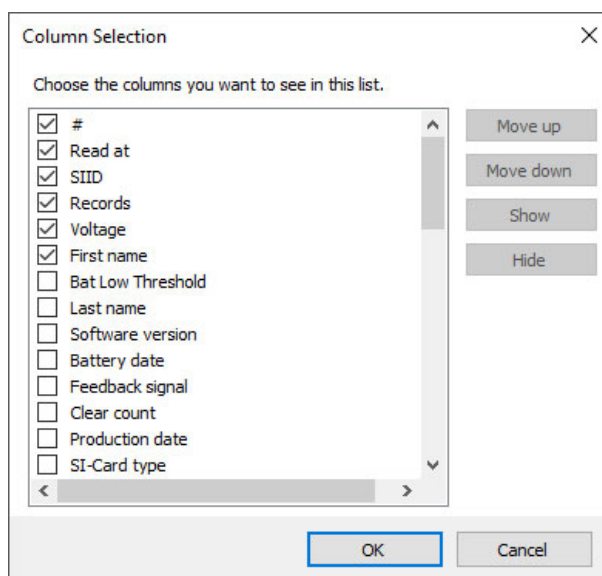
In **direct** mode, click on **Read SI-Cards**. The card will be read automatically when inserted in the main station. A progress bar will pop up.

All data on the card will be shown: on top the time of clear, check, start and finish, followed by the different punches and at the bottom the personal data of the runner.



1. Clicking on the "Detail panel" button will hide the data on the card.

2. By clicking the header with the right mouse button, you can select the columns you like to display in the table. You can load and save your selection by clicking the right mouse button in the readout table.



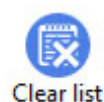
## Read SI-Cards navigation bar



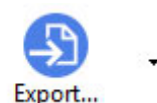
By activating the **Duplicates** button, a SI-Card can be read more than once in the list. If this option is not checked, the card will not be read again if it is already listed.



By activating the **SIAC subseconds** button, SIACs punching sub seconds are read from the SIAC's memory. Every contactless punch with a SIAC at a station in beacon mode will be registered with sub seconds. However, not every timing software can process this data.



**Clear list** will delete all readouts of the last session. If the cards are not cleared, all data is still stored in the cards. By right clicking a row in the table of a card readout, single cards can be deleted.



By clicking the **Export** button in the main bar, a sub navigation will open. Here you could export the current view of your readout list or a file with all card information (full detail view). By right clicking a row in the table of a card readout, single cards can be exported.



By clicking the **Print** button in the main bar a sub navigation will open. Here you can print single card details or the complete list. To print just one card, a row in the table needs to be selected.



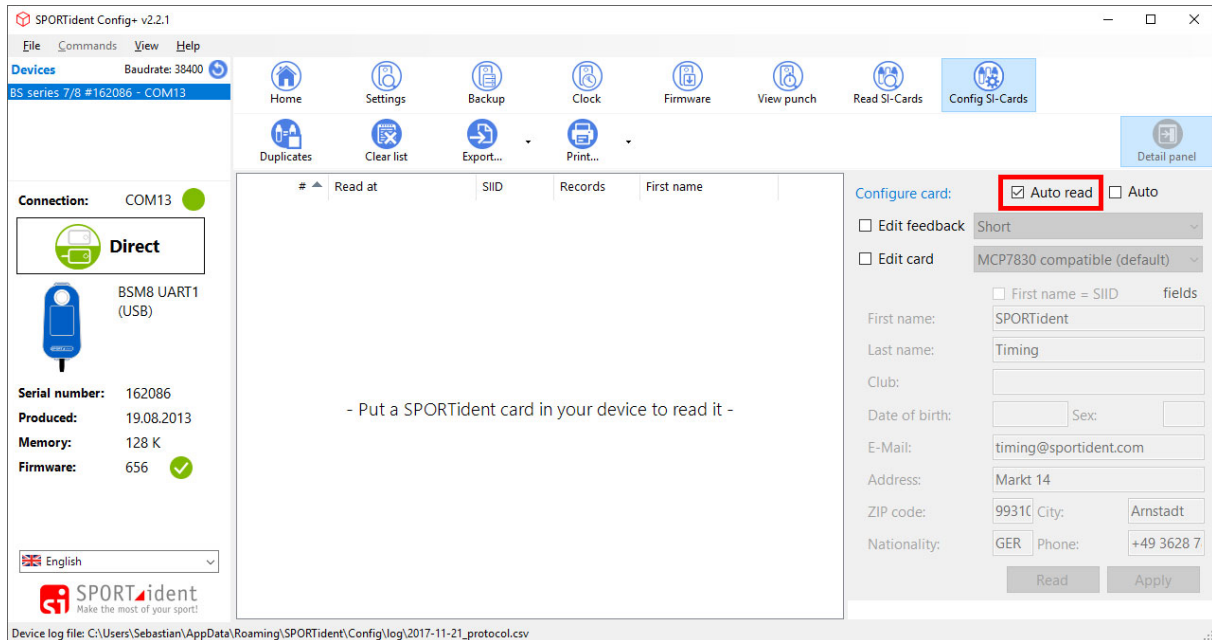
This feature allows you to read all relevant data on the SI-Card, which is useful if there is a complaint by an athlete to be investigated. Specifically, the allocated fields clear and check are not read by every timing software.

## 5.9. Config SI-Cards

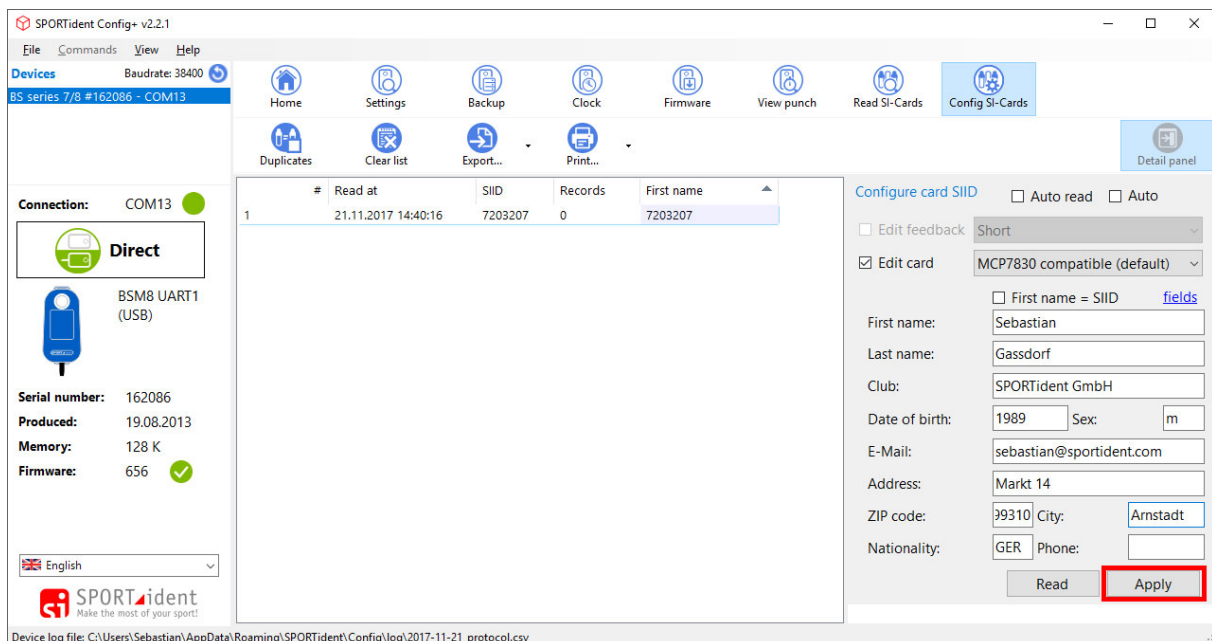




1. In **direct mode**, click on **Config SI-Cards**. Insert the SI-Card in the main station. The SI-Card will be read automatically if the **Auto Read** checkbox is on. Otherwise, click on the **Read** button and the SI-Card will be read.



2. Click in the checkbox next to **Edit card personal data** and the fields where information can be written become active. The number of fields varies with the type of SI-Card from none (SI-Card 5), first name and last name (SI-Card 8 and 9) to everything (SI-Card 6, 10, 11, pCard and SIAC).



3. When finished, click on **Apply**. This button is only available if the SI-Card is in the main station.

4. For the SI-Card 11 and the SIAC, the feedback signal can be configured. During the time that the SI-Card is flashing (and beeping), a subsequent punch cannot be recorded. This means that



with long feedback periods, these SI-Cards are not suitable for some activities such as rapidly punching all the boxes on a table to check if they are working.

 Edit feedback 

Check the checkbox **Edit Feedback signal** and click in the field that becomes active. The default feedback is about 3 seconds to best meet the requirements of typical orienteering events. In general, it is recommended to use a longer feedback cycle for applications in Ski-O and MTBO and a shorter feedback cycle for FootMicro-O. The option **Blink only** is available for the SIAC (as the SI-Card 11 is not emitting a sound signal as feedback).



The option 'Auto read' checked will read and overwrite the personal data. This is useful if there are no common fields between different SI-Cards. Otherwise it is easier to use the **Read** button.



The option **Auto apply** checked is useful to edit the card data first and then put the SI-Card in the main station to write the data to the SI-Card immediately.

## 6. Short range radio


Live data is essential in competitions for delivering information to organisers or speakers. It enhances the overall experience for spectators and competitors. For spectators, it is far less spectacular to watch an event like orienteering, MTB Enduro, trail, and so on, by having only the final results. The competitors in the forest or on the track might at some stage pass by the competition arena, but most of the time they are invisible for the spectators. With the use of additional SPORTident equipment (SI radios and receivers), live data can be produced to provide more information for the speaker and the public, like the position in the race of the participants, allowing them to make race predictions and to analyse the respective split times.

The following SPORTident products are specifically designed for SRR (short range radio):

Data radios	Data receivers
BSF8-SRR	SRR radio dongle (connects to a PC)
SIAC	SIGSM-DN (GSM modem)

The collected data can be processed by a web service or used directly by evaluation software (see chapter [Live data](#)).

### 6.1. Sender device: BSF8-SRR

	<p><b>BSF8-SRR station</b></p> <p>The special SI-Station BSF8-DB is additionally equipped with SRR modules. It enables wireless transmission of SPORTident data records over distances of up to 8 metres. The radio is working in the licence free 2.4 GHz radio band and can be used worldwide.</p>
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The data from a direct punch with a SI-Card is transmitted to a receiver. The BSF8-SRR can be configured as a normal station in the operating modes CLEAR, CHECK, START, CONTROL and FINISH.



Other operating modes are not supported in conjunction with Short Range Radio.

A typical application for SI-SRR is the so called **online controls** in orienteering sport. Because the control point in orienteering can be placed at nearly any position in any terrain, a wired data transmission from the control station can be inconvenient or even impossible. SI-SRR creates a wireless data bridge to a receiver or repeater mounted some metres away. The receiver (SRR dongle) can be connected directly to a computer and a repeater (SIGSM-DN) can be used to send the data to a web service.

SI-SRR uses two radio channels (named 'red' and 'blue') to achieve a robust data transmission

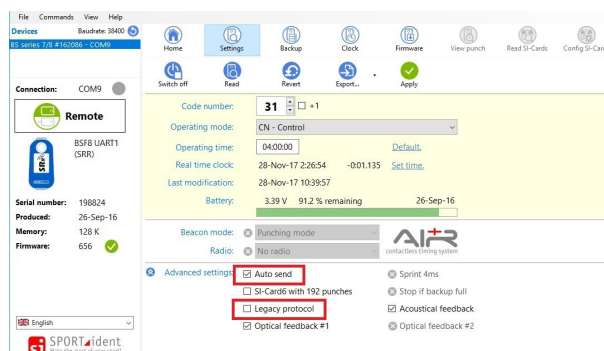
with a low error rate. While the SRR stations uses the two channels simultaneously, the data receivers (SRR dongles) always work on one and the same channel.

### BSF8-SRR configuration by using Config+:

1. Read the station in **remote mode** by clicking on **Settings**.

2. The following advanced settings have to be set:

- Enable **Auto send**
- Disable **Legacy protocol**



To avoid unnecessary energy consumption, the setting **Auto send** should only be activated when a radio receiver is present.

## 6.2. Sender device: SIAC radio

The SIAC features an inbuilt radio to deliver timing data to a receiver and for online transmission. **The SIAC's radio is disabled by default.** The radio is activated by a special signal sent from the BSF7/8 respectively BS11 station.

When punching a control, the information is always stored in the memory of the SIAC. The BSF7/8 and BS11 stations can optionally be configured such that their signals tell the SIACs in range to transmit the punch details along with the SI card number. For using this feature, the BSF7/8 stations must be configured in beacon mode (the BS11 stations are always in beacon mode) to enable the radio options in the AIR+ settings area. Essentially, during each contactless punching the station tells the SIAC which data to send via its radio (the default setting is no radio).

The receiver is ideally placed very close to the control. The transmission distance from the SIAC to a receiver should be kept in a range of no more than 8 metres. .



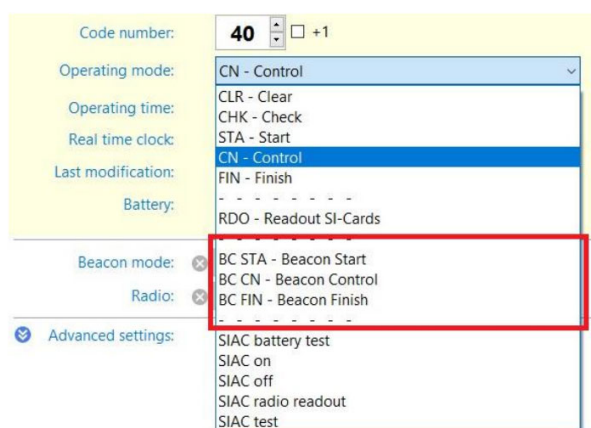
If a BSF8-SRR station is configured as a beacon control and is punched with a SIAC in the contactless way, the data stored in the SIAC (depending on the configured settings) will be sent to the receiver by the SIAC. The radio of the SRR station has no function at that moment.



The SIAC's power consumption is significantly increased when using its radio. Therefore, the SIAC's radio should only be activated by a control station if a receiver for radio data is mounted nearby.

Programming the radio options in Config+:

1. Read the station by clicking on **Settings**.
2. Click on the field of the operating mode (below the control number). The different options are shown. Choose the desired beacon function.




3. Four different SIAC radio options can be chosen in the **AIR+ settings** area:

- **No radio:** This is the default setting. It should only be changed if radios will be used during the event to avoid unnecessary consumption of battery power of the SIAC.
- **Send last record:** Transmits the most recently received record. This is normally, the 'punching' of the control where the radio is mounted.
- **Send all unsent records:** Transmits all the records not yet successfully transmitted.
- **Send all card contents:** Transmit all the records stored in the SIAC's memory.



In cases where a SIGSM-DN receiver (repeater) is used, it is possible that the data is transmitted with a certain delay, depending on the coverage of the GSM network. If for any reason the information cannot be sent because of a momentary poor coverage, the information is not transmitted to the monitoring software and thus not available for further use. The SIAC is of course not aware of this delay. When using 'Send all unsent records' at the next transmission point, the SIAC will only send the new records recorded after the previous transmission point.

### 6.3. Receiver device: SRR USB Dongle



### SRR Dongle

The SRR dongle receives data records sent by a BSF8-SRR or a SIAC. The device features an USB interface for easy connection with a PC, laptop or other standard communication equipment.

The SRR dongle can manage up to eight logical radio links. There is no upper limit for data sources working in ad-hoc mode. SIAC always works in this mode.

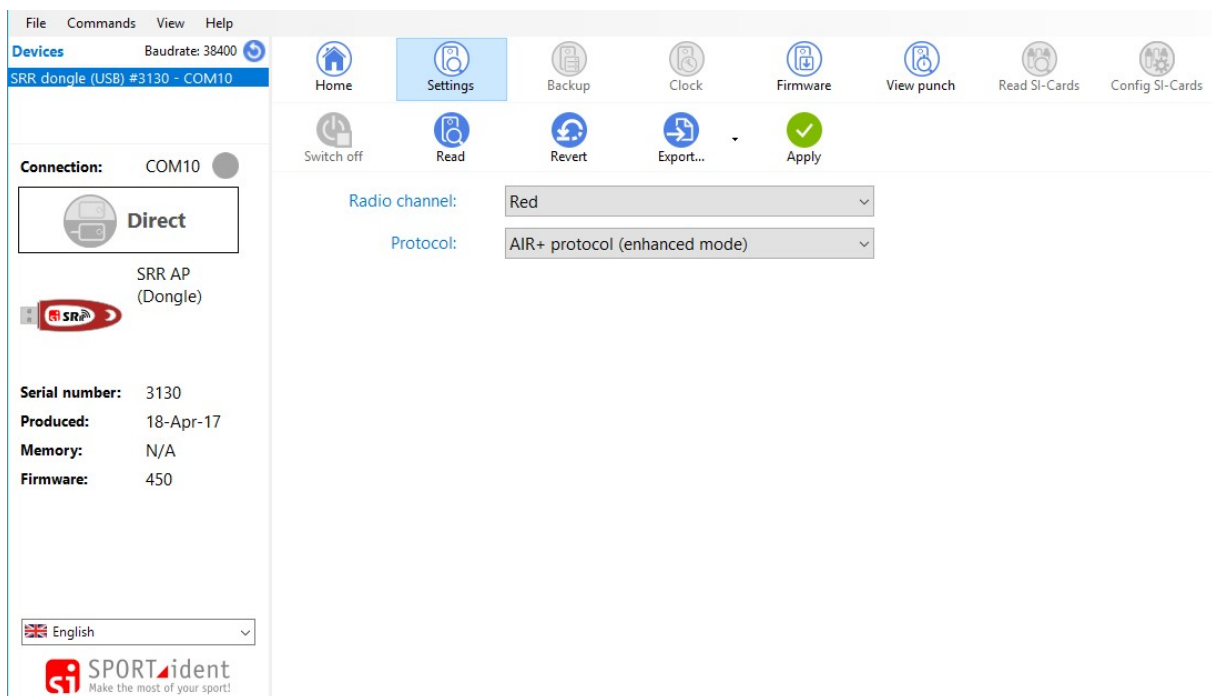
Although the radios are working on two radio channels simultaneously, the SRR dongle only works on one radio channel permanently. This channel has to be configured by Config+. When using the radio signal from the SIAC, this signal is only available for a very short time due to the speed of the participants. This is especially the case for MTB or ski competitions of any kind. Therefore, to profit from the frequency agility of the SI SRR, two receivers are required, respectively operating at the red and blue channel. Both SRR dongles are connected to the computer.



For correct functionality it is important to check that the SRR dongles and occasionally other receivers in the neighbourhood do not work at the same radio channel.

### Configuring the radio channel of the SRR dongle in Config+:

1. Plug the SRR dongle in a USB port of the computer and click on **Settings**.



The screenshot shows the Config+ application window. The 'Settings' menu is selected, and the 'SRR dongle (USB) #3130 - COM10' is selected in the 'Devices' list. The 'Radio channel' is set to 'Red' and the 'Protocol' is set to 'AIR+ protocol (enhanced mode)'. The 'Apply' button is highlighted with a green checkmark.

2. Choose the radio channel for the dongle. If you only use a single dongle, there is no preferred channel, both are identical from the technical point of view. It is recommended using two dongles, one working on the red and the second on the blue radio channel to avoid occasional loss of information.

Radio channel:

Protocol:


3. The default setting for the communication protocol is the 'AIR+ protocol'. Unless an older evaluation software is used, this setting should not be changed.

Protocol:



The SRR dongle can manage up to eight connected SRR stations. There is no upper limit for collecting information from transmitting SIACs.

## 6.4. Receiver device: SIGSM-DN



**SIGSM-DN**

The SIGSM-DN GSM modem features two built in SRR receiver modules (red and blue) and automated data transmission to a web service by using the mobile network. No SRR-specific configuration is needed.

The SIGSM-DN (GSM Modem) is delivered **ready to use** by SPORTident. This means that a SIM card is already mounted inside of the box. The SIM card offers a general service and automatically selects the best signal provider. The SIGSM-DN is equipped with two receivers, one for the red and one for the blue channel. Each SIGSM-DN has his unique identification number. This is important as it will be used to identify the device that is sending data to the monitoring or evaluation software.

As the SIGSM-DN is delivered with an active SIM card, costs for the use of the device will be based on the number of runners per event and day.

Please contact [support@sportident.com](mailto:support@sportident.com) for more information.

The SIGSM-DN is turned on by holding the 'on/off switch' against the 'I/O' label until the LCD screen becomes active. To turn it off, the switch needs to be kept against the 'I/O' label for about 4 seconds. A blinking orange LED confirms the turning off procedure until the LCD display is empty.

The SIGSM-DN has a rechargeable battery and need to be charged before application. Therefore, the stations are equipped with a standard mini USB connector. The stations need to be connected directly to a USB port of the computer or with an adapter to the socket. To assure

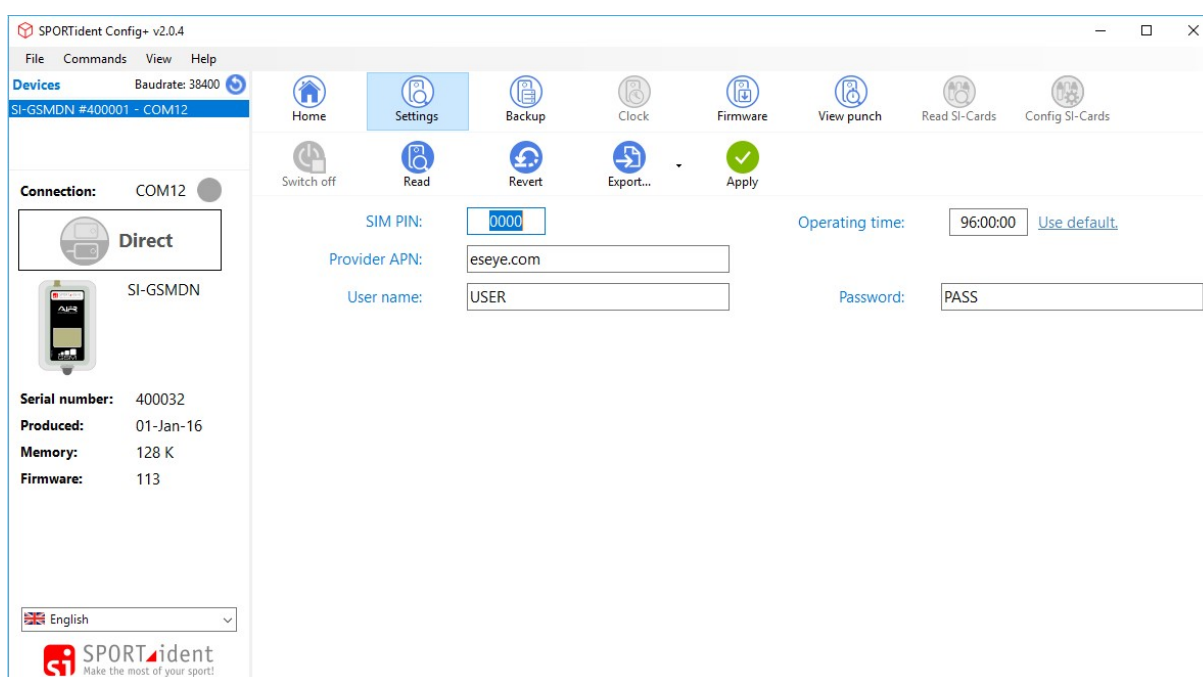
the waterproofness of the stations, the mini USB connectors are protected and you should ensure to always put the protector back on after charging.

See [LCD display information / SIGSM-DN](#) for display information explanation.



When using the SIGSM-DN, testing of the availability of a decent GSM network at the desired location might be necessary prior to the competition. This can easily be done by punching a classic SI-Card in a BSF8-SRR station or with a (switched on) SIAC and a station in beacon mode.

Reading the SIGSM-DN in Config+:



The settings of the SIGSM-DN can be read in Config+ by selecting the device and clicking on **Settings**. The settings are visible but cannot be modified. The SIGSM-DN is delivered preconfigured and any changes would only disturb the correct operation of the device. The default operating time is 96 hours, which is identical to the capacity of the battery. In a normal use case the device should be manually switched off. The buttons **Backup** and **View punch** will provide the needed information in the same way as any other SI device.

## 6.5. Show received data in Config+

Config+ features a simple monitor function to visualize the SRR functionality. Select a SRR dongle or a SIGSM-DN (it has to be 'on') as target device and choose the feature **View punch** in the main toolbar. The devices will immediately show the data received from a BSF8-SRR station or a SIAC (instructed to send its data). The available information is slightly different between a classic and an AIR+ punch.





SPORTident Config+ v2.0.4

File Commands View Help

Devices Baudrate: 38400

BS series 7/8 #162086 - COM9  
SRR\_dongle (USB) #3133 - COM11

Home Settings Backup Clock Firmware View punch Read SI-Cards Config SI-Cards

Clear list Export... Print...

Connection: COM11

Direct

SRR AP (Dongle)

Serial number: 3133  
Produced: 18-Apr-17  
Memory: N/A  
Firmware: 450

English

SPORTident  
Make the most of your sport!

#	Read at	SIID	CN	DOW	Punch time	Mode	No	Count	Radio	Battery	SI-Card	Beacon mode	Gate	RSSI Information
1	28-Nov-17 7:19:36 PM	7203207	39	Tu	19:19:38.902	Unknown	0	1						
2	28-Nov-17 7:19:41 PM	8623231	44	Tu	19:19:41.226	BcControl	0	1	SrRadioSendLast	OK	OK	PunchingMode	No	

The first row shows the information for a classic punch, the second one for a SIAC. Here, information is given about the configuration of the station that gave instructions to the SIAC (in this example Beacon Control 44 – radio Send last record – punching mode – No gate). It also displays information about the used SIAC (for example Battery OK).



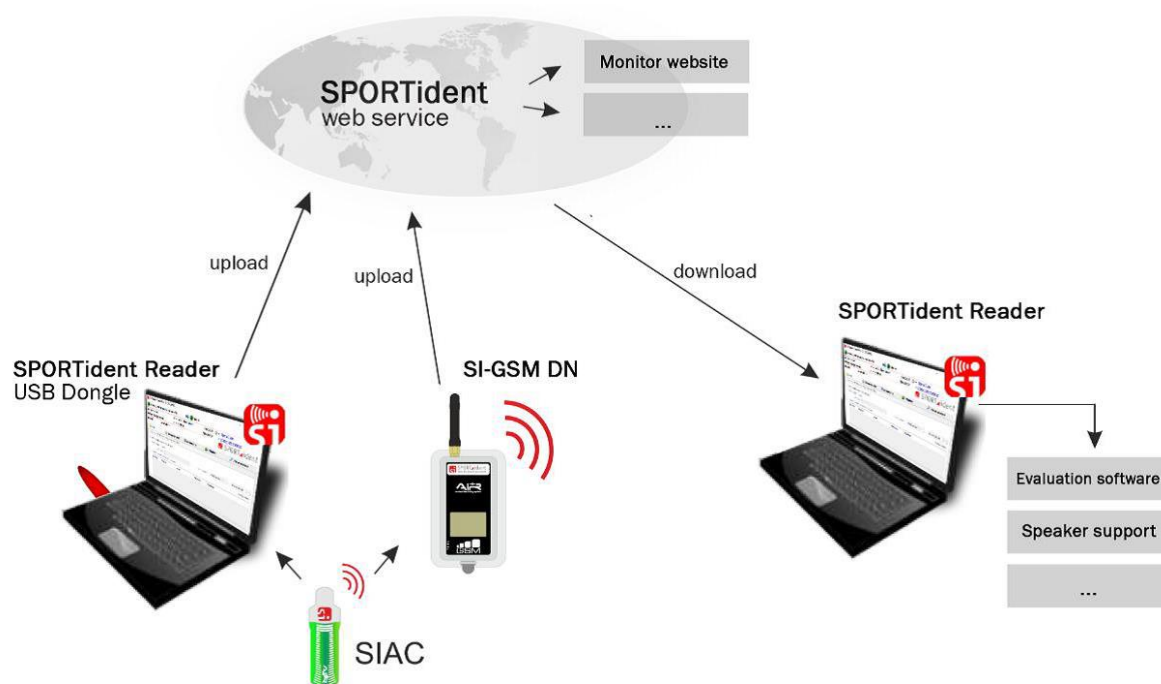
This feature in Config+ allows you to test the equipment that will be used before the competition.

## 7. Live data

### 7.1. Introduction

The use of live data has to be considered as a complete system, from collecting and uploading the data of the competitor to a server (or directly to a PC with a SRR USB Dongle), to the downloading and processing of the data by an evaluation software. The SPORTident components and the settings described in the previous sections are necessary to ensure their correct functioning as part of the system, and their setup can differ from one race to another and from one sport to another. SIAC, BSF8-SRR station, SRR USB Dongle, SI-GSM Modem, SI-Reader software and the SPORTident Center provide a complete distributed online data system to meet the growing need for live information during the race.

The basic setup of the system is given in the scheme below.



Of course, having access to the internet is essential.

### 7.2. Software and web services

To be able to upload/download data during a race and to handle an event, from the setup of the race, entries registration, until the publication of the (intermediate) results, a series of software and web services are available. Together, they offer the complete package for handling an event and to make it attractive for the organiser, athletes and spectators.

#### SPORTident Reader



SPORTident offers the (free) software SPORTident Reader as a universal data capture program. It is able to upload data from a BSF8-SRR or SIAC, received by a SRR USB Dongle to the SPORTident Center (in addition to the data from a SI-GSM Modem that are directly sent to the SPORTident Center) and, if necessary, to download the data to an evaluation software at the event center. However, downloading data is frequently done directly by an evaluation software such as SiTiming.

SPORTident Reader can be downloaded from the following page: <https://www.sportident.com/products.html#software>

## SPORTident Center

The SPORTident Center is hosting the database that stores information on events, modems and timing data. The service allows you to assign your SI-GSM Modem to an event for a certain period. The data received by this modem are displayed.

You can register yourself for the SPORTident Center. Use the **Register** function on the start page. As a user, you will receive a confirmation e-mail for your account with your user name. You will have to activate the account by setting your password. Once this is accomplished, you will be redirected to the website: <https://center.sportident.com/>

## SiTiming by SPORTident UK

SiTiming is a SPORTident UK Ltd results software. A license has to be bought if you want to use this software. More information is available at <http://www.sportident.co.uk/autodownload/buy.php>

A detailed user guide is available at <http://www.sportident.co.uk/sitiming/>. Only a few features of SiTiming are highlighted in this guide.

## 7.3. SPORTident Center

The first step to upload data is the setup of the available modems for an event. Open the SPORTident Center in your browser <https://center.sportident.com/>. Four tab sheets are available: Events, Modems, Billing and Subscriptions.

### 7.3.1. Events

Create a new event by clicking the **+** button. Choose the name, start date and end date of the event and complete the process by clicking **create**. Your event will now be added to the event list.

## Events

The screenshot shows the 'Events' section of the SPORTident Center. At the top, there are search filters: 'Search for event' and 'Search for user', followed by a close button (X). To the right, there are icons for deleting (trash) and adding (+) an event. Below the filters, a table lists events. The first event is 'Benelux Test', which is highlighted in green. It has a date range of 'November 28, 2017 – December 1, 2017' and is associated with the user 'Cloostermans Luc'. To the right of the event name, it shows '1 modem' and '9 stamps'. A red circle highlights a pencil icon in the top right corner of the event row, indicating that the event can be modified.

Any event can be modified by clicking on the pencil. Some additional information is shown.

Additional information

**Event ID**

367

**SOAP API key**

b894119f-ae49-331c-a496-783508434116



The Event ID and the SOAP API Key are necessary for the SPORTident Reader program to be able to upload data.


### 7.3.2. Modems




The list displays the available modems assigned to the user. The modems are assigned by SPORTident to a user. There is no possibility to add a modem by yourself. In case of questions, please contact [support@sportident.com](mailto:support@sportident.com).

#### Modems

ID Last Activity All Online Offline

✕



400032	<div style="border: 2px solid red; padding: 2px;"> <span style="color: green; font-size: 1.2em;">●</span>   </div>	Cloostermans Luc Benelux Test	2 minutes ago 2 hours	
--------	--	----------------------------------	--------------------------	---

An icon indicates the state of the modem (grey if offline, green if online) and its battery level. This is useful information for testing the modem on site before the event (or even to monitor the modem during an event).

A modem can only be assigned to a single event at the same time. To assign a modem to an event, click on the runner icon at the top right of the screen.



Some extra fields are shown. Select one of your events from the list and confirm it. The modem is now assigned to that event.

### 7.3.3. Monitor

#### Monitor <sup>9</sup>

« 29.11.2017 ✕ 📅 »
« 07:51 ✕ »

Event	Modem	Card	Control	Punch Time	Readout Time
Benelux Test	400032	8623231	31	08:50:24	07:50:29
Benelux Test	400032	7203207	31	08:39:55	07:40:00

The monitor provides an overview of the data received. Go to the event page and click **Monitor punches** of your event. You can filter the punches by event, modem, card (enter the card number) or for any control number (enter the control number) for a selected time period. The default setting is the day and time of opening the program. The display is updated periodically.



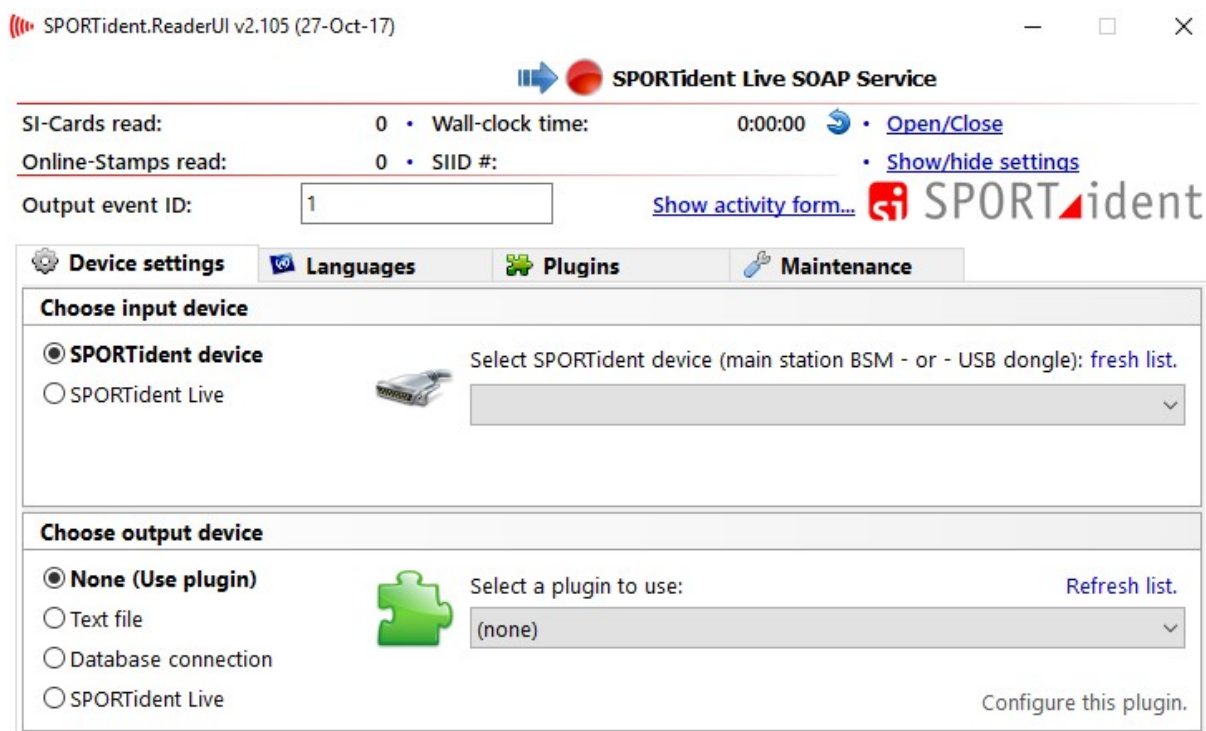
This functionality is useful for testing the configuration and correct operation of the equipment that will be used during the event.



Data uploaded by a PC and received with a SRR USB Dongle can also be uploaded and monitored. The field 'Modem' will be empty in this case. Also incoming data collected with SPORTident Reader will be shown without modem ID.

## 7.4. Data upload with SPORTident Reader

After installing the program SPORTident Reader, it might be necessary to click **Show/hide settings** in the configuration bar.





The desired language can be modified if necessary.

### Uploading data to SPORTident Center

The data collected with a readout station or a SRR USB Dongle (the input device), from a single punch up to all data records from a SI-Card, can be uploaded to the SPORTident Center (the output device). The configuration of SPORTident Reader is a three steps procedure:

## 1. Configure the input device

Choose input device	
<input checked="" type="radio"/> <b>SPORTident device</b> <input type="radio"/> SPORTident Live	 Select SPORTident device (main station BSM - or - USB dongle): <a href="#">fresh list.</a> <div style="border: 1px solid #ccc; height: 20px; width: 100%;"></div>


Connect a readout station or a dongle to the computer and click on **fresh list.**

Choose input device	
<input checked="" type="radio"/> <b>SPORTident device</b> <input type="radio"/> SPORTident Live	 Select SPORTident device (main station BSM - or - USB dongle): <a href="#">fresh list.</a> <div style="border: 1px solid #ccc; padding: 2px;">SRR dongle #3130 - COM10</div>




If you want to use two SRR USB Dongles (as recommended for sports where competitors pass at high speed), or a dongle and a readout station, you need to open SPORTident Reader twice. Only a single input device can be selected per SPORTident Reader window. Choose a different device in each window. Now data from both sources will be uploaded.

## 2. Configure the output device

Choose output device	
<input checked="" type="radio"/> <b>None (Use plugin)</b> <input type="radio"/> Text file <input type="radio"/> Database connection <input type="radio"/> SPORTident Live	 Select a plugin to use: <a href="#">Refresh list.</a> <div style="border: 1px solid #ccc; padding: 2px;">(none)</div> <div style="text-align: right;"><a href="#">Configure this plugin.</a></div>

There are many options, but these are mainly for developers of evaluation software. As a user, only the last button is necessary.

The API Key and Event ID of the target event have to be copied from SI Center into the specified fields.

Choose output device	
<input type="radio"/> None (Use plugin) <input type="radio"/> Text file <input type="radio"/> Database connection <input checked="" type="radio"/> <b>SPORTident Live</b>	 API Key: <input type="text" value="4aad9f2e-e4b4-1ea5-334f-98922beae1d8"/> Event ID: <input type="text" value="132"/>



### 3. Activate the connections

The summary of the configuration is given at the top of the screen, in this example from a readout station (the input device) to the SPORTident Center (the output device). The connections are not active yet and this is visualised by the two red dots.

Click **Open/Close** to open (or to close) the connections. Two green dots will confirm that the communication lines are open. SI-Reader is now ready to receive and to upload data.



In case of a red dot, the connections should be checked. It might be that the internet connection is not available.

Next to the monitoring page in SI Center activity can also be monitored in SI-Reader by clicking on **Show activity form**.

#	Timestamp	SIID	Date	Time	Text
1	2017-11...	7203207	Tu	11:16:41	ON...
1	2017-11...	7203207	Tu	11:17:05	ON...
1	2017-11...	7203207	Tu	11:17:03	ON...
1	2017-11...	7203207	Tu	11:17:05	ON...
1	2017-11...	7203207	Tu	11:17:03	ON...
1	2017-11...	7203207	Tu	18:53:56	ON...
1	2017-11...	7203207	Tu	19:15:13	ON...
1	2017-11...	7203207	Tu	19:19:38	ON...
1	2017-11...	7203207	We	08:38:52	ON...
1	2017-11...	7203207	We	08:38:59	ON...
1	2017-11...	7203207	We	08:39:55	ON...
1	2017-11...	7203207	We	11:11:01	ON...
1	2017-11...	7203207	We	13:06:24	ON...

## 7.5. Data processing with SiTiming



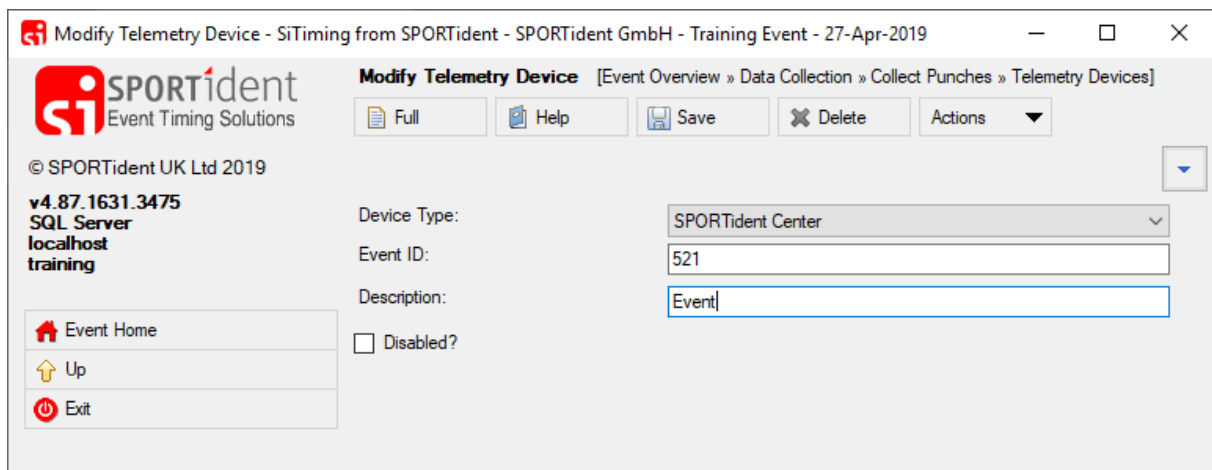
To use this feature you need to install SiTiming by SPORTident UK and buy a license.

### Download data

First you have to configure your connection to SI Center as a Telemetry Device.

Open your event in SiTiming and navigate to Data Collection → Collect Punches → Telemetry Device → Add Telemetry Device.

Select as Device Type SPORTident Center and enter your Event ID from the SI Center. The Description is optional.



Click the **Save** Button.

Go back by clicking the **Up** Button. Now you've get a new menu item **SPORTident Center Receiver**. Enter this menu.

Enter your Service URL, for example: <https://center.sportident.com/stamps/soap> and the API Key of your event. You will find the API Key in the SI Center.

For download the data once click the **Refresh Now** Button or select the refresh Interval and click the **Start Timer** Button for continuous download.





Event ID	Description	Last Sent	Last Status
521	521	27.04.2019 09:33:57	

To stop the continuous download click the **Stop Timer** Button.

### Upload to SPORTident Timing website

For the upload of the live results to the website you will open a new SiTiming instance.

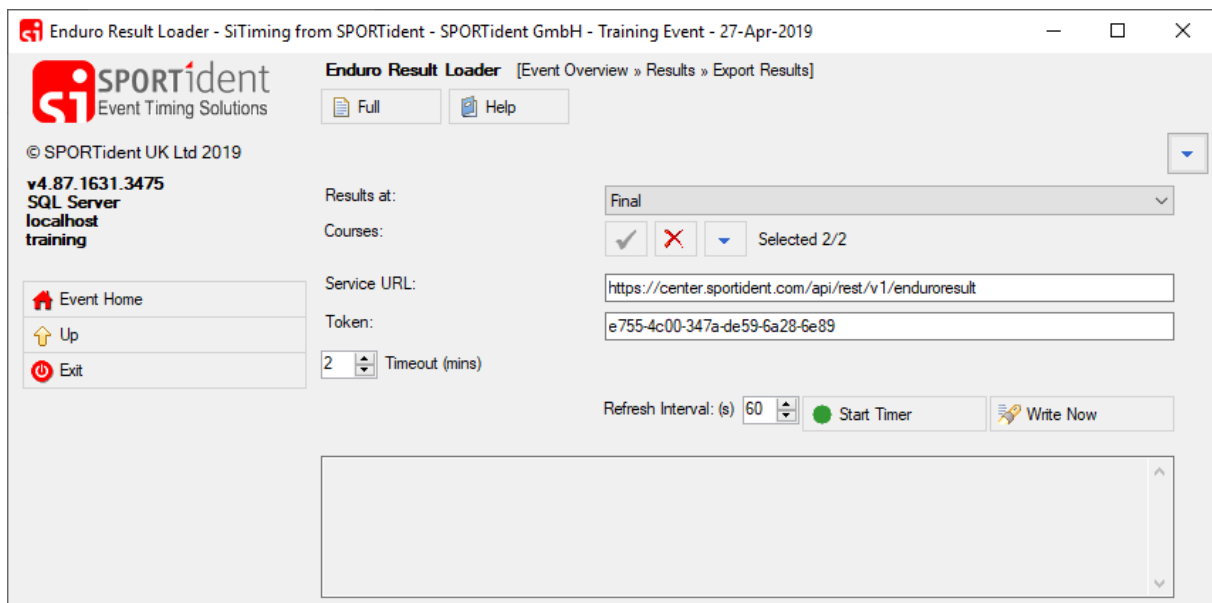


To enable this option in Modify Event Step 4 – Results Options the **Special Results Format of Enduro** and **Use Substage Reporting** must both be ticked.

Open your event in SiTiming and navigate to Results → Export Results → Enduro Result Loader.

Enter the Service URL and Token for your event. Both you will get from the SPORTident Timing website.

For upload the data once click the **Write Now** Button or select the refresh Interval and click the **Start Timer** Button for continuous download.



To stop the continuous upload click the **Stop Timer** Button.

### Generate HTML files

## 8. SPORTident Printer

### 8.1. Introduction

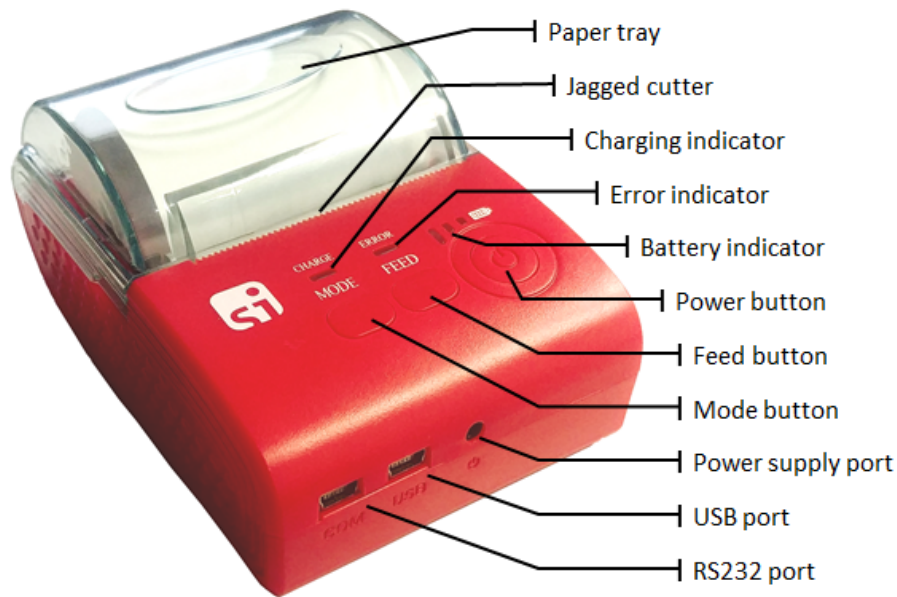


SPORTident Printer (Art.-No. 14123) is a pocket-sized, light-weight and battery-powered thermal printer. The printer is designed to be used with the SPORTident Orienteering App. The SPORTident Orienteering App Set (Art.-No. 15000) contains the SPORTident Orienteering App for Android, the SPORTident Printer with accessories and a SPORTident mini reader for a fully functional evaluation kit for trainings and small events. You will be able to read and evaluate competitors' SI-Cards right on site without the need for an external power supply or other accessories.

The SPORTident Printer allows you to connect via Bluetooth, USB or serial port connector. This gives you the flexibility to use both existing legacy equipment as well as the latest tools like the SPORTident Orienteering App.

#### Specification

- Direct thermal printer
- 58 mm paper width
- Up to 70 mm per second printing speed
- Expected life of thermal printing head: 100 km
- Resolution: 203 DPI (8 dot / mm)
- Paper roll diameter:  $\leq 40$  mm
- Power: rechargeable lithium battery
- Battery: 7.4 V DC, 1500 mAh
- Power supply: 9V DC, 1.5 A
- Interfaces: Standard RS232 (Mini-USB jack), USB 2.0 (Mini-USB jack), Bluetooth 2.0 & 4.0
- Serial port (RS232) settings: 4800 baud, 8, n, 1, no flow control
- Working environment: -10 to 50 °C, Humidity: 10 to 90 %



## 8.2. Safety points



Please regard the following points for your own safety.

- The printer has a lithium-ion battery. Only use the original battery and charge it with the supplied charger.
- Do not put the printer and the battery in fire or water. This may cause an explosion.
- Do not dispose of the batteries in domestic waste, but return them to SPORTident, the trade or your local waste disposal company.
- Do not open the paper cover while printing and for a short time afterwards. The print head is hot after printing!

## 8.3. First use and charging

The SPORTident Printer is shipped in a paper box together with a power adapter, a Mini-USB cable and a paper roll. For first use, please unpack the printer from the plastic foil and open the back cover. The lithium-ion battery is taped for transportation safety. Remove the insulation tape from the battery, insert the battery again and close the lid.



Connect the supplied charger and charge the battery until the **CHARGING** indicator shines blue. The **BATTERY** indicator will indicate the battery level in three steps.



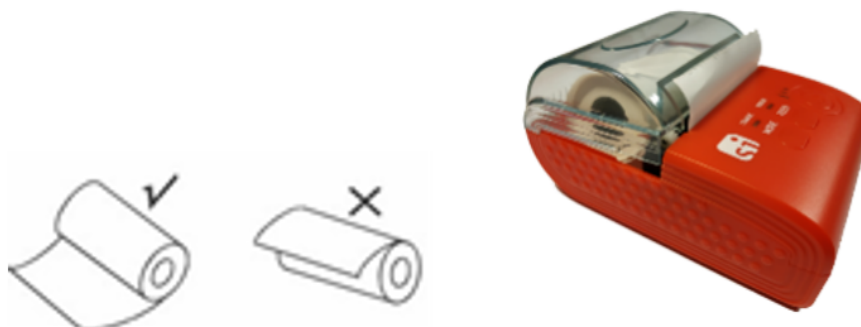
The printer's battery can be recharged more than 100 times. But with ongoing lifetime the battery capacity will become smaller. With a new battery the printer will operate 5 hours non-stop.



The charger plug is Euro standard. Adapters for the most common outlet types (US, UK, AU) are available on request.

## 8.4. Replacing the paper roll

The printer can be used with 58mm wide thermal paper. The maximum length of the paper roll is 25m. Open the paper tray by lifting up the clear plastic lid. Put the paper roll into the paper tray so the paper protrudes. Note the orientation of the paper roll as shown:



## 8.5. Operation

To switch on the printer, keep the **POWER** button pressed for three seconds. The **BATTERY** indicator will blink blue. Now the printer is ready to be used.

Press the **FEED** button to manually feed the paper. The **MODE** button is not needed for normal operation.

To switch off the printer, keep the **POWER** button pressed for three seconds. The **BATTERY** indicator should turn off.

### 8.5.1. Status LED

The printer incorporates three LED indicators to report its condition.

LED Indication	Condition	Description
CHARGING	Shines red	Charging in progress
CHARGING	Shines blue	Charging completed
ERROR	Blinks red	Paper out or stuck
BATTERY	Blinks blue	Printer on Shows the battery level in three steps Bluetooth not connected
BATTERY	Shines blue	Printer on Shows the battery level in three steps Bluetooth connected

## 8.6. Using SPORTident Printer with the Orienteering App

The SPORTident Printer is designed to be used with the SPORTident Orienteering App. The printer connects via Bluetooth to an Android smartphone.

To connect the SPORTident Printer for the first time:

1. Turn on the printer.
2. Turn on Bluetooth on your phone.
3. Search for available Bluetooth devices on your phone. The printer should be visible as "SI-Printer xxxxx" where xxxxx is the serial number noted on the package or on the back side of the printer.
4. Connect the printer to your phone. The Bluetooth PIN for the connection is **5349**.
5. Set up the printer in the SPORTident Orienteering App. Go to Settings - Printer and choose the coupled printer. You can do a test print to verify the connection.

Now you can print results on the SPORTident Printer with the SPORTident Orienteering App.



This coupling process needs to be done only once. After the first coupling, just turn on the printer and Bluetooth on your phone and the connection should work right away.

## 8.7. Using SPORTident Printer with the SPORTident Printout Station BS7-P (Art.-No. 13200)

The SPORTident Printer features a "COM" (RS232) connector that is hidden under a rubber cover on the front panel of the printer. Although the jack type is Mini-USB, it is a serial port.



Do not connect the "COM" jack of the printer directly to a USB port (of a computer) with a Mini-USB cable. This will not work and might damage your electronics.

SPORTident supplies a special adapter cable called "SPORTident Printer Serial Cable" (Art.-No. 15032) to connect your legacy Printout Station to the printer. This article needs to be ordered separately.

Remove the rubber cover from the "COM" jack of the printer. Connect the SPORTident Printer Serial Cable to the "COM" jack on one side and the SUB-D connector to the Printout Station on the other side.



Your Printout Station needs to be set to 4800 baud (which is the default setting) in order to work with the SPORTident Printer.

### 8.7.1. Update the layout for SPORTident Printout Station

If you intend to use your legacy SPORTident Printout Station with the new SPORTident Printer, you need to adapt the layout that is stored in the Printout Station, as the new printer's paper width is a bit smaller than before. This can be done in the following two ways.



This procedure is not required if you only intend to use the SPORTident Printer with the Orienteering App. However following this procedure does not influence the operation of the SPORTident Printer with the SPORTident Orienteering App.



You need to have Config+ v2.5 or later installed to use this feature. You need to have SI-Print 2.0.2 installed to store a layout on your SPORTident Printout Station.

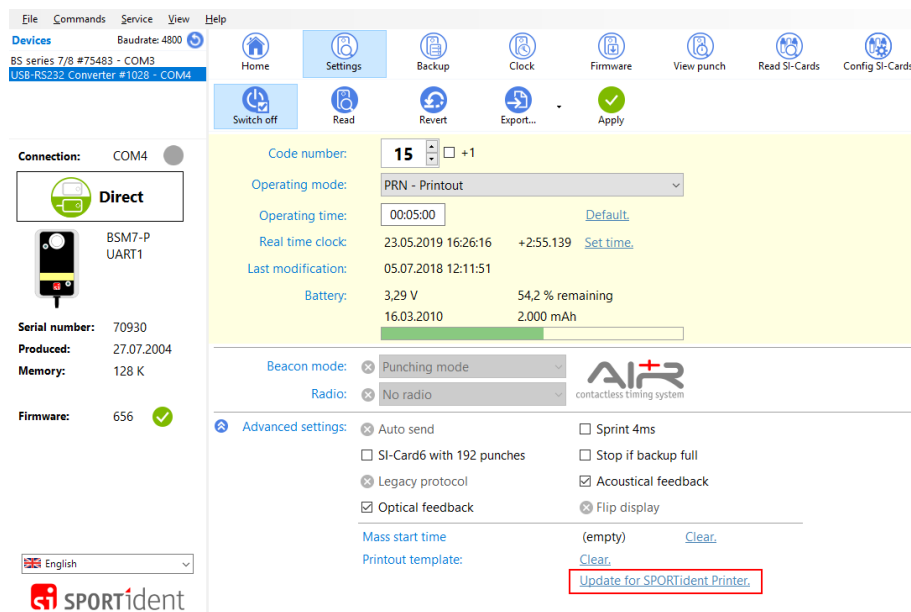
#### Update the layout in a Printout Station directly

It is recommended to fix the layout in the layout file that is stored on your computer. However, if the original layout file is not available anymore, you can fix the layout directly in your Printout Station.



This fix will only work if you have a layout stored in your Printout Station. It will not work if you have cleared the layout storage in your Printout Station. In this case, you need to load a layout to the Printout Station with SI-Print first.

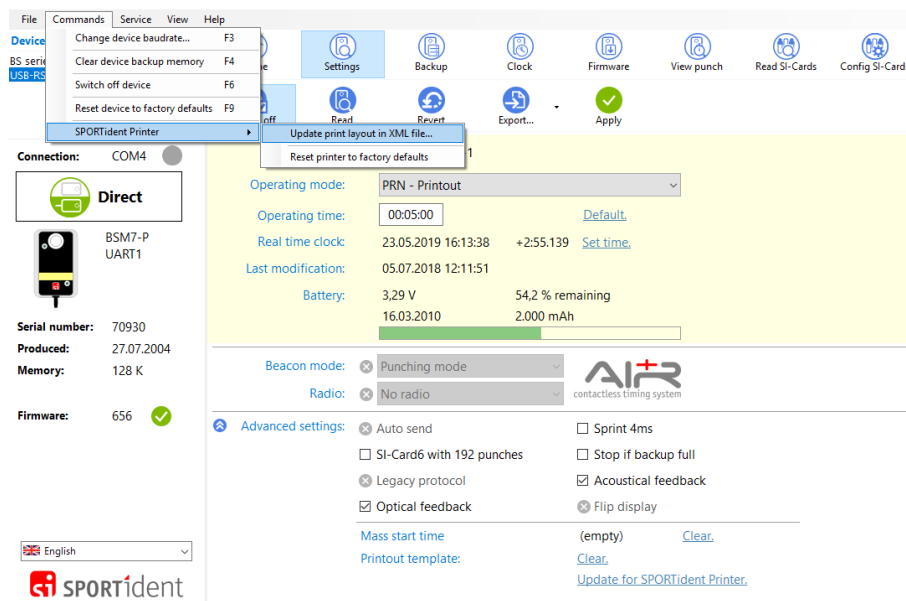
1. Open Config+, connect and read your Printout Station.
2. In the settings view, open the Advanced settings panel.
3. You will see a link label called Update for SPORTident Printer.
4. Click this label and confirm the question.
5. Config+ should start working and report success after several seconds.
6. Optional: Connect the Printout Station to the SPORTident Printer and do a test print with any SI-Card.



## Update a layout file that is stored on your computer

1. Open Config+. You do **not** need to have a SPORTident Station connected to your computer.
2. In the menu, go to Commands → SPORTident Printer → Update print layout in XML file....
3. You will be asked to select the layout file on your computer.
4. Config+ will confirm that the layout file has been updated.
5. Load the layout file to the Printout Station using SI-Print.





## 8.8. Using SPORTident Printer with your computer

SPORTident Printer features a Mini-USB jack labelled "USB". You can use a standard Mini-USB to USB-A cable (included in the package) to connect the printer to your computer.



A Windows printer driver is available on request. However, SPORTident does NOT provide support for using the printer with a computer.

## 8.9. SPORTident Printer maintenance and troubleshooting



When performing maintenance on the printer, remove the battery and disconnect the charger. Do not use tools like pliers or tweezers as this might scratch the housing or permanently damage the printer's internal parts. Do not disassemble the printer!

### 8.9.1. Cleaning the printer

The printer housing can be cleaned with a moist soft cloth.



Do not use any gasoline, acetone or organic solvents to clean the printer as this might damage the housing or internal parts.

### 8.9.2. Cleaning the printer head

When the printer has the following conditions, you should clean the printer head:



- The printer does not print clearly but the thermal paper looks ok.
- The printer is noisy while feeding paper or printing.

To clean the printer head:

1. Power off the printer and open the paper lid. Remove the thermal paper roll.
2. If the printer just finished printing, please wait for the printer head to cool down.
3. With a soft cloth dipped in cleaning alcohol (not dripping!), wipe the thermal printer head gently and remove any dust or stains.
4. Wait for the alcohol to dry completely, then place the thermal paper roll back, close the printer, reconnect power or battery and print a test page.

### 8.9.3. Printing a test page

To print a test page with all printer settings, do the following:

1. Power off the printer.
2. Be sure to have at least 60 cm of paper inserted.
3. Hold down the **FEED** and the **POWER** button for 2 second.
4. Release both buttons. The **ERROR** led will shine red, the **BATTERY** indicator will shine blue.
5. The printer prints a test page.

### 8.9.4. Default settings

The following scan shows the default settings that can be verified with a test page:





4. Keep both buttons pressed until the **ERROR** led turns off and on again.
5. Now release both buttons.
6. The printer should print "You select Density Level x" where x can be a value between 1 and 4.
7. Repeat the procedure to toggle the density level 1→2→3→4→1 and so on.

### 8.9.6. Reset the printer to its factory defaults

You can reset the printer to its default settings with the help of Config+. You will need:

- Windows computer with latest Config+ installed
  - "SPORTident Printer Serial Cable" (Art.-No. 15032)
  - a serial port or "SI-RS232-USB-Converter" (Art.-No. 30800) or any other RS232-USB-Converter
1. Power on the printer. Be sure to have at least 50 cm of paper inserted into the printer.
  2. Connect the printer to the computer using the "SPORTident Printer Serial Cable" (Art.-No. 15032). Be sure to use the "COM" jack on the printer.
  3. Open Config+ on your computer.
  4. In the "Devices" list, select the proper device with a single left click. If you do not see the desired device, be sure to have "Show all available devices" check in the "View" menu.
  5. In the menu, click "Commands" - "SPORTident Printer" - "Reset printer to factory defaults"

Config+ will guide you through the reset procedure. First it will try to communicate with the printer. Follow the instructions on the screen.

During the reset, the printer should print out the following:

```
Config+ connection ok
```

```
Setting Bluetooth  
password to 5439
```

```
Operating OK!!!
```

```
Resetting formatting.
```

```
Factory data reset is done.  
Please restart the printer.
```

## 9. LCD display information




### 9.1. SI-Stations BSx7/8



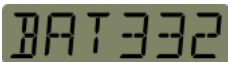



The onboard LCD display can provide a quick overview of the stations' settings and properties. The stations spend most of their life in **standby** mode. This is a low activity mode, which consumes very little power. In this mode, the LCD display is off. Switching from **standby** mode to **active** mode takes place when a SI-Card is inserted in the station. The maximum reaction time is 1 second. In **active** mode, the LCD display cyclically shows the function (including the control code) and the time. It will also display the SI-Card number during 3 seconds after it has been punched. This can be useful at the start to verify the number of the SI-Card of a runner.

From **standby** or **active** mode, the station can also be switched to **service** mode. This is done by inserting the **SERVICE/OFF** instruction card into the station. In **service** mode the station shows additional information on the display and it is recommended to switch stations into **service** mode when the station should be configured with Config+.



indicates that the service mode is active. **Service** mode is automatically terminated after 5 minutes or when any kind of SI-Card is inserted into the station.

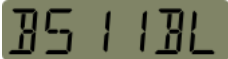
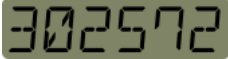
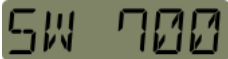

	<p><b>Operating mode</b></p> <p>CLR (clear), CHK (check), STA (start), FIN (finish), RDO (readout), CN (control),</p> <p>BST (beacon start), BFN (beacon finish), BCN (beacon control),</p> <p>AC BT (SIAC battery test), AC ON (SIAC on), AC OFF (SIAC off), AC RDO (SIAC radio readout).</p>
	<p><b>Time of day</b></p> <p>24h format - HH:mm:ss</p>
	<p><b>OFF time</b></p> <p>The amount of minutes the station will be idling awake before automatically switching to standby mode. In this example, the unit will go to sleep 2 hours (120 minutes) after the last user punched the control. If the number is above 999, only the last 3 digits are displayed.</p>

	<p><b>Firmware</b></p> <p>The version of the software (firmware) installed on the station, in this case version 656. See section <a href="#">Config+ / Firmware update</a> for the latest version.</p>
	<p><b>Station backup</b></p> <p>The number of punches that are currently stored in the backup memory of the station.</p>
	<p><b>Battery voltage</b></p> <p>The last measured battery voltage or <b>BAT</b> if no battery voltage has been measured. When it drops below 3.0V (BAT300), time is nearing for a battery replacement.</p>
	<p><b>Battery capacity</b></p> <p>Used capacity of the battery. A new battery will indicate <b>CAP000</b>. The example shows that the battery has consumed approximately 5% of its power. This value is a computed approximation, not the actual level. Accurate battery health check should be done depending on the battery voltage.</p>
	<p><b>Card full indicator</b></p> <p>The text <b>FULLxy</b> is shown in the display when the inserted SI-Cards memory is full and the punch cannot be written to the card anymore. An error entry will be written to the backup memory of the card. The station will not give any audible or visible feedback.</p>
	<p><b>Battery low indicator</b></p> <p>The tiny battery icon on the left side of the display is additionally displayed with the current information to indicate a low battery (battery voltage is below 3.0 Volts). So please make sure to replace the devices battery soon.</p>






## 9.2. SI-Stations BS11




The following information will cycle when the station is off but connected to USB charger (available with firmware 700 and later only):






	<b>Device type</b> Shows the device type of the station: <b>BS11BL</b> (Beacon large), <b>BS11BS</b> (Beacon small), <b>BS11LA</b> (Loop antenna)
	<b>Serial number</b> The serial number of the device
	<b>Software version</b> The software (firmware) version of the device.
	<b>Battery voltage</b> The battery voltage of the station: <b>B + + +</b> (voltage supplied by USB charger), <b>B FULL</b> (battery is fully charged)

The following information will cycle on the display when the station is on. The displayed information differs slightly for the two main firmware versions:

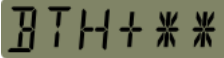
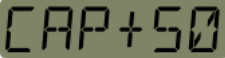




Firmware 320	Firmware ≥ 700	Description
		<b>CN xyz</b> Control number of the SI-Station.
	←	<b>Time of day</b> 24h format - HH:mm:ss
	←	<b>Operating mode</b> <ul style="list-style-type: none"> <li>• <b>BC CTL/CTR</b> (Beacon Control)</li> <li>• <b>BC FIN</b> (Beacon Finish)</li> <li>• <b>BC STA</b> (Beacon Start)</li> <li>• <b>BC SLA</b> (Beacon Slave)</li> </ul>
	←	<b>Beacon mode</b> <b>PMODE</b> (Punching mode), <b>TMODE</b> (Timing mode). See <a href="#">Configuration of BS11 for AIR+</a> .

	←	<p><b>Gate mode</b></p> <p>Gate mode:</p> <ul style="list-style-type: none"> <li>- <b>NOGATE</b> (gate mode not active)</li> <li>- <b>GATE S</b> (this station is a gate slave)</li> <li>- <b>GATE M</b> (this station is a gate master)</li> <li>- <b>ERROR</b> (this station was a gate slave and lost connection to the gate master)</li> <li>- <b>SIG 34</b> (new firmware only: signal strength to the other station, values between 21 (low) and 50 (high))</li> </ul> <p>See <a href="#">Gate mode of BS11 for AIR+</a></p>
		<p><b>Operating time</b></p> <p>Old notation: <b>ON+599</b> (remaining operating time in minutes before the station will shut down),  New notation: <b>OF:11:59</b> (remaining operating time in hours and minutes before the station will shut down)</p>
	←	<p><b>Battery low indicator</b></p> <p>The tiny battery icon on the side of the display is additionally displayed with the current information to indicate a low battery. Depending on the display installation, this indicator can be either left or right side. The indicator is shown for a battery voltage below 3.5 Volts. So please make sure to recharge the devices battery soon.</p>

The following additional information will cycle on the display for the first minute only. The displayed information differs slightly for the two main firmware versions:

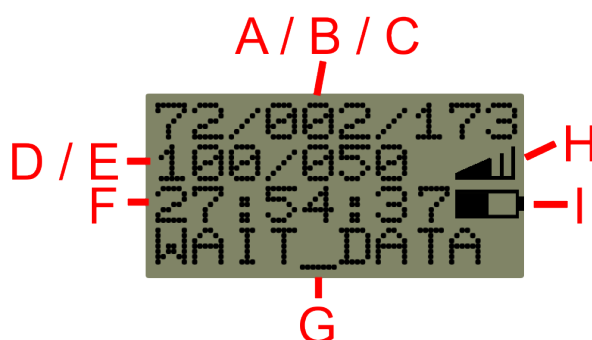
Firmware 320	Firmware ≥ 700	Description
	←	<p><b>Date</b></p> <p>The current date, either YYMMDD or YY.MM.DD</p>
		<p><b>Temperature</b></p> <p>Device temperature in degrees Celsius.</p>



		<p><b>Battery capacity</b></p> <p>The remaining battery capacity.          Old notation: <b>BTH+</b> (not available in this software version)          New notation: <b>CAP+50</b> (the device has used 50% of its battery capacity), only available after device was fully charged, otherwise <b>CAP+++</b> is shown.</p>
		<p><b>Battery voltage</b></p> <p>The battery voltage of the device.</p> <ul style="list-style-type: none"> <li>- Full battery should be at <b>4.2 Volts or higher</b>.</li> <li>- Default operating range: <b>between 4.2 and 3.5 Volts</b>.</li> <li>- Low battery: <b>3.5 Volts and below</b>.</li> </ul> <p>If the display shows no voltage, please switch on the device without a USB charger connected, so it can measure the battery voltage.</p>
	←	<p><b>Radio options</b></p> <p>Radio options for the SIAC          (See section <a href="#">Short range radio / Sender device: SIAC radio</a>).</p> <ul style="list-style-type: none"> <li>- <b>RAD NO</b> (radio disabled)</li> <li>- <b>RAD LA</b> (send last record)</li> <li>- <b>RAD AN</b> (send all unsent records)</li> <li>- <b>RAD AL</b> (send all card content)</li> </ul>
	←	<p><b>Serial number</b></p> <p>Unique serial number of the SI-Station.</p>

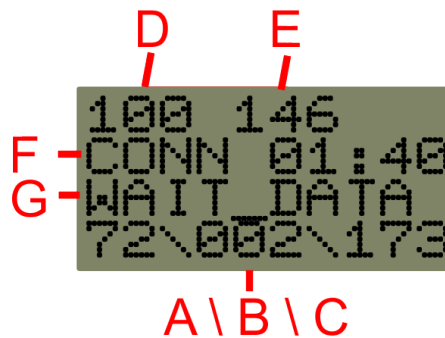
### 9.3. SIGSM-DN

The following information will be shown on the display of a device prior to firmware 200:  
 (Please find information for firmware ≥ 200 below)



A	Number of ping (keep alive) signals sent to the server
B	Number of data records in the device buffer that still need to be sent to the server
C	Number of data records already sent to the server in this session. This value will overflow after 999 and start from 1 again
D	Internal state code of the device
E	Countdown timer in seconds until next ping (keep alive) signal is sent to the server
F	Toggles between <b>current session time</b> (HH:mm:ss) and <b>ON 5759</b> : remaining operating time in minutes until device switches off
G	<p>Status text of the device. Most common texts are:</p> <ul style="list-style-type: none"> <li>- <b>INIT_MODEM</b> : The modem is starting</li> <li>- <b>SEARCH_PRV</b> : Searching for cell network provider</li> <li>- <b>(provider)</b> : The name of the registered cell provider</li> <li>- <b>GRPS_OK</b> : Data connection established</li> <li>- <b>WAIT_DATA</b>: (default operating state) The device is connected and waiting for data to be transmitted</li> <li>- <b>SERVER_OK</b> : SPORTident Center has received and confirmed the data package</li> <li>- <b>SEND_PING</b> : Ping (keep alive) package is being sent to the server</li> <li>- <b>OFF_OK</b> : The device has entered standby mode after 2 hours of inactivity, cell network has been disconnected. A new data package via SRR will wake the device again and it will re-register in the cell network.</li> <li>- <b>NO_SERVICE</b> : No available cell provider found, no network connection possible</li> </ul>
H	Graphical representation of the cell network signal strength
I	Graphical representation of the battery level

The following information will be shown on the display of a device with firmware 200 or later:



D      E  
 F - 100 146  
 G - \ 01:40  
   - WAIT\_DATA  
   72\002\173  
   A \ B \ C

A	Number of ping (keep alive) signals sent to the server
B	Number of data records in the device buffer that still need to be sent to the server
C	Number of data records already sent to the server in this session. This value will overflow after 999 and start from 1 again
D	Internal state code of the device
E	Countdown timer in seconds until next ping (keep alive) signal is sent to the server
F	<p>Status information of the device:</p> <ul style="list-style-type: none"> <li>- <b>CONN 01:40</b> : Shows the connection time of the current session in hours and minutes</li> <li>- <b>BAT 4.0V</b> : Shows the current battery voltage of the device:               <ul style="list-style-type: none"> <li>- Full battery should be at <b>4.2 Volts or higher</b>.</li> <li>- Default operating range: <b>between 4.2 and 3.5 Volts</b>.</li> <li>- Low battery: <b>3.5 Volts and below</b>.</li> </ul> </li> <li>- <b>SIGNAL 84%</b> : Show the current cell network signal strength in percent, a value of 40 and higher is sufficient in most cases</li> <li>- <b>OFF 47:24</b> : remaining operating time in hours and minutes until device switches off</li> </ul>
G	<p>Status text of the device. Most common texts are:</p> <ul style="list-style-type: none"> <li>- <b>INIT_MODEM</b> : The modem is starting</li> <li>- <b>SEARCH_PRV</b> : Searching for cell network provider</li> <li>- <b>(provider)</b> : The name of the registered cell provider</li> <li>- <b>GRPS_OK</b> : Data connection established</li> <li>- <b>WAIT_DATA</b>: (default operating state) The device is connected and waiting for data to be transmitted</li> <li>- <b>SERVER_OK</b> : SPORTident Center has received and confirmed the data package</li> <li>- <b>SEND_PING</b> : Ping (keep alive) package is being sent to the server</li> <li>- <b>OFF_OK</b> : The device has entered standby mode after 2 hours of inactivity, cell network has been disconnected. A new data package via SRR will wake the device again and it will re-register in the cell network.</li> <li>- <b>NO_SERVICE</b> : No available cell provider found, no network connection possible</li> </ul>



## 10. Firmware release notes

### 10.1. SI-Stations BSx7/8 - Firmware 656

#### 10.1.1. Overview

SPORTident has released firmware version 656 for the following devices

- **BSF7**: SPORTident control station series 7
- **BSF8**: SPORTident control station series 8
- **BSM7**: SPORTident main station series 7
- **BSM8**: SPORTident USB main station series 8
- **BS7-P**: SPORTident printer station series 7
- **BS7-S**: SPORTident sprint station series 7
- **BSF8 Master**: SPORTident control station master series 8

Update to the latest firmware version is supported for every listed device above running firmware version 500 or later. We recommend to update all of your SPORTident devices to the latest firmware.

The new firmware version is available through the firmware update feature of SPORTident Config+ application. We recommend to use the latest available version of Config+ available at [www.sportident.com](http://www.sportident.com).

To use BSM7 and BSM8 USB stations on your computer, you need to install a USB device driver. SPORTident supplies a driver for Windows operating systems (Windows 2000 up to Windows 10). It is included in the setup of Config+ or can be downloaded in the software download section at [www.sportident.com](http://www.sportident.com).

Linux users can use the generic CP2102 device driver that ships with their distribution.

Mac users can use the Silicon Labs driver for CP2102 that is available at [www.silabs.com](http://www.silabs.com).

Be aware that SPORTident does not provide support for Linux and Mac operating systems.

#### 10.1.2. Changelog for 656 since 649

Firmware version 656 introduces performance and stability improvements and fixes known issues. No new features have been added since firmware 649.

##### Improvements

- Optimized power consumption, enhanced battery consumption counter accuracy
- Improved SIAC battery test display message:



- Station will show “WARN” (warning) for voltages  $\leq 2,72$  Volts
- Station will show “FAIL” (failure) for voltages  $\leq 2,44$  Volts
- Field detection improved for waking up the station from sleep mode

#### Fixed issues

- Fixed SIAC readout in legacy protocol mode

### 10.1.3. Changelog for 649 since 623

Firmware version 649 introduces performance and stability improvements and fixes known issues. No new features have been added since firmware 623.

#### Improvements

- A clear station now always clears a SI-Card6 completely, ignoring the setting “Card 6 with 192 punches” to prevent problems with incompletely cleared cards
- Printout station now always sets “Autosend” setting and disables “Legacy protocol” setting
- Voltage is not shown anymore for USB stations when connected to a computer
- Faster clearing of the SIAC
- Battery voltage is now measured after firmware boot
- Reading and writing a SIAC with a readout station is more stable and faster
- Improved robustness of backup memory writing routine
- Improved checking of default values when programming wrong values for beacon mode settings
- Improved master-slave communication of stations with coupling stick

#### Fixed issues

- Fixed incomplete initialization of BS8-SRR in some cases
- Fixed battery measurement bug showing wrong values (“1.6... V”)
- Fixed crash of SIAC battery test station when beeping and showing “LOW” value
- Fixed printing on printers with low battery
- Fixed beacon not being sent when a full card is punching and remaining in the station
- Fixed wrong baud rate initialization of BSM7-USB when USB is connected

### 10.1.4. Changelog for 623 since 580

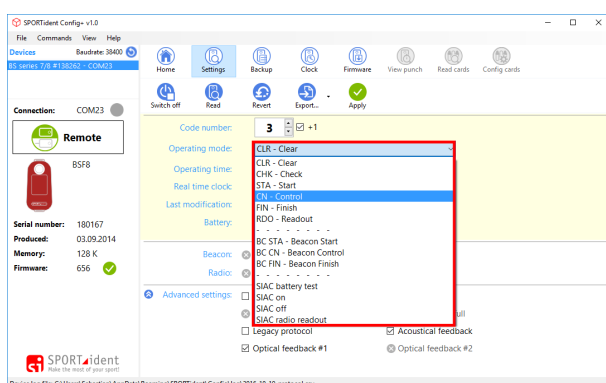
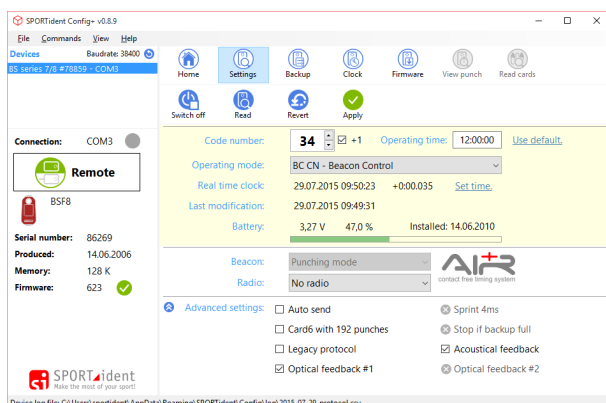
#### Introduction of beacon operating modes for BSx7/8 to work together with SIAC

The SPORTident classic equipment grows in the Air+ direction. The new beacon operating modes allow all BSx7/8 stations to operate in a **mixed mode**. Punching all classic SPORTident



Cards is still possible (**direct punching**) while the new SPORTident ActiveCard will be able to record the control point at a range of 60 cm above and 30 cm around the station (**remote punching**).

The new operating modes are possible to be configured with **Config+** and will be enabled for all BSx7/8 stations running firmware 618 and later.



Beacon modes are available with the operating modes **Beacon Start**, **Beacon Finish** and **Beacon Control**.

The beacon operating modes offer more **settings parameters** to be configured. The parameters and its meanings are the same as for BS11 devices.



**Punching mode** is mandatory for the Beacon operating modes for all BS series 7 and 8 so this value cannot be changed.

Stations running in beacon operating mode **must be activated** using a **direct punch**. Service/Off stick **does NOT enable** the beacon field of the station but switches to service mode/standby only. The device will have about **ten times** the **battery consumption** as in non beacon mode when it is active. A **BSF8** with a brand new battery will operate about **1 500 hours** before the battery is dead, a **BSF7** about double the time.



If you will **solely** use SPORTident ActiveCard (remote punching) you need to be aware that the **operating time** counter is **not reset** when a SIAC passes by. Therefore you are required to set the operating time **long enough** to end after your event. A setting of **12 hours** minimum is **recommended**. Afterwards you are recommended to **turn off** your stations with the **Service/Off** stick to save battery life.

## Introduction of SIAC special functions operating modes

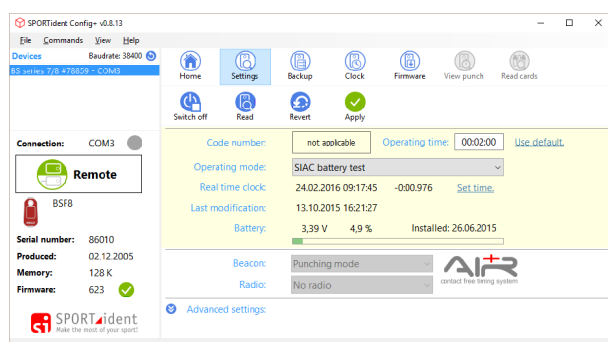
The SPORTident BSx7/8 can be programmed in various operating modes to integrate with the SPORTident Air+ system.

The following new +operating modes\* are available:

- SIAC Battery test – Measures the battery of the punched SIAC and indicates its status by beeping/blinking and displaying its voltage. Critical battery voltage is indicated by no beeping/blinking and the display caption “FAIL”. The backup memory of the station additionally contains the battery voltage of all checked SIACs. Backup memory can be read with Config+.
- SIAC on – Activates the beacon interface of the SIAC to enable remote punching, does not modify the card memory, also the card does not need to be cleared.
- SIAC off – Deactivates the beacon interface of the SIAC to disable remote punching, does not modify the card memory.
- SIAC radio readout – Instructs the SIAC to send its memory via SRR (short range radio) to the next available receiver device (SRR Dongle or SI GSMDN), does not modify the card memory, beacon interface of the card does not need to be activated.

SPORTident BSx7/8 stations that are configured as one of the SIAC special functions operating modes do not perform any other action/mode (like control, start ...).

The new operating modes are possible to be configured with **SPORTident Config+** and will be enabled for all BSx7/8 stations running firmware 618 and later. Be aware that the code number setting is not available for these operating modes.





### 10.1.5. Additional improvements and fixes to the firmware:

- **Changes since firmware 614:**

Compared to prior firmware 614, we have improved handling of SI-Card5 and changed some additional details.

- **Changes since firmware 618:**

- Improvements:

- clearing of SI-Card5 is faster (below 7 seconds)
- readout of SI-Card5 is more reliable and faster

- Fixed issues:

- fixed a clock issue when the station woke up from standby
- fixed erroneous beacon pulse after readout
- fixed blocking of serial connection (BS7-P) after incomplete readout and printout of cards
- fixed faulty (too short) beep after beep instruction (0xF8)
- fixed page overflow issue when writing punch records to backup memory in non extended protocol mode
- fixed an issue when reading cards to the backup with BSF7/8

- **SI-Master station: Extended master mode**

The operating time is set to a value of 12 hours, if the touched station is programmed in one of the beacon operating modes and the current value is less than 12 hours. Higher values are disregarded.

- **fCard handling**

If a SPORTident fCard is punched on a station that has the extended protocol flag disabled, the device will automatically enable the extended protocol flag because this is required for fCard to work.

- **Remote time setting with PC software**

When a remote station time is set via PC software, the master station will set its own time to the time delivered by the PC software and afterwards will set the time of the remote station itself. This ensures a higher accuracy of time setting as the PC software does not need to compensate the round trip time from the PC interface via coupling interface into the remote station.

- **SI-Card 6 handling**

The general performance of SI-Card 6 handling has been improved and made more secure.

- **Service mode display enhanced**

The service mode now displays the following information (cycling every 3 seconds)

- "SERVMO" - indicates service mode active, station will switch to standby mode after 5 minutes
- [TIME] - displays the current time of the device
- [MODE] - displays the operating mode and code number (if applicable)





- OFFxyz - display the operating time in minutes
- SWxyz - displays the current firmware version
- PC xyz - displays the number of punch records in the backup memory
- BATxyz - displays the last measured battery voltage or “BAT “ if no battery voltage has been measured
- CAPxyz - displays the battery consumption in percent

### 10.1.6. Known issues

We are aware that the current firmware still contains an issue that might lead to loss of punch data in SI-Card6. The reason is a corruption in the internal memory structures of the SI-Card6 that lead to existing data being overwritten by new punches. This problem occurs in very rare conditions (less than 1 out of 100 000 punches). We have introduced countermeasures during the last firmware version to make this problem even less likely.

In case this problem occurs at an event, we recommend disproving the apparent mispunch by reading the backup memory of the relevant field stations that are missing on the SI-Card.

## 10.2. SI-Stations BS11 - Firmware 702

### 10.2.1. Overview

SPORTident has released a new firmware for the following devices

- **BS11-BS**: SPORTident base station series 11 (Beacon small)
- **BS11-BL**: SPORTident base station series 11 (Beacon large)
- **BS11-LA**: SPORTident base station series 11 (Loop antenna)

Update to the latest firmware is supported for all listed device families running firmware 300 and later.

The new firmware version is available through the firmware update feature of the SPORTident Config+ application. We recommend to use the latest available version of Config+ available at the [SPORTident website](#).



SPORTident Config+ version 2.5.1 or later is required to update your BS11 stations to this firmware version.



To connect older BS11 stations to your computer, you need to install a USB device driver. SPORTident supplies a driver for Windows operating systems (Windows 2000 up to Windows 10). It is included in the setup of Config+ or can be downloaded at the [SPORTident website](#). Current BS11 stations (produced since Aug 2014) feature a HID connection and do not require additional drivers.



Linux users can use the generic CP2102 device driver that ships with their distribution. Mac users can use the Silicon Labs driver for CP2102 that is available at [www.silabs.com](http://www.silabs.com).



Be aware that SPORTident does not provide support for Linux and Mac operating systems.

Please refer to the [firmware update section](#) to find instructions on how to update your firmware.

### 10.2.2. Changelog for 702 since 320

Please also refer to our [organizer guide](#) with detailed information about the latest firmware features.

#### Improvements

- higher accuracy of real time clock by factory calibration
  - time drift is 1 second per week with 15 - 30 °C
- dedicated mode BC\_SLAVE introduced
  - to use gate mode with BS11 BL, the slaved station must be set up as BC\_SLAVE now
  - no automatic configuration of gate master and slave anymore
  - this prevents accidentally misconfiguration on site
- exclusive support for AIR+ operating modes
- a battery status indicator has been introduced
- a battery low warning icon has been introduced
- information shown on the display has been optimized

#### Fixes

- wrong calendar has been fixed
- several other minor fixes