TENDO SPORTS TECHNOLOGY

TENDO Sprint System

YOUR WIRELESS TIMING SYSTEM

Hardware

User Manual TSS-217



Content

Quick start guide 4

1 Acknowledgement 4

2 Safety precautions 4

3 Product description 5

3.1 About the product 5

3.2 Content of the basic TSS kit 7

3.3 Technical specifications 8

4 Hardware setup 8

4.1 Battery installation 8

4.2 Photocell/reflector installation 8

4.3 Tripod installation 9

4.4 Photocell 10

4.4.1 Photocell setup via menu panel 11

4.4.1.1 Switching ON 11

4.4.1.2 Photocell's settings 11

4.4.1.3 Setup menu 11

4.4.1.4 Switching OFF 13

4.4.2 Power and battery LED lights 13

4.4.3 Battery charging 13

4.4.4 Battery exchange 14

4.4.5 Optical signalling LED bulb 14

4.5 Bluetooth signal receiver 15

4.5.1 Set up the signal receiver 15

4.5.2 Connect to the Tendo Sprint system app 16

4.5.3 Understand the LED indicators 17

4.5.4 Battery and charging 17

4.6 USB signal receiver 17

4.6.1 Set up the signal receiver 18

4.5.2 Understand the LED indicators 18

Quick Start Guide

1. Install computer software
2. Install the TSS signal receiver driver
3. Set up the hardware
4. Start using TSS

1. Acknowledgement

Thank you for purchasing the Tendo Sprint System. We hope you will be satisfied with our product and customer service.

Please read the user manual fully before using the product. Save the manual for future reference and make sure anyone using this product is familiar with the instructions.

2. Safety Precautions



Do not use the device in damp environments or in the rain.

The photocells, RFID chip reader, and display board are equipped with **neodymium magnets**, which attach them to tripods.The following safety precautions must be observed during the operation with the magnets:

- Do not put two magnets together.
- When transporting devices containing magnets, use only non-metallic packaging to protect the magnet during transport and storage.
- Medical devices: Some medical devices (such as pacemakers and heart defibrillators) may be affected by a strong magnetic field.
- Credit cards and electronic devices: Do not place credit cards, computer disks, and other magnetic storage devices closer than 20 cm to the magnet.
- Keep mechanical watches, compasses and hearing aids away from the magnet.
- CD and DVD media do not carry magnetic data. Therefore, they cannot be damaged by the magnet
- Cameras, and mobile phones do not contain magnetically stored media. Therefore, the magnet cannot damage them.
- USB keys and memory cards do not carry magnetic data and cannot be damaged by the magnet.
- The static magnetic field does not damage the *car keys*.

3. Product Description

3.1 About the product

TENDO Sprint System (TSS) is a wireless timing system used to measure short distance times for athlete training and testing. TSS data is essential in sports where performance is assessed through speed, sprint, endurance, reaction, shuttle tests, etc.



TSS is a highly effective training technology used to evaluate performance and **increase athletes' speed**.

TSS also provides **immediate feedback** on athletes' performance, allowing coaches to assess when to stop the exercise to **prevent unnecessary injuries** or when athletes need **an extra motivational** push to get the results they want.



TSS is an **intelligent system** that uses **error-correction processing (ECP)** technology to eliminate false triggers. TSS can recognise beam interruptions caused by different body parts and evaluate **only those caused by the athlete's torso**. This makes it one of the most accurate systems on the market, outperforming single-beam and even double-beam systems.

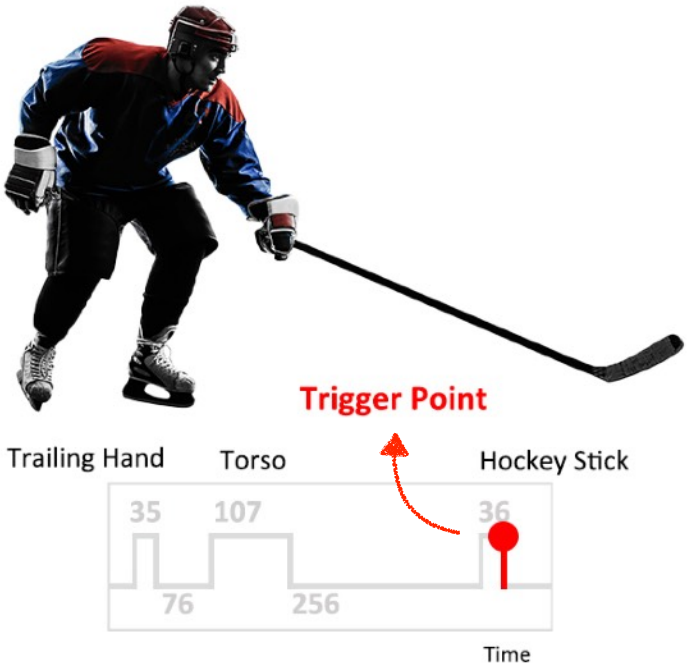
Turn Error Correction Processing ON/OFF based on your training needs.

When Error Correction Processing is off, it uses the first crossing event instead. Use it in training with athletes using rackets, hockey sticks, bikes, wheelchairs, …

ECP ON



ECP OFF



3.2 Content of the basic TSS kit

(1) 2 photocells
(2) 2 reflectors
(3) 1 bluetooth TSS signal receiver
(4) 3 antennas
(5) 5 tripods
(6) 1 carrier bag
(7) 3 sets of rechargeable batteries (4 pieces each set)
(8) 3 power adapters
(9) 1 manual
(10) 1 software installation USB stick



You can expand the kit by purchasing more photocells and reflector pairs with tripods. Please get in touch with your seller for more information.

3.3 Technical specifications

- Maximum distance between photocell and reflector is **5 m**
- Maximum distance between photocell and TSS signal receiver is **100 m**
- Accuracy of measurement: **1/1000 s**
- Maximum number of photocells for split times: **8**
- Number of communication channels: **4**
- Frequency range based on continents/countries: **Europe**, **USA, China, India, AU AS (Australia, New Zealand, Indonesia, Hong Kong, Japan, Malaysia, Taiwan, Thailand, Singapore, Vietnam)**

	Frequency Range				
Communication Channel	**Europe**	**USA**	**China**	**India**	**AU AS**
0	869.6	905.6	868.0	865.2	920.2
1	869.8	915.2	868.2	865.8	921.2
2	869.6	920.4	868.4	866.4	922.0
3	869.8	925.8	868.6	867.0	923.0

4. Hardware Setup

4.1 Battery installation

New rechargeable batteries are already inserted in the photocell's battery compartment. A plastic safety strip secures the batteries to prevent the photocell from switching on spontaneously during transport.

Before first use, carefully remove the plastic safety strip.

Use only rechargeable NiMH batteries, size AA, 2000-2500 mAh.

4.2 Photocell/reflector installation

A photocell and a reflector always form a pair. Both photocells and reflectors are mounted on steel tripods.

4.3 Tripod installation

1. Open the tripod so the bottom yellow plastic part is approximately 25 cm from the bottom end of the tube (see the picture below). Secure the position by tightening the locking screw.
2. Attach the photocell to a steel plate on top of the tripod using the magnet on the bottom of the photocell.
3. Screw the antenna onto the top connector of the photocell (see page 8). But do not tighten the nut yet! Set the antenna to the perpendicular position first, then tighten the nut.

If you tighten the nut before setting the antenna to the correct position, it could damage the antenna!!

4. Set the tripod height based on your needs (we recommend placing the photocells/reflector pairs at 100-110 cm from the ground). Make sure the photocells and reflectors are at the same height so the photocell beam falls in the middle of the reflector.

Do not place photocells on the ground, as the radio signal will be low.

5. Place the reflector 2- 5 m from the photocell (Do not exceed 6 m).



- *If the photocell is switched on and the beam does not fall onto the reflector, the photocell will produce a **continuous audio signal**. The audio signal makes it easy to align the photocells and reflectors properly (no audio signal indicates correct alignment).*
- *Each time the photocell's beam is broken, it produces an **audio signal**, and the optical signalling LED bulb (9) lights up.*

4.4 Photocell



(1) Menu panel
(2) Battery compartment

There are three connectors located on the rear side of the photocell:

(3) Antenna connector
(4) Connector for RFID reader
(5) Power supply adapter connector

The optical sensor (6) and speaker (7) are located on the front of the photocell. Fastening magnet (8) is placed on the bottom of the photocell.

An optical signalling LED bulb (9) is located on top.

4.4.1 Photocell setup via the menu panel



4.4.1.1 ON / OFF

Press the ON/OFF button (the left downward arrow button) for 2 < seconds. After the long press (press and hold for 2 s), you will hear a double beep, and LED_power will light up. The photocell is now ready for use.

Immediately after you release the ON/OFF button, the LED display shows information about the photocell's current setting for 5 seconds.

4.4.1.2 Photocell's settings

The setting of the photocell represents the **photocell's function**:

0 = start
1 - 8 = split times
9 = finish

To see the **current setting** of the photocell, press the ON/OFF button anytime (short press only). The setting will be displayed for 3s.

4.4.1.3 Setup menu

Press and hold the Setup button (middle button - ENTER) to activate the photocell Setup Menu.

Function of the buttons in the Setup Menu:

- *Down/ Up button* - to change values in the submenu
- *ENTER* - Short press - to browse in the menu
- *ENTER* - Long press - to close the setup menu and save all new settings

!! To save the new settings, long-press the ENTER button. !!

If the setup menu is active and no buttons are pressed for more than 30s, the setup menu will close and the new settings will be lost.

If you are in the Setup Menu, you have 3 options:

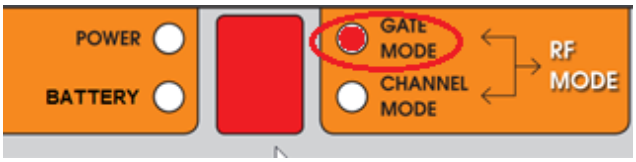
1. Change the setting of the photocell (start, split, finish) = GATE MODE
2. Set up the channel for communication (specific frequency) = CHANNEL MODE
3. Change the country in which TSS is used (different frequency ranges are used in different continents/countries due to different norms) = RF MODE

When you open the submenu, the LED indicates the selected setting.

To change settings use the Up or Down buttons.

1. GATE MODE - choose from 0 to 9 (0 = start, 1 - 8 = split times, 9 = finish)

You can use any photocell number for start, finish, and split times. However, it must be synchronised with the gate setting in the Tendo Sprint System computer software (use the same number for start, finish, and split times).



2. CHANNEL MODE - choose from 0 to 3 (see page 6)



3. RF MODE - E - Europe, A - USA, C - China, I - India, U - Australia, New Zealand, Indonesia, Hong Kong, Japan, Malaysia, Taiwan, Thailand, Singapore, Vietnam



!! Use the selected Radio Frequency only in a country where the particular frequency is allowed. Do not use the radio frequency not allowed in the country of the system location !!

4.4.1.4 Switching OFF

Press the ON/OFF button (button of the left downward arrow) for 2 < seconds. After the long press (hold for 2 s), you will hear a double beep, and LED_power will turn off. The photocell is now switched off.

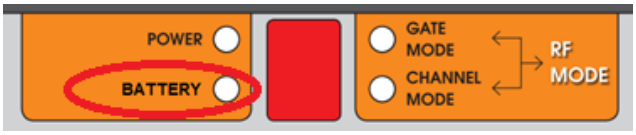
4.4.2 Power and battery LED lights

Power LED = app connection indicator



Indicator	Meaning
Green LED continuously on	The photocell is turned on but the system is **NOT connected to the app.**
Green LED flashing	The photocell is turned on and the system is **connected to the app.**

Battery LED = Battery status indicator



Indicator	Meaning
Orange LED continuously on	batteries are charging.
Orange LED flashing	Batteries need to be charged.
Light is off	Batteries are charged.

4.4.3 Battery charging

Each photocell has its own built-in battery charger. To charge the batteries, use the power adapter included in the basic TSS set kit.

Power adapter parameters:

Input voltage: 110 - 230 V AC, 50 - 60 Hz
Output voltage: 12 V DC, 1,2 A

!! **Only use rechargeable batteries:** type NiMH, 2000 - 2500 mSh !!

Plug the power adapter into a 230V AC power outlet.
Plug the power adapter connector into the bottom socket on the left side of the photocell unit (see page 8).
After you turn on charging, the LED_battery light will stay continuously orange, and the LED display will show "c" for 2 seconds.
After charging finishes, the orange LED_battery will turn off.

4.4.4 Battery exchange

Open the back cover of the battery compartment.
Insert 4x rechargeable NiMH batteries as pictured on the bottom part of the battery compartment.
Before inserting the batteries, make sure that the batteries are correctly polarised.

4.4.5 Optical Signalling LED bulb

Indicator	Meaning
Light is off	The photocell is not connected to the TSS app
Red LED continuously on	The photocell is connected to the TSS app. This is accompanied by a high-frequency audio signal (signalling when the photocell beam between the photocell and the reflector is interrupted, or the beam is out of alignment with the reflector).
Red LED flashing along with **Power LED**	Communication between the photocell, receiver, and TSS app is correct (after you activate the "Click to Connect" button in the TSS app)

4.5 Bluetooth signal receiver

The Tendo Sprint System is equipped with a bluetooth signal receiver that enables wireless data transfer to devices running iOS or macOS TSS app.





(1) Antenna connector
(2) Power supply adapter connector
(3) Receiver Bluetooth identification number
(4) ON/OFF button
(5) Fastening magnet
(6) Optical signalling LED bulbs

4.5.1 Set up the signal receiver

1. Open the tripod stand. Position the lower plastic section approximately 20 cm (8 in) from the bottom end of the tube, then tighten the locking screw.
2. Screw the antenna into the signal receiver's upper connector.

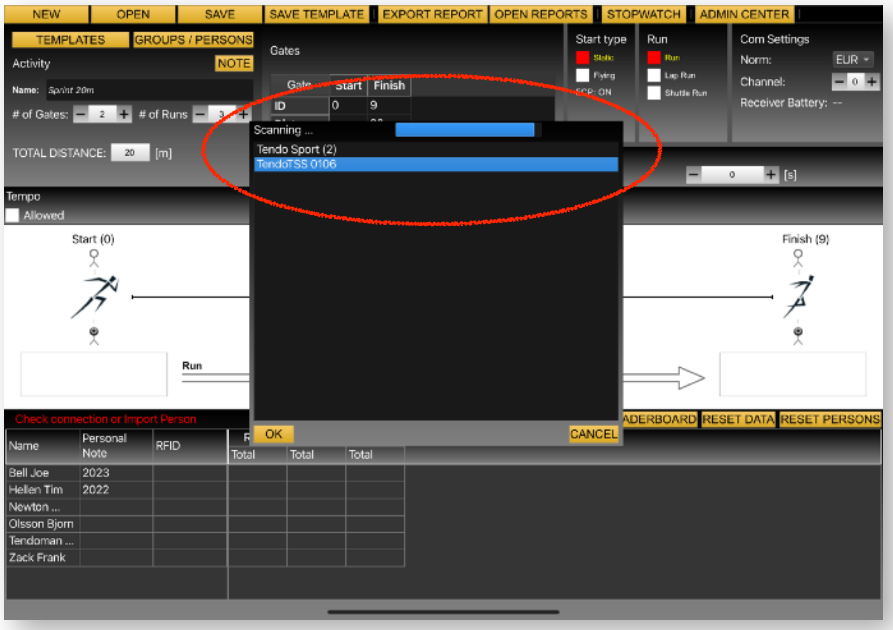
!! *Do not rotate the antenna body when tightening it, as this may cause damage. Tighten the antenna using its nut only* !!

3. Attach the receiver to the metal stand bracket using the magnet on the underside of the receiver.
4. Adjust the receiver to the same height as the photocells (90 - 110 cm / approximately 35 - 43 in). Placing it lower may reduce radio range.

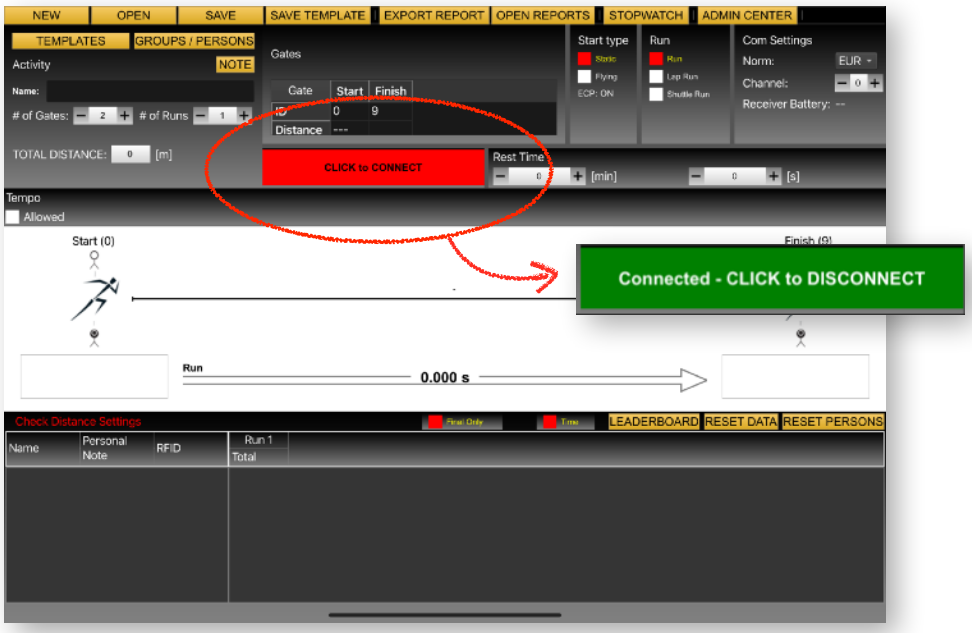
5. Turn on the signal receiver by pressing and holding the ON/OFF button for more than 2 seconds. The receiver will emit two beeps and display a pulsing green LED, indicating it is searching for an available device to connect to.

4.5.2 Connect to the TENDO Sprint System app

1. Find the unique Bluetooth identification number on the rear of the receiver.
2. Open the TENDO Sprint System app. When the receiver appears in the device search window, select it and click “OK”.



3. Click the red “Click to Connect” button, then wait for the receiver to connect to the photocells (the button turns green).



4.5.3 Understand the LED indicators

Indicator	Meaning
Green LED flashing	Receiver is connected to the app
Red LED flashing	Receiver connected to the photocells
Red LED continuously on	Connection to the photocells has not been established

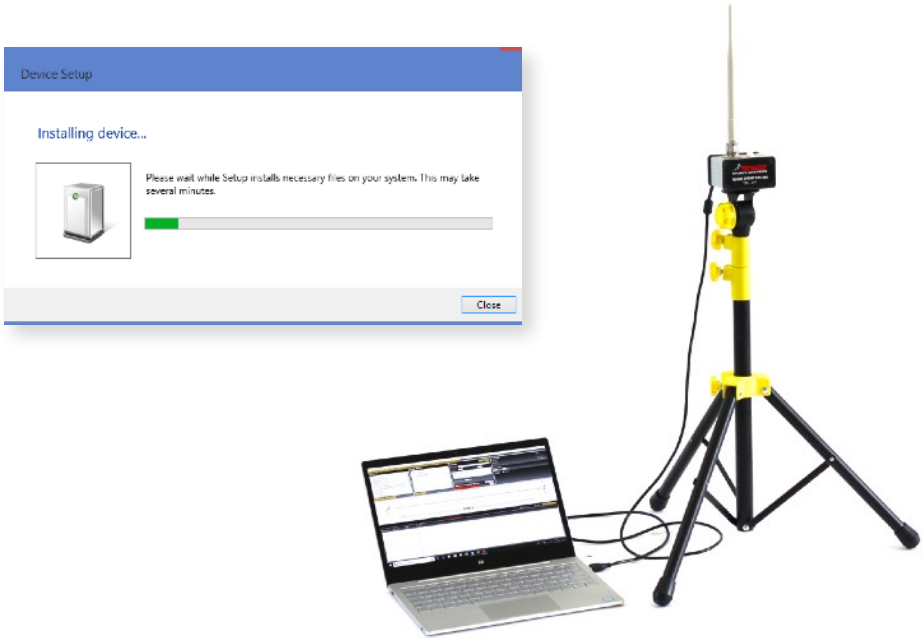
If the red LED stays on continuously, check the photocell setup and the photocell settings in the app. Refer to the troubleshooting guide for further instructions.

4.5.4 Battery and charging

The receiver includes four rechargeable AA NiMH batteries rated at 2,000 mAh. Battery voltage is displayed in the TENDO Sprint System app.
When battery charge is low, connect the power adapter to the receiver and plug it into a power outlet. A red charging LED illuminates while charging is in progress and turns off when charging is complete.

4.6 USB signal receiver

If you want to use Windows devices instead of iOS/MacOS devices, you need a USB receiver. The USB receiver is available as an optional accessory for the TENDO Sprint System.



4.6.1 Set up the signal receiver

Before the first use, it is necessary to install the TSS signal receiver driver

1. Insert the USB cable into the connector located on the signal receiver
2. Insert the other end of the USB cable into a USB port on your computer
3. Your computer will recognise the new device and install the TSS signal receiver

Once the driver is installed, the system is ready for use.

4.6.2 Understand the LED indicators

Indicator	Meaning
Blue flashing	Active, correct communication with all turned-on photocells.
Blue/Red flashing	At least one of the photocells is not communicating with the TSS computer software (e.g. the photocell is turned off or the communication channel, frequency range, or the photocell number does not correspond to the setting in the TSS computer software)
Red LED continuously on	No communication between the signal receiver and the photocells (e.g. the photocells are turned off).



@tendosport_official



TENDO Sport
@tendosportsmachines



@tendosport

Manufactured in Europe.

TENDO Sport
Zlatovska 22
911 01 Trencin
Slovak Republic

Phone / fax : 00421-32-6401500
e-mail: tendo@tendosport.com