

WF1

Troubleshooting



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1 - INTRODUCTION

This document contains information for the quick solving of the main problems that can happen during the WF1 product life. If the problem you have identified is not included in those we have indicated, please contact us.

FAVERO ELECTRONIC DESIGN

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2 - ARTICLES



Art.897-01 - WF1 Wireless Fencing apparatus
Includes the case with the RECEIVER and 2 transmitters.

3 - SPARE PARTS



Art. 897-10 WF1-RECEIVER.



Art. 897-14 WF1-TRANSMITTER.



Art.290-24 - BATTERY CHARGER 100-240V/14.4Vcc 0.5A



Art.290-26 - Rechargeable battery 12V 2Ah



Art.897-30 - Lithium-Polymer battery, 3.7V 150mAh, for WF1-TRANSMITTER



Art.897-32 - F1211B electronic board for WF1-TRANSMITTER



Art.897-40 - F1215B electronic board for WF1-RECEIVER



Art.897-44 - Charging cable for WF1-TRANSMITTER



Art.897-48 - Carrying case for WF1-RECEIVER (with holes)

4 - SYMBOLS USED IN THE DOCUMENT

The parts of the text that have a particular importance for the safety or for an appropriate use of the product are highlighted by the following symbols:



Possible danger to persons, if instructions or necessary precautions are not followed



Important information about product use.

5 - TROUBLESHOOTING



Any operation regarding electric connections, the opening of the containers, the replacing of parts or batteries and in general any other operation not described in the manual in use has to be carried out by a qualified electrician.

5.1 - IMPORTANT: verification of the software version

Make sure that the latest software version is installed on the WF1: WF1 1.5 version.
See chapter 8.2.

5.2 - EPEE: sometimes the hit on the opponent is not signalled

On the WF1 user manual, in chapter 4.2 the following notes about the functioning on hit recording are reported:

- The hit on garments and shoes is signalled. However, it can happen that a hit is not signalled if a garment is dampened with sweat.
- The hits to the varnished mask (insulated) of the opponent are signalled. However, if a conductive part of the mask (without varnish) is hit, the hit may not be signalled.
- The hit to your own skin may not be signalled. Hence, to test the tip of the weapon, do not press it on your own hand but on an insulating surface (e.g. your own shoe).

Other possible causes of the problem

- Defective Weapon or bodycord
- Radio interference
- Extremely insulated floor
- Defective TRANSMITTER

Perform the following verifications

1. To check the general operation, try to perform some hits on a insulated floor or on your own shoe: if the hit is not signalled then try to change weapon or bodycord or both.
2. If the problem is solved, then ask an armourer to check the defective weapon/bodycord, even though such a weapon/bodycord results in functioning with a traditional wired apparatus. In any case, it is suggested to clean the tip contact.
3. The presence of radio interferences can be the direct cause for the non-signalling of hits, because even though the hit has been registered, the TRANSMITTER is not able to communicate it to the RECEIVER. We recommend reading carefully what is reported in chapters 5.15 and 6.
4. Try another TRANSMITTER, if the problem is resolved, then the electronic board of the TRANSMITTER is defective: require and replace art. 897-32 (see chapter 3)

5.3 - EPEE: sometimes the hit on the opponent guard is signalled

On the WF1 user manual, in chapter 4.2 the following notes about the functioning on hit recording are reported:

- A hit to the guard will not be signalled. However, a hit to the guard may be signalled as valid in the following situations:
 - when both fencers are jumping at the same time;
 - when bodycords are not worn properly. Beginning at the weapon, the bodycord should run up the arm, touching the skin, and then pass over the undershirt to arrive at the base of the back;
 - With certain types of epees³, when the tip is first placed against the guard and then subsequently pressed against it.

Note3: an epee tip in which one of its two wires is always connected to the tip, even when not pressed.

Possible other causes of the problem

- bodycords incorrectly positioned in respect to the body
- extremely insulated floor
- defective TRANSMITTER

Perform the following verifications

1. Check that the bodycords of both fencers are worn correctly. Starting from the weapon, the body cord has to go along the arm in contact with the skin, then go over the t-shirt (underwear), until it arrives at the base of the back.
2. When not using a metal piste, in any case, there has to be a metal net under the pavement, typical of concrete floors in sport centres. The hits on the guard may not be neutralised if the floor is completely insulated, for example a wooden floor without metal structures.
3. Try another TRANSMITTER: if the problem resolves then the electronic board of the TRANSMITTER is faulty: require and replace art. 897-32 (see chapter 3).

5.4 - EPEE: sometimes the hit on the piste is signalled

On the WF1 user manual, in chapter 4.2 the following notes about the functioning on hit recording are reported:

- A hit to the piste will not be signalled. Certain types of epee1, however, may signal a hit to the piste if the tip of the epee was placed on the piste and then afterwards was pressed on the same.

Other possible causes of the problem

- body cords incorrectly positioned in respect to the body.
- defective TRANSMITTER

Perform the following verifications

1. Check that the bodycord of both fencers is worn correctly. Starting from the weapon, the body cord has to go along the arm in contact with skin, then go over the t-shirt (underwear) until it arrives at the base of the back.
2. Try another TRANSMITTER: if the problem resolves then the TRANSMITTER electronic board is faulty: require and replace art. 897-32 (see chapter 3).

5.5 - FOIL: sometimes it is not possible to execute the calibration**Possible causes**

- opponent's jacket very worn out
- bodycord incorrectly worn
- non-connection of the crocodile clip to the conductive jackets
- radio interference

The instructions for the calibration are indicated on the User manual in chapter 5.2.

Perform the following verifications

1. Check that the opponent's jacket is in good conditions, without insulated areas or stains of oxidation. During the three hits necessary for the calibration, the WF1 TRANSMITTER controls that the values registered are similar: if one or more of the hits touch a part of the metal jacket that is damaged then the calibration is not performed.
2. Check that the bodycords of both fencers are correctly worn. Starting from the weapon, the body cord has to go along the arm in contact with the skin, then go over the t-shirt (underwear) until it arrives at the base of the back.
3. Check that both fencers have correctly connected the electric jacket to the bodycord by the crocodile clips.
4. The presence of radio interference can be the indirect cause of the non-signalling of the performed calibration, because even though there has been a calibration, the TRANSMITTER is not able to communicate to the RECEIVER. We recommend reading carefully what has been reported in chapters 5.15 and 6.

5.6 - FOIL: sometimes the hit on the opponent's non-conductive garment is signalled as valid

On the WF1 user manual, in chapter 5.3 the following notes about the functioning on hit recording are reported:

- A hit to non conductive garments will be signalled as INVALID. However, it may happen that a hit to a non conductive garment is signalled as VALID in the following case
 - the part of the garment that is hit is damp with sweat;
 - there is a change in the perspiration level of the fencer who made the hit. In this case carry out the calibration procedure again.
- A hit to the (insulated) varnished mask is signalled as INVALID. However, if a conductive part of the mask (unvarnished) is hit, the hit may be signalled as VALID.
- A hit to the skin of an opponent is signalled as VALID.

- A hit to one's own skin is signalled as VALID.

Other possible causes of the problem

- incorrect calibration
- your own state of perspiration has changed
- opponents' garments damp with perspiration
- body cords incorrectly positioned in respect to the body

Perform the following verifications

1. Perform again the calibration, by carefully following the instructions indicated in the User manual, chapter 5.2.
2. Check that the body cords of both fencers are worn correctly. Starting from the weapon, the body cord has to go along the arm in contact with the skin, then go over the t-shirt (underwear) until it arrives at the base of the back. The bodycord does not have to move excessively during the body movement.

Note: the hit to the piste, to the guard and to the mask when not varnished are signalled as VALID. Please, see the User manual on chapter 3.

5.7 - FOIL: sometimes the hit to the opponent's conductive jacket is signalled as Non-valid

In the WF1 user manual, in chapter 5.3, the following notes about the functioning on hit recording are reported:

- A hit to the conductive jacket is signalled as VALID. If it is signalled as INVALID:
 - make sure that the part of the jacket hit is not insulated or heavily oxidized;
 - execute the calibration procedure again (see ch. 5.2) of the fencer who made the hit.
- A hit to the (insulated) varnished mask is signalled as INVALID. However, if a conductive part of the mask (unvarnished) is hit, the hit may be signalled as VALID.

Other possible causes of the problem

- incorrect calibration
- opponent's jacket oxidated or damaged
- body cords incorrectly positioned in respect to the body
- non-connection of the crocodile clip to the conductive jackets
- extremely insulated floor

Perform the following verifications

1. Re-perform the calibration, by carefully following the instructions indicated in the User manual, chapter 5.2.
2. Check that the opponent jacket is in good conditions, without insulated areas or stains of oxidation..
3. Check that the body cords of both fencers are worn correctly. Starting from the weapon, the body cord has to go along the arm in contact with skin, then go over the t-shirt (underwear) until it arrives at the base of the back.
4. Check that both fencers have correctly connected the electric jacket to the bodycord by the crocodile clips.
5. The floor on which the fencers are training could be extremely insulating and not providing an adequate ground reference. If you do not use a metal piste, it is necessary that under the insulated floor there is at least one metal net, typical of reinforced concrete.

5.8 - FOIL: sometimes the valid hit or the invalid one is not signalled

Possible causes

- radio interference
- defective TRANSMITTER

Perform the following verifications

1. The presence of radio interference can be the indirect cause of the non-signalling of the hits, because even though the hit has been recorded, the TRANSMITTER is not able to communicate to the RECEIVER. We recommend to reading carefully what is reported in chapters 5.15 and 6.
2. Try another TRANSMITTER: if the problem is resolved, then the TRANSMITTER electronic board is faulty: require and replace art. 897-32 (see chapter 3).

5.9 - The RECEIVER does not switch on or it works only if connected to the line voltage

Possible causes

- damaged battery charger
- RECEIVER battery completely discharged or damaged
- faulty RECEIVER electronic board

Before you proceed with verifications, remove all the electric parts from the case by unscrewing the three screws situated on the external black side of the case. Be careful not to let the internal battery fall.

Perform the following verifications

1. Connect the battery charger to a working electric socket. Unplug the output connector of the battery charger and verify that its exit voltage is about 14.4Vdc.
2. If the output voltage is not correct, then the battery charger is damaged. Require and replace the battery charger art. 290-24 (see chapter 3).
3. If the battery charger output voltage is correct, disconnect the positive pole of the battery and reconnect the battery charger output connector to the electronic board.
4. If the RECEIVER switches on by pressing the On/Off button, then the damage is caused by the battery which is defective. Require and replace art. 290-26 (see chapter 3).
5. If the RECEIVER does not switch on, then its electronic board is damaged. Require and replace art. 897-40 (see chapter 3).

5.10 - The RECEIVER battery has a limited operating time

Possible causes

- Damaged RECEIVER battery

We remind you that the RECEIVER and the TRANSMITTER have to be recharged at least every 4 months, if not used. Otherwise, the batteries deteriorate losing their performance (more and more limited operating time).

If, at the end of the training session, the RECEIVER battery is at 25% (only 1 blinking green LED Battery Level) or it is discharged (blinking of Low Battery red LED) then proceed immediately to its recharging as per the User Manual indications in chapter 6. Should the battery stay discharged for a long time it deteriorates and diminishes its capacity/efficiency.

The RECEIVER battery is damaged and has to be substituted.

1. Remove all the electric parts from the case by unscrewing the three screws situated on the external black side of the case. Be careful not to let the internal battery fall.
2. Require and replace art. 290-26 (see chap. 3).

5.11 - The TRANSMITTER does not switch on

Possible causes

- Damaged TRANSMITTER electronic board
- Damaged recharging cable (does not allow the recharge)
- Damaged RECEIVER electronic board (does not allow the recharging of Transmitters)

Perform the following verifications

If the TRANSMITTER does not switch on when pressing the P1 button (no blinking of the L1 LED), then perform the following verifications:

1. Charge the TRANSMITTER (see User manual) by using the appropriate cable connected to the Charger 1 or Charger 2 of the RECEIVER connector and press the P1 button to turn it on. If it does not switch on, let it charge for at least 4 hours.
2. If after the recharging the L1 LED does not switch on by pressing the P1 button, then the possible causes can be the following:
 - 2.1 Defective recharging cable: try to do the recharging by using another cable.
 - 2.2 Damaged RECEIVER electronic board: try to charge the second TRANSMITTER by using both Charger 1 and Charger 2 connectors, so as to verify if the RECEIVER electronic board charges the TRANSMITTER correctly (double blinking of LED L1 if charging, the light is stationary if the recharge has been completed). If the recharge

does not happen then the RECEIVER electronic board is damaged. Require and replace art. art. 897-40 (see chapter 3).

3. If the previous tests have not solved the problem, then open the TRANSMITTER and verify the output voltage of the battery on the connector of the board where it (the battery) has been connected. If the voltage is lower than 3.3Vdc then the battery is damaged: require and replace art. 897-30 (see chapter 3). If the voltage is higher than 3.3Vdc then the electronic board is damaged: require and replace art. 897-32 (see chapter 3).

5.12 - The TRANSMITTER battery has a limited operating time

Possible causes

- damaged TRANSMITTER battery

Perform the following verifications

The TRANSMITTER has an operating time of about 80 hours which is much longer than the RECEIVER operating time (about 40 hours). Since the Transmitters are usually recharged together with the RECEIVER, the case in which a TRANSMITTER discharges before the RECEIVER should never happen.

Should this be the case then the TRANSMITTER battery is damaged and has to be substituted. Require and replace art. 897-30 (see chapter 3).



The substitution of the TRANSMITTER battery must be performed by a qualified technician. Do not use batteries which do not comply to what is required by the Manufacturer.

5.13 - Sometimes the hits are not signalled

See chapter 5.15.

5.14 - Sometimes when pressing the P1 button on the TRANSMITTER, no signalling happens on the RECEIVER

See chapter 5.15.

5.15 - Sometimes, after a hit, the Error LED performs a series of 4 blinkings

Possible causes.

- radio interferences
- damaged TRANSMITTER electronic board
- damaged RECEIVER electronic board

Important: please verify if there are radio interferences (eg: with Wi-Fi network), see chapter 6.

If you think there are radio interferences, we suggest:

- try to change the radio channel by changing the number of piste.
- do not place close to the RECEIVER other radio electronic devices like tablets, PC, smartphones, etc.
- do not keep in your pocket, close to the TRANSMITTER, a smartphone with enabled Wi-Fi or Bluetooth.

If the problem continues, perform the following verifications.

1. Make sure that the RECEIVER and the 2 TRANSMITTER batteries are charged (see User manual, chapter 6).
2. Verify the correct operation of the radio part of the RECEIVER and of the TRANSMITTER as follows:
 - Go to an open area, away from buildings, or make sure that no other radio devices are switched on (mobiles with activated Bluetooth, Wi-Fi network, radio connections).
 - Verify the radio working distance for each TRANSMITTER. To do this, you have to progressively separate from the RECEIVER and verify that any time you press on the P1 button on the TRANSMITTER, the corresponding LED line on the RECEIVER lights up.
 - If the distance is more than 40 metres for both Transmitters it can be considered that the RECEIVER and TRANSMITTER work correctly.

3. If only one of the two Transmitters has transmission problems require and replace art. 897-32 (see chap. 3).
4. If both Transmitters have transmission problems the possible causes are the following:
 - 4.1 There is a nearby radio TRANSMITTER which creates disturbance on the radio channel that has been used. Try to change piste (different radio channel) as indicated in chapter 3.1 of the WF1 user manual.
 - 4.2 It is likely that the RECEIVER is damaged. If you have other Receivers you have to compare their operating. If you see that the problem is on the RECEIVER, require and replace its electronic board art.897-40 (see chap. 3).

5.16 - Sometimes you are not able to change weapon or piste, it seems that the RECEIVER buttons do not work

Possible causes.

- Radio interference

If there is continuous radio traffic on the radio channel used by the RECEIVER, then the RECEIVER is always busy and it is possible that the RECEIVER does not allow the change of the piste or of the weapon.
See chapter 6.

6 - RADIO INTERFERENCES

6.1 - Introduction

The radio transmission of the WF1 occurs on 2.4GHz radio band, by using the IEEE802.15.4 protocol. Each piste corresponds to a distinct radio channel on this band, so that, in case you wish to use more than one WF1 system in the same salle/gym by setting each of them on a different piste, there is not interference between them.

If a TRANSMITTER is not be able to communicate to the RECEIVER that there has been a hit, than an anomaly will be signalled on the next hit with a series of 4 flashings of the LED Error (see fig. 1).

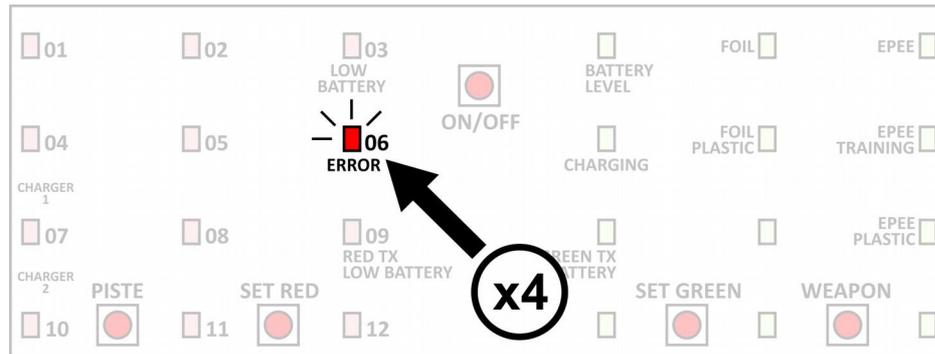


Fig 1: Flashing of LED ERROR for 4 times

In case there are many WF1 apparatuses operating on the same fencing salle or building, please verify that each of them is programmed for a different piste. Two WF1 apparatuses can work on the same channel, but the probability of the malfunctioning due to radio interference will increase.

The 2.4 band is used also for other radio transmissions, among which (the list is not complete)

- Wi-Fi
- Bluetooth
- Zigbee

Products that can use the following items of common use or that are present in a gym:

- mobile phones and smartphones
- tablets
- PCs and laptops
- Wi-Fi routers
- cordless phones working on the 2.4GHz band
- bluetooth earphones
- radiomicrophones
- electronic scoreboards with radio connections
- home automation
- radio anti-theft alarms
- wireless videocameras or video surveillance systems

Some devices, even though they use different radio bands, have such strength that they make the radio communication difficult:

- radio links
- crane remote controls

The most common source of radio interference is the presence of one or more Wi-Fi networks. Such networks are normally placed on different and distant channels so as not to interfere with one another. The Wi-Fi channels mostly used are the 1, 6, and 11 channels, because they do not cross one another.

6.2 - Troubleshooting

If you suspect there is radio interference, we suggest:

- try to change the number of pistes; choose the most suitable one after having read all this chapter.
- If possible, switch off the radio systems that are present in the gym;
- do not place the RECEIVER close to other electronic and/or radio devices (mobiles, smartphones)
- do not keep the TRANSMITTER close to other radio devices (mobiles, smartphones)

IMPORTANT: If the release of the software is prior the 1.4, proceed with the updating of the RECEIVER and of the TRANSMITTER (see chapter 8)

First of all, to verify the presence of Wi-Fi network you can use different free programs.

If you have a smartphone or a Android tablet, you can use the app **Wifi Analyzer** (see fig 2).

If you have a smartphone or a iOS tablet, you can use the app **Wifi Scanner**.

If you have a PC with a Windows operating system, you can use the **inSSIDer** program.

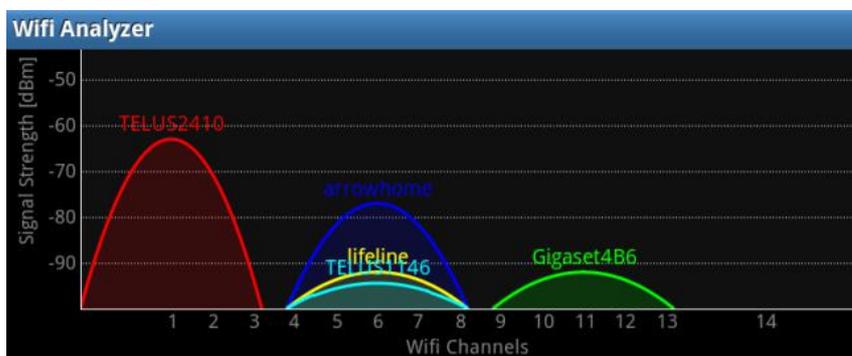


Fig 2: Wifi Analyzer for Android

In the example above, a very congested situation is shown in which there are several Wi-Fi networks which occupy Wi-Fi channels also overlapping. Normally, the Wi-Fi networks use the radio channels 1, 6 and 11. In some situations the Wi-Fi channels that are mostly used are 1, 5, 9, 13.

Every piste set on the WF1 RECEIVER corresponds to a radio channel. It is advisable to choose pistes which radio channels do not overlap Wi-Fi radio channels, if possible.

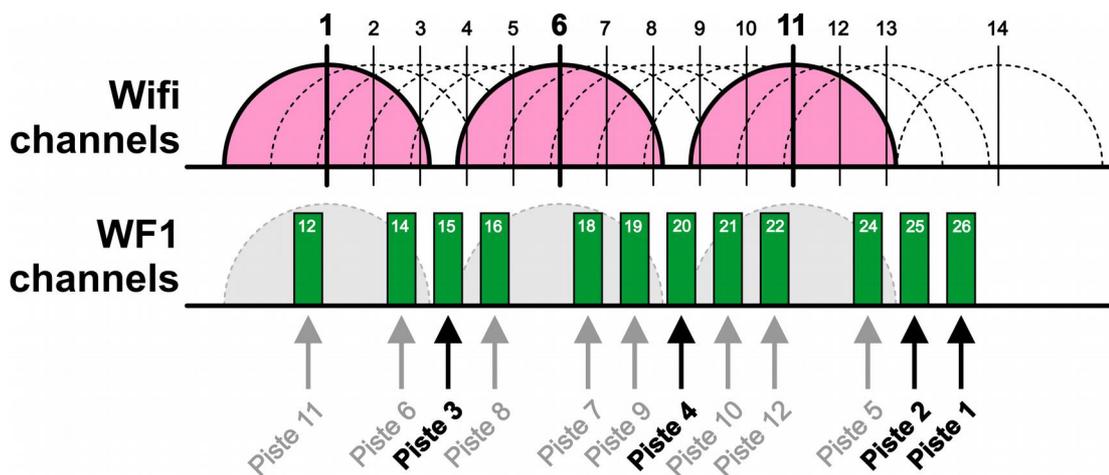


Fig.3: Wi-Fi channels and WF1 pistes

To avoid problems of interference, it is advisable to choose a piste that is not overlapping active Wi-Fi channels.

The choice has to be done by looking at fig. 3 where the frequencies used by Wi-Fi channels and WF1 pistes are shown (in green).

If, for example, there are Wi-Fi networks on channels 1, 6 and 11, as highlighted in pink colour in fig. 3, you can choose pistes 1, 2, 4 and 3. The other pistes have frequencies that may be disturbed, instead.

7 - SIGNALLING OF THE ERROR LED

The "Error" LED of the RECEIVER blinks in case of internal anomalies.
The number of the blinkings of the "Error" LED shows the type of anomaly.

| Numbers of the Error LED blinkings | Anomaly |
|---|--|
| 2 blinkings | Radio module error Contact the supplier informing them of the situation in which the problem has occurred. |
| 3 blinkings | EEPROM memory error Contact the supplier informing them of the situation in which the problem has occurred. |
| 4 blinkings | Radio transmission error The TRANSMITTER has not been able to transmit the previous hit, probably due to radio interference. See chapter 6. |

8 - DISPLAYING AND UPDATING OF THE SOFTWARE

8.1 - Software change log

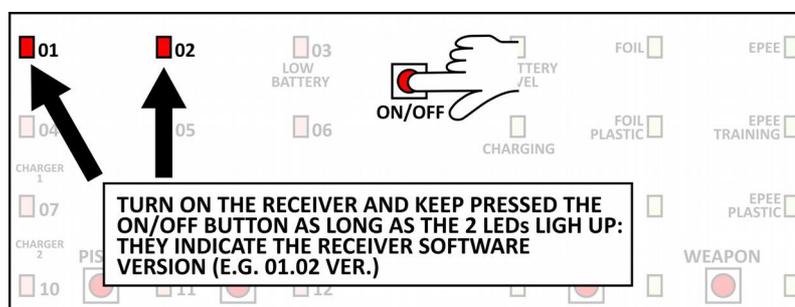
Version 1.5, 19/11/2013:

- solved some issues with extremely capacitive epees;
- better radio communication in case of Wi-Fi interferences.

8.2 - Verification of the RECEIVER and TRANSMITTERS software version

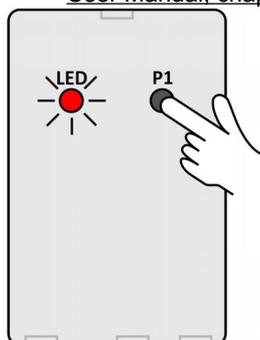
It is possible to display the RECEIVER and Transmitters software version number through the following procedure:

1. Be sure that both TRANSMITTERS have been programmed with the RECEIVER, see user manual paragraph 3.1 and 3.2.
2. Turn off the RECEIVER.
3. Turn on the RECEIVER by pressing the ON/OFF button and keep it pressed for about 5s, until the two red LEDs light up: those LEDs indicate the number of the software version of the RECEIVER (e.g. picture below, version 01.02). Now it is possible to release the ON/OFF button.

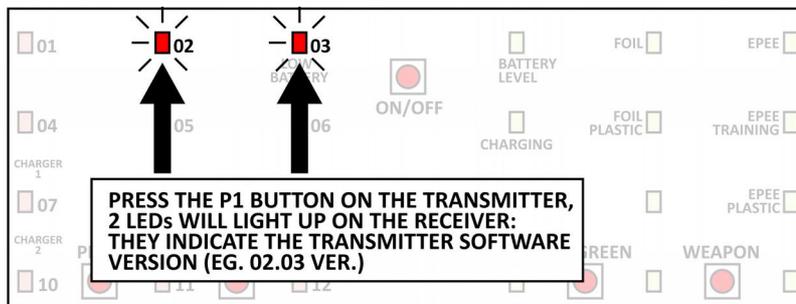


4. On the TRANSMITTER, press the P1 button, two red LEDs will light up on the RECEIVER for a few seconds: those LEDs indicate the software version of the TRANSMITTER (e.g. picture below : 02.03).

Please note: The TRANSMITTER must have been previously programmed on the same piste of the RECEIVER (see User Manual, chapter 3)!



TRANSMITTER



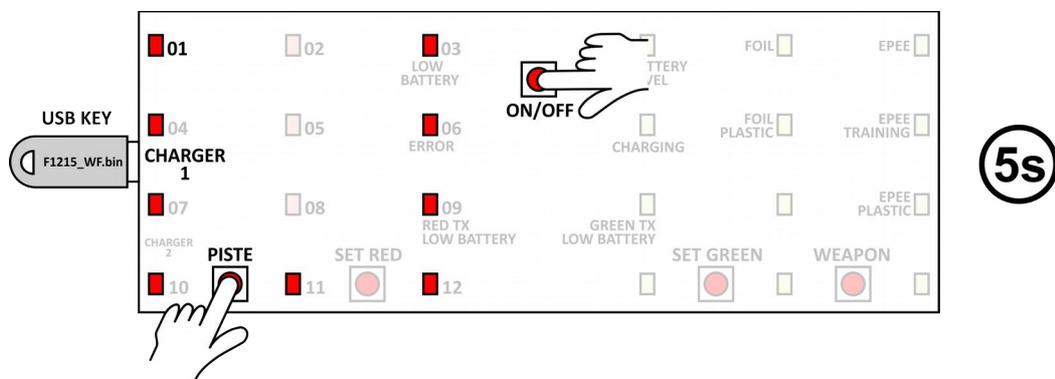
5. Please press the ON/OFF button shortly to exit this procedure.

8.3 - Updating of the RECEIVER software

The RECEIVER and TRANSMITTER software is upgradeable by using a USB pen containing a single file. It is possible to verify the current version of the RECEIVER and TRANSMITTER software through the procedure indicated in chapter 8.1.

See here below the procedure for the upgrading:

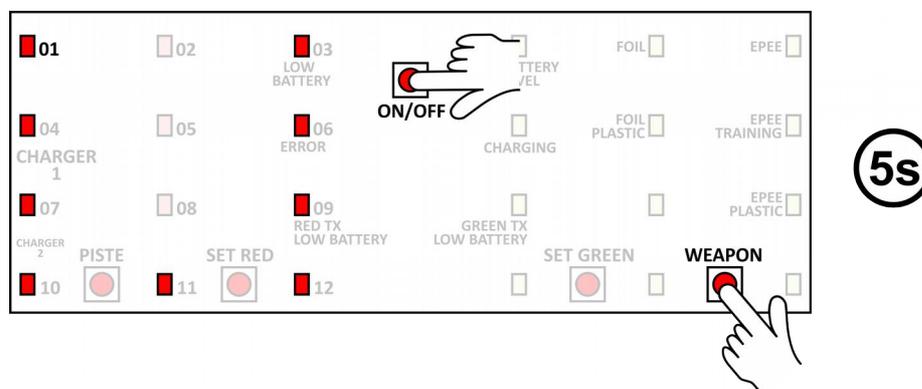
1. Make sure the RECEIVER battery is fully charged: the green LED indicating the battery level has to blink two or three times . Otherwise, you have to do a complete recharge of the battery (see User manual chapter 6).
2. Download from the WF1 webpage the new software version, e.g. the file "WF1_release_1.5.zip".
3. Extract the zip file you have just downloaded and select the file "**F1215_WF.bin**".
4. Prepare a new and empty USB pen, without any file or folder in it.
5. Copy only the file "F1215_WF.bin" directly on the root of the USB pen, do not do it on a sub folder.
6. Turn off the RECEIVER by pressing the ON/OFF button. No LEDs have to blink.
7. Insert the USB pen on the connector indicated as **CHARGER 1**.
8. Keep pressed the **PISTE** and **ON/OFF** button for about 5s, as soon as you see a "U" on the red LEDs. Release the buttons.



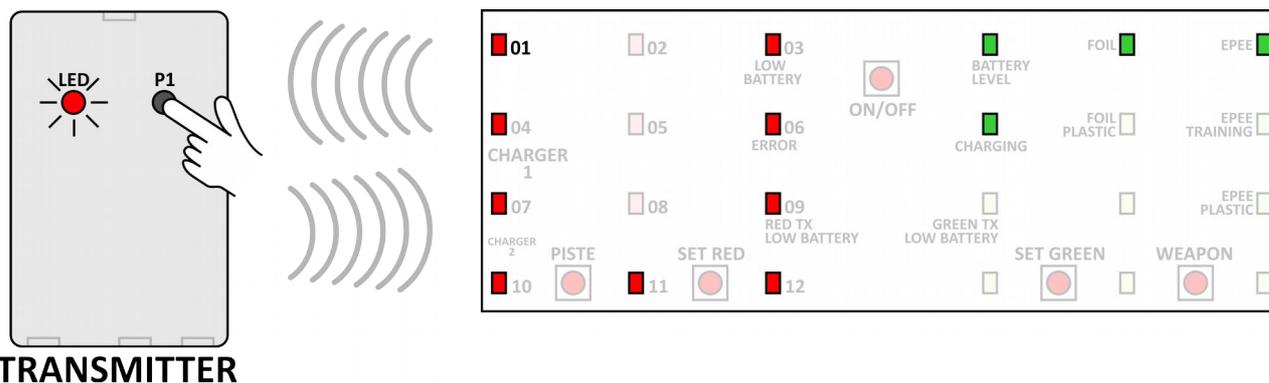
9. If the updating of the RECEIVER has been done correctly, all the green LEDs light up for 5s, then the RECEIVER turns off.
10. If the updating has **not** been done correctly, an X will appear on the red LEDs for 5s, then the RECEIVER turns off. Check to have correctly inserted the USB pen on the correct connector **CHARGER 1**. Turn off the RECEIVER by the ON/OFF button and repeat the procedure from point 5.

8.4 - Updating of the TRANSMITTER software by the RECEIVER

1. Make sure the Transmitters are properly programmed with the RECEIVER: see User Manual chapters 3.1 and 3.2.
2. Make sure the TRANSMITTER battery is charged: do a complete recharge (see User Manual, chapter 6)
3. Turn off the RECEIVER by pressing the ON/OFF button. No LEDs have to blink.
4. Keep pressed the **WEAPON** and **ON/OFF** button for about 5s, as long as a blinking "U" appears on the red LEDs. Release the buttons.



5. If not yet operating, turn on the TRANSMITTER, and go close to the RECEIVER.
6. Keep pressed the P1 button on the TRANSMITTER as long as its L1 LED starts blinking and as long as the blinking "U" on the RECEIVER lights up stationary. The green LEDs have to light up in sequence.



7. The updating is completed within 15-20 sec. If executed correctly, all the green LEDs will light up stationary for 5s, after that, the RECEIVER will turn off.
8. If the updating has been interrupted or there have been problems, wait until the TRANSMITTER turns off automatically, then turn it on again by pressing the P1 button. If the RECEIVER is still in the updating procedure, it will restart the programming by lighting up again the green LEDs in sequence.
9. If the procedure interrupts again, wait until the TRANSMITTER turns off automatically. After that, turn off the RECEIVER by pressing the ON/OFF button. Repeat the procedure from dot 4.
10. If it is not possible to complete the procedure you can contact the Favero technical support.

Please note: In case the updating procedure has been started but has not been completed correctly the TRANSMITTER will not work. In such case, you have to repeat the procedure as long as it will be completed correctly