

# Art.302-01: Radio Receiver for FOS Series Scoreboards

## Installation and Service Manual

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## 1. INTRODUCTION

This manual concerns the installation and maintenance aspects of the Radio Receiver for FOS series electronic scoreboards. It is extremely important that the product is properly installed so as to ensure a reliable and safe functioning. Therefore, although installation is easy, we advise reading the manual carefully before beginning the installation procedure. The Command Console of the scoreboards must be equipped with a Radio Transmitter.

## 2. MOUNTING THE RADIO RECEIVER



Before mounting the Radio Receiver, we suggest making a preliminary operating test by connecting to the scoreboard temporarily (see chapter 3.1).

**2.1 CHOICE OF POSITION**

Even if the type of radio transmitter used is highly reliable, in that it automatically selects an appropriate radio channel to avoid interference from other transmitters and that the distance of communication reaches 500m outdoors, it is advised that in the presence of metallic structures:

- there are no visible obstacles between the Radio Receiver and the Command Console (Fig. 1);
- there are no large metallic walls in the vicinity;
- the Radio Receiver is easily accessible.

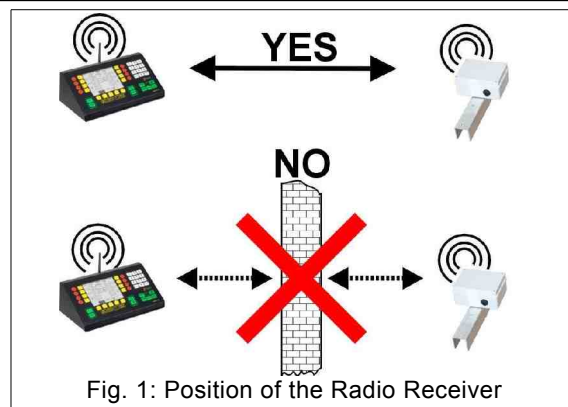


Fig. 1: Position of the Radio Receiver

**2.2 MOUNTING**

Mounting the Radio Receiver is only necessary if it is purchased after the scoreboard has been installed. Otherwise, when both are purchased simultaneously, the Radio Receiver will come joined to the right-hand (rear view) vertical bracket with 'Ω' profile. The correct position can be seen in Fig. 2.

1. From the vertical bracket with 'Ω' profile, located to the right of the scoreboard (rear view), remove the closing nut and washer of the top M8x20 fastening screw (Fig. 3).
2. Align the support bracket of the receiver to the 2 holes on the 'Ω' profile bracket as in Fig. 3, and lock it in place with the M8x20 screws and relative washers and nuts.
3. Fasten the cable entry conduit to allow for the passage of the cable along the 'Ω' profile bracket of the Scoreboard as in Fig. 3.
4. Thread the cable of the Radio Receiver into the cable entry conduits found on the support structure until it reaches the power supply module (labeled **POWER SUPPLY**).

**1. Radio Receiver**

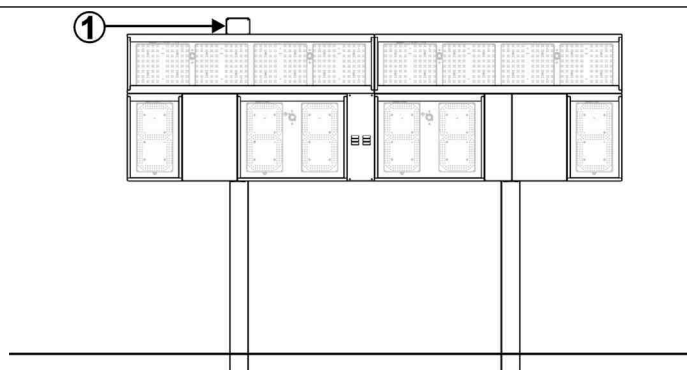


Fig. 2: Position of the Radio Receiver

1. Radio Receiver
2. Horizontal bracket with 'Z' profile
3. Cable entry conduit of the Radio Receiver
4. Vertical bracket with 'Ω' profile
5. M8 nut
6. Elastic washer
7. M8x20 screw
8. Self-tapping screw

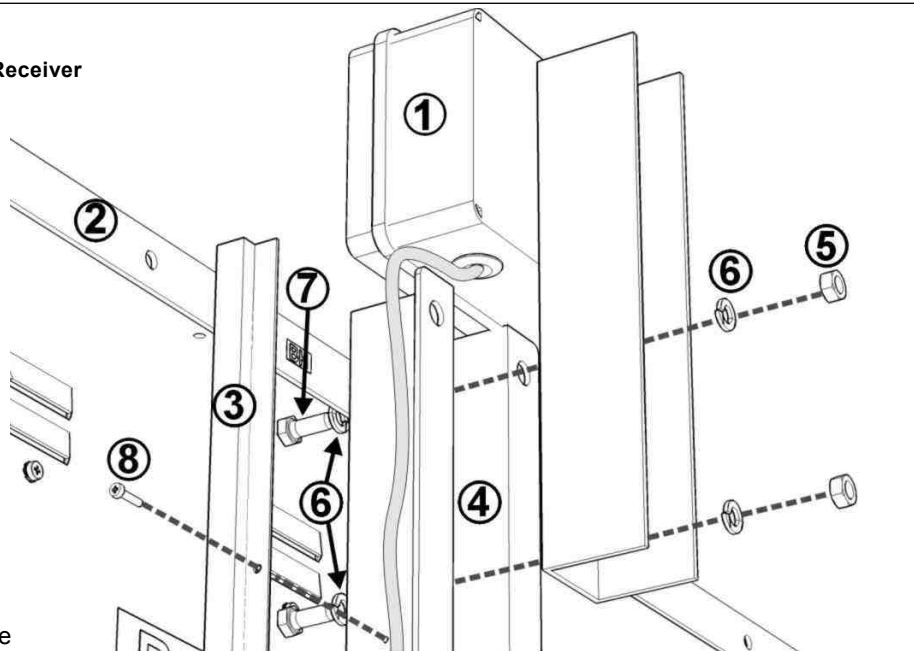


Fig. 3: Detail of mounting procedure

### 3. CONNECTING AND TESTING THE RECEIVER



After installing the Radio Receiver, you may connect the power supply and data cable.

#### 3.1 CONNECTING THE RADIO RECEIVER

1. Make sure the scoreboard's power supply voltage has been disconnected via the power supply switch.
2. Connect the power supply and data cable into the connector of the **HUB+24V** board labeled 'RR', located inside the Power Supply module of the scoreboard, as described in chapter 3.3 of the Scoreboard Installation Manual.

#### 3.2 LINKING PROCEDURE OF THE RADIO RECEIVER

The Radio Receiver now needs to be linked to the designated Command Console so that it receives data only from the Command Console and not from other consoles. If the Radio Receiver has been purchased together with the Console, this link has already been effectuated and you can proceed to paragraph 3.3.

1. Switch on the Command Console and only the Radio Receiver (or Receivers) that should be linked, making sure that no other Consoles are turned on.
2. If there are other Radio Receivers linked/connected to other Consoles in the near vicinity, make sure to check that they are turned off so as to avoid interference in the linking procedure.
3. On the Console press the buttons  → . Set the "Connect new scoreboards" parameter to the heading "Yes", and then wait for circa 1 minute until it automatically returns to "No".

At this point the Radio Receiver has been linked to the Command Console and will start sending data that it has received to the various linked scoreboards. From this point on, every time the scoreboard is switched on the connection to this Console will be established automatically, without need of repeating the procedure. The linking procedure must be repeated only when you wish to connect the Receiver to another Command Console.



Please note that all switched-on Radio Receivers will permanently link to the Console, providing that they are not already communicating with other Consoles.

#### 3.3 TESTING THE RADIO RECEIVER

Once the Radio Receiver has been installed and linked to the Command Console:

1. Check that the scoreboards display all the information present on the Console's screen, otherwise see chapter 4.1.

### 4. PROBLEM SOLVING

This chapter contains information concerning the principal problems that may arise during the Radio Receiver's life and is aimed at helping you to quickly resolves such problems. If the problem concerns the scoreboards, please consult the Scoreboard Installation Manual. If you encounter a problem that is not explained here, please contact us.

For all malfunctions, the following is a list of operations, ranked according to priority, to be carried out in order to re-establish the Radio Receiver's proper functioning .

#### 4.1 OPERATING MALFUNCTIONS

##### 4.1.1 The scoreboard commanded by the Radio Receiver lights up for 1 second but then displays the time of day.

This malfunction is due to the scoreboard not receiving information from the Console. To resolve the problem, proceed as follows:

1. Repeat the linking procedure of the Receiver to the Console (chapter 3.2).
2. If you possess another radio Console, try using it (effectuating the linking procedure).
3. Open the Radio Receiver cover and check the red LED in the Radio Receiver (Fig. 4 and Fig. 5):
  - a) With the red LED off, measure the voltage on the power supply connector. If this is +24Vdc, then replace the control board (chapter 4.2), otherwise check the cable connecting to the "POWER SUPPLY" module of the scoreboard.
  - b) With a steady, continual red LED on, the supply voltage is present but the console is not receiving data. Increase the quality of radio communication by bringing the Console closer to the Radio Receiver and by eliminating any obstacles between the two devices. If there is no improvement, replace the control board (chapter 4.2).
  - c) With a flashing red LED, the Radio Receiver is receiving data correctly from the console, but data are not being sent to the Scoreboard.
4. Check that the power supply and data cable is properly connected both to the scoreboard's Power Supply module and to the Radio Receiver, and that it shows no signs of abrasions, cuts, or other types of damage.
5. Temporarily connect the console to the Scoreboard via cable (see FOS Scoreboard Manual). If the scoreboard functions properly, then replace the control board of the Radio Receiver (chapter 4.2).

##### 4.1.2 The scoreboard displays data that do not correspond to the data of the Console.

When the scoreboard displays data that are plausible but not congruent with those sent by the Command Console, it is because the Radio Receiver has been connected to another Console by mistake, and left on while that Console was effectuating a linking/connecting procedure.

1. Repeat the linking/connecting procedure of the Receiver to the Command Console (chapter 3.2).

**4.1.3 While in operation the scoreboard does not update data, or it switches off and on.**

If the scoreboard does not promptly update data sent from the Console, or if it occasionally turns off and on, it is most likely due to a deterioration in radio connection between the Console and Receiver.

1. Make sure the antenna of the Console is positioned vertically.
2. Eliminate any obstacles (metallic structures, persons, equipment, etc.) between the Console and the Receiver (Fig. 1).
3. Disconnect the power supply for several seconds from both the Command Console and the Radio Receiver so that when the scoreboard is switched on again, these will automatically reconnect through a new radio channel with less interference.
4. Try bringing the Command Console closer to the Radio Receiver.

**4.2 REPLACING THE CONTROL BOARD**



1. Make sure the scoreboard's power voltage has been disconnected via its power supply switch.
2. Remove the cover by unscrewing the 4 front closing screws (Fig. 4).

- 1. Radio Receiver cover
- 2. Radio Receiver box
- 3. Fastening screws of the cover

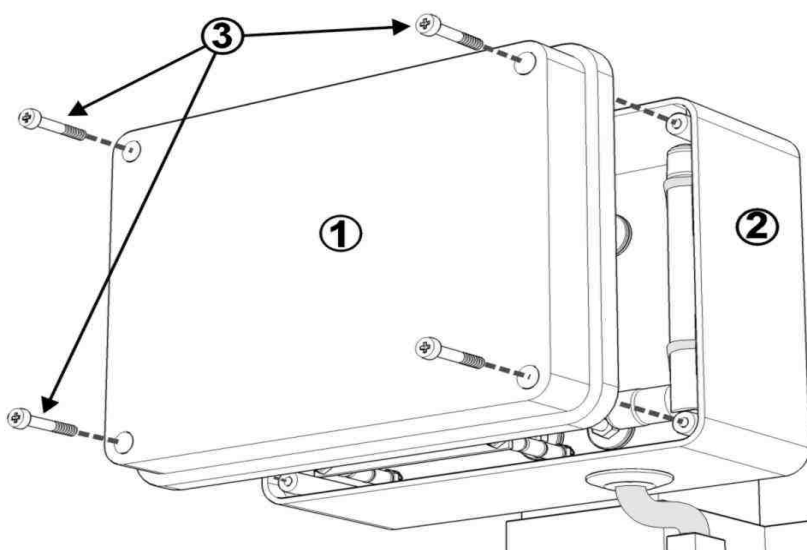


Fig. 4: Opening the cover

3. Remove the antenna cable from the connector on the radio module and then, with a flathead screwdriver, disconnect the 3 wires from their respective terminals, taking note of their position (Fig. 5).
4. Remove the fastening nuts and extract the control board from its place (Fig. 5).
5. Position and secure in place the new board, then reconnect the power supply wires into the terminals and reconnect the antenna cable.
6. Close the Radio Receiver with the cover and restore power to the scoreboard.

- 1. Radio Receiver
- 2. Control board
- 3. M3 fastening nuts of the board
- 4. Power supply and data cable
- 5. Power supply connection
- 6. Antenna cable
- 7. Antenna
- 8. Data connection (blue wire)

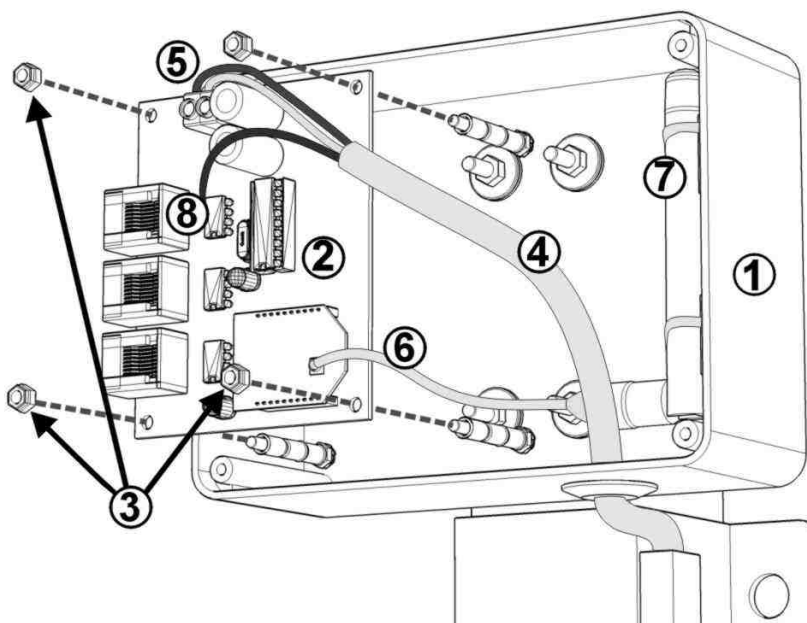


Fig. 5: Control board

**4.3 REPLACING THE MICRO CONTROLLER**

1. Open the container of the Receiver as indicated in point 1-2 of chapter 4.2.
2. Identify the micro controller and with a small flathead screwdriver gradually lever it along the shorter edges in order to extract it from its base (Fig. 6).
3. Insert the new micro controller, making sure to place it in the proper direction, then close the Receiver with the cover and restore power to the scoreboard.

1. Control board
2. Micro controller
3. Direction of the micro controller
4. Levering point

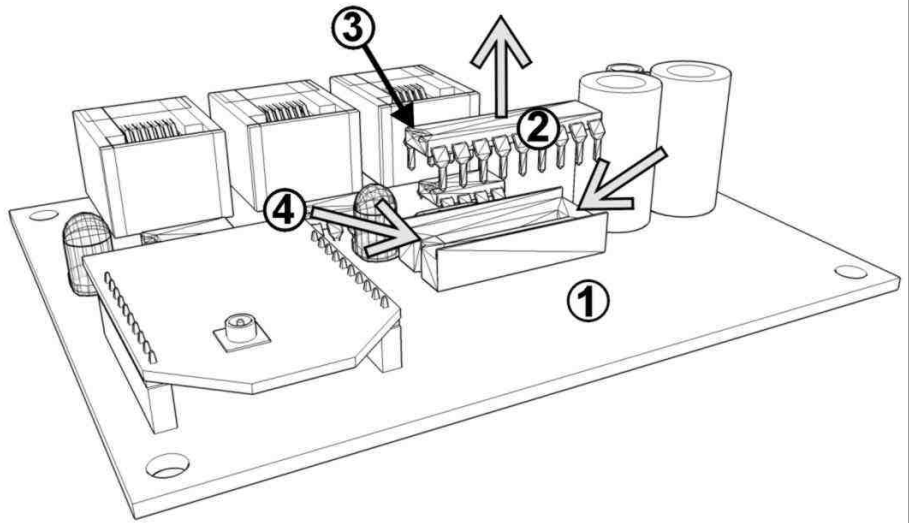


Fig. 6: Replacing the micro controller