

# FS-24s-x Scoreboards

## Installation and service manual

Displaying 24-seconds shot clock and game time

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## 1. LIST OF SCOREBOARD MODELS

Fig. 1: **FS-24s-1** (art.258-1)  
One-sided display

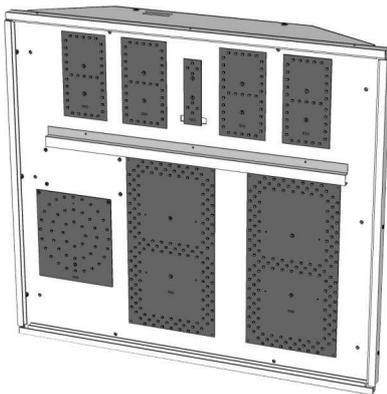


Fig. 2: **FS-24s-3** (art.258-3)  
Three-sided display

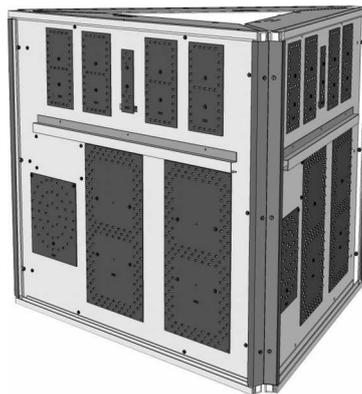
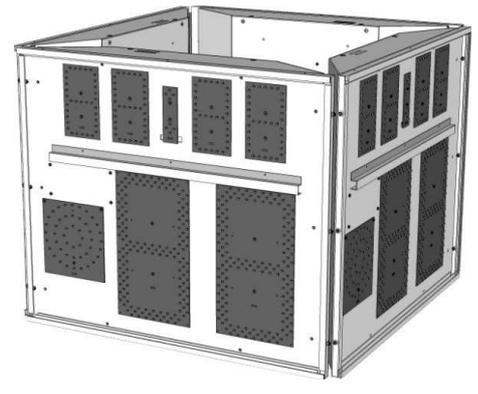


Fig. 3: **FS-24s-4** (art.258-4)  
Four-sided display



## 2. INTRODUCTION

This manual covers all the aspects of normal assembly, installation and maintenance of the various models of FS-24s-x scoreboards, used for displaying 24-seconds shot clock and game time (see models in chapter 1). It is extremely important that the scoreboard is installed correctly: please read the manual carefully before attempting to install your board.

### 2.1 SAFETY WARNING



The installation of this product and of the electrical system should be carried out by a qualified technician and conform with the current regulations established by the country in which the device will be installed. The system must be equipped with ground connection and protective devices.

## 3. ASSEMBLY OF SCOREBOARD

The modules of the three and four-sided display models (FS-24s-3, FS-24s-4) are separated before shipping. These modules must be assembled before installation.

To assemble, follow the procedure for a display scoreboard with more than one display side.

### 3.1 JOINING THE MODULES

Assemble the scoreboard on the floor before installing it in the desired position. We suggest placing protective material, such as cardboard, on the floor to serve as a base for assembling the board. Follow the directions below:

1. Make sure you have all the necessary pieces: modules for putting together the scoreboard and screws (see the various modules in chapter 1), power supply cords and flat cables for connection among modules.
2. Place the modules in a vertical position on the floor. Align the sides of the modules so that their edges are close together and in order to form a completed scoreboard (modules may be aligned in any order); then join the various modules by fastening the screws into the metal joining brackets (Fig. 4). The image in Fig. 5 shows the assembly of a four-sided display scoreboard.

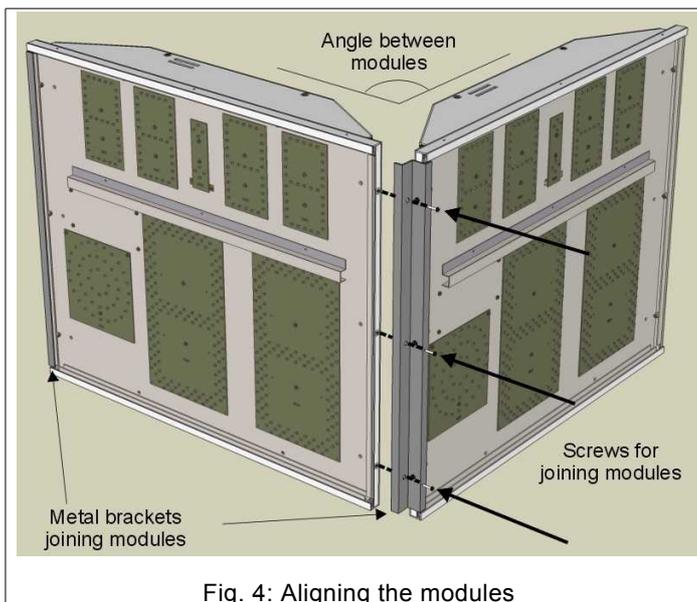


Fig. 4: Aligning the modules

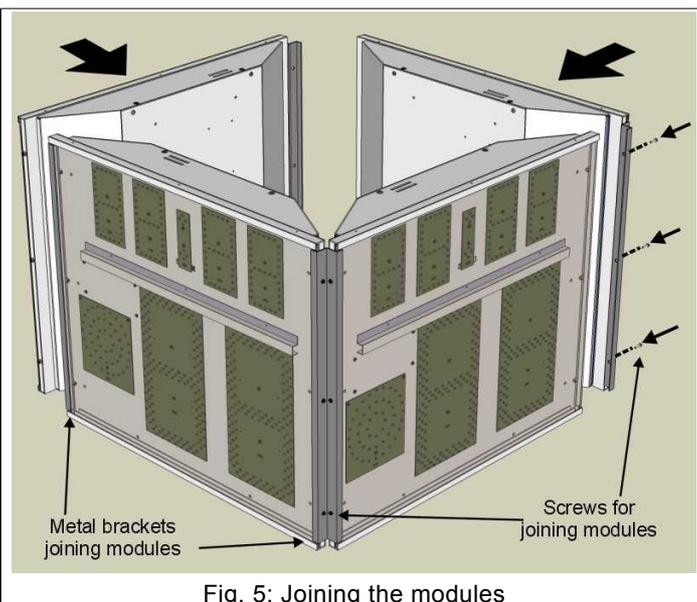


Fig. 5: Joining the modules

### 3.2 ELECTRICAL CONNECTION OF MODULES

Once the various modules of a scoreboard have been assembled, you may proceed to their electrical connection. On the back of each module the following connectors can be found (Fig. 6, Fig. 7):

- 15-way female connectors for inserting the flat cables;
- power supply socket;
- “SERIAL DATA INPUT” port for connecting to the serial data cable of the Command Console.

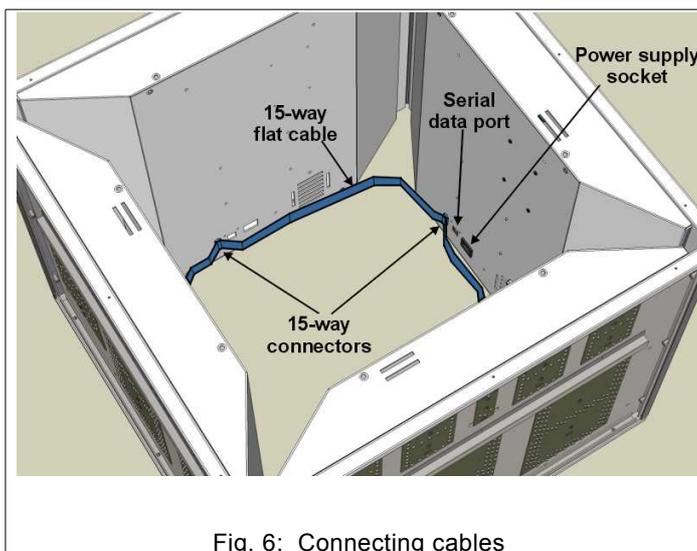


Fig. 6: Connecting cables

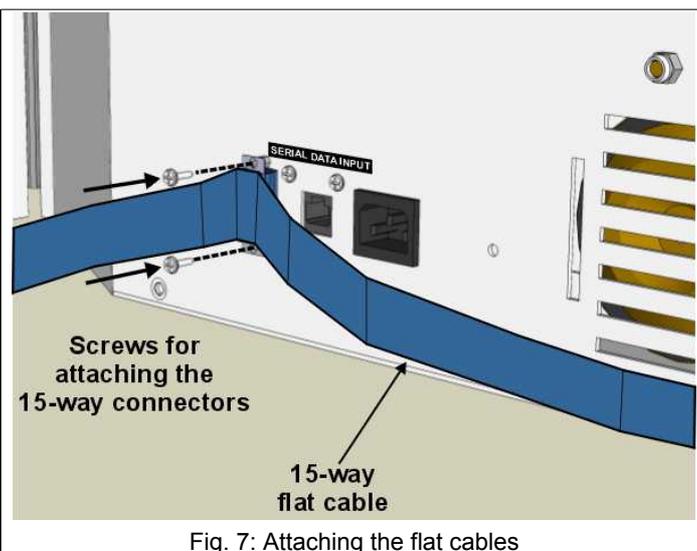


Fig. 7: Attaching the flat cables

Proceed as follows.

1. Insert a middle masculine connector (not an end connector) of the flat cable into the 15-way female connector of the module containing the power supply socket (Fig. 6, Fig. 7).
2. Connect the other modules by means of the 15-way flat cable.
3. Secure the 15-way connectors to the various modules by using the screws provided (Fig. 7).

## 4. ELECTRICAL POWER SUPPLY SYSTEM

Remember that the electrical power system should be implemented by a qualified technician.

### 4.1 POWER SWITCH AND SOCKET

Each scoreboard comes with a power cord and plug. We suggest that a power supply socket be positioned near the scoreboard; the socket can then be controlled by a general switch for the various scoreboards: this will facilitate switching off the system when not in use and help save energy and prevent unnecessary wear and tear.

**5. INSTALLATION**



Before installing the assembled scoreboards (see chapter 3), we suggest first running a preliminary check test (chapter 6.3) by temporarily connecting the scoreboard to the Command Console and to the mains power supply.

**5.1 SELECTING THE CORRECT POSITION**

FIBA regulations require that 24-seconds shot clocks, whether one-sided or multi-sided, are either installed above the backboard support structure or suspended from the ceiling (the exact positions and distances for shot clocks are defined by regulation). According to need, the shot clocks can also be installed on walls or placed on the floor behind the out-of-bounds protection line. Be reminded that the FS series scoreboards are resistant to damage from balls and therefore require no additional front protection cover.



Check to make sure that the support structure is strong enough to support the weight of the scoreboard and to resist damage from balls. Consult a professional in the field.

**5.2 INSTALLING THE SCOREBOARD**

Each module contains threaded inserts used for attaching the module to a support structure: four M5 inserts located on the back and at the corners of each module, and two M8 inserts located on both the top and bottom sides of each module; Fig. 8 shows the positions of inserts on a four-sided scoreboard.

By utilizing the threaded inserts, a suitable support frame should be attached to the scoreboard; Fig. 9 shows an example of a support frame installed at the bottom part of a three-sided scoreboard.

For one-sided scoreboards (FS-24s-1), the four brackets provided may be used for attaching to walls or support frames; the brackets must be attached to the scoreboard by using the proper M5 screws (Fig. 10).

Please note that the scoreboard must be positioned far enough away from the wall to allow for the passage of cables.

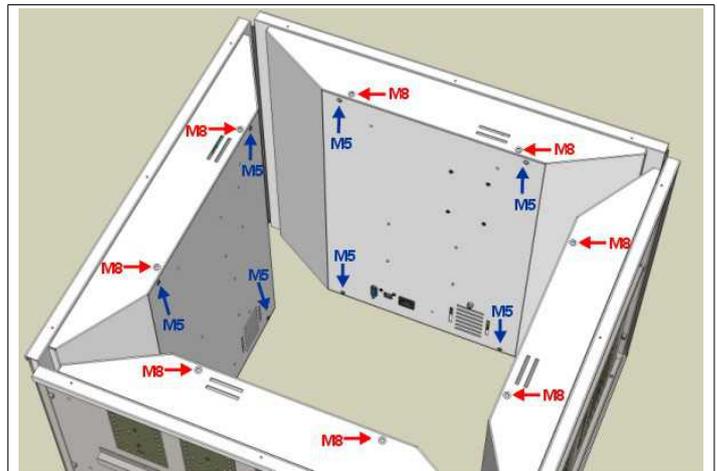


Fig. 8: M5 and M8 threaded inserts

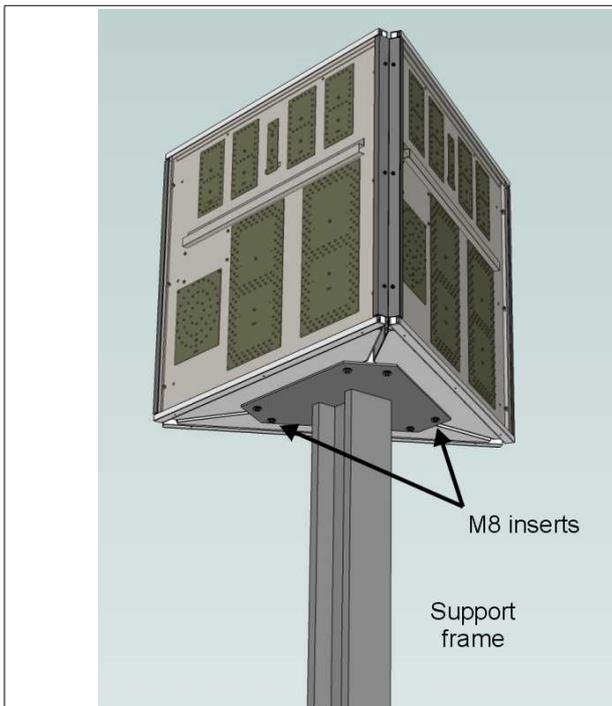


Fig. 9: Example of an installed support frame

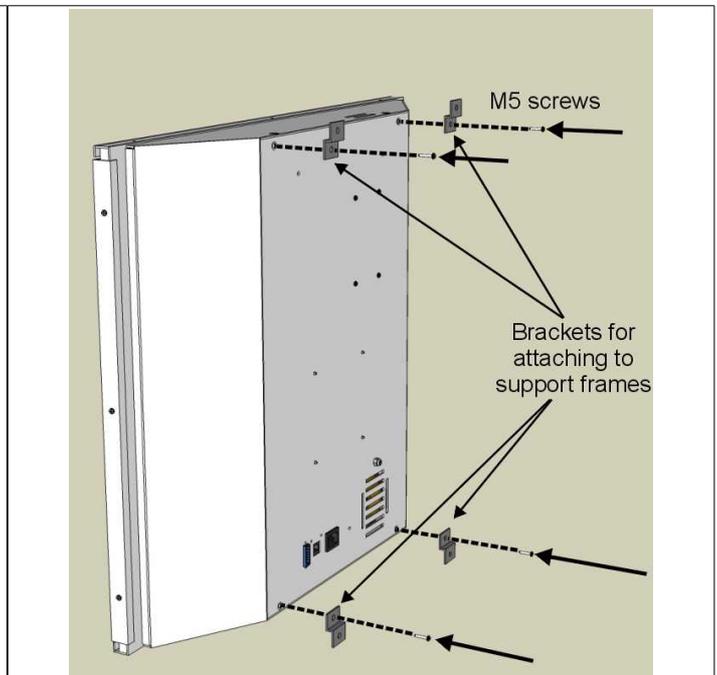


Fig. 10: Brackets used for attaching FS-24s-1 models to support frames or wall

**6. FINAL CONNECTION AND SCOREBOARD TEST**

**6.1 CONNECTING TO THE ELECTRICAL POWER SUPPLY**

To connect to the electrical power supply use the proper power supply socket, as described in paragraph 4.1.

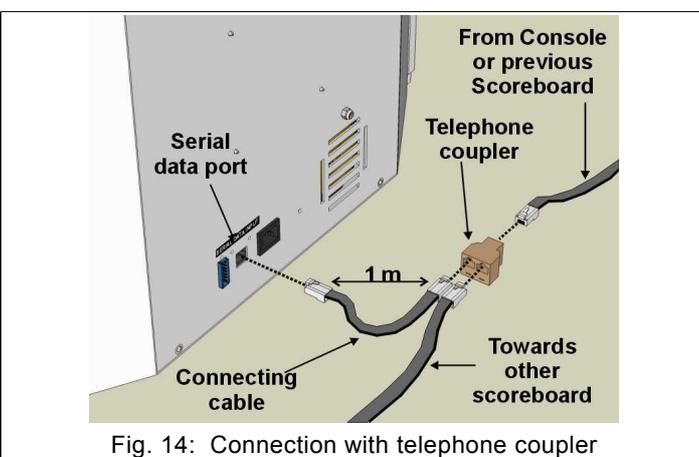
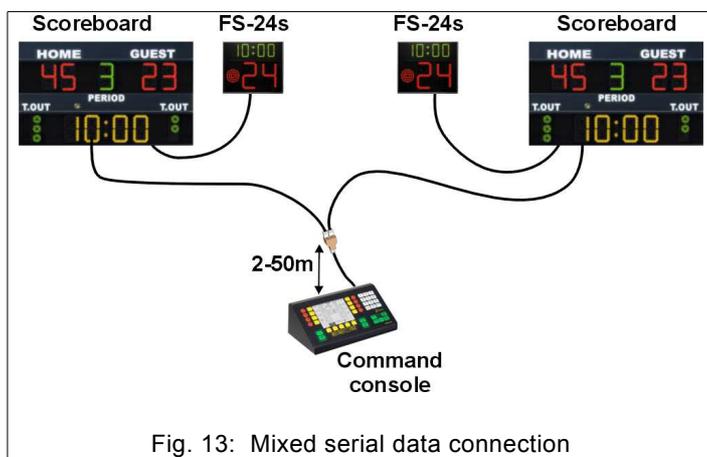
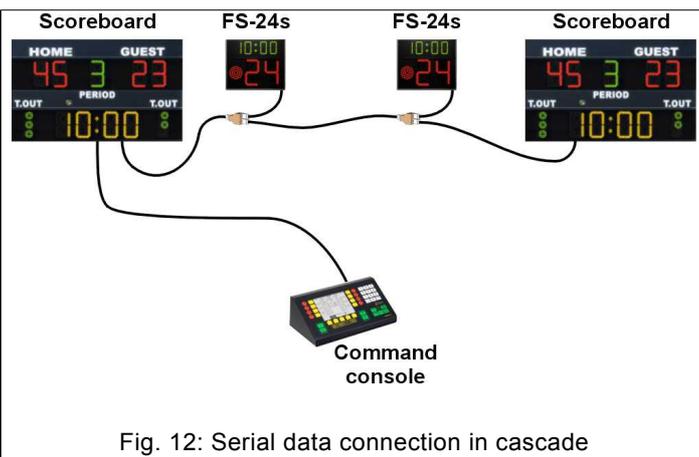
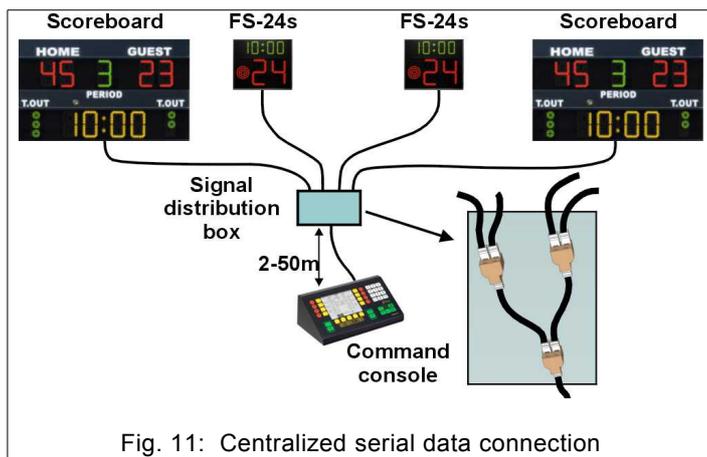
## 6.2 CONNECTING THE SERIAL DATA CABLE

A maximum of 8 scoreboards can be directly connected to the same serial data port of the Command Console; if more than 8 scoreboards need to be connected, the serial data ports located on the central scoreboard can be used. However, creating a bifurcation of the serial cable is easy to do by using a 3-way coupler.

Connecting the serial data cable among the Command Console and the various scoreboards can be done in several ways: select the method that is most suited to the needs of the facility and to the available cable conductors. Here are some examples.

1. Centralized connection (see Fig. 11). In an easily accessible location, a signal distribution box is placed, from which diverges a cable for each scoreboard. The advantage of this method is that it has a single point of connection; therefore, if one of the cables is interrupted, only one display scoreboard is compromised.
2. Distributed connection (see Fig. 12, Fig. 14). Connections are carried out in cascade, from one scoreboard to the next. Please note that the interruption of a cable will cause some scoreboards to switch off.
3. Mixed connection of methods 1 and 2 above. An example is shown in Fig. 13, where the serial data ports of the scoreboards are used for connecting to the 24-seconds shot clocks and game timers.

If you use a radio connection system, please refer to the Radio Receiver Manual.



## 6.3 TESTING THE SCOREBOARDS

Once the scoreboards have been installed you can make an overall test to see if all information is displayed correctly.

1. The first test should be made when you first switch on the scoreboards: all display panels should remain illuminated for circa 1 second, even if the Command Console is turned off or disconnected. If a panel does not remain illuminated for circa 1 second, see paragraph 7.1.1.
2. The next step is to connect the serial data cable to the Command Console; after switching on the Console, the screens should light up to display the proper information. If the screens do not light up, see paragraph 7.1.2.
3. Once you have checked that the data connection works properly, you can make a complete start-up test of all display scoreboards; from the Command Console press the buttons **Setup Menu** → **SYSTEM**, then with the buttons **↑** and **↓** select the parameter "Scoreboard Test". Lastly, with the buttons **⊕** and **⊖**, modify the parameter in order to activate and deactivate the complete start-up of the scoreboards. If you encounter problems, consult the Command Console manual.

For incomplete display of panels, see chapter 7.1.

## 7. MAINTENANCE

This chapter contains information on how to quickly resolve the principal problems that may occur with the scoreboard over time. For problems with other models of the FS series, consult the relative manuals. If you have further problems that cannot be solved herein, please contact us.

### 7.1 MALFUNCTIONS

For all malfunctions, the following is a list of operations, ranked according to priority, that should be carried out to re-establish the scoreboard's proper functioning.

#### → 7.1.1 The scoreboard does not light up when switched on.

When the scoreboard is supplied with electricity, all the display panels light up for circa 1 second, even if the Command Console is turned off or disconnected; if this does not occur, proceed as follows:

1. Check that there is power supply at the board's power socket.
2. Make sure that the board's power cable plug is properly inserted in the socket.
3. Have a qualified technician conduct the following operations:
  - a) open the scoreboard module containing the power supply socket, as described in chapter 7.2, points 1-4;
  - b) check that there is a continuous +24Vdc voltage output from the power supply (the red LED on the connector board should be illuminated); if the +24Vdc voltage is not present then replace the power supply (chapter 7.5), otherwise replace the electronic connector board (chapter 7.4).

#### → 7.1.2 The scoreboard lights up for 1 second but then switches off completely.

1. Check that the game time and the 24-second shot clock are displayed on the Command Console.
2. Check that the serial data cable is properly connected to the scoreboard and Command Console and that it shows no signs of abrasions, cuts or damage. Also check the other connectors located along the cable.
3. Try using the other data output port of the Command Console.
4. Temporarily connect the scoreboard directly to the Console with a normal 8-way telephone cable with RJ-45 modular connectors, or with a standard straight-through network cable (EIA/TIA-568A/B); if the scoreboard functions correctly, replace the permanent system's serial data cable.
5. Have a qualified technician conduct the following operations:
  - a) open the scoreboard module containing the power supply socket, as described in chapter 7.2, points 1-4;
  - b) connect the Console directly to the serial data connector of the connector board (Fig. 21) by means of a properly functioning serial cable. Supply power to the scoreboard;
  - c) if the scoreboard still does not light up, disconnect the power supply and replace the electronic connector board (chapter 7.4), otherwise replace the interior, thin, serial data cable that was previously connected to the board.

#### → 7.1.3 Part or all of a LED display board does not light up.

1. Replace the relative LED board (chapter 7.3).
2. Change the connection cable between the display board and the control board (Fig. 18, Fig. 19).
3. Replace the control board (chapter 7.2).

#### → 7.1.4 The board is not bright enough.

1. On the Command Console press the buttons  →  and check the level of brightness [0 to 9] found under the item "Scoreboard brightness".

#### → 7.1.5 An entire group of LED boards does not light up in one of the scoreboard's modules.

1. Have a qualified technician conduct the following operations:
  - a) open the scoreboard module, as described in chapter 7.2, points 1-4;
  - b) identify the control board that is connected to the group of non-functioning LED boards via the flat 10-way cables (Fig. 18, Fig. 19). When supplying power to the scoreboard, if the LED on that control board (Fig. 19) is illuminated or flashing, then replace the control board (chapter 7.2); otherwise, if the LED is not illuminated, proceed as follows:
  - c) locate the connector board inside the scoreboard's module containing the power socket (Fig. 18, Fig. 21) and identify the fuse near the connector where the 16-way flat cable from the previous control board has been inserted; replace the fuse if it has ruptured, otherwise replace the connector board (chapter 7.4).

#### → 7.1.6 The acoustic signal does not work.

1. On the Command Console press the buttons  → , then select level 3 from the line "Sound volume".

2. On the Command Console press the buttons **Setup Menu** → **SPORT**, then select a number other than 0 from the line "Duration of end game sound".
3. Check the sound and volume by pressing the button **Shot clock sound** "Shot clock sound" found in the menu **Times Menu** → **SHOT CLOCK**.
4. Have a qualified technician conduct the following operations:
  - a) open the scoreboard module containing the power supply socket, as described in chapter 7.2, points 1-4;
  - b) identify the acoustic signal (horn) and disconnect the cables; try supplying power directly with a continuous voltage of +24 Vdc, paying attention that the polarity is correct (red cable: +);
  - c) if still no sound is emitted, replace the horn (chapter 7.6), otherwise replace the electronic connector board (chapter 7.4).

**7.2 REPLACING A CONTROL BOARD**

This procedure can be carried out by operating on the front of the device.



1. Disconnect the electronic board's power supply.

2. In the module containing the control board in need of replacement, detach both side metal brackets joining the modules by removing the screws with a Phillips screwdriver (Fig. 15).
3. Remove the transparent front panel (Fig. 16).

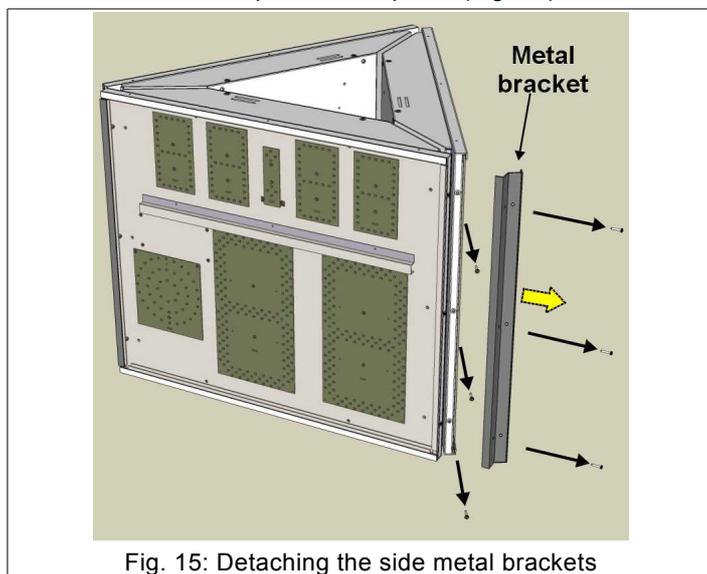


Fig. 15: Detaching the side metal brackets

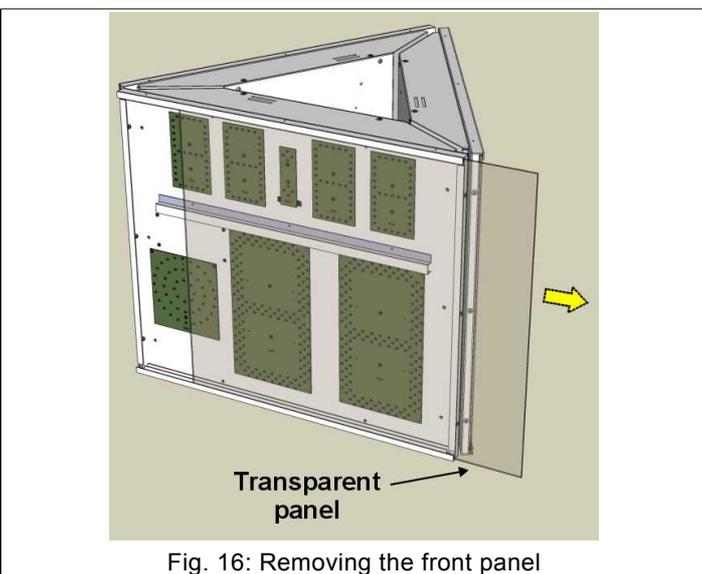


Fig. 16: Removing the front panel

4. With a Phillips screwdriver remove the 10 screws from the front of the metal support of the LED display boards (Fig. 17); distance the support from its position making sure not to disconnect the connection cable inside (Fig. 18).

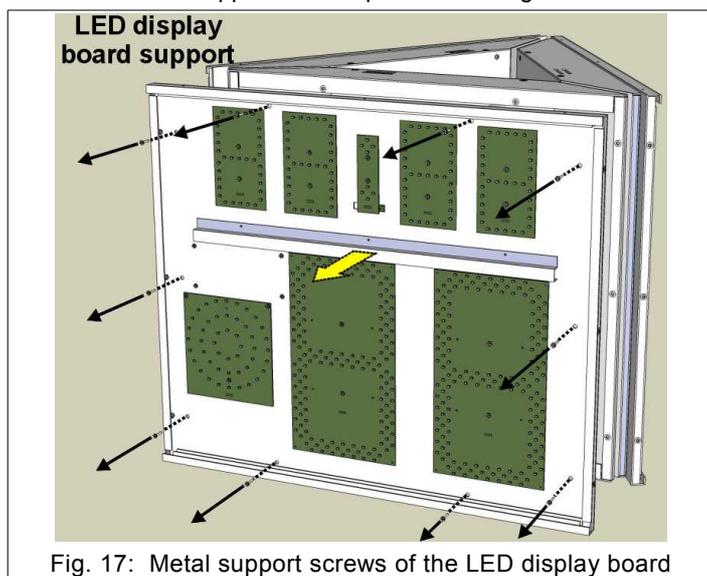


Fig. 17: Metal support screws of the LED display board

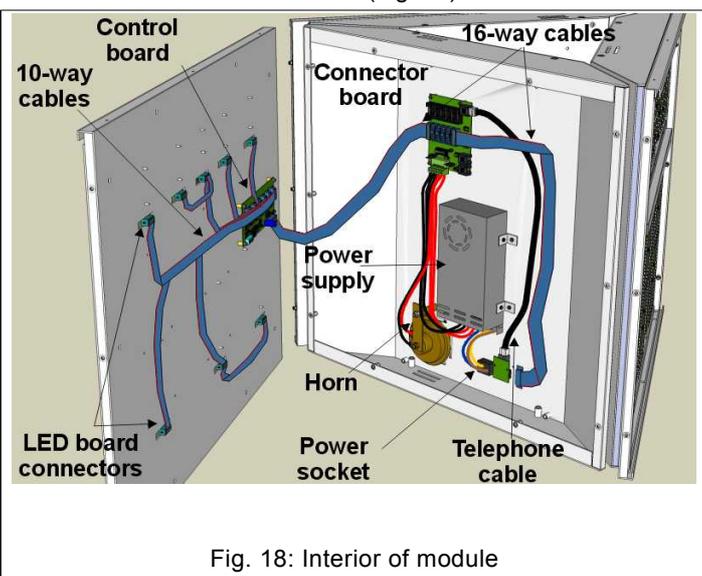


Fig. 18: Interior of module

5. Identify the control board housed inside the metal support structure (Fig. 18); the malfunctioning LED display boards are connected to this control board. Keeping in mind their original positions, remove all connectors from the control board.
6. With a 5.5 mm wrench, unscrew the 4 end nuts from the control board (Fig. 19) and remove the control board from its

casing.

- Set the DIP-switches of the new control board to the same settings of those of the replaced control board (chapter 8) and screw the new board into the casing.

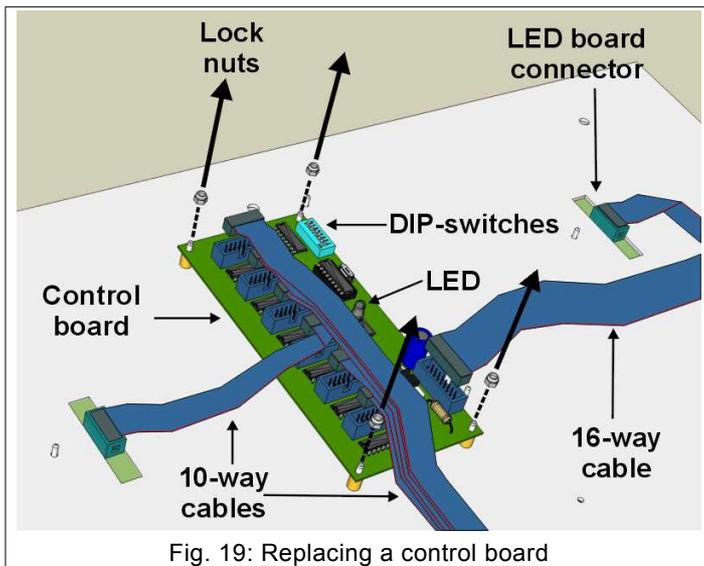


Fig. 19: Replacing a control board

- Reinsert the control board's connectors into their original positions; reposition the metal support structure of the LED display boards and fasten it with the screws. Reposition the front transparent panel and the metal brackets.
- Supply power to the scoreboard again to check if the new control board works properly.

### 7.3 REPLACING A LED DISPLAY BOARD

This procedure can be carried out by operating on the front of the device.

- Remove the transparent front panel of the module containing the LED display board in need of replacement, as described in chapter 7.2, paragraphs 1-3.
- With a screwdriver, remove the screws from the LED display board in need of replacement (Fig. 20); slightly distance the board from its position in order to remove the flat cable connector.
- Insert the flat cable connector in the new board and then tighten the screws.
- Supply power to the board again to check if it works properly.

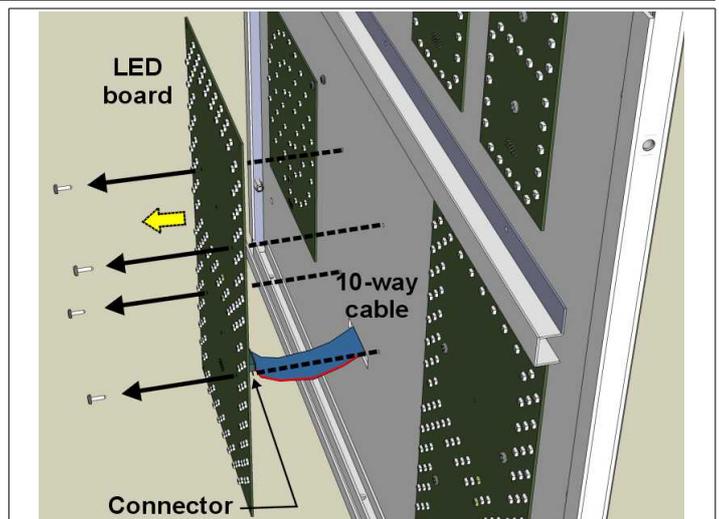


Fig. 20: Replacing a LED display board

### 7.4 REPLACING A CONNECTOR BOARD

This procedure can be carried out by operating on the front of the device.

- Remove the transparent front panel of the module containing the power supply socket and open the support structure of the LED display board, as described in chapter 7.2, paragraphs 1-4.
- Identify the connector board (Fig. 18, Fig. 21); keeping in mind their original positions, remove all the connectors from inside the board.
- With a 5.5 mm wrench unscrew the 4 end nuts from the connector board (Fig. 21), and remove the board from its casing. Insert the new connector board.
- Reinsert the board connectors in their original positions and then fasten the metal support of the LED display board with the screws.

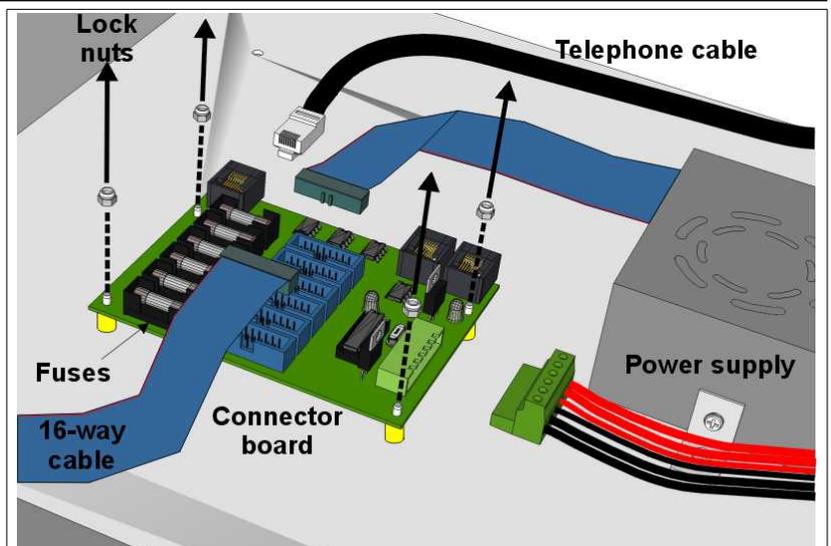


Fig. 21: Replacing a connector board

5. Supply power to the board again to check if the new connector board works properly.

**7.5 REPLACING THE POWER SUPPLY**

This procedure can be carried out by operating on the front of the device.

1. Remove the transparent front panel from the module containing the power supply socket. Open the metal support structure of the LED display board as described in chapter 7.2, paragraphs 1-4.
2. Identify the power supply in need of replacement (Fig. 18, Fig. 22); while keeping in mind their original positions, disconnect the cables from the terminal block by using a Phillips screwdriver.
3. With the same screwdriver, remove the four screws (Fig. 22) located on the sides of the power supply unit and remove it from its position.
4. Place the new power supply into position and fasten the screws. Then reconnect the cables to the terminal block while keeping in mind their correct positions (1).
5. Close the metal support of the LED display board by fastening in the screws.
6. Supply power to the board again to check if it works properly.

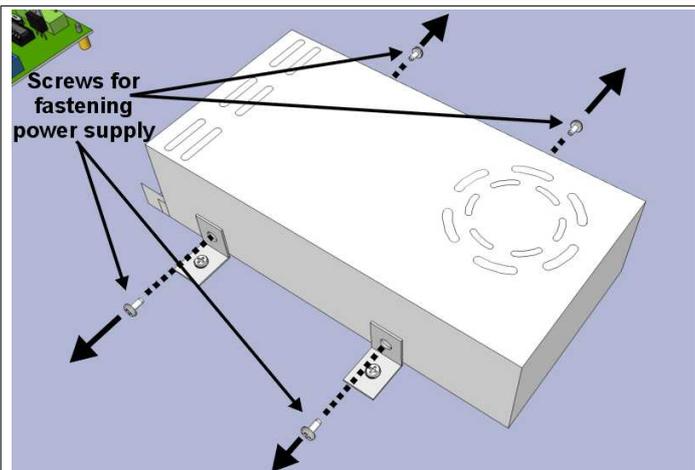


Fig. 22: Replacing the power supply unit

+V		-V		PE	N	L
Red	Red	Black	Black	Yellow Green	Blue	Brown

Table 1: Terminal block of power supply

**7.6 REPLACING THE HORN**

This procedure can be carried out by standing in front of the device.

1. Remove the transparent front panel from the module containing the power supply socket. Open the metal support structure of the LED display boards, as described in chapter 7.2, paragraphs 1-4.
2. Identify the horn in need of replacement (Fig. 23); disconnect the cables (red: +, black: -) from the connectors.
3. Remove the nut and then remove the horn.
4. Place the new horn in the proper position and fasten it with the nut. Connect the horn to the cables.

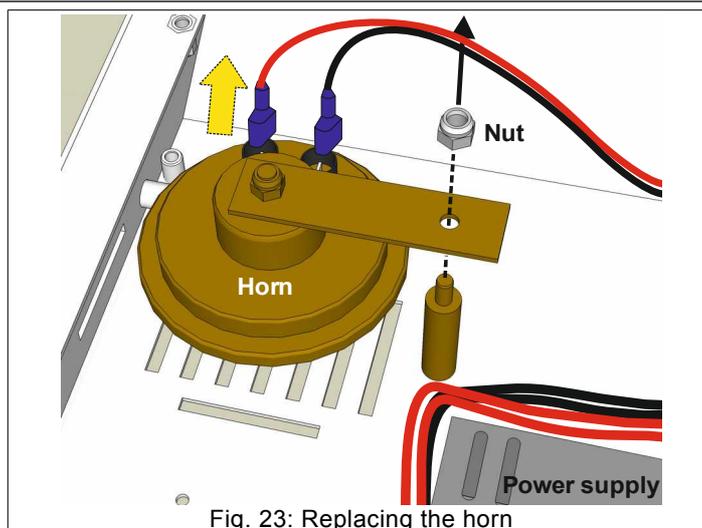


Fig. 23: Replacing the horn

**8. CONFIGURATION OF MODULE DIP-SWITCHES**

A control panel with DIP-switches is located on each module of the 24-seconds shot clock scoreboards (Fig. 19); the DIP-switches must have the following configuration.

