

FA-07

Art. 940 Fencing Apparatus – 07

User's Manual



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Art.940: FA-07 and included accessories



Art.940-01: FA-07 Scoreboard without accessories



Art.952: FA-07 remote control



Art.943: FA-07 carrying case



Art.952-1: 1.3m Cable for FA-07 remote control



Art.952-2: 10m Cable for FA-07 remote control



Art.858: 2.5m Cable for Serial Data



Art.859: 15m Cable for Serial Data



Art.954: Power Supply 90-264V/12Vdc 2.5A, Medical

Optional accessories



Art.945: Pair of 360° Tower-Lights for FA-07



Art.828: Rechargeable battery 12Vdc 7Ah



Art.829: Battery charger (for Art.828 battery)



Art.880: Doubler for SERIAL DATA



Art.856: Power cord with clamps for connecting to a car battery



Art.944: FA-07 Table stand 96cm high



Art.948: Carrying case for Tower-Lights and Table Stand for FA-07

1. PARTICULARS

The **FENCING APPARATUS 07 (FA-07)** is a multifunctional apparatus used for the sport of fencing.

1.1 Included and optional accessories

Accessories included with the **FA-07**:

- Carrying case;
- Infrared and cable-operated remote control;
- Power supply 90÷264Vac/12Vdc 2.5A, conforms to UL 60601-1 standards;
- 2 telephone cables 15m and 2.5m in length, with RJ-14 (6P4C) jacks for connection via the SERIAL DATA ports;
- 2 telephone cables 10m and 1.3m in length, with RJ-10 (4P4C) jacks for connection to the remote control. The short cable is more convenient for recharging the battery.

Optional accessories:

- Art.944 - Table Stand 96cm high for **FA-07**;
- Art.945 - Pair of 360° Tower-Lights for **FA-07**;
- Art.948 - Carrying case for Table Stand 96cm and Tower-Lights;
- Art.828 - Rechargeable Battery 12V/7Ah with connectors;
- Art.829 - Battery Recharger (for Art.828 battery);
- Art.856 - Power cable with clamps for connecting to a car battery (length: 3.5m);
- Art.880 - Doubler for SERIAL DATA.

1.2 Technical Data

- Size and weight of **FA-07** (scoreboard): 55 x 35 x 9.5cm, 4.2kg
- Size and weight of infrared remote control: 14.3 x 5 x 2.3cm, 0.19kg
- Size and weight of carrying case: 60 x 40 x 13.5cm, 2.8kg
- Total weight of **FA-07** with carrying case and included accessories: 8.1kg
- Operating temperature: 0..45°C
- Storage temperature: -20..+85°C
- Relative humidity: 10..90%
- Level of protection: IP32
- Remote control battery: 3.6V 600mA, Lithium-ion
- Battery recharge time: 7hrs max

1.3 Warranty

The warranty is good for 2 years from the date indicated on the purchase agreement and includes free repair of all defects found in materials or in construction; the warranty does not cover delivery or transportation costs. The portable power supply (Art.954) provided with the **FA-07**, and the optional battery (Art.828), are not covered by the warranty.

1.4 Power supply

- Power supply voltage: 12Vdc (10.6-14.5Vdc).
- Consumption: 0.5A typical,
0.85A max, without the Tower-Lights,
2.3A max, with both TOWER-LIGHTS connected and switched on.

1.4.1 Safety warning



WARNING: Supply power to the **FA-07** exclusively by means of the power supply unit provided (Art.954) to ensure that safety isolation requirements are met; otherwise supply power by means of a 12Vdc battery.

1.4.2 Battery power supply

We recommend using a lead-acid 12V battery. The battery listed in the catalogue (Art.828) enables uninterrupted use of the **FA-07** for 10-12 hours, while a 70Ah car battery lasts 120 hours. On the **FA-07** graphic display panel the power supply voltage is indicated and relates to the remaining life of the battery. When the battery's voltage is 12.0V, only about 5-10% of its capacity is available. We recommend recharging the battery after each use or, in any case, if the voltage is <12.5V. We also recommend recharging the battery at least every 6 months when not used for long periods, mainly due to the fact that if left to run down, it will deteriorate and lose its power completely.

The battery's positive pole must be connected to the number 2 contact of the power supply connector, otherwise the **FA-07** will not switch on. If the **FA-07** does not switch on after connecting it to a car battery, try inverting the connections to the clamps.

2. FA-07 VISUAL DISPLAYS

2.1 LED display panel

With reference to the numbers indicated in Fig. 1, information shown on the LED display panel is as follows:

1. Scorer.
2. Match counter.
3. Chronometer.
4. Green and red lights.
5. White light.
6. Priority.
7. Red card.
8. Yellow card.
9. Yellow light signalling faults.
10. Rearmament light. When lit up, this indicates that the **FA-07** is ready to register hits.
11. Match running light. Indicates that the match is under way and that the **FA-07** is continuously transmitting all match data through the Ethernet port.
12. LINK light. Signals LAN communication via the Ethernet port or, in other words, that the **FA-07** recognizes an active connection with the central management system.
13. Remote control light. Lights up every time the **FA-07** receives a command from its remote control. If commands from other remote control devices are received, the light will ignite only faintly.

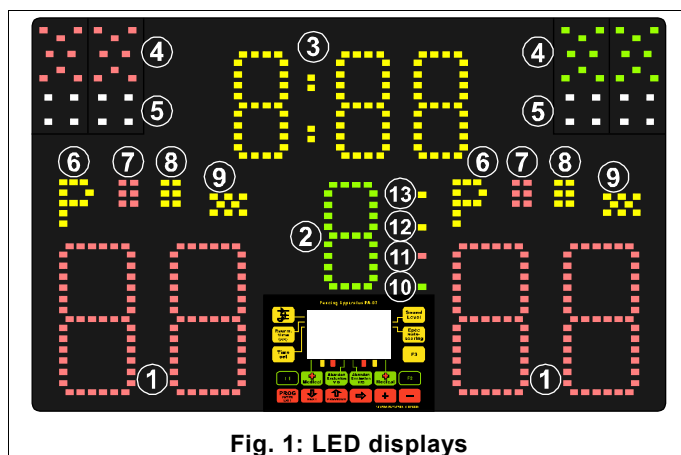


Fig. 1: LED displays

2.2 Graphic display panel

With reference to the numbers indicated in Fig. 2, the information on the main menu's graphic display panel is as follows:

1. Selected weapon and version, or else temporary notification of faults or other information.
2. Rearmament time: [1, 3, 5, Man.]. Rearmament can take place automatically after 1, 3, or 5 seconds, or else manually.
3. Start time minutes of chronometer.
4. Nationality of fencers.
5. Names of fencers: as with nationalities, the names of the fencers appear only when the **FA-07** receives the information from the central system through the LAN connection.
6. Number of medical interventions [0÷3].
7. Number of yellow cards [0÷1].
8. Number of red cards [0÷15].
9. Status of fencers [A, E, V, D, -]: Abandon, Exclusion, Victoire, Défaite. See description of related key in chapter 3.
10. Automatic counting of épée hits [YES, NO].
11. Sound volume [0 = off, 1, 2, 3 = max].
12. Power supply voltage.
13. Piste number: this appears only when the **FA-07** receives the information from the central system through the LAN connection.
14. Referee's name: appears only when the **FA-07** receives this information from the central system via LAN connection.

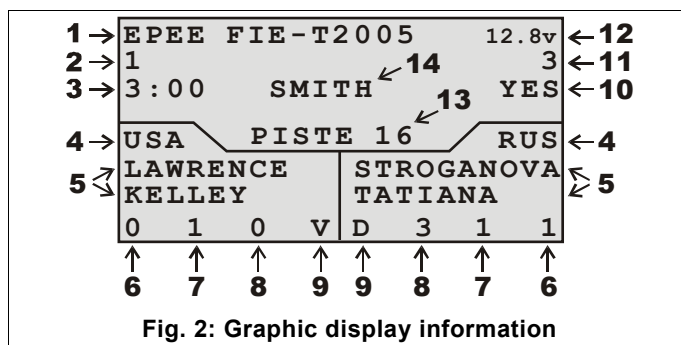


Fig. 2: Graphic display information

3. FA-07 KEYBOARD

With reference to Fig. 3, the following is a description of each key's function.



Select (upon rotation) the weapon in use; 4 possibilities:

- FOIL,
- SABRE,
- ÉPÉE,
- ÉPÉE-TRAINING;

this is used in training for signaling hits in rapid succession. After a determinate time the **FA-07** prevents the annoying and continuous noise that occurs in sabre and foil when both fencers are not connected, and the white lights are switched off in order to save energy. Once a fencer reconnects, signals are switched back on.

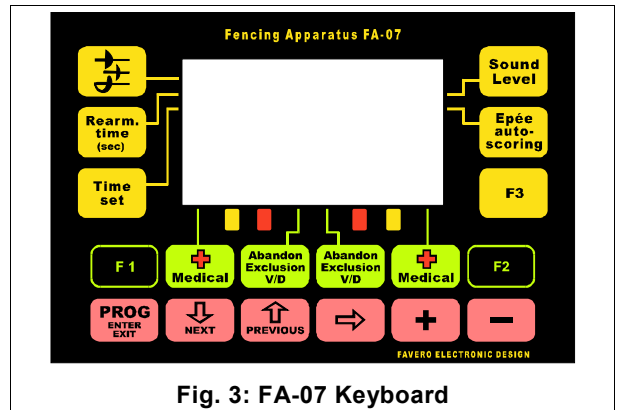


Fig. 3: FA-07 Keyboard



Select (upon rotation) rearmament time from the following: 1, 3, 5 seconds and Manual.



Chronometer start time. Can be selected (upon rotation) from 1 to 9 minutes. The same function can be made via the remote control by pressing [Alt-1] + [TIME SET].

At the beginning of each match the time indicated is loaded on the chronometer via the remote control, by either pressing the [LOAD TIME] key or the [Alt-1] + [RESET ALL] keys.



Select (upon rotation) from 4 sound levels: 0 (sound off), 1, 2, 3 (max volume level).



Activate (=YES) or deactivate (=NO) the automatic score increase if a hit is made when the selected weapon is ÉPÉE and the chronometer is counting.



Function key [F3]. Not used.



Insert the RESERVE fencer on the left side, in team competitions. This is active only when the competition is managed via a LAN connection. On the graphic display panel the name of the fencer will be replaced by the words "RESERVE".



Same as with [F1] key but for the right side.



Increase the number of medical interventions for the corresponding fencer: [0, 1, 2, 3]. After 3, it resets to zero. This is useful when there is a connection via LAN and you wish to send information to the central system.



Select (upon rotation) fencer's status:

- "A" = Abandon. In the case of withdrawal or absence .
- "E" = Exclusion. In the case of disqualification by the referee.
- "V" = Victoire. Appears automatically if the fencer has a higher score than his/her opponent.
- "D" = Défaite. Appears automatically if the fencer has a lower score than his/her opponent.
- "-" = Undefined. Appears automatically in the case of a draw or if the other fencer's status is Abandon or Exclusion. A referee may select Abandon or Exclusion when there is a LAN connection and they wish to communicate such information to the central system (see chapter 6.5).



Programming and test keys. See chapter 5.

4. REMOTE CONTROL

4.1 Remote control tuning

The **FA-07** recognises only one infrared remote control device at a time. The remote control provided has been pre-tuned before sale.

To tune a remote control simply connect it via the proper cable to the “**Infrared Remote Control**” connector located on the back of the **FA-07**. Two black telephone cables are provided (1.3m and 10m) with RJ-10 (4P4C) jacks.

4.2 Remote control operation modes

4.2.1 Operation via infrared

Infrared rays are effective at a distance of over 20m. To tune the remote control see the previous chapter.

4.2.2 Operation via cable

The use of the remote control via cable is required in certain important competitions: to connect the remote control use the black 10m long telephone cable.

4.2.3 Operation with safety range function

In certain important competitions a safety system is required to avoid effectuating the wrong command by mistakenly pressing the remote control keys. To enable this safety system you can programme the **FA-07** to accept remote control commands only when 2 specific keys are pressed: first the [Alt-2] key, and then, while the [Alt-2] key remains pressed, the function key desired. For example, to effectuate a 1-minute pause, instead of pressing only the [PAUSE 1 min] key, you would simultaneously press the [Alt-2] + [PAUSE 1 min] keys.

The [START STOP TIME] key will continue to work as usual, without the use of the [Alt-2] key, to allow you to immediately stop the chronometer.

The white keys, which require simultaneously pressing the [Alt-1] key, do not require the [Alt-2] key to be pressed.

The safety range function of the remote control is enabled by following programming step P.03: select “Block Remote Control = YES” (see chapter 5.2).

Remember to unblock this function at the end of the competition, otherwise future users who are not familiar with or who do not remember this function might assume that the remote control is not working properly.

4.3 Remote control indications

There are 2 red lights on the remote control (see Fig. 5):

- **Transmission light**: signals each transmission. If it does not switch on, the remote control is either broken or its battery is discharged.
- **Recharging light**: when the remote control is connected to the **FA-07** by way of cable, the battery is also charged. The recharging light switches off when the battery has been completely charged.
- **Low battery indication**: if the battery of the remote control is low the message “Remote control battery low” will appear on the **FA-07**’s graphic display panel.

4.4 Functions of remote control keys

The following is a list of functions of the various keys on the remote control. Here the “**safety range function**” is deactivated, as described in chapter 4.2.3. Some functions require that the [Alt-1] key be pressed. In such cases the [Alt-1] key must be held down while the desired function key is simultaneously pressed.

Please be aware that many functions can be effectuated only if the chronometer is in STOP position.



[START STOP TIME]: starts and stops the chronometer.



[Alt-1] + [RESET ALL]: arrange all the visual displays for a new match:

- 1) set to zero the hits, cards, priority, and medical interventions;
- 2) set the number of matches at 1 and load the chronometer with the established start time minutes.



[REARM]: effectuates manual rearmament.



[LOAD TIME]: with the chronometer stopped, this key loads the match’s start time minutes.

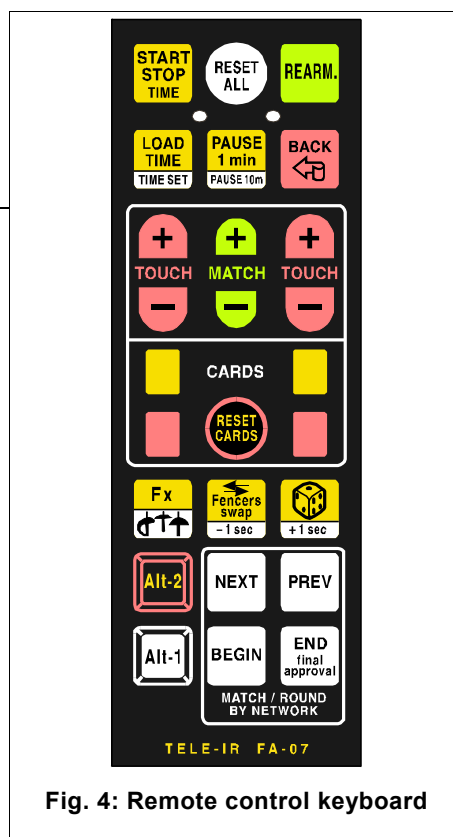


Fig. 4: Remote control keyboard

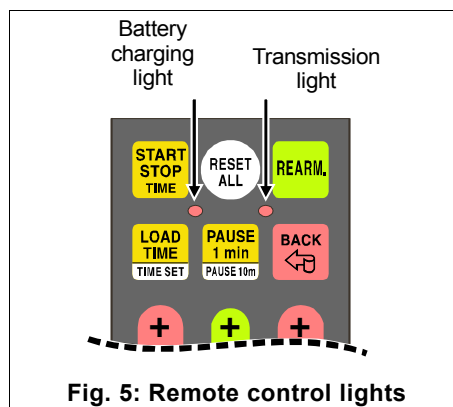






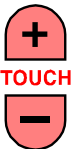
























Fig. 5: Remote control lights

-  +  [Alt-1] + [TIME SET]: these keys set the chronometer's start time, which can be selected (upon rotation) from 1 to 9 minutes. The same function can be effectuated from the **FA-07** keyboard by pressing the [TIME SET] key.
-  [PAUSE 1 min]: with the chronometer stopped, this key effectuates a pause of 1 minute. The pause time is distinguished from the match time by the two yellow lights on the chronometer blinking faster.
-  +  [Alt-1] + [PAUSE 10m]: initiate a 10 minute pause of the chronometer, useful for medical interventions. Once the 10 minutes are over, or if you STOP the counting, the previous chronometer time returns.
-  [BACK]: allows you to cancel the last operation made with regards to scores, cards and matches. It does not affect the chronometer.
-  [+ TOUCH]: increases the number of hits.
[- TOUCH]: decreases the number of hits.
-  [+ MATCH]: increases the number of matches.
[- MATCH]: decreases the number of matches.
After match number 9 the "-" (hyphen) symbol will appear and the chronometer and score will switch off. This allows you to use the **FA-07** as only a simple scoring apparatus and lowers the current consumption.
-  [Yellow card] and  [Red card]: increase the yellow and red cards. Each fencer is assigned one yellow card only, and multiple red cards (max. 15). The red light indicates that at least one red card is present, while the exact number (of red cards) will appear on the graphic display panel.
-  [RESET CARDS]. Useful when beginning each match of a team competition: it sets only the yellow and red cards at zero, whereas the [RESET ALL] key also initializes the score and the number of matches.
-  [Fx]: not used.
-  +  [Alt-1] + [WEAPONS]: effectuate the change of weapon in the same way that the corresponding key on the **FA-07** keyboard does.
-  [Fencers swap]: inverts all the visual displays regarding the two fencers. This is used when fencers change positions.
-  +  [Alt-1] + [-1sec]: decrease the value of the chronometer by 1 second to allow for corrections to be made.
-  [DIE]: causes the "Priority" signal to switch on randomly. To turn off this signal, simply press the "Priority" key again.
-  +  [Alt-1] + [+1sec]: increase the value of the chronometer by 1 second to allow for corrections to be made.
-  [Alt-2]: used only with the remote control's "safety range function", which is activated via programming step P.03 (see chapter 4.2.3). In this mode all functions, which are usually effectuated by pressing only one single key, now require that the [Alt-2] key also be pressed. An exception is the [START STOP TIME] key, which should be pressed directly (without pressing [Alt-2]).
-  +  [Alt-1] + [NEXT]: request the central system to send the information concerning the subsequent match. See chapter 6.5.
-  +  [Alt-1] + [PREV]: request the central system to send the information concerning the previous, already concluded, match, to allow for eventual corrections to be made. See chapter 6.5.
-  +  [Alt-1] + [BEGIN]: tell the central system that the match has begun. See chapter 6.5.
-  +  [Alt-1] + [END]: tell the central system that the match has ended. See chapter 6.5.

4.5 Battery charging

To charge the remote control battery, connect it by using one of the two cables provided (1.3m and 10m) to the “**Infrared Remote Control**” connector found at the back of the **FA-07**. The relative light on the remote control (see Fig. 5) switches on when recharging and switches off when charging is completed. A totally depleted battery is recharged in circa 7 hours, while a charged battery lasts circa 300 hours of competition time. We suggest charging the battery at least once a year if the remote control is not used.

4.5.1 Low battery indication

If the remote control battery is low, the **FA-07**'s graphic display panel will switch off for a brief moment and the message “**Remote Control Battery Low**” will appear. The remote control will function for only a few hours thereafter.

5. PROGRAMMING & TEST MENUS

5.1 Introduction

The 6 red keys are for programming and testing the **FA-07**. Following is a description of the function of each key:



Allows you to alternately enter and exit the programming function. The first step of programming is indicated with P.01.



Allows you to go to the next programming step (P.01 → P.02 → P.03, etc.).



Allows you to return to the previous programming step (P.04 → P.03 → P.02, etc.).



When the programming parameter has more than one digit, this key allows you to select (upon rotation) one digit at a time in order to modify it with the **+** and **-** keys.



Increases/modifies the value of the parameter displayed.



Decreases/modifies the value of the parameter displayed.

5.2 Description of programming steps

Following is a description of the various programming steps, starting with P.01.

- P.01 Language = [English, Italiano, Français, Español, Deutsch]
Select the desired language with the **+** and **-** keys.
- P.02 Chronometer = [0:00 ÷ 9:59]
The current value of the chronometer is displayed. You can modify the digit underlined (by the cursor) with the keys **+** and **-**, or select the digit to be modified with the key **⇒**.
- P.03 Block Remote Control = [NO, YES]
Used only in important competitions to ensure “**remote control safety**” and to avoid errors made from pressing a key by mistake. If “Block Remote Control = YES”, the remote control keys that normally function on their own (i.e., without the [A1t-1] key) are recognized only if the [A1t-2] key is simultaneously pressed. For example, to effectuate a 1-minute pause, instead of pressing only the [PAUSE 1 min] key, you should press the [A1t-2] + [PAUSE 1 min] keys simultaneously.
Only the [START STOP TIME] key continues to work by itself, to allow you to immediately stop the chronometer.
- P.04 IP = [000.000.000.000 ÷ 254.254.254.254]
When a LAN connection is used, each apparatus must have a different IP address. We suggest using a number from 192.168.000.020 to 192.168.000.254, if not already in use by other devices.
Use the **⇒** key to select the number you wish to modify, and the keys **+** and **-** to modify it.
- P.05 Port number = [01025 ÷ 65535]
This number is used for connection to the LAN. We suggest that you leave it at 50100 and modify it only in accordance with the central management system.
- P.06 Display contrast = [0 ÷ 9]
With the **+** and **-** keys you can modify the contrast of the graphic display panel for better visualization. When switching on the **FA-07**, if you are unable to read the display panel (it is entirely dark or entirely light due to a previous error in the contrast setting), use the remote control’s [+] and [-] keys for modifying the match by keeping pressed the [A1t-1] and [A1t-2] keys at the same time. In this way the contrast of the display panel can be modified without using the programming menu.
- P.07 TEST number = [0 ÷ 7]
With the **+** and **-** keys you can access the various tests specified in chapter 5.3.
- P.08 OTHER INFORMATION
In this step the following non-modifiable information is displayed:
- the software version installed in the **FA-07**,
 - the serial number of the apparatus.

5.3 Description of tests

The test functions are accessible in programming step P.07 (see chapter 5.2); by using the **+** and **-** keys, tests 1 to 7 can be made. Following is a description of these tests.

TEST 1 Testing of all lights with alternating switch on.

All the Red, Green, and White lights switch on by turns for a second, followed for another second by the remaining displays (see Fig. 6).

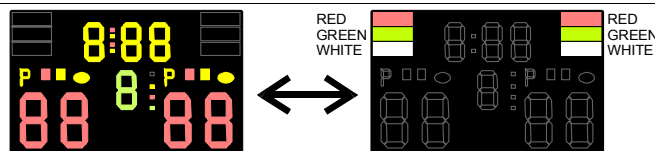


Fig. 6: Test 1

TEST 2 LED test, phase 1. Switches on the LEDs as in Fig. 7.



Fig. 7: Test 2

TEST 3 Test LED, phase 2. Switches on the LEDs as in Fig. 8.



Fig. 8: Test 3

TEST 4 Test LED, phase 3. Switches on the LEDs as in Fig. 9.

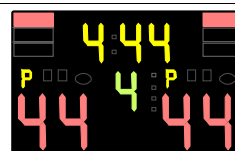


Fig. 9: Test 4

TEST 5 Test LED, phase 4. Switches on the LEDs as in Fig. 10.



Fig. 10: Test 5

TEST 6 Visualization for sales display. Switches on the LEDs as in Fig. 11 and also switches on, continuously every second, the different lights signaling hits. This test is useful when you want to display the apparatus for sale or call attention to the brightness of its various lights.



Fig. 11: Test 6

TEST 7 Verify the circuits of the weapons. This test is used by the manufacturer for testing the internal electronic circuits that analyze all the contact combinations that take place between fencers. It can also be useful to the user for distinguishing if the indications of faults are due to failure of the internal circuits or to defects in the external connections.

P.07 PROGRAMMING				
TEST number = 7				
249	250	248	H=	251
250	249	248	M=	249
251	248	250	L=	248
249	250	248	D=	3

Fig. 12: Test 7

The display panel (see Fig. 12) shows 12 values in the three columns to the left, and in the far right column, the corresponding values Higher (H), Middle (M), Lower (L) and Deviation (D). When there is no connection to the 7 weapon sockets, the values displayed must be M=1023 and D=0. Whereas when short-circuiting all 7 sockets among themselves, the values displayed must be M=250±5 and D=5±5 and a persistent sound should be heard.

To short-circuit the 7 sockets use a épée body cord for fencing, cut the cable, connect all 6 wires together and make them come into contact with the piste socket.

6. OPERATION VIA LAN

6.1 Preliminary information

The **FA-07** has an Ethernet port which allows for direct LAN connection, making the management of competitions from a computer of the central system all the easier. The main functions used for managing competitions via LAN are:

1. Request to the central system, made by the referee via the [Alt-1] + [NEXT] keys, for information to be sent on the first or subsequent match. The names and nationalities of the fencers, as well as the match's beginning time, are shown on the graphic display panel of the **FA-07**. Displaying names and positions helps avoid any errors. If necessary, the referee can invert the fencers' positions by pressing the [Fencers swap] key on the remote control.
2. Announcing the start of the match to the central system by the referee (via the keys [Alt-1] + [BEGIN]). The **FA-07** now begins to uninterruptedly send all of its data so that the central system can gather and transmit it to other visual display screens and on the Web. When a match is underway the "Match Running" light (see Fig. 15) will appear on the **FA-07**.
3. Announcing the end of a match to the central system by the referee (via the keys [Alt-1] + [END final approval]). The **FA-07** will consider the match ended, and the "Match Running" light will be turned off, only upon confirmation that all such information has been received. The operations for the following match take back from the point 1.
4. Request to the central system, made by the referee via the keys [Alt-1] + [PREVIOUS], for the data from the previously concluded match, in order to correct any possible errors. The central system decides whether to accept the request or not.

For more information on management of the match via LAN, see chapter 6.5.

6.2 Software for the central system for managing competitions

Communication between the central system and the various **FA-07** apparatuses connected to the LAN takes place via the CYRANO freeware protocol, developed especially for this application. Managing competitions that use this protocol is done via the programme:

- "Engarde-PRO", produced by the company "ANPV-log SARL" (www.engage-escrime.com).

This programme simultaneously manages apparatuses connected with the Ethernet port, such as the **FA-07**, as well as apparatuses without an Ethernet port, managed manually as per usual.

6.3 LAN connections

The network should be set up by competent technicians. Connections can be made:

1. Via cable, using cat.5 or cat.6 standard network cables and standard Switch and Hub for distributing/routing the connections to the various apparatuses which may be located in different areas. See Fig. 13.

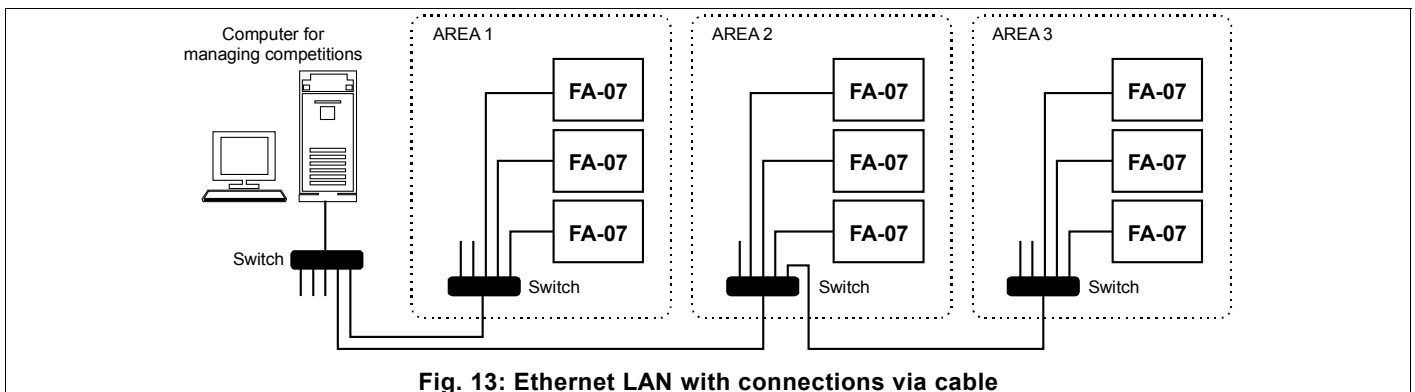


Fig. 13: Ethernet LAN with connections via cable

2. Via radio, using Wireless Access Points, and thus avoiding the use of cable connections. We suggest a configuration which uses a Wireless Access Point with 2 Ethernet points to which the two **FA-07** apparatuses with 2 adjoining pistes can be connected. In this way a single 12V car battery can supply the 2 apparatuses and the Access Point, allowing the power supply cables and network cables to be eliminated. See Fig. 14.

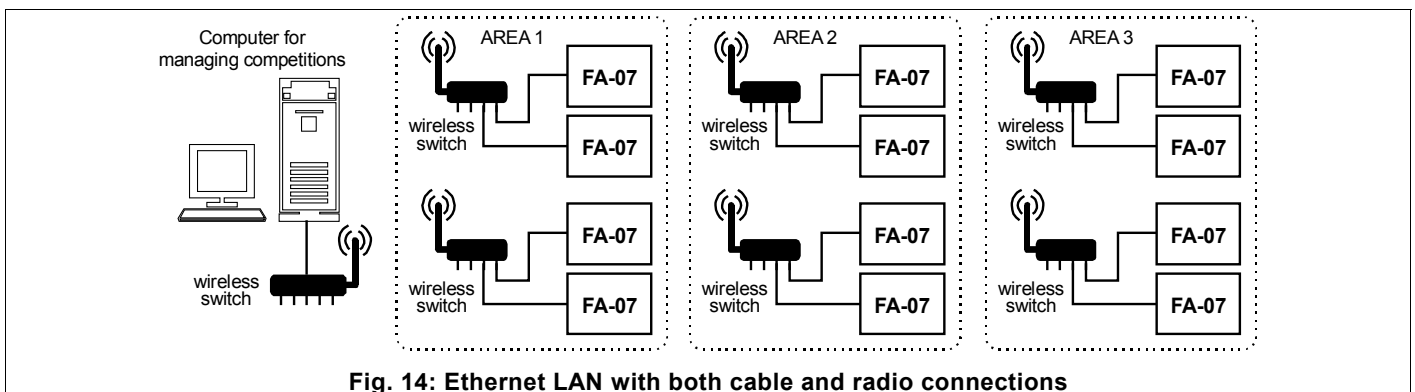


Fig. 14: Ethernet LAN with both cable and radio connections

6.4 IP addresses and checking connection status

Once all apparatuses are in position, we suggest creating a table that links each piste number to the corresponding **FA-07's** IP address, which can be modified via programming step P.04 (chapter 5.2); we suggest using an IP address between 192.168.000.020 and 192.168.000.254, i.e., leaving the first 9 digits the same (192.168.000) unless they are already being used by other devices. Make sure that the IP addresses of the various apparatuses connected via LAN are all different from one another.

Leave the port number of all **FA-07s**, shown in programming step P.05, at **50100** and modify it only in accordance with the central management system.

The IP addresses of all apparatuses should be inserted in the central management programme.

To show that there is an active connection status with the central system, the yellow LINK light on the **FA-07** will switch on (see Fig. 15); the piste number assigned and communicated to the **FA-07** will appear on the graphic display panel so that its correspondence can be verified.

If there is no reception of messages sent from the central system for over 40 seconds, the **FA-07** will consider the connection concluded and will interrupt and switch off all relative indications.

6.5 Matches managed via LAN

When the **FA-07** recognizes that connection via LAN is active, the yellow LINK light (see Fig. 15) will switch on and the piste number associated to the **FA-07** will appear on the graphic display panel.

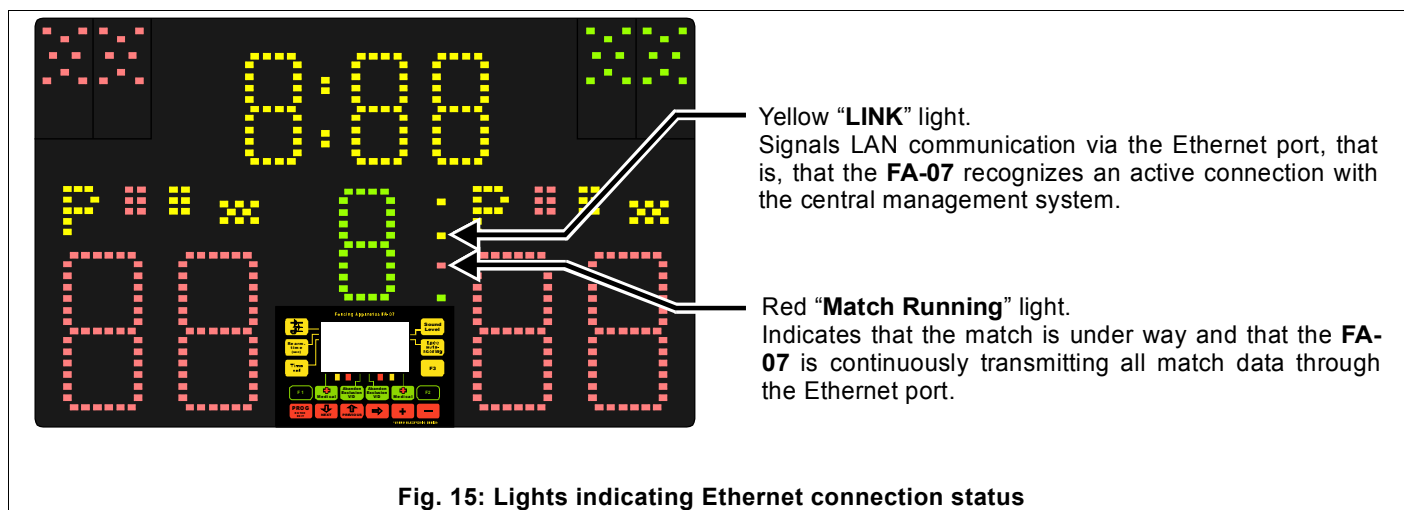


Fig. 15: Lights indicating Ethernet connection status

Also with an active LAN connection (LINK light switched on), the **FA-07** can be used for managing matches which do not depend on the central system: by pressing the [Alt-1] + [RESET ALL] keys on the remote control, the necessary zero settings are arranged for starting a new match in autonomous mode.

Following is a description of the various phases for managing a match via LAN connection.

6.5.1 Request for a new/subsequent match

By pressing the [Alt-1] + [NEXT] keys on the remote control, first the **FA-07** will completely set all of its current data to zero, then it will send a request to the central system for data regarding the subsequent match. When such information has been received, the names and nationalities of the fencers will appear, flashing several times, on the **FA-07's** graphic display panel. If this does not happen, for example because the central system does not yet have such data, the request will have to be repeated.

Along with the data of the new match, please note that the central system can also send the score, match number, and chronometer value, etc..., for managing team competitions where the matches which immediately follow continue with the previous scores and the match number is automatically determined by the central system. The reception of all data is also necessary when a previously interrupted match is recalled (see chapter 6.5.4).

Information regarding the new match may include the time the match is scheduled to begin; if so, the time will be shown on the **FA-07's** graphic panel.

If you do not wish to immediately begin the assigned match, in order to use the **FA-07** for other autonomous matches or trials the information received should be set to zero by pressing the [Alt-1] + [RESET ALL] keys. The match to run can then be later requested.

Remember that the referee can invert the fencers' positions via the [Fencers swap] key on the remote control and can also insert the reserve fencers via the [F1] + [F2] keys in a team competition.

6.5.2 Match start

If the **FA-07** has received and is displaying the data for a new match (e.g., fencers' names, etc...), the referee can communicate the start of the match to the central system by pressing the [Alt-1] + [BEGIN] keys on the remote control. From that moment onwards the **FA-07** continuously transmits data via LAN and the "Match Running" light will switch on (see Fig. 15) to indicate that the match is underway.

To interrupt the match, press [Alt-1] + [RESET ALL]: the **FA-07** will switch off the "MATCH Running" light and stop sending data to the central system. Such data may later be recovered by pressing the [Alt-1] + [NEXT] keys.

6.5.3 Match end

By pressing the [Alt-1] + [END final approval] keys on the remote control, the referee communicates the end of the match to the central system. After the central system confirms receipt of such information the **FA-07** will consider the match ended and switch off the "Match Running" light. If this light does not switch off, the causes may be that:

A) The **FA-07** did not receive the confirmation message and, therefore, the request must be made again via the [Alt-1] + [END final approval] keys.

B) The data received by the central system are not valid. In this case a message will be sent to the **FA-07** indicating the type of error. The graphic display panel will flash and show the type of error.

If a fencer abandons or is excluded from a match, the referee must record the event via the [Abandon/Exclusion] key located on the **FA-07**'s keyboard. The referee makes an "A" appear on the graphic display panel in the case of abandonment, or an "E" in the case of exclusion. A request for the match end must then be made.

Once the central system has been informed of the match end, and the "MATCH Running" light has been switched off, a new match can be requested as described in chapter 6.5.1.

6.5.4 Correcting a previously sent match

Via the [Alt-1] + [PREVIOUS] keys of the remote control, the referee can ask the central system for the data pertaining to the previously concluded match, in order to make eventual corrections. The central system will decide whether to accept such requests or not.

Once the **FA-07** receives the data, its graphic display panel will flash several times and all information will be updated with the new data. At this point, one should:

- A) reactivate the match by pressing the [Alt-1] + [BEGIN] keys on the remote control, as described in chapter 6.5.2;
- B) carry out the modification of scores, or other, as necessary;
- C) confirm the match end via the [Alt-1] + [END final approval] keys, as described in chapter 6.5.3.

7. VARIOUS CONNECTIONS

All connections are located at the back of the **FA-07** and indicated by their relative labels (see Fig. 16).

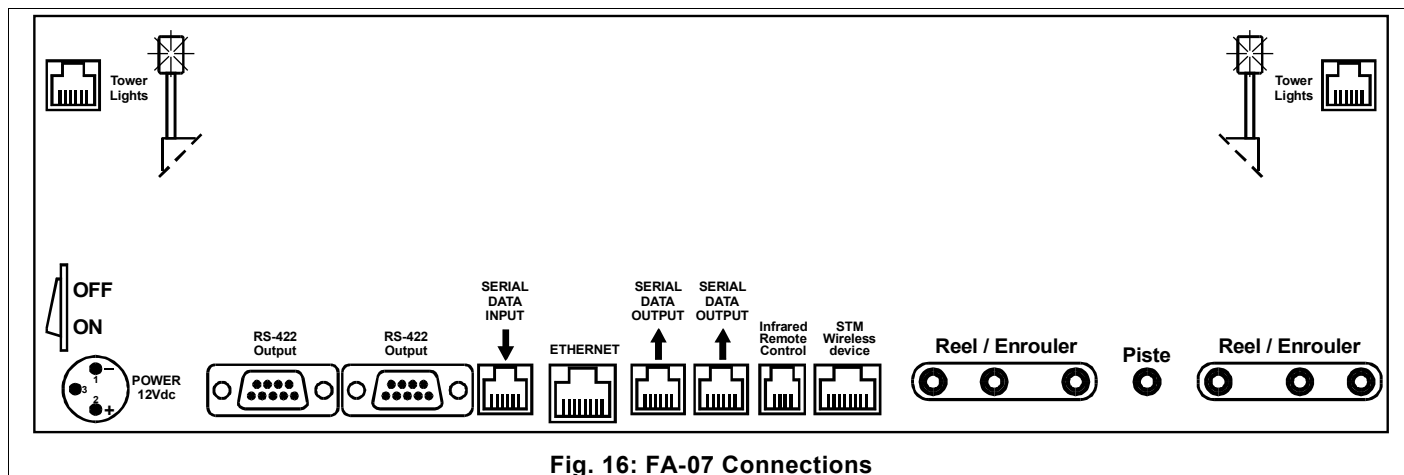


Fig. 16: FA-07 Connections

For power supply data see chapter 1.4. All other connections are described below.

7.1 SERIAL DATA ports and REPEATER function

The **FA-07** is equipped with 3 SERIAL DATA ports: 2 OUTPUT ports and 1 INPUT port. All ports are opto-isolated to protect fencers from dangerous high voltages.

By using regular telephone cables, the ports can be easily connected to other **FA-07** apparatuses or to other Favero Electronic Design devices, with a distance of up to 100m. The two cables provided are 15m and 2.5m in length. Several **FA-07s** can be connected, in a cascade configuration, from the SERIAL DATA OUTPUT port of one apparatus to the INPUT port of another. The first works as a piste apparatus and the others as repeaters.

On the graphic display panel of the repeater apparatuses, the word “REPEATER” will appear. Via the [F3] key, either the word “FRONT VIEW” or the word “BACK VIEW” can be selected. By selecting the word “BACK VIEW”, a complete inversion of the displayed information results, such that two **FA-07s** positioned back to back will display, at 360°, all information and lights on the same side (i.e., on the side corresponding to the fencer’s position).

If necessary, each OUTPUT port can be redoubled by using the special doubler (Art. 880).

7.2 RS-422 Ports

The **FA-07** comes provided with two RS-422 ports for sending all data to external data gathering, visualization, and Video-refereeing systems, and for TV-Superimpositions. All ports are opto-isolated to protect fencers from dangerous high voltages. The connections of signals are shown in Fig. 17. Each OUTPUT port can drive 8 INPUT ports.

The communications protocol is provided upon request.

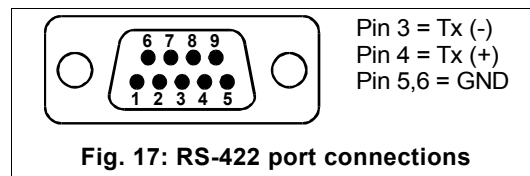


Fig. 17: RS-422 port connections

7.3 Ethernet Port

The **FA-07** comes with a 10Base-T/100Base-Tx Ethernet port. This port allows the **FA-07** to be connected:

- A) directly to a PC for updating software, as described in chapter 8,
- B) to a LAN in order to manage the entire competition via the central system, as described in chapter 6.

The Ethernet port has a 1500V isolation to protect fencers from any dangerous high voltages.

7.4 Tower-Lights Connection

The pair of Tower-Lights is an optional accessory and is not provided with the **FA-07**. Installation is simple and does not require tools:

1. Identify the colour of the two Tower-Lights (red and green), indicated by a label located at the lower end of the support pole of each tower. See Fig. 18.
2. Insert the Tower-Towers poles into the corresponding slits located at the top corners of the **FA-07**. Make sure the colour of the pole and the slit correspond.

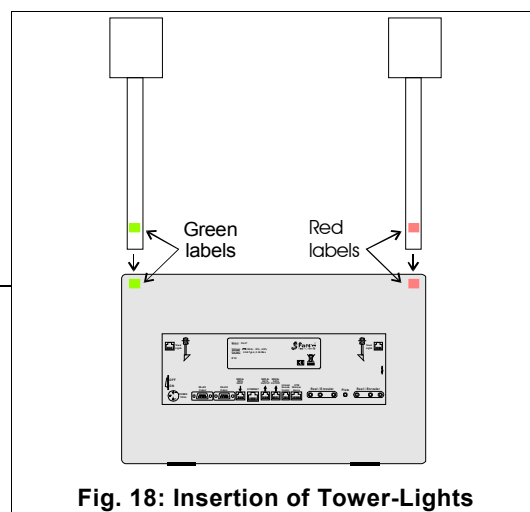


Fig. 18: Insertion of Tower-Lights

3. Each Tower-Light comes with a cable and connector: insert the connector in the proper “Tower Lights” socket.

7.5 “STM-Wireless” connection

On the back of the **FA-07** there is a “STM Wireless device” connector for connecting to the relative wireless system. When this connection is made, the **FA-07** automatically displays the words “STM-Wireless” and is prepared to work in synch with the “STM-wireless” system.

8. SOFTWARE UPDATES

FA-07 software updates should be made with a personal computer that has an Ethernet port, by following the procedure below:

1. Identify the file containing the new software and unzip it into a folder of the PC. Free versions of the software may be available on the Favero Electronic Design web site (www.favero.com), otherwise versions at cost can be received via email.
2. Temporarily set the IP address of the PC at the fixed value of "192.168.1.229". For this operation, see the document attached to the software updates.
3. Directly connect the PC's Ethernet port to the **FA-07**'s Ethernet port via a direct standard network cable (EIA/TIA-568A/B).
4. Switch on the **FA-07** while holding down the [F3] key; release the key when the graphic display panel begins flashing.
5. Launch a Web Browser, such as Explorer, Firefox, Opera or other, on your PC. Type in the IP address "192.168.1.230" in the browser's address bar (See Fig. 19).
6. On the page that appears on your computer (see Fig. 20), click on the "Choose..." button to browse the computer's folders and select the previously saved update file (of the type "FA-07_0100_0201.bin"). Then click on "Open" to confirm your choice.
7. Launch the software update program by clicking on "Upload". At the end of the operation the **FA-07** will emit a brief sound and the graphic display panel will stop flashing, while the message "UPLOAD COMPLETED" will appear on the PC screen.
8. Disconnect the PC and reset the IP address to its original setting. Switch off the **FA-07** and then switch it on again: the new software version can be viewed in programming step P.08 (see chapter 5.2).

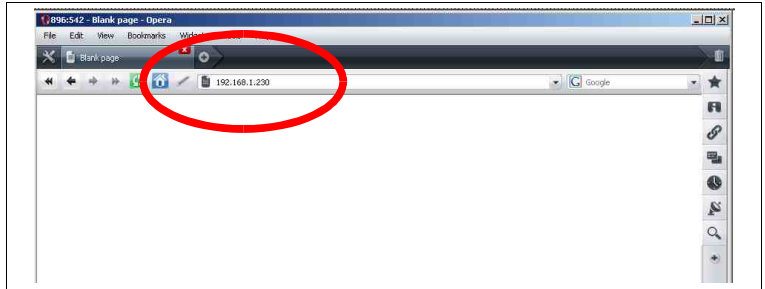


Fig. 19: Insert the FA-07's IP address

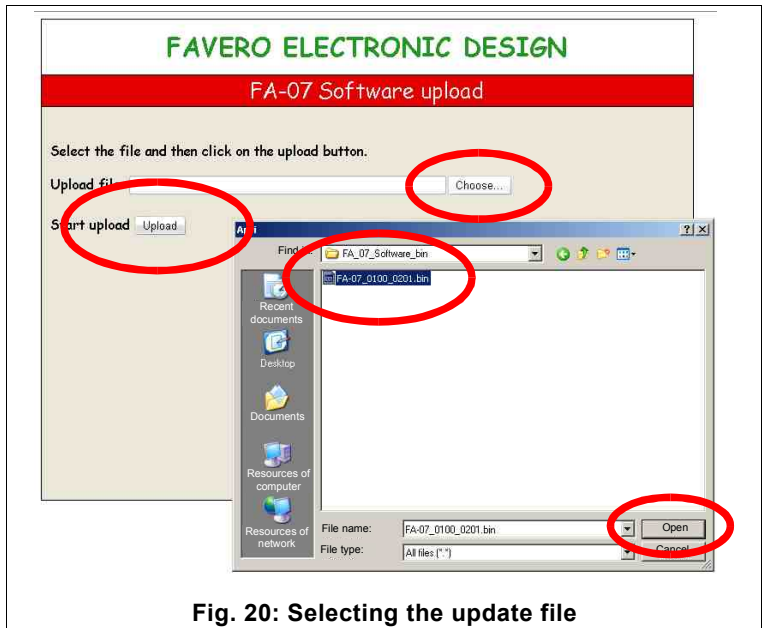


Fig. 20: Selecting the update file

