FULGOR SERVICE
SISTEMI AUDIO

M10

Matrix 10IN 6OUT
Firmware 1.0.2.3
Software 1.0.2.1

USER AND INSTALLATION MANUAL

INDEX

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1. M10 Software Manual

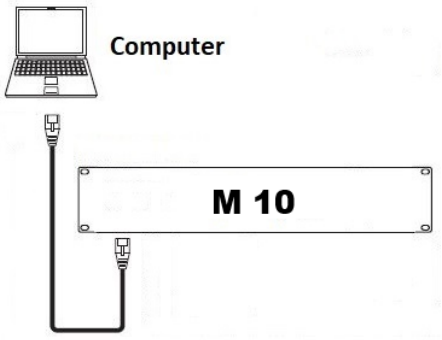
M10 Software Guide

This manual allows you to take full advantage of the M10's many features.

Thank you for purchasing the Fulgor Service M10 processing matrix.

2. Installing and running the SOFTWARE

After installing the dedicated "M10" software on a computer with a Windows 7 or later operating system and connecting the PC to the M10 matrix via the Ethernet port as shown in the diagram (set the PC's network card as shown on the following page), launch the software to start working.



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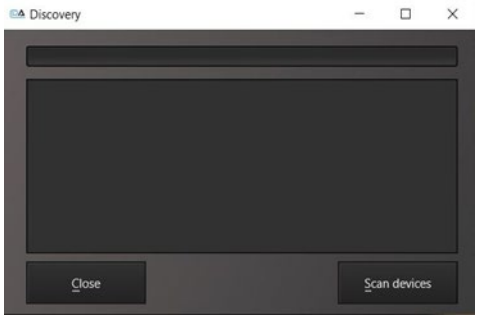
Follow the steps:

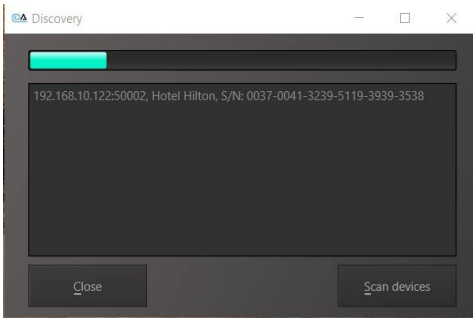
The screen on the right is the first screen of the M10 software.

In this dialog box, you can search the network for one or more devices. After configuring your network card with an IP address of **192.168.100**.XXX sub 255.255.255.0, you need to search for devices on the network by clicking "**Discovery**."

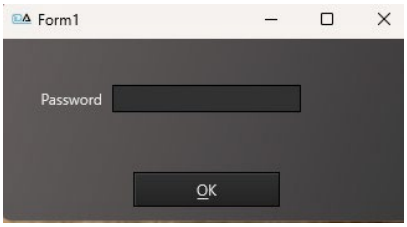
Please note: 192.168.100.50 is the default IP address for the M10; do not configure your network card with a .50 ending.



The second window will open, where the software will automatically scan the entire network for one or more M10s.



Once the scan is complete, one or more devices will be detected. You can view all the information related to the machines on your network. By double-clicking on the device information, you can choose which device you want to connect to. In the first window, click "**Connect**".
By entering the password, we begin interacting with the device. For the first connection, the default password is **123456**.



The default settings are:

IP Add 192.168.100.50
IP Mask 255.255.255.0
Router IP 192.168.100.1
Password 123456
ID 1
PC IP Port 50002
APP IP Port 50003

This is

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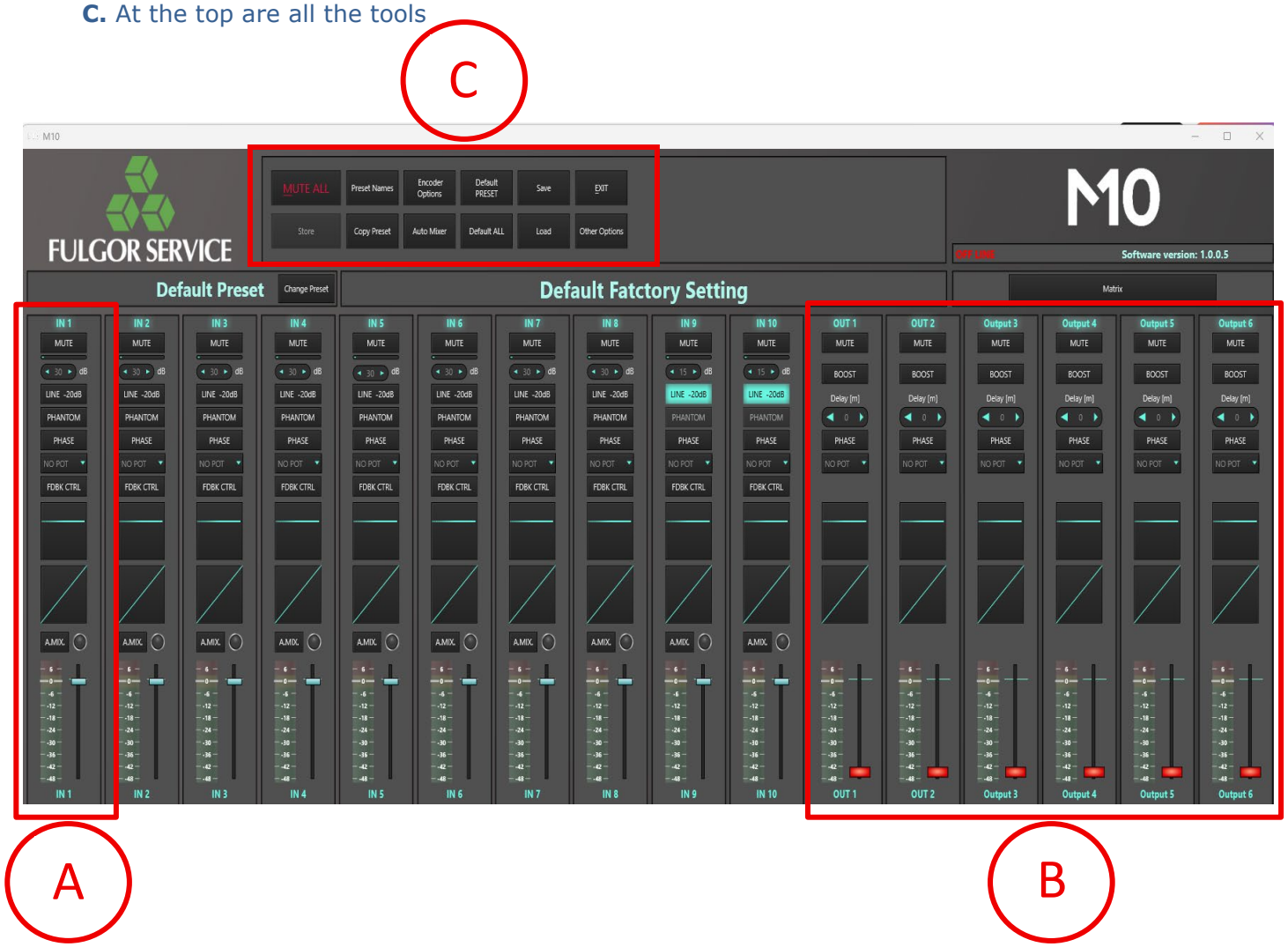
the M10's main window, from which you have access to all the machine's settings and information. Let's start by dividing the window into three large areas marked in red below.

A. On the left is the first of the 10 inputs
B. On the right are the outputs with the matrix
C. At the top are all the tools



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3. Section "A" Main Window "INPUTS"

All the adjustments and settings of an input are illustrated below.

This detail of the main window highlights an input. Starting from the top, we find:

1. Clicking on "**Input 1**" allows you to change the input name.
2. Clicking on "**MUTE**" mutes the channel.
3. Below "mute" is a horizontal "**VU meter**" that turns blue when there is signal at the input; this signal is before all adjustments.
4. The input level "**GAIN**" is adjusted in 3dB steps.
5. Clicking on "**LINE -20dB**" decreases the input sensitivity and disables phantom power.
6. Clicking on "**PHANTOM**" enables or disables the 38Vdc power supply only on the input in question.
7. Clicking "PHASE" inverts the input phase by 180°
8. Clicking "**NO POT**" sets the user interface, i.e., the control used to adjust the signal for this input.
   - **F-Pot** enables the encoders on the front panel and the tablet app.
   - **V-Pot** enables the RS485 serial port; the channel will be controlled by a dedicated device capable of generating pre-programmed strings.
   - **R-Pot** enables the 10K analog potentiometers (from 1 to 6).

   If nothing is set, the channel will operate without any controls.
9. Clicking "**FDBK CTRL**" opens a window for adjusting the Antilarsen.
10. Clicking on the square opens the parametric equalizer window.
11. Clicking on the square opens the Dynamics Processor window.
12. Clicking "**A.MIX**" inserts the input into the Automixer system (more information in section 36C).
13. At the bottom left is the handy "**VU meter**".
14. At the bottom right is the "**SLIDER**" for controlling the input volume.
15. Between points 13 and 14 is the reference for the position of the real or virtual potentiometer used for this input (see point 8). If no interface is used, the bar is not displayed.

The underlined points are explained individually below.

This window appears when you click on **the name of an input or output** (see step 1).

1A. Enter the desired name for the input or output using the same procedure, then confirm with "OK".

This section of the "INPUTS" window highlights steps 8 and 15.

8A. From this window, we can enable volume control for this input in various ways:

- **Encoder or Tablet APP**: Selecting F-Pot1 to F-Pot10 enables the input to be controlled by the encoder on the front of the M10, or it can be controlled with a tablet via a dedicated app. (See 30C for settings.)

- **RS485**: Selecting V-Pot1 to V-Pot10 enables the input to be controlled via a dedicated RS485 protocol string. Configure a device capable of generating and receiving RS485 protocol (check the appropriate box in the Other Options section. See DB15 in the Hardware manual, item 6). Optional MControl.

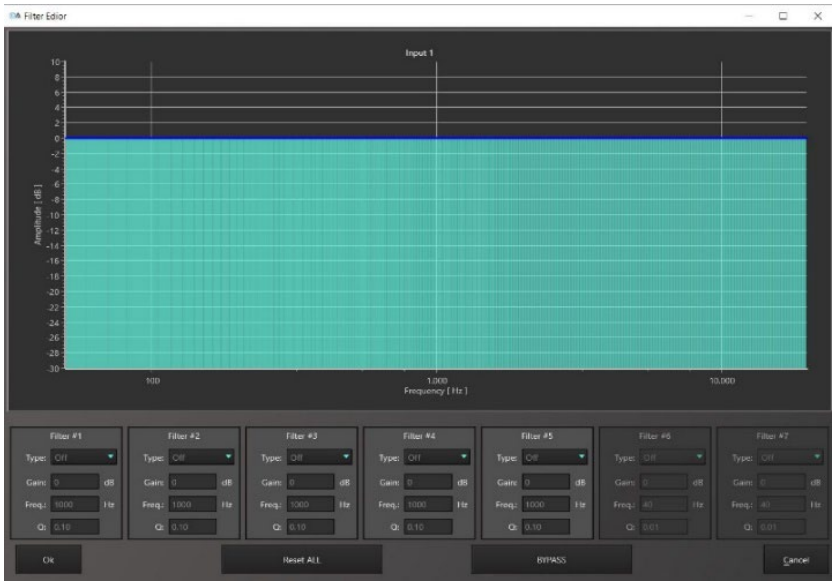
- **Analog potentiometers:** Selecting R-Pot1 to R-Pot6 enables the input to be controlled by an analog potentiometer. The potentiometer can be remotely controlled up to a maximum distance of 50 meters using a shielded cable. (See DB15 in the Hardware manual.)

15A. Enabling any control will cause a bar (highlighted in red in the figure) to appear between the VU meter and the slider, visually indicating the "position" of the device currently adjusting the volume.

This window appears when you click the "**FDBK CTRL**" key, item 9V

9A. Selecting "**ENABLED**" activates the Antilarsen only on the selected input. The "**FREQUENCY**" buttons increase or decrease the sampling frequency shift. Clicking OK confirms everything.

When you click on the parametric equalizer square, the window below appears (see point 10).

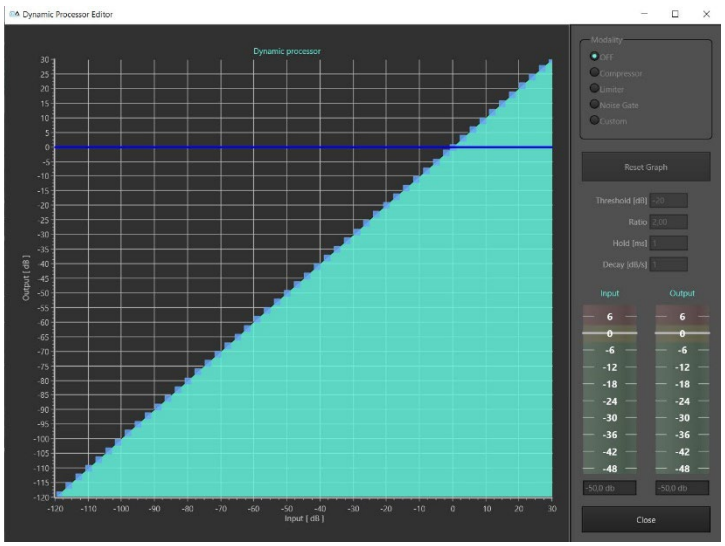


10A. **Input Equalizer** control window.

- On the inputs, we find five "**FILTER**" that is configurable filters.
- By adjusting "**TYPE**", we decide which type of filter to use (High Pass, Low Pass, or parametric EQ).
- By adjusting "**GAIN**", we increase or decrease the gain of the selected frequency.
- By setting "**FREQ**", we decide which frequency we want to affect.
- By adjusting "Q", we broaden or decrease the range of our adjustment on the audio spectrum. Below is an example.

Example of an equalization

When you click on the square on the right, the **Dynamics Processor** window opens (see point 11).



11A. Input **Dynamics Processor** window.

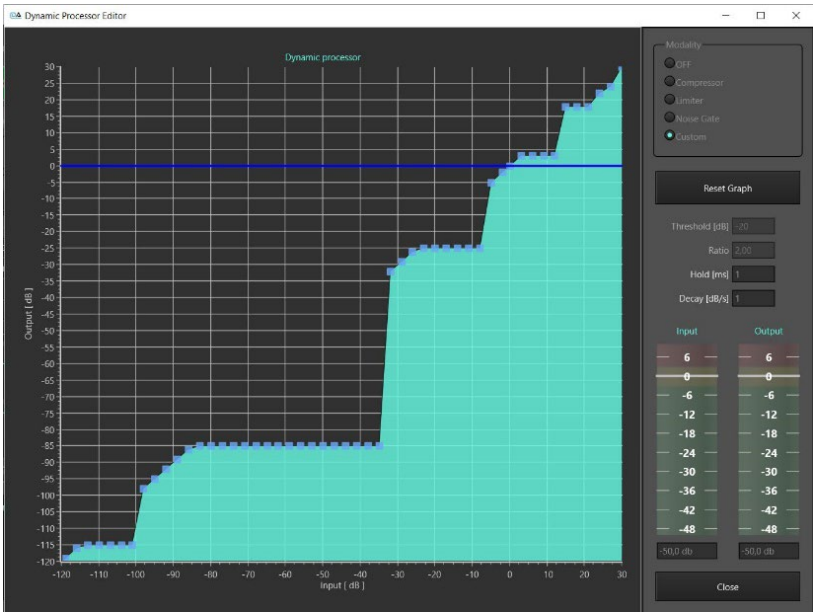
At the top right are the processor's four operating modes:

- **Compressor**
- **Limiter**
- **Noise Gate**
- **Custom**

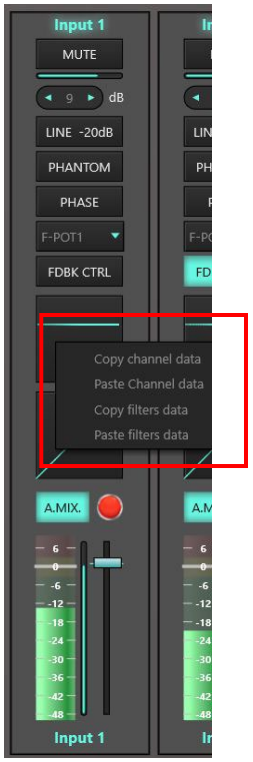
It's very easy to use thanks to its four adjustment parameters:

- Threshold (dB): intervention threshold (below which it doesn't intervene)
- Ratio: compression ratio
- Hold (ms): : intervention time
- Decay (dB/ms): slope/speed

The two large VU meters are a great help to the engineer during adjustments and show the filter's input level (left) and output level (right) in real time.



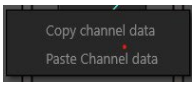
Example of a Custom configuration



Once you've finished configuring a channel, if you're satisfied with its performance, you can copy all the settings for that channel and apply them to other inputs.

Procedure:

- Right-clicking in an empty area of the channel opens this window.



- Clicking "Copy Channel Data" copies all the channel settings.
- To paste, right-click in an empty area of the new channel and select "Paste Channel Data." All settings will be pasted.
- Alternatively, right-clicking on the equalizer or dynamics processor square (see the red box on the left) allows you to copy only the equalizer or dynamics processor settings. Once copied, do the same to paste.

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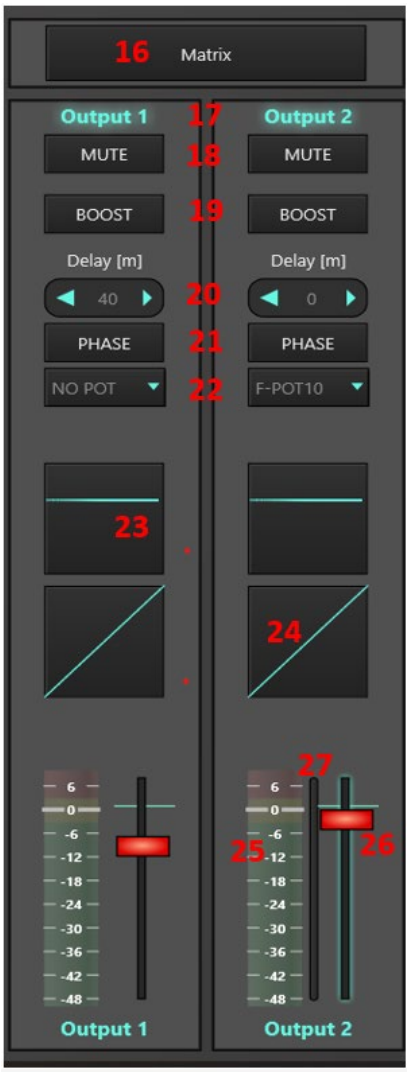
4. Section "B" Main Window "OUTPUTS"

All the adjustments and settings of an input are illustrated below.

This detail of the main window highlights two of the six outputs.
Starting from the top, we find:



16. Clicking the "**Matrix**" button accesses the matrix.
17. Clicking from "**output 1**" to "**output 6**" allows you to change the name of the output (see point 1).
18. Clicking "**MUTE**" mutes the channel.
19. Below "mute" is the "**BOOST**" button, which increases the channel's output level by +6dB.
20. The delay is expressed in meters, and each channel can reach up to 70 meters.
21. Clicking "**PHASE**" inverts the output phase by 180°.
22. Clicking "**NO POT**" sets the user interface, i.e., which control will regulate the signal for this input.

- **F-Pot** enables the encoders on the front panel and the tablet app
- **V-Pot** enables the RS485 serial port; the channel will be controlled by a dedicated device capable of generating pre-programmed strings.
- **R-Pot** enables the 10K analog potentiometers (from 1 to 6).

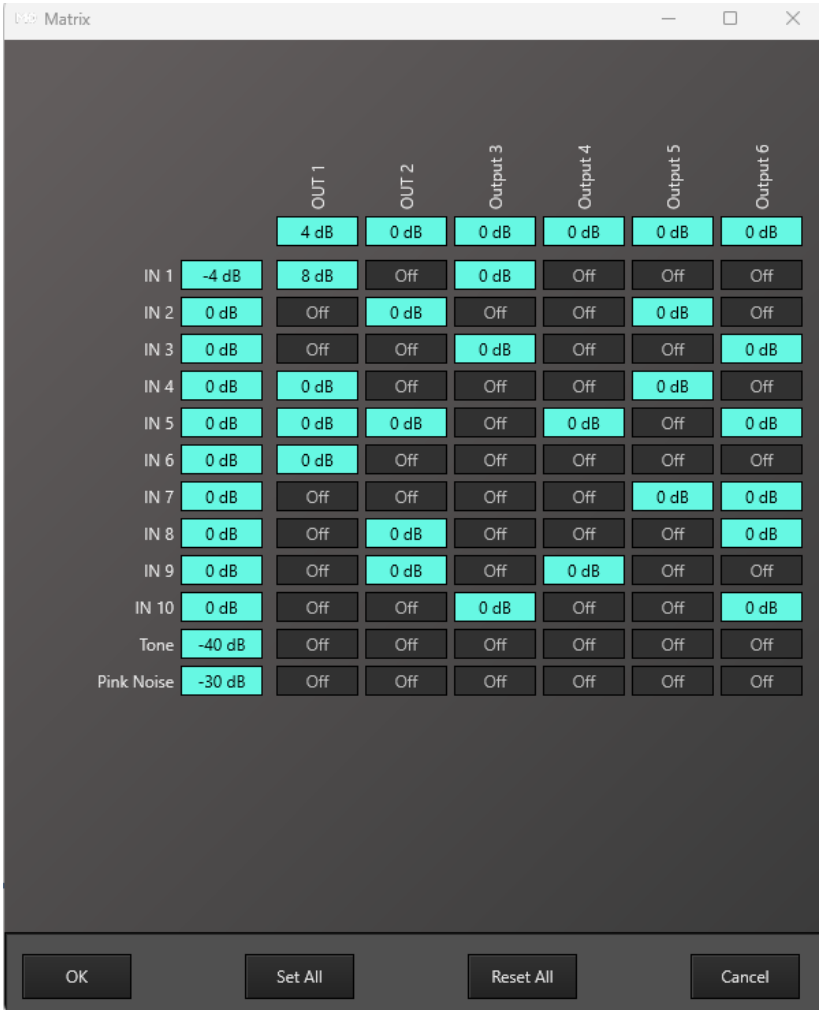
  If nothing is set, the channel will operate without any controls.

23. Clicking on the square opens the parametric equalizer window.
24. Clicking on the square opens the Dynamics Processor window.
25. Below is the handy "**VU meter**".
26. Below, on the right, is the "**SLIDER**" for controlling the input volume.
27. Between points 25 and 26 is the reference for the position of the real or virtual potentiometer used for this input (see point 8); if no interface is used, the bar is not displayed.

The underlined points are explained individually later.

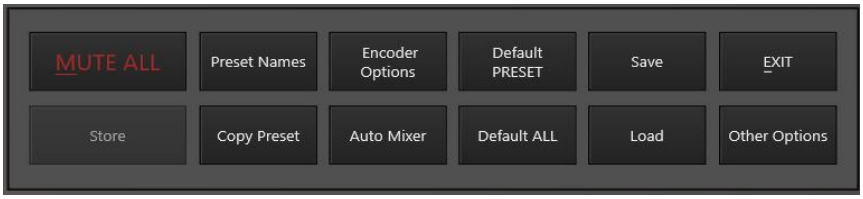
16B Matrix

From this window, you can decide which of the 6 outputs to route the 10 input signals to. You can also raise or lower the level (expressed in dB) beforehand, at each crossover point, or at the matrix output.
The installer can quickly test an output using the last two buttons, "**TONE**" and "**NOISE**", which send a known signal to the desired output.



5. Section "C" Main Window "TOOLS"

All the adjustments and settings of an input are illustrated below.



This window highlights all the buttons for the various tools. From left to right, they are:

28. Clicking "**MUTE ALL**" mutes all inputs and outputs.
29. Clicking "**Preset Names**" opens a window for editing preset names.
30. Clicking "**Encoder Options**" opens a window for controlling the encoders and potentiometers.
31. Clicking "**Default PRESET**" resets only the current presets to the factory settings.
32. Clicking "**Save**" saves the configuration to your computer.
33. Clicking "**EXIT**" exits and closes the M10 program.
34. Clicking "**Store**" saves the configuration to the M10.
35. Clicking "**Copy Preset**" opens a window for copying the preset.
36. Clicking "**Auto Mixer**" opens a window with all the parameters for the automatic mixer settings.
37. Clicking "**Default ALL**" resets the M10 to its factory default settings.
38. Clicking "**Load**" allows you to load a configuration from your computer.
    - WARNING: Loading from a file PREVENTS updating:
        - All network information (DHCP, IP addresses, ports, MAC addresses, etc.)
        - All system information (I Am Master, Audio Link, Slave IP address, Service port, App port)
        - The product password.
39. Clicking "**Other Options**" opens a window with information and optional settings.

The underlined points are explained individually below.

This window appears when you click the **Preset Names** button (see step 29).

29C Procedure for naming presets.

Highlight the preset name, type it (numbers or letters in lowercase or uppercase), repeat for each preset, then click OK.

This window appears when you click the Encoder Options button (see step 30).

30C The area is formally divided into three macro areas:

Area Encoder
Area Programmed Encoders level
Area Rear Potentiometer

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30C Encoder Area

Encoder Management Guide.

Encoder settings are independent of presets. By recalling a preset, you can enable or disable encoders for the channel(s), but the encoder settings will always be the same for all presets.

The Encoder Management window features 10 identical panes, each of which controls the functionality of one of the encoders. These encoders must be activated (see steps 8 or 15 of the main window). A single encoder can control multiple inputs or outputs. The following describes the procedure for configuring an encoder, using Encoder 4, highlighted in transparent red in the window, as a reference.

Encoder Configuration
Encoder Activation: Make sure the encoder is activated (see steps 8 or 15 of the main window).

Volume Sensitivity: Sets the speed at which the encoder will adjust the volume when turned left or right. There are three options:

- **LOW**: Slow response speed
- **MEDIUM**: Medium response speed
- **HIGH**: Fast response speed

Encoder Gain Setting

Max Gain: Sets the maximum gain in dB.
For example, if you set the Max Gain to +6 dB, turning the encoder infinitely to the right will result in a maximum increase of +6 dB compared to the volume value of the input associated with this encoder.

Min Gain: Sets the maximum reduction in dB.
For example, if you set the Min Gain to -12 dB, turning the encoder infinitely to the left will result in a maximum reduction of -12 dB compared to the volume value of the input associated with this encoder.

Important:

Preserve the encoder value.
When recalling a new preset, the encoder value will not change and will remain the same as the last user's setting.

Step-by-step setup procedure

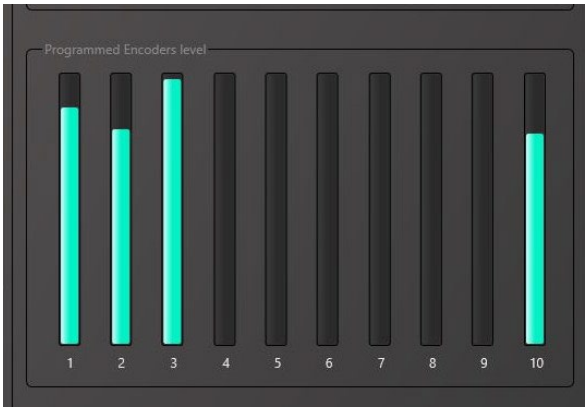
Make sure the encoder is enabled: Verify that Encoder 4 (or any other encoder you wish to configure) is enabled (see steps 8 or 15 in the main window).
Set the rotation speed: Select between LOW, MEDIUM, and HIGH based on your operating needs.
Set the gain parameters:

Enter the desired value for Max Gain (example: +6 dB)
Enter the desired value for Min Gain (example: -12 dB)

By following this procedure, you will be able to correctly configure each encoder to control the inputs or outputs with the desired parameters.

30C Area **Programmed Encoders level**

This portion of the window serves as a visual reference for the programmer, allowing him or her to monitor all enabled encoder levels during programming and audio system setup.



30C Area **Rear Potentiometer**

Guide to calibrating and managing the volume with analog potentiometers.

The "Rear/Potentiometer" window features 6 identical boxes for adjusting the volume using 6 optional analog potentiometers. These potentiometers must be connected via the DB15 port, as described in the hardware manual. The procedure for calibrating and managing the volume gain is described below.

Calibration Procedure

- Potentiometer Connection: Connect the potentiometers to the DB15 socket.
- Potentiometer Positioning: Turn all potentiometers to their maximum settings.
- Calibration: Press the "Calibrate" button in the "Rear/Potentiometer" window. This step measures the exact impedance of the analog potentiometers.

Gain Management

Each potentiometer can control the volume gain in decibels (dB). Here's how to configure the maximum and minimum gain for each potentiometer:

- **Max** (Maximum Gain): This parameter defines the maximum gain achievable by turning the potentiometer to the right.
- **Min** (Minimum Gain): This parameter defines the maximum reduction achievable by turning the potentiometer to the left.

Gain Configuration Example:

- Max Parameter: +6 dB

  Rotating the potentiometer to the right to its maximum setting results in a gain of +6 dB compared to the volume of the input associated with this potentiometer.

- Min Parameter: -12 dB

  Turning the potentiometer to the maximum left reduces the volume by -12 dB compared to the volume of the input associated with this potentiometer.

Summary

- Connect the potentiometers to the DB15 jack.
- Turn the potentiometers to maximum.
- Press "Calibrate" to calibrate the potentiometers.
- Set the gain parameters (Max and Min) for each potentiometer:

  Max: Determines the maximum gain in dB.

  Min: Determines the maximum reduction in dB

By following this procedure, you will be able to correctly calibrate the potentiometers and manage the volume gain for each input.

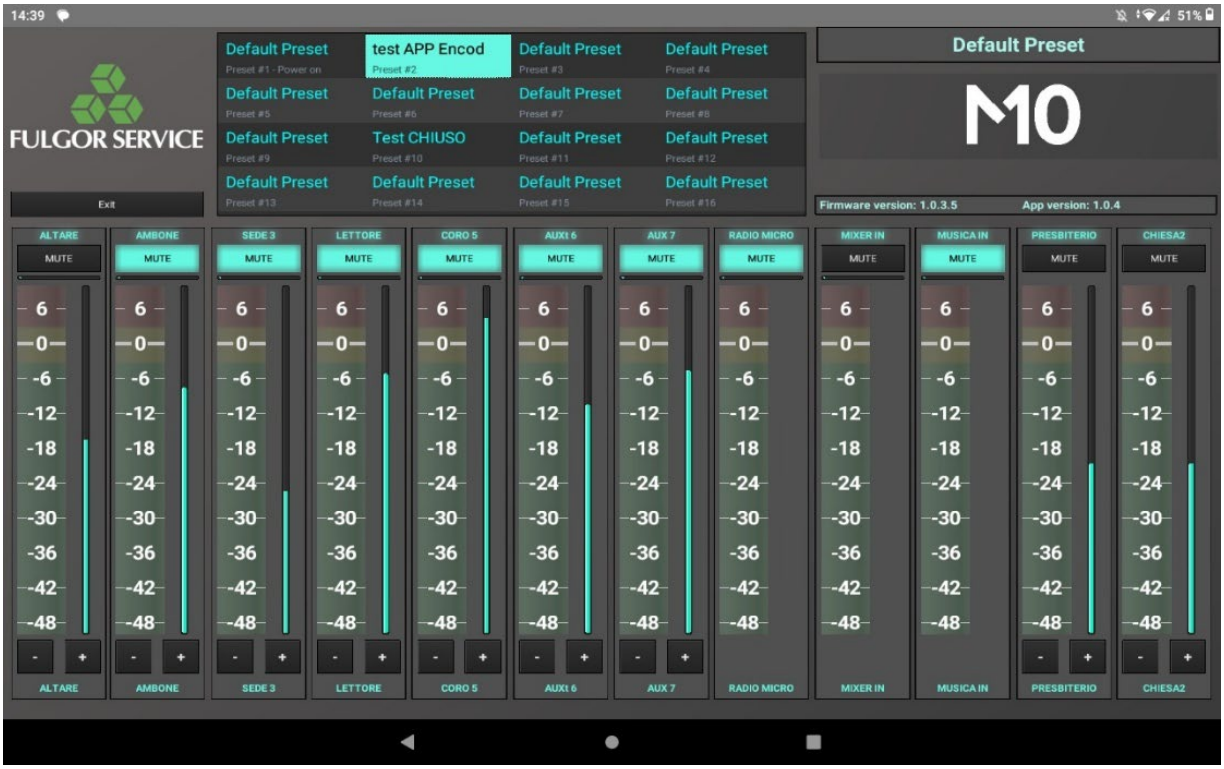
Tablet APP

App configuration procedure for the Tablet

The APP works in parallel with the encoders, so the procedure for enabling volume control is the same.

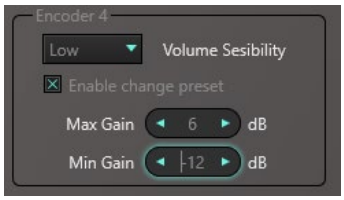
Make sure the encoder is enabled: for example, verify that Encoder 4 (or any other encoder you wish to configure) is enabled via step 8 or 15 of the main window.

Now you can manage the volumes from both the APP and the encoders simultaneously.



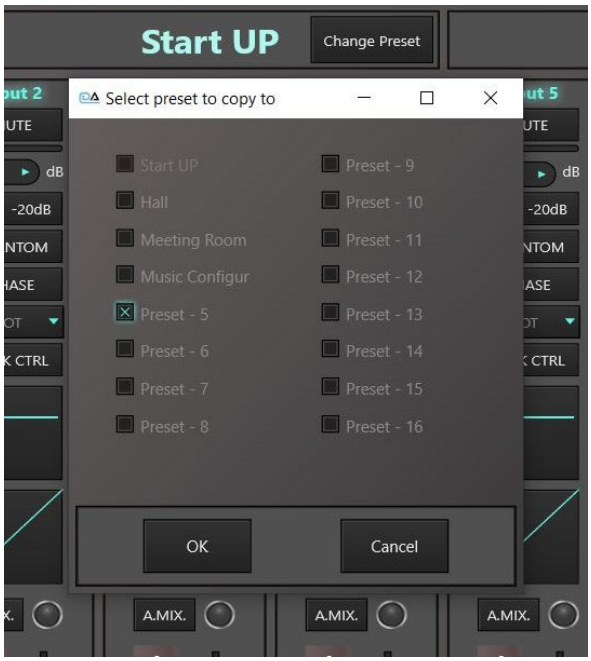
Changing Preset

In each encoder window, there is a square to select (example: Encoder 4).



If selected, it will recall preset 4; if deselected, nothing will happen. Recalling will not work with a connected PC.
All unselected encoders will not recall anything.
In addition, presets can be recalled via the app, via RS485 (see codes at the bottom), or via logic contact; see DB15 in the hardware manual.
This window appears when you click the "Copy Preset" button (see point 35).

35C By selecting one or more boxes, you can copy the current preset's configuration to one or more presets.
Clicking OK closes the window.
NOTE: M10 will remain on the preset you are currently working on.



This window appears when you click the "Auto Mixer" button (see point 36).

36C From this screen it is possible to calibrate the parameters of the automation that manages the inputs that have been enabled from the main screen (see point 12).

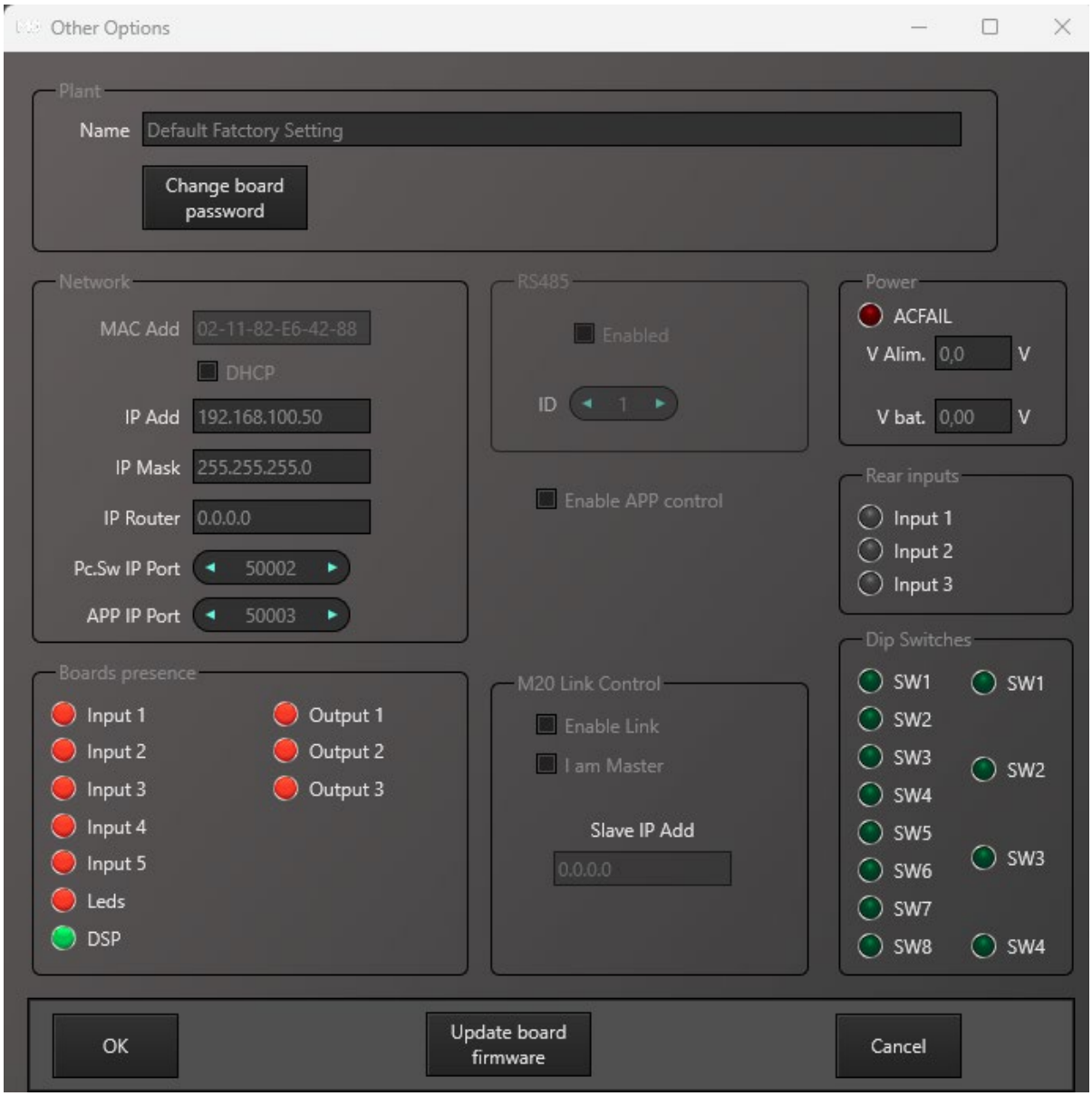
The automixer calibration logic operation is highlighted in the red rectangle at point 36C.

"**Enable**" button: enables/disables the AM function. We recommend first calibrating all parameters (inputs, outputs, equalizations, etc.) and only then enabling the automixer by selecting the "**Enable**" box.

From the main screen, you can control the inputs that are part of the automixer: green = open, red = closed, gray = not in AM.

- **Attenuation**: attenuation in dB of the input gain when "closed" by the logic.
- **Level delta to be a leader**: difference in dB required for an input to become a leader.
- **Max num open mic**: how many inputs can open simultaneously.
- **Delta level for sync opening**: the minimum difference in dB required from the leader level for a channel to activate.
- **Noma**: This function allows for greater working margin even with many microphones open simultaneously (as long as they are part of the AM). The parameter and management algorithm cannot be modified.
- **Min level for open inputs**: minimum value required to open one or more inputs: the channel(s) will be closed.

This window appears when you click the "**Other Options**" button (see point 39).



39C from top to bottom, the window contains:

Plant
- Name: Enter the project name, which will also be the file name when saved to the PC.

Change board password
- Follow the instructions

Network
- MAC Add: This is the machine's unique number.
- DHCP: If selected, the machine automatically assigns itself a network address.
- IP Add: Enter a static IP address for the machine.
- IP Mask: Enter the subnet.
- IP Router: Enter a static IP address for the router.
- Pc.Sw IP Port: Enter the port number to use for the network.
- APP IP Port: Enter the port number to use for the M10 app.

Board preference
- Input LEDs 1 to 5: Green indicates everything is OK; red indicates a problem with the IN board.
- Output LEDs 1 to 3: Green indicates everything is OK; red indicates a problem with the OUT board.
- LEDs: Green indicates OK; red indicates a problem with the encoder board.
- DSP: Green indicates OK; red indicates a problem with the CPU and DSP board.

RS485
- If selected, enables RS485 protocol transmission via the DB15 connector, allowing you to receive and generate strings.
- ID is the M10's identification number in the RS485 network.

Power
- ACFAIL Led: If lit, there is a problem with the AC power supply.
- V.Alim: Board power level (reference 37V).
- V.Bat: Backup battery power level used to store encoder levels (reference 3V).

- Enable APP control: If selected, enables control from the M10 app with a dedicated tablet.

M20 link Control
This section is used to link two M10s to form a single matrix with 20 inputs and 12 outputs.

WARNING: The IP addresses of the M10s must be different.

- Enable link: This is used when linking two M10s to use the M20 software.
- I am Master: Enable only the M10, which will become the Master.
- Slave IP Add: Once the Master is enabled, enter the IP address of the linked M10, which will become the Slave.

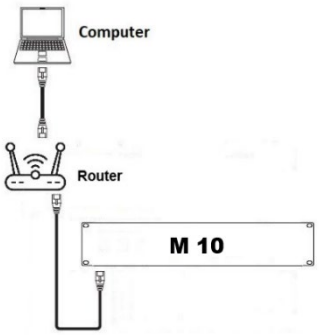
4- and 8-position DIP switches are NOT enabled in this version.

Update board firmware
- To update the firmware, connect to the M10 using the software and follow the instructions.

6. M10 APP Software and Hardware Manual

M10 Software and Hardware

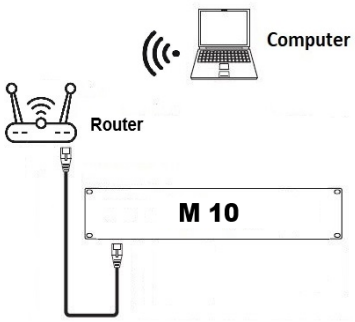
Guide This manual allows you to take full advantage of the M10's many features using the dedicated app.

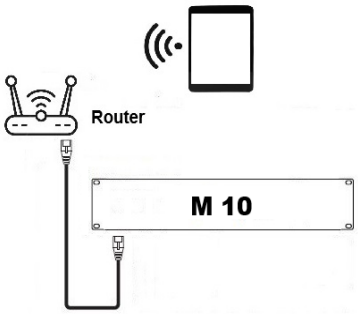


To use the app, you must first create an intranet network with Wi-Fi, connected to the M10 using a standard Ethernet router with Wi-Fi.

Only after connecting to the machine change the connection type between the PC and the M10 by adding a router (see diagram below). Then, configure the router with the network parameters according to your needs, considering that the tablet will need to connect via Wi-Fi. created by the router and operate via the intranet with the M10.

Alternatively, you can use the preconfigured FULGOR NET router (optional), which already has all the parameters set. This router allows you to easily connect to the M10 with your tablet or PC via Wi-Fi. To connect to the "FULGOR NET" intranet network, leave the Wi-Fi network card configurations of the devices in DHCP mode.





See the FULGOR NET Router manual.

Enable software control from the M10 app (Enable APP control) and verify that the communication port (APP IP Port) is 50003 (see point 39C).

Now install the .APK file on your tablet running Android 13 or higher. This file contains the app for connecting to and controlling the M10. Connect via Wi-Fi to the intranet you created specifically for this purpose and launch the app.

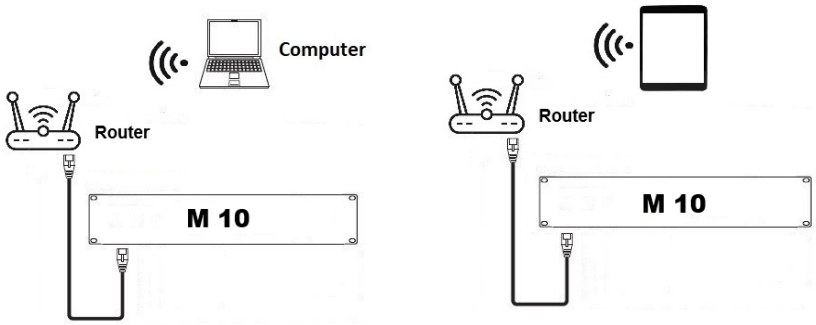
With the app, you can control all volumes that have been software-enabled for management by the app, recall any preset, and view the exact position of the input and output signals via the VU meters.

NOTE: The PC and tablet software are not redundant, so do not use them simultaneously.

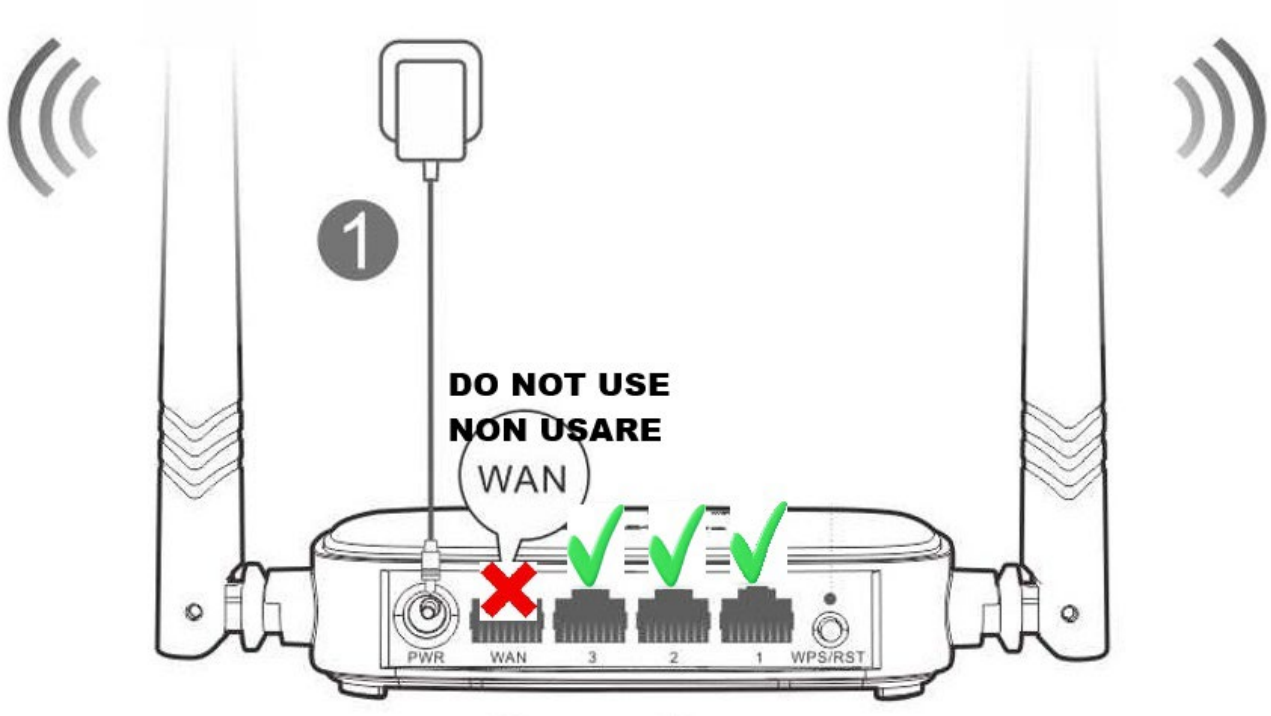
7. FULGOR NET Router Manual

FULGOR NET Router Hardware Guide (**Optional**)

This manual allows you to take full advantage of the many features of the preconfigured router. Below are some examples of router connections, which generates a network called "FULGOR NET" that can be accessed without a password via a PC or tablet by configuring the Wi-Fi network card in **DHCP**.



A CAUTION: Do not use the router WAN port (see diagram)



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8. M10 Hardware Manual

M10 Hardware Guide

This manual allows you to take full advantage of the M10's many features.

Thank you for purchasing the M10 amplified processing matrix manufactured and designed by Fulgor Service. Your M10 has been meticulously designed, from the choice of components to final assembly. All FULGOR SERVICE products are designed with complete customer satisfaction in mind, so please be assured that the product you have chosen features advanced technology and robust components.
The package contains the M10, a 230 VAC power cable, a power cable, and the instruction manual.

9. Precautions for use

This symbol indicates the presence of important instructions for use and information to which particular attention must be paid for the correct use of the product.

This symbol indicates the presence of "dangerous voltage" that can cause a risk of electric shock. Pay particular attention and proceed with caution.

1. Carefully follow all documentation included with the product and retain it for future reference.
2. Follow the warnings.
3. Keep the packaging and check that all materials are in good condition.
4. Do not use near water; do not spill water or other liquids on the amplifier. Be careful not to use with wet hands or feet in water.
5. Do not use near heat sources such as radiators, stoves, or other heat-producing devices.
6. Check that the power cord is intact. Do not step on the cord or crush the plug.
7. Connect the plug to a grounded outlet. Do not tamper with the plug. If the provided plug does not fit your outlet, contact an electrician for replacement.
8. Connect to power sources with the voltage indicated on the back of the amplifier.
9. Install the amplifier according to the instructions.
10. Do not block ventilation ducts.
11. Unplug during lightning storms or when not in use.
12. Connect only as directed in the instructions.
13. Do not connect an input signal higher than that specified in the manual.
14. Do not connect the output of the device to the input of another channel on the same device.
15. Do not connect the output of the device to any power source such as batteries, a power adapter, or an AC outlet, regardless of whether the amplifier is turned on or off.
16. Keep the volume controls at minimum when turning the amplifier on or off.
17. Do not remove the top or bottom cover, otherwise there is a risk of electric shock.
18. Do not attempt to repair the product; refer repairs to qualified personnel.
19. Clean only with a dry cloth.
20. The product should be serviced by qualified service personnel when:

- The power cord or plug is damaged.
- The product has been exposed to rain or moisture.
- Liquid has spilled into the unit.
- An object has fallen onto the unit.
- The unit has been dropped and damaged.
- The product does not appear to be working properly or exhibits a noticeable change in performance.

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21. Close supervision is necessary when this product is used near children or inexperienced adults.
22. This product may produce sound levels that could cause hearing damage. Use extreme caution and do not operate at high or uncomfortable volume levels for extended periods. If you experience hearing loss or ringing in your ears, consult a hearing care professional.

9.1. Declaration of Conformity

This device complies with the requirements of the Electromagnetic Compatibility Directive 2014/30/EU, and the Low Voltage Directive 2014/35/EU.

Applicable Standards:

- EN55103-1 (Emissions)
- EN55103-2 (Immunity)
- EN60065, Class I (Safety)

9.2. User Responsability

9.2.1 Damages to speakers

Always check the peak and continuous power of your speakers. This amplifier is extremely powerful and can be potentially dangerous to both speakers and humans. Most speakers are easily damaged or broken. Even if the gain is reduced using the attenuators on the amplifier's front panel, maximum output power can still be achieved if the input signal level is high enough.

9.2.2 Dangerous output voltages

Amplifiers can generate dangerous output voltages. Do not touch any exposed speaker wires while the amplifier is running.

9.2.3 Radio interference

These limits are designed to provide reasonable protection against harmful interference from electrical devices. If this product is not installed and used in accordance with these instructions, it may interfere with other devices, such as radio receivers. However, there is no guarantee that interference will not occur in a particular installation. If this device does interfere with radio or television reception (which can be determined by turning the device off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Reorient or relocate the receiving device's antenna.

- Verify that the affected unit complies with EMC immunity limits (it must bear the CE mark). All electrical devices sold in the EEC must be approved for immunity to electromagnetic fields, high voltages, and radio interference.

- Contact qualified and authorized personnel.

10. M10 Introduction

Please note that improper use could compromise the proper functioning of the device, so we recommend careful and correct use. Please read this manual carefully as all the information contained therein is vital for the safe use of your device.

10.1 Installation/Assembly

This FULGOR SERVICE product is designed for surface use (tabletop, etc.) or for installation in a standard 19" rack.

Maximum effective dimensions of the M10 chassis:

- Width 480mm
- Height 88mm
- Depth 190mm

M10 does not have internal fans, which can cause problems over time. The heat sink inside the chassis is capable of dissipating a large amount of heat; the side vents allow the dissipated heat to escape.

When installing the M10, pay particular attention to not placing it in:

- Environments with very high temperatures.
- Completely enclosed spaces that prevent even minimal ventilation.
- Environments with dust, excessive humidity, or water near the product.
- Presence of intense magnetic fields.
- Environments with strong vibrations or shaking.

11. Description

The FULGOR SERVICE M10 matrix represents an evolution in the catalog, replacing previous generation matrices. Thanks to the versatility of the M10 matrix, it is possible to configure highly complex and large-scale audio systems, ensuring high performance in every function. It offers exceptional performance even when two matrices are linked and using the dedicated M20 software to easily manage the routing of 20 inputs and 12 outputs with a series of features specifically designed to solve and optimize the user interface as easily as possible. Capable of creating an excellent sound experience even in highly professional contexts.

12. M10 Front Panel

1. Encoders 1 – 10 manage volumes and presets (programmed via software).

Multifunction encoders 1 – 10

In M10, the 10 encoders have multiple functions:

A. Recall 10 preset
B. Adjust the volume
C. General machine status information

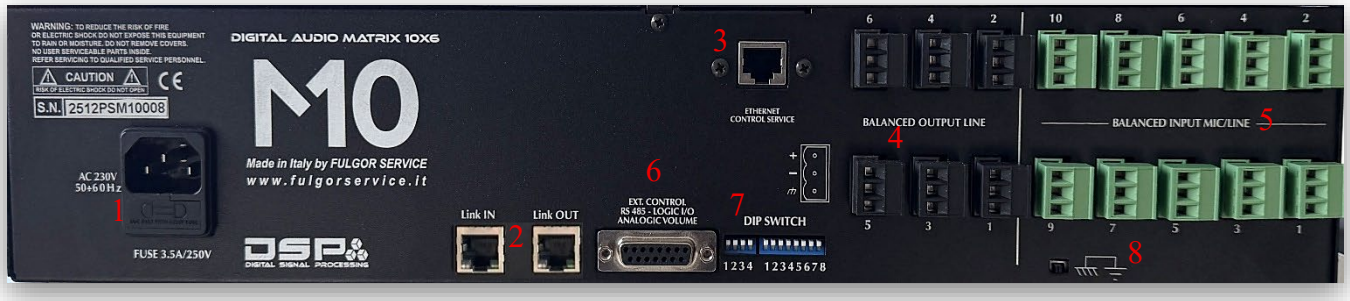
"**A**" M10, after powering on, always positions itself on preset 1, indicated by Encoder 1 lighting up blue. Clicking on an encoder (programmed as a preset) recalls the desired preset and the reference encoder lights up blue. This operation works with any programmed encoder.

"**B**" If programmed, the encoders can adjust the input or output signal. When you turn the transparent knob of an encoder programmed as volume to the right, all 10 encoders will function as a volume bar/scale, lighting up green from left to right.

"**C**" All encoders are used as indicators for various user information:

- Only one encoder, lit up blue, indicates which preset the M10 is in.
- When connected to a PC or tablet app, all encoders light up blue.
- As a volume bar/scale, lighting up green.
- When powered on, all encoders light up blue to indicate their status.

13. M10 Rear Panel



1. IEC C14 male power socket with fuse.
2. Link IN and Link OUT inputs and outputs with RJ45 connectors, for connecting to another M10 to expand and double the M20 matrix. (See below.)
3. RJ45 connector for network protocols: used to connect to a switch or access point and use the PC software or tablet application. See the Hardware Manual.
4. Six balanced audio outputs with Euro-Block connectors (See below.)
5. Ten balanced mic/line audio inputs with Euro-Block connectors (See below.)
6. 15-pin DB15 connector: allows communication between the M10 and various technologies, RS485 with dedicated strings, or even via 10K logarithmic potentiometers to adjust volumes or recall presets via GPIO.
7. 4-position and 8-position DIP switches: These switches allow you to set multiple functions when the unit is turned on.
8. A small switch that allows you to connect or separate the ground of the M10's internal circuit boards from the power supply ground.

The underlined points are explained individually below.

14. Connections to M10

This section lists all types of connections and wiring for the M10.
We recommend that installation be performed by qualified audio technicians and that high-quality connectors and cables be used to avoid unpleasant hiss and hums.

Point 1

Male IEC C14 power socket with a 3.5A 250V T-fuse. Use the supplied cord with a three-pin Italian or Schuko plug.

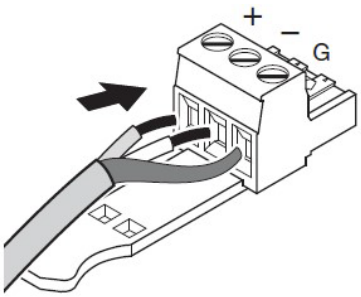
Point 2

Link IN and Link OUT inputs and outputs with RJ45 connectors, connect inverted with another M10 to expand and double the "M20" matrix. Follow the software instructions to configure the Master and Slave matrices, then use the M20 software to manage and calibrate the audio system with 20 inputs and 12 outputs.

Point 4

The six balanced line outputs with 3-pin Euro-Block connectors. Each output channel can be connected to audio devices capable of receiving preamplified, balanced, or unbalanced line signals (depending on the type of connection you intend to use).

Caution:
Use only the supplied Euro-Blocks, connect the cables as shown in the figure, and make sure all screws are securely tightened.

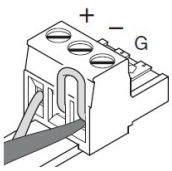


Point 5

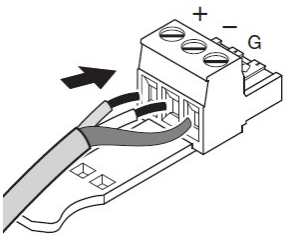
The ten balanced mic/line inputs are separated by 3-pin Euro-Block connectors. Each input is software-controlled. Sensitivity can be adjusted from 0dB for line input to +60dB for mic input, with 37V phantom power.

Connection Type

Unbalanced



Balamced



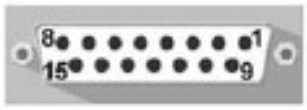
Point 6

DB15 connector with 15 pins: allows communication between the M10 and various technologies.

- Binary-coded preset recall via GPIO.
- 10K logarithmic analog potentiometers (up to 6)
- RS485 with dedicated strings.

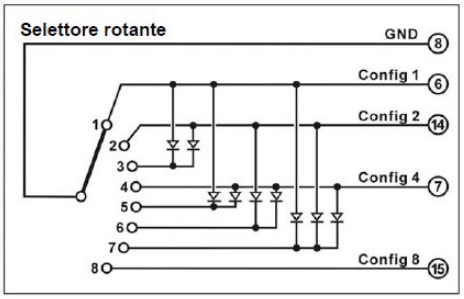
SOCKET CONTACTS

Contatti presa:



1	POT EXT 1	9	POT EXT 2
2	POT EXT 3	10	POT EXT 4
3	POT EXT 5	11	POT EXT 6
4	RS485 A	12	RS485 B
5	10 V	13	GND
6	PRESET 1	14	PRESET 2
7	PRESET 4	15	NC
8	GND		

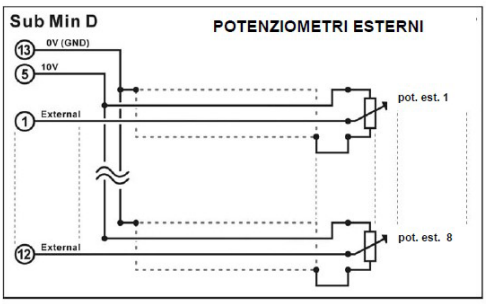
Change configurations or recall presets via GPIO with binary logic. It is possible to create a keypad or a rotary selector to be installed wherever most convenient for the user. Use the DB15 socket and a suitable cable. Example of RP6 type diagram with rotary switch.



Remember to disable all software preset recalls otherwise the GPIO contacts will not work (See Encoder Options point 30).

External analog potentiometers for remote volume control can only be up to six and must be 10K. Use the DB15 socket and a suitable cable.

Example of typical diagram below.



Each potentiometer can be assigned any channel (IN or OUT) and the signal can be controlled with any range.

Using the RS485 protocol, it is possible to change configurations and volumes and mute inputs and outputs. Remember to enable the protocol via the software. Use the DB15 socket and a suitable cable.

General RS485 Notes

Remember to enable protocol transmission via the software (See the "Other options" section).

Communication with the devices in question occurs over an asynchronous serial line configured with 8 data bits, one stop bit, and no parity.

The baud rate is 38,400 bits/sec.

The electrical standard of the physical medium is a properly terminated RS485 bus.

The bus can be up to 800 meters long.

The terminations are simply a resistor of the appropriate value (100Ω) placed at the beginning and end of the RS485 bus.

The sockets within the bus (also called stubs) **MUST NOT** be longer than 50cm.

The following pins are used in the DB15 remote control connector:

Pin 4: Hot pin (or signal A) of the RS485 serial line

Pin 12: Cold pin (or signal B) of the RS485 serial line

Pin 15: if connected to pin 4, the termination is 100Ω.

The general format of a string for controlling the devices in question is shown below:

:ddmmccxxxx<CR>

Where:

dd - Address of the destination device in hexadecimal [1..1E]

mm - Address of the sending device in hexadecimal [1..1E]

cc - Command code, see below.

xxxx - Command data; may or may not be present if the command does not provide it.

<CR> - is the carriage return character (13 decimal, 0x0D hexadecimal, or \n).

PRESET CHANGE via RS485

To select preset 2, use the string :**0102CP01** and the carriage return character.

01 is the address of the destination device, which in this case is M10; the number identifying the destination device can be changed in the appropriate box in the **Other Options** window in the software.

02 is the address of the sending device.

CP is the code needed to change presets.

01 is the selected preset, in this case 2.

And finally, a return character (13 decimal, 0x0D hexadecimal, or \n) will be required.

Example

stringa	Preset	risposta
:0102CP00\n	1	:0201CP00cr
:0102CP0F\n	16	:0201CP0Fcr

VOLUME CHANGE via RS485

To select and change volume 2, use the string :0102CV0180 and the carriage return character.

01 is the address of the destination device, in this case M10. The number identifying the destination device can be changed in the appropriate box in the Other Options window in the software.

02 is the address of the sending device.

CV is the code needed to change the volume.

01 is the selected volume, in this case V-Pot2.

80 is the medium volume (128 decimal).

And finally a return character will be needed (13 decimal or 0x0D hexadecimal).
In this case we set the volume of the V-Pot2 to exactly half.

stringa	potenziometro	risposta
:0102CV0180\n	V-Pot2, volume 128 dec.	:0201CV0180cr

NOTE 1: Hexadecimal values must be used in all strings (except the carriage return character). The volume value can range from a minimum of 00 (0 decimal) to a maximum of FF (255 decimal).

NOTE 2: The maximum number of recallable presets is 16, and the maximum number of controllable volumes is 10. If the code contains a value greater than the maximum supported values, the device may respond incorrectly.

Point 7

4-Position and 8-Position Dip Switches

Not used in this version.

15. Product Techincal Specifications

Sampling Rate	48KHz/44,1KHz
Frequency Response	20Hz to 20KHz, ±1,5dB
Dynamics	> 101dBs
Inputs	10 Balanced Micro/Line Max Gain +60dB 3-pin Euro Block connectors (5,08mm pitch)
Outputs	6 Balanced Line Outputs Max Level +24dBu 4-pin Euro-Block connectors (5,08mm pitch)
Front Panel Indicators	10 Multifucntions Encoder
Number of Encoder	10
Number of Preset	16
Maximum Number of Devices Usable Simultaneously in a Single Network	6 with firmware 1.0.1.0
Operating Temperature Range	0°C ~ 45°C
Storage Temperature Range	-20°C ~ 60°C
Phantom Power	37V (per channel; adjustable)
Power supply voltage	240V 50/60Hz
Power consumption	150W max.
Power cord length	1,5m
Dimensions (W x H x D)	480 x 88 x 190mm 2U
Weight	3,4 kg
Options sold separately	MCONTROL, Android APP, RP6

16. Environmental Packaging

Packaging Disposal according to Italian Legislative Decree 116/2020

Below are the codes of our packaging related to disposal.

Box (Corrugated Paper)
Paper (PAP 20)

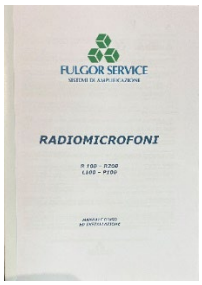
Separated Collection (Paper)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the box

Box (Corrugated Paper)
Paper (PAP 21)

Separated Collection (Paper)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the box



Service Booklets and documents
Paper (PAP 22)

Separated Collection (Paper)

- Check the provisions of your municipality
- Remove the back (LDPE 4) before harvesting
- Reduce the volume of the manual

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Plastic bags
Plastic (LDPE 4)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the bag

Plastic bag
Plastic (LDPE 4)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the bag

Plastic
Low-density polyethylene (LDPE 4)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

Plastic
Polyethylene (PP 5)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

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Pallet
Wood (FOR 50)

Separated Collection (Wood)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

Plastic
Low-density Polyethylene (LDPE 4)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

Plastic
Low-density Polyethylene (O 07)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

Plastic
Low-density Polyethylene (LDPE 4)

Separated Collection (Plastic)

- Check the provisions of your municipality
- Empty packaging before collection
- Reduce the volume of the packaging

17. WARRANTY CERTIFICATE

Dear Customer,
We are pleased to inform you that it has been transposed into Italian law, through Legislative Decree no. 24 of 2 February 2002, a community directive on sales and consumer protection.
This Directive makes a distinction between consumer goods for private use and those used exclusively in the professional field.
In particular, the new standard applies only to consumer goods for private use, and consequently consumer goods used in the course of their professional or business activities will be guaranteed according to the normal general sales rules provided by the civil code.
In both cases, FULGOR SERVICE, by virtue of the quality of its products, applies a 24 months warranty period.

Warranty management
As Directive 1999/44 / EC represents a high level of consumer protection, the decree governs certain aspects of sales contracts concluded between **the consumer and the seller** and guarantees relating to the consumer goods sold.
For the purpose of the Legislative Decree, it is understood that:
For Consumers any natural person who purchases consumer goods for use solely in the private sector and hence outside his or her professional or business activity;
For Seller, any natural or legal person, whether public or private, who uses one of the above-mentioned contracts in the course of his or her business or professional activity;
For the sake of consumption any mobile goods, with express exclusion of the forced sale of goods; Water and gas, when not packaged for sale in a volumetric volume or in a specified quantity.
Consumers are entitled to rights under applicable national legislation governing the sale of consumer goods. The warranty does not affect these rights.
The warranty is valid in all EU Member States.
According to the new legislation, any claim by the consumer to the warranty must be submitted to the retailer and / or point of sale at which the product was purchased.
FULGOR SERVICE has also set up a toll-free number 800-804067. By calling this number we will be able to collect your reports regarding warranty issues and possibly arrange direct return / repair methods.
The number is active from Monday to Friday (excluding holidays), from 8am to 12.30pm and from 14am to 5pm in the winter months and from 7.30am to 12.30pm during the summer months (July and August)

GUARANTEE CLAUSES
The product is guaranteed for a period of 24 (twenty-four) months from the date of purchase. Warranty means repairing or replacing equipment that is defective in the sales contract (and generally product information), the warranty is free of charge and excludes shipping costs for the Consumer.
The warranty is valid only if this warranty certificate, completed in all its parts by the buyer and accompanied by a valid proof of purchase (copy of the invoice or tax receipt for the consumer), is presented to the Of the request for intervention. The non-compliant product must be returned to the original packaging, complete with all accessories.
The serial number on the product must not be erased or made unreadable, since the warranty is invalid.
The warranty does not apply in the case of damage caused by improper use, use or installation that does not comply with the instructions given, tampering, product or serial numbering, accidental or negligent damage to the buyer with particular reference to the outside parts. It also does not apply in case of faults due to connections of the device at voltages other than those indicated or sudden changes in the mains voltage to which the appliance is connected, as well as in case of faults caused by liquid infiltration, fire, discharges Inductive / electrostatic or discharge caused by lightning, overvoltages or other phenomena outside the device.

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Warranty includes parts subject to wear after use, batteries when supplied, connectors and connectors, connectors, external parts and plastic supports, which do not have manufacturing defects.
They are excluded from the warranty: periodic checks, software updates, settings, maintenance.
After the warranty period has expired, the assistance will be charged by charging the replaced parts, labor and transport costs, according to the rates in force.
The guarantee is provided by: FULGOR SERVICE snc., Via Caduti del lavoro 58, 19021 Arcola - La Spezia.
For each dispute, the Forum of La Spezia will have sole jurisdiction.

18. CONSUMER DATA

Fill in every part and join the product. In the case of warranty, please always enclose a copy of the valid **proof of purchase** and send the product to the following address: FULGOR SERVICE snc., Via Caduti del lavoro 58, 19021 Arcola La Spezia or fax 01 87 952326.

Surname _____ Name_____

Parish/Religious Institute/other_____

Street _____

Zip Code _____ City _____ Prov _____

Tax Code/VAT _____

19. PRODUCT DATA

MODEL _____SERIAL NUMBER _____FREQ.MHz _____

DATE OF PURCHASE __ / __ / __ N. INVOICE _____ RESELLER _____

AT	BE	BG	HR	CY	CZ	DK
EE	FI	FR	DE	EL	HU	IE
IT	LV	LT	LU	MT	NL	PL
PT	RO	SK	SI	ES	SE	UK

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Features can be modified without any notice M10 V20260526

20. Personal data protection

Dear Customer,
We inform you that FULGOR SERVICE, pursuant to art. 13 of Legislative Decree 196/2003, will process your data provided by you in compliance with the legislation on the protection of the processing of personal data. The disclosure of the data is optional but any refusal to provide them will result in the impossibility of performing the obligations arising out of the repair service of which you are a party (Article 13, paragraph 1, letter C, Legislative Decree 196 of 2003). The personal data you provide is collected by electronic means and processed, including by means of electronic means, directly and / or through delegated third parties (repair and delivery company) for the following purposes:
- **purposes related to the execution of the service and the management of the repair and return of the products sent for repair.**
In any case, your data will not be disclosed (if not to a repair or redemption company) or sold to third parties. Within FULGOR SERVICE the data can only be acquired by persons specifically assigned to the Information Systems, Administration and Accounting, Customer Service departments.
According to art. 7 of Legislative Decree 196/2003 You have the right, at any time, to obtain from the Data Manager the information on the processing of your data, the manner and purpose and the logic applied to it.
The Data Controller is the legal representative of FULGOR SERVICE snc., Via Caduti del lavoro 58, 19021 Arcola - La Spezia. www.fulgorservice.it

Date _____ Signature _____ Stamp and signature of the reseller

The symbol of a crossed-out garbage can indicates that the product must not be disposed of with other household waste at the end of its life cycle, but must be collected separately. To prevent potential harm to the environment and human health due to the presence of hazardous substances, users are encouraged to take such waste to the distributor/retailer when purchasing a new product or to collection centers designated by local authorities. Penalties apply for illegal disposal of these products.

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