

Example:

To lower the transmitter power every night from 1000 W to 750 W, enable two events in the scheduler:

- The 1st event at 6:00 am every day launches the command TX.PWR = 1000
- The 2nd event at 23:00 pm every day launches the command TX.PWR = 750

8.8.3. Synchro

Path: **Transmitter**/Synchro

 This page is only available for the SFN and 10 MHz Input options when the SFN license is present on the unit. For the 10 MHz Input option, the option card is not present, so you won't need to activate the SFN or configure the delay.

SFN		Clocks	
Delay	0.00 μ s	10 MHz	Not Present
Measured Delay	0.00 μ s	1 PPS	Not Present
Active	☐	10 MHz Alarm	☐
Lost Synchro	☐	Clock	Internal
Optional Memory Present	☒	10 MHz Operation	Auto v

On this page, set synchronization parameters, including SFN parameters. Please refer to parameter descriptions section 5.6 for more details.

Three indicators show:

Lost synchro



No SFN alarm



Current SFN alarm due to a loss of the external 10 MHz or of the external 1 PPS or due to a difference between the set SFN delay and the measured SFN delay. This alarm indicates a loss of SFN, not a loss of transmission

Optional memory present



Memory required for SFN not present



Memory required for SFN present

10 MHz alarm



No alarm



Current 10 MHz alarm due to a 10 MHz switch

8.8.4. Presets

Path: **Transmitter**/Presets

Manage up to 8 presets on this page.

Presets

Current Preset
None

Switch with GPIO
Off

Preset #1

Name	SET_1	
Frequency	101.00	MHz
Power	31	W
RF Present Threshold	1	W
-3 dB Threshold	11	W
-1 dB Threshold	21	W
Auto -3dB / -1dB	☐	
Memory	0	...

Preset #3

Name	SET_3	
Frequency	103.00	MHz
Power	33	W
RF Present Threshold	3	W
-3 dB Threshold	13	W
-1 dB Threshold	23	W
Auto -3dB / -1dB	☐	
Memory	0	...

Preset #2

Name	SET_2	
Frequency	102.00	MHz
Power	32	W
RF Present Threshold	2	W
-3 dB Threshold	12	W
-1 dB Threshold	22	W
Auto -3dB / -1dB	☐	
Memory	0	...

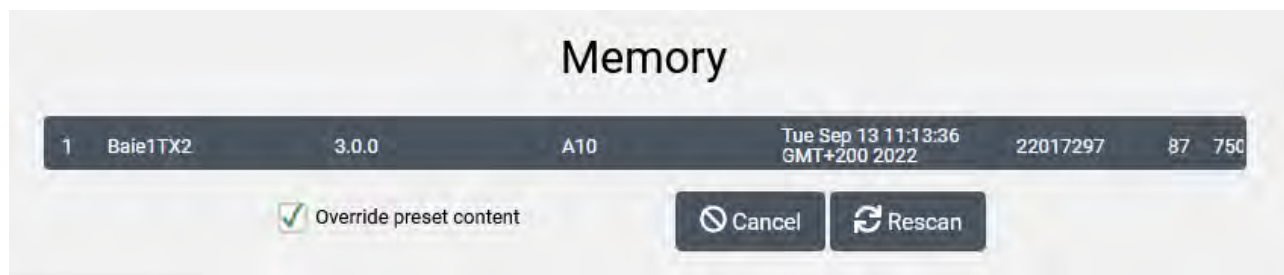
Preset #4

Name	SET_4	
Frequency	104.00	MHz
Power	34	W
RF Present Threshold	4	W
-3 dB Threshold	14	W
-1 dB Threshold	24	W
Auto -3dB / -1dB	☐	
Memory	0	...

Eight presets are available. For each, manually set the name, frequency, power and 1 dB and 3 dB alarm thresholds or link each preset to a memory saved on the µSD card.

When using memories, the whole transmitter configuration is associated to the preset: RF, input and RDS configuration.

To link a preset to a memory, click the button . Rescan if necessary to display the content of the card and select the slot of the memory.



You may override the present content visible and editable on screen.

i If the memory on the μ SD card is modified, the associated preset will also be changed.

On the top of this page, set the current preset and whether it can be switched with GPIOs (optional standard GPIO board).

To manage presets 1 to 4 with GPIOs, select '4 inputs':

Preset	Remote Control	Input name	Common
1	RC5	CONF3(22)	RC_COMMUN(24)
2	RC6	CONF4(10)	RC_COMMUN(24)
3	RC7	CONF5(23)	RC_COMMUN(24)
4	RC8	CONF6(11)	RC_COMMUN(24)

To manage presets 1 to 8 with GPIOs, select '8 inputs':

Preset	Remote Control	Input name	Common
1	RC1	OPT1A(20)	RC_COMMUN(24)
2	RC2	OPT2A(8)	RC_COMMUN(24)
3	RC3	CONF1(21)	RC_COMMUN(24)
4	RC4	CONF2(9)	RC_COMMUN(24)
5	RC5	CONF3(22)	RC_COMMUN(24)
6	RC6	CONF4(10)	RC_COMMUN(24)
7	RC7	CONF5(23)	RC_COMMUN(24)
8	RC8	CONF6(11)	RC_COMMUN(24)

For more details on GPIOs' working principle and pinout, see chapter 10.

8.8.5. SmartFM

Path: **Transmitter/SmartFM**

On this page set SmartFM and analyze its results.

Please refer to parameter descriptions section 5.7 for more details.

i *SmartFM is an option. If the license is not present, the function cannot be enabled.*

! *If the Drive, Min and Max Variations, and the Maximizer are modified, the changes apply to all SmartFM strategies.*

When SmartFM is enabled, the transmitter performs a 15-minute calibration to optimize SmartFM.

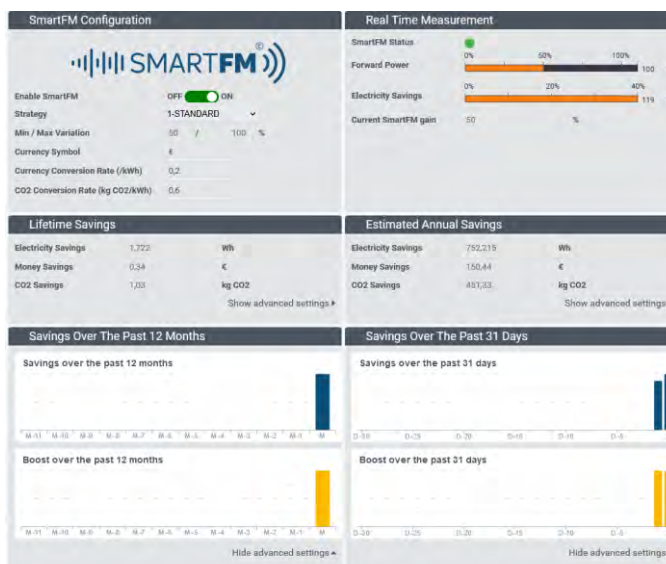
Resetting the SmartFM history erases historical values, so savings are no longer displayed. The SmartFM license is not affected.

! *User modified parameters will not be reset.*

Forward power and electricity savings are given in real time.

Graphs display savings and boost over the past 12 previous months and 31 previous days.

i *Values presented on this page (year estimation, potential benefits/year) may be erroneous during the initialization phase. A 30 day operating period is required for optimal estimations.*



SmartFM status indicator

- SmartFM is disabled
- Initialization phase *
- SmartFM is enabled
- SmartFM fault due to the transmitter status

* Initialization phase:

The algorithm starts and checks the stability of the power and the current consumption. Any change in the SmartFM parameters will trigger a new initialization phase.

The initialization period lasts 60 seconds, but can be reset before the end.

The initialization state will last more than one minute if during the initialization period, RF and/or SmartFM parameters are changed, or if an alarm occurs:

- Modifying the power setting
- Changing the frequency
- Changing the SmartFM strategy
- SmartFM alarm
- Putting the transmitter in standby mode

8.9. System configuration

i System settings changed from the web interface are updated in the unit after a delay of about one minute.

8.9.1. Global settings

Path: **System/Global Settings**

The screenshot displays the 'Global Settings' page of the Ecreso FM AiO Series web interface. The page is organized into several sections:

- Product:** Displays information about the transmitter, including Name (FM Transmitter), Description (FM Transmitter), Serial Number (22017290), Hardware Version (02), Software Version (3.2.1), Contact, Location, Type (AT0), Power capability (1000), Available Power (1100), Uptime (1418), and Calibration date (16082022). There is a 'Show more' button and an 'Option List' section.
- Administration:** Contains options for Reboot Control Board, Reboot TCP/IP, Reboot Unit, Reset to default, Reset Sound processor, and Update System. Each option has a corresponding 'Reboot' or 'Reset' button. The 'Update System' section includes an 'Apply' button and a 'Last Status' indicator showing 'Ready'.
- Backup & Restore:** Includes a 'Backup' section with 'On PC' and 'On SD' options, and a 'Restore' section with 'Transmitter & Modulation', 'RDS', 'System', and 'Network' options. There are 'From PC' and 'From SD' buttons.
- Miscellaneous:** Includes settings for 'Reflected power protection criticity' (Fault), 'Unit display mode' (Relative/Absolute), 'Power display' (Setting/Measure), 'Digital MPX over AES1', 'Digital MPX over AES2', and 'Custom Audio Alarm' (None).
- SmartFM:** Includes settings for 'CO2 Conversion Rate (kg CO2/kWh)' (60), 'Currency Conversion Rate (/kWh)' (0,2), and 'Currency Symbol' (€).
- SD Card:** Includes status indicators for 'Present', 'Mounted', and 'Fault'.

Product

General information regarding the transmitter: name, serial number, versions...

Use the product name and product description to adequately and uniquely describe your unit. They are useful in a network environment to identify it.

Specifically, these values are sent with SNMP traps.

Administration

Reboot the entire transmitter or parts of it. Reinitialize it to default settings.

- !** **TCP/IP reboot restarts power.**
- !** **Rebooting the unit will turn off the RF for about 25 seconds first.**
- !** **After a configuration reset, we recommend you check parameters meant to protect the transmitter: hard clipper activation/deviation and VSWR Trip.**

Update System: if a new version of the transmitter becomes available, you may receive the update patch file from your Ecreso dealer.

Click the Browse button to locate it, and once located, click the Upload Patch File button. After the upload process is done, the transmitter's version can be checked on this page. Depending on the version, the time for upload may vary.

! Wait for the IP connection to be available before shutting off the unit.

Date and time

A couple of Ecreso FM internal components are fitted with a clock. This page allows you to make sure they are synchronized. The IP board clock can be set on this page: it can manage time zones and will be used as reference for the system clock which cannot manage time zone and which is used for RDS.

Date, time and time zone can be updated by clicking the Change button.

The battery alarm indicator is orange when the battery needs to be changed.

NTP (Network Time Protocol):

The user can enter a time server address to update the IP board clock automatically. Make sure this address can be reached by the unit; specifically, the gateway must be properly set. Specify whether it should be synchronized continuously or periodically. For periodic synchronization, indicate what time the daily synchronization should occur (between 0 and 23).

Backing up the transmitter configuration:

Select the media on which to back up, PC or μ SD card.

On the PC, the backup file is saved on the web browser download directory. Its name is:
FmLp_version_serial-number_date_time.

On the μ SD card, click Rescan if needed to display the content of the card and select the slot. Up to 8 configurations can be used for presets (see section 8.8.4).

Memory

1	Empty
2	Empty
3	Empty
4	Empty
5	Empty
6	Empty
7	Empty
8	Empty

Cancel
Rescan

Restoring the transmitter configuration:

First select elements you wish to restore:

- Transmitter and modulation
- RDS
- System
- Network

By default, network parameters are unchecked to allow, for example, two transmitters to be configured identically.

If the backup is on the PC, select the file.

If the backup is on the μ SD card, click on Rescan if necessary to display the contents of the card and select the memory slot to be restored.

Miscellaneous

Set the reflected power protection criticality and the unit display mode (absolute or relative).

Set the power value to be displayed on the front panel status screen: nominal or measured power.

Check the box if line 2 is an MPX input, uncheck if line 2 is an audio input.

SmartFM

Set the parameters with which SmartFM savings are calculated.

SD Card

Indicators show the status of the μ SD card:

SD Card Present		μ SD card not present
		μ SD card present
SD Card Mount		μ SD card ready to unmount
		μ SD card is mounted
SD Card Fault		μ SD card ok
		μ SD card alarm

8.9.2. Communication

Path: **System**/Communication

Static Configuration ETH0

Mode

Static

Name

Name

IP Address

192.168.101.100

Netmask

255.255.0.0

Gateway

192.168.0.254

Speed / Duplex Mode

Auto-Negotiation

100Mbps / Full

MAC Address

00:90:3F:30:01:37

Loss of Interface

☒

Static Configuration ETH1

Mode

Static

Name

Name

IP Address

172.18.2.16

Netmask

255.255.255.0

Gateway

0.0.0.0

Speed / Duplex Mode

Auto-Negotiation

10Mbps / Half

MAC Address

00:90:3F:30:01:38

Loss of Interface

☒

COM Port

COM1 Mode

CONSOLE

COM1 Speed

9600

COM1 Echo

☐

COM2 Mode

CONSOLE

COM2 Speed

9600

COM2 Echo

☐

DNS Servers

Primary DNS

0.0.0.0

Secondary DNS

0.0.0.0

Telnet

Telnet port

23

CAN

CAN ID

0

Miscellaneous

Authority Certification

Download

Static Ethernet configuration

Set the parameters for the network interface.

Set also the speed and duplex mode of the network interface: 10Mbps/Full, 10Mbps/Half, 100Mbps/Full, 100Mbps/Half, 1Gbps/Full. To let the module select the speed and mode according to the environment, choose 'auto-negotiation'.

Enable or disable the alarm on loss of interface.

COM Ports:

Define the usage for the encoder COM ports, their speed and echo.

If a port is set for UECP, UECP parameters can then be set on the page RDS/UECP (see section 8.6.6).

! Make sure the firewall allows required ports (see section 8.9.3).

DNS Servers:

! DNS configuration is mandatory before using DNS addresses on other configuration pages

Miscellaneous

To prevent potential blocking and warning messages, WorldCast Systems now supplies certificates for HTTPS browsing.

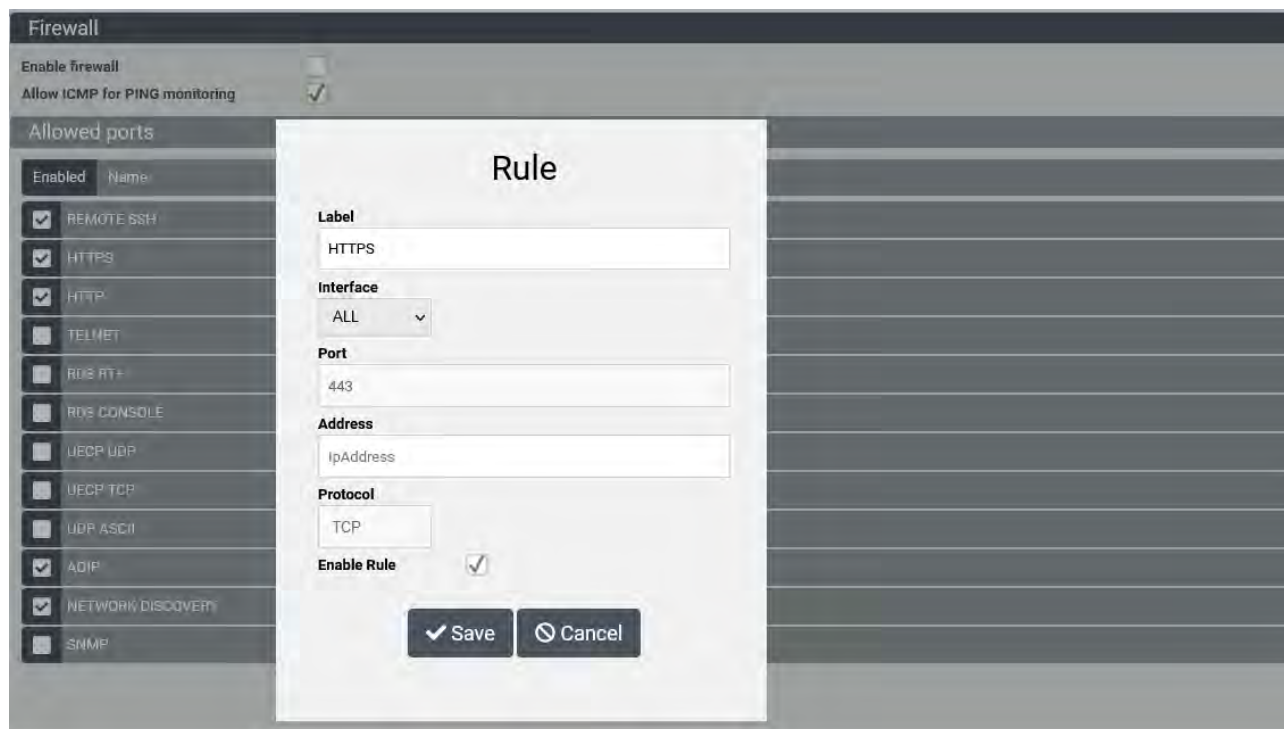
- Download the certificate,
- Display the advanced parameters of the web browser (Mozilla Firefox, Google Chrome) or the Internet Options/Content (Microsoft Edge).

- Display security options
- Open the certificate manager and import the certification previously downloaded.

 This certification is also valid with other WorldCast Systems products of the latest generation.

8.9.3. Firewall

Path: **System**/Firewall



Enable the firewall and allow/block the unit's ports.

The firewall is disabled by default. It must be enabled for relevant ports to actually be blocked.

! For security reason, we recommend enabling the firewall and blocking all unused ports. For ports used only occasionally, allow them temporarily when required and block them when done.

By default, the following protocols are authorized:

- ICMP
- HTTPS on port 443 (web application)
- Network discovery on ports 5577-5578

Click on the name of a rule to manage it: the rule window opens. You can then modify the applicable ethernet interface(s), the associated port, the IP address if necessary, the protocol (TCP, UDP, or both) and enable it.

Create a new rule by clicking the Create button.

8.9.4. Users



This is where web site connection settings can be modified. This page is only visible to administrators.

A single account is available by default: the administrator account (Admin / admin by default). The administrator has access to all pages and can modify any information.

To modify an existing account, click on the name.

To create a new user, click the button **+ User**.

In the user window enter/modify required information.

Verify the password by clicking .

Select the access level:

- Admin: full access
- Guest: read-only access to all pages except the user management page.

 *You may change login names but make sure each is unique!*

A user account can be deleted by clicking the button  next to the name.

 *The Admin account cannot be deleted.*

! For more security, choose a strong password that includes a minimum of 8 characters, including uppercase, lowercase and numbers.

 *The icon  indicates accounts with a weak password.*

8.9.5. SNMP/SMTP

Path: **System**/SNMP/SMTP

SNMP Agent	SMTP Server Configuration
Minutes between Heartbeats: 10 Local Agent Port: 161 Local Trap Port: 162 Community GET 1: public Community SET 1: private Community GET 2: Community GET 2 Community SET 2: Community SET 2 Max Pending Traps: 500 MIB: Download	Enable: ☐ Address: Address Port: 587 Authentication Needed: yes Login: Login Password: Password TLS: yes
SNMP Agent 1 : Disabled. Current pending traps: 0 Enable: false Manager IP Address: 0.0.0.0 Remote Manager Port: 162 Trap Community: public Notification Type: Trap SNMPv2c Number of Repeat: 0 Ack Timeout: 30.0 Max Attempts: 3 Delete pending traps: Delete	SMTP Email Configuration To: To Reply-to: Reply-to Content Type: Undefined Possible Keywords <PRODUCTNAME>, <PRODUCTDESCRIPTION>, <LOCATION>, <SERIALNUMBER>, <MAXPRIO>, <IPADDR> Subject Template Product: <PRODUCTNAME> (<PRODUCTDESCRIPTION>) SN: <SERIALNUMBER> Location: <LOCATION> Send Email every: 1 h Send at/from: 0 : 0 Minimum time between two attempts (s): 10 Minutes between Heartbeats: 60 Status: OK
SNMP Agent 2 : Disabled. Current pending traps: 0 SNMP Agent 3 : Disabled. Current pending traps: 0 SNMP Agent 4 : Disabled. Current pending traps: 0	SMTP Actions Send Test Email: Send Delete all pending events: Delete
SNMP Actions Trap sending test: Send Replay traps not acknowledged: Replay Delete all pending traps: Delete	

SNMP

Minutes between Heartbeats: sends the heartbeat every X minutes. This trap makes it possible to check that the unit is connected to the network.

Local ports: set the ports on which the traps are sent.

GET / SET communities: Set whether a community is private or public. GET 2 and SET 2 communities can be used for a second manager (up to four managers can be set, see next section) or for test and maintenance.

Max pending traps: set the number of traps in the manager queue, between 255 and 1000.

MIB: to download the MIBs click on the button. The mibs.zip file includes the Ecreso MIB and the IRT MIBs.

SNMP manager settings

The equipment enables multiple addresses to be configured for SNMP notifications. Any of the configured managers can acknowledge traps.

The unit is compliant with SNMPv1 and SNMPv2c versions. Notifications can be transmitted as SNMPv1, SNMPv2c or Inform SNMPv2c type traps. Select the notification type for all traps of a given manager

SNMPv1 and SNMPv2c type traps are sent n times (Number of repeats) before they are deleted from the queue.

Case of Inform SNMPv2c type traps:

Inform SNMPv2c traps require manager acknowledgment.

A trap is sent n times (Number of repeats) and stored in a queue.

If the trap is acknowledged, it is deleted from the queue.

If the trap is not acknowledged, it will be sent up to m times (Max attempts) in a t delay (Ack timeout). After m tries, the trap is deleted even if it has not been acknowledged.

The queue uses the FIFO principle. If the number of traps in the queue becomes too great, the oldest traps will be deleted, even if they have not been acknowledged. The size of the queue is set on the SNMP Agent page (Max pending traps).

SNMP actions:

Trap sending test: enables the user to carry out a test according to the trap settings.

The user may replay traps that have not been acknowledged yet.

The user may also delete pending traps that have not been acknowledged yet.

SMTP server configuration

Set the sender account. Ask your network administrator for SMTP settings.

Note that you must have a valid DNS setup if you want to use SMTP host name. Otherwise you must use a numeric IP address xxx.xxx.xxx.xxx.

E-mail Configuration:

Enter the recipient address.

Subject template: it can be formatted so that it contains the necessary information. Use <KEYWORDS> for dynamic information.

The following information can be inserted:

<PRODUCTNAME>	Product name
<PRODUCTDESCRIPTION>	Product description
<LOCATION>	Product location
<SERIALNUMBER>	Product serial number
<MAXPRIO>	Max level of priority among alarm sent envoyées
<IPADDR>	Product IP address

“Send mail every” enables the user to send messages in a batch every “X” minutes if desired. When waiting for the time chosen by the user, the unit stores the messages.

-  If a text address is set, the DNS must be configured so as to allow name resolution.
-  Make sure the gateway is correctly configured for the unit to be able to reach the SMTP server (Firewall page, section 8.9.3).

8.9.6. Alarms

Path: **System/Alarms**

On this page, enable the sending of traps and/or emails for the different alarms and set their priority level.

The priority level is included in the traps and can, for example, be used by an SNMP agent as a filter criterion.

For email messages, make sure that the SMTP client is correctly configured (see section 8.9.5).

IRT FM Single Transmitter Traps			
Trap	Enable All Disable All		
fmSTTransmitterOpMode	☒	1	
fmSTRFPresent	☒	1	
fmSTFault	☒	1	
fmSTWarning	☒	1	
fmSTLocalMode	☒	1	

System Alarms			
Trap	Enable All Disable All		
Email	Enable All Disable All		
Hearbeat	☐	Trap	☒ Email 1
Equipment On	☒	Trap	☒ Email 1
Configuration Changed	☒	Trap	☒ Email 1
Local mode	☒	Trap	☒ Email 1
Ambient Temperature	☒	Trap	☒ Email 1
Volt Aux.	☒	Trap	☒ Email 1
Internal Communication	☒	Trap	☒ Email 1
Logging	☒	Trap	☒ Email 1
Loss of Physical ETH 0	☒	Trap	☒ Email 1
Loss of Physical ETH 1	☒	Trap	☒ Email 1
Sound Processor License	☒	Trap	☒ Email 1
SmartFM License	☒	Trap	☒ Email 1
RDS License	☒	Trap	☒ Email 1
Activation License	☒	Trap	☒ Email 1
AoIP License	☒	Trap	☒ Email 1
MPXoIP License	☒	Trap	☒ Email 1
SureStream License	☒	Trap	☒ Email 1
SynchroStream License	☒	Trap	☒ Email 1
Invalid Data	☒	Trap	☒ Email 1

Audio Alarms			
Trap	Enable All Disable All		
Email	Enable All Disable All		
Input Switch	☒	Trap	☒ Email 1
Input Fault	☒	Trap	☒ Email 1
Input AES 1	☒	Trap	☒ Email 1
Input AES 2	☒	Trap	☒ Email 1
Input ANA 1	☒	Trap	☒ Email 1
Input MPX 1	☒	Trap	☒ Email 1
Input MPX 2	☒	Trap	☒ Email 1
Input AOIP	☒	Trap	☒ Email 1
Input Player	☒	Trap	☒ Email 1

Network Alarms			
Trap	Enable All Disable All		
Email	Enable All Disable All		
UECP Timeout 1	☒	Trap	☒ Email 1
UECP Timeout 2	☒	Trap	☒ Email 1
UECP Timeout 3	☒	Trap	☒ Email 1
UECP Timeout 4	☒	Trap	☒ Email 1
UECP Timeout 5	☒	Trap	☒ Email 1
UECP Timeout 6	☒	Trap	☒ Email 1

Transmission Alarms			
Trap	Enable All Disable All		
Email	Enable All Disable All		
Fault	☒	Trap	☒ Email 1
Warning	☒	Trap	☒ Email 1
3 dB	☒	Trap	☒ Email 1
1 dB	☒	Trap	☒ Email 1
VSWR	☒	Trap	☒ Email 1
Interlock	☒	Trap	☒ Email 1
RF On	☒	Trap	☒ Email 1
RF Present	☒	Trap	☒ Email 1
SmartFM Status	☒	Trap	☒ Email 1
SmartFM	☒	Trap	☒ Email 1

IP Codec Alarms			
Trap	Enable All Disable All		
Email	Enable All Disable All		
IP Rx Error	☒	Trap	☒ Email 1
Audio Mismatch	☒	Trap	☒ Email 1
Sync Failed	☒	Trap	☒ Email 1
NTP Sync Fault	☒	Trap	☒ Email 1
Loss of IP Connection	☒	Trap	☒ Email 1
Min. Jitter Buffer Alarm	☒	Trap	☒ Email 1

-  No trap is sent on automatic audio switch.

8.9.7. License

Path: **System**/License

Activation

Generate Temporary Key

Temporary Key

A03_0003-9E86137033655B3744BF3F6577273DECB32AA7B8A1D380

Request license

Add a License

A03_0003 -

Apply License

Remove a License

A03_0003 -

Remove License

Licenses

Sound Processor	Permanent	●
SFN	Disabled	
Full RDS	Permanent	●
SmartFM	Permanent	●
AoIP Decoder	Permanent	●
MPXoIP Decoder	Permanent	●
SureStream	Permanent	●
SynchroStream	Disabled	●
Activation	Permanent	●
Popup Display Before License Expiration		✓

On this page, view the current licenses, and set new ones.

Some options are available either as permanent or as temporary licenses: Sound Processor, RDS, SmartFM and Activation.

For these licenses, a yellow indicator ● warns when there are less than 30 days left.

The message that warns of impending expiration at login can be disabled.

See Appendix A for more information.

8.10. Configuration Wizard

The wizard allows you to do the initial configuration of the transmitter.

The steps are described in section 4.4.

! *If the transmitter is already set, running the configuration wizard will reset the audio configuration.*

9. SOUND PROCESSOR

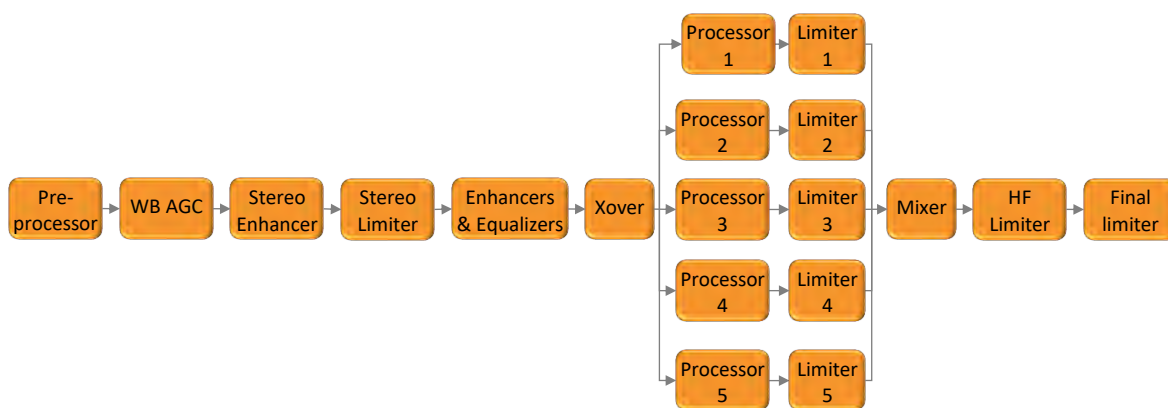
9.1. Overview

i The 5-band sound processor is a cost option. Without the license, available features are limited.

The Ecreso FM features an integrated 5-band sound processor. This fully digital sound processor offers a unique signal quality and outstanding reliability as no additional hardware is required.

All processing calculations are performed by the direct to channel digital modulator, from audio to RF signal.

Here is a block diagram of the processor:



9.2. Presets

There are two types of factory presets:

- WB presets (wide band)
- 5B presets (five bands) - only available with the Sound processing option

Unlike many processors, there is no ‘bypass’ preset, but a real bypass parameter (see parameter description below).

The presets WB PROTECT and 5B FINALIZE are dedicated to protect your broadcasting chain against over-deviation without audible distortion.

All other presets can be used as unique processor or secondary processor in your chain. Don’t hesitate to try several presets from the list without taking their name as a main criteria choice. Those are only very general indications. Depending on your format, your expectations and the other radios available in your area, the best preset for you can be any of those. As soon as you identify a preferred preset, feel free to you use it as is, or fine tune a few parameters to better match your needs (see next sections)

Wide Band presets

Wide band presets	Factory Preset Name	Description
1	WB PROTECT	A transparent protection without additional gain or loudness, it only makes sure not to exceed your maximum deviation.
2	WB CLASSICAL	To finalize your program in a very soft and purist way.
3	WB DIGIPLEX	This preset is fully compatible with FMX Digiplexer. The user will only need to adjust the AGC drive and the Final Limiter to get the level as it was on the previous unit.
4	WB BOOST	This wide band preset can boost your loudness and offer a more flattering sound. If you have the 5 band license on your transmitter, it can also be used to enhance and control your stereo image.

5 Band presets (only available with the Sound processing option)

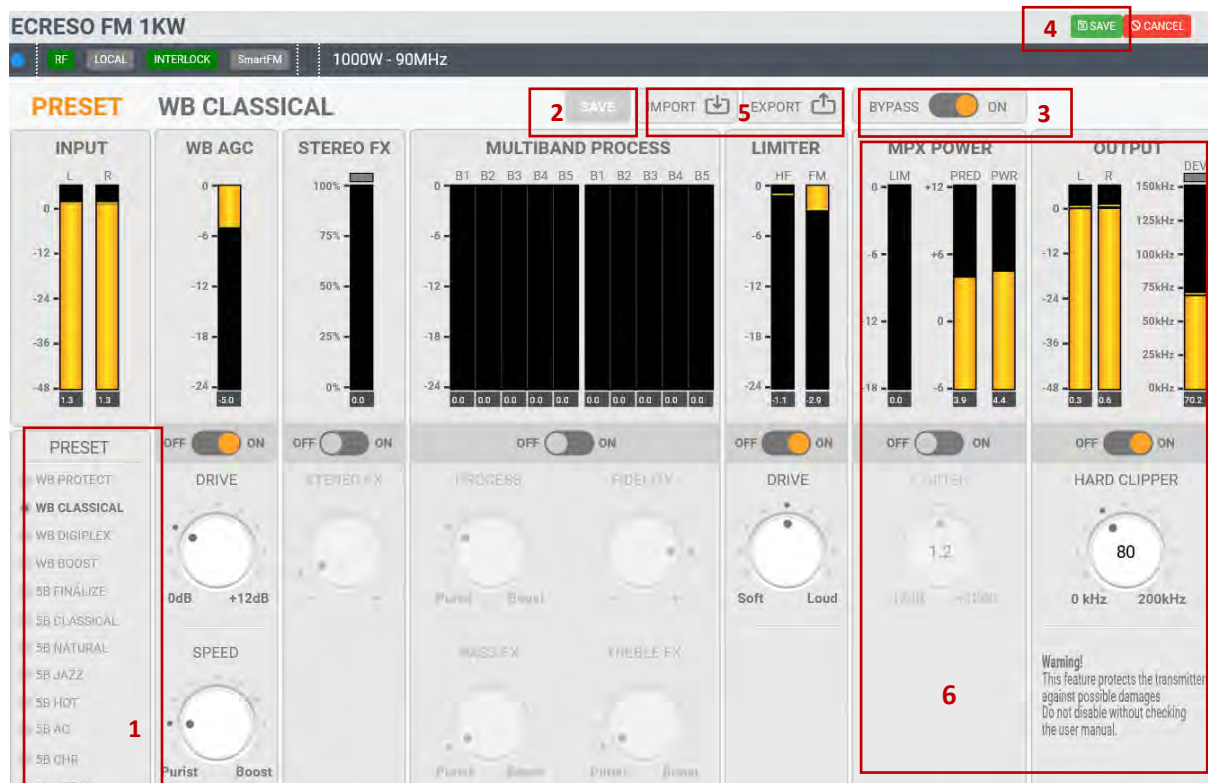
5 band presets	Factory Preset Name	Description
5	5B FINALIZE	A more efficient protection as it uses the 5 band structure configured in a transparent way. It ensures not to exceed your maximum deviation.
6	5B CLASSICAL	A very purist and clean preset to adapt soft and classical format to FM broadcasting.
7	5B NATURAL	Neutral and efficient preset to embellish the sound while keeping a spectrum similar to the input source.
8	5B JAZZ	Ideal for jazz but not only, this preset offers a flattering sound, still purist, combined with a perfect control of the peaks
9	5B HOT	More basses and high frequencies for this all-around preset.
10	5B AC	Strong sound, power and loudness. Ideal for rock or commercial formats
11	5B CHR	Very powerful preset for commercial stations, with a strong presence in the medium-high frequencies.
12	5B URBAN	Very powerful preset for stations looking loudness and basses.

All factory presets can be downloaded on the [WorldCast Systems](https://www.worldcastsystems.com) website.

Presets management is available on the web site, see section 8.7.5.

9.3. Management using the web interface

The sound processor settings are available on the Transmitter/Modulation/Sound Processor page of the embedded web site.



To select a preset, simply click on its name in the list (1). The selected preset is automatically applied.

When the 5-band Sound process license is present, if parameters are greyed out, make sure the processor is enabled, and not on bypass (3). Once the processor is enabled (ON), click the Save button in the main toolbar (4). The parameters are now available.

To modify parameters, turn the various buttons: click on the dot corresponding to the value you want to set, or use the scroll wheel when the mouse is over the button.

Some presets include specific or set algorithms or functions. In that case, a lock is displayed in the parameter to indicate it cannot be modified.

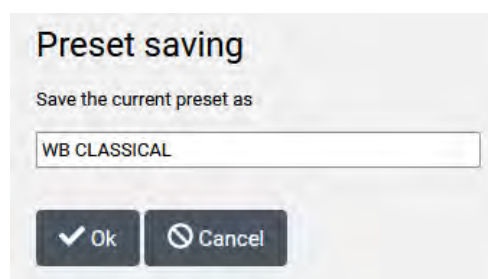
9.3.1. Saving a preset

When preset parameters are modified, the effects are immediate. However, to store the modified preset you need to save it, using the button in the sound processing toolbar (2).

Upon saving, you may change the name of the preset in the pop-up window. The new preset will then replace the previous one in the list.

9.3.2. Import/Export

To apply a modified preset on a different ECRESO FM transmitter, export and import it using buttons in the sound process toolbar (5).



When exporting, a .sp file including all parameters for the current preset is created and saved locally or on the network. This file can then be imported into another transmitter.

Factory presets can be downloaded on the [WorldCast Systems](https://www.worldcastsystems.com) website to be reimported if needed.

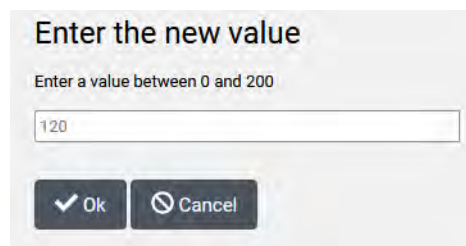
9.3.3. Transmitter settings

Note that the MPX power limiter and hard clipper are transmitter parameters (6), they are set for the whole transmitter, not for individual sound processing presets (see section 1.1 for more information).

To enable/disable them, slide the corresponding ON/OFF buttons.

To adjust their values, you may either click on the dots like with other buttons, or click on the button to open a pop-up windows and enter a specific value.

Click the Save button in the main toolbar (4) after modifying MPX power limiter and hard clipper settings.

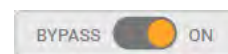


 *The displayed output level does not take into account the hard clipper.*

9.4. Sound process parameters

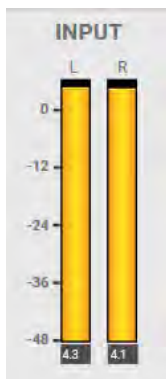
BYPASS

Unlike several other FM processors, the bypass is not a preset, but a real bypass feature that roots the signal directly to the output without going through the sound processor algorithms.



 *The MPX Power Limiter and the final Hard Clipper are not affected by this BYPASS but only by their own ON/OFF buttons.*

INPUT STAGE



The first vu-meters indicate the audio levels (left and right) at the input of the processor. The units are in dBr, relative to the input level setting of the current audio source. For example, if you feed the analog audio input of the transmitter with a +12 dBu signal and if you configure the corresponding input level setting to 12 dBu as well (see section 5.6), the vu-meter will indicate 0 dBr. Be aware that you may see different results if you add gain to your signal before the processor, in the input settings page: right trim, drive or pre-emphasis.

In general, the processor will operate at its best when the peak meter indicates 0 dBr. Obviously this must be observed while the studio is playing a typical content. If it is a soft musical part, it is better to wait until the content changes. Don't hesitate to observe during several minutes. If the peak meter is too low or too high, adjust your input level setting (see

section 5.6).

AGC

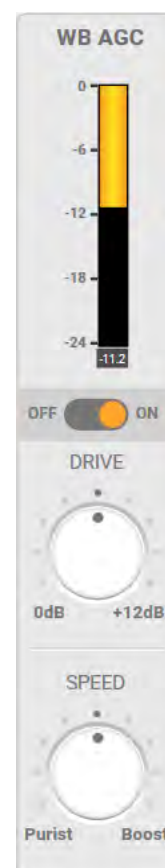
The automatic gain control softly regulates the audio level thanks to predictive algorithms, in order to be clean and unnoticeable for the human ear. It also includes a noise gating algorithm to avoid increasing the level in case of silence.

The vu-meter shows the attenuation in dBr performed by the AGC stage after its drive. When the gating is activated and the AGC frozen, the vu-meter turns black. You can easily see it if you feed the transmitter with a high level (AGC attenuation clearly visible on the vu-meter) quickly followed by a silence. Note that the gate operates in different ways depending on the original preset you have selected.

The ON/OFF button allows enabling or disabling the AGC algorithm. It is recommended to always keep it on, which is the case even in the WB PROTECT and 5B FINALIZE presets to avoid audible distortion in case of wrong input level.

The DRIVE setting is a fixed gain applied at the input of the AGC. It sets the range in which your AGC will work. Configure it to 0 dB to compensate high levels only: the AGC stage will work as a soft protection but it may result in a loss of loudness. Increase the drive setting to also compensate low audio levels, which is recommended in most cases. The set value represents the maximum gain the AGC will be able to apply to your program.

The SPEED setting can be used to configure a slow or fast gain control. Decrease the parameter for purist formats or increase it (Boost) for commercial formats. You should see a real time impact on the AGC vu-meter especially if you play a punchy number followed by a softer piece. With a slow AGC, the soft piece will need some time to be compensated and you will see the AGC releasing the gain very slowly. On the contrary, with a faster configuration, the AGC compensates the soft content piece as soon as possible.



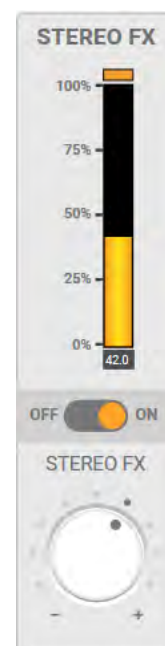
STEREO EFFECT (only available with the Sound processing option)

The Stereo FX section controls the stereo of your signal. It is fully compatible with mono contents; no stereo will be generated by the algorithm if there is none at all on your audio source. When feeding the transmitter with stereo content, two algorithms are applied: stereo enhancement and stereo limitation. The stereo enhancer slightly increases the stereo effect. The stereo limiter ensures a proper balance between mono and stereo components to avoid reception issues on difficult coverage areas. If you feed the transmitter with an “extreme” signal full of stereo (without mono component), the limiter will put back some mono to your broadcasted signal.

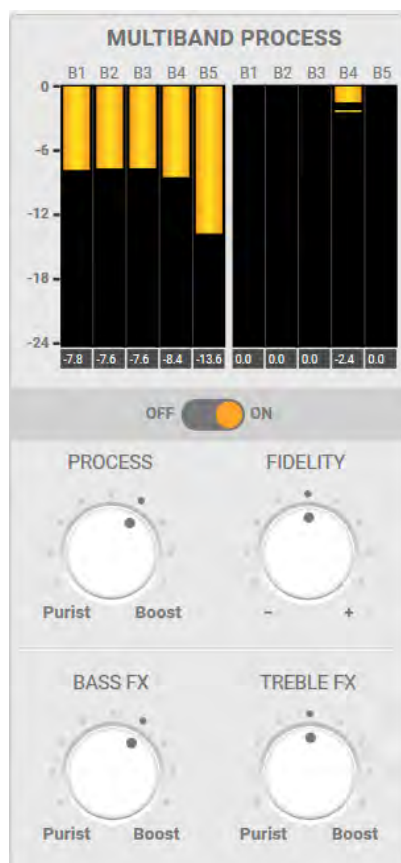
The vu-meter shows the quantity of stereo (in %) on the broadcasted signal. 0% means the current signal is mono while a 100% value would mean both L+R and L-R have the same level. The LED on the top of the vu-meter indicates the activity of the stereo limiter.

The ON/OFF button enables or disables the Stereo FX algorithm.

The STEREO FX parameter sets how much stereo will be added to the program. The minimum value will not change much the audio source but the limiter will be enabled, while high values will also increase the stereo image.



MULTIBAND PROCESS (only available with the Sound processing option)



The multiband process includes several stages: bass and treble enhancers, equalization, 5-band processing, 5-band limiters and a mixer that recombines the audio.

The first 5 vu-meters show the activity of the 5-band processor. Each vu-meter represents the attenuation in dBr performed by each band from low to high frequencies. Depending on presets, the 5-band processor stage includes an intelligent gating feature visible when the vu-meter turns black. The 5 other vu-meters indicate the peak control performed by the 5-band limiters. They are used to perform faster and with less attenuation than the previous ones but it depends on the preset and on the program material.

The ON/OFF button enables or disables the multiband process stage.

The PROCESS knob is an intelligent setting that acts on several gains within the processing chain to provide a more or less processed sound. Reduce the value to “purist” for a natural sound but most likely less presence. Increase the parameter to “boost” for more multiband processing and increased loudness.

The FIDELITY setting defines how the audio spectrum can or cannot be affected by the processor. High values lead to a very natural and purist sound where the bands will also be linked together to keep the original audio spectrum. Lowest values allow the processor to provide a stronger sonic signature among distinct program materials, and it also leads to slight loudness increase.

The BASS and TREBLE settings allow increasing low and/or high frequencies. Setting them to the minimum value will result in a totally transparent sound (neither equalization nor enhancers applied). Increasing the

settings will result in a more colorful sound. Note that the way the equalizers and enhancers perform, also depends on your original factory preset.

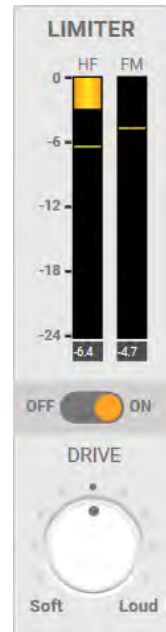
FINAL LIMITERS

This stage limits the audio to a maximum peak value to prevent the deviation to exceed your setting. It also increases the loudness (depending on presets and settings) without audible distortion. It is a very fast and powerful stage with HF and FM Limiters. The HF Limiter is dedicated to trebles while the FM Limiter covers the whole audio bandwidth.

Each vu-meter shows the peak control performed by each limiter.

The ON/OFF button enables or disables the Final Limiters stage. It is recommended to always keep this stage ON.

The DRIVE setting controls the gain applied at this stage. Configure it to the minimum for soft and very purist formats. Increase the parameter step by step if you want to get more loudness.



10. REMOTE CONTROL AND MONITORING WITH THE GPIO BOARD

10.1. Introduction

This function is available when the optional standard or analog GPIO board is installed on the transmitter. It provides an interface between ECRESO transmitters and external systems. The modules are remotely controlled via “RC” inputs using opto isolators. Working state and alarms are sent to “RM” outputs via relays, or “RM ANA” analog outputs on the analog board.

10.2. Standard GPIO board

10.2.1. Description of control and monitoring functions

Control commands work when an impulsion longer than 100 ms is sent to the corresponding input.

There are eight control functions:

- Power on: turns on the transmitter
- Power off: turns off the transmitter
- RF on: enables the RF
- RF off: disables the RF
- TA on: enables the TA (basic RDS)
- TA off: disables the TA (basic RDS)
- DSN main: enables the main DSN (basic RDS)
- DSN alt: enables the alternative DSN (basic RDS)

Control commands can also be used to trigger presets. See section 0 for more details.

Outputs are relays that include a normally closed or normally open contact. When an event occurs in the unit, the corresponding relay is activated.

Seven monitoring functions are associated with relays:

- Local: indicates if the unit is in local mode
- Fault: indicates a transmitter fault
- Warning: indicates an alarm linked to the internal working of the transmitter (temperature, voltage...)
- RF: indicates if the RF is enabled
- On: indicates if the transmitter is not in standby mode
- Off: indicates if the transmitter is in standby mode
- VSWR: indicates if there is a VSWR error

10.2.2. Remote control function pinout

Function	Remote Control	Input name	Common
POWER ON / PRESET 1*	RC1	OPT1A(20)	RC_COMMUN(24)
POWER OFF / PRESET 2*	RC2	OPT2A(8)	RC_COMMUN(24)
RF ON / PRESET 3*	RC3	CONF1(21)	RC_COMMUN(24)
RF OFF / PRESET 4*	RC4	CONF2(9)	RC_COMMUN(24)
TA ON / PRESET 5 or 1*	RC5	CONF3(22)	RC_COMMUN(24)
TA OFF / PRESET 6 or 2*	RC6	CONF4(10)	RC_COMMUN(24)
DSN MAIN / PRESET 7 or 3*	RC7	CONF5(23)	RC_COMMUN(24)
DSN ALT / PRESET 8 or 4*	RC8	CONF6(11)	RC_COMMUN(24)

Numbers in parenthesis indicated the pin number on the DB25 connector.

* The GPIO board can be used to manage presets. See section 0 for more details.

10.2.3. Remote monitoring function pinout

Event	Remote Monitoring	Output name	Common
LOCAL	RM1	REL1_RT(1)	REL1_C(14)
FAULT	RM2	REL2_RT(2)	REL2_C(15)
WARNING	RM3	REL3_RT(3)	REL3_C(16)
RF (ON/OFF)	RM4	REL4_RT(4)	REL4_C(17)
ON	RM5	REL5_T(18)	REL5_C(6)
OFF	RM6	REL5_R(5)	REL5_C(6)
VSWR	RM7	REL6_RT(19)	REL6_C(7)

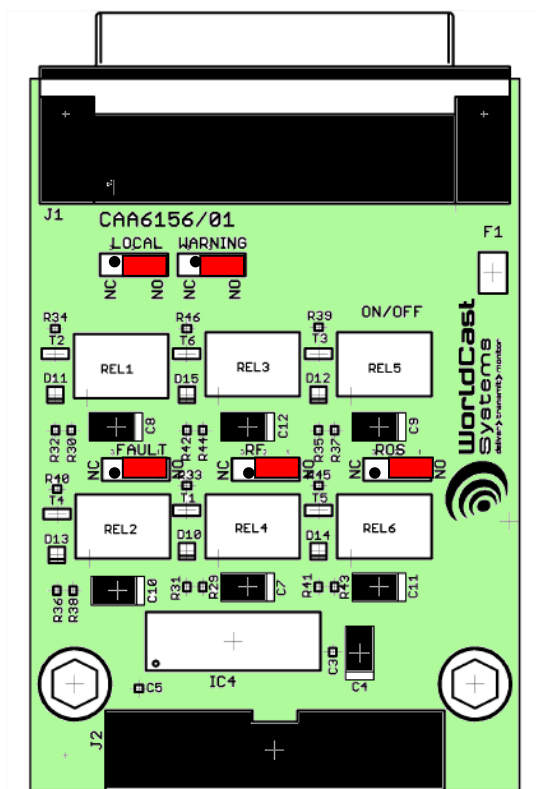
Numbers in parenthesis indicated the pin number on the DB25 connector.

A closed link indicates valid information when configuration is as in the following table.

Default jumper position:

Relay	Positions	Contacts
REL_1RT	JUMP2[1 ;2]	NO
REL2_RT	JUMP3[1 ;2]	NO
REL3_RT	JUMP5[1 ;2]	NO
REL4_RT	JUMP1[1 ;2]	NO
REL6_RT	JUMP4[1 ;2]	NO

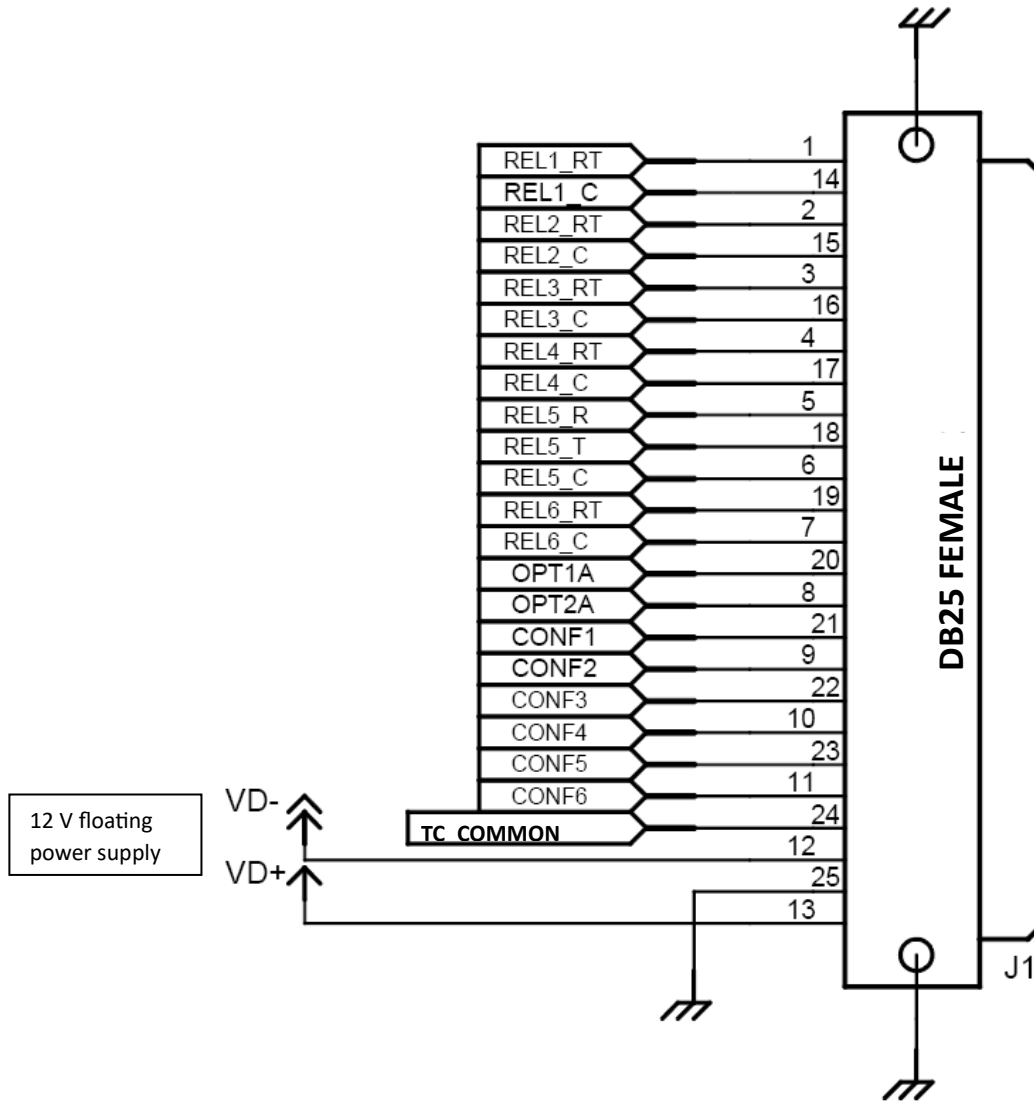
Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.



All jumpers are normally open on the GPIO board.

- i** Switching to local mode (relay 1) prevents remote control: it therefore disables all other relays and commands.

10.2.4. Physical representation of the GPIOs



10.2.5. Management using serial commands

A set of commands makes it possible to override the control board to modify specific RM outputs and read specific RC inputs.

To do so, set the RC you want to control (SYS.GPIO.IN.MASK) and the RM you want information from (SYS.GPIO.OUT.MASK).

When these commands are used, the control board cannot monitor nor control them.

NAME	Access (R/W)	Serial port possible value	Comments
SYS.GPIO.IN.ACT	R	XX X=[A..F;0..9]	Indicates the corresponding RC when assigned to an external unit.
SYS.GPIO.IN.MASK	R/W	XX X=[A..F;0..9]	Sets the RC control either by the control board or by an external unit (IP board). Hexadecimal code: each bit corresponds to an input. Ex: A1 (10100001) indicates the RC 1, 6 and 8 are assigned to the IP board.
SYS.GPIO.OUT.ACT	R/W	XX X=[A..F;0..9]	Enables the corresponding RM when controlled by an external unit.
SYS.GPIO.OUT.MASK	R/W	XX X=[A..F;0..9]	Sets the RM control either by the control board or by an external unit (IP board). Hexadecimal code: each bit corresponds to an input: Ex: 21 (00100001) indicates RM 1 and 6 are controlled by the IP board.

Serial commands used to configure RC/RM

Remote control binary values:

Remote Control	Binary value
RC1	xxxxxxx1
RC2	xxxxxx1x
RC3	xxxxx1xx
RC4	xxxx1xxx
RC5	xxx1xxxx
RC6	xx1xxxxx
RC7	x1xxxxxx
RC8	1xxxxxxx

Remote monitoring binary values:

Remote Monitoring	Binary value
RM1	xxxxxxx1
RM2	xxxxxx1x
RM3	xxxxx1xx
RM4	xxxx1xxx

RM5	xxx1xxxx
RM6	xx1xxxxx
RM7	x1xxxxxx

However, the format of values returned by serial commands is hexadecimal.

You must then convert each 4 digit set as per the following table:

Hexadecimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

Examples:

If the command

```
SYS.GPIO.IN.ACT
```

returns

```
8A
```

You must convert the hexadecimal value in binary, ie 8A=10001010, which indicates that RC 2, 4 and 8 are activated.

To control RM 3 and 5, convert the binary value 00010100: you get 14 as per the above table. You must then send the command:

```
SYS.GPIO.OUT.MASK=14
```

10.3. Analog GPIO board

10.3.1. Description of control and monitoring functions

Its working principle is similar to that of the standard board.

On this board, there are four control functions:

- Power on: turns on the transmitter
- Power off: turns off the transmitter
- RF on: enables the RF
- RF off: disables the RF

Four analog monitoring functions

- Forward power
- Reflected power
- 2 user-defined functions that can monitor one of the following:
 - Ambient temperature
 - Heatsink temperature
 - Fan 1 speed (or fan 2)
 - Amplifier voltage
 - Amplifier current
 - Amplifier power

And seven monitoring functions are associated with relays:

- Local: indicates if the unit is in local mode
- Fault: indicates a transmitter fault
- Warning: indicates an alarm linked to the internal working of the transmitter (temperature, voltage...)
- RF: indicates if the RF is enabled
- On: indicates if the transmitter is not in standby mode
- Off: indicates if the transmitter is in standby mode
- VSWR: indicates if there is a VSWR error

10.3.2. Remote control function pinout

Function	Remote Control	Input name	Common
POWER ON / PRESET 1*	RC1	OPT1(20)	RC_COMMUN(24)
POWER OFF / PRESET 2*	RC2	OPT2(8)	RC_COMMUN(24)
RF ON / PRESET 3*	RC3	OPT3(21)	RC_COMMUN(24)
RF OFF / PRESET 4*	RC4	OPT4(9)	RC_COMMUN(24)

Numbers in parenthesis indicated the pin number on the DB25 connector.

* The GPIO board can be used to manage presets. See section 0 for more details.

10.3.3. Remote analog monitoring function pinout

Event	Remote Monitoring	Output name	Common
FORWARD POWER	RM ANA 1	ANA_OUT_A(11)	GND(25)
REFLECTED POWER	RM ANA 2	ANA_OUT_B(23)	GND(25)
CONFIGURABLE* 1	RM ANA 3	ANA_OUT_C(10)	GND(25)
CONFIGURABLE* 2	RM ANA 4	ANA_OUT_D(22)	GND(25)

Numbers in parenthesis indicated the pin number on the DB25 connector.

* CONFIGURABLE: T AMB or FAN 1 or V1+V2/2 or HEAT SINK or FAN 2 or I1+I2

10.3.4. Remote monitoring function pinout (relays)

Event	Remote Monitoring	Output name	Common
LOCAL	RM1	REL1_RT(1)	REL1_C(14)
FAULT	RM2	REL2_RT(2)	REL2_C(15)
WARNING	RM3	REL3_RT(3)	REL3_C(16)
RF (ON/OFF)	RM4	REL4_RT(4)	REL4_C(17)
ON	RM5	REL5_T(18)	REL5_C(6)
OFF	RM6	REL5_R(5)	REL5_C(6)
VSWR	RM7	REL6_RT(19)	REL6_C(7)

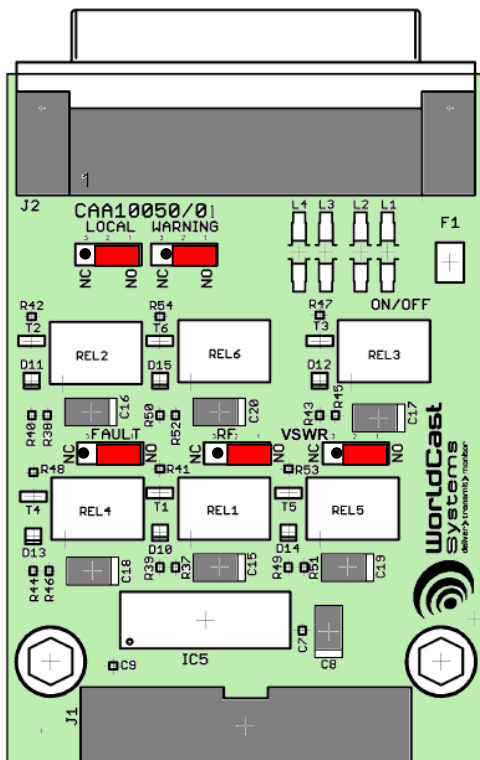
Numbers in parenthesis indicated the pin number on the DB25 connector.

A closed link indicates valid information when configuration is as in the following table.

Default jumper position:

Relay	Positions	Contacts
REL_1RT	JUMP2[1 ;2]	NO
REL2_RT	JUMP3[1 ;2]	NO
REL3_RT	JUMP5[1 ;2]	NO
REL4_RT	JUMP1[1 ;2]	NO
REL6_RT	JUMP4[1 ;2]	NO

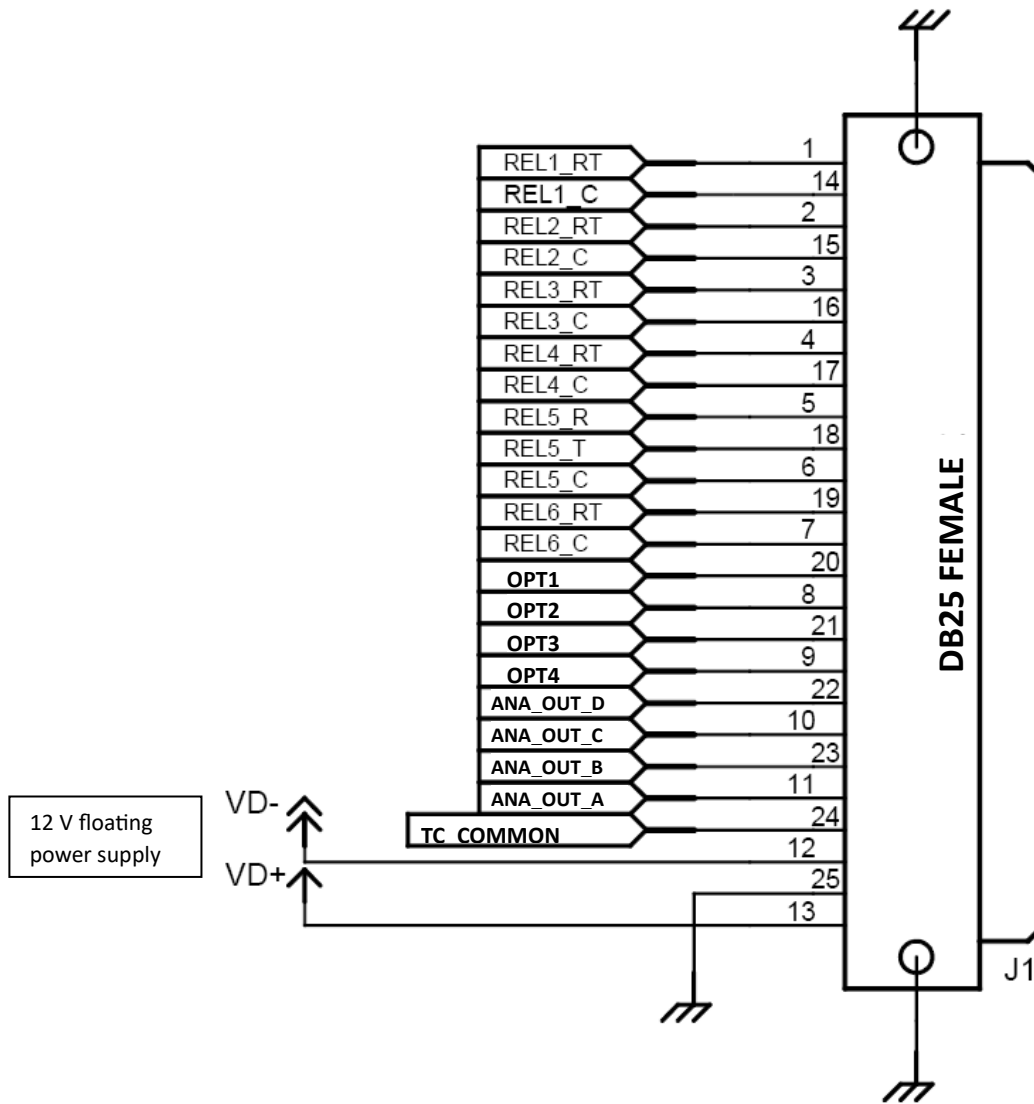
Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.



All jumpers are normally open on the analog GPIO board.

- i** Switching to local mode (relay 1) prevents remote control: it therefore disables all other relays and commands.

10.3.5. Physical representation of the analog GPIOs



10.3.6. Management using serial commands

To configure one of the analog functions, simply associate the desired function to one of the configurable outputs:

NAME	Access (R/W)	Serial port possible value	Comments
SYS.GPIO.CONF1	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the remote monitoring ANA3 on the optional GPIO Analog board
SYS.GPIO.CONF2	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the remote monitoring ANA4 on the optional GPIO Analog board

10.3.7. Specification of the analog GPIO board

The values the board can return depend on the power of the module :

Module power	100 W	300 W	600 W	1000 W
Max Value *				
Forward Power (W)	110	350	750	1100
Reflected Power (W)	20	25	50	50
Ambient temperature (°C)	65	70	90	90
Fan speed (rpm)	9500	9500	9500	9500
Voltage (V)	30	56	56	56
Heat (°C)	70	70	100	100
Intensity 1+ Intensity 2 (A)	8.5	10	32	32

* The output power is between 0 and +5 V; it varies depending on the measured value. It is at 5 V for the maximum values.

APPENDIX A: SOFTWARE OPTION MANAGEMENT

A set of options is available for Ecreso FM transmitters. Contact your WorldCast Systems dealer if you wish to install one of them after the initial transmitter purchase.

With the current version, the following software options are available:

- SmartFM
- Sound Processor
- Full RDS
- Dynamic RDS
- Audio IP decoder with SureStream
- MPXoIP
- Activation

For all options, two types of licenses are available:

- Permanent license: once applied, the function is permanently unlocked
- Temporary license: valid for a given number of days, it will need to be renewed for the function to remain available. The web application displays a warning when there are less than 30 days left before the expiration date. Time left only decreases when the transmitter is actually turned on.

You will need to retrieve the software activation key from the transmitter and forward to your WorldCast Systems contact. From this activation key a new key will be created which will unblock the desired option. The last step will be to send it to the transmitter.

This activation process can be done using the web application or serial commands. Follow the selected procedure as described below.

 *At the end of the procedure, users connected to the embedded web site will have to reload it to display pages related to the new option.*

A.1. Using the embedded web site

Display the page **System/License**.

Activation

Generate Temporary Key

Temporary Key

A03_0003-9E86137033655B3744BF3F6577273DEC832AA7B8A1D380

Request license

Add a License

A03_0003 -

Apply License

Remove a License

A03_0003 -

Remove License

Licenses

Sound Processor	Permanent	☐
SFN	Disabled	☐
Full RDS	Permanent	☐
SmartFM	Permanent	☐
AoIP Decoder	Permanent	☐
MPXoIP Decoder	Permanent	☐
SureStream	Permanent	☐
SynchroStream	Disabled	☐
Activation	Permanent	☐
Popup Display Before License Expiration		☒

Generate a temporary key and click the button to send by mail to WorldCast Systems.

Enter the new key sent by WorldCast Systems and apply this new license.

Applying or removing a license will disconnect the web interface.

Log in again and check on this page that the desired option is enabled.

A.2. Using serial commands

Connect a PC to the front panel USB-B port as described in chapter 7.

Send the command:

```
SYS.KEY.ADD
```

The return value will have the following format: *serial_number-key1*.

Send this key to WorldCast Systems.

A new key will be returned to you (*serial_number-key2*).

Once you have received the new key, send the command:

```
SYS.KEY.ADD= serial_number-key2
```

The unit will return:

```
$OPTION ACTIVATED
```

If the key is not recognized, the unit will return:

```
WRONG KEY
```

In that case you will need to contact WorldCast Systems.

You can check the current options by sending the command:

```
SYS.OPT.LIST
```

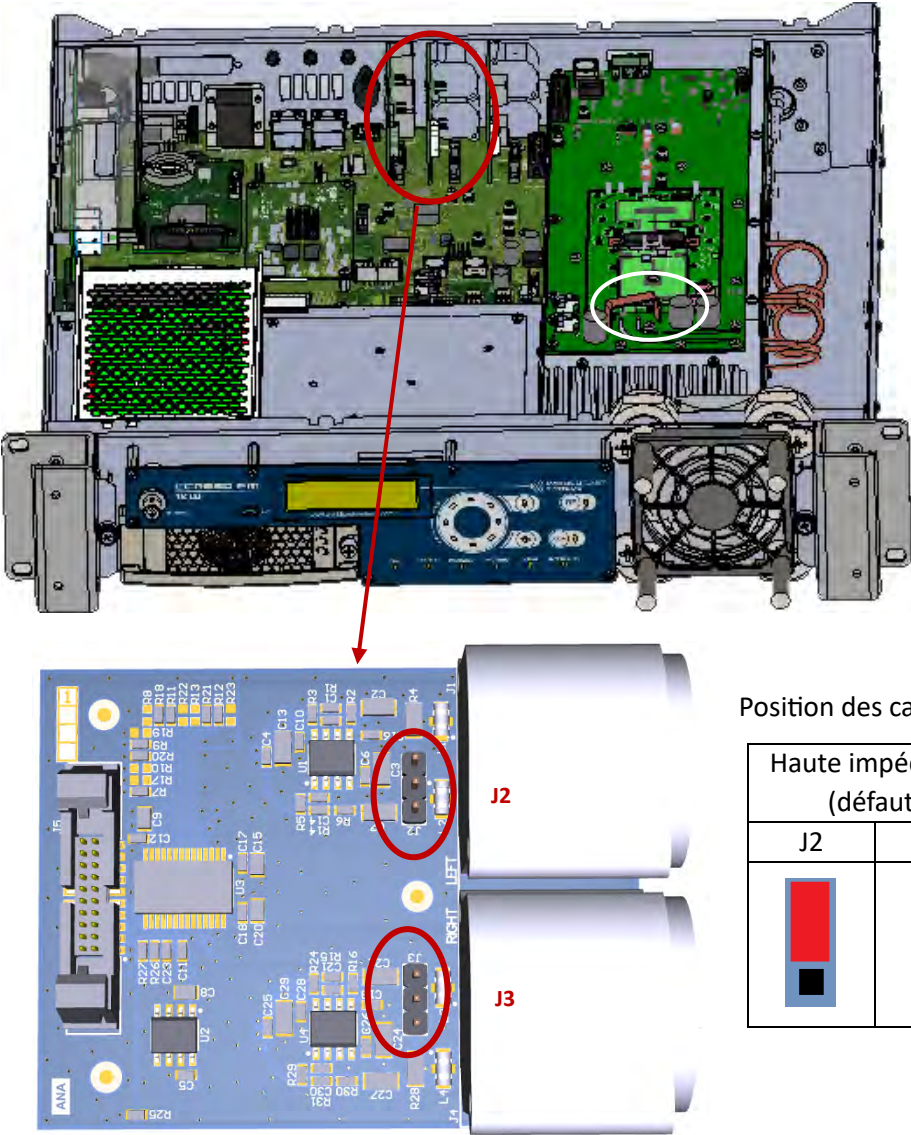
The unit will return the list of enabled options, including the new one.

APPENDIX B: ADJUSTING THE IMPEDANCE OF ANALOG INPUTS

Default impedance of analog inputs is high.

It can be set to 600 Ω by jumpers.

Before setting the jumpers, make sure that all cables are disconnected. Remove all the screws securing the cover.



Position des cavaliers sur une carte audio:

Haute impédance (défaut)		600 Ω	
J2	J3	J2	J3

APPENDIX C: TROUBLESHOOTING

Problem				Solution	
The transmitter is unresponsive. All LEDs are on, INIT.CONFIG / TX.CAP are displayed on the LCD screen. Rebooting has no effect				A factory reset was done on this transmitter, via the ENGI application or with the SYS.RAZ=RAZ command. You must configure the transmitter as needed and exit the menu (see Appendix D2).	
I enabled the RF on the transmitter (RF LED ON) but there is no power					
Check whether the transmitter is in alarm	⇒ The transmitter is not in alarm (no red LED)	Check the interlock LED	⇒ The interlock LED is OFF		A short-circuit must be established between both pins of the interlock on the rear panel (green connector).
		Check the power setting	⇒ Power is set to 0 W		Set the desired power (Web Page: Transmitter/Main/Parameters/Power setting). In case of new installation, we recommend starting with low power (10% of nominal power).
	⇒ The transmitter is in alarm (red LED present)	Check the VSWR LED	⇒ The VSWR LED is ON		There is an antenna adaptation issue. Check all the elements after the transmitter: cables, cavity, dummy load, antennas...
			⇒ The VSWR LED is OFF	Check the current on the main PSU	If the current is lesser than 2 A on the main PSU (Web Page Transmitter/Main/Monitoring/Current): Contact the hotline
		Check the status of PSU 1 and 2	⇒ One of the PSU is in alarm		Issue with a PSU: Contact the hotline

Problem				Solution
I enabled the RF on the transmitter (RF LED ON), power is OK, but the FAULT LED is ON (and not the 3dB LED)				
Check for the presence of audio	⇒ there is a loss of audio	Check settings for the audio alarm (web page Transmitter/Input Select/Silence Detector)	⇒ The audio alarm is set to trigger a fault type alarm	This behavior is normal. All alarms can be viewed on the front panel Alarms menu.
I enabled the RF on the transmitter (RF LED ON), power is OK, but FAULT and 3 dB LEDs are ON				Check the 3 dB alarm threshold (web page Transmitter/Main/Parameters/3 dB Threshold)
The OK and RF ON buttons on the front panel do not work				These buttons are enabled only in Local mode
The web page is greyed out, there is an orange LOCAL banner on top				Local mode is enabled on the transmitter. You need to disable it via the front panel. You cannot do this operation remotely
A fuse was broken, I changed it, but it immediately blew again.				If you have the surge protector option, it probably has protected the transmitter. Open the equipment and check the surge protector (green LED on the module itself) as well as the mains filter.
I don't care for the language of the Web interface				Display the login page (F5), click on the flag corresponding to the desired language and enter your login information.

APPENDIX D: MAINTENANCE

- !** *! For all maintenance operations requiring the chassis to be open, ESD work space and protections are necessary.
Systematically disconnect the transmitter from the main, and disconnect all cables (inputs, interlock, network...)*

To order spare parts, please contact your WorldCast Systems dealer.

D.1. Replacing the fuse

Reference for the Ecreso FM AiO Series 10 AT fuse: FXE00019

Required tools

- A cross-headed screwdriver

1. Unscrew the 3 hood screws, then slide the hood towards the rear to remove it:



2. Unscrew the 2 plexiglass protection screws and remove the protection:



3. Pinch the fuse cover to remove it:



4. Replace the fuse.
5. Reset the fuse cover back in place.
6. Screw the plexiglass protection back in place with 2 screws.
7. Slide the hood back in place and screw the 3 screws.

D.2. Changing the fan

Reference for the Ecreso FM AiO series fan kit: TFS01204

Required tools

- A cross-headed screwdriver
- An Allen-key, size 3

Procedure

! *Read the entire procedure to avoid any damage during maintenance process.*

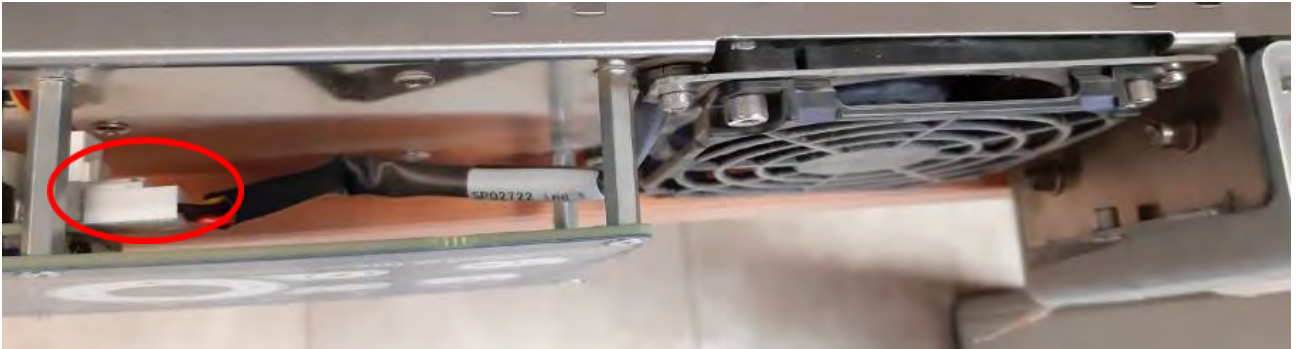
1. The fan can be extracted directly from the front. Remove first the front panel by unscrewing the two screws with a cross-headed screwdriver.



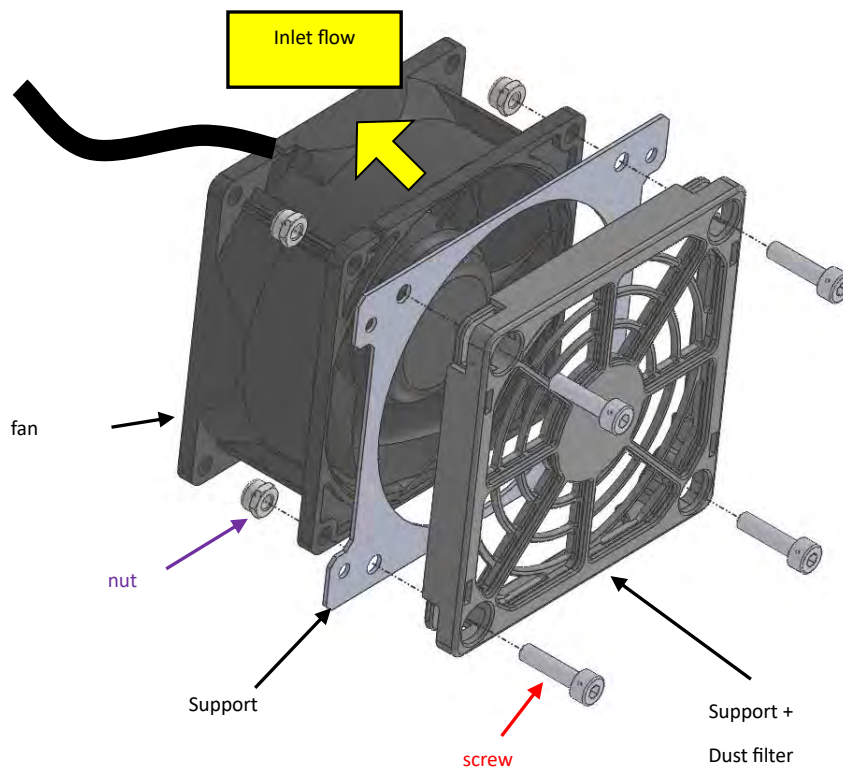
2. Unscrew the 4 screws of the support with the cross-headed screwdriver.



3. Unplug the fan cable and remove the fan from the module.

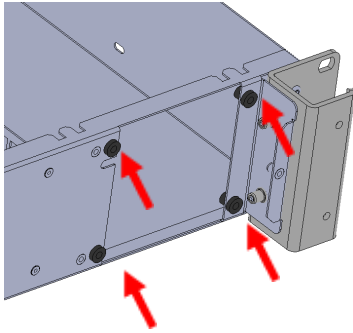


4. Unscrew the fan from the support with the Allen key.



5. Mount the new fan (respect inlet flow) on the support with the dust filter.

6. Check Flex Loc's state on the frame. If they are in bad shape, remove them with pliers and mount the ones included in the kit.



Flex-Loc
MX01901

7. Install the new fan in the module without damaging the fan cable, and plug the cable.
8. Screw the four screws to attach the support to the frame.
9. Screw the front panel back in place.

D.3. Changing the auxiliary PSU

D.3.1. Ecreso FM 300W-600W-1kW AiO series

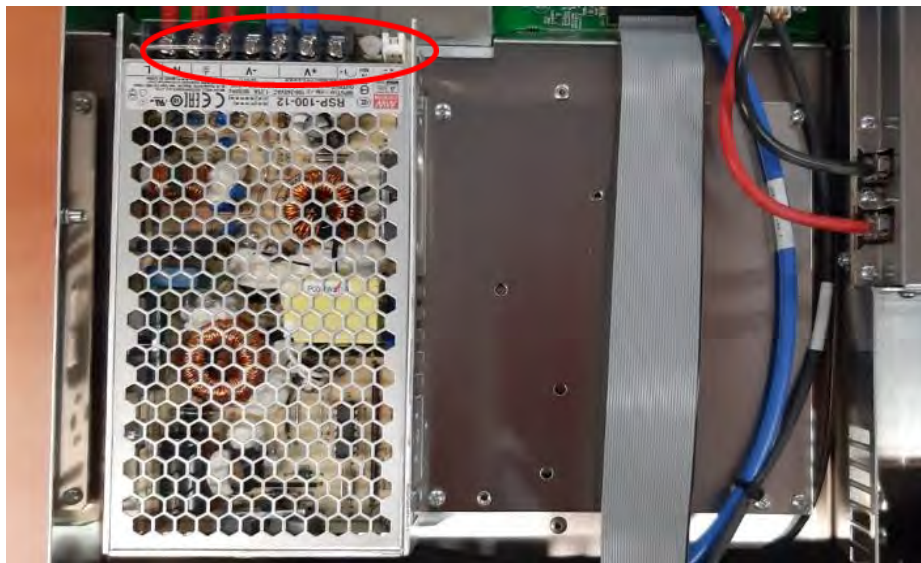
Reference for the Ecreso FM 300W-600W-1kW AiO series Aux PSU: TFS01208

Required tools

- A cross-headed screwdriver

Procedure

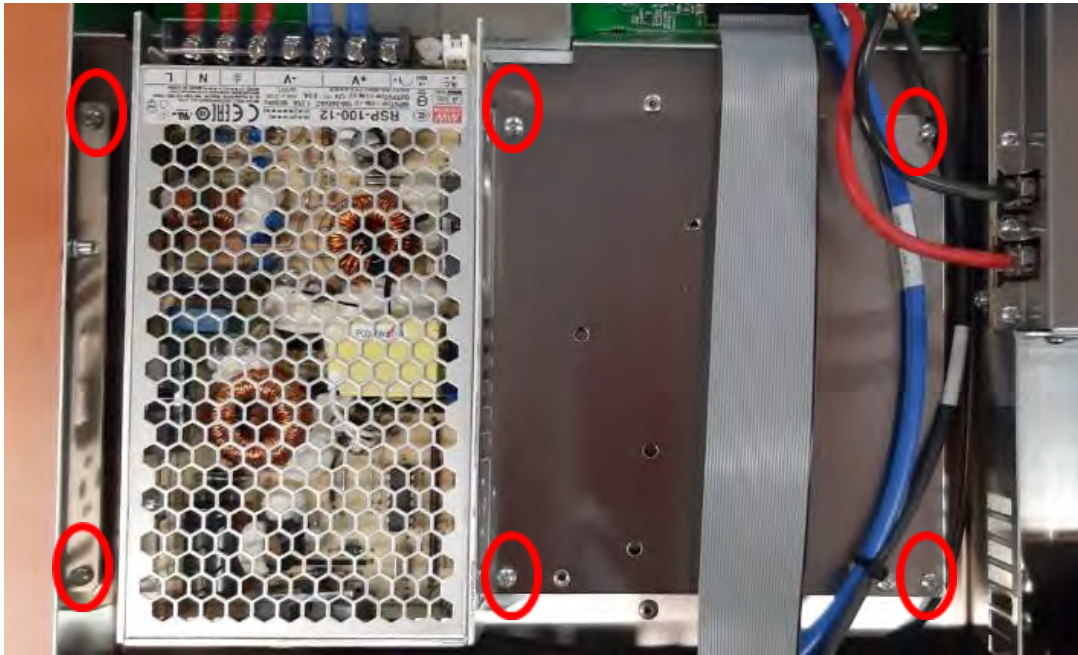
1. Disconnect all cables on the transmitter and set the module in ESD environment. Unscrew the cover of the module.
2. Remove the plastic protection on the PSU, and with the screwdriver, unscrew the AC and DC cables



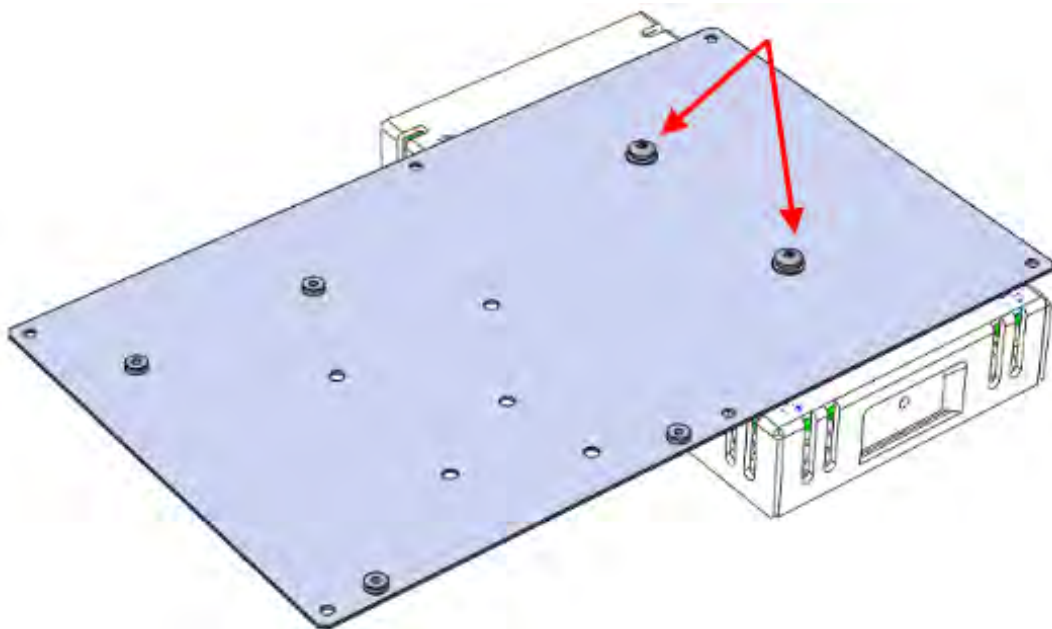
3. Unscrew the screw maintaining internal cables:



4. Unscrew the six screws of the support where the PSU is mounted:

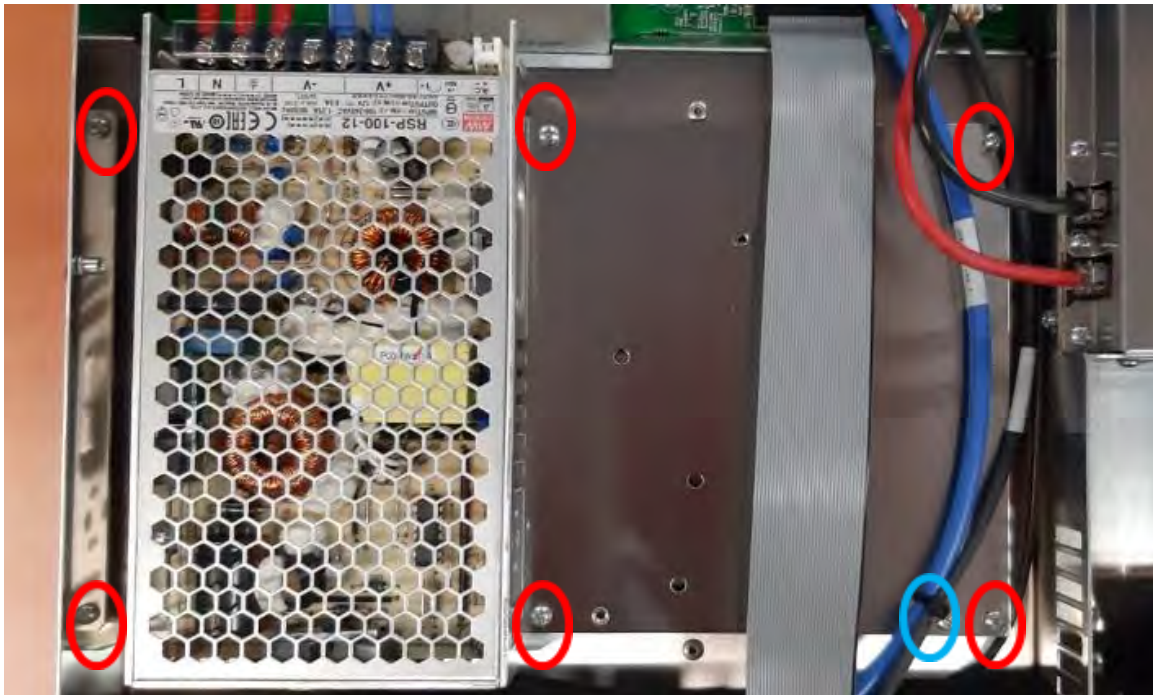


5. Remove the PSU on its support from the product.
6. Unscrew the 2 screws to unite the PSU from the support. Be careful not to lose the washers.



7. Mount the new PSU on the support with the 2 washers and screws.
8. Install the PSU in the product without damaging the internal cables.

9. Screw back the 5 screws maintaining the support in the frame and the screw maintaining the internal cables.



10. Check there are no loose parts in the module
11. Screw the cover back in place.

D.3.2. Ecreso FM 100W AiO series

Reference for the Ecreso FM 100W AiO series Aux PSU: TFS01217

Required tools

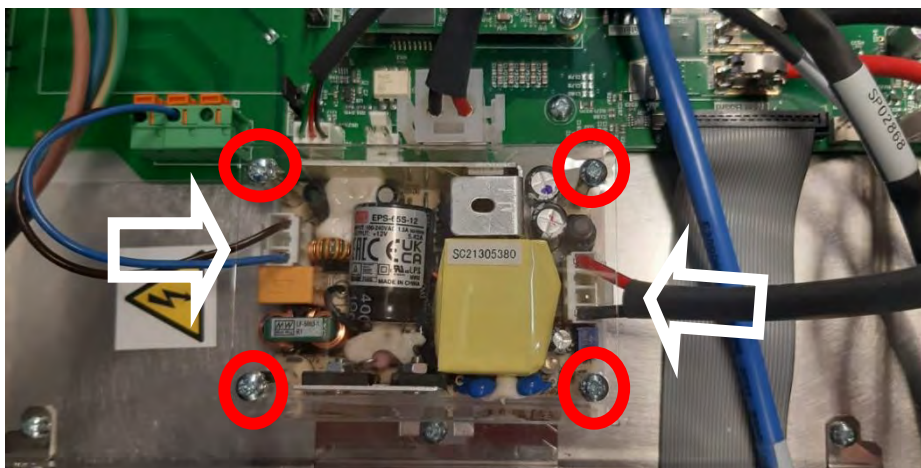
- A cross-headed screwdriver
- A six-sided hollow screwdriver

Procedure

1. Disconnect all cables on the transmitter and set the module in ESD environment.
2. Unscrew the two screws of the top lid and slide it towards the rear.



3. Unscrew the four screws and remove the polycarbonate cover, putting them aside. Disconnect carefully the mains cable (left) and the DC output cable (right)



4. Unscrew the four spacers to remove the faulty PSU.

5. Screw the new PSU with the spacers, then connect the mains and DC cable. Take care of not misconnecting them.



6. Screw the polycarbonate protection.
7. Make sure there are no loose parts and slide back the lid from the rear before screwing it back.

D.4. Changing the surge protector

Reference for the Ecreso FM AiO series surge protector + mounting kit: TFS01215

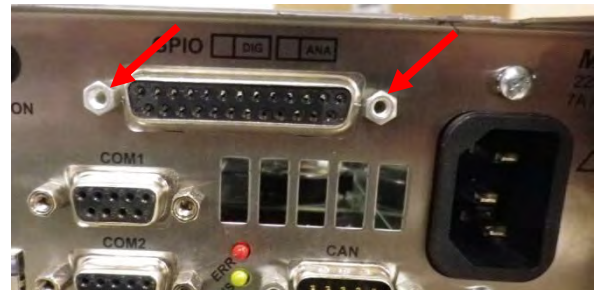
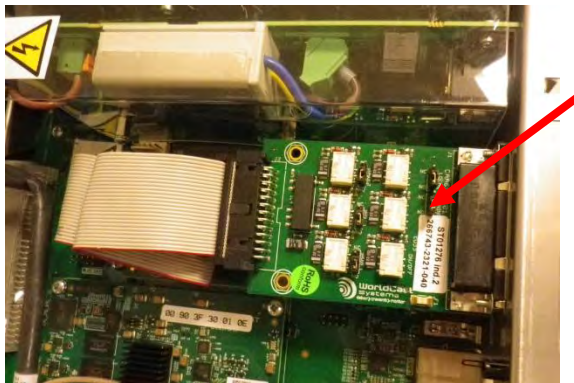
Reference for the Ecreso FM AiO series replacement surge protector: TFS01214

Required tools

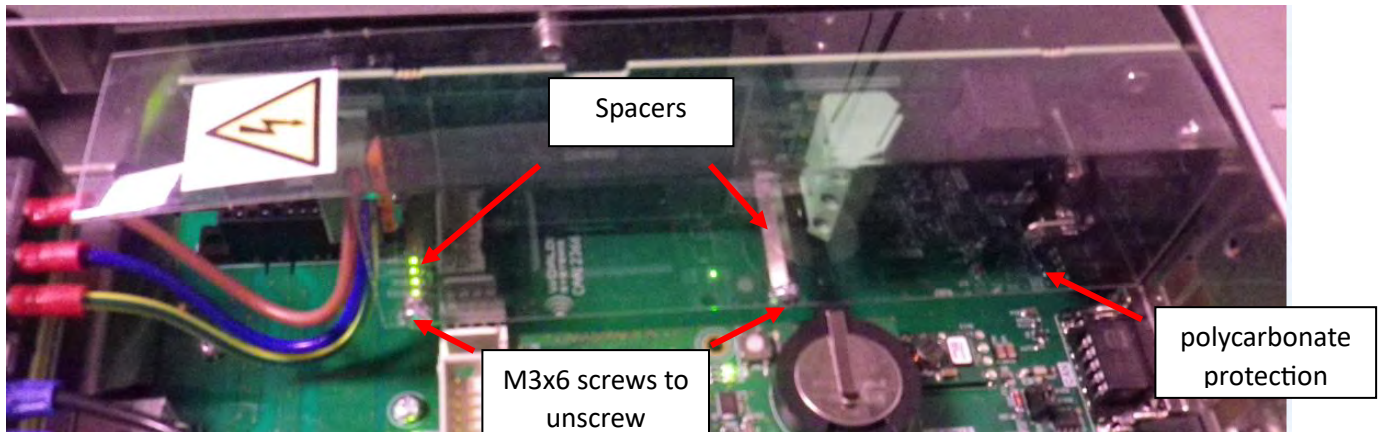
- A cross-headed screwdriver

Procedure

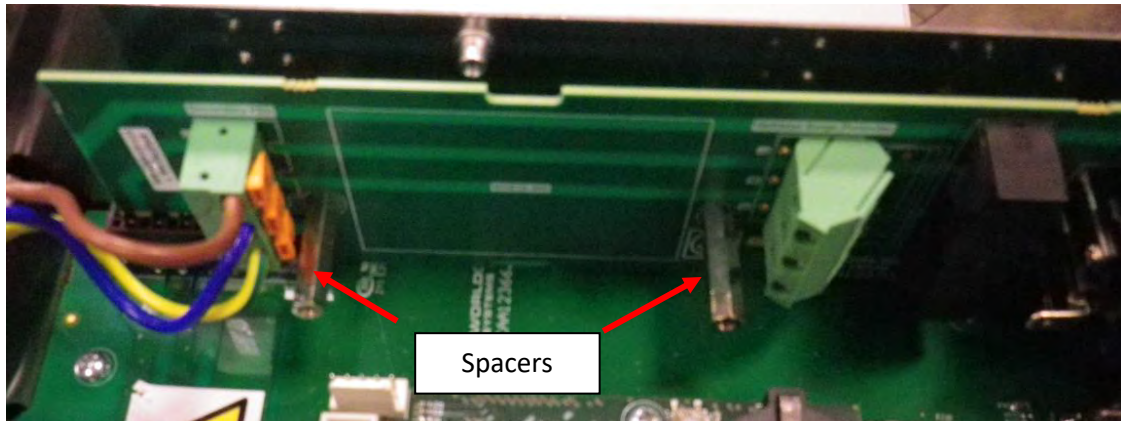
1. To change the surge protector, disconnect all cables on the transmitter and set the module in ESD environment. Unscrew the cover of the module.
2. If the optional GPIO board is present, remove it:



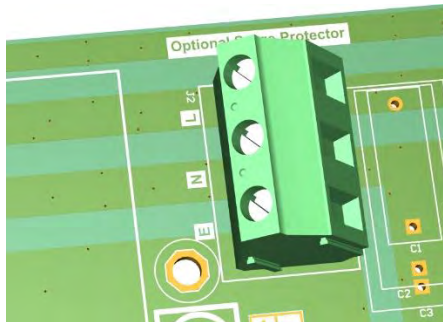
3. Unscrew the polycarbonate protection and the M3X30 spacers from the mains input board:



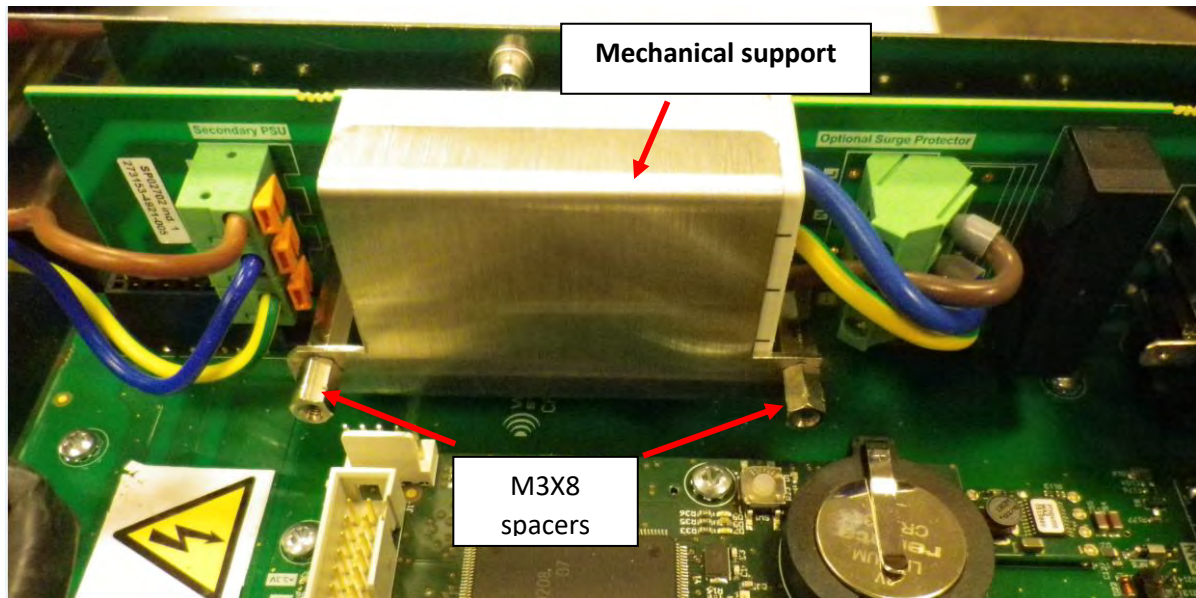
4. Screw the spacers:



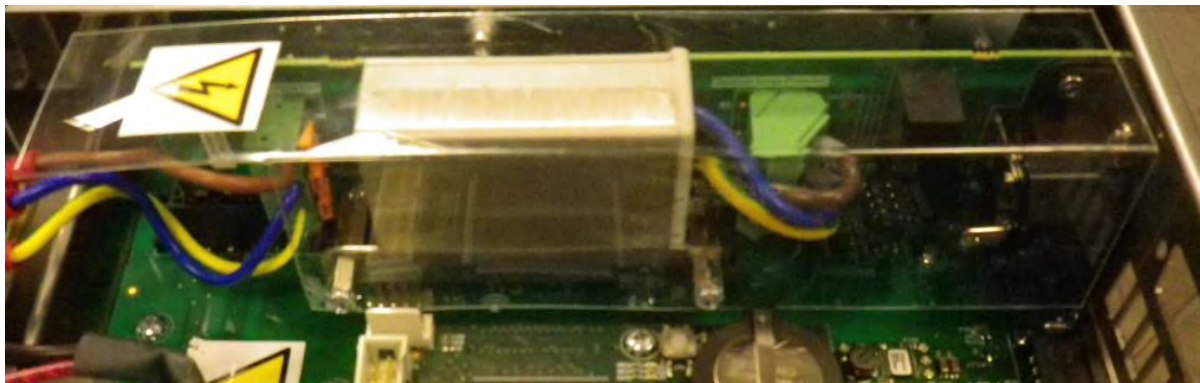
5. Screw the surge protector on connector J2: Brown wire on L, blue wire on N and yellow/green wire on E.



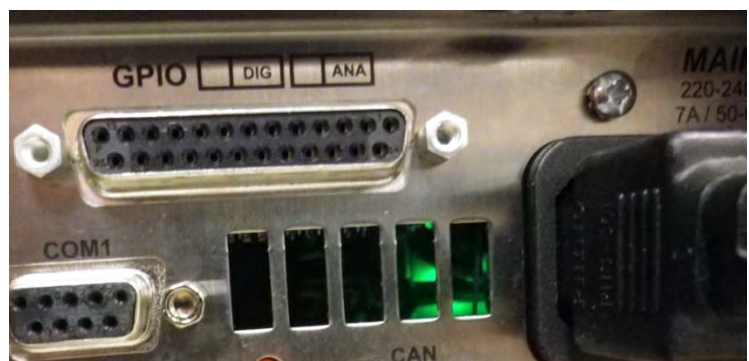
6. Fix the surge protector on the M3X22 spacers with the mechanical support and the M3x8 spacers:



7. Screw the polycarbonate protection back in place:



8. Mount the GPIO board if needed.
9. Close the unit.
10. Turn on the power. Check that the unit starts and that the green LED of the surge protector is lit, as shown in the picture.



FOR MORE INFORMATION

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