

ECRESO FM AiO SERIES USER MANUAL



87.5 – 108 MHz
FM TRANSMITTER

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WorldCast Systems

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WorldCast Systems, hereby, certifies that **ECRESO FM** transmitters comply with the dispositions of applicable European Community Directives.

A copy of the complete certificates of conformance can be found on the website www.worldcastsystems.com.



FCC Part 15.19 Warning Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Part 15.21 Warning Statement

NOTE: the grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

FCC Part 15.105(b) Warning Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- 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.
- -Consult the dealer or an experienced radio/TV technician for help.

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1. INTRODUCTION

1.1. About WorldCast Systems

WorldCast Systems is a leading solution provider with over 60 years of experience in media and broadcast.

Our solutions and services cover the entire broadcast chain from field contribution, to audio/video distribution over IP, FM transmission, RDS encoding, signal measurement, telemetry, antenna management, and remote monitoring and control.

With our established brands APT, Ecreso, Audemat, and the NMS solution KYBIO Media, we are trusted by customers worldwide including large network operators, regulation authorities, national broadcasters and local, community stations. From product and software supply to full turnkey solutions, we accompany our customers throughout all phases of their project.

Our team's mission - to help our customers deliver the best service to their audience, while lowering total cost of ownership and benefiting from the best user experience.

WorldCast Systems is a part of WorldCast Group and employs around 100 people worldwide. With its headquarters in Bordeaux, France, and offices in Miami and Kuala Lumpur, the group generates more than 85% of its turnover internationally. Customers also benefit local support through a large network of trusted partners and distributors.

Our In-House Expertise covers:

- Research & Development
- Production & Quality Testing
- Systems Integration
- Turnkey Projects
- Project Engineering & Customer Support
- Training Academy
- Maintenance & Technical Support

Why We're Here

We believe in bringing the most advanced solutions to our customers, enabling them to deliver to their audience continuous on-air broadcasting of information, music, radio, tv... while at work, on the road, at home.

- **Keep Your Audience Loyal** by delivering them a great experience with content that is delivered continuously and with the highest quality.
- **Reduce Your Operating Costs** with broadcast solutions that are competitive at the time of purchase and that continue to drive savings throughout our products' lifespan.
- **Protect Your Investment** with tools that enable optimum operating conditions of your network infrastructure and maximum site performance

What We Value

- **360° Innovation**
 - Collegial Management
 - Design Thinking
 - Future-Ready Designs
 - Agile Method
- **Enhancing The Customer Experience**
 - Great User Experience
 - Simplicity
 - Product and Service Excellence
 - Quality ISO 9001
- **Sustainable Growth**
 - Product Efficiency
 - Low Consumption Building
 - Charitable Foundation For Local Reforestation

1.2. Before you start

1.2.1. Safety precautions

This equipment complies with international mechanical and electrical standards. To maintain this compliance, as well as to ensure proper and safe working conditions and avoid electrical shocks and fire hazards, you must comply with the following recommendations:

- The device should only be utilized in the conditions described in the user manual.
- The device is designed for industrial usage and must only be operated by qualified personnel.
- The device may be heavy; it must be lifted and handled with care, specifically during unpacking and set up.
- Rackable products must be set in cabinet with 19" rack mounting screws.



Electrical precautions

- Disconnect all sources of power before any intervention.
- Any maintenance, adjustment or repair must be carried out by personnel specifically trained by WorldCast Systems.
- Before switching on the device, make sure the nominal voltage specified on the device matches the mains nominal voltage.
- The device should only be operated on a stable electrical network. If the electrical network is not stable, a power conditioner, such as a UPS, must be used
- The device must only be used with a plug that incorporates a protective ground contact.
- To avoid any risk of electrocution, the protective earthing conductor must not be cut, intentionally or accidentally, either on the device or on the power cord.
- High quality shielded cables are mandatory.



Environmental precautions

- It is necessary to verify that environmental conditions comply with those recommended in the manual.
- Nothing must obstruct the ventilation.
- To avoid any electromagnetic interference, the device must only be used when it is closed, installed in a cabinet and connected to the earth as per the instructions.
- The device should not be exposed to dripping or splashing and no objects filled with liquids, such as coffee cups, should be placed on the equipment.
- Connectors may be hot on high power units.



Precautions regarding the lithium battery

This device includes a lithium battery.

If the battery is not correctly replaced, there is a risk of explosion.

- Only replace it with a battery of the same type. Contact us before attempting to use another type
- Do not puncture the battery
- Do not throw the battery in fire
- Do not immerse the battery in water

Beryllium is present in the load and transistor used inside the unit.

- It can be handled safely if unbroken and undamaged, but dust from broken, crushed, or scratched beryllium can cause severe illness. Never cut or file beryllium.
- If broken beryllium is found, collect all particles carefully, being careful not to touch or breathe it. Package and dispose of it properly, then wash thoroughly.

Perchlorate material – special handling may apply, see <https://dtsc.ca.gov/perchlorate/>

Do not throw away used components containing hazardous material, recycle them instead. You may send it back to us if needed.

1.2.2. Factory guarantee

WorldCast Systems offers a standard three-year warranty on parts and workmanship from the date the transmitter is received. WorldCast Systems also offers on compact transmitters of the range a ten-year warranty.

If precautions listed section 1.2.1 are not followed, the guarantee will be void.

2. DESCRIPTION

2.1. General description

The AiO Series is the latest generation of Ecreso FM transmitters, designed to lower the Total Cost of Ownership.

The new AiO series delivers the highest efficiency on the market. In its standard operations, broadcasters benefit from up to 76% efficiency (AC to RF) and when the patented SmartFM technology is activated, they can further reduce their energy consumption by up to 40%.

The AiO Series also brings together the expertise of APT and Audemat into a compact 2U chassis, resulting in a unique APT IP Decoder and a full RDS encoder.

Additional features such as the direct-to-channel digital modulator and a 5-band sound processor complete this flagship FM transmitter.

Options available with the current version are:

- **SmartFM:** developed over 3 years of intense research, this option makes it possible to reduce FM Operating Costs (Opex) and CO₂ emissions
- **5-band Sound Processor**, which includes:
 - Single digital processing from audio to RF (direct to frequency)
 - Low Latency and Powerful DSP based algorithms
 - Gated and predictive automatic gain control
 - Equalization, Bass and Treble Enhancers
 - Stereo Enhancer and Limiter
 - 5 Band Processors
 - 5 Band Limiters
 - HF and Final Limiters
 - Complete set of audio presets
 - Intuitive and complete user interface with settings and vu meters (web based)
 - Easy fine tuning of your sonic signature
- **Full RDS:** full internal RDS Audemat encoder
 - Full RDS (IEC 62106 1-6:2018)
 - RDS2 ready
 - 10 DSN / 10 PSN
 - Highest Signal Purity and Quality on the market
 - Compatible with all ODA (TMC , RT+, etc.)
 - Dynamic PS, RT and RT+
 - UECP Compatible

- **Dynamic RDS:** the internal RDS encoder makes it possible to manage RDS parameters (PI, PS, TP, TA, PTY, MS, DI, RT, PTYN, AF, CT) and includes 1 PSN and 2 DSN.
- **Décodeur Audio sur IP APT:**
 - AptX Enhanced 16/24 Bit, Linear PCM 16/24 Bit, MPEG2/4 AAC/HE-AAC Suite, MPEG1/2 Layer II, MP3, OPUS
 - SureStream: redundant streaming technology which enables broadcast-grade audio over inexpensive IP links
 - Dual Ethernet for streaming and/or control
 - RTP over UDP streaming
- **MPX over IP:** includes APTmpX, the first non-perceptual MPX compression algorithm
- **10 MHz input for SFN application:** this option for SFN networks includes a 10 MHz input to synchronize the RF sub-carrier.
- **GPIO:** this additional board allows remote control and management of your transmitter. Available as standard or analog board.
- **Surge protector:** added to the chassis to limit the surge caused by lightning

Please refer to Appendix A for more information on option management.

2.2. Accessories

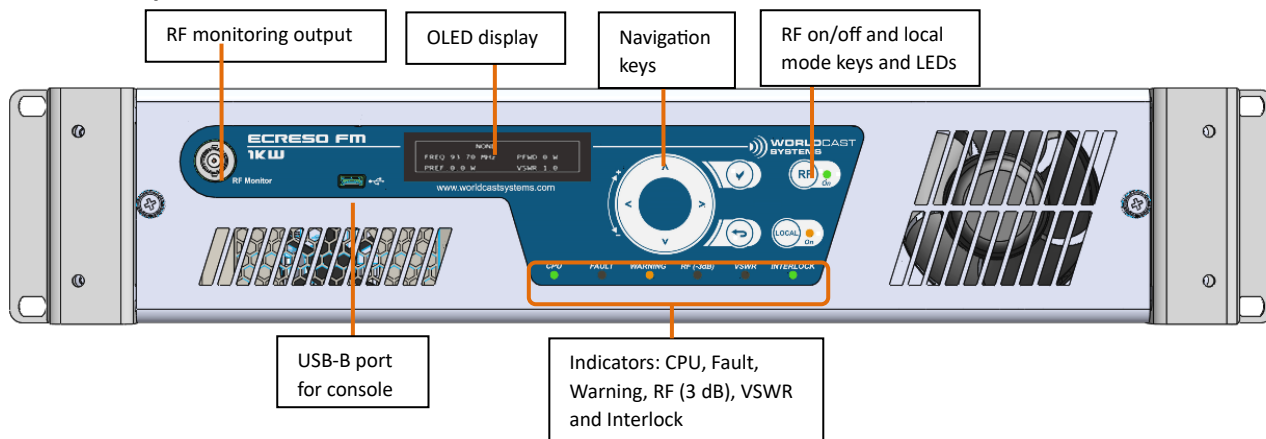
The ECRESO FM AiO Series is supplied with:

- 1 power cable with locking system
- 10 AT fuses
- 1 interlock plug
- 1 ground strap
- 1 quick start notice.

2.3. ECRESO FM Description

For optimum protection against corrosion, the Ecreso FM chassis is made of aluminum.

2.3.1. Front panel



Description of indicator LEDs:

i As a rule, green LEDs indicate things are ok, orange LEDs indicate an issue requiring attention, red LEDs indicate a possible loss of transmission.

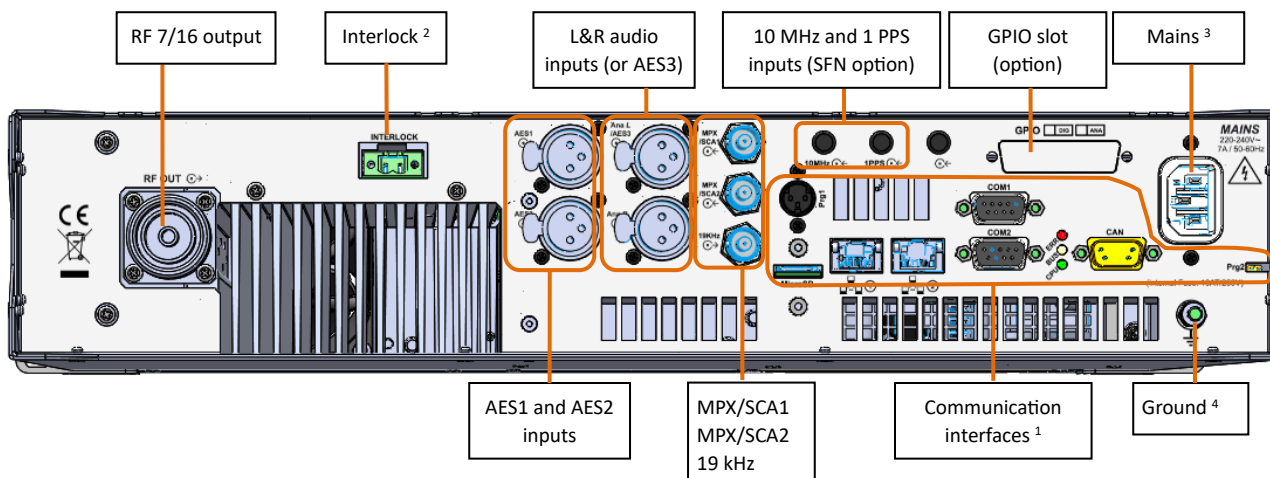


- CPU: blinks to indicate CPU activity
- FAULT: major fault of the unit (3 dB, VSWR or audio fault)
- WARNING: minor fault of the unit (ambient temperature, heatsink temperature, PSU temperature, fan, current, voltage, 1 dB, loss of signal, battery low on startup).
- VSWR: VSWR of the unit
- RF (3dB): 3 dB of the unit
- INTERLOCK: indicates that internal or external safety links are not activated
- RF: indicates that the unit is on RF=ON. Pressing the RF button will turn the RF on and off.
- LOCAL: indicates that the unit is in local mode. Pressing the local button for a few seconds will switch between local to remote mode.



i The transmitter is working properly when: the CPU LED blinks, and both the RF LED and the interlock LED are green

2.3.2. Rear panel



1. Communication interfaces

- 1 µSD card
- 2 Ethernet ports (1 and 2 1 Gb , base-T RJ-45)
- 2 RS232 ports (COM1 and COM2)
- 3 communication indicators (ERR, BUS et CPU)
- 1 CAN port
- 1 DIN port (Prog1)
- 1 2-point connector (Prog2)

The COM1 and COM2 ports are used to send serial commands and dynamic PS tags and for UECP.

The DIN port and the 2-point connector are used to reprogram the module (only to be used for maintenance).

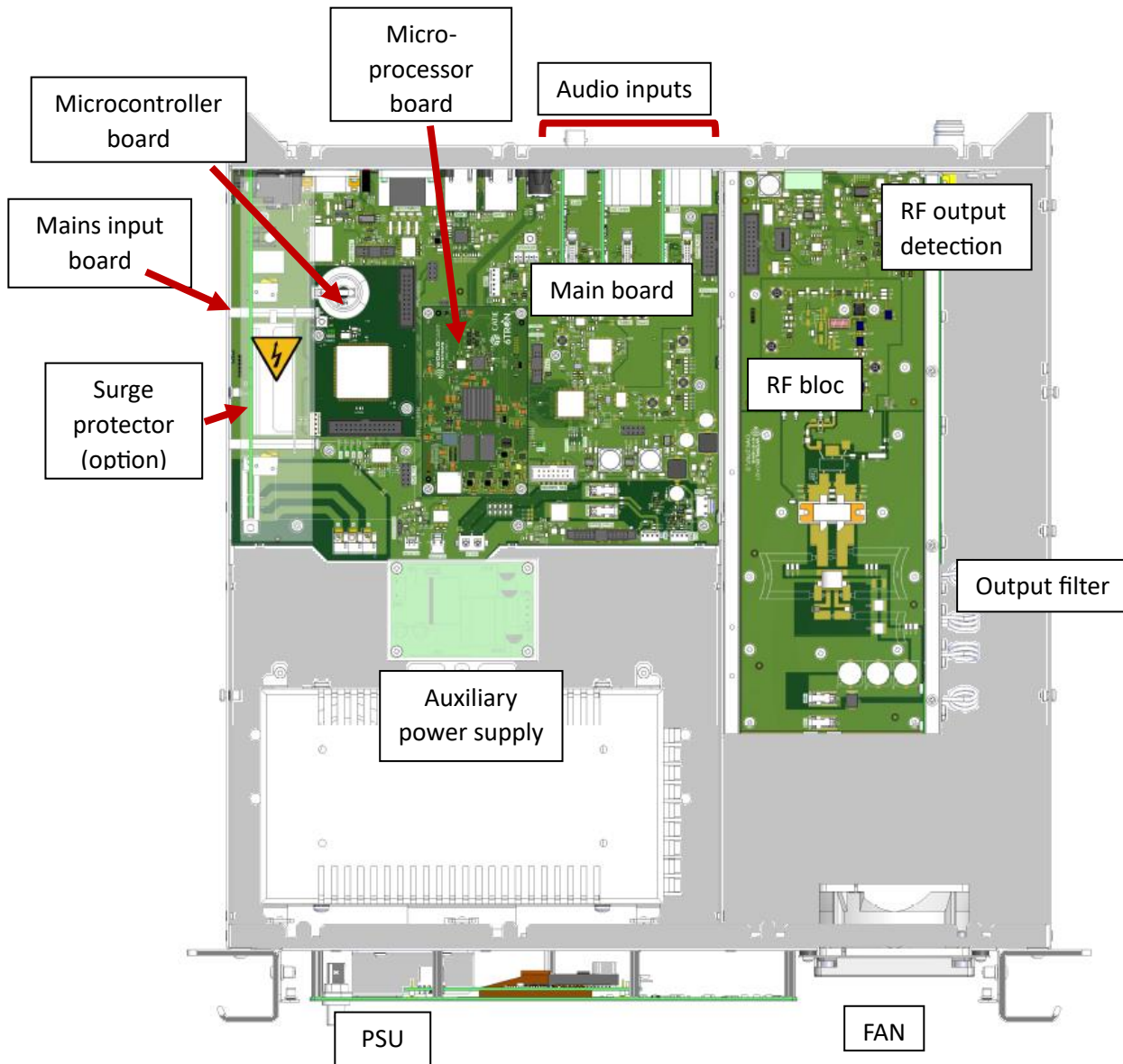
2. The safety loops must be closed to ensure the transmitter will work. If nothing is connected to these connectors, interlock plugs must be present to close the loop.

3. The supplied power cable is fitted with a locking system which prevents accidental disconnections.

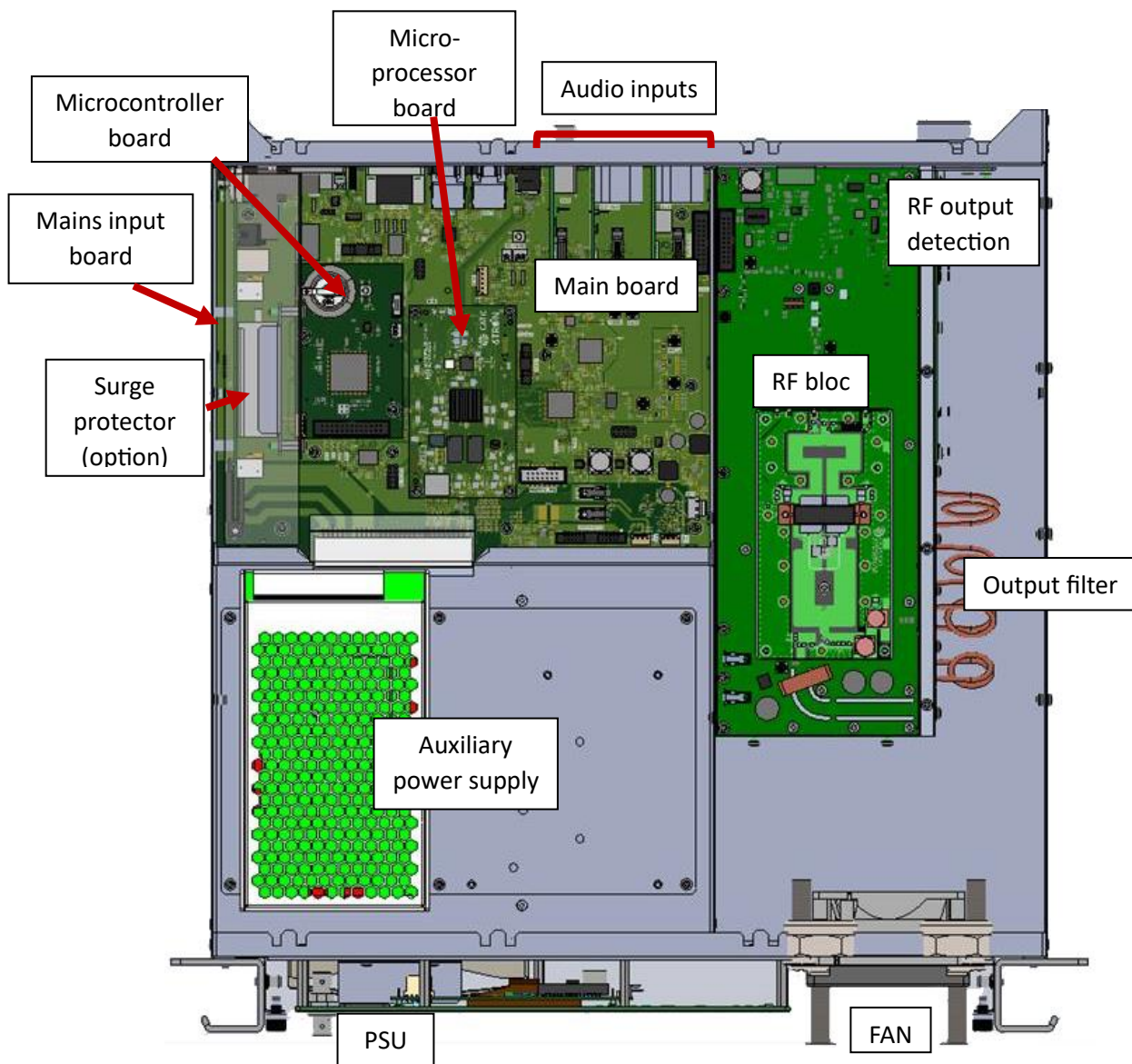
4. A permanently connected protective earth is required on the equipment: connect the protective earth terminal first to the protective earth of the building. A protective earth section of 4 mm² is recommended.

2.3.3. Opened cover

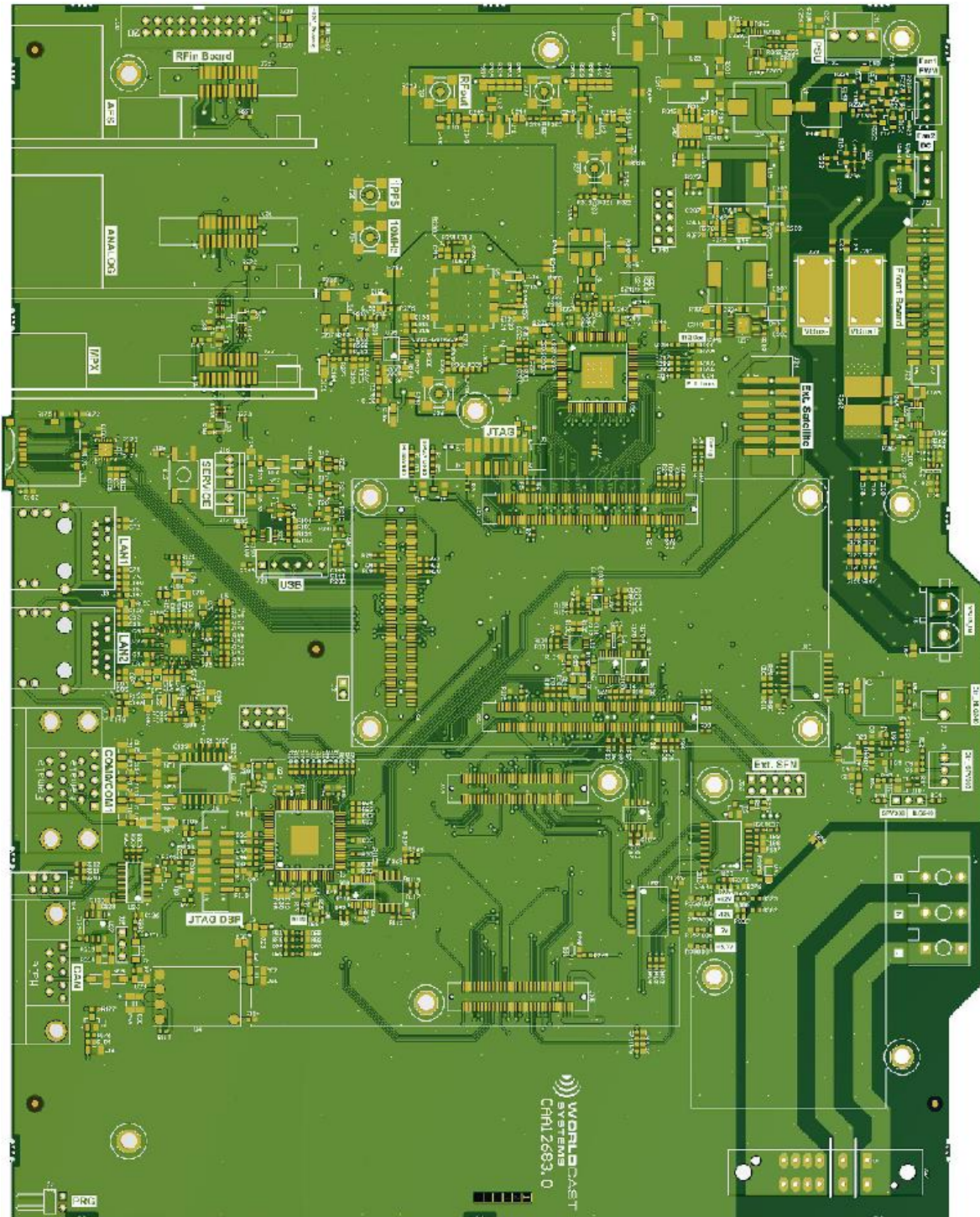
Ecreso FM 100W AiO Series



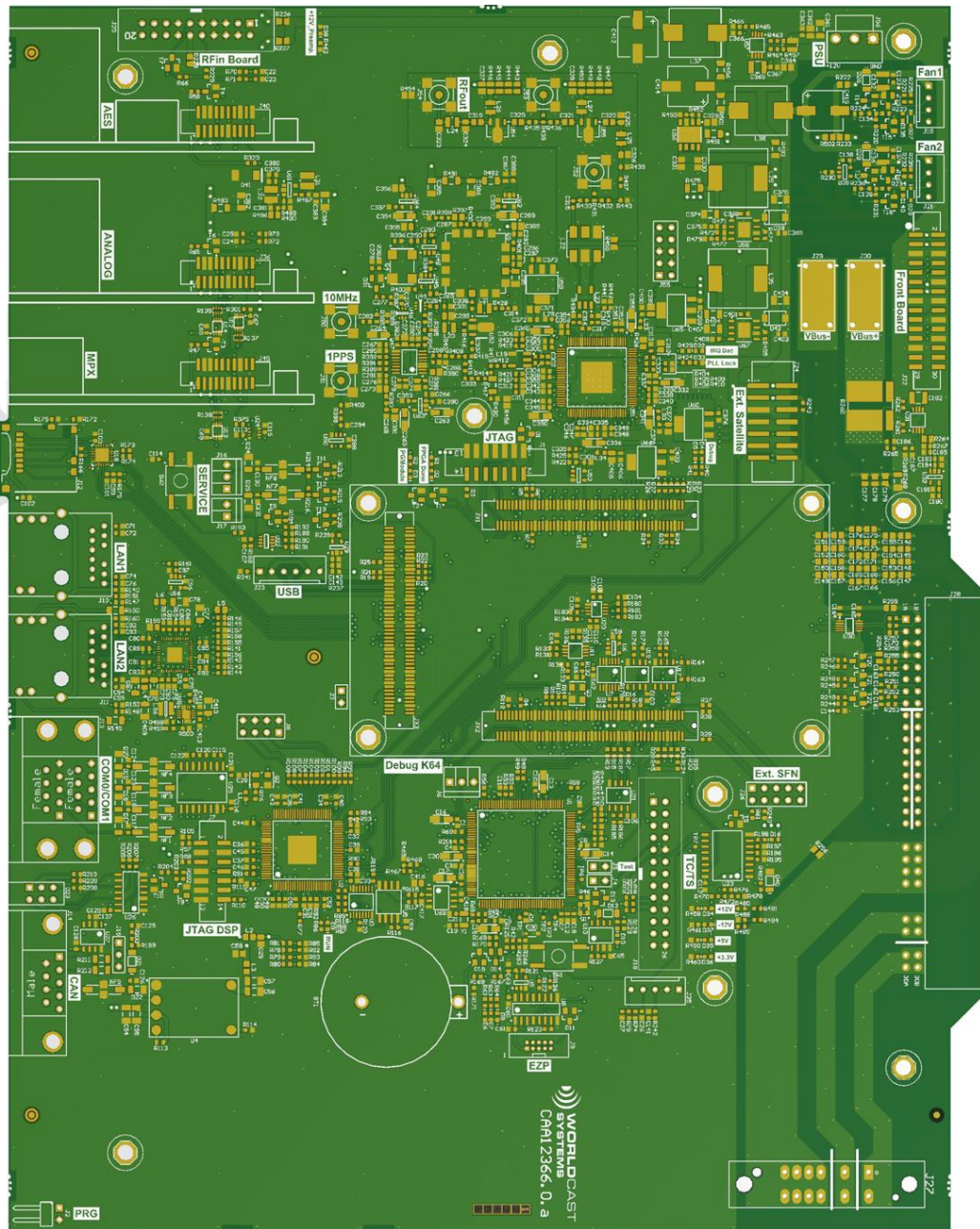
Ecreso FM 600W-1kW AiO Series



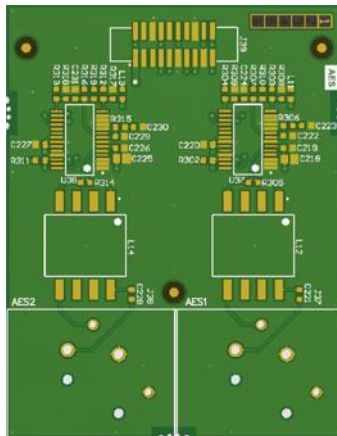
ECRESO FM 100W AiO Series main board



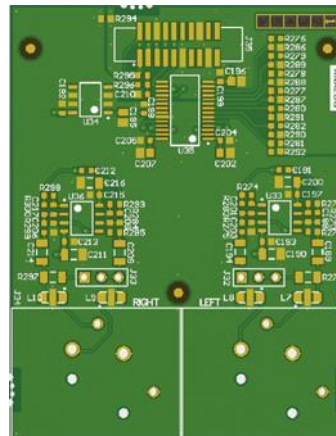
ECRESO FM 600W-1kW AiO Series main board



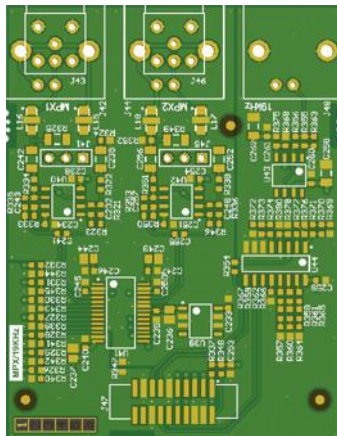
AES board



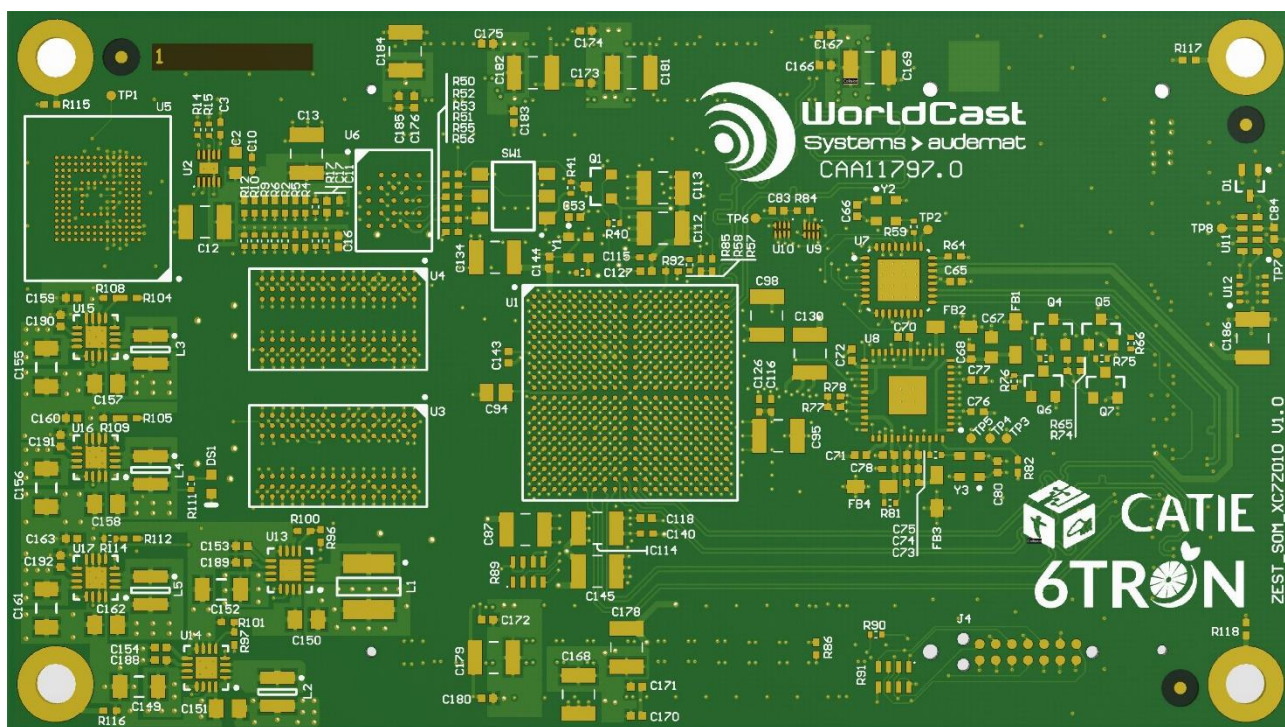
Analog audio board



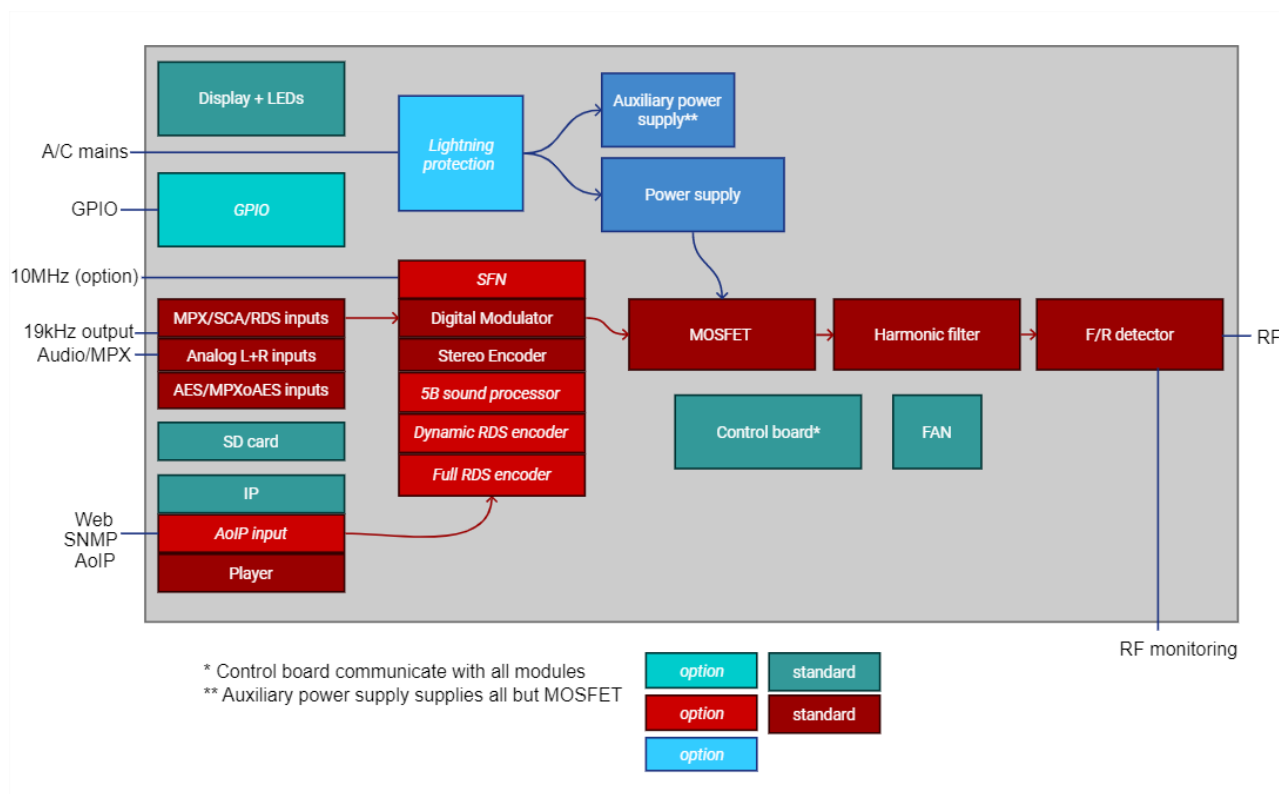
MPX/1 9kHz board



Micro-processor board



2.3.4. Synoptic diagram



2.4. Protecting the transmitter

To ensure the transmitter will work with no risk of damage, a series of protections has been set.

2.4.1. Surge Protector

An optional surge protector module can be added to the chassis. The goal of this module is to limit the surge caused by lightning. It works after the main protector usually located in the electrical board and before the power supply protector, thus offering an optimal level of protection. The protector principle is to capture the surge and divert it to the ground so as to protect the transmitter and its power supplies.

The surge protector used by WorldCast Systems includes multi-MOV technology and a gas discharge tube (GDT) giving a very high protection and very low parasitic capacitance and leakage currents.

Please refer to Appendix D 'Maintenance' for the procedure to replace the surge protection module.

2.4.2. Protection against VSWR

Several systems coexist to offer the optimal protection against VSWR:

- **Hardware protection:**
 In case of open circuit or short-circuit, the RF is cut. When the situation returns to normal, it is automatically reset. The protection is triggered in case of an overshoot of the reflected power over:

Transmitter power	100 W	600 W	1 kW
Threshold	20 W	70 W	70 W

- Software protection:

The software protection prevents the transmitter to reach a given reflected power value by blocking the control or by lowering the power.

Transmitter power	100 W	600 W	1 kW
Threshold	15 W	45 W	45 W

- Software settings for the reflected power security management: if the VSWR is greater than 3 in a recurring way, enabling the VSWR Trip parameter allows disabling then cutting the RF (see VSWR Trip, section 5.5).

2.4.3. Protection against high temperature

The Power Supply module includes its own protector against high temperature: the protector cuts off the power supply output voltage if the temperature is abnormally high. When the situation returns to normal, it is automatically reset. The temperature threshold value varies depending on the PSU.

The ambient temperature and the heatsink temperature are monitored.

- The max ambient temperature is set by software (see menu Temp/Fan, section 6.3.18 or serial command CONF.AMB.MAX, section 7.2.4), default value is 50°C. In case of overshoot, a Warning alarm is triggered (Alarm Amb). The default value works when the room temperature is controlled. In case the room temperature is likely to be greater than 35°C, the value should be increased accordingly, but should not exceed 70°C.
- The max heatsink temperature is set by serial command (see serial command CONF.HEAT.MAX, section 7.2.4), default value is 90°C. In case of overshoot, a Warning alarm is triggered (Alarm Heat).
- The max internal temperature is set at 100°C. If the temperature exceeds 70°C, the RF is cut off and a fault alarm is triggered (Alarm Temp).

2.4.4. Protections incorporated into the PSU


Ecreso FM transmitters have an auxiliary power block and a power block, each having its own protections:

- Against overloads: protects by limiting the current. For auxiliary power supplies, it is a protection against shorts circuits.
- Against overvoltage.
- Against high temperatures (see previous section).

The main power supply voltage and the auxiliary power supply voltage are monitored as follows:

- Main power supply:
if the difference between the measured voltage and the expected voltage is greater than 10%, a Warning alarm is triggered (Alarm Volt1). Expected voltage is automatically computed.

- Auxiliary power supply:
Voltage should be either 5, 12 or -12 V. if the difference between the measured voltage and the nominal voltage is greater than 10%, a Warning alarm is triggered (Alarm Volt Aux).

 *For both power supplies, we are monitoring the output voltage (DC); the input is not monitored.*

The current is also measured and monitored. The threshold varies depending of the power of the Ecreso FM: 10 A for the Ecreso FM 100W, 20 A for the Ecreso FM 600 W, 30 A for the Ecreso FM 1 kW. In case of overshoot, a Warning alarm is triggered (Alarm Cur) and the nominal power is reduced.

3. TECHNICAL SPECIFICATIONS

3.1. Environmental

Nominal operating temperature	5°C to 45°C
Maximum operating temperature	0°C to 50°C
Warehousing temperature	-20°C to +70°C
Humidity	5 - 95 % non-condensing relative humidity
Altitude	
Ecreso FM 100W AiO Series	up to 3900 m
Ecreso FM 600W-1kW AiO Series with PSU AL01021 (PN02):	up to 3900 m
Ecreso FM 600W-1kW AiO Series with PSU AL01010 (PN01):	up to 1900 m
Warehousing time	< 10 years
Cooling	Internal ventilation: 1 fan: ~30 l/s

3.2. Power supply

Voltage	220-240 VAC
Frequency	50 Hz - 60 Hz
Max consumption	
Ecreso FM 100W AiO Series	200 W
Ecreso FM 600W AiO Series	1200 W
Ecreso FM 1kW AiO Series	1550 W
Power factor	> 0.9
Fuses	10 AT

3.3. Physical

Overall dimension	19" (482, 6 mm) X 2U (89 mm) X 490 mm
Enclosure depth required	600 mm
Mounting	19"enclosure, with 4 M6X12 screws
Weight	~ 13 kg

3.4. Interface panel

Indicators	<p>Green LED: CPU activity</p> <p>Red LED: major fault</p> <p>Yellow LED: minor fault</p> <p>Red LED: RF fault (3 dB)</p> <p>Red LED: VSWR fault</p> <p>Green LED: safety interlock</p> <p>Green LED: RF on</p> <p>Yellow LED: local mode</p>
Screens	OLED screen: displays operating parameters and menus.
Buttons	RF, local and OK

3.5. RF section

Frequency range	87.5 to 108 MHz
Setting increment	10 kHz
Frequency stability	$< 10^{-6}$ per year
Power range	50-1000 W
Power setting	continuously 0-1100 W
VSWR	<p>< 1.35</p> <p>Optimal performance: < 1.1</p> <p>Protection: > 1.5</p>
Spurious and harmonic suppression	> 75 dBc
10 MHz input connector (SFN option)	SMA
10 MHz input recommended range	-10 dBm to +10 dBm

3.6. Composite operation

Bandwidth	<p>> 40 Hz to 53 kHz @ 0.1 dB</p> <p>> 20 Hz to 60 kHz @ 0.2 dB</p> <p>> 60 kHz to 80 kHz @ 0.4 dB</p>
Intermodulation distortion	$< 0.05\%$
FM S/N ratio	> 80 dB RMS @ 75 kHz deviation
AM noise	> 55 dB, weighted/unweighted, sync/async, RMS/CCIR (20-20 000 Hz)

3.7. Stereo operation

Bandwidth	> 20 Hz to 15 kHz @ 0.1 dB
38 kHz discontinuance	> 50 dB
Stereophonic crosstalk	> 50 dB
Preemphasis	0 μ s, 50 μ s or 75 μ s

3.8. Mono operation

Bandwidth	> 40 Hz to 15 kHz @ 0.1 dB
Out of band rejection	> 40 dB @ 19 kHz
Preemphasis	0 μ s, 50 μ s or 75 μ s

3.9. AF inputs

Analog (ANA1)

Connector	XLR type
Impedance	> 10 k Ω by default, adjustable to 600 Ω by jumpers, balanced
Bandwidth	Software adjustable
Level	Software adjustable (-18/+18 dBu range)

AES (AES1 / AES2 / AES3)

Connector	XLR type
Impedance	> 110 Ω balanced
Bandwidth	Software adjustable
Level	Software adjustable (-20 to 0 dBFS range)
Sampling rate	Auto adjusted up to 192 kHz
Bit	16, 24, 32

Multiplex (MPX1 / MPX2 /SCA)

Connector	BNC type
Impedance	> 5 k Ω unbalanced
Level	Software adjustable (-18/+18 dBu range)

3.10. HF output

Connector	7/16 type
Impedance	50 Ω

Monitoring (RF Monitor)

Level 10 dBm \pm 3 dB @ 750 W at main output

3.11. Miscellaneous

Marking CE, FCC

Directive and Standards RED 2014/53/UE, 2014/30/UE and 2014/35/UE

EN 301 489-1 V1.9.2

EN 60 215:1989, A1:1992, A2:1994

EN 300 384, 1998

EN 302 018-2 V2.1.1

IEC 62106-2:2021

Lithium battery 1 CR2032 battery on main board

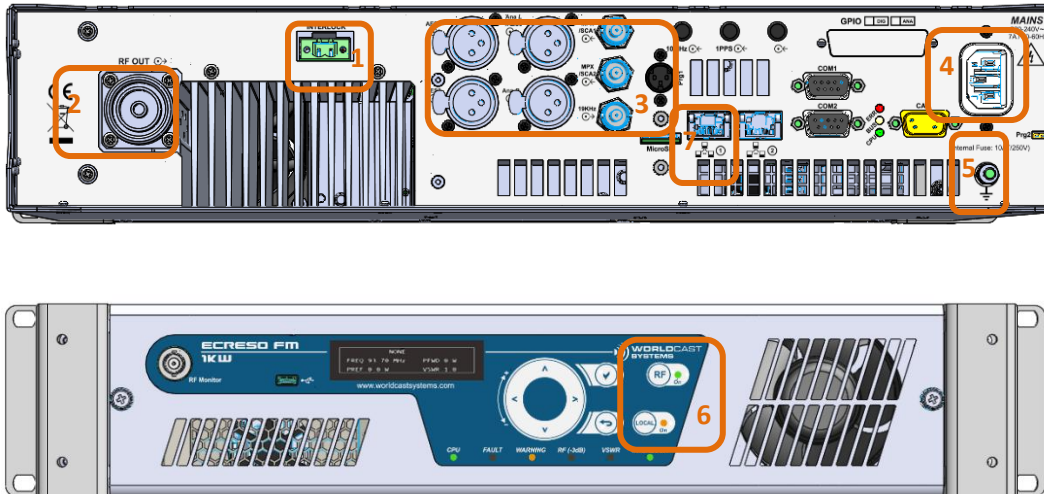
Control board battery life expectancy > 20 years in storage (longer when used)

Typical performances unless otherwise noted. Unit compliance is contingent to the compliance of its environment

4. STARTING UP YOUR TRANSMITTER

! *The transmitter should never be operated without a suitable antenna or test dummy load, and an overall proper installation. Failure to observe this requirement may result in damage to the transmitter that is not covered by the warranty.*

4.1. Connecting the transmitter



1. Make sure that the safety loop is closed, or that the interlock plug is present on the rear panel.

i *We recommend using an armored interlock cable*

2. Connect the transmitter RF output to a 50 Ω load.

The 50 Ω charge power must be greater than 150 W for a 100 W transmitter, greater than 800 W for a 600 W transmitter, greater than 1250 for a 1 kW transmitter.

When you acquired your transmitter, the RF amplifier is deactivated and power is set to 0 W. These settings can be adjusted using the front panel application, serial commands or with the web interface.

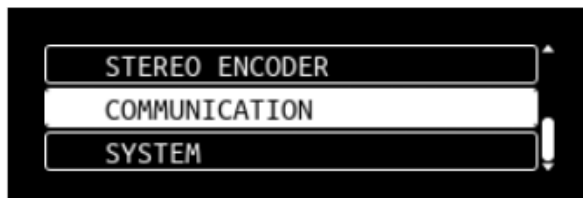
3. Connect the audio or MPX inputs.
4. Connect to power using the provided cable. The power socket must be easily accessible.
5. **Make sure to ground the transmitter properly, use provided ground strap if needed.**
6. Press the **Local** button on the front panel for a few seconds until the local LED is on, then the RF button.
7. Before connecting to the network, check the IP address of the ETH0 interface (next step)

4.2. Network configuration

! Though this unit includes a firewall and enforces a password policy, it is up to the user to set it in a secured environment such as a private network, VPN, behind a firewall... WorldCast Systems cannot be held responsible for the consequences of a security breach on the operating network.

i See section 5.2 for the front panel application working principle.

From the main screen, press the Check button to display the menu.



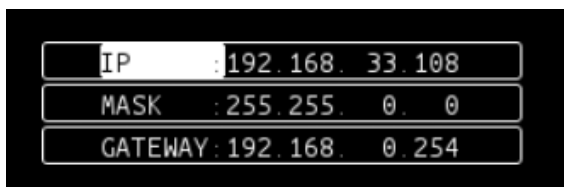
Use the arrow to select the Communication menu and press the Check button.

Use the arrow to select the ETH0 menu and press the Check button.



If you need to change the IP address:

- Use the Check button to switch to edit mode
- Use the Left and Right buttons to select the various groups of digits
- Use the Up and Down buttons or the swipe around the wheel modify the values
- When the IP address has been modified, use the Check button to save the new value.



Proceed the same way to change the mask and gateway if necessary.

Disable the local mode by pressing the LOCAL button until the LED is off.

You may now connect the Ecreso FM to the network on the ETH0 port using the provided Ethernet cable.

4.3. Connecting to the web interface

For remote access, connect to the encoder's embedded web site. Simply open a web browser and enter the encoder's IP address in the address bar (set on the front panel).

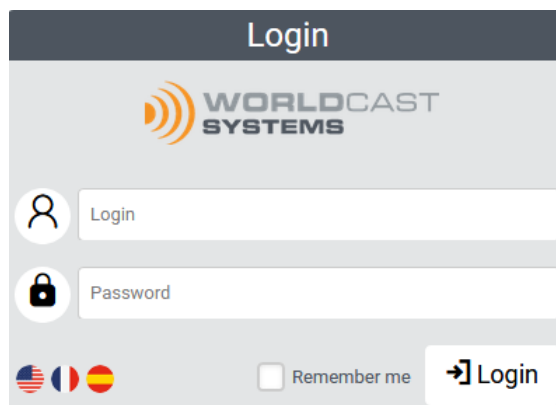
i Though the web application is compatible with most browsers, performances vary from one browser to another. For optimal performances, Google Chrome is recommended.

- i** The browser may display a message indicating that the connection is not certified; however, the site is secured (data is encrypted) and you may proceed to access it. To prevent these potential blocking and warning messages, WorldCast Systems now supplies certificates for HTTPS browsing, see the user manual for more information.

Select the language if necessary.

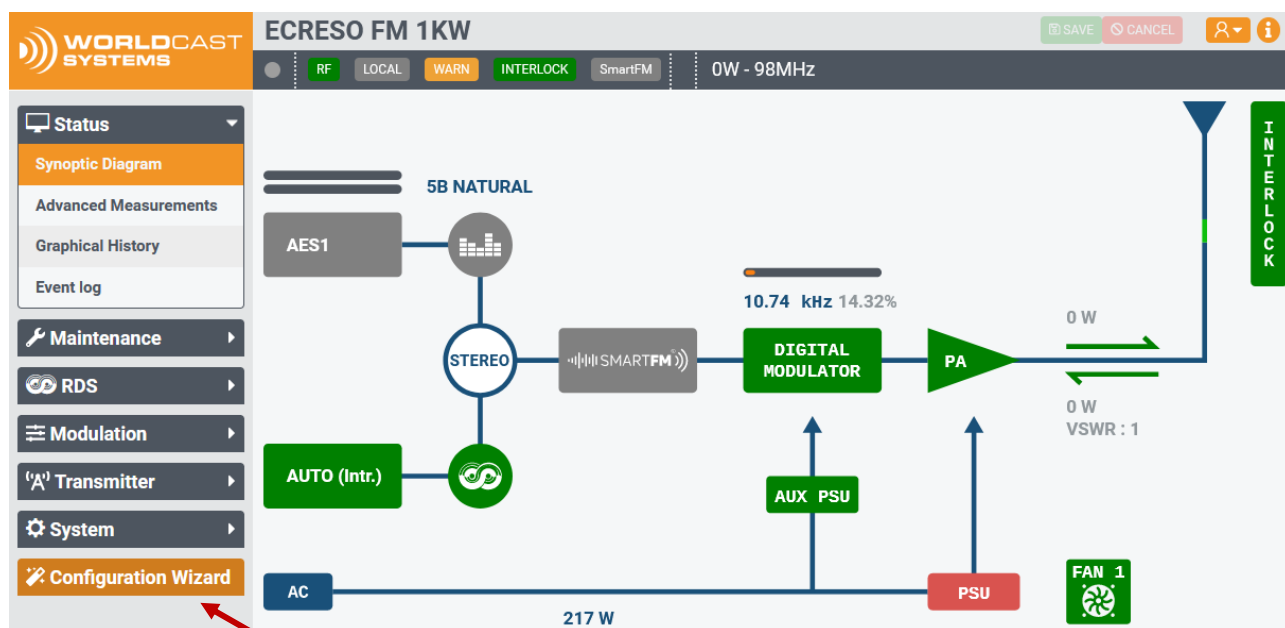
Enter the default user name and password: **Admin** / **admin**

- !** When you first connect, you will have to modify the password. For more security, choose a strong password that includes a minimum of 8 characters, including uppercase, lowercase and numbers.



- i** If several users are connected at once, they all can send commands and change parameters. The last edit will always be taken into account.
- !** Parameters can only be modified when the transmitter is in remote mode. Make sur the Local LED on the front panel is off, if not, press the Local button.

4.4. Configuring the transmitter



Once connected, launch the Configuration Wizard.

<p>Enter the name of the transmitter. Select a name that will be easy to identify in a network environment</p>	<div> <div>1/8 General</div> <div> <div>1- Enter your transmitter name:</div> <div> <input type="text"/> </div> </div> <div> <div>Next</div> </div> </div>
--	--

<p>Select the main audio input and a secondary input if needed.</p> <p>Set the audio input level.</p>	<div data-bbox="523 159 1433 1059"> <h3>2/8 Audio inputs</h3> <p>1- Select transmitter main audio input: AES1</p> <p>2- Set level for transmitter audio input: -4.00 dBFS -90 -72 -54 -36 -18 0 18 L -90.00 dBr R -90.00 dBr</p> <p>3- Is there a secondary audio input? No Yes None</p>  </div>
<p>Select the RDS input.</p>	<div data-bbox="523 1084 1433 1361"> <h3>3/8 RDS</h3> <p>1- Select transmitter RDS input: AUTO</p> </div>
<p>Select the encoder mode de l'encodeur and the total deviation.</p>	<div data-bbox="523 1386 1433 1727"> <h3>4/8 Modulation</h3> <p>1- Encoder mode Stereo</p> <p>2- Total Deviation 75.00 kHz</p> </div>

<p>Enable the Sound processor if you wish. The 5B Natural preset is selected by default: neutral and efficient, it embellishes the sound while keeping a spectrum similar to the input source.</p>	<div data-bbox="515 152 1433 763"> <h3>5/8 Sound Processor ✕</h3> <p>1- Enable Sound processing?</p> <p>No <input checked="" type="checkbox"/> Yes</p> <p> <input type="radio"/> WB PROTECT <input type="radio"/> WB CLASSICAL <input type="radio"/> WB DIGIPLEX <input type="radio"/> WB BOOST <input type="radio"/> 5B FINALIZE <input type="radio"/> 5B CLASSICAL <input checked="" type="radio"/> 5B NATURAL <input type="radio"/> 5B JAZZ <input type="radio"/> 5B HOT <input type="radio"/> 5B AC <input type="radio"/> 5B CHR <input type="radio"/> 5B URBAN </p> <p>⏮ ⏭</p> </div>
<p>Enter the frequency and power.</p> <p>Enable the RF.</p>	<div data-bbox="515 775 1433 1205"> <h3>6/8 RF ✕</h3> <p>1- Set transmitter frequency:</p> <p>98.00 MHz</p> <p>2- Set transmitter power:</p> <p>0 W</p> <p>3- Enable RF:</p> <p>No <input checked="" type="checkbox"/> Yes</p> <p>Before enabling RF, make sure the interlock is closed and the RF cable is properly connected.</p> <p>⏮ ⏭</p> </div>
<p>Enable SmartFM if you wish. The Standard strategy will be applied. This strategy improves the reception quality while allowing significant savings.</p>	<div data-bbox="515 1216 1433 1518"> <h3>7/8 SmartFM ✕</h3> <p>SmartFM allows you to reduce your energy cost when your transmitter is running.</p> <p>1- Enable SmartFM?</p> <p>No <input checked="" type="checkbox"/> Yes</p> <p>⏮ ⏭</p> </div>
<p>If needed, modify the time zone and date of the transmitter.</p>	<div data-bbox="515 1529 1433 1821"> <h3>8/8 Time ✕</h3> <p>1- Set transmitter date and time:</p> <p>2022-09-29 14:47:32 (CEST) 📅 Change</p> <p>⏮ 📅</p> </div>

4.5. Getting on air

1. Disable the RF by pressing the front panel button.
2. Make sure the RF indicator LED is off.
3. Disconnect the load and connect the antenna to the transmitter RF output.
4. Enable the RF again by pressing the front panel button.

5. OPERATION AND PARAMETERS DESCRIPTION

5.1. Overview

Three interfaces are available to set the transmitter:

- The front panel menus for local configuration – see chapter 6
- The serial/Telnet commands for local or remote configuration – see chapter 7
- The embedded web site for remote configuration – see chapter 8

In all cases, parameters are as described below.

5.2. Local mode

The local mode is used for maintenance operations. It allows the technician to make sure nobody nor any system will control the transmitter during the operation.

Enable/Disable the local mode

- With the front panel local button. The lit yellow LED indicates the unit is in local mode; it is in remote mode when the LED is off.
- With a serial command:
 - for a module: CONF.MODE= LOCAL or REMOTE,
 - for a transmitter: TX.MODE=LOCAL or REMOTE.

Modification of the configuration with local interfaces

In local mode, the transmitter can be modified using the front panel application (see chapter 6), with serial commands (see chapter 7) or with the PC application (see chapter 8).

Disabling remote control interfaces

If the module is equipped with the GPIO option, in local mode, inputs and outputs are disabled until the transmitter is no longer in local mode (see chapter 10).

If the module is equipped with the Communication Pack option, in local mode, updates with the web site are not accessible.

If the module is an amplifier or an exciter included in a redundant system (non CCU for a exciter) such as a DD, 1+1 or N+1 system, any command from the management unit will not be taken into account by the module.



Port 2000 used for RDS remains available when the transmitter is in local mode

5.3. How to set the inputs

As **standard**, **main available audio inputs** are:

- AES1, AES2: AES/EBU digital audio
- ANA L* + ANA R: L+R analog audio.
- MPX1, MPX2: analog MPX

** ANA L can be used as a 3rd AES input.*

All inputs are located on the rear panel (see section 2.3.2).

Input are selected using the front panel, serial commands or the web site (see section 5.5).

To test the transmitter, use the audio generator (see section 5.8) or the player which plays an audio file from the SD card (see section 8.7.2).

For normal operation, set a main channel (usually, AES1, AES2, Analog, MPX1 or MPX2) as well as a backup channel (AES1, AES2, Analog, MPX1 or MPX2, Audio over IP, Player). Six backups can be set, each with a level of priority.

The transmitter will automatically switch to one or more backup channel in case of loss of signal, according to the priority assigned to the channels and the switching parameters (see section 5.9).

For the **RDS**, the following inputs can be used (see section 5.9):

- Either set: in MPX1, MPX2 or internally.
- Or in auto mode, with backup, in which case:
 - If the audio input is MPX1, the RDS source is MPX1
 - If the audio input is MPX2, the RDS source is MPX2
 - If the audio input is LINE 1/LINE2, the RDS source is internal (if the option is enabled).

It is essential to **set audio input levels** so as to obtain the desired deviation. We recommend checking levels with the front panel application readings (see section 6.3.2), and regardless of the situation, to enable the MPX hard clipper (see section 5.11).

5.4. Main indicators

This indicators are present on the web application header and on the unit's front panel.

RF PRESENT (TX.RFPRESENT)

This parameter indicates whether RF is present at a level superior to the threshold set by the command TX.RFPRESENT.MIN (0 by default). When not present (status=off), no alarm is triggered.

Local mode— see section 5.2.

Fault (ALARM.FAULT)

This indicator is red when a FAULT alarm is in progress.

Warning (ALARM.WARN)

This indicator is orange when a WARNING alarm is in progress.

Interlock (TX.INTERLOCK)

This indicator is green when the safety loop is closed.

5.5. Transmitter configuration

These parameters are available as:

Front panel *	TX PARAMETERS menu	see section 6.3.4
Serial commands	TX and CONF	see sections 7.2.3 and 7.2.4
Embedded web site	Transmitter/RF page	see section 8.8.7

Max power (TX.PWR_MAX) – read/write

With this parameter, set the maximum power that can be configured. This can be useful when in a modular system, the exciter power has to be within a given range for the transmitter to work properly, or when the installation (antenna...) has its own limitation.

From 0 to 99999 W (depending on the transmitter's power)

3 dB (TX.3DB) – read/write

With this parameter, set the triggering threshold for the 3 dB alarm. Default value is half the transmitter's power (also when in auto mode).

From 0 to 9999 dB (depending on the transmitter's power)

VSWR threshold (TX.VSWR.MAX) – read/write

With this parameter, set the triggering threshold for the VSWR alarm. It has no bearing on the VSWR Trip parameter described below.

From 0 to 99.9

Internal reflected limit (STAT.PREFMAX) – read *

This parameter indicates whether the reflected power went over the maximum limit. Depending on the configuration of the CONF.VSWR_TRIG command, it may trigger a VSWR fault.

Off/On

VSWR trip (TX.VSWRTRIP) – read/write

With this parameter, enable or disable the VSWR/reflected power safety. With a compact transmitter, in case the VSWR is higher than 3 and the reflected power is greater than the maximum threshold (software threshold as defined in the "Protecting the transmitter" section, chapter 2), the RF is shut off and automatically starts again. With a modular transmitter, in case the VSWR is higher than 3, the amplifier

power is set to 0 W, and again to its set value. If the fault is still present, the cut/restart process is repeated 3 times. If the 3rd time, it is still present, the transmitter is cut for good.

Off/On

5.6. Synchro

10 MHz operation (CONF.10MOPE) - read/write *

With this parameter set the operating mode of the 10 MHz input. In manual mode, the transmitter uses the internal 10 MHz reference. In auto mode, it uses an external 10 MHz reference when one is detected; when none is detected, it switches back to the internal 10 MHz reference.


Manu/Auto

5.7. SmartFM parameters

These parameters are available as:

Front panel	SMARTFM menu	see section 6.3.5
Serial commands	MEAS, TX, CONF, STAT	see sections 7.2.2, 7.2.3, 7.2.4 and 7.2.9
Embedded web site	Transmitter/SmartFM page	see section 8.8.5

 *SmartFM is a worldwide patented technology developed by WorldCast Systems.*

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

SmartFM is the first artificial intelligence dedicated to the FM radio listener experience. SmartFM can:

- Reduce FM Operating Costs (Opex)
 - Reduces electrical consumption by up to 40%
 - Reduces cooling costs by up to 45%
 - Increases transmitter lifespan
 - Reduces maintenance
- Reduce CO₂ emissions
 - Measurable and logged benefits
 - Guaranteed return-on-investment

SmartFM activation (CONF.SFM.STATE) – read/write

With this parameter, enable/disable the SmartFM function.

Off/On

SmartFM status (STAT.SFM.ACT) – read

This parameter indicates whether SmartFM is enabled. It differs from the Activation parameter which indicates whether the license is present.

Off/On

SmartFM strategy (CONF.SFM.MODE) – read/write

Five broadcasting strategies are available to meet the distinct needs of broadcasters. These strategies may dramatically reduce OPEX without affecting the listening experience, including at coverage limits.

1. **Standard:** This strategy allows significant savings without affecting the listening experience.
2. **Standard +:** This strategy increases the “standard” savings.
3. **Overlap:** this strategy leads to significant savings while protecting from adjacent channels .
4. **Boost:** This strategy improves the reception quality while controlling the average power. Make sure your transmitter can reach the set power +10%.
5. **Extreme:** This strategy achieves extreme savings. As minimum impact on the reception quality may be observed, be careful while using this configuration.

Minimum rate (STAT.SFM.MIN) – read *

Minimum rate applied to the set power. This rate is contingent on the selected strategy.

From 25 to 125 %

Maximum rate (STAT.SFM.MAX) – read *

Maximum rate applied to the set power. This rate is contingent on the selected strategy.

From 25 to 125 %

Current rate (MEAS.SFM) – read *

Rate applied to the set power. It varies between the min rate and the max rate, and depends on the current program.

From 25 to 125 %

SmartFM (TX.SFM) – read *

SmartFM set power based on the transmitter set power and the applied rate. This value is visible on the Transmitter/Main/Parameters page of the embedded web site.

Savings (TX.PCONS.SAVE) – read *

This parameter gives the number of kWh saved since SmartFM was first used (on web page and front panel), or over the last 10 seconds (with serial command). On the web interface, the conversion rate and the currency symbol can be set (System/Product/Configuration page) to display this parameter as cash value.

Boost (TX.PFWD.BOOST) – read *

This parameter gives the boost in Wh since SmartFM was first used (on web page and front panel), or instantaneously (with serial command).

5.8. Input settings

These parameters are available as:

Front panel	INPUT menu	see section 6.3.7
Serial commands	INPUT	see sections 7.2.8
Embedded web site	Transmitter/Input Select pages	see section 8.7.2

5.8.1. AES Inputs – AES1, AES2, AES3**Level (INPUT.AESn.LEVEL) – read/write**

This parameter is the max audio peak in dBu that can come from the transmitter on the AESn input. For example, if the audio peak from the source is +6 dBu, this parameter must be set to +6 dBu for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the LINE1 LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -20 dBu to +0 dBu

Preaccentuation (INPUT.AESn.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 µs is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 µs in Europe, 75 µs in the USA.

0, 50 or 75 µs

Synchronization check (INPUT.AESn.NO.SYNC) – read/write

With this parameter, set whether the loss of synchronization on the AES input should lead to a switch of channel. On the website, it is the “Check sync” parameter of the Transmitter/Input Select/Silence Detector page.

Off/On

Silence detection delay (INPUT.AESn.SW.DELAY) – read/write

With this parameter, set the switching delay in seconds when audio loss occurs.

From 1 to 120 s

Silence threshold (INPUT.AESn.SW.THRESH) – read/write

With this parameter, set the silence threshold level on the selected channel. In dBr when units are in relative mode; in dBFS or dBu when units are in absolute mode (see definition of modes section 5.15).

From -90 to 0 dBr

Silence back delay (INPUT.AESn.SW.BACKDELAY) – read/write

With this parameter, set the delay before returning to the highest priority channel, in seconds.

From 0 to 30 s

Silence detection mode (INPUT.AESn.SW.SILENCE) – read/write

With this parameter, select the channel (L / R / L or R / L and R) on which silence detection must be performed (not available on the MPX sub-menus).

L, R, ANY or BOTH

Drive (INPUT.AESn.DRIVE) – read/write

With this parameter, you can slightly compensate the input audio level. It directly affects the final deviation. A negative value decreases the deviation; a positive value can increase the deviation and/or cause the MPX hard clipper to be used (if enabled) which in turn may lead to audio distortion. We recommend you leave it at 0 dB.

From -6 dB to +6 dB

Right trim (INPUT.AESn.TRIM) – read/write

With this parameter, you can correct the balance between the Left and Right channels. However, it is better to look for and correct the cause of a lack of balance (before the transmitter) rather than correcting it at this stage. A positive value increases the Right channel; a negative value decreases the Right channel level. It is best to leave it at 0 dB.

From -3 dB to +3 dB

Filter (INPUT.AESn.FLT) – read/write

This parameter is crucial: it set the low-pass filter applied on the audio input. The FM bandwidth is limited to 15 kHz, so **the filter must be set to 15 kHz for the FM**. Digital technology and the quality of the internal stereo encoder make it possible to set the filter at 16 or 17 kHz while maintaining an acceptable pilot protection. Select 0 kHz to disable the filter: this solution can be used in mono operation (in stereo operation, the incidence on the MPX signal and its sub-carrier would be too great) or when a 15 kHz filter is already used upstream as with an FM processor for instance. In this specific situation, you may also use 2 filters, the standard 15 kHz standard filter with the external processor, plus the 16 kHz transmitter filter. The listeners will hear the processor's filter; the internal filter will take the relay in case of issue with the processor.

0, 15, 16 or 17 kHz

Custom audio alarm (INPUT.AESn.LOST) – read/write

With this parameter, set whether a loss of audio on this input should trigger an alarm.

Off/On

Audio alarm trigger (INPUT.AESn.ALARM) – read/write

With this parameter, set the type of alarm triggered by a loss of audio: none, warning or fault. If the custom alarm is enabled on a given input and the triggering type is NONE, in case of loss of audio, the transmitter will neither be in fault nor in warning, however, the alarm will be triggered. This behavior allows shutting off the RF on loss of audio without having the transmitter in alarm.

NONE, WARNING, FAULT

Presence (INPUT.AESn.PRESENCE) – read only

This parameter indicates the presence of audio signal at the input: none, left, right or L&R.

NONE, L, R, L+R

Sampling rate (INPUT.AESn.GET_SAMPLING) – read only

This parameter reads the sampling rate in Hz.

From 0 to 200000 Hz

5.8.2. Analog audio input– ANA1

Analog audio input parameters are as follows:

- Level (INPUT.ANA1.LEVEL) – read/write
- Preaccentuation (INPUT.ANA1.PREAC) – read/write
- Silence detection delay (INPUT.ANA1.SW.DELAY) – read/write
- Silence threshold (INPUT.ANA1.SW.THRESH) – read/write
- Silence back delay (INPUT.ANA1.SW.BACKDELAY) – read/write
- Silence detection mode (INPUT.ANA1.SW.SILENCE) – read/write
- Drive (INPUT.ANA1.DRIVE) – read/write
- Trim (INPUT.ANA1.TRIM) – read/write
- Filter (INPUT.ANA1.FLT) – read/write
- Audio alarm trigger (INPUT.ANA1.ALARM) – read/write
- Custom audio alarm (INPUT.ANA1.LOST) – read/write
- Presence (INPUT.ANA1.PRESENCE) – read only

They are identical to those of the AES inputs described in section 5.8.1.

5.8.3. Analog MPX inputs – MPX1, MPX2

Analog MPX input parameters are as follows:

- Level (INPUT.MPXn.LEVEL) – read/write
- Silence detection delay (INPUT.MPXn.SW.DELAY) – read/write
- Silence threshold (INPUT.MPXn.SW.THRESH) – read/write
- Silence back delay (INPUT.MPXn.SW.BACKDELAY) – read/write
- Drive (INPUT.MPXn.DRIVE) read/write
- Audio alarm trigger (INPUT.MPXn.ALARM) – read/write
- Custom audio alarm (INPUT.MPXn.LOST) – read/write
- Presence (INPUT.MPXn.PRESENCE) – read only

They are identical to those of the AES inputs described in section 5.8.1.

5.8.4. Player input

The player can be used as audio backup. Its parameters are as follows:

- Level (INPUT.PLAYER.LEVEL) – read/write
- Preaccentuation (INPUT.PLAYER.PREAC) – read/write
- Synchronization check (INPUT.PLAYER.NO.SYNC) – lecture/écriture
- Silence detection delay (INPUT.PLAYER.SW.DELAY) – read/write
- Silence threshold (INPUT.PLAYER.SW.THRESH) – read/write
- Silence back delay (INPUT.PLAYER.SW.BACKDELAY) – read/write
- Silence detection mode (INPUT.PLAYER.SW.SILENCE) – read/write
- Drive (INPUT.PLAYER.DRIVE) – read/write
- Trim (INPUT.PLAYER.TRIM) – read/write
- Filter (INPUT.PLAYER.FLT) – read/write
- Audio alarm trigger (INPUT.PLAYER.ALARM) – read/write
- Custom audio alarm (INPUT.PLAYER.LOST) – read/write
- Presence (INPUT.PLAYER.PRESENCE) – read only
- Sampling rate (INPUT.PLAYER.GET_SAMPLING) – read only

They are identical to those of the AES inputs described in section 5.8.1.



A +4dB attenuation is applied by default on the Player input to avoid saturation.

5.8.5. Generator input

State (INPUT.AUDIOGEN.STATE) – read/write

With this parameter, set the type of MPX signal generated by the internal generator.

OFF, PILOT, L, R, L+R (mono) or L-R (stereo)

Level (INPUT.AUDIOGEN.LEVEL) – read/write

With this parameter, set the internal generator audio level.

From -100.00 to 12.00 dBFS

Frequency (INPUT.AUDIOGEN.FREQ) – read/write

With this parameter, set the internal generator audio frequency.

From 0 to 100000.00 Hz

Preaccentuation (INPUT.AUDIOGEN.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 μ s is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 μ s in Europe, 75 μ s in the USA.


0, 50 or 75 μ s

5.8.6. IP decoder input

The following IP decoder input parameters are identical to those of the AES inputs described in section 5.8.1:

- Level (INPUT.AOIP.LEVEL) – read/write
- Preaccentuation (INPUT.AOIP.PREAC) – read/write
- Synchronization check (INPUT.AOIP.NO.SYNC) – lecture/écriture
- Silence detection delay (INPUT.AOIP.SW.DELAY) – read/write
- Silence threshold (INPUT.AOIP.SW.THRESH) – read/write
- Silence back delay (INPUT.AOIP.SW.BACKDELAY) – read/write
- Silence detection mode (INPUT.AOIP.SW.SILENCE) – read/write
- Drive (INPUT.AOIP.DRIVE) – read/write
- Trim (INPUT.AOIP.TRIM) – read/write
- Filter (INPUT.AOIP.FLT) – read/write
- Audio alarm trigger (INPUT.AOIP.ALARM) – read/write
- Custom audio alarm (INPUT.AOIP.LOST) – read/write
- Presence (INPUT.AOIP.PRESENCE) – read only

The following parameters are IP decoder specific.

 *Serial commands do not exist for these parameters.*

Connection status

An error occurs when one of the IP interface is in error and a stream is assigned to this interface

Audio mismatch

An error occurs if the algorithm and/or packet size do not match on both sides of the link.

Codec

Select the algorithm according to the incoming stream. With Auto-detect, the algorithm is selected automatically.

Codec configuration

This settings gives the bit rate, the mode and the sampling rate. The options vary according to the selected algorithm.

SureStream

SureStream is an APT feature that provides reliable, lossless connectivity over IP and Internet links through stream redundancy. To use SureStream on the IP decoder, SureStream must also be enabled on the encoder. The settings must be identical on both sides of the link. SureStream with 4 streams and 2 different interfaces provides the highest level of reliability.

WAN interface

This setting defines the network interface to be used for a single stream, or interfaces if SureStream is enabled.

ETH0 or ETH1

Base port UDP/IP

The base port can be any even number. Default: 5004.

Casting mode:

- **Unicast** is a point-to-point connection. The stream can be received from one decoder only. The system allows the configuration of several unicast streams (multiple unicast).
- **Multicast** allows point-to-multi-point streaming and uses the IGMP protocol for managing multicast joins and leaves; IGMPv2 and v3 (SSM) is supported.
- **SSM Multicast:** (Source-specific Multicast) SSM has several advantages over "normal" Multicast architectures. An essential is the possibility to make a multicast group usable through several sources. With SSM, a receiver can receive the data from a specific source. The Multicast Source IP address must also be entered for this purpose. The Source IP Address input field appears only in the receiver mode and if SSM Multicast has been selected.

Rx latency

Sets the size of the jitter buffer of the codec.

From 1 to 1500 ms

5.9. Encoder settings

These parameters are available as:

Front panel *	MODULATION and STEREO ENCODER menus	see sections 6.3.8 and 6.3.9
Serial commands	CONF and CODER	see sections 7.2.4 and 7.2.9
Embedded web site	Modulation/Stereo encoder pages	see section 8.7.3

Audio auto switch (CODER.BACKUP.AUDIO.*n*) – read/write

With this parameter, choose whether audio source selection is done manually or automatically. In manual mode, the user selected audio source is used regardless of the state of the audio source. In auto mode, the effective audio source depends directly on the switching configuration and on the channels selected as main or as backups.

MANU or AUTO

Main audio source (CODER.BACKUP.AUDIO.*n*) – read/write

With this parameter, select the main audio source.

NONE or AES1 or AES2 or AES3 or ANA1 or MPX1 or MPX2 or PLAYER or GENE or TUNER

1st to 6th backup (CODER.BACKUP.AUDIO.*n* - *n* = 1 to 6) – read/write

With this parameter, select backup audio sources from first to sixth.

NONE or AES1 or AES2 or AES3 or ANA1 or MPX1 or MPX2 or PLAYER or GENE or TUNER



If there is no audio, neither on the main source nor on the backup sources (or regardless of the priority level), the transmitter will remain on (or switch back to) the main source.

Main RDS source (CODER.SELECT.RDS) – read/write

With this parameter, set the RDS component source of the broadcast signal either with an external source or with the internal encoder. The AUTO mode selects the RDS source according to the current audio source. If the source is pure audio (LINE1 or LINE2), the transmitter uses the internal RDS; if the source is MPX1 (or MPX2), the transmitter uses the MPX1 (or MPX2) as RDS encoder. When selecting AUTO, the RDS source is updated when there is a switch of audio source. OFF disables the RDS.

MPX1, MPX2, INTERNAL, AUTO or OFF



The internal source can only be selected if the RDS option is present. Without the RDS option and if AUTO is selected: with the MPX1 or MPX2 source, their RDS component is used; with the ANA1 source, there is no RDS.



When the internal source is selected, a 15 second delay is to be expected upon startup before the RDS source is available.

RDS backup (CODER.BACKUP.RDS) – read/write

With this parameter, set the RDS backup source.

MPX1, MPX2, INTERNAL, AUTO or OFF

SCA source (CODER.SELECT.SCA) – read/write

With this parameter, set the SCA component source of the broadcast signal. The AUTO mode selects the SCA source according to the current audio source. If the source is MPX1 (or MPX2), the transmitter uses the MPX1 (or MPX2). When selecting AUTO, the SCA source is updated when there is a switch of audio source. OFF disables the SCA.

MPX1, MPX2, AUTO or OFF

Crossfade (CONF.CROSSFADE) – read/write

With this parameter, set the duration of the crossfade to switch from a backup audio channel back to a channel with a higher priority level in seconds. Recommended value: 0 to disable the function, 1 for optimal results.

From 0 to 25.5 s

Fade-in (CONF.FADEIN) – read/write

With this parameter, set the time it will take for the volume to reach its maximum level when a backup audio channel goes on air, in seconds. Recommended value: 0 to disable the function, 1 for optimal results.

From 0 to 25.5 s

Encoder mode (CODER.MOST) – read/write

With this parameter, set the stereo generator in mono or stereo mode. For mono, there are 3 options: Left channel broadcast in mono (Mono_L), right channel broadcast in mono (Mono_R), the sum Left+Right broadcast in mono (Mono). Otherwise left and right channels are broadcasted in stereo.

STEREO, MONO, MONO_L or MONO_R

Total deviation or MPX deviation (CONF.DEV.MPX) – read/write

With this parameter, set the maximum MPX deviation in kHz generated when the audio source is at the nominal level. It is often set at 75 kHz but this value may vary according to the country and relevant regulatory authorities. To ensure the sub-carrier levels remain stable, this parameter directly changes the audio deviation.

From 0 to 150.00 kHz

Audio deviation (CONF.DEV.AUDIO) – read/write

With this parameter, set the maximum audio deviation in kHz generated when the audio source is at the nominal level (the nominal level is set with the LEVEL parameter of the menus: LINE1, LINE2, MPX1 or MPX2). The audio deviation is set automatically when the MPX deviation parameter is set; however, it is possible to set the audio deviation rather than the MPX deviation. Increasing or decreasing the audio deviation affects the total deviation and thus automatically adjusts the MPX deviation. Make sure to avoid overmodulation. In case of loss of a sub-carrier (RDS or SCA) the deviation which was previously allocated to the sub-carrier is allocated to the audio.

From 0 to 150.00 kHz

Pilot deviation (CONF.DEV.PILOT) – read/write

With this parameter, set the 19 kHz pilot deviation. For countries modulating at 75 kHz, the pilot deviation should be 10% of the total deviation, i.e. 7.5 kHz without RDS or 7.1 kHz if RDS is used.

From 0 to 25.5 kHz

RDS deviation (CONF.DEV.RDS) – read/write

With this parameter, set the RDS sub-carrier deviation. The most widely used value is 4 kHz. In case of loss of RDS, this deviation is allocated to the audio.

From 0 to 25.5 kHz

SCA deviation (CONF.DEV.SCA) – read/write

With this parameter, set the SCA deviation (auxiliary sub-carrier other than RDS), as needed. In case of loss of SCA, this deviation is allocated to the audio.

From 0 to 25.5 kHz

Interaction between the various components according to the input type:

In all cases described below, the transmitter configuration is as follows:

Audio = 67.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

In the case of audio inputs (analog or AES), the set MPX represents the total of audio, pilot and RDS. If the RDS is disabled, the audio is automatically adjusted with +4 kHz.

Ex 1: set MPX = 75 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

If the RDS is enabled: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

If the RDS is disabled: Audio = $63.5 + 4 = 67.5$ kHz

Pilot = 7.5 kHz

In the case of MPX inputs, if the RDS is disabled, **the audio cannot be adjusted.**

Ex 2: inject stereo MPX + RDS with:

Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

If the RDS is disabled: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS on the MPX input: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

With internal RDS: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

Ex 3: inject stereo MPX with:

Audio = 67.5 kHz

Pilot = 7.5 kHz

If the RDS is disabled: Audio = 67.5 kHz

Pilot = 7.5 kHz

With internal RDS: Audio = 67.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

! The total modulation $67.5+7.5+4.0 = 79$ kHz is too high!

RDS phase (CONF.PHASE.RDS) – read/write

With this parameter, set the RDS sub-carrier phase in relation to the pilot sub-carrier. We recommend setting it at 90°.

From -180 à to180°

19 kHz output level (CODER.19KOUT.LEVEL) – read/write

With this parameter, enable/disable the rear panel 19 kHz clock and set its output level. 0=off; between 1 and 7: set a level between 0.9 and 1.1 V peak-to-peak. 5 corresponds to 1 V.

From 0 to 8 V

SmartFM RDS correction (CONF.DEV.RDS.COR) – read/write

With this parameter, enable SmartFM to optimize the modulation. We recommend you leave this parameter enabled.

Off/On

5.10. FSK parameters**FSK – Frequency-Shift Keying ***

The FSK is a frequency modulation scheme in which digital information is transmitted through discrete frequency changes of a carrier wave. Data is sent at the beginning of each hour. To use FSK, set the four following parameters:

- identification (CONF.FSK.ID): call sign to transmit in Morse code, character string – empty by default.
- number of repetition (CONF.FSK.REP) from 0 to 255 – 0 by default.
- frequency shift (CONF.FSK.SHIFT) in kHz from 5 to 25 and -25 to -5 – 10 by default.
- speed of transmission (CONF.FSK.SPEED) in WPM from 0 to 25 – 5 by default.

5.11. Sound process parameters

These parameters are available as:

Front panel	SOUND PROCESS menu	see section 6.3.15
Serial commands	CONF	see section 7.2.4
Embedded web site	Transmitter/Modulation/Sound Process page	see section 9.4.3 + chapter 10



Parameters specific to the 5 Band Sound Processor option are only available on the embedded web site. See chapter 9 for more details.

Preset name (CONF.SP.PRESET.NAME) – read/write

With this parameter, select the current preset among set presets.

Hard clipper state (CONF.STATE.CLIP) – read/write

This parameter enables or disables the clipper. It is recommended to leave it on to protect the transmitter.

Off/On

Hard clipper deviation (CONF.DEV.CLIP) – read/write

With this parameter, set the MPX hard clipper to prevent any possibility of overmodulation on the modulator itself. This process is carried out digitally right before the RF generation, and is therefore enabled on all the inputs. If the deviation is greater than the configured value (in kHz), the MPX hard clipper is automatically enabled. Unlike FM limiters/clippers used in audio processing, this clipper cannot be used continuously for it generates a noticeable audio distortion. It is therefore best to set it at the maximum authorized deviation, plus a few kHz to ensure additional security, for instance, set it at 90 kHz for a 75 kHz nominal deviation.

From 0 to 200 kHz

MPX power limiter state (CONF.STATE.MPXPWR) – read/write

This parameter enables or disables the MPX Power Limiter processing stage. Do not activate the MPX power reduction if no standard requires you to do it, it could have a negative impact on the sought after sound level. Default: off.

Off/On

MPX power limiter level (CONF.DEV.MPXPWR) – read/write




Set the maximum authorized MPX Power. Default value: 3 dB.

From -3 to -10 dB

5.12. RDS parameters

These parameters are available as:

Front panel	RDS menu	see section 6.3.11
Serial commands	RDS	see sections 7.2.8 and 7.2.9
Embedded web site	RDS pages	see section 8.6

-  *RDS data setting is only available if an RDS license is present on the unit. Functions related to each license, Full RDS license and Dynamic RDS license are detailed below.*
-  *The RDS is enabled with the RDS/SCA ENCODER parameters.*
-  *You may use any type of characters for RDS texts (static or dynamic PS, RT...). In remote mode, these characters will be properly displayed, but not in local mode: ie., the Web interface will show the actual text but not the front panel application.*

5.12.1. Full RDS – Global RDS parameters

RDS Activation (RDS.OPMODE)

Enable the RDS to send RDS data. When RDS is disabled, the input signal is sent as is to the output.

RBDS Mode (RDS.TYPE)

Enable the RBDS mode, American standard. Enabling RBDS modifies the definition of PTY codes.

ITU Region (ITU_REGION2)

Set the ITU region, 1/3 for Europe and Asia, 2 for America. The region sets the way frequencies are attributed in compliance with the IEC 62106 standard.

Clock Time (4A)

Regular transmission of UTC (Universal time coordinated) and Julian day with time zone offset.

RTC / Local Time Offset

Set the offset for the clock time function in ½ hours (ex: 2 = 1 hour)

TA – EON TA

When a TA flag is activated, the encoder can send a burst of 15B type groups (TA linked to the main PSN) or 14B type groups (TA linked to an EON program), if desired.

For each type of burst, the user may specify: the number of 15B groups or 14B groups to be sent (whether it is an OFF → ON transition or an ON → OFF transition, the number can be different), and the number of groups in between each 15B or 14B group.

Reference input

6 reference tables are available. They allow different configurations to be ‘preset’, and then activated with a single click or simple UECP command.

RDS Level (LEVEL)

RDS level in millivolts.

Phase (PHASE)

RDS Phase to synchronize with the transmitter. Between 0 and 359.9°.

Legacy mode

With this mode, Telnet operation is compatible with legacy Audemat encoders (FMB80 and HQSound Processor)

PS Scroll

 *PS scroll commands include multiple parameters.*

Center (PS_OPTIONS)

When scrolling is done word by word, the encoder may center each word in the receiver screen. Only applicable when 'Word' is the chosen increment

Truncate (PS_OPTIONS)

When scrolling is done word by word, the encoder truncates words longer than the display screen (longer than 8 characters). Only applicable when 'Word' is the chosen increment.

Increment (PS_SCROLL)

Set the number of scrolling characters. Scrolling may be done by word. In that case, the encoder will detect whole words (identifiable delimiters are: ' ', '-', ','), and fit as many whole words as possible on each screen.

Delay between screens (PS_SCROLL)

Time laps between 2 consecutive screens.

Enable (PS_STRING)

Each line must be enabled to be sent.

Repeat (PS_STRING)

The encoder can repeat a line before sending the next one (max: 99 times).

Text (PS_STRING ou PS_SCROLL)

Text may include dynamic data (<ITEM....>, <INFO...>...) that will only be sent if filled in, and for ITEM type fields if the validity time frame is correct.

TA timeout

When the TA is activated, it will be automatically deactivated at the end of a timeout (if it has not first been deactivated by command). Timeout is set in minutes. If set at 0, this function is disabled.

PS RT Delay (PS_RT_DELAY)

Set the delay in seconds before PS or radiotext is sent.

5.12.2. Full RDS - DSN

These parameters are on the RDS/DSN page of the embedded website.

Group sequence

Order in which groups are sent. It must have at least one 0A group.

Group variant sequencing

A given group may include variants which will display specific information for this group. Set the group variant sequence.

Groupe 1A variant:

- 0 – Extended Country Code
- 6 - Broadcaster Usage
- 7 – EWS Channel Identification

Groupe 14A variant:

- 0 - PS characters 1 & 2
- 1 - PS characters 3 & 4
- 2 - PS characters 5 & 6
- 3 - PS characters 7 & 8
- 4 - AF (method A)
- 5 - Mapped FM frequency 1
- 6 - Mapped FM frequency 2
- 7 - Mapped FM frequency 3
- 8 - Mapped FM frequency 4
- 9 - Mapped AM frequency
- 10 - Mapped FM frequency other band
- 12 - Link Information
- 13 - PTY / TA
- 15 - Broadcaster Usage

Group 3A sequence (ODA)

Promotes one ODA in particular. If no sequence is set, all ODAs are sent in the same proportions.

Extended group sequences

The extended group sequences allow the replacement of an empty group by another.

Example:

In data set 1, transmission of the first type 7A group should be replaced, if there is no data, by transmission of a type 8A group, or if the type 8A group buffer is empty by a type 6A group, or if the type 6A group buffer

is empty by a type 14A group. The next transmission of a type 7A group for which there is no data should be replaced by transmission of a type 6A group or, if the type 6A buffer is empty, by a type 0A group. The following transmission of a type 7A group for which there is no data should be replaced by the alternatives sequence: type 8A, 6A, 14A groups.

0A,	2A,	7A,	14A,	7A,	0A,	6A,	2A,	7A,	group sequence
		8A		6A				8A	1 ^e alternative
		6A		0A				6A	
		14A						14A	alternative finale

SLC

Slow Labeling Code, software configuration codes.

Extended Country Code

RDS uses its own country codes. The first most significant bits of the PI code carry the RDS country code. Their four bit coding structure only permits the definition of 15 different codes, 1 to F (hex). Since there are much more countries to be identified, some countries have to share the same code, which does not permit unique identification. Hence there is the need to use the Extended Country Code. The ECC consists of eight bits.

Long PS

PS with 32 bytes

Main PSN Radiotext (RDS.RADIOTEXT.TEXT)

Radiotext content (64 characters max). Up to 8 lines of text can be entered.

A/B Toggle (RDS.RADIOTEXT.TOGGLE)

Enables the change of logical state with each new message.

Repeat (RDS.RADIOTEXT.NB)

Number of repetitions between 1 and 15 before sending the next radiotext.

PSN number

This number must be unique in the DSN.

Enabling EON PSN

Each EON PSN can be sent or not. The main PSN is always enabled.

PI (RDS.PI)

Program Identification: identifying code of the received station.

PS (RDS.PS)

Program Service name: name of the station in 8 characters.

PTY (RDS.PTY)

Program Type: function which identifies types of programs broadcast by an RDS station.

PTY code	RDS Programme type (EU)	RBDS Program type (USA)
0	No programme type or undefined	No program type or undefined
1	News	News
2	Current affairs	Information
3	Information	Sports
4	Sport	Talk
5	Education	Rock
6	Drama	Classic Rock
7	Culture	Adult Hits
8	Science	Soft Rock
9	Varied	Top 40
10	Pop Music	Country
11	Rock Music	Oldies
12	<u>M.O.R. Music</u>	Soft
13	Light classical	Nostalgia
14	Serious classical	Jazz
15	Other Music	Classical
16	Weather	Rhythm and Blues
17	Finance	Soft Rhythm and Blues
18	Children's programmes	Language
19	Social Affairs	Religious Music

20	Religion	Religious Talk
21	Phone In	Personality
22	Travel	Public
23	Leisure	College
24	Jazz Music	Unassigned
25	Country Music	Unassigned
26	National Music	Unassigned
27	Oldies Music	Unassigned
28	Folk Music	Unassigned
29	Documentary	Weather
30	Alarm Test	Emergency Test
31	Alarm	Emergency

PTYN (RDS.PTYN)

Program TYpe Name: supplement to program type (PTY), specifying its nature using an 8 character alphanumeric string.

TA (RDS.TA)

Traffic Announcement: digital flag which instantaneously switches an RDS receiver onto road information reports. At the end of the report, the receiver will automatically go back to its former operating state.

TP (RDS.TP)

Traffic Program: digital flag showing RDS receivers that the allocated station is likely to broadcast road information. The TP code does not ensure receiver switching during road announcements; it simply lets the listener know if the station offers this type of information.

Dynamic PTY

PTY default mode is static. This parameter enables the dynamic mode for PTY.

Link

The 4 character linkage information makes it possible to link several encoders for a common configuration.

Alternative Frequencies (RDS.AF)

The list(s) of alternative frequencies give information on the various transmitters broadcasting the same program in the same or adjacent reception areas, and enable receivers equipped with a memory to store

the list(s), to reduce the time needed for switching to another transmitter. This facility is particularly useful in the case of car and portable radios.

With the A method, up to 25 alternative frequencies may be added.

With the B method, alternative frequencies are sent in pairs. First define the tuning frequency, then enter the associated alternative frequencies. With this method, the frequency type (regional, national) may be specified.

EON PSN creation (RDS.EON.ADD)

This feature can be used to update the information stored in a receiver about program services other than the one received. Alternative frequencies, the PS name, Traffic program and Traffic Announcement identification as well as program Type and program Item Number information can be transmitted for the other service. The relation to the corresponding program is established by means of the relevant program Identification. Linkage information, consisting of four data elements, provides the means by which several program services may be treated by the receiver as a single service during times a common program is carried. Linkage information also provides a mechanism to signal an extended set of related services.

EON Sent Fields (EON_ELEMENTS)

Indicate which specific data is sent to the receiver:

- **PS**
- **AF**
- **LINK**
- **PTY**
- **Broadcaster Usage:** The coding of this information may be decided unilaterally by the broadcaster to suit the application. RDS consumer receivers should entirely ignore this information.
- **Burst 14B:** sends group 14B, reserved for EON information in burst mode (repetition).

5.12.3. Full RDS - RT Plus

These parameters are on the RDS/RT Plus page of the embedded website.

RT+ is a service complementary to radiotext which tags some text parts of radiotext messages with metadata describing their nature.

It regroups information sent by ODA to various equipment with dedicated FM receivers (such as MP3 players, smartphones...).

Using the RT+, receivers access functions such as:

- Content extraction (title, artist, group, genre, etc.)
- Display of "renewable" information (horoscope, sports results, movie theaters, etc.)
- Program guide
- Interactivity (phone number, SMS, vote ; URL)

RDS Group (RT_PLUS)

RT+ can be sent in groups 1B, 3B, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9A, 9B, 10B, 11B, 12A, 12B, 13A and 13B.

Table of definition of RT+ commands

Category	RTplus classes	MP3 id3v2		Description
Item	ITEM.TITLE	TIT2	TITLE	Title of item
	ITEM.ALBUM	TALB	ALBUM	The collection name to which this track belongs
	ITEM.TRACKNUMBER	TRCK	TRACKNUM	Number of the current part of the current level
	ITEM.ARTIST	TPE1	ARTIST	A person or band/collective generally considered responsible for the work
	ITEM.COMPOSITION			A complete composition (mainly used in classical music)
	ITEM.MOVEMENT			A movement is a large division of a larger composition or musical form
	ITEM.CONDUCTOR	TPE3	CONDUCTOR	The artist(s) who performed the work. In classical music this would be the conductor, soloists
	ITEM.COMPOSER	TCOM	COMPOSER	Name of the original composer
	ITEM.BAND	TPE2	BAND	Band / orchestra / accompaniment / musician
	ITEM.COMMENT	COMM	COMMENT	Any comment related to the content
	ITEM.GENRE	TCON	CONTENTTYPE	The main genre of the audio or video; e.g. "classical", "ambient-house", "synthpop", "sci-fi", "drama", etc.
Info	INFO.NEWS			Headline
	INFO.NEWS.LOCAL			Local news.
	INFO.STOCKMARKET			Quote information
	INFO.SPORT			Result of a game, either as one tag "Bayern München: Borussia 5:5" or as 2 distinct tags
	INFO.LOTTERY			Lottery
	INFO.HOROSCOPE			Horoscope
	INFO.DAILY_DIVERSION			Daily tip / diversion / joke ...
	INFO.HEALTH			Information about health: Allergy alarms ...
	INFO.EVENT			Info about an event
	INFO.SZENE			Information about scene (Hot locations to be, ...)
	INFO.CINEMA			Information about movies in cinema
	INFO.TV			Information about TV-movies
	INFO.DATE_TIME			Information about date and time (Client to chose between date and time)
	INFO.WEATHER			Information about weather
	INFO.ALARM			An alarm information, typically an official alarm send out while the alarm flag is set
	INFO.ADVERTISEMENT			Info about an advertisement. May be in parallel to an audio advertisements
	INFO.OTHER			Other Information: Not especially specified
Program	STATIONNAME.LONG			Name describing the radio station
	PROGRAM.NOW			EPG info program now

Category	RTplus classes	MP3 id3v2		Description
	PROGRAM.NEXT			EPG info program next
	PROGRAM.PART			Part of the current radio show: E.g. one of several parts of the PROGRAM.NOW
	PROGRAM.HOST			Name of the host of the radio show
	PROGRAM.EDITORIAL_ST AFF			
	PROGRAM.RADIO			Information about radio shows: A link towards another frequency with other content (NOT AF list) May be one tag (keyword##frequency) or two distinctive tags
	PROGRAM.HOMEPAGE	WORS	WWWRADIOPAGE	Link to radio station homepage
Interactivity	PHONE.HOTLINE			The telephone number of the radio stations hotline
	PHONE.STUDIO			The telephone number of the radio stations studio
	PHONE.OTHER			Name and telephone number: Either as one tag ("keyword##phone number") or as two distinct tags
	SMS.STUDIO			The sms number of the radio stations studio (to send directly a sms into the studio)
	SMS.OTHER			Name and sms number: Either as one tag ("keyword##sms number") or as two distinct tags
	EMAIL.HOTLINE			The email address of the radio stations hotline
	EMAIL.STUDIO			The email address of the radio stations studio
	EMAIL.OTHER			Name and email address: Either as one tag ("keyword##phone number") or as two distinct tags
	MMS.OTHER			Name and mms number: Either as one tag ("keyword##mms number") or as two distinct tags
	CHAT			chat content: send by users to a specific address and broadcasted by the Radio Station
	CHAT.CENTER			Address, where contributions to the chat shall be sent (may be url or sms)
	VOTE.QUESTION			A question (typically binary) which can be answered by "yes" or "no" or "1" or "2"
	VOTE.CENTER			url or sms number to send your answer to
Descriptor	PLACE			Descriptor will always be the second RT tag in a message. And will describe the RT tag 1 in more detail
	APPOINTMENT			Adds info about date and time
	HOTLINE			Hotline number to call to get more info
	IDENTIFIER	TSRC	ISRC	Can identify any tag in RT1. For music it is the: International Standard Recording Code (http://www.ifpi.org/isrc/)
	PURCHASE	WPAY	WWWPAYMENT	Address where item can be purchased. Address can be an url or a sms-number

Category	RTplus classes	MP3 id3v2		Description
	GET_DATA			Retrieves either via a sms or url-link more data about tag in RT1. (Info request via Point to Point - unicast)

5.12.4. Full RDS - ODA

Working with ODA data

The introduction of open data applications to the RDS standard IEC EN 62106 / EN 50067 offers a very flexible way of setting up new (and maybe unknown) applications using RDS. This in turn however requires a very flexible means of allocating resources to ODA and dealing with possible conflicts of priority for different applications.

Relative priority

In order to offer flexibility for different OD applications, the ODA free-format group is sent to the encoder with one of the following priorities: normal, "extremely urgent" or "immediate" transmission.

A group sent with normal priority will be added to the specified free-format group buffer for transmission according to the group sequence and resource allocation configuration. A group sent with "extremely urgent" priority will bypass the free-format buffer and will be sent as soon as possible according to the group sequence and resource allocation configuration. A group sent for "immediate" transmission is immediately transmitted regardless of the group sequence, but respecting the priority of 1A and 4A groups.

The relative priority setting for different groups can also be configured in order to explicitly define the relative priority for groups competing to be transmitted outside of the normal group sequence: e.g. 14B, 15B and repetitions of ODA "Burst mode" groups.

RDS resource allocation

The transmission of data according to the group sequence and extended group sequence does not offer the timing constraints necessary for certain Open Data Applications, so two additional mechanisms have been included to increase the flexibility of the RDS resource allocation: "Burst Mode" transmission and "Spinning wheel" mode transmission.

It is necessary to configure several parameters to be able to use a group for an ODA.

AID

ODA identification number. Assigned by the RDS forum.

Each application supported on the RDS forum has a unique AID.

MSG

Message.

MSG2

Some applications require sending 2 messages in sequence. When there is data in MSG2, the RDS encoder sends it.

Timeout

Timeout on data at the input, in minutes. Data loss at the input for a longer time will cause a 3A group containing this AID and a group equal to 0x1F to be sent.

"Burst mode" transmission

This mode enables ODA free-format groups like 14B and 15B groups with a predetermined number of repetitions and inter-group spacing.

Spacing

Number of other groups to be inserted between the free format groups.

Repeat

Number of 'free-format' groups to be sent.

"Spinning wheel" mode transmission. The "Spinning wheel" method uses the following parameters:

Number of time slots

Divide the minute evenly into a number of time slots.

Time Window

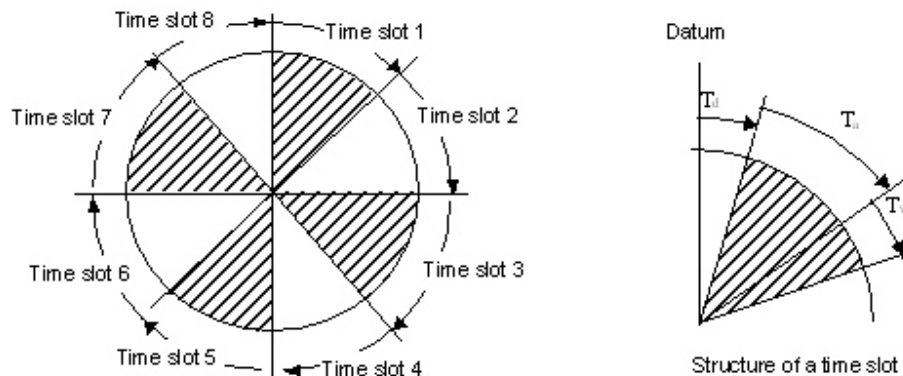
Split each of these time slots into two parts: a first part (activity time, T_a), during which ODA groups may be inserted into the data stream; and a second part (window time, T_w), during which no ODA groups shall be inserted into the data stream.

Delay

- Between the start of the minute (as indicated in the RDS-data stream by the presence of a type 4A group, which must be transmitted to use spinning wheel transmission) and the start of the first time slot it is possible to configure a delay (delay time, T_d).

•

The structure of the parameters T_a , T_d and T_w is illustrated below:



The insertion of ODA groups is governed by the following rules:

- No ODA group should start outside the activity window.
- An ODA group may be completed outside the activity window.
- T_a , T_w , and T_d have to be multiples of one second, with $60 \text{ s} / (T_a + T_w) = n$ (where n : integer > 0).

The actual values of these parameters should be assumed to be either default values or be coded into the system information.

5.12.5. Full RDS - UECP

Site (UECP.SITE)

Site address of the unit The individual address can be set by Telnet, via the front panel application or on the web site Hexadecimal value, 3 characters max.

Encoder (UECP.ENCODER)

Encoder address of the unit. The individual address can only be set by Telnet, via the front panel application or on the web site. Hexadecimal value, 2 characters max.

Speed

Serial port speed

Mode (UECP.UDP.MODE)

UECP communication mode (one-way, bidirectional requested or spontaneous).




Timeout (UECP.UDP.TIMEOUT)

Delay in minutes after which the timeout alarm will be triggered if there is no activity (255 = no timeout)

Filters

The filters allow selection of groups to be sent.

5.12.6. Dynamic RDS

-  *With the RDS option, configure up to 2 DSNs each with a main PSN. Among other things, the DSNs allow fast and easy changing of the encoder settings remotely.*
-  *The RDS is enabled with the RDS/SCA ENCODER parameters.*
-  *You may use any type of characters for RDS texts (static or dynamic PS, RT...). In remote mode, these characters will be properly displayed, but not in local mode: ie., the Web interface will show the actual text but not the front panel application.*

Active DNS (RDS.DSN)

This parameter indicates the current DSN number.

Main DSN

PI (RDS.MAINDSN.PI) – read/write

With this parameter, set the PI code (Program Identifier) used by RDS receivers to identify the station while searching for a frequency using AF or EON-AF codes.

4-digit hexadecimal code

PS (RDS.MAINDSN.PS) – read/write

With this parameter, set the PS (Program Station)

8-digit code

PTY (RDS.MAINDSN.PTY) – read/write

With this parameter, set the PTY (Program Type). Select on 32 RDS or RDBS preset codes as given in the table below.

From 0 to 31

PTY code	RDS Programme type (EU)	RBDS Program type (USA)
0	No programme type or undefined	No program type or undefined
1	News	News
2	Current affairs	Information
3	Information	Sports
4	Sport	Talk
5	Education	Rock
6	Drama	Classic Rock
7	Culture	Adult Hits
8	Science	Soft Rock
9	Varied	Top 40
10	Pop Music	Country
11	Rock Music	Oldies
12	<u>M.O.R. Music</u>	Soft
13	Light classical	Nostalgia
14	Serious classical	Jazz
15	Other Music	Classical
16	Weather	Rhythm and Blues
17	Finance	Soft Rhythm and Blues
18	Children's programmes	Language
19	Social Affairs	Religious Music
20	Religion	Religious Talk
21	Phone In	Personality
22	Travel	Public
23	Leisure	College
24	Jazz Music	Unassigned
25	Country Music	Unassigned
26	National Music	Unassigned

27	Oldies Music	Unassigned
28	Folk Music	Unassigned
29	Documentary	Weather
30	Alarm Test	Emergency Test
31	Alarm	Emergency

MS (RDS.MAINDSN.MS) – read/write

With this parameter, indicate whether the program is Music or Speech to automatically adjust the sound level of the RDS receiver.

0 (music) or 1 (speech)

DI (RDS.MAINDSN.DI) – read/write

With this parameter, set the DI (Decoder Identification) which enables an RDS receiver's audio level to be adjusted according to the type of received audio (mono or stereo, static or dynamic PTY, compressed or not, with or without artificial head).

From 0 to 15, as indicated in the table below.

	Mono / Stereo	With / Without artificial head	Compressed / non compressed	static / dynamic PTY
0	mono	without	non	static
1	stereo	without	non	static
2	mono	with	non	static
3	stereo	with	non	static
4	mono	without	compressed	static
5	stereo	without	compressed	static
6	mono	with	compressed	static
7	stereo	with	compressed	static
8	mono	without	non	dynamic
9	stereo	without	non	dynamic
10	mono	with	non	dynamic
11	stereo	with	non	dynamic
12	mono	without	compressed	dynamic
13	stereo	without	compressed	dynamic
14	mono	with	compressed	dynamic
15	stereo	with	compressed	dynamic

TA/TP (RDS.MAINDSN.TATP / RDS.MAINDSN.TA / RDS.MAINDSN.TA) – read/write

With this parameter, enable or disable the TA (Traffic Announcement) / TP (Traffic Program). Enabling the TA instantaneously switches an RDS receiver onto road information reports; at the end of the report, the receiver will automatically go back to its former operating state. Enabling the TP shows RDS receivers that the allocated station is likely to broadcast road information. You may enable both the TA and the TP, the TP only or neither.

TATP, TP or OFF

AF (RDS.MAINDSN.AF) – read/write

With this parameter, set up to 25 alternative frequencies in MHz with the method A. A RDS receiver will shift to an alternative frequency when the set frequency is no longer properly received.

XX,XX, ...,XX

RT (RDS.MAINDSN.RT) – read/write

With this parameter, display and set the radiotext, function which enables text messages to be broadcast in groups of 64 characters. RDS receiver can only benefit from this function if fitted with a specific display (home receivers, Smartphone mobile receivers).

Dynamic RT (RDS.RT1.TEXT) – read/write

With this parameter, display and set the radiotext, enhanced with tags (see list of tags below). It is not stored in the transmitter's internal memory and will be lost upon restart.



To ensure compatibility with legacy systems, the command RT_TEXT has been created. It is identical to the command RDS.RT1.TEXT.

Group sequence / GS (RDS.MAINDSN.GS) – read/write

With this parameter, set the group sequence (32 max) which must include at least one group 0A.

On the web interface, you may enter a specific sequence, or use a preset sequence. The SmartFM button makes it possible to set a group sequence to be used for field measurements run with a SmartFM compatible monitoring or measurement unit (such as the AUDEMAT FM MC5).

XX,XX, ...,XX

Parameters of the ALT DSN are identical to those of the MAIN DSN; for serial commands, use ALT instead of MAIN.

PS Scroll

When it is authorized, PS Scroll is often used in direct relation with the on air audio content. The information needs frequent updating, it therefore should be set so changes are automatically taken into account.

Two distinct cases are identified:

- PS Scroll setting: available with serial commands, the Engi application or with the web site.
- Dynamic data transmission: can only be done with the RDS console.

Setting

Commands are available to interface with any automation system generating the information. Their name can be configured to match the specific commands of the automation software application.

Category	RTplus classes	MP3 id3v2		Description
Item	ITEM.TITLE	TIT2	TITLE	Title of item
	ITEM.ALBUM	TALB	ALBUM	The collection name to which this track belongs
	ITEM.TRACKNUMBER	TRCK	TRACKNUM	Number of the current part of the current level
	ITEM.ARTIST	TPE1	ARTIST	A person or band/collective generally considered responsible for the work
	ITEM.COMPOSITION			A complete composition (mainly used in classical music)
	ITEM.MOVEMENT			A movement is a large division of a larger composition or musical form
	ITEM.CONDUCTOR	TPE3	CONDUCTOR	The artist(s) who performed the work. In classical music this would be the conductor, soloists
	ITEM.COMPOSER	TCOM	COMPOSER	Name of the original composer
	ITEM.BAND	TPE2	BAND	Band / orchestra / accompaniment / musician
	ITEM.COMMENT	COMM	COMMENT	Any comment related to the content
	ITEM.GENRE	TCON	CONTENTTYPE	The main genre of the audio or video; e.g. "classical", "ambient-house", "synthpop", "sci-fi", "drama", etc.
Info	INFO.NEWS			Headline
	INFO.NEWS.LOCAL			Local news.
	INFO.STOCKMARKET			Quote information
	INFO.SPORT			Result of a game, either as one tag "Bayern München: Borussia 5:5" or as 2 distinct tags
	INFO.LOTTERY			Lottery
	INFO.HOROSCOPE			Horoscope
	INFO.DAILY_DIVERSION			Daily tip / diversion / joke ...
	INFO.HEALTH			Information about health: Allergy alarms ...
	INFO.EVENT			Info about an event
	INFO.SZENE			Information about scene (Hot locations to be, ...)
	INFO.CINEMA			Information about movies in cinema
	INFO.TV			Information about TV-movies
	INFO.DATE_TIME			Information about date and time (Client to chose between date and time)
	INFO.WEATHER			Information about weather
	INFO.ALARM			An alarm information, typically an official alarm send out while the alarm flag is set
	INFO.ADVERTISEMENT			Info about an advertisement. May be in parallel to an audio advertisements
	INFO.OTHER			Other Information: Not especially specified
Program	STATIONNAME.LONG			Name describing the radio station
	PROGRAM.NOW			EPG info program now
	PROGRAM.NEXT			EPG info program next
	PROGRAM.PART			Part of the current radio show: E.g. one of several parts of the PROGRAM.NOW
	PROGRAM.HOST			Name of the host of the radio show
	PROGRAM.EDITORIAL_STAFF			

Category	RTplus classes	MP3 id3v2		Description
	PROGRAM.RADIO			Information about radio shows: A link towards another frequency with other content (NOT AF list) May be one tag (keyword##frequency) or two distinctive tags
	PROGRAM.HOMEPAGE	WORS	WWW.RADIOPAGE	Link to radio station homepage
Interactivity	PHONE.HOTLINE			The telephone number of the radio stations hotline
	PHONE.STUDIO			The telephone number of the radio stations studio
	PHONE.OTHER			Name and telephone number: Either as one tag ("keyword##phone number") or as two distinct tags
	SMS.STUDIO			The sms number of the radio stations studio (to send directly a sms into the studio)
	SMS.OTHER			Name and sms number: Either as one tag ("keyword##sms number") or as two distinct tags
	EMAIL.HOTLINE			The email address of the radio stations hotline
	EMAIL.STUDIO			The email address of the radio stations studio
	EMAIL.OTHER			Name and email address: Either as one tag ("keyword##phone number") or as two distinct tags
	MMS.OTHER			Name and mms number: Either as one tag ("keyword##mms number") or as two distinct tags
	CHAT			chat content: send by users to a specific address and broadcasted by the Radio Station
	CHAT.CENTER			Address, where contributions to the chat shall be sent (may be url or sms)
	VOTE.QUESTION			A question (typically binary) which can be answered by "yes" or "no" or "1" or "2"
	VOTE.CENTER			url or sms number to send your answer to
Descriptor	PLACE			Descriptor will always be the second RT tag in a message. And will describe the RT tag 1 in more detail
	APPOINTMENT			Adds info about date and time
	HOTLINE			Hotline number to call to get more info
	IDENTIFIER	TSRC	ISRC	Can identify any tag in RT1. For music it is the: International Standard Recording Code (http://www.ifpi.org/isrc/)
	PURCHASE	WPAY	WWW.PAYMENT	Address where item can be purchased. Address can be an url or a sms-number
	GET_DATA			Retrieves either via a sms or url-link more data about tag in RT1. (Info request via Point to Point - unicast)


Six lines of PS Scroll can be configured. For each, set:

- **Text** (RDS.PSn.TEXT): Text may include dynamic data (<ITEM....>, <INFO...>...) that will only be sent if filled in, and for ITEM type fields if the validity time frame is correct. Four dynamic data tags max may be included.
- **Repetition** (RDS.PSn.REP): The encoder will repeat the line before sending the next one (max: 16 times). If repetition is set between 1 and 16 for only one of the enabled strings, this one string will be sent indefinitely*. If repetition is set 0 for all the enabled strings, the static PS is sent. If the repetition for several enabled strings is set between 1 and 16, the sequence of these strings will be sent indefinitely*.
- **Enabled** (RDS.PSn.EN): Check the box for the line to be sent.

- **Center** (RDS.PSn.CENTER): When scrolling is done word by word, the encoder may center each word in the receiver screen. Only applicable when 'Word' is the chosen increment
- **Increment** (RDS.PSn.INCREMENT): Set the number of scrolling characters, from 1 to 8. Scrolling may be done by word (value 0). In that case, the encoder will detect whole words (identifiable delimiters are: ' ', '-', ','), and fit as many whole words as possible on each screen.
- **Truncated** (RDS.PSn.TRUNCATE): When scrolling is done word by word, the encoder truncates words longer than the display screen (longer than 8 characters). Only applicable when 'Word' is the chosen increment.
- **Delay** (RDS.PSn.DELAY): Time laps between 2 consecutive screens. When scrolling by letter, time laps between 2 characters.

Example:

```
RDS.PS1.TEXT = Now playing <ITEM.TITLE> by <ITEM.ARTIST>
RDS.PS1.EN = ON
RDS.PS1.REP = 1
RDS.PS1.TEXT = You're listening to <LONGNAME>
RDS.PS1.EN = ON
RDS.PS1.REP = 2
```

 *To ensure compatibility with legacy systems, the command PS_TEXT has been created. It is identical to the command RDS.PS1.TEXT.*

Sending dynamic data

Default port for the RDS console is port 2000. It is set on the System/Communication/Network page.

To send dynamic data, open a Telnet session on port 2000.

Example:


```
ARTISTNAME= Calexico
SONGTITLE= Miles from the Sea
STATIONNAMELONG= My Station
DURATION=3:41
```

For 3 minutes and 41 seconds, the following sequence will be repeated:

Now playing Miles from the Sea by Calexico

You're listening to My Station

You're listening to My Station

 ** Strings including ITEM type data can only be sent if the duration is valid. In the above example, after 3 minutes and 41 seconds and with no new data, "You're listening to My Station" will be the only string sent.*

In addition to all the RT+ commands listed above, and their redefinitions when available, the following commands can be sent on port 2000:

PS_TEXT
RT_TEXT
PS_RT_TEXT
TA
TP
PTY
PTYN
DSN
MS
PI

5.13. System parameters

These parameters are available as:

Front panel	About/System menu	see section 6.3.14
Serial commands	SYS	see section 7.2.1
Embedded web site	System\Product\Configuration Page	see section 8.9.1

5.13.1. Product

unit (SYS.UNIT) – read/write

This parameter sets the input mode for audio silence detection thresholds on all the inputs. With the Relative mode, level, drive and trim values are given in dBr. In Absolute mode, these values are given in dBu or dBFS and can be positive. Input levels affect set thresholds; thresholds applied to left and right, and to MPX1 and MPX2 can differ; however, only left and MPX1 threshold can be set. Default value: RELATIVE.

ABSOLUTE or RELATIVE

5.13.2. Date and Time parameters

Date and time (SYS.DATE and SYS.TIME) – read/write

These parameters set the system date and time. To set the IP board date and time or to synchronize the IP board date and time with the system date and time.

5.13.3. Administration

Reset to default (SYS.RAZ)

This parameter reset the unit to default configuration.

- ! ***With an IP unit, wait for the IP connection to be available before shutting off the unit.***
- ! ***After a configuration reset, we recommend you check parameters meant to protect the transmitter: hard clipper activation/deviation and VSWR Trip.***

YES or NO

5.13.4. SD card

Status (SYS.SDC.PRES / SYS.SDC.STATE) – read

This parameter indicates if the μ SD card is present and working properly (OK), not present, ready to be removed (UNMOUNT) or in fault.

OK, NOT PRES, UNMOUNT or FAULT

Eject (SYS.SDC.EJECT) – read/write

This parameter requests the removal of the μ SD card. Once the command is sent (YES), you must wait for the status to switch to UNMOUNT before the card is removed. This can only be done locally.

YES or NO

Card removal procedure

- Unscrew the warranty warning shield on the rear panel of the transmitter
- On the front panel, select the EJECT menu and set to YES
- Check the STATUS menu is UNMOUNT
- Physically remove the μ SD card

5.14. Alarms

Current alarms are visible:

Front panel	Alarm menu	Only available when at least one alarm is active
Serial commands	Alarms	see section 7.2.7
Embedded web site	Header and synoptic diagrams	see sections 8.3, 8.4.1, 8.7.1

All alarms can either be ON or OFF.

10 MHz switch alarm (ALARM.10MSWITCH)

This alarm is on when there was a 10 MHz switch between the external source and the internal source.

1 dB alarm (ALARM.1DB)

This alarm is on when the RF is ON and the current forward power is below the set 1 dB power threshold. The 1 dB can be user-set.

3 dB alarm (ALARM.1DB)

This alarm is on when the RF is ON and the current forward power is below the set 3 dB power threshold. The 1 dB can be user-set.

Ambient temperature alarm (ALARM.AMB)

This alarm is on when the current ambient temperature is above the set maximum ambient temperature. The max ambient temperature can be user-set

Low battery alarm (ALARM.BATLOW)

This alarm is on when the NVRAM battery's level is low. It means the NVRAM battery needs to be changed.

Communication alarm (ALARM.COMM)

This alarm is on when there is a communication fault with one of the units of the system. It only applies to Master unit of modular transmitters and 1+1 systems.

Current 1 or 2 alarm (ALARM.CUR1 / ALARM.CUR2)

This alarm is on when the transmitter input current (CUR1) or the amplifier output current (CUR2) is over the max threshold.

Fan alarm (ALARM.FAN1)

This alarm is on when the speed fan is too slow.

Critical alarm (ALARM.FAULT)

This alarm is on when a critical alarm (3 dB, VSWR) is on.

Heatsink alarm (ALARM.HEAT1)

This alarm is on when the heatsink temperature around MOSFET is over the set heatsink max temperature. The heatsink max temperature can be user-set.

Fault on input alarm (ALARM.INPUT_FAULT)

This alarm is on when there is a FAULT type alarm on an input.

Input switch alarm (ALARM.INPUTSWITCH)

This alarm is on when the current audio input does not correspond to the highest priority channel. It means the transmitter switched to a backup audio input.

Internal temperature alarm (ALARM.INT_TEMP)

This alarm is on when the temperature of the internal sensor placed on PSU is higher than the max threshold.

µSD card alarm (ALARM.LOGGING)

This alarm is on when two consecutive attempts to write on the µSD card have failed. The µSD card may be faulty.

Analog input alarm (ALARM.ANA1)

AES 1, 2 or 4 alarm (ALARM.AES1 / ALARM.AES2 / ALARM.AES3)

MPX 1 or 2 alarm (ALARM.MPX1 / ALARM.MPX2)

Player alarm (ALARM.PLAYER)

This alarm is on when there is no signal on the corresponding input. The silence detector considers there is no signal accordingly to various user-set parameters (see section 5.8).

PLL alarm (ALARM.PLL)

This alarm is on when the PLL is locked. It may be due to an issue on modulator board.

Pressure alarm (ALARM.PRESSURE)

This alarm is on when the pressure of the internal sensor is higher than the max threshold.

RDS switch alarm (ALARM.RDSSWITCH)

This alarm is on when a RDS switch occurred (RDS auto mode only).

SmartFM alarm (ALARM.SFM)

This alarm is on when other alarms or states have disabled SmartFM.

Auxiliary voltage alarm (ALARM.VOLT.AUX)

This alarm is on when the auxiliary voltage is offset by more than 10% of the set value.

Voltage alarm (ALARM.VOLT)

This alarm is on when the amplifier is offset by more or less 10% of the expected value.

VSWR alarm (ALARM.VSWR)

This alarm is on when the VSWR is over the VSWR alarm threshold. The threshold can be user-set.

Warning alarm (ALARM.WARN)

This alarm is on when a warning type alarm is on (fan, current, voltage, power supply, temperature, radiator, ambient temp).

6. FRONT SCREEN USE

6.1. Overview

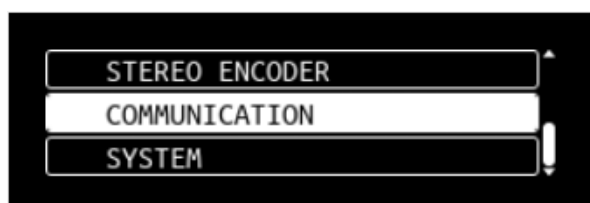
The transmitter can be set using the front panel application.


For audio configuration you will use the following menus:


- **Input:** to select the main audio source and secondary audio sources and to set switching criteria between these sources.
- **Modulation:** to set the deviation for each sub-carrier of the multiplex signal. In this menu you may also enable RDS and SCA.
- **Stereo Encoder:** to choose the content of stereo sub-carrier of the multiplex signal.
- **Sound Processor:** to set the sound processor
- **RDS:** to set the RDS.

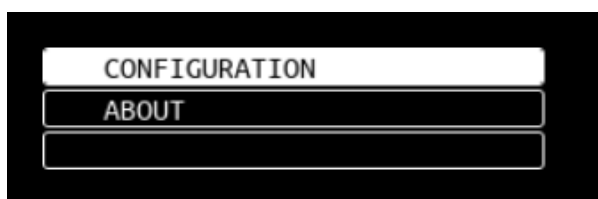
The default mode for the transmitter is the “Easy” mode: only menus required for basic configuration are available. For instance, the Sound Processor and RDS menus mentioned above are not visible.


To display all menus, simply switch to “Expert” mode:

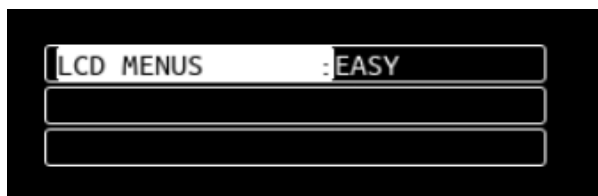



From the main screen, press the button  to display the menu and press the down arrow until you see the System menu.

When the System menu is highlighted, press the button .



In the sub-menu press the button  to display the menu configuration screen.



Press the check button again to switch to edit mode. When the word Easy is highlighted, use the right or left arrow to modify the value. Press the check button to confirm the Expert mode, and on the return button  to go back to the menu

 On startup, the screen displays the name of the unit, its software release and its serial number.

6.2. Working principle

! *Press the Local button on the front panel: the transmitter must be in local mode before parameters can be modified.*

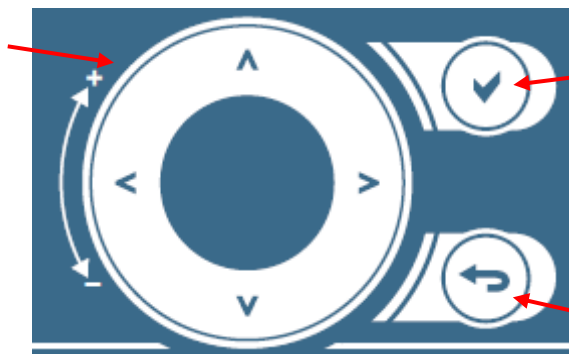
The key pad on the right of the screen allows you to browse through the menus:

If the screen is in standby mode, press any key to reactivate it.

Arrows are used for scrolling through menus, selecting parameters and adjusting values.

LEDs indicate possible directions, for instance, only up and down arrows are available when scrolling through main menus.

When adjusting values, press on the top or down button for small increments or swipe your fingers around for large increments



The **Check** button is used to:

- Access a lower level menu
- Enable the edit mode for parameters that can be modified,
- Confirm a new value.

The **Return** button is used to

- Return to the higher level screen,
- When in edit mode, go back to the initial value.

When parameters can be edited, they are highlighted when selected. Press the Check button to switch to edit mode



The white scroll bar indicates there are additional values. Press the down button to view them.

6.3. Structure of the Ecreso FM menus

6.3.1. Overview

 Menu and menu items in orange are only visible in Expert mode.

STATUS	RF	Station name / Freq / Direct Pwr / Ref Pwr / VSWR	
	SMARTFM	Pwr / Avg / Status / Mode	
	CODER	Dev / State / Cur input	
	AUDIO INPUTS	L & R Measurements	
	MPX INPUTS	Level measurements	
	SOUND PROCESSING	Bypass status / Current preset	
ALARMS	List of current alarms		
TX PARAMETERS	Freq / Power		
	3dB threshold / 1dB threshold / RF present threshold VSWR threshold / VSWR trip / VSWR trip count		
SMARTFM	Status / State /Mode / RDS correction / Percent / Pwr		
INPUTS	SELECTION	AUDIO	Auto switch / Main source / Backup 1 ->6
		RDS	Main source / Backup
		SCA	Main source.
	ANA1	Presence / Level / Preemphasis / Drive / Trim / L & R measurements	
		Silence threshold / Delay / Back delay / Silence mode / Filter	
	AES1 / AES2 / AES3	Presence / Level / Preemphasis / Drive / Trim / L & R measurements / Level measurements	
		Silence threshold / Delay / Back delay / Silence mode / No sync / Filter	
	PLAYER	Presence / Level / Preemphasis / Silence threshold / Delay / Back delay / Silence mode / No sync / Drive / Trim / L & R measurements	
	MPX1 / MPX2	Presence / Level / Drive / Level measurements	
		Silence threshold / Delay / Back delay	
		GENERATOR	Mode / Leve1-2 / Freq 1-2 / Preemphasis

MODULATION	Meas peak / Total dv / Audio dev / Pilot dev	
	RDS dev / SCA dev	
STEREO ENCODER	Coder mode	
	RDS Phase / 19 kHz out level	
SOUND PROCESSOR	Bypass / Preset name / Current preset /	
	Clip state / dev / status / MPX pwr state / target / normative / predictive	
RDS	GLOBAL RDS	RDS state / Current DSN / RDS level / RDS phase / Clock time
	CURRENT RDS / BACKUP RDS	PI / PS / TA / TP / PTY
	UECP ADDRESSES	Site / Encoder
MAINTENANCE	GLOBAL	Estimated consumption / Efficiency / PA efficiency / Ambient temp / Control temp / +5V voltage / +12V voltage / -12V voltage / Fan speed
	PREAMPLIFIER	Current / Voltage
	PA1	Comm alarm / Voltage / Current / Heatsink temp / Reflected pwr
	PSU1	Comm alarm / In pwr / In voltage / In current / Out pwr / Out voltage / Out current / Efficiency / PFC temp / Heatsink temp / Serial number / Release number / PFC temp
COMMUNICATION	COM1 / COM2	Usage / Speed / Echo
	ETH0 / ETH1	IP / Mask / Gateway / Mac address
	DNS	First / Second
	NETWORK PORTS	Telnet / RDS / RT+ / UECP UDP1/2 mode / port / time / UECP TCP1/2 mode / port / time
	CAN BUS	ID

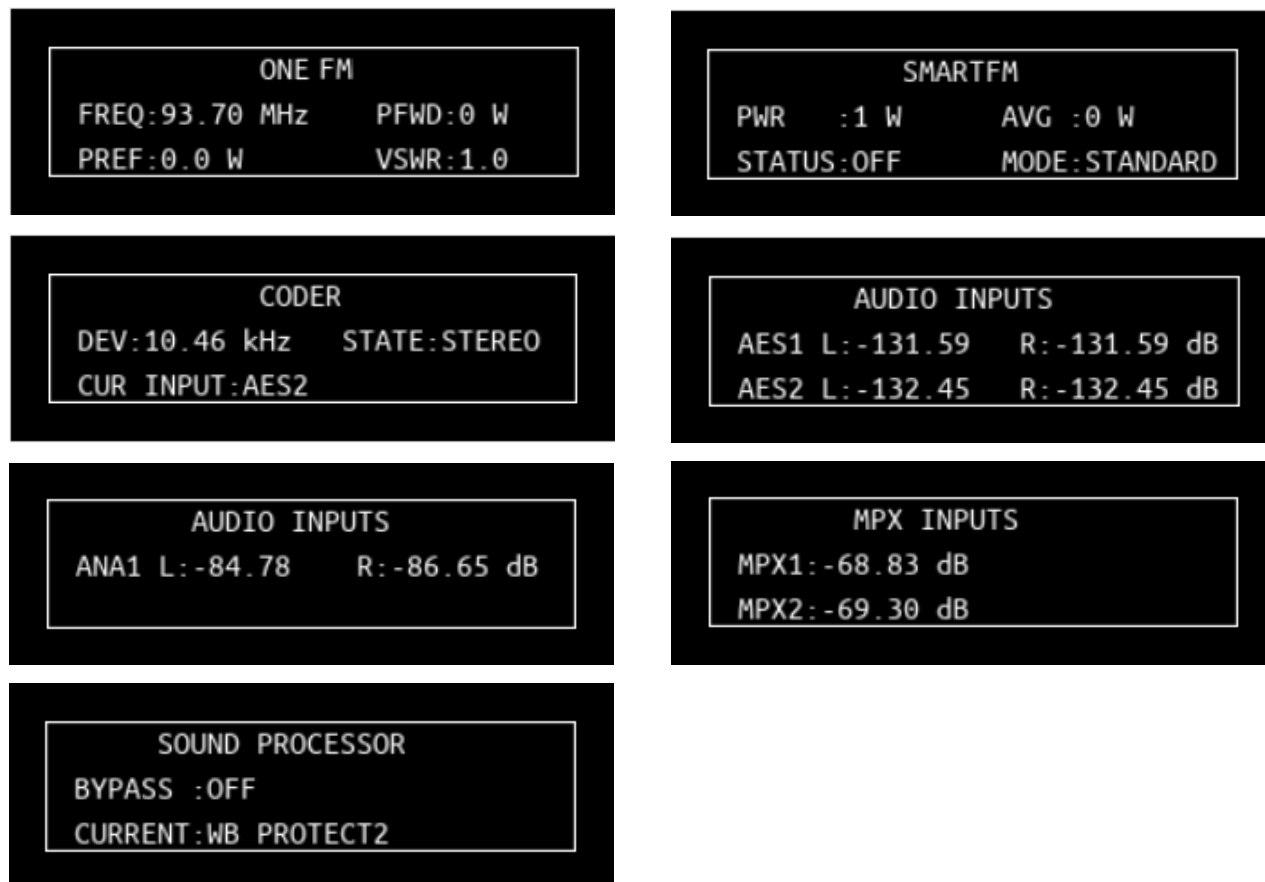
SYSTEM	REBOOT TCPIP	
	REBOOT CONTROL	
	REBOOT ALL	
	FACTORY RESET	
	DATE/TIME	Date / Time
	CONFIGURATION	LCD MENUS
		Reflected pwr protection criticity / Unit display / Pwr display
	SDCARD	Present / Mounted / Eject / Fault
	LICENSES	List of current licenses
	ABOUT	Serial number / Sft release / Hdw release / Datecode / Calibration date / FPGA release / DSP release / MAC address

6.3.2. Status Menu

When there is no alarm, the first few screens provide a general overview of the transmitter's status by showing the main measurements.

They vary depending on the transmitter's options and configured inputs.

These values are read-only.



Use the right and left arrows to display the various Status screens.

6.3.3. Alarms Menu

This read-only menu is only visible when alarms are in progress. If more than 3 alarms are present, use the up and down arrows to scroll through the list.

See section 5.14 for a description alarms.

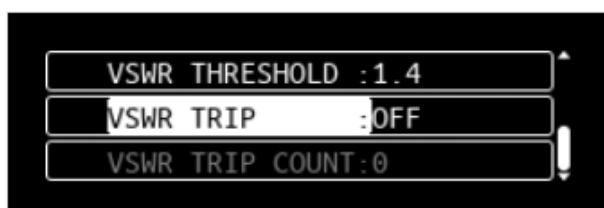
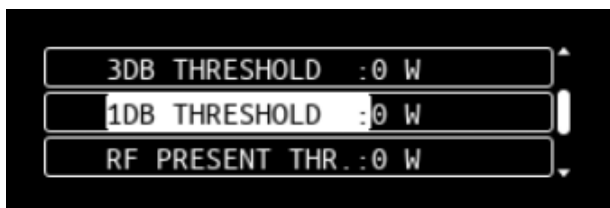
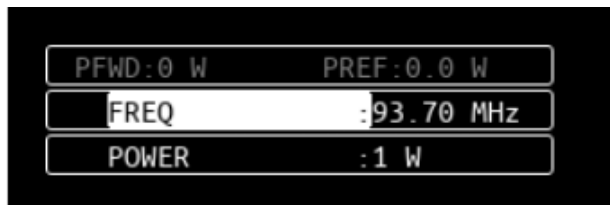
6.3.4. Main Menus

Press the Check button to display the Main Menu, then use the up and down arrows to scroll through the menus.

The menus vary depending on the options installed on the transmitter and its status.

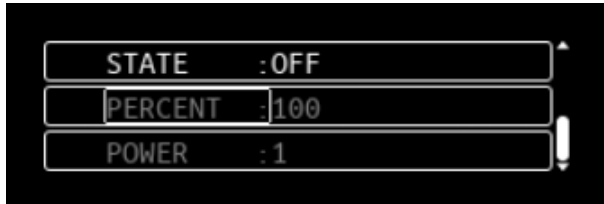
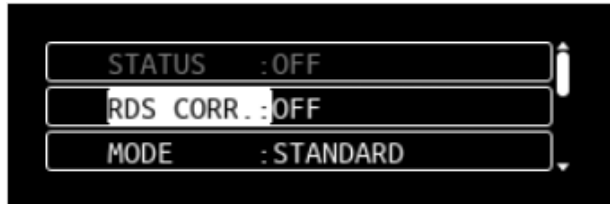
Some menus are only visible in Expert mode.

6.3.5. TX Parameters Menu



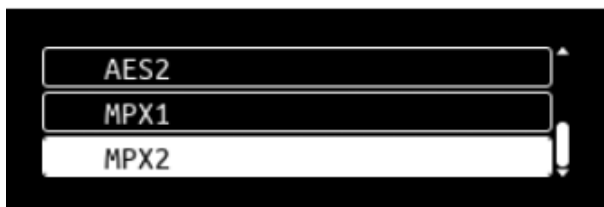
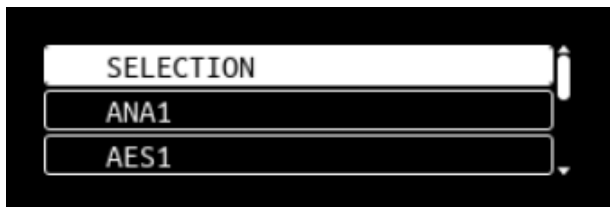
 *Thresholds and VSWR trip parameters are only visible in Expert mode.*

6.3.6. SmartFM Menu



6.3.7. Inputs Menu

This menu displays a sub-menu:

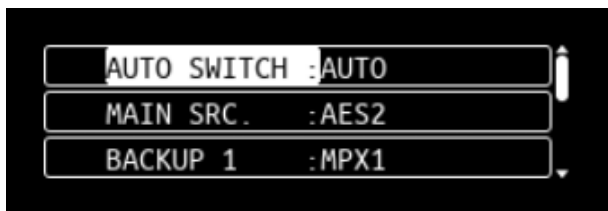


6.3.7.1. Inputs/Selection Sub-menu

This menu displays a sub-menu:

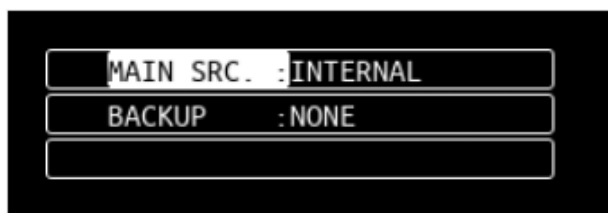


Audio Sub-menu:

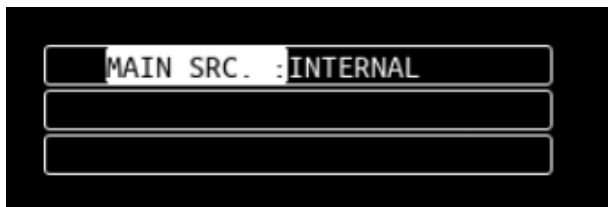


i On this menu, set up to 6 audio backup sources (BACKUP 1 → BACKUP 6).

RDS Sub-menu:




SCA Sub-menu:




6.3.7.2. Ana1 Sub-menu



 Silence threshold, delay, back delay, silence mode and filter are only visible in Expert mode.

6.3.7.3. AES1 / AES2 / AES3 Sub-menu



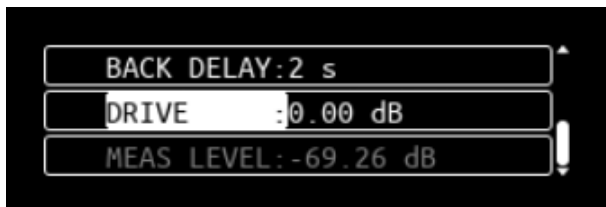
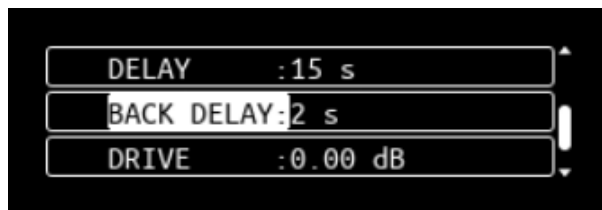
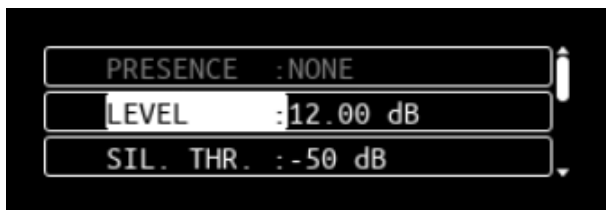
 Silence threshold, delay, back delay, silence mode, synchro loss and filter are only visible in Expert mode.


6.3.7.4. Player Sub-menu

 This menu is only visible in Expert mode.




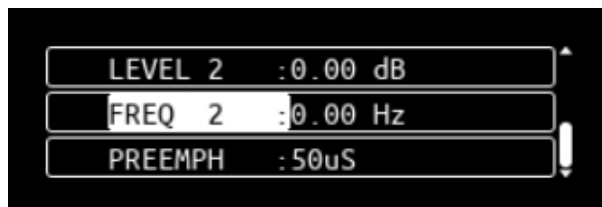
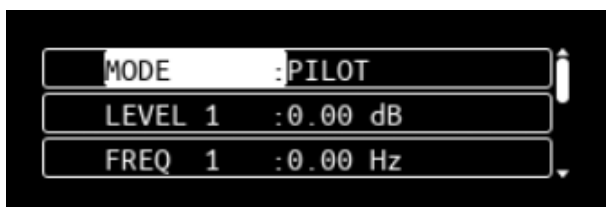
6.3.7.5. MPX1 / MPX2 Sub-menu



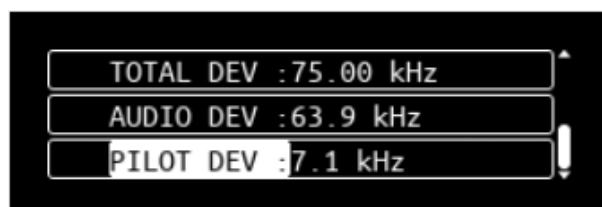
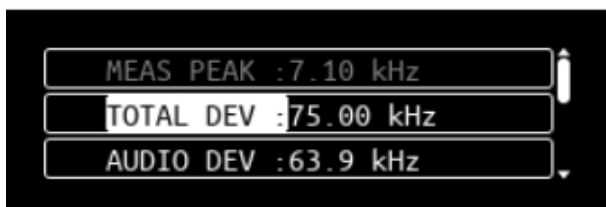
 Silence threshold, delay and back delay are only visible in Expert mode.


6.3.7.6. Generator Sub-menu

 This menu is only visible in Expert mode.

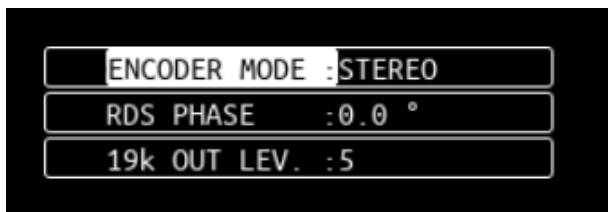


6.3.8. Modulation Menu



 RDS and SCA deviation are only visible in Expert mode.

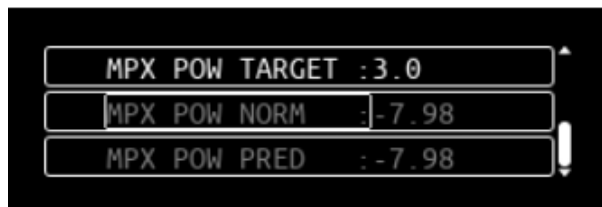
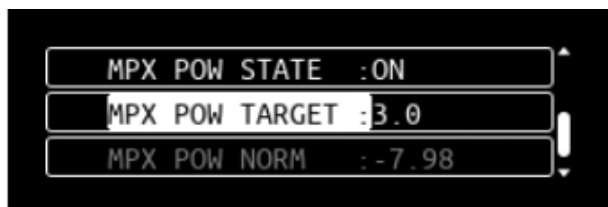
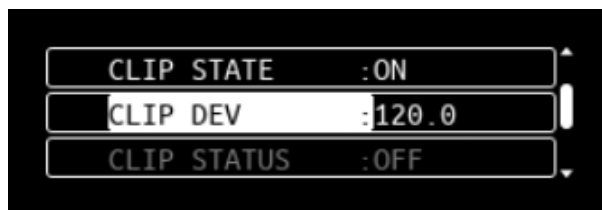
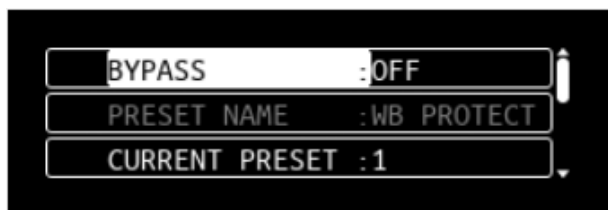
6.3.9. Stereo encoder Menu



 RDS phase and 19 kHz output level are only visible in Expert mode.


6.3.10. Sound Process Menu

 This menu is only visible in Expert mode.

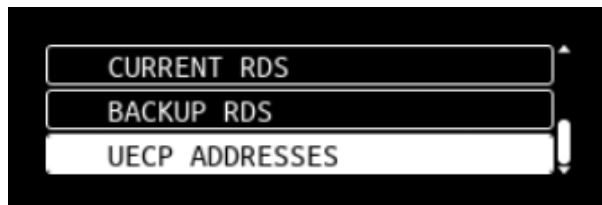
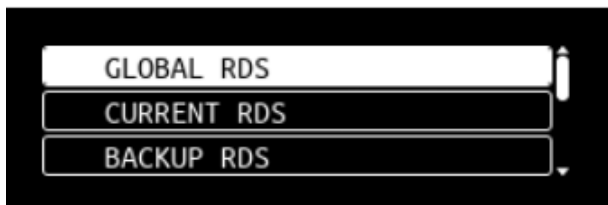


6.3.11. RDS Menu

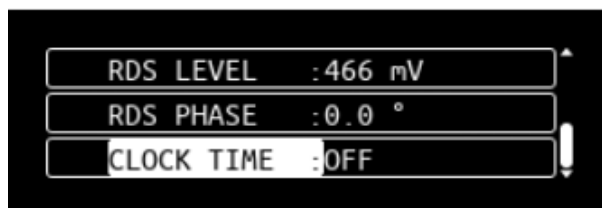
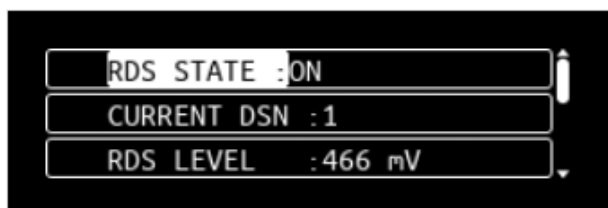
 This menu is only visible in Expert mode.

 This menu is only available when the RDS dynamic license or the Full RDS license is present.

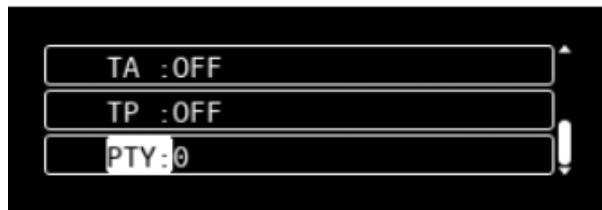
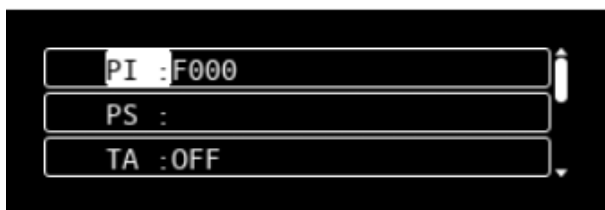
This menu displays a sub-menu:



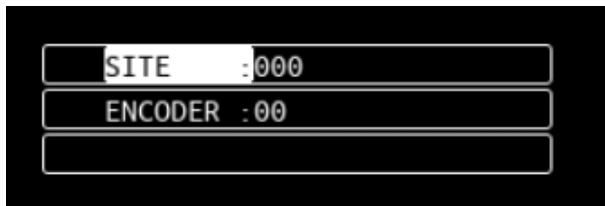
6.3.11.1. Sub-menu Global RDS



6.3.11.2. Current RDS / Backup RDS Sub-menus




6.3.11.3. UECP addresses Sub-menu

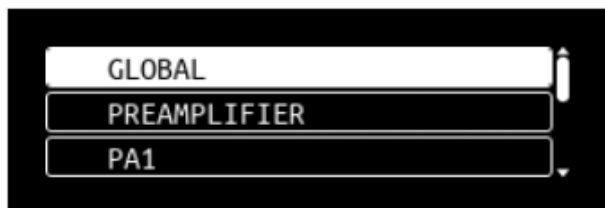


 Uniquement en Full RDS.

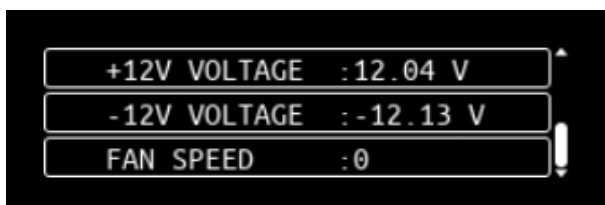
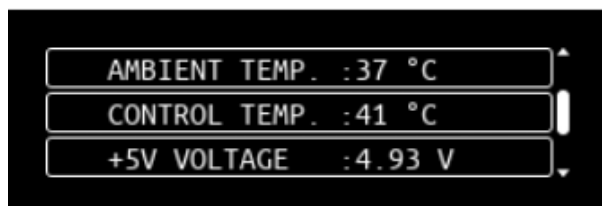
6.3.12. Maintenance Menu

 This menu is only visible in Expert mode.

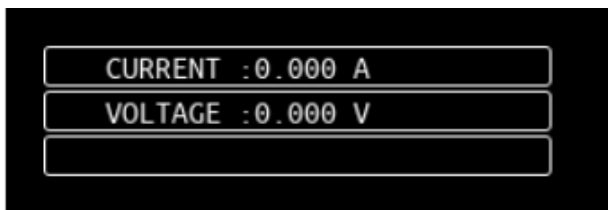
This menu displays a sub-menu:



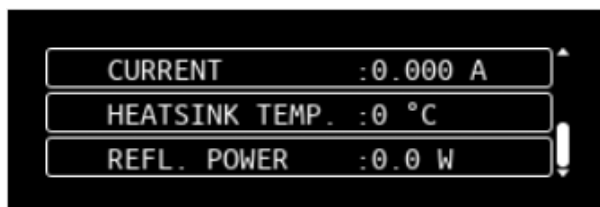
6.3.12.1. Global Sub-menu



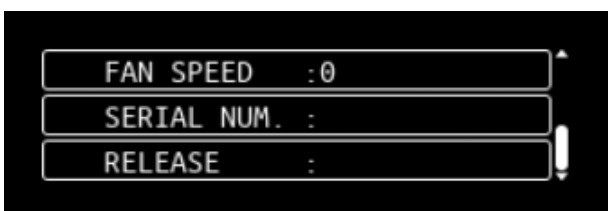
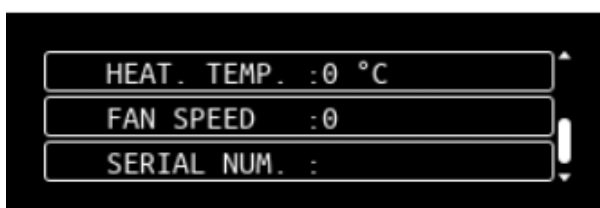
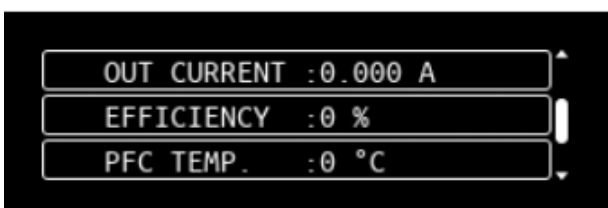
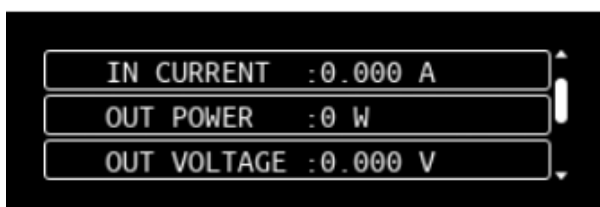
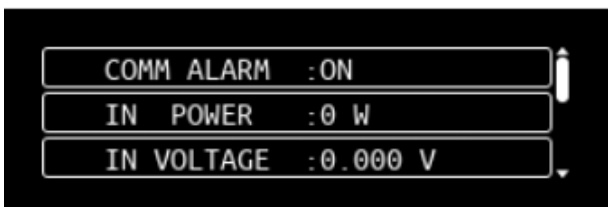
6.3.12.2. Preamplifier Sub-menu



6.3.12.3. PA1 Sub-menu

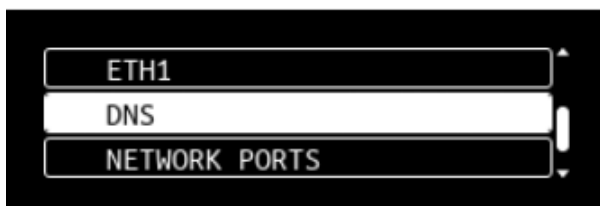


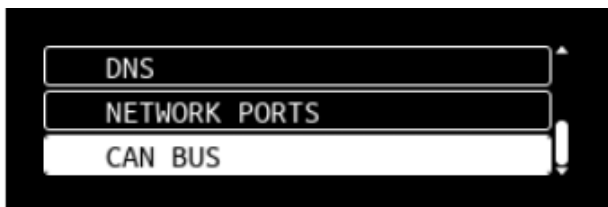
6.3.12.4. PSU1 Sub-menu



6.3.13. Com Menu

This menu displays a sub-menu:

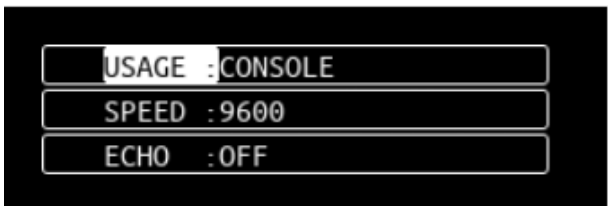




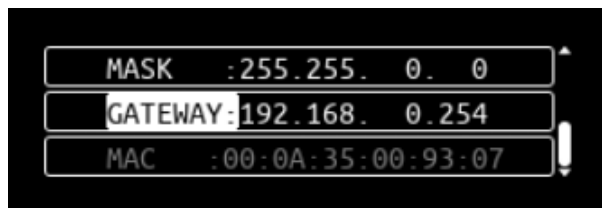
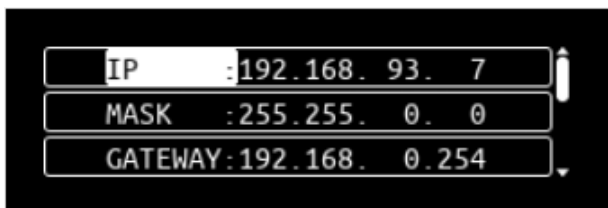
i COM, Network Ports and CAN Bus menus are only visible in Expert mode.

6.3.13.1. COM1 / COM2 Sub-menus

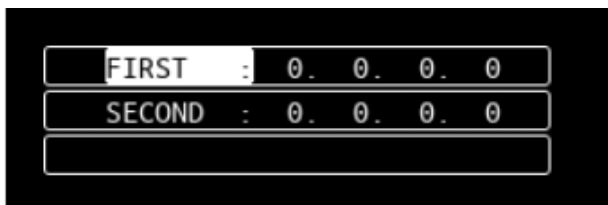
i This menu is only visible in Expert mode.



6.3.13.2. ETH0 / ETH1 Sub-menus

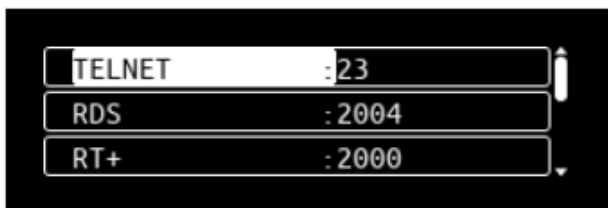


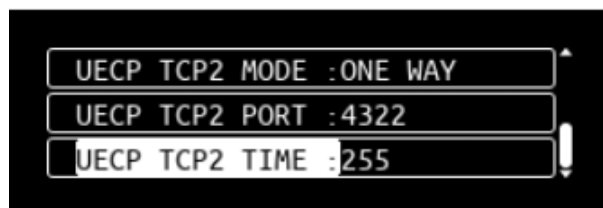
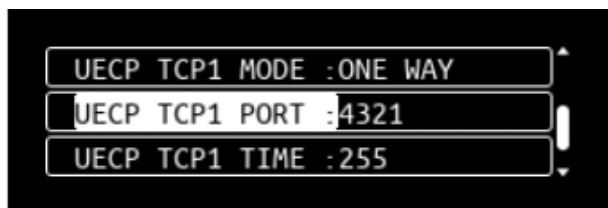
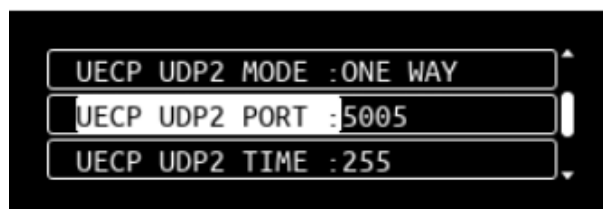
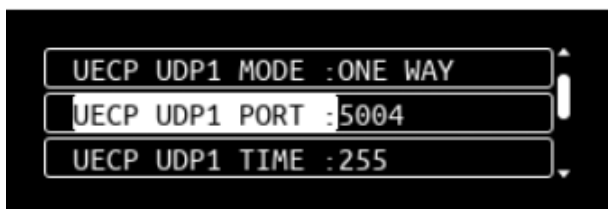
6.3.13.3. DNS Sub-menu



6.3.13.4. Network ports Sub-menu

i This menu is only visible in Expert mode.





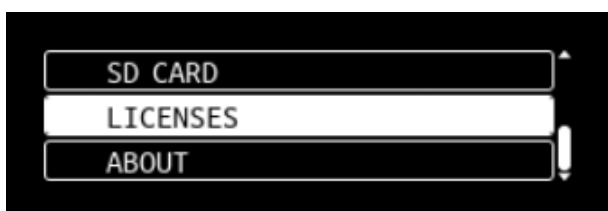
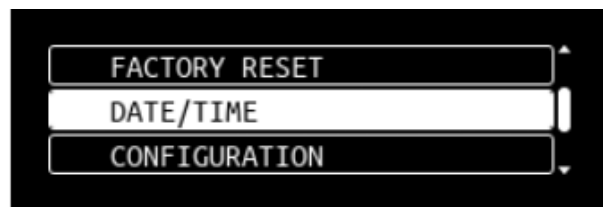
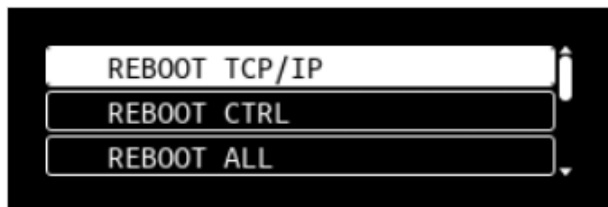
6.3.13.5. CAN Sub-menu

This menu is only visible in Expert mode.



6.3.14. System Menu

This menu displays a sub-menu:




Reboot, Factory reset, Date/time, SD card et Licenses menus are only visible in Expert mode.

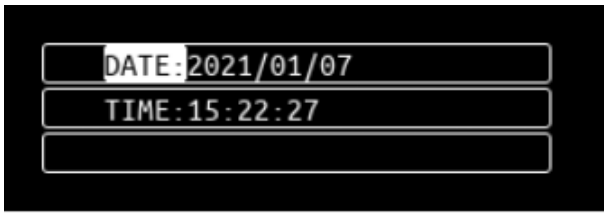
6.3.14.1. Reboot TCP/IP, Reboot Ctrl, Reboot all, Factory reset Sub-menus

These menus are only visible in Expert mode.

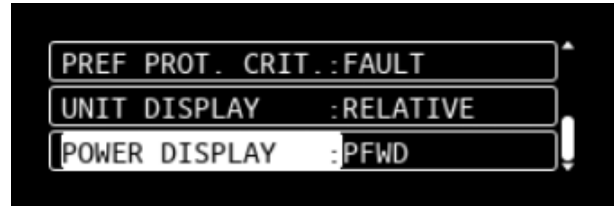
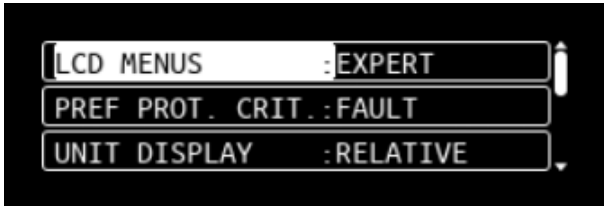
These menus display a confirmation screen.


6.3.14.2. Date/Time Sub-menu

 This menu is only visible in Expert mode.




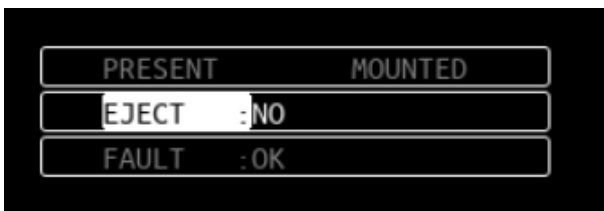
6.3.14.3. Configuration Sub-menu




 The above parameters are only visible in Expert mode, except for the LCD Menus.

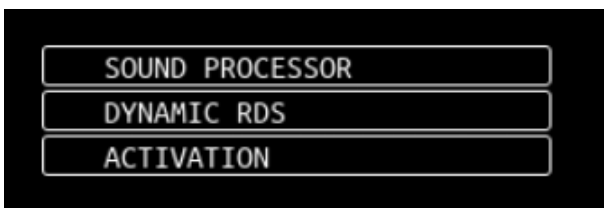
6.3.14.4. SD card Sub-menu

 This menu is only visible in Expert mode.

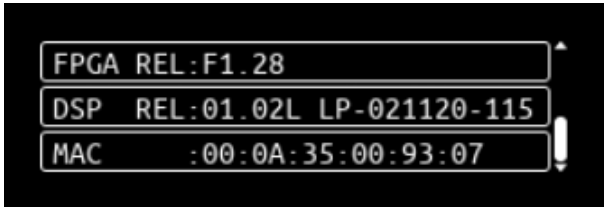
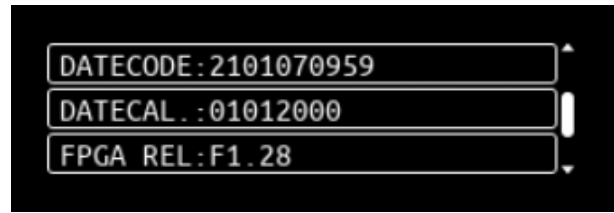
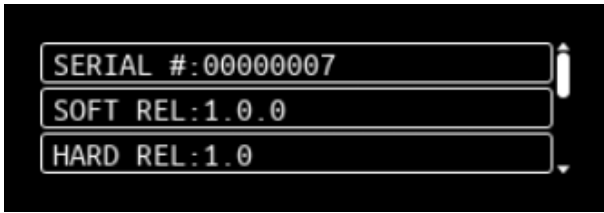



6.3.14.5. License Sub-menu

 This menu is only visible in Expert mode.



6.3.14.6. About Sub-menu



-  The above parameters are only visible in Expert mode, except for the serial number and the software release.

7. SERIAL & TELNET COMMANDS

7.1. Working principle

Ecreso FM has a serial interface. The physical connection is done using the USB port (COM0 port) on the front panel. A common computer with an RS 232 interface (example: PC+ Windows + PuTTY) is all you need to send commands. The dialog is in text mode (ASCII) and no specific software is required.

Like all serial PC connected equipment, a good cable and correct communication settings are essential to ensure good communication. The cable must have a USB-micro B male connector to connect to the unit.

To avoid problems during connection, set the same communication speed and identical settings for both devices:

-> 9600	bits per second
-> 8	data bits
-> No	Parity
-> 1	Stop bit
-> No	Handshaking

Commands may also be used in Telnet when the transmitter is fitted with an IP interface.

The commands make it possible to read the functional parameters (R) or even to edit some of them (W).

Before entering any command, connect with the command for read and write access:

LOGIN

! Without this line, parameters will be in read-only mode; you will not be able to modify them.

To retrieve the value of a functional parameter, simply enter the command name and press the <Enter> key.

Example:

To display the status of the 3 dB alarm, type:

ALARM.3DB

The answer, ON or OFF will indicate the 3 dB alarm is on or not.

To set a parameter, type the command name, the equal sign, the new value and press the <Enter> key.

Example:

To set the transmitter working mode (local or remote), type:

```
CONF.MODE=LOCAL
```

The answer: `LOCAL` will indicate the command has been implemented. In case it has not, the message `ERROR CMD` will appear.

Protection with a password:

By default, there is no protection to send commands.

This can be secured with the command:

```
SYS.PASSWORD = my_password, where my_password is the password you chose
```

To connect without a password, enter:

```
LOGIN
```

And if a password has been set:

```
LOGIN = my_password
```

For Telnet connections, use the embedded website identifiers (see section 9.7.7), `IP_user` and `my_IP_password` in the following exemple:

```
LOGIN USER=IP_user
```

```
LOGIN PASSWORD= my_IP_password
```

The password set with the `SYS.PASSWORD` command is not used with remote connections.

To logout, use the `LOGOUT` command or close the terminal window. When disconnecting from a specific port (local or remote), all ports are disconnected.



If several users are connected at once, they all can send commands and change parameters. The last edit will always be taken into account.

7.2. Ecreso FM serial commands

7.2.1. System commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
LOGIN	R/W	XXXX,X=[0...z] "LOGGED" or "NOT LOGGED"	Logs the user and allows them to update variables if the password is correct. Returns Logged or not logged
LOGOUT	W		Logs out the user and locks all variables.
SYS.AIPMPX	R/W	YES or NO	Sets the input type for AoIP: NO=audio input; YES=MPX input
SYS.CID	R/W	[0..31]	Unit identifier used by the CAN bus.
SYS.COM1.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.COM1.SPEED	R/W	75,150,300,600,1200,2400,4800,9600,19200,38400,57600,115200	Speed of the rear panel serial port 1
SYS.COM1.USAGE	R/W	CONSOLE or RDS or UECP	Sets the COM 1 port usage
SYS.COM2.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.COM2.SPEED	R/W	75,150,300,600,1200,2400,4800,9600,19200,38400,57600,115200	Speed of the rear panel serial port 2
SYS.COM2.USAGE	R/W	CONSOLE ou RDS ou UECP	Sets the COM 2 port usage
SYS.DATE	R/W	DD/MM/YY	Reads and sets the amplifier date
SYS.DATECALIB	R	DDMMYYYY	Date of the last calibration
SYS.DATECODE	R	AAMMDDHHmm	Date de la version
SYS.DIGMPX1	R/W	YES or NO	Sets the input type for AES1, slot 1: NO=audio input; YES=MPX input
SYS.DIGMPX2	R/W	YES or NO	Sets the input type for AES2, slot 1: NO=audio input; YES=MPX input
SYS.DIGMPX3	R/W	YES or NO	Sets the input type for AES1, slot 2: NO=audio input; YES=MPX input
SYS.DSP.VERSION	R	xxx x=[A..Z;0..9]	DSP Version
SYS.ETH0.ADR	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH0 IP address
SYS.ETH0.AUTONEG	R/W	ON or OFF	Specifies if Ethernet 0 port speed and duplex mode are in auto-negotiation
SYS.ETH0.DUPLEX	R/W	HALF or FULL	Sets the Ethernet 0 port duplex mode
SYS.ETH0.GW	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH0 network gateway
SYS.ETH0.MAC	R/W	XX:XX:XX:XX:XX:XX:XX:XX X=[A..F;0..9]	ETH0 mac address
SYS.ETH0.MASK	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH0 IP mask
SYS.ETH1.ADR	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH1 IP address
SYS.ETH1.AUTONEG	R/W	ON or OFF	Specifies if Ethernet 1 port speed and duplex mode are in auto-negotiation
SYS.ETH1.DUPLEX	R/W	HALF or FULL	Sets the Ethernet 0 port duplex mode
SYS.ETH1.GW	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH1 network gateway
SYS.ETH1.MAC	R/W	XX:XX:XX:XX:XX:XX:XX:XX X=[A..F;0..9]	ETH1 mac address
SYS.ETH1.MASK	R/W	XXX.XXX.XXX.XXX X=[0...9]	ETH1 IP mask
SYS.FPGA.VERSION	R	xxx x=[A..Z;0..9]	FPGA Version
SYS.GPIO.CONF1	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the RC ANA3 on an analog GPIO board

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.GPIO.CONF2	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the RC ANA4 on an analog GPIO board
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.
SYS.GPIO.TYPE	R	NONE or ANA or STD or STD2	Indicates the type of GPIO board. None, analog, standard (digital) or digital with fault memory
SYS.HARDREL	R	xx.xx.xx x=[0..9]	Hardware version: example "3.0.1"
SYS.IP.ADR	R/W	XXX.XXX.XXX.XXX X=[0...9]	IP address of the IP board
SYS.IP.GW	R/W	XXX.XXX.XXX.XXX X=[0...9]	Network gateway of the IP board
SYS.IP.MAC	R/W	XX:XX:XX:XX:XX:XX X=[A..F;0..9]	Mac address of the IP board
SYS.IP.MASK	R/W	XXX.XXX.XXX.XXX X=[0...9]	IP mask of the IP board
SYS.KEY.ADD	R/W	ADD	Generates a key to enable the specified option
SYS.KEY.RDS_STATIC	R		Gives the remaining time on a temporary RDS license
SYS.KEY.REM	R/W	REM	Generates a key to disable the specified option
SYS.KEY.RF	R		Gives the remaining time on a temporary activation license
SYS.KEY.SOUND_PROC	R		Gives the remaining time on a temporary Sound Processing license
SYS.LCDMENU	R/W	EASY or EXPERT	Sets the display type on the front panel screen
SYS.LOG	R		List of the latest 200 events (configuration changes, alarm start date and end date...)
SYS.LOG.CLR	W		Clears the event list
SYS.MEMORY	R	"PRES" or "NOT PRES"	Indicates if the optional memory required for SFN is present
SYS.NAME	R/W	XXXX X=[A...Z]	Equipment name
SYS.OPT.LIST	R	GPIO_STD, GPIO_ANA, RF_PROBE, IP, COM_STD, MPX_IN, AUDIO_IP, TUNER, RDS_STATIC, RDS_DYNAMIC, POWERFUL_CONTROL	List of implemented options
SYS.PASSWORD	R/W	xxx x=[A..Z;0..9]	Password for the console and front panel display. 'NONE' disables the password
SYS.PASSWORD.RESET	R/W	xxx x=[A..Z;0..9]	Creates a text string to unlock the password if it has been forgotten
SYS.POWER_DISPLAY	R/W	PFWD or PWR	Indicates which value is displayed on the front panel main screen. PWR=Power or PFWD=Forward power
SYS.RAZ	W	"RAZ"	Reloads default values. With an IP unit, wait for IP connection to be available before shut off.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.RST	W		Reset of all parameters.
SYS.SDC.EJECT	R/W	"YES" or "NO"	Request the removal of the μ SD card. This command can only be sent locally.
SYS.SDC.FAULT	R	"OK" or "FAULT"	Failed = read/write error on the μ SD card
SYS.SDC.STATE	R	"MOUNT" or "UNMOUNT"	Gives the status of the μ SD card. The state must be UNMOUNT before the card can be removed.
SYS.SDC.PRES	R	"PRES" or "NOT PRES"	Indicates whether a μ SD card is present
SYS.SN	R	YYMMXXXX A,M,X=[0..9]	Serial number of the unit: Y => year, M => month, X => number
SYS.SOFTREL	R	xx.xx.xx x=[0..9]	Software version: example "3.0.1"
SYS.TIME	R/W	HH:MM:SS	Reads and sets the amplifier time
SYS.UNIT	R/W	"ABSOLUTE" or "PERCENT" or "RELATIVE"	Input method for audio silence detection threshold. It is used for commands INPUT.xxx.SW.THRESH; default value: RELATIVE
SYS.UPTIME	R	[0..99999999]	Indicates the number of working hours since commissioning

7.2.2. Measurement commands

Greyed out commands are Ecreso FM only commands.

Commands in bold are Ecreso FM Amplifier and Ecreso FM with integrated amplifier (300 W to 2000 W) only commands.

Commands followed by two stars (**) are available with modules sold in v.1.2.2 or higher.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
MEAS.12V	R	xx.x x=[0..9]	Measures the 12 V voltage
MEAS.5V	R	xx.x x=[0..9]	Measures the 5 V voltage
MEAS.AMB	R	±[0..125]	Measures the ambient temperature from 0 to 125°C. "52"=>52°C.
MEAS.CUR1	R	xxx.x x=[0..9]	Total current at the transmitter's input in amperes. Examples: "02.0"=>2 A "15.2"=> 15,2 A
MEAS.CUR2	R	xxx.x x=[0..9]	Measured current at the amplifier's input in amperes. Examples: "02.0"=>2 A "15.2"=> 15,2 A
MEAS.CUR3	R	xxx.x x=[0..9]	Measured current at the pre-amplifier's input in amperes. Examples: "02.0"=>2 A "15.2"=> 15,2 A
MEAS.DEV.CLIP	R	ON or OFF	Hard limiter status
MEAS.DEV.PEAK	R	-150,0...150,0	Gives the peak value for the signal deviation in kHz
MEAS.DEV.PKMAX	R	-150.0...150.0	Gives the peak value for the signal deviation in kHz over 1 second
MEAS.FAN1.SPEED	R	xxx.x x=[0..9]	Fan 1 speed in RPM
MEAS.INT_TEMP **	R	0...999	Measure of the temperature of the internal sensor.
MEAS.M.PKMAX	R	-150.0...150.0	Absolute value max of the mono channel in kHz
MEAS.MPXPWR.10S	R	-320.00...+320.00	Value of the MPX power over 10 seconds
MEAS.MPXPWR.1M	R	-320.00...+320.00	Value of the MPX power over 1 minute
MEAS.MPXPWR.ATT	R	-320.00...+320.00	Value of the attenuation applied to limit MPX power
MEAS.N12V	R	-xx.x x=[0..9]	Measures the -12 V voltage
MEAS.PCONS	R	[0..9999]	Power used by the unit in Watts
MEAS.PFWD.AVG	R	[0..9999]	Average measured power in Watts
MEAS.PRESSURE **	R	0...2000	Measure of the pressure on the internal sensor.
MEAS.S.PKMAX	R	-150.0...150.0	Absolute value max of the channel S in kHz
MEAS.SFM	R	[0..125]	SmartFM coefficient to be applied to the set power
MEAS.SFN.DELAY	R	0... 5000000.00	Delay applied to the signal in µs
MEAS.VOLT3	R	xxx.x x=[0..9]	Measures the power supply 3 voltage. Example: "48.0" =>48.0 V

7.2.3. Transmitter commands

Commands available both as TX and CONF are followed by a star (*).

For Ecreso FM transmitters who are not controlled by a central unit (Ecreso Control Unit), use TX commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
TX.1DB *	R/W	[0..9999]	Sets the triggering threshold for the 1 dB alarm. Example "250" => 250 W
TX.3DB *	R/W	[0..9999]	Sets the triggering threshold for the 3 dB alarm. Example "250" => 250 W
TX.3DB.AUTO *	R/W	"ON" or "OFF"	If ON set the 3 dB level to TX.PWR/2. If TX.3DB is modified, switches automatically to OFF
TX.ALARM.1DB	R	"ON" or "OFF"	ON => 1 dB alarm, OFF => No alarm.
TX.ALARM.3DB	R	"ON" or "OFF"	ON => 3 dB alarm, OFF => No alarm.
TX.ALARM.VSWR	R	"ON" or "OFF"	ON => VSWR alarm, OFF => No alarm
TX.ALARM.VSWRTRIP	R	"ON" or "OFF"	Indicates if there has been a VSWR trip fault (max number of RF shut off/restart cycles has been reached)
TX.FAULT	R	"FAULT" or "OK"	Fault state of transmitter
TX.FREQ *	R/W	[087500 ... 108000]	Working frequency of the modulator in kHz Example: 094700 -> 94.70 MHz
TX.INTERLOCK	R	"CLOSE" or "OPEN"	State of the safety loop
TX.LINK	R	"OPEN" or "CLOSE"	State of the CAN bus link
TX.MODE *	R	"LOCAL" or "REMOTE"	Single transmitter, indicates the local or remote mode
TX.NAME	R/W	XXXX X=[A...Z]	Transmitter name
TX.OPMODE	R/W	"ON" or "OFF"	Enables/disables the RF on a single transmitter
TX.PAVL	R	[0..9999]	Max power, set in factory and limited depending on the type of unit. This limitation can be requested by regulating agencies.
TX.PCAP	R	[0..999]	Amplifier nominal power: example "300"=>300W
TX.PCONS	R	[0..99999]	Estimated current power consumption of the transmitter in Watts
TX.PCONS.BOOST	R	[0..10000]	Boost in Watts over 10 seconds when the transmitter is in SmartFM Boost mode
TX.PCONS.EFF	R	[0..99]	General efficiency of the transmitter in percentage
TX.PCONS.PWR	R	[0..99999]	Memorized estimated current power consumption of the transmitter without SmartFM in Watts
TX.PCONS.SAVE	R	[0..99999]	Energy savings over 10 seconds, in Watts
TX.PFWD	R	[0..9999]	Measure of direct power. examples: "20" or "300" => 300W
TX.PFWD.AVG	R	[0..99999]	Average measured power in Watts
TX.PREF	R	xxx.x x=[0..9]	Measure of reflected power: "20" => 2W
TX.PWR *	R/W	[0..9999]	Sets the output power in Watts. From 0 to 9999
TX.PWR_MAX *	R/W	[0..99999]	Set the max power of the transmitter TX.PWR in Watts. Limited by TX.PAVL
TX.PWR.SFM	R	[0..99999]	Power after SmartFM coefficient is applied in Watts
TX.RFPRESENT	R	"PRES" or "NOT PRES"	Indicates if the single transmitter output power is present
TX.RFPRESENT.MIN *	R/W	[0..9999]	TX.RFPRESENT (presence RF) triggering threshold; default value: 0 W
TX.SFM	R	[25...125]	SmartFM coefficient to be applied to the set power
TX.TYPE	R	xxx x=[A..Z;0..9]	System type: example "A10" For a 1 kW transmitter AiO Series
TX.VSWR	R	XX.X X=[0..9]	VSWR measure "01.0" or "20.0"

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
TX.VSWR_DB	R	XXXX.X X=[0..9]	VSWR measure in dB. Ex: "1.2" => 1.2 dB
TX.VSWR.MAX *	R/W	XX.X X=[0..9]	Sets the triggering threshold for the VSWR alarm. Must be of type "XXX"."020" => VSWR = 2. Do not use "2" or "1.4".
TX.VSWRTRIP *	R/W	"ON" or "OFF"	Enables/disables reflected power safety using a RF shut off/restart method
TX.VSWRTRIP_COUNT	R	0...4	VSWR trip fault counter
TX.WARNING	R	"ON" or "OFF"	Single transmitter. Warning state of single transmitter

7.2.4. Configuration commands

These commands are specific to an individual unit.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CONF.10M.OPE	R/W	"AUTO or "MANU"	Indicates the operating mode of the external 10 MHz input
CONF.AMB.MAX	R/W	[0..99]	Sets the triggering threshold for the ambient temperature alarm
CONF.CROSSFADE	R/W	0 to 25.5	Crossfade between audio channels (in seconds). Enter 1 for optimal configuration.
CONF.DEV.AUDIO	R/W	0...150	Sets the audio excursion in kHz
CONF.DEV.CLIP	R/W	0 to 200	Set the excursion clipping in kHz ; +128 = disabled limitation
CONF.DEV.MPX	R/W	00000 à 150.00	Sets the MPX excursion in kHz (total excursion)
CONF.DEV.MPXPWR	R/W	-12.7...12.7	Set the MPX power limitation; +128 = disabled limitation
CONF.DEV.PILOT	R/W	0 to 25.5	Sets the pilot excursion
CONF.DEV.RDS	R/W	0 to 25.5	Sets the RDS excursion
CONF.DEV.RDS.COR	R/W	"ON" ou "OFF"	Enables/disables the SmartFM RDS correction
CONF.DEV.SCA	R/W	0 to 25.5	Sets the SCA excursion in kHz
CONF.FADEIN	R/W	0 to 25.5	Sets the fade-in for audio channels in seconds
CONF.FSK.ID	R/W	[0..9][A...Z][a...z][-]	Code to transmit in Morse, default value: empty string
CONF.FSK.REP	R/W	0...255	Number of repetitions of CONF.FSK.ID, default value: 0
CONF.FSK.SHIFT	R/W	[-25...-5][5...25]	Jump in frequency (in kHz), default value: 50
CONF.FSK.SPEED	R/W	0...25	Speed in group number (5 characters base), default value: 5
CONF.HEAT.MAX	R/W	[0..99]	Sets the triggering threshold for the heatsink 1 temperature alarm
CONF.INT_TEMP.MAX **	R/W	0...99	Sets the triggering threshold for the temperature alarm of the internal sensor
CONF.PHASE.RDS	R/W	-180..+180	Sets the RDS phase in degrees
CONF.PRESSURE.MIN **	R/W	0...2000	Sets the triggering threshold for the pressure alarm of the internal sensor in hPa
CONF.SFM.STATE	R/W	"ON" or "OFF"	Enables/disables the SmartFM function
CONF.SFM.MODE	R/W	STANDARD, SAVINGS, SAVINGS SOFT, BOOST, LIMITED	SmartFM strategy
CONF.SFN.DELAY	R/W	0... 5000000.00	SFN delay in µs. Can be set in 1,25 µs increments
CONF.SP.PRESET.NUM	R/W	0...12	Preset number for sound processing
CONF.SP.BYPASS	R/W	"ON" or "OFF"	Enables/disables Sound processing

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CONF.SP.PRESET.NAME	R/W	XXXX X=[0..9;A...Z]	Returns/edits the name of the current preset
CONF.SP.PRESET.NAME. <i>n</i>	R	XXXX X=[0..9;A...Z]	Returns/edits the name of preset <i>n</i> . <i>n</i> = 1 to 12
CONF.STATE.CLIP	R/W	"ON" or "OFF"	Enables/disables the Hard Clipper
CONF.STATE.LIMIT	R/W	"ON" or "OFF"	Enables/disables the FM limiter
CONF.STATE.MPXPWR	R/W	"ON" or "OFF"	Enables/disables the MPX Power limiter
CONF.VSWR_TRIG	R/W	"WARNING" or "FAULT/WARN" or "FAULT"	Working mode in case of VSWR overshoot. WARNING = triggers a simple Warning. WARN/FAULT = triggers a fault but does not trigger the reflected protection. FAULT = triggers a fault and the reflected protection triggers a VSWR fault. Default value: FAULT

Commands related to options are only available when the option is present.

7.2.5. Amplifier commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
PA1.ALARM.AMB	R	ON or OFF	Ambient temperature alarm
PA1.ALARM.COMM	R	ON or OFF	Communication alarm
PA1.ALARM.CUR1	R	ON or OFF	Current alarm
PA1.ALARM.FAULT	R	ON or OFF	Fault type alarm
PA1.ALARM.HEAT1	R	ON or OFF	Heatsink temperature alarm
PA1.ALARM.TEMP1	R	ON or OFF	Temperature security alarm. When triggered, the RF is shut off.
PA1.ALARM.VOLT	R	ON or OFF	Input voltage alarm
PA1.ALARM.WARN	R	ON or OFF	Warning type alarm
PA1.CONF.AMB.MAX	R	[0..150]	Ambient temperature threshold configuration in Celsius degrees
PA1.CONF.HEAT.MAX	R	[0..150]	Heatsink temperature threshold configuration in Celsius degrees
PA1.MEAS.AMB	R	XX=[0..9]	Measures the RF bloc internal temperature in Celsius degrees
PA1.MEAS.CUR1	R	XX.XXX=[0..9]	Measures the input current in amperes
PA1.MEAS.HEAT1	R	XXX=[0..9]	Measures the heatsink temperature in Celsius degrees

7.2.6. PSU commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
PSU1.ALARM.AMB		ON or OFF	Ambient temperature alarm
PSU1.ALARM.COMM		ON or OFF	Communication alarm
PSU1.ALARM.CUR1		ON or OFF	Input current alarm
PSU1.ALARM.CUR2		ON or OFF	Output current alarm
PSU1.ALARM.FAN1		ON or OFF	Fan 1 alarm
PSU1.ALARM.FAN2		ON or OFF	Fan 2 alarm
PSU1.ALARM.FAULT		ON or OFF	Fault type alarm
PSU1.ALARM.HEAT1		ON or OFF	Temperature alarm at the hottest point
PSU1.ALARM.MISSING		ON or OFF	Missing PSU alarm
PSU1.ALARM.SHORTCIRCUIT		ON or OFF	Short-circuit alarm
PSU1.ALARM.TEMP1		ON or OFF	Temperature alarm leading to the PSU stopping
PSU1.ALARM.VOLT1		ON or OFF	Input voltage alarm
PSU1.ALARM.VOLT2		ON or OFF	Output voltage alarm
PSU1.ALARM.WARN		ON or OFF	Warning type alarm
PSU1.CONF.AMB.MAX		[0..150]	Ambient temperature threshold configuration in Celsius degrees
PSU1.CONF.HEAT.MAX		[0..150]	Heatsink temperature threshold configuration in Celsius degrees

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
PSU1.MEAS.AMB		XX=[0..9]	Measures the ambient temperature in Celsius degrees
PSU1.MEAS.CUR1	R	XX.XXX=[0..9]	Measures the input current in amperes
PSU1.MEAS.CUR2	R	XX.XXX=[0..9]	Measures the output current in amperes
PSU1.MEAS.FAN1.SPEED	R	XXX=[0..9]	Measures the fan 1 speed in rpm
PSU1.MEAS.FAN2.SPEED	R	XXX=[0..9]	Measures the fan 2 speed in rpm
PSU1.MEAS.HEAT1	R	XXX=[0..9]	Measures the heatsink temperature in Celsius degrees
PSU1.MEAS.PFWD	R	XXX=[0..9]	Measures the output power in Watts
PSU1.MEAS.PIN	R	XXX=[0..9]	Measures the input power in Watts
PSU1.MEAS.SHORTCOUNTER	R	XXX=[0..9]	Short-circuit counter
PSU1.MEAS.VOLT1	R	XX.XXX=[0..9]	Measures the input voltage in volts
PSU1.MEAS.VOLT2	R	XX.XXX=[0..9]	Measures the output voltage in volts
PSU1.STAT.COMM	R	ON or OFF	Communication state
PSU1.STAT.PRESENT	R	PRES or NOT PRES	Detection of the PSU physical presence
PSU1.SYS.SN	R	XXXX X=[0..9;A...Z]	PSU serial number
PSU1.SYS.SOFTREL	R	XXXX X=[0..9;A...Z]	PSU software release

7.2.7. Alarm commands

Greyed out commands are Ecreso FM only commands.

Commands in bold are Ecreso FM Amplifier and Ecreso FM with integrated amplifier (300 W to 2000 W) only commands.

Commands followed by two stars (**) are available with modules sold in v.1.2.2 or higher.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
ALARM.10MSWITCH	R	"ON" or "OFF"	Indicates there was a 10 MHz switch between the external source and the internal source.
ALARM.AES1	R	"ON" or "OFF"	ON => no signal on the input AES1
ALARM.AES2	R	"ON" or "OFF"	ON => no signal on the input AES2
ALARM.AES3	R	"ON" or "OFF"	ON => no signal on the input AES3
ALARM.AMB	R	"ON" or "OFF"	ON => ambient alarm, OFF => No alarm. The current ambient temperature is above the set maximum ambient temperature (CONF.AMB.MAX)
ALARM.ANA1	R	"ON" or "OFF"	ON => no signal on the input ANA1
ALARM.BATLOW	R	"ON" or "OFF"	Indicates if the NVRAM battery's level is OK. ON: the NVRAM battery needs to be changed.
ALARM.COMM	R	"ON" or "OFF"	Indicates if there is a communication fault with one of the units of the system. Only applies to Master unit of modular TX and 1+1 systems.
ALARM.CUR1	R	"ON" or "OFF"	Indicates the current at the transmitter's input is over the max threshold.
ALARM.CUR2	R	"ON" or "OFF"	Indicates the current at the amplifier's input is over the max threshold. (1500 & 2000 W modules only)
ALARM.CUR3	R	"ON" or "OFF"	Indicates the current at the pre-amplifier's input is over the max threshold. (1500 & 2000 W modules only)
ALARM.FAN1	R	"ON" or "OFF"	Fan 1 alarm; speed is too slow
ALARM.FAULT	R	"ON" or "OFF"	ON => critical alarm OFF => No alarm (3 dB, VSWR)

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
ALARM.HEAT1	R	"ON" or "OFF"	ON => The heatsink temperature around MOSFET1 is over the set heatsink max temperature (CONF.HEAT.MAX)
ALARM.INT_TEMP **	R	"ON" or "OFF"	ON => indicates the temperature of the internal sensor is higher than the max threshold
ALARM.INPUT_FAULT	R	"ON" or "OFF"	Indicates if there is an alarm on an input set as FAULT
ALARM.INPUTSWITCH	R	"ON" or "OFF"	Indicates if the current audio input corresponds to the highest priority channel
ALARM.LIST	R		Returns the list of current alarms in ASCII format
ALARM.LOGGING	R	"ON" or "OFF"	ON => two consecutive failed attempts to write on the µSD card
ALARM.MPX1	R	"ON" or "OFF"	ON => no signal on the input MPX1
ALARM.MPX2	R	"ON" or "OFF"	ON => no signal on the input MPX2
ALARM.PA	R	"ON" or "OFF"	ON => global alarm on amplifier
ALARM.PLAYER	R	"ON" or "OFF"	ON => no signal on the generator
ALARM.PLL	R	"ON" or "OFF"	Indicates whether the PLL is locked (OFF) or unlocked (ON)
ALARM.PRESSURE **	R	"ON" or "OFF"	ON => indicates the pressure of the internal sensor is higher than the max threshold
ALARM.PSU	R	"ON" or "OFF"	ON => global alarm on PSU
ALARM.RDSSWITCH	R	"ON" or "OFF"	Indicates there was a RDS switch (auto mode only)
ALARM.SFM	R	"ON" or "OFF"	Indicates a SmartFM malfunction
ALARM.SFN	R	"ON" or "OFF"	When SFN is enabled, indicates a loss of the external 10 MHz or a loss of the external 1 PPS or a difference between the set SFN delay and the measured SFN delay. This alarm indicates a loss of SFN, not a loss of transmission.
ALARM.VOLT	R	"ON" or "OFF"	ON => incorrect amplifie voltage
ALARM.VOLT.AUX	R	"ON" or "OFF"	Indicates if auxiliary voltage is offset by more than 10% of the set value
ALARM.WARN	R	"ON" or "OFF"	ON => Internal Alarm (warnings) OFF=> No alarm. (fan, current, voltage, power supply, temperature, heatsink, ambient temp)

7.2.8. Input commands

These commands are Ecreso FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
Commands for AES1, AES2 and AES3 inputs (n = 1, 2 or 3)			
INPUT.AESn.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.AESn.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.AESn.FLT	R/W	"0" or "15" or "16" or "17"	Configuration of the audio filter
INPUT.AESn.GET_SAMPLING	R	0...200000	Gives the sampling rate in Hz
INPUT.AESn.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds in dB
INPUT.AESn.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second in dB
INPUT.AESn.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.AESn.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.AESn.ALARM.
INPUT.AESn.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.AESn.PREAC	R/W	OFF;50;75	Sets the value of the pre-emphasis
INPUT.AESn.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio/MPX signals are present on the input
INPUT.AESn.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds in dB
INPUT.AESn.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.AESn.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.AESn.SW.DELAY	R/W	XXX=[1...600]	Switching delay when loss on the input
INPUT.AESn.SW.NOSYNC	R/W	"ON" or "OFF"	If ON, switches on loss of AES synchro
INPUT.AESn.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel silence detection must be conducted for the audio input: L, R, L or R (ANY), L and R (BOTH)
INPUT.AESn.SW.THRESH	R/W	-90...20	Silence triggering level in dBFS on channel 2
INPUT.AESn.TRIM	R/W	-3.00 à 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Commands for analog audio input ANA1			
INPUT.ANA1.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.ANA1.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.ANA1.FLT	R/W	"0" or "15" or "16" or "17"	Configuration of the audio filter
INPUT.ANA1.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds in dB
INPUT.ANA1.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second in dB
INPUT.ANA1.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.ANA1.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.AESn.ALARM.
INPUT.ANA1.PREAC	R/W	OFF;50;75	Sets the value of the pre-emphasis

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.ANA1.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio/MPX signals are present on the input
INPUT.ANA1.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds in dB
INPUT.ANA1.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.ANA1.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.ANA1.SW.DELAY	R/W	XXX=[1...600]	Switching delay when loss on the input
INPUT.ANA1.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel silence detection must be conducted for the audio input: L, R, L or R (ANY), L and R (BOTH)
INPUT.ANA1.SW.THRESH	R/W	-90...20	Silence triggering level in dBFS on channel 2
INPUT.ANA1.TRIM	R/W	-3.00 à 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Commands for AoIP input			
INPUT.AOIP.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.AOIP.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.AOIP.FLT	R/W	"0" or "15" or "16" or "17"	Configuration of the audio filter
INPUT.AOIP.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds in dB
INPUT.AOIP.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second in dB
INPUT.AOIP.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.AOIP.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.AOIP.ALARM.
INPUT.AOIP.PEAK	R	-100 ... 28	Gives the deviation max peak value of the transmitted signal in kHz over 100 milliseconds
INPUT.AOIP.PKMAX	R	-100 ... 28	Gives the deviation max peak value of the transmitted signal in kHz over 1 second
INPUT.AOIP.PREAC	R/W	OFF;50;75	Sets the value of the pre-emphasis
INPUT.AOIP.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio/MPX signals are present on the input
INPUT.AOIP.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds in dB
INPUT.AOIP.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.AOIP.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.AOIP.SW.DELAY	R/W	XXX=[1...600]	Switching delay when loss on the input
INPUT.AOIP.SW.NOSYNC	R/W	"ON" or "OFF"	If ON, switches on loss of AES synchro
INPUT.AOIP.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel silence detection must be conducted for the audio input: L, R, L or R (ANY), L and R (BOTH)
INPUT.AOIP.SW.THRESH	R/W	-90...20	Silence triggering level in dBFS on the input
INPUT.AOIP.TRIM	R/W	-3.00 à 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Commands for audio generator input			
INPUT.AUDIOGEN.FREQ1	R/W	0 ~ 100000.00	Delta phase = freq audio / 200000 in kHz
INPUT.AUDIOGEN.FREQ2	R/W	0 ~ 100000.00	Delta phase = freq audio / 200000 in kHz
INPUT.AUDIOGEN.LEVEL1	R/W	-100.00 ~ 12.00	Audio level in dB

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.AUDIOGEN.LEVEL2	R/W	-100.00 ~ 12.00	Audio level in dB
INPUT.AUDIOGEN.PREAC	R/W	"0" or "50" or "75"	Sets the value of the pre-emphasis
INPUT.AUDIOGEN.STATE		"OFF" or "PILOT" or "L" or "R" or "L+R" or "L-R"	Type of generated MPX signal
Commands for MPX1 and MPX2 inputs (n = 1 or 2)			
INPUT.MPXn.ALARM	R/W	NONE or FAULT or WARNING	Alarm generated upon loss of signal on the input
INPUT.MPXn.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.MPXn.LEVEL	R/W	-20.00...+18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.MPXn.LOST	R	YES or NO	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.MPXn.ALARM.
INPUT.MPXn.PEAK	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 100 milliseconds
INPUT.MPXn.PKMAX	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 1 second
INPUT.MPXn.PRESENCE	R	NONE, L, R, L+R, MONO, MONO+RDS, MONO+RDS+SCA, STEREO, STEREO+RDS, STEREO+RDS+SCA, RDS, RDS+SCA, SCA, MONO+SCA or STEREO+SCA	Indicates audio/MPX signals are present on the input
INPUT.MPXn.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.MPXn.SW.DELAY	R/W	XXX=[1...600]	Switching delay when loss on the input
INPUT.MPXn.SW.THRESH	R/W	[-90...20]	Silence triggering level in dBFS on the input
Commands for audio backup Player input			
INPUT.PLAYER.ALARM	R/W	NONE or FAULT or WARNING	Alarm generated upon loss of signal on the input
INPUT.PLAYER.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.PLAYER.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.PLAYER.GET_SAMPLING	R	0...200000	Gives the sampling rate in Hz
INPUT.PLAYER.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds in dB
INPUT.PLAYER.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second in dB
INPUT.PLAYER.LEVEL	R/W	-20...0	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.PLAYER.LOST	R	YES or NO	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.PLAYER.ALARM.
INPUT.PLAYER.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.PLAYER.PRESENCE	R	OFF or L or R or L&R	Indicates audio/MPX signals are present on the input
INPUT.PLAYER.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds in dB
INPUT.PLAYER.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.PLAYER.SAMPLING	R/W	44 or 48 or 96	Gives the sampling rate
INPUT.PLAYER.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.PLAYER.SW.DELAY	R/W	XXX=[1...180]	Switching delay when loss on the input
INPUT.PLAYER.SW.NOSYNC	R/W	ON or OFF	If ON, switches on loss of AES synchro

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.PLAYER.SW.SILENCE	R/W	L or R or ANY or BOTH	Sets on which channel silence detection must be conducted for the audio input: L, R, L or R (ANY), L and R (BOTH)
INPUT.PLAYER.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on channel 2
INPUT.PLAYER.TRIM	R/W	-3.00 à 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Commands for tuner			
INPUT.TUNER.ALARM	R/W	NONE or FAULT or WARNING	Alarm generated upon loss of signal on the input
INPUT.TUNER.DRIVE	R/W	-6.00 à 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting in dB
INPUT.TUNER.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.TUNER.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds in dB
INPUT.TUNER.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second in dB
INPUT.TUNER.LEVEL	R/W	-20...0	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.TUNER.LOST	R	YES or NO	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.TUNER.ALARM.
INPUT.TUNER.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.TUNER.PRESENCE	R	OFF or L or R or L&R	Indicates audio/MPX signals are present on the input
INPUT.TUNER.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds in dB
INPUT.TUNER.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second in dB
INPUT.TUNER.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the main channel
INPUT.TUNER.SW.DELAY	R/W	XXX=[1...180]	Switching delay when loss on the input
INPUT.TUNER.SW.NOSYNC	R/W	ON or OFF	If ON, switches on loss of AES synchro
INPUT.TUNER.SW.SILENCE	R/W	L or R or ANY or BOTH	Sets on which channel silence detection must be conducted for the audio input: L, R, L or R (ANY), L and R (BOTH)
INPUT.TUNER.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on channel 2
INPUT.TUNER.TRIM	R/W	-3.00 à 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Other commands			
INPUT.SLOT1.TYPE			

7.2.9. Encoder commands

These commands are Ecreso FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CODER.19KOUT.LEVEL	R/W	0...8; 0=OFF	Enables/disables and sets the rear panel 19 kHz level output
CODER.BACKUP.AUDIO. <i>n</i>	R/W	NONE or MPX1 or MPX2 or AIP or PLAYER or GENE or TUNER	<i>n</i> = 1 to 6. Sets up to 6 audio backup sources. 1=1 st backup source
CODER.BACKUP.MODE.AUDIO	R/W	MANU or AUTO	Indicates whether backup audio is managed automatically or manually
CODER.BACKUP.RDS	R/W	NONE or AUTO or INTERNAL or AES1 or AES2 or AES3 or MPX1 or MPX2 or AIP or TUNER	Set the RDS backup source
CODER.CURRENT.AUDIO	R	"AUTO" or "LINE1" or "LINE2" or "MPX1" or "MPX2" or "PLAYER" or "GENE"	Indicates the audio channel used by the exciter.
CODER.CURRENT.RDS	R	"NONE" or "MPX1" or "MPX2" or "INTERNAL"	Indicates the RDS channel used by the exciter.
CODER.CURRENT.SCA	R	"NONE" or "MPX1" or "MPX2" or "INTERNAL"	Indicates the SCA channel used by the exciter.
CODER.MOST	R/W	"STEREO" or "MONO" or "MONO_L" or "MONO_R"	Configuration of the audio on MPX
CODER.SELECT.AUDIO	R/W	"AUTO" or "LINE1" or "LINE2" or "MPX1" or "MPX2" or "PLAYER" or "GENE"	Selects the audio channel. 'AUTO': the audio input depends on the input switch parameters (see section 5.4).
CODER.SELECT.RDS	R/W	"OFF" or "MPX1" or "MPX2" or "INTERNAL" or "AUTO"	Selects the RDS channel. 'OFF' disables the RDS, 'AUTO' selects the RDS source according to the selected audio channel (see section 5.12).
CODER.SELECT.SCA	R/W	"OFF" or "MPX1" or "MPX2" or "AUTO"	Selects the SCA channel. 'OFF' disables the SCA, 'AUTO' selects the SCA source according to the selected audio channel (see section 5.12).

7.2.10. Full RDS commands

This commands can also be used on the RDS console port (UDP and/or TCP)

NAME	Possible value	Comment
General commands		
? *		Displays all available commands
EXIT *		Closes the console
System commands		
DATE	YYMMDDHHMMSS	Encoder date and time
REBOOT	REBOOT	Reboots the AUDEMAT RDS Encoder REBOOT=REBOOT
SYSTEM.SERIAL		Displays the unit serial number
SYSTEM.VERSION		Displays the software release number

CONF.OUTPUTA.METHOD CONF.OUTPUTB.METHOD	MUTE or RDS or MPX or MPX+RDS	Sets output A and output B components: MPX+RDS, RDS, MPX or nothing (MUTE)
RDS commands		
<i>General commands</i>		
RDS.OPMODE	0 or 1	Enables (1) / disables (0) the RDS
PHASE=(0-3599)	From 0 to 3599	RDS Phase for synchronization with the transmitter
LEVEL	From 0 to 8191	RDS level in mV
PS_STRING=a,b,c,d	a = from 0 to 9 b = 0 or 1 c = from 1 to 99 d = alphanumeric (100 characters max)	PS scroll Parameters. a=number of the PS string b=enables the string (1=enabled) c=number of repetitions d=PS string text
PS_OPTIONS=a,b	a = 0 or 1 b = 0 or 1	PS options "truncate" and "center". a=1: text is truncated; b=1 text is centered. Ex: PS_OPTIONS=0,1 → text is not truncated and it is centered
PS_SCROLL=[a,b,c,d][,][e]	a = from 0 to 8 b = from 0 to 8 c = from 0 to 8 d = from 1 to 99 e = alphanumeric (100 characters max)	PS scroll Parameters. a=number of spaces before; b= number of spaces after; c=incrementation between 1 and 8 characters – 0=incrementation by word; d=delay in seconds between 2 consecutive screens; e=scrolling text. All parameters can be entered, separated by a comma, or only parameters a, b, c and d, or only parameter e.
RDS.TYPE	RDS or RDBS	Indicates the RDS type
AUTO_RTC_OFFSET	0 or 1	Sets whether the RTC offset is managed automatically (1)
PS_RT_DELAY	From 0 to 200	Indicates the delay in seconds before the PS or radiotext is sent
ITU_REGION2	0 or 1	Sets the ITU region. 0 = 1/3 (Europe or Asia) ; 1 = 2 (America)
<i>DSN commands</i>		
RDS.CURDSN	From 1 to 10	Current DSN number

RDS.DSN	From 0 to 10	<p>Sets the DSN number for which the following commands will be applied. 0 applies the commands on the current DSN.</p> <p>It this command is not sent, the DSN commands are applied to the current DSN.</p> <p>Ex:</p> <p>RDS.DSN=2 → The work DSN is DSN 2 (regardless of the current DSN)</p> <p>RDS.DSN=2 → encoder response</p> <p>RDS.RADIOTEXT.TEXT= DSN 2 radiotext → DSN 2 radiotext is set</p>
RDS.GS		Group sequence, separated by comma
RDS.LONG_PS	alphanumeric (32 bytes max)	Long PS text
<i>PSN/EON commands</i>		
RDS.PSN	From 0 to 9	<p>Sets the PSN number for which the following commands will be applied. 0 applies the commands on the main PSN.</p> <p>It this command is not sent, or if the work DSN is modified, the PSN/EON commands are applied to the main PSN.</p> <p>Ex:</p> <p>RDS.PSN=3 → the work PSN is PSN 3 (on the work DSN)</p> <p>RDS.PSN=3 → encoder response</p> <p>RDS.AF=89.7;101.6;98 → AF are et for PSN 3</p>
RDS.PI	hexadecimal	PI code
RDS.PS	alphanumeric	PS code
RDS.TA	0 or 1	Enables (1) / disables (0) the TA
RDS.TP	0 or 1	Enables (1) / disables (0) the TP
RDS.PTY	From 1 to 29	PTY. See Program TYPe table section 4.3
RDS.PTYN	alphanumeric	PTYN

RDS.AF		<p>Alternative frequency list. Regional frequencies are in parenthesis. Default unit is the MHz, add 'k' for low and medium frequencies (ex: 250k for 250 kHz)</p> <p>Method A: list of frequencies separated by semi-colon. Ex: RDS.AF=89.7;101.6; (98)</p> <p>Method B: each main frequency if followed by its alternative frequencies between brackets, there is a space before each main frequency. Ex: RDS.AF=89.7 [101.6;88] 89.8 [(92) ;103]</p>																																																								
EON_ELEMENTS	hexadecimal from 0 to 7F	<p>Sent EON data. Each type of information is sent (1) or not (0). The hexadecimal value can be found with the following table:</p> <table><tr><th>Burst 14B</th><th>Usage Broadcaster</th><th>PIN (obso)</th><th>PTY</th><th>Link</th><th>AF</th><th>PS</th><th>Hexa</th></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>10</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>17</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>19</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>23</td></tr><tr><td colspan="8">...</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>7F</td></tr></table> <p>Note: DSN and PSN must be set before using this command. Errors may occur:</p> <ul style="list-style-type: none">• ERROR 1: writing error• ERROR 2: invalid argument• ERROR 3: writing error• ERROR 4: reading error• ERROR 5: EON PSN does not exist	Burst 14B	Usage Broadcaster	PIN (obso)	PTY	Link	AF	PS	Hexa	0	0	1	0	0	0	0	10	0	0	1	0	0	0	1	17	0	0	1	0	0	1	1	19	0	0	1	0	1	1	1	23	...								1	1	1	1	1	1	1	7F
Burst 14B	Usage Broadcaster	PIN (obso)	PTY	Link	AF	PS	Hexa																																																			
0	0	1	0	0	0	0	10																																																			
0	0	1	0	0	0	1	17																																																			
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0	0	1	0	1	1	1	23																																																			
...																																																										
1	1	1	1	1	1	1	7F																																																			
RDS.EON.DEL	From 1 to 9	Deletes an EON PSN from the work DSN index.																																																								
RDS.EON.ACTIVE=a,b	a = from 1 to 9 b = 0 or 1	Enables or disables an EON. a= EON number b=enables (1) or disables (1)																																																								
RDS.EON.ADD	From 1 to 255	<p>Creates a new EON for the work DSN. Enter the EON number which has to be unique for the encoder.</p> <p>When the command is sent, the encoder returns the EON index number.</p> <p>Ex:</p> <p>RDS.EON.ADD=108 → creation of a new EON</p> <p>RDS.EON.ADD=8 → encoder response: PSN #8 has been created</p>																																																								

<i>Radiotext commands</i>		
RT_PLUS	3, 7, 9 to 19, 21 to 27, or 0	Enables RT+ for the RDS groups which includes it (only for groups 3, 7, 9 to 19, 21 to 27). 0 removes the assigned group.
RT=a,b,c	a = from 0 to 15 b = 0 or 1 c = alphanumeric (64 characters max)	Configures the radiotext. a=number of transmissions, 0= infinity b=enables (1) / disables (0) the AB toggle c=radiotext string
RDS.RT	alphanumeric (64 characters max)	Dynamically sets the first radiotext. This command does not store the string: it will be lost if the unit restarts. It will not be visible via the distant interface.
RDS.RADIOTEXT.TEXT=a,b	a = from 1 to 8 b = alphanumeric (64 characters max)	Radiotext string text. a=string number b=radiotext text
RDS.RADIOTEXT.NB=a,b	a = from 1 to 8 b = from 0 to 15	Radiotext string text. a=string number b= number of repetitions, 0= infinity
RDS.RADIOTEXT.TOGGLE=a,b	a = from 1 to 8 b = 0 or 1	Radiotext string text. a=string number b=enables (1) or disables (0) the A/B toggle
<i>UECP commands</i>		
UECP.SITE	hexadecimal	Site address of the unit, max: 3 characters
UECP.ENCODER	hexadecimal	Encoder address of the unit, max: 2 characters.
UECP.LEGACY	0 or 1	Enables (1) or disables (0) UECP standard v.7.0.5 compatibility
UECP.UDP1.PORT UECP.UDP2.PORT	integer	Port for UECP commands
UECP.UDP1.MODE UECP.UDP2.MODE	UNI / BIREQ / BI	UECP mode, one-way, bidirectional requested or spontaneous
UECP.UDP1.TIMEOUT UECP.UDP2.TIMEOUT	From 1 to 254 / OFF	Timeout before alarm
UECP.SQC.ENABLE	0 or 1	Enables (1) or disables (0) SQC management in UECP
UECP.TCP1.PORT UECP.TCP2.PORT	xxx.xxx.xxx.xxx	Port for UECP commands

UECP.TCP1.MODE UECP.TCP2.MODE	UNI / BIREQ / BI	UECP mode, one-way, bidirectional requested or spontaneous
UECP.TCP1.TIMEOUT UECP.TCP2.TIMEOUT	From 1 to 254 / OFF	Timeout before alarm
Network commands		
PING		Tests network access. Respond PONG in case of success
IP.ADDR	xxx.xxx.xxx.xxx	AUDEMAT RDS Encoder IP address
IP.MASK	xxx.xxx.xxx.xxx	AUDEMAT RDS Encoder network mask
IP.GW	xxx.xxx.xxx.xxx	AUDEMAT RDS Encoder gateway
ASCII.UDP1.PORT ASCII.UDP2.PORT ASCII.UDP3.PORT	from 1 to 65635	UDP port number
ASCII.UDP1.MODE ASCII.UDP2.MODE ASCII.UDP3.MODE	OFF / CMD / CONF	UDP port configuration: disabled, command or configuration
CONF.APPLY	APPLY	Command to send to apply new network settings. Ex: IP.ADDR=192.168.0.10 → changes the unit's address IP.ADDR=192.168.0.10 → encoder response CONF.APPLY=APPLY → applies the new IP address to the unit
DNS.PRIMARY	xxx.xxx.xxx.xxx	Sets the primary DNS port
DNS.SECONDARY	xxx.xxx.xxx.xxx	Sets the secondary DNS port
SNMP commands		
SNMP.TRAPS	0 or 1	Enables (1) or disables (0) SNMP traps
SNMP.TRAPS.DEST	xxx.xxx.xxx.xxx	SNMP manager IP address
SNMP.COMMUNITY.GET	alphanumeric	SNMP GET community
SNMP.COMMUNITY.SET	alphanumeric	SNMP SET community

7.2.11. Dynamic RDS commands

These commands are Ecreso FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
PS_TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the first line of PS text. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ... Equivalent to RDS.PS1.TXT
RDS.ALTDSN.AF	R/W	XX,...,XX XX=[87.5~108.00]	List of alternative frequencies (26 max). Enter frequencies as 5 character values. Ex: 89.70 or 103.2
RDS.ALTDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.ALTDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)
RDS.ALTDSN.ID	R/W	X; X=[1...8]	Indicates which DSN sent by UECP is copied to the ALT memory
RDS.ALTDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.ALTDSN.PI	R/W	XXXX X=[0..9;A...F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.ALTDSN.PS	R/W	XXXX X=[0..9;A...Z]	Station name; with 8 characters
RDS.ALTDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.ALTDSN.PTYN	R/W	XXXX X=[0..9;A...Z]	Program type name
RDS.ALTDSN.RT	R/W	X..X ; X=[0..9;A...Z]	Radiotext
RDS.ALTDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.APPOINTMENT.STR	R/W	[A...Z]	Sets the command that modifies <APPOINTMENT>; default value: APPOINTEMENT
RDS.CHAT.CENTER.STR	R/W	[A...Z]	Sets the command that modifies <CHAT.CENTER>; default value: CHATCENTRE
RDS.CHAT.STR	R/W	[A...Z]	Sets the command that modifies <CHAT>; default value: CHAT
RDS.CT.EN	R/W	"ON" or "OFF"	Enables/disables the Clock time function
RDS.CT.OFFSET	R/W	-24---24	Time offset in number of 30 minute periods. Ex: for an offset of 90 minutes, set 3
RDS.CURRENT.PS	R	[A...Z]	Current PS string
RDS.CURRENT.RT	R	[A...Z]	Current radiotext string
RDS.DSN	R/W	"MAIN" or "ALT"	Transmit the DSN 1 or 2 to the exciter
RDS.EMAIL.HOTLINE.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.HOTLINE>; default value: EMAILHOTLINE
RDS.EMAIL.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.OTHER>; default value: EMAILOTHER
RDS.EMAIL.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.STUDIO>; default value: EMAILSTUDIO
RDS.GET_DATA.STR	R/W	[A...Z]	Sets the command that modifies <GET_DATA>; default value: GETDATA
RDS.IDENTIFIER.STR	R/W	[A...Z]	Sets the command that modifies <IDENTIFIER>; default value: IDENTIFIER
RDS.INFO.ADVERTISEMENT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.ADVERTISEMENT>; default value: ADVERTISEMENT
RDS.INFO.ALARM.STR	R/W	[A...Z]	Sets the command that modifies <INFO.ALARM>; default value: ALARMINFO
RDS.INFO.CINEMA.STR	R/W	[A...Z]	Sets the command that modifies <INFO.CINEMA>; default value: CINEMA
RDS.INFO.DAILY_DIVERSION.STR	R/W	[A...Z]	Sets the command that modifies <INFO.DAILY_DIVERSION>; default value: DAILYDIVERSION

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.INFO.DATE_TIME.STR	R/W	[A...Z]	Sets the command that modifies <INFO.DATE_TIME>; default value: DATETIME
RDS.INFO.EVENT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.EVENT>; default value: EVENT
RDS.INFO.HEALTH.STR	R/W	[A...Z]	Sets the command that modifies <INFO.HEALTH>; default value: HEALTH
RDS.INFO.HOROSCOPE.STR	R/W	[A...Z]	Sets the command that modifies <INFO.HOROSCOPE>; default value: HOROSCOPE
RDS.INFO.LOTTERY.STR	R/W	[A...Z]	Sets the command that modifies <INFO.LOTTERY>; default value: LOTTERY
RDS.INFO.NEWS.LOCAL.STR	R/W	[A...Z]	Sets the command that modifies <INFO.NEWS.LOCAL>; default value: LOCALNEWS
RDS.INFO.NEWS.STR	R/W	[A...Z]	Sets the command that modifies <INFO.NEWS>; default value: NEWS
RDS.INFO.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <INFO.OTHER>; default value: OTHER
RDS.INFO.SCENE.STR	R/W	[A...Z]	Sets the command that modifies <INFO.SZENE>; default value: SCENE
RDS.INFO.SPORT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.SPORT>; default value: SPORT
RDS.INFO.STOCKMARKET.STR	R/W	[A...Z]	Sets the command that modifies <INFO.STOCKMARKET>; default value: STOCKMARKET
RDS.INFO.TRAFFIC.STR	R/W	[A...Z]	Sets the command that modifies <INFO.TRAFFIC>; default value: TRAFFIC
RDS.INFO.TV.STR	R/W	[A...Z]	Sets the command that modifies <INFO.TV>; default value: TVINFO
RDS.INFO.URL.STR	R/W	[A...Z]	Sets the command that modifies <INFO.URL>; default value: URLINFO
RDS.INFO.WEATHER.STR	R/W	[A...Z]	Sets the command that modifies <INFO.WEATHER>; ; default value: WEATHER
RDS.ITEM.ALBUM.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.ALBUM>; default value: ALBUMNAME
RDS.ITEM.ARTIST.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.ARTIST>; default value: ARTISTNAME
RDS.ITEM.BAND.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.BAND>; default value: BAND
RDS.ITEM.COMMENT.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMMENT>; default value: COMMENT
RDS.ITEM.COMPOSER.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMPOSER>; default value: COMPOSER
RDS.ITEM.COMPOSITION.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMPOSITION>; default value: COMPOSITION
RDS.ITEM.CONDUCTOR.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.CONDUCTOR>; default value: CONDUCTOR
RDS.ITEM.DURATION.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.DURATION>; default value: DURATION
RDS.ITEM.GENRE.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.GENRE>; default value: GENRE
RDS.ITEM.MOVEMENT.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.MOVEMENT>; default value: MOVEMENT
RDS.ITEM.TITLE.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.TITLE>; default value: SONGTITLE
RDS.ITEM.TRACKNUMBER.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.TRACKNUMBER>; default value: TRACKNUMBER

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.MAINDSN.AF	R/W	XX,...,XX XX=[87.5 ~108.0]	List of alternative frequencies (26 max). Enter frequencies as 5 character values. Ex: 89.70 or 103.2
RDS.MAINDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.MAINDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)
RDS.MAINDSN.ID	R/W	X; X=[1...8]	Indicates which DSN sent by UECP is copied to the MAIN memory
RDS.MAINDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.MAINDSN.PI	R/W	XXXX X=[0..9;A...F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.MAINDSN.PS	R/W	XXXX X=[0..9;A...Z]	Station name; with 8 characters
RDS.MAINDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.MAINDSN.PTYN	R/W	XXXX X=[0..9;A...Z]	Program type name
RDS.MAINDSN.RT	R/W	X..X ; X=[0..9;A...Z]	Radiotext
RDS.MAINDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.MMS.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <MMS.OTHER>; default value: MMSOTHER
RDS.PHONE.HOTLINE.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.HOTLINE>; default value: PHONEHOTLINE
RDS.PHONE.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.OTHER>; default value: PHONEOTHER
RDS.PHONE.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.STUDIO>; default value: PHONESTUDIO
RDS.PLACE.STR	R/W	[A...Z]	Sets the command that modifies <PLACE>; default value: PLACE
RDS.PROGRAM.EDITORIAL_STAFF.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.EDITORIAL_STAFF>; default value: EDITORIALSTAFF
RDS.PROGRAM.HOMEPAGE.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.HOMEPAGE>; default value: HOMEPAGE
RDS.PROGRAM.HOST.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.HOST>; default value: PROGRAMMEHOST
RDS.PROGRAM.NEXT.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.NEXT>; default value: PROGRAMMENEXT
RDS.PROGRAM.NOW.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.NOW>; default value: PROGRAMMENOW
RDS.PROGRAM.PART.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.PART>; default value: PROGRAMMEPART
RDS.PROGRAM.SUBCHANNEL.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.SUBCHANNEL>; default value: SUBCHANNEL
RDS.PROGRAMME.FREQUENCY.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.FREQUENCY>; default value: FREQUENCY
RDS.PS _n .CENTER	R/W	ON/OFF	Centered text, only when incrementing by word ($n = 1$ to 8)
RDS.PS _n .DELAY	R/W	0...99	Delay between 2 consecutive screens ($n = 1$ to 8)
RDS.PS _n .EN	R/W	ON/OFF	Enables/disables string n ($n = 1$ to 8)
RDS.PS _n .INCREMENT	R/W	[0...8]	From 1 to 8: number of characters per screen. 0 = by word ($n = 1$ to 8)
RDS.PS _n .REP	R/W	0...16	Sets the number of repetition of string n . 0=infinite ($n = 1$ to 8)

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.PS n .TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the n^{th} PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ... ($n = 1$ to 8)
RDS.PS n .TRUNCATE	R/W	ON/OFF	Truncated text, only when incrementing by word ($n = 1$ to 8)
RDS.PURCHASE.STR	R/W	[A...Z]	Sets the command that modifies <PURCHASE>; default value: PURCHASE
RDS.RT1.TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the radiotext with Tags <ITEM.TITLE>, <ITEM.ARTIST>,...
RDS.SMS.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <SMS.OTHER>; default value: SMSOTHER
RDS.SMS.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <SMS.STUDIO>; default value: SMSSTUDIO
RDS.STATIONNAME.LONG.STR	R/W	[A...Z]	Sets the command that modifies <STATIONNAME.LONG>; default value: STATIONNAMELONG
RDS.STATIONNAME.SHORT.STR	R/W	[A...Z]	Sets the command that modifies <STATIONNAME.SHORT>; default value: STATIONNAMESHORT
RDS.VOTE.CENTER.STR	R/W	[A...Z]	Sets the command that modifies <VOTE.CENTER>; default value: VOTECENTRE
RDS.VOTE.QUESTION.STR	R/W	[A...Z]	Sets the command that modifies <VOTE.QUESTION>; default value: VOTEQUESTION
RT.TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the radiotext with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...Equivalent to the command RDS.RT1.TEXT

7.2.12. Status commands

Commands in bold are Ecreso FM Amplifier and Ecreso FM with integrated amplifier (300 W to 2000 W) only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
STAT.10M	R	"PRES" or "NOT PRES"	Indicates the presence of an external 10 MHz
STAT.1PPS	R	"LOCK" or "UNLOCK"	Indicates the presence of an external 1 PPS
STAT.CLK	R	"INTERNAL" or "EXTERNAL"	Indicates the 10 MHz switch position
STAT.COMM	R	"ON" or "OFF"	State of the communication between the IP and control part
STAT.ETH0.DUPLEX	R	HALF or FULL	Current ETH0 mode
STAT.ETH0.SPEED	R	10, 100 or 1000	Measured ETH0 speed
STAT.ETH1.DUPLEX	R	HALF or FULL	Current ETH1 mode
STAT.ETH1.SPEED	R	10, 100 or 1000	Measured ETH1 speed
STAT.PLL	R	"LOCK" or "UNLOCK"	Indicates the state of the exciter PLL
STAT.PREFMAX	R	"ON" or "OFF"	ON: Max Reflected Power Safety overshoot
STAT.RF	R	"PRES" or "NOT PRES"	RF present at the output of the unit
STAT.SECREF	R	"ON" or "OFF"	Indicates if the reflective protection safety is enabled
STAT.SFM.ACT	R	"ON" or "OFF"	SmartFM internal activation
STAT.SFM.MAX	R	[25...125]	SmartFM high limit
STAT.SFM.MIN	R	[25...125]	SmartFM low limit
STAT.SWRF	R	"ON" or "OFF"	State of the RF switch

8. THE EMBEDDED WEBSITE

8.1. Introduction

- !** *Though this unit includes a firewall and enforces a password policy, it is up to the user to set it in a secured environment such as a private network, VPN, behind a firewall...WorldCast Systems cannot be held responsible for the consequences of a security breach on the operating network.*

8.2. Connecting to the embedded web site

For remote access, connect to the encoder's embedded web site. Simply open a web browser (Google Chrome recommended) and enter the encoder's IP address in the address bar (set on the front panel).

- i** *Though the web application is compatible with most browsers, performances vary from one browser to another. For optimal performances, Google Chrome is recommended.*
- i** *The browser may display a message indicating that the connection is not certified; however, the site is secured (data is encrypted) and you may proceed to access it. To prevent these potential blocking and warning messages, WorldCast Systems now supplies a certificate for HTTPS browsing, see section 8.9.2 for more information.*

Select the language if necessary.

Enter the user name and password:

Default identifiers are:

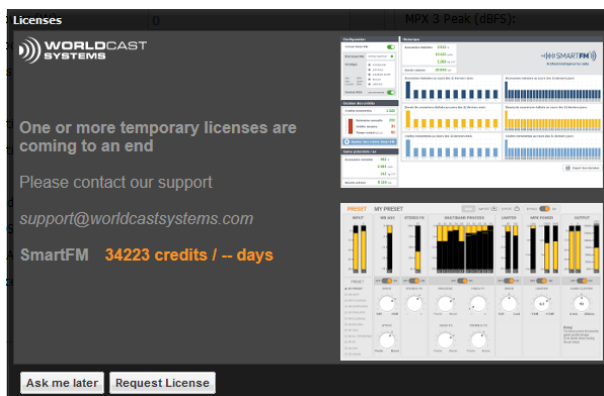
- Login: Admin
- Password: admin

- !** *When you first connect, you will have to modify the password. For more security, choose a strong password that includes a minimum of 8 characters, including uppercase, lowercase and numbers.*

Check the box to save connection information. This process is managed by the web browser cookies; login and passwords are saved for 15 days.

- i** *If several users are connected at once, they all can send commands and change parameters. The last edit will always be taken into account.*

A 3 month trial period is offered for all Ecreso FM optional licenses. The following display pops up if you have less than 30 days on one of the temporary licenses:



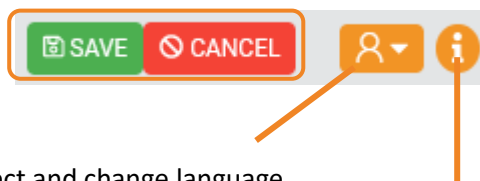
Please see section 8.9.7 and appendix A for more information on managing options.

To disable this message, please see section 8.9.7.

8.3. Application overview

The header is visible on all pages:

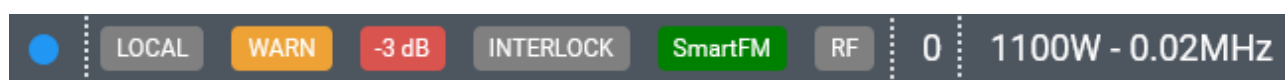
Save and Cancel buttons enabled only when parameters have been modified. Before saving, values are temporarily memorized even when navigating to another page.



Connect/disconnect and change language

Information on the application

Right underneath, a series of indicators give an overview of the transmitter status:



Current communication with the transmitter



Transmitter in standard mode












Transmitter in local mode



Current fault alarm



Current warning alarm

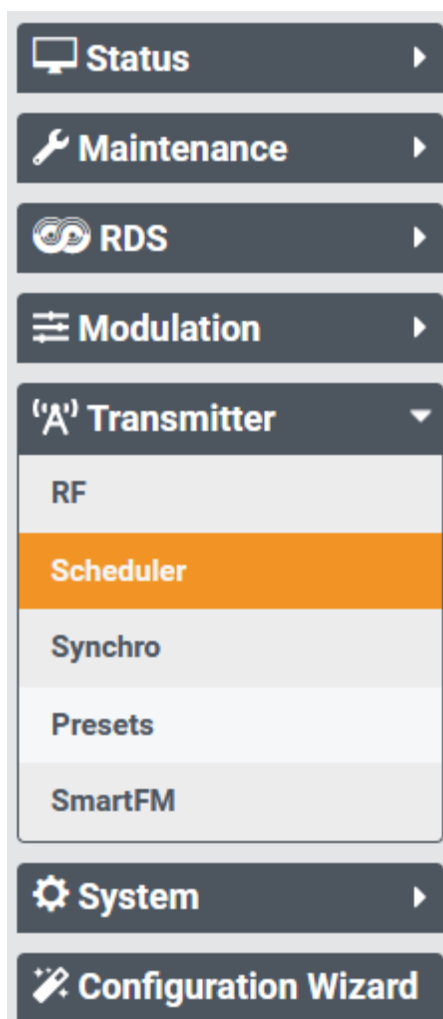
	Current 3 dB alarm
	Current 1 dB alarm
	Current VSWR alarm
	Interlock not present
	Interlock present
	RF disabled
	RF enabled
	SmartFM disabled
	SmartFM enabled

On the right of this bar, the frequency and the power of the transmitters are also indicated.

The logo at the top left allows you to return to the main synoptic diagram (see section 8.4.1).



The left menu is visible on all pages:



Pages are organized in eight sections:

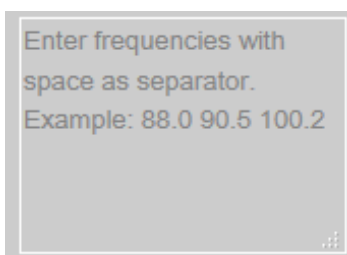
- Status
- Maintenance
- RDS
- Modulation
- Transmitter
- System
- Configuration wizard

Sub-menus for each section can be displayed or hidden

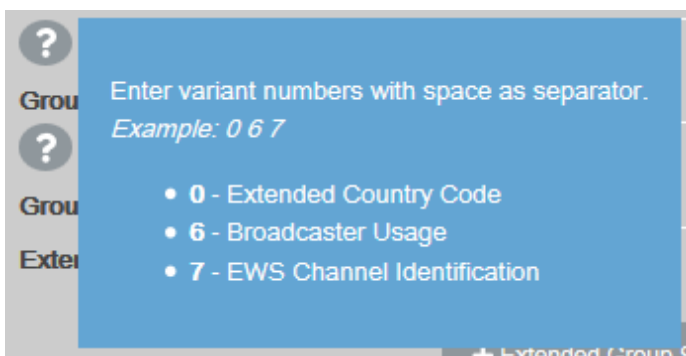
The title of the displayed page is highlighted in orange

Several online help tools are available

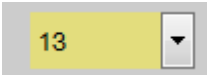
When a value has not been entered yet, some text fields display contextual help. The Help text is in grey, the entered value in black.



Some fields are followed by a question mark. Click on it to display contextual help, click outside the blue zone to hide it.



When a value has been modified but has not been saved yet, the background of the field is yellow



color

A red frame indicates a value that is out of range.



The site is responsive and can be viewed on a mobile device.

8.4. Status

8.4.1. Synoptic diagram

Path: **Status**/Synoptic Diagram

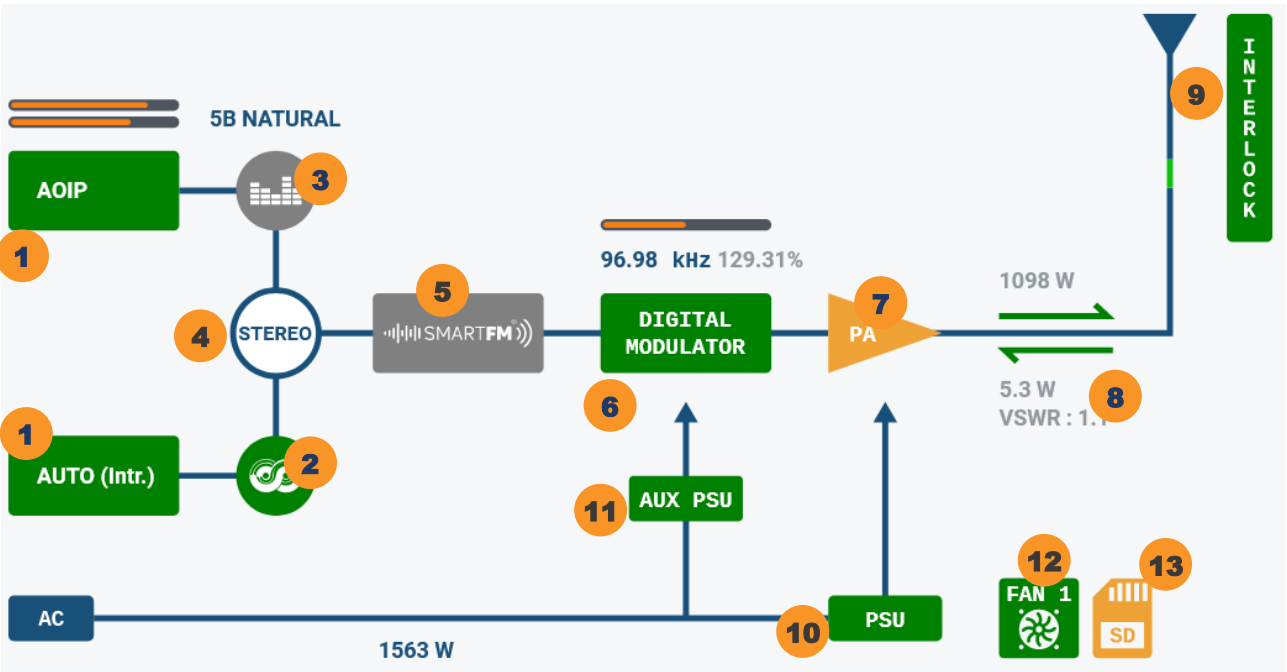
This is the home page.

Return to it by clicking on the logo at the top left of the



screen

It shows an overview of the Ecreso FM.



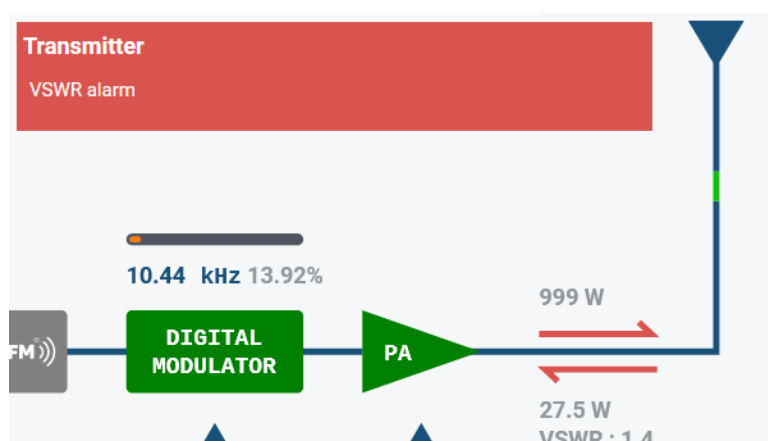
The synoptic gives the current status of the transmitter.

The various elements of the synoptic provide links to the corresponding pages.

<p>1 Audio and RDS Inputs Opens the Modulation / Synoptic Diagram page</p> <ul style="list-style-type: none">OKwarningfaultno signal	<p>2 RDS Opens the RDS / Overview page</p> <ul style="list-style-type: none">OKwarningnone
<p>3 Sound Process Opens the Modulation / Sound Processor page The active preset name is displayed</p> <ul style="list-style-type: none">Sound process enableBypass mode	<p>4 Stereo Opens the Modulation / Synoptic Diagram page</p> <p>STEREO MONO NONE</p>

<p>5 SmartFM Opens the Transmitter / SmartFM page</p> <ul style="list-style-type: none"> ● on ● initialization ● off 	<p>6 Modulator Opens the Modulation / Stereo Encoder page</p> <ul style="list-style-type: none"> ● OK ● warning ● fault
<p>7 Amplifier Opens the Maintenance / PA page</p> <ul style="list-style-type: none"> ● OK ● warning ● fault ● stand-by / no communication 	<p>8 Power Setting / Reflected Power / VSWR Opens the Transmitter / RF page</p> <ul style="list-style-type: none"> ● OK ● warning ● fault
<p>9 Antenna Interlock / Link Opens the Transmitter / RF page</p> <ul style="list-style-type: none"> ● link Opens and interlock closed ● link closed and interlock Opens 	<p>10 Main power supply Opens the Maintenance / PSU page</p> <ul style="list-style-type: none"> ● OK ● warning ● fault ● stand-by / no communication
<p>11 Auxiliary power supply Opens the Maintenance / Monitoring page</p> <ul style="list-style-type: none"> ● OK ● warning ● fault ● stand-by / no communication 	<p>12 Fan Opens the Maintenance / Monitoring page</p> <ul style="list-style-type: none"> ● OK ● warning / no communication
<p>13 SD card Opens the System / Global settings page</p> <ul style="list-style-type: none"> ● OK ● unmounted card or logging alarm ● fault ● card is not present 	

When an element is in alarm, simply hover over it with the mouse to display the specific alarm:



8.4.2. Advanced measurements


Path: **Status/Advanced measurements**

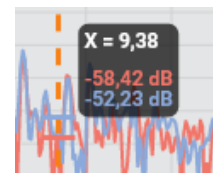
Four graphics are available on this page:

- RF spectrum
- Current spectrum for one of the inputs
- MPX output
- Audio level



A click on a point on the graph displays the frequency and the corresponding level.

The button  displays the curve in full screen mode and then switches back to the general display.



The input spectrum displays the current input by default, but a drop-down menu allows you to select another one.

By default, a single gauge shows the MPX output level. Click "Show Advanced Settings" to display additional gauges for each input.

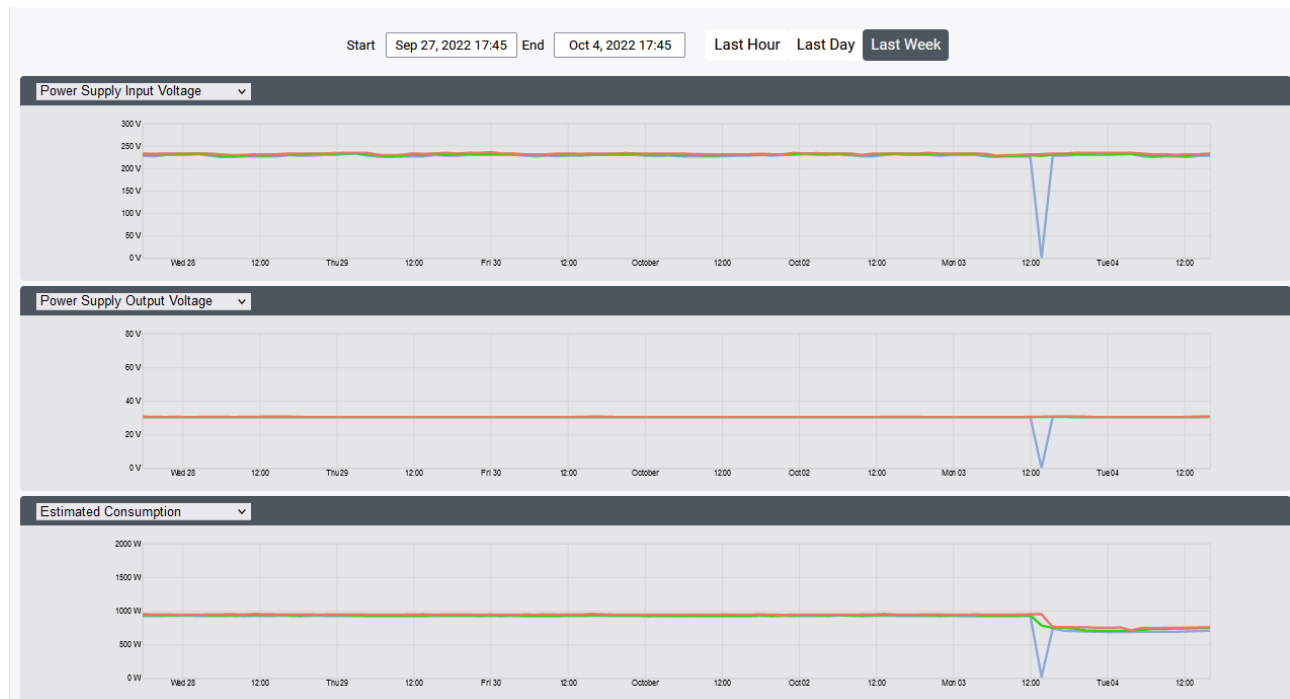
The yellow line in the gauges indicates the reference level. On the MPX output graph, the reference level is the total deflection, which can be set on the transmitter pages. If the total deviation is changed, the audio levels page must be refreshed to show the new value.



8.4.3. Graphical history

Path: **Status**/Graphical history

This page displays measurements over the last day (default view), the last hour, the last week or over the specified dates.



Three graphics can be selected on the page amongst:

- Average forward power
- Forward power and set power
- Forward power
- VSWR
- PSU input and output voltage
- Amplifier current
- Preamplifier PSU¹
- 21 V aux current
- Global efficiency
- Mosfet efficiency
- Ambient temperature
- Heatsink temperature¹
- Fan speed¹
- Power supply temperature
- Main control board temperature
- Atmospheric pressure
- Electricity savings²
- Estimated consumption²

¹ Available measurements vary depending on the power of the transmitter

² Readings available with the SmartFM option

30/09/2022 17:30:28
 233.00 V Maximum
 230.97 V Average
 229.50 V Minimum

Clicking on a point on a curve displays the exact date and time of the point, and a set of relevant values for the selected curve

8.4.4. Event log

Path: **Status**/Event log

View the last 1000 events on this page.

In the header, filter by period or specific start and end dates, source of events and event type.

<div> <div>Start Sep 27, 2022 17:56 End Oct 4, 2022 17:56</div> <div>Last Hour Last Day Last Week Last Month</div> </div> <div> <div>Source All System Alarm Configuration</div> <div>Event Type All System Software Start System Software Stop Local Mode</div> </div> <div></div>					
Severity	Source	Date	Event	Description	
✓	Notice	01/10/2022 23:04:37 CEST	Configuration Changed		
✓	Notice	30/09/2022 23:04:36 CEST	Configuration Changed		
✓	Notice	Alarm	30/09/2022 14:33:54 CEST	Voltage Alarm	Off
✓	Notice	Alarm	30/09/2022 14:33:54 CEST	Warning	Off
⚠	Warning	Alarm	30/09/2022 14:33:53 CEST	Voltage Alarm	On
⚠	Warning	Alarm	30/09/2022 14:33:53 CEST	Warning	On
✓	Notice	Alarm	30/09/2022 14:33:52 CEST	Interlock	Close
✓	Notice	Alarm	30/09/2022 14:33:52 CEST	RF Present	On [TX.PFWD=43]
🔥	Error	Alarm	30/09/2022 14:33:52 CEST	Interlock	Open
🔥	Error	Alarm	30/09/2022 14:33:52 CEST	RF Present	Off [TX.PFWD=0]
✓	Notice	Alarm	30/09/2022 14:33:52 CEST	RF Present	On [TX.PFWD=18]
🔥	Error	Alarm	30/09/2022 14:33:51 CEST	RF Present	Off [TX.PFWD=0]
✓	Notice	Alarm	30/09/2022 14:33:51 CEST	Interlock	Close
🔥	Error	Alarm	30/09/2022 14:33:51 CEST	Interlock	Open
✓	Notice		29/09/2022 23:04:25 CEST	Configuration Changed	
i	Info	Configuration	29/09/2022 23:04:24 CEST	Power set to	500
i	Info	Configuration	29/09/2022 23:04:24 CEST	Power set to	750
✓	Notice	AOIP	29/09/2022 04:00:17 CEST	Loss of IP Connection	Off

Click on a column title to sort the column.

The symbol in the first column gives its degree of severity:

- 🔥 errors
- ⚠ warning
- ✓ notice, end of a warning or error
- i information.

There are several sources of events:

- **Configuration**

These events give the parameter that was modified (Event) and the new value for that parameter (Description).

Ex:

	Severity	Source	Date	Event	Description
	Info	Configuration	29/09/2022 23:04:24 CEST	Power set to	750

The transmitter configuration has been changed, the power is now set to 750 W.




For a list of configuration changes that may appear in the event log, please see the Configuration commands (section 7.2.4) for “Equipment” events (Sub-System column) and to transmitter commands (section 7.2.3) for “Transmitter” events.

- **Alarms**

These events give the beginning and end of Warning and Fault (Error) type alarms.

In the Description column, we see both the status of the alarm and the last variables related to that event. .

Ex:

	Severity	Source	Date	Event	Description
	Notice	Alarm	30/09/2022 14:33:54 CEST	Voltage Alarm	Off
	Warning	Alarm	30/09/2022 14:33:53 CEST	Warning	On
	Error	Alarm	30/09/2022 14:33:51 CEST	Interlock	Open

1st event: the voltage alarm on the exciter is over.


2nd event: beginning of a Warning alarm on the transmitter.

3rd event: beginning of the Interlock alarm on the exciter, the loop is now open.


For a list of alarms that may appear in the event log, please see the Alarm commands (section 7.2.5).

- **System information**

Ex:

	Severity	Source	Date	Event	Description
	Notice	System	03/10/2022 14:06:53 CEST	Local Mode	Off

This event indicates the local mode was disabled.

You may export the entire log by clicking the button . It will download the log.csv file in you download directory.

8.5. Maintenance

8.5.1. Monitoring

Path: **Maintenance**/Monitoring

This page allows you to view the physical status of the transmitter.

Main				Auxiliary Voltages		
Estimated Consumption (with SmartFM / without SmartFM)	1422	/ 1422	W	Reinit	Fault Alarm	
Warning! This command will turn off SmartFM for a few minutes.				+5V	4,94	V
Efficiency	70	%		+12V	12,06	V
Power Amplifier Efficiency	80	%		-12V	-12,17	V
PSU Efficiency	94	%				
Temperatures				Fans		
Ambient	32	°C		Fan	8430	rpm
Amplifier Heatsink	69	°C				
Power Supply	32	°C				
Power Supply Heatsink	75	°C				
Main Control Board	44	°C				
Pressure				Preamplifier		
Atmospheric Pressure	1017	hPa		Current	0,85	A
				Voltage	11,92	V
				Modulator		
				PLL		

All indicators are grey ● if the state is normal, and yellow ● in case of a warning type alarm or red ● in case of a fault type alarm on the given parameter.

i Efficiency values are only accurate when the power is stable. When SmartFM is enabled, the power is constantly adjusted, displayed efficiency readings are therefore not significant.

8.5.2. Amplifier

Path: **Maintenance**/PA

This page allows you to view the physical status of the amplifier.

Main				Hardware Security	
Comm. State				Pre-amplifier Current Security	
Fault Alarm				Reflected Power	
Warning Alarm					
Power Amplifier Efficiency	84	%			
Supply Voltage	35,013	V			
Current	6,734	A			
Amplifier Heatsink	36	°C			

All indicators are grey ● if the state is normal, and yellow ● in case of a warning type alarm or red ● in case of a fault type alarm on the given parameter.

8.5.3. Power supply

Path: **Maintenance/PSU**

This page allows you to view the physical status of the main PSU.

Main

Comm. State

Fault Alarm

Warning Alarm

Missing PSU Alarm

Output Power

Input Power

PSU Efficiency

Input Current

Input Voltage

Output Current

Output Voltage

1207

1373

94

6,095

225.000

26,6

45,395

W

W

%

A

V

A

V

System

Serial Number

Software release

LBGEPE21CS20123629

2.45 2/3/21

Temperature / Fan

PFC Temperature

Heatsink Temperature

Fan 1

32

75

9736

°C

°C


rpm

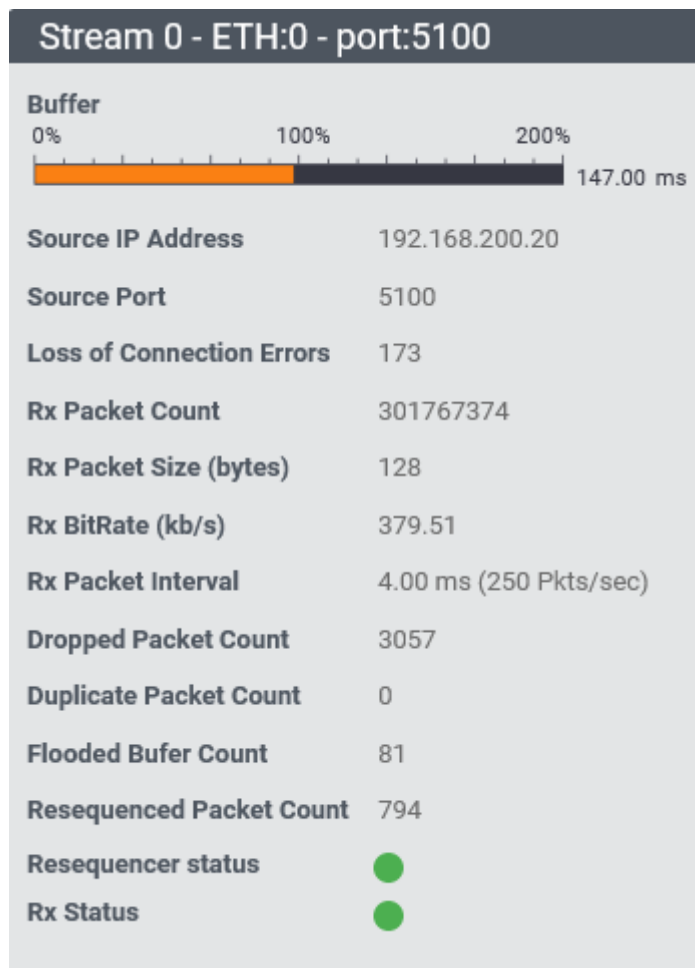
All indicators are grey ● if the state is normal, and yellow ● in case of a warning type alarm or red ● in case of a fault type alarm on the given parameter.

8.5.4. Codec

Path: **Maintenance/Codec**

This page allows you to view the status of the codec.

 *It is only available when the option is enabled!*



Please refer to parameter descriptions sections 5.8.6 for more details.

8.6. RDS



The RDS data setting is only available if an RDS license is present on the unit.

The functions related to each license, Full RDS license and Dynamic RDS license are detailed below.

8.6.1. Full RDS – Overview

Path: **RDS/Overview**

This page gives an overview of the RDS status.

Global

RDS

DSN 1

PI F000

PS

PTY undefined

PTYn (10A)

TP

TA

RT

AF

Sent Groups

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A

B

Date - Time (4A)

TMC and immediate ODA buffers

TMC 0.0% 0

Immediate 0.0% 0

UECP

Port #1 Port #2 Port #3 Port #4 Port #5 Port #6

Timeout

Event Count Last Time

Message Received OK 0

CRC error 0

Message not received 0

Unknown Message 0

DSN Error 0

PSN Error 0

Out of Range Parameter 0

Message Element Length Error 0

Message Field Length Error 0

Message Not Acceptable 0

Missing Message End (0xFF) 0

Buffer Overflow 0

Bad Stuffing after 0xFD 0

Unexpected End of Message 0

Message Received OK but not interpreted 0

Reset Event Counter

Reset

Free Format Group and ODA Buffers

Buffer	Urgent	Queue	Cyclic
0A	0%	0	0
0B	0%	0	0
1A	0%	0	0
1B	0%	0	0
2A	0%	0	0
2B	0%	0	0
3A	0%	0	0
3B	0%	0	0
4A	0%	0	0
4B	0%	0	0
5A	0%	0	0
5B	0%	0	0
6A	0%	0	0
6B	0%	0	0
7A	0%	0	0
7B	0%	0	0
8A	0%	0	0
8B	0%	0	0
9A	0%	0	0
9B	0%	0	0
10A	0%	0	0
10B	0%	0	0
11A	0%	0	0
11B	0%	0	0
12A	0%	0	0
12B	0%	0	0
13A	0%	0	0
13B	0%	0	0
14A	0%	0	0
14B	0%	0	0
15A	0%	0	0
15B	0%	0	0

Please refer to parameter descriptions sections 5.12.1 for more details.

8.6.2. Full RDS – Global

Path: **RDS/Global**

Set RDS parameters on this page.

Main Configuration	PS Scroll	Reference Table
DSN in use 1 RBDS Mode RDS <input type="radio"/> RBDS <input type="radio"/> ITU Region 1/3 <input type="radio"/> 2 <input type="radio"/> Clock Time (4A) <input type="checkbox"/> Local Clock Time Offset Manual <input type="radio"/> Automatic <input checked="" type="radio"/> RTC / Local Time Offset (%h) 0 Separator =	Center <input type="checkbox"/> Truncate <input type="checkbox"/> Increment 3 Delay between screens 2 PS and RT delay (sec) 0 Table Enable Repeat Text <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag <input type="checkbox"/> 1 Tag	Current Reference Input 1 Reference Table RDS Level (mV) / Phase (°) 1 - 466 0.0 2 - 466 0.0 3 - 466 0.0 4 - 466 0.0 5 - 466 0.0 6 - 466 0.0
TA / EON TA Minimum number of groups between two 15B 0 Number of 15B groups on TA on transition 0 Number of 15B groups on TA off transition 0 Minimum number of groups between two 14B 0 Number of 14B groups on EON TA on transition 0 Number of 14B groups on EON TA off transition 0		TCP Command Port (RT+) Port 2000 Legacy Mode <input type="checkbox"/> TCP RDS Configuration Port Port 2004 Secured (login/password) <input checked="" type="checkbox"/> Legacy Mode <input type="checkbox"/> UDP ASCII 1 - 8001 Disabled 2 - 8002 Disabled 3 - 8003 Disabled Backup RDS parameters PI F000 PS PS TP <input type="checkbox"/> TA <input type="checkbox"/> PTY undefined AF A List (< 25) Enter frequencies with space as separator. Example: 88.0 90.5 100.2

Global RDS parameters are described section 5.12.1.

8.6.3. Full RDS - DSN

Path: **RDS/DSN**

DSN #1 (active)	DSN #2	DSN #3	DSN #4	DSN #5
PI F000 PS PS	PI F000 PS PS	PI F000 PS PS	PI F000 PS PS	PI F000 PS PS
DSN #6	DSN #7	DSN #8	DSN #9	DSN #10
PI F000 PS PS	PI F000 PS PS	PI F000 PS PS	PI F000 PS PS	PI F000 PS PS

On this page set DSN, parameters are described section 5.12.2.

With the Full RDS option, you may set up to 10 DSN. This page displays them. Click on one DSN in the list to display its details.

DSN #2

⚙ Set as current

0A

?

Group Sequence

Default

SmartFM

Group 1A Variant Sequencing 0 ?

Group 14A Variant Sequencing 0 1 2 3 4 12 13 ?

Group 3A Sequence (ODA) Group 3A Sequence (ODA)

Extended Group Sequences

+ Extended Group Sequences

Main PSN Details

SLC 0 0 0 0 0 0 0 0 0

Extended Country Code 0

Long PS (Main PSN)
Long PS (Main PSN)

Radiotext (Main PSN)

A/B Repeat Radiotext

1 ▾

Tag

1 ▾

Tag

Main PSN

Number 1

Enable ☒

Main Parameters ▾

PI F000

PS PS

PTY undefined ▾

PTYn (10A) PTYn (10A)

TP ☐

TA ☐

PTY Dyn. ☐

LINK 0

Alternative Frequencies ▾

+ PSN

EON PSN #1

Remove

Number 12

Enable ☐

Main Parameters ▾

PI 0

PS PS

PTY undefined ▾

TP ☐

TA ☐

LINK 0


EON Sent Fields ▾

Alternative Frequencies ▾

 To return to the list of DSN, simply click on DSN in the RDS menu.

To add a PSN, click **+ PSN**, and enter the new PSN number, or let the encoder assign one.

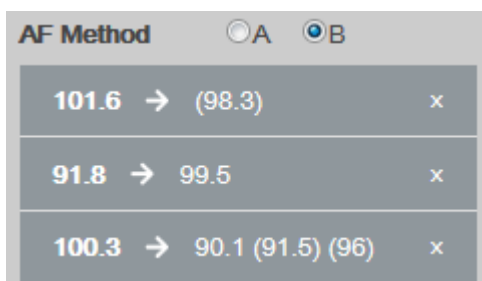
You may add up to 10 PSN (1 main PSN principal + 9 EON PSN).


 *Save after the creation of each PSN.*

To set alternative frequencies with method A, simply enter frequencies separated with spaces



With method B, enter the tuning frequency then the alternative frequency. Use parentheses for regional frequencies.



 *If the syntax is incorrect on a line, the unit switches back to method A.*

8.6.4. Full RDS – RT Plus

Path: **RDS/RT Plus**

Configuration	
RDS Group	None ▾
RT Plus Auto Generation	<input checked="" type="checkbox"/>

ITEM	PROGRAM
<ITEM.DURATION> DURATION 0	<STATIONNAME.SHORT> STATIONNAMESHORT
<ITEM.TITLE> SONGTITLE	<STATIONNAME.LONG> STATIONNAMELONG
<ITEM.ALBUM> ALBUMNAME	<PROGRAMME.NOW> PROGRAMMENOW
<ITEM.TRACKNUMBER> TRACKNUMBER	<PROGRAMME.NEXT> PROGRAMMENEXT
<ITEM.ARTIST> ARTISTNAME	<PROGRAMME.PART> PROGRAMMEPART
<ITEM.COMPOSITION> COMPOSITION	<PROGRAMME.HOST> PROGRAMMEHOST
<ITEM.MOVEMENT> MOVEMENT	<PROGRAMME.EDITORIAL_STAFF> EDITORIALSTAFF
<ITEM.CONDUCTOR> CONDUCTOR	<PROGRAMME.FREQUENCY> FREQUENCY
<ITEM.COMPOSER> COMPOSER	<PROGRAMME.HOMEPAGE> HOMEPAGE
<ITEM.BAND> BAND	<PROGRAMME.SUBCHANNEL> SUBCHANNEL
<ITEM.COMMENT> COMMENT	
<ITEM.GENRE> GENRE	

DESCRIPTOR	INTERACTIVITY
<PLACE> PLACE	<PHONE.HOTLINE> PHONEHOTLINE
<APPOINTMENT> APPOINTMENT	<PHONE.STUDIO> PHONESTUDIO
<IDENTIFIER> IDENTIFIER	<PHONE.OTHER> PHONEOTHER
<PURCHASE> PURCHASE	<SMS.STUDIO> SMSSTUDIO
<GET_DATA> GETDATA	<SMS.OTHER> SMSOTHER
	<EMAIL.HOTLINE> EMAILHOTLINE
	<EMAIL.STUDIO> EMAILSTUDIO
	<EMAIL.OTHER> EMAILOTHER

RT Plus parameters are described section 5.12.3.

RT Plus Auto Generation:

This feature allows RT+ frames to be injected directly into the ODA according to tags set on this page. If the box is not checked, the standard is applied: information is sent via UECP and the encoder does not inject frames in the ODA.

8.6.5. Full RDS – ODA

Path: **RDS**/ODA

Global Configuration

0A

?

Group Sequence

Group 3A Sequence (ODA)

Relative Priority

7A

Remove

AID

8A9B

Message 1

0

Message 2

0

Timeout (min)

0

Burst Mode

Spacing

0

Repeat

0

Spinning Wheel

+ ODA

12B

Remove

AID

8A9B

Message 1

0

Message 2

0

Timeout (min)

0

Burst Mode

Spinning Wheel

Nb. Time Slots

1

Time Window (s)

0

Delay (s)

0

ODA parameters are described section 5.12.4.

To add an ODA, click **+ ODA** and enter the group number.

You will have to check that the group is included in the group sequence and add it if needed.

8.6.6. UECP

Path: **RDS/UECP**

Mode		UECP Addresses											
Legacy Mode	OFF <input checked="" type="checkbox"/> ON	Site 0 0 0 0 0 0 0 0 0 0 0 0											
UECP Frame Analysis		Encoder 0 0 0 0 0 0 0 0 0 0 0 0											
Frame Analysis Configuration													
Frame Analysis Command													

1 - COM1		2 - COM2		3 - UDP1	
Mode	CONSOLE ▾	Mode	CONSOLE ▾	Mode	One-way ▾
				Timeout (min) (0 or 255: OFF)	255
				Port	5004
				Filters	✓ All ⓧ None ▾

4 - UDP2		5 - TCP1		6 - TCP2	
Mode	One-way ▾	Mode	One-way ▾	Mode	One-way ▾
Timeout (min) (0 or 255: OFF)	255	Timeout (min) (0 or 255: OFF)	255	Timeout (min) (0 or 255: OFF)	255
Port	5005	Port	4321	Port	4322
Filters	✓ All ⓧ None ▾	Filters	✓ All ⓧ None ▾	Filters	✓ All ⓧ None ▾
<input checked="" type="checkbox"/> 01-PI <input checked="" type="checkbox"/> 04-DI/PTYI <input checked="" type="checkbox"/> 07-PTY <input checked="" type="checkbox"/> 09-RTC Correction for CT <input checked="" type="checkbox"/> 0D-RTC for CT <input checked="" type="checkbox"/> 0E-RDS Level					

UECP parameters are described section 5.12.5.


- The individual address (the first one in the UECP Addresses section) cannot be set on the Web interface. It can only be set via Telnet or the front panel application.*
- In case of issue, you may review the UECP log ('UECP frame analysis' link in the Mode section).*

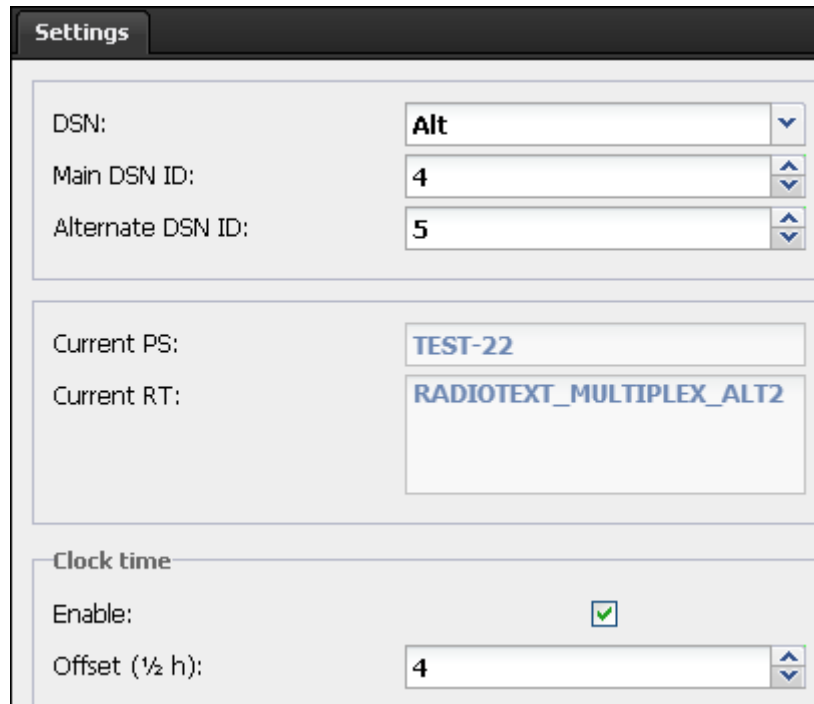
8.6.7. Dynamic RDS - Static encoder

Path: **RDS/Settings**

Please refer to parameter descriptions section 5.12.6 for more details.

Settings

-  Enter the ID of the main and the alternate DSN.



The screenshot shows the 'Settings' window for Dynamic RDS. It contains three main sections: DSN settings, Current PS/RT settings, and Clock time settings. The DSN section has three dropdown menus: 'DSN:' set to 'Alt', 'Main DSN ID:' set to '4', and 'Alternate DSN ID:' set to '5'. The Current PS/RT section has two text boxes: 'Current PS:' containing 'TEST-22' and 'Current RT:' containing 'RADIOTEXT_MULTIPLEX_ALT2'. The Clock time section has an 'Enable:' checkbox checked and an 'Offset (1/2 h):' dropdown set to '4'.

Settings	
DSN:	Alt
Main DSN ID:	4
Alternate DSN ID:	5
Current PS: TEST-22	
Current RT: RADIOTEXT_MULTIPLEX_ALT2	
Clock time	
Enable:	<input checked="" type="checkbox"/>
Offset (1/2 h):	4






Check the box 'Clock time' to send the time in the 4A group. Specify an offset if needed.

There is no need to add the 4A group to the group sequence.

Main DSN / Alternate DSN

Path: **RDS**/Static Encoder/Main DSN (or Alternate DSN)

Set DSN parameters on these pages.

PI:	<input type="text" value="0"/>	
PS:	<input type="text"/>	
PTY [No programme type defined]:	<input type="text" value="0"/>	 
MS:	<input type="text" value="Speech"/>	
DI [Mono, No Artificial Head , Not Compressed , Static PTY Codes]:	<input type="text" value="0"/>	 
AF List:	<input type="text" value="NO AF"/>	
RT:	<input type="text"/>	
PTYN:	<input type="text"/>	
Group Sequence:	<input type="text" value="0A"/>	<input type="button" value="Default"/> <input type="button" value="SmartFM"/>
TA:	<input type="checkbox"/>	
TP:	<input type="checkbox"/>	
TP/TA [Program offers no traffic program]:		

The definition of selected PTY, DI and TA/TP codes appears on the screen. They are also available section 5.12.6.

Enter the group sequence manually, or use the buttons to use standard group sequences: Default or SmartFM, which is to be used when SmartFM is enabled and fields measurements are run with a SmartFM compatible unit such as the AUDEMAT FM MC5.

8.6.8. Dynamic Encoder

The dynamic encoder can be set using serial commands (see section 7.2.12) or the web interface but not with the front panel.

Please refer to parameter descriptions section 5.12.6 (PS Scroll) for more details.

PS Scroll

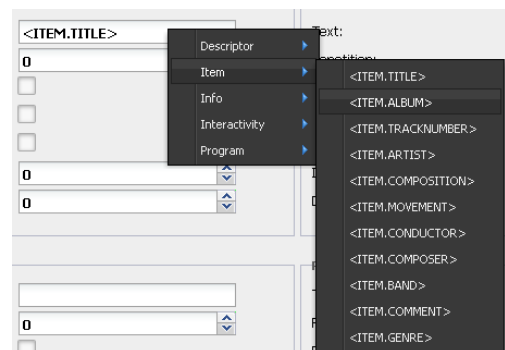
Path: **RDS**/Dynamic Encoder/PS Scroll

Set the radiotext and/or the PS scroll on this page.

The screenshot displays the 'Dynamic Encoder' configuration page with the following settings:

- RT1:** Text: été, tag
- PS 1:** Text: été, tag; Repetition: 1; Enabled: ☒; Center: ☐; Truncate: ☐; Increment: 3; Delay: 3
- PS 2:** Text: 0123456789 0123456, tag; Repetition: 1; Enabled: ☐; Center: ☐; Truncate: ☐; Increment: 0; Delay: 2
- PS 3:** Text: <ITEM.TITLE> chanté, tag; Repetition: 2; Enabled: ☐; Center: ☒; Truncate: ☒; Increment: 4; Delay: 2
- PS 4:** Text: Test PS4, tag; Repetition: 3; Enabled: ☐; Center: ☐; Truncate: ☐; Increment: 4; Delay: 2
- PS 5:** Text: Test PS5, tag; Repetition: 1; Enabled: ☐
- PS 6:** Text: <ITEM.ARTIST> chante, tag; Repetition: 1; Enabled: ☐

To insert dynamic data (<ITEM....>, <INFO...>...) in the PS text, click the Tag button and choose from the list of available fields.





TAG pages

Path: **RDS**/Dynamic Encoder/Items Tags (or Info Tags or Miscellaneous Tags)

Items Tags	
Items	Definition
Title:	<input type="text"/>
Album:	<input type="text"/>
Track Number:	<input type="text"/>
Artist:	<input type="text"/>
Composition:	<input type="text"/>
Movement:	<input type="text"/>
Conductor:	<input type="text"/>
Composer:	<input type="text"/>
Band:	<input type="text"/>
Comment:	<input type="text"/>
Genre:	<input type="text"/>
Duration:	<input type="text" value="0"/>

Dynamic fields presented on the 'Items Tags', 'Info Tags' and 'Miscellaneous Tags' pages display current data in the left column and automation command definitions in the right column. Definitions should be configured to match commands of the automation software application.

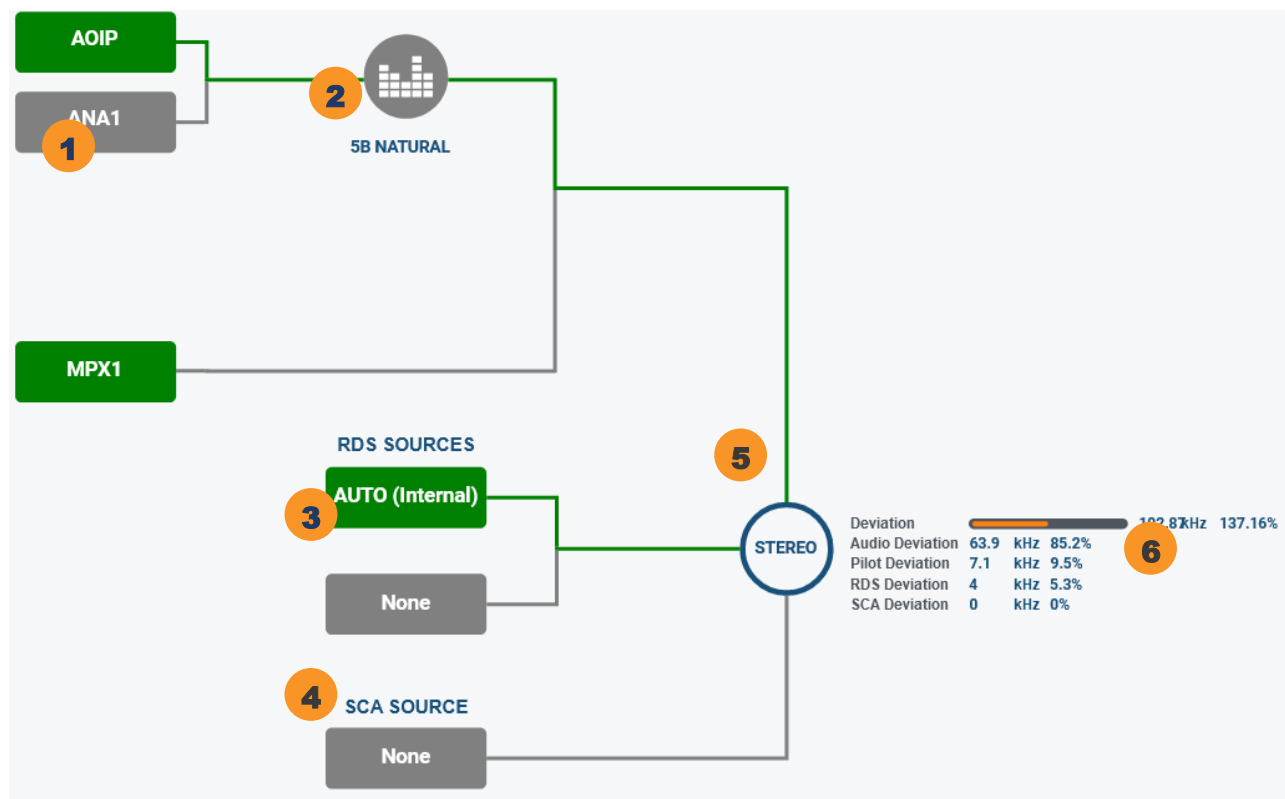
-  *Each name must be unique.*
-  *Automation commands are case sensitive.*

8.7. Modulation

8.7.1. Synoptic diagram

Chemin: **Modulation**/Synoptic diagram

This page gives a detailed view of the audio sources.



<p>1 Audio input Opens the Modulation / Input settings page</p> <ul style="list-style-type: none"> OK warning fault no signal <p>Les entrées sont présentées par ordre d'importance: la source principale en 1^e, le 1^e secours ensuite...</p>	<p>2 Sound processor Opens the page Modulation / Sound Processor Le nom du preset actif est affiché</p> <ul style="list-style-type: none"> Sound processor enabled bypass Mode
<p>3 RDS Sources Opens the Modulation / Stereo Encoder page</p> <ul style="list-style-type: none"> OK warning none <p>La source principale est en 1^e et le secours ensuite</p>	<p>4 SCA Source Opens the Modulation / Stereo Encoder page</p> <ul style="list-style-type: none"> OK warning none

5

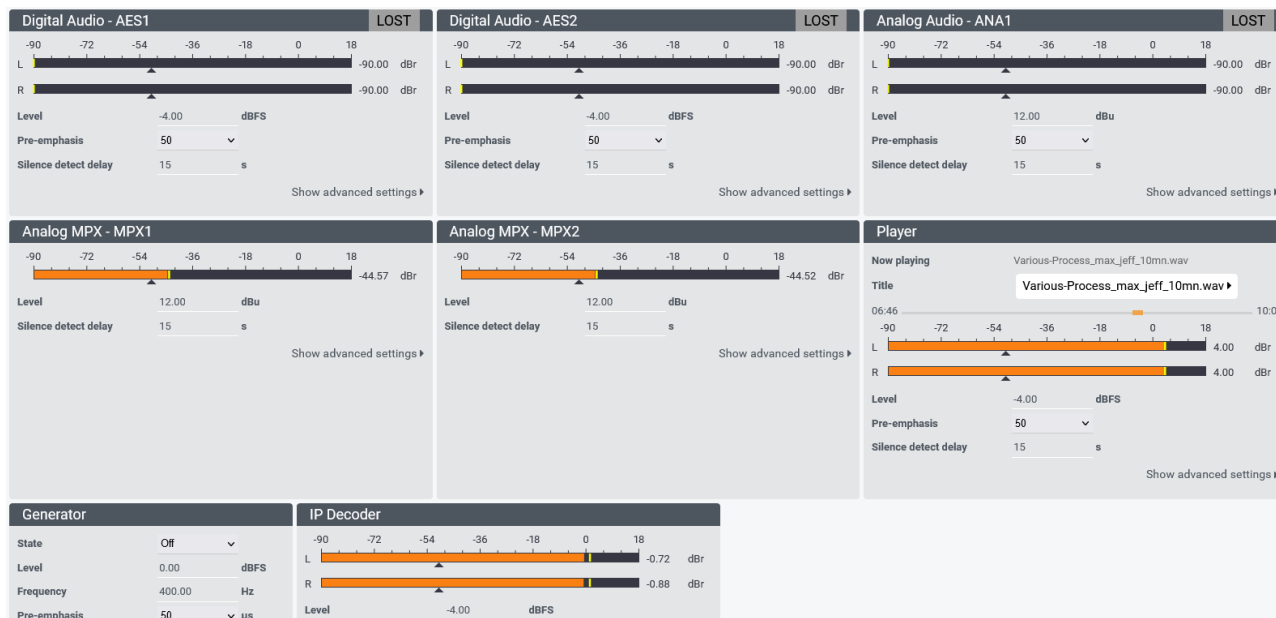
StereoOpens the Modulation / **Stereo Encoder** page

STEREO

MONO

NONE

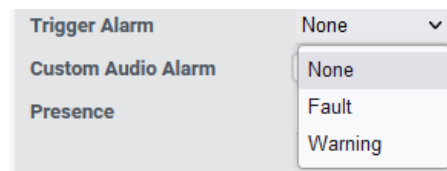
6

Deviations, in kHz and %**8.7.2. Input settings**Path: **Modulation/Input Settings**

Set up the inputs on this page. Refer to the description of the parameters in section 5.8 for more details.

For each input, the main settings are displayed by default. To see the full set of settings, click on "Show advanced settings".

In the advanced settings for each input, signal loss can be configured as a warning or default. Depending on this configuration, a loss of signal will result in a warning or a fault; the "lost" input will be orange or red on the synoptic diagrams.

**ON-AIR**

"ON-AIR" in green appears in the header of the on-air input. It will be grey if there was loss of audio and no switch to another input.

LOST

"LOST" appears in the header of an input after loss of audio. It will be yellow or red if the signal loss on this input was set as fault or warning (see above).

Audio backup:

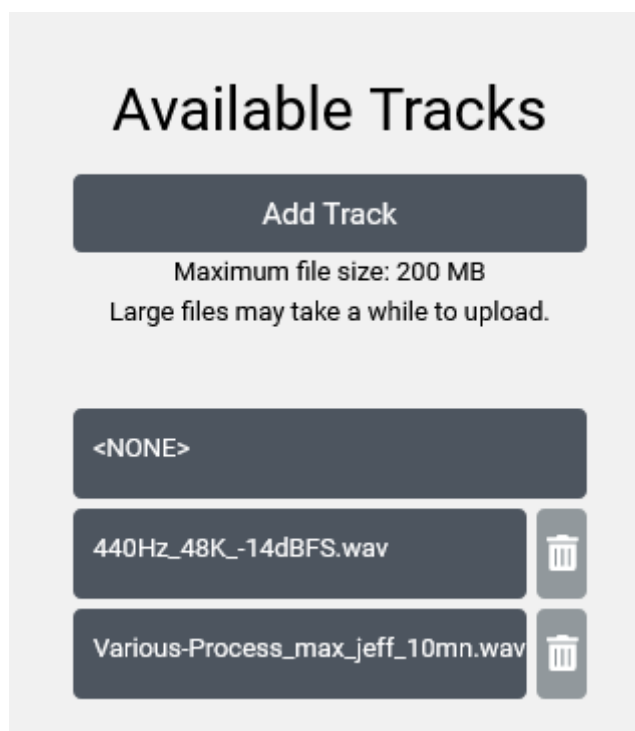
The player can be used as audio backup. The source is either coming from a file be stored on the transmitter's μ SD card, or from a stream.



! - 4 dB

With a file:

Select the file mode and click on the file name ("Title") to manage the content of the μ SD drive.



Click on "Add track" and browse your files to select the desired file.

Up to 20 audio files can be located at the root of the µSD card. The format of these files needs to be .wav (standard wav format only) or .mp3 format.

The page displays previously uploaded files.

To select a file in the list, click on its name.

! The µSD card is used for various features, including data storage required for the warranty. To allow enough space for this data storage, make sure the audio backup files are less than 10 Gb.

When the Player is enabled, the selected file will play in loop and its name will be displayed as "Now playing".

With a stream:

The Ecreso FM AiO Series supports the Icecast and SHOUTcast formats.

Select the stream mode and set the stream URL.

Now playing	SFM_-3,7--20dB_2x5mn.wav
Mode	stream ▼
Stream URL	Name
Status	● <input type="button" value="🔍 Last status"/>

IP decoder:

IP Decoder

-90-72-54-36-18018

L

1.01 dBr

R

0.91 dBr

Level

-4.00 dBFS

Pre-emphasis

50

Connection Status

Audio mismatch

AoIP Decoder (E-aPTX (16-bit) - 256kbps - Stereo - 32kHz)

Codec

Auto Detect

Codec Configuration

Auto - Auto - Auto

SureStream

WAN interfaces

eth0

Base UDP/IP port

5100

Casting Mode

Unicast

Rx Latency

150 ms

Hide advanced settings

Silence detector

Silence detect delay

30 s

Silence Threshold

-50 dBr

Check sync.

Silence detect back delay

2 s

Silence detect mode

Both

Drive

0.00 dB

Trim

0.00 dB

Filter

15 kHz

Trigger Alarm


Fault

Custom Audio Alarm

Presence

Left+Right

Hide advanced settings

 Advanced settings (framed above) are hidden by default.

8.7.3. Stereo encoder

Path: **Modulation**/Stereo Encoder

Auto Switch		Modulation	
Audio auto switch	<input checked="" type="checkbox"/>	Encoder mode	Stereo ▾
Main Audio Source	AOIP ▾	Total Deviation	75.00 kHz 100.00 %
1st Backup	None ▾	Audio Deviation	63,9 kHz 85,2 %
2nd Backup	None ▾	Pilot Deviation	7,1 kHz 9,5 %
3rd Backup	None ▾	RDS Deviation	4.00 kHz 5,3 %
4th Backup	None ▾	SCA Deviation	0.0 kHz 0.0 %
5th Backup	None ▾	RDS Phase	0.0 °
6th Backup	None ▾	19 kHz Output Level	5
Main RDS Source	AUTO ▾	SmartFM RDS Correction	<input type="checkbox"/>
RDS Backup	None ▾	Hide advanced settings ▲	
SCA Source	None ▾		
Crossfade	1.0 s		
FadeIn	1.0 s		
Reset to default	Reset		
Hide advanced settings ▲			

Advanced settings (framed above) are hidden by default.

On this page, set:

- Audio sources, main and backups,
- RDS and SCA sources
- Deviation

Please refer to parameter descriptions sections 5.9 for more details.

8.7.4. FSK

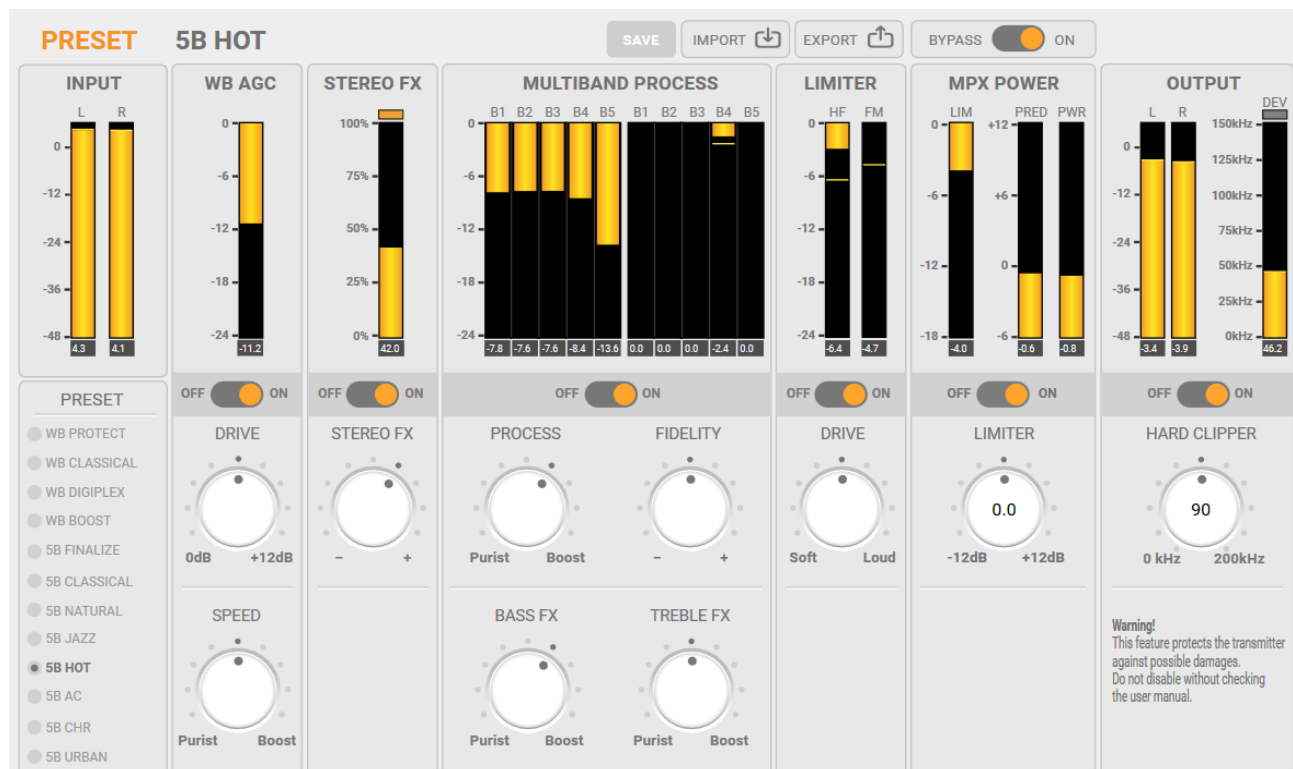
Path: **Modulation**/FSK

FSK	
Identification	Identification
Repetitions	0
Shift	0
Speed (WPM)	0.0

Set FSK on this page. Please refer to parameter descriptions sections 5.10 for more details.

8.7.5. Sound Processor

Path: **Modulation/Sound Processor**



i Modifications on this page are applied in real time. However, you must use the Save button to store them permanently.

See chapter 10 for more details on the sound processor.

8.8. Transmitter

8.8.1. RF

Path: **Transmitter**/RF

RF OFF ☒ ON

RF Measurements

SmartFM Power	955	W
Forward Power	1000	W
Reflected Power	5.0	W
VSWR	1,2	
Return Loss	20,8	dB

Protections

Power Limit	1100	W
Internal Reflected Limit	<input type="checkbox"/>	
VSWR Trip	<input type="checkbox"/>	
VSWR Trip Alarm	<input type="checkbox"/>	
VSWR Trip Counter	0	
Link Input	<input checked="" type="checkbox"/>	
Interlock Input	<input checked="" type="checkbox"/>	

RF Settings

Program Name	Program Name	
Frequency (MHz)	102.00	MHz
Power	1000	W
RF Present Threshold	0	W <input checked="" type="checkbox"/>
Auto -3dB / -1dB	<input type="checkbox"/>	
-3 dB Threshold	0	W
-1 dB Threshold	0	W
VSWR Threshold	1,4	
Return Loss Threshold	15,6	dB

On this page:

- Enable the RF
- View RF readings
- Set RF parameters
- Set protections
- View protection status

Please refer to parameter descriptions sections 5.5 for more details.

Indicators show:

RF presence	<input type="checkbox"/>	RF not detected
	<input checked="" type="checkbox"/>	RF detected
Trip VSWR alarm	<input type="checkbox"/>	No alarm
	<input checked="" type="checkbox"/>	Current VSWR trip alarm
Link	<input type="checkbox"/>	Link disabled
	<input checked="" type="checkbox"/>	Link enabled

Interlock



Interlock not present



Interlock present

Input fault alarm



No alarm



Fault type alarm on one of the inputs

8.8.2. Scheduler

Path: **Transmitter**/Scheduler

The screenshot displays the 'Scheduler' configuration page. It features a list of schedulers, with Scheduler #1 and Scheduler #2 expanded to show their settings. Scheduler #1 is configured with 'Every Week' mode, a date and time of '2017/01/01 00:00:00', and an action of 'TX.OPMODE=OFF'. Scheduler #2 is configured with 'Single Event' mode, the same date and time, and an action of 'Preset 1'. Below these, Scheduler #3, #4, and #5 are listed with their respective status checkboxes.

Scheduler	Mode	Date and Time	Action
Scheduler #1	Every Week	2017/01/01 00:00:00	TX.OPMODE=OFF
Scheduler #2	Single Event	2017/01/01 00:00:00	Preset 1
Scheduler #3			
Scheduler #4			
Scheduler #5			

With the scheduler, the transmitter settings can be modified a single time, regularly (every day or every week) or when triggered by an event.

Enable an instance of the scheduler and set the time and date.

A daily occurrence will take place every day at the set time, starting at the set date. A weekly occurrence will take place on the week day of the selected date, starting at the set date.

For an event triggered action, select the alarm which will generate the action.



Up to 10 seconds may be necessary between the time the event is triggered and the time of the action.

To set which parameters should be modified, select a preset or a series of commands.

Presets are set on the Transmitter/Preset page.

Select Commands to enter a maximum of 10 serial commands (see chapter 7). Each command including the last one must be followed by a carriage return (Enter key).

You can for instance enable transmitter presets or change the transmitter's power every day at the same time, or change a sound process preset for a weekly show.


Ex:

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 will be used for a future option.*

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	<input type="checkbox"/>	
Memory	0	<div>...</div> <div></div>

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	<input type="checkbox"/>	
Memory	0	<div>...</div> <div></div>

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	<input type="checkbox"/>	
Memory	0	<div>...</div> <div></div>

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	<input type="checkbox"/>	
Memory	0	<div>...</div> <div></div>

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.

Memory

1 Baie1TX2 3.0.0 A10
Tue Sep 13 11:13:36 GMT+200 2022 22017297 87 750

☒
Override preset content

⌂
Cancel

↺
Rescan

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

 *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.

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

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.

With the 'Export Data' button, retrieve the data from the 6 graphics, but also CO₂ and money savings over the past 12 months and the past 31 days in a csv file.

 *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:

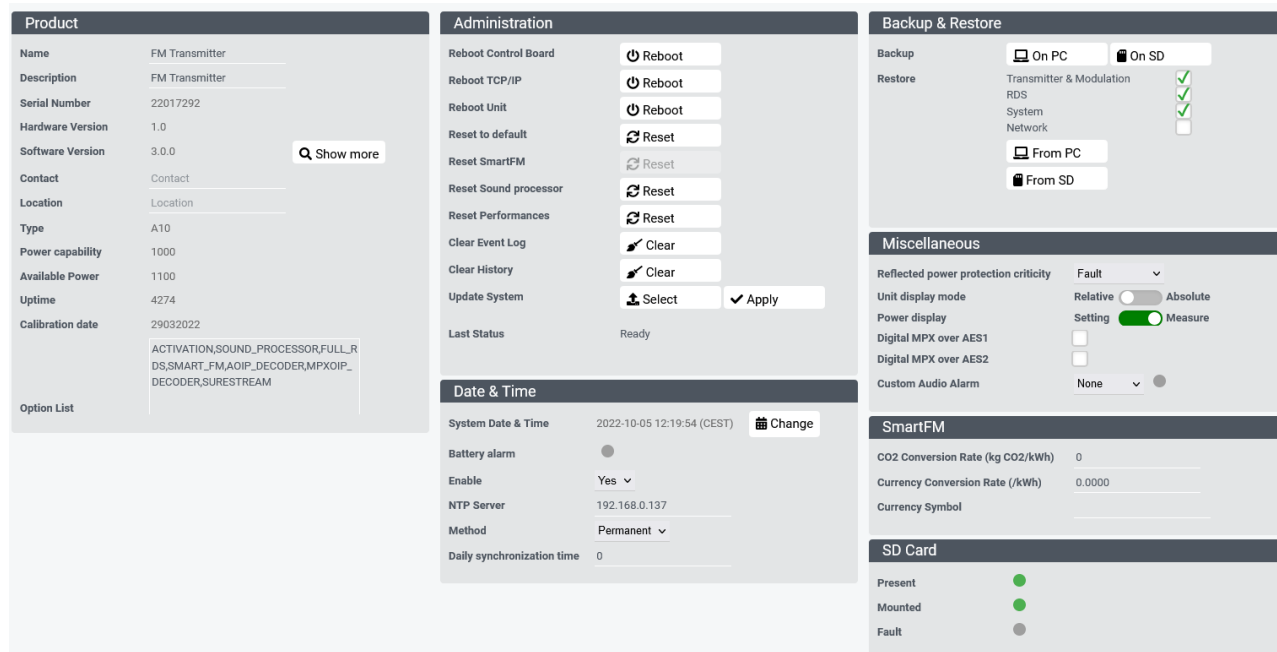
- Modifying the power setting
- Changing the frequency
- Changing the SmartFM strategy
- SmartFM alarm
- Putting the transmitter in standby mode

8.9. System configuration

 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**



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.

-  **Rebooting the unit will turn off the RF for about 10 seconds first, then for about 2 seconds 15 seconds later.**
-  **After a configuration reset, we recommend you check parameters meant to protect the transmitter: hard clipper activation/deviation and VSWR Trip.**

To reset **SmartFM** history, press the Reset button. Historical data will be erased so savings values will no longer be available. The SmartFM license will not be affected.

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		COM Port	
Mode	Static ▾	COM1 Mode	CONSOLE ▾
Name	Name	COM1 Speed	9600 ▾
IP Address	192.168.101.100	COM1 Echo	<input type="checkbox"/>
Netmask	255.255.0.0	COM2 Mode	CONSOLE ▾
Gateway	192.168.0.254	COM2 Speed	9600 ▾
Speed / Duplex Mode	Auto-Negotiation ▾ 100Mbps / Full	COM2 Echo	<input type="checkbox"/>
MAC Address	00:90:3F:30:01:37		
Loss of Interface	<input checked="" type="checkbox"/>		

Static Configuration ETH1		DNS Servers	
Mode	Static ▾	Primary DNS	0.0.0.0
Name	Name	Secondary DNS	0.0.0.0
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	<input checked="" type="checkbox"/>		

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.

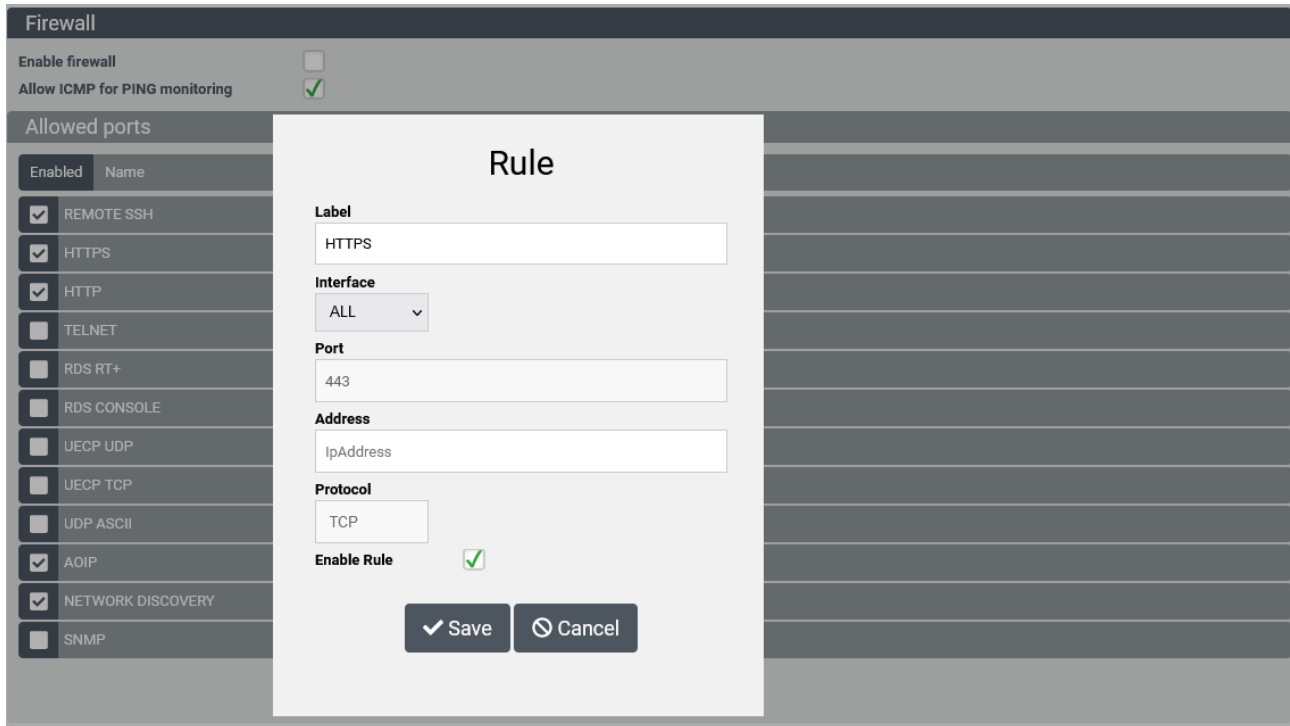
- Download the certificate,
- Display the advanced parameters of the web browser (Mozilla Firefox, Google Chrome) or the Internet Options/Content (Microsoft Edge).

- 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.

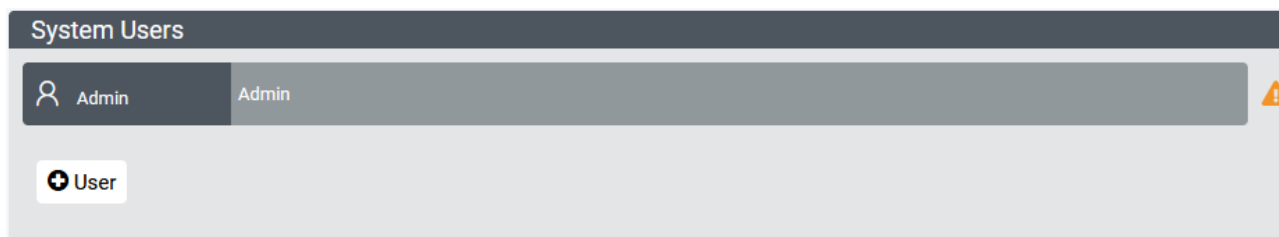
By default, the following protocols are authorized:

- 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: <input type="checkbox"/> 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	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
fmSTTransmitterOpMode	<input checked="" type="checkbox"/>	1
fmSTRFPresent	<input checked="" type="checkbox"/>	1
fmSTFault	<input checked="" type="checkbox"/>	1
fmSTWarning	<input checked="" type="checkbox"/>	1
fmSTLocalMode	<input checked="" type="checkbox"/>	1

System Alarms		
Trap	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Email	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Hearbeat	<input type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Equipment On	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Configuration Changed	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Local mode	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Ambient Temperature	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Volt Aux.	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Internal Communication	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Logging	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Loss of Physical ETH 0	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Loss of Physical ETH 1	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Sound Processor License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
SmartFM License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
RDS License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Activation License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
AoIP License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
MPXoIP License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
SureStream License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
SynchroStream License	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Invalid Data	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1

Audio Alarms		
Trap	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Email	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Input Switch	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input Fault	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input AES 1	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input AES 2	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input ANA 1	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input MPX 1	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input MPX 2	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input AOIP	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Input Player	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1

Network Alarms		
Trap	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Email	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
UECP Timeout 1	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
UECP Timeout 2	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
UECP Timeout 3	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
UECP Timeout 4	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
UECP Timeout 5	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
UECP Timeout 6	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1

Transmission Alarms		
Trap	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Email	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Fault	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Warning	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
3 dB	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
1 dB	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
VSWR	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Interlock	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
RF On	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
RF Present	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
SmartFM Status	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
SmartFM	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1

IP Codec Alarms		
Trap	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
Email	<input type="button" value="Enable All"/>	<input type="button" value="Disable All"/>
IP Rx Error	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Audio Mismatch	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Sync Failed	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
NTP Sync Fault	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Loss of IP Connection	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> Email 1
Min. Jitter Buffer Alarm	<input checked="" type="checkbox"/> Trap	<input checked="" type="checkbox"/> 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

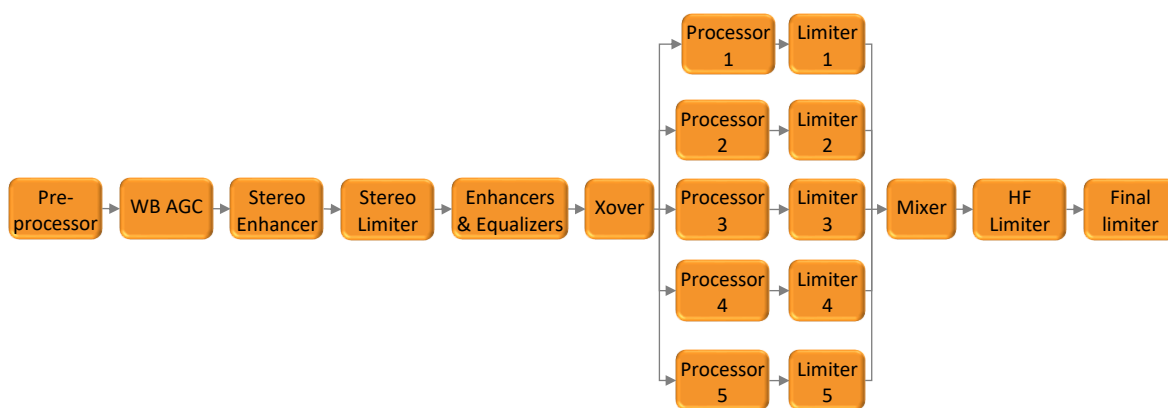
9.1. Overview

 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)

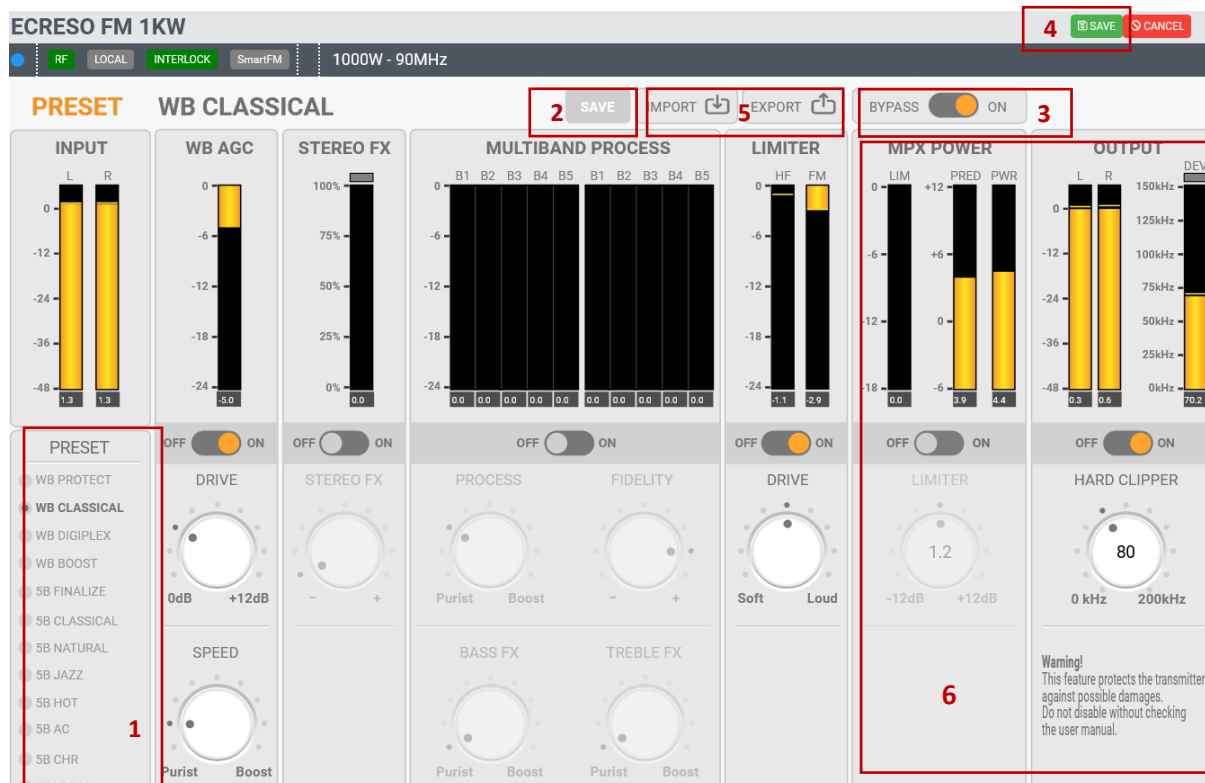
5 band presets	Factory Preset Name	Description
5	5B FINALIZE	A more efficient protection as it uses the 5 band structure configured in a transparent way. It ensures not to exceed your maximum deviation.
6	5B CLASSICAL	A very purist and clean preset to adapt soft and classical format to FM broadcasting.
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.

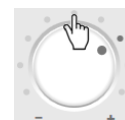


To select a preset, simply click on its name in the list (1). The selected preset is automatically applied.

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.

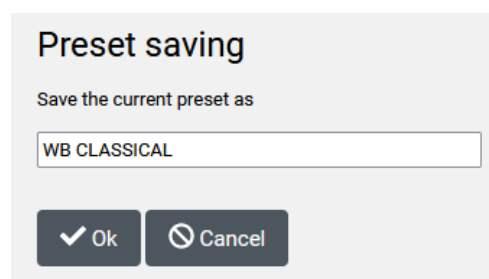
Some presets include specific or set algorithms or functions. In that case, a lock is displayed in the parameter to indicate it cannot be modified.



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 5.11 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.

Enter the new value

Enter a value between 0 and 200


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

9.4. Sound process parameters

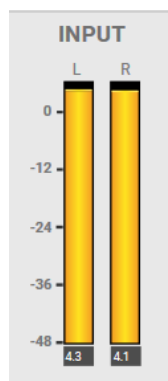
BYPASS

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

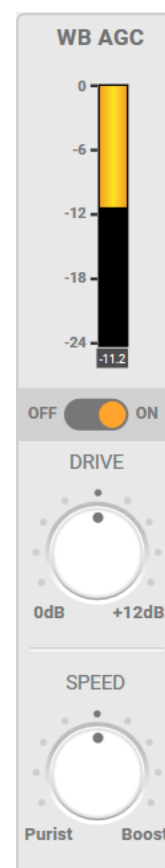
The automatic gain control softly regulates the audio level thanks to predictive algorithms, in order to be clean and unnoticeable for the human ear. It also includes a noise gating algorithm to avoid increasing the level in case of silence.

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.



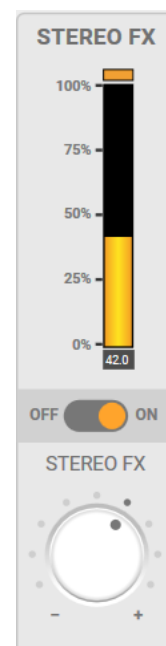
STEREO EFFECT (only available with the Sound processing option)

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.

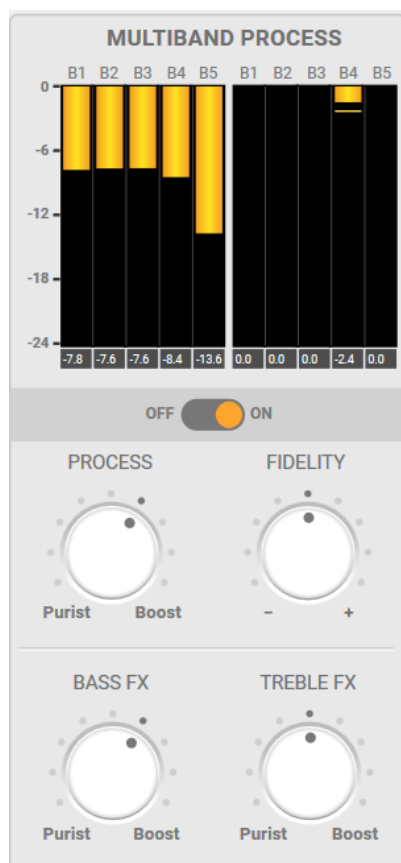
The vu-meter shows the quantity of stereo (in %) on the broadcasted signal. 0% means the current signal is mono while a 100% value would mean both L+R and L-R have the same level. The LED on the top of the vu-meter indicates the activity of the stereo limiter.

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.

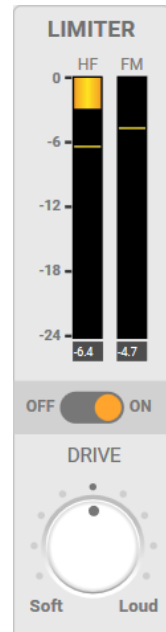
FINAL LIMITERS

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)

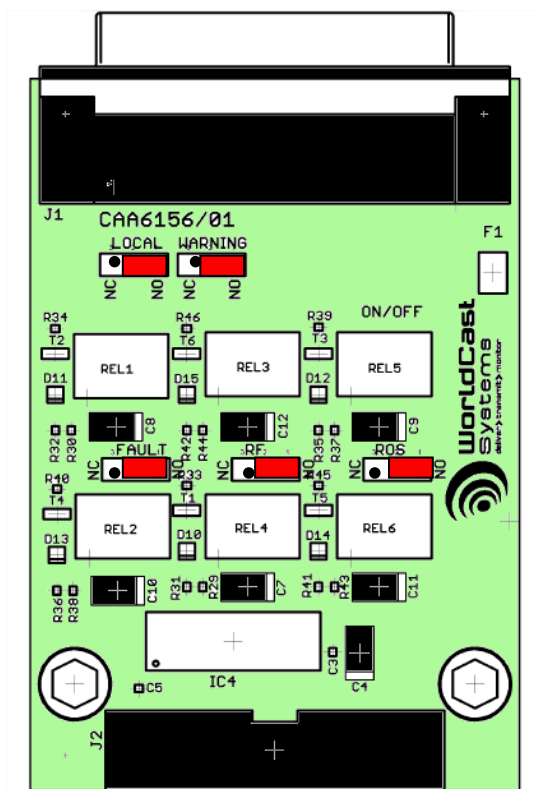
Numbers in parenthesis indicated the pin number on the DB25 connector.

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

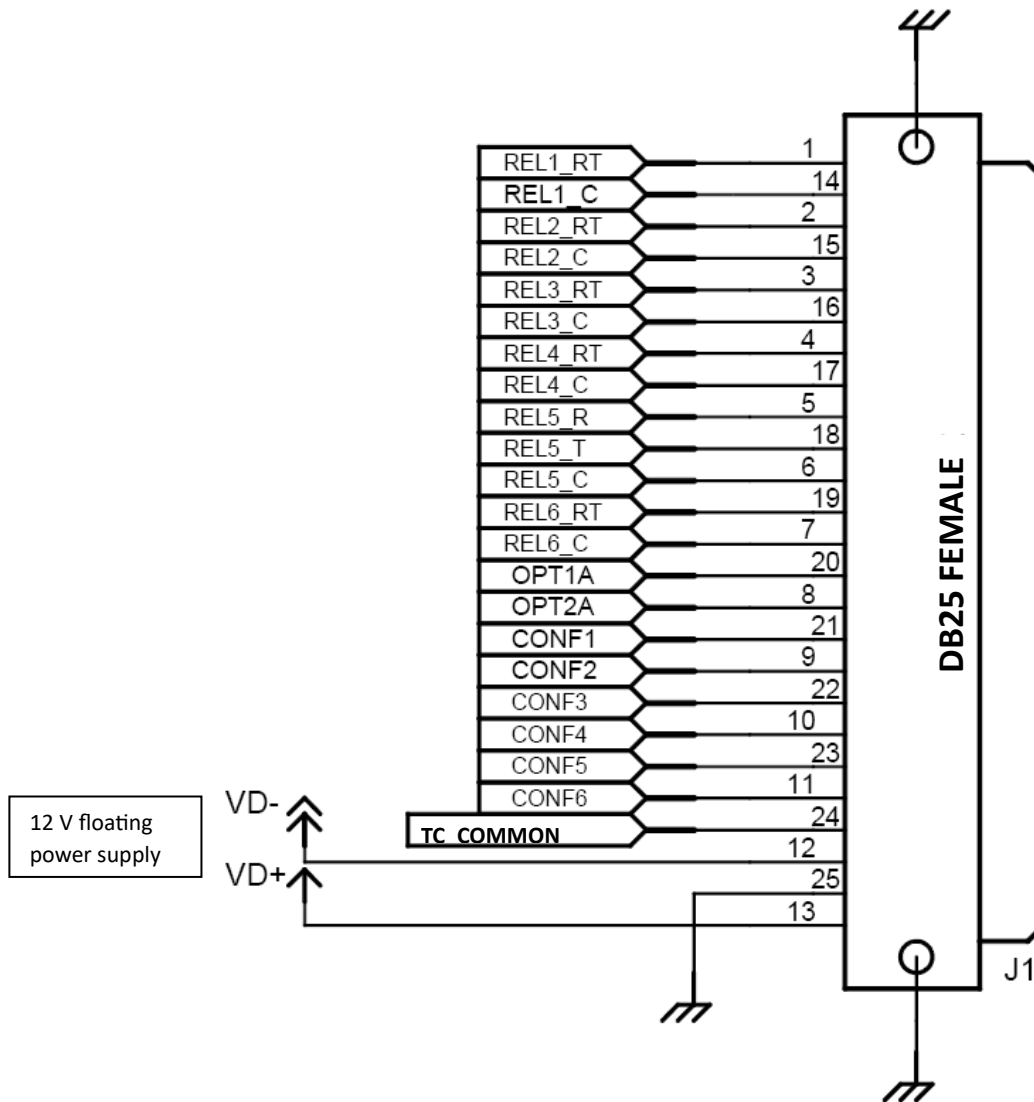
Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.



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)

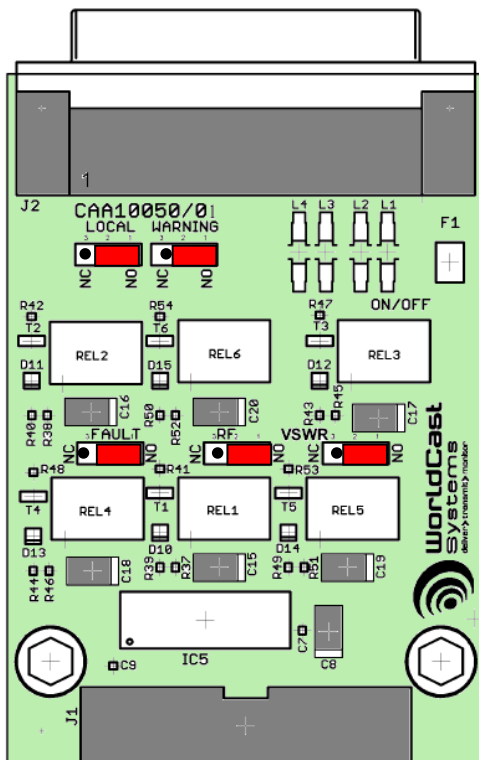
Numbers in parenthesis indicated the pin number on the DB25 connector.

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

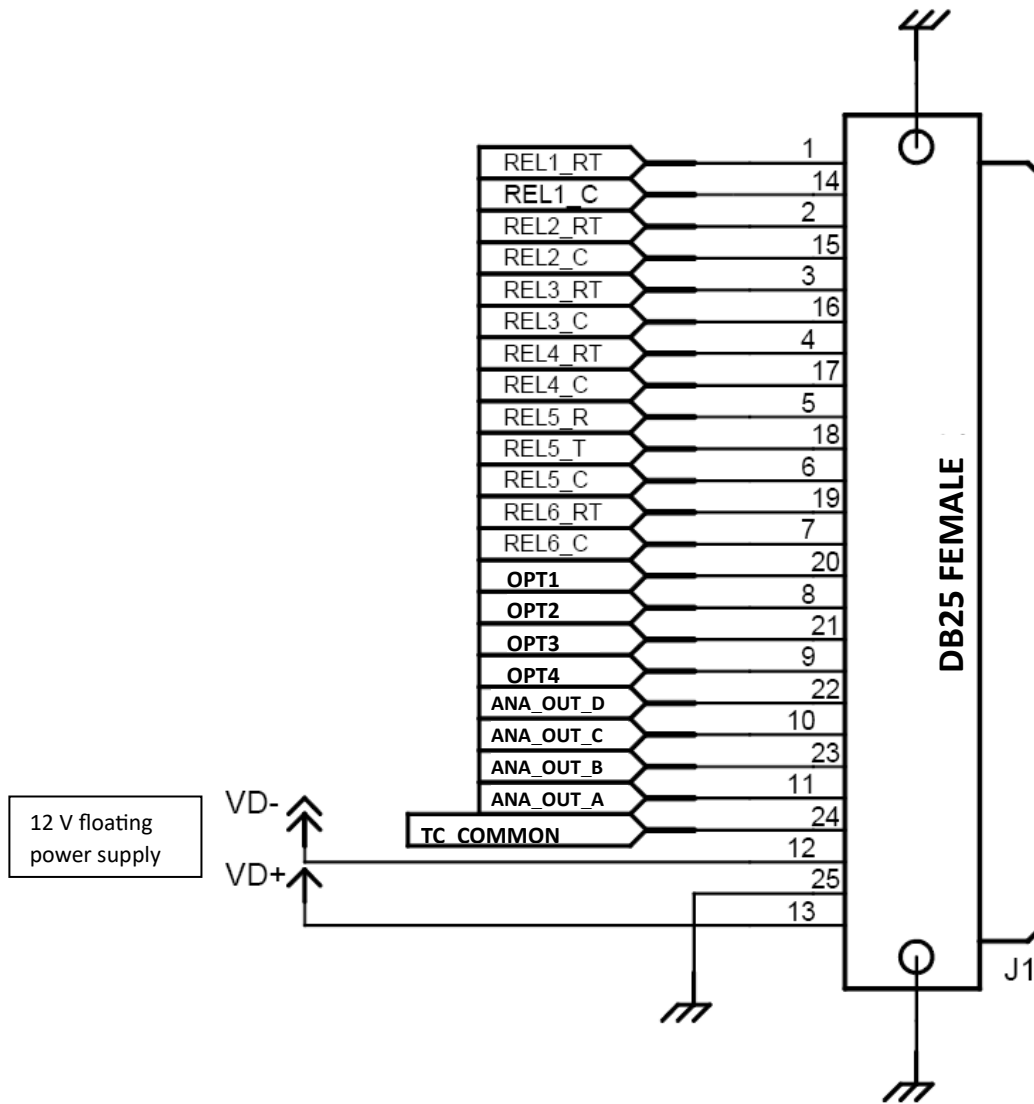
Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.



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 (Ecreso FM or Ecreso FM amplifier):

Module power Max Value **	100 W	300 W	750 W	1000 W	1500 W	2000 W	3000 W*	3500 W*	5000 W*	5 kW	10 kW
Forward Power (W)	110	330	825	1100	1650	2200	3100	4100	6100	6000	12000
Reflected Power (W)	20	50	50	50	100	100	200	200	300	300	600
Ambient temperature (°C)	70	70	70	70	70	70	70	70	70	70	70
Fan speed (rpm)	19000	19000	6000	6000	6000	6000	19000	19000	19000	10000	10000
Voltage 1+Voltage 2 (V)	60	60	60	60	60	60	60	60	60	60	60
Heat (°C)	80	80	80	80	80	80	80	80	80	80	80
Intensity 1+ Intensity 2 (A)	25	25	25	35	60	70	25	25	25	70	70

* For 3000 W, 3500 W and 5000 W modular transmitters, the max forward and reflected power values apply to the whole transmitter, other values apply to the 100 W exciter only.

** 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	<input type="radio"/>
SFN	Disabled	<input type="radio"/>
Full RDS	Permanent	<input type="radio"/>
SmartFM	Permanent	<input type="radio"/>
AoIP Decoder	Permanent	<input type="radio"/>
MPXoIP Decoder	Permanent	<input type="radio"/>
SureStream	Permanent	<input type="radio"/>
SynchroStream	Disabled	<input type="radio"/>
Activation	Permanent	<input type="radio"/>
Popup Display Before License Expiration		<input checked="" type="checkbox"/>

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
```

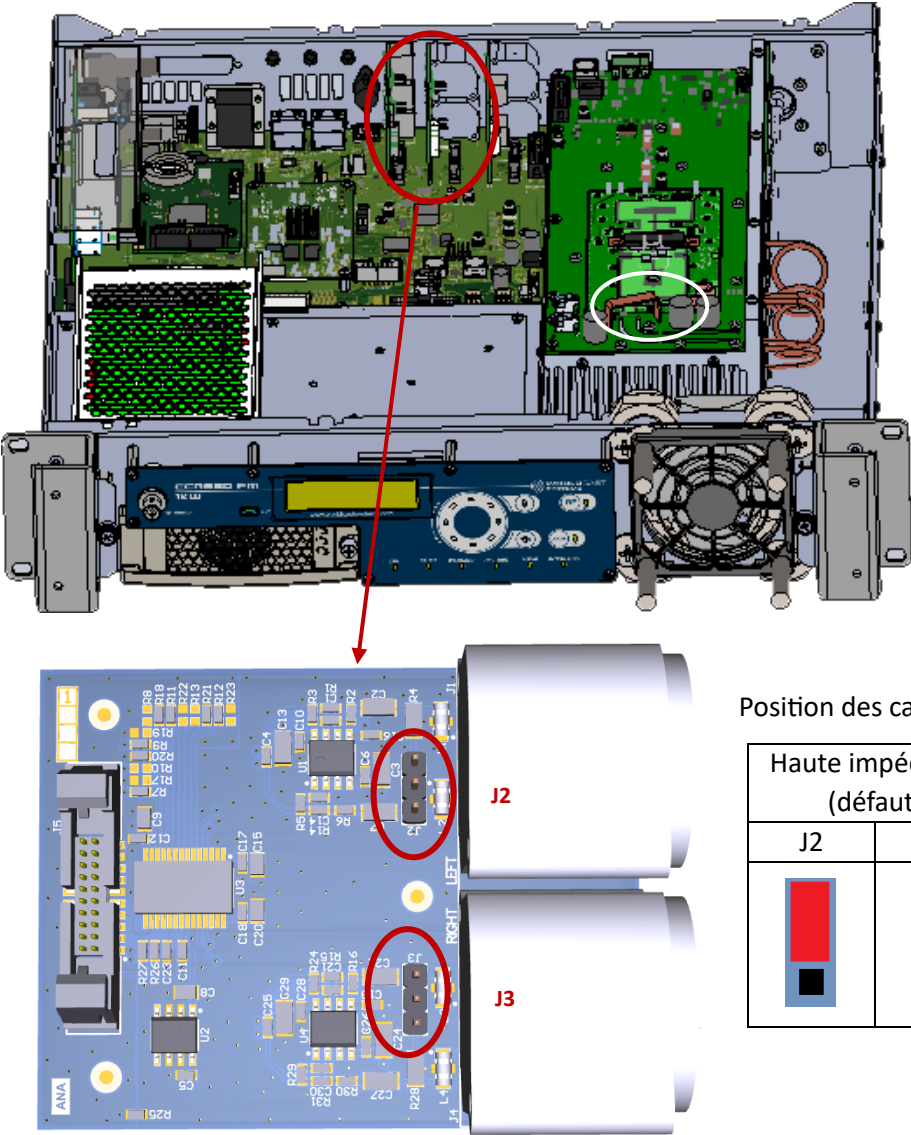
The unit will return the list of enabled options, including the new one.

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.



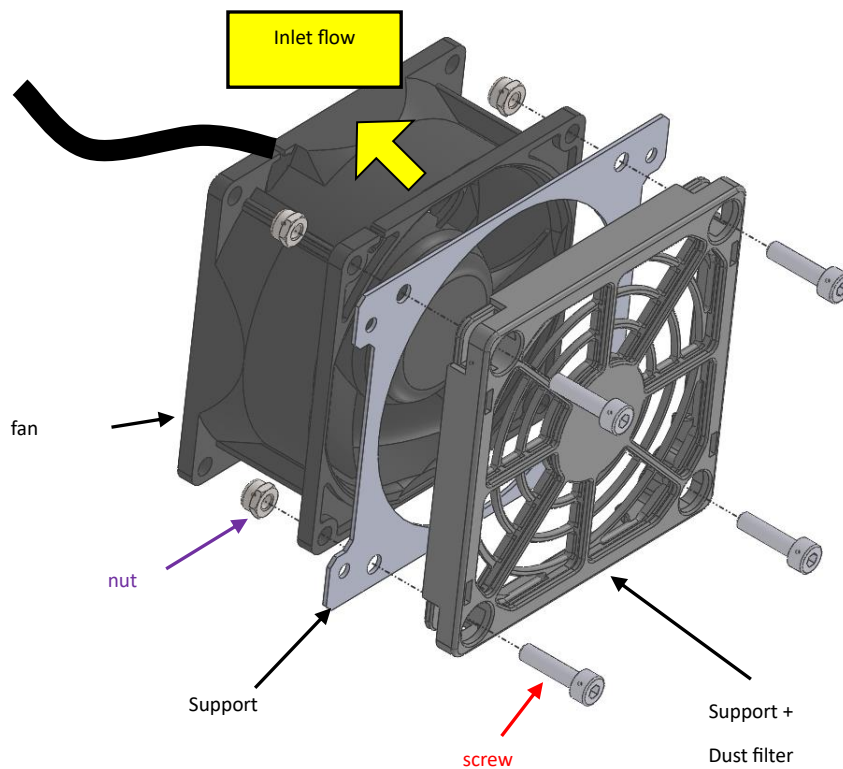
2. Unscrew the 4 screws of the support with the cross-headed screwdriver.



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

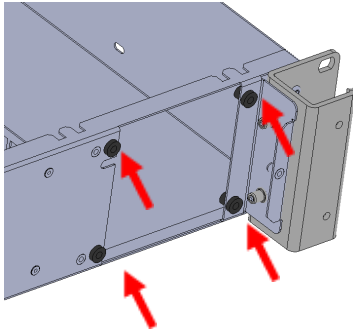


4. Unscrew the fan from the support with the Allen key.



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 600W-1kW AiO series

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

Required tools

- A cross-headed screwdriver

Procedure

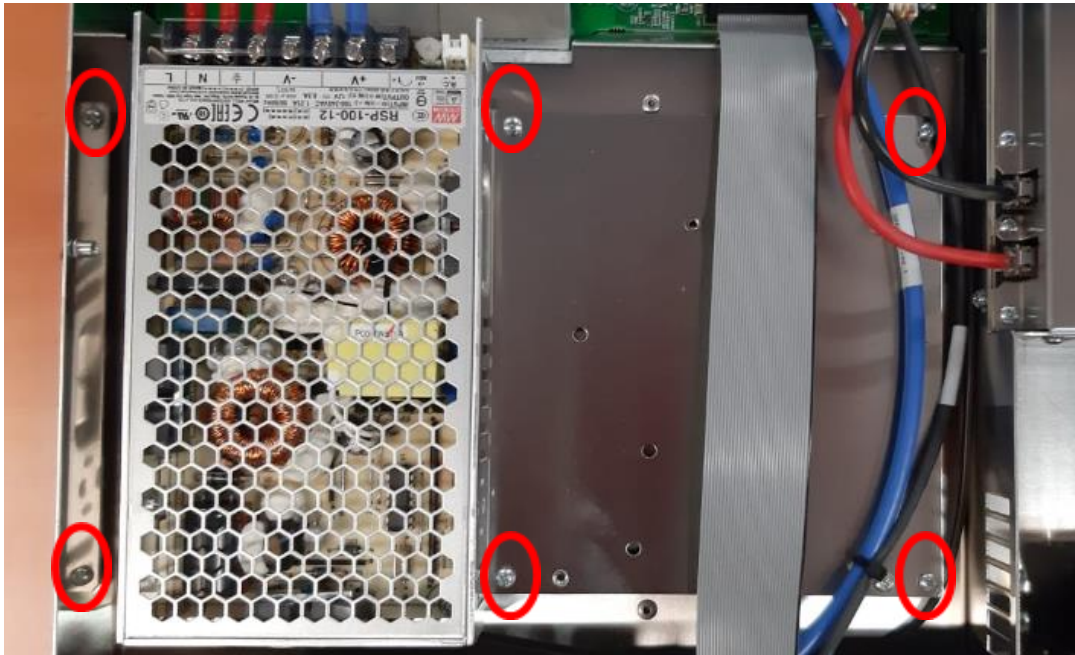
1. Disconnect all cables on the transmitter and set the module in ESD environment. Unscrew the cover of the module.
2. Remove the plastic protection on the PSU, and with the screwdriver, unscrew the AC and DC cables



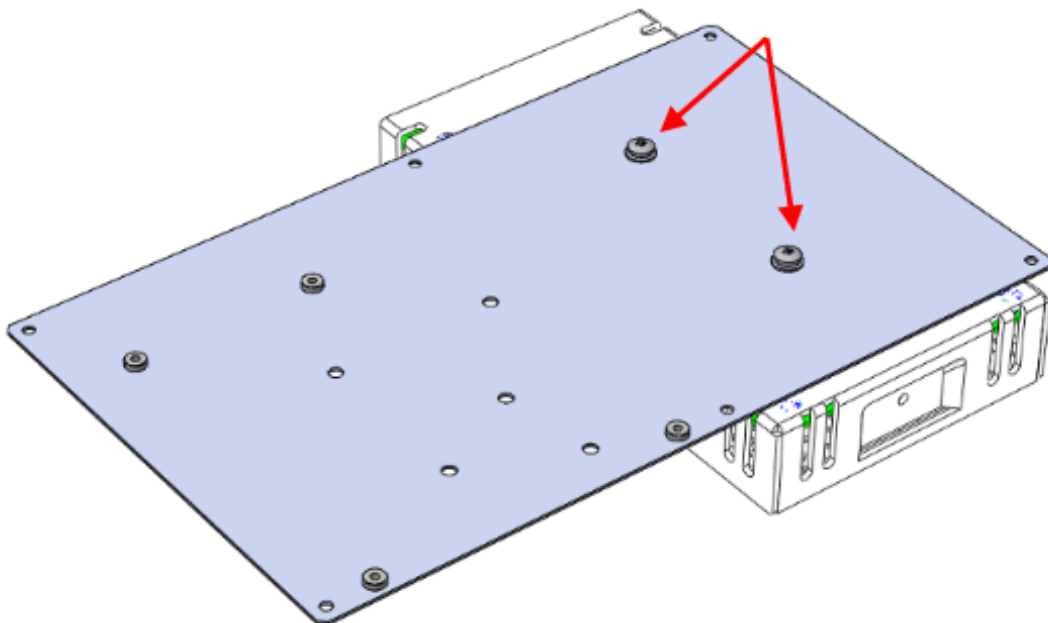
3. Unscrew the screw maintaining internal cables:



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

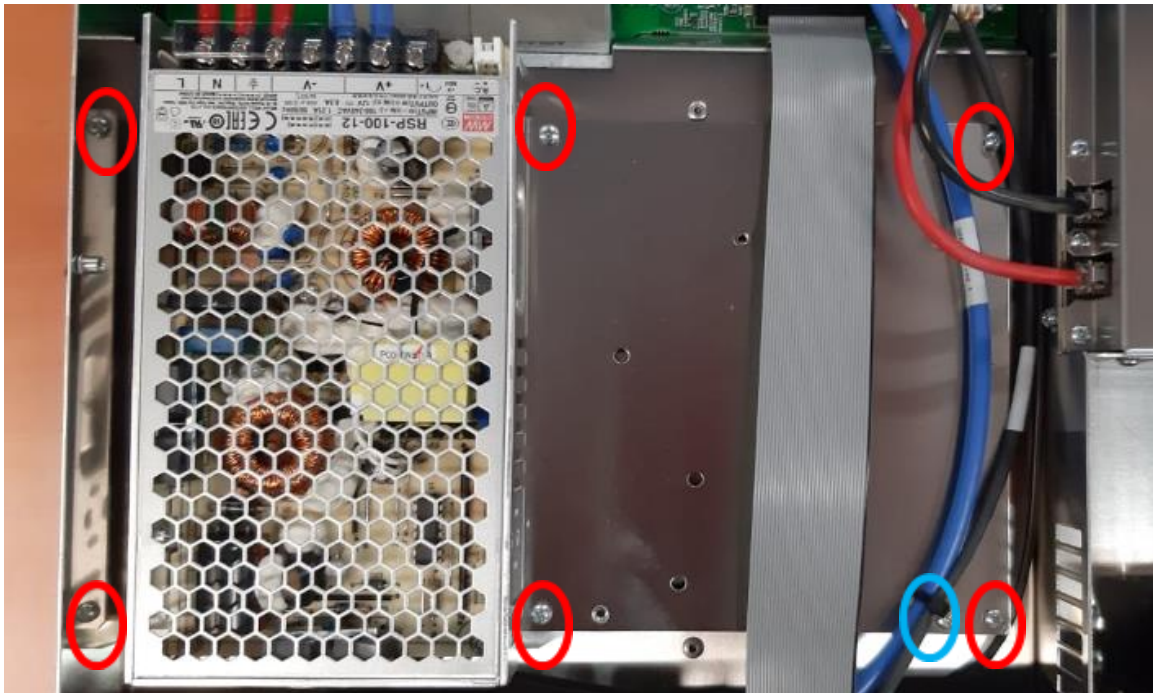


5. Remove the PSU on its support from the product.
6. Unscrew the 2 screws to unite the PSU from the support. Be careful not to lose the washers.



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

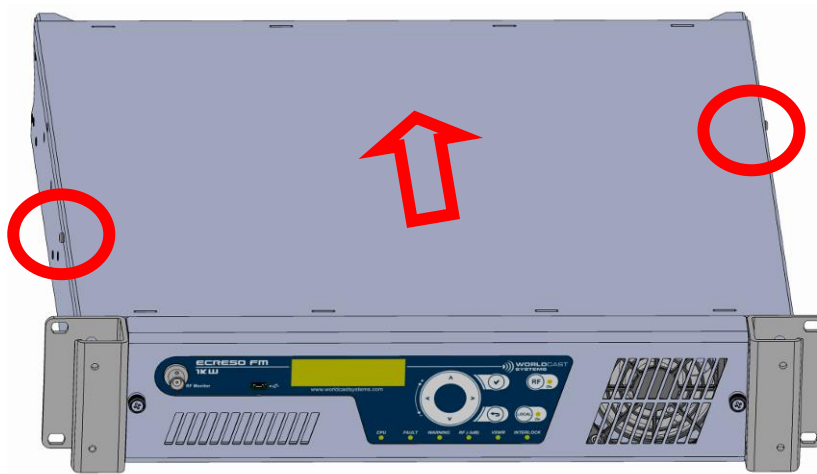
Reference for the Ecreso FM 100W AiO series Aux PSU: TFS01217

Required tools

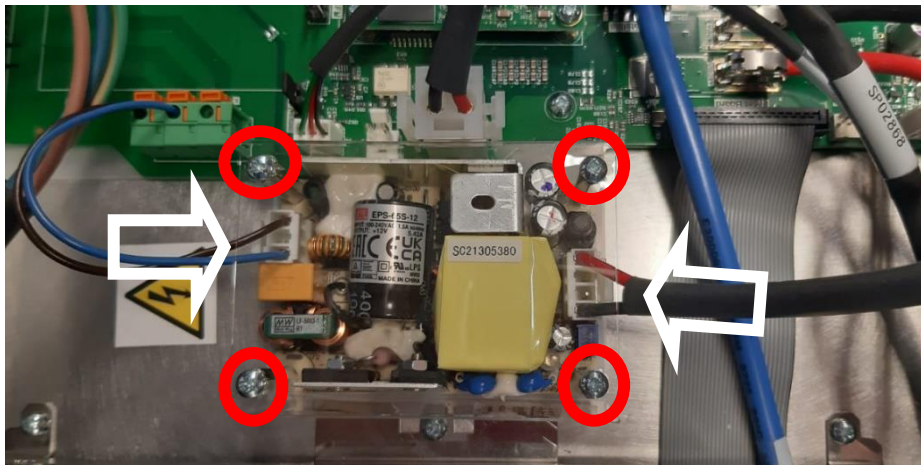
- A cross-headed screwdriver
- A six-sided hollow screwdriver

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

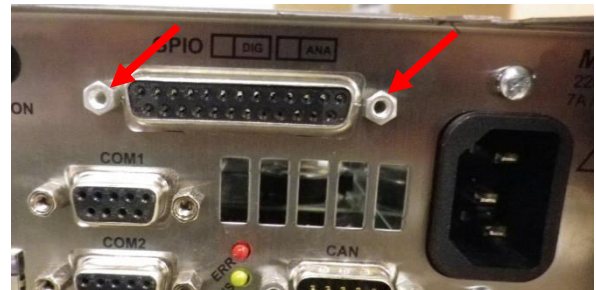
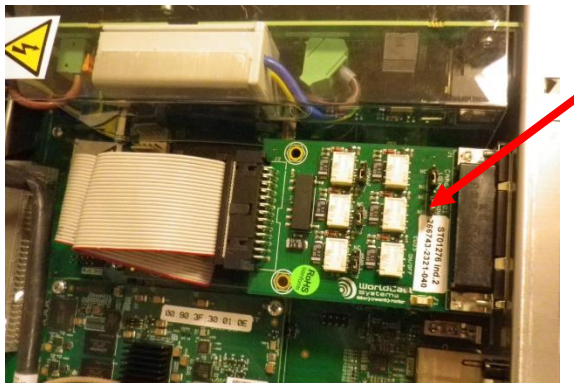
Reference for the Ecreso FM AiO series replacement surge protector: TFS01214

Required tools

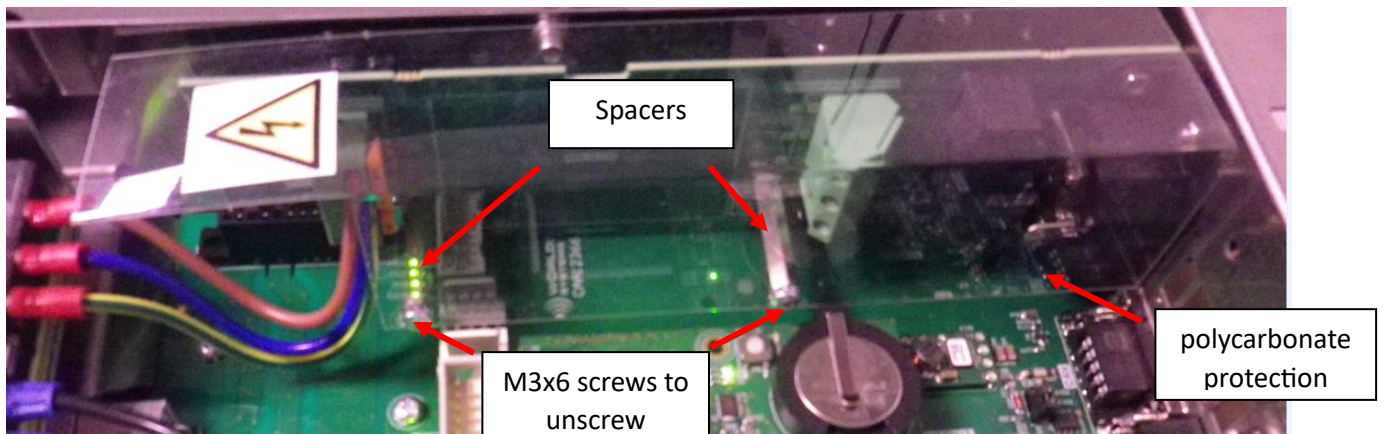
- A cross-headed screwdriver

Procedure

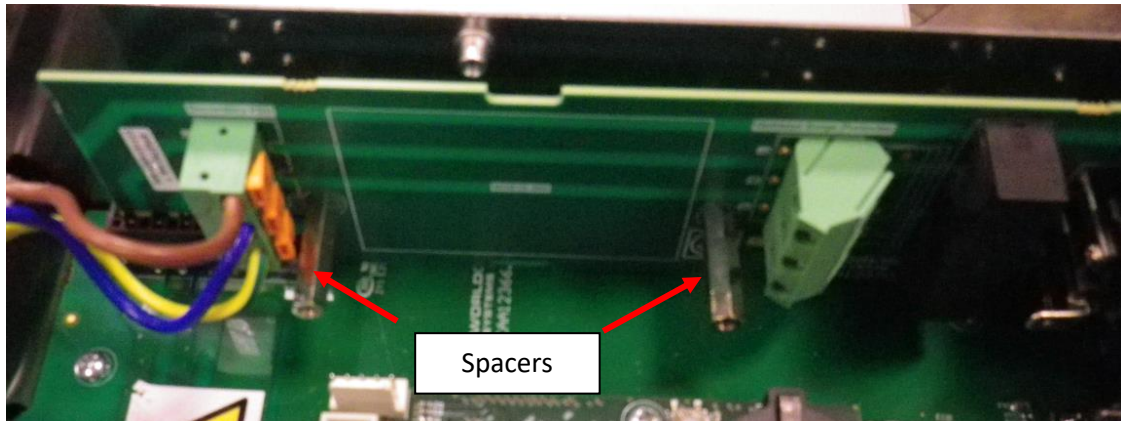
1. To change the surge protector, disconnect all cables on the transmitter and set the module in ESD environment. Unscrew the cover of the module.
2. If the optional GPIO board is present, remove it:



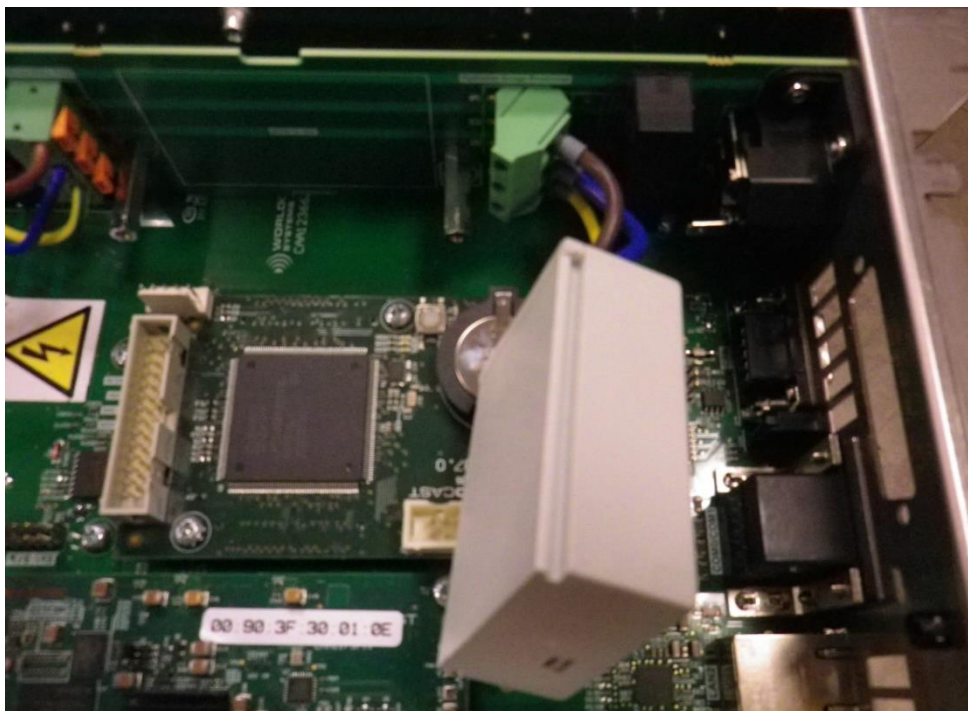
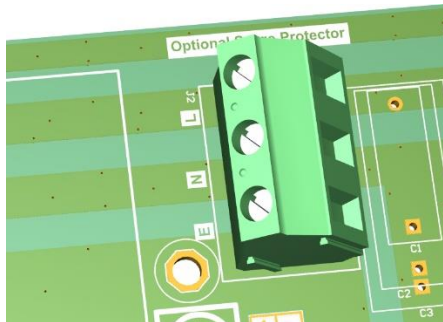
3. Unscrew the polycarbonate protection and the M3X30 spacers from the mains input board:



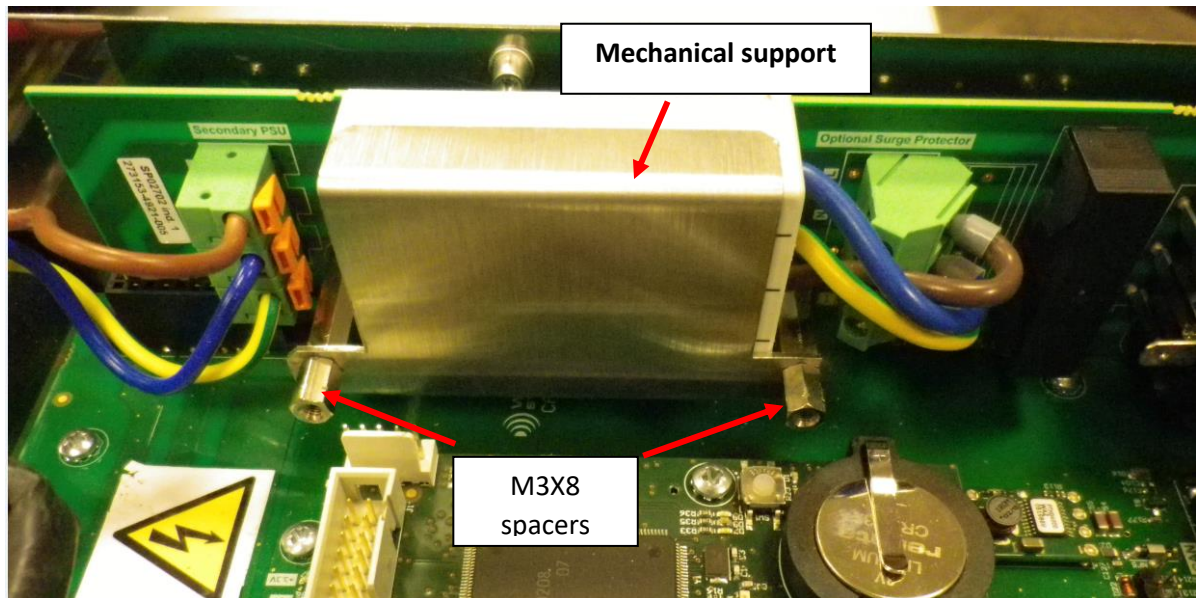
4. Screw the spacers:



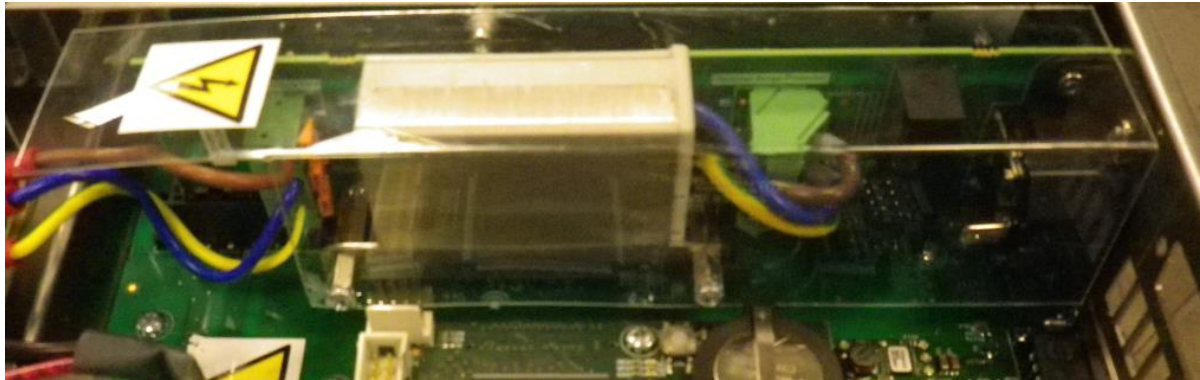
5. Screw the surge protector on connector J2: Brown wire on L, blue wire on N and yellow/green wire on E.



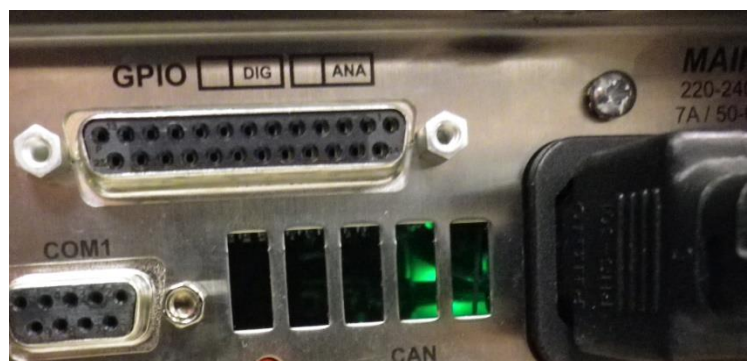
6. Fix the surge protector on the M3X22 spacers with the mechanical support and the M3x8 spacers:



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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