ECRESO FM AiO SERIES
USER MANUAL

87.5 – 108 MHz

FM TRANSMITTER

Date: 2024/03/13

Version: 3.2.x

CE

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.

FC

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.

afaq
ISO 9001
Qualité
AFNOR CERTIFICATION

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1. INTRODUCTION

1.1. About WorldCast Systems

WorldCast Systems is a global provider of audiovisual solutions. Backed by over 60 years of industry experience, WorldCast Systems has a full understanding of the entire broadcast chain and the mission-critical challenges of broadcasters, network operators, regulation authorities, and corporations for reliable, optimum content transmission.

Its industry leading brands are APT, Ecreso, Audemat, and Kybio address the needs of audio / video transport, radio broadcast, and media supervision. This covers audio/MPX codecs, virtualized solutions, FM transmitters, DAB/FM test and measurement, as well as monitoring and control. From products to turnkey solutions, WorldCast Group accompanies its customers throughout all phases of their project.

The group's mission: to create innovative media and broadcast solutions in service of connecting people, audiences, and businesses with perfectly delivered audio/video content. To achieve this, WorldCast empowers its customers with next-gen hardware and software solutions that ensure the most efficient performance, the highest reliability, and ultimately, the lowest Total Cost of Ownership.

Headquartered in Bordeaux, France with a subsidiary in the US, as well as representatives and distributors worldwide, the group generates more than 85% of its turnover internationally. Ambition, sustainability, innovation, competence, and sharing have been its pillars for many years and are the strengths of this human-sized company.

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 or Local Reforestation
    - ISO 14001

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, 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 CO_2 emissions
        - Measurable and logged benefits
        - Guaranteed return-on-investment.

- **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)

- o RDS2 ready

- o 10 DSN / 10 PSN

- o Highest Signal Purity and Quality on the market

- o Compatible with all ODA (TMC , RT+, etc.)

- o Dynamic PS, RT and RT+

- o 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.

- **APT IP Decoder*:**

  - o AptX Enhanced 16/24 Bit, Linear PCM 16/24 Bit, MPEG2/4 AAC/HE-AAC Suite, MPEG1/2 Layer II, OPUS

  - o SureStream: redundant streaming technology which enables broadcast-grade audio over inexpensive IP links

  - o Dual Ethernet for streaming and/or control

  - o RTP over UDP streaming.

- **MPX over IP transport**: includes APTmpX, the first non-perceptual MPX compression algorithm

- **SFN** (Single Frequency Network): this option includes a 10 MHz input to synchronize the RF sub-carrier to an external source and an embedded memory on the digital modulator to configure the delays which will allow to the synchronization between the various transmitters.

- **10 MHz input**: this option includes a 10 MHz input to synchronize the RF sub-carrier.

- **Dual Drive input****: this option includes an RF Input connector (expected level: 23 dBm) and an internal RF switch to manage switching between the external RF input and the internal Modulator.

- **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.

* The APT IP Decoder integrated in the transmitter is compatible with APT IP codecs release 4.0.8 or higher.

** This option is available on Ecreso FM 300W, 600W and 1kW AiO Series with hardware version 02. It is not currently available on Ecreso FM 100W AiO Series. Please contact support for more information.

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
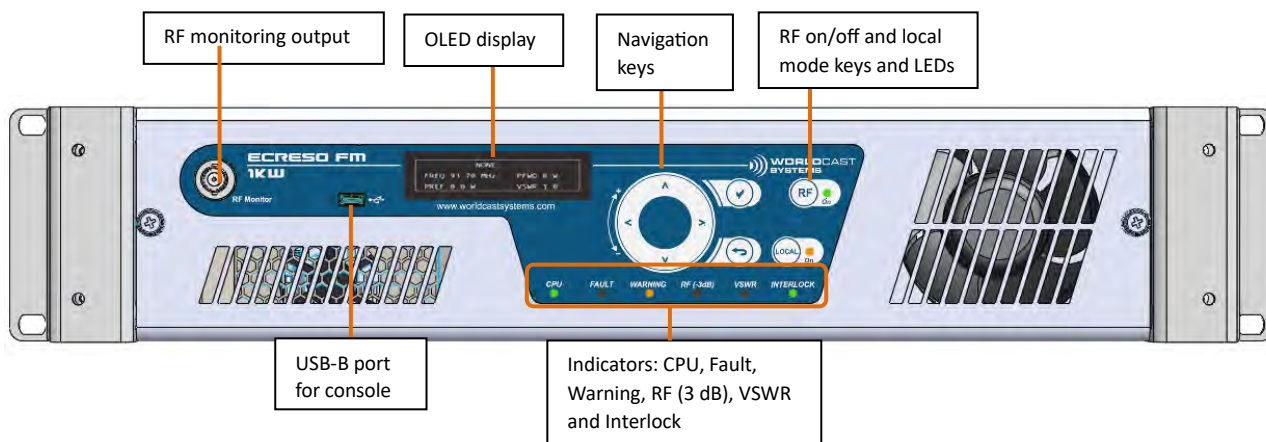
Description of indicator LEDs:

ⓘ *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.

ⓘ *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

RF 7/16 output (100W-300W) RF N output (600W-1kW)	Interlock [2]
L&R audio inputs	10 MHz and 1 PPS inputs (SFN option)
GPIO slot (option)	Mains [3]
AES1 and AES2 inputs	MPX/SCA1 MPX/SCA2 19 kHz
Communication interfaces [1]	Ground [4]
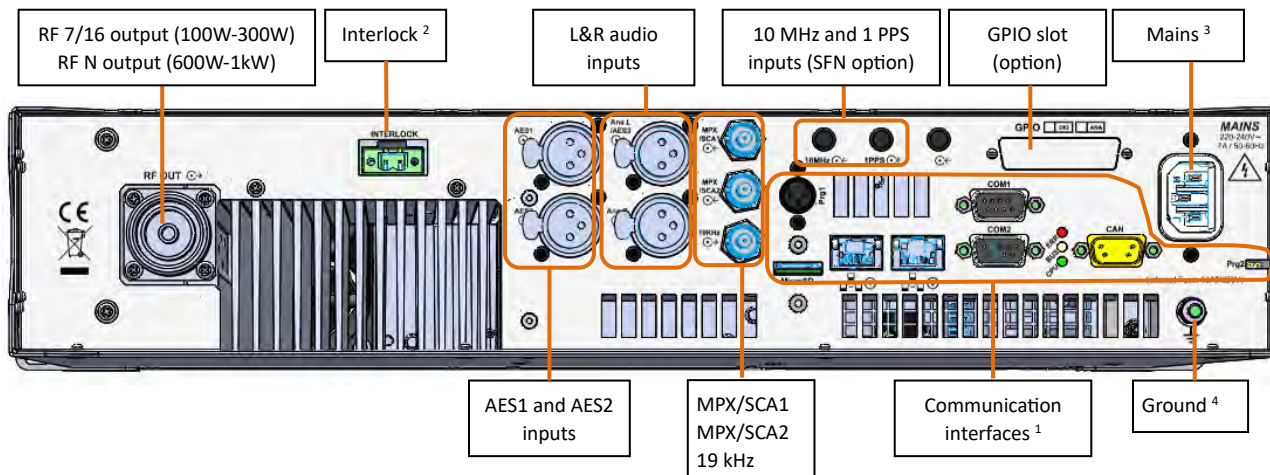
1. Communication interfaces

- 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 and 300W AiO Series
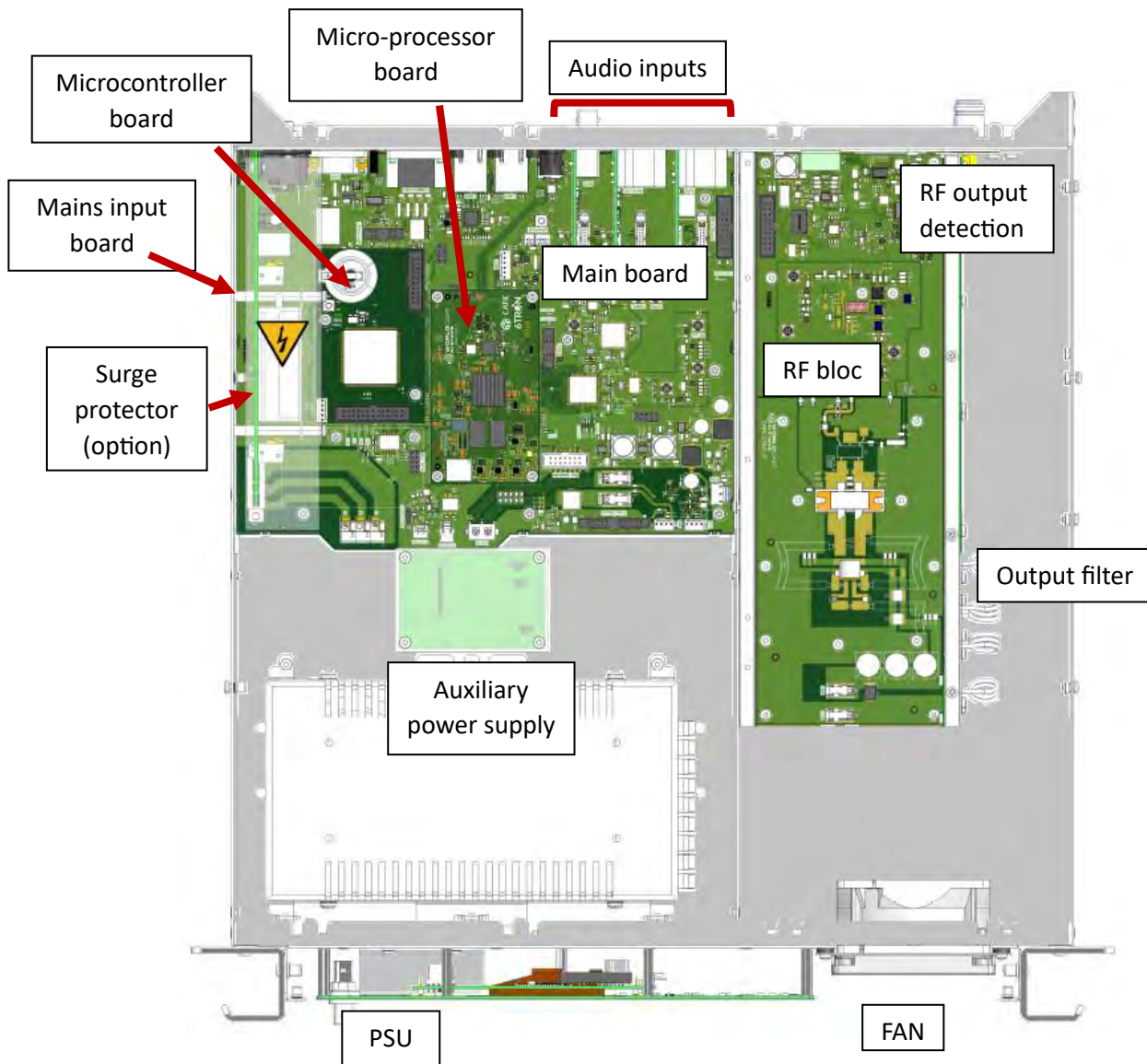
Ecreso FM 600W and 1kW AiO Series
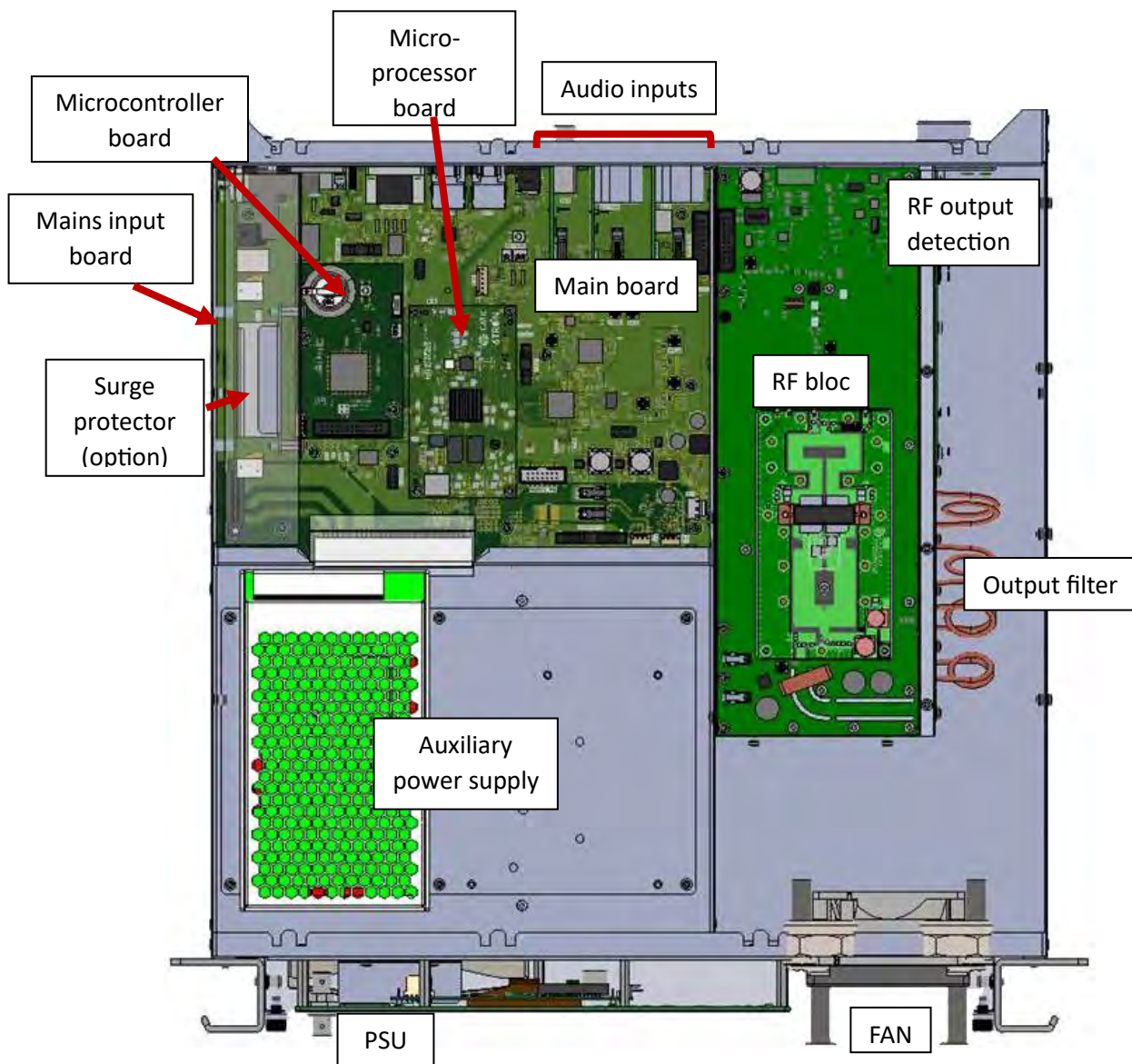
ECRESO FM 100W AiO Series main board
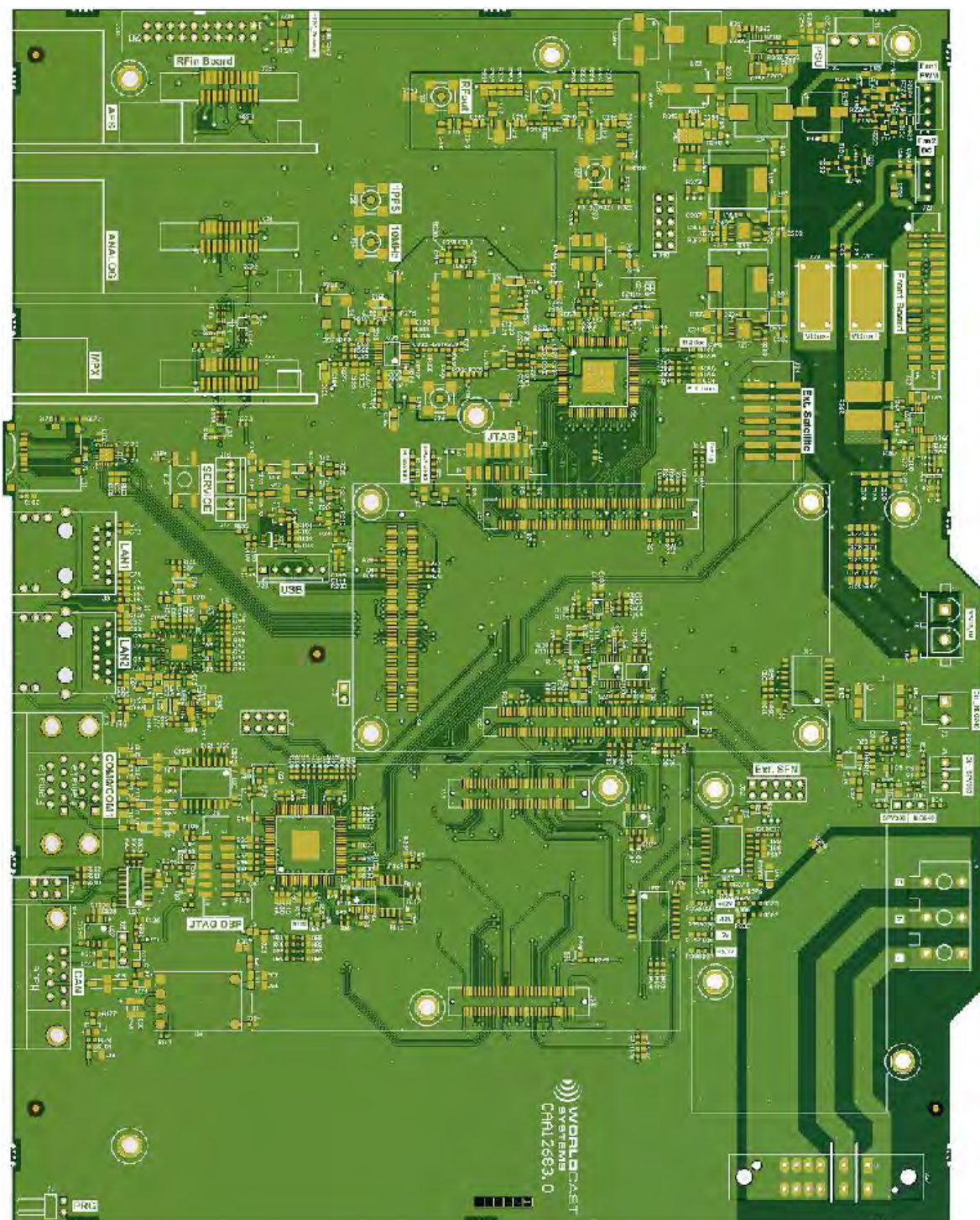
ECRESO FM 300W-600W-1kW AiO Series main board
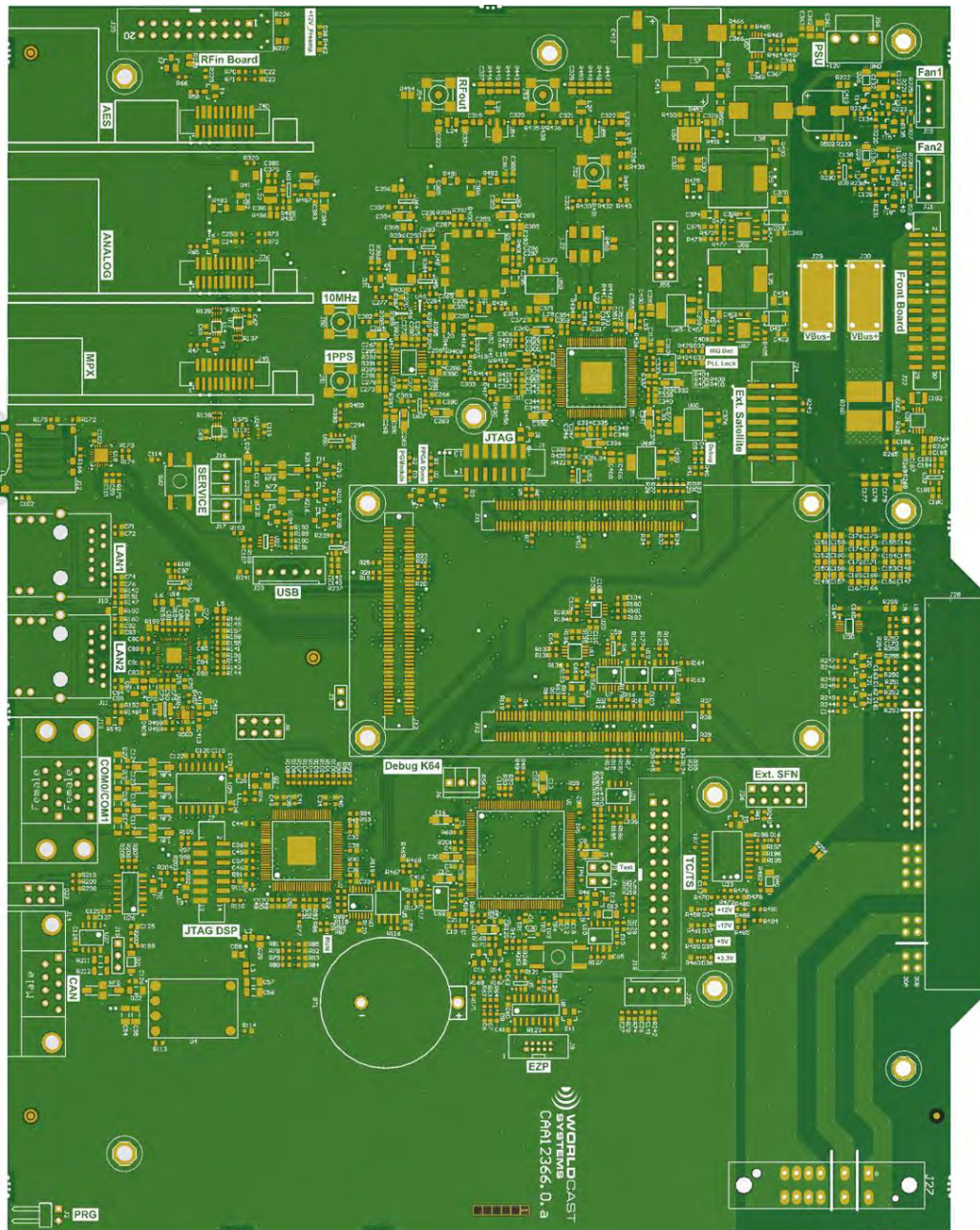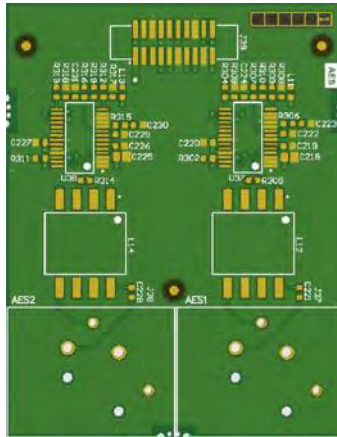
AES board   **Analog audio board**
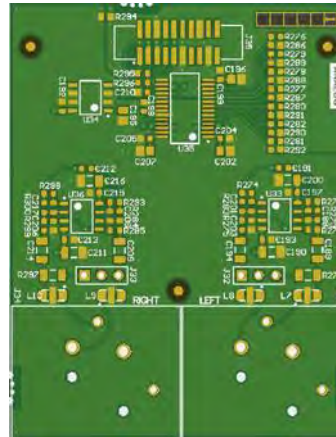
MPX/1 9kHz board
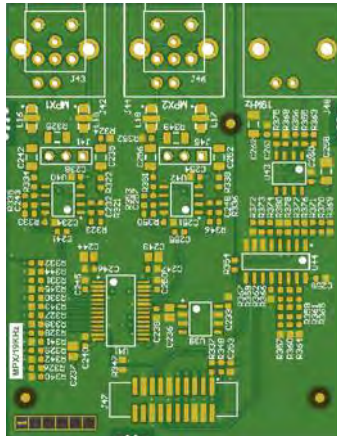
Micro-processor board
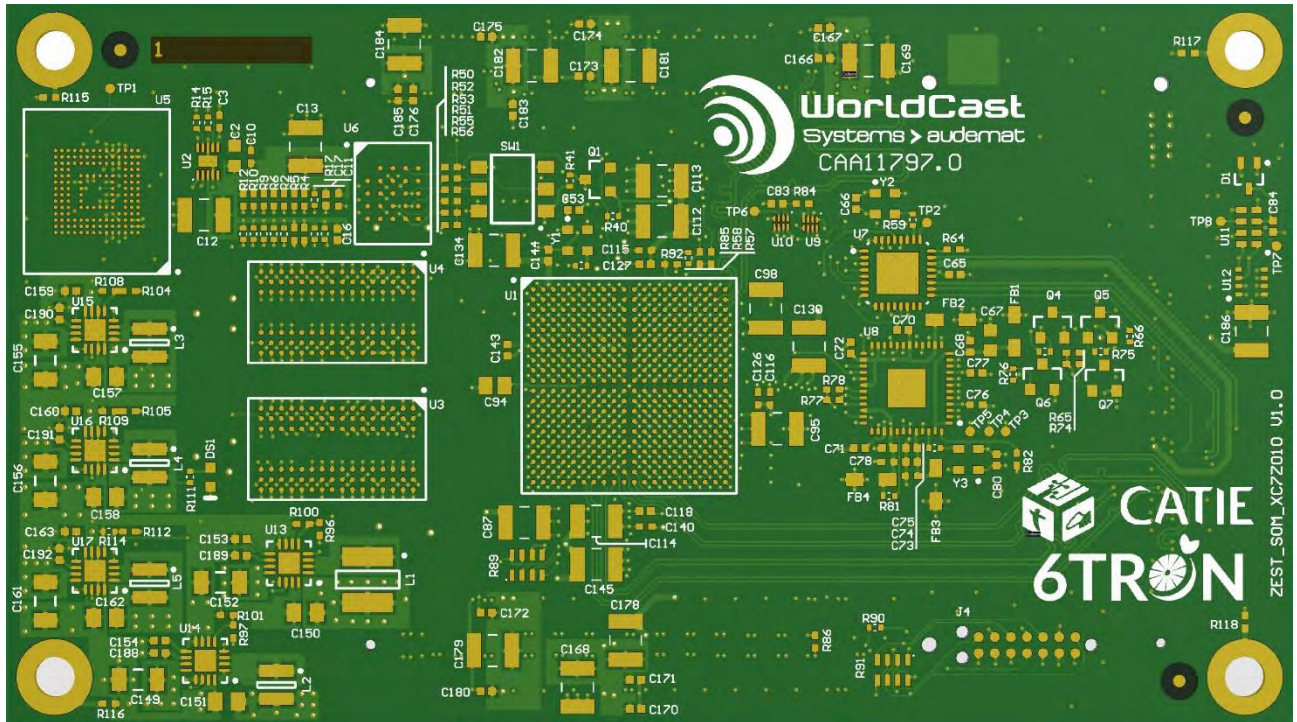
2.3.4. Synoptic diagram
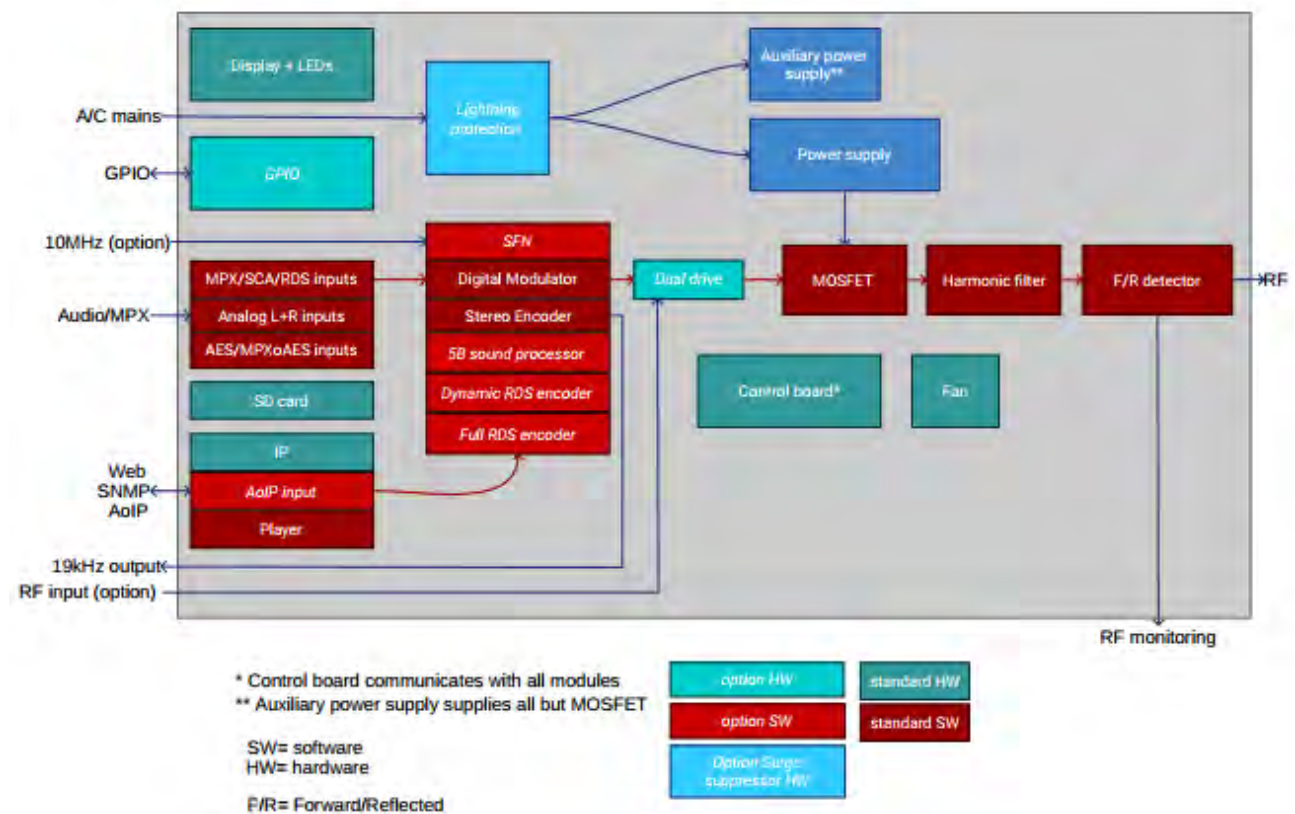
2.4. Protecting the transmitter

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	300 W	600 W	1 kW
Threshold	20 W	25 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	300 W	600 W	1 kW
Threshold	15 W	20 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: 8.5 A for the Ecreso FM 100W, 10 A for the Ecreso FM 300W, 32 A for the Ecreso FM 600 W, 32 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 300W 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

Nominal voltage	220-240 VAC
Voltage range	
Ecreso FM 100W-300W AiO Series	100-264 VAC
Ecreso FM 600W-1kW AiO Series	184-264 VAC
Frequency	50 Hz - 60 Hz
Max consumption	
Ecreso FM 100W AiO Series	200 W
Ecreso FM 300W AiO Series	500 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 dimensions	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	Green LED: CPU activity
	Red LED: major fault
	Yellow LED: minor fault
	Red LED: RF fault (3 dB)
	Red LED: VSWR fault
	Green LED: safety interlock
	Green LED: RF on
	Yellow LED: local mode
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
Ecreso FM 100W AiO Series	0 to 100 W
Ecreso FM 300W AiO Series	0 to 300 W
Ecreso FM 600W AiO Series	0 to 600 W
Ecreso FM 1kW AiO Series	50 to 1000 W
Power setting	
Ecreso FM 100W AiO Series	continuously 0-110 W
Ecreso FM 300W AiO Series	continuously 0-350 W
Ecreso FM 600W AiO Series	continuously 0-700 W
Ecreso FM 1kW AiO Series	continuously 0-1100 W
VSWR	< 1.35
	Optimal performance: < 1.1
	Protection: > 1.5

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	> 40 Hz to 53 kHz @ 0.1 dB
	> 20 Hz to 60 kHz @ 0.2 dB
	> 60 kHz to 80 kHz @ 0.4 dB
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 µs, 50 µs or 75 µs

3.8. Mono operation

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

3.9. AF inputs

Analog (ANA1)

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

AES (AES1 / AES2)

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 kΩ unbalanced
Level	Software adjustable (-18/+18 dBu range)

3.10. HF output

Connector

Ecreso FM 100W AiO Series	N
Ecreso FM 300W AiO Series	N
Ecreso FM 600W AiO Series	7/16
Ecreso FM 1kW AiO Series	7/16
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
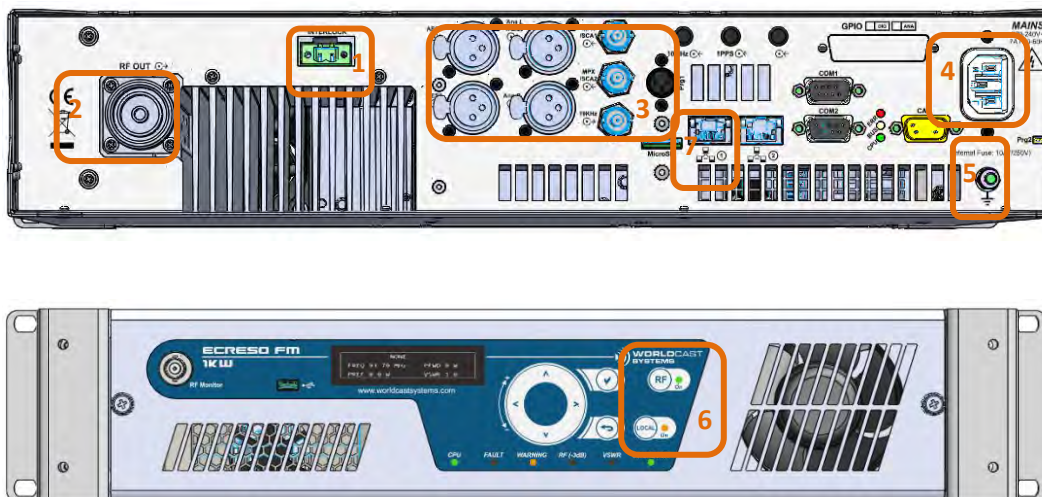
1. Make sure that the safety loop is closed, or that the interlock plug is present on the rear panel.

(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 400 W for a 300 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.***

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

From the main screen, press the Check button to display the menu.
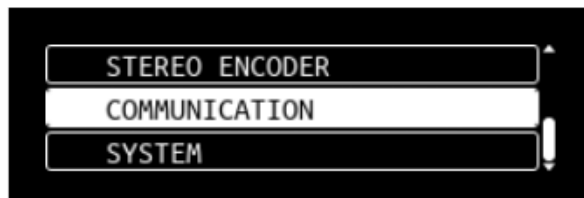
Use the arrow to select the Communication menu and press the Check button.

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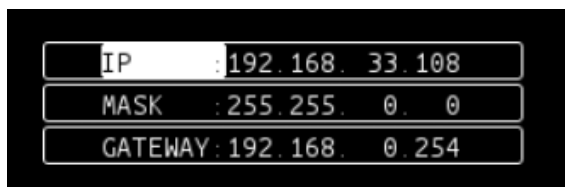
Proceed the same way to change the mask and gateway if necessary.

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).

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

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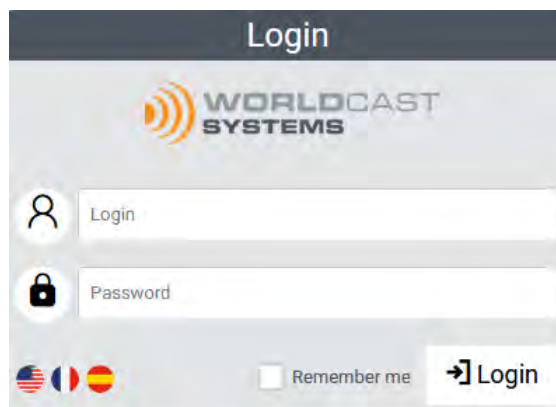
ⓘ *If several users are connected at once, they all can send commands and change parameters. The last edit will always be taken into account.*

❗ *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.*
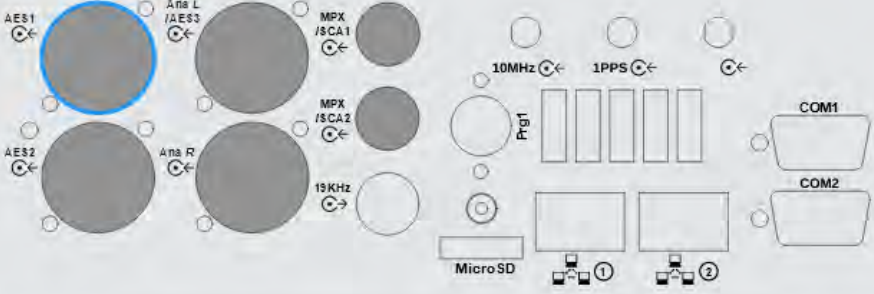
4.4. Configuring the transmitter
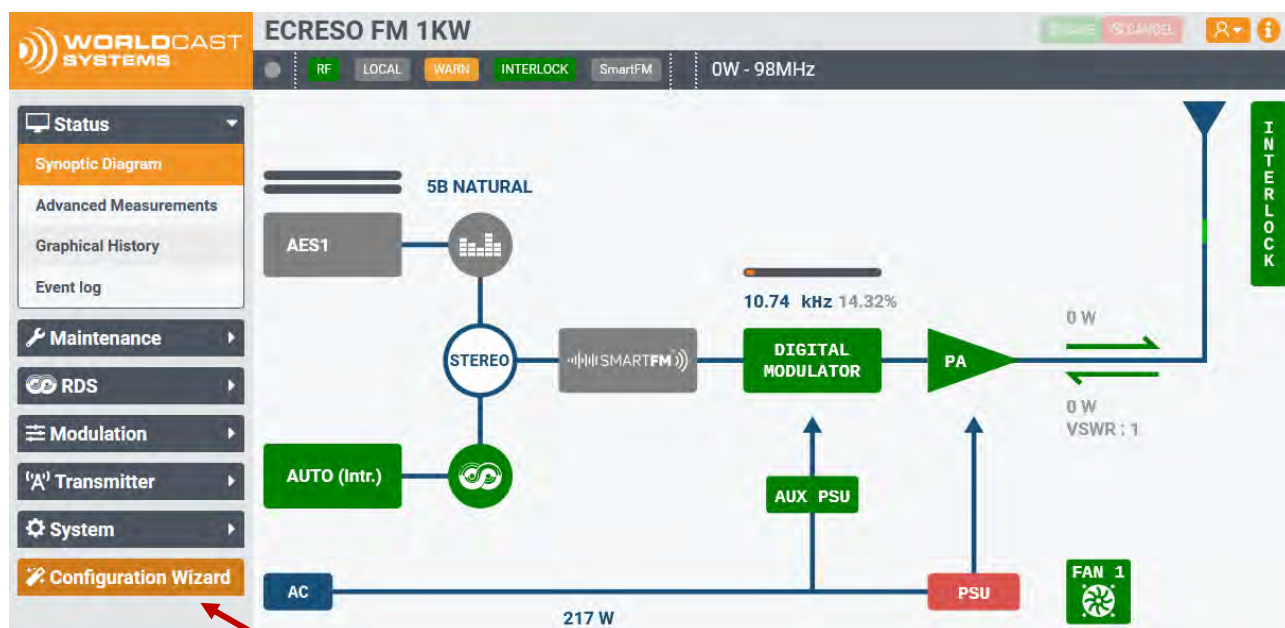
Once connected, launch the Configuration Wizard.

Enter the name of the transmitter. Select a name that will be easy to identify in a network environment	

Select the main audio input and a secondary input if needed. Set the audio input level.	**2/8 Audio inputs** ✕ **1- Select transmitter main audio input:** AES1 ▾ 🟦 **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 **3- Is there a secondary audio input?** No ⬤ Yes None ▾ 🟥
Select the RDS input.	**3/8 RDS** ✕ **1- Select transmitter RDS input:** AUTO ▾
Select the encoder mode de l'encodeur and the total deviation.	**4/8 Modulation** ✕ **1- Encoder mode** Stereo ▾ **2- Total Deviation** 75.00 **kHz**

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.	**5/8 Sound Processor** ✕ **1- Enable Sound processing?** No ⬤ Yes ○ WB PROTECT ○ WB CLASSICAL ○ WB DIGIPLEX ○ WB BOOST ○ 5B FINALIZE ○ 5B CLASSICAL ⦿ 5B NATURAL ○ 5B JAZZ ○ 5B HOT ○ 5B AC ○ 5B CHR ○ 5B URBAN ⏮ ⏭
Enter the frequency and power. Enable the RF.	**6/8 RF** ✕ **1- Set transmitter frequency:** 98.00 MHz **2- Set transmitter power:** 0 W **3- Enable RF:** No ⬤ Yes Before enabling RF, make sure the interlock is closed and the RF cable is properly connected. ⏮ ⏭
Enable SmartFM if you wish. The Standard strategy will be applied. This strategy improves the reception quality while allowing significant savings.	**7/8 SmartFM** ✕ SmartFM allows you to reduce your energy cost when your transmitter is running. **1- Enable SmartFM?** No ⬤ Yes ⏮ ⏭
If needed, modify the time zone and date of the transmitter.	**8/8 Time** ✕ **1- Set transmitter date and time:** 2022-09-29 14:47:32 (CEST) 📅 Change ⏮ 💾

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

Press the front panel local button for a few seconds to enable/disable the local mode. The lit yellow LED indicates the unit is in local mode; it is in remote mode when the LED is off.

Modification of the configuration with local interfaces

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

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 transmitter is part of 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 s**tandard, main available audio inputs** are:

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

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

These 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 threshold (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 W (depending on the transmitter's power)

1 dB threshold (TX.1DB) – read/write

With this parameter, set the triggering threshold for the 1 dB alarm. Default value: 0.

> From 0 to 9999 W (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. Several situations may trigger the security:

- 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),
- In case of very low power and high VSWR, ie., depending of the transmitter power:

Transmitter power	Output power	VSWR
100 W	< 5 W	> 3.5
300 W	< 10 W	> 3.5
600 W	< 10 W	> 3.5
1 kW	< 10 W	> 3.5

The RF is then shut off and automatically starts again.

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

SFN (CONF.SFN.STATE) – read/write *

Enable or disable the SFN function with this parameter. The SFN (Single Frequency Network) is a broadcast network where several transmitters simultaneously transmit the same signal over the same frequency channel. It uses the 10 MHz input to synchronize the RF subcarrier and the modulation. Before enabling SFN, it is essential to conduct a study to determine its feasibility; if feasible, SNF requires a proper installation. Use AES inputs and adjust the transmitter power accordingly.

> Off/On

SFN Delay (CONF.SFN.STATE) – read/write *

With this parameter set the SFN delay. The SFN delay makes it possible to compensate audio transmit time in the network. This delay has to be set in the field depending on readings computed in the coverage area. It is set in 1.25 µs increments. The actual delay is then read and an offset between the set delay and the read delay leads to an SFN alarm (loss of synchronization).

> From 0 to 5000000.00 µs

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 CO_2 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 Power (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

Level (INPUT.AES*n*.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the AES*n* 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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.SW.BACKDELAY) – read/write

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

> From 0 to 30 s

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Silence detection mode (INPUT.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.AES*n*.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.MPX*n*.LEVEL) – read/write
- Silence detection delay (INPUT.MPX*n*.SW.DELAY) – read/write
- Silence threshold (INPUT.MPX*n*.SW.THRESH) – read/write
- Silence back delay (INPUT.MPX*n*.SW.BACKDELAY) – read/write
- Drive (INPUT.MPX*n*.DRIVE) read/write
- Audio alarm trigger (INPUT.MPX*n*.ALARM) – read/write
- Custom audio alarm (INPUT.MPX*n*.LOST) – read/write
- Presence (INPUT.MPX*n*.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 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

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 setting 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 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 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.

Example 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**.

Example 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

Example 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    1e 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)

Trafic 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)

Trafic 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.

Category	RTplus classes	MP3 id3v2		Description
	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 choose between date and time)
	INFO.WEATHER			Information about weather
	INFO.ALARM			An alarm information, typically an official alarm sends 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			
	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

Category	RTplus classes	MP3 id3v2		Description
	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
	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, Ta), during which ODA groups may be inserted into the data stream; and a second part (window time, Tw), 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, Td).

•

The structure of the parameters Ta, Td and Tw is illustrated below:
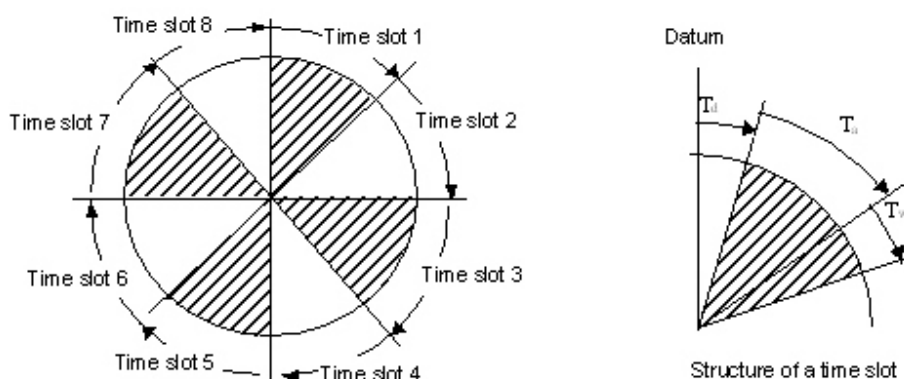
The insertion of ODA groups is governed by the following rules:

- No ODA group should start outside the activity window.
- An ODA group may be completed outside the activity window.
- Ta, Tw, and Td have to be multiples of one second, with 60 s/(Ta + Tw) = 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	M.O.R. Music	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	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
	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.PS*n*.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.PS*n*.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.PS*n*.EN): Check the box for the line to be sent.

- **Center** (RDS.PS*n*.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.PS*n*.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.PS*n*.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.PS*n*.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 µSD 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 µSD 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 µSD 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)

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 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).

SFN alarm (ALARM.SFN)

This alarm is on when 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 occurred. This alarm indicates a loss of SFN, not a loss of transmission.

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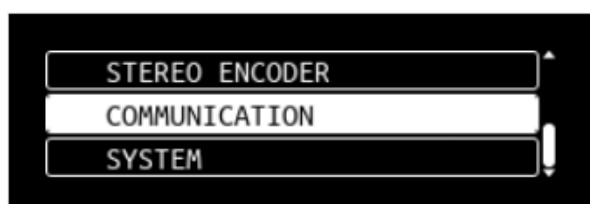
From the main screen, press the button ✔ to display the menu and press the down arrow until you see the System menu.

When the System menu is highlighted, press the button ✔
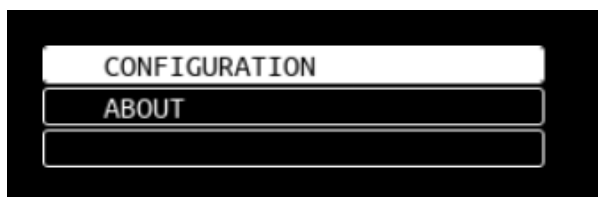
In the sub-menu press the button ✔ to display the menu configuration screen.
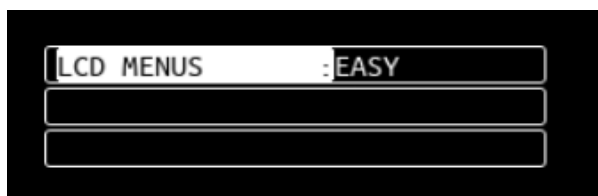
Press the check button again to switch to edit mode. When the word Easy is highlighted, use the right or left arrow to modify the value. Press the check button to confirm the Expert mode, and on the return button ↩ to go back to the menu

ⓘ *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
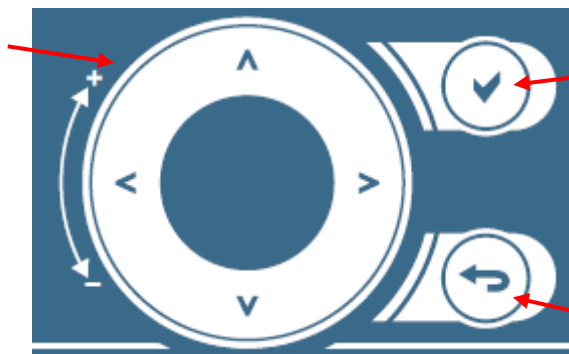
The **Check** button is used to:

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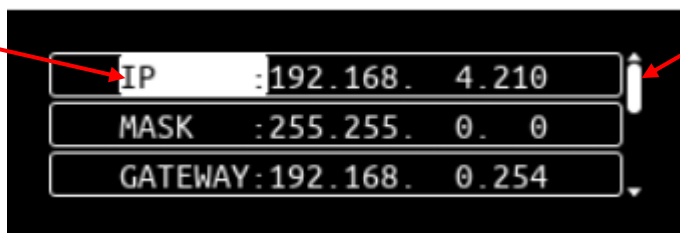
The white scroll bar indicates there are additional values. Press the down button to view them.

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	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	

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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.

```
        ONE FM
FREQ:93.70 MHz    PFWD:0 W
PREF:0.0 W        VSWR:1.0
```

```
        SMARTFM
PWR   :1 W       AVG :0 W
STATUS:OFF       MODE:STANDARD
```

```
        CODER
DEV:10.46 kHz    STATE:STEREO
CUR INPUT:AES2
```

```
      AUDIO INPUTS
AES1 L:-131.59   R:-131.59 dB
AES2 L:-132.45   R:-132.45 dB
```

```
      AUDIO INPUTS
ANA1 L:-84.78    R:-86.65 dB
```

```
       MPX INPUTS
MPX1:-68.83 dB
MPX2:-69.30 dB
```

```
    SOUND PROCESSOR
BYPASS :OFF
CURRENT:WB PROTECT2
```
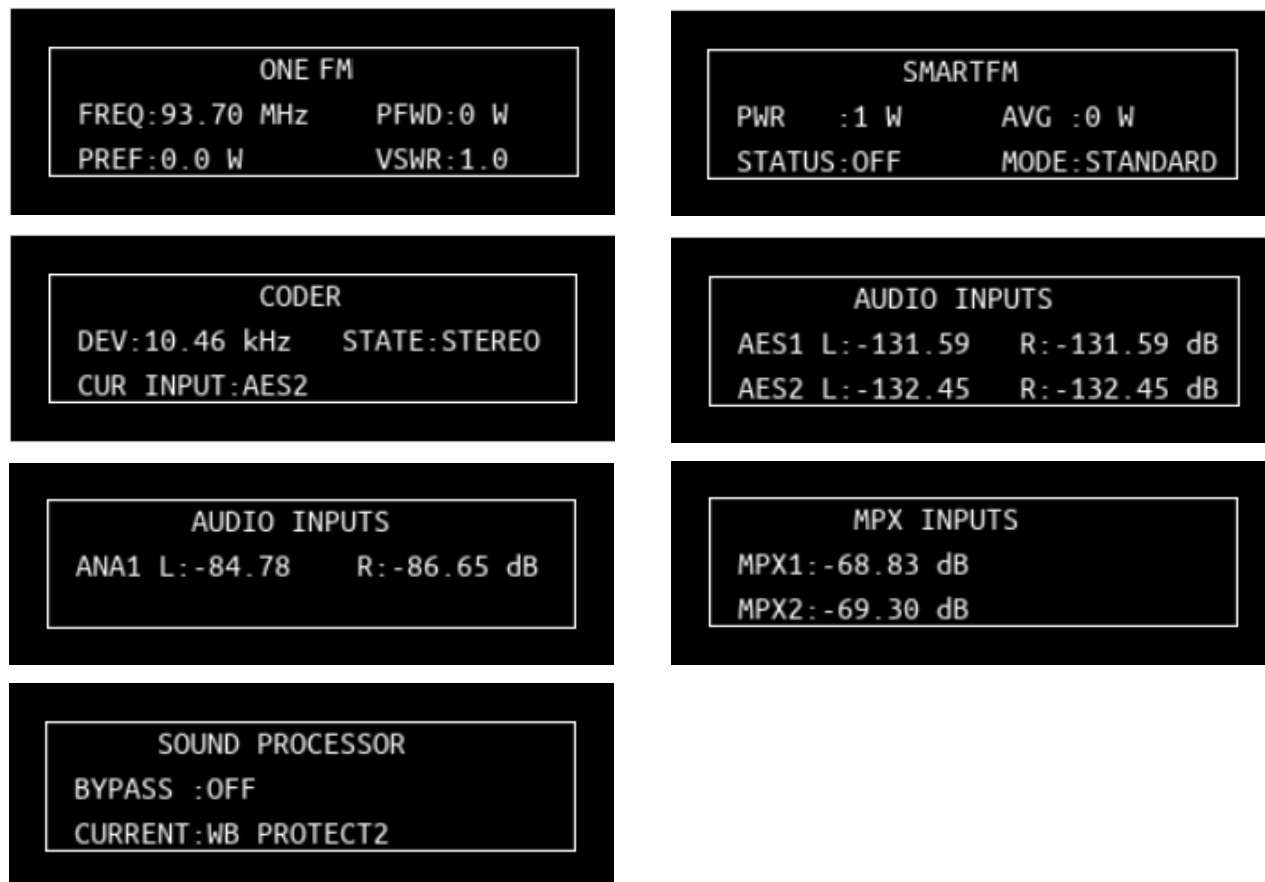
Use the right and left arrows to display the various Status screens.

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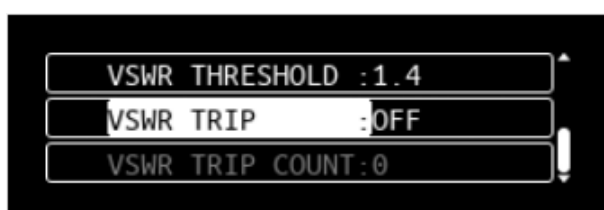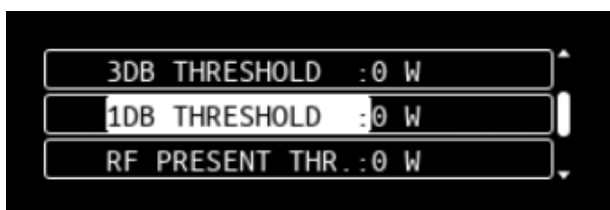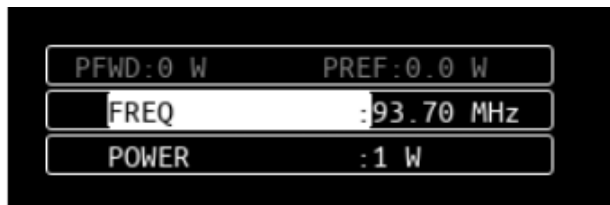
ⓘ *Thresholds and VSWR trip parameters are only visible in Expert mode.*

6.3.6. SmartFM Menu
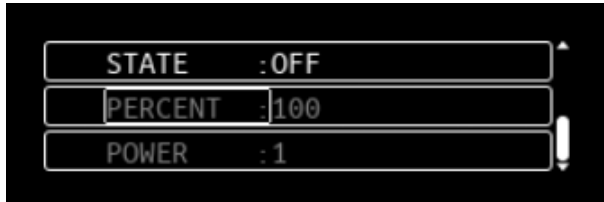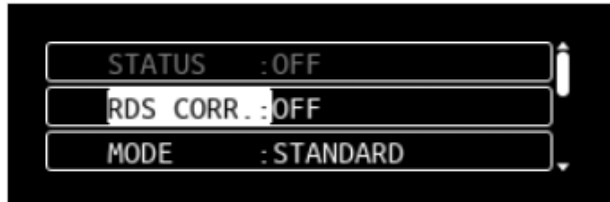
6.3.7. Inputs Menu

This menu displays a sub-menu:
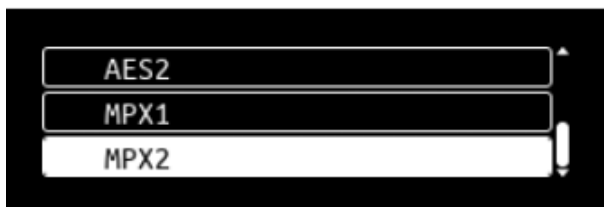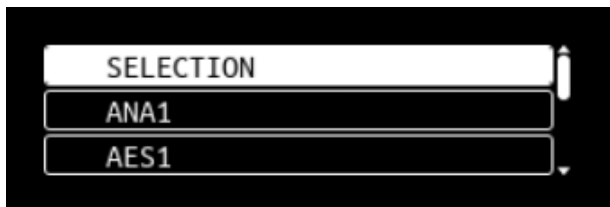
6.3.7.1. Inputs/Selection Sub-menu

This menu displays a sub-menu:

```
AUDIO
RDS
SCA
```

Audio Sub-menu:

```
AUTO SWITCH :AUTO
MAIN SRC.    :AES2
BACKUP 1     :MPX1
```
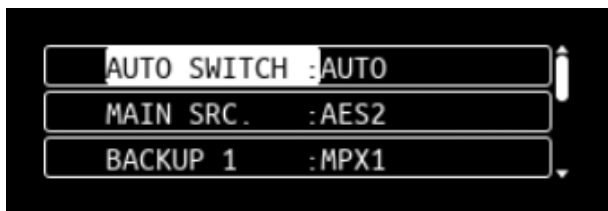
ⓘ *On this menu, set up to 6 audio backup sources (BACKUP 1 → BACKUP 6).*

RDS Sub-menu:

```
MAIN SRC. :INTERNAL
BACKUP    :NONE
```

SCA Sub-menu:

```
MAIN SRC. :INTERNAL
```

6.3.7.2. Ana1 Sub-menu

```
PRESENCE  :NONE
LEVEL     :12.00 dB
PREEMPH   :50uS
```

```
SIL. THR. :-50 dB
DELAY     :15 s
BACK DELAY:2 s
```

```
SIL. MODE :BOTH
DRIVE     :0.00 dB
TRIM      :0.00 dB
```

```
TRIM      :0.00 dB
FILTER    :15kHz
L:-86.34        R:-85.22 dB
```
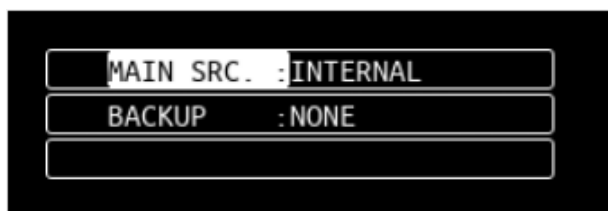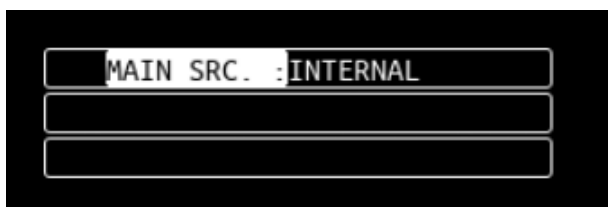
ⓘ *Silence threshold, delay, back delay, silence mode and filter are only visible in Expert mode.*

6.3.7.3. AES1 / AES2 Sub-menu

```
PRESENCE  :NONE
LEVEL     :12.00 dB
PREEMPH   :50uS
```

```
SIL. THR. :-50 dB
DELAY     :15 s
BACK DELAY:2 s
```

```
SIL. MODE :BOTH
NO SYNC   :OFF
DRIVE     :0.00 dB
```

```
TRIM      :0.00 dB
FILTER    :15kHz
L:-6.70         R:-10.29 dB
```

ⓘ *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.*

```
PRESENCE  :L+R
LEVEL     :-6.00 dB
PREEMPH   :50uS
```

```
SIL. THR. :-50 dB
DELAY     :15 s
BACK DELAY:2 s
```

```
SIL. MODE :BOTH
NO SYNC   :OFF
DRIVE     :0.00 dB
```

```
TRIM      :0.00 dB
FILTER    :15kHz
L:-6.70         R:-10.29 dB
```

6.3.7.5. MPX1 / MPX2 Sub-menu

```
PRESENCE  :NONE
LEVEL     :12.00 dB
SIL. THR. :-50 dB
```

```
DELAY      :15 s
BACK DELAY:2 s
DRIVE      :0.00 dB
```

```
BACK DELAY:2 s
DRIVE      :0.00 dB
MEAS LEVEL:-69.26 dB
```
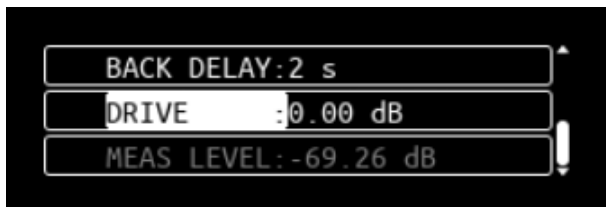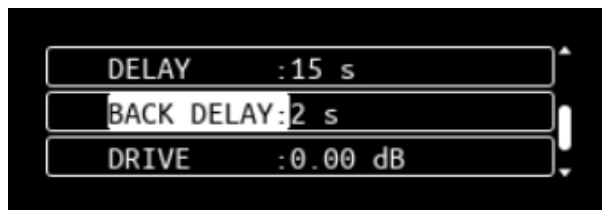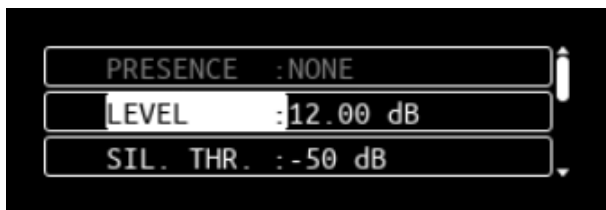
ⓘ *Silence threshold, delay and back delay are only visible in Expert mode.*

6.3.7.6. Generator Sub-menu

ⓘ *This menu is only visible in Expert mode.*

```
MODE      :PILOT
LEVEL 1   :0.00 dB
FREQ  1   :0.00 Hz
```

```
LEVEL 2   :0.00 dB
FREQ  2   :0.00 Hz
PREEMPH   :50uS
```

6.3.8. Modulation Menu

```
MEAS PEAK :7.10 kHz
TOTAL DEV :75.00 kHz
AUDIO DEV :63.9 kHz
```

```
TOTAL DEV :75.00 kHz
AUDIO DEV :63.9 kHz
PILOT DEV :7.1 kHz
```

```
PILOT DEV :7.1 kHz
RDS   DEV :4.0 kHz
SCA   DEV :0.0 kHz
```
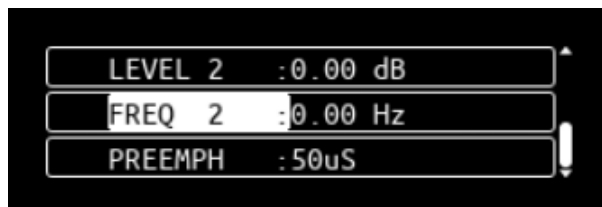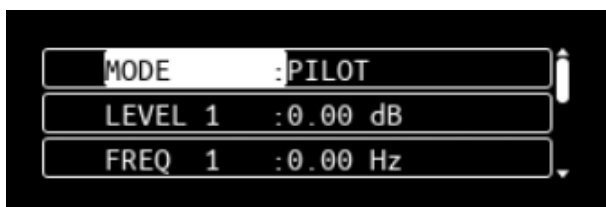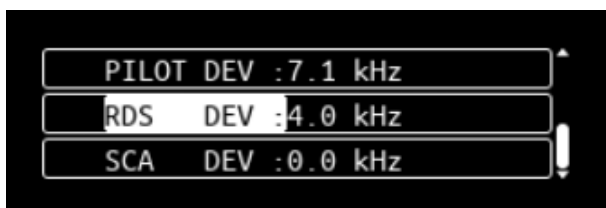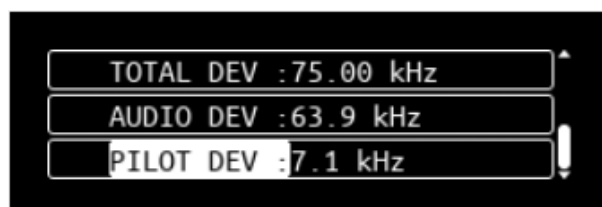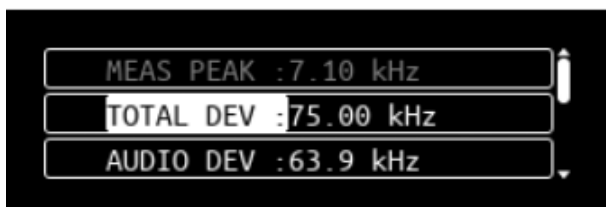
ⓘ *RDS and SCA deviation are only visible in Expert mode.*

6.3.9. Stereo encoder Menu

```
ENCODER MODE :STEREO
RDS PHASE     :0.0 °
19k OUT LEV.  :5
```
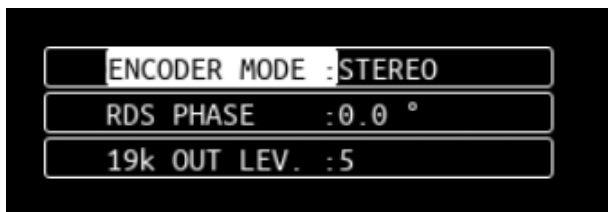
ⓘ *RDS phase and 19 kHz output level are only visible in Expert mode.*

6.3.10. Sound Process Menu

ⓘ *This menu is only visible in Expert mode.*

```
BYPASS          :OFF
PRESET NAME    :WB PROTECT
CURRENT PRESET :1
```

```
CLIP STATE     :ON
CLIP DEV       :120.0
CLIP STATUS    :OFF
```

```
MPX POW STATE  :ON
MPX POW TARGET :3.0
MPX POW NORM   :-7.98
```

```
MPX POW TARGET :3.0
MPX POW NORM   :-7.98
MPX POW PRED   :-7.98
```
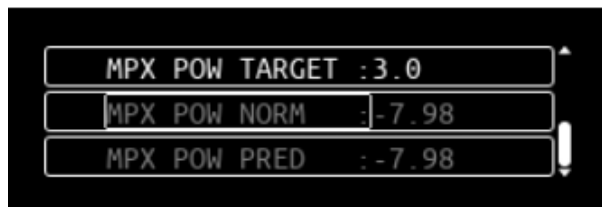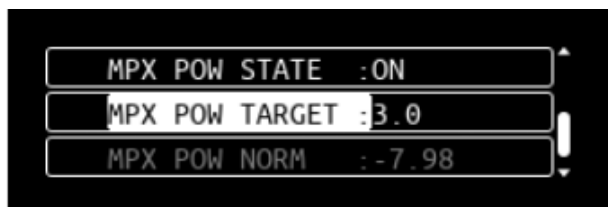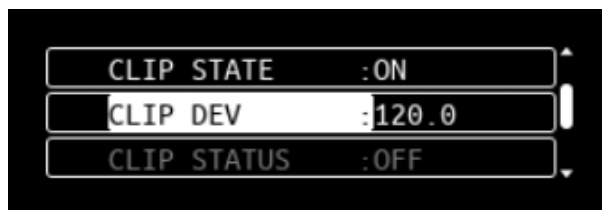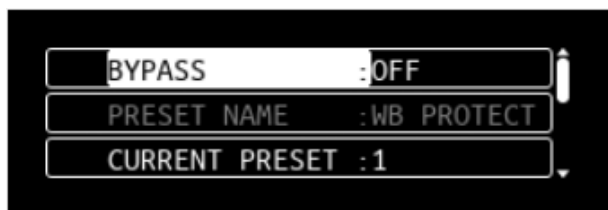
6.3.11. RDS Menu

ⓘ *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:

```
GLOBAL RDS
CURRENT RDS
BACKUP RDS
```

```
CURRENT RDS
BACKUP RDS
UECP ADDRESSES
```

6.3.11.1. Sub-menu Global RDS

```
RDS STATE :ON
CURRENT DSN :1
RDS LEVEL    :466 mV
```

```
RDS LEVEL     :466 mV
RDS PHASE     :0.0 °
CLOCK TIME    :OFF
```
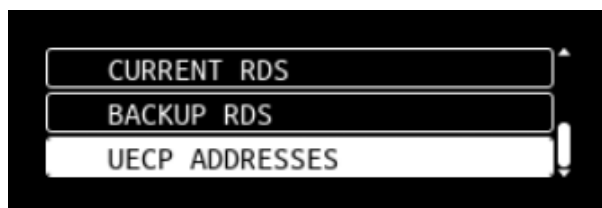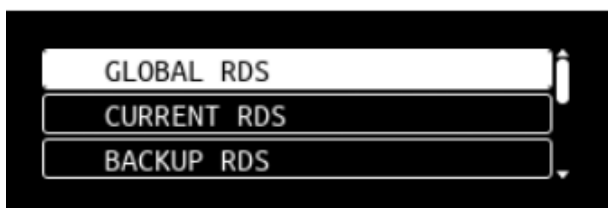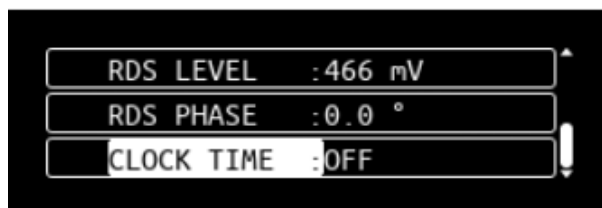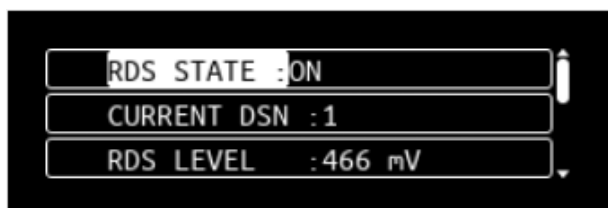
6.3.11.2. *Current RDS / Backup RDS Sub-menus*

```
PI :F000
PS :
TA :OFF
```

```
TA :OFF
TP :OFF
PTY:0
```
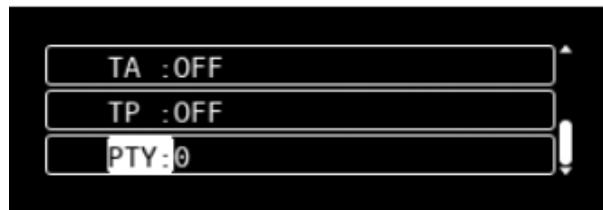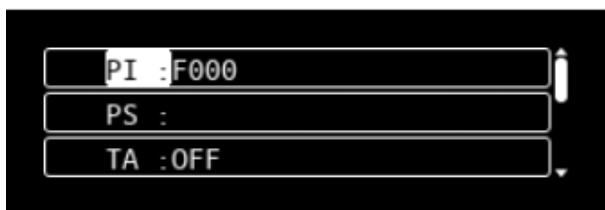
6.3.11.3. *UECP addresses Sub-menu*

```
SITE    :000
ENCODER :00

```
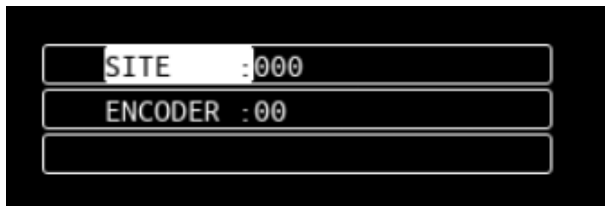
ⓘ *Uniquement en Full RDS.*

6.3.12. Maintenance Menu

ⓘ *This menu is only visible in Expert mode.*

This menu displays a sub-menu:

```
GLOBAL
PREAMPLIFIER
PA1
```

```
PREAMPLIFIER
PA1
PSU1
```

6.3.12.1. *Global Sub-menu*

```
EST. CONS.    :0 W
EFFICIENCY    :0 %
PA EFFICIENCY :0 %
```

```
AMBIENT TEMP. :37 °C
CONTROL TEMP. :41 °C
+5V VOLTAGE   :4.93 V
```

```
+12V VOLTAGE  :12.04 V
-12V VOLTAGE  :-12.13 V
FAN SPEED     :0
```
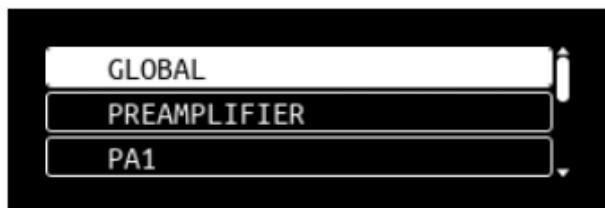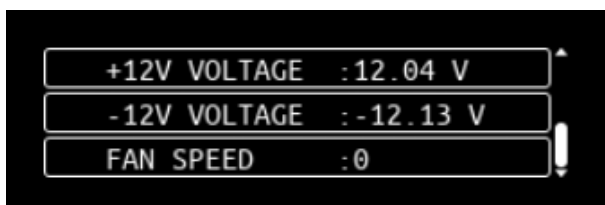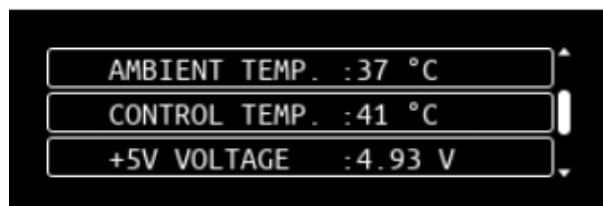
6.3.12.2. Preamplifier Sub-menu

```
CURRENT  :0.000 A
VOLTAGE  :0.000 V
```

6.3.12.3. PA1 Sub-menu

```
COMM ALARM      :ON
VOLTAGE         :0.000 V
CURRENT         :0.000 A
```

```
CURRENT         :0.000 A
HEATSINK TEMP. :0 °C
REFL. POWER     :0.0 W
```

6.3.12.4. PSU1 Sub-menu

```
COMM ALARM   :ON
IN  POWER    :0 W
IN VOLTAGE   :0.000 V
```

```
IN CURRENT   :0.000 A
OUT POWER    :0 W
OUT VOLTAGE :0.000 V
```

```
OUT CURRENT :0.000 A
EFFICIENCY  :0 %
PFC TEMP.   :0 °C
```

```
HEAT. TEMP.  :0 °C
FAN SPEED    :0
SERIAL NUM. :
```

```
FAN SPEED    :0
SERIAL NUM. :
RELEASE      :
```
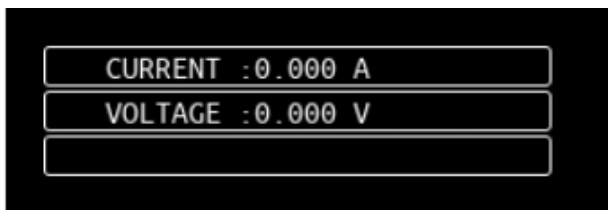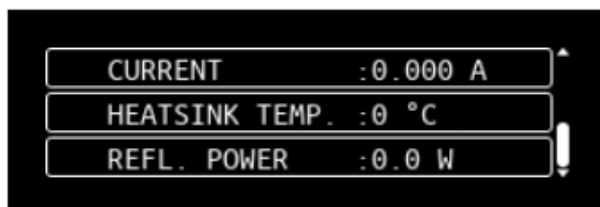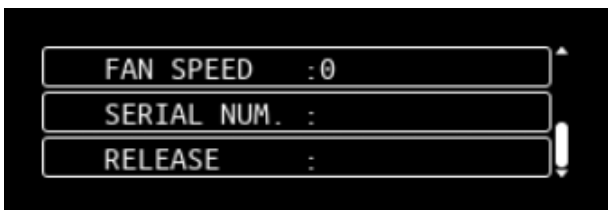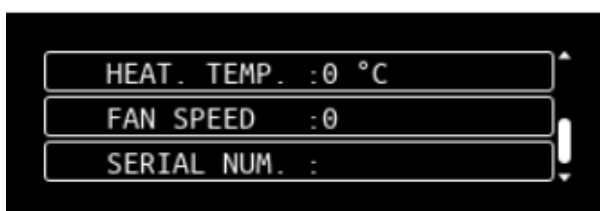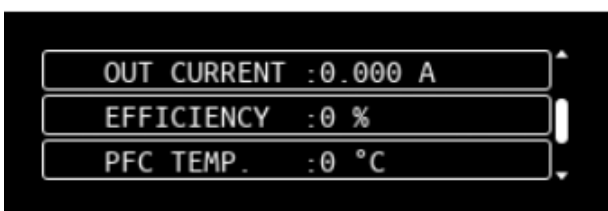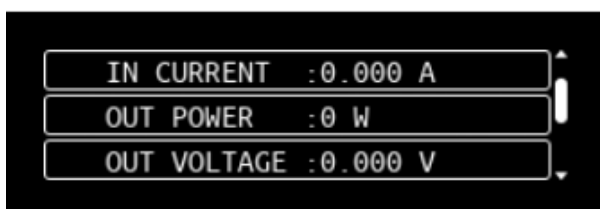
6.3.13. Com Menu

This menu displays a sub-menu:

```
COM1
COM2
ETH0
```

```
ETH1
DNS
NETWORK PORTS
```
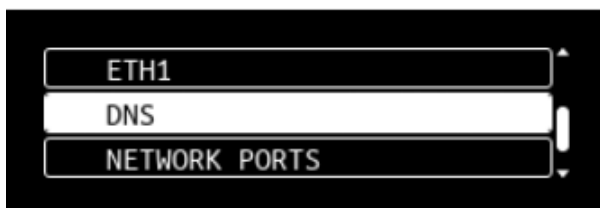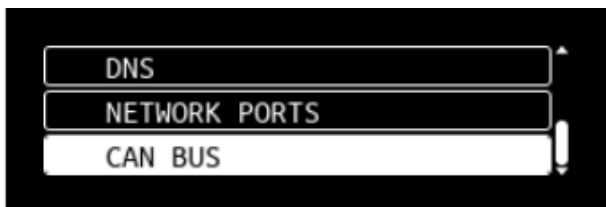
ⓘ *COM, Network Ports and CAN Bus menus are only visible in Expert mode.*

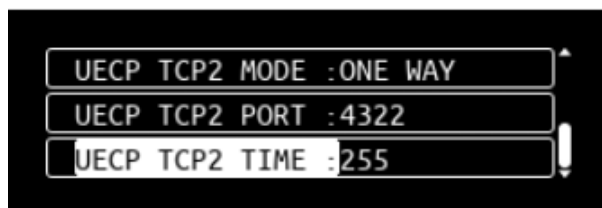### 6.3.13.1. COM1 / COM2 Sub-menus

ⓘ *This menu is only visible in Expert mode.*
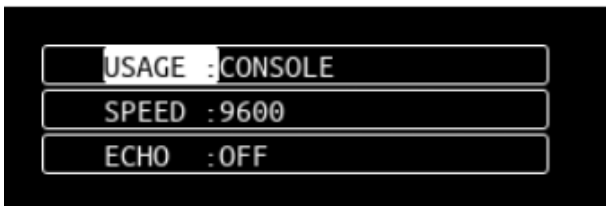
6.3.13.2. ETH0 / ETH1 Sub-menus
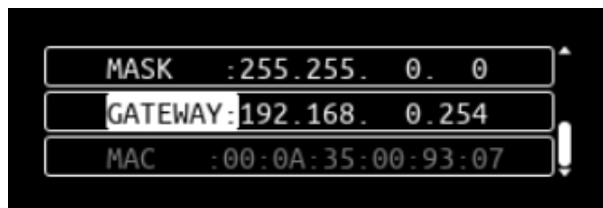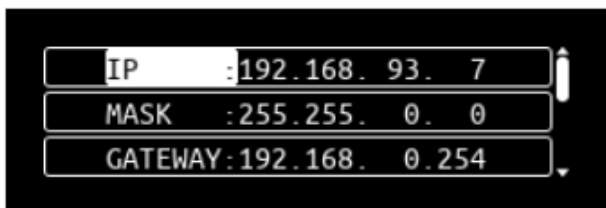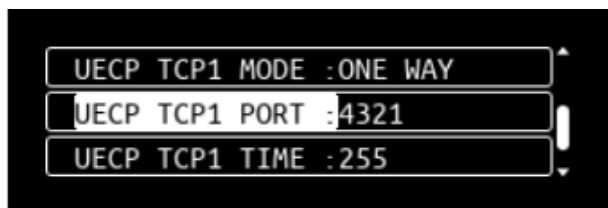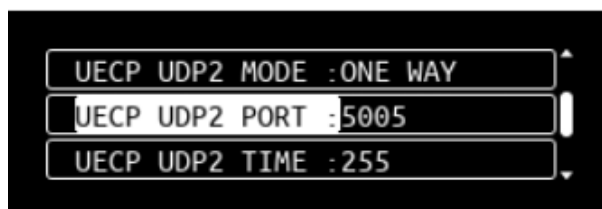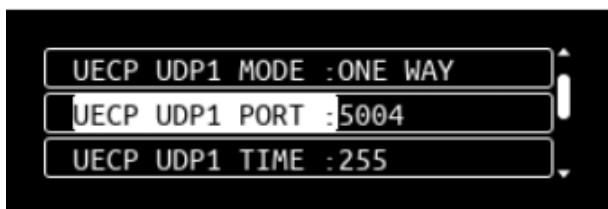

6.3.13.3. DNS Sub-menu
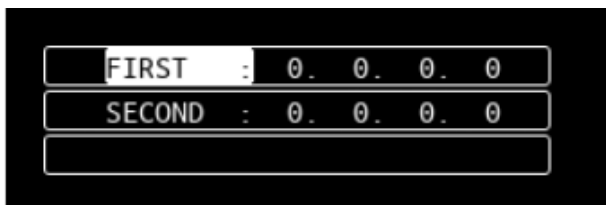
6.3.13.4. Network ports Sub-menu

ⓘ *This menu is only visible in Expert mode.*

```
UECP UDP1 MODE :ONE WAY
UECP UDP1 PORT :5004
UECP UDP1 TIME :255
```

```
UECP UDP2 MODE :ONE WAY
UECP UDP2 PORT :5005
UECP UDP2 TIME :255
```

```
UECP TCP1 MODE :ONE WAY
UECP TCP1 PORT :4321
UECP TCP1 TIME :255
```

```
UECP TCP2 MODE :ONE WAY
UECP TCP2 PORT :4322
UECP TCP2 TIME :255
```
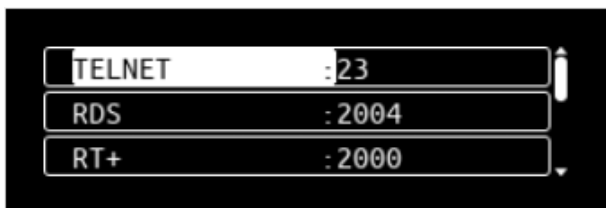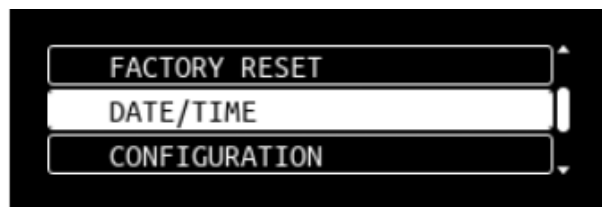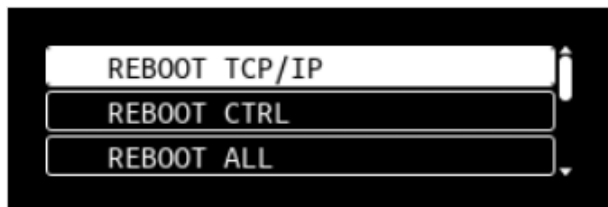
6.3.13.5. CAN Sub-menu

ⓘ *This menu is only visible in Expert mode.*

```
ID :0
```

6.3.14. System Menu

This menu displays a sub-menu:

```
REBOOT TCP/IP
REBOOT CTRL
REBOOT ALL
```

```
FACTORY RESET
DATE/TIME
CONFIGURATION
```

```
SD CARD
LICENSES
ABOUT
```
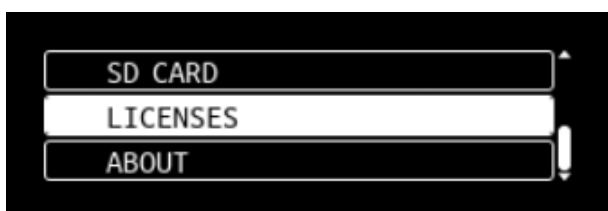
ⓘ *Reboot, Factory reset, Date/time, SD card et Licenses menus are only visible in Expert mode.*

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

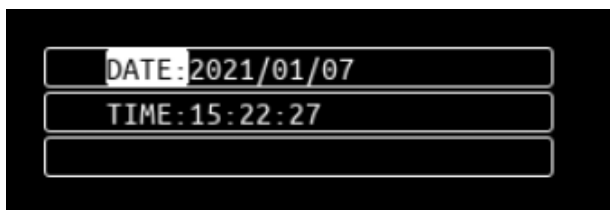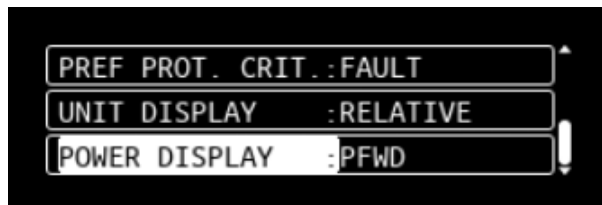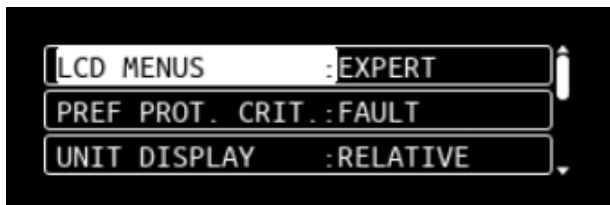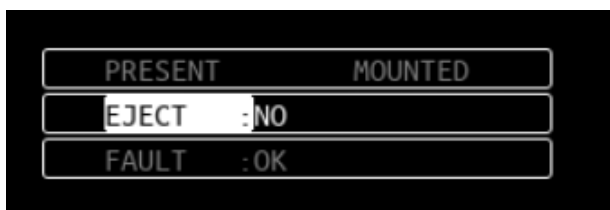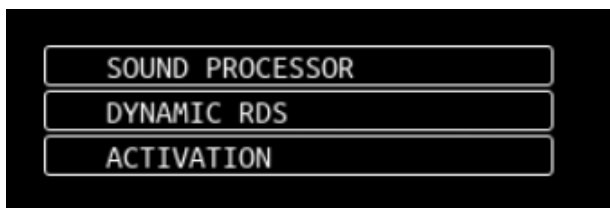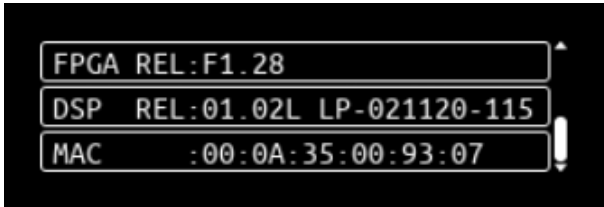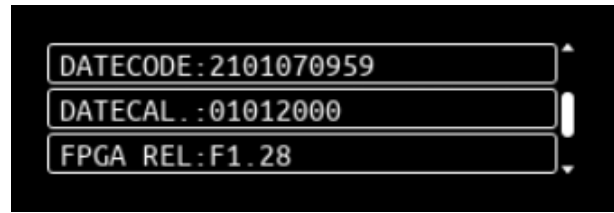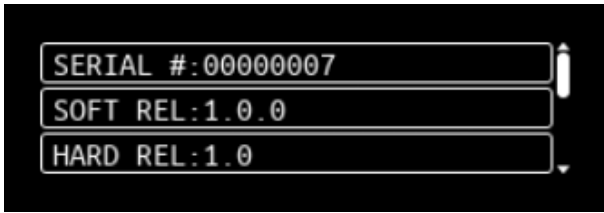ⓘ *This menu is only visible in Expert mode.*

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 power to 500 W, type:

```
TX.PWR=500
```

The answer: `500` 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.*

For help on a specific command, type:

```
HELP NOM.COMMANDE
```

Example:

```
HELP CONF.DEV.RDS
```

The answer will be:

```
Command CONF.DEV.RDS :
 MPX RDS level configuration in kHz:
 Argument is from 0.00 to 25.50.
 Default value is 4.00.
```

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 / 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 / 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 / OFF	Adds the local echo on the rear panel serial port
SYS.COM1.SPEED	R/W	75 / 150 / 300 / 600 / 1200 / 2400 / 48009600 / 19200 / 38400 / 57600 / 115200	Speed of the rear panel serial port 1
SYS.COM1.USAGE	R/W	CONSOLE / RDS / UECP	Sets the COM 1 port usage
SYS.COM2.ECHO	R/W	ON / OFF	Adds the local echo on the rear panel serial port
SYS.COM2.SPEED	R/W	75 / 150 / 300 / 600 / 1200 / 2400 / 48009600 / 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 / NO	Sets the input type for AES1, slot 1: NO=audio input; YES=MPX input
SYS.DIGMPX2	R/W	YES / NO	Sets the input type for AES2, slot 1: NO=audio input; YES=MPX input
SYS.DIGMPX3	R/W	YES / 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.ADDR	R/W	XXX.XXX.XXX.XXX X=[0…9]	ETH0 IP address
SYS.ETH0.AUTONEG	R/W	ON / OFF	Specifies if Ethernet 0 port speed and duplex mode are in auto-negociation
SYS.ETH0.DUPLEX	R/W	HALF / 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.ETH0.SPEED	R/W	10 / 100 / 1000	ETH0 speed in Mb/s
SYS.ETH1.ADR	R/W	XXX.XXX.XXX.XXX X=[0…9]	ETH1 IP address
SYS.ETH1.AUTONEG	R/W	ON / OFF	Specifies if Ethernet 1 port speed and duplex mode are in auto-negociation
SYS.ETH1.DUPLEX	R/W	HALF / 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.ETH1.SPEED	R/W	10 / 100 / 1000	ETH1 speed in Mb/s
SYS.FPGA.VERSION	R	xxx x=[A..Z;0..9]	FPGA Version

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.GPIO.CONF1	R/W	AMB / FAN1 / VOLT / HEAT / FAN2 / CURRENT / PWR	Sets the RC ANA3 on an analog GPIO board
SYS.GPIO.CONF2	R/W	AMB / FAN1 / VOLT / HEAT / FAN2 / CURRENT / 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 / ANA / STD / 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: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.AOIPDECODER	R		Gives the remaining time on a temporary AOiP license
SYS.KEY.FULLRDS	R		Gives the remaining time on a temporary Full RDS license
SYS.KEY.MPXOIPDECODER	R		Gives the remaining time on a temporary MPXoIP license
SYS.KEY.RDS_STATIC	R		Gives the remaining time on a temporary Dynamic RDS license
SYS.KEY.REM	R/W	REM	Generates a key to disable the specified option
SYS.KEY.SFM	R		Gives the remaining time on a temporary SmartFM license
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.KEY.SURESTREAM	R		Gives the remaining time on a temporary SureStream license
SYS.LCDMENUS	R/W	EASY / 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 / NOT PRES	Indicates if the optional memory required for SFN is present
SYS.NAME	R/W	XXXX X=[A…Z]	Equipment name
SYS.NBFAN	R		Number of fans

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NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.NBPA	R		Number of amplifiers
SYS.NBPSU	R		Number of PSU
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 / 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**.
SYS.RDS.VERSION	R		Release of the internal RDS encoder
SYS.RST	W		Reset of all parameters.
SYS.SDC.EJECT	R/W	YES / NO	Request the removal of the μSD card. This command can only be sent locally.
SYS.SDC.FAULT	R	OK / FAULT	Failed = read/write error on the μSD card
SYS.SDC.STATE	R	MOUNT / UNMOUNT	Gives the status of the μSD card. The state must be UNMOUNT before the card can be removed.
SYS.SDC.PRES	R	PRES / NOT PRES	Indicates whether a μSD 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 / PERCENT / 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

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.CURAUX	R	[0..99.999]	Measures the auxiliary PSU current in amperes
MEAS.DEV.CLIP	R	ON / 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.FAN2.SPEED	R	xxx.x x=[0..9]	Fan 2 speed in RPM
MEAS.FAN3.SPEED	R	xxx.x x=[0..9]	Fan 3 speed in RPM
MEAS.FAN4.SPEED	R	xxx.x x=[0..9]	Fan 4 speed in RPM
MEAS.HEAT1	R	[-125..+125]	Heatsink temperature in Celsius degrees
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.15M	R	-320.00…+320.00	Value of the MPX power over 15 minute
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	R	[0..9999]	Output PSU power in Watts
MEAS.PFWD.AVG	R	[0..9999]	Average measured power in Watts
MEAS.PIN	R	[0..9999]	Input PSU 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.SHORTCOUNTER	R	0…100	PSU short-circuit counter

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
MEAS.VOLT1	R	xxx.x x=[0..9]	Input voltage in Volts
MEAS.VOLT2	R	xxx.x x=[0..9]	PSU output voltage in Volts
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 p/t 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 / 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 / OFF	ON => 1 dB alarm, OFF => No alarm.
TX.ALARM.3DB	R	ON / OFF	ON => 3 dB alarm, OFF => No alarm.
TX.ALARM.VSWR	R	ON / OFF	ON => VSWR alarm, OFF => No alarm
TX.ALARM.VSWRTRIP	R	ON / 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 / 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 / OPEN	State of the safety loop
TX.LINK	R	OPEN / CLOSE	State of the CAN bus link
TX.MODE *	R	LOCAL / REMOTE	Single transmitter, indicates the local or remote mode
TX.NAME	R/W	XXXX X=[A…Z]	Transmitter name
TX.OPMODE	R/W	ON / 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 / NOT PRES	Indicates if the single transmitter output power is present

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
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"
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 / 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 / OFF	Single transmitter. Warning state of single transmitter

7.2.4. Configuration commands

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
CONF.10MOPE	R/W	AUTO / 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.AUDIO.LOSS.SELECT.AES1	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.AES2	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.AES3	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.ANA1	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.AOIP	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.MPX1	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.MPX2	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.PLAYER	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.SELECT.TUNER	R/W	ON / OFF	If on, the loss of the input triggers an Audio loss alarm
CONF.AUDIO.LOSS.TRIG	R/W	NONE / FAULT / WARNING	Gives the level of the alarm triggered by audio loss
CONF.CROSSFADE	R/W	0 ... 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 ... 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 ... 25.5	Sets the pilot excursion
CONF.DEV.RDS	R/W	0 ... 25.5	Sets the RDS excursion
CONF.DEV.RDS.COR	R/W	ON / OFF	Enables/disables the SmartFM RDS correction

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
CONF.DEV.SCA	R/W	0 ... 25.5	Sets the SCA excursion in kHz
CONF.FADEIN	R/W	0 ... 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.PILOT	R/W	-180..+180	Sets the pilot phase in degrees
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 / OFF	Enables/disables the SmartFM function
CONF.SFM.MAX	R/W	100…150	SmartFM max power
CONF.SFM.MAXIMIZER	R/W	OFF / SOFT / FULL	SmartFM maximizer value
CONF.SFM.MIN	R/W	10…100	SmartFM min power
CONF.SFM.MODE	R/W	STANDARD / SAVINGS / SAVINGS SOFT / BOOST / LIMITED	SmartFM strategy
CONF.SFM.PROC	R/W	-10…10	SmartFM drive level
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 / OFF	Enables/disables Sound processing
CONF.SP.PRESET.NAME	R/W	XXXX X=[0..9;A…Z]	Returns/edits the name of the current preset
CONF.SP.PRESET.NAME.*n*	R	XXXX X=[0..9;A…Z]	Returns/edits the name of preset *n*. *n* = 1 to 12
CONF.STATE.CLIP	R/W	ON / OFF	Enables/disables the Hard Clipper
CONF.STATE.LIMIT	R/W	ON / OFF	Enables/disables the FM limiter
CONF.STATE.MPXPWR	R/W	ON / OFF	Enables/disables the MPX Power limiter
CONF.SWITCHRF.DELAY.FAULT	R/W	[0..99]	Delay before switching in seconds (Double drive option)
CONF.SWITCHRF.DELAY.START	R/W	[0..99]	Delay before system startup in seconds (Double drive option)
CONF.SWITCHRF.OPE	R/W	AUTO / INTERNAL / EXTERNAL	RF input source for the Double drive option
CONF.VSWR_TRIG	R/W	WARNING / FAULT/WARN / 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 p/t of the unit	Comments
PA1.ALARM.AMB	R	ON / OFF	Ambient temperature alarm
PA1.ALARM.COMM	R	ON / OFF	Communication alarm
PA1.ALARM.CUR1	R	ON / OFF	Current alarm
PA1.ALARM.FAULT	R	ON / OFF	Fault type alarm
PA1.ALARM.HEAT1	R	ON / OFF	Heatsink temperature alarm
PA1.ALARM.TEMP1	R	ON / OFF	Temperature security alarm. When triggered, the RF is shut off.
PA1.ALARM.VOLT	R	ON / OFF	Input voltage alarm
PA1.ALARM.WARN	R	ON / 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 p/t of the unit	Comments
PSU1.ALARM.AMB		ON / OFF	Ambient temperature alarm
PSU1.ALARM.COMM		ON / OFF	Communication alarm
PSU1.ALARM.CUR1		ON / OFF	Input current alarm
PSU1.ALARM.CUR2		ON / OFF	Output current alarm
PSU1.ALARM.FAN1		ON / OFF	Fan 1 alarm
PSU1.ALARM.FAN2		ON / OFF	Fan 2 alarm
PSU1.ALARM.FAULT		ON / OFF	Fault type alarm
PSU1.ALARM.HEAT1		ON / OFF	Temperature alarm at the hottest point
PSU1.ALARM.MISSING		ON / OFF	Missing PSU alarm
PSU1.ALARM.SHORTCIRCUIT		ON / OFF	Short-circuit alarm
PSU1.ALARM.TEMP1		ON / OFF	Temperature alarm leading to the PSU stopping
PSU1.ALARM.VOLT1		ON / OFF	Input voltage alarm
PSU1.ALARM.VOLT2		ON / OFF	Output voltage alarm
PSU1.ALARM.WARN		ON / 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
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 / OFF	Communication state
PSU1.STAT.PRESENT	R	PRES / 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

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
ALARM.10MSWITCH	R	ON / OFF	Indicates there was a 10 MHz switch between the external source and the internal source.
ALARM.AES1	R	ON / OFF	ON => no signal on the input AES1
ALARM.AES2	R	ON / OFF	ON => no signal on the input AES2
ALARM.AES3	R	ON / OFF	ON => no signal on the input AES3
ALARM.AMB	R	ON / 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 / OFF	ON => no signal on the input ANA1
ALARM.AOIP	R	ON / OFF	ON => no signal on the input AoIP
ALARM.AUDIOLOSS	R	ON / OFF	Indicates a loss of audio
ALARM.BATLOW	R	ON / OFF	Indicates if the NVRAM battery's level is OK. ON: the NVRAM battery needs to be changed.
ALARM.COMM	R	ON / 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 / OFF	Indicates the current at the transmitter's input is over the max threshold.
ALARM.CUR2	R	ON / OFF	Indicates the current at the amplifier's input is over the max threshold. (1500 & 2000 W modules only)
ALARM.CUR3	R	ON / OFF	Indicates the current at the pre-amplifier's input is over the max threshold. (1500 & 2000 W modules only)
ALARM.EEPROM	R	ON / OFF	Indicates a communication error with the internal memory
ALARM.FAN1	R	ON / OFF	Fan 1 alarm; speed is too slow
ALARM.FAN2	R	ON / OFF	Fan 2 alarm; speed is too slow
ALARM.FAN3	R	ON / OFF	Fan 3 alarm; speed is too slow
ALARM.FAN4	R	ON / OFF	Fan 4 alarm; speed is too slow
ALARM.FAULT	R	ON / OFF	ON => critical alarm OFF => => No alarm (3 dB, VSWR)
ALARM.HEAT1	R	ON / OFF	ON => The heatsink temperature around MOSFET1 is over the set heatsink max temperature (CONF.HEAT.MAX)
ALARM.INT_TEMP	R	ON / OFF	ON => indicates the temperature of the internal sensor is higher than the max threshold
ALARM.INPUT_FAULT	R	ON / OFF	Indicates if there is an alarm on an input set as FAULT
ALARM.INPUTSWITCH	R	ON / OFF	Indicates if the current audio input corresponds to the highest priority channel
ALARM.LOGGING	R	ON / OFF	ON => two consecutive failed attempts to write on the µSD card
ALARM.MISSING	R	ON / OFF	Indicates a missing PSU
ALARM.MPX1	R	ON / OFF	ON => no signal on the input MPX1
ALARM.MPX2	R	ON / OFF	ON => no signal on the input MPX2
ALARM.PA	R	ON / OFF	ON => global alarm on amplifier
ALARM.PLAYER	R	ON / OFF	ON => no signal on the generator

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
ALARM.PLL	R	ON / OFF	Indicates whether the PLL is locked (OFF) or unlocked (ON)
ALARM.PRESSURE	R	ON / OFF	ON => indicates the pressure of the internal sensor is higher than the max threshold
ALARM.PSU	R	ON / OFF	ON => global alarm on PSU
ALARM.RDSSWITCH	R	ON / OFF	Indicates there was a RDS switch (auto mode only)
ALARM.SFM	R	ON / OFF	Indicates a SmartFM malfunction
ALARM.SFN	R	ON / 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.SHORTCIRCUIT	R	ON / OFF	Indicates a short-circuit on the PSU
ALARM.SWITCHRF.EXTRF.LOST	R	ON / OFF	Indicates a loss of the external RF input when the RF source is either external or auto (Double drive option)
ALARM.SWITCHRF.SWITCH	R	ON / OFF	Indicates an RF input switch (Double drive option)
ALARM.TEMP1	R	ON / OFF	Indicates a safety status because of the temperature
ALARM.VOLT	R	ON / OFF	ON => incorrect amplifier voltage
ALARM.VOLT1	R	ON / OFF	PSU input voltage in alarm
ALARM.VOLT2	R	ON / OFF	PSU output voltage in alarm
ALARM.VOLT.AUX	R	ON / OFF	Indicates if auxiliary voltage is offset by more than 10% of the set value
ALARM.WARN	R	ON / OFF	ON =>Internal Alarm (warnings) OFF=> No alarm. (fan, current, voltage, power supply, temperature, heatsink, ambient temp)
TX.ALARM.1DB	R	ON / OFF	Indicates a 1dB alarm
TX.ALARM.3DB	R	ON / OFF	Indicates a 3dB alarm
TX.ALARM.VSWR	R	ON / OFF	Indicates a VSWR alarm
TX.ALARM.VSWRTRIP	R	ON / OFF	Indicates a VSWR trip fault (the max number of RF cut/restarts has been reached)

7.2.8. Input commands

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

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
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 / R / ANY / 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 … 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 / FAULT / WARNING	Alarm generated upon loss of signal on the input
INPUT.AOIP.DRIVE	R/W	-6.00 … 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 / 15 / 16 / 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 / 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	0FF / 50 / 75	Sets the value of the pre-emphasis
INPUT.AOIP.PRESENCE	R	NONE / L / R / 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 / OFF	If ON, switches on loss of AES synchro
INPUT.AOIP.SW.SILENCE	R/W	L / R / ANY / 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 … 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
INPUT.AUDIOGEN.LEVEL2	R/W	-100.00 ~ 12.00	Audio level in dB
INPUT.AUDIOGEN.PREAC	R/W	0 / 50 / 75	Sets the value of the pre-emphasis
INPUT.AUDIOGEN.STATE	R	OFF / PILOT / L / R / L+R / L-R	Type of generated MPX signal

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
Commands for MPX1 and MPX2 inputs (n = 1 or 2)			
INPUT.MPXn.ALARM	R/W	NONE / FAULT / WARNING	Alarm generated upon loss of signal on the input
INPUT.MPXn.DRIVE	R/W	-6.00 ... 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 / 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 / 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 / FAULT / WARNING	Alarm generated upon loss of signal on the input
INPUT.PLAYER.DRIVE	R/W	-6.00 ... 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 / 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	0FF / 50 / 75	Sets the value of the pre-emphasis
INPUT.PLAYER.PRESENCE	R	OFF / L / R / 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 / 48 / 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 / OFF	If ON, switches on loss of AES synchro
INPUT.PLAYER.SW.SILENCE	R/W	L / R / ANY / 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

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.PLAYER.TRIM	R/W	-3.00 ... 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
Ohter commands			
INPUT.SLOT1.TYPE	R/W	NONE, AES1, AES2 o/ AES1+AES2	Sets the input type in the 1st slot
INPUT.SLOT2.TYPE	R/W	NONE / AES / ANA	Sets the input type in the 2nd slot
INPUT.SLOT3.TYPE	R/W	NONE / MPX	Sets the input type in the 3rd slot

7.2.9. Encoder commands

These commands are Ecreso FM only commands.

NAME	Access (R/W)	Possible value on the serial p/t 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.*n*	R/W	NONE / MPX1 / MPX2 / AIP / PLAYER / GENE / TUNER	*n* = 1 to 6. Sets up to 6 audio backup sources. 1=1st backup source
CODER.BACKUP.MODE.AUDIO	R/W	MANU / AUTO	Indicates whether backup audio is managed automatically or manually
CODER.BACKUP.RDS	R/W	NONE / AUTO / INTERNAL / AES1 / AES2 / MPX1 / MPX2 / AIP / TUNER	Set the RDS backup source
CODER.CURRENT.AUDIO	R	NONE / AES1 / AES2 / ANA1 / MPX1 / MPX2 / AIP / PLAYER / GENE / TUNER	Indicates the audio channel used by the exciter.
CODER.CURRENT.RDS	R	NONE / AUTO / INTERNAL / AES1 / AES2 / MPX1 / MPX2 / AIP / TUNER	Indicates the RDS channel used by the exciter.
CODER.CURRENT.SCA	R	NONE / AUTO / AES1 / AES2 / MPX1 / MPX2 / AIP / TUNER	Indicates the SCA channel used by the exciter.
CODER.MOST	R/W	STEREO / MONO / MONO_L / MONO_R	Configuration of the audio on MPX
CODER.SELECT.AUDIO	R/W	NONE / AES1 / AES2 / ANA1 / MPX1 / MPX2 / PLAYER / GENE / TUNER	Selects the audio channel
CODER.SELECT.RDS	R/W	NONE / AUTO / INTERNAL / AES1 / AES2 / MPX1 / MPX2 / AIP / TUNER	Selects the RDS channel. 'OFF' disables the RDS, 'AUTO' selects the RDS source according to the selected audio channel (see section 5.9).
CODER.SELECT.SCA	R/W	NONE / AUTO / AES1 / AES2 / MPX1 / MPX2 / AIP / TUNER	Selects the SCA channel. 'OFF' disables the SCA, 'AUTO' selects the SCA source according to the selected audio channel (see section 5.9).

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		
General commands		
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. O = 1/3 (Europe or Asia) ; 1 = 2 (America)
DSN commands		
RDS.CURDSN	From 1 to 10	Current DSN number
RDS.DSN	From 0 to 10	Sets the DSN number for which the following commands will be applied. 0 applies the commands on the current DSN. It this command is not sent, the DSN commands are applied to the current DSN. Example: RDS.DSN=2 → The work DSN is DSN 2 (regardless of the current DSN) RDS.DSN=2 → encoder response RDS.RADIOTEXT.TEXT= DSN 2 radiotext → DSN 2 radiotext is set
RDS.GS		Group sequence, separated by comma
RDS.LONG_PS	alphanumeric (32 bytes max)	Long PS text
PSN/EON commands		
RDS.PSN	From 0 to 9	Sets the PSN number for which the following commands will be applied. 0 applies the commands on the main PSN. It this command is not sent, or if the work DSN is modified, the PSN/EON commands are applied to the main PSN. Example: RDS.PSN=3 → the work PSN is PSN 3 (on the work DSN) RDS.PSN=3 → encoder response RDS.AF=89.7;101.6;98 → AF are et for PSN 3
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 5.12.2
RDS.PTYN	alphanumeric	PTYN
RDS.AF		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) Method A: list of frequencies separated by semi-colon. Ex: `RDS.AF=89.7;101.6;(98)` 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]`
EON_ELEMENTS	hexadecimal from 0 to 7F	Sent EON data. Each type of information is sent (1) or not (0). The hexadecimal value can be found with the following table:

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

Note: DSN and PSN must be set before using this command. Errors may occur:

- ERROR 1: writing error
- ERROR 2: invalid argument
- ERROR 3: writing error
- ERROR 4: reading error
- ERROR 5: EON PSN does not exist

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	Creates a new EON for the work DSN. Enter the EON number which has to be unique for the encoder.
		When the command is sent, the encoder returns the EON index number.
		Ex:
		`RDS.EON.ADD=108` → `creation of a new EON`
		`RDS.EON.ADD=8` → `encoder response: PSN #8 has been created`
Radiotext commands		
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
UECP commands		
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 p/t 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 / 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 / TA / TP / 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 / 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 / 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

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
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
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

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
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
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 / 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 / TA / TP / 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

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
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.PSn.CENTER	R/W	ON / OFF	Centered text, only when incrementing by word (n = 1 to 8)
RDS.PSn.DELAY	R/W	0...99	Delay between 2 consecutive screens (n = 1 to 8)
RDS.PSn.EN	R/W	ON / OFF	Enables/disables string n (n = 1 to 8)
RDS.PSn.INCREMENT	R/W	[0...8]	From 1 to 8: number of characters per screen. 0 = by word (n = 1 to 8)
RDS.PSn.REP	R/W	0...16	Sets the number of repetition of string n. 0=infinite (n = 1 to 8)
RDS.PSn.TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the nth PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ... (n = 1 to 8)
RDS.PSn.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

NAME	Access (R/W)	Possible value on the serial p/t of the unit	Comments
STAT.10M	R	PRES / NOT PRES	Indicates the presence of an external 10 MHz
STAT.1PPS	R	LOCK / UNLOCK	Indicates the presence of an external 1 PPS
STAT.BRD.SWITCHRF	R	PRES / NOT PRES	Indicates if the internal switching board for the Double Drive option is present
STAT.CLK	R	INTERNAL / EXTERNAL	Indicates the 10 MHz switch position
STAT.COMM	R	ON / OFF	State of the communication between the IP and control part
STAT.ETH0.DUPLEX	R	HALF / FULL	Current ETH0 mode
STAT.ETH0.SPEED	R	10, 100 / 1000	Measured ETH0 speed
STAT.ETH1.DUPLEX	R	HALF / FULL	Current ETH1 mode
STAT.ETH1.SPEED	R	10, 100 / 1000	Measured ETH1 speed
STAT.PLL	R	LOCK / UNLOCK	Indicates the state of the exciter PLL
STAT.PREFMAX	R	ON / OFF	ON: Max Reflected Power Safety overshoot
STAT.PRESENT	R	PRES / NOT PRES	PSU detection
STAT.PSUTYPE	R		PSU type
STAT.RF	R	PRES / NOT PRES	RF present at the output of the unit
STAT.SECPREF	R	ON / OFF	Indicates if the reflective protection safety is enabled
STAT.SFM.ACT	R	ON / OFF	SmartFM internal activation
STAT.SFM.MAX	R	[25…125]	SmartFM high limit
STAT.SFM.MIN	R	[25…125]	SmartFM low limit
STAT.SFM.PROCTEACH	R	NO / RUNNING / DONE	SmartFM learning phase stage
STAT.SWITCHRF.EXTRF	R	PRES / NOT PRES	Presence of an external signal on the internal switching board for the Double Drive option
STAT.SWRF	R	INTERNAL / EXTERNAL	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).

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

ⓘ *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.

ⓘ *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

Righ underneath, a series of indicators give an overview of the transmitter status:
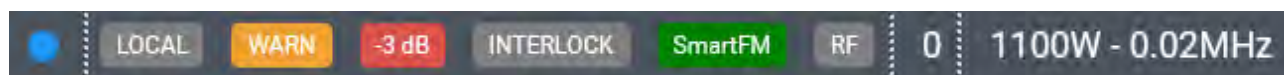
🔵	Current communication with the transmitter
LOCAL	Transmitter in standard mode
LOCAL	Transmitter in local mode
FAULT	Current fault alarm
WARN	Current warning alarm
-3DB	Current 3 dB alarm

1DB	Current 1 dB alarm
VSWR	Current VSWR alarm
INTERLOCK	Interlock not present
INTERLOCK	Interlock present
RF	RF disabled
RF	RF enabled
SmartFM	SmartFM disabled
SmartFM	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:
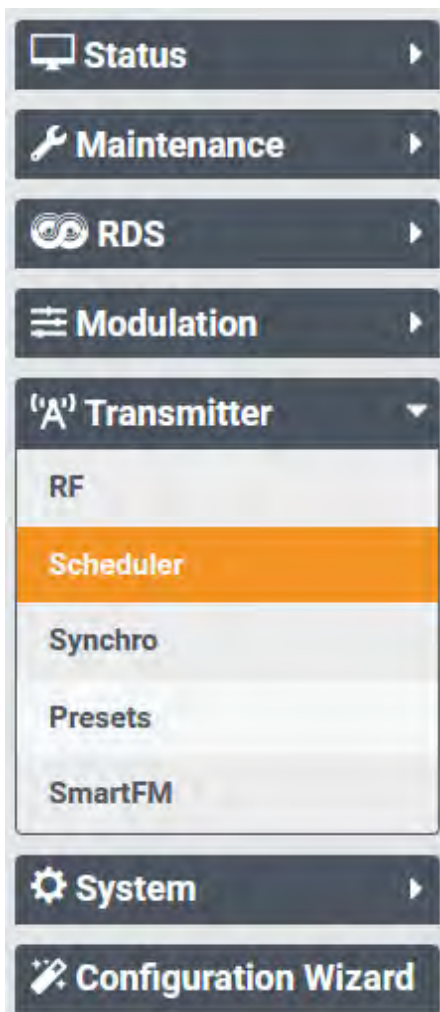
Pages are organized in eight sections:

- 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.
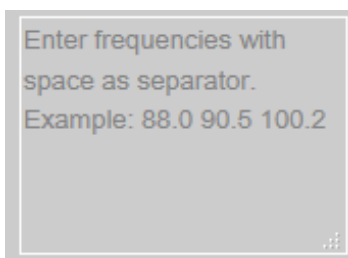
Some fields are followed by a question mark. Click on it to display contextual help, click outside the blue zone to hide it.
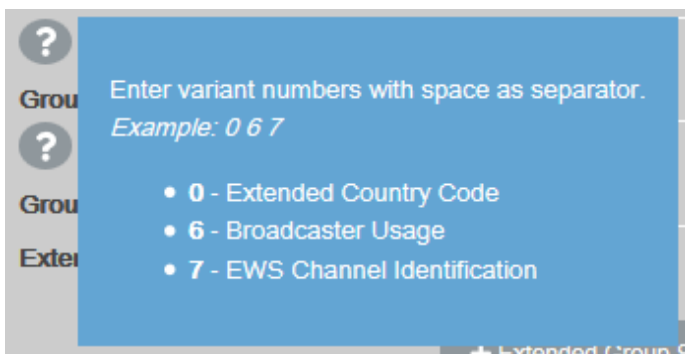
When a value has been modified but has not been saved yet, the background color of the field is yellow
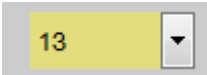
A red frame indicates a value that is out of range.

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.
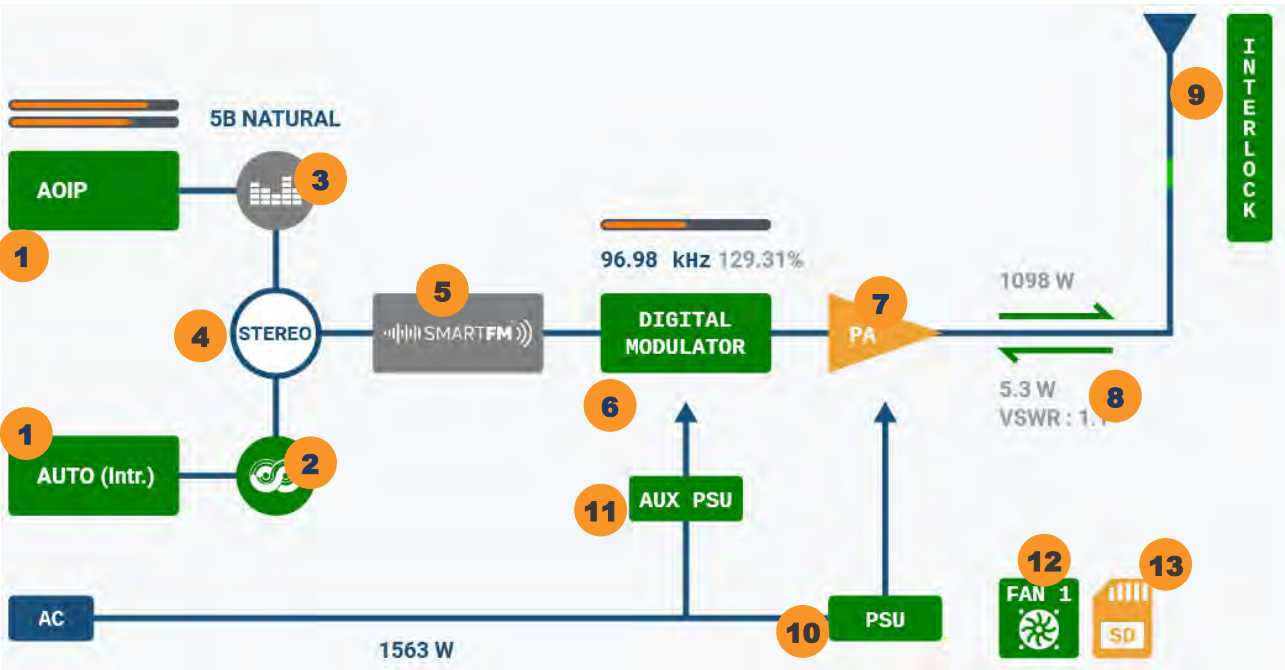
The synoptic gives the current status of the transmitter.

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

1 **Audio and RDS Inputs**	**2** **RDS**
Opens the Modulation / Synoptic Diagram page 🟢 OK 🟡 warning 🔴 fault ⚪ no signal	Opens the RDS / **Overview** page 🟢 OK 🟡 warning ⚪ none
3 **Sound Process**	**4** **Stereo**
Opens the Modulation / **Sound Processor** page The active preset name is displayed 🟢 Sound process enable ⚪ Bypass mode	Opens the Modulation / Synoptic Diagram page STEREO MONO NONE

5 **SmartFM**	**6** **Modulator**
Opens the Transmitter / **SmartFM** page	Opens the Modulation / **Stereo Encoder** page
🟢 on	🟢 OK
🟡 initialization	🟡 warning
⚪ off	🔴 fault
7 **Amplifier**	**8** **Power Setting / Reflected Power / VSWR**
Opens the Maintenance / **PA** page	Opens the Transmitter / RF page
🟢 OK	🟢 OK
🟡 warning	🟡 warning
🔴 fault	🔴 fault
⚪ stand-by / no communication	
9 **Antenna Interlock / Link**	**10** **Main power supply**
Opens the Transmitter / RF page	Opens the Maintenance / PSU page
🟢 link Opens and interlock closed	🟢 OK
⚪ link closed and interlock Opens	🟡 warning
	🔴 fault
	⚪ stand-by / no communication
11 **Auxiliary power supply**	**12** **Fan**
Opens the Maintenance / **Monitoring** page	Opens the Maintenance / **Monitoring** page
🟢 OK	🟢 OK
🟡 warning	🟡 warning / no communication
🔴 fault	
⚪ stand-by / no communication	
13 **SD card**	
Opens the System / **Global settings** page	
🟢 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:
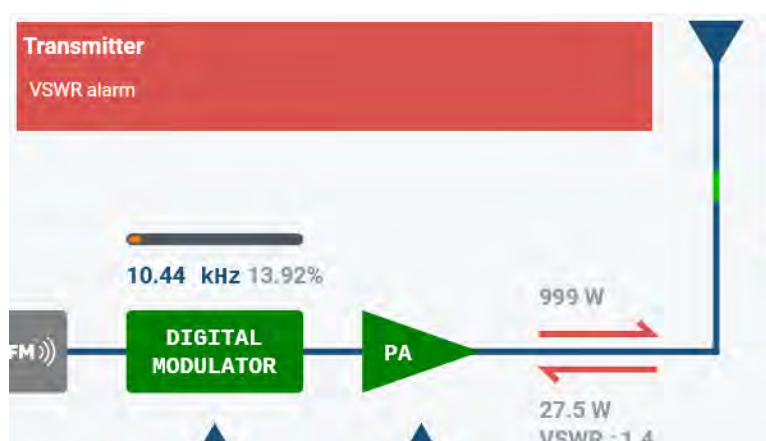
8.4.2. Advanced measurements

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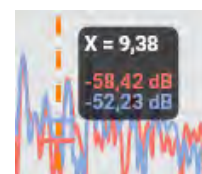
The input spectrum displays the current input by default, but a drop-down menu allows you to select another one.

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 PSU[1]
- 21 V aux current
- Global efficiency
- Mosfet efficiency
- Ambient temperature
- Heatsink temperature[1]
- Fan speed[1]
- Power supply temperature
- Main control board temperature
- Atmospheric pressure
- Electricity savings[2]
- Estimated consumption[2]

[1] *Available measurements vary depending on the power of the transmitter*

[2] *Readings available with the SmartFM option*

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

Click 🖌 Clear to purge the history log.

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.

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

- ℹ️ 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).

Example:

	Severity	Source	Date	Event	Description
ℹ️	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. .

Example:

	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**

Example:

	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.

The list can be deleting by clicking 🖌️ Clear .

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				
Estimated Consumption (with SmartFM / without SmartFM)	1422	/ 1422	W	Reinit
Warning! This command will turn off SmartFM for a few minutes.				
Efficiency	70	%		
Power Amplifier Efficiency	80	%		
PSU Efficiency	94	%		

Auxiliary Voltages		
Fault Alarm	●	
+5V	4,94	V
+12V	12,06	V
-12V	-12,17	V

Temperatures		
Ambient	32	°C ●
Amplifier Heatsink	69	°C ●
Power Supply	32	°C ●
Power Supply Heatsink	75	°C ●
Main Control Board	44	°C ●

Fans		
Fan	8430	rpm ●

Preamplifier		
Current	0,85	A ●
Voltage	11,92	V

Pressure		
Atmospheric Pressure	1017	hPa ●

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.

ⓘ *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			
Comm. State	●		
Fault Alarm	●		
Warning Alarm	●		
Power Amplifier Efficiency	84	%	
Supply Voltage	35,013	V	●
Current	6,734	A	●
Amplifier Heatsink	36	°C	●

Hardware Security	
Pre-amplifier Current Security	●
Reflected Power	●

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	1207	W
Input Power	1373	W
PSU Efficiency	94	%
Input Current	6,095	A ⚪
Input Voltage	225.000	V ⚪
Output Current	26,6	A ⚪
Output Voltage	45,395	V ⚪

System	
Serial Number	LBGEPE21CS20123629
Software release	2.45 2/3/21

Temperature / Fan		
PFC Temperature	32	°C ⚪
Heatsink Temperature	75	°C ⚪
Fan 1	9736	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!*

```
- ETH:0 - port:0

Buffer
0%              100%           200%
|||||||||||||||||||||||||||||||||  0.00    ms

Source IP Address            0.0.0.0
Source Port                  0
Loss of Connection Errors    0
Rx Packet Count              0
Rx Packet Size (bytes)       0
Rx BitRate (kb/s)            0.00
Rx Packet Interval           0.00
Dropped Packet Count         0
Duplicate Packet Count       0
Flooded Buffer Count         0
Resequenced Packet Count     0
Resequencer status           🟢
Rx Status                    🟢
Reset IP Decoder monitoring  ⟳ Reset
```
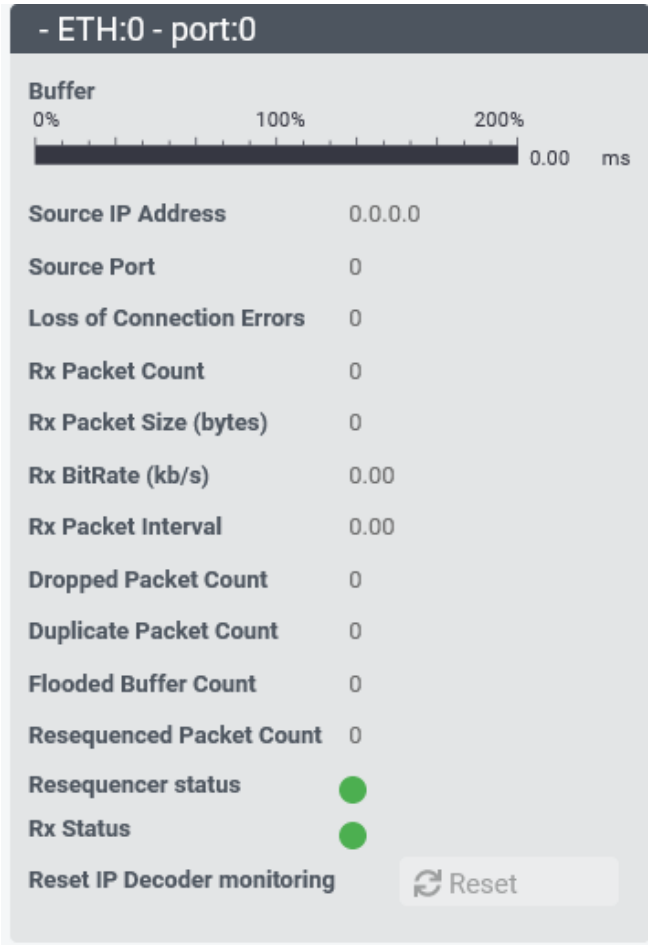
Please refer to parameter descriptions sections 5.8.6 for more details.

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. 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	0 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%	0	0%	0	●
0B	0%	0	0%	0	0%	0	●
1A	0%	0	0%	0	0%	0	●
1B	0%	0	0%	0	0%	0	●
2A	0%	0	0%	0	0%	0	●
2B	0%	0	0%	0	0%	0	●
3A	0%	0	0%	0	0%	0	●
3B	0%	0	0%	0	0%	0	●
4A	0%	0	0%	0	0%	0	●
4B	0%	0	0%	0	0%	0	●
5A	0%	0	0%	0	0%	0	●
5B	0%	0	0%	0	0%	0	●
6A	0%	0	0%	0	0%	0	●
6B	0%	0	0%	0	0%	0	●
7A	0%	0	0%	0	0%	0	●
7B	0%	0	0%	0	0%	0	●
8A	0%	0	0%	0	0%	0	●
8B	0%	0	0%	0	0%	0	●
9A	0%	0	0%	0	0%	0	●
9B	0%	0	0%	0	0%	0	●
10A	0%	0	0%	0	0%	0	●
10B	0%	0	0%	0	0%	0	●
11A	0%	0	0%	0	0%	0	●
11B	0%	0	0%	0	0%	0	●
12A	0%	0	0%	0	0%	0	●
12B	0%	0	0%	0	0%	0	●
13A	0%	0	0%	0	0%	0	●
13B	0%	0	0%	0	0%	0	●
14A	0%	0	0%	0	0%	0	●
14B	0%	0	0%	0	0%	0	●
15A	0%	0	0%	0	0%	0	●
15B	0%	0	0%	0	0%	0	●

With the Dynamic RDS option, information in the Global frame is the only one available.

Please refer to parameter descriptions sections 5.12.1 / 5.12.6 for more details.

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8.6.2. Global

Path: **RDS**/Global

Set RDS parameters on this page.

The page differs depending on the license.

Full RDS:

Global RDS parameters are described section 5.12.1.

Main configuration:

When the 'Clock time' box is checked, time is sent in the 4A group. There will be no need to add it the group sequence (see section 8.6.3).

Dynamic RDS:

Global RDS parameters are described section 5.12.6.

Main configuration:

When the 'Clock time' box is checked, time is sent in the 4A group. There will be no need to add it the group sequence.

Main DSN:

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.

PS Scroll:

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

8.6.3. DSN
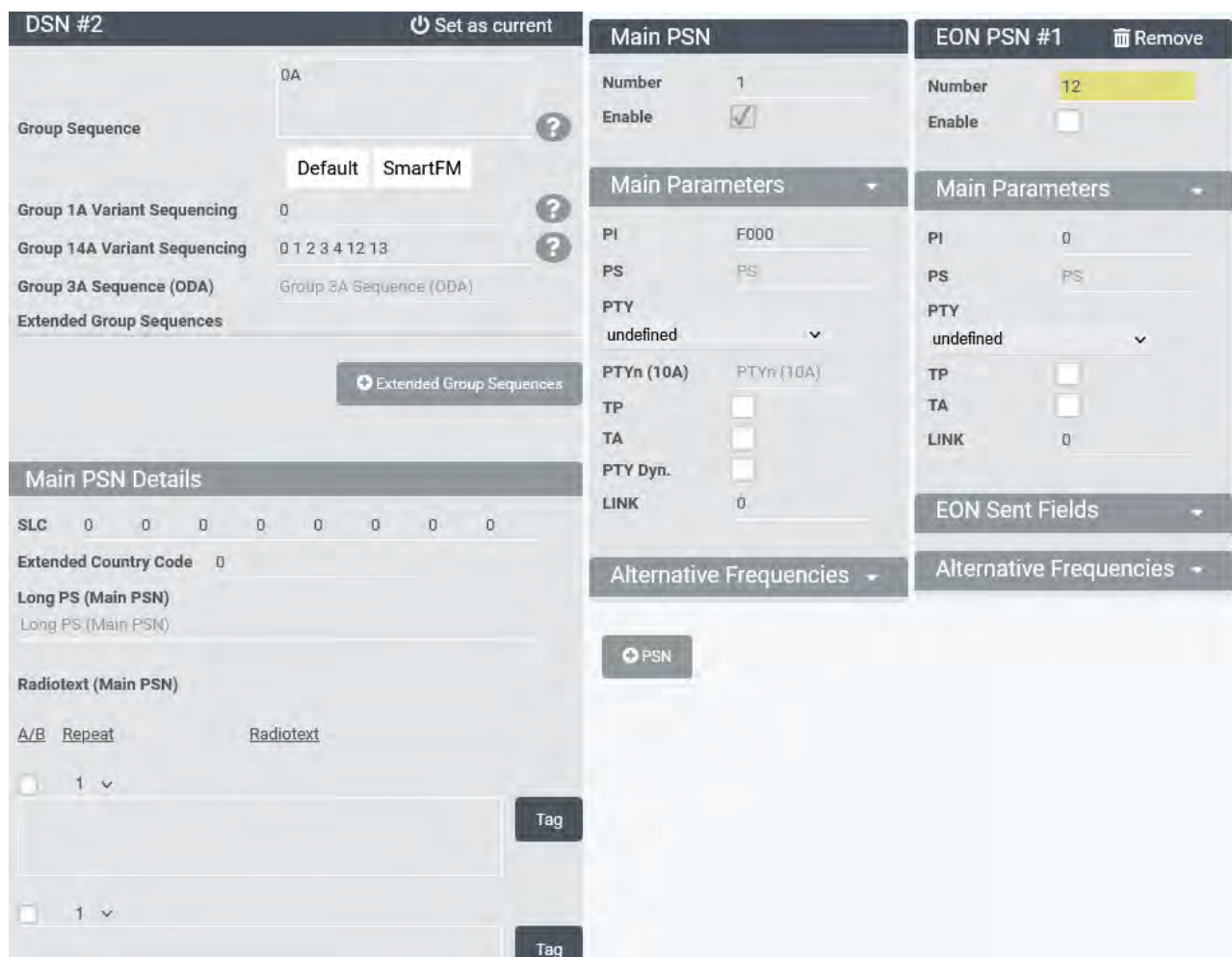
Path: **RDS**/DSN

ⓘ *This page is only available with the Full RDS option*

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.

ⓘ *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.*

Group sequences:
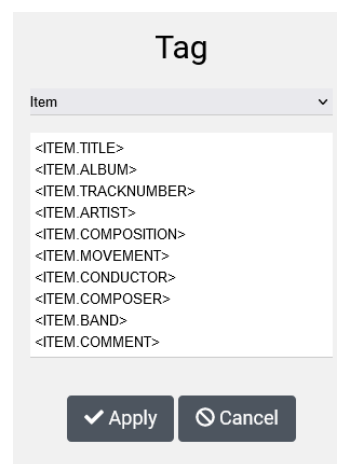
Enter the group sequence manually, or use the Default button to use the standard group sequence.

The SmartFM button is used to associate the ODA to a specific group. This ODA is useful when SmartFM is enabled and fields measurements are run with a SmartFM compatible unit such as the AUDEMAT FM MC5.

❗ ***When group 2A is added, set radiotext at the same time so it can be saved properly.***

Radiotext:
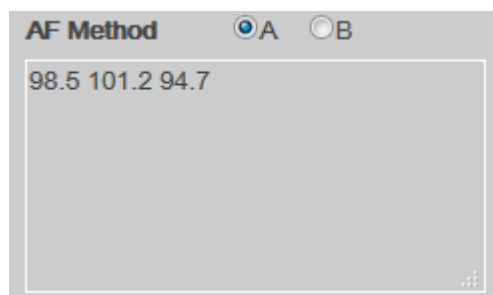
To insert dynamic data (<ITEM….>, <INFO…>…) in the radiotext, click the Tag button and choose from the list of available fields.
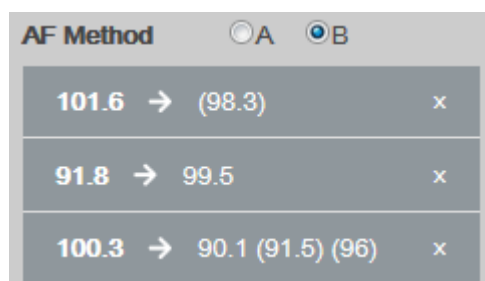
Alternative frequencies:

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. RT Plus

Path: **RDS**/RT Plus

Configuration

RDS Group	None ▾
RT Plus Auto Generation	✓

ITEM

\<ITEM.DURATION\>	DURATION	0
\<ITEM.TITLE\>	SONGTITLE	
\<ITEM.ALBUM\>	ALBUMNAME	
\<ITEM.TRACKNUMBER\>	TRACKNUMBER	
\<ITEM.ARTIST\>	ARTISTNAME	
\<ITEM.COMPOSITION\>	COMPOSITION	
\<ITEM.MOVEMENT\>	MOVEMENT	
\<ITEM.CONDUCTOR\>	CONDUCTOR	
\<ITEM.COMPOSER\>	COMPOSER	
\<ITEM.BAND\>	BAND	
\<ITEM.COMMENT\>	COMMENT	
\<ITEM.GENRE\>	GENRE	

PROGRAM

\<STATIONNAME.SHORT\>	STATIONNAMESHORT
\<STATIONNAME.LONG\>	STATIONNAMELONG
\<PROGRAMME.NOW\>	PROGRAMMENOW
\<PROGRAMME.NEXT\>	PROGRAMMENEXT
\<PROGRAMME.PART\>	PROGRAMMEPART
\<PROGRAMME.HOST\>	PROGRAMMEHOST
\<PROGRAMME.EDITORIAL_STAFF\>	EDITORIALSTAFF
\<PROGRAMME.FREQUENCY\>	FREQUENCY
\<PROGRAMME.HOMEPAGE\>	HOMEPAGE
\<PROGRAMME.SUBCHANNEL\>	SUBCHANNEL

DESCRIPTOR

\<PLACE\>	PLACE
\<APPOINTMENT\>	APPOINTMENT
\<IDENTIFIER\>	IDENTIFIER
\<PURCHASE\>	PURCHASE
\<GET_DATA\>	GETDATA

INTERACTIVITY

\<PHONE.HOTLINE\>	PHONEHOTLINE
\<PHONE.STUDIO\>	PHONESTUDIO
\<PHONE.OTHER\>	PHONEOTHER
\<SMS.STUDIO\>	SMSSTUDIO
\<SMS.OTHER\>	SMSOTHER
\<EMAIL.HOTLINE\>	EMAILHOTLINE
\<EMAIL.STUDIO\>	EMAILSTUDIO
\<EMAIL.OTHER\>	EMAILOTHER

RT Plus parameters are described section 5.12.3.

Dynamic fields presented on this page 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.*

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. ODA

Path: **RDS**/ODA

ⓘ *This page is only available with the Full RDS option*

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

ⓘ *This page is only available with the Full RDS option*

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).*

8.7. Modulation

8.7.1. Synoptic diagram

Chemin: **Modulation**/Synoptic diagram

This page gives a detailed view of the audio sources.

1	**Audio input** Opens the Modulation / Input settings page 🟢 OK 🟡 warning 🔴 fault ⚪ no signal Inputs are ordered by importance: main 1st from the top, then 1st backup…	**2**	**Sound processor** Opens the page Modulation / **Sound Processor** The name of the current preset is displayed. 🟢 Sound processor enabled ⚪ bypass Mode
3	**RDS Sources** Opens the Modulation / **Stereo Encoder** page 🟢 OK 🟡 warning ⚪ none Main source is 1st, then backup	**4**	**SCA Source** Opens the Modulation / **Stereo Encoder** page 🟢 OK 🟡 warning ⚪ none

⑤	**Stereo** Opens the Modulation / **Stereo Encoder** page STEREO MONO NONE	⑥	**Deviations**, in kHz and %

8.7.2. Input settings

Path: **Modulation**/Input Settings
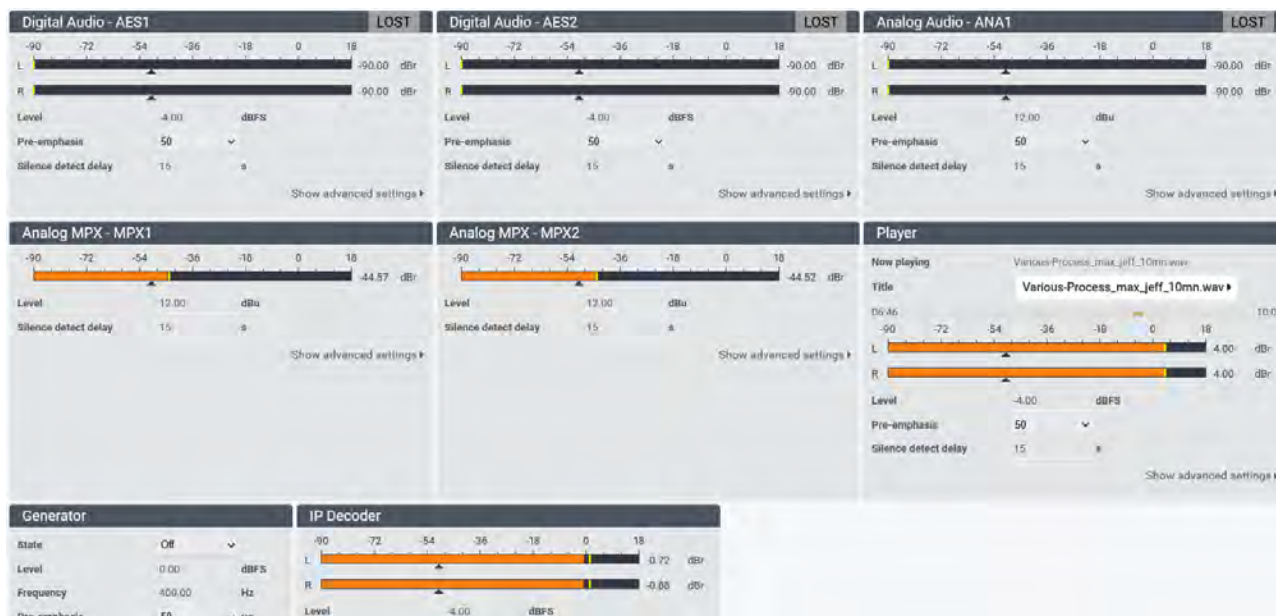
Set up the inputs on this page. Refer to the description of the parameters in section 5.8 for more details.

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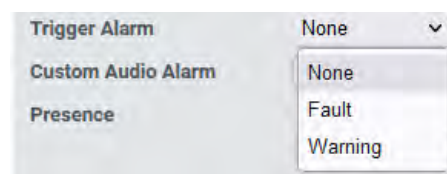
    "ON-AIR" in green appears in the header of the on-air input. It will be grey if there was loss of audio and no switch to another input.

    "LOST" 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 µSD card, or from a stream.

! *The player's internal level is attenuated by 4dB.*

With a file:

Select the file mode and click on the file name ("Title") to manage the content of the µSD drive.
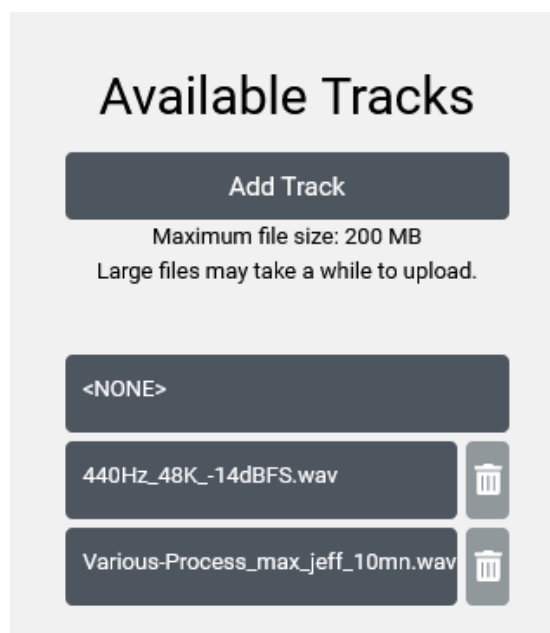
Click on "Add track" and browse your files to select the desired file.

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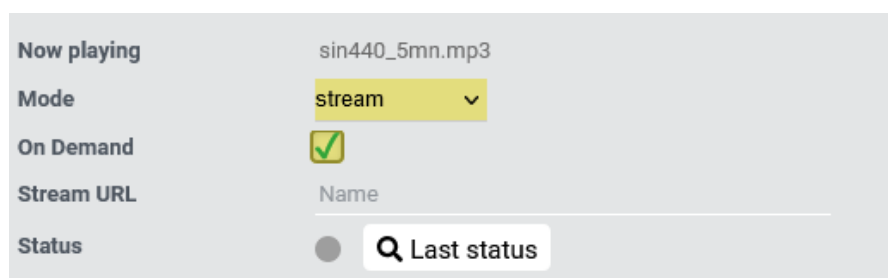
! ***The µSD card is used for various features, including data storage required for the warranty. To allow enough space for this data storage, make sure the audio backup files are less than 10 Gb.***

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

<u>With a stream:</u>

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

Select the stream mode and set the stream URL.

Whether with a stream or a file, audio can be permanently active or only "on demand":

On-demand audio backup will only be activated in the event of a fault on the main source, a few seconds before the scheduled switchover. In this way, when switching, the player is already fully functional.

Example:

If the main source is no longer available, and the silence detection delay is set to 15 seconds, the player will switch on after 13 seconds of silence.

IP decoder:

ℹ️ *Advanced settings (framed above) are hidden by default.*

If AES67 decoding is selected, only compatible algorithms are available (linear PCM).

8.7.3. Stereo encoder

Path: **Modulation**/Stereo Encoder

ℹ️ *Advanced settings (framed above) are hidden by default.*

On this page, set:

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

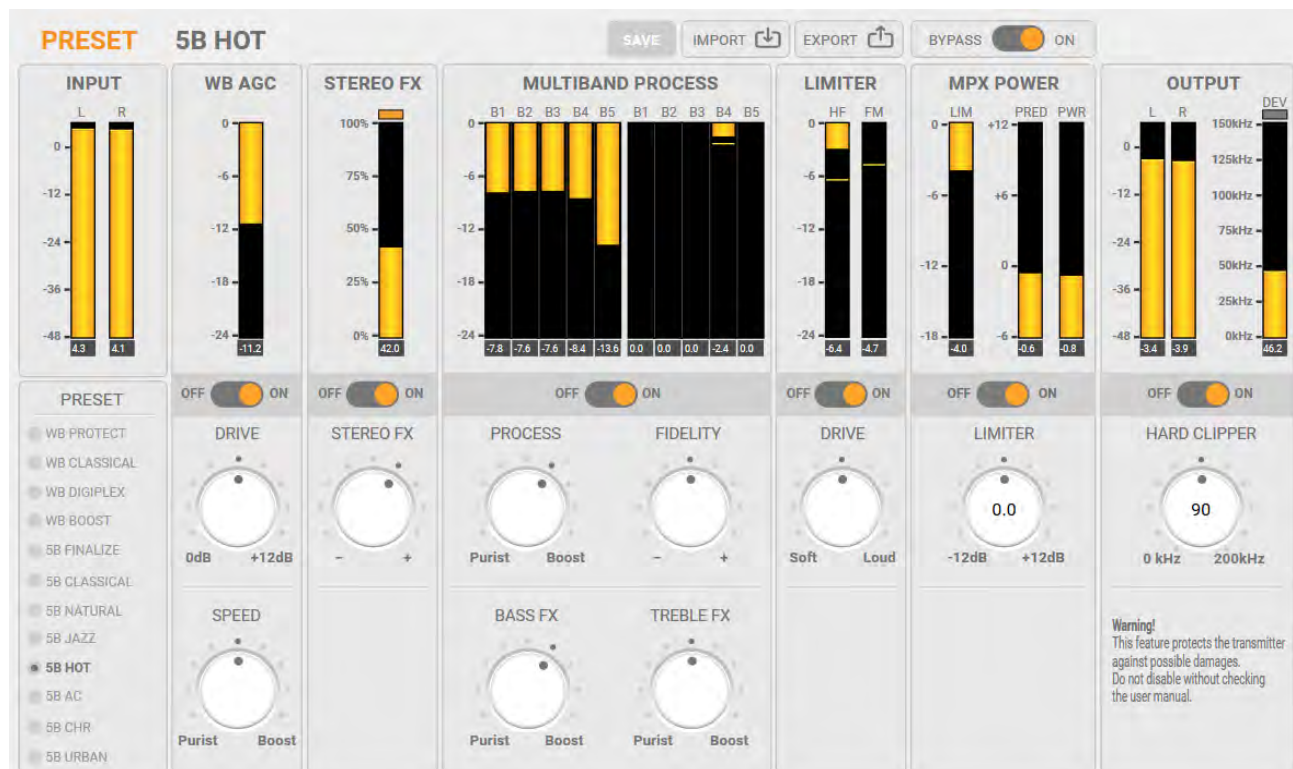Please refer to parameter descriptions sections 5.9 for more details.

8.7.4. FSK

Path: **Modulation**/FSK

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

ⓘ *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

On this page:

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

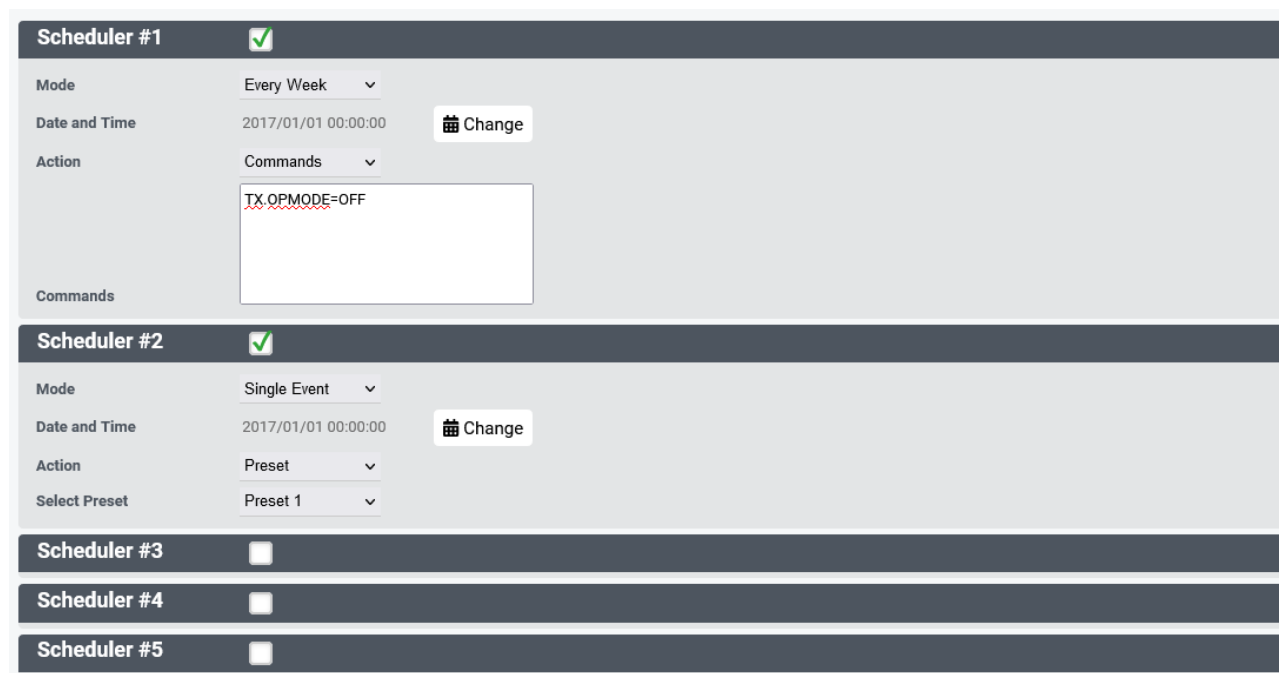Please refer to parameter descriptions sections 5.5 for more details.

Indicators show:

RF presence	⚪	RF not detected
	🟢	RF detected
Trip VSWR alarm	⚪	No alarm
	🔴	Current VSWR trip alarm
Link	⚪	Link disabled
	🟢	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

Scheduler #1 ✅

Mode	Every Week
Date and Time	2017/01/01 00:00:00 📅 Change
Action	Commands
	TX.OPMODE=OFF
Commands	

Scheduler #2 ✅

Mode	Single Event
Date and Time	2017/01/01 00:00:00 📅 Change
Action	Preset
Select Preset	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.

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