www.elber.com
elber@elber.it

ELBER
WIRELESS INSIGHT

XPM

User Manual

System: XPM Portable link
Release: 1.0
Author: Giancarlo De Mattei

Summary.

1 Figure Index.

2 Table's index.

3 Safety regulations.

The personnel engaged with the installation, the use and the maintenance of the equipment has to be familiar with the theory and practice of first aid.

3.1 Treatment of electrical shocks.

When the victim loses his consciousness*:*

Put into practice the following first aid principles.

- Position the victim lying down on his back on a rigid surface.
- Open the respiratory airways lifting up the neck and pushing down the front (Fig. 1).
- If necessary, open the mouth to check the respiration.
- In case the victim doesn't breath, start immediately the artificial respiration (figure 2): bend the head, close the nostrils, attach the mouth to the victim one's and do 4 quick mouth-to-mouth respirations

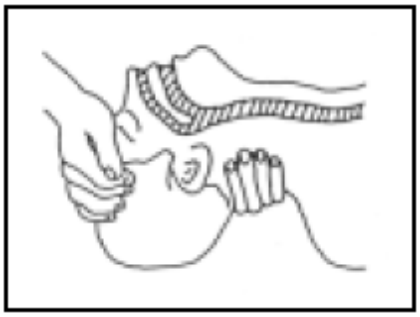


FIGURE 1: RESUSCITATION DETAIL – 1.

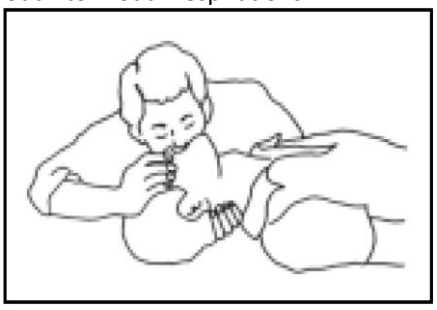


FIGURE 2: RESUSCITATION DETAIL – 2.

- Check the pulsation (Figure 3); in case of absence of pulsation, start immediately the cardiac massage (Figure 4) pressing the breastbone in the middle of the thorax (Figure 5).

FIGURE 3: RESUSCITATION DETAIL – 3.

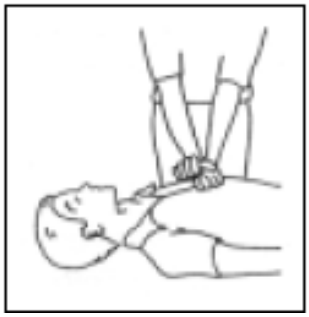


FIGURE 4: RESUSCITATION DETAIL – 4.

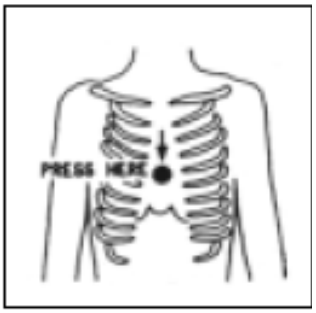


FIGURE 5: RESUSCITATION DETAIL – 5.

- When there is only one rescuer, he has to maintain a rhythm of 15 compressions alternated with 2 quick respirations.
- In case there are two rescuers, the rhythm should be one respiration each 5 compressions.
- Do not interrupt the cardiac massage during the artificial breathing
- Call a doctor as soon as possible

When the victim is conscious

- Cover up the victim with a blanket.
- Try to calm down the victim.
- Unbutton the cloche and lay down the victim.
- Call a doctor as soon as possible.

3.2 Treatment of electrical burns.

Large burns and cuts of the skin

- Cover up the interested area with a clean sheet or cloth.
- Do not open the blisters; remove the fabric and the parts of the clothes attached to the skin; apply a suitable ointment.
- Treat the victim according to the type of accident.
- Take the victim to the hospital as soon as possible.
- When the arms and legs are affected keep them raised.

When there is no doctor available within an hour and the victim is conscious and does not retch, give a liquid solution containing salt and sodium bicarbonate: 1 teaspoon of salt and half a teaspoon of sodium bicarbonate for each 250 ml of water.
Have the victim sip half a glass of the solution for four times and for 15 minutes.
Stop when retching.
Do not give any alcoholics
Less serious burns

- Apply cold (not frozen) gauzes using a clean as possible cloth.
- Do not open the blisters; remove the fabric and the parts of the clothes attached to the skin; apply a suitable ointment.
- When necessary, put on clean and dry clothes.
- Treat the victim according to the type of accident.
- Take the victim to the hospital as soon as possible.
- When the arms and legs are affected keep them raised.

4 General description.

The portable microwave system XPM is a digital link working either in COFDM technique (standard DVB-T/T2). It is a split type (2 boxes) system composed by a RF head, waterproof IP65 (transmitter or receiver) and a rack mount lightweight control unit, whose name is Cleber (see Figure 6). Cleber can host up to six different boards plug-in, such as encoders, decoders, modulators or demodulator with standards DVB-T and DVB-T2. Encoders and decoders can be programmed for both MPEG-2 and H.264 compression, High and Standard Definition, 4:2:0 and 4:2:2 for high quality audio/video contribution.

The RF box is installed on a tripod, for simplex transmission, and a base plate for two boxes with orthomode transducer is available for double simplex and full duplex configurations. Moreover, the transmitter can be equipped with an external power amplifier box to get higher distances. Connection between control units and RF heads is performed through a RG-216 cable with LEMO connectors, with distance of up to 300 meters.

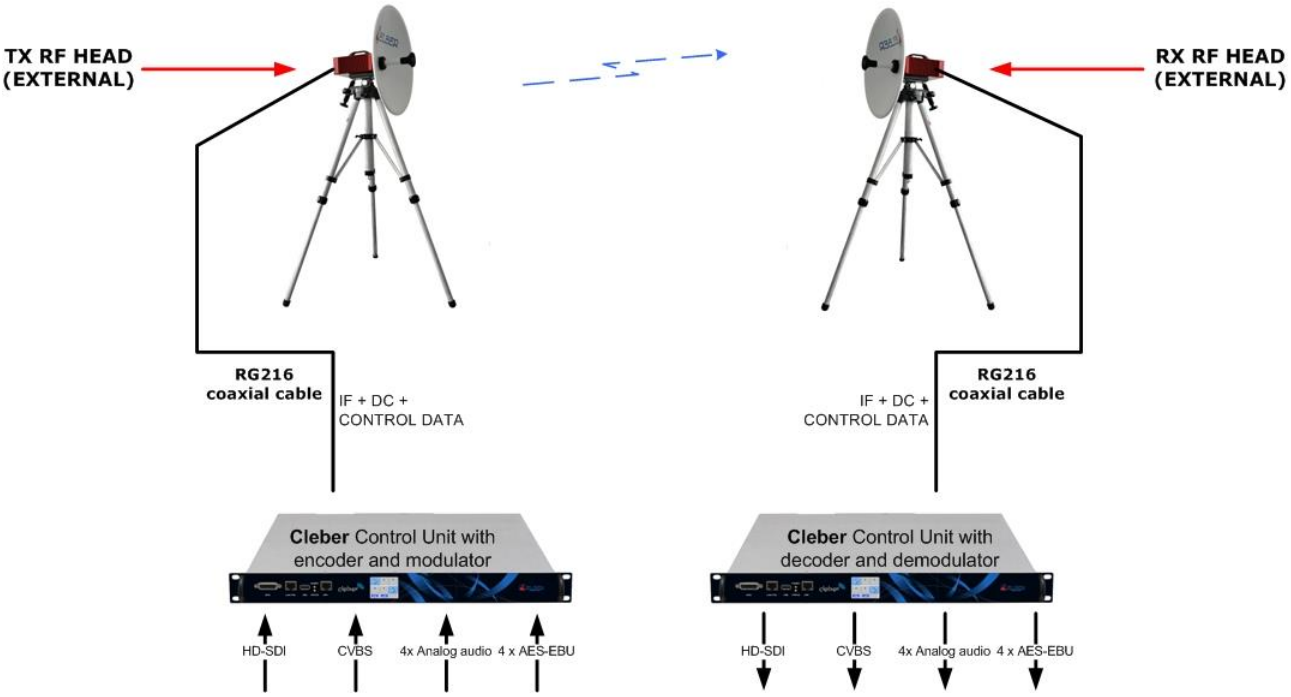


FIGURE 6: XPM 1+0 BLOCK DIAGRAM.

5 Technical Specifications.

5.1 System General Specifications.

TABLE 1: GENERAL SPECIFICATIONS

Operative Temperature Range	-10°C ÷ 55°C
Management	Control unit: Front panel (Display TFT touchscreen) SNMP Web browser Head: Front panel (Display TFT touchscreen)
Firmware upgrade	USB, WEB, FTP
Power supply	Version 1: AC 90-260 V~ 50/60 Hz IEC 320 Swappable Version 2: AC 90-260 V~ 50/60 Hz IEC 320 and DC 22 ÷ 65 V 2 pins socket Swappable Version 3: AC 90-260 V~ 50/60 Hz IEC 320 and DC 10 ÷ 36 V 2 pins socket Swappable Version 4: Dual redundant AC 90-260 V~ 50/60 Hz IEC 320 Hot swappable Version 5: Dual redundant DC 10 ÷ 36 V 2 pins socket Hot swappable Version 6: Dual redundant DC 22 ÷ 65 V 2 pins socket Hot swappable
Max power consumption	150 W
Max dissipation	160 W

5.2 System Performances.

TABLE 2: TRANSMITTER PERFORMANCES

Operating Frequency	6.9-7.5 GHz; 10.2-10.7 GHz
Frequency Span	Up to 600 MHz
Channel Spacing	Upon customer request
Number of RF channels	Depending on channel spacing
Frequency Stability	2.5 ppm
Frequency Resolution	
IF frequency	70 MHz
IF/DC connector	Standard: Coaxial LEMO (ERA.3T.275.CTL) Optional: Triax
Output RF connector	N(f)
RF output Return Loss	> 20 dB
Spurious output content	< -65 dB

TABLE 3: RECEIVER PERFORMANCES

Operating Frequency	6.9-7.5 GHz; 10.2-10.7 GHz
Frequency Span	Up to 600 MHz
Channel Spacing	Upon customer request
Number of RF channels	Depending on channel spacing
Frequency Stability	2.5 ppm
Frequency Resolution	

IF frequency	70 MHz
IF/DC connector	Standard: Coaxial LEMO (ERA.3T.275.CTL) Optional: Triax
Input RF connector	N(f)
RF input Return Loss	> 20 dB
Image rejection	> 60 dB

5.3 Mechanical Specifications.

5.3.1 Control unit.

TABLE 4: CONTROL UNIT MECHANICAL SPECIFICATIONS

Rack	Standard 19" 1U
Width	482.5 mm
Height	43.65 mm
Depth	380.65 mm (without connectors) 357.80 mm (without connectors and front hangers)
Weight	< 7 Kg

5.3.2 Head.

TABLE 5: RF HEAD MECHANICAL SPECIFICATIONS

Width	240 mm
Height	117 mm
Depth	250 mm (without connectors)
Weight	< 12 Kg

6 Installation.

1. Open the package box, using a cutting tool, ensuring no damage is done to the content. Verify any damage caused during transportation.
2. Check the package contents. It should contain:
    - XPM/T transmitting head.
    - (Optional) amplifier/booster module with additional head support (booster version) and booster power supply cable.
    - XPM/R receiving head.
    - Two Tripods complete with Panoramic Heads.
    - Two Feeders.
    - Two Parabolic Dishes.
    - CLEBER-RK610 transmitter control unit.
    - CLEBER-RK610 receiver control unit.
    - AC-DC power cords.
    - Two RG-216/TRIAX cables used to connect the RF heads with the control units.
    - USB Stick with TOKEN and User Manual.
    - Password/Login details.
3. Install the control units in a cabinet rack if available. The space required is 1 rack unit.
4. Verify that there is sufficient clearance on both sides of the equipment in order not to restrict air flow.
5. No heat sources should be placed too close to the equipment: the proper functioning is warranted for ambient temperature between -5°C to +60°C.
6. Open tripods locking the desired position using the appropriate brake.

FIGURE 7: TRIPOD INSTALLATION A

FIGURE 8: TRIPOD INSTALLATION B

FIGURE 9: TRIPOD INSTALLATION C

7. If you have ordered the optional amplifier module, please jump to point 10
8. Insert the transmitting head in the relative tripod (Figure: 10), locking the position through the appropriate brake. (Figure 11).

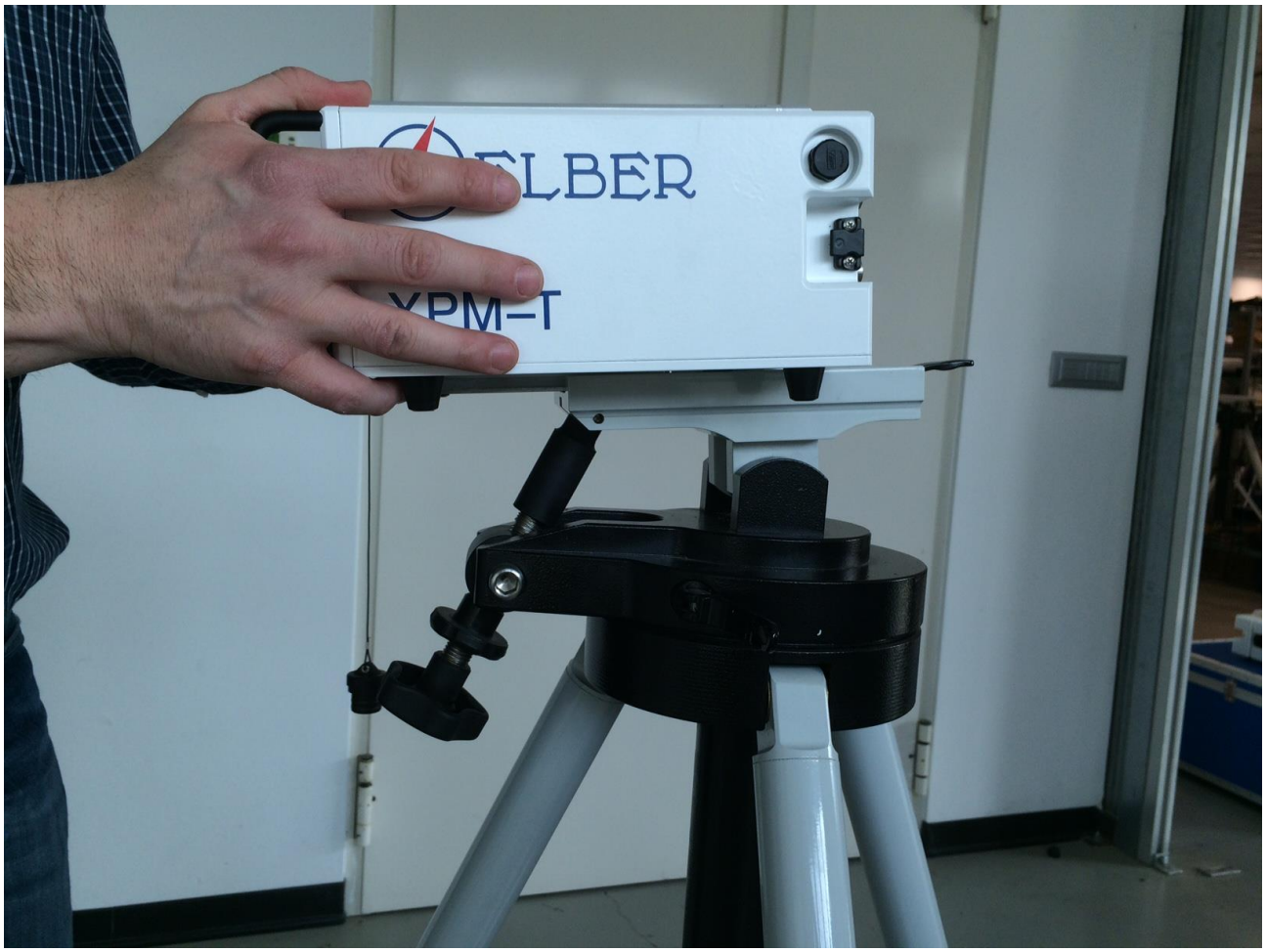


FIGURE: 10 HEAD INSERTION.

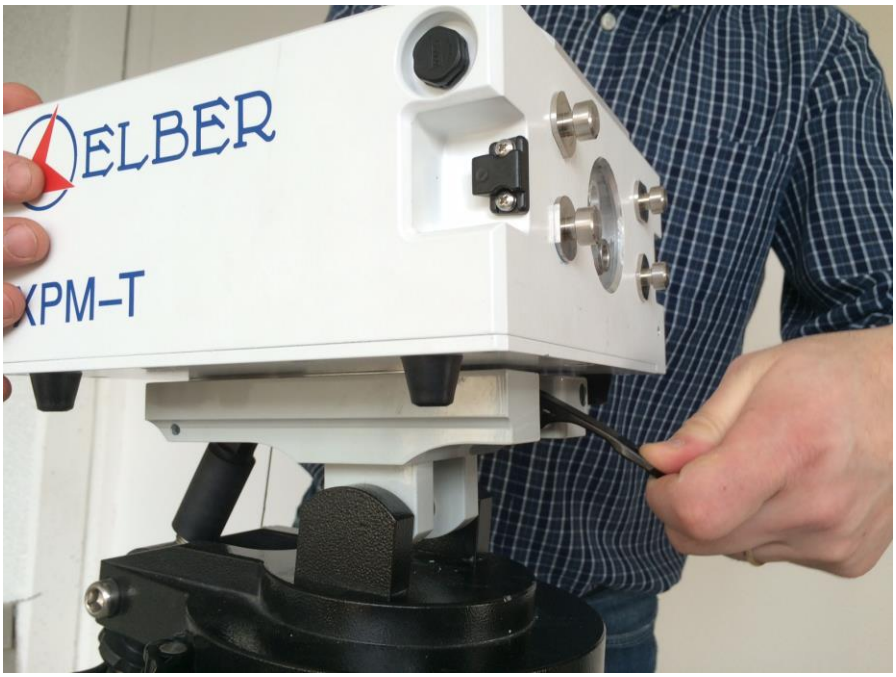


FIGURE 11: HEAD FIXING

9. Jump to point 14
10. Install the additional head support (booster version) as shown in Figure 12 and fix it with the appropriate brake (Figure 13).

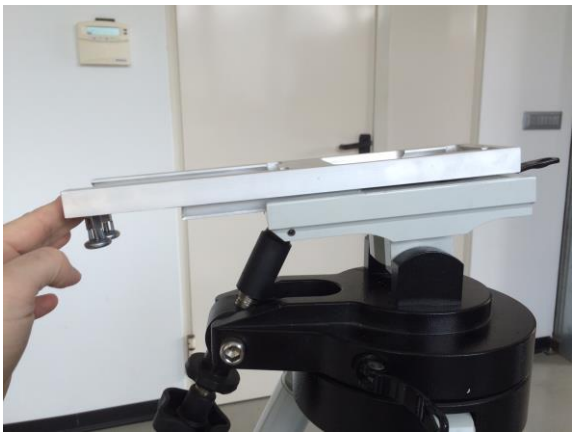


FIGURE 12: HEAD SUPPORT BOOSTER VERSION

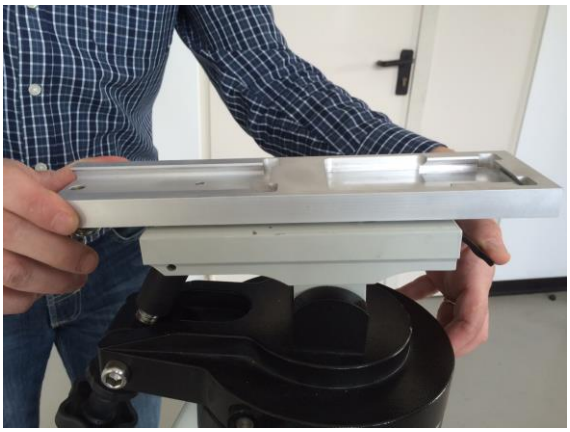


FIGURE 13: HEAD SUPPORT BOOSTER VERSION FIXING

11. Insert first the amplifier module (Figure 14) and lead it up to the limit (Figure 15)

FIGURE 14: BOOSTER INSTALLATION A

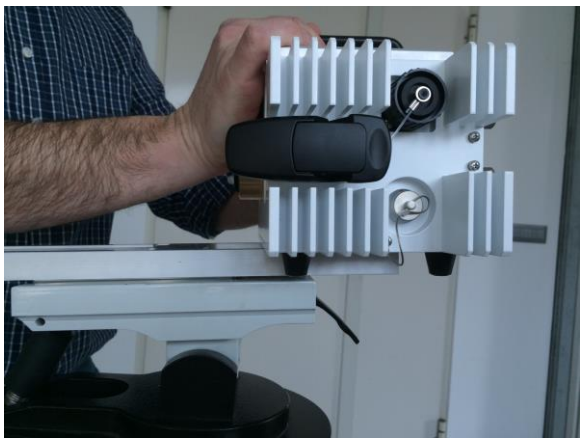


FIGURE 15: BOOSTER INSTALLATION B

12. Insert then the TX Head as shown in figures below.

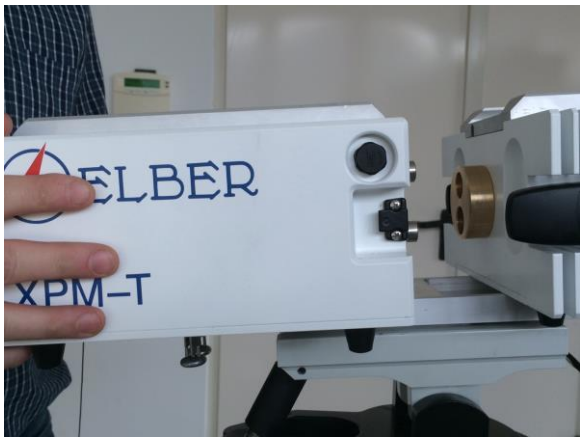


FIGURE 16: HEAD INSERTION A

FIGURE 17: HEAD INSERTION B

13. Fix the Tx RF Head to the Booster as shown in Figure 18, Figure 19, Figure 20.

FIGURE 18: RF HEAD / BOOSTER FIXING A

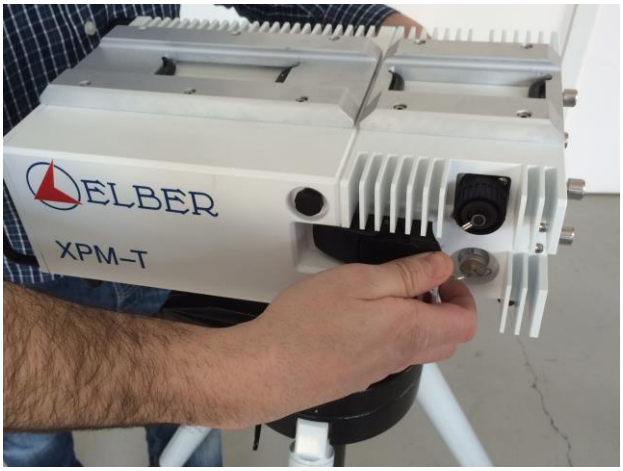


FIGURE 19: RF HEAD / BOOSTER FIXING B

FIGURE 20: RF HEAD / BOOSTER FIXING C

14. Fix the parabolic dish to the relative RF head as shown in the next figures.

FIGURE 21: PARABOLIC DISH FIXING A

FIGURE 22: PARABOLIC DISH FIXING B

15. Select the required polarization through the appropriate indications available on the feeder itself (H & V), see Figure 23, Figure 24, Figure 25.

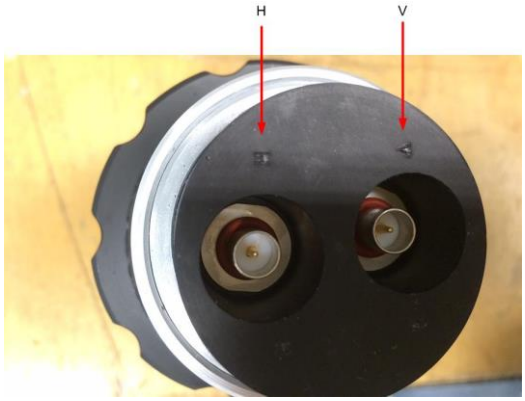


FIGURE 23: POLARIZATION SELECTION A

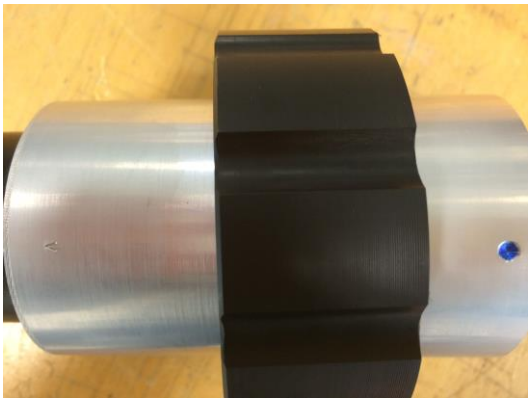


FIGURE 24: POLARIZATION SELECTION B

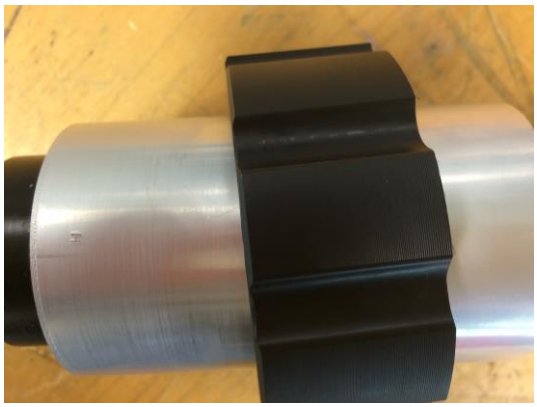


FIGURE 25: POLARIZATION SELECTION C

16. Screw the feeder to the RF head, so that the parabolic dish is locked (Figure 26, Figure 27, Figure 28).

FIGURE 26: FEEDER FIXING A

FIGURE 27: FEEDER FIXING B

FIGURE 28: FEEDER FIXING C

17. Only in case of a booster (amplifier) installation, please connect the booster power supply cable provided between the booster itself and the TX RF Head as shown in Figure 29, Figure 30, Figure 31. Be careful not to connect/disconnect the booster module while the system is powered (in operation/switched on).

FIGURE 29: BOOSTER POWER SUPPLY CABLE CONNECTION A

FIGURE 30: BOOSTER POWER SUPPLY CABLE CONNECTION B

FIGURE 31: BOOSTER POWER SUPPLY CABLE CONNECTION C

18. Connect the control unit to the relative RF head through the cable provided (Figure 32, Figure 33).

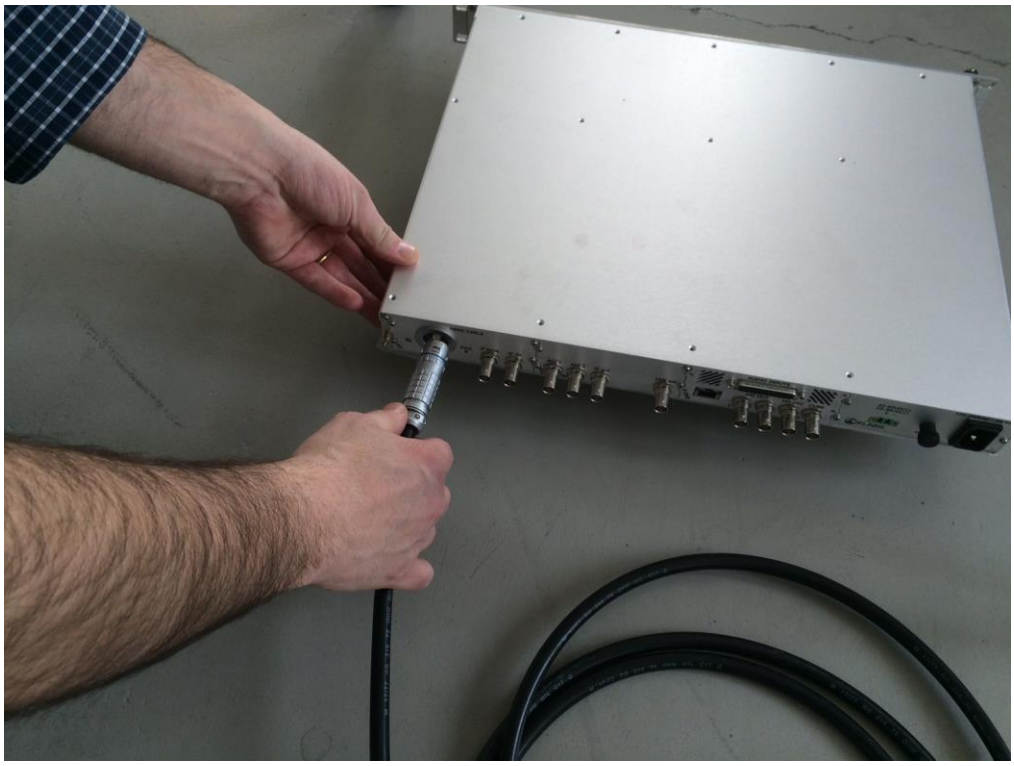


FIGURE 32: CONTROL UNIT / RF HEAD CONNECTION

FIGURE 33: CONTROL UNIT / RF HEAD CONNECTION

19. Make the ground connection to the screw located on the rear of the equipment, to meet the EMC directives.

FIGURE 34: GROUND CONNECTION

20. Assure of the right input voltage reading the data on the user manual or on the adhesive stickers, located on each equipment, that show the register number.

21. Install the power cord and connect to the primary power source (Figure 35). The state and the operations of the device can be checked using the local display (or web browser) following the instructions in the paragraph related to the user interface.

FIGURE 35: CONNECTION TO THE PRIMARY POWER SOURCE

22. For the receiver head repeat the same operations of the transmitter head (from point 8).
23. Orientate and incline the parabolic dishes for the pointing (figure below).

FIGURE 36: PARABOLA ALIGNMENT

7 User interface - TFT.

XPM portable system offers a modern and intuitive user interface; indeed, both RF Head and Control unit are equipped with a touch screen TFT display for monitoring and configuration of main parameters.
For a deeper control of the system, user is asked to accede to via web interface (see par 8).

7.1 Control unit.

The user interface consists of a general alarm led and a graphical TFT display with **TOUCH SCREEN** function (for more comfortable use, a stick is available in a compartment located in the front panel, see Figure 166).
In order to have a read/write privilege and thus modify the configuration of the equipment, it's required the connection of a USB pen with the right token to the USB port in the front panel; alternatively, a numeric password while trying to modify one parameter is required (the password is tied to the customer's name and it's notified at delivery).

7.1.1 Main menu.

At equipment switch on, after embedded software boot, display shows the main menu, according to the system type (Tx or Rx), as can be seen in Figure 38 and Figure 38. This menu shows the equipment block diagram, for an easy and intuitive access to modules parameters according to their function; on every active area, one or more circles symbolizing alarm led are shown, eventually red or green depending on the status of the related block.

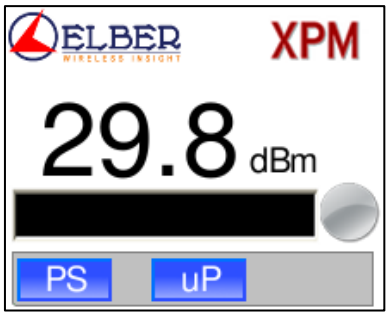


Figure 37: Main Menu - Tx

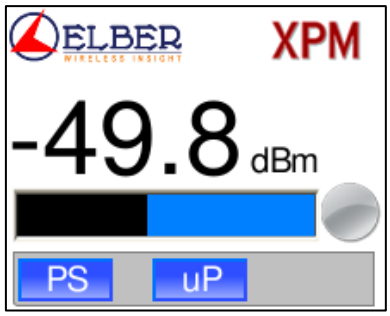


Figure 38: Main Menu - Rx

Active areas:

- PS
- uP

Table 6: Head TFT Main Page

PS	When pushed, menu goes to Power Supply page
uP	When pushed, menu goes to uProcessor page
Any other Tag	When pushed, menu goes to Summary page
	General status led: No alarm: Alarm present Warning present

The transmitter page shows the output power (in dBm), and a general status led (red if alarm, green if ok, yellow if warning); for receivers, same content except the Received Signal Strength Indication (in dBm) at power output place.

7.1.2 Summary Menu.

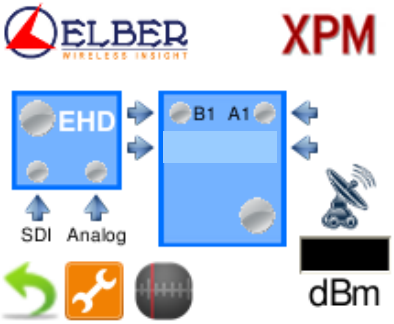


Figure 39: Summary Menu – Tx

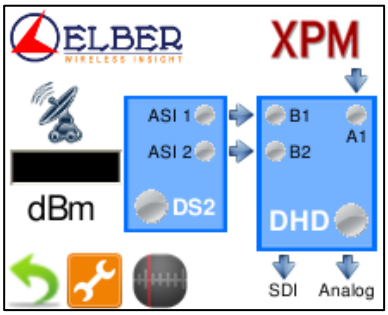


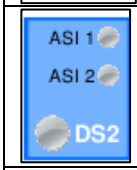
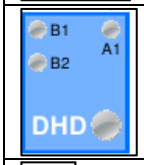
Figure 40: Summary Menu - Rx

Active areas:

- PS
- uP
- EHD
- B1 A1
- ASI 1
- ASI 2
- DS2
- B1
- B2
- A1
- DHD

Table 7: TFT Main Menu Parameters Menu Descriptions

PS	When pushed, menu goes to Power Supply page
uP	When pushed, menu goes to uProcessor page

	When pushed, menu goes to Encoder page For intuitive approach, some alarms are shown, related to the whole board and each video input (SDI and analogue).
	When pushed, menu goes to Modulator page For intuitive approach, some alarms are shown, related to the whole board and each ASI input. A1 -> ASI IN 1 B1 -> ASI BUS 1
	When pushed, menu goes to Tx control page
	When pushed, menu goes to Rx control page
	When pushed, menu goes to Demodulator page For intuitive approach, some alarms are shown, related to whole board and each ASI output.
	When pushed, menu goes to Decoder page For intuitive approach, some alarms are shown, related to whole board and each ASI inputs (ASI 1, ASI BUS 1, and ASI BUS 2).
	When pushed, go back to MAIN MENU.
	When pushed, go to USER CONFIGURATION MENU
	When pushed, go to CHANNELS CONFIGURATION MENU

7.1.3 User Configuration Menu.

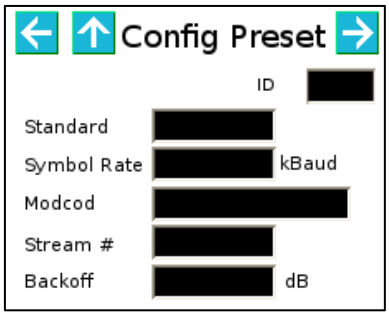


FIGURE 41: DVB-T/T2 MODULATOR PRESET CONFIGURATIONS MENU

TABLE 8: DVB-T/T2 MODULATOR PRESET CONFIGURATIONS PARAMETERS MENU

Tag	Type	Description
ID	Text Box	Preset Number
Standard	Text Box	DVB-T/T2
Symbol Rate	Text Box	As per name
Modcod	Text Box	As per name
Stream #	Text Box	As per name
Backoff	Text Box	As per name

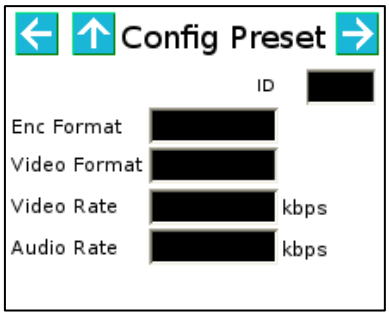


FIGURE 42: ENCODER PRESET CONFIGURATIONS MENU

TABLE 9: ENCODER PRESET CONFIGURATIONS PARAMETERS MENU

Tag	Type	Description
ID	Text Box	Preset Number
Enc Format	Text Box	MPEG-2 or H.264
Video Format	Text Box	As per name
Video Rate	Text Box	Video bitrate in kbps
Audio Rate	Text Box	Audio bitrate in kbps

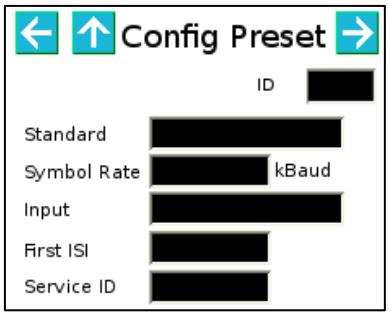


FIGURE 43: DVB-T/T2 DEMODULATOR PRESET CONFIGURATION MENU

TABLE 10: DVB-T/T2 DEMODULATOR PRESET CONFIGURATIONS PARAMETERS MENU

Tag	Type	Description
ID	Text Box	Preset Number
Standard	Text Box	
Symbol Rate	Text Box	As per name
Input	Text Box	As per name
First ISI	Text Box	As per name
Service ID	Text Box	As per name

7.1.4 Channels Configuration Menu.

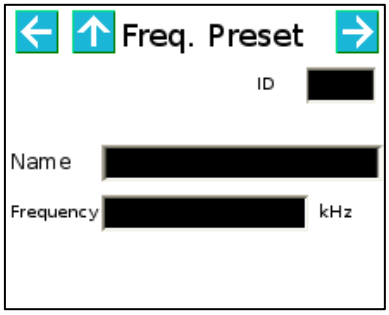


FIGURE 44: SELECT FREQUENCY PRESET MENU.

TABLE 11: SELECT FREQUENCY PRESET PARAMETERS MENU

Tag	Type	Description
ID	Text Box	Preset Number
Name	Text Box	Preset Name

Frequency	Text Box	Preset frequency in KHz

7.1.5 Menu uProcessor (uP).

The submenu let a fast access to the elements to be controlled; icons Description, concerning different sections, is intuitive.

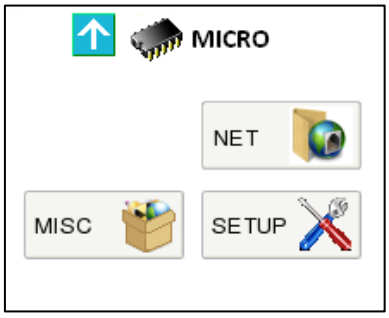


FIGURE 45: MICROPROCESSOR SUBMENU.

Active areas:

- Directional arrow “UP” to go back to main menu.
- 

To go to Menu Net - Network parameters.
- 

To go to Menu Misc - General information 1/2.
- 

To go to Menu Setup - System Time.

7.1.5.1 Menu Net - Network parameters.

This menu let the user modify management port network parameters; in detail, it is possible to set IP address, Subnet Mask and Gateway IP. MAC Address is read-only.

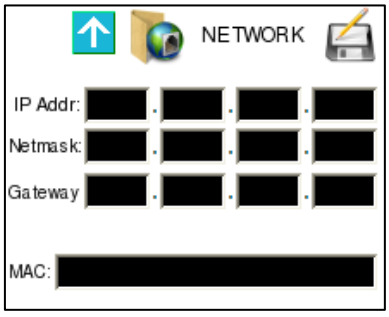


FIGURE 46: NETWORK PARAMETERS MENU.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrows “LEFT” and “RIGHT” to browse microprocessor menu.
- Every text box, which opens the virtual keypad to insert characters.

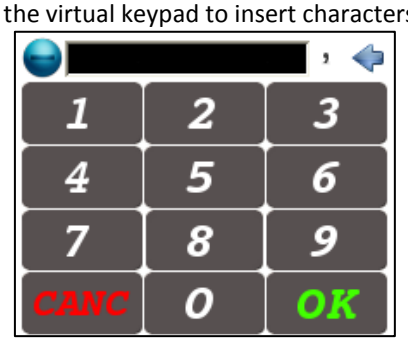


FIGURE 47: VIRTUAL KEYPAD.

7.1.5.2 Menu Misc - General information 1/2.

This menu shows general purpose information, such as:

- Model
- Serial Number
- Part Number

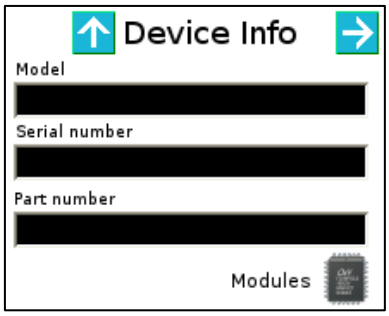


FIGURE 48: GENERAL INFO MENU 1/2.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to browse microprocessor menu.
- Modules icon.

Upon pressing modules icon, user is redirect to Controller Board Factory information.

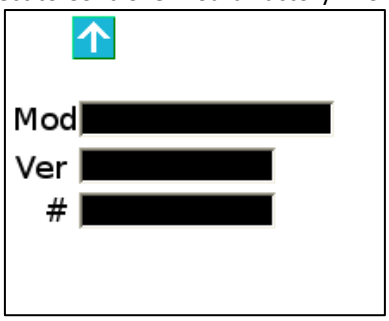


FIGURE 49: MODULES MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.

7.1.5.3 Menu Misc - General information 2/2.

This menu shows general purpose information, such as:

- Customer name (two rows)
- Installation site (Loc.)

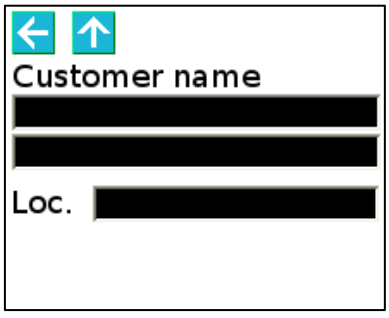


FIGURE 50: GENERAL INFO MENU 2/2.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "LEFT" to browse microprocessor menu.

7.1.5.4 Menu Setup - System Time.

This menu let the user set right time and date, used by the system for alarm logging. Information about system time is preserved by the battery of the *Real Time Clock*.

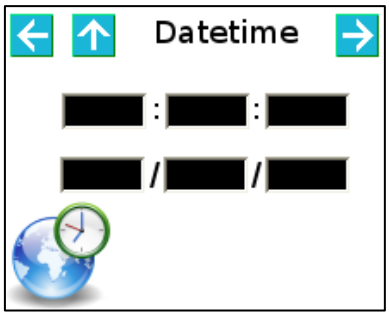


FIGURE 51: SYSTEM TIME SETTING MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse microprocessor menu.
- Every text box which opens a virtual keypad to enter information.

7.1.5.5 Menu Setup - Touch Screen Calibration.

This menu let the user calibrate the Touch Screen function. It's recommended to use the stick provided with the equipment touch the red cross, three times as required by the system, after **Calibrate** button pushing.

FIGURE 52: TOUCH SCREEN CALIBRATION MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse microprocessor menu.

This menu let the user reset each microcontroller and FPGA of the equipment.

7.1.5.6 Menu Setup - Touch Screen Calibration.

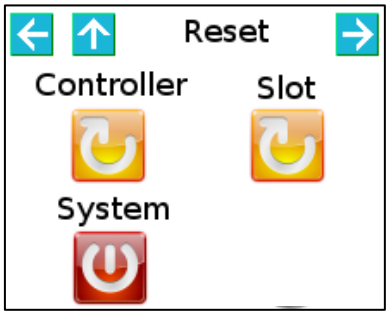


FIGURE 53: RESET MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse microprocessor menu.
- Reset icons.

SLOT reset will eventually restart every optional board installed in control unit; *CONTROLLER reset* just reboot system supervisor, *SYSTEM reset* is the complete reset of the equipment.

7.1.6 Power Supply.

This menu shows Power supply information.
Depending on the number and type of power supplies installed, related icon(s) is/are shown in each position; left position is for Primary Power Supply; right position is for Secondary Power Supply.
Three led icons are shown (from left to right):

- 12V status referred to Primary PSU
- Alarm
- 12V status referred to Secondary PSU

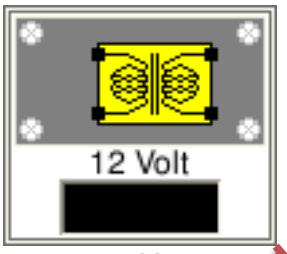


FIGURE 54: AC SUPPLY ICON

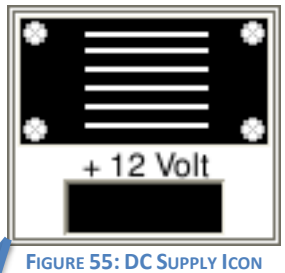


FIGURE 55: DC SUPPLY ICON

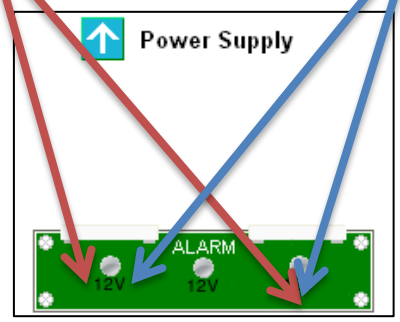


FIGURE 56: POWER SUPPLY MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.

7.1.7 Transmitter control unit.

The transmitter control unit is composed by specific boards:

1) Encoder EHD
2) Modulator MT2
3) Transmitter board UXT

Moreover, it is possible to check and configure RF head parameters through the UXT page; in following subparagraphs, the related menu is described.

7.1.7.1 Encoder EHD.

FIGURE 57: EHD GENERAL MENU.

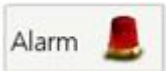
Active areas:

- Directional arrow "UP" to go back to main menu;
- 

icon to go to Status Submenu;
- 

icon to go to Config Submenu;

- 

icon to go to Info Submenu.
- 

icon to go to Alarm Submenu

7.1.7.1.1 Menu Status.

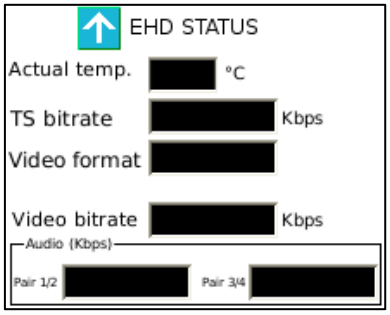


FIGURE 58: EHD STATUS PAGE.

Active areas:

- Directional arrow "UP" to go back to main menu.

TABLE 12: EHD STATUS PARAMETERS

Tag	Type	Description
Actual temp.	Text Box	Indication of Actual temperature.
TS bitrate	Text Box	Indication of Transport Stream bitrate.
Video format	Text Box	Indication of Video format.
Video bitrate	Text Box	Indication of Video bitrate.
Audio (Kbps)	Text Box	Indication of Audio bitrate (Kbps) for each stereo pair.

7.1.7.1.2 Menu Config.

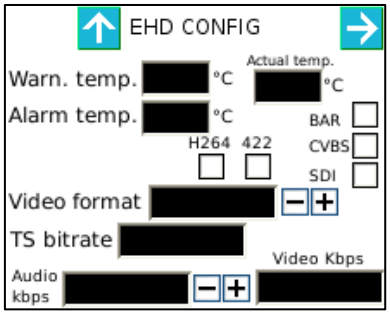


FIGURE 59: EHD CONFIG PAGE.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to go to Audio embedder configuration

TABLE 13: EHD CONFIG PARAMETERS.

Tag	Type	Action
Warn. Temp.	Text Box	Let the user modify the warning temperature threshold [°C].
Alarm temp.	Text Box	Indication of actual temperature.
Actual temp.	Text Box	Let the user modify the alarm temperature threshold [°C].
H264	Checkbox	Let the user enable/disable Encoding Format H264.
422	Checkbox	Let the user enable/disable the Chroma Format 422.
BAR	Checkbox	Let the user enable/disable the Source BAR Generator.
CVBS	Checkbox	Let the user enable/disable the Source CVBS.
SDI	Checkbox	Let the user enable/disable the Source SDI.
Video format	virtual	Let the user select the video format.
TS bitrate	Text Box	Let the user modify the Transport Stream bitrate.
Audio Kbps	virtual	Let the user set the audio bitrate.
Video Kbps	virtual	Let the user set the video bitrate.

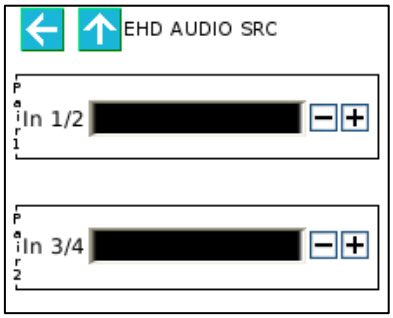


FIGURE 26: EHD AUDIO EMBEDDER CONFIG.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrow “LEFT” to browse encoder configuration menu.

TABLE 14: EHD AUDIO EMBEDDER CONFIG

Tag	Type	Action
Pair 1 In 1/2	virtual	
Pair 2 In 3/4	virtual	

7.1.7.1.3 Menu Info.

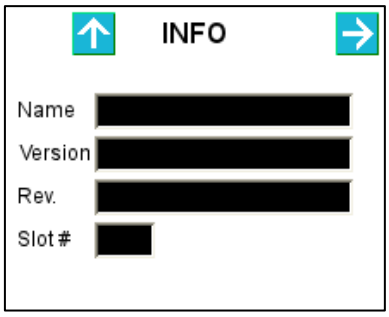


FIGURE 27: EHD INFO MENU.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrow “RIGHT” to browse encoder info menu.

TABLE 15: EHD INFO MENU

Tag	Type	Description
Name	Text Box	Indication of the name of the board.
Version	Text Box	Indication of software version for on-board microcontroller.
Rev.	Text Box	Indication of software version revision for on-board microcontroller
Slot#	Text Box	Indication of slot number.

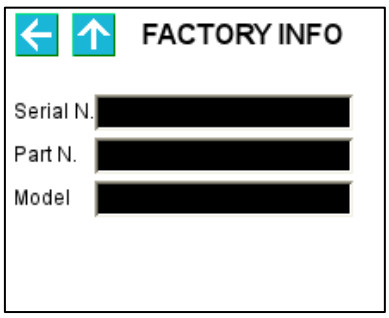


FIGURE 28: EHD FACTORY INFO MENU.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrow “LEFT” to browse encoder info menu.

TABLE 16: EHD FACTORY INFO MENU

Tag	Type	Description
Serial N.	Text Box	Indication of Serial Number of the board.
Part N.	Text Box	Indication of Part Number of the board.
Model	Text Box	Indication of Model of the board.

7.1.7.2 Modulator MT2.

Through this page, user can manage MT2 plug-in board, the modulator.
Basically, the modulator board can generate digital modulated signals according to two different ETSI standards that are:

1) DVB-T
2) DVB-T2

Active areas:

- Directional arrow “UP” to go back to main menu.

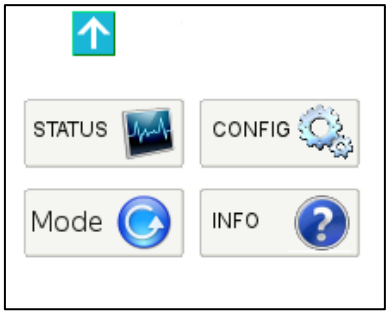


FIGURE 29: MT2 GENERAL MENU.

- Directional arrow “UP” to go back to main menu.
- 

to go to Status Menu
- 

to go to Menu Config - General.
- 

to go to 7.1.7.2.7
- 

to go to Modulator Info Menu

7.1.7.2.1 Menu Status – DVB-T.

This menu is shown only if actual transmission standard is DVB-T.

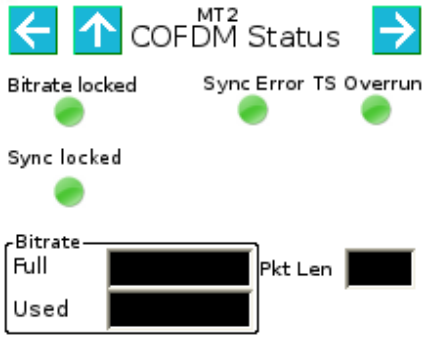


FIGURE 60: MT2 STATUS DVB-T.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrows “LEFT” and “RIGHT” to browse modulator menu (Go to ASI Status Menu , see 7.1.7.2.3).

TABLE 17: MT2 DVB-T STATUS PARAMETERS MENU

Tag	Description
Bitrate locked	Data lock indication.
Sync Error	Input stream Sync byte error indication.
TS Overrun	Input TS bitrate is too high for actual modulator settings.
Sync Locked	Sync lock indication.

FIGURE 61: BITRATE CHECK.

In this area, customer can check the Used and the maximum available bitrate with actual modulator settings.

7.1.7.2.2 Menu Status – DVB-T2.

This menu is shown only if actual transmission standard is DVB-T2.

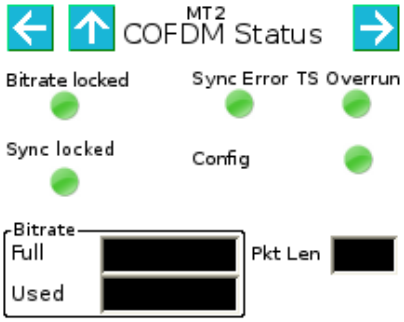


FIGURE 62: MT2 STATUS DVB-T2.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator menu (Go to ASI Status Menu , see 7.1.7.2.3).

TABLE 18: MT2 DVB-T2 STATUS PARAMETERS MENU

Tag	Description
Bitrate locked	Data lock indication.
Sync Error	Input stream Sync byte error indication.
TS Overrun	Input TS bitrate is too high for actual modulator settings.
Sync Locked	Sync lock indication.

FIGURE 63: BITRATE CHECK.

In this area, customer can check the Used and the maximum available bitrate with actual modulator settings.

7.1.7.2.3 Menu Status – ASI.

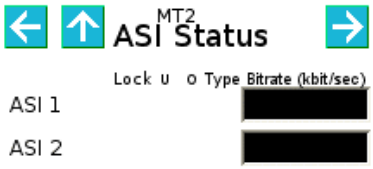


FIGURE 64: MT2 STATUS ASI.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator menu

This menu is available for any type of transmission mode adopted (DVB-T or DVB-T2) and reports status of each ASI stream at MT2 input.
ASI 1 and ASI 2 come from back panel (see 9.1.2.1.3).
For every stream, following information are shown:

TABLE 19: MT2 DVB-T/T2 INPUTS STATUS PARAMETERS MENU

Tag	Type	Description
Lock	Led icon	Input stream is present and interface is locked.
U	Led icon	Input stream FIFO is currently underrun (almost empty)
O	Led icon	Input stream FIFO is currently overrun (almost full)
Type	Image : 188 204	Input stream format (188 or 204 frame length)
Bitrate (Kbit/sec)	Text box	Measured bitrate in Kbit/sec

7.1.7.2.4 Menu Config - General.

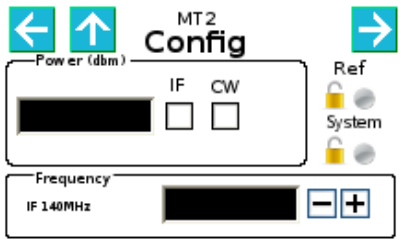


FIGURE 65: MT2 CONFIG MODULATOR

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator config menu

OTHER AREAS DESCRIBED IN

- Table 20

TABLE 20: MT2 CONFIG PARAMETERS MENU

Tag	Type	Action
IF 70 MHz	Text box	Let the user modify IF level between -20 ÷0 dBm through virtual keyboard.
IF 70 MHz	Checkbox	Let the user enable/disable IF output available on back panel.
CW	Checkbox	Let the user enable/disable Continuous Wave (Clean Carrier) generation
Frequency	Text box	Let the user select IF Frequency (70 or 140 MHz)
Ref		10 MHz VCXO Locking status

System		System PLL Locking status

7.1.7.2.5 Menu Config – DVB-T.

This menu is shown only if selected transmission standard is DVB-T.

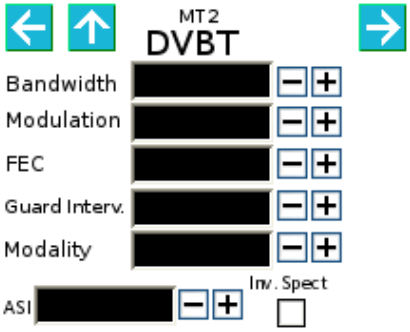


FIGURE 46: MT2 CONFIG DVB-T.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator menu.
- Other areas described in Table 21

TABLE 21: MT2 DVB-T PARAMETERS MENU

Tag	Type	Action
Bandwidth	virtual buttons	Let the user set the signal bandwidth
Modulation	virtual buttons	Let the user set the constellation
FEC	virtual buttons	Let the user set the FEC rate
Guard Interv.	virtual buttons	Let the user set the guard interval of COFDM signal
Modality	virtual buttons	Let the user set the number of carriers of COFDM signal
ASI	virtual buttons	Let the user select the ASI source (ASI 1, ASI BUS 1)
Inv. Spect	Checkbox	Let the user enable/disable the spectrum inversion

7.1.7.2.6 Menu Config – DVB-T2.

This menu is shown only if selected transmission standard is DVB-T2.

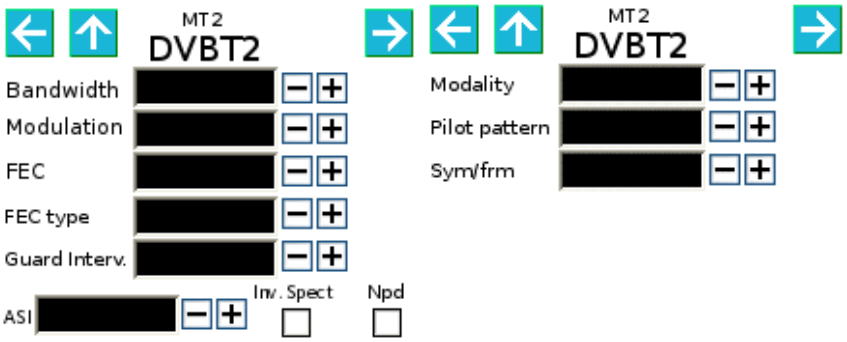


FIGURE 46: MT2 CONFIG DVB-T2.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator menu.
- Other areas described in Table 22

TABLE 22: MT2 DVB-T2 PARAMETERS MENU

Tag	Type	Action
Bandwidth	virtual buttons	Let the user set the signal bandwidth
Modulation	virtual buttons	Let the user set the constellation
FEC	virtual buttons	Let the user set the FEC rate
FEC type	virtual buttons	Let the user select the FEC type (LDPC16K, LDPC64K)
Guard Interv.	virtual buttons	Let the user set the guard interval of COFDM signal
Modality	virtual buttons	Let the user set the number of carriers of COFDM signal
Pilot pattern	virtual buttons	Let the user select the Pilot Pattern (PP1 to PP8)
Sym/frm	virtual buttons	Let the user select the Data Symbols per frame (1-67)
ASI	virtual buttons	Let the user select the ASI source (ASI 1, ASI BUS 1)
Inv. Spect	Checkbox	Let the user enable/disable the spectrum inversion
Npd	Checkbox	Let the user enable/disable the null packet deletion

7.1.7.2.7 Menu Mode Selection.

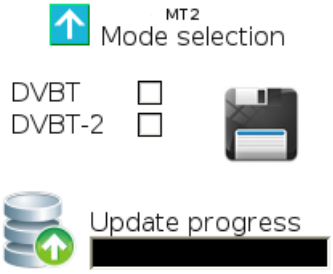


FIGURE 47: MT2 MODE MENU.

Through this menu, user can change transmission standard by pressing on the related checkbox (of course, one at a time can be selected); when transmission standard is changed, a full upgrade of the modulator is performed (Update status can be checked in the "Update progress bar").

Active areas:

- Directional arrow "UP" to go back to main menu.
- Checkbox for standard selection.
-

7.1.7.2.8 Menu Info.

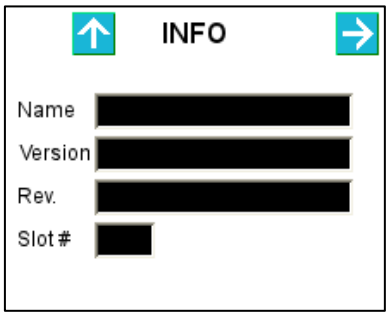


FIGURE 48: MT2 INFO MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to browse modulator info menu.

TABLE 23: MT2 INFO MENU

Tag	Type	Description
Name	Text Box	Indication of the name of the board.
Version	Text Box	Indication of software version for on-board microcontroller.
Rev.	Text Box	Indication of software version revision for on-board microcontroller
Slot#	Text Box	Indication of slot number.

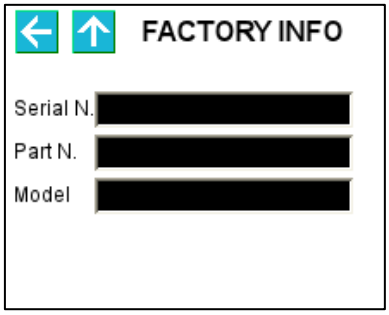


FIGURE 49: MT2 FACTORY INFO MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "LEFT" to browse modulator info menu.

TABLE 24: MT2 FACTORY INFO MENU

Tag	Type	Description
Serial N.	Text Box	Indication of Serial Number of the board.
Part N.	Text Box	Indication of Part Number of the board.
Model	Text Box	Indication of Model of the board.

7.1.7.3 Transmitter.

This menu let the user check transmitter parameters, both for UXT board (RF head controller) and the TX Head.

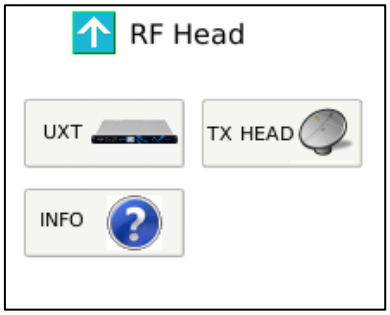


FIGURE 66: TRANSMITTER MENU.

Active areas:

- Directional arrow “UP”  to go back to main menu.
- 

To accede to UXT Board management.
- 

To accede to TX Head management.
- 

To accede to general info of the UXT board and the transmitter.

7.1.7.3.1 Menu UXT.

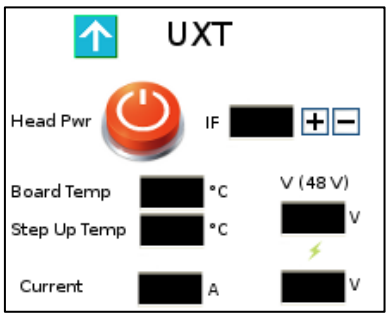


FIGURE 67: UXT BOARD MENU.

Active areas:

- Directional arrow “UP”  to go back to main menu.
- A button to switch on/off the RF Head  (requires confirmation).
- A text box “IF” to select IF input for the transmitter between:
  - Internal (from Modulator via internal BUS)
  - External (from IF IN BNC on back panel)

Moreover, the page reports temperature and power supply measurements.

7.1.7.3.2 Menu TX Head.

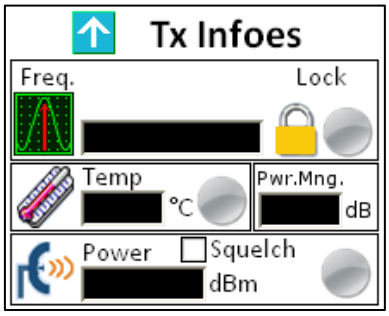


FIGURE 68: TX MENU

Active areas:

- Directional arrow “UP”  to go back to main menu.
- Checkbox “Squelch” for transmitter muting.
- “Freq.” Text box to change frequency (within range allowed)
- “Pwr. Mng.” Text Box to manage output power of the transmitter (just power reduction is allowed)

The page also shows three icons that correspond to the alarm led:

1. An alarm for the oscillator status (in case of oscillator unlock, the transmitter is muted through hardware pin).
2. An alarm indicating low power at the transmitter output.
3. An alarm indicating that the temperature of the module is higher than 60°C.

Moreover, the page reports temperature and power output measurements.

7.1.7.3.3 Menu Info.

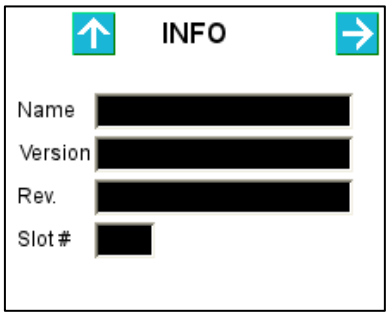


FIGURE 69: UXT INFO MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to browse transmitter control unit info menu.

TABLE 25: UXT INFO MENU.

Tag	Type	Description
Name	Text Box	Indication of the name of the board.
Version	Text Box	Indication of software version for on-board microcontroller.
Rev.	Text Box	Indication of software version revision for on-board microcontroller
Slot#	Text Box	Indication of slot number.

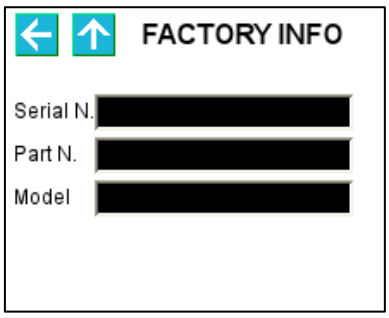


FIGURE 70: UXT FACTORY INFO MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "LEFT" to browse transmitter control unit info menu.

TABLE 26: UXT FACTORY INFO MENU.

Tag	Type	Description
Serial N.	Text Box	Indication of Serial Number of the board.
Part N.	Text Box	Indication of Part Number of the board.
Model	Text Box	Indication of Model of the board.

7.1.8 Receiver control unit.

7.1.8.1 Decoder DHD

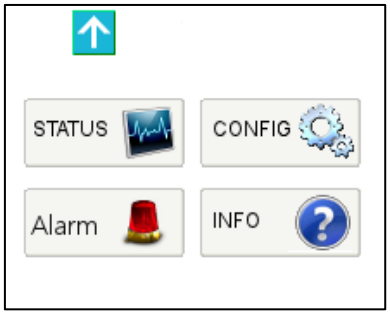


FIGURE 71: DHD GENERAL MENU

- Directional arrow "UP" to go back to main menu.

- 

to go to Decoder Status Menu
- 

to go to Decoder Config Menu
- 

to go to Decoder Alarm Menu
- 

to go to Decoder Info Menu

7.1.8.1.1 Menu Status – General

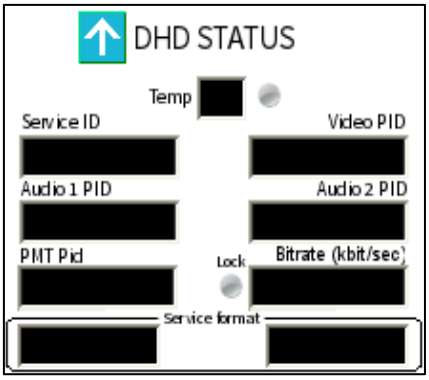


FIGURE 72: DHD STATUS PAGE

Active areas:

- Directional arrow "UP" to go back to main menu.

TABLE 27: DHD STATUS PARAMETERS MENU

Tag	Type	Description
Temp.	Text Box/ Led icon	Indication of Temperature.
Service ID	Text Box	Indication of Service Identify.
Audio 1 PID	Text Box	Indication of Audio 1 Packet Identifier.
PMT PID	Text Box	Indication of PMT (Program Map Tables), Packet Identifier.
Video PID	Text Box	Indication of Video Packet Identifier.
Audio 2 PID	Text Box	Indication of Audio 2 Packet Identifier.
Bitrate (Kbit/sec)	Text Box	Indication of Bitrate (Kbit/sec)
Lock	Led icon	Indication of
Service format	Text Box	Indication of Service format.

7.1.8.1.2 Menu Config – General configuration.

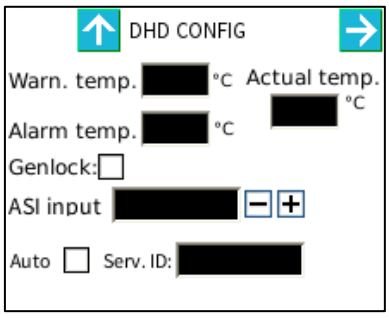


FIGURE 73: DHD CONFIG PAGE

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to browse DHD Audio configuration.

TABLE 28: DHD CONFIG PARAMETERS

Tag	Type	Action
Warn. Temp.	Text Box	Let the user modify the warning temperature threshold [°C].
Actual. Temp.	Text Box	Indication of actual temperature.
Alarm. Temp.	Text Box	Let the user modify the alarm temperature threshold [°C].
Genlock	☑ ☐ Checkbox	
ASI input	− + virtual buttons	Let the user configure the ASI input.
Auto	☑ ☐ Checkbox	Let the user set the “automatic locking” of decoder (no service ID needed)
Serv.ID	Text Box	Let the user modify the Service Identify.

7.1.8.1.3 Menu Config – DHD audio configuration.

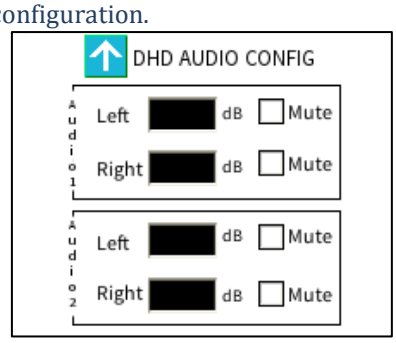


FIGURE 74: DHD CONFIG AUDIO

Active areas:

- Directional arrow “UP” to go back to main menu.

TABLE 29: DHD AUDIO CONFIGURATION PARAMETERS MENU

Tag	Type	Description
Left	Text Box	Let the user modify the related audio left output gain
Right	Text Box	Let the user modify the related audio right output gain
Mute	Checkbox	When checked, disable the related audio output

7.1.8.1.4 Menu Alarms.

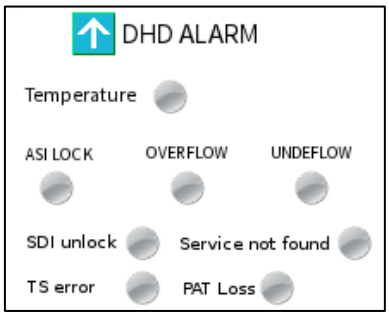


FIGURE 75: DHD ALARMS MENU

Active areas:

- Directional arrow “UP” to go back to main menu.
- Other areas described in Table 30

TABLE 30: DHD ALARMS MENU

Tag	Description
Temperature	Temperature alarm condition.
ASI LOCK	ASI LOCK alarm condition.
OVERFLOW	OVERFLOW alarm condition.
UNDEFLOW	UNDEFLOW alarm condition.
SDI unlock	SDI unlock alarm condition.
Service not found	Service not found alarm condition.
TS error	TS error alarm condition

PAT Loss	PAT Loss alarm condition

7.1.8.1.5 Menu Info.

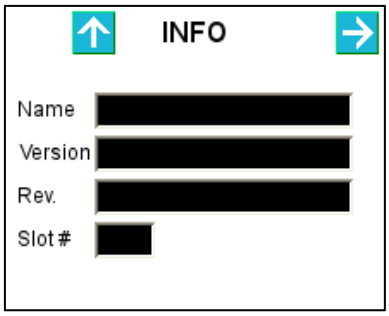


FIGURE 76: DHD INFO MENU

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "RIGHT" to browse decoder info menu.

TABLE 31: DHD INFO PARAMETERS MENU

Tag	Type	Description
Name	Text Box	Indication of the name of the board.
Version	Text Box	Indication of software version for on-board microcontroller.
Rev.	Text Box	Indication of software version revision for on-board microcontroller
Slot#	Text Box	Indication of slot number.

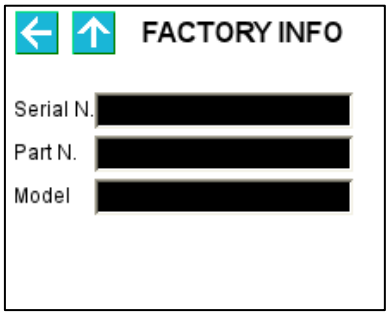


FIGURE 77: DHD FACTORY INFO

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "LEFT" to browse decoder info menu.

TABLE 32: DHD FACTORY INFO PARAMETERS MENU

Tag	Type	Description
Serial N.	Text Box	Indication of Serial Number of the board.
Part N.	Text Box	Indication of Part Number of the board.
Model	Text Box	Indication of Model of the board.

7.1.8.2 Demodulator.

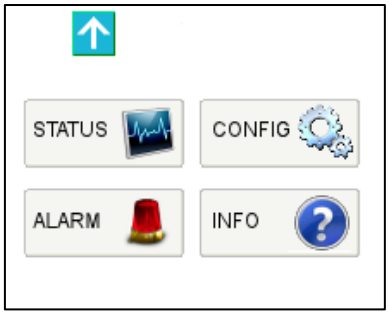


FIGURE 78: DS2 GENERAL MENU.

- Directional arrow "UP" to go back to main menu.

- 

To go to Status Menu
- 

To go to Menu Config - General.
- 

to go to Menu Alarms
- 

To go to Menu Info.

Active areas:

- Directional arrow “UP” to go back to main menu.

7.1.8.2.1 Menu Status – DVB-T.

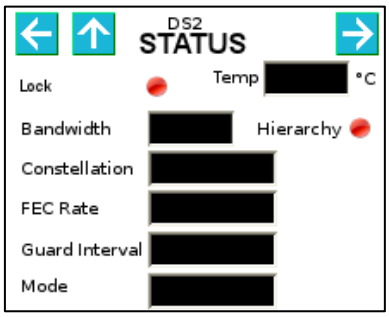


FIGURE 79: DS2 DVB-T STATUS MENU - 1.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrows “LEFT” and “RIGHT” to browse modulator menu.
- Other areas described in Table 33

TABLE 33: DS2 DVB-T STATUS PARAMETERS MENU

Tag	Type	Description
Lock		Indication of Lock status of input TS.
Temp	Text Box	Indication of temperature detected on the DS2 board surface.
Bandwidth	Text Box	Indication of signal bandwidth
Hierarchy		Indication of hierarchical modulation detected on input signal.
Constellation	Text Box	Indication of constellation detected on input signal.
FEC rate	Text Box	Indication of FEC type detected on input signal
Guard interval	Text Box	Indication of guard interval detected on input signal
Mode	Text Box	Indication of Transmission mode detected on input signal

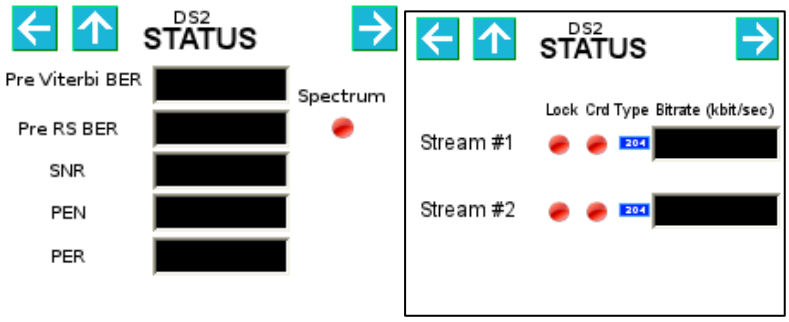


FIGURE 80: DS2 DVB-T STATUS MENU - 2.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrows “LEFT” and “RIGHT” to browse demodulator menu.
- Other areas described in Table 34

TABLE 34: DS2 DVB-T STATUS PARAMETERS MENU - 2

Tag	Type	Description
Pre Viterbi BER	Text Box	Indication of Bit Error Rate before Viterbi decoder (Channel BER)
Pre RS BER	Text Box	Indication of Bit Error Rate before Reed Solomon decoder. (Post Viterbi BER)
Spectrum		Indication of spectrum inversion detected on input signal.
SNR	Text Box	Indication of Signal to Noise Ratio detected on input signal.
PEN	Text Box	Indication of number of RS errors over 1s, also known as code word reject count
PER	Text Box	Indication of Packet Error Rate.
Lock		Indication of Lock status of related TS
Crd		Indication of "Carrier Detected" of related TS
Type	188 204	Indication of packet size of related TS (188/204)
Bitrate	Text Box	Indication of bitrate of related TS

7.1.8.2.2 Menu Status – DVB-T2.

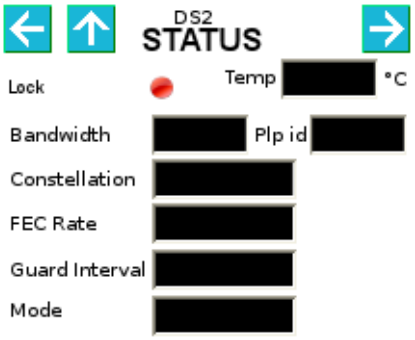


FIGURE 81: DS2 DVB-T2 STATUS MENU - 1.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrows "LEFT" and "RIGHT" to browse modulator menu.
- Other areas described in Table 35

TABLE 35: DS2 DVB-T2 STATUS PARAMETERS MENU

Tag	Type	Description
Lock		Indication of Lock status of input TS.
Temp	Text Box	Indication of temperature detected on the DS2 board surface.
Bandwidth	Text Box	Indication of signal bandwidth
Plp Id	Text Box	PLP Identifier
Constellation	Text Box	Indication of constellation detected on input signal.
FEC rate	Text Box	Indication of FEC type detected on input signal
Guard interval	Text Box	Indication of guard interval detected on input signal
Mode	Text Box	Indication of Transmission mode detected on input signal

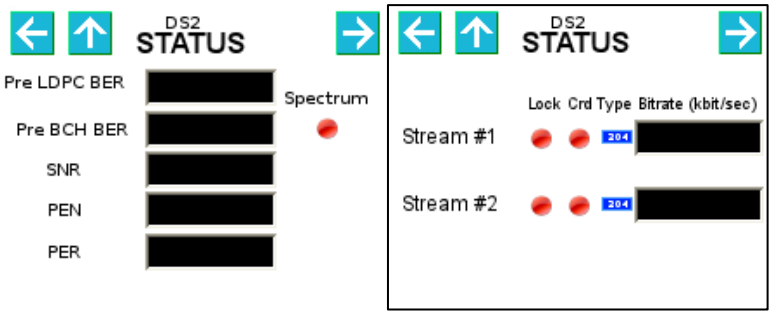


FIGURE 82: DS2 DVB-T2 STATUS MENU - 2.

Active areas:

- Directional arrow "UP" to go back to main menu.

- Directional arrows “LEFT” and “RIGHT” to browse demodulator menu.
- Other areas described in Table 36

TABLE 36: DS2 DVB-T2 STATUS PARAMETERS MENU - 2

Tag	Type	Description
Pre LDPC BER	Text Box	Indication of Bit Error Rate before LDPC decoder
Pre BCH BER	Text Box	Indication of Bit Error Rate before BCH decoder.
Spectrum		Indication of spectrum inversion detected on input signal.
SNR	Text Box	Indication of Signal to Noise Ratio detected on input signal.
PEN	Text Box	Indication of number of errors over 1s, also known as code word reject count
PER	Text Box	Indication of Packet Error Rate.
Lock		Indication of Lock status of related TS
Crd		Indication of “Carrier Detected” of related TS
Type	188 204	Indication of packet size of related TS (188/204)
Bitrate	Text Box	Indication of bitrate of related TS

7.1.8.2.3 Menu Alarms.

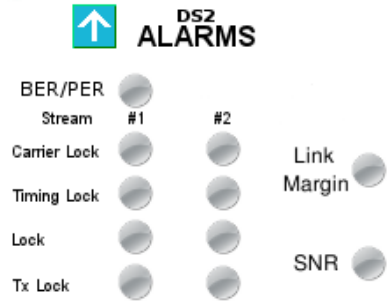


FIGURE 83: DS2 ALARMS MENU - 1.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Other areas described in Table 37

TABLE 37: DS2 ALARMS MENU

Tag	Description
BER/PER	BER or PER alarm condition.
Carrier lock	Carrier lock alarm condition.
Timing Lock	Data clock lock alarm condition.
Lock	General Demodulator Lock alarm condition.
Tx Lock	Tx Lock alarm condition
Link Margin	Link Margin below threshold.
SNR	Signal to Noise Ratio alarm condition.

7.1.8.2.4 Menu Config - General.

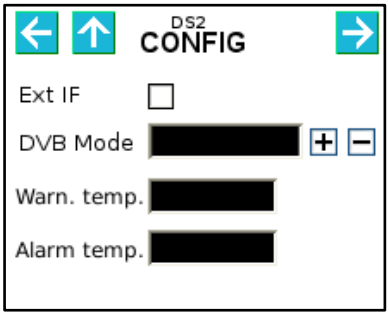


FIGURE 84: DS2 CONFIG MENU – 1

Active areas:

- Directional arrow “UP” to go back to main menu.

- Directional arrows “LEFT” and “RIGHT” to browse demodulator menu.
- Other areas described in Table 38

TABLE 38: DS2 CONFIG PARAMETERS MENU

Tag	Type	Action
Ext IF	Checkbox	Let the user enable external IF input for the demodulator board.
DVB Mode	virtual buttons	Let the user configure the DVB standard to be adopted for demodulation between DVB-T and DVB-T2.
Warn. Temp.	Text box	Let the user modify the warning temperature threshold [°C]
Alarm temp.	Text box	Let the user modify the alarm temperature threshold [°C]

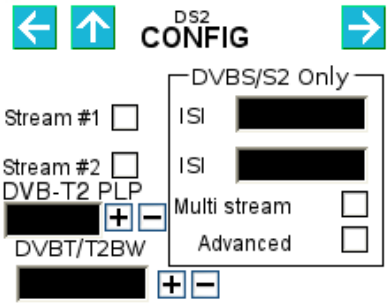


FIGURE 85: DS2 CONFIG MENU – 2

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrows “LEFT” and “RIGHT” to browse demodulator menu.
- Other areas described in Table 39.

TABLE 39: DS2 CONFIG MENU PARAMETERS

Tag	Type	Action
Stream #1	Checkbox	Let the user enable/disable ASI 1 on rear panel.
Stream #2	Checkbox	Let the user enable/disable ASI 2 on rear panel.
DVB-T2 PLP	virtual buttons	In multi PLP DVB-T2 mode, let the user select the PLP.
DVBT/T2BW	virtual buttons	Let the user select the signal bandwidth for the incoming signal.

7.1.8.2.5 Menu Info.

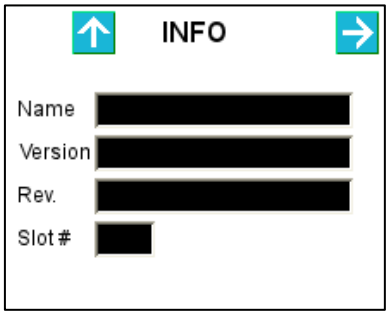


FIGURE 86: DS2 INFO MENU.

Active areas:

- Directional arrow “UP” to go back to main menu.
- Directional arrow “RIGHT” to browse demodulator info menu.

TABLE 44: DS2 INFO PARAMETERS MENU

Tag	Type	Description
Name	Text Box	Indication of the name of the board.
Version	Text Box	Indication of software version for on-board microcontroller.
Rev.	Text Box	Indication of software version revision for on-board microcontroller
Slot#	Text Box	Indication of slot number.

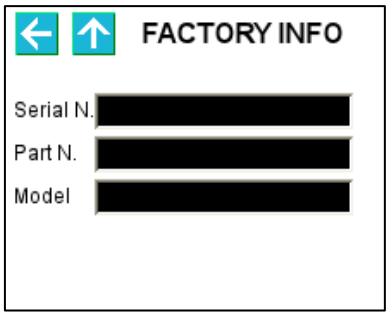


FIGURE 87: DS2 FACTORY INFO MENU.

Active areas:

- Directional arrow "UP" to go back to main menu.
- Directional arrow "LEFT" to browse demodulator info menu.

TABLE 45: DS2 FACTORY INFO PARAMETERS MENU

Tag	Type	Description
Serial N.	Text Box	Indication of Serial Number of the board.
Part N.	Text Box	Indication of Part Number of the board.
Model	Text Box	Indication of Model of the board.

7.1.8.3 Receiver.

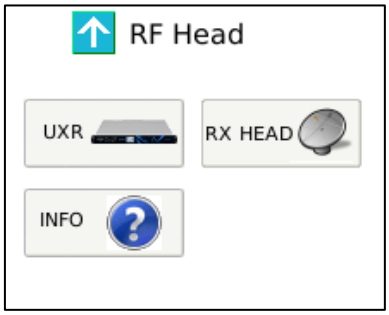


FIGURE 88: RECEIVER MENU

Active areas:

- Directional arrow "UP" to go back to main menu.
- 

To accede to UXR Board management.
- 

To accede to RX Head management.
- 

To accede to general info of the UXR board and the receiver.

7.1.8.3.1 Menu UXR.

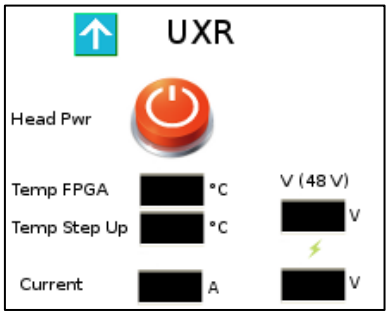


FIGURE 89: UXR BOARD MENU

Active areas:

- Directional arrow "UP" to go back to main menu.

- A button to switch on/off the RF Head  (requires confirmation).

Moreover, the page reports temperature and power supply measurements as can be easily understood from Figure 89.

7.1.8.3.2 Menu RX Head.

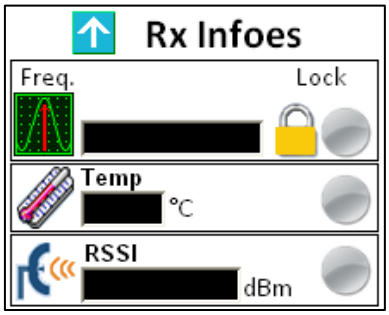


FIGURE 90: RX MENU.

Active areas:

- Directional arrow "UP"  to go back to main menu.
- "Freq." Text box to change frequency (within range allowed)

The page also shows three icons that correspond to the alarm led*:*

1. An alarm for the oscillator status
2. An alarm indicating the low field level received for the used modulation.
3. An alarm indicating that the temperature of the module is higher than 55°C.

The page reports as well the measurements of the registered temperature and received field level (RSSI).

7.2 RF Head.

XPM portable link can be configured in many of its parameters directly from the touchscreen display available in the RF Head. Hereunder a description of menu and functions for transmitter and receiver.

7.2.1 Transmitter.

At equipment switch on, RF Head display shows Figure 91 where, in evidence, customer can see actual output power (in dBm) and the frequency (KHz).

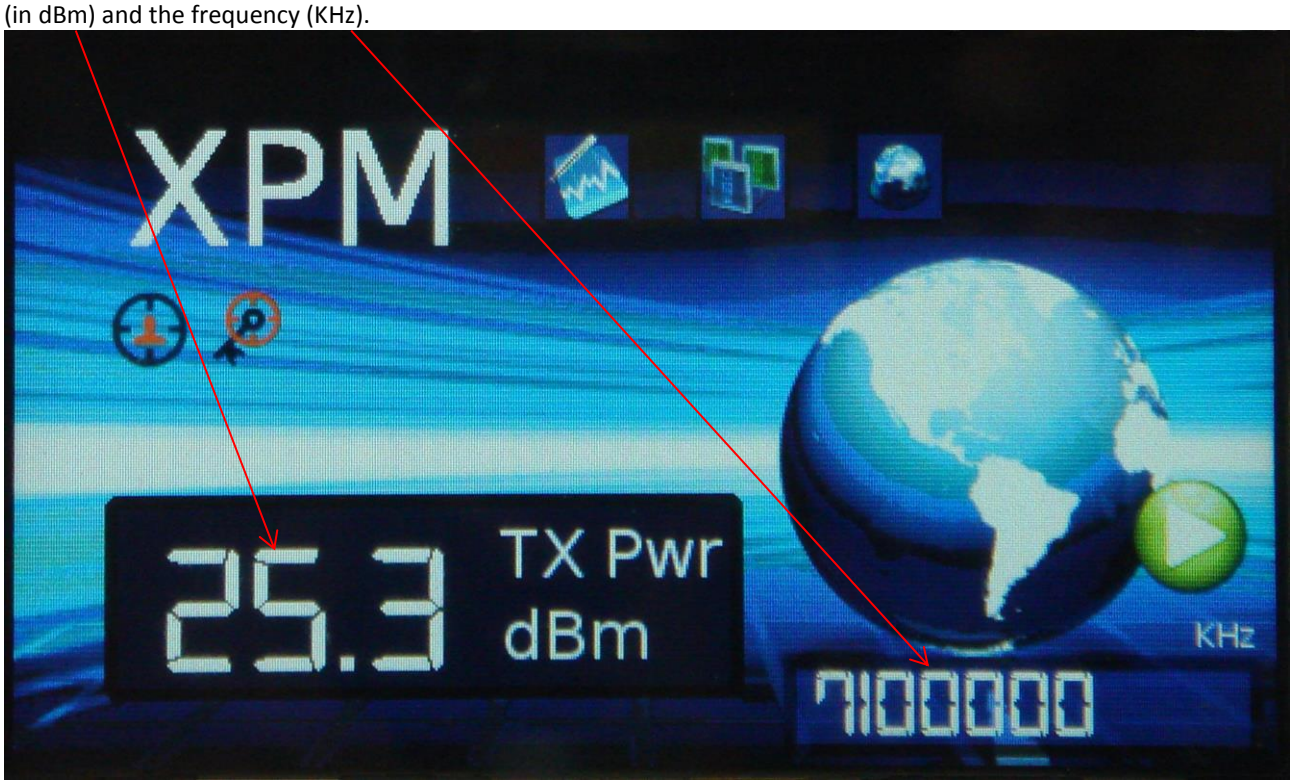


FIGURE 91: TRANSMITTING HEAD - MAIN MENU.

Next table shows active areas and related consequence on clicking.

TABLE 46: HEAD DISPLAY – TX MAIN MENU PARAMETERS

Active area	Action
	Go to next right page (same for every page of the display)
	Direct access to General Info Page.
	Direct access to Status page
	Direct access to Network Parameters Page
	Accede to Power Management Page
	Accede to Frequency Management Page

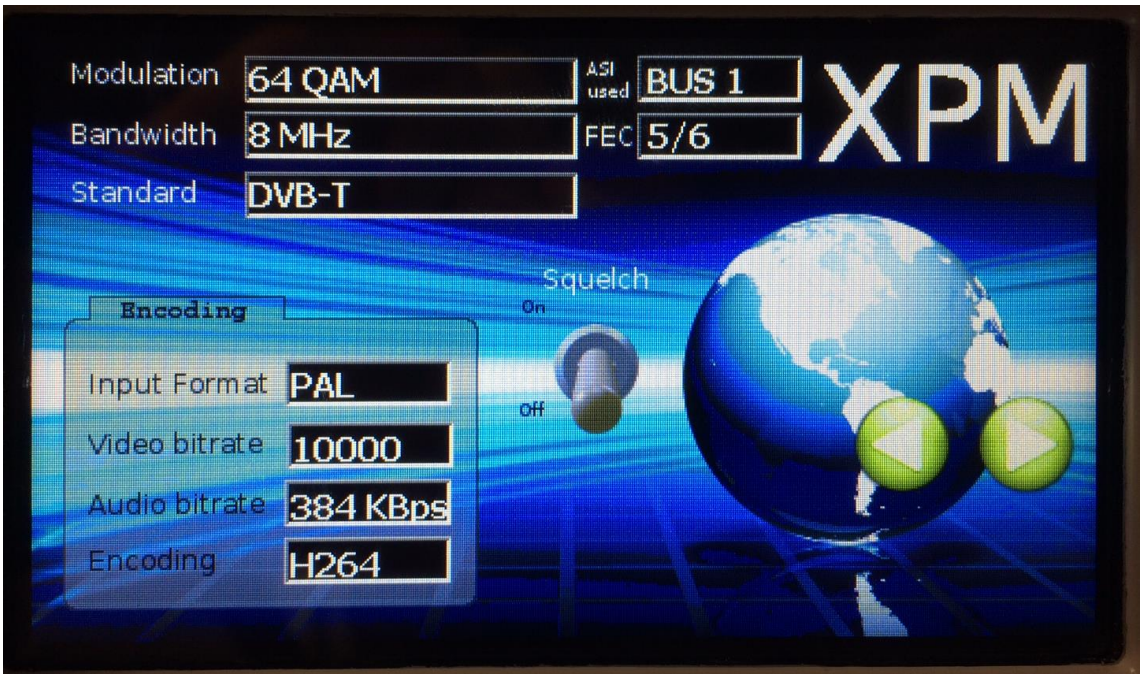
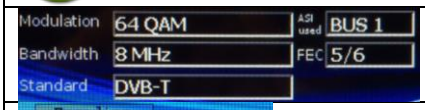
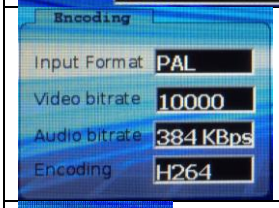


FIGURE 92: TRANSMITTING HEAD - SECONDARY MENU.

Next table shows active areas and related consequence on clicking.

Active area	Action
	Go to next right page (same for every page of the display)
	Direct access to Modulator Page.
	Direct access to Encoder page
	Squelch enable/disable

7.2.1.1 Modulator Page.

7.2.1.1.1 DVB-T/T2.

In case of DVB-T/T2 transmission system, the TFT display will show accordingly the below picture.

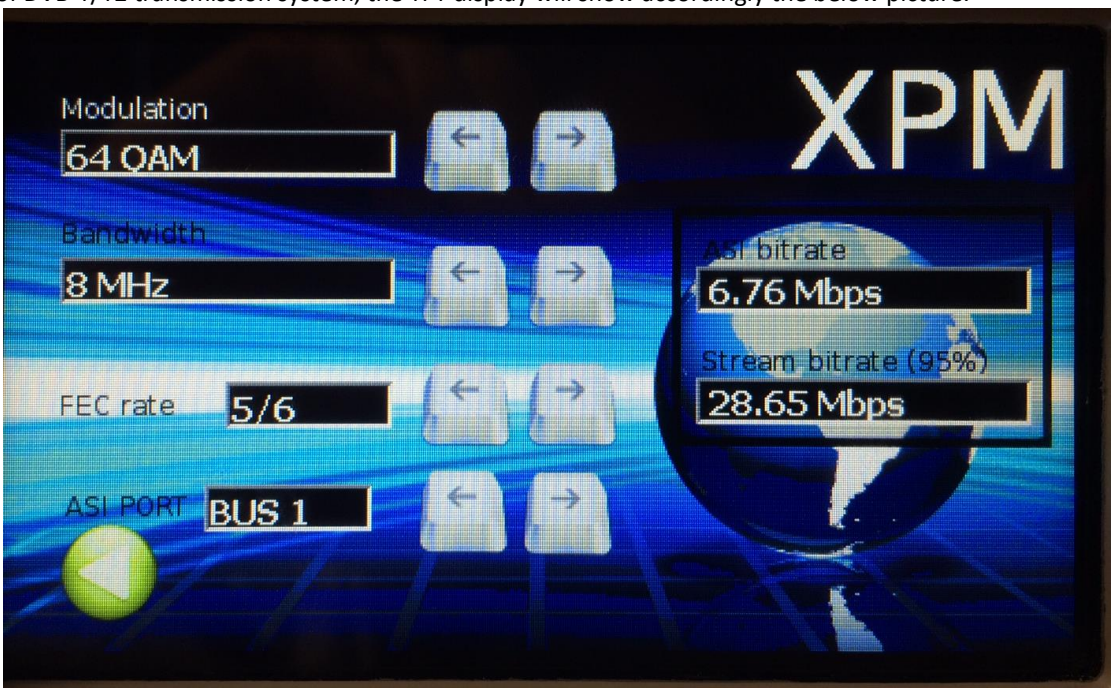


FIGURE 93: TRANSMITTING HEAD – MODULATION SETTINGS.

The left side shows the configuration parameters, while the right side shows status information.

Browsing between available parameters in the configuration side is performed through the virtual arrow buttons  .

TABLE 47: DVB-T/T2 MODULATOR CONFIG TABLE

Parameter	Selection
Modulation	QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	5/6/7/8 MHz
FEC Rate	1/2, 2/3, 3/4, 3/5, 4/5 5/6, 7/8
ASI Port	ASI 1, ASI BUS 1

TABLE 48 DVB-T/T2 MODULATOR STATUS TABLE

Parameter	Selection
ASI Bitrate	Used bitrate
Stream bitrate	Maximum TS bitrate indication

7.2.1.2 Encoder Page.

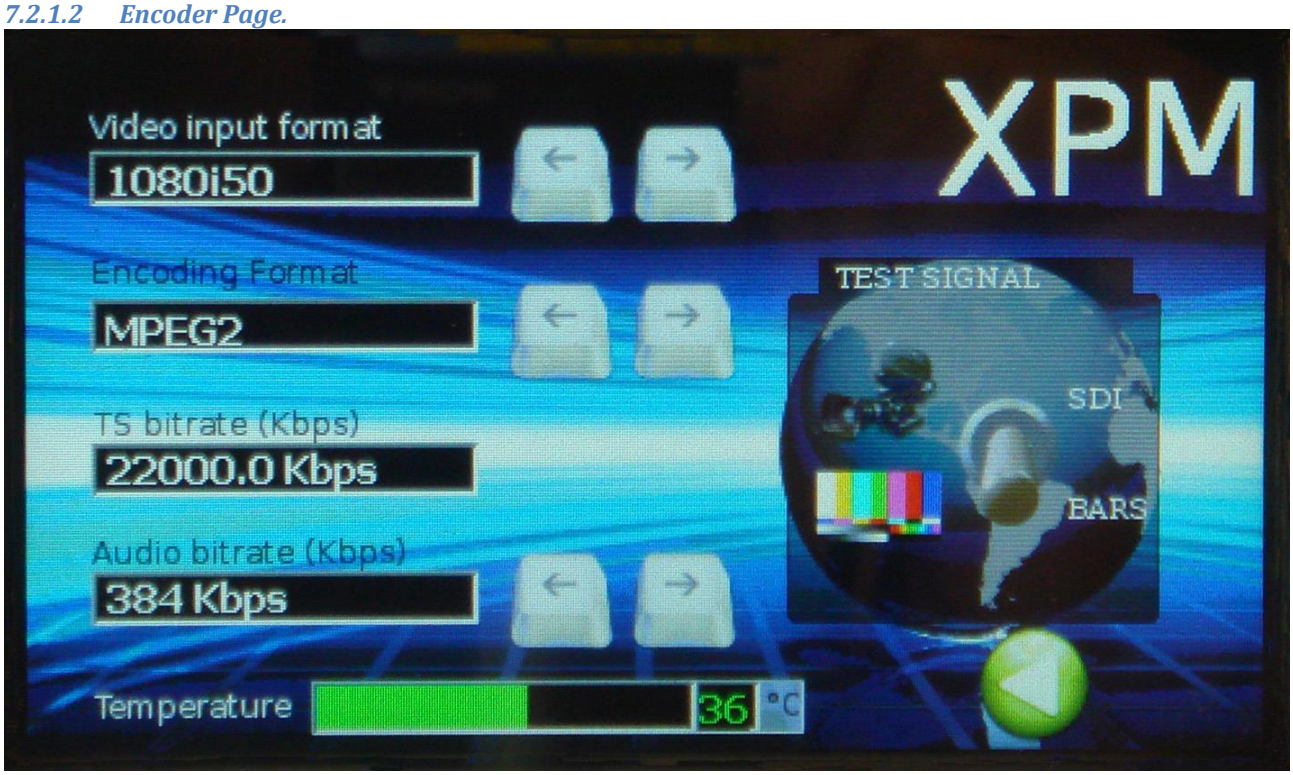


FIGURE 94: TRANSMITTING HEAD – ENCODER SETTINGS.

TABLE 40: HEAD DISPLAY – ENCODER SETTINGS PARAMETERS

Parameter	Description
Video input format	Let the user set the image format
Encoding format	Let the user select the encoding format between • MPEG Layer 2 • H.264
TS bitrate (kbps)	Indication of TS bitrate
Audio bitrate (kbps)	Let the user set the audio rate
Temperature	Temperature measurement in °C (green if ok)
Test Signal	Let the user select the video source between BAR and SDI

7.2.1.3 General Info Page.

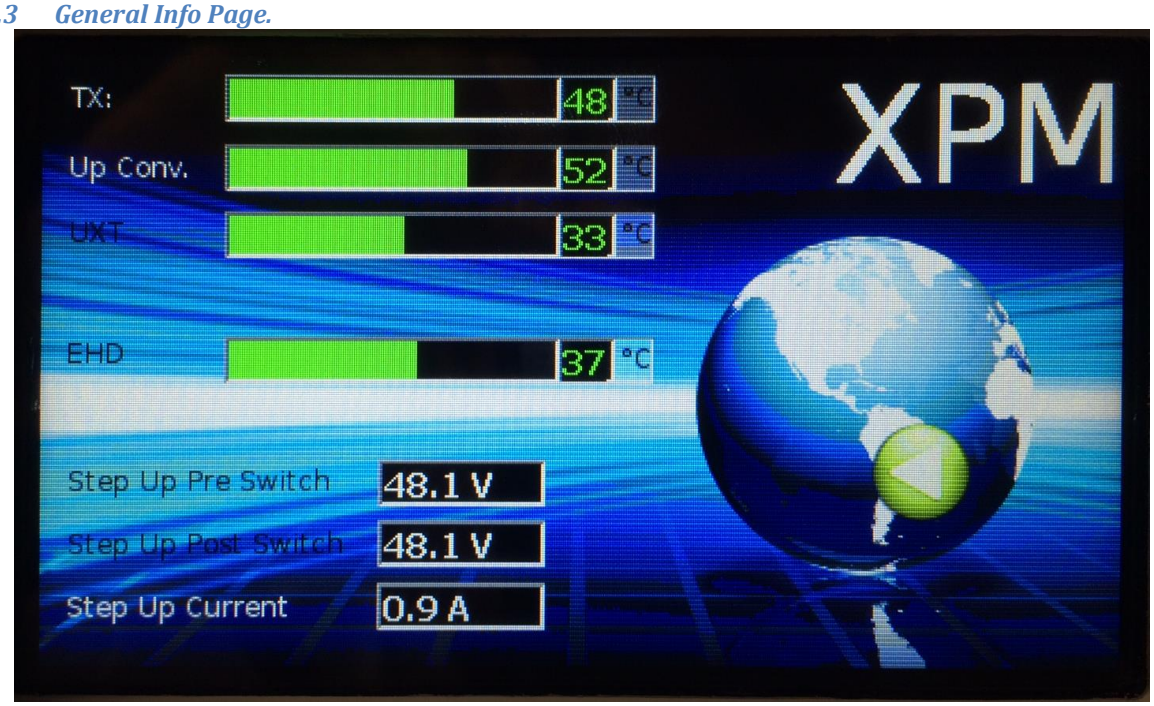


FIGURE 95: TRANSMITTING HEAD – GENERAL INFO.

This page is just for monitoring, so no action on pressing in any part of the screen except the "previous page" icon  .

In the upper part of the page user can check the temperature detected on any boards of the control unit and in the TX head (Up converter and Transmitter). For intuitive monitoring, the value is showed both numeric and through a colours bar.

In the lower part of the page, RF head power supply measurements are showed; value of voltages should be around 48V ± 2V and the current with Tx On should be around 0.6A ± 0.1A.

TABLE 41: HEAD DISPLAY – GENERAL SETTINGS PARAMETERS

Parameter	Description
TX	Transmitter module temperature
Up Conv.	Upconverter board temperature
UXT	Transmitter control unit board temperature (CLEBER)
EHD	Encoder board temperature (CLEBER)
Step Up Pre Switch	Cable voltage measurement before on/off switch circuitry
Step Up Post Switch	Cable voltage measurement after on/off switch circuitry
Step Up Current	Cable current

7.2.1.4 Network Parameters Page.

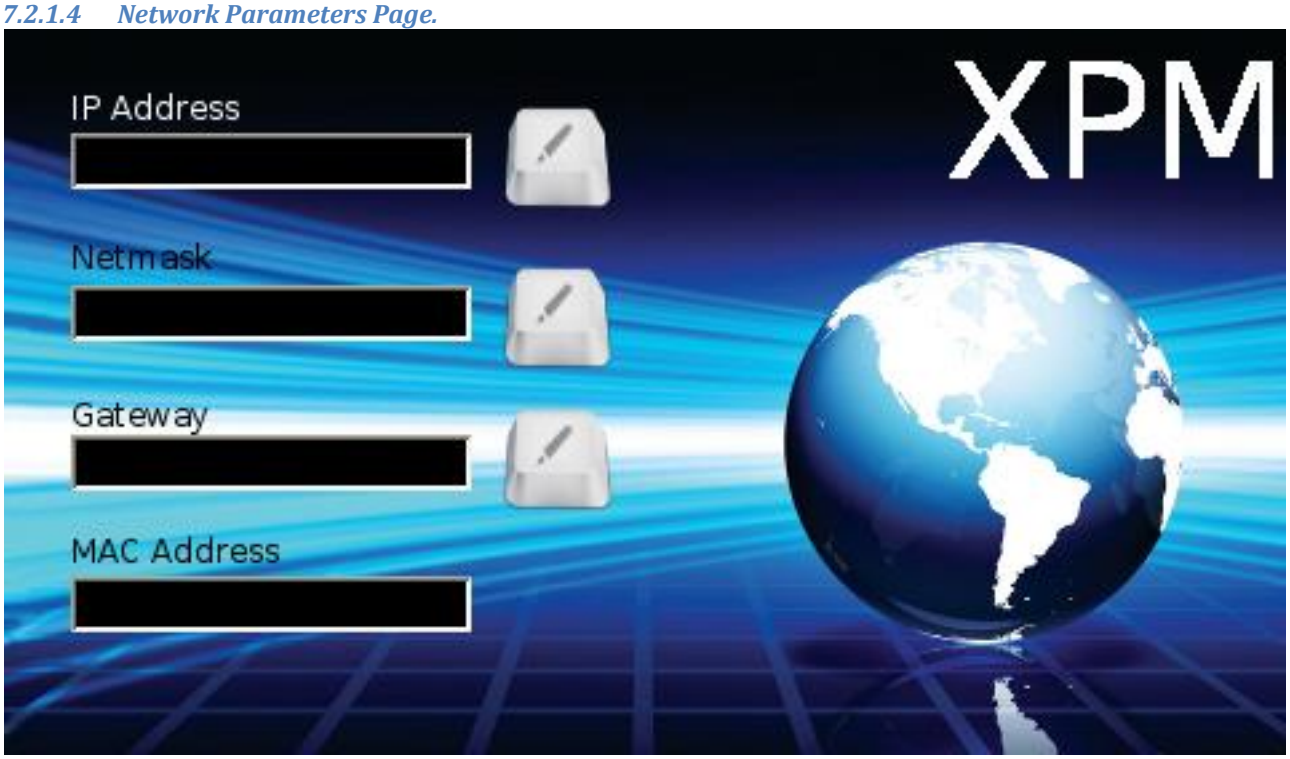


FIGURE 96: TRANSMITTING HEAD – NETWORK PARAMETERS MENU PAGE.

This page shows network parameters of control unit Management port.

User can edit IP Address, Netmask and Gateway (decimal format) by pressing on “Edit” icon  leading to the “Virtual Keypad display” hereunder shown.

FIGURE 97: VIRTUAL KEYPAD DISPLAY.

The system will help the user by putting dots in between ciphers of IP address decimal format (such as 192.169.10.150).

7.2.2 Receiver.

FIGURE 98: RECEIVING HEAD – MAIN MENU.

TABLE 42: HEAD DISPLAY -RX MAIN MENU PARAMETERS

Active area	Action
	Go to next right page (same for every page of the display)
	Direct access to General Info Page
	Direct access to Status page
	Direct access to Network Parameters Page
	Received Signal Strength Indication in dBm (green if above alarm threshold)
	Accede to Frequency Management Page

7.2.2.1.1 DVB-T/T2

FIGURE 99: RECEIVING HEAD – DEMODULATION AND DECODING CONFIG.

7.2.2.2 General Info Page.

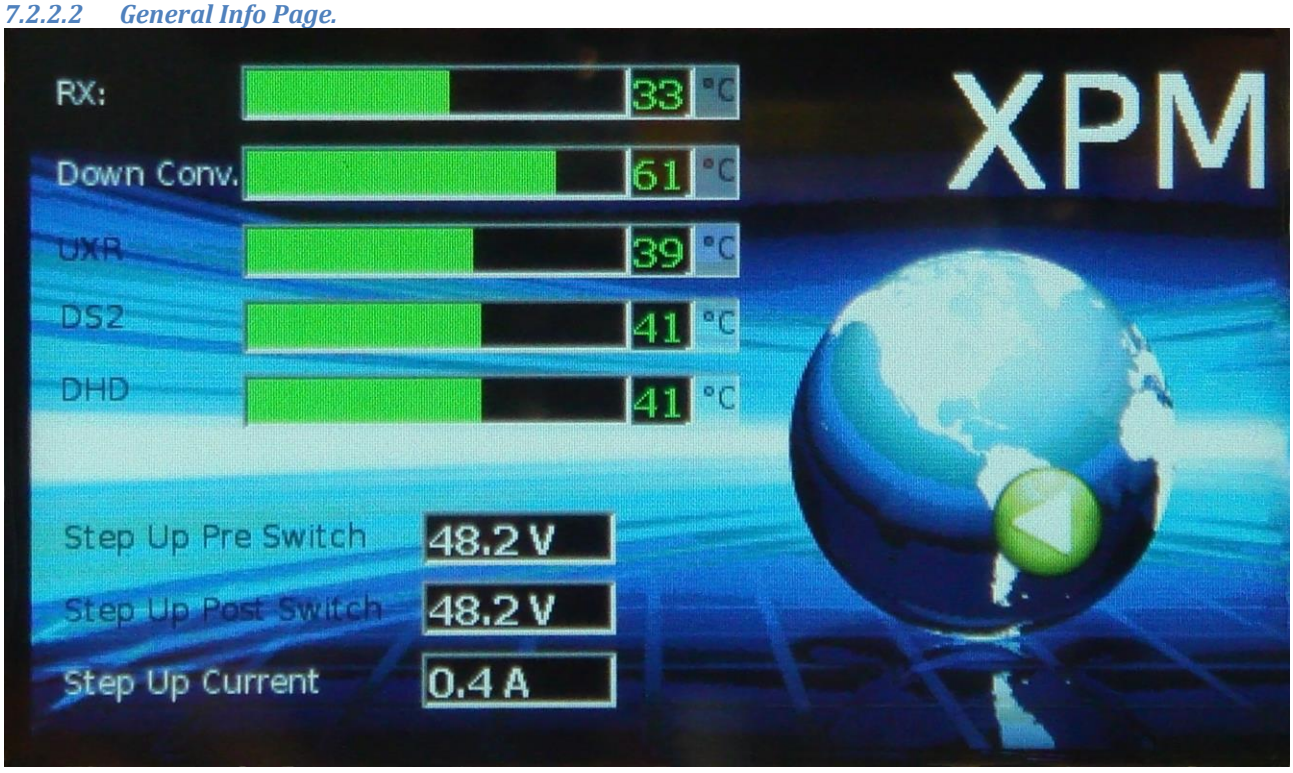


FIGURE 100: RECEIVING HEAD – GENERAL INFO.

This page is just for monitoring, so no action on pressing in any part of the screen except the “previous page” icon  .

In the upper part of the page user can check the temperature detected on any boards of the control unit and in the Rx head (Down converter and Receiver). For intuitive monitoring, the value is showed both numeric and through a colour bar.
In the lower part of the page, RF head power supply measurements are showed; value of voltages should be around 48V ± 2V and the current (should be around 0.4A ± 0.1A).

7.2.2.3 Network Parameters Page.

Same as per transmitter; see 7.2.1.4.

8 WEB Interface.

The XPM portable link provides a web interface for easy monitoring and setting operations. The connection to the Web Server integrated in the Linux Embedded OS can be achieved through RJ-45 connector LAN CTRL in the front panel (see Figure 166); with a web browser (such as Internet Explorer, Mozilla Firefox, Google Chrome, Opera, Safari…) it is possible to check equipment status and verify performances even remotely simply writing in the address bar the IP address of the equipment. In order to check the IP address, please refer par. 7.1.5.1.

Important Note: Default IP address is 192.168.10.150.

FIGURE 101: WEB INTERFACE LOGIN MESSAGE.

Figure 101 shows the login page of the Web interface, which let the user accede to after successful insertion of username and password. Default passwords are tied to the customer name and they are generated automatically during testing sessions; credentials are delivered with the goods with the documentation.

Three access levels are available:

1. User, with username **user** (read-only access to)
2. Power user, with username **puser** (read/write access to)
3. Administrator, with username **admin** (read/write and special functions access to)

Passwords can be modified, depending on the credentials, by the customer in related section.

8.1 Status.

Once the login process has been validated, the general status page shows up; it let the user check alarmed parts immediately; the page is divided into two sections: the upper part reports general information about controller and power supply, while the lower one shows the logic and physical interconnections between XPM parts and related main measurements and settings.

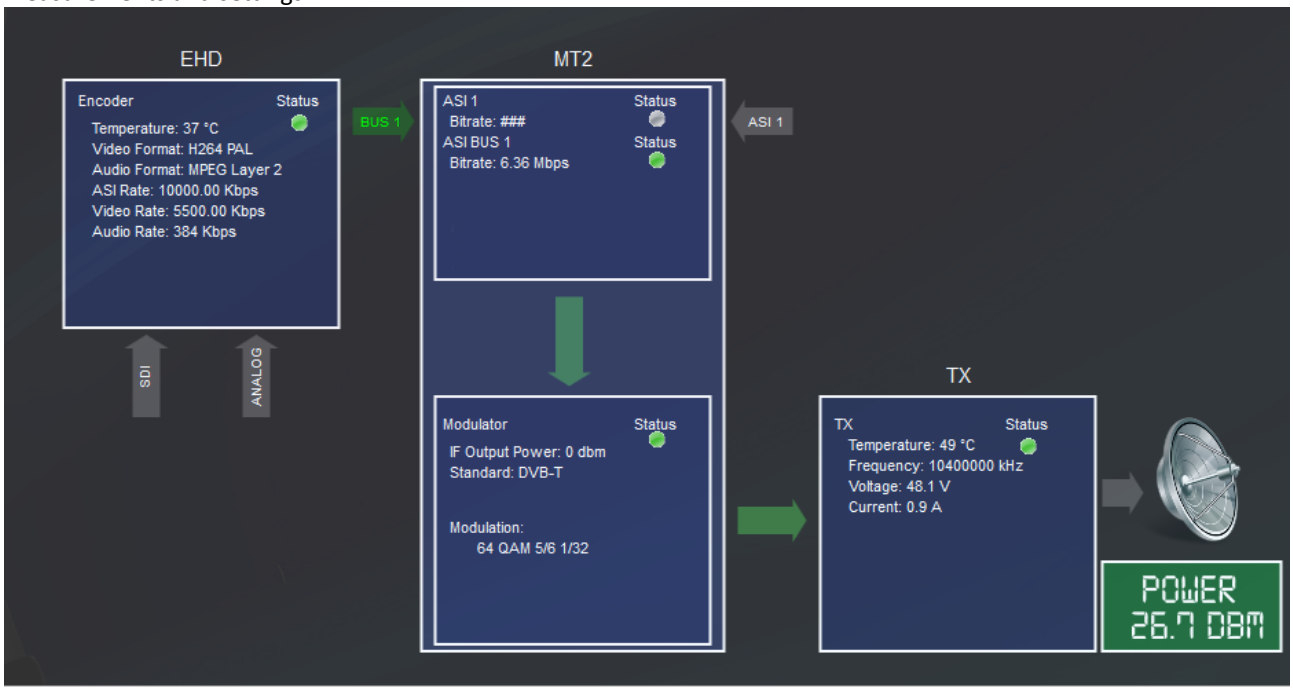


FIGURE 102: TRANSMITTER STATUS PAGE.

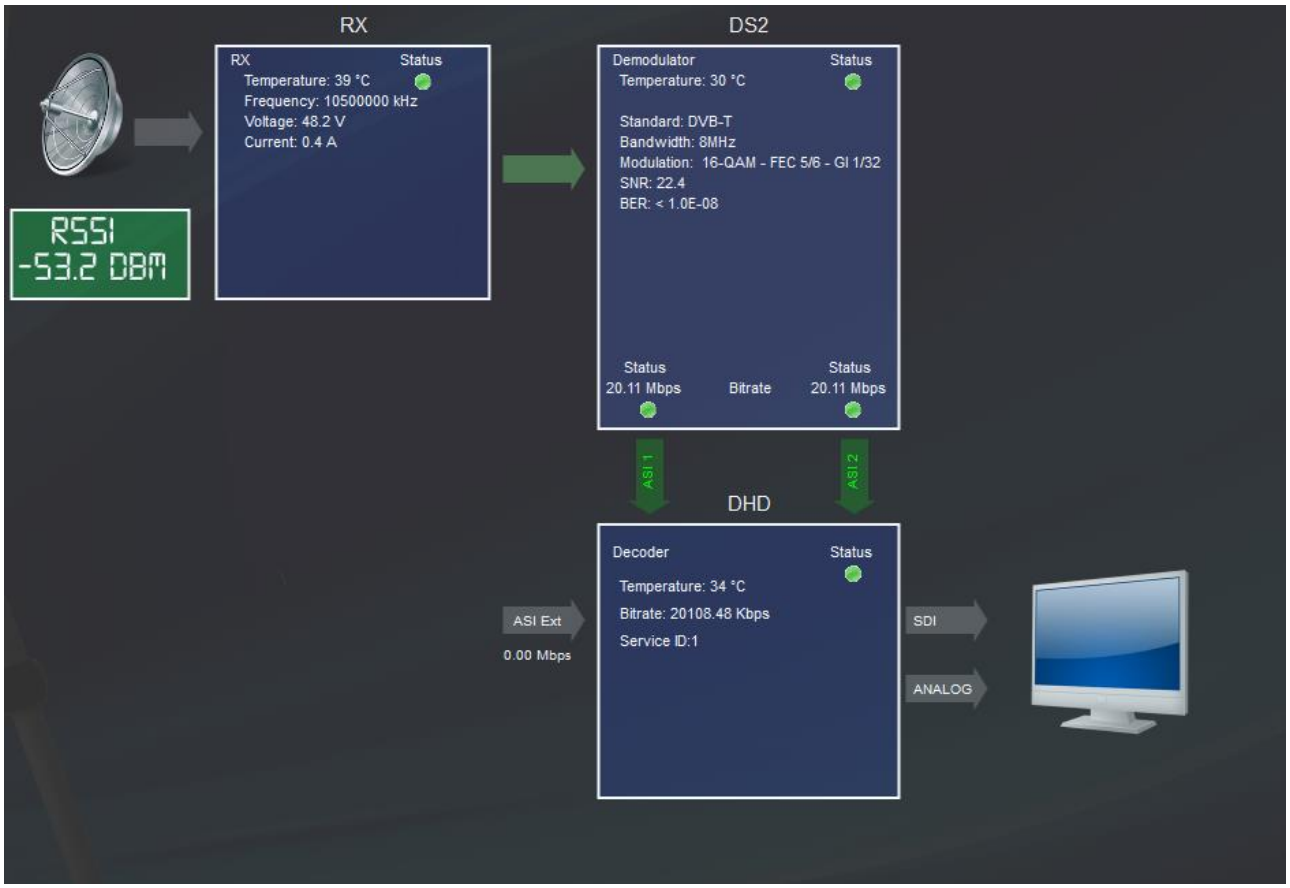


FIGURE 103: RECEIVER STATUS PAGE.

FIGURE 104: MENU BAR.

Figure 104 shows the menu bar, letting user access to related subsections, hereunder described.

8.1.1 Status-Controller.

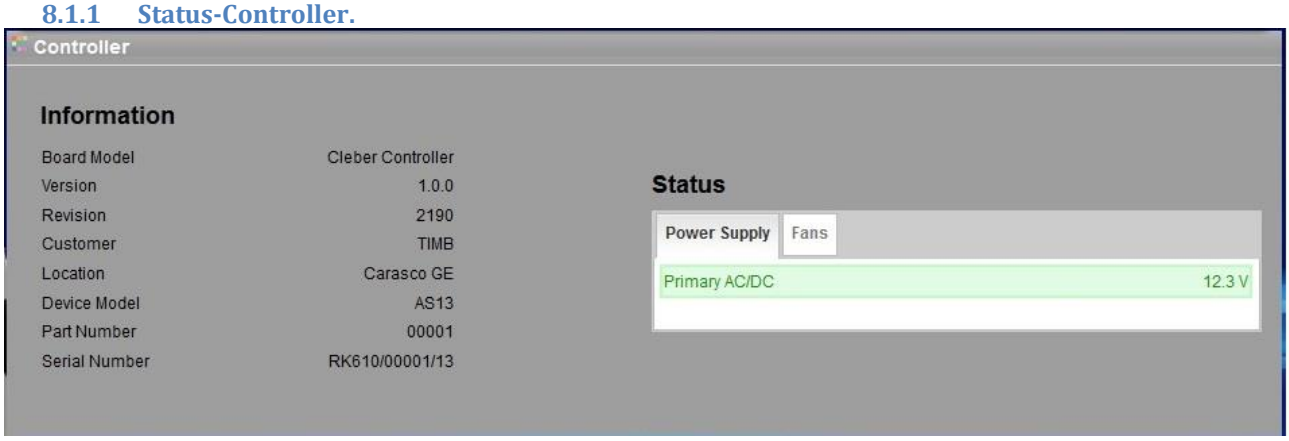


FIGURE 105: WEB STATUS FORM – CONTROLLER.

TABLE 43: CONTROLLER INFORMATION.

Tag	Description
Board Model	Controller board model
Version	Firmware version
Revision	Firmware version revision
Customer	Customer name
Location	Installation site
Device Model	Equipment configuration
Serial Number	As per name; ex. RK610/00001/13 RK610 -> name of chassis 00001 -> progressive number 13 -> year of production
Part Number	As per name

TABLE 44: POWER SUPPLY STATUS.

Primary AC/DC	12V output of main supply measurements; indication if AC/DC or DC/DC. Line is green if value is between limits, red otherwise.

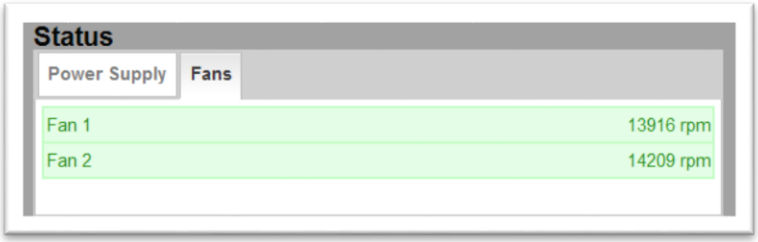


FIGURE 106: WEB STATUS FORM – CONTROLLER FANS.

TABLE 45: FANS STATUS.

Fan 1	Power supply cooling fan #1 speed.
Fan 2	Power supply cooling fan #2 speed

8.1.2 System Status-Transmitter.

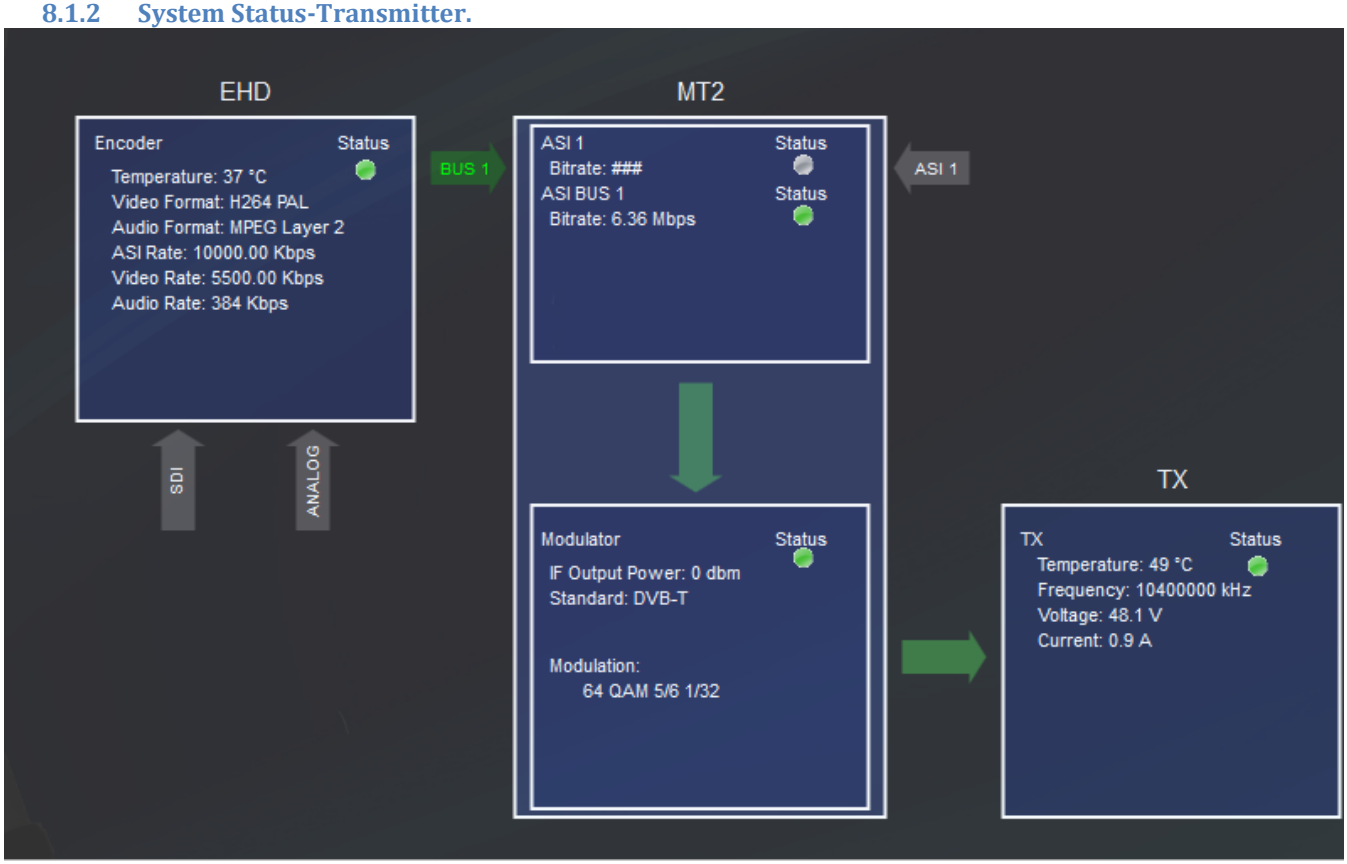


FIGURE 107: WEB STATUS FORM – TX SYSTEM STATUS-1

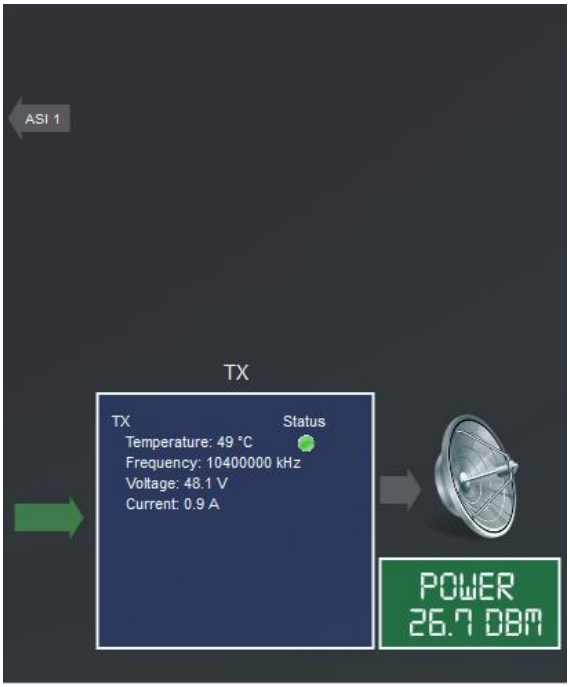


FIGURE 108: WEB STATUS FORM – TX SYSTEM STATUS-2.

Figure 108 shows the status page in case equipment is a **transmitter**; three logic areas compose the page, from left to right they are the encoder (EHD), the modulator (MT2) and the transmitter (located in the RF Head, TX).
Main information are shown, such as active inputs and outputs (in green) and transmission profiles; for easy check, output power is shown in capital letters in the right bottom corner; every area is active and linked to the related detailed page in Slot tab (see par. 8.4).

8.1.3 System Status-Receiver.

Figure 109 shows the status page in case equipment is a **receiver**; as for the transmitter, three logic areas compose the page, which, from right to left, are: the decoder (DHD), the demodulator (DS2) and the receiver (located in the RF Head,

RX). Main information are shown, such as active inputs and outputs (in green) and reception profiles; for easy check, received signal strength (RSSI) is shown in capital letters in the left upper corner; every area is active and linked to the related detailed page in Slot tab (see par. 8.4).

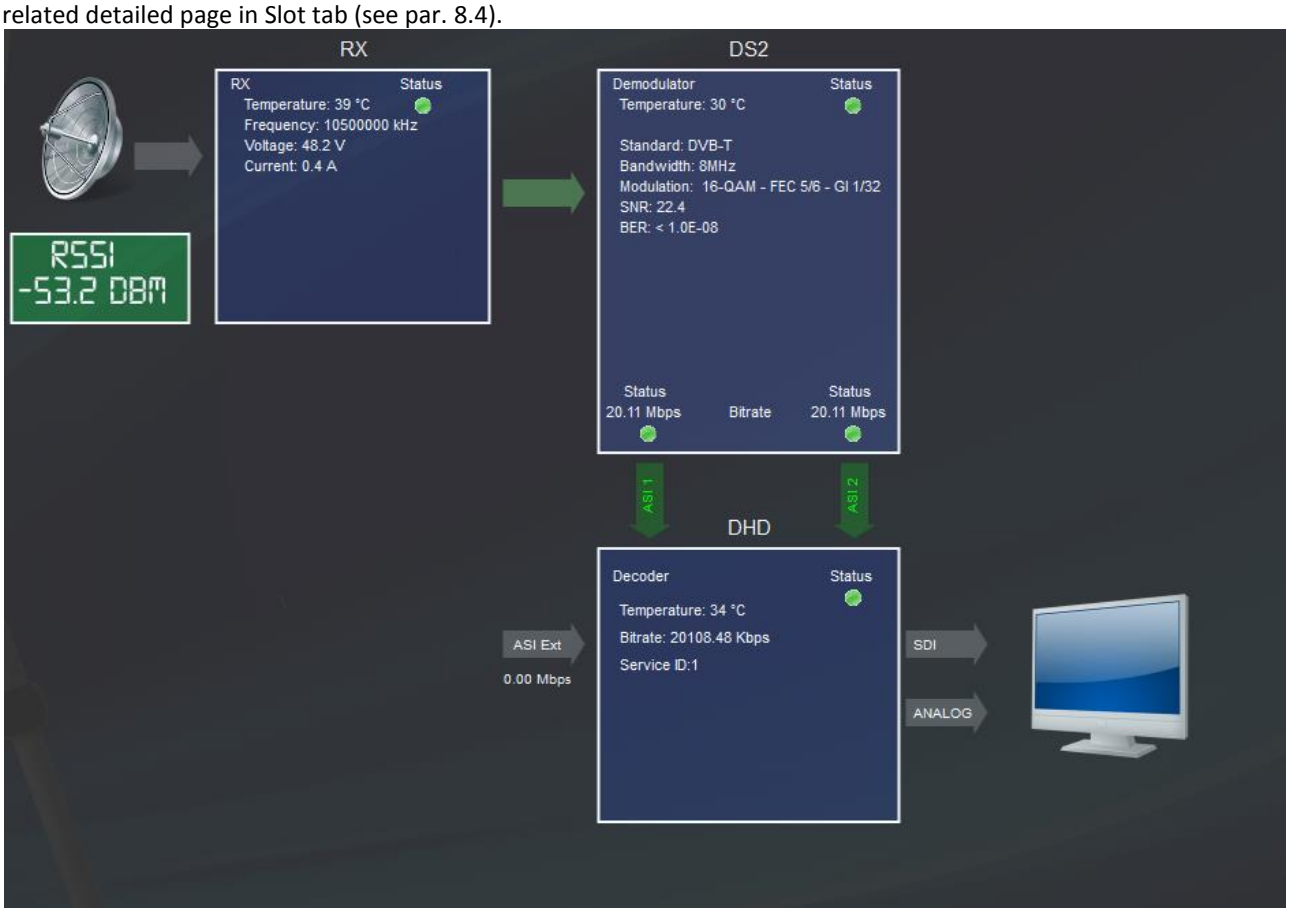


FIGURE 109: WEB STATUS FORM – RX SYSTEM STATUS

8.2 Tab Controller.

Tab web concerning Controller is composed by five frames:

1. Customer.
2. Network.
3. Traps Manager.
4. Tools.
5. Password Management.

8.2.1 Controller – Customer.

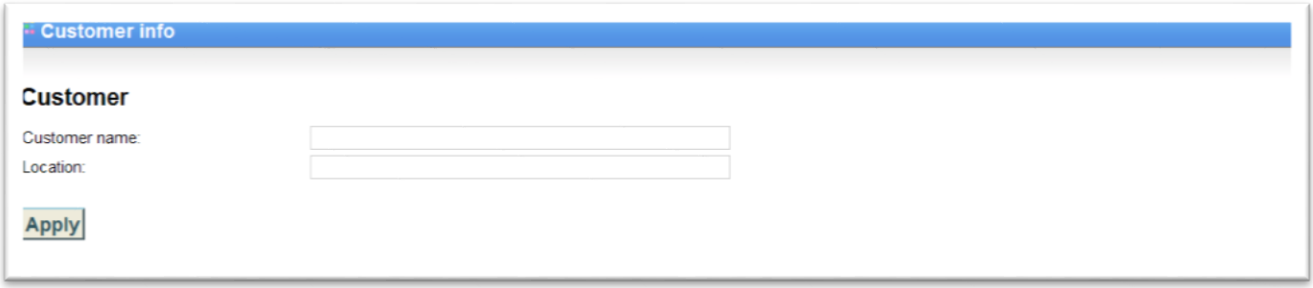


FIGURE 110: WEB CONTROLLER FORM – CUSTOMER INFO.

TABLE 46: EQUIPMENT INFORMATION FOR CUSTOMERS.

Customer name	Customer name.
Location	Installation site.

8.2.2 Controller – Network.

This frame let check and modify network parameters of the user interface.

Ip Address, Netmask and Gateway Address can be modified by the user writing in the dedicated text box while Mac Address is read-only. Moreover, it's possible to configure a DNS, a NTP server IP address, the Time Zone and the Country where the equipment is installed.

TABLE 47: EQUIPMENT INFORMATION FOR CUSTOMERS.

DHCP	Enable DHCP protocol to get network configuration automatically (if supported by user network; please contact your network administrator for further details).
IP Address	Equipment IP Address
Netmask	Equipment IP Subnet Mask
Gateway	Gateway IP Address
MAC address	Equipment MAC Address (read only)
Domain Name Server	DNS IP Address
NTP Server	NTP Server IP Address
Time Zone	Selection of Time Zone for Time synchronization
Country	Selection of Country for Time synchronization

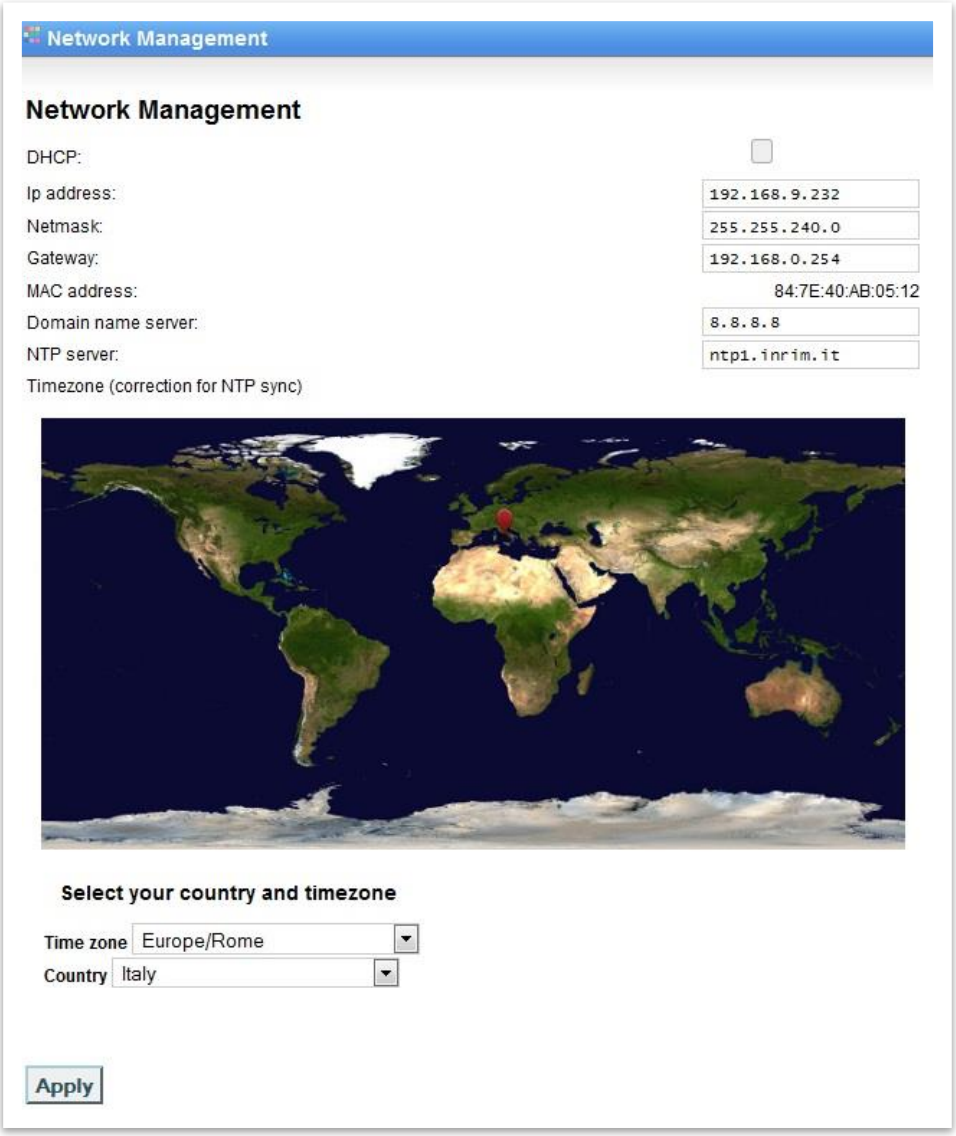


FIGURE 111: WEB CONTROLLER FORM – NETWORK PARAMETERS MENU.

8.2.3 Controller – Traps Manager.

This frame let the user accede to SNMP traps management; for every possible alarm it allows to enable or disable the traps sending. Moreover, it is possible to set their destination address and configure a destination mail address (if supported by customer's network).

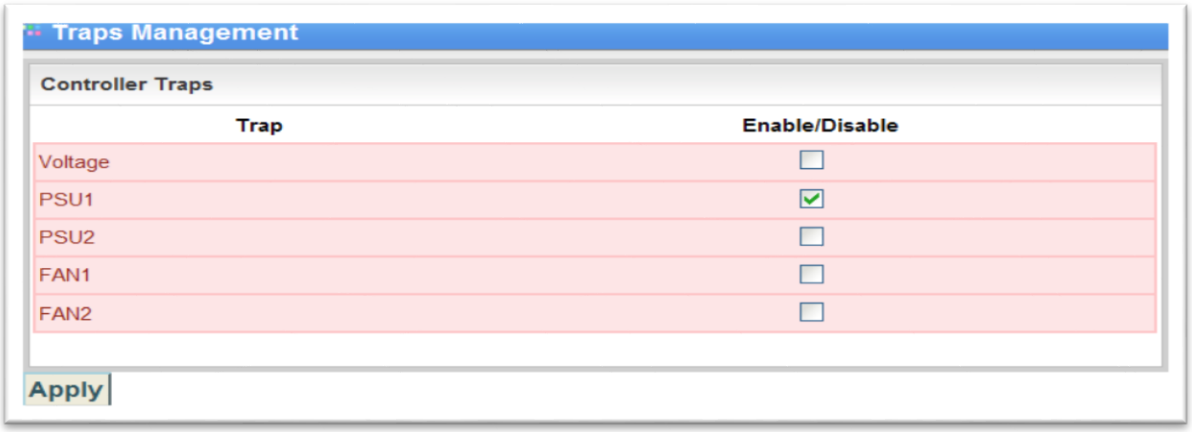


FIGURE 112: WEB CONTROLLER FORM –TRAPS MANAGEMENT.

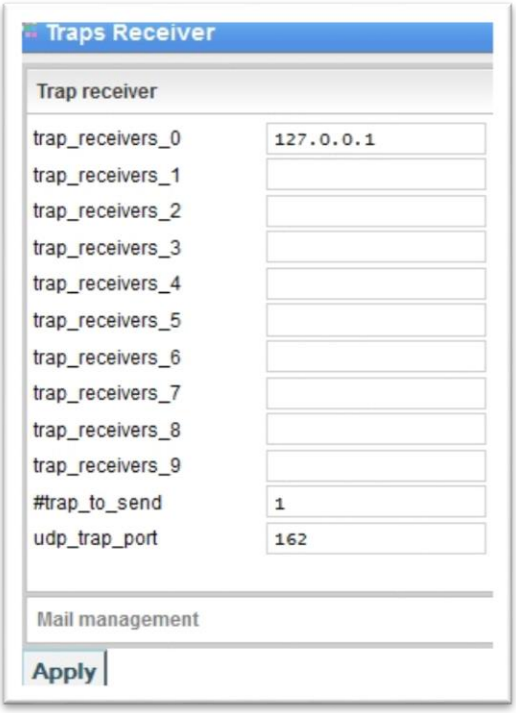


FIGURE 113: WEB CONTROLLER FORM – SNMP TRAPS RECEIVERS.

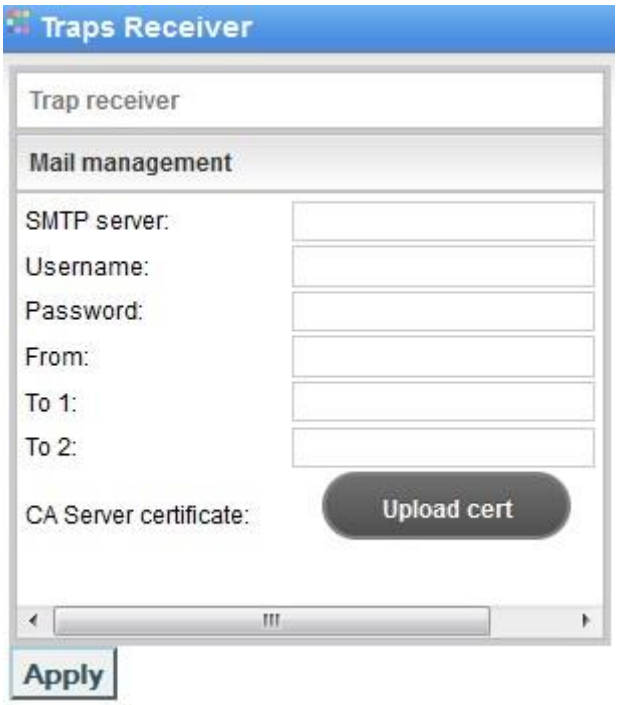


FIGURE 114: WEB CONTROLLER FORM – MAIL MANAGEMENT.

TABLE 48: MAIL MANAGEMENT

SMTP Server	Setting of SMTP server
Username	Setting of Username
Password	Setting of Password
From	Setting Source Name
To 1	Setting Destination address
To 2	Setting Destination address
CA Server certificate	Upload CA certificate for security

This information depends on customer's network. If you have not this information, please contact your network administrator.

8.2.4 Controller – Tools.

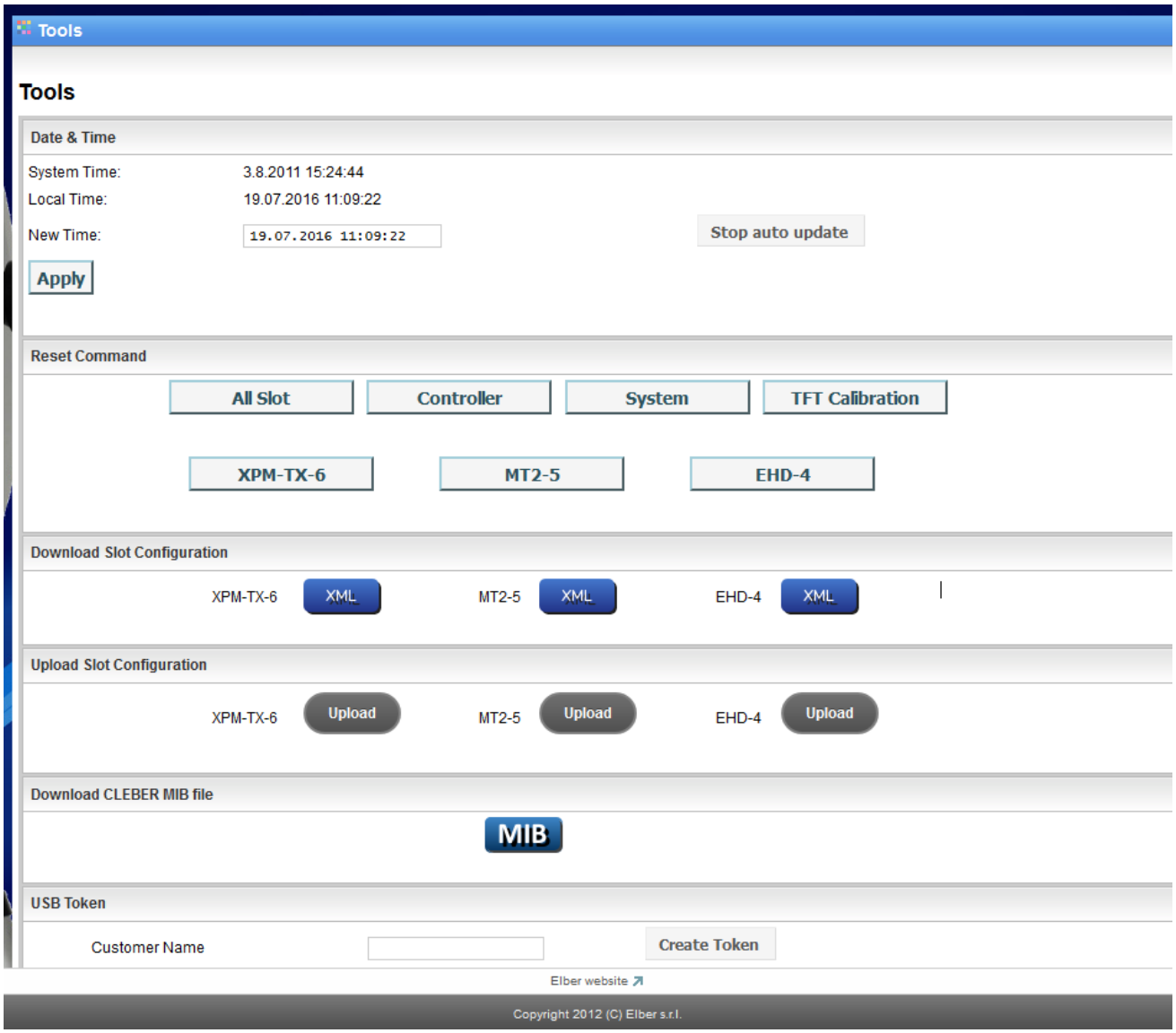


FIGURE 115 WEB CONTROLLER FORM – GENERAL INFO AND TOOLS

TABLE 49: DATE AND TIME

System Time	It shows System Time
Local Time	It shows local time (if taken from NTP server)
New Time	Text box to modify local time.
Stop auto update	Button; let the user disable “auto-updating” of Local Time.

TABLE 50: RESET COMMAND

All Slot	Let the user reset all boards in the control unit
Controller	Let the user reset just the user-interface microprocessor
System	Let the user reset both microprocessor and optional boards
TFT Calibration	Let the user launch the TFT calibration procedure
XPM-TX	Let the user reset just UXT (Tx control unit) board and TX Head.
MT2	Let the user reset MT2 (modulator) board
EHD	Let the user reset EHD (encoder) board

TABLE 51: DOWNLOAD SLOT CONFIGURATION

XPM-TX	Let the user save actual configuration for UXT (Tx control unit) board and TX Head.
MT2	Let the user save actual configuration for MT2 (modulator) board
EHD	Let the user save actual configuration for EHD (encoder) board

TABLE 52: UPLOAD SLOT CONFIGURATION

XPM-TX	Let the user upload a stored configuration for UXT (Tx control unit) board and TX Head.
MT2	Let the user upload a stored configuration for MT2 (modulator) board
EHD	Let the user upload a stored configuration for EHD (encoder) board

TABLE 53: CREATE TOKEN

Customer Name	Indicate exact Customer Name (see Table 43); Token is generated on the basis of the Customer Name.
Create Token	Push this button to generate the Token file. Token is to be installed on a USB Pen-Drive and connected to front panel USB connector to grant read/write rights while using the TFT.

8.2.5 Controller – Password management.

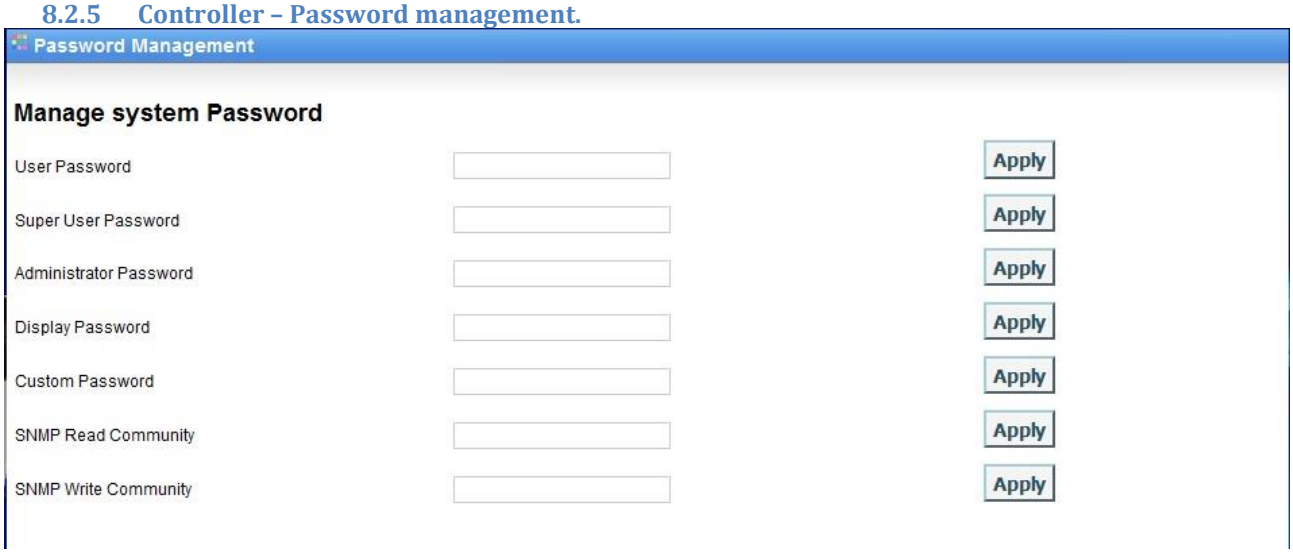


FIGURE 116: WEB CONTROLLER FORM –PASSWORD MANAGEMENT.

This form let modify the passwords for web interface, TFT and the SNMP communities.
Passwords should be composed of at least six characters and cannot overcome fifteen characters.
The password level that can be modified is subject to the rights of the user. The user “User” cannot change passwords. User “Super-User” can change its own and the “User” ones. The “Administrator” can change any password.

8.3 Tab Configuration.

Tab configuration shows a list of “pre-set” configuration that user can recall, modify or insert.
Preset configurations are divided into two lists:

1) Configuration
2) TX Frequency Presets

Configuration list is organized in 14 columns, while number of rows depends on how many records customer has. A minimum set is stored by default and shown with  icon in ID field.

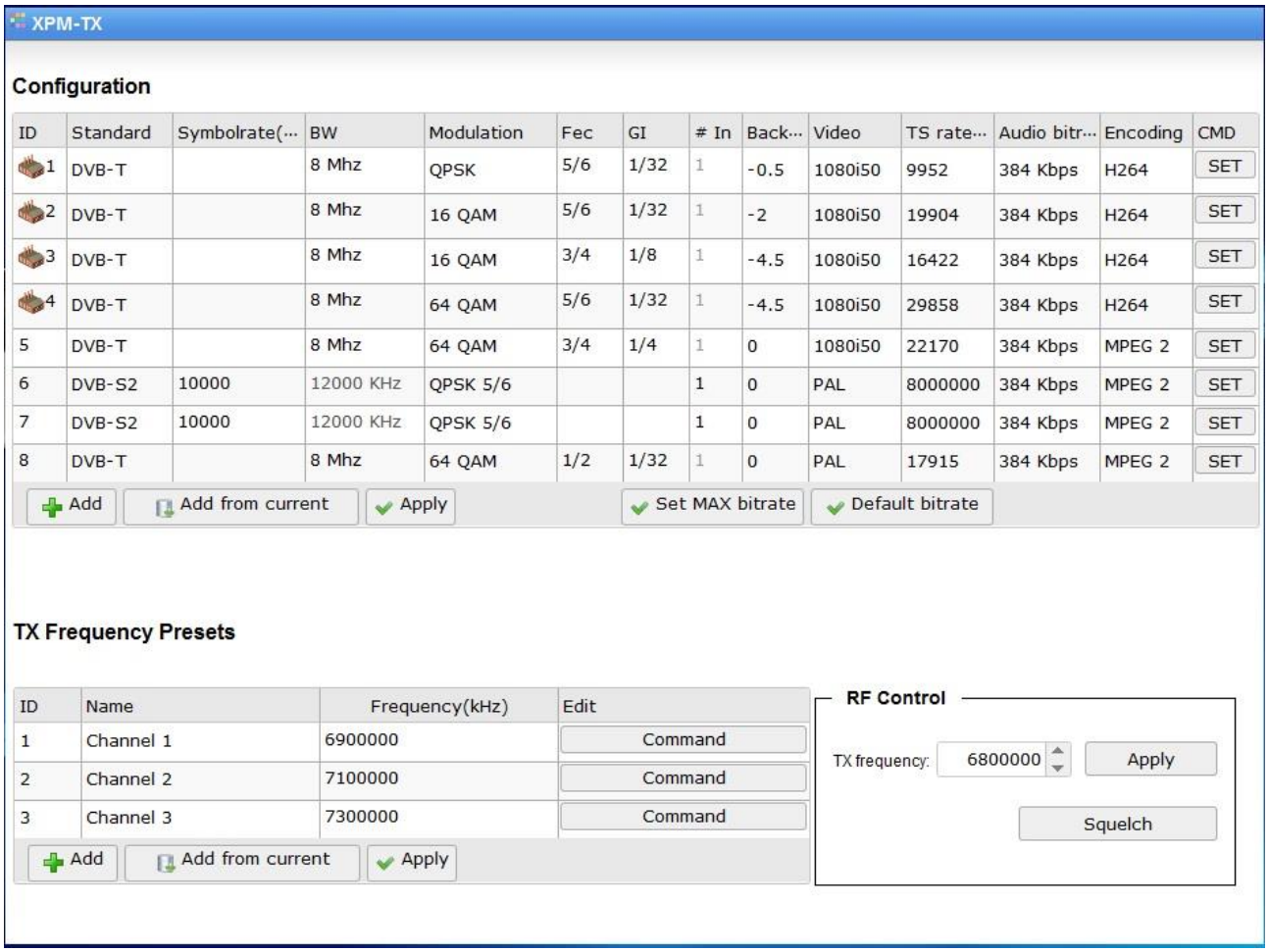


FIGURE 117: WEB CONFIGURATION FORM – PRESET CONFIGURATIONS.

TABLE 54: CONFIGURATIONS LIST

ID	Identification Number
Standard	DVB-T/T2
Symbol Rate	Modulator Symbol rate in Kbaud
Modulation	Constellation adopted
FEC	Code rate indication
GI	Guard Interval
# In	Not Used
Back-off	Power management of transmitter
Video	Video Resolution
TS rate	Transport Stream bitrate
Audio bitrate	Audio Bitrate
Encoding	Coding type (H.264 or MPEG-2)
CMD	Set command shows a recap window with Save/Apply and Cancel button. In this window, configuration can also be set as read-only
Add	When pushed, a new row is added to the table
Add from current	When pushed, a new row is added to the table, with values taken from actual configuration
Apply	When pushed, the configuration is applied.
Set MAX bitrate	When pushed, TS rate is set automatically to the maximum allowed by the modulator configuration
Default bitrate	When pushed, related bitrate is used as default.

TABLE 55: TX FREQUENCY PRESETS LIST

ID	Identification Number
Name	Channel identifier decided by the user
Frequency (KHz)	Frequency of operation in KHz
Edit	Command button, when pushed, shows a recap window with Save, Save/Apply, Remove and Cancel button
Add	When pushed, a new row is added to the table

Add from current	When pushed, a new row is added to the table, with values taken from actual configuration
Apply	When pushed, the configuration is applied.

For safety purposes, a RF control form is shown besides the TX Frequency Presets.

TABLE 56: RF CONTROL

Tx frequency	Let the user change Tx operating frequency (need to push Apply button besides
Apply	When pushed, the new frequency is applied.
Squelch	When pushed, Tx is muted.

8.4 Tab Slot.

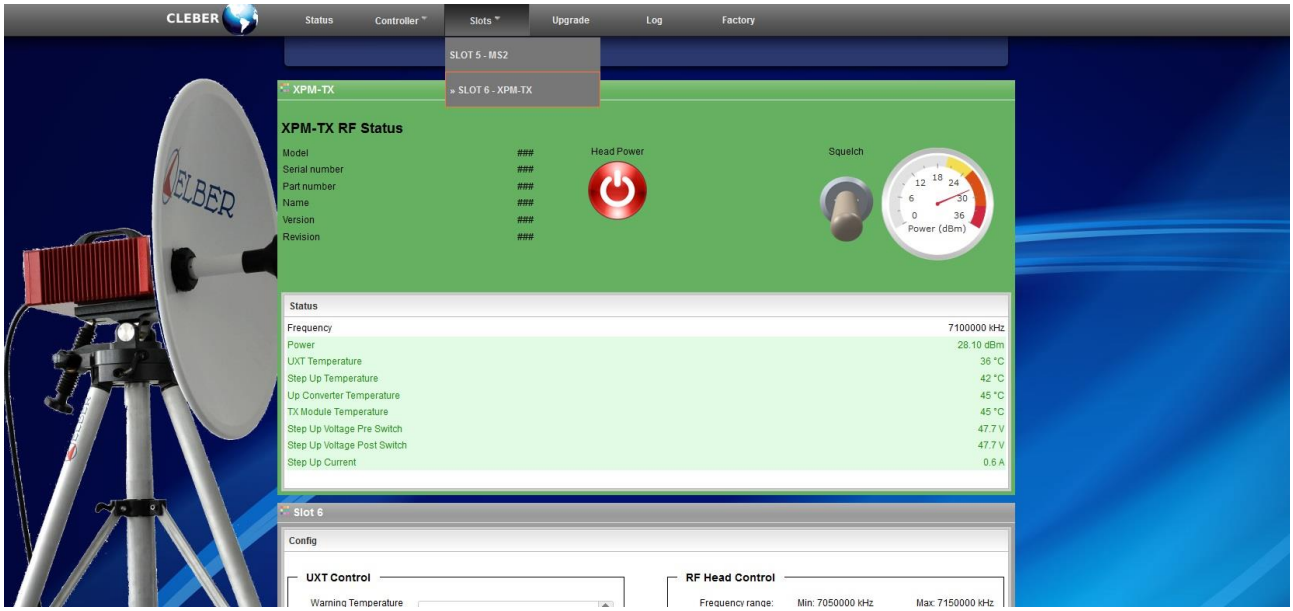


FIGURE 118: WEB SLOT FORM.

The Tab "Slot" let the user monitor and configure every single board composing the system; user is asked to select the board he may want to check, like the number 6 in the example above.

8.4.1 Transmitter.

8.4.1.1 Encoder EHD.

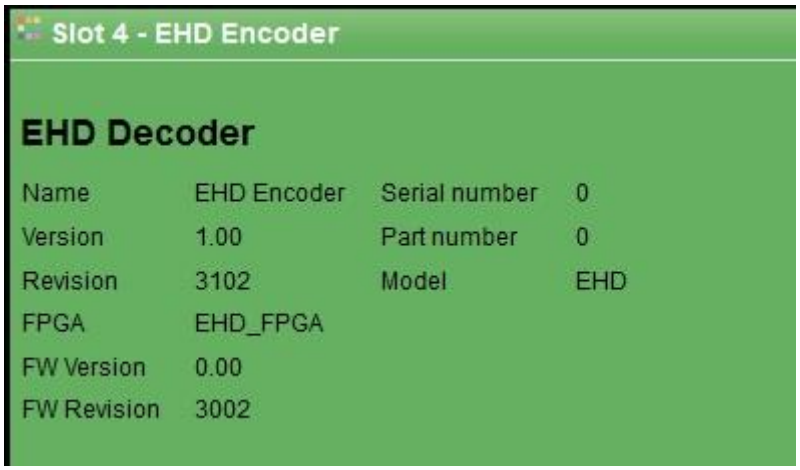


FIGURE 119: WEB SLOT FORM - EHD GENERAL INFO.

TABLE 57: EHD GENERAL INFO PARAMETERS

Tag	Description
Name	Board Name
Version	Firmware version
Revision	Firmware version revision

FPGA	FPGA firmware name
FW Version	FPGA firmware version
FW Revision	FPGA firmware revision
Serial Number	As per name
Part Number	As per name
Model	As per name

FIGURE 120: WEB SLOT FORM - EHD ENCODING STATUS.

TABLE 58: EHD ENCODING STATUS PARAMETERS

Tag	Description
Temperature	Temperature measurement in °C (green if ok)
Video input	Indication of selected video input (BAR generator, SDI, CVBS)
Audio Pair 1/2	Indication of selected audio input for channels 1/2 (tone generator, SDI-embedded, analogue 1-2, digital 1-2)
Audio Pair 3/4	Indication of selected audio input for channels 3/4 (tone generator, SDI-embedded, analogue 1-2-3-4, digital 1-2-3-4)
Video Input Format	Indication of input video format (4:3, 16:9)
Encoding Format	Indication of encoding parameters (Standard-Resolution-Chroma)
ASI 1	Indication of TS bitrate on ASI 1 connector
ASI 2	Indication of TS bitrate on ASI 2 connector
ASI 3 (BUS 1)	Indication of TS bitrate on ASI 3 connector (BUS 1)
ASI 4 (BUS 2)	Indication of TS bitrate on ASI 4 connector (BUS 2)

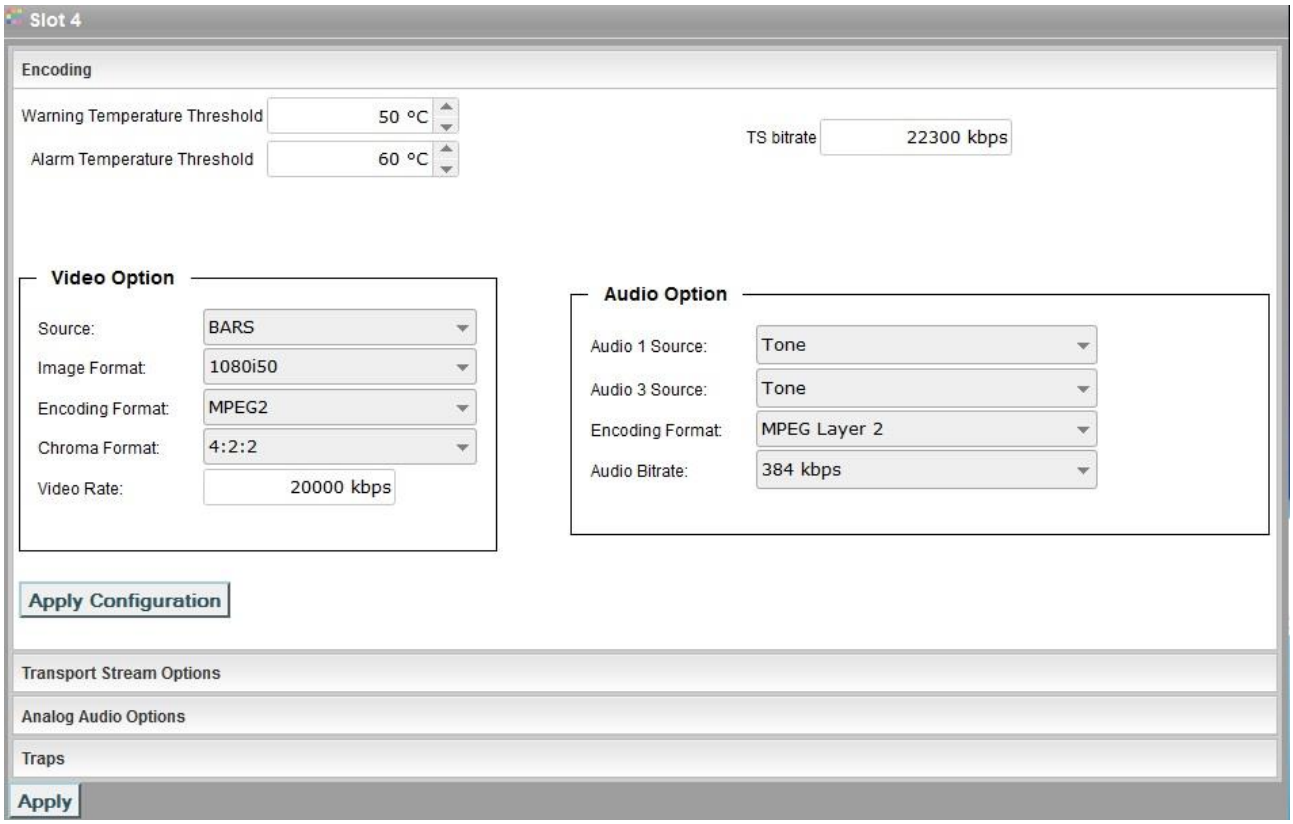


FIGURE 121: WEB SLOT FORM - EHD ENCODING CONFIG.

TABLE 59: EHD ENCODING CONFIG PARAMETERS

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C
TS bitrate	Let the user set the output bitrate in kbps
Video Option - Source	Let the user select the video source between BARS, CVBS and SDI
Video Option - Image Format	Let the user set the image format
Video Option - Encoding Format	Let the user select the encoding format between • MPEG Layer 2 • H.264
Video Option - Chroma Format	Let the user select the Chroma Format between • 4:2:2 • 4:2:0
Video Option - Video Rate	Let the user set the video rate in kbps
Audio Option - Audio 1/2 Source	Let the user select the audio 1/2 source between Tone Generator, SDI Embedded, Analogue, AES-EBU
Audio Option - Audio 3/4 Source	Let the user set select the audio 3/4 source between Tone Generator, SDI Embedded, Analogue, AES-EBU
Audio Option - Encoding Format	Let the user set the audio encoding format
Audio Option - Audio Bitrate	Let the user set the audio rate

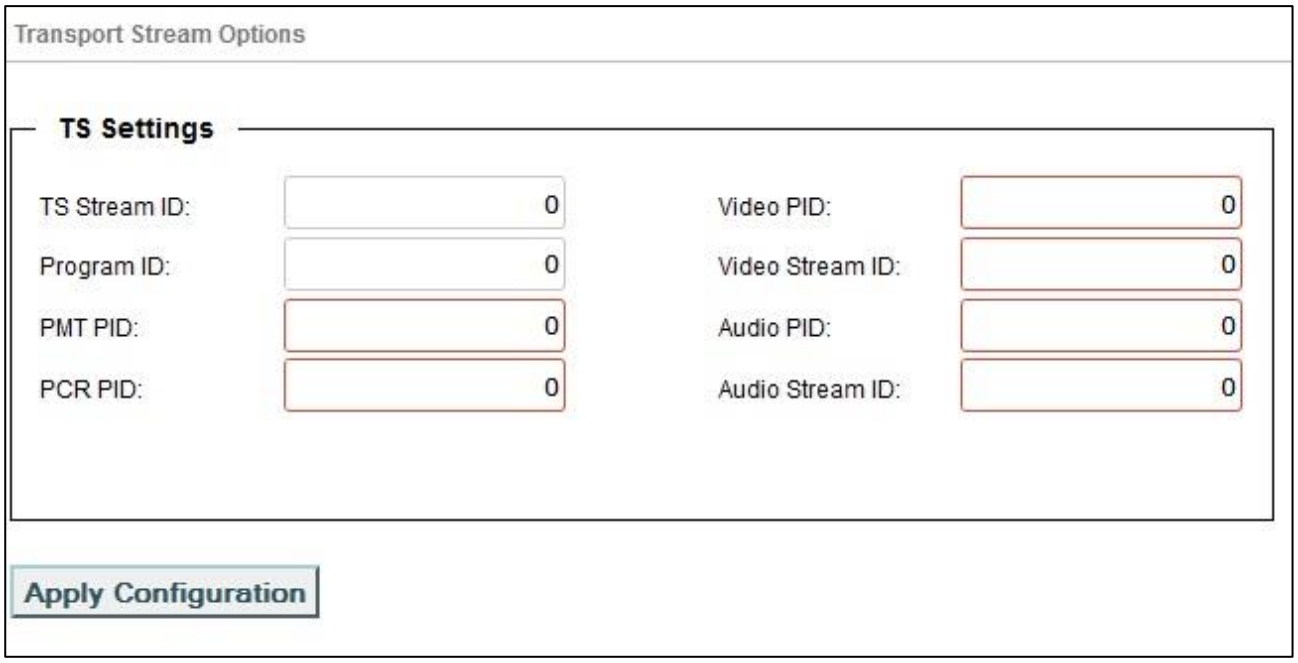


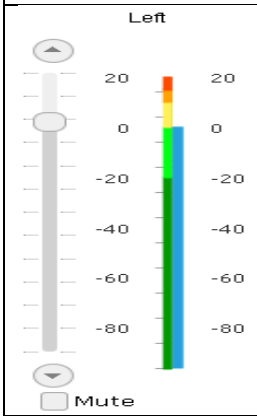
FIGURE 122: WEB SLOT FORM - EHD TS OPTIONS CONFIG.

TABLE 60: EHD TS OPTIONS CONFIG PARAMETERS

Tag	Description
TS Stream ID	Let the user set the TS ID
Program ID	Let the user set the Program ID
PMT PID	Let the user set the PMT PID
PCR PID	Let the user set the PCR PID
Video PID	Let the user set the video PID
Video Stream ID	Let the user set the video stream ID
Audio PID	Let the user set the audio PID
Audio Stream ID	Let the user set the audio stream ID

FIGURE 123: WEB SLOT FORM - EHD ANALOG AUDIO CONTROL CONFIG.

TABLE 61: EHD ANALOG AUDIO CONTROL CONFIG PARAMETERS

Tag	Description
Audio 1	Audio 1 control
Audio 2	Audio 2 control
Phantom	Let the user enable Microphone supply(+12V)
Pad	Let the user enable input attenuator(20dB)
	Let the user set the audio output gain by cursor
	Let the user set the value of audio output gain

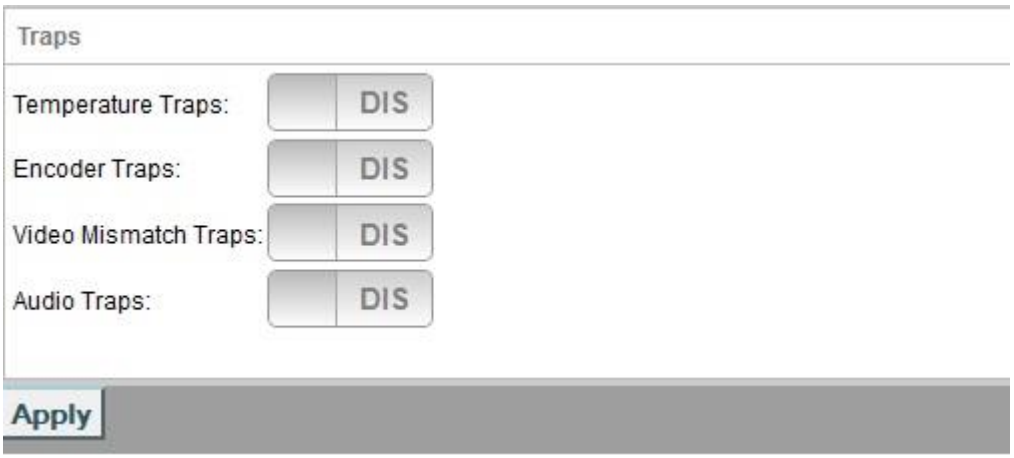


FIGURE 124: WEB SLOT FORM - EHD SNMP TRAPS CONFIG.

TABLE 62: EHD SNMP TRAPS

Tag	Description
Temperature traps	Let the user enable SNMP trap sending for temperature alarm event
Encoder Traps	Let the user enable SNMP trap sending for encoder general alarm event
Video Mismatch Traps	Let the user enable SNMP trap sending for Video Mismatch alarm event
Audio Traps	Let the user enable SNMP trap sending for Audio alarm event

8.4.1.2 Modulator MT2.

FIGURE 125: WEB SLOT FORM - MT2 GENERAL INFO.

TABLE 63

Tag	Description
Name	Board Name
Version	Firmware version
Revision	Firmware version revision
Serial Number	As per name
Part Number	As per name
Model	As per name

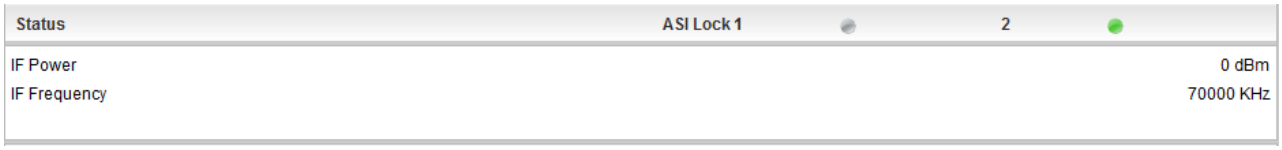


FIGURE 126: WEB SLOT FORM - MT2 GENERAL STATUS.

TABLE 64

Tag	Description
ASI Lock 1-2	Led indication for ASI inputs locking status; ASI 1 is the BNC connector; ASI 2 comes from internal BUS
IF Frequency	IF Frequency indication in KHz.

IF Power	IF level indication in dBm.

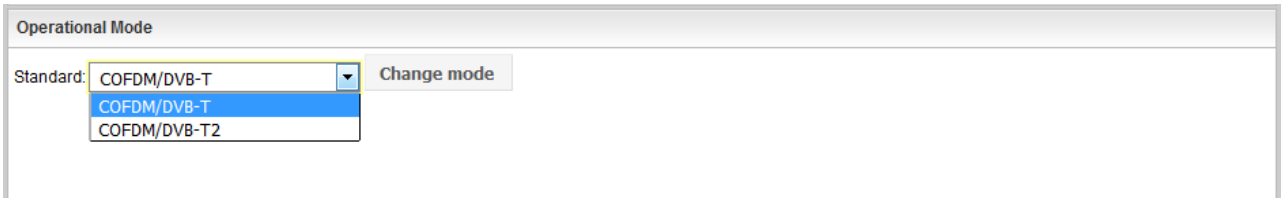


FIGURE 127: WEB SLOT FORM - MT2 OPERATIONAL MODE SETTING.

TABLE 65

Tag	Description
Standard	Let the user select the modulation standard between COFDM/DVB-T and COFDM/DVB-T2. The button Change mode applies the choice and the related standard is loaded into the MT2 module.

8.4.1.2.1 DVB-T version.

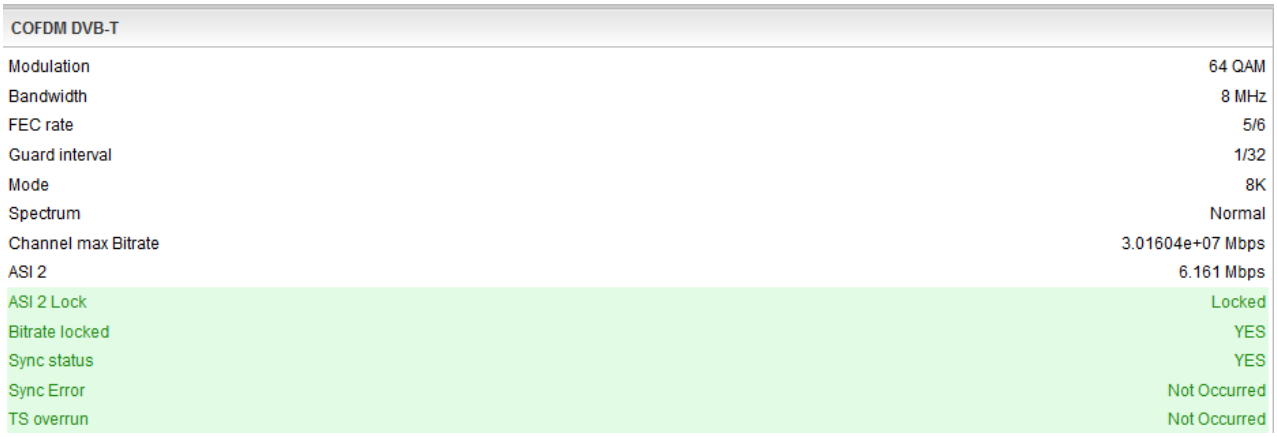


FIGURE 128: WEB SLOT FORM - MT2 STATUS (DVB-T).

TABLE 66: COFDM MODULATOR STATUS PARAMETERS MENU.

Tag	Description
Modulation	Modulation scheme (QPSK-16-64QAM)
Bandwidth	Signal bandwidth (5/6/7/8 MHz)
FEC Rate	Code rate
Guard Interval	Guard Interval(1/4, 1/8/, 1/16, 1/32)
Mode	Number of carriers (2K/8K)
Spectrum	Normal or Inverted
Channel max Bitrate	Maximum TS bitrate indication
ASI 2	Bitrate ASI 2 (selected one)
ASI 2 Lock	Lock indication (green if ok, red if not)
Bitrate locked	Bitrate lock indication (green if ok, red if not)
Sync Status	Sync status indication **(green if ok, red if not)**
Sync Error	Sync error signalling (green if ok, red if not)
TS Overrun	TS bitrate higher than capacity (green if ok, red if not)

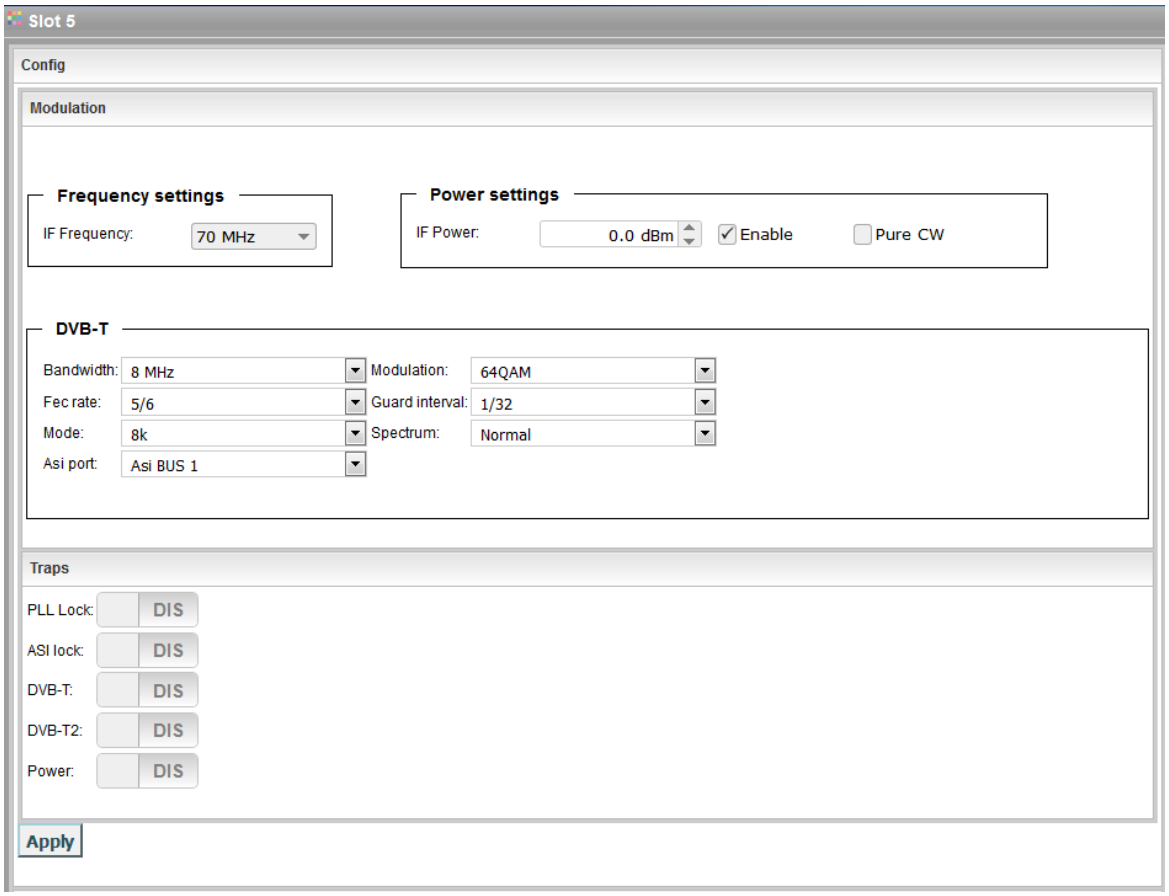


FIGURE 129: WEB SLOT FORM - MT2 CONFIG (DVB-T).

TABLE 67: MT2 CONFIG (DVB-T) PARAMETERS

Tag	Description
IF Frequency	Let the user set the IF frequency in MHz. 70 or 140 MHz.
IF Power	IF Power setting in dBm (-25 ÷ 0 dBm). Checkbox related for Enabling/Disabling the transmission. Pure CW allows generation of Pure Carrier.
Bandwidth	Signal bandwidth selection (5/6/7/8 MHz)
FEC Rate	1/2, 2/3, 3/4, 5/6, 7/8
Mode	Number of carriers (2K, 8K)
ASI port	Input selection (just one at a time) • ASI 1 • ASI BUS 1
Modulation	QPSK, 16QAM, 64QAM
Guard interval	1/4, 1/8, 1/16, 1/32
Spectrum	Normal, Inverted
PLL Lock traps	Let the user enable SNMP trap sending for PLL Lock alarm event
ASI Lock traps	Let the user enable SNMP trap sending for ASI Lock alarm event
DVB-T traps	Let the user enable SNMP trap sending for DVB-T alarm event
DVB-T2 traps	Let the user enable SNMP trap sending for DVB-T2 alarm event
Power traps	Let the user enable SNMP trap sending for Power alarm event

8.4.1.2.2 DVB-T2 version.

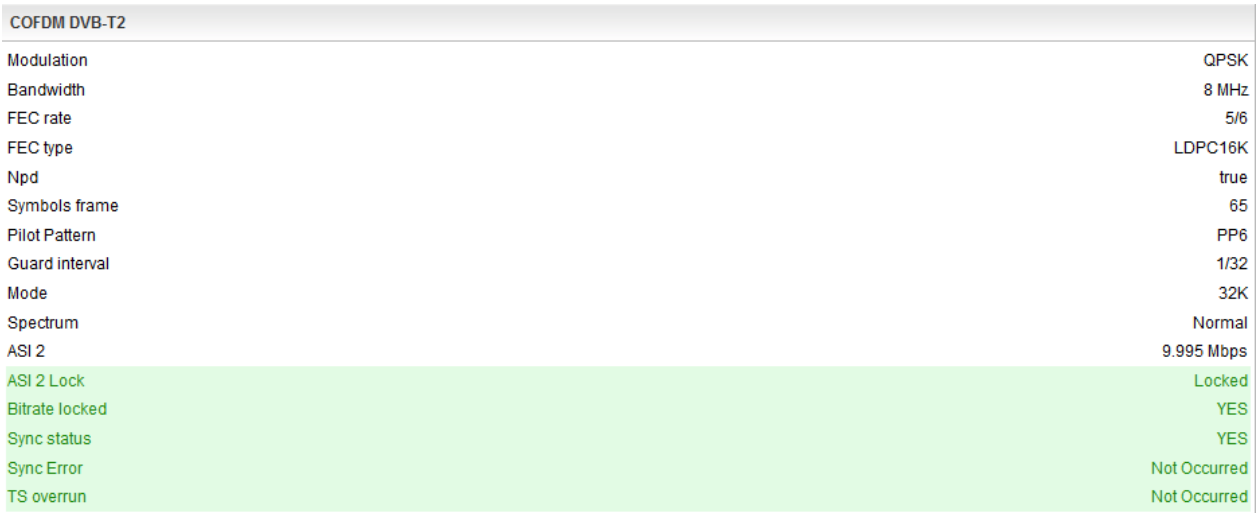


FIGURE 130: WEB SLOT FORM - MT2 STATUS (DVB-T2).

TABLE 68: COFDM MODULATOR STATUS PARAMETERS MENU.

Tag	Description
Modulation	Modulation scheme (QPSK-16-64-256QAM)
Bandwidth	Signal bandwidth (5/6/7/8 MHz)
FEC Rate	Code rate
FEC Type	FEC Type (LDPC16K, LDPC64K)
NPD	Null Packet Deletion (true, false)
Symbols frame	Data Symbols per frame (1-67)
Pilot pattern	PP1 to PP8
Guard Interval	Guard Interval (1/32, 1/16, 1/8, ¼, 1/128, 19/128, 19/256)
Mode	Number of carriers (1K/2K/4K/8K/16K/32K)
Spectrum	Normal or Inverted
ASI 2	Bitrate ASI 2 (selected one)
ASI 2 Lock	Lock indication (green if ok, red if not)
Bitrate locked	Bitrate lock indication (green if ok, red if not)
Sync Status	Sync status indication **(green if ok, red if not)**
Sync Error	Sync error signalling (green if ok, red if not)
TS Overrun	TS bitrate higher than capacity (green if ok, red if not)

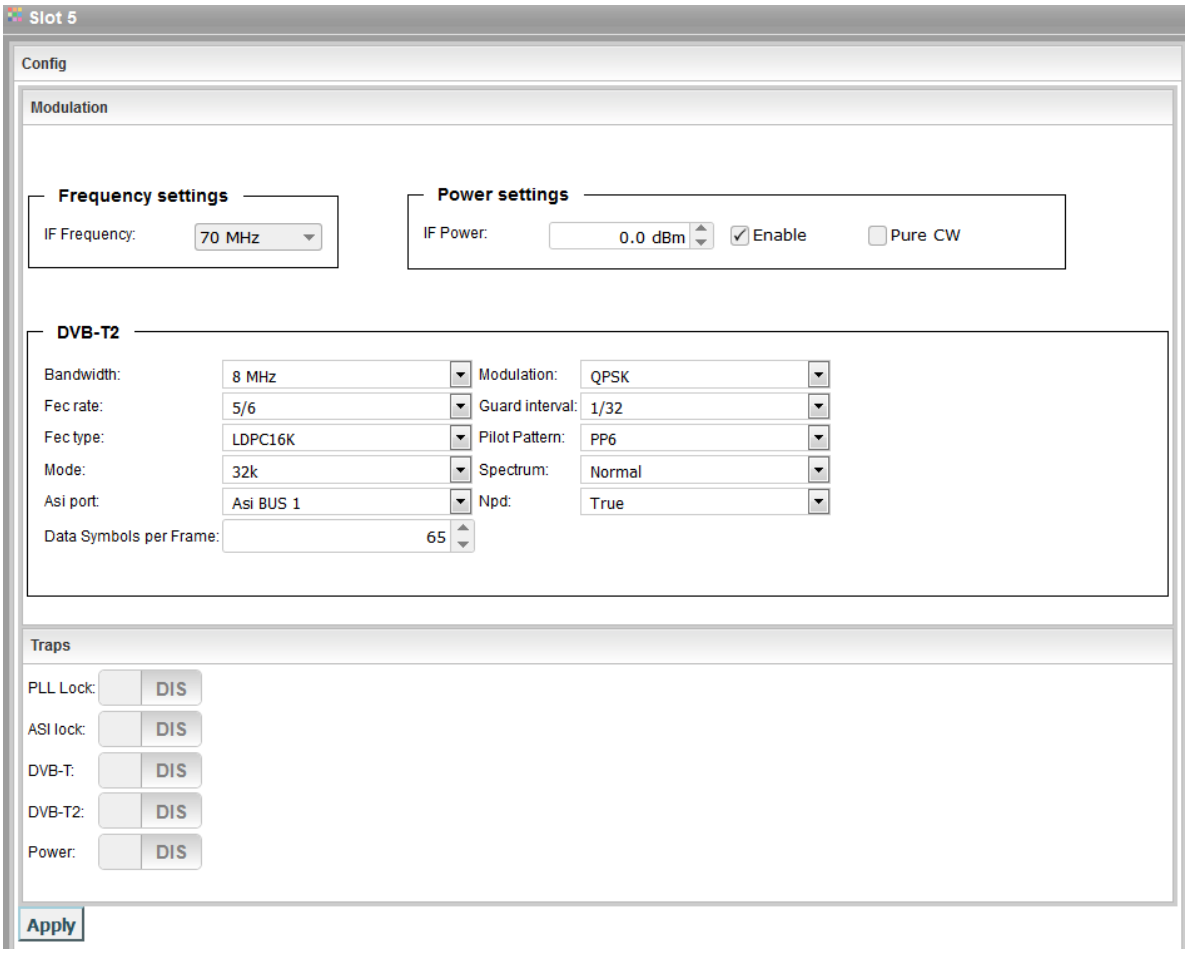


FIGURE 131: WEB SLOT FORM - MT2 CONFIG (DVB-T2).

TABLE 69: MT2 CONFIG (DVB-T2) PARAMETERS

Tag	Description
IF Frequency	Let the user set the IF frequency in MHz. 70 or 140 MHz.
IF Power	IF Power setting in dBm (-25 ÷ 0 dBm). Checkbox related for Enabling/Disabling the transmission. Pure CW allows generation of Pure Carrier.
Bandwidth	Signal bandwidth selection (5/6/7/8 MHz)
FEC Rate	Code rate selection
FEC Type	FEC Type selection (LDPC16K, LDPC64K)
Mode	Number of carriers (1K/2K/4K/8K/16K/32K)
ASI port	Let user select the ASI input (ASI BUS 1, ASI 1)
Data Symbols per Frame	Let the user select the Data Symbols per frame (1-67)
Modulation	Modulation scheme (QPSK-16-64-256QAM)
Guard Interval	Guard Interval selection (1/32, 1/16, 1/8, ¼, 1/128, 19/128, 19/256)
Pilot Pattern	Let the user select the Pilot Pattern (PP1 to PP8)
Spectrum	Normal/Inverted
Npd	True/False
PLL Lock traps	Let the user enable SNMP trap sending for PLL Lock alarm event
ASI Lock traps	Let the user enable SNMP trap sending for ASI Lock alarm event
DVB-T traps	Let the user enable SNMP trap sending for DVB-T alarm event
DVB-T2 traps	Let the user enable SNMP trap sending for DVB-T2 alarm event
Power traps	Let the user enable SNMP trap sending for Power alarm event

8.4.1.3 Transmitter XPM-TX.

FIGURE 132: WEB SLOT FORM - TX GENERAL INFORMATION AND CONTROLS.

TABLE 70: TX GENERAL INFORMATION AND CONTROLS PARAMETERS

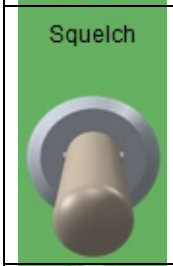
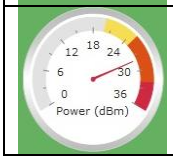
Tag	Description
Model	As per name
Serial Number	As per name
Part Number	As per name
Name	As per name
Version	HW release
Revision	HW revision
	Let the user switch off the Transmitting Head.
	Let the user switch off the transmission.
	Power strength indication

FIGURE 133: WEB SLOT FORM - TX STATUS.

TABLE 71: TX STATUS PARAMETERS

Tag	Description
Frequency	Operating frequency indication in KHz

UXT Temperature	Temperature indication in °C detected in UXT board (indoor unit)
Step Up Temperature	Temperature indication in °C detected in UXT board, power supply Step up section (indoor unit)
Up Converter Temperature	Temperature indication in °C detected in upconverter board (outdoor unit)
Tx Module Temperature	Temperature indication in °C detected in transmitter board (outdoor unit)
Step Up voltage Pre Switch	Voltage indication in V detected in UXT board, power supply Step up section (indoor unit)before switch for lighting on the head
Step Up voltage Post Switch	Voltage indication in V detected in UXT board, power supply Step up section (indoor unit) after switch for lighting on the head
Step Up Current	Current absorption indication in A (Head consumption)

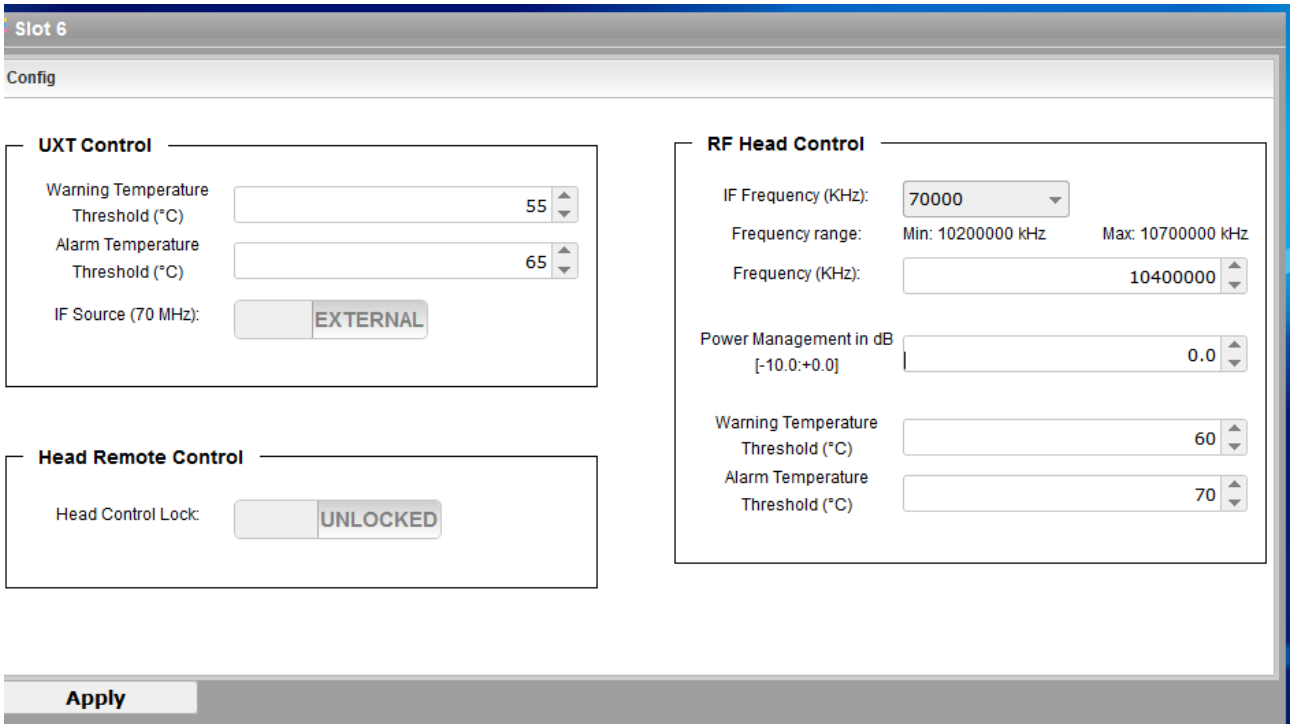


FIGURE 134: WEB SLOT FORM - TX CONFIG.

TABLE 72: TX CONFIG PARAMETERS

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C
IF Source (70MHz)	Let the use select the IF source for the upconverter, between internal (bus) and external (BNC connector of back panel)
Frequency range	Indication of maximum and minimum frequency of the transmitter
Frequency (KHz)	Let the user set the operating frequency in KHz (it should be within the range stated above
Power Management in dB	Let the user modify the output power in dB, 0.1 dB step.
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C for RF Head
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C for RF Head
Head Control Lock	Let the user Enable/Disable the control from Head

8.4.1 Receiver.

8.4.1.1 Decoder DHD.

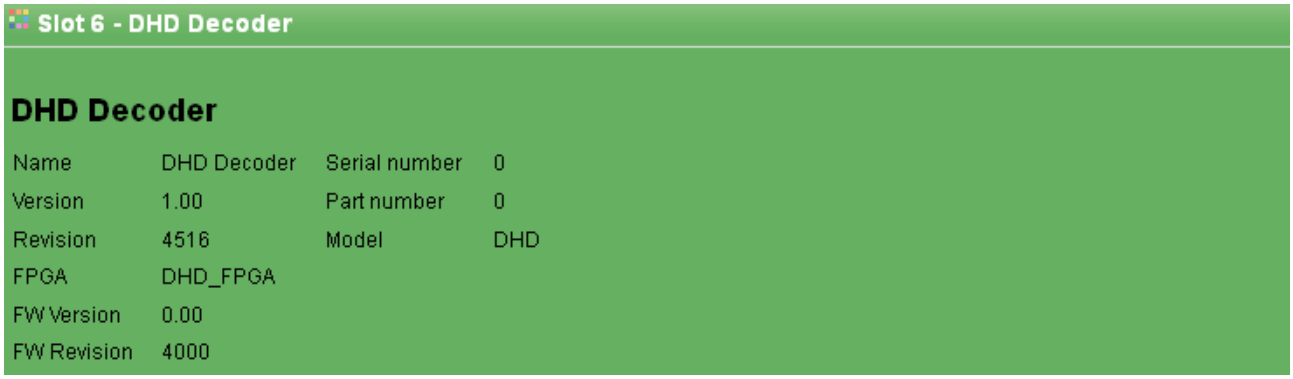


FIGURE 135: WEB SLOT FORM - DHD DECODER

TABLE 73: DHD DECODER

Tag	Description
Name	Board Name
Version	Firmware version
Revision	Firmware version revision
FPGA	FPGA firmware name
FW Version	FPGA firmware version
FW Revision	FPGA firmware revision
Serial Number	As per name
Part Number	As per name
Model	As per name

FIGURE 136: WEB SLOT FORM -DECODING STATUS

TABLE 74: DECODING STATUS

Tag	Description
Temperature	Temperature measurement in °C (green if ok)
ASI bus 1	ASI Bus 1 locking indication (green if locked)
Bitrate	ASI Bus 1 bitrate indication in Mbps
Standard	Decoding Format(MPEG Layer 2,H.264)
Format	Indication of video format((4:3, 16:9))
Service ID	Indication of Service ID
PMT pid	Indication of PMT Pid
Video pid	Indication of video Pid
Audio 1 / 2 pid	Indication of Audio 1 / 2 pid
Audio 3 / 4 pid	Indication of Audio 3 / 4 pid

PCR pid	Indication of PCR Pid

FIGURE 137: WEB SLOT FORM - CONFIG DECODING

TABLE 75: CONFIG DECODING

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C
Genlock	Let the user Enable/Disable Genlock Input
ASI Source	Input selection (just one at a time) • ASI EXT • ASI BUS 1

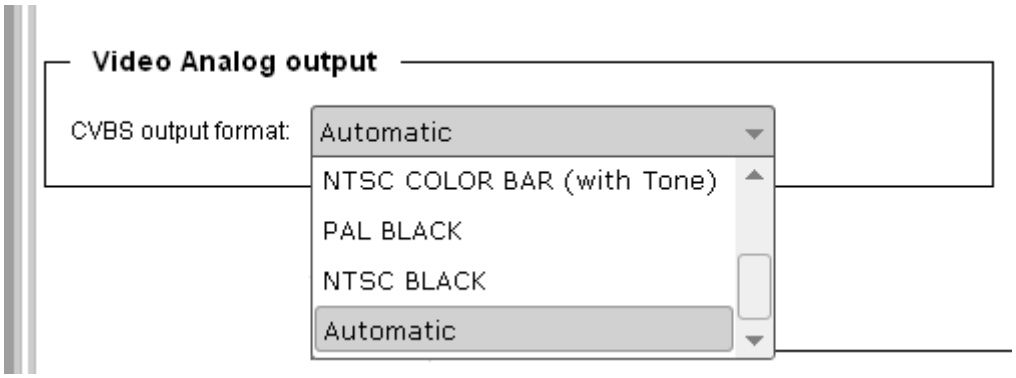


FIGURE 138: WEB SLOT FORM -VIDEO ANALOG OUTPUT

TABLE 76: VIDEO ANALOG OUTPUT

Tag	Description
NTSC COLOR BAR	Let the user set NTSC COLOR BAR format
PAL BLACK	Let the user PAL BLACK format
NTSC BLACK	Let the user set NTSC BLACK format
Automatic	Let the user set Automatic format

FIGURE 139: WEB SLOT FORM - DECODED SERVICE

TABLE 77: DECODED SERVICE

Tag	Description
Service ID	Let the user set Service ID
Automatic	Let the user set Automatic/Manual Decoded service

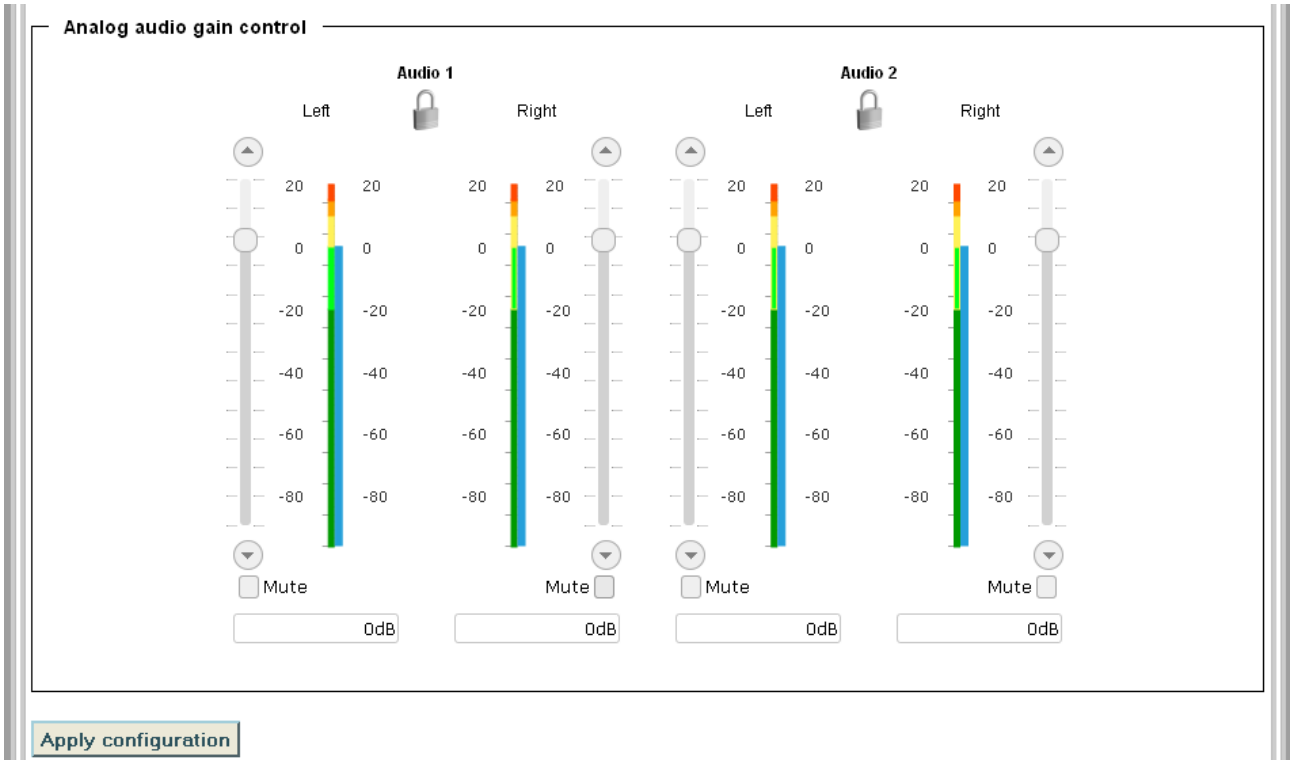
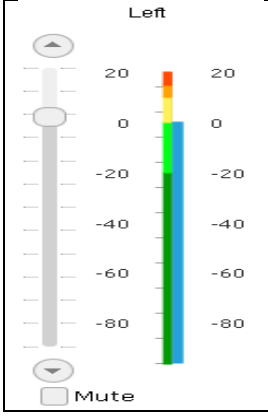


FIGURE 140: WEB SLOT FORM- ANALOG AUDIO GAIN CONTROL

TABLE 78: ANALOG AUDIO GAIN CONTROL

Tag	Description
Audio 1	Analog audio 1 gain control
Audio 2	Analog audio 2 gain control
	Let the user set the audio output gain by cursor

0dB	Let the user set the value of audio output gain

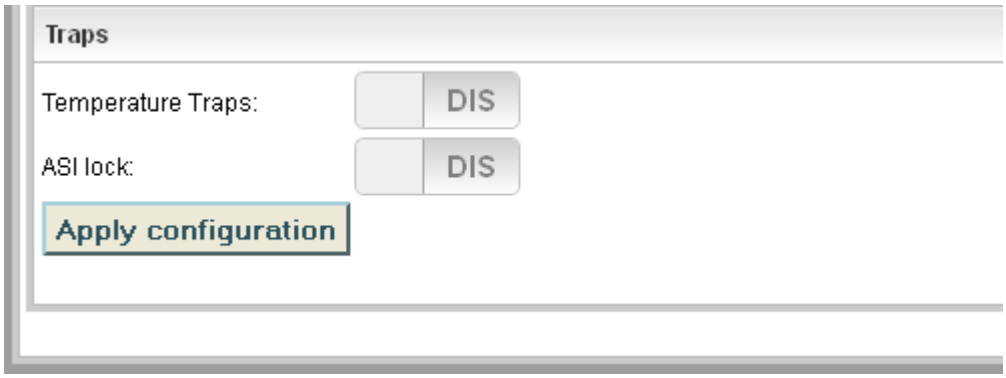


FIGURE 141: WEB SLOT FORM – TRAPS

TABLE 79: TRAPS

Tag	Description
Temperature Traps	Let the user enable SNMP trap sending for temperature alarm event
ASI lock	Let the user enable SNMP trap sending for ASI alarm event

8.4.1.2 Demodulator DS2.

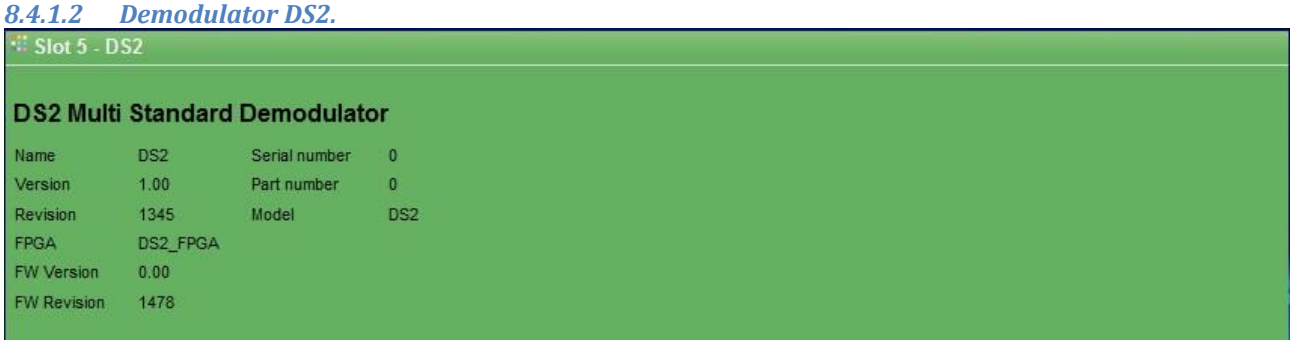


FIGURE 142: WEB SLOT FORM - DS2 GENERAL INFO.

TABLE 75: DS2 GENERAL INFO PARAMETERS

Tag	Description
Name	Board Name
Version	Firmware version
Revision	Firmware version revision
FPGA	FPGA firmware name
FW Version	FPGA firmware version
FW Revision	FPGA firmware revision
Serial Number	As per name
Part Number	As per name
Model	As per name

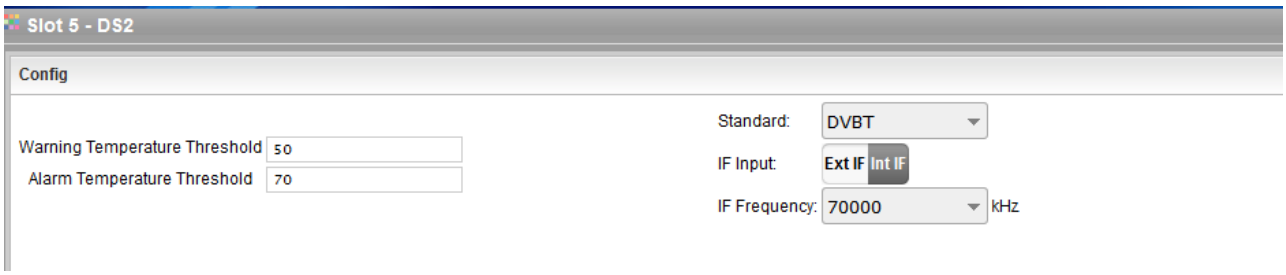


FIGURE 143: WEB SLOT FORM - DS2 OPERATIONAL MODE SETTING.

TABLE 80: DS2 OPERATIONAL MODE SETTING PARAMETERS

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C
Standard	Let the user select the modulation standard between COFDM/DVB-T and COFDM/DVB-T2.
IF Input	Let the user select the IF input for the demodulator between External (BNC connector on back panel) and Internal (signal received from internal bus)
IF Frequency	Let the user select the IF Frequency in KHz (70000 0r 140000)

8.4.1.2.1 DVB-T version.

FIGURE 144: WEB SLOT FORM - DS2 STATUS (DVB-T).

TABLE 81: COFDM DEMODULATOR STATUS PARAMETERS MENU.

Tag	Description
Temperature	Temperature measurement in °C (green if ok)
Modulation Standard	Indication of Modulation technique DVB-T/DVB-T2
Bandwidth	Signal bandwidth (6/7/8 MHz)
Constellation	Modulation scheme (QPSK-16-64QAM)
Hierarchy	Indication of Hierarchical modulation detected
Rate HP	Indication of FEC for High priority signal (in hierarchical mode) or for normal signal
Rate LP	Indication of FEC for Low priority signal (in hierarchical mode)
Guard Interval	Indication of guard interval (1/2, 1/4, , 1/16, 1/32)
Mode	Indication of Number of carriers (2K/8K)

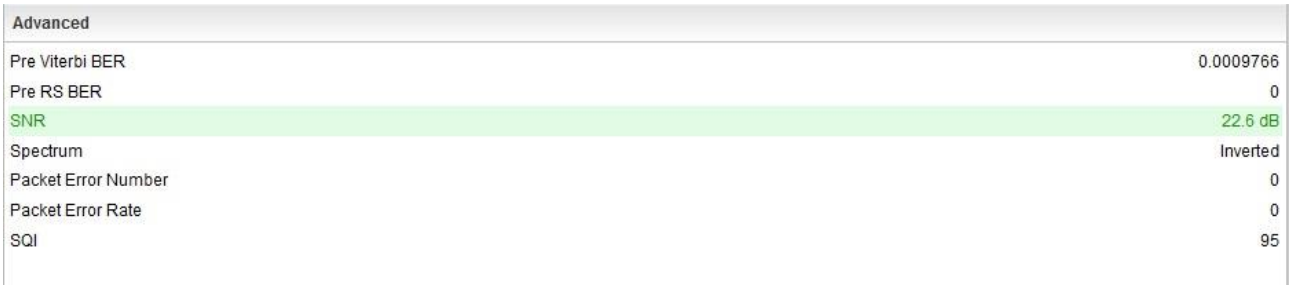


FIGURE 145: WEB SLOT FORM - DS2 STATUS ADVANCED (DVB-T).

TABLE 82

Tag	Description
Pre Viterbi BER	Indication of Bit Error Rate before Viterbi Decoder (channel BER)
Pre RS BER	Indication of Bit Error Rate before Reed Solomon Decoder (BER after Viterbi)
SNR	Indication of Signal to Noise Ratio (green if ok)
Spectrum	Indication of spectrum inversion detected
Packet Error Numbers	As per name

Packet Error Rate	As per name
SQI	Signal Quality Indicator [0-100]

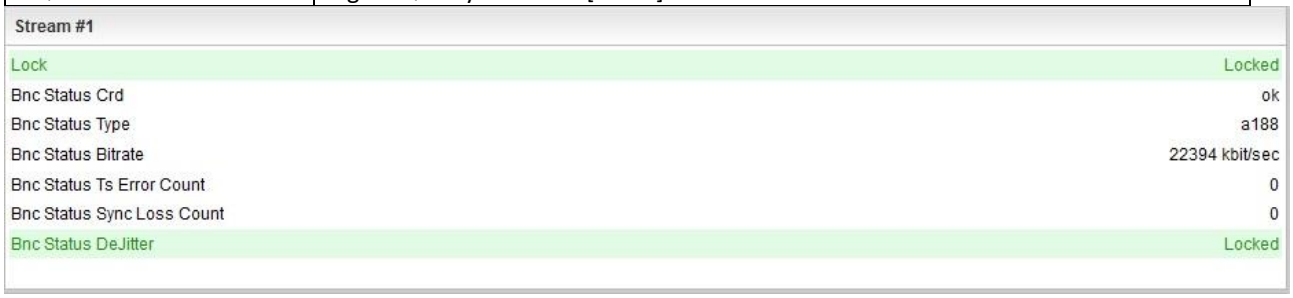


FIGURE 146: WEB SLOT FORM - DS2 STATUS STREAM #1 (DVB-T).

TABLE 83

Tag	Description
Lock	Indication of locking status for incoming data stream (green if ok)
BNC status Crd	Indication of carrier detected for signal to BNC output 1
BNC status Type	Indication of ASI packet size for signal to BNC output 1
BNC status Bitrate	Indication of ASI stream bitrate for signal to BNC output 1
BNC status TS Error Count	As per name
BNC status Sync Loss Count	As per name
BNC Status DeJitter	Indication of locking status of dejittering circuitry for signal to BNC output 1

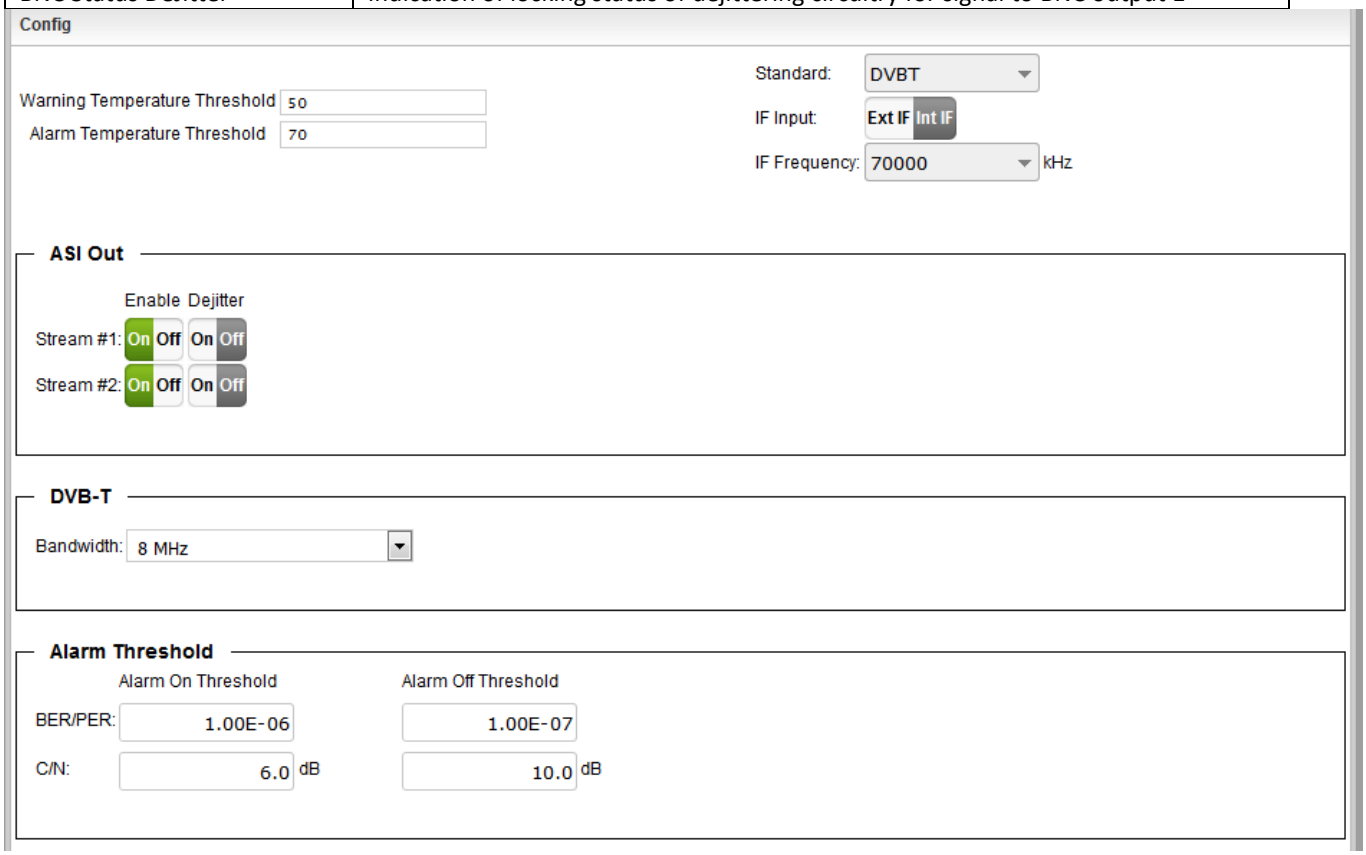


FIGURE 147: WEB SLOT FORM - DS2 CONFIG (DVB-T).

TABLE 84: DS2 CONFIG PARAMETERS

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C

Standard	Let the user configure the demodulator standard modality
IF input	Let the user set the IF input to the demodulator between external BNC and internal Bus
IF Frequency	Let the user set the IF frequency in KHz. Standard 70000 KHz.
Bandwidth	5-6-7-8 MHz
BER/PER	Let the user set the threshold for alarm on/off related to BER and PER value
C/N	Let the user set the threshold for alarm on/off related to C/N value

FIGURE 148: WEB SLOT FORM - DS2 (DVB-T) ASI OUT SETTING.

FIGURE 149: WEB SLOT FORM - DS2 CONFIG TRAPS.

TABLE 85: DS2 (DVB-T) TRAPS SETTING PARAMETERS

Tag	Description
Temperature Traps	Let the user enable/disable Trap message associated to Temperature alarm.
Ber Traps	Let the user enable/disable Trap message associated to BER alarm.
C/N Traps	Let the user enable/disable Trap message associated to C/N alarm.
Link Margin Traps	Let the user enable/disable Trap message associated to Link Margin alarm.
Lock Traps	Let the user enable/disable Trap message associated to Lock alarm.
Tx Lock Traps	Let the user enable/disable Trap message associated to Tx Lock alarm.

8.4.1.2.2 DVB-T/2 version.

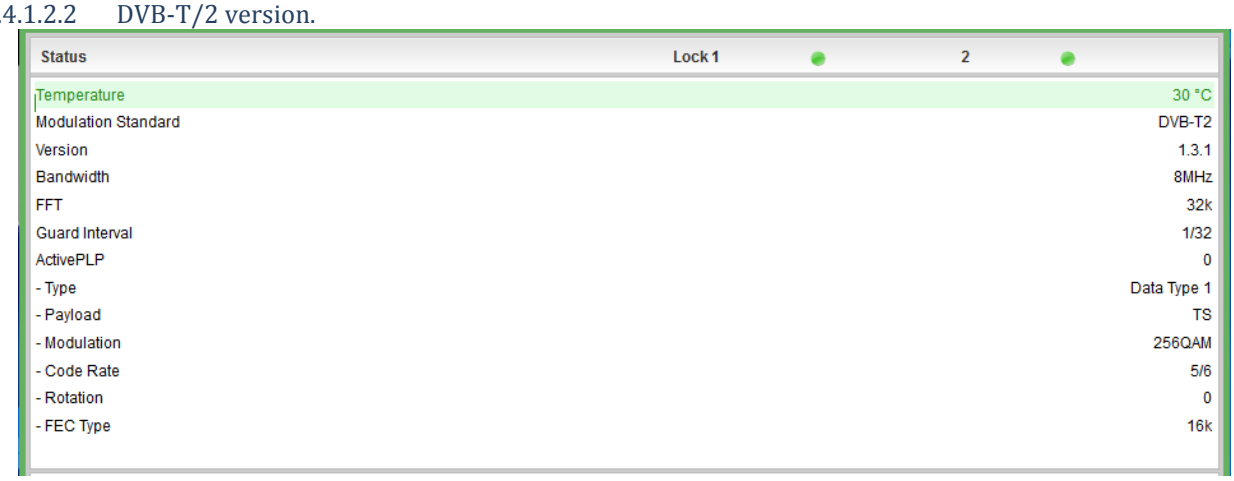


FIGURE 150: WEB SLOT FORM - DS2 STATUS (DVB-T2).

TABLE 86: COFDM DEMODULATOR STATUS PARAMETERS MENU.

Tag	Description
Temperature	Temperature measurement in °C (green if ok)
Modulation Standard	Indication of Modulation technique (DVB-T2)
Version	Version of DVB-T2 standard
Bandwidth	Signal bandwidth (5/6/7/8 MHz)
FFT	Number of carriers (1K/2K/4K/8K/16K/32K)
Guard Interval	Indication of guard interval (1/32, 1/16, 1/8, ¼, 1/128, 19/128, 19/256)
Active PLP	PLP number Indication
Type	Data type
Payload	Indication of the Payload type
Modulation	Modulation scheme (QPSK-16-64QAM-256QAM)
Code Rate	Code rate
Rotation	YES/NO (1/0)
FEC Type	FEC Type (LDPC16K, LDPC64K)

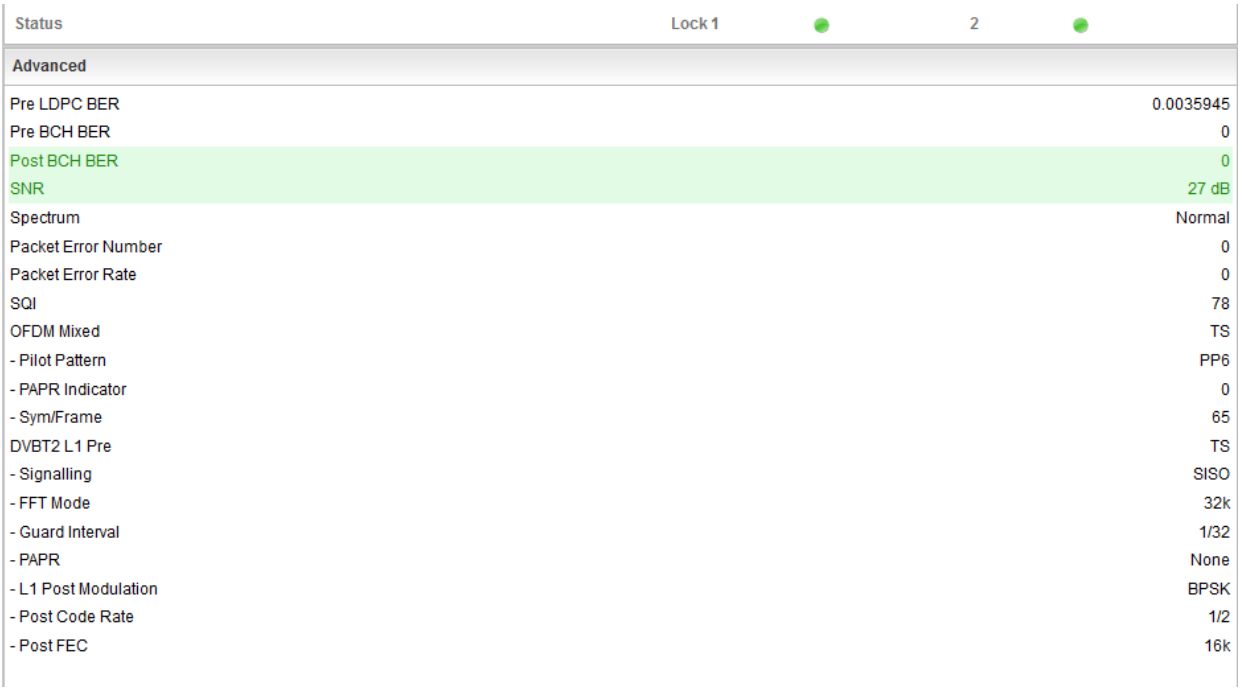


FIGURE 151: WEB SLOT FORM - DS2 STATUS ADVANCED (DVB-T2).

TABLE 87

Tag	Description

Pre LDPC BER	Indication of Bit Error Rate before LDPC Decoder
Pre BCH BER	Indication of Bit Error Rate before BCH Decoder
Post BCH BER	Indication of Bit Error Rate after BCH Decoder
SNR	Indication of Signal to Noise Ratio (green if ok)
Spectrum	Indication of spectrum inversion detected
Packet Error Number	As per name
Packet Error Rate	As per name
SQI	Signal Quality Indicator [0-100]
OFDM Mixed	As per ETSI EN 302 755
- Pilot Pattern	Pilot Pattern indication [PP1-PP8]
- PAPR Indicator	PAPR Indicator
- Sym/Frame	Data Symbols per frame (1-67)
DVBT2 L1 Pre	As per ETSI EN 302 755
- Signalling	As per ETSI EN 302 755
- FFT Mode	Number of carriers (1K/2K/4K/8K/16K/32K)
- Guard Interval	Guard Interval (1/32, 1/16, 1/8, ¼, 1/128, 19/128, 19/256)
- PAPR	PAPR as per ETSI EN 302 755
- L1 Post Modulation	As per ETSI EN 302 755
- Post Code Rate	As per ETSI EN 302 755
- Post FEC	As per ETSI EN 302 755

FIGURE 152: WEB SLOT FORM - DS2 STATUS STREAM #1 (DVB-T2).

TABLE 88

Tag	Description
Lock	Indication of locking status for incoming data stream (green if ok)
BNC status Crd	Indication of carrier detected for signal to BNC output 1
BNC status Type	Indication of ASI packet size for signal to BNC output 1
BNC status Bitrate	Indication of ASI stream bitrate for signal to BNC output 1
BNC status TS Error Count	As per name
BNC status Sync Loss Count	As per name
BNC Status DeJitter	Indication of locking status of dejittering circuitry for signal to BNC output 1

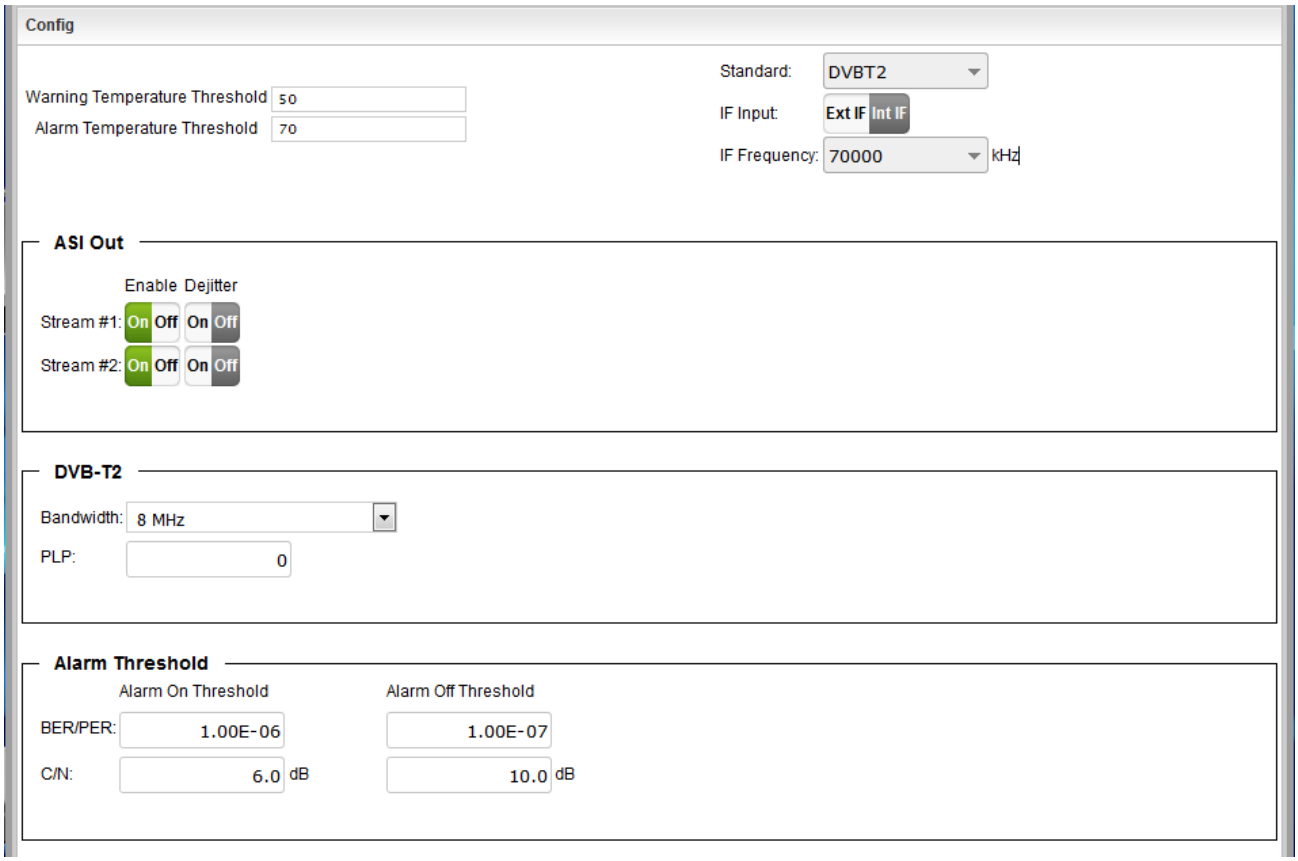


FIGURE 153: WEB SLOT FORM - DS2 CONFIG (DVB-T2).

TABLE 89: DS2 CONFIG PARAMETERS

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C
Standard	Let the user configure the demodulator standard modality
IF input	Let the user set the IF input to the demodulator between external BNC and internal Bus
IF Frequency	Let the user set the IF frequency in KHz. Standard 70000 KHz.
Bandwidth	5-6-7-8 MHz
PLP	0
BER/PER	Let the user set the threshold for alarm on/off related to BER and PER value
C/N	Let the user set the threshold for alarm on/off related to C/N value

FIGURE 154: WEB SLOT FORM - DS2 (DVB-T2) ASI OUT SETTING.

FIGURE 155: WEB SLOT FORM - DS2 CONFIG TRAPS.

TABLE 90: DS2 (DVB-T2) TRAPS SETTING PARAMETERS

Tag	Description
Temperature Traps	Let the user enable/disable Trap message associated to Temperature alarm.
Ber Traps	Let the user enable/disable Trap message associated to BER alarm.
C/N Traps	Let the user enable/disable Trap message associated to C/N alarm.
Link Margin Traps	Let the user enable/disable Trap message associated to Link Margin alarm.
Lock Traps	Let the user enable/disable Trap message associated to Lock alarm.
Tx Lock Traps	Let the user enable/disable Trap message associated to Tx Lock alarm.

8.4.1.3 Receiver XPM-RX.

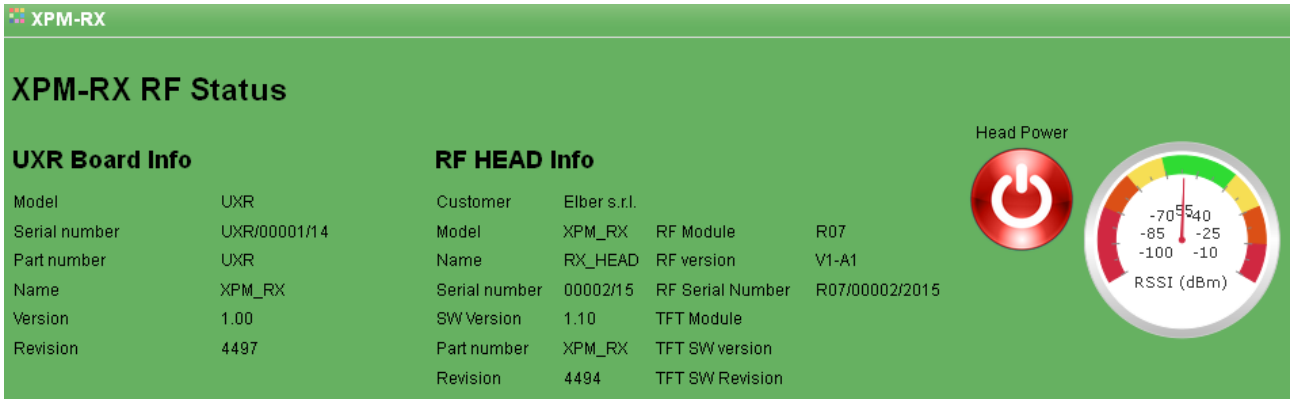


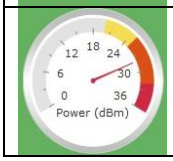
FIGURE 156: WEB SLOT FORM -XPM-RX RF STATUS

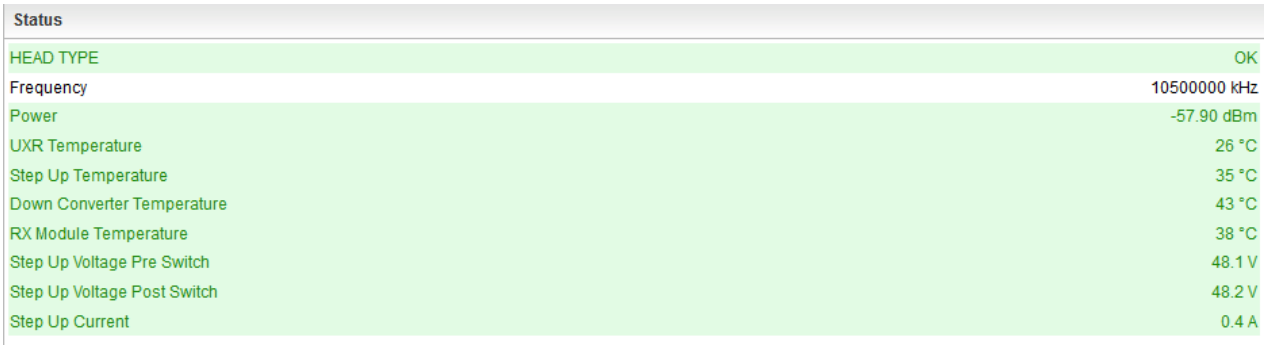
TABLE 91 :(XPM-RX) UXR BOARD INFO

Tag	Description
Model	As per name
Serial number	As per name
Part number	As per name
Name	As per name
Version	Firmware version
Revision	Firmware version revision

TABLE 92: (XPM-RX) RF HEAD INFO

Tag	Description
Customer	As per name
Model	As per name
Name	As per name
Serial number	As per name
SW Version	Firmware version
Part number	As per name
Revision	Firmware version revision

RF Module	As per name
RF Version	As per name
RF Serial Number	As per name
TFT Module	As per name
TFT SW version	TFT Firmware version
TFT SW Revision	TFT Firmware version revision
	Let the user switch off the receiving Head.
	Rf field strength indication



Status	
HEAD TYPE	OK
Frequency	10500000 kHz
Power	-57.90 dBm
UXR Temperature	26 °C
Step Up Temperature	35 °C
Down Converter Temperature	43 °C
RX Module Temperature	38 °C
Step Up Voltage Pre Switch	48.1 V
Step Up Voltage Post Switch	48.2 V
Step Up Current	0.4 A

FIGURE 157: WEB SLOT FORM - RX STATUS.

TABLE 93: RX STATUS PARAMETERS

Tag	Description
Frequency	Operating frequency indication in KHz
Power	RF Field indication in dBm
UXR Temperature	Temperature indication in °C detected in UXR board (indoor unit)
Step Up Temperature	Temperature indication in °C detected in UXR board, power supply Step up section (indoor unit)
Down Converter Temperature	Temperature indication in °C detected in downconverter board (outdoor unit)
Rx Module Temperature	Temperature indication in °C detected in receiver board (outdoor unit)
Step Up voltage Pre Switch	Voltage indication in V detected in UXR board, power supply Step up section (indoor unit) before switch for lighting on the head
Step Up voltage Post Switch	Voltage indication in V detected in UXR board, power supply Step up section (indoor unit) after switch for lighting on the head
Step Up Current	Current absorption indication in A (Head consumption)

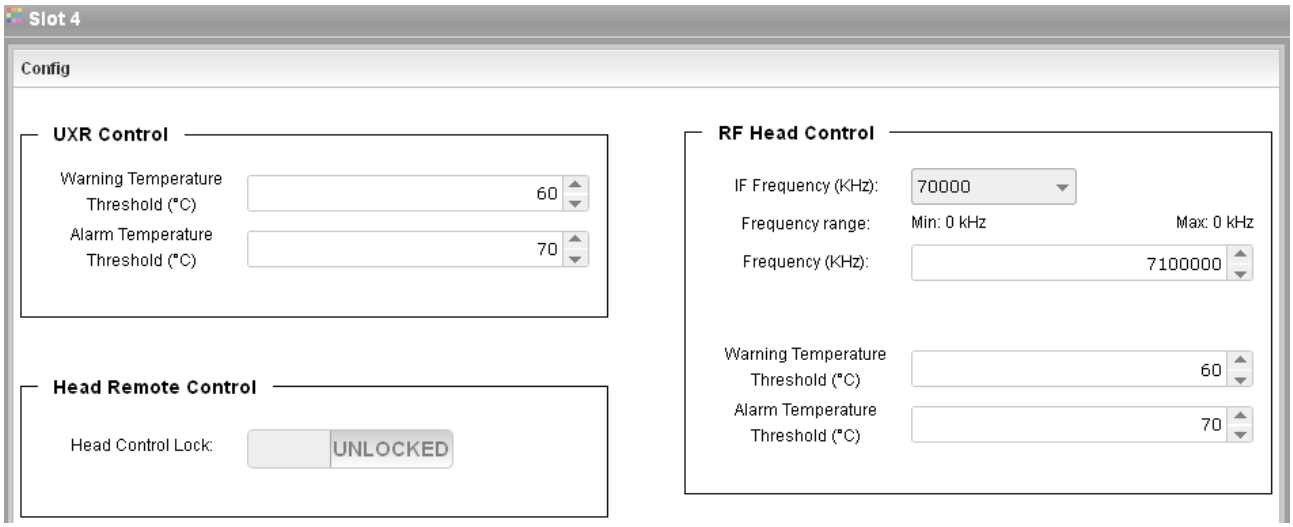


FIGURE 158: WEB SLOT FORM-XPM-RX-CONFIG.

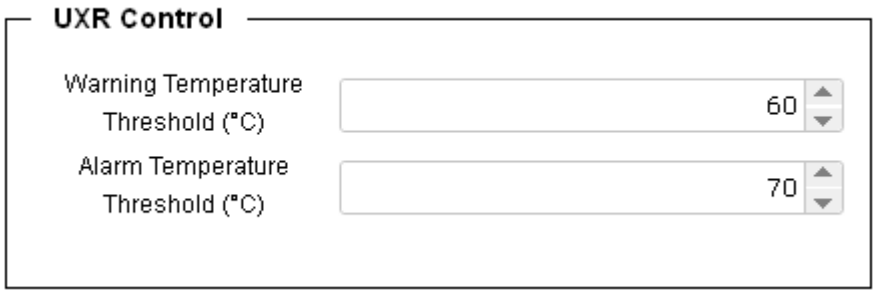


FIGURE 159: WEB SLOT FORM-CONFIG-UXR CONTROL

TABLE 94: (XPM-RX) CONFIG-UXR CONTROL

Tag	Description
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C

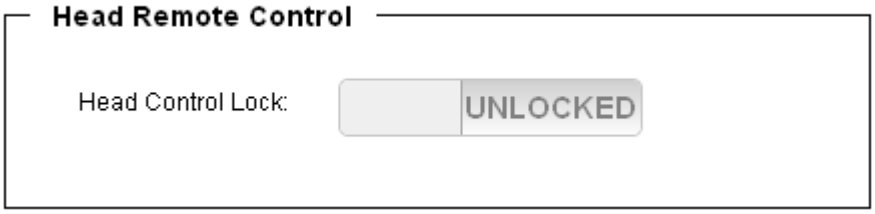


FIGURE 160: WEB SLOT FORM-CONFIG-HEAD REMOTE CONTROL

TABLE 95: (XPM-RX) CONFIG-HEAD REMOTE CONTROL

Tag	Description
Head Control Lock	Let the user Enable/Disable the control from Head

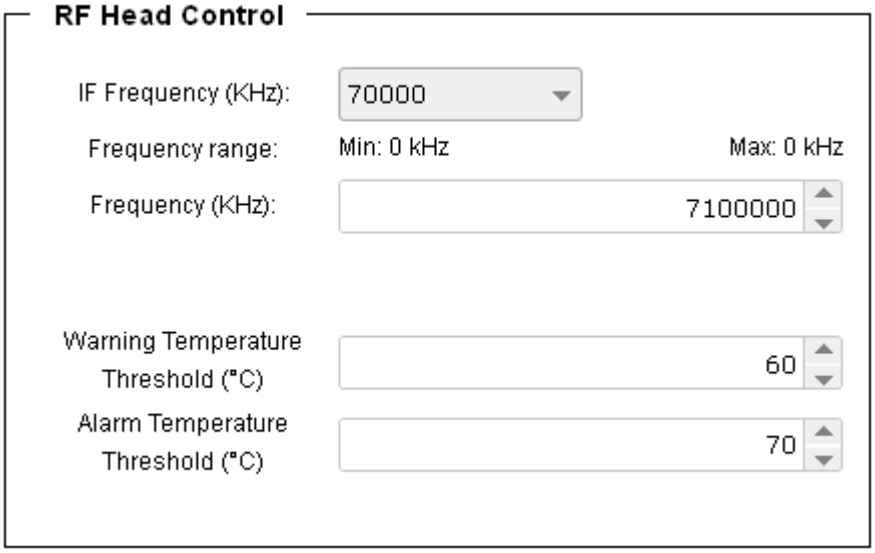


FIGURE 161: WEB SLOT FORM-CONFIG-RF HEAD CONTROL

TABLE 96: (XPM- RX) CONFIG-RF HEAD CONTROL

Tag	Description
IF Frequency (KHz)	Let the user set the IF frequency in KHz. Standard 70000 KHz.
Frequency range	Indication of maximum and minimum frequency of the transmitter
Frequency (KHz)	Let the user set the operating frequency in KHz (it should be within the range stated above
Warning Temperature Threshold	Let the user set Warning temperature threshold in °C
Alarm Temperature Threshold	Let the user set Alarm temperature threshold in °C

8.5 Tab Upgrade.

Web tab regarding upgrade is composed by:

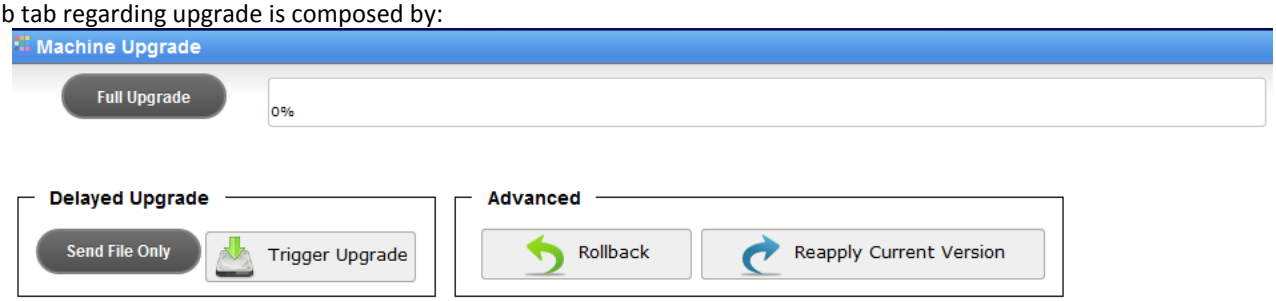


FIGURE 162: WEB UPGRADE FORM - FIRMWARE UPDATE.

Clicking on Full Upgrade button, user is asked to select the upgrade file, to be browser in its personal device memory. Delayed Upgrade allows the user to submit a file for upgrade and apply it only when Trigger Upgrade button is selected. Rollback button allows to go back to the previous version; while Reapply Current Version permits to apply again the actual version.

8.6 Tab Log.

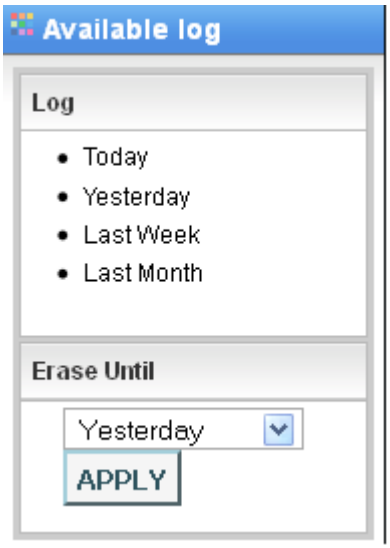


FIGURE 163 : WEB LOG FORM – AVAILABLE LOG.

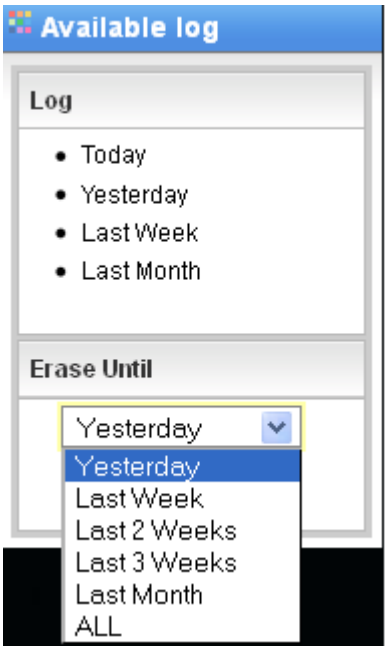


FIGURE 164: WEB LOG FORM – AVAILABLE LOG EXPANDED.

The equipment offers an operation log service that can be checked in this tab of the web interface.
In left part of the web page, the form concerning available logs is present, grouped by:

- Daily report
- Last day
- Last week
- Last month

In order to avoid huge memory usage, it is recommended to delete old records using **Erase until** form and selecting desired interval (Figure 164).
In central part of the page, log messages are reported, organized in a table that can be ordered, filtered and resized in terms of number of rows per page.
Records belong to 4 different categories are shown with different colours for user facility:

1. Messages
2. Configurations
3. Alarms
4. Warnings

Every record has a time, a description and an origin; an alarm event is described in appendix with OCCURRED tag, while the alarm condition recovery is a Message with appendix RECOVERED. Records can be ordered in every column and filtered.
Log can be saved with many different formats for further elaborations and storage; files formats available are:

- .xls
- .xml
- .csv
- .tsv
- .html
- .json

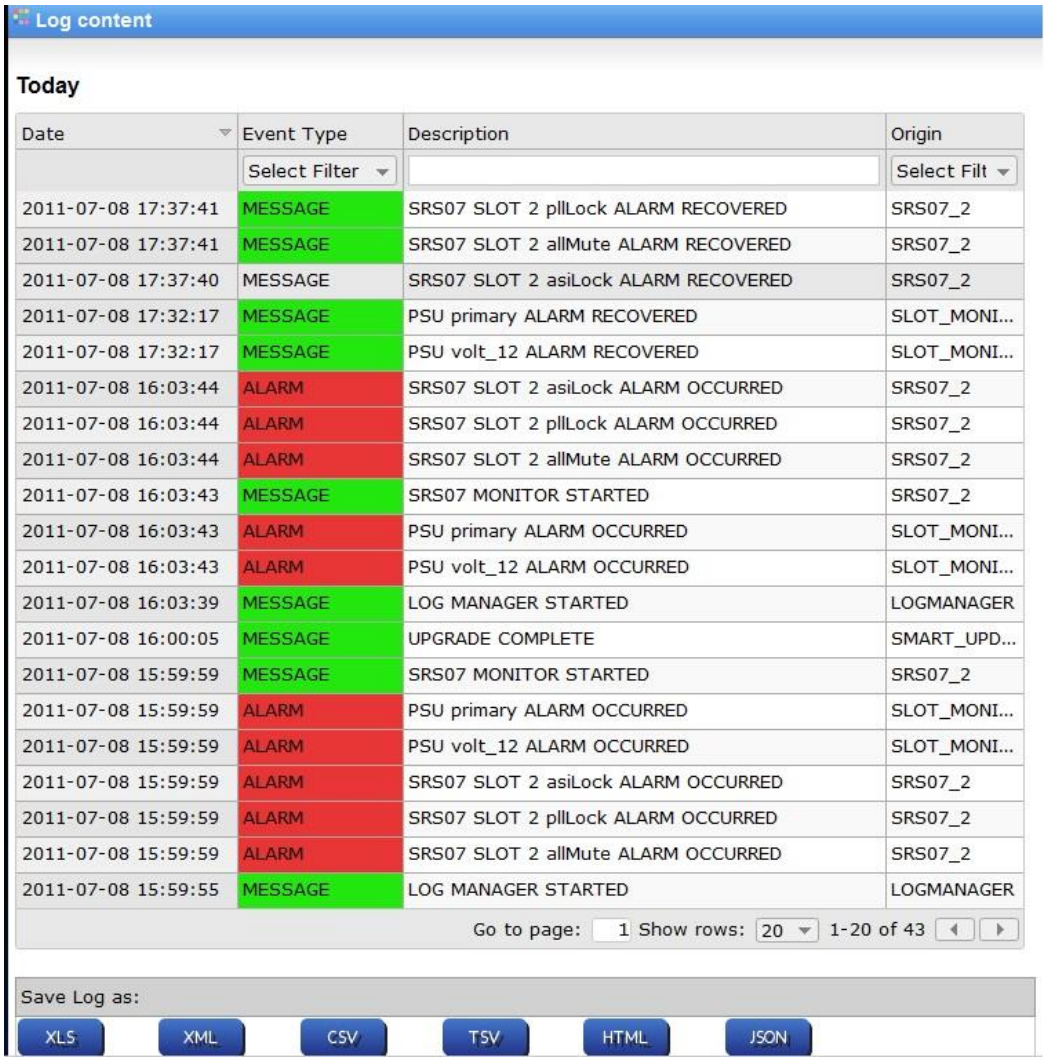


FIGURE 165: WEB LOG FORM – LOG.

9 Mechanics.

9.1 Control unit.

9.1.1 Front Panel.

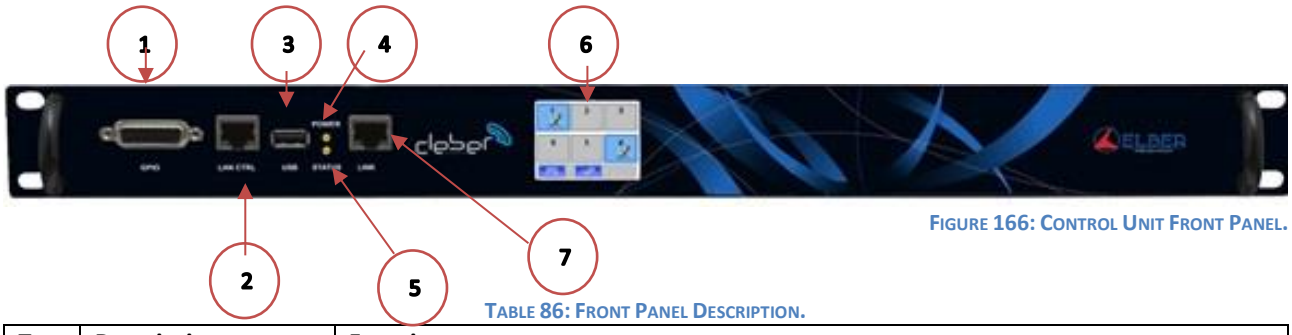
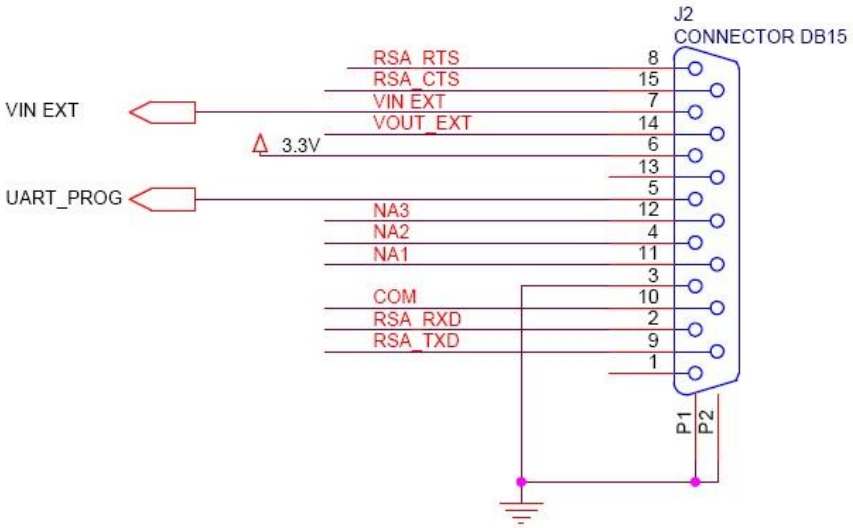


FIGURE 166: CONTROL UNIT FRONT PANEL.

TABLE 86: FRONT PANEL DESCRIPTION.

Tag	Description	Function
1	DB15 Connector	
2	RJ-45 Connector	Port Ethernet 10/100 for Management

Pin	Function
1	Not connected
2	Debug serial Rx Pin
3	Ground
4	Relay 2, Normally open contact
5	Reset pin for In-System-Programming modality
6	+3.3V
7	0-5V controlled voltage for analogue remote control; programmable upon customer request.
8	Debug serial RTS Pin
9	Debug serial Tx Pin
10	Relay 1-2-3 Common Contact
11	Relay 1, Normally open contact
12	Relay 3, Normally open contact
13	Not connected
14	0-5V controlled voltage for analogue remote control; programmable upon customer request.
15	Debug serial CTS Pin

3	USB Connector	USB pen drive connection for firmware upgrade and token connection (read/write accede to TFT).
4	Led green	Power supply on
5	Three colours led	Green: ok Yellow: warning Red: alarm
6	Display TFT touchscreen	User Interface
7	Connector RJ-45	Fast Ethernet Port for Debug and equipment extensions

9.1.2 Rear Panel.

9.1.2.1 Transmitter Control Unit.

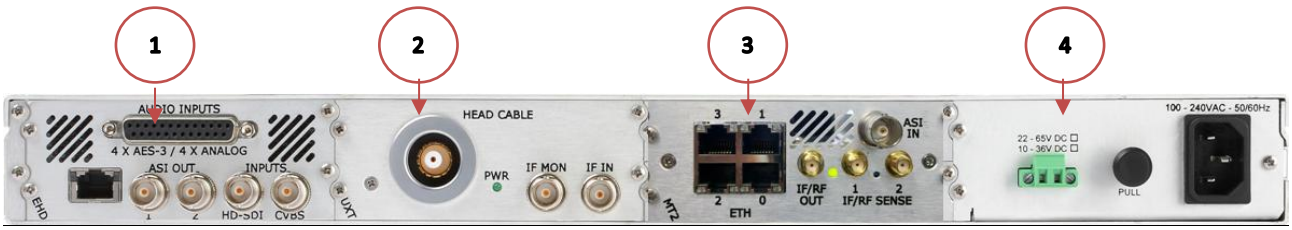


FIGURE 167: TRANSMITTER CONTROL UNIT REAR PANEL.

TABLE 87: TRANSMITTER CONTROL UNIT MODULE DESCRIPTION.

Tag	Description	Function
1	EHD	H.264 and MPEG-2 HD/SD Encoder module. Swappable.
2	UXT	Cable interface for transmitter. Swappable.
3	MT2	DVB-T/T2 modulator. Swappable.
4	PSU	Power supply, AC+DC version. Swappable.

9.1.2.1.1 EHD.

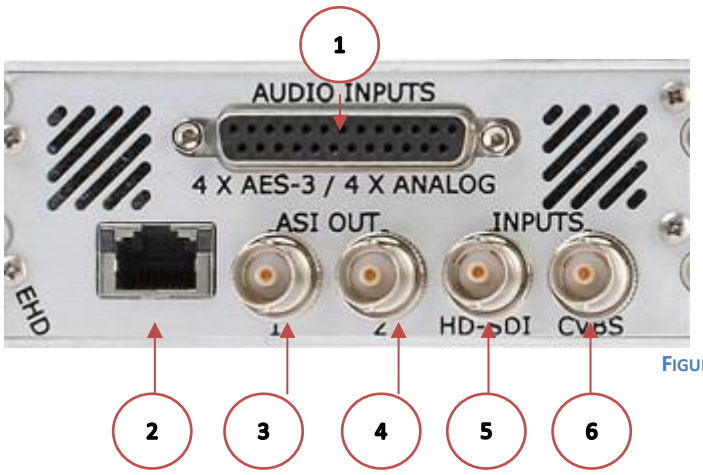
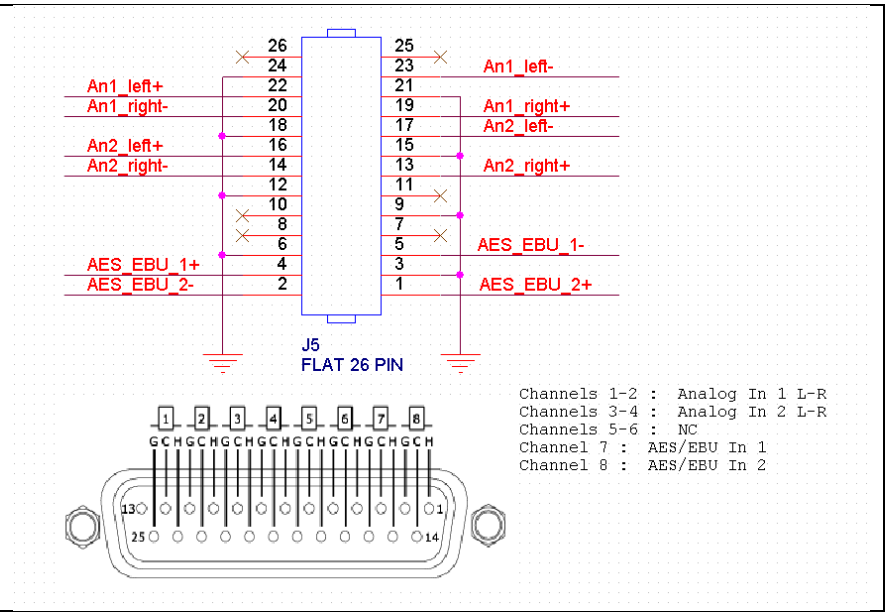


FIGURE 168: EHD BACK PANEL DETAIL.

TABLE 88: EHD MODULE CONNECTORS DESCRIPTION.

Tag	Description	Function
1	Audio inputs	DB25 Connector, TASCAM pinout for audio inputs.

		
2		RJ-45, not used
3	ASI OUT 1	BNC(f) 75 Ohm; ASI output
4	ASI OUT 2	BNC(f) 75 Ohm; ASI output
5	INPUTS HD-SDI	BNC(f) 75 Ohm; HD/SD-SDI digital video input (and SDI embedded audio)
6	INPUTS CVBS	BNC(f) 75 Ohm; Composite video input (just Standard Definition)

9.1.2.1.2 UXT.

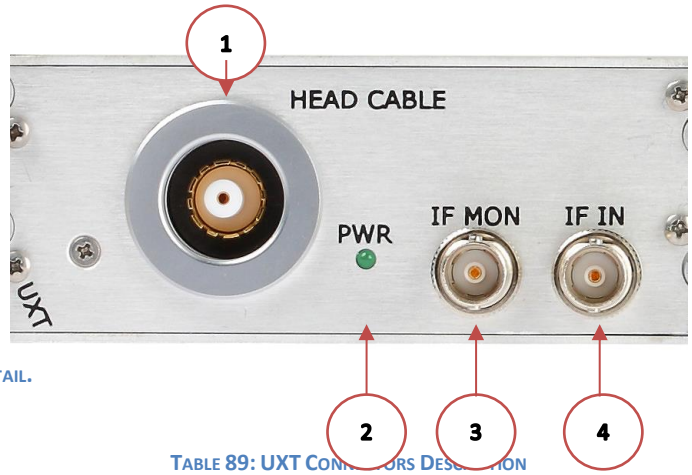


FIGURE 169: UXT BACK PANEL DETAIL.

TABLE 89: UXT CONNECTORS DESCRIPTION

Tag	Description	Function
1	Head Cable	Lemo connector for RG-216 connection cable between Control Unit and Head.
2	PWR	Green led, voltage presence indication.
3	IF MON	BNC(f) 75 Ohm; IF 70 MHz monitor output.
4	IF IN	BNC(f) 75 Ohm; IF 70 MHz external input.

9.1.2.1.3 MT2.

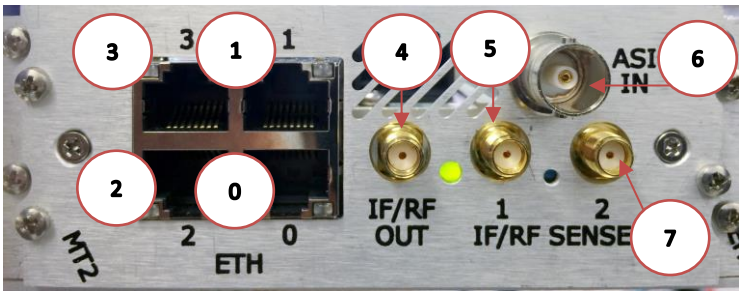


FIGURE 170: MT2 BACK PANEL DETAIL.

TABLE 90: MT2 CONNECTORS DESCRIPTION

Tag	Description	Function
0	ETH 0	RJ45; Not Used
1	ETH 1	RJ45; Not Used
2	ETH 2	RJ45; Not Used
3	ETH 3	RJ45; Not Used
4	IF/RF OUT	SMA(f) 75 Ohm; 70 or 140 MHz output
5	IF/RF SENSE 1	SMA(f) 75 Ohm; Not Used
6	ASI IN	BNC(f) 75 Ohm; ASI 1 external input
7	IF/RF SENSE 2	SMA(f) 75 Ohm; Not Used

9.1.2.1.4 PSU.

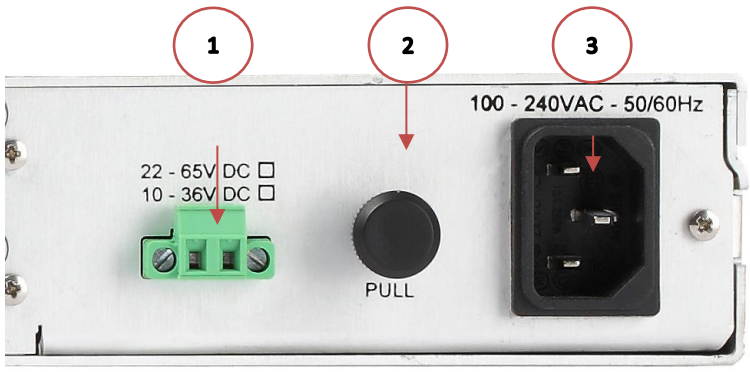


FIGURE 171: POWER SUPPLY BACK PANEL (AC+DC VERSION).

TABLE 91: PSU CONNECTORS DESCRIPTION

Tag	Description	Function
1		DC input (check input range flagged) before connection. Polarity independent
2	PULL	Hanging knob for swapping.
3	100-240VAC - 50/60Hz	IEC 320 socket for AC input.

9.1.2.2 Receiver Control Unit.

FIGURE 172: RECEIVER CONTROL UNIT REAR PANEL

TABLE 92: RECEIVER CONTROL UNIT MODULE MENU

Tag	Description	Function
1	DHD	H.264 and MPEG-2 HD/SD Decoder module. Swappable.
2	UXR	Cable interface for receiver. Swappable.
3	DS2	DVB-T/T2 demodulator. Swappable.
4	PSU	Power supply, AC+DC version. Swappable.

9.1.2.2.1 DHD.

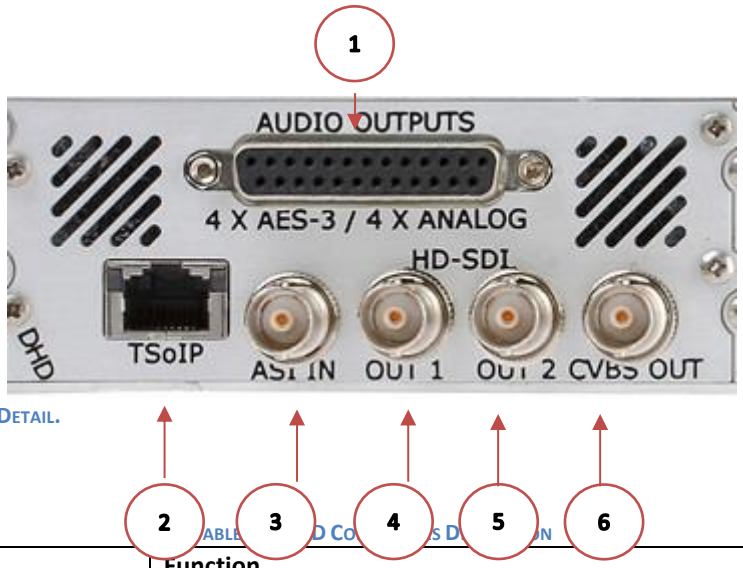


FIGURE 173: DHD BACK PANEL DETAIL.

TABLE 93: DHD CONNECTORS DESCRIPTION

Tag	Description	Function
1	Audio output	DB25 Connector, TASCAM pinout for audio outputs.
2	TSoIP	RJ-45, Transport Stream Over IP output
3	ASI IN	BNC(f) 75 Ohm; external ASI input
4	HD-SDI OUT 1	BNC(f) 75 Ohm; HD/SD-SDI digital video and audio embedded output 1
5	HD-SDI OUT 1	BNC(f) 75 Ohm; HD/SD-SDI digital video and audio embedded output 2
6	CVBS OUT	BNC(f) 75 Ohm; Composite video output (just Standard Definition)

9.1.2.2.2 UXR.

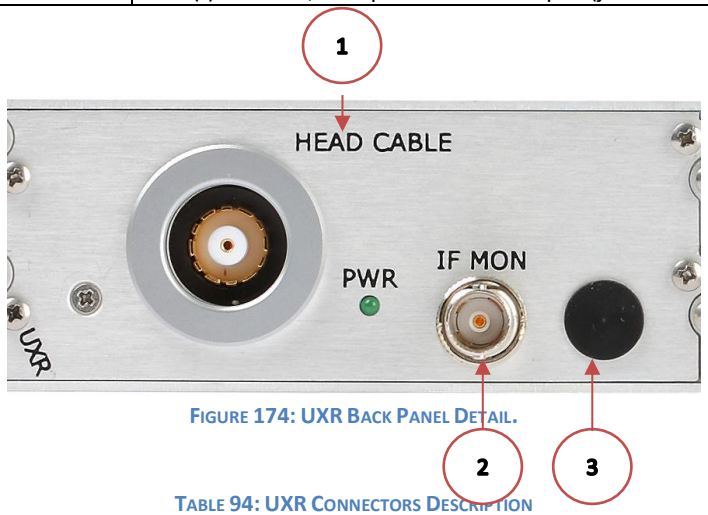


FIGURE 174: UXR BACK PANEL DETAIL.

TABLE 94: UXR CONNECTORS DESCRIPTION

Tag	Description	Function
1	Head Cable	Lemo connector for RG-216 connection cable between Control Unit and Head.
2	PWR	Green led, voltage presence indication.
3	IF MON	BNC(f) 75 Ohm; IF 70 MHz received monitor output.

9.1.2.2.3 DS2.

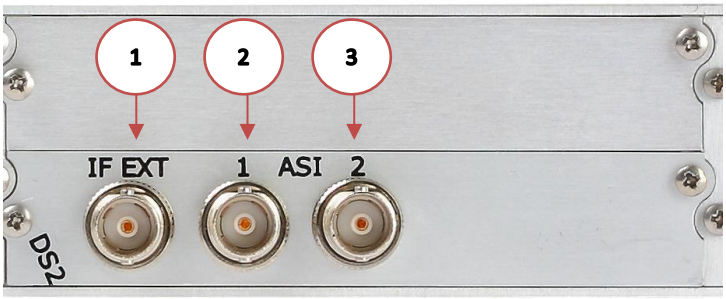


FIGURE 175: DS2 BACK PANEL DETAIL.

TABLE 95: DS2 CONNECTORS DESCRIPTION

Tag	Description	Function
1	IF EXT	BNC(f) 75 Ohm; IF 70 MHz received monitor output.
2	ASI 1	BNC(f) 75 Ohm; ASI output 1.
3	ASI 2	BNC(f) 75 Ohm; ASI output 2.

9.2 Head.

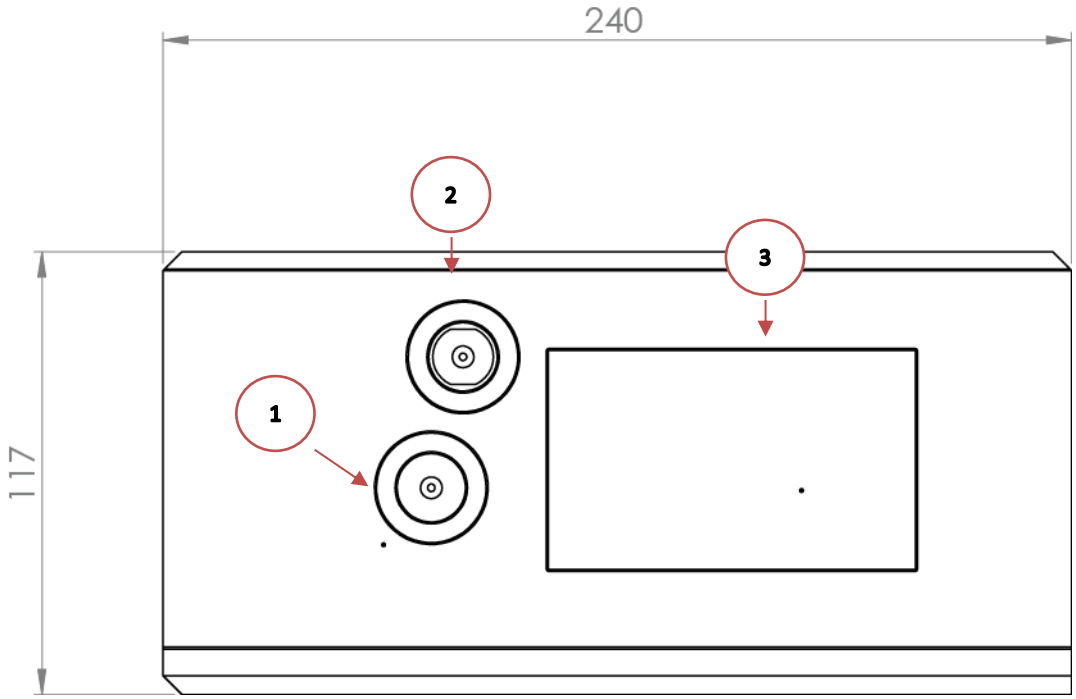


FIGURE 176: FRONT PANEL RF HEAD (MEASUREMENTS IN CM).

TABLE 96: RF HEAD CONNECTORS DESCRIPTION

Tag	Description	Function
1	LEMO	RF Head connection to control unit
2	N	Connection to optional external booster
3		Display touchscreen for user interface

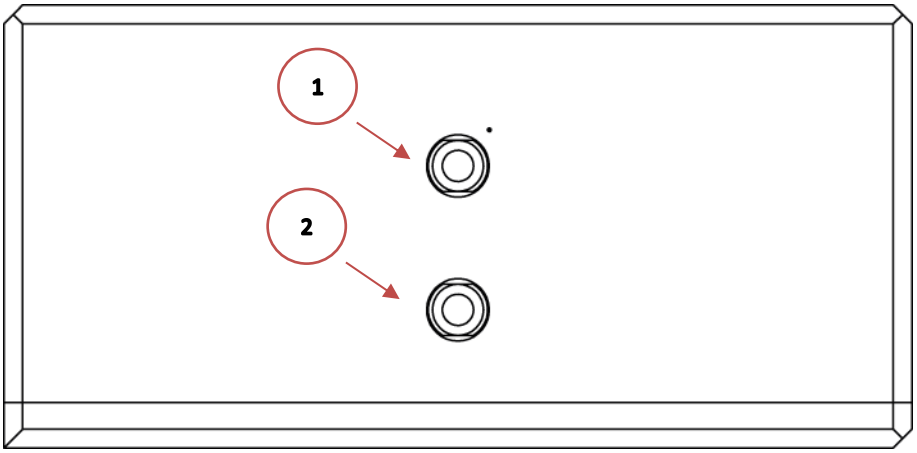


FIGURE 177: ANTENNA SIDE RF HEAD DETAIL.

TABLE 97: RF HEAD CONNECTORS DESCRIPTION - 2

Tag	Description	Function
1	N	Antenna connection (1+0 or half duplex system)
2	N	Antenna connection (2+0, 1+1 or full duplex system)

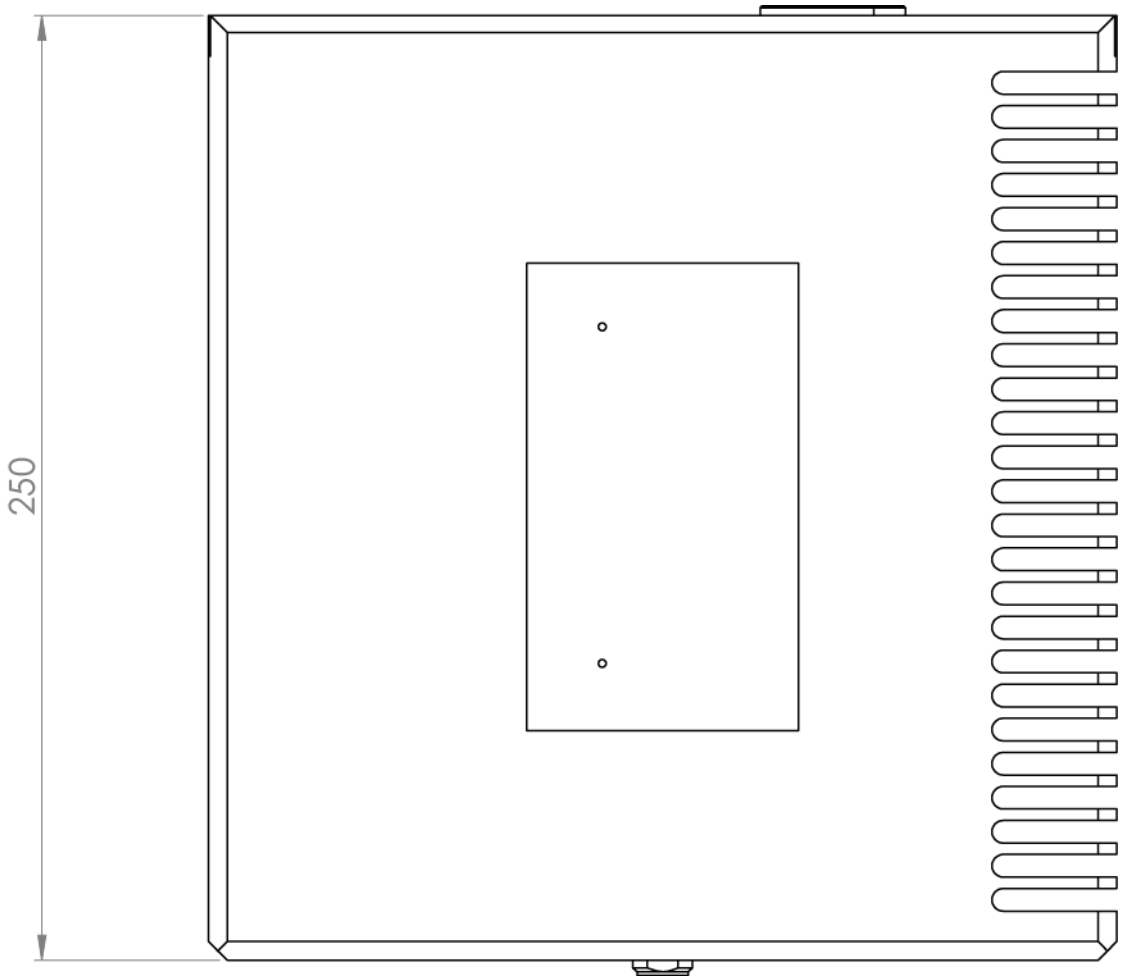


FIGURE 178: BOTTOM SIDE RF HEAD DETAIL (MEASUREMENT IN CM).

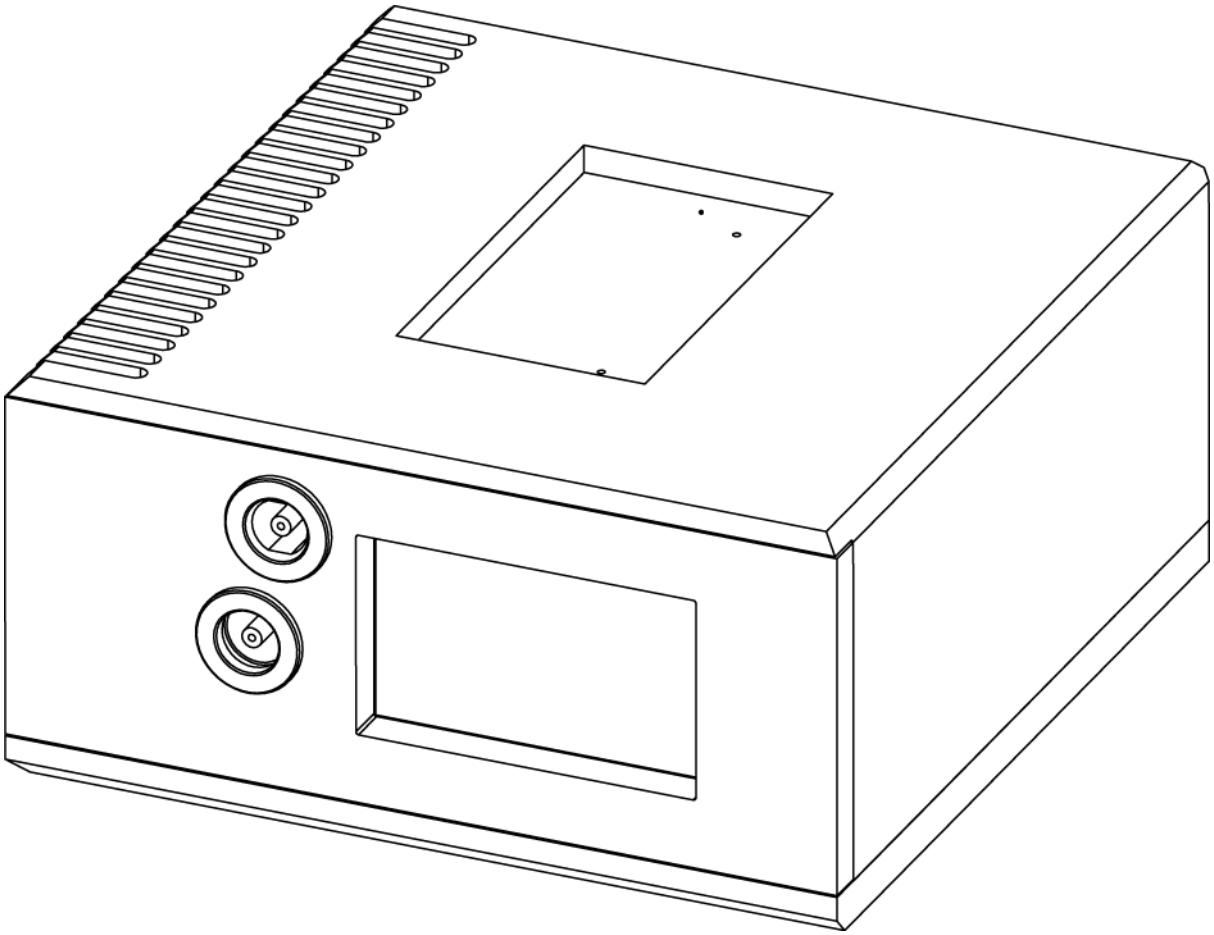


FIGURE 179: ISOMETRIC VIEW XPM RF HEAD (BOTTOM VIEW).