NTi 300/600 FM BROADCAST TRANSMITTER

INSTALLATION

The installation of any electrical equipment should be made by trained technicians who know the risks related to handling electrical supplies.
Before proceeding with the installation, it is necessary to verify that the equipment is in compliance with the rules of the Country where the unit will operate. Before connecting the transmitter to the AC source, it is necessary to verify that the voltage range reported in the back of the unit matches the voltage of the AC supplied. Here are some important details about electrical systems.

ELECTRICAL SYSTEM

Depending upon the exact location of the site, electricity is subject to more or less fluctuations in power. Fluctuation in voltage is not the only issue you can have with electricity. Most of the time, you can have spikes and peaks of power that last for very short intervals but that are sufficient to destroy your device. There are many devices on the market that protect the AC line and they are all useful (surge suppressors, stabilizers etc.). However, only one is really mandatory to avoid disasters caused by the AC. It is called an ISOLATION TRASFORMER. The isolation transformer creates a physical separation from the input of your AC line to the trasmitter. Anything destructive that would come through the AC, stops in the transformer and cannot reach the transmitter.

This device is indispensable because, in the last 10 years, the broadcast industry has developed new smaller power supplies that are very light. They did this to allow the units to be lighter for easy trasportation. Unfortunately, the side the downside is that the big transformers that were located inside the units protecting them, have been removed. The new AC-DC power supplies do not give any sort of protection. The isolation transformer is necessary to give that protection. A big isolation transformer installed where the AC enters the site protect not only one specific device, but all of the equipment that are in the same building.

If you want to protect only one specific device and you want to know what size of tranformer you will need, you can multiply the output watt power of your device by 2.5 and you will have the Watts needed by your isolation transformer. (Example: for a 1000 W transmitter you need at least a 2.5

KWatt isolation transformer). If you want to protect more devices you should add the wattage of every unit and multiply by 2.5.

Once you have your transformer installed, you need to verify how good your ground system is. Every good electrician should have a proper device to measure the ground. Money invested in measuring your ground can fix problems and avoid bigger expenses in the future. Every rack and every unit must be connected to ground.

Once that the electrical connections have been verified, you need to connect the antenna to the transmitter through the coaxial cable. Verify that the connector is properly tighten and, in case you have a rigid coaxial cable feeding the transmitter, install a pigtail with proper power capability and more flexibility so that you do not put too much pressure on the connector.
Before proceeding to operate, we strongly recommend that you make double sure an adequate grounding system has been set. Nicom will not be held responsible for damages to persons and materials if these guidelines are not followed.

The positioning of the transmitter inside the room is equally important. If the unit is placed in a rack, make sure there is enough space around for the air to circulate. Remember that fresh air is positioned lowest in the room. Place your transmitter as low as possible, but not too close to the floor to avoid damages due to humidity. Leave at least 2 feet of space behind the transmitter to allow the warm air flow to circulate without obstruction. We highly recommend to keep the room cool with an air conditioning system, so that the unit can work at a constant temperature without excessive humidity (between 60 and 75 degrees); a temperature over 75 degrees causes the unit to work in a stressed environment which can negatively impact the life and performance of the unit.

CONNECTION AND OPERATION

1. First, connect the transmitting cable coming from the antenna to the corresponding connector placed in the rear panel of the unit; check that it is tightened properly.
2. Then connect the plug to the AC mains and also make a good ground connection.
3. Once these procedures have been performed, you can turn the power on. The transmitter requires about 20 to 30 seconds to perform the internal checks and lock onto the frequency. After that, it will start delivering power.
4. Always start with low power and keep an eye on the reading of the reflected power to be sure that your system (antenna, cables etc.) is performing well.
5. Allow the unit to warm up for about 30 minutes and then you can increase the power to the desired level.
6. Wait another 30 minutes to verify that everything is working properly.
7. Check the air coming out from the rear fans and verify that it is just warm air not overly hot. At this point, if everything looks good, you can consider your installation successful.

SAFETY SUGGESTIONS

Thank you for your business. We at Nicom appreciate our partnership with you and your broadcasting team. We proudly stand behind our products. Regardless of how well our electrical equipment is designed; personnel can be exposed to dangerous electrical shock when protective covers are removed for maintenance or other activities. Therefore, it is incumbent on the user to see that all safety regulations are consistently observed and that each individual assigned to the equipment has a clear understanding of first aid related to electrical shocks (see next pages).

In addition, these safety practices **must** be followed:

- Do not attempt to adjust unprotected circuit controls or to dress leads with the power on.
- Always avoid placing parts of the body in a series between ground and circuit points.
- To avoid burns, do not touch heavily loaded or overheated components without precaution.
- Remember that some semiconductor cases and solid-state circuits carry high voltages.
- Do not assume that all danger of electrical shock is removed when the power is off. Charged capacitors can retain dangerous voltages for long periods of time after the power is turned off. These capacitors should be discharged through a suitable resistor before any circuit points are touched.
- Do not take chances. Be fully trained. Nicom equipment should be operated and maintained by fully qualified personnel.
- Do not service equipment alone and do not perform internal adjustments to this unit unless another person is capable of rendering first aid and resuscitation is present.
- Some components used in the construction of this equipment contain Beryllium Oxide (BeO). This substance is harmless as it is, but becomes highly dangerous if it is ground to powder. Special procedures of disposal must be observed in case of failure of these devices.

NOTE: This section is not intended to contain a complete statement of all safety precautions that should be observed by personnel in using this electronic equipment or others.

Nicom shall not be responsible for injury or damage resulted from improper procedures or from using it by improperly trained or inexperienced personnel.

GENERAL INFORMATION FOR SAFETY

When connecting the equipment to power, please follow these important recommendations:

- This product is intended to operate from a power source that will not apply more than 10% of the voltage specified on the rear panel between the supply conductors or between either supply conductor and ground. A protective- ground connection by way of the grounding conductor in the power cord is essential for safe operation.

- This equipment is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired socket before connecting to the product input or output terminals.

- Upon loss of the protective-ground connection, all accessible conductive parts (including parts that

  may appear to be insulating) can render an electric shock.
- To avoid fire hazard, use only the fuse of correct type, voltage rating, and current rating. Refer fuse

  replacement to qualified service personnel.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.

- To avoid personal injury, do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed.

GOOD PRACTICE

In maintaining the equipment covered in this manual, please keep in mind the following standards for good safety practice:

- At regular intervals, the condition of the equipment and the correct functioning of protective and safety devices shall be checked by a skilled person approved by the appropriate authority for this duty. Functional checks shall be carried out on interlocking systems of doors, mechanical interlocks, isolating switches, earthing switches, parallel resistances and protective devices against overvoltage and over-currents. The above checks shall not be carried out after the protective and safety devices have operated under faulty conditions. The safety devices shall not be altered or disconnected except for replacement, nor shall the safety circuit be modified without specific approval of the appropriate authority in each case.

- When connecting any instrument (wattmeter, spectrum analyzer, etc.) to a high frequency output, use the appropriate attenuator or dummy load to protect the final amplifiers and the instrument input.

- When inserting or removing printed circuit boards (PCBs), cable connectors, or fuses, always turn off power to the affected portion of the equipment. After power is removed, allow sufficient time for the power supplies to bleed down before reinserting PCBs.
- When troubleshooting, remember that FETs and other metal-oxide semiconductor (MOS) devices may appear defective because of leakage between traces or component leads on the printed circuit board. Clean the printed circuit board and recheck the MOS device before assuming it is defective.
- When replacing MOS devices, follow standard practices to avoid damage caused by static charges and soldering.
- When removing components from PCBs (particularly ICs), use care to avoid damaging PCB traces.

PROCEDURE TO ESTABLISH THE ABSENCE OF VOLTAGE

Follow these simple steps for establish the absence of voltage:

- Before starting work on the equipment, it shall be isolated from the main power supply. This disconnection shall always be checked by visual inspection. Further precautions shall be taken to ensure that the main supply cannot be restored while work is being carried out. After the main supply has been disconnected, all other lines such as the control, interlocking and modulation lines shall be disconnected if they carry dangerous voltage. Moreover, the antenna or the antenna transmission line shall be disconnected from the antenna terminal device to prevent the introduction of dangerous voltage due to antenna pick-up. When disconnection of the antenna or antenna transmission line is not possible, other suitable precautions shall be taken, for example, earthing, when necessary at several places, to establish absence of voltage. These earthing connections shall be very short compared with the wave-length.
- Capacitors, which are connected to a circuit isolated from its supply, shall be discharged (and have their terminals permanently short-circuited, and the casing earthed) during the whole period of the work.
- The electrical charge retained by electrical machinery when stopped may, in certain cases, be sufficient to cause a severe shock. This shall be taken into account when making connections to an apparently "dead" machine. Therefore, all machinery shall be discharged and earthed using an adequately insulated lead for this purpose. The discharge operation shall be repeated several times.

- Before any maintenance work is carried out on automatic or remote-controlled equipment, the remote switching circuits shall be made inoperative.

PROCEDURE FOR DETERMINATION OF THE ABSENCE OF VOLTAGE

After the equipment has been isolated according to the standard EN60215, the absence of voltage shall be determined at the work place. This may be done by the use of voltage indicators, measuring instruments, glow discharge lamps for indicating radio-frequency voltage or other suitable means.

ELECTRIC SAFETY PRECAUTIONS

All parts making up the equipment have danger identification tags (with a yellow background) to highlight the parts dangerous for the operator that has access to the system

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Presence of hazardous energy levels

A hazardous energy level is defined as a stored energy level of 20 J or more, or an available continuous power level of 240 VA or more, at a potential of 2 V or more.

Precautions for Handling Components Containing Toxic Material

The Beryllium (Beryllium Oxide) is used in the construction of some components of the apparatus.
This material, when in the form of fine powder or vapor if inhaled into the lungs can cause respiratory problems. In its solid form, as used herein, can be handled quite safely, but it is prudent to avoid conditions that favor the formation of dust due to abrasion of the surfaces. Because of this risk, you should be very careful in the removal and disposal of these components.

Do not throw them in containers for generic waste material, industrial or domestic, or send via mail. They must be packed separately and clearly identified in safety and to show the nature of the risk and then safely disposed by authorized personnel for toxic waste.Before you remove or replace any RF COMPONENT, make sure that all precautions comply with the recommendations of SAFETY.

This warning label is used for components containing Beryllium Oxide.

ELECTROSTATIC PRECAUTIONS

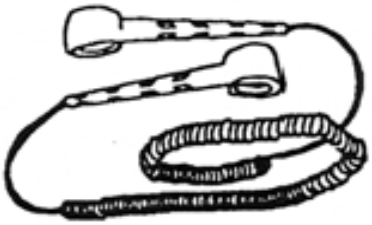
Before removing or replacing any PCB assembly within the equipment, make sure that all precautions comply with ESD protections (ESD = Electro Static Discharge). Make sure that electrostatic discharge protections are reset after maintenance and/or measurement operations.

The tag of CAUTION is used for the majority of electronic devices that are subject to electrical shocks.

If electronic parts have to be touched during installation or repair, please observe the following precautions.

Operators must be equipped with anti-static protection devices such as:

Elastic wristband: to be fixed on the operator's wrist.



Flexible cords: to be connected to the elastic wristband and the special plug on the shelf highlighted with the ESD warning label.

RULES OF FIRST AID

Personnel engaged in the installation, use and maintenance of the equipment must be familiar with the theory and practice of first aid.

FIRST AID IN CASE OF ELECTRIC SHOCK

If someone seems unable to free themselves when they receive an electric shock, disconnect the power before trying to help. A muscle spasm or unconsciousness may render the victim unable to free themselves from the power source.

If power cannot be turned off immediately, very carefully loop a length of dry non-conducting material (such as a rope, insulating material, or clothing) around the victim and pull him free of the power. Carefully avoid touching him or his clothing until free of power.

DO NOT TOUCH VICTIM OR HIS CLOTHING BEFORE POWER IS DISCONNECTED OR YOU CAN ALSO BECOME A SHOCK VICTIM.

EMERGENCY RESUSCITATION TECHNIQUE

Step 1
Check the victim for unresponsiveness. If there is no response, **immediately call for medical assistance** and then return to the person.

Step 2
Position the person flat on their back. Kneel by their side and place one hand on the forehead and the other under the chin. Tilt the head back and lift the chin until teeth almost touch. Look and listen for breathing.

Step 3
If not breathing normally, pinch the nose and cover the mouth with yours. Give two full breaths. The person's chest will rise if you are giving enough air.

Step 4
Put the fingertips of your hand on the Adam's apple; slide them into the groove next to the windpipe. Feel for a pulse. If you cannot feel a pulse or are unsure, move on to the next step.

Step 5
Position your hands in the center of the chest between the nipples. Place one hand on top of the other.

Step 6
Push down firmly two inches. Push on chest 15 times.
CONTINUE WITH TWO BREATHS AND 15 PUMPS UNTIL HELP ARRIVES.

TREATMENT FOR BURNS

Extensive burns and broken skin

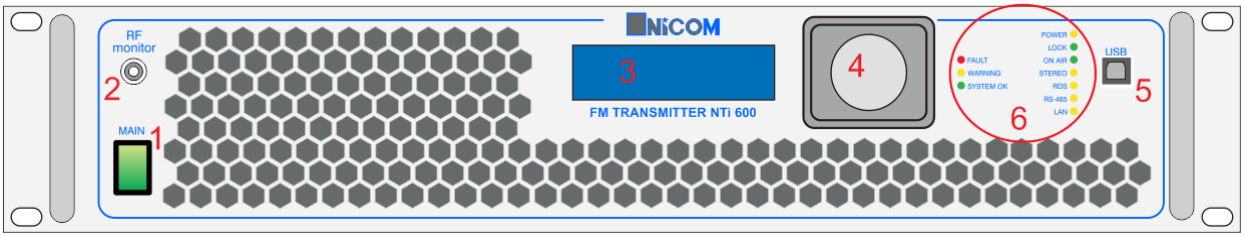
- Cover area with clean sheet or a clean cloth.
- Do not break blisters, remove tissue, remove any clothing that is stuck to the skin, and apply an ointment.
- Treat victim according to the type of accident.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected, keep them elevated.

If medical help is not available within an hour and the victim is conscious and not vomiting, give a solution of salt and baking soda: 1 teaspoon of salt and half of baking soda every 250 ml of water. Make slowly drink half a glass of solution four times and for a period of 15 minutes.Stop at the retching.Do not administer alcoholic beverages

Less severe burns

- Apply cold gauze compresses (not iced) using a cloth as clean as possible.
- Do not break blisters, remove tissue, remove any clothing that is stuck to the skin, and apply an ointment.
- If necessary, put on clean clothes and dry.
- Treat victim according to the type of accident.
- Arrange transportation to a hospital as quickly as possible.

NTi 300-600 TRANSMITTER FRONT PANEL



The NTi 300 and 600 front panel presents:

1. ON – OFF SWITCH
2. RF MONITOR - RF output of approx.. -50 dBm
3. OLED GRAPHIC DISPLAY
4. ROTARY SWITCH
5. RDS programming input
6. LEDs reporting the status of the unit.

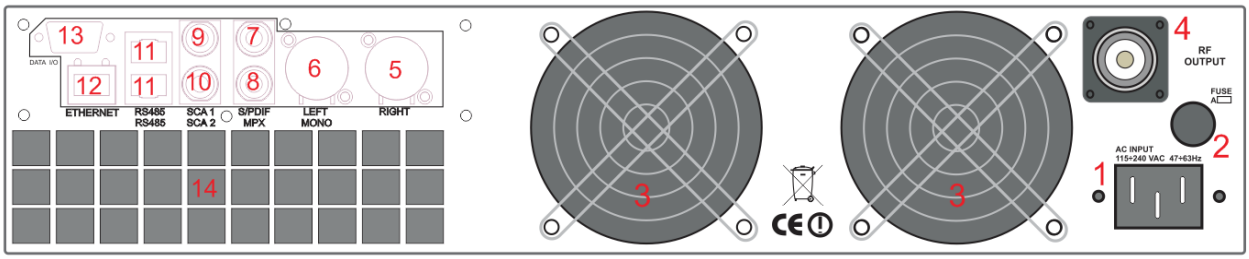
The 3 LEDs close to the rotary switch are like a traffic signal:

- Green indicates regular operation;
- Yellow is a caution alert for a possible issue;
- Red signal stops the machine to protect electronic parts from any damage. After few minutes the microprocessor will make a second attempt to check if the alarm condition is still present, if not the unit will resume the power. If not it will try up to five times and then it will lock the unit in a protection status.

The LEDs on the right give the following indications:

- Internal power supply is running;
- PLL lock status;
- Activation of the final RF module (ON-AIR mode);
- Activation of the STEREO CODER module;
- Activation of the RDS module;
- Activation of RS-485 management
- Activation of the LAN

NTi 300-600 TRANSMITTER REAR PANEL

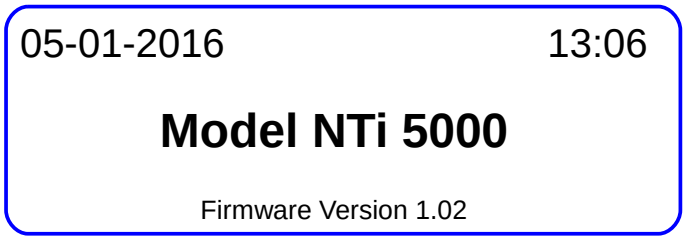


1. POWER SOCKET
2. FUSE HOLDER
3. 80x80x38 48 VDC FANS
4. RF OUTPUT N TYPE CONNECTOR
5. RIGHT CHANNEL STEREO XLR- INPUT
6. LEFT CHANNEL STEREO XLR- INPUT OR MONO (if stereo coder not activated)
7. S/PDIF DIGITAL INPUT
8. MPX INPUT
9. SCA SUBCARRIER 1 INPUT
10. SCA SUBCARRIER 2 INPUT
11. RS485 COM PORT IN-OUT
12. LAN CONNECTION REMOTE CONTROL
13. DB9 TELEMETRY DATA CONNECTOR

TURNING ON THE EQUIPMENT

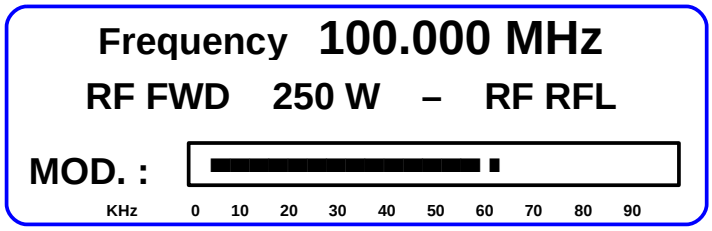
After the unit is switched on the display will show the logo, as it does this, the unit is performing a test on the signal lights by lighting them for a few seconds.

Then the traffic light LED turns yellow, while the model name is displayed with the firmware version at the bottom, at the top left you will see the date and on the top right the time:



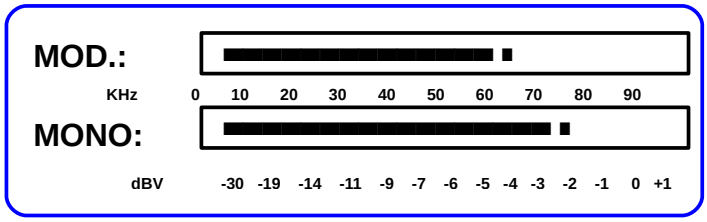
During a waiting time of approximately 15 seconds, the PLL module is locking the programmed frequency

If the lock process is successful, the working frequency is displayed, the traffic light becomes green, while the LOCK and ON AIR lights indicate that the PLL module and the RF module are OK:

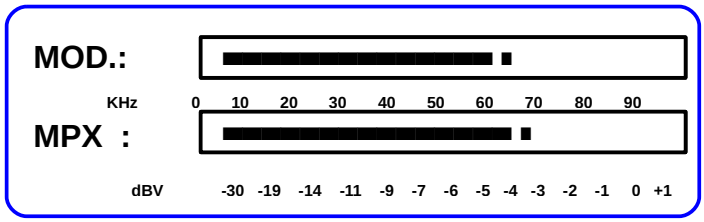


If a RF power was previously set, the unit will slowly increase the output power until it reaches the memorized value.

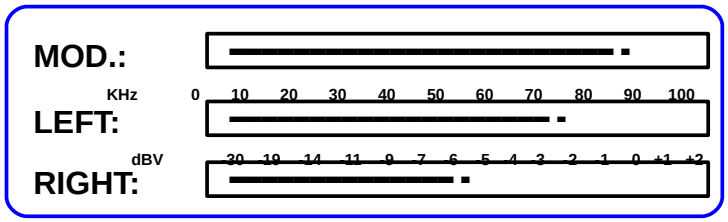
Rotating the knob clockwise the reading goes to the main modulation and the MONO input:



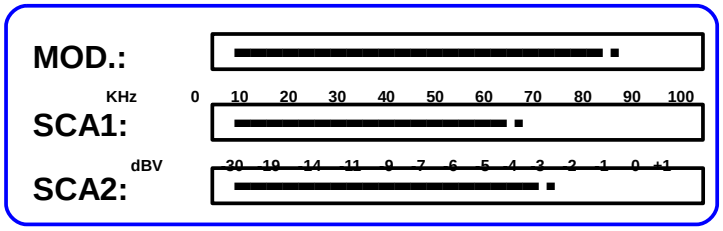
Then it goes to the MPX one:



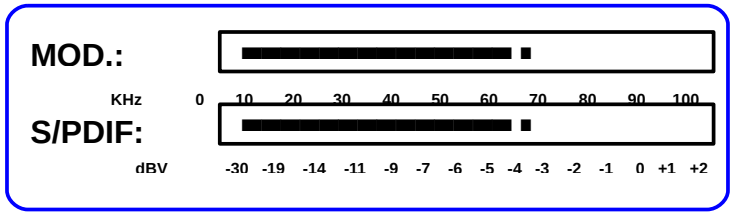
Then it goes to the STEREO CODER



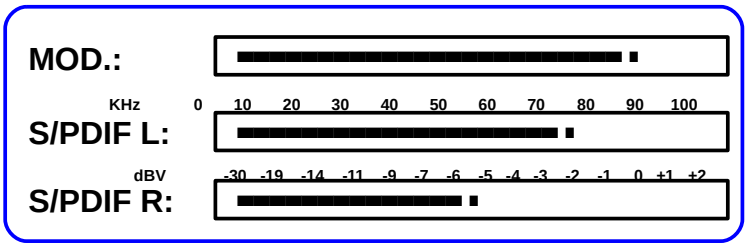
Then it goes to the SCA1 e SCA2:



Then it goes to the MONO input and to the digital S/PDIF signal.



Then it goes to the digital S/PDIF signal related to the LEFT and RIGHT channels



Then to the RF VOLTAGE and CURRENT module;

RF VOLTAGE: = 48.3 V

RF CURRENT:I1 = 24.6 A
I2 = 25.1 A
I3 = 25.3 A

Finally, it goes to the internal temperature and the RF module

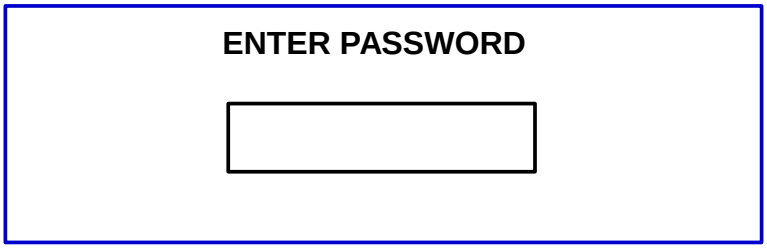
TEMPERATURE

INTERNAL31.7 °C

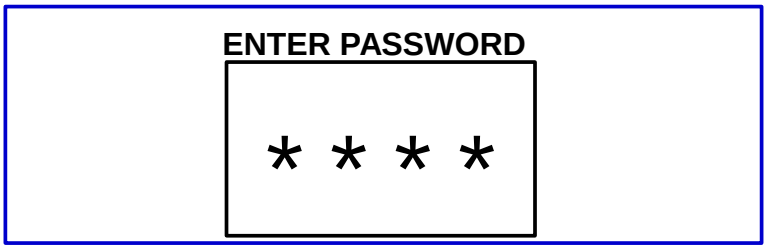
RF MODULE 45.5 °C

SETTING PARAMETERS (PASSWORD DEFAULT: 0 0 0 0)

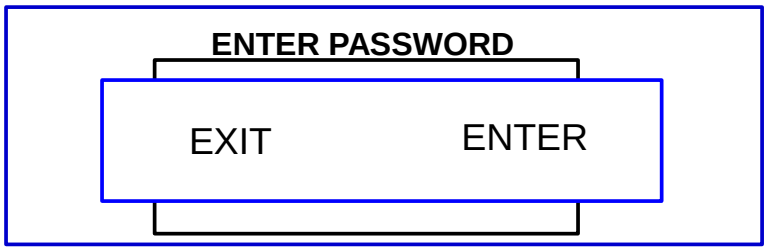
To access the settings, please press and hold the rotary encoder for a few seconds:



After that you enter the password by selecting the desired number rotating the encoder and confirming it by pressing the same encoder:

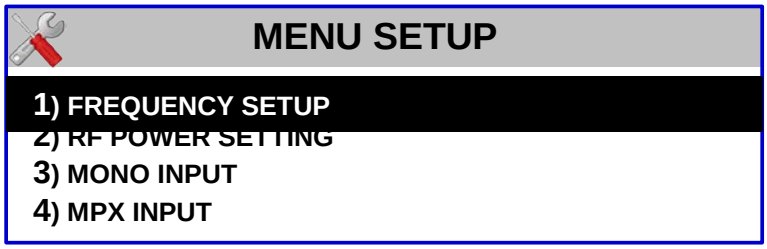


The password is always four digits, at the end of which the unit will ask to confirm by pressing “ENTER” or exit.

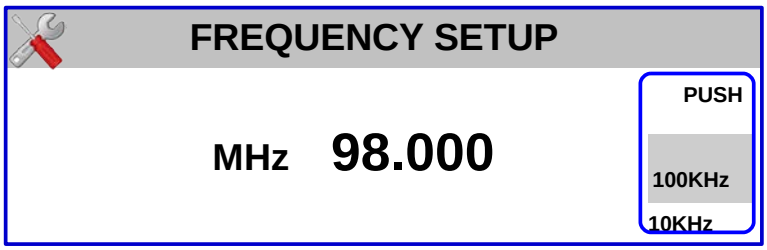


5 attempts are allowed; after that you must turn the machine off and on again to resume the procedure described above.

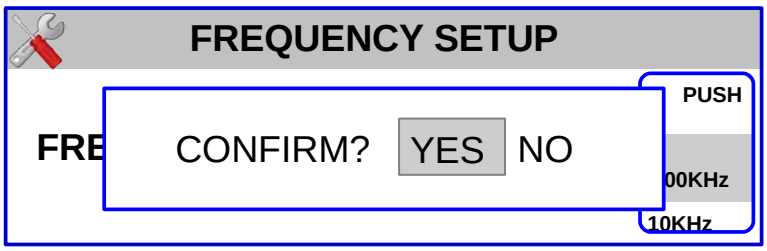
FREQUENCY SETTING



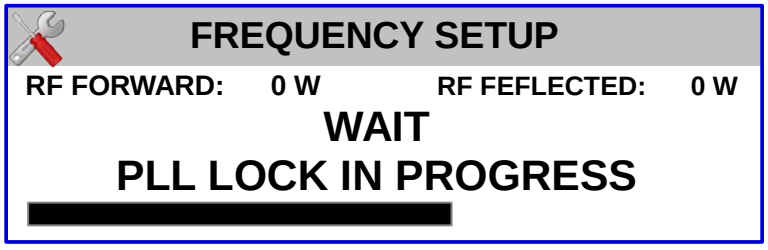
The first line allows you to set the frequency:



Pressing the rotary switch you can choose the frequency steps between 100 KHz or 10 KHz. Then turning the rotary knob you can reach the desired frequency. Confirmation is done by pressing the rotary encoder for a few seconds.

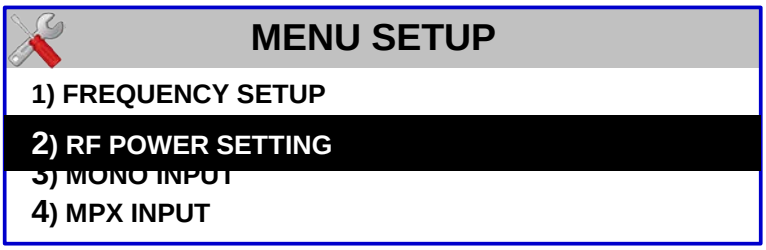


After confirmation, the RF module is turned off processing a new PLL frequency locking;

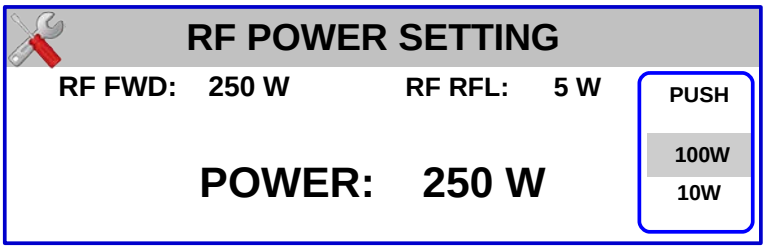


The PLL and ON-AIR LEDs are switched on after the locking time is complete. During the locking time, the traffic light turns yellow and then turns green once the procedure is complete.

OUTPUT POWER SETTING

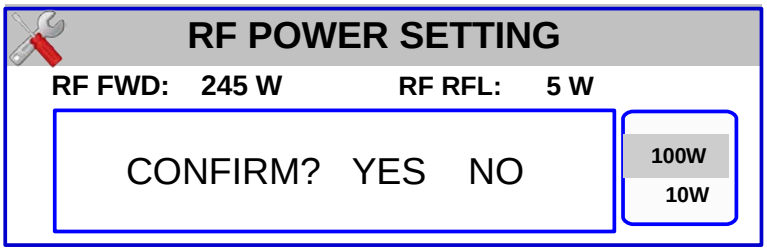


The second line allows you to set the output RF power:

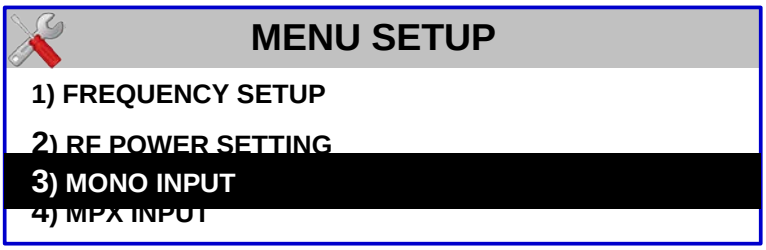


Rotary encoder rotation allows you to increase or decrease the value of the output RF power, short rotary pressure allows you to switch from one movement being 10W to many movements being 100W.

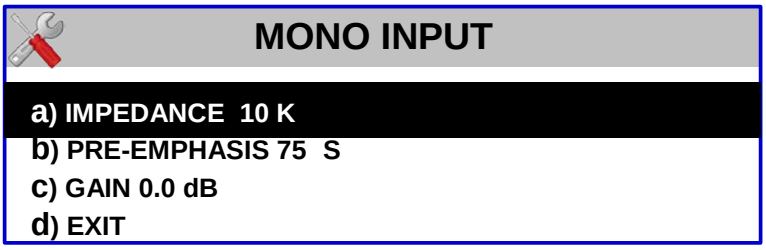
Once the power has been set, it is possible to save it so that in the event of a network power blackout the system will return to the set value when it is restored:



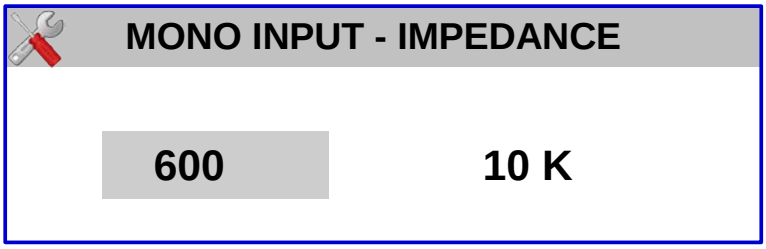
INPUT MONO SETTING

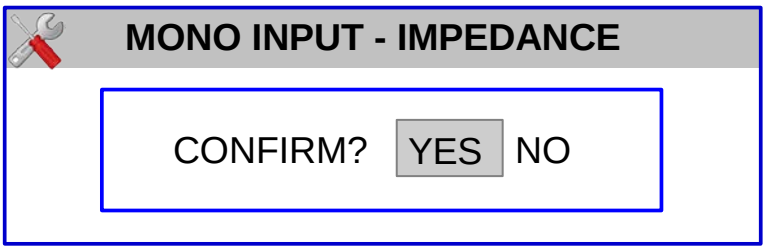


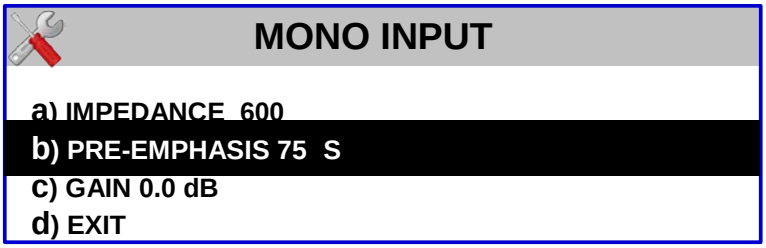
The MONO input is the XLR connector. It is shared with the LEFT input of the STEREO CODER module. By choosing this option you can set some parameters of the MONO input, including the input impedance, pre-emphasis and amplification gain:

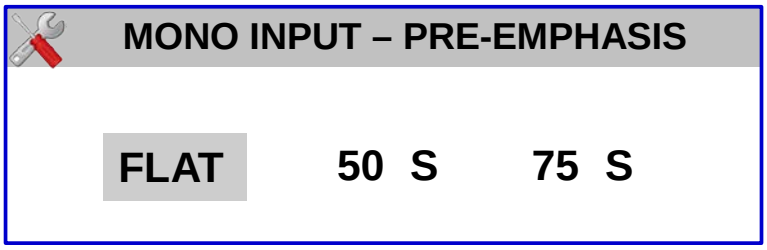


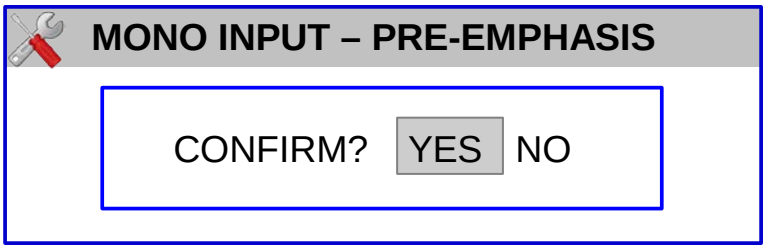
Each access to these parameters gives the possibility of switching from one value to another through the rotary encoder and confirming the choice by pressing it:

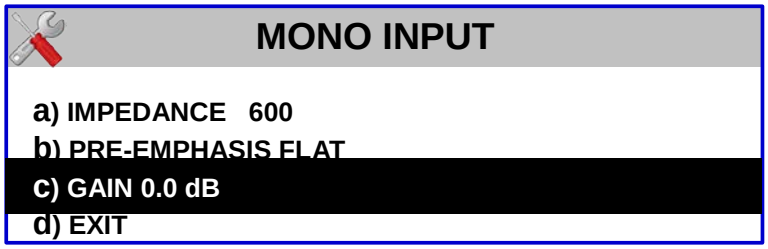


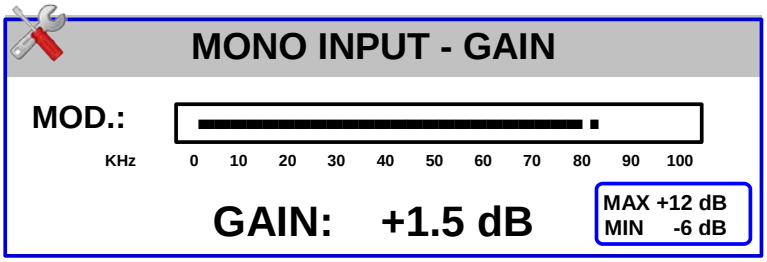


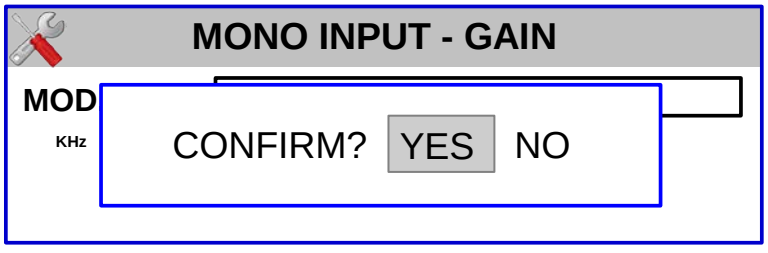

MONO INPUT
a) IMPEDANCE 600
b) PRE-EMPHASIS 75 S
c) GAIN 0.0 dB
d) EXIT

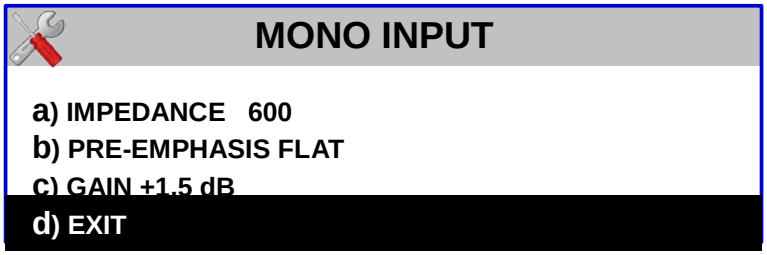

MONO INPUT – PRE-EMPHASIS
FLAT
50 S
75 S


MONO INPUT – PRE-EMPHASIS
CONFIRM?
YES
NO

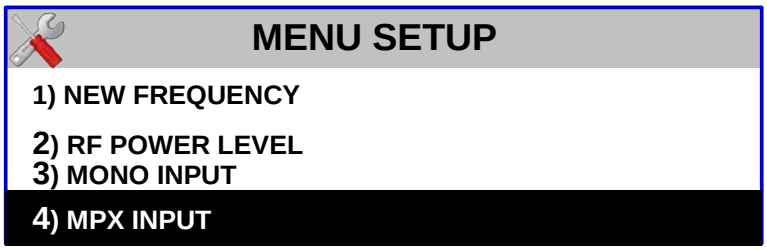

MONO INPUT
a) IMPEDANCE 600
b) PRE-EMPHASIS FLAT
c) GAIN 0.0 dB
d) EXIT


MONO INPUT - GAIN
MOD.:
KHz
0 10 20 30 40 50 60 70 80 90 100
GAIN: +1.5 dB
MAX +12 dB
MIN -6 dB

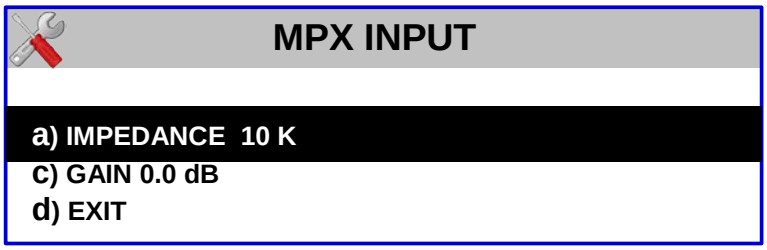

MONO INPUT - GAIN
MOD
KHz
CONFIRM?
YES
NO

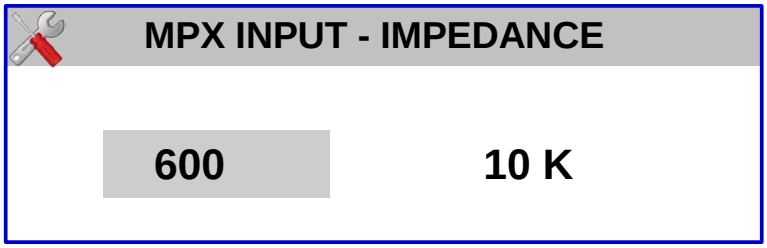

MONO INPUT
a) IMPEDANCE 600
b) PRE-EMPHASIS FLAT
c) GAIN +1.5 dB
d) EXIT

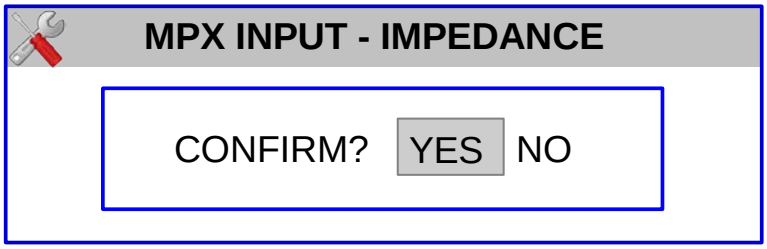
MPX INPUT SETTING

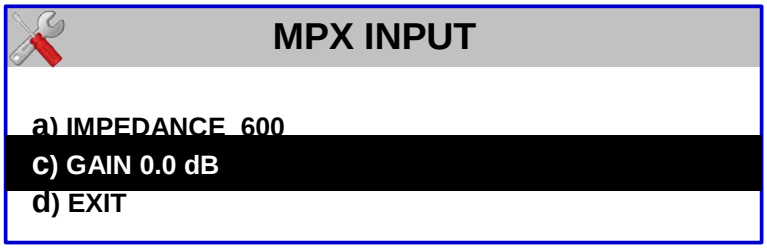


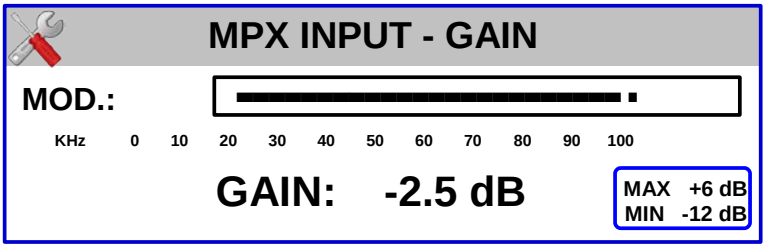
Like in the previous MONO setting, also here it is possible to set the input impedance and MPX input gain:

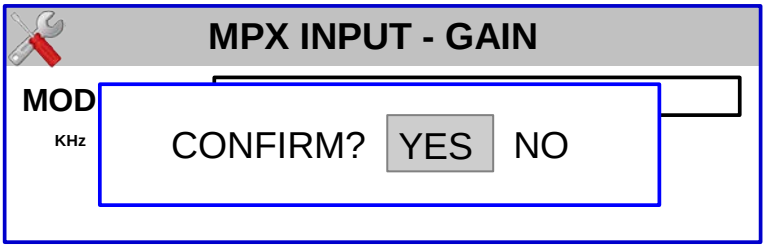


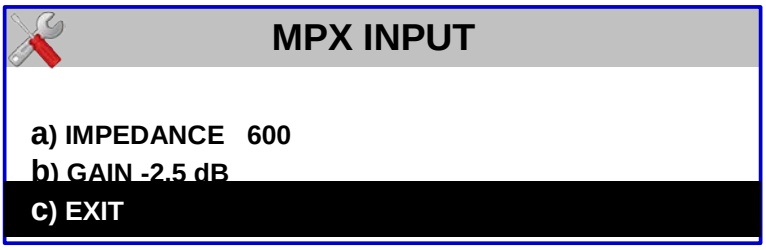




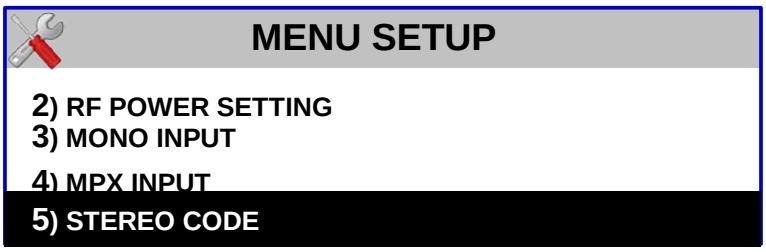




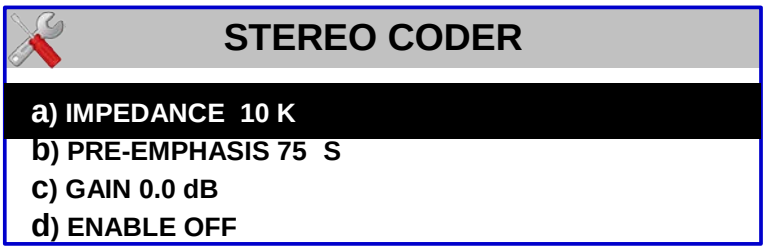


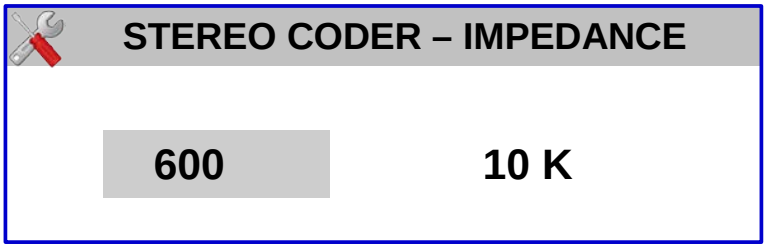


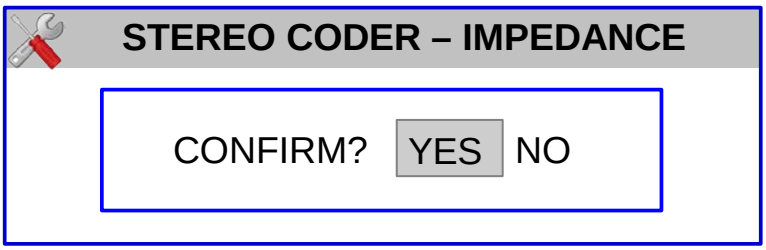
STEREO CODER INPUT SETTING

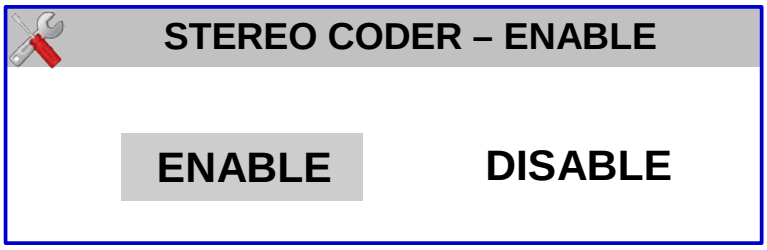


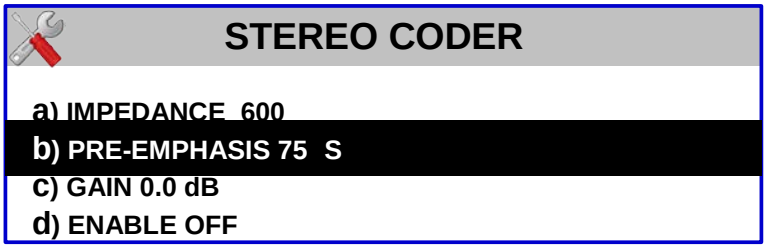
You can set the input impedance of the STEREO CODER, pre-emphasis, amplification gain and enable or disable this module:

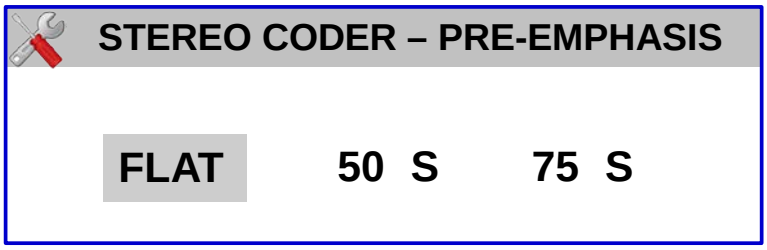


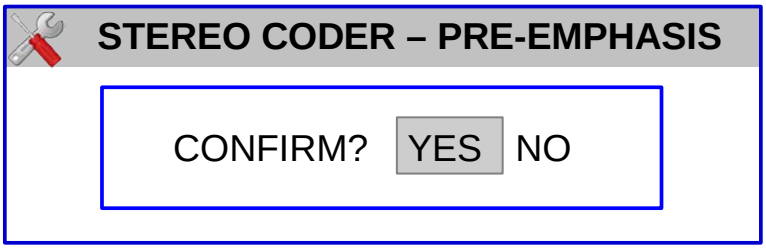


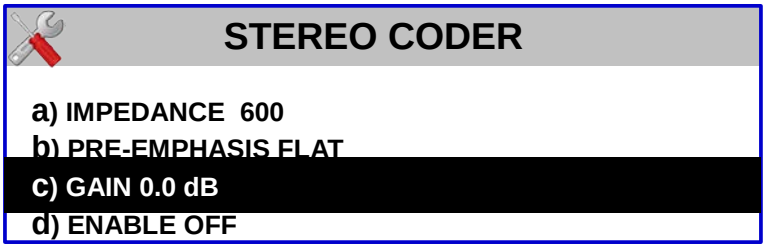


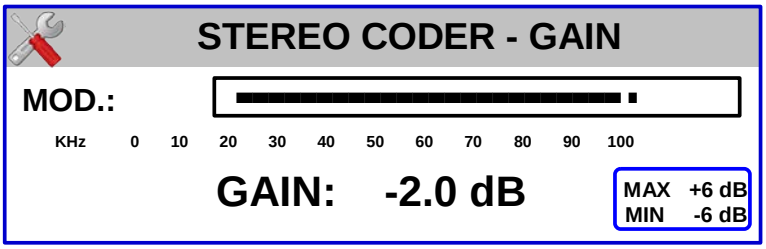

STEREO CODER – ENABLE
ENABLE
DISABLE

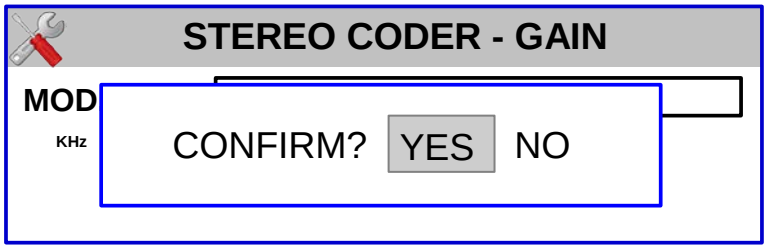

STEREO CODER
a) IMPEDANCE 600
b) PRE-EMPHASIS 75 S
c) GAIN 0.0 dB
d) ENABLE OFF

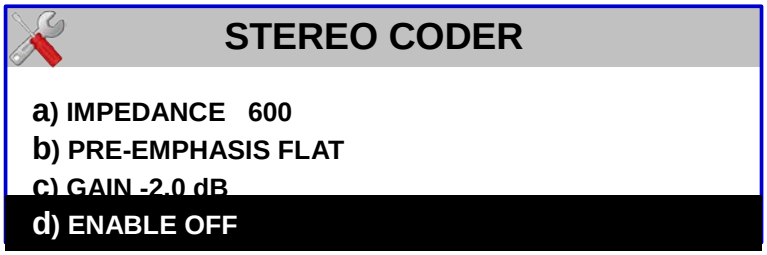

STEREO CODER – PRE-EMPHASIS
FLAT
50 S
75 S

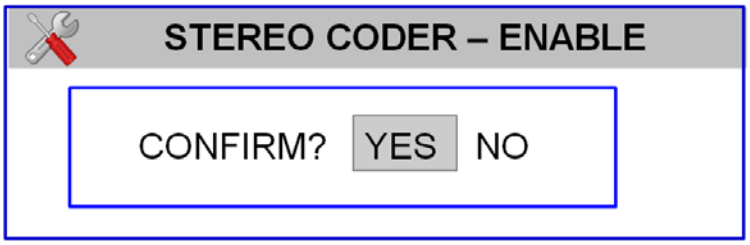

STEREO CODER – PRE-EMPHASIS
CONFIRM?
YES
NO

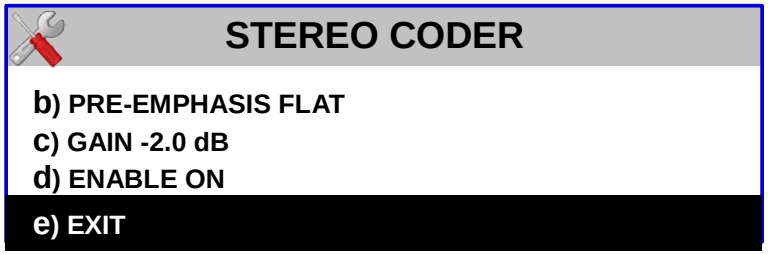

STEREO CODER
a) IMPEDANCE 600
b) PRE-EMPHASIS FLAT
c) GAIN 0.0 dB
d) ENABLE OFF


STEREO CODER - GAIN
MOD.:
KHz 0 10 20 30 40 50 60 70 80 90 100
GAIN: -2.0 dB
MAX +6 dB
MIN -6 dB

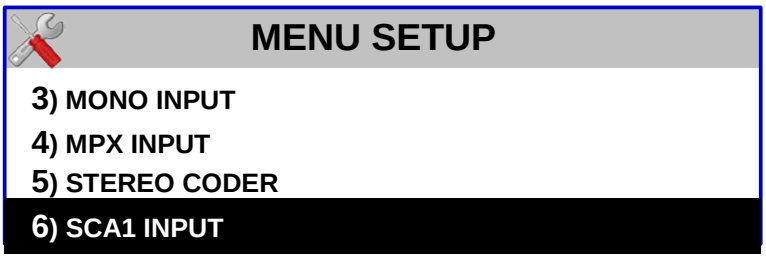

STEREO CODER - GAIN
MOD
KHz
CONFIRM? YES NO


STEREO CODER
a) IMPEDANCE 600
b) PRE-EMPHASIS FLAT
c) GAIN -2.0 dB
d) ENABLE OFF

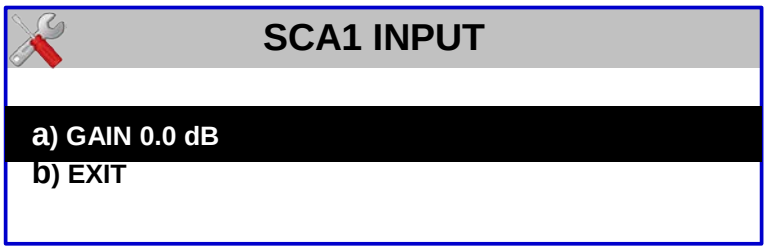

STEREO CODER – ENABLE
CONFIRM? YES NO

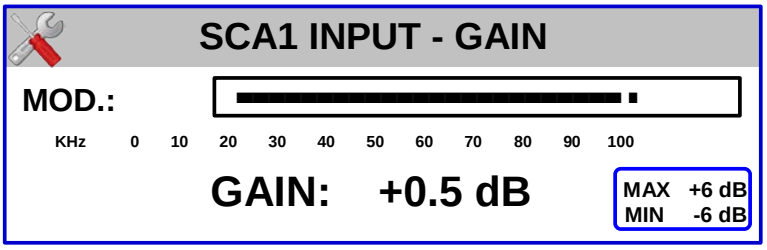

STEREO CODER
b) PRE-EMPHASIS FLAT
c) GAIN -2.0 dB
d) ENABLE ON
e) EXIT

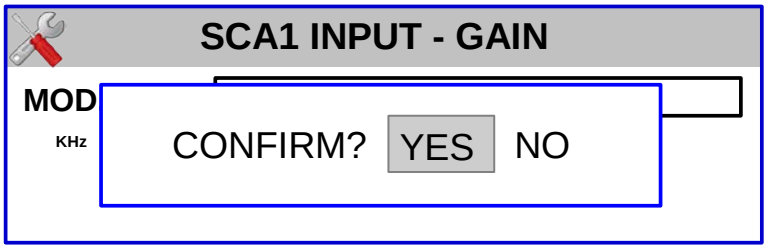
SCA1 SETTING

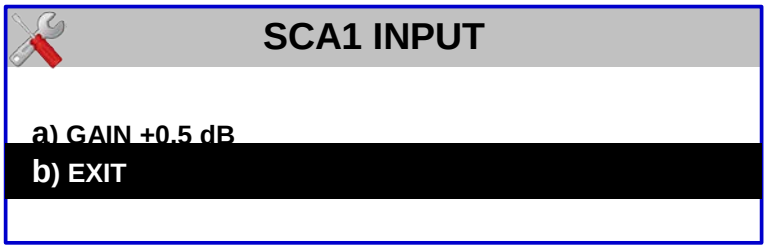


Here you can set the input gain of SCA1:

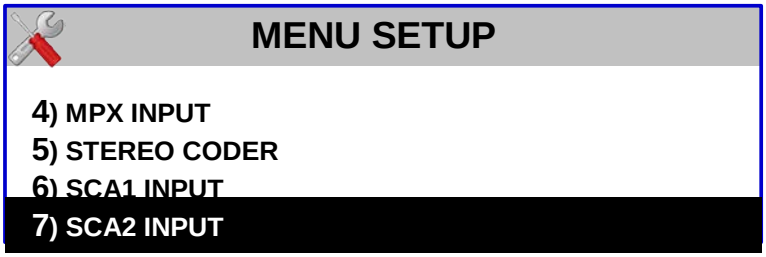




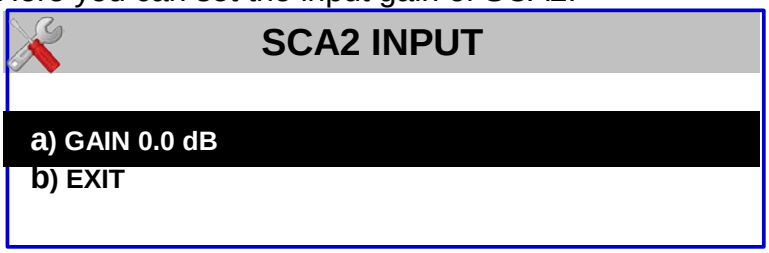


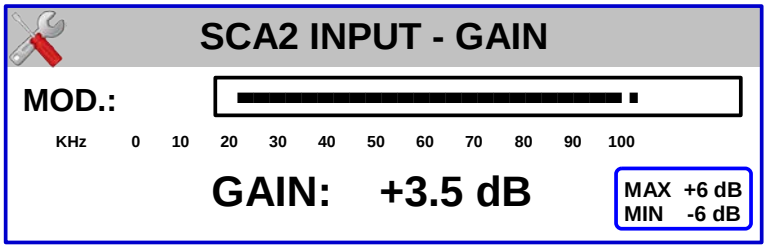


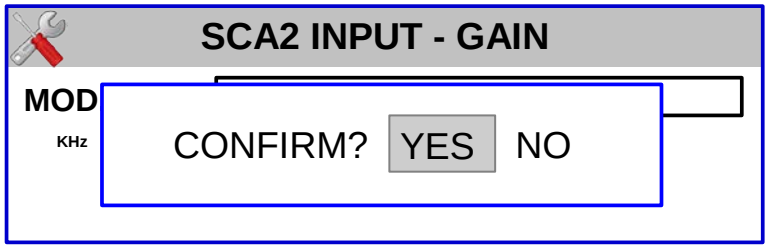
SCA2 SETTING

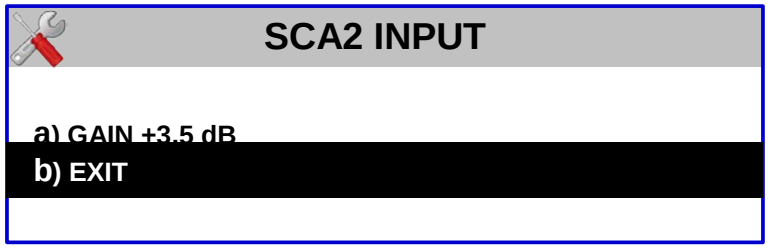


Here you can set the input gain of SCA2:

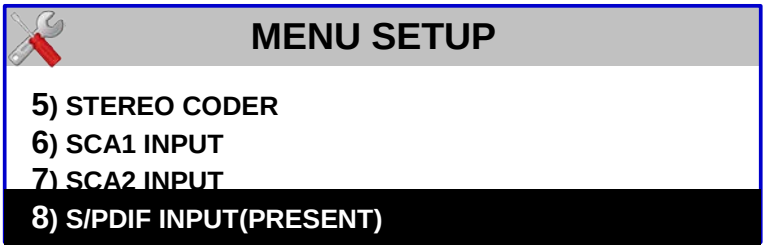




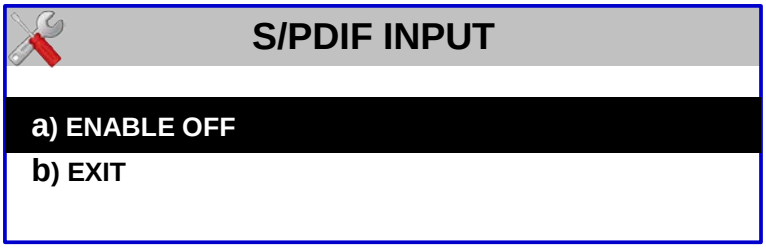


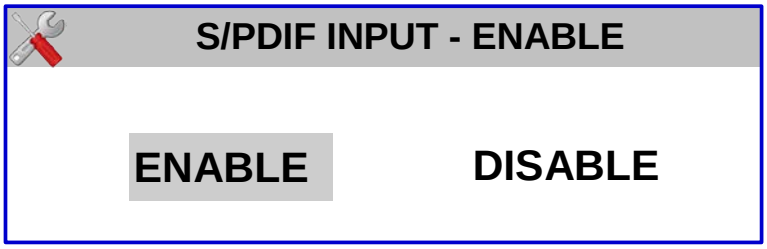


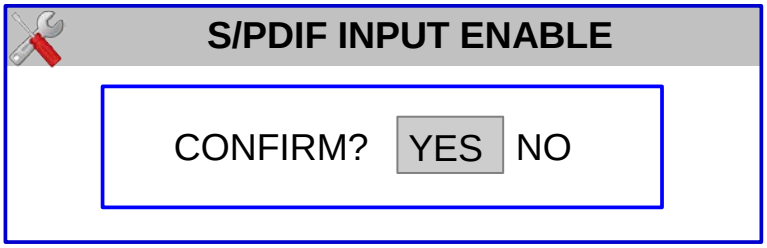
S/PDIF INPUT SETTING

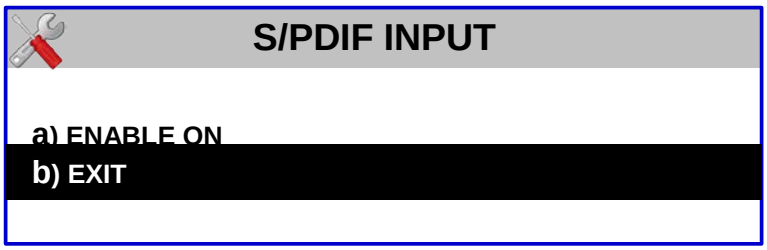


Here you can enable or disable the S / PDIF digital input function.
If the STEREO CODER module is not present in the unit, the S/PDIF works in MONO, otherwise it works in stereo:

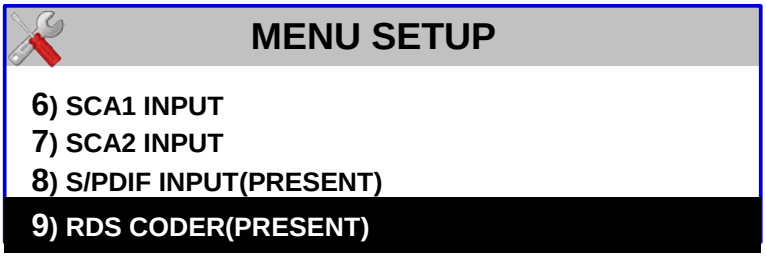




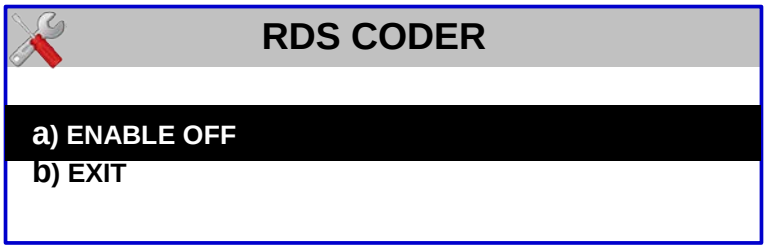


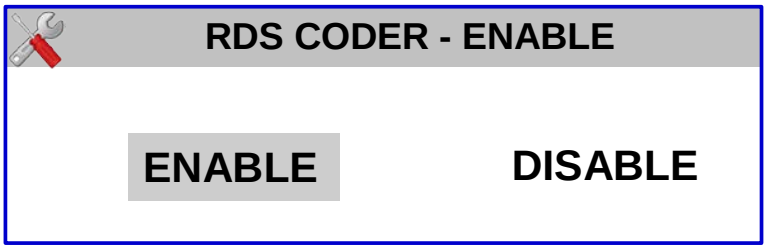


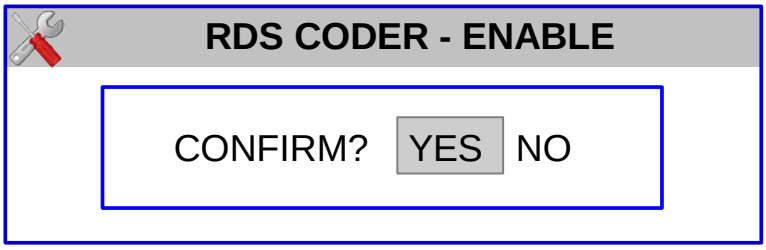
RDS MODULE SETTING

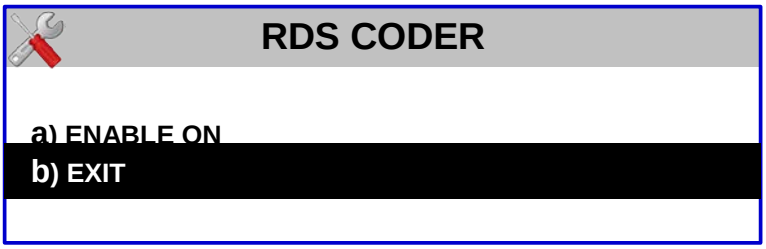


If the RDS module is present in this case, it is only possible to enable or disable it:

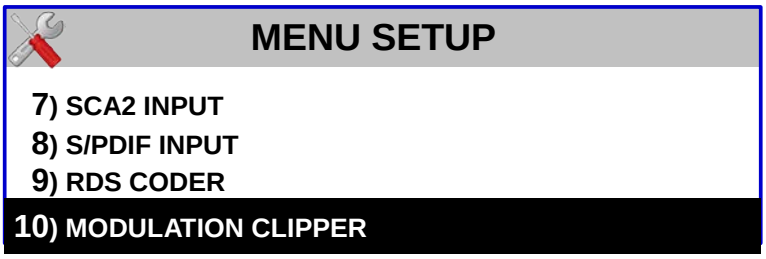




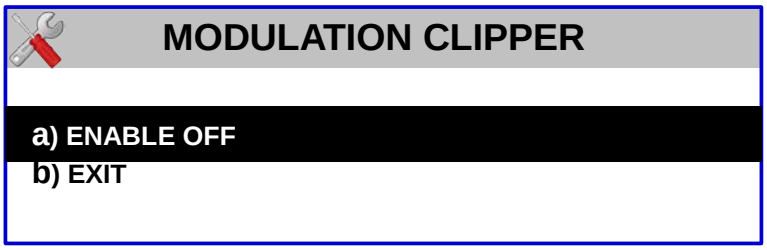


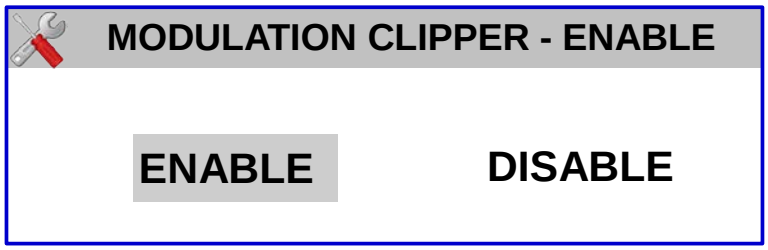


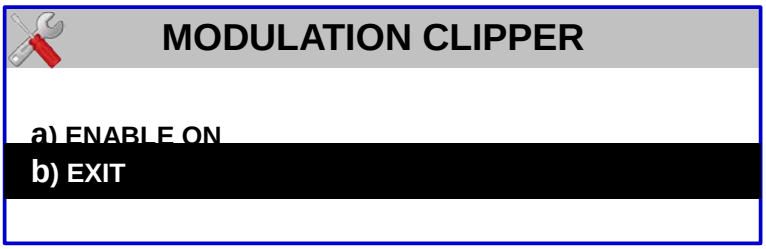
CLIPPER SETTING



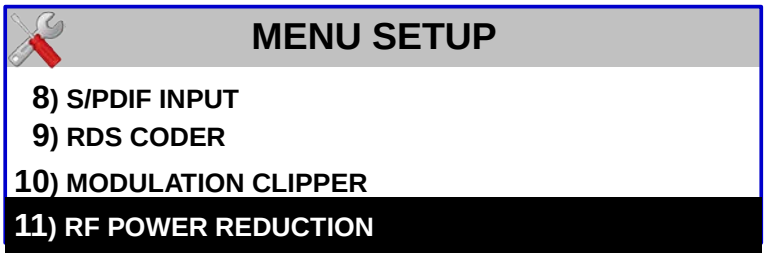
Here you can enable or disable the clipper circuit:



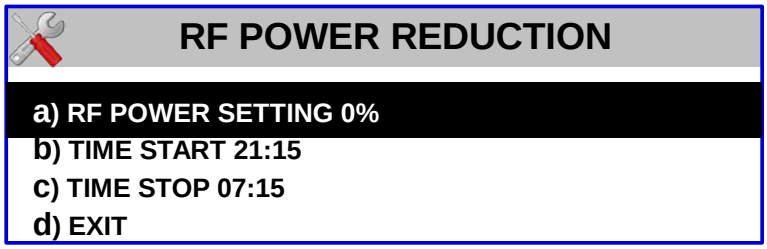


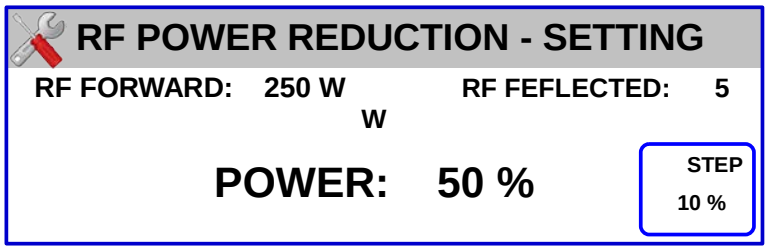


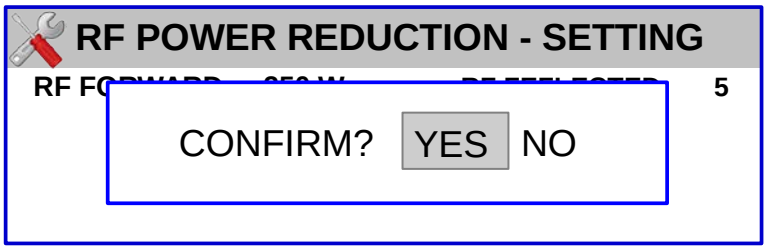
SETTING POWER REDUCTION

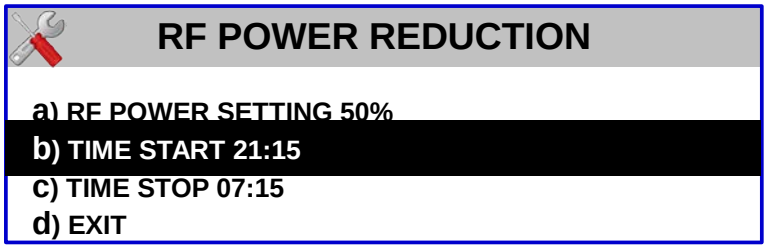


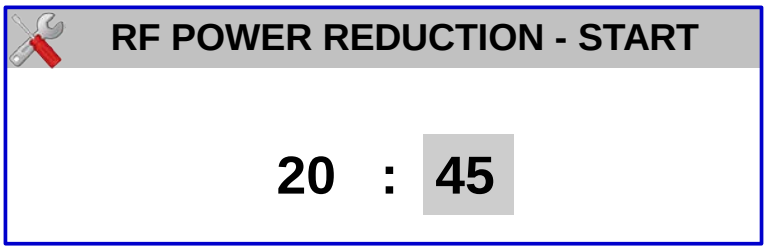
With this function you can set a time frame in to reduce by a certain percentage the power of the unit and you can decide the starting time and the ending time.

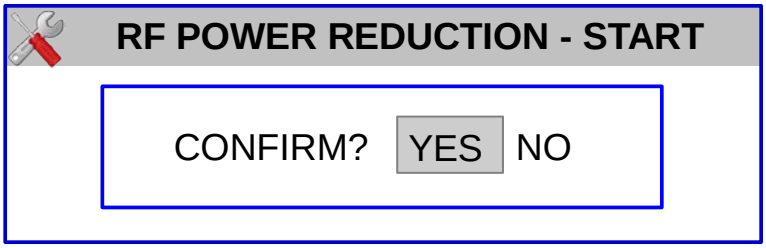


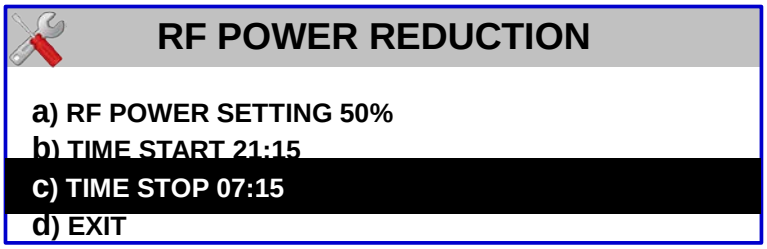


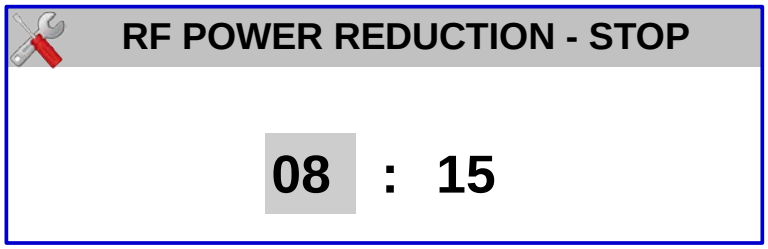


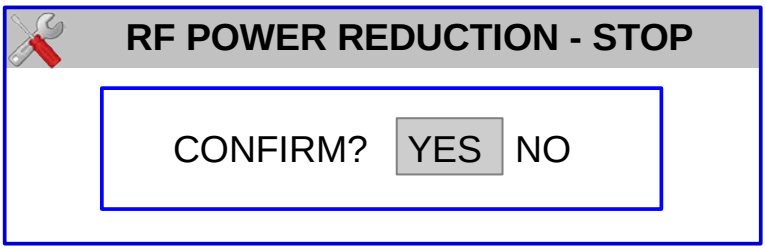


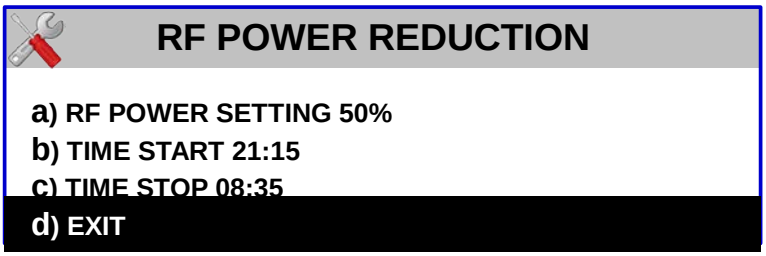

RF POWER REDUCTION - START
20 : 45


RF POWER REDUCTION - START
CONFIRM? YES NO

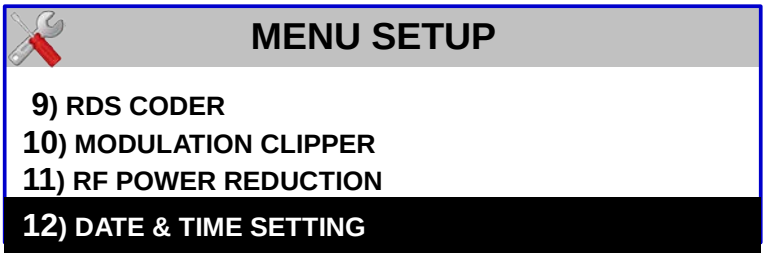

RF POWER REDUCTION
a) RF POWER SETTING 50%
b) TIME START 21:15
c) TIME STOP 07:15
d) EXIT


RF POWER REDUCTION - STOP
08 : 15

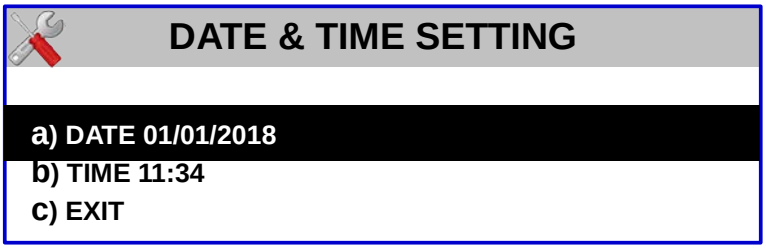

RF POWER REDUCTION - STOP
CONFIRM? YES NO

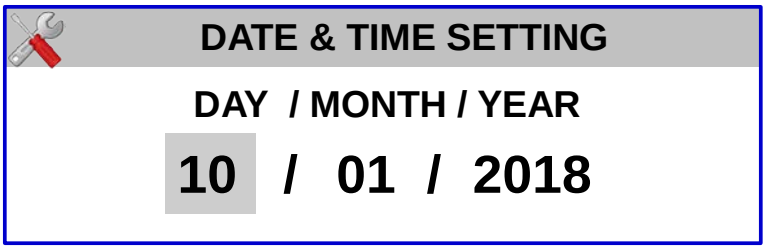

RF POWER REDUCTION
a) RF POWER SETTING 50%
b) TIME START 21:15
c) TIME STOP 08:35
d) EXIT

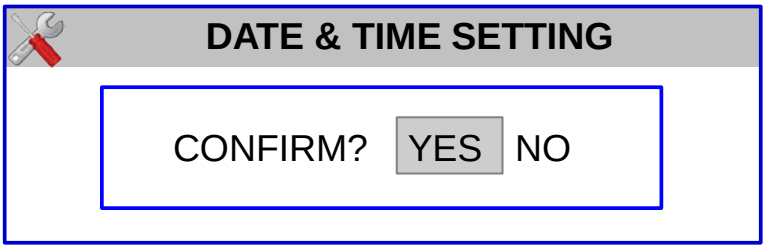
SETTING DATE AND TIME

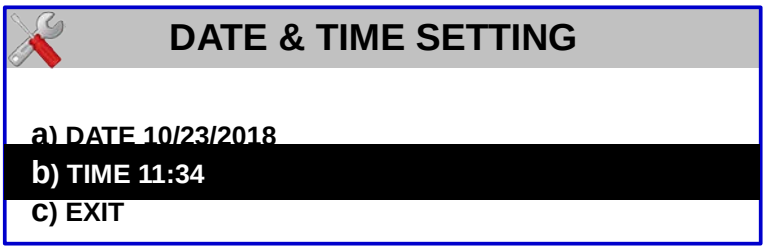


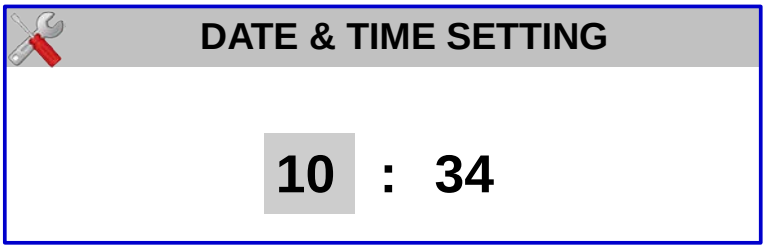
Here you can set the internal clock and date:











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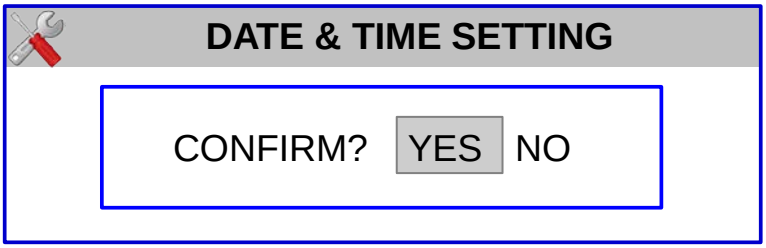
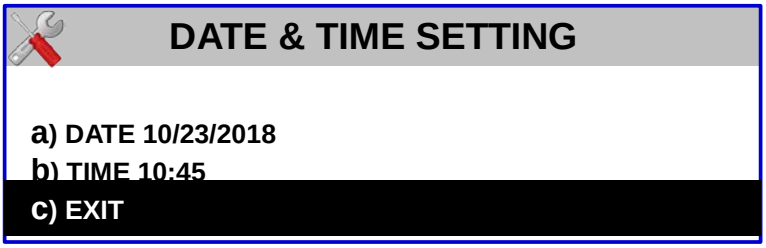
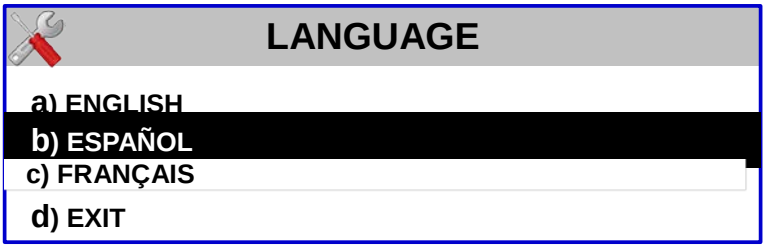
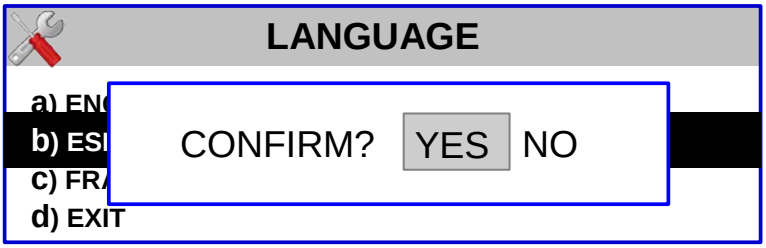


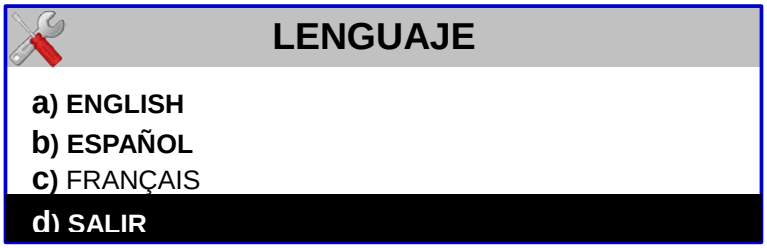


SETTING THE LANGUAGE

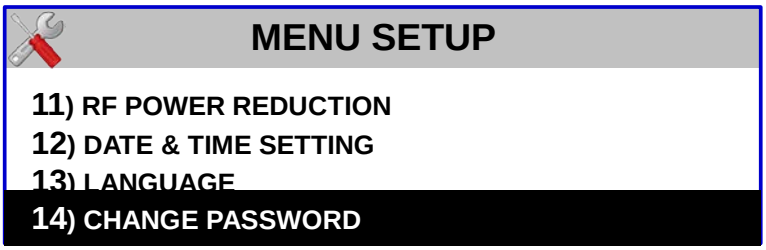


You can set the unit to languages shown on the list:

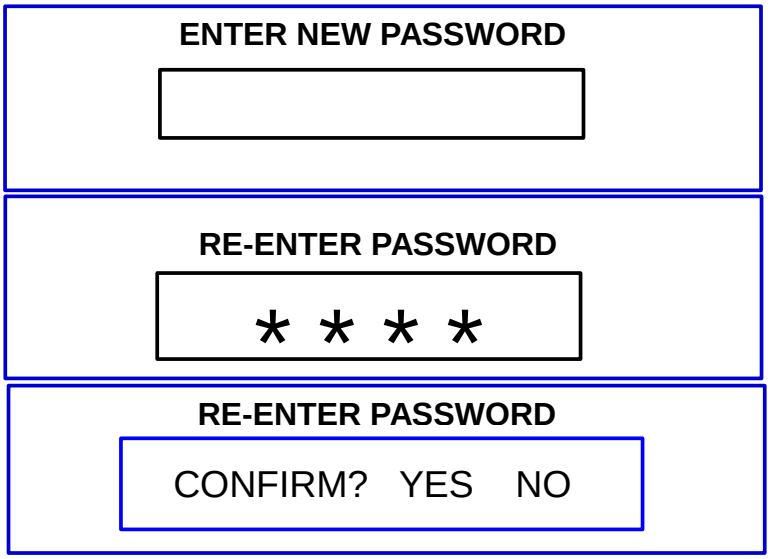




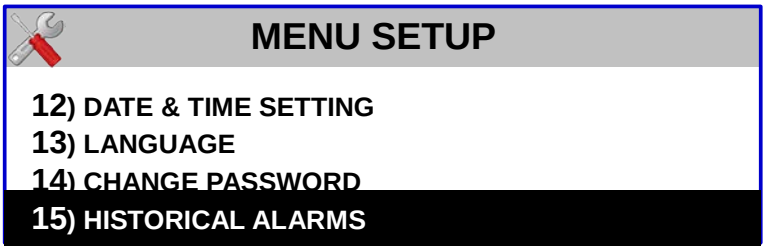
NEW PASSWORD SETTING



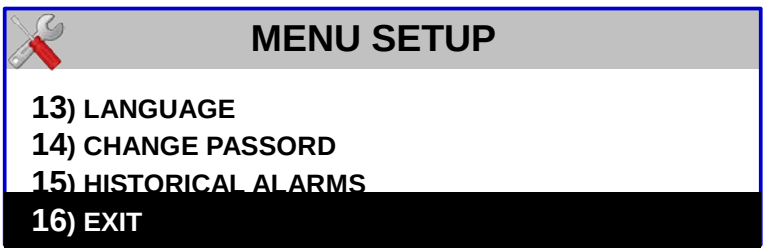
It is required when setting up a new password that it be made up of four digits:



READING OF ALARMS



Here you will be able to read the history of the alarms of the unit.



WEB SERVER

Open a Web- browser (Microsoft Edge, Mozilla Firefox, Chrome …) and enter the pre-set IP adress:

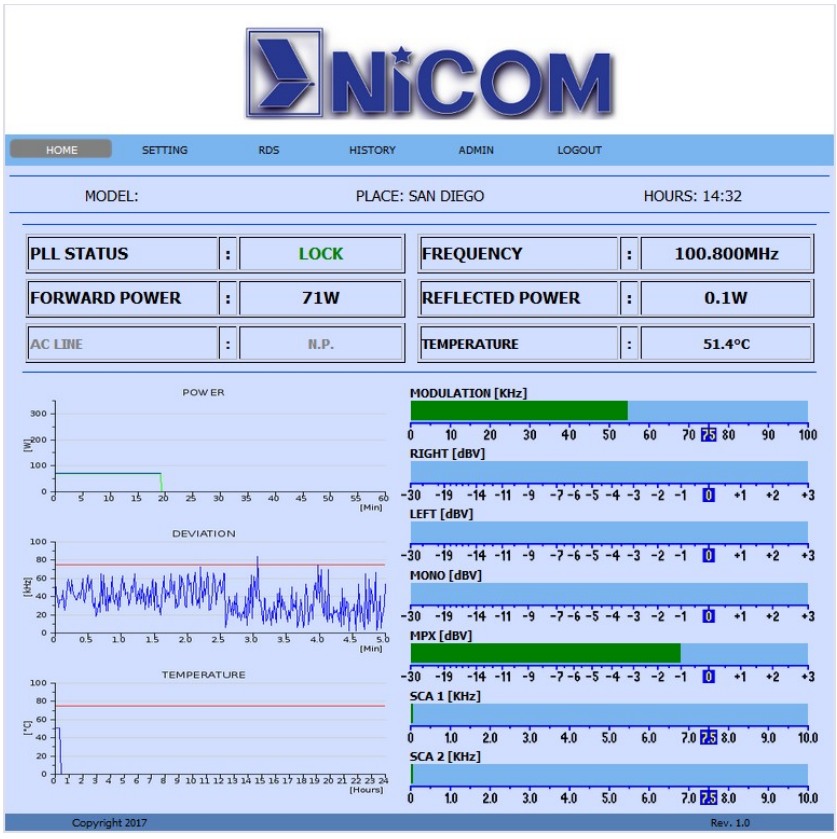
192.168.1.100

Automatically the main page comes up asking for a **USER** and **PASSWORD**.

USER: admin
PASSWORD: admin

This is the default for the Administrator

Once entered, the **HOME** page below comes up :



The user Admin has the complete access to the WEB SERVER and its the only one able to set up new users, change settings and allow other users to do so.

The user Amin is the only one with access to the tab **ADMIN**.

In this Tab is where the ADMIN can define the User names, passwords and permissions.

ADMIN: administrator who can change these settings;

RD ONLY: Read-only, can access only the page **HOME**;

WR & RD: Read and Write only, can make changes but no access to **ADMIN**.

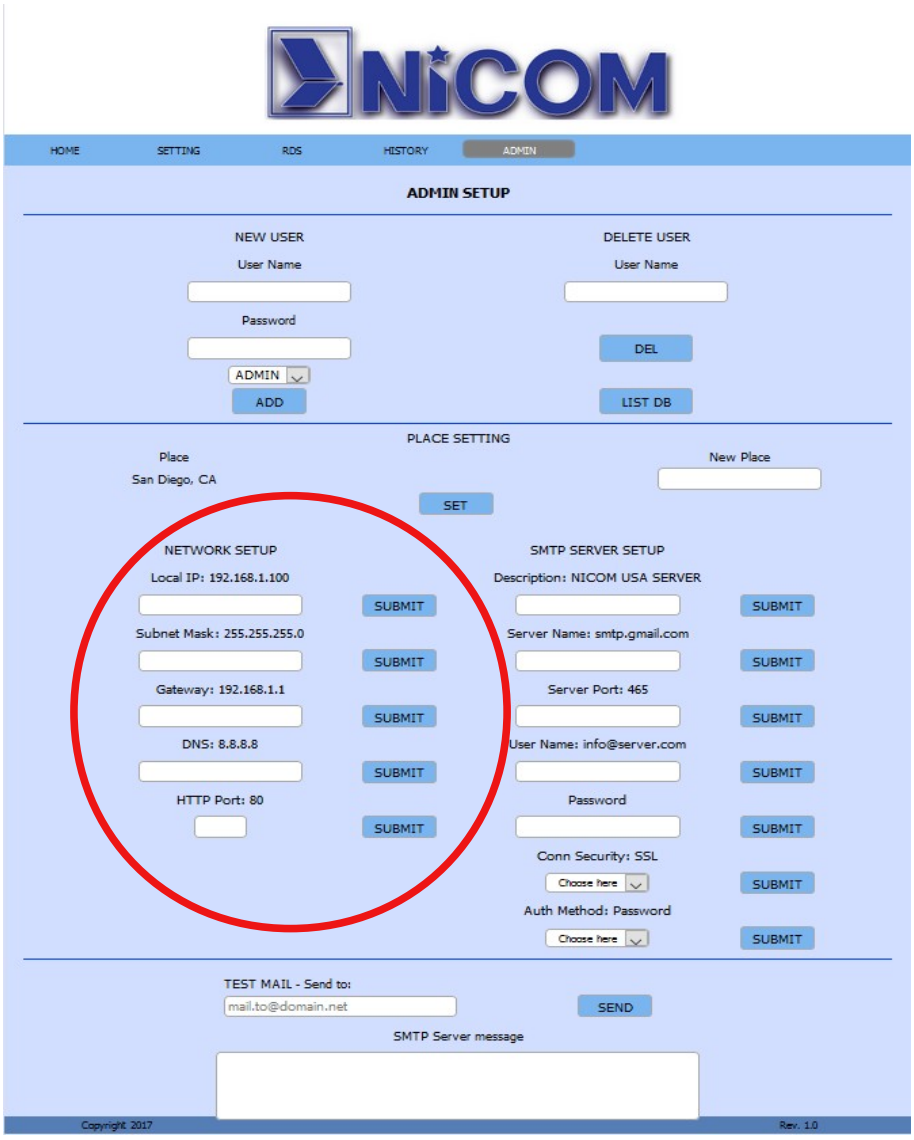
The default **WEB SERVER** settings are:

LOCAL IP: 192.168.1.100

Subnet Mask: 255.255.255.0

GATEWAY: 192.168.1.1

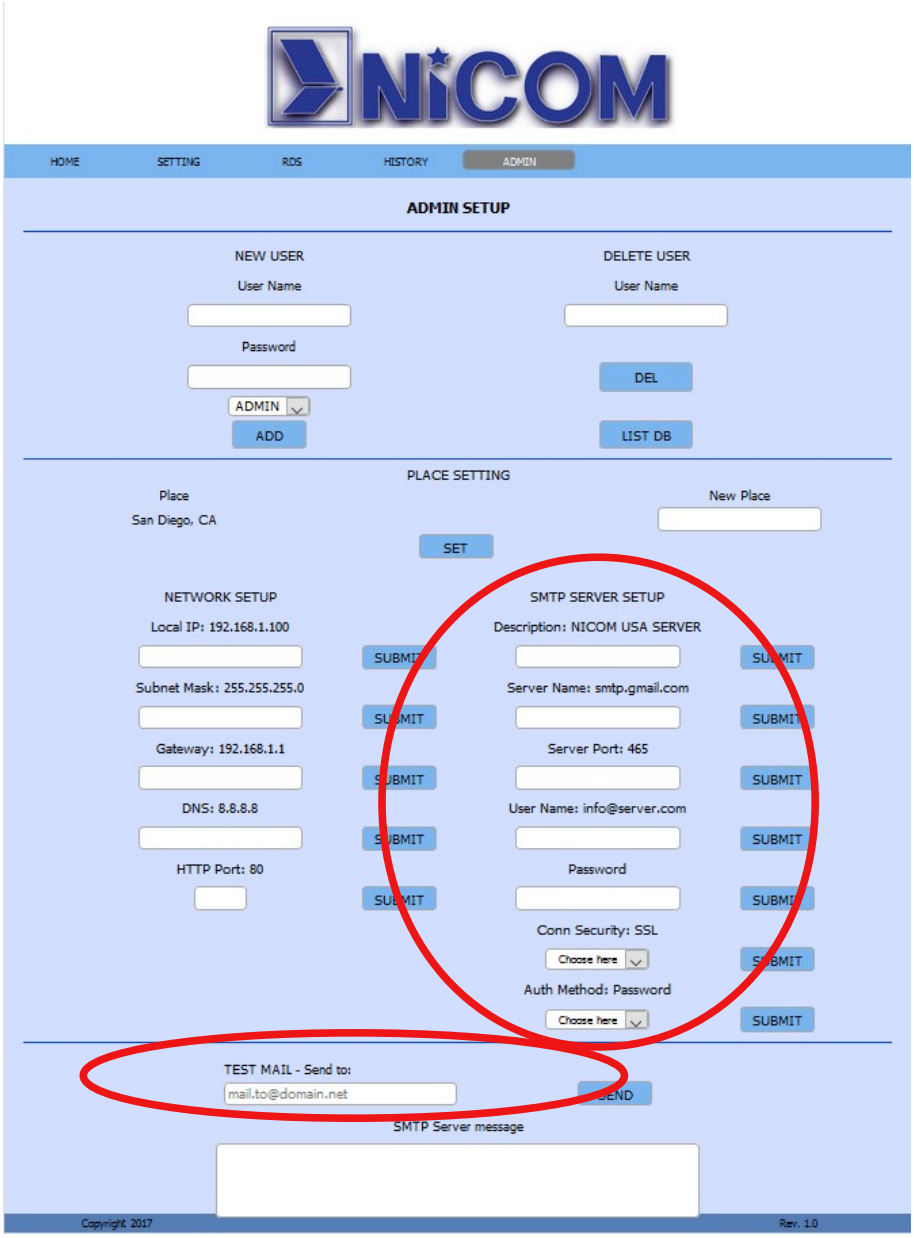
Port: 80



The **SMTP SERVER** is still under implementation, soon it will be available.

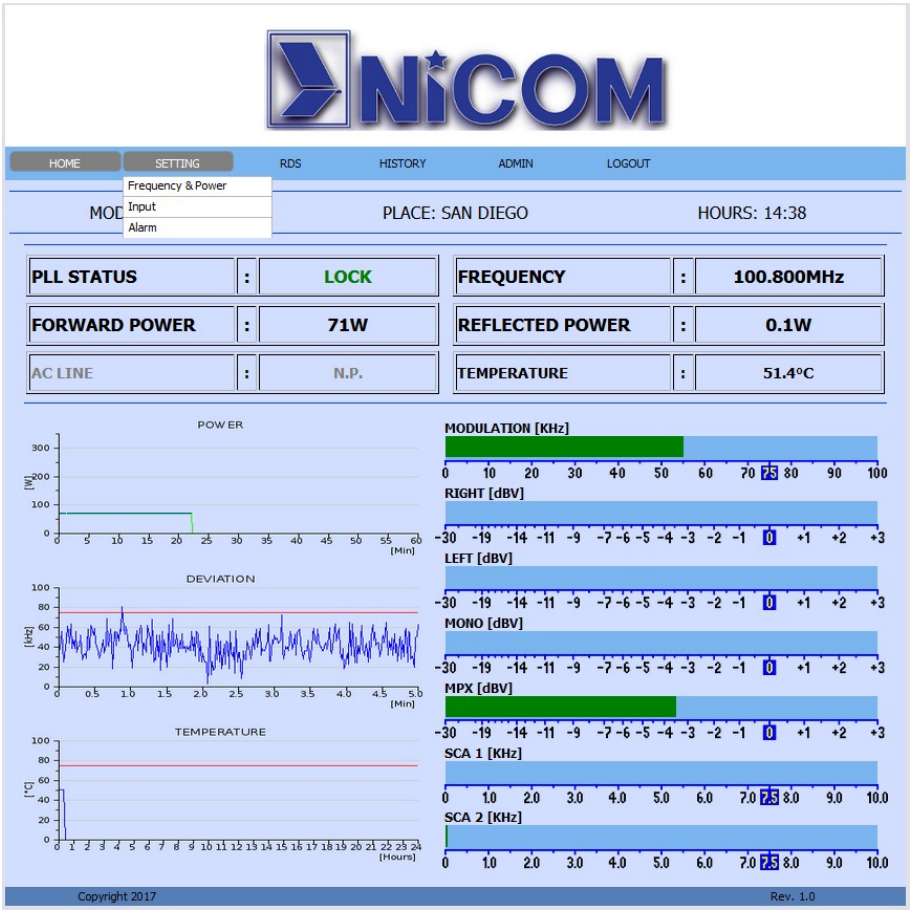
With this settings the transmitter is able to send EMAIL notifications about alarms and histoy of the tranmsitter.

Under **HISTORY** there are all the alarms sent by the SMTP server

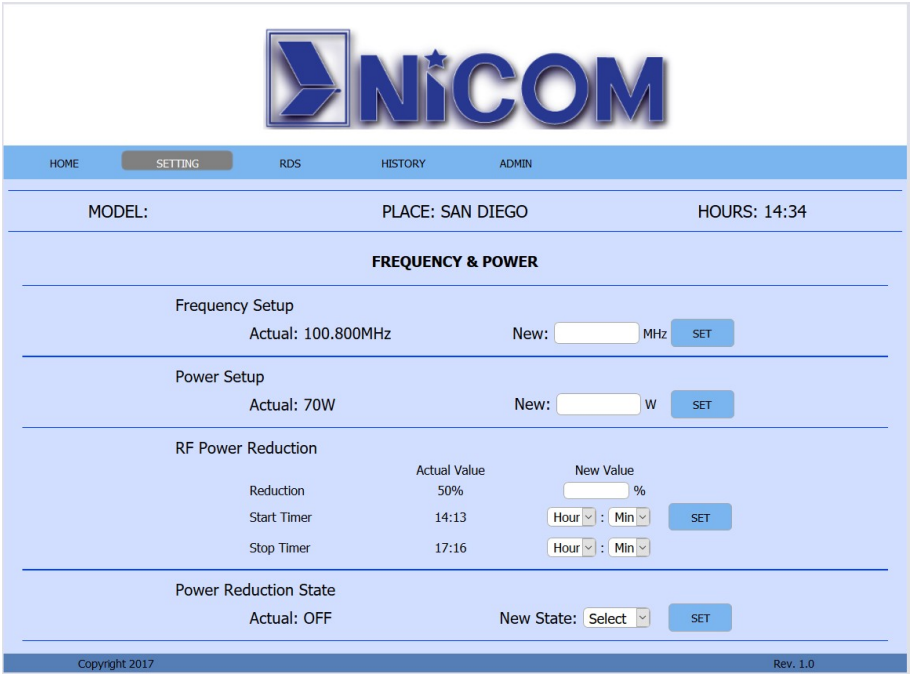


In the lower part there is a TEST MAIL section which it can be used for testing the settings above. All Settings needs to be confirmed with the **SUBMIT** Button

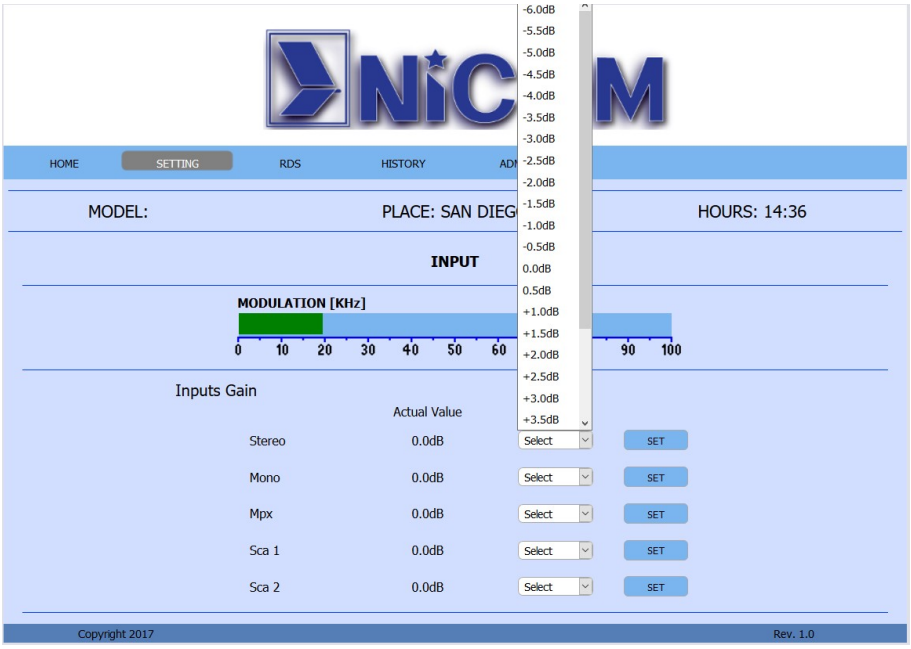
In the **SETTING** tab is possible to change the Frequency, power level, Audio levels and the alarms.



Under SETTINGS, there is the option to set a power reduction at a specific time of day. All settings need to be confirmed with the SET button



Inside **SETTING** it is also possible to set the Audio Levels in every input of the transmitter. Again all changes needs to be confirmed with the SET button.



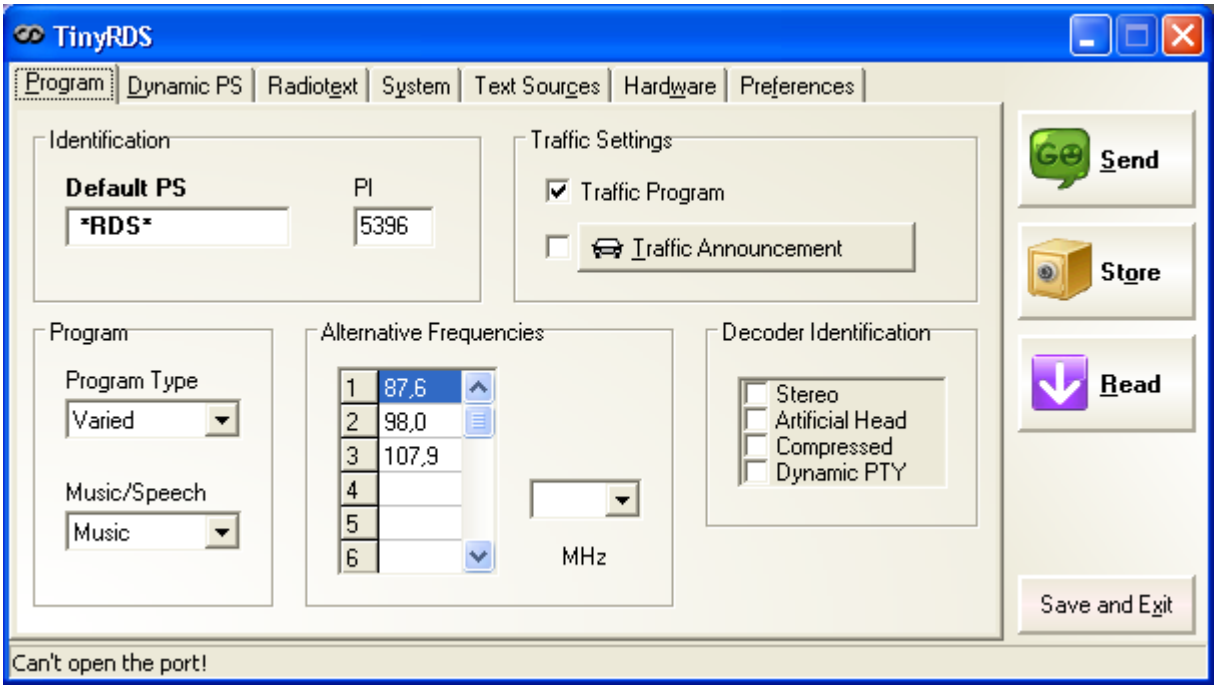
RDS and **HISTORY** are still under construction

RDS Configuration Manual

RDSM02

Windows control application for RDS encoders

Table of Content



1 Installation

1. Download and run the installation exe file.
2. Select the setup language and finish the installation using the ‘Next’ button.
3. In the case of USB connection install the USB driver now. Pure RS-232 connection or parallel port connection requires no additional driver.
4. Make sure the RDS encoder is connected, powered and well configured, all connectors are seated completely and where possible, use screws to fix the connection.
5. Run the TinyRDS application, go to Hardware card and select appropriate hardware type, communication port and communication parameters. Confirm by the ‘Update’ button.
6. Follow the encoder’s manual for additional information and specifics.

Note for old devices using parallel port connection: The application still supports writing to hardware parallel ports. Appropriate device driver is installed at runtime. To do this you need administrator privileges. In Windows Vista and later, using UAC, you can run the InstallDriver.exe in the application folder to install the parallel port driver appropriate for your OS.

2 Minimum Requirements

• An RDS encoder based on MRDS1322 or MRDS192 chip
• Pentium 133 MHz, 64 MB RAM
• Serial, parallel or USB port (or 3rd party Virtual COM Port driver)
• Windows 98 or later

3 Purpose and Features

The TinyRDS is a default control application for your RDS encoder.
• Supports all basic RDS services
• Supports a fixed set of Radiotexts
• ‘Text sources’ tool can update Dynamic PS or Radiotext by actual text produced by your broadcast automation system or similar external application
• Supports Clock-Time and Date (CT)
• Very simple to use

For understanding all symbols and terminology as well as for connection diagrams please read the device's original manual.

4 Application Control

4.1 Main Buttons

Send	Sends the data to the RDS encoder. That data will be used for the transmission until power off. Use this button also for confirm of RDS services settings, e.g. when changed Dynamic PS mode.
Store	Stores the data into the EEPROM memory so the data will be available also after next power-up or reset.
Read	Reads actual data from the RDS encoder. This button is allowed only in bidirectional communication mode.

4.2 Program Page

Default PS	Static name of the program service, which is displayed by RDS receivers by default in order to inform the listener what program service is being broadcast by the station to which the receiver is tuned. Usually this is your station name. The RDS standard permits max. 8 character long name.
PI (Program Identification)	Four hexadecimal digits. This information consists of a code enabling the receiver to distinguish between countries, areas in which the same program is transmitted, and the identification of the program itself. The PI can never start with zero (0)!
Traffic Program	A flag to indicate that the tuned program carries traffic announcements.
Traffic Announcement	An on/off switching signal to indicate when a traffic announcement is on air. You may control it using the button or leave the box unchecked and contol the flag using external switch connected to the RDS encoder.
Program Type	Specifies the current program type.
Music/Speech	A two-state signal to provide information on whether music or speech is being broadcast.
Alternative Frequencies	List of alternative frequencies. Up to 15 items allowed.
Decoder Identification	Indicates which possible operating mode is appropriate for use with the broadcast audio. Check the items which explicitly correspond to your broadcast equipment.

4.3 Dynamic PS

Dynamic PS (DPS) is defined as using of the station name for showing of sequential information. Up to 72 characters long text message to be displayed on receiver instead of static PS name.

Four display modes (0-3) are available. The user can insert the text manually from the keyboard or configure the ‘Text sources’ automation tool for Dynamic PS. The result can be immediately visible due to Preview feature.

Note: Using the dynamic PS is restricted in some countries and it's fully prohibited by the RDS standard! The manufacturer is not responsible for incompetent use of this feature. Consider of using Radiotext instead of Dynamic PS. Some receivers may not display the dynamic/scrolling PS properly for reasons that lie entirely on their side. Commercial receivers produced in last years usually support Radiotext.

Enabled	Enables or disables the Dynamic PS, including all related functions.
Dynamic PS Mode	Selects one of four possible display modes for the Dynamic PS text loop. Mode 0 is a ‘raw’ mode as it uses a fixed 8 character cells. A separate field is dedicated for this mode. For other modes, the text is entered as a single text line, the encoder processes the text automatically.
Scrolling PS Speed	Sets high or low speed of scrolling PS transmission, applied in DPS mode 1 and 3. The high speed does not work on some receivers, especially car radios, or under bad reception conditions. The reason is absolutely outside the RDS encoder and comes out from the fact that scrolling PS has never been included in the RDS standard. Due to this the high speed is not recommended.
Label Period	A period between two strings, applied in DPS Mode 0 and 2.
Delay between text loops	Specifies the time between two repeats of the Dynamic PS text loops. Static PS is displayed during this time. If the maximum value is set, the Dynamic PS will be displayed only once - when changed.

4.4 Radiotext

This refers to text transmissions, primarily addressed to consumer home receivers or mobile receivers, which would be equipped with suitable display facilities. The text can be up to 64 characters long. Some receivers do not support the Radiotext (RT) service.

Enabled	Enables or disables the Radiotext, including all related functions. *Note: If Radiotext is disabled, the encoder sends no 2A groups.*
Radiotext messages	A set of Radiotexts. To get the RT working, at least one line must be filled by some text and that line must be selected. If 'Text sources' tool is enabled for the Radiotext, the text appears in the first line.
Type	Radiotext type A and B are equal. On most receivers, a changing of the type completely clears previous Radiotext while leaving the type unchanged causes the new message to rewrite all letters as they are received. Some receivers keep RT A and RT B in separated memory space.
Send next RT after	Allows switching between more Radiotexts using predefined time period. Empty messages will be omitted. The feature may be combined with reading the RT from file. You may also select the Radiotext manually.
Toggle RT type automatically	Controls the RT type automatically (recommended). Toggles the RT type any time a new Radiotext is sent to the encoder.

4.5 System

Clock-Time and Date (CT)	Starts/Stops the Clock-Time and Date transmission (CT). The time and date information is taken from PC system clock. Needs the TinyRDS application to be running.
Subcarrier Phase Shift	Fixes the relative phase shift between the pilot tone and the RDS signal. The value serves only as a scale, it may not provide real phase shift value. Has a sense only if Clock Source is set to Auto.
PLL Lock Range (MRDS192 only)	Specifies the maximum PLL lock range for the pilot signal. The PLL will never lock to any signals outside this range and stays stable in any situation. If high quality stereo encoder is used, you may set +/- 2 Hz value. Default value is +/- 5 Hz.

Cyclic User Defined Group	The user may add one RDS group with any content to the RDS stream. This group is cyclically transmitted approx. twice per second. Insert the content in hexadecimal format. This feature is intended mainly for advanced users or experimental purposes. It may be used for example to include ECC code. Do not enable if you are not sure what you're doing!
Reset	Resets the RDS encoder. RDS data will be read from internal EEPROM.
Read Status	Reads the RDS encoder's Status byte. Allows to detect if the connection to the encoder is working. Includes information about pilot tone, dynamic PS transmission and TA.
Switch Off	Switches off the RDS carrier. Doesn't affect the communication, the encoder stays powered and responding.
Switch On	Switches on the RDS carrier if previously switched off.

4.6 Hardware

Hardware Type	Selects the device type. Follow the device documentation for more details. *Note: Since the MRDS192 is obsolete, most of current products are the MRDS1322 based.*
Communication Port	Select the port where the RDS encoder is connected. It may be a virtual serial port as well.
List	Shows list of serial/parallel ports installed in your system.
Bidirectional	Select this item to allow connection diagnostics, data verify and data reading back.
Slow	Low speed option. Tick if there's some communication problem. For RS232 mode (MRDS1322 only), this item effectively selects between 19200 and 2400 bps.
LPT2 address	Allows entering a non-standard parallel port address for parallel port connection.
Connection Update E	stablishes a connection based on actual configuration.

4.7 Preferences

Skin Picture and Font Color	You may insert your own BMP picture to the application, showed on the first page. You may also change the font color. To clear the skin, enter a non-existing file name.
UTC Offset	Your local time offset.
Summertime Offset	Your summertime offset, usually 1.
Always on Top	Keeps the application window on top so it is not overlapped by other windows.
High Priority	Assigns the application high priority. Not recommended if broadcast automation system is running on the same PC.
Confirm Exit	Enables a confirmation dialogue box showing any time the user tries to exit the application.
PTY Coding	Allows showing correct PTY names in application depending on broadcast area.

5 Text Sources

This tool can update Dynamic PS, Radiotext or both by actual text produced by your broadcast automation system or similar external application.

The text processing scheme is as follows:
Reading from file → Characters cutting → Processing Options → (Adding prefix)

To get it working, set all parameters, then check the From file box.
Dynamic PS and/or Radiotext must be Enabled.

5.1 Dynamic PS, Radiotext

From file	If enabled, reads the text from specified text file. This can be for example "now-playing" file, music log file etc. Wildcards ("*" and "?") are supported as well (the most actual file found will be read). Next time the file will be read again when the text changes.
Send on change	Sends data to the RDS encoder when the text source file changes. Enabled by default.
Read from	Determines from which line the text has to be read.
Cut characters from beginning/end	Cuts redundant or unwanted characters from the text.
Prefix	Prefix placed before the text, for example “Now playing: ”.

5.2 Options

ANSI Character code conversion	Affects how national characters are converted before sending to RDS encoder. The middle option is recommended as it ensures readability of national characters on all receivers using conversion to similar characters from basic set.
DPS Mode 0 Justification	Text justification for the Dynamic PS. Applies only if mode 0 is selected. Fill with - Character used to fill the free space around the words.

6 ANNEXES

6.1 Setting Basic RDS Data

Before getting on-air with the RDS signal, you will need to decide on the settings to be used. The following RDS services should be set as the first.

6.1.1 PI (Program Identification)

This is very important information that enables the receiver to distinguish between countries, areas in which the same program is transmitted, and the identification of the program itself. The code is not intended for direct display and is assigned to each individual radio program, to enable it to be distinguished from all other programs. The PI code consists of four characters (hexadecimal numbers).

Important notes: If the station has only one transmitter, second PI digit must be zero (x0xx). Meaning of some PI digits may be different for US RBDS.

The first character identifies country:

0	***Cannot be assigned!***	8	PS, BG, LV, PT
1	DE, GR, MA, IE, MD	9	AL, DK, LI, LB, SI
2	DZ, CY, CZ, TR, EE	A	AT, GI, IS
3	AD, SM, PL, MK	B	HU, IQ, MC, HR
4	IL,CH, VA	C	MT, GB, LT
5	IT, JO, SK	D	DE, LY, YU
6	BE, FI, SY, UA	E	RO, ES, SE
7	RU, LU, TN, NL	F	EG, FR, NO, BY, BA

The second character identifies program type in terms of area coverage:

0	Local	Local program transmitted via a single transmitter only during the whole transmitting time.
1	International	The same program is also transmitted in other countries.
2	National	The same program is transmitted throughout the country.
3	Supra-regional	The same program is transmitted throughout a large part of the country.
4 to F	Regional	The program is available only in one location or region over one or more frequencies, and there exists no definition of its frontiers.

The third and fourth characters are used to clearly identify different stations within
the area of coverage.

Important note: Factory default PI value is FFFF and it's needed to change it as soon as possible to avoid the situation that two different stations with common area of coverage have the same PI. For each station in the same location the unique PI must be assigned. Stations that carry different program must be unambiguously identified by the last two PI digits. In other case they are recognized as one station by car radios, regardless of any other service settings. If
the broadcaster hasn't received the 4-digit PI from regulatory office, he must choose such number that is not in conflict with other stations in the location. Set your final PI as soon as possible!

6.1.2 PS (Program Service name)

The PS name is max. 8 character long radio station name that will be shown most of the time on the radio display.

6.1.3 PTY (Program Type)

The PTY code defines the type of the programme broadcast within 31 possibilities.
This code could be used for search tuning.

6.1.4 TP (Traffic Program)

This is a flag to indicate that the tuned program carries traffic announcements. The
TP flag should only be set on programs which dynamically switch on the TA identification during traffic announcements. The flag shall be taken into account during automatic search tuning.

6.1.5 MS (Music/Speech)

This is a two-state signal to provide information on whether music or speech is being broadcast. The signal would permit receivers to be equipped with two separate volume controls, one for music and one for speech, so that the listener
could adjust the balance between them to suit his individual listening habits.

6.1.6 AF (Alternative Frequencies)

The Alternative Frequencies are used to tell receivers what frequencies they can receive the radio station on. This facility is particularly useful in the case of car and portable radios. For this to work, each transmitter must have RDS with the same PI code.

Important note: If second PI digit is set to zero (x0xx), this indicates that the station has only one transmitter and the AF list is ignored on most receivers.

6.2 Software Troubleshooting

The RDS encoder uses simple connection and has been designed to make its use as easy and painless as possible. However, success depends upon several settings and things working together correctly. While correcting problems is usually quite simple, the difficulty lays in knowing where to look. This section is designed to assist you in determining the cause of problems that may occur when establishing a communication with the PC software, so they can be fixed quickly.

6.2.1 How to verify the connection to the RDS encoder?

In case of some troubles it may be important to check if the RDS encoder receives
data from the computer. The easiest way how to check the connection is clicking on the "Read Status" button on "System" card in the Windows software. Correct connection will result in pop-up a message window with status information whereas incorrect connection is indicated by a "!Ready" message in the bottom line of the application.
Note that "Bidirectional" option must be enabled on "Hardware" card for this test.

6.2.2 What to check if the connection does not work?

• Is the RDS encoder really connected to the port selected? Typically there are more ports installed in the system (modem, mobile phone, IrDA port, bluetooth etc.) - opening of these ports is usually possible, however it results in no success.
User should ensure that the serial port desired is enabled in BIOS Setup. No other configuration of the port is required, the software does that itself.
• Is the RDS encoder connected to a power supply? Connecting a power supply is required prior to communicating with the unit.
• Is there right Communication mode selected on the encoder? Some RDS encoders allow selection of communication mode. See the product manual for more details. A power off/on cycle is required after changing the communication mode.
• Is there right communication speed selected in the software (MRDS1322 only)?
The speed can be selected on "Hardware" card, by item "Slow". Enabling this item, the encoder is expected to communicate on 2400 bps (mode 2), otherwise 19200 bps is expected (mode 0 and 1).
• Is there right hardware type selected in the software? The software supports two types of hardware. Make sure the right device is selected on "Hardware" card.
• Is the communication cable wired right? If the cable is a Do-It-Yourself job, please check the wiring several times. Follow the product manual.

Note: RF EXPOSURE SAFETY DISTANCE (only for FCC & IC) *RF Exposure Limits for United States of America, according to FCC regulation: setting to the maximum of the output power of the apparatus, to guarantee the limits of exposure declared within this document, it is necessary that the antenna gain used with this device should be 0dBi or less and all persons should maintain a minimum separation distance of* ***266.13cm*** *for general uncontrolled exposure and general controlled exposure. RF Exposure Limits for Canada, according to IC regulation: setting to the maximum of the output power of the apparatus, to guarantee the limits of exposure declared within this document, it is necessary that the antenna gain used with this device should be 0dBi or less and all persons should maintain a minimum separation distance of* ***135.99cm*** *for general uncontrolled exposure and general controlled exposure. Limites d'exposition RF: en réglant au maximum de la puissance de sortie de l'appareil, afin de garantir les limites d'exposition déclarées dans ce document, il est nécessaire que le gain d'antenne utilisé avec cet appareil doit être de 0 dBi ou moins et toutes les personnes doivent conserver une distance de séparation minimale de* ***135.99 cm*** *pour les expositions générales non contrôlées et les expositions générales contrôlées.*

CONDITIONS OF SALE AND WARRANTY

1. Any goods (at your request) not collected/dispatched, shall be stored at your expense and risk. Such goods may be sold or disposed of 30 days after the invoice date to cover the price and coat incurred thereby.
2. Delivery/ completion shall be affected by agreement or any reasonable extension thereof, and no claim(s) shall lie against NicomUSA, Inc. for any reason saves for negligence by NicomUSA, Inc.
3. Each and every Installment delivery shall be considered as a separate contract and shall be subject to full payment prior to any further delivery(ies)
4. Delivery shall be FOB San Diego, California. Shipment to chosen address plus insurance shaft be at consignee's expense
5. Any price increases affecting the quoted price prior to delivery shat be increased accordingly.
6. All quoted prices at NicomUSA's Inc. sole discretion are subject to change/variation by virtue of any condition beyond their control. The price shall not include packing costs for shipping purposes or any taxes, duties, or transportation costs
7. Any damage to the goods must be reported to the carrier in writing on the shipping receipt. Any discrepancy/damage discovered subsequent to delivery shall be reported to NicomUSA. Inc. within 5 business days of its receipt.
8. NicomUSA, Inc. extends to the original end user purchaser all original manufacturers warranties which are non-transferable and all manufactures' warranties will be supported by NicomUSA, Inc. to ensure precise and speedy service when possible.
9. NicomUSA, Inc. shall not be liable for damages of whatsoever nature arising out of connection with the product or its use thereof.
10. NICOMUSA's WARRANTY DOES NOT INCLUDE THE FOLLOWING
    a) Any unauthorized repairs/modifications
    b) Repair of unit whose seal has been broken without Nicom's authorization
    c) Incidental/consequential damages as a result of any defect
    d) Nominal non-incidental defects
    e) Free replacement of semiconductors (transistors, mosfets) and vacuum tubes, which are not covered under any warranty, as well as labor charges to replace them.
    f) Replacement of power supply and fans after the first year
    g) Shipment costs including Insurance of the unit or replacement unit/parts from customer to NicomUSA and vice-versa
11. Warranty shell commence as of the Invoice/shipment date and for the period of 3 years. Any and all warranty work will take place at NicomUsa's facility
12. To claim your rights under this warranty:
    A. Contact the dealer or distributor if unit was purchased through them and if your dealer is not able to assist you then contact Nicom directly or through our website to fill out a return authorization form to obtain a return authorization number.
    B. When you receive the return authorization number, you can return the unit. Pack the unit(s) carefully for shipment and assume carton will be dropped several times during transportation. If equipment is received inadequately packed, there will be a charge for re-packing for re-shipment, The rusk of loos is assumed by you (NicomUSA, Inc. is not responsible for damage or loss) until the package is received at NicomUSA Inc. 1690 Cactus Rd. San Diego CA 92154

    DO NOT RETURN ANY UNITS WITHOUT A RETURN AUTHORIZATION NUMBER, AS IT WILL NOT BE ACCEPTED

    C. Please note in warranty returns where no fault is found with the unit, there will be a $150 minimum labor charge plus return freight. Any unit(s) submitted for repair and not be paid for 30 days after submission will become the property of NicomUSA, Inc.
13. Terms shown on the front of invoice are from date of invoice and not contingent upon delivery. In the event buyer falls to fulfill the terms of payment hereunder, buyer promises to pay all costs and expenses of collection and reasonable attorney's fees incurred by NicomUSA, Inc. on account of collection, whether or not suit is filet thereon. NicomUSA, Inc. Reserves the right to charge interest on all bills not paid at maturity.
14. AS a condition of purchase conducting business with NicomUSA, Inc., the parties agree that should any dispute arise under such transaction for any reason, that venue and jurisdiction, therefore, shall be San Diego Superior Court, Central Court District or Municipal Court of the Country of San Diego, San Diego Judicial District.
15. Interest shall accrue at the rate of 2% per month on all balances incurred for whatever reason remaining unpaid thirty (30) days from the date of invoice.
16. If a buyer has consigned goods to NicomUSA, Inc. for repair within or outside of a warranty product, buyer may lease/rent replacement good AS IS from NicomUSA, Inc... If available. Buyer agrees that any and all of its goods in possession of NicomUSA, Inc. for whatever purpose, shall constitute retained security for the timely return of said rental goods as well as timely payment for repair services performed by NicomUsa,Inc who at its option, may require a deposit paid for any rental goods leased to buyer. Said deposit may be used by NicomUSA, Inc. as satisfaction of any amounts owed to it by buyer in the event of buyer's failure to make any payment required in a timely fashion