# AUDEMAT RDS ENCODER
# USER MANUAL
# V.1.3


Date: 2024/09/03

**WorldCast Systems**

**web:** www.worldcastsystems.com - **e-mail:** contact@worldcastsystems.com

CE

WorldCast Systems, hereby, certifies that the **Audemat RDS Encoder** complies with the dispositions of applicable European Community Directives.

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



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# 1. INTRODUCTION

## 1.1. About WorldCast Systems

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

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

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

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

Our In-House Expertise covers:

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

**Why We're Here**

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

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

**What We Value**

- **360° Innovation**
    - Collegial Management
    - Design Thinking
    - Future-Ready Designs
    - Agile Method



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- **Enhancing The Customer Experience**
  - Great User Experience
  - Simplicity
  - Product and Service Excellence
  - Quality ISO 9001
- **Sustainable Growth**
  - Product Efficiency
  - Low Consumption Building
  - Charitable Foundation or Local Reforestation
  - ISO 14001

## 1.2. About the AUDEMAT RDS ENCODER

Leveraging nearly 25 years of experience in RDS encoders with its FMB80, WorldCast Systems is releasing the AUDEMAT RDS ENCODER, a new innovative RDS encoder designed to meet the needs of its loyal and future customers in terms of system versatility, ease of use and spectral purity.

This new RDS Encoder aligns with WorldCast Systems' highest standards of quality, innovation, and customer satisfaction.

It also has automation capabilities with the ScriptEasy software.

Three software applications are supplied with it:

- Web application, for unit and RDS configuration.
- **ScriptEasy**: application to create scripts for automation.
- **MasterView**: web application to view and control your unit via custom views.

## 1.3. Software options

Software options are available to enhance the AUDEMAT RDS Encoder.

- **ScriptEasy SNMP:** allows communication with 10 additional SNMP equipment units (10 as standard).
- **ScriptEasy Driver License:** monitoring/control of 3rd party equipment with its proprietary RS232 or RS485 protocol or by SNMP through ScriptEasy software.

See section 6.7.1 for software option activation.



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## 1.4. Before you start

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

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

**Electrical precautions**

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

**Environmental precautions**

- It is necessary to verify that environmental conditions comply with those recommended in the manual.
- Nothing must obstruct the ventilation.
- To avoid any electromagnetic interference, the device must only be used when it is closed, installed in a cabinet and connected to the earth as per the instructions.
- To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 345.45 centimeters from all persons.
- The device should not be exposed to dripping or splashing and no objects filled with liquids, such as coffee cups, should be placed on the equipment.
- Connectors may be hot on high power units.

**Precautions regarding hazardous material and end of life**

This device includes a **lithium** battery.

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

- Only replace it with a battery of the same type. Contact us before attempting to use another type
- Do not puncture the battery
- Do not throw the battery in fire
- Do not immerse the battery in water
- **Perchlorate** material – special handling may apply, see https://dtsc.ca.gov/perchlorate/

At the end of its life, please dispose of your product, batteries and packaging in an environmentally friendly way.

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



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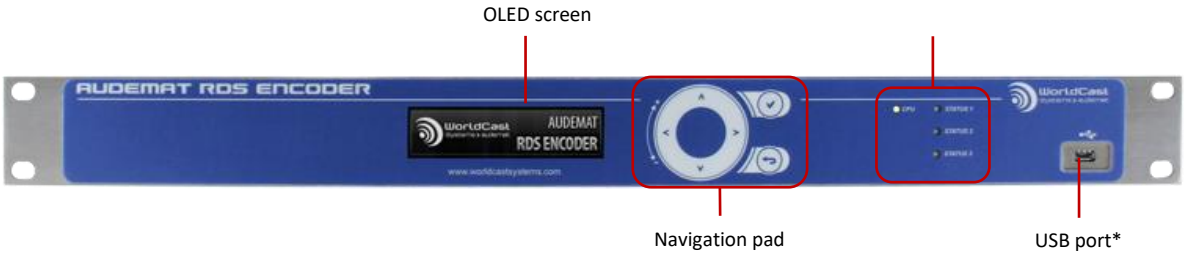
# 2. PRODUCT PRESENTATION

## 2.1. List of included accessories

Check that all items are present in the box:

- 1 power cord
- 1 RJ45 cable
- 1 USB cable
- 1 folder including 1 quick start notice.

## 2.2. Front panel



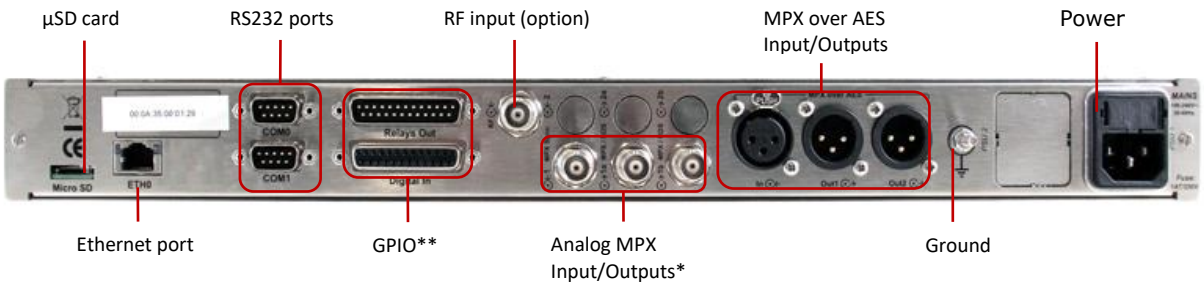

* Connect the supplied USB cable to your PC to retrieve product documentation and the ScriptEasy software installer.

**** Indicators:**

CPU LED: blinks to indicate CPU activity

Alarm LEDs: ON when associated alarms are on, the alarms represented here are set in the ScriptEasy script according to needs.

## 2.3. Rear panel




* When the Audemat RDS Encoder is off, a signal on the input will go directly to the A output. There will be no signal on the B output.

** See Appendix A for input/output pinout

***Cables used to connect the Audemat RDS Encoder to the FM transmitter should be kept short in length, and the connection should be direct.***

*MPX outputs Out1 and Out2 are identical, use both as required.*



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## 2.4. Technical specifications

| RDS FEATURES | |
|---|---|
| Group supported | From 0A to 15A |
| Group sequence | Configurable |
| EON | 10 PSN |
| PS | 10 PSN |
| PI | 10 PSN |
| PTY | 10 PSN |
| AF | Yes method A and B |
| TP / TA | Yes by command or contact closure |
| PTYN | Yes |
| CT | Yes - NTP sync |
| ODA: TMC, EWS, EPP PAGING, RT+... | Yes |
| RDS2 Ready | Yes |
| Side Chain Mode, Loop through mode, Bypass feature | Yes by software |
| **Scrolling PS** | |
| Dynamic PS | Yes |
| Sequencing speed | Adjustable in sec |
| Scrolling by character | from 1 to 8 |
| Scrolling by centered words, Truncate long words | Yes |
| Repetition, Labeling, Delay before display | Yes |
| **Radiotext** | |
| Radiotext | 8 messages |
| RT+ | Yes |
| **Communication** | |
| Scheduler | ScriptEasy & MasterView |
| GUI | Embedded web server<br>with responsive design website |
| History Log | Yes |
| Connection with automation software | Yes with RS232 or TCP/IP |
| Remote Display | Yes |
| ASCII protocol | Yes |
| UECP standard | Yes |
| **Hardware** | |
| Inputs/Outputs | 16 inputs + 8 relays |
| Communication port | 1 RJ45 + 2 RS232 + 1 µUSB |
| Communication Protocol | Telnet SSH FTP |
| MPX over AES | Yes |
| Synchro. Monitoring | Yes |
| FM Tuner | Yes |
| Front panel display | Yes |
| Integrated RDS Decoder | Yes |



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| PHYSICAL SPECIFICATION | |
|---|---|
| External Dimensions (W / L / H) | 483 mm (19”) x 220 mm x 1U |
| Weight | 2.35 kg |
| Power supply voltage | 125 / 250 V |
| Power supply frequency | 50-60 Hz |
| Power consumption | 50 VA |
| Temperatures | 0°C to 50 °C / 32°F to 122°F |
| Storage temperatures | -30°C to 80°C / -22°F to 176°F |
| Humidity | 10-95% non condensing relative humidity |
| Lithium Battery<br>Life expectancy | CR2032 type<br>10 years |



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# 3. GETTING STARTED

## 3.1. Connecting to the network

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

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

Before connecting to the network, check the encoder's IP address:

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

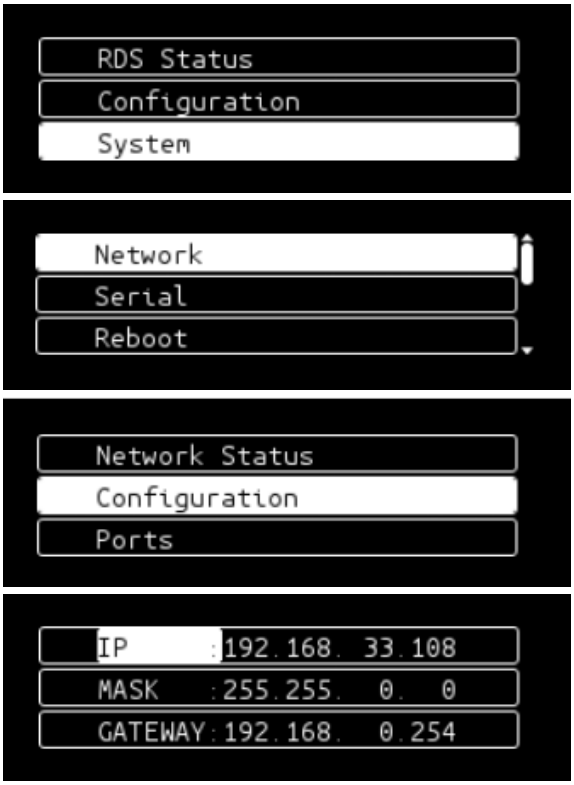
Use the arrow to select the System menu and touch the Check button.

The Network menu is selected, touch the Check button

Use the arrow to select the Configuration menu and touch the Check button.

If you need to change the IP address:

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




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

You may now connect the AUDEMAT RDS ENCODER to the network on the ETH0 port using the provided Ethernet cable.



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## 3.2. Configuring the AUDEMAT RDS ENCODER using the embedded website

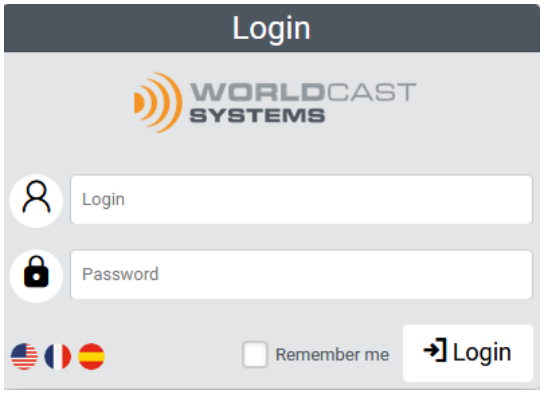
For remote access, connect to the encoder's embedded web site. Simply open a web browser (Google Chrome recommended) and enter the encoder's IP address in the address bar (set on the front panel).

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

ⓘ *The browser may display a message indicating that the connection is not certified; however, the site is secured (data is encrypted) and you may proceed to access it. To prevent these potential blocking and warning messages, WorldCast Systems now supplies certificates for HTTPS browsing, see section 6.6.1 for more information.*

Select the language if necessary.

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




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



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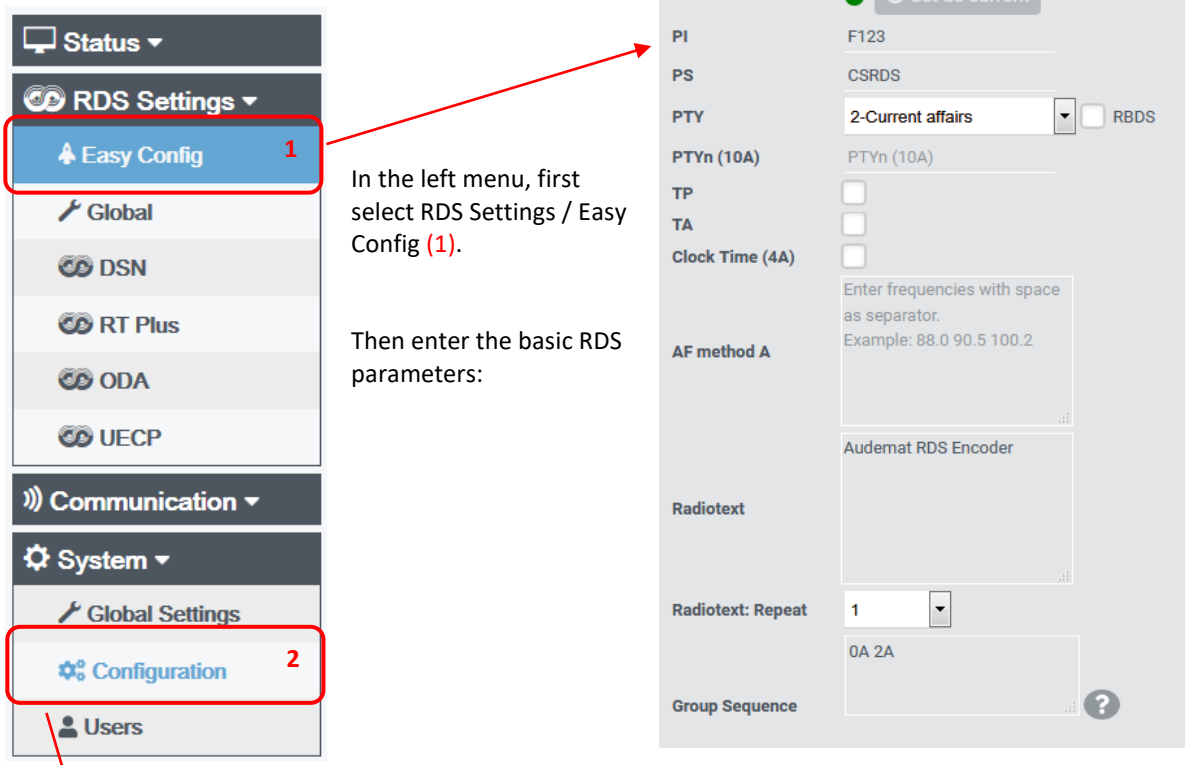
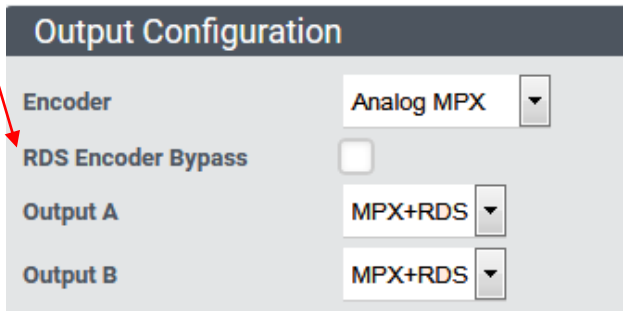



In the left menu, first select RDS Settings / Easy Config (1).

Then enter the basic RDS parameters:

Back in the left menu, select now System / Configuration (2).

Then select the Output Channel :




Press the Save button SAVE in the tool bar on top of the screen.



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# 4. RDS OPERATION AND PARAMETERS DESCRIPTION

## 4.1. Introduction

Three interfaces are available to set the encoder:

- The embedded web site for remote configuration – see chapter 6
- The front panel menus for local configuration – see chapter 5
- Serial commands for local or remote configuration – see chapter 7

In all cases, parameters are as described below.

Please note that some parameters are only available through a given interface.

In the following sections, RDS parameters are organized as they are on the website. The corresponding front panel menu and/or command are indicated between parentheses if applicable.

*For more details on RDS parameters, please refer to the IEC 62106 standard.*

## 4.2. Global RDS parameters

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

**RDS Activation (Configuration|Global RDS / RDS.OPMODE)**

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

**RBDS Mode (RDS.TYPE)**

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

**ITU Region (ITU_REGION2)**

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

**Clock Time (4A) (Configuration|Global RDS)**

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

**RTC / Local Time Offset**

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

**TA – EON TA**

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

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



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**Reference input**

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

**RDS Level (Configuration|Global RDS / LEVEL)**

RDS level in millivolts peak-to-peak .

*MPX signal input level*

The Audemat RDS Encoder adapts to the input level and does not alter the MPX signal fed into it.

Consequently, the input signal level (and its deviation) must take into account the absence of RDS added by the Audemat RDS Encoder.

Ex 1: To obtain an output signal of 12 dBu with a 75 kHz deviation, thus 4 kHz deviation for the RDS signal, the input signal must have a total deviation of 75 - 4 kHz = 71 kHz.

Ex 2: To obtain an output signal of 12 dBu with a 50 kHz deviation, thus 3 kHz deviation for the RDS signal, the input signal must have a total deviation of 50 - 3 kHz = 47 kHz.

*RDS Signal level in millivolts*

By default, the RDS level is set to 466 mVpp. This corresponds to a 4 kHz deviation at 12 dBu MPX. This level can be adjusted as needed.

Table for a 75 kHz total deviation:

| MPX Signal @ 12 dBu | |
|---|---|
| RDS deviation @ 4 kHz | 466 mVpp |
| RDS deviation @ 3 kHz | 350 mVpp |
| MPX Signal @ 6 dBu | |
| RDS deviation @ 4 kHz | 233 mVpp |
| RDS deviation @ 3 kHz | 175 mVpp |
| MPX Signal @ 0 dBu | |
| RDS deviation @ 4 kHz | 116 mVpp |
| RDS deviation @ 3 kHz | 87 mVpp |

*The deviation must be proportional to the level in volts/millivolts.*

U = Vpp en volts / 2 * 0.707

dBu = 20 x log (U)

U = 10 ^ (dBu / 20)

**Phase (Configuration|Global RDS / PHASE)**

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

**Legacy mode**

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



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***PS Scroll***

*PS scroll commands include multiple parameters.*

**Center (PS_OPTIONS)**

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

**Truncate (PS_OPTIONS)**

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

**Increment (PS_SCROLL)**

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

**Delay between screens (PS_SCROLL)**

Time laps between 2 consecutive screens.

**Enable (PS_STRING)**

Each line must be enabled to be sent.

**Repeat (PS_STRING)**

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

**Text (PS_STRING ou PS_SCROLL)**

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

**TA timeout**

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

**PS RT Delay (PS_RT_DELAY)**

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

## 4.3. DSN

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

**Group sequence**

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



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**Group variant sequencing**

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

**Groupe 1A variant:**

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

**Groupe 14A variant:**

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

**Group 3A sequence (ODA)**

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

**Extended group sequences**

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

Example:

In data set 1, transmission of the first type 7A group should be replaced, if there is no data, by transmission of a type 8A group, or if the type 8A group buffer is empty by a type 6A group, or if the type 6A group buffer is empty by a type 14A group. The next transmission of a type 7A group for which there is no data should be replaced by transmission of a type 6A group or, if the type 6A buffer is empty, by a type 0A group. The following transmission of a type 7A group for which there is no data should be replaced by the alternatives sequence: type 8A, 6A, 14A groups.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0A, | 2A, | 7A, | 14A, | 7A, | 0A, | 6A, | 2A, | 7A, | group sequence |
| | | \| | | \| | | | | \| | |
| | | 8A | | 6A | | | | 8A | 1e alternative |
| | | \| | | \| | | | | \| | |
| | | 6A | | 0A | | | | 6A | |
| | | \| | | | | | | | \| | |
| | | 14A | | | | | | 14A | alternative finale |



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**SLC**

Slow Labeling Code, software configuration codes.

**Extended Country Code**

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

**Long PS**

PS with 32 bytes

**Main PSN Radiotext (RDS.RADIOTEXT.TEXT)**

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

**A/B Toggle (RDS.RADIOTEXT.TOGGLE)**

Enables the change of logical state with each new message.

**Repeat (RDS.RADIOTEXT.NB)**

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

**PSN number**

This number must be unique in the DSN.

**Enabling EON PSN**

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

**PI (Configuration|Current DSN / RDS.PI)**

Program Identification: identifying code of the received station.

**PS (Configuration|Current DSN / RDS.PS)**

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

**PTY (Configuration|Current DSN / RDS.PTY)**

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

| PTY code | RDS Programme type (EU) | RBDS Program type (USA) |
|---|---|---|
| 0 | No programme type or undefined | No program type or undefined |
| 1 | News | News |
| 2 | Current affairs | Information |



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| | | |
|---|---|---|
| 3 | Information | Sports |
| 4 | Sport | Talk |
| 5 | Education | Rock |
| 6 | Drama | Classic Rock |
| 7 | Culture | Adult Hits |
| 8 | Science | Soft Rock |
| 9 | Varied | Top 40 |
| 10 | Pop Music | Country |
| 11 | Rock Music | Oldies |
| 12 | M.O.R. Music | Soft |
| 13 | Light classical | Nostalgia |
| 14 | Serious classical | Jazz |
| 15 | Other Music | Classical |
| 16 | Weather | Rhythm and Blues |
| 17 | Finance | Soft Rhythm and Blues |
| 18 | Children's programmes | Language |
| 19 | Social Affairs | Religious Music |
| 20 | Religion | Religious Talk |
| 21 | Phone In | Personality |
| 22 | Travel | Public |
| 23 | Leisure | College |
| 24 | Jazz Music | Unassigned |
| 25 | Country Music | Unassigned |
| 26 | National Music | Unassigned |
| 27 | Oldies Music | Unassigned |
| 28 | Folk Music | Unassigned |
| 29 | Documentary | Weather |
| 30 | Alarm Test | Emergency Test |
| 31 | Alarm | Emergency |

**PTYN (RDS.PTYN)**

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

**TA (Configuration|Current DSN / RDS.TA)**

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



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**TP (Configuration|Current DSN / RDS.TP)**

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

**Dynamic PTY**

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

**Link**

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

**Alternative Frequencies (RDS.AF)**

The list(s) of alternative frequencies give information on the various transmitters broadcasting the same program in the same or adjacent reception areas, and enable receivers equipped with a memory to store the list(s), to reduce the time needed for switching to another transmitter. This facility is particularly useful in the case of car and portable radios.

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

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

**EON PSN creation (RDS.EON.ADD)**

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

**EON Sent Fields (EON_ELEMENTS)**

Indicate which specific data is sent to the receiver:

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



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## 4.4. RT Plus

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

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

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

Using the RT+, receivers access functions such as:

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

**RDS Group (RT_PLUS)**

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

**Table of definition of RT+ commands**

| Category | RTplus classes | MP3 id3v2 | | Description |
|---|---|---|---|---|
| **Item** | ITEM.TITLE | TIT2 | TITLE | Title of item |
| | ITEM.ALBUM | TALB | ALBUM | The collection name to which this track belongs |
| | ITEM.TRACKNUMBER | TRCK | TRACKNUM | Number of the current part of the current level |
| | ITEM.ARTIST | TPE1 | ARTIST | A person or band/collective generally considered responsible for the work |
| | ITEM.COMPOSITION | | | A complete composition (mainly used in classical music) |
| | ITEM.MOVEMENT | | | A **movement** is a large division of a larger composition or musical form |
| | ITEM.CONDUCTOR | TPE3 | CONDUCTOR | The artist(s) who performed the work. In classical music this would be the conductor, soloists |
| | ITEM.COMPOSER | TCOM | COMPOSER | Name of the original composer |
| | ITEM.BAND | TPE2 | BAND | Band / orchestra / accompaniment / musician |
| | ITEM.COMMENT | COMM | COMMENT | Any comment related to the content |
| | ITEM.GENRE | TCON | CONTENTTYPE | The main genre of the audio or video; e.g. "classical", "ambient-house", "synthpop", "sci-fi", "drama", etc. |
| **Info** | INFO.NEWS | | | Headline |
| | INFO.NEWS.LOCAL | | | Local news. |
| | INFO.STOCKMARKET | | | Quote information |
| | INFO.SPORT | | | Result of a game, either as one tag "Bayern München : Borussia 5:5" or as 2 distinct tags |
| | INFO.LOTTERY | | | Lottery |
| | INFO.HOROSCOPE | | | Horoscope |
| | INFO.DAILY_DIVERSION | | | Daily tip / diversion / joke ... |
| | INFO.HEALTH | | | Information about health: Allergy alarms ... |
| | INFO.EVENT | | | Info about an event |
| | INFO.SZENE | | | Information about scene (Hot locations to be, ...) |
| | INFO.CINEMA | | | Information about movies in cinema |
| | INFO.TV | | | Information about TV-movies |



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| Category | RTplus classes | MP3 id3v2 | | Description |
|---|---|---|---|---|
| | INFO.DATE_TIME | | | Information about date and time (Client to chose between date and time) |
| | INFO.WEATHER | | | Information about weather |
| | INFO.ALARM | | | An alarm information, typically an official alarm send out while the alarm flag is set |
| | INFO.ADVERTISEMENT | | | Info about an advertisement. May be in parallel to an audio advertisements |
| | INFO.OTHER | | | Other Information: Not especially specified |
| **Program** | STATIONNAME.LONG | | | Name describing the radio station |
| | PROGRAM.NOW | | | EPG info program now |
| | PROGRAM.NEXT | | | EPG info program next |
| | PROGRAM.PART | | | Part of the current radio show: E.g. one of several parts of the PROGRAM.NOW |
| | PROGRAM.HOST | | | Name of the host of the radio show |
| | PROGRAM.EDITORIAL_STAFF | | | |
| | PROGRAM.RADIO | | | Information about radio shows: A link towards another frequency with other content (NOT AF list) May be one tag (keyword##frequency) or two distinctive tags |
| | PROGRAM.HOMEPAGE | WORS | WWWRADIOPAGE | Link to radio station homepage |
| **Interactivity** | PHONE.HOTLINE | | | The telephone number of the radio stations hotline |
| | PHONE.STUDIO | | | The telephone number of the radio stations studio |
| | PHONE.OTHER | | | Name and telephone number: Either as one tag ("keyword##phone number") or as two distinct tags |
| | SMS.STUDIO | | | The sms number of the radio stations studio (to send directly a sms into the studio) |
| | SMS.OTHER | | | Name and sms number: Either as one tag ("keyword##sms number") or as two distinct tags |
| | EMAIL.HOTLINE | | | The email address of the radio stations hotline |
| | EMAIL.STUDIO | | | The email address of the radio stations studio |
| | EMAIL.OTHER | | | Name and email address: Either as one tag ("keyword##phone number") or as two distinct tags |
| | MMS.OTHER | | | Name and mms number: Either as one tag ("keyword##mms number") or as two distinct tags |
| | CHAT | | | chat content: send by users to a specific address and broadcasted by the Radio Station |
| | CHAT.CENTER | | | Address, where contributions to the chat shall be sent (may be url or sms) |
| | VOTE.QUESTION | | | A question (typically binary) which can be answered by "yes" or "no" or "1" or "2" |
| | VOTE.CENTER | | | url or sms number to send your answer to |
| **Descriptor** | PLACE | | | Descriptor will always be the second RT tag in a message. And will describe the RT tag 1 in more detail |
| | APPOINTMENT | | | Adds info about date and time |



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| Category | RTplus classes | MP3 id3v2 | | Description |
|---|---|---|---|---|
| | HOTLINE | | | Hotline number to call to get more info |
| | IDENTIFIER | TSRC | ISRC | Can identify any tag in RT1. For music it is the: International Standard Recording Code (http://www.ifpi.org/isrc/) |
| | PURCHASE | WPAY | WWWPAYMENT | Address where item can be purchased. Address can be an url or a sms-number |
| | GET_DATA | | | Retrieves either via a sms or url-link more data about tag in RT1. (Info request via Point to Point - unicast) |

## 4.5. ODA

***Working with ODA data***

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

**Relative priority**

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

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

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

***RDS resource allocation***

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

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

**AID**

ODA identification number. Assigned by the RDS forum.

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

**MSG**

Message.

**MSG2**

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



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**Timeout**

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

***"Burst mode" transmission***

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

**Spacing**

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

**Repeat**

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

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

**Number of time slots**

Divide the minute evenly into a number of time slots.

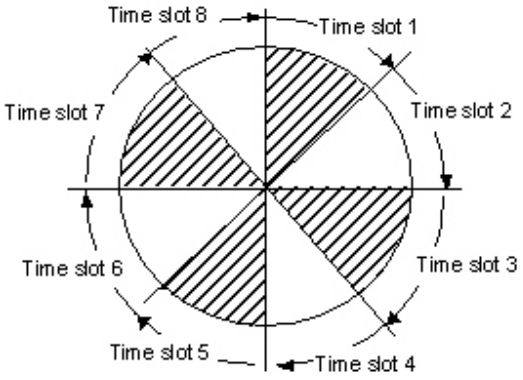
**Time Window**

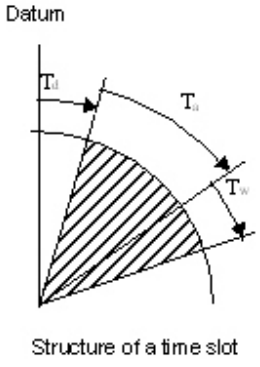
Split each of these time slots into two parts: a first part (activity time, Ta), during which ODA groups may be inserted into the data stream; and a second part (window time, Tw), during which no ODA groups shall be inserted into the data stream.

**Delay**

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

The structure of the parameters Ta, Td and Tw is illustrated below:




Structure of a time slot



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

- No ODA group should start outside the activity window.
- An ODA group may be completed outside the activity window.
- Ta, Tw, and Td have to be multiples of one second, with 60 s/(Ta + Tw) = n (where n: integer > 0).

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

## 4.6. UECP

**Site (Configuration|UECP Addresses / UECP.SITE)**

Site address of the unit If the individual address is set by Telnet or via the front panel application, it cannot be changed with the web interface. If it is set on the web interface, it is not visible on the front panel application. Hexadecimal value, between 000 and 3FF.

**Encoder (Configuration|UECP Addresses / UECP.ENCODER)**

Encoder address of the unit. If the individual address is set by Telnet or via the front panel application, it cannot be changed with the web interface. If it is set on the web interface, it is not visible on the front panel application.Hexadecimal value, between 00 and 3F.

**Speed (System|Serial|UECP)**

Serial port speed

**Mode (System|Serial|UECP / UECP.UDP.MODE)**

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

**Timeout (System|Serial|UECP / UECP.UDP.TIMEOUT)**

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

**Filters**

The filters allow selection of groups to be sent.

## 4.7. Communication parameters

IP Address (**System|Network|Configuration /** IP.ADDR)

Configure the encoder IP address.

Netmask (**System|Network|Configuration /** IP.MASK)

Configure the network mask.



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# 5. FRONT PANEL APPLICATION

## 5.1. Presentation

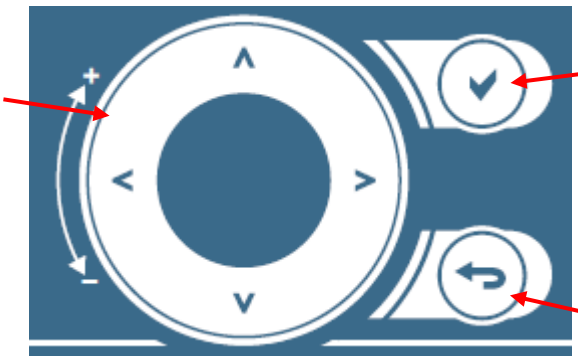
The front panel application makes it possible to set basic parameters and to view encoder and RDS status.

## 5.2. Working principle

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

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

**Arrows** are used for scrolling through menus, selecting parameters and adjusting values.
LEDs indicate possible directions, for instance, only up and down arrows are available when scrolling through main menus.
When adjusting values, press on the top or down button for small increments or swipe your fingers around for large increments



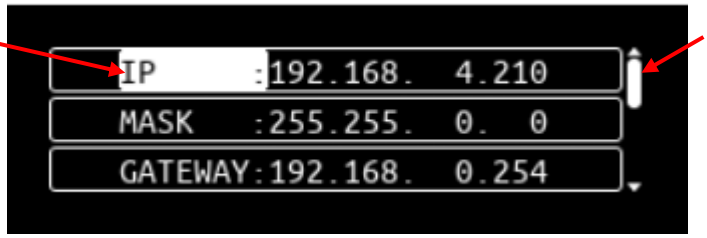
The **Check** button is used to:

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

The **Return** button is used to

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

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




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



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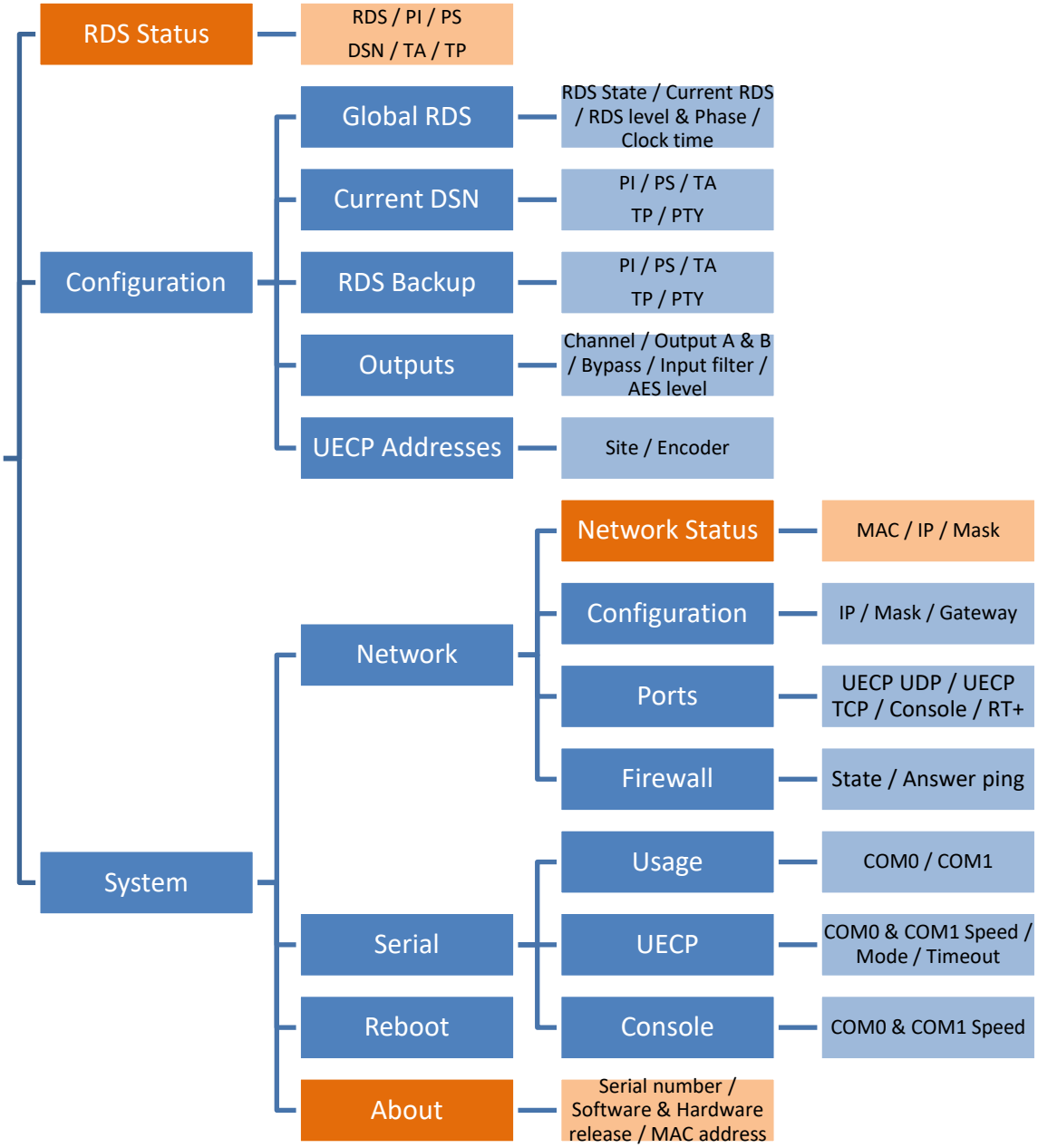
## 5.3. Structure of the menus

### 5.3.1. Synoptic view




*Menus in orange are read-only.*

The RDS status screen is the default screen.

Push the Check button to display first level menus.



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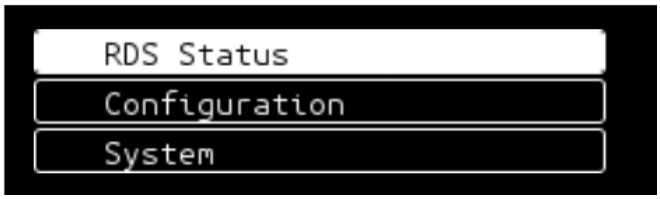
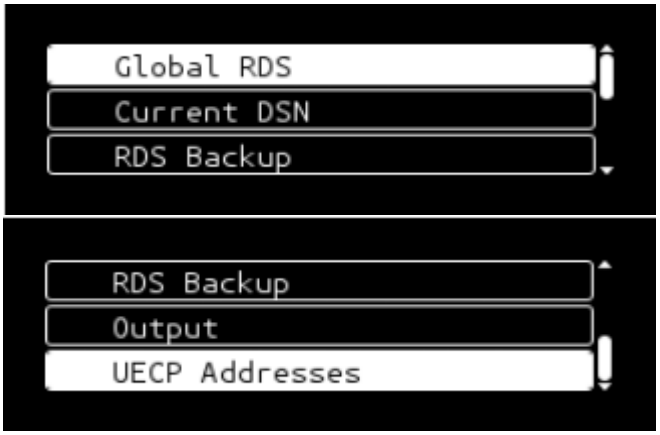
### 5.3.2. Main Menu

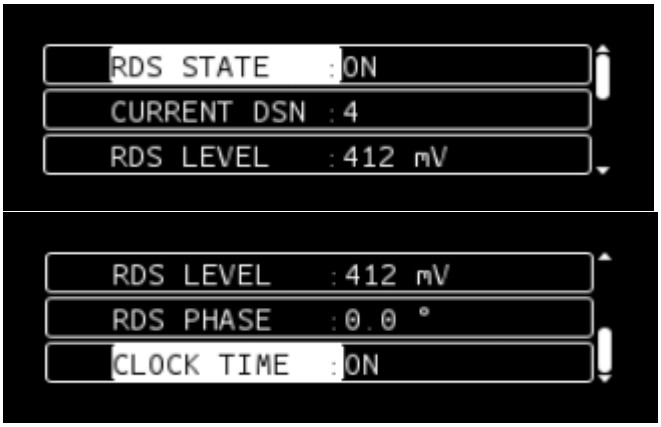



### 5.3.3. RDS Status screen


### 5.3.4. Configuration Menu




*Global RDS screens*




*Current DSN screens (identical to RDS Backup)*



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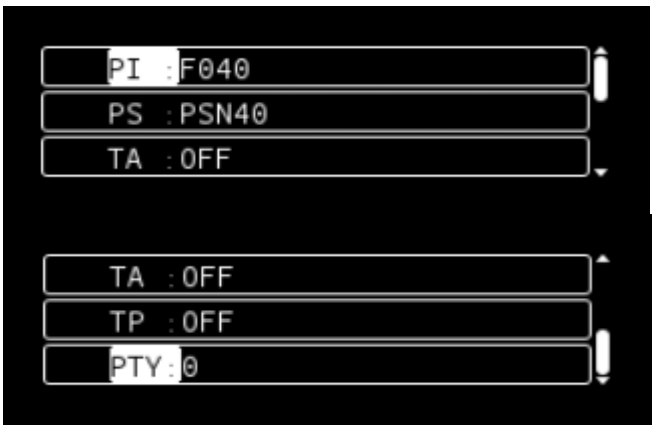
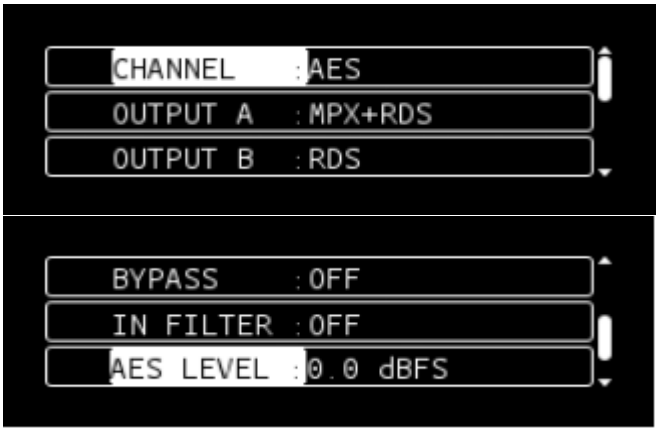
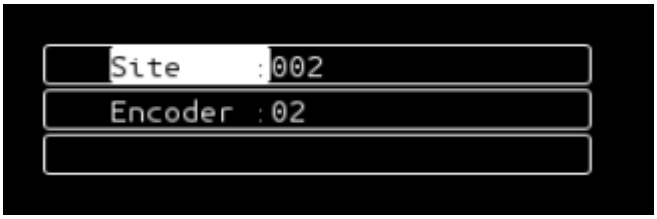


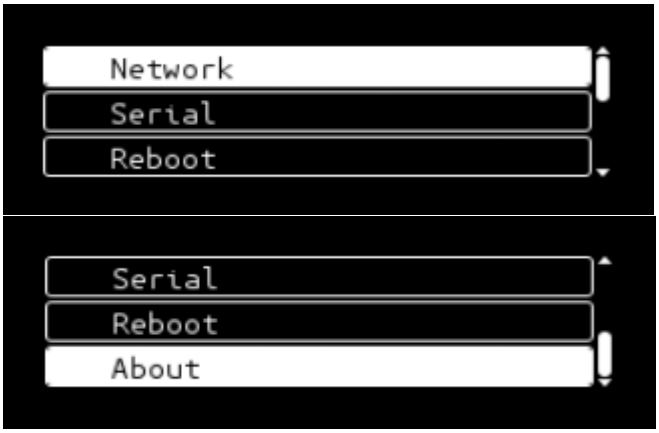

*Outputs screens*




*UECP addresses screen (for individual addresses)*




**5.3.5. System Menu**



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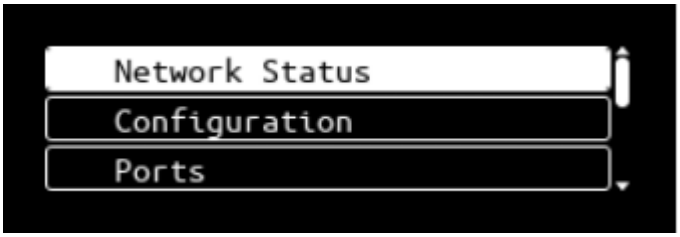
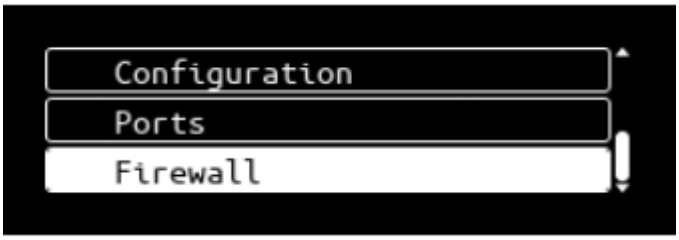
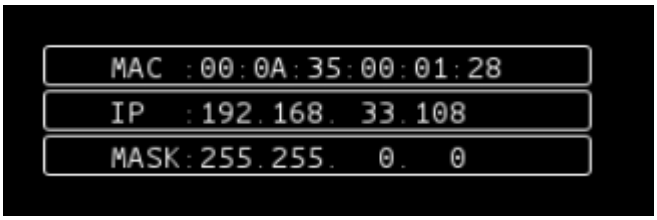
#### *5.3.5.1. Network sub-menu*

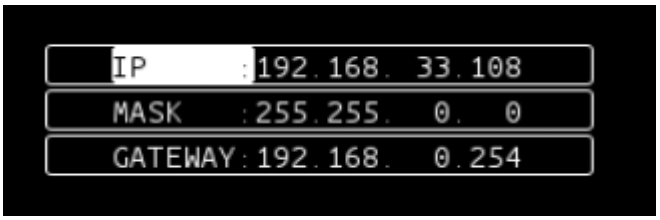


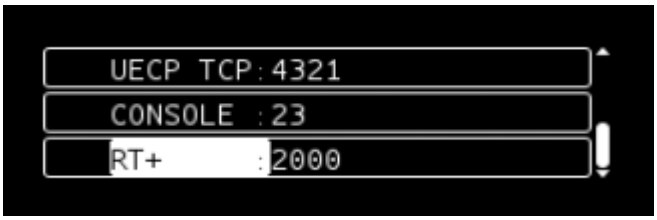

*Network Status screen*




*Configuration screen*




*Ports screens*

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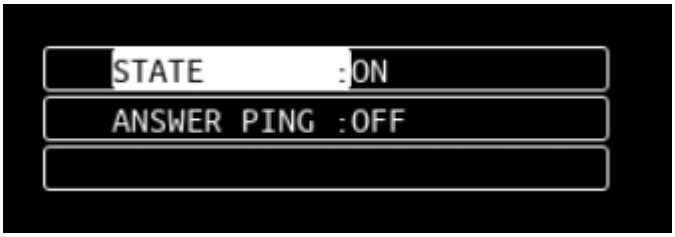
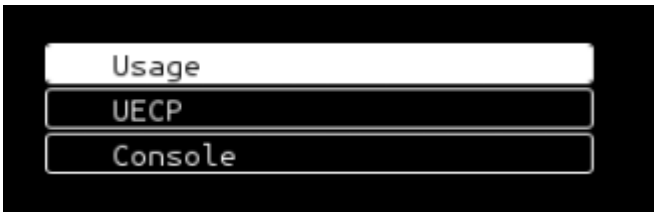
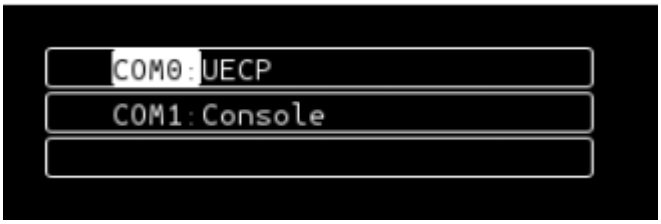
*Firewall screen*



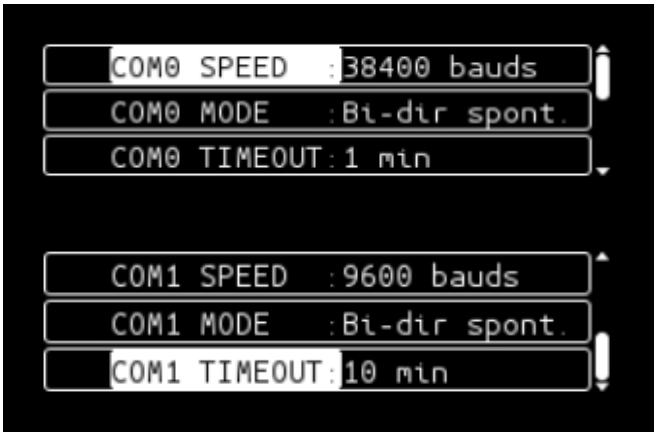

### *5.3.5.2. Serial sub-menu*




*Usage screen*




*UECP screen*




*Console screen*

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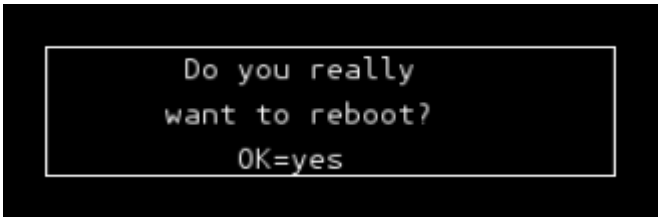
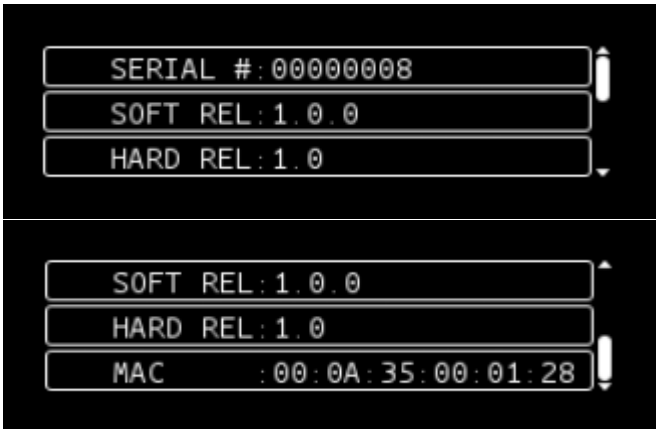
*Reboot screen*




*About screens*



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# 6. THE WEB APPLICATION

## 6.1. Warning

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

## 6.2. Connecting to the embedded web site

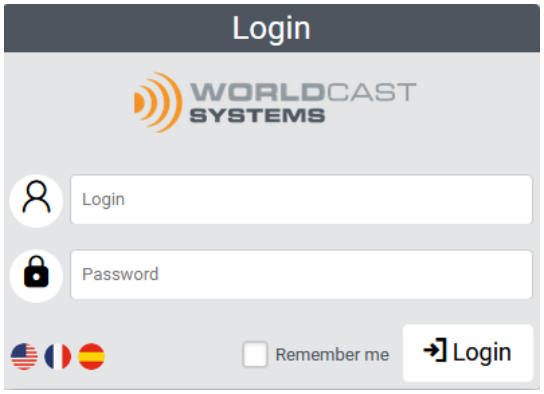
For remote access, connect to the encoder's embedded web site. Simply open a web browser (Google Chrome recommended) and enter the encoder's IP address in the address bar (set on the front panel).

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

*The browser may display a message indicating that the connection is not certified; however, the site is secured (data is encrypted) and you may proceed to access it. To prevent these potential blocking and warning messages, WorldCast Systems now supplies a certificate for HTTPS browsing, see section 9.6.5 for more information.*

Select the language if necessary.

Enter the user name and password:




Default identifiers are:

- Login: Admin
- Password: admin

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

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

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



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## 6.3. Application overview

The header is visible on all pages:

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

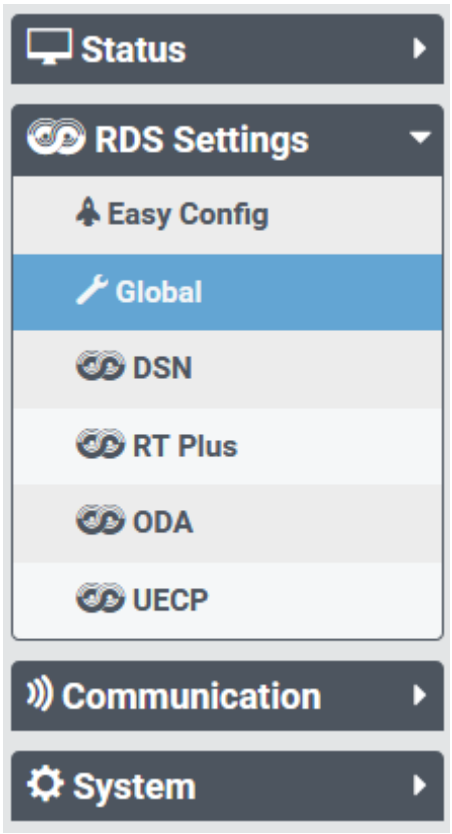

Connect/disconnect and change language

Information on the application

Encoder status:

- blinking: communication ok between embedded software and web
- RDS RDS enabled / RDS RDS disabled
  or RBDS RBDS enabled / RBDS RBDS disabled
- DSN enabled
- PI Code
- TA TA enabled / TA TA disabled
- PS

The left menu is visible on all pages:




Pages are organized in four sections:

- Status
- RDS
- Communication
- System

The title of the displayed page is highlighted in blue

Sub-menus for each section can be displayed or hidden

Several online help tools are available



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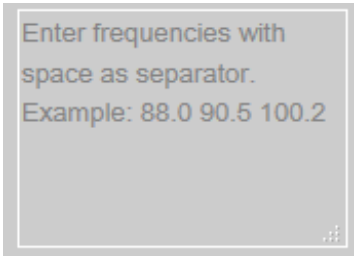
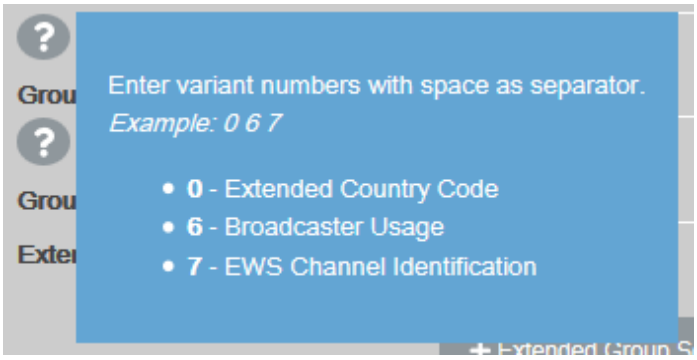
When a value has not been entered yet, some text fields display contextual help. The Help text is in grey, the entered value in black.




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




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

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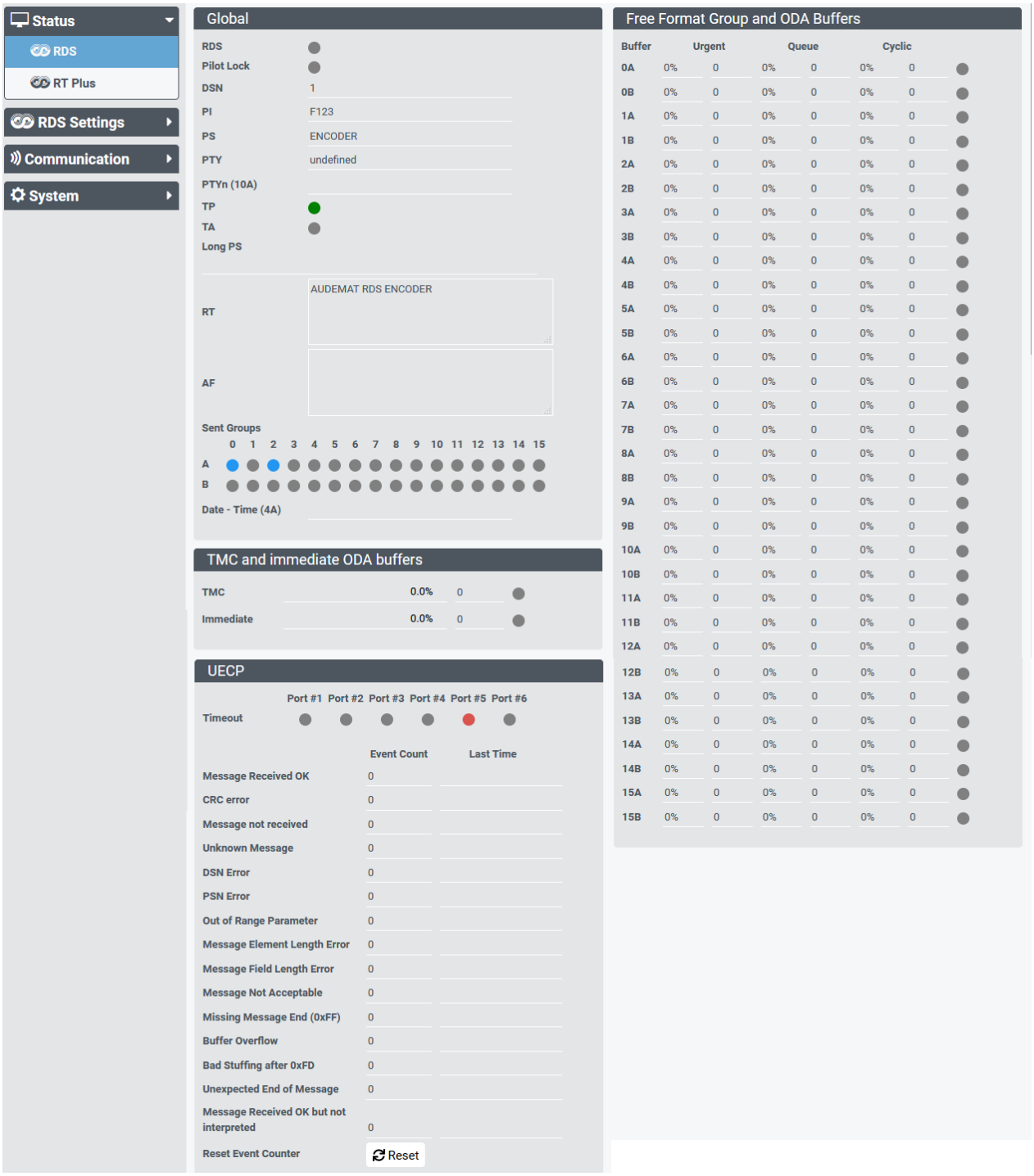
## 6.4. Status

### 6.4.1. RDS Status

This page displays global RDS information.




The time is based on the PC time. It can be different from the AUDEMAT RDS Encoder time if the encoder time has not been set or if it is in another time zone.



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### 6.4.2. RT Plus Status


This page displays the current values for the various fields.

The ITEM fields are validated when the ITEM.DURATION command is sent. They are reset when the duration is null.

Other field types are valid as soon as they are set and until a new configuration is sent.



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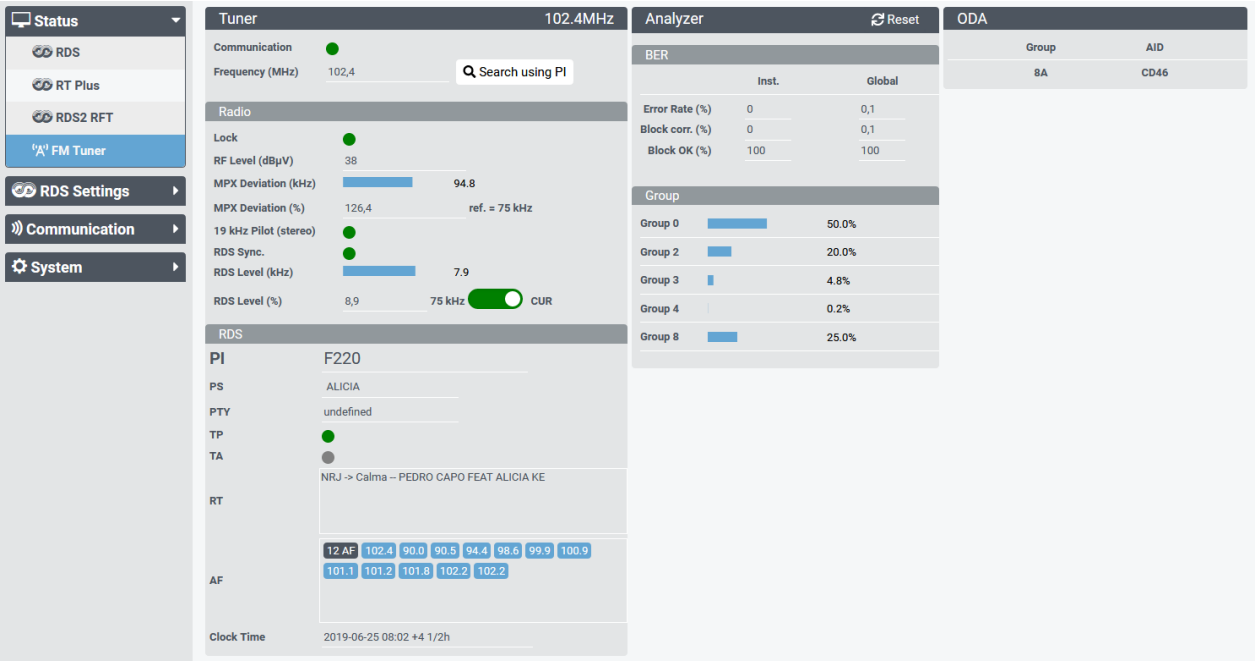
### 6.4.3. FM Tuner

*This page is only available when the optional FM Tuner board is present.*




**Tuner:**

Data in the Tuner section is only retrieved when the page is displayed.

For a search using the PI (or Call Letters in RBDS), the PI/Call Letters configured in the encoder is used. If it is not found, a red exclamation point is displayed. It is always possible to manually enter the tuner frequency.

The RDS level in % is either based on 75 kHz or on the current MPX deviation.

*If the level of the 19 kHz pilot is lesser than 3.1 kHz, the pilot is considered not present (grey indicator).*

**Analyzer:**

Parameters of the Analyzer section are monitored continuously.

With each change of frequency, the analysis is reset.



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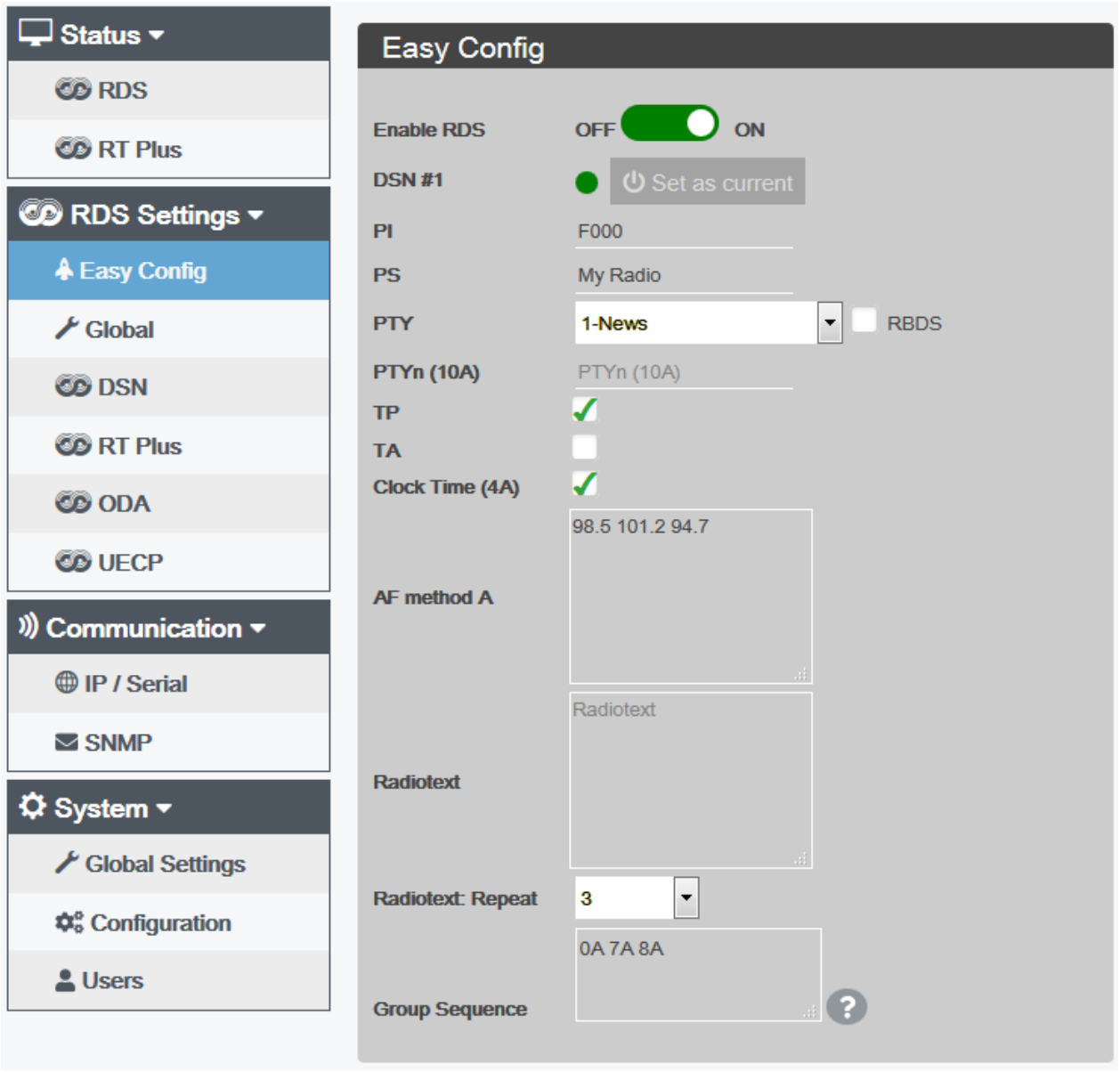
## 6.5. RDS

### 6.5.1. Easy Configuration




On this page, the main RDS parameters are present, thus allowing for a simple configuration to be easily implemented.

The various parameters are also available on the pages les pages RDS/Global and RDS/DSN, and are described sections 4.2 and 4.3.



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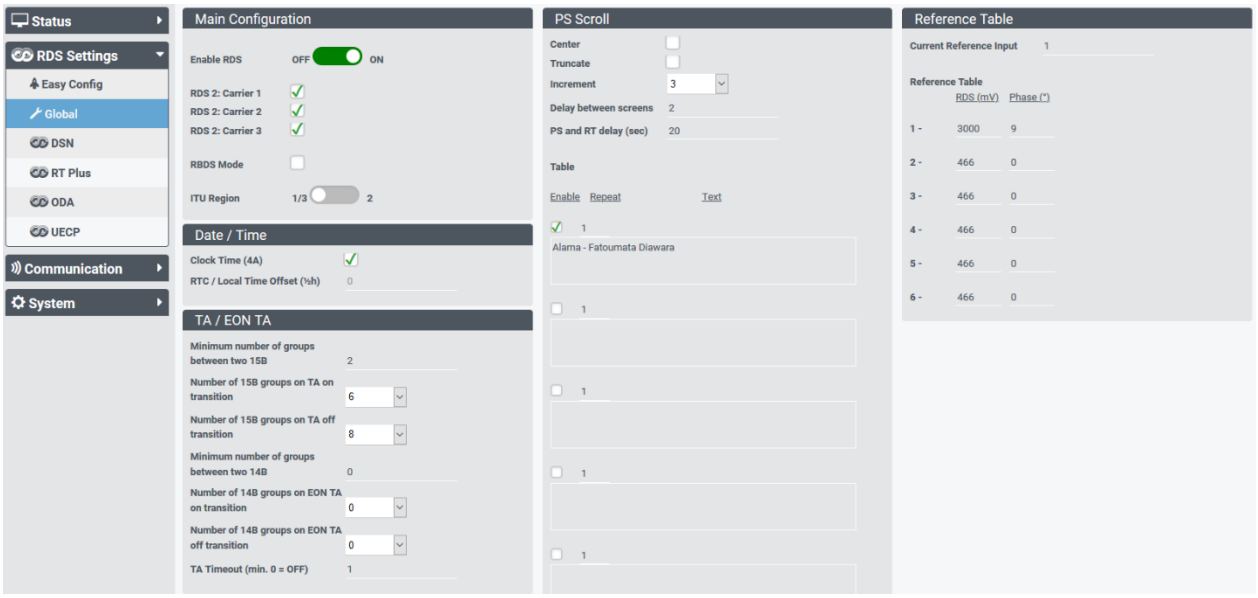
### 6.5.2. Global Configuration




This page includes global RDS parameters, described section 4.2.

If the RTC offset is set automatically (page System/Global Settings, section 6.7.1), date and time parameters cannot be modified on this page.



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### 6.5.3. DSN


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



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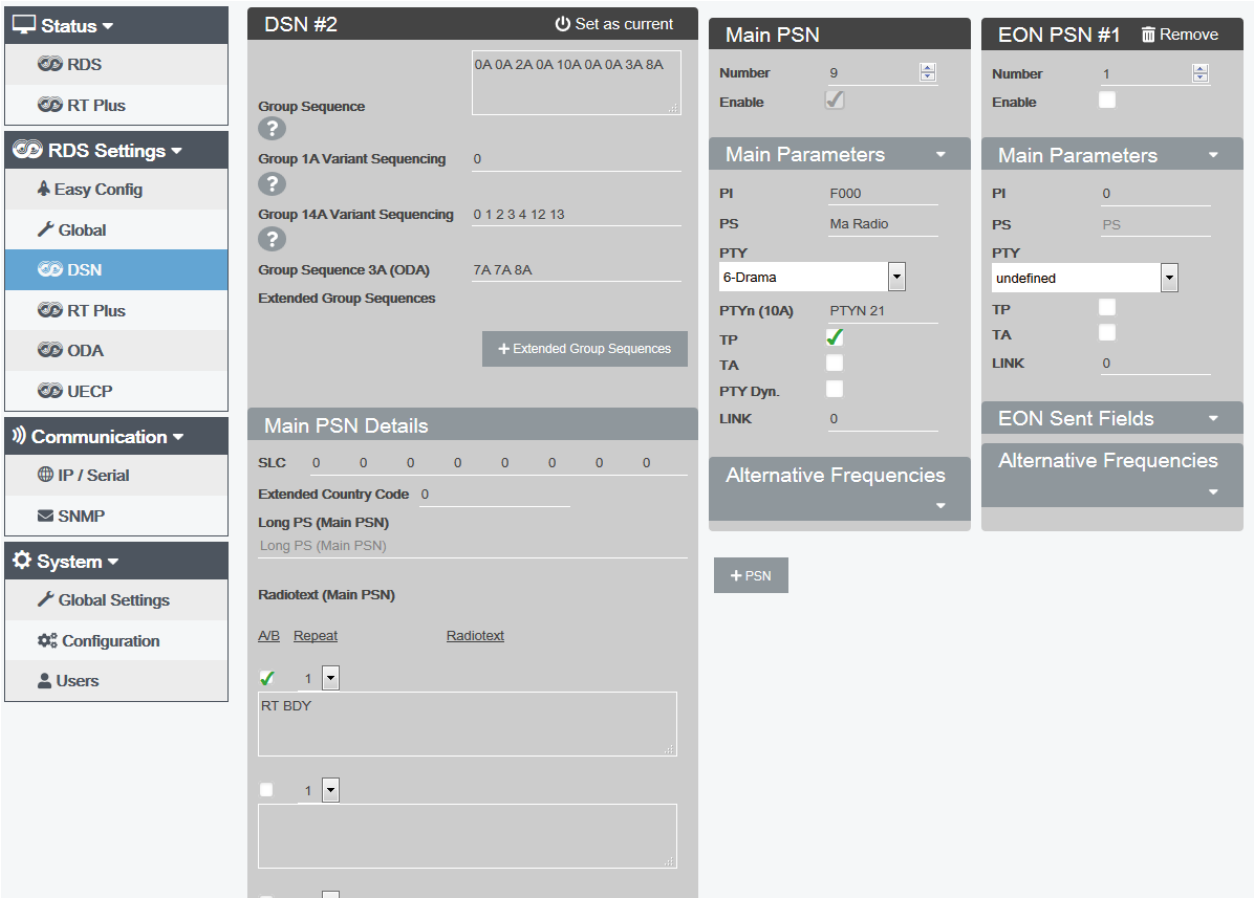



*To return to the list of DSN, simply click on DSN in the RDS menu.*

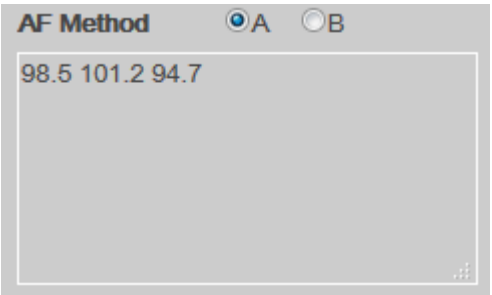
DSN are described section 4.3.

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

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

*Save after the creation of each PSN.*

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



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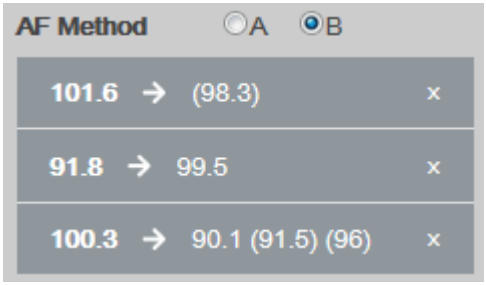
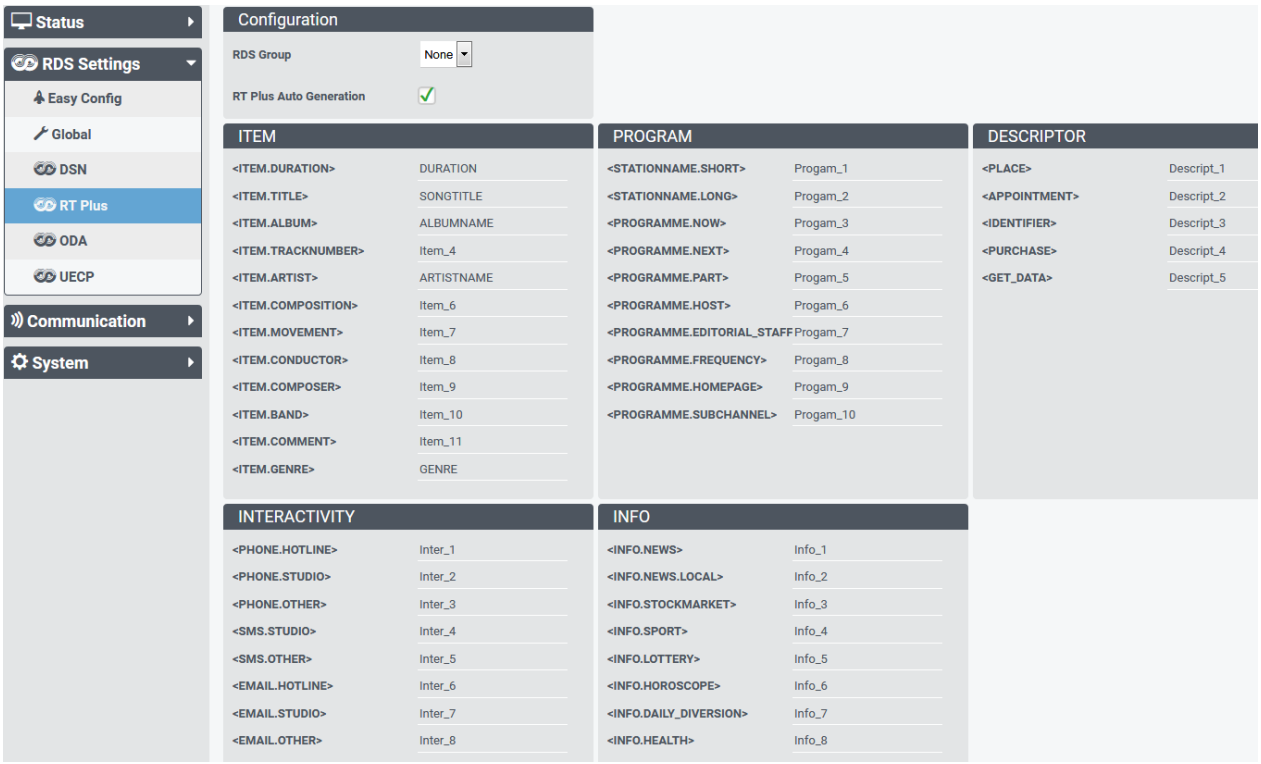
With method B, enter the tuning frequency then the alternative frequency. Use parentheses for regional frequencies.




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

### 6.5.4. RT Plus




RT Plus parameters are described section 4.4.

RT Plus Auto Generation:

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



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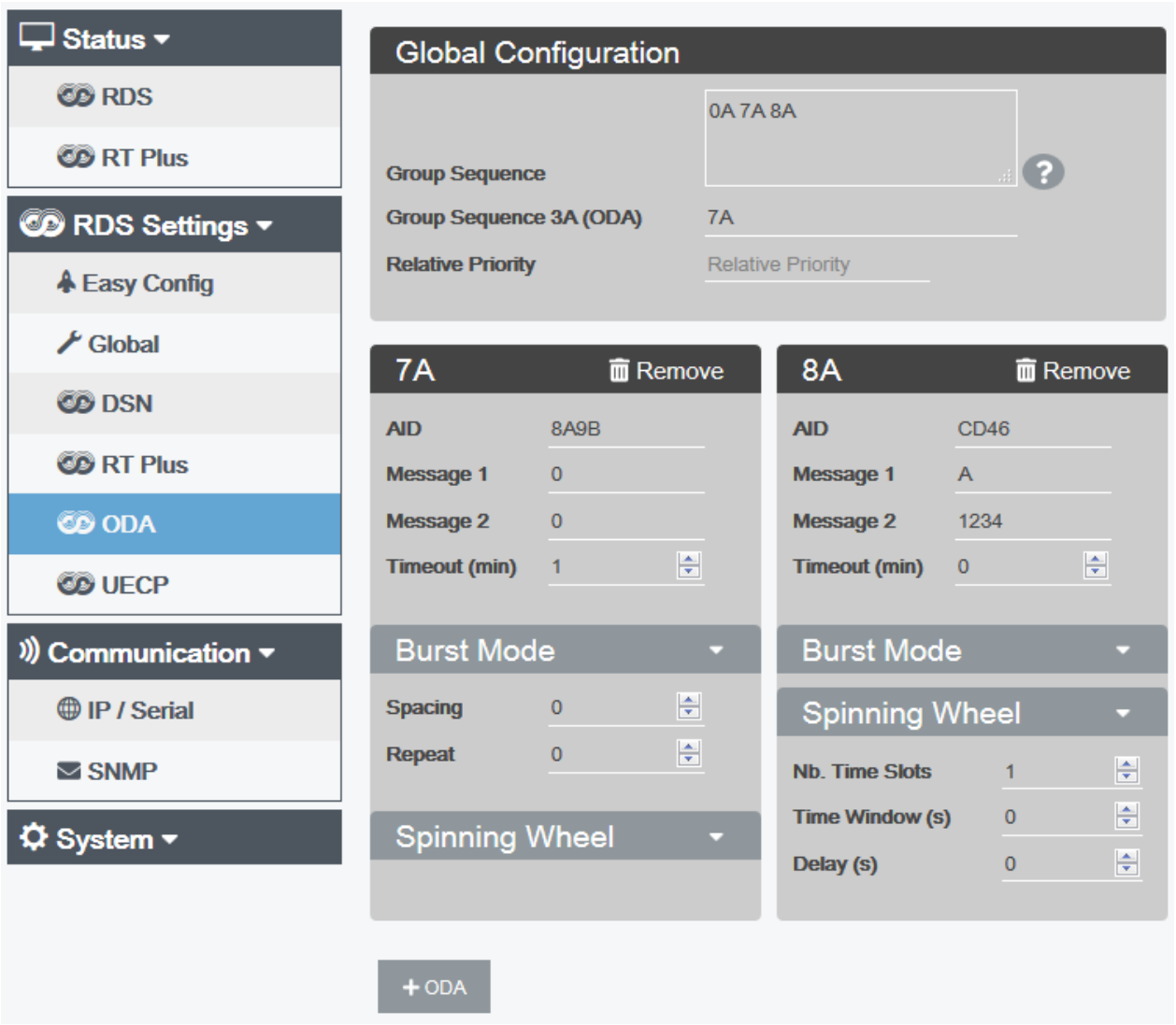
### 6.5.5. ODA




ODA parameters are described section 4.5.

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

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



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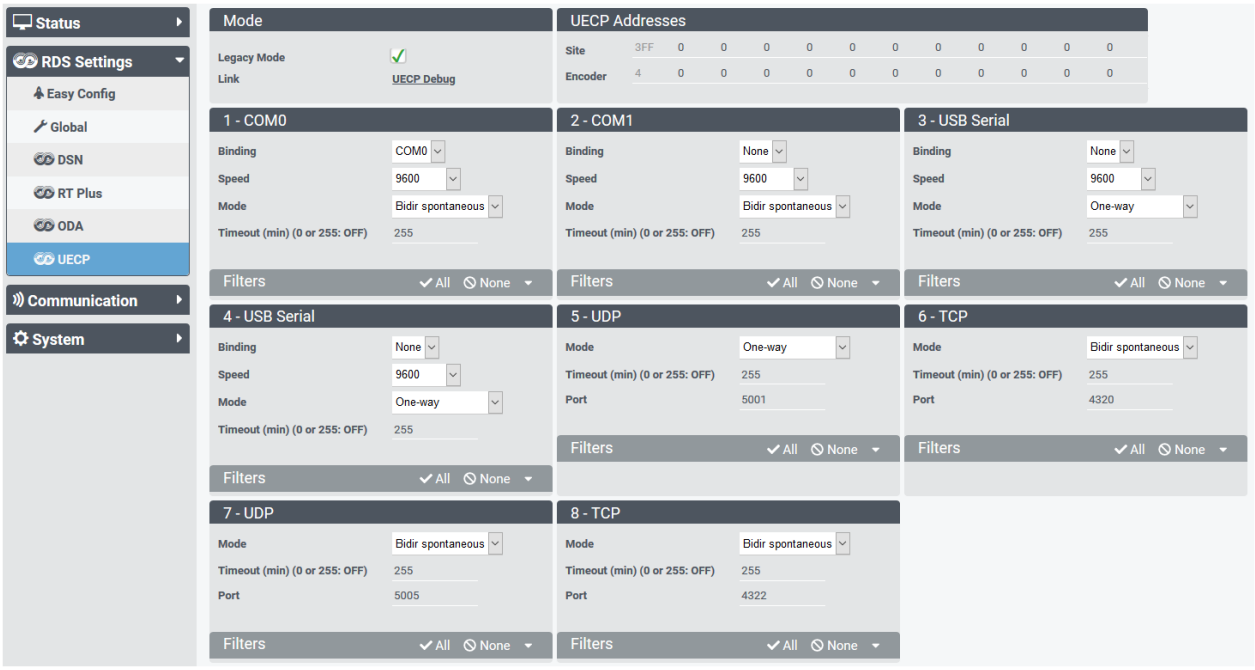
### 6.5.6. UECP

UECP parameters are described section 4.6.

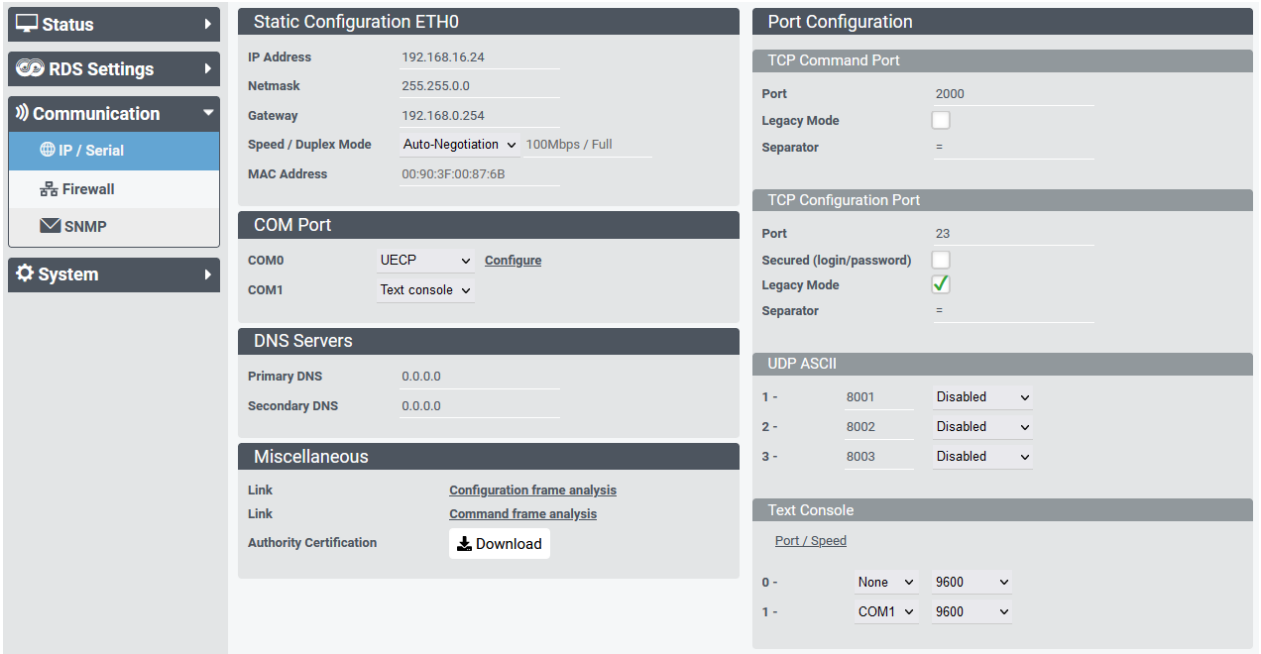



*When the individual address (the first one in the UECP Addresses section) is set via Telnet or the front panel application, it cannot be modified on the Web interface.*

*In case of issue, you may review the UECP log ('UECP frame analysis' link in the Mode section).*

## 6.6. Communication

### 6.6.1. IP/Serial



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**ETH0 Static Configuration:**

Set the parameters for the network interface.

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

**COM Port:**

Define the usage for the encoder COM port.

If a port is set for text console, the console speed can then be set in the Port Configuration / Text Console section.

If a port is set for UECP, UECP parameters can then be set on the page RDS/UECP (see section 6.5.6).

! ***Make sure the firewall allows required ports (see section 6.6.2).***

Shortcuts to these pages are made available when applicable.

ⓘ *A given physical port can only be associated with the logical port of the same identifier, ie logical port COM0 cannot refer to physical port COM1.*

**DNS Servers**:

DNS configuration. Mandatory if before using DNS addresses on other configuration pages.

**Certification Authority:**

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

- Download the certificate,
- Display the advanced parameters of the web browser (Mozilla Firefox, Google Chrome) or the Internet Options/Content (Internet Explorer, Microsoft Edge).
- Display security options
- Open the certificate manager and import the certificate previously downloaded.

ⓘ *This certificate is also valid with other WorldCast Systems products of the latest generation.*

**Port configuration**

The TCP command port is used to send only RT+ and dynamic PS commands.

The TCP configuration port is used to send all commands, including RT+ and dynamic PS commands.

Set port function in the UDP ASCII section.

! ***Make sure the firewall allows required ports (see section 6.6.2).***

ⓘ *In case of issue, you may review the logs for the ports (links in the Miscellaneous section).*



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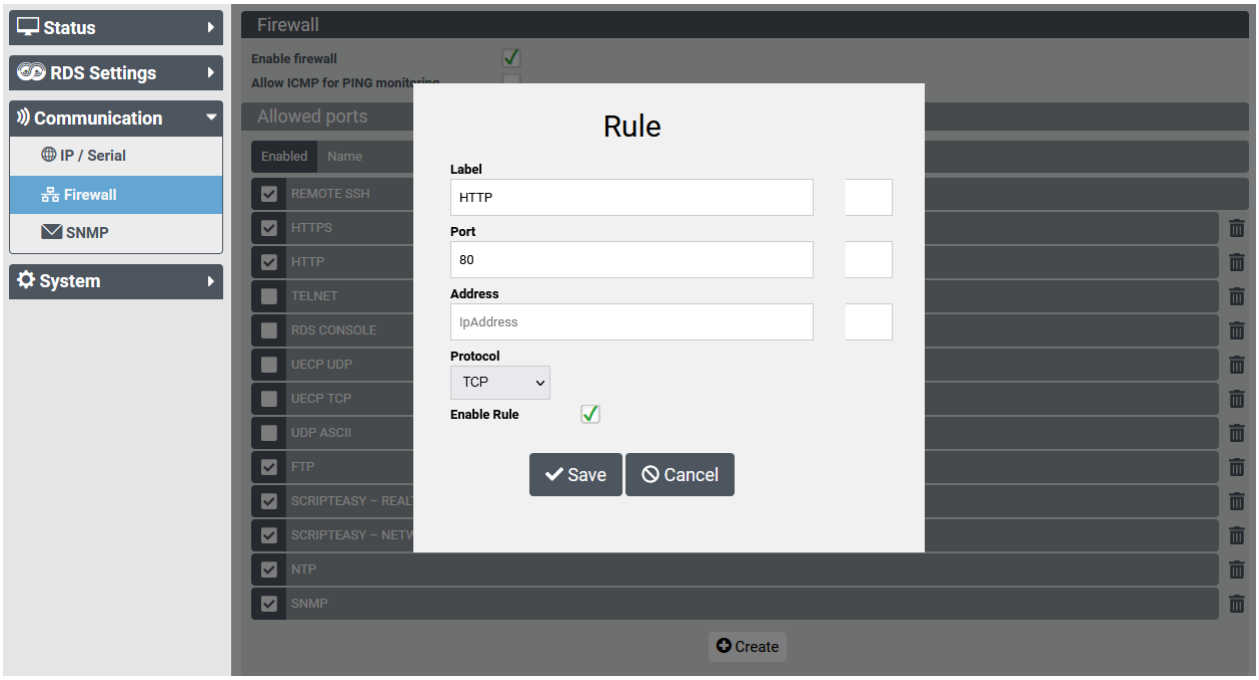
### 6.6.2. Firewall



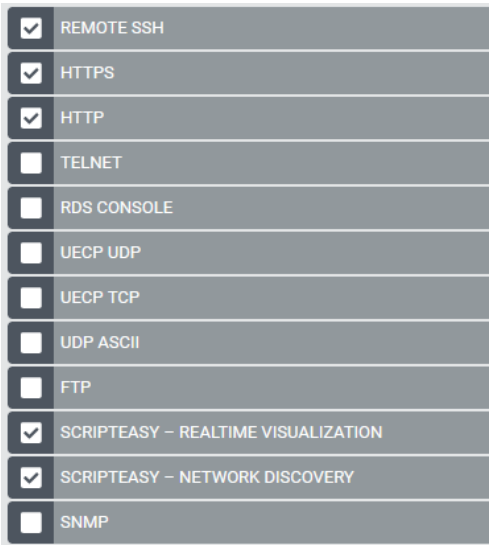

Enable the firewall and allow/block the unit's ports.

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

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

By default, the following ports are open:

- 65522 for SSH. This port is used for maintenance and cannot be disabled. However, the SSH server does not run.
- 443 for HTTPS (web application)
- 80 for HTTP (web application)
- 5570 for running the ScriptEasy script
- 5577-5578 to allow the ScriptEasy application to easily connect to the unit




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

To define multiple ports for a single rule:

- Use commas for non-consecutive ports. Ex 5570,5576 for ports 5570 and 5576,
- Use dashes for consecutive ports. Ex 5577-5579 for ports 5577, 5578 and 5579.

Multiple IP addresses can also be entered using commas.

Delete an existing rule by clicking 

Create a new rule by clicking the Create button.



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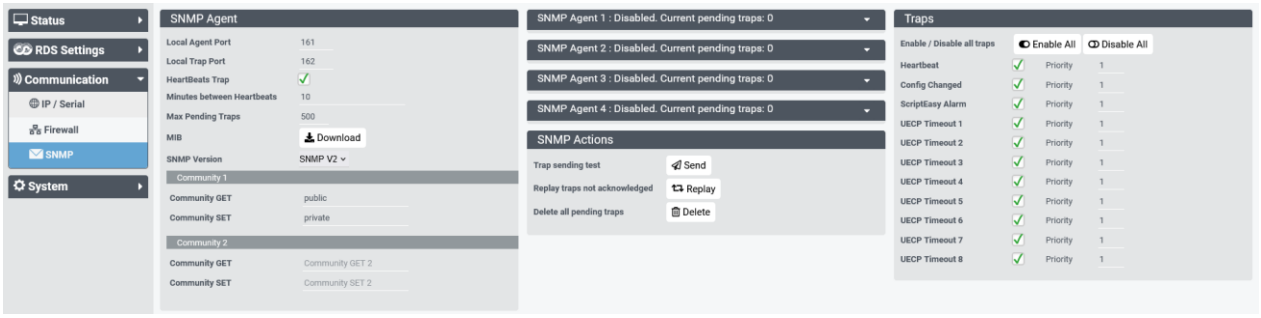
To connect in FTP to the unit, activate the FTP rule and set the FTP account password on the System/Users page (see section 6.7.3).

### 6.6.3. SNMP




**SNMP:**

- **Life Sign Trap / Minutes between Life Signs:** sends life signs every X minutes. This trap makes it possible to check that the unit is connected to the network.
- **Local ports:** set the ports on which the traps are sent.

! ***Make sure the firewall allows required ports (see section 6.6.2).***

- **Max pending traps:** set the number of traps in the manager queue, between 255 and 1000.
- **MIB:** to download the MIBs click on the button (mibs.zip file).
- **SNMP version**: SNMP v2 or v3. The following parameters will vary depending on the selected version.

With SNMP v2:

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

With SNMP v3:

- **Read only / Read write security level:** set the security level
  - **No auth, no priv:** equivalent to SNMP v2, password is not required
  - **Auth, no priv:** set the authentication algorithm and password
  - **Auth, priv:** set the authentication and encryption algorithms and passwords

ⓘ *SNMP v3 passwords must include at least 8 alphanumerical characters.*

**SNMP manager settings:**

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

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

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

***Case of Inform SNMPv2c type traps:***

Inform SNMPv2c traps require manager acknowledgment.

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



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

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

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

**SNMP Action:**

- **Trap sending test:** enables the user to carry out a test according to the trap settings.
- **Replay:** The user may replay traps that have not been acknowledged yet.
- **Delete**: The user may also delete pending traps that have not been acknowledged yet.

**SNMP Traps:**

- To enable a trap, check the box.
- Set the priority; this information which is sent with the traps can be used by an SNMP Manager as filter criteria for instance.



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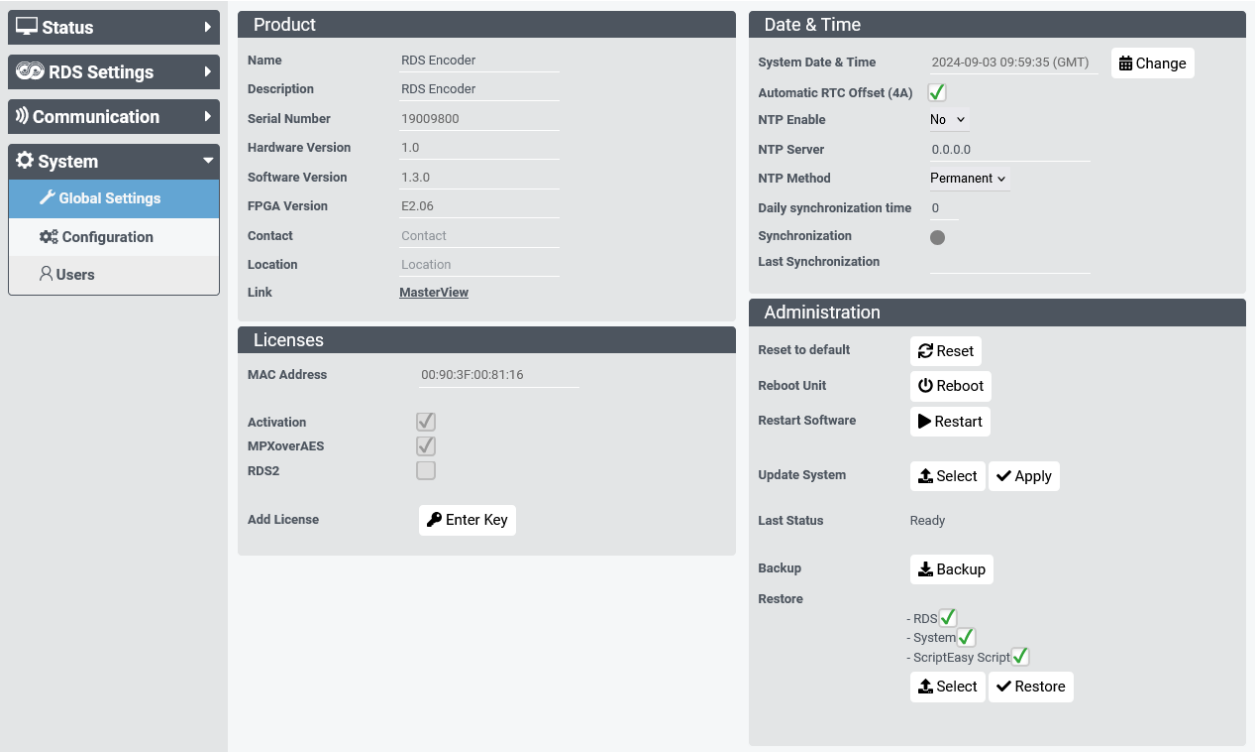
## 6.7. System

### 6.7.1. Global Settings




On this page, manage global settings.

**Product:**

General information regarding the encoder: name, serial number, versions…

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

Specifically, these values are sent with SNMP traps.

Link to MasterView: MasterView is a web application which gives access to a status and control dashboard of your unit. A default view is available, it can be modified and more can be created. Views are based on the ScriptEasy script. The ScriptEasy application installer and the ScriptEasy manual can be retrieved after connecting the supplied USB cable to your PC.

ⓘ *Read the ScriptEasy manual for more information on ScriptEasy and MasterView.*

**Date and time:**

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

The RTC offset can be automatically set by checking the box: it is then based on the selected time zone. In that case, the group 4A is sent and clock time settings on the page RDS/Global are disabled.

ⓘ *RTC offset can be deducted from the time zone, but the time zone cannot be set based on the RTC offset!*



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**NTP (Network Time Protocol):**

The user can enter a time server address to update the IP board clock automatically. Make sure this address can be reached by the unit; specifically, the gateway must be properly set.

Specify the synchronization method:

- Periodical: corresponds to an attempt to synchronize the equipment with the NTP server on a daily basis. The time at which this synchronization is made is indicated in “daily synchronization time”, in 24h format (between 0 and 23).
- Permanent: the unit continuously communicates with the NTP server and accounts for the latency between the NTP server and the device, allowing for finer synchronization.

*When NTP is enabled, the unit will attempt to contact the specified NTP server regardless of the synchronization method. If the difference with the server time is significant, this synchronization method may take some time.*

The synchronization indicator shows:

- NTP disabled or currently synchronizing for the first time
- Waiting synchronization
- Las synchronization OK

Multiple servers can be set. Simply enter the different addresses, separated by commas.

**Licenses:**

In addition to the MAC address, you may view the current licenses, and set new ones in this section.

**Administration:**

The unit can be restarted and values set back to factory settings.

When a new AUDEMAT RDS Encoder software release is available, you may receive the update patch file from your WorldCast Systems dealer.

Click the Select button to locate it, and once selected, click the Apply button. After the upload process is done, check on this page that the new release is uploaded.

Backup and restore:

The RDS configuration, the system configuration (which includes SNMP parameters), the ScriptEasy script can be backed up, for instance to be used in a second unit.

The backup file is saved in the download directory with the name:

RdsEncoder_*Version number_Serial number_date_time*.cnf

Before restoring data, select the parts you want to restore, then click on the Restore button to select the backup file and on the Apply button to launch the restore process.

With the authentication policy, set whether login is required before accessing the website, or whether it opens in Guest mode by default.



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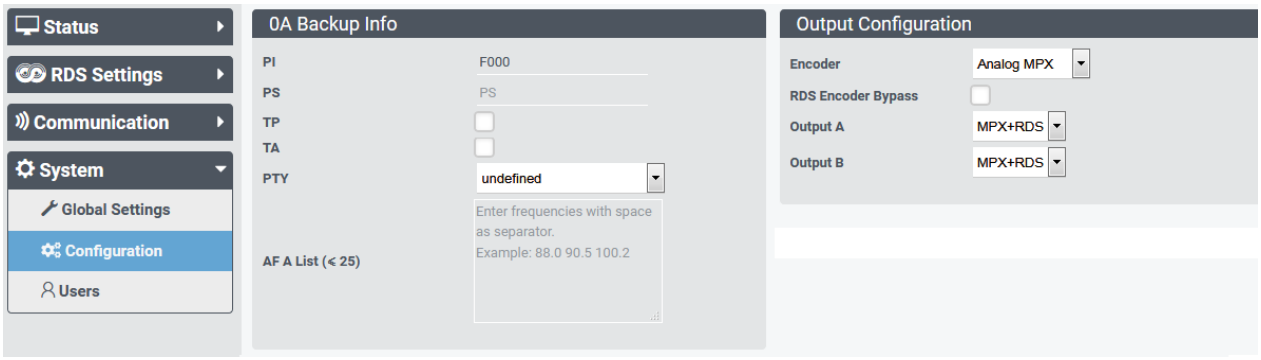
### 6.7.2. Configuration




On this page, set:

**0A backup information:**

Enter 0A information for the DSN which can be backed up (see section 6.7.1).

**Output configuration:**

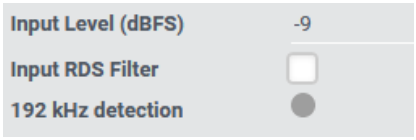
Select the type of encoder (only one possible type): analog MPX or MPX over AES.

*Selecting one encoder type does not disable inputs/outputs of the other type.*
*Ex: if Analog MPX is selected, the AES input audio goes to the AES output, but without any processing.*

If you do not wish to add RDS encoding to the signal, check the box RDS Encoder Bypass.

Set output A and output B components: MPX+RDS, RDS, MPX or nothing.

For MPX over AES type encoders, if RDS is present at the input, it can be removed, then added by the encoder when checking the box Input RDS Filter.



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### 6.7.3. Users

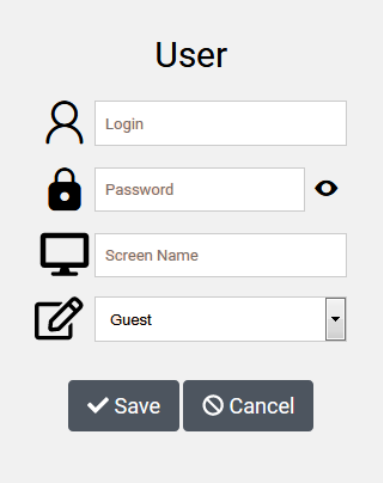

This is where web site connection settings can be modified. This page is only visible to administrators.

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

To modify an existing account, click on the name.

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

In the user window enter/modify required information.




Select the access level:

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

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

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

ⓘ *The Admin account cannot be deleted.*

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

ⓘ *The icon indicates accounts with a weak password.*

FTP accounts are also available:

- ScriptEasy (default login seasy). With this account, view the unit ScriptEasy directory which contains the script and associated images.
- Configuration (defaut login ftpConf). With this account, send configuration files directly via FTP.

As long as the password of an FTP account has not been set, the account cannot be used and the symbol is displayed.

❗ ***Make sure the firewall allows required ports (see section 6.6.2).***

ⓘ *When upgrading the unit to a newer software release, users will be kept, but passwords might have to be reset.*



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# 7. SERIAL AND TELNET COMMANDS

## 7.1. Working principle

The AUDEMAT RDS Encoder has a serial interface. The physical connection is done using the SUB-D9 (SERIAL MONITOR) on the front panel. A common computer with an RS 232 interface (example: PC+ Windows + PuTTY) is all you need to send commands. The dialog is in text mode (ASCII) with UTF-8 encoding and no specific software is required.

Like all serial PC connected equipment, a good cable and correct communication settings are essential to ensure good communication. The cable must be a straight cable (not crossover), with a female plug to connect to the PC, and male plug to connect to the unit.

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

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

Commands may also be used in Telnet.

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

With a serial connection, no login is requested.

With Telnet two session types are available:

! ***Make sure the firewall allows required ports (see section 6.6.2).***

- Session command port (port 2000):

- Session configuration port (port 23):

For this connection, use the embedded web site identifiers (see section 6.7.3):

```
LOGIN:Admin <Enter>
PASSWORD:admin <Enter>
```

The unit responds: `LOGGED.`

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

*Example:*

To display the PI code, type:

```
RDS.PI
```

The response will be similar to:

```
RDS.PI=F404
```



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If the command is unknown, the response will be:

```
UNKNOWN COMMAND
```

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

*Example:*

To set the radiotext, type:

```
RDS.RT=My radiotext
```

The response similar to:

```
RDS.RT=My radiotext
```

Indicates the command has been implemented.

In case it has not, the error message will be similar to:

```
RDS.RT:ERROR 3
```

Several error codes may appear:

- 2: invalid argument
- 3: the value cannot be set
- 4: the value cannot be retrieved
- 5: command requested on an non-existing PSN

*The working principle described above is standard for the AUDEMAT RDS ENCODER. If you prefer the syntax to be similar to the Audemat legacy encoders (FMB80 and HQSound Processor), check the box "Legacy Mode" of the embedded web site RDS/Global page.*



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## 7.2. List of commands

Commands are read and write except ?, HELP and EXIT.

| Command name | Possible value | Comment |
|---|---|---|
| **General commands** | | |
| ? * | | Displays all available commands |
| HELP | | Displays all available commands |
| EXIT * | | Closes the console |
| **System commands** | | |
| DATE | YYMMDDHHMMSS | Encoder date and time |
| REBOOT | REBOOT | Reboots the AUDEMAT RDS Encoder<br>`REBOOT=REBOOT` |
| SYSTEM.SERIAL | | Displays the unit serial number |
| SYSTEM.VERSION | | Displays the software release number |
| CONF.OUTPUTA.METHOD<br>CONF.OUTPUTB.METHOD | MUTE or RDS or MPX or MPX+RDS | Sets output A and output B components: MPX+RDS, RDS, MPX or nothing (MUTE) |
| **RDS commands** | | |
| *General commands* | | |
| RDS.OPMODE | 0 or 1 | Enables (1) / disables (0) the RDS |
| PHASE=(0-3599) | From 0 to 3599 | RDS Phase for synchronization with the transmitter |
| LEVEL | From 0 to 8191 | RDS level in mV |
| PS_STRING=a,b,c,d | a = from 0 to 9<br>b = 0 or 1<br>c = from 1 to 99<br>d = alphanumeric (100 characters max) | PS scroll Parameters.<br>a=number of the PS string<br>b=enables the string (1=enabled)<br>c=number of repetitions<br>d=PS string text |
| PS_OPTIONS=a,b | a = 0 or 1<br>b = 0 or 1 | PS options "truncate" and "center". a=1: text is truncated; b=1 text is centered. Ex:<br>`PS_OPTIONS=0,1` → `text is not truncated and it is centered` |
| PS_SCROLL=[a,b,c,d][,][e] | a = from 0 to 8<br>b = from 0 to 8<br>c = from 0 to 8<br>d = from 1 to 99<br>e = alphanumeric (100 characters max) | PS scroll Parameters.<br>a=number of spaces before;<br>b= number of spaces after;<br>c=incrementation between 1 and 8 characters – 0=incrementation by word;<br>d=delay in seconds between 2 consecutive screens;<br>e=scrolling text.<br>All parameters can be entered, separated by a comma, or only parameters a, b, c and d, or only parameter e. |



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| | | |
|---|---|---|
| RDS.TYPE | RDS or RDBS | Indicates the RDS type |
| AUTO_RTC_OFFSET | 0 or 1 | Sets whether the RTC offset is managed automatically (1) |
| PS_RT_DELAY | From 0 to 200 | Indicates the delay in seconds before the PS or radiotext is sent |
| ITU_REGION2 | 0 or 1 | Sets the ITU region. O = 1/3 (Europe or Asia) ;<br>1 = 2 (America) |
| *DSN commands* | | |
| RDS.CURDSN | From 1 to 10 | Current DSN number |
| RDS.DSN | From 0 to 10 | Sets the DSN number for which the following commands will be applied. 0 applies the commands on the current DSN.<br>It this command is not sent, the DSN commands are applied to the current DSN.<br>Ex:<br>`RDS.DSN=2 → The work DSN is DSN 2 (regardless of the current DSN)`<br>`RDS.DSN=2 → encoder response`<br>`RDS.RT.TEXT= DSN 2 radiotext → DSN 2 radiotext is set` |
| RDS.GS | | Group sequence, separated by comma |
| RDS.LONG_PS | alphanumeric (32 bytes max) | Long PS text |
| *PSN/EON commands* | | |
| RDS.PSN | From 0 to 9 | Sets the PSN number for which the following commands will be applied. 0 applies the commands on the main PSN.<br>It this command is not sent, or if the work DSN is modified, the PSN/EON commands are applied to the main PSN.<br>Ex:<br>`RDS.PSN=3 → the work PSN is PSN 3 (on the work DSN)`<br>`RDS.PSN=3 → encoder response`<br>`RDS.AF=89.7;101.6;98 → AF are et for PSN 3` |
| RDS.PI | hexadecimal | PI code |
| RDS.PS | alphanumeric | PS code |
| RDS.TA | 0 or 1 | Enables (1) / disables (0) the TA |
| RDS.TP | 0 or 1 | Enables (1) / disables (0) the TP |
| RDS.PTY | From 1 to 29 | PTY. See Program TYpe table section 4.3 |
| RDS.PTYN | alphanumeric | PTYN |



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<table>
<tr><td>RDS.AF</td><td></td><td>Alternative frequency list. Regional frequencies are in parenthesis. Default unit is the MHz, add ‘k’ for low and medium frequencies (ex: 250k for 250 kHz)<br><br>Method A: list of frequencies separated by semi-colon. Ex: <code>RDS.AF=89.7;101.6;(98)</code><br><br>Method B: each main frequency if followed by its alternative frequencies between brackets, there is a space before each main frequency. Ex:<br><code>RDS.AF=89.7[101.6;88] 89.8[(92);103]</code></td></tr>
<tr><td>EON_ELEMENTS</td><td>hexadecimal from 0 to 7F</td><td>Sent EON data. Each type of information is sent (1) or not (0). The hexadecimal value can be found with the following table:
<table>
<tr><th>Burst 14B</th><th>Usage Broadcaster</th><th>PIN (obso)</th><th>PTY</th><th>Link</th><th>AF</th><th>PS</th><th>Hexa</th></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>10</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>17</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>19</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>23</td></tr>
<tr><td colspan="8">…</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>7F</td></tr>
</table>
Note: DSN and PSN must be set before using this command. The following errors may occur:<br>
• ERRO 1: writing error<br>
• ERRO 2: invalid argument<br>
• ERRO 3: writing error<br>
• ERRO 4: reading error<br>
• ERRO 5 : EON PS does not exist</td></tr>
<tr><td>RDS.EON.DEL</td><td>From 1 to 9</td><td>Deletes an EON PSN from the work DSN index.</td></tr>
<tr><td>RDS.EON.ACTIVE=a,b</td><td>a = from 1 to 9<br><br>b = 0 or 1</td><td>Enables or disables an EON.<br><br>a= EON number<br><br>b=enables (1) or disables (1)</td></tr>
<tr><td>RDS.EON.ADD</td><td>From 1 to 255</td><td>Creates a new EON for the work DSN. Enter the EON number which has to be unique for the encoder.<br><br>When the command is sent, the encoder returns the EON index number.<br><br>Ex:<br><br><code>RDS.EON.ADD=108 → creation of a new EON</code><br><br><code>RDS.EON.ADD=8 → encoder response: PSN #8 has been created</code></td></tr>
<tr><td colspan="3">Radiotext commands</td></tr>
<tr><td>RT_PLUS</td><td>3, 7, 9 to 19, 21 to 27, or 0</td><td>Enables RT+ for the RDS groups which includes it (only for groups 3, 7, 9 to 19, 21 to 27). 0 removes the assigned group.</td></tr>
<tr><td>RT=a,b,c</td><td>a = from 0 to 15<br><br>b = 0 or 1</td><td>Configures the radiotext.<br><br>a=number of transmissions, 0= infinity</td></tr>
</table>



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| | | |
|---|---|---|
| | c = alphanumeric (64 characters max) | b=enables (1) / disables (0) the AB toggle<br>c=radiotext string |
| RDS.RT | alphanumeric (64 characters max) | Dynamically sets the first radiotext. This command does not store the string: it will be lost if the unit restarts. It will not be visible via the distant interface. |
| RDS.RADIOTEXT.TEXT=a,b | a = from 1 to 8<br>b = alphanumeric (64 characters max) | Radiotext string text.<br>a=string number<br>b=radiotext text |
| RDS.RADIOTEXT.NB=a,b | a = from 1 to 8<br>b = from 0 to 15 | Radiotext string text.<br>a=string number<br>b= number of repetitions, 0= infinity |
| RDS.RADIOTEXT.TOGGLE=a,b | a = from 1 to 8<br>b = 0 or 1 | Radiotext string text.<br>a=string number<br>b=enables (1) or disables (0) the A/B toggle |
| *UECP commands* | | |
| UECP.SITE | hexadecimal | Site address of the unit, max: 3 characters |
| UECP.ENCODER | hexadecimal | Encoder address of the unit, max: 2 characters. |
| UECP.LEGACY | 0 or 1 | Enables (1) or disables (0) UECP standard v.7.0.5 compatibility |
| UECP.UDP1.PORT<br>UECP.UDP2.PORT | integer | Port for UECP commands |
| UECP.UDP1.MODE<br>UECP.UDP2.MODE | UNI / BIREQ / BI | UECP mode, one-way, bidirectional requested or spontaneous |
| UECP.UDP1.TIMEOUT<br>UECP.UDP2.TIMEOUT | From 1 to 254 / OFF | Timeout before alarm |
| UECP.SQC.ENABLE | 0 or 1 | Enables (1) or disables (0) SQC management in UECP |
| UECP.TCP1.PORT<br>UECP.TCP2.PORT | xxx.xxx.xxx.xxx | Port for UECP commands |
| UECP.TCP1.MODE<br>UECP.TCP2.MODE | UNI / BIREQ / BI | UECP mode, one-way, bidirectional requested or spontaneous |
| UECP.TCP1.TIMEOUT<br>UECP.TCP2.TIMEOUT | From 1 to 254 / OFF | Timeout before alarm |
| **Network commands** | | |
| PING | | Tests network access. Respond PONG in case of success |
| IP.ADDR | xxx.xxx.xxx.xxx | AUDEMAT RDS Encoder IP address |
| IP.MASK | xxx.xxx.xxx.xxx | AUDEMAT RDS Encoder network mask |
| IP.GW | xxx.xxx.xxx.xxx | AUDEMAT RDS Encoder gateway |



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| | | |
|---|---|---|
| ASCII.UDP1.PORT<br>ASCII.UDP2.PORT<br>ASCII.UDP3.PORT | from 1 to 65635 | UDP port number |



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| | | |
|---|---|---|
| ASCII.UDP1.MODE<br>ASCII.UDP2.MODE<br>ASCII.UDP3.MODE | OFF / CMD / CONF | UDP port configuration: disabled, command or configuration |
| CONF.APPLY | APPLY | Command to send to apply new network settings.<br>Ex:<br>`IP.ADDR=192.168.0.10` → `changes the unit's address`<br>`IP.ADDR=192.168.0.10` → `encoder response`<br>`CONF.APPLY=APPLY` → `applies the new IP address to the unit` |
| DNS.PRIMARY | xxx.xxx.xxx.xxx | Sets the primary DNS port |
| DNS.SECONDARY | xxx.xxx.xxx.xxx | Sets the secondary DNS port |
| **SNMP commands** | | |
| SNMP.TRAPS | 0 or 1 | Enables (1) or disables (0) SNMP traps |
| SNMP.TRAPS.DEST | xxx.xxx.xxx.xxx | SNMP manager IP address |
| SNMP.COMMUNITY.GET | alphanumeric | SNMP GET community |
| SNMP.COMMUNITY.SET | alphanumeric | SNMP SET community |

## 7.3. Legacy commands

To ensure compatibility with legacy Audemat RDS encoders (FMB80, Digiplexer 2/4 / HQSound Processor), the following commands are also available:

AF=<a1>,<a2>,...<an>
DSN.CURR
LOGOUT
PS_RT_TEXT
PS_TEXT
PTY
QUIT
RT
RT_TEXT
TA



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# APPENDIX A: OPTIONAL INPUT / OUTPUT CONFIGURATION

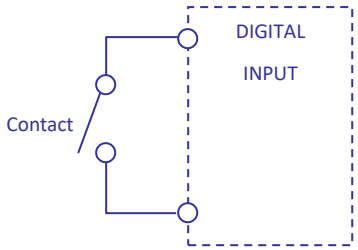
## A.1. Digital inputs

*Please refer to the ScriptEasy manual for more information on I/O management.*

***16 digital inputs can work in 2 different modes depending on jumper configuration:***

- **Schematic diagram:**
  - **'Internal power supply' mode (default mode):**

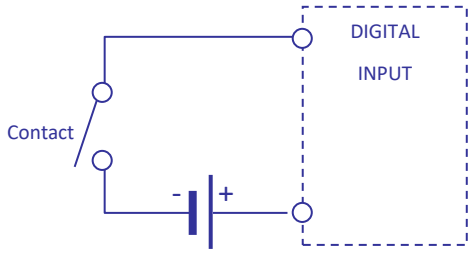
With this mode, all common pins are internally linked to the ground.




When a digital input is connected with the common, this input's value switches to '1'; otherwise it stays on '0'.

  - **'External power supply' mode:**

With this mode, all 'common' pins are linked together but they are no longer connected to the ground. Now, an external power supply is necessary.




An external power supply between 5 and 25 V is applied to the common. If a digital input is connected to the ground, this input's value switches to '1'; otherwise it stays on '0'.



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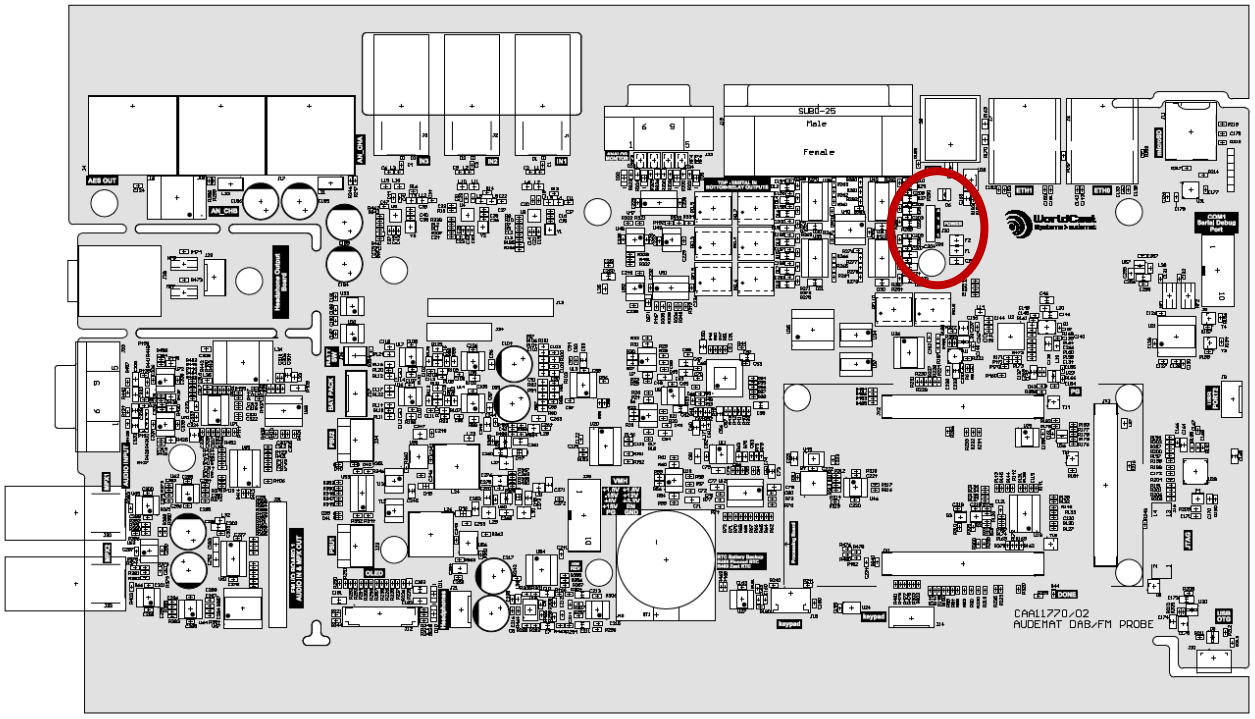
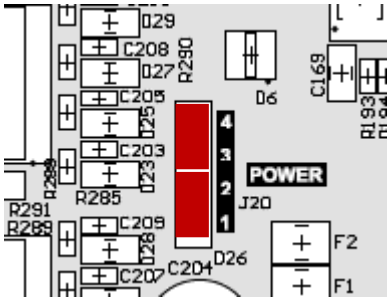
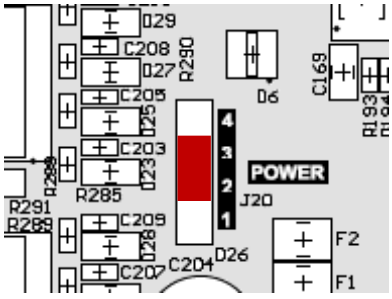
- **Jumper postion:**




In internal power supply mode, 2 jumpers are on 1-2 and 3-4.




In external power supply mode, 1 jumper is in 2-3.



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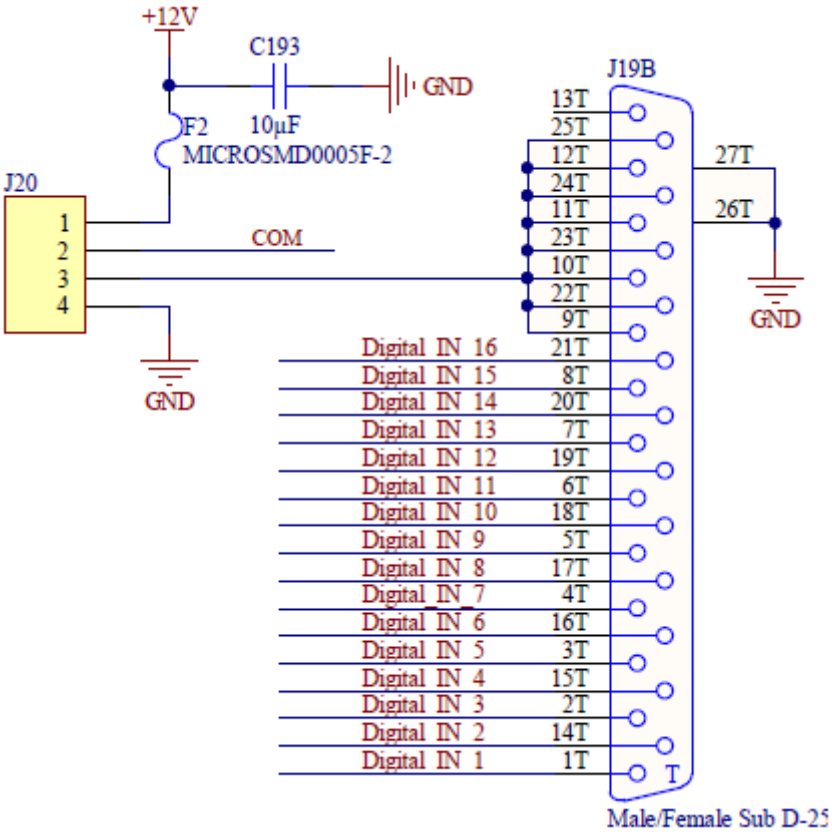
■ **Digital input external connection diagram:**

External connections on SUB-D 25pts female connector.




*When the 'internal power supply' mode is selected, the common ground is also the unit's ground.*



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## A.2. Relay outputs

*Please refer to the ScriptEasy manual for more information on I/O management.*

***8 SPDT relays with one com input (common) and two outputs: NC (normally closed) and NO (normally opened).***

- When the relay is not in use, com is linked to the NC output.
- When the relay is activated, com is linked to the NO output.

*If your unit reboots, com is then linked to the NC output.*

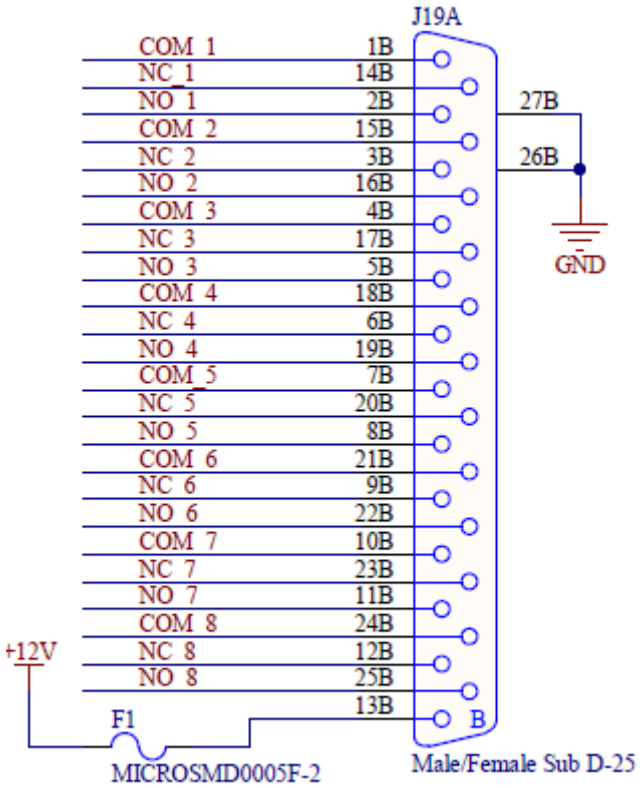
- **Practical examples:**

1. The relay can be used like an on-off switch to make a contact between the common and one of the outputs (NC or NO).
2. It is also possible to connect a power supply to the common (for example the +12 V power supply available on pin 13) and to switch this power supply between the NC and the NO output.

- **Relay output external connection diagram:**

External connections on SUB-D 25pts male connector located at the end of the board.

- Each circuit can support 5 A between -50 V and +50 V.
- A +12 V power supply with a max current of 250 mA is available on pin 13.




*Ground for the 12 V power supply is available on the ground of the unit.*



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