MAINTENANCE AND OPERATION
INSTRUCTION MANUAL

DB35

Compact & Reliable FM Radio Streamer

Publish Date: 14-Sep-2026

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Introduction

DEVA Broadcast Ltd. is an international communications and high-technology manufacturing organization, its corporate headquarters and facility located in Burgas, Bulgaria. The company serves the broadcast and corporate markets worldwide – from consumers and small businesses to the largest global organizations. It is dedicated to the research, design, development and provision of advanced products, systems and services. DEVA launched its own brand back in 1997 and has nowadays evolved to become known as a market leader and internationally reputed manufacturer of user-friendly, cost-effective and innovative broadcast products.

Creativity and innovation are deeply woven into DEVA corporate culture. Through successful engineering, marketing and management our team of dedicated professionals creates future-oriented solutions to improve customers' performance. You may rely that all issues communicated to our crew would be addressed accordingly. We pride ourselves on our pre and post-sales support and purchase services, which along with the outstanding quality of our radio gear have won us due respect and the market authority position.

DEVA best-of-breed solutions have become the best sellers for our partners. The strategic partnerships which have been formed with industry leaders during all these years that we have been operating on the broadcasting market, have proved us a reliable business partner and a valuable asset, as our dealers worldwide would confirm. In constant pursuit of precision and long-term satisfaction, DEVA enhances the reputation of our partners and clients alike. Furthermore, we have already a proven merit as a credible partner provider.

Our portfolio offers complete line of high quality and competitive products for FM and Digital Radio, Radio Networks, Telecommunication Operators and regulation authorities. For almost two decades of intensive software and hardware development, we have achieved a unique price-performance and endurance of our product lines. Our company's multitude of equipment and services is in line with the latest technologies and key trends. The most recognizable characteristics attributed to DEVA products are their clear-cut, streamlined design, easiness of use and cost-effectiveness: simplicity of forms but multiplicity of functions.

For us there is no stage when we deem that we have reached the most satisfactory level in our work. Our engineers are in constant pursuit of new ideas and technologies to be captured in DEVA solutions. Simultaneously, a strict control is being exercised at each step of any new development. Experience and hard work are our fundament but the continuous improving process is what we never leave aside. DEVA participates on a regular basis in all landmark broadcasting events, not only to promote its products, but to exchange valuable know-how and experience. We are also engaged in international large-scale projects involving radio and audio solutions which makes us even more competitive on the global market.

All DEVA products are developed and produced in accordance with the latest ISO 9001 quality control standards.

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Typographic conventions

The following table describes important conventions used in the manual.

Convention and Style	Description	Examples
Menu > Sub Menu > Menu Command	A menu item(s) and menu command that you need to click in sequence	Click ***Settings > General***
[Button]	Interface Interactive buttons	Press [OK] to save the changes
NOTE	Important notes and recommendations	**NOTE:** The notification will appear only once
"Reference Name" on Page XXX	References and links	refer to "New Connection" (see "Monitoring" on page 56)
`Example`	Used when example text is cited	Example for E-mail Notification: `Date: 04 Nov 2013, 07:31:11`

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General Information

Fully in keeping with the high standards of the DEVA product range, the DB35 model is the very definition of reliable, high-quality streaming of the FM signal. Additionally there is an Analog AUX Input suitable for local audio monitoring. With a compact and practical, but quite elegant design, this product has been developed with the express purpose of allowing users to listen to and record the audio from any station. It also incorporates a variety of features providing accurate and dependable monitoring and measuring of signal parameters, including the RF level, Left & Right audio levels.

The DB35 boasts a fully DSP-based core and guarantees round-the-clock operation. Crucially, this product provides an analog input, which allows you to perform not only remote, but also local audio monitoring. Upon demodulation of the FM signal, the RF signal is digitalized by the SDR FM tuner and all signal processing is achieved through calculations. The precision of this tool's digital filters means that the FM signal's Audio components can be accurately and repeatedly reproduced from one device to another, i.e. the same signal applied to two devices would give the same result. All measurement can be refreshed simultaneously and synchronously so that detailed readings of the FM Audio signal components can be obtained.

The DB35 supports TCP/IP connectivity for easy control and setup, also allowing you to monitor the channel status.

The DB35 model provides an RDS/RBDS decoder with BER meter, as well as adjustable alarms for RF Level, Left & Right Audio, Pilot Presence, RDS PI and RDS Groups via email and SNMP, while the WEB interface makes for easy management of your unit.

The DB35 brings you the customary DEVA dependability and quality. Coupled with an affordable price, all its features contrive to produce an impeccable streaming performance.

Product Features

- Real Time Audio Program Streaming
- FM Band 65 ÷ 108 MHz support
- Analog AUX In for local monitoring
- Up to 32 channels Round-Robin monitoring
- Fully DSP based core
- Selectable De-emphasis – 50µs and 75µs
- Built-in Stereo Decoder; Stereo Presence Detection
- Date & Time Settings with various formats
- LAN port for full TCP/IP remote control and monitoring
- Up to 90dBµV direct RF Antenna Input
- Adjustable alarms for RF Level, Pilot Presence and RDS PI
- Firmware update for future-proof operation
- Parameters Factory Restore Option
- LEFT and RIGHT demodulated audio level meters and Alarms
- Headphones audio output
- RDS and RBDS decoder with BER meter
- Alarm dispatch via E-mail and SNMP
- Attractive price and very good price-performance ratio
- Very Intuitive Embedded WEB server for interactive supervision
- Proved and reliable hardware for 24/7/365 operating
- Easy Installation and Setup
- SNTP for automatic synchronization of the built-in clock
- Compact and Robust Aluminum Case for high RF immunity

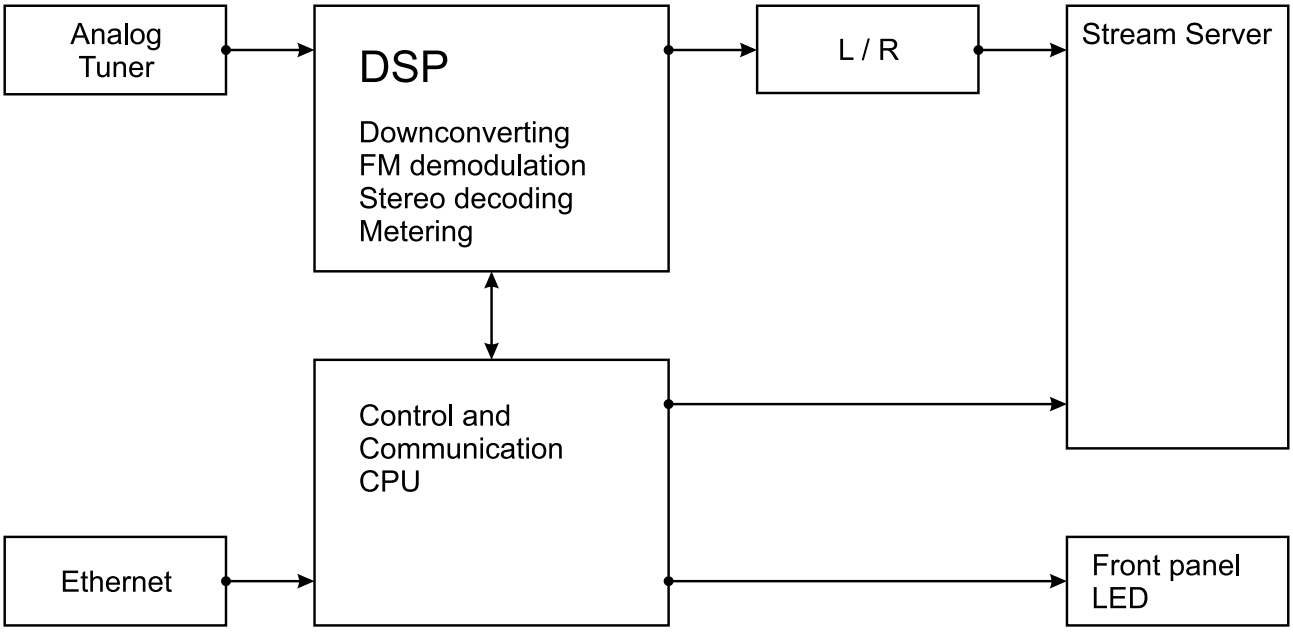
TECHNICAL SPECIFICATIONS

RF INPUT	
Tuning Range	User selectable, 87.1-107.9 MHz (CCIR), 65-74 MHz (OIRT), 76-95 MHz (Japan)
Tuning Step	10, 20, 50, 100 kHz
Tuner Sensitivity	30 dBµV
Antenna Port	BNC Connector, 50Ω
Internal Attenuator	0, 10, 20 and 30 dB
Dynamic range	100 dB
FM DEMOD	
IF Filter Bandwidth	15 Increments (25kHz - 157kHz, Auto)
Dynamic range	90 dB
STEREO DECODER	
Frequency Response (L and R)	±0.1 dB, 10 Hz to 15 kHz
SNR (Stereo)	60 dB, 50 µs de-emphasis
THD	0.1%, 10 Hz to 15 kHz, 50 µs de-emphasis
Separation	50 dB, 50 Hz to 10 kHz, 50 µs de-emphasis
Crosstalk	52 dB
RDS DECODER	
Standards	European RDS CENELEC; United States RBDS NRSC
Error Correction & Counting	Yes
AF Decoding	Yes
CT (Time/Date)	Yes
PI, PTY, DI, MS	Yes
TA/TP	Yes
RT (Radio Text), RT+	Yes
PS (Program Service name)	Yes
ODA	Yes
Group Analyzer	Yes
BER Analyzer	Yes
Group Sequence Display	Yes
ANALOG AUDIO INPUT	
Connector	2 x RCA, stereo
Type	Unbalanced
Level	+6 dBu (max. +8dBu)
Sample rate	96 kHz; Build-in sample rate converter used to produce lower sample rates
Dynamic range	102 dB

METERING ACCURACY	
RF Level	±1 dB, 0 to 100 dBµV
Multipath	0 to 100%; accuracy - ±1%
Audio Level	±1 dB, +10.0 to -55.0 dB, 0.1 dB resolution
USER INTERFACE	
Web interface	Full monitoring and control; Interactive and easy to use
Indicators	3 LEDs (on front panel)
OUTPUTS	
Audio stream	Icecast/Shoutcast compatible audio stream
Alarms	E-mail, SNMP
Headphone	1/8” (3.5mm) Phone Jack
COMMUNICATION INTERFACES	
Ethernet 10/100 Base-T	RJ45 Connector
GSM Modem	15 pin Male D-Sub Connector
MEASUREMENT STORAGE	
Storage	16GB Build-in Memory Card
Data format	Text, CSV
OPERATING CONDITIONS	
Temperature	-15°C to 55°C
Humidity	< 95%, non-condensing
Altitude	0 to 5000m above sea level
EMC Immunity	6V/m
POWER	
Voltage	External, 12V/1A
Power Consumption	12VA
Connector	Power Jack 5.5mm
SIZE AND WEIGHT	
Dimensions (W;H;D)	125 x 31 x 160 mm
Shipping Weight	270 x 54 x 230 mm / 1.1kg

BLOCK DIAGRAM

A simplified block diagram of DB35 is shown below



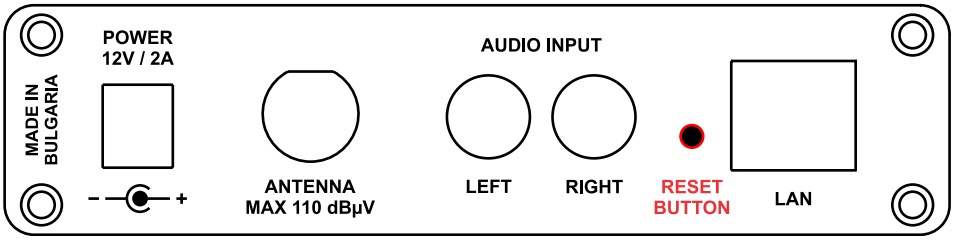
Because of the all-digital, minimalist-discrete-component nature of device circuitry, we have not provided schematic diagrams of the DB35 in this Manual. Please, note that:

**NO USER-SERVICEABLE COMPONENTS INSIDE.
REFER ALL SERVICING TO
QUALIFIED TECHNICAL PERSONNEL.**

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Factory Default Settings

HOW TO RESET THE DB35 TO ITS FACTORY DEFAULTS WITHOUT HAVING ACCESS TO THE WEB INTERFACE?



1. Disconnect the power supply cable from the unit.
2. Find the RESET button on Rear panel (labeled in red on the picture), press and hold it.
3. While pressing the RESET button, connect the power supply cable to the unit and wait until the POWER led starts blinking.
4. Release the RESET button and wait for the DB35 to reboot.
5. Once the reboot is complete, the DB35 will be returned to its factory default settings.

Safety Warning

ALWAYS OBSERVE THE SAFETY PRECAUTIONS.

Careful observance of the safety precautions will help prevent physical injury, damage of the equipment, and extend the equipment life.

- The servicing of electronic equipment should be performed only by qualified personnel;
- Before removing the covers the unit must be switched off and the mains cable unplugged;
- When the equipment is open, the power supply capacitors should be discharged using a suitable resistor;
- Never touch the wires or the electrical circuits;
- Use insulated tools only;
- Never touch the metal semiconductor. They might carry high voltages;
- For removing and installing electronic components, follow the recommendations for handling MOS components.
- Do not remove the factory sticker from the equipment. It contains information as regards the name, serial number and MAC address of the device.
- To join the equipment to the mains supply, use the power cord purchased with the equipment.

ATTENTION: The device has an internal Lithium battery for RTC timekeeping. Do not try to re-charge this battery!

NOTE: A depleted RTC battery may cause the device to start with an incorrect or random time and date. For the RTC battery replacement procedure, refer to APPENDIX "Battery Replacement Procedure" on page 39.

Getting Started

In order for the normal operation of the DB35 to be guaranteed, you will need fulfill the following conditions:

1. Standard Ethernet 10/100M connection;
2. Correctly assigned Network configuration and device settings.

To make sure that all the conditions are fulfilled please, follow the instructions below.

CONNECTION

1. Install the unit on its operation place;
2. Using the provided power cable, connect the unit to the power supply network;
3. Connect the antenna cable to the RF antenna input connector located on the rear panel of the device;
4. Connect the DB35 to the TCP/IP network using direct network cable;
5. **IF GSM OPTION IS SUPPORTED** - Using the connection cable provided, connect the optional GSM modem. In order for better GSM network coverage to be achieved, please select proper place for the GSM antenna.

NOTE: The GSM antenna must be installed far enough from the monitoring devices. The GSM modem radiates RF signal that may cause spurious emissions that will may interfere with the accuracy of the measurements.

NETWORK SETTINGS

After connecting the network cable the Led 'LAN' located on the rear panel must be ON or flashing. The next and most important step for configuration is the adjustment procedure of the Network Communication. The settings shown below are Default Network Settings:

DHCP	Enabled
IP	Assigned by DHCP
Mask	Assigned by DHCP
Gateway	Assigned by DHCP
DNS	Assigned by DHCP
HTTP Port	80

NETWORK DISCOVERY

This is a network setting that defines whether your computer can see (find) other computers and devices on the network and whether other computers on the network can see your computer. By default, Windows Firewall blocks network discovery but you can enable it.

1. Open Advanced sharing settings by clicking the Start button, and then on "Control Panel". In the search box, type "network", click "Network and Sharing Center", and then, in the left pane click "Change advanced sharing settings";
2. Select your current network profile;
3. Click "Turn on network discovery", and then click save changes.

NOTE: If you're prompted for an administrator password or confirmation, type the password, provide confirmation or contact your system administrator.

If you have already enabled this function on your computer DB35 will be automatically added to the Device list section. The device will be ready for usage and no additional adjustments will be required except user name and password.

NOTE: If the port is different than the default one (80), it is necessary to specify it, for example: `http://192.168.1.2:9000`

ATTENTION: Depending on Internet Protocol Settings, the assigned IP address may not be visible outside your local network, thus the device may be accessed only within that network. Consult with your network administrator for the appropriate IP settings.

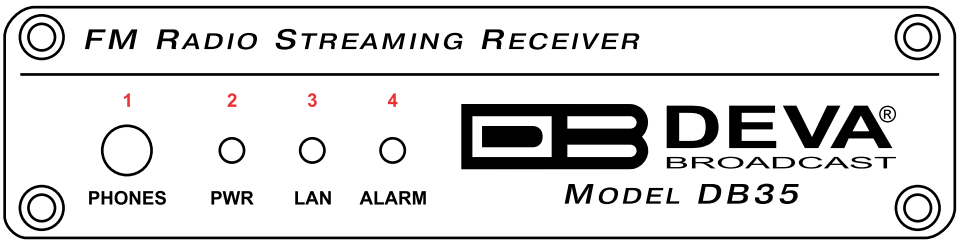
NETWORK SECURITY RECOMMENDATIONS

1. It is not recommended the DB35 to be directly connected to the Internet. This may lead to unregulated access and/or problematic operation of the device. To ensure secure connection, we recommend the device to be installed behind a router with an active firewall.
2. If remote access to the device is needed, we recommend using VPN to the router or the port of the relevant service (WEB, SNMP, Application, etc.) to be properly NAT forwarded.
3. If NAT forward is used, it is highly recommended random ports of your choice to be used. Not the standard ones (80 for WEB, 161 for SNMP, etc.).
4. Using DMZ connection is not recommended.
5. Make sure to change the standard access credentials (usernames and passwords, SNMP communities).

For detailed information as regards the recommendations listed above or need of further instructions, please contact your network administrator.

Panel Indicators and Appointments

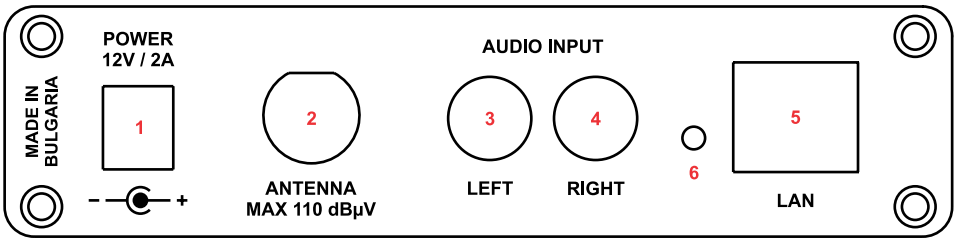
FRONT PANEL



1 - Phones Output - Audio signal from the tuned frequency.
2 - Power LED Indicator
3 - LAN LED Indicator. This LED can be in one of the following states:
Off - No User Connected, Logger is active;
Blinking – User is connected, Logger is inactive;
4 - ALARM LED Indicator. This LED can in one of the following states:
Off - no active alarm
On - at least on alarm is active

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REAR PANEL



1 - Power Supply (12V, 2A);
2 - Antenna Input - BNC connector for FM Antenna;
3 - AUX Audio Input LEFT channel - standard RCA female jack;
4 - AUX Audio Input RIGHT channel - standard RCA female jack;
5 - LAN Port / Internet Input – standard RJ-45 port;
6 - Factory Defaults reset button

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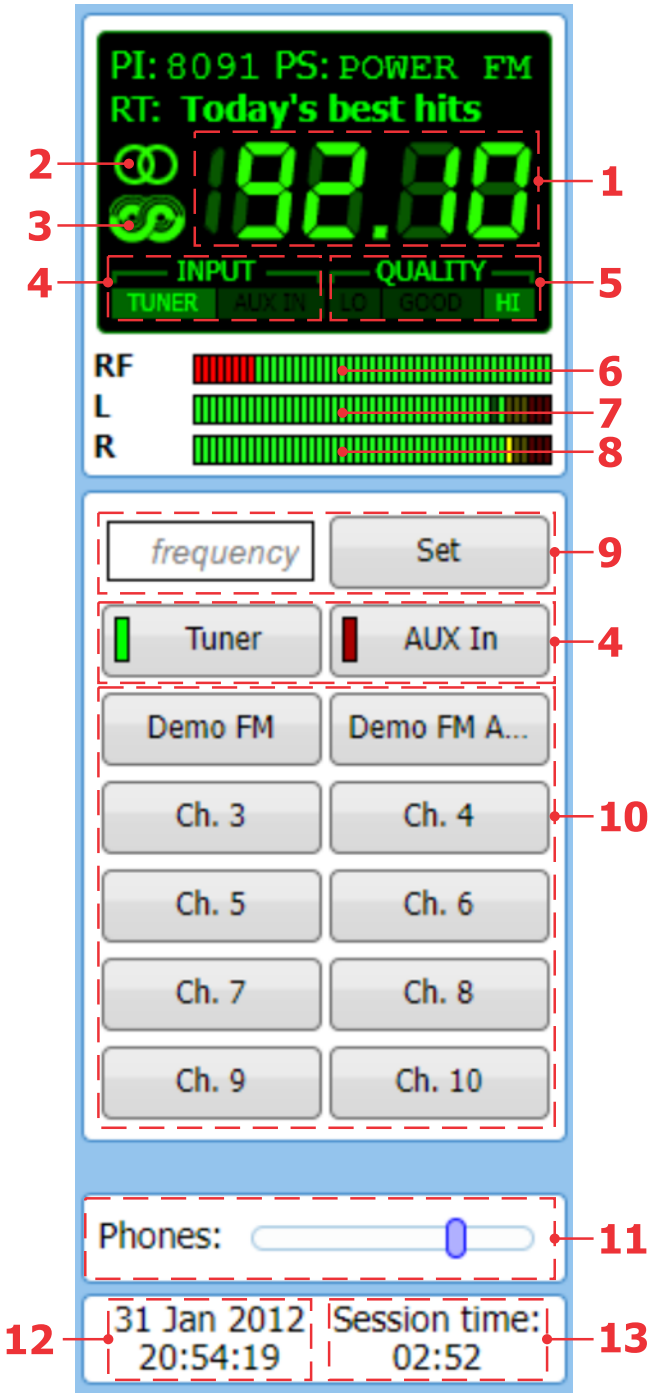
WEB Interface menu pages

DEVICE CONTROL INTERFACE

The WEB Interface is visually divided into two sections Left and Right.

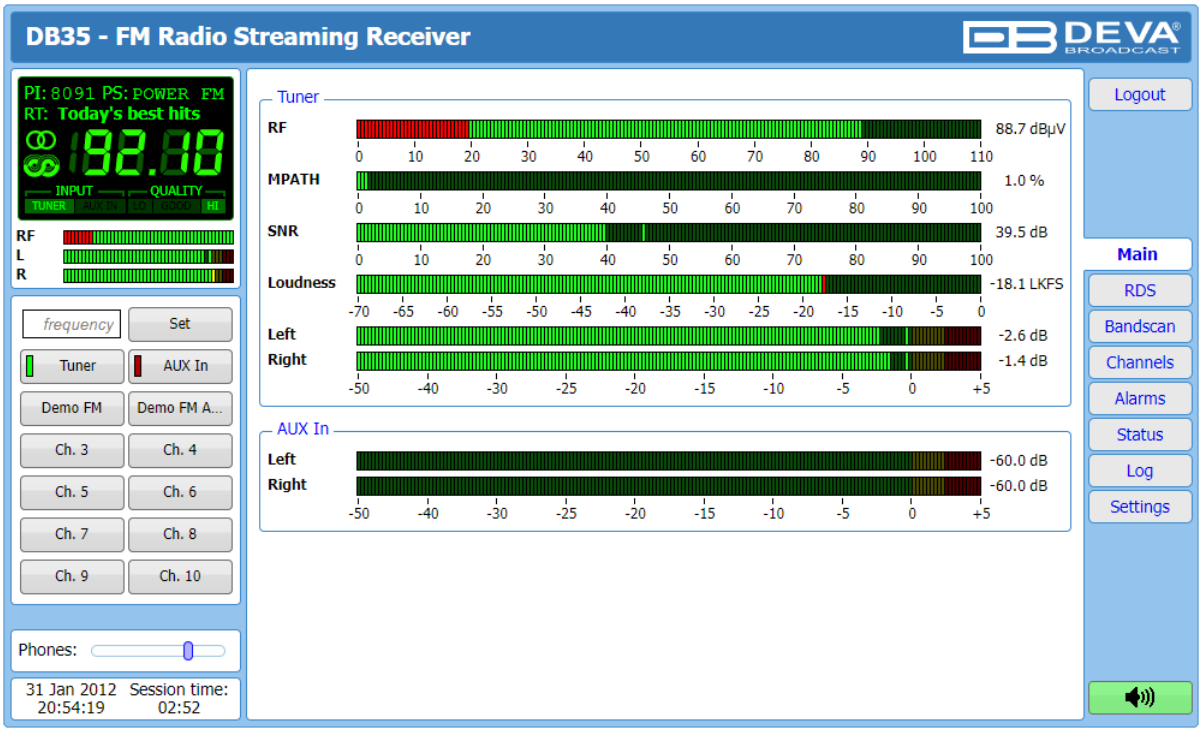
- On the Right are the specific contextual readings of the currently selected menu page.
- On the Left is the so called "dashboard" of the device - General Tuner and Channel readings, functional buttons. This section of the WEB interface is constant part of each screen, hence allowing immediate tuner interactions.

DB35 "dashboard" content:



1. Frequency indicator showing currently tuned frequency;
2. Stereo indicator;
3. RDS/RBDS presence indicator;
4. Input indicator - FM Radio Tuner or Analog AUX Input;
5. Signal Quality indicator;
6. RF Level indicator. The red zone (low level) indicates low RF level;
7. Current input Audio LEFT level indicator;
8. Current input Audio RIGHT level indicator;
9. Frequency set buttons;
10. Channel Preset Buttons – when one of the buttons is pressed, the Tuner will be set to the predefined frequency.
11. Headphones Audio level control
12. Device Time;
13. Session remaining time;

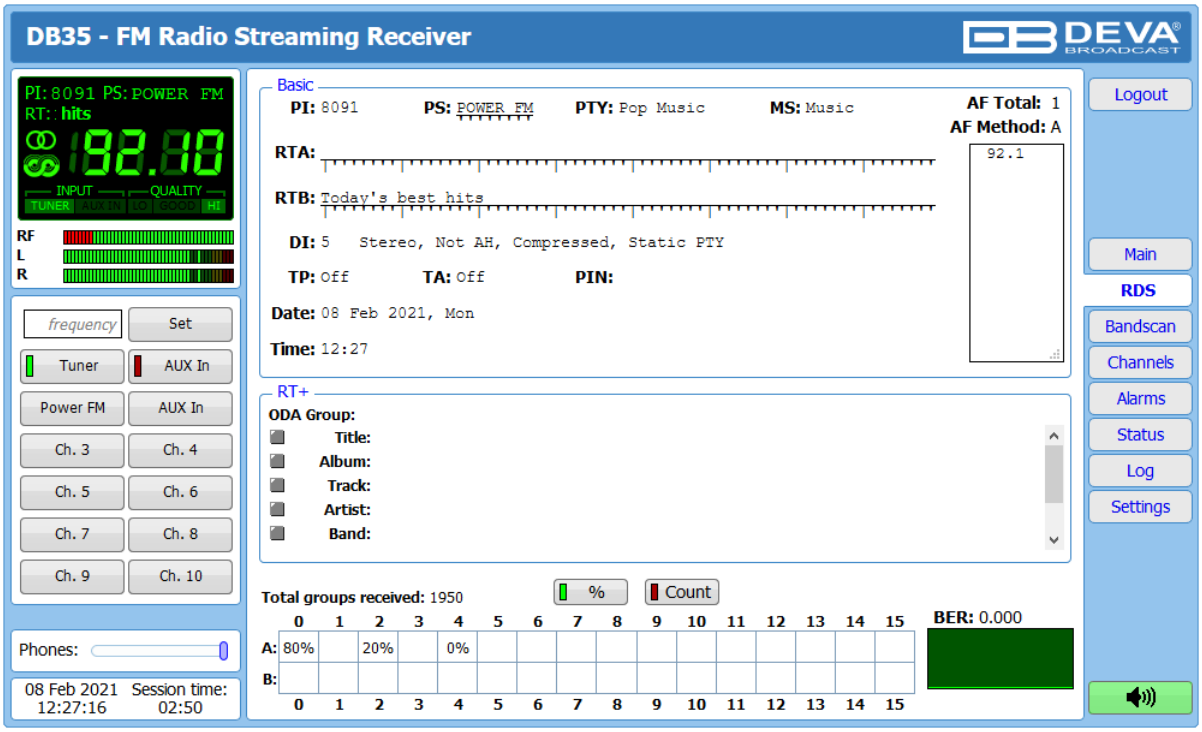
MAIN



The Main Screen of the WEB Interface shows all the mandatory parameters represented as LED readings. You can easily select the preferred audio frequency by using the selection buttons, placed on the left part of the screen. All station presets are defined by the user.

[Listen] button – used to Play/Stop the current audio stream (an audio device will be required).

RDS



One of our core competencies lies in the RDS/RBDS. The RDS/RBDS page is very comprehensive, with a display of the RadioText (RTA and RTB), basic RDS/RBDS fields and a table of all decoded RDS/RBDS groups with a percentage measurement based on the overall RDS/RBDS data stream or group count. A very useful graph on this display is the rolling RDS/RBDS bit error rate (BER) display.

Total groups received indicator – all received groups are systematized into a table, representing the percentage/quantity of the groups in the received RDS/RBDS signal. The user selects how the "Total groups received" data should be displayed: as Percents [%] or [Count], by selecting the corresponding button.

NOTE: The bit error rate or bit error ratio (BER) is the number of bit errors divided by the total number of transferred bits during a studied time interval. Result closer or equal to 0 indicates that no bit errors are detected and vice versa result closer or equal to 1 indicates that the received transferred bits are only errors.

Basic RDS

PI/CALL (Program Identification) – The PI code is your station's 'digital address'. It is a hexadecimal code that is assigned by an appropriate broadcasting authority in most countries, but in the United States the PI code is numerically calculated from the station's call sign. We have provided a calculator utility within the DB35. An in-depth discussion of the mathematical calculation is given in RDS/RBDS Standard.;

PS (Program Service Name) – This is the station's "street name" that will appear on the receiver faceplate display. The PS can be up to eight characters in length (including spaces) and can be as simple as the station's call letters: `KWOW` or `KWOW FM`, or a slogan: `NEWSTALK` or `LIVE 95`.

PTY (Program Type) – The PTY data flag identifies the station format from a pre-defined categories. Many RDS receivers are able to seek the listener's preferred format automatically. This means that a car radio can switch from a fading station to a stronger one that carries the same variety of music, though not the very same program, as provided by AF switching. The PTY

function of RDS helps a broadcaster catch 'transient audience' share. The PTY code is not meant to change from song to song or to accommodate a top-of-the-hour newscast, however.

MS (Music/Speech Switch) – This flag simply indicates whether music or speech is the primary broadcast programming.

RT (Radio Text) – This is a 64-character block of plain text that the listener can select for visual display on the faceplate of the radio by pressing an INFO button on the receiver. This function is not available on many automobile radios for safety reasons, which has precipitated the frowned-upon practice of scrolling the PS field instead. The Radio Text can announce song titles and performers, run special promotions or contests, or broadcast sponsors' messages.

DI (Decoder Information) – This is one of several 'flags' that convey yes/no or other very basic data. This particular flag tells the receiver whether the broadcast is monaural, or is being transmitted in any of several methods of stereo or binaural broadcasting.

TP (Traffic Program Identification) – The TP flag identifies the station as one that routinely broadcasts traffic bulletins for motorists as part of its normal, everyday programming. When the TP flag is displayed on the receiver faceplate, the radio is searching for traffic announcements. The radio keeps track of TP stations offering this service to speed up the search-and-switch process.

TA (Traffic Announcement) – This is a temporary flag added to the RDS data stream only when a traffic bulletin is being aired. Some RDS car radios can be set to search for traffic bulletins among various TP stations while tuned to a listener's preferred program, or even while playing a tape or CD. As soon as any TP station broadcasts a traffic bulletin, the receiver temporarily switches-over to receive it. When the bulletin is finished, the receiver switches back to the original program, tape or CD.

List of Alternative Frequencies – A network broadcaster, or one with low-power rebroadcast transmitters (translators) to fill holes in his coverage area, can include a list of all frequencies where the identical program can be heard simultaneously. The RDS receiver (particularly the upscale car radio) constantly searches for the best signal that carries the very same program. When a better signal is found, the radio re-tunes with no noticeable interruption. The principal utility of this RDS function is with European radio networks and US stations with 'translators.'

PIN - Program Item Number: The code enables the designed to use this feature receivers and recorders to respond to the preselected by the user program item(s).This feature is used via scheduled program time, to which in order to avoid ambiguity is added the day of the month.

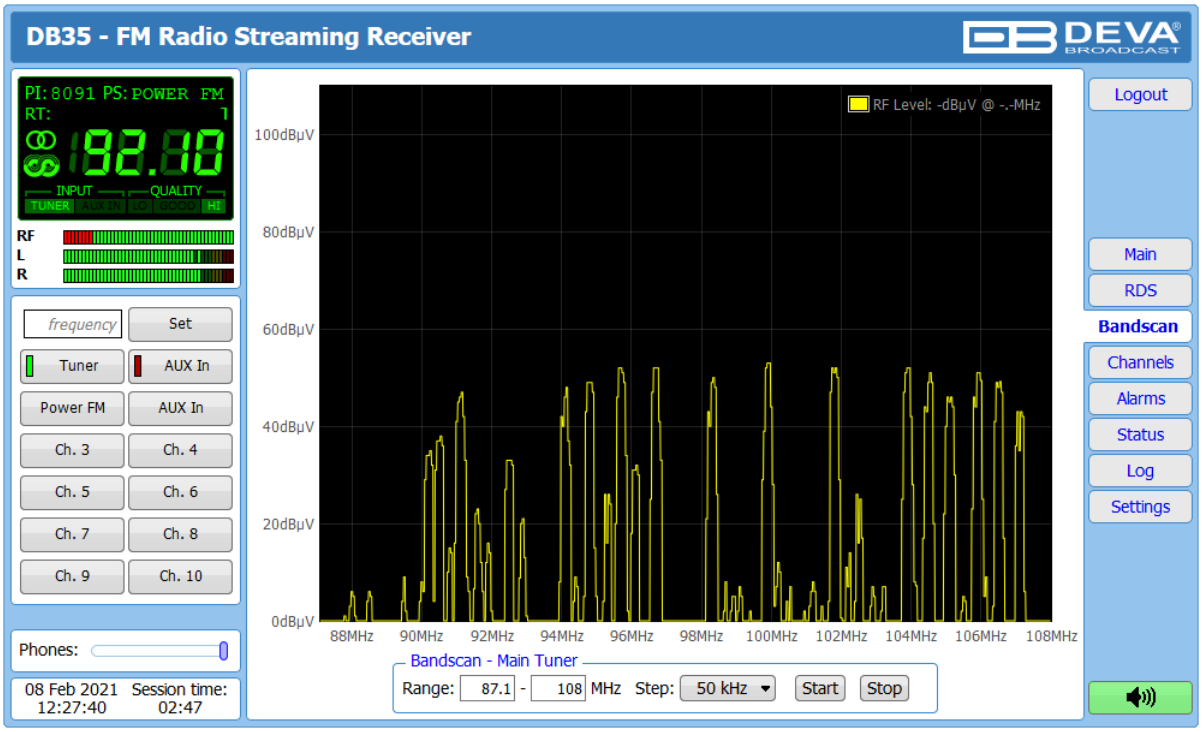
Date and Time – Decoded CT information.

Radio Text +

RadioText Plus is “semantic analogue radio”. It allows the RDS feature RadioText (RT) to be read by the FM RDS receiving terminals. Based on the RDS RT messages, RT+ is completely backwards compatible with RT. The usage of RT+ allows the listener/user to derive additional benefits from the RDS Radio Text service. It enables FM RDS receivers to “read” Radio Text (to recognize designated objects and make them manageable) by user’s direct access to specific elements of the Radio Text messages. For example, that element could be programme associated metadata like Title and Artist of the currently playing song or a news headlines. This provides the listener with an “mp3-player feeling” while listening to analogue FM radio. The elements can also carry additional service messages or information about the Radio Station such as the telephone number or the web address of the Radio Station’s hotline. These objects, or more accurately RT+ information elements carried in the RDS RadioText (RT) messages, are identified by their location within the RT messages and by the class code of their content type. Once an information element is received and understood, a receiver is able to, for example, store the different RT+ information elements and the listener may then select and request a specific content type from the radio’s memory at an instant in time that suits the listener’s needs. Thus the listener is no longer forced to watch the RT information passing (scrolling) by. Moreover, RT+ offers selected RT message elements to car drivers on a static display, without risk of distracting the attention of the driver. Furthermore, RT+ is well suited for mobile phones with built-in FM receivers: telephone numbers can be directly used to initiate calls, and web addresses can be used to start browsing the web content offered by the radio programme provider. Last but not least, RT+ is also used for satellite radio broadcasting via DVB-S. It may be adopted by DRM and DAB in the future, too.

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BAND SCAN



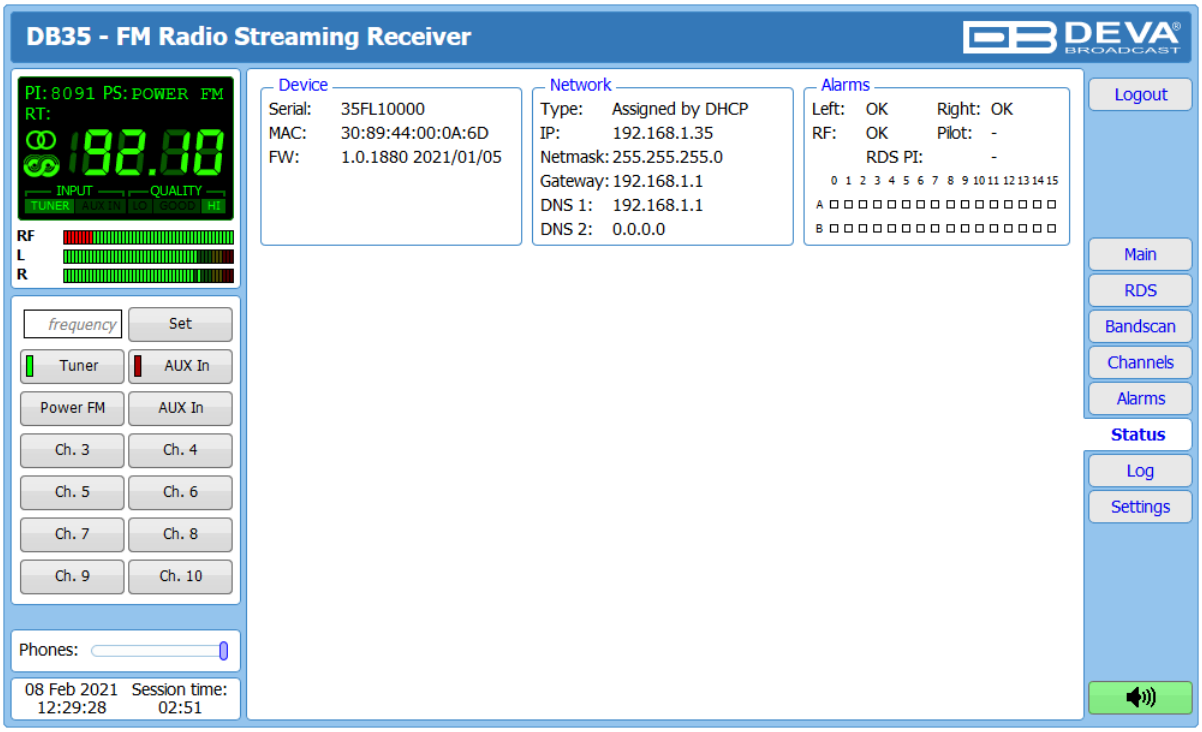
This Screen evaluates FM broadcast band congestion by sweeping the tuner across the FM band, logging every carrier and generating a spectrum display of carrier level vs. frequency.

The Bandscan application utilizes four different types of Bandscan, depending on the preferred signal frequency step. The bandscanning mode could be customized by setting low and high frequency limits of the scan. Once you have set the frequency step and low/high frequencies, the start button should be pressed in order for the Bandscan process to be initiated. The current scan could be stopped at any time by pressing the [Stop] button.

To evaluate the RF level of the specified frequency, move the vertical marker along the horizontal scale. The Values at the cross-point will be shown at the top right corner of the graph.

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STATUS



The status tab shows the alarm status of each parameter of the preset frequencies, along with the basic device and network status (IP address, MAC, etc.).

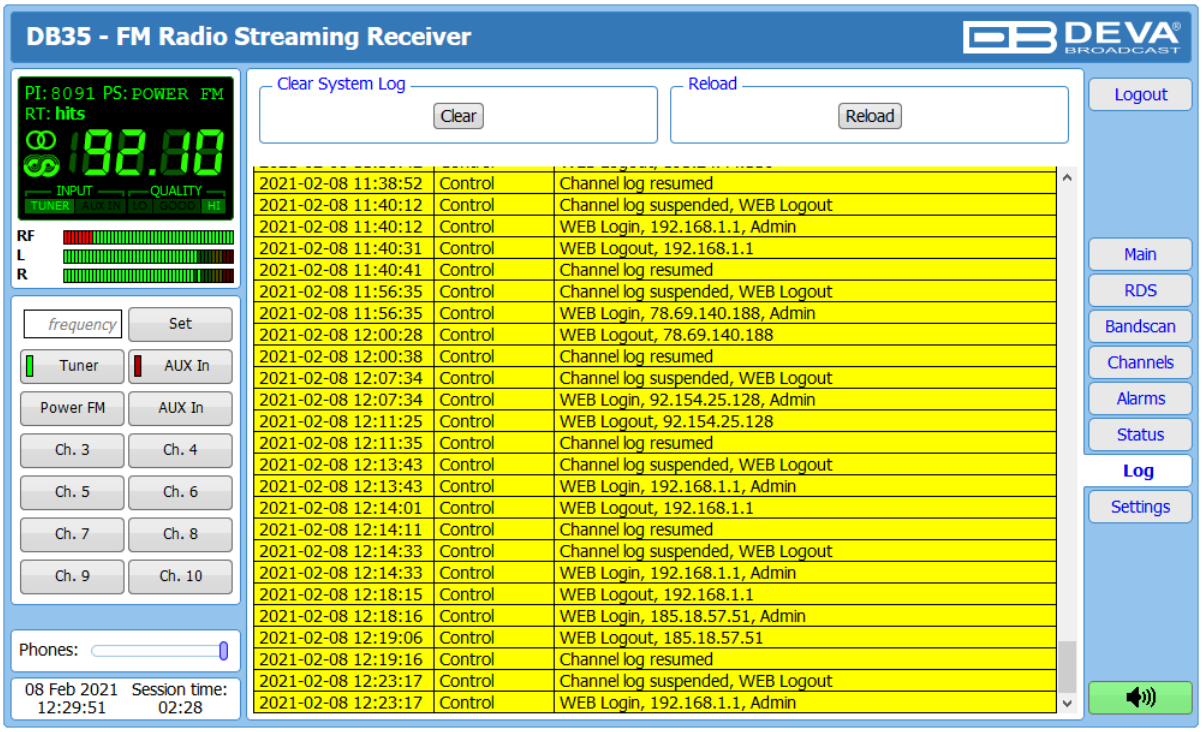
The RF Signal parameter Alarms have several states:

- In range - green OK;
- Out of range - red LOW, HIGH or LOSS;
- Signal monitoring is not enabled - n/a.

The status of the RDS/RBDS Groups Alarm is displayed on the bottom of the Alarms section:

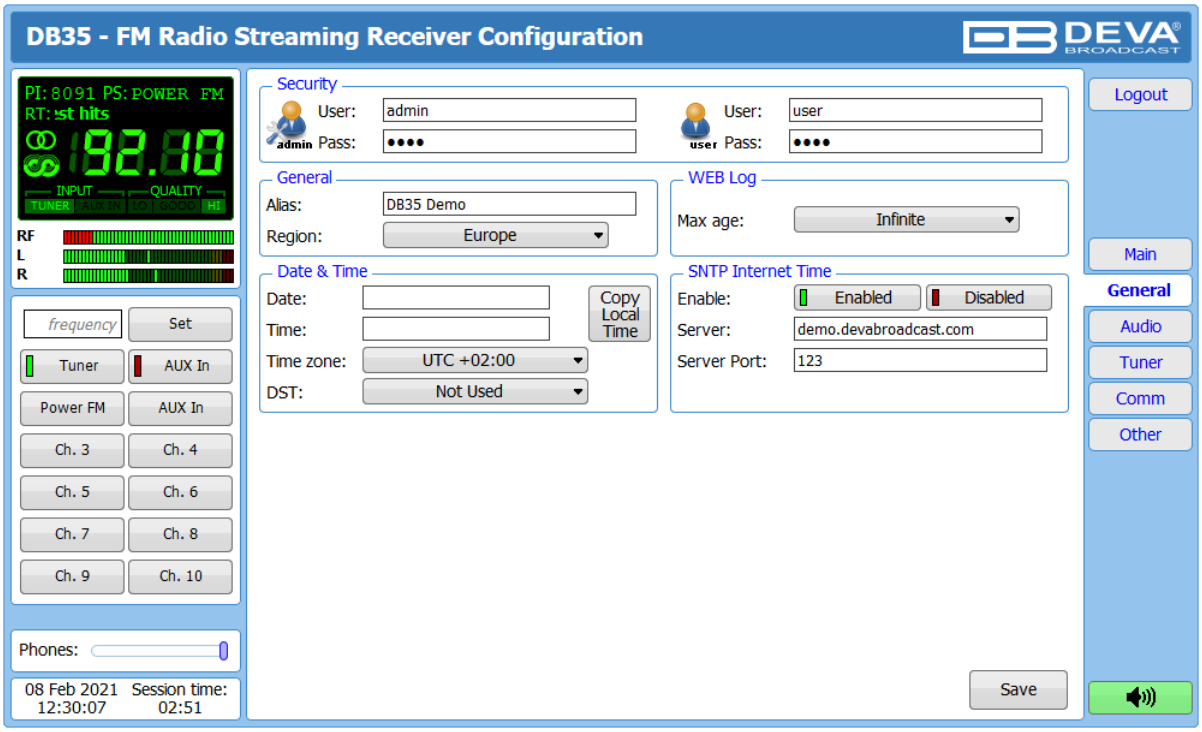
- Green - RDS/RBDS Group is received;
- Red - RDS/RBDS Group is not received and an alarm has been triggered;
- White (blank) - RDS/RBDS Group is not received and no alarm has been triggered.

LOG



Here are listed all the Device System Events. The local measurements and logs are saved in the internal device memory. All log files can be downloaded via the built-in FTP server. For information on how the connection between the DB35 and an FTP Client should be configured, please refer to “Download files via FTP” on page 37.

GENERAL SETTINGS



DB35 provides you with protected access to the device settings. You can choose between two types of log in.

- As an Administrator – It will give you full control over the settings of the device;
- As a User – that will allow you to just monitor the device and to choose different stations, while the Settings bar remains locked.

In order for the security of DB35 to be enhanced, a new **username** and **password** could be set from the Security section. By choice, you can change the name of the device (General section). Later on, it will be used as a title name for all WEB pages. Customizing the name will make the device more recognizable.

WEB Log – the maximum storage time of the System Log file is chosen from here. If the file is older than the specified maximum will be deleted.

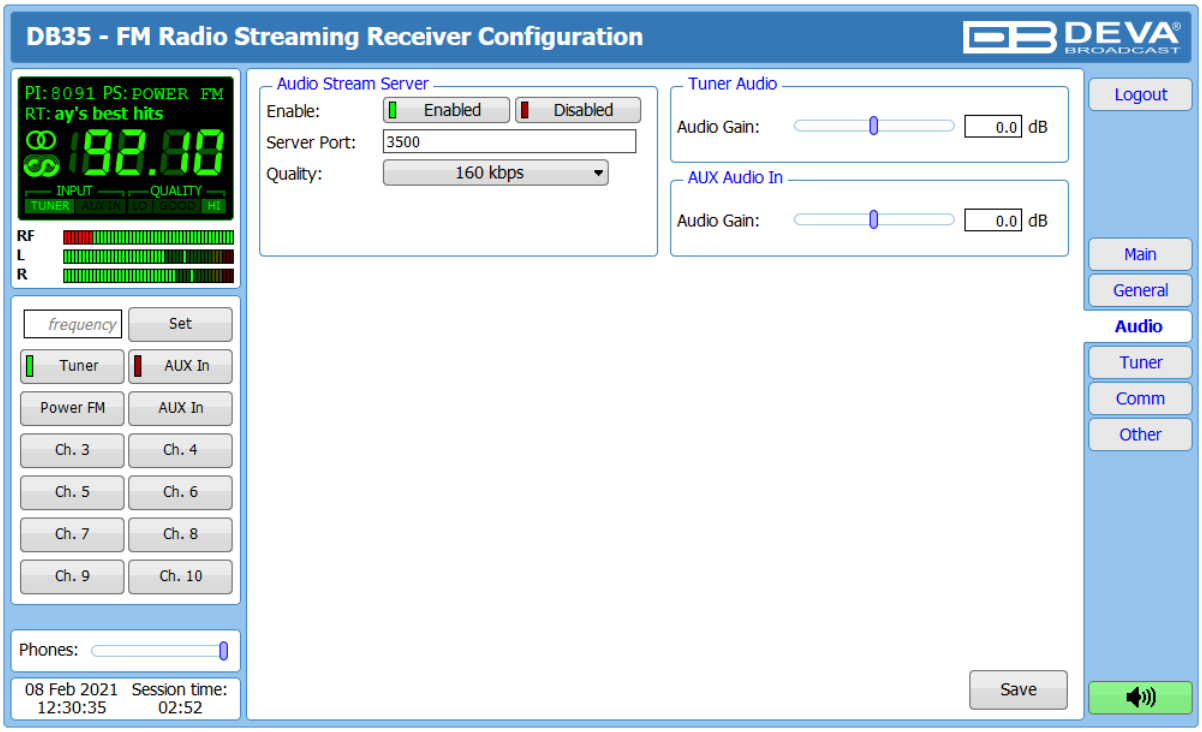
Date & Time – used for manually set the current Date and Time. [Copy Local Time] button will set the Date and Time to correspond to that of your computer.

SNTP Internet Time – Synchronizes automatically the DB35 clock to a millisecond with the Internet time server. Enable this function in order to use it. (Specifying the server closest to your location will improve the accuracy).

NOTE: In order for the applied settings to be used press the [Save] button, placed on the bottom right part of the screen.

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AUDIO SETTINGS



Audio Stream Settings

Enable – Enable/Disable the audio stream sever
Server Port – Audio stream server TCP port
Quality – Audio stream quality

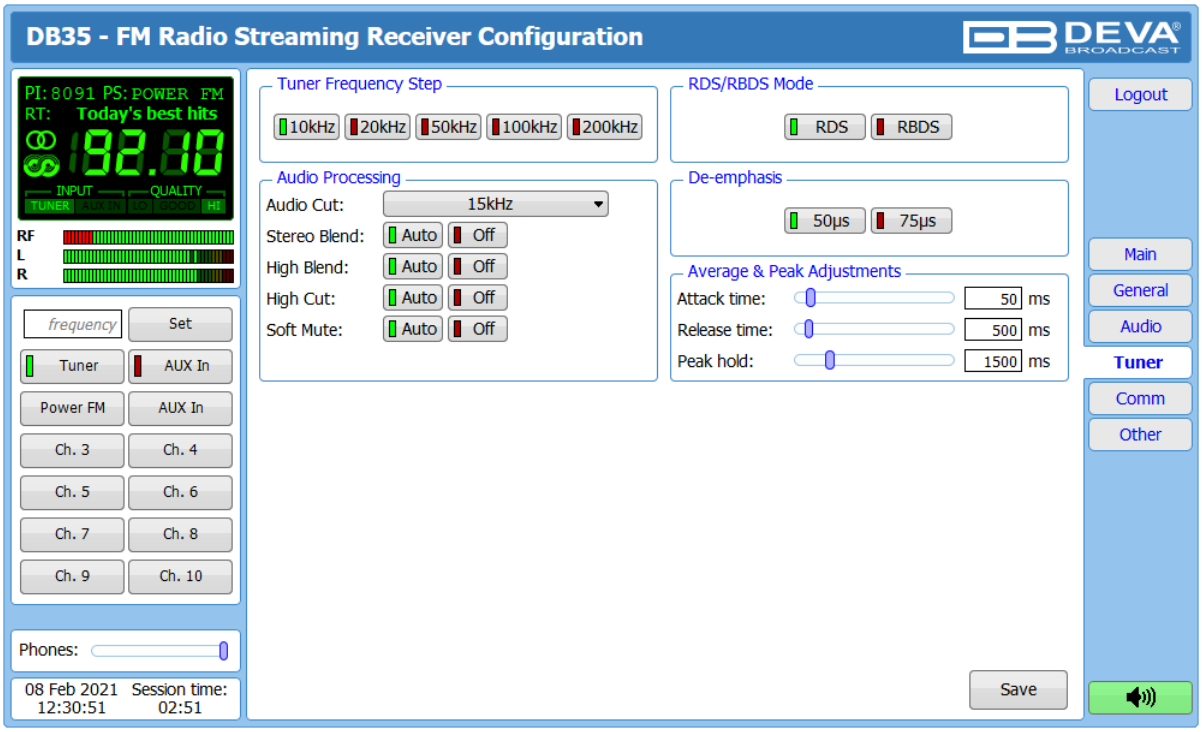
Tuner Audio Settings

Audio Gain – set RF Tuner Audio gain

AUX In Settings

Audio Gain – set AUX In Audio gain

TUNER SETTINGS



The Tuner Section gives full control over Tuner settings.

Tuner Frequency Step – Allows tuner frequency step value to be set.

RDS/RBDS Mode – Depending on the client's preferences, the deviation could be measured in % [RBDS] or in kHz [RDS].

De-emphasis – User defined De-emphasis could be set, where the default values are 50 kHz Frequency Step and 50µs De-emphasis.

Audio Processing – If the IF Bandwidth is set to Auto, these settings depend on the quality of the received signal (RF Level, Multipath, and etc.). If any changes in the signal are detected, the unit will automatically adjust to the correct values.

- Stereo Blend – reduces the stereo separation if the received signal is bad;
- High Blend – applies low pass filter to the L-R audio levels;
- High Cut – applies low pass filter to the L+R audio levels;
- Soft Mute – reduces the level of the audio if the RF level is too low.

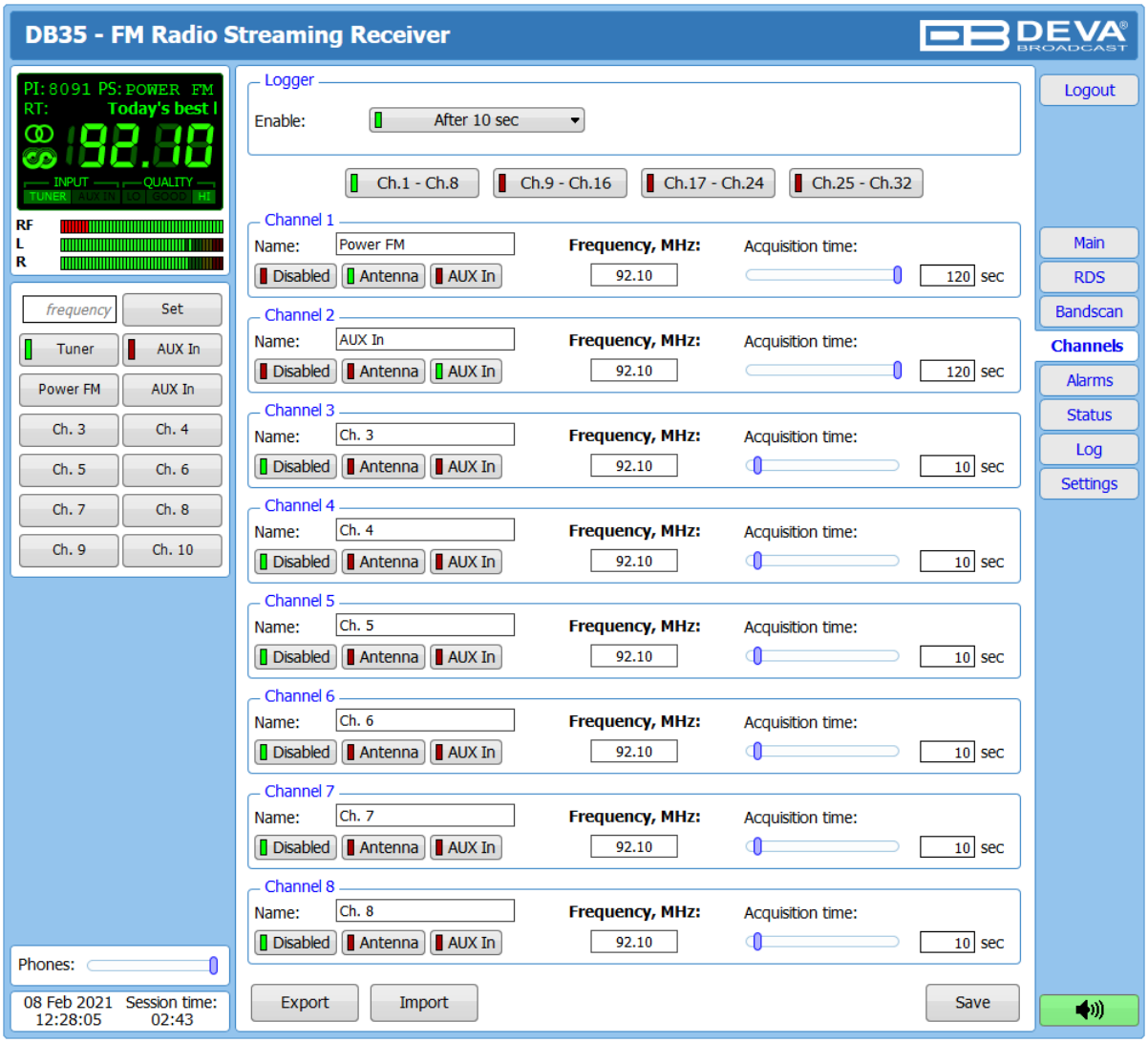
Average & Peak Adjustments Section is used for setting of the indicators response times.

- Attack time and Release time set the rate in which the indicators' level will change in response to the signal. For most of the applications (including this one), the recommended attack time is shorter than the release time.
- Peak-hold time – Permits retaining and displaying the peak value reached by the signal for a period of time predefined by the user, in milliseconds.

NOTE: In order for the applied settings to be used press the [Save] button, placed on the bottom right part of the screen.

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CHANNELS SETTINGS (CHANNELS 1 TO 8)

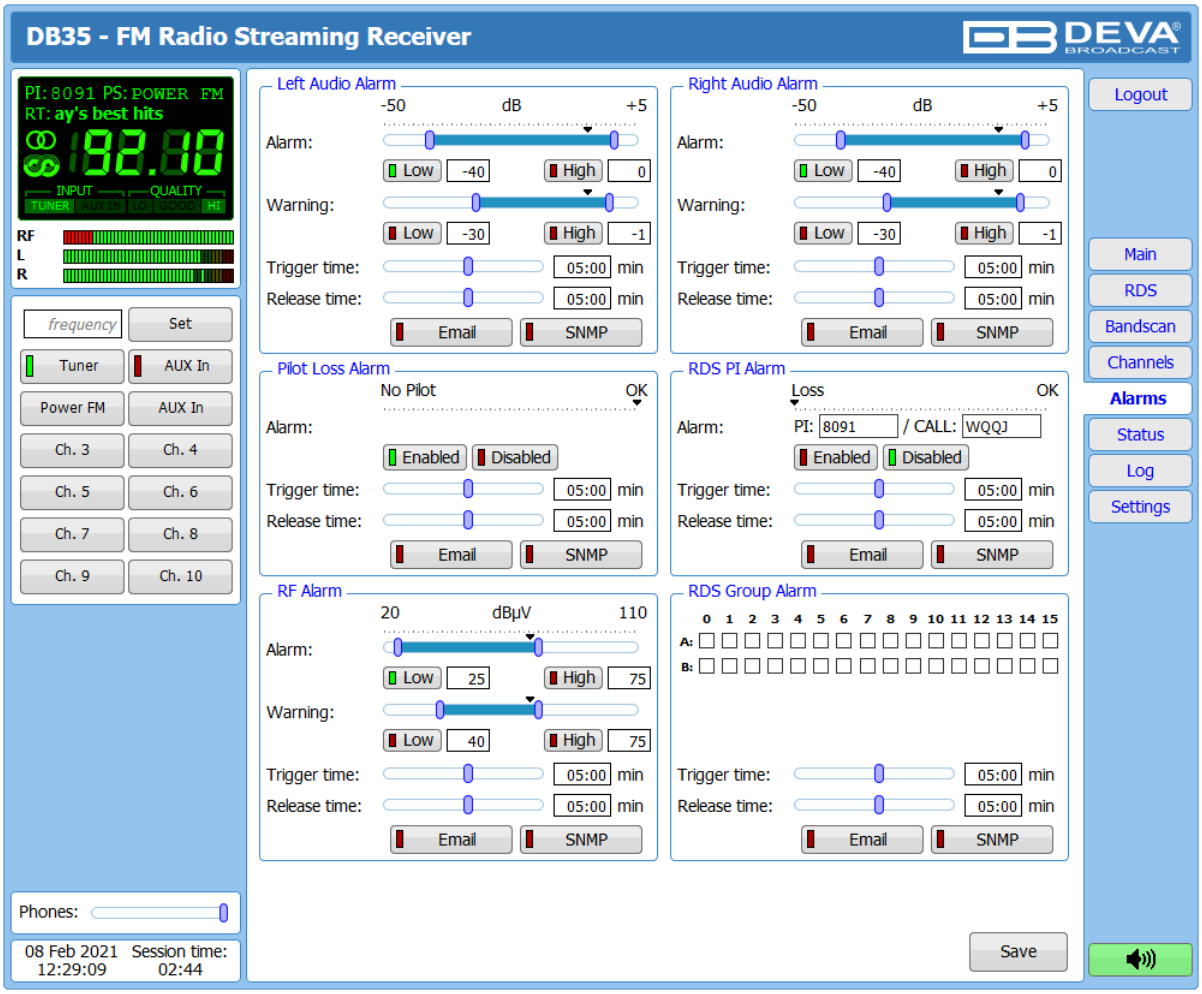


The DB35 can monitor up to 32 FM Stations at regular intervals and send warning and alarm notifications via E-mail and SNMP. Every Channel consists of a group of settings (explained in details below), which are used when monitoring.

Channel

- [Disabled] / [Antenna] / [AUX In] – Select channel's source. If the channel is not generally enabled, the frequency will not be monitored;
- Frequency – specify the frequency to be monitored;
- Name – channel alias. The same name will appear on the quick access buttons in the "dashboard";
- Acquisition time – specify the observation time for the current station (before switching to the next channel).

ALARMS SETTINGS



DB35 has a set of the six parameters that can be monitored: Left and Right audio levels, RF Level, Pilot Presence, RDS PI and RDS Groups. Trigger and alarm release times can be set for each alarm. The notification means (Email and SNMP) is set for each parameter individually. To enable the notification, press on the relevant button so that it could be illuminated in green.

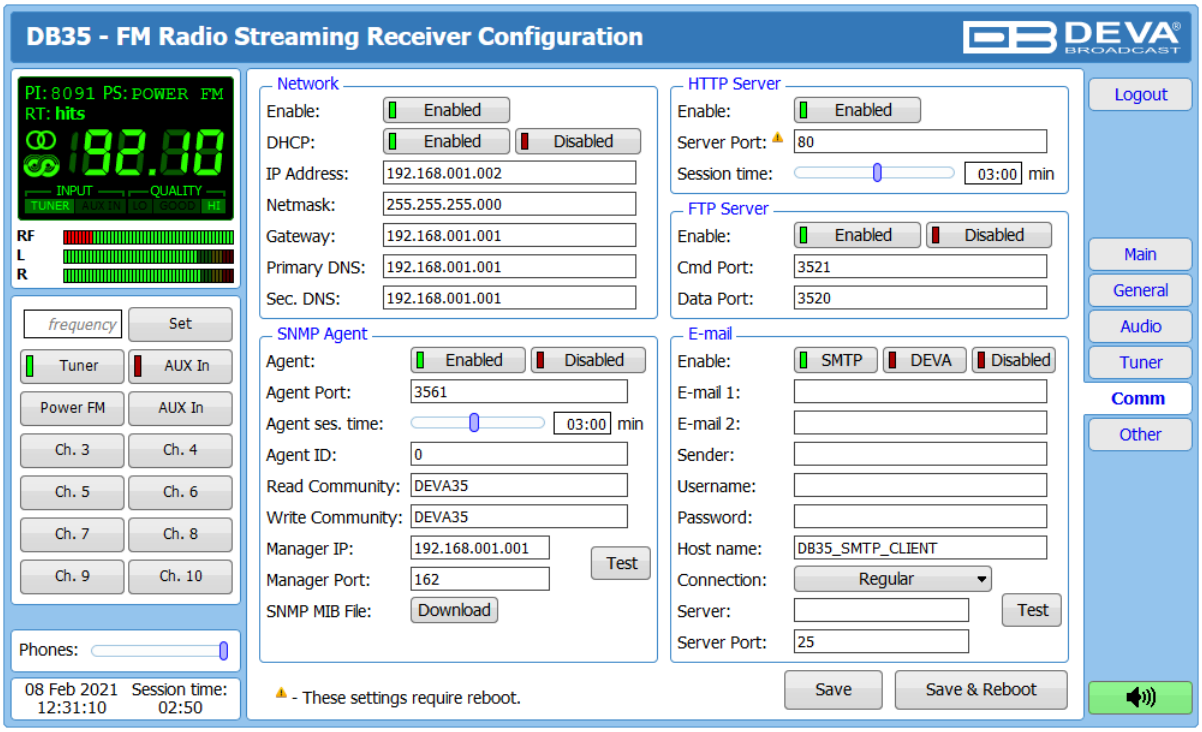
- **Alarm Range** – interactive slider used to adjust the Low & High thresholds at which an alarm will be generated;
- **Warning Range** – interactive slider used to adjust the Low & High thresholds at which a warning will be generated;
- **Threshold** – buttons to enable/disable alarm range limits;
- **Trigger Time** – waiting time before Active Alarm/Warning is generated;
- **Release Time** – waiting time before Idle Alarm/Warning is generated;
- **RDS/RBDS Group Alarm** – alarm only for selected groups will be generated.

Trigger and Release times define the time, which should elapse in order for the received signal to be defined as low/high/lost or restored/OK. What we recommend is the release time to be bigger than the trigger time.

NOTE: When setting Trigger and Release times, have in mind that 01:00 means 1 minute, and 00:01 means 1 second.

NOTE: In order for the applied settings to be used press the [Save] button, placed on the bottom right part of the screen.

COMMUNICATION SETTINGS



Network

The network addresses could be set manually (static IP) or automatically via a DHCP server. To set static IP, MASK, GATEWAY and DNS addresses, the DHCP should be disabled. In order for the built-in DHCP client to be activated, the function should be enabled. When the DHCP client is activated, all assigned values will be shown in the relevant fields on the Status Screen. If due to any reason, the DHCP procedure cannot be completed, DB35 will use AutoIP and will generate an IP Address.

HTTP Server

[Enabled] the HTTP Server. Specify the Server Port and session timeout. If the [Enabled] button is not illuminated in green, the option is disabled.

FTP Server

[Enabled]/[Disabled] the FTP Server. Specify the Command and Data Ports to be used.

SNMP Agent

Agent - [Enabled]/[Disabled] the SNMP Agent.

Specify Agent ID, Agent Port, Read/Write Communities, Manager IP, Manager Port and session timeout. Agent ID is used for identification of the device among others, when an SNMP notification is being sent.

Once all needed settings are applied, use the [Test] button to generate a test notification, which upon success will be received by the SNMP Manager.

Press the [Download] button to download the latest available DB35 SNMP MIB file.

NOTE: The MIB file may vary from one firmware revision to another. Downloading this file from the device, guarantees that you have the proper MIB file.

E-mail

To use the email notification option, please make sure it is [Enabled] by pressing the relevant button. Then follow the instructions below:

1. Enter the desired alarm recipients in e-mail 1 and/or e-mail 2 fields.
2. Fill in your e-mail account settings: Sender, Username and Password, Server, SNMP port and connection type.
3. It is mandatory the type of connection with the server to be specified from Connection - Regular, Encrypted.
4. The Server port will be changed accordingly. Please note that the most commonly used port will be entered in the field. If the port that is to be used is different, change it manually to the correct value.
5. We recommend you to use the [Test] button and generate a test e-mail, which upon success will be delivered to the specified E-mail 1 and/or E-mail 2. Example of Test E-mail Message:

```
DB35 Test Message.
Please do not reply to this e-mail.
```

If you experience difficulties in the set-up, or would like to use DEVA account for sending of alarm email notifications, press the [DEVA] button option, and:

1. Complete the recipient emails (E-mail 1 and E-mail 2) only.
2. The other fields must be left blank, otherwise the email notification option will not be working.
3. We recommend you to use the [Test] button and generate a test e-mail, which upon success will be delivered to the specified E-mail 1 and/or E-mail 2. Example of Test E-mail Message:

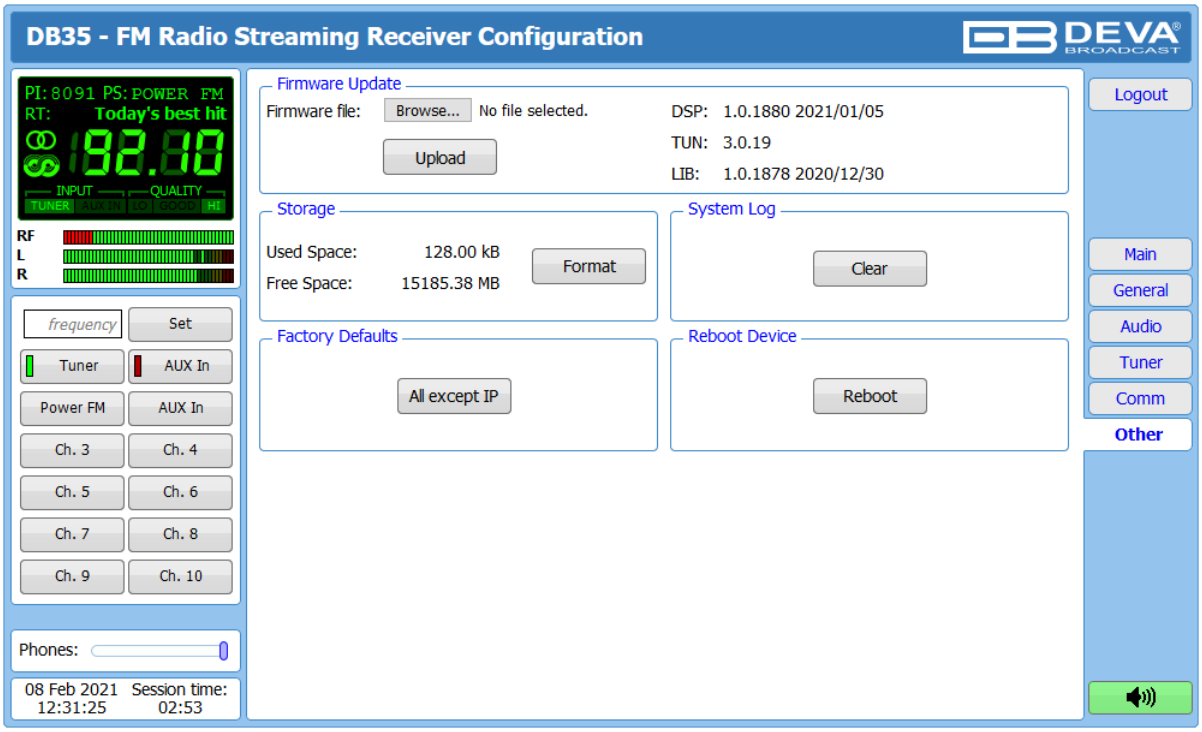
```
DB35 Test Message.
Please do not reply to this e-mail.
```

Even though using the DEVA account eases the set-up process, we recommend user account to be used for sending of email notifications, and the DEVA account for test purposes. When using DEVA account, please note that the stable 24/7 connection depends on the mail service provider and cannot be guaranteed.

NOTE: In order for the applied settings to be used press the [Save] button, placed on the bottom right part of the screen.

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OTHER SETTINGS



Firmware Update

To update the device firmware, select the new firmware file. After having pressed the Upload button, a dialog window will appear. Confirm the firmware update and wait for the process to complete. Information on current DSP1, DSP2 and WEB version is also found in this section.

Storage

Information about the device storage space is found in this section. The entire internal storage could be deleted by pressing the [Format] button.

System Log

By pressing the [Clear] button, all records in the system log will be deleted.

Factory Defaults

[All except IP] – all settings, except for the Network settings (IP Address) will be deleted.

To restore DB35 to its Factory Defaults, press [All except IP]. A new window will appear – confirm that you want to restore the factory defaults and wait for the process to be completed. On completion of the process, the settings should have the proper default values.

Reboot

To start Rebooting of DB35, press the [Reboot] button. A dialog warning window will appear. Confirm that you want to reboot the device and wait for the process to be completed.

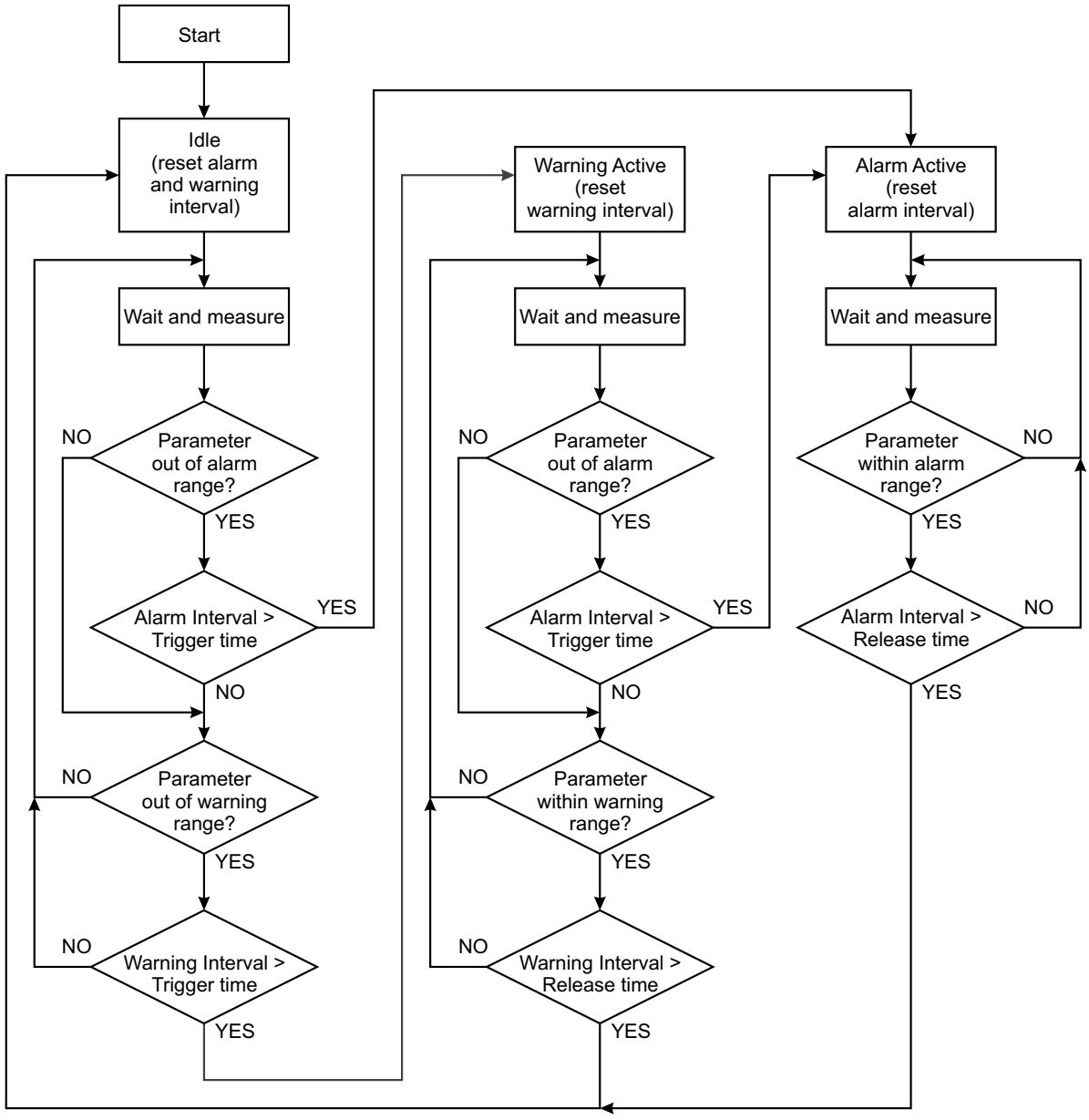
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APPENDIX A

ALARM TRIGGERS

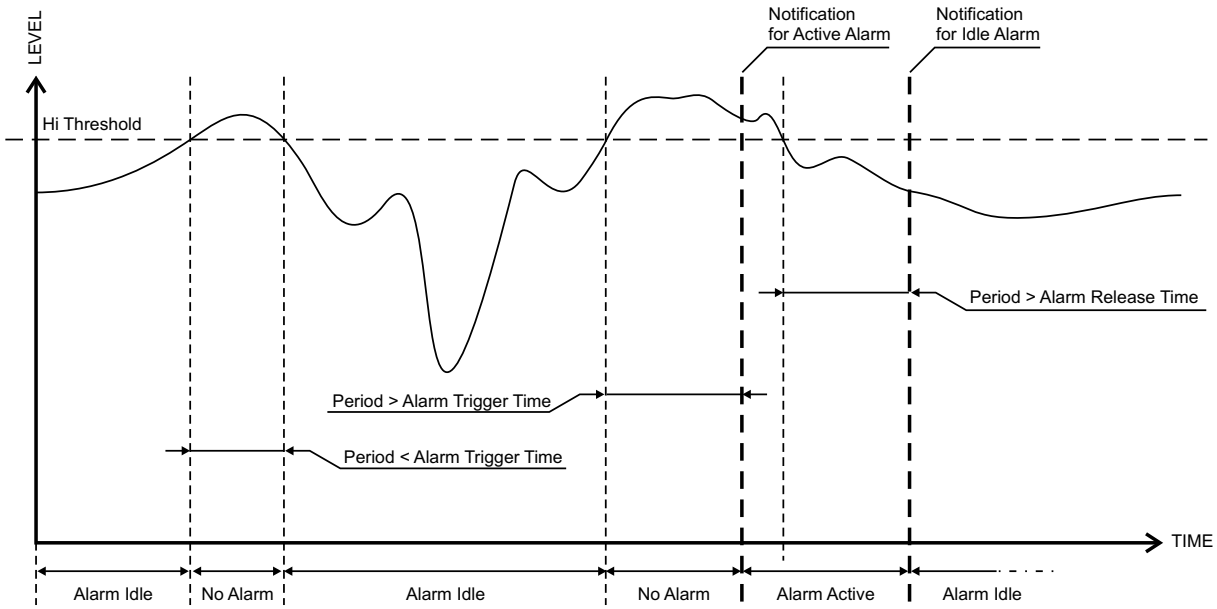
After collecting all the data, the DSP-based core compares the values measured with the predefined by the user threshold levels, for all the parameters monitored. In case that a parameter is beyond limits, the device will initiate the sending of an alarm or warning notification via the selected communication path. All the alarm and warning events are stored in the device's log. It is essential that, if there is a very short fault of the signal, with duration shorter than the 'trigger time', the device would not trigger an alarm or warning.

There are several Alarm Triggers for the following parameters: RF, Left/ Right Audio, RDS Group loss, Pilot loss, RDS PI loss. An option for defining different limits for each of the parameters is present. All these values, the 'trigger time' and the 'release time have to be assigned separately for each of the alarms.



Block Diagram of Alarm Automata

When an observation event takes place, the Alarm Trigger's State will refresh, if necessary. Should we consider an instance when the Alarm Trigger is in Idle state, having in mind that an alarm is not triggered immediately when a parameter level passes beyond threshold: If the parameter level becomes stable, within Thresholds, and the Alarm Trigger Time is not elapsed, then the Alarm Trigger remains in Idle state. If the Alarm Trigger Time expires and the parameter level is still beyond limits, the Alarm Trigger would change its state to High/Low. This would result in predefined actions - Alarm Notifications (E-mail, SNMP trap) and Save a Log Record. The state will not be immediately switched into Idle when the parameter stabilizes, within Threshold levels, not up until the 'Alarm Release Time' is elapsed. Meanwhile, if the parameter crosses again any Threshold, the Alarm Trigger will remain in Active state. If the parameter remain within the Threshold levels and the Alarm Release Time expires, then the Alarm Trigger would switch into Idle state and again predefined actions would be initiated.



If the RDS Group has not been received within the Alarm Trigger Time, the state would be changed into Active. If the Active state and the Release Time have elapsed and the RDS Group is received, the state is changed to Idle. Should the RDS Group is received before the Release Time is elapsed, the state would remain Active.

ALARM NOTIFICATIONS

The E-mail, SNMP trap Alarm Notifications contain the following information - device's Alias, date and time of Alarm triggered, channel number, frequency and information about the Alarm activation/deactivation. The basic signal parameters are also included.

Example for E-mal Notification:

```
Date: 03 Feb 2012, 02:36:05

DB35 reports ALARM state on 98.10MHz

Alarm: RF < 25dBuV

Signal parameters:
RF: 8dBuV
Stereo: LOSS
RDS PI: 8091
Left: -16.6dB
Right: -16.6dB
```

APPENDIX B

HOW SHOULD I CONFIGURE THE CONNECTION BETWEEN MY DEVA DEVICE AND AN FTP CLIENT?

In order for a connection to be established the following setting should be applied:

1. FTP Server Settings

The built-in FTP Server has four important parameters that should be configured: Command Port, Data Port, User name and Password. These parameters are to be used in the FTP client's connection configuration. Further information on how to change the FTP Server's settings and their respective default values can be found in the device's User manual.

WE RECOMMEND the usage of FileZilla (https://filezilla-project.org). This is a widespread open source software distributed free of charge, hence available for downloading from the Internet.

NOTE: The FTP Server can manage only one connection at a time. The FTP Server works in Passive mode. Hence, the FTP Client should also be set in passive mode.

2. IP Router and Port Translation Settings

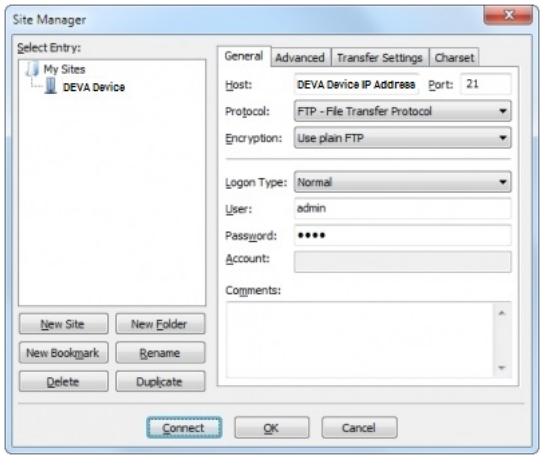
If the connection to the device is made through a Network address translation (NAT) router or firewall, the port forwarding feature of the router should be configured. The port forwarding is usually set in the firewall section of the router's menu. As each router has different port forwarding procedure, we recommend you to refer to its complete manual. To allow proper data flow through the router, the FTP Command and FTP Data ports should be open.

NOTE: The FTP port numbers to be used in the port forwarding feature configuration can be found in the device.

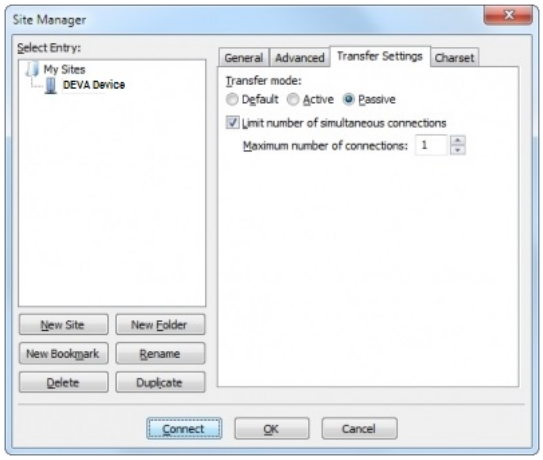
3. Example of FTP Client (FileZilla) Settings

In some cases, FileZilla's "Quick connect" feature is not able to connect with the DEVA unit. That is why we recommend the device to be assigned in the program manually.

Enter the FTP Client and go to: ***File > Site manager > New Site***. A dialog box requiring obligatory information about the device will appear. Fill in the needed information and press "OK".



Select "Transfer Settings" sub-menu and apply the settings as shown below:



APPENDIX C

BATTERY REPLACEMENT PROCEDURE

IMPORTANT: Before starting the procedure, power off and disconnect the device. Perform the battery replacement on a static-resistant work surface and follow all applicable safety precautions.

REPLACEMENT

1. Using a suitable screwdriver, remove the bolts securing the back panel to the chassis.
2. Carefully pull out the back panel together with the motherboard. Handle the motherboard with care and avoid applying excessive force.
3. Locate the RTC battery socket on the motherboard.
4. Remove the depleted battery from the socket.
5. Insert a new **3V Lithium CR2032** battery into the battery socket. Ensure that the battery is correctly oriented and securely seated in the socket.

REASSEMBLY

1. Align both ends of the motherboard with their respective slots and carefully slide the motherboard into position simultaneously from both sides.
2. Make sure that the LED indicators are correctly aligned with their respective openings.
3. Reinstall the bolts securing the back panel to the chassis.
4. Using a suitable screwdriver, tighten the bolts securely. Do not overtighten.
5. Power on the device and set the correct time or wait for it to sync over the Internet.
6. Remove the power to the device and wait for a few seconds.
7. Power on the device again and verify that the time and date are displayed correctly.

VERIFICATION

If the time and date are retained correctly after the device is powered off and restarted, the RTC battery replacement has been completed successfully.

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WARRANTY TERMS AND CONDITIONS

I. TERMS OF SALE: DEVA Broadcast Ltd. products are sold with an understanding of "full satisfaction"; that is, full credit or refund will be issued for products sold as new if returned to the point of purchase within 30 days following their receipt, provided that they are returned complete and in an "as received" condition.

II. CONDITIONS OF WARRANTY: The following terms apply unless amended in writing by DEVA Broadcast Ltd.

A. The Warranty Registration Card must be completed and returned to DEVA Broadcast Ltd. within 10 days of delivery. Product registration can also be done digitally at https://www.devabroadcast.com/members/product-registration, after registering on our website, within 10 days of delivery.

B. This Warranty applies only to products sold "as new." It is extended only to the original end-user and may not be transferred or assigned without prior written approval by DEVA Broadcast Ltd.

C. This Warranty does not apply to damage caused by improper mains settings and/or power supply.

D. This Warranty does not apply to damage caused by misuse, abuse, accident or neglect. This Warranty is voided by unauthorized attempts at repair or modification, or if the serial identification label has been removed or altered.

III. TERMS OF WARRANTY: DEVA Broadcast Ltd. products are warranted to be free from defects in materials and workmanship.

A. Any discrepancies noted within TWO YEARS of the date of purchase will be repaired free of charge, or the equipment will be replaced with a new or remanufactured product at DEVA Broadcast Ltd. option.

B. Parts and labor for factory repair required after the two-year Warranty period will be billed at prevailing prices and rates.

IV. RETURNING GOODS FOR FACTORY REPAIR:

A. Equipment will not be accepted for Warranty or other repair without a Return Material Authorization (RMA) number issued by DEVA Broadcast Ltd. prior to its return. An RMA number may be obtained by placing an RMA request at https://www.devabroadcast.com/rma. The number should be prominently marked on the outside of the shipping carton.

B. Equipment must be shipped prepaid to DEVA Broadcast Ltd. Damage sustained as a result of improper packing for return to the factory is not covered under terms of the Warranty and may occasion additional charges.

V. UPDATES TO THE TERMS OF SERVICE:

For the most up-to-date, valid, and accurate terms, conditions, and product documentation, please visit the official DEVA Broadcast Ltd. website downloads section at https://www.devabroadcast.com/downloads/deva-documents. Printed documents may not reflect recent amendments. Reviewing the current online versions ensures you have the latest information.

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PRODUCT REGISTRATION CARD

• All fields are required, or warranty registration is invalid and void

Your Company Name_____

Contact_____

Address Line 1_____

Address Line 2_____

City_____

State/Province_____ ZIP/Postal Code_____

Country_____

E-mail_____ Phone_____ Fax_____

Which DEVA Broadcast Ltd. product did you purchase?_____

_____

_____

Product Serial #_____

Purchase date_____/_____/_____ Installation date_____/_____/_____

_____
Your signature*

*Signing this warranty registration form you are stating that all the information provided to DEVA Broadcast Ltd. are truth and correct. DEVA Broadcast Ltd. declines any responsibility for the provided information that could result in an immediate loss of warranty for the above specified product(s).

Privacy statement: DEVA Broadcast Ltd. will not share the personal information you provide on this card with any other parties.