MAINTENANCE AND OPERATION
INSTRUCTION MANUAL

DB37

HD Radio Streaming Receiver

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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`

General Information

Reliable, easy to manage and fully compliant with the Digital HD Radio Broadcasting standard, the DB37 brings together a dependable streaming functionality and practicality at an affordable price. One of its defining assets is its highly-selective DSP-based tuner, which allows the HD Radio Broadcast and FM station to be selected, listened to and recorded. Additionally, the dedicated hardware will let you constantly monitor the sound of your station and will also measure and store for future analysis the RF level and Left & Right Audio Levels. For an even better performance, the DB37 comes with a built-in FM RDS/RBDS Decoder and HD Radio PAD Decoder.

Crucially, this product provides an analog input, which allows you to perform not only remote, but also local audio monitoring. Users can also toggle through the FM and HD Radio broadcast stream to confirm audio presence and quality in live broadcast environments.

Another great feature of the product is the WEB interface, which guarantees easy remote setup and control. The setup and control of the unit could be done through your PC, tablet or smartphone, via a standard web browser. All operating systems are supported.

DB37 offers a great combination of reliable HD Radio streaming and an affordable price.

Product Features

- FM/HD Radio DSP-based Tuner 87.1 - 107.9MHz
- Up to 100 dBµV direct RF Antenna Input
- Selectable wide range IF filter bandwidth
- HD Radio PAD (Program-Associated Data) Information
- Provision for PAD data analysis and Logging
- Selectable De-emphasis - 50µs and 75µs
- RDS and RBDS decoder with BER meter
- Very Intuitive Navigational Menu
- Quick Station access via 4 Presets
- Real Time Audio Program Streaming
- Built-in WEB and FTP server
- Easy to use WEB interface
- Apple and Android devices support
- Protected access to the device settings
- Headphone output with front panel level control
- SNTP for automatic synchronization of the built-in clock
- LAN port for full TCP/IP remote control and monitoring
- Adjustable MIN/MAX alarms for RF, Left & Right Audio Levels
- Alarm dispatch via E-mail, SNMP ver.2C and GPO
- Firmware updates will ensure improved operation

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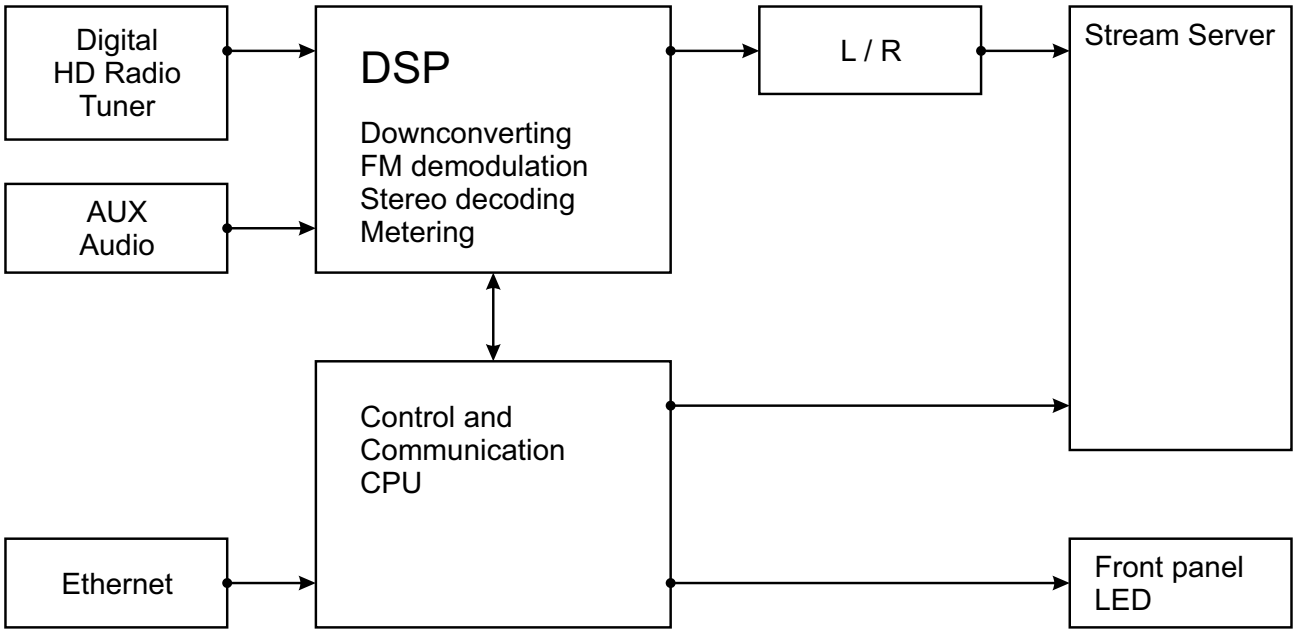
TECHNICAL SPECIFICATIONS

FM/HD RADIO TUNER	
Tuning Range	87.1 to 107.9 MHz, Frequency Agile
Tuning Step	10, 20, 50, 100 kHz
Tuner Sensitivity	≤ 10µV for 50dB monaural FM S/N
Antenna Port	BNC Connectors, 50Ω
Dynamic range	100 dB
FM DEMOD	
IF Filter Bandwidth	Adjustable from 10kHz to 150kHz
Frequency Response	±0.1 dB, 10 Hz to 86 kHz
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
Stereo Separation	50 dB, 50 Hz to 10 kHz, 50 µs de-emphasis
HD RADIO	
Audio Programs	MPS, SPS1 to SPS7
Quality Indicators	DAAI, CDNR, HD Radio lock
SIS Data	Station Slogan, Station Message, Station Long Name, Station Universal Short Name, FCCID
PAD Data	Artist, Title, Album, Genre
RDS DECODER	
Standards	European RDS CENELEC; United States RBDS NRSC
Error Correction & Counting	Yes
Decoder	PI, PS, PTY, AF, RT, RT+, DI, MS, TA, TP, CT, ODA
Group Analyzer	Yes
BER Analyzer	Yes
Group Sequence Display	Yes
RDS RAW Data Display	Yes
METERING ACCURACY	
RF Level	1%, 0 to 100 dBµV, 1dB resolution
Audio	1%, +5.0 to -50.0 dB, 0.1 dB resolution
Headphone	6,3mm (1/4”) Phone Jack
NETWORK	
Connector	RJ-45
Type	Ethernet
Device discovery	UPnP support

MEASUREMENTS AND LOG STORAGE	
Storage	16GB Build-in Memory Card
Data format	Text, CSV
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 / 1.054 kg
HS Code	8527212000

BLOCK DIAGRAM

A simplified block diagram of DB37 is shown below



Because of the all-digital, minimalist-discrete-component nature of device circuitry, we have not provided schematic diagrams of the DB37 in this Manual. Please, note that:

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

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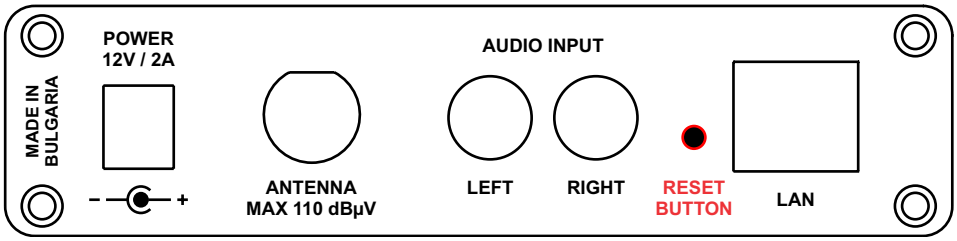
Factory Default Settings

HOW TO RESET THE DB37 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 DB37 to reboot.
5. Once the reboot is complete, the DB37 will be returned to its factory default settings.

Unpacking and inspection

Upon receipt, the equipment should be inspected for possible shipping damages. If such are found or suspected, notify the carrier at once and contact DEVA Broadcast Ltd. The original shipping carton box and packing materials should be kept for possible reuse, in case of return for Warranty repair, for example. Shipping damages as a result of improper packing for return may invalidate the Warranty!

The packing material (plastic bags, polystyrene, nails, etc.) must never be left within reach of children, as these items are potential sources of danger.

IT IS VERY IMPORTANT that the "Product Registration Card" included in the Manual be completed accurately and returned. This will assure coverage of the terms of the Warranty and it will provide a means of trace in case of lost or stolen equipment. In addition, the user will automatically receive SERVICE OR MODIFICATION INSTRUCTIONS from DEVA Broadcast Ltd.

Mounting

RACK REQUIREMENTS 1U

The unit mounts in a standard 19-inch equipment rack and requires only 1¾ inches (1U) of vertical rack space. In order the painted finish around the mounting holes to be protected, the use of plastic washers is recommended.

RACK REQUIREMENTS COMPACT UNITS

Our customized 1U 19-inch rack accessory provides a professional mounting option for up to three compact size DEVA units. It is made of milled aluminum and finished in black powder coat. Two extra blanking panels and set of mounting screws are provided with each rack bracket kit.

STAND-ALONE DEVICES

DEVA's stand-alone units (Radio Explorer series, BandScanner series, DVB Explorer) do not require additional tools or installation brackets.

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.

Operating Recommendations

To ensure normal operation of the DEVA unit, we recommend following the instructions listed below.

- Install the unit in places with good air conditioning. The unit is designed to operate within the ambient temperature range of 10 to 50°C. The equipment rack should be ventilated in order for the device to keep its internal temperature below the maximum ambient temperatures;
- We do not recommend installation in rooms with high humidity, dusty places or other aggressive conditions;
- Although the device is intended to be installed closed to exciters or transmitters, we do recommend the device to be located away from abnormally high RF fields.
- Use only checked power supply cables. We strongly recommend the usage of shielded cables;
- Connect the DEVA unit to reliable power supply sources only. In case of unstable power supply, please use Uninterruptible Power Supply (UPS);
- Use the device only with its top cover on to avoid electromagnetic anomalies. Otherwise, this may cause problems with the normal functionality of the unit;
- To ensure normal remote operation of the unit, make sure to connect the device to a good quality Internet connection;
- For the normal operation of your DEVA device, check if the network settings past through all the required data traffic.

Getting Started

In order for the normal operation of the DB37 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 DB37 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 DB37 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 DB37 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.

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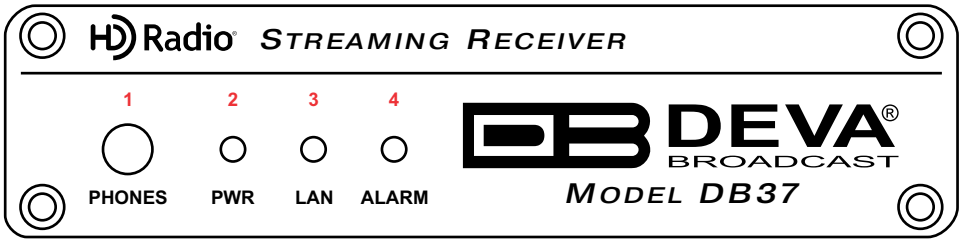
Panel Indicators and Appointments

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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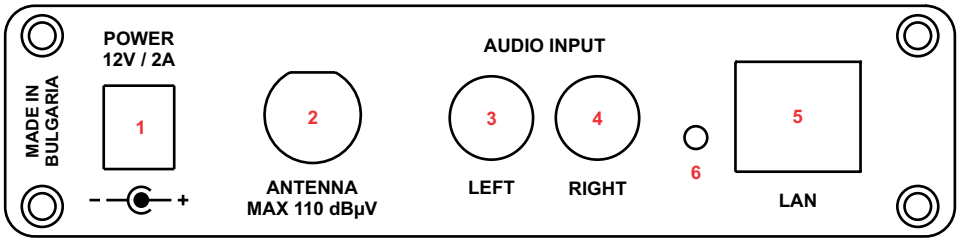
REAR PANEL



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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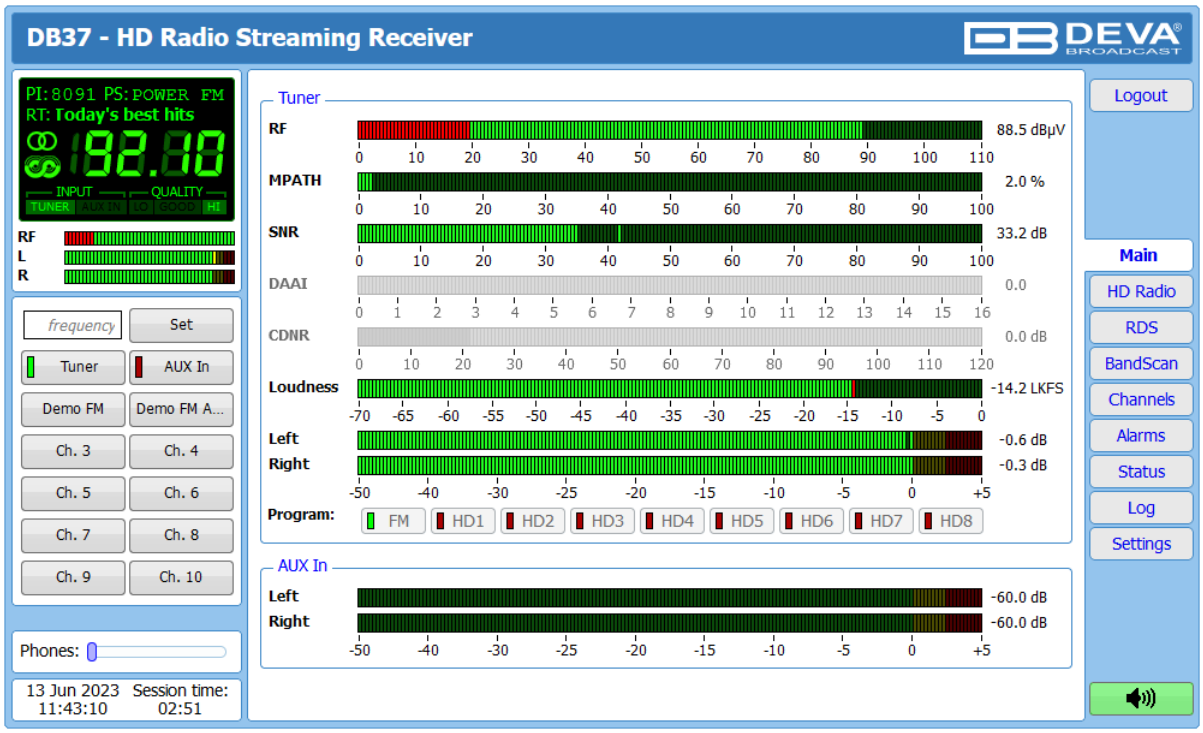
WEB interface

The DB37 provides you with a protected access to the device settings. The device serves only one user at a time, thus username and password will be requested when login. Default values are admin and pass.

MAIN PAGE

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

- On the Right are all 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.



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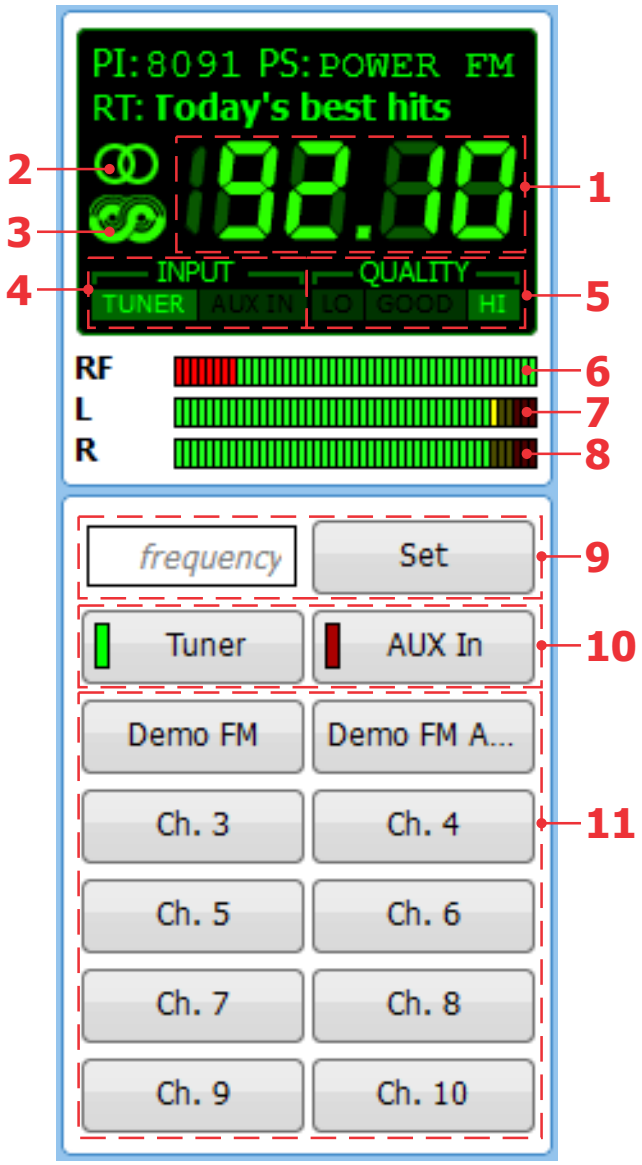
FM DASHBOARD



1. Frequency indicator showing currently tuned frequency;
2. Stereo indicator;
3. RDS/RBDS presence indicator;
4. INPUT – input currently in use;
5. Signal Quality indicator;
6. RF Level indicator. The red zone (low level) indicates low RF level;
7. Left Audio Indicator;
8. Right Audio indicator;
9. Frequency set buttons;
10. INPUT selector;
11. Channel Preset Buttons – when one of the buttons is pressed, the Tuner will be set to the predefined frequency.

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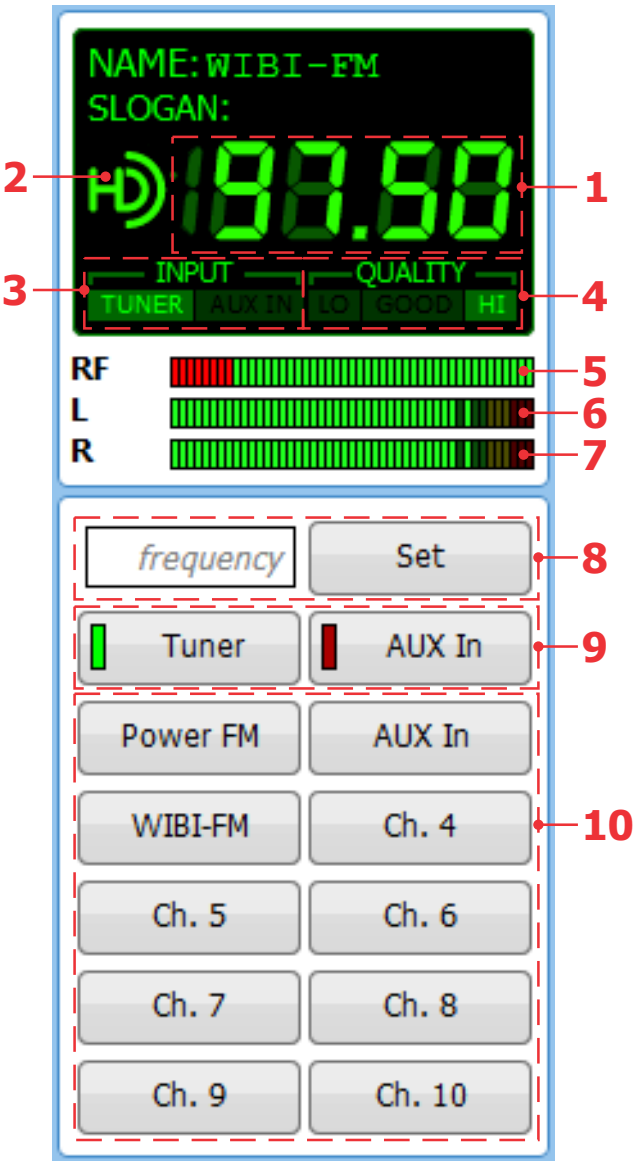
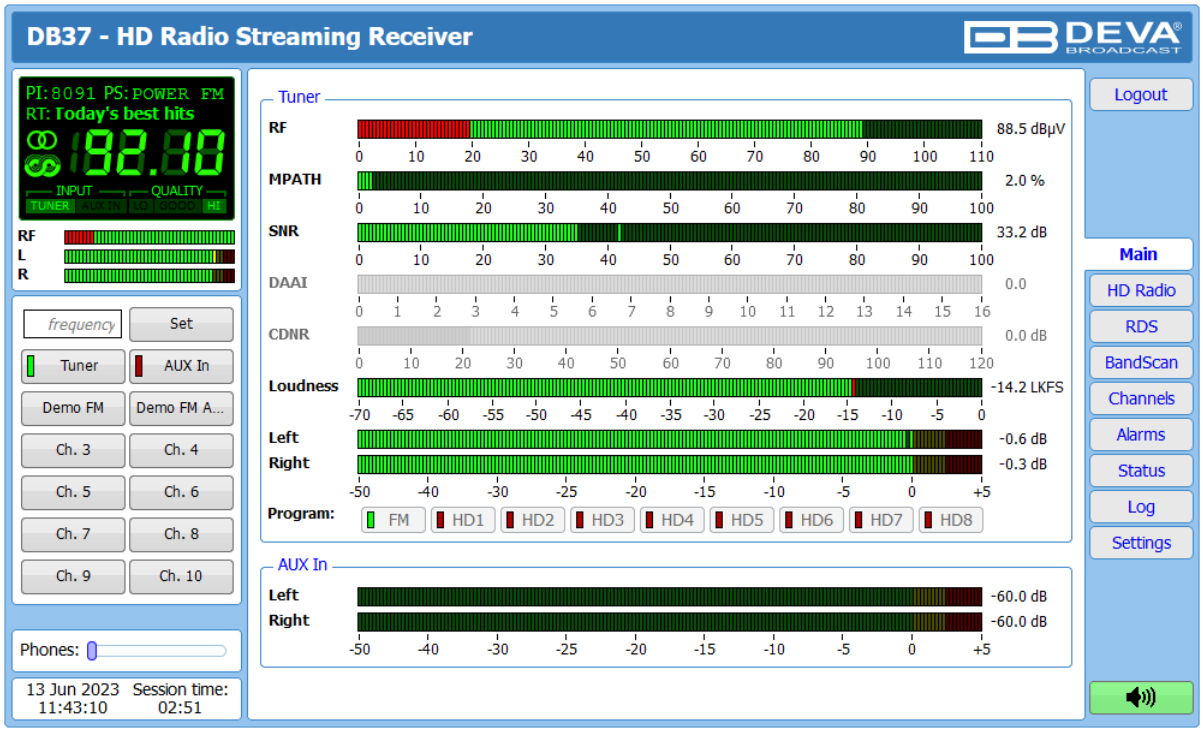
HD RADIO DASHBOARD



1. Frequency indicator showing currently tuned frequency;
2. HD Radio presence indicator;
3. INPUT – input currently in use;
4. Signal Quality indicator;
5. RF Level indicator. The red zone (low level) indicates low RF level;
6. Left Audio Indicator;
7. Right Audio indicator;
8. Frequency set buttons;
9. INPUT selector;
10. Channel Preset Buttons – when one of the buttons is pressed, the Tuner will be set to the predefined frequency.

MAIN



This Screen shows all the mandatory parameters represented as LED readings. You can easily select the preferred audio frequency 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).

AUX In – if in use, the LED meters will indicate the Left and Right audio levels

Phones slider – allows the user to adjust the volume.

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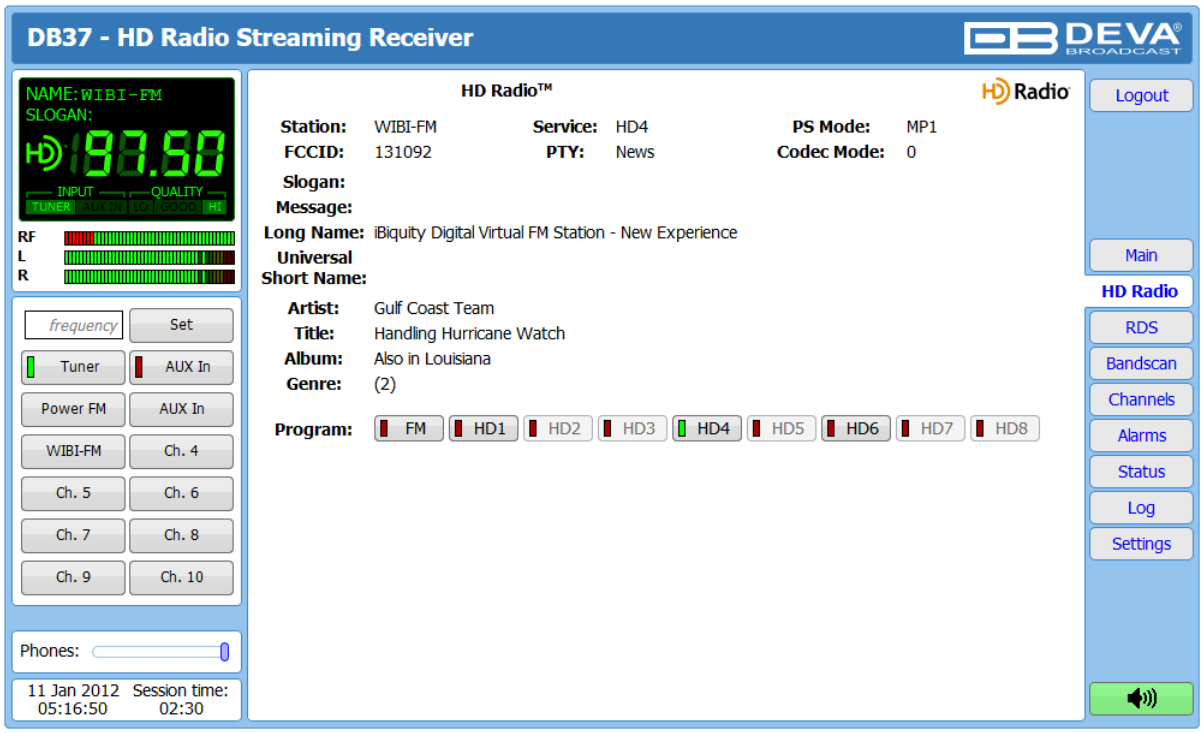
HD RADIO



All of the primary HD Radio parameters are available here:

Station – Station short name. Four alpha-character station call sign, with optional three character "-FM" extension;

Service – Indicates the present and selected HD Radio Audio Program;

PS mode – Indicates FM primary service mod;

FCC ID – Unique facility ID assigned by the FCC;

PTY – Audio service program type;

Codec Mode – Indicates codec configuration for currently selected audio program.

Slogan – Standard slogan;

Message – Station's message.

Long Name – Long format station identifying information;

Universal Short Name – Station's universal short name;

Artist – Program artist;

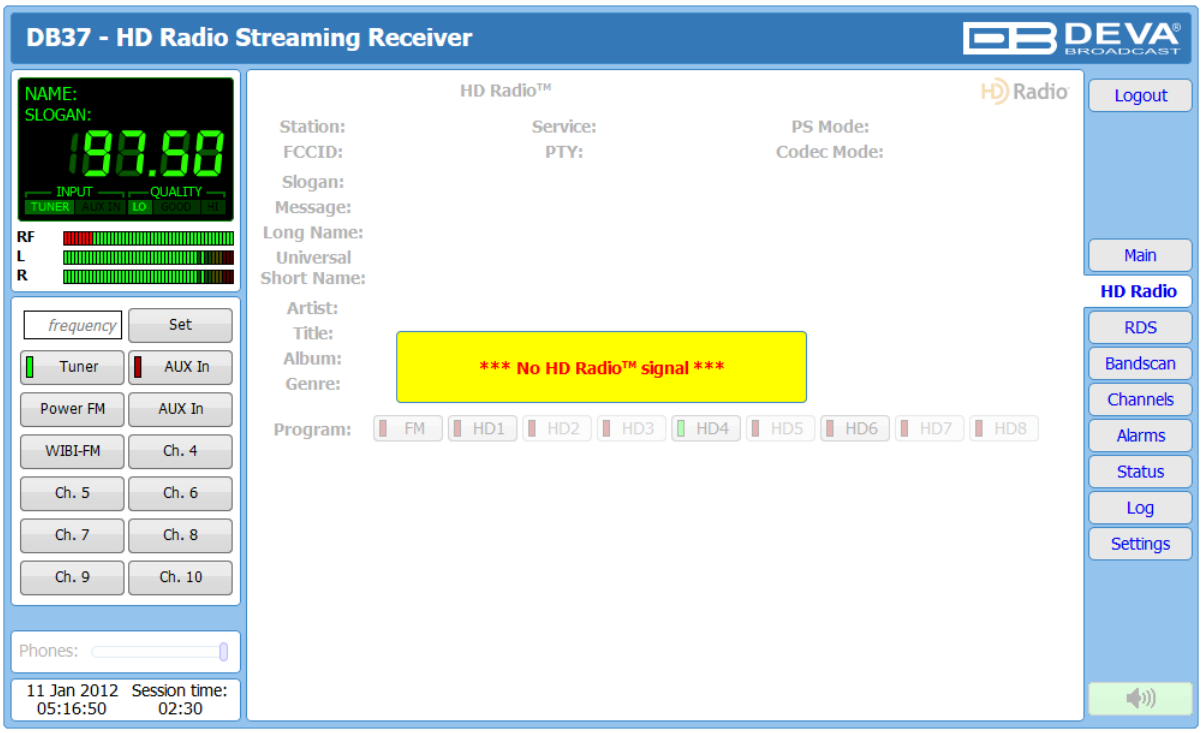
Title – Program song title;

Album – Program album;

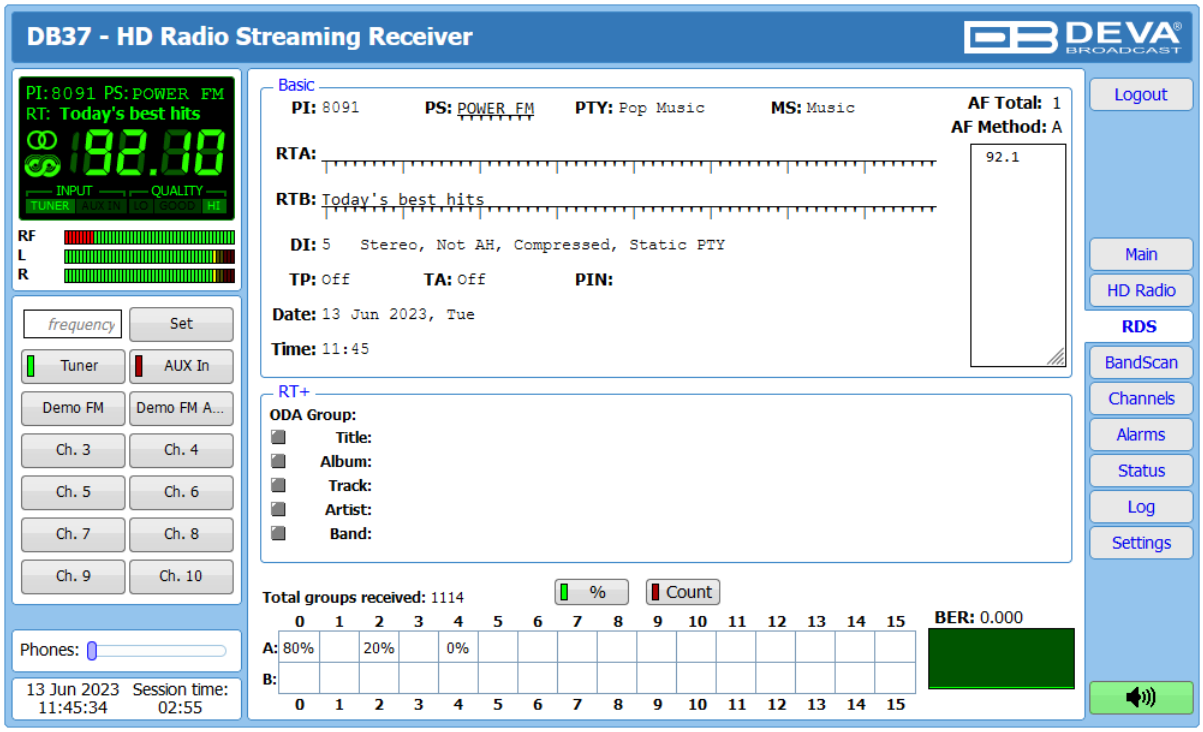
Genre – Program genre.

The colored [HD1] thru [HD8] interactive buttons indicate how many HD Radio Audio Programs are available. The illuminated in green interactive button indicates the present and selected stream.

If no HD Radio signal is currently available, the following message will appear:



RDS



All basic elements of the RDS/RBDS are displayed on the screen – ***PI***, ***PS***, ***RT***, ***TA/TP***, etc. Represented a list, also available are the Alternative frequencies (***AF***). DB37 supports one of the most used ODA Applications - ***RT***+ (Radio Text Plus). If your radio station has ***RT***+, DB37 will display the information.

Total groups received indicator

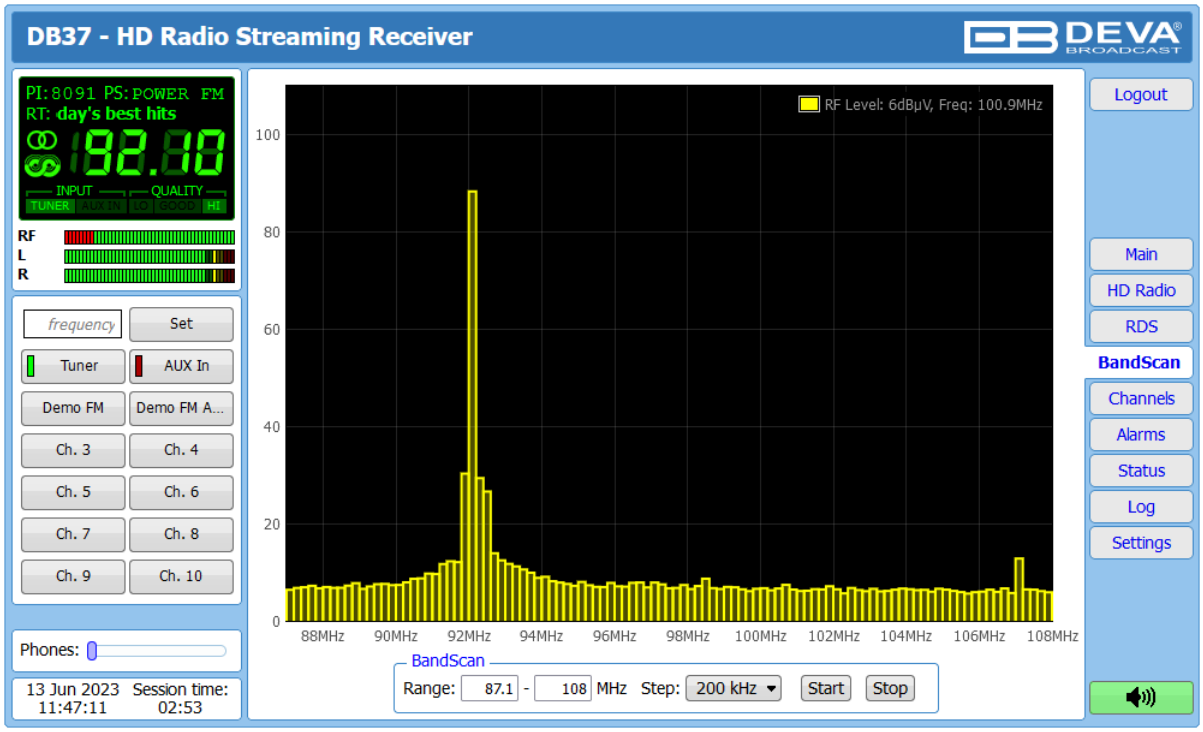
All received groups are systematized into a table, representing the percentage/quantity of the groups in the received RDS/RBDS signal. The user selects how the ***Total groups received*** data should be represented: as percents[%] or as [Count], by selecting the corresponding button.

BER

Indicator with graphics is placed at the right bottom part of the screen, showing 60 sec. history of the BER quantities.

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 the observed 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.

BAND SCAN

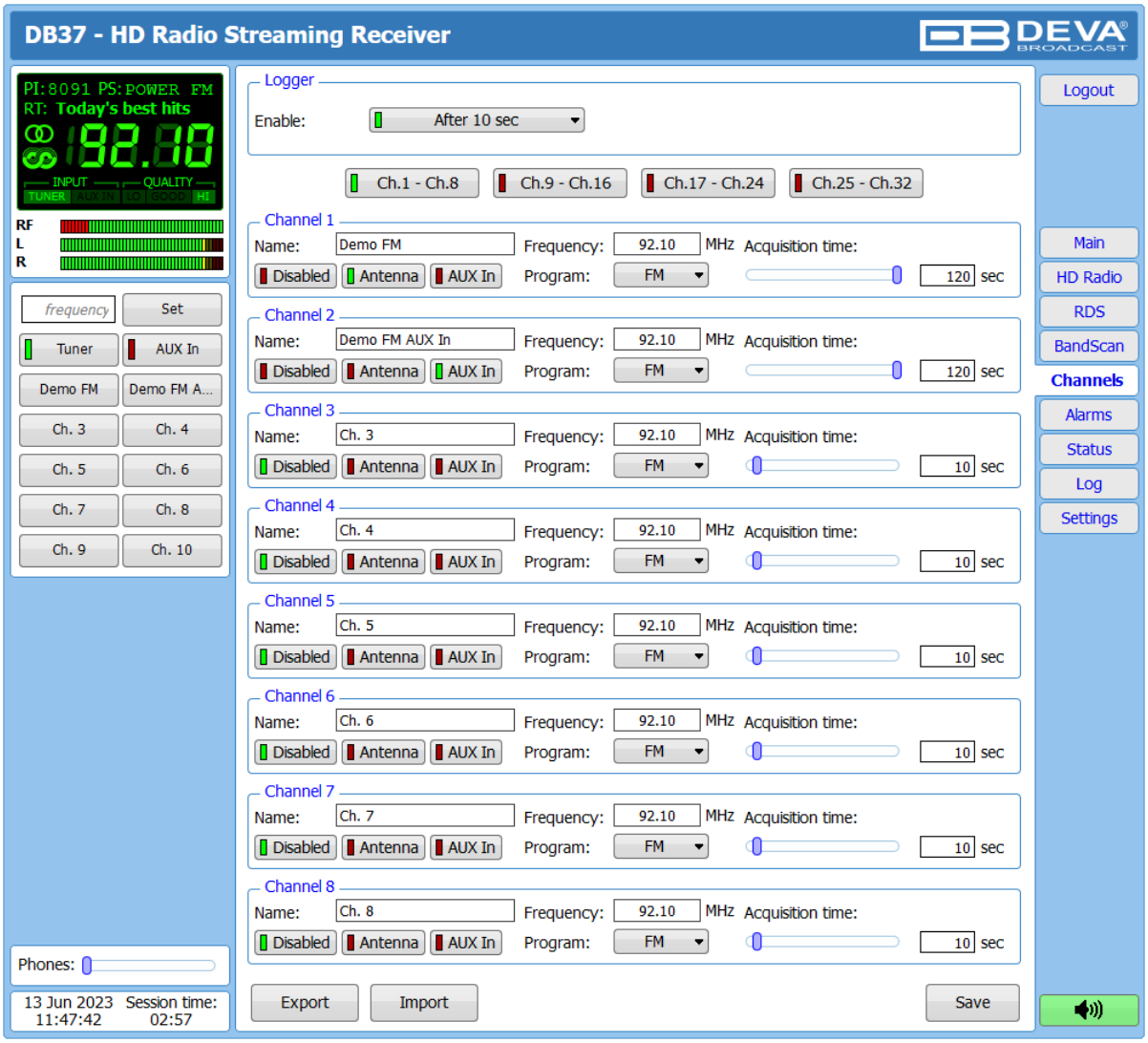


This Screen evaluates FM broadcast band congestion by sweeping the tuner across the FM band, logging every carrier and generating a spectrum display of carrier level vs. frequency.

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.

CHANNELS



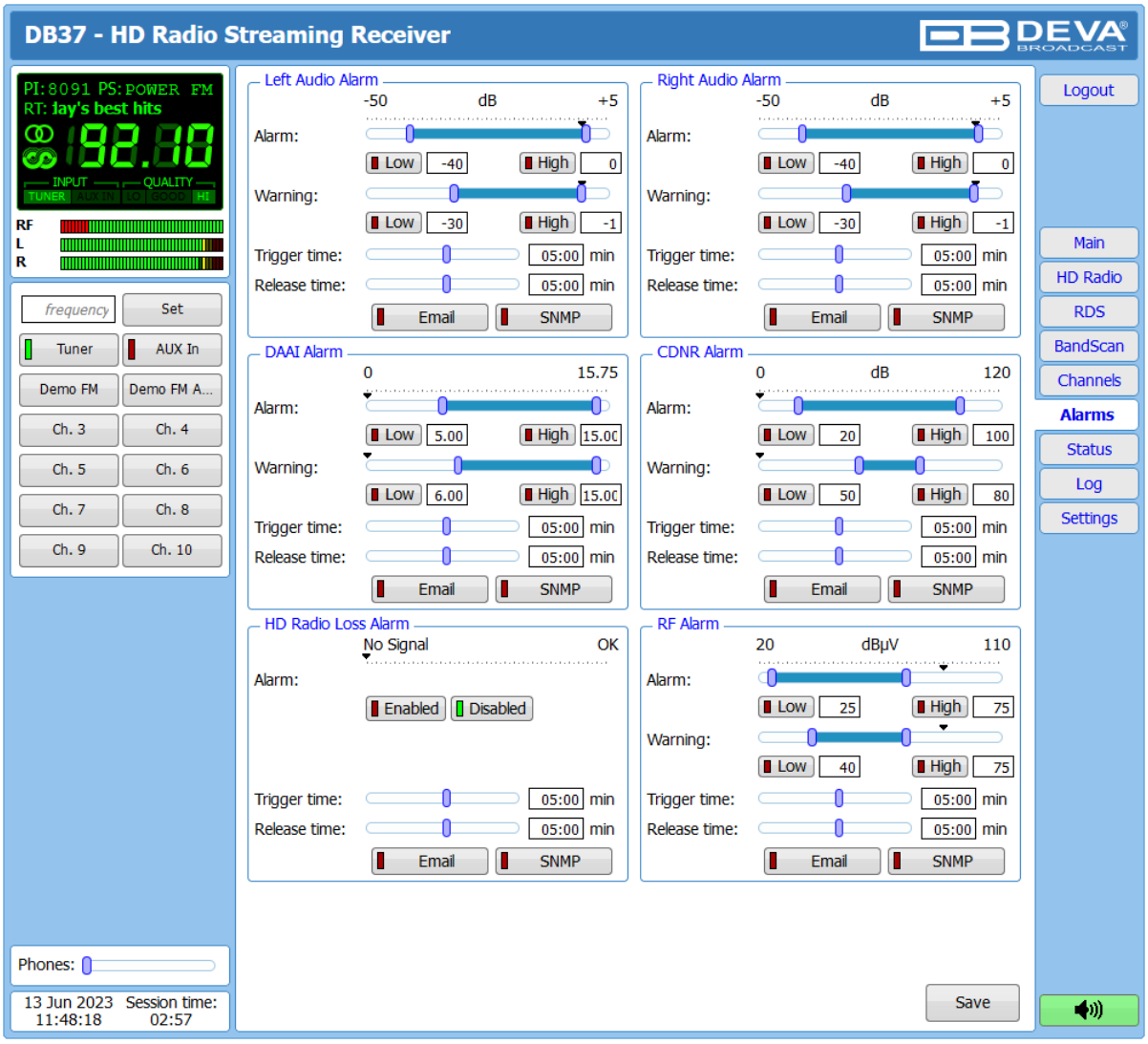
This section of the WEB Interface allows up to 32 channels to be chosen and monitored, by applying the needed settings.

When the desired adjustments are being made, the DB37 will monitor all of the selected services at regular intervals. All of the collected information is accessible through the built-in FTP Server. (see “Download files via FTP” on page 43)

Follow the steps below to initiate the simplified process of starting a Logger mode:

1. Set the Logger’s start time delay;
2. Use the [Ch.1 – Ch. 8] to [Ch. 25 – Ch. 32] buttons to toggle trough the channels;
3. Select the Channel number to be monitored and apply the needed settings – Name, Frequency, Program and Acquisition time. **IMPORTANT:** Acquisition time for each service should be set individually.
4. In order for a channel to be included in the campaign, the [Antenna]/[AUX In] button should be selected. To exclude a service from the campaign select the [Disabled] button.

ALARMS



The DB37 can send alarm notification via E-mail or SNMP. Measurement windows can be set for each of the six parameters: RF, Left and Right audio levels, HD Radio Loss, DAAI and CDNR. Trigger and alarm release times can be set for each alarm.

Please bear in mind that the type of alarm notification is set for each parameter individually. To enable the preferred notification method, press the relevant button so that it could be illuminated in green.

RF Alarm, DAAI, CDNR, Left & Right Audio Alarms

The settings applied to these alarms - are identical and are explained in details below.

Range – interactive slider used to adjust the ***Low & High thresholds*** at which an alarm will be generated. Depending on the user's preferences, the same setting can be applied via the Thresholds placed below the slider, but in figures.

Warning – interactive slider used to adjust the ***Low & High warning values*** at which a warning will be generated. Depending on the user's preferences, the same setting can be applied via the Thresholds placed below the slider, but in figures.

Trigger Time – waiting time before active alarm is generated;

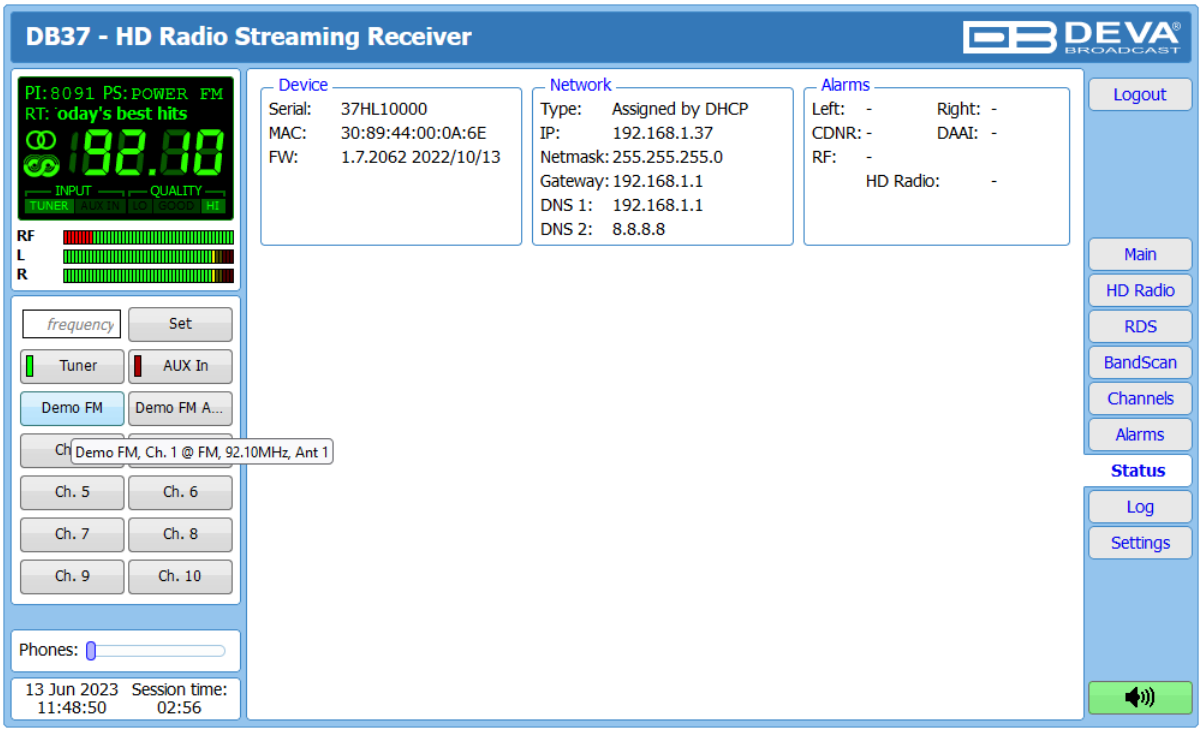
Release Time – waiting time before idle alarm is generated;

Once the **Range**, **Thresholds**, **Trigger** and **Release times** are set, the preferred alarm type should be selected.

HD Radio Loss Alarm

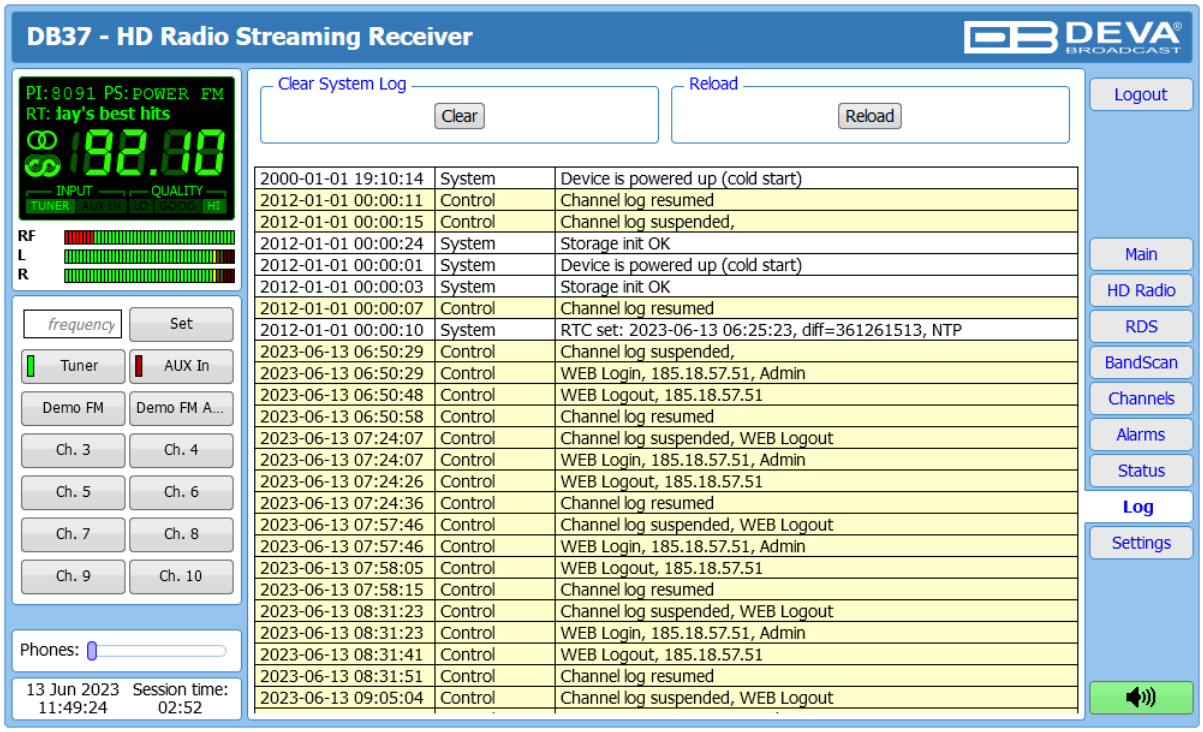
Enable – In order for the alarm to be generated, the function should be enabled;
Trigger Time – waiting time before active alarm is generated;
Release Time – waiting time before idle alarm is generated.

STATUS



The status tab shows the basic Device, Alarm and Network statuses (IP address, MAC, etc.).

LOG



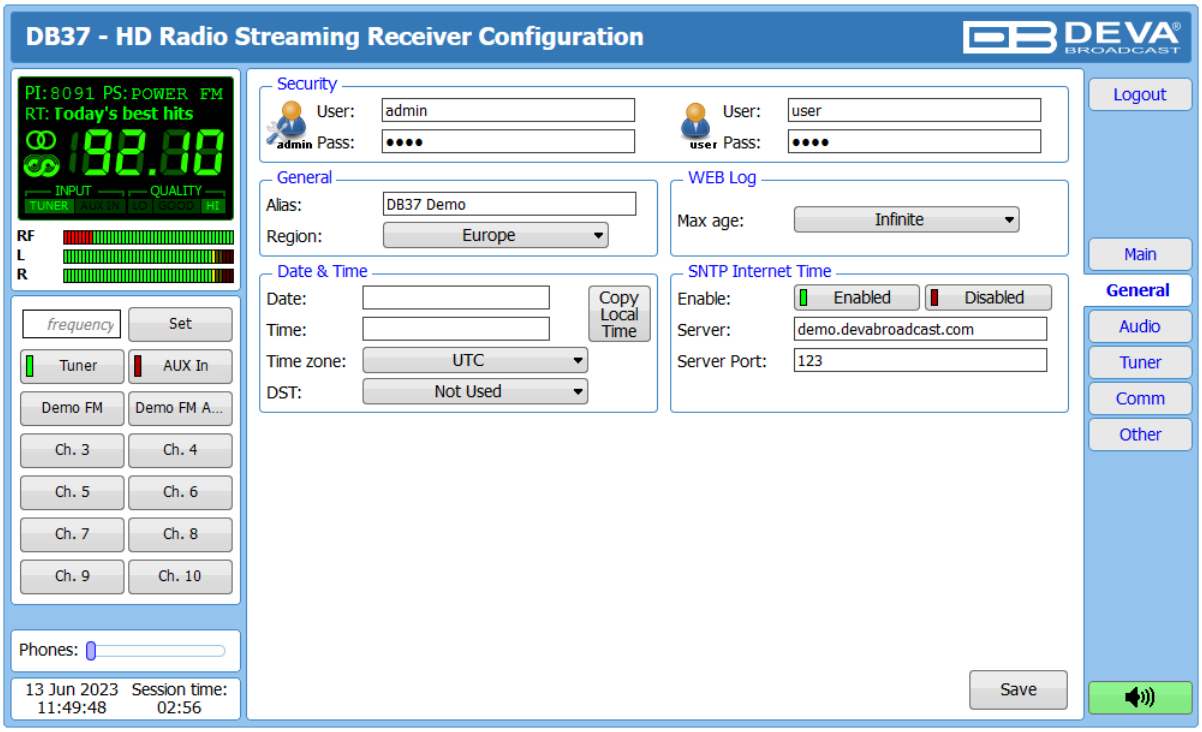
2000-01-01 19:10:14	System	Device is powered up (cold start)
2012-01-01 00:00:11	Control	Channel log resumed
2012-01-01 00:00:15	Control	Channel log suspended,
2012-01-01 00:00:24	System	Storage init OK
2012-01-01 00:00:01	System	Device is powered up (cold start)
2012-01-01 00:00:03	System	Storage init OK
2012-01-01 00:00:07	Control	Channel log resumed
2012-01-01 00:00:10	System	RTC set: 2023-06-13 06:25:23, diff=361261513, NTP
2023-06-13 06:50:29	Control	Channel log suspended,
2023-06-13 06:50:29	Control	WEB Login, 185.18.57.51, Admin
2023-06-13 06:50:48	Control	WEB Logout, 185.18.57.51
2023-06-13 06:50:58	Control	Channel log resumed
2023-06-13 07:24:07	Control	Channel log suspended, WEB Logout
2023-06-13 07:24:07	Control	WEB Login, 185.18.57.51, Admin
2023-06-13 07:24:26	Control	WEB Logout, 185.18.57.51
2023-06-13 07:24:36	Control	Channel log resumed
2023-06-13 07:57:46	Control	Channel log suspended, WEB Logout
2023-06-13 07:57:46	Control	WEB Login, 185.18.57.51, Admin
2023-06-13 07:58:05	Control	WEB Logout, 185.18.57.51
2023-06-13 07:58:15	Control	Channel log resumed
2023-06-13 08:31:23	Control	Channel log suspended, WEB Logout
2023-06-13 08:31:23	Control	WEB Login, 185.18.57.51, Admin
2023-06-13 08:31:41	Control	WEB Logout, 185.18.57.51
2023-06-13 08:31:51	Control	Channel log resumed
2023-06-13 09:05:04	Control	Channel log suspended, WEB Logout

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 DB37 and an FTP Client should be configured, please refer to “Download files via FTP” on page 43.

[Clear] will delete the System log.

[Reload] will refresh the information.

GENERAL SETTINGS



DB37 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 DB37 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.

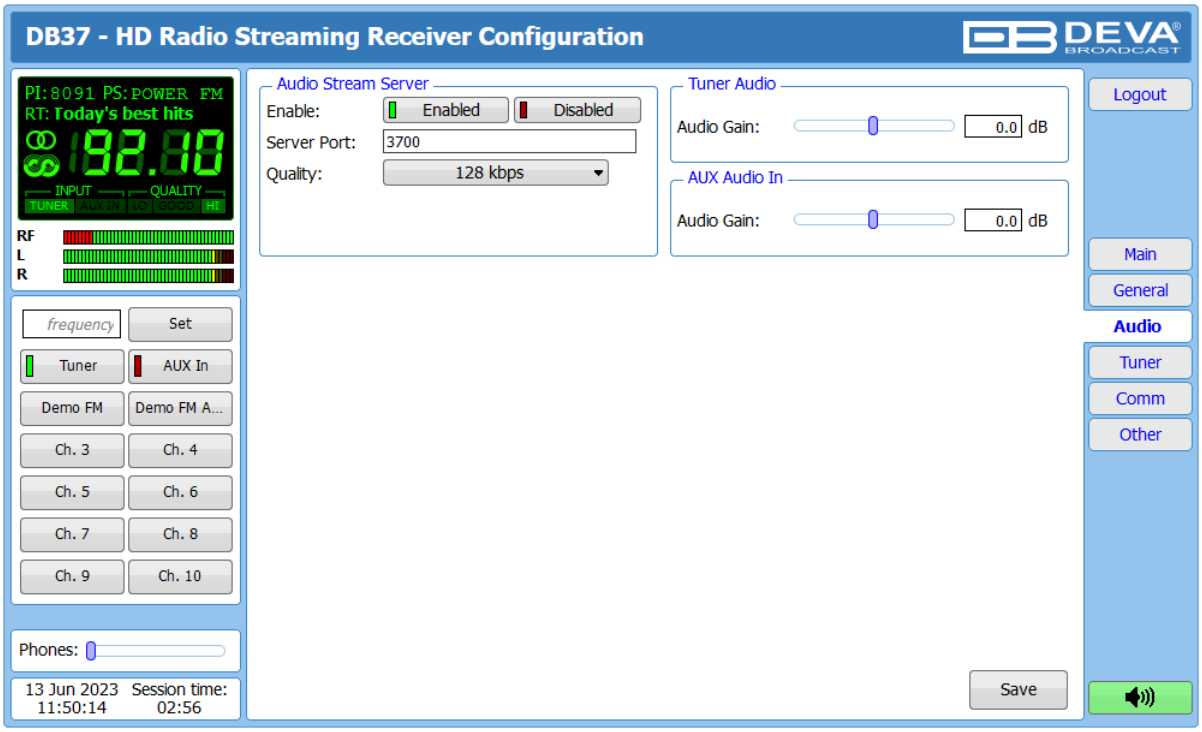
WEB Log – the maximum storage time of the System Log file is chosen from here. If the file is older than the specified maximum will be deleted.

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 DB37 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.

AUDIO

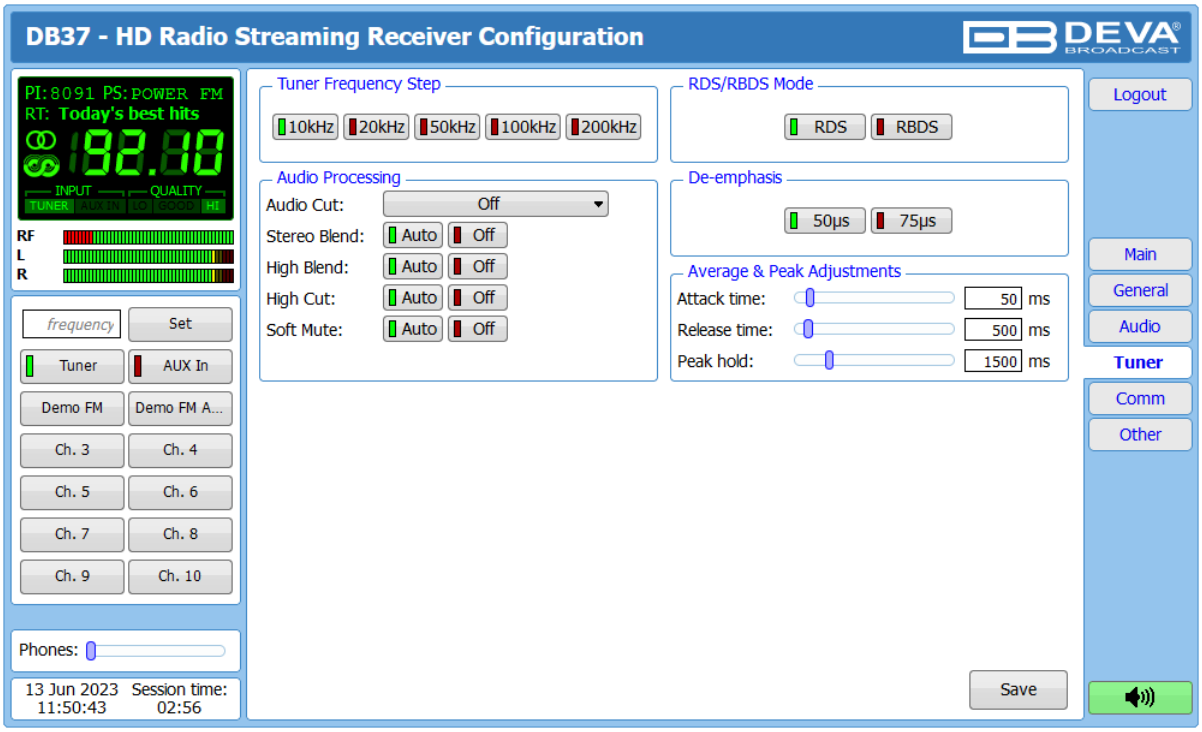


The Audio section of the WEB Interface allows the user to apply the needed settings to the Audio Stream Server, Tuner Audio and MPX Audio In of the DB37.

Audio Stream – In order for the option to be used, the user needs to Enable it and specify **Server Port** and **Quality**.

IMPORTANT: Press the [Save] button to save the applied changes.

TUNER



The Tuner tab gives full control over the tuner, Audio Processing, RDS/RBDS mode and the De-emphasis. These settings provide all the needed adjustments to the algorithm which DB37 demodulates and processes the signal.

Tuner Frequency Step and De-emphasis

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

RDS/RBDS Mode

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

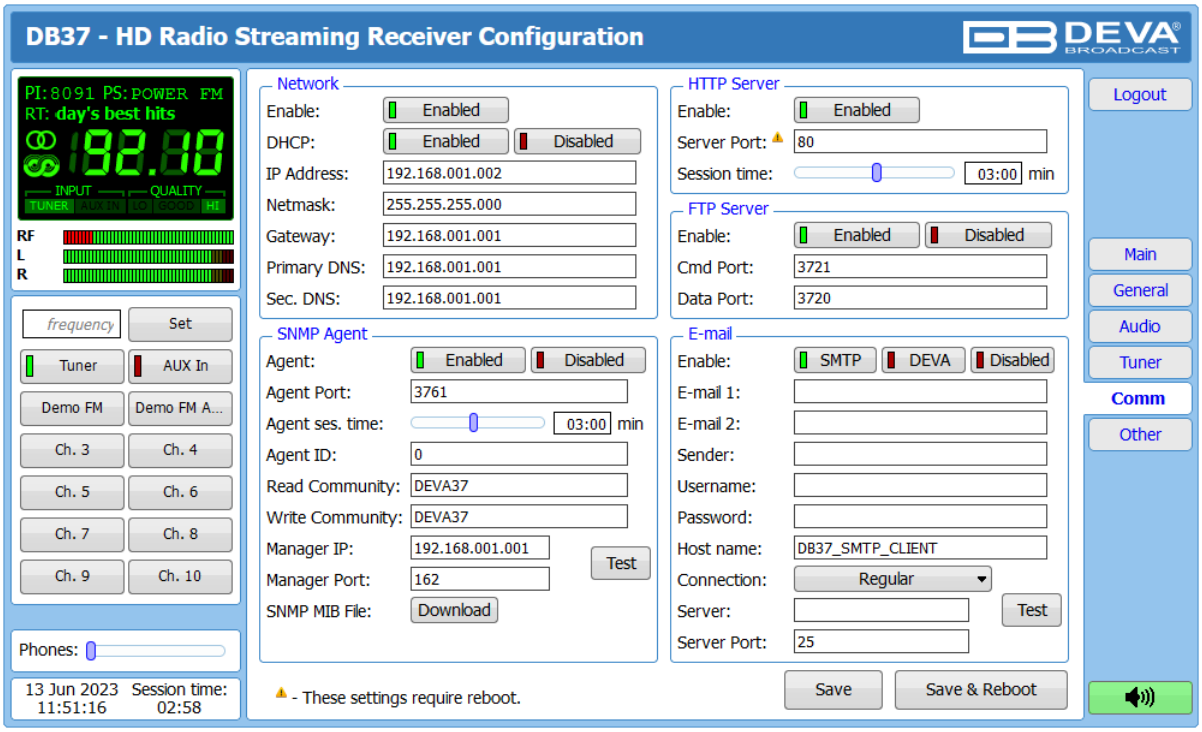
Audio Processing

If 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.

- Audio cut – can be set to 5 kHz, 10 kHz, 15 kHz and Off;
- High blend - blending of the two stereo channel signals to mono;
- Stereo Blend – reduces the stereo separation if the received signal is bad;
- 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.

IMPORTANT: Press the [Save] button to save the applied changes.

COMMUNICATION



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, DB37 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 DB37 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:

```
DB37 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:

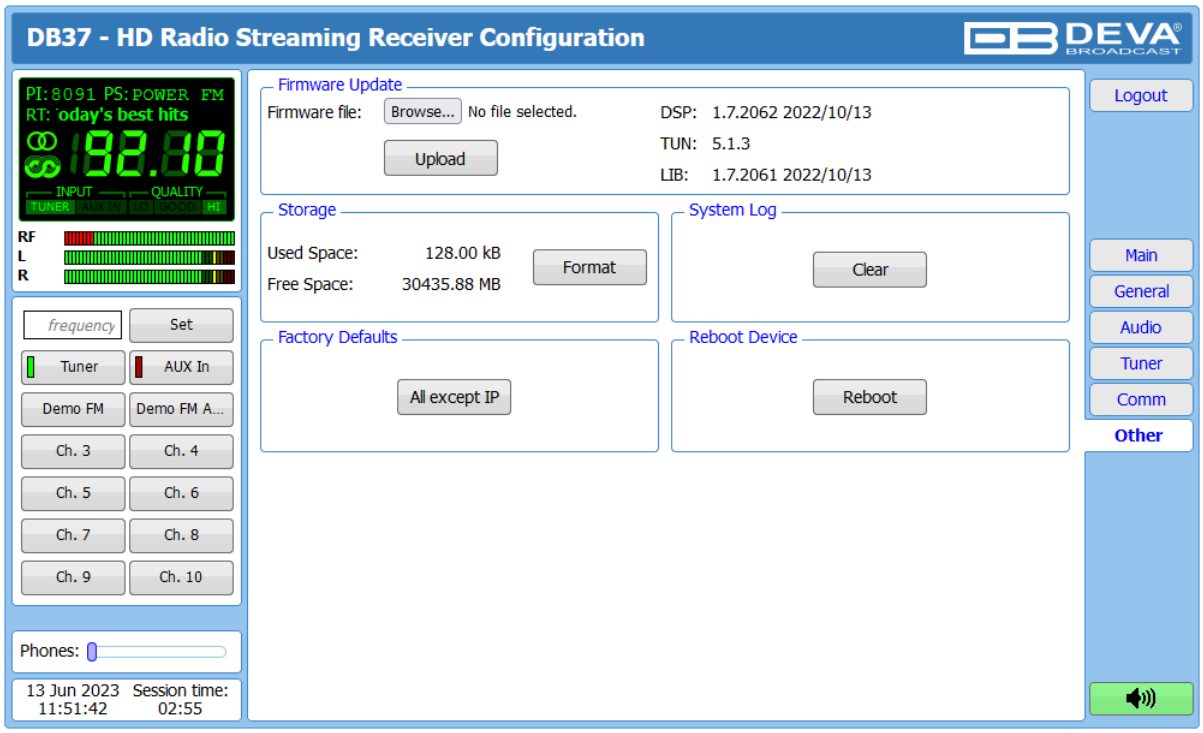
```
DB37 Test Message.
Please do not reply to this e-mail.
```

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.

IMPORTANT NOTES:

1. In order for the applied settings to be used press the [Save] button, placed on the bottom right part of the screen.
2. When changes to the **HTTP Server Port** are applied, the [Save & Reboot] button needs to be pressed.

OTHER



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 DB37 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

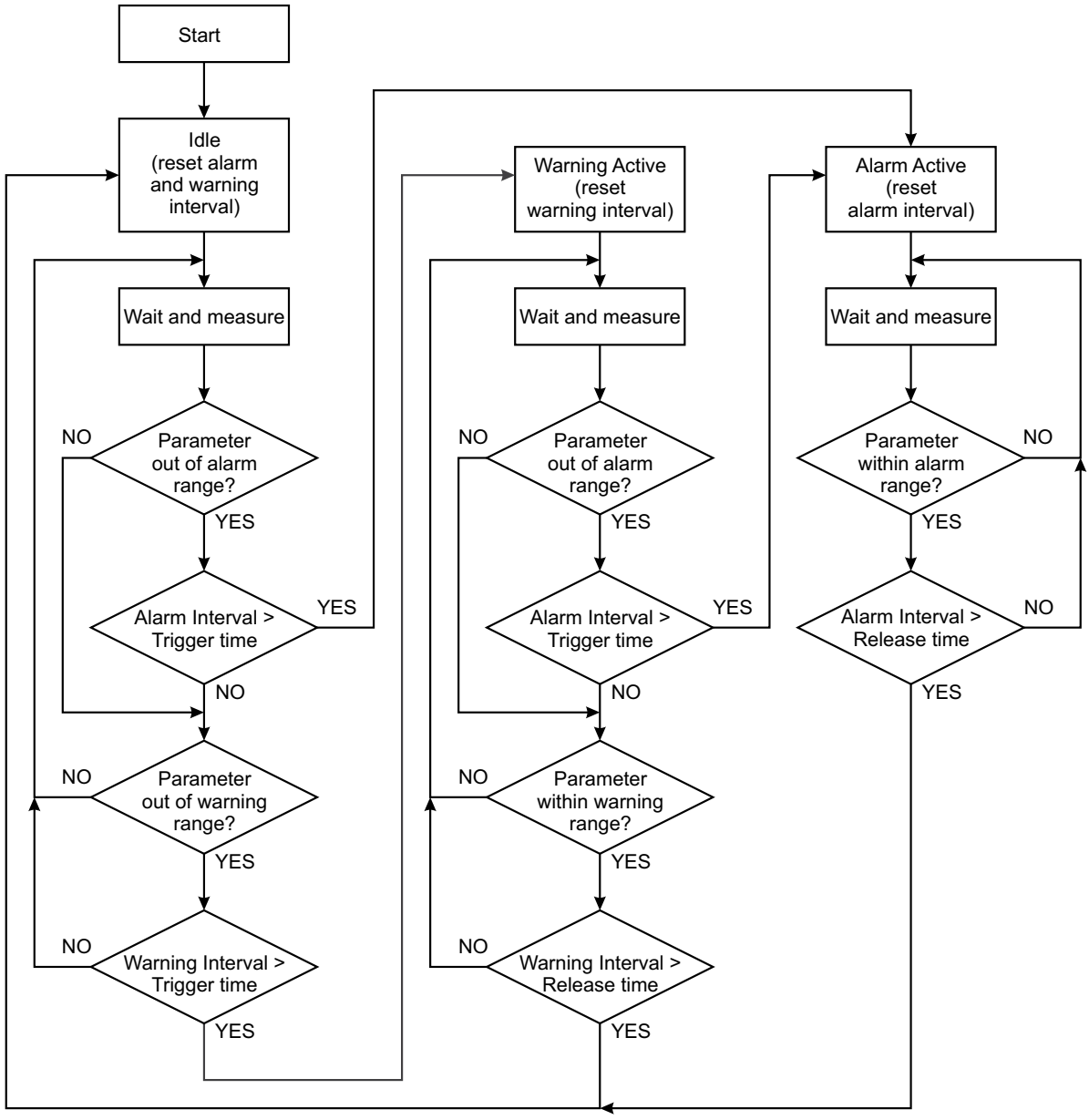
To start Rebooting of DB37, press the [Reboot] button. A dialog warning window will appear. Confirm that you want to reboot the device and wait for the process to be completed.

APPENDIX A

ALARM TRIGGERS

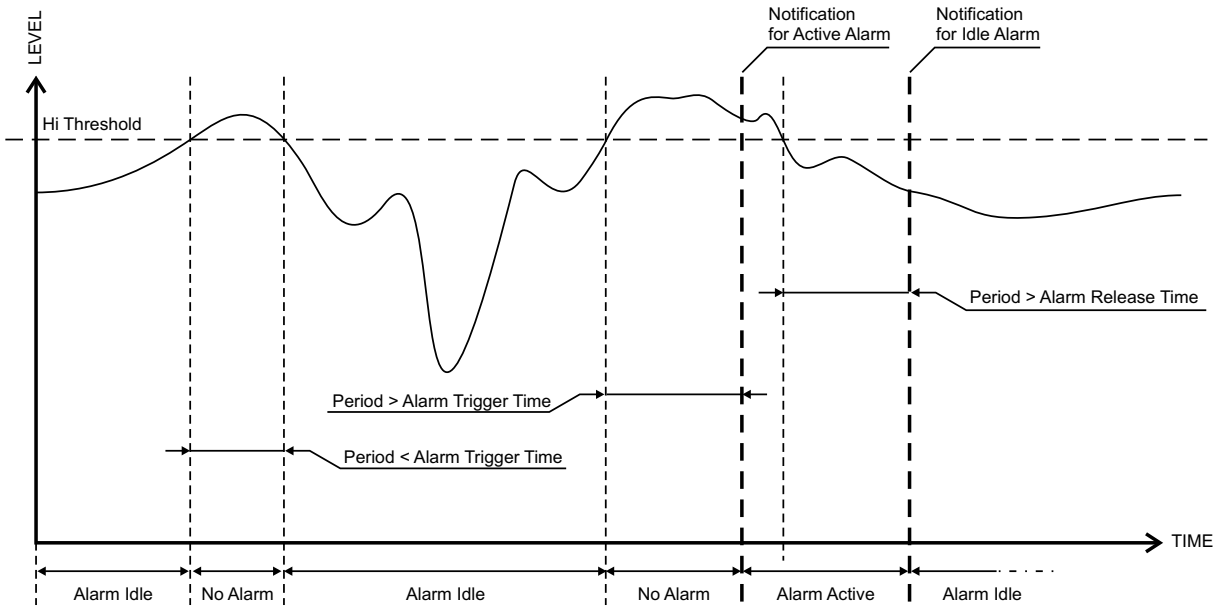
After collecting all the data, the DSP-based core compares the values measured with the predefined by the user threshold levels, for all the parameters monitored. In case that a parameter is beyond limits, the device will initiate the sending of an alarm or warning notification via the selected communication 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 and Right audio levels, HD Radio Loss, DAAI and CDNR. 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.



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: 17 Jul 2023, 13:32:13

DB37 Demo reports ALARM state on 99.90MHz

Alarm: RF < 25dBuV

Signal parameters:
RF: 7dBuV
HD: LOSS
CDNR: 0dB
DAAI: 0.00-
Out Left: -18.5dB
Out Right: -18.5dB
```

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

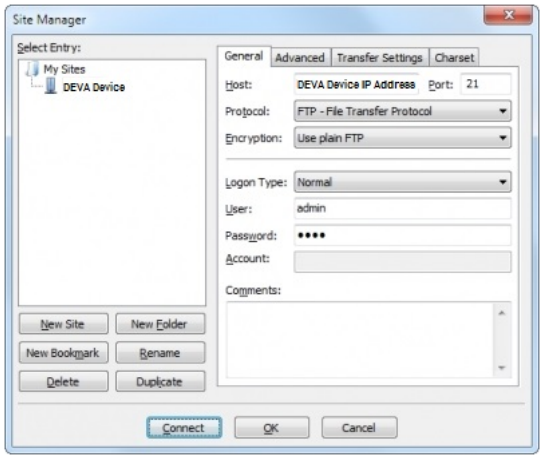
If the connection to the device is made through a Network address translation (NAT) router or firewall, the port forwarding feature of the router should be configured. The port forwarding is usually set in the firewall section of the router's menu. As each router has different port forwarding procedure, 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.

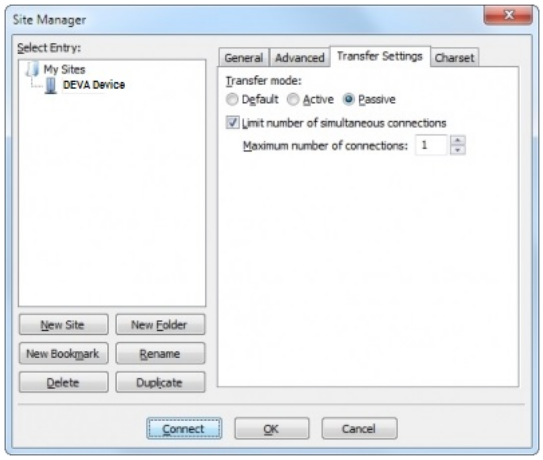
3. Example of FTP Client (FileZilla) Settings

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:



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E-mail: office@devabroadcast.com ,Web: www.devabroadcast.com

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 supplied with this product must be completed and returned to DEVA Broadcast Ltd. 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 delivery 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 calling the factory. The number should be prominently marked on the outside of the shipping carton.

B. Equipment must be shipped prepaid to DEVA Broadcast Ltd. Shipping charges will be reimbursed for valid Warranty claims. 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.

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E-mail: office@devabroadcast.com ,Web: www.devabroadcast.com

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.