

MAINTENANCE AND OPERATION
INSTRUCTION MANUAL

DB9000-TX

Professional IP Audio Encoder



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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.

Typographic conventions

This manual uses the following typographic conventions:

Style	Used for
NOTE	Important notes and recommendations
Example	Used when example text is cited
“Menu” on page XX.	References
[OK]	Interface Interactive buttons.
<i>Settings</i>	Menu paths are represented as follows: <i>Settings</i> > <i>General</i> > <i>Backup</i>

General Information

DB9000-TX is a multi protocol Audio over IP encoder, specially designed to serve DEVA's most demanding clients.

Encoding the analog audio sources into high quality configurable format happens in real time by HE-AAC Versions 1 and 2 or MPEG-1 Layer 3. DB9000-TX supports PCM uncompressed audio, guarantees audio transmission without quality loss.

Operating with either analog or digital audio signal, the device compresses the output signal, directly transmitted over IP-based networks to one or more (up to 10) decoders such as DB9000-RX, DB90-RX or other compatible IP audio players.

Once an audio source is selected, the encoded in real time audio is immediately sent to the network. DB9000-TX can act simultaneously as an Icecast compatible Server, Icecast source client or Real Time Protocol (RTP) sender. The audio stream can be spread over an IP-based network to one or more (up to 10) DB90-RX or other compatible IP audio decoders. Using the RS-232 port, DB9000-TX could be easily transformed from an Ethernet to a serial Redirector, enabling management of third party RS-232 managed equipment.

Highly valued by the professional broadcasters and situated on thousands of locations all over the world, DB90-TX allows management by any kind of web browser from your PC, PDA or any kind of mobile device. That is what makes it the best choice for professional and consumer use.

APPLICATION

- Audio broadcasting over IP-based networks.
- Point-to-Point Audio Transfer (DB9000-RX is required at the opposite site).
- Suitable for professional and consumer use.
- Ethernet to RS-232 Redirector

PRODUCT FEATURES

- High Quality HE-AAC (v.1 and v.2) and MPEG-1 Layer 3 Codecs
- 32 kHz, 44.1 and 48 kHz sample rates support
- Up to 56 kbps under HE-AAC
- Up to 320 kbps under MPEG-1 Layer 3
- Shoutcast / Icecast compatible TCP/IP stream
- Up to 10 simultaneously connected clients *
- 4 LEDs and Phones output for quick diagnostics
- IP address pronunciation at startup (through the headphones)
- Full Control and easy setup via a standard web browser
- UPnP for easy discovery in Local Networks
- Ethernet to RS-232 Redirector

* Actual limit depends on the speed of the link and/or other factors.

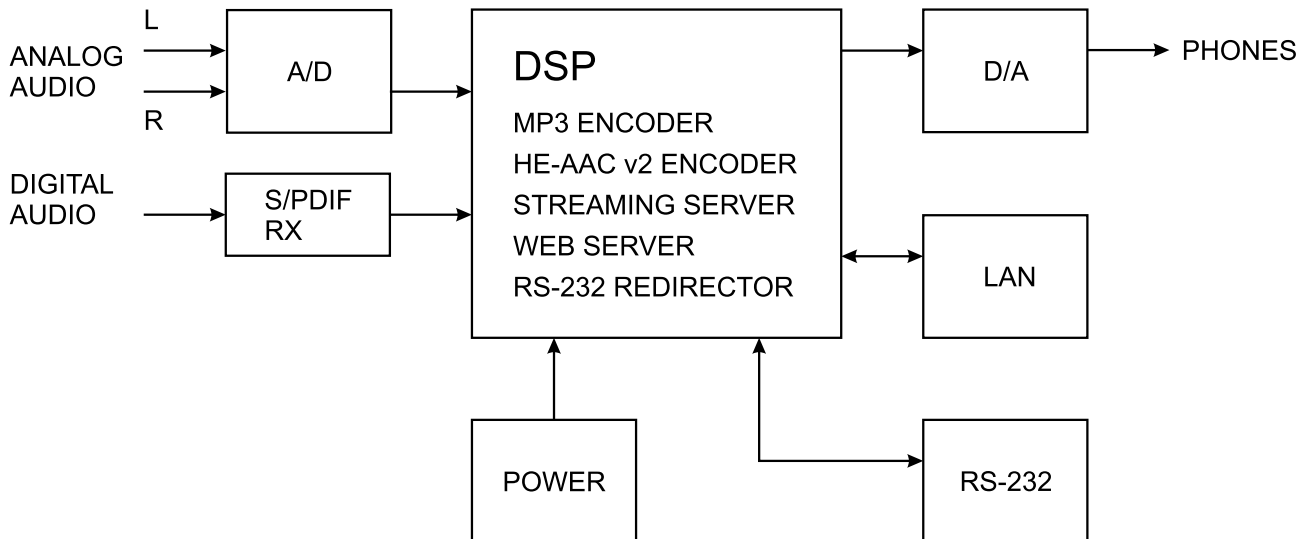
TECHNICAL SPECIFICATIONS

Audio codec	
Codec	HE-AAC (v.1 and v.2),; MPEG-1 Layer 3; raw PCM
Sample rates	32 kHz 44.1 kHz 48 kHz
Channels	1 or 2
Bitrates	Up to 56 kbps (HE-AAC); Up to 320 kbps (MPEG-1); Up to 1536 kbps (PCM);
MPEG-1 Layer 3 specific	
Encoding mode	Mono and stereo, Joint Stereo or Dual Channel
Emphasis	50µs, CCITT J.17 or none
PCM codec	
Channels	1 or 2
Bitrate	Up to 3072 kbps
Analog audio input	
Connector	2 x XLR, stereo
Type	Balanced
Impedance	600Ω or high impedance
Level	+6dBu / +12dBu, user selectable
Sample rate	96 kHz; Build-in sample rate converter used to produce lower sample rates
Dynamic range	>100 dB
Digital audio input	
Connector	XLR
Type	AES/EBU (IEC 60958)
Resampling	Thru build-in sample rate converter
Streaming server	
Type	Shoutcast / Icecast compatible TCP/IP stream
Codec	AAC, MP3, PCM
Clients limit	Up to 10 simultaneous clients
Icecast Source Client	
Type	Icecast Source Client
Codec	AAC, MP3, PCM
Count	1

RTP Sender	
Type	Unicast RTP Sender
Codec	AAC, MP3
Count	1
Phones audio output	
Connector	6.3mm jack, stereo
Type	Headphones
User interface	
Indicators	4 LEDs on front panel, 2 LEDs on rear panel
Web interface	Full control and status information
RS-232	
Type	TCP/IP to RS-232 Redirector
Connector	DB-9
Baud rates	9600 to 115200
Password protection	Yes
Network	
Connector	RJ-45
Type	Ethernet
Device discovery	UPnP support
Operating conditions	
Temperature	10°C - 45°C
Humidity	< 75%, non-condensing
Power requirements	
Power supply	115/230V AC (internal switch), 18VA
Connector	IEC320, rear panel
Size and weight	
Dimension (W x H x D)	1U, 19" x 1.7" x 6.9", 485 x 44 x 178mm
Weight	8 lbs, 3.5 kg

BLOCK DIAGRAM

A simplified block diagram of DB9000-TX is shown below



Because of the all-digital, minimalist-discrete-component nature of device circuitry, we have not provided schematic diagrams of the DB9000-TX in this Manual. Please, note that:

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

Safety Precautions

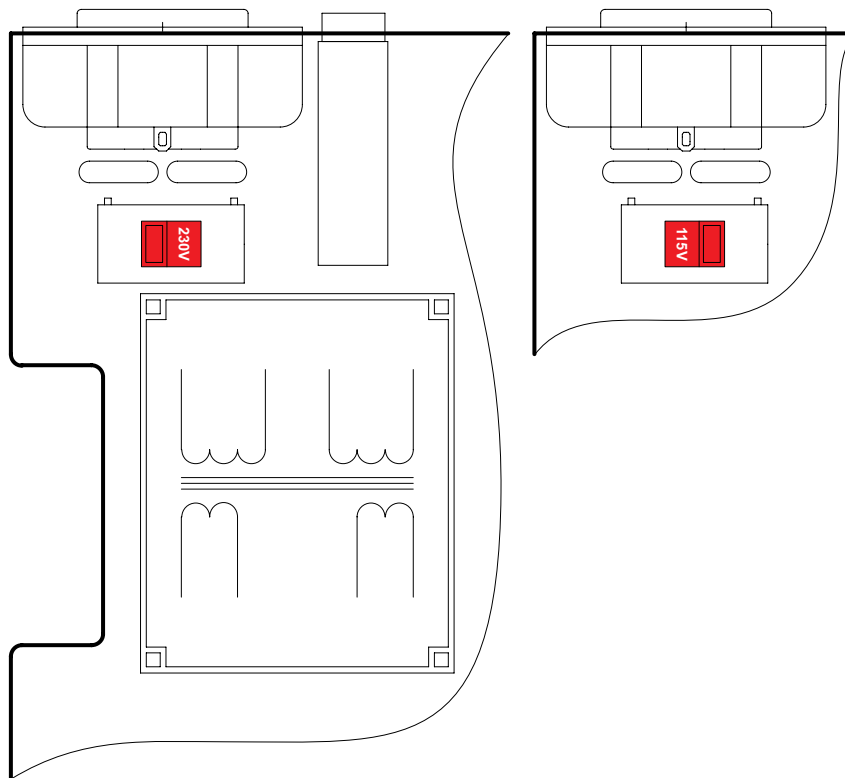
IMPORTANT: *Carefully read this paragraph as it contains important instructions concerning operator safety and directions regarding the installation, operation and maintenance of the equipment. Failure to observe the safety instructions and information given in this manual constitutes an infringement of the safety rules and design specifications provided for this piece of equipment. DEVA Broadcast Ltd. declines all responsibility if any one of the safety rules given herein is not observed. DEVA Broadcast Ltd. declines all responsibility if the end-user resells the product. The equipment is to be used by people capable of operating it in a trouble-free manner and it is assumed that they are aware of the following safety rules.*

- ◇ Keep this manual with the utmost care and close at hand so that it can be consulted whenever needed
- ◇ After unpacking the equipment, check its condition.
- ◇ Avoid banging the equipment.
- ◇ The packing material (plastic bags, polystyrene, nails, etc.) must never be left within reach of children, as these items are potential sources of danger.
- ◇ Do not use the equipment in places where the temperature is not within the recommended range, as specified by the manufacturer.
- ◇ Before connecting the equipment, make sure the nameplate specifications correspond to the mains electricity supply (the nameplate is located on the equipment enclosure).
- ◇ Do not remove the sticker from the equipment as it contains important specifications and the relevant serial number.
- ◇ To join the equipment to the mains supply, use the power cord purchased with the equipment.
- ◇ The equipment must be used only for the purposes it was designed for.
- ◇ Abuse or misuse of the equipment is extremely dangerous for people, pets and property. The manufacturer declines all responsibility for damage and injury resulting from improper use and mishandling.
- ◇ Certain basic safety rules must be observed when using electrical equipment, in particular:
 - Never touch the equipment with wet and/or damp hands or other parts of the body.
 - Keep the equipment away from drops of water or sprinkling systems.
 - Never use the equipment near high heat sources or explosive material.
 - Do not introduce any extraneous matter into the equipment.
 - Do not allow children or untrained people to use the equipment.
- ◇ Before cleaning or servicing the equipment outside, disconnect its power supply and wait at least 2 seconds before working on it, as recommended by current safety regulations.
- ◇ In the event of faults and/or improper operation, turn off the equipment, shut off the electrical power and call your dealer.
- ◇ Do not attempt to make repairs and/or adjustments when covers/guards or circuit boards are to be removed.
- ◇ Call your dealer for any repairs and be certain original spare parts are used. Failure to observe this rule may adversely affect the safety level of your equipment.
- ◇ The equipment is to be connected to the mains supply and provided with adequate and efficient earth conductors.
- ◇ When installing, leave a clearance of at least 1 cm around the equipment to allow air to pass freely.

Before you start

MAINS VOLTAGE SELECTOR

Unless specifically ordered for export shipment, the DB9000-TX is set at the factory for operation from 115V/230V, 50/60Hz AC mains. This can be confirmed by checking the voltage selector inside the unit. To change the mains voltage, first remove the top cover of the unit. A clearly marked slide switch is next to the AC mains connector on the encoder circuit board. *With power disconnected*, use a small screwdriver to set the switch for 115VAC or 230VAC operation. Be sure to install the appropriate fuse, DB9000-TX is equipped at the factory with 1A fuse.



POWER CORD

The detachable IEC-type power cord is supplied with the unit. The individual cord conductors may be color-coded in either of two ways:

1) In accordance with US standards:

BLACK = AC "HOT"

WHITE = AC NEUTRAL

GREEN = EARTH GROUND

2) To European CEE standards:

BROWN = AC "HOT"

BLUE = AC NEUTRAL

GREEN/YELLOW = EARTH GROUND

OPERATING RECOMMENDATIONS

For the normal and reliable operation of the DB9000-TX device we recommend to follow the next list of instructions:

- Please, install the unit only in places with good air conditioning. The unit has been designed for operation within an ambient temperature range extending from 10 to 50°C. But because adjacent, less efficient equipment may radiate substantial second-hand heat, be sure that the equipment rack is adequately ventilated to keep its internal temperature below the specified maximum ambient. When installing, leave a clearance of at least 1 cm around the equipment to allow air to pass freely.
- We do not recommend installation in rooms with high humidity, dusty places or other aggressive conditions.
- Although it is expected that a DB9000-TX will be installed close to exciters (or transmitters of even higher-power!), please practice reasonable care and common sense in locating the unit away from abnormally high RF fields.
- Please, use only already checked power supply cables and sources. The shielded cables usage is strongly recommended.
- We strongly recommend connecting the device only to reliable power supply sources. In case of unstable power supply, please use UPS (Uninterruptible Power Supply).
- Please, use the device only with placed top cover to avoid any electromagnetic anomalies which may cause problems of the normal functionality of the unit.
- Please, connect DB9000-TX only to good quality Internet connection. This is very important for the normal remote operation of the unit.
- Please, check if your network settings pass through all the data traffic required for the normal operation of the DB9000-TX unit.

RADIO FREQUENCY INTERFERENCE (RFI)

Although we have anticipated DB9000-TX installation in the immediate proximity of broadcast transmitters, please do practice some care using the unit away from abnormally high RF fields.

Unpacking and Inspection

IT IS VERY IMPORTANT that the Warranty Registration Card found at the front of this Manual be completed and returned. Not only does this assure coverage of the equipment under terms of the Warranty and provide a means of tracing lost or stolen gear, but the user will be sent specific SERVICE OR MODIFICATION INSTRUCTIONS issued by DEVA Broadcast Ltd.

As soon as the equipment is received, inspect carefully for any shipping damage. If damage is suspected, notify the carrier at once, and then contact DEVA Broadcast Ltd.

We recommend that you retain the original shipping carton and packing materials, just in case return or reshipment becomes necessary. In the event of return for Warranty repair, shipping damage sustained as a result of improper packing for return *may invalidate the Warranty!*

Mounting

RACK REQUIREMENT

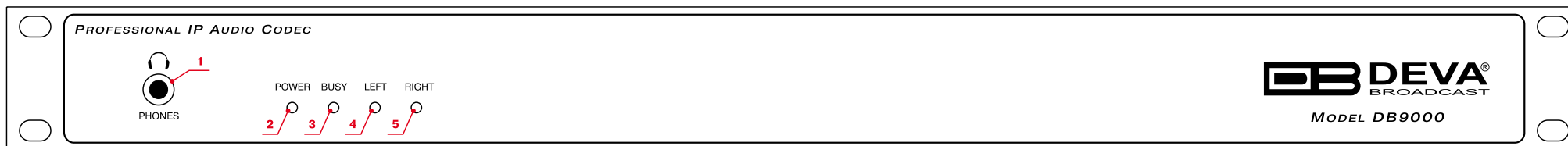
The DB9000-TX mounts in a standard 19-inch equipment rack and requires only 1¾ inches (1U) of vertical rack space. The use of plastic washers is recommended to protect the painted finish around the mounting holes.

HEAT DISSIPATION

Consuming less power than the light in a refrigerator, the DB9000-TX itself generates negligible heat. The unit is specified for operation within an ambient temperature range extending from freezing to 120°F/50°C. But because adjacent, less efficient equipment may radiate substantial heat, be sure that the equipment rack is adequately ventilated to keep its internal temperature below the specified maximum ambient.

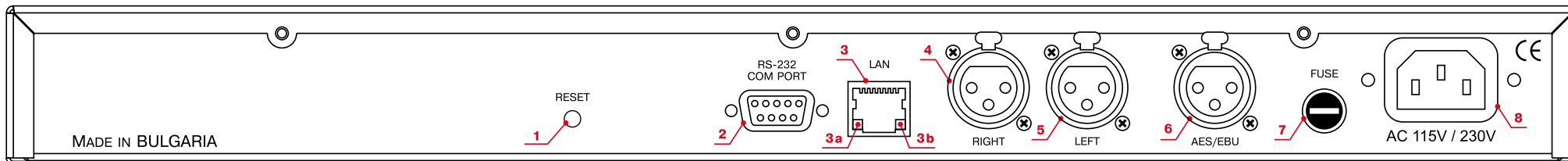
Panel Indicators and Appointments

FRONT VIEW



- 1 - Phones Output. The following audio signals are reproduced through the headphones:
 - Voice Announcement of DB9000-TX IP address upon startup;
 - Audio signal from the selected input;
- 2 - Power LED Indicator.
- 3 - Connection LED Indicator. This LED can be in one of the following states:
 - Off - NO clients are connected to the encoder;
 - Blinking slow – at least one client is connected to the streamer;
 - Blinking fast – maximum allowable clients are connected to the streamer ([see “Stream Server Settings” on page 26](#));
- 4 - Left Channel Level LED Indicator. This LED can be in one of the following states:
 - Off - the channel level is within norms;
 - Blinking – indication of low signal level;
 - Constantly lit – indication of high signal level;
- 5 - Right Channel Level LED Indicator. This LED can be in one of the following states:
 - Off - the channel level is within norms;
 - Blinking – indication of low signal level;
 - Constantly lit – indication of high signal level;

REAR VIEW



- 1 - Factory Defaults Reset Button
- 2 - RS-232 Serial COM Port - DB-9 Female Connector;
- 3 - LAN Port / Internet Input – RJ-45 Connector;
- 3a - Network Activity LED Indicator (RJ-45 built-in);
- 3b - Network Availability LED Indicator (RJ-45 built-in);
- 4 - Right - Analog Audio Input – Balanced XLR Female;
- 5 - Left - Analog Audio Input – Balanced XLR Female;
- 6 - AES/EBU - Digital Audio Input – Balanced XLR Female;
- 7 - Fuse;
- 8 - Main Power Supply;

Connecting of DB9000-TX

ANALOG AUDIO INPUTS

Using a cable ending with two standard XLR connectors connect the analog signal source to the analog audio inputs of DB9000-TX.

WARNING: Do not exceed maximum input level. This may permanently damage DB9000-TX.

DIGITAL AUDIO INPUT

Using a cable ending with a standard XLR connectors connect the AES/EBU signal source to the digital audio input of DB9000-TX.

NOTE: As only one input can be managed by the encoder at a time, please select the preferred signal source input – either analog or digital one. Selecting the preferred input can be performed under CONFIGURATION menu ([see “Audio Settings” on page 25](#)).

LAN PORT

For normal operation it is necessary the encoder to be connected to a local network or Internet by cable with RJ-45 connector.

RS-232 COM PORT

Using standart DB-9 cable connect DB9000-TX to any RS-232 compatible equipment.

Operation

DB9000-TX is controlled through the built-in web server and a standard web browser can be used to monitor its status or make some adjustments. To connect to the device you need to know its IP address and follow the next steps:

- Open a web browser.
- Enter the encoder's IP address in the browser's address field.
- Press <ENTER>.

If you do not know the encoder's IP address you can hear it through the headphones when you turn on DB9000-TX. The other option to find out the IP address is using UPnP discovery in local networks ([see "UPnP discovery in Local Networks" on page 34](#)).

The web interface consists of the following pages:

- Status
- Configuration
 - Network
 - IP Audio
 - COM Port
- Factory Defaults
- Reboot
- Firmware Update

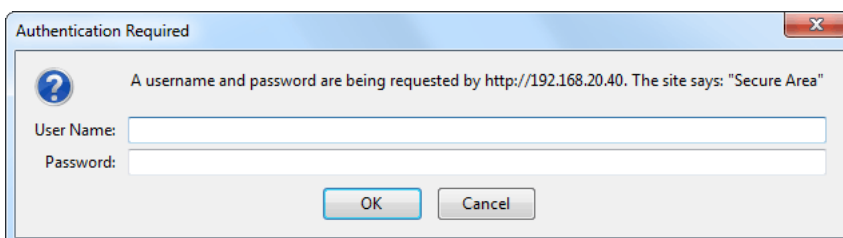
At the top of each page is located the Navigational Menu and underneath, on the left side is the section with relevant information and adjustments. There is a kind of help section on the right side, containing brief information about each of the fields on the left.

Hover your mouse over any of the left side fields to bring out a field's description next to the mouse pointer.

The picture below is illustrating STATUS page opened:



NOTE: As shown on the picture below a Username and Password may be requested if the Access Control is turned on and a page other then STATUS is selected ([see “WEB Server Settings” on page 27](#)). Default values are *user* and *pass*.



STATUS

On the picture below is shown the page with current device status:



The screenshot displays the 'Status' page of a DEVA Broadcast device. The page has a blue header with navigation links: Status, Configuration, Factory Defaults, Reboot, and Firmware Update. The main content is split into two columns. The left column shows 'Audio Status' with two level indicators (Left and Right) both at -80.8dBFS, 'Network Status' with details for MAC address (00:04:A3:1E:3C:25), Type (Assigned by DHCP), IP address (192.168.20.206), Netmask (255.255.255.0), and Gateway (192.168.20.1), and 'Active connections' showing one 'Remote Peer'. The right column provides explanations for these sections: 'Audio Status' (Left and Right peak audio levels), 'Network status' (MAC address, IP assignment method, IP address, Netmask, and Gateway), and 'Live data' (a toggle icon to turn live data ON/OFF). The footer contains 'DEVA Broadcast' and 'Model: DB9000-TX • Serial: WORKUNIT'.

This page contains information regarding current DB9000-TX status as follows:

- Input Signal Level;
- Network Settings;
- List of Active Connections;

Level of the input signal and the list of active connections are updated dynamically which makes it possible to remotely monitor encoder's operation.

Under Network Status are shown MAC address and current IP address, Network mask, Gateway and the method in which they have been assigned:

- Static Allocation Settings;
- Allocated by DHCP server ;
- Automatically generated;

The last option uses AutoIP to generate a unique IP address. This option is activated automatically when the device is set to use DHCP server ([see "Network Settings" on page 23](#)), but such server is not available.

The list of Active Connections provides information for the currently connected clients. Shown are the IP address and local port of each client. Link duration is visible as well.

In the upper right corner is located LIVE DATA icon. Clicking on the icon will toggle live data ON and OFF as follows:



- live data is ON



- live data is OFF.

DB9000-TX CONFIGURATION



The screenshot shows the configuration page for the DEVA DB9000-TX. The top navigation bar includes 'Status', 'Configuration' (selected), 'Factory Defaults', 'Reboot', and 'Firmware Update'. Below this, there are tabs for 'Network', 'IP Audio', and 'COM Port'. The main content area is split into two columns. The left column contains sections for 'General', 'WEB server', and 'SNMP'. The 'General' section has radio buttons for 'DHCP' (Enabled/Disabled) and input fields for 'IP Address', 'Netmask', and 'Gateway', all set to '0.0.0.0'. The 'WEB server' section has input fields for 'Port' (2101), 'Username' (user), and 'Password' (pass). The 'SNMP' section has a 'Download' button for the MIB file, radio buttons for 'Agent' (Enabled/Disabled), and input fields for 'Agent Port' (161), 'Manager Port' (162), 'Agent ID' (1), 'Community' (DEVA9000), and 'Manager IP' (0.0.0.0). A 'Save' button is at the bottom of this column. The right column is a blue box titled 'Network settings' containing detailed text for 'DHCP', 'IP Address', 'Netmask', and 'Gateway' settings, and another blue box titled 'Web settings' containing detailed text for 'Port', 'Username', and 'Password' settings. The footer shows 'Deva Broadcast Ltd. © 2012' and 'Model: DB9000-TX • Serial: 110307001'.

Network Settings

- DHCP – as DHCP Client is used to automatically obtain the Network Settings. It can be enabled or disabled.
- IP Address – a field where static IP address is to be inserted in case that DHCP client is not used. Example: 192.168.0.2.
- Netmask – a field where Static Subnet Mask is to be inserted. This parameter is not used if DHCP Client is enabled. Example for Netmask is: 255.255.255.0.
- Gateway – a field where Static Gateway is to be inserted. This parameter is not used if DHCP Client is enabled. Example for Gateway is: 192.168.0.1.

NOTE: If the encoder's IP address is changed, it is necessary to enter the new IP address in your browser.

WEB Server Settings

- Port – this is the TCP port of the WEB Server. Default value is 80.
- Username – user name of the WEB Server. Default value is *user*.
- Password – Password of the WEB Server. Default value is *pass*.

NOTE: You can define Username only, Password only or both of them. If both Username and Password are left blank, NO security is used.

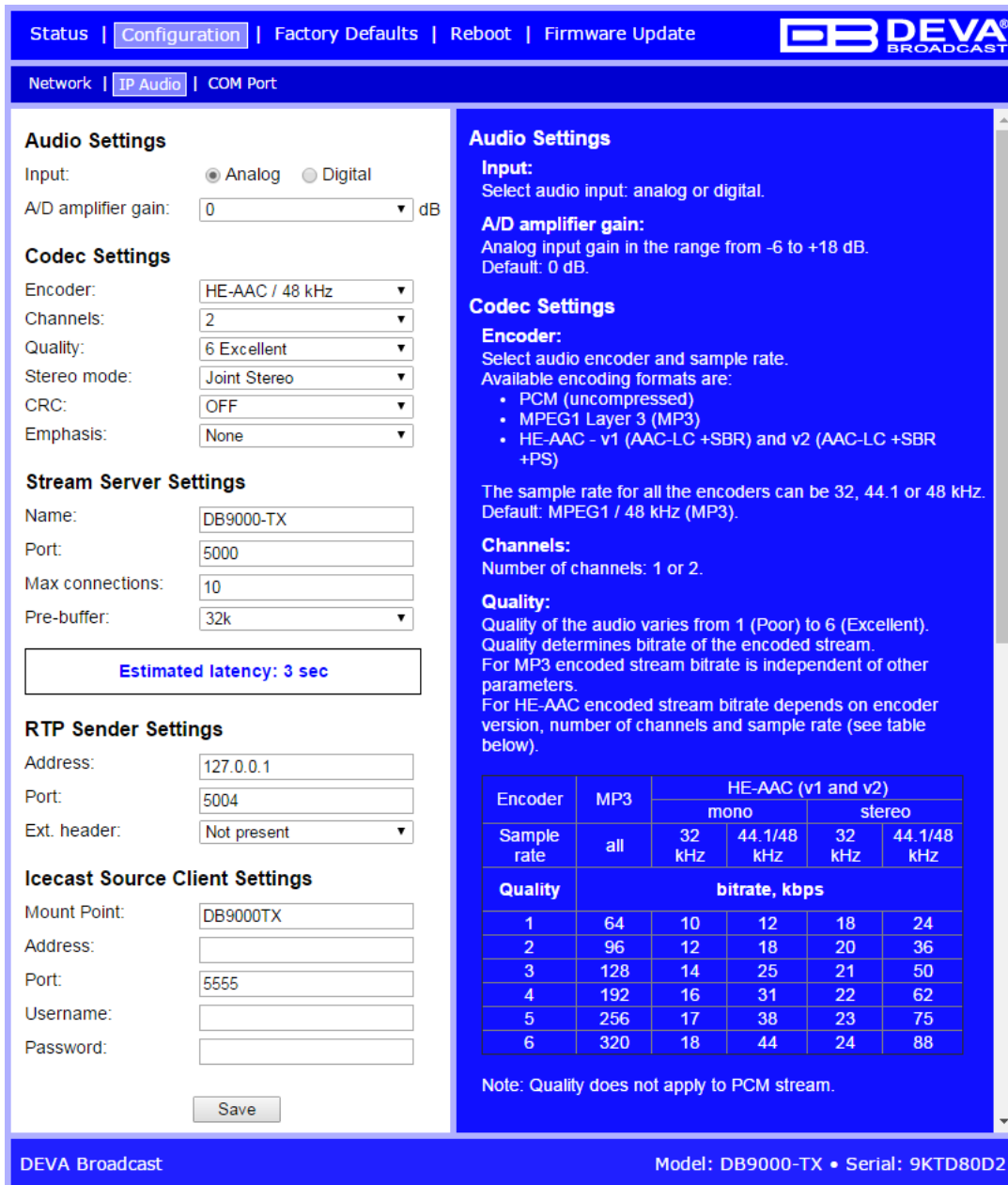
SNMP Settings

SNMP MIB File: Press the Download button to download DB9000-TX SNMP MIB file.

NOTE: The MIB file may change from one firmware revision to the other. Downloading this file from the device ensures that you have the proper MIB file.

Specify Agent ID, Agent Port, Read/Write Communities, Manager IP and Manager Port.

NOTE: Agent ID is used to identify the device among others when a SNMP notification is send.
Agent - enables/disables SNMP Agent.



The screenshot shows the configuration page for a DEVA Broadcast device. The top navigation bar includes 'Status', 'Configuration' (selected), 'Factory Defaults', 'Reboot', and 'Firmware Update'. The main content area is divided into several sections:

- Audio Settings:** Input (Analog/Digital), A/D amplifier gain (0 dB).
- Codec Settings:** Encoder (HE-AAC / 48 kHz), Channels (2), Quality (6 Excellent), Stereo mode (Joint Stereo), CRC (OFF), Emphasis (None).
- Stream Server Settings:** Name (DB9000-TX), Port (5000), Max connections (10), Pre-buffer (32k). A box below indicates 'Estimated latency: 3 sec'.
- RTP Sender Settings:** Address (127.0.0.1), Port (5004), Ext. header (Not present).
- Icecast Source Client Settings:** Mount Point (DB9000TX), Address, Port (5555), Username, Password.

On the right side, there is a detailed 'Audio Settings' section with explanatory text and a table:

Audio Settings
Input: Select audio input: analog or digital.
A/D amplifier gain: Analog input gain in the range from -6 to +18 dB. Default: 0 dB.
Codec Settings
Encoder: Select audio encoder and sample rate. Available encoding formats are:
 • PCM (uncompressed)
 • MPEG1 Layer 3 (MP3)
 • HE-AAC - v1 (AAC-LC +SBR) and v2 (AAC-LC +SBR +PS)
 The sample rate for all the encoders can be 32, 44.1 or 48 kHz. Default: MPEG1 / 48 kHz (MP3).
Channels: Number of channels: 1 or 2.
Quality: Quality of the audio varies from 1 (Poor) to 6 (Excellent). Quality determines bitrate of the encoded stream. For MP3 encoded stream bitrate is independent of other parameters. For HE-AAC encoded stream bitrate depends on encoder version, number of channels and sample rate (see table below).

Encoder	MP3	HE-AAC (v1 and v2)			
		mono		stereo	
Sample rate	all	32 kHz	44.1/48 kHz	32 kHz	44.1/48 kHz
Quality	bitrate, kbps				
1	64	10	12	18	24
2	96	12	18	20	36
3	128	14	25	21	50
4	192	16	31	22	62
5	256	17	38	23	75
6	320	18	44	24	88

Note: Quality does not apply to PCM stream.

At the bottom, the footer shows 'DEVA Broadcast' and 'Model: DB9000-TX • Serial: 9KTD80D2'.

Audio Settings

- Input – select analog or digital input to be used.
- A/D Amplifier Gain – Analog input gain in the range from -6 to +18 dB. Default level is 0dB.

Codec Settings

- Encoder + Sample Rate – select audio encoder and sample rate. Available encoding formats are:
 - HE-AAC v1 (AAC-LC +SBR)
 - HE-AAC v2 (AAC-LC +SBR +PS)
 - MPEG1 Layer 3 (MP3)
 - PCM (uncompressed)
- Channels – select number of the input channels (1 or 2). If only one channel is selected, then the Left one is used.
- Quality – Audio quality varies from 1 (Poor) to 6 (Excellent). Quality determines bitrate of the encoded stream. For MP3 encoded stream bitrate is independent of other parameters.

For HE-AAC encoded stream bitrate depends on encoder version, number of channels and sample rate (see table below):

Encoder	MP3	HE-AAC (v1 and v2)			
		mono		stereo	
Sample rate	all	32 kHz	44.1/48 kHz	32 kHz	44.1/48 kHz
Quality	bitrate, kbps				
1	64	10	12	18	24
2	96	12	18	20	36
3	128	14	25	21	50
4	192	16	31	22	62
5	256	17	38	23	75
6	320	18	44	24	88

Please note all rates are in kbps.

NOTE: Quality does not apply to PCM stream. For PCM stream bitrate is calculated by the following equation: (sample rate)*(Number of channels)*16, [bps].

- Stereo mode – selecting stereo mode. Supported modes are Stereo, Joint Stereo or Dual Channels.
- CRC - selecting whether MP3 stream to contain information on error detection.
- Emphasis – selecting the emphasis to be applied. Supported values are 50µs, CCITT J.17 and NO emphasis.

NOTE: These parameters apply only to MP3 stream.

Stream Server Settings

- Name – this is the encoder’s name displayed as name of the stream.
- Port – a field where TCP port of the stream server must be inserted. Default value is 5000.
- Pre-buffer – initial amount of data sent to the client. Large value decreases startup delay caused by buffering on the client side. This also introduces latency in the audio. Latency is bitrate dependent and can be estimated by the formula:

$$\text{Latency} = (\text{PreBuffer} \times 8) / \text{BitRate}, [\text{sec}].$$
 Default value is 96k.
- Max connections – maximum number of simultaneous connected clients. This value can be in the range from 1 to 10. Default value is 2.

RTP Settings

- Address – URL or IP Address of the RTP Receiver.
- Port – UDP port of the RTP Receiver.
- Ext. header – RTP Extension header present in stream. Used for compatibility with some RTP receivers. By default the option is set to *Not present*.

Icecast Settings

- Mount point – specify the Icecast Mount point. The Mount Point should be written without the leading slash. For example - `stream9`, instead of `/steam9`.
- Address – URL or IP Address of the Icecast Receiver. The address should be written without the `http//`, just `stream.vendor.com`
- Port – TCP port of the Icecast Receiver.
- Username – Username for Authentication with Icecast Receiver.
- Password – Password for Authentication with Icecast Receiver.

Status | Configuration | Factory Defaults | Reboot | Firmware Update

Network | IP Audio | COM Port

RS-232 Settings

Baudrate: 9600

Ethernet to RS-232 Redirector

Port: 8001

Password:

Save

RS-232 settings

Baudrate:
RS-232 port baudrate.
Default: 9600.

Ethernet to RS-232 Redirector

Port:
Ethernet to RS-232 redirector TCP port.
Default: 8001.

Password:
Password for the Ethernet to RS-232 redirector. It is used to restrict the access to RS-232 from the network. If Password is left blank no security is used. Up to 15 alpha-numeric characters.
Default: (blank).

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Model: DB9000-TX • Serial: 110307001

RS-232 Settings

- Baudrate - select RS-232 COM port baudrate. Default value is 9600.
- Port - a field where TCP port of the RS-232 Redirector must be inserted. This is the port to which your software should connect to communicate with any external device connected to the RS-232 Com Port. Default value is 8001.
- Password - Password for the RS-232 Redirector. These are the first symbols your software must send to authenticate itself to the Redirector. If left blank, NO security is used. Default value is *pass*. Maximum 15 alpha-numeric characters can be used.

Applying New Settings

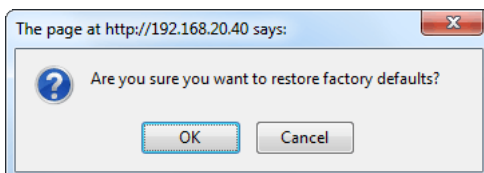
In order new settings to take effect, it is necessary to press the [Save] button. Please keep in mind that some of the new settings can reset DB9000-TX.

FACTORY DEFAULT SETTINGS



On the above picture is shown the Factory Defaults page. Restoring DB9000-TX to its Factory Defaults can be done by following the next steps:

- Press the “Restore” button.
- A new window as the one shown below will appear:



- Confirm that you want to restore factory defaults.
- Wait for the process to complete.

All the settings will be restored to their factory defaults except the Network Settings, which will remain the same.

On completion of the process DB9000-TX settings will have the following values:

Audio Default Settings

- Input: analog
- A/D amplifier gain: 0 dB
- Channels: 2
- Encoder + Sample rate: MPEG 1/48 kHz
- Quality: 6 Excellent
- Stereo mode: Stereo
- CRC: ON
- Emphasis: None

Network Default Settings

All General Network Settings will remain unchanged.

WEB Server Default Settings

All WEB Server Settings will remain unchanged.

SNMP Default Settings

- Agent : Disabled
- Agent Port: 161
- Community: DEVA9000
- Manager IP: 0.0.0.0
- Manager Port: 162
- Agent ID: 0

Stream Server Default Settings

- Name: DB9000-TX
- Port: 5000
- Pre-buffer: 96k
- Max connections: 2

RS-232 Default Settings

- Baudrate: 9600
- Port : 8001
- Password: pass

RTP Settings

- Port: 5004

Icecast Settings

- Port: 5555
- Username: source
- Password: pass

HARDWARE RESET

This process will fully restore DB9000-TX to its Factory Defaults, including the Network settings. Hardware Reset can be done by following the next steps:

- Disconnect the power supply cable from the unit.
- Locate the RESET button on Rear panel.
- Press and hold the RESET button.
- Connect the power supply cable to the unit.
- Keep the RESET button pressed until the POWER led starts blinking.
- Release the RESET button.
- Wait for DB9000-TX to reboot with the factory default settings.

On completion of the process DB9000-TX settings will have the following values:

Network Default Settings

- DHCP: enabled

WEB Server Default Settings

- Port: 80
- Username: user
- Password: pass

All other settings will have the factory default values described in chapter [“Factory Default Settings”](#).

NOTE: After the process completes the DHCP Client is enabled. The DB9000-TX will obtain IP Address from DHCP server shortly.

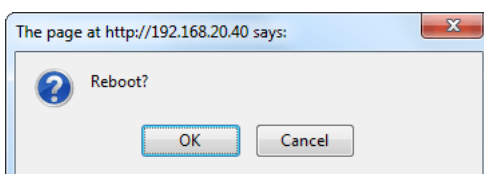
ATTENTION: Please note that the WEB Server’s Port, Username and Password will be changed, so it is possible the page not to be loaded after restoring factory defaults. You may be asked to re-enter the encoder’s address and/or username and password.

REBOOTING



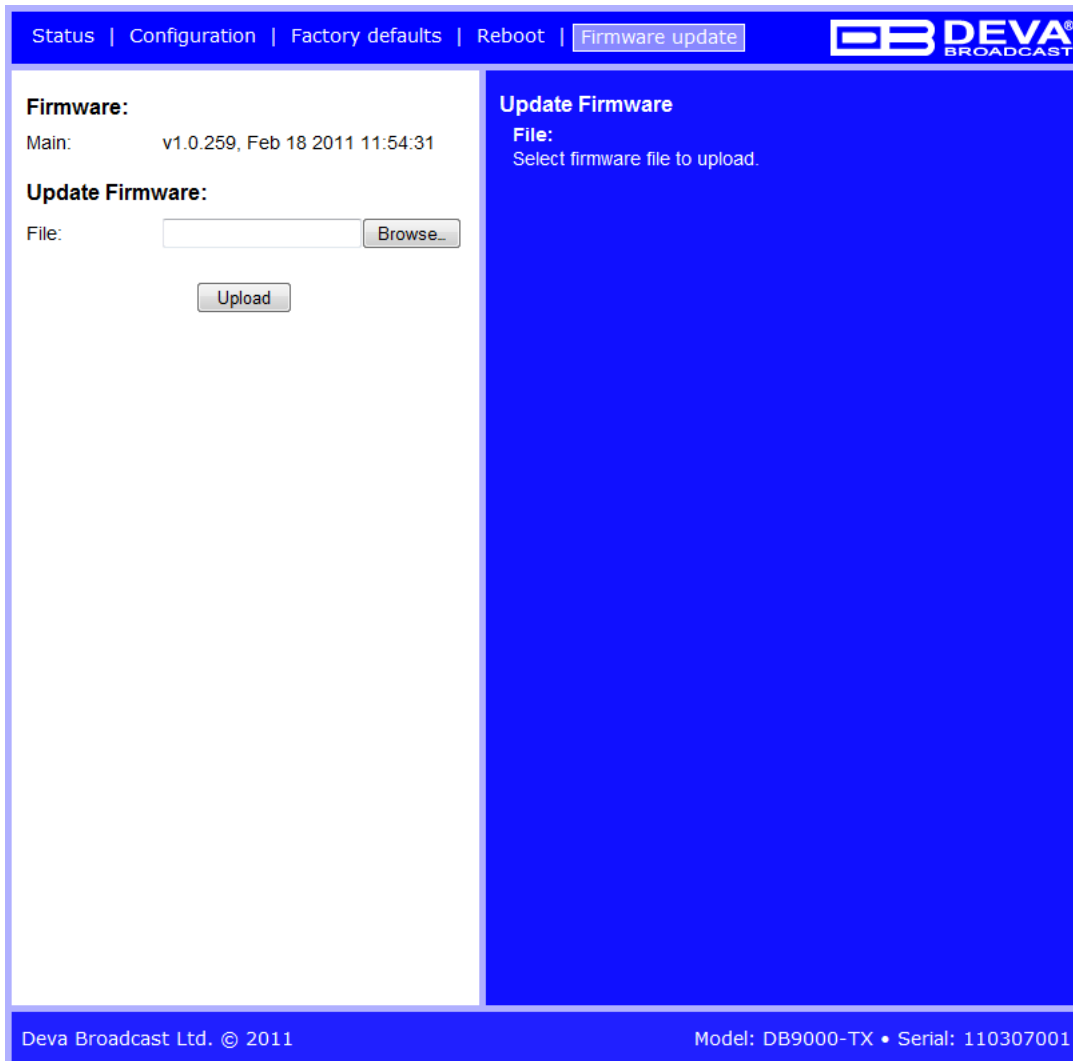
On the above picture is shown the Reboot page. Rebooting of DB9000-TX can be done by following the next steps:

- Press the “Reboot” button.
- The following warning window will appear:



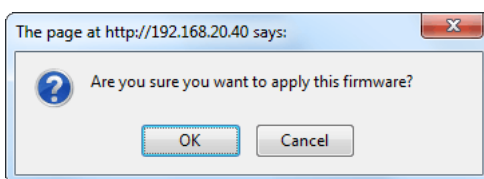
- Confirm that you want to reboot the encoder.
- Wait for the process to complete.

FIRMWARE UPDATE



On the above picture is shown the Firmware Update page. To update the encoder's firmware, please follow the next steps:

- Select the new firmware file.
- Press the "Upload" button.
- The following warning window will appear:



- Wait for the process to complete

CONNECTING TO THE STREAM SERVER

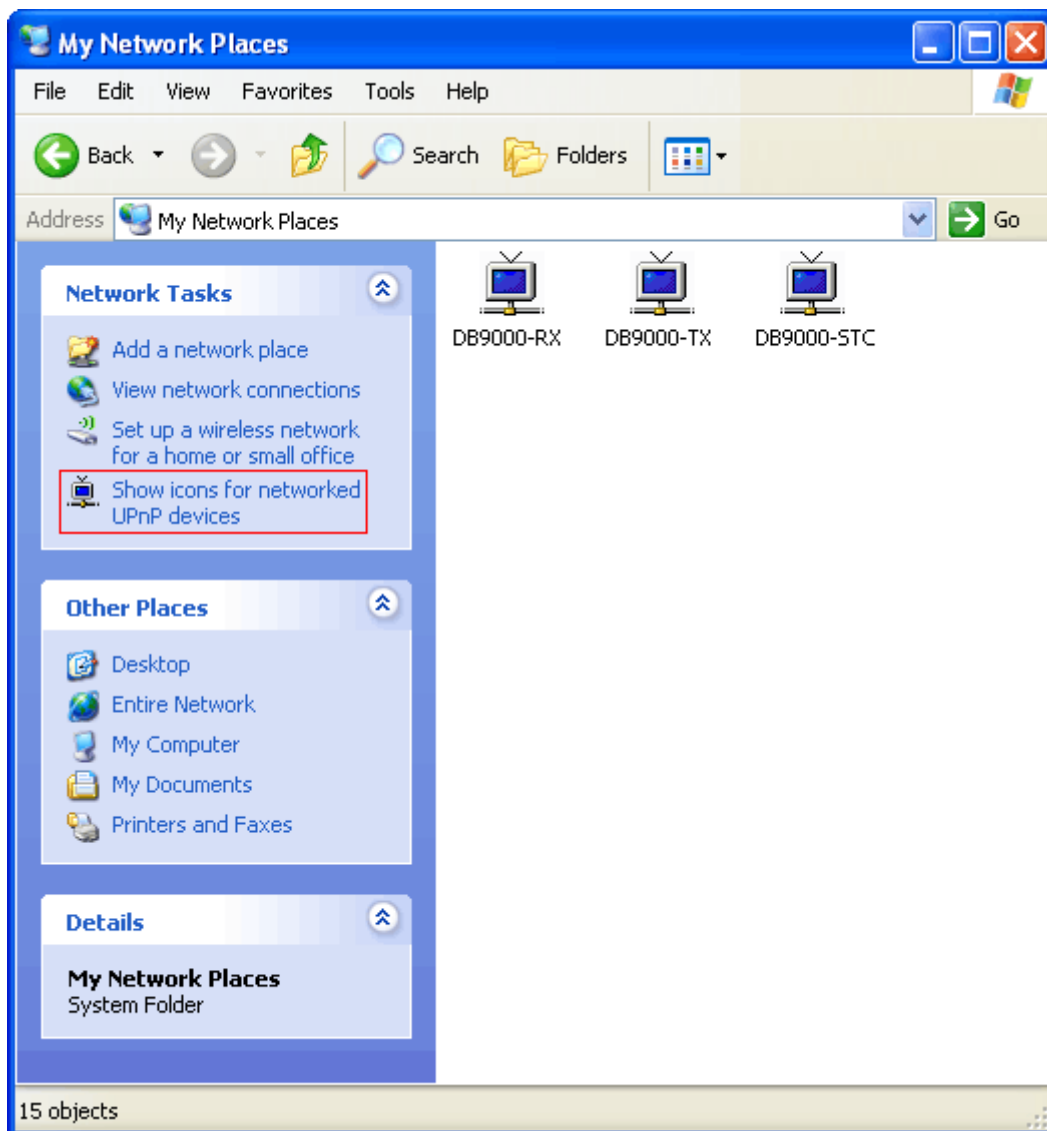
To listen to the stream audio, please follow the next steps:

- Open an audio player supporting streaming audio
- Select “Play URL”
- Insert device’s address and port. For example: `http://192.168.0.2:5000/`
- Wait to be connected

UPnP discovery in Local Networks

DB9000-TX implements UPnP which lets you easily find it in your local network. For this purpose your system should have UPnP enabled ([see “UPnP Activation” on page 35](#)). To discover the device follow the next steps:

- Connect the device to the local network.
- Open “My Network Places” on your computer.
- Find the decoder’s icon.
- Double click it to open the DB9000-TX web interface.

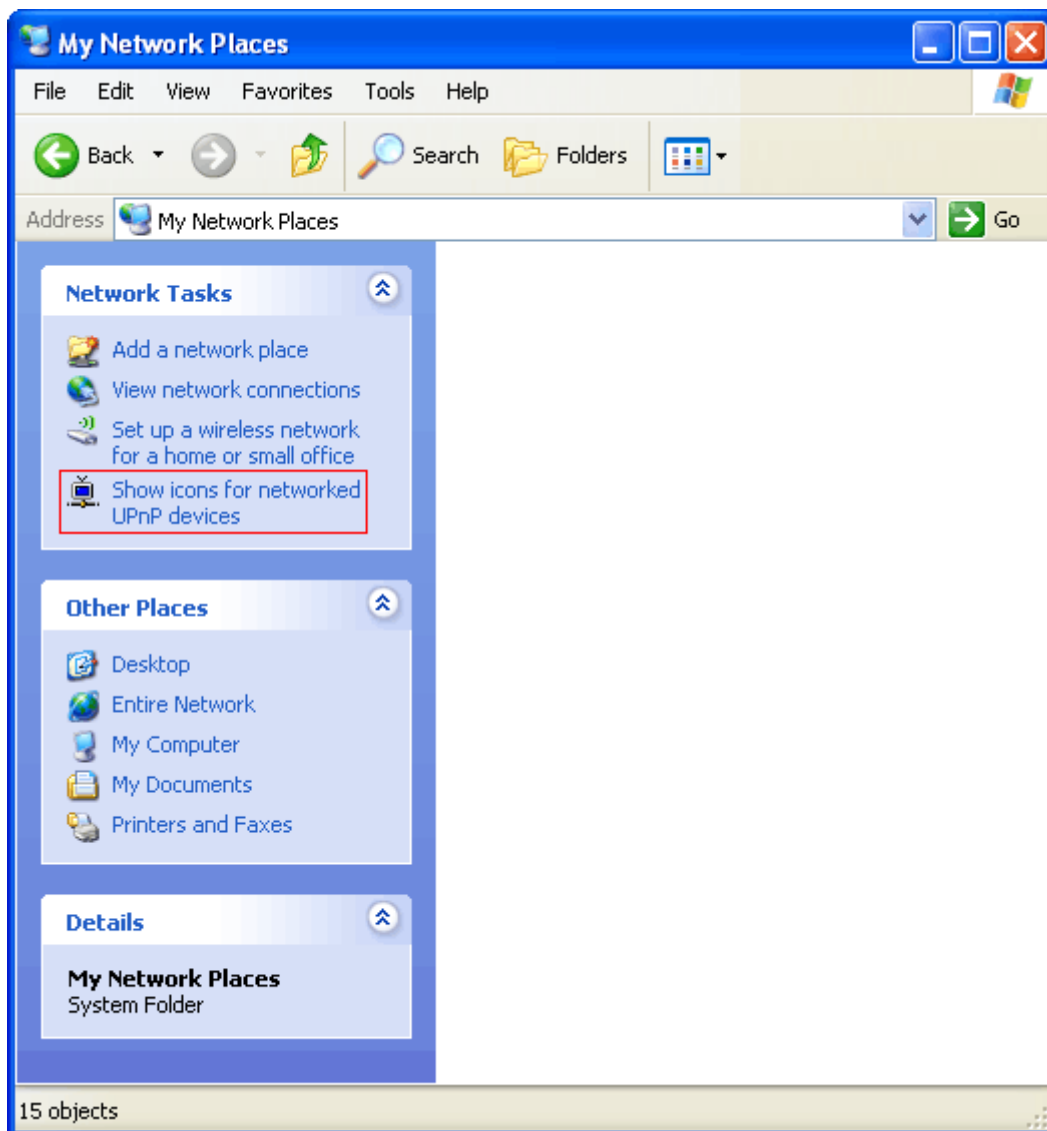


UPnP Activation

NOTE: The following explanations apply to Windows XP SP2 or SP3! If you use another operating system, please contact your system administrator.

Open “My Network Places”. If you have the caption displayed in the picture below, click on it. Then click “Yes” and wait for the process to complete. Now you should see the device. If you still have troubles finding the device, please see

<http://support.microsoft.com/kb/941206> or contact your system administrator.



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 Authorization (RA) number issued by DEVA Broadcast Ltd. prior to its return. An RA 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.

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.