User Manual and Installation Guide

Pico Broadcaster

US Patent No.: 8,063,996. Other patents pending.

Touchboards
205 Westwood Ave, Long Branch, NJ 07740
Phone: 866-94 BOARDS (26273) / (732)-222-1511
Fax: (732)-222-7088 | E-mail: sales@touchboards.com

Models:
HDS-PB100

ISSUED: 11-07-13 SHEET #: 180-9044-1

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Important Safety Instructions

Warnings/Safety

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The product was submitted and evaluated for use at the maximum ambient (Tma)ὰ 40°C
16. WARNING: To reduce the risk of fire or electrical shock do not place this apparatus in a position where it is exposed to dripping or splashing liquid, rain, moisture, or exceedingly high humidity. Objects containing liquid shall not be placed in proximity to the unit such that they present a risk of spillage onto the apparatus.

	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be a sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

	Le symbole de l'éclair avec une flèche à son extrémité, dans un triangle équilatéral, a pour but de vous avertir de la présence d'une « tension électrique dangereuse » et non isolée à l'intérieur de l'enceinte de l'appareil, qui peut être suffisamment puissante pour constituer un risque d'élctrocution pour les personnes
	Le point d'excalamation dans un triangle équilatéral vous avertit de l'existence d'instructions importantes de fonctionnement et d'entretien (intervention) dans la documnetation accompagnant l'appareil.

Important Safety Instructions

17. To avoid electric shock, never stick anything in the slots on the case or remove the cover.
18. This product is intended for indoor use only.

Important Information

- Never use this product in an aircraft or a medical facility as it can cause interference or an undesirable effect.
- The use of this product in the following locations may result in abnormal audio output (noise, etc,).
    - When the product is placed near a refrigerator or metal structure.
    - A cluttered room where the wireless signals may be blocked.
- This product has been tested and manufactured to comply with each country's safety rules. However, there is no guarantee that interference will not occur in some installations. If interference happens, decrease the distance between the product and receiving antenna.
- Optimal use of this product is for in-room/multi-room applications with a range of up to 350 ft. (106m) away line of sight, up to 30ft (9m) through one structure.
- Any changes or modifications not expressly approved by the manufacturer of this device could void the product warranty.
- This equipment must be installed and operated in accordance with the provided instructions. The Transmitter must be installed to provide a separation distance of at least 8" (20cm) from all persons and must not be operating near or in conjunction with any other Transmitter. End users and installers must be provided with installation instructions and Transmitter operating conditions for satisfying RF exposure compliance.
- This device should be used only as specified within this manual to meet RF exposure requirements. Use of this device in a manner inconsistent with this manual could lead to excessive RF exposure conditions.

Unit Care Recommendations

To clean, use a soft, dry cloth only. Do not use water or other cleaning products as they may cause electrical failure or damage the surface of the product.

Introduction

The HDS-PB100 is a personal broadcasting device that is capable of broadcasting HD quality content from a computer or select media player(s) with IP transport output capabilities to any open "white space channels" local to the area.

What are White Space Channels?

White space channels refer to the channels that were left over from the analog to digital conversion. The FCC is the governing body over white space use in the US.

Broadcasting on White Space Channels

The HDS-PB100 requires an internet signal in order for it to become enabled based upon its registration with the FCC when installed. The FCC has delegated white space channels between channels 21 to 51 for personal broadcast and requires a fee to use them. The annual fee is approximately $55. **Note:** The first years' fee is included within the original purchase price of the unit. Notification is sent on an annual basis that further use will require payment of annual fee.

Items Needed for Installation

- Network connection that allows internet connectivity
- PC/Laptop or Media Player that has the ability to output a Transport Stream via the Ethernet port
- Digital Television(s) that has/have ATSC tuner(s)
- Over-the-air antenna to connect to DTV tuner
- Cat 5e/6 network cables for interconnections
- Mounting hardware (optional)

Package Contents

Ensure that the following items are present in the package. If any items are missing or damaged, please call Peerless-AV Customer Care at 1-800-865-2112. (available 7:00am - 7:00pm (CST) Monday - Friday).

Pico Broadcaster

Antenna

Power Adapter with Inserts

Manual

USB Flash Drive

Product Overview

Front

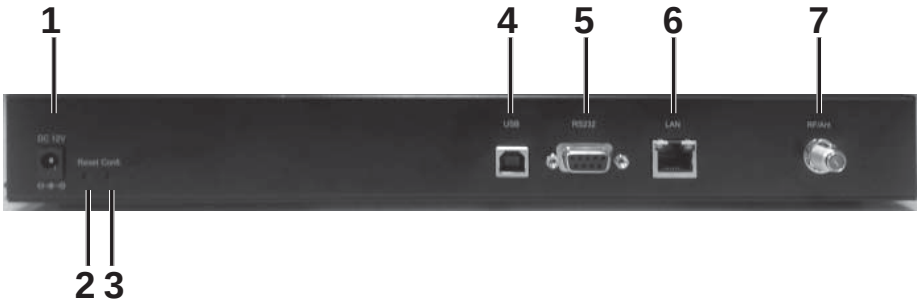
1. SD Card
- SD card slot. (Factory use only)

2. Error
- The Error indicator light will be illuminated red if there is a problem with the Broadcaster.

3. On Air
- The On Air indicator light will be illuminated blue signaling that the Broadcaster is enabled.

4. Power
- The Power indicator light will be illuminated blue signaling that power is applied to the Broadcaster.

Back



1. DC 12V
- DC power input port.

2. Reset
- Restores settings back to factory defaults. (Factory use only)

3. Confi.
- Allows for internal Broadcaster configuration. (Factory use only)

4. USB
- USB port. (Factory use only)

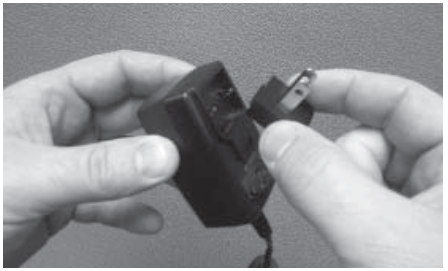
5. RS232
- RS232 port. (Factory use only)

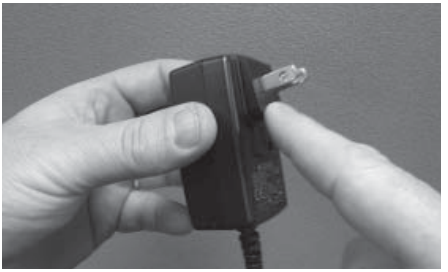
6. LAN
- Direct connection to LAN cable for product configuration and data streaming.

7. RF/Ant
- RF antenna terminal.

Step 1

Locate the Power Adapter and appropriate insert (US shown). Place insert into the Power Adapter as shown and push to lock into place.





Step 2

Connect the Antenna to the **RF/Ant terminal** on the back of the Broadcaster.

Step 3

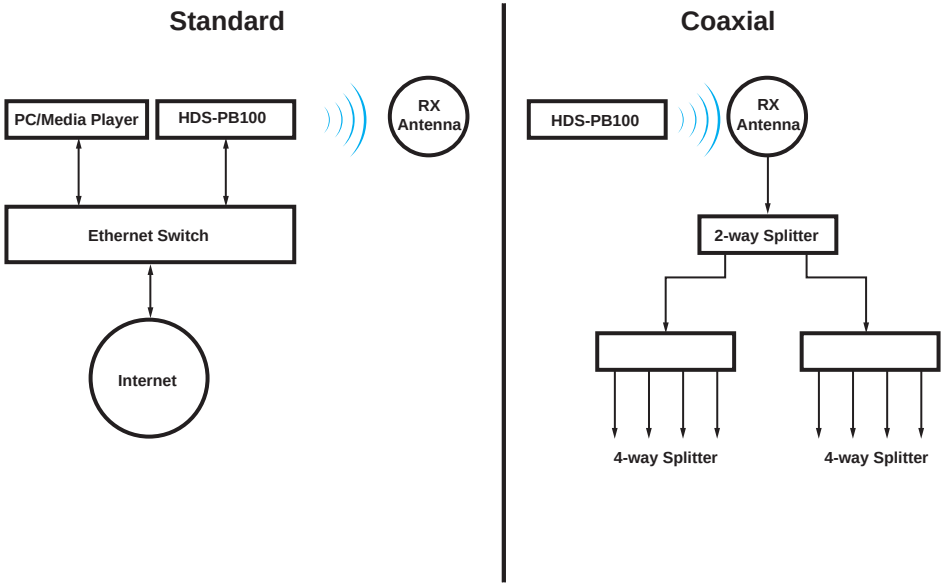
The broadcaster needs to be as centrally located as possible to allow its' omni-directional antenna uniform coverage over the entire area that the DTV's will be located within. Install the Broadcaster as high in the air as possible to ensure that an unimpeded signal is transmitted down toward the DTV's. Proper positioning will allow the full radial distance potential of 350' (106m).

The Broadcaster can be mounted to a vertical surface if required. The rubber pads on the bottom of the Broadcaster may be removed prior to installation. Ideally, the Broadcaster should be installed in one of the orientations pictured below (mounting hardware not included). **Note:** To ensure uniform signal coverage, the antenna must point straight up.

Step 4

The Broadcaster will need to access the internet and receive its media content via a network connection. Connect the broadcaster to the network before applying power to the device. Plug in the power adapter into an available power outlet. **Note:** If the broadcaster becomes unplugged from its power adapter, wait 30 seconds before applying power to allow it to reset.

The diagram below shows two typical Broadcaster installations.

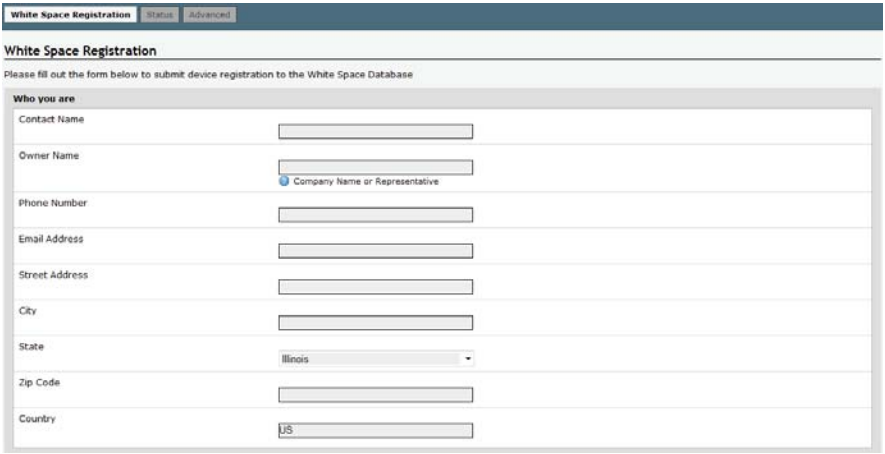


Step 5

Allow the broadcaster to be connected to network for approx 30 seconds before accessing its IP address. From a computer connected to the network, enter **192.168.1.194** in the address bar of the web browser. This will bring you to the **White Space Registration** page.

Step 5a

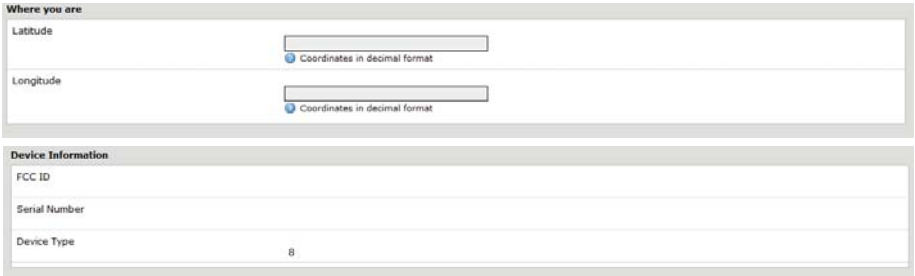
Fill in all fields in the **Who You Are** section to register your unit with the White Space Database (**Contact Name, Owner Name, Phone Number, Email Address, Street Address, City, State, Zip Code, Country**). This contact information is what the FCC uses to send notification regarding update fees and information.



Step 5b

Fill in all fields in the **Where You Are** section (**Latitude** and **Longitude**). This information should reflect the physical location of the Broadcaster. You can find this information by visiting websites such as
http://www.getlatlon.com and ***http://www.findlatitudeandlongitude.com*** or use the app "Show My White Space" from Spectrum Bridge Inc. (available for Android and iOS). Data in the **Device Information** section contains information specific to your Broadcaster.

Once all data fields are complete, click **Save & Apply** at the bottom right of the screen.



Step 5c

Click on **Status** tab to open the **Device Status** page. This page contains information about **Radio Status** and **White Space Status**.

Radio Status

- **Operating Channel** - The channel that the broadcaster has been set to.
- **Transmitter status** - Displays the status of the broadcaster.

White Space Status

- **Registration Status** - Displays the status of the Broadcasters registration. The status must be displayed as **Success** in order for the broadcaster to become enabled.
- **Last Registration Request** - Displays the time and date that the broadcaster was registered.
- **Channel Request Status** - Displays whether the information regarding the location of the user has been successfully applied to an open white space channel.
- **Available Channels** - Displays a list of channels that the database recommends based upon the users latitude and longitude.
- **Last Channel Request** - Displays the time and date in which the broadcaster accessed the database to search for available channels.

Step 5d

Click on the **Advanced** tab to display the **Preferences, Networks and Upgrade sub tabs.** The **Preferences** sub tab contains information about **RF Settings.**

Power Level - Click on the pull down menu to set the required power level (1-11)**. Note:** Keep power level at 11 unless a shorter broadcast range is desired. For in-room and smaller spaces, it may be necessary to change power level to 5 otherwise the broadcast power is too "hot" for DTV tuner.

Available Channels - Displays channels available for use.

Preferred Channels - Enter up to 3 comma separated channels between 21 and 51.

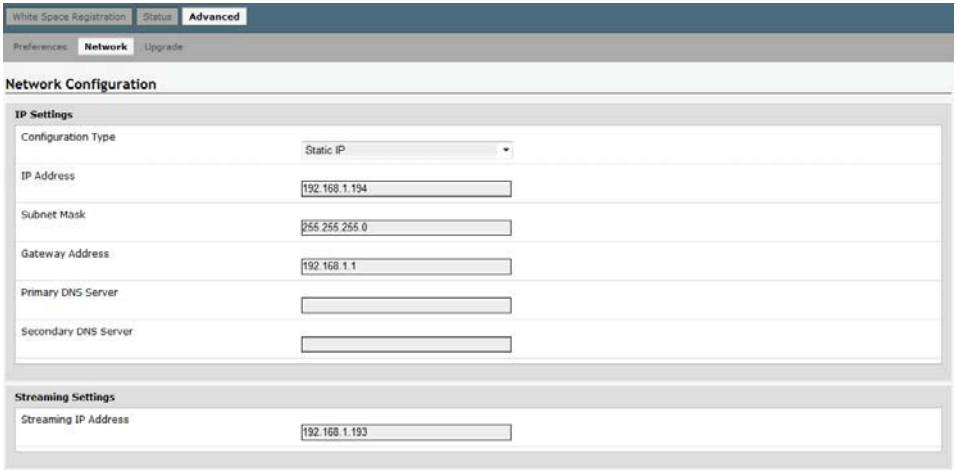
Step 5e

Click on the **Network** sub tab to open the **Network Configuration** page. This page contains information about **IP Settings** and **Streaming Settings**. Fill in all fields in the **IP Settings** section to match the existing network settings or create custom settings if needed.

Fill in the field in the **Streaming Settings** section with the IP address set up for data streaming. If multiple HDS-PB100 devices are connected on the network, each device MUST have a unique streaming IP address.

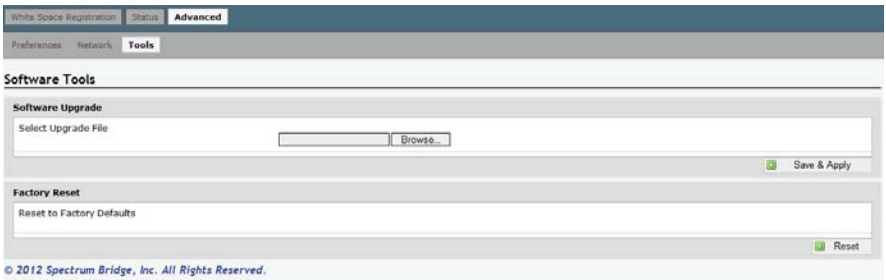
Once all data fields are complete, click on **Save & Apply** at the bottom right of the screen.

Note: If IP addresses are modified, open a new web browser and enter the new IP address to confirm changes took place.



Step 5f

Click on the **Tools** sub tab to open the **Software Tools** page. This page contains information about **Software Upgrade** and **Factory Reset**. If a software upgrade is needed, click on the browse button in the Software Upgrade section and choose the upgrade file to install. Once the file is installed, click on **Save & Apply** at the bottom right of the section. If a factory reset is needed**,** click on **Reset** at the bottom right of the **Factory Reset** section. Once all settings have been saved and applied, content is now ready to stream to the Broadcaster.



Streaming Server Software

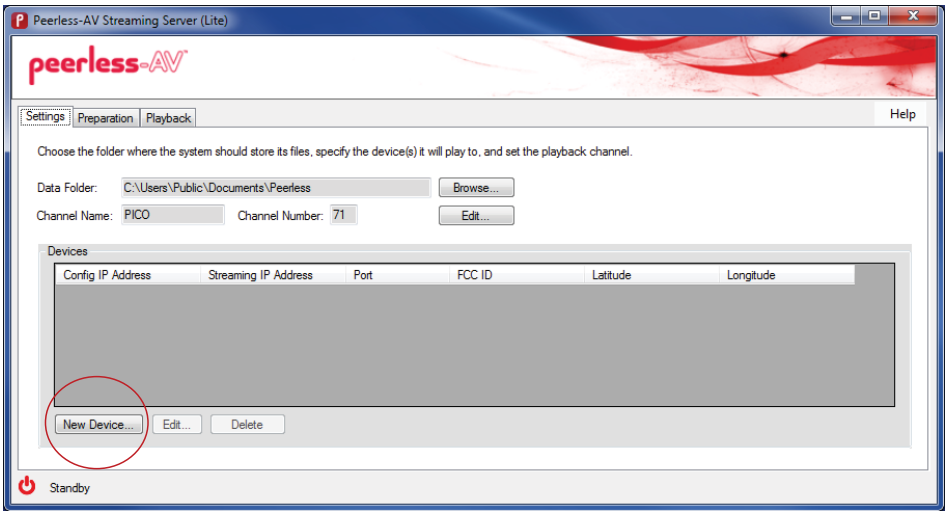
Included with the Pico Broadcaster is a program that will allow the end user to create custom playlists of video content to be streamed by the Broadcaster.

Step 1

Navigate to the folder where your streaming server installation software resides. Click on *setup.exe* and follow the on screen prompts to complete the installation.

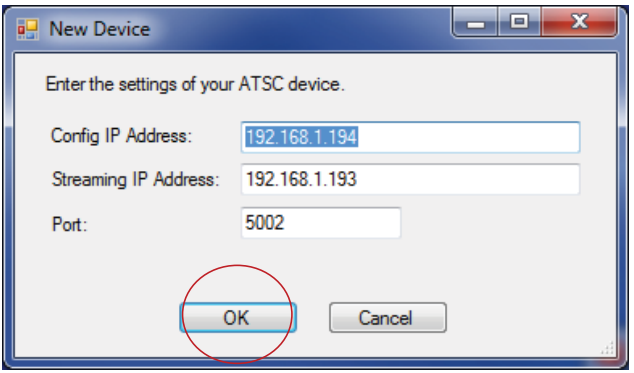
Step 2

Launch the Peerless-AV® Streaming Media Software. Click the Settings button to open the Settings dialog box. Click on "New Device" button.



Step 3

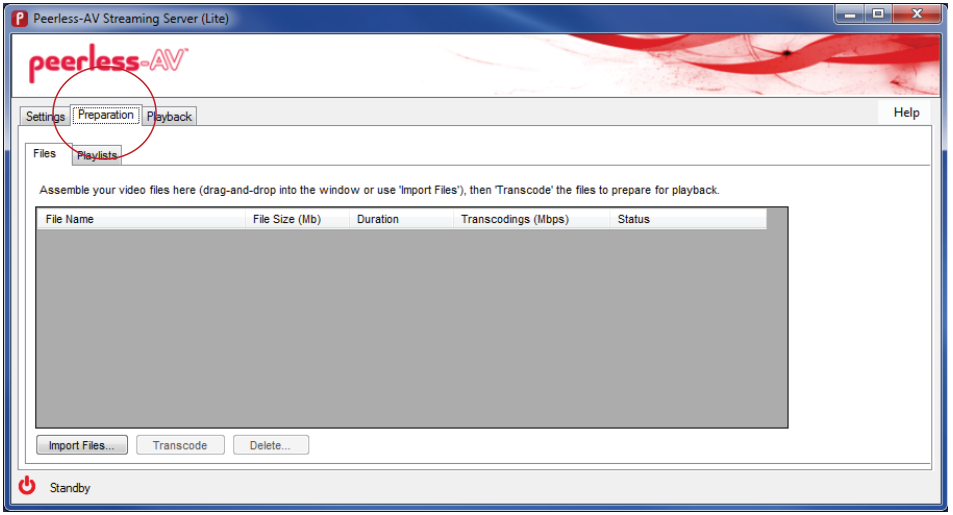
You will need to enter the IP address of the Pico Broadcaster. Default IP adress of the device and digital modulator is 192.168.1.194 and 192.168.1.193 respectively. Base port is 5002. You need to match the IP of the HDS-PB100 to the IP of the Local Area Network that it will be associated with. After values have been adjusted, click "OK" button.



Step 4

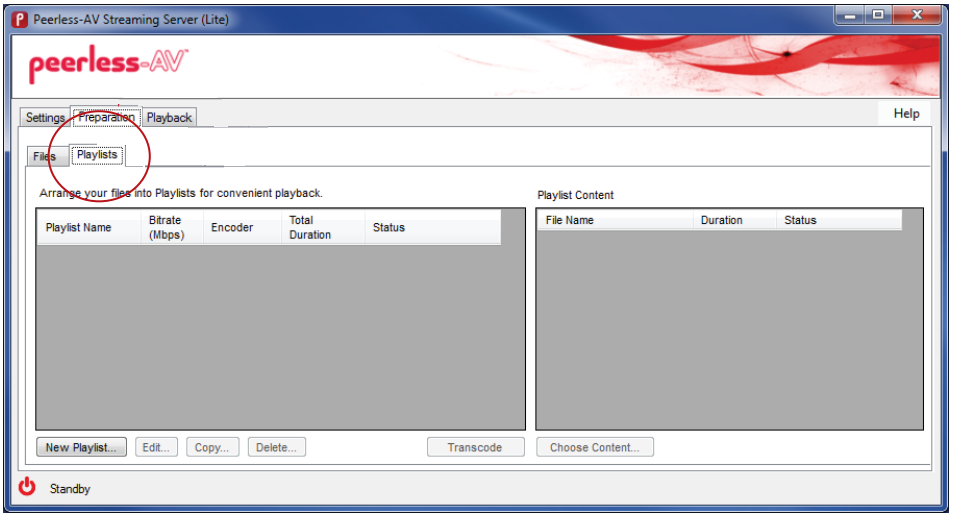
Click on the "Preparation Tab":

The software can accept a number of different file types that can be readied for streaming (see Help file for supported file types). The user can use the drag and drop feature to pull content into the grey window, or can populate the window by using the "Import Files" button. Once the user has brought the files they want to stream into the software and they have been transcoded, the user can now setup a playlist to automate content delivery.



Step 5

Click on the "Playlist" sub tab:



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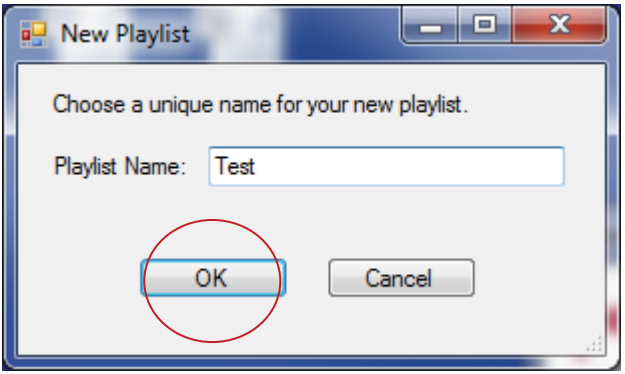
Step 6

Click on "New Playlist" to name the playlist:

Once the playlist is named, click "OK".



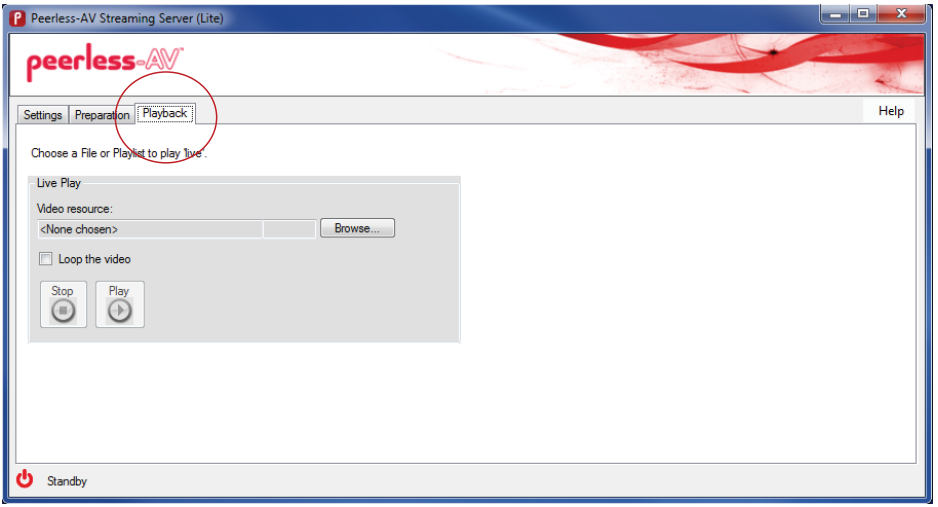
Step 7

The user can now drag and drop any of the transcoded files into the "Playlist Content" window to create a custom playlist of their content.

Once files have been transcoded and playlists have been created, content is now ready to be streamed to the modulator for the OTA broadcast.

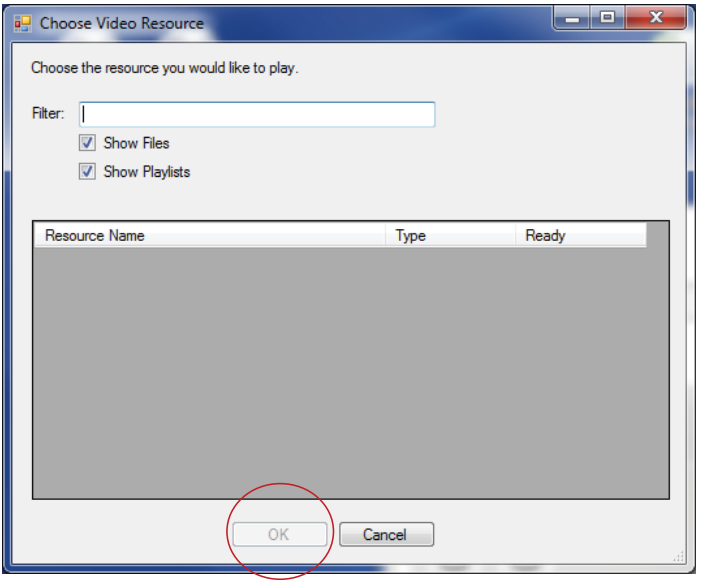
Click on the "Playback" tab.

To playback content click on the "Browse" button:



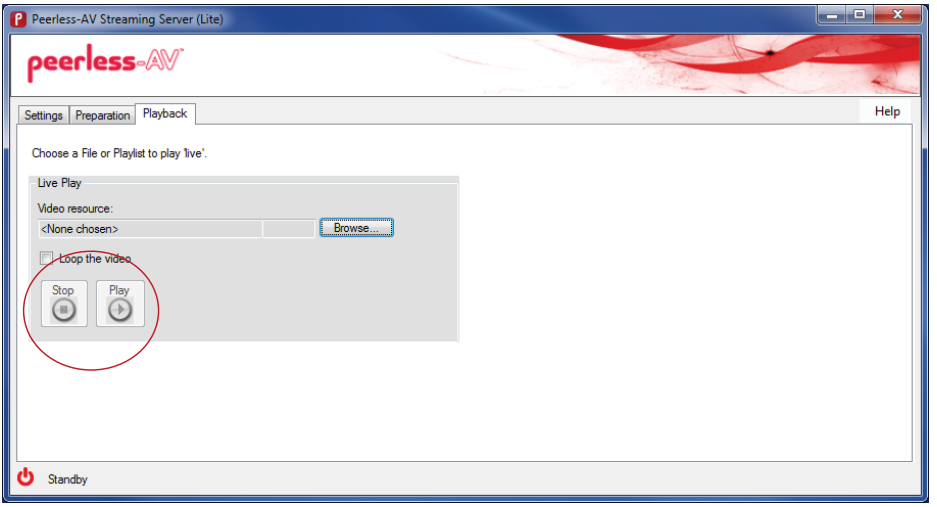
Step 8

The window below will appear which will show all the transcoded content as well as the playlists that have been created. Choose the file or playlist to stream and click "OK".



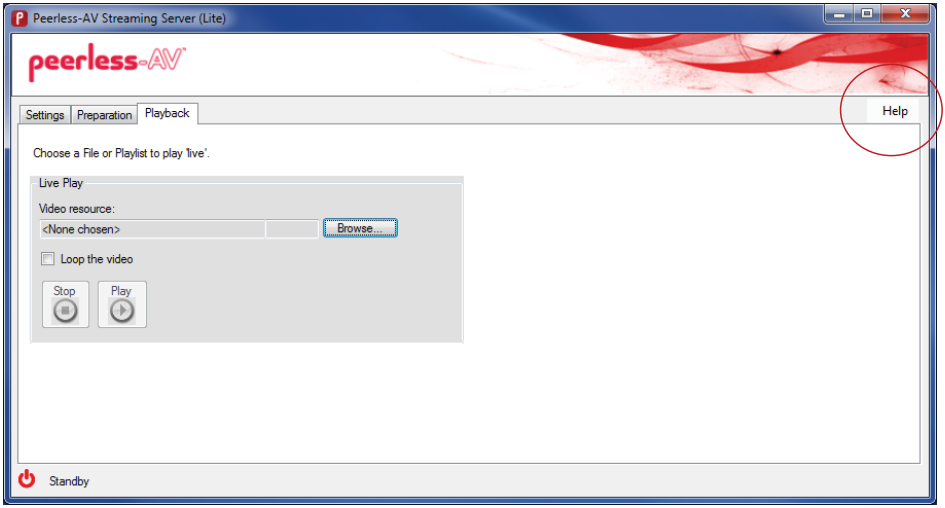
Step 9

The end user will then choose to play the content by pressing "Play". If looping of content is needed, the user should click the "Loop the Video" button before pressing play. Once the content is playing, the "Play button will convert to a "Pause" button. If the content needs to be paused and not started over, press "Pause". If the stop button is pressed, when "Play" is depressed, the content will start from the beginning of the loop.



Step 10

If additional support is needed, the "Help" tab on the far right of the software window will launch a help file that will address concerns when using the software.



FAQs

Q. What type of media format does the HDS-PB100 Pico Broadcaster accept?
A. The HDS-PB100 needs the format of the media to be MPEG-2 TS. The Peerless-AV Streaming Media software will determine if the given media file(s) need transcoding once the file is dropped into the window.

Q. What type of input does the HDS-PB100 Pico Broadcaster accept?
A. The only input associated with the HDS-PB100 is an RJ45 network port as the Broadcaster requires a UDP stream (User Datagram Protocol).

Q. What is the DB9 serial port used for?
A. The DB9 port is for factory use only.

Q. What is the USB port used for?
A. The USB port is for factory use only.

Q. What is the “reset” toggle used for?
A. If information and setup need to return to factory settings, press the reset toggle briefly while power is applied. The RJ 45 lights will blink off and then on momentarily. Unit has now been rest. Wait 30 seconds to access webpage to continue setup.

Q. What is the “confi” toggle used for?
A. The “confi” toggle is used only for firmware updates. The user will hold down the “confi” toggle as power is applied. This will put the device into firmware update mode.

Q. What is the SD card slot used for?
A. The SD Card slot is for factory use only.

Q. What are white space channels?
A. White space channels are the frequencies available that allow for low power personal broadcast devices. In any given geographical location there are from 1-10 or more available channels to broadcast onto. These channels are within the frequencies 500 MHz - 700 MHz commonly known as channels 21-51.

Q. How do I find the longitude and latitude of my location?
A. Websites such as ***http://www.getlatlon.com*** and ***http://www.findlatitudeandlongitude.com*** can be used to find Latitude and Longitude. For location searches from a tablet or smart-phone, the user may use the app “Show My White Space” from Spectrum Bridge Inc. (available for Android and iOS).

Q. What bit rate is available to stream per white space channel?
A. Each stream has the ability to carry up to 19.2Mbps.

Q. What do the lights on the front of the HDS-PB100 refer to?
A. When looking at the front of the device, the right most light is the **Power** indicator, illuminated when power is applied. The center light is the **On Air** light used to signify the HDS-PB100 is operating properly and is in broadcast mode. Until the device is registered properly the **On Air** light will remain off. The left most light is the **Error** light and will illuminate red when there is an error with the device.

Q. Can the antenna be placed behind the DTV? Where is it best to mount the antenna?
A. The Antenna can be placed behind the DTV, but placement of the HDS-PB100 Pico Broadcaster really dictates where the antenna can live. The higher up physically that the Pico Broadcaster is mounted, the more options you have with antenna placement. Antennae need to “see” the broadcast device, or have the ability to receive a reflected signal from a device installed high off the ground.

Q. Does the power level increase the distance of the HDS-PB100?
A. The adjustable power level will not increase distance, but rather increases signal intensity. For a smaller deployment, not covering as much physical area, the power level may need to be decreased as to not produce too 'hot' of a signal that is difficult to tune in.

Q. Why does the HDS-PB100 need to be connected to the internet?
A. Due to the FCC requiring an annual fee to use licensed white space channels, internet connectivity is required in order for the polling of the HDS-PB100 to take place and verify the current license.

Q. Can I remotely mount the transmitting antenna away from the HDS-PB100 Pico Broadcaster?
A. If the HDS-PB100 needs to be situated in a setting that does not allow for an elevated installation (i.e. AV Rack, IT Closet etc), you may provide a run of coax between the device and the antenna in order install the antenna at an appropriate location allowing for proper placement. Note that as you add coax between the antenna and the device, you also add attenuation.

Q. Can I transmit a signal from my computer of a Presentation/File (i.e. PPTX, Spread sheets, etc…)?
A. Currently the Peerless-AV streaming software allows preset AV files to be encoded properly and streamed to the HDS-PB100. However, there is open source software that has the ability to stream from a desktop, so no matter what is displayed on the desktop of a PC, the Broadcaster can transmit the signal.

Q. Can I give my broadcast a custom name?
A. Yes. On the first page of the software you will see a field that says "Channel Name". To the far right of that click "Edit" and enter in the name of the channel as well as the actual channel number. Click "OK".

Appendix

Product Specifications

HDS-PB100	
Input	Audio/Video via LAN port (MPEG2 Transport)
Output	ATSC modulated broadcast signal HD Broadcast format TV signal Stereo / AC3 audio Output power variable up to 40mW White space database compliant channel selection
Control	LAN
Broadcast Range	350' maximum radius
Broadcast Frequency	500-700 MHz
Channel Range	21-51
Power Supply	Input: 100-240V, 50/60Hz, 1A Output: 12V, 3A Wall adapter
Operating Temperature	+32° to +131°F (0° to 55°C)
Compliance	Safety UL60065 FCC Class B
Product Dimensions (W x D x H)	14.19" x 7.50" x 1.74" (360 x 190 x 44mm)
Product Weight	3.36lb (1.52kg)

Federal Communication Commission Interference Statement

Pico Broadcaster

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference received, including interference that may cause undesired operation.

FCC_Model: MT300v1

FCC ID: OKVMT300

Limited Warranty

Peerless Industries, Inc. (“Peerless-AV®”) warrants to original end-users of Peerless-AV® products that Peerless-AV® products will be free from defects in material and workmanship, under normal use, for the periods listed below, from the date of purchase by the original end-user. At its option, Peerless-AV® will repair or replace with new or refurbished products or parts, or refund the purchase price of, any Peerless-AV™ product which fails to conform with this warranty.

In no event shall the duration of any implied warranty of merchantability or fitness for a particular purpose be longer than the period of the applicable express warranty set forth above. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty does not cover damage caused by (a) service or repairs by the customer or a person who is not authorized for such service or repairs by Peerless-AV®, (b) the failure to utilize proper packing when returning the product, (c) incorrect installation or the failure to follow Peerless-AV®'s instructions or warnings when installing, using or storing the product, or (d) misuse or accident, in transit or otherwise, including in cases of third-party actions and force majeure. This warranty also does not cover corrosion or rust resulting from damaged, scratched or chipped paint or other surfaces.

In no event shall Peerless-AV® be liable for incidental or consequential damages or damages arising from the theft of any product, whether or not secured by a security device which may be included with the Peerless-AV® product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty is in lieu of all other warranties, express or implied, and is the sole remedy with respect to product defects. No dealer, distributor, installer or other person is authorized to modify or extend this Limited Warranty or impose any obligation on Peerless-AV® in connection with the sale of any Peerless-AV® product.

This warranty gives specific legal rights, and you may also have other rights which vary from state to state.

Product	Warranty Period
Mounts	5 years
Furniture	1 year
Cables	25 years
Cleaning Products	1 year
Electronic Products and components	1 year

ISSUED: 11-07-13 SHEET #: 180-9044-1

Customer Care

Need help with set up? Call Peerless-AV Customer Care
1-800-865-2112 (available 7:00am- 7:00pm CST, Monday - Friday), or
email us at info@peerless-av.com.

Peerless -AV
2300 White Oak Circle
Aurora, IL 60502 USA
peerair.peerless-av.com

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