Broadcast Devices, Inc.

DAB-300 Digital Audio Broadcast
**Digital/Analog Audio Switcher DA*

Operations Quick Start Guide

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*Option Dependent

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I. Basic Description

The DAB-300 is a dual 4-channel audio switch intended for simultaneously switching parallel program audio feeding analog and digital broadcast transmitters where synchronous timing such as in IBOC operations is important to maintain. It functions similar to a 4 position dual pole switch in that when audio to the analog transmitter is switched, the output feeding the digital transmitter is switched to the corresponding program source for the analog transmitter. Automatic silence detection may be enabled to switch both analog and digital program feeds if either becomes silent for a period which exceeds the user defined interval.

The DAB-300 can be ordered for four or eight inputs. The inputs can be AES3 digital and/or analog L/R and composite base band depending on model.

II. DAB-300 Operational Description

The DAB-300 may be placed in the manual switching mode by pressing either the left or right arrow key. The source selected will begin to flash. Select the desired input using the up and down arrow keys. When the desired input channel is flashing press the green enter key to accept the selection and switch to the selected input. If a channel is not selected within 1 minute the DAB-300 will exit the manual switching mode automatically. Note that the inputs will be selected in pairs. If Input 1 is selected to feed the analog transmitter, Input 5 will be directed to the digital transmitter. The other inputs (2/6, 3/7 and 4/8) are paired similarly.

III. REMOTE CONTROLLED OPERATION

The DAB-300 provides remote control to select between inputs and to enable/disable remote operation. Open collector status outputs are provided to indicate the currently selected input channel. These outputs are capable of sinking up to 100ma and are rated at a maximum of 30v DC.

Remote Channel Selection:

The DAB-300 DAS provides 4 channel selection inputs and 4 channel status outputs on the remote control DB-25 connector. Each output channel pair (1-4) is controlled via its respective channel select pin (GPI 0-3) and provides a status output (GPO 0-3) which reflects which of the 4 input pairs (1/5 through 4/8) is currently selected. A momentary

closure between the GPI pin corresponding to the desired input pair and control common will cause that input pair to be routed to that output. Likewise the open collector status outputs will float for the unselected channel pairs and be pulled low for the status output corresponding to the selected input pair. Refer to section VI. Remote Control Connector designation chart on page 9 for connection information.

IV. Input Mode Selection Menu Operation

The DAB-300 inputs can be configured for mode of operation on an individual basis. Stereo, Mono Left, Mono Right, L+R and Stereo Swap can be configured from the front panel. Use mono left and mono right to fill in a missing channel. For example; choosing mono left will take a signal only input on the left channel and apply it to both channels at the output of the unit. Use L+R to create a monaural input from a stereo source.

To select the input mode push F4 once. The display will indicate that you are in the INPUT MODE SELECTION menu. Select the input channel pair (1-8) using the up and down arrow keys. The left and right arrow keys are then used to select between the following modes:

Press F4 once: Input Mode Selection

Pushing the up arrow/down allows you to select the input channel to be changed:
Pushing the left/right arrow buttons allows selection of the following input modes:

OFF
Stereo - Factory Default
LR Swap - L/R Channels Swapped
Mono L - L input fed to both L & R outputs
Mono R - R input fed to both L & R outputs
L + R - L & R inputs are summed and fed to both L & R outputs.
The input mode is automatically saved when selected. To exit this menu press the F1 key to return to the main menu.

Press F4 twice: Input Invert Control – Phase Inversion

Pushing the up arrow/down allows you to select the input channel to be changed:
Pushing the left/right arrow buttons allows selection of the following input modes:

Normal
Invert Left
Invert Right

Note: Phase inversion is Left or right but not both simultaneously.

Input Invert Control modes are automatically saved when selected. To exit this menu press the F1 key to return to the main menu.

Press F4 three times to enter Input Gain Control menu

Pushing the up arrow/down allows you to select the input channel to be changed: Pushing the left/right arrow buttons allows you to adjust gain in one dB increments +/- 10 dB

Press F4 four times and the display will indicate Output Gain Control

Pushing the up arrow/down allows you to select the output channel to be changed: Pushing the left/right arrow buttons allows you to adjust gain in one dB increments +/- 10 dB

Factory default for input and output gain controls is 0 dB. When factory default gains are used AES3 I/O is unity. When AES3 inputs are output to an analog channel the analog output will correspond to –10 dB below full scale AES3 input when AES3 input is nominal – 10 dB below full scale.

DAB-300 Factory Default Recovery

As with any programmable device, it is possible that the user would like to quickly return to the “factory default” settings. To return the DAB-300 to its factory configuration remove AC power to the unit. While holding the red “X” key, restore AC power until the display indicates “FACTORY DEFAULT”. The default condition is such that outputs 1 through 4 are fed by input 1 and outputs 5 through 8 are fed by input 5.

V. Automatic Silence Detection Setup

Push F3 once to enter the silence detection setup menu. Doing so presents the user with a dialog which sets the silence detection interval. The factory default silence detection time is 60 seconds. Values ranging from 10 to 600 seconds may be selected using the up and down arrow keys. Broadcast Devices strongly suggests that silence detection intervals of less than 60 seconds be tested carefully to verify that normal program content does not cause undesirable switching.

Push F3 a second time to select the silence detection threshold level. This is the audio level below which the DAB-300 considers the input to be silent (inactive). The factory default silence threshold is -55 dBm. This level may be changed using the up and down arrow keys. For composite audio units use -35 dBm as a silence threshold as composite audio has a higher noise threshold.

Push the F3 key a third time to enable / disable the auto-return function and to set the auto-return time. The auto-return function will cause the DAB-300 to return to the channel pair which was selected prior to a loss of audio detection and subsequent auto-switching. Using the up and down arrow keys intervals ranging from 1-10 minutes may be selected or the auto-return function may be disabled.

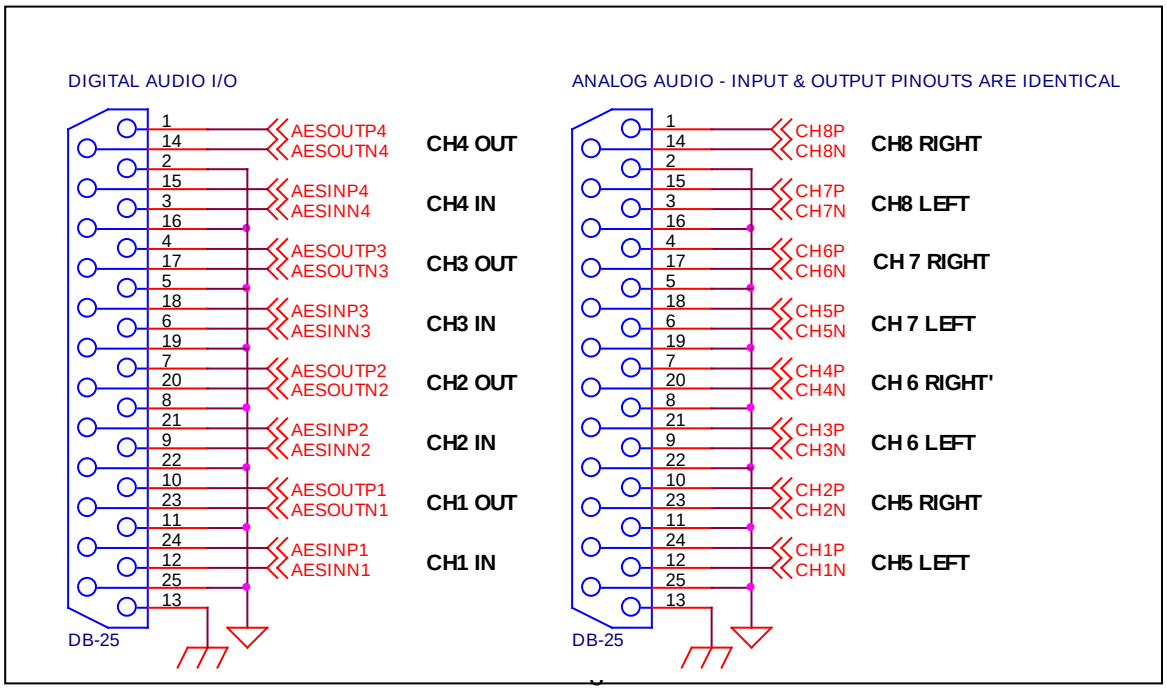
A 4th press of the F3 key will move to the Audible Alarm Config menu. The audible alarm will sound when a loss of audio has been detected if enabled. Use the up and down arrow keys to enable or disable the audible alarm.

Pressing the F3 key a 5th time will move to the AUX RELAY CONFIG menu. Using the up and down arrow keys the AUX RELAY may be set to either close and remain closed or to issue a momentary 1 second closure upon loss of audio. Using the momentary function can be useful in applications such as starting a CD player to be used as a backup program audio source.

Press F1 to exit the silence detection setup dialogs.

VI. Audio I/O Connections

DAB-300 Audio Connections



DAB-300 AUDIO INPUT MAPPING MODEL DEPENDENT

INPUT CHANNEL	TYPE	LOCATION
1	DIGITAL	AES 1
2	DIGITAL	AES 2
3	DIGITAL	AES 3
4	DIGITAL	AES 4
5	ANALOG	ANALOG IN 1-2 (L/R)
6	ANALOG	ANALOG IN 3-4 (L/R)
7	ANALOG	ANALOG IN 5-6 (L/R)
8	ANALOG	ANALOG IN 7-8 (L/R)

AES and Analog L/R Input Version

INPUT CHANNEL	TYPE	LOCATION
1	DIGITAL	AES 1
2	DIGITAL	AES 2
3	DIGITAL	AES 3
4	DIGITAL	AES 4
5	ANALOG	COMPOSITE BASE BAND 1
6	ANALOG	COMPOSITE BASE BAND 2
7	ANALOG	COMPOSITE BASE BAND 3
8	ANALOG	COMPOSITE BASE BAND 4

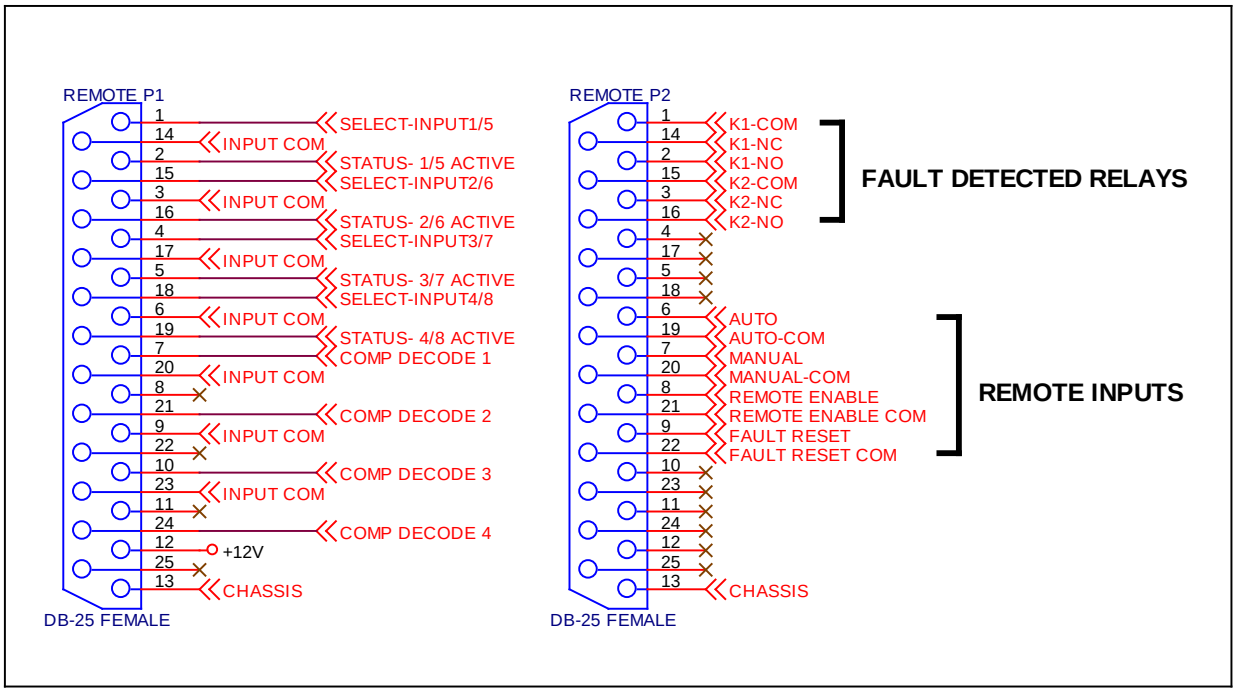
AES and Composite Input Version

INPUT CHANNEL	TYPE	LOCATION
1	ANALOG	ANALOG IN 1-2 (L/R)
2	ANALOG	ANALOG IN 3-4 (L/R)
3	ANALOG	ANALOG IN 5-6 (L/R)
4	ANALOG	ANALOG IN 7-8 (L/R)
5	ANALOG	COMPOSITE BASE BAND 1
6	ANALOG	COMPOSITE BASE BAND 2
7	ANALOG	COMPOSITE BASE BAND 3
8	ANALOG	COMPOSITE BASE BAND 4

Analog L/R and Composite Base Band Input Version

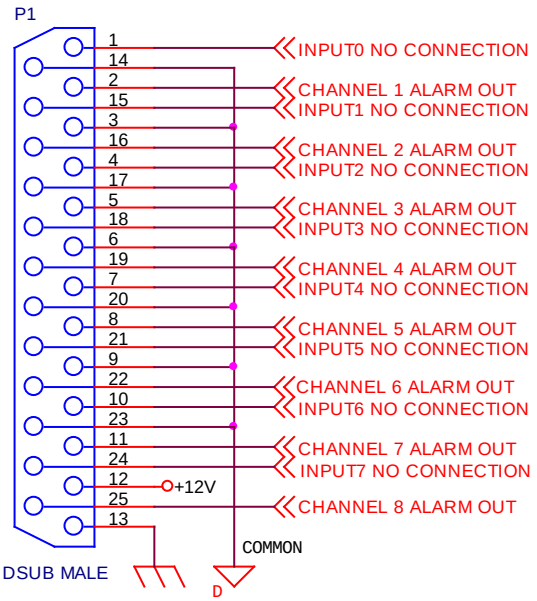
VI. Remote Control Connections

DAB-300 Remote Connections



Notes:

1. Status outputs are open collector Darlington transistors capable of sinking 100ma @ 30v DC.
2. Select and remote inputs are momentary closures with internal 4.7K pullup resistors to 5v DC.
3. Any of the first four AES or analog L/R inputs can be substituted for composite input by strapping the respective COMP DECODE pin to INPUT COM as illustrated in the above figure. Then strapped, the normal 1-4 input will be substituted for a composite input 1-4.

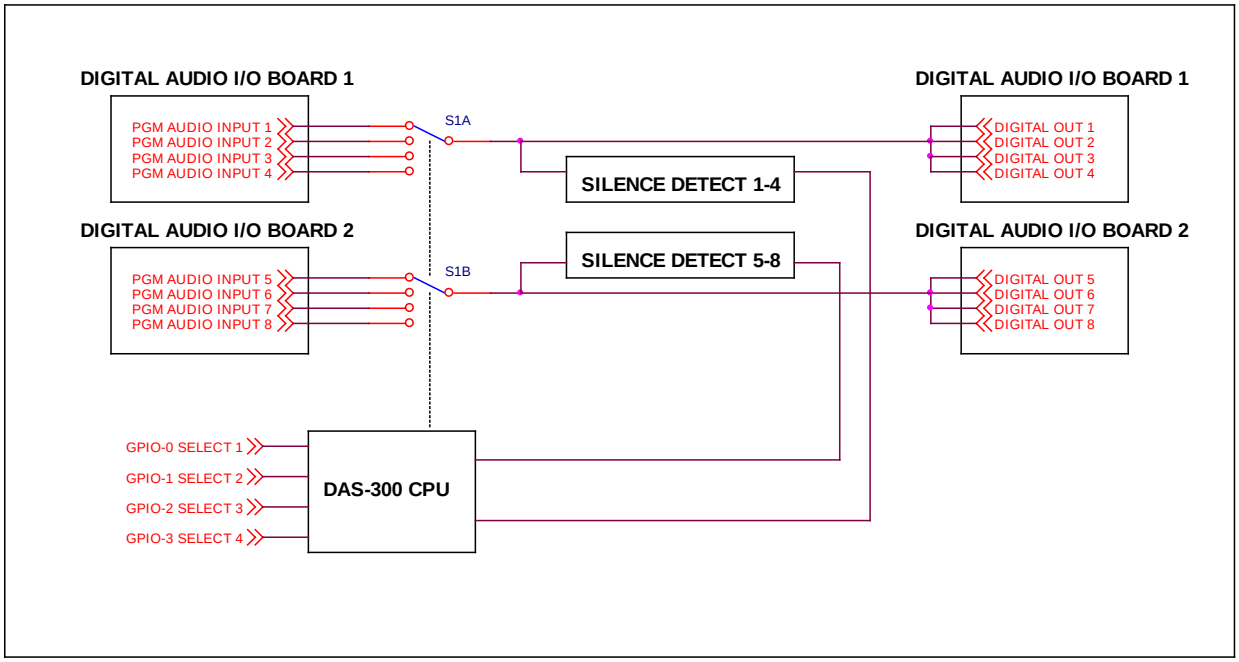


GPIO 2 AUDIO LOSS ALARM CONNECTOR ATB/DAB Versions

DAB-300 Audio Alarm Connection

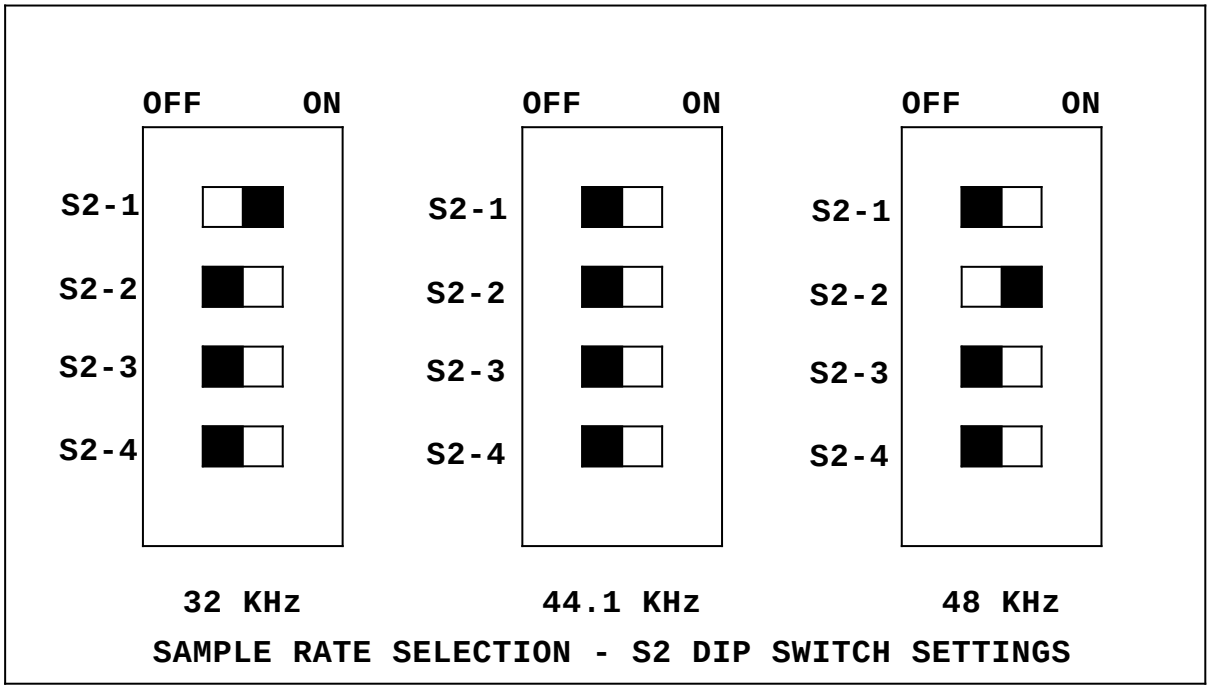
The DAB-300 provides audio failure alarm status contacts for each of the eight inputs. Each channel output is held low when audio is present. If audio is removed for at least five seconds the respective output will go to a high state. If audio is restored for at least five seconds the respective channel relay will re energize. Channels 1-8 outs shown provide audio status for inputs 1-8 respectively

VII. Basic Block Diagram of DAB-300



VIII. Frame Rate Conversion Switch Selection

The DAB-300 has active frame rate conversion on all AES3 digital inputs. The unit can accept sample rates from 8 KHz to 96 KHz. The frame rate converter then up or down converts the sample rate to the selected sample rate. The DAB-300 is capable of outputting 32, 44.1 or 48 KHz sample rates. The factory default sample rate is 44.1 KHz. To change the sample rate to either 32 or 48 KHz refer to the diagram below. The sample rate converters are located on the DSP board. Locate S2 and change and according to the chart below. Do not adjust any other DIP switch settings on the other boards as this will result in incorrect operation of the DAB-300. Correct DIP switch settings are provided for convenience.



IX. DAB-300 Ethernet Setup – Generation II Firmware Edition

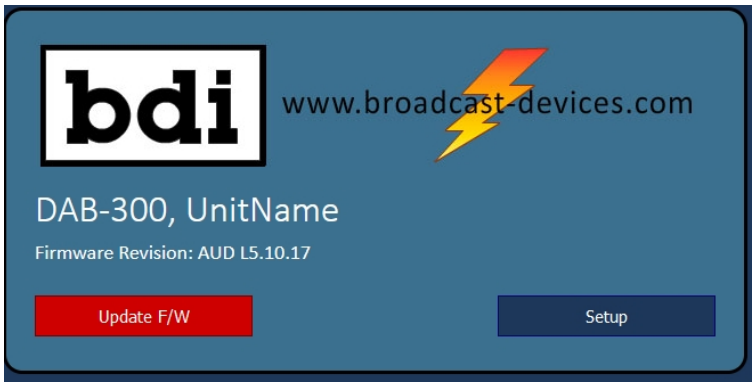
Introduction

The DAB-300 series audio switchers from BDI are now equipped with web access and SNMP v2 support. This addendum will describe access to the DAB-300 web site for initial setup and for use of the BDI Stack Graphical User Interface (GUI) for monitor and control. SNMP v2 support is provided with a MIB for use with remote control systems and third party software.

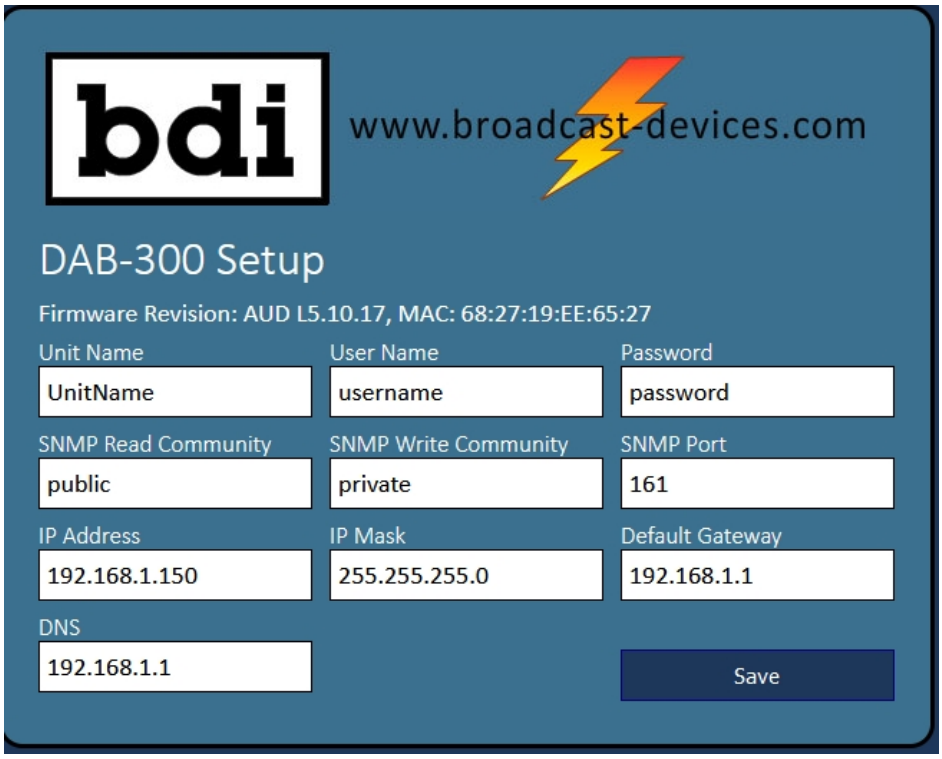
Initial Web setup

It is always best to start with a laptop computer directly connected to the DAB-300 LAN port for access to the web site. The default IP address for your unit is:
192.168.1.150
Port: 161
Username: username – all lower case
Password: password - all lower case

1. Access the web site Power cycle the unit first and within five minutes type the default IP address into a browser. If you wait too long the unit will time out preventing access to the web site. If this happens simply power cycle the unit again.



2. Press setup. DO NOT PRESS UPDATE! Doing so will do no harm but you will lose access to the unit and the unit will need to be power cycled. This button is only used for updates in firmware provided by the factory.
3. Once you have avoided the temptation to press the big RED button and have pressed the setup button the following screen will appear:

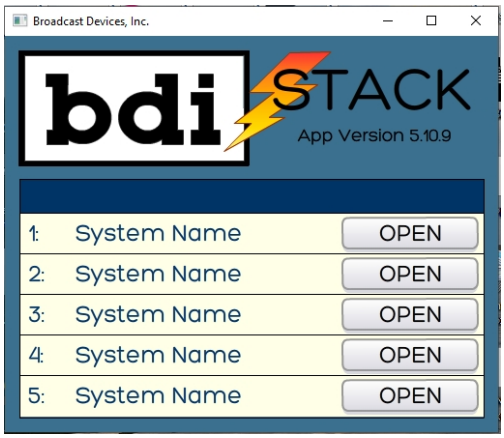


4. Make the desired changes AND TAKE A SCREEN SHOT OF THE CHANGES BEFORE HITTING SAVE!
5. Once all of the changes have been made and saved YOU MUST POWER CYCLE THE UNIT. Remove power for at least 5 seconds and restore power.
6. Once you are certain you have made your changes and saved the username and password along with the new IP address, you did write these down or take a screen shot right? Well, if you have done so you can now download the BDI Stack APP from our web site. The accompanying QR Code below will help you locate it.

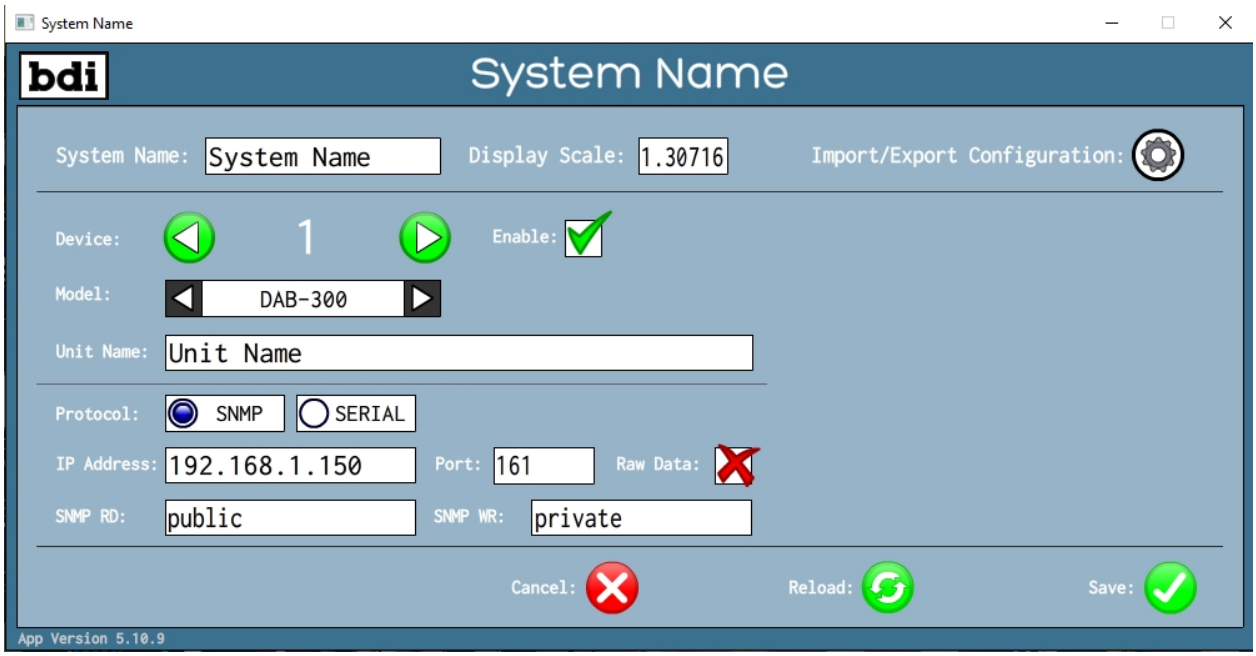
http://gofile.me/4GmwR/PWHJmHoF9

BDI Stack Installation and setup:

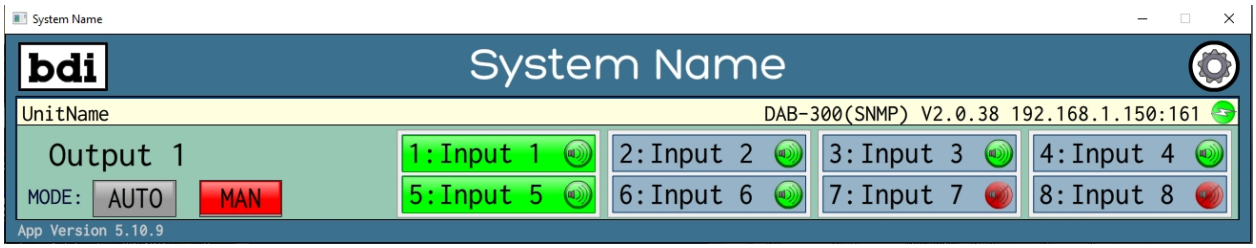
1. Once you have downloaded the BDI Stack GUI and unzipped it open the BDI APP folder and click on the executable file to open the BDI Stack GUI you will see the following screen and you can have up to 5 different BDI products set up via the GUI. First time users use the first system by pressing OPEN.



2. Once opened the screen will be rather blank so click on the gear icon in the upper right hand corner to set up the DAB-300:



3. Select a device, then a model DAB-300 in this case, give it a Unit Name if you like, use SNMP Protocol, enter the saved IP address and port. Once all of this is done click on the Enable Icon and then hit Save.
4. Once you hit save you will be in the operating screen for the DAB-300:



You can select channel by pressing buttons 1-4. Remember this is a dual path switcher so when you select Input 2 Input 6 will also be selected, etc. This way when you select an AES path the complementary composite path will switch along with it. The buttons lit up in green are the selected channels. Note the Green speaker icon on input 1-6 in this example. This means there is valid audio above threshold on these channels. Channels 7 and 8 in this example are not being driven. You can also place the unit in AUTO or MANUAL from this screen.

SNMP v2 Support

The DAB-300 series audio switchers can be controlled and monitored via SNMP v2. You can download the MIB for this product at the link below:

https://broadcast-devices.com/BDI-AUDIOSWITCHER-MIB.zip

Load the MIB into the remote control or software package to be used and you will have access to the DAB-300 via your remote control system.

For access to the BDI support page on our web site:

https://broadcast-devices.com/support-html/

X. Warranty

Broadcast Devices, Inc. products are warranted against failure due to faulty materials or workmanship for a period of one year from the date of shipment to the ultimate user. The warranty covers repair or replacement of defective parts at the factory, provided the unit has been returned prepaid by the user. All shipments to the factory shall have affixed to the outside of the container a return authorization number obtained from the factory. The above warranty is void if the unit has been modified by the user outside of any recommendations from the factory or if the unit has been abused or operated outside of its electrical or environmental specifications. If customer conducted field tests suggest that the unit may be faulty, whether or not the unit is in warranty, a full report of the difficulty should be sent to Broadcast Devices, Inc. factory at Cortlandt Manor, New York. The office may suggest further tests or authorize return for factory evaluation.

Units sent to the factory should be well packed and shipped to Broadcast Devices, Inc. 2066 E. Main Street, Cortlandt Manor, NY 10567. Remember to affix the R.A. number to the outside of the carton. Any packages received without such R.A. number will be refused. Note: freight collect shipments will also be refused. When the unit has been received, inspected and tested, the customer will receive a report of the findings along with a quotation for recommended repairs, which are found falling outside of the standard warranty. Units returned for in-warranty repairs, which are found not to be defective will be subject to an evaluation and handling charge. In-warranty units will be repaired at no charge and returned via prepaid freight.

Out-of-warranty units needing repair require a purchase order and will be invoiced for parts, labor, and shipping charges.

When ordering replacement part, always specify A) Part Description, and Quantity; B) Date of Purchase, Where Purchased; C) Any Special Shipping Instructions. Always specify a street address, as shipping companies cannot deliver to a postal box.

Broadcast Devices, Inc. is not responsible for any other manufacturer's warranty on original equipment. Nor are we responsible for any failure, damage, or loss of property that may occur due to the installation or operation of our equipment outside of recommended specifications.

Broadcast Devices, Inc. reserves the right to change materials, specifications, and features from time to time.
www.broadcast-devices.com

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Customer.Service@broadcast-devices.com (914) 737-5032 Tel. (914) 736-6916 Fax.

FCC Compliance Statement:

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 that may cause undesired operation.