



USER MANUAL FOR AIB-3000 16-CHANNEL CINEMA AUDIO PROCESSOR

May 27th, 2024



NOTE: THE INFORMATION PROVIDED IN THIS MANUAL IS SUBJECT TO CHANGE AS THE PRODUCT IS IN ACTIVE DEVELOPMENT.



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1 SAFETY INSTRUCTIONS

EXPLANATIONS OF GRAPHICAL SYMBOLS



The triangle with the lightning bolt is used to alert the user to the risk of electric shock.



The triangle with the exclamation point is used to alert the user to important operating or maintenance instructions.



The CE-mark indicates compliance with low voltage and electromagnetic compatibility.



Symbol for earth/ground connection.



Symbol indicating that the equipment is for indoor use only.



Symbol for conformity with Directive 2002/96/EC and Directive 2003/108/EC of the European Parliament on waste electrical and electronic equipment (WEEE).



WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT ATTEMPT TO OPEN ANY PART OF THE UNIT. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.



THE MAINS PLUG OF THE POWER SUPPLY CORD MUST REMAIN READILY ACCESSIBLE.



DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE, DRIPPING OR SPLASHING LIQUIDS. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.



WHEN THE UNIT IS INSTALLED IN RACK CABINET OR A SHELF, MAKE SURE THAT IT HAS SUFFICIENT SPACE ON ALL SIDES TO ALLOW FOR PROPER VENTILATION (50 CM FROM THE FRONT AND REAR VENTILATION OPENINGS).



CONNECTIONS TO THE MAINS SHALL BE DONE ONLY BY AN ELECTROTECHNICALLY SKILLED PERSON ACCORDING TO THE NATIONAL REQUIREMENTS OF THE COUNTRIES WHERE THE UNIT IS SOLD.



IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions carefully.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. DO NOT use this equipment near water.
6. Clean only with a dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. DO NOT use near heat sources such as stoves, heat registers, radiators or other equipment(including amplifiers) that produces heat.
9. DO NOT use the unit near open fire sources.
10. Connect the unit only to the electric network with grounding. Use only electric plugs that provide grounding.
11. Protect the power cord from being walked on, pinched or otherwise damaged.
12. Use only accessories specified by the manufacturer.
13. Unplug this unit during lightning storms or when unused for long periods.
14. Refer all servicing to qualified service personnel. Servicing is required when the system 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 unit, the unit has been exposed to rain or moisture, does not operate normally or has been dropped.
15. **WARNING** - TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS SYSTEM UNIT TO RAIN OR MOISTURE.

THIS UNIT CONTAINS POTENTIALLY LETHAL VOLTAGES. TO PREVENT ELECTRIC SHOCK OR HAZARD, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE.REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

INSTALLING OF THIS UNIT MUST BE PERFORMED ONLY BY QUALIFIED TRAINED PERSONNEL FOLLOWING APPLICABLE SAFETY RULES. DO NOT ALLOW INSTALLING OF THIS UNIT IF INSTALLATION HARDWARE IS BROKEN, BENT, PARTS ARE MISSING OR IS OTHERWISE DAMAGED.

2 REGULATORY INFORMATION

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.

CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure conditions without restriction.

3 DIMENSIONS

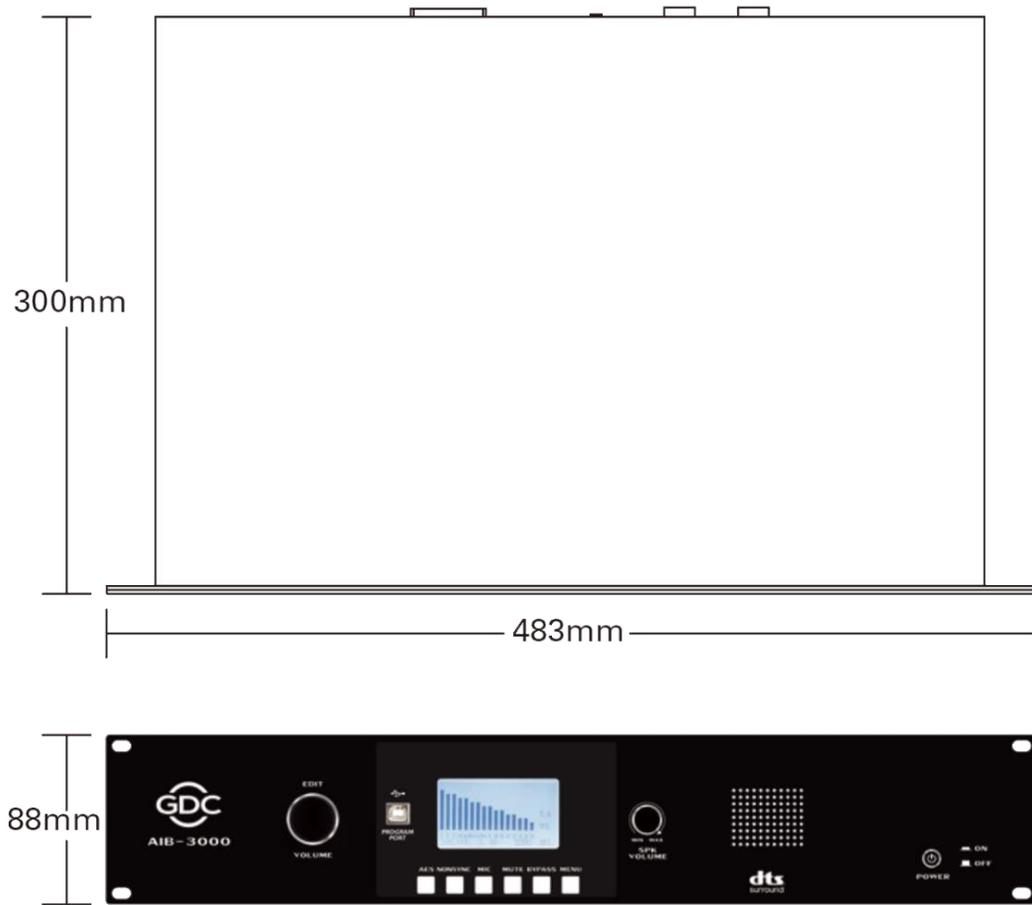


Figure 1: Dimensions of AIB-3000 Unit

4 PRODUCT SPECIFICATIONS

PERFORMANCE		
Balanced analog output	THD+N	<0.005%
	Frequency response	+/-0.5dB (20 Hz - 20K Hz)
	Dynamic range	>105dB
INPUT		
AES3 input	Connector	3 x RJ-45 balanced
	Impedance	110 Ohms
	Input level	0.5 - 10 Vpp
Non-sync input	Connector	2x RCA unbalanced
	Maximum input level	+8.2dBu
	Impedance	10K Ohms
Microphone input	Connector	Female XLR balanced or unbalanced
	Maximum gain	+32 dB
	Phantom supply	+48 V switchable
	Impedance	750 Ohms (balanced) or 375 Ohms (unbalanced)
OUTPUT		
Analog output CH1-16 & Surround Bass channel BM1-2	Connector	18x 3-Pos Phoenix Balanced
	Frequency range	20 Hz - 20,000 Hz
	Impedance	100 Ohms (balanced) or 50 Ohms (unbalanced)
	Maximum output level	+13 dBu
Redundant analog output CH1-16	Connector	2x Male HD-25 balanced
	Frequency range	20 Hz - 20,000 Hz
	Impedance	100 Ohms (balanced) or 50 Ohms (unbalanced)
	Maximum output level	+13 dBu

Hi/Vi-N	Connector	2x RCA unbalanced
Monitoring output (L+C+R summed)	Connector	1x RCA unbalanced
Booth Monitor speaker	Selectable source	LCR mix or a specific channel*
POWER		
Main power input		AC 100V-240V 50/60Hz
Backup power input		DC +12VDC, 4A
Maximum power		<50W
OPERATION CONDITION		
Standard operating temperature		0°C to 40°C (32°F to 104°F)
Non-operating temperature		-10°C to 60°C (14°F to 140°F)
Standard operating humidity		20% to 80% non-condensing
Non-operating humidity		20% to 80% non-condensing
GENERAL		
Dimensions (WxHxD)		483 x 88 x 300 mm (19" x 3.5" x 11.8")
Net weight		3.9 kg (8.6 lbs.)
Shipping dimensions (WxHxD)		526 x 130 x 430 mm (20.7" x 5.1" x 16.9")
Shipping weight		4.8 kg (10.6 lbs.)

Table 1

* **NOTE:** In the 5.1/7.1 configuration, it is possible to choose a specific channel. In the 15.1 configuration, the channel is fixed to the LCR mix.

5 ROUTING DIAGRAM

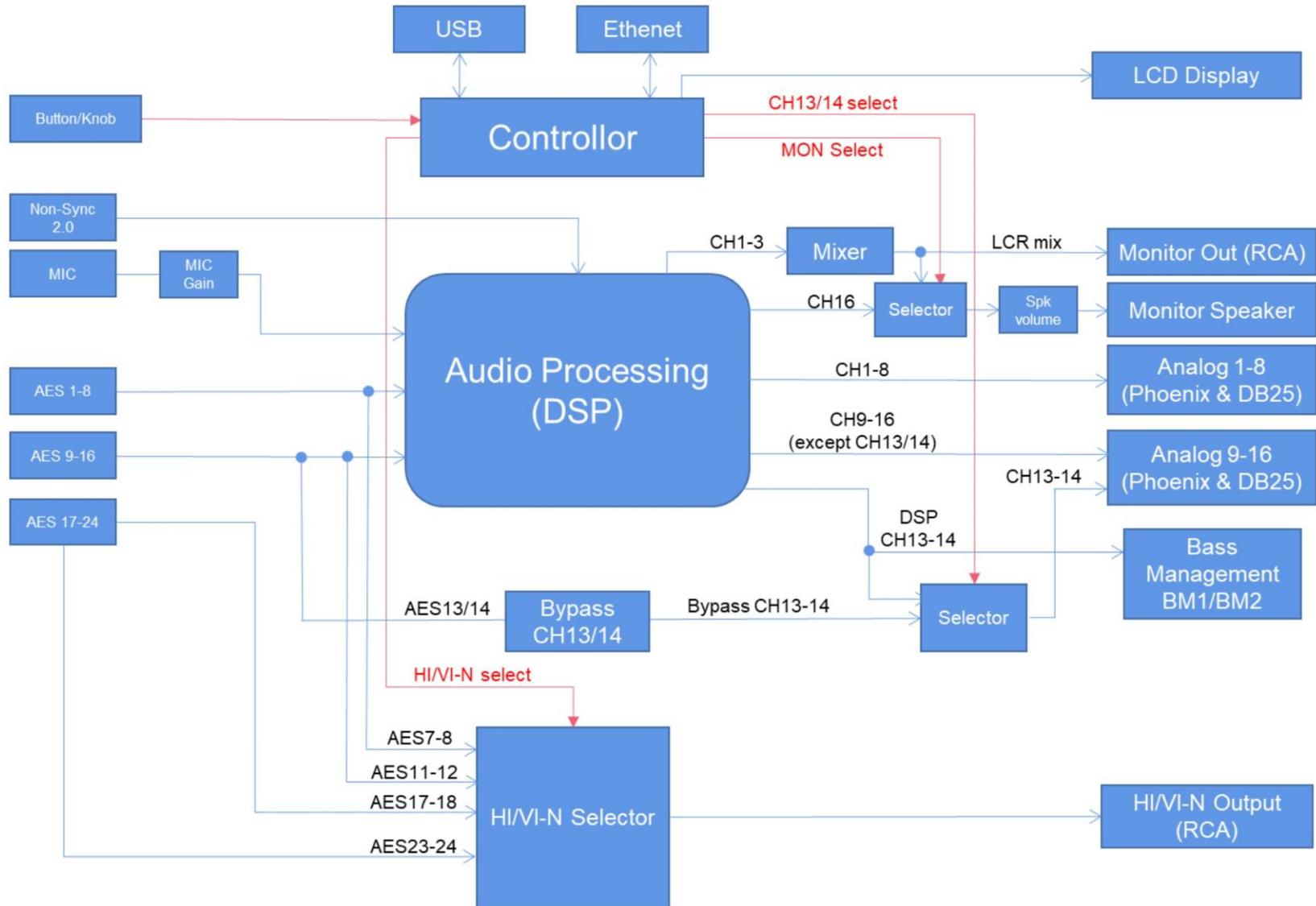
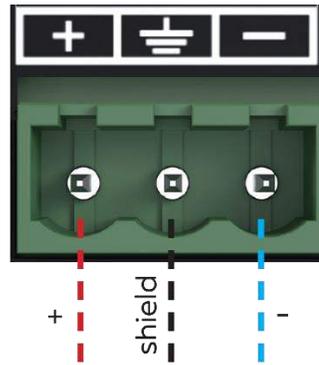


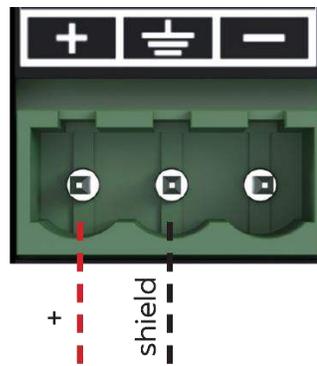
Figure 2: AIB-3000 Routing Diagram

6 ETHERNET/ AES3/ ANALOG OUT CONNECTION

Analog outputs, balanced lines



Analog outputs, unbalanced lines



ETH port input

			568A	568B
1	ETH TX+	GREEN/WHITE		
2	ETH TX-	GREEN		
3	ETH RX+	ORANGE/WHITE		
4		BLUE		
5		BLUE/WHITE		
6	ETH RX-	ORANGE		
7		BROWN/WHITE		
8		BROWN		

AES3 input

			568A	568B
1	AES3 1+	GREEN/WHITE		
2	AES3 1-	GREEN		
3	AES3 2+	ORANGE/WHITE		
4	AES3 3+	BLUE		
5	AES3 3-	BLUE/WHITE		
6	AES3 2-	ORANGE		
7	AES3 4+	BROWN/WHITE		
8	AES3 4-	BROWN		

7 INTRODUCTION TO AIB-3000

7.1 About the AIB-3000

The **GDC AIB-3000** is a standalone 5.1/7.1/15.1 Cinema Audio Processor is compatible with all current and legacy media blocks. The AIB-3000 creates a sensational surround sound experience for certified 'DTS Surround Cinema' auditoriums by achieving precise sound system calibration and full-range surrounds with its enhanced Bass Management.

The AIB-3000 offers a 16-channel premium quality Audio Processor and Digital-to-Analog Converter. It has an expanded feature set including a built-in booth monitor, microphone input and interface for external audio media players. The AIB-3000 is also able to remotely switch input sources via Ethernet.

NOTE: The information provided in this document is subject to change as the product is in active development.

7.2 Unpacking and Checking for Shipping Damage

Your AIB-3000 has been completely tested and inspected before leaving the factory. Carefully inspect the shipping package before opening it and then immediately inspect your new product. If you find any damage notify the shipping company immediately.

The packing box contains the following:

- 1x GDC AIB-3000 Unit
- 1x AC Mains Power Cord
- 1x USB Data Cable with Ferrite Ring (1.5m)
- 2x 3.81mm Double Layer Two-Row Push-in Terminal Blocks (12-Pos)
- 2x 3.81mm Double Layer Two-Row Push-in Terminal Blocks (15-Pos)

7.3 Packing Material

Kindly retain the original packaging of the AIB-3000 for RMA shipments.

NOTE: The transport and protective packing has been selected from materials that are environmentally friendly, which can normally be recycled.

8 FRONT AND REAR PANEL OVERVIEW

8.1 Front Panel Description

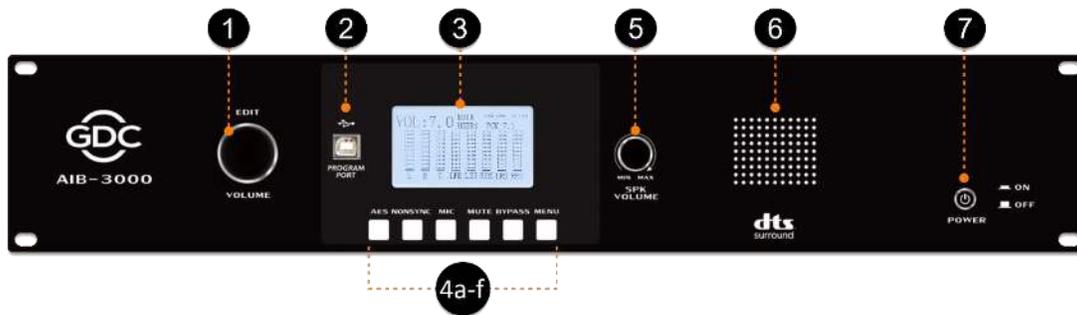


Figure 3: AIB-3000 Front Panel

① → VOLUME:

This multi-purpose knob will be used for sound level control and configuration on the LCD display. This knob supports long-press, short press and rotating actions and can be used to set the Main Fader level as well as navigate through the **MENU** screens or edit parameters. This knob can rotate continuously in both directions, with no end stops.

② → USB:

This Type-B USB connector is used for PC/Laptop connection and Firmware upgrade for the device.

③ → LCD DISPLAY:

This display shows the audio levels and AIB-3000 information. Refer to **Section 10** for more details.

④ → BUTTONS:

4a. AES - Pressing this button will switch to AES3 digital input [④ @ Rear Panel] and the button will illuminate to indicate the selection. Short press this button again to switch between 5.1, 7.1 and 15.1 formats.

4b. NONSYNC – Pressing this button will switch to NON-SYNC RCA analog input [⑥ @ Rear Panel] and the button will illuminate to indicate the selection.

4c. MIC - Pressing this button will switch to microphone input [⑤ @ Rear Panel] which can be used for the convenience of making announcements, including emergency messages. The button will illuminate to indicate the selection.

4d. MUTE - Pressing this button fades out the audio output to all channels without disturbing the current Main Fader setting. The button will illuminate when the outputs are muted. Press this button again to fade in all channel outputs, until their original set volumes are restored. The **Fade IN** and **Fade OUT** duration can be separately adjustable using the PC Tool.

4e. BYPASS - Pressing this button will mix the 'Center' channel to the 'Left' and 'Right' channels and the button will illuminate to indicate the selection. Note that the Bypass option can only be enabled when the AES button [④a @ Front Panel] is selected.

4f. MENU - Press this button to enter configuration mode on the LCD display. Refer to **Section 10.1** for more details regarding the options available under the Menu screen.

⑤ → **SPK VOLUME:**

This knob can be used to adjust the speaker volume level for the Booth Monitor.

⑥ → **BOOTH MONITOR SPEAKER:**

With this front-panel speaker, you can monitor either a mix of the Left, Center and Right channels or the audio input on Channel 16. LCR is the default option, which can be changed from the Web Interface or PC Tool. Note that for 15.1 configuration, the channel is fixed to the LCR downmix.

⑦ → **POWER:**

This is the power button which can be used to switch the unit ON or OFF.

8.2 Rear Panel Description



Figure 4: Rear Panel of AIB-3000

① → MAIN POWER INPUT:

This AC power input accepts IEC-type power cable from 100-240 VAC, 50/60Hz power source. Connect the AC power cable provided as part of standard packaging.

② → BACKUP POWER INPUT:

This input connects to the +12V, 4A DC power adapter.

NOTE: The Main Power and Backup Power inputs can be simultaneously connected to the device. There are no functional limitations to using the +12V DC backup power. When the Main Power supply is cut off, the AIB-3000 will automatically switch over to the backup power supply.

③ → LAN:

This Ethernet port uses an RJ-45 connector with activity LEDs and provides an interface for communication with a Theatre Management System. This port can also be used to access the AIB-3000 Web Interface or connect the AIB-3000 to the PC Tool, using a PC/Laptop.

④ → AES:

This input accepts 16 Channel Digital AES3 audio and is typically driven by a digital cinema server.

4a. AES Input (1-16) - 2x RJ-45 connector.

4b. Aux AES Input (17-24) - 1x RJ-45 connector. This particular AES input can be used to route HI and VI-N signals specifically, in case all the 16 channels are used for audio processing. The user can use the Web Interface or PC Tool to select the appropriate channels (Channels 17/18 or Channels 23/24) for HI/VI-N routing.

⑤ → ANALOG MIC IN:

This microphone input uses an XLR connector to accept balanced or unbalanced signal with adjustable gain of up to +32 dB. Turn the **Gain** knob clockwise to increase and counter clockwise to decrease the gain of the microphone preamp (*use a small-sized flathead screwdriver to turn this knob*). +48V phantom power is available and can be switched ON or OFF through the **MENU** screen (refer to **Section 10.1** for more details) or using the PC Tool.

⑥ → NON SYNC:

This Non-Sync unbalanced input allows connection to a two-channel analog source device with line-level outputs (such as CD/DVD players), via the two RCA connectors labeled **L**(Left) and **R**(Right).

⑦ → ANALOG OUTPUT:

7a. HI/VI-N – Provides analog unbalanced outputs for HI/VI-N devices via 2x RCA L-R connectors. HI/VI-N signals can be placed on AES Channels 7/8 OR AES Channels 11/12 OR AES Channels 17/18 OR AES Channels 23/24 of a digital cinema server, depending on territory or the configuration of the digital cinema package (DCP). This routing can be selected using the Web Interface or PC Tool.

7b. Monitor OUT (LCR) – Provides analog unbalanced output for external monitor via 1x RCA connector. By default, the Monitor OUT provides a L+C+R summation ('Left', 'Center' and 'Right' channels) of the AES3 inputs to the AIB-3000 or the audio input on Channel 16. LCR is the default option for the Monitor output, which can be changed from the Web Interface or PC Tool.

7c. REDUNDANT – Provides redundant analog output for Channels 1 to 16 via 2x male DB-25 connectors. These ports provide compatibility for ease of connection with legacy cinema audio processors

⑧ → ANALOG OUTPUT CH1-8 and CH9-16:

These outputs provide 16-channel balanced analog audio for connection to Amplifiers with analog inputs via 16x 3-Pos Phoenix connector interface.

⑨ → BASS MANAGEMENT:

Provide 2-channel Bass Management output via 2x 3-Pos Phoenix connector interface.

9 INSTALLATION AND CONNECTIONS

9.1 Installation

The AIB-3000 unit occupies 2U space and can be placed on a solid and stable surface or mounted in a standard equipment rack. Before mounting or installing the unit, ensure that its power cable is disconnected from the power supply completely.

For ventilation purposes, it is recommended to leave 1U space above and below the unit and not block any ventilation openings.

NOTE: Instead of connecting the AIB-3000 to the power grid directly, it is recommended to plug the device's mains connection to a UPS outlet.

9.2 AC Mains Supply

The AC Main connection is made via the **IEC C13** connector.



Make sure the AC mains voltage used is within the acceptable operating voltage range: 115V-230V \pm 10%.



It is important to connect the ground for safety, do not use adapter that disables the ground connection.



The DC series amplifiers have an automatic power factor correction system - PFC - for a perfect mains network interface. The PFC minimizes the reactive power reflected on the network and reduces the harmonic distortion on voltage/current waveform: in this way the amplifier is seen as a resistive load from the mains network. Furthermore, the system allows performance to be maintained even in case of varying mains voltage.



Connection to the main shall be done only by an electro technically skilled person according to the national requirements of the countries where the unit is sold.



9.3 AIB-3000 Wiring Diagram

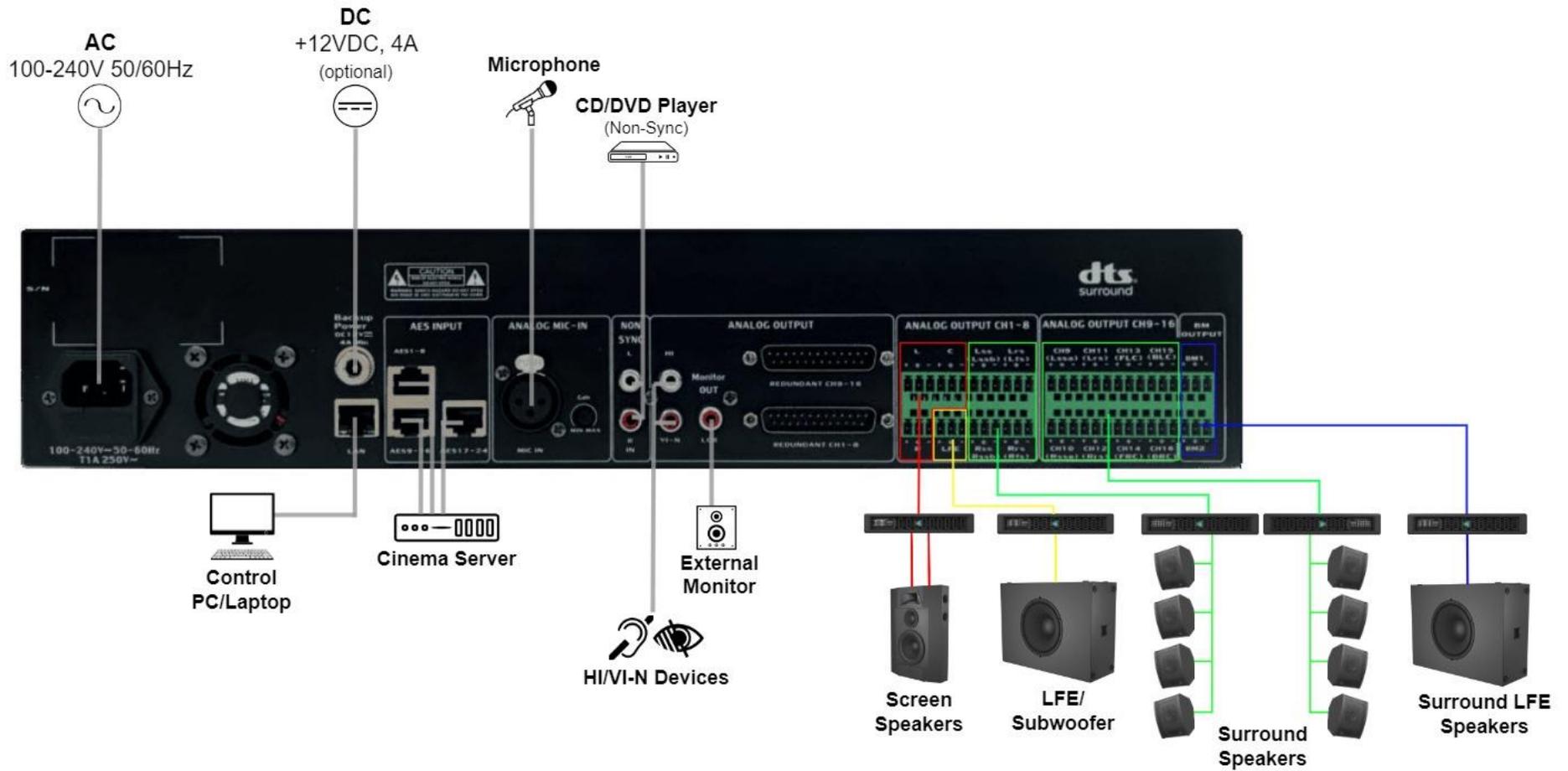


Figure 5

9.4 Connecting the AIB-3000 to the Cinema Network

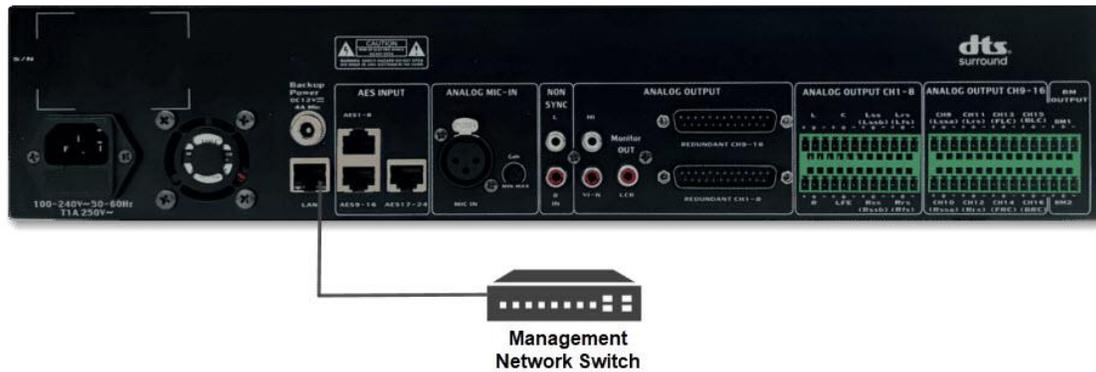


Figure 6: Connect AIB-3000 to

Connect the **LAN** port [③ @ Rear Panel] of the AIB-3000 to the Management Network switch of the cinema using CAT5e (or greater) Ethernet cable, as shown in **Figure 6**. It is also recommended to have a 1 Gbps (1,000 Mbps) network connection.

9.5 Connecting the AIB-3000 to a Digital Cinema Server

This section provides instructions for connecting the AIB-3000 to a Digital Cinema Server.

Digital Cinema Systems like the GDC SR-1000 IMB, GDC SR-1000 Extreme IMB, GDC SR-1000 Extreme - 24 IMB) output audio to the AIB-3000 using RJ-45 connectors and standard CAT5e or greater shielded Ethernet cables. Other compatible playback systems require similar connections.

9.5.1 AIB-3000 with GDC-SR-1000/ GDC SR-1000 Extreme IMB

To connect the GDC SR-1000 IMB or GDC SR-1000 Extreme IMB to the AIB-3000, connect the AUDIO AES ports on the IMB (**A-TOP** for 5.1/7.1 configuration OR **A-TOP** and **A-BOT** for 15.1 configuration) to the AIB-3000 AES Input ports (**④a @ Rear Panel; AES1-8** for 5.1/7.1 configuration OR **AES1-8** and **AES9-16** for 15.1 configuration) using good quality CAT5e (or greater) shielded Ethernet cables. For best results, use the cables provided as part of standard SR-1000 packaging **Figure 7** shows an example where the SR-1000 Extreme IMB is connected to an AIB-3000.

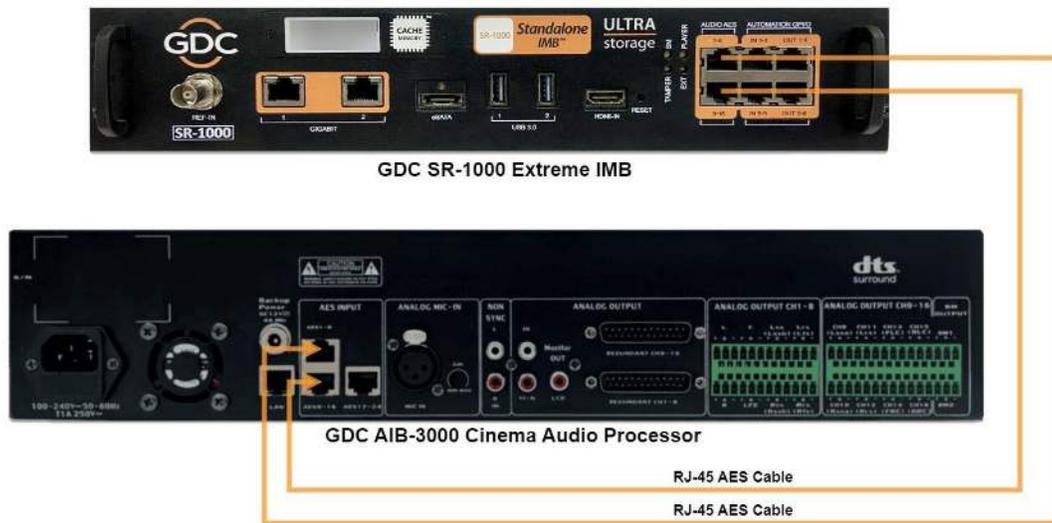


Figure 7: SR-1000 Extreme with AIB-3000

9.5.2 AIB-3000 with GDC-SR-1000 Extreme – 24 IMB

To connect the GDC SR-1000 Extreme - 24 IMB to the AIB-3000, connect the AUDIO AES ports on the IMB (**A-TOP**, **A-BOT** and **AUDIO AES 17-24** for 15.1 configuration with HI/VI-N) to the AIB-3000 AES Input ports (**4a** and **4b** @ Rear Panel; **AES1-8**, **AES9-16** and **AES17-24** for 15.1 configuration with HI/VI-N) using good quality CAT5e (or greater) shielded Ethernet cables. For best results, use the cables provided as part of standard SR-1000 packaging.

Figure 8 shows an example where the SR-1000 Extreme - 24 IMB is connected to an AIB-3000.

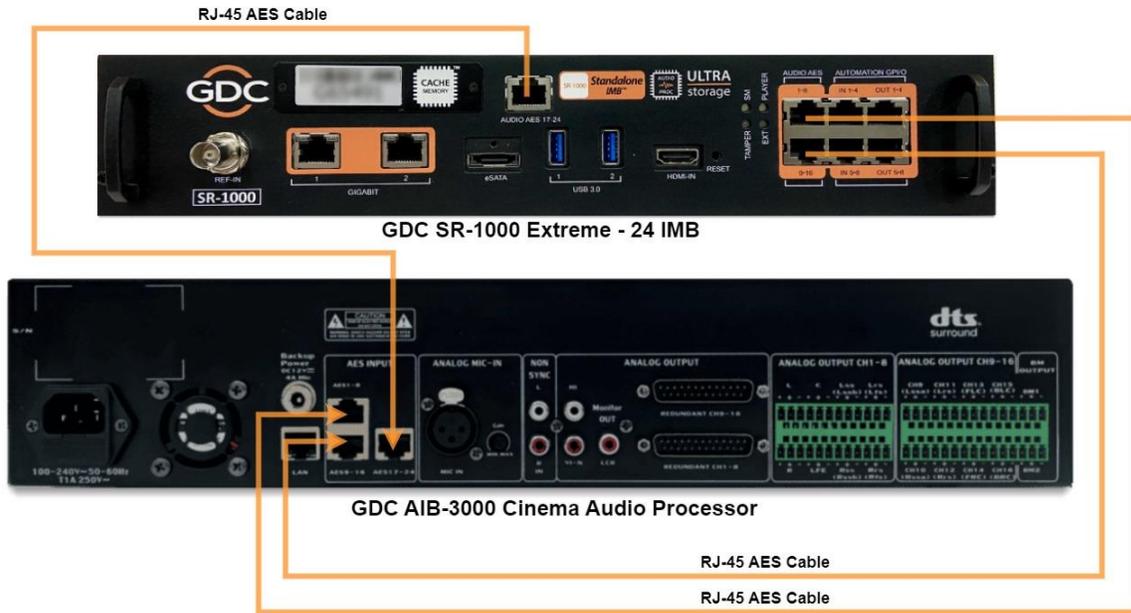


Figure 8: SR-1000 Extreme – 24 with AIB-3000

9.6 Connecting the AIB-3000 to Cinema Amplifiers

To connect the AIB-3000 to the cinema Amplifiers, connect the required number of channels from the AIB-3000 **ANALOG OUTPUT** [⑧ and ⑨ @ Rear Panel; **CH1-8**, **CH9-16** and **BM1/BM2**] to the analog inputs of the analog Amplifiers, using Phoenix connectors along with good quality Line Level audio cables (refer to **Figure 9**).



Figure 9: AIB-3000 to Analog Amplifiers

9.7 Typical Application Use-Cases

Case 1: AIB-3000 used as a 7.1 'DTS Surround' Audio Processor with Crossover and Bass Management.

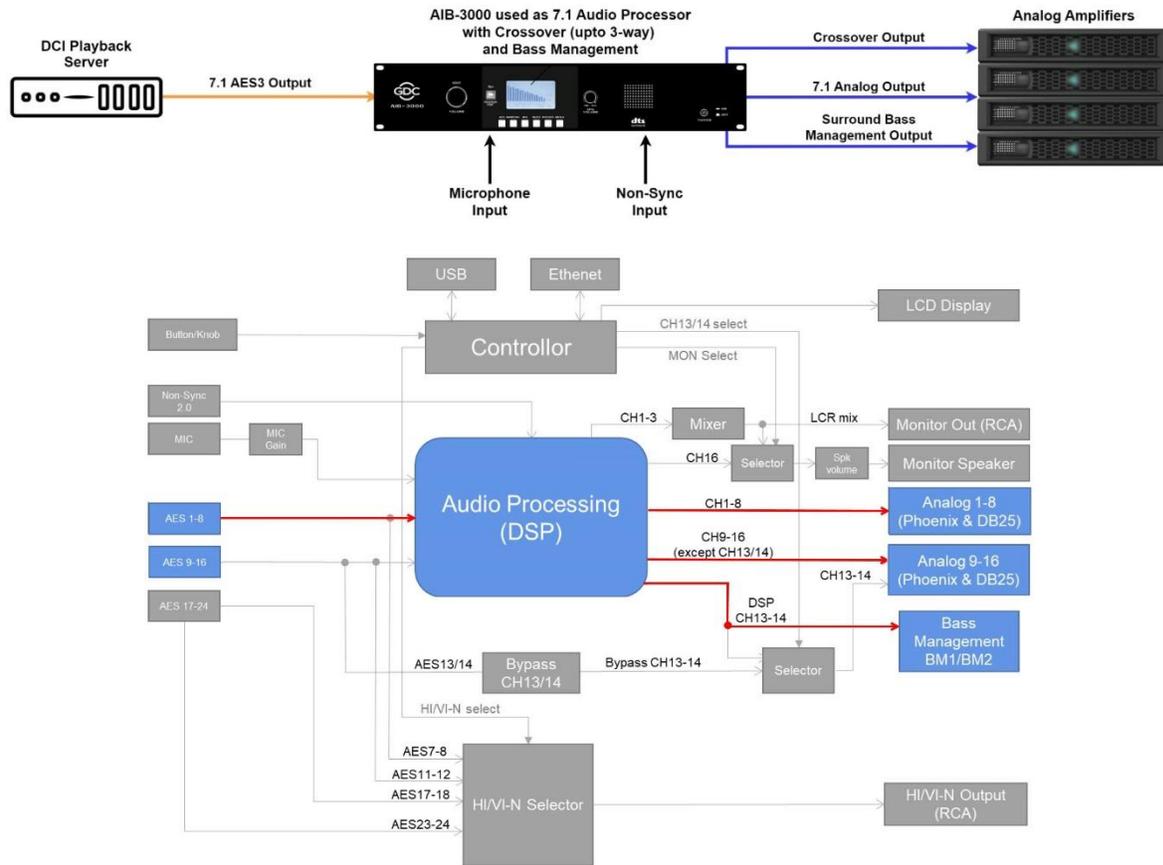


Figure 10: AIB-3000 'DTS Surround' Solution

In this particular solution, the AIB-3000 is used as a 7.1 'DTS Surround' Audio Processor which provides 8-Channel analog output on **CH 1-8** along with Crossover output on **CH 9-16** (except **CH 13** and **14**) and Bass Management output on **BM1** and **BM2**. For such a setup, the following configuration needs to be done on the PC Tool:

- Since Channels 13 and 14 are not used, the **CH13/14** setting under the **Profile** tab does not matter.
- Under the **Input Setting** tab, use the **Channel Assignment** routing matrix to route the AES3 inputs (1 to 8) to the desired output channels (Outputs 1 to 8) on the device. In addition to this, select the additional output channels (between Outputs 9 to 16) required for the extra Crossover bands, based on whether it is a 'two-way' or 'three-way' Crossover setup. Furthermore, set the parameters for Low Pass filter and High Pass filter for each of these additional output channels (based on speaker specifications) in the **Xover** section under the **Channel tune** tab. Refer to **Section 13.3.4** for more details.
- Under the **Surround Bass Management** tab, select the surround speaker channel(s) for Bass Management processing on the **BM1** and **BM2** outputs. Refer to **Section 13.3.6** for more details.
- The amplifiers need to be connected to **ANALOG OUTPUT 1-8** and **9-16** [8] @ Rear Panel].

Case 2: AIB-3000 used as a 16-Channel Audio Processor without Bass Management

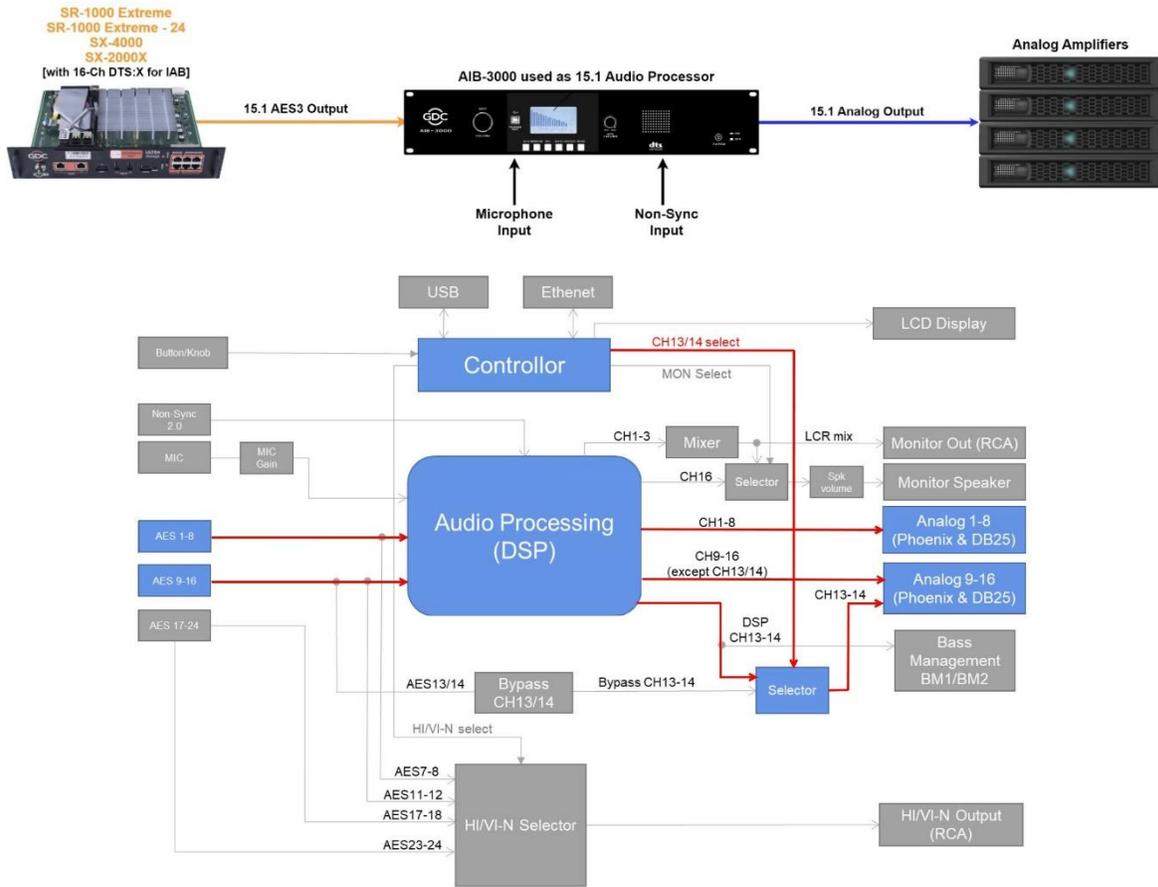


Figure 11: 16-Channel DTS:X for IAB without Bass Management

In this particular solution, the AIB-3000 is used as a 15.1 Audio Processor which provides 16-Channel analog output on **CH 1-8** and **CH 9-16**. Note that the audio processing for 16-Channels will take place in the AIB-3000 itself. For such a setup, the following configuration needs to be done on the PC Tool:

- Under the **Profile** tab, select the ‘DSP’ option for the **CH13/14** setting. Refer to **Section 13.3.1** for more details.
- Under the **Input Setting** tab, use the **Channel Assignment** routing matrix to route the AES3 inputs (1 to 16) to the desired output channels (Outputs 1 to 16) on the device.
- The amplifiers need to be connected to **ANALOG OUTPUT 1-8** and **9-16** [8 @ Rear Panel].

Case 3: AIB-3000 used as a 16-Channel DAC with Aux Input and Bass Management

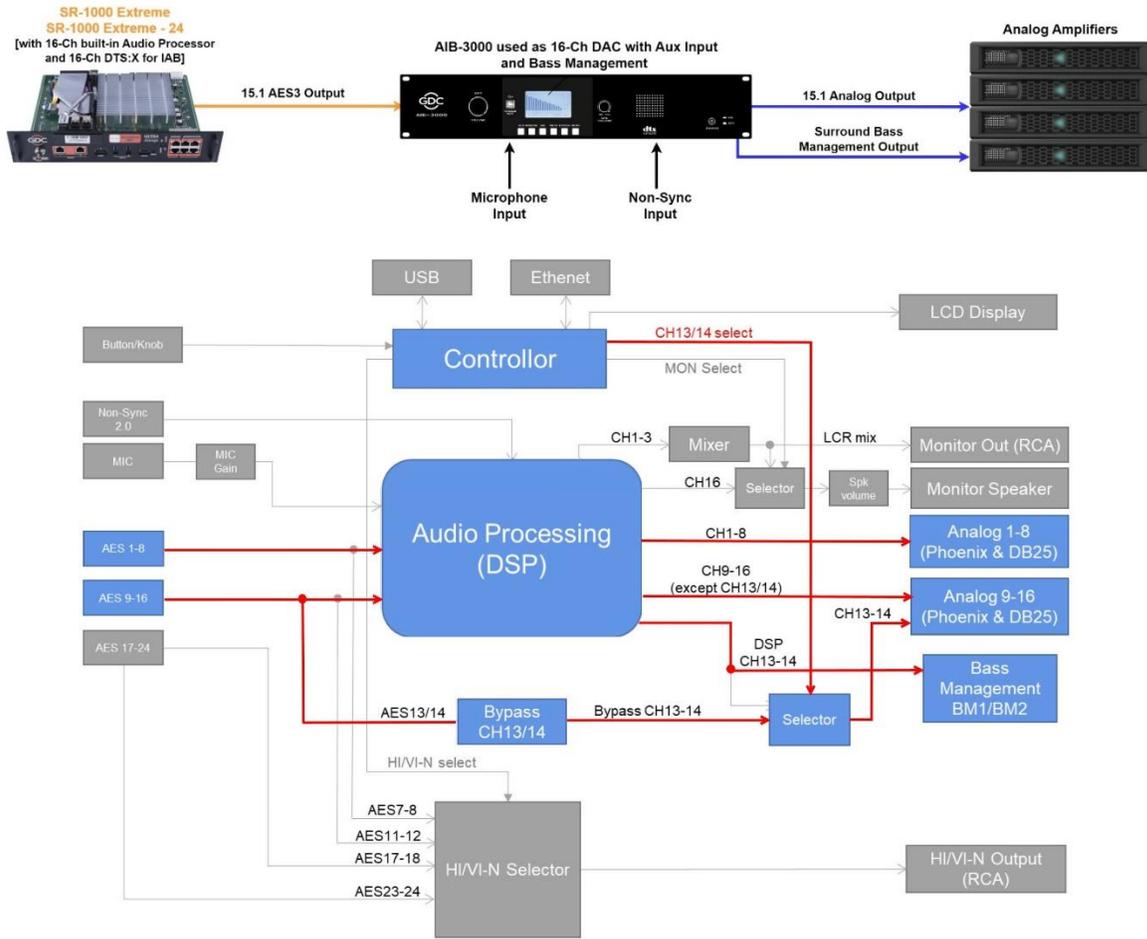


Figure 12: 16-Channel DTS:X for IAB with Bass Management

In this particular solution, the AIB-3000 is used as a 16-Channel Digital-to-Analog Converter (DAC) which provides 16-Channel analog output on **CH 1-8** and **CH 9-16** along with Bass Management output on **BM1** and **BM2**. Note that the audio processing for 16-Channels will take place in the SR-1000 Extreme/Extreme -24 IMB (license needed) and the processing for 2 Bass Management channels will take place in the AIB-3000. For such a setup, the following configuration needs to be done on the PC Tool:

- Under the **Profile** tab, select the ‘Bypass’ option for the **CH13/14** setting. Refer to **Section 13.3.1** for more details.
- Under the **Input Setting** tab, use the **Channel Assignment** routing matrix to route the AES3 inputs (1 to 16) to the desired output channels (Outputs 1 to 16) on the device. Refer to **Section 13.3.4** for more details.
- Under the **Surround Bass Management** tab, select the surround speaker channel(s) for Bass Management processing on the **BM1** and **BM2** outputs. Refer to **Section 13.3.6** for more details.
- The amplifiers for the 16 main channels need to be connected to **ANALOG OUTPUT 1-8** and **9-16** [⑧ @ Rear Panel].and ones for Bass Management need to be connected to **BM1** and **BM2** [⑨ @ Rear Panel].

10 LCD DISPLAY OVERVIEW

The LCD Display provided on the Front Panel of the AIB-3000 makes it simple for the user to quickly check the system status. When the device is powered ON, the 'Home' screen is displayed on the LCD Display by default. As shown in **Figure 13**, the following information is displayed on the 'Home' screen:

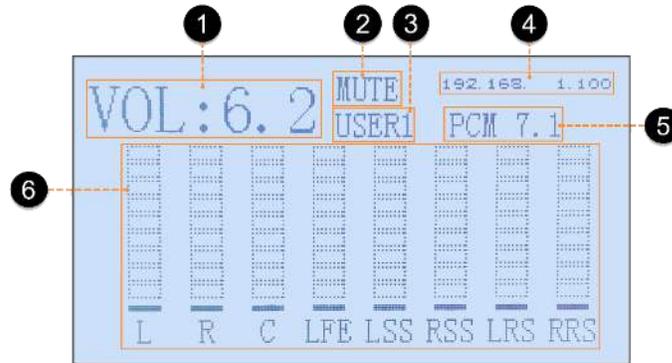


Figure 13: LCD Display Home Screen

① → **Main Fader level:**

Displays the current fader level, which can range from 0 to 10. Rotate the **VOLUME** knob [① @ Front Panel] clockwise to increase the volume or counter clockwise to decrease the volume, in 0.1 step.

② → **Mute Status:**

Indicates whether the global sound output is muted or unmuted. When the **MUTE** button [④d @ Front Panel] is pressed, a "MUTE" message will be displayed on the 'Home' screen indicating that all audio outputs are muted. When pressed again, this message will disappear indicating that all audio outputs are unmuted.

③ → **User Preset:**

Displays the name of the current configuration and settings user preset which is loaded on the system. These user presets can be loaded or saved from the Menu screen and the PC Tool can be used to edit these presets.

④ → **Input Format:**

Displays the audio input format which is currently selected.

- When the **AES** button [④a @ Front Panel] is pressed, a "PCM 5.1" message will be displayed on the 'Home' screen indicating that AES3 audio input is selected. Short press the AES button again to switch between 5.1/7.1/15.1 formats. Note that the channel level meters displayed will also change depending on the format selected.
- When the **NONSYNC** button [④b @ Front Panel] is pressed, a "NONSYNC2.0" message will be displayed on the 'Home' screen indicating that Non-Sync analog input is selected.
- When the **MIC** button [④c @ Front Panel] is pressed, a "MIC 2.0" message will be displayed on the 'Home' screen indicating that microphone input is selected.

⑤ → **Audio Meter:**

Displays the signal levels of the audio inputs. Note that the number of channel meters shown on the LCD Display will change based on the selected format of audio input.

10.1 Menu Options

By pressing the **MENU** button [(4)f @ Front Panel] the LCD Display will navigate to the 'Menu' section. As indicated in **Figure 14**, rotate the **VOLUME** knob [(1) @ Front Panel] clockwise or counter clockwise to toggle between the two screens.

On any particular screen, short press the **VOLUME** knob to enter edit mode (the value against the first parameter will start blinking). To move to the next parameter, short press the **VOLUME** knob again and keep repeating until you have reached the parameter that needs to be edited.

When the parameter value is blinking, rotate the **VOLUME** knob clockwise or counter clockwise to navigate among the options available for that particular parameter. Short press the **VOLUME** knob to confirm the selected value and apply the changes.

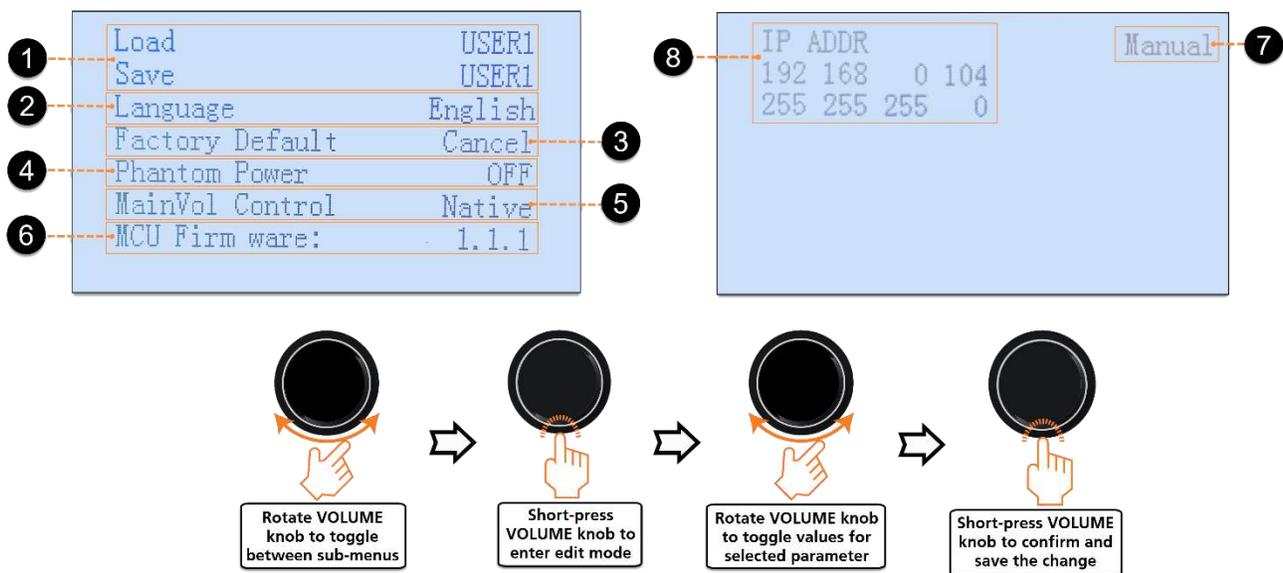


Figure 14: Menu Screen Navigation

The options available for each of the parameters listed under the Menu section are mentioned below:

① → **Load/Save:**

The 'Load' parameter enables the user to select and load a particular user preset on the system. The 'Save' parameter allows the user to save the configuration changes made to the user preset currently loaded on the system.

② → **Language:**

This parameter enables the user to change the language the LCD Display screens. Currently, the language options available are 'English' and 'Chinese (中文)'.

③ → **Factory Default:**

This parameter enables the user to reset the device. Select the 'Resume' option to erase the current configuration and EQ settings done via the Web Interface/PC Tool and reset the device to factory default. However, the options selected for **HI/VI**, **CH13/14** and **MON** settings will not be reset.

④ → **Phantom Power:**

This parameter enables the user to activate the +48V Phantom Power for the XLR Microphone input, by selecting the 'ON' option. To disable this setting, select the 'OFF' option.

⑤ → **MainVol Control:**

This parameter enables the user to select the method of controlling the Main Fader volume.

- When the 'Native' option is selected, the Fader level of the device can be controlled either using the **VOLUME** knob on the front panel or via the Web Interface/PC Tool.
- The 'Server' option should be selected when the built-in audio processing capability of the digital cinema server is used (Refer to [Case 3](#) under **Section 9.7**). In this scenario, the Fader level on the server can be controlled either using the **VOLUME** knob on the Front Panel or via the Web Interface/PC Tool. Note that the user needs to mention the corresponding server 'IP Address' and 'Port number' within the Web Interface or PC Tool, in order to establish a connection.

⑥ → **MCU Firmware:**

This parameter displays the current system software version of the AIB-3000 unit. Refer to **Section 14** for more details regarding AIB-3000 system software upgrade.

⑦ → **Auto/Manual Mode:**

This parameter enables the user to either assign a static IP Address to the device by selecting the 'Manual' option OR allow the device to search and auto-assign a valid IP Address from a DHCP server on the connected network, by selecting the 'Auto' option.

⑧ → **IP ADDR:**

This parameter enables the user to view and edit the network settings of the device, which include IP Address and Subnet Mask. The default IP address of the AIB-3000 is "192.168.0.100" and Subnet Mask is "255.255.255.0".

To edit the IP Address and Subnet Mask values; short press the **VOLUME** knob to enter edit mode (the value of the first octet for IP Address will start blinking). To edit the current octet value, rotate the **VOLUME** knob clockwise or counter clockwise. Once the desired value is set, short press the **VOLUME** knob to move to the next octet in the IP value. Repeat this procedure until the last octet of the Subnet Mask value is reached and short press the **VOLUME** knob to confirm and apply the changes to the device.

11 AIB-3000 REMOTE CONTROLS

The GDC AIB-3000 can be controlled remotely from a PC, Digital Cinema Server or other devices. Communication is implemented through an Ethernet connection.

Remote Control allows switching of the input source to AES 5.1/7.1/15.1 or NONSYNC, MIC control, Main Fader Volume Control, MUTE control, setting Center channel output to Left and Right channels (BYPASS), etc.

As illustrated in **Figure 15**, the AIB-3000 can be controlled from the GDC SR-1000 IMB by adding it as a 'NETWORKSOCKET' device in the SR-1000 Automation settings. For more details regarding adding an automation device, refer to the '[GDC SR-1000 User Manual](#)'.

Get in touch with GDC Technical Support for the control cues needed to program the AIB-3000 automation device.

1 Click on 'Device' sub-tab under Automation

2 Click on 'Create' button to add new Automation Device

3 Under 'Details' section, add AIB-3000 device info. and Control Cues

The screenshot shows the GDC SR-1000 IMB Automation settings interface. The 'Automation' sub-tab is selected, and the 'Device' sub-tab is active. The 'Device' list on the left shows a 'Create' button. The 'Details' section for the 'AIB-3000' device is expanded, showing the following configuration:

- Type: NETWORKSOCKET
- Name: AIB-3000
- IP Address: 192.168.0.100
- Port: 5005
- Local Port: (empty)
- Transport: TCP
- Linefeed Type: LF
- Control Cues:

Name	Value
VOL 7.0	0x52 0x50 0x01 0x05 0x04 0x03 0
VOL 6.5	0x52 0x50 0x01 0x05 0x04 0x03 0
VOL 6.0	0x52 0x50 0x01 0x05 0x04 0x03 0

Figure 15: AIB-3000 Automation Device Setup

12 AIB-3000 WEB INTERFACE

The AIB-3000 Cinema Audio Processor comes with a built-in Web Interface which can be used to access its basic functions for control, setup and monitoring. Interface functions include switching audio input source, fader volume control, selecting output for microphone, channel assignment, setting device's IP Address and Subnet Mask, etc.

The unit must be connected to a wired or a wireless network via the **LAN** [③ @ Rear Panel] port. The PC/laptop used for accessing the Web Interface must be in the same network segment as the AIB-3000 device.

12.1 Default Access

Factory default network settings for AIB-3000 are as follows:

- IP Address: **192.168.0.100**
- Network mask: **255.255.255.0**
- Gateway: **192.168.0.1**
- User name: *Contact GDC for the User name and Password of the AIB-3000 Web Interface.*
- Password: *Contact GDC for the User name and Password of the AIB-3000 Web Interface.*

12.2 Accessing the Web Interface

Make sure your computer is in the same network as the AIB-3000 and has the same network mask. Open a web browser and enter the default IP of the AIB-3000 in the address bar. The login page for the AIB-3000 Web Interface will be displayed, as shown in **Figure 16**. Enter the login credentials and click on the **Sign In** button.



The screenshot shows the login page for the AIB-3000 web interface. At the top, there is a blue header bar with the text "AIB-3000" in white. Below the header, the page is white. There are two input fields: "User name:" followed by a text box, and "Password:" followed by a text box. Below the password field, there is a "Sign In" button with a mouse cursor pointing to it.

Figure 16: Accessing the Web Interface

12.3 About the AIB-3000 Web Interface

The navigation sidebar of the AIB-3000 Web Interface provides access to the **Status** and **Setup** tabs. Click the desired tab to display the corresponding screen.

12.3.1 Status tab

The **Status** tab duplicates some of the controls available on the device's Front Panel as well as provide certain configuration options for the audio processing.

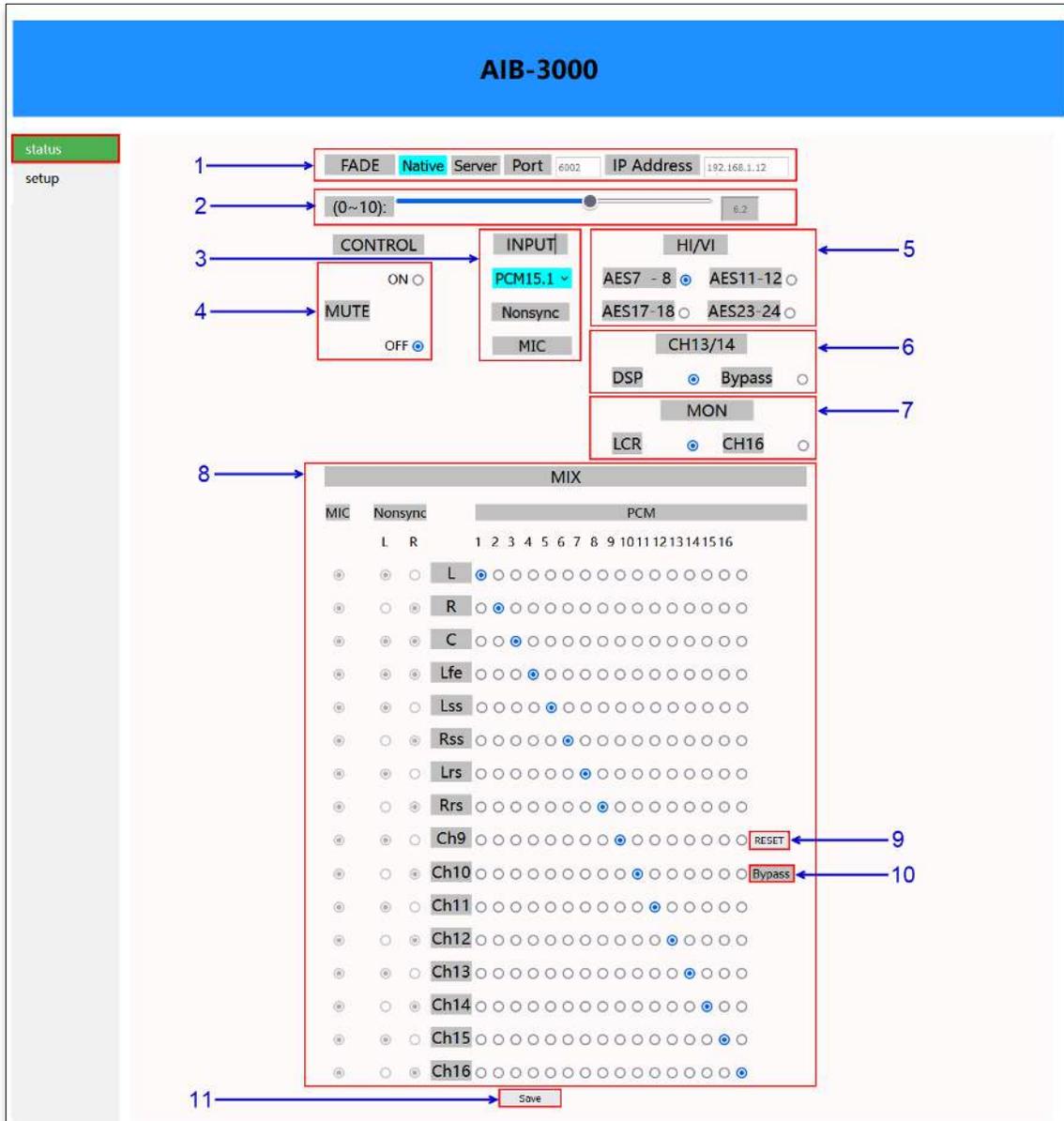


Figure 17: Status Tab

Sr. No.	Name	Function Description
1	[FADE CONTROL]	<p>Allows the user to select the method of controlling the Main Fader volume.</p> <p>The 'Native' option indicates that the Main fader level can be controlled either using the VOLUME knob [① @ Front Panel] or via the Web Interface/PC Tool.</p>
2	[FADER LEVEL]	<p>Allows the user to adjust the Main Fader level. The adjustment range is 0 -10, in 0.1 step. The Fader level can be set using the slider. Alternatively, the user can also type-in the value in the textbox provided besides the slider.</p>
3	[INPUT]	<p>Allows the user to select the desired input source. There are three options available:</p> <ul style="list-style-type: none"> ▪ PCM5.1/7.1/15.1 (switches to AES3 digital input) ▪ Nonsync (switches to Non-Sync analog input digital input) ▪ MIC (switches to Microphone input)
4	[MUTE]	<p>Allows the user to either mute or unmute the global sound output.</p> <p>When the MUTE status is set to 'On', all audio outputs will be muted. When the MUTE status is set to 'OFF', all audio outputs will be unmuted.</p>
5	[HI/VI]	<p>Allows the user to select the AES output pair which should be routed to the HI and VI-N channels. The following AES output channels are available:</p> <ul style="list-style-type: none"> ▪ AES7 – 8 ▪ AES11 – 12 ▪ AES17 – 18 ▪ AES23 - 24

6	[CH13/14]	<p>Allows the user to select the function for AES output channels CH13 and CH14. Note that the AIB-3000 uses Ch. 13 and 14 for Bass Management processing. There are two options available:</p> <ul style="list-style-type: none"> ▪ DSP ▪ Bypass <p>The Bypass option should be selected in a scenario where the AIB-3000 is used to implement a 15.1 DTS:X for IAB with Bass Management solution (refer to Case 3 under Section 9.7). In this case, the Bass Management speakers should be connected to the BM1/BM2 output [4b @ Rear Panel] and the Channels 13/14 speakers should be connected to the CH13/CH14 output [8 @ Rear Panel].</p> <p>For all other scenarios, the DSP option should be selected.</p>
7	[MON]	<p>Allows the user to configure the monitoring source for the built-in Booth Monitor [6 @ Front Panel] and Monitor OUT [7b @ Rear Panel] analog RCA connector.</p> <p>By default, the LCR option (mix of 'Left', 'Center' and 'Right' channels) is selected. Alternatively, you can select the CH16 option and configure the monitoring source by assigning the AES input(s) from required speaker(s) to Channel 16 output, under the MIX section of the Web Interface.</p>
8	[MIX]	<p>Displays the channel assignment for the AES3 digital audio input (16 channels) under PCM routing matrix. It also displays the output routing for the Microphone input (under MIC routing matrix) and Non-Sync analog input (under Nonsync routing matrix). Depending on the INPUT type selected, the corresponding routing matrix will become clickable under the MIX section.</p> <p>The user can customize the default channel assignment by selecting the radio button against the destination speaker for every AES3 input channel (1 to 16). Clicking on a selected radio button will de-select the assignment.</p> <p>Similarly, the user can also customize the output routing for the Microphone and Non-Sync inputs as well.</p>
9	[RESET]	<p>Allows the user to reset the changes made to different settings and controls listed under the Status tab, to their corresponding default values.</p>

10	[BYPASS]	Indicates whether 'Bypass' mode (Center to Left and Right) is enabled or disabled on the device.
11	[SAVE]	Allows the user to save all the changes made to various setup and control options available under the Status tab. NOTE: Any updates which are made to the configuration/controls under the Status tab, will not reflect on the AIB-3000 device unless the Save button is clicked after making those changes.

Table 2

12.3.2 Setup tab

The **Setup** tab provides access to the network configuration for the AIB-3000 as well as edit auditorium-related information associated with the installed device.

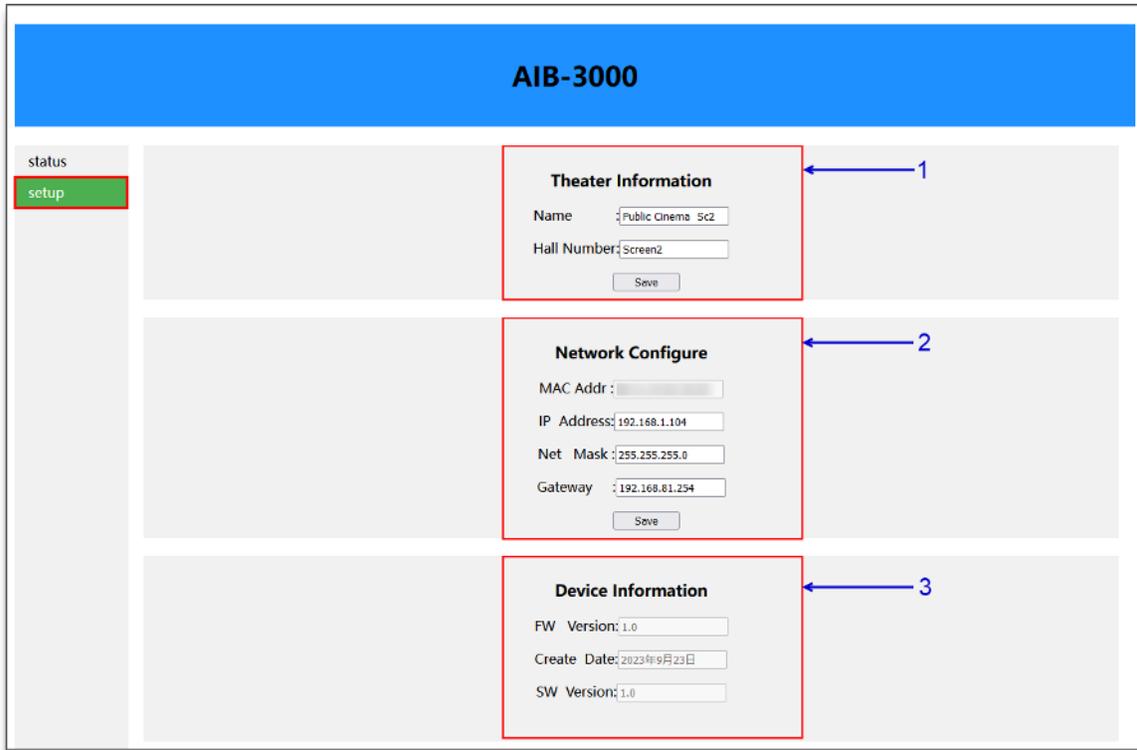


Figure 18: Setup Tab

Sr. No.	Name	Function Description
1	[Theater Information]	<p>Displays information related to the auditorium where the device is installed, which include the following:</p> <ul style="list-style-type: none"> Name Hall Number <p>The user can edit this information by entering the updated values in the above mentioned fields and clicking the Save button.</p>
2	[Network Configure]	<p>Displays the network settings of the device, which include the following:</p> <ul style="list-style-type: none"> MAC Addr. (cannot be edited) IP Address Net Mask Gateway

		<p>The user can configure the network settings by entering the updated 'IP Address', 'Subnet Mask' and 'Gateway' values (as per the cinema network) in the above mentioned fields and clicking the Save button.</p>
3	[Device Information]	<p>Displays system information related to the device, which includes the following:</p> <ul style="list-style-type: none">▪ FW Version▪ Create Date▪ SW Version

Table 3

13 USING THE PC TOOL

Apart from the Web Interface, the AIB-3000 Cinema Audio processor can also be configured using a custom-designed software PC Tool.

This software includes all the functions and controls that would be needed for setting up and tuning the auditorium's sound system and requires minimum operational training to do so. It provides tools for audio processing functions such as equalization, delays, output levels, input matrix, etc.

Get in touch with GDC Technical Support in order to obtain the PC Tool software file for the AIB-3000.

13.1 Accessing the PC Tool

The PC Tool software can be run on a PC or Laptop running Microsoft® Windows 7, Windows 10 or Windows 11 Operating System only.

The PC Tool software does not require any installation. To run this application, double-click on the "GDC_Audio_V1.0.0_T20.exe" file. The PC Tool interface window will be displayed, as shown in **Figure 19**.

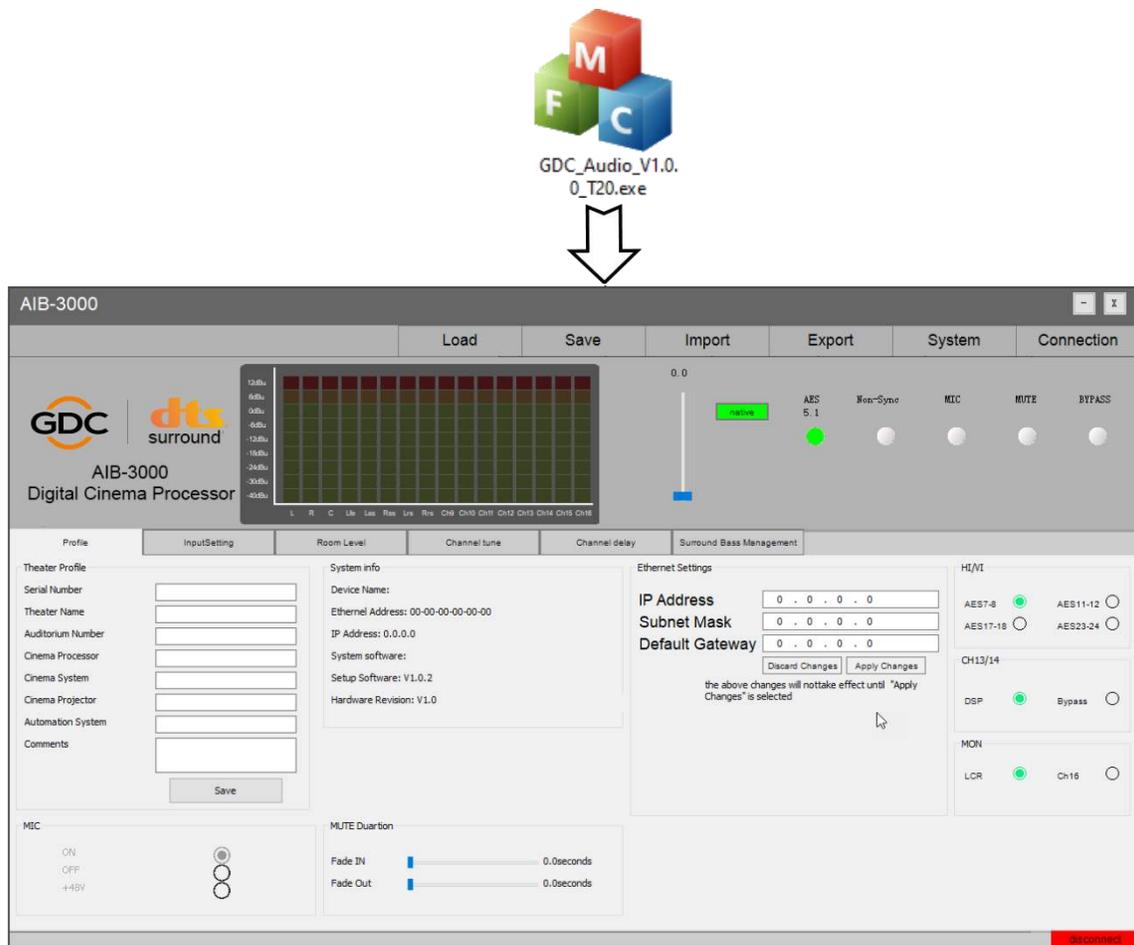


Figure 19: Accessing PC Tool

13.2 Connecting the AIB-3000 to the PC Tool

The AIB-3000 device can be connected to the PC Tool using two methods which are described below.

- Method 1: via USB** → Using this method; the PC/Laptop which is running the PC Tool software needs to be directly connected to the AIB-3000 device using a USB 2.0 Type-A Male to Type-B Male cable (*provided as part of standard AIB-3000 packaging*). Connect the Type-A end of the USB cable to the USB port on the PC/Laptop and connect the Type-B end to the USB port [② @ Front Panel] of the AIB-3000 unit, as illustrated in **Figure 20**.

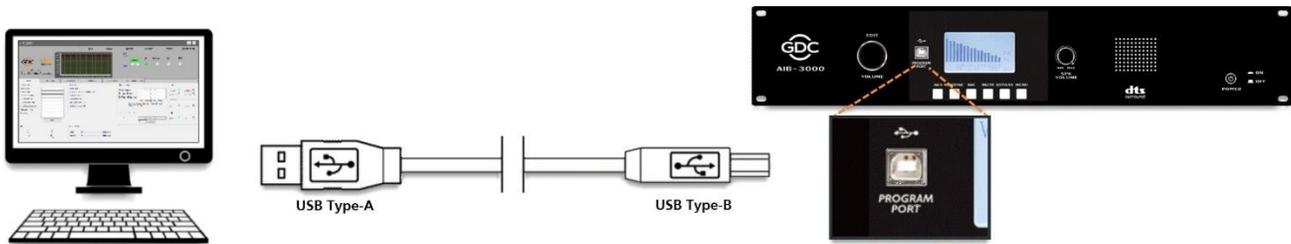


Figure 20: Connect to PC Tool using USB

Under the PC Tool interface, click on the **Connection** tab on the top menu bar. A pop-up window will be displayed. Select the 'USB' option as the **Connection** mode and click the **Connect** button, as shown in **Figure 21**.

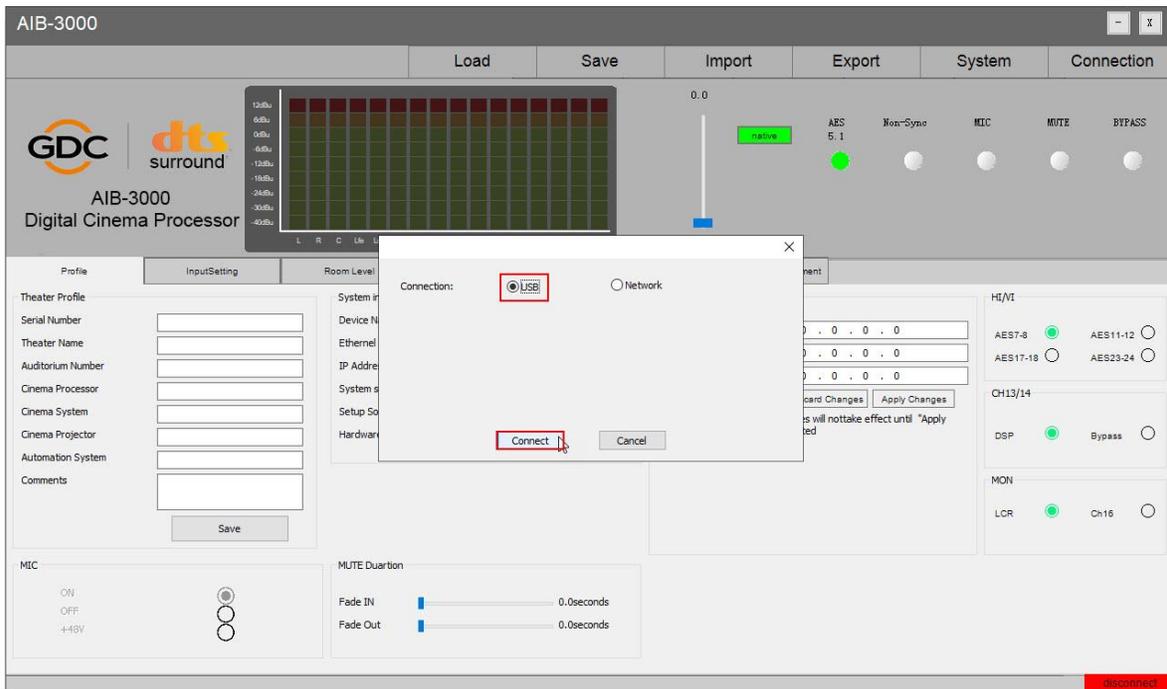


Figure 21: USB Connection

Once connected, a “Connected” message in **Green** color will be shown at the bottom-right corner of the PC Tool window and all device-related information/settings will be displayed within the interface.

Method 2: via Network → Using this method; the PC/Laptop which is running the PC Tool software needs to be connected to the AIB-3000 device (either directly or through the cinema’s network switch), using a network cable. Ensure that the network interface of PC/Laptop is set to the same subnet as the AIB-3000 device. Connect one end the network cable to the **LAN** port [③ @ Rear Panel] of the AIB-3000 unit and the other end to LAN port of the PC/Laptop (or the cinema’s network switch).

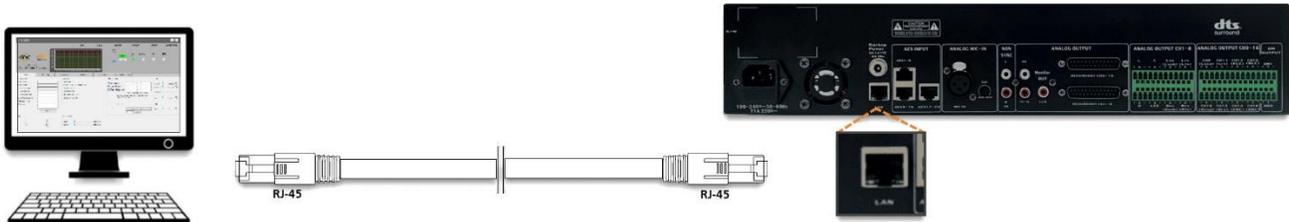


Figure 22: Connect to PC Tool using Network

Under the PC Tool interface, click on the **Connection** tab on the top menu bar. A pop-up window will be displayed. Select the ‘Network’ option as the **Connection** mode. When selected, the **IP Address** and **Device Name** drop-downs will be displayed, along with a **Search** button. Upon clicking this button, the PC Tool will search the cinema network for all the connected AIB-3000 devices and populate the **IP Address** and **Device Name** drop-downs. Select the device you want to connect and then click the **Connect** button, as shown in **Figure 23**. Alternatively, the user can type the IP Address of the device and click the **Connect** button.

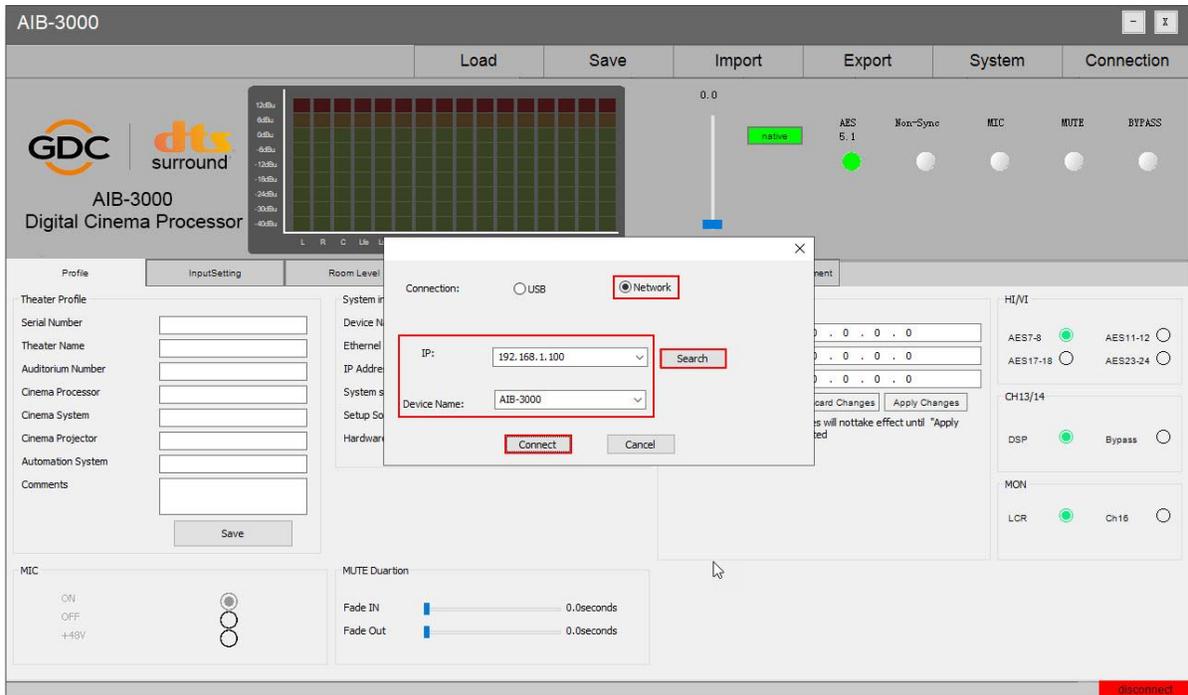


Figure 23: Network Connection

Once connected, a “Connected” message in **Green** color will be shown at the bottom-right corner of the PC Tool window and all device-related information/settings will be displayed within the interface.

IMPORTANT: When the AIB-3000 device is connected to the PC Tool software using either USB or Network method, the LCD Display of the device will continue to display the 'Home' screen information as shown in **Figure 24**.

The user will also be able to access or operate the device using the Front Panel controls. However, the **MENU** button will remain disabled and the 'Menu' screen will not be accessible for the duration of the PC Tool connection.

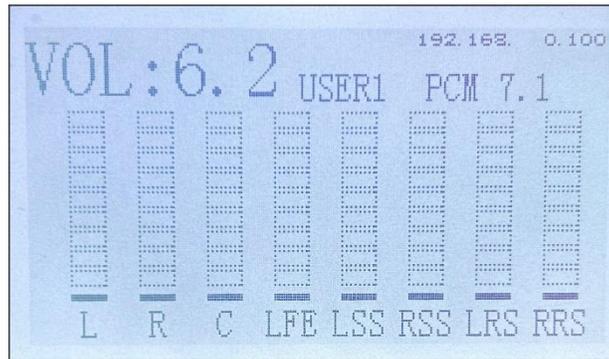


Figure 24: PC Connect Message

13.3 Overview of the PC Tool Interface

The PC Tool interface is comprised of six function tabs, namely 'Profile', 'Input Setting', 'Room Level', 'Channel tune', 'Channel delay' and 'Surround Bass Management', where functions necessary to setup, tune and monitor the cinema's sound system are available.

Apart from these function tabs, the interface also provides controls for basic functions such as switching audio input source, fader volume control, selecting output for microphone, loading and saving user presets and displays the audio level meters.

13.3.1 Device Controls and Profile tab

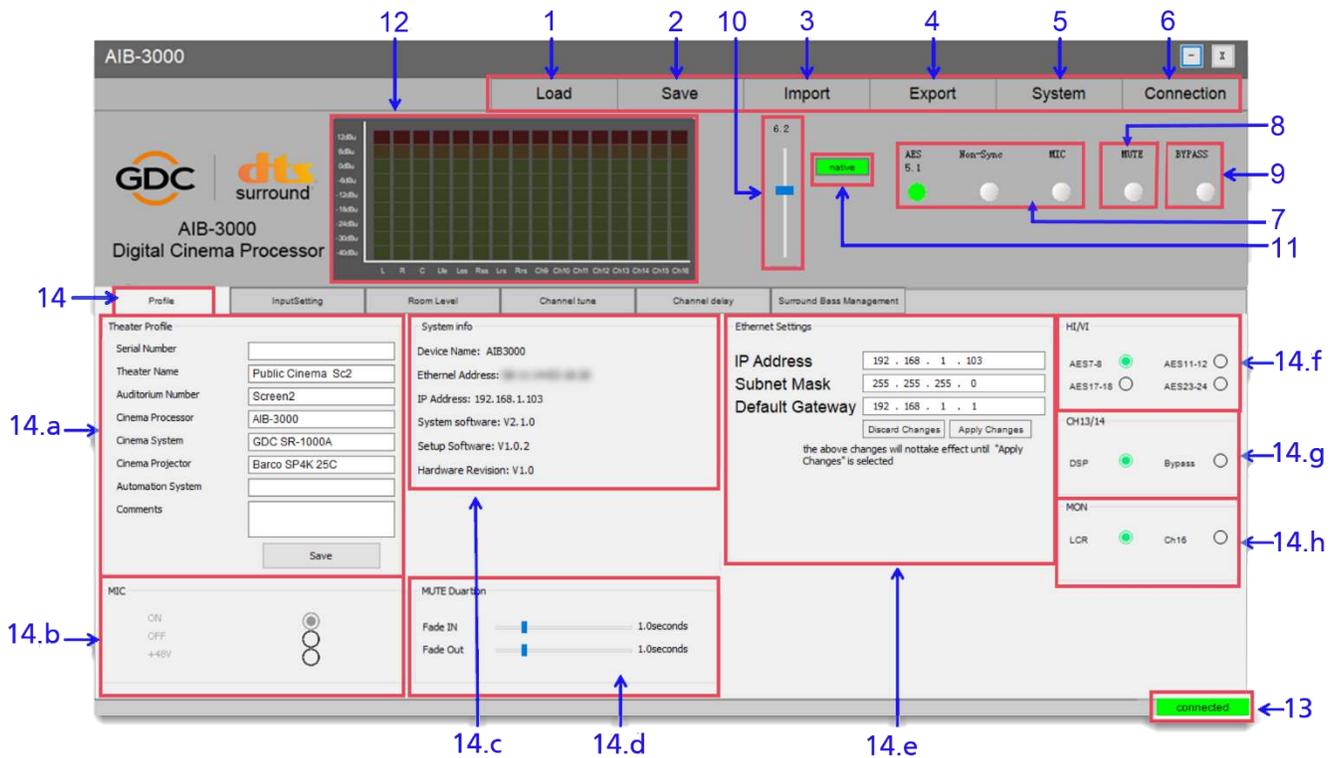
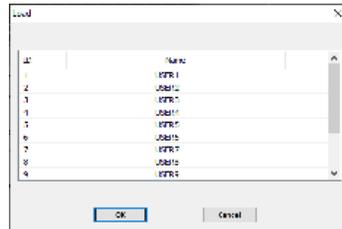
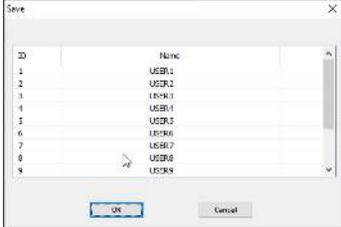


Figure 25: Device Controls and Profile Tab

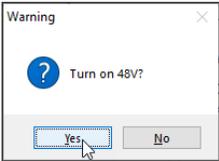
Sr. No.	Name	Function Description
1	[Load]	Allows the user to select a particular user preset and load the corresponding audio processing configuration to the device.



		<p>Select the desired user preset from the displayed list and click on the OK button. Click on the Cancel button to return to the previous screen.</p> <p>When any user preset is loaded, the settings under the following function tabs of the PC Tool will be updated from it:</p> <ul style="list-style-type: none"> ▪ Input Setting ▪ Room Level ▪ Channel tune ▪ Channel delay ▪ Surround Bass Management <p>NOTE: A user preset will not load device information shown under the Profile tab, the HI/VI, CH13/14 and MON settings, Main Fader Level and selected Input source.</p>
<p style="text-align: center;">2</p>	<p style="text-align: center;">[Save]</p>	<p>Allows the user to save the current audio processing configuration to a particular user preset.</p> <div style="text-align: center;">  </div> <p>Select the desired user preset from the displayed list and click on the OK button. A “Save Successful” message will be displayed. Click on the Cancel button to return to the previous screen.</p> <p>To rename any user preset, double-click on it and provide the desired name. Click on the OK button to save the preset name or Cancel button to return to the preset list.</p> <p>When any user preset is saved, the settings under the following function tabs of the PC Tool will be stored in it:</p> <ul style="list-style-type: none"> ▪ Input Setting ▪ Room Level ▪ Channel tune ▪ Channel delay ▪ Surround Bass Management <p>NOTE: A user preset will not save device information shown under the Profile tab, the HI/VI, CH13/14 and MON settings, Main Fader Level and selected Input source.</p>
<p style="text-align: center;">3</p>	<p style="text-align: center;">[Import]</p>	<p>Allows the user to import configuration and settings from a configuration file (.ys).</p>

		<p>Upon importing a configuration file, all user presets will be restored to the device. For more details regarding what settings are loaded from a particular user preset, refer to point 1 [Load].</p> <p>NOTE: A configuration file will not import device information shown under the Profile tab, the HI/VI, CH13/14 and MON settings, Main Fader Level and selected Input source.</p>
4	[Export]	<p>Allows the user to export the current configuration and settings to a configuration file (.ys).</p> <p>Upon exporting a configuration file, all user presets will be backed up from the device. For more details regarding what settings are stored in a particular user preset, refer to point 2 [Save].</p> <p>NOTE: A configuration file will not store device information shown under the Profile tab, the HI/VI, CH13/14 and MON settings, Main Fader Level and selected Input source.</p>
5	[System]	<i>(for future use)</i>
6	[Connection]	<p>Allows the user to establish a connection between the device and PC Tool software.</p> <p>There are two connection modes available: 'USB' and 'Network'. Refer to Section 13.2 for more details.</p>
7	[Input]	<p>Allows the user to select the desired input source. There are five options available:</p> <ul style="list-style-type: none"> ▪ PCM5.1/7.1/15.1 (switches to AES3 digital input. User can select between 'PCM5.1', 'PCM7.1' and 'PCM15.1') ▪ Non-Sync (switches to Non-Sync analog input digital input) ▪ MIC (switches to Microphone input)
8	[MUTE]	<p>Allows the user to mute or unmute the global sound output without disturbing the current Main Fader setting. The 'Fade IN' and 'Fade OUT' duration can be adjustable under the 'MUTE Duration' section of the Profile tab.</p>
9	[BYPASS]	<p>Allows the user to mix the Center channel to the Left and Right channels. Note that the BYPASS option is clickable only when the AES input source is selected.</p>

10	[Fader Level]	Allows the user to adjust the Main Fader level. The adjustment range is <u>0 -10</u> , in <u>0.1</u> step.
11	[Fader Control]	Allows the user to select the method of controlling the Main Fader volume. The 'Native' option indicates that the Main fader level can be controlled either using the VOLUME knob [① @ Front Panel] or via the Web Interface/PC Tool.
12	[Input Level Meters]	Displays the channel meters for the audio inputs.
13	[Connection Status]	Displays the connection status of the PC Tool software with the AIB-3000 device. A 'Connected' message will be displayed in Green color when the device is successfully connected to the PC Tool. A 'Disconnect' message will be displayed in Red color when the connection between the device and PC Tool is terminated.

14	Profile Tab		
	14.a	Theater Profile	Allows the user to view/edit the Cinema-related information such as the Theater Name , Auditorium Number and Device information such as the Cinema Processor , Digital Cinema System , Digital Cinema Projector and Automation System .
	14.b	MIC	<p>Allows the user to switch the microphone input ON or OFF. This section will be enabled when MIC is selected as the input source for the device.</p> <p>The +48V option switches the +48 V phantom power supply ON and OFF. When this option is clicked, a corresponding pop-up message will be shown. Click on the Yes button to turn ON the +48V phantom power supply for the microphone input.</p> <div style="text-align: center;">  </div> <p>To switch OFF the +48V phantom power supply, click on the +48V option again.</p>
	14.c	System info	Displays the system information related to the device such as the Device Name , MAC Address , IP Address , System software , Setup Software and Hardware Revision .
	14.d	MUTE Duration	Allows the user to set the Fade IN duration when there is a unmute operation (<u>0.0</u> to <u>5.0</u> sec. in <u>0.1</u> step) and set the Fade OUT duration when there is a mute operation (<u>0.0</u> to <u>5.0</u> sec. in <u>0.1</u> step).
	14.e	Ethernet Settings	<p>Allows the user to configure the network settings for the device.</p> <p>To update the network configuration, enter the updated values in the IP Address, Subnet Mask and Default Gateway fields (as per the Cinema network) and click the Apply Changes button. To discard the changes, click the Discard Changes button.</p> <p>In case the Fader Control is set to the 'Server', the corresponding IP Address and Port number for the digital cinema server can be mentioned under this section.</p>

	14.f	HI/VI	<p>Allows the user to select the AES output pair which should route the HI and VI-N channels. The following AES output channels are available:</p> <ul style="list-style-type: none"> ▪ AES7 – 8 ▪ AES11 – 12 ▪ AES17 – 18 ▪ AES23 - 24
	14.g	CH13/14	<p>Allows the user to select the function for AES output channels CH13 and CH14. Note that the AIB-3000 uses Ch. 13 and 14 for Bass Management processing. There are two options available:</p> <ul style="list-style-type: none"> ▪ DSP ▪ Bypass <p>The Bypass option should be selected in a scenario where the AIB-3000 is used to implement a 15.1 DTS:X for IAB with Bass Management solution (refer to Case 3 under Section 9.7). In this case, the Bass Management speakers should be connected to the BM1/BM2 output [4b @ Rear Panel] and the Channels 13/14 speakers should be connected to the CH13/CH14 output [8 @ Rear Panel].</p> <p>For all other scenarios, the DSP option should be selected.</p>
	14.h	MON	<p>Allows the user to configure the monitoring source for the built-in Booth Monitor [6 @ Front Panel] and Monitor OUT [7b @ Rear Panel] analog RCA connector.</p> <p>By default, the LCR option (mix of 'Left', 'Center' and 'Right' channels) is selected.</p> <p>Alternatively, you can select the CH16 option and configure the monitoring source by assigning the AES input(s) from required speaker(s) to Channel 16 output, under the Input Setting tab.</p>

Table 4

13.3.2 Input Setting tab

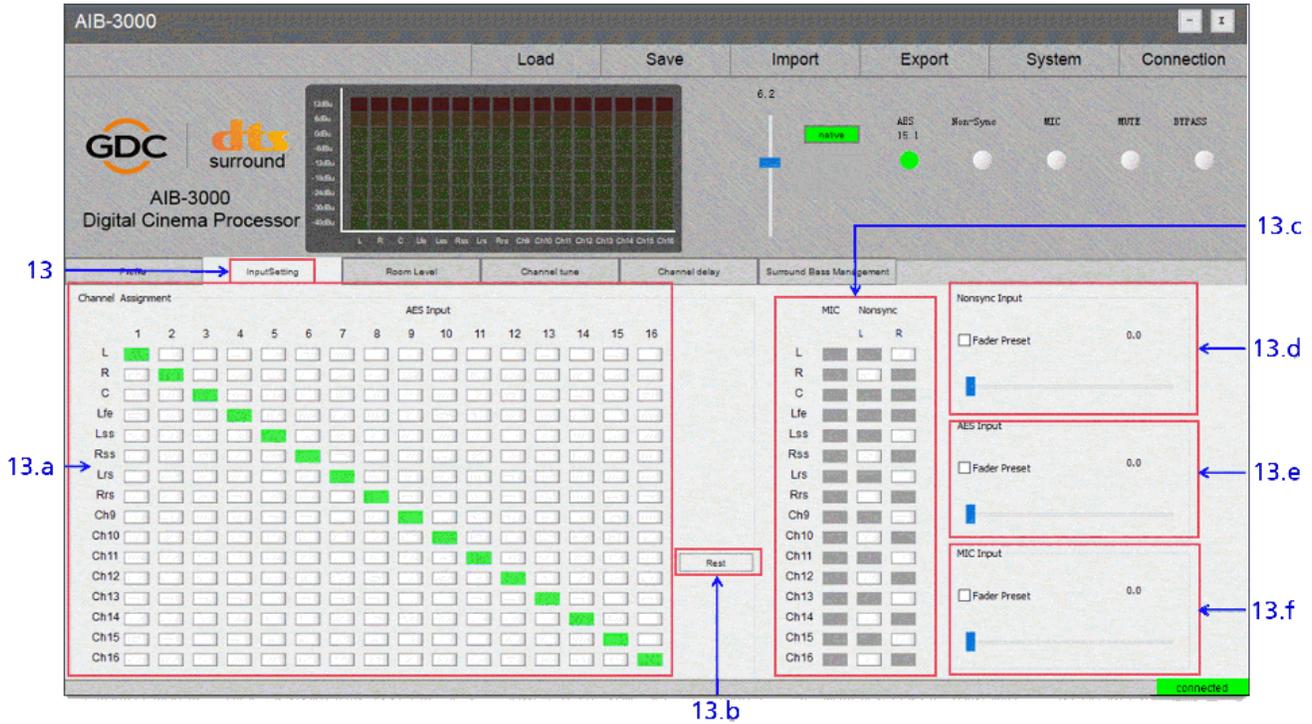


Figure 26

SN	Function Name and Description		
13	Input Setting Tab		
	13.a	Channel Assignment	<p>Displays the channel assignment for the AES3 digital audio input (16 channels) under Chanel Assignment routing matrix which ensures that the audio channels from the digital cinema server are routed to the desired output channels on the AIB-3000, to ensure that auditorium speakers receive the correct audio signals.</p> <p>This section will be enabled when AES5.1/7.1/15.1 is selected as the input source for the device.</p> <p>The user can customize the default channel assignment by selecting the toggle button against the destination AIB-3000 outputs for every AES3 input channel (1 to 16).</p> <p>When selected, the toggle button will be highlighted in Green color. Clicking on any highlighted toggle button again will de-select the assignment.</p>

	13.b	Reset	Allows the user to reset the output routing which has been set AES3 input under the 'Channel Assignment' section as well as for the MIC and Non-Sync inputs.
	13.c	Output Routing for Non-Sync/Mic	<p>Displays the output routing for the Microphone input (under MIC routing matrix) and Non-Sync analog input (under Nonsync routing matrix).</p> <p>This section will be enabled when MIC or Non-Sync is selected as the input source for the device.</p> <p>The user can customize the output routing for the Microphone (mono) and Non-Sync (stereo) inputs under the respective routing matrix, by selecting the toggle button against the destination AIB-3000 outputs.</p> <p>When selected, the toggle button will be highlighted in Green color. Clicking on any highlighted toggle button again will de-select the assignment.</p>
	13.d	Nonsync Input	<p>Allows the user to assign a fader preset for Non-Sync analog input. The fader will be set to the value of the Fader Preset whenever the corresponding input is selected, irrespective of the previous fader value.</p> <p>To enable this, select the Fader Preset checkbox under this section and set the desired value using the slider. The adjustment range is between 0 to 10 in 0.1 step.</p>
	13.e	AES Input	<p>Allows the user to assign a fader preset for AES3 digital input. The fader will be set to the value of the Fader Preset whenever the corresponding input is selected, irrespective of the previous fader value.</p> <p>To enable this, select the Fader Preset checkbox under this section and set the desired value using the slider. The adjustment range is between 0 to 10 in 0.1 step.</p>
	13.f	MIC Input	<p>Allows the user to assign a fader preset for Microphone input. The fader will be set to the value of the Fader Preset whenever the corresponding input is selected, irrespective of the previous fader value.</p> <p>To enable this, select the Fader Preset checkbox under this section and set the desired value using the slider. The adjustment range is between 0 to 10 in 0.1 step.</p>

Table 5

13.3.3 Room Level tab

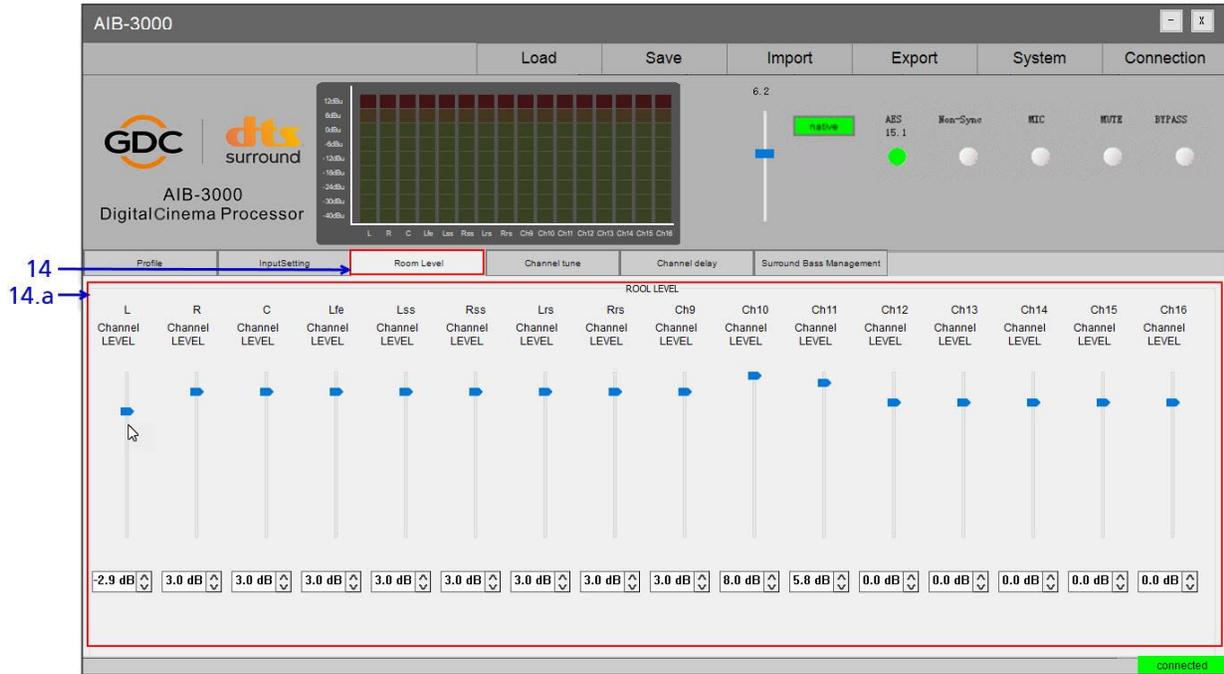


Figure 27

SN	Function Name and Description	
14	Room Level Tab	
	14.a	<p>ROOM LEVEL</p> <p>This tab is where the user can set the output levels of the AIB-3000. It allows the user to set the individual Gain of each channel (for a total of 16 channels). The adjustment range is between <u>-40dB to 8dB</u>, in <u>0.1dB</u> steps.</p> <p>The desired Gain value for each channel can be set using the slider. Alternatively, the user can also type in the value in the textbox provided below each slider.</p>

Table 6

13.3.4 Channel tune tab

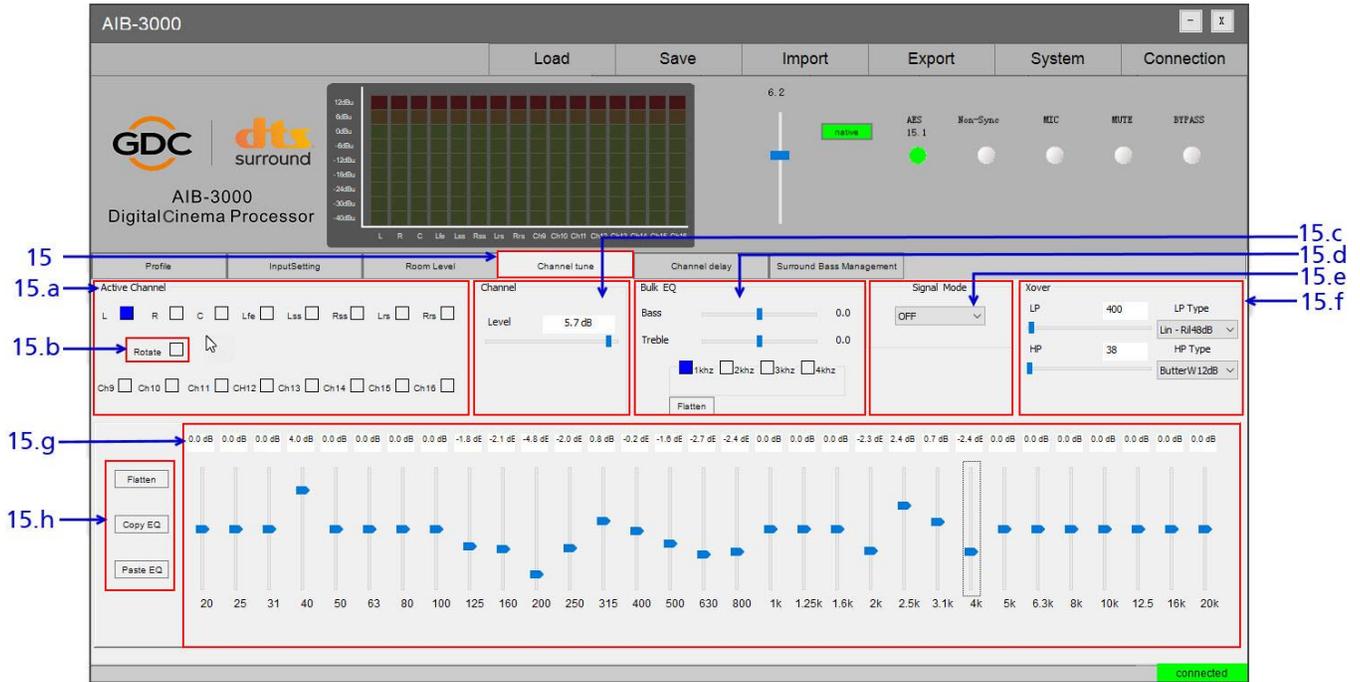


Figure 28

SN	Function Name and Description		
	Channel tune Tab		
15	15.a	Active Channel	Allows the user to select the channel that needs to be tuned. After selecting a particular channel, the adjustments performed under this tab will only affect that specific channel and will not be applied to other channels.
	15.b	Rotate	Using this option, the user can play the selected test signal (using the Signal Mode drop-down) sequentially through all the corresponding channels (one channel at a time) in a looped manner.
	15.c	Channel Gain	Allows the user to set the individual Gain for the selected channel. The adjustment range is between <u>-40dB to 8dB</u> , in <u>0.1dB</u> step. The desired Gain value for the selected channel, can be set using the slider.

	<p>15.d</p>	<p>Bulk EQ</p>	<p>Allows the user to increase or decrease the low frequencies or high frequencies as a whole. The Bass and Treble options can be used for this overall adjustment.</p> <p>The adjustment range for Bass and Treble is from <u>-6dB to +6dB</u> in <u>0.1 dB</u> step. The desired value for the Bass/Treble can be set using the slider. The Treble Corner Frequency can be set to 1kHz, 2KHz, 3kHz or 4kHz. Use the Flatten button to reset the EQ values for the Bass and Treble sliders.</p> <p>NOTE: The 'Bulk EQ' section will remain disabled when Channel 13 or Channel 14 are selected.</p>
	<p>15.e</p>	<p>Signal Mode</p>	<p>The built-in 'Signal Generator' can be used to output a test signal to the selected output channel(s), required for calibrating the cinema's sound system.</p> <p>The user can select from the following types of test signals from the drop-down:</p> <ul style="list-style-type: none"> ▪ Pink noise, ▪ 100Hz sine, ▪ 1 kHz sine, ▪ 10kHz sine ▪ Sweep. <p>Select any one type of test signal from this drop-down, to initiate playback of the corresponding signal.</p>
	<p>15.f</p>	<p>Xover</p>	<p>Allows the user to create 'two-way' or 'three-way' Crossover using the LP (Low Pass Filter) and HP (High Pass Filter) for each band. The range for cut off frequency value is from <u>20 ~ 20000Hz</u>.</p> <p>The user can also select the 'filter type' and 'slope' for the High Pass and Low Pass filters. The following filters and slope options are available under the LP Type and HP Type drop-downs:</p> <ul style="list-style-type: none"> ▪ Linkwitz-Riley → 12dB/ 24dB/ 36dB/ 48dB ▪ Bessel → 12dB/ 24dB/ 36dB/ 48dB ▪ Butterworth → 12dB/ 24dB/ 36dB/ 48dB <p>To understand how to configure crossovers on the AIB-3000, consider the example provided below:</p> <p>A tri-amplified speaker has crossover points of <u>500Hz</u> and <u>1700Hz</u>. In this case, the user would have to create a channel assignment in which the L, C and R channels are assigned to their respective outputs as well as additional channels for the extra crossover bands.</p>

For instance; Input 1 would be assigned to Output L as well as Outputs 9 and 12. Similarly, Input 2 would be assigned to Output R as well as Outputs 10 and 13 while Input 3 would be assigned to Output C as well as Outputs 11 and 14 (this can be done using the **Channel Assignment** routing matrix under the **InputSetting** tab).

Channel Assignment				AES Input															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
R	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
C	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lfe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Lss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Rss	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
Lrs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Rrs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Ch9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ch10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ch11	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ch12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																
Ch13	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ch14	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ch15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
Ch16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										

Suppose the user wants to connect Output L to the low-frequency (LF) channel of the Left screen speaker, Output 9 to the mid-frequency (MF) channel and Output 12 to the high-frequency (HF) channel, they would have to set the **Xover** on the Left channel (L) to the Low-band. Correspondingly, the **LP** would have to be set to 500Hz and the **HP** would have to be set to 20Hz (assuming the speaker's low-frequency section goes down to 20Hz). Similarly, the **Xover** on Channel 9 would have to be set to the Mid-band, by setting the **LP** to 1700Hz and **HP** to 500Hz. The Xover on Channel 12 will have to be set to the High-band, by setting the **LP** to 20000Hz (upper-limit of human hearing) and **HP** to 1700Hz. The appropriate filter slopes and types should be set according to the speaker specifications.

The image shows three sequential screenshots of the Xover settings interface, labeled 'Low', 'Mid', and 'High'.

- Low:** The 'Active Channel' is 'L'. The 'Xover' is set to 'Low'. The 'LP' (Low Pass) frequency is set to 500 Hz, and the 'HP' (High Pass) frequency is set to 20 Hz. The 'LP Type' is 'Lin - RJ24dB' and the 'HP Type' is 'ButterW12dB'.
- Mid:** The 'Active Channel' is 'Ch9'. The 'Xover' is set to 'Mid'. The 'LP' frequency is set to 1700 Hz, and the 'HP' frequency is set to 500 Hz. Both 'LP Type' and 'HP Type' are set to 'Lin - RJ24dB'.
- High:** The 'Active Channel' is 'Ch12'. The 'Xover' is set to 'High'. The 'LP' frequency is set to 20000 Hz, and the 'HP' frequency is set to 1700 Hz. The 'LP Type' is set to 'Flat' and the 'HP Type' is 'Lin - RJ24dB'.

This process would need to be repeated for the Right and Center channels as well. Note that a two-way crossover can also be created by using the above method.

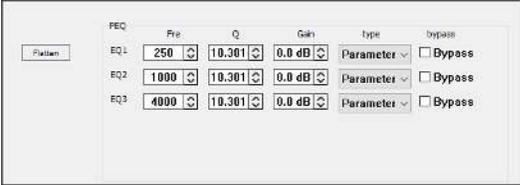
			<p>NOTE: The Crossover functionality is available only for 5.1/7.1 audio configurations.</p> <p>CAUTION: Please ensure that the correct Crossover frequencies are set before connecting or feeding the amplifier output to the speakers, in order to prevent speaker damage as a result of wrong frequencies being fed to the speaker components.</p>
	<p>15.g</p>	<p>EQ</p>	<p>Graphic EQ: Each channel supports 31 bands of 1/3-band Graphic Equalization (GEQ) for gain control (apart from LFE channel). The gain range for each frequency band ranges from <u>-6dB to +6dB</u> in <u>0.1 dB</u> step.</p> <p>Parametric EQ: When the LFE channel is selected, the Parametric Equalization (PEQ) for adjustment of the following controls will be shown:</p> <ul style="list-style-type: none"> Center frequency (Fre) which ranges from <u>20Hz to 20000Hz</u> in <u>1Hz</u> step. Bandwidth (Q) which ranges from <u>0.404 to 28.9</u>. Note that a lower Q value results in a wider bandwidth, whereas a higher Q value results in a narrower bandwidth. Gain which ranges from <u>-6dB to +6dB</u> in <u>0.1 dB</u> step.  <p>Three PEQ filters have been provided (EQ1, EQ2 and EQ3) with individual Bypass option.</p>
	<p>15.g</p>	<p>Flatten/ Copy EQ/ Paste EQ</p>	<p>Flatten: Allows the user to reset the EQ values for the selected channel.</p> <ol style="list-style-type: none"> When the Graphic EQ of any channel (except LFE) is selected; pressing Flatten will reset the EQ Gain values of the selected channel to <u>0dB</u>. When the LFE channel is selected; pressing Flatten will reset Parametric EQ controls (Gain, Fre, Q) to their default values. <p>Copy EQ and Paste EQ: Allows the user to copy the selected channel EQ settings (except LFE) to a specified channel, in order to reduce repetitive work. Select a particular channel (except LFE) from the 'Active Channel' section and click the Copy EQ button to copy the EQ gain values. Then, select the destination channel from the 'Active Channel' section to which the EQ gain values need to be copied to and click the Paste EQ button.</p>

Table 7

13.3.5 Channel delay tab

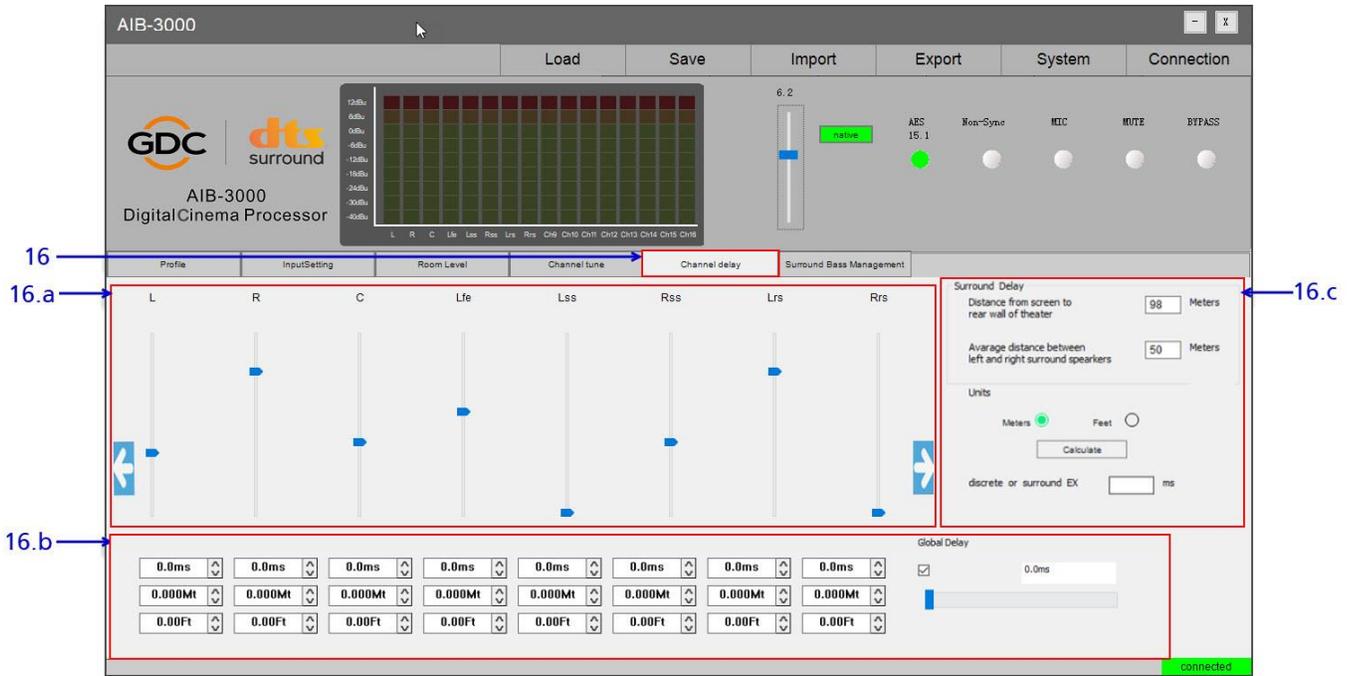
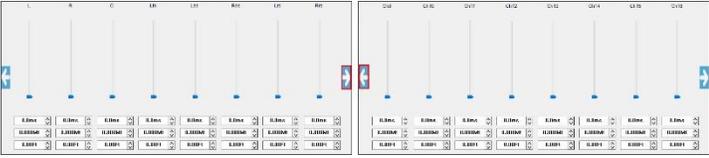


Figure 29

SN	Function Name and Description	
16	Channel delay Tab	
	16.a	<p>Channel Delay</p> <p>Allows the user to set the individual delay of each channel, in the range of 0 to 240 milliseconds. The desired delay value for a particular channel can be set using the slider provided below the channel name. By default, the delays of the first eight channels are displayed.</p> <p>Click on the  and  icons to toggle between Channels 1-8 and Channels 9-16, as shown below.</p> 
	16.b	<p>Global Delay</p> <p>When enabled, it allows the user to enter the Global Delay value. It applies the delay to all the audio channels.</p>

	<p>16.c</p>	<p>Surround Delay Calculate</p>	<p>This section can be used to calculate surround delays. This calculation is based on the values entered in following fields:</p> <ul style="list-style-type: none"> ▪ Distance from screen to rear wall of the theater: ▪ Average distance between left and right surround speakers: <p>The user can also select the Units of measurement as 'Meters' or 'Feet' for the entered values, before clicking the Calculate button. Based, on the entered values, the 'Surround Delay' time (in milliseconds) will be calculated and displayed in the field below.</p>
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Table 8

13.3.6 Surround Bass Management tab

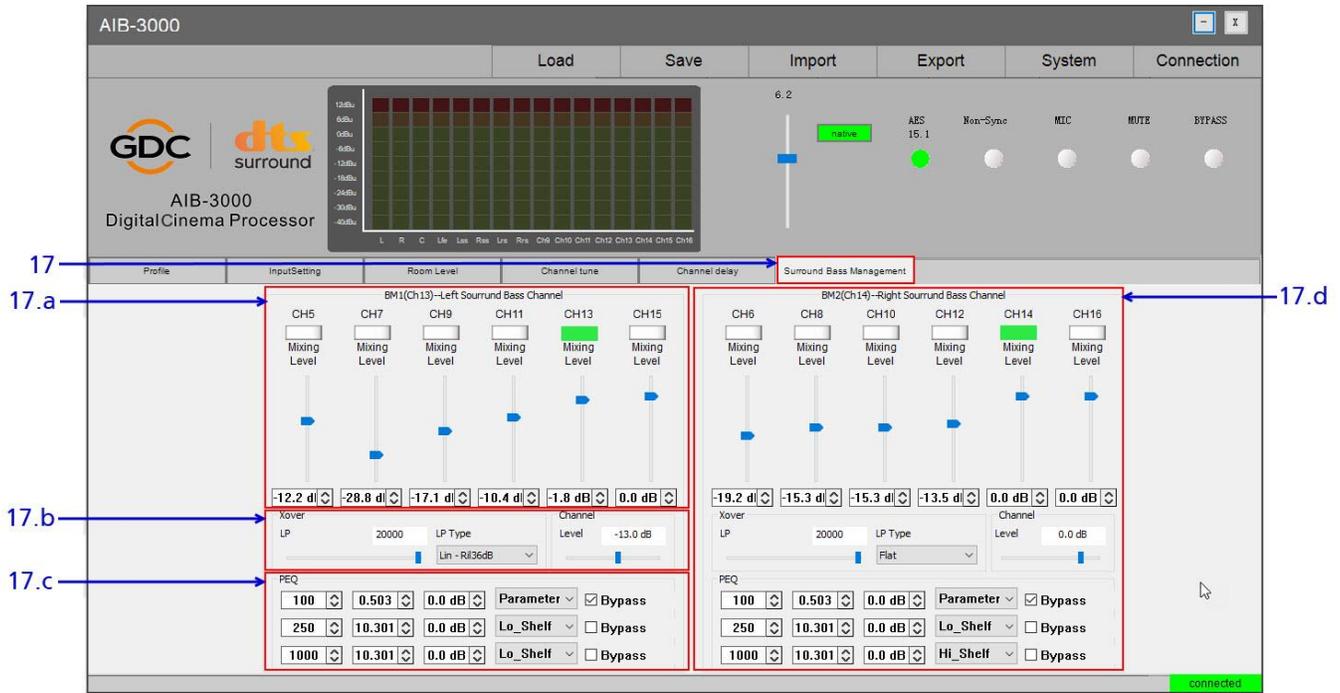


Figure 30

SN	Function Name and Description	
17	<p>Surround Bass Management Tab [The AIB-3000 uses Ch. 13 and 14 for Bass Management processing]</p>	
17.a	<p>BM1 (Ch13)-Left Surround Bass Channel</p>	<p>Allows the user to select the surround speaker channel(s) for Bass Management processing on the BM1 output. The user can also set the individual Gain of each selected channel (for BM1 output, Channels 5, 7, 9, 11, 13 and 15 can be selected). The adjustment range is between <u>-40dB to 8dB</u>, in <u>0.1dB</u> steps.</p> <p>To select a channel for Bass Management, click the toggle button below the channel name. The toggle button for the selected channel(s) will be highlighted in Green color. Clicking on any highlighted toggle button again will de-select that particular channel.</p> <p>The desired Gain value for the selected channel(s), can be set using the slider. Alternatively, the user can also type-in the value in the textbox provided below each slider.</p>
17.b	<p>Xover</p>	<p>Allows the user to set the LP (Low Pass Filter) required for Ch. 13. The range for cut off frequency value is from <u>20 ~ 20000Hz</u>.</p>

		<p>The user can also select the 'filter type' and 'slope' for the Low Pass filter. The following filters and slope options are available under the LP Type drop-down:</p> <ul style="list-style-type: none"> ▪ Linkwitz-Riley → 12dB/ 24dB/ 36dB/ 48dB ▪ Bessel → 12dB/ 24dB/ 36dB/ 48dB ▪ Butterworth → 12dB/ 24dB/ 36dB/ 48dB <p>The user can also set the individual Gain for the Ch. 13. The adjustment range is between <u>-40dB to 8dB</u>, in <u>0.1dB</u> step.</p> <p>The desired Gain value for the selected channel, can be set using the slider. Alternatively, the user can also type in the value in the textbox provided above the slider.</p>
17.c	PEQ	<p>Allows the user to perform bulk EQ for Ch. 13, which can be achieved by applying High shelf and Low shelf filters. There are three PEQ filters available which allow the adjustment of Gain, Center frequency (Fre), and Bandwidth (Q) for the Ch. 13 channel.</p> <p>The user can adjust the Bass by fine-tuning the Gain, Fre and Q values for the Low shelf filter (Lo_Shelf) and adjust the Treble by fine-tuning the Gain, Fre and Q values for the High shelf filter (Hi_Shelf).</p>
17.d	BM2 (Ch14)- Right Surround Bass Channel, Xover, PEQ	<p>All functions described under 17.1, 17.b and 17.c would be applicable for Ch. 14 which corresponds to the Bass Management output BM2.</p>

Table 9

13.3.6.1 Points to note while configuring Bass Management

The following points need to be noted when using **Surround Bass Management** tab for Bass Management processing:

- Selecting the surround speaker channels for Bass Management under the **Surround Bass Management** tab is reflected in the **Channel Assignment** routing matrix under the **Input Setting** tab.
- Changes made to Low Pass filter (**LP** and **LP Type**) and Channel Gain (**Level**) settings for Ch. 13 and Ch. 14 under the **Surround Bass Management** tab, are reflected in the Low Pass filter (**LP** and **LP Type**) and Channel Gain (**Level**) settings under the **Channel tune** tab.
- Audio processing for Ch. 13 and Ch. 14 should not be done under the **Channel tune** tab, when Bass Management is used.

14 UPGRADING THE AIB-3000 SYSTEM SOFTWARE

The AIB-3000 system software can be upgraded using a custom-designed Upgrade Tool. This Upgrade Tool software can be run on a PC or Laptop running Microsoft® Windows 7, Windows 10 or Windows 11 Operating System only and does not require any installation.

Get in touch with GDC Technical Support in order to obtain the Upgrade Tool software and the latest upgrade file (.hex) for the AIB-3000.

Please note that the AIB-3000 can currently be upgraded using the USB method. To upgrade, follow the steps mentioned below:

Step ①

To initiate the software upgrade procedure, the AIB-3000 needs to be in switched OFF state.

Connect the PC/Laptop which contains the Upgrade Tool software and the latest upgrade file for the AIB-3000, directly to the device using a USB 2.0 Type-A Male to Type-B Male cable (*provided as part of standard AIB-3000 packaging*). Connect the Type-A end of the USB cable to the USB port on the PC/Laptop and connect the Type-B end to the USB port [② @ Front Panel] of the AIB-3000 unit, as shown in **Figure 31**.

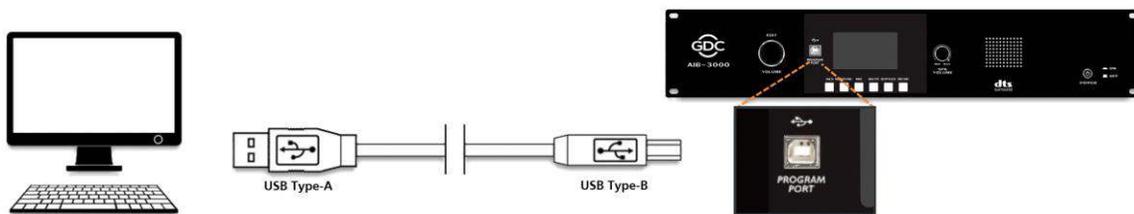


Figure 31: Connect PC/Laptop to AIB-3000 using USB

Step ②

Once connected to the PC/Laptop, the AIB-3000 needs to be put in upgrade mode. To do so, press and hold the **VOLUME** knob [① @ Front Panel] and press the **POWER** button [⑦ @ Front Panel] to switch ON the unit.

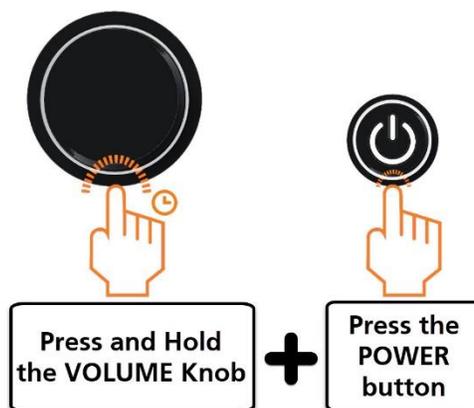


Figure 32: Put AIB-3000 in Upgrade mode

When in AIB-3000 enters upgrade mode, the LCD Display of the device will show “Upgrade...” message (refer to **Figure 33**).

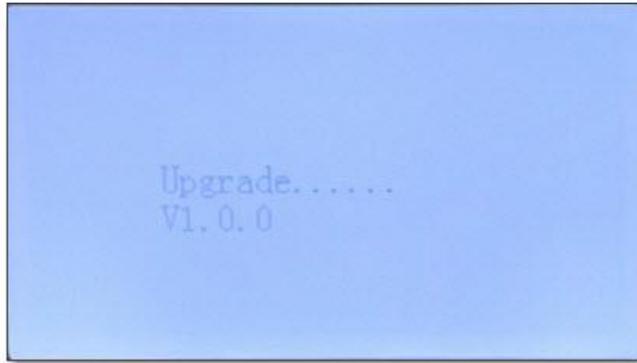


Figure 33: Upgrade message on LCD Display

Step ③

Run the Upgrade Tool software on the PC/Laptop, by double-clicking on the “UpGradeTool.exe” file. The Upgrade Tool interface window will be displayed, as shown in **Figure 34**.

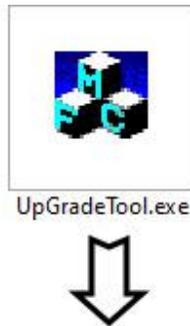


Figure 34: Run UpGrade Tool

From the Upgrade Tool interface, click on the **Open** button and select the software upgrade file (.hex) from the folder location on the PC/Laptop, as shown in Figure 35

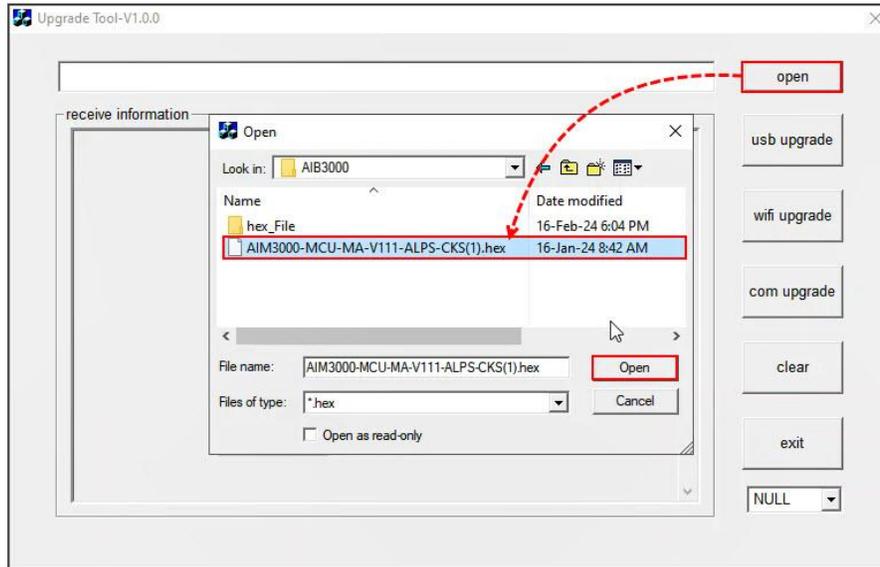


Figure 35: Select Upgrade file

Step ④

After selecting the upgrade file, click on the **usb upgrade** button to begin the device upgrade. The 'receive information' section will display the progress, as shown in **Figure 36**.

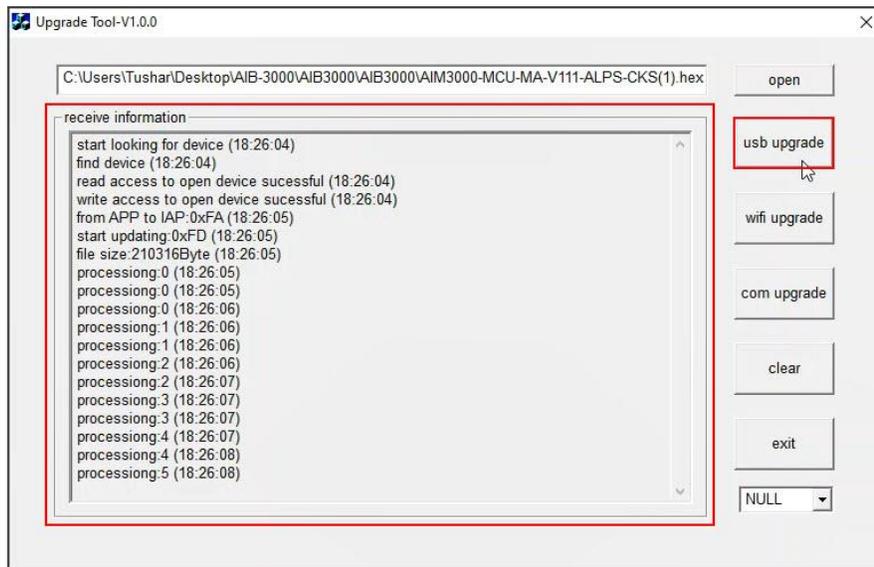


Figure 36: Start USB Upgrade

Once the progress reaches 100, a “upgrade finished, close USB.....” message will be displayed (as shown in **Figure 37**) indicating that the software upgrade procedure is complete. Click on the **exit** button to close the Upgrade Tool interface.

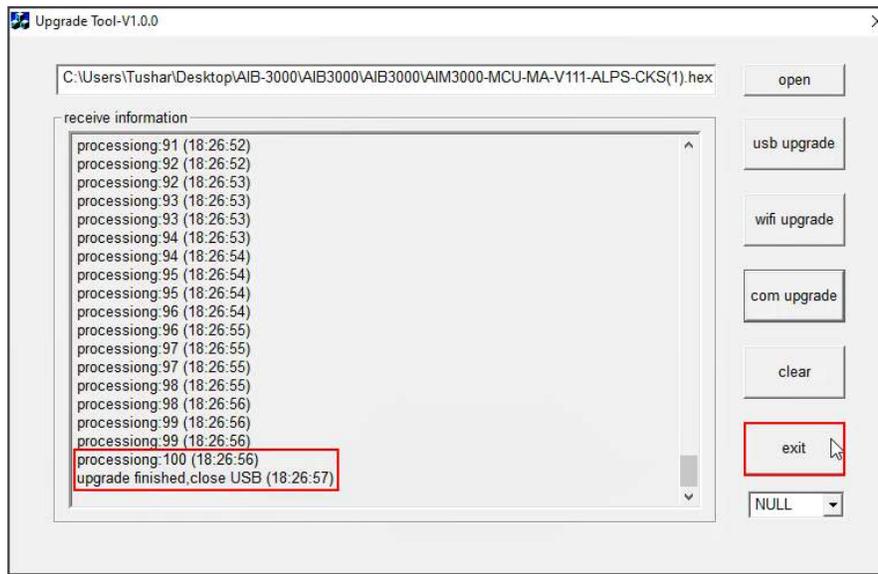


Figure 37: Upgrade complete

The updated software version for the AIB-3000 will now be displayed in the PC Tool (within the **Profile** tab, under 'System info' section) as shown in **Figure 38**.

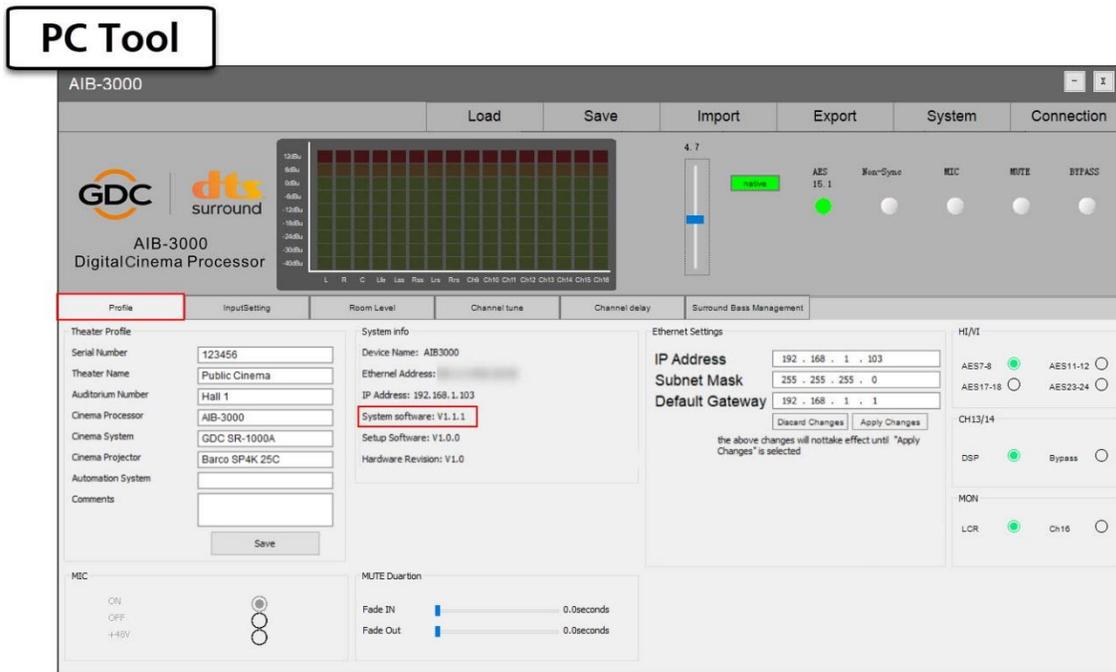


Figure 38



GDC Technology manufacturing facility is ISO 9001:2015 certified.

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Specifications are subject to change without notice due to ongoing product development and improvement.