# AmpTraXX™

*16 Channel Intelligent Amplifier with EQ*


# User's Manual

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Every effort has been made to assure the accuracy of the information contained in this manual, and the reliability of the Alcorn McBride AmpTraXX hardware and software. Errors can sometimes go undetected, however. If you find one, please bring it to our attention so that we can correct it for others. Alcorn McBride welcomes comments and suggestions on the content and layout of its documentation.

Applications described herein are for illustrative purposes only. Alcorn McBride Inc. assumes no responsibility or liability for the use of these products, and makes no representation or warranty that the use of these products for specific applications will be suitable without further testing or modification. Alcorn McBride products are not intended for use in applications where a malfunction can reasonably be expected to result in personal injury. Customers using or selling Alcorn McBride products for use in such applications do so at their own risk, and agree to fully indemnify Alcorn McBride for any damages resulting from such improper use or sale.

Product Design: Jim Carstensen, Jeremy Scheinberg, Scott Harkless, Chris Harden, Martin Chaney, Steve Alcorn

# Table of Contents

# Welcome!

Thank you for purchasing The Alcorn McBride AmpTraXX™ sixteen channel amplifier and EQ system. Whether you're planning on a multi-room speaker installation, or multiple point-source audio tracks in a single room, with AmpTraXX it's easy to tailor the frequency response and gain of each 20 Watt output to achieve the exact results you need.

This manual describes the various connectors and controls on the AmpTraXX unit, and describes the best way to use the AmpTraXX Windows software to set up your system. A serial protocol section is also included to allow you to program RS-232 control systems for dynamic configuration of the AmpTraXX.

*Protocol files for Alcorn McBride Show Controllers are available for AmpTraXX.*

Please browse the table of contents and install the AmpTraXX programming software on your PC. Once you're connected, you'll likely find that your AmpTraXX is one of the most versatile pieces of audio gear you've ever used!

We would like to provide you with Firmware and Software updates and notify you when additional features become available. If you are interested, please subscribe to our AmpTraXX mailing list at http://alcorn.com/library/lists/subscribe.html.

# Features

The AmpTraXX offers a wide range of features including:

- 16 channels x 20W each (into 8 ohms).
- Independent frequency response configuration and control for each channel.
- Independent volume control for each channel.
- Serial RS-232 Control.
- Lockable front-panel volume controls.
- Front Panel Signal and ‘Clip’ LED indicators.
- Built-in test tone generator for channel identification and output testing.
- Built-in overload protection for each channel
- 70/100 volt output option available.
- Balanced Input option available

# Technical Support

You can obtain information about specifying, installing, configuring, updating and programming your Alcorn McBride AmpTraXX from several sources:

| For… | Contact… | When?… |
|---|---|---|
| Telephone Support | (407) 296-5800 | M-F 9am–6pm (EST) |
| Fax Support | (407) 296-5801 | M-F 9am-6pm (EST) |
| Knowledge Base (FAQ) | http://www.alcorn.com/kb | Any Time |
| E-mail Support | support@alcorn.com | Any Time |
| Firmware Updates | http://www.alcorn.com/support | Any Time |

# Getting Started

So you don't have the time or patience to read the stupid manual. You just want to know how to make your AmpTraXX do something useful. We understand your situation perfectly, and we have written this section especially for you.

## Let's make some noise!

Follow these simple steps to have your AmpTraXX working right out of the box.

1. Remove your AmpTraXX from its cushiony bed of packing material, and make sure that the parcel service did not use it as a basketball during shipment.

2. Verify that all DIP switches are in the **ON** (**Down**) position.

3. Connect a standard 8-ohm or 4-ohm speaker to the gold screw terminals conveniently labeled "**1**".

4. Connect your audio gear (CD Player, MP3 Machine, etc.) to the unbalanced RCA input labeled "**1**".

5. To avoid the possibility of severe hearing damage, make sure that the front-panel volume knob for Channel #1 is turned down all the way (counter-clockwise).

6. Okay, now it's time to plug it in! Once you have securely connected the AC line cord to AmpTraXX and an electrical outlet (don't forget this part, it's important), flip the nearby power switch to the ON position.

7. As your AmpTraXX whirs to life, you should see a blinding blue LED indicating power.

8. Once your audio source starts playing, you will also see the green signal LED for channel #1 begin to flicker.

9. Slowly turn the volume control for channel #1 clockwise until you hear sound.

10. You're Jammin'.

## AmpTraXX Software Tutorial

Now that your AmpTraXX is up and running, you may be interested in using some of its more advanced features, such as filters. To access these advanced features, we suggest you use the AmpTraXX Windows application. The directions below will provide a step-by-step example of using this application to configure AmpTraXX.

1. If you have not done so already, install the AmpTraXX application on your Windows-based PC. If you need help doing this, follow the procedure in the **Installing the AmpTraXX Configuration Software** section of this manual.

2. Connect the 9-pin RS-232 cable to both AmpTraXX and your PC. If your dog has eaten this cable, use a 9-pin female-to-female straight-through (not NULL) RS-232 serial cable.

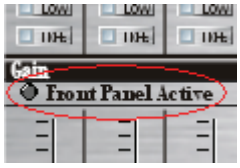
3. Run the AmpTraXX application.

4. Click on the  button to configure your PC's serial port. Make sure you select the COM port that corresponds to the PC port AmpTraXX is connected to. Click OK when you have done so.


5. Now, we are going to establish a live connection with AmpTraXX. Click on the  button to do this. Once a connection has been established, the application will retrieve the current settings from AmpTraXX and you will have the ability to adjust its settings in real-time.

6. Assuming that you have not touched anything from the **Let's make some noise!** section, you should be able to see the gain sliders and indicators move as you turn the front-panel volume controls. Do this now.

7. By now, you may have noticed that you cannot manipulate the gain controls with the mouse. This is because the AmpTraXX front panel is Active and has control of all gain values. To change this behavior, simply flip DIP switch #1 to the **OFF** (**Up**) position to disable the front panel controls. You will see the **Front Panel Active** indicator turn off, and the Gain sliders will become available to mouse control.


8. Click and slowly drag the gain slider for channel #1 up and down and listen to the volume change in real-time.

9. Now, to demonstrate how to set and adjust filters, let's configure a Low-pass filter. In the channel #1 division of the **Filter Type** section, click on the  button to select Low-pass filter. The output for channel #1 will momentarily go silent as the filter is changed. Already, you should notice a difference in the way the output sounds.

10. To make this Low-pass filter really effective, let's adjust the cutoff frequency so that only very low frequency audio is allowed to pass. Click and hold the mouse button on the **Frequency** knob for channel #1. When you have the mouse button down, the knob can be adjusted by moving the mouse in an **up** or **down** direction. Adjust the frequency value as close to **100** as possible and then release the mouse button. You have now selected a cutoff frequency of approximately **100** Hz.


11. Let's tweak the behavior of this filter even more by adjusting the **Filter Quality** setting. As you increase the **Filter Quality** setting, the Low-pass filter will more effectively amplify the lower frequencies, while blocking more of the higher frequencies. The opposite applies when lowering the **Q** setting.

12. Take a moment to play around with this filter (or other AmpTraXX filters) to find a sound that you like. When you are ready, move on to the next step.

13. Now that you like what you have done with AmpTraXX, let's make it remember these settings permanently. By clicking the  button, AmpTraXX will store it's current settings into non-volatile memory. This means that AmpTraXX will load these settings the next time it powers up. Remember, if you do not click this button, all of your settings will be lost the next time AmpTraXX is power cycled.


14. Now, let's make a backup of your configuration before you spill coffee in your AmpTraXX, it gets struck by lightning, or one of your co-workers tinkers with your 'finely tuned' settings. Click on the  button to save your configuration to a file. This configuration can be recalled at any time using the  button.

# Front Panel

The front panel of the AmpTraXX contains the manual volume controls, signal LED indicators, clip LED indicators, and the blue power led. Read the descriptions below for more detailed information.


## Power/Status LED

A blue LED indicates the current status of AmpTraXX. Here is a table explaining the different states of this LED:

| LED State | Status | Description |
|---|---|---|
| Off | No Power | This one is pretty obvious. |
| Blinking Quickly | Power-up Initialization | AmpTraXX is initializing its internal hardware |
| Blinking Slowly (1 sec.) | Firmware Update Mode | AmpTraXX is waiting for a firmware upgrade – If you do not wish to update the firmware, then return DIP switch #3 to the ON (down) position. |
| On | Normal Operation | Amplifiers and Filters are active, and everything is normal. |
| 3 blinks – pause | Error | AmpTraXX has experienced a serious error. If this continues, you should contact Technical Support for assistance. |

## Signal Present and Clip Indicators

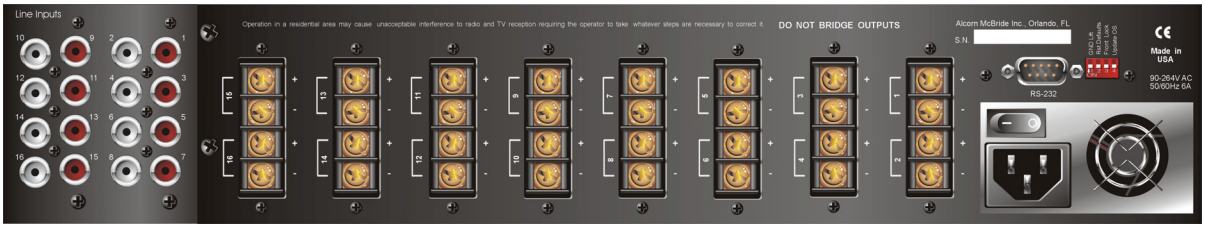
A row of 16 Green LEDs illuminate whenever an active signal is detected on the corresponding input of the AmpTraXX. The red **Clipping** LEDs will blink whenever the pre-amp output signal nears the clipping level.

## Volume Controls

There are 16 volume controls on the front of the AmpTraXX for quick manual control of each channel's volume. If you wish, these controls can be disabled using one of the Rear Panel DIP switches.

# Rear Panel

The rear panel contains the speaker output terminals, the RS232 connector, the power switch, input connectors, and configuration DIP switches. Read the descriptions below for more detailed information.

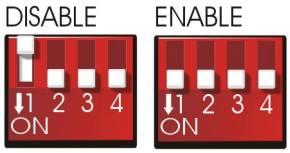



# Configuration DIP Switches

The configuration DIP switches can be located on the right side of the AmpTraXX rear panel. Changing the states of these switches can alter the behavior of AmpTraXX. See the descriptions below.

## Disable Front Panel

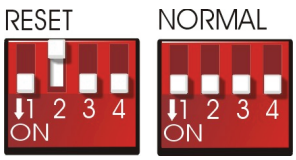
In order to disable the front panel volume controls, turn off the first key on the 4 key DIP switch block. These switches are located at the rear of the left side of the AmpTraXX. With this switch in the OFF position, the unit will ignore the front panel volume controls. Only RS-232 commands have the power to adjust volume in this situation. However, if the DIP switch is in the ON position, this behavior is opposite. In this mode, RS-232 volume commands will have no effect and only the front panel controls have the ability to adjust volume.




## Reset Factory Defaults

*It may take several seconds for the Factory defaults to be loaded. Once loaded, this DIP switch should be switched ON once again. There is no need to power cycle AmpTraXX to perform this reset.*

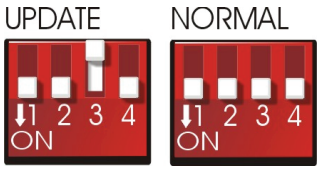
The second DIP switch position is used to reset AmpTraXX settings to factory defaults. Any stored filter or gain settings will be erased from non-volatile memory. This means that all filters will be restored to FLAT, and all gain levels will be set to zero (unless the Front Panel volume controls are Enabled).



## Firmware Update Mode

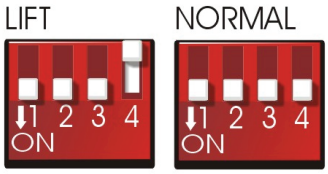
*While in Firmware Update Mode, AmpTraXX will not operate normally. All filters and amplifiers will remain off until this switch is returned to the ON state.*

Whenever switch #3 is in the **OFF** (**Up**) position, AmpTraXX will be in Firmware Update Mode. In this mode of operation, AmpTraXX will sit in an idle state and wait for a firmware update via RS-232. For a detailed explanation on Updating AmpTraXX firmware, see the **Updating Your Firmware** section.




## Ground Lift

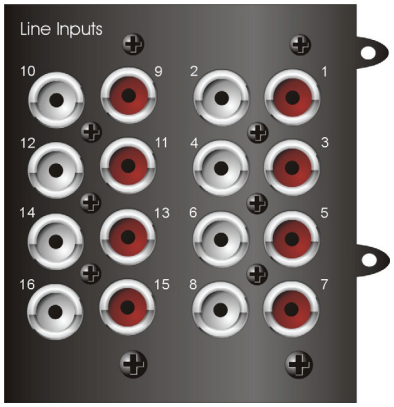
In the event of AC hum or noise, the fourth key on the 4 key DIP switch, may be opened to isolate the unit's ground from its chassis. For ground lifting, push the DIP switch #4 to the **OFF** (**Up**) position.



# Unbalanced Inputs

*For balanced input obtain the optional balanced audio input module.*

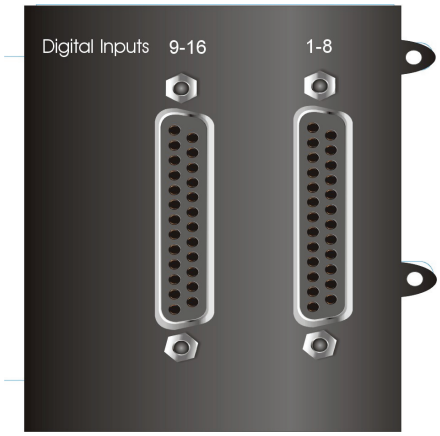
Sixteen RCA jacks are used for unbalanced audio input.




# Balanced Inputs (Optional)

*When you select the Balanced Input option, the balanced input connectors will replace the unbalanced connectors..*

Two DB-25 connectors provide balanced audio inputs for all 16 channels. See the tables below for the pinout of these connectors.




Connector pinout for channels 1-8

| Channel | + | - | Ground |
|---|---|---|---|
| 1 | 1 | 2 | 3 |
| 2 | 14 | 15 | 16 |
| 3 | 4 | 5 | 6 |
| 4 | 17 | 18 | 19 |
| 5 | 7 | 8 | 9 |
| 6 | 20 | 21 | 22 |
| 7 | 10 | 11 | 12 |

| | | | |
|---|---|---|---|
| 8 | 23 | 24 | 25 |

Connector pinout for channels 9-16

| Channel | + | - | Ground |
|---|---|---|---|
| 9 | 1 | 2 | 3 |
| 10 | 14 | 15 | 16 |
| 11 | 4 | 5 | 6 |
| 12 | 17 | 18 | 19 |
| 13 | 7 | 8 | 9 |
| 14 | 20 | 21 | 22 |
| 15 | 10 | 11 | 12 |
| 16 | 23 | 24 | 25 |

# Speaker Terminals

*For more information on the transformer option, see the **70V/100V Output Option** section of this manual.*

Sixteen pairs of screw terminals accept 14 to 22 gauge wire for speaker connections. For applications that require transformers, these terminals can also be used to connect to the optional 70/100v modules (**XD4** or **XD1**).

# Serial Port: RS-232C Control Connector

*A 9-pin serial cable is provided with each AmpTraXX.*

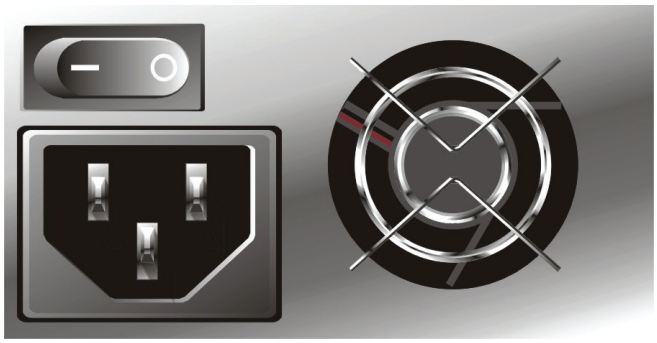
This input is a standard DB-9 male RS-232C connector. This connector allows for external control using a PC running the AmpTraXX configuration software or an external control system. The pinout appears below.

| Pin | Function |
|---|---|
| 2 | TXD (data from AmpTraXX) |
| 3 | RXD (data to AmpTraXX) |
| 5 | GND |

# Power Input and Switch

*The power input is auto-sensing, and can accept 90-220VAC, 50Hz or 60Hz.*

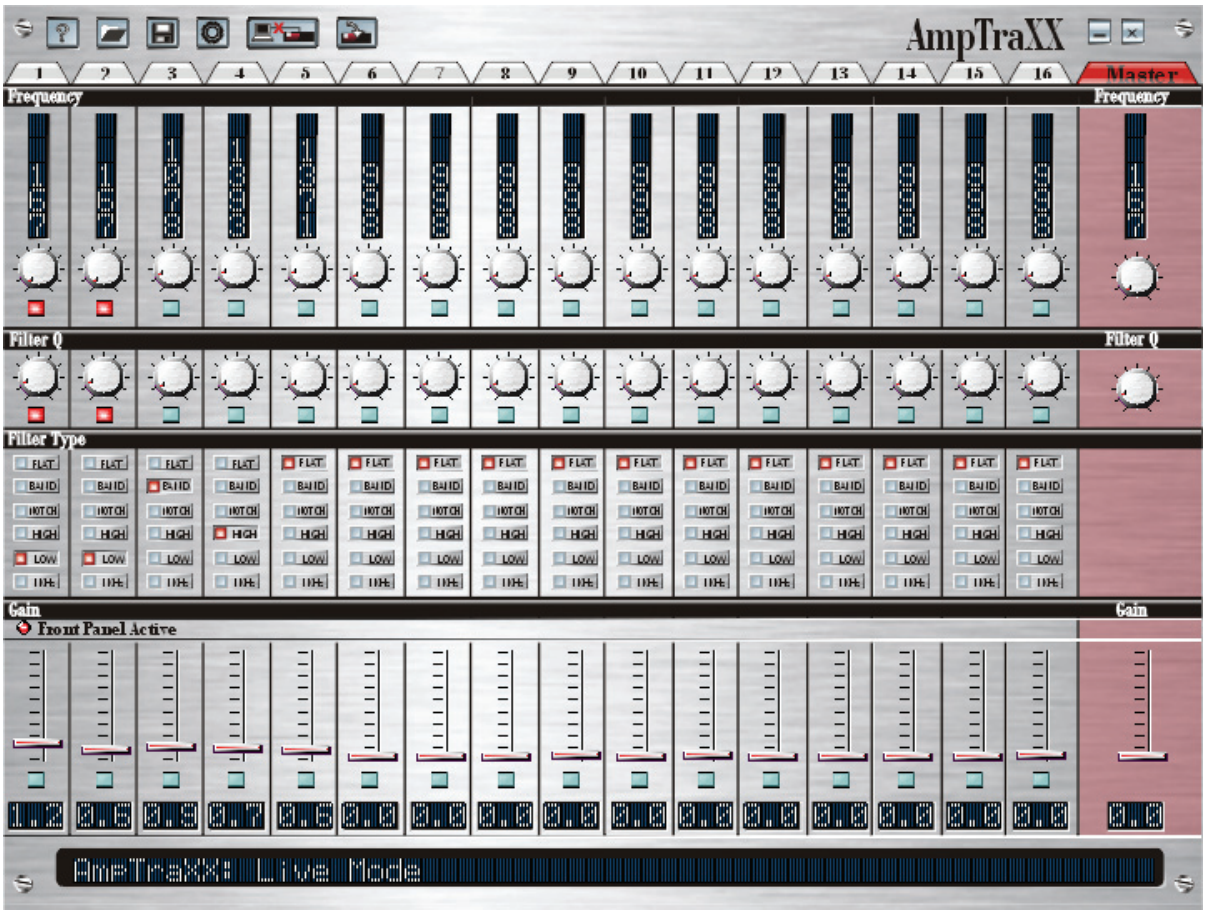
A standard power cord is supplied and plugs into the back of the unit. Next to the power input is the power switch.



# AmpTraXX Configuration Software

## Introduction to AmpTraXX Software

A free windows-based program is provided which enables you to customize AmpTraXX for your needs. In this application, you can set each channel's filter type, filter quality, frequency response, and gain. This application also gives you the flexibility to adjust these values in real-time, as well as Save and Load your configurations to your computer. This section describes this software in detail.

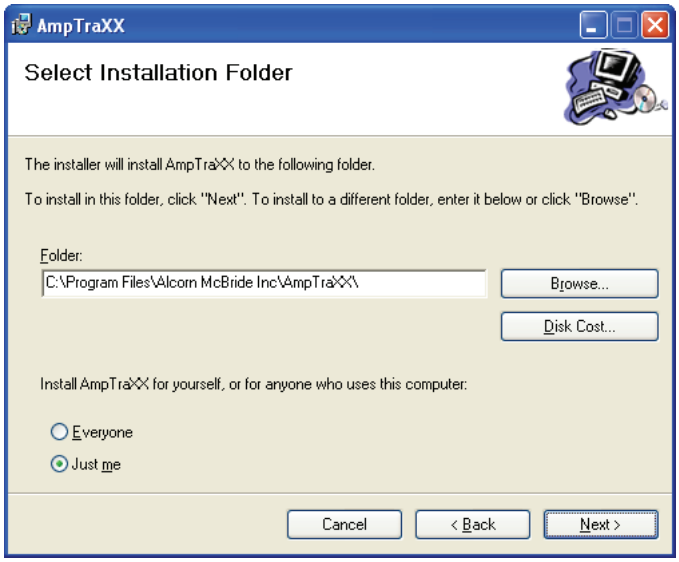


# Installing the AmpTraXX Configuration Software

A free copy of the AmpTraXX configuration software is located on the CD that shipped with your new AmpTraXX. If you have misplaced this CD, or you would like to obtain the most recent version of this software, please visit our website at http://www.alcorn.com. Below is the procedure used to install the software.

1. Insert the AmpTraXX Configuration Software CD into your PC's CD drive.

2. If the program does not start automatically, use Explorer and browse to the CD. Double-click **Setup.exe** to begin installation.




3. When the program asks, choose a suitable directory for installing the software. Although you may choose whatever location you like, the default directory is **C:\Program Files\Alcorn McBride Inc\AmpTraXX**.

4. Follow the on-screen instructions, and step through the installation process using the **Next** button.

5. Once the installation is complete, you can run AmpTraXX by clicking the AmpTraXX icon located in your Start Menu.

# AmpTraXX Application Modes

The AmpTraXX application has 3 basic operational modes depending on its connection status with AmpTraXX. These will be referred to in the following documentation, so it is important to understand these different modes of operation.

## Offline Mode

When a connection is not established with an AmpTraXX unit, this application is in **Offline Mode**. In this mode of operation, you can Save, Load, and adjust settings without affecting a real AmpTraXX. At any time, you can Download or Retrieve settings from an AmpTraXX by clicking the buttons associated with these actions. When this is done, a temporary connection is established with AmpTraXX until the data transfer is complete.

## Live Mode

When the **Connect** button is clicked and a connection is established with AmpTraXX, the application enters **Live Mode**. In this mode, AmpTraXX settings are displayed on the application controls in real-time. Any changes you make to filter type, gain, frequency, or filter quality will be applied to AmpTraXX immediately. If the front panel controls of AmpTraXX are enabled, the application will monitor the values of these knobs in real-time as well.

Other than this real-time behavior, there are some other differences between **Live Mode** and **Offline Mode**. For example, when a configuration is loaded from a file, these settings are applied to AmpTraXX immediately. Also, since the settings of AmpTraXX and the application are always synchronized, there is no need to have a **Retrieve** function.

One important fact about **Live Mode** is that any settings you change are temporary. This means that if you totally mess up all of your settings, you can always just power cycle AmpTraXX and it will return to its permanently stored settings. If you wish to apply your changes so that they are permanent, simply click the **Store Settings** button. This saves all AmpTraXX settings into non-volatile memory so that they are applied every time AmpTraXX is turned on.

## Firmware Update Mode

Using a configuration DIP switch, AmpTraXX will shutdown and wait for a firmware update. When the **Connect** button is clicked in this situation, the application will enter **Firmware Update Mode**. Since AmpTraXX is not functioning normally in this situation, none of the application controls will have any effect. To update the firmware, simply click the **Update Firmware** button at the top of the application. Once you are finished updating the firmware, make sure you return the DIP switch to the 'Normal' state. If you do not do this, AmpTraXX will not resume normal operation.

# AmpTraXX Application Controls

The AmpTraXX application has a variety of controls that can be used to configure your Alcorn McBride AmpTraXX. These controls have been listed and described in detail below:

## Help

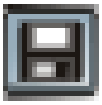
If you are a lost puppy, click this button to access the AmpTraXX application's built-in HTML help.

## Load Configuration File

This button is used to load a previously saved AmpTraXX configuration. If you are currently connected to AmpTraXX in Live Mode, these settings will be sent to the machine upon opening the file. Otherwise, the loaded settings will only reflect the on-screen controls.

## Save Configuration File

This button is used to save the current on-screen configuration into a file. This is useful for backups and managing multiple configurations.

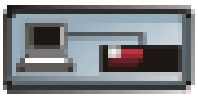


## Configuration

Any settings (COM Port, etc.), regarding the AmpTraXX application, are accessible by clicking this button.

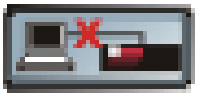
## Connect to AmpTraXX

Clicking this button will establish a live connection to AmpTraXX. While in **Live Mode**, adjusting any of the on-screen controls will affect AmpTraXX in real-time. Filters, frequency, filter quality, and gain can all be tweaked without affecting the permanent settings stored in AmpTraXX. Also, while in **Live Mode**, AmpTraXX will constantly be monitored for connection, status, and Gain values (if the front panel is enabled).



## Disconnect from AmpTraXX

This button will only be visible if you are in **Live Mode**. Clicking this button will simply sever the connection between AmpTraXX and the application.



## Store Settings to AmpTraXX

This button actually has 2 different, yet similar, functions depending on your connection status with AmpTraXX:

**Offline Mode:** This button will open a connection with AmpTraXX, download the on-screen settings, and store them in AmpTraXX's non-volatile memory. This means that AmpTraXX will remember these settings if it is every power-cycled. Once this transfer is complete, the connection with AmpTraXX will be terminated.

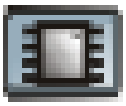
**Live Mode:** The only functional difference between clicking this button in **Live Mode** instead of **Offline Mode** is that in **Live Mode**, AmpTraXX already has the current settings. Therefore, there is no need to resend that information or establish a connection. The sole function of this button is to cause AmpTraXX to store its current settings in non-volatile memory, so that it remembers its current state in the event of power loss.

## Retrieve Settings from AmpTraXX

This button will only be visible if you are in **Offline Mode**. If clicked, the AmpTraXX application will open a temporary connection with AmpTraXX and retrieve its current settings. These settings will be reflected on the on-screen controls, and then the connection will be terminated.

## Update AmpTraXX Firmware

This button will only be visible if you are in connected to AmpTraXX and DIP switch #3 is in the Update Firmware position. Clicking this button will allow you to select a valid HEX firmware file to update your AmpTraXX firmware. For more details on this process, see the **Updating Your Firmware** section located in this manual.



## Front Panel Status Indicator

When in **Live Mode**, this indicator will tell you whether AmpTraXX's front panel volume controls are enabled. When they are enabled, the AmpTraXX application will lock out the on-screen gain controls. Instead, these controls will reflect the current gain value based on the front panel values.


## Gain Control

You can adjust the gain of each channel by using the Gain Control slider. Gain is adjustable from a value of 0 (muted ) to 10. The readout below indicates the actual value of the gain setting.


## Filter Type

Each AmpTraXX channel can be set up with a variety of filter types. You can insert a **Band-pass**, **Notch**, **High-pass**, or **Low-pass** filter. This section also contains a button to enable a **1Khz** test tone to aid in channel identification and output testing. Of course, you can always select the **Flat** filter, which passes the input signal with no frequency alterations.

## Filter Quality

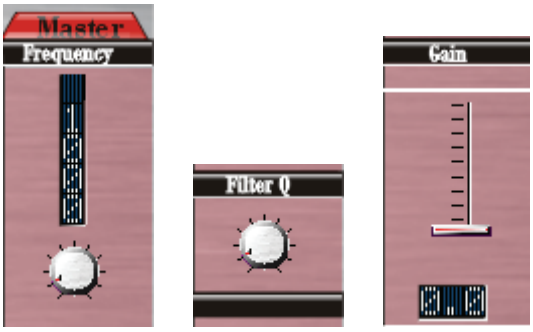
When selecting a **Notch**, **Band-pass**, **High-pass**, or **Low-pass** filter, you can adjust the quality of the frequency response. For the **Notch** and **Band-pass** filters, this essentially adjusts the width of the "notch" or passband. For **High-pass** and **Low-pass** filters, this adjusts the "slope" of the cutoff frequency. Keep in mind that this setting has no effect on the **Flat** or **1Khz** filters.


## Frequency

The Frequency adjustment section allows you to select the cutoff frequency in the case of a **High-pass** or **Low-pass** filter, or the center frequency in the case of a **Band-pass** or **Notch** filter. A digital readout is provided which shows the exact frequency selected. Just like the **Filter Quality** setting, the **Frequency** setting has no effect on the **Flat** or **1Khz** filters.


## Master Control Panel

Whenever any of the small buttons is activated beneath each individual control, it becomes "ganged" with the Master Control panel. This way you can adjust many (or all) channels at the same time with just the one Master Control.



# Simple Serial Control

*For serial communications with a PC or an Alcorn McBride Show Controller, use the supplied straight-thru (not Null) serial cable supplied with the AmpTraXX.*

The Alcorn McBride AmpTraXX may be controlled using serial RS-232C messages via the rear DB-9 Connector. The serial data format is 38400,N,8,1: 38400 baud, 8 bits/byte, no parity, with one stop bit.

The control protocol is ASCII-based, and many commands are identical to Pioneer Laser Disc protocol. Upper or lower case characters can be used interchangeably.

The details of these commands are listed in this section. Many other commands are also possible and are summarized in the section entitled **Advanced Serial Protocol**. Throughout this manual <CR> refers to a carriage return, a byte with the hexadecimal value 0D.

## Select Filter

Description: This command causes AmpTraXX to change the audio filter of a specified channel. Each channel can individually use 1of 6 available filters. These filters are **Flat (FL)**, **Band-pass (BP)**, **Notch (NO)**, **High-pass (HP)**, **Low-pass (LP)**, and **1KHz Test Tone (TO)**.

Command Bytes: **ffccFI<CR>**
where **ff** is the 2-letter representation of the filter type (**FL**, **BP**, **NO**, **HP**, **LP**, **NO**).
where **cc** represents the 2-digit channel number between 01→16.

Message Response: **R<CR>**

Examples:
Select **Flat** filter on channel 2. **FL02FI<CR>**
Select **Band-pass** filter on channel 13. **BP13FI<CR>**

## Set Gain

Description: This command causes AmpTraXX to change the gain level of a specified channel. You have the choice between entering this gain level as a percentage (0% → 100%) or as a real number value between 0.0 and 10.0.

Command bytes: **nnn%ccGA<CR>** or **xx.xccGA<CR>**
where **nnn%** is a percentage between 0% → 100%.
where **xx.x** is real number between 0.0 → 10.0
where **cc** represents the 2-digit channel number between 01→16.

Message Response: R<CR>

Examples:
Set Gain to 55% on channel 2. **55%02GA<CR>**
Set Gain to 2.5 on channel 11. **2.511GA<CR>**

## Set Filter Quality

Description: This command causes AmpTraXX to change the Filter Quality of a specified channel. You have the choice between entering this as a percentage (0% → 100%) or as a real number value between 0.15 and 5.0.

Command bytes: **nnn%ccFQ<CR>** or **xx.xccFQ<CR>**
where **nnn** is a percentage between 0% → 100%.
where **xx.x** is real number between 0.15 → 5.0
where **cc** represents the 2-digit channel number between 01→16.

Message Response: **R<CR>**

Examples: Set Filter Quality to 25% on channel 2. **25%02FQ<CR>**
Set Filter Quality to 0.707 on channel 11. **0.70711FQ<CR>**

Comments: This setting has no effect if the specified channel is using either the **Flat** or **Test Tone** filter.

## Set Frequency

Description: This command causes AmpTraXX to change the Frequency response of a specified channel. For the **Band-pass** and **Notch** filters, this is used as the center frequency. If the channel is using a **Low-pass** or **High-pass** filter, this represents the cutoff frequency.

Command bytes: **nnnnccFR<CR>**
where **nnnn** is a frequency value (in Hz) from 40→8000.
where **cc** represents the 2-digit channel number between 01→16.

Message Response: **R<CR>**

Examples: Set Frequency to 1.5KHz on channel 2. **150002FR<CR>**
Set Frequency to 125Hz on channel 11. **12511FR<CR>**

Comments: This setting has no effect if the specified channel is using either the **Flat** or **Test Tone** filter.

## Store Settings

Description: This command causes AmpTraXX to store its current settings into Non-Volatile memory (EEPROM). Once this is done, AmpTraXX will revert to these saved settings the next time it is switched on.

Command bytes: ST<CR>

Message Response: R<CR>

# Reset Amplifier

| | |
|---|---|
| Description: | This command causes AmpTraXX to reset the designated channel's amplifier. The only purpose of this command is to release an amplifier from overdrive protection mode. This protection mode occurs when an AmpTraXX channel is pushed beyond its safe operating range. |
| Command bytes: | ccRA<CR><br>where **cc** represents the 2-digit channel number between 01→16. |
| Message Response: | R<CR> |

# Version Request

| | |
|---|---|
| Description: | This command instructs AmpTraXX to return its current firmware version. |
| Command bytes: | ?V<CR> |
| Message Response: | AmpTraXX Vn.nn<CR><br>where **n.nn** is the current firmware version of AmpTraXX |

# Advanced Serial Control

The table below shows the complete AmpTraXX serial protocol. Using these commands, an external controller can set up and/or dynamically control AmpTraXX. Throughout the following table <CR> means carriage return, a byte with the hexadecimal value of 0D.

**NOTE:** For the channel commands, **cc** represents a 2 digit channel number. This number must always be 2 digits, event for the single digit numbers. For example, Channel #1 would be represented as **01** where channel #12 would be **12**.

## General Commands

| Description | Command Bytes | Response | Comments |
|---|---|---|---|
| | | | |
| Get Version | ?V <CR> | AmpTraXX Vx.xx <CR> | **x.xx** = current version |
| Get Mode | ?M <CR> | Mxx <CR> | **M00** = Firmware Update, **M01** = Normal Mode |
| Get Front Panel Status | FP <CR> | Fxx <CR> | **F00** = Front-Panel Disabled, **F01** = Front-Panel Enabled |
| Store Settings | ST <CR> | R <CR> | |
| | | | |

## Channel Commands

| Description | Command Bytes | Response | Comments |
|---|---|---|---|
| Set Filter Type | ffccFI <CR> | R <CR> | Flat = **FL**, Band = **BP**, Notch = **NO**, Low = **LP**, High = **HP**, Test Tone = **TO** |
| Get Filter Type | ccFI | ff<CR> | |
| Set Frequency | nnnnccFR <CR> | R <CR> | Value between 40-8000 |
| Get Frequency | ccFR <CR> | nnnn <CR> | |
| Set Filter Quality | n.nnccFQ <CR> | R <CR> | Value between 0.15 – 5.0 |
| Get Filter Quality | ccFQ <CR> | n.nn <CR> | |
| Set Gain | nn.nccGA <CR> | R <CR> | Value between 0.0 – 10.0 |
| Get Gain | ccGA <CR> | nn.n <CR> | |
| Set Filter Quality % | nnn%ccFQ | R <CR> | 0% → 100% |
| Get Filter Quality % | %ccFQ | nnn% <CR> | |
| Set Gain % | nnn%ccGA | R <CR> | 0% → 100% |
| Get Gain % | %ccGA | nnn% <CR> | |
| Reset Amplifier | ccRA <CR> | R <CR> | clears protect mode |
| | | | |

# Error Codes

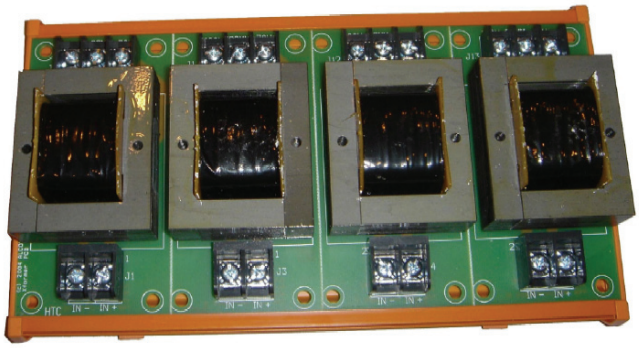
If AmpTraXX experiences any kind of error during serial control, it will respond with one the following error codes.

| Error Code | Description | What to Do: |
|---|---|---|
| E00 | Invalid Channel Number | Check the syntax of the channel number (01,02,03,04, etc.) |
| E01 | Hardware Error | AmpTraXX has experienced an internal hardware problem |
| E04 | Invalid Command | Have you entered the correct command? Are you using a command that is not supported by the current firmware? |

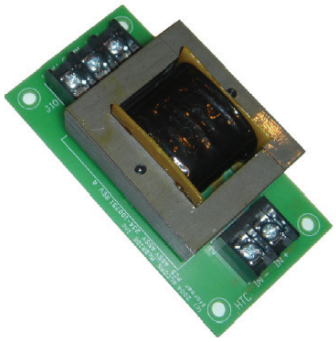
# 70V/100V Output Option

If your application requires 70/100 volt operation, we offer several transformer accessories to assist you.

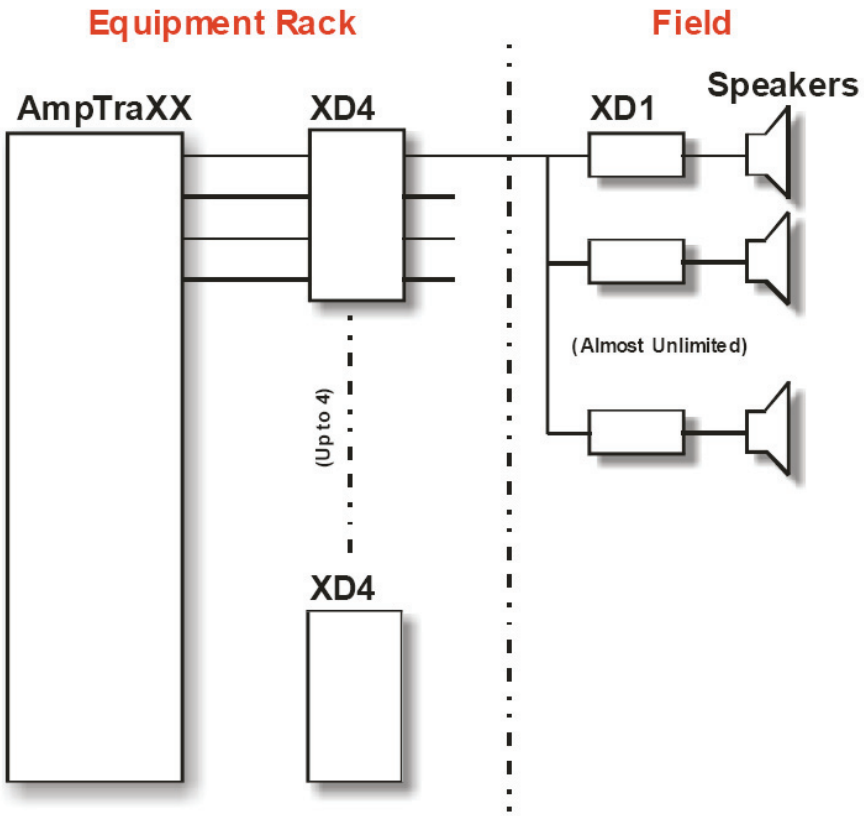
Contact sales@alcorn.com for availability.



XD4 Quad DIN Rail Module



XD1 Single Module



# Updating Your Firmware

You can download the latest firmware upgrades for your AmpTraXX from
http://www.alcorn.com/products/amptraxx/firmware.html

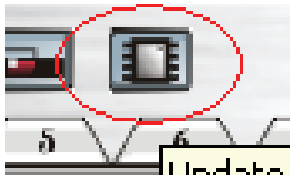
**To update your firmware, perform the following procedure:**

First and foremost, you will need the AmpTraXX Configuration Software installed to perform a firmware update. If you do not have this application installed, you can obtain it from the CD that ships with AmpTraXX or the Alcorn McBride Website ( http://www.alcorn.com ). Please follow the instructions of the **Installing AmpTraXX Configuration Software** section if you require assistance.

Next, it is important to verify that you even require an update. To do this, open the AmpTraXX application, configure your COM port settings, and then click the **Connect To AmpTraXX** button. Watch the status bar at the bottom of the AmpTraXX application for the current firmware version. If you determine that your firmware is not up to date, continue with this procedure.

The next step is to prepare AmpTraXX for a firmware update by setting DIP switch #3 to the **OFF** (**Up**) position. When this is done, you will notice that the AmpTraXX audio outputs will shutdown. This means that AmpTraXX is patiently awaiting new firmware.

If necessary, re-click the **Connect To AmpTraXX** button. When connected, the status bar should indicate that AmpTraXX is in **Firmware Update Mode**. If this is the case, you should now see the **Update Firmware** button next to the **Disconnect** button. Click this button, and then locate the new HEX firmware file that you wish to load to AmpTraXX.



A message box will appear, informing you that the update is about to begin. Please follow the guidelines stated in the message box to ensure that your Firmware Update is successful. When you are ready, click **OK** to continue.

You can monitor the progress of the update in the Status bar. Within a few seconds, the update should be complete. Return DIP switch #3 to the **ON** (**Down**) position to resume normal operation

NOTE: If the firmware update fails, do not panic and cry *"NOOO!!!! Now what am I supposed to do with this rack-mountable paper weight?!?!"* Pull yourself together man! Simply locate and fix the source of the problem (noisy cable, loss of power, corrupted file, etc.) and re-initiate the firmware update. Although a failed update may cause AmpTraXX not to function, it will never render the Firmware Update feature useless!

# Troubleshooting Guide / FAQ

If you have a question not answered by this manual, take a look at our Knowledge Base at http://www.alcorn.com/kb/index.html. We're always updating it with new answers and useful information! If your question isn't answered there, please email us at support@alcorn.com

### *Q: I hear a knocking sound when I am playing AmpTraXX loudly. What is causing this?*

A: This is the sound of your neighbor pounding on your wall. Maybe you should turn it down a few notches, eh? After all, it is 2 o'clock in the morning!

### *Q: Why can't I establish a connection with AmpTraXX?*

A: First, verify that you are using a straight-through (not NULL) RS-232 cable like the one provided with AmpTraXX. Next, make sure that you have the correct COM port selected in the AmpTraXX configuration menu. If you are not sure which COM port your PC's external serial port is using, just use trial and error to figure it out. If you still cannot connect, contact Technical Support.

### *Q: I cranked up the volume, and then the channel stopped working. What is going on?*

A: Congratulations! You have just discovered AmpTraXX's built-in overdrive protection. It has just prevented AmpTraXX's amplifier circuit from melting into a small pile of molten goo. There are several ways to bring the Amplifier back out of protection mode.

1. Power-cycle the unit.
2. Issue a **Set Filter Type** command. If you are using the AmpTraXX application, just change filters.
3. Issue a **Reset Amplifier** command

### *Q: Why aren't the Front Panel volume controls working?*

A: These controls can be disabled using DIP switch #1 on the back panel. Keep in mind that if the volume controls that are currently stored on AmpTraXX were configured using RS-232, the front panel knobs may not be anywhere near the current values. For that reason, ask yourself a few questions before changing this DIP switch:

1. Would someone else kill me for fiddling with the volume controls?
2. Are the volume controls in a reasonable location (ie. not at full volume!).

As soon as you flip the switch, the volume levels of each channel will be acquired from the front panel knobs.

### *Q: Why can't I change the Gain in the AmpTraXX application?*

A: You are connected to AmpTraXX in Live Mode and the front panel volume controls are enabled. Whenever these controls are enabled, the gain controls will only display the current value represented by the knobs on the front of your AmpTraXX. To control volume remotely, you must disable the front panel controls by flipping DIP switch #1 to the **OFF** (**Up**) position.

### *Q: The Blue LED is blinking, and AmpTraXX doesn't seem to be working. Why?*

A: AmpTraXX is either not configured for normal operation or it may have experienced a serious error. Compare the LED's behavior to the table in the **Front Panel** section of this manual to determine the exact cause. Most likely, DIP switch #3 is in the OFF (up) position and AmpTraXX is waiting for a firmware upgrade. Returning this switch to the ON position should resume normal operation.

# Specifications

| | | |
|---|---|---|
| **Power Output** | 20 W, All channels driven, 20-20 kHz | (16) 8 Ohm loads 10% THD max |
| | 16 W, All channels driven, 20-20 kHz | (16) 8 Ohm loads 1% THD max |
| | 13 W, All channels driven, 20-20 kHz | (16) 4 Ohm loads 1% THD max |
| **THD+Noise** | 1.0% | 15W 8ohms |
| **Signal-to-Noise Ratio** | 102 dB | 15W 8ohms |
| **Crosstalk** | -60 dB | 1 kHz, any channel to any channel |
| **Input Type** | Unbalanced | (Active Balanced Optional) |
| **Unbalanced Input Connector** | RCA | |
| **Balanced Input Connector** | Dual DB-25F | |
| **Impedance** | 20 k Ohm | Minimum each leg to ground |
| **Frequency Response** | 20-20 kHz | Low-Frequency filter OFF |
| **Maximum Level - SOA** | 4 volts p-p | 20W 8ohm load each channel level control full |
| **Maximum Level - SOA** | 2.25 volts p-p | 13W 4ohm load each channel level control full |
| **Output Type** | Direct Coupled | |
| **Output Connectors** | Screw Terminal | Accepts 22 to 14 AWG wire |
| **On/Off Transient Muting** | Yes, active "depop" circuitry built-in | |
| **Short Circuit Protection** | Output to Output, Output to Ground | Shutdown - no damage |
| **Thermal Characteristics** | Automatic over-temperature shutdown | |
| **Clip Indicators** | 90% SOA, Red LEDs | 20W 8ohm load each channel level control full |
| **Signal Present Indicators** | 0.003 volts p-p, Green LEDs | |
| **Power/Status Indicator** | Blue LED | |
| **Serial Connector** | DB9 Male | |
| **Serial Protocol** | EIA232 38400 N,8,1 | Ascii Protocol |
| **Serial Control Capabilities** | Volume, Filter, Filter Properties, etc. | |
| **Volume Control Disable** | Disables front volume controls | Switchable On-Off |
| **Reset Factory Defaults** | Restores all channel settings to factory defaults | Switchable On-Off |
| **Firmware Update** | Causes unit to wait for Firmware Update | Switchable On-Off |
| **Shield Lift** | Lifts shields from chassis ground | Switchable On-Off |
| **Input Voltage** | 120/220 VAC | 50/60 Hz Auto Detect |
| **Input Power** | 400 Watts | Maximum |
| **Agency Compliance** | UL CE CSA | |
| **Size** | 19"W x 3.5"H x 12"D (48cm x 9cm x 30cm) | |
| **Weight** | 10 lb (5 kg) | |
| **Environment** | 0º to 38º C (32º to 100º F) | Fan cooled power supply |
| | 0 to 90% relative humidity, non-condensing | |