

8 TraXX/E

Eight Independent Stereo MP3 Players

User's Guide



**Alcorn
McBride
Inc.**

Every effort has been made to assure the accuracy of the information contained in this manual, and the reliability of the Alcorn McBride 8TraXX/E 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.

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Some or all of the following open source software were used in the development of this product: u-boot, uClinux, ALSA, Busybox, drivers by Analog Devices Inc, drivers by PLX Technology, Inc., drivers by Alcorn McBride Inc., and the traxxPlay Mp3 player.

Please contact us at swlicense@alcorn.com to request a copy of any license or source code for the previously mentioned open source projects.

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Table of Contents

<i>Welcome!</i>	6
<i>Features</i>	6
<i>Technical Support</i>	8
<i>Getting Started</i>	9
In the Box	9
Playing a Test Sound	10
Replacing an Older 8TraXX Model	11
Control	11
Compact Flash	11
Front Panel Controls and Indicators	11
Test Channel Buttons	11
Channel Status LEDs	12
Input LEDs	12
Mute All Button	12
File Access LED	12
Communication LED	12
LCD and Menu Knob	13
Rear Panel Controls and Connectors	14
Audio Outputs	14
Discrete Control Inputs	14
RS-232C Serial Connector	14
MIDI In	15
Ethernet RJ-45	15
Configuration DIP Switches	15
Power	16
<i>The Compact Flash Card</i>	17
Recommended Compact Flash Cards	17
Supported File Formats	17
File Naming	17
Playback	18
Transferring Files via FTP	19
<i>Additional Features</i>	20
LCD Status Display	20
<i>Control Methods</i>	21
Serial Control	21
Ethernet Control	21
Discrete Input Control	22
Input Groups	22
TraXX Configuration Software	23

Playlist Control	28
Overview	28
Special Playlist Commands	29
Example Playlist	30
Playlist Builder	31
Scheduler Control	32
Schedule File Format	32
Schedule Builder	38
<i>Command Protocol</i>	<i>41</i>
Playback Commands	41
Play - PL	42
Loop Play - LP	42
Play Toggle - PT	43
Search - SE	43
Play Directory - PD	44
Pause - PA	44
Stop - RJ	46
Add Channel Pairs to Channel Group - GR	46
Playlists	47
Play System Playlist	47
Play Channel Playlist	47
Stop Channel Playlist	47
Control Commands	49
Keylock Enable	49
LCD PIN Enable	49
LCD PIN Set	49
Version Request	50
Soft Reset	50
Set Name	50
Mute/UnMute/Volume Control	51
Send String	51
Playing Status Request	52
Filename Status Request	52
Completion Acknowledge Mode	54
MIDI Control Protocol	55
Error codes	56
<i>How To Update Firmware</i>	<i>57</i>
Standard Firmware Update	57
Firmware Recovery	57
<i>Troubleshooting Guide</i>	<i>58</i>
<i>Specifications</i>	<i>59</i>
<i>Index</i>	<i>60</i>

Welcome!

Thank you for purchasing The Alcorn McBride 8TraXX/E™. The 8TraXX/E replaces CD and solid state audio players in permanent audio playback installations, providing hours of high-quality, maintenance-free digital audio.

The 8TraXX/E lets you play eight independent stereo tracks from a single, economical rack-mount unit. It's perfect for museums, interactive displays, and background music or effects. Each track can be individually triggered by a number of methods. Discrete inputs – contact closure or voltage – allow direct connection to proximity sensors or switches. The 8TraXX/E can also be controlled using Ethernet, RS-232 serial or MIDI. It can even be programmed to play on a scheduled-basis using its built-in Real Time Clock or execute a pre-programmed sequence of playback operations using a playlist.

8TraXX/E offers the latest in Digital Audio Repeater technology, combining MP3 audio with Compact Flash for a rugged, reliable, maintenance-free solution to your playback needs. Access time is nearly instantaneous! All eight tracks are completely independent, and offer superb audio quality.

Sounds are simply copied onto the 8TraXX/E from your laptop computer using an Ethernet connection, or you can use an external Compact Flash card reader.

Features

The 8TraXX/E offers a wide range of features including:

- 8 Independent Stereo Audio Channels
- Hours of High-quality MP3 Audio
- Compact Flash Media Included
- Voltage or Contact Closure Control
- Ethernet, RS-232 or MIDI Control
- Ethernet File Transfer
- Scheduled Playback using built-in clock
- Playlists for automated operation
- “Boot-and-Loop” playback capability

Technical Support

You can obtain technical support or other information about specifying, installing, configuring, updating and programming your Alcorn McBride 8TraXX/E from several sources:

For...	Contact...	When?...
Firmware Updates	http://www.alcorn.com/support	Any Time
Knowledge Base	http://www.alcorn.com/kb	Any Time
E-mail Support	support@alcorn.com	Any Time
Telephone Support	(407) 296-5800	M-F 9am-5pm (EST)

Getting Started

Throughout this manual you will find detailed discussions on all the features of this product. However, you're probably anxious to see your 8TraXX/E play some audio right away. We'll start with a few easy steps to show you how to play audio from the 8TraXX/E straight out of the box!

**** IMPORTANT NOTE: THE 8TRAXX/E IS NOT DESIGNED FOR AND SHOULD NEVER BE USED TO PLAY SAFETY-RELATED ANNOUNCEMENTS.**

In the Box

- 8TraXX/E Multichannel Audio Player (with CF card installed)
- 8TraXX/E Manual
- Straight-through DB-9 Female to DB-9 Female serial cable
- Crossover Ethernet Cable
- Power Supply
- (2) Phoenix type connectors for rear control inputs

Playing a Test Sound

Every 8TraXX/E comes with a Compact Flash card preloaded with test sounds already installed in the unit's Compact Flash slot. To play test sounds, follow these step-by-step directions:

- Connect a channel of the 8TraXX/E to a set of powered speakers or to the input to an amplifier.



- Power the 8TraXX/E using the included power supply. The LCD display will indicate that the 8TraXX/E is initializing, and then display its current status when it's finished.
- When the 8TraXX/E has finished initializing, press the front panel channel pushbutton corresponding to the channel you connected the amplifier to. You should hear the test sound playing.

Replacing an Older 8TraXX Model

Control

By default, the 8TraXX/E uses an advanced command set to take advantage of its new features and flexibility. If you are replacing an older 8TraXX model and wish to continue using the older command set, use the LCD menu of the 8TraXX/E to turn on “Legacy Mode”. Your 8TraXX/E will now function like an older model 8TraXX.

Compact Flash

The 8TraXX/E uses a FAT32 formatted compact flash card. If you wish to reuse the compact flash card from your old 8TraXX, first backup all your audio files to a computer. Then, format the flash card to FAT32. Finally, copy your audio files back to your newly formatted compact flash card.

Note: Reformatting your compact flash card will ERASE all content on the card. Backup your files BEFORE formatting.

Front Panel Controls and Indicators

The 8TraXX/E includes controls to accommodate a wide variety of installations. The front panel incorporates a 2x16 LCD display and Menu Knob, a blue power indicator, eight channel control pushbuttons, a Mute pushbutton, media status/error indicator, an Ethernet activity indicator, channel status and rear input indicators, and a Compact Flash slot. All front panel controls can be locked using a PIN number for systems requiring tamper-free operation.



Test Channel Buttons

The numbers next to the test button match the channel and file numbers (i.e. Button number 1 plays file number 1 to channel pair 1, Button number 2 plays file number 2 to channel pair 2, etc.

The front panel contains a row of eight pushbuttons. These buttons allow you to test play each of the unit's 8 stereo channels. When a test channel button is pressed, the file with the same number as the button number will be activated and played out the corresponding channel. Pressing a button once plays the sound. Pressing it again while the sound is playing stops playback.

Channel Status LEDs

Front Panel Channel Status LEDs activate whenever a channel is playing (Green) or muted (Red) or paused (Orange).

Input LEDs

Input LEDs will illuminate Green whenever the corresponding rear panel input is activated.

Mute All Button

A pushbutton on the far right of the front panel causes all channels to mute. Pressing the button once causes all channels to mute. Pressing it again causes all channels to unmute.

File Access LED



This LED is primarily used to indicate Compact Flash media activity. It illuminates green whenever the Compact Flash media is being accessed. The LED will turn Red if an error condition exists.

File Access LED Behavior	File Access LED Color	LED Meaning
Off	Off	Idle
On	Green	Media activity (Playing, file transfer, etc.)
On	Red	Media Error
On	Orange	Firmware Update (erasing Flash)
Flashing	Green	Firmware Updating
Flashing	Red	Firmware Update Error

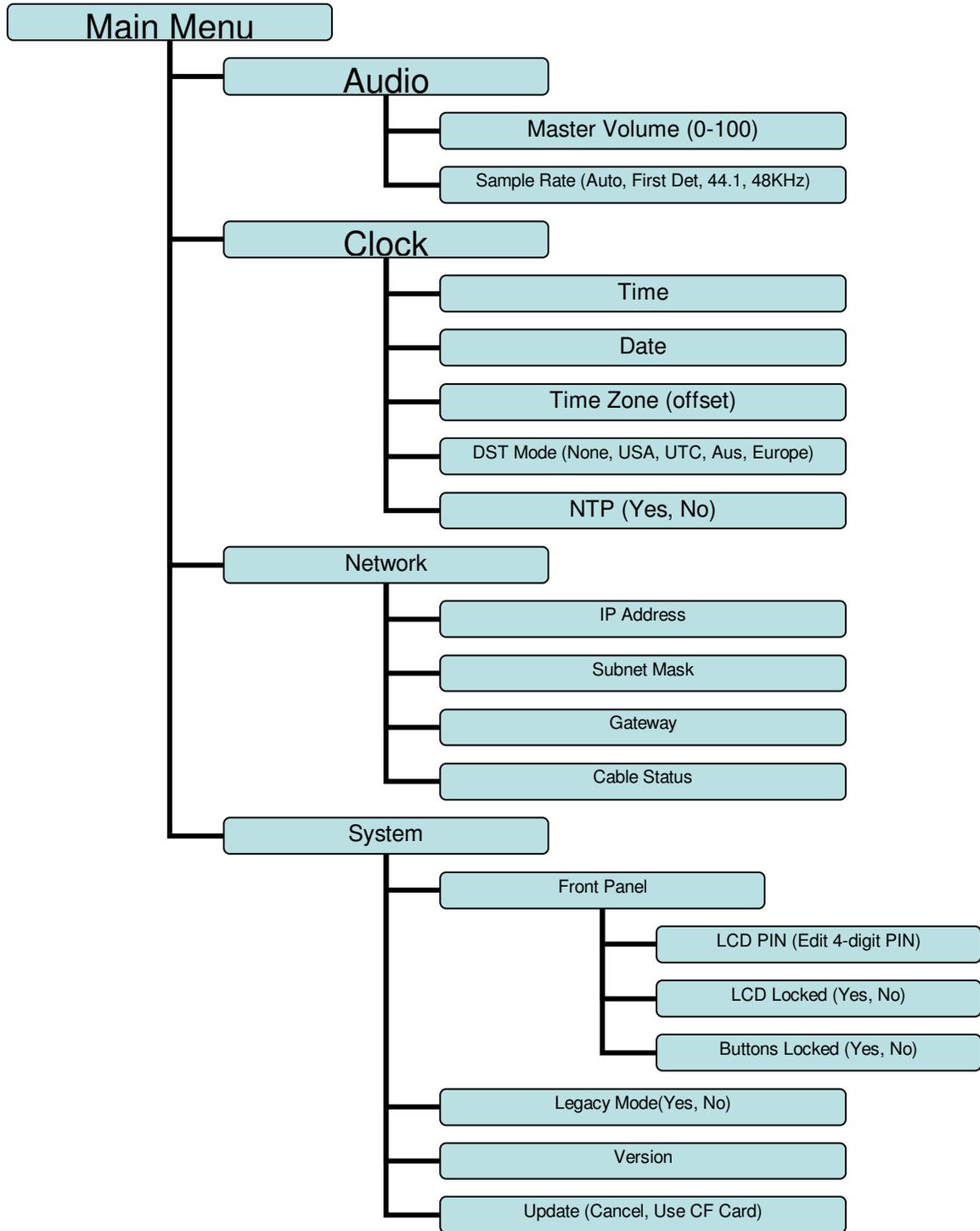
Communication LED



The LED located directly above the File Access LED is used to indicate communication activity. It will blink Green whenever the unit is communicating via Serial or Ethernet. It will blink Red whenever a communication error is detected.

LCD and Menu Knob

The Menu Knob is used to navigate through an LCD menu in which you can configure your 8TraXX/E. Details of each of these parameters are explained in the sections that follow.



Rear Panel Controls and Connectors

The rear panel includes RCA jacks for 8 stereo channels of unbalanced audio, parallel control inputs, configuration DIP switches, serial and MIDI control connectors, an RJ45 network jack and the power input jack:



Audio Outputs

Eight sets of RCA jacks supply analog line-level stereo signals suitable for connection to a multi-channel amplifier or powered loudspeakers.

Discrete Control Inputs

Eight discrete inputs can be programmed in a variety of ways to operate the unit. Please refer to the TraXX Configuration Software section for programming details. These inputs can be set up to accept contact closures or voltage inputs using the configuration DIP switches.

By default, the rear control inputs are configured to play files 1-8 to channel pairs 1-8. For instance, input 3 will play file 3 to channel pair 3 when triggered. With the default input configuration, files will play and loop for as long as the input is maintained.

RS-232C Serial Connector

A serial cable is provided with each 8TraXX/E.

This input is a standard DB-9 male RS-232C connector, intended to be connected to a PC or control system using a straight-through (not null-modem) 9-pin cable. The pinout appears below. Please refer to the *Serial Protocol* section for a list of control commands.



Serial Connector Pinout	
Pin	Function
2	TXD (data from 8TraXX/E)
3	RXD (data to 8TraXX/E)
5	Ground

MIDI In

The 5-pin DIN connector is used for MIDI control. The 8TraXX/E uses standard control change MIDI command protocol. Please refer to the Serial Protocol section of the manual for a list of commands.

Ethernet RJ-45

UDP control uses port 2638.

FTP uses TCP ports 20, 21.

NTP uses UDP port 123.

This is a standard RJ-45 jack used to connect the 8TraXX/E to a network. Control (UDP), file transfer (FTP), and time (NTP) protocols are supported. Network settings can be configured using the front panel menu.

Configuration DIP Switches

Four small DIP switches near the power connector are used to configure the unit.

DIP Switch Operation		
Number	On	Off
1	Ground Lift Enabled	Ground Lift Disabled
2	Voltage Input Mode	Contact Closure Input Mode
3	Firmware Recovery Mode	N/A
4	Reset to Factory Defaults	N/A



Ground Lift (DIP 1)

The Ground Lift feature can sometimes help in situations where audio hum or other noise is being caused by potential ground loops. A Ground Lift disconnects the internal ground from the 8TraXX/E's metal chassis, reducing the chance of ground noise affecting the 8TraXX/E's electrical systems (i.e. audio outputs/inputs, etc.). This feature is configured using switch #1 on the bank of DIP switches. By default, this switch is set to the OFF position which grounds the 8TraXX/E to its chassis. You can implement a ground lift by setting this switch to the ON position. After that, the 8TraXX/E's ground will be isolated from the chassis.

Voltage Mode (DIP 2)

This switch configures the discrete control inputs for either dry contact closure operation or voltage input operation. For voltage input operation, the input voltage should be at least 12VDC and not more than 24VDC. See the *Discrete Input Control* section of this manual for more details.

Firmware Recovery Mode (DIP 3, Unlabeled)

This switch boots the 8TraXX/E in a recovery mode in which you can update the firmware. Use this mode to update to a working firmware version if a regular firmware update fails (due to power failure during update, corrupt firmware file, etc.)

Factory Defaults (DIP 4)

Activating this switch while the unit is booted returns the unit to its default (factory) state. These defaults are listed below.

Factory Defaults	
Parameter	Default Value
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
Nameserver (DNS)	127.0.0.1
NTP Server	pool.ntp.org
FTP User	admin
FTP Password	password
UDP Port	2638
RS232 Serial	9600 Baud, 8 Data Bits, No Parity, 1 Stop Bit
Buttons Enabled	Yes
LCD PIN	1111
LCD Locked	No
Master Volume	100
Legacy Mode	No
NTP Enabled	No
Timezone Offset	0
Daylight Savings Mode	None

Power

The power input is a 2.5x5.5x10mm threaded barrel connector with center pin (+) and the outer rim (-). The 8TraXX/E requires 9-36VDC at approximately 2 Amps. An external 115 or 230 VAC power supply is provided with the unit.

The Compact Flash Card

Recommended Compact Flash Cards

Included with your 8TraXX/E is a pre-formatted Compact Flash card. The formatting is a standard Microsoft FAT32 format, and any other card you use should be formatted as FAT32 using a PC.

Alcorn McBride recommends SanDisk® brand of Compact Flash. For the latest list of compatible and recommended Compact Flash please visit:

<http://www.alcorn.com/library/appnotes/HowMuchFlash/index.html>

Supported File Formats

The 8TraXX/E plays MP3 files which are compliant to the following specifications:

Supported MP3 Formats	
Standard	MPEG-1 Part 3 (or simply, MP3) defined in ISO/IEC-11172-3
Channel Encoding	Mono, Joint Stereo, Stereo, Dual
Sample Rates	44.1KHz, 48KHz
Bitrates	32,48,56,64,80,96,112,128,160,192Kbps

File Naming

It is sometimes easiest to use the “numbered” style of file naming for MP3 files if you want to use the discrete inputs.

A specific file naming convention is used so that the 8TraXX/E can identify the file type, as well as associate the supported file types with a number. Here is a table showing the naming conventions based on the type of file that is being named:

Details about Playlists and Schedules are contained in separate chapters of this manual.

File Type	File Naming Style
MP3 Audio File (numbered)	SNDnnnnn.MP3
MP3 Audio File (named)	any-filename.MP3
Playlist	PLYnnnnn.LST
Schedule	SCHEDULE.SCL

Files can be referenced in commands by their full filename or their file number. The file number is determined by the 5-digit ‘**nnnnn**’ portion of the file name. The 8TraXX/E supports files that are assigned numbers between 1 and 99999, so this part of the filename is always represented as **00001** through **99999**.

Just as an example, let’s say that you created an MP3 file that you want to associate as file #123. To do this, you would need to rename the MP3 file to **SND00123.MP3**.

The file number naming style is not needed if you plan to reference files in commands by their full filename.

The one exception to the numbering method is the schedule file. The 8TraXX/E only supports a single schedule, and therefore there is only one file name permitted for this file. As you can see in the table above, this filename is **SCHEDULE.SCL**.

Note: If you use the file numbering scheme, every file on the media must have a unique number in the file name, no duplications are allowed. If you have duplicate file numbers (i.e. two files associated as file #1), the 8TraXX/E would consistently choose only one of those files when told to play the associated number.

Playback

Interruptible versus Uninterruptible Operation

In a play command, you can specify uninterruptible playback, meaning that repeated play requests will not cause the sound to start over from the beginning while playing. An example of where this might be used is in a museum kiosk, where a guest trips a break-beam sensor to start an audio presentation. The audio will continue playing through, even though the guest might continually trip the sensor while listening to the presentation.

If not otherwise specified in the play command, files play back as interruptible, meaning that repeated play requests during playback will cause the sound to start over. An example of where this might be used is in a shooting gallery, where you want the sound to be heard every time a gun’s trigger is pulled.

See the Command Protocol section for details on how to specify interruptible vs. uninterruptible mode in your commands.

Transferring Files via FTP

The nameserver setting is used to resolve hostnames into IP addresses. If you will not be using domain names (for NTP server addresses, etc.) you need not change this value from the default.

In addition to transferring the files to the 8TraXX/E's compact flash card directly with your PC, 8TraXX/E has a built-in FTP server allowing for quick file transfers over Ethernet.

Before using FTP, be sure that the network settings on your 8TraXX/E are configured correctly. Network settings can be configured using the front panel menu of your 8TraXX/E. The default network settings are listed below.

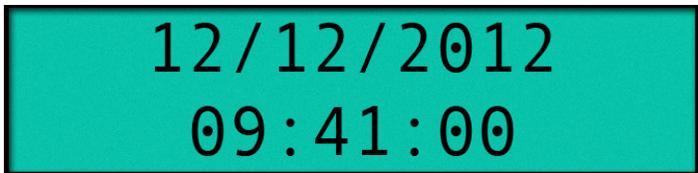
IP Address	192.168.0.254
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
Nameserver	127.0.0.1
FTP User	admin
FTP Password	password

Additional Features

LCD Status Display

You can choose from three different home screen status displays via the LCD menu on your 8TraXX/E. Entering the main menu and choosing System->Panel->Home Screen, you can choose from *Clock*, *Ch. Status*, and *All Ch. Status*. 8TraXX/E defaults to the *Ch. Status* home screen.

Clock: Displays the current system time.



Ch. Status: Cycles through the channel pairs, showing the current status as one of the following: (Playing, Stopped, Paused). The currently displayed channel pair changes every 3 seconds - turning the menu knob will scroll through the channels.



All Ch. Status: Displays the status of every channel on the screen at once as one of the following letters: (P, S, A), corresponding to Playing, Stopped, and Paused. Channels are listed 1-16 from left to right.



Control Methods

For your convenience, Alcorn McBride distributes an application called **AMI Terminal**, which allows you to control the 8TraXX/E via RS-232 or Ethernet with the click of a button. This free application can be obtained at <http://www.alcorn.com/support/software.html>

Serial Control

The 8TraXX/E can be controlled using the male DB-9 RS-232 connector on the rear panel. If you are interfacing to the unit with a PC or other type of controller, you will need to use a straight-through DB-9 Female to DB-9 Female serial cable. For your convenience, this cable has been included with your 8TraXX/E.

This serial interface operates at **9600 baud, no parity, 8 bits per character, and one stop bit (9600,8,N,1)**.

All serial commands are ASCII based, and **are terminated with a carriage return** (hexadecimal value 0x0D). The complete list of supported commands can be found in the **Command Protocol** section of this manual.

Ethernet Control

The 8TraXX/E is equipped with an Ethernet interface that allows you to control the unit using a standard Ethernet Protocol called UDP (User Datagram Protocol).

UDP is a very simple Ethernet protocol that allows an Ethernet device to transmit a generic string of data to another Ethernet device. Since UDP is such a common standard, UDP packets can be generated easily by a large variety of controllers and PC applications. The UDP packet handles all of the complexities of getting the message where it needs to go in one piece. The good news is that you do not have to understand those complexities. As a matter of fact, you only need to know the following information to send a UDP message.

1. **Destination IP Address** – This needs to be the IP address of the 8TraXX/E you intend to control. The default IP address of the 8TraXX/E is **192.168.0.254**.
2. **Destination Port** – This value needs to be the UDP port that the 8TraXX/E is listening to for UDP commands. This value is always **2638**.
3. **Source Port** - This is the UDP port the PC or controller will use to send the UDP message. It does not matter what port you choose, as long as it is a legal UDP port. If you have no idea what a legal UDP port is, just use **2638**.
4. **Data** – This is the actual message that you are sending to the 8TraXX/E. This message needs to be a **Command Protocol** message (i.e. 5P1PL<CR>).

All UDP commands are ASCII based, and **are terminated with a carriage return** (hexadecimal value 0x0D). The complete list of supported commands can be found in the **Command Protocol** section.

Discrete Input Control

The 8TraXX/E has a total of 8 discrete inputs on the rear of the unit which can be set to accept Voltage Input (12-24VDC) or Contact Closure. Voltage Input or Contact Closure is selected by configuration dipswitch #2 on the side of the 8TraXX/E chassis. See the **Configuration Dipswitch** section of this manual for configuration details.

When configured for contact closure, an input is triggered when a connection is made between the positive and negative terminals of that input. No external power supply is needed, so a simple switch or button wired between the terminals can be used to trigger the input. Contact Closure should not be used over long distances, anything over 15 feet should use inputs configured for Voltage Input.

When 8TraXX/E is configured for voltage input, an external power supply should be used to provide a 12-24vdc signal to the 8TraXX/E. Voltage Input can trigger from much longer distances than contact closure and because the inputs aren't sharing the power supply of the 8TraXX/E (as with contact closure), the wiring can be further isolated.

When triggered, inputs execute whatever standard control command has been assigned to them. TraXX Config, the configuration software for your 8TraXX/E, can be used to assign commands (such as play, stop, etc) to your 8TraXX/E's discrete inputs. See the **Command Protocol** section of this manual for a list of supported commands.

By default, the rear control inputs are configured to play files 1-8 to channel pairs 1-8. For instance, input 3 will play file 3 to channel pair 3 when triggered. With the default input configuration, files will play and loop for as long as the input is maintained.

Input Groups

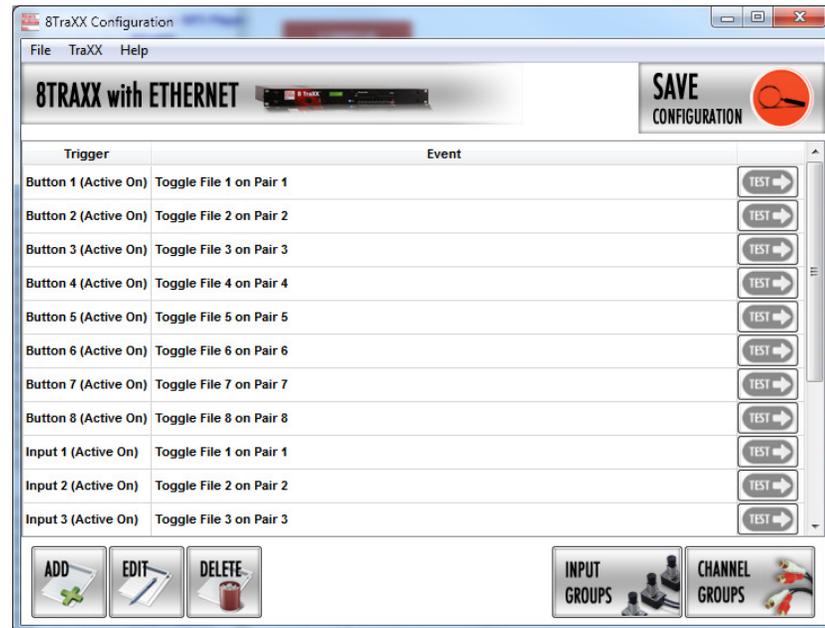
If you need more than 8 discrete inputs for your application, you can set up an Input Group. Input Groups are an advanced feature of 8TraXX/E that allows you to use combination of inputs to trigger up to 255 different actions. Once you use the TraXX Config software to add inputs to a group, the input group can be assigned to respond to different combinations of inputs triggered simultaneously.

For example, if you add all 8 inputs to input group 1, you can assign commands to respond to the 8bit numbers created by the 255 different combinations of inputs.

TraXX Configuration Software

TraXX Config can be downloaded from www.alcorn.com.

TraXX Config allows you to easily group inputs together, assign them to specific playback or operational commands, and configure them for active-on or active-off operation.



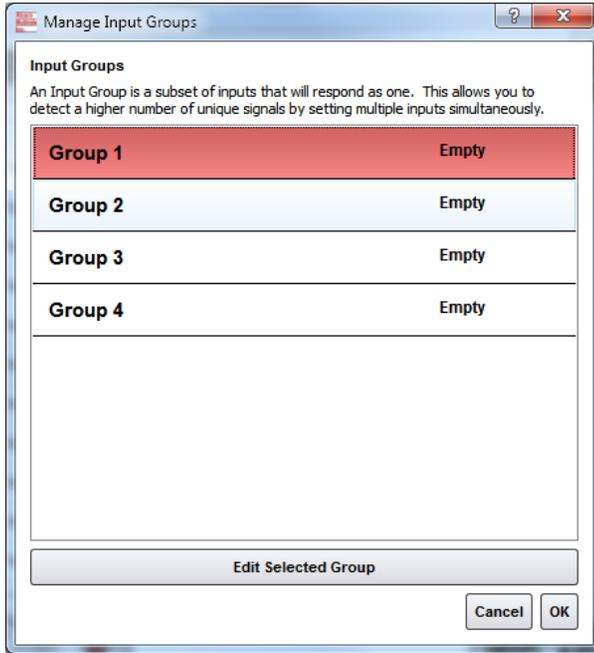
Groups are arranged into two different types: Input Groups and Channel Groups.

Manage Input Groups

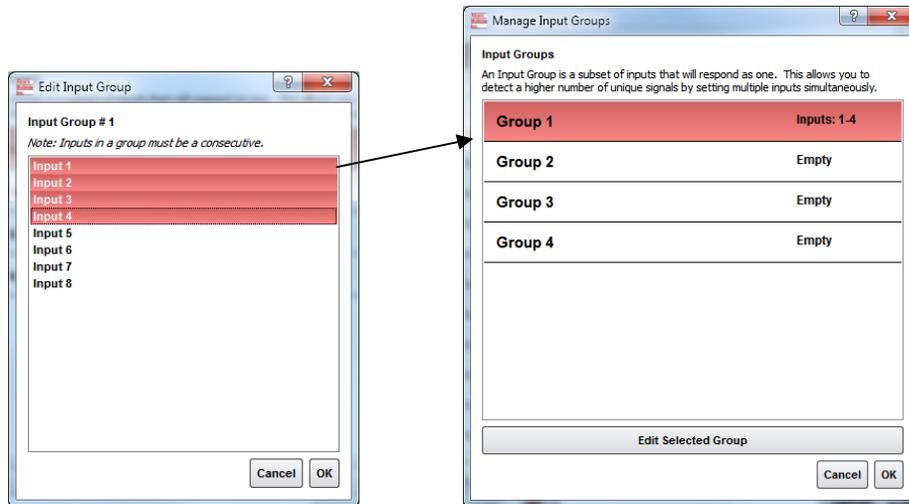
By default, the 8 discrete inputs on the 8TraXX/E act individually and are constrained to a total of 8 separate operations – one for each input.

However, if you need to perform more than 8 operations using the parallel inputs, you can combine the 8 inputs into “Input Groups” so that they can be activated using binary codes to achieve up to 255 operations.

In the TraXX Config program select *Manage Input Groups* to open this window:



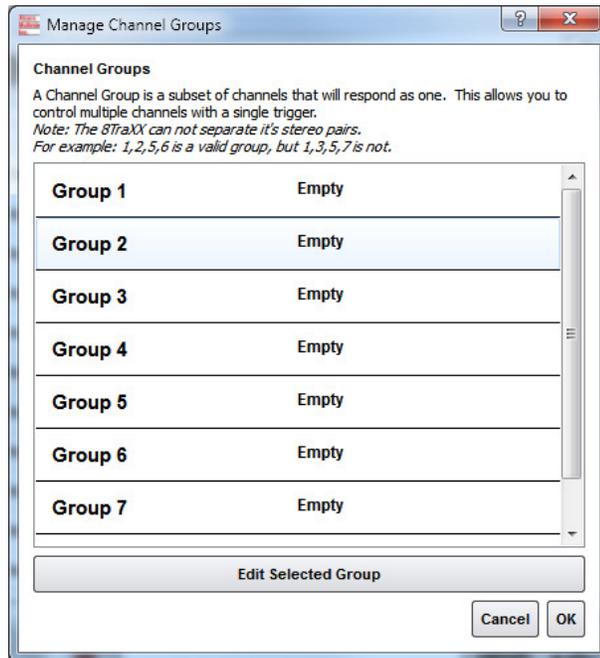
Select one of the Groups and click *Edit Selected Group* to assign inputs to that group. For this example we have assigned Inputs 1-4 to Group #1. Click *Save* to save the assignments.



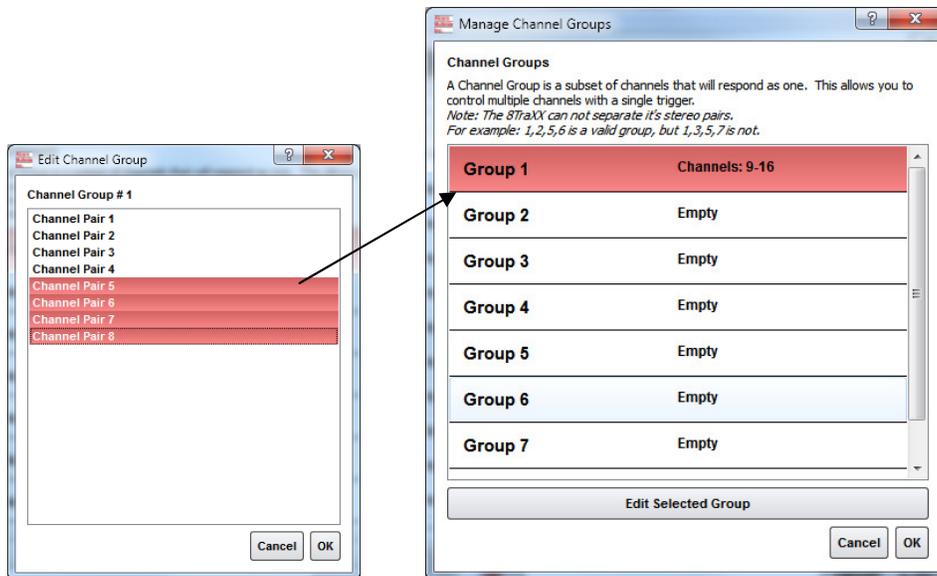
Manage Channel Groups

You can have a total of 8 *Channel Groups* in the 8TraXX/E. Channel Groups allow you to control multiple audio channels using a single input or Serial/Ethernet command.

In the TraXX Config program select *Manage Channel Groups* to open this window:

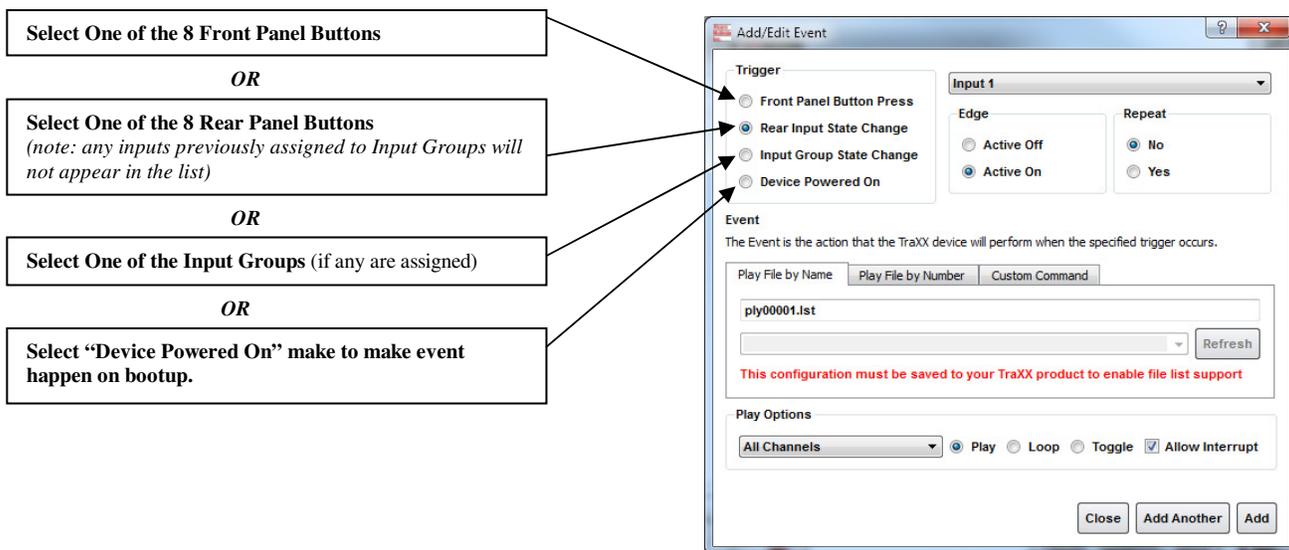


Select a Group and click *Edit Selected Group* to assign channels to that group. For this example we have assigned channel pairs 6-8 to Group #1. Click *Save* to save the assignments.



Add/Edit Event

Now for the fun part! Click on *Add* to add a trigger event to one of the inputs, buttons, or input groups. The Add/Edit Event window will appear.



The best way to cause the 8TraXX/E to play something on startup is to select the *Device Powered On* Trigger Type.

Once you have chosen where the event is being triggered from, you can select either an *Active On* or *Active Off* Trigger Edge. This allows the 8TraXX/E to respond to either normally-open or normally-closed input sources.

In the *Event* field you specify exactly what action you want the Event to perform. You can have it play a file or you can specify a *Custom Command*, where you can use any command out of the Command Reference in this manual.

The Configuration File is named "CONFIG.LST" which the 8TraXX/E always loads on startup.

Click *Add* once you've finished making your choices and the trigger will be added to the 8TraXX/E configuration file.

Now you need to save your file. To do this select File...Export Configuration... and choose the destination. You can copy it to your hard drive and then copy it to the 8TraXX/E Compact Flash and insert it into the unit.

Playlist Control

You can have a total of 9 simultaneously-running playlists in the 8TraXX/E. One system playlist plus one per channel pair.

Playlists provide a mechanism for the 8TraXX/E to automatically execute commands in a predefined sequence. Since Playlists can execute any of the commands listed in the **Command Protocol** section, they can perform a variety of functions. These functions could be something as simple as looping a single channel or groups of channels, or as complex as user-initiated pacing of playback.

Overview

*For an easy way to make a playlist, use **Playlist Builder** described on Page 314 and available at www.alcorn.com.*

A playlist zero (PLY0000.LST) will automatically play on power-up.

It is not a good idea to have both a playlist file and an audio file with the same number (like PLY00002.LST and SND00002.MP3). If you do, commanding the 8TraXX/E to play file #2 may not produce the desired result (whatever that may be) since the 8TraXX/E is forced to prioritize which file type it should play in that circumstance.

A playlist file is nothing more than a list of 8TraXX/E commands listed in a text file. These commands, which are listed in the **Command Protocol** section, are the same commands that are used by all of the 8TraXX/E's control interfaces. Although any of the supported commands can be used, playlists usually contain **Play** commands, which cause the 8TraXX/E to play audio clips from the Compact Flash card. When a playlist is being used, the commands are processed in the order in which they appear in the list. The playlist is an ASCII text file and can be made using any ASCII text editor (like notepad) or using the Playlist Builder program available from <http://www.alcorn.com/support/software.html>.

Each channel pair of the 8TraXX/E can have its own independent playlist. There is one additional system playlist that is not tied to any particular channel.

Playlists are triggered the same way as sound files - by Serial or Ethernet commands, or with discrete inputs. The system playlist is started by a **PL** command and the individual channel pair playlists are started with **PO** commands.

For example, the following serial command would start the playlist file "ply00002.lst" as the system playlist:

2PL

The following command would start the playlist file "ply00004.lst" as the channel pair 6 playlist:

4P6PO

It is a very common requirement in applications for the 8TraXX/E to power up and launch a playlist on its own. This can easily be done by naming the playlist file **PLY00000.LST**. This filename directs the 8TraXX/E to play the file as the system playlist upon power up.

It is also common practice to have one playlist launch another playlist. This is done in the same fashion as playing an audio file; by using a command like **2PL** (where 2 is the number of another playlist).

Special Playlist Commands

In addition to regular 8TraXX/E commands listed in the **Command Protocol** section, there are a few additional commands for the Playlist Control interface. These single-character commands further modify the behavior of the playlists to provide additional features that only apply to the Playlist Control interface of the 8TraXX/E. These characters and their functions are listed in the following table:

Command	Description
W	Wait. Playlist pauses in the current position until another 'Play' command occurs, at which time it resumes processing of the playlist. This is useful for applications where a user interactively controls the progression of play.
<	Loop. Tells the playlist to loop upon completion. This looping will continue indefinitely until a Stop condition occurs, or another audio or playlist file is played on that channel.
;	Comment. Ignore all characters until the next line.

Commands may be entered into the Playlist in either upper or lower case. All text following a semicolon (;) is interpreted as comments, until the next line in the file. You may put anything you want in comments, including the special command characters normally used in the Playlist.

Example Playlist

Here's an example playlist that will be discussed in detail below to explain the concept of how playlists work in the 8TraXX/E.

```
1P1PL ;You can comment your Playlist file by using
6P2LP ;semicolons. All text after a semicolon is
3G1PL ;ignored until the end of the line where a
      ;carriage return is encountered.
5P1PL
<
```

The first command, which is “**1P1PL**”, causes the 8TraXX/E to play file #1 to channel pair #1. If the user issues a Play command during the playback of file #1, it will be interrupted and the playlist will move on to the next command. If a Play command is not received, the 8TraXX/E will not advance to the next playlist command until file #1 has played to completion.

When file #1 has finished playing, the “**6P2LP**” command is executed. This command causes the 8TraXX/E to loop file #6 continuously to channel pair #2. This file will continue looping indefinitely until the user issues a Play command to advance the playlist.

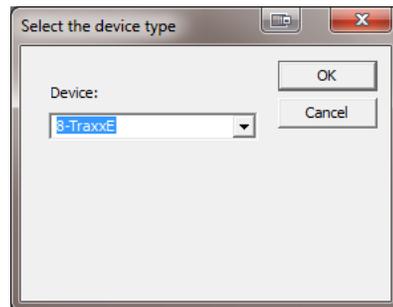
If advanced by the user, file #3 plays to channel group #1 followed by file #5 playing to channel pair #1. Once file #5 finishes, the “<” character causes the playlist to loop back to the beginning. This means that file #1 will start playing once again.

Playlist Builder

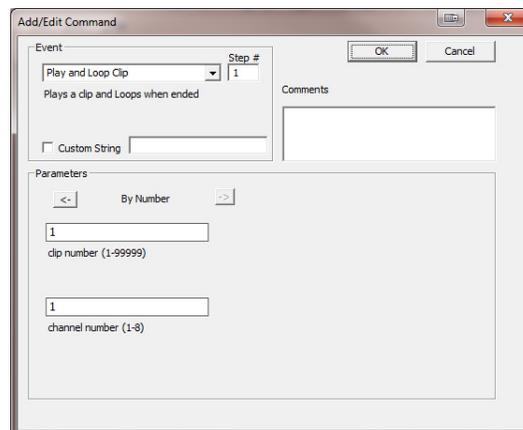
For convenience, Alcorn McBride provides a free Windows application for making playlists using a graphical interface. This program is called Playlist Builder, and it can be downloaded from the software section the Alcorn McBride website at <http://www.alcorn.com>.

Here is a step-by-step guide to get started making playlists with Playlist Builder.

1. Open the Playlist Builder application
2. Select “8-TraxxE” in the list of supported devices and click OK.



3. Select the event you wish to insert into the playlist. For this example we’ll choose “Play and Loop Clip”.
4. Using the arrows in the ‘parameters’ box, you can select which type of Play command you wish to use. For example, “By Number” would allow you to enter a clip number. “By File” would allow you to enter the actual file name. If you are using the compact flash card that shipped inside your 8TraXX/E, select ‘By Number’ and enter the number ‘1’ in the field.
5. Also choose which channel pair you would like the file to play to. For this example we will choose Channel Pair 1.
6. Click OK to add the event to the playlist



7. Add as many commands as you like! Once you are done, you can save the playlist file and transfer it to the 8TraXX/E Compact Flash card!

Scheduler Control

*For an easy way to make a schedule, use **Schedule Builder** described on Page 38 available at <http://www.alcorn.com>*

If you plan on using the Scheduler, you should verify that the 8TraXX/E's time, date, timezone, and daylight savings mode are set correctly.

The 8TraXX/E has a built-in real-time clock, which can be used to trigger events based on time and/or date. For example, a schedule could be created to play a sound at exactly 3:00PM on January 15th 2015, or start looping a sound at 8AM every morning and stop looping it at 8PM every night.

The 8TraXX/E can accomplish this type of task using a feature called the **Scheduler**. With a user-created schedule file, the Scheduler can execute any event listed in the **Command Protocol** section of this manual. These scheduled events are accurate down to the minute, and can be programmed to execute once, or repeat periodically (i.e. repeat every Monday, every January 1st, every morning, etc.).

The 8TraXX/E obtains schedule information from a file on the Compact Flash card named **schedule.scl**. This file is created using either a text editor (i.e. Notepad) or a free Alcorn McBride application called **Schedule Builder**. The remainder of this section contains information on how to make this schedule file using either method.

Schedule File Format

The **schedule.scl** file itself is nothing more than a formatted ASCII text file. In this file, each line contains an 8TraXX/E command as well as data fields that specify when that command should be executed. This section covers these fields and how they are used to schedule command execution.

Field Summary

Here is a list of the fields that can be used within a scheduled event. Below this table, there are several examples that show how these fields can be used to change the behavior of a scheduled event.

Delimiter	Field
T:	Starting time (hh:mm) (military time – leading zeros for hours required)
D:	Starting date (mm/dd/yy or mm/dd/yyyy . You can use periods, slashes, or dashes to separate dates)
I:	Ending time (hh:mm) (military time)
A:	Ending date (mm/dd/yy or mm/dd/yyyy . You can use periods, slashes, or dashes to separate dates)
E:	Event – This field always contains the COMMAND event
1:	Parameter 1 – This always contains the 8TraXX/E command wrapped in quotes.
R:	Repeat Number: repeat after this number of periods has expired

P:	Repeat Period: Time to wait between executions, used with Repeat Number and Set when necessary
S:	Repeat Set: special case usage described below
;	Although not a field, this marks a comment

Example 1

```
T:13:46 D:01/1/2015 E:COMMAND 1:"1P2PL"
```

This is the simplest possible example because it contains the minimum number of fields needed to execute a scheduled event. Notice that the example occupies only one line of text, and that each field is separated by a space. In order, this is exactly what each field means.

Start Time(T): 1:46pm in the afternoon (**13:46** military)

Start Date(D): January 1st 2015

Event(E): COMMAND – Specifies that parameter 1 contains a 8TraXX/E command

Parameter 1(1): The command string “1P2PL” will cause the 8TraXX/E to play file #1 to channel pair #2.

Example 2

```
T:14:46 D:01/1/2015 E:COMMAND 1:"P2RJ" ;Stop CH Pair2
Playback
```

Two things have changed in this example.

Start Time(T): 2:46pm in the afternoon (**14:46** military)

Start Date(D): January 1st 2015. (same as Example 1)

Event(E): COMMAND (same as Example 1)

Parameter 1(1): The command string “P2RJ” will cause the 8TraXX/E to stop playback on channel pair 2.

Using Example #1 and Example #2 together in a schedule file will cause file #1 to begin playback at 1:46PM on January 1st, 2015 and stop playback at 2:46PM the same day.

One other thing that is special about this event is that the comment “**Stop Playback**” has been added at the end of the line using a semicolon(;). **Anything found after a semicolon is ignored by the scheduler.** You can even place a comment on its own line, if you like.

Example 3

```
T:14:46 D:01/1/2015 R:30 P:minute A:1/3/2010 I:3:00  
E:COMMAND 1:"1P2PL"
```

We've now added:

Repeat Number(R): 30

Repeat Period(P): minute

Ending Time(I): 3am in the morning (**3:00** military)

Ending Date(A): January 3rd 2015

The **Repeat Number** acts as a multiplier of the **Repeat Period**. They should be read in conjunction like this: "**Repeat this event every 30 minutes**".

The **Ending Time** and **Ending Date** fields specify the time and date that the repeating will stop. In this example, the 8TraXX/E will play file #1 to channel pair 2 on 1/1/2015 at exactly 2:46PM. It will then play the file again 30 minutes later (3:16PM) and will continue to repeat until 3:00AM on 1/3/2010.

Example 4

```
T:1:00 D:11-28-2015 R:4 P:Thursday S:November  
E:COMMAND 1:"1P2PL"
```

The only thing that is new with this example is the **Set** field:

Repeat Set(S): November

A **set** defines a certain range of valid repeat periods. For this example, only the Thursdays in November are eligible for this event. When a **Set** is used in an event, the **Repeat Number** takes on a different meaning. Instead of being a multiplier of the **Repeat Period**, **it and the Repeat Period become an index of the set**. These three fields should be read in conjunction like this: "**Repeat this event every 4th Thursday in November.**"

Fields in Detail

There is a summary table in the **Scheduled Events** section that lists all the fields for your reference. Since the **Command Event**, and event **Parameter** fields have been discussed, we'll discuss the rest of the fields here.

T: Start Time

The **Start Time** is the hour and minute your event becomes active. For most cases being active simply means gets executed. You can specify it in military or standard time where 00:00 is midnight, 23:59 or 11:59pm is last minute of the day something can be scheduled. You can also specify

sunrise or **sunset**. In order to take advantage of sunrise/sunset calculations in the 8TraXX/E, you need to determine you longitude, latitude, and time zone. All three of these settings can be configured remotely using the **Command Protocol** of the 8TraXX/E.

Example:

T:13:30
T:Sunrise
T:Sunset

D: Start Date

The Start Date is the month, day, and year your event becomes active. For most cases being active simply means gets executed. You specify it in a variety of ways. You can use periods, slashes, or dashes to separate the fields of the dates. Dates from the year 2000 to the year 2099 are supported. Leap years are handled automatically.

Examples:

D:01.01.2001
D:01/01/2001
D:01-1-2001

I: End Time

The End Time is the hour and minute your event stops being active. See the T: Start Time section for syntax.

Examples:

I:1:30
I:Sunset
I:Sunrise

A: End Date

The End Date is the month, day, and year your event stops being active. See the D: Start Date section for syntax.

Examples:

D:01.01.2001
D:01/01/2001
D:01-1-2001

R: Repeat Number

The Repeat Number acts differently depending on what other fields it is used with:

- With no Repeat set field present.
- With a Repeat Set field present.

1. With no Repeat set field present:

This is the most common usage of the Repeat Number. It acts as a multiplier of the Repeat Period. They should be read in conjunction like

this: **“Repeat this event every <repeat number> <repeat period>”**.
Ex. “Repeat this event every 30 minutes”.

The repeat number can be anywhere from 1 to over 4 billion. You can specify repeating a number of minutes, which is why this is so huge. Realistically though, you would specify repeating in years, if it got that large. Whatever combination you choose between Repeat Number and Repeat Period should not multiply out to be greater than a century.

Example:

R:1 ;do it every period
R:117 ;do it every 117 periods

2. With a Repeat Set field present: The Repeat Number and the Repeat Period become an index of the set. These three fields should be read in conjunction like this: **“Repeat this event every <repeat number> <repeat period> in <set>.”** Ex. “Repeat this event every 4th Thursday in November.”

Although there are many possibilities, we can use an example of holidays to explain what using a set can do for you. Over the period of a year, you may want to schedule events for some holidays. Unfortunately, not all holidays land on the same date every year. By defining a set, along with the repeat number and repeat period, you can choose the first Monday of the month, or whatever you like. Sets can be specific or general.

Example:

R:2 P:Sunday S:May E:Command 1:"1P1PL" ;Every 2nd Sunday in May
Play file #1 to channel pair 1.
R:1 P:Day S:Month E:Command 1: "2P2PL" ;Every 1st day of every month
play file #2 to channel pair 2.
R:2 P:Day S:Month E:Command 1: "4P4PL" ;Every 2nd day of every
month play file #4 to channel pair 4.
R:3 P:Day S:Month E:Command 1: "5P5PL" ;Every 3rd day of every month
play file #5 to channel pair 5.
....

P: Repeat Period

The Repeat Period defines how long to wait. It is multiplied or indexed according to the presence of a Repeat Set field. (See the Repeat Set and Repeat Number sections for details)

Periods can be one of the following:

Sunrise, Sunset
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
Minute
Hour
Day
Year

Notes: Month is not a valid period. If you want to make a monthly schedule, use a combination of repeat number, period and set to do so. See the example in the Repeat Number section for details. You can also specify **sunrise** or **sunset**. In order to take advantage of sunrise/sunset calculations

in the 8TraXX/E, you need to determine you longitude, latitude, and time zone. All three of these settings can be configured remotely using the **Command Protocol** of the 8TraXX/E.

Examples:

R:sunday
R:year
R:sunset

I: Repeat Set

Using the Repeat Set field changes the way Repeat Number and Repeat Period operate. Together they act as an index into the Repeat Set. Please read the Repeat Number section above, for a detailed explanation of the different behaviors they take on when the Repeat Set field is present.

For example, in order to create a monthly schedule, you can specify the Repeat Set as **month**.

Sets can be one of the following:

Month

January, February, March, April, May, June, July, August, September, October, November, and December

Examples:

R:5 P:day S:month ;repeat 5th day of every month
R:2 P:monday S:month ;repeat 2nd Monday of every month
R:4 P:Thursday S:November ;repeat 4th Thursday in November

Restrictions

Since the Scheduler is very flexible, it is easier to explain what it cannot do, than to explain what it can.

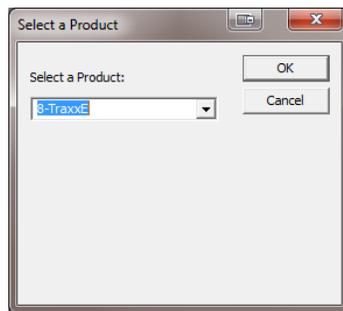
1. Whatever combination you choose between Repeat Number and Repeat Period should not multiply out to be greater than a century. For example, you can't repeat an event every 102 years.
2. One event executes per minute. If you want to execute more than one event, you should launch a playlist with the schedule event. Playlists can execute an unlimited number of commands once they are triggered.

Schedule Builder

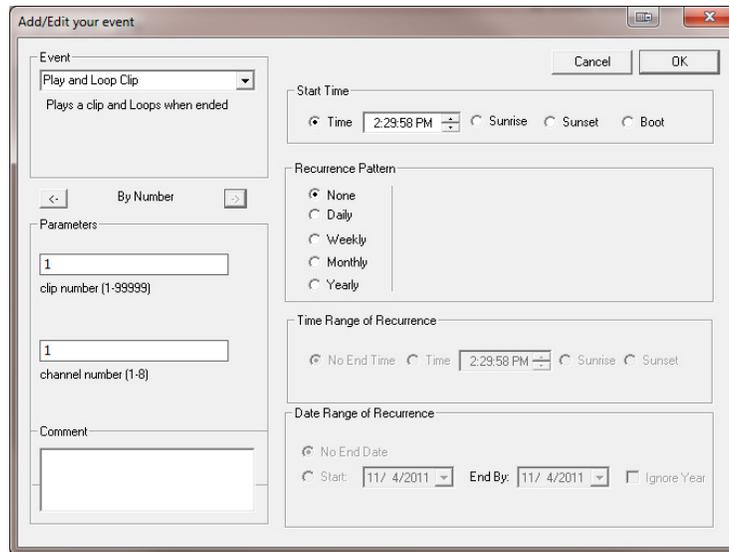
To make creating schedules more convenient, Alcorn McBride provides a free Windows application for making schedules using a graphical interface. This program is called **Schedule Builder**, and it can be downloaded from the software section the Alcorn McBride website at <http://www.alcorn.com/support/software.html>

Here is a step-by-step guide to get started making schedules with Schedule Builder.

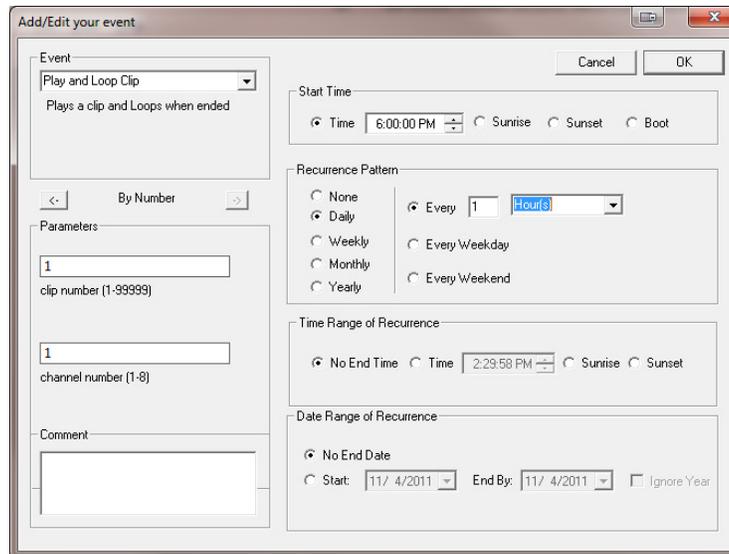
1. Open the Schedule Builder application
2. Select the 8TraXX/E in the list of supported devices and click OK.



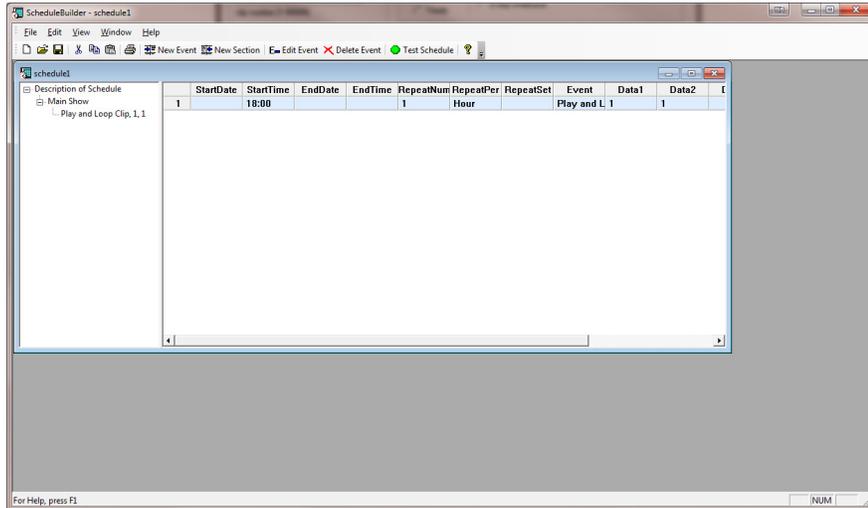
3. The Add/Edit Event window will appear automatically. This is where you select the event you wish to insert into the schedule. Since “Play and Loop Clip” is an event used to play an audio file, we will use it for this example.
4. Using the arrows in the ‘parameters’ box, you can select which type of Play command you wish to use. For example, “By Number” would allow you to enter a clip number. “By File” would allow you to enter the actual file name. If you are using the compact flash card that shipped inside your 8TraXX/E, select ‘By Number’ and enter the number ‘1’ in the field.



5. Select the time and date you wish to execute the command in the Start Date/Time section on the right side of this screen.
6. If you only want the command to be executed once, just click OK. However, if you want the command to be repeated (say every hour or every day) you can specify that in the repeat box on the right side of the screen. For the sake of this example, we are going to repeat this command every hour.



7. Click OK and the event will be added to the schedule.



8. In this screen, you are free to Add/Edit/Delete Scheduled events as needed.
9. Once you are finished creating the schedule, all you need to do is **save** the schedule file as **schedule.scl** and copy it to the 8TraXX/E's Compact Flash card.

Command Protocol

The Serial, Ethernet, Playlist, and Scheduler control interfaces use the Pioneer Alcorn McBride Enhanced protocol. This section discusses the most commonly used commands in detail.

The protocol is ASCII-based. Upper or lower case characters can be used interchangeably. **All commands and responses are terminated with the Carriage Return character. This character is represented by the hexadecimal value of 0x0D.**

Certain commands were added in later firmware releases. In this case, the minimum OS version is indicated. If no minimum version is indicated, the command has always been available. You can obtain the latest firmware version from our website at <http://www.alcorn.com>.

Playback Commands

These commands control the playback operation of the 8TraXX/E. These commands can be directed at either an individual **Channel Pair** or a **Channel Group**.

Channel Group numbers range from 1 to 13 and are always preceded by the letter 'G'. For example,

G5 means Channel Group #5.

Individual Channel Pair numbers range from 1 to 8 and are always preceded by the letter 'P'. For example,

P4 means Channel Pair #4.

Play Toggle - PT

Description:	This command causes the 8TraXX/E to toggle playback of a file on the specified channel. If currently stopped, the file will play. If currently playing, the file will stop.	
Command Bytes:	<n><d><i>PT or " <filename><d><i>PT	
Parameters:	<n> is the ASCII file number between 0-99999 <filename> is the ASCII file name <d> is either C followed by a channel number in ASCII, P followed by a channel pair number in ASCII, or G followed by a channel group number in ASCII <i> is either U for uninterruptible playback or I for interruptible playback. This parameter is optional.	
Message Response:	R	
Comments:	If no sound number or filename is specified, the file specified with the last Search command (see below) will be used. Channel numbers range from 1 through 16, Channel Pairs from 1 through 8, and Channel Groups from 1 through 13. Use "*" for All Channels.	
Examples:	Play toggle file 21 to Channel Pair 4.	21P4PT
	Play toggle file 1 to Channel Group 12.	1G12PT
	Play toggle file "music.mp3" to all channels.	"music.mp3"*PT

Search - SE

Description:	This command causes the 8TraXX/E to preload a file to a specific Channel Pair or Channel Group. If the next Play or Loop command is sent without a sound number or file specified, the preloaded sound number specified by this command is used. This is especially useful for All Channel play commands, where you can leave the sound number unspecified, and the channel number is specified as '*'. The 8TraXX/E will start playback of all channels at the same time, using the assigned files for each channel specified by a previous Search command.	
Command Bytes:	<n><d><i>SE or " <filename><d><i>SE	
Parameters:	<n> is the ASCII file number between 0-99999 <filename> is the ASCII file name <d> is either P followed by a channel pair number in ASCII or G followed by a channel group number in ASCII <i> is either U for uninterruptible playback or I for interruptible playback. This parameter is optional.	
Message Response:	R	
Comments:	Channel Pair numbers range from 1 through 8, Channel Groups from 1 through 13, or use "*" for All Channels.	

Examples: Search file 21 to Channel Pair 4. **21P4SE**
 Search file 1 to Channel Group 12. **1G12SE**
 Search file "music.mp3" to all channels **"music.mp3"*SE**

Play Directory - PD

Description: This command causes the 8TraXX/E to play the files located in a specified directory by automatically generating a playlist with the contents of the directory and starting the playlist on the specified channel, channel pair, or channel group.

Command Bytes: **"<dir>"<d><options>PD**

Parameters: **<dir>** is the directory path. Leave blank with *no quotes* for root directory.
<d> is either **P** followed by a channel pair number in ASCII or **G** followed by a channel group number in ASCII
<options> is one or more of the following:
A – sort ascending
D – sort descending (overrides ascending)
C – sort case-sensitive
– sort by number
? – randomize each directory (overrides all sorting options)
E – embed playlists contained in directory into generated playlist
R – recurse into subdirectories
L – loop the directory by refreshing playlist at end

Message Response: **R**

Minimum OS Version: TraXXOS 1.3.0

Comments: Channel Pairs from 1 through 8, and Channel Groups from 1 through 13. Use "*" for All Channels.

Examples: Play all the files in the "sounds" directory, sorted by number, on ch pair 5.
 "sounds"P5#PD
 Play all the files in the "music" directory, sorted ascending, on ch. group 2.
 "music"G2APD
 Play all the files in all directories, sorted randomly, on all channels.
 ***?RPD**

Pause - PA

Description: This command causes the 8TraXX/E to pause playback of the specified Channel Pair or Channel Group. Playback is resumed whenever a Play command is issued to the paused Channel Pair or Channel Group

Command Bytes: **<d>PA**

Parameters: **<d>** is either **P** followed by a channel pair number in ASCII or **G** followed by a channel group number in ASCII

Comments: Channel Pair numbers range from 1 through 8, Channel Groups from 1 through 13, or use "*" for All Channels.

Message Response: **R**

Examples: Pause Channel Pair 2. **P2PA**
Pause Channel Group 1. **G1PA**

Stop - RJ

Description:	This command causes the 8TraXX/E to stop playback of the specified Channel Pair or Channel Group.	
Command Bytes:	<d>RJ	
Parameters:	<d> is either P followed by a channel pair number in ASCII or G followed by a channel group number in ASCII	
Comments:	Channel Pair numbers range from 1 through 8, Channel Groups from 1 through 13, or use "*" for All Channels.	
Message Response:	R	
Examples:	Stop Channel Pair 2.	P2RJ
	Stop Channel Group 1.	G1RJ

Add Channel Pairs to Channel Group - GR

Description:	This command will create a group from the specified channel pairs. This allows you to control the grouped channel pairs as one.	
Command Bytes:	A<n>P<#,#,#>GR	
Parameters:	<n> is the channel group number (1-13) <#,#,#> are the channels pairs to be added to the group, separated by commas. (up to 8)	
Comments:	To clear the group, issue the command with no channel pairs listed after P	
Message Response:	R	
Examples:	Add channel pairs 2,3,6 to Group 3.	A3P2,3,6GR
	Clear group 6.	A6PGR

Playlists

Play System Playlist

Description:	This command causes the 8TraXX/E to start a playlist as the system playlist (not tied to any particular channel).	
Command Bytes:	<n>PL or "<filename>"PL	
Parameters:	<n> is the ASCII playlist number between 0-99999 <filename> is the ASCII playlist file name	
Message Response:	R	
Comments:	Playlists named ply00000.lst will automatically be started as the system playlist on startup.	
Examples:	Start playlist 3 as the system playlist	3PL
	Start playlist "cmds.lst" as the system playlist	"cmds.lst"PL

Play Channel Playlist

Description:	This command causes the 8TraXX/E to start a playlist on a specified channel pair	
Command Bytes:	<n><d>PO or "<filename>"<d>PO	
Parameters:	<n> is the ASCII playlist number between 0-99999 <filename> is the ASCII playlist file name <d> is P followed by a channel pair number in ASCII	
Message Response:	R	
Minimum OS Version:	TraXXOS 1.2.3	
Examples:	Start playlist 3 as the channel pair 2 playlist	3P2PO
	Start playlist "cmds.lst" as the channel pair 3 playlist	"cmds.lst"P3PO

Stop Channel Playlist

Description:	This command stops a channel playlist	
Command Bytes:	<d>RJ	
Parameters:	<d> is P followed by a channel pair number in ASCII	
Message Response:	R	

Examples:

Stop the channel pair 2 playlist

P2RJ

Control Commands

These commands control some of the operational modes of the 8TraXX/E. Other operational modes and unit configuration can be accomplished by using the LCD menu system on the front panel.

Keylock Enable

Description:	This command is used to disable the front panel buttons of the 8TraXX/E.	
Command Bytes:	B<n>KL	
Parameters:	<n> is 0 to disable buttons, 1 to enable buttons.	
Message Response:	R	
Examples:	Lock front panel buttons.	B1KL

LCD PIN Enable

Description:	This command is used to enable or disable the LCD PIN number lock. When enabled, a 4-Digit PIN number is required to access the front panel menu.	
Command Bytes:	L<n>KL	
Parameters:	<n> is 0 to disable PIN, 1 to enable PIN.	
Message Response:	R	
Examples:	Enable LCD PIN lock.	L1KL

LCD PIN Set

Description:	This command is used to set the 4-digit PIN number that is required to unlock the front panel LCD menu, when enabled.	
Command Bytes:	S<n>KL	
Parameters:	<n> is a 4 digit PIN.	
Message Response:	R	
Examples:	Set PIN to 1234.	S1234KL

Version Request

Description:	This command is used to request the operating system version.	
Command Bytes:	?V	
Message Response:	8TraXX/E x.x.x Where x.x.x is the current version of the installed firmware.	
Example:	Get current version.	?V

Note: The firmware version can also be obtained from the LCD menu.

Soft Reset

Description:	This command issues a software reset to the unit.	
Command Bytes:	XX	
Message Response:	R	
Example:	Reset Unit.	XX

Set Name

Description:	This command gets/sets the user-readable name of the unit.	
Command Bytes:	<n>NM	
Parameters:	<n> is the desired ASCII name of the unit	
Message Response:	R	
Minimum OS Version:	TraXXOS 1.2.5	
Comments:	To get the current name of the unit, send NM without the <n> parameter.	
Examples:	Set unit name to "myTraXX".	myTraXXNM
	Get the current unit name.	NM

Mute/Unmute/Volume Control

Description:	This command causes the 8TraXX/E to mute, unmute, or set the volume level of the specified Channel Pair or Channel Group.	
Command Bytes:	<v><d>AD	
Parameters:	<v> is one of the following (in ASCII): M - Mute U - Unmute T - Toggle Mute # - number between 0(silent) and 10(loudest) <d> is either P followed by a channel pair number in ASCII or G followed by a channel group number in ASCII	
Comments:	Channel Pair numbers range from 1 through 8, Channel Groups from 1 through 13, or use "*" for All Channels.	
Message Response:	R	
Examples:	Mute Channel Pair 2.	MP2AD
	Unmute Channel Group 1.	UG1AD
	Set Volume of Channel Pair 3 to 7/10	7P3AD

Send String

Description:	This command sends an ASCII string from 8TraXX/E to the specified destination.	
Command Bytes:	"<s>"<d><o>SS	
Parameters:	<s> is the string to be sent <d> is the destination, one of: S – Serial U – UDP(over Ethernet) <o> is only required for UDP, and is the destination info in the form of: <XXX.XXX.XXX.XXX>:<PPPPP>:<SSSSS> where, <XXX.XXX.XXX.XXX> is destination IP <PPPPP> is destination port <SSSSS> is source port	
Comments:	The <o> field is not necessary if using Serial destination. You must escape all special characters in the string to be sent (such as quotation marks). For example, "State=\"Playing\"r" would send: State="Playing"r	
Message Response:	R	
Examples:	Send 'Done' out the serial port:	"Done"SSS
	Send 'Done Playing' to 192.168.0.254 port 2639 from port 2640:	"Done Playing"U192.168.0.254:2639:2640SS

Get Channel Group 2 Status

G2?C

Example Response: **2lyell.mp3<h0d>3sing.mp3<h0d>4hi.mp3<h0d>**

Get Channel 12 Status

C12?C

Example Response: **12soundfx.mp3**

Completion Acknowledge Mode

Description: This command is used to select the Completion Acknowledge mode. When the 8TraXX/E finishes playing a file, it can send a Completion Acknowledge response or trigger a command.

There are 2 different completion acknowledge modes possible. This *Completion Acknowledge Mode* remains as long as the 8TraXX/E is powered. *Note:* The unit defaults to no completion acknowledge whenever the unit first powers up.

Message Response: **R**

Command Bytes: **<s>"<c>"<d>AK** Selects advanced channel response mode. This allows you to specify a command to be executed when the status of a channel pair or group changes.

<s> is the channel status to trigger on

- P** for play started
- S** for stopped
- L** for looped
- A** for paused

<c> is the command to perform when this status occurs (such as `\`CH1 Stopped\`SS`)

<d> is either **P** followed by a channel pair number in ASCII or **G** followed by a channel group number in ASCII

RAK Selects simple channel response mode.

CH is sent out the serial port upon a channel pair stopping, where CH = ASCII representation of the Channel pair number (0 through 7). For a completion ack via Ethernet, use the above advanced mode with a Send String command.

Examples: Select simple command response mode:

RAK

Use advanced channel response mode to send "ChPair1Started" over UDP to 192.168.1.100 port 2639 from port 2640 whenever channel pair 1 starts:

P"\`ChPair1Started\`U192.168.5.150:2639:2640SS"PIAK

MIDI Control Protocol

The 8TraXX/E may also be controlled using MIDI control change messages via the 5-pin DIN Connector. The data format is:

31250 Baud, No Parity, 8 bits, 1 Stop bit

Unlike with parallel control, MIDI and RS232 control allow you to play any sound to any channel.

The protocol is in accordance with MIDI Control Change protocol. As shown in the following table, the Status Byte (76) is always followed by two data bytes that determine the channel to be addressed and the activity to be triggered (i.e. Play, Stop, Mute, etc.) All number in the table are decimal.

Message Format: (Status Byte)(Control Number)(Control Value)

Function	Status Byte (control change)	Control Number Range	Control Value Range
Play Channel	176	64 – 71 select channels 1 - 8	0 – 121 selects sound number 1 - 122
Play & Loop Channel	176	72 – 79 select channels 1 – 8	0 – 121 selects sound number 1 - 122
Stop Channel	176	80 – 87 select channels 1 – 8	0
Mute /Unmute Channel	176	88 – 95 select channels 1 – 8	0 = Mute channel 127 = Unmute channel
Disable/Enable Front Panel	176	122	0 = Disable buttons 127 = Enable buttons
Stop All Channels	176	123	0

Examples:

Play sound 1 to channel pair 2	176,65,0
Play and loop sound 4 to channel pair 5	176,76,3
Stop channel pair 4	176,83,0
Unmute channel pair 6	176,93,127
Stop all channels	176,123,0

Error codes

Error Code	Description	What to Do:
E00	Communication Error	Check your serial connections, baud rate, etc.
E01	Hardware Error	Contact Factory.
E04	Invalid Command or Command Format	Verify your command with the Command Protocol section.
E06	Invalid Command Argument	Verify your command with the Command Protocol section.
E11	Media Not Present	Compact Flash installed? Formatted? Compatible brand?
E12	Search Error	Selecting the correct file? Is the file on the card? Is it named correctly?
E22	System Busy	Wait for system to be ready for command.
E99	Unspecified Error	Contact Factory.

How To Update Firmware

Under certain circumstances, it may be necessary to update the 8TraXX/E's firmware. Do not update the firmware unless there is a specific need to do so.

Standard Firmware Update

1. Download the latest firmware for the 8TraXX/E product from <http://www.alcorn.com/support/firmware.html>
2. Copy the new firmware file to your Compact Flash card. The file must be named "OS.NEW" if updating only one unit or "FACTORY.NEW" if updating multiple units using the same CF card. You may copy it directly using a CF card reader or over a network via FTP.
3. Reset this product by either power-cycling or sending the reset command. It is also possible to begin the update process from the LCD System menu.
4. When the CF card is detected after loading, the new firmware file will be located and the update process will begin. **Do not remove power from the unit during the update.**
5. When the LCD display reads "Update Complete" and the file access LED is off, the firmware update is complete. If your firmware file was named "OS.NEW" it will be renamed to "OS.SAV" and the unit will automatically restart.
6. If the firmware update fails (i.e. power was interrupted during update), please follow the directions under "Firmware Recovery".

Firmware Recovery

1. Remove power from the unit.
2. Set DIP Switch 3 to the ON position.
3. Download the latest firmware for this product from www.alcorn.com.
4. Copy the new firmware file to your Compact Flash card. The file must be named "OS.NEW" if updating only one unit or "FACTORY.NEW" if updating multiple units using the same CF card. You must copy the file directly to the CF card using a CF card reader.
5. Insert the CF card, with the firmware update file, into the unit.
6. Apply power to the unit.
7. The new firmware file will be located and the update process will begin.
8. When the LCD display reads "Update Complete" and the file access LED is off, the firmware update is complete.
9. Remove power from the unit.
10. Set DIP Switch 3 to the OFF position.
11. Apply power to the unit.

Troubleshooting Guide

Q: Triggering using the discrete inputs, the front panel LEDs do not turn on and the unit does not execute the assigned command.

A: Verify that the Voltage/Contact Closure DIP switch is properly configured.

Q: I've copied several files from my PC onto a Compact Flash, but they do not play.

A: The Compact Flash may have been pre-formatted in a way that is incompatible with the 8TraXX/E operating system. Be sure you have saved your files, then format the card as Microsoft FAT32.

Q: Audio playback is too fast or too slow.

A: All files played on the 8TraXX/E must be encoded to use the same sample rate (i.e all 44.1KHz or all 48KHz, etc.). You cannot mix and match sample rates.

Q: I hear snaps and pops in the playback audio, especially when playing all of the channels.

A: Make sure that your maximum encoded bitrate is no greater than 192kbps.

For the answers to other questions, check out the Alcorn McBride Knowledge Base at <http://www.alcorn.com/kb>

If you don't find it there, please email our technical support staff at support@alcorn.com

Specifications

Audio	Tracks: 8 Stereo unbalanced Format: MPEG-1 Part 3 (or simply, MP3) defined in ISO/IEC-11172-3 Maximum Bitrate: 192kbps Sample Rate: 44.1Khz or 48Khz DAC Resolution: 16 Bits Frequency Response: 10 to 20 Khz +/-0.1 dB (dependent on MP3 encoding) Line Output Level: Unbalanced, 1.15Vrms into 20K Line Output Load: 10K Ohm Minimum, 100pF Maximum
Playback Time:	Approximately 1 MByte per minute per channel with excellent audio quality at 128kbps
Controls:	Discrete: 8 programmable and configurable contact or voltage (12-24vdc) inputs Serial: DB9M RS-232 9600,N,8,1 MIDI: 5-Pin DIN Ethernet (10/100Base-T, UDP control, FTP file transfer, NTP time protocol)
Connectors:	DB-9M serial RS-232 connector RJ45 jack for Ethernet connection RCA type connectors for unbalanced audio output Phoenix Type screw terminals for discrete controls Threaded barrel connector for power DIN 5/180 connector for MIDI
Front Panel:	8 Direct-play pushbuttons Rotary encoder with LCD menus 16 channel status LEDs, Power LED, Comm & Status LEDs. Compact Flash Socket
Power:	9 VDC to 36 VDC at 1 Amp max on threaded barrel connector Class 2 Power Adapter for 115 or 230 volts included
Physical:	Size: 19" W x 1.719" H x 10.88" D (48.3 cm W x 4.44 cm H x 27.64 cm D) Weight: 8.5lbs. (3.9kg) Environment: 0°C (32°F) to 38°C (100°F) 0-90% Relative Humidity
Compliance:	CE, UL, CSA, WEEE, RoHS

Index

- AMI Terminal, 19
- Bitrates, 15
- Channel Encoding, 15
- Channel Status LEDs, 10
- Command Protocol, 38
- Communication LED, 10
- Compact Flash, 9, 15
- Completion Acknowledge Mode, 48
- Configuration DIP Switches, 13
- Control Commands, 44
- Control Methods, 19
- Defaults, 14
- DIP Switch
 - Ground Lift, 13
- Discrete Input Control, 20
- discrete inputs, 12
- Error codes, 50
- Ethernet Control, 19
- File Access LED, 10
- file naming, 15
- Firmware, 51
- front panel, 9
- FTP, 14, 17
- Gateway, 13, 14, 17
- Ground Lift, 13
- Input LEDs, 10
- interruptible, 16
- IP Address, 14, 17
- ISO/IEC-11172-3, 15
- Keylock Enable, 44
- LCD display, 9
- LCD PIN, 14, 44
- Loop Play, 39
- Manage Channel Groups, 23
- Manage Input Groups, 21
- Menu, 11
- Menu Knob, 9
- MIDI, 13
- MIDI Control Protocol, 49
- MPEG-1 Part 3, 15
- Mute, 46
- Mute All Button, 10
- Noise, 13
- On Startup Trigger Type, 24
- Password, 14, 17
- Pause, 41
- PIN number, 9
- Play, 39, 40, 41, 43
- Play Toggle, 40
- Playback Commands, 38
- Playlist Builder, 28
- Playlists, 25
- power input, 14
- rear panel, 12
- RJ45, 12
- RS-232C connector, 12
- Sample Rates, 15
- SanDisk®, 15
- Schedule Builder, 29, 35
- Search, 40
- Serial Control, 19
- Set Name, 45
- Soft Reset, 45
- Specifications, 53, 54
- Status Request, 47
- Stop, 41, 42
- Subnet Mask, 12, 13, 14, 17
- technical support, 6
- Test Channel Buttons, 9
- test sounds, 8
- TraXX Configuration Software, 12, 21
- Troubleshooting, 52
- UDP Port, 14
- uninterruptible, 16
- UnMute, 46
- Update Firmware, 51
- Version Request, 45