Sound Controller™

OPERATIONS MANUAL

Version 1.1d

INTRODUCTION

The Model Train Technology™ *Sound Controller™* provides an extremely simple plug-and-play system for adding sound animation to your layout.

The main features are:

- Record and load your own sounds from PC or MAC.
- Up to four separate sound tracks
- 4MB sound storage (about 4 minutes total)*
- Four triggers – by sensor, push button or DCC.
- Each channel has its own volume setting
- Play once or repeat a sound
- Have a sound interrupt other sounds.
- Built in speaker with sound baffle
- External speaker connections
- Four channel DCC Accessory Decoder, address settable
- Any DC voltage from 5-12VDC

*The typical encoding standard for MP3 files is 128 kilobits per second. This works out to about **1 megabyte (MB) per minute of sound**.

OVERVIEW

The MTT Sound Controller provides a new approach to adding sound "events" to your layout. Up to now, sound cards, sound boards or components had one sound and it was either on or off, and you could not change the sounds. For some applications on the railroad that is fine and appropriate.

However, there are two aspects of this situation I wanted to change. The first one is that I wanted to be able to play my own sounds whether I recorded them myself or found them on the internet. Secondly, I wanted the sounds to interact with each other in a simple and intuitive way. What do I mean by this?

Here is an example:

At a station, background noise of the station can be heard. As a train approaches the station and diverges from the mainline to the station track, it trips a sensor. An announcement of the train's arrival plays: "Amtrak 1043 now arriving from Orlando on Track 1". This sound "interrupts" the background sound and plays once.   When finished, the background sound resumes (in repeat mode).

When the train is ready to leave, you push a push button that triggers the departure announcement which once again interrupts the background sound. "Amtrak 1043 for

Jacksonville, now leaving on track 1. All Aboard!!". After the announcement which plays once, the background sounds resume.

Since you are controlling the train as the engineer, you may now proceed and begin to leave the station. However, there is a road crossing in front of you so as you hit the detector the Crossing Flashers begin to flash (controlled by our Signal Controller). The same detector signal wire is connected to one of the inputs on the Sound Controller for the crossing bell. The Bell sound interrupts the station background sounds and plays continuously until the train has safely passed the road crossing. Then the Detector times out, releases (stops) the bell sound and we're back to background sounds at the station.

(By the way, the station background sound can also be triggered by a toggle switch on/off or by using our Precision Detector for any train motion near the station OR, by facing it outward so that when someone is near it plays.)

What is so great about this Sound Controller is there is NO programming required, and the setup is darn simple. Furthermore, those announcements and other sounds at the station are ANYTHING you want them to be because they are your recordings.

There were a few other things about the sound boards/cars that were either sold separately or as part of a crossing flasher

for example. It was often confusing which terminals were for power, what voltage do they require, what kind of speakers how to trigger them, etc. Hopefully we have removed that confusion and, just like our Signal Controller, you should be able to simply plug it in and go.

THEORY OF OPERATION

The Sound Controller has a single MP3 file player and therefore, can only play one sound at a time. When a sound is playing the blue LED will light and will shut off when a sound is finished playing.

Each sound can have one or more of these behaviors:

1. Play once and stop, OR play continuously while the trigger is ON

2. Interrupt a currently playing sound or No Interrupt.

Also,

- Once a Play-Once sound has started, it will play to the end even if you release the trigger.

- An interrupt cannot interrupt another interrupt. (got that?)

- No wishing for more wishes.

- If multiple similar triggers are activated simultaneously the priority will play from sound 1 to sound 4.

In the example, here is the configuration we used:

1. Crossing Bell	Repeat Play Interrupt	Precision Detector
2. Arrival Announcement	Play Once Interrupt	Precision Detector
3. Departure Announcement	Play Once Interrupt	Push Button
4. Background	Repeat No Interrupt	Toggle Switch

There are up to four sounds and a trigger for each sound. On the back of the Controller there is a green terminal block with five ports. The port closest to the black round speaker jack is COMMON. If you want to trigger a track manually, connect this ground through a single pole switch to the track you want to controller. For testing purposes, you can simply touch a wire from ground to any of the tracks and they will play. Don't worry if you accidently connect other ports together with the

wire. As long as you don't put power on these ports you can't harm them.

The trigger behaviors are set via Dip switches on the bottom of the controller. The first four are to set the Play Once or Repeat mode for the sounds. The switches 5-8 (left to right) set the trigger Interrupt. Default is OFF (no trigger).

ADDING SOUNDS TO YOUR SOUND MODULE

One of the chips on the Sound board inside the case acts like a folder and when you plug the Sound Controller into your computer via the USB cable, that folder will pop up on your desktop.

To move sounds to the Sound Module simply drag and drop those files from their source location on your "PC" into the folder.

SOUND FILES MUST BE .mp3 FILES

To remove a sound, we suggest you move it to your desktop via drag and drop. This copies the file to the desktop but does not remove it form the folder. Once you have that copy, then delete the file in the foler.

Some guidelines:

1. Only four files will play, and they will be the first four files you load into the folder. A fifth file will be ignored.

2. If you try to move a file that is too big for the folder your operating system (Windows/MAC) will let you know and complain. We don't control that.

3. <u>The order in which the files are load into the folder determines their order of play</u> on the Sound Controller. Sorting them in the folder, changing their names, etc. will have NO EFFECT. If you delete a sound file that was previously track 1 and then you copy it back, it will now be track 4 – the last track copied in. The behavior setting follow the track number, not the sound.

4. MAC users – when you plug in the Sound Controller, the MAC installs some files in a new folder called (**.fseventsd**). inside the main folder. This will be invisible to you if you only use a MAC, then you should not worry about it. If you then connect the Sound Module to a PC, it's very likely you will then see this extra folder. You can delete it.

5. The files must be .MP3 files and recommend that they are 128kbt. Here is a link to a sound convert program on the internet. BEWARE OF FREE PROGRAMS ON THE INTERNET. I've used this one for years and so far, no problems.

6. You can have up to four sounds, but you don't have to have four sounds. If you want a single 4-minute sound you can load a single sound and use trigger #1.

HOW TO CREATE .MP3 FILES

I will not be able to explain all the details but rather, I can give you some general ideas about how to record sound files and get them into MP3 format. There are also web sites that let you subscribe to their library, and some are free.

Using your Phone:

All smart phones have an audio recording app. These will usually create an .M4a file which is an Audio only version of MPEG-4.   These will usually have higher quality than an equivalent MP3 file – and therefore the files are larger. The first portable song players were MP3 and our sound card is an MP3 player so we need to convert the file. It's fairly simple as things go on MACs and PC. The hardest part is getting the audio file from your smart phone to the desktop.

Once you record a sound on your phone you will want to move that file onto your desktop. You can email it to yourself, text it or use what's called AirDrop on the MAC. Get your kids to help you with this.
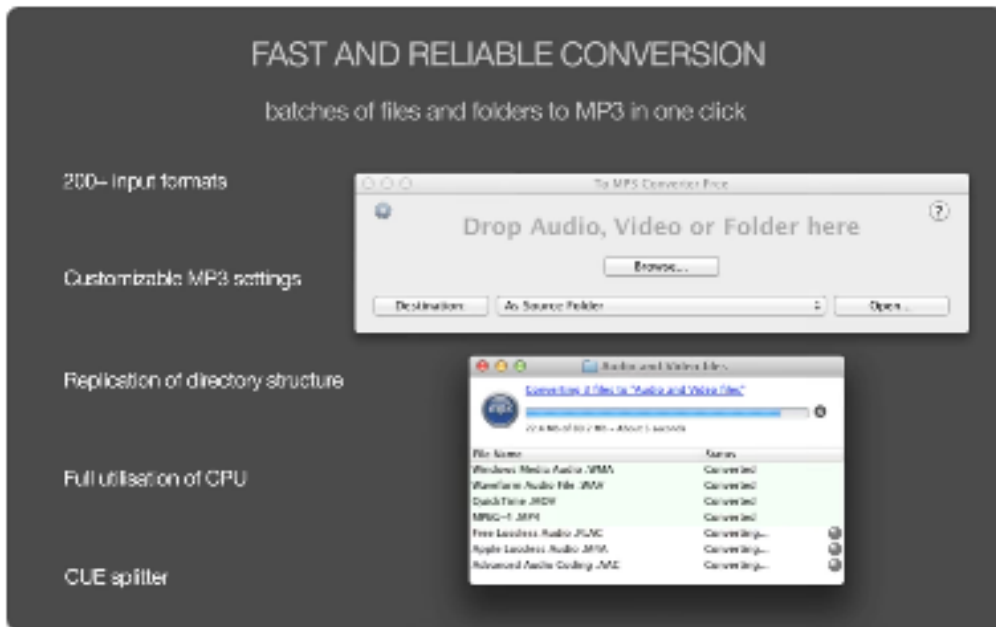
Once the file is on the desktop you will need to use a "Converter". Type "to mp3 converter" into Google or into the

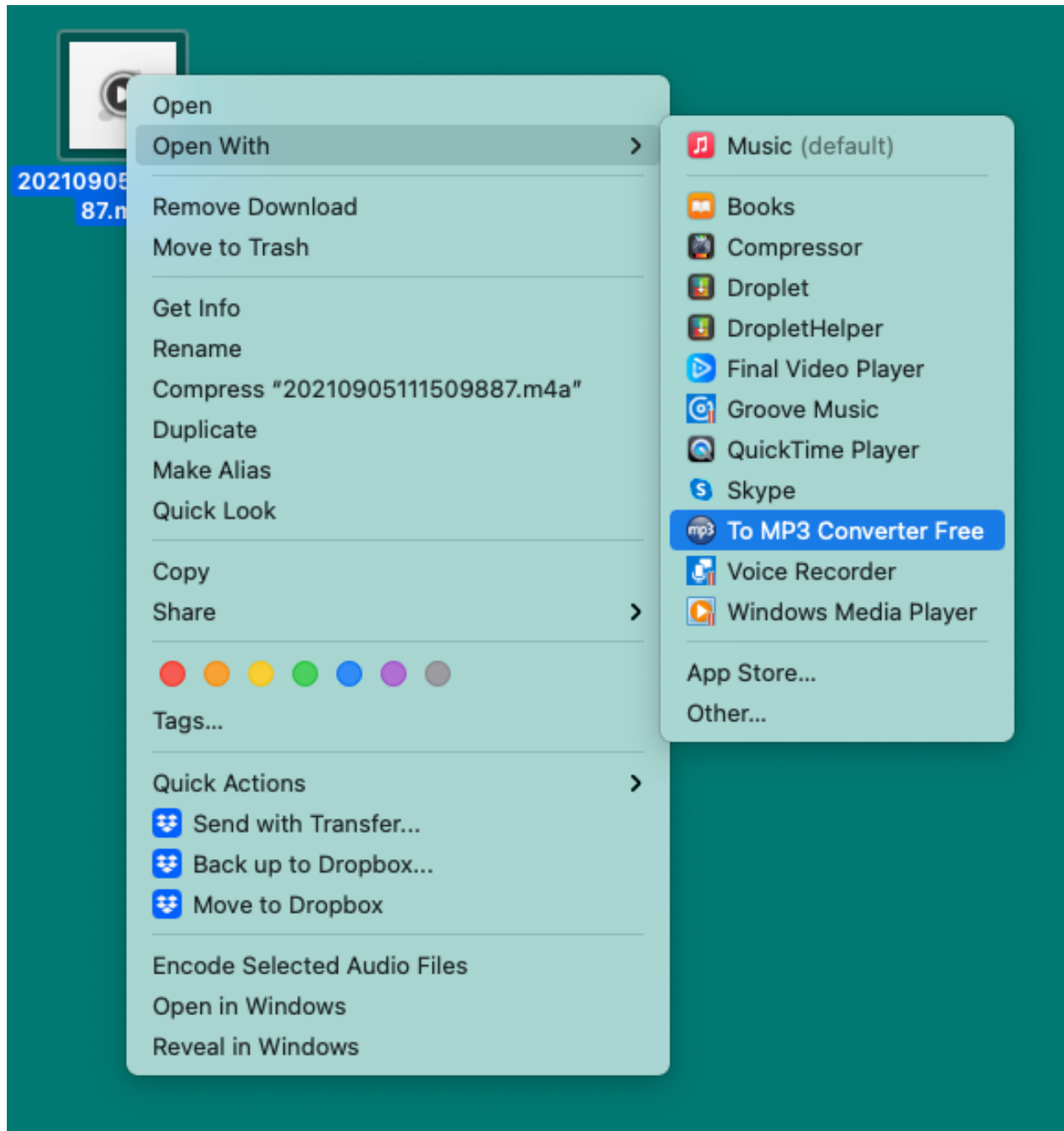MAC App Store and you will find at least a dozen choices. The one I use on the MAC has this logo:

Once this app is installed, I can right click on the sound file I want to convert, and a window pops up and asks me how I want to OPEN the file. Use OPEN WITH and choose:

To MP3 Converter Free

Once you choose the To MP3 Converter Free it will open your source ma4 files, convert it to MP3 and save it back to your desktop with the same name but with an .mp3 extension on the end. That .mp3 files is the one to load into the MTT Sound Controller.

Another step you can take PRIOR to the conversion is to edit the file. I do this to clip the dead space at the beginning and end of my original recording. Both MAC and PC have a way to do this. On MAC, open the .ma4 files with the QuickTime player and the use trim mode from the menu. The save the file with a new name. Then convert the newly save file to .mp3.

On the PC the easier process I found is to add a plugin to the Windows Media Player. This plug in add the trimmer function that is missing.   Here is the link to that plugin.

▷ WMP Trimmer Plugin ➡ Windows Media Player Plugin (solveigmm.com)

Once this is installed on your Windows machine you use the same approach – that is – OPEN WITH and use Windows Media Player. The trimmer plug in will have been added and chose EDIT to edit the file. This is only a free version and has limited functionality until you buy a license.

DCC OPERATIONS

The **Sound Controller** can respond DCC Accessory messages just like your turnout controllers.

By default, and industry standard, the **Controller** DCC address is set to 3. You can change it to any valid accessory switch address between 1 and 2044. When the **Controller** receives a DCC turnout command (thrown or closed) that matches the **Controller** address, it will activate the trip function of the **Sound Controller** and start the playing the sound on that track. Since there are four tracks per **Sound Controller,** the address set is for the first track, then followed by the 3 remaining tracks. An address of 3 set the Sound Controller tracks as addresses 3,4,5,6. An address of 27 would set the tracks to 27,28,29,30.

- Closed means Off and Thrown is On.

SETTING THE CONTROLLER ADDRESS

With the Controller in the non-tripped state, press and hold the select button for about 10 seconds. Within 1 second of beginning to press the button, all the signal lights will go out.

Continue to hold the select button until the light comes back on and begins to blink. Then release the button. This indicates that the *Controller* is ready to accept a new address.

To set a new address, select the Accessory/Turnout number that you want to use on your DCC hand controller. This can be a number from 1-2044. Using your DCC hand controller, enter the number and then press the appropriate command to set a CLOSED or THROWN switch event. Either closed or thrown will work. This will be slightly different depending on the brand of DCC system that you are using.

To exit setting the address mode WITHOUT changing it, press the select button once. The Controller will return to its ready state.

As soon as you select CLOSED or THROWN, the *Controller* will flash 4 times and the lights will go off. The *Controller* is now set to the new address.

While DCC is connected and active, DCC commands will override the input signal. In other words, you can use detectors OR DCC to trigger the *Controller* but not at the same time.

ELECTRONICS AND STATIC ELECTRICITY

The **MTT PRECISION DETECTOR™ - Trackside** circuit board and components are exposed when the cover is off. Electricity can be dangerous. Static electricity can cause component failure. Scuffing along a carpet and then touching one of the component connectors can cause a static spark. These components are fairly rugged – some designed for the automotive industry. Just be mindful of the risk. The current on the board will not harm you if the board is powered and operated as per the instructions.

ONE YEAR **MANUFACTURER WARRANTY**: We warrant this **product** to be free from defects in workmanship and materials, under normal residential use and conditions, for a period of one (1) year for the original invoice date. Shipping and handling fees are to be paid for by the customer.

LIMITATION OF LIABILITY

UNDER NO CIRCUMSTANCE SHALL COMPANY OR ITS AFFILIATES, PARTNERS, SUPPLIERS OR LICENSORS BE LIABLE FOR ANY INDIRECT, INCIDENTAL, CONSEQUENCIAL, SPECIAL OR EXEMPLARY DAMAGES ARRISING OUT OF OR IN CONNECTION WITH YOUR USE, OR INABILITY TO USE THE PRODUCT, WHETHER OR NOT THE DAMAGES WERE FORESEEABLE AND WHETHER OR NOT COMPANY WAS ADVISED OF THE POSSIBLITY OF SUCH DAMAGES. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, COMPANY'S AGGREGATE LIABILITY TO YOU SHALL NOT EXCEED THE AMOUNT OF THE PRODUCT. THE FOREGOING LIMITATION WILL APPLY EVEN IF THE ABOVE STATED REMEDY FAILS OF ITS ESSENTIAL PURPOSE.

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