



DCC-Equipped Quick Start Guide



Congratulations on the purchase of your new Athearn® locomotive with SoundTraxx® Tsunami® Digital Sound Decoder™ installed. This state-of-the-art Digital Sound Decoder (DSD) will provide all the pleasures of high quality, digital onboard sound and the benefits of today's DCC (Digital Command Control) technology.

IMPORTANT:

This Quick Start Guide assumes that you have some understanding of, or experience with, other SoundTraxx Digital Sound Decoders. It covers the differences you may need to know between these decoders and any you may have previously used.

If you are new to SoundTraxx Digital Sound Decoders, you should start with the User's Guide which will walk you through the various aspects of programming your Tsunami decoder, as well as some tips on troubleshooting. For the power user, the Tsunami Technical Reference will provide a list of all the CVs available for use with Tsunami decoders and their exact function and make-up for those who wish to have a complete reference for advanced programming techniques. These documents are available online at www.soundtraxx.com, or at <http://www.athearn.com/dcc>. Please note that you need to have Adobe® Acrobat Reader installed on your computer to open and print these files. This is available as a free download from www.adobe.com.

Tsunami Features and Specifications

Tsunami Digital Sound Decoders have a great number of features designed to enhance your operating experience. Many features operate similarly to previous SoundTraxx decoders, but some features will require a little explanation.

Some of these features include:

Decoder Features

- True 16-Bit Digital Processor
- Hyperdrive Technology, which includes features such as high-resolution speed steps, high-frequency PWM drive, and torque control
- Back EMF for consistent operating speeds
- Hyperlight lighting effects reproducing popular prototypical lighting such as beacons, Mars lights, firebox flicker, and Rule 17 lighting.

Sound Features

There are many sound features found in your new Athearn® Tsunami®-equipped locomotive, which can be adjusted to suit your personal preferences. You can also adjust the volume of each sound effect individually with the Tsunami's® built-in mixer. The addition of a short horn effect will allow you to more easily incorporate signaling practices into your operations. There is also the option of replacing the short horn function with an alternate horn for the engine equipped with two horns. For those with limited function keys, you may wish to enable the automatic signal feature, which will activate stop, forward, reverse, and grade crossing whistle signals automatically in response to train motion.

More Sound Features

- 1-Watt Audio Amplifier
- Adjustable Reverb
- Adjustable Volume Controls
- Seven-Band Equalizer
- Auto-Notching™ allows the engine RPMs to rev up and down automatically in response to locomotive speed.
- Optional manual notching allows you to control the engine RPMs independent of locomotive speed for more realistic operation.

Diesel Sound Effects

- Engine Exhaust (8 notches)
- Engine Shutdown
- Three Different Airhorns
- Compressor
- Pop-Off, or Poppet Valve
- Brake Squeal
- Radiator Fans
- Turbo Whine (some models)
- Engine Startup
- Bell
- Short Airhorn
- Dynamic Brakes
- Brake Release
- Coupler Clank

Let's Get Started!

Your SoundTraxx Tsunami has been installed with all CVs pre-programmed and optimized for your locomotive so you can begin using your model immediately without having to worry about what adjustments to make. The decoder is set to operate immediately using either a 12 volt DC power pack or NMRA-compatible DCC command station.

Operating with DCC

Your locomotive will respond to address 3 as it would if you had just installed any DCC decoder. Since the N-Scale decoders have two, rather than four lighting outputs, we have made some changes to the standard function assignments so that those using command stations with limited functions keys can access some additional sound functions. The User's Guide will give you all the information you need to adjust your decoder to suit your taste.

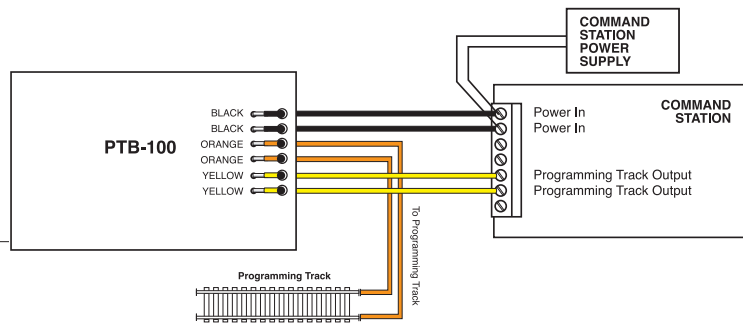
For now, simply set your controller to Locomotive 3, place the locomotive on the mainline and away you go!

Sound Decoder Function Assignments		
Function Key	HO Scale Default Effect	N Scale Default Effect
F0	Headlight	Headlight
F1	Bell	Bell
F2	Whistle / Horn	Whistle / Horn
F3	Short Whistle / Horn	Short Whistle
F4	Dynamic Brakes (Diesels Only) / Steam Release (Steam Only)	Dynamic Brakes (Diesels Only)
F5	Effect Light (If Applicable)	Brake Squeal / Release
F6	Effect Light (If Applicable) / Number Board Light (Steam Only)	Coupler
F7	Headlight Dimmer	Headlight Dimmer
F8	Mute	Mute
F9	Brake Squeal / Release	Not Assigned
F10	Coupler	Not Assigned
F11	Injector (Steam Only)	Injector (Steam Only)
F12	Water Stop (Steam Only)	Water Stop (Steam Only)

Programming and Reading CVs

Some command stations allow you to read a Configuration Variable (CV) during Service Mode Programming, which is useful to verify its current setting. If you have trouble reading or verifying CVs, the problem may be due to the design of your command station and not the Tsunami decoder itself. Tsunami and all other decoders communicate back to the command station using what's called an acknowledgment pulse, which is defined in NMRA RP-9.2.3 as "an increased load on the programming track of at least 60mA for at least 5ms." Like most decoders, the Digital Sound Decoder (DSD) generates the acknowledgment pulse by momentarily applying power to the motor.

If your DSD is otherwise working properly (i.e., responds properly on the mainline to speed and direction commands) but your command station is having trouble reading CV data from the DSD, it may be due to incompatibilities between the electrical requirements of the DSD (which are different from conventional decoders due to the added audio circuitry) and the electrical characteristics of your programming track. In such an event, you will need to use a Programming Track Booster, such as SoundTraxx PTB-100 (P.N. 829002). The PTB-100 amplifies the programming track signals to levels that work best with Tsunami. It is easy to install (see below) and inexpensive. An advantage to using the PTB-100 is that it also provides short circuit detection and some helpful diagnostics. It works well for all other SoundTraxx decoders, too.



General Wiring Diagram for the SoundTraxx PTB-100

Since CVs are pre-programmed for individual models to achieve the best possible sound and operation, default values will vary from locomotive to locomotive. You can find the default values for each model listed on the SoundTraxx website (www.soundtraxx.com).

Note: If you are having difficulty with CVs, and wish to restore the model to its factory default settings, program CV 8 to a value of 8, or CV 30 to a value of 2. Please be aware that this will reset ALL CVs back to their original factory values.

Operating in Analog Mode Using a DC Power Pack

While the sound system installed in your Athearn model is first and foremost a DCC decoder, it may be used on a DC powered layout. When analog mode is enabled, you may control your locomotive using an ordinary power-pack though operation will be a bit different than when running non-decoder equipped locomotives.

With the power pack's throttle set to zero, Tsunami will be silent as it has no power. The throttle must be turned up to around 5 volts or so to provide sufficient voltage to power up the internal circuitry of the decoder. At this point, you will hear the prime mover start up and settle into a steady idle.

Increasing the throttle further to around 7.5 volts or so will set the locomotive in motion, increasing speed as the throttle is increased. **Note that the direction can only be changed when the locomotive is stopped.**

When operating in analog mode, be careful not to exceed the decoder's input voltage rating of 27 volts. When your track voltage exceeds 21 volts, Tsunami will automatically shut off the sound and motor and flash the front and rear lights: back down on the throttle immediately.

Important: Tsunami will work best in analog mode when using a high quality, electronically regulated power pack, preferably one that supplies smooth, filtered DC power. Older rheostat style power packs and pulse power packs will result in erratic and unreliable operation and should not be used with the Tsunami sound decoder. If your power pack provides a Pulse power switch, leave it in the 'Off' position.

Depending on the quality of the power pack's track voltage, some automatic sound functions such as the grade crossing whistle may require a higher sensitivity setting than needed for DCC operation to avoid continual triggering of the sound effect.

Automatic Sound Configuration Register

CV 197 selects which automatic sound functions are enabled when the decoder is operating in analog or DC mode. This has been preset for the Automatic Grade Crossing Signal and Automatic Bell.

Automatic Grade Crossing Signal - The Tsunami will play a grade crossing signal (two long whistle / horn blasts, followed by a short and another long) triggered by a sudden upward spike in the throttle.

Automatic Bell - The sound decoder will turn the bell on and off at preset speed points such as might occur when passing through a yard or station platform.

There are two additional sound features that can be programmed for automatic operation. (You will need access to a DCC system to enable these features.)

Automatic Whistle / Horn Signals - When activated, the sound decoder will produce the correct whistle / horn signal appropriate for the direction of travel whenever the locomotive is stopped or started:

One short toot = Stop
Two Medium Toots = Forward
Three Short Toots = Reverse

Automatic Brake Squeal - The brake squeal can be activated by slowing the train down by a predetermined amount.

Additional information about automatic sound functions can be found in the User's Guide.