



**Tsunami® Digital Sound Decoder**

**User's Guide Addendum  
for the Cummins QSK19C x3 (GenSet)**

Software Release 1.15

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# All Aboard!

## Overview

Congratulations on the purchase of your SoundTraxx® Tsunami® Digital Sound Decoder™. This **User's Guide Addendum** will provide you with the unique information you need for proper operation of the Tsunami for the Cummins **QSK19C x3 (GenSet)**. For the power user, the Tsunami **Technical Reference** will provide a list of all the CVs available for use with Tsunami decoders, as well as their exact functions and make-ups for those who wish to have a complete reference for advanced programming techniques.

Technical Bulletins and Application Notes covering various topics are also published from time to time, and these may be downloaded free of charge from our website at [www.soundtraxx.com](http://www.soundtraxx.com).



# Operation

## Using Your Tsunami Cummins QSK19C x3 (GenSet) Digital Sound Decoder

Your SoundTraxx Tsunami with multiple Cummins QSK19C prime movers for GenSet Locomotives has been shipped with all the CVs pre-programmed so you can begin using your locomotive immediately without having to worry about making adjustments. However, the software for this decoder is as unique as the prototype, and we have several special features to enhance the experience of running your GenSet.

This decoder has individual sound channels for each of the locomotive's three prime movers. We recorded this decoder's sounds directly from the Cummins QSK19C prime movers of the NRE 3GS-21B Locomotive. NRE released the prototype in 2007 to meet California's air quality standards by using Generator Set, or GenSet, technology with multiple prime movers that are switched on and off as needed for power. This setup results in significant fuel savings and emission reductions.

### Operation Overview

This decoder has operational features specific to the prototype. The following section describes these features and their uses. Additional programming information can be found in the Tsunami Diesel Technical Reference.

### Prime Mover Operation

Using extensive research, the operating characteristics of this decoder have been set up to correctly match the operation of the prototype prime movers. For example, when the locomotive is idling, only one prime mover is switched on. The other prime movers kick on and off progressively as needed when the locomotive throttle is notched up or down. When notching down, the prime movers go to idle and then have an internal timer to simulate "cooling off" as they shut down. Please refer to the Prime Mover Operation Chart on the next page for throttle notch settings.



# Operation

Throttle	Prime Mover 1	Prime Mover 2	Prime Mover 3
<b>Off</b>	Off	Off	Off
	Startup		
<b>Notch 1</b>	1200 RPM		
	1200 > 1500 Rev Up		
<b>Notch 2</b>	1500 RPM		
	1500 > 1800 Rev Up		
<b>Notch 3</b>	1800 RPM		
		Startup	
<b>Notch 4</b>		1500 RPM	
<b>Notch 5</b>			
		1500 > 1800 Rev Up	Startup
<b>Notch 6</b>		1800 RPM	1500 RPM
			1500 > 1800 Rev Up
<b>Notch 7</b>			1800 RPM
		1800 > 2000 Rev Up	1800 > 2000 Rev Up
<b>Notch 8</b>		2000 RPM	2000 RPM
		2000 > 1800 Rev Down	2000 > 1800 Rev Down
<b>Notch 7</b>		1800 RPM	1800 RPM
			1800 > 1500 Rev Down
<b>Notch 6</b>		1800 > 1500 Rev Down	1500 RPM
		1500 RPM	Shutdown
<b>Notch 5</b>			Off
<b>Notch 4</b>			
		Shutdown	
<b>Notch 3</b>		Off	
	1800 > 1500 Rev Down		
<b>Notch 2</b>	1500 RPM		
	1500 > 1200 Rev Down		
<b>Notch 1</b>	1200 RPM		
	Shutdown		
<b>Off</b>	Off		



# Operation

## **CVs Unique to the Cummins QSK19C x3**

The following CVs are unique to this decoder.

### **CV 112 Air Compressor**

The model contains an air compressor that is unique to the GenSet Locomotive and can be activated through a function key or turned on automatically in CV 112. The air compressor sound is premixed with one of the prime mover sound channels, and therefore does not have its own volume setting that can be controlled with CV 132. However, the compressor is still activated using function 10 just like any other Tsunami decoder.

### **CV 133 Dynamic Brake**

Since the prototype does not have a dynamic braking system, this sound is not included on the decoder. CV 133 (dynamic brake volume) is not used, and bits 6 and 7 are not used in CV 116. Function 4 on your DCC cab at default does not activate a function.

### **CVs 171, 172, 173**

#### **Prime Mover Reverb Effect Send Levels**

CVs have been provided to control the reverb effect send level for each prime mover. The default values are set to 0. The CVs are:

CV 171 Prime Mover 1 Reverb Effect Send Level

CV 172 Prime Mover 2 Reverb Effect Send Level

CV 173 Prime Mover 3 Reverb Effect Send Level

### **CVs 131, 145, 146, 147 Volume Settings**

Each prime mover has its own independent volume (CVs 145, 146 and 147) that can be set to a value between 0 and 255. CV 131 is a master exhaust volume that shifts the three prime mover volumes up and down proportionally the same way that the overall master volume (CV 128) works. They are currently defaulted to the following levels:

CV 131 = 180 Master Exhaust Volume

CV 145 = 150 Prime Mover 1 Volume

CV 146 = 200 Prime Mover 2 Volume

CV 147 = 250 Prime Mover 3 Volume