

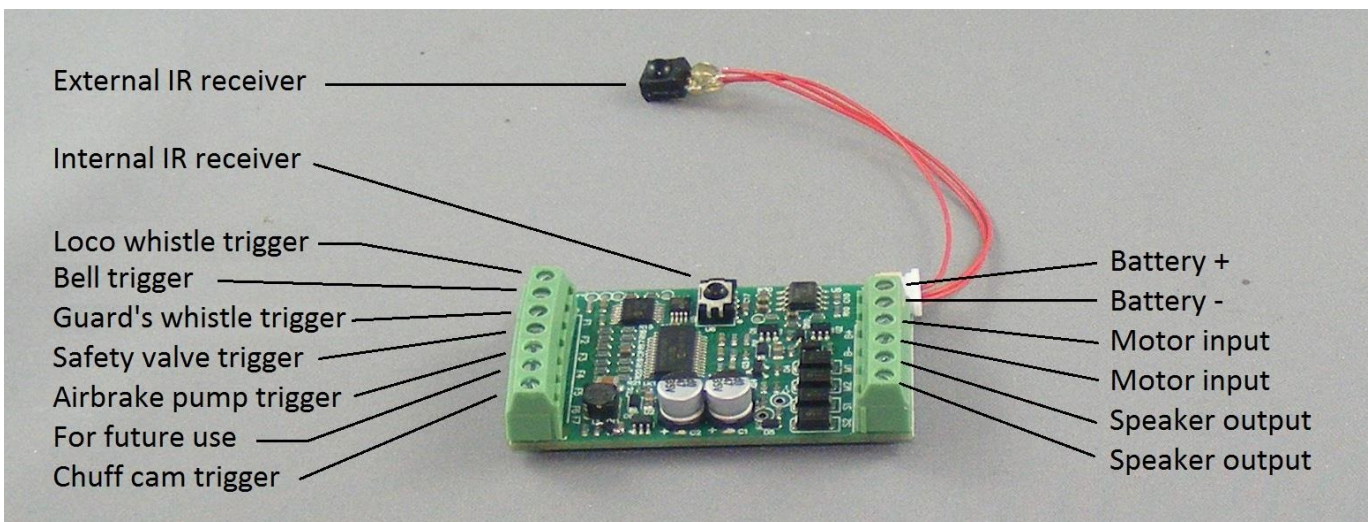
MYLOCOSOUND

UNIVERSAL SOUND FOR LARGE SCALE, DC, STEAM LOCOMOTIVES

1. OVERVIEW

- Easy installation using screw terminals with no soldering.
- Uses a TV remote control to adjust the volume and sounds to match the prototype loco.
- Provides an chuff sound which matches the loco speed and load.
- Plain and chime whistles with adjustable tone to suit the loco.
- Full remote control of the whistle, bell, safety valve, guard's whistle and optional brake pump.
- For track powered DC or battery powered radio controlled railways

2. CONTENTS



The soundcard generates synthesised sound which is adjustable to reproduce the sounds of most steam locos and railmotors. The terminal connections on the right are necessary for the soundcard to generate a chuff which varies with the loco speed and load. The terminal connections on the left trigger the various sounds where the locomotive controller has the appropriate outputs available.

Sounds can also be triggered by the infra-red TV remote control which comes with the soundcard.

Although it can be used when running in the garden, the remote control is intended mainly for the adjustment and testing of sounds.

The remote control communicates with the soundcard via two infra-red receivers. One is located on the soundcard and the other is on a flying lead which allows it to be fixed to any external surface of the loco.



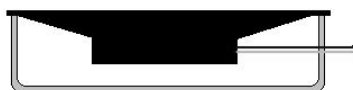
Adjustments to the sounds can then be made without taking the loco apart to access the soundcard.

3. SPEAKERS AND SOUND QUALITY

The soundcard requires an 8 ohm loudspeaker which is not included. A 4 ohm speaker can also be used but you may cause the soundcard to overheat and temporarily shut down if the volume is very high and the soundcard is in a confined space.. Your choice of speaker is highly important because it determines the quality of the sound produced.



The lowest cost option is to fit speaker from your local consumer electronics store. Typically these come in 27mm or 57mm diameters. Use the largest which you can fit in your loco.



For a better quality sound and more volume, the speaker needs to be baffled. That means that it needs to be built into the front face of an airtight box so that sound is heard only from the front of the speaker and none from the back. The plastic top of a spray paint can is good for making a baffle as shown in the diagram.

A good solution, which ensures high quality sound with lots of deep throbbing bass, is to purchase an 8 ohm impedance external speaker unit for iPod and MP3 music players and remove the two speaker modules, in their enclosures, for use in two locos. These are readily available at consumer electronics stores.

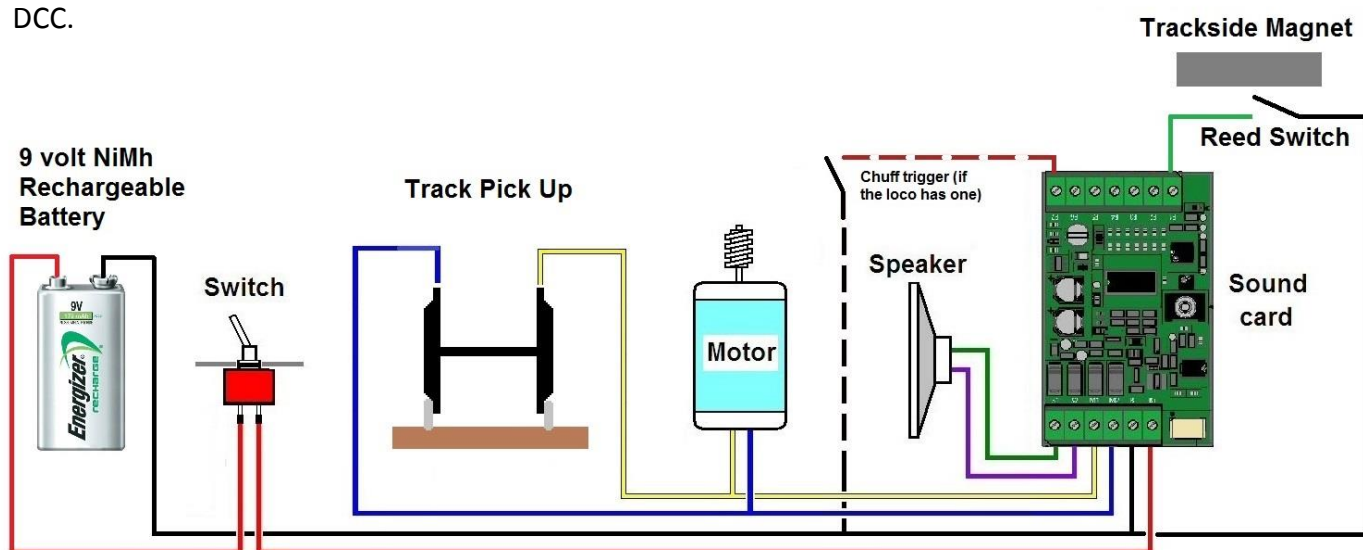


Speakers can be connected to the terminals either way around.

It is also possible to boost the volume by using a commercial stereo amplifier. Section 13 of these instructions shows how this can be done. Use of an external amplifier is recommended for ride on railways.

4. INSTALLING THE SOUND CARD IN A TRACK POWERED LOCOMOTIVE OR RAILCAR

The soundcard is suitable for use on analogue DC track powered railways. It is not suitable for use with DCC.



When the track voltage is below nine volts it is insufficient to power the soundcard. Therefore a nine volt PP3 battery is used to drive the soundcard and produce sound when the loco is static or moving slowly.

This battery will be automatically recharged whenever the track voltage is at least one volt higher than the battery voltage so there should never be a need to remove the battery for recharging. However, the battery must be a Nickel Metal Hydride type; Lithium and Nickel Cadmium batteries must not be used. On small shunting layouts, the loco speed is often not high enough for charging to take place. Some owners of shunting layouts put an isolation switch on the loco motor circuit so that they can turn up the power to recharge the battery without having the loco moving.

Because most DC controllers do not have function buttons, an alternative way of triggering the horn, bell and other sounds needs to be found. The options are:

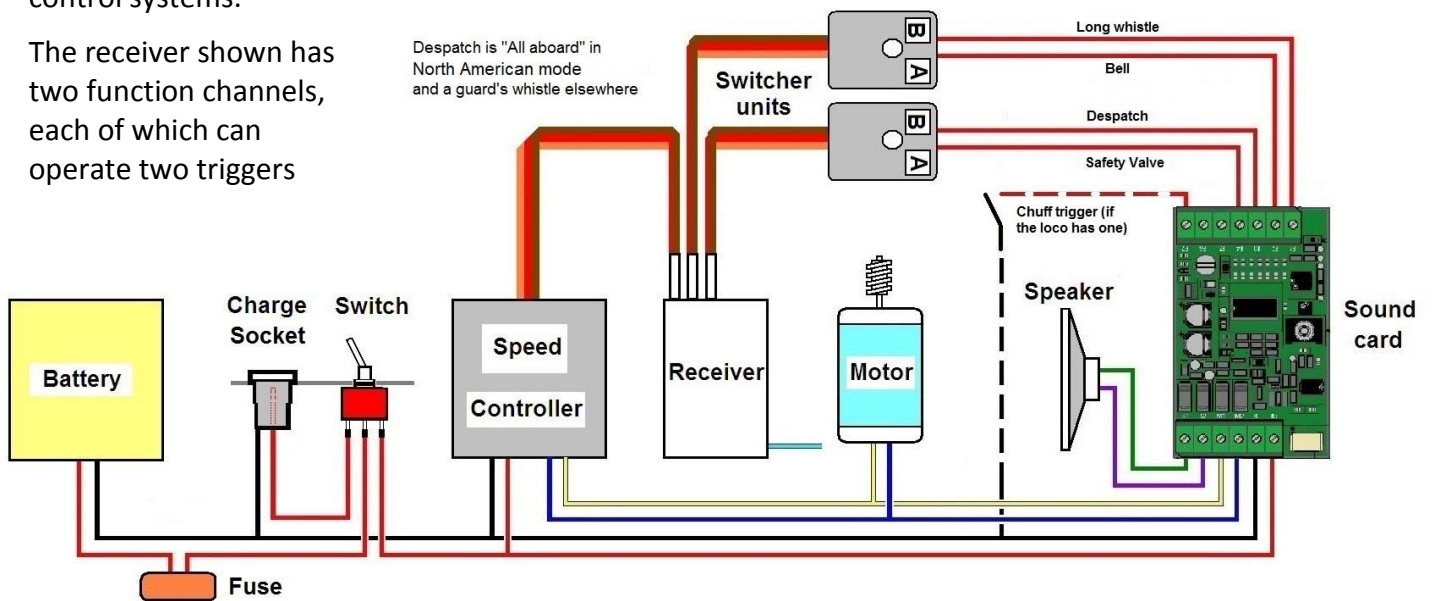
1. You can set the whistle to sound automatically three times a minute when the train is running. This is described in section 6.
2. You can connect the soundcard whistle trigger to a reed switch which you mount on the bottom of the loco. Then install magnets in the track where you want the whistle to sound eg. at the approaches to a level crossing. The whistle will then sound briefly as the loco crosses each magnet.
3. Use the remote control, supplied with the soundcard, to trigger all the sounds as described in section 6. However, infra-red remote controls are not designed for long distance use outside. On an overcast but bright day, the remote with coin batteries will only operate up to one metre away from the loco. A larger remote control, powered by AA or AAA batteries will probably operate up to three metres away.
4. Any combination, or all, of these methods can be used.

Now continue reading at section 6.

5. INSTALLING THE SOUND CARD IN A BATTERY POWERED LOCOMOTIVE OR RAILCAR

The wiring diagram below shows a typical installation for common types of battery powered radio control systems.

The receiver shown has two function channels, each of which can operate two triggers

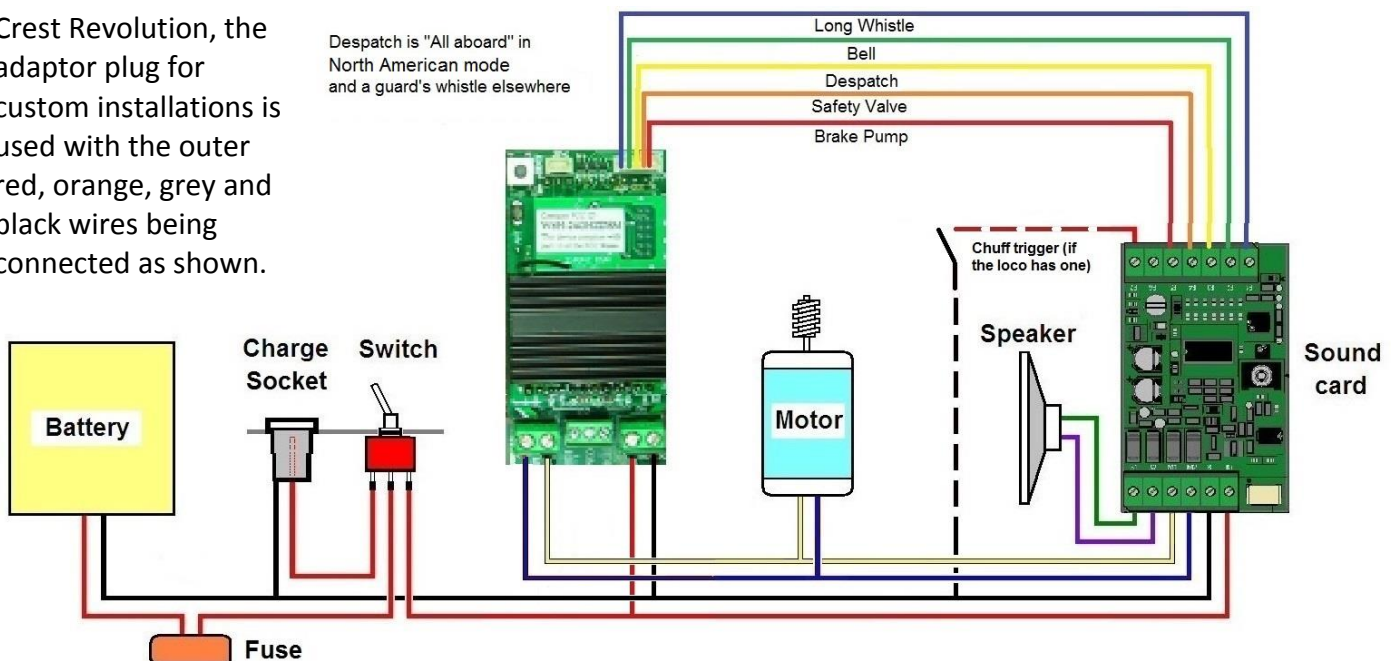


via two switcher units. The fifth soundcard trigger, the brake pump, therefore cannot be radio controlled and will need to be switched on, if required, by the IR remote control.

If your radio control system only has two function buttons then connect them to terminals F1 and F3 at the soundcard. Then refer to page 6 which describes how all five sounds can be triggered.

The above wiring diagrams can be seen in colour by visiting the web site at www.mylocosound.com/installs. Also shown are specific wiring diagrams for RCS, Barker, Mac 5, RailBoss, Mtronics, Roundhouse, Electronise and LocoLinc.

The Crest Revolution can trigger all five sound functions and is connected as shown in the diagram below. To connect the Crest Revolution, the adaptor plug for custom installations is used with the outer red, orange, grey and black wires being connected as shown.



The whistle and despatch functions should be set to momentary by selecting MENU – ASSIGN FUNCTIONS – AUX FUNC SETUP.

Note that volume is adjusted by the remote control and not by the transmitter 7, 8 and 9 buttons.

6. THE INFRA-RED RECEIVERS

The infra-red receivers accept commands from the handheld remote control to adjust or trigger sounds. Two receivers are provided. One is fixed in the middle of the soundcard. The other is on a flying lead which plugs into the small white socket as shown on page one.

In some installations, the soundcard is visible when installed in the loco. This usually occurs when the soundcard is mounted on the floor of a cab, with or without windows. In this case, the remote control can be pointed directly at the soundcard and the on-board receiver is all that is needed.

If the soundcard is within the loco and is not visible then the flying lead needs to be used. Plug it into the white socket and glue the black receiver, round side outwards, to any external surface of the loco to which you can easily point the radio control. Do not paint the receiver.

7. THE REMOTE CONTROL

The soundcard will operate with any Sony™ TV remote control using the buttons described in this section. It will also operate with any universal remote control when the code is set to 0140. However, in the interests of domestic harmony, in which stealing your partner's TV remote is probably a bad idea, MyLocoSound supplies a suitable remote control and that is the one illustrated here.

It is a universal device which has been pre-programmed to Sony™ coding. Do not hold down the mute button for more than a second since this can cause the remote control to lose its coding. If your remote control stops working then please refer to the Trouble Shooting Guide at the end of these instructions to re-establish the coding.



Note that the buttons on the MyLocoSound remote control auto-repeat if held down. If you want a single event to occur, like turning on the safety valve, then press the safety valve and release it immediately. If you want to make a large change in volume or tone then you can hold the button down to avoid the need to press the button repeatedly.

8. CONFIGURING THE SOUNDCARD

The first step is to tell your soundcard where your loco comes from. Specifically, is it a North American loco or is it European? Your soundcard has been delivered set for European sounds. If you wish to change then do the following:

1. Power up the soundcard. You should hear a static hiss.
2. Press the Mute button on the remote control.
3. Press the 8 button on the remote control. One beep will indicate that it is set for European sounds and two beeps for North American sounds.
4. Press the Mute button again to restore normal operation.

In European mode, the 3 button triggers a guard's whistle. In North American mode, the 3 button triggers "All aboard" and US whistle sequences in automatic mode.

There are a few settings which need to be specified to match the sounds to the particular locomotive or railmotor. Place the loco on the track and switch it on. Then proceed as follows:

- **Number of cylinders.** Press the 7 button on the remote control. If a double beep sounds then the soundcard is set three cylinder locos. If there is a single beep then the soundcard is set to two or four cylinder locos, both of which emit four chuffs per revolution.
- **Control mode buttons.** Press the 6 button on the remote control to change the control mode.
 - One beep – Indicates **Manual Mode**. In this mode all sounds are triggered only by pressing a radio control function or by using the remote control buttons. The whistle will sound for as long as its button is pressed.
 - Two beeps – Indicate **Timed Whistle Mode**. This is designed for controllers which have no function buttons, as is often the case with track power, or at exhibitions, etc. where you don't want to operate manually. The whistle will sound once automatically when the loco moves off and then once more three times a minute when the loco is on motion. A reed switch can be placed under the loco and be connected to the F1 terminal to make the whistle sound when the loco passes over a magnet. Another reed switch, connected to the F2 terminal, can be used to trigger the bell which will turn on when crossing a magnet and then off at the next magnet.
 - Three beeps – Indicate **Automatic Mode**. Again this is designed for controllers which have no function buttons, as is often the case with track power, or at exhibitions, etc. where you don't want to operate manually. When the soundcard is set for **North American locos**, it follows American whistle sequences.

The whistle will sound two long toots when the loco moves off forwards or three short when backing up. If these occur the wrong way around then reverse the leads at the M1/M2 terminals. When the loco stops, a single short toot will indicate brakes on. A reed switch can be placed under the loco and be connected to the F1 terminal to make the whistle sound the grade crossing sequence when the loco passes over a magnet.

Another reed switch, connected to the F2 terminal, can be used to trigger the bell which will turn on when crossing a magnet and sound for a set time. This time is set using the remote control. Press button 2, let the bell sound for the desired time and then press button 2 again to stop it. The bell will then ring for that time when the F2 terminal is triggered.

When the soundcard is set for **European locos**, the whistle will sound once when the loco moves off. A reed switch can be placed under the loco and be connected to the F1 terminal to make the whistle sound a longer blast when the loco passes over a magnet.

- Four beeps – Indicate **Two Function Mode**. If your radio control only has two function buttons then connect them to terminals F1 (whistle) and F3 (Guard's whistle or "All aboard"). The three remaining sounds then operate as follows:
 - Bell. For **North American locos** only, this will start ringing when the loco moves off and will continue until a certain speed is reached. That speed can be set using the remote control's 2 button. When you press that button the soundcard will rotate from one to five beeps. The more beeps the higher the speed at which the bell will stop ringing. The bell does not operate when the plain whistle is in use.
 - Safety valve. If you turn up the power a little, but not so much that the loco starts moving, then, after a second's delay, the safety valve will turn on. It will stay on until you turn the power off or start the loco moving.

If you don't want any of these sounds then use the remote control to change to Manual Mode, reduce the volume to zero and then switch back to Two Function Mode.

This mode is not designed for the Crest Revolution which has all the function buttons needed to control all five sounds.

- **Whistle type.** Press the 9 button on the remote control. The number of beeps will increment by one and will indicate the type of whistle selected as follows:
 1. British whistle used in early versions of the soundcard
 2. British whistle 1
 3. British whistle 2
 4. British Stanier hooter whistle
 5. Thomas the Tank Engine
 6. 3 chime whistle
 7. 6 chime whistle with full entry
 8. 6 chime whistle with ramped entry
- **Whistle tone and volume.** Press the 1 button to start the whistle. Use the channel up/down buttons to set the tone and the volume up/down buttons to set the volume.
- **Bell volume.** The 2 button will sound the bell. Use the volume up/down buttons to set the bell volume to the desired level.
- **Brake Pump.** The 5 button controls the Westinghouse brake pump. If your loco is fitted with this pump then press the button until you get two beeps. If your loco is not fitted then press the button until you get one beep. Use the volume up/down buttons to set the pump volume to the desired level. If selected, the brake pump will operate when the loco is static and stop when it is in motion.
- **Setting the static steam hiss.** You should hear a steam hiss. If not then press the Mute button to switch on the sound. With the loco static, use the volume up/down buttons to set the desired volume. If the brake pump is in use then you will need to turn it off using button 5, adjust the steam hiss volume and then turn the pump on again.
- **Choosing the chuff.** Some locos have a chuff trigger; an internal switch which closes three or four times each time the wheels rotate. If your loco has one of these then you should connect it to the F7 terminal and use it to trigger the chuffs generated by the soundcard. Do this by pressing the 0 button and two beeps indicates that the chuff cam is in use. One beep indicates that the chuff rate will be determined by the soundcard from the motor voltage. When using a chuff cam, the chuffs will not switch on until the motor voltage, at the M1/M2 terminals, gets up to 0.4 volts.
- **Setting the chuff start voltage.** Turn up the controller to the point where the loco just starts moving. Then press the Power button to set that start point. Further increases in power should cause the chuff to speed up.
- **Setting the engine running speed.** When the loco is in motion, even at slow speed, you can use the channel up/down buttons to set the rate at which the chuff increases with speed. Aim for four chuffs per wheel revolution for two or four cylinder locos and six chuffs per revolution for three cylinder locos.

- **Setting load sensitivity.** The soundcard can be programmed to make the engine loud when accelerating and softer when coasting and slowing down. Button 8 changes the level of sensitivity as indicated by the number of beeps when pressed. One beep indicates maximum sensitivity. Five beeps sets minimum sensitivity ie. the engine will be loud all the time. Start by setting the sensitivity to two and change to one if you want more sensitivity or three or more if the chuff sounds erratic. After five beeps the sensitivity will return to one beep.

You can change these settings whenever you wish and those changes will be effective immediately.

Holding down the 3 button for two seconds will cause the soundcard to reset itself back to its factory defaults. These set the chime whistle, 2/4 cylinders and a voltage controlled chuff.

11. OPERATING THE SOUNDCARD

When the loco is running, the engine sounds should operate automatically, getting louder when accelerating and softer when slowing down or idle.

Where your controller has function buttons then you can use them as follows:

- Button 1. Sounds the whistle for as long as the button is pressed.
- Button 2. Operates the bell for as long as the button is pressed.
- Button 3. Sounds the guard's whistle or "All aboard".
- Button 4. Sounds the safety valve blowing off.

12. TROUBLE SHOOTING GUIDE

THE REMOTE CONTROL WON'T WORK

Press any button. If a red light does not flash next to the SET button then the battery is missing. If it flashes twice then the battery is flat and the remote control is not sending anything. Using a small flat screwdriver or knife blade, lever open the battery compartment and insert two new AAA. Then, when you press a button, the red light should flash rapidly to indicate that it is sending.

If the remote still does not work then the Sony™ coding may have been lost. Hold down the TV button. When the red light illuminates, let go of the TV button. Press and release the 0, then the 1, then the 4 and then the 0 button in turn. The red light will blink while this is done and will then go out. The remote control is then ready for use.

If the remote control still does nothing then the problem may be the infra-red receiver on the loco which must not be painted or obstructed.

I GET NO SOUND AT LOW SPEEDS WHEN USING TRACKPOWER

On trackpower, you may get no sound at low speeds until the track voltage gets up to about nine volts. Indicates that the support battery is flat. Charge it by running the loco at half speed for ten minutes.

I GET NO SOUND AT ALL

Press the Mute button on the remote control in case the sound has been accidentally turned off.

Switch the loco off and then on again. When the soundcard starts, the LED should flash three times. If not then use a multimeter to check that there is at least nine volts at the B+ and B- terminals. If not then check your wiring in case something has come adrift.

Check that the speaker is connected correctly.

THE SOUNDCARD MAKES A CLICKING NOISE OR SHUTS DOWN

This most often occurs when the whistle is sounded. It is caused by the soundcard restarting because there is insufficient voltage in the track or battery to sustain the volume setting. Recharge the battery.

WHEN INSTALLED IN A LOCO, THE LOCO AND SOUND STOP INTERMITTENTLY AND I HAVE TO RESET THE CONTROLLER TO GET IT GOING AGAIN

The soundcard maximum output is 1.5 amps. If this is exceeded as a result of a large motor, a heavy load and/or high volume settings then the soundcard will shut down. Also, if the soundcard is installed in a very confined space and is run for a prolonged period at high power then it can overheat and switch itself off while it cools down.

HOW TO RESET YOUR SOUND CARD

A time may come when you have been adjusting the sound and you want to start again. This can be achieved by resetting the soundcard back to the settings when it left the factory. You can do this by pressing the 3 button on the remote control and hold it down for two seconds. The soundcard will beep three times when the reset is complete.

THE SOUND IS ERRATIC (ON TRACKPOWER ONLY, NOT RADIO CONTROL)

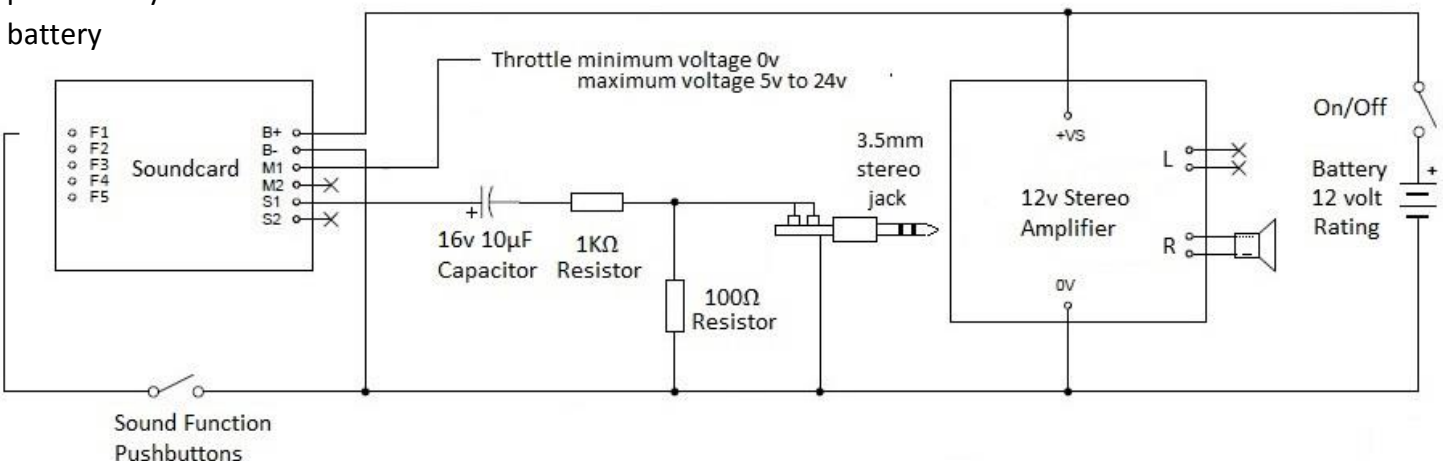
When using trackpower, some controllers have an output which is so rough as to cause the soundcard to run erratically. This can be cured by fitting a 220 μ F bi-polar capacitor across the M1/M2 terminals to smooth the DC pulses. The capacitor rating needs to be at least 30 volts to ensure that it is more than the maximum voltage of the controller. A bi-polar capacitor is one which can be connected either way around.

MY RADIO CONTROL HAS BECOME ERRATIC

If the soundcard is installed very close to the loco radio receiver ie, back to back, then it can interfere with the radio commands and operation can become erratic. To avoid this problem move the soundcard a little away from the receiver. You can also avoid the problem by wrapping the soundcard in silver paper but would have to be very careful to avoid shorts and component overheating.

13. USING AN EXTERNAL AMPLIFIER FOR RIDE ON RAILWAY LOCOMOTIVES

When used in 5 inch and 7¼ inch ride on railways there is a lot all environmental noise. The one watt output of the soundcard is not sufficient for these environments and an external amplifier needs to be used. The wiring diagram below shows how the soundcard can be interfaced to a commercial stereo amplifier in a loco powered by a 12 V battery



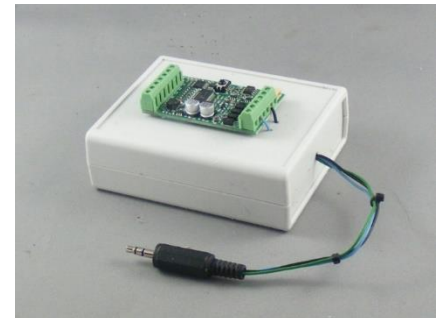
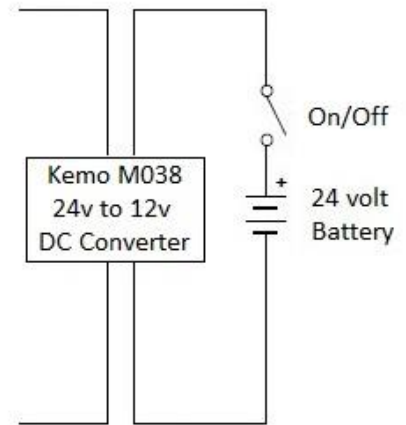
A 24v battery powered loco will require a 24v to 12v DC converter as shown alongside. Note that the soundcard can handle a maximum of 24 volts DC. A battery which is labelled as 24 volts will typically output 28 volts when fully charged and will therefore damage the soundcard if connected directly.

For most locos a 12v DC, 2x15 watt amplifier is suitable. Other amplifiers may require the 100 Ω resistor to be changed. If the output volume is too low then raise the value of the 100 Ω resistor.

A single speaker can be used on the right output or two speakers on the left and right outputs.

Any of the five functions can be used by means of a pushbutton between the function terminal and ground. The sound functions available are horn, bell, guard's whistle, airbrake release and turbocharger.

The installation can be made more robust by using two blobs of silicon to attached the soundcard to a plastic box in which the capacitor and two resistors are placed as shown alongside. The whole can then be fixed to the top of the amplifier, again using silicon.



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For more information, please visit the web site at www.mylocosound.com or e-mail sales@mylocosound.com.

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Remote Control	Radio Control	Defaults shown in grey	
Power		Set Start Voltage for Chuff	
VOL up/down		Change Volume of active sound	
CH up/down		Change Sound	Whistle Tone when whistle sounding
			Engine Chuff Rate when moving
Mute		Sound on/off	
Button 1	F1	Whistle	
Button 2	F2	Bell on/off	
Button 3	F3	All Aboard (U.S. mode)	[^] Guard's Whistle (Non U.S. mode)
Button 4	F4	Safety Valve on/off	
Button 5		Brake Pump on/off	
Button 6		Control Mode	
		1 beep	Manual
		2 beeps	Auto Whistle every 20 secs
		3 beeps	Auto Signals & Track Magnets
		4 beeps	Auto Safety valve, brake pump, bell
Button 7		Number of Cylinders	
		1 beep	2 or 4 Cylinder (4 chuffs per rev.)
		2 beeps	3 Cylinder (6 chuffs per rev.)
Button 8		Load sensitivity 1 to 5, Default=2	
		1 beep	Chuff maximum sensitivity to power changes
		2 beeps	Chuff average sensitivity to power changes
		5 beeps	Chuff minimum sensitivity to power changes
Button 9		Whistle Type	
		1 beep	British Whistle 1
		2 beeps	British Whistle 2
		3 beeps	British Whistle 3
		4 beeps	British Stanier Hooter
		5 beeps	Thomas Whistle
		6 beeps	Three chime whistle
		7 beeps	Six chime whistle with full entry
		8 beeps	Six chime whistle w/ ramped entry
Button 0		Chuff Mode	
		1 beep	Voltage triggered chuff
		2 beeps	Switch/Wheel trigger at F7 terminal
	F5	Not used	
	F6	Not used	
	F7	Chuff trigger input at F7 terminal	
Button 3 Held For more than 2 seconds		Reset above settings to defaults	