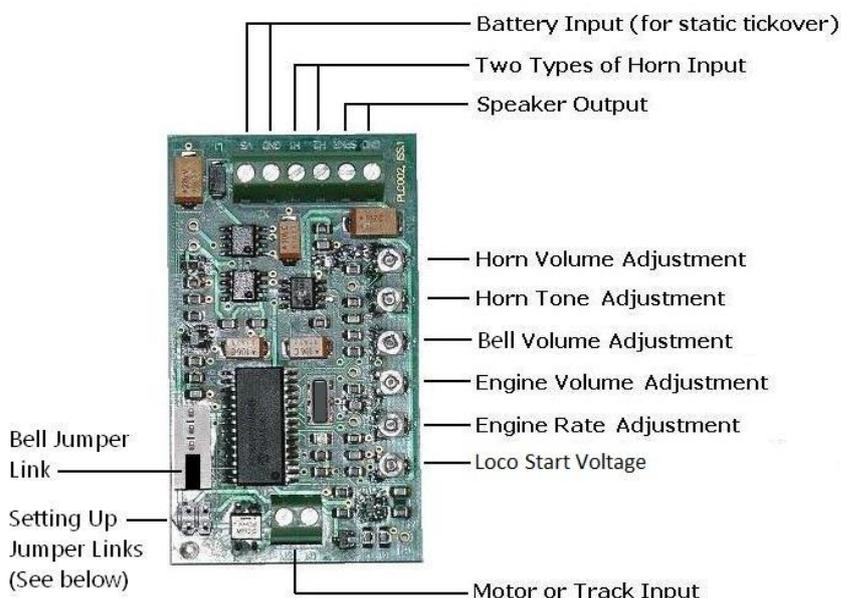


MyLocoSound – Diesel

A LOW COST AND CUSTOMISABLE SOUND CARD FOR LARGE SCALE DIESEL LOCOS AND RAILCARS

- ✓ One third the cost of the major sound card brands
- ✓ Small size for easy fitting – only 64mm by 38mm by 13mm
- ✓ Digital synthesized sound varies correctly with loco speed
- ✓ Single and dual tone horns and a switchable bell
- ✓ Customisable using a screwdriver – no programming needed.
- ✓ Suitable for battery or track powered locos and most DCC
- ✓ Compatible with Roundhouse, RCS, Train Engineer, TE Revolution, Brian Jones, Mtroniks and Cliff Barker radio control equipment plus many other brands.
- ✓ Very easy to connect.



MyLocoSound – Diesel is not an inflexible recording of a real diesel loco. It is a synthesised sound which is highly adjustable

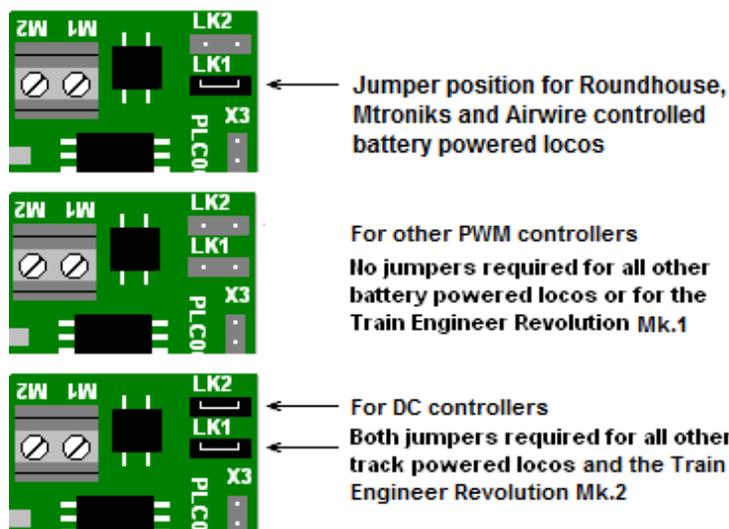
to represent a variety of diesel locos, from small railcars and industrial locos up to heavy, mainline freight units.

PREPARING THE SOUND CARD

The card contains two setting up jumpers which are pushed onto the pins in one of the positions described below:

If the loco is battery powered using an Airwire, Mtroniks or Roundhouse controller then you need to place one jumper on the pins marked LK1 as shown.

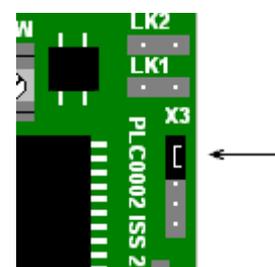
For all controllers which use Pulse Width Modulation (PWM) you need to remove both jumpers. This includes other battery powered controllers. The Crest Train Engineer Revolution Mk.1 from Aristocraft, should also have these jumpers removed, whether it is powered from the track or from a battery.



For all other controllers which output plain DC, both jumpers must remain fitted to LK1 and LK2 as shown. These include track powered locos and the Crest Train Engineer Revolution Mk.2 from Aristocraft.

A BELL FOR AMERICAN LOCOS

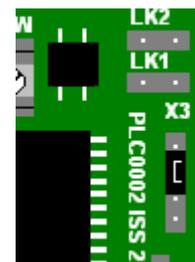
If you have an American loco and want to have a bell sound when the loco is moving at low speeds then switch off the loco, fit the bell jumper to the two pins shown in the diagram alongside, and switch the loco on again. The bell will then sound when the input voltage at



the M1/M2 terminals is between the levels shown in page 7. To stop the bell ringing, switch off the loco, remove the bell jumper link and switch on again.

SINGLE OR DUAL TONE HORN

If the bell is not being used then it is possible to change the horn from single to dual tone by fitting a jumper as shown alongside. Switch off the loco, fit the horn jumper, switch the loco on again and the horn should change from single to dual.



SPEAKERS

MyLocoSound – Diesel requires an 8 ohm loudspeaker which is not included. A 4 ohm speaker can also be used but you may need to connect a 2 ohm resistor in series. 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.

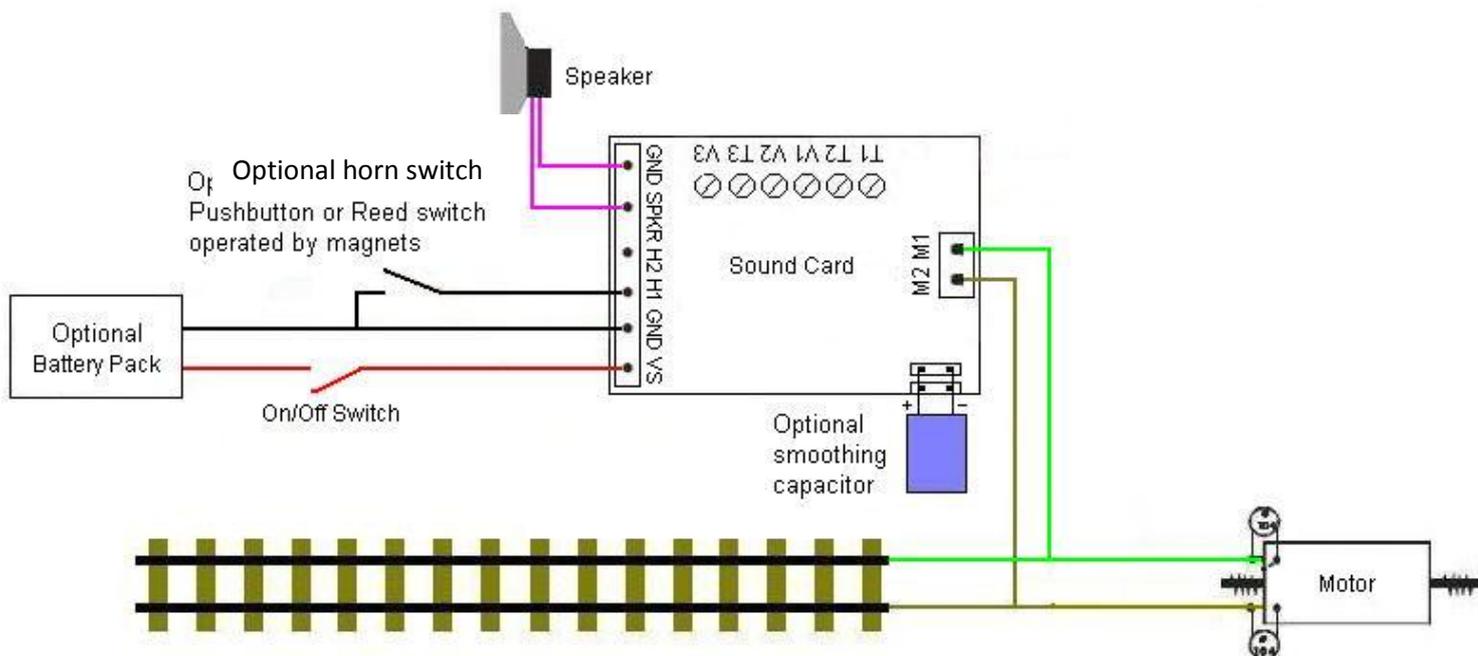
For a better quality sound and more volume, the speaker needs to be baffled. That means that it needs to be built into the front face of an airtight box so that sound is heard only from the front of the speaker and none from the back. The plastic top of a spray paint can is good for making a baffle as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



CONNECTING THE SOUND CARD IN A TRACK POWERED LOCO



The sound card is designed for use on track powered railways where the DC voltage varies from zero to a maximum voltage of between 7.2 and 24 volts. Controllers should be linear not pulse width modulated. On DCC systems you must connect the soundcard to the DC output to the motor, not to the AC voltage from the track.

The horn will sound automatically each time the loco is about to move off. In addition, you can make the horn sound by connecting a switch between the H1 and GND terminals. This switch can be a reed switch under the loco operated by magnets buried between the rails. In both cases, the horn will sound for one second.

The battery pack shown provides power for the diesel engine tickover when the track power is switched off and the loco is therefore static. Any small battery pack can be used, from 7.2 to 9.6 volts. Without a battery pack, the loco will become silent as the loco comes to a halt. If using a small 9.6v battery, don't set the horn volume to maximum as the current drawn may be excessive for a small battery and cause its voltage to drop and restart the soundcard.

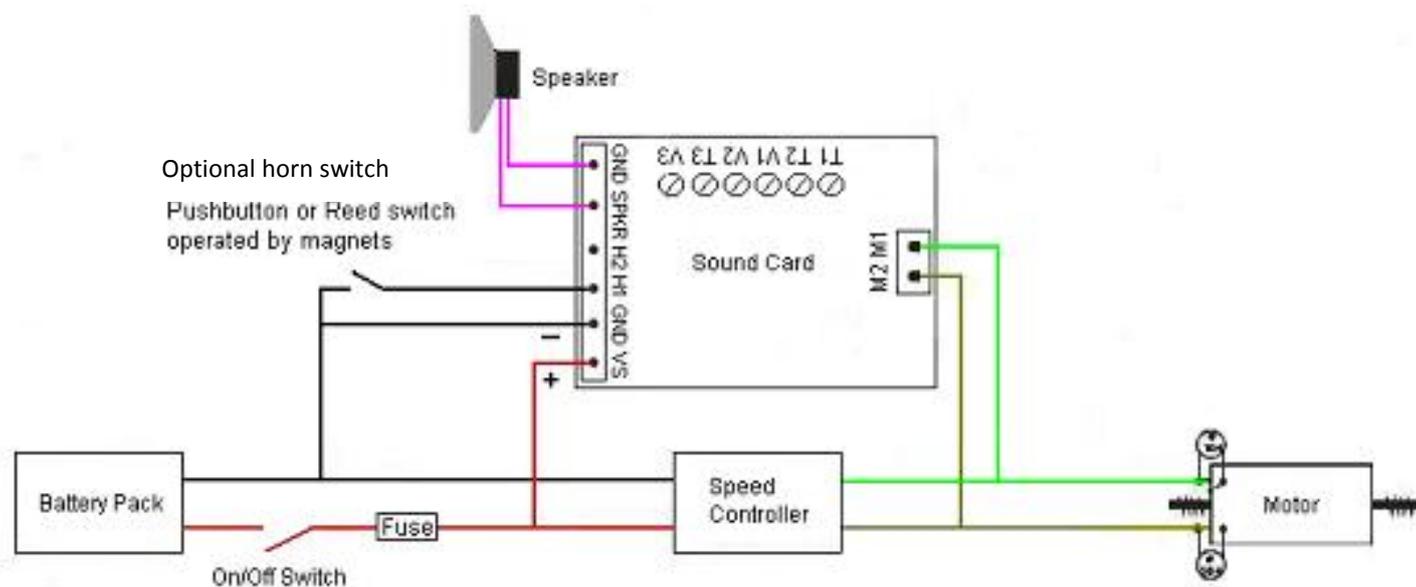
If using the Aristocraft Train Engineer system, please ensure that the receiver is set to "Linear" not "PWM".

The quality of the sound depends on the smoothness of the DC track power. Some popular brands of controller, produce a very rough DC voltage which will lead to inferior sound reproduction. The solution is to use a 2200 microfarad, 50 volt, polarised capacitor from your local consumer electronics store. A smaller 25 volt capacitor can be used where the track power is 18 volts or less. Remove the soundcard jumpers and solder the capacitor across the jumper pins as shown on the previous page. This will ensure that the roughest controller will produce a sound quality equal to that of a battery powered locomotive.

CONNECTING THE SOUND CARD IN A MANUALLY CONTROLLED, BATTERY POWERED LOCO

The sound card is suitable for battery powered locos in the range 7.2 to 24 volts, with or without radio control.

The diagram below shows how the sound card can be connected to a loco with a manual speed control.



Again, the horn can be operated by means of a switch or pushbutton mounted on the loco, by means of a reed switch operated by trackside magnets or by modifying a wireless door chime or garage door opener. It sounds when the switch is closed and stops when the switch is opened. The horn is shown as a negative (ground) input connected to terminal H1.

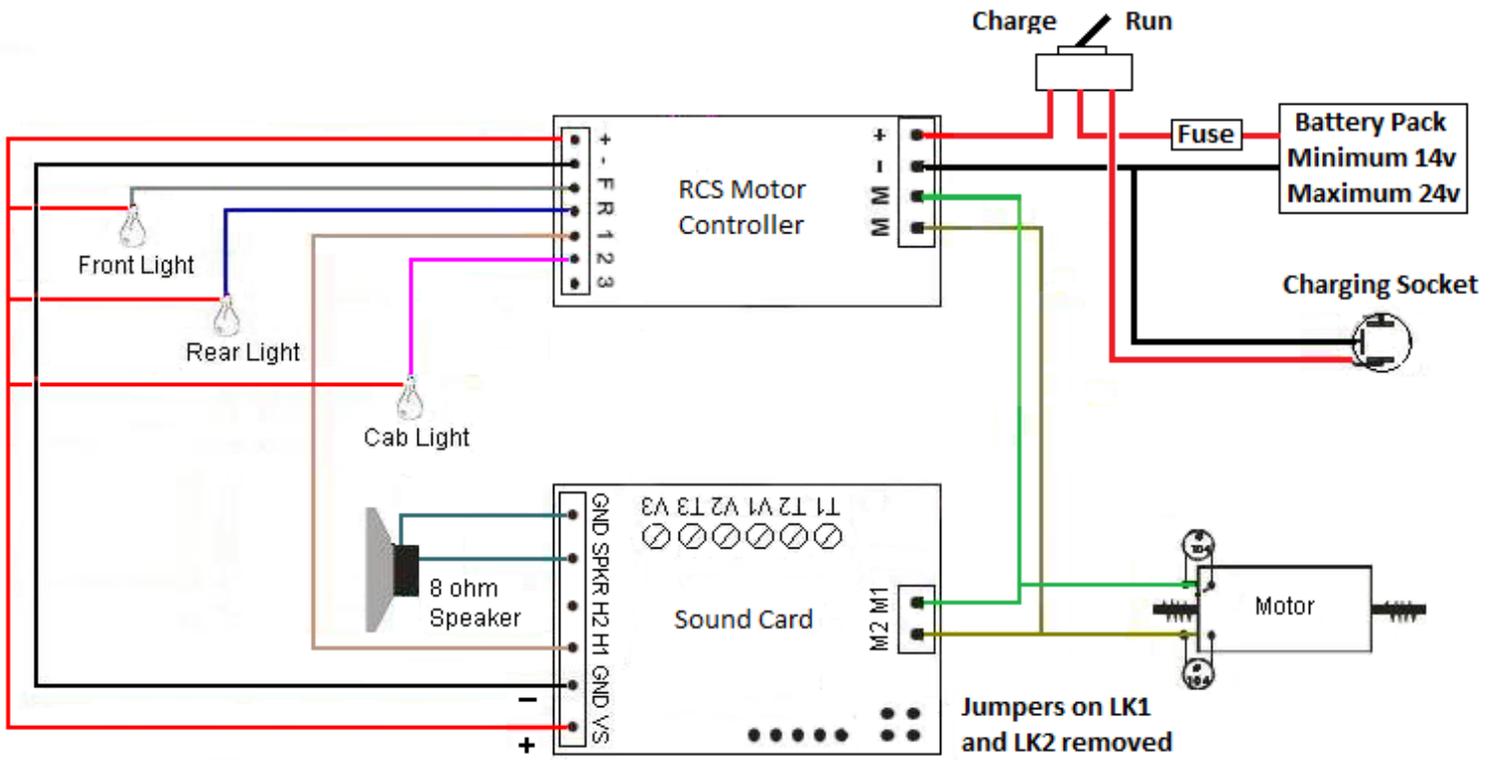
CONNECTING THE SOUND CARD IN RADIO CONTROLLED, BATTERY LOCOS USING RCS EQUIPMENT

The MyLocoSound – Diesel sound card is compatible with the products of Remote Control Systems (RCS), using either pushbutton or joystick transmitters.

The diagram overleaf shows how the sound card can be connected to an RCS motor controller with the optional accessory terminals which are used as follows:

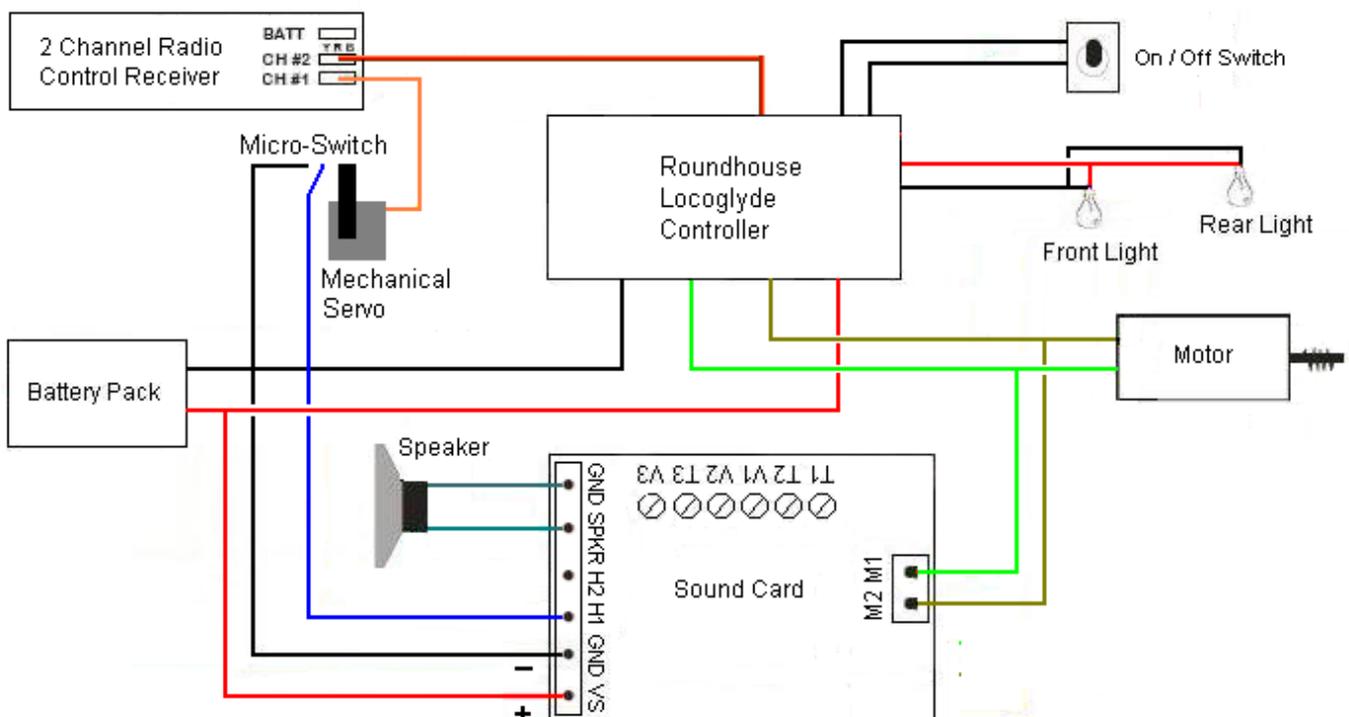
- The F terminal is connected to a front light which will then illuminate when the loco is moving forwards.

- The R terminal is connected to a rear light which will then illuminate when the loco is moving backwards.
- The 1 terminal is connected to the sound card horn. This terminal should be programmed for momentary operation that is the horn sounds while the button is pressed and stops when it is released.
- The 2 terminal is connected to a cab light and can be used for other purposes. For a cab light, this terminal should be programmed for latched operation that is it alternates on and off each time the button is pressed.



CONNECTING THE SOUND CARD USING ROUNDHOUSE AND MTRONIKS CONTROLLERS

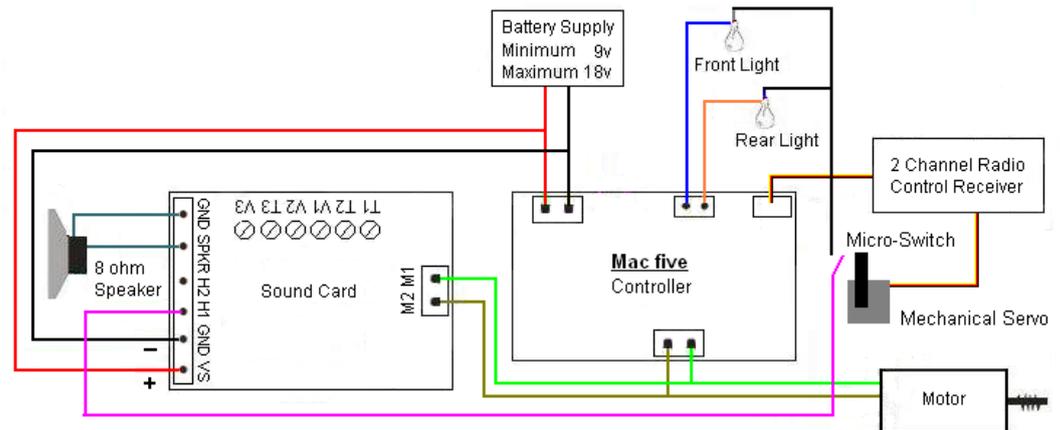
The diagram below shows how the soundcard can be connected to the Roundhouse Locoglyde controller and the Mtroniks range of controllers which are very similar. Again, a mechanical servo and micro switch can be used to sound the horn. These controllers need to have the special jumper fitted as shown on page one of these instructions.



CONNECTING THE SOUND CARD IN RADIO CONTROLLED, BATTERY LOCOS USING OTHER EQUIPMENT

The diagram below shows how the soundcard can be connected to other types of battery radio control systems.

The Brian Jones Mac Five uses one channel for loco speed and direction but has no accessory channel. The second channel can drive a separate mechanical servo and micro switch to operate the horn. The wiring diagram is shown above.



Controllers from Cliff Barker are also similar except that they have a rear light only which is pre-fitted. They also do not require the capacitor but the controller pulse rate **must** be set to 1KHz. The horn can be worked by the uncoupler button by connecting the centre terminal of the controller accessory connector to the soundcard H1 terminal.

The LocoLinc KLR-102 and KLR-106 receivers have accessory terminals which can be used to operate the horn. They do not require a capacitor.

In all cases, the horn operates on a momentary basis ie. It sounds when the switch is closed and stops when the switch is opened.

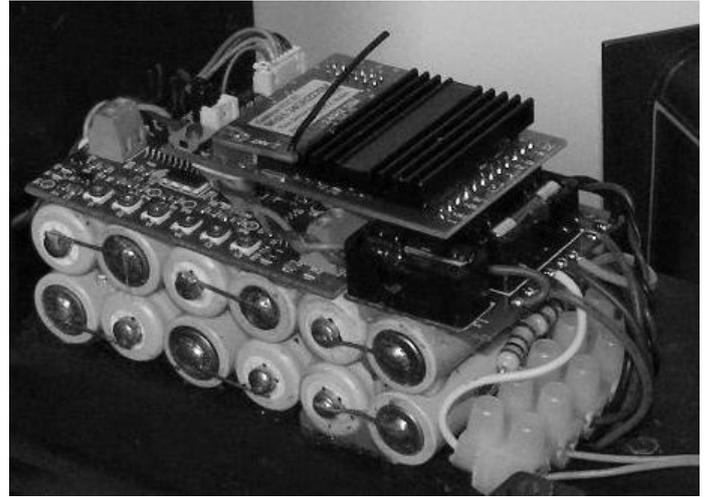
CONNECTING THE SOUND CARD TO AIRWIRE

The connections between two types of Airwire 900 controller and the soundcard are:

Function	Airwire 900 Original	Airwire 900 G2 Decoder	MyLocoSound Terminals
Speed input	Motor Terminal A	TM3 Terminal 2 or 4	Terminal M1
	Motor Terminal B	TM3 Terminal 3 or 5	Terminal M2
Power supply	Battery Positive	TM3 Terminal 1	Terminal VS
	Battery Negative	TM3 Terminal 8	Terminal GND
Whistle/Horn	Function A Output	TM2 Terminal 3	Terminal H1

CONNECTING THE SOUND CARD TO THE CREST TRAIN ENGINE REVOLUTION FROM ARISTOCRAFT

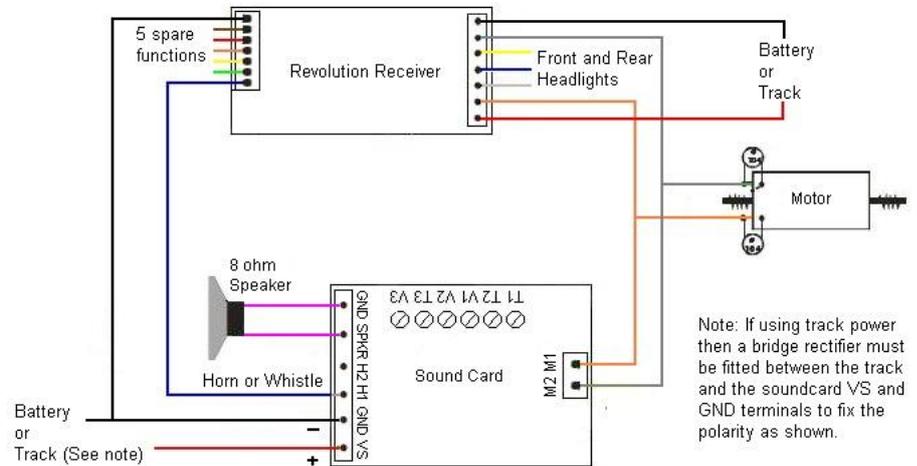
The photo shows a compact Revolution installation where silicon has been used to mount the soundcard on a pack of twelve AA rechargeable batteries for a total of 14.4 volts. The Revolution Adaptor Plug has been mounted alongside and the Revolution receiver plugged in on top giving easy access to the soundcard trimpots.



The terminal strip ahead of the batteries is used to connect the resistors needed for incandescent head and rear lights.

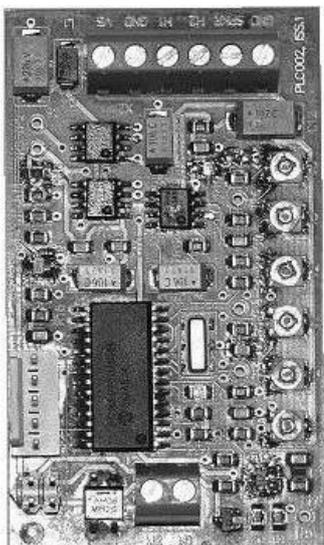
The Revolution receiver has six accessory outputs, the first of which is set to momentary and is used for the horn. The remaining five can be used for cab lights and other purposes.

The diagram below shows how the soundcard can be connected to the Train Engineer Revolution from Aristocraft for both battery and track power supply. If using track power then you will need to purchase a bridge rectifier from your local consumer electronics store. Connect it between the track and the soundcard with the positive going to the VS terminal and the negative to the GND terminal.

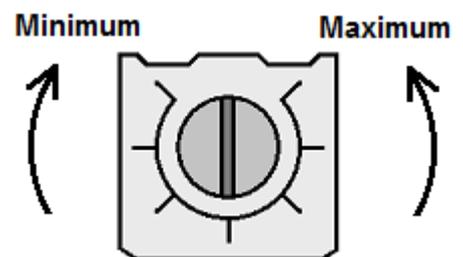


ADJUSTING THE SOUND CARD

Once it has been installed and connected, the MyLocoSound – Diesel sound card can be adjusted to provide the sound characteristics required for each loco. Adjustments are made by using a 2.5mm or smaller flat bladed screwdriver to turn the trimpots located down one side of the sound card, as shown below.



- ← Horn volume
- ← Horn tone
- ← Bell volume
- ← Engine volume
- ← Engine rate adjustment
- ← Voltage at which the engine rate peaks on moving off. The engine will start ramping up at about 0.6v

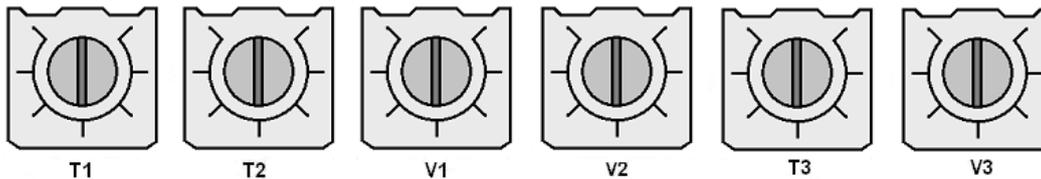


The table shows the voltages at which the engine rate peaks and the bell sounds at different settings of the T1 trimpot.

T1 Trimpot Setting	Engine Peaks At	Bell Starts At	Bell Stops At
Minimum	1.5v	1.9v	5.6v
Mid-range	4.3v	4.4v	7.9v
Maximum	7.0v	7.0v	10.5v

FACTORY SETTINGS

The diesel soundcard is shipped with the slot pointing in the directions shown below:



If the soundcard sounds wrong then it is suggested that you return all the trimpots to these factory settings and commence your adjustments again.

CHECKING THE SOUND CARD

If you suspect that the soundcard is faulty or cannot make it work properly, we suggest that you carry out the following steps:

1. Disconnect all wires from the soundcard
2. Check that the jumper links are set correctly as shown in page one.
3. Return all the trimpots to their factory settings as shown above.
4. Connect a voltage between 7.2 volts and 24 volts, positive to the VS terminal and negative to the GND terminal. After a delay of a couple of seconds, the red light should illuminate. If it does not then the soundcard is faulty or damaged or the voltage is less than 7 volts.
5. Connect a speaker to the SP1 and SP2 terminals. It does not matter which way around the wires are. You should hear a diesel engine tickover. If nothing is heard then turn up the volume control V2. If still nothing is heard, check that the speaker is okay.
6. Connect the terminals M1 and M2 to each side of the motor. Turn up the motor speed and the tickover should accelerate. The tickover rate can be changed by adjusting the T1 trimpot. The maximum engine rate is set using trimpot T2.
7. Connect a wire between the H1 and GND terminals or between the H2 and VS terminals. The horn should sound. If you hear nothing then check that the horn volume trimpot V3 is turned up enough.

GOT A PROBLEM?

I get a very poor sound or no sound at all

There are several common reasons for this:

1. The supply voltage at the VS and GND terminals may be too low. It needs to be at least seven volts.
2. VS and GND are connected the wrong way around. The positive should be connected to the VS terminal and the negative to the GND terminal.
3. The speaker is not connected.

4. The speaker is the wrong impedance. It should be 8 ohms impedance or, if a 4 ohm speaker is used then try connecting a 2 ohm resistor in series.
5. The soundcard has been mounted using double sided tape which is electrically conductive.
6. If there is no sound at all then the volume control V2 may be set to zero.

The horn does not work.

There are two horn input terminals H1 and H2. These are designed for different types of output from the accessory terminals of radio controllers. If it doesn't work on the terminal you have connected to then try the other one.

The trimpots will not turn

Use a flat bladed screwdriver with a blade width of up to 2.5 mm.

On Trackpower the sound quality is poor may be just a series of clicks

The quality of the engine sound depends on the smoothness of the DC track power. Some popular brands of controller, produce a very rough DC voltage which will lead to inferior sound reproduction. This can be overcome by adding a capacitor as described in the track power section of these instructions.

On Trackpower my static engine tickover battery runs out too fast

In our tests, a nine volt EverReady Energiser battery, with a capacity of 635 mAH, powers the static engine tickover for ninety minutes before the voltage drops so far that the sound starts breaking up. If you are not getting this kind of duration then check the following.

First check that the jumpers are correctly in place for track power. If the jumper pins are not linked then the engine tickover battery will be doing more than it needs to.

Second, make sure that your speaker is 8 ohms impedance. Lower impedance speakers will use proportionally more power. For example, a 2 ohm speaker will exhaust the engine tickover battery four times faster.

If you want a longer engine tickover duration then we suggest that you use the rechargeable Sub-C battery packs which are commonly available for model racing cars. These have three advantages:

1. Their capacity is about four times longer than a 9v battery.
2. Their 7.2 volt output is a more economical match to the steam hiss requirement
3. They can be recharged; often with a recharger which comes with the battery.

On battery power, the sound stops when the loco moves off

The soundcard requires a minimum of 7 volts operate. If your loco has only 7.2 volt batteries on board then the motor may be pulling the voltage down below the soundcard minimum. The same thing can happen if a small 9.6v battery is used for the static tickover and the horn volume is set to maximum.