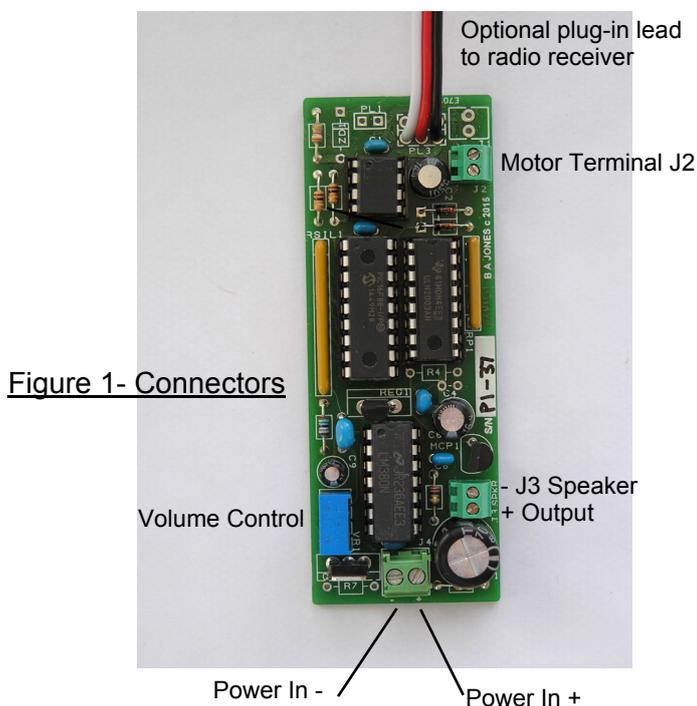


INSTALLATION INSTRUCTIONS

FX-4U

GENERAL PROCEDURE (All versions)

The **FX-4U** Sound card can be installed at any angle, but installation with the power transistor tab face up is best. ALLOW PLENTY OF FREE AIR SPACE ABOVE THE **FX-4U** FOR VENTILATION. Try a "dry run" with the various components, including a controller, motor and speaker on the bench, prior to fitting into your loco. Once satisfied, permanent fixing can be made with double sided sticky pads, or Velcro. DO NOT in any circumstances drill any holes through the **FX-4U** to fix it in place. Do not remove the sleeve from the **FX-4U**. This is used to protect your unit.



ELECTRICAL CONNECTIONS - Refer to Figure 1 above.

The '+' power input terminal is usually marked with a red spot. The main power input is protected against reverse connection. **Strip and 'Tin' all multi-stranded wire connections with solder, before clamping in the screw terminals. Do not over-tighten them. Note that the clamps in the screw terminals rise when tightened, so put wires above the clamps, not below.**

R/C INPUT OPTION (if fitted)

White > Receiver signal	}	
Red > Receiver power (+)	}	On plug-in lead
Black > Receiver power (-)	}	

CONNECTING THE LOUDSPEAKER

Connect the '+' terminal of the speaker (if marked) to the '+' output on the **FX-4U** speaker connector. Likewise connect the '-' speaker terminal to the '-' output of the **FX-4U** speaker terminal.

If being fitted into a radio controlled locomotive, make sure that the speaker, the speaker lead, and any power wiring associated with the **FX-4U** is kept well away from the radio receiver and especially its' aerial lead.

Wiring associated with the **FX-4U** should be made up as 'twisted pairs' to cut down on interference getting into the R/C receiver. Similarly, the variation of the speaker's magnetic field can affect radio control if placed too close to the receiver. If necessary, a screened speaker and screened wiring should be used to reduce emissions.

OVERLOAD PROTECTION

This is not generally necessary if a fuse, or cutout, has already been fitted to the loco immediately after the battery '+' terminal. A separate fuse (or cut-out) just for the sound card can be fitted if required. This should be approximately 300mA rating.

TESTING AND RUNNING

Double check the wiring against the circuit diagram in Figure 2. Make sure there are NO loose connections, including on/off switches with faulty contacts. Intermittent power connection will cause the **FX-4U** to malfunction. Once satisfied that the wiring is correct, switch on the loco power. **N.B. If radio control is being used, ensure that the joysticks are at the centre of their travel and switch on the transmitter before the loco. Also make sure the transmitter and loco are well away from large metal structures e.g. metal gates or fencing, and that the transmitter aerial is pointing towards the sky.** This ensures that the loco locks on to your transmitter's proper signal and not a reflection or another false signal source. Adjust the volume setting as required. Note that the volume will increase from idle, so do not set the volume too high or else you may damage the speaker if it is not large enough to take the full power output of the **FX-4U** amplifier. If the loco power is turned off, allow 10 seconds before switching back on.

RADIO CONTROL SOUND OPTION

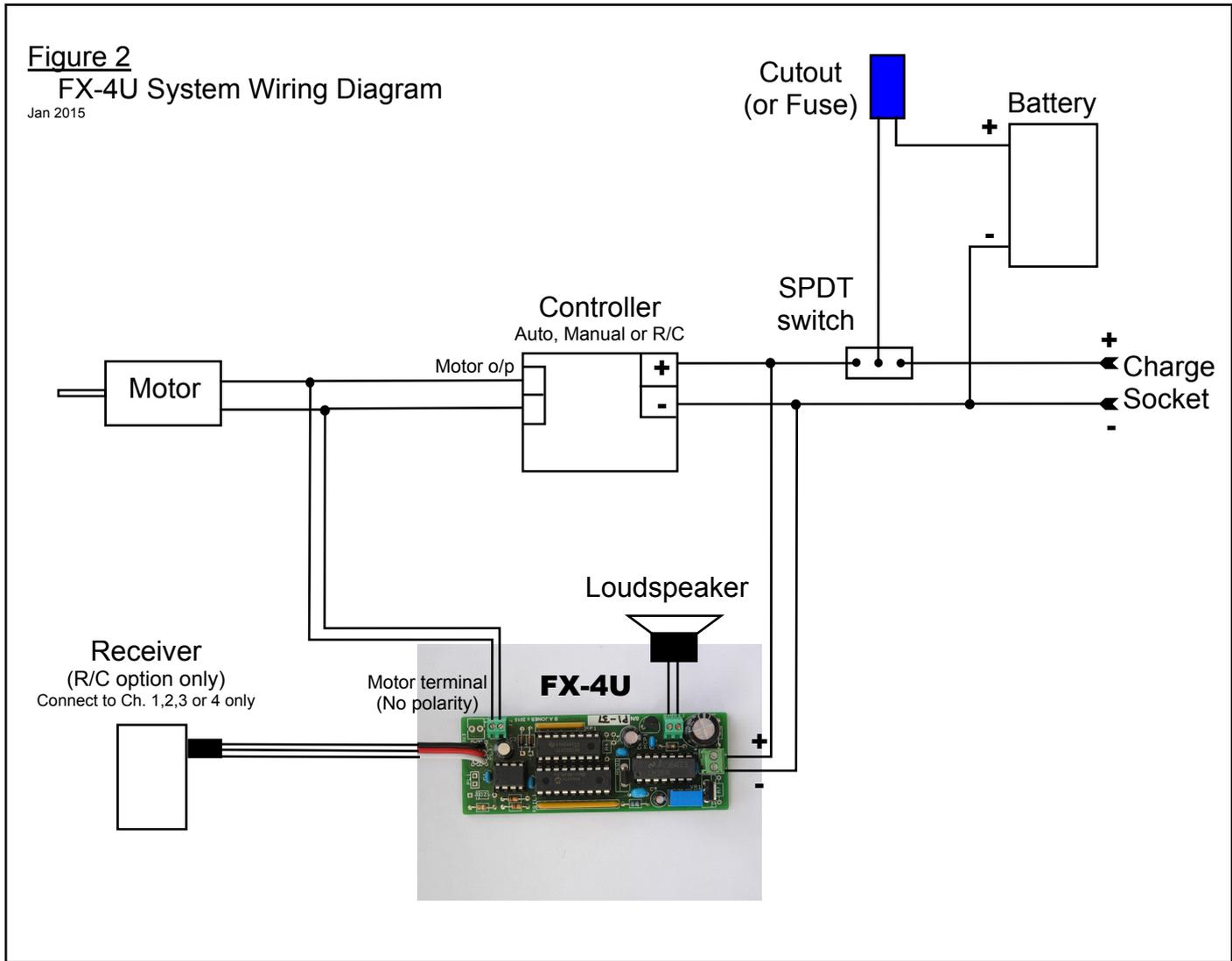
If an **FX-4U** with the R/C sound option has been purchased then one transmitter joystick can be used to operate it. On diesel or electric locos this will typically be the two tone horns, and on steam locos the whistle. When not being used the joystick should be left in the centre. Unless otherwise stated, the sounds produced are fixed length. To produce two different horn tones in quick succession, as soon as the first horn tone starts, quickly move the joystick to the opposite extreme position to produce the second tone. If not done quickly enough, the engine sound will play before the second horn tone. If the joystick is held off centre alternate engine sound and one horn tone will be repeated. It may be necessary to adjust the joystick trim control on the transmitter so that each tone is triggered by equal movement in either direction. Using the joystick 'return to centre' springing is advised.

MOTOR SUPPRESSION

If not already suppressed, motors should be fitted with a 0.1uF capacitor directly across the motor terminals. If it is not fitted directly on the motor it will not be effective. LGB locos, and Buhler motors, do not generally need additional suppression components as they often have them built in.

Figure 2
FX-4U System Wiring Diagram

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RECOMMENDED OPERATING CONDITIONS

Working Voltage:

5 watt versions - 12v to 24v DC

2 watt versions - 10v to 20v DC

Both types can be run on voltages down to 7v but with increased distortion.

DECLARATION OF INCORPORATION

This device is a component and should not be put into service until the model into which it is incorporated has been declared in conformity with the relevant directives including EMC Directive 89/336/EEC.

N.B. IF FOR ANY REASON YOU NEED TO RETURN YOUR **FX-4U** PLEASE RETURN IT IN THE ANTI-STATIC BAG IN WHICH IT WAS SUPPLIED, OR WRAPPED IN ALUMINIUM FOIL BEFORE PACKING.

WARNING! - FOR HEALTH & SAFETY

DO NOT OPERATE AN FX-4U WITH A 5 WATT (OR LARGER) SPEAKER ON FULL VOLUME WITHIN 20 FEET OF ANY PERSON OR ANIMAL OUTDOORS, OR WITHIN 40 FEET IN A CONFINED SPACE. LOSS OF HEARING MAY RESULT IF DUE CARE AND ATTENTION IS NOT APPLIED IN OPERATING THIS PRODUCT.

I.E. USE COMMON SENSE!

NO LIABILITY IS ACCEPTED FOR MISUSE

FX-4U Sound cards are not suitable for locos fitted with MTS or DCC decoders, and cannot be used with a conventional DC 2-rail loco unless fitted with an **FX-2A** interface module.

Specification of the **FX-4U** may vary according to the application of an actual unit. BJ's policy is one of continual improvement, and thus the right is reserved to alter the specification from that shown in this document.

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