

## Adding phantom power to an LM-I Remote Active Module

### Preamble:

This Technical Note describes the modifications which need to be made to an LM-I active module to provide phantom power at the microphone input.

The LM-I is a remote active module for use with various Cloud zoners, including the Z4II and Z8II. It provides both mic and line inputs. The microphone input is designed for use with dynamic microphones only, which do not require a power supply of any kind. Capacitor microphones (also known as condenser microphones) are generally of higher quality, but require a DC power source. DC power is most often supplied to the microphone via its normal wiring and XLR connector; this method is known as “phantom power”. After this modification has been performed, you will be able to use capacitor microphones with an LM-I.

### Applicable products:

LM-I remote active module with remote music control. The LM-I is compatible with the following current products:

CATEGORY	PRODUCT
Venue Mixers	Z4II
	Z8II
Integrated Mixer Amplifier	46/50

Table 1

### Limitations:

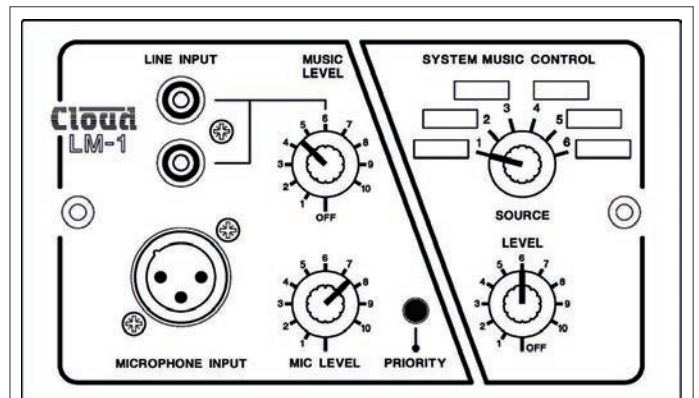
The phantom power available at the LM-I’s XLR socket after modification is limited to 15 volts. The DC source resistance is approx. 2.35 kΩ, which may limit the current available to some microphones. Microphones which require a higher phantom voltage, or draw more current than the LM-I can supply will not be suitable for use. Please check the specification of the capacitor mic to be used.

### Parts required:

Two 4k7, 1/2-watt, 1% metal oxide resistors; 1.0 mm dia. sleeving, Neoprene, silicone or similar (not PVC).

### Required Skill Level: Medium.

Experience in soldering small components is desirable.



LM-I Front Panel

**Tools required:** Soldering iron (max. 25 W), small wire-cutters, small pliers, screwdriver, small vice (optional).

**Procedure - modification:**

1. If the LM-I module is a new one, unpack it. If it is already installed, power the system off and remove the module from its back box by undoing the two M3.5 screws. Inspect the connections to the 10-way screw terminal block on the upper of the two PCBs and make a careful note of cable core colours, etc., to facilitate reconnection. Then disconnect the cable and remove the module.

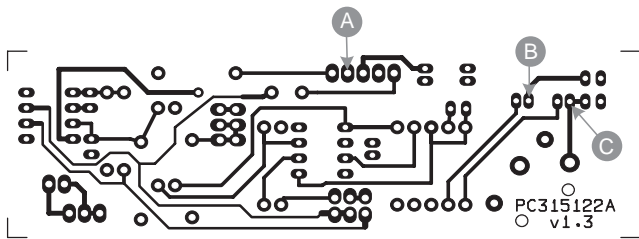
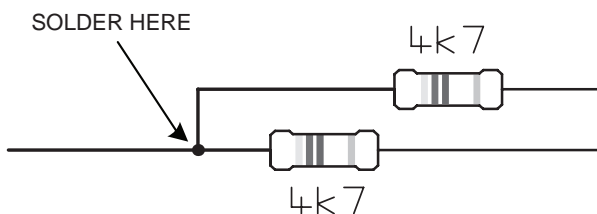


Fig. 1

2. The two 4k7 resistors are added to the underside (track side) of the lower of the two PCBs. It should be possible to perform the modification without removing the PCB from the faceplate. A small bench vice will be of great assistance in holding the module during soldering. Clamp the top of the module's faceplate in the vice with it facing away from you, so that the underside of the lower board faces upwards, orientated as in the diag. below. Use some pieces of card (or similar) in the vice jaws to avoid marking the faceplate.

3. Cut one leg of one 4k7 resistor to approx. 10 mm, and bend it through 90°. Solder its end to one leg of the other resistor, 2-3 mm from the resistor itself, as shown below.



4. Cut the "common" resistor leg to about 15 mm length, and thread some sleeving over it, leaving about 2-3 mm showing. Bend it through 90° and solder the end to pad A (refer to Fig. 1). The two resistors should lie alongside the back edge of the PCB.

5. In the same manner, cut, sleeve and bend the other legs of the two resistors in turn so that their ends can be soldered to pads B and C (refer to Fig. 1).

**TAKE CARE!** - when soldering the resistor ends, take great care not to cause solder bridges between adjacent pads, Also ensure that the sleeving is long enough to prevent any part of the resistor legs from touching other solder pads.

6. When complete, the modified PCB should look similar to below:

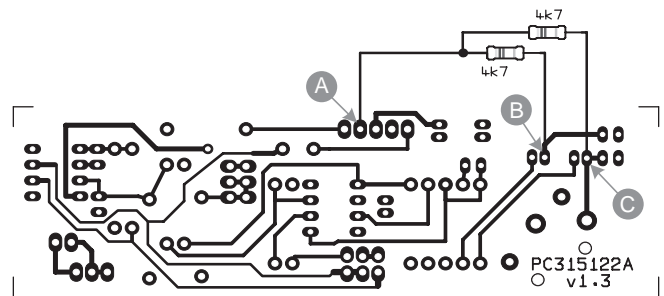


Fig. 2

7. If the module is new, refer to the LM-I Installation and User Guide supplied with it for installation and connection details. Otherwise, return it to its back box, re-connect the installation cable as previously noted, and re-fix it with the screws.