

## Connecting two LM-I plates to one facility port on a Z4II or Z8II

### Preamble:

This Technical Note describes the wiring necessary to connect two LM-I\* remote mic/line input plates to a single Facility Port on a Z4II or Z8II Venue Mixer. No internal modifications need to be made to either the input plates or the zoner to realise this system configuration.

The LM-I is a remote input plate accessory for use with Cloud zoners fitted with a 9-pin Facility Port. It allows one mic and/or one line level input to be connected into the audio system from a remote location, and these inputs to be routed to a particular zone – normally the zone in which the plate is installed. The connection to the host mixer is via the zone's Facility Port, which normally only supports a single LM-I. (The standard connection details may be found in the Z4II/Z8II Installation Guide).

In some installations, the zone in which remote inputs are required may be quite large, and it may be desirable for two LM-I input plates to be fitted. This will allow external sources connected at either plate to be routed into that zone. For this to be implemented, a specific wiring procedure must be followed to connect the two plates to the Facility Port for the zone in question. When complete, mic and/or line level inputs may be connected at either or both plates. If sources are connected to both plates, the sources will be mixed, and their relative levels adjusted by the input controls on the plate at which they are connected. Only one plate will provide remote control of music source and level (see "Limitations" below).

### Applicable products:

LM-I Remote Active Module, used in conjunction with a zoner fitted with a 9-pin Facility Port. Current compatible products are the Z4II and Z8II Venue Mixers, and the 46/50.

### Limitations:

1. Only one of the two LM-I's can additionally act as a remote music level and source control. The music level and source controls on the other plate will be inoperative. The installer should confirm with the client which plate is to have the remote music control facility.

### Parts required:

- Four 4k7 1/4-watt (min.) 1% resistors.
- Two general purpose silicon diodes – e.g., 1N4148
- Screened 10-core cable, max recommended dia. 5 mm. (length: from each plate to zoner)
- 9-pin male Dsub connector with cover
- Silicone sleeves and lubricant.

### Optional (see Procedure):

- Small ABS or diecast metal box of adequate size to house the following:
- 3 x cable glands of a diameter suitable for the cable type in use
- Length(s) of small tagstrip or similar

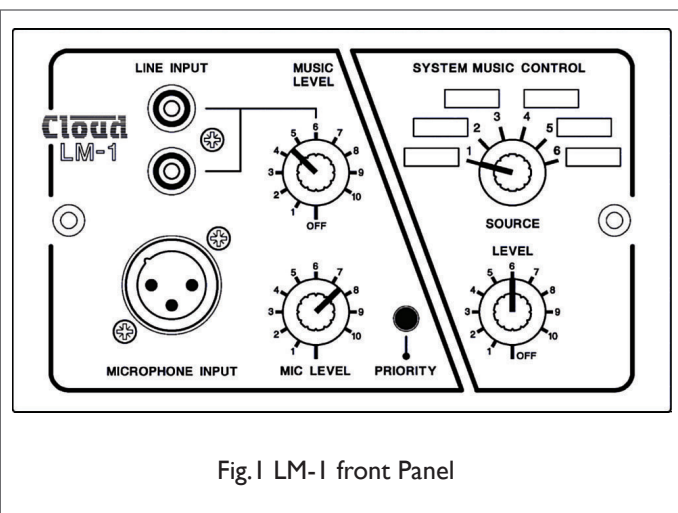


Fig.1 LM-I front Panel

\*The LM-1a is a mechanically different variant which fits USA-size electrical boxes. All details of this Technical Note are also applicable to this version

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

**Required Skill Level:** Medium-to-high. Not recommended for those inexperienced in fine soldering and/or constructing one-off interface boxes.

**Procedure - modification:**

Refer to Figs. 2 & 3.

The wiring configuration requires each LM-I to be run separately back to the zoner, and the two cables then wired into a single Dsub connector. Additional passive components (four resistors and two diodes) must be wired into the connector as well. This requires careful and accurate soldering as everything must fit inside the Dsub cover, however this is the simplest and neatest method.

If the cable diameter is such that two cables will not fit through the connector's rear entry gland, or if the

cover proves to be too small to accommodate the wiring and components, an alternative method is to terminate the two cables and passive components in a small external box using tagstrip (or similar) mounted internally. A third cable can then be added to provide the "output" to the zoner's Facility Port. If this method is employed, the cable run from the external box to the Facility Port should be less than 0.5 m. (Only abridged instructions for this method are provided, as there are many mechanical options, and it is assumed that those choosing to use this method are competent to follow the system wiring diagram, Fig 4.)

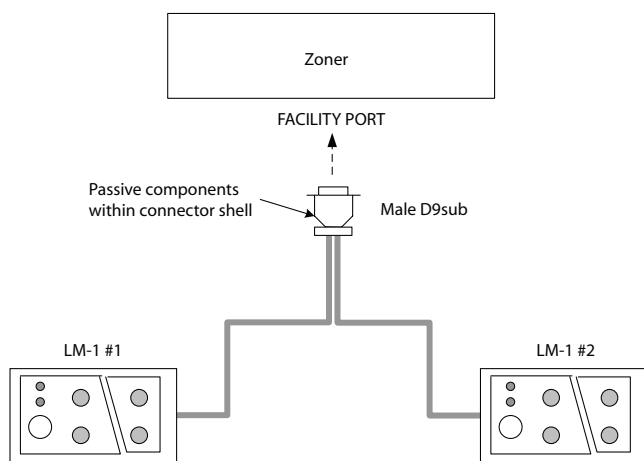


Fig.2

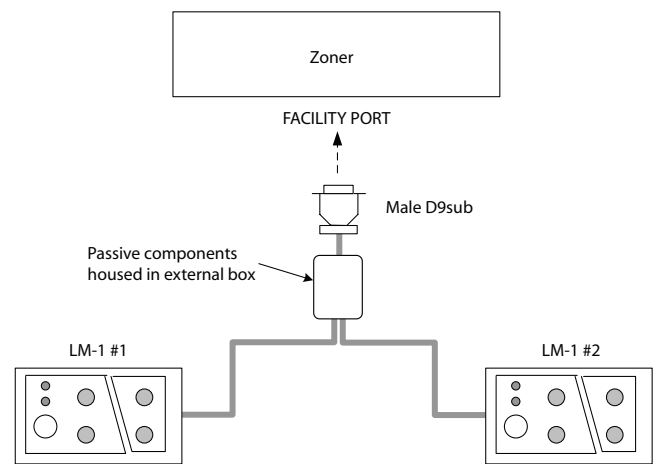


Fig.3

The procedures outlined below assume a new installation where two LM-I's are to be fitted and wired at the same time. It also applies in principle to the situation where a second LM-I is to be added to an existing system which already has one.

**Method 1 – direct wiring:**

1. Unpack the LM-I's. Note there are two PCBs fitted to the rear of the faceplate; connections are made to the 10-way screw terminal block on the upper PCB.
2. Connect up the LM-I's using the 10-core screened cable. Make a note of the core colours used (where possible, use the resistor colour code). Note that on one of the plates, terminals 1

and 2 are NOT connected - this will be the plate which does not have remote control of music level and source. Note also that the cable screen should be connected to terminal 3 at both plates.

3. Run the cables back to the zoner. Allow sufficient length to enable convenient working on the cable ends to take place, preferably on an adjacent flat surface, using a small vice. Strip the outer jackets to a length to suit the connector covers, and fold and cut the screening back as necessary. An electrical connection to the cable screens is required, so use a soldered length of hookup wire and a silicon sleeve to perform this neatly (the cable may have a drain wire, which simplifies this step).
4. Mount the Dsub connector in the vice. Cut one

wire of each of the four 4k7 resistors to about 5 - 7 mm, and solder two resistors to pin 3 and two to pin 4. (If this proves tricky, bend the wire of one resistor through 90° using pliers, and form a ‘hook’ with the end, wrapping it around the wire of the second resistor. Solder this joint, and then solder the second resistor to the connector pin.)

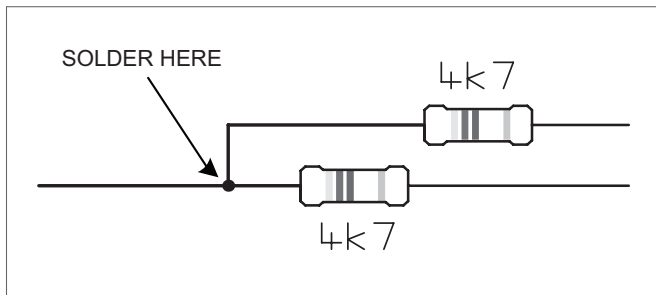


Fig. 4

5. Perform the same process with the two diodes, being sure to use the cathode wires of the diodes (indicated by a black band at one end of the diode). The diodes are soldered to pin 9.
6. The multicore cables from the two LM-1s may now be connected up. Refer to Table 1 and Fig. 7

From terminal on:		To Dsub pin:	Notes
LM-1 #1	LM-1 #2		
1	n/c	1	
2	n/c	2	
3	3	Connector shell	Cable screen
4	4	5	Parallel
5	5	9	Via diodes
6	6	4	Via 2 x resistors
7	7	3	Via 2 x resistors
8	8	8	Parallel
9	9	6	Parallel
10	10	7	Parallel

Table 1

- The cable cores which are connected to LM-1 terminals 4, 8, 9 and 10 must be soldered together to Dsub pins 5, 8, 6 and 7 respectively. Strip the end of the cores to about 10 mm, twist them together tightly and tin the ends. Then cut the tinned end back to about 3 mm, and push a silicone sleeve (try 1.5 mm bore) over the pair of cores. Solder to the pin, and slide the sleeve down so that the pin is completely covered and no conductor is visible.
7. Only one of the cables will have cores connected to LM-1 terminals 1 and 2. Solder these cores to Dsub pins 1 and 2 respectively. Use silicon sleeves as described above.
8. The remaining cable cores need to be soldered to the “free” ends of the resistors and diodes. Cut the free ends back to 5 mm or so. The cores from LM-1 terminals 7 should each be soldered to one of the two resistors on Dsub pin 3. Cut the cores shorter than those going directly to Dsub pins, twist the ends together and use a silicon sleeve as described above. Push the sleeve down over the soldered joint so that no conductor is visible. (See Fig. 5)

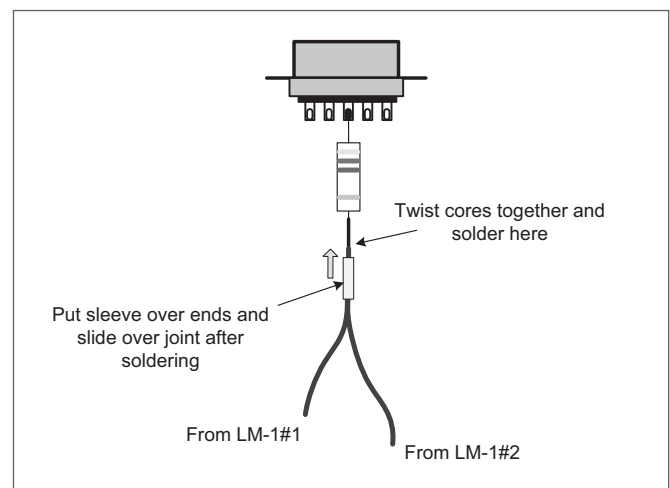


Fig. 5:

9. Repeat Step 8, connecting LM-1 terminals 6 to the resistors on Dsub pin 4 and LM-1 terminals 5 to the diodes.
10. Connect the screens of the two cables
11. Fit the cover to the Dsub connector, tighten the cable gland and plug into the Facility Port.

## Method 2 – wiring via external box:

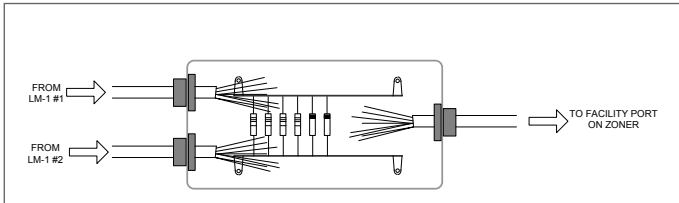


Fig. 6

1. Perform Steps 1 to 3 of Method 1 above.
2. Refer to Fig. 6. Drill two holes on one end of the box and one in the opposite end. Fit the cable glands. Fit the tagstrip (or similar) to the box base as necessary. The arrangement shown in Fig. 6 is by way

of example only, and that used in practice will depend on the components available.

3. Feed the two cables from the LM-Is through the two glands at one end. Prepare another length of multicore cable (max. length 0.5 m) and feed through the gland at the other end.
4. Solder the four resistors and two diodes to the tagstrips, noting the diode polarity.
5. Solder the cores of the cables from the two LM-Is to the tagstrips, following the wiring shown in Fig. 7.
6. Similarly, solder the cores of the outgoing cable to the tagstrips.
7. Tighten the cable glands and fit the lid on the box.
8. Wire the male 9-pin Dsub to the other end of the outgoing cable.

## System wiring

Fig. 7 shows the overall system wiring which is achieved by either Method 1 or Method 2.

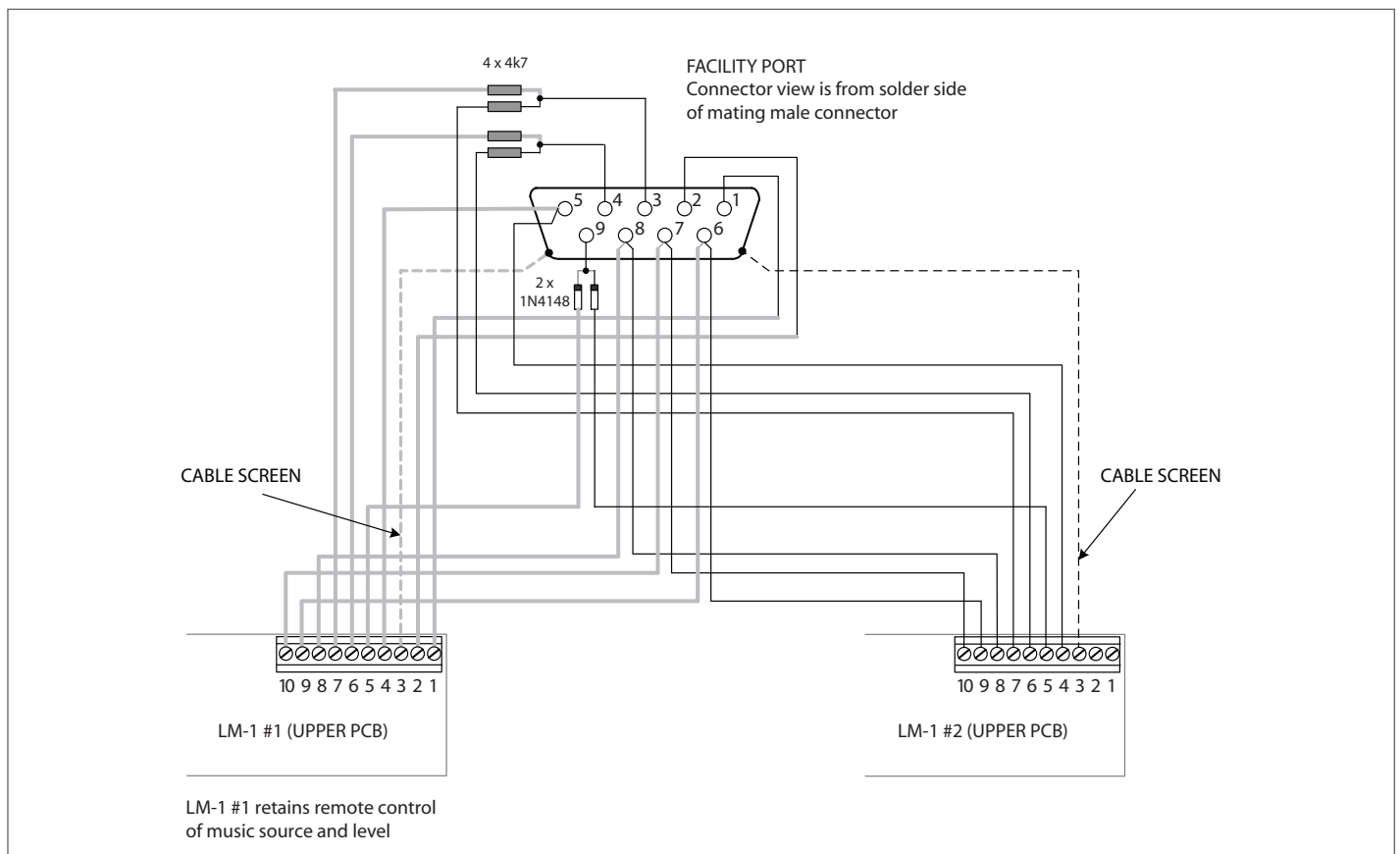


Fig. 7