Technical Note TN-007

Clearly better sound

Connecting an LM-2 to a Z4II/Z8II or 46/50

Preamble:

The LM-2 remote input/control module was introduced in 2013 as a replacement for the earlier LM-1, and is intended for use with the Z4MK3, Z8MK3 Zone Mixers and the 46-120 and 46-120MEDIA Multi-Zone Mixer Amplifiers, introduced at the same time. When installed in one of the host unit's Zones, it provides a local mic input, line input, and also remote control of background music source and level (as per the Cloud RSL-6 remote control module).

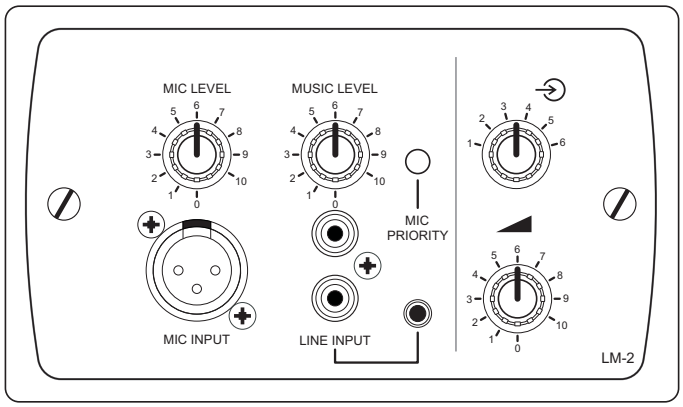
Like the LM-1, the LM-2 connects to its host unit via a single multicore cable to a rear panel Facility Port. Facility Ports on the Z4II, Z8II and 46/50 are 9-pin Dsub connectors; however instead of the screw-terminal connector fitted to the LM-1, the LM-2 uses an RJ45 connector, allowing the use of screened Cat 5 cable.

This Technical Note describes how to connect an LM-2 module to one of the older host units. Note that the LM-2 Installation Guide (supplied with each module) describes only the connections to the newer models. While much of the information in the Installation Guide is still valid, this Technical Note should be followed in preference to the Guide to make the correct connections and perform the necessary host configuration.

Applicable products:

LM-2* Remote Active Module, used in conjunction with a Cloud product fitted with one or more 9-pin Dsub Facility Ports. These are as follows:

- Z4II 4 Zone Mixer
- Z8II 8 Zone Mixer
- 46/50 4 Zone Integrated Mixer Amplifier



LM-2 front panel

*The LM-2 is currently available in six style/finish variants: LM-2B, LM-2W, LM-2AB, LM-2AW, LM-2DB and LM-2DW. This Technical Note is applicable to all variants; the wording "LM-2" is used throughout for brevity.

Limitations:

The 46/50 has a single Facility Port, on Zone 1. Thus an LM-2 used with this host unit will need to be located within Zone 1.

Parts required:

- 1 x screened RJ45 plug
- 1 x 9-pin male Dsub connector, with cover
- Screened Cat 5 cable of the appropriate length
- H10 silicone sleeves and 2 mm bore silicone

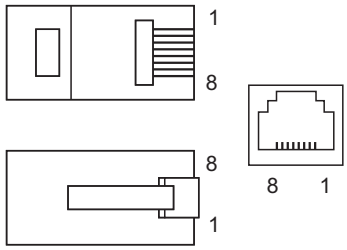
(Note that as the cable carries analogue audio, only screened cable and screened RJ45 connectors should be used.)

Tools required: RJ45 crimp tool, small wire cutters, wire stripper, small screwdriver (or as required) for Dsub cover assembly, small soldering iron, small bench vice.

Required Skill Level: Medium.
Experience in soldering Dsub connectors advisable.

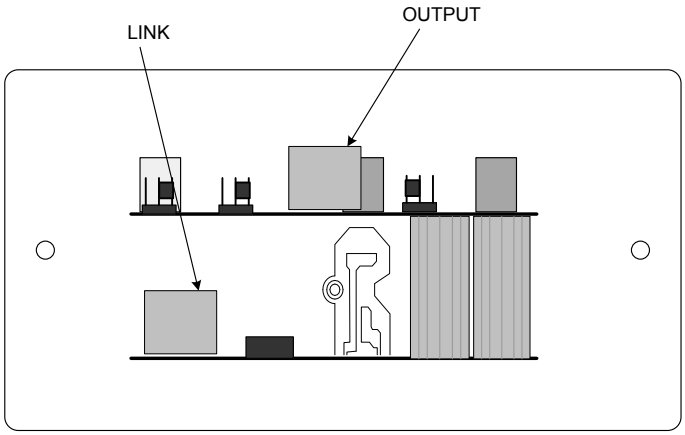
Procedure - wiring:

Connections at the LM-2 end are straightforward, and merely involve crimping a screened RJ45 connector to one end of the run of screened Cat 5 cable at the remote module location. Fit the connector according to the colour code listed below:



PIN	USE	CAT 5 CORE
1	Audio 'cold' phase (-)	White + Orange
2	Audio 'hot' phase (+)	Orange
3	Priority VCA control	White + Green
4	+15V	Blue
5	0V	White + Blue
6	-15V	Green
7	Music level control (0 to 10V)	White + Brown
8	Music source select control (0 to 10V)	Brown
9	Screen for system music controls	Connector shell

Plug the RJ45 connector into the socket labelled OUTPUT on the upper PCB at the rear of the LM-2 module.



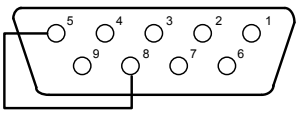
LOCATION OF REAR RJ45 CONNECTORS

(UK version illustrated. Sketch simplified; only primary components shown)

Note that the LM-2 has a second RJ45 port, labelled LINK. This is used when more than one LM-2 is to be installed in the same Zone. Refer to the LM-2 Installation Guide for full details about using this port.

At the host, it is necessary to solder the Cat 5 cable to the 9-pin male Dsub connector. We recommend the use of a bench vice to hold the connector secure while soldering. Do not strip the Cat 5 outer jacket back further than needed; 25 mm or so should be adequate. Twist the screen and insulate with silicone sleeving. Spread the eight inner cores out, untwisting the four pairs, and strip about 3-4 mm of insulation back. Tin the ends.

Note that Pin 5 needs to be connected to Pin 8; it is probably most convenient to solder one end of a short length of wire (a bit of Cat 5 core is fine) to Pin 5 before soldering the other pins. We recommend the use of H10 silicone rubber sleeves on all pins, (typically cut in half, about 10 mm long); slip these over the ends of the Cat 5 cores before commencing soldering, as well as the short length on Pin 5.



View from solder side of male mating connector, showing pin 5-8 link

Solder the Cat 5 cores to the D9 connector according to table below. Slide the H10 sleeve down over each pin as you make the connection.

D9 CONNECTOR	CAT 5 CORE	USE
1	Brown	Music source select
2	White + Brown	Music level control
3	Orange	Audio + ('hot'/phase)
4	White + Orange	Audio – ('cold'/antiphase)
5	(link to Pin 8)	Gate control
6	Green	-15V
7	Blue	+15V
8	White + Blue	0V
9	White +Green	Priority VCA control
Body	Cable screen	Ref. screen for music controls

Note that Pin 8 needs two wires to be soldered to it; these are best soldered at one go rather than sequentially.

Solder the screen to the metal body of the connector shell. Assemble the connector cover.

Procedure – host configuration:

In order for the remote control section (background music source and level controls) to operate correctly, the host unit must be set for remote control operation.

Z4II and Z8II:

Set the MUSIC CONTROL button on the host unit's rear panel to REMOTE (in) for the Zone in use. The button is adjacent to the REMOTE SOURCE + LEVEL connector immediately above the FACILITY PORT. This will disable the host unit's front panel music source and level controls for the Zone.

Sometimes it is desirable to permit remote control of music level but keep music source selectable only on the host unit. In this case, internal jumper J1 on the sub-board for the Zone in use should be moved from 'SW' to 'FR'. This will render the LM-2's music source switch inoperative, and return source selection to the front panel. See the Z4II/ Z8II Installation and User Guide for full details and jumper locations.

46/50:

These units only have a single Facility Port, for Zone 1. Thus the LM-2 can only be installed in Zone 1. (If the LM-2 needs to be added to a different Zone in an existing system, this restriction may be simply overcome by swapping outputs and renaming the Zones.)

Set the Z1 MUSIC CONTROL button to REMOTE (in). This button is immediately below the 4 x 3-pin REMOTE CONTROL PANEL CONNECTORS. This will disable the host unit's front panel music source and level controls for Zone 1.

Sometimes it is desirable to permit remote control of music level but keep music source selectable only on the host unit. In this case, set the Source Selection Jumper J3 (on the internal PCB) to the position 'FR'. This will render the LM-2's music source switch inoperative, and return source selection to the front panel. See the 46/50's Installation and User Guide for full details and jumper locations.

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