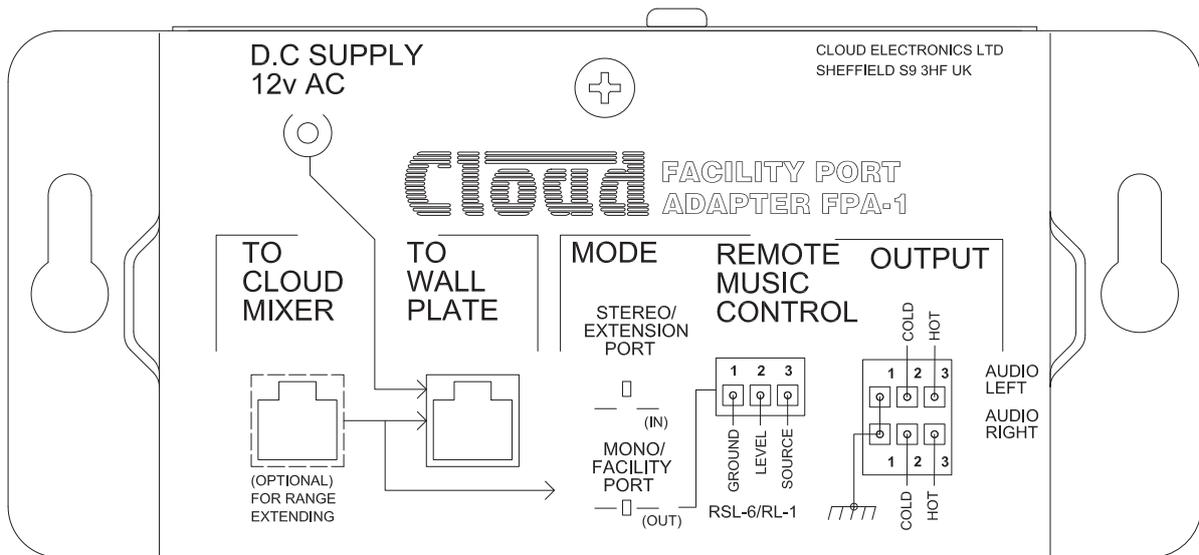


# FPA-1 Facility Port Adapter



## Installation Guide

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## Introduction

The FPA-I Facility Port Adapter is an accessory which can be used with almost any Cloud host product – amplifiers, zone mixers, zone mixing amplifiers, etc. Its primary purpose is to allow a remote input module fitted with an RJ45 connector - such as the LM-2 and BT-I - to be used with the host. Without an FPA-I, these remote modules are only directly compatible with Cloud host units fitted with an RJ45 Facility Port, such as the Z4/Z8MK4 and 46-I20 ranges.

With an FPA-I, audio sources connected at the remote input module are routed to a line input on the host device, greatly increasing the flexibility of the installation. The FPA-I supports both mono and stereo operation, and can be used with either unbalanced or balanced line inputs. The remote control functions of the LM-2 input module are also catered for, allowing remote volume control of many Cloud mixers and mixer-amplifiers.

The FPA-I is also compatible with LE-I, BE-I and ME-I remote input modules: these are normally used with the DCM-I range of Digital Control Mixers, but may be interfaced via an FPA-I to a line input on any host unit, in stereo or mono as appropriate.

A typical application example would be to use the FPA-I to connect a BT-IE Bluetooth wireless audio module to a CX26I Zone Mixer in a fitness centre. This would allow customers to route audio wirelessly from their own smartphones or portable MP3 players into the audio system, in stereo. The CX26I has stereo unbalanced inputs but no Facility Port; the BT-IE uses Cat 5 cable fitted with RJ45 connectors, so interfacing one to a CX26I would normally be problematical. The FPA-I makes connection simple: the BT-IE audio source is routed to a CX26I line input.

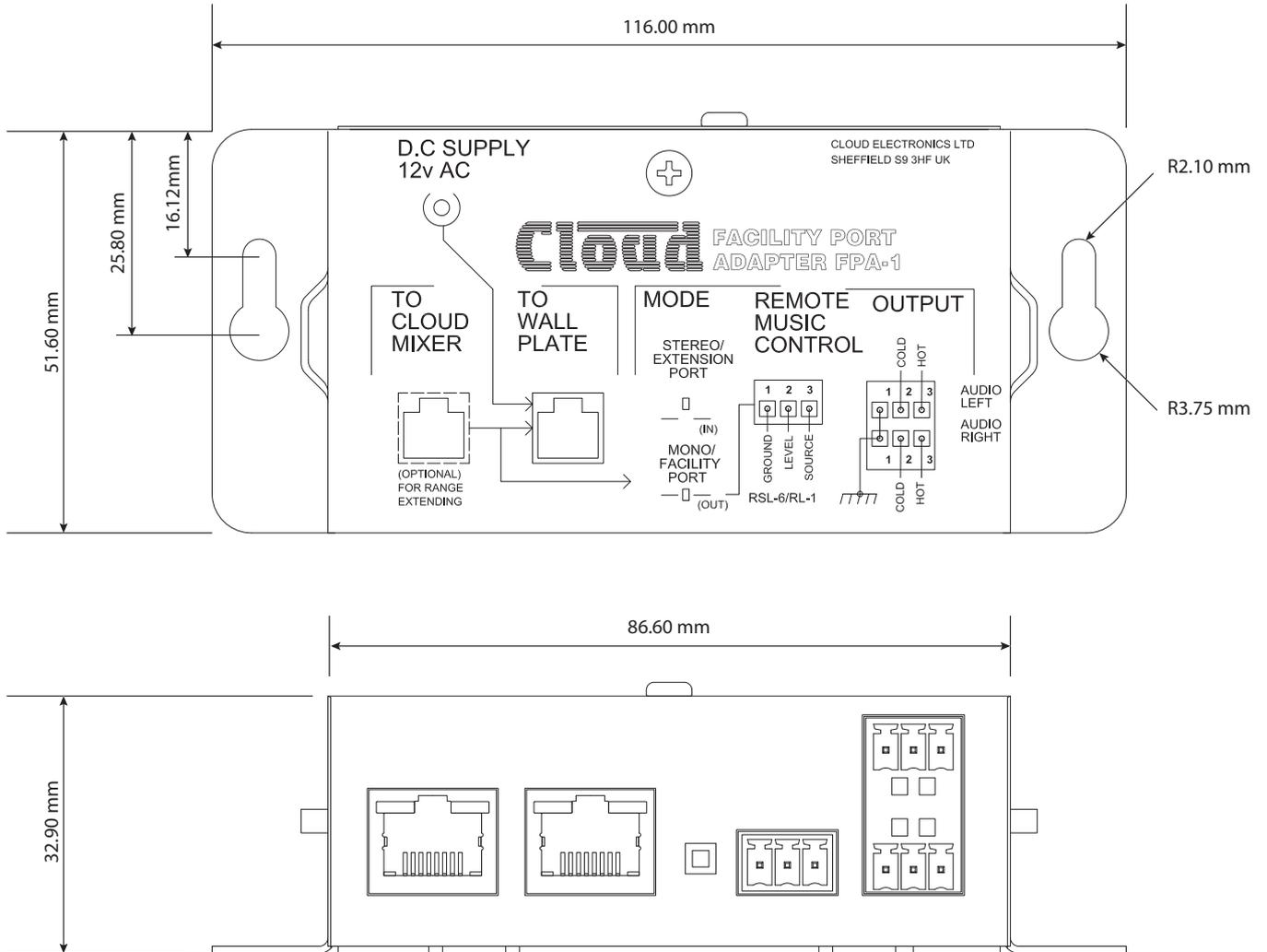
A secondary use for the FPA-I is to provide local DC power for a remote input module when unusually long cable lengths require it. Recommended maximum cable lengths for connecting accessories to host units are detailed in Technical Note TN-009 which can be found under “Cable Connector List” on the Resources page of the Cloud website. If these cable lengths are exceeded, or if other technical problems in a particular installation suggest that a separate PSU should be employed, the FPA-I acts as a convenient power injection point to supply local DC power to the input module.

### **IMPORTANT:**

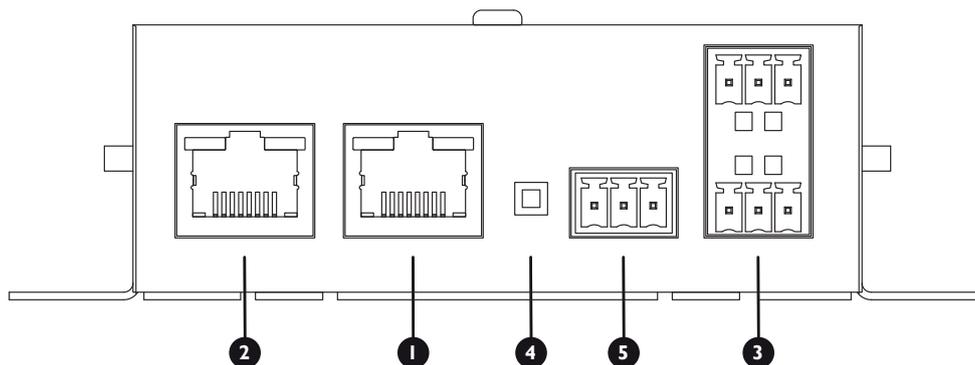
The FPA-I is an extremely versatile interface and may also be used to connect Cloud remote input modules to non-Cloud amplifiers or mixers. However it must be emphasised that the FPA-I has been developed for use with Cloud products exclusively, and its performance has only been evaluated using Cloud products. Thus while it is likely that the FPA-I will operate satisfactorily when used with some non-Cloud products, no guarantee can be given of correct operation and Cloud Electronics Ltd. accepts no responsibility for the consequences of any such use.

## Mounting - mechanical

The FPA-1 is a small steel unit with two “keyhole” slots for mounting. It can be easily fixed with wood screws or nuts and bolts to any convenient surface, in a wall or ceiling void or within a rack or other equipment housing. Power consumption is negligible and there are no ventilation considerations.



## Connections and Controls



1. **TO WALL PLATE** – connect this RJ45 socket to the remote input module (LM-2, BT-1, LE-1, BE-1 or ME-1) using screened Cat 5 cable and shielded RJ45 connectors.
2. **TO CLOUD MIXER** – a connection to this RJ45 socket is optional. If using the FPA-1 as a breakout box to provide local DC power to a remote input module, this connector can be used to connect to the host's Facility Port or Extension Port with screened Cat 5 cable in the normal way.

**NOTE:** Because both RJ45 connectors 1 and 2 carry analogue audio, only screened Cat 5 and shielded RJ45 connectors should be used.

3. **OUTPUT** – two 3-pin, 3.5 mm-pitch screw terminal connectors. Note there are separate connectors for **AUDIO LEFT** and **AUDIO RIGHT**, and each output is electronically balanced. For mono operation, connect either output to a line input on the host unit; for stereo operation connect both outputs. (Note that many Cloud host units are equipped with stereo line inputs which are summed internally to mono).

The pinout of each connector is as follows:

PIN	SIGNAL	NOTES
1	Screen	
2	Audio '-' (cold)	Do not use when connecting to an unbalanced input
3	Audio '+' (hot)	

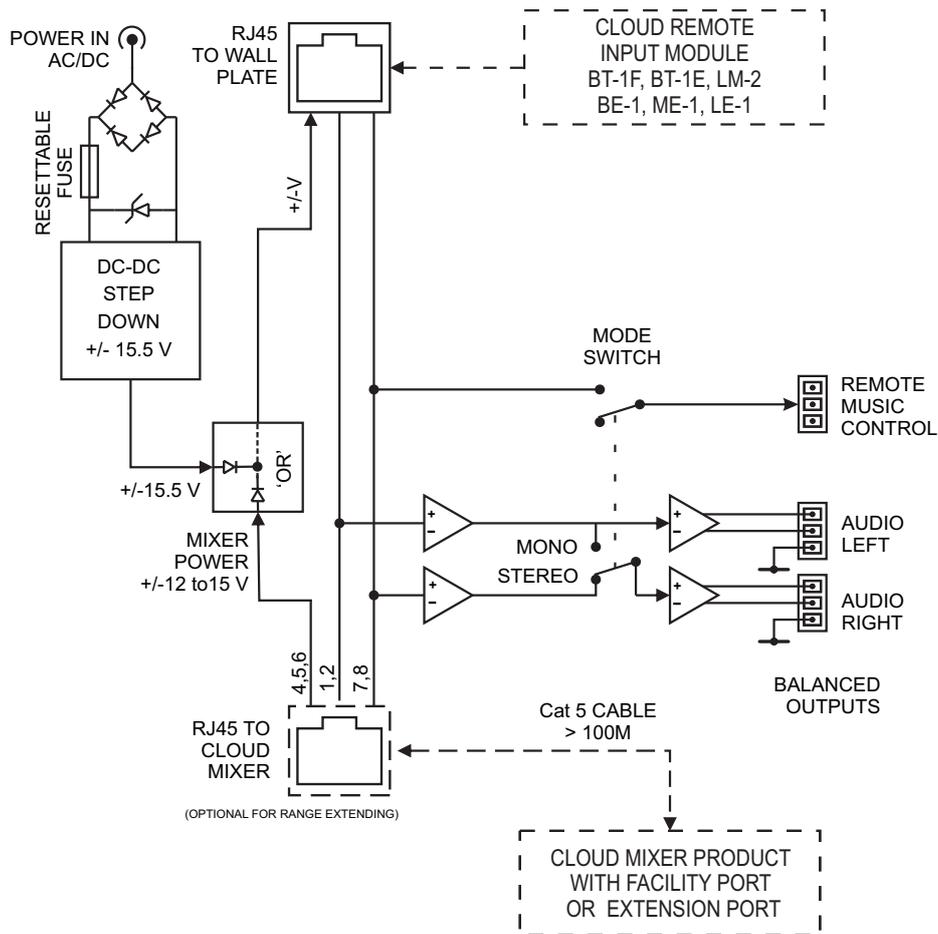
4. **MODE** – a recessed press button switch: set to **MONO/FACILITY PORT** (button out) to configure the outputs as mono and to **STEREO/EXTENSION PORT** (button in) to configure them as stereo.
5. **REMOTE MUSIC CONTROL** – a 3-pin, 3.5 mm-pitch screw terminal connector for connecting to the host unit's remote music control port. (Note that this port is identified in various ways on different Cloud products: **MUSIC CONTROL**, **RSL-6**, etc.)
6. This connector carries the control voltages from the remote level and source controls on the input module connected at 1 e.g., an LM-2. The pinout of the connector is as follows:

PIN	FUNCTION	NOTES
1	Ground	
2	Remote level control	
3	Remote source select	Do not connect if host unit does not support remote source selection

Setting switch 4 to **STEREO** disables this connector.

**Note:** switches (and in many cases, internal jumpers) will need to be set in the host unit in order for remote music controls to operate.

## Block Diagram



## Installation – connections

### Powering the FPA-I

The FPA-I will operate from a power supply of 12V AC or 12 to 24V DC. A 12V AC “plugtop” type PSU is supplied with each adapter. Connect this to the coaxial socket on the rear of the housing.

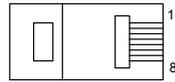
### Application Examples:

The FPA-I is a highly versatile interface and can be used in a variety of ways for different purposes. Its primary purpose is to allow remote input modules with only RJ45 connectivity to be used with Cloud host units that are not provided with either RJ45 Facility Ports or RJ45 Extension Ports. This includes most Cloud products of older design, such as the CX261, CX263, CX163, MPA, CX and VTX Series amplifiers (all current production).

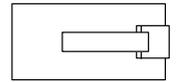
The various methods of connecting the FPA-I are described below by way of four examples. Use the example that most closely follows the combination of Cloud items being installed.

In all cases, the remote input module should be connected to the **TO WALL PLATE** RJ45 socket on the FPA-I using screened Cat 5 cable and shielded RJ45 plugs.

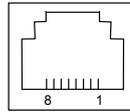
**IMPORTANT:** Because the cables carry low-level audio, *only* screened Cat 5 should be used, the foil screen of the cable being bonded to the metal screening can of the plugs. If a remote input module is being installed in very close proximity to the host unit, it may be possible to use ready-made screened Cat 5 “patch” cables of short length. In all other situations, shielded RJ45 plugs should be crimped onto the installed screened Cat 5 cable using the pinout shown on the following page.



RJ-45 PLUG (PIN SIDE)



RJ-45 PLUG (LATCH SIDE)

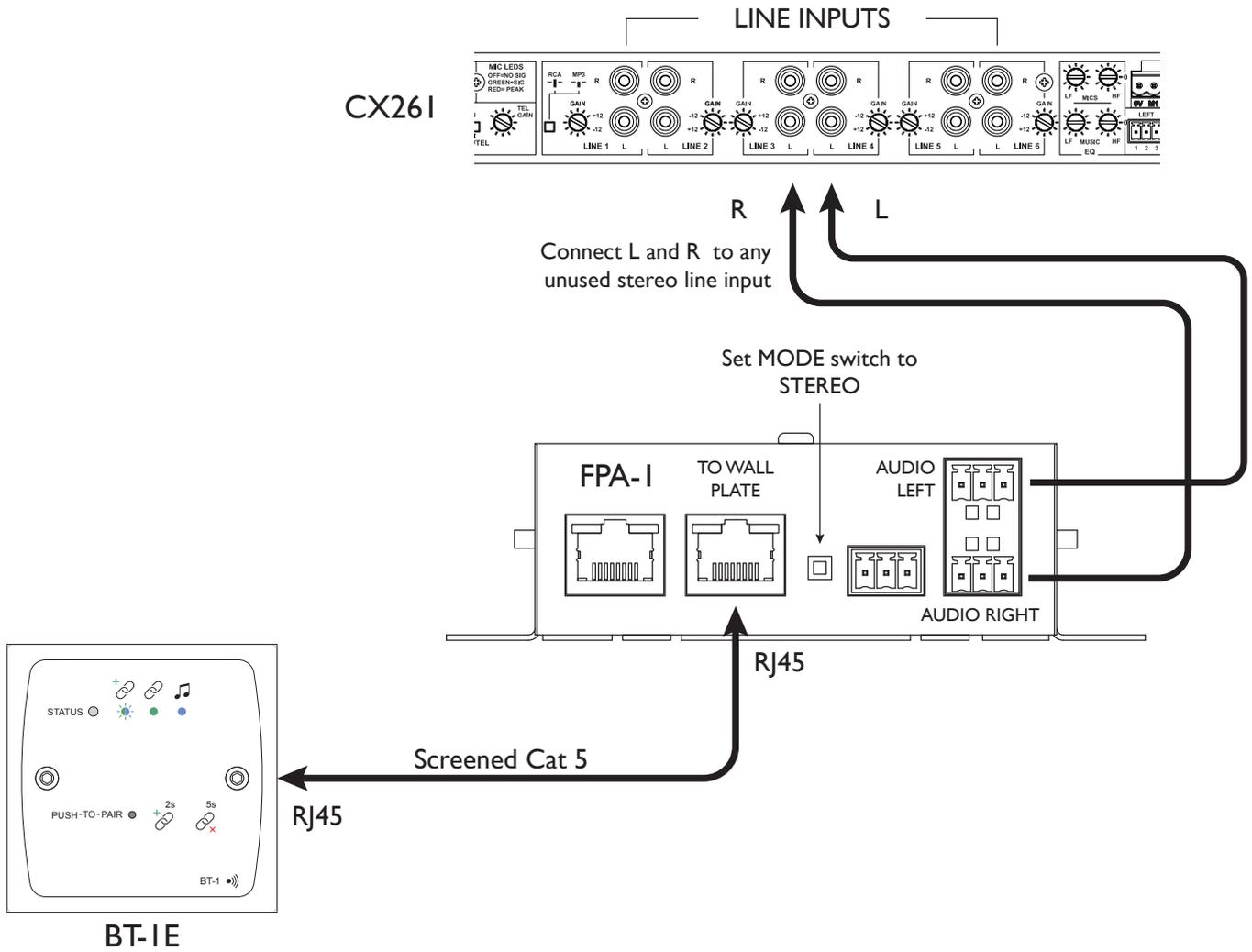


RJ-45 SOCKET

PIN	USE (MONO MODE)	USE (STEREO MODE)	Cat 5 CORE
1	Audio 'cold' phase (-)	Left audio channel 'cold' phase (-)	White + Orange
2	Audio 'hot' phase (+)	Left audio channel 'hot' phase (+)	Orange
3	Priority VCA control	Model sense	White + Green
4	+V <sub>supply</sub>	+V <sub>supply</sub>	Blue
5	0V	0V	White + Blue
6	-V <sub>supply</sub>	-V <sub>supply</sub>	Green
7	Music level control voltage	Right audio channel 'hot' phase (+)	White + Brown
8	Music source select control voltage	Right audio channel 'cold' phase (-)	Brown
SCN	Screen for system music controls	Screen	Connector shell

## I. Connecting a BT-IE to a CX261

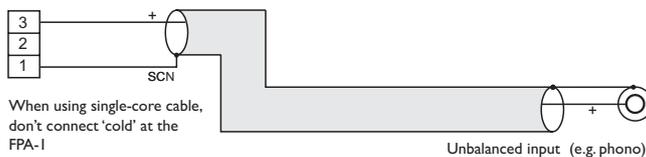
A BT-I wireless audio input module allows a user to use their Bluetooth-enabled smartphone or MP3 player to be the audio source for the system to which the BT-I is connected. The CX261 is a stereo, single zone mixer with six line inputs. An FPA-I allows a BT-IE module to be interfaced to one of the CX261's line inputs. Note that as a BT-IE is stereo-capable, the audio source retains its stereo status through the entire system; the BT-IF variant does not have this capability.



The audio connection between the FPA-I and the CX261 line input is most easily achieved with a pre-made twin phono-phono cable, with the connectors at one end cut off. This can then be connected to the left and right audio outputs of the FPA-I, using the mating connectors provided.

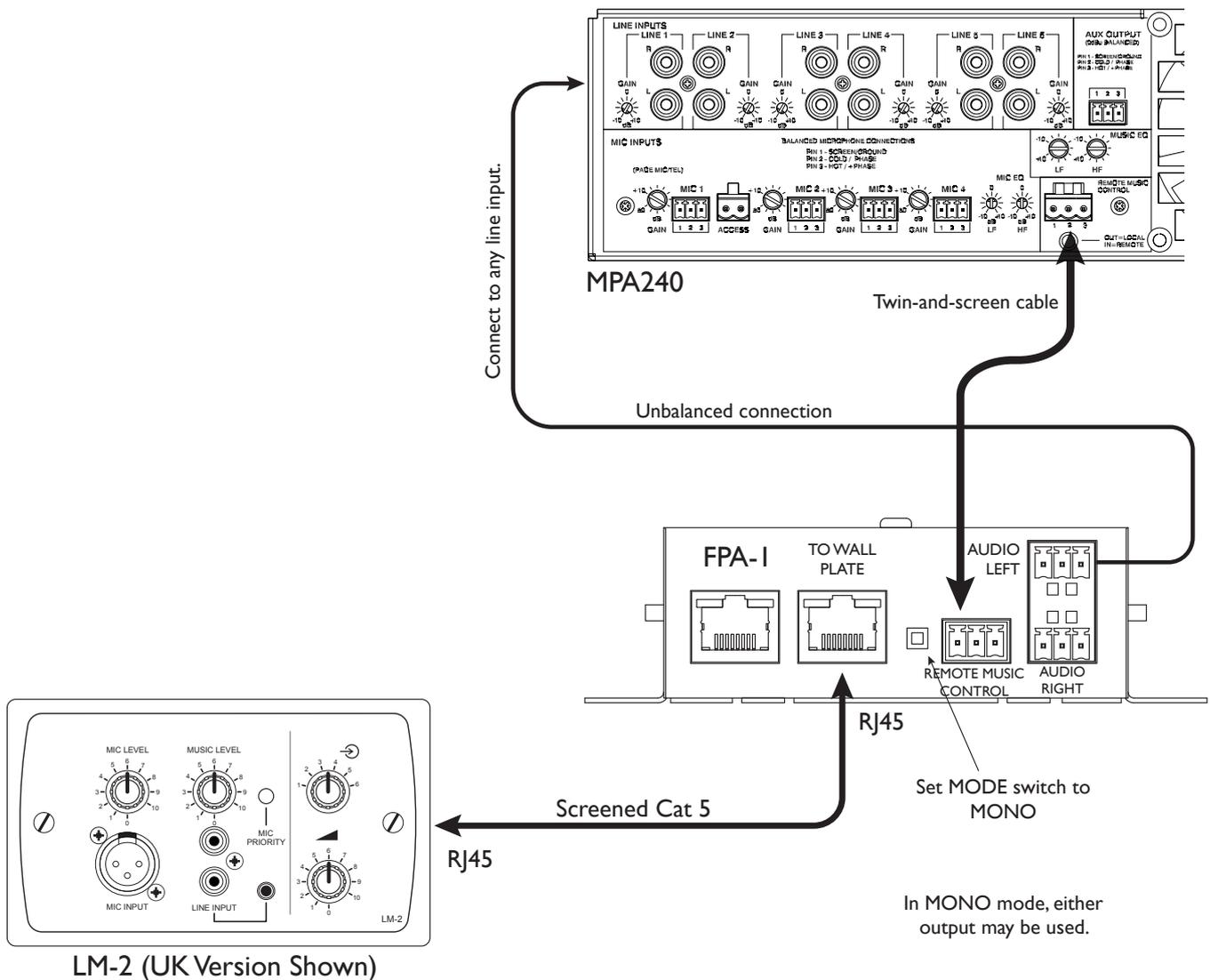
Note that the inputs to the CX261 are unbalanced while the FPA-I outputs are balanced. Wire pins 1 (screen) and 3 (hot) only – do not connect pin 2 (cold).

**FPA-I Balanced output:**  
 pin 1 ground  
 pin 2 cold  
 pin 3 hot



## 2. Connecting an LM-2 to an MPA240

The LM-2 is a remote input module which provides mic and line inputs plus remote control of music level and source selection. The MPA240 is a single zone mixer-amplifier for use with either low-impedance or 70/100 V-line systems. An LM-2 can be interfaced to an MPA240 using an FPA-1 to provide a remote audio input point: audio sources connected here will become available to the mixer-amplifier via a line input, and can be selected with the front panel source selection switch. The LM-2 will also allow remote control of audio volume.



The MPA240 has unbalanced inputs, so a phono cable with one end cut off may be used to connect the audio outputs of the FPA-1 to the amplifier. As in Example 1, wire pins 1 (screen) and 3 (hot) only – do not connect pin 2 (cold).

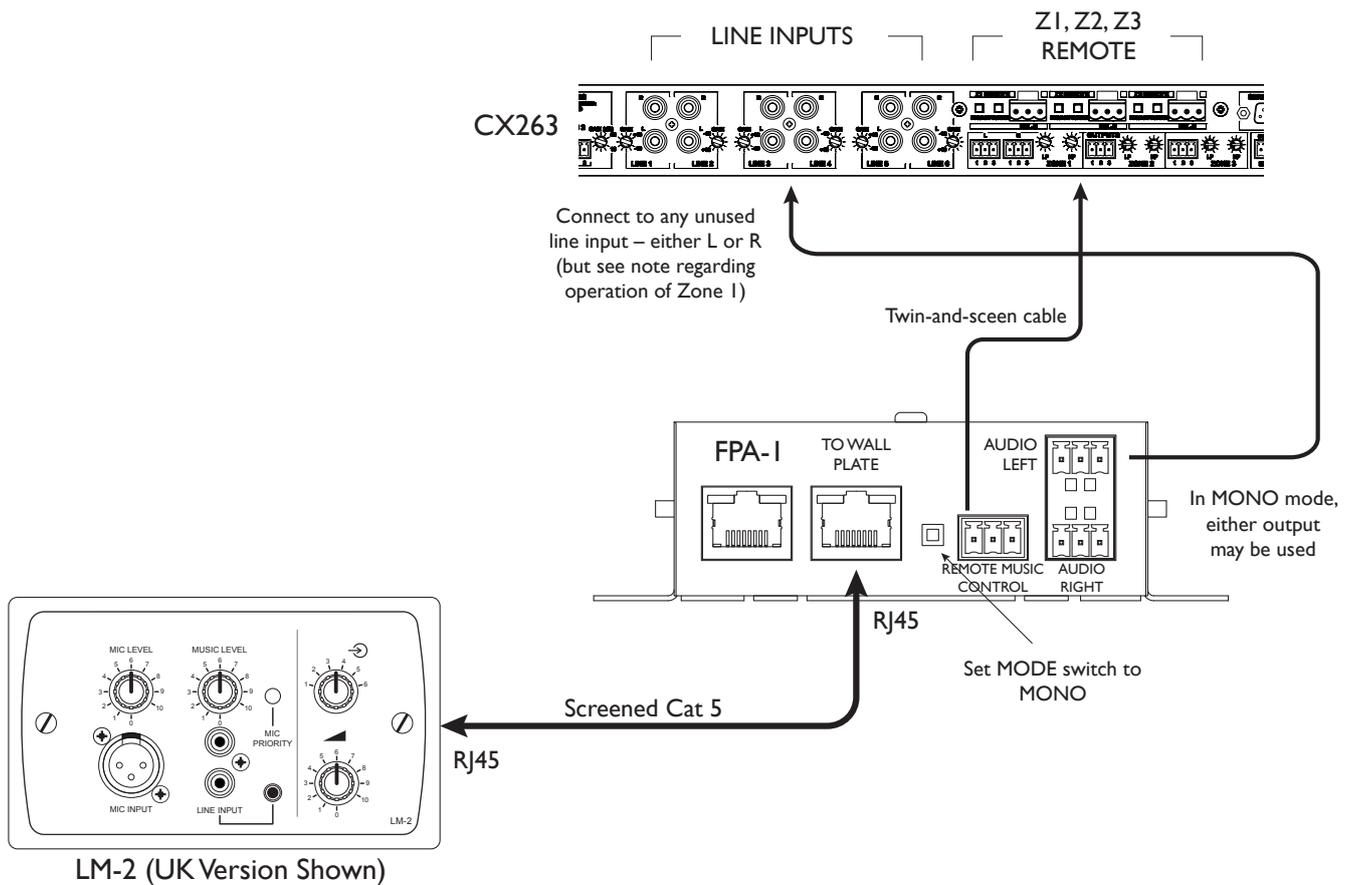
A second connection is required to implement the remote level control function of the LM-2. (The LM-2's remote source selection control is unused in this application.) In the case of the MPA240, twin-and-screen cable should be used for the connection. Ensure that all three connections are made pin-for-pin. Note that the remote control ports on the MPA240 are marked **REMOTE MUSIC CONTROL**.

If connecting to a host unit other than an MPA240 mixer-amplifier, please consult the specific Installation and User Guide for details of how to connect to and enable the remote control port, as there are certain differences between Cloud models.

### 3. Connecting an LM-2 to a CX263

The LM-2 is a remote input module which provides mic and line inputs and remote control of music level and source selection. The CX263 is a three zone mixer amplifier with six line inputs; Zone 1 may be stereo, while Zones 2 and 3 are always mono. An LM-2 can be interfaced to a CX263 using an FPA-1 to provide a remote audio input point: audio sources connected here will become available as one of the six amplifier sources. The LM-2 will also allow remote control of audio volume and selection of the audio source.

For Zones 2 & 3, the CX263 sums stereo audio sources internally to mono, while retaining full two-channel operation for Zone 1. Thus the FPA-1 can be set to operate in either mono or stereo mode, depending on the circumstances of the installation. However, as in Example 2, selection of stereo mode will disable the remote control functions, so this example illustrates the FPA-1 installation in mono mode. Zone 1 on the CX263 may be reconfigured for mono operation by internal jumper: depending how the zones are configured, it may be preferable to connect the mono audio output of the FPA-1 to both the L and R sockets of the chosen line input. Please consult the CX263 Installation and User Guide for further details.



As in Example 1, the audio connection to the host unit is most easily made by cutting off the connector(s) from one end of a pre-made phono-phono cable. Wire pins 1 (screen) and 3 (hot) only at the FPA-1 end.

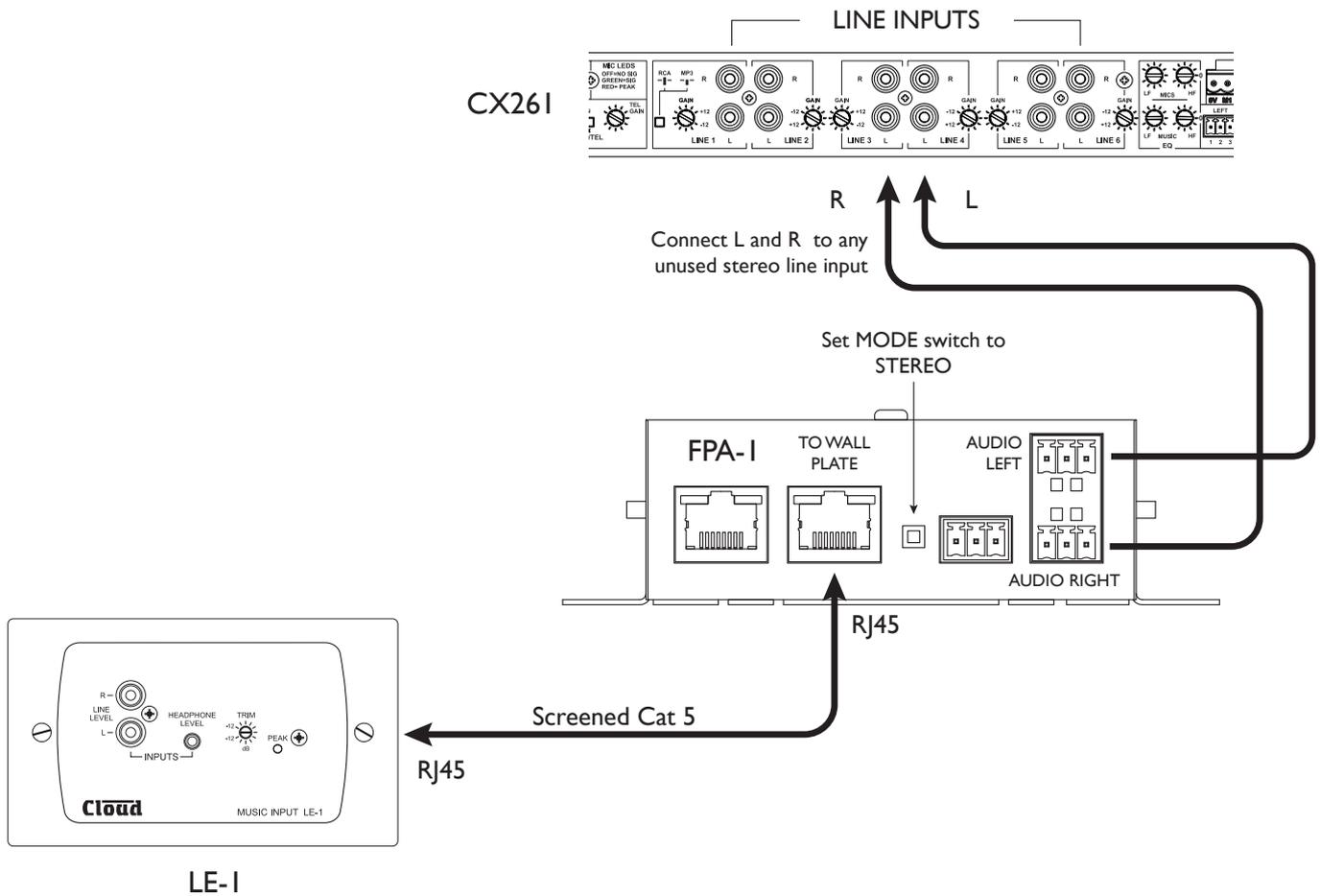
A second connection is required to implement the remote control functions of the LM-2. Use twin-and-screen cable for this, observe the pinout in the **REMOTE MUSIC CONTROL** table at page 5, and ensure that all connections are made pin-for-pin. The CX263 has a separate remote control port for each zone: these are marked **Z1 REMOTE**, **Z2 REMOTE** and **Z3 REMOTE**. In common with most Cloud units supporting remote control, the remote control port will need to be enabled; in the case of the CX263, this is via a rear panel push-button switch.

If connecting to a host unit other than an CX263, please consult the specific Installation and User Guide for details of how to connect to and enable the remote control port, as there are certain differences between Cloud models.

#### 4. Connecting an LE-1 to a CX261

The LE-1 is a simple remote input module providing a stereo line input on both phono sockets and a 3.5 mm jack socket. A level trim control and a Peak LED are included. The CX261 (see also Example 1) is a stereo, single zone mixer with six line inputs. An FPA-1 will allow a stereo music source to be routed to one of the CX261's line inputs, retaining its stereo status through the entire system.

This achieves essentially the same result as Example 1, but allows for a wired connection of the audio source rather than a wireless one. ME-1 (dual microphone inputs) and BE-1 (two XLR balanced line inputs) modules may be connected in exactly the same way.



The audio connection between the FPA-1 and the CX261 line input is most easily achieved with a pre-made twin phono-phono cable, with the connectors at one end cut off. This can then be connected to the left and right audio outputs of the FPA-1, using the mating connectors provided.

Note that the inputs to the CX261 are unbalanced while the FPA-1 outputs are balanced. Wire pins 1 (screen) and 3 (hot) only – do not connect pin 2 (cold).

#### Connecting multiple LM-2s

Two or more LE-1s may be installed by employing the LINK connector on the lower rear PCB. The primary purpose of this feature is so that music sources may be connected into the audio system at different locations. BE-1 modules may also be chained and intermixed with LE-1s. Note it is not possible to mix ME-1 modules with LE-1s and/or BE-1s.

## Technical Specification

<b>ELECTRICAL</b>	
Frequency response	+/- 0.5dB 20 Hz – 20 kHz
Distortion	< 0.01%
Noise	<-90 dB
Power Input	12V AC (adaptor supplied) or 12-24V DC
<b>PHYSICAL</b>	
Dimensions	116 mm x 33 mm x 54 mm
Shipping Dimensions	200 mm x 140 mm x 80 mm
Weight (discounting PSU)	184 g
Shipping Weight	545 g
Dimensions	116 mm x 33 mm x 54 mm







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