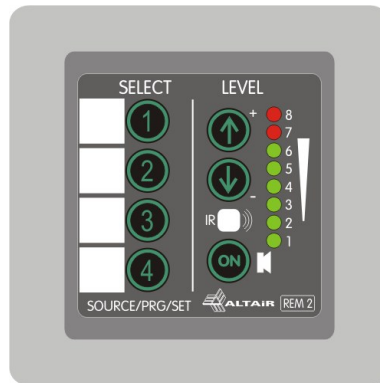# REM-2

REMOTE CONTROL for
MATRIX AUDIO PROCESSOR MAP SERIES
OWNERS MANUAL

Version 1.0   May 2014

PACKING LIST:

-THIS OWNERS MANUAL
-1x REM-2
-1x Terminal Block 4 pin, screw type, plug

## 0. INTRODUCTION

The REM-2 is a wired remote control to be used on audio installations equipped with a Matrix Audio Processor Altair MAP series. The remote includes a group of 4 keys that can be programmed under the 3cMAP software allowing each key a broad range of functions as preset recall, source selection, gpio control, etc. A pair of up/down keys are included to be used as room volume control, parameter scroll, etc. Mute key allows for temporary volume shut down. A bargraph composed of eight leds allows for level indication, volume adjustment or general purpose parameter set indication.

The device is equipped with an infrared IR receiver allowing remote control by either the optional Altair IR-02 remote control or any compatible of your own remote.

1. INSTALLATION
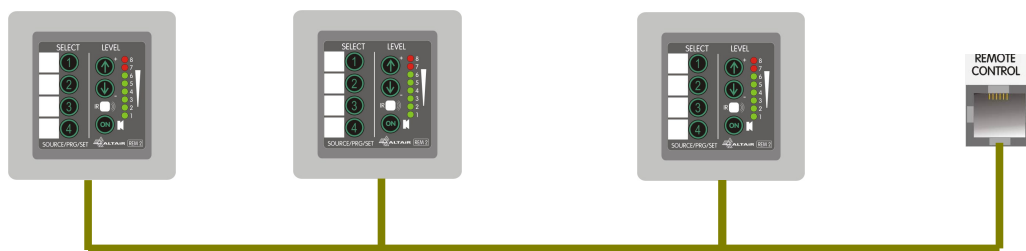
The REM-2 is designed to be mounted on European universal flush mounting boxes or surface mounting boxes for convenience or when worldwide installations.

For user and testing convenience the unit comes fully assembled and must be dismounted -following electrical wall sockets procedure- before installation:

DISMOUNTING: You can separate the 3 parts by levering the chassis plate from the decorative bezel by using a small flat screwdriver. If the unit is installed, simply lever it from the wall.

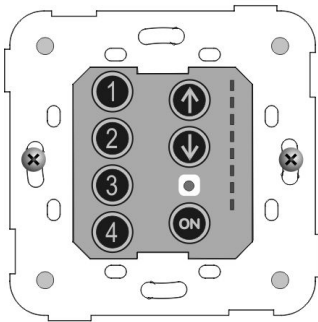The unit comprises three parts: a chassis plate/pcb, a decorative bezel and a faceplate.
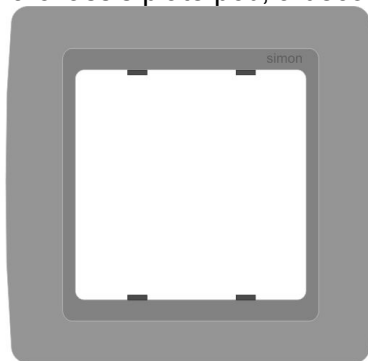

Fig1 CHASSIS PLATE/PCB

Fig2 DECORATIVE BEZEL
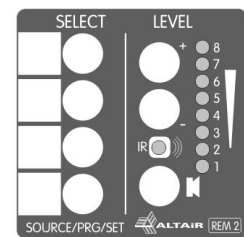
Fig3 FACEPLATE

MOUNTING on the wall box

1/Install the chassis plate/pcb into the wall box and screw the box screws. The unit can be mounted with two horizontal (shown) or two vertical screws. Check the 4 wires are secured into the plug.

2/Place the decorative bezel by centering the 4 plugs into the holes.

3/Check the faceplate has installed its 9 led pipelines. Center it into the decorative bezel as shown. Force it gently downwards by applying force in all corners at a time. Hear a click.

If necessary, dismount from the wall and try it again.

2. WIRING

The REM-2 must be connected in either daisy-chain or star configuration to the MAP processor´s remote connector. In both layouts all the remotes are wired pin to pin para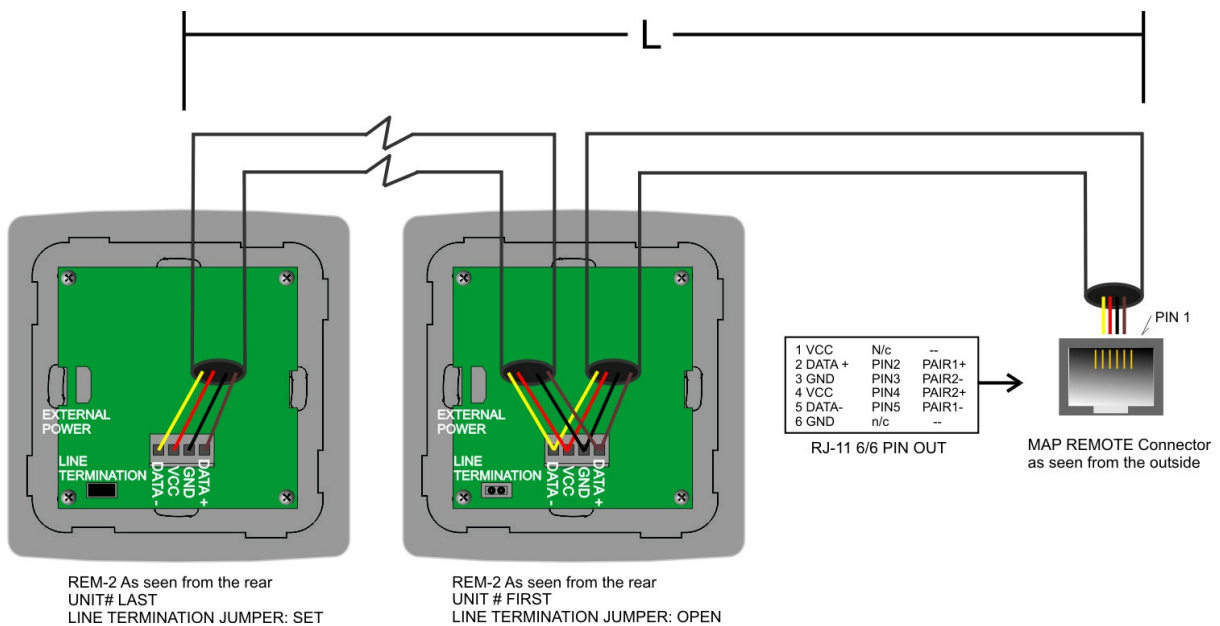lleled. Daisy chain allows for a lower non cumulative cooper loses, better control of the installation at a large total wire length penalty.

The unit incorporates an automatic addressing system that is arranged at the first time the system is configured. The system would recognise and name each remote separately.

Depending on the total cable length and the number of remote in the installation, it is recommended different solutions:

2.1 SMALL INSTALLATIONS

Wiring is done with two cat5 or equivalent pairs (four wires total) as depicted.
Due to copper loses a maximum length is allowed as seen on the table bellow.
Last unit in the line must be terminated by using a jumper connector.


```
1 VCC     N/c     --
2 DATA +  PIN2    PAIR1+
3 GND     PIN3    PAIR2-
4 VCC     PIN4    PAIR2+
5 DATA-   PIN5    PAIR1-
6 GND     n/c     --
```
RJ-11 6/6 PIN OUT

MAP REMOTE Connector
as seen from the outside

REM-2 As seen from the rear
UNIT# LAST
LINE TERMINATION JUMPER: SET

REM-2 As seen from the rear
UNIT # FIRST
LINE TERMINATION JUMPER: OPEN

# OF REMOTES	MAX WIRE LENTH m/(ft) first to last unit. cat5 wire, 0.2mm2, AWG24
1	200/(650)
2	100/(325)
3 to 4	50/(165)
5 to 8	25/(82)

2.2 MEDIUM SIZE INSTALLATIONS

Wiring is done with three cat5 or equivalent pairs (six wires) as depicted.
Due to copper loses a maximum length is allowed as seen on the table bellow.
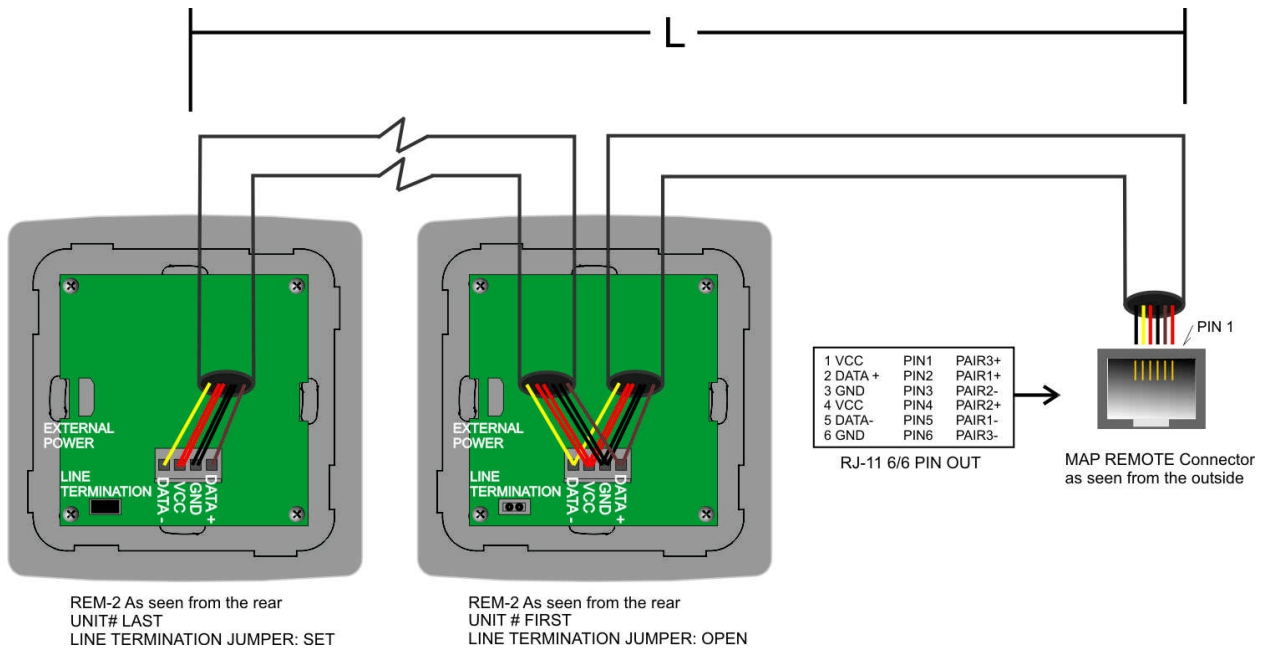Last unit in the line must be terminated by using a jumper connector.


```
1 VCC      PIN1    PAIR3+
2 DATA +   PIN2    PAIR1+
3 GND      PIN3    PAIR2-
4 VCC      PIN4    PAIR2+
5 DATA-    PIN5    PAIR1-
6 GND      PIN6    PAIR3-
```

RJ-11 6/6 PIN OUT

MAP REMOTE Connector
as seen from the outside

REM-2 As seen from the rear
UNIT# LAST
LINE TERMINATION JUMPER: SET

REM-2 As seen from the rear
UNIT # FIRST
LINE TERMINATION JUMPER: OPEN

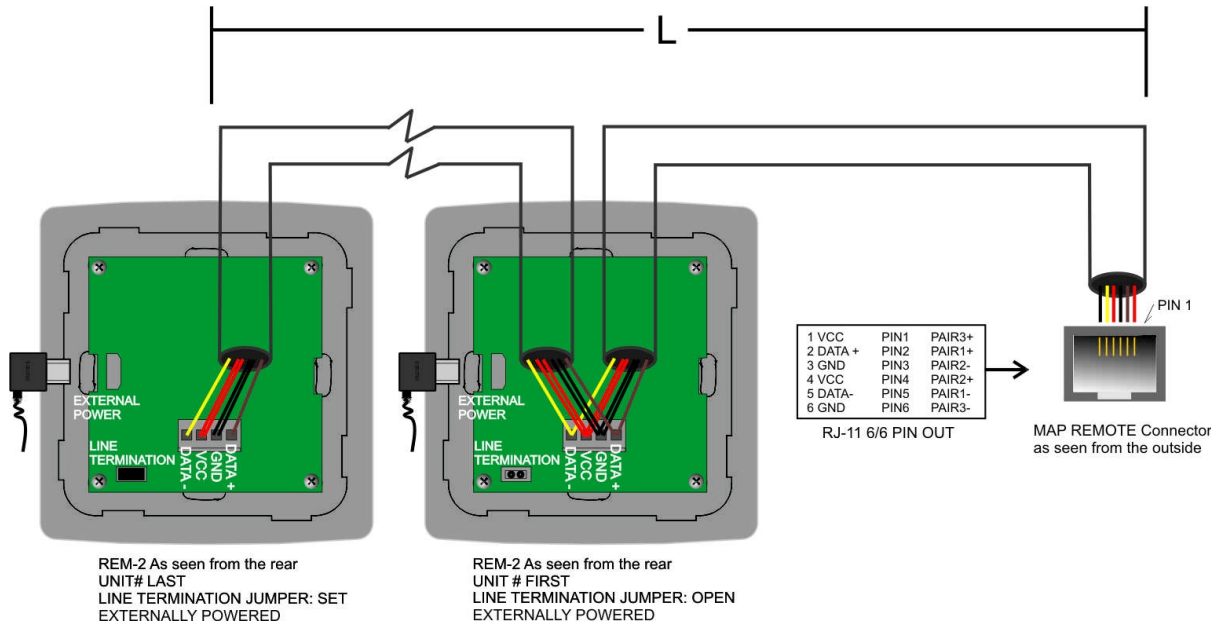| # OF REMOTES	MAX WIRE LENTH m/(ft) first to last unit. cat5 wire, 0.2mm2, AWG24
1	400/(1300)
2	200/(650)
3 to 4	100/(325)
5 to 8	50/(165)

2.2 LARGE SIZE INSTALLATIONS

Wiring is done with three cat5 or equivalent pairs (six wires) as depicted.

In order to overcome the cooper loses, the remote connected far than 100 meters from the MAP processor or the remote higher than number 8, each must be externally powered by using a micro-USB commercial power wall adaptor.

Due to the protocol specification, the maximum cable run is about 500 meter independent of the number of units.

Last unit in the line must be terminated by using a jumper connector.

REM-2 As seen from the rear
UNIT# LAST
LINE TERMINATION JUMPER: SET
EXTERNALLY POWERED

REM-2 As seen from the rear
UNIT # FIRST
LINE TERMINATION JUMPER: OPEN
EXTERNALLY POWERED

1 VCC	PIN1	PAIR3+
2 DATA +	PIN2	PAIR1+
3 GND	PIN3	PAIR2-
4 VCC	PIN4	PAIR2+
5 DATA-	PIN5	PAIR1-
6 GND	PIN6	PAIR3-

RJ-11 6/6 PIN OUT

MAP REMOTE Connector
as seen from the outside

# OF REMOTES	POWERED FROM MAP m/(ft)*	LOCALLY POWERED m/(ft)*
1	400/(1300)	1200/(4000) **
2	200/(650)	1200/(4000) **
3 to 4	100/(325)	1200/(4000) **
5 to 8	50/(165)	1200/(4000) **
9 to 32	Not allowed	1200/(4000) **

*In both cases calculations based on wire size cat5, 0.2 mm2, AWG24.   **Specs. limit

3. CONNECTION and POWERING

As previously described a set of REM-2 units can be powered directly from the MAP processor data wiring. Maximum allowed load is limited to 500 mA that corresponds to 8 units. Using an external power supply per remote solves for this limit. Cable cooper loses could reduce de number of units or the operating cable length as detailed. To overcome this loses, higher cable section is recommended. In some cases (as depicted on *large size installations* chapter) doubling the power cables by using 3 pairs instead of the minimum 2 pairs, would double the operating length or the number of units as depicted.

In order to overcome the cable loses, the units can be powered locally by using a standard 5V wall adapter supply equipped with micro USB. Right angle connector types maybe more convenient depending on the available space on the wall box. Connect the adaptor to the mains following the manufacturer operation and indications. Never install the adaptor inside a wall box.

Connection to the MAP processor is carried out with a 4 pin terminal block plug included. Plug accepts up to 1.3 mm2 (AWG16) cable sections.

3.1 TERMINAL LINE. IMPEDANCE

For proper operation in large cable runs, it is advisable to terminate the last -farthest- remote unit. To do so, simply insert a jumper into the rear socket labelled *terminal line.*
Choose a cable with an impedance of 100 ohms for optimum operation. Cat5 type is recommended.

4. PANEL OPERATION

All the settings are stored on the REM-2 device. Care must be taken when changing the remote control for another use than the originally programmed on the 3cMAP. Each remote comes from factory with a serial number than identify it on the installation's remote network.

4.1 KEY OPERATION
All the SELECT four keys, the up/down LEVEL keys and the ON key can be programmed separately to perform the desired action when operated. Function definitions are managed on the 3cMAP software that is running on the MAP processor. Keys would operate either as momentary or latching mode depending on the assigned action or mode selected. Included led on the key would show the action taken. Each key includes space for installing a label associated to the key function.
A pair of keys are dedicated for LEVEL up/down control or for parameter set-up.
A key is dedicated for ON/OFF (*muting)* the selected zone (output) or selected input.
Each key function is defined as **Button 1, Button 2, Button 3, Button 4, Level and On** on the REMOTE CONTROL window of the 3cMAP program.
NOTE. Allow a small time delay response for repeated key strokes specially when setting levels.
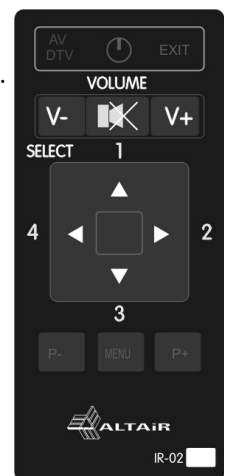
4.2 LED BARGRAPH
An eight led dot bar, indicates the actual level in dBu's of the input or output channels defined on the REMOTE CONTROL window of the 3cMAP as **Level.** This bargraph serves also for momentary indication of the adjusted level point in dB's. Leds 1 to 6 are green. Leds 7 and 8 are red (indication of upper 0 dB region)

-	**Dot 1**	1+2	**Dot 2**	2+3	**Dot 3**	3+4	**Dot 4**	4+5	**Dot 5**	5+6	**Dot 6**	6+7	**Dot 7**	7+8	**Dot 8**
<-25	-25	-22,5	-20	-17,5	-15	-12,5	-10	-7,5	-5	-2,5	**OdB**	2,5	5	7,5	10or>

5. INFRARED CONTROL

The unit incorporates an IR receiver. The receiver operates with transmitters compatible with the NEC standard as been one of the most common devices in the A/V consumer market. The REM-2 can recognise and learn the code in a key by key basis and then it is very easy to assign it to the REM-2 keys by making a simple association. This allows the use of your own IR remote by using the not used key set for the MAP operation.
Alternatively, you can buy the accessory Altair IR-02 infrared remote, that comes programmed specifically for the REM-2 key layout. See correspondent owners´s manual for additional information.

Altair IR-02
Infrared Remote

6.TECHNICAL SPECIFICATIONS

PANEL CONTROLS/INDICATORS	• 4x Source/prg/set illuminated keys. • 2x Level/parameter set illuminated Up/down keys. • 1x Mute illuminated key. • 8x bargraph indicator leds.
IR COMMUNICATION	• Protocol RC-5 NEC compatible. • Communicates with Altair IR-02 remote.
SOFTWARE CONTROL	• Proprietary RS-485 under 3cMAP
ADDRESSING	• Up to 32 units. Automatic addressing under 3cMAP control
NETWORK CONNECTION	• 4 pin Phoenix ™ 3.5 mm Type.
EXTERNAL POWER CONNECTOR (optional)	• Micro usb/5V
POWER COMPSUMPTION:	• 5Volts. Current draw 35mA nominal, 60 mA max. • Minimum operating voltage: 3.3 Volts
DIMENSIONS/WEIGHT:	• Bezel 89x89mm. 20 mm deep/100gr net

NOTE: Specifications subject to change without notice.

7. WARRANTY

This unit is warranted by Equipos Europeos Electrónicos to the original user, against flaws in the manufacturing and in the materials, for a period of two years (one year depending on some countries), starting from the date of sale.

Flaws due to wrong use of the unit, internal modifications or accidents, are not covered by this warranty.

There is no other warranty expressed or implicit.

Any faulty unit must be sent to the dealer or the manufacturer, previous an RMA authorisation. Carry it or ship prepaid in an adequate box. The serial number of the unit must be included for any request to the technical service.

Equipos Europeos Electrónicos reserves the right to modify the prices or the technical specifications without further notice.

SERIAL NUMBER ....

# Extract of the Declaration of Conformity (DoC)

"We, Equipos Europeos Electrónicos, S.A. declare, that the above mentioned product is manufactured according to our Full Quality Assurance System in compliance with Directive 99/5/EC. The presumption of conformity with the essential requirements regarding Council Directive 99/5/EC is ensured."

The Declaration of Conformity (DoC) has been signed. In case of needing a copy of the original DoC, it can be made available via the internet direction: http://www.altairaudio.com/DoC

European Union
Waste Electronics Information
Unión Europea
Información sobre residuos electrónicos

Waste from Electrical and Electronic Equipment (WEEE) directive
The WEEE logo signifies specific recycling programs and procedures for electronic products in countries of the European Union. We encourage the recycling of our products. If you have further questions about recycling, contact your local sales office.
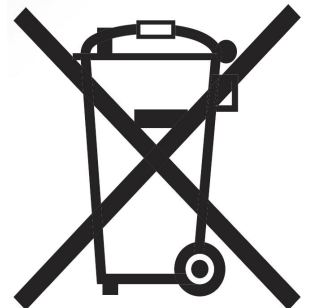
Directiva sobre Residuos de Aparatos Eléctricos y Electrónicos (RAEE)
El logotipo de la Directiva RAEE se refiere a los programas y procedimientos específicos de reciclaje para aparatos electrónicos de países de la Unión Europea. Recomendamos el reciclaje de nuestros productos. Si tiene alguna consulta, póngase en contacto con su Distribuidor.

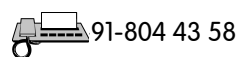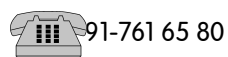**Information based on European Union WEEE Directive 2002/96/EC**
Información basada en la Directiva de la unión europea RAEE 2002/96/EC y el Real Decreto 208/2005

AUDIO ELECTRONICS DESIGN

EQUIPOS EUROPEOS ELECTRÓNICOS, S.A.
Avda. de la Industria, 50. 28760 TRES CANTOS-MADRID (SPAIN).

91-761 65 80   91-804 43 58   air@altairaudio.com
www.altairaudio.com