L86 EMR/EMAR

electronics module

USER MANUAL

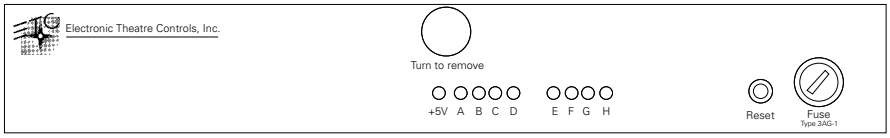
This manual describes ETC's L86 EMR and EMAR electronics receiver modules. These two L86 components are almost identical, the difference lying in the EMAR's ability to translate multiple data formats. The EMR can only accept DMX512 control signal.

The EMR/EMAR electronics module is installed in the top center slot of the L86 dimmer chassis. It receives dimmer output data from a lighting control console, then distributes the data in DMX512 format to the rack's EM64 electronics modules.

ETC configures the EMR/EMAR to customize the dimmer numbering within the chassis. This allows chassis starting addresses other than the normal multiple of 48. The module compensates for a mixture of dimmer types within the same chassis and can customize the control curve for each dimmer. It can also be set by ETC to allow two consoles to control two sets of lights independently, or two consoles to control the same lights with highest level taking priority.

Generally, EMR/EMARs within installation racks are configured at ETC to match the requirements of your system. For portable applications, standard configurations are available without custom programming. For more details about standard and custom configurations, see *Configuring the EMR/EMAR* on page 3.

Front panel



The EMR/EMAR front panel is illustrated above. It contains eight lettered indicator LEDs, a power LED, a [Reset] button, and a fuse holder.

Electronic Theatre Controls

North America
3030 Laura Lane
Middleton, Wisconsin 53562 • USA
Tel: (+1) 608 831 4116 • Fax: (+1) 608 836 1736

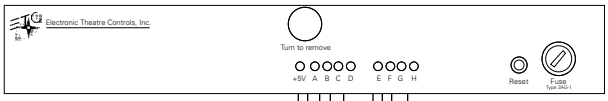
Europe
5 Victoria Industrial Estate • Victoria Road
London W3 6UU • England
Tel: (+44) 181 896 1000 • Fax: (+44) 181 896 2000

Asia
Room 1619-20 • 16/F Metro Centre II • 21 Lam Hing Street
Kowloon Bay • Hong Kong
Tel: (+852) 2799 1220 • Fax: (+852) 2799 9325

World Wide Web http://www.etcconnect.com • **Email** mail@etcconnect.com

Indicator LEDs

When you first turn on your system (or press [Reset]) the module's processor runs a series of self tests. The LEDs turn on, then all flash together. Once the tests finish, the LEDs stop flashing. Each indicator LED provides specific information about the operating status of the module, as described below.



H (green) **Port 1 Input status**
LED Off Data not being received
LED On Data is being received

G (red) **Port 1 Input status**
LED Off Normal
LED On Error detected

F (green) **Port 2 Input status**
LED Off Data not being received
LED On Data is being received

E (red) **Port 2 Input status**
LED Off Normal
LED On Error detected

D (green) **Port 1 Output status**
LED On Data not being transmitted
LED Flashing Data is being transmitted

C (red) **Port 1 Output status**
LED Off Normal
LED Flashing Error detected

B (green) **Port 2 Output status**
LED On Data not being transmitted
LED Flashing Data is being transmitted

A (red) **Port 2 Output status**
LED Off Normal
LED Flashing Error detected

+5V (green) **Power LED**
LED Off System is off or disconnected
LED On System is receiving power

Note: If all LEDs flash simultaneously, the system has encountered a condition that makes it impossible to function. Please contact ETC customer service at 608/831-4116 if this happens. See Backup Jumpers on page 4 for more information.

Reset button

Press [Reset] any time you change the EMR/EMAR's internal jumper settings. (See *Configuring the EMR/EMAR* on page 3 for more information on jumper settings.)

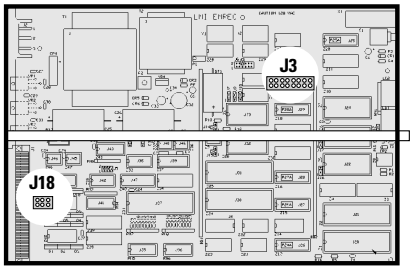
Also, press [Reset] any time you install an EMR/EMAR into a system that has already been turned on.

Fuse

To remove the fuse, push slightly on the center of the fuse cover with a screwdriver and turn the cover counter-clockwise. Replace the fuse with type 3AG-1 only.

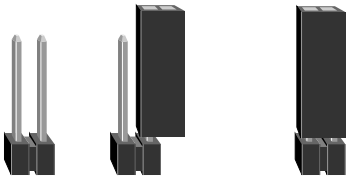
Configuring the EMR/EMAR

Jumper locations

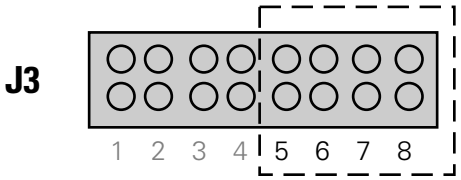


Two prong jumper

Jumper clip off *Jumper clip on*



Use these jumpers to select the input data format



Most L86 Installation Racks and some L86 Touring Racks are shipped with specially customized programming and non-standard jumper settings for their EMR/EMAR modules. The following section describes jumper settings and configuration options for non-customized systems only, except where noted. Customized systems include a separate sheet noting your actual settings. If you have any questions, please contact ETC Technical Service at 608/831-4116.

The modules are configured by adjusting settings on a bank of jumpers within the module. Jumpers consist of either two or three vertical pins on the circuit board. A two-pin jumper is **On** when a clip (a small, rectangular piece of plastic) is placed over both connectors closing the circuit. It is **Off** when you remove the clip. A three-pin jumper is **On** with the center pin connected to either of the side pins. It is **Off** when the clip is removed.

If the module malfunctions and you need to exchange it for a spare, be certain to adjust all the jumper settings on the spare so they match the settings on the original module. The circuit board illustrations on page 4 show the locations of all jumpers.

Selecting input data format

Jumpers 5 through 8 at location **J3** allow you to select the incoming data format for the module. Select the format by setting the jumpers according to the chart below.

Data type	Jumper 5	Jumper 6	Jumper 7	Jumper 8	Filter level
Custom	—	—	—	on	
DMX512	—	—	—	—	
Colortran	on	—	—	—	
AMX192	—	on	—	—	None
AMX192	on	on	—	—	Low
AMX192	—	—	on	—	Medium
AMX192	on	—	on	—	High
Kleigl (K96)	—	on	on	—	

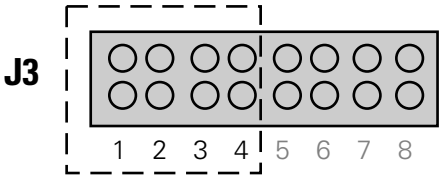
Custom is the most common configuration for L86 racks. If you have a customized system, your *System Manual* includes a separate page showing your actual EMR/EMAR jumper settings.

K96 supports ten backups with 256 dimmers in each. AMX192 signals have filters to remove excess noise.

The EMR lets you merge two incoming DMX512 signals into a single output signal. The EMAR also lets you merge an incoming signal using a different protocol with a DMX512 signal into a single DMX512 output. The chart below indicates the jumper settings for signals that combine the output types shown in the left column.

Data type	Jumper 5	Jumper 6	Jumper 7	Jumper 8	Filter level
DMX512 + DMX512	on	—	—	on	
Colortran + DMX512	—	on	—	on	
AMX192 + DMX512	on	on	—	on	None
AMX192 + DMX512	—	—	on	on	Low
AMX192 + DMX512	on	—	on	on	Medium
AMX192 + DMX512	—	on	on	on	High

Use these jumpers to set the starting address



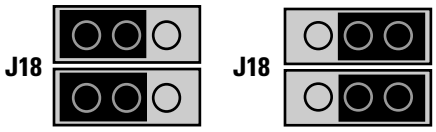
Setting starting address

Jumpers 1 through 4 at location **J3** allow you to set the starting address for the *EMR/EMAR*. Select the starting address by setting the jumpers according to the chart below. Please note that the starting address and the dimmer number (as listed on your console) do not necessarily correspond. If you need to make changes, write down your original jumper settings for future reference.

Starting address	Jumper 1	Jumper 2	Jumper 3	Jumper 4
1	—	—	—	—
49	on	—	—	—
97	—	on	—	—
145	on	on	—	—
193	—	—	on	—
241	on	—	on	—
289	—	on	on	—
337	on	on	on	—
385	—	—	—	on
433	on	—	—	on

Backup jumpers

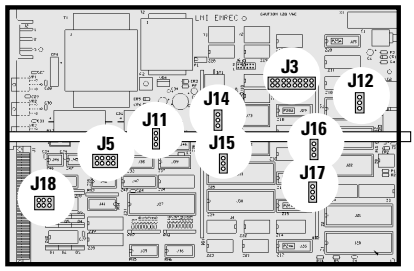
Normal *Backup*



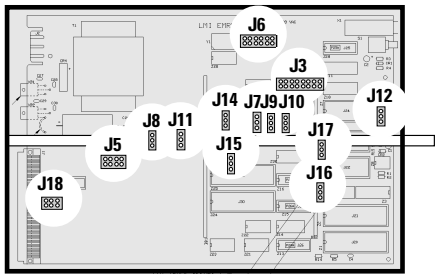
If your module fails, you can temporarily continue to use the rack by setting the module to Backup mode. Do this by changing the jumper settings at location **J18** from **Left** to **Right** (as shown to the left). You can also replace it with the EMRF module shipped with your system for that purpose.

Standard jumper settings

EMR jumper locations



EMAR jumper locations



The following table shows correct EMR/EMAR settings for all jumpers except those at locations **J3** and **J18**, both of which are discussed in *Configuring the EMR/EMAR* on pages 3 and 4. Customized modules may have different settings, but you should never need to change the settings on these jumpers except as instructed by ETC Technical Service. Setting descriptions are based on module oriented as shown in the illustrations to the left.

EMR

Jumpers at…	Should be…
J5	all off
J11	up
J12	down
J14	down
J15	up
J16	up w/27256 EPROM
	down w27512 EPROM
J17	down

EMAR

Jumpers at…	Should be…
J5	all off
J6	factory wire wrapped
J7	up
J8	up
J9	up
J10	up
J11	up
J12	down
J14	up or off
J15	down or off
J16	down
J17	down