

# Owner's Manual



## DMX-512 ADAPTER

MODELS LP-DMX3 AND LP-DMX5

### FOR

## YORKVILLE LP-LED4

## LIGHT BAR

Dear Customer,

Years ago, I approached Yorkville Sound for permission to build and sell an adapter to allow their LP-304 light bars to work with a DMX-512 controller. They went much farther. They not only gave me permission, but a lot of help – inside information on their protocol and circuitry that allowed me to design it more quickly and more cost-effectively. They knew some of their customers wanted a DMX adapter for the LP-304, but couldn't spare the engineering manpower to do it themselves. They gave me a chance to help their customers at a time when they couldn't. That told me they really cared for their customers.

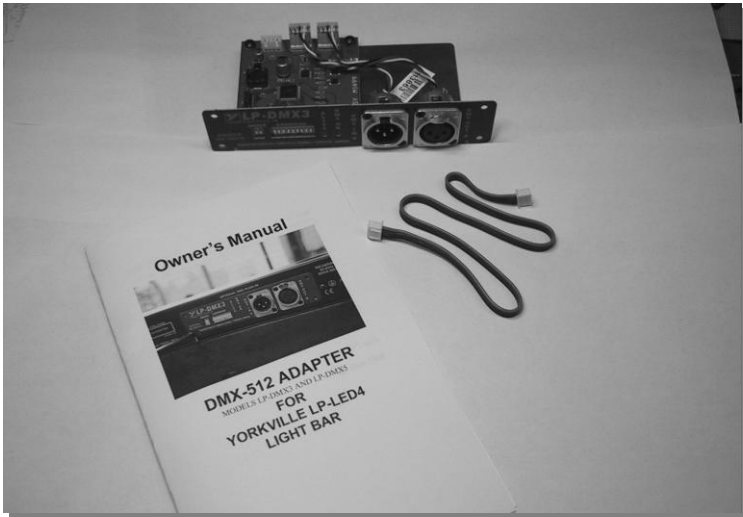
Now they've created the LP-LED4 light bar. This time they designed-in a place to put a DMX-512 adapter and an extra internal connector for it. Then they called me for help with the design, and once again gave me a lot of inside information to make sure the LP-DMX3 would be the best adapter it could be, at the lowest price we could achieve. To me, that's just more proof they really care about their customers. I'm proud of my association with them.

*John K Emerson*

***DMX-tools Co.***

# Installation

The LP-DMX3/LP-DMX5 installation kit should include the LP-DMX3 or LP-DMX5 plug-in module, a 4-wire connecting cable and this manual.



## **CAUTION: DISCONNECT THE POWER CORD BEFORE PROCEEDING!**

Just left of center on the LP-LED4 light bar, there is a knockout panel. Using the straight-bladed screwdriver, pry it off and remove it.



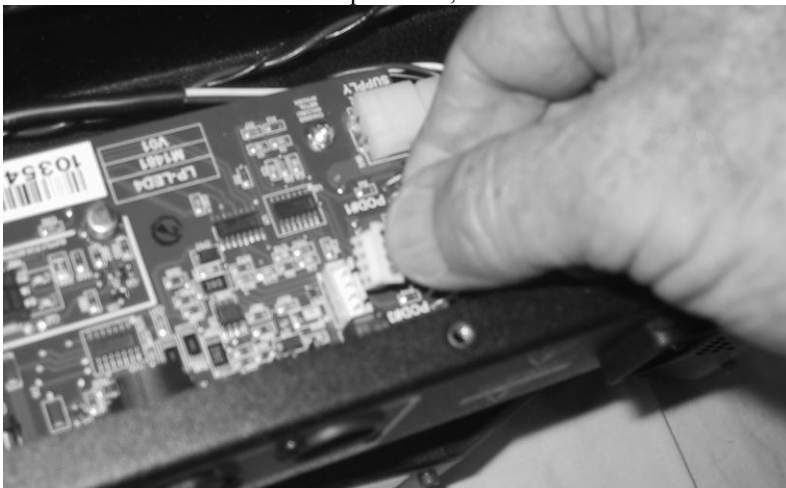
There are Phillips screws at the four corners of the resulting hole. Remove them and set them aside for use later.

If there is a clamping screw in the stand adapter at the center of the LP-LED4, remove it and set it aside.

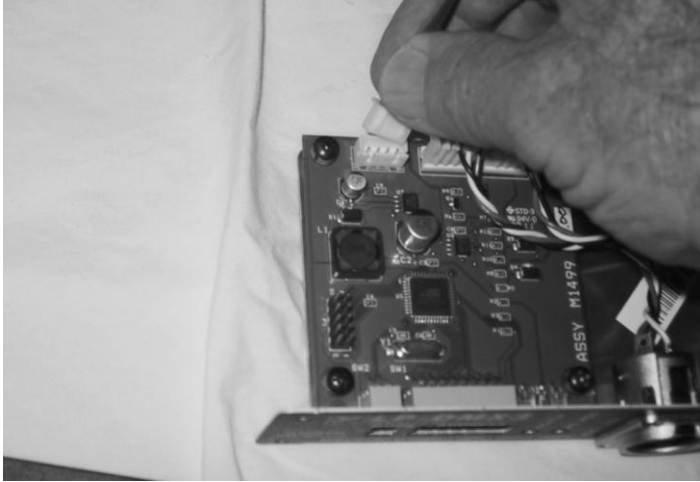
Make sure the LED pods are level and the tilt clamping knobs on all four are tight. Turn the LP-LED4 over so it rests on the pods. Remove the Phillips screws holding the bottom cover on and remove the cover.



Plug one end of the 4-wire cable into the W2 connector on the LP-LED4 control board. The connector is polarized, so don't force it.



Put the other end of the cable through the knockout hole and connect it to the P3 connector on the LP-DMX3/LP-DMX5.



Turn the LP-DMX3/LP-DMX5 over and carefully guide it into the knockout hole. Be sure not to pinch the 4-wire cable.



Use the four screws removed earlier to secure the LP-DMX3/LP-DMX5 to the LP-LED4. Dress the 4-wire cable so that it won't be pinched or interfere with the stand adapter, then replace the bottom cover. Turn the LP-LED4 right-side-up. If the stand adapter had a locking screw, replace it.

# Controls, indicators and connectors



## Mode Switches

The two-place DIPswitch to the extreme left selects the operating mode of the combined LP-LED4 and LP-DMX3 or LP-DMX5.



### MODE 1

Placing both switches in the down position selects mode 1. This is the most basic mode of operation, intended for use with simple, low-cost DMX controllers with few available channels. The LP-LED4 occupies four DMX channels, each of which controls the intensity of one LED pod, while the color that pod produces is selected by that pod’s rotary switch on the LP-LED4.



### MODE 2

Placing the left switch up and the right switch down selects mode 2. This mode uses two DMX channels per pod or eight total. The channels are organized in pairs: the first channel controls intensity, the second controls color for pod 1, the third and fourth control intensity and color for pod 2 and so on. DMX allows a wider selection of colors than are available on the LP-LED4’s rotary switches. When selecting the color, don’t look directly into the LEDs. Instead, look at the scene being lit. Besides avoiding damage to your eyes, you’ll see the colors more accurately.



### MODE 3

Placing the left switch down and the right switch up selects mode 3. This mode was designed to add a little flash to your light show – it turns each pod into a strobe. Each pod now occupies three DMX channels, so the entire LP-LED4 occupies twelve channels. In each group of three channels, the first again controls intensity and the second controls color. The third controls the strobe rate, from several seconds per flash up to about 10 flashes per second. Placing the strobe rate channel “full-on” puts the pod back into continuous mode, so that it can be used as a normal light when the strobe effect is not

called for. While operating as a strobe, the intensity and color controls remain in effect.



## MODE 4

Placing both switches in the “up” position selects mode 4. This mode provides the ultimate control over color saturation and hue, but uses the largest number of DMX channels: five per pod, twenty for the entire LP-LED4. In each group of five, the first four channels control the intensity of the individual red, green, blue and white LEDs in the pod, while the fifth is an overall intensity control for the pod, allowing it to be dimmed without changing the proportions of the four LED colors. Note that this fifth overall intensity channel should be set at or above 75% (192 if your controller reads out the values in decimal or 0C0 if it reads in hexadecimal) while the other four are used to mix colors. Once the desired color is obtained, its intensity can be varied without changing the color by adjusting the fifth channel. Again, to mix the colors accurately, as well as to avoid damaging your eyes, watch the scene, not the LED pod.

## Address Switches

For those true geeks who can do binary math in their heads, the left-most switch is the least-significant bit, down is 0 and up is 1. For the rest of us, appendix A is a chart which indicates the switch settings required for all useable DMX addresses. The address listed is the first channel assigned to pod 1. Additional channels above that are assigned according to the mode selected.

## “ALIVE” LED

The LP-DMX3/LP-DMX5 uses a microprocessor to receive the DMX-512 and turn it into the LP-LED4 control signals. The microprocessor spends most of its time waiting for something to do. While it’s waiting, it does a self-test. At the end of the test, it toggles the ALIVE LED: if the LED is on, the microprocessor turns it off and if the LED is off, the microprocessor turns it on. If the ALIVE LED stops blinking, the microprocessor has failed its test.

## **“DMX OK” LED**

The DMX OK LED lights when the LP-DMX3/LP-DMX5 is receiving a valid DMX-512 signal from the controller. If the DMX-512 signal stops for any reason, the DMX OK LED will go out and control will be passed back to the Yorkville controller input. If no Yorkville controller is connected, control reverts to the local rotary switches on the LP-LED4.

## **DMX IN and DMX OUT Connectors**

DMX-512 devices are connected in a “daisy chain” arrangement, where a cable from the controller connects to the DMX IN of a first DMX device. DMX OUT of that device is connected to DMX IN of a second device and so on for as many as 32 DMX devices. 32 devices may not seem like much, but devices are not channels: the LP-LED4 with the LP-DMX3 or LP-DMX5 may use up to 20 channels, but only counts as one “device.” And it isn’t necessary to connect the devices in any particular order – the address makes sure the right channel gets to the right device regardless of its position in the daisy chain.

## **The Terminator**

A DMX-512 terminator is not part of the LP-DMX3/LP-DMX5, but should be connected to DMX OUT of the last device in the daisy chain. DMX-512 signals are transmitted as a series of very fast pulses. When they get to the end of the daisy chain, they tend to bounce back the way they came, toward the controller, interfering with new pulses coming out. A terminator is just a resistor of the right size that, to the pulses, it looks like another piece of cable that goes on forever. The pulses go in and they don’t come back out, so they don’t interfere. Terminators are available from most stage-lighting vendors, but if you’re handy with a soldering iron, appendix B is a wiring diagram for building your own from an XLR male connector and one or two 120 ohm ¼ watt resistors.



# Appendix A – address switches

DESIRED ADDRESS	SWITCH SETTING	DESIRED ADDRESS	SWITCH SETTING	DESIRED ADDRESS	SWITCH SETTING
0		32		64	
1		33		65	
2		34		66	
3		35		67	
4		36		68	
5		37		69	
6		38		70	
7		39		71	
8		40		72	
9		41		73	
10		42		74	
11		43		75	
12		44		76	
13		45		77	
14		46		78	
15		47		79	
16		48		80	
17		49		81	
18		50		82	
19		51		83	
20		52		84	
21		53		85	
22		54		86	
23		55		87	
24		56		88	
25		57		89	
26		58		90	
27		59		91	
28		60		92	
29		61		93	
30		62		94	
31		63		95	

DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191



DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

288



320



352



289



321



353



290



322



354



291



323



355



292



324



356



293



325



357



294



326



358



295



327



359



296



328



360



297



329



361



298



330



362



299



331



363



300



332



364



301



333



365



302



334



366



303



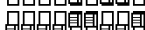
335



367



304



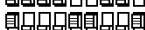
336



368



305



337



369



306



338



370



307



339



371



308



340



372



309



341



373



310



342



374



311



343



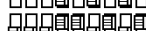
375



312



344



376



313



345



377



314



346



378



315



347



379



316



348



380



317



349



381



318



350



382



319



351



383



DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

DESIRED  
ADDRESS

SWITCH  
SETTING

384

385

386

387

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

421

422

423

424

425

426

427

428

429

430

431

432

433

434

435

436

437

438

439

440

441

442

443

444

445

446

447

448

449

450

451

452

453

454

455

456

457

458

459

460

461

462

463

464

465

466

467

468

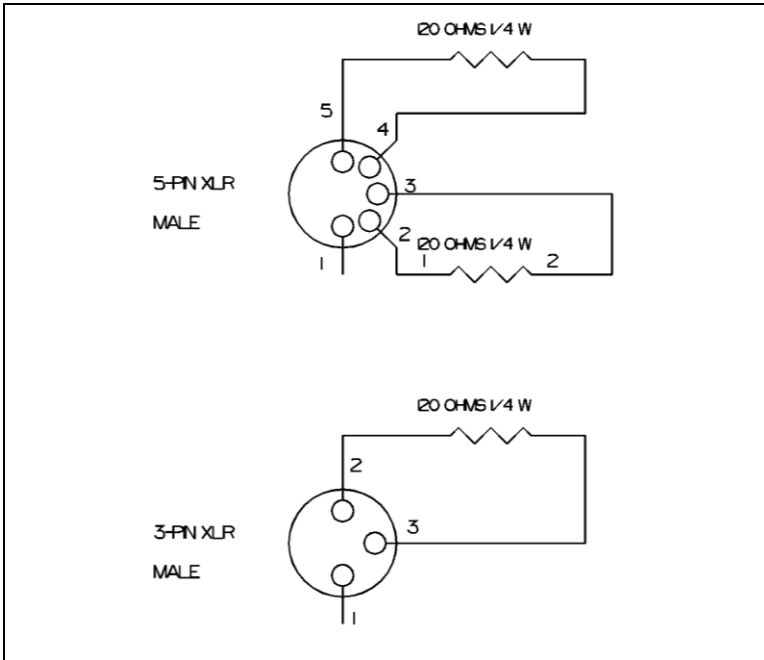
469

DESIRED ADDRESS	SWITCH SETTING	DESIRED ADDRESS	SWITCH SETTING	DESIRED ADDRESS	SWITCH SETTING
480		491		502	
481		492		503	
482		493		504	
483		494		505	
484		495		506	
485		496		507	
486		497		508	
487		498		509	
488		499		510	
489		500		511	
490		501			

**NOTES:**

1. There is no valid DMX-512 address 0. To make the LP-DMX3/ LP-DMX5 work for those who might not want to read the manual, we promoted address switch setting 0 to access DMX channel 1.
2. Some controllers have DMX addresses above 512. These are actually addresses 1-512 on a second cable (referred to as a second DMX universe). There is no provision for the LP-DMX3/LP-DMX5 to span universes.
3. In mode 1, setting the DMX start channel higher than 509 will result in the loss of functionality of one or more LED pods. In mode 2, setting the DMX start channel higher than 505 will result in the loss of functionality in some pods. In mode 3, setting a start channel higher than 501 will result in the loss of functionality in some pods. In mode 4, setting a start channel higher than 493 will result in the loss of functionality in some pods.

## APPENDIX B



### **DMX-512 TERMINATORS**

**A DMX-512 terminator can be easily built into a cable-mounted male XLR connector, per the above diagrams. A terminator should be connected to the DMX OUT jack on the LAST device in the DMX-512 chain (the device furthest from the controller).**