

Ultra **LED** *SERIES*



Information specifically for:  
DL-BAR04TC16O/B

v1.0

This manual contains important information.  
Please read before operating fixture.



# **IMPORTANT INFORMATION**

**Save original packing and documentation for warranty, service and return issues.**

Limited Warranty: This warranty covers defects or malfunctions in this equipment. This warranty lasts for a period of one year from date of purchase. It is the owner's responsibility to provide invoices for proof of purchase, purchase date and dealer or distributor. If purchase date can not be provided, warranty period will start at manufacture date. It is the sole discretion of Techni-Lux to repair or replace parts or equipment. All shipping will be paid by purchaser. This warranty does not cover lamps, fuses, belts, power semiconductors, relays, cleaning, standard maintenance adjustments or normal wear items or any problem resulting from the following: improper wiring, incorrect voltage (including low or over voltage conditions and lightning), abuse, misuse, improper maintenance or an act of God or damage resulting from shipping. Warranty will be null and void if the product is altered, modified, misused, damaged, or subjected to unauthorized repairs. Lamps are covered by relevant manufacturer warranty. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Any liability for consequential and incidental damages is expressly disclaimed. No other warranty, expressed or implied is made. Techni-Lux liability in all events is limited to, and shall not exceed, the purchase price paid.

Returning equipment and Repairs: All returns must be accompanied by a Return Merchandise Authorization (RMA) number and sent pre-paid. Contact the dealer or Techni-Lux directly to obtain an RMA. The RMA number must be clearly listed on the shipping label. Due care must be exercised in packing all merchandise to be returned. All repairs must be accompanied by a written explanation of the claimed problem or error encountered. Techni-Lux is solely responsible for determining a product's eligibility for coverage under warranty. If returning for consideration of credit, all accessories and documentation, original protective material and cartons must be included and the equipment, packing and carton must be in new resalable condition. Credit for returned merchandise will be issued at the lowest current price and is subject to a restocking fee. No returns accepted on discontinued items. Techni-Lux is not responsible for merchandise damaged in transit and reserves the right to refuse any return that is damaged by the carrier, not accompanied by a Return Authorization Number (RMA#) or sent by freight collect.

Claims: All claims must be made within seven (7) days of receipt of merchandise. Any physical damage must be reported to carrier upon receipt of merchandise.

**Please record the following information for future reference:**

**Model Number (circle):** DL-BAR04TC16O/B

Serial Number: \_\_\_\_\_

Dealer: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

[www.Techni-Lux.com](http://www.Techni-Lux.com)

# Table of Contents

<b>Specifications</b> .....	<b>4</b>
<b>Unpacking</b> .....	<b>5</b>
<b>Power</b> .....	<b>5</b>
<b>Mounting</b> .....	<b>6</b>
<b>Basic Reference</b> .....	<b>6</b>
<b>Optional Mounting Yoke</b> .....	<b>6</b>
<b>Setup and Operation Modes (LCD Display)</b> .....	<b>7</b>
<i>Control Panel Menu &amp; Operation Settings</i> .....	7
<i>Built-in Program Chase Operation (P01-P14)</i> .....	7
<i>Auto Run Operation</i> .....	8
<i>Slave Operation</i> .....	8
<i>Sound Active Operation</i> .....	8
<i>DMX Operation</i> .....	9
<b>DMX-512 Control</b> .....	<b>9</b>
<i>DMX Data Connection</i> .....	9
<i>Data Terminator</i> .....	10
<i>Adapter 5-to-3 pin</i> .....	10
<i>DMX Start Address</i> .....	10
<b>DMX Channel Assignments</b> .....	<b>11</b>
<i>6 Channel Mode</i> .....	12
<i>9 Channel Mode</i> .....	12
<i>12 Channel Mode</i> .....	12
<i>15 Channel Mode</i> .....	12
<b>Maintenance</b> .....	<b>13</b>
<b>Accessory Items (sold separately)</b> .....	<b>13</b>
<b>Troubleshooting</b> .....	<b>14</b>
<b>DMX-512 Background</b> .....	<b>14</b>

# Specifications

## *Fixture Overview*

- 3 watt tri-chromatic RGB color mixing LED elements
- 16 TriLEDs divided into 4 sections of 4
- Beam Angle – 25°
- Rugged Aluminum Outdoor IP 65 Housing
- Operating modes: DMX, Auto Run, Chases, Sound Active, Master/Slave
- Precise DMX control using 6, 9, 12, or 15 channels
- 3 Pin XLR DMX connectors
- 14 Built-in programs
- Digital LCD display menu for settings
- Adjustable mounting bracket included
- Quiet operation

## *Physical*

Color	Black
Size	15.75" x 4.72" x 6.89"
Weight	11.5 lbs (5.23kgs)
Housing Material	Aluminum

## *Environmental*

Location	Indoor / Outdoor IP65
Max. ambient temperature	113°F (45°C)
Min. distance to flammable surface	3.3ft (1m)
Min. distance to illuminated surface	1ft (0.3m)

## *Electrical*

Voltage	Automatically adjusting from 100 to 240vAC, 50-60Hz
Rated Power	60W
Fuses	2 amp mini size: 5x20mm

## *Control*

Digital Protocol	USITT DMX512 (1990)
Channels	6, 9, 12, or 15 maximum
Data I/O	3 Pin XLR (Cannon)
Modes	DMX512 or Stand-Alone

## *Optics*

Light Source	16 RGB 3 watt LEDS (3 x 1 watt) at 700ma
Beam Angle	25°

## *Rigging*

Orientation	Any position
Mounting Points	U-type bracket for clamp mounting using 1/2" (13mm) mounting holes

## Unpacking

Immediately upon receipt, carefully unpack and inspect the fixture to verify that all parts are present and have been received in good condition. If any parts appear damaged from shipping or the shipping carton shows signs of mishandling, notify the shipper immediately. Retain carton and all packing material for inspection. In the event that the merchandise is to be returned, the original carton and packing must be used. The customer will be billed for a new carton and packing if merchandise is received without the original carton and packing.

### *Claims*

Physical damage must be reported to the Freight Carrier or Shipping Company upon receipt of merchandise. Damage incurred in shipping is the responsibility of the Freight Carrier or Shipping Company. It is the customer's obligation in the event that merchandise is received damaged, to notify the Freight Carrier or Shipping Company immediately. All other claims not related to damage incurred during shipping must be made to the Dealer or Distributor within 7 days of receiving merchandise.

### *Returns*

Returned merchandise must be in the original packing with a Return Merchandise Authorization number (RMA) clearly listed on the shipping label. Items sent by Freight Collect or without a RMA number will be refused. Call your sales person and request a RMA prior to shipping. Be prepared to provide the model number, serial number and description of the nature of the return. Shipping damage resulting from inadequate packaging is the customer's responsibility. Customer will be charged additional shipping charges to return products received in non original packing and or cartons.

## Power



Do not apply power to the fixture until power source is verified.

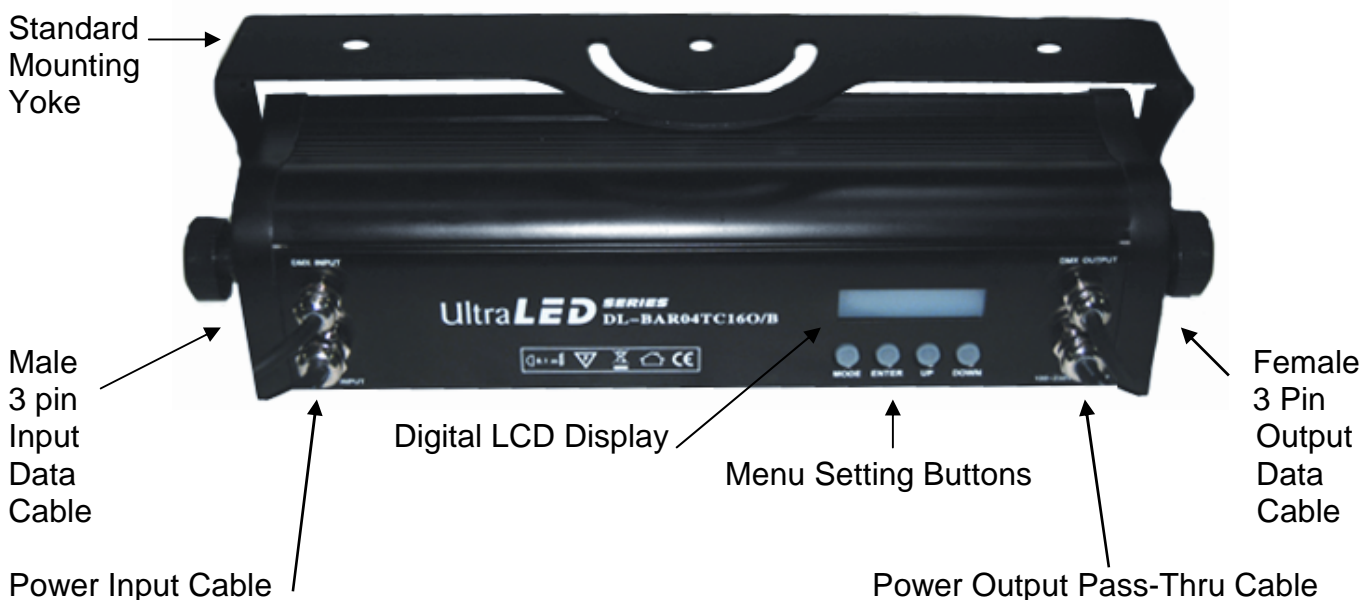
For protection against electric shock, fixture must be connected to suitable earth ground. Make sure fixture is disconnected from power mains before any service.

The mains voltage and frequency of this fixture is automatically set. The input voltage can range from 100vAC to 240vAC 50/60Hz. The listed power rating is its average wattage under normal conditions. All fixtures must be powered directly from a switched circuit. This fixture cannot be run on a rheostat or dimmer circuit even if used solely for a 0% to 100% switching. Before applying power to a fixture, check that the fixture's input voltage matches the power source voltage. Consult a qualified electrician if there are any concerns about proper connection to power.

# Mounting

Always consult a qualified professional when rigging. Consider access for routine maintenance when selecting a mounting position. This fixture may be mounted in any position provided there is adequate room for movement and ventilation. Mount the fixture securely using proper hardware, clamps and a safety cables. This fixture features a U-type bracket that allows adjustment and positioning when mounted. The bracket may be used to floor stand this unit or hang using proper clamps. Three clamp mounting holes 1/2" in diameter are provided. Knobs on both sides of the bracket provide locking tension, preventing movement when tightened down. Always keep cords out of the way, thus preventing any trip hazards. Secure all cables properly. Do not mount where the fixture will be exposed to constant water or rain, high humidity, extreme temperature changes or restricted ventilation. Do not obstruct any vents or heat-sinking.

## Basic Reference



## Optional Mounting Yoke



DL-BAR04TC-3Y is an optional (sold separately) mounting yoke bracket. Using the hardware knobs provided with the standard yoke, it allows 2 to 3 of these fixtures to be mounted in a bank like format. Each unit is individually adjustable. This special yoke features 3 clamp mounting 1/2" diameter holes for standard clamp attachment. The fixtures can be easily connected from one unit to the other (daisy chain style) using the standard in and out data and power cables provided and maintain the IP 65 rating without the use of additional connectors.

DL-BAR04TC-3Y	Yoke for 2-3 units * Material: Aluminum * Color: Black Size: 21.65"x16.54"x2.36" * Weight: 2.31 Lbs
---------------	--

# Setup and Operation Modes (LCD Display)

The following refers to the different modes that are available on this fixture via the LCD Control Panel display. All functions are selectable from the display menu located at the back of the fixture.

## *Control Panel Menu & Operation Settings*

Use the fixture's Control Panel to access the Control Menu. The MODE Key puts the fixture in the settings menu itself. The UP/DOWN moves through the menu options and allows the assignment of a value. The ENTER key is used to enter that option and confirms the selection once the UP/DOWN is used to adjust the value. Settings are stored and recalled on subsequent power cycles. R, G, B, refers to Red, Green and Blue respectively. DMX and master/slave modes require data cables to be connected between fixtures. Manual and some stand-alone modes do not require data cables for independent use of the fixture.

## *Built-in Program Chase Operation (P01-P14)*

A program is a sequence of different steps that will be called up one after another in a continuous loop. With the DL-BAR04TC16O fixture, you can select up to 14 different program chases. Each program is described in the table below.

### **To select a program:**

Press the MODE button to select the internal PROGRAM Mode. Select the desired chase from P01 to P14 using the UP/DOWN buttons. Press the ENTER button to select speed and flash settings, respectively. You can select the desired values via the UP/DOWN buttons. Speed is from slowest 00 to fastest at 99. Set strobe flashing from none at 00 to fastest at 99. Press the ENTER button to confirm and to exit the STAND ALONE Mode.

**Note:** Under programs P13 & P14, FLOW 8 and FLOW 9 there are 2 sub-programs to choose from (C1, C2). Please press the ENTER button twice to reach the sub-programs. The desired color combinations can be selected using the UP/DOWN buttons.

P1 STATIC COLOR BLACK-RGB Strobe 00-99	Blackout, Red-Yellow-Green-Cyan-Blue-Purple-White Strobe speed adjustable.
P2 DREAM Speed 00-99 Strobe 00-99	Seven color dreaming Speed & Strobe adjustable
P3 METEOR Speed 00-99 Strobe 00-99	Seven color flow Speed & Strobe adjustable
P4 FADE Speed 00-99 Strobe 00-99	Seven color fade Speed & Strobe adjustable
P5 CHANGE Speed 00-99 Strobe 00-99	Seven color change Speed & Strobe adjustable
P6 FLOW 1 Speed 00-99 Strobe 00-99	Seven color chase in 1 direction Speed & Strobe adjustable
P7 FLOW 2	Seven color chase in 2 directions

Speed 00-99 Strobe 00-99	Speed & Strobe adjustable
P8 FLOW 3 Speed 00-99 Strobe 00-99	Seven color relay chase in 1 direction Speed & Strobe adjustable
P9 FLOW 4 Speed 00-99 Strobe 00-99	Seven color relay chase in 2 direction Speed & Strobe adjustable
P10 FLOW 5 Speed 00-99 Strobe 00-99	Seven color chase from two sides to middle Speed & Strobe adjustable
P11 FLOW 6 Speed 00-99 Strobe 00-99	Seven color chase from middle to two sides Speed & Strobe adjustable
P12 FLOW 7 Speed 00-99 Strobe 00-99	Seven color chase Speed & Strobe adjustable
P13 FLOW 8 Speed 00-99 Strobe 00-99 1.BLACK-RGB 2. BLACK-RGB	Two color chase in 1 direction Speed & Strobe adjustable Blackout-Red-Yellow-Green-Cyan-Blue-Purple-White
P14 FLOW 9 Speed 00-99 Strobe 00-99 1.BLACK-RGB 2. BLACK-RGB	Two color chase in 2 directions Speed & Strobe adjustable Blackout-Red-Yellow-Green-Cyan-Blue-Purple-White

### *Auto Run Operation*

In Auto Mode the programs are called up automatically in a continuous loop. Press the MODE button to select the AUTO Mode. Press the ENTER button to select the desired frequency of the loops. The desired frequency of the loops (Frequency = FQN 01-99) can be selected using the UP/DOWN buttons. Please press the ENTER button to confirm and to exit the AUTO Mode.

### *Slave Operation*

The master/slave operation enables several LED bars to be synchronized and controlled by one master device. For slave operation to function, XLR data cables must be used to connect fixtures together. To set this mode, press the MODE button to select the SLAVE mode. Any devices set in this manner can now be controlled by the master unit. Press the ENTER button to confirm and to exit the SLAVE Mode.

### *Sound Active Operation*

Press MODE button until you reach the SOUND controlling mode, then the fixture will respond to the sound of audio. Press UP/DOWN to adjust the sound sensitivity levels (SENS00-31) & frequency (FQN01-99) of loops. Press the ENTER button to select the desired sensitivity and frequency of the loops, respectively. Press the ENTER button again to confirm and to exit the SOUND Mode.



## DMX Operation

The DMX operation mode allows you to control the bar using a standard DMX controller. In this mode you set the start address at which the fixture will respond to the controller on. Also the channel assignment mode to be used is set here. To address simply press the MODE button until the display shows DMX MODE. Press the ENTER button and the display shows: 001. Set the desired address using the UP/DOWN buttons. Please press the ENTER button again to confirm and to select a DMX Channel Mode. After having set the desired address and pressed ENTER, you can now choose a DMX Channel Mode from 6, 9, and 15. Set the desired mode using the UP/DOWN buttons. Press the ENTER button again to confirm and to exit the DMX Mode.

**Note:** The following DMX-512 Control section explains how to select a DMX start address for your fixture. It also covers connecting data cables, proper termination, specific channel assignments and channel value tables.

## DMX-512 Control

Fixtures require a "Start Address" from 1 to 512, setting the first DMX channel containing data for the fixture (see DMX Background). Before addressing fixtures, consult the manual of the system's DMX controller to select a desirable addressing scheme. Valid Start Addresses range from 1 to 512. Fixtures requiring more than one channel for control will read subsequent channels up to the total number of channels required. Since this fixture requires 6 channels of DMX, if set to a Start Address of 7 it would use data from channels: 7 and 8, 9, 10, 11, 12. Choose a Start Address so the channels used DO NOT overlap with other fixtures. In some cases, it may be desirable to set two or more same type fixtures to the same Start Address. In this case, the fixtures will be slaved together and respond to the same data. Because all fixtures see the same data, fixtures may be set to any address without concern for the order they are connected by the DMX cables.

## DMX Data Connection

This fixture uses 3 pin XLR type connectors and shielded twisted pair cable approved for EIA-422/EIA485 use. Fixtures are connected in Daisy Chain topography: Connection is made from the controller to the DMX-IN of the first light, then from the DMX-OUT to the DMX-IN of the next light and so on. Only one data source can be on a chain and no branching is allowed. The physical order in which the fixtures are connected is not important, use the most convenient.

**DMX-IN**  
XLR Connector - Plug:

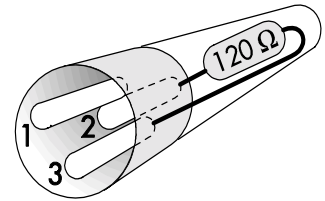


**DMX-OUT**  
XLR Connector - Socket:



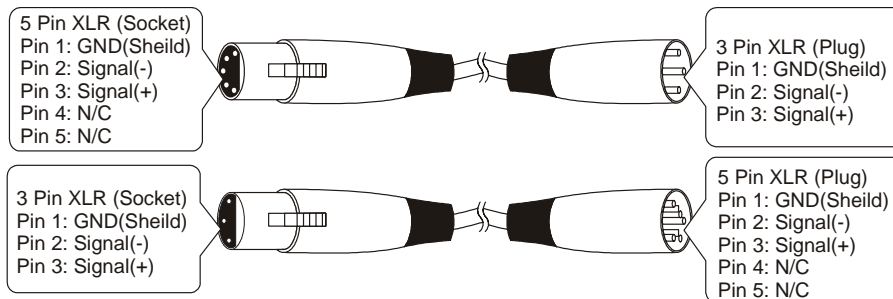
## Data Terminator

A Data Terminator can be connected to the DMX-OUT of the last fixture to reduce the effects of signal noise; it is not required for all installations. To make a Terminator, connect a 120-ohm  $\frac{1}{4}$  watt resistor across pin 2, Data Negative (S-) and pin 3, Data positive (S+). Whether it is a 5 pin XLR or 3 pin XLR connector (shown on right) does not matter, the pin numbers remain the same. A qualified technician can determine if a Data Terminator is needed.



## Adapter 5-to-3 pin

Systems using 5 pin DMX interfaces can be accommodated by purchasing 3-to-5 pin adapters or building adapter cables. Numbers designating each pin can be found on connectors. Converting between the two XLR types is done in a pin-to-pin fashion. Connect the shields to pin 1, then connect pin 2 to pin 2 and pin 3 to pin 3, regardless of either connector's gender or pin count. No connection is made to Pins 4 & 5.



## DMX Start Address

To place the fixture in DMX mode, press the MODE key, then using the UP/DOWN keys get to the Address Menu Option. Press ENTER and using the UP/DOWN buttons, set the start address number for this particular unit in the DMX chain. Once selected, press ENTER again to save your selection. More than one fixture may have the same start address, but they will behave the same. Giving a unique start address that does not overlap with any other units allows you to individually control that fixture's features fully. Never allow channels to overlap. You will need to select the number of channels you wish the fixture to use first. Your choices are 6, 9, 12, or 15 channel modes. This will determine the spacing of channels you will need to avoid overlapping of channels when selecting your start addresses.

*Example* Select Start Addresses for 4 fixtures each requiring 6 channels of DMX (6 channel mode).

For this example, start with the first unit set to the first possible Start Address = 1. This fixture occupies DMX channels 1 thru 6. The next DMX channel available for a Start Address is found by adding the previous fixture's Start Address to its channel requirement:  $1+6=7$ . To maximize channel usage, we will leave no empty channels between fixtures so the second Start Address is set to DMX channel 7 and that fixture occupies channels 7 thru 12. The third fixture will be addressed  $7+6=13$  and occupy channels 13 thru 18. The last fixture is addressed  $13+6=19$  and will occupy channels 19 thru 24. Thus, 4 fixtures using 6 channels each have Start Addresses of 1, 7, 13 and 19 and the next free channel in the system is  $19+6=25$ .

# DMX Channel Assignments

This fixture features 3 different DMX Channel modes. A 6, 9, 12, and 15 channel mode. Using the 6 channel mode provides the least granular control, and relatively uses the least number of DMX channels. The different channel assignments and values are shown below in the following tables. The 6 channel mode provides a full description of all the values and functions. All other modes of more channels allow additional “section” control of the bar by dividing the bar into smaller sections of 4 RGB TriLED groups. *Note that the channel order maybe different for each of the modes.*

## DMX Channel Mode Descriptions

In the 6, 9, and 15 channel modes, the first 3 channels (1,2,3) function the same as described in the 6 channel mode table.

**6 channels:** Bar completely operates as 1 complete section only.

Channels 4,5,6	Channels 4,5,6	Channels 4,5,6	Channels 4,5,6
-------------------	-------------------	-------------------	-------------------

**9 channels:** Bar is divided into 2 sections of 2 groups of trileds.

Channels 4,5,6	Channels 4,5,6	Channels 7,8,9	Channels 7,8,9
-------------------	-------------------	-------------------	-------------------

**12 channels:** Bar is divided into 4 sections of 1 group of trileds without any macro, master dimmer or strobe function channels.

Channels 1,2,3	Channels 4,5,6	Channels 7,8,9	Channels 10,11,12
-------------------	-------------------	-------------------	----------------------

**15 channels:** Bar is divided into 4 sections of 1 group of trileds with master dimmer and strobe functions.

Channels 4,5,6	Channels 7,8,9	Channels 10,11,12	Channels 13,14,15
-------------------	-------------------	----------------------	----------------------

**Note:** A group of LEDS is 4 tri-leds.

## 6 Channel Mode

This 6 channel mode fully describes the function of channels 1,2,3. Reference this table for all other DMX channel modes.

CH 1	CH 2	CH3	CH4	CH5	CH6
0-10	Blackout	Blackout	Blackout	Blackout	Blackout
11-21	Master dimmer (0-255)	Strobe (0-255)	Red (0-255)	Green (0-255)	Blue (0-255)
22-32 Red		Strobe (0-255)			
33-43 Yellow		Strobe (0-255)			
44-54 Green		Strobe (0-255)			
55-65 Cyan		Strobe (0-255)			
66-76 Blue		Strobe (0-255)			
77-87 Purple		Strobe (0-255)			
88-98 White		Strobe (0-255)			
99-109 Dream	Speed (0-255)	Strobe (0-255)			
110-120 Meteor	Speed (0-255)	Strobe (0-255)			
121-131 Fade	Speed (0-255)	Strobe (0-255)			
132-142 Change	Speed (0-255)	Strobe (0-255)			
143-153 Flow 1	Speed (0-255)	Strobe (0-255)			
154-164 Flow 2	Speed (0-255)	Strobe (0-255)			
165-175 Flow 3	Speed (0-255)	Strobe (0-255)			
176-186 Flow 4	Speed (0-255)	Strobe (0-255)			
187-197 Flow 5	Speed (0-255)	Strobe (0-255)			
198-208 Flow 6	Speed (0-255)	Strobe (0-255)			
209-219 Flow 7	Speed (0-255)	Strobe (0-255)			
220-230 Flow 8	Speed (0-255)	Strobe (0-255)	Color select		
231-241 Flow 9	Speed (0-255)	Strobe (0-255)	Color select		
242-255 Sound active	Speed (0-255)	Strobe (0-255)			

## 9 Channel Mode

CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9
11-21	Master Dimmer (0-255)	Strobe (0-255)	R1	G1	B1	R2	G2	B2

## 12 Channel Mode

CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12
R1	G1	B1	R2	G2	B2	R3	G3	B3	R4	G4	B4

## 15 Channel Mode

CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	CH 9	CH 10	CH 11	CH 12	CH 13	CH 14	CH 15
11-21	Master Dimmer (0-255)	Strobe (0-255)	R1	G1	B1	R2	G2	B2	R3	G3	B3	R4	G4	B4

# Maintenance



Make sure fixture is cool and disconnected from power mains before any service.

Weekly operating hours and environmental conditions will establish how often the fixtures need cleaning. Fixtures should be cleaned and inspected at least once a month to maintain optimum performance. Accumulation of dust and fog residue increases heat build up, can lead to malfunctions, overheating and reduction in maximum light output, reduced fixture life and over all performance. Before conducting any maintenance, disconnect fixture from power mains.

- 1) Disconnect fixture from power mains.
- 2) Use a vacuum with a soft brush to remove dust collected on external vents and internal components. If using an air compressor, use low pressures and extreme care to prevent damaging any internal parts or effects.
- 4) Clean all optical elements when the fixture is cold. Use a soft lint free cotton cloth or tissue and cleaner safe for plastics.
- 5) Inspect clamps and safety cables to ensure fixture is secure and safe.

## Accessory Items (sold separately)

Order Code	Description
CLAMP-MEGA/B	Mega Heavy Duty Aluminum Clamp – Black
CLAMP-CBHALF	Half Cheeseborough Coupler 300kg Max Load
SAFETYCABLE30B	Safety Cable Black 30"
SAFETYCABLE30S	Safety Cable Silver 30"
DL-BAR04TC-3Y	Yoke bracket for mounting 2-3 units together
ZEPO0005	Extension IP Link Jumper Power Cable - 6' with male to female connectors - Black
ZEPO0006	Extension IP Link Jumper Data Cable - 6' with male to female connectors - Black
CA-XLR3/10	Pre-made 10' 3-pin XLR Cable
CA-XLR3/25	Pre-made 25' 3-pin XLR Cable
CA-XLR3/50	Pre-made 50' 3-pin XLR Cable
CA-XLR3/100	Pre-made 100' 3-pin XLR Cable
CO-XLR3M	XLR Connector 3-pin Male
CO-XLR3F	XLR Connector 3-pin Female
CO-XLRTERM3	XLR 3 Pin Data Terminator
CO-XLR3MTO5F	XLR 3 Pin Male to 5 Pin Female Adapter
CO-XLR5MTO3F	XLR 5 Pin Male to 3 Pin Female Adapter

# Troubleshooting

Symptom	Possible Cause / Solution
No Power	Check for power on mains
	Check main fuse and fuse holder
Erratic / No response to DMX	Check data cables: connection and proper wiring
	Check Display settings
	Check Start Address
Incorrectly responds to DMX (Diagnostic technique for DMX issues: Set suspect fixture's Start Address the same as a correctly functioning fixture. If both units then function correctly, issue is programming)	Check Start Address
	Check for overlapping addresses
	Check Menu settings
	Check Data cables (faults and proper wiring)

## DMX-512 Background

DMX-512 is a digital data transmission standard developed by the United States Institute for Theater Technology (USITT). It is designed to enable control of lighting equipment. DMX deals solely with the formatting of data for transmission and does not dictate how the data is created or used.

Under DMX, signals are transmitted in much the same way a computer modem transmits data. The Data, divided into channels, is "Framed" using a start bit, high (1), eight data bits and finally, two stop bits, both high (1). DMX uses no parity to check the integrity of the signal. Instead, DMX relies on the ultra low probability of an error occurring in the same place when the data is resent. The rate at which data is sent is fixed at 250k bps, almost four and a half times faster than a 56k modem. This speed allows all data on a DMX chain to be updated more than 44 times every second.

The transmitted data follows a specific format. DMX allows for 512 channels each with eight data bits, giving each channel the possibility of 256 values. When a data "Packet" is sent, all channels are transmitted one after another. Even if the data on a specific channel has not been changed, it must be sent. In a packet, a "start code" of all zeros is sent before the data to identify the signal as a Standard DMX transmission. This start code is transparent to the user and is handled by the controller.

The physical signals are transmitted using a twisted pair of wires and a common shield, a configuration called Balanced. The controller and all receiving equipment are connected using a "Daisy Chain" connection. The signal is jumped from the controller to a piece of DMX equipment. From there, the signal is jumped to the next piece of equipment and so on until the last piece of equipment is connected. No branches are allowed and the signal does not come back to the controller. The final piece of equipment will have only one cable connection. As a result, all equipment connected to the chain will see exactly the same signal whether it is first or last. When connecting equipment, no particular attention needs to be paid to the order in which the equipment is connected. Depending on the conditions and equipment, a line terminator may be required. If there is any question, in most circumstances the addition of a terminator will not degrade the signal. To make a terminator, attach a 120-ohm resistor between the Signal Data Negative and Signal Data Positive pins of a connector in the last piece of equipment in the chain.

The DMX Standard uses 5 pin XLR connectors. However, it is common to see fixtures with 3 pin XLR connectors as these types of balanced or "Lo-Z" cables are common in the audio industry. In either case, pin numbers are the same and carry the same signals.

Pin	Connection
1	Common (Shield)
2	Data Negative (S- or Cold)
3	Data Positive (S+ or Hot)
4	n/c (not used)
5	n/c (not used)



10900 Palmbay Drive • Orlando, FL 32824 U.S.A.  
www.techni-lux.com