

# Chroma-Q Color Block PSU-05B

## User Manual



Version 1.2 December 2006

PN: 602-0502

## **Disclaimer**

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that A.C. Lighting products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent. A.C. Lighting sole warranty is that the product will meet the sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

A.C. Lighting reserves the right to change or make alteration to devices and their functionality without notice due to our on going research and development.

The Color Block PSU-05 has been designed specifically for the professional entertainment lighting industry. Regular maintenance should be performed to ensure that the products perform well in the entertainment environment.

If you experience any difficulties with any Chroma-Q products please contact your selling dealer. If your selling dealer is unable to help please contact [support@aclighting.com](mailto:support@aclighting.com). If the selling dealer is unable to satisfy your servicing needs, please contact the following, for full factory service:

**Outside North America:**

A.C. Lighting Ltd.  
Centauri House  
Hillbottom Road,  
High Wycombe,  
Buckinghamshire,  
HP12 4HQ.  
United Kingdom  
Tel: +44 (0)1494 446000  
Fax: +44 (0)1494 461024

**North America:**

A.C. Lighting Inc.  
Unit #1  
435 Horner Avenue,  
Toronto,  
ON.  
M8W 4W3  
Canada  
Tel: 416-255-9494  
Fax: 416-255-3514

For further information please visit the A.C. Lighting website at [www.aclighting.com](http://www.aclighting.com).

Chroma-Q is a trademark of A.C. Lighting Ltd.

The rights and ownership of all trademarks are recognised.

# Table of Contents

<b>1. Product Overview</b> .....	<b>3</b>
<b>2. Operation</b> .....	<b>3</b>
2.1 Cabling .....	3
2.2 Control .....	4
a. Control menu .....	4
b. DMX personality mode 1-3 .....	6
c. DMX personality mode 4-6 .....	7
d. DMX personality mode 7-9 .....	8
2.3 Technical Information .....	9
a. Specification .....	9
b. Maintenance .....	9
c. Battery replacement .....	9
d. Installation .....	9
e. Wiring .....	10

## 1. Product overview

The Color Block PSU-05B is a power supply suitable for up to 5 Color Block DB4 LED fixtures. It can be controlled remotely via ANSI E1.11 DMX 512-A in a variety of modes to accommodate most applications or can operate independently as a standalone system.

The Color Block PSU-05B delivers power and data via 1 XLR4 outputs. A maximum of five daisy-chained Color Block DB4 fixtures can be connected to the PSU-05B. Return lines are not required. The total cable length of each chain must not exceed 60m/200ft.



### Color Block DB4

For the purpose of clarification, the Color Block DB4 unit (pictured below) is known as a Fixture. Each Fixture contains 4 Cells, with each Cell comprising of 3 LEDs.



**Note:** To ensure proper functionality, Date/Time must be set before operation. Look Store will function when Date/Time are set. Time is reset when battery is replaced or when the PSU-05B is reset.

## 2. Operation

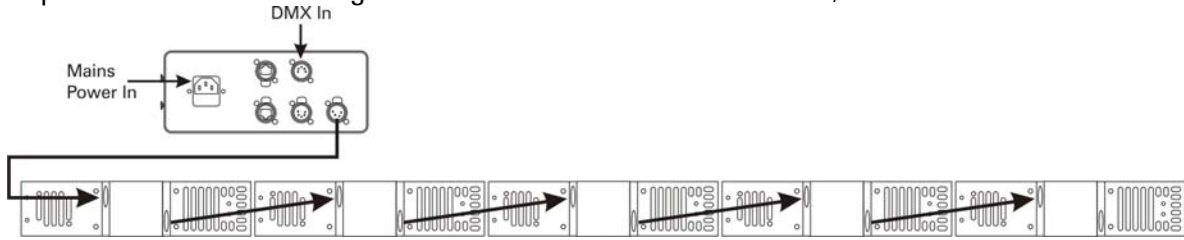
- 2.1 Cabling
- 2.2 Control
  - a. Control menu
  - b. DMX personality mode 1-3
  - c. DMX personality mode 4-6
  - d. DMX personality mode 7-9
- 2.3 Technical Information
  - a. Specification
  - b. Maintenance
  - c. Battery replacement
  - d. Installation
  - e. Wiring

### 2.1 Cabling

The Color Block utilises an XLR 4-pin cable system. This is used to supply power and control data. Pin 1 = 0VDC, pin 2 = control minus, pin 3 = control plus, pin 4 = +48VDC. The chassis should be ground bonded.

Only genuine Tourflex Datasafe cable is recommended for use with the Color Block system. Damage will occur if power connections short-circuit to data or ground shield connections. When assembling XLR4-pin cables, heat shrink should be used on each individual data pin and the drain wire to prevent short circuits.

The Color Block PSU-05B delivers power and data via 1 XLR4 output. A maximum of five daisy-chained Color Block DB4 fixtures can be connected to the PSU-05B. Return lines are not required. The total cable length of each chain must not exceed 60m/200ft.



**Note:** Maximum of 5 Color Block fixtures per PSU-05B. No return cables required.

## 2.2 Control

The Color Block PSU-05B menu items are accessed via the LCD display and the following controls:

- Right hand button (red) = Enter (hold for 2 seconds to save)
- Left hand button (blue) = Exit without saving
- Wheel = Adjusts values or scrolls through menu items

The LCD Screen shown to the right currently at the Home position displays: product name, current DMX Address, current Control Mode and Time.



If left unadjusted at a main menu position for 5 second the LCD screen will revert to the Home position.

The software version number is displayed on power-up.

### a. Control menu

Use the wheel to scroll through the control menu positions:

- ➔ **Home / DMX Address**  
To set the DMX start address of the PSU-05B, press Enter, turn wheel to adjust DMX start address, press Enter for 2 seconds to save.
- ➔ **Control Mode**  
The PSU-05B can be set to operate in various DMX controlled modes. We offer 3 grouping options (individual, block, all) with 3 control options on each (FX, HSI & RGB) see below for details. Press Enter, turn wheel to select control mode, press Enter for 2 seconds to save.  
  - Mode 1 (67ch) - Individually grouped, 20 x HSI + FX
  - Mode 2 (60ch) - Individually grouped, 20 x HSI
  - Mode 3 (60ch) - Individually grouped, 20 x RGB
  - Mode 4 (21ch) - Block grouped, 5 x HSI + FX
  - Mode 5 (15ch) - Block grouped, 5 x HSI
  - Mode 6 (15ch) - Block grouped, 5 x RGB
  - Mode 7 (9ch) - All grouped, 1 x HSI + FX
  - Mode 8 (3) - All grouped, 1 x HSI
  - Mode 9 (3) - All grouped, 1 x RGB
- ➔ **When DMX is Lost**  
If DMX is not detected various output options can be selected: Press Enter, turn wheel to selection, press Enter for 2 seconds to save.  
  - Off - will snap to off
  - Hold - will hold the last valid DMX state

Trig - will default to **Time Trigger** operation  
Look 1-42 - will snap to the **Look** of your choice



### **Look Store**

The PSU-05B has 42 internal preset FX Looks for standalone operation, 1-9 are pre-programmed. To replay a Look, press Enter and scroll through the Looks.

**Note:** DMX has priority over internal Looks.

Looks can be recorded to the internal flash memory by users and will be preserved on power down. However, looks will be returned to default setting if menu 8 Reset is performed. There are two ways to record a look:

#### **Simple, with DMX console.**

Set the PSU-05B to Control Mode 1. Use a DMX console to adjust the internal FX engine to create the desired effect. Scroll to Look Store and press Enter, scroll to desired Look and press Enter. Press Enter again for 2 seconds to save Look.

#### **Advanced, standalone.**

Set the PSU-05B to Control Mode 1. Scroll to Look Store and press Enter, scroll to desired Look and press Enter to access the memory data. The data is presented as two numbers separated by a letter "c". The number to the left of the c is the channel number and to the right is the channel level. Scrolling the wheel will select the channel number. To edit the channel level, press Enter to toggle to the alternate number and use the scroll wheel to adjust the level (shown as 0-255). Press Enter to toggle back to the channel number. When the desired effect is created press Enter for 2 seconds to save Look.



### **Time Triggers**

The PSU-05B has real time triggering of the internal Looks. Press Enter and scroll to desired Time Trigger and press Enter. Press Enter to toggle between Day, Hour (24), Minutes and Look to be triggered, adjusting the setting with the scroll wheel as desired. Press Enter for 2 seconds to save settings. By default Time Triggers will occur on all 7 days unless specified. The triggers will only be activated when the feature "When DMX is Lost" is set to Trig.



### **Set Day and Time**

Press Enter to toggle between Day, Hour (24) and Minutes, adjusting the setting with the scroll wheel as desired. When the Day and Time is set correctly press Enter for 2 seconds to save settings.



### **Display Backlight (Displ. Backlight)**

The LED display can be set to go off after 5 seconds of no activity. Press Enter, scroll wheel to On (permanently) or Off (after 5 seconds) and press Enter for 2 seconds to save setting.



### **Reset to Default**

Press Enter for 2 seconds to reset all menu items to factory defaults:  
DMX address = 001, Control Mode = 1 (67 channels HSI+FX), DMX Lost = Hold, Looks = default, Display = On.



### **Sync Mode**

In normal operation internally generated FX should stay synchronised between PSU-05B's for approx 30 minutes. If better synchronisation is required a timing signal can be run via a RJ45 patch (not crossover) cable between PSU-05B's. In order for this to work correctly one PSU-05B must be designated as the Master and all the others must be set to Slave.

Press Enter and use the scroll wheel to select Master or Slave. Press Enter for 2 seconds to save setting.

**b. DMX personality mode 1-3**

	In modes 1-3 each cell is a group		
PSU-05B (v1.5)	Mode 1 (67ch) 20 x HSI = FX	Mode 2 (60ch) 20 x HSI	Mode 3 (60ch) 20 x RGB
Channel 1	<b>Grouping</b> 0-100 Variable grouping range between 1-20 cells with FX running within the group. 102-206 variable grouping range between 1-20 cells with FX running between the groups. 209-255 Variable grouping range for every 2 <sup>nd</sup> to every 20 <sup>th</sup> cells in a group.	Hue for group 1	Red for group 1
Channel 2	<b>Colour Speed</b> 0-255 Variable speed of colour scrolling. From static at 0 to maximum at 255.	Saturation for group 1	Green for group 1
Channel 3	<b>Colour Fan</b> 0-255 Variable fan of colour between / within groups. All units are the same colour at 0.	Intensity for group 1	Blue for group 1
Channel 4	<b>Colour Range</b> 0 Full spectrum 1-255 Variable limit of spectrum for colour scrolling. Single colour at 1, full spectrum at 255.	Hue for group 2	Red for group 2
Channel 5	<b>Colour Step</b> 0-255 Variable control of smoothness of colour scrolling. Smoothest is at 0. Most coarse is at 250. Rate will vary with scrolling speed. 255 will override effects and switch to RGB.	Saturation for group 2	Green for group 2
Channel 6	<b>Intensity Effects</b> 0 Static 1-63 Fade on, fade off . Variable range, 63 the fastest 64-127 Fade on, snap off. Variable range, 127 the fastest 128-191 Snap on, fade off. Variable range, 191 the fastest. 192-255 Snap on, snap off (strobe). Variable range, 255 the fastest.	Intensity for group 2	Blue for group 2
Channel 7	<b>Intensity Fan</b> 0-255 Variable fan of intensity effect between / within groups. All units at the same intensity at 0. Alternating units on and off at 255.	Hue for group 3	Red for group 3
Channel 8	Hue for group 1	Saturation for group 3	Green for group 3
Channel 9	Saturation for group 1	Intensity for group 3	Blue for group 3
Channel 10	Intensity for group 1	Hue for group 4	Red for group 4
Channel 11	Hue for group 2	Saturation for group 4	Green for group 4
Channel 12	Saturation for group 2	Intensity for group 4	Blue for group 4
Channel 13	Intensity for group 2	Hue for group 5	Red for group 5
	...and so on up to group 20		
<b>Total DMX Channels</b>	<b>67 DMX channels</b>	<b>60 DMX channels</b>	<b>60 DMX channels</b>

**c. DMX personality mode 4-6**

	In modes 4-6 each Color Block DB4 fixture (4 cells) is a group		
PSU-05B (v1.5)	Mode 4 (21ch) 5 x HSI + FX	Mode 5 (15ch) 5 x HSI	Mode 6 (15ch) 5 x RGB
Channel 1	<b>Colour Speed</b> 0-255 Variable speed of colour scrolling. From static at 0 to maximum at 255.	Hue for group 1	Red for group 1
Channel 2	<b>Colour Fan</b> 0-255 Variable fan of colour between groups. All units are the same colour at 0.	Saturation for group 1	Green for group 1
Channel 3	<b>Colour Range</b> 0 Full spectrum 1-255 Variable limit of spectrum for colour scrolling. Single colour at 1, full spectrum at 255.	Intensity for group 1	Blue for group 1
Channel 4	<b>Colour Step</b> 0-255 Variable control of smoothness of colour scrolling. Smoothest is at 0. Most coarse is at 250. Rate will vary with scrolling speed. 255 will override effects and switch to RGB.	Hue for group 2	Red for group 2
Channel 5	<b>Intensity Effects</b> 0 Static 1-63 Fade on, fade off . Variable range, 63 the fastest 64-127 Fade on, snap off. Variable range, 127 the fastest 128-191 Snap on, fade off. Variable range, 191 the fastest. 192-255 Snap on, snap off (Strobe). Variable range, 255 the fastest.	Saturation for group 2	Green for group 2
Channel 6	<b>Intensity Fan</b> 0-255 Variable fan of intensity effect between groups. All units at the same intensity at 0. Alternating units on and off at 255.	Intensity for group 2	Blue for group 2
Channel 7	Hue for group 1	Hue for group 3	Red for group 3
Channel 8	Saturation for group 1	Saturation for group 3	Green for group 3
Channel 9	Intensity for group 1	Intensity for group 3	Blue for group 3
Channel 10	Hue for group 2	Hue for group 4	Red for group 4
Channel 11	Saturation for group 2	Saturation for group 4	Green for group 4
Channel 12	Intensity for group 2	Intensity for group 4	Blue for group 4
Channel 13	Hue for group 3	Hue for group 5	Red for group 5
	...and so on up to group 5		
<b>Total DMX Channels</b>	<b>21 DMX channels</b>	<b>15 DMX channels</b>	<b>15 DMX channels</b>

**d. DMX personality mode 7-9**

	In modes 7-9 all PSU-05 output is grouped as one		
PSU-05B (v1.5)	Mode 7 (9ch) HSI + FX	Mode 8 (3ch) HSI	Mode 9 (3ch) RGB
Channel 1	<b>Colour Speed</b> 0-255 Variable speed of colour scrolling. From static at 0 to maximum at 255.	Hue for group 1	Red for group 1
Channel 2	<b>Colour Fan</b> 0-255 Variable fan of colour within group. All units are the same colour at 0.	Saturation for group 1	Green for group 1
Channel 3	<b>Colour Range</b> 0 Full spectrum 1-255 Variable limit of spectrum for colour scrolling. Single colour at 1, full spectrum at 255.	Intensity for group 1	Blue for group 1
Channel 4	<b>Colour Step</b> 0-255 Variable control of smoothness of colour scrolling. Smoothest is at 0. Most coarse is at 250. Rate will vary with scrolling speed. 255 will override effects and switch to RGB.		
Channel 5	<b>Intensity Effects</b> 0 Static 1-63 Fade on, fade off . Variable range, 63 the fastest 64-127 Fade on, snap off. Variable range, 127 the fastest 128-191 Snap on, fade off. Variable range, 191 the fastest. 192-255 Snap on, snap off (Strobe). Variable range, 255 the fastest.		
Channel 6	<b>Intensity Fan</b> 0-255 Variable fan of intensity effect within group. All units at the same intensity at 0. Alternating units on and off at 255.		
Channel 7	Hue for group 1		
Channel 8	Saturation for group 1		
Channel 9	Intensity for group 1		
<b>Total DMX Channels</b>	<b>9 DMX channels</b>	<b>3 DMX channels</b>	<b>3 DMX channels</b>

**Note:** Please be advised that the PSU-05B is designed to function in combination with the PSU-30. In programming the PSU-05B without the PSU-30 some incremental levels in a channel have no effects created in certain modes having been allocated to the expanded channels of the PSU-30.

## 2.3 Technical Information

### a. Specification

Product code:	CHCBPSU-05B
Dimensions:	279mm × 219mm × 88mm 11" × 8.6" × 3.5"
Weight:	3.9kg / 8.6lbs
Working Voltage:	100-240VAC 50/60Hz
Power consumption:	4A @ 120VAC; 2A @ 240VAC
Output connectors:	XLR4
Control:	ANSI E1.11 USITT DMX 512-A
Power connector:	IEC male chassis
Fuses:	6A 20mm spare included
Operating temperature:	0° C to + 40° C
Body colour:	Black powder coated paint
IP rating:	IP20
Cooling:	1 x rear mounted fans, ventilation required front and rear
Approvals:	EN55103-1, EN55103-2, IEC60950



### b. Maintenance

With care the Color Block PSU-05B will require little maintenance. However, as the unit is likely to be used in a stage environment we recommend periodical internal inspection and cleaning of any resulting dust and cracked oil residue. In addition the internal battery will need to be replaced on a regular basis (see following section).

Do not spray liquids on the front or rear panel. If the front enclosure requires cleaning, wipe with a mild detergent on a damp soft cloth.

### c. Battery replacement

The CR20/32 Lithium battery should last approximately 5 years from the date the battery was made – note that a 4 year life from date of product sale would not be unexpected when delivery and manufacturing times are allowed for.

**Caution:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions and local regulations.

### d. Installation

Unique Magic Box interlocking enclosure facilitates easy rack mounting when used in pairs and easy truss mounting via captive nut insert. Rack mounting brackets are available in single unit and dual unit versions. Ensure adequate ventilation around the holes in the enclosure. Failure to allow adequate ventilation may result in premature failure of the unit.

## **e. Wiring**

### **Power in, mains voltage**

Europe

Live = brown, neutral = blue, earth = green / yellow

North America

Live = black, neutral = white, ground = green

### **Out - XLR4**

Used to supply power and control data to the Color Block DB4 fixtures. Pin 1 = 0VDC, pin 2 = control minus, pin 3 = control plus, pin 4 = +48VDC. The chassis should be ground bonded.

### **DMX - XLR5**

Pin 1 = ground/shield, pin 2 = control minus, pin 3 = control plus, pin 4 and 5 are not used.

### **SYNC - RJ45**

Used to synchronize the FX running on multiple PSU-05Bs. A straight wired RJ45 patch cable is suitable to connect units (not a crossover cable).

**Note:** The SYNC connector on the PSU-05B is not using Ethernet.