

Chroma-Q™ Color Block™ PSU-05B

User Manual



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Software Version 2.1

PN: 602-0502

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1. Product overview

1.1 Color Block PSU-05B

The Color Block PSU-05B is a power supply suitable for up to 5 Color Block DB4 LED fixtures or 5 Color Block 2 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 or Color Block 2 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. Two in/out ethernet RJ45 connectors are available for synchronisation.



1.2 Color Block Fixtures

Color Block DB4

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



Color Block 2

The Color Block 2 unit (picture below) is known as a Fixture. Each Color Block 2 Fixture contains four cells, with each cell comprising of 3 single optic RGBA LED clusters.



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
- e. DMX personality mode 10-11
- f. DMX personality mode 12-13
- g. DMX personality mode 14-15
- h. DMX personality mode 16

- 2.3 Technical Information
- Specification
 - Maintenance
 - Battery replacement
 - Installation
 - Wiring

2.1 Cabling

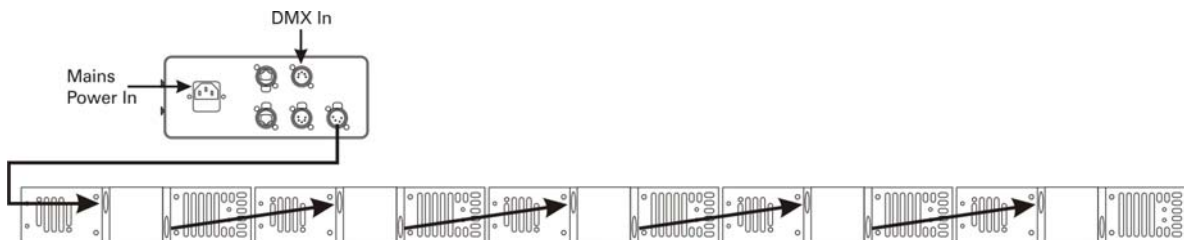
The Color Block system utilises an XLR 4-pin cable system. This is used to supply power and control data. Pin 1 = 0VDC, pin 2 = control minus, pin 3 = control plus, pin 4 = +48VDC. The chassis should be ground bonded.

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.

Pin #	Pin #	Minimum Cable size
1	Ground (-ve)	2.50mm ² (14 AWG)
2	Control data minus (-)	0.35mm ² (22 AWG)
3	Control data plus (+)	0.35mm ² (22AWG)
4	24V DC (+ve)	2.50mm ² (14 AWG)
Chassis	Cable shield/drain wire	0.25mm ² (24 AWG)

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.

It is recommended that a maximum of 20m XLR4 cable length should separate adjacent units as to avoid signal deterioration.



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 above is currently at the **Home** position and displays: product name and model, software version, 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.



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, scroll wheel to adjust DMX start address, press Enter for 2 seconds to save settings.

→ Control Mode

The PSU-05B can be set to operate in 10 DMX controlled modes for the Color Block DB4 system (CB1) and 16 DMX controlled modes for the Color Block 2 system (CB2). Go to "System" and select either "CB1" or "CB2". Both systems offer 3 grouping options (single-cell, block-grouped, all-grouped) with 5 control options: HSIFX, HSI, RGBA, RGB (with *Magic Amber), RGBI (with *Magic Amber), pre-programmed looks and standalone effects. See list below for details. Press Enter, scroll wheel to select control mode, and press Enter for 2 seconds to save control mode settings.

Mode	Ch	Group	System: CB1	System: CB2
1	67	Variable	7FX + 20 x HSI	7FX + 20 x HSI
2	60	Cell	20 x HSI	20 x HSI
3	60	Cell	20 x RGB (with *Magic Amber)	20 x RGB (with *Magic Amber)
4	21	Block	6FX + 5 x HSI	6FX + 5 x HSI
5	15	Block	5 x HSI	5 x HSI
6	15	Block	5 x RGB (with *Magic Amber)	5 x RGB (with *Magic Amber)
7	9	All	6FX + HSI	6FX + HSI
8	3	All	1 x HSI	1 x HSI
9	3	All	1 x RGB (with *Magic Amber)	1 x RGB (with *Magic Amber)
10	80	Cell	Not Available	20 x RGBA
11	80	Cell	Not Available	20 x RGBI (with *Magic Amber)
12	20	Block	Not Available	5 x RGBA
13	20	Block	Not Available	5 x RGBI (with *Magic Amber)
14	4	All	Not Available	RGBA
15	4	All	Not Available	RGBI (with *Magic Amber)
16	1	Any	Look Select	Look Select

→ When DMX is Lost

If DMX is not detected various output options can be selected: Press Enter, scroll wheel to selection, press Enter for 2 seconds to save settings.

Off - will snap to off

Hold - will hold the last valid DMX state

Trig - will default to **Time Trigger** operation

Look 1-31 will snap to the **Look** of your choice

→ Look Store

The PSU-05B has 31 internal preset FX Looks for standalone operation, 1-23 are pre-programmed. To replay a Look in standalone operation, scroll to Look Store, press Enter, scroll and select the desired Look and press Enter for 2 seconds to save settings. To replay a Look with a DMX console, scroll to Control Mode 16 and press Enter for 2 seconds. Use the DMX console with the assigned channel to playback the various looks stored. (1-31 looks in 1 single channel)

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 the desired Control Mode. Use a DMX console to adjust channel levels and create the desired look or effect. Scroll to Look Store and press Enter, scroll to desired Look number and press Enter. Press Enter again for 2 seconds to save Look.

Advanced, standalone. (DMX is unplugged)

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 to the far end of the wheel will show the Mode at which the selected Look was programmed.

To edit the Mode of a selected Look:

Scroll to Look Store and press Enter, scroll to desired Look and press Enter to access the memory data. Scroll the wheel to the far end until Mode number is shown and press Enter. Scroll wheel to adjust the Mode number. Press Enter to toggle back to the channel numbers.

To edit the channel numbers and levels of a selected Look:

Scroll to Look Store and press Enter, scroll to desired Look and press Enter to access the memory data. Scroll the wheel to select the channel number. To edit the channel level, press Enter 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 settings.

→ **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, Frequency = 360, System = CB2

→ **System**

The PSU-05B can be set to operate for the Color Block DB4 system (CB1) and the Color Block 2 system (CB2). Press Enter, scroll wheel to select CB1 or CB2, press Enter for 2 seconds to save settings.

→ **Frequency**

The PSU-05B has four frequency settings available - 360, 600, 1200, 2400. This allows for the LED scan rate to be synchronised with the video camera and avoid a flickering effect. Press Enter, scroll wheel to select frequency, press Enter for 2 seconds to save settings.

→ **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 mode 1 grouping is variable & in modes 2 -3 each cell is a group		
PSU-05B (v2.1)	Mode 1 (67ch) 7FX + 20 x HSI	Mode 2 (60ch) 20 x HSI	Mode 3 (60ch) 20 x RGB (with *Magic Amber)
Channel 1	Grouping 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 nd to every 20 th cells in a group.	Hue for group 1	Red for group 1
Channel 2	Colour Speed 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	Colour Fan 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	Colour Range 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	Colour Step 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	Intensity Effects 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	Intensity Fan 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		
Total DMX Channels	67 DMX channels	60 DMX channels	60 DMX channels

c. DMX personality mode 4-6

	In modes 4-6 each Color Block DB4 or Color Block 2 fixture (4 cells) is a group		
PSU-05B (v2.1)	Mode 4 (21ch) 6FX + 5 x HSI	Mode 5 (15ch) 5 x HSI	Mode 6 (15ch) 5 x RGB (with *Magic Amber)
Channel 1	Colour Speed 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	Colour Fan 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	Colour Range 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	Colour Step 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	Intensity Effects 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	Intensity Fan 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		
Total DMX Channels	21 DMX channels	15 DMX channels	15 DMX channels

d. DMX personality mode 7-9

	In modes 7-9 the PSU-05B output is grouped as one		
PSU-05B (v2.1)	Mode 7 (9ch) 6FX + HSI	Mode 8 (3ch) HSI	Mode 9 (3ch) RGB (with *Magic Amber)
Channel 1	Colour Speed 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	Colour Fan 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	Colour Range 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	Colour Step 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	Intensity Effects 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	Intensity Fan 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		
Total DMX Channels	9 DMX channels	3 DMX channels	3 DMX channels

e. DMX personality mode 10-11

	In modes 10-11 each cell is a group	
PSU-05B (v2.1)	Mode 10 (80ch) RGBA	Mode 11 (80ch) RGBI (with *Magic Amber)
Channel 1	Red for group 1	Red for group 1
Channel 2	Green for group 1	Green for group 1
Channel 3	Blue for group 1	Blue for group 1
Channel 4	Amber for group 1	Intensity for group 1
Channel 5	Red for group 2	Red for group 2

Channel 6	Green for group 2	Green for group 2
Channel 7	Blue for group 2	Blue for group 2
Channel 8	Amber for group 2	Intensity for group 2
Channel 9	Red for group 3	Red for group 3
Channel 10	Green for group 3	Green for group 3
Channel 11	Blue for group 3	Blue for group 3
Channel 12	Amber for group 3	Intensity for group 3
Channel 13	Red for group 4	Red for group 4
	...and so on up to group 20	
	80 DMX channels	80 DMX channels

f. DMX personality mode 12-13

	In modes 12-13 each Color Block DB4 or Color Block 2 fixture (4 cells) is a group	
PSU-05B (v2.1)	Mode 12 (20ch) RGBA	Mode 13 (20ch) RGBI (with *Magic Amber)
Channel 1	Red for group 1	Red for group 1
Channel 2	Green for group 1	Green for group 1
Channel 3	Blue for group 1	Blue for group 1
Channel 4	Amber for group 1	Intensity for group 1
Channel 5	Red for group 2	Red for group 2
Channel 6	Green for group 2	Green for group 2
Channel 7	Blue for group 2	Blue for group 2
Channel 8	Amber for group 2	Intensity for group 2
Channel 9	Red for group 3	Red for group 3
Channel 10	Green for group 3	Green for group 3
Channel 11	Blue for group 3	Blue for group 3
Channel 12	Amber for group 3	Intensity for group 3
Channel 13	Red for group 4	Red for group 4
	...and so on up to group 5	
	20 DMX channels	20 DMX channels

g. DMX personality mode 14-15

	In modes 14-15 all outputs are grouped as one	
PSU-05B (v2.1)	Mode 14 (4ch) RGBA	Mode 15 (4ch) RGBI (with *Magic Amber)
Channel 1	Red for group 1	Red for group 1
Channel 2	Green for group 1	Green for group 1
Channel 3	Blue for group 1	Blue for group 1
Channel 4	Amber for group 1	Intensity for group 1
	4 DMX channels	4 DMX channels

h. DMX personality mode 16

	In mode 16 grouping is variable					
PSU-05B (v2.1)	Mode 16 (1ch) Look Store					
Channel 1	Channel levels and the corresponding Look numbers:					
	Channel Level (%)	Look	Channel Level (%)	Look	Channel Level (%)	Look
	0	OFF	33-35	11	69-71	22
	1-2	1	36-38	12	72-74	23
	3-5	2	39-42	13	75-78	24
	6-9	3	43-45	14	79-81	25
	10-11	4	46-48	15	83-85	26
	12-15	5	49-51	16	86-88	27
	16-19	6	52-54	17	89-91	28
	20-22	7	56-58	18	92-94	29
	23-25	8	59-61	19	95-97	30
	26-27	9	62-64	20	98-100	31
	29-32	10	65-68	21		

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:	CHCBPSU05
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, enabling you to customise your equipment rack or installation by mixing and matching different Magic Box interface units. 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 or Color Block 2 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 synchronise 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.