

Chroma-Q Original Colour Changer

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Product Overview

The Chroma-Q is designed to be one of the most reliable colour changers available. The utilisation of digital circuitry and high technology composite materials, produces an affordable colour changer which is capable of scrolling gel strings of various lengths from 2 to 16 colours.

The Chroma-Q is designed to give years of trouble free use, providing that it is regularly adjusted and used in accordance with the instructions detailed in this manual. If you should experience any problems which fall outside of the scope of this manual, contact the selling dealer for further details.

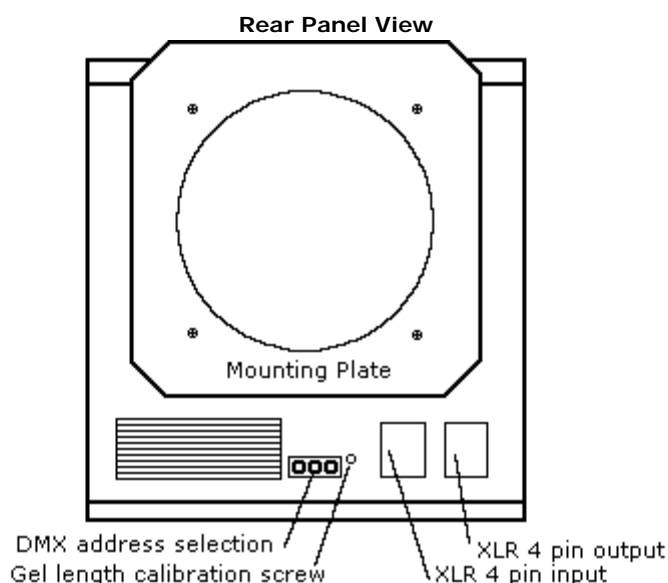
Product Description

The Chroma Q will read USITT DMX512 (1990) protocol, which enables individual addressing of each unit. This allows for easy grouping of multiple units. The units are individually addressed by the positioning of three rotating switches, as displayed in the Rear Panel View on page 4.

The Chroma-Q is supplied power and control signals by means of a XLR 4-pin input connector. The XLR 4-pin output may then be used to connect other units in turn to the same line. Each chain line must be terminated by patching the output from the last unit in the chain to it's corresponding return, as shown in the System Diagram on page 7.

Note: The quantity of Chroma-Q colour changers and maximum cable length per distribution line is dependent upon the size of PSU / Splitterbox used

The Chroma-Q is equipped with an integral cooling fan. Each unit is also equipped with three diagnostic LED indicators (found on the underside of the unit); showing Power, DMX signal and DMX level (see Troubleshooting on page 10 for full details).



Note: A range of mounting plates are available to suit most fixtures (see Price List for current selection).

Operation

A summary of Chroma-Q's operations has been divided into the following sections:

- a) Gel Description
- b) Gel Dimensions
- c) Gel String Assembly
- d) Control and Power Cables
- e) Loading Gel Strings and Calibration
- f) PSU / Splitterbox Options
- g) Troubleshooting

a) Gel Description

The standard gel string consists of a leader, gel frames and a tail. Procolor Lighting Filter is recommended, however most other leading brands can also be used. The leader and tail are taped directly to two types of rollers. The leader is attached to a spring-loaded roller (with grey knob).

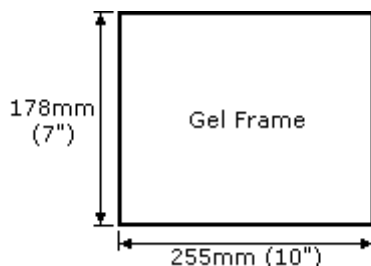
b) Gel Dimensions

The leader and tail dimensions are as follows:



Note: Leaders and tails should be made from 0.076mm / 0.003" thickness Gel. Procolor 130 (clear) is ideal.

The gel frame dimensions are as follows:

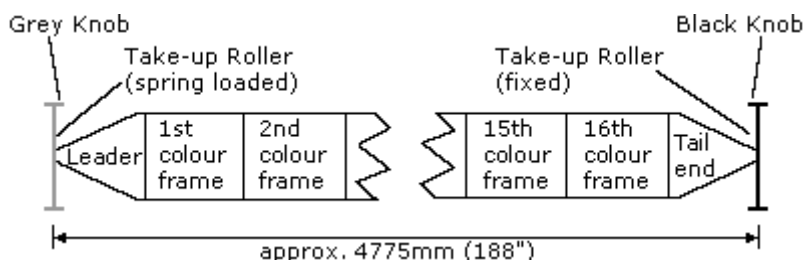


c) Gel String Assembly

To join a leader, tail and gel together, a high temperature, clear gel tape is recommended (see Product Ordering List).

To join leader and tail to rollers, a paper tape product is recommended.

The completed string should look like this:



Note: A range of completed gel strings are available from (see Product Ordering List). Custom gel strings are available upon request. Contact the selling dealer for details.

d) Control and Power cables

Only genuine Tourflex Data Safe cable is recommended for use with the Chroma-Q colour changing System (see Product Ordering List).

The Chroma-Q utilises an XLR 4-pin cable system. This is used for power and data transfer. Pins 1 and 4 serve as 24VDC power. Pins 2 and 3 are used for USITT 1990 DMX512 control protocol.

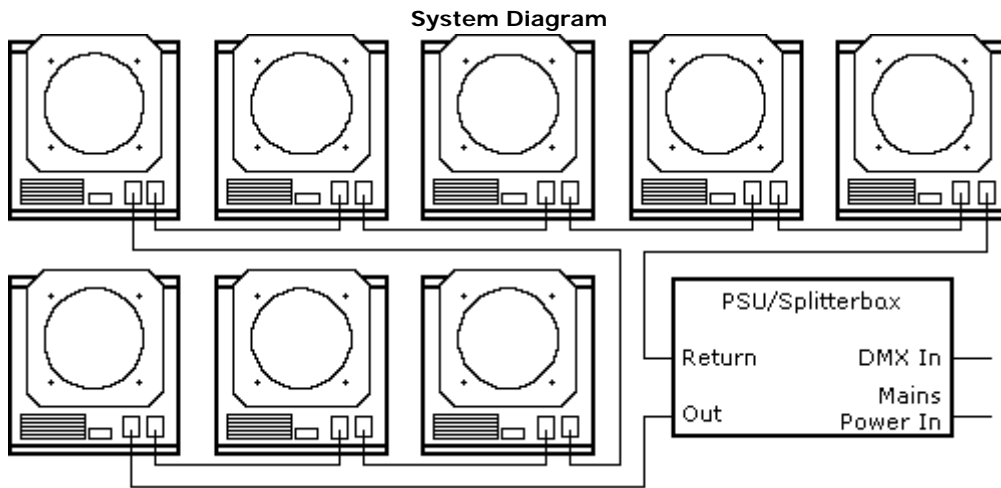
Note: It is very important to ensure that the drain wire from the cable shield is connected to **both** connector cases.

When assembling XLR 4-pin cables, heat shrink should be used on each individual pin to prevent short circuits.

Note: Damage will occur if power connections short-circuit to control protocol connections.

The pins are wired one to one, in the following format:

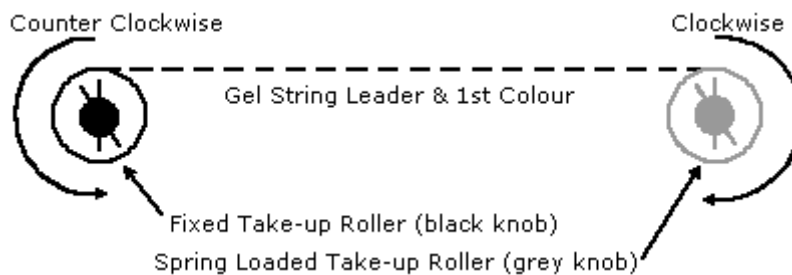
Pin	Function
1	Minus 24VDC
2	Control Data Minus
3	Control Data Plus
4	Plus 24VDC
Chassis	Ground Bonding



Note: Do not connect more than 8 units per Chroma-Q circuit on any DMX / Splitterbox, as this may overload the output. Total cable length per circuit must not exceed 60M / 200' on the 8 unit PSU / Splitterbox and 105M / 350' on the 18 unit PSU / Splitterbox.

e) Loading Gel Strings and Calibration

In order to load gel strings, each unit must be powered and control protocol must be at zero level, as indicated by Level LED. The gel string should be positioned at the first colour frame and inserted as shown by the following diagram:



To apply tension to the gel string being loaded, the following procedure should be followed:

- 1) Hold fixed roller (roller with black knob).
- 2) Lift spring-loaded roller (roller with grey knob) until it rotates freely.
- 3) Rotate spring-loaded roller clockwise while lifted.
- 4) Replace spring-loaded roller securely on shaft base.
- 5) Repeat procedure as required, until excess slack is removed (2-3 turns of spring-loaded roller is usually sufficient).

Note: Always ensure that fixed roller does not rotate while completing this procedure.

To calibrate the individual gel string length for each Chroma-Q, proceed as follows:

First, load the gel string as described above.

Then, slowly increase control protocol level until the gel string reaches its tail, or until maximum control level is attained. At this stage, the gel length calibration screw (range pot) will be adjusted according to the following conditions:

If the gel string reaches tail before maximum level, rotate calibration screw counter-clockwise with a jeweller's screwdriver. Then slowly increase control protocol level. Continue these adjustments until the last colour frame is positioned properly at maximum control protocol level settings.

If maximum level is reached before the last gel string frame, repeat above procedure, but rotate the trim pot clockwise until the final frame is parked in the appropriate position.

f) PSU / Splitterbox Options

The Chroma-Q PSU / Splitterboxes are the only units suitable to be connected to Chroma-Q colour changers. Connection to other units will invalidate the warranty and may cause serious damage to Chroma-Q colour changers and / or Chroma-Q PSU / Splitterbox.

The Chroma-Q PSU / Splitterbox is available in 2 sizes: One suitable for connection to 18 Chroma-Q colour changers and the other suitable for connection to 8 Chroma-Q colour changers.

Each Chroma-Q PSU / Splitterbox is equipped with the following:

- 1) DMX input and thru sockets
- 2) DMX data indicator
- 3) Mains power indicator
- 4) XLR 4-pin output sockets
- 5) XLR 4-pin return sockets
- 6) AC mains input

The basic purpose of the PSU / Splitterbox is to combine the DMX control signal and the 24VDC power into individual lines. There are separate circuit outputs for distribution on each PSU / Splitterbox, each capable of supplying power and data for 8 Chroma-Q colour changers. The maximum total cable length for each output circuit is 60M / 200' on the 8 unit PSU / Splitterbox and 105M / 350' on the 18 unit PSU / Splitterbox.

All outputs are independent of one another, and each line has it's own return. The purpose of the return socket is to maintain a constant voltage level across all units on each line, and to prevent line loss.

Note: A return must always be plugged into the same channel as it's corresponding line out. Mixing up of lines may cause Chroma-Qs or PSU / Splitterboxes to fail.

The 8 unit PSU / Splitterbox has two Chroma-Q circuits and produces 24VDC at 6.5 Amps maximum output. This means a total of 8 Chroma-Q colour changers can be powered through a single 8 unit PSU / Splitterbox. The power consumption is approximately 2 Amps at 120V AC.

To change the operating voltage on the 8 unit PSU / Splitterbox, first isolate the unit from the mains supply, then remove the main body cover by unscrewing the two screws on the end plate. Set the voltage selection switch to the desired setting and refit the cover and endplate using the 2 screws.

The 18 unit PSU / Splitterbox has four Chroma-Q circuits and produces 24VDC at 15 Amps maximum output. This means that a total of 18 Chroma-Q colour changers can be powered through a single 18 unit PSU / Splitterbox (maximum of 8 per circuit). The power consumption is approximately 5 Amps at 120V AC.

To change the operating voltage on the 18 unit PSU / Splitterbox, first isolate the unit from the mains supply, then locate the power input panel which includes the main switch and chassis plug. Open cover, using small blade screwdriver or similar tool; set aside cover / fuse block assembly; pull voltage selector card straight out of housing, using indicator pin; orient selector card so that desired voltage is readable at the bottom; orient indicator pin to point up when desired voltage is readable at bottom (note that when indicator pin is fixed, successive voltages are selected by rotating the card by 90° clockwise); inset voltage selector card into housing, *printed side of card facing towards IEC connector*, and edge containing the desired voltage first; replace cover and verify that indicator pin shows desired voltage.

g) Troubleshooting

Troubleshooting of the Chroma-Q is aided by the indications provided by the 3 diagnostic LED's located on the underside of the Chroma-Q. All troubleshooting procedures should begin with a LED check.

This section is a guide to solving common problems:

Symptom	Possible Cause	Solution
All Chroma-Qs show no power indicator. (Red LED).	24VDC power supply is not providing power to Chroma-Q.	Check if mains power is on and red 24VDC LED is on.
Single Chroma-Q power indicator is off.	4-pin XLR cable has broken connection.	Replace 4-pin XLR cable.
Power indicator light in flashing. (Red LED).	Gel string is jammed and / or thermal protection circuit has activated.	Readjust or replace faulty gel string and / or turn power off and then on again. This will reset the unit.
Chroma-Q has dim power light.	Voltage has dropped below acceptable level.	Check that the return line has been installed. Check maximum cable length has not been exceeded.
DMX indicator on all Chroma-Q are off. (Green LED).	No DMX is present at the Splitterbox	Check that the DMX cable is properly connected to DMX input on the Splitterbox. Check that DMX indicator light, located on the Splitterbox, is on.
DMX indicator light on one group of Chroma-Q's are off. (Green LED).	One output of the Splitterbox has failed. Faulty XLR 4-pin cable at Splitterbox output.	Call selling dealer. Test cables
Level indicator (Yellow LED) does not respond to DMX control signal.	Improper address.	Reassign unit addressing.
Level LED changes intensity, but gel string does not move.	Mechanical failure.	Call selling dealer.

Note: A high percentage of problems are caused by corrupt DMX control protocol. We highly recommend the use of genuine Tourflex Data Safe cables for all Chroma-Q colour changer and DMX control protocol cables.

Chroma-Q Colour Changer Specification

Dimensions:	285mm (w) x 295mm (h) x 89mm (d) 11¼" (w) x 11 5/8" (h) x 3 ½"(d)
Aperture:	171mm / 6 ¾" diameter
Weight:	2.04kg / 4.5lb (without mounting frame)
Gel Frame Capacity:	between 2 - 16 frames
Speed:	3.0 seconds end to end 16 frames
Address:	3 switch address up to 512 channels
Power Requirements:	24V DC
Power Consumption:	0.8 Amperes nominal 1.4 Amperes peak
Protocol Requirements:	USITT DMX512 (1990)
Body Material:	UL94 V0 rated reinforced PBT compound
Mounting Plate:	Mounting plates are available to suit numerous fixtures (see separate price list for current selection)
Colour:	Black
Input Connector:	XLR 4-pin male (power and control protocol)
Output Connector:	XLR 4-pin female (power and control protocol)
European Approvals:	Complies with EU directives: EMC 89/336/EEC Class A. Harmonised standards applied in order to verify compliance with directives: EN 56022:1994, EN 50082-1: 1992 & EN 60950
North American Approvals:	Radiated Emissions: Complies with FCC part 15, subpart B, class A for unintentional radiators.
Low Voltage Directive:	Complies with CSA C22.2 950, UL 1950

Chroma-Q 8 unit PSU / Splitterbox Specification

Dimensions:	185mm (w) x 65mm (h) x 240mm (d) 7¼" (w) x 2½" (h) x 9½" (d)
Weight:	2.05kg / 4½lb
Power Requirements:	115 / 230 V AC (internally switchable - isolate from mains before removing cover)
Power Consumption:	2.2 Amperes at 115V AC with 8 units under load
Protocol Requirements:	USITT DMX512 (1990)
Body Material:	Powder-coated Aluminium
Mounting Options:	Either freestanding or can be hung from threaded bolt (included).
Colour:	Black
Circuit Out Connector:	XLR 4-pin female (power and control protocol)
Return Connector:	XLR 4-pin male (power and control protocol)
Power Input Connector:	Hard wired AWG 18 x 3c power cord
Control Out Connector:	XLR 5-pin female (DMX link)
Control Input Connector:	XLR 5-pin male (protected with clamping diodes)
European Approvals:	Complies with EU directives: EMC 89/336/EEC and LVD 73/23/EEC. Harmonised standards applied in order to verify compliance with directives: EN 55022 (class B), EN 50082-1 & EN 60950
North American Approvals:	Radiated Emissions: Complies with FCC part 15, subpart B, class A for unintentional radiators.

Chroma-Q 18 unit PSU / Splitterbox Specification

Dimensions:	483mm (w) x 178mm (h) x 229mm (d) 19" (w) x 7" (h) x 9" (d)
Weight:	14.3kg / 31½ LB
Power Requirements:	100 / 120 / 230 / 240 V AC (externally switchable, isolate from mains before switching)
Power Consumption:	5 Amperes at 120V AC with 18 units under load
Protocol Requirements:	USITT DMX512 (1990)
Body Material:	Plated and powder-coated steel
Mounting Options:	Either freestanding, rack mounted or can be hung from two ½" threaded bolts (included).
Colour:	Black
Circuit Out Connector:	XLR 4-pin female (power and control protocol)
Return Connector:	XLR 4-pin male (power and control protocol)
Power Input Connector:	IEC 10A, UL rated supplied with detachable power cord
Control Out Connector:	XLR 5-pin female (DMX link)
Control Input Connector:	XLR 5-pin male (opto-isolated)
European Approvals:	Complies with EU directives: EMC 89/336/EEC Class A. Harmonised standards applied in order to verify compliance with directives: EN 56022:1994, EN 50082-1: 1992 & EN 60950
North American Approvals:	Radiated Emissions: Complies with FCC part 15, subpart B, class A for unintentional radiators.
Low Voltage Directive:	Complies with CSA C22.2 950, UL 1950