Chroma-Q™
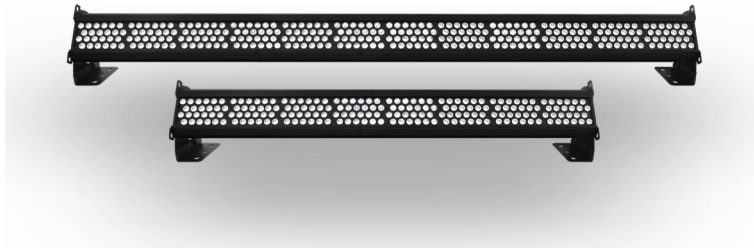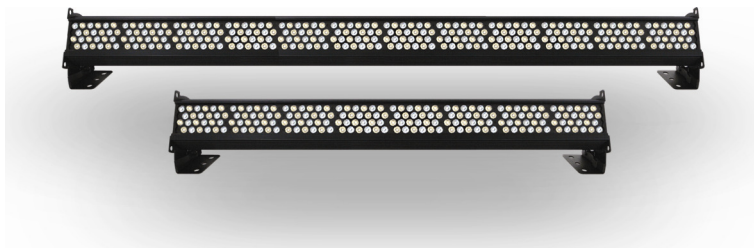## Studio Force™

D 48 & 72

V 48 & 72

User Manual

Chroma-Q™
BRILLIANT SOLUTIONS

Software Version 2.1 September 2012

Warranty Statement

Chroma-Q warrants to the original purchaser, with proof of purchase, that its delivered products shall be free from defects in material and workmanship under normal use for a period of 12 months from date of shipment.

Chroma-Q will repair, or at its option, provide an equivalent item or replace, the defective product during the stated warranty period. This warranty applies only to the repair or replacement of the product and only when the product is properly handled, installed and maintained according to Chroma-Q instructions. This warranty excludes defects resulting from improper handling, storage, installation, acts of God, fire, vandalism or civil disturbances. Purchaser must notify Chroma-Q in writing within 14 days of noticing the defect. This warranty excludes field labour or service charges related to the repair or replacement of the product.

The warranty contained herein shall not extend to any finished goods or spare parts from which any serial number has been removed or which have been damaged or rendered defective (a) as a result of normal wear and tear, willful or accidental damage, negligence, misuse or abuse; (b) due to water or moisture, lightning, windstorm, abnormal voltage, harmonic distortion, dust, dirt, corrosion or other external causes; (c) by operation outside the specifications contained in the user documentation; (d) by the use of spare parts not manufactured or sold by Chroma-Q or by the connection or integration of other equipment or software not approved by Chroma-Q unless the Customer provides acceptable proof to Chroma-Q that the defect or damage was not caused by the above; (e) by modification, repair or service by anyone other than Chroma-Q, who has not applied for and been approved by Chroma-Q to do such modification, repair or service unless the Customer provides acceptable proof to Chroma-Q that the defect or damage was not caused by the above; (f) due to procedures, deviating from procedures specified by Chroma-Q or (g) due to failure to store, install, test, commission, maintain, operate or use finished goods and spare parts in a safe and reasonable manner and in accordance with Chroma-Q's instructions (h) by repair or replacement of engines without factory training.

The warranty contained herein shall not apply to finished goods or spare parts which are sold "as is", as "second-hand", as "used", as "demo" or under similar qualifications or to Consumables ("Consumables" is defined as any part(s) of goods or part(s) for use with goods, which part(s) of goods or part(s) for use with goods are consumed during the operation of the goods and which part(s) of goods or part(s) for use with goods require replacement from time to time by a user such as, but not limited to, light bulbs).

The warranty contained herein shall not apply, unless the total purchase price for the defective finished goods or spare parts has been paid by the due date for payment.

The warranty contained herein applies only to the original purchaser and are not assignable or transferable to any subsequent purchaser or end-user.

This warranty is subject to the shipment of the goods, within the warranty period, to the ChromaQ warranty returns department, by the purchaser, at the purchasers expense. If no fault is found, ChromaQ will charge the purchaser for the subsequent return of the goods.

Chroma-Q reserves the right to change the warranty period without prior notice and without incurring obligation and expressly disclaims all warranties not stated in this limited warranty.

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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 Chroma-Q 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. Chroma-Q 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.

Chroma-Q reserves the right to change or make alteration to devices and their functionality without notice due to our on going research and development.

The Chroma-Q Studio Force D / V 48 & 72 range has been designed specifically for the 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@chroma-q.com. If the selling dealer is unable to satisfy your servicing needs, please contact the following, for full factory service:

Outside North America:	North America:
Tel: +44 (0)1494 446000	Tel: 416-255-9494
Fax: +44 (0)1494 461024	Fax: 416-255-3514
support@chroma-q.com	support@chroma-q.com

For further information please visit the Chroma-Q website at www.chroma-q.com.

Chroma-Q and Studio Force are trademarks, for more information on this visit www.chroma-q.com/trademarks.

The rights and ownership of all trademarks are recognised.

Important Notice:

As per the requirements in the Occupational Safety and Health Administration standards for product approval, please refer to the OSHA web pages http://www.osha.gov/dts/otpca/nrtl/ for information on the list of Nationally Recognized Testing Laboratories (NRTLs) and the scope of recognition.

Table of Contents

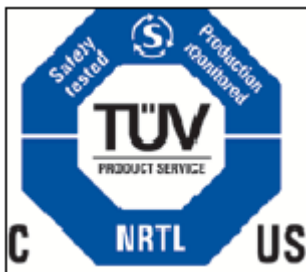**www.chroma-q.com**

1.   Product overview

The Chroma-Q Studio Force™ 48 & 72 LED fixtures range features a choice of 6,100K CCT, daylight white (Studio Force D 48 & 72) and 3,000K – 6,100K CCT, variable white (Studio Force V 48 & 72) models – the latter featuring laboratory calibrated 3200°K and 5600°K presets.

Utilising the same core technologies as the innovative Chroma-Q Color Force™ range, all models offer at least twice the light output of their RGBA colour variants.

The Studio Force D units provide an extreme output ranging from 20,000 lumens (D 48) up to 28,000 lumens (D 72). The Studio Force V units provide an extreme output ranging from 16,900 lumens (V 48) up to 25,400 lumens (V 72).

In addition to evenly washing large areas, they provide smooth, theatrical grade dimming.

The Studio Force range is specifically designed for TV, film, touring, exhibitions, corporate events and theatre lighting applications.

The Studio Force D & Studio Force V line-ups each feature a choice of 1.2m / 4ft (48) and 1.8m / 6ft (72) batten lengths. The units are suitable for a wide range of lighting applications, including key-lighting, uplighting, backlighting and wash applications.

Optional accessories include a cyc and border light lens for general purpose wash applications, and a half snoot.

The 1.2m / 4ft Studio Force D 48 & V 48 batten lengths utilise eight light engines featuring 24 high powered LEDs per engine / a total of 192 LEDs per fixture.

The 1.8m / 6ft Studio Force D 72 & V 72 batten lengths utilise 12 light engines featuring 24 high powered LEDs per engine / a total of 288 LEDs per fixture.

Each Studio Force D batten length features 24 cold white LEDs per engine, whereas the Studio Force V batten lengths feature 12 cold white and 12 warm white LEDs per engine.

The models are equipped with a built-in power supply and can operate as a standalone unit or be remotely controlled through ANSI E1.11 USITT DMX 512-A protocol. The control options incorporate a choice of multiple channel intensity control, effects and a dynamic Variable Effects Engine integrated in the software, which gives the user full control of the effects combination.

The product's robust anodised aluminum extruded construction houses a discreet cable management system. Additional protection is built around the lenses for a truly road proof fixture.

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Note: HANDHELD COLOUR METERS

Handheld Colour Meters provide a very limited measuring range for LED fixtures, which results in inconsistent and unreliable data.

All photometric values listed in this document are based on testing and measurements conducted by certified independent laboratories with reference to the IES standards.

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2. Operation
2.1 Unpacking the Units

The Studio Force D / V 48 & 72 fixture packages include 1 unit Studio Force fixture, power connector (EU)/power cord (US) and a Quick Start Guide. We recommend that you keep the original packaging in case the item needs to be returned.

2.2 Cabling

The Studio Force D / V 48 & 72 range utilises PowerCon connectors for power input and through.

The DMX control data input and through connections from an external control console are via two XLR 5-pin connectors. The chassis are ground bonded.

Note: The maximum number of Studio Force D 72 / V 72 fixtures running off a single power input cable is 2 at 120V AC or 4 at 240V AC. The maximum number of Studio Force D 48 / V 48 fixtures running off a single power input cable is 3 at 120V AC or 6 at 240V AC. Please refer to the ANSI and AWG standards for the maximum data and power cable lengths.

XLR 5-pin Cable:

Pin#	Function
1	Ground (Screen)
2	Data Minus
3	Data Plus
4	Spare Data Minus
5	Spare Data Plus

Power Cable:

International Colour Code	North American Colour Code	Connections	
Green and Yellow	Green	Earth (E)	Ground (Green)
Blue	White	Neutral (N)	Neutral (Silver)
Brown	Black	Live (L)	Hot (Gold)

Important Notice: The use of an opto-splitter for DMX signal distribution is highly recommended when several fixture units are not plugged into the same power source.

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2.3   Mounting

The Studio Force D / V 48 & 72 fixtures are equipped with built-in mounting brackets for floor, wall and truss mounting applications. The mounting brackets feature a pair of quick release levers for easy tilt adjustment.

Note: Secure the fixture with a safety bond through the fixing hold that is built into the end plates of the fixture.

2.4   Orientation

The Studio Force D / V 48 & 72 fixtures are built with near/far lenses that optimise the beam spread when used on a wall or cyclorama. The side with near-field lenses is indicated by the narrow edge border, which should be adjacent to the wall or cyclorama. The side with far-field lenses is indicated by the wider edge border, which should be facing away from the wall or cyclorama.
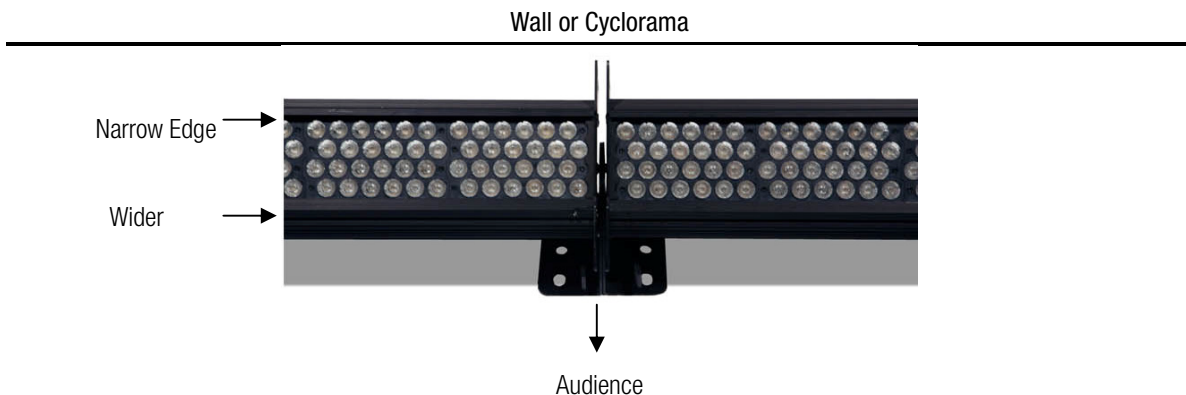
2.5   Cyc & Border Light Lens

"Cyc Lens" and "Border Light Lens" are slide-in optical accessories available to adjust the light output of the Studio Force D / V 48 & 72 fixtures to suit a wide range of applications. Two accessory slots are available at the front of the fixture to hold these slide-in Lens.

The Cyc Lens is an acrylic panel with 60º x 10º diffusion film. The Border Light Lens is an acrylic panel with 40º x 40º diffusion film. Matching indentations on both ends of both panels are available for locking.

Spring Plungers are pre-installed at the far ends of both accessory slots to lock in-place the slide-in panels. The height of the spring plungers are preset and fixed with no need for further adjustment.

2.6   Control

The Studio Force D / V 48 & 72 fixtures can operate as a stand-alone unit or controlled remotely via ANSI E1.11 USITT DMX512-A. The control functions of both fixture models are identical and can be accessed through the LCD display at the rear of the fixture with 4 push buttons.

Push button operation:

Control	Function
Exit	Back to previous menu
Up Arrow	Increases (+) the mode level or value
Down Arrow	Decreases (-) the mode level or value
Back Arrow	(Enter) Stores the menu choice

Power-Up Display:
On power-up and home position, the display shows the model name 'Studio F48D', software version '1.8', the DMX address 'd002', current assigned mode 'White' and the number of channels the Studio Force is in '1ch'.

Display Mode:
The LCD is backlit when you access the menus. This will turn off when left undisturbed for 5 seconds.

Control Options:

Grouping – The Studio Force D 72 / V 72 fixtures consist of 12 LED engines with 24 white LEDs each, and the Studio Force D 48 / V 48 fixtures consist of 8 LED engines with 24 white LEDs each. Individual "Single" grouping allows for the control of the individual LED circuits in every engine. "All" grouping allows for the control of all the 12 or 8 LED engines in one group.

Studio Force D 48:
32 channels (Dim32) – 1 control channel directly affecting the intensity of 6 LEDs per engine.

2 channels (FxDim) – 1 control channel for intensity effects for all LEDs as one group and the 2nd channel directly affecting the intensity of all the LEDs as one group.

8 channels (Dim8x) – 1 control channel directly affecting the intensity of 24 LEDs per engine.

1 channel (Dim1x) – 1 control channel directly affecting the intensity of all LEDs as one group.

1 channel (Look Select) – 1 control channel directly selecting scenes from the look store.

Studio Force D 72:
48 channels (Dim48)– 1 control channel directly affecting the intensity of the 6 LEDs per engine.

2 channels (FxDim) – 1 control channel for intensity effects for all LEDs as one group and the 2nd channel directly affecting the intensity of all the LEDs as one group.

12 channels (Dim12) – 1 control channel directly affecting the intensity of 24 LEDs per engine.

1 channel (Dim1x) – 1 control channel directly affecting the intensity of all LEDs as one group.

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1 channel (Look Select) – 1 control channel directly selecting scenes from the look store.

Studio Force V 48:

32 channels (Dim32) – 1 control channel directly affecting the intensity of 6 LEDs per engine.

3 channels (FxCTI) – 1 control channel for intensity effects, the 2nd control channel for Colour Temperature adjustment, and the 3rd control channel directly affecting the intensity of all the LEDs.

2 channels (WW/CW) – 1 control channel directly affecting all warm white LEDs and the 2nd control channel directly affecting all the cold white LEDs.

2 channels (CTI) – 1 control channel for Colour Temperature adjustment, and the 2nd control channel directly affecting the intensity of all LEDs.

1 channel (Look Select) – 1 control channel directly selecting scenes from the look store.

Studio Force V 72:

48 channels (Dim48) – 1 control channel directly affecting the intensity of 6 LEDs per engine.

3 channels (FxCTI) – 1 control channel for intensity effects, the 2nd control channel for Colour Temperature adjustment, and the 3rd control channel directly affecting the intensity of all the LEDs.

2 channels (WW/CW) – 1 control channel directly affecting all warm white LEDs and the 2nd control channel directly affecting all the cold white LEDs.

2 channels (CTI) – 1 control channel for Colour Temperature adjustment, and the 2nd control channel directly affecting the intensity of all LEDs.

1 channel (Look Select) – 1 control channel directly selecting scenes from the look store.

Other Control Modes (All Models):

Internal FX engine: integrated in the software is an internal FX engine with variable parameters to create an unlimited amount of unique lighting effects. (see 2.5 DMX Protocol for list of parameters)

Master Standalone – assigns the unit to be the Master unit where stand-alone control options are set.

Slave Standalone – assigns the unit to be the Slave unit and follows the control options assigned to the Master unit.

Manual – gives manual control for the Intensity level (Studio Force D 12), and Intensity and Colour Temperature (Studio Force V 12)

Control Menu

Use the push buttons (up/down arrows) to scroll through the control menu positions:

→ Home / DMX Address

To set the DMX start address, press Enter, press Up/Down buttons to adjust DMX start address, press Enter for 2 seconds to save the settings.

→ Control Mode

The Studio Force D / V 48 & 72 range can be set to operate in 5 DMX controlled modes – with 2 grouping options available (cell-grouped, all-grouped), and stand-alone effects.

Refer to the list below for details.

Press Up/Down buttons to access the "Control Mode", press Up/Down to select the mode and press Enter for 2 seconds to save the settings.

Studio Force D 48 & 72

Mode	Name	Group	Ch	Description	
1	Dim32/Dim48	Single	32/48	32 x W (SF 48)	48 x W (SF 72)
2	FxDim	All	2	1 x Intensity Fx + W	
3	Dim8x/Dim12	Single	8/12	8 x W	12 x W
4	Dim1x	All	1	1 x W	
11			1	Look Select	
12	Mastr StndAlon			Standalone Master	
13	Slave StndAlon			Standalone Master	
	Manual			Manual	

Manual:

In this mode, the intensity level "Intensity" can be set and adjusted in stand-alone operation. From the main menu, press Up/Down to access "Control Mode", press Up/Down to select "Manual", and then press Enter for 2 seconds to save the setting. Press Exit and the display will show "Manual Control" and the intensity level "00% Intensity". To adjust the levels press Enter once and "00%" will flash. Use the Up/Down buttons to adjust the levels. Press Enter for 2 seconds to save the settings.

Studio Force V 48 & 72

Mode	Name	Group	Ch	Description	
1	Dim32/ Dim48	Single	32/48	(16 x WW) + (16 x CW)	(24 x WW) + (24 x CW)
2	FxCTI	All	3	1 x Intensity Fx + 1 x Colour Temp + 1 x Intensity	
3	WW/CW	All	2	(1 x WW) + (1 x CW)	
4	CTI	All	2	1 x Colour Temp + 1 x Intensity	
11	Look Sel		1	Look Select	
12	Mastr StndAlon			Standalone Master	
13	Slave StndAlon			Standalone Master	
	Manual			Manual	

Manual:

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In this mode, the intensity level "Int" and colour temperature "CT" can be set and adjusted in stand-alone operation. From the main menu, press Up/Down to access "Control Mode",   press Up/Down to select "Manual", and then press Enter for 2 seconds to save the setting. Press Exit and the display will show "Manual Control" – the colour temperature level "CT 00%" and the intensity level "Int 00%". To adjust the levels press enter once and the CT level will flash. Use the Up/Down buttons to adjust the value and press Enter again once and the "Int" level will flash. Use the Up/Down buttons to adjust the value and press Enter for 2 seconds to save the settings.

When DMX is Lost
If DMX is not detected various output options can be selected:
Press Up/Down to access "When DMX is Lost", press Enter, press Up/Down buttons to select the setting , press Enter for 2 seconds to save.
'Off' - will snap to off
'Hold' - will hold the last valid DMX state
Look 1-31 will snap to the **Look** of your choice

Look Store D / V 48 & 72 range
The Studio Force D / V 48 & 72 range has 31 internal preset FX Looks for stand-alone operation, 1-23 are pre-programmed.
To replay a Look in stand-alone operation, press Up/Down buttons to access "Look Store", press Enter, press Up/Down buttons to select the desired Look and press Enter for 2 seconds to save settings.
To replay a Look with a DMX console, press Up/Down buttons to access Control Mode 11 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 Reset is performed. There are two ways to record a look:

Simple, with DMX console. D / V 48 & 72 Fixtures
Set the Studio Force D / V 48 & 72 range to the desired Control Mode. Use a DMX console to adjust channel levels and create the desired look or effect. Press Up/Down buttons to "Look Store" and press Enter, press Up/Down buttons to the desired Look number and press Enter. Press Enter again for 2 seconds to save Look.

Advanced, stand-alone. (DMX is unplugged)
Press Up/Down buttons to access "Look Store", and press Enter, press Up/Down button to the 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. Pressing Up/Down up to the far end will show the Mode at which the selected Look was programmed.

To edit the Mode of a selected Look:
Press Up/Down buttons to access "Look Store" and press Enter, press Up/Down to the desired Look and press Enter to access the memory data. Press Up/Down buttons up to the far end until Mode number is shown and press Enter. Press Up/Down buttons 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:
Press Up/Down buttons to access "Look Store" and press Enter, press Up/Down to the desired Look and press Enter to access the memory data. Press Up/Down buttons and select the channel number. To edit the channel level, press Enter and use the Up/Down buttons 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 the edited Look.

Technical
In this mode, frequency settings of the unit can be changed and pre-programmed engines can be uploaded.

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Press Up/Down to access "Technical", press Up/Down to select either "Frequency" or "Upload Engines".

Frequency:

The Studio Force D / V 48 & 72 fixtures have four frequency settings available - 600, 1200, 2400 and 4800. This allows for the LED scan rate to be synchronised with the video camera and avoid a flickering effect. Press Up/Down buttons to select the desired frequency, press Enter for 2 seconds to save settings.

Upload Engines:

Pre-programmed engines can be uploaded to the Studio Force D / V 48 & 72 fixtures from the Chroma-Q Uploader.

1. Press Enter, Up/Down buttons to select "Upload Engines" then press Enter, and the display will show "Ready":

2. Connect an XLR 5-pin cable from the Uploader to the unit.

3. Power-up the Uploader - display will show the file name, and 'Ready'.

4. Press the "GO" button once to execute the uploading - red indicator light on the "GO" button will blink.

5. The Uploader display will show a simulated arrow moving from left to right indicating the uploading process.

6. All the white LEDs of the unit will light up (low intensity) to indicate completion of a successful Upload and the Uploader display will show "DONE".

7. Power-cycle the unit.

(See Quick Start Guide of the Chroma-Q Uploader)

Reset to Default

Press Up/Down to access "Reset to Default", press Enter and the display will show "reset?", press Enter for 2 seconds until the display shows "resetting", and wait for the display to show "done" and reset is complete with all menu items reset to factory defaults: DMX address = 001, Control Mode = 3 , DMX Lost = Hold, Looks = 00, Display = On, Frequency = 600

2.7   DMX Protocol

Studio Force D 48 / 72 DMX Personality Mode 1-4:

Studio Force D 48 / 72 V2.0	Control Mode 1 [48/32ch] Group: Single	Control Mode 2 [3ch] Group: All	Control Mode 3 [2ch] Group: All	Control Mode 4 [2ch] Group: All
Channel 1	White for group 1	Intensity Effects 0 Static 1-63 Fade on, fade off. Variable, 63 fastest 64-127 Fade on, snap off. Variable, 127 the fastest 128-191 Snap on, fade off. Variable, 191 fastest 192-255 Snap on, snap off (strobe). Variable, 255 fastest.	Warm White for group 1	Colour Temp for group 1
Channel 2	White for group 2	Colour Temp for group 1	Cold White for group 1	Intensity for group 1
Channel 3	White for group 3	Intensity for group 1		
Channel 4	White for group 4			
Channel 5	White for group 5			
Channel 6	White for group 6			
Channel 7	White for group 7			
Channel 8	White for group 8			
	…and so on up to group 48/32…			
Total	48/32 DMX channels	3 DMX channels	2 DMX channels	2 DMX channel

Studio Force D 48 / 72 DMX Personality Mode 4 / Studio Force V 48 / 72 DMX Personality Mode 3:

Studio Force D 48 / 72 V2.0	Control Mode 5 [1ch] Look Select		
Channel 1	Channel levels and the corresponding Look numbers:		
	Channel Level (%)	Look	Description
	0	OFF	
	1–2	1	Full Scroll (5 sec)
	3–5	2	Full Scroll (10 sec)
	6–9	3	Full Scroll (30 sec)
	10–11	4	Warm Colour Scroll (5 sec)
	12–15	5	Warm Colour Scroll (10 sec)
	16–19	6	Warm Colour Scroll (30 sec)
	20–22	7	Cold Colour Scroll (5 sec)
	23-25	8	Cold Colour Scroll (10 sec)
	26–27	9	Cold Colour Scroll (30 sec)
	29-32	10	
	33–35	11	
	36-38	12	
	39-42	13	
	43-45	14	
	46-48	15	
	49-51	16	
	52-54	17	
	56-58	18	
	59-61	19	
	62-64	20	
	65-68	21	
	69-71	22	3200 White
	72-74	23	5600 White
	75-78	24	
	79-81	25	
	83-85	26	
	86-88	27	
	89-91	28	
	92-94	29	
	95-97	30	
	98-100	31	

2.8 Thermal Performance

The Studio Force D / V 48 & 72 fixtures feature 2 internal fans that drive the internal cooling system.

The output of the fixture is reduced for automatic protection if the internal temperature exceeds 75ºC. This happens on rare and extreme conditions when ambient temperature is over 35ºC or the internal fans are blocked or damaged.

The airflow to and from the fan must not be constricted to maintain the maximum operating capacity of the Studio Force D / V 48 & 72 fixtures.

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3. Troubleshooting

Troubleshooting is a process of elimination. First, rule out the other field factors (i.e. bad connections, faulty cables and power supplies). For technical support and/or parts, please contact your selling dealer or the offices listed in this manual.

Symptom	Possible Cause	Solution
Fixture does not respond to DMX control.	Set to wrong or different DMX address. Bad cable connecting DMX control and fixture. Bad in/through connection between adjacent fixtures. Fans are not working.	Check DMX address and Mode settings. Check/replace DMX run from the console.
Noise from fixture unit.	Fan malfunction.	Check fan.
Low LED output.	Internal temperature is over the limit.	Check fan. Check for airflow - to and from the internal fan. Check area ventilation.

4.   Specification
4.1 Technical specifications

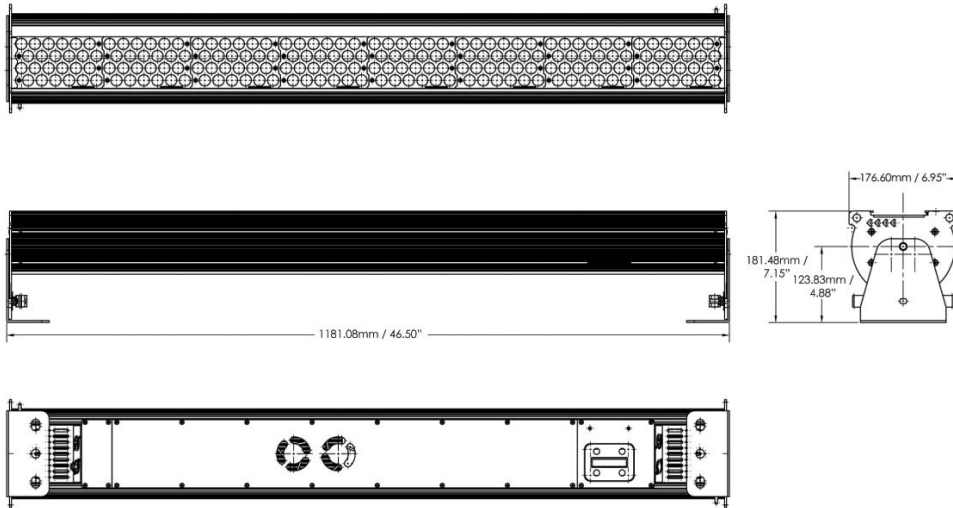|	Studio Force D 48 / V 48	Studio Force D 72 / V 72
Product Code	CHSFD48NF / CHSFV48NF	CHSFD72NF / CHSFV72NF
Dimensions**	1,181mm x 182mm x 177mm 46.5" x 7.25" x 7"	1,759mm x 182mm x 177mm 69.25" x 7.25" x 7"
Weight	15kgs / 33lbs	22kg / 48lbs
Power Input Rating	100-240V AC, 50-60 Hz, 400VA	100-240V AC, 50-60 Hz, 700VA
Typical Power & Current	Measurements done with all LEDs at max. intensity. Measurements made at nominal voltage. Allow for a deviation of +/- 10%	
Power Connector In/Out	PowerCon	
Data Connectors In/Out	XLR 5-pin	
Control Protocol	ANSI E1.11 USITT DMX 512-A	
Cooling System	Forced - 2 x fans	
Construction	Anodised aluminium extrusion	
Colour	Black	
Built-In Hardware	Quick release lever for tilt adjustment	
IP Rating	IP20	
Approvals	CISPR 22 :2006/EN55022 :2006 & CISPR 24 :1997/EN55024 :1998, ICES-003 :2004 & FCC Part 15 Subpart B: 2007, CSA C22. No. 166-M1983:R2008 UL 1573:2003; UL 8750	
LED Engines	8	12
LED Per Engine	D 48: 24 Cold White V 48: 12 Cold White / 12 Warm White	D 72: 24 Cold White V 72: 12 Cold White / 12 Warm White
Total LEDs	288	192
Control Modes	Studio Force D 48 32 channels Dim32 2 channels FxDim 8 channels Dim8x	Studio Force D 72 48 channels Dim48 2 channels FxDim 12 channels Dim12

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	1 channel Dim1x 1 channel Look Select Master Standalone Slave Standalone Manual **Studio Force V 48** 32 channels Dim32 3 channels FxCTI 2 channels WW/CW 2 channels CTI 1 channel Look Select Master Standalone Slave Standalone Manual	1 channel Dim1x 1 channel Look Select Master Standalone Slave Standalone Manual **Studio Force V 72** 48 channels Dim48 3 channels FxCTI 2 channels WW/CW 2 channels CTI 1 channel Look Select Master Standalone Slave Standalone Manual
Dimming Curve	Theatrical	
Variable Effects Engine	Yes	
Effects Parameters	Intensity Effects	
Hot Lumen Output	**Studio Force D 48** White 20,000 hot lumens **Studio Force V 48** White 16,900 hot lumens @ 4,200K	**Studio Force D 72** White 28,000 hot lumens **Studio Force V 72** White 25,400 hot lumens @ 4,200K
Optics:	Specialised close focus lens	
Beam Angle:	~ 23º	
Beam Angle With Optional Cyc Optic	80 x 30° (approx.)	
Beam Angle With Optional Border Optic	60° (approx.)	
Beam Distribution	Asymmetrical direct illumination	
CCT	D: 6,100K (+/- 200K) V: 3,000K – 6,100K	
Colour Gamut	Performance Enhanced	
CRI	**Studio Force D 48** ≥70 **Studio Force V 48** ≥80	**Studio Force D 72** ≥70 **Studio Force V 72** ≥80
Lamp Life	L70 at 50,000 hours	
Operating temperature	**0ºC to 40ºC**	

**For exact measurements please refer to the line drawings on the next page
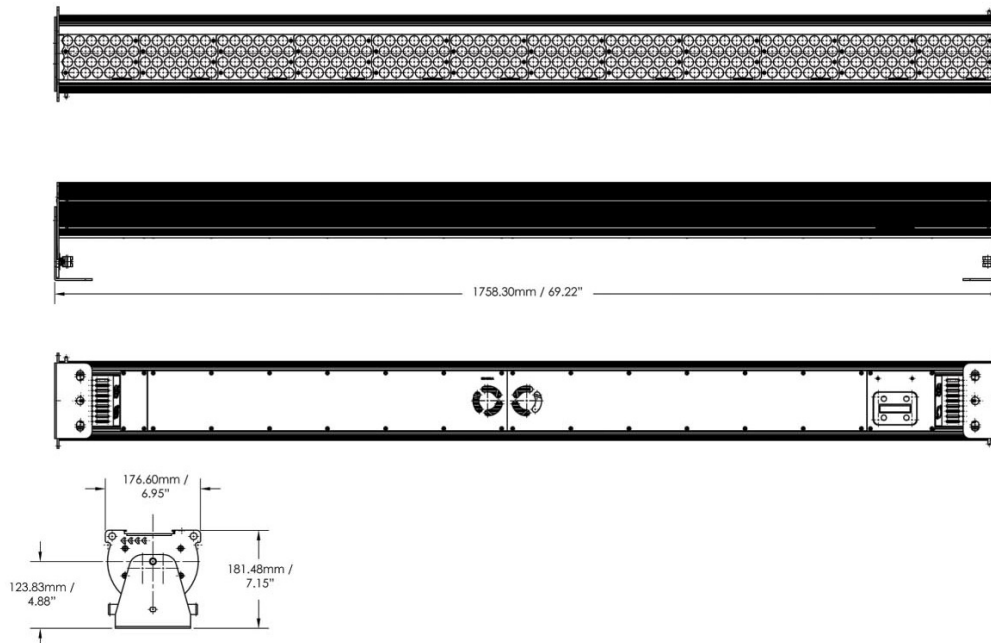
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4.2 Drawings

Studio Force D 48 / V 48 Dimensions

176.60mm / 6.95"

181.48mm / 7.15"   123.83mm / 4.88"

1181.08mm / 46.50"

Studio Force D 72 / V 72 Dimensions

1758.30mm / 69.22"

176.60mm / 6.95"

181.48mm / 7.15"

123.83mm / 4.88"

DISCLAIMER: Dimensions and illustrative drawings contained herein are accurate to the company's knowledge at the time of printing, however specifications are subject to change without notice

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4.3   Accessories

CHCFCL48 – Cyc Lens For Force 48	CHCFCL72 – Cyc Lens For Force 72
CHCFBL48 – Border Light Lens For Force 48	CHCFBL72 – Border Light Lens For Force 72
CHCFHS48 – Half Snoot For Force 48	CHCFHS72 – Half Snoot For Force 72

5.   Maintenance

With care, the Studio Force D / V 48 & 72 fixtures 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.

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