PRODUCT USER GUIDE

Comet Illuminator

Rev: C6

PLEASE READ THIS USER GUIDE BEFORE INSTALLING, OPERATING OR PERFORMING MAINTENANCE ON THE ILLUMINATOR UNIT

c UL us LISTED E357731

FOR INDOOR USE ONLY

WEATHER RESISTANT ENCLOSURE AVAILABLE

LED 50,000 hrs

MADE IN U.K. PREMIUM QUALITY

Thank you for purchasing this UFO illuminator/luminaire.

This innovative illuminator is designed to provide a flexible and creative lighting solution. A row of three powerful LED arrays provides impressive illumination for design elements such as shooting star effects, custom lighting effects, water effects, chasing special effects and firework effects, while rear panel push-button controls and an LCD display provides outstanding ease of use.

The Comet illuminator utilises industry standard protocols for the ultimate in control. It is dimmable and you can also specify your preferred wheel: a 10 segment color change wheel, twinkle wheel, or a number of special effects wheels and custom light output collars can be produced by UFO for you to enhance your desired effect. This is the perfect illuminator for imaginatively lighting decorative fiber optic effect lighting.

To ensure that the illuminator is set up optimally and gives a long service life, please read this user guide before installing, operating or performing any maintenance on the unit.

Please keep this User Guide for future reference. This User Guide is laid out in three sections:

Installation -details on how to connect your luminaire
Operation - details how to programme and set up your luminaire
Maintenance - maintenance log, troubleshooting guide, technical specification

FEATURES

The Comet is a 60W white light LED illuminator with optional decorative wheel capability. The Comet LED illuminator driver PCB has all its control functionality fitted as standard, available via rear panel connections, push buttons and LCD display.

- Manual dimming using rear panel push button controls with status display
- 0-10V (current source – receiving) dimming
- 0-10V (current source – receiving) decorative wheel speed
- 1-10V (current sink – sending) dimming
- DMX dimming – 3 channels (white light dimming, wheel speed, initialise/reset/LED/fan on and off)
- Manual decorative wheel with bi-directional motor speed control, or Stop setting, where an open wheel segment can provide maximum light output.
- Master slave functionality – one Comet acting as master controlling slave Comet luminaires via DMX links

The Comet LED illuminator is powered from a multi-voltage, external 48V Class 2 power supply unit, which will be configured for your country's mains supply.

IMPORTANT

This product must be installed in accordance with the applicable installation code, by a person familiar with the construction and operation of the product, and the hazards involved.

These illuminators are not mains dimmable.

The LED array and heatsink in this illuminator can be replaced when it reaches end of life. Contact UFO for details

Type Y Attachment: If the external flexible cable or cord of this luminaire or associated PSU/driver is damaged, it shall be exclusively replaced by the manufacturer or his service agent or a similar qualified person to avoid a hazard.

Location: Do not locate this illuminator closer than 200mm from any flammable surface.

Clearance / Ventilation: It is imperative that a gap of 200mm is left around the unit. This is to allow air to circulate and prevent overheating. The location must have free ventilation and must not have an ambient temperature higher than that specified for the luminaire.

Mounting: This luminaire comes with integral mounting feet for securing the unit to a vertical or horizontal surface.

Warning: Never look directly at the luminaire through the fiber port.

Warning: The luminaire should be positioned so that prolonged staring into the luminaire at a distance closer than 2.7 metres is not expected.

Warning: NEVER hot plug the DC connector on the rear of the illuminator as this may cause arcing of the DC current. Do not disconnect or connect power from the Comet illuminator by removing or connecting the DC connector whilst the 48V PSU is live.

UFO will accept no liability for damage, or associated claims, caused by not following the installation and safety instructions contained within this user guide.

CONNECTION - FOR MANUAL OPERATION

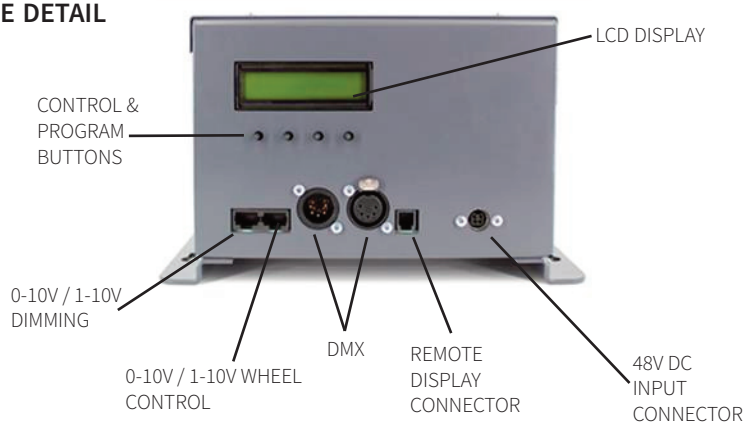
There are two connections required – the fiber port and the power supply connections. The fiber port should be connected first before the mains supply. Connect and secure the fiber optic connector into the collar and the front of the unit and secure using the M5 knurled locking screw. Ensure the fiber optic connector is fully inserted before tightening the locking screw.

Never run the luminaire with the fiber optic connector out of the collar.

Plug the power supply's output into the Comets power supply input and then connect the mains plug into a local mains supply. The Comet will initialise and display its current status.

Consult the Troubleshooting and Operation sections in this manual if the Comet does not power up or operate as expected.

REAR PLATE DETAIL

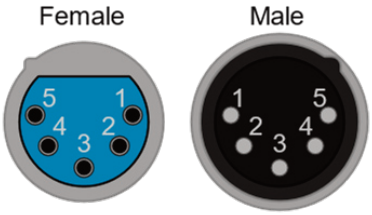


CONNECTION - FOR DMX REMOTE CONTROL & DMX MASTER / SLAVE OPERATION

There are three connections required – the fiber port, the DMX cables and the mains supply cable. The fiber port should be connected first before the mains supply. Connect and secure the fiber optic connector into the collar and the front of the unit and secure using the M5 knurled locking screw. Ensure the fiber optic connector is fully inserted before tightening the locking screw.

Never run the luminaire with the fiber optic connector out of the collar.

Wire up using the DMX cable from the DMX control system. Solder the cables to the 5 pin XLR male and female plug and socket using pin outs as detailed below and plug in to the connectors on the rear of the luminaire.



Pin	Description
1	Ground/Shield
2	Data - (cold)
3	Data + (hot)
4	Not used
5	Not used

Plug the power supply's output into the Comets power supply input connector and then plug the mains plug into a local mains supply. The Comet will initialise and display its current status.

Consult the Troubleshooting section in this manual if the Comet does not power up.

DMX NOTES

- Always use an approved DMX cable
- Always "daisy chain" a DMX cable or universe
- Never use a T joint on a DMX cable or universe, unless using and approved interface or splitter
- Never connect more than 30 devices to a single DMX universe unless using and approved interface or splitter
- Always terminate the last device on a DMX universe by connecting a 120 ohm resistor across DMX+ and DMX- across the last output connector
- This is a 3 channel DMX device always leave 3 channels free when addressing multiple Comet luminaires i.e. address 001, 004, 007 etc.
- For master/slave operation all slaves must be connected together and to the master Comet

If there is no DMX data being received at a Comet illuminator the display will indicate "No DMX" as shown in the example below for address 001

DMX 001 No DMX

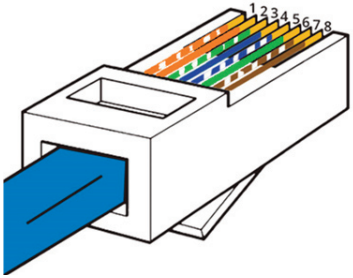
CONNECTION - FOR 0-10V (CURRENT SOURCE) OPERATION

This is a current source dimming and decorative wheel operation. For current source, the inputs to the Comet require an external control voltage between 0V and 10V DC.

There are three/four connections required – the fiber port, the 0-10V cable(s) and the power supply cable. The fiber port should be connected first before the mains supply. Connect and secure the fiber optic connector into the collar and the front of the unit and secure using the M5 knurled locking screw. Ensure the fiber optic connector is fully inserted before tightening the locking screw.

Never run the luminaire with the fiber optic connector out of the collar.

Wire up and connect RJ45 plugs to the RJ45 connectors on the rear of the luminaire using pin outs as detailed below. The left hand RJ45 connector controls dimming, the right-hand connector controls the decorative wheel motor. Ensure the 0-10V control system is powered up and supplying a control voltage.



Pin	Wire Color
1	White / Orange
2	Orange
3	White / Green
4	Blue
5	White / Blue
6	Green
7	White / Brown
8	Brown

RJ45 CONNECTOR (LEFT HAND) - DIMMING

RJ45 Pin No	Wire Color	Polarity	Function
5	White / Blue	+VE Positive	Positive (10V) 0-10V Current Source Dimming
8	Brown	Ground (0V)	Ground (0V) 0-10V Current Source Dimming

RJ45 CONNECTOR (RIGHT HAND) - DECORATIVE WHEEL CONTROL

RJ45 Pin No	Wire Color	Polarity	Function
3	White / Green	+VE Positive	Positive (10V) 0-10V Current Source Twinkle Motor3
8	Brown	Ground (0V)	Ground (0V) 0-10V Current Source Twinkle Motor

CONNECTION - FOR 0-10V (CURRENT SOURCE) OPERATION - CONTINUED

Plug the power supply's output into the Comet's power supply input and then connect the mains plug into a local mains supply. The Comet will initialise and display its current status.

Consult the Troubleshooting and Operation sections in this manual if the Comet does not power up or operate as expected.

0-10V NOTES

- This is a current source 0-10V control system. The input from the 0-10V controller (source) supplies a varying control voltage between 0 and 10v to the luminaire to control the dimming or decorative wheel motors, or both the dimming and the decorative motors
- Always use an approved CAT5 cable
- With no 0-10V input the luminaire will give no light output and the decorative wheel will be stationary, but may move slightly. If this movement causes a problem, connect a 0-10V controller set to 0V or set the Comet to manual control.

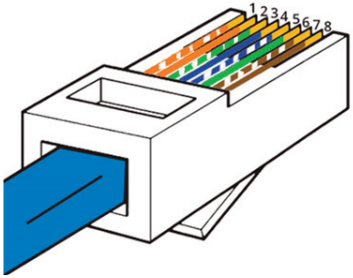
CONNECTION - FOR 1-10V (CURRENT SINK) OPERATION

This is a current sink 1-10V dimming operation. For current sink dimming, the left-hand dimming RJ45 socket of the Comet provides current flow to a remote electronic dimmer. The remote electronic dimmer modifies the current returning to the Comet, thus providing remote dimming control.

There are three connections required – the fiber port, the 1-10V cable and the mains supply cable. The fiber port should be connected first before the mains supply. Connect and secure the fiber optic connector into the collar and the front of the unit and secure using the M5 knurled locking screw. Ensure the fiber optic connector is fully inserted before tightening the locking screw.

Never run the luminaire with the fiber optic connector out of the collar.

Wire up and connect a RJ45 plug to the left hand RJ45 connector on the rear of the luminaire using pin outs as detailed below. Note that only the left hand RJ45 connector can be used for current sink dimming.



Pin	Wire Color
1	White / Orange
2	Orange
3	White / Green
4	Blue
5	White / Blue
6	Green
7	White / Brown
8	Brown

RJ45 CONNECTOR (LEFT HAND) - 1-10V CURRENT SINK DIMMING

RJ45 Pin No	Wire Color	Polarity	Function
3	White / Green	+VE Positive	Positive (10V) 1-10V Current Sink Dimming
8	Brown	Ground (0V)	Ground (0V) 1-10V Current Sink Dimming

CONNECTION - FOR 1-10V (CURRENT SINK) OPERATION - CONTINUED

Plug the power supply's output into the Comet's power supply input and then connect the mains plug into a local mains supply. The Comet will initialise and display its current status.

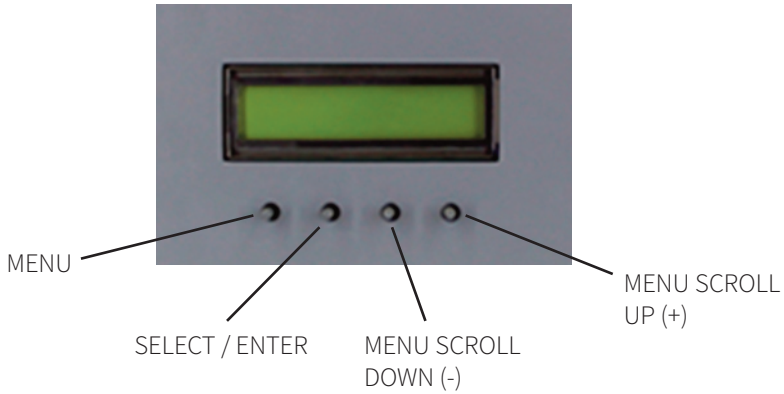
Consult the Troubleshooting and Operation sections in this manual if the Comet does not power up or operate as expected.

1-10V NOTES

- This is a current sink 1-10V control system. A 10V output from the Pulsar is connected via an external 1-10V current sink dimmer varying the circuit current to control the dimming only
- Dimming is controlled between maximum light output and approximately 10% at minimum light output. This minimum value may vary depending on the dimmer used
- Always use an approved CAT5 cable
- Always ensure correct connection polarity
- The Comet 1-10V dimming system has been designed around the UFO CVD3 Current Sink Electronic Dimmer (See Accessories in Technical Specification section at end of this document)
- The CVD3 is designed to be fitted to the back of a one gang faceplate

USER CONTROLS

Operation of the Comet is carried out via the rear display and associated push button controls as detailed below:



POWER UP

On power up the display will firstly display as follows and as detailed below:

- The Comet firmware version
- The current status of the unit

Pulsar Firmware Version

Pulsar Current Status

The current status used as an example above depicts the illuminator configured as a DMX Master, light output 100% (undimmed), this is the factory default setting – see section below.

Once the luminaire is powered up, user controlled manual functions and all programming features are available via the four rear panel push buttons as detailed in the figure above and the following Programmable Function Table.

RESET / FACTORY DEFAULT

IMPORTANT NOTE: Once programmed the luminaire will always revert to the user programmed settings when power is recycled. However, if manual RESET is selected as detailed below all previous user program selections will be deleted and the luminaire will revert to the following factory default settings:

DEFAULT FACTORY SETTINGS

Item	Value
DMX Address	001
Control Mode	Master
Dimming Level	100%
Wheel Speed	CW Spd 4

MENU >> Reset options **>> SCROLL UP/DOWN** Yes **>> ENTER**

PROGRAMMABLE FUNCTION TABLE

MAIN MENU	SUB MENU	DESCRIPTION	INSTRUCTIONS
DMX Address	None	Sets DMX address	Use + & - buttons to display chosen address. Press enter to select
Control Mode	Master	Allows manual control of illuminator	Press enter to select
Control Mode	DMX	Allows DMX control of illuminator	Press enter to select
Control Mode	0-10V	Allows 0-10V (current source) control of lluminator	Press enter to select
Control Mode	1-10V	Allows 1-10V (current sink) control of illuminator	Press enter to select
Dimming Level	None	If set to Master, allows manual dimming of light output	Use + & - buttons to display chosen light output. Enter to select
Wheel Speed	Stop to 47 rpm	Allows manual control of decorative wheel speed	Use + & - buttons to display chosen wheel speed. Press enter to select
Reset Options	None	When set to Master, allows unit to be manually reset to factory default settings	Use + & - buttons to display YES or NO. Press enter to select
Temperature	None	Displays temperature of array	None

MANUAL OPERATION

All Comet models in the range can be manually controlled in a variety of ways as detailed in the Programmable Function Table above and in the preceding section and in the following sections.

NOTE

- For all manual operation modes, the luminaire must be programmed to Master
- Refer to Programmable Function Table above for Main Menu and Sub Menu availability for each model

MENU >> Control mode **>> SCROLL UP/DOWN** Master **>> ENTER**

MANUAL DIMMING

With the luminaire in Master Control Mode the luminaire light output can be controlled by the Dim level menu from 0% (no light output) to 100% (maximum light output) as detailed below

MENU >> Dim level **>> SCROLL UP/DOWN TO SELECT LEVEL >> ENTER**

MANUAL WHEEL CONTROL

With the luminaire in Master Control Mode the wheel speed can be controlled by the wheel menu from Stop to 47rpm as detailed below (all speeds approximate)

MENU >> Wheel speed Stop **>> SCROLL UP/DOWN AND PRESS ENTER TO SELECT COLOR/SEQUENCE**

Program:	Stop	Spd1	Spd2	Spd3	Spd4	Spd5	Spd6	Spd7	Spd8	Spd9	Spd10
Speed:	-	6rpm	12rpm	20rpm	37rpm	47rpm	47rpm	37rpm	20rpm	12rpm	6rpm
Direction:	-	CW	CW	CW	CW	CW	ACW	ACW	ACW	ACW	ACW

DMX OPERATION

With the luminaire in DMX Control Mode all Comet models in the range can be DMX controlled as detailed in the Programmable Function Table and in the following sections. There are two DMX control methods available:

- DMX controller or control system
- Comet Master/Slave configuration

DMX CONTROLLER/CONTROL SYSTEM

For all normal DMX operation modes, the DMX address must be set using the DMX Address menu and the luminaire must be set to DMX in the Control Mode sub menu as shown below.

MENU >> Control mode **>> SCROLL UP/DOWN** DMX **>> ENTER**

DMX ADDRESSING

MENU >> Select program **>> SCROLL UP/DOWN TO SELECT ADDRESS >> ENTER**

The Comet occupies 3 DMX channels as detailed below. When addressing multiple Comets:
- If they are to function together on the same DMX channels use the same address for all
- If they are to function independently always leave 3 channels free i.e. address 001, 005, 009 etc.

DMX CHANNELS

CHAN No.	FUNCTION	ADDRESS VALUE	DESIRED EFFECT
01	LED Dimming	0-255	0-100% Dimming across range
02	Wheel Indexing	0-127	Each increment moves wheel one setting and stops. 0-127 = one full rotation
02	CW rotation of wheel from fast to slow	128-189	Fast to slow clockwise
02	No rotation of wheel	190-193	Wheel stationary
02	ACW rotation of wheel from slow to fast	194-255	Slow to fast anti-clockwise
03	Normal - LED & Fan On	0-119	LED illuminated & fan running
03	Wheel to home position	120-127	Wheel returns to home position
03	Initialise / Reset	128-200	Initialise & reset If held for 10 seconds
03	LED & Fan Off	201-255	LED & fan off after 30 second delay

DMX OPERATION

COMET MASTER/SLAVE DMX CONTROL

In Comet Master/Slave DMX operation, a single Comet Master acts as a DMX controller and the Slaves connected to it follow the Master luminaire manual controls and pre-programmed static colors and sequences. For Master/Slave to work:

The luminaire selected as Master must be set to Master Control Mode as shown below:

MENU >> Control mode **>> SCROLL UP/DOWN** MASTER **>> ENTER**

The luminaire(s) selected as Slave(s) must be set to DMX control mode as shown below:

MENU >> Control mode **>> SCROLL UP/DOWN** DMX **>> ENTER**

The luminaire(s) selected as Slave(s) must be set to DMX address 001 as shown below:

MENU >> Control mode **>> SCROLL UP/DOWN** DMX address 001 **>> ENTER**

The Slave luminaire(s) will now respond to the Master manual settings and pre-programmed static colors and sequences.

0-10V OPERATION

All Comet models in the range can be 0-10V (current source) controlled as described in the Programmable Function Table and as detailed in the following sections

For all 0-10V current source operation modes the luminaire must be set to 0-10V in the Control Mode sub menu.

MENU >> Control mode **>> SCROLL UP/DOWN** Control mode 0-10V **>> ENTER**

0-10V CHANNELS

CHAN No.	FUNCTION	0-10V VALUE	DESIRED EFFECT
01	LED Dimming	0V to 10V	No light output to full light output
02	Wheel Control	0V	Wheel at rest at cutout – full light output
02	Wheel Control	0.02V to 4.9V	Wheel indexing. Each increment moves wheel around one setting and stops. 0.02 to 4.9V = one full rotation
02	Wheel Control	5V to 7.49V	Clockwise rotation of wheel from fast to slow
02	Wheel Control	7.5V to 10V	Anti-clockwise rotation of wheel from slow to fast

NOTE: This is a current source 0-10V control system. For this control mode to work, the Comet requires a varying control voltage input (between 0 and 10V DC) from a 0-10V controller (source) to control the dimming or decorative wheel motors, or both if two 0-10V channels are used.

If no 0-10V control voltage is present on the dimming input the LED will not illuminate.

If no 0-10V control voltage is present on the motor input the wheel will not turn but may twitch slightly.

1-10V OPERATION

All Comet models in the range can be 1-10V (current sink) controlled as described in the Programmable Function Table and as detailed in the following sections.

For all 1-10V current source operation modes the luminaire must be set to 1-10V in the Control Mode sub menu.

MENU >> Control mode **>> SCROLL UP/DOWN** Control mode 1-10V **>> ENTER**

1-10V CHANNELS

CHAN No.	FUNCTION	CONTROL STATE	DESIRED EFFECT
01	LED Dimming	Minimum	10% light output
01	LED Dimming	Maximum	Maximum light output

NOTE: This is a current sink 1-10V dimming operation. For current sink dimming to work a compatible remote electronic dimmer must be connected to the dimming input, for example UFO Unidim CVD3 - Remote Current Sink dimmer.

MAINTENANCE

To ensure a long working life and the safe, reliable operation of the illuminator, it is very important to maintain it properly and ensure it is installed in an appropriate and safe location.

Before performing any maintenance on the illuminator it should be disconnected from the power supply and allowed to cool down.

• The illuminator fans and vents should be blown out with compressed air at least every 12 months, or more often if located in a dusty environment.

• Do not allow dust to build up on internal pcb's & components as this will increase heat within the illuminator and lead to failure. Units should be checked regularly and all dust must be vacuumed off. Failure caused by excessive dust will not be covered under warranty.

• After the illuminator has been installed, check the fans and vents to ensure they are clear of dust and debris. Blow out with compressed air if required.

• The body of the illuminator can be cleaned using a soft damp cloth. Do not use any abrasives on the unit.

Note that a record of all maintenance MUST be kept in the table below, indicating what maintenance was undertaken. This must be dated and is required for warranty purposes.

SAFETY GUIDANCE

• A gap of 200mm (8") **MUST** be left around the unit. This is to allow air to circulate and prevent overheating. The location must have free ventilation and must not have an ambient temperature higher than that specified for the luminaire.

• The outer body of the illuminator may become hot - keep away from all combustible materials and **DO NOT** locate this light source within 200mm (8") of any flammable surface.

• The illuminator must not be run without the fiber optic harness fitted.

MAINTENANCE LOG

Date	Maintenance Undertaken

TROUBLESHOOTING - LCD DISPLAY ERROR MESSAGES

DMX 001 No DMX	No DMX signal at illuminator
UFO Error Wheel Sens	Decorative wheel sensor not found
UFO Error Array Temp	Array overheating

TROUBLESHOOTING - ALL MODES & MANUAL MODE

Problem	Probable Cause	Possible Solution
[ALL MODES] Unit is dead No light output and LCD display is out	Mains supply off	Check supply & reinstate
	Loose connectors	Check if all required plugs & sockets are fully mated
	Blown fuse in plug (UK models only)	Check fuse & replace if necessary. If problem persists and fuse blows again, isolate mains supply and contact UFO
[ALL MODES] No light output. LCD display lit, fans are running	Unit in Master control mode and dimming at 0%	Select Dim level menu option and manually set dimming level to give required light output
	Unit in 0-10V control mode but no 0-10V control voltage present	Check 0-10v control voltage and reinstate
	Unit in 1-10V control mode but no connection to electronic dimmer	Check 1-10V control circuit and reinstate
	Unit in DMX control mode but channel 1 value set a 0	Increase channel 1 DMX controller value
	Failed array or internal component	Contact UFO
[ALL MODES] No light output. LCD display lit, fans are not running	Unit in DMX control mode but channel 6 value set >200	Reduce channel 5 DMX controller value to 0
	Failed internal component	Contact UFO
[MANUAL MODE] No light output. LCD display lit, fans are not running	Unit not in Master control Mode	Set to Master in the Control Mode sub menu
	Failed internal component	Contact UFO

TROUBLESHOOTING - DMX MODELS

Problem	Probable Cause	Possible Solution
No DMX control over dimming and other DMX functions "No DMX" displayed	Indicates unit is not receiving a DMX signal from controller or Master Comet	Check DMX controller or Master Comet settings.
	Faulty DMX cable	Check DMX cabling and repair/replace
No DMX control over dimming and other DMX functions – no DMX address displayed	Unit not in DMX control mode	Set to DMX in the Control Mode sub menu
No DMX control over dimming and other DMX functions –DMX address displayed	DMX address not correctly set	Set correct DMX address
Random/wrong function DMX control over dimming and other DMX functions DMX address displayed	Incorrect DMX address set - probably not enough channel space left between addresses	Set correct DMX address and leave adequate space for 3 channels of DMX between addresses

TROUBLESHOOTING - 1-10V MODELS

Problem	Probable Cause	Possible Solution
Dim level displayed at 5%, dimmer control has no effect	Current sink dimmer connected wrong polarity	Check and correct polarity in all remote dimming connections
Dim level displayed at maximum, dimmer has no effect	Open circuit on current sink dimmer connection/cabling	Check dimmer cabling and repair/replace
	Incompatible current source dimmer	Disconnect dimmer and check output with DVM turning dimmer from minimum to maximum – if there is a varying 0-10V voltage on output, change the dimmer for a current sink type
Dim level changes with remote dimming but light output range inaccurate or reduced	Incompatible current sink dimmer	Contact UFO

TROUBLESHOOTING - 0-10V MODELS

Problem	Probable Cause	Possible Solution
No control over dimming and/or decorative wheel speed. Unit is dead – no light output. Mains power indicator on PSU and LCD display are lit, fans are running	Unit in 0-10V control mode but no 0-10V control voltage present	Check 0-10v control voltage at controller and reinstate
	Fault on 0-1V cabling, reverse polarity or open circuit	Check 0-10V cabling and repair/replace
Decorative wheel twitches but does not turn	Unit in 0-10V mode but no 0-10V control voltage present.	Check 0-10v control voltage at controller and reinstate

Fiber Type	Glass / PMMA
Port Connector	Custom dual slotted
Material / Finish	Sheet steel, grey powdercoat (RAL7024)
Dimension (L x W x H)	207mm x 265mm x 186mm
Min. Ambient Temp.	-10°C
Max. Ambient Temp.	+45°C
Decorative Effects	Control over dimming, color change effects or twinkle effects. Supports one built in effect wheel. The slotted common end allows fiber to be inserted in such a way to allow creation of specialist lighting effects such as shooting stars, fireworks and light chasing effects.
Control	DMX, 0-10V, 1-10V, manual DALI (via optional interface)
LED Array Type	White light
LED Array Life	50,000 hours typical
LED Power	60W
Color Temperature	5000K
CRI	>80
Typical Luminous Flux	5400lm
Mains Supply Voltage	100 - 240V AC, 50-60Hz
PSU Type	Desktop PSU with IEC power cord
PSU Output	48V DC, 96W
Fan Type	Crossflow
Thermal Protection	On LED PCB thermistor

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