ALCHEMY 7

USER'S MANUAL

DTS

Release	1.02	**Code: 0517I363**	**For more information**	
Language	EN			

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1 Symbols

Symbol	Meaning
	General risk.
	Electric shock risk
	Hot surface
	Suitable for indoor use only.
$T_a 45°C$	Maximum operating ambient temperature.
0,5 m	Minimum distance from illuminated objects.
	Do not stare at the operating light source.
Risk Group 2	Photobiological safety risk group2
	Never expose the front lens to sunlight or any strong artificial Light source from any angle to avoid damage of head internal parts.
	European Community Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).
LiFePO4	Dispose the battery at the end of its life according to the regulation in force

2   General Warning

Carefully read the instruction contained in this User Manual, as they give important information regarding your safety and others during installation, use, and maintenance of the product.

The unit is not suitable for domestic use and must be installed by qualified personnel only.

The device must always be equipped with an efficient ground connection.

3   Important Safety Information

3.1   Fire Prevention

- **Minimum distance from illuminated surface: 0.5 m**

- **Never expose the front lens, from any angle, to direct sunlight or strong artificial light sources to avoid damage to internal parts of the product.**
  The front lens may act as a powerful magnifying glass if exposed towards the sun or any strong artificial light source; this will cause damage to the internal parts of the moving head, even if exposed for a few seconds, and even when the unit is turned off.
  It is strongly recommended to leave the front lens directed towards the ground when switching off or leaving the unit unattended.

- **The unit features various air inlets and cooling fans located on both the base and the head of the fixture. Under no circumstances should these be blocked or obstructed whilst the projector is operating. Doing so may cause the fixture to seriously overheat, damaging it and compromising its proper operation.**
- Each fixture produces heat and must be installed in a well-ventilated place.
- Connect the projector to mains power via a thermal magnetic circuit breaker.

3.2   Prevention of Electric Shock

- **High voltage is present inside the unit.**
  Unplug the unit prior to performing any function which involves handling of the insides of all parts of the product.

- **Class I appliance: connection must be made to a mains system fitted with an efficient earthing.**
- ALCHEMY 7 requires the assistance of specialized personnel for all servicing. Please always refer to an authorized DTS service center.

3.3   Safety

- **Risk Group 2 product according to IEC 62471.**
  Do not look directly at the light output and do not stare at the light beam through optical instruments or any other device that may concentrate the light beam. May be harmful to the eyes and skin.

- **Do not stare at the operating light source.**
  The luminaire should be positioned so that prolonged staring into the luminaire from a minimum distance of 14.16 m is not expected.
- The light source contained in this luminaire shall only be replaced by the manufacturer or their service agent or a similar qualified person.
- The unit is not suitable for domestic use and must be installed by qualified personnel only.
- The projector should always be installed with the proper tools. The fixing point must always be capable of supporting the weight of the unit.
- Always use a safety cable to sustain the weight of the unit in case of failure of the main fixing point.

- **Pan: 540° rotation; Tilt: 230° rotation.**
  Never obstruct the projector's movement while it is operating.

- **The external surface of the unit's body, at various points, may exceed 50 °C. Never handle the unit until at least five minutes have passed since it was turned off.**

- **Ambient temperature should not exceed 45 °C.**
- This fixture is intended for use where humidity does not exceed 90% (non-condensing).
- After storage, and before switching on the fixture, please ensure that its ambient temperature has been restored to acceptable values.
- Never install the fixture in places that lack a constant air flow.

3.4 *Level of Protection Against the Penetration of Solid and Liquid Objects*

- **The projector is classified as an ordinary appliance and its protection level against the penetration of solid and liquid objects is IP20.**
- The projector contains electric and electronic components which should under no circumstances come into contact with oil, water, or any other liquid. The proper functioning of the unit would be compromised should this occur**.**

- **Suitable for indoor use only.**

3.5 *Waste Electrical and Electronic Equipment (WEEE) Directive:*

- **The projector, the accessories, and the packaging should be sorted for environmental-friendly recycling.**
  For EC countries: according to the European Directive 2012/19/EU for Waste Electrical and Electronic Equipment and its implementation into national right, luminaires that are no longer usable must be collected separately and disposed of in an environmentally correct manner.

- **The projector contains a rechargeable lead-acid or lithium iron tetraphosphate battery. To preserve the environment, please dispose the battery at the end of its life according to the regulation in force.**

4 General Warranty Conditions

The unit is guaranteed for 36 months from the date of purchase against manufacturing material defects.
The warranty covers defects in materials and workmanship. The warranty is not appliable where a defect is caused by misuse or unauthorized repair of the product.
Any functional or/and physical modification of the product is not allowed.

5 Technical Features

5.1 *Source and Output*

- High power multi-chip, 6-colors LED source;
- Lumen output: 22,000 lm;
- CRI up to 98;
- TLCI up to 96;
- Average LED life: 20,000 hours (70% lumen output)

5.2 Optical Group

- 15° - 50° linear zoom;
- Ø 250 mm Fresnel lens;
- Retractable "top hat"

5.3 Colored and White Light Generation

- 6-colors LED engine;
- Linear CCT (1,800 K - 10,000 K);
- Linear "Green saturation" (for both colored and white light);
- 100 Gel filter emulations:
    - Linear crossfade between gel filter emulations and CCT whites;
    - Linear crossfade between any two gel filter emulations;
    - True color point of gel filter emulations at any CCT value;
- "Raw" color mixing with 'Advanced' DMX mode:
    - Linear crossfade between "raw" color mixing and CCT;
- Deep Blue and Deep Red dichroic filters (DMX-selectable)

5.4 Imaging and Effects

- Indexeable beam shaper (2:1 ratio) with endless rotation at any zoom angle;
- Heavy frost filter

5.5 Rotating Framing System (Alchemy 7F only)

- 2-blade rotating framing system;
- Real 'curtain' effect for each blade;
- 60° rotation for each blade (+/- 30°);
- 200° full system rotation (+/- 100°)

5.6 Dimmer

- "Hi-Q" dimming technology;
- Tungsten emulation

5.7 User interface

- LCD graphic display + 4 soft keys ("auto-flip" and "key-lock" functions available);
- Li-Fe backup battery for controlling display settings when the unit is not powered

5.8 Control

- Art-Net 4, sACN, RDM/DMX 512 protocols
- DMX modes:
    - CCT (default);

- Advanced;

- Basic;

- Expo;

- CMY Emulation

5.9   Pan & Tilt

- Pan: 540°; (Standard mode 2,4 s; Silent and ultra-silent mode 2,7 s)
- Tilt: 230°; (Standard mode 2,3 s; Silent and ultra-silent mode 2,7 s)
- 16-bit resolution;
- Pan / Tilt lock

5.10   Operativity

- 'Standard', 'Silent' and 'Ultra-silent' operation modes:

  - Noise level in 'Silent' mode: 37 dBA @ 1 m (normal operation, full power);
- Internal operating system updatable via DTS firmware uploader dongle

5.11   Power Supply

- Wide-range 100-240 Vac 50/60 Hz;
- Power consumption: 800 W max;
- Power Factor: PF > 0.90

5.12   Connections

- DMX: XLR 3-pole and 5-pole In/Out panel connectors;
- Power supply: powerCON TRUE1 In/Out panel connectors;
- Art-Net / sACN: etherCON RJ45 panel connector

5.13   Internal Protection Devices

- Overvoltage and over temperature circuits protection

5.14   Operating Temperature

- -10 °C / 45 °C

5.15   Storage Temperature

- -20 °C / 60 °C

5.16   Physical

- IP20;
- Weight: 31 Kg (ALCHEMY 7) / 34 Kg (ALCHEMY 7F);
- Finishing: Black

5.17 Dimensions

449 mm
(17.68")

623 mm
(24.52")

449 mm
(17.7")

140 mm
(5.51")

427 mm
(16.81")

348 mm
(13.70")

704 mm
(27.72")

517 mm
(20.35")
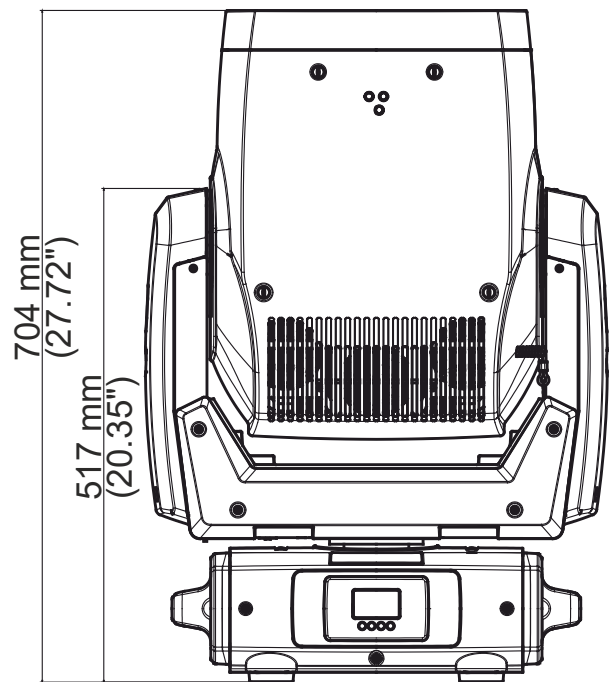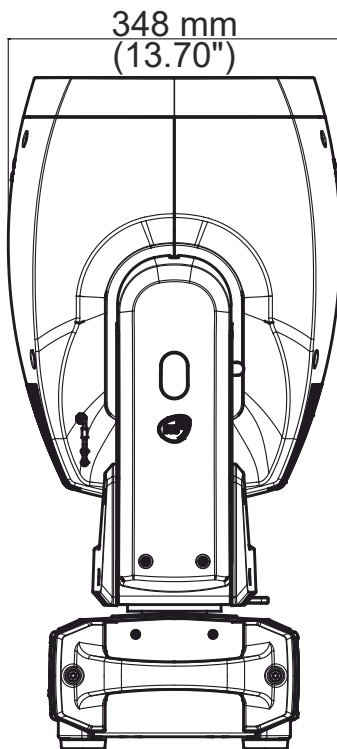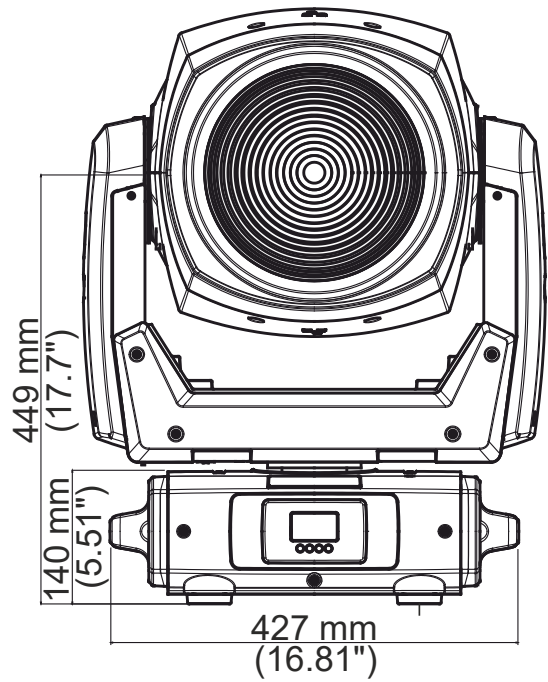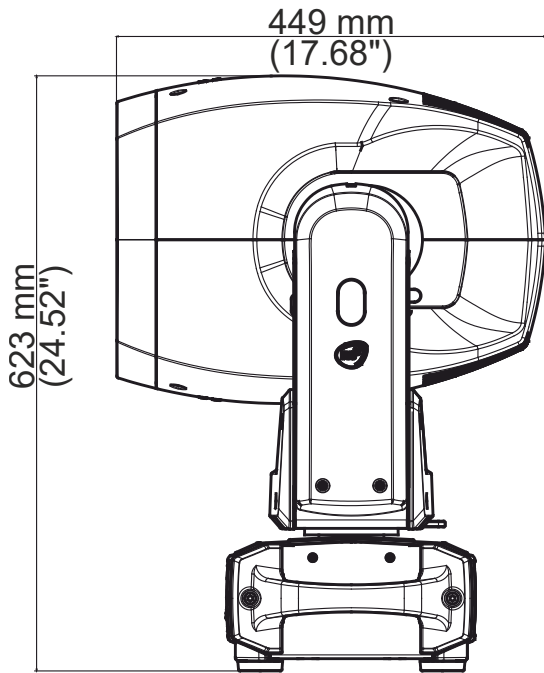
6 Retractable 'Top Hat'

The top hat retracts automatically when the projector is switched off.

In order to prevent damage to the unit, ALCHEMY 7 is equipped with "Li-Fe" backup battery, that allows the use of the unit's on-board display when it is not powered and ensure a safe return and blockage of the top hat during the shut down.

7   Pan / Tilt Lock

When moving or servicing the unit, you can lock the pan and tilt movements.

To lock or release the pan and tilt, follow the instructions as seen below:
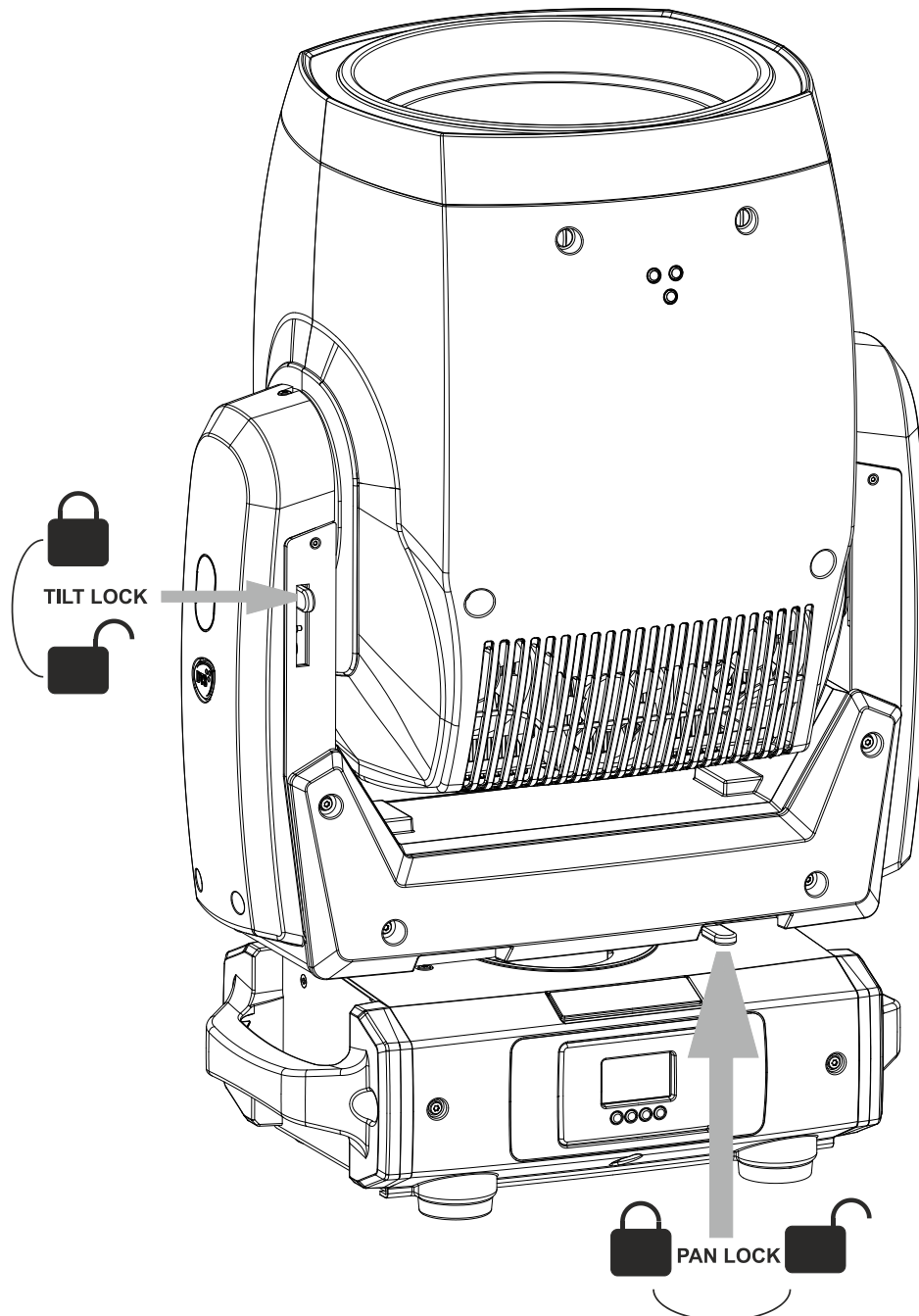
8   Included Items

- 1x PowerCON TRUE1 female connector (code 0520P066)
- 2x Omega clamp with ¼- turn "Fast Lock" connection (code 02K00549)

9 Accessories on Request

- Aliscaf clamp for Ø 48-51 mm tube - max load 200 Kg (code 0521A033)
  Indicated for any kind of loads, both vertical and/or horizontal.

- Professional G-QUICK clamp - max load 100 Kg (code 0521A037)
  Not indicated for horizontal load.

- Safety cable 5 x 600 mm - max load 60 Kg (code 0521A038)

- DTS firmware uploader dongle (code 03.LA.206)

10 Installation

The unit is suitable for dry locations only.

ALCHEMY 7 may be either floor or ceiling mounted.

For floor mounting installations, ALCHEMY 7 is supplied with four rubber mounting feet on the base.
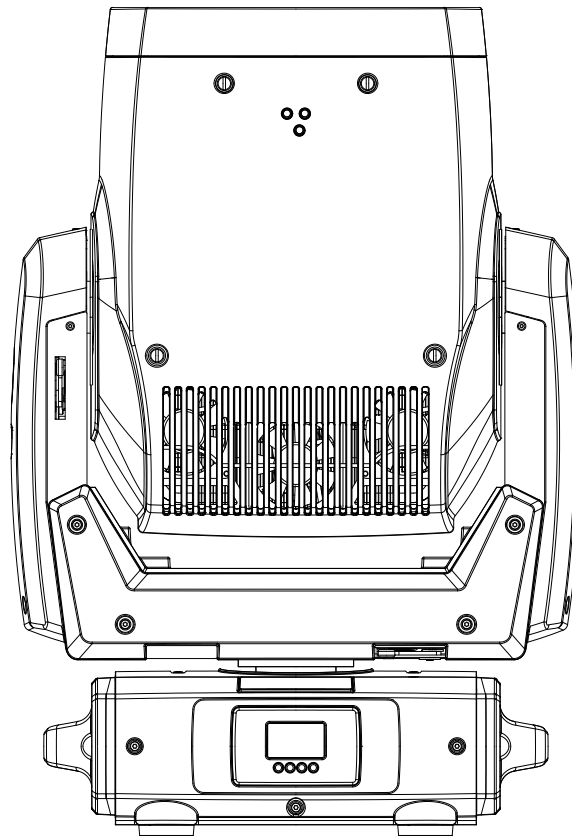
For ceiling mounted installations, DTS recommend the use of appropriate clamps to fix the unit to the mounting surface.

The supporting structure from which the unit is hung should be capable of bearing the weight of the unit, as should any clamps used to hang it.

The structure should also be sufficiently rigid as not to move or shake whilst the ALCHEMY 7 is moving.

Four ¼-turn "Fast Lock" connections, placed in the base of the unit, allow ALCHEMY 7 to hang by using two Omega brackets (provided with the unit) in conjunction with an Aliscaf clamp (available on demand).

10.1   Safety Cable

A safety cable must be securely fixed to ALCHEMY 7 and to the suspension truss in order to avoid the fixture accidentally falling, should the main fixing point fail.

The safety cable used must be approved by a notified body according to IEC 60598-2-17 and must be capable of bearing at least 10 times the weight of the unit. For more information, please refer to an authorized DTS service center.

A suitable safety cable (code 0521A038) is available on demand.

You may attach the safety cable to the attachment point (A) located at the base of the fixture, as shown in the picture below.
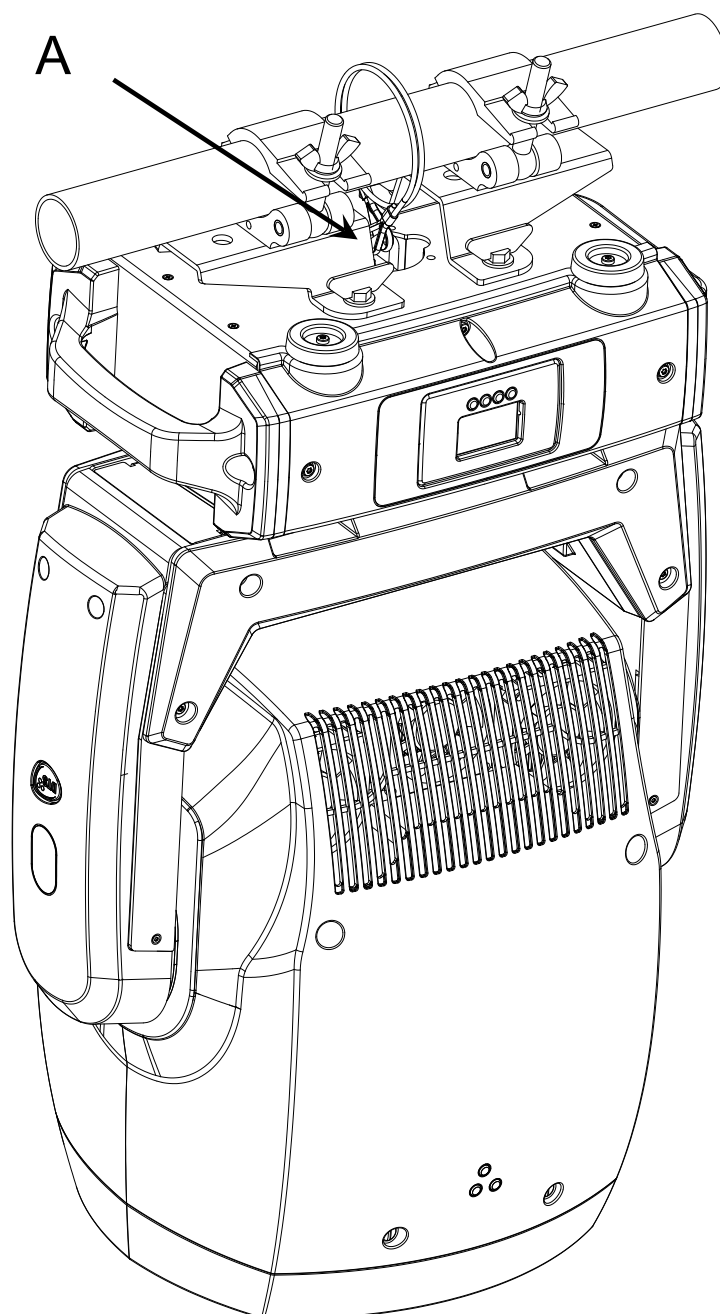
11 Mains Connection

ALCHEMY 7 operates at 100-240 Vac 50/60 Hz.

Prior to connecting the unit to the mains, ensure that your local mains electricity supply properties are compatible with those of the product.

For connection purposes, ensure that your plug is capable of supporting 4,5 A at 230 Vac or 10 A at 100 Vac for each unit connected.

Strict adherence to regulatory norms is strongly recommended.
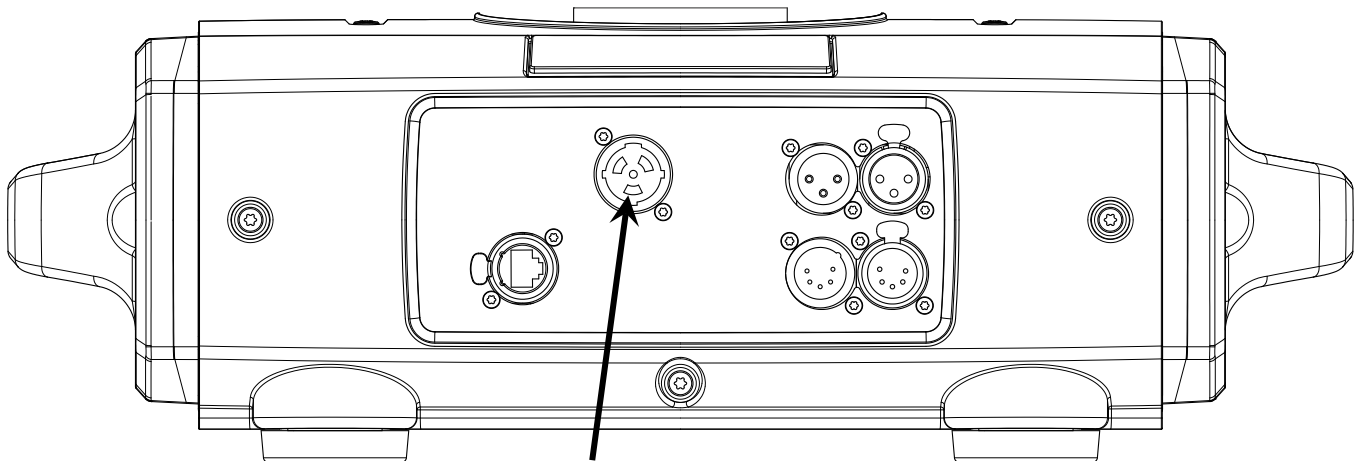
MAINS IN
100 - 240 Vac   50 / 60Hz
male PowerCON TRUE1 panel connector

11.1   Protection

The use of a thermal magnetic circuit breaker is recommended for each unit.

Class I appliance: connection must be made to a mains system fitted with an efficient earthing.

12 DMX Signal Connection

The unit operates using the digital USITT DMX512 signal.

• Connection between the light controller and the projector, or between projectors, must be carried out using a two-pair screened ø 0.5 mm cable, and a XLR 5 or 3 pins connector.

• Ensure that the conductors do not touch each other. Do not connect the ground cable to the XLR chassis. The housing of the plug must be isolated.

• Connect the light controller to the DMX IN panel connector of the projector; to create a link to the next projector, simply connect the DMX OUT plug of the former to the DMX IN plug of the new fixture in line. Following this procedure, all the projectors will be cascade connected.

PS. *If the display showing the DMX address flashes, then one of the following errors has occurred:*

- DMX signal not present;

- DMX reception problem
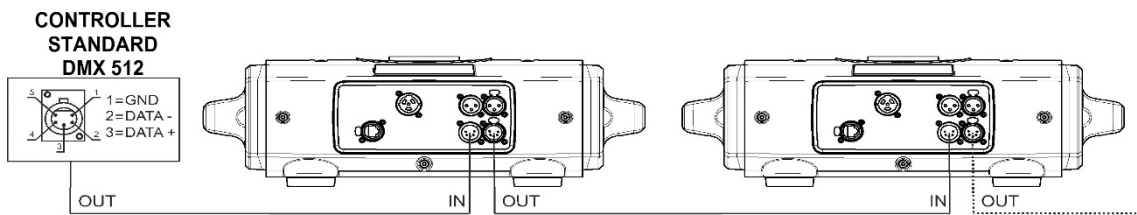
For installations where long-distance DMX cable connections are needed, the use of a DMX terminator is recommended.

The DMX terminator is a male XLR 3- or 5-pins connector with a 120 Ω resistor between pin 2 and pin 3.

The DMX terminator must be plugged in into the last unit's DMX OUT panel connector of the DMX line.
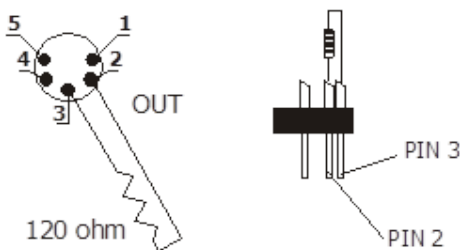
Place a 120 Ω resistor between pin 2 and 3 of a male XRL connector;

Plug the resistor into the DMX OUT panel connector of the last unit connected to the DMX line.

12.1   DMX Modes

ALCHEMY 7 can be used in five different DMX modes:

- CCT (default mode);
- Advanced;
- Basic;
- Expo;
- CMY Emulation

e.g., when using the unit in "CCT" mode (20/25 DMX channels) (default), set the following addresses on the light desk:

Projector 1   A001

Projector 2   A045   *If you want to select the next projector, just add "44" to the former DMX address*

Projector 3   A089

…..   A….

projector 6   A221

12.2   Setting Up the DMX Address

1   Press the UP and DOWN key until you reach the desired DMX address. The numbers on the display will start flashing (new DMX address hasn't yet been set).

2   Press ENTER to confirm your selection. The numbers on the display will stop flashing; the projector is now set to the new DMX address.

TIP: if you keep pressed down the UP or DOWN keys, address scrolling will be quicker allowing thus for a faster selection.

13 Art-Net / sACN Signal Connection

ALCHEMY 7 can be controlled through Art-Net / sACN signals.

Connection between the light controller and the projector must be carried out using a category 5 network cable and a standard RJ45 connector.

13.1 Direct Ethernet Operation

For direct Ethernet operation, connect the light controller's Art-Net / s-ACN output signal via Ethernet switch to each unit's etherCON RJ45 IN connector.

For each unit, scroll to "NETWORK" menu (refer to the paragraph "Display Functions" for further details):

- Inside the "INPUT" menu, select "Art-Net" or "sACN" as input control signal.
- Inside the "IP ADDRESS MODE" menu, select "Default" or "Static" mode.
- Inside the "ETH TO DMX" menu, select OFF.
- Set the IP address and Net Mask.
  IP address must be different for each unit on a network.
- Set the Art-Net or sACN Universe.

DMX address: 1	**DMX address: 45**	**DMX address: 89**
IP address: 002.214.192.007	**IP address: 002.214.192.008**	**IP address: 002.214.192.009**
Universe: 1	**Universe: 1**	**Universe: 1**
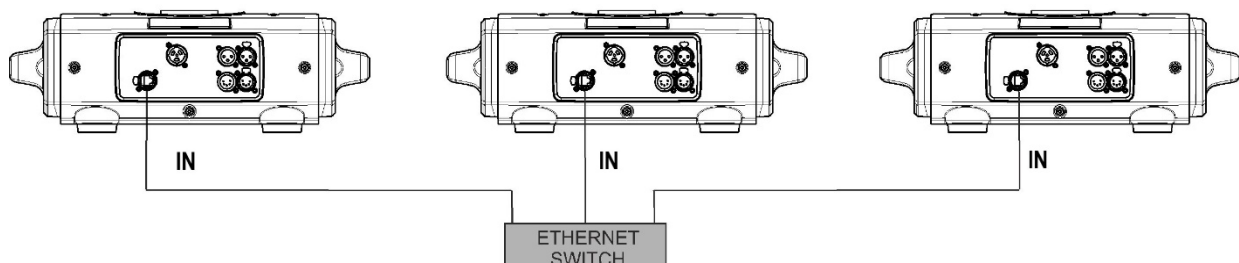
13.2 Ethernet to RDM/DMX Operation

For Ethernet to RDM/DMX operation, connect the light controller's Art-Net / s-ACN output signal via Ethernet switch to the etherCON RJ45 input connector of the first unit only.

In this configuration, the first unit works as an Ethernet-to-DMX converter and sends RDM/DMX signal to its DMX output connector. All the other units must be connected as a DMX chain with standard DMX settings.

Only for the first unit, scroll until reaching "NETWORK" menu (refer to DISPLAY FUNCTIONS for details):

- Inside the "INPUT" menu, select "Art-Net" or "sACN" as input control signal.
- Inside the "IP ADDRESS MODE" menu, select "Default" or "Static" mode.
- Inside the "ETH TO DMX" menu, select ON.
- Set the IP address and Net Mask.

IP address must be different for each unit on a network.

- Set the Art-Net or sACN Universe.
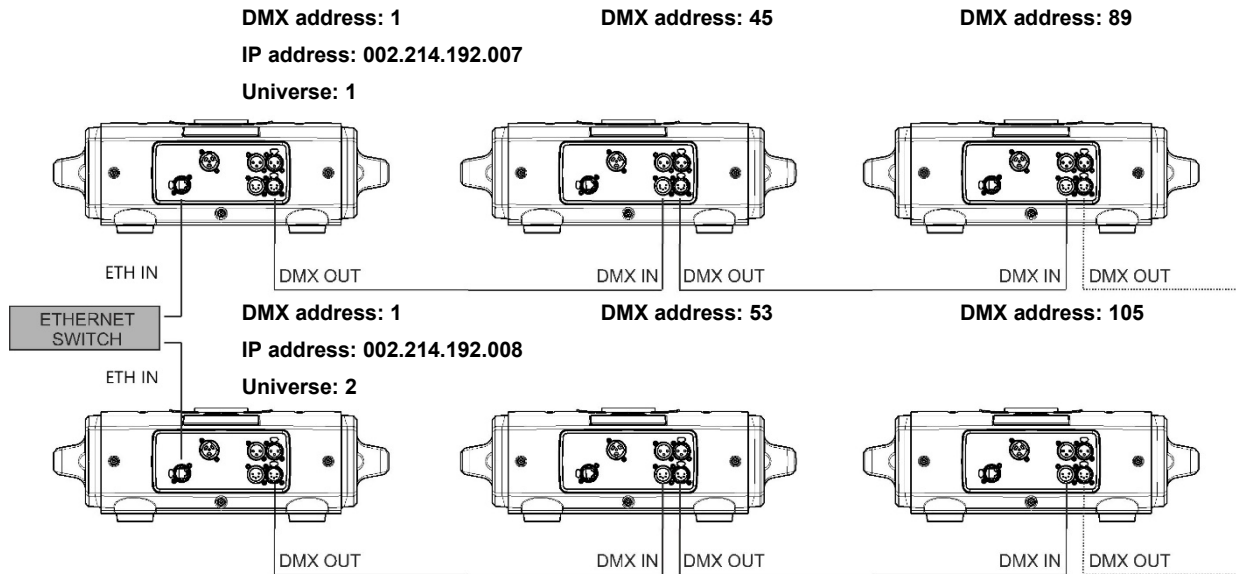
For installations where long-distance DMX cable connections are needed, the use of a DMX terminator is recommended.

Please refer to page 16 for further information DMX terminators.

14 RDM Functions

By using an RDM controller, it is possible to read/set DMX address, DMX modes and other parameters.

ALCHEMY 7 accepts the following RDM commands:

RDM Device Model ID: - ALCHEMY 7: 0x001B

           - ALCHEMY 7F: 0x001A

RDM PID DESCRIPTION	RDM PID VALUE	GET	SET
Category - Network Management			
DISC_UNIQUE_BRANCH	0x0001		
DISC_MUTE	0x0002		
DISC_UN_MUTE	0x0003		
Category - Status Collection			
STATUS_MESSAGES	0x0030	X	
STATUS_ID_DESCRIPTION	0x0031	X	
Category - RDM Information			
SUPPORTED_PARAMETERS	0x0050	X	
PARAMETERS_DESCRIPTION	0x0051	X	
Category - Product Information			
DEVICE_INFO	0x0060	X	
DEVICE_MODEL_DESCRIPTION	0x0080	X	
MANUFACTURER_LABEL	0x0081	X	
DEVICE_LABEL	0x0082	X	X
SOFTWARE_VERSION_LABEL	0x00C0	X	

RDM PID DESCRIPTION	RDM PID VALUE	GET	SET
Category - DMX512 Setup			
DMX_PERSONALITY	0x00E0	X	X
DMX_PERSONALITY_DESCRIPTION	0x00E1	X	
DMX_START_ADDRESS	0x00F0	X	X
Category - Sensors			
SENSOR_DEFINITION	0x0200	X	
SENSOR_VALUE	0x0201	X	X
Category - Power/Lamp Settings			
DEVICE_HOURS	0x0400	X	
LAMP_HOURS	0x0401	X	
Category - Display Settings			
DISPLAY_INVERT	0x0500	X	X
Category - Configuration			
PAN_INVERT	0x0600	X	X
TILT_INVERT	0x0601	X	X
Category - Control			
IDENTIFY_DEVICE	0x1000	X	X
Category - Dimmer Settings			
CURVE	0x0343	X	X
CURVE_DESCRIPTION	0x0344	X	
OUTPUT_RESPONSE_TIME	0x0345	X	X
OUTPUT_RESPONSE_TIME_DESCRIPTION	0x0346	X	
MODULATION_FREQUENCY	0x0347	X	X
MODULATION_FREQUENCY_DESCRIPTION	0x0348	X	
Category - Custom PID			
ETHERNET_TO_DMX	0x8000	X	X
INPUT_PRIORITY	0x8001	X	X
DISPLAY_STANDBY	0x8002	X	X

14.1   RDM Additional Messages

CURVE	CURVE DESCRIPTION
1	LINEAR
2	QUADRATIC (default)
3	GAMMA 2.2
4	S-CURVE

QUADRATIC	GAMMA 2.2	S-CURVE	LINEAR
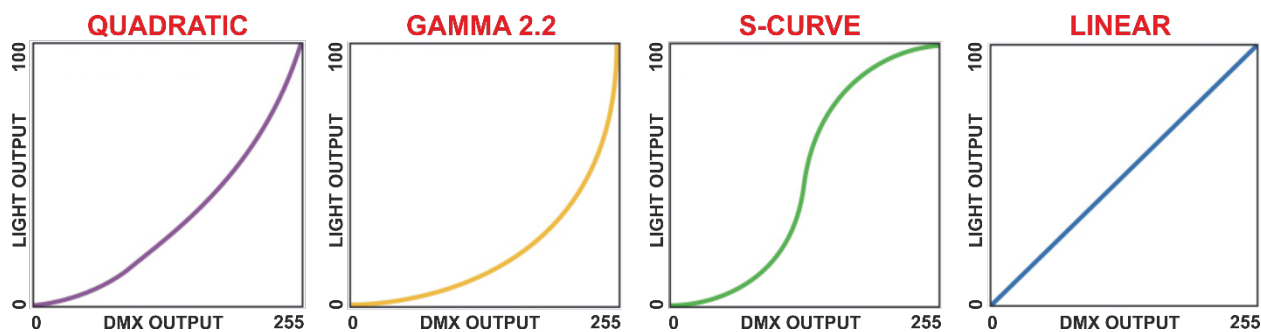
OUTPUT RESPONSE TIME	OUTPUT_RESPONSE_TIME_DESCRIPTION
1	SMOOTH OFF
2	SMOOTH 1 (25 ms)
3	SMOOTH 2 (50 ms)
4	SMOOTH 3 (75 ms)
5	SMOOTH 4 (100 ms) (default)
6	SMOOTH 5 (125 ms)
7	SMOOTH 6 (150 ms)
8	SMOOTH 7 (175 ms)
9	SMOOTH 8 (200 ms)
10	SMOOTH 9 (225 ms)
11	SMOOTH 10 (250 ms)
12	SMOOTH 11 (275 ms)
13	SMOOTH 12 (300 ms)
14	SMOOTH 13 (325 ms)
15	SMOOTH 14 (350 ms)
16	SMOOTH 15 (375 ms)
17	SMOOTH 16 (400 ms)
18	SMOOTH 17 (425 ms)
19	SMOOTH 18 (450 ms)
20	SMOOTH 19 (475 ms)
21	SMOOTH 20 (500 ms)

MODULATION FREQUENCY	MODULATION FREQUENCY DESCRIPTION
1	610 Hz
2	800 Hz
3	1.000 Hz (default)
4	1.500 Hz
5	2.000 Hz
6	2.500 Hz
7	3.000 Hz
8	3.500 Hz
9	4.000 Hz
10	4.500 Hz
11	5.000 Hz

14.2   RDM Manufacturer's Specific PIDs

RDM CUSTOM PID	DESCRIPTION
0x8000_ETHERNET_TO_DMX	Set parameter NETWORK - ETH TO DMX 0 = OFF (default) 1 = ON
0x8001_INPUT_PRIORITY	Set parameter NETWORK - PRIORITY 0 = DMX PORT (default) 1 = ETHERNET PORT
0x8002_DISPLAY_STANDBY	Set parameter DISPLAY - STANDBY 0 = DISABLED 1 = ENABLED (default) 2 = FORCED ENABLED

14.3   RDM Status Message IDs

Status Message ID	Data Value 1	Data Value 2	Status ID Description
0x8000			ERROR PAN MOTOR/ENCODER
0x8001			ERROR PAN LOCKED
0x8002			ERROR PAN ZERO SENSOR
0x8003			ERROR TILT MOTOR/ENCODER
0x8004			ERROR TILT LOCKED
0x8005			ERROR TILT ZERO SENSOR
0x8006			ERROR DMX ADDRESS
0x8007			ERROR PARAMETERS MEMORY
0x8008			ERROR SUPPLY VOLTS TOO LOW
0x8009			ERROR SUPPLY VOLTS TOO HIGH
0x800A			ERROR BUS ARTNET CARD
0x800B	card number		ERROR BUS LED DRIVER CARD %d
0x800C	card number		ERROR BUS MOTORS CARD %d
0x8013			ERROR ZOOM
0x801A			ERROR PROFILER INDEX (only ALCHEMY 7F)
0x801B			ERROR EFFECTS
0x801D	prism number		ERROR PRISM %d INDEX
0x801F			ERROR TEMPERATURE LED MODULE
0x8020	sensor number		ERROR TEMPERATURE LED DRIVER %d
0x8021			ERROR TEMPERATURE MICRO
0x8027	sensor number		ERROR TEMPERATURE SENSOR %d
0x8028	1=data non present 2=read error 3=incomplete data		ERROR COLOUR DATA INTEGRITY CODE %d

15 Updating the Firmware

In order to update to the latest firmware release of ALCHEMY 7, you will need:

- DTS firmware uploader dongle (code 03.LA.206).
- "DTS Firmware Upgrade Utility v.2.02" program installed on PC (Windows OS).
- Latest firmware release available for the ALCHEMY 7 unit.

Updating to the latest firmware release:

To perform the update, please follow the procedure as described below:

1 Connect the DTS Firmware Uploader Dongle to a spare USB port on the PC.
2 Connect the unit's DMX IN to the DTS Firmware Uploader Dongle's DMX OUT with a standard DMX cable and turn on the fixture.
3 Send the new firmware release into the unit by using "DTS Firmware Upgrade Utility v.2.02" program. At the end of the procedure, the unit will commence a reset.

For more information, please refer to an authorized DTS service center.

16 Rotating Framing System

PROJECTION

BLADE 2 ←→ ←→ BLADE 1

TILT LOCK

PAN DMX value = 128
TILT DMX value = 224

PAN LOCK

DISPLAY

-100° Full system rotation

255 DMX value

128 DMX value

0° Full system rotation

128 DMX value

+100° Full system rotation

0 DMX value

128 DMX value

PAN DMX value = 128
TILT DMX value = 224

PAN DMX value = 128
TILT DMX value = 224

PAN DMX value = 128
TILT DMX value = 224
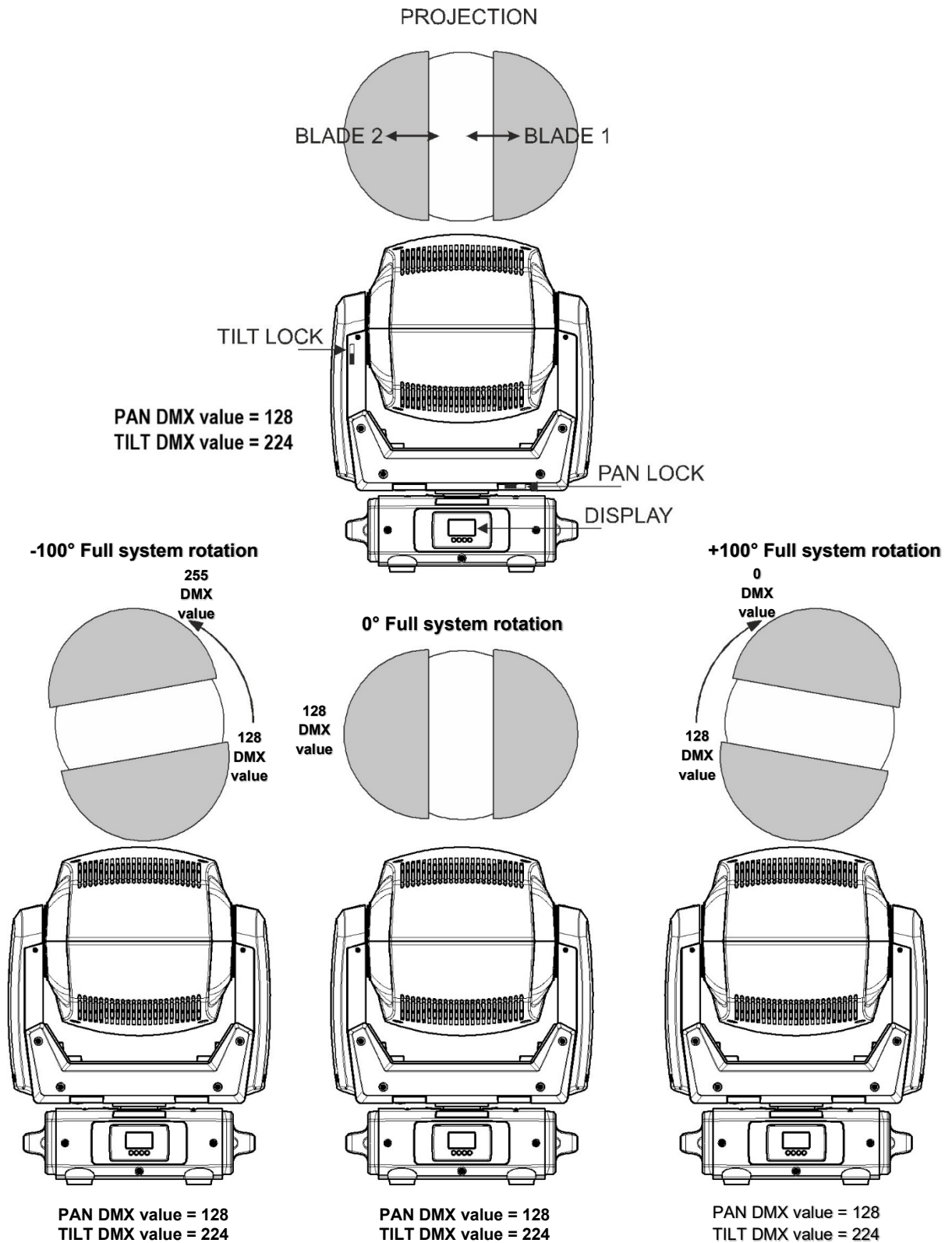
17 Display Functions

The ALCHEMY 7 display panel shows all the available control menus.

By selecting the available functions on these menus, you will be able to change the fixture's settings and behavior.

Beware that changing these settings may vary the operating functions of the unit so that it may not respond correctly to the signal given to it. Carefully read the instructions and tables below before carrying out any variations or selections.
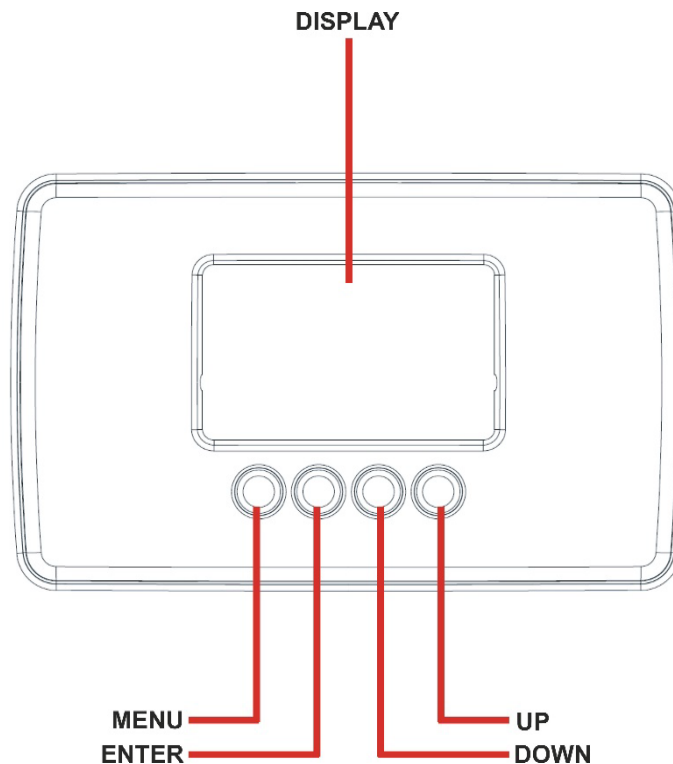
MENU	• To access the control menus in the display panel. • To return to the previous level in the menu structure without making a change. • To exit the menus.
ENTER	• To select any required menu. • To confirm any selection made or to save any changes.
UP / DOWN	• To navigate the menus structure. • To change or scroll between any values.

Motors Firmware Release LED Firmware Release	10 1.00
RDM Device Model ID	ALCHEMY 7: 0x001B ALCHEMY 7F: 0x001A
DMX Personality IDs	0x01 "CCT" 0x02 "ADVANCED" 0x03 "BASIC" 0x04 "EXPO" 0x05 "CMY EMULATION"

"Display Key-Lock" Function

Display "key-lock" function can be enabled/disabled by contemporary pressing ENTER + DOWN keys for 3 seconds.

"Zero Skip" Function

"Zero skip" function can be activated by contemporary pressing MENU + UP during initial reset.

This function allows to have the display active while all motors are turned off. This can be useful when the unit, while still being inside the flightcase, needs to be DMX-addressed or when its other parameters need to be set.

MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
NETWORK	INPUT	DISABLED		**Allows to disable Ethernet operation (Default).**
		ARTNET		Allows to select Art-Net as input control signal protocol.
		SACN		Allows to select sACN as input control signal protocol.
	IP ADDR MODE	DEFAULT		Allows to select the mode to set the IP address and the Net Mask. **Fixed IP address with manual setting of first byte only and fixed Net Mask (Default).**
		STATIC		Manual setting of IP address and Net Mask.
	DEFAULT IP	IP 2.214.192. 7 MASK 255. 0. 0. 0		Fixed IP address and Net Mask. It is possible to set only first byte of the IP address. *IP address must be different for each unit on a network.*
	ARTNET UNIV.	00000 - 32767		Allows to set the Art-Net Universe (range 0÷32767).
	SACN UNIVERSE	00001 - 63999		Allows to set the sACN Universe (range 1÷63999).
	PRIORITY	DMX512		Allows to set the priority between input control signals when the unit is connected via DMX and via ETHERNET at the same time. **RDM / DMX signal has the priority on the Art-Net / sACN signal (Default).**

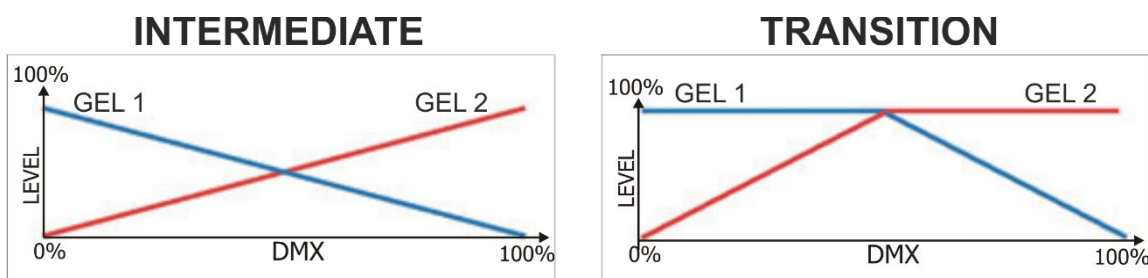| MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
		ETHERNET		Art-Net / sACN signal has the priority on the DMX signal.
	ETH TO DMX	OFF		Allows to enable ETHERNET to RDM/DMX operation. **Default = OFF.**
		ON		In this configuration the first unit works as an Ethernet to DMX converter and sends RDM/DMX signal to its DMX output connector.
	NO SIGNAL	KEEP LAST		Allows to set the desired unit's behavior in case Art-Net or sACN signal is missing or not available. **Keep last valid Art-Net or sACN signal (Default).**
		BLACKOUT		Black-out.
PAN DIRECTION	NORMAL			Allows to set the Pan movement. Normal or Reverse. **Default = Normal**
	REVERSE			
TILT DIRECTION	NORMAL			Allows to set the Tilt movement. Normal or Reverse. **Default = Normal**
	REVERSE			
ZOOM DIRECTION	NORMAL			Allows to set the Zoom movement. Normal or Reverse. **Default = Normal**
	REVERSE			
OPERATING MODE	SILENT			**Reduced Pan-Tilt-Zoom-Fans speed for low noise operation (Default).**
	ULTRASILENT			Reduced Pan-Tilt-Zoom-Fans speed for ultra low noise operation.
	STANDARD			Pan-Tilt-Zoom-Fans standard speed.
FAN MODE **(FAN MODE will work relatively to OPERATING MODE)**	CONSTANT			**Same fans speed in any working condition in SILENT, ULTRASILENT and STANDARD operating mode (Default).**
	AUTOMATIC			Automatic fans speed. If LED temperature <40°C: fans OFF. If LED temperature >40°C: If OPERATING MODE = SILENT, fans speed is increased within the values range set in SILENT mode; If OPERATING MODE = ULTRASILENT, fans speed is increased within values range set in ULTRASILENT mode; If OPERATING MODE = STANDARD, fans speed is increased within values range set in STANDARD mode.
DISPLAY	FLIP	AUTO		Reverses display's reading depending on the mounting position. Automatic, on the ground or suspended. **Automatic (Default).**
		ON THE GROUND		
		SUSPENDED		
	STANDBY	DISABLED		**Display stand-by disabled (Default).**
		ENABLED		Display goes OFF after 5 seconds.
		FORCED EN.		Display forced OFF even if control signal is missing or error messages are shown.
	CONTRAST	20 - 35		Display contrast regulation. Range 20-35. **Default = 25.**

MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
DMX MODE Personality	CCT			**Allows to select CCT mode (20/25 DMX channels). Default.** -ALCHEMY 7: 20 channels; -ALCHEMY 7F:25 channels.
	ADVANCED			Allows to select ADVANCED mode (28/32 DMX channels). -ALCHEMY 7: 28 channels; -ALCHEMY 7F:32 channels.
	BASIC			Allows to select BASIC mode (23/27 DMX channels). -ALCHEMY 7: 23 channels; -ALCHEMY 7F:27 channels.
	EXPO			Allows to select EXPO mode (13/19 DMX channels). -ALCHEMY 7: 13 channels; -ALCHEMY 7F:19 channels.
	CMY EMULATION			Allows to select CMY EMULATION mode (23/27 DMX channels). -ALCHEMY 7: 23 channels; -ALCHEMY 7F:27 channels.
NO DMX ACTION	KEEP LAST DMX			Allows to set the desired unit's behavior in case DMX signal is missing or not available. **Keep last valid DMX signal (Default).**
	PROGRAM 1 - 48	1 - 48		48 pre-programmed steps. Speed time values (range 0.5x - 3x) selectable by user (default 1x).
	SINGLE CUE	PAN MSB	0 - 255	Fixed cue with values selectable by user. **Default = 128**
		PAN LSB	0 - 255	**Default = 128**
		TILT MSB	0 - 255	**Default = 128**
		TILT LSB	0 - 255	**Default = 128**
		SPEED MOVEMENT	0 - 255	**Default = 0**
		SHUTTER	0 - 255	**Default = 15**
		DIMMER MSB	0 - 255	**Default = 255**
		DIMMER LSB	0 - 255	**Default = 255**
		CCT	0 - 255	**Default = 0**
		GEL LIBRARY	0 - 255	**Default = 0**
		RED	0 - 255	**Default = 255**
		GREEN	0 - 255	**Default = 255**
		BLUE	0 - 255	**Default = 255**
		AMBER	0 - 255	**Default = 255**
		CYAN	0 - 255	**Default = 255**
		LIME	0 - 255	**Default = 255**
		EFFECT WHEEL	0 - 255	**Default = 0**
		BEAM SHP R - I	0 - 255	**Default = 0**
		BLADE SYS ROT. (only ALCHEMY 7F)	0 - 255	**Default = 128**
		BLADE 1 INS. (only ALCHEMY 7F)	0 - 255	**Default = 0**
		BLADE 1 ROT. (only ALCHEMY 7F)	0 - 255	**Default = 128**
		BLADE 2 INS. (only ALCHEMY 7F)	0 - 255	**Default = 0**
		BLADE 2 ROT. (only ALCHEMY 7F)	0 - 255	**Default = 128**
		ZOOM	0 - 255	**Default = 128**
		RESTORE DEF.		To restore parameters default settings.

MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
	BLACKOUT			Black-out.
RESET BY DMX	ENABLED			**Reset via DMX enabled (Default).**
	DISABLED			Reset via DMX disabled.
	NOW			Instant unit motors reset.
LED	SMOOTH	OFF - 20		Allows to select the value of delay (in ms) for DIMMER channel reaction to DMX dimming command. OFF = Instant response. **4 = 100 ms smooth response (Default).** 20 = 500 ms smooth response.
	GAMMA CORR.	QUAD		**Allows to set quadratic current output for LED (Default).**
		2.2		Allows to set gamma curve 2.2 .
		S-CURVE		Allows to set S-curve to emulates light intensity characteristics of the tungsten halogen lamps.
		LINE		Allows to set linear light output.
	FREQUENCY	610 - 5000 HZ		Allows to adjust the PWM frequency value (Hz) in order to reduce flickering in the process of camera recordings. Range = 610 Hz - 5 KHz **Default = 1000 Hz**
	TUNGSTEN EMU.	DISABLED		Allows to enable Tungsten Emulation. Variation in the dimmer intensity will affect CCT values. **Disabled (Default).**
		ENABLED		
	CROSSFADE	INTERMEDIATE		**Allows to set Crossfade Intermediate for 'GELS X-FADE' channel 12 of "ADVANCED" DMX mode (Default).**
		TRANSITION		Allows to set Crossfade Transition for 'GELS X-FADE' channel 12 of "ADVANCED" DMX mode.

"GAMMA CORR." graphics:
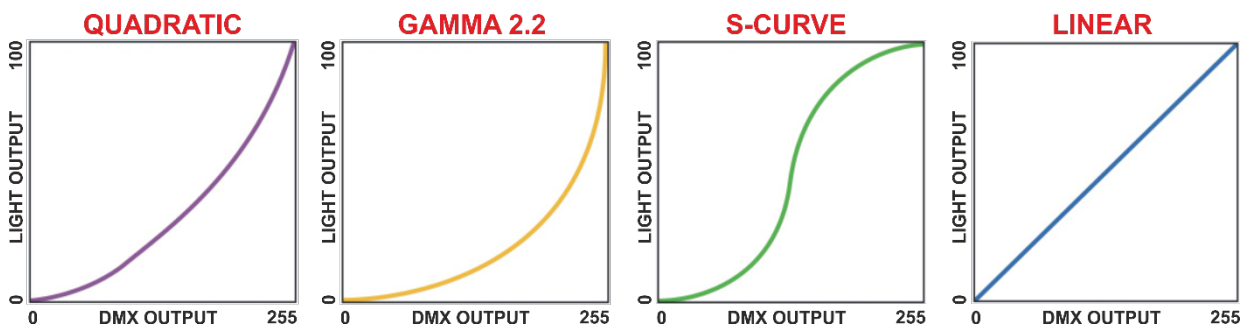
"CROSSFADE" graphics:

MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
SYSTEM INFO	SOFTWARE	ALCHEMY 7 / 7F 10 SEP 2019 MOTOR: V.1.0 LED: V.1.0		Unit model, motors firmware release date, Motors board and LED Driver board firmware release.
	TEMP. 1	LED: 041°C DRV-1: 043°C DRV-2: 044°C MICRO: 040°C DRV-1: 043°C DRV-2: 044°C MICRO: 040°C		LED: LED temperature monitoring. DRV-1: output 1/4 of Master LED Driver board temperature monitoring. DRV-2: output 5/8 of Master LED Driver board temperature monitoring. DRV-1: output 1/4 of Slave LED Driver board temperature monitoring. DRV-2: output 5/8 of Slave LED Driver board temperature monitoring. MICRO: Micro controller temperature monitoring.
	TEMP. 2	5M-1: 025°C 5M-2: 024°C 5M-3: 026°C (only ALCHEMY 7F)		Temperatures detected by 5Motors-1 / 2 / 3.
	TIME COUNTERS	UNIT: 0082H DRIVER: 0080H RED: 0045H GREEN: 0068H BLUE: 0023H AMBER: 0037H CYAN: 0067H LIME: 0058H		Unit, LED Driver board and LED channels life time.
	ADDRESSES	RDM: 0710:0001196B MAC: 70:B3:D5:D7:C7:DF		RDM and MAC Ids.
RESERVED	ENTER CODE 0 - 255 (code 100)	PAN LOCK	NO	Lock the Pan to the desired value. **Default = NO**
			YES	
		TILT LOCK	NO	Lock the Tilt to the desired value. **Default = NO**
			YES	
		PAN FREE	NO	Remove power to Pan motor. **Default = NO**
			YES	
		TILT FREE	NO	.Remove power to Tilt motor. **Default = NO**
			YES	
		LOCK DETECTOR	ON	Allows to activate the Lock detector on Pan and Tilt. If for any reason there is something blocking the movement for Pan&Tilt motors during the initial reset (example unit into the flight case and power connected), it automatically will stop to reset Pan&Tilt motors after 5 seconds from the startup and a warning message (Pan locked-Tilt-locked) will appear on unit display. **Default = ON.**
			OFF	
		REBOOT		Unit reboot without needing of turning OFF the unit.
		EXIT TO MAIN		Exit from Reserved menu.
DEFAULT				To restore factory settings.
MANUAL CONTR.	RESET	HEAD MOTORS		To reset head motors only.
		PAN TILT		To reset Pan and Tilt only.
		ALL MOTORS		To reset all motors.
	RESTORE DEF.			To restore parameters default settings.

MAIN MENU	LEVEL 1	LEVEL 2	LEVEL 3	FUNCTION
	PAN MSB	0 - 255		Manual mode with functions value selectable by user. **Default = 128**
	PAN LSB	0 - 255		**Default = 128**
	TILT MSB	0 - 255		**Default = 128**
	TILT LSB	0 - 255		**Default = 128**
	SPEED MOVEMENT	0 - 255		**Default = 0**
	SHUTTER	0 - 255		**Default = 15**
	DIMMER MSB	0 - 255		**Default = 255**
	DIMMER LSB	0 - 255		**Default =255**
	CCT	0 - 255		**Default = 0**
	GEL LIBRARY	0 - 255		**Default = 0**
	RED	0 - 255		**Default = 255**
	GREEN	0 - 255		**Default = 255**
	BLUE	0 - 255		**Default = 255**
	AMBER	0 - 255		**Default = 255**
	CYAN	0 - 255		**Default = 255**
	LIME	0 - 255		**Default = 255**
	EFFECTS WHEEL	0 - 255		**Default = 0**
	BEAM SHP R-I	0 - 255		**Default = 0**
	BLADE SYS. ROT. (only ALCHEMY 7F)	0 - 255		**Default = 128**
	BLADE 1 INS. (only ALCHEMY 7F)	0 - 255		**Default = 0**
	BLADE 1 ROT. (only ALCHEMY 7F)	0 - 255		**Default = 128**
	BLADE 2 INS. (only ALCHEMY 7F)	0 - 255		**Default = 0**
	BLADE 2 ROT. (only ALCHEMY 7F)	0 - 255		**Default = 128**
	ZOOM	0 - 255		**Default = 128**

18 Error Messages

ERROR SHOWN ON DISPLAY	APPEARS WHEN
PAN	-Pan motor fault -Pan encoder fault -Pan motor driver on Pan&Tilt PCB fault -Wiring connection between Pan encoder and Pan&Tilt PCB fault
PAN LOCKED	-Pan locked -Pan motor fault -Pan encoder fault -Pan motor driver on Pan&Tilt PCB fault -Wiring connection between Pan encoder and Pan&Tilt PCB fault
TILT	-Tilt motor fault -Tilt encoder fault -Tilt motor driver on Pan&Tilt PCB fault -Wiring connection between Tilt encoder and Pan&Tilt PCB fault
TILT LOCKED	-Tilt locked -Tilt motor fault -Tilt encoder fault -Tilt motor driver on Pan&Tilt PCB fault -Wiring connection between Tilt encoder and Pan&Tilt PCB fault
PAN ZERO SENSOR LINE	-Pan magnet missing -Pan hall sensor PCB fault -Wiring connection between Pan hall sensor PCB and Pan&Tilt PCB fault
TILT ZERO SENSOR LINE	-Tilt magnet missing -Tilt hall sensor PCB fault -Wiring connection between Tilt hall sensor PCB and Pan&Tilt PCB fault
DATA ERROR	Pan&Tilt PCB Eeprom data corrupted
TEMP. LED MOD.	LED module temperature detected under -20°C or over 85°C. Unit immediately goes in black-out.
TEMP. LED1 DRV 1	Output from 1 to 4 LED Driver PCB 1 (Master) temperature detected under -20°C or over 100°C. Unit immediately goes in black-out.
TEMP. LED1 DRV 2	Output from 5 to 8 LED Driver PCB 1 (Master) temperature detected under -20°C or over 100°C. Unit immediately goes in black-out.
TEMP. LED2 DRV 1	Output from 1 to 4 LED Driver PCB 2 (Slave) temperature detected under -20°C or over 100°C. Unit immediately goes in black-out.
TEMP. LED2 DRV 2	Output from 5 to 8 LED Driver PCB 2 (Slave) temperature detected under -20°C or over 100°C. Unit immediately goes in black-out.
TEMP. LED1 MICRO	Micro controller on LED Driver PCB 1 (Master) temperature detected under -20°C or over 85°C. Unit immediately goes in black-out.
TEMP. LED2 MICRO	Micro controller on LED Driver PCB 2 (Slave) temperature detected under -10°C or over 85°C. Unit immediately goes in black-out.
TEMP. 5M1	Micro controller on 5 Motors PCB (1) temperature detected over 85°C.
TEMP. 5M2	Micro controller on 5 Motors PCB (2) temperature detected over 85°C.
TEMP. 5M3 (only ALCHEMY 7F)	Micro controller on 5 Motors PCB (3) temperature detected over 85°C.
MOTOR SUPPLY TOO LOW	PCBs input voltage <46,5Vdc.
MOTOR SUPPLY TOO HIGH	PCBs input voltage >49,5Vdc.
BUS 5 MOTORS CARD 1	-Pan&Tilt PCB driver fault -5 Motors PCB (1) driver fault -5 Motors PCB (1) input voltage missing -Internal Bus wiring connection fault
BUS 5 MOTORS CARD 2	-Pan&Tilt PCB driver fault -5 Motors PCB (2) driver fault -5 Motors PCB (2) input voltage missing -Internal Bus wiring connection fault
BUS 5 MOTORS CARD 3 (only ALCHEMY 7F)	-Pan&Tilt PCB driver fault -5 Motors PCB (3) driver fault -5 Motors PCB (3) input voltage missing -Internal Bus wiring connection fault

| ERROR SHOWN ON DISPLAY	APPEARS WHEN
BUS LED DRIVER MASTER	-Pan&Tilt PCB driver fault -LED Driver PCB 1 (Master) driver fault -LED Driver PCB 1 (Master) input voltage missing -Internal Bus wiring connection fault
BUS LED DRIVER SLAVE	-Pan&Tilt PCB driver fault -LED Driver PCB 2 (Slave) driver fault -LED Driver PCB 2 (Slave) input voltage missing -Internal Bus wiring connection fault
BUS ARTNET CARD	-Pan&Tilt PCB driver fault -Art-Net PCB driver fault -Art-Net PCB input voltage missing -Wiring connection between Art-Net PCB and Pan&Tilt PCB fault
ZOOM DX OR RESET LINE 4	-Zoom DX motor fault -Zoom DX motor driver on 5 Motors PCB fault -Zoom DX magnet missing -Zoom DX hall sensor PCB fault
ZOOM SX OR RESET LINE 1	-Zoom SX motor fault -Zoom SX motor driver on 5 Motors PCB fault -Zoom SX magnet missing -Zoom SX hall sensor PCB fault
ZOOM LOCK OR RESET LINE 3	-Zoom Lock motor fault -Zoom Lock motor driver on 5 Motors PCB fault -Zoom Lock magnet missing -Zoom Lock hall sensor PCB fault
EFFECTS OR RESET LINE 1	-Effects wheel motor fault -Effects wheel motor driver on 5 Motors PCB fault -Effects wheel magnet missing -Effects wheel hall sensor PCB fault
BEAM INDEX OR RESET LINE 2	-Beam Shaper motor fault -Beam Shaper motor driver on 5 Motors PCB fault -Beam Shaper magnet missing -Beam Shaper hall sensor PCB fault
PROFILER INDEX OR RESET LINE 1 (only ALCHEMY 7F)	-Profiler Index motor fault -Profiler Index motor driver on 5 Motors PCB fault -Profiler Index magnet missing -Profiler Index hall sensor PCB fault
-COLOUR DATA INTEGRITY NOT PRESENT **-COLOUR DATA INTEGRITY READ** **-COLOUR DATA INTEGRITY INCOMPLETE**	Led module not calibrated, Led calibration data corrupted or incomplete.

19 Opening the Housing

It is possible to inspect the inside of the projector by removing the covers, as indicated below.

WARNING! Remove mains power prior to accessing the projector's internal components.

1) Using a flat bladed screwdriver, loose the four "¼-turn" screws that fix the head covers on both sides.

2) Remove each cover, then slide away the protective silicone tube from the safety wire. Unhook the wire in order to access the internal components of the head.
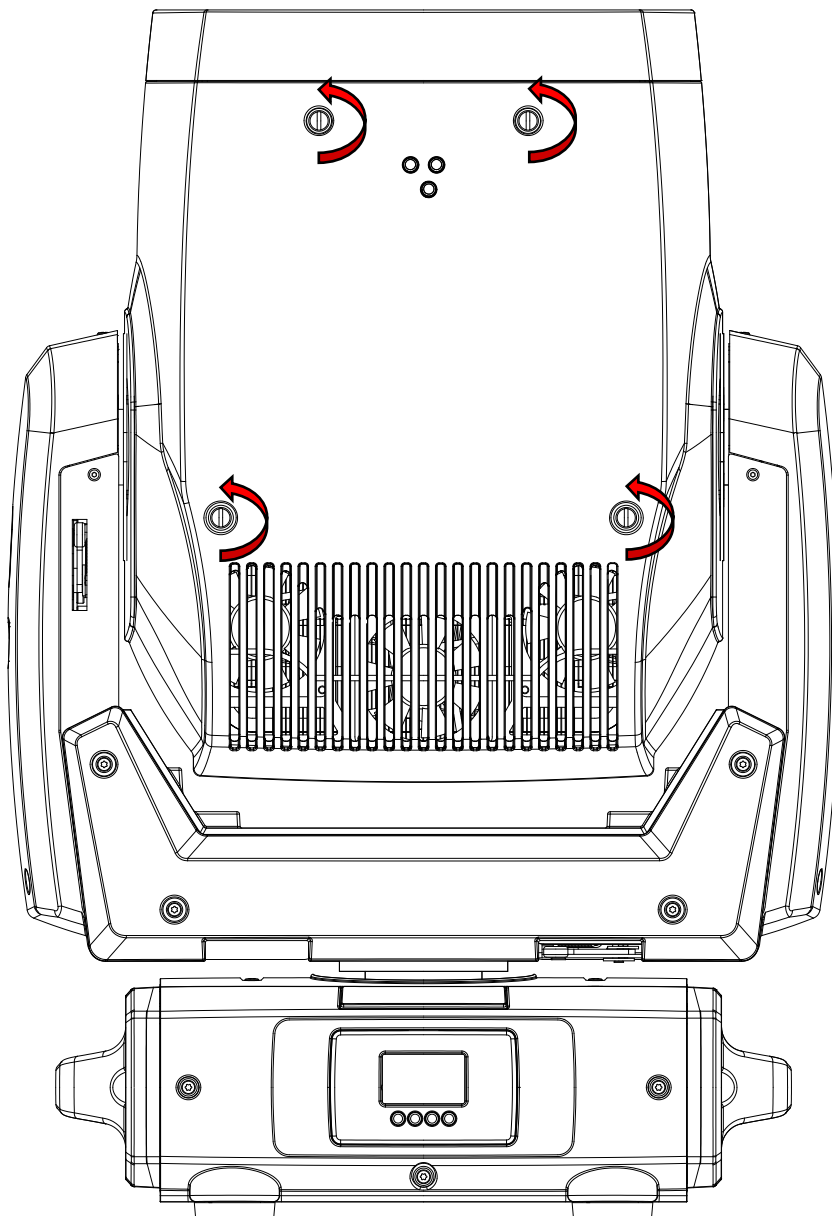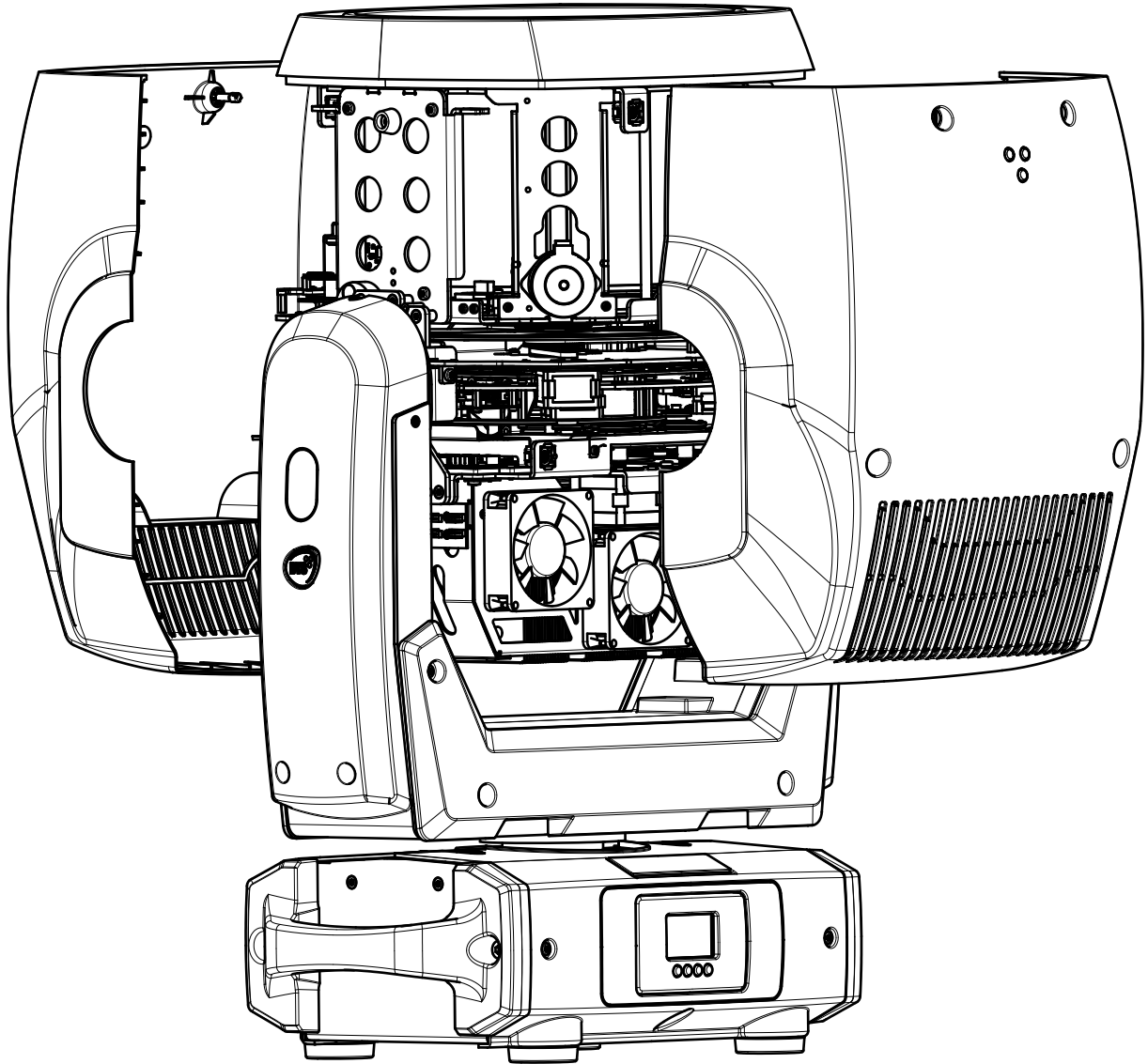
20 Periodic Cleaning

WARNING! Disconnect from mains powers before servicing.

20.1 Lenses and Filters

Even a fine layer of dust can substantially reduce the luminous output of the luminaire.

Excessive dust, smoke fluid and particle buildup can degrade and seriously damage lenses and dichroic filters.

It is recommended to regularly clean all lenses and glass filters using a soft cotton cloth, dampened with a dedicated lens cleaning solution.

Maintenance period may vary, depending on environmental conditions.

20.2   Fans and Air Passages

The fans and air passages must be cleaned approximately every 6 weeks.

This time period will of course vary depending on the conditions in which the projector is operating.

Suitable instruments for performing this type of maintenance are a brush and a common vacuum cleaner or air compressor.

If necessary, clean the fans and air passages more frequently than suggested.

21 Periodic Check-ups

WARNING! Disconnect from mains power before servicing.

21.1   Mechanical Parts

Periodically check all mechanical parts, gears, guides, belts, etc., for wear and tear. Replace them if necessary.

Periodically check the lubrication of all components, particularly the parts subjected to high temperatures.

If necessary, apply suitable lubricant (available from your DTS distributor) where needed.

Check the tension of the belts and adjust them where necessary.

21.2   Electrical Components

Check all electrical components for correct earthing and proper connection of all connectors. Refasten where necessary.

NOTES

DTS

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