VARI*LITE

VLHIVE 151 DIGITAL FX

USER MANUAL

INTRODUCTION

OUR GOAL

We are committed to providing you the highest quality in customer service. Our comprehensive resources are available to help your business succeed and ensure you get the full benefit of being a Vari-Lite customer.

TECHNICAL SUPPORT

Our Service and Support team is tasked with online and field support, repair, demo, commissioning, maintenance contracts, and technical training for fixtures and systems. In addition, this team plays a large role in a Systems sales, responsible for administering final commissioning, record-keeping, and organizing services. Refer to the back cover of this user manual for contacts in your region or visit **WWW.VARI-LITE.COM/SUPPORT**.

CUSTOMER SERVICE

Customer Service is responsible for boxed goods and spare parts quotations, order entry and fulfilment, project delivery, lead times, and general account management. They also manage all after sales warranty fulfilment, RGA, and repairs invoicing in tandem with our After Sales Service & Support team. Visit our website to find a customer service agent in your region.

ADDITIONAL DOCUMENTATION

Additional product documentation, including DMX maps, software, and photometric reports, are available for download on our website.

For more information on installing DMX512 control systems, the following publication is available for purchase from the United States Institute for Theatre Technology (USITT), “Recommended Practice for DMX512: A Guide for Users and Installers, 2nd edition” (ISBN: 9780955703522).

USITT Contact Information:

USITT

315 South Crouse Avenue, Suite 200

Syracuse, New York 13210-1844 USA

Phone: 800-938-7488 or +1-315-463-6463

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Website: www.usitt.org

ABOUT THIS DOCUMENT

Read all instructions before installing or using this product. Retain this user manual for future reference.

Additional product information and descriptions may be found on the product data sheet(s) which can be downloaded from the Vari-Lite website at **WWW.VARI-LITE.COM**.

This user manual provides necessary information regarding safety, installation, operation and routine maintenance for Vari-Lite HIVE Series. Familiarizing yourself with this information will help you to get the most out of your product.

WARNING: It is important to read ALL accompanying safety and installation instructions to avoid damage to the product and potential injury to yourself or others.

This user manual covers the following model(s):

- VLHIVE 151 DIGITAL FX Order codes 74820-001, 74820-101

SAFETY WARNINGS AND NOTICES

Read this user manual in full before attempting to install, operate or maintain the fixture to which it relates. This user manual is intended to provide general guidance to such suitably qualified personnel. Installation and operation of the fixture are to be performed by qualified personnel only.

When using electrical equipment, basic safety precautions should always be followed including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

- For indoor, dry location use only. Do not use outdoors unless fixture is suitably IP rated.
- Use safety tether when mounting.
- Equipment should be mounted in locations and at heights where it will not be readily subjected to tampering by unauthorized personnel.
- Not for residential use. Do not use this equipment for other than intended use.
- Note distance requirement(s) from combustible materials or illuminated objects. Do not mount near gas or electric heaters.
- Install only in locations with adequate ventilation. Ensure sure that ventilation slots are not blocked.
- Ensure that the voltage and frequency of the power supply match the power requirements of the fixture.
- The fixture must be earthed/grounded to the appropriate conductor.
- Do not operate fixture outside the specified ambient temperature range.
- Do not connect the fixture to any dimmer pack.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition and void warranty.
- Refer service to qualified personnel. This fixture contains no user serviceable parts.
- Prior to first use, carefully inspect fixture to ensure no damage has occurred during shipping.
- Materials used in the manufacturing process can cause strong odors when the product is new. These odors dissipate over time.
- Prior to each use, carefully inspect power cables and replace any damaged cables.
- Exterior surfaces of the luminaire will be hot during operation. Take appropriate precautions.
- Continuous use of the fixture may shorten the lifespan. Power down the fixture when not in use.
- Do not cycle power on and off repeatedly. Disconnect mains power if the fixture is not used for an extended period.
- Clean fixtures regularly, particularly when working in a dusty environment.
- Never touch power cables or wires while the fixture is powered on.
- Avoid entangling power wires with other cables.
- In the event of a serious operating problem, immediately discontinue using the fixture.
- It is hazardous to operate luminaires without lens or shield. Shields, lenses, or ultraviolet screens shall be changed if they have become visibly damaged to such an extent that their effectiveness is impaired, for example, by cracks or deep scratches.
- Original packing materials can be reused for transporting the fixture.
- Do not look directly at the LED light beam while the fixture is on.
- This is a Class A product. In a domestic environment this product may cause radio interference, in which case, the user may be required to take adequate measures.
- The light source contained in this luminaire shall only be replaced by the manufacturer or service agent or similarly qualified person.

SAVE THESE INSTRUCTIONS.

WARNING: Refer to National Electrical Code® and local codes for cable specifications. Failure to use proper cable can result in damage to equipment or danger to personnel. Caution Against Direct Sunlight Through Front Lens Assembly

COMPLIANCE NOTICE

FCC DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with Vari-Lite system, service, and safety guidelines, may cause harmful interference to radio communications.

As tested under this standard:

FCC 47CFR 15B clA*CEI

Issued:2009/10/01 Title 47 CFR Part 15 Subpart B Unintentional Radiators Class A

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

EU DECLARATION OF CONFORMITY

We, Vari-Lite LLC., 10911 Petal Street, Dallas, Texas 75238, declare under our responsibility for the products contained herein are in conformity with the essential requirements of the following European Directives and harmonized standards:

Low Voltage Director (LVD), 2006/95/EC

EN 60589-2-17:1984+A1:1987+A2:1990 used in conjunction with 60598-1:2008/A11:2009

Electromagnetic Compatibility Directive (EMC), 2004//108/EC

EN 55022:2010, EN55024:2010

HOW TO OBTAIN WARRANTY SERVICE

A copy of the Limited Warranty card was included in the shipping package for this product.

To obtain warranty service, please contact customer service at 1-214-647-7880, or **entertainment.service@signify.com** and request a Return Material Authorization (RMA) for warranty service. You will need to provide the model and serial number of the item being returned, a description of the problem or failure and the name of the registered user or organization. If available, you should have your sales invoice to establish the date of sale as the beginning of the warranty period. Once you obtain the RMA, pack the unit in a secure shipping container or in its original packing box. Be sure to clearly indicate the RMA number on all packing lists, correspondence, and shipping labels. If available, please include a copy of your invoice (as proof of purchase) in the shipping container.

With the RMA number written legibly on or near the shipping address label, return the unit, freight prepaid, to:

Vari-Lite LLC
Attention: Warranty Service (RMA# _____)
10911 Petal Street
Dallas, Texas 75238
USA

As stated in the warranty, it is required that the shipment be insured and FOB our service center.

IMPORTANT! When returning products to Vari-Lite for repairs (warranty or out-of-warranty) from a country other than the USA, "Vari-Lite LLC", must appear in the address block as the Importer of Record (IOR) on all shipping documentation, Commercial Invoices, etc. This must be done in order to clear customs in a timely manner and prevent returns.

1 DESCRIPTION

FEATURES

- High-impact 300mm (12”) front lens fitted with patent pending Vari*glass projection technology- large impact washes, digitally created beams, and direct-view set piece effects
- Digital images (80 pre-installed and 60 user installable**) with scaling, keystoning, polar positioning, and more- endless variety of “gobo” type images without mechanical constraints **Requires Vari-Lite HiveCreator software to upload
- Digital animation effects (50 pre-installed and 50 user installable**)- produce video-style animation effects where the output remains the true light source and where black is true black (out), not “video black”.
- Integrated hue, saturation and contrast control of animation- fine tune animations for unlimited possibilities in creating digitally driven looks from the lighting desk
- Patent pending SmartColor+ system, optional open-source color mixing, calibrated VL library preset colors, background colors and color effects- advanced color system that expands color control options
- Hybrid optical system combining traditional 2:1 optical and digital scale- produces wide angle washes and effect or pinpoint beams
- Multiple control options, including DMX (RDM) via 5 PIN XLR, Ethernet protocols via duel Ethercon control connection, and duel Ethercon connections for video integration such as NDI***- comprehensive digital connectivity for every application ***Function to be added late 2025
- Robust IP65 mechanical design coupled with integrated advanced feature sensors and data log reporting- Built to tour

Download the product datasheet(s) from the Vari-Lite website at **WWW.VARI-LITE.COM** for the full technical specifications.

2 INSTALLATION & SETUP

POWER AND DATA CABLING REQUIREMENTS

CONNECTING POWER

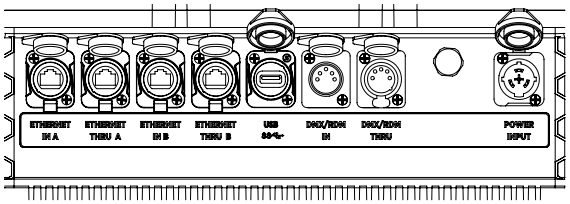
This fixture requires standard AC power distribution from 100-240 VAC, 50/60 Hz. Current required depends on the AC supply voltage.

NOTE: The mating Neutrik® powerCON® True1 connector is supplied; however, you will need to purchase or construct a cable appropriate for your application.

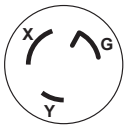
Depending on the application, the luminaire's AC input cable may require a different connector. If required, install a new connector meeting your requirements using the following wire color code reference:

WIRE*	CONNECTION
Green/yellow	AC ground
Blue	AC neutral
Brown	AC line

* International (Harmonized) Standard



WARNING: DO NOT connect to three-phase service in countries with 240V power.



For single-phase power at 240 volts RMS:

CONNECTION	PIN
AC neutral	X
AC line	Y
Ground (earth)	G

For three-phase power at 200 volts RMS:

CONNECTION	PIN
Phase 1	X
Phase 2	Y
Ground (earth)	G

CURRENT VERSUS VOLTAGE

TABLE 1 provides the luminaire's current draw at specific voltages. Total luminaire current is calculated with the lamp on and all motors sequencing.

WARNING! It is the responsibility of the user to adequately protect supply source with a correct size and type circuit breaker and not overload circuits.

WARNING! It is not recommended to power any Vari-Lite luminaire from a dimmer - even in 'NONDIM' mode. Dimmer modules are not suitable sources of power because their output modifies the AC wave form. This may work for a short time, but will eventually result in power problems, luminaire mis-operation and/or failure and may void the luminaire's warranty. Use constant current or relay modules only.

TABLE 1. CURRENT VS. VOLTAGE (550W SOURCE)

AC VOLTAGE	TOTAL CURRENT
120V/60Hz	13.33A
180V/60Hz	9.72A
208V/60Hz	8.41A
230V/50Hz	7.61A
240V/50Hz	7.29A

DATA CABLES

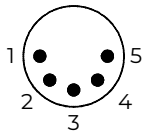
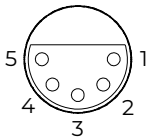
The luminaire is equipped with two, 5-pin XLR connectors for DATA IN and DATA THRU (out) applications. DATA IN requires a 5-pin, female XLR connector and DATA THRU requires a 5-pin, male XLR connector. When purchasing or constructing data cables, it is important that not only the correct cable type be used, but also quality cable to ensure a reliable DMX512 system. Your cabling should meet the following USITT DMX specification requirements:

- Suitable for use with EIA485 (RS485) operation at 250k baud
- Characteristic impedance 85-150 ohms, nominally 120 ohms
- Low capacitance
- Two twisted pairs
- Foil and braid shielded
- 24 AWG min. gauge for runs up to 1000 feet (300m)
- 22 AWG min. gauge for runs up to 1640 feet (500m)

NOTE: Microphone type cables and other general purpose, two-core audio or signal cables are not suitable for use with DMX512.

Refer to the USITT Recommended Practice for DMX512 guide for additional information regarding DMX512 systems.

The XLR 5-pin connectors should be wired as follows:

Pin/Wire Code to XLR Connectors						
Data Thru Cable Pinout  Male Conn.	Pin 1 Foil & Braided Shield	Pin 2 1st conductor of 1st twisted pair Data (-)	Pin 3 2nd conductor of 1st twisted pair Data (+)	Pin 4 1st conductor of 2nd twisted pair Data (-)	Pin 5 2nd conductor of 2nd twisted pair Data (+)	Data In Cable Pinout  Female Conn.

RECOMMENDED CABLE TYPES/MANUFACTURERS

These are only a few of the suitable cable types. Any quality EIA485, twisted pair, 120 ohm, shielded cable will also work. Refer to **TABLE 2.**

TABLE 2. RECOMMENDED CABLES

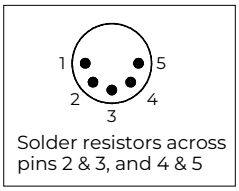
TYPE	PAIRS	ZΩ*	JACKET	AWG	USE	TEMP (°F)	TEMP (°C)
BELDEN CABLES							
1215A	2	150	PVC	26	IBM Type 6 Office cable	75	24
1269A	2	100	PTFE	22 (solid)	High Temp, Plenum cable	200	93
8102	2	100	PVC	24	UL2919	80	27
8132	2	120	PVC	28	UL2919	80	27
8162	2	100	PVC	24	UL2493	60	16
82729	2	100	PTFE	24	High Temp, Plenum cable	200	93
88102	2	100	PTFE	24	High Temp, Plenum cable	200	93
89696	2	100	PTFE	22	High Temp, Plenum cable	200	93
89729	2	100	PTFE	24	High Temp, Plenum cable	200	93
89855	2	100	PTFE	22	High Temp, Plenum cable	200	93
9729	2	100	PVC	24	UL2493	60	16
9804	2	100	PVC	28	UL2960	60	16
9829	2	100	PVC	24	UL2919	80	27
9842	2	120	PVC	24	UL2919	80	27
PROPEX CABLES							
PC224P	2	110	Polyurethane	22	Heavy Duty and Portable	105	41
PC224T	2	110	PVC	22	UL2464	105	41
PC226T	3	110	PVC	22	UL2464		

* Characteristic impedance

TERMINATION CONNECTOR

A XLR termination connector is required at the last luminaire (or "far end of the line") to prevent signal reflections. Signal reflections may cancel out the signal at certain line lengths, resulting in errors. The terminator is also necessary for software downloads and running tests on multiple luminaires. To construct your own connector, you will need the following components:

- 5-pin, male XLR connector.
- Two 1/4W 5% 120 ohm resistors.



Solder resistors across pins 2 & 3, and 4 & 5

NOTE: A male termination connector is available as an accessory from Vari-Lite.

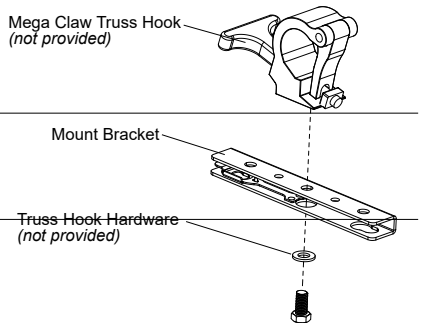
HANGING THE FIXTURE

The VLHIVE 151 Digital FX can be hung horizontally or vertically from any structure designed to work with the type of load created by this moving luminaire. Two mounting truss hooks or other mounting hardware are required. Many compatible truss hooks are available from different manufacturers for your particular needs.

A minimum of two hooks per luminaire is required. If mounting method does not use truss hooks, two attachment points, per luminaire, are required.

Install mounting hardware and brackets:

Step 1. Install truss hooks (also refer to "Truss Hook Hardware (by others)" on page 23) for additional information) on two provided truss hook brackets as required as shown in Figure 2-7.



NOTE: Various types of truss hooks can be used. The Mega Claw truss hook (as shown in the example above) as well as many other standard hooks, can be ordered separately.

TRUSS HOOK HARDWARE (BY OTHERS)

When installing hanging hooks on mounting brackets, Vari-Lite strongly recommends the use of a Belleville washer when installing a truss hook or claw. The Belleville washer's size should be approximately 13-25mm (0.5-1.0 in) diameter. Belleville washers are available in various thicknesses and any of the following thicknesses are acceptable for the application described: 0.9.mm, 1.0mm, 1.3mm, 1.9mm (0.035-inch, 0.043-inch, 0.050-inch, 0.073-inch).

The washer serves two purposes:

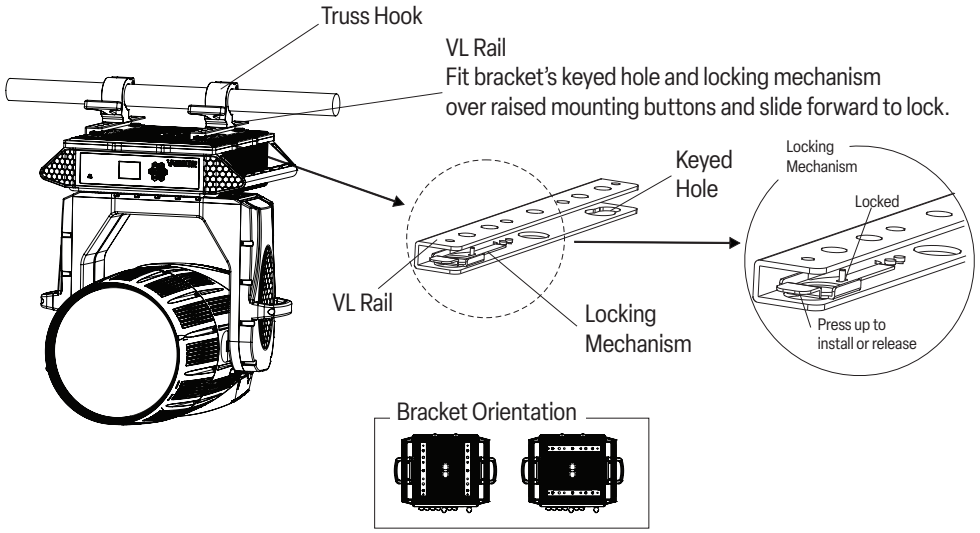
- **To spread out the load.** When a washer IS NOT used, the bolt head (without a washer) concentrates the load in a smaller area, creating focused stress on the steel bracket, making premature failure possible. A steel washer is recommended to spread this load over a larger surface area.
- **To keep the bolt in place.** The recommended Belleville washer maintains tension in the bolted assembly and prevents it from vibrating loose.

If a Belleville washer is not available, a regular flat washer measuring in diameter of 25mm (1 inch) minimum can be used in conjunction with a suitable split lock washer situated between the bolt head and flat washer.

Step 2. Determine required configuration of bracket installation. Brackets may be installed in many different orientations.

Step 3. While pulling up on locking mechanism release, fit keyed holes onto raised mounting buttons at bottom of enclosure. Slide forward and release locking mechanism to lock in place. Ensure brackets are locked securely.

WARNING: Ensure that the bracket locking mechanism is fully seated after the bracket is installed on the luminaire.



Installing in Truss:

Step 1. Using two people, lift luminaire into mounting position.

Step 2. Secure in place with truss hook. Ensure truss hook hardware that locks hook in place (e.g. wing bolt) is properly tightened and that luminaire is fully supported.

Step 3. Attach safety cable (as required) as follows:

a. Loop safety cable at least once around safety cable anchor point rod.

b. Loop safety cable at least once around truss/pipe and secure around pipe.

Step 4. Make sure tilt and pan locks are disengaged so luminaire moves freely.

Step 5. Connect power and data cables.

When the fixture is mounted in a side hanging orientation, you must enable side hang in the menu for proper operation. To enable side hang, press MENU. Select CONFIG > PAN/TILT > SIDE HANG > ENABLE.

FLOOR MOUNTING

All luminaires included in this manual are designed to sit directly on its base in a floor installation application. When used in this type of application, be sure to leave enough space around the luminaire to allow proper, uninterrupted airflow for cooling and movement.

CONNECTING DATA AND POWER

A maximum of 32 luminaires may be connected in any one DMX data link.

NOTE: This maximum limit applies to the luminaire "daisy chain" only. Your system or console may require fewer luminaires on a single data link path. Consult your console documentation for more information.

To connect power and data:

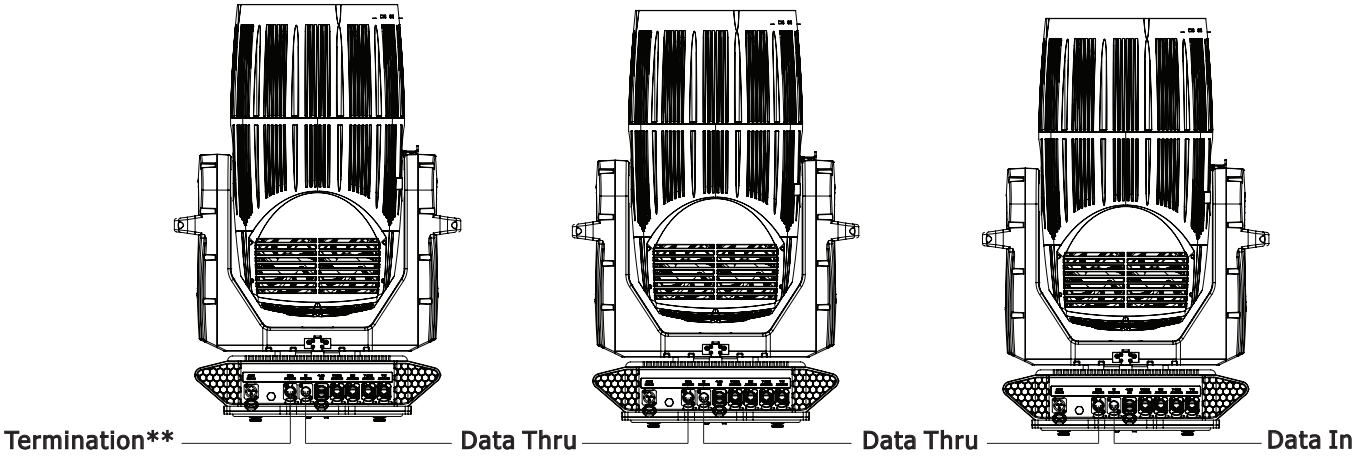
Step 1. Connect data cable from console to first luminaire in chain at DATA IN connector.

Step 2. If required, connect additional data cables from DATA THRU connectors to DATA IN connectors of remaining luminaires in link.

Step 3. At last luminaire in link, install male termination connector at DATA THRU connector. (Luminaires and other devices on the same DMX chain may not function properly without termination.)

Step 4. Connect AC Input Cable connector to power input source.

Step 5. Dress AC input and data cables and secure them so that they will not interfere with luminaire head and yoke movement.



WARNING!: It is not recommended to power any Vari-Lite luminaire from a dimmer - even in 'NONDIM' mode. Dimmer modules are not suitable sources of power because their output modifies the AC wave form. This may work for a short time, but will eventually result in power problems, luminaire mis-operation and/or failure and may void the luminaire's warranty. Use constant current or relay modules only.

POWERING UP

POWER-UP PROCEDURE

The VLHIVE 151 Digital FX utilizes V*Trac Calibration. This means all mechanical mechanisms (Pan, Tilt, Zoom, and Focus) do not need to move through a range of travel to determine their location. After startup, the luminaire head will either move to its "home" position (which positions the pan axis at mid-rotation and the head parallel to the yoke with the lens pointing away from the luminaire enclosure) or move to its current DMX-defined position if DMX data is present. All internal mechanisms also move to their "home" or DMX-defined positions.

CAUTION: Before applying power, be sure the luminaire is hung (or positioned), and the pan and tilt locks are disengaged, so that the head and yoke can move freely without restriction.

To power up:

Step 1. At each luminaire, apply power connecting the power cable to the unit.

Step 2. Luminaire automatically moves to its "home" position (only if DMX is not present).

ADDRESSING

PROGRAM STARTING ADDRESS

The address setting for DMX console controlled systems is entered using the Menu Display. The luminaire retains the DMX address even if power is removed.

DMX ADDRESS

To set, edit, and save a DMX address:

Step 1. Press [ESC].

Step 2. Press [Up] / [Down] arrows until Address appears. Press [OK].

Step 3. Use [Left] and [Right] arrow buttons to scroll through all digits.

Step 4. Once at desired digit, use [Up] and [Down] arrows to change highlighted digit.

Step 5. Once digit is set, use [Left] and [Right] arrow buttons to set other digits in DMX address.

Step 6. Once all digits are set in DMX address, press [OK] to set.

Step 7. DMX will display and is saved.

PROGRAM STARTING ADDRESS WITHOUT CALIBRATION

It is possible to bypass the calibration sequence and go directly to the Menu Display programming in order to pre-program an address setting.

Program starting address without calibrating luminaire:

- While powering up luminaire, press and hold [ESC].
- When display changes from "Starting" to the DMX address, program address as in Program Starting Address above.

NOTE: The luminaire will require a reset to restore control.

Program starting address in Battery Mode:

- To activate menu in Battery Mode when the fixture is not connected to a power source, press [OK] and [ESC] together. The LCD screen will come on. Address the fixture as described above. The LCD screen will shut off after one minute of inactivity.

TRANSPORTING

When shipping or transporting luminaires, Vari-Lite recommends that the luminaire(s) be sufficiently protected against any (including, but not limited to) shock, vibration, drops, jarring, exposure to the environment, etc.

Failure to sufficiently protect any Vari-Lite luminaire during shipping or transportation will result in damage and void the luminaire's warranty. Vari-Lite will not be responsible for any shipping damage or breakage of any product under any circumstances. Vari-Lite will not be responsible for any third party case manufacturer's cases.

Note: As with all automated luminaires, proper handling and suitable protective shipping cases should be used when transporting fixtures to reduce the risk of damage. For more information, please refer to Vari-Lite technical notice (TN-235) "Transportation and Shipping Case Requirements" in the "Support" area of the Philips Entertainment Lighting web site.

TRANSPORTATION AND SHIPPING CASE REQUIREMENTS

Cases to transport Vari-Lite luminaires should meet the following loading requirements:

- Luminaire head, yoke, and enclosure sub-assemblies shall be equally supported and constrained where no one sub-assembly (head, yoke, or enclosure) fully supports the entire mass of the luminaire.
- The interior of the case shall be of high quality and uniform density foam. The foam shall be of the same type and density throughout as to equally and uniformly support loading at every contact surface.
- The case shall, when laid on any of its six (6) surfaces, maintain the loading requirements outlined above.
- All cases not meeting the aforementioned loading requirements, with wheels, shall have markings on the exterior of the case that the unit is to be transported on it wheels only (e.g. "Case must be transported and remain [at all times] on its wheels").

3 OPERATION

The VLHIVE 151 Digital FX only has 4 mechanical functions. Pan, Tilt, Zoom and Edge (Focus). The rest of the functions are created by the Digital Light Engine. Dimming, color mixing, masking, image layers and animation layers are all produced by the Digital Light Engine, giving the user multiple layers of control. The luminaire can be controlled as three separate components. The top layer is the Wash Layer. The layer controls Pan, Tilt, Zoom, Edge (Focus), Smart Color+, Iris, Framing Shutters and layer effects. The next layer is the Image Layer, which contains both the 80 Factory loaded images and the up to 60 User loaded images, Open Source color control (RGBL), Color presets and various other effects for the images. The third and final layer contains the 50 Factory loaded Animations and up to 50 User loaded Animations and various controls and effects for the animation.

NOTE: While the wash layer is the top layer of control, any Image from the Image layer will sit on top of the wash layer. So if you have the wash in Blue and an Image in Red, you will see the Red image on top of the Blue wash layer.

WASH LAYER

The VLHIVE 151 Digital FX Wash Layer controls Pan, Tilt, Zoom and Edge (Focus) of the mechanical systems. It also has a dimmer control, Strobe, Smart Color+, Color Presets, Iris, Framing Shutters, Digital Zoom (scale) and Layer effects.

PAN/TILT

Pan and Tilt consists of 16Bit control of both axis. Pan has 540° of travel while Tilt has 240°.

DIMMING

There is 16Bit control of dimming of the Wash Layer Digital Light Engine output.

STROBE

There is 8Bit control of strobe of the Wash Layer with speeds from .5Hz to 30Hz. Random and Random Sync are also available (see Programmer Channel to switch between Random and Random Sync).

NOTE: Dimming and Strobe in the Wash Layer do NOT apply to Image or Animation layers. They each have their own independent Dimmer and Strobe control.

SMART COLOR+

Smart Color+ allows for simpler control of the RGBL Digital Light Engine. It allows for simple CMY control of the Digital Light Engine with a dedicated CCT channel to select the white color temperature.

NOTE: The Wash Layer Smart Color+ control does NOT apply to an Image or Animation layers. They each have their own independent control of color.

CRI BOOST

This allows the user to optimize the Wash Layer output either for highest lumen output or highest CRI.

COLOR PRESETS

Allows for the selection of 33 calibrated color presets based on popular colors. The Color Presets will take priority of the Smart Color+ control and the CCT channel.

EDGE (FOCUS)

Control of the mechanical Edge/Focus of the projected image from soft to hard edge. This includes the Wash Layer, the Image Layer and the Animation Layer.

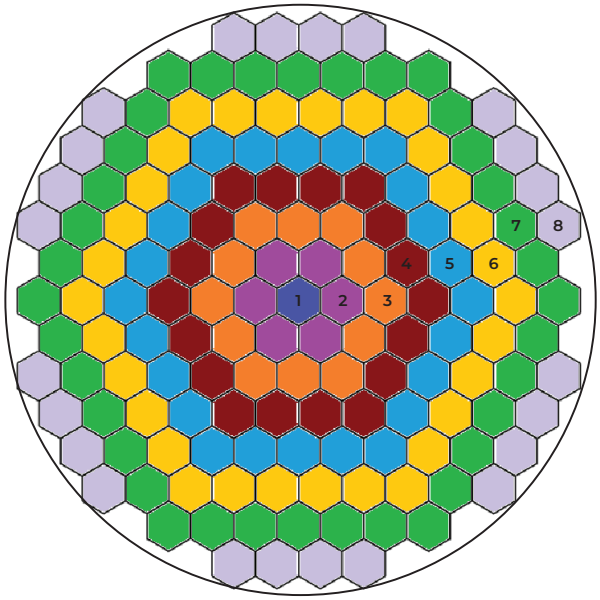
NOTE: It is not possible to have a different edge/focus on the different layers. It affects all layers at same time.

ZOOM

Provides 8Bit control of the mechanical zoom. The zoom range is 2:1, but actual beam angles will depend on what is present on the Digital Light Engine.

DIGITAL ZOOM (SCALE)

Provides 8Bit control the size of the Digital Light Engine array from all 151 Pixels down to a single Pixel in Center. Decreases by the number of rings that are outputting from all 8 down to just 1.



Pixel Ring	Opt. Zoom Narrow	Opt. Zoom Wide	Total Pixels used
1	0.6°	1.3 °	1
2	3.8°	9.7°	7
3	8.2°	17.9 °	19
4	12.5 °	26.0°	37
5	16.9 °	33.8°	61
6	21.2 °	41.3 °	91
7	25.4°	48.4°	127
8	26.4°	50.1°	151

Field Angle by Pixel Diameter

IRIS

Digital Iris that has 8Bit control from fully open to 100% coverage of the array. This will mask ALL layers.

FRAMING SHUTTERS

Digital framing shutters with 8Bit control of four frames (1A/B, 2A/B, 3A/B, 4A/B). Each shutter can cover 100%of the array. Shutters have 360° of index control. Shutters can also continuously rotate in either direction and at variable speeds. See Programmer channel to select Index or Rotation. Framing Shutters will mask ALL layers.

SMOOTHING

Controls fade decay rate of Image and Animation Layers. DMX 0 will be no smoothing, Image and Animations will play back across the array with no smoothing. At DMX 255, Image and Animations will change across the pixels with 10sec of fade.

NOTE: Smoothing is applied to all Image and Animation layers. They cannot be operated at different levels of smoothing.

VARI*GLASS

The front lens of the fixture will be opaque with the fixture powered off. Once powered on, there is 8Bit control of whether the glass is clear (default) or opaque. There is no fade of this channel. From DMX 0 to 128 it will be clear and 129 to 255 It will be opaque.

NOTE: When Vari*Glass is opaque, the output of the Digital Light Engine is automatically lowered to protect the glass.

TRANSITION FX

Allows the selection of transition effects between Images, Animations or layers.

TRANSITION TIMING

Controls the speed of the Transition FX. Instant change occurs at DMX 000 and is variable to 10 Sec of transition time at DMX 255.

PROGRAMMER CONTROL

This dedicated channel allows for the selection of settings that you may want to change from cue to cue during a show. See the DMX map for all options. These functions do NOT require the 3 Sec rule (see Fixture Control) to set. You can set the value of the desired function in the same cue that you use the function. Example; if you want to remove the normal attack/decay of the dimmer at zero time, you can set Dimmer Snap On in the same cue you set the zero time intensity. Be sure to return the channel to DMX 000 (idle) when you are not using it.

NOTE: This channel should be set to ignore any fade time within the console.

FIXTURE CONTROL

The Fixture Control channel allows for making changes to fixture settings and modes that would normally NOT be changed during use. These functions are all protected by the 3 Sec Rule. Set the value of the function you wish to set (see DMX map) and hold that value for more then 3 seconds. Then change the value DIRECTLY to DMX 000 (Idle). The setting, mode or function will be performed.

Note: This channel should be set to ignore any fade time within the console.

FAN CONTROL

If the fixture is set in Standard Mode and the fan is set to ON (see Menu and/or DMX Map) and the Fan Control channel is enabled (see Menu and/or DMX Map) this channel will allow the fan speed to be set from full speed (Standard Mode) at DMX 000 to slowest speed (Whisper Mode) at DMX 255. It can also be set to any value in between, allowing the user to select a fan speed that works for the space the luminaire is installed. Output will automatically decrease as needed based on the fan speed.

NOTE: This channel is deactivated by default. It must be turned on either at the Menu or via the Fixture Control channel. See Menu and/or DMX Map for more details.

IMAGE LAYER

The Image Layer of the VLHIVE 151 DIGITAL FX allows for the selection of either the 80 Factory loaded Images or the 60 User Loaded images. These images can then be indexed, rotated, scaled, keystoned, and moved around the array. They are color controlled by their own independent Open Source (RGBL) color control or Calibrated presets. The Image Layer will sit on top of the Wash Layer and has its own dimmer and strobe control. Images from the Factory Load and the User Load can be played simultaneously.

Note: For information on User Loaded Images, please see the Vari-Lite HiveCreator Manual.

DIMMING

Provides 16Bit control of the Image Layer on the array.

NOTE: It is recommended that this channel default to 100% (DMX 65535) so that any Images selected can be seen.

STROBE

There is 8Bit control of strobe of the Image Layer with speeds from .5Hz to 30Hz. Random and Random Sync are also available (see Programmer Channel to switch between Random and Random Sync).

NOTE: Dimming and Strobe in the Image Layer do NOT apply to Wash or Animation Layers. They each have their own independent Dimmer and Strobe control.

OPEN SOURCE COLOR

The Image Layer has its own color control that is separate from the Wash Layer. This layer is controlled by direct 16Bit control of each set of LEDs in the Digital Light Engine (Red, Green, Blue, and Lime). Any Image that is selected will output as the color set by these channels.

Note: It is recommended that these channels all default to 0% (DMX 0) so that any image selected will be seen as black against the Wash Layer. You can change color as needed.

COLOR PRESETS

Allows for the selection of 33 calibrated color presets based on popular colors. The Color Presets will take priority over Open Source Color.

FACTORY/USER IMAGES

The fixture ships from the factory with 80 Images preloaded. These images can be projected on a surface, as aerial beams or direct view. You can index or continuously rotate the image, keystone the image in X or Y coordinates, move the center of the image on the array in X or Y coordinates, color the image, mask it with the wash layer and many other combinations. User created Images can be played back on the User Images channel. Up to 60 User Created Images can be installed into the fixture. For information on creating User Images and loading into the fixture, see the Vari-Lite HiveCreator manual.

FACTORY/USER IMAGE CONTROL

This allows you to choose how the Image responds to the Index/Rotation channel. Whether it is stationary, continuously rotating or rotating with Mega Step (a start/stop effect).

IMAGE KEYSTONE

The Image selected from either the Factory or User Image can be keystone corrected in both the X (horizontal) and Y (vertical) plane. There is one DMX channel for each. Their default position should be at 50% (DMX 128). This will display the image as created. Adjusting the X Keystone will fold the Image toward the left or right, depending on which way you move the DMX from 128. It will travel a full 'flip' inverting the image in either direction at DMX 0 or 255. Adjusting the Y will do the same toward the top or bottom.

IMAGE KEYSTONE FX

There are pre-defined effects that can be applied to an Image's keystone. See DMX Map for further details.

IMAGE KEYSTONE FX SPEED

Controls the direction and speed of the Image Keystone effects. Channel should default to 50% (DMX 128) which would stop the effect. Changing toward 0 will gradually speed up the effect in one direction. Changing toward 255 will gradually speed up the effect in the opposite direction.

IMAGE POLAR X/Y

Allows for the center position of an Image to be moved on the array. Their default positions should be at 50% (DMX 128), which centers the Image on the array. Adjusting the X will move the Image toward the left or right, depending on which way you move the DMX from 128. Adjusting the Y will do the same toward the top or bottom.

IMAGE X/Y FX

There are pre-defined effects that can be applied to an Image's Polar position. See DMX Map for further details.

IMAGE X/Y FX SPEED

Controls the direction and speed of the Image Polar X/Y effects. Channel should default to 50% (DMX 128) which would stop the effect. Changing toward 0 will gradually speed up the effect in one direction. Changing toward 255 will gradually speed up the effect in the opposite direction.

IMAGE COLOR FX

There are pre-defined color effects that can be applied to an Image. See DMX Map for further details.

IMAGE COLOR FX SPEED

Controls the direction and speed of the Image Polar effects. Channel should default to 50% (DMX 128) which would have the effect be stopped. Changing toward 0 will gradually speed up the effect in one direction. Changing toward 255 will gradually speed up the effect in the opposite direction. See Programmer channel to choose effect run or effect indexed.

IMAGE DIGITAL SCALE

Increases or decreases the Image size on the array. Channel should default to 50% (DMX 128) which will show the Image at its normal size. Adjusting toward DMX 0 will decrease the size of the Image and towards 255 will increase the size of the Image.

IMAGE CONTRAST

Allows you to adjust how 'sharp' an Image is. Depending on how an Image is drawn, there can be a falloff on the outside edge as an Image transitions from being present (ON) to not being rendered on the array (OFF). This can turn lower saturated pixels off, which sharpens the definition of the Image. This can also be used to drastically alter the look of an Image.

ANIMATION LAYER

The Animation Layer of the VLHIVE 151 DIGITAL FX allows for the selection of either the 50 Factory loaded Animation or the 50 User Loaded Animations. These Animations can then be looped, played once, and paused, among other controls. Their color is dependent on the Animation itself, but the Hue and Saturation can be controlled. The Animation Layer is the bottom layer. It will be covered by the Image and Wash Layer. Animations from the Factory Load and the User Load can be played simultaneously.

NOTE: For information on User Loaded Animations, please see the Vari-Lite HiveCreator Manual.

DIMMING

Provides 16Bit control of the intensity of the Animation Layer on the array.

NOTE: It is recommended that this channel default to 100% (DMX 65535) so that any Animations selected can be seen.

STROBE

There is 8Bit control of strobe of the Animation Layer with speeds from .5Hz to 30Hz. Random and Random Sync are also available (see Programmer Channel to switch between Random and Random Sync).

NOTE: Dimming and Strobe in the Animation Layer do NOT apply to Wash or Image layers. They each have their own independent Dimmer and Strobe control.

ANIMATION CONTRAST

Allows you to adjust how 'sharp' an Animation is. Depending on how an Animation is created, there can be a falloff on the outside edge as an Animation transitions from being present (ON) to not being rendered on the array (OFF). This can turn lower saturated pixels off, which sharpens the definition of the Image. This can also be used to drastically alter the look of an Animation.

ANIMATION HUE

The color in an Animation is based upon the Animation itself. The Animation Hue control allows for adjustment of these colors. The channel should default to 50% (DMX 128), which will render the Animation in its natural color. Moving toward 0 or 255 will shift the hue of the Animation.

ANIMATION SATURATION

The saturation of the Animation color can be adjusted. The channel should default to 50% (DMX 128), which will render the Animation in its natural color. Moving toward 0 or 255 will decrease or increase the Saturation of the Animation colors.

FACTORY/USER ANIMATIONS

The VLHIVE 151 DIGITAL FX ships with 50 pre-loaded Animations. These Animations can be played forward or backwards at variable speeds up to 200% of natural speed. It can be stopped on its first frame or paused on a running frame. It can be looped or played one time. It can also be indexed up to +/- 60°. Images from the Image Layer can be placed on top of an Animation and the Wash Layer can mask the Animations. User created Animations can be played on the User Animation channel. Up to 50 Animations can be loaded into the luminaire. See the Vari-Lite HiveCreater manual for more details on creating and loading Animations.

FACTORY/USER ANIMATION CONTROL

Animations can plays as a loop in either direction and at varying speed using the Animation Speed/Direction channel (this is recommended default state). It can be stopped on the first frame. It can be run once in either direction or speed based on the Animation Speed Direction channel. It can also be paused on the current frame while running a loop. There are separate identical controls for Factory and User Animations.

FACTORY/USER ANIMATION SPEED/DIRECTION

Used in conjunction with the Factory/User Animation Control above, controls the direction and speed the Animation will run. This channel should default at 50% (DMX 128) which in a Loop would stop the animation on the first frame. Adjusting toward 255 will run the Animation in its normal direction up to 200% of the normal speed. Adjusting toward 0 will run the Animation backwards from its normal direction up to 200% of the normal speed. There are separate identical controls for Factory and User Animations.

ANIMATION INDEX

Factory and User Animations can be indexed +/- 60° from center. The channel should default to 50% (DMX 128). Moving toward 0 adjusts the index counter clockwise from the center. Moving toward 255 adjust the index clockwise from the center.

NOTE: Animation index applies to both Factory and User Animations simultaneously. You cannot adjust them independent of each other.

NDI LAYER (NOT IMPLEMENTED)

Coming Soon.

DMX OPERATION

DMX MAPS

The tables assume a DMX start address of 1. When a different starting address is used, this address becomes channel 1 function and other functions follow in sequence.

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
1 to 37*				Main Fixture - Wash
1	Intensity High - Wash	0	0-65535	16-Bit control of Dimming
2	Intensity Low - Wash			
3	Strobe - Wash	0	0- 255	8-Bit control of Strobe
			0 - 5	Open
			6 - 10	Closed
			11 - 125	Strobe Slow>Fast 0.5Hz to 30Hz
			126 - 130	Open
			131 - 245	Strobe Random/Random Sync* Slow>Fast
			246 - 250	Open
			251 - 255	Closed
				*See Programmer channel for mode selection
4	Cyan High	0	0 - 65535	16-Bit control of Cyan Smart Color - Wash Output Color
5	Cyan Low			
6	Yellow High	0	0 - 65535	16-Bit control of Yellow Smart Color - Wash Output Color
7	Yellow Low			
8	Magenta High	0	0 - 65535	16-Bit control of Magenta Smart Color - Wash Output Color
9	Magenta Low			
10	CCT	200	0 - 255	8-Bit control of variable color temperature Wash Output Color Values stated below are for guidance only
			0	1800K
			25	2700K
			50	3000K
			75	3200K
			100	4000K
			125	4500K
			150	5000K
			175	5600K
			200	6500K (Default)
			225	8000K
			250-255	10000K
11	CRI Boost	0	0 - 255	Optimized output for Output vs. Higher CRI Highest Output>>Highest CRI
12	Color Preset - Wash	0	0 - 255	Calibrated color presets 1 to 33 User definable color preset 1 to 20 (Future Activation)
			0 - 10	Channel OFF Color Mixing takes priority

*These three sections can be created as sub-fixture or instances for easier control

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
12	Color Preset - Wash Continued	0	11 - 14	Moroccan Pink
			15 - 18	Pink
			19 - 22	Flesh Pink
			23 - 26	Bright Rose
			27 - 30	Follies Pink
			31 - 34	Fuchsia Pink
			35 - 38	Surprise Pink
			39 - 42	Congo Blue
			43 - 46	Blue
			47 - 50	Virgin Blue
			51 - 54	Midnight Maya
			55 - 58	Double C.T. Blue
			59 - 62	Slate Blue
			63 - 66	Regal Blue
			67 - 70	Full C.T. Blue
			71 - 74	Steel Blue
			75 - 78	Lighter Blue
			79 - 82	Cyan
			83 - 86	Marine Blue
			87 - 90	Soft Green
			91 - 94	Moss Green
			95 - 98	Green
			99 - 102	Fern Green
			103 - 106	JAS Green
			107 - 110	Pale Green
			111 - 114	Spring Yellow
			115 - 118	Yellow
			119 - 122	Deep Amber
			123 - 126	Chrome Orange
			127 - 130	Orange
			131 - 134	Magenta
			135 - 138	Flame Red
			139 - 142	Purple
			143 - 146	User Preset 1**
			147 - 150	User Preset 2**
			151 - 154	User Preset 3**
			155 - 158	User Preset 4**
			159 - 162	User Preset 5**
			163 - 166	User Preset 6**

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
12	Color Preset - Wash Continued	0	167 - 170	User Preset 7**
			171 - 174	User Preset 8**
			175 - 178	User Preset 9**
			179 - 182	User Preset 10**
			183 - 186	User Preset 11**
			187 - 190	User Preset 12**
			191 - 194	User Preset 13**
			195 - 198	User Preset 14**
			199 - 202	User Preset 15**
			203 - 206	User Preset 16**
			207 - 210	User Preset 17**
			211 - 214	User Preset 18**
			215 - 218	User Preset 19**
			219 - 222	User Preset 20**
			223 - 255	Channel OFF Color Mixing takes priority
				**User defined color preset when replayed from DMX will only playback stored color values
13	Pan High	32767	0 - 65535	540° Total Pan Rotation
14	Pan Low			
15	Tilt High	32767	0 - 65535	240° Total Tilt
16	Tilt Low			
17	Edge/Focus	128	0 - 255	Edge/Focus Control
18	Zoom	128	0 - 255	Zoom Control
19	Digital Zoom	255	0 - 255	Digital Scaling of array size
20	Iris	0	0 - 255	Digital Iris Masking effect
			0 - 200	Iris beam size open to closed
			201 - 255	Iris pulse slow to fast
21	Frame 1A	0	0 - 255	Controls Digital Framing Shutter 1A Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter
22	Frame 1B	0	0 - 255	Controls Digital Framing Shutter 1B Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.
23	Frame 2A	0	0 - 255	Controls Digital Framing Shutter 2A Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.
24	Frame 2B	0	0 - 255	Controls Digital Framing Shutter 2B Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
25	Frame 3A	0	0 - 255	Controls Digital Framing Shutter 3A Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.
26	Frame 3B	0	0 - 255	Controls Digital Framing shutter 3B Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.
27	Frame 4A	0	0 - 255	Controls Digital Framing shutter 4A Open (DMX 0) to Full (DMX 255) Digital Framing masking effect of output to mimic Mechanical framing shutter.
28	Frame 4B	0	0 - 255	Controls Framing Shutter 4B Open (DMX 0) to Full (DMX 255) Digital Framing masking of output to mimic Mechanical framing shutter.
29	Frame Index/ Rotate	128	0 - 255	Controls Framing Shutter mechanism from +/- 180° and spin direction and speed
			0 - 127	Framing index from Center << Counter Clockwise
			128	Framing Centered
			129 - 255	Framing index from Center >> Clockwise
				See Programmer channel for index (default) or continuously rotating or mega stepping
30	Reserved			Reserved for future use.
31	Smoothing	0	0 - 255	Controls fade decay rate of image/animation 0 - no smoothing >> 255 = 10sec of fade
32	Diffusion/Frost	0	0 - 255	Controls the Vari*Glass from clear to opaque
			0 - 128	Clear
			129 - 255	Opaque*
				*Opaque limits the intensity to prevent long term damage
33	Transition FX	0	0 - 255	Transition effects applied to when changing between Images, Animations or layers
			0 - 5	No effect applied
			6 - 11	Fade in/out
			12 - 17	Dissolve
			18 - 23	Wipe X
			24 - 29	Wipe Y
			30 - 35	Wipe X/Y
			36 - 41	Wipe X/Y Rotated
			42 - 47	Flash
			48 - 53	Shrink and Expand
			54 - 59	Keystone X
			60 - 65	Keystone Y
			66 - 71	Effect TBD (Future activation)

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
33	Transition FX - Continued	0	72 - 77	Effect TBD (Future activation)
			78 - 83	Effect TBD (Future activation)
			84 - 89	Effect TBD (Future activation)
			90 - 95	Effect TBD (Future activation)
			96 - 255	Reserved for future use.
34	Transition Timing	128	0 - 255	Controls Fade decay rate and speed of the transition effect.
			0 - 127	Reverse Fast to Slow
			128	No Effect
			129 - 255	Forward Slow to Fast
35	Programmer Controls	0	0 - 255	Functions do not require 3 second DMX rule, Function is activated when item is selected. Console should have this channel set to SNAP so timed moved is ignored.
			0 - 40	Idle
			41 - 55	Reserved
			56 - 60	Dimmer Snap On
			61 - 65	Dimmer Snap Off (Default)
			66 - 90	Reserved Values
			91 - 95	Color Snap Off (Default)
			96 - 100	Color Snap On (de-activates color timing channel)
			101 - 105	Reserved Values
			106 - 110	Strobe Random (Default)
			111 - 115	Strobe Random Sync
			116 - 120	Reserved Values
			121 - 125	Color FX Run
			126 - 130	Color FX Indexing (Defualt)
			131 - 150	Reserved Values
			151 - 155	Image Projection Up
			156 - 160	Image Projection Down (Default)
			161 - 165	Image Projection Front (Default)
			166 - 170	Image Projection Rear
			171 - 180	Reserved Values
			181 - 185	Framing Shutter Index (Default)
			186 - 190	Framing Shutter continuous Rotate
			191 - 195	Framing Shutter rotation megastep
			196 - 255	Reserved Values
36	Fixture Control	0	0 - 255	Control Channel used for full fixture settings and miscellaneous modes. Set discrete value of desired effect, wait for >3 seconds, then set value to 0 (idle)
			0 - 5	Idle (Default)

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
36	Fixture Control - Continued	0	6 - 10	Full Luminaire Re-Cal (Also used to Wake fixture from shutdown
			11 - 15	Fixture Shutdown
			16 - 20	Re-Boot
			21 - 25	Display - Menu ON
			26 - 30	Display - Menu OFF
			31 - 85	Reserved Values
			86 - 90	Status Check (UI screen will be Green of OK, Red if any errors are present. Send again to turn off or will auto turn off in 5 min
			91 - 95	Side Hang Disable (Default)
			96 - 100	Side Hang Enable
			101 - 110	Reserved Values
			111 - 115	Standard Mode - Default
			116 - 120	Studio Mode
			121 - 125	Whisper Mode
			126 - 135	Reserved Values
			136 - 140	Fan On (Default)
			141 - 145	Fan Auto
			146 - 148	Fan Control Channel On (Channel 12)
			149 - 150	Fan Control Channel Off (Default)
			151 - 155	ReCal Position
			156 - 165	Reserved Values
			166 - 170	ReCal Optics
			171 - 175	Reserved Values
			176 - 180	Reset fixture to default (NOTE - will NOT change DMX address or Map)
			181 - 195	Reserved Values
			196	LED Refresh 250Hz
			197	LED Refresh 500Hz
			198	LED Refresh 1000Hz
			199	LED Refresh 2000Hz
			200	LED Refresh 4000Hz
			201	LED Refresh 6000Hz
			202	LED Refresh 8000Hz
			203	LED Refresh 10000Hz
			204	LED Refresh 12000Hz
			205	LED Refresh 14000Hz
			206	LED Refresh 16000Hz
			207	LED Refresh 18000Hz
			208	LED Refresh 20000Hz

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
36	Fixture Control - Continued	0	209 - 250	Reserved Values
			251 - 252	Listen for NDI ON (Default) - Future Activation
			253 - 255	Listen for NDI OFF - Future Activation
37	Fan Control**	0	0 - 255	Dynamically control fan speed vs. LED Output
			0 - 4	Automatic/On fan/output adjustment (Default)
			5 - 255	Linear control of fan speed and LED max output*
				DMX 5 = Highest Constant Fan Speed DMX 255 = Lowest Constant Fan Speed *Standard mode only function is de-activated if Studio or Whisper modes are selected **Note channel is deactivated by default. The function requires activation from the UI or the luminaire control channel
38 - 67				Image Layer
38	Intensity High - Image Layer	65535	0 - 65535	16Bit control of Dimming for Image layer
39	Intensity Low -Image Layer			
40	Strobe - Image	0	0 - 255	8Bit control of Strobe for Image layer
			0 - 5	Open
			6 - 10	CloseD
			11 - 125	Strobe 0.5Hz to 30Hz of Image layer
			126 - 130	Open
			131 - 245	Strobe Random/Random Sync* 0.5Hz to 30Hz of image layer
			246 - 250	Open
			251 - 255	Closed
				*See Programmer channel for mode selection
41	Red High - Image Layer	0	0 - 65535	16Bit Control of Red LED Output of Image layer 0 - No Saturation - 255 Full Saturation
42	Red Low - Image Layer			
43	Green High - Image Layer	0	0 - 65535	16Bit Control of Green LED Output of Image layer 0 - No Saturation - 255 Full Saturation
44	Green Low - Image Layer			
45	Blue High - Image Layer	0	0 - 65535	16Bit Control of Blue LED Output of Image layer 0 - No Saturation - 255 Full Saturation
46	Blue Low - Image Layer			
47	Lime High - Image Layer	0	0 - 65535	16Bit Control of Lime LED Output of Image layer 0 - No Saturation - 255 Full Saturation
48	Lime Low - Image Layer			

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
49	Color Preset - Image Layer	0	0 - 255	Image Layer Color Calibrated presets 1 to 33
			0 - 10	Channel OFF. Color mixing takes priority
			11 - 14	Moroccan Pink
			15 - 18	Pink
			19 - 22	Flesh Pink
			23 - 26	Bright Rose
			27 - 30	Follies Pink
			31 - 34	Fuchsia Pink
			35 - 38	Surprise Pink
			39 - 42	Congo Blue
			43 - 46	Blue
			47 - 50	Virgin Blue
			51 - 54	Midnight Maya
			55 - 58	Double C.T. Blue
			59 - 62	Slate Blue
			63 - 66	Regal Blue
			67 - 70	Full C.T. Blue
			71 - 74	Steel Blue
			75 - 78	Lighter Blue
			79 - 82	Cyan
			83 - 86	Marine Blue
			87 - 90	Soft Green
			91 - 94	Moss Green
			95 - 98	Green
			99 - 102	Fern Green
			103 - 106	JAS Green
			107 - 110	Pale Green
			111 - 114	Spring Yellow
			115 - 118	Yellow
			119 - 122	Deep Amber
			123 - 126	Chrome Orange
			127 - 130	Orange
			131 - 134	Magenta
			135 - 138	Flame Red
			139 - 142	Purple
			143 - 255	Channel OFF. Color mixing takes priority
50	Factory Images	0	0 - 255	Digital Factory Images - Images will deactivate active pixels in Wash Layer output when no color (RGBL) is active for images
			0 - 2	Open
			3 - 5	Number 1

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
50	Factory Images - Continued	0	6 - 8	Number 2
			9 - 11	Number 3
			12 - 14	Number 4
			15 - 17	Number 5
			18 - 20	Number 6
			21 - 23	Number 7
			24 - 26	Number 8
			27 - 29	Number 9
			30 - 32	Number 0
			33 - 35	Alpha A
			36 - 38	Alpha B
			39 - 41	Alpha C
			42 - 44	Alpha D
			46 - 47	Alpha E
			48 - 50	Alpha F
			51 - 53	Alpha G
			54 - 56	Alpha H
			57 - 59	Alpha I
			60 - 62	Alpha J
			63 - 65	Alpha K
			66 - 68	Alpha L
			69 - 71	Alpha M
			72 - 74	Alpha N
			75 - 77	Alpha O
			78 - 80	Alpha P
			81 - 83	Alpha Q
			84 - 86	Alpha R
			87 - 89	Alpha S
			90 - 92	Alpha T
			93 - 95	Alpha U
			96 - 98	Alpha V
			99 - 101	Alpha W
			102 - 104	Alpha X
			105 - 107	Alpha Y
			108 - 110	Alpha Z
			111 - 113	Square Outline
			114 - 116	Circle Outline
			117 - 119	Triangle
			120 - 122	Star 5 Pt
			123 - 125	Star 6 Pt

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
50	Factory Images - Continued	0	126 - 128	Heart
			129 - 131	Jack
			132 - 134	Laser Wave
			135 - 137	Circle Holes
			138 - 140	Split Cone
			141 - 143	Four Sides
			144 - 146	Boomerang
			147 - 149	Psyclone
			150 - 152	TriFan Blades
			153 - 155	Paddle Wheel
			156 - 158	Cyclone Spiral
			159 - 161	Pinwheel
			162 - 164	Twirler
			165 - 167	TriCone Circles
			168 - 170	Shield
			171 - 173	Clover
			174 - 176	Radial Lines
			177 - 179	Ray Gear
			180 - 182	TriTower
			183 - 185	Dot Flake
			186 - 188	Beam Fan
			189 - 191	Ray
			192 - 194	Punchcard
			195 - 197	Horizontal Slits
			198 - 200	Lines
			201 - 203	New Horizon
			204 - 206	Grid
			207 - 209	Neurons
			210 - 212	Staples
			213 - 215	Blobs
			216 - 218	Chopped
			219 - 221	Bar Break
			222 - 224	Night Sky
			225 - 227	Triangle Breakup
			228 - 230	Concurrent
			231 - 233	Pipes
			234 - 236	Bricked Out
			237 - 239	Wafer
			240 - 242	Weave
			243 - 255	Reserved

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
51	Factory Image Control	0	0 - 255	
			0 - 10	Index (Default)
			11 - 20	Rotate
			21 - 30	Mega Step
			31 - 255	Reserved Values
52	Factory Image Index/Rotation	128	0 - 255	Controls index/rotation of Image
			0 - 127	Rotate Fast to Slow <<<
			128	Stop
			129 - 255	Rotate Slow to Fast >>>
53	User Images	0	0 - 255	Digital User loaded Images. Images will deactivate active pixels in wash output when no color (RGBL) is active for images
			0 - 3	Open
			4 - 7	User Image 1
			8 - 11	User Image 2
			12 - 15	User Image 3
			16 - 19	User Image 4
			20 - 23	User Image 5
			24 - 27	User Image 6
			28 - 31	User Image 7
			32 - 35	User Image 8
			36 - 39	User Image 9
			40 - 43	User Image 10
			44 - 47	User Image 11
			48 - 51	User Image 12
			52 - 55	User Image 13
			56 - 59	User Image 14
			60 - 63	User Image 15
			64 - 67	User Image 16
			68 - 71	User Image 17
			72 - 75	User Image 18
			76 - 79	User Image 19
			80 - 83	User Image 20
			84 - 87	User Image 21
			88 - 91	User Image 22
			92 - 95	User Image 23
			96 - 99	User Image 24
			100 - 103	User Image 25
			104 - 107	User Image 26
			108 - 111	User Image 27
			112 - 115	User Image 28

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
53	User Images - Continued	0	116 - 119	User Image 29
			120 - 123	User Image 30
			124 - 127	User Image 31
			128 - 131	User Image 32
			132 - 135	User Image 33
			136 - 139	User Image 34
			140 - 143	User Image 35
			144 - 147	User Image 36
			148 - 151	User Image 37
			152 - 155	User Image 38
			156 - 159	User Image 39
			160 - 163	User Image 40
			164 - 167	User Image 41
			168 - 171	User Image 42
			172 - 175	User Image 43
			176 - 179	User Image 44
			180 - 183	User Image 45
			184 - 187	User Image 46
			188 - 191	User Image 47
			192 - 195	User Image 48
			196 - 199	User Image 49
			200 - 203	User Image 50
			204 - 207	User Image 51
			208 - 211	User Image 52
			212 - 215	User Image 53
			216 - 219	User Image 54
			220 - 223	User Image 55
			224 - 227	User Image 56
			228 - 231	User Image 57
			232 - 235	User Image 58
			236 - 239	User Image 59
			240 - 243	User Image 60
			244 - 255	Reserved values
54	User Image Control	0	0 - 255	
			0 - 10	Index
			11 - 20	Rotate
			21 - 30	Mega Step
			31 - 255	Reserved values

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
55	User Image Index/Rotation	128	0 - 255	Control index/rotation of image
			0 - 127	Rotate Fast to Slow <<<
			128	Stop
			129 - 255	Rotate Slow to Fast >>>
56	Image Keystone X	128	0 - 255	Image keystone correction X axis, left to right
			0 - 127	Left of field to center
			128	Center of field (Default)
			129 - 255	Center to right of field
57	Image Keystone Y	128	0 - 255	Image keystone correction Y axis, top to bottom
			0 - 127	Bottom of field to center
			128	Center of field (Default)
			129 - 255	Center to top of field
58	Image Keystone FX	0	0 - 255	Keystone effect added to Image
			0 - 10	No Effect (Default)
			11 - 20	Whompify
			21 - 30	X Axis Bounce
			31 - 40	Y Axis Bounce
			41 - 50	X Axis Wave, anchor point left
			51 - 60	X Axis Wave, anchor point right
			61 - 70	Y Axis Wave, anchor point top
			71 - 80	Y Axis Wave, anchor point bottom
			81 - 90	X Axis Rotate
			91 - 100	Y Axis Tumble
			101 - 110	X/Y Axis Tumble
			111 - 120	Wompify X Axis
			121 - 130	Wompify Y Axis
			131 - 255	Reserved
59	Image Keystone FX Speed	128	0 - 255	Controls speed/direction of Image keystone effects
			0 - 127	<<Fastest speed to slowest
			128	Stop
			129 - 255	Slowest to Fastest>>
60	Image Polar X	128	0 - 255	Moves Image in field of projection left to right
			0 - 127	Left of field to center
			128	Center of field
			129 - 255	Center of field to right
61	Image Polar Y	128	0 - 255	Moves Image in field of projection bottom to top
			0 - 127	Bottom of field to center
			128	Center of field
			129 - 255	Center of field to top

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
62	Image X/Y FX	0	0 - 255	Polar effect movement across the field of Umage (increased scale size of Image will reduce range
				Start position defined by channels 60 and 61
			0 - 5	No effect
			6 - 11	Polar swipe X - Move Image from start point across array in single direction
			12 - 17	Polar swipe Y - Move Image from start point across array in singe direction
			18 - 23	Polar swipe diagonal
			24 - 29	Rotated polar swipe diagonal
			30 - 35	Polar X axis bounce
			36 - 41	Polar Y axis bounce
			42 - 47	Polar diagonal bounce
			48 - 53	Rotate polar diagonal bounce
			54 - 59	Polar bow-tie/fig 8 vertical move
			60 - 65	Polar bow-tie/fig 8 diagonal move
			66 - 71	Rotated polar bow-tie/fig 8 diagonal move
			72 - 77	Polar bow-tie/fig 8 horizontal move
			78 - 83	X/Y axis rotate
			84 - 89	X/Y axis spiral rotate
			90 - 95	Corkscrew
			96 - 101	Earthquake X
			102 - 107	Earthquake Y
			108 - 113	Earthquake X/Y
			114 - 119	Drop and rise
			120 - 125	Sawtooth
			126 - 131	Pendulum
			132 - 255	Reserved
63	Image X/Y FX Speed	128	0 - 255	Controls speed/direction of Image polar effects
			0 - 127	<<Fastest speed to slowest
			128	Stop
			129 - 255	Slowest to Fastest>>
64	Image Color FX	0	0 - 255	Applies color effect to Image. Takes priority over Image mixed color or preset. Channels 72 (Hue) & 43 (Saturation) can tune the colors from Vivid to Pastel shades
			0 - 5	Open
			6 - 11	2 Split - Horizontal - Congo & Kelley Green
			12 - 17	2 Split - Horizontal - Fuchsia & Red
			18 - 23	2 Split - Horizontal - Kelley Green & Orange
			24 - 29	2 Split - Horizontal - Orange & Fuchsia
			30 - 35	2 Split - Horizontal - Red & Congo
			36 - 41	3 Split - Horizontal - Congo, Kelley Green & Orange

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
64	Image Color FX - Continued	0	42 - 47	3 Split - Horizontal - Fuchsia, Red & Congo
			48 - 53	3 Split - Horizontal - Kelley Green, Orange, Fuchsia
			54 - 59	3 Split - Horizontal - Orange, Fuchsia & Red
			60 - 65	3 Split - Horizontal - Red, Congo, & Kelley Green
			66 - 71	3 Split - Horizontal - Congo, White & Red
			72 - 77	4 Split - Horizontal - Congo, Kelley Green, Orange & Fuschia
			78 - 83	2 Split - Vertical - Congo & Kelley Green
			84 - 89	2 Split - Vertical - Fuschia & Red
			90 - 95	2 Split - Vertical - Kelley Green & Orange
			96 - 101	2 Split - Vertical - Orange & Fuschia
			102 - 107	2 Split - Vertical - Red & Congo
			108 - 113	3 Split - Vertical - Congo, Kelley Green & Orange
			114 - 119	3 Split - Vertical - Fuschia, Red & Congo
			120 - 125	3 Split - Vertical - Kelley Green, Orange & Fuschia
			126 - 131	3 Split - Vertical - Orange, Fushcia & Red
			132 - 137	3 Split - Vertical - Red, Congo & Kelley Green
			138 - 143	3 Split - Vertical - Congo, White & Red
			144 - 149	4 Split - Vertical - Cyan, Kelley Green, Orange & Fuschia
			150 - 155	V Split - Horizontal - Congo & Kelley Green
			156 - 161	V Split - Horizontal - Fuschia & Red
			162 - 167	V Split - Horizontal - Kelley Green & Orange
			168 - 173	V Split - Horizontal - Orange & Fuschia
			174 - 179	V Split - Horizontal - Red & Congo
			180 - 185	V Split - Vertical - Congo & Kelley Green
			186 - 191	V Split - Vertical - Fuschia & Red
			192 - 197	V Split - Vertical - Kelley Green & Orange
			198 - 203	V Split - Vertical - Orange & Fushcia
			204 - 209	V split - Vertical - Red & Congo
			210 - 215	Color Band - Horizontal - Red & White
			216 - 221	Color Band - Vertical - Red & White
			222 - 227	Hex Grow - Congo, Kelley Green, Orange & Fuschia
			228 - 233	X Spin - Congo, Kelley Green, Orange & Fuschia
			234 - 239	Square Split - Congo, Kelley Green, Orange & Fuschia
			240 - 245	Polka Dot - White, Congo, Kelley Green, Orange & Fuschia
			246 - 255	Future values
65	Image Color FX Speed	128	0 - 255	Controls speed/direction of image color effects
			0 - 127	<<Fastest to slowest
			128	Stop
			129 - 255	Slowest to fastest>>

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
66	Image Digital Scale	128	0 - 255	Digital scaling of image size
67	Image Contrast	0	0 - 255	Lowest contrast to highest
68 - 82				Animation Layer
68	Intensity High - Animations	65535	0 - 65535	16Bit control of dimming for animation layer. Default to max output so animation are visible when selected
69	Intensity Low - Animations			
70	Strobe - Animations	0	0 - 255	8Bit control of strobe for animations
			0 - 5	Open
			6 - 10	Closed
			11 - 125	Strobe 0.5Hz to 30Hz
			126 - 130	Open
			131 - 245	Strobe random/random sync* slow to fast
			246 - 250	Open
			251 - 255	Closed
				*See Programmer channel for mode selection
71	Animation Contrast	0	0 - 255	Lowest contrast to highest
72	Animation Hue	128	0 - 255	8Bit control of animation hue
			0 - 127	<<Hue adjustment away from source
			128	Hue matches source animation
			129 - 255	Hue adjustment away from source>>
73	Animation Saturation	128	0 - 255	8Bit control of animation color saturation
			0 - 127	<<Saturation adjustment away from source
			128	Saturation matches source animation
			129 - 255	Saturation adjustment away from source>>
74	Factory Animations	0	0 - 255	Factory Digital Animations
			0 - 5	Open
			6 - 10	Fire
			11 - 15	Flicker
			16 - 20	Starfield Medium
			21 - 25	Starfield Small
			26 - 30	Color Noise
			31 - 35	Rift
			36 - 40	Laser Corner
			41 - 45	Sparkle
			46 - 50	Ripples
			51 - 55	TriTunnel
			56 - 60	Wave

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
74	Factory Animations - Continued	0	61 - 65	Growing Swirls
			66 - 70	Color Spiral
			71 - 75	Branches
			76 - 80	Cube Lines
			81 - 85	Crashing V
			86 - 90	Neural Creep
			91 - 95	Raising the Bar
			96 - 100	Shuffle
			101 - 105	Spinning Curves
			106 - 110	V Lines
			111 - 115	Geometric Bars
			116 - 120	Hourglass
			121 - 125	Hex Pulse
			126 - 130	Lava Lamp
			131 - 135	Pulsing Bar
			136 - 140	Color Drops
			141 - 145	White Drops
			146 - 150	Bubbles
			151 - 155	Particles
			156 - 160	Hex
			161 - 165	Color Swirls
			166 - 170	Anamorphic Waves
			171 - 175	Rainbow Circles
			176 - 180	Hot Air Balloon
			181 - 185	Gel Wave
			186 - 190	Pillars
			191 - 195	Terrain
			196 - 200	Crawlers
			201 - 205	Dropplet
			206 - 210	Liquid
			211 - 215	Clouds
			216 - 220	Lakeside
			221 - 225	Meadow Evening
			226 - 230	Sunrise
			231 - 235	Ice Cream
			236 - 240	Clock
			241 - 245	Eyeball
			246 - 250	Heart Pulse
			251 - 255	Wipe

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
75	Factory Animation Control	0	0 - 255	Factory Animation playback mode
			0 - 5	Loop (Default)
			6 - 10	Stop
			11 - 15	Run Once
			16 - 20	Pause
			21 - 255	Reserved values
76	Factory Animation Speed/Direction	128	0 - 255	Factory Animation playback speed/direction
			0 - 127	<<Fastest to slowest
			128	Stop
			129 - 255	Slowest to fastest>>
77	User Animations	0	0 - 255	User loaded animations
			0 - 5	Open
			6 - 10	User Animation 1
			11 - 15	User Animation 2
			16 - 20	User Animation 3
			21 - 25	User Animation 4
			26 - 30	User Animation 5
			31 - 35	User Animation 6
			36 - 40	User Animation 7
			41 - 45	User Animation 8
			46 - 50	User Animation 9
			51 - 55	User Animation 10
			56 - 60	User Animation 11
			61 - 65	User Animation 12
			66 - 70	User Animation 13
			71 - 75	User Animation 14
			76 - 80	User Animation 15
			81 - 85	User Animation 16
			86 - 90	User Animation 17
			91 - 95	User Animation 18
			96 - 100	User Animation 19
			101 - 105	User Animation 20
			106 - 110	User Animation 21
			111 - 115	User Animation 22
			116 - 120	User Animation 23
			121 - 125	User Animation 24
			126 - 130	User Animation 25
			131 - 135	User Animation 26
			136 - 140	User Animation 27
			141 - 145	User Animation 28
			146 - 150	User Animation 29

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
77	User Animations - Continued	0	151 - 155	User Animation 30
			156 - 160	User Animation 31
			161 - 165	User Animation 32
			166 - 170	User Animation 33
			171 - 175	User Animation 34
			176 - 180	User Animation 35
			181 - 185	User Animation 36
			186 - 190	User Animation 37
			191 - 195	User Animation 38
			196 - 200	User Animation 39
			201 - 205	User Animation 40
			206 - 210	User Animation 41
			211 - 215	User Animation 42
			216 - 220	User Animation 43
			221 - 225	User Animation 44
			226 - 230	User Animation 45
			231 - 235	User Animation 46
			236 - 240	User Animation 47
			241 - 245	User Animation 48
			246 - 250	User Animation 49
			251 - 255	User Animation 50
78	User Animation Control	0	0 - 255	User Animation playback mode
			0 - 5	Loop (Default)
			6 - 10	Stop
			11 - 15	Run Once
			16 - 20	Pause
			21 - 255	Reserved values
79	User Animation Speed/Direction	128	0 - 255	User animation playback speed/direction
			0 - 127	<<Fastest to slowest
			128	Stop
			129 - 255	Slowest to fastest>>
80	Animation Index	128	0 - 255	Animation Index
			0 - 127	Counter clockwise from center
			128	Center
			129 - 255	Clockwise from center

DMX	PARAMETER	DEFAULTS	RANGE DMX	DESCRIPTION
16-BIT EXTENDED (DEFAULT)				
81	Reserved for Future use			
82	Reserved for Future use			
83 - 84				NDI Layer (Not Implemented)
83	NDI Intensity	0	0 - 255	8 bit control of dimming for NDI input. (Not implemented)
84	NDI Signal Select	0	0 - 255	Selection of stream ID from NDI Network. (Not implemented). Chanel should be set to NOT fade.
			0	No NDI Stream
			1	NDI Stream 1
			2	NDI Stream 2
			3	NDI Stream 3
			4	NDI Stream 4
			5	NDI Stream 5
			6	NDI Stream 6
			7	NDI Stream 7
			8	NDI Stream 8
			9	NDI Stream 9
			10	NDI Stream 10
			11 - 255	Reserved values
85	Reserved for Future use			

RDM PARAMETERS

Remote Device Management (RDM) is a protocol enhancement to USITT DMX512 that allows bi-directional communication between a lighting or system controller and attached RDM compliant devices over a standard DMX line. This protocol will allow configuration, status monitoring, and management of these devices in such a way that does not disturb the normal operation of standard DMX512 devices that do not recognize the RDM protocol.

VLHIVE 151 DIGITAL FX RDM PRODUCT PARAMETER IDS				
Model ID	Manufacturer	Vendor ID	Model Description	Product Category
0x0043	Vari-Lite	0x3D00	VLHIVE 151 DIGITAL FX	0x0100

The table on the following pages outlines and describes all the RDM parameters IDs associated with the VLHIVE 151 DIGITAL FX.

GET ALLOWED	SET ALLOWED	RDM PARAMETER IDS	VALUE	COMMENT	ESTA STANDARD	REQUIRED / IMPLEMENTED	DMX / UI DESCIPTION
Category - Network Management							
		DISC_UNIQUE_BRANCH	0x0001		X	X	
		DISC_MUTE	0x0002		X	X	
		DISC_UN_MUTE	0x0003		X	X	
X		PROXIED_DEVICES	0x0010				
X		PROXIED_DEVICES_COUNT	0x0011				
X	X	COMMS_STATUS	0x0015				
Category - Status Collection							
X		QUEUED_MESSAGE	0x0020				
X		STATUS_MESSAGES	0x0030			X	Status
X		STATUS_ID_DESCRIPTION	0x0031			X	
	X	CLEAR_STATUS_ID	0x0032				
X	X	SUB_DEVICE_STATUS_ REPORT_THRESHOLD	0x0033				
Category - RDM Information							
X		SUPPORTED_PARAMETERS	0x0050		X	X	
X		PARAMETER_DESCRIPTION	0x0051		X	X	
Category - Product Information							
X		DEVICE_INFO	0x0060		X	X	
X		PRODUCT_DETAIL_ID_LIST	0x0070				
X		DEVICE_MODEL_ DESCRIPTION	0x0080			X	
X		MANUFACTURER_LABEL	0x0081			X	
X	X	DEVICE_LABEL	0x0082			X	
X	X	FACTORY_DEFAULTS	0x0090			X	Reset Defaults
X		LANGUAGE_CAPABILITIES	0x00A0				
X	X	LANGUAGE	0x00B0				
X		SOFTWARE_VERSION_ LABEL	0x00C0		X	X	Version
X		BOOT_SOFTWARE_ VERSION_ID	0x00C1				
X		BOOT_SOFTWARE_ VERSION_LABEL	0x00C2				
Category - DMX512 Setup							
X	X	DMX_PERSONALITY	0x00E0			X	DMX Mode
X		DMX_PERSONALITY_ DESCRIPTION	0x00E1			X	
X	X	DMX_START_ADDRESS	0x00F0		X	X	Address
X		SLOT_INFO	0x0120			X	
X		SLOT_DESCRIPTION	0x0121			X	
X		DEFAULT_SLOT_VALUE	0x0122			X	
Category – Sensors 0x02xx USE							
X		SENSOR_DEFINITION	0x0200			X	

GET ALLOWED	SET ALLOWED	RDM PARAMETER IDS	VALUE	COMMENT	ESTA STANDARD	REQUIRED / IMPLEMENTED	DMX / UI DESCIPTION
X	X	SENSOR_VALUE	0x0201	Fan Speed and Temperatures		X	Diagnostics
	X	RECORD_SENSORS	0x0202				
Category - Dimmer Settings 0x03xx - FUTURE USE							
X	X	Dimmer Curve	0x0343			X	
X		Dimmer Curve Description	0x0344			X	
X	X	Modulation Frequency	0x0347			X	
X		Modulation Frequency Description	0x0348			X	
Category - Power / Lamp Settings 0x04xx							
X	X	DEVICE_HOURS	0x0400			X	Fixture Hours
X	X	LAMP_HOURS	0x0401				
X	X	LAMP_STRIKES	0x0402				
X	X	LAMP_STATE	0x0403				
X	X	LAMP_ON_MODE	0x0404				
X	X	DEVICE_POWER_CYCLES	0x0405				
Category - Display Settings 0x05xx							
X	X	DISPLAY_INVERT	0x0500				
X	X	DISPLAY_LEVEL	0x0501				
		Category - Configuration 0x06xx					
X	X	PAN_INVERT	0x0600				
X	X	TILT_INVERT	0x0601				
X	X	PAN_TILT_SWAP	0x0602				
X	X	REAL_TIME_CLOCK	0x0603				
Category - Control 0x10xx							
X	X	IDENTIFY_DEVICE	0x1000		X	X	
	X	RESET_DEVICE	0x1001			X	
X	X	POWER_STATE	0x1010				
X	X	PERFORM_SELFTEST	0x1020	All Test, Pan/Tilt, Encoder			
X		SELF_TEST_DESCRIPTION	0x1021				
	X	CAPTURE PRESET	0x1030	See E1-20_2010a			
X	X	PRESET PLAYBACK	0x1031	Table A-7 defines			
		ESTA Reserved Future RDM	0x7FE0-0x7FFF				
		Manufacturer-Specific PIDs	0x8000-0xFFDF				
X	X	Output Power Mode	0x8A97	Value range depends on options (Standard, Studio, etc)		X	LED Output Mode
X	X	Pan/Tilt Feedback (On/Off)	0x8AD3				

GET ALLOWED	SET ALLOWED	RDM PARAMETER IDS	VALUE	COMMENT	ESTA STANDARD	REQUIRED / IMPLEMENTED	DMX / UI DESCIPTION
X	X	Display On Time	0x8AA0	Value range depends on options		X	Display On Time
X	X	LED Dimmer Curve	0x8AA1	Value range depends on options			LED Dimming Curve
X	X	Pan Tilt Movement (On/Off)	0x8AA2				
X	X	Head Motor Movement (On/Off)	0x8AA3				
X	X	Auto Shutdown Mode	0x8AA4	Value range depends on options			
X	X	LED Hours	0x8AA5				
X	X	Dim Snap (On/Off)	0x8AA6				
X	X	Color Snap (On/Off)	0x8AA7				
X	X	Auto Fan Mode (On/Off)	0x8AA8				LED Fan Mode
X	X	Gamma Shift	0x8AA9	Value range depends on options			
X	X	Tungsten Dimming (On/Off)	0x8AAA				
X	X	CTB Correction (On/Off)	0x8AAB				
X	X	LED Refresh Rate	0x8AAC	Value range depends on options			LED Refresh Rate
X	X	Side Hang (On/Off)	0x8AAD				
X	X	Focus Track (On/Off)	0x8AAE				
	X	Control Signel select DMX only/ARtNET (On/Off)	0x8AAF				
	X	Recalibrate Fixture (Level)	0x8AB0	different levels (all, position, color, etc)			
X	X	DMX Fail (Hold, Blackout, GOTO Preset)	0x8AB1				DMX Fail
X	X	ArtNet Universe	0x8AB2				
X	X	ArtNet Net	0x8AB3				
X	X	ArtNet Sub-Net	0x8AB4				
X	X	ArtNet Ethernet IP	0x8AB5				
X	X	ArtNet Ethernet Sub-Net Mask	0x8AB6				
X	X	Manual PRESET Playback Power Up Preset	0x8AB7				
X	X	Manual PRESET Playback Preset Intensity	0x8AB8				
X	X	Manual PRESET Playback Priority	0x8AB9				
X	X	Manual PRESET Playback Power Up?	0x8ABA				
X	X	LED Color Calibration (On/Off)	0x8ABB			X	LED Color Calibration

MENU FUNCTIONS

Press the MENU button to select any functions, until the required function is shown in the display. Select the LCD Display and Menu System

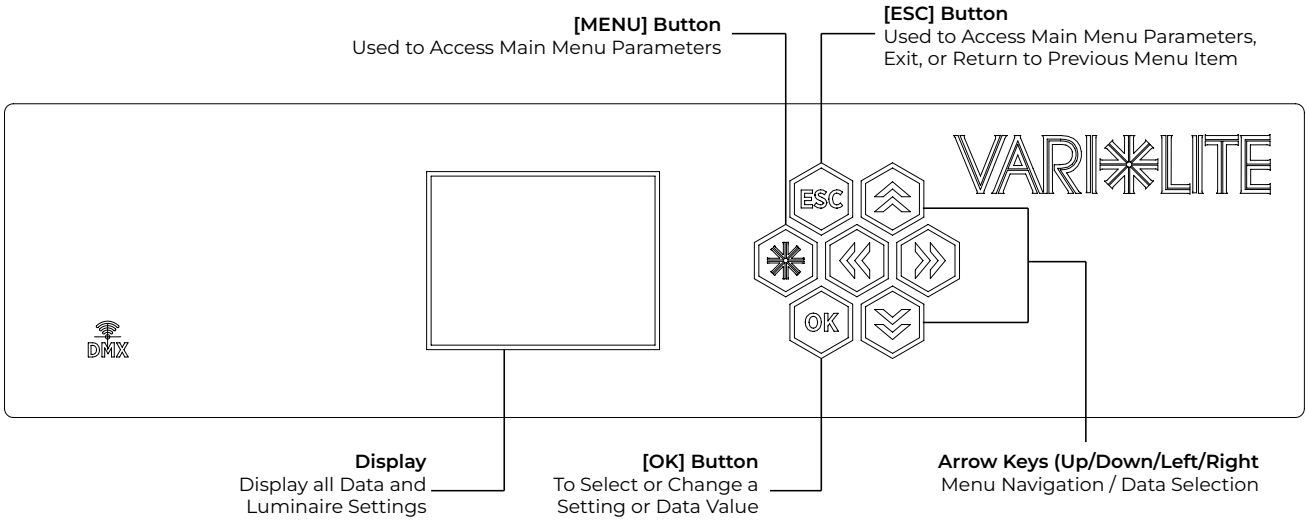
The VLHIVE 151 DIGITAL FX LCD Display and Menu System provides local control for accessing the following fixture's settings:

- Address – to set the DMX address
- Configure – various parameter settings, set luminaire ID
- DMX – change the map, view incoming DMX, invert pan/tilt
- Fixture – fixture status, recalibrate, reboot, software version, view fixtures hours, service, etc.
- Manual – manual control of parameters
- Test – test functions of parameters

The menu system is controlled at the Menu Display available at the enclosure input panel. If there are multiple luminaires in a system, any settings or changes would need to be made at each LCD Menu as desired

MENU CONTROLS

The menu system is controlled by an ✳ (Menu), OK (Enter), ESC (Escape), and four Arrow (◄▲▼►) buttons.



MENU SYSTEM

LCD DISPLAY AND MENU SYSTEM OPERATION

The LCD Display Menu system consists of several categories. Use the Menu Buttons to access and make changes to the menu items. When the desired menu item is reached, press the desired Menu Button to display the menu options and to navigate and configure the menu options as required.

TO NAVIGATE AND ACCESS MENU SETTINGS/SELECTIONS:

Step 1. Make sure unit is powered and turned on.
Step 2. Press [ESC] to access menu categories.
Step 3. Use four Arrow (←↑↓→) buttons to navigate through the various options and settings.
Step 4. Once menu item is reached, press [OK] to access the menu item parameters.
Step 5. Make changes to parameters as desired.
Step 6. Press OK [Enter] button to accept changes.

DMX ADDRESS

TO SET, EDIT, AND SAVE A DMX ADDRESS:

Step 1. Press [ESC].
Step 2. Press [Up] / [Down] arrows until Address appears. Press [OK].
Step 3. Use [Left] and [Right] arrow buttons to scroll through all digits.
Step 4. Once at desired digit, use [Up] and [Down] arrows to change highlighted digit.
Step 5. Once digit is set, use [Left] and [Right] arrow buttons to set other digits in DMX address.
Step 6. Once all digits are set in DMX address, press [OK] to set.
Step 7. DMX address will display and is saved.

OTHER LCD DISPLAY FEATURES

LCD MENU BATTERY OPERATION

The LCD menu system utilizes a battery powered system for operation when the luminaire is not connected to power. The primary purpose of this mode is to allow basic setup and configuration of the luminaire.

TO ENABLE THE BATTERY OPERATION OF THE MENU SYSTEM:

Step 1. Press and hold [ESC] and [OK] for two seconds.
Step 2. Once enabled, the menu will function as normal.

NOTE: Any commands that require full power will be ignored while the menu system is in battery operation mode.

Step 3. Step 3. To exit battery mode, press and hold [ESC] and [OK] for two seconds.

NOTE: Lumianire will automatically exit this mode after one minute of inactivity.

STATUS BAR

The Status Bar is present at all times and displays luminaire operational information of the luminaire. The Status Bar contains the following information:

- WD – indicates wDMX status
- MODE – indicates output mode - STA (Standard, STU (Studio) WSP (Whisper)
- ERRORS – displays a number indicating the total amount of current errors.

NOTE: When errors are present, messages will appear in Red text. When no errors are present, NO will display.

- MAP - indicates current DMX Mode
- ADDR – Displays the current DMX address for the fixture.

NOTE: When the fixture does not detect a DMX input signal, the DMX address will display in Red.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6	DEFAULT
Address	001-429 (Mode 1)					001
Configure	LED	Dim Snap	Off	Ok		Default
			On	Ok		
		Color Snap	Off	Ok		Default
			On	Ok		
		Output Mode	Standard	Ok		Default
			Studio	Ok		
			Whisper	Ok		
		Fan Mode	On	Ok		Default
			Auto	Ok		
		Fan Control	Off	Ok		Default
			On	Ok		
		Refresh Rate	250Hz	Ok		
			500Hz	Ok		
			1000Hz	Ok		
			2000Hz	Ok		Default
			4000Hz	Ok		
			6000Hz	Ok		
			8000Hz	Ok		
			10000Hz	Ok		
			12000Hz	Ok		
			14000Hz	Ok		
			16000Hz	Ok		
			18000Hz	Ok		
			20000Hz	Ok		
		LED Hours	xxxxx			
		Reset Hrs	Are You Sure?	Ok or Esc		
	Pan/Tilt	Movement	Enable	Ok		Default
			Disable	Ok		
		Speed	Normal	Ok		Default
			Sidehang	Ok		
			Fast	Ok		
		Feedback	Off	Ok		
			On	Ok		Default
		Cal Position	Home	Ok		Default
			DMX	Ok		
	Head Motors	Movement	Enable	Ok		Default
			Disable	Ok		
	Display	Disp Orientation	Auto	Ok		Default
			Up	Ok		
			Down	Ok		
		On Time	30 Sec	Ok		
			5 Min	Ok		Default

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6	DEFAULT
Configure - Continued	Display - Continued	On Time - Continued	10 Min	Ok		
			On	Ok		
	Follow Spot	Enable	Ok			
		Disable	Ok			Default
	Reset Def	Are You Sure?	OK or ESC			
	Chg LumID	xxxxx	OK or ESC			
DMX	Address	001 - 429 (Mode 1)				001
	Data	Ch 1 - Intensity xxx (value)				
		Ch 2 - Intensity Fine xxx (value)				
		...All functions				
	Pan/Tilt	Swap	Off	Ok		Default
			On	Ok		
		Inv Pan	Off	Ok		Default
			On	Ok		
		Int Tilt	Off	Ok		Default
			On	Ok		
	DMX Source	DMX	Ok			Default
		WDMX	Ok			
		Art-Net	Ok			
		sACN	Ok			
	DMX Fail	Hold	Ok			Default
		Blackout	Ok			
	Network	Cntrl IP Address	xxx.xxx.xxx.xxx	Ok		
		Cntrl Netmask	xxx.xxx.xxx.xxx	Ok		
		NDI IP Address	xxx.xxx.xxx.xxx	Ok		
		NDI Netmask	xxx.xxx.xxx.xxx	Ok		
		Universe	xx	Ok		
	WDMX	Unlink				
Fixture	Status	Displays any errors or if non display No Errors				
	Re-Calibrate	Are You Sure?	OK or ESC			
	Luminaire ID	xxxxx				
	Version	xx/xx/xx	xx:xx			
	Fixture Hours	xxxx Hours				
	USB	Update OS	Shows list of software or No Valid Viles			
	Service	Service Pwd*	For authorized users only - see service manual			
		Info	Network Info	Ctrl IP xxx.xxx.xxx.xxx & NDI IP xxx.xxx.xxx.xxx		
			Fan Check	PS1 - xxxxrpm		
				PS2 - xxxxrpm		
				...All Fans		
			Temp Info	All board temps		
			Display Info	Display orientation xyz and led sensor info		
			Power Info	Displays various DC and AC power information		
			Encoders	Edge, Zoom, Pan Tilt		
			Pxl Results	Shows results of Pixel Test (must be run first)		
			Debug	Factory Use		

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6	DEFAULT
Test	All	*Not Implemented				
	Pan/tilt	*Not Implemented				
	Dimmer	*Not Implemented				
	Strobe	*Not Implemented				
	Pixel	Run Test 0r Unplug DMX				

ADDRESS

ADDRESS

Sets the starting DMX address for the fixture. Can also be set via RDM.

Step 1. Press [ESC].
Step 2. Press [Up] / [Down] arrows until Address appears. Press [OK].
Step 3. Use [Left] and [Right] arrow buttons to scroll through all digits.
Step 4. Once at desired digit, use [Up] and [Down] arrows to change highlighted digit.
Step 5. Once digit is set, use [Left] and [Right] arrow buttons to set other digits in DMX address.
Step 6. Once all digits are set in DMX address, press [OK] to set.
Step 7. DMX address will display and is saved.

CONFIGURE

LED

This menu allows for viewing the LED engine hours, setting the dimming curve, dim snap, output mode, fan mode, and refresh rate

Dim Snap

Dim Snap On allows for fastest output changes between levels but reduces smoothness dimming the LED engine. Dim Snap Off ensures all fades between output levels remains smooth and flicker free but limits fast, instant snaps between levels. Can also be set via the programmer channel and RDM.

Color Snap

Color Snap On allows for fastest color changes between levels but reduces smoothness of the LED engine. Color Snap Off ensures all fades between colors remains smooth and flicker free but limits fast, instant snaps between Colors. Can also be set via the programmer channel and RDM.

Color Cal

Color Cal On utilizes factory measurements to improve consistence between multiple luminaires. It is recommended to always run the fixture with Color Cal On.

Output Mode

Standard mode provides full LED output. Studio mode reduces fan speed to reduce the fan noise of the fixture. Whisper mode decrease the fan noise further. Silent mode stops the fans from turning. In Studio mode, and Whisper mode, the LED output will decrease accordingly. Can also be set via the control channel and RDM.

Fan Mode

Fan On runs fans at continuous Max speed based on Output Mode. Fan Auto will reduce/increase speed on demand based on LED operating temperature. The fan will not exceed the maximum permissible level based on Output Mode. Can also be set via the control channel and RDM. See Appendix B.

Fan Control

If the fixture is in Standard Output Mode and the Fan Mode is set to On, the fan speeds can be set using the Fan Control Channel (See DMX Map). By default this channel is Off, meaning that channel will not change the fan speeds. With the channel On, they fans can be changed using the Fan Control Channel

Refresh Rate

Choose the refresh rate of the LED engine (see Display Menu Tree for list).

LED Hours

Displays the current LED engine hours.

Reset Hrs

Resets the LED Engine Hours

PAN/TILT

Movement

Enable allows the pan and tilt motors to be operational. Disable shuts down all power, including holding current to pan and tilt.

Speed

Selects the speed at which pan and tilt can move. Normal is the fastest speed the mechanism can move, regardless of the lens positions. Fast allows for faster moves when the zoom and edge lenses are further back towards the Digital Light Engine (DMX 000). Side Hang should be select if the fixture are mounted in a horizontal position to prevent motor stalls. This is the slowest speed.

NOTE: Having luminaires in different settings will of course cause different performance of the fixtures.

Feedback

Enable allows the pan/tilt encoders to provide feedback to pan/tilt. They will correct if an non-expected pan/tilt move occurs. Disable removes this function, which might be useful troubleshooting possible encoder issues.

Cal Position

Allows a choice of where pan/tilt will go during calibration. Home selects the 50/50 position of pan tilt. DMX will have the fixture move to the current DMX values for Pan & Tilt immediately during calibration

HEAD MOTORS

Movement

Enable allows for normal DMX controls of all head motor functions. Disable removes motor current allowing free movement of internal components.

NOTE: Head motors will auto calibrate if changing from Disable to Enable.

DISPLAY

Disp Orientation

Sets the orientation of the display. Auto allows the fixture to change the display based on its orientation (hanging vs. sitting). Up or down disables the auto switching. This should be chosen if fixture orientation changes (i.e. moving truss) to prevent unwanted display illumination.

On Time

Sets how long the display remains illuminated after the last button touch. Choose from 30 seconds, 5 minutes, 10 minutes, or always on.

FOLLOW SPOT

Enabling Follow Spot Mode allows the fixture to be hand positioned without the use of DMX. All other functions are still dependent on DMX control. The pan and tilt motors do provide resistance and breaking. If you disable Follow Spot Mode, the pan and tilt will return to the correct position based on the DMX value.

RESET DEFAULTS

Resets all the factory defaults of the fixture. This includes setting the DMX Address to 001. Can also be done via RDM and via the control channel.

NOTE: Control channel will not change the current DMX address.

CHG LUMID

Allows for the luminaire ID to be set. Should be set to the last 1 to 5 digits of the serial number. Required of the Display board has been changed.

WARNING: Luminaires with the same LumID will always strobe together during a random strobe

DMX

ADDRESS

Sets the starting DMX address of the fixture. Can also be set via RDM.

DATA

Allows the current DMX value present on each of the luminaire's DMX channels to be viewed.

PAN/TILT

Swap Pan/Tilt

Choose ON to have the pan mechanism controlled via the tilt DMX channels and vice versa. OFF behaves normally.

Invert Pan

Choose ON to reverse the direction of pan. OFF behaves normally.

Invert Tilt

Choose ON to reverse the direction of tilt. OFF behaves normally.

DMX SOURCE

Allows for the control source of the fixture to be set. Choose from DMX, WDMX, Art-Net, or sACN.

DMX FAIL

Hold

Luminaire will hold its current positions if DMX signal is lost.

Blackout

Luminaire will hold its current position, but the Digital Light Engine will go out if DMX signal is lost.

NETWORK

Cntrl IP Address

Allows a Control IP address for Art-Net or sACN to be set (xxx.xxx.xxx.xxx)

Cntrl IP Net Mask

Allows a Control IP Sub Net Mask to be set (xxx.xxx.xxx.xxx)

NDI IP Address

Allows a NDI IP address for NDI video to be set (xxx.xxx.xxx.xxx)

NDI IP Netmask

Allows a NDI IP Sub Net Mask to be set (xxx.xxx.xxx.xxx)

Universe

Allows the Art-Net or sACN universe to be set

WDMX

Unlink

Removes the current link between the fixture and a Wireless DMX transmitter

FIXTURE

STATUS

Shows list of error message from previous calibration. If none, it will say No Errors.

RE-CALIBRATE

Runs the calibration routine within the fixture. Can be performed via the control channel or RDM.

LUMINAIRE ID

Displays the fixture's Luminaire ID

VERSION

Shows the current software version of the fixture. Version is listed in MM/DD/YY format. Can be viewed via RDM.

FIXTURE HOURS

Shows the accumulated hours the fixture has been powered on. Can be viewed via RDM.

USB

Allows for future software updates to be loaded. Pressing OK will show Update OS, with a USB inserted with VLHIVE 151 DFX software loaded on it will be listed on the screen. Select the version to install and press OK

NOTE: USB drive must be formatted in FAT.

SERVICE

Service Pwd - Password protected

This is for the use of authorized service personnel only. Refer to Service Manual for information.

Info

Displays Network Info, Fan Info, Temp Info, Display Info, Power Info, Encoder Info, Pixel Test Results and various Debug info.

TEST

PIXEL

Runs the Pixel Test. Fixture will cycle through all 151 Pixels, one color at a time (Red, Green, Blue, Lime). The color sensor will record any individual colors that do not light and report those as failed (showing the color and position number 1 through 151. Using the left/right arrows will scroll through failed LEDs only. Using up/down arrows scrolls through entire list. Results can also be viewed in the FIXTURE - SERVICE-INFO-PXL RESULTS screen.

APPENDIX A
CARE AND MAINTENANCE

TROUBLESHOOTING

The unit does not work; light and fan do not turn on

- Check the connection of power and main fuse.
- Measure the mains voltage on the main connector.

Not responding to DMX controller

- Check DMX connectors, cables to see if they link properly.
- Check the address settings and DMX polarity.
- If you have intermittent DMX signal problems, check the pins on connectors or on DMX PCB of the unit or the previous one.
- Try to use another DMX controller.
- Check if the DMX cables run near or run alongside to high voltage cables that may cause damage or interference to DMX interface circuit.

CLEANING

IP65 rated luminaires require less internal cleaning as IP20 luminaires. Cleaning should only be required if seals have been compromised. Internal cleaning should ONLY be performed by trained service personal to ensure the luminaire retains its IP65 rating. External surfaces should be cleaned regularly.

General cleaning guidelines:

- Clean with soft cloth using non ammoniated glass cleaning fluid.
- Always dry the parts carefully.
- Clean the external optics at least every 30 days.

APPENDIX B
FAN SPEED

FAN SPEED AND CONTROL

All Vari-lite luminaires will be governed by the same Fan speed v Noise levels v Maximum power output rules as details below. These noises related to these levels will confirm to Noise Criteria levels details of which are contained within the document.

There are 3 control parameters can be selected separately or in conjunction when permitted to manage Fan speed v Noise levels v Maximum power output.

NOTE: Not all fixture have all modes or functions refer to DMX map and User interface menu tree to see if you product has one of more of these functions.

Item 1 - Fan 'v' Output Preset Modes

These modes are selectable at either / or the fixtures DMX control channel or via the fixture user interface screen. The section of the modes works in conjunction with Items 3 and will also active or deactivate the Item 2.

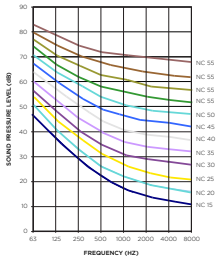
Boost mode – LED output boosted to >120% of standard output fan speeds increased manage heat level of LED (may be limited to only run for XXhrs). Fixture will not exceed NC45 – NC55 sound levels in this mode

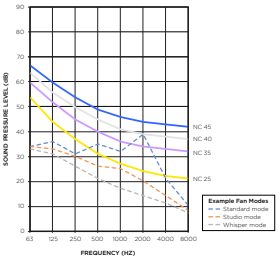
Standard mode - Full LED Output + Fan Spin at top speed (loudest setting). Fixture will not exceed NC40 sound levels in this mode

Studio Mode - Fan speed reduced to appropriate amount to reduce dB levels >10% of full speed + LED @ max output approximately 80% of Standard output at appropriate level to ensure LED work at optimum temperature and output efficiency (fan speed remains at a constant speed and do not ramp up or down) NC35

Whisper mode - Fan speed reduced to appropriate amount to reduce dB levels to >30% of the full speed + LED Max output approximately 60% of Standard output at appropriate level to ensure LED work at optimum temperature and output efficiency (Fan speed remains at a constant speed and do not ramp up or down) NC25

Silent Mode – ideally Fans do not spin + output capped at appropriate level to ensure LED work at optimum temperature and output efficiency (Fan should never switch on in this mode or change speed if they on) NC15 target level.





MODE	LED OUTPUT	FAN SPEED	NOISE CRITERION	EQUIVALENT SOUND LEVEL DBA (@3M)
Boost Mode	>100%	Boosted fan speed constant	NC45	50
Standard Mode	Full 100%	Full 100% constant	NC40	45
Studio Mode	80%	Appropriate speed to reduce dB levels >10% of full speed	NC35	40
Whisper Mode	60%	Appropriate speed to reduce dB levels >30% of full speed	NC25	35
Silent Mode	TBC	Fan off	NC15	25

NOISE CRITERION	OCTAVE BAND CENTER FREQUENCY (HZ)							
	63	125	250	500	1000	2000	4000	8000
	SOUND PRESSURE LEVELS (DB)							
NC-15	47	36	29	22	17	14	12	11
NC-20	51	40	33	26	22	19	17	16
NC-25	54	44	37	31	27	24	22	21
NC-30	57	48	41	35	31	29	28	27
NC-35	60	52	45	40	36	34	33	32
NC-40	64	56	50	45	41	39	38	37
NC-45	67	60	54	49	46	44	43	42
NC-50	71	64	58	54	51	49	48	47
NC-55	74	67	62	58	56	54	53	52
NC-60	77	71	67	63	61	59	58	57
NC-65	80	75	71	68	66	64	63	62
NC-70	83	79	75	72	71	70	69	68

TECHNICAL SUPPORT

GLOBAL 24HR TECHNICAL SUPPORT:

Call: +1 214 647 7880

entertainment.service@signify.com

NORTH AMERICA SUPPORT:

Call: 877-VARI-LITE (877-827-4583)

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EUROPEAN CUSTOMER SERVICE:

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