CINEO
LIGHTING ™

STANDARD
410

User Guide

Revision 2.2 — August, 2018

Information and specifications in this document are
subject to change without notice.

STANDARD 410

Cineo has designed the ultimate creative lighting tool: the Standard 410. Combining the same award-winning white light quality used in Cineo HSX with innovative saturated color technology, the Standard 410 delivers up to 25,000 lumens of beautiful, easily controllable, full-gamut light across a diffused 1' x 2' aperture. With built in power supply and silent operation, the Standard 410 delivers 410 watts of power in a package that is less than 30 lbs and is less than 5 inches deep.

Creating beautiful white light with extended color gamut in smart packaging is only part of the story. Cineo has also developed an intuitive control strategy that allows predictable, repeatable results, either using the graphic on-board control panel or remotely with wired DMX/RDM or built-in wireless CRMX control.

The Standard 410 is ruggedly built and passively cooled for completely silent operation. The Standard 410 also includes an integrated power supply for easy setup.

The strategy for control is simple. Whether using local or DMX settings, four independent controls (DIM, CCT, SATURATION and HUE) give range to the entire fixture via a single mode of intuitive operation.
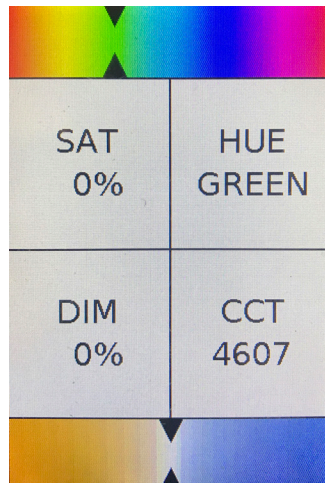
Dim
Uniform Control of Total Fixture Output.
Cineo's Photo-Accurate Dimming™ maps the 0-100% dimming curve to actual camera stops for precise output control using the DIM control locally or on the 1st DMX channel.

CCT
Adjust Primary White Light Base 2700-6500K.
For color-accurate white light, choose the CCT by using the lower right rotary control or the 2nd DMX channel.

Saturation
Blend Between White Light Base and the Color Gamut. This control blends and balances the amount of saturated color with the CCT base, from pristine white to deep artistic color. The saturation can be controlled remotely on the 3rd DMX channel.

Hue
Explore Brilliant Color Palettes Across the Full Color Space. To optionally add saturated color, the HUE control adjusts added RGB. The hue can be adjusted on the 4th DMX channel. The selected hue is displayed on the control panel.

With Standard 410, the CCT, SATURATION and HUE controls are mutually exclusive, allowing for consistent color shading across the entire range of white light bases. For example, +2 Green added to 3200K CCT will look the same as +2 Green at 5600K to the correctly white-balanced camera.

In addition to Cineo's proprietary phosphor-converted white light LEDs, we have developed phosphor-converted saturated color LEDs. The phosphor-converted LEDs use the exact same dies as the white LEDs, ensuring that all light emitting elements of the Standard 410 carry identical thermal stability and perform over time with identical differential aging. After years of service, Cineo's color stability remains consistent.

General Notes

1. Please read through this manual carefully before operating Cineo Standard 410, and keep this manual for future reference.

2. There are numerous safety instructions and warnings that must be adhered to for your

own safety.

3. Standard 410 is not intended for residential use. It is intended for use in a professional studio.

4. Standard 410 must be serviced by a qualified technician.

5. The Cineo Standard 410 is rated as IP22 – for damp environments.

6. Cineo products are not certified for use in hazardous locations.

Fixture Set Up

Read these safety instructions carefully to ensure fixture and accessories are used safely.

Ensure the TVMP adapter is correctly mounted onto the yoke before rigging.

Always use secondary safety cables of suitable length when hanging Cineo Standard 410 units.

The Standard 410 weighs 28 lbs. (12.7 kg) excluding accessories. The combined weight should be considered when choosing a suitable safety cable.
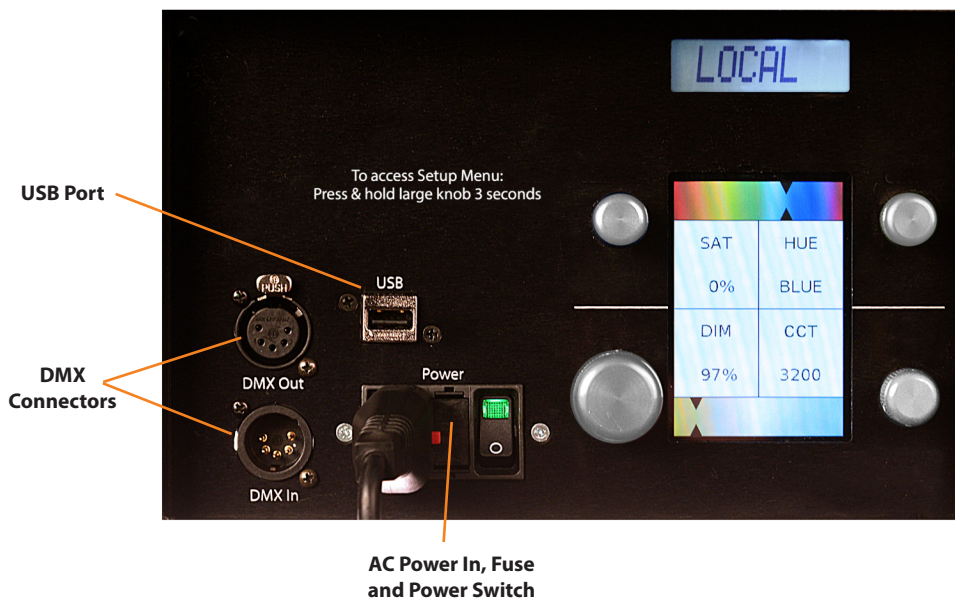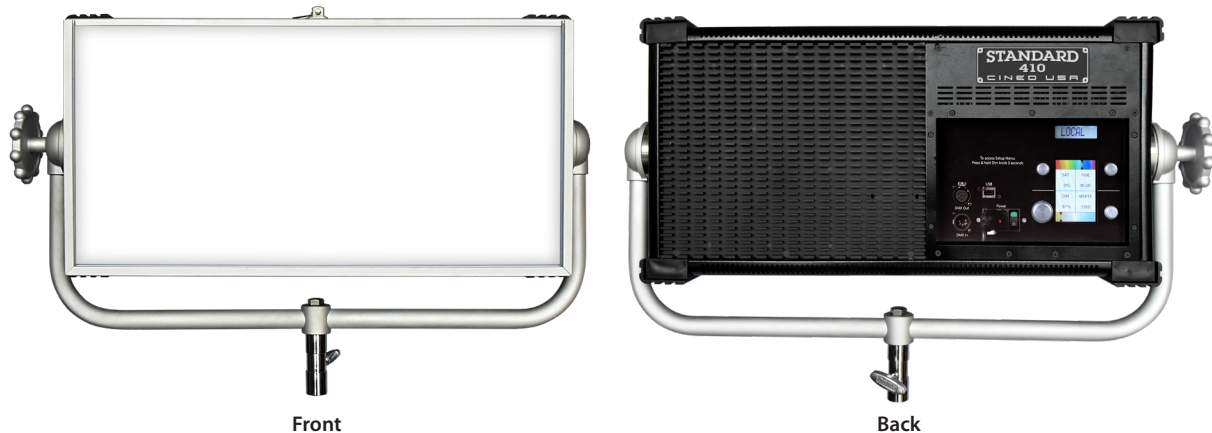
Safety cables must securely be attached to the yoke on Standard 410 and should be as short as possible to reduce travel distance if primary hanging accessory fails.

Ensure that the yoke lock is correctly tightened when manipulating Standard 410 in the required orientation for safety purposes.

Ensure the Cineo Standard 410 is operated within an ambient temperature range of -20 to +40°C

(-4 to 104°F).

System Components, Connections and Controls

All connectors and system controls for the Cineo Standard 410 are located on the back of the unit. In addition to its full color heads-up display, optically encoded rotary knobs give access to menu selections and local control inputs. Hard power connections and switches allow for easy set up and strike. The 5 pin DMX connections, embedded wireless receivers, RDM responders, and powered USB ports support many options for external control.

Front

Back

USB Port

To access Setup Menu:
Press & hold large knob 3 seconds

USB

DMX Connectors

DMX Out

Power

DMX In

SAT — HUE
0% — BLUE
DIM — CCT
97% — 3200

LOCAL

AC Power In, Fuse and Power Switch

Power

The Standard 410 unit is controlled by an internal power supply. 110 – 220VAC is provided to the unit via a locking IEC connector, located on the back control panel.

NOTES:

1. Ensure the power cable is disconnected before servicing.

2. Do not connect to a variable supply, such as a dimmer rack.

3. The power cable should be plugged into the power supply before switching the power ON. The power supply should be switched OFF before removing the power cable.

4. A fuse is located within the IEC connection port. A spare fuse is provided in this same space. If power is provided, the power switch is ON and the LED light on the power switch is not illuminated, please disconnect power and check this fuse first.

Displays Screens

The Standard 410 control interface includes two backlit displays, each of which communicates valuable yet discrete information during the operation and setup of the Standard 410. They are separated as CONTROL and STATUS.

Control Screen

The Control screen is an 8-character, daylight-visible display that shows data adjustment values in Local Mode, shows DMX signal status in DMX Mode, Radio status, and interacts with the Status screen in Menu Mode.


Status Screen

In Local Mode, the full-color screen displays the status of each DIM, CCT, SATURATION and HUE control value. The color ribbons on the top and bottom of the display give a visual reference for both the CCT and the HUE. DIM value and SATURATION are represented as a percentage. In DMX mode, this display reflects the current DMX channel assignment as well as the current Personality and communication bitrate.
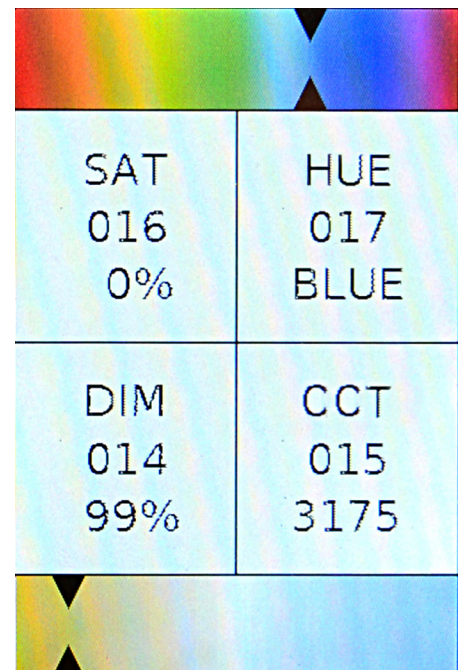
Color Space

The Standard 410 uses two separate LED engines to independently generate accurate white light, variable from 2700K to 6500K, and an extended RGB gamut for broad saturated color space. The CIE 1931 diagram opposite illustrates the Standard 410 color space.
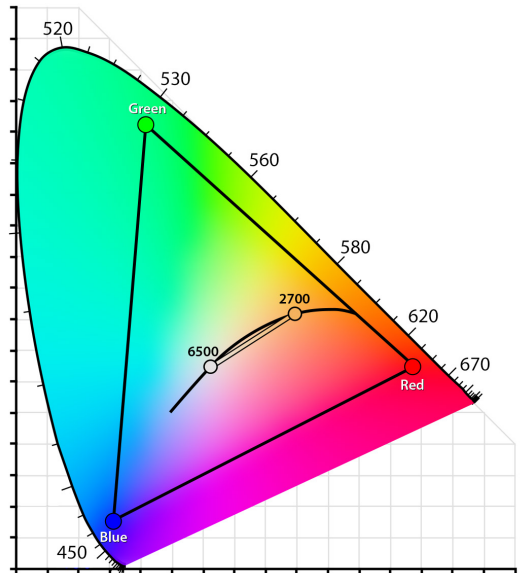
Controls

Setup of the Standard 410 is can be accomplished either using the large knob with the CONTROL and STATUS displays, or remotely using RDM.

Standard 410 Setup Menus

Operational parameters for the Standard 410 are managed through the Setup Menus.

The Setup Menus can be enabled via the control panel as follows:

1. Push and hold the large knob for approximately 3 seconds. The status display will now show the root menu.

2. Turn the large knob until the desired control selection is highlighted: LOCAL, DMX, PRESETS or SETTINGS.

3. Push the knob again to select menu category.

*Note that in any menu, pressing and holding the large knob for 3 seconds will return you to the root menu.

LOCAL Mode

When LOCAL mode is selected, all functions of the fixture are managed through the 4 rotary encoders; feedback and functions are displayed on the display screens. The Control Screen contextually switches to show the value of each control being adjusted.

Lower left knob (Large) Photo-Accurate Dimming

The dimming curve on the Standard 410 follows a strategy that provides relative output levels that correspond to image capture. Both DMX values and local control levels directly correlate to camera stops in a meaningful way. The result is extremely predictable light levels within the full output range of the fixture.

0-100% dimming is controlled by turning the large knob. Pushing the knob cycles the output at these levels: 20%, 40%, 60%, 80% and 100%.
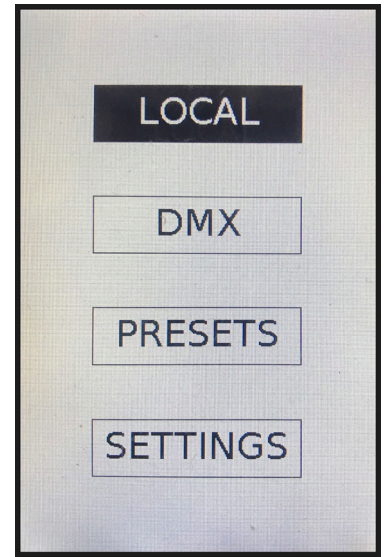
The following table shows the relationship between LOCAL values as they relate to camera stops:

Local Value	% Output increase	Stop Increase
(0-100)		
20%	100	0
40%	200	1
60%	400	2
80%	800	3
100%	1600	4

Here are examples of how to accurately match camera stops to dimming levels in Local Mode:

Local Dimming: The Rule of 20 (0-100 scale)
Increase output 1 Stop: Add 20 units (fc/lux is doubled)
Decrease output 1 Stop: Subtract 20 units (fc/lux is reduced 50%)
Adjust ½ Stop = 10 Units (0-100)
Adjust ¼ Stop = 5 Units (0-100)

Lower right knob: CCT Adjustment

The color temperature (CCT) of the fixture is controlled by turning the lower right knob in a continuously variable range of 2700K to 6500K. Pushing the lower right knob cycles the CCT of the fixture between popular settings: 2700, 3200, 4300, 5600 and 6500K.

Upper left knob: Color Saturation

The SATURATION of color added to the base white light is controlled by the upper left knob, which has presets at 0%, 10%, 20%, 50%, 80% and 100%. Note that the addition of saturated color does not change the base CCT of the white light; these are completely independent functions.

**Upper right knob: Hue Control**

The upper right knob adjusts the saturated color hue, in 256 increments, and the approximate hue is displayed on the color ribbon. Pushing this knob cycles between the primary and secondary colors: Red, Yellow, Green, Cyan, Blue and Magenta. Colors can be fine-tuned anywhere within the color space.

The Status display shows all values selected for these four controls at all times.

DMX Mode

When DMX is selected from the root menu, operation of the fixture is controlled remotely on four DMX addresses in the address range of 001 to 512. Also, various bit rate and DMX Personality parameters can be selected for the remote operation of the unit. To continue to change the DMX parameters, select DMX SETTINGS and push the knob; otherwise select KEEP SETTINGS to return to the previous menu.

If DMX SETTINGS is selected, the menu shows different DMX personalities that the fixture can operate with: 8-bit HSI, 16-bit HSI, 8-bit RGB and 16-bit RGB. The following further explains:
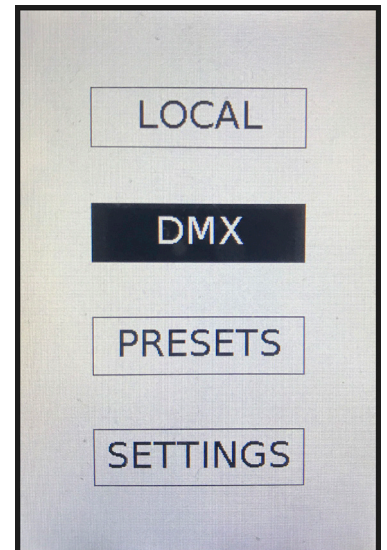
8-BIT vs 16-BIT

Standard DMX data structure is 8-bit, which limits the value range between 0-255. This is the preferable operating mode for maximum compatibility with DMX controllers. If more precise control is required, the unit can be operated in 16-bit mode, offering a value range of 0-65,535. On the surface, this sounds more valuable than 8-bit mode, however operating in this mode assigns two DMX channels for each control, working in pairs, requiring twice as many DMX addresses. The first DMX channel in the pair is the COURSE adjustment of the control, while the second channel is the FINE adjustment. The COURSE channels operate identically to 8-bit controls, while the FINE channels in the pair adjust in-between adjacent values of the COURSE control. To further explain, the COURSE channel adjusts values of 0-255 while the FINE channel adjusts between only two control values. If, for example the COURSE channel is set at value 165, the FINE channel adjusts between 165 and 166. Fortunately, most professional lighting consoles allow controls to be set up in 16-bit mode, so a single fader manages the two channels automatically. It is recommended that 16-bit mode only be used when the DMX controller supports 16-bit operation.
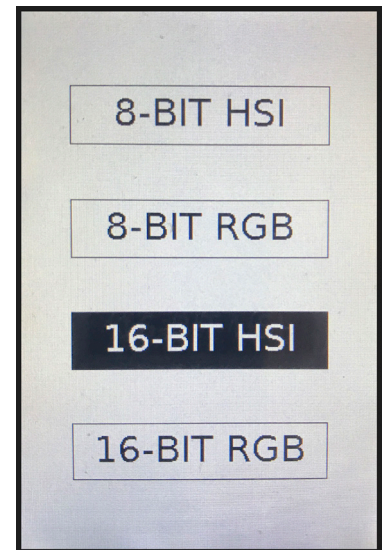
HSI vs. RGB Personality modes

HSI, also known as HSIK, stands for Hue, Saturation, Intensity and white value in Kelvin. This is the most common method of control for full-gamut lighting fixtures, and mimics the operation from the LOCAL control panel on the back of the fixture.

In HSIK Mode, the channel assignments are as follows, and are directly related to 8-bit or 16-bit operation:

First Channel (or channel pair for 16-bit): Output level

Second Channel (or channel pair): CCT

Third Channel (or channel pair): Color Saturation

Fourth Channel (or channel pair): Hue

The RGB Personality is technically considered RGBK, where a variable white point can be selected as well as values of the primary Red, Green and Blue channels. This is extremely valuable in correlating RGB operation in context with the white balance selected on the camera.

In RGBK Mode, channel assignments are as follows:

First Channel (or channel pair for 16-bit): RED level

Second Channel (or channel pair): GREEN level

Third Channel (or channel pair): BLUE level

Fourth Channel (or channel pair): CCT

For example, if all values of Red, Green and Blue are equal, the resultant white light emanating from the fixture will be at the CCT determined by the CCT control. In actuality, the Standard 410 correlates the RGB values in combination with the white LEDs to maintain a very accurate, high-CRI white light value. Equal values of Red, Green and Blue, each at 50% are the equivalent of a white light dim level of 50%.

DMX Address

Once a DMX Personality is selected, the large knob is used to set the master DMX address for dimming. The other three controls are automatically addressed sequentially. The Control Display shows the master address of the fixture while the addresses are being selected, while the Status display show the address range being assigned to the fixture, based on the Personality selected. When the desired master address is selected, push the large knob to save and enter DMX mode. The master address is shown on the Status Display, along with the selected Personality. Both screens show the status of the DMX signal: DMX LINE, DMX WIFI or DMX NONE.
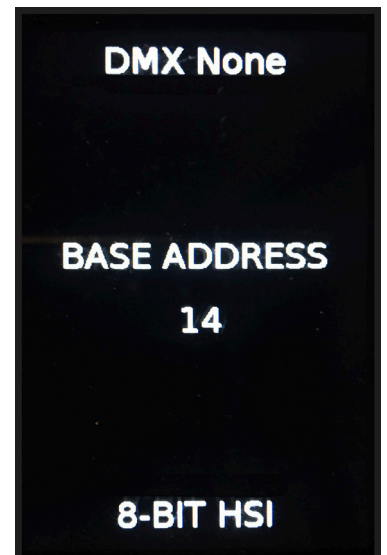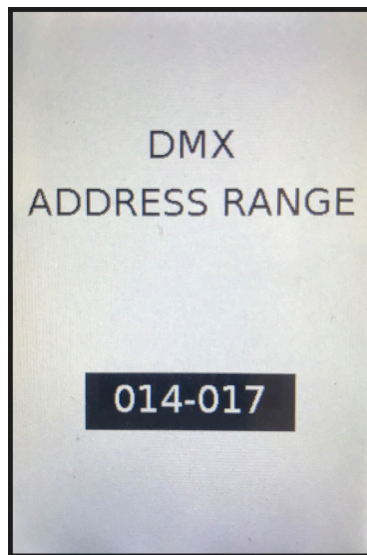
Cineo PAD™ Dimming

As mentioned earlier, Cineo fixtures use a Photo-Accurate Dimming curve, which offers light output congruent with lens stops on a camera. When operating in DMX mode, each increase of 50 units (8-bit) doubles the light output, or the equivalent of opening the lens 1 f-stop.

DMX Value	% Output increase	Stop Increase
(0-255)		
50	100	0
100	200	1
150	400	2
200	800	3
250	1600	4

Here are examples of how to accurately match camera stops to dimming levels in DMX Mode:

DMX Dimming: The Rule of 50 (0-255 scale)

Increase output 1 Stop: Add 50 DMX values (fc/lux is doubled)

Decrease output 1 Stop: Subtract 50 DMX values (fc/lux is reduced 50%)

Adjust ½ Stop = 25 DMX Values

Adjust ¼ Stop = 12 DMX Values

The following table lists all the 8-bit DMX values for all of the fixture presets:

| Dimming		CCT		Saturation		Color	
100%	255	2700	000	0%	000	Red	000/255
-1 Stop	200	3200	034	10%	025	Yellow	043
-2 Stops	150	4300	107	20%	050	Green	085
-3 Stops	100	5600	195	50%	128	Cyan	127
-4 Stops	050	6500	255	80%	204	Blue	170
Off	000			100%	255	Magenta	212

Note that changing the DMX values in sequential steps, as in performing a live dim to zero will add a dimming hysteresis, or smoothing. When switching between DMX values of 5 or greater, the value change is instantaneous, allowing the fixture to be used for dynamic lighting effects, such as strobing.

User Presets

The Standard 410 can store and recall up to 6 separate groups of settings, which are saved until over-written or a factory reset is performed.
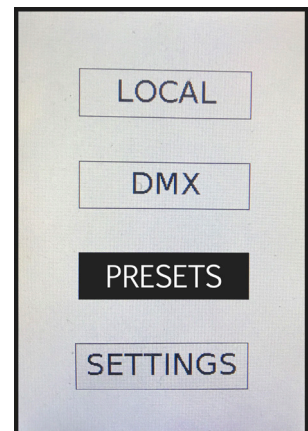
To store a group of settings, select the PRESETS menu option. Initially, the system presents 6 storage locations, labeled A-F. Turn the large knob to the desired storage location, push the large knob and the current settings for the fixture will be stored in that location. The unit automatically returns to LOCAL Mode.
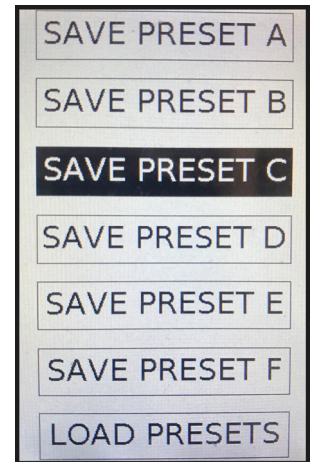
To recall a group of settings, scroll to the bottom of the SAVE PRESET list, and select LOAD PRESETS. The menu allows you to load any of the 6 stored presets by selecting it. Again, the unit automatically returns to LOCAL Mode.
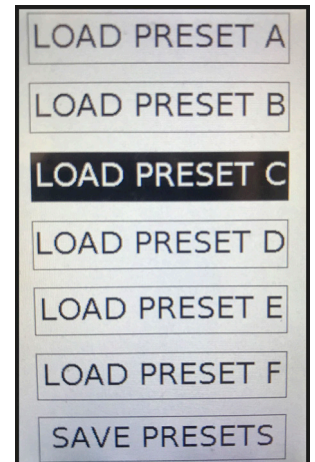
Settings

Unlink Radio

By selecting the UNLINK RADIO function from the SETTINGS menu, the internal Lumen Radio will UNLINK from its previous transmitter pairing. When complete, the fixture returns to LOCAL Mode. Alternative, pushing the lower right knob for 3 seconds from any menu will initiate an UNLINK RADIO function.

Calibration

The Standard 410 should periodically be calibrated to re-align all controls to their proper settings. When CALIBRATE is highlighted on the menu and selected with the large knob push, the fixture will perform a self-calibration routine, lasting approximately one minute and then returning to its previous operating status.

Factory Reset

This menu option is designed primary for rental facilities. In one step, it performs a CALIBRATE, clears all presets, UNLINKs the Radio and returns the unit to LOCAL Mode, with all values set at 0.

Connections

Wired DMX Connections

Standard 410 uses industry-standard 5-Pin XLR male and female connectors to receive and forward DMX signals and output RDM signals. The DMX port is self-terminating and does not require external DMX termination when used in a chain. If the unit is the last device on a DMX chain, make sure that there is no cable inserted into the DMX Out connector.

The DMX pin wiring is as follows:

- Pin 1: Signal Common
- Pin 2: Data –
- Pin 3: Data +
- Pin 4: Spare
- Pin 5: Spare

Wireless DMX Control

The Standard 410 built-in wireless receiver runs on CRMX / Lumen Radio protocol which can receive signals from CRMX and some WDMX transmitters. Please note that each fixture can only be linked to a single transmitter at a time, and maintains the transmitter ID of its previous linking. Therefore, the fixture's linking data must be cleared prior to linking to a new network, using the Unlink Radio function.

To link to a new transmitter, make sure the fixture is unlinked, in DMX mode and the DMX addresses are set.

If the unit is in DMX Mode and no cable is inserted in the DMX IN port, Wireless DMX is automatically activated and the unit can now be controlled on a linked wireless DMX network. When the unit is ready to receive a signal from a transmitter but is not yet linked, the CONTROL screen will flash "DMX NONE." Once the connection is made the CONTROL Screen will change to "DMX WIFI" and can now be control remotely.

Refer to your wireless DMX transmitter instructions for linking fixtures to a wireless network.

Third party wireless products can be used by plugging the third party wireless antenna into the DMX XLR port. If power is needed for the antenna the powered USB port can provide such up to 500ma@ 5VDC. If a third party wireless device, powered or non powered, is attached via the 5pin XLR port this connection will take priority over the imbedded wireless receiver.

RDM Support

The fixture supports RDM Discovery and Identify commands for identifying fixtures on the network. The Standard 410 supports both GET and SET commands remotely through an RDM controller. The GET information provided includes the Unit ID, device type, firmware revision, DMX address and DMX Personality.

The unit supports SET Commands to allow remote programming of the following:

LOCAL / DMX Personality

DMX base address

Calibration

To perform a remote Calibration, follow these steps:

1. Select device to be calibrated with the RDM controller

2. Select DEVICE STATE from the RDM menu

3. Within the DEVICE STATE menu, select MORE

4. Choose SET FACTORY DEFAULT

5. Execute the command

USB Port

An A-type USB port is included on the control panel for installation of software updates. It can also supply 5 VDC, 500ma power to attached devices. Refer to installation instructions supplied with software upgrade.

Mounting Options

The Standard 410 has a fully rotational yoke with a TVMP mount. The standard yoke can be removed, and an optional Pole-Op yoke can be attached.

Specifications

Input Power: 110-240VAC, 410 watts max. via locking IEC connector

Integrated power supply

Fixture Size: 12" x 24 x 4.5" (37.4cm x 61cm x 11.5cm)

Diffuser Size: 11" x 23"

Weight: 28 lbs. (12.7 kg.)

Mounting yoke includes TVMP

Variable saturated color with presets at Red, Yellow, Green, Cyan, Blue, Magenta

Variable white/color blending

Local and Remote dimming, 0-100%

5-pin wired DMX/RDM In and Thru

Integrated LumenRadio™ CRMX bi-directional wireless DMX/RDM

Completely flicker-free operation

Silent, passive cooling: no fans

Environmental temperature range: -20ºC - +40º C

Max. temperature rise: +45º C - Thermal Rollback Protected

ETL, cETL, CE pending

Made in USA

Warnings, Disclaimers and Warranty

Risk of Electric shock / Risk of Fire
Do not open. To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

Burning Injuries
Be aware of high temperatures in excess of 50°C inside the fixture during and after use. Do not touch the LEDs to avoid burning injuries.

Flammable Materials
Keep flammable materials away from the installation. Insure that the amount of air flow required for safe operation of the equipment is not compromised. Proper ventilation must be provided.

ESD and LED's
LED components used in the Standard 410 are ESD (Electro-Static Discharge) sensitive. To prevent the possibility of destroying LED components do not touch either while in operation or when switched off.

This Equipment MUST be Grounded
In order to protect against risk of electric shock, the installation should be properly grounded. Defeating the purpose of the grounding type plug will expose you to the risk of electric shock.

AC Power Cords
Use only a rated IEC Connector. The user is responsible for ensuring power cables are of adequate condition for each application. If the power cords are damaged, replace them only with new ones.

Environmental: Disposal of Old Electrical & Electronic Equipment
This product shall not be treated as household waste.

CINEO LIGHTING LIMITED WARRANTY

Products from Cineo Lighting are warranted against defects in materials and workmanship for two years from the date the Product is shipped to Customer. Products are guaranteed to perform substantially in accordance with the accompanying written materials within the warranty period under normal use.

If the Product fails to work as warranted, Cineo Lighting will, in its sole discretion, repair or replace the Product with a new or remanufactured Product that is at least equivalent to the original Product. Customer must obtain a Return Material Authorization number from Cineo Lighting before returning any Products under warranty to Cineo Lighting.

Customer shall pay expenses for shipment of repaired or replacement Products to Cineo Lighting's repair facility. Any repaired or replaced Products will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer. Cineo Lighting will pay shipping of repaired goods back to the customer. After examining and testing a returned product, if Cineo Lighting concludes that a returned product is not defective, Customer will be notified, the product returned at Customer's expense.

This Limited Warranty is void if failure of the Products has resulted from accident, abuse, misapplication, or use outside of normal operating conditions. Warranty is void if serial number has been defaced or removed.

NO OTHER WARRANTIES. EXCEPT AS EXPRESSLY SET FORTH ABOVE, THE PRODUCTS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, AND NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED ARE MADE WITH RESPECT TO THE PRODUCTS, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE OR NON-INFRINGEMENT OR ANY OTHER WARRANTIES THAT MAY ARISE FROM USAGE OF TRADE OR COURSE OF DEALING. ELEMENT DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE OF OR THE RESULTS OF THE USE OF THE PRODUCTS IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, OR OTHERWISE AND DOES NOT WARRANT THAT THE OPERATION OF THE PRODUCTS WILL BE UNINTERRUPTED OR ERROR FREE. CINEO LIGHTING EXPRESSLY DISCLAIMS ANY WARRANTIES NOT STATED HEREIN. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL ELEMENT AND ITS LICENSORS, DISTRIBUTORS, AND SUPPLIERS (INCLUDING ITS AND THEIR DIRECTORS, OFFICERS, EMPLOYEES, AND AGENTS) BE LIABLE FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, ANY SPECIAL, DIRECT, INDIRECT, INCIDENTAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES, EXPENSES, LOST PROFITS, INSTALLATION COSTS, LOST SAVINGS, BUSINESS INTERRUPTION, LOST BUSINESS INFORMATION, OR ANY OTHER DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCTS, EVEN IF ELEMENT OR ITS LICENSORS, DISTRIBUTORS, AND SUPPLIERS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. CINEO LIGHTING'S TOTAL LIABILITY ON ALL CLAIMS, WHETHER IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE OR BREACH OF STATUTORY DUTY), STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE AMOUNTS PAID BY CUSTOMER FOR THE PRODUCTS.

Customer acknowledges that the applicable purchase price or license fee for the Products reflects this allocation of risk. Because some states/jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply.   The above limitations shall apply notwithstanding the failure of any limited remedy to fulfill its essential purpose.

STANDARD
410

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