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VL6C+™ SPOT LUMINAIRE

USER MANUAL

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VL6C+™ Spot Luminaire User Manual

Version as of: November 3, 2010

PRG part number: 02.9803.0001 A

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FOREWORD

Compliance Notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) This device must accept any interference received, including interference that may cause undesired operation.

Conforms to:

UL STD 1573

Certified to:

CAN/CSA STD E598-1

CAN/CSA STD E598-2-17



Safety Notice

It is extremely important to read ALL safety information and instructions provided in this manual and any accompanying documentation before installing and operating the products described herein. Heed all cautions and warnings during installation and use of this product.

Safety symbols used throughout this manual are as follows:



CAUTION advising of potential damage to product.



WARNING advising of potential injury or death to persons.

GENERAL INFORMATION PERTAINING TO PROTECTION AGAINST ELECTRICAL SHOCK, FIRE, EXPOSURE TO EXCESSIVE UV RADIATION, AND INJURY TO PERSONS CAN BE FOUND BELOW.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST FIRE

- 1) PRG luminaires have been designed for use only with specific lamps. Note lamp type before replacing. Installing another type of lamp may be hazardous.
- 2) PRG luminaires may be mounted on any type of surface as long as mounting instructions are followed. See instructions detailed in this manual.
- 3) Replace fuses with same type and rating only.
- 4) Minimum distance from head to any flammable object is 2m.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST ELECTRICAL SHOCK

- 1) PRG luminaires are designed for dry locations only. Exposure to rain or moisture may damage luminaire.
- 2) Disconnect power before servicing any PRG equipment.
- 3) Servicing to be performed by qualified personnel only.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST EXPOSURE TO EXCESSIVE ULTRAVIOLET RADIATION

- 1) PRG luminaires may use an HID type lamp which produces UV radiation. DO NOT look directly at lamp.
- 2) It is hazardous to operate luminaires without complete lamp enclosure in place or when lens is damaged. Lenses or UV shields shall be changed if they have become visibly damaged to such an extent that their effectiveness is impaired.



WARNING: INSTRUCTIONS FOR PROTECTION AGAINST INJURY TO PERSONS

- 1) Exterior surfaces of the luminaire will be hot during operation. Use appropriate safety equipment (gloves, eye protection, etc.) when handling and adjusting hot equipment and components. Service and maintenance should be performed only by qualified personnel as determined by the high pressure lighting fixture manufacturer.
- 2) Arc lamps generate intense heat. Disconnect power and allow lamp to cool for 15 minutes before relamping.
- 3) Arc lamps emit ultraviolet radiation which can cause serious skin burn and eye inflammation. Additionally, arc lamps operate under high pressure at very high temperatures. Should the lamp break, there can exist a danger of personal injury and/or fire from broken lamp particles being discharged.
- 4) The lamp shall be changed if it has become damaged or thermally deformed.
- 5) Wear eye protection when relamping.
- 6) If lamp is touched with bare hands, clean lamp with denatured alcohol and wipe with lint-free cloth before installing or powering up the luminaire.
- 7) Serious injury may result from the generation of ozone by this lamp system. A proper means of venting must be provided.

Notes de sécurité

Avant de procéder à l'installation des produits décrits dans ce guide et de les mettre en marche, il est extrêmement important de lire TOUS les renseignements et TOUTES les directives de sécurité contenues dans ce guide ainsi que toute documentation jointe. Tenir compte de tous les avertissements et suivre toutes les précautions pendant l'installation et l'utilisation de cet appareil.

Les symboles de sécurité utilisés dans ce guide sont les suivants :



ATTENTION Ce symbole annonce que l'appareil risque d'être endommagé.



AVERTISSEMENT Ce symbole annonce qu'il y a risque d'accident grave ou même fatal.

CETTE SECTION CONTIENT DES INFORMATIONS GÉNÉRALES POUR SE PROTÉGER CONTRE LES DÉCHARGES ÉLECTRIQUES, LES INCENDIES, L'EXPOSITION EXCESSIVE AUX RAYONS UV ET TOUT AUTRE ACCIDENT POUVANT ENTRAÎNER DES BLESSURES.

AVERTISSEMENT: Risque d' explosion.

- 1) Le service et le maintenance ne devront être assurés que par des personnes qualifiées comme précisé par le fabricant des lampes à haute pression.
- 2) Des vêtements de protection et les procédures précisées dans le manuel du fabricant doit être fournies.

AVERTISSEMENT: Réglage des lampes

- 1) Chaleur intense. Débrancher le matériel et laisser refroidir pendant 15 minutes avant de rallumer.
- 2) Risque l'incendie. N'utilise que des METAL HALIDE MSR 700 Watt G 22 Base.

AVERTISSEMENT: DIRECTIVES POUR SE PROTÉGER CONTRE UNE EXPOSITION EXCESSIVE AUX RAYONS UV

- 1) Risque d'explosion en cas de radiation ultraviolet imprantes.
- 2) Ne pas intervenir en l'absence de confinement de la lampe en place ou quand la lentille est abîmée.

AVERTISSEMENT: DIRECTIVES POUR SE PROTÉGER CONTRE LES ACCIDENTS POUVANT ENTRAÎNER DES BLESSURES

- 1) Chaleur intense. Eviter tout contact avec des personnes ou des tissus. Attention, de graves blessures peuvent résulter de production d'ozone par cette lampe. Un système de ventilation adapté doit être fournies
- 2) La température de surface = 300.c
La temperature de l'ambiance = 50.c
- 3) Ne convient pas pour un usage résidentiel.
- 4) Utilisable seulement dans les locaux secs



Revision History

This manual has been revised as follows:

Version	Release Date	Notes
BASIC	June 8, 2007	Initial release.
A	November 2, 2007	Changed product name from VL6C Plus to VL6C+.
A1	November 3, 2010	Updated book format. (No change to technical information.)

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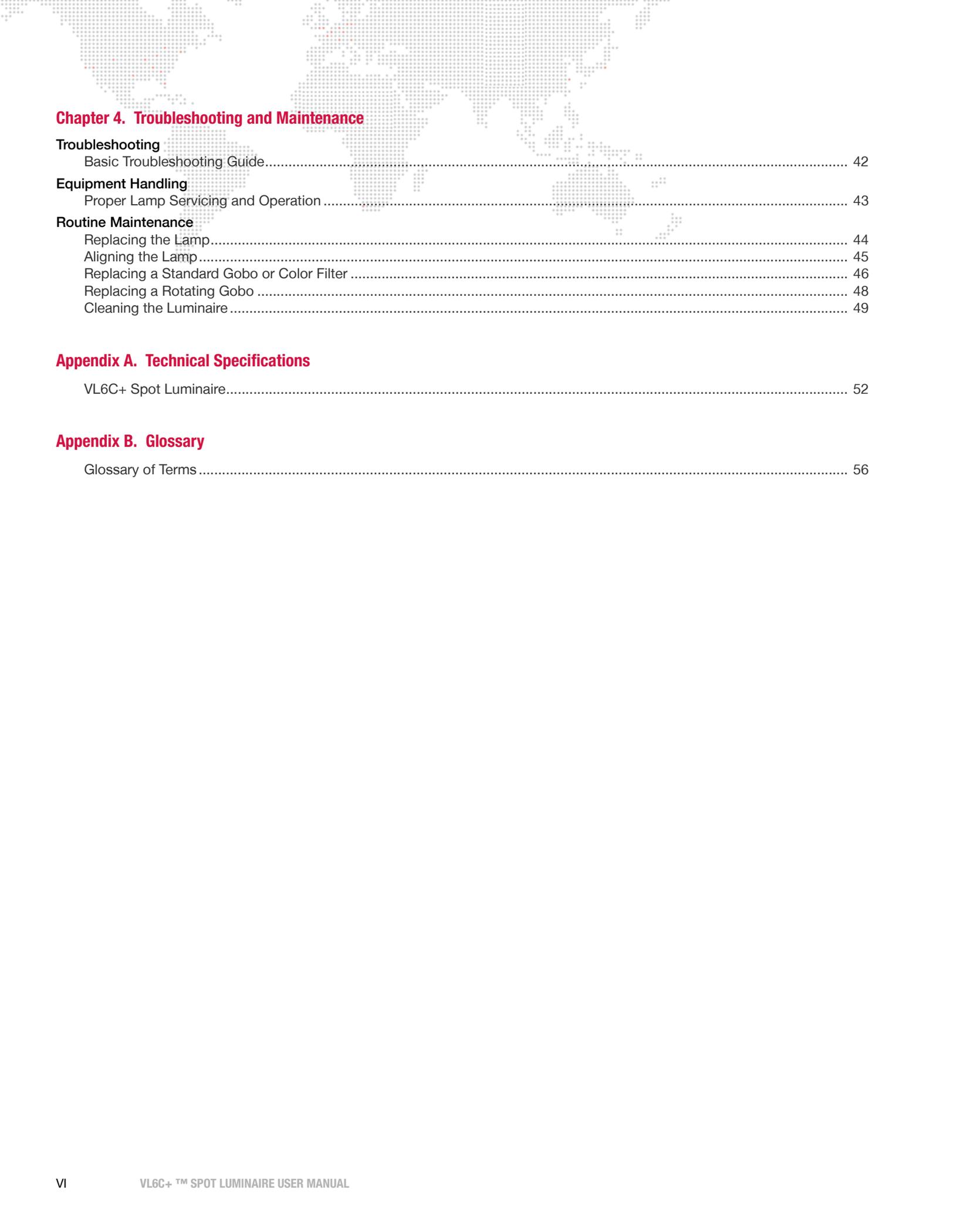
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INTRODUCTION

About This Manual

This manual provides necessary information regarding product safety, installation, and operation for the following equipment:

- + VARI***LITE** VL6C+™ Spot Luminaire (20.9674.0002)

Familiarizing yourself with this information will help you get the most out of your lighting system.



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.

Additional Documentation

For extended service information, refer to the following manual:

- + VL6C+™ Spot Luminaire Service Manual (02.9803.0010)

For additional information regarding the use of VL6 series luminaires in lighting systems, refer to the following manuals:

- + VARI***LITE** Series 200/300 System Installation and Checkout Manual (02.3004.0200)
- + VARI***LITE** Interface Devices Service Manual (02.5014.0010)
- + VARI***LITE** Series 300 Modular Rack Service Manual (02.9640.0010)
- + Virtuoso® System Installation and Checkout Manual (02.3004.0400)
- + Controlling VARI***LITE** Equipment Using a DMX512 Console (02.3004.0300.52)

For additional documentation, please visit our support tech center at: www.prg.com/support

Special Note

Customer support for this product is provided by Production Resource Group (not Vari-Lite). Refer to "**Customer Service**" on page 2.

Technical updates regarding this product are issued by the PRG Dallas office.



Customer Service

Our comprehensive technical services department ensures you get the full benefit of being a PRG customer. Whether your needs are simple or complex, our full-time staff of experienced professionals are on-hand to provide support. For assistance, contact your nearest PRG office:

PRG Dallas (International Service)

8617 Ambassador Row, Suite 120
Dallas, Texas 75247
Ph: 214.630.1963
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Service Fx: 214.638.2125
Service Email: orders@prg.com

PRG Atlanta

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Atlanta, Georgia 30344
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Fx: 404.214.4801

PRG Chicago

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Des Plaines, Illinois 60018
Ph: 847.227.5171
Fx: 847.557.9033

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6050 South Valley View Blvd.
Las Vegas, Nevada 89118
Ph: 702.942.4774
Fx: 702.942.4775

PRG Los Angeles

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Sun Valley, California 91352
Ph: 818.252.2600
Fx: 818.252.2620

PRG Nashville

8351 Eastgate Blvd.
Mount Juliet, Tennessee 37122
Ph: 615.834.3190
Fx: 615.834.3192

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915 Secaucus Rd.
Secaucus, New Jersey 07094
Ph: 201.758.4000
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PRG Orlando

1902 Cypress Lake Dr.
Orlando, Florida 32837
Ph: 407.855.8060
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PRG Canada

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Mississauga, Ontario L5A 3V3 Canada
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Fx: 905.270.2590

PRG Asia

KI Building, 2nd Floor
6-4-2 Kiba, Koto-ku
Tokyo, 135-0042, Japan
Ph: 81 3 5665 3377
Fx: 81 3 5665 3517

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The Cofton Centre
Grovely Lane
Longbridge, Birmingham
B31 4PT, England
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Fx: +44 (0) 845.470.6401

Essential Lighting

Unit E
Imber Court Trading Estate
Orchard Lane
East Molesey, Surrey
KT8 0BY, England
Ph: +44 (0) 208.335.6000
Fx: +44 (0) 208.398.7205

For additional resources and documentation, please visit our website at: www.prg.com



1.

DESCRIPTION

This chapter contains descriptions of luminaire features, components, and operations.

- + **FEATURES**
- + **COMPONENTS**
- + **OPERATION OVERVIEW**

FEATURES

Overview

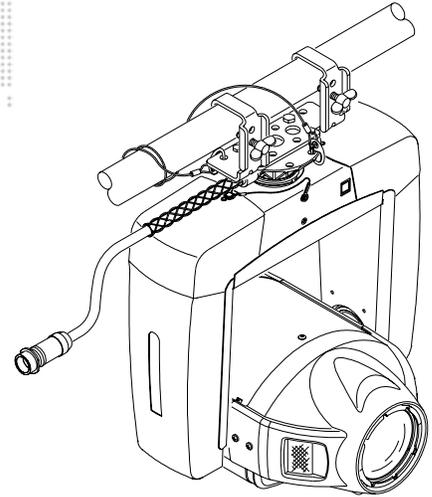
The VL6C+ Spot Luminaire from PRG Lighting is an improved version of the VARI***LITE** VL6C Spot Luminaire. Upgrades to the ventilation and airflow system provide superior reliability for all circuit boards and motors, while upgraded wiring and connectors further enhance the dependability and consistency of all motors and pan/tilt mechanisms. Improvements to the luminaire's ignitor technology reduce hot restrike time from 8 minutes (VL6C) to 1 minute (VL6C+) and a new lamp douse switch allows lamp power to be quickly disconnected at the luminaire itself.

Like the standard VL6C model, it contains a 700 watt short arc lamp and a cold mirror reflector to provide an extremely bright and flat field. The VL6C+ Luminaire accepts a wide variety of color filters and gobos. Two fixed wheels are included, one factory configured for gobos and the second for color filters. Automated zoom optics and edge control, along with a rotating gobo wheel, compliment the fixed wheels and beam size iris functions for a wide variety of effects. A standard palette of gobos and colors is provided with the luminaire and custom gobos can also be installed.

The VL6C+ Luminaire can be controlled by PRG consoles or a wide variety of DMX512 consoles. Operation is identical to the standard VL6C model.

Features:

- + A 700 watt arc source.
- + Rotatable, indexable gobos.
- + A 3:1 zoom optics assembly.
- + Variable beam focus to soften the edges of gobos or spots and provide gobo crossfades.
- + Full field dimmer to allow smooth timed fades and fast blackouts.
- + Mechanical iris for continuous beam size control with rapid beam size changes and smooth timed beam angle changes.
- + Two, 12-position wheels, each providing 11 easily loaded positions (and 1 open) for interchangeable dichroic color and gobo selections.
- + Low expansion glass reflector.
- + Solid state ignitor.
- + Hot restrike time of 1 minute.
- + Smooth, time-controlled continuous 360° pan and 270° tilt movement.
- + Control by PRG consoles or a wide variety of DMX512 consoles.
- + Compatible with Series 300 truss hooks for versatile hanging configurations.
- + Optional floor stand.





Upgrade Summary

The VL6C+ Spot Luminaire features many improvements over the standard VL6C Luminaire, both to the exterior and interior components. The following is a complete summary of improvements found in the VL6C+™ Spot Luminaire:

- + Reduced luminaire head temperatures to improve reliability of the optical mechanisms by increasing air flow through the head assembly. This improvement was accomplished by installing new air ducting, a metal foam air filter and replacing an existing fan with a higher CFM fan.
- + Increased reliability of the lamp strike. This improvement was accomplished by installing a new solid state ignitor and relocating it from a high temperature area in the head assembly to a low temperature area in the yoke. This change also improves access to the ignitor and reduces hot restrike time from 8 minutes (VL6C) to 1 minute (VL6C+).
- + Increased reliability of the Controller and Auxiliary PCBs. This improvement was accomplished by adding a centrifugal blower to cool the PCB components and ventilation holes to improve air flow. The PCB RJ-45 connectors were also replaced with improved Molex interconnect cable assemblies.
- + Reduced PCB driver failures. This improvement was accomplished by installing a new 24VDC cable assembly to protect the motor drivers from failing in the event the Yoke Termination PCB fuse blows.
- + Increased reliability of Pan and Tilt functions. This improvement was accomplished by retrofitting the pan/tilt mechanisms with new clutches and encoders, replacing the pan/tilt cable assemblies and installing a newly designed pan stop which prevents sticking.
- + Increased reliability of Yoke and Motor Cable Harnesses. This improvement was accomplished by designing new harnesses with highly stranded 24AWG PVC wire which makes a more reliable connection in the MTA connectors.
- + Improved motor reliability and function. This improvement was accomplished by replacing the connectors on all motors.
- + Improved yoke covers. This improvement was accomplished by installing new yoke sheet metal which not only accommodates the relocation of PCB components, but adds support to the yoke covers which will prevent damage to them during normal use. Ventilation holes have been added to the yoke leg for PCB cooling and air flow, along with heavy duty yoke covers and new safety tethers to prevent covers from falling off.
- + Added reset switch. A "soft reset" can be accomplished using the new reset switch located in the yoke leg. During a soft reset, the lamp will not be extinguished, eliminating the need to wait for the lamp to cool down before restriking.
- + Added lamp douse switch to yoke cross-member. The switch should be used to douse the arc lamp before disconnecting the pigtail cable. This will prevent damage to the contacts in the CPC connector, which can be caused by drawing an arc during disconnect.

COMPONENTS

Exterior Components

The following illustration shows the exterior VL6C+ components and controls.

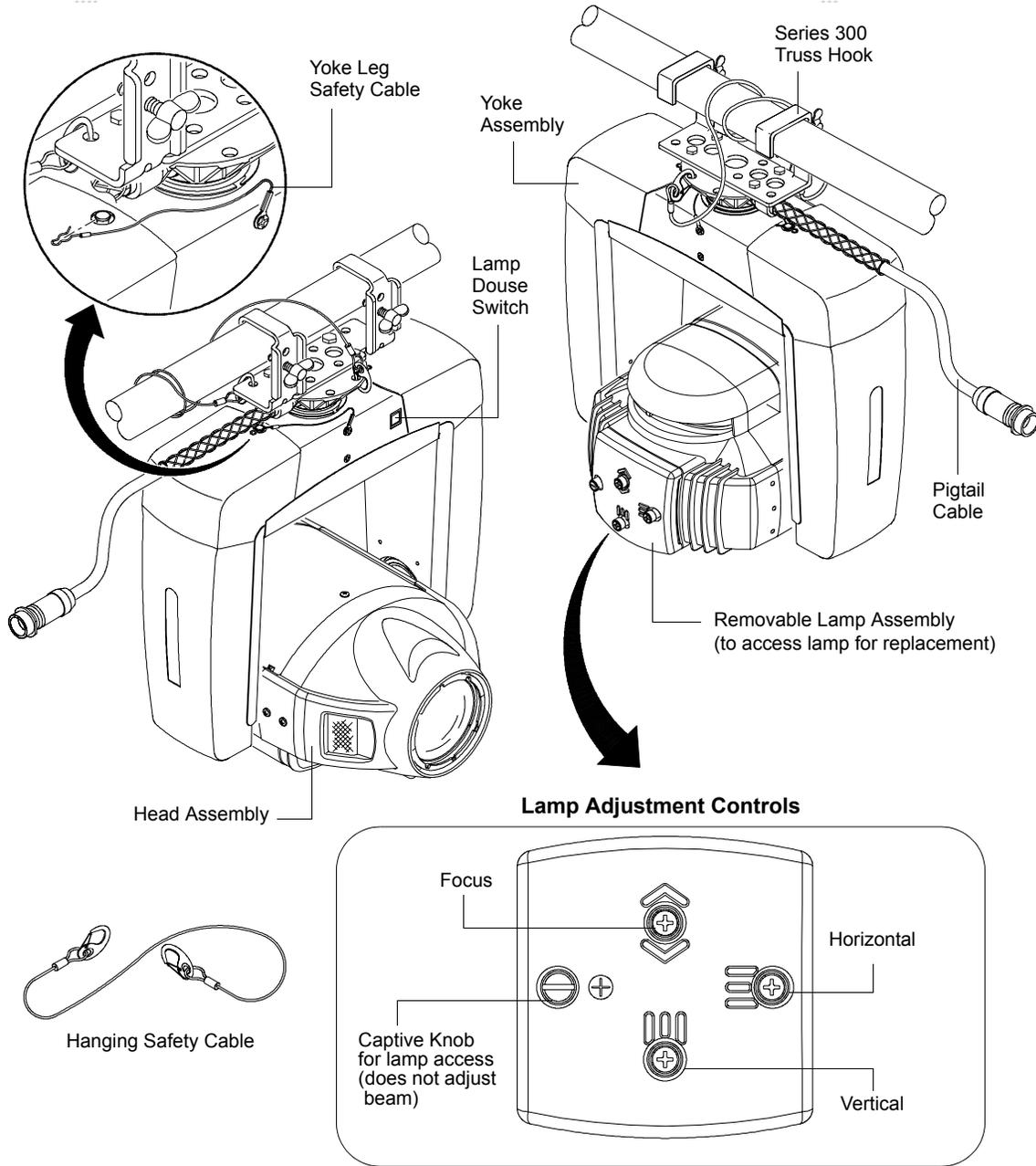


Figure 1-1: Exterior Components

Interior Head Components

The following illustration shows the major sub-assemblies located in the VL6C+ Head.

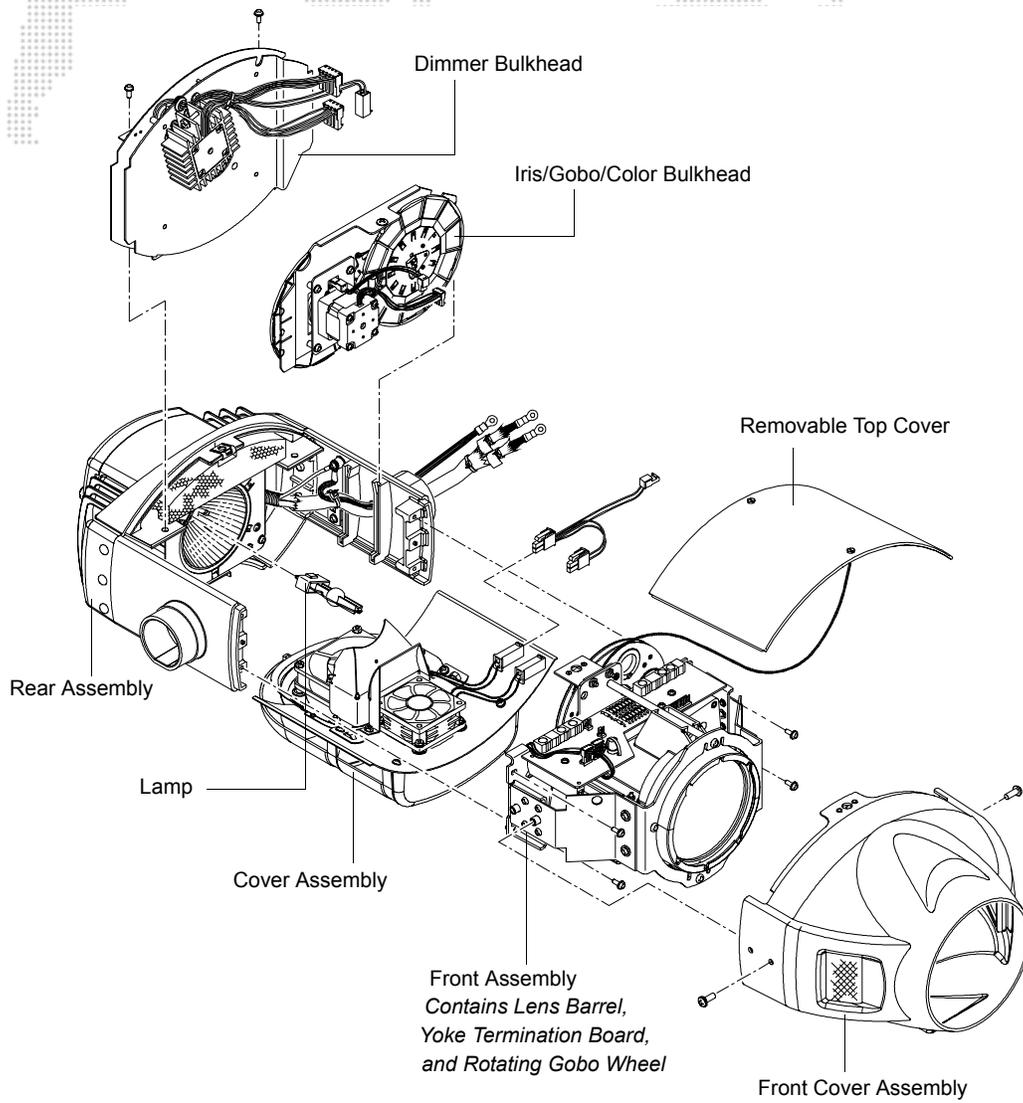


Figure 1-2: Head Components

Interior Yoke Components

The following illustration shows the major sub-assemblies located in the VL6C+ Yoke.

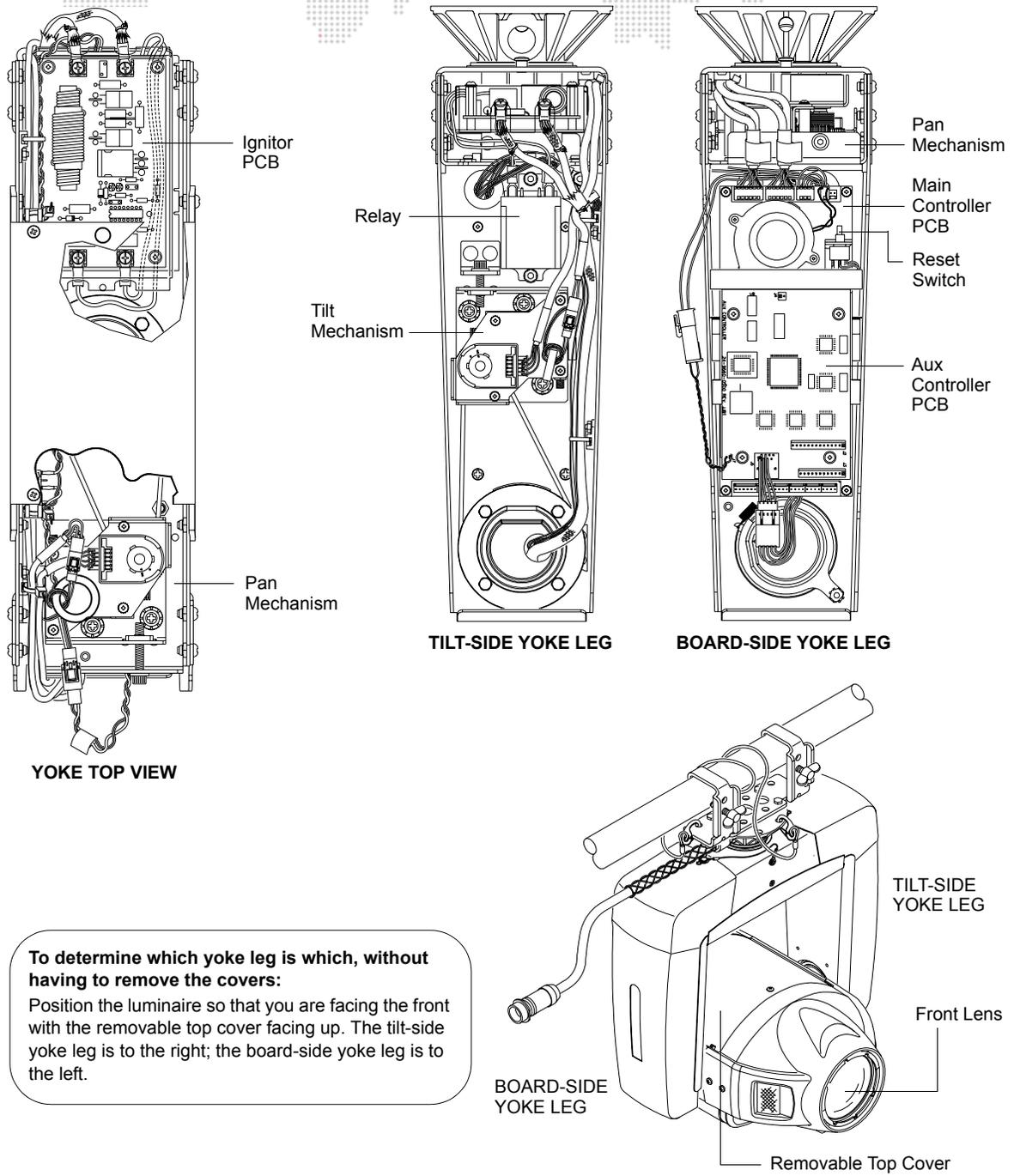


Figure 1-3: Yoke Components

Replacement Items and Accessories

The following items can be ordered from PRG. (Please order by PRG part number.)

PRG P/N	Accessory
71.2528.0700.0	MSR 700W Lamp
22.9634.0145	Series 300 Safety Cable
22.9634.0161	Series 300 Floor Stand
22.9634.0195	Series 300 Third-Point Truss Hook
22.9634.0217	Series 300 Double Truss Hook
25.7042.0006	6 ft. Shielded Series 300 Lamp Cable
25.7042.0012	12 ft. Shielded Series 300 Lamp Cable
25.7042.0020	20 ft. Shielded Series 300 Lamp Cable
25.7155.0050	50 ft. Shielded Series 300 Lamp Cable (Smart Lamp Plus)
25.7155.0100	100 ft. Shielded Series 300 Lamp Cable (Smart Lamp Plus)
25.7155.0XXX	Custom Length Shielded Series 300 Lamp Cable *
20.9623.0111	Smart Repeater Unit
20.9623.0600	Smart Repeater Plus Unit
22.9620.0217	Series 200 Truss Hook (2 each required for Smart Repeater)
20.9625.0024	Series 300 Molded Plastic Work Trunk
20.9625.0112	Luminaire Case

* Cannot exceed 200 ft. in length.

OPERATION OVERVIEW

External Power and Data Configuration

Control data signals, 24Vdc, and lamp power are provided by a Series 300 Smart Repeater or Smart Repeater Plus processing unit to Series 300 luminaires via lamp cables. A maximum of three (3) VL6C+ Luminaires may be powered from a Smart Repeater unit and a maximum of six (6) VL6C+ Luminaires from a Smart Repeater Plus unit. Lamp power for VL6C+ Luminaires is provided by APS6 power supply modules located in a Series 300 Modular Rack. The following diagram shows how data and power are distributed to VL6C+ Luminaires in a sample DMX512 system.

Note: Refer to the VARI*LITE Interface Devices Service Manual (02.5014.0010), VARI*LITE Series 300 Modular Rack Service Manual (02.9640.0010) and Controlling VARI*LITE Equipment Using a DMX512 Console Manual (02.3004.0300.52) for more information about the associated equipment.

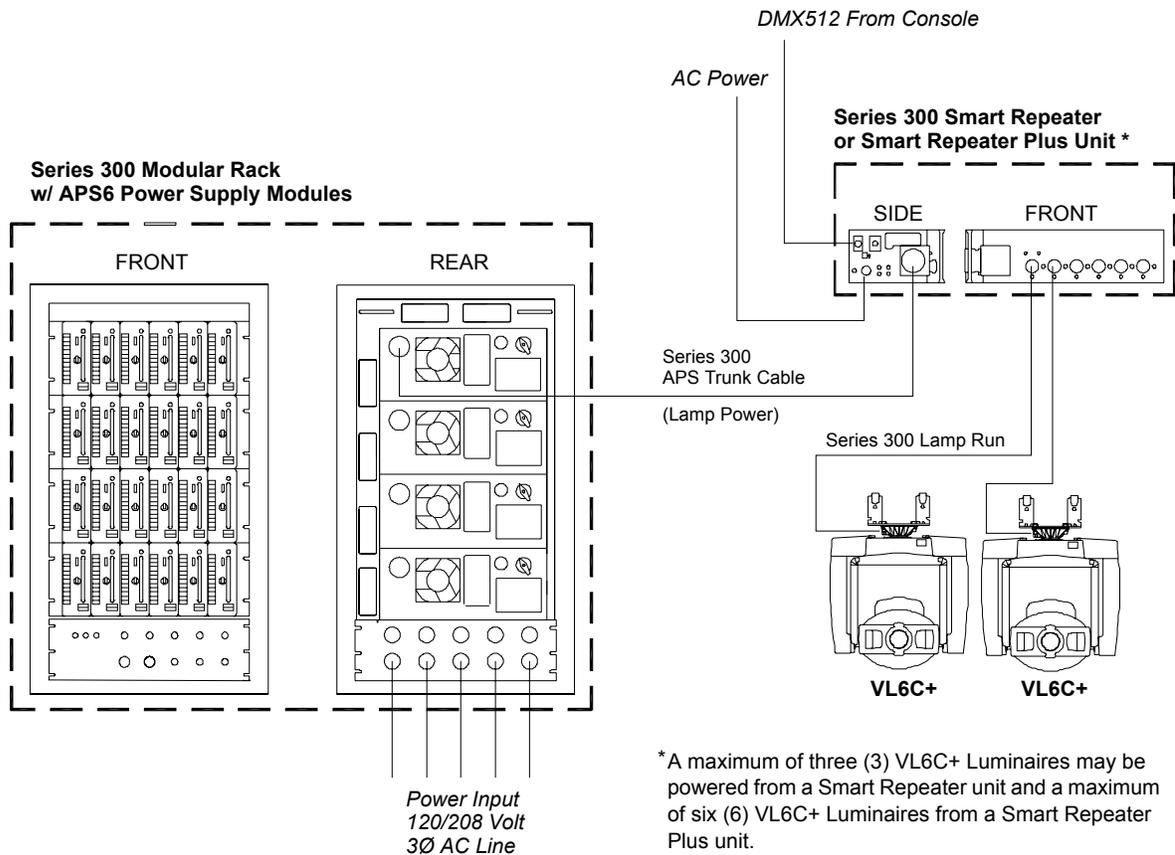


Figure 1-4: Power and Data Configuration (Typical DMX512 System)

Smart Repeater Units

The Smart Repeater processing units combine electrical power and data signals from different sources and provide it for up to six VL6C+ Spot Luminaires via a single connector to each luminaire.

Smart Repeater features:

- + Receives Virtuoso® or Series 200 data signal, and AC power for electronics through standard, 9-pin Series 200 lamp cable from ACS rack and sends it to connected luminaires.
- + Receives lamp power from conventional dimmers or APS6/C3 power supply modules through standard Socapex-type 19-pin lighting connector and sends it to connected luminaires.
- + Provides a thumbwheel switch for setting the starting address for the six luminaire outputs.
- + Provides Broadcast and Reply LEDs to monitor data traffic.
- + Contains test software for Series 300 luminaires.
- + Attaches to truss or pipes with two truss hooks and a safety cable.
- + Operates up to six VARI*LITE VL5, VL5Arc, VL5B, VL6, or VLM luminaires; one on each output connector.
- + Operates VL6C+ Luminaires on a limited basis. When using multiple combinations involving the VL6C, use the point system indicated below. Combinations of luminaires connected to the Smart Repeater unit should not exceed 6 points.

VL5 = 1 point

VL5Arc = 1 point

VL6 = 1 point

VL6B = 2 points

VL6C / VL6C+ = 2 points

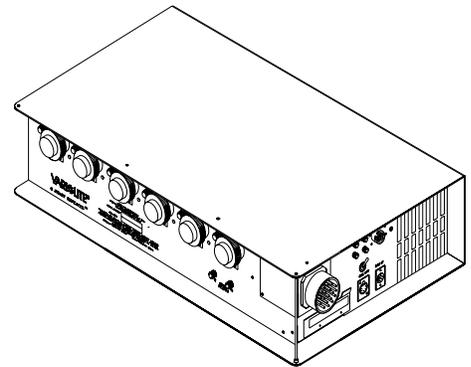
- + Accepts DMX512 protocol from DMX control desks and translates it to Series 300 comm for DMX control of VARI*LITE luminaires.

Two versions of the unit are available: a standard Smart Repeater unit and a Smart Repeater Plus unit. The standard unit can operate any of the Series 300 luminaires with the exception of the VARI*LITE VL7, VL7B, and VL7U luminaires, which can only be operated with a Smart Repeater Plus unit.

Smart Repeater Plus Unit

The Smart Repeater Plus unit has the ability to operate all Series 300 luminaires including the VL7 series spot luminaires, which require additional power not available with the standard Smart Repeater unit.

Operation and functionality of the Smart Repeater Plus unit is identical to the standard unit, with the addition of an active DMX512 termination switch and fan cooling. The Smart Repeater Plus unit can control up to six VL7, VL7B or VL7U luminaires.



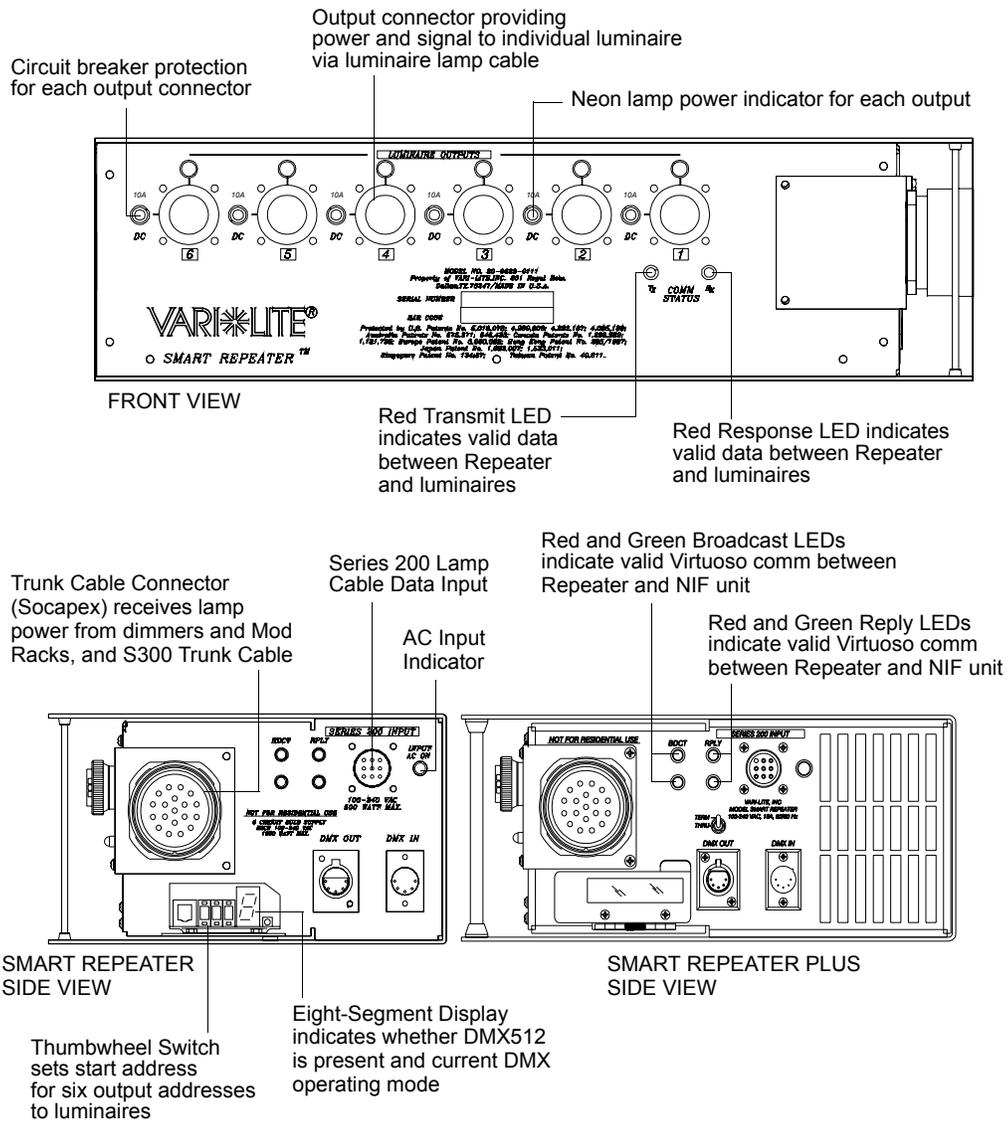


Figure 1-5: Smart Repeater / Smart Repeater Plus Input/Output Connections

Internal Power and Data Distribution

The following diagram shows how data and power are distributed within the VL6C+ Spot Luminaire.

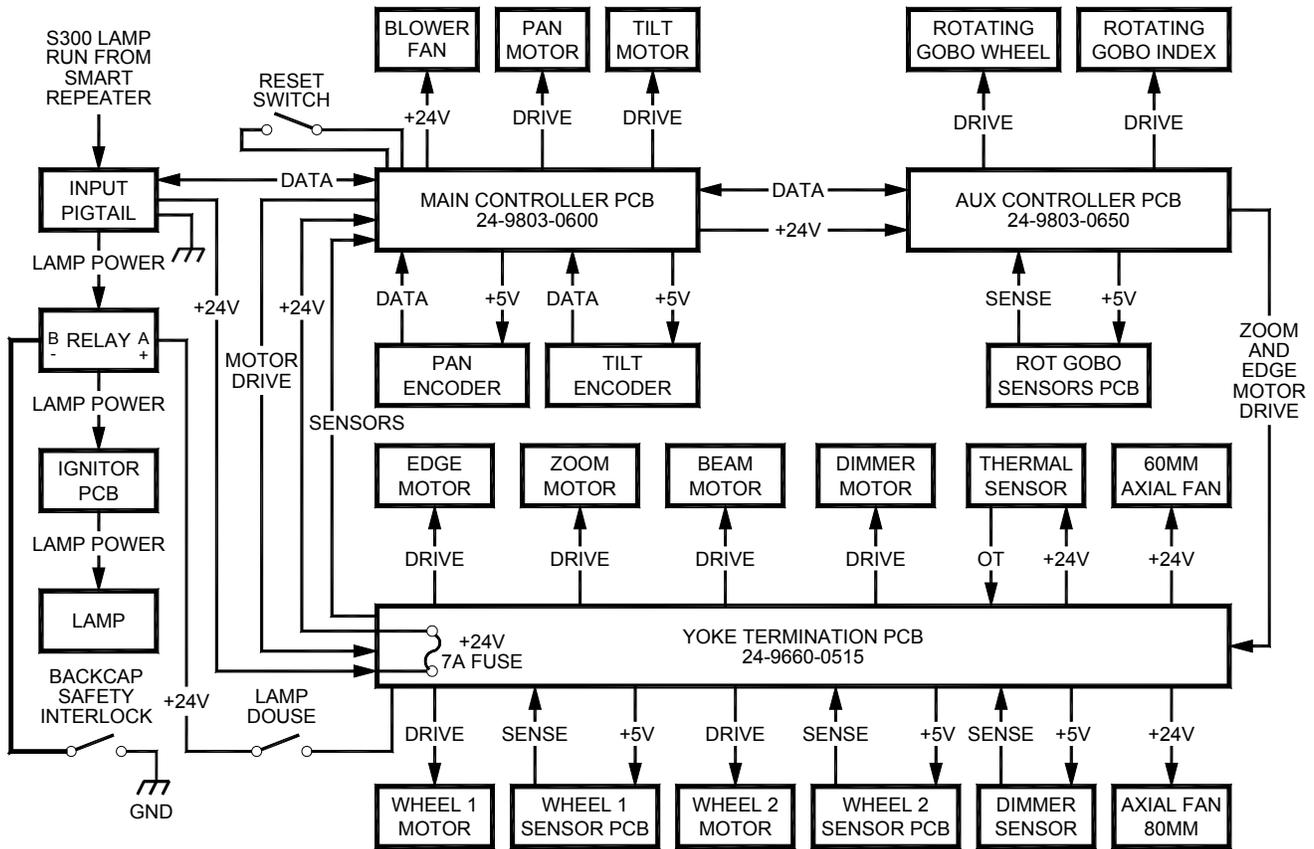


Figure 1-6: Internal Power and Data Distribution



2.

INSTALLATION

This chapter contains instructions for hanging or floor mounting the luminaire and connecting it to the system.

- + MOUNTING THE LUMINAIRE
- + SYSTEM CONNECTION

MOUNTING THE LUMINAIRE

Attaching a Truss Hook

The VL6C+ Spot Luminaire can be hung horizontally or vertically from any structure designed to accommodate the load created by this moving luminaire. In standard hanging applications, the VL6C+ Luminaire utilizes a Series 300 double truss hook, which is bolted to the pan tube. The hook can be oriented in 45 degree increments to provide flexible mounting. (See "[Standard Hang](#)" on page 17.)

A special third-point truss hook, which mounts to the pan tube in addition to the double hook, is available to provide a third point of support. (See "[Three-Point Hang](#)" on page 19.)

To attach a double truss hook:

- Step 1. Determine type of installation and required orientation of truss hook.
- Step 2. At pan tube, attach truss hook using four 5/16-18 x 1" bolts and 5/16-18 nuts (**Figure 2-1**).
- Step 3. Ensure truss hook is secure.

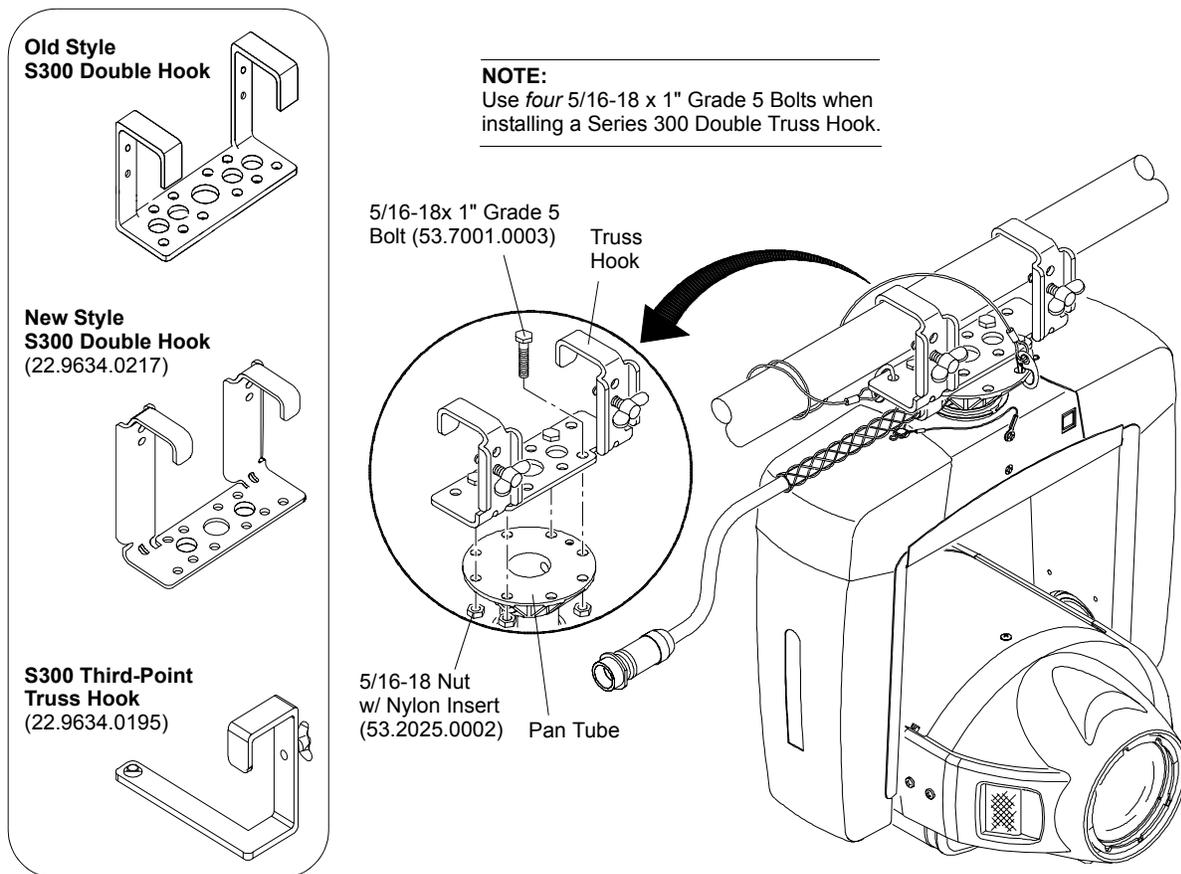


Figure 2-1: Attaching a Truss Hook

Hanging Methods

Standard Hang

In standard hanging applications, the VL6C+ Spot Luminaire utilizes a Series 300 double truss hook, which is bolted to the pan tube and affixed to square tube or round pipe; the minimum outside dimension for a piece of pipe or tube is 1 inch (2.54 cm) and the maximum outside dimension is 2 inches (5.08 cm).



CAUTION: Wing bolts should be tightened only by hand. Do not use wrenches or other tools as this can damage the truss or the hook.



WARNING: A safety cable **MUST** be used in all hanging configurations.

- Step 1. Lift luminaire into mounting position (**Figure 2-2** on next page).
- Step 2. Tighten truss hook wing bolts by hand. Ensure that luminaire is fully supported.
- Step 3. Install safety cable as follows (referring to **Figure 2-2** DETAIL A):
- Attach one end of safety cable to pan tube.
 - Loop several times around truss or pipe, leaving as little slack as possible.
 - Attach other end of safety cable to pan tube.
- Step 4. Connect input pigtail cable to Series 300 Lamp Run Cable which is connected to a Smart Repeater or Smart Repeater Plus unit. (Refer to "**External Power and Data Configuration**" on page 11 for an example system diagram.)

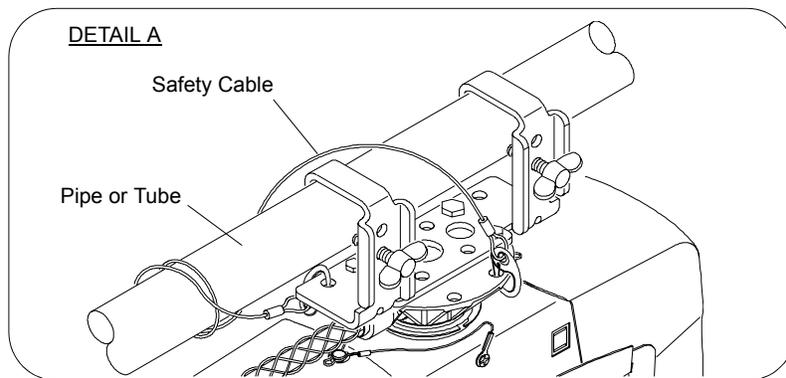
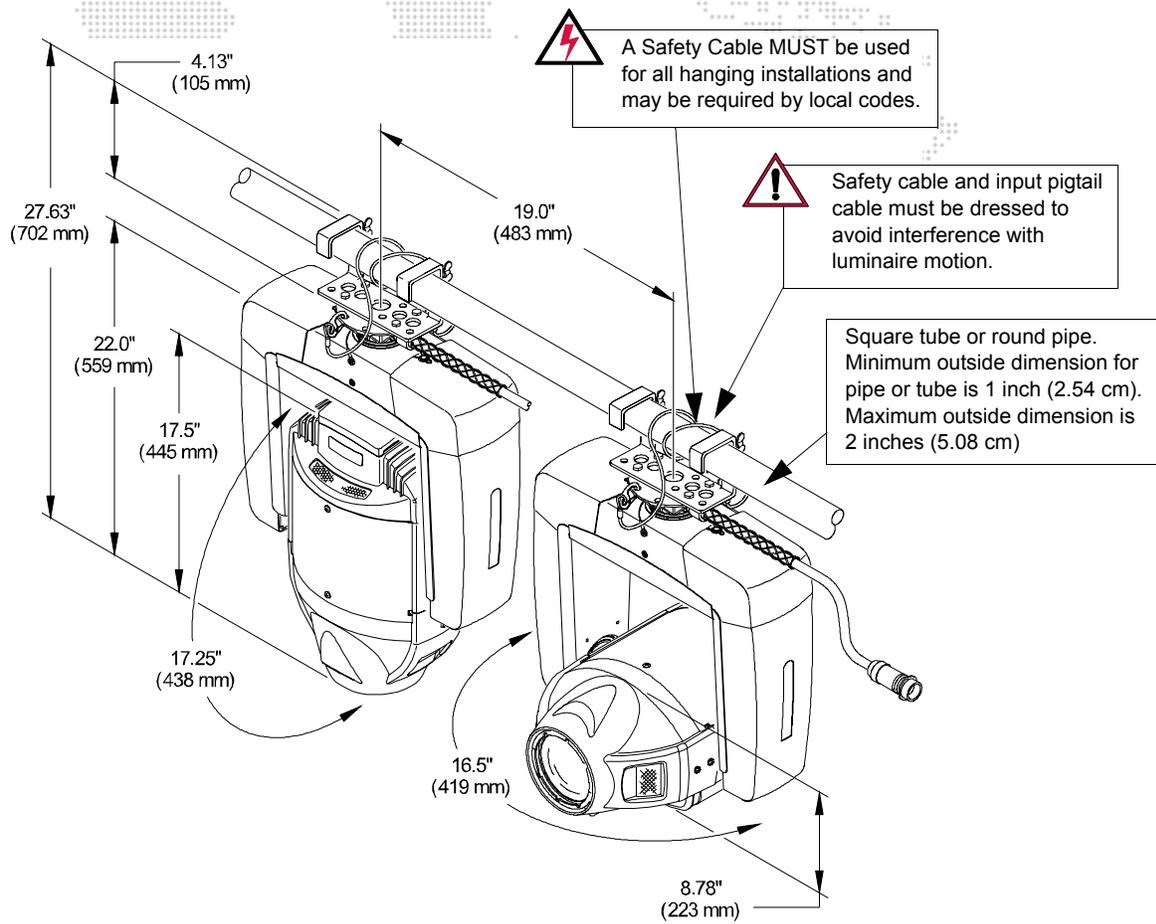


Figure 2-2: Standard Hanging Configuration and Clearances

Three-Point Hang

A Series 300 third-point truss hook can be used to stabilize the luminaire in a three-point hanging configuration. The third-point hook is bolted to the pan tube in addition to the standard double hook. The following illustration shows how the hook is used to achieve a three-point hang.

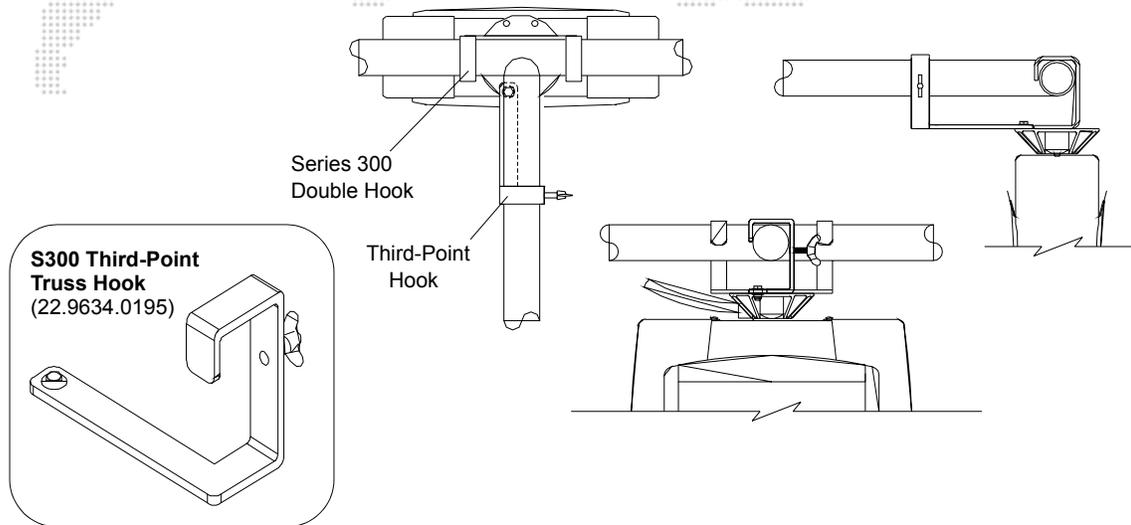


Figure 2-3: Three-Point Hang

Custom Hang

The luminaire can also be hung using custom hanging devices. The pan tube's multiple mounting holes allow flexibility for placement of hardware. To attach custom hanging devices to the pan tube, the following hardware can be used:

- + 5/16"-18 x 1" HSCZ Grade 5 Bolt (53.7001.0003)
- + 5/16"-18 Zinc nut with nylon inserts (53.2025.0002)

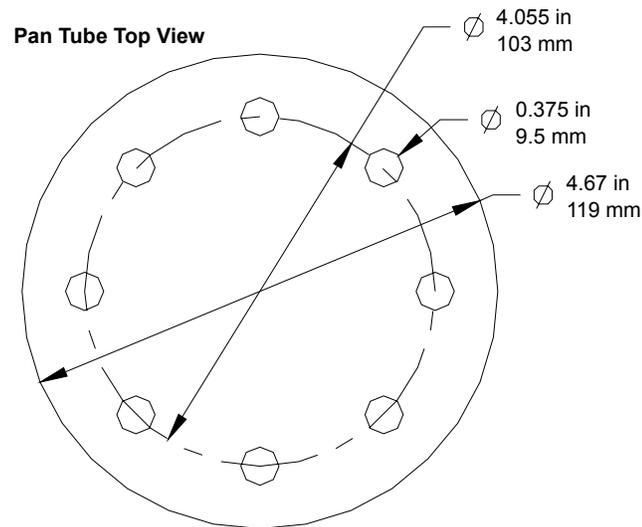


Figure 2-4: Pan Tube Hole Dimensions

Floor Mounting

The VL6C+ Spot Luminaire may be mounted in an upright floor position using a Series 300 floor stand. The floor stand (22.9634.0161) includes all necessary hardware as shown in **Figure 2-5**.

To install floor stand:

- Step 1. Orient pigtail cable as shown in **Figure 2-5** DETAIL B and rotate pan tube accordingly.
- Step 2. Secure pivoting legs to pan tube using, on each pivoting leg, one 5/16-18 bolt and nut; with two clutch disc springs, and one 1/4" flat washer between the bolt and the leg, one 1/4" flat washer between the leg and the pan tube. *Be sure to install disc springs with concave surfaces facing the flat washer.*
- Step 3. Tighten nuts and bolts until there is proper tension: just enough so pivoting legs stay in place, but not so much that the legs don't pivot. See **Figure 2-5** DETAIL A.

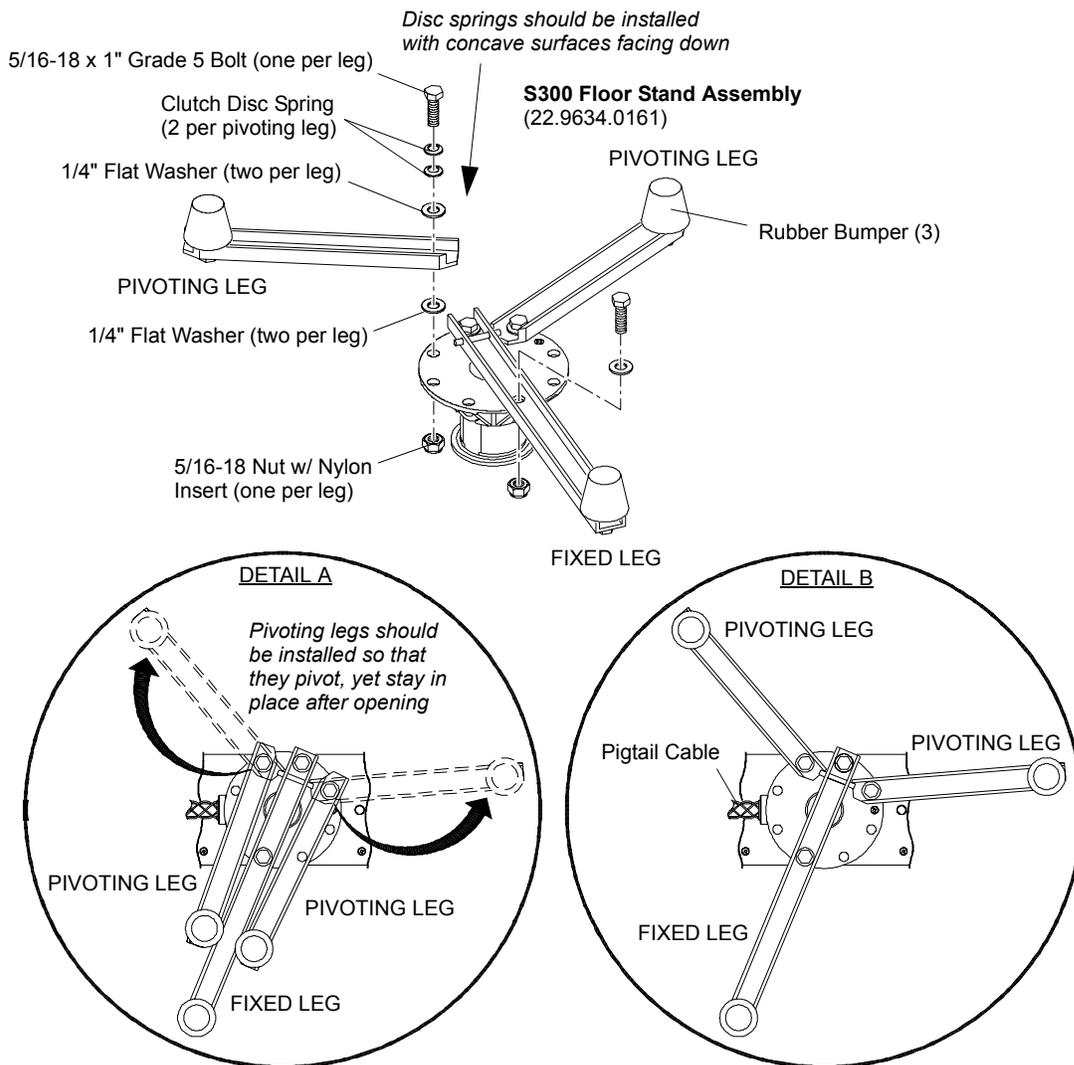


Figure 2-5: Installing Floor Stand

- Step 4. Place luminaire in desired floor position. Refer to clearances in **Figure 2-6**.
- Step 5. Connect input pigtail cable to Series 300 Lamp Run Cable which is connected to a Smart Repeater or Smart Repeater Plus unit. (Refer to "**External Power and Data Configuration**" on page 11 for an example system diagram.)

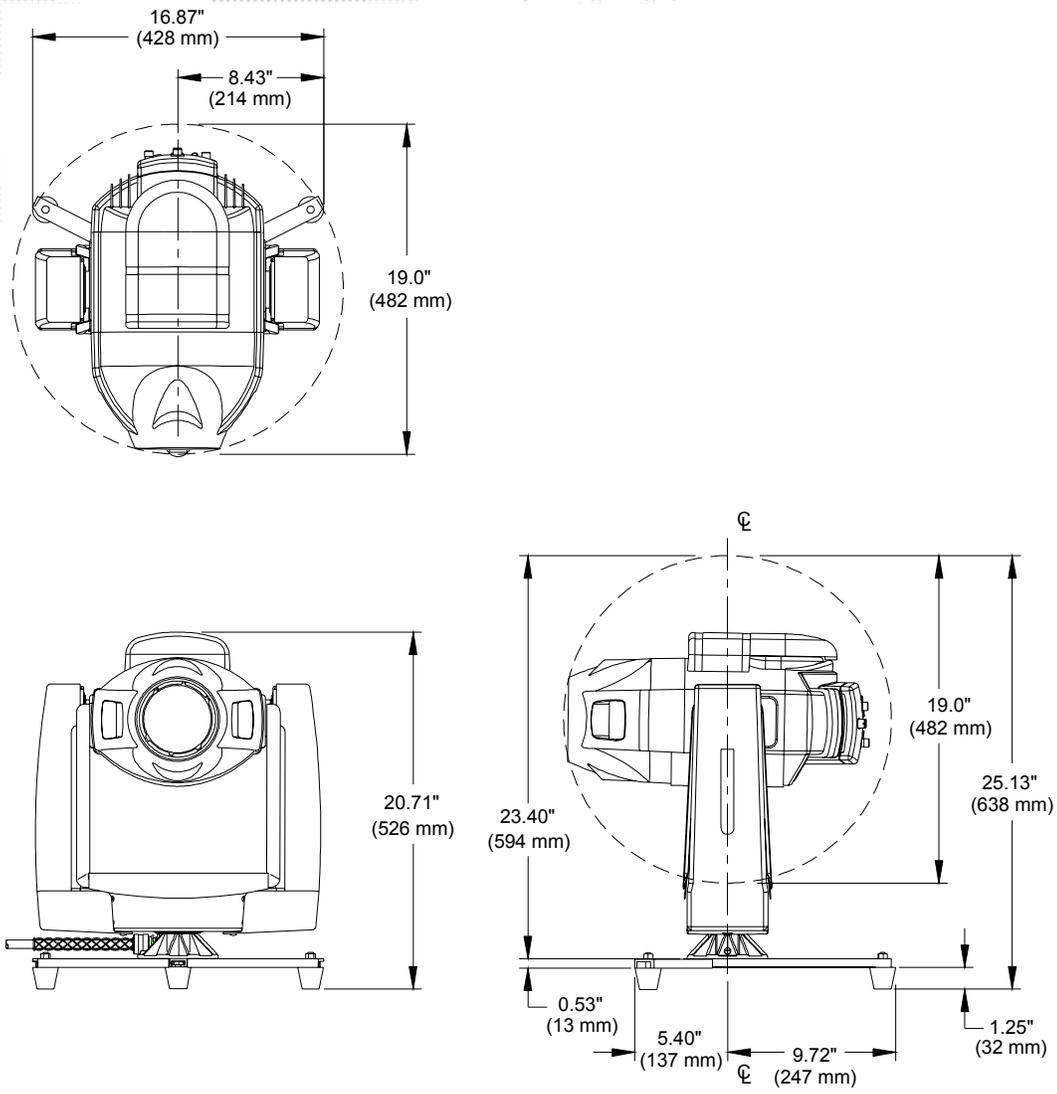


Figure 2-6: Floor Mounting Clearances

SYSTEM CONNECTION

Connecting to System (Typical)

The VL6C+ Spot Luminaire requires a Smart Repeater unit for power and control by DMX512 consoles. (Refer to "Smart Repeater Units" on page 12 of the Operation Overview section.) Lamp power is provided by an APS6 power supply module installed in a Series 300 Modular Rack.



WARNING: Voltages high enough to injure or kill a person exists in the AC power rack when power is applied. Verify that power has been removed from the AC rack before reconfiguring bus bars or performing other internal work.

Three-Phase Power Source

The system is commonly connected to a three-phase AC power source. Three-phase AC power is produced by alternators which contain three separate windings designed so that the voltages induced in them are equal in amplitude and out of phase with each other by exactly 120 degrees. The outputs can be connected in one of two methods to produce a three-wire, three-phase circuit: wye-connected source and the delta-connected source.

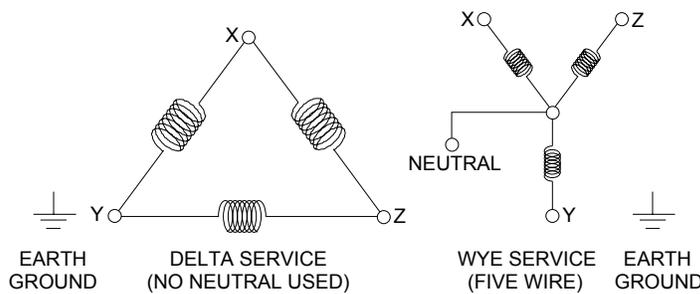


Figure 2-7: Three-Phase Power Diagram

In almost all cases the power source (house service) will be wye connected, but Series 200/300 equipment may be connected either as delta or wye loads as required. The most obvious difference between delta and wye loads is that a wye load uses a neutral and a delta load does not.

Note: The Series 200 powered outputs on the modular rack utilize the service neutral, and therefore must not be used with a delta service, and requires the presence of a neutral, even when connected as a delta load.

There are five connections for a wye source and four connections for a delta source. Cables are often color coded to represent corresponding connections.

Table 2-1: Delta/Wye Connections

Connection	Delta Power *		Wye Power	
	US Color Code	UK Colour Code	US Color Code	UK Colour Code
Phase X	Black	Gray	Black	Gray
Phase Y	Red	Black	Red	Black
Phase Z	Blue	Brown	Blue	Brown
Neutral	N/A	N/A	White	Blue
Ground	Green	Green	Green	Green

* Not applicable in Europe.

Input Voltage

When the system is configured for delta operation, the input voltage to the luminaires equals the phase-to-phase voltage of the power source. When the system is configured for wye operation, the input voltage to the luminaires equals the phase-to-neutral voltage of the power source. Single-phase power can be used to operate the system by configuring the equipment for wye operation and connecting all three phase inputs to the same single-phase source. APS6 modules usually operate under three-phase power, but can also be operated under 180-240 VAC, single phase mains with L1, L2, and L3 tied together at the SixPack chassis.

Typical wye services in the United States produce voltages ranging from 175 to 225 VAC phase-to-phase and 90 to 130 VAC phase-to-neutral. The SixPack Chassis and the ACS rack should be placed in delta mode so that the racks produce 175 to 225 VAC to the system. AC for the system is produced across the phases.

In Europe, wye services produce voltages ranging from 310 to 415 VAC phase-to-phase and 180 to 240 VAC phase-to-neutral. Since the system can not operate in voltages above 260 VAC, the SixPack Chassis and ACS rack must be placed in wye mode, thus activating the neutral and placing the system into the standard 180 to 240 VAC operating range.

Configuring Modular Rack and APS6 Modules

Set Modular Rack SixPack chassis delta/ye switch(es) to correct setting:

Determine requirements for either delta or wye load.

- + While operation as a delta load is typical in the U.S., most European countries require the system to be configured as a wye load. For example, if the house service is a wye-connected source and the phase-to-neutral voltage is 220, the system must be configured as a wye load.
- + Also note that if line voltage is 120 phase-to-neutral, the system must be configured as a delta load. If line voltage is 220 phase-to-neutral, the system must be configured as a wye load.

Table 2-2: Requirements For Delta and Wye Loads

Type	VAC Phase to Neutral	VAC Phase to Phase	Delta/Wye Jumper Position	Voltage to Modules
Wye	100-130	175 - 225	Delta	175 - 225
Wye	180 - 240	310 - 415	Wye	180 - 240
Delta	-	180 - 240	Delta	180 - 240
Single Phase	180 - 240	-	Wye	180 - 240

At rear of SixPack chassis, set switch to required setting (**Figure 2-8**).

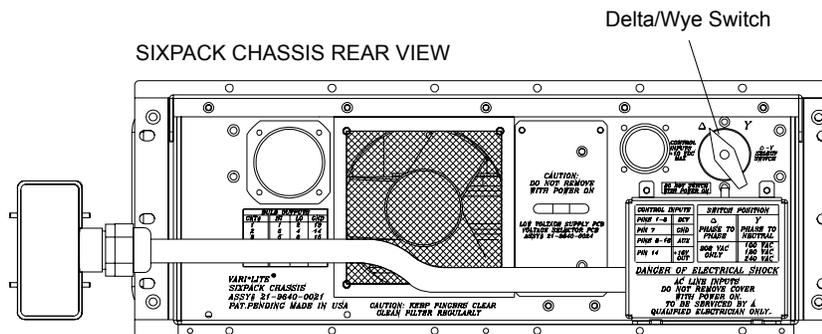


Figure 2-8: Series 300 Modular Rack SixPack Chassis

Connect Series 300 Modular Rack to power source:

Three-phase power will need to be supplied to the system. The maximum recommended Modular Rack power requirement is 200 amps, using 2/0 feeder with 4/0 Cam-Lok connectors and a 200A line disconnect. A SixPack Chassis requires 30 amps, and uses Hubbell or Epic connectors on 8/5 multicore cable. Connector choice is dependent upon location. This cable will need to be run from a house disconnect through a 30A line disconnect to the racks.



WARNING: The high voltages required to run this equipment are dangerous. Electrical "tie-ins" should be handled by a qualified electrician.

Note: Some equipment in Europe will work using single-phase power. Check with an Account Manager regarding your event.

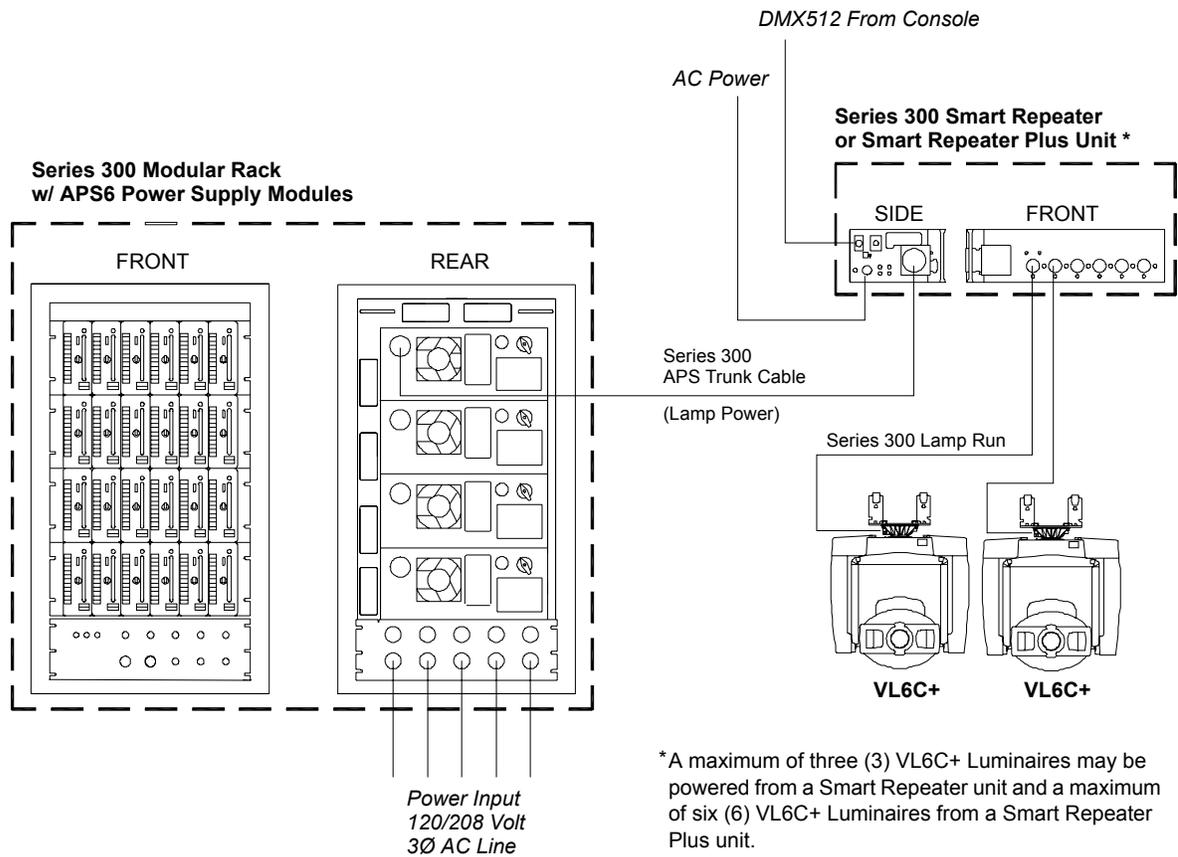


Figure 2-9: Power and Data Configuration (Typical)

Configure APS6 module(s):

Lamp power for the VL6C+ Spot Luminaire is provided by an APS6 power supply module installed in a Series 300 Modular Rack.



CAUTION: Do not change mode or power setting with power applied to module.

- Step 1. At face of APS6 module(s), set rotary power switch to the 700W position (**Figure 2-10**).
- Step 2. Set mode switch to PSET for manual operation.
- Step 3. Apply power to lamp by moving circuit breaker switch to the ON position.

Note: The PSET (Preset) mode enables manual control of the module. This is the normal mode of operation. The DCV (Dimmer Control Voltage) mode operates the module with 0-10Vdc control input. This mode is only required when using an SPC-36 controller to remotely control modules from a console.

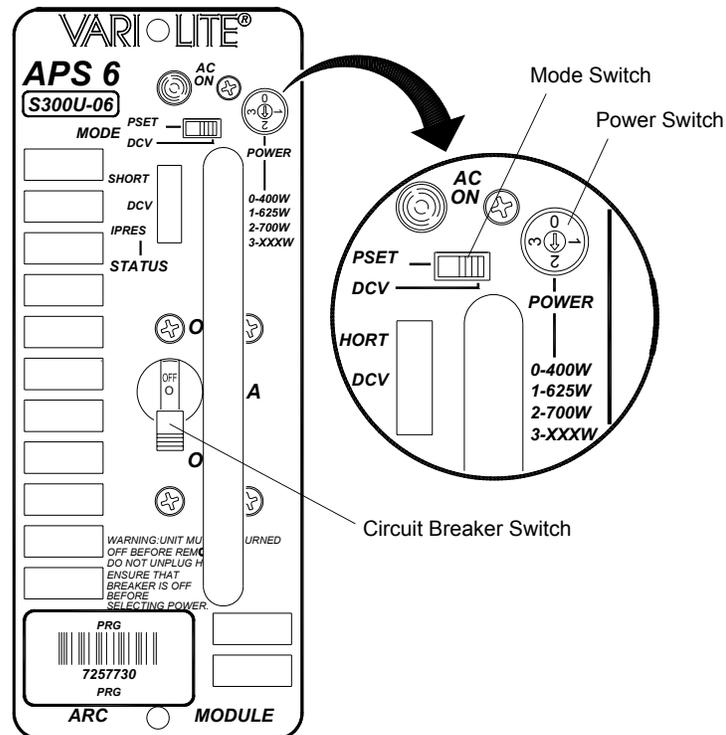


Figure 2-10: APS6 Module

Power Up the Luminaire:

Proceed to "[Powering Up the Luminaire](#)" on page 28 for further operating instructions.



3.

OPERATION

This chapter contains instructions for power-up, reset and lamp dousing, along with DMX512 mapping information required for controlling the luminaire.

- + POWER-UP PROCEDURES
- + SMART REPEATER MODES
- + DMX512 MAPPING

POWER-UP PROCEDURES

Powering Up the Luminaire

When power is applied, the VL6C+ Spot Luminaire will begin a calibration sequence which moves its pan, tilt, and all other mechanisms. After calibration, the luminaire head will either stop at its "home" position (which positions the pan and tilt axis at mid-rotation) or move to its current DMX-defined position if DMX512 data is present. All other mechanisms will also move to their "home" or DMX-defined positions.



CAUTION: Before applying power, be sure the luminaire is positioned so that the head and yoke can move freely without restriction. Refer to the Installation chapter for complete setup instructions.

To power up:

- Step 1. Apply power and data to Smart Repeater or Smart Repeater Plus.
- Step 2. Allow luminaire to complete calibration sequence.
- Step 3. The luminaire is now ready for operation. See "[DMX512 Mapping](#)" on page 32 for control parameters.

Note: Refer to "[Proper Lamp Servicing and Operation](#)" on page 43 for correct lamp operating procedures.

Soft Reset

A "soft reset" can be accomplished using the reset switch located in the yoke leg. During a soft reset, the lamp will not be extinguished, eliminating the need to wait for the lamp to cool down before restriking.

To perform a soft reset:

Step 1. Remove board-side yoke leg cover (**Figure 3-1**).

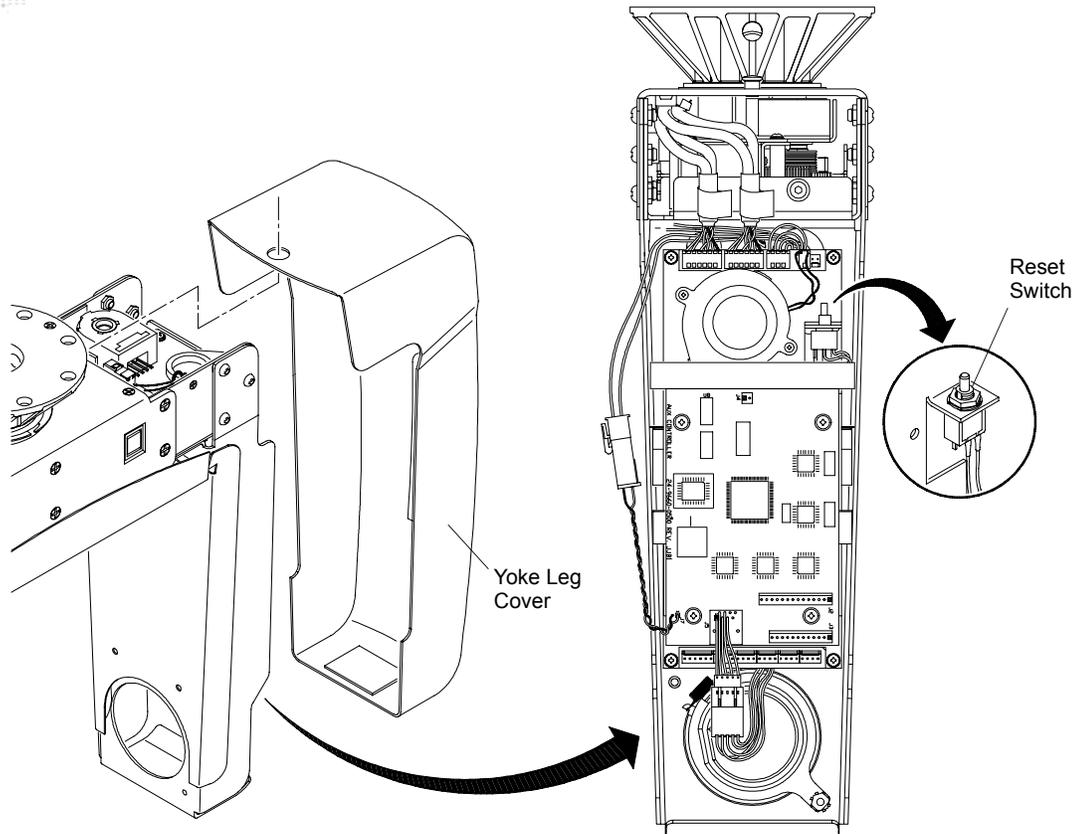


Figure 3-1: Accessing the Reset Switch

- Step 2. Press reset switch.
- Step 3. Allow luminaire to execute reset and calibration procedure.
- Step 4. Replace yoke leg cover.

Lamp Douse Switch

The lamp douse switch should be used to douse the arc lamp before disconnecting the pigtail cable. This will prevent damage to the contacts in the CPC connector, which can be caused by drawing an arc during disconnect. To douse the lamp, press the lamp douse switch located at the yoke cross-member.

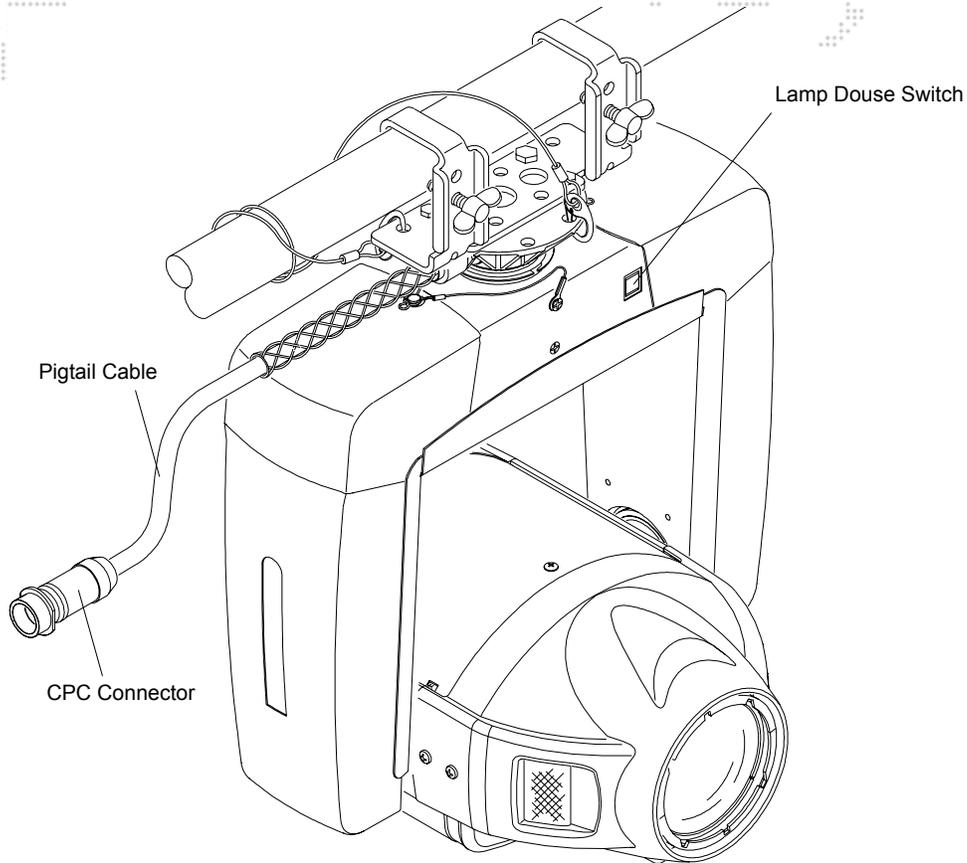


Figure 3-2: Lamp Douse Switch Location

Note: Refer to "Proper Lamp Servicing and Operation" on page 43 for correct lamp operating procedures.

SMART REPEATER MODES

Setting Smart Repeater DMX512 Modes

There are a total of ten (10) software modes available for use in the Smart Repeater or Smart Repeater Plus units, allowing optimized control of the lighting system. Modes 5-10 apply to the VL6C+ Spot Luminaire. Below are brief descriptions of the modes and how to access them.

Note: It is possible to have multiple modes in a single system, but not on a single Smart Repeater unit.

MODE 5: 16-Bit with Reset - To set Mode 5, set the thumbwheel to 905. Mode 5 requires 14 channels per luminaire output port for a total of 84 channels per Smart Repeater unit.

MODE 6: Extended 16-Bit - To set Mode 6, set the thumbwheel to 906. Mode 6 requires 17 channels per luminaire output port for a total of 102 channels per Smart Repeater unit.

MODE 7: 16-Bit with Reset - To set Mode 7, set the thumbwheel to 907. Mode 7 requires 17 channels per luminaire output port for a total of 102 channels per Smart Repeater unit.

MODE 8: Extended 16-Bit - To set Mode 8, set the thumb wheel to 908. Mode 8 requires 20 channels per luminaire output port for a total of 120 channels per Smart Repeater unit.

MODE 9: 16-Bit with Reset - To set Mode 9, set the thumbwheel to 909. Mode 9 requires 24 channels per luminaire output port for a total of 144 channels per Smart Repeater unit.

MODE 10: Extended 16-Bit - To set Mode 10, set the thumbwheel to 910. Mode 10 requires 27 channels per luminaire output port for a total of 162 channels per Smart Repeater unit.

To set Smart Repeater mode:

- Step 1. With no signal applied (VARI*LITE or DMX512), set thumbwheel to required mode number.
- Step 2. Apply power to Smart Repeater or Smart Repeater Plus unit (plug it in). After a moment, a number from 1-9 or the letter "A" (hexadecimal 10) will be seen in the seven-segment display. The mode is now set and will remain that way until it is reassigned.

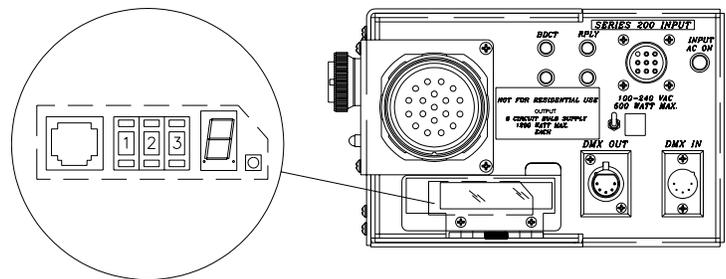


Figure 3-3: Smart Repeater Thumbwheel and Display

Note: The mode is stored in a battery backed-up RAM in the Smart Repeater unit. A dead battery may cause the Smart Repeater to revert to the default mode (Mode 4) on power-up.

Note: When no data is being received, the Smart Repeater unit will flash a "0" and the mode number.

DMX512 MAPPING

DMX512 Mapping by Mode

The following charts provide DMX512 mapping, by Smart Repeater mode, for the VL6C+ Spot Luminaire.

DMX Mode 5

Table 3-1: DMX Mode 5 (16-bit with Reset)

Port Number	DMX Channel	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Zoom
	12	Rotating Wheel
	13	Rotation/Index
	14	Reset
2	15-28	--
3	29-42	--
4	43-56	--
5	57-70	--
6	71-84	--

DMX Mode 6

Table 3-2: DMX Mode 6 (16-bit Extended)

Port Number	DMX Channel	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Zoom
	12	Rotating Wheel
	13	Rotation/Index
	14	Focus Time
	15	Color Time
	16	Beam Time
	17	Reset
2	18-34	--
3	35-51	--
4	52-68	--
5	69-85	--
6	86-102	--

DMX Mode 7

Applies to Smart Repeater Plus Unit ONLY.

Table 3-3: DMX512 Mode 7 (16-bit with Reset)

Port Number	DMX Channel	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Zoom
	12	Rotating Wheel
	13	Rotation/Index
	14	Reset
	15	--
	16	--
	17	--
2	18-34	--
3	35-51	--
4	52-68	--
5	69-85	--
6	86-102	--

DMX Mode 8

Applies to Smart Repeater Plus Unit ONLY.

Table 3-4: DMX512 Mode 8 (16-bit Extended)

Port Number	DMX Channel	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Zoom
	12	Rotating Wheel
	13	Rotation/Index
	14	Focus Time
	15	Color Time
	16	Beam Time
	17	Reset
	18	--
	19	--
	20	--
2	21-40	--
3	41-60	--
4	61-80	--
5	81-100	--
6	101-120	--

DMX Mode 9

Applies to Smart Repeater Plus Unit ONLY.

Table 3-5: DMX512 Mode 9 (16-bit with Reset)

Port Number	DMX Chan.	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Zoom
	12	Rotating Wheel
	13	Rotation/Index
	14	Reset
	15	--
	16	--
	17	--
	18	--
	19	--
	20	--
	21	--
	22	--
	23	--
	24	--
2	25-49	--
3	50-73	--
4	74-97	--
5	98-121	--
6	122-144	--

DMX Mode 10

Applies to Smart Repeater Plus Unit ONLY.

Table 3-6: DMX512 Mode 10 (16-bit Extended)

Port Number	DMX Chan.	VL6C+ Luminaire
1	1	Intensity
	2	Hi Byte Pan
	3	Lo Byte Pan
	4	Hi Byte Tilt
	5	Lo Byte Tilt
	6	Wheel 1
	7	Wheel 2
	8	Beam Iris
	9	Lens (Edge)
	10	Strobe
	11	Rotating Wheel
	12	Rotation/Index
	13	Focus Time
	14	Color Time
	15	Beam Time
	16	Reset
	17	--
	18	--
	19	--
	20	--
	21	--
	22	--
	23	--
	24	--
	25	--
	26	--
	27	--
2	28-54	--
3	55-81	--
4	82-108	--
5	109-135	--
6	136-162	--

DMX512 Mapping by Component

The following charts provide DMX512 mapping for all VL6C+ Luminaire functions.

Table 3-7: DMX512 Values for Fixed Wheels

Wheel Step/Position		DMX Value	% Value	Wheel Step/Position		DMX Value	% Value
0	0	0-2	0	66		77-79	30
95		3-5	1	65		80-81	31
94		6-7	2	64	4	82-84	32
93		8-10	3	63		85-86	33
92	1/2	11-12	4	62		87-89	34
91		13-15	5	61		90-91	35
90		16-17	6	60	4 1/2	92-94	36
89		18-20	7	59		95-96	37
88	1	21-22	8	58		97-99	38
87		23-25	9	57		100-101	39
86		26-28	10	56	5	102-104	40
85		29-30	11	55		105-107	41
84	1-1/2	31-33	12	54		108-109	42
83		34-35	13	53		110-112	43
82		36-38	14	52	5-1/2	113-114	44
81		39-40	15	51		115-117	45
80	2	41-43	16	50		118-119	46
79		44-45	17	49		120-122	47
78		46-48	18	48	6	123-124	48
77		49-50	19	47		125-127	49
76	2-1/2	51-53	20	46		128-130	50
75		54-56	21	45		131-132	51
74		57-58	22	44	6-1/2	133-135	52
73		59-61	23	43		136-137	53
72	3	62-63	24	42		138-140	54
71		64-66	25	41		141-142	55
70		67-68	26	40	7	143-145	56
69		69-71	27	39		146-147	57
68	3-1/2	72-73	28	38		148-150	58
67		74-76	29	37		151-152	59

Table 3-7: DMX512 Values for Fixed Wheels (Continued)

Wheel Step/Position	DMX Value	% Value	Wheel Step/Position	DMX Value	% Value		
36	7-1/2	153-155	60	15	207-209	81	
35		156-158	61	14	210-211	82	
34		159-160	62	13	212-214	83	
33		161-163	63	12	10-1/2	215-216	84
32	8	164-165	64	11		217-219	85
31		166-168	65	10		220-221	86
30		169-170	66	9		222-224	87
29		171-173	67	8	11	225-226	88
28	8-1/2	174-175	68	7		227-229	89
27		176-178	69	6		230-232	90
26		179-181	70	5		233-234	91
25		182-183	71	4	11-1/2	235-237	92
24	9	184-186	72	3		238-239	93
23		187-188	73	2		240-242	94
22		189-191	74	1		243-244	95
21		192-193	75	Spin 1		245-247	96
20	9-1/2	194-196	76	Spin 2		248-249	97
19		197-198	77	Spin 3		250-252	98
18		199-201	78	Spin 4		253-254	99
17		202-203	79	Spin 5		255	100
16	10	204-206	80				

The channel assigned to the rotating wheel selects the required gobo as follows:

DMX Values	Percent Values	Action
156-255		Open
129-153	55	Gobo 5
102-128	45	Gobo 4
77-102	35	Gobo 3

DMX Values	Percent Values	Action
53-76	25	Gobo 2
27-52	15	Gobo 1
0-26	5	Open

Value	Action
0 - 2	Open
3 - 5	Closed
6 - 7	Slow Random
8-10	Medium Random
11-12	Fast Random
13-255	Where 13 is greatest interval and 255 is least interval (fastest) strobe

Timing Channels

Timing channel control improves the timed moves of certain groups of parameters. Three timing channels are provided: one for Focus (Pan and Tilt), one for color parameters and one for beam parameters. Timing channels support time values of up to six minutes.

Channel Function	Timing Channel		
	Focus Time	Color Time	Beam Time
Pan (Hi Byte/Lo Byte)	◆		
Tilt (Hi Byte/Lo Byte)	◆		
Blue		◆	
Amber		◆	
Magenta		◆	
Color Wheel		◆	
Diffusion			◆
Beam			◆
Edge			◆
Zoom			◆
Rotating Gobo			◆
Gobo Index (HiByte/LoByte)			◆
Shutter (all 9 motors)			◆

A timing value of zero is full speed. A time value of 100% (or 255 in DMX) causes the associated parameter(s) to follow cue fade time (console time) rather than the timing channel.



4.

TROUBLESHOOTING AND MAINTENANCE

This chapter provides a basic troubleshooting guide, along with procedures for extended care of the luminaire and lamp.

- + TROUBLESHOOTING
- + EQUIPMENT HANDLING
- + ROUTINE MAINTENANCE

For more detailed troubleshooting and maintenance procedures, refer to the VL6C+ Spot Luminaire Service Manual (02.9803.0010).

TROUBLESHOOTING

Basic Troubleshooting Guide

The following is a basic troubleshooting guide to get the luminaire up and running. For more extensive troubleshooting and testing, refer to the VL6C+ Spot Luminaire Service Manual (02.9803.0010).

Symptom	Cause(s)	Refer to...
No power to luminaire	Input cable not connected to Smart Repeater unit.	page 11
	Power not applied to Smart Repeater unit.	page 11
No lamp output	No intensity value.	Your console user manual
	APS6 Module breaker switch not turned on.	page 11
	Lamp needs replacement.	page 44
	Backcap not fully seated causing backcap safety interlock to open.	page 44
Hot spot visible in beam <i>or</i> beam not optimized	Lamp needs to be aligned.	page 45



EQUIPMENT HANDLING

Proper Lamp Servicing and Operation

Servicing

- + When handling a lamp, hold it by the ceramic base while wearing cotton gloves or finger cots. Do not touch the glass envelope (bulb). If you touch the glass with bare fingers, wipe off any fingerprints with alcohol.

Heat

- + When lamps are lit, the interior of the luminaires becomes very hot. To aid in the airflow circulation within the luminaires, after dousing the lamps, wait ten minutes before removing power to the luminaires. This will provide enough time for the equipment fan to cool off the unit.

Lamp Life

- + When operating arc lamps, allow luminaires to operate for at least 3 minutes. It takes about 3 minutes for the fill components (mercury and halogen-metal compounds) in the lamp tubes to vaporize completely. If the lamps are switched off earlier than 3 minutes, the fill components are partially vaporized. The inadequately vaporized fill components and the electrode material (tungsten) are deposited in the areas of the lamp tubes that have remained cool. As a result, the lamp tubes blacken prematurely and reduce the service lives of the lamps.
- + If system will be unattended for more than 3-4 hours, luminaire lamps should be doused. Standby mode should NOT be used for more than 3-4 hours (only applies to systems using an SPC-36 Controller).

Proper Lamp Douse

- + The lamp douse switch should be used to douse the arc lamp before disconnecting the pigtail cable. This will prevent damage to the contacts in the CPC connector, which can be caused by drawing an arc during disconnect. To douse the lamp, press the lamp douse switch located at the yoke cross-member. (Refer to "[Lamp Douse Switch](#)" on page 30.)

ROUTINE MAINTENANCE

Replacing the Lamp

Parts:

71.2528.0700.0 LAMP, MSR 700W

Tools:

Screwdriver, #2 Phillips
Screwdriver, slotted



WARNING: Remove power from luminaire before performing any maintenance procedures.



CAUTION: Refer to "[Proper Lamp Servicing and Operation](#)" on page 43 before handling the lamp.

To replace lamp:

- Step 1. At APS6 module, remove power from lamp and allow lamp to cool for at least 5 minutes.
- Step 2. Remove power from luminaire.
- Step 3. At backcap, loosen captive knob and slide backcap out of head assembly (it will remain attached by tether). (**Figure 4-1.**)
- Step 4. Remove lamp by pulling straight out of socket.
- Step 5. Noting polarity of lamp to socket, install new lamp by pressing firmly into socket, making sure it is fully seated.
- Step 6. Align guide rods in guide holes and slide backcap into head assembly.
- Step 7. Ensure that backcap is fully seated in rear chassis and re-tighten captive knob.
- Step 8. Align lamp. (Refer to next procedure.)

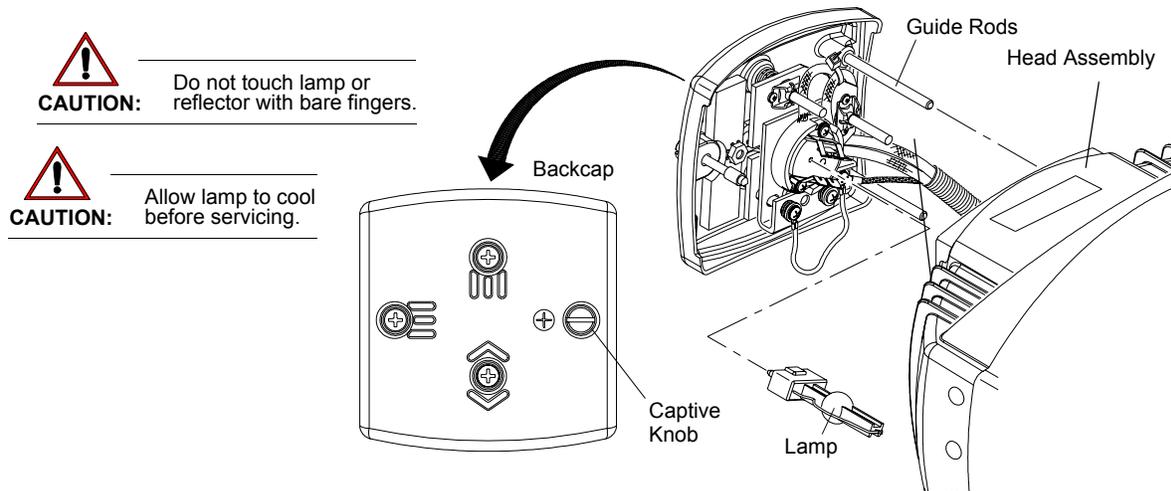


Figure 4-1: Lamp Replacement

Aligning the Lamp

The design of the VL6C+ optical system is based on an optimally flat field. A flat field is one where there is no detectable hot spot.

After a new lamp is installed, it will be necessary to align the lamp to optimize the beam. Knobs located at the luminaire's backcap allow for adjustment.

Tools:

Screwdriver, #2 Phillips

To align lamp:



WARNING: Backcap and adjustment knobs will be HOT during lamp operation. Wear gloves and/or use tools to prevent burns.

To align lamp:

- Step 1. Power up luminaire and allow to warm up for at least ten minutes.
- Step 2. Set intensity to 100%.
- Step 3. Position beam on a white wall at a distance of 10' to 20'.
- Step 4. Using control console, open beam size iris, set zoom for mid-range, and adjust for hard edge.
- Step 5. At backcap, using vertical and horizontal knobs, adjust hot spot to center of beam
(**Figure 4-2.**)
- Step 6. Using focus knob, adjust beam for flat field.

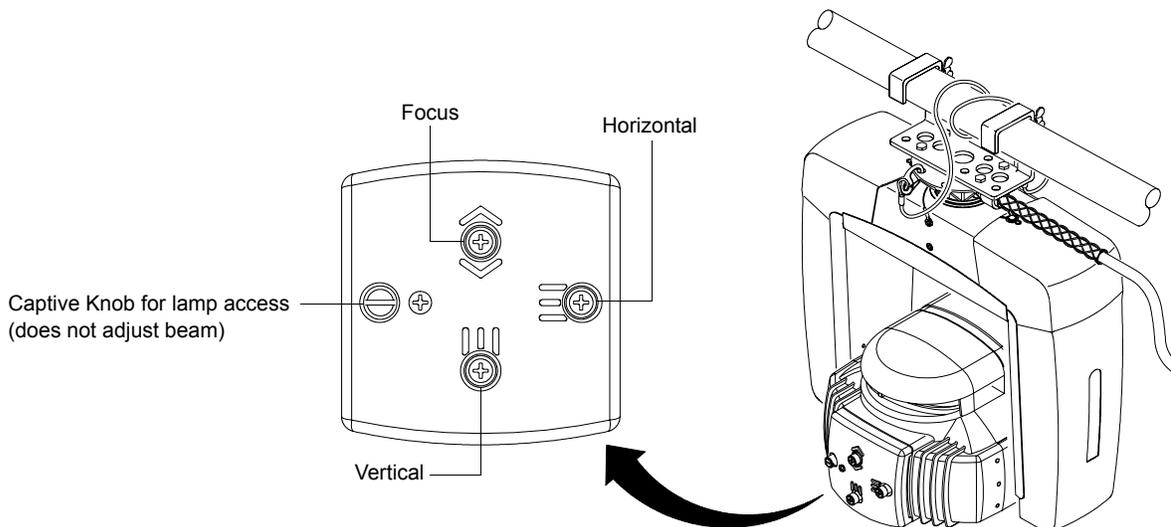


Figure 4-2: Lamp Alignment Controls

Replacing a Standard Gobo or Color Filter

Parts:

Standard Gobo or Color Filter, as required

Tools:

Screwdriver, #2 Phillips



WARNING: Remove power from luminaire before performing any maintenance procedures.

To remove and replace a standard gobo or color filter:

- Step 1. Remove power from luminaire.
- Step 2. At head assembly, turn two captive screws one-quarter turn and remove cover (it will remain attached by tether). **(Figure 4-3.)**
- Step 3. In some cases it is easier to slide the color/gobo bulkhead partially out of the head assembly to access gobo and color filters. If required, do the following:
- At Yoke Termination PCB, disconnect cables at locations J10-J17. (Cables are labeled for easy re-connection.)
 - At color/gobo bulkhead, turn captive screw one-quarter turn to release bulkhead.
 - Remove bulkhead from head assembly.

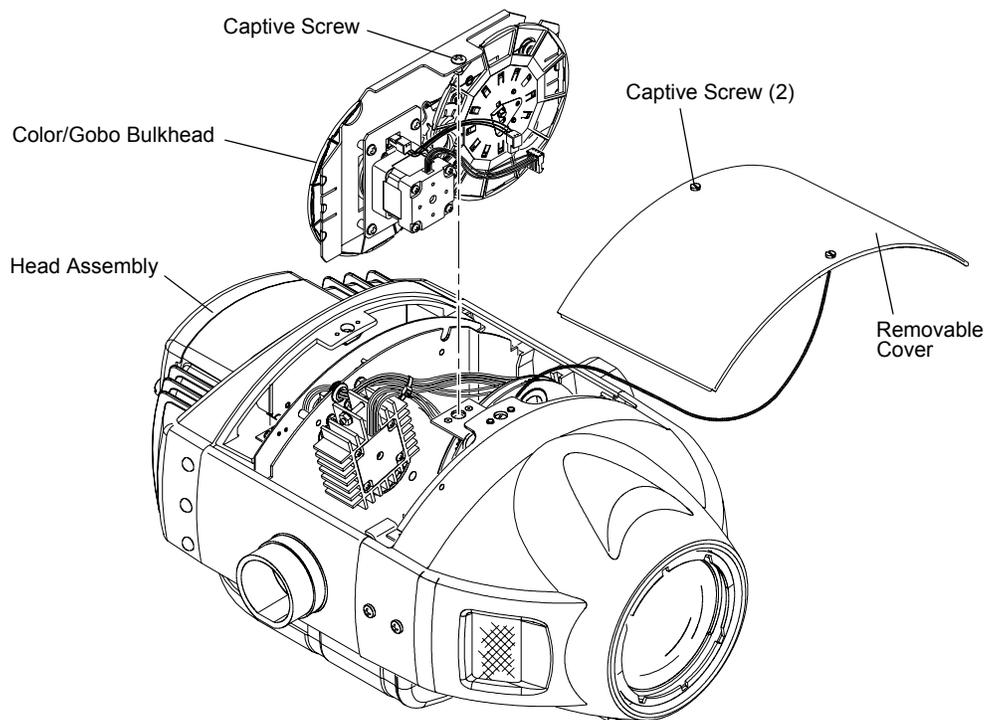


Figure 4-3: Removing Color/Gobo Bulkhead

- Step 4. If not removing color/gobo bulkhead, simply rotate wheel until gobo or color filter is accessible.



CAUTION: Do not touch gobo or color filters with bare fingers. Wear cotton gloves or other covering while replacing.

Step 5. Using fingers, grasp frame of gobo or color filter and pull out of wheel hub (**Figure 4-4.**)

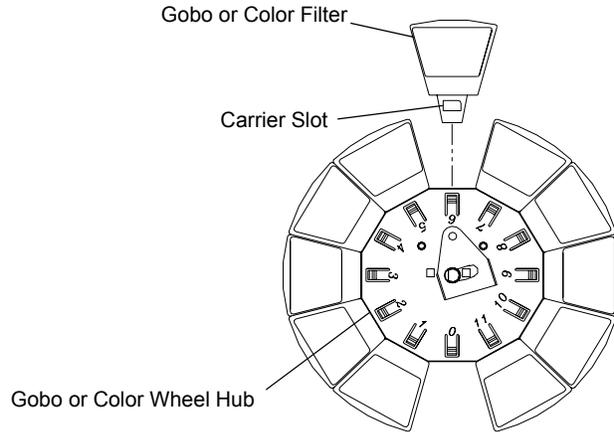


Figure 4-4: Replacing a Standard Gobo or Color Filter

Step 6. Noting proper orientation of carrier slot, insert new gobo or color filter into position and push fully into place.

Step 7. Re-install color/gobo bulkhead, as required, and re-connect cables to Yoke Termination PCB (**Figure 4-3.**)

Step 8. Re-install removable cover by positioning cover on head assembly and tightening two captive screws.

Replacing a Rotating Gobo

Parts:

Rotating Gobo, as required

Tools:

Screwdriver, #2 Phillips



WARNING: Remove power from luminaire before performing any maintenance procedures.

To remove and replace a rotating gobo:

- Step 1. Remove power from luminaire.
- Step 2. At head assembly, turn two captive screws one-quarter turn and remove cover (it will remain attached by tether). (Refer back to **Figure 4-3**.)
- Step 3. At rotating gobo wheel, spin wheel so that desired gobo is accessible.



CAUTION: Do not touch gobo with bare fingers. Wear cotton gloves or other covering while replacing.

- Step 4. Remove gobo from wheel by pulling outward (**Figure 4-5**). Note that the 4-Facet Prism gobo has a spring, while the other gobos do not.

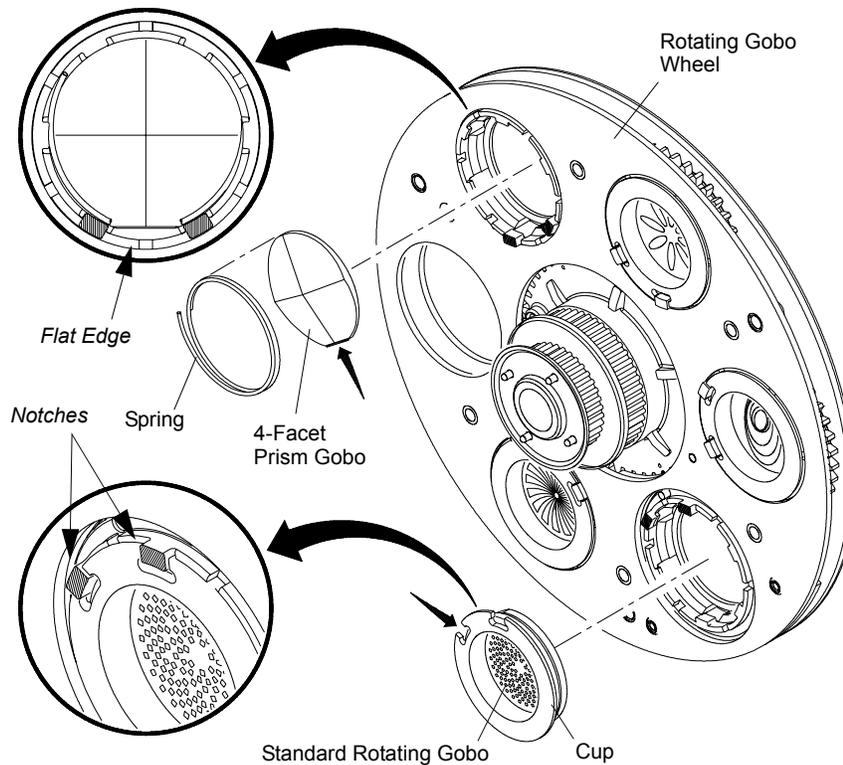


Figure 4-5: Replacing a Rotating Gobo

- Step 5. Install a new Prism gobo by aligning flat edge of gobo with flat space between the two notches on gobo wheel. **CAUTION:** If this is not done correctly, gobos will not index properly across multiple luminaires, and can also fall out of the wheel.
- Step 6. Install a new standard gobo by aligning the two notches in the gobo's cup with the notches on the gobo wheel.
- Step 7. Re-install head cover.



Cleaning the Luminaire

Tools:

- Clean, lint-free cloth (2)
- Window cleaner
- 99% + Isopropyl alcohol
- Vacuum cleaner with brush nozzle or compressed air

To clean the outside of the luminaire:



WARNING: Remove power from luminaire before performing any maintenance procedures.



CAUTION: Use caution when handling lenses or reflector. Avoid scratching optical surfaces.

- Step 1. Remove power from luminaire.
- Step 2. Using vacuum cleaner with brush nozzle or compressed air, clean dust from external components. *If using compressed air to clean out luminaire, DO NOT allow fans or blower to spin at high speeds, as this will damage their bearings.*
- Step 3. Using window cleaner and a clean, lint-free cloth, wipe outside surface of luminaire. *DO NOT use window cleaner on lenses or reflector.*
- Step 4. Using 99% + Isopropyl alcohol and a clean, lint-free cloth, clean lenses and reflector.



Notes



A.

TECHNICAL SPECIFICATIONS



VL6C+ Spot Luminaire

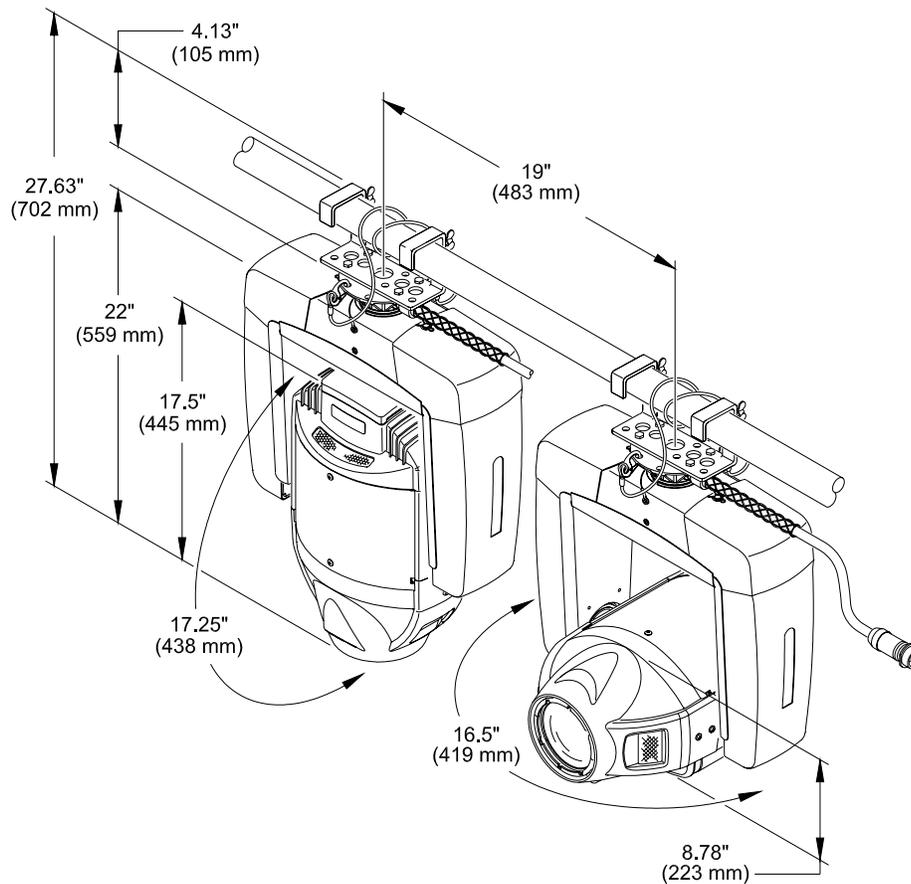
Description

SOURCE:	700 Watt Short Arc Metal Halide Lamp Color Temperature 5600°K CRI 80
OUTPUT:	15,500 lumens
BALLAST:	Lamp power is provided by an APS6 module in the Modular Power Distribution Rack at 90 to 264 VAC, 50/60 Hz.
LOW VOLTAGE:	Luminaires are powered through a Smart Repeater or Smart Repeater Plus processing unit.*
REFLECTOR:	Precision glass reflector with dichroic cold mirror coating.
OPERATING TEMP:	-20° to 120°F (-29° to 49°C)
COOLING:	Forced air.
CONTROL:	Compatible with all PRG consoles and a wide variety of DMX-512 consoles.
POSITIONING:	Can be mounted and operated in any orientation.
SPACING:	Hangs on 19 in. (483 mm) centers.
WEIGHT:	29 lbs (13.2 kg)

Programmable Functions

ZOOM:	Continuously variable field angle from 19° to 43°, programmable over a timed range of 2 seconds to 20 minutes.
BEAM SIZE CONTROL:	In addition to the zoom optics, a mechanical iris provides continuous beam size control for both rapid changes and smooth timed beam angle changes.
INTENSITY:	Full field dimming designed for both smooth timed fades and strobe effects.
COLOR & GOBO:	Two wheels, each providing 11 easily loaded positions for user-selectable color and gobo choices.
ROTATING GOBO:	Six-position rotating gobo wheel with five rotatable, indexable gobo positions and one open position. Smooth and stepless individual gobo rotation over a range from 0.2 RPM to 80 RPM in either direction. Angular resolution is 0.3°.
EDGE & FOCUS:	Variable beam focus to soften edges of gobos or spots.
PAN & TILT:	Smooth, time controlled continuous motion by way of a digital servo system.
RANGE:	Pan - 360°, Tilt - 270°
MAX VELOCITY:	240° per second.
ACCURACY:	0.3° resolution.

* A maximum of three (3) VL6C+ Luminaires may be powered from a Smart Repeater unit and a maximum of six (6) VL6C+ Luminaires from a Smart Repeater Plus unit.



Photometric Data

VL6C+ Luminaire with 700W Short Arc Metal Halide Lamp

ZOOM LENS POSITION	CANDELA* (cd)	BEAM ANGLE (degrees)	BEAM DIAMETER (Tn) ¹	FIELD ANGLE (degrees)	FIELD DIAMETER (Tn) ¹
NFOV	297,000	15.0°	.263	18.5°	.326
MFOV	104,000	25.0°	.443	30.5°	.545
WFOV	50,000	34.5°	.621	42.5°	.777

¹ Multiply throw distance by Tn to determine coverage.

To calculate center beam illuminance (I) at a specific distance (D): $I = \frac{cd}{D^2}$

-- if (D) is in feet, (I) is in foot candles

-- if (D) is in meters, (I) is in lux

* All data taken with seasoned light source at 20 hours of life.



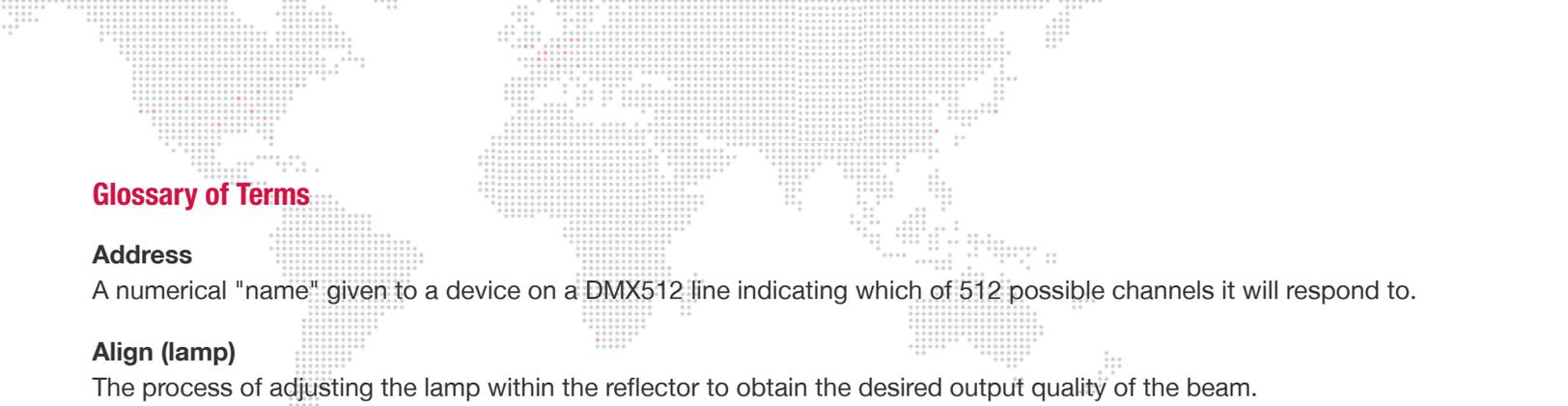
Notes



B.

GLOSSARY

This glossary provides useful terms associated with operating VL6C+ Spot Luminaires.



Glossary of Terms

Address

A numerical "name" given to a device on a DMX512 line indicating which of 512 possible channels it will respond to.

Align (lamp)

The process of adjusting the lamp within the reflector to obtain the desired output quality of the beam.

APS6 Module

The lamp power supply (ballast) for arc lamps found in the VL6C+ Luminaire.

APS6 Trunk Cable

Multi-conductor cable used to provide six circuits of arc lamp power to VARI*LITE Series 300 luminaires. Differs from industry standard six circuit Socapex cable by using pin 19 as a shield to eliminate RF noise, which can interfere with sound systems. (Can be used with incandescent lamps.)

Arc Lamp

A type of lamp which creates light by forming an arc of electricity. Brightness is achieved by including gasses and metals within the envelope of the lamp which dissolve and give off a bright light. Arc lamps must be dimmed mechanically because electrical dimming will extinguish the arc.

Attribute

An individual controllable aspect of a luminaire: pan, tilt, color, etc. Also known as "parameter."

Beam

- 1) The size, shape and sharpness of image of the light beam as projected on stage.
- 2) A function of the luminaire related to the size, shape, and sharpness of the light beam, specified by beam and edge data, and use of gobos (patterns) as required.

C3 Dimmer

The VARI*LITE current sensing dimmer that can be installed in a Modular Rack SixPack chassis to control the intensity of a VL5 or VL5B wash luminaire.

Channel

A control reference which collects a device's associated thumbwheel address(es) (device, lamp power, etc.) and maps them to a single selectable number. Channels are assigned via the patch setup. (Also referred to as a "Control Channel.")

Console Timing

Time value in seconds or minutes applied to an entire cue.

Dimmer

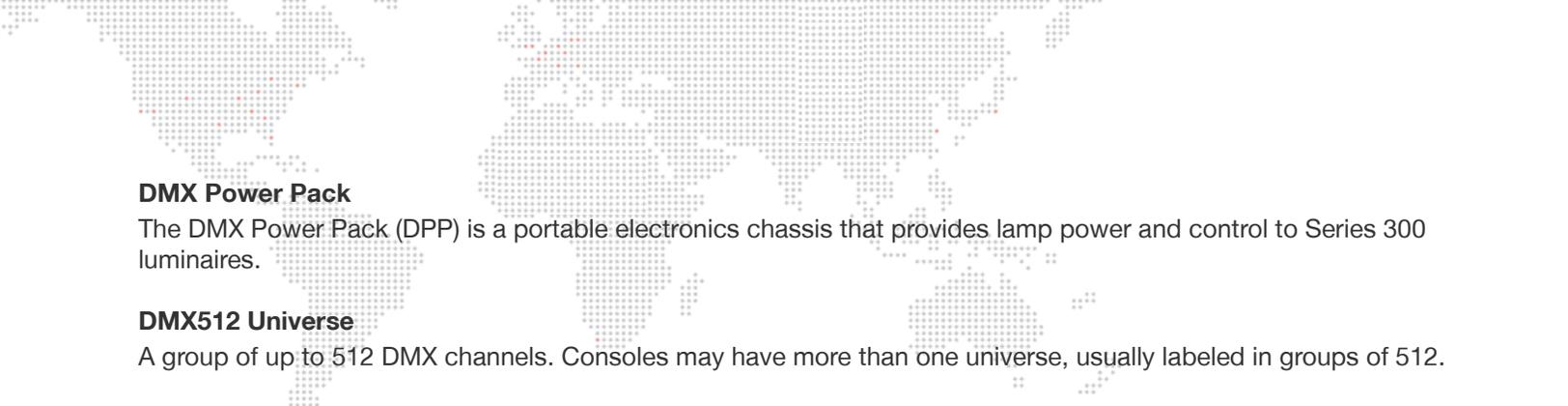
Device used to control the relative output (or intensity) of an incandescent lamp.

DMX512

Digital multiplexing; an industry standard protocol. 8-bit protocol with a maximum of 256 steps of resolution per channel. Maximum of 512 controllable channels per DMX data stream.

DMX512 Cable

Industry standard cable consists of two twisted pair and a shield, and 5-pin XLR style connectors. The pin out is: pin 1 = common (shield), pin 2 = data -, pin 3 = data +. The second pair (pins 4 & 5) may be used for a secondary data link; in VARI*LITE equipment, these pins are not used.



DMX Power Pack

The DMX Power Pack (DPP) is a portable electronics chassis that provides lamp power and control to Series 300 luminaires.

DMX512 Universe

A group of up to 512 DMX channels. Consoles may have more than one universe, usually labeled in groups of 512.

Douse

To de-energize a luminaire lamp. (Douse is unrelated to intensity states.)

Epic Connector

A six-pin, three-phase 35 amp connector found on 8/5 wire used to provide power to a Modular Rack SixPack chassis.

Fan-In

(Break-In) 6 male plugs to female multicore connector. In the case of Series 300 equipment, a Socapex connector.

Fan-Out

(Break-Out) A male multicore connector to 6 female plugs. In the case of Series 300 equipment, a Socapex connector.

Feeder

In the case of Series 300 equipment, 2/0 double-insulated wire, rated at 225 amps, with 4/0 Cam-Lok connectors on either end, color coded by phase, neutral and ground.

Fixture Orientation

Based on the direction the pigtail points as it exits the fixture.

Flipped Focus

When one or more fixtures inadvertently move differently from others in the system.

Focus

The point to which the light beam is directed. Also, a function of the luminaire related to the direction of the beam as specified by pan and/or tilt data.

Frame

A luminaire mechanism which allows framing of the light beam.

Gobo

A pattern (template) used to create backgrounds or texture when projected on to scenery or cycloramas, or to create the illusion of natural elements such as fire, windows or tree leaves.

Hard Reset

Restarts luminaires and reloads operating system and cue data.

Home Position

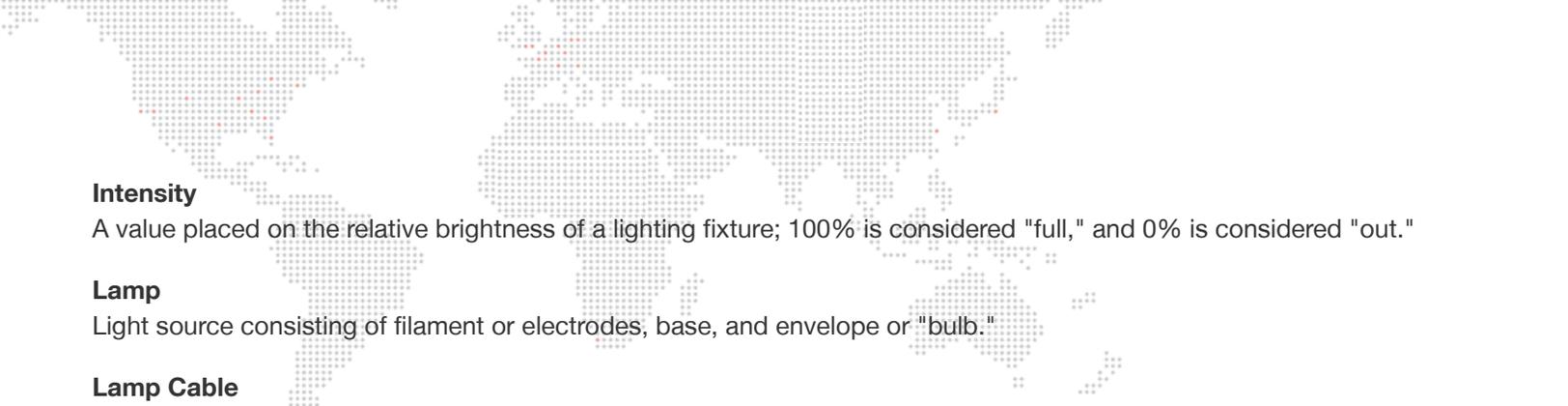
Pan and Tilt values at 50%. Also called "Zero Position" or a "50/50" cue or group.

Hubbell Connector

A five-pin, three-phase connector found on 8/5 wire, used to provide power to a Modular Rack SixPack Chassis, when used with the proper Epic to Hubbell adapter.

Indexing

A function of a rotating gobo mechanism.



Intensity

A value placed on the relative brightness of a lighting fixture; 100% is considered "full," and 0% is considered "out."

Lamp

Light source consisting of filament or electrodes, base, and envelope or "bulb."

Lamp Cable

VARI*LITE cable that extends the fixture pigtail to a Smart Repeater unit.

Luminaire Calibration

The process of a luminaire finding its end stops for all parameters.

Mini-Stepping

Allows for smoother movement of color and gobo wheels in a VL6 spot luminaire.

Mode

Software contained within the Smart Repeater unit allowing for different control options for luminaires.

Modular (Mod) Rack

A power distribution and storage rack for SixPack chassis. The Mod Rack is fitted for 200A Cam-Lok input, with six Epic connectors for individual outputs for up to four rack-mounted chassis and up to two auxiliary chassis. The Mod Rack also has a space for one SPC-36 controller for control of the modules within the chassis.

Output Port

One of the six plugs on the long side of a Smart Repeater unit, with port one being closest to the Socapex connector.

Palette

Term for groups of groups; i.e. all the color groups would be considered the Color Palette, all the beam groups would be the Beam Palette, etc.

Pan

The 360° movement of the luminaire around the axis of the yoke.

Parameter

An individual controllable aspect of a luminaire: pan, tilt, color, etc. Also known as "Attribute."

Part Cue

Basically a "cue within a cue." A portion of a cue with a time applied that is different than the cue time.

Patch

The act of assigning a DMX512 channel to a control channel on a console.

Pigtail

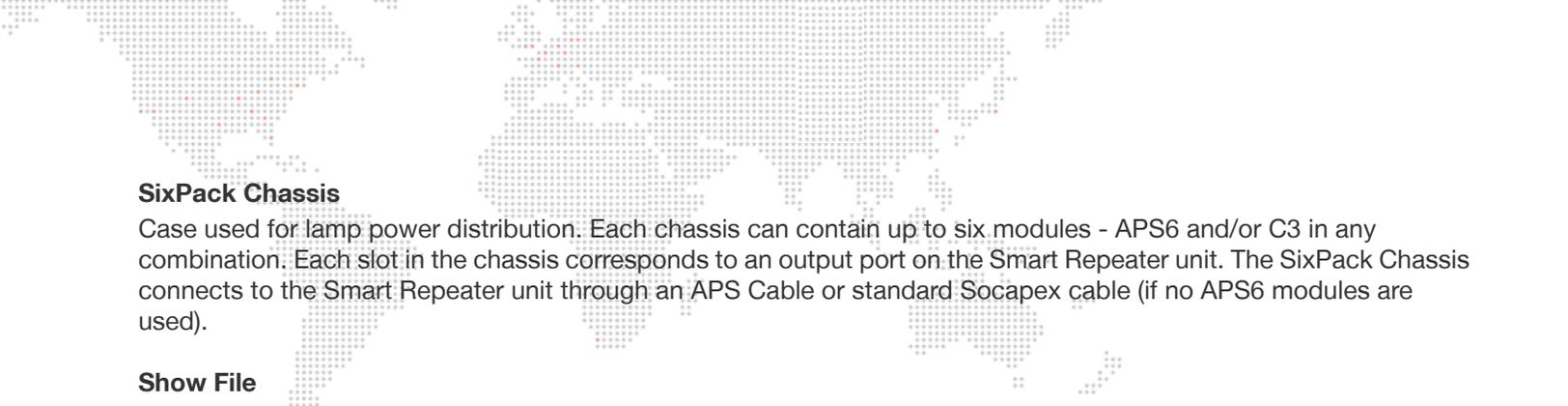
Input cable of a Series 300 luminaire.

Reply

Digital data signals transmitted from each luminaire to the console. Only one luminaire may transmit at a time, in response to a request from the console.

Signal

Control protocol from a lighting console or interface.



SixPack Chassis

Case used for lamp power distribution. Each chassis can contain up to six modules - APS6 and/or C3 in any combination. Each slot in the chassis corresponds to an output port on the Smart Repeater unit. The SixPack Chassis connects to the Smart Repeater unit through an APS Cable or standard Socapex cable (if no APS6 modules are used).

Show File

A file containing all programmed cue data.

Shutter

A mechanism which controls the douser or strobe action of luminaires capable of this function.

Smart Repeater

The Smart Repeater unit is the hub for up to six Series 300 luminaires. The Smart Repeater unit is also an interface between the control system and the luminaires. It consolidates the three things necessary to run Series 300 luminaires into one lamp cable: Control Signal, Lamp power and Motor/Control power.

Socapex Cable

Industry standard multicore cable is used to distribute lamp power to luminaires. It is often created using 19-pin Socapex or Veam connectors and 12/18 cable for six 20A circuits.

Splitter (Isolator)

Device used to optically isolate and split a DMX512 signal. *Note: A DMX "two-fer" cannot be used to divide a signal.*

Start

To energize a luminaire arc lamp (applies to arc-lamp luminaires only).

Tails

In the case of Series 300 equipment, 2/0 double-insulated wire, rated at 225 amps, with 4/0 Cam-Lok connectors on one end color coded by phase, neutral and ground and bare wire on the other, or 8/5 multicore wire with a female connector (Hubbell or Epic) on one end, and bare wire on the other.

Terminate/Termination

Termination refers to the dampening of DMX signal at the end of the transmission line. Termination is created by placing a 100 ohm resistor between pins 2 and 3 of the DMX line. Often, there is a switch on DMX devices to do this internally. If not, a terminator is provided in the form of an XLR connector with the proper resistor between pins 2 and 3 to be placed in the DMX Thru port on the device.

Test Software

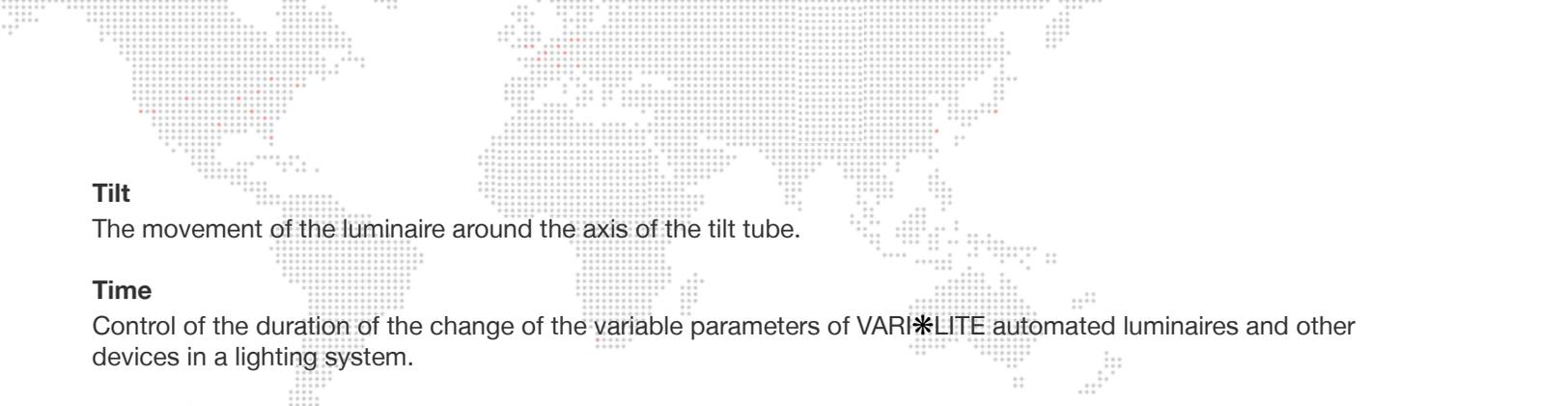
Software resident in the Smart Repeater unit that allows for troubleshooting of a Series 300 luminaire.

Three-Phase Power

In order to manufacture electricity efficiently, it is created in what is known as three "phases". In other words, in its creation, the sine wave of alternating current are offset by 120°. The VARI*LITE system runs on three-phase power, as indicated by the five Cam-Lok connectors on the mod rack - Phase X, Phase Y, Phase Z, Neutral and Ground. Each phase in a 200A feed can support 200A of equipment. To adequately power the same amount of equipment on a single phase, you would need a 600A feed.

Thumbwheel Switch

Three digit switching device used to set the range of channels a particular Smart Repeater unit or other Series 300 hardware device looks at for control information. Also used to set the operating mode of a Smart Repeater unit.



Tilt

The movement of the luminaire around the axis of the tilt tube.

Time

Control of the duration of the change of the variable parameters of VARI***LITE** automated luminaires and other devices in a lighting system.

Timing Channel

A Timing Channel is used in lieu of cue fade rate to determine the time it will take a luminaire to move from one setting to another. For example, a cue in which a luminaire pans from one side of stage to the other may look "steppy" if cue fade rate is used, because of the nature of the DMX512 signal. To overcome this, a timing channel causes the Smart Repeater unit and luminaire to calculate the move in time, effectively smoothing out the movement. To operate properly, the new position and timing channel levels need to be sent to the Smart Repeater in a zero count, (an instant change).

Zero Position

Pan and Tilt values at 50%. Also called "Home Position" or a "50/50" cue or group.

8-Bit DMX

The universally accepted lighting control protocol in the entertainment industry. A console uses this protocol to control specific devices in a lighting system. A DMX512 channel packet is eight bits of absolute parameter data. 8-bit refers to the resolution of the signal: 256 step resolution, providing channel values from 0 through 255. A DMX512 data packet is a group of 512 data channels.

16-Bit DMX

To smooth out the movement of automated luminaires, the industry has adopted 16-bit DMX. This is not a change to the DMX512 specification, rather a change in the way luminaires and consoles treat DMX512 information. In practice, 16-bit DMX adds a DMX512 channel each to pan and tilt - pan coarse, pan fine, tilt coarse, tilt fine, instead of just pan and tilt. The console and luminaire combine these levels and increase the resolution of pan and tilt from 256 steps to a theoretical maximum 65,536 steps at the console level, resulting in the ability to position the luminaire more accurately.



VL6C+™ Spot Luminaire User Manual

Version as of: November 3, 2010

PRG part number: 02.9803.0001 A



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