COLOR PRO®

HX   HXi   FX

User Manual

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Declaration of Conformity
according to ISO/IEC Guide 22 and EN45104

Manufacturer's name: High End Systems, Inc.
Manufacturer's address: 2217 West Braker Lane
Austin, Texas 78758 USA

Distributor's name: High End Systems, Inc.
Distributor's address: 2217 West Braker Lane
Austin, Texas 78758 USA

Declares that the product

Product Name: Color Pro HX
Color Pro HXi
Color Pro FX
Product Number: All
Product Options: All

conforms to the following EEC directives:
73/23/EEC, as amended by 93/68/EEC
89/336/EEC, as amended by 92/31/EEC and 93/68/EEC

Equipment referred to in this declaration of conformity was first manufactured in compliance with the following standards in 1999:

Safety: EN 60598-1 : 1993
EN 60598-2-17 ; 1989
A1-A3 : 1993

EMC: EN 55022, 1994 Class A ITE
EN 61000-4-2:1995 Level 2/3 (4/8 kV)
EN 61000-4-3:1995 Level 2 (3 V/m)
ENV 50204:1996 Level 2 (3 V/m)
EN 61000-4-4:1995 Level 2 (1/.5 kV)
EN 61000-4-5:1995 Level 3 (2/1 kV)
EN 61000-4-6:1996 Level 2 (3 VRMS)
EN 61000-4-11:1994

USA, Monday, November 06, 2000
Kenneth Stuart Hansen, Compliance Engineer

Product Modification Warning

High End Systems' products are designed and manufactured to meet the requirements of United States and International safety regulations. Modifications to the product could affect safety and render the product non-compliant to relevant safety standards.

Mise En Garde Contre La Modification Du Produit

Les produits High End Systems sont conçus et fabriqués conformément aux exigences des règlements internationaux de sécurité. Toute modification du produit peut entraîner sa non conformité aux normes de sécurité en vigueur.

Produktmodifikationswarnung

Design und Herstellung von High End Systems entsprechen den Anforderungen der U.S. Amerikanischen und internationalen Sicherheitsvorschriften. Abänderungen dieses Produktes können dessen Sicherheit beeinträchtigen und unter Umständen gegen die diesbezüglichen Sicherheitsnormen verstoßen.

Avvertenza Sulla Modifica Del Prodotto

I prodotti di High End Systems sono stati progettati e fabbricati per soddisfare i requisiti delle normative di sicurezza statunitensi ed internazionali. Qualsiasi modifica al prodotto potrebbe pregiudicare la sicurezza e rendere il prodotto non conforme agli standard di sicurezza pertinenti.

Advertencia De Modificación Del Producto

Los productos de High End Systems están diseñados y fabricados para cumplir los requisitos de las reglamentaciones de seguridad de los Estados Unidos e internacionales. Las modificaciones al producto podrían afectar la seguridad y dejar al producto fuera de conformidad con las normas de seguridad relevantes.

FCC Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Electrostatic Discharge Information

This product is sensitive to electrostatic discharge (ESD) and some ESD events may reset the fixture (and lose information that is not saved). In the event of a fixture reset, merely return the fixture to the previous operating mode and try to avoid any situations that may cause further electrostatic discharge to the fixture.

Important Safety Information

Instructions pertaining to continued protection against fire, electric shock, exposure to excessive ultraviolet (UV) radiation, and injury to persons are found in Appendix B.

Please read all instructions prior to assembling, mounting, and operating this equipment.

Important: Informations De Sécurité

Les instructions se rapportant à la protection permanente contre les incendies, l'électrocution, l'exposition à un rayonnement ultraviolet (UV) excessif et aux blessures corporelles se trouvent dans l'Annexe B.

Veuillez lire toutes les instructions avant d'assembler, de monter ou d'utiliser cet équipement.

Wichtige Sicherheitshinweise

Sicherheitsanleitungen zum Schutz gegen Feuer, elektrischen Schlag, übermäßige UV-Strahlung und Verletzung von Personen finden Sie in Anhang B.

Vor der Montage, dem Zusammenbau und der Intbetriebnahme dieses Geräts alle Anleitungen sorgfältig durchlesen.

Informazioni Importanti Di Sicurezza

Le istruzioni sulla protezione da incendi, folgorazione, esposizione eccessiva a raggi ultravioletti (UV) e infortuni sono contenute nell'appendice B.

Si prega di leggere tutte le istruzioni prima di assemblare, montare e azionare l'apparecchiatura.

Informacion Importante De Seguridad

En el Apéndice B se encuentran instrucciones sobre protección continua contra incendios, descarga eléctrica, exposición excesiva a radiación ultravioleta (UV) y lesiones personales.

Lea, por favor, todas las instrucciones antes del ensamblaje, montaje y operación de este equipo.

Warranty Information

Limited Warranty

Unless otherwise stated, your product is covered by a two year parts and labor limited warranty. Dichroic filters and LithoPatterns® high resolution glass gobos are not guaranteed against breakage or scratches to coating. It is the owner's responsibility to furnish receipts or invoices for verification of purchase, date, and dealer or distributor. If purchase date cannot be provided, date of manufacture will be used to determine warranty period.

Returning an Item Under Warranty for Repair

It is necessary to obtain a Return Material Authorization (RMA) number from your dealer or point of purchase BEFORE any units are returned for repair. The manufacturer will make the final determination as to whether or not the unit is covered by warranty. Lamps are covered by the lamp manufacturer's warranty.

Any Product unit or parts returned to High End Systems must be packaged in a suitable manner to ensure the protection of such Product unit or parts, and such package shall be clearly and prominently marked

to indicate that the package contains returned Product units or parts and with an RMA number. Accompany all returned Product units or parts with a written explanation of the alleged problem or malfunction. Ship returned Product units or parts to: 2227 West Braker Lane, Austin, TX 78758 USA.

Note: Freight Damage Claims are invalid for fixtures shipped in non-factory boxes and packing materials.

Freight

All shipping will be paid by the purchaser. Items under warranty shall have return shipping paid by the manufacturer only in the Continental United States. Under no circumstances will freight collect shipments be accepted. Prepaid shipping does not include rush expediting such as air freight. Air freight can be sent customer collect in the Continental United States.

REPAIR OR REPLACEMENT AS PROVIDED FOR UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. HIGH END SYSTEMS, INC. MAKES NO WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO ANY PRODUCT, AND HIGH END SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HIGH END SHALL NOT BE LIABLE FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGE, INCLUDING LOST PROFITS, SUSTAINED OR INCURRED IN CONNECTION WITH ANY PRODUCT OR CAUSED BY PRODUCT DEFECTS OR THE PARTIAL OR TOTAL FAILURE OF ANY PRODUCT REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, AND WHETHER OR NOT SUCH DAMAGE WAS FORESEEN OR UNFORESEEN.

Warranty is void if the product is misused, damaged, modified in any way, or for unauthorized repairs or parts. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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Introduction

Congratulations on your purchase of one of the Color Pro ® series of automated luminaires. Since its introduction in 1987, the name Color Pro has been synonymous with high quality color mixing. The Color Pro series now continues that distinguished heritage in new, flexible, high-powered designs.

Color Pro HX is an affordable color changing spotlight that allows you to diffuse from hard-edge to soft wash beams. The Color Pro HX reflector is based on the patented reflector technology introduced in Technobeam ® and uses the same long life MSD 250/2 lamp. However, Color Pro HX incorporates a completely new high-efficiency optical design, which in combination with its full CMY (cyan, magenta and yellow) subtractive color mixing system provides smooth infinite color mixing. Add to that variable beam shaping, frost functions, and true zoom control over a wide range of beam sizes, and the result is a truly versatile unit. Color Pro HX allows variable beam angles from 17° to 44° (soft wash) and from 17° to 36° (hard edge).

Color Pro HXi has the same features of Color Pro HX, but includes an iris (instead of an effects wheel) for even more control over beam size. With the addition of an iris, the Color Pro HXi allows variable beam angles from 3° to 36°.

Color Pro FX is a fiber optic illuminator unlike any other. The Color Pro FX uses the same reflector, lamp, and CMY subtractive color mixing system as Color Pro HX, but includes a proprietary wheel which allows individual fiber optic cable color twinkle.

Features

- Two user types (A and B) per fixture, each with an on-board 16 scene memory for a total of 32 scene memory per fixture in stand-alone mode.
- High-resolution DMX 512 control.
- Easy-to-program seven-segment LED (light emitting diode) display.
- High efficiency 2000 hour MSD 250/2 lamp developed by Philips® in conjunction with High End Systems®, Inc.
- High efficiency reflector and optical train providing over 7,000 total lumens.
- CMY subtractive color mixing including a separate black light filter.
- Effects wheel with frost and rotatable, variable horizontal and vertical beam shaping (HX only)
- Remote iris that provides full control over beam size (HXi only)
- Patented Twinkle wheel that allows individual fiber optic cable color twinkle (FX only)
- Dual light output setting (FX only)
- Manual zoom and focus for additional beam angle flexibility (HX and HXi only).
- Precision stepper motors used to control shutter, dim flags, color wheels, and the effect wheel (HX only), iris (HXi only), or twinkle wheel (FX only).
- Time code synchronization in stand-alone mode via Master/Slave links (synchronized preset playback) to any combination of Color Pro series, EC-1™, ES-1™, Technobeam, Studio Color® 575, Studio Spot™, Studio Color® 250, and Studio Spot™ 250 fixtures.
- DMX analyzer for easy DMX troubleshooting.
- Variable-speed strobe.
- Full dimming and fade-to-black.
- Yoke assembly sliding track for mounting flexibility.
- Power factor correction.
- LED status indicators.
- Remote fixture power up and shut down.

Symbols

International caution and warning symbols appear in margins throughout this manual to highlight the following messages.

Caution: **This symbol appears adjacent to Caution messages. Not heeding these messages could result in personal injury and/or damage to equipment.**

Warning: **This symbol appears adjacent to high voltage warning messages. Not heeding these messages could result in serious personal injury.**

This symbol indicates that a fire hazard is present. Not heeding these messages could result in serious personal injury.

This symbol indicates that eye protection is required.
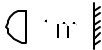
This symbol indicates the minimum distance to a lighted object, which in this case, is 1 meter.

This symbol indicates an explosion hazard.

This symbol indicates a hot surface.

Document Conventions

This manual uses the following conventions for menus and menu navigation buttons:

Example	Meaning
<Button>	Press the appropriate LED display navigation button on the fixture. For example, the <Enter> button on the fixture's LED display panel (see "Preset Programming" on page 2-6).
"MENU OPTION"	Quotation marks and capitalization are used to indicate the appropriate menu selection you should choose from the on-board menu system. For example, the "ADDR" menu option (see "Menu Map" on page 2-7).

Specifications

Electrical Specifications

Warning: **Class 1 equipment - This equipment must be earthed.**

Factory setting: 230V, 50Hz

Selectable voltages: 100V, 50/60Hz, 3.75A
                       120V, 50/60Hz, 3.13A
                       208V, 50/60Hz, 1.8A
                       230V, 50/60Hz, 1.6A

Rated power: 375 W

Fuses: F1 - 6.3A, 250V, Slow Blow only (5 mm x 20 mm)
                       F2 - 3.5A, 250V, Slow Blow only (5 mm x 20 mm)

Physical Specifications

Fixture Type	Height	Width (including handles)	Depth	Weight
Color Pro HX and HXi	9.58 in. (243.3 mm)	16.08 in. (408.4 mm)	19.55 in. (496.6 mm)	37.0 lbs. (16.78 kg)
Color Pro FX	9.58 in. (243.3 mm)	16.08 in. (408.4 mm)	22.15 in. (562.6 mm)	37.0 lbs. (16.78 kg)

For additional dimensions, refer to Figure intro-1.

Color Pro HX and HXi   ## Color Pro FX
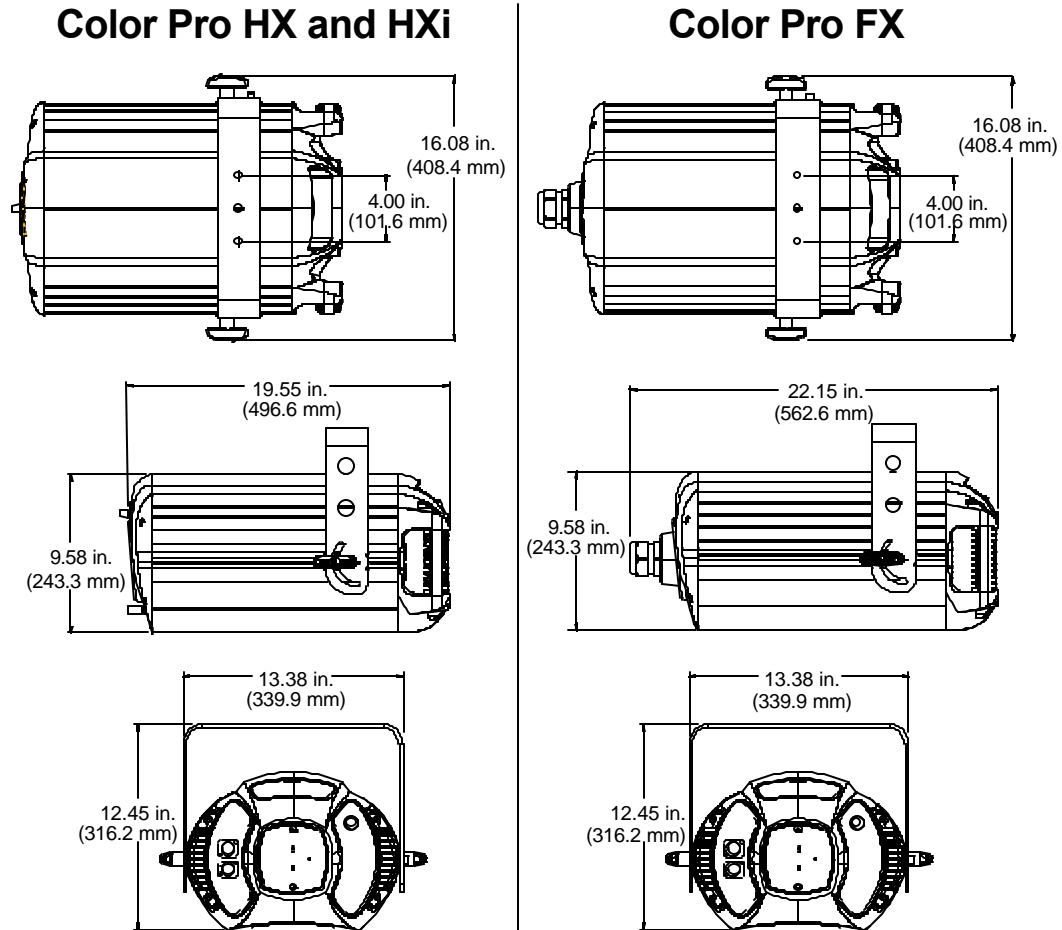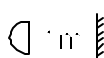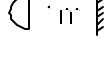
Figure intro-1. Color Pro® HX, HXi, and FX dimensions.

Environmental Specifications

Minimum distance to flammable objects: 1.0 m (3.28 ft)
Minimum distance to lighted object: 1.0 m (3.28 ft)
Maximum ambient temperature, (T_a): 50° C (122° F)
Maximum exterior surface temperature: 80° C (176° F)

Do not mount on a flammable surface.

Lamp Specifications

Lamp type: MSD 250/2, 250 watt, metal halide lamp, GY 9.5 base
Color temperature: 6500 K

Gobo Specifications

Standard size "E" metal gobo (diameter: 37.5 mm (1.47"))

Cable and Connector Specifications

DMX data cables:
Belden® 9841 or equivalent (meets specifications for EIA RS-485 applications) with the following characteristics:
- 2-conductor twisted pair plus a shield
- maximum capacitance between conductors - 30 pF/ft.
- maximum capacitance between conductor and shield - 55 pF/ft.
- maximum resistance of 20 Ω / 1000 ft.
- nominal impedance 100-140 Ω

DMX data connectors:
5-pin male and female XLR connectors

DMX data terminators:
XLR connector with 120 ohm terminator

Optional Accessories

Table intro-1 lists the Color Pro optional accessories available from your High End Systems dealer/distributor.

Table intro-1. Optional Accessories

Part Description	Part Number
Replacement Philips® MSD250/2 lamp	55030051
Status Cue® Lighting Console	22020002
Whole Hog® II Lighting Console	25020001
Neutrik 5-to-3 pin XLR convertor set	55050015
Neutrik 3-to-5 pin XLR convertor set	55050016
Heavy Duty 5-pin XLR cable (10')	55050017
Heavy Duty 5-pin XLR cable (25')	55050018
Heavy Duty 5-pin XLR cable (50')	55050019
Heavy Duty 5-pin XLR cable (100')	55050020
Galvanized safety cable	12040001
Cheeseborough clamp	55040014
Lightwave Research® Upload Dongle	26040002

Note: For more information about optional accessories, contact either your High End Systems dealer/distributor, High End System Sales, or visit the High End Systems Web site (see "Contacting High End Systems" on page ii).

Chapter 1
Setup and Installation

1

Installing/Repositioning the Yoke

Follow the procedure in this section to install the moving-track yoke. The moving-track yoke allows you to mount the fixture at any tilt angle. You can even slide the yoke to the end of the fixture to hang the fixture straight down.

You will need:
- 1/4" allen wrench
- yoke (shipped with the fixture)
- two (2) slide bezels (shipped with the fixture)
- two (2) allen screws (shipped with the fixture)
- two (2) T-handles (shipped with the fixture)

To install the yoke:

1. Place the slide bezel and yoke on the side of the fixture. Align the slide bezel and yoke so that the screw holes are aligned over the yoke slide mounting holes (see Figure 1-1).
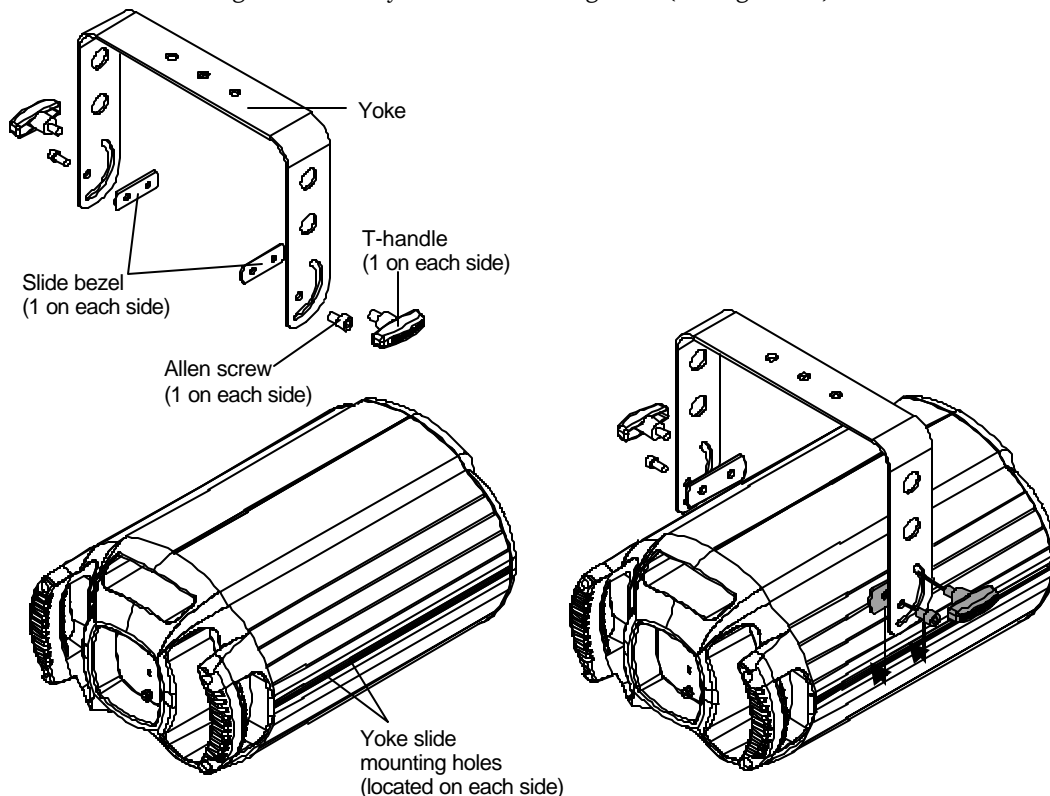
Figure 1-1. Installing the yoke.

2. Using a 1/4" allen wrench, install one allen screw through the yoke and slide bezel into the mounting hole in the yoke slide and tighten securely (see Figure 1-1).

3. Complete steps 1 and 2 for each side of the fixture.

4. Make sure the yoke is an equal distance from the back of the fixture on both sides.

5. Install a T-handle through the yoke and slide bezel into the mounting hole in the yoke slide on each side of the fixture (see Figure 1-1).

6. Position the fixture at the desired tilt angle and tighten both T-handles securely.

7. To reposition the yoke, loosen both allen screws and T-handles, slide the yoke to the desired position, and securely tighten the allen screws and T-handles.

8. To hang the fixture straight down, reposition the yoke at the end of the fixture and rotate the yoke as shown in Figure 1-2.
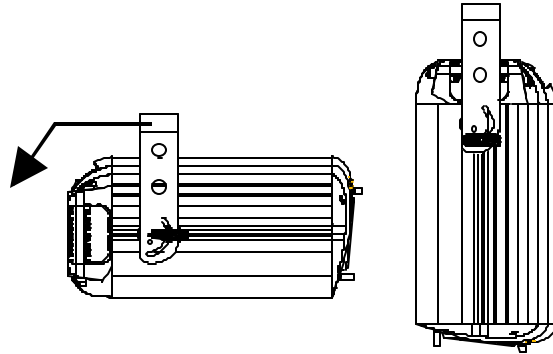
Figure 1-2. Hanging the fixture straight down.

Installing a Gobo (HX Only)

You will need:
- standard size "E" metal gobo (diameter: 37.5 mm (1.47"))
- 1/4" hex wrench
- #1 phillips-head screwdriver
- #2 phillips-head screwdriver
- wide-tip, flat head screwdriver

To install a gobo in a Color Pro HX fixture:

1. Electrically isolate the fixture.

2. Using a wide-tip, flat head screwdriver, loosen the access door retaining screw and remove the access door (see Figure 1-3).

3. Locate the sensor mount and gobo holder inside the fixture (see Figure 1-4).

4. Using a #2 Phillips-head screwdriver, remove the three screws (and star washers) in the sensor mount (see Figure 1-4).

5. Move the sensor mount to gain enough clearance to easily access to the gobo holder.

    Note: The sensor mount is connected to the fixture by cabling. *Do not disconnect this cabling while moving the sensor mount.*

Figure 1-3. Removing the access door.

6. Using a 1/4" hex wrench, loosen (*but do not remove*) the two gobo holder retaining screws (see Figure 1-4).

7. Pull up on the gobo holder to slide the large ends of the keyhole slot over the retaining screw heads, and remove the gobo holder from of the fixture (see Figure 1-4).

8. Using a #1 Phillips-head screwdriver, loosen (*but do not remove*) the top two gobo mounting screws (see Figure 1-4). Completely remove the bottom gobo mounting screw and washer.
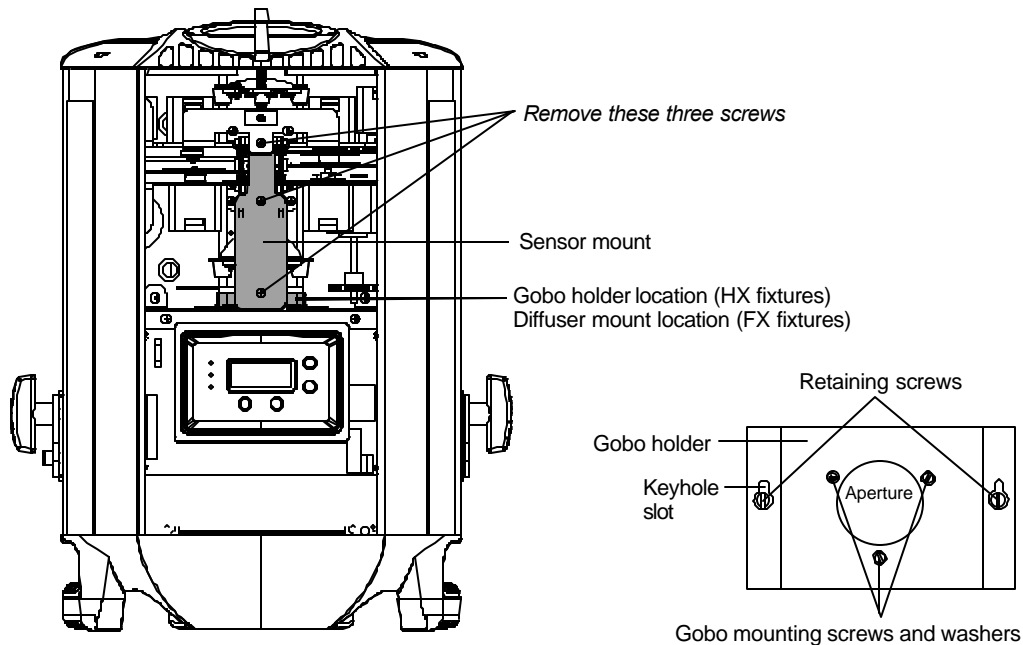
Figure 1-4. Gobo holder and sensor mount inside the fixture.

9. Slide the metal gobo under the washers of the top two gobo mounting screws and directly over the aperture in the gobo holder.

10. Replace the bottom gobo mounting screw and washer in the gobo holder and securely tighten the three mounting screws (see Figure 1-4).

11. Replace the keyhole slots on the gobo holder over the retaining screw heads inside the fixture and press down until the retaining screw heads are over the small end of the keyhole slot. Securely tighten the retaining screws.

12. Realign the sensor mount in the orientation shown in Figure 1-4. Replace the three screws (and star washers) in the sensor mount and tighten securely.

13. Reattach the access door and tighten the door retaining screw.

Setting the Light Output (FX Only)

The Color Pro FX fixture has a dual light output feature which may need to be changed depending on the fiber optic cable you install in the fixture. Standard multi-strand fiber optic cable uses epoxy glue in the ferrule which connects to the fixture. Since this epoxy glue is heat-sensitive, you must make sure the diffuser mount is installed in the FX fixture. The diffuser mount reduces the fixture's light output to prevent melting the epoxy glue.

If you plan to use solid core fiber optic cable, or ferrule terminations that use compression fittings (instead of epoxy glue), you can remove the diffuser mount. Removing the diffuser mount allows for maximum output.

Note: The fixture is shipped with the diffuser mount already installed.

Installing/Removing the Diffuser Mount

You will need:
- 1/4" hex wrench
- wide-tip, flat head screwdriver

To install/remove the diffuser mount in a Color Pro FX fixture:

1. Electrically isolate the fixture.

2. Using a wide-tip, flat head screwdriver, loosen the access door retaining screw and remove the access door (see Figure 1-3).

3. Locate the diffuser mount inside the fixture (see Figure 1-4).

4. Using a 1/4" hex wrench, loosen (*but do not remove*) the two diffuser mount screws (see Figure 1-5).

   If you are removing the diffuser mount, slide the large ends of the keyhole slots over the screw heads and remove the diffuser mount.

   If you are installing the diffuser mount, place the large ends of the keyhole slots over the screw heads. Slide the diffuser mount over so that the small ends of the keyhole slots are over the screw heads, and securely tighten the diffuser mount screws.
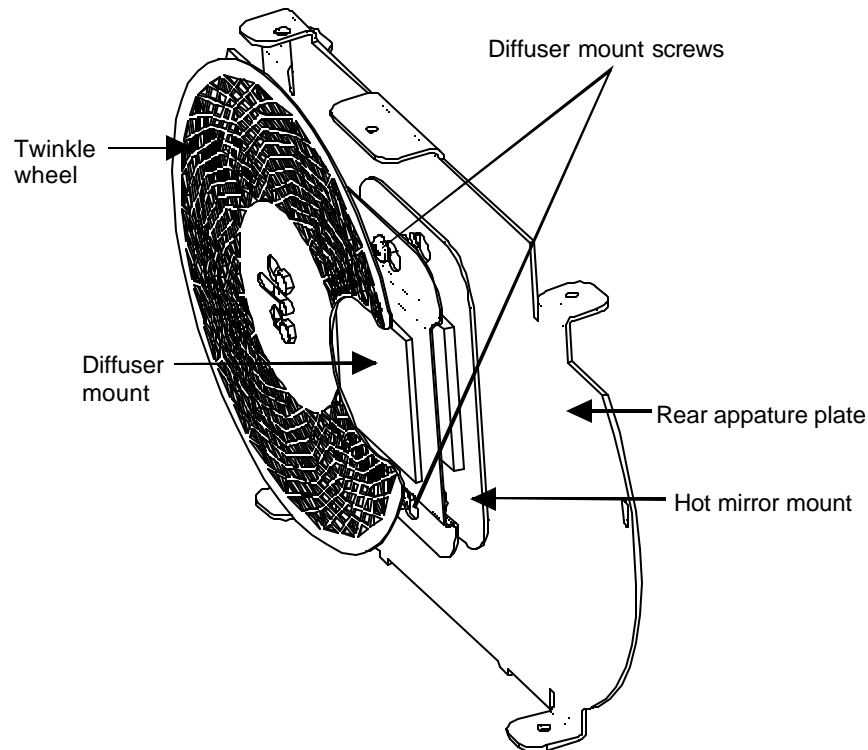
Figure 1-5. Diffuser mount.

Caution: **Remove only the diffuser assembly. Do not remove the hot mirror assembly or operate the fixture without the hot mirror assembly in place. Operating the fixture without the hot mirror assembly in place will damage the fixture's optics.**

1

Twinkle Wheel Optimization (FX Only)

You can adjust the twinkle effect from a sharp twinkle to a soft twinkle by changing the depth that the ferrule is inserted in the Color Pro FX fixture.

For maximum sharpness, insert the ferrule 1.5 inches (3.8 cm) into the fixture's collar (see Figure 1-6).

To soften the sharpness, pull the ferrule out as desired.
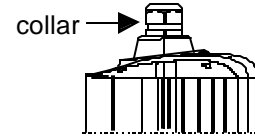
collar →

Figure 1-6. Collar on the FX fixture.

Changing the Power Cord Cap

Color Pro fixtures are shipped with an attached power cord cap. However, different locations (even within the same country) may require a different power cord cap to connect your fixture to a power outlet. Because of the variety of power cord caps used worldwide, High End Systems, Inc. cannot make specific recommendations for the particular power cord cap you should use. Contact a local authority if you are unsure which type of power cord cap you need to obtain.

If you need to replace the power cord cap, note that the cores in the mains lead are colored in accordance with the following code:
*   green and yellow = earth
*   blue = neutral
*   brown = live

Warning: **Class 1 equipment - This equipment must be earthed.**

Installing a Power Cord Cap - U.K. Only

In the United Kingdom, the colours of the cores in the mains lead of this equipment may not correspond with the coloured markings identifying the terminals in your plug. Therefore, install a power cord cap in accordance with the following code:
*   The core which is coloured green and yellow must be connected to the plug terminal which is marked with the letter "E," or by the earth symbol ⏚, or coloured green, or green and yellow.
*   The core which is coloured blue must be connected to the terminal which is marked with the letter "N" or coloured black.
*   The core which is coloured brown must be connected to the terminal which is marked with the letter "L" or coloured red.

Warning: **Class 1 equipment - This equipment must be earthed.**

Vigtig Fikker Heds Information - Danmark

Advarsel: Beskyttelse mod elektrisk chock.

Vigtigt!

Lederne med gul/groen isolation maa kun tilsluttes en klemme maerket

⏚ eller   ⏚

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Changing the Fixture Voltage

Color Pro fixtures are factory-set to 230V, 50Hz. If your power source differs, you must change the fixture's input voltage to match your power source. Color Pro fixtures offer the following selectable input voltage/frequency settings:

- 100V, 50Hz
- 120V, 50 Hz
- 208V, 50 Hz
- 230V, 50 Hz

- 100V, 60 Hz
- 120V, 60 Hz
- 208V, 60 Hz
- 230V, 60 Hz

Warnings:
1) **Disconnect power before servicing.**
2) **This fixture must be serviced by qualified personnel. The information in this section is intended to assist qualified service personnel only.**
3) **Be sure to match the voltage selection jumper to your power source *prior* to operating this equipment.**

You will need:
- wide-tip, flat head screwdriver
- small flat head screwdriver

To change the fixture's voltage/frequency setting:

1. Electrically isolate the fixture.

2. Using a wide-tip, flat head screwdriver, loosen the access door retaining screw and remove the access door (see Figure 1-3).

3. Locate the voltage/frequency terminal block (on the power supply board) and the voltage setting label (see Figure 1-7).
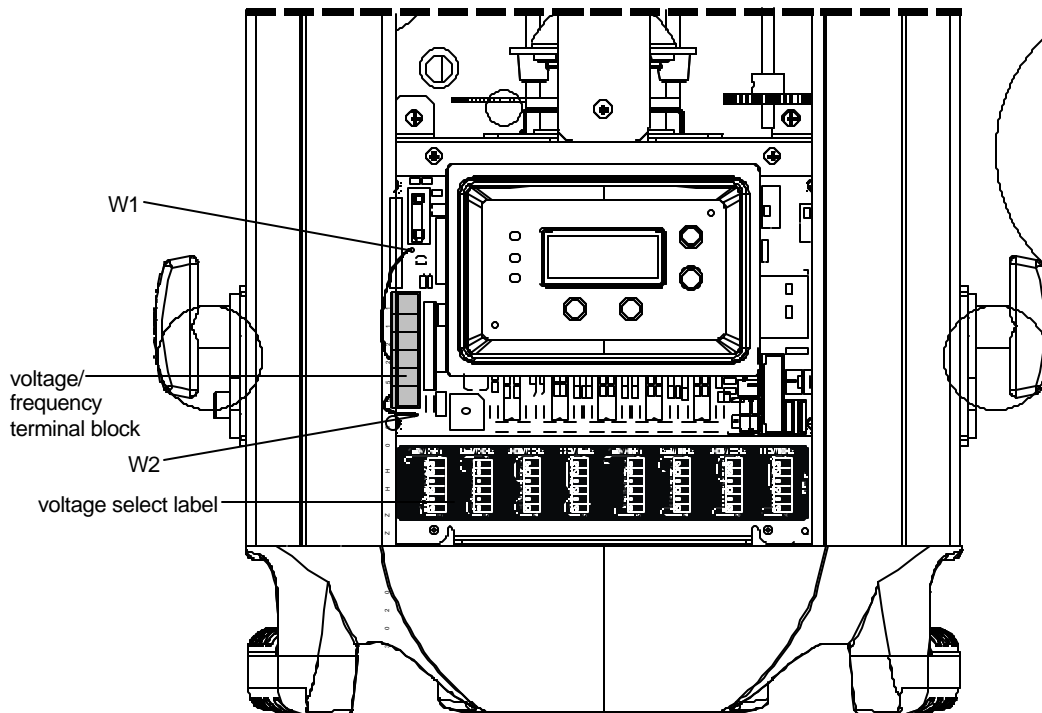
Figure 1-7. Terminal block and voltage select label inside the fixture.

4. The jumper ends connected to the W1 and W2 pins (on each side of the terminal block) will always remain connected. To change the frequency or voltage, move the other end of the appropriate jumper to a new voltage or frequency pin as shown in the voltage select label.

5. To move a jumper, loosen the screw that secures the jumper end in the voltage/frequency pin. Remove the jumper end and reinsert it in the desired voltage/frequency pin. After moving the jumper, tighten its corresponding screw to secure the jumper to the pin.

6. When you have successfully changed the voltage and/or frequency, reattach the access door and tighten the retaining screw.

Powering on the Fixture

Caution: **Do not power on the fixture until you have verified that the input voltage setting and line cord cap are suitable for the power source in your location. For more information, see "Changing the Fixture Voltage" on page 1-6 or "Changing the Power Cord Cap" on page 1-5.**

Warning: **This equipment for connection to a branch circuit having a maximum overload protection of 20 A.**

Color Pro fixtures do not have a power switch. To power on the fixture, simply connect it to an appropriately-rated power source. Once connected, you can remotely power up or shutdown the fixture via the Control channel (see "Programming with a DMX Controller" on page 2-1). However, it is very important that you electrically isolate the fixture before performing certain procedures as shown in this manual.

Homing the Fixture

The fixture's homing procedure verifies that the major functions of the fixture (color wheels, dim wheel, and effects wheel, iris, or twinkle wheel) are oriented properly. The homing procedure is also used to take the fixture out of shutdown mode. During the homing process, you will hear clicking sounds as the wheels and iris seek their home position.

When you connect any Color Pro fixture to an appropriately-rated power source, the fixture automatically begins a homing procedure. You can also remotely home the fixture via the Control channel (see "Programming with a DMX Controller" on page 2-1) or manually home the fixture ("HOME") via the on-board menu system (see "Menu Map" on page 2-7).

Linking Fixtures

To link one or more fixtures to a controller and/or to each other, you must obtain data cabling. You can either purchase cabling from High End Systems (see "Optional Accessories" on page Intro-4) or construct your own cabling. If you choose to construct your own cabling, it must adhere to the specifications listed in "Constructing Cabling" below.

> ⚠ **Caution:** **High End Systems does *not* recommend running your fixtures off a dimmer.**

Constructing Cabling

If you choose to construct cabling, High End Systems recommends that you use data-grade cable. Data-grade cable is designed to carry a high-quality signal with less susceptibility to electromagnetic interference. Data-grade cables must be Belden® 9841 or equivalent (meets specifications for EIA RS-485 applications) with the following characteristics:

- 2-conductor twisted pair plus a shield
- maximum capacitance between conductors - 30 pF/ft.
- maximum capacitance between conductor and shield - 55 pF/ft.
- maximum resistance of 20Ω /1000 ft.
- nominal impedance 100-140Ω

Cabling Connectors

Your cabling must have a male 5-pin XLR connector on one end of the cable and a female 5-pin XLR connector on the other end. Pin one is the common (cable shield), pin two is the data complement (negative), pin three is the data true (positive), and pins four and five are not used, but they allow a secondary data link to pass through the fixture (see Figure 1-8).

Grounding lug (inside XLR shell)

XLR shell

Common (cable shield)

negative (data complement)

positive (data true)

positive (data true)*

negative (data complement)*

positive (data true)*

negative (data complement)*

positive (data true)

Common (cable shield)

negative (data complement)

Male XLR Connector

Female XLR Connector

*This data line is not used by the fixture, but allows data to pass through the fixture.

Figure 1-8. XLR 5-pin connectors.

You should test each cable with a voltage/ohm meter (VOM) to verify correct polarity and to make sure that the negative and positive pins are not grounded or shorted to the shield or to each other.

⚠ **Caution:** **Do not connect anything to the ground lug on the XLR connectors. Do not connect or allow contact between the common (cable shield) and the fixture's chassis ground. Grounding the common could cause a ground loop and/or erratic behavior.**

Linking Procedure

You can link up to 56***** Color Pro fixtures using enhanced protocol (512 DMX channels available / 9 channels = 56.8 fixtures per link) or 85***** Color Pro fixtures using standard protocol (512 DMX channels available / 6 channels = 85.3 fixtures per link). For more information on enhanced and standard protocol, see "Selecting a Protocol" on page 1-13.

> *****Note: You **must** use a DMX splitter to connect more than 32 fixtures per link. Connecting more than 32 devices per link without a DMX splitter will eventually deteriorate the digital signal. The 32 device limit complies with the EIA-485 standard.

To link one or more fixtures to a controller and/or to each other, follow the steps below:

1. Connect a male XLR cable connector (with attached data cable) to the controller's Data Out connector.

   If you plan to control your fixtures in stand-alone mode (without a controller), connect a male XLR cable connector with attached data cable to the 5-pin Data Out connector on the *master fixture* (the fixture addressed at DMX start channel 1). For more information on DMX start channels, see "Assigning a DMX Start Channel" on page 1-13.

2. Connect the female XLR cable connector *of the same data cable* to the first (or next) fixture's 5-pin Data In connector (see Figure 1-9).
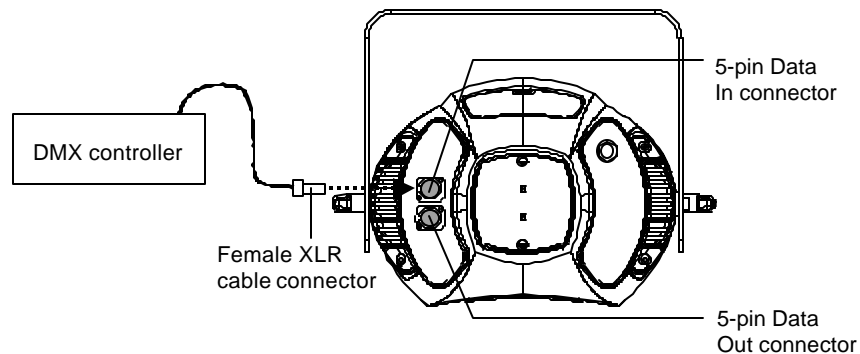
Figure 1-9. Data In and Data Out connectors on the fixture's side panel.

3. Continue using this method to link the remaining fixtures together by connecting a male XLR cable connector (with attached data cable) to one fixture's Data Out connector and the female XLR cable connector *of the same data cable* to the next fixture's Data In connector (see Figure 1-10).
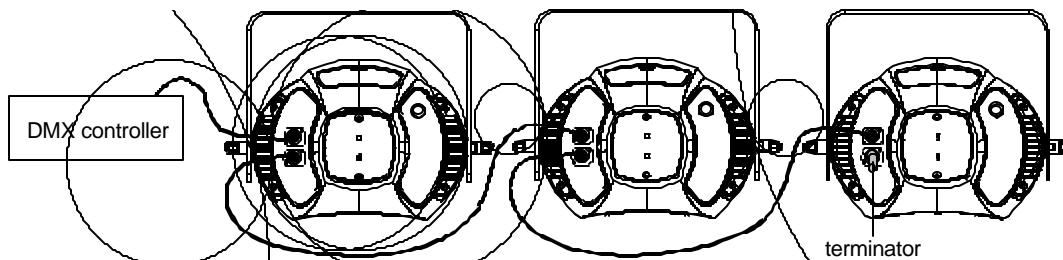
Figure 1-10. Linking the fixtures.

4. Connect a male terminator to the Data Out connector of the last fixture in the link (see Figure 1-10). If you plan to control your fixtures in stand-alone mode (without a controller), you should install a female terminator in the Data In connector of the *master* fixture (the fixture assigned to DMX start channel 1). For more information on terminators, see "Constructing a Terminator" below.

    Note: Controllers, serial data distributors, data line optoisolators, and any fixtures using the RS-422 DMX standard of serial communications (including Dataflash ® AF1000 xenon strobes, and Intellabeam ® fixtures) block software uploads or crossloads on a link. Therefore, make sure you either put all of these devices after the Color Pro fixtures on the link, or bypass these devices when you perform software uploads or crossloads.

Constructing a Terminator

You must install a 120 ohm, 1/4 watt (minimum) male terminator in the fixture's Data Out cable connector in the *last* fixture on each DMX link. If you plan to control your fixtures in stand-alone mode (with no controller on the link), you must also install a female terminator in the Data In cable connector on the *master* fixture (the fixture assigned to DMX start channel 1). A terminator will prevent data reflection, which can corrupt the data communication on the link.

To construct a terminator:

1. Obtain a 5-pin XLR connector.

2. Disassemble the connector.

3. Solder a 120 ohm resistor, minimum of 1/4 watt, between pins two and three (see Figure 1-11)

4. Reassemble the XLR connector.
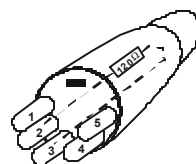
Figure 1-11. Male 5-pin terminator.

Mounting the Fixture

Warnings: **Equipment suitable for dry locations only. Do not expose this equipment to rain or moisture.**

Maintain a minimum distance of 1 m (3.28 ft.) from combustible materials.

Maintain a minimum distance of 1 m (3.28 ft.) from lighted object. This means the fixture must be positioned at least 1 meter away from the object it is illuminating.

Do not mount on a flammable surface.

Use a secondary safety cable when mounting this fixture.

You can mount Color Pro fixtures either upright (on the fixture's rear handles) or in any orientation suspended from a support system (such as a truss).

If you choose to mount the fixture upright, place the fixture on a sturdy, stable surface. If the surface is above floor height, use safety cables to secure the fixture to the surface (see "Safety Cable" on page 1-11). Install the safety cable(s) by looping the cables around a support on the surface and around the fixture's rear handles. Make sure the support and cables can handle the weight of the fixture (see "Physical Specifications" on page Intro-3).

Mounting Procedure

You will need:
- safety cable
- clamp
- locking washers (2)
- truss or other support system

Truss or Other Support System

If you are mounting the fixture(s) on a truss or another type of support, verify the truss or support will handle the weight of *all* the devices you are mounting. The Color Pro fixture weights are listed in the section titled "Physical Specifications" on page Intro-3.

Safety Cable

High End Systems strongly recommends that you use safety cable when mounting any fixture. You must supply your own safety cable and verify the cable is capable of supporting the weight of the fixture. You can order a galvanized safety cable from your High End Systems dealer/distributor (see "Optional Accessories" on page Intro-4).

Clamp

You must supply your own clamp and verify the clamp is capable of supporting the weight of the fixture. You can order a deluxe C-clamp for a two-inch truss from your High End Systems dealer/distributor (see "Optional Accessories" on page Intro-4).

>   Note: Due to the wide variety of possible lighting designs, High End Systems cannot make specific mounting recommendations. Consider the following procedure as a suggested guideline only.

Suggested mounting procedure:

1. Electrically isolate the fixture. If the fixture has been operating, allow the fixture to cool before handling.

2. Use two people to mount each fixture: one person to hold the fixture while it is being secured in place, and one person to secure the fixture to its support and attach safety cables.

   Always stand on a firm, stable surface when mounting a fixture to its support. The fixture should be at a height where you can comfortably work on it, and should either be resting on a stable surface, or held in a stable manner. *Do not allow one person to both support and mount the fixture.*

3. Attach a suitable clamp through the center hole on the yoke (see Figure 1-12). *Use two locking washers when attaching the clamp to the yoke.*

Truss

Clamp (securely on truss)

Use two (2) locking washers

Insert bolt through hole in top of yoke

Side view of yoke

Loop safety cable through either of these holes
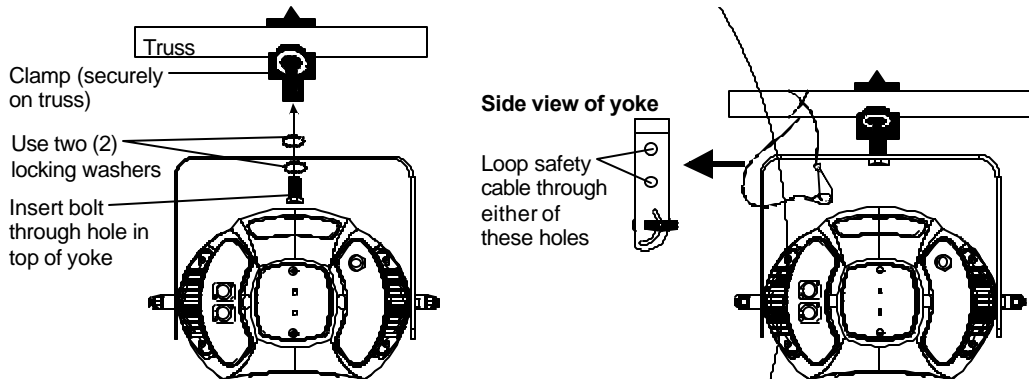
Figure 1-12. Attaching a clamp and safety cable to the fixture.

4. Tighten the clamps firmly to the yoke and to the support.

5. Loop one or more suitable safety cables around the support and the yoke (see Figure 1-12).

6. To reposition the fixture in a new tilt position, see "Installing/Repositioning the Yoke" on page 1-1.

Setting the Beam Angle/Focusing the Beam

Locate the zoom drive screw knob and the focus drive screw knob on the fixture's front bezel (see Figure 1-13). To set the beam angle and/or focus the beam, simply turn the appropriate drive screw knob until you achieve the desired beam angle and focus.

> Note: You cannot adjust the beam angle or focus for Color Pro FX fixtures.

Zoom drive screw knob

Focus drive screw knob
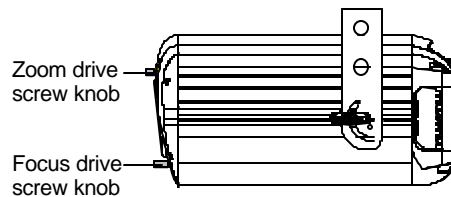
Figure 1-13. Focus and zoom drive screw knobs.

Configuring the Fixture

Follow the procedures in this section to configure your fixture for operation by selecting a protocol and assigning a DMX start channel.

Configuring your fixture requires you to access the fixture's menu system via the seven-segment LED display and four menu navigation buttons on the fixture's front panel (see Figure 1-14). For a detailed menu map, see "Menu Map" on page 2-7.

seven-segment LED display

<Up> arrow button: scroll upward through menu items or options

<Down> arrow button: scroll downward through menu items or options

MENU   ENTER

<Menu> button: move back to the previous menu level (press and hold to enter the menu system)

<Enter> button: select the curent menu item or option
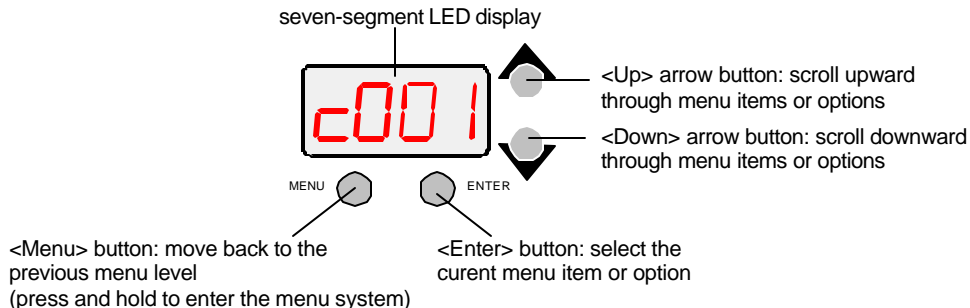
Figure 1-14. Menu navigation buttons.

Selecting a Protocol

Each Color Pro fixture type (HX, HXi, FX) uses either standard or enhanced protocol. Enhanced protocol provides additional color mixing options and separates the dim/shutter constructs for additional strobing features. For more information on the constructs available with each protocol, see either "Programming with a DMX Controller" on page 2-1 or "Menu Map" on page 2-7.

The protocol you choose determines the number of DMX channels the fixture will use. Standard protocol uses 6 DMX channels per fixture. Enhanced protocol uses 9 DMX channels per fixture.

To select a protocol:

`Addr`	1. Press and hold the <Menu> button until "ADDR" appears on the LED display.
`hES`	2. Using the <Up> and <Down> arrow buttons, scroll to the "HES" menu and press <Enter>.
`Prot`	3. Using the <Up> and <Down> arrow buttons, scroll to the "PROT" menu and press <Enter>.
`Stnd` or `Enhd`	4. Using the <Up> and <Down> arrow buttons, scroll to "STND" for standard protocol or "ENHD" for enhanced protocol. Press <Enter> to select the desired option.

Assigning a DMX Start Channel

The DMX start channel identifies each unique fixture on a DMX link. If you plan to control your fixtures with a DMX controller (or using synchronized preset playback), you must assign a DMX start channel to each fixture on the link. However, if you *always* plan to use the fixture in stand-alone mode (without a controller or synchronized preset playback), you can skip this section. For more information, see "Preset Programming" on page 2-6 or "Synchronizing Preset Playback" on page 2-19.

There are 512 available channels on each DMX link. These 512 channels are divided among *all* the devices on a particular link. The number of channels each fixture requires is called the fixture's channel range. The DMX start channel is the first channel available to a fixture in its channel range. Color Pro fixtures have either a 9-channel or 6-channel range, depending on the protocol you selected (see "Selecting a Protocol" on page 1-13).

The fixture's channel range must not overlap any other device's channel range on the link.***** When two devices on the same DMX link have overlapping channel ranges, one or both devices will be disabled or behave erratically.

> ***Note:** The single exception to the non-overlapping rule is if you want the fixtures to respond to controller commands in exactly the same way. In this case, the fixtures must be the same type and be assigned the same protocol (for example two Color Pro HX fixtures assigned to enhanced protocol) and the fixtures must share the *entire* channel range.

If you plan to mix different fixture types (and/or protocols) on the same DMX link, see "Determining the Unique DMX Start Channel" below. If your DMX link will have only Color Pro fixtures (all using the same protocol), see Table A-1 on page A-1 for a listing of available DMX start channels for successive fixtures on the link.

To assign a DMX start channel for the fixture:

`Addr`	1. Press and hold the <Menu> button until "ADDR" appears on the LED display.
	2. Press the <Enter> button to enter the "ADDR" menu.
`c001` to `c512`	3. Using the <Up> and <Down> arrow buttons, scroll to the desired DMX start channel and press the <Enter> button.

Determining the Unique DMX Start Channel

To determine each fixture's DMX start channel in a link, you must know the number of channels used by each fixture. Knowing that the first fixture on the link will use DMX start channel 1, you can determine the DMX start channel for each successive fixture by adding the number of DMX channels used by the fixture to the fixture's DMX start channel. For example, in Table 1-1, 9 (channels used by Color Pro in enhanced mode) + 1 (DMX start channel for the first fixture) = 10 (DMX start channel for the next fixture on the link).

Table 1-1. Example: Determining the DMX Start Channel

Fixture location on the link*	Fixture name	Number of DMX channels used per fixture	DMX start channel	Channel range used
First	Color Pro (enhanced)	9 channels	C001	1-9
Second	Color Pro (standard)	6 channels	C010	10-15
Third	Other Device (using 14 channels)	14 channels	C016	16-29
Fourth	Color Pro (enhanced)	9 channels	C030	30-38

*Note: The fixture location on the link does not have to comply with this example. The fixtures can be addressed in any order on the link.

If you have other fixtures in the link or plan to skip channels, note that the maximum address for the last Color Pro fixture on the link in enhanced mode is 504 (channel range 504-512) and in standard mode is 507 (channel range 507-512).

Chapter 2
Operating the Fixture

2

Color Pro fixtures can be programmed for operation either with a DMX-compatible controller or with preset programming (for stand-alone operation). This chapter provides a programming overview, DMX protocol (for fixtures programmed with a DMX-compatible controller), and a menu map with a step-by-step example of creating a scene (for fixtures programmed via the on-board menu system).

Programming Overview

A *construct* is a specific feature of the fixture that helps to design the "look" of the light beam (such as the color, effect, or dim level). A *scene* is a combination of all the available construct values you selected. When you play back more than one scene in sequence, it becomes a *program.* A program that continuously repeats is called a *loop*.

Some constructs allow you to choose a construct value set by MSpeed (motor speed). Unlike other construct values which are completed in the shortest length of time after the motor starts moving, an MSpeed change occurs smoothly over the entire MSpeed time value you select. For example, if you select an MSpeed time of 30 seconds, the motor will gradually change position until it reaches its new destination at the end of 30 seconds.

Using a DMX controller, you can program an unlimited number of sequences and retain direct control over the Color Pro fixtures at all times. You may choose to save time by programming your fixtures using a controller and then capturing the scene(s) to the on-board memory of multiple Color Pro fixtures.*****

> *****Note: Because controllers do not transmit crossfade (FADE) or delay (DLAY) construct values, you must use preset programming to manually set those construct values for each fixture.

You can use either a controller or the fixture's on-board memory to create and play back scenes, but not both at the same time. In other words, you cannot create a scene using preset programming and play it back using a DMX controller. You also cannot use a controller while on-board scenes are playing.

You can synchronize preset playback among all fixtures with no DMX controllers connected to the link. During synchronized preset playback, the *master fixture* (the fixture assigned DMX start channel 1) synchronizes playback for all fixtures. For more information, see "Synchronizing Preset Playback" on page 2-19.

Programming with a DMX Controller

When you program your fixtures with a DMX controller, you use the controller to assign a value to each of the fixture's available constructs. Each construct is assigned to a specific DMX channel in the fixture's channel range.

The Status Cue® Lighting Console and the Whole Hog® II Lighting Console are the DMX controllers available from High End Systems for Color Pro fixtures (see "Optional Accessories" on page Intro-4). For more information on whether your DMX controller will support Color Pro fixtures, contact the controller's vendor.

Table 2-1 and Table 2-2 list the Color Pro constructs and their corresponding DMX controller values for each protocol. If you have a numeric-type controller, use the Value Decimal (dec.) column. If you have a fader-type controller, use the Value Percentage (%) column. If your controller allows you to program hex values, use the Value (hex) column. The values in the tables may vary slightly depending on your controller's rounding convention.

Table 2-1. DMX Construct Parameters in Standard Protocol

Channel	Construct	Description	Value (dec.)	Value (%)	Value (hex)
1	Dim	Continuous dimming (closed to open)	0-127	0-49	00-7F
		Open	128-143	50-56	80-8F
		Periodic Strobe	144-187	57-73	90-BB
		Open	188-195	74-77	BC-C3
		Random Strobe	196-239	77-94	C4-EF
		Open	240-255	94-100	F0-FF
2	Red (-Cyan)	Continuous Mode			
		Red 0%	0	0	00
		Red Full	244-255	96-100	F4-FF
3	Green (-Magenta)	Continuous Mode			
		Green 0%	0	0	00
		Green Full	244-255	96-100	F4-FF
4	Blue (-Yellow)	Continuous Mode			
		Blue 0%	0	0	00
		Blue Full	244	96	F4
		UV *(Note: The Red and Green channels must be set to "0" to access UV.)*	255	100	FF
5	Effects (Color Pro HX only)	Continuous Positioning (open at 0)	0-127	0-50	00-7F
		Spin Reverse (fast to slow)	128-187	50-73	80-BB
		Spin Stop	188-195	74-77	BC-C3
		Spin Forward (slow to fast)	196-255	77-100	C4-FF
	Effects (Color Pro FX only)	Continuous Positioning (open at 64)	0-127	0-50	00-7F
		Twinkle Scan (slow to fast)	128-255	50-100	80-FF
	Iris (Color Pro HX-i only)	Continuous Positioning (closed to open)	0-255	0-100	00-FF
6	Control *(Note: The Dim channel must be set to "0" to access Control channel settings.)*	Safe	0-9	0-4	00-09
		Display Off	20-28	8-11	14-1C
		Display Dim	30-38	12-15	1E-26
		Display Bright	40-48	16-19	28-30
		Home	60-68	24-27	3C-44
		Lamp On	80-88	31-35	50-58
		Lamp Off	90-98	35-38	5A-62
		Shutdown* (send this value for 2 seconds)	120-130	47-51	78-82

*Note: Fixture shutdown allows you to remotely deactivate the fixture. When a fixture is shut down, the lamp is extinguished, power to the motors is disabled, and the LED display shows "SHUT OFF." If a fixture is in shutdown mode, you must home the fixture to bring it back into operation.

Table 2-2. DMX Construct Parameters in Enhanced Protocol

Channel	Construct	Description	Value (dec.)	Value (%)	Value (hex)
1	Dim	Continuous Positioning (closed to open)	0-255	0-100	00-FF
2	Shutter *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*	Close	0-31	0-12	00-1F
		Periodic Strobe (Variable)	32-63	13-25	20-3F
		Random/Rand Strobe (Variable)	64-95	25-37	40-5F
		Random/Sync (Variable)	96-127	38-50	60-7F
		Ramp Open/Ramp Shut (Variable)	128-159	50-62	80-9F
		Random Ramp/Ramp (Variable)	160-191	63-75	A0-BF
		TBD *(Reserved for future use)*	192-223	75-88	C0-DF
		Open	224-255	88-100	E0-FF
3	Color Function	Full Speeds			
		Continuous	0-15	0-6	00-0F
		Indexed *(Divides the wheel into 8 equal sections)*	16-31	6-12	10-1F
		Pure Mix *(Only accesses the portion of the wheel used for color mixing)*	32-47	13-18	20-2F
		Spin *(Puts all the color wheels in spin mode. Wheel spin speed, direction, or fixed position can be set individually on Red, Green, and Blue channels)*	48-63	19-25	30-3F
		Cycle *(3 wheels use color mix portion to cycle colors. Rate set by Red channel)*	64-79	25-31	40-4F
		Color Scan *(Puts all the color wheels in scan mode. Scans only the continuous color portion of the wheel - not the open "white" portion. Fixed position or scanning speed can be set individually on Red, Green, and Blue channels)*	80-95	31-37	50-5F
		Random *(3 wheels perform pseudo-random color chase. Rate set by Red channel)*	96-111	38-44	60-6F
		Blink-Continuous *(Shutter blink between continuous wheel position changes)*	112-127	44-50	70-7F
		MSpeed Controlled (see above for function descriptions)			
		Continuous	128-143	50-56	80-8F
		Indexed	144-159	57-62	90-9F
		Pure Mix	160-175	63-69	A0-AF
		Spin	176-191	69-75	B0-BF
		Cycle	192-207	75-81	C0-CF
		Color Scan	208-223	82-88	D0-DF
		Random	224-239	88-94	E0-EF
		Blink-Indexed	240-255	94-100	F0-FF
4	Red (-Cyan)	Continuous Mode			
		Open	0	0	00
		Color 1 (open "white" position)	42	17	2A
		Color 2 (open "white" position)	85	33	55

2

Table 2-2. DMX Construct Parameters in Enhanced Protocol

Channel	Construct	Description	Value (dec.)	Value (%)	Value (hex)
		Red 0%	127	50	7F
		Red Full	255	100	FF
		Indexed Mode			
		Open	0-15	0-6	00-0F
		Color 1 (open "white" position)	16-47	6-18	10-2F
		Color 2 (open "white" position)	48-79	19-31	30-4F
		Red Low	80-111	31-44	50-5F
		Red Med Low	112-143	44-56	70-8F
		Red Medium	144-175	57-69	90-AF
		Red Med High	176-207	69-81	B0-CF
		Red Full	208-239	82-94	D0-EF
		Open	240-255	94-100	F0-FF
4 (cont.)	Red (-Cyan) (cont.)	Pure Mix Mode			
		Red 0%	0	0	00
		Red Full	255	100	FF
		Spin Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Spin Reverse (fast to slow)	128-187	50-73	80-BB
		Spin Stop	188-195	74-77	BC-C3
		Spin Forward (slow to fast)	196-255	77-100	C4-FF
		Color Scan Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Scanning (slow to fast)	128-255	50-100	80-FF
		Cycle & Random Modes			
		Slow Rate	0	0	00
		Fast Rate	255	100	FF
		Continuous Mode			
		Open	0	0	00
		Color 1 (open "white" position)	42	17	2A
		Color 2 (open "white" position)	85	33	55
		Green 0%	127	50	7F
		Green Full	255	100	FF
		Indexed Mode			
		Open	0-15	0-6	00-0F
		Color 1 (open "white" position)	16-47	6-18	10-2F
		Color 2 (open "white" position)	48-79	19-31	30-4F
5	Green (-Magenta)	Green Low	80-111	31-44	50-5F
		Green Med Low	112-143	44-56	70-8F
		Green Medium	144-175	57-69	90-AF
		Green Med High	176-207	69-81	B0-CF
		Green Full	208-239	82-94	D0-EF
		Open	240-255	94-100	F0-FF
		Pure Mix Mode			
		Green 0%	0	0	00
		Green Full	255	100	FF
		Spin Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Spin Reverse (fast to slow)	128-187	50-73	80-BB

Table 2-2. DMX Construct Parameters in Enhanced Protocol

Channel	Construct	Description	Value (dec.)	Value (%)	Value (hex)
5 *(cont.)*	Green (-Magenta) *(cont.)*	Spin Stop	188-195	74-77	BC-C3
		Spin Forward (slow to fast)	196-255	77-100	C4-FF
		Color Scan Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Scanning (slow to fast)	128-255	50-100	80-FF
6	Blue (-Yellow)	Continuous Mode			
		Open	0	0	00
		UV	42	17	2A
		Color 2 (open "white" position)	85	33	55
		Blue 0%	127	50	7F
		Blue Full	255	100	FF
		Indexed Mode			
		Open	0-15	0-6	00-0F
		UV	16-47	6-18	10-2F
		Color 2 (open "white" position)	48-79	19-31	30-4F
		Blue Low	80-111	31-44	50-5F
		Blue Med Low	112-143	44-56	70-8F
		Blue Medium	144-175	57-69	90-AF
		Blue Med High	176-207	69-81	B0-CF
		Blue Full	208-239	82-94	D0-EF
		Open	240-255	94-100	F0-FF
		Pure Mix Mode			
		Blue 0%	0	0	00
		Blue Full	255	100	FF
		Spin Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Spin Reverse (fast to slow)	128-187	50-73	80-BB
		Spin Stop	188-195	74-77	BC-C3
		Spin Forward (slow to fast)	196-255	77-100	C4-FF
		Color Scan Mode			
		Continuous Positioning	0-127	0-50	00-7F
		Scanning (slow to fast)	128-255	50-100	80-FF
7	Effects (HX Model)	Continuous Positioning	0-127	0-50	00-7F
		Spin Reverse (fast to slow)	128-187	50-73	80-BB
		Spin Stop	188-195	74-77	BC-C3
		Spin Forward (slow to fast)	196-255	77-100	C4-FF
	Effects (FX Model)	Continuous Positioning	0-127	0-50	00-7F
		Twinkle Scan (slow to fast)	128-255	50-100	80-FF

2

Table 2-2. DMX Construct Parameters in Enhanced Protocol

Channel	Construct	Description	Value (dec.)	Value (%)	Value (hex)
7 (cont.)	Iris (HX-i Model) (Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)	Close	0	0	00
		Variable Iris	1-127	1-50	01-7F
		Open	128-135	50-53	80-87
		Periodic Strobe (Variable)	136-151	53-60	88-97
		Random Strobe (Variable)	152-167	60-66	98-A7
		Ramp Open/Snap Shut (Variable)	168-183	66-72	A8-B7
		Snap Open/Ramp Shut (Variable)	184-199	72-78	B8-C7
		Ramp Open/Ramp Shut (Variable)	200-215	78-84	C8-D7
		Random Ramp Open/Snap Shut (Variable)	216-231	85-91	D8-E7
		Random Snap Open/Ramp Shut (Variable)	232-247	91-97	E8-F7
		Open	248-255	97-100	F8-FF
8	MSpeed (see Table A-2 on page A-2)	Disable	0-3	0-1	00-03
		Longest (252.7 sec.)	4	2	04
		Shortest (0.15 sec.)	255	100	FF
9	Control (Note: The Shutter channel must be set to "0" to access Control channel settings.)	Safe (disables all Control settings)	0-9	0-4	00-09
		Display Off	20-28	8-11	14-1C
		Display Dim	30-38	12-15	1E-26
		Display Bright	40-48	16-19	28-30
		Home	60-68	24-27	3C-44
		Lamp On	80-88	31-35	50-58
		Lamp Off	90-98	35-38	5A-62
		Shutdown*	120-130	47-51	78-82

*Note: Fixture shutdown allows you to remotely deactivate the fixture. When a fixture is shut down, the lamp is extinguished, power to the motors is disabled, and the LED display shows "SHUT OFF." If a fixture is in shutdown mode, you must home the fixture to bring it back into operation.

Preset Programming

When you use the fixture's on-board memory to program your fixtures, you manually assign a value to each of the fixture's available constructs using the fixture's menu system. You access the menu system via the four menu navigation buttons on the fixture's front panel (see Figure 2-1).

seven-segment LED display

<Up> arrow button: scroll upward through menu items or options

<Down> arrow button: scroll downward through menu items or options

MENU   ENTER

<Menu> button: move back to the previous menu level (press and hold to enter the menu system)

<Enter> button: select the curent menu item or option
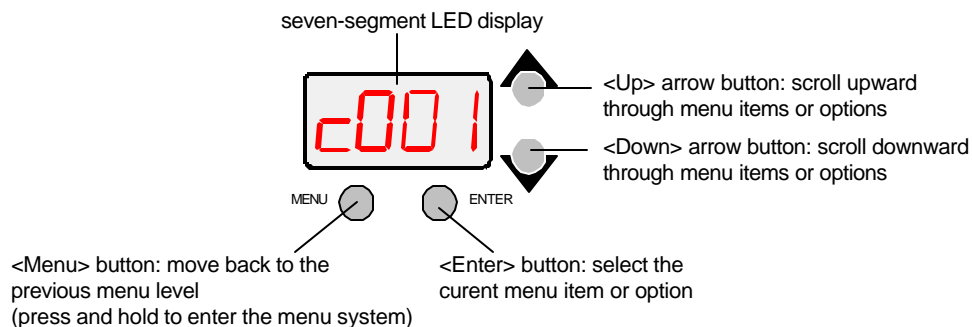
Figure 2-1. Menu navigation buttons.

The seven-segment LED display shows the menu items you select from the menu map. When accessing fixture options (not presets), the display will flash when a new option is *selected* (by pressing the <Up> or <Down> arrow buttons) and will stop flashing when a new option is *entered* (by pressing the <Enter> button). Pressing the <Menu> button returns you to the previous option or menu *without changing* the value of an option.

To access the menu system, press and hold the <Menu> button until "ADDR" appears on the display. The menu system is protected against inadvertent menu changes by requiring the <Menu> button to be held for a few seconds before allowing entry to the menu system.

To exit the menu system, you must keep pressing the <Menu> button until "TOP" appears on the display. "TOP" will be replaced after a few seconds, with the default cycling display of the fixture's software version, fixture type, and DMX start channel.

> Note: The words "AUTO" and "LOCK" will appear briefly on the display after "TOP." As mentioned above, the fixture's software is "locking" the display after you have accessed the menu system.

Menu Map

The intuitive Color Pro menu system allows you to:

- Configure your fixture for operation (discussed in Chapter 1)
- Access fixture options such as homing the fixture, viewing fixture status, crossloading software, and performing self tests (listed in this menu map)
- Create, store, and play scenes from the fixture's on-board memory using preset programming (see "Step-By-Step Example" on page 2-16)

Table Table 2-3 lists the Color Pro menu map and descriptions of each menu item.

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
ADDR	C001-C512				change the existing DMX start channel
INFO	SEN	SEN1			view whether the dim, shutter, effects wheel, and yellow color wheel sensor is obstructed ("OFF") or is not obstructed ("ON")
		SEN2			view whether the magenta and cyan color wheel sensor is obstructed ("OFF") or is not obstructed ("ON")
	SOFT	RXXX			view the fixture's software version
	L-HR				view the current number of lamp hours
	L-ST				view the current number of lamp strikes
	L-RS				reset lamp hours to zero *(press and hold the <Enter> button for 5 seconds to change the value)*
	F-HR				view the current number of fixture hours
	F-RS				reset fixture hours to zero *(press and hold the <Enter> button for 5 seconds to change the value)*
	TEMP	XXXC			view the current ambient temperature at the logic board inside the fixture in degrees centigrade (C)
	LINK	CNST	BRK		view the number of DMX framing errors with a data value of zero
			FE		view the number of DMX framing errors with non-zero values (errors in data transmission)
			OE		view the number of DMX overruns

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
INFO *(cont.)*	LINK *(cont.)*	CNST *(cont.)*	STRT		view the DMX start code value
			INTY		view the DMX dim value
			SHUT		view the DMX shutter value *(enhanced mode only)*
			COLC		view the DMX color control value *(enhanced mode only)*
			RED		view the DMX red color wheel position value
			GRN		view the DMX green color wheel position value
			BLUE		view the DMX blue color wheel position value
			EFCT		view the DMX effects wheel, iris, or twinkle wheel position value
			SPED		view the DMX MSpeed time value *(enhanced mode only)*
			CNTL		view the DMX control channel value
		DATA	C001-C512		view DMX data of the selected DMX channel for any fixture on the link
	UNIQ				*Customer Service use only*
TEST	RSET				home the fixture
	CODE				*Factory use only*
	DISP				self test LED display
	S-UP				place the fixture in setup mode for mechanical homing
	SELF	ALL			self test all constructs
		INTY			self test dim movement
		RED			self test red color wheel movement
		GRN			self test green color wheel movement
		BLUE			self test blue color wheel movement
		EFCT			self test effects wheel, iris, or twinkle wheel movement
	BOOT				copy the boot sector
	LITE	OFF			extinguish the lamp
		ON			strike the lamp
HES	PROT	STND			select standard protocol mode (6 DMX channels per fixture)
		ENHD			select enhanced protocol mode (9 DMX channels per fixture)
	C-LD				crossload fixture software to all other Color Pro fixtures on the link
	USER	A			select user A settings
		B			select user B settings
		COPY	PRST	ATOB	copy user A presets to user B
				BTOA	copy user B presets to user A
			SETT	ATOB	copy user A settings to user B
				BTOA	copy user B settings to user A
			ALL	ATOB	copy user A presets and settings to user B
				BTOA	copy user B presets and settings to user A
	TYPE	COLR			set the fixture type to Color Pro HX
		FIBR			set the fixture type to Color Pro FX
		IRIS			set the fixture type to Color Pro HXi

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
SET	FACT	OFF			set factory defaults off
		ON			set factory defaults on
	LITL	OFF			disable lamp hour warning message
		ON			enable lamp hour warning message
	D-IN	OFF			select normal LED display orientation
		ON			select inverted LED display orientation
	DSPL	OFF			set the LED display off
		ON			set the LED display on
		LO			dim the LED display
PRST	EDIT	SN01 - SN16	INTY *(standard mode only)*	D001 - D127	select a dim value from dark (D001) to bright (D255)
				OPEN	select an open dim value
				P 01 - P 48	select a periodic dim strobe value from slow (P01) to fast (P48)
				N 01 - N 48	select a random dim strobe value from slow (N01) to fast (N48)
			INTY *(enhanced mode only)*	D001-D255	select a dim value from dark (D001) to bright (D255)
			SHUT *(enhanced mode only)*	CLSD	close the shutter
				P 01 - P 32	periodic shutter strobe at specified intervals, slow (P 01) to fast (P 32)
				NN01 - NN32	shutter strobe at random intervals, slow (NN01) to fast (NN32)
				NK01 - NK32	random shutter strobe, slow (NK01) to fast (NK32), in synchronization with the random strobing of all other Color Pro fixtures on the link
				RR01 - RR32	shutter ramp open, ramp shut slow (RR01) to fast (RR32) *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				NR01 - NR32	random shutter ramp open, slow (NR01) to fast (NR32), snap shut *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				OPEN	open the shutter
			COLC *(enhanced mode only)*	CON	select exact positioning at any point on the three color wheels, full speed (FADE)
				IND	divide the three color wheels into eight equal sections, full speed (FADE)
				RGB	access only the portion of the three color wheels used for color mixing, full speed (FADE)
				SPN	set all three color wheels to spin mode, full speed (FADE)
				CYC	use only the color mixing portion of the three color wheels to cycle colors from red to green to blue (rate set by red DMX channel), full speed (FADE)
				SCN	set all three color wheels to scan mode, full speed (FADE)

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
PRST *(cont.)*	EDIT *(cont.)*	SN01 - SN16 *(cont.)*	COLC *(enhanced mode only)*	RND	perform a random color chase of 12 factory-selected colors using the three color wheels (rate set by red DMX channel), full speed (FADE)
				BLK	shutter blink between continuous (CON) wheel position changes, full speed (FADE)
				SCON	select exact positioning at any point on the three color wheels, MSpeed
				SIND	divide the three color wheels into eight equal sections, MSpeed
				SRGB	access only the portion of the three color wheels used for color mixing, MSpeed
				SSPN	set all three color wheels to spin mode, MSpeed
				SCYC	use only the color mixing portion of the three color wheels to cycle colors from red to green to blue (rate set by red DMX channel), MSpeed
				SSCN	set all three color wheels to scan mode, MSpeed
				SRND	perform a random color chase of 12 factory-selected colors using the three color wheels (rate set by red DMX channel), MSpeed
				SBLK	shutter blink between continuous (CON) wheel position changes, MSpeed
			RED *(standard mode only)*	R000 - R255	select an exact position within the color mixing portion of the red color wheel from most saturated (R000) to least saturated (R255)
			RED *(enhanced mode only)*	D000 - D358	select an exact position on the red color wheel from 0° (D000) to 358° (D358) *(only available with a COLC value of CON or SCON)*
				OPEN	select the open "white" position on the red color wheel *(only available with a COLC value of IND, BLK, SIND, or SBLK)*
				S 5	choose the most saturated position on the red color wheel *(only available with a COLC value of IND or SIND)*
				S 4	choose the second saturated position on the red color wheel *(only available with a COLC value of IND or SIND)*
				S 3	choose the third saturated position on the red color wheel *(only available with a COLC value of IND or SIND)*
				S 2	choose the fourth saturated position on the red color wheel *(only available with a COLC value of IND or SIND)*
				S 1	choose the least saturated position on the red color wheel *(only available with a COLC value of IND or SIND)*
				R000 - R255	select an exact position within the color mixing portion of the red color wheel from most saturated (R000) to least saturated (R255) *(only available with a COLC value of RGB or SRGB)*
				D000 - D357	select an exact position on the red color wheel from 0° (D000) to 357° (D357) while the other color wheels are spinning or scanning *(only available with a COLC value of SPN, SSPN, SCN, or SSCN)*

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
PRST *(cont.)*	EDIT *(cont.)*	SN01 - SN16 *(cont.)*	RED *(cont.)* *(enhanced mode only)*	R 60 - R 01	select a reverse red color wheel spin speed from fast (R 60) to slow (R 01) *(only available with a COLC value of SPN or SSPN)*
				STIL	stop the red color wheel from spinning *(only available with a COLC value of SPN or SSPN)*
				F 01 - F 60	select a forward red color wheel spin speed from slow (F 01) to fast (F 60) *(only available with a COLC value of SPN or SSPN)*
				L000 - L255	select the speed at which all three color wheels move to the next cycle color, from slow (C000) to fast (C255) *(only available with a COLC value of CYC or SCYC)*
				S001- S128	select a red color wheel scan speed from slow (S001) to fast (S128) *(only available with a COLC value of SCN or SSCN)*
				N000 - N255	select the speed at which all three color wheels move to the next random color, from slow (N000) to fast (N255) *(only available with a COLC value of RND or SRND)*
				BS 5	choose the most saturated position on the red color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 4	choose the second saturated position on the red color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 3	choose the third saturated position on the red color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 2	choose the fourth saturated position on the red color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 1	choose the least saturated position on the red color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
			GRN *(standard mode only)*	G000 - G255	select an exact position within the color mixing portion of the green color wheel from most saturated (G000) to least saturated (G255)
			GRN *(enhanced mode only)*	D000 - D358	select an exact position on the green color wheel from 0° (D000) to 358° (D358) *(only available with a COLC value of CON or SCON)*
				OPEN	select the open "white" position on the green color wheel *(only available with a COLC value of IND, BLK, SIND, or SBLK)*
				S 5	choose the most saturated position on the green color wheel *(only available with a COLC value of IND or SIND)*
				S 4	choose the second saturated position on the green color wheel *(only available with a COLC value of IND or SIND)*
				S 3	choose the third saturated position on the green color wheel *(only available with a COLC value of IND or SIND)*
				S 2	choose the fourth saturated position on the green color wheel *(only available with a COLC value of IND or SIND)*

2

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
PRST *(cont.)*	EDIT *(cont.)*	SN01 - SN16 *(cont.)*	GRN *(cont.)* *(enhanced mode only)*	S 1	choose the least saturated position on the green color wheel *(only available with a COLC value of IND or SIND)*
				G000 - G255	select an exact position within the color mixing portion of the green color wheel from most saturated (G000) to least saturated (G255) *(only available with a COLC value of RGB or SRGB)*
				D000 - D357	select an exact position on the green color wheel from 0° (D000) to 357° (D357) while the other color wheels are spinning or scanning *(only available with a COLC value of SPN, SSPN, SCN, or SSCN)*
				R 60 - R 01	select a reverse green color wheel spin speed from fast (R 60) to slow (R 01) *(only available with a COLC value of SPN or SSPN)*
				STIL	stop the green color wheel from spinning *(only available with a COLC value of SPN or SSPN)*
				F 01 - F 60	select a forward green color wheel spin speed from slow (F 01) to fast (F 60) *(only available with a COLC value of SPN or SSPN)*
				S001- S128	select a green color wheel scan speed from slow (S001) to fast (S128) *(only available with a COLC value of SCN or SSCN)*
				BS 5	choose the most saturated position on the green color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 4	choose the second saturated position on the green color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 3	choose the third saturated position on the green color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 2	choose the fourth saturated position on the green color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 1	choose the least saturated position on the green color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
			BLUE *(standard mode only)*	B000 - B255	select an exact position within the color mixing portion of the blue color wheel from most saturated (B000) to least saturated (B255)
				ULT	select the UV position on the blue color mixing wheel *(Note: To access UV, set the Red and Green menu options to a zero value)*
			BLUE *(enhanced mode only)*	D000 - D358	select an exact position on the blue color wheel from 0° (D000) to 358° (D358) *(only available with a COLC value of CON or SCON)*
				OPEN	select the open "white" position on the blue color wheel *(only available with a COLC value of IND, BLK, SIND, or SBLK)*
				C 1	select the UV filter on the blue color wheel *(only available with a COLC value of IND or SIND)*

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
				S 5	choose the most saturated position on the blue color wheel *(only available with a COLC value of IND or SIND)*
				S 4	choose the second saturated position on the blue color wheel *(only available with a COLC value of IND or SIND)*
				S 3	choose the third saturated position on the blue color wheel *(only available with a COLC value of IND or SIND)*
				S 2	choose the fourth saturated position on the blue color wheel *(only available with a COLC value of IND or SIND)*
				S 1	choose the least saturated position on the blue color wheel *(only available with a COLC value of IND or SIND)*
				B000 - B255	select an exact position within the color mixing portion of the blue color wheel from most saturated (B000) to least saturated (B255) *(only available with a COLC value of RGB or SRGB)*
				D000 - D357	select an exact position on the blue color wheel from 0° (D000) to 357° (D357) while the other color wheels are spinning or scanning *(only available with a COLC value of SPN, SSPN, SCN or SSCN)*
				R 60 - R 01	select a reverse blue color wheel spin speed from fast (R 60) to slow (R 01) *(only available with a COLC value of SPN or SSPN)*
PRST *(cont.)*	EDIT *(cont.)*	SN01 - SN16 *(cont.)*	BLUE *(cont.)* *(enhanced mode only)*	STIL	stop the blue color wheel from spinning *(only available with a COLC value of SPN or SSPN)*
				F 01 - F 60	select a forward blue color wheel spin speed from slow (F 01) to fast (F 60) *(only available with a COLC value of SPN or SSPN)*
				S001- S128	select a blue color wheel scan speed from slow (S001) to fast (S128) *(only available with a COLC value of SCN or SSCN)*
				BC 1	select the UV filter on the blue color wheel *(only available with a COLC value of BLK or SBLK)*
				BS 5	choose the most saturated position on the blue color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 4	choose the second saturated position on the blue color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 3	choose the third saturated position on the blue color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 2	choose the fourth saturated position on the blue color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*
				BS 1	choose the least saturated position on the blue color wheel with shutter blink *(only available with a COLC value of BLK or SBLK)*

2

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
PRST *(cont.)*	EDIT *(cont.)*	SN01 - SN16 *(cont.)*	EFCT *(Color Pro HX model only)*	D000 - D357	select an exact position on the effects wheel from 0° (D000) to 357° (D357)
				R 60 - R 01	select reverse effects wheel spin speed, from fast (R 60) to slow (R 01)
				STIL	stop the effects wheel from spinning
				F 01 - F 60	select a forward effects wheel spin speed, from slow (F 01) to fast (F 60)
			EFCT *(Color Pro FX model only)*	D000 - D357	select an exact position on the twinkle wheel from 0° (D000) to 357° (D357)
				T001 - T128	select a twinkle wheel spin speed, from slow (T001) to fast (T128)
			EFCT *(Color Pro HXi model only)* *(standard mode only)*	CLSD	close the iris
				F001 - F254	select a beam diameter, from small (F001) to large (F254)
				OPEN	fully open the iris
			EFCT *(Color Pro HXi model only)* *(enhanced mode only)*	CLSD	close the iris
				F001 - F127	select a beam diameter, from small (F001) to large (F127)
				P 01 - P 16	select a speed to strobe the beam diameter, from slow (P 01) to fast (P 16)
				N 01 - N 16	select the random frequency to strobe the beam diameter, from less often (N 01) to more often (N 16)
				RS01 - RS16	select the speed to ramp open, slow (RS01) to fast (RS16), then snap shut *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				SR01 - SR16	select the speed to snap open, then ramp shut slow (SR01) to fast (SR16) *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				RR01 - RR16	select the speed to ramp open, then ramp shut slow (RR01) to fast (RR16) *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				NS01 - NS16	select the random frequency to snap open, then ramp shut from less often (NS01) to more often (NS16) *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				NR01 - NR16	select the random frequency to ramp open from less often (NR01) to more often (NR16), then snap shut *(Note: Snap instantly opens or closes at full speed. Ramp opens or closes at specified speeds.)*
				OPEN	fully open the iris
			SPED *(enhanced mode only)*	0.15 - 252.7	select a motor movement time in decimal seconds from fast (0.15) to slow (252.7)
			FADE	0.1 - 9.9	select the INTY and COLR construct's crossfade time in increments of 0.1
				10 - 166	select the INTY and COLR construct's crossfade time in increments of 1

Table 2-3. Menu Map

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5	Description
PRST *(cont.)*	EDIT *(cont.)*	SN 1 - SN16 *(cont.)*	DLAY	D 0.1 - D 9.9	select the scene delay time in increments of 0.1
				D 10 - D166	select the scene delay time in increments of 1
			TBSE	SEC	select seconds as the units of time used for the FADE and DLAY constructs
				MIN	select minutes as the units of time used for the FADE and DLAY constructs
				HOUR	select hours as the units of time used for the FADE and DLAY constructs
			ZERO	YES?	erase any programming of the current scene by voiding all construct values / mark the end of the loop
	PLAY	OFF			set preset playback off
		ON			set preset playback on
		SCN			display which scene is currently playing
	SEND	YES?			send the fixture's presets (for either user A or B) to all other Color Pro fixtures on the link *Note: This option sends the presets and protocol of the sending fixture (HX, HXi, or FX). For example, if you send presets from a Color Pro HX with enhanced protocol, all receiving fixtures will be set to enhanced protocol and you will have to individually change the Effects/Iris channel values for any HXi or FX fixtures on the link.*
	DFLT	YES?			enable the factory-programmed preset scene sequence (self demo) - erases any preset scenes previously programmed
	CAPT	SN01 - SN16			select a scene to capture a pre-programmed scene to (from your DMX controller)
	COPY	FRO	FA01 - FA16		select a user A scene to copy from (source scene)
			FB01- FB16		select a user B scene to copy from (source scene)
		TO	TA01- TA16		select a user A scene to copy to (destination scene)
			TB01- TB16		select a user B scene to copy to (destination scene)

2

Step-By-Step Example

Follow the example below to create a sample scene using the fixture's menu system to choose a value for each of the fixture's available constructs. This example includes construct parameters available in enhanced mode only. For more information on available construct parameters, see "Menu Map" on page 2-7.

Choosing a Scene to Create/Edit

`Addr`
1. Press and hold the <Menu> button until "ADDR" appears on the LED display.

`Pr-St`
2. Using the <Up> and <Down> arrow buttons, scroll to the "PRST" menu. (This will be the first construct displayed.) Press the <Enter> button to select the "PRST" menu.

`Ed it`
3. Using the <Up> and <Down> arrow buttons, scroll to the "EDIT" menu and press the <Enter> button to select the "EDIT" menu.

`Sn01`
4. Using the <Up> and <Down> arrow buttons, scroll to the scene you want to create (in this example, "SN01") and press the <Enter> button to select the desired scene.

Selecting a Dim Value (INTY)

`inty`
1. Using the <Up> and <Down> arrow buttons, scroll to the "INTY" construct and press the <Enter> button to select the dim construct.

`d 127`
2. Using the <Up> and <Down> arrow buttons, scroll to the desired dim value (in this example, "D127") and press the <Enter> button to select the desired value.

Opening the Shutter (SHUT)

`SHUt`
1. Using the <Up> and <Down> arrow buttons, scroll to the "SHUT" construct. Press the <Enter> button to select the shutter construct.

`oPEn`
2. Using the <Up> and <Down> arrow buttons, scroll to the desired shutter value (in this example, "OPEN") and press the <Enter> button to select the desired value.

Choosing a Color Wheel Control Value (COLC)

`coLc`
1. Using the <Up> and <Down> arrow buttons, scroll to the "COLC" construct and press the <Enter> button to select the color wheel control construct.

`ind`
2. Using the <Up> and <Down> arrow buttons, scroll to the desired color wheel control value (in this example, "IND") and press the <Enter> button to select the desired value.

Selecting a Red Wheel Position/Rotation Value (RED)

`rEd`
1. Using the <Up> and <Down> arrow buttons, scroll to the "RED" construct and press the <Enter> button to select the red color wheel position construct.

`S 5`
2. Using the <Up> and <Down> arrow buttons, scroll to the desired red color wheel position value (in this example, "S 5") and press the <Enter> button to select the desired value.

Selecting a Green Wheel Position/Rotation Value (GRN)

`grn`
1. Using the <Up> and <Down> arrow buttons, scroll to the "GRN" construct and press the <Enter> button to select the green color wheel position construct.

`S 3`
2. Using the <Up> and <Down> arrow buttons, scroll to the desired green color wheel position value (in this example, "S 3") and press the <Enter> button to select the desired value.

Selecting a Blue Wheel Position/Rotation Value (BLUE)

`bLUE`   1. Using the <Up> and <Down> arrow buttons, scroll to the "BLUE" construct and press the <Enter> button to select the yellow color wheel position construct.

`oPEn`   2. Using the <Up> and <Down> arrow buttons, scroll to the desired yellow color wheel position value (in this example, "OPEN") and press the <Enter> button to select the desired value.

Selecting an Effects or Twinkle Wheel Position/Rotation Value (EFCT)

This menu option is only available for Color Pro HX and FX fixtures.

`EFct`   1. Using the <Up> and <Down> arrow buttons, scroll to the "EFCT" construct and press the <Enter> button to select the effects wheel or twinkle wheel position/rotation construct.

`F 20`   2. Using the <Up> and <Down> arrow buttons, scroll to the desired effects wheel position value (in this example, "F 20") and press the <Enter> button to select the desired value.

Selecting the Iris Value (EFCT)

This menu option is only available for Color Pro HXi fixtures.

`EFct`   1. Using the <Up> and <Down> arrow buttons, scroll to the "IRIS" construct and press the <Enter> button to select the iris construct.

`Sr04`   2. Using the <Up> and <Down> arrow buttons, scroll to the desired iris position value (in this example, "SR04") and press the <Enter> button to select the desired value.

Setting an MSpeed Value (SPED)

`SPEd`   1. Using the <Up> and <Down> arrow buttons, scroll to the "SPED" construct and press the <Enter> button to select the MSpeed construct.

   2. Using the <Up> and <Down> arrow buttons, scroll to the desired MSpeed in decimal seconds and press the <Enter> button to select the desired value.

Note: In this example, no MSpeed value is chosen because a color control (COLC) construct with an MSpeed value was selected.

Setting a Crossfade Value (FADE)

`FAdE`   1. Using the <Up> and <Down> arrow buttons, scroll to the "FADE" construct and press the <Enter> button to select the crossfade construct.

`1.5`   2. Using the <Up> and <Down> arrow buttons, scroll to the desired crossfade value in increments of 0.1 or 1 (in this example, "1.5") and press the <Enter> button to select the desired value.

Note: The crossfade value affects the INTY construct and if, as in this example, you select a color control (COLC) construct with a full speed (*not MSpeed*) value, then the crossfade value also affects the RED, GRN, and BLUE constructs. Set the unit of time used for crossfade (seconds, minutes, or hours) using the TBSE construct.

Setting a Delay Value (DLAY)

`dLAY`   1. Using the <Up> and <Down> arrow buttons, scroll to the "DLAY" construct and press the <Enter> button to select the delay construct.

`60` 2. Using the <Up> and <Down> arrow buttons, scroll to the desired delay value in increments of 0.1 or 1 (in this example, "6.0") and press the <Enter> button to select the desired value.

Note: The delay value determines the length of the scene. If you want all motor transitions to be completed before the next scene begins, FADE must be less than or equal to DLAY. If FADE is longer than DLAY, the transition will not be completed before the next scene begins. Set the unit of time used for delay (seconds, minutes, or hours) using the TBSE construct.

Setting the Time Unit (TBSE)

`tbSE` 1. Using the <Up> and <Down> arrow buttons, scroll to the "TBSE" construct and press the <Enter> button to select the time construct.

`SEc` 2. Using the <Up> and <Down> arrow buttons, scroll to the desired time value (in this example, "SEC") and press the <Enter> button to select the desired value.

Note: This construct sets the unit of time used in for the FADE and DLAY values.

Erasing the Scene (ZERO)

`ZEro` 1. Using the <Up> and <Down> arrow buttons, scroll to the "ZERO" construct and press the <Enter> button to select the zero construct.

`YES?` 2. The LED will display "YES?" (In this example, press the <Menu> button.) Pressing the <Menu> button will exit this construct and leave the current scene as programmed. Pressing the <Enter> button will erase the scene and mark the end of a loop.

Creating a Loop

A loop is a series of programmed scenes that continuously plays in sequential order. To create a loop, you must first create two or more contiguous scenes (see "Step-By-Step Example" on page 3-16). After you have created your scenes, go to the *next available* scene and choose the "ZERO" menu option to erase any programmed construct values and mark the end of a loop.

Note: If you program all available on-board scenes, you *do not* have to mark the end of the loop. When preset playback is set on, the fixture will automatically loop after playback of all programmed scenes.

Playing Back a Loop

To play back a loop, you must set preset playback mode on for each fixture. When preset playback is set on, your fixture will automatically begin playing back the first scene and continue through the loop.

Note: You *must* program scene 1 to enable preset playback.

To set preset playback mode on:

`Addr` 1. Press and hold the <Menu> button until "ADDR" appears on the LED display.

`PrSt` 2. Using the <Up> and <Down> arrow buttons, scroll to the "PRST" menu and press <Enter>.

`PLAY` 3. Using the <Up> and <Down> arrow buttons, scroll to the "PLAY" menu and press <Enter>.

`on` 4. Using the <Up> and <Down> arrow buttons, scroll to the "ON" option and press <Enter>.

The fixture has two ways to indicate that preset playback is on. First, the display will show a dot in the lower right corner (see Figure 2-2). Second, during normal operation, the seven-segment LED cycled information will be changed to display "PRST" instead of the fixture's software version ("Rxxx").

If power is removed during playback, when power is reapplied, the fixture will home and begin playback at the first scene. To stop playback, you must manually set playback mode off following the steps above, but choosing the "OFF" option.
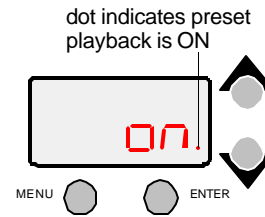

Figure 2-2. Preset playback indicator.

Synchronizing Preset Playback

After you have created one or more scenes for your fixtures, you can synchronize the preset playback for all Color Pro, Studio Spot 250, Studio Color 250, Studio Color 575, Studio Spot 575, EC-1, ES-1, Technobeam, Technopro, or Technoray fixtures in the link.

Note: Synchronizing preset playback is applicable for fixtures operating in stand-alone mode only. Do not include a DMX controller in the link while synchronizing preset scene playback.

Synchronizing playback allows you to set all applicable fixtures to a "master clock" so that all fixtures have a definite, synchronized starting point when playing back their sequences (or loops). It is the master fixture (the fixture set to DMX start channel 1) which determines the sequence length for *all* the other fixtures in the link (slave fixtures), regardless of the number of programmed scenes or the sequence length of the individual slave fixtures.

When the master fixture reaches the end of its last scene, *all* fixtures will restart at scene 1 (regardless of whether the slave fixtures have finished playing their scenes) and *all* the "clocks" will be reset to zero. For example, if a slave fixture has a shorter sequence length, it will continuously repeat its sequence until the master fixture resets all the clocks (see Figure 2-3).   If a slave fixture has a longer sequence length, it will restart at scene 1 before it completes its entire sequence.
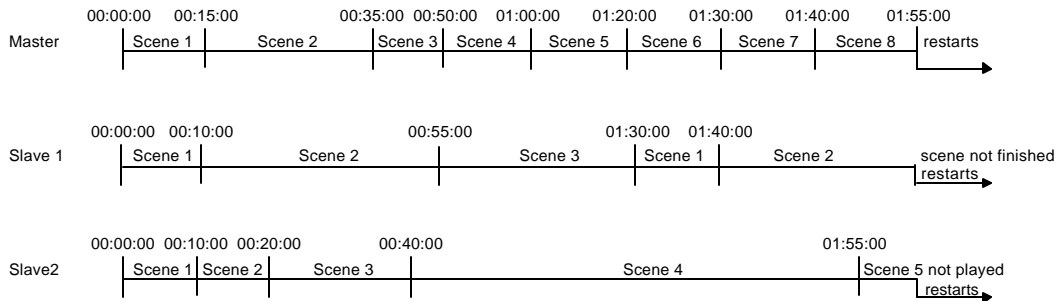
Figure 2-3. Example of synchronized playback.

To enable synchronized playback:

1.   Link the fixtures you want to synchronize (see "Linking Fixtures" on page 1-8). Make sure you terminate *both* the first and the last fixtures in the link and that there are no DMX controllers on the link.

2.   Assign one fixture as the master fixture by assigning it a unique DMX start channel 1 or fixture number 1. Make sure *no other fixture* on the link is assigned DMX start channel 1 or fixture number 1.

3.   Set preset playback on for all fixtures on the link (see "Playing Back a Loop" on page 2-18).

Chapter 3
Troubleshooting and Maintenance

This chapter lists typical symptoms and solutions for problems you might experience when using your Color Pro fixture.   Also included is information on replacing parts, optimizing the lamp, cleaning the fixture, and updating fixture software. Please note the warnings under each heading before servicing your fixture.

3

Troubleshooting

If the problem you are experiencing is not listed in this section or the solution listed does not solve the problem, contact High End Systems customer service (see "Contacting High End Systems" on page ii).

LED Display Error Messages

The front panel on Color Pro fixtures has an seven-segment LED (Light Emitting Diode) display, three status LEDs, and four menu navigation buttons (see Figure 3-1).
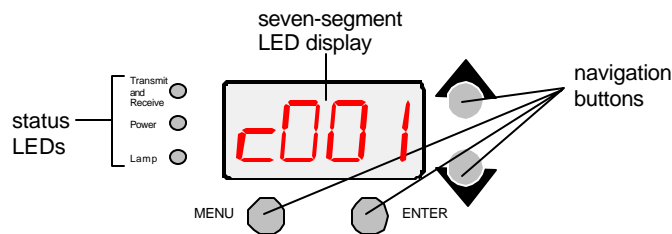
Figure 3-1. Front panel display.

Under normal circumstances, the seven-segment display cycles between displaying the fixture's software version ("Rxxx"), the fixture name ("COLR" for Color Pro HX fixtures, "IRIS" for Color Pro HXi fixtures, or "FIBR" for Color Pro FX fixtures), and the fixture's DMX start channel ("Cxxx"). However, if you are experiencing problems with your fixture, the status LEDs and/or seven-segment display can also provide insight on where the problem is originating.

Table 3-1. LED Error Messages

Display Message	Problem	Solution
ADDR LOST	The fixture was unable to retrieve the DMX start channel. This error message may be received if you change the protocol and cause the fixture's DMX channel range to overlap another fixture's channel range.	Set the DMX start channel again (see "Assigning a DMX Start Channel" on page 1-13).
ADDR OVER	A new logic board (without a stored address) was installed in the fixture or the memory location has not been initialized.	Verify the starting channel (see "Assigning a DMX Start Channel" on page 1-13).

Table 3-1. LED Error Messages

Display Message	Problem	Solution
BOOT DIFF ERR	The current boot code does not match the new boot code. This error may occur after you upload new software.	Update the boot code ("BOOT") (see "Menu Map" on page 2-7).
COPY EE*	Error copying EE settings.	Reset the fixture ("RSET") (see "Menu Map" on page 2-7) and try to copy the value again.
CYAN SENS	The fixture could not home the cyan color wheel.	Perform a self test ("TEST") of the cyan color wheel movement to determine if the wheel is obstructed (see "Menu Map" on page 2-7).
DATA BUSY	• Controller or other crossloading fixture is communicating on the link. • Serial data distributor, optoisolator, controller, or fixture using RS-422 communication is located *before* Color Pro fixtures on the link. • Preset playback is on, and the master fixture detected other activity on the link and stopped transmitting time code.	• Disconnect controller or wait for other crossloading fixture to finish crossloading. • Remove or bypass the offending device(s) on the data link and reattempt the crossload. • If in synchronized preset playback, verify that no other fixture is assigned DMX start channel 1 except the master fixture (see "Assigning a DMX Start Channel" on page 1-13). • Wait three minutes after the last activity on the link and the master fixture will attempt to resend the time code.
EE* [message]	The fixture experienced a memory failure and was unable to retrieve one of the following values: CHNL, DSPL, D-IN, F-HR, L-HR, L-ST, OPER (preset playback), PERS (fixture type), PROT, TBSE, TEST, USER.	An electrical event may have interrupted or corrupted data for the listed construct. Try manually entering the value for the (see "Menu Map" on page 2-7).
EFCT SENS	The fixture could not home the effects wheel.	Perform a self test ("TEST") of the effects wheel movement to determine if the wheel is obstructed (see "Menu Map" on page 2-7).
INIT SEN1 or INIT SEN2	• The specified sensor failed. • A wheel motor failed.	Determine if the sensor failed or is blocked using the fixture's self test of each sensor "SEN1" and "SEN2" (see "Menu Map" on page 2-7).
LITE FAIL*	Lamp unexpectedly shut off due to: • Lamp sensor error • Lamp failure • The fixture lost track of the lamp status during an electrical event.	• Manually strike the lamp ("LITE") (see "Menu Map" on page 2-7). • Replace the lamp (see "Replacing the Lamp" on page 3-7) and reset the lamp hours ("L-RS") (see "Menu Map" on page 2-7).
LITE LIFE ERR	Lamp warning enabled and lamp hours exceed 2,000.	Replace the lamp (see "Replacing the Lamp" on page 3-7) and reset the lamp hours ("L-RS") (see "Menu Map" on page 2-7).
LITE OUT ERR or LERR	• Failed lamp. • The fixture lost track of the lamp status during an electrical event. • Lamp warning enabled and lamp hours exceed 2,200.	• Replace the lamp (see "Replacing the Lamp" on page 3-7) and reset the lamp hours ("L-RS") (see "Menu Map" on page 2-7). • Allow the fixture 5 to 10 minutes to cool, then strike the lamp either via the control channel (see "Programming with a DMX Controller" on page 2-1) or via the on-board menu system ("LITE") (see "Menu Map" on page 2-7).
LITE RATO*	• Error while sensing the lamp status. • The fixture lost track of the lamp status during an electrical event.	Manually strike the lamp ("LITE") (see "Menu Map" on page 2-7).
LITE STAT*	Error in establishing the current lamp status.	Allow the fixture 5 to 10 minutes to cool, then strike the lamp either via the control channel (see "Programming with a DMX Controller" on page 2-1) or via the on-board menu system ("LITE") (see "Menu Map" on page 2-7).

Table 3-1. LED Error Messages

Display Message	Problem	Solution
LITE TOUT ERR	• Lamp is too hot to restrike. • Failed lamp. • Ignitor failure.	• Allow 5 to 10 minutes for the lamp to cool, then restrike the lamp either via the control channel (see "Programming with a DMX Controller" on page 2-1) or via the on-board menu system ("LITE") (see "Menu Map" on page 2-7). • Replace the lamp (see "Replacing the Lamp" on page 3-7) and reset the lamp hours ("L-RS") (see "Menu Map" on page 2-7).
MAGN SENS	The fixture could not home the magenta color wheel.	Perform a self test ("TEST") of the magenta color wheel movement to determine if the wheel is obstructed (see "Menu Map" on page 2-7).
NO DATA or DATA ERR	The crossloading fixture experienced a communication failure with other fixtures due to: • Problem with cable(s). • No data or bad data. • Bad output from previous fixture. • Defective comm board.	• Test and replace cable(s) as necessary. • Test controller data on another link. • Test by bypassing previous fixture on the link.
OVER	Lamp strikes, lamp hours, or fixture hours have exceeded the limited range of 9999.	Reset the menu item that has rolled out of range (either "L-HR," "L-ST," or "F-HR") (see "Menu Map" on page 2-7).
PCB TEMP ERR	The internal temperature of the fixture's logic board is too high.	• Make sure the fixture's fan is working by placing your hand over the fan's exhaust located on the rear panel. If you do not feel air movement, the fan has failed. • Remove any object which may be obstructing the fan vents on the back of the rear panel. • Check and reduce ambient temperature by turning on fans and/or moving the fixture if it is close to a heat source.
PRG ERR	The maximum allowed programming time was exceeded during an upload due to: • Incomplete data. • Defective board.	Try the upload again (see "Updating Software" on page 3-10).
PRST LOST	Preset scenes stored on the fixture's on-board memory were lost.	An electrical event may have interrupted or corrupted preset scene data. Try manually entering the preset scene (see "Step-By-Step Example" on page 2-16)
SENS ERR	Problem with the tab, sensor or motor on the specified sensor.	Check the value ("INFO") for the specified sensor (see "Menu Map" on page 2-7).
SHTR SENS	The fixture could not home the shutter	Perform a self test ("TEST") of the shutter movement to see if the shutter is obstructed (see "Menu Map" on page 2-7).
TEMP CHIP	The microprocessor maximum temperature was exceeded.	• Move the fixture if it is close to a heat source. • Remove any object which may be obstructing the fixture's heatsink. • Check and reduce ambient temperature by turning on fans, etc.
UPLD	The fixture is held in boot mode because power was disconnected during an upload.	Reconnect the fixture and perform the upload again (see "Updating Software" on page 3-10).
YEL SENS	The fixture could not home the yellow color wheel.	Perform a self test ("TEST") of the yellow color wheel movement to determine if the wheel is obstructed (see "Menu Map" on page 2-7).

*Note: If you receive a "COPY EE," "EE," "LITE FAIL," "LITE STAT," "LITE RATO," please contact High End Systems to report the error (see "Contacting High End Systems" on page ii).

General Troubleshooting

To find solutions to general fixture problems not indicated by seven-segment LED display error messages or status LEDs, see Table 3-2.

Table 3-2. General Troubleshooting

Problem	Probable Cause	Solution
Fixture will not turn on.	• No power is connected. • Breaker is turned off. • Power connectors are defective.	• Connect power to the fixture. • Turn the breaker on.
Fixture functions but lamp does not strike.	• The lamp is defective. • The voltage setting is incorrect. • The lamp is currently too hot to strike. • The ignitor connection is loose.	• Replace the lamp (see "Replacing the Lamp" on page 3-7). • Provide correct power source voltage, power cord cap, and input voltage setting (see "Changing the Fixture Voltage" on page 1-6, or "Changing the Power Cord Cap" on page 1-5). • Verify that the fixture's DMX start channel and/or channel range is valid for your controller and link (see "Assigning a DMX Start Channel" on page 1-13). • Allow the lamp to cool, then restrike the lamp either via the control channel (see "Programming with a DMX Controller" on page 2-1) or via the on-board menu system ("LGHT") (see "Menu Map" on page 2-7).
Lamp is dimmer than other fixtures.	• The lamp is defective. • The voltage setting is incorrect. • The wrong type of lamp is installed. • The lamp is not optimized.	• Replace lamp with the specified type (see "Replacing the Lamp" on page 3-7). • Provide correct power source voltage or change input voltage setting (see "Changing the Fixture Voltage" on page 1-6). • Optimize the lamp (see "Optimizing the Lamp" on page 3-8).
Lamp shuts off during operation.	• The lamp is defective. • The lamp has exceeded the maximum temperature. • The lamp socket is loose and causing arcing.	• Replace the lamp (see "Replacing the Lamp" on page 3-7). • Allow the fixture 5 to 10 minutes to cool, then attempt to strike the lamp either via the control channel (see "Programming with a DMX Controller" on page 2-1) or via the on-board menu system ("LGHT") (see "Menu Map" on page 2-7).
Color system is not producing the correct color.	The fixture is not properly homed.	Home the fixture (see "Homing the Fixture" on page 1-8).
Fixture is not responding to controller commands or is producing unexpected results.	• The data cable is faulty. • No controller is attached to the link or the controller is not generating any output. • The fixture has an incorrect fixture number or DMX start channel. • The link was not terminated.	• Test and replace the data cables as necessary. • Verify that a controller is connected to the link and is generating output by sending commands to a known working device. • Verify the DMX start channel does not overlap another fixture's DMX start channel (see "Assigning a DMX Start Channel" on page 1-13). • Terminate the link (see "Constructing a Terminator" on page 1-10).
Display is not functioning.	• The LED display is set off. • The power supply fuse is defective. • The power connectors are loose. • The software upload was incomplete. • The logic board is defective.	• Turn on the LED display ("DSPL") (see "Menu Map" on page 2-7). • Check the power supply fuses (see "Replacing Fuses" on page 3-6). • At fixture start-up, press the two navigational arrow buttons simultaneously. The LED will display "UPLD" and hold the fixture in boot mode. Reload the latest version of the software (see "Updating Software" on page 3-10).
Light output is low and/or fuzzy.	The optical path is dirty.	Clean the internal glass components (see "Cleaning the Internal Components" on page 3-9).

Upload and Crossload Troubleshooting

To find solutions to problems encountered while uploading or crossloading new software versions, see Table 3-3.

Table 3-3. Upload and Crossload Troubleshooting

Problem	Probable Cause	Solution
Not all fixtures on the link are receiving the upload.	• Defective DMX cable(s) • Cable(s) disconnected	• Test and replace cable(s) as necessary • Reconnect DMX cable(s)
Status Cue Lighting Console displays "Fixture could not erase Flash ROM."	• The XLR cable(s) disconnected • Defective cable(s) • The fixture's electrical circuitry is damaged	• Reconnect cable(s) • Test and replace cable(s) as necessary
Status Cue Lighting Console displays "Warning: No response from Fixture xx (Link xx Address xx)."	• Status Cue was configured with a fixture at that address, but no fixtures were found there. • Controllers, serial data distributors, data line Optoisolators, or fixture(s) using RS-422 communication is connected *before* Color Pro fixtures on the link.	• If there is not a fixture at that address, ignore this message - if there is a fixture at that address, verify the DMX start channel (see "Determining the Unique DMX Start Channel' on page 1-14). • Remove or bypass the offending devices from the data link or move them *after* the Color Pro fixtures.
The fixture's LED displays: BOOT DIFF ERR	New software included a new boot code.	Accept and store the new boot code ("BOOT") (see "Menu Map" on page 2-7).
Fixtures are not crossloading.	Controllers, serial data distributors, data line Optoisolators, or fixture(s) using RS-422 communication is connected *before* Color Pro fixtures on the link.	Remove or bypass any offending devices from the data link or move them *after* the Color Pro fixtures.

Status LEDs

See Table 3-4 for a description of the three status LEDs.

Table 3-4. Status LEDs

LED	State	Problem Indication?	Description
Transmit (red LED) & Receive (green LED)	solid	No	Fixture is crossloading or receiving software from other fixtures on the link.
	OFF	Not necessarily [*]	No DMX 512 data is being transmitted.
	flashing	No	The fixture is in preset playback mode, and is the master fixture.
Power	solid	No	The motor power supply is receiving adequate voltage.
	OFF	Yes	Fuse or power failure.
Lamp	solid	No	The lamp power supply is receiving the proper voltage, and the lamp is ON.
	OFF	Not necessarily [**]	The lamp is extinguished.
	flashing	Yes	The fixture is unable to strike the lamp.

*Note: The Transmit & Receive LED will not be on until you have connected the fixture to a DMX 512-compatible controller using XLR data-grade cabling. If this LED remains OFF even though you have connected the fixture to a controller and are sending DMX 512 commands to the fixture, see "General Troubleshooting" on page 3-4.

**Note: If you shut down the lamp using a remote shutdown command, the lamp and the Lamp LED will shut off. However, if you have defective data cables, no data cables/controller

connected to the fixture, or the controller is off, the lamp and its LED will also be off. If correcting these problems does not turn the lamp on, see "General Troubleshooting" on page 3-4.

Maintenance

Warning: **This fixture must be serviced by qualified personnel. The information listed in this section is intended to assist qualified personnel *only*.**

Warnings: **Disconnect power before servicing.**

Replace fuses with the specified type and rating only.

Equipment surfaces may reach temperatures up to 80° C (176° F). Allow the fixture to cool before handling.

Replacing Fuses

You will need:
•   replacement fuse (see Table 3-5)
•   wide tip, flat head screwdriver

To replace either of the two fuses located on the fixture's circuit board:

1.   Electrically isolate the fixture. If the fixture has been operating, allow the fixture to cool before handling.

2.   Determine which fuse needs to be replaced by referring to Table 3-5.

Table 3-5. Description and Function of Fuses

Fuse	Type and Rating	Size	Protects	Symptom of Failure
F1	6.3 A, 250 V, Slow Blow only	5mm x 20mm	Main fuse	Fixture shuts down, all status LEDs are off, the fixture will not receive power, fuse filament is broken or fuse is black.
F2	2.5 A, 250 V, Slow Blow only*	5mm x 20mm	Logic board	Fixture shuts down, all status LEDs are off, the fixture will not receive power, fuse filament is broken or fuse is black.

3.   Locate the access door retaining screw (see Figure 1-3 on page 1-2).

4.   Using a wide-tip flat head screwdriver, loosen the door retaining screw and remove the access door.

5.   Locate the F1 and F2 fuses on the fixture's circuit board (see Figure 3-2).

   *Note: If you are replacing the F2 fuse, you must first remove the protective plastic covering over the fuse.

6.   Replace the appropriate fuse(s) with a fuse of the same type and rating (see Table 3-5).

   *Note: If you replaced the F2 fuse, reinstall the protective plastic covering over the fuse.

7.   Replace the access door and tighten the door retaining screw.

F1 fuse

F2 fuse
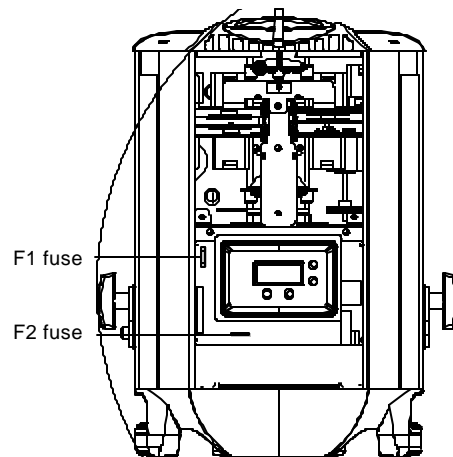
Figure 3-2. Location of the fuses.

Replacing the Lamp

Warnings: **Disconnect power before re-lamping or servicing.**

Change the lamp if it becomes damaged or thermally deformed.

An operating, unshielded MSD lamp emits ultraviolet and visible (UV-vis) radiation which could damage eyes and skin. Whenever you are working on or near an exposed lamp, wear protective eye gear. Never look directly at the lamp while the lamp is on.

A hot lamp may be an explosion hazard. Do not open for five minutes after switching off. Wear eye and hand protection when re-lamping.

Change shields, lenses, or ultraviolet screens if they become visibly damaged to such an extent that their effectiveness is impaired, for example, by cracks or deep scratches.

Do not operate this equipment without complete lamp enclosure in place or if shields, lenses, or ultraviolet screens are damaged.

Equipment surfaces may reach temperatures up to 80° C (176° F). Allow the fixture to cool before handling.

3

You will need:
- MSD 250/2, 250 watt, metal halide lamp, GY 9.5 base*****
- protective gloves and eyewear
- wide tip, flat head screwdriver

> *****Note: Use only the MSD 250/2 lamp in your fixture, not the MSD 250. Color Pro fixtures are optimized for the MSD 250/2 lamp and will give reduced performance with other lamps.

To install/replace the lamp:

1. Electrically isolate the fixture. If the fixture has been operating, wait for the lamp to cool before handling.

2. Put on your protective eyewear and gloves.

3. Locate and loosen the two lamp assembly screws (see Figure 3-3).

4. Pull the lamp assembly straight out of the fixture (see Figure 3-4).

   The lamp assembly is connected to the fixture by lamp socket wires (see Figure 3-4). Support the lamp assembly while replacing the lamp. *Do not allow the lamp socket wires to support the weight of the lamp assembly.*

Lamp assembly screws

Figure 3-3. Lamp assembly screws.

lamp socket wires

lamp assembly

Figure 3-4. Removing the lamp assembly.

5. Holding the existing lamp by its ceramic base, carefully pull the lamp straight out of the lamp socket on the lamp assembly (see Figure 3-5).

⚠️ **Caution:** **Do not squeeze the lamp glass while removing the existing lamp from the socket. Lamp glass may shatter.**

6. Remove all packaging materials from the new lamp. Holding the new lamp by its ceramic base, gently press the two base pins into the lamp socket until the lamp is firmly seated.
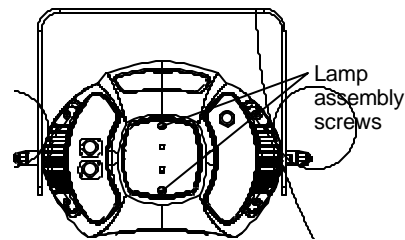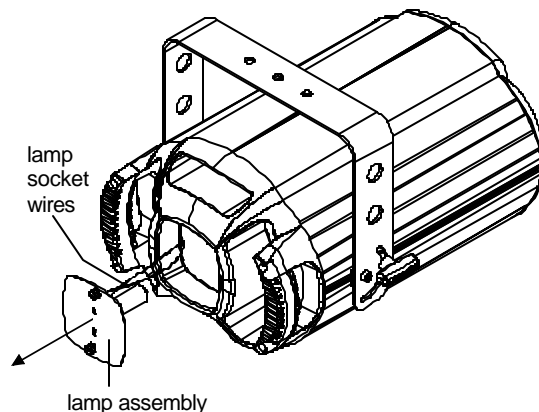
⚠️ **Caution:** **When handling the new lamp, avoid contact with the lamp glass. If the lamp glass is soiled by oil or dirt from skin, gloves, etc., clean the cold lamp glass with an alcohol wipe. A soiled lamp could overheat and burst, causing damage to the fixture.**

Figure 3-5. Removing the lamp from the lamp socket.

7. Reinsert the lamp assembly straight into the fixture (and reflector).

⚠️ **Caution:** **Make sure the lamp socket wires are not wrapped around the lamp or crimped in the assembly while reinserting the lamp. If the lamp socket wires are wrapped around the lamp or crimped, the lamp and fixture could be damaged.**

8. Tighten the lamp assembly screws.

9. Reset the lamp hours ("L-RS") to zero so that you can track the lamp life (see "Menu Map" on page 2-7). If desired, enable the lamp warning message ("LITL") so that the display will show "LITE LIFE ERR" when the current lamp hours exceed 2,000.*

   *Note: After 2,200 hours, the display will show "LITE OUT ERR." Once the lamp is extinguished, the fixture will no longer strike the lamp until the current lamp is replaced and lamp hours are reset to zero. (If you try to manually strike the lamp, the display will show "LERR.")

10. Optimize the new lamp (see "Optimizing the Lamp" below).

Optimizing the Lamp

You should optimize the lamp in a Color Pro HX or HXi fixture after you replace the lamp, or if you notice a "hot spot" of brightness anywhere other than the center of the light beam.

The optimization procedure below describes how to optimize the lamp using the fixture's on-board menu system. However, you can access the same options using your DMX controller.

1. Orient the fixture so that the beam will project onto a flat, white surface at least 10 feet (3 m) away.

2. Turn the lamp on ("LITE") (see "Menu Map" on page 2-7).

3. If necessary, change any colors or effects wheel/iris values to achieve an open, white beam.

4. If necessary, adjust the fixture's position until the beam is round and not oval.

5. Adjust the focus until the edge of the light beam is sharp (see "Setting the Beam Angle/Focusing the Beam" on page 1-12).

6. Locate and loosen the two optimization screws (see Figure 3-6).

7. Look at the wall where the beam is projected and use the two optimization screws to adjust the lamp's position within the fixture.

Optimization screws

Figure 3-6. Optimization screws.

8. When the beam is at its maximum brightness and the light level is even across the beam (or the "hot spot" of brightness is at the center of the beam), retighten the two optimization screws to secure the lamp in its new position.

Cleaning the Internal Components

Warnings: **Disconnect power before servicing.**

Equipment surfaces may reach temperatures up to 80° C (176° F). Allow the fixture to cool before handling.

If the internal components of your fixture become dirty, clean them by following the procedure below.

You will need:
- a soft, lint-free cotton cloth
- mild glass cleaning solution (containing no ammonia)
- warm, soapy water

To clean the internal components:

1. Electrically isolate the fixture.

2. Loosen the access door retaining screw and remove the access door (see Figure 1-3 on page 1-2).

3. Once the access door is removed, use a soft, lint-free cotton cloth and warm soapy water (if necessary) to clean the inside and outside of the access door vents.

4. Clean the anti-reflective glass (HX and HXi), color wheels, effects wheel, hot mirror, and lenses using a mild glass cleaner (*containing no ammonia)* and a soft, lint-free cotton cloth (see Figure 3-7).

   Note: Color Pro FX does not have a zoom lens and its effect wheel is the twinkle wheel (which does not need to be cleaned).
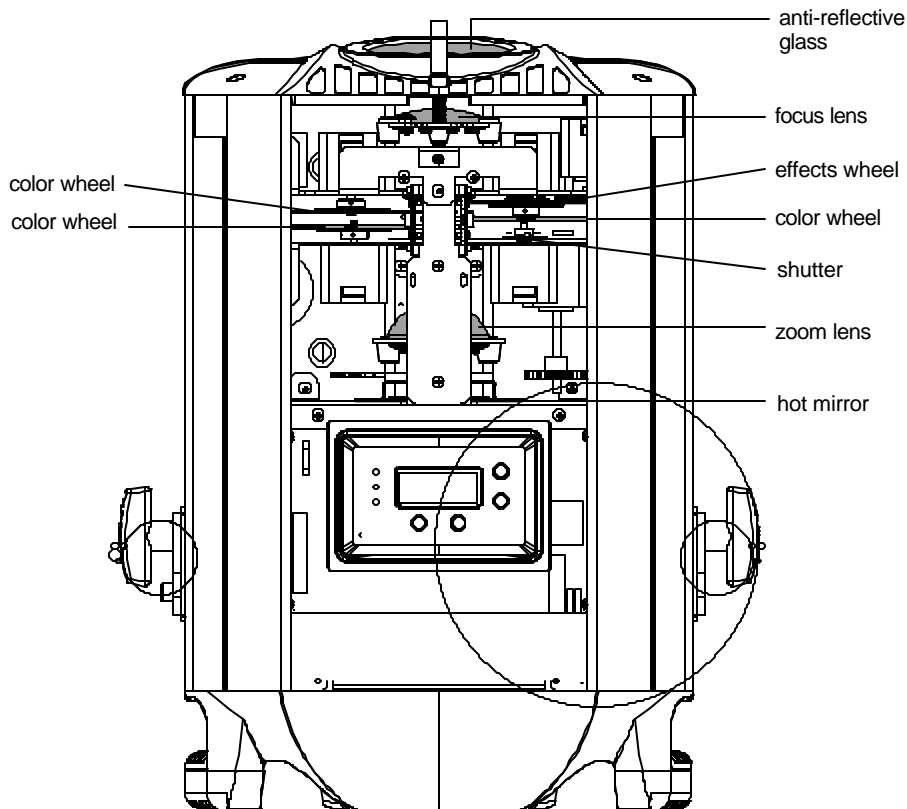
Figure 3-7. Location of the internal components.

Updating Software

Updating Color Pro fixture software is fast and easy. The latest versions of software are provided on the High End Systems web site, and are also available through High End Systems customer service (see "Contacting High End Systems" on page ii).

There are three ways to upload new software to your Color Pro fixtures:

1. Attach a High End Systems Upload Dongle to your computer and upload the software to a Color Pro fixture.

    To use a High End Systems Upload Dongle, you will need a 386-based (or faster) computer, MS DOS® version 3.3 (or later), and one MB of free disk space. To obtain an Upload Dongle (with installation and operation instructions), contact your High End Systems dealer/distributor (see "Contacting High End Systems" on page ii).

2. Upload the new software to all Color Pro fixtures on the link using the Status Cue lighting console.

    Refer to the *Status Cue User Manual* for the procedure used to upload software using a Status Cue lighting console.

3. Crossload software from one fixture that contains the new software to all other Color Pro fixtures on the link.

    Color Pro fixtures (HX, HXi, and FX) all use the same software. Therefore, if you have a Color Pro fixture with newer software, you can crossload its software (using the fixture's menu system) to all other Color Pro fixtures on the link.

    To crossload software:

    Addr   1. Press and hold the <Menu> button until "ADDR" appears on the LED display.

    hES   2. Using the <Up> and <Down> arrow buttons, scroll to the "HES" menu and press <Enter>.

    c-Ld   3. Using the <Up> and <Down> arrow buttons, scroll to the "C-LD" option and press <Enter>. The fixture will begin the crossload.

Before you can upload or crossload new software, you must disconnect any controllers, bypass any serial data distributors and/or data line optoisolators, and bypass or make sure that any fixtures using RS-422 communications (such as Dataflash® AF1000 xenon strobes, and Intellabeam® fixtures) are located *after* the Color Pro fixtures on the link. These devices will block communication with any other Color Pro fixtures on the link.

Regardless of the method you chose to upload software, if you receive an error during the upload, see "Upload and Crossload Troubleshooting" on page 3-5.

Appendix A
DMX Control

This appendix includes tables which list appropriate DMX start channels and MSpeed time conversions. For a listing of the Color Pro fixture's color matching to Rosco® and Lee® common gel colors, refer to the High End Systems' web page (see "Contacting High End Systems" on page ii).

DMX Start Channels

Table A-1 lists the DMX start channels for Color Pro fixtures in standard and enhanced protocol. This table assumes that the fixtures are all assigned to the same link, one after another, and that all fixtures use the *same number of channels* (i.e. only Color Pro fixtures in standard protocol (or other devices using 6 DMX channels) on the link, or only Color Pro fixtures in enhanced protocol (or other devices using 9 DMX channels) on the link).

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Table A-1. DMX Start Channels

Fixture Order in the Link	Standard Protocol	Enhanced Protocol	Fixture Order in the Link	Standard Protocol	Enhanced Protocol
1	1	1	27	157	235
2	7	10	28	163	244
3	13	19	29	169	253
4	19	28	30	175	262
5	25	37	31	181	271
6	31	46	32	187	280
7	37	55	33	193	289
8	43	64	34	199	298
9	49	73	35	205	307
10	55	82	36	211	316
11	61	91	37	217	325
12	67	100	38	223	334
13	73	109	39	229	343
14	79	118	40	235	352
15	85	127	41	241	361
16	91	136	42	247	370
17	97	145	43	253	379
18	103	154	44	259	388
19	109	163	45	265	397
20	115	172	46	271	406
21	121	181	47	277	415
22	127	190	48	283	424
23	133	199	49	289	433
24	139	208	50	295	442
25	145	217	51	301	451
26	151	226	52	307	460

Table A-1. DMX Start Channels

Fixture Order in the Link	Standard Protocol	Enhanced Protocol	Fixture Order in the Link	Standard Protocol	Enhanced Protocol
53	313	469	70	415	
54	319	478	71	421	
55	325	487	72	427	
56	331	496*	73	433	
57	337		74	439	
58	343		75	445	
59	349		76	451	
60	355		77	457	
61	361		78	463	
62	367		79	469	
63	373		80	475	
64	379		81	481	
65	385		82	487	
66	391		83	493	
67	397		84	499	
68	403		85	505*	
69	409				

*Note: You can connect up to 85 fixtures (in standard protocol) or 56 fixtures (in enhanced protocol) to one DMX link. In standard protocol, channels 511 and 512 cannot be used due to the protocol's 6-channel range. In enhanced protocol, channels 505 through 512 cannot be used due to the protocol's 9-channel range

Although there are enough available DMX channels to link up to 85 fixtures in standard protocol or 56 fixtures in enhanced protocol, you must use a DMX splitter to connect more than 32 fixtures per link. The 32 device limit complies with the EIA-485 standard. Connecting more than 32 devices per link without a DMX splitter will eventually deteriorate the digital signal.

MSpeed Times

Table A-2 lists the MSpeed (motor) movement times and their corresponding DMX controller values. If you have a numeric-type controller, use the Value Decimal (dec.) column. If you have a fader-type controller, use the Value Percentage (%) column. If your controller allows you to program hex values, use the Value (hex) column.

The values in Table A-2 may vary slightly depending on your controller's rounding convention.

Table A-2. MSpeed Times

Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)
0.15	255	100	FF	0.21	251	98	FB	0.41	247	97	F7
0.15	254	100	FE	0.25	250	98	FA	0.47	246	96	F6
0.17	253	99	FD	0.29	249	98	F9	0.55	245	96	F5
0.19	252	99	FC	0.35	248	97	F8	0.63	244	96	F4

Table A-2. MSpeed Times

Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)
0.73	243	95	F3	11.84	201	79	C9	37.09	159	62	9F
0.83	242	95	F2	12.28	200	78	C8	37.87	158	62	9E
0.94	241	95	F1	12.72	199	78	C7	38.65	157	62	9D
1.05	240	94	F0	13.17	198	78	C6	39.44	156	61	9C
1.18	239	94	EF	13.63	197	77	C5	40.23	155	61	9B
1.31	238	93	EE	14.10	196	77	C4	41.04	154	60	9A
1.45	237	93	ED	14.58	195	76	C3	41.85	153	60	99
1.60	236	93	EC	15.07	194	76	C2	42.68	152	60	98
1.75	235	92	EB	15.56	193	76	C1	43.50	151	59	97
1.92	234	92	EA	16.06	192	75	C0	44.34	150	59	96
2.09	233	91	E9	16.57	191	75	BF	45.19	149	58	95
2.27	232	91	E8	17.09	190	75	BE	46.04	148	58	94
2.46	231	91	E7	17.61	189	74	BD	46.90	147	58	93
2.66	230	90	E6	18.14	188	74	BC	47.77	146	57	92
2.86	229	90	E5	18.68	187	73	BB	48.65	145	57	91
3.07	228	89	E4	19.23	186	73	BA	49.54	144	56	90
3.29	227	89	E3	19.79	185	73	B9	50.43	143	56	8F
3.52	226	89	E2	20.36	184	72	B8	51.33	142	56	8E
3.76	225	88	E1	20.93	183	72	B7	52.24	141	55	8D
4.00	224	88	E0	21.51	182	71	B6	53.16	140	55	8C
4.25	223	87	DF	22.10	181	71	B5	54.09	139	55	8B
4.52	222	87	DE	22.70	180	71	B4	55.02	138	54	8A
4.78	221	87	DD	23.30	179	70	B3	55.96	137	54	89
5.06	220	86	DC	23.92	178	70	B2	56.91	136	53	88
5.34	219	86	DB	24.54	177	69	B1	57.87	135	53	87
5.64	218	85	DA	25.17	176	69	B0	58.84	134	53	86
5.94	217	85	D9	25.80	175	69	AF	59.81	133	52	85
6.25	216	85	D8	26.45	174	68	AE	60.79	132	52	84
6.56	215	84	D7	27.10	173	68	AD	61.78	131	51	83
6.89	214	84	D6	27.76	172	67	AC	62.78	130	51	82
7.22	213	84	D5	28.43	171	67	AB	63.79	129	51	81
7.56	212	83	D4	29.11	170	67	AA	64.80	128	50	80
7.91	211	83	D3	29.80	169	66	A9	65.82	127	50	7F
8.27	210	82	D2	30.49	168	66	A8	66.85	126	49	7E
8.63	209	82	D1	31.19	167	65	A7	67.89	125	49	7D
9.00	208	82	D0	31.90	166	65	A6	68.94	124	49	7C
9.39	207	81	CF	32.62	165	65	A5	69.99	123	48	7B
9.77	206	81	CE	33.34	164	64	A4	71.05	122	48	7A
10.17	205	80	CD	34.08	163	64	A3	72.13	121	47	79
10.58	204	80	CC	34.82	162	64	A2	73.20	120	47	78
10.99	203	80	CB	35.57	161	63	A1	74.29	119	47	77
11.41	202	79	CA	36.33	160	63	A0	75.38	118	46	76

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Table A-2. MSpeed Times

Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)
76.49	117	46	75	130.02	75	29	4B	197.70	33	13	21
77.60	116	45	74	131.47	74	29	4A	199.48	32	13	20
78.71	115	45	73	132.92	73	29	49	201.28	31	12	1F
79.84	114	45	72	134.39	72	28	48	203.08	30	12	1E
80.98	113	44	71	135.86	71	28	47	204.88	29	11	1D
82.12	112	44	70	137.34	70	27	46	206.70	28	11	1C
83.27	111	44	6F	138.82	69	27	45	208.52	27	11	1B
84.43	110	43	6E	140.32	68	27	44	210.36	26	10	1A
85.59	109	43	6D	141.82	67	26	43	212.19	25	10	19
86.77	108	42	6C	143.33	66	26	42	214.04	24	9	18
87.95	107	42	6B	144.85	65	25	41	215.90	23	9	17
89.14	106	42	6A	146.38	64	25	40	217.76	22	9	16
90.34	105	41	69	147.92	63	25	3F	219.63	21	8	15
91.55	104	41	68	149.46	62	24	3E	221.51	20	8	14
92.76	103	40	67	151.01	61	24	3D	223.40	19	7	13
93.98	102	40	66	152.57	60	24	3C	225.30	18	7	12
95.21	101	40	65	154.14	59	23	3B	227.20	17	7	11
96.45	100	39	64	155.71	58	23	3A	229.11	16	6	10
97.70	99	39	63	157.30	57	22	39	231.03	15	6	0F
98.95	98	38	62	158.89	56	22	38	232.96	14	5	0E
100.22	97	38	61	160.49	55	22	37	234.90	13	5	0D
101.49	96	38	60	162.09	54	21	36	236.84	12	5	0C
102.77	95	37	5F	163.71	53	21	35	238.79	11	4	0B
104.05	94	37	5E	165.33	52	20	34	240.75	10	4	0A
105.35	93	36	5D	166.96	51	20	33	242.72	9	4	09
106.65	92	36	5C	168.60	50	20	32	244.70	8	3	08
107.96	91	36	5B	170.25	49	19	31	246.68	7	3	07
109.28	90	35	5A	171.91	48	19	30	248.68	6	2	06
110.61	89	35	59	173.57	47	18	2F	250.68	5	2	05
111.94	88	35	58	175.24	46	18	2E	252.68	4	2	04
113.28	87	34	57	176.92	45	18	2D				
114.63	86	34	56	178.61	44	17	2C				
115.99	85	33	55	180.30	43	17	2B				
117.36	84	33	54	182.01	42	16	2A				
118.73	83	33	53	183.72	41	16	29				
120.12	82	32	52	185.44	40	16	28				
121.51	81	32	51	187.17	39	15	27				
122.91	80	31	50	188.90	38	15	26				
124.31	79	31	4F	190.65	37	15	25				
125.73	78	31	4E	192.40	36	14	24				
127.15	77	30	4D	194.16	35	14	23				
128.58	76	30	4C	195.92	34	13	22				

Appendix B
Important Safety Information

Warning: For Continued Protection Against Fire

1. This equipment is designed for use with a 250 Watt, GY 9.5 base, metal halide lamp only. Use of any other type lamp may be hazardous and may void the warranty.
2. Do not mount on a flammable surface.
3. Maintain minimum distance of 1.0 meter (3.28 feet) from combustible materials.
4. Replace fuses only with the specified type and rating.
5. Observe minimum distance to lighted objects of 1.0 meter (3.28 feet).
6. This equipment for connection to branch circuit having a maximum overload protection of 20 A.

Warning: For Continued Protection Against Electric Shock

1. If this equipment was received without a line cord plug, attach the appropriate line cord plug according to the following code:
   - brown–live
   - blue–neutral
   - green/yellow–earth
2. As the colors of the cores in the mains lead of this equipment may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:
   - the core which is colored green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚, or colored green or green and yellow.
   - the core which is colored blue must be connected to the terminal which is marked with the letter N or colored black.
   - the core which is colored brown must be connected to the terminal which is marked with the letter L or colored red.
3. Class I equipment. This equipment must be earthed.
4. Equipment suitable for dry locations only. Do not expose this equipment to rain or moisture.
5. Disconnect power before re-lamping or servicing.
6. Refer servicing to qualified personnel; no user serviceable parts inside.

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Warning: For Continued Protection Against Exposure To Excessive Ultraviolet (UV) Radiation

1. Do not operate this equipment without complete lamp enclosure in place or if shields, lenses, or ultraviolet screens are damaged.
2. Change shields, lenses, or ultraviolet screens if they have become visibly damaged to such an extent that their effectiveness is impaired, for example by cracks or deep scratches.
3. Never look directly at the lamp while lamp is on.

Warning: For Continued Protection Against Injury To Persons

1. Use secondary safety cable when mounting this fixture.
2. Caution: hot lamp may be an explosion hazard. Do not open for 5 minutes after switching off. Wear eye and hand protection when re-lamping.
3. Equipment surfaces may reach temperatures up to 80° C (176° F). Allow 5 minutes for cooling before handling.
4. Change the lamp if it becomes damaged or thermally deformed.

Appendice B
Importantes Informations Sur La Sécurité

Mise En Garde: Pour Une Protection Permanente Contre Les Incendies

1. Cet appareil est conçu uniquement pour une lampe métallique à halogène, de 250 watts, à base GY 9.5. Son utilisation avec tout autre type de lampe peut être dangereuse et annuler la garantie.
2. Ne pas monter les lampes sur une surface inflammable.
3. Maintenir à une distance minimum de 1.0 mètre de matières inflammables.
4. Ne remplacer les fusibles qu'avec des modèles et valeurs assignées recommandés.
5. Respecter une distance minimum de 1.0 mètre par rapport aux objets éclairés.
6. Cet appareil de connection au circuit comporte une protection contre les surcharges de 20 A.

Mise En Garde: Pour Une Protection Permanente Contre Les Chocs Électriques

1. Si cet équipement est livré sans prise de cable, veuillez connecter la prise de cable correcte selon le code suivant:
    *   marron - phase
    *   bleu - neutre
    *   vert/jaune - terre
2. Débrancher le courant avant de changer les lampes ou d'effectuer des réparations.
3. Cet équipement doit être uniquement utilisé dans des endroits secs. Ne pas l'exposer à la pluie ou l'humidité.
4. À l'intérieur de l'équipement il n'y a pas de pièces remplaçables par l' utilisateur. Confiez l'entretien à un personnel qualifié.
5. Equipement de Classe I. Cet équipement doit être mis à la terre.

Mise En Garde: Pour Une Protection Permanente Contre Des Expositions Excessives Aux Rayons Ultra Violets (UV)

1. Ne pas utiliser cet appareil si le boîtier de la lampe n'est pas complètement fixé ou si les blindages, lentilles, ou écrans ultraviolets sont endommagés.
2. Changer les blindages ou les écrans ultraviolets s'ils sont visiblement endommagés au point que leur efficacité aient été altérée, par exemple par des fissures ou de profondes égratignures.
3. Ne jamais regarder directement la lampe quand celle ci est allumée.

Mise En Garde: Pour Une Protection Permanente Contre Les Blessures Corporelles

1. Lors de l'assemblage, utiliser un câble de sécurité secondaire.
2. AVERTISSEMENT: les lampes chaudes comportent un risque d'explosion. Après l'avoir éteinte, attendre 5 minutes avant de la dégager. Lors du remplacement de la lampe, une protection des yeux et des mains est requise.
3. Les surfaces de l'appareil peuvent atteindre des températures de 80 C. Laisser refroidir pendant 5 minutes avant la manipulation.
4. Changer la lampe si elle est endommagée ou thermiquement déformée.

Anhang B
Wichtige Hinweise Für Ihre Sicherheit

Warnung: Zum Schutz Vor Brandgefahr

1. Dieses Gerät ist nur für den Gebrauch mit einer 250-Watt, Metall-Halogen-Lampe mit GY 9.5-Sockel konzipiert. Der Gebrauch irgend eines anderen Lampentyps könnte Sie gefährden und Ihre Garantie außer Kraft setzen.
2. Das Gerät nie auf einer feuergefährlichen Fläche montieren.
3. Stets einen Mindestabstand von 1 Meter zu brennbaren Materialien einhalten.
4. Zum Ersatz nur Sicherungen verwenden, die dem vorgeschriebenen Typ und Nennwert entsprechen.
5. Einen Mindestabstand von 1 Meter zu den angestrahlten Objekten einhalten.
6. Dieses Gerät darf nur an eine Zweigleitung mit einem Überlastungsschutz von höchstens 20 A angeschlossen werden.

Warnung: Zum Schutz Gegen Gefährliche Körperströme

1. Wenn dieses Gerät ohne einen Netzkabelstecker erhalten wurde, ist der entsprechende Netzkabelstecker entsprechend dem folgenden Code anzubringen:
   - Braun - Unter Spannung stehend
   - Blau - Neutral
   - Grün/Gelb - Erde
2. Vor dem Austauschen von Lampen oder vor Wartungsarbeiten stets den Netzstecker ziehen.
3. Diese Geräte sind nur zum Einbau in trockenen Lagen bestimmt und müssen vor Regen und Feuchtigkeit geschützt werden.
4. Servicearbeiten sollten nur von Fachpersonal ausgeführt werden. Das Gerät enthält keine wartungsbedürftigen Teile.
5. Dieses Gerät gehört zur Klasse I. Dieses Gerät muß geerdet werden.

Warnung: Zum Schutz Gegen Übermässige Ultraviolett (UV)-Bestrahlung

1. Benutzen Sie dieses Gerät nur, wenn das komplette Lampengehäuse fest eingebaut ist; ebenfalls dürfen keine der Schutzabdeckungen, Linsen oder der UV-Schutz Beschädigungen aufweisen.
2. Die Schutzabdeckungen, Linsen und der UV-Schutz müssen ausgewechselt werden, wenn sie sichtlich dermaßen beschädigt sind, daß sie ihre Wirksamkeit einbüßen, z.B. infolge von Rissen oder tiefen Kratzern.
3. Nie direkt in die eingeschaltete Lampe schauen.

Warnung: Zum Schutz Vor Verletzungen

1. Verwenden Sie bei der Installation des Beleuchtungskörpers ein zusätzliches Sicherheitskabel.
2. VORSICHT: Bei einer heiße Lampe besteht Explosionsgefahr. Nach dem Abschalten der Netzspannung sollten Sie etwa 5 Minuten warten, bevor Sie das Lampengehäuse öffnen. Schützen Sie beim Auswechseln der Lampen Ihre Hände und tragen Sie eine Schutzbrille.
3. Die Oberflächen des Gerätes können Temperaturen bis zu 80 C erreichen. Vor dem Anfassen stets 5 Minuten lang abkühlen lassen.
4. Falls die Lampe beschädigt oder durch Wärmeeinwirkung verformt ist, muß sie ausgewechselt werden.

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Apéndice B
Información Importante De Seguridad

Advertencia: Para Protección Continua Contra Incendios

1. Este equipo está diseñado para utilizarse únicamente con la lámpara de haluro metálico, de 250 vatios y base GY 9.5. El uso de cualquier otro tipo de lámpara puedá resultar peligroso, y puedá anular la garantía.
2. No monte el equipo sobre una superficie inflamable.
3. Mantenga una distancia mínima de materiales combustibles de 1,0 metro.
4. Cambie los fusibles únicamente por otros que sean del tipo y la clasificación especificadas.
5. Guarda una distancia mínima a objetos iluminados de 1,0 metro.
6. Este equipo debe conectarse a un circuito que tenga una protección máxima contra las sobrecargas de 20 A.

Advertencia: Para La Protección Continua Contra Electrocuciones

1. Si se recibió este equipo sin el enchufe de alimentacion, monte usted el enchufe correcto según el clave siguente:
   - moreno - vivo
   - azul - neutral
   - verde/amarillo - tierra
2. Desconecte el suministro de energía antes de recambiar lámparas o prestar servicio de reparación.
3. Questa apparecchiatura e' da usarsi in ambienti secchi. Non e' da essere esposta ne alla pioggia ne all' umidita'.
4. Derive el servicio de reparación de este equipo al personal calificado. El interior no contiene repuestos que puedan ser reparados por el usuario.
5. Equipo de Clase I. Este equipo debe conectarse a la tierra.

Advertencia: Para Protección Continua Contra La Exposición A Radiación Ultravioleta (UV) Excesiva

1. No opere este equipo sin tener colocada en su lugar la caja protectora completa de la lámpara o bien, si el blindaje, los lentes o las pantallas ultravioletas están dañadas.
2. Cambie el blindaje, los lentes o las pantallas ultravioleta si nota una avería visible, a tal grado que su eficacia se vea comprometida. Por ejemplo, en el caso de grietas o rayaduras profundas.
3. Jamás mire directamente a la lámpara en tanto ésta esté encendida.

Advertencia: Para Protección Continua Contra Lesiones Corporales

1. Al montare questa apparechiatura, usare un secondo cavo di sicurezza.
2. Precaución: una lámpara caliente puede constituir un peligro de explosión. No la abra por 5 minutos luego de haberla apagado. Lleve puestos, un protector ocular, y guantes al recambiar lámparas.
3. Las superficies del equipo pueden alcanzar temperaturas máximas de 80 grados centígrados. Deje que se enfríen por 5 minutos antes de tocarlas.
4. Cambie la lámpara si ésta se avería o deforma por acción térmica.

Appendice B
Importanti Informazioni Di Sicurezza

Avvertenza: Per Prevenire Incendi

1. Questa apparecchiatura è stata progettata per l'uso esclusivo con lampada a sali metallici da 250 watt, base GY 9.5. L'uso di qualsiasi altro tipo di lampada può essere pericoloso e può annullare la garanzia.
2. Da non montare sopra una superficie infiammabile.
3. Mantenere l' apparecchio a un minimo di 1.0 metri (3.28 piedi) di distanza dai materiali combustibili.
4. Rimpiazzare i fusibili usando soltanto quelli del tipo e della taratura adatta.
5. Mantenere una distanza minima di 1.0 metri (3.28 piedi) dagli oggetti accesi.
6. Questa apparecchiatura e' da collegarsi ad un circuito con una protezzione da sovraccarico massima di 20 amperes.

Avvertenza: Per Prevenire Le Scosse Elettriche

1. Se questa apparecchiatura è stata consegnata senza una spina del cavo di alimentazione, collegare la spina appropriata del cavo di alimentazione in base ai seguenti codici:
    *   marrone - sotto tensione
    *   blu - neutro
    *   verde/giallo - terra
2. Disinnestare la corrente prima di cambiare la lampadina o prima di eseguire qualsiasi riparazione.
3. Este equipo se adecua a lugares secos solamente. no lo exponga a la lluvia o humedad.
4. Per qualsiasi riparazione rivolgersi al personale specializzato. L' utente non deve riparare nessuna parte dentro l' unita'.
5. Aparecchio di Classe I. Questa apparecchiatura deve essere messa a terra.

Avvertenza: Per Proteggersi Contro Le Radiazioni Dei Raggi Ultravioletti

Non usare questa apparecchiatura se il sistema di chiusura della lampadina non e' completo o se gli scudetti, le lenti, o gli schermi ultravioletti si sono visibilmente danneggiati di maniera tale che la loro efficacia sia stata ridotta --- ad esempio, se vi sono visibili spaccature o graffi profondi. Mai guardare direttamente verso la lampadina quando sia accesa.

Avvertenza: Per Non Ferire Ad Altre Persone

1. Use cable secundario de seguridad al montar este aparato.
2. Avvertenza: la lampadina calda potrebbe esplodere. Spegnerla per 5 minuti prima di aprirla. Usare protezzioni per le mani e per gli occhi prima di cambiare la lampadina.
3. Le superfici della apparecchiatura possono arrivare a temperature di 80 gradi centrigradi (176 gradi f). Aspettare 5 minuti prima di maneggiare.
4. Cambiare la lampadina se si danneggia o se si e' deformata dovuto alle alte temperature.

Vigtig Sikkerhedsinformation

Advarsel: Beskyttelse mod elektrisk chock.

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Vigtigt!

Lederne med gul/groen isolation maa kun tilsluttes en klemme maerket

⏚ eller ⏚

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