

trackspot Bolt ⚡

trackspot® Bolt User Manual

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HIGH END SYSTEMS



a Barco company

trackspot Bolt User Manual

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Instructions pertaining to continued protection against fire, electric shock, and injury to persons are found throughout this manual. Please read all instructions prior to assembling, mounting, and operating this equipment.

The following international caution and warning symbols appear in margins throughout this manual to highlight messages.



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



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



This symbol indicates the minimum focus distance from a combustible object.



This symbol cautions against mounting the fixture on or near a flammable surface.



This symbol indicates an explosion hazard.



This symbol cautions against an Ultraviolet Radiation hazard.



This symbol indicates that eye protection should be worn to prevent potential injury.



This symbol indicates that, while operating, equipment surfaces may reach very high temperatures. Allow the fixture to cool before handling.

Warranty Information

Limited Warranty

Unless otherwise stated, your product is covered by a three 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.

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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.

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Patents

This product may use one or more of the following patents: US 4,392,187; US 4,602,321; US 4,688,161; US 4,701,833; US 4,709,311; US 4,779,176; US 4,800,474; US 4,962,687; US 4,972,306; US 4,980,806; US 5,010,459; US 5,031,078; US 5,073,847; US 5,078,039; US 5,186,536; US 5,209,560; US 5,278,742; US 5,282,121; US 5,307,295; US 5,329,431; US 5,331,822; US 5,367,444; US 5,402,326; US 5,414,328; US 5,426,576; US 5,430,629; US 5,432,691; US 5,454,477; US 5,455,748; US 5,502,627; US 5,506,762; US 5,515,254; US 5,537,303; US 5,545,951; US 5,588,021; US 5,590,954; US 5,590,955; US 5,640,061; US 5,647,662; US 5,691,886; US 5,702,082; US 5,728,994; US 5,758,955; US 5,758,956; US 5,769,527; US 5,769,531; US 5,774,273; US 5,788,365; US 5,794,881; US 5,795,058; US 5,798,619; US 5,806,951; US 5,812,596; US 5,823,661; US 5,825,548; US 5,828,485; US 5,829,868; US 5,857,768; US 5,882,107; US 5,921,659; US 5,934,794; US 5,940,204; US 5,945,786; US 5,953,151; US 5,953,152; US 5,969,485; US 5,980,066; US 5,983,280; US 5,984,248; US 5,986,201; US 6,011,662; US 6,029,122; US 6,048,080; US 6,048,081; US 6,054,816; US 6,057,958; US 6,062,706; US 6,079,853; US 6,126,288; US 6,142,652; US 6,142,653; US 6,172,822; US 6,175,771; US 6,188,933; US 6,208,087; US 6,219,093; US 6,220,730; US 6,241,366; US 6,249,091; US 6,255,787; US 6,256,136; US 6,261,636; US 6,278,542; US 6,278,545; US 6,278,563; US 6,288,828; US 6,326,741; US 6,327,103; US 6,331,756; US 6,346,783; US 6,421,165; US 6,430,934; US 6,459,217; US 6,466,357; US 6,502,961; US 6,515,435; US 6,523,353; US 6,536,922; US 6,538,797; US 6,545,586; US 6,549,324; US 6,549,326; US 6,563,520; US 6,565,941; US 6,570,348; US 6,575,577; US 6,578,991; US 6,588,944; US 6,592,480; US 6,597,132; US 6,600,270; US 6,601,974; US 6,605,907; US 6,617,792; US 6,621,239; US 6,622,053; US 6,635,999; US 6,648,286; US 6,664,745; US 6,682,031; US 6,693,392; US 6,696,101; US 6,719,433; US 6,736,528; US 6,771,411; US 6,775,991; US 6,783,251; US 6,801,353; US 6,812,653; US 6,823,119; US 6,865,008; US 6,866,390; US 6,866,402; US 6,866,451; US 6,869,193; US 6,891,656; US 6,894,443; US 6,919,916; US 6,930,456; US 6,934,071; US 6,937,338; US 6,955,435; US 6,969,960; US 6,971,764; US 6,982,529; US 6,988,805; US 6,988,807; US 6,988,817; US 7,000,417; US 7,011,429; US 7,018,047; US 7,020,370; US 7,033,028; US 7,048,838; US 7,055,963; US 7,055,964; US 7,057,797; US 7,073,910; US 7,078,869; US 7,092,098; US 7,119,902; US 7,161,562; US 7,175,317; US 7,181,112; US 7,206,023; US 7,210,798; US D347,113; US D350,408; US D359,574; US D360,404; US D365,165; US D366,712; US D370,080; US D372,550; US D374,439; US D377,338; US D381,740; US D409,771; AT E169413; CA 2142619; CA 2145508; CA 2245842; DE 22588.4-08; DE 621495; DE 655144; DE 69320175.4; DE 69322401.0; DE 69331145.2; DE 69525856.7; DE 69734744.3; DE 797503; DK 0655144; DK 1447702; EP 0475082; EP 0621495; EP 0655144; EP 0662275; EP 0767398; EP 0797503; EP 0969247; EP 1447702; ES 0621495; FR 0621495; FR 0655144; FR 0662275; FR 1447702; GB 2043769B; GB 2055842B; GB 2283808B; GB 2290134B; GB 2291814B; GB 2292530B; GB 2292896B; GB 2294909B; GB 2295058B; GB 2303203B; GB 2306887B; GB 2307036B; GB 2316477B; IE 0621495; IT 034244BE; 2005; IT 0621495; IT 0655144; JP 3495373; JP 3793577; NL 0621495; NL 0797503; NL 0969247; UK 0621495; UK 0655144; UK 0662275; UK 0797503; UK 0969247; UK 1447702;

Table of Contents

trackspot® Bolt User Manual	i
Contact Information	ii
Product Modification Warning	iii
Important Safety Information	iv
Warranty Information	v
Limited Warranty	v
Returning an Item Under Warranty for Repair	v
Freight	v
Patents	vi
Chapter 1: Product Overview	
Features	1
Operation	1
Construction	2
Specifications	3
Mechanical Specifications	3
Wheel Components	3
Electrical	4
Operation	4
Environmental	4
Cables and Connectors	4
Related Products and Accessories	5
Chapter 2: Installation and Setup	
Unpacking the <i>trackspot® Bolt Fixture</i>	7
Installing the Power Cord Cap	7
Power Cord Cap: UK Only	7
VIGTIG FIKKER HEDS INFORMATION - DANMARK	8
Mounting the <i>trackspot Bolt Fixture</i>	8
Standing the Fixture on its End Handles	9
Mounting the Fixture on a Truss or Other Support System	9
Truss or Other Support System	9
Safety Cable.....	9
Clamps	9
Mounting Procedure.....	10
Linking <i>trackspot Bolt Fixtures</i>	11
Cable Connectors	11
Connecting to a DMX512 Link	12

Powering On the Fixture	12
Setting the DMX Start Channel	13
Shutting Down the Fixture	14

Chapter 3: The Menu System

Navigating the Menu System	15
The trackspot Bolt Menu Map	16
The trackspot Bolt Menu Options	18
Address Menu (Addr)	18
Set Menu (SET)	19
Setting Factory Defaults (FACT)	19
Changing the Display Output (DSPL)	19
Inverting Pan (P/IN)	19
Inverting Tilt (T/IN)	20
Swapping Pan and Tilt (SWAP)	20
Data Loss (DLOS).....	20
Press <Enter> to store.....	20
Defog Fan Mode (DEFG)	21
Mode Menu (MODE)	22
Selecting Protocol (PROT).....	22
Crossloading the Fixture (XLd)	22
Test Menu (TEST)	23
Homing the Fixture (HOME)	23
Lamp Test (LAMP)	23
Changing Boot Codes (BOOT)	23
Performing Self Tests (SELF).....	24
Moving the Fixture to Setup Position (S/UP)	24
Information Menu (INFO)	25
Viewing the Current Software Version (VER)	25
Viewing the Unique Fixture ID (UNIQ)	25
Monitoring Internal Fixture Temperature (TEMP).....	25
Viewing Fixture Hours	26
Viewing DMX Data for the Link (DATA)	27
Viewing Lamp Hours (L/HR)	27
Resetting Lamp Hours (L/RS).....	27
Monitoring the Fan Speed (FAN)	28
Viewing the Current Motor and Display Versions (VER)	28

Chapter 4: Fixture Programming

- DMX Programming Overview 29**
 - Full Speed versus MSpeed Control 29
 - DMX Programming Options 29
 - Programming with a DMX Console 29
- DMX Parameters for trackspot Bolt Fixtures 30**
- Pan and Tilt 30**
- Static Color Wheel 31**
 - Static Color Function 31
 - Static Color Position 31
- Static Gobo Wheel 32**
 - Static Gobo Function 32
 - Static Gobo Position 32
- Rotating Gobo Wheel 33**
 - Rotating Gobo Wheel Function 33
 - Rotating Gobo Wheel Position 33
 - Rotating Gobo Rotate Function 34
 - Rotating Gobo Rotate Coarse/Rotating Gobo Rotate Fine 34
- Focus 34**
- Iris 34**
- Shutter 34**
- Dim 35**
- MSpeed (Motor Speed) 35**
- Macros 35**
- Control Settings 36**

- Appendix A: MSpeed Conversion Table 37**
- Appendix B: Important Safety Information 39**
 - APPENDICE B: IMPORTANTES INFORMATIONS SUR LA SÉCURITÉ 40
 - ANHANG B: WICHTIGE HINWEISE FÜR IHRE SICHERHEIT 41
 - APÉNDICE B: INFORMACIÓN IMPORTANTE DE SEGURIDAD 42
 - APPENDICE B: IMPORTANTI INFORMAZIONI PER LA SICUREZZA 43



Chapter I:

Product Overview

This chapter describes the features and specifications of the trackspot® Bolt fixture along with a list of related products and accessories.

The trackspot Bolt fixture features a state-of-the-art LED lighting engine outputting over 3,000 lumens of pure white light in a small, fast moving mirror fixture. With rotating gobos, remote focus, anamorphic gobos and a wedged color wheel, trackspot Bolt sets a new standard for functionality in a moving mirror fixture.

The LED source provides enhancements above non-LED fixtures. With no loss of output over years of use, reduced power consumption and less heat dissipation, the trackspot Bolt fixture is a perfect choice for long lasting efficiency.

Utilizing new technology, every motion within the fixture is capable of high speed movement along with smooth, slow changes. The rotating lithopattern wheel has seven glass patterns all capable of indexing, rotating, and animating. The anamorphic fixed gobo wheel features seven patterns plus unique morphing transitions from pattern to pattern.

Features

- LED light engine with output better than a 250 MSR
- Color wheel features nine colors plus open
- Fixed Anamorphic Gobo wheel with seven etched positions, eight anamorphic positions plus open
- Rotating Gobo wheel with seven Lithopatterns plus open
- 15 degree beam angle
- Remote Focus
- Variable iris
- Variable strobe
- No lamp to change, LED source lasts over 30,000 hours
- Electronic circuit design for smooth dimming

Operation

- 170° pan and 110° tilt movement
- DMX-512 control
- Auto switching Power 100V - 240V, 50/60Hz

Construction

- High-resolution microstepping motor control for smooth motion
- Computer-designed optical components for maximum light efficiency
- Easy maintenance access
- Low-noise, high-efficiency cooling system
- Break-resistant mirror
- 5-pin XLR connector
- LED Menu System
- ETL and CE compliance
- Optional Roadcase
- 3 year warranty

Specifications

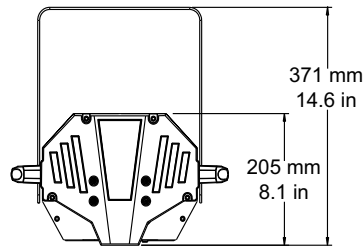
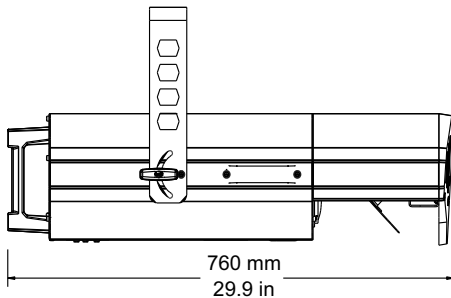
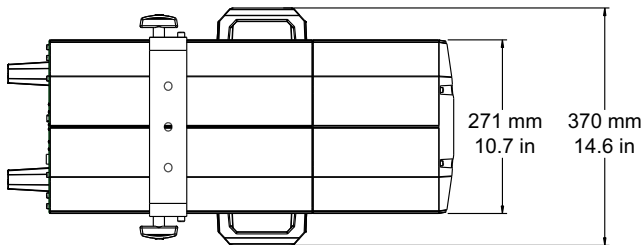
Mechanical Specifications

Fixture weight (including yoke): 11.3 kg (25 lb)

Shipping weight (Box + Fixture + Yoke): 17.2 kg (38 lb)

Dimensions (including yoke): 371 mm x 370 mm x 760 mm (14.6 in x 14.6 in x 29.9 in)

Shipping Box Dimensions: 457 mm x 404 mm x 879 mm (18.0 in x 15.9 in x 34.6 in)



Wheel Components

Lithopatterns: Diameter: 29 mm \pm .25 mm (1.142 in \pm .01 in)

Image Area: 23.8 mm \pm 25 mm (0.937 in \pm .01 in)

Electrical

Power consumption: 100-240V, 50/60Hz; 4.5 A

Rated Lamp Life: 30.000 hrs



Warning: Class I equipment - For continued protection against electric shock connect this equipment to an earthed (grounded) power source only

This equipment for connection to branch circuit having a maximum overload protection of 20 A

Operation

Pan: 150°

Tilt: 110°

Beam Angle: 15°

Environmental

Maximum ambient temperature: 45° C (113° F)

Minimum distance to lighted object: 1 m (3.28 ft)

Minimum distance to flammable objects: 1 m (3.28 ft)



**Caution: Do not mount on a flammable surface
Not for residential use
Use in dry locations only**

Cables and Connectors

Belden® 3107A or equivalent (meets specifications for EIA RS-485 applications) with the following characteristics:

- Two twisted pairs 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

Related Products and Accessories

Name	Part Number
trackspot Bolt LithoPatterns	Call Customer Service
Wholehog [®] 3 Lighting Console	25020001
Road Hog [®] Full Boar Lighting Console	A6020001
Road Hog [®] Lighting Console	A2020001
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
Mega-Claw clamp	67040007

Chapter 2:

Installation and Setup

Installation includes mounting, connecting to power, and setting a start channel to configure the fixture for DMX control.

Unpacking the trackspot® Bolt Fixture

Carefully unpack your fixture and verify that it arrived complete and without any damage. If any internal or external parts of the fixture are damaged you must notify both the shipping agent and your sales agent immediately.

Do not discard the shipping carton and packing materials. The carton and packing materials are specifically designed to protect the product during transport. High End Systems assumes no responsibility for products damaged during transport. Any product being returned for repair must be shipped in its original shipping carton and packing materials.

Note: *Before sending anything to the factory, be sure to call your HES dealer/distributor for a Return Authorization (RA) number. The factory cannot accept any goods shipped without an RA number.*

Installing the Power Cord Cap

The trackspot Bolt fixture ships with a US Edison connector. If your application requires a different connector, you must remove it and install the appropriate power cord cap before you connect the trackspot Bolt to a power outlet. The type of power cord cap depends on the location in which the trackspot Bolt will be used; different locations (even within the same country) might have different power cord cap requirements.


Note: *Because of the wide variety of power cord caps used worldwide, High End Systems 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.*

Power Cord Cap: UK Only

The cores in the mains lead are colored in accordance with the following code:

- **green and yellow:** earth
- **blue:** neutral
- **brown:** live

Since 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



CAUTION: Class 1 equipment. This equipment must be earthed

VIGTIG FIKKER HEDS INFORMATION - DANMARK

ADVARSEI: RESKYTTEKSE MOD ELEKTRISK SHOCK

VIGTIGT!

LEDERE MED GROEN/GUL ISOLATION

MA KUN TILSLUTTES EN KLEMME MAERKET

ELLER =  

Mounting the trackspot Bolt Fixture



WARNING!

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

This equipment must be earthed.



CAUTION!

Always use a secondary safety cable through the yoke when mounting this fixture.

Mount the fixtures and controllers in a location that is away from direct heat and protected from moisture.



Maintain a minimum focus distance of 1 meter.



Do not mount within 1 meter of a flammable surface.

Standing the Fixture on its End Handles

The trackspot Bolt end handles are designed to support the weight of the fixture; however, make sure you observe the following guidelines:

- The fixture must be located away from moving objects that could strike it and cause it to become unbalanced.
- The fixture must be mounted on a sturdy, stable surface.
- If the surface is other than floor height, make sure you use safety cables as described in the next section.

Mounting the Fixture on a Truss or Other Support System



WARNING:

Before mounting, disconnect power to the fixture. If it has been operating, allow the fixture to cool for five minutes before handling.

CAUTION: Only experienced lighting personnel should attempt to hang a lighting fixture to an appropriate theatrical truss.

WARNING: Always use a safety cable when mounting the fixture to a truss. Failure to use a safety cable could result in injury or death. High End Systems supplies the proper safety cables and may be contacted for replacements if necessary. For more information go to: www.highend.com/trusshang.

Truss or Other Support System

If you are mounting the fixture(s) on a truss or another type of support, verify that the truss or support will handle the weight of *all* the devices you are mounting. The trackspot Bolt fixture with its yoke weighs 11.3 kg (25 lb).

Safety Cable

High End Systems strongly recommends that you use a safety cable when mounting any fixture. You must supply your own safety cable and verify that the cable is capable of supporting the weight of the fixture. You can order galvanized safety cables from your High End Systems dealer/distributor (see *Related Products and Accessories* on page 5).

Clamps

You must supply the required truss clamp and make sure it is capable of supporting the weight of the fixture with the yoke. You can order truss clamps from your High End Systems dealer/distributor (see *Related Products and Accessories* on page 5).

Make sure the fixture **cannot** be rotated all the way around (360°). (Using two clamps is a good way to do this). Allowing the fixture to rotate 360° could loosen the clamp mounting bolts.

Mounting Procedure

Because of the variety of conceivable lighting designs, you should consider the procedure below as a suggested guideline only. High End Systems cannot make specific recommendations for your particular lighting design or venue.



CAUTION:
Always stand on a firm, stable surface to mount a trackspot Bolt fixture.

To mount the fixture:

1. Attach a clamps using any of the three holes on the yoke. *Use locking washers when attaching the clamp to the yoke*
2. Tighten the clamps firmly to the trackspot Bolt yoke and to the support.
3. Loop one or more suitable safety cables around the support and around the trackspot Bolt yoke.

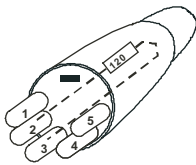


CAUTION:
Do not use the fixture handles as a safety cable attachment point. The trackspot Bolt handles are intended only for hand-lifting the fixture.

Connecting to a DMX512 Link

To link one or more fixtures to a DMX controller:

1. Connect the male XLR connector of a DMX Data cable to the controller's DMX Data Out connector.
2. Connect the Data cable's female XLR connector to the Data In connector of the first (or next) fixture on the DMX link.
3. Continue linking the remaining fixtures connecting a cable from the Data Out connector of each fixture to the Data In connector of the next fixture on the link.
4. Terminate the link by installing a 120 ohm, 1/4 watt (minimum) terminator in the fixture's Data Out (female) cable connector in the last fixture on each DMX link. A terminator on the last fixture of the link prevents data reflection, which can corrupt the data communication on the link.



To construct a terminator:

1. Disassemble a male 5-pin XLR connector.
2. Solder a 120 ohm resistor, minimum of 1/4 watt, between Pin 2 and Pin 3.
3. Reassemble the XLR connector.

Powering On the Fixture



WARNING:

This equipment is designed for connection to a branch circuit having a maximum overload protection of 20 A.



CAUTION:

Do not power on the fixture until *verifying* that the line cord cap is suitable for the power source in your location. For more information, see *Installing the Power Cord Cap* on page 7.

To power on the trackspot Bolt fixture, simply connect it to a 10000V-240V AC power source. Once the fixture is connected to a power source, it automatically begins a homing procedure to verify that fixture components are functioning.

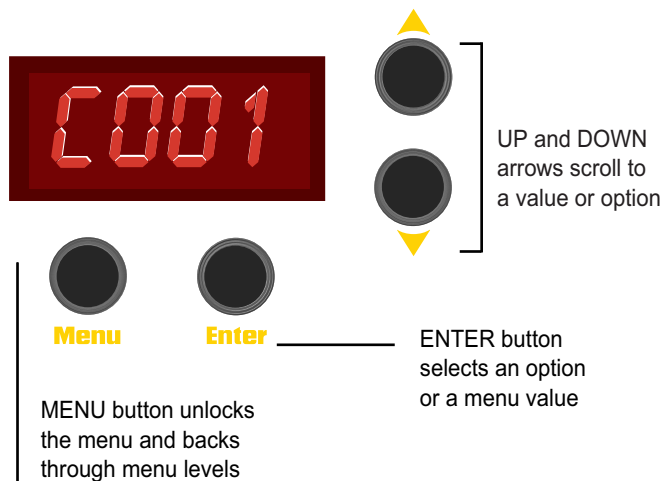
Setting the DMX Start Channel

Each trackspot Bolt fixture requires a block of 21 consecutive channels on a 512-Channel DMX link for standard protocol.

Note: *A reduced protocol using 20 channels is optional if your application only requires 8-bit control of LED Dimming. You can use the menu system to change the configuration to reduced protocol, (see [Selecting Protocol \(PROT\)](#) on page 22).*

To set the Start Channel on an trackspot Bolt fixture:

1. Access the fixture's menu system via the LED display on the fixture's front panel. For a detailed description of the menu system, see [Chapter 3: The Menu System](#) on page 15.
2. To unlock the menu, press and hold the <Menu> button until *Addr* appears on the LED display. Press the <Enter> button to select.



3. The display will show the start channel currently assigned to the fixture.
4. Use the <Up> and <Down> arrow buttons to select a valid DMX start channel from 0-491. The display will flash a new option ready for selection. For more information on addressing your fixture, see [Address Menu \(Addr\)](#) on page 18.
5. Press the <Enter> button to store the new DMX Start channel. The display will stop flashing when a new option is entered.

When setting the Start channel on a fixture, remember:

- A fixture's physical location on the link does not have to coincide with the order of channel range assignments in the link.
- 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. The single exception would be if two or more fixtures need to respond to controller commands in exactly the same way. In that case, those fixtures must be the same type and must share the *entire* channel range.

Shutting Down the Fixture

A DMX controller can shut down the fixture remotely with the Shutdown option in the Control Channel or you can simply disconnect from power. The trackspot Bolt fixture automatically shuts down in the event of DMX data loss longer than one minute.

Chapter 3

The Menu System

You can use the fixture's onboard menu system to configure and test the trackspot Bolt fixture.

The onboard trackspot Bolt menu system allows you to:

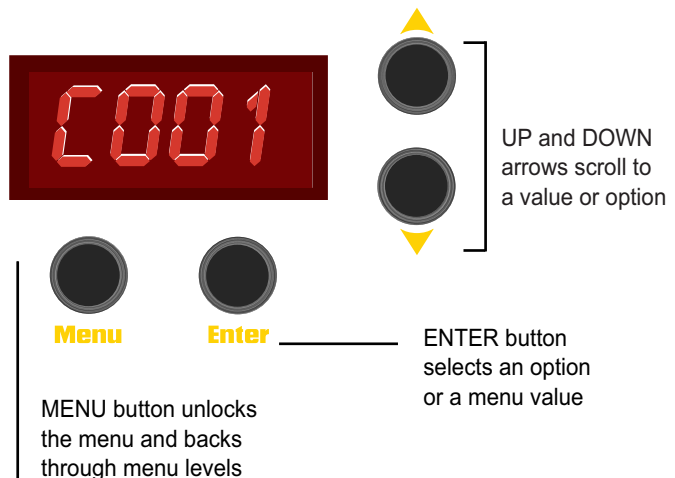
- Assign a DMX start channel.
- Access fixture options such as homing the fixture, viewing fixture status, and performing self tests.
- View all DMX values on the link.
- Identify fixture errors.

Navigating the Menu System

After homing, The LED screen will display **HES, BOLT**, the software version in the form V Major.minor (**V1.1** for example), the DMX address in the **C###** format, and, if the defog fan is running, **DEFG**.

You can access and navigate the menu system via the four menu navigation buttons on the fixture's front panel.

The LED display shows the menu items you select from the menu map. When accessing fixture options, the display will flash when a new option is *selected* (by pressing the <Up> or <Down> arrow buttons), and stops flashing when a new option is *stored* (by pressing the <Enter> button).



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 return to the previous option or menu *without changing the value*: press the <Menu> button.

The trackspot Bolt Menu Map

Level 1	Level 2	Level 3	Level 4	Option	Description	
ADDR	C###				Change the existing DMX start channel	
SET	FACT	ON			Set factory defaults on	
		OFF			Set factory defaults off	
	DSPL	ON			Set the LED display on	
		OFF			Set the LED display off	
	P/IN	ON			Set pan invert on	
		OFF			Set pan invert off	
	T/IN	ON			Set tilt invert on	
		OFF			Set tilt invert off	
	SWAP	ON			Set pan/tilt swap on	
		OFF			Set pan/tilt swap off	
	DLOS	SHRT				Turns LED lamp off one second after DMX data is lost.
		LONG				Retains LED lamp state after DMX data is lost until the unit is shutdown
	DEFG	MOD1				Defog fan runs @ 12V for 3 hours after shutdown (factory default).
		MOD2				Defog fan runs @ 20V after shutdown
		MOD3				Defog fan runs @ 12V during operation and 3 hours after shutdown
MOD4					Defog fan runs @ 20V during operation and after shutdown	
MOD5					No defog fan operation	
MODE	PROT	STD			Selects Standard protocol (factory default)	
		RED			Selects Reduced protocol	
	XLd	YES				Crossloads to other trackspot Bolt fixtures
		NO				Crossload function off

Level 1	Level 2	Level 3	Level 4	Option	Description	
TEST	HOME			HOLD	Homes the fixture when hold is selected	
	LAMP			ON	Manually turns the LED light engine on	
				OFF	Manually turns the LED light engine off	
	BOOT	NO			Default safe mode	
		YES	DONE		Indicates that boot copy has been performed and begins homing fixture	
			EMTY		indicates that spare boot is empty. Perform an upload to copy boot	
	SELF (Note 1)	PAN	PAN TESTING		Mirror movement function	
		TILT	TILT TESTING			
		DIM	DIM TESTING		Shutter strobe movement	
		COLR	COLOR TESTING		Static color wheel function	
		LT1	GOBO 1 TESTING		Rotating Gobo Wheel: wheel movement	
		LT1R	GOBO ROT TESTING		Rotating Gobo Wheel: rotating gobo movement	
		LT2	GOBO 2 TESTING		Static Gobo Wheel movement	
		IRIS	IRIS TESTING		Tests Iris function	
	S/UP	OFF			Setup mode for mechanical homing	
		ON				
INFO	VER	####			Shows the version of software currently loaded on the fixture	
	UNIQ	#####			Shows the fixture's unique ID number	
	TEMP	CURR		####		Shows the current temperature of the LED lighting engine.
		MAX		####		Shows the maximum temperature of the LED lighting engine since last reset.
		MIN		####		Shows the minimum temperature of the LED lighting engine since last reset.
		RST	YES	HOLD		When you select Yes and HOLD, Max and Min temperature readings reset to Current. DONE displays when reset is complete.
	DONE					
	F/HR				####	Shows number of fixture hours
	DMX	1-512		####		Shows the DMX data for the selected DMX channel on the link.
	L/HR				####	Shows LED light engine hours
	L/RS	NO			Select Yes to reset LED hours to zero. DONE displays when reset is complete.	
		YES	DONE			
	FAN		On		Shows the rotations per second of the two fans located in the lamp power supply compartment	
ERR						
M/VR	MOTR	####		Shows Motor HW.SW version		
	DISP	####		Shows LED display HW.SW version		

The trackspot Bolt Menu Options

The sections below explain how to access the fixture options shown in the fixture's menu map. This manual uses the following conventions in the descriptions 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 LED display panel.
<i>Menu Option</i>	Italics are used to indicate the appropriate menu selection you should choose from the on-board menu system. For example, the <i>AddR</i> menu option.

Address Menu (AddR)

The DMX Start Channel is the first channel of a device's channel range on a DMX link and identifies the fixture for the DMX controller. There are 512 available channels on each DMX universe divided among all the devices in a particular universe. A device must have a unique DMX Start Channel number in order to respond independently to controller commands. You must assign a DMX start channel to every fixture on the link.

The Address menu allows you to change the DMX start channel that is currently assigned to the fixture. The fixture's DMX channel range must not overlap any other device's channel range on the link. When two devices on the same DMX universe have overlapping channel ranges, one or both devices will be disabled or behave erratically.

Note: *The single exception would be if two or more fixtures need to respond to controller commands in exactly the same way. In that case, those fixtures must be the same type and must share the entire channel range.*

The trackspot Bolt fixture requires a unique range of 21 channels on the DMX link for standard protocol. The last valid Start Channel on a DMX512 link is 491.

To set the DMX start channel:

1. Press and hold <Menu> until *AddR* appears on the LED display. Press <Enter> to select.
2. Select a new DMX start channel. The LED display flashes when a new start channel is selected.
3. Press <Enter> to accept the new DMX start channel. The LED display stops flashing when a new option is entered. If you do not press <Enter>, the new option you selected is not stored.

Set Menu (SET)

Setting Factory Defaults (FACT)

When you set this menu item on, all factory options return to their default settings. trackspot Bolt fixtures are shipped from the factory with the following default option settings:

pan/tilt swap = off	pan invert = off	LED off with DMX data loss = short
tilt invert = off	LED display = on and bright	protocol = STD (standard)

The factory default menu option displays *On* if all the factory options are at the factory default settings. If any of the items listed above are not at the factory default setting, the display reads *OFF*. Selecting the *OFF* option will have no effect. To restore the factory default setting:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *FACT* menu (this will be the first menu displayed). Press <Enter>.
4. Scroll to *ON* to restore the factory option defaults.
5. Press <Enter> to store.

Changing the Display Output (DSPL)

You can manually turn the fixture's LED display on or off. If you want to remotely change the display output (using a DMX console), see *Control Settings* on page 36.

To turn the display off:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *DSPL* menu. Press <Enter> to select.
4. Scroll to *ON* to set the LED display to normal intensity.
5. Press <Enter> to store.

Inverting Pan (P/IN)

This menu item inverts the direction of the pan motor, to allow fixtures mounted opposite each other horizontally to respond to pan movement commands in the same direction.

To invert the fixture's pan motion:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *P/IN* menu. Press <Enter> to select.
4. Scroll to *ON* to invert the fixture's pan motion, or *OFF* to return the fixture's pan motion to normal orientation.
5. Press <Enter> to store.

Inverting Tilt (T/IN)

This menu item inverts the direction of the tilt motor, to allow fixtures mounted opposite each other vertically to respond to tilt movement commands in the same direction.

To invert the fixture's tilt motion:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *T/IN* menu. Press <Enter> to select.
4. Scroll to *ON* to invert the fixture's tilt motion, or *OFF* to return the fixture's tilt motion to normal orientation.
5. Press <Enter> to store.

Swapping Pan and Tilt (SWAP)

This menu option swaps the pan motor and tilt motor operation to allow fixtures hung perpendicular to each other to respond to pan and tilt movement commands in the same direction.

To swap pan and tilt motion:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *SWAP* menu. Press <Enter> to select.
4. Scroll to *ON* to swap the fixture's pan and tilt motion, or *OFF* to return the fixture's pan and tilt motion to normal orientation.
5. Press <Enter> to store.

Data Loss (DLOS)

Use this menu item to determine how the fixture will react in the event of DMX data loss by turning off the LED light engine upon Data Loss or keeping the LED light engine on until shut down.

To select a data loss option:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *dLOS* menu. Press <Enter> to select.
4. Scroll to *LONG* to turn the LED light engine off only when the fixture is shut down, or *SHRT* to turn off the LED light engine one second after data loss.

Press <Enter> to store.

Defog Fan Mode (DEFG)

The trackspot Bolt features a fan inside the fixture that blows air across the inside of the output lens to clear fog(atmospheres) condensation. You can choose from four different modes plus off to control the Defog fan operation depending on your application's requirement:

MOD1	Defog fan runs @ 12V for 3 hours after shutdown (factory default).
MOD2	Defog fan runs @ 20V after shutdown
MOD3	Defog fan runs @ 12V during operation and 3 hours after shutdown
MOD4	Defog fan runs @ 20V during operation and after shutdown
MOD5	No defog fan operation

To turn the defog fan off:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *SET* menu. Press <Enter> to select.
3. Scroll to the *dEFG* menu. Press <Enter> to select.
4. Scroll to *MOD5* to turn the fan off.
5. Press <Enter> to store.

Mode Menu (MODE)

Selecting Protocol (PROT)

You can select between Standard protocol (21 channels) that provides 16-bit dimming control or Reduced protocol (20 channels) with 8-bit dimming control. The trackspot Bolt fixture ships with standard protocol as the default

To change protocol:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *MOdE* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *PROT* field and press <ENTER>.
4. Scroll to *RED* to set the fixture to Reduced protocol or *STD* to set the fixture to Standard protocol.
5. Press <Enter> to store.

Crossloading the Fixture (XLd)

The trackspot Bolt fixture can crossload software from one fixture to additional trackspot Bolt fixtures on the same link.

To crossload software:

1. Disconnect the data cable between the console and the first fixture.
2. Hold <MENU> on the master fixture (the fixture with the latest software version) until the display changes to *AddR*.
3. Using the up and down buttons, scroll to the *MOdE* field and press <ENTER>.
4. Using the up and down buttons, scroll to the *XLd* field and press <ENTER>. The master fixture will upload its software to all connected fixtures on the link. The slave fixtures will display *UPLd* during the process. After the fixtures have completed the upload, they will reset and home.

Notes: *If the fixture(s) take longer than one minute to reset after an upload, turn off the fixture(s) and repeat the procedure.*

If a new boot code was included with the latest software, you will need to store the boot code on each fixture.

Test Menu (TEST)

The Test menu allows you to manually home the fixture and perform fixture self tests to determine the origin of mechanical problems.

Homing the Fixture (HOME)

This menu item allows you to manually home the fixture. To remotely home the fixture using a DMX console, see *Control Settings* on page 36. To manually home the fixture:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *TEST* menu. Press <Enter> to select.
3. Scroll to the *HOME* option (this will be the first option displayed).
4. Press <Enter> to select.
5. HOLD will be displayed.
6. Press <Enter> to select. The fixture will begin homing.

Lamp Test (LAMP)

The Lamp Test menu let you manually turn the LED light engine on or off. To access the lamp function:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *TEST* field and press <ENTER> to select.
3. Using the up and down buttons, scroll to the *LAMP* field and press <ENTER>.
4. Using the up and down buttons, scroll to *ON* or *OFF*.
5. Press <Enter> to store.

Changing Boot Codes (BOOT)

When the trackspot Bolt fixture is uploaded, occasionally it is necessary to include a new boot code with the latest software. This is apparent when *BOOT dIff* appears in the display. To accept and store the new boot code:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *TEST* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *BOOT* field and press <ENTER>. The fixture will display *dONE*, *RST*, and home.



Caution: Do not remove power from the fixture during the above procedure.

Performing Self Tests (SELF)

The following self tests are available:

Parameter	Self-Test Description
PAN	Moves through the entire pan range
TILT	Moves through the entire tilt range
DIM	Tests LED Dimming function
COLR	Static color wheel function
LT1	Rotating Gobo wheel movement
LT1R	Rotating Gobo wheel: rotating gobo movement
LT2	Static Gobo wheel movement
IRIS	Tests Iris function
FCUS	Moves through the Focus range

To start a self test process:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *TEST* menu. Press <Enter> to select.
3. Scroll to the *SELF* menu. Press <Enter> to select.
4. Scroll to the desired option (listed above).
5. Press <Enter> to start the test. The fixture will perform the selected self test.
6. Press <Menu> to exit the test.

Moving the Fixture to Setup Position (S/UP)



Caution: The setup position is used only by qualified service personnel during maintenance.

To place the fixture in setup position before servicing:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *TEST* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *S/UP* field and press <ENTER>. The display will indicate *SET NOW* while the motors are electronically locked into place.
4. Perform the appropriate maintenance procedures.
5. Press <MENU> to reset and home the fixture.

Information Menu (INFO)

The Information menu allows you to view current fixture information such as internal temperature, fixture hours, software version, and DMX data.

Viewing the Current Software Version (VER)

This menu options lets you check the fixture's software versions. The latest software is always available for download from www.highend.com.

To view the version of software currently loaded on the fixture:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *INFO* menu. Press <Enter> to select.
3. Scroll to the *VER* option.
4. Press <Enter>. The LED will display the fixture's current software version.

Viewing the Unique Fixture ID (UNIQ)

To view the fixture's identification number:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *INFO* menu. Press <Enter> to select.
3. Scroll to the *UNIQ* option.
4. Press <Enter>. The LED will display the fixture's unique ID number.

Note: *This option also contains the commands for setting the ID number for the first time at the factory. In that case UP and DOWN will be displayed as the number is generated.*

Monitoring Internal Fixture Temperature (TEMP)

The trackspot Bolt menu system lets you monitor the internal fixture temperature. You can view the current, maximum and minimum temperatures or reset the maximum and minimum temperature readings to the current temperature.

To view the fixture's current internal temperature:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *TEMP* field and press <ENTER>.
4. Using the up and down buttons, scroll to the *CURR* field and press <ENTER>.

The fixture will display the current internal temperature followed by C (degrees centigrade).

To view the fixture's minimum internal temperature (lowest ambient at power on):

1. Hold <MENU> until the display changes to *Addr*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *TEMP* field and press <ENTER>.
4. Using the up and down buttons, scroll to the *MIN* field and press <ENTER>.

The fixture will display the minimum internal temperature followed by C (degrees centigrade).

To view the fixture's maximum internal temperature (since the last reset):

1. Hold <MENU> until the display changes to *Addr*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *TEMP* field and press <ENTER>.
4. Using the up and down buttons, scroll to the *MAX* field and press <ENTER>.

The fixture will display the maximum internal temperature followed by C (degrees centigrade) for the CPU and the LPS locations.

To reset the minimum and maximum temperature readings:

1. Hold <MENU> until the display changes to *Addr*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *TEMP* field and press <ENTER>.
4. Using the up and down buttons, scroll to the *RST* field and press <ENTER>. The display flashes *YES* until <ENTER> is pressed, then displays *HOLD* while resetting and *DONE* after resetting the maximum and minimum temperatures to the current internal temperature at the CPU and LPS locations.

Viewing Fixture Hours

To view the time a fixture has spent turned on:

1. Hold <MENU> until the display changes to *Addr*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *F/HR* field and press <ENTER>. The fixture will display the total fixture hours.

Note: *The display will indicate Hxxx for hours and M xx for minutes until H999. When fixture hours exceed 999, the display will no longer indicate minutes, instead it will use all four digits to display hours. If the display indicates OVER, the counter has rolled over 9999 hours and must be manually reset.*

Viewing DMX Data for the Link (DATA)

This procedure allows you to use a trackspot Bolt fixture to view DMX channel values all devices on the DMX link. Use this menu option to:

- Checking current DMX values on this fixture
- Test devices that do not have built-in DMX diagnostics
- Check fixtures that are physically inconvenient to monitor directly

If you experience a problem with a device on the link, use this menu to select a DMX channel in the device's channel range and view its DMX value. After noting the value of the channel you selected, use your DMX console to change that channel's value.

If the value of the DMX channel you selected does not change, there may be a problem with the DMX cable or your transmitting device (i.e. DMX console).

If the DMX channel value changes, but the device does not respond, the device may be faulty. Consult the documentation provided with that device for more information.

To view DMX data for any device on the DMX link:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Scroll to the *INFO* menu. Press <Enter> to select.
3. Scroll to the *dMX* menu. Press <Enter> to select.
4. Scroll to the desired DMX channel (001 – 512). Channel numbers will flash.
5. Press <Enter> The DMX value for the selected channel will be displayed.

Viewing LED Hours (L/HR)

To view the number of hours the LED light engine has spent on since the last reset:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *L/HR* field and press <ENTER> to view the LED hours.

Note: *If the display indicates OVER, the counter has rolled over 9999 hours.*

Resetting LED Hours (L/RS)

To reset LED light engine hours:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *L/RS* field and hold <ENTER> until the fixture resets the lamp hours to 0000. DONE displays when the reset is complete.

Monitoring the Fan Speed (FAN)

To monitor the lamp power supply fan speed:

1. Hold <MENU> until the display changes to *AddR*.
2. Using the up and down buttons, scroll to the *INFO* field and press <ENTER>.
3. Using the up and down buttons, scroll to the *FAN* field and hold <ENTER>.
4. Using the up and down buttons, scroll to the *On* to view the rotations per second of the lamp power supply fan. ERR will display if the fan is not running.

Viewing the Current Motor and Display Versions (VER)

This menu options shows you the currently loaded motor and LED display firmware.

To view the current version:

1. Press and hold <Menu> until *AddR* appears on the LED display.
2. Using the up and down buttons, scroll to the *INFO* menu and press <Enter> to select.
3. Using the up and down buttons, scroll to the *M/VR* option and press <Enter> to select.
4. Scroll to *MOTR* to view the motor version or *DISP* and press <Enter> to view the current version.

Chapter 4:

Fixture Programming

The trackspot Bolt fixture can be programmed to provide a hard edge beam with multiple colors, gobo patterns and effects.

DMX Programming Overview

A parameter is a fixture attribute that can be controlled to modify the light beam in terms of color, beam quality and pattern, intensity, or focus (position). DMX programming assigns a DMX value to each of the fixture's parameters. A look (sometimes referred to a *scene* or a *cue*) is one combination of parameter settings. These looks are the building blocks for show creation.

Full Speed versus MSpeed Control

Some parameters can be set to operate at full speed or MSpeed (motor speed). Full speed operations are completed in the shortest length of time after the motor starts moving. With MSpeed control, change occurs smoothly over the entire MSpeed time value selected. 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.

DMX Programming Options

Using a DMX controller, you can program an unlimited number of looks and retain direct control over the trackspot Bolt fixture at all times.

Programming with a DMX Console

Wholehog® lighting consoles; and Hog® 3PC software are available from High End Systems to control trackspot Bolt fixtures (see *Related Products and Accessories* on page 5). For information on whether your DMX controller supports trackspot Bolt fixtures, contact the controller's vendor. For information on operating your fixture with a controller (or control device such as DMX control software), consult the documentation provided with the controller.

DMX Parameters for trackspot Bolt Fixtures

DMX console libraries define parameters for the following trackspot Bolt functions over a 21-channel range (Standard protocol) or 20-channel range (Reduced protocol). DMX libraries are copyrighted and available in High End Systems consoles.

Standard Protocol		Channel	
Channel	Function	Channel	Function
1	Pan	1	Pan
2		2	
3	Tilt	3	Tilt
4		4	
5	Static Color Function	5	Static Color Function
6	Static Color Position	6	Static Color Position
7	Static Gobo Function	7	Static Gobo Function
8	Static Gobo Position	8	Static Gobo Position
9	Rotating Gobo Function	9	Rotating Gobo Function
10	Rotating Gobo Position	10	Rotating Gobo Position
11	Rotating Gobo Rotate Function	11	Rotating Gobo Rotate Function
12	Rotating Gobo Rotate	12	Rotating Gobo Rotate
13		13	
14	Focus	14	Focus
15	Iris	15	Iris
16	Shutter	16	Shutter
17	Dim	17	Dim
18		18	
19	MSpeed	19	Macro
20	Macro	20	Control
21	Control		

For more information on developing libraries for DMX consoles from other manufacturers, contact High End Systems.

Pan and Tilt

The **Pan** and **Tilt** parameters control the trackspot Bolt fixture's 150° pan range and 110° tilt range. Pan and Tilt functions each utilize two channels to provide 16 bit adjustment to a fraction of a degree.

Pan and Tilt motion can be controlled with MSPEED values, (see *MSPEED (Motor Speed)* on page 35). If you choose to use MSPEED for color or gobo changes without affecting Pan and Tilt parameters, set Pan/Tilt MSPEED OFF in the Control parameter.

Static Color Wheel

Static Color Function

This parameter provides options for how you control the color selection:

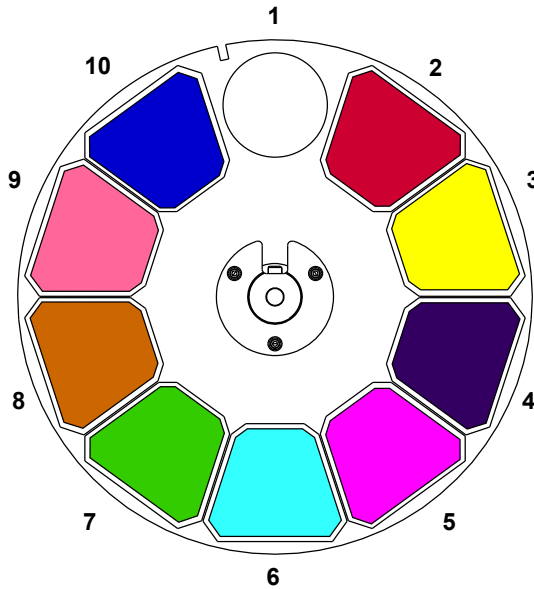
Static Color Function	Description
Indexed	Takes the quickest path and snaps to the chosen color on the wheel.
Forward Spin	Spins the wheel forward through the colors at variable speeds.
Reverse Spin	Spins the wheel in reverse through the colors at variable speeds.
Continuous	Rotates the wheel to any position within 360°
Slow Scan	Performs a scan of one static color position from each side at a slow rate
Fast Scan	Performs a scan of one static color position from each side at a fast rate
Random	Selects random static color positions at variable speeds.
Blink	Closes and opens the shutter between indexed static color changes.

You can select either full speed or MSpeed (MSpeed control of the wheel motor) mode to control the motor speed of the function you choose. For more information on MSpeed, See *MSpeed (Motor Speed)* on page 35.

Static Color Position

This parameter lets you select one of nine dichroic colors, or open Static Color Wheel.

Position	Description
1	Open
2	Red
3	Yellow
4	Indigo
5	Dark Magenta
6	Cyan
7	Green
8	Amber
9	Pink
10	Dark Blue



Static Gobo Wheel

Static Gobo Function

This parameter provides options for how you control the wheelspin and gobo selection on the Static Gobo Wheel.

Static Gobo Function	Description
Indexed	Takes the quickest path and snaps to the chosen gobo position on the wheel.
Forward Spin	Spins the wheel forward through the gobo positions at variable speeds.
Reverse Spin	Spins the wheel in reverse through the gobo positions at variable speeds.
Continuous	Rotates the wheel to any position within 360°
Slow Scan	Performs a scan of one gobo position from each side at a slow rate
Fast Scan	Performs a scan of one gobo position from each side at a fast rate
Random	Selects random gobo positions at variable speeds.
Blink	Closes and opens the shutter between indexed gobo position changes.

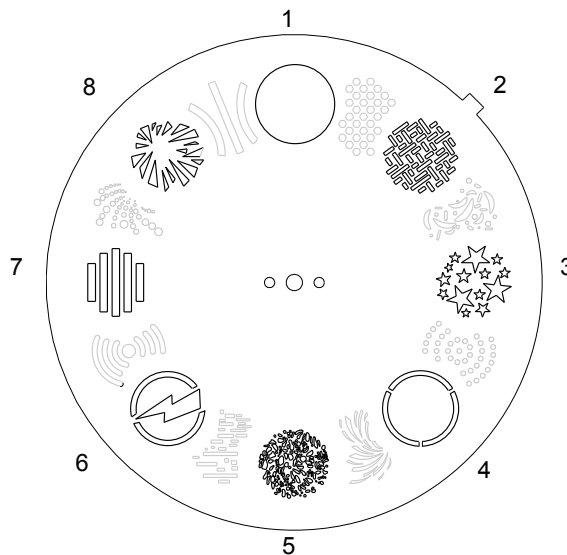
Note: You can access the transition patterns using the continuous Gobo function.

You can select either full speed or MSpeed (MSpeed control of the wheel motor) mode to control the motor speed of the function you choose. For more information on MSpeed, See *MSpeed (Motor Speed)* on page 35.

Static Gobo Position

This parameter lets you select from seven anamorphic patterns plus open on the Static Gobo Wheel.

Position	Description
1	Open
2	Crosshatch
3	Stars
4	Tunnel
5	Foliage
6	Bolt
7	Bars
8	Burst



Rotating Gobo Wheel

Rotating Gobo Wheel Function

This parameter provides options for how you control the wheelspin and gobo selection on the Rotating Gobo Wheel.

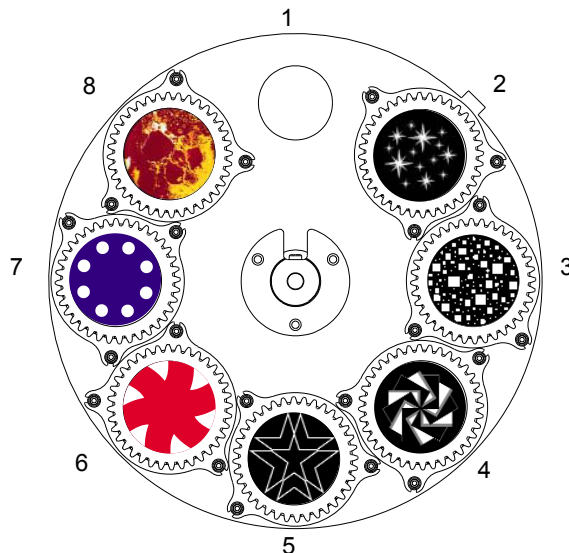
Static Gobo Function	Description
Indexed	Takes the quickest path and snaps to the chosen gobo position on the wheel.
Forward Spin	Spins the wheel forward through the gobo positions at variable speeds.
Reverse Spin	Spins the wheel in reverse through the gobo positions at variable speeds.
Continuous	Rotates the wheel to any position within 360°
Slow Scan	Performs a scan of one gobo position from each side at a slow rate
Fast Scan	Performs a scan of one gobo position from each side at a fast rate
Random	Selects random gobo positions at variable speeds.
Blink	Closes and opens the shutter between indexed gobo position changes.

You can select either full speed or MSpeed (MSpeed control of the wheel motor) mode to control the motor speed of the function you choose. For more information on MSpeed, See *MSpeed (Motor Speed)* on page 35.

Rotating Gobo Wheel Position

The **Rotating Gobo Position** parameter lets you select from the seven factory provided lithopatterns or open on the Rotating Gobo Wheel.

Position	Description
1	Open
2	Bright Stars
3	Framed
4	Paper Stack
5	In Stars
6	Techno Wedge
7	Gatlin Indigo
8	Psy Dye Red/Yellow



Rotating Gobo Rotate Function

The **Rotating Gobo Function** parameter setting determines how the individual aperture wheels on the Rotating Gobo Wheel move.

Gobo Rotate Function	Description
Indexed	Rotates the specified indexed aperture to any position
Forward Rotate	Forward aperture rotation from slowest to fastest
Reverse Rotate	Reverse aperture rotation from slowest to fastest
Blink	Closes and opens the shutter on rotate position changes
Forward Animate Rotate	Forward aperture rotation in strobing steps
Reverse Animate Rotate	Reverse aperture rotation in strobing step

You can select either full speed or MSpeed (MSpeed control of the wheel motor) mode to control the motor speed of the function you choose. For more information on MSpeed, See *MSpeed (Motor Speed)* on page 35.

Rotating Gobo Rotate Coarse/Rotating Gobo Rotate Fine

When the **Rotating Gobo Function** channel is set to Indexed or Blink, these two channels allows for 16-bit adjustment to the Rotating Gobo Wheel aperture position.

When a rotate option is selected in the **Rotating Gobo Function** parameter, the **Rotating Gobo Rotate Coarse** parameter sets the selected aperture's rotation speed from the slowest at a DMX value = 0 to the fastest at a DMX value = 255.

Focus

This parameter gives you control of the focus range. When the controller DMX value = 0, the focus is fully out. Increasing the value gradually moves the focus in to the maximum at a DMX value = 255.

Iris

This parameter controls the movement of the Iris. When the controller DMX value = 0, the iris is closed. Increasing the value gradually opens the iris until it is fully open at a DMX value = 255.

Shutter

The **Shutter** channel lets you select periodic strobing from slow to fast.

Dim

In trackspot Bolt fixtures, the Dim parameter provides full dimming capability without changing the color temperature or the beam shape. The dim values range from Off at a DMX value = 0 to fully on when the DMX value = 255). Standard protocol provides 16-bit brightness control. Reduced protocol allows for 8-bit control.

MSpeed (Motor Speed)

The **MSpeed** sets the time required for a motor to complete movement when changing from one position to another. MSpeed provides a means for all motors to reach their target position at the same time, even though each motor may have different distances to travel. MSpeed movement is extremely smooth because the fixture controls its own movements and is not dependent on DMX refresh rates.

MSpeed times vary from 0.15 seconds to 252.7 seconds. However, if you apply MSpeed to a parameter, be sure that the delay value (length of time allowed for the entire look) is longer than the MSpeed value to allow the motors to complete their movement before the end of the cue. An MSpeed value that is longer than the delay value could produce an undesirable result; for example, no light output during the scene. For a listing of exact MSpeed times, see *Appendix A: MSpeed Conversion Table* on page 37.

MSpeed can be applied to the Pan and Tilt, Color, and Wheel functions. You can disable Pan and Tilt MSpeed with the Control channel to allow MSpeed to apply only to Color and Gobo wheel functions.

Macros

The Macro parameter controls Internal Effects™ macros. These are factory-programmed sequences that allow you to quickly program complicated looks in one scene (cue). Each Internal Effect™ macro modifies a specific set of parameters, while allowing user control of all other parameters in the scene. The amplitude of the position macro movement is determined by the Pan Coarse channel and Tilt Coarse channel, respectively. The MSpeed channel controls the speed of the macros.

With the MSpeed set at the default value of DMX 0-4, an Internal Effects macro completes its movement in approximately 2.5 seconds. This provides a pleasing look when the additional variation given by using the MSpeed channel is not required. With the MSpeed set between DMX 5-255, Internal Effects macros complete movement at the selected MSpeed time (up to 25 seconds).

Control Settings

The Control parameter activates certain Fixture functions. To access all trackspot Bolt Control settings (except for Pan & Tilt MSpeed Off), first select a control channel value, then set the Shutter channel to "0."

NOTE: *The Control channel should not be crossfaded.*

Control Setting	Description	
Safe	Disables all Control settings for normal operation.	
Pan & Tilt MSpeed Off	Sets Pan & Tilt MSpeed to ignore MSpeed settings.	
Display Off	Sets display to off.	Set Shutter parameter = 0 to access these control options.
Display On	Turns on the display.	
Home All	Remotely homes the fixture.	The Control channel should return to Safe mode after the desired command is issued.
Shutdown	Remotely deactivates the fixture.	

Appendix A:

MSpeed Conversion Table

The following table 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.

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	5.94	217	85	D9	23.30	179	70	B3
0.15	254	100	FE	6.25	216	85	D8	23.92	178	70	B2
0.17	253	99	FD	6.56	215	84	D7	24.54	177	69	B1
0.19	252	99	FC	6.89	214	84	D6	25.17	176	69	B0
0.21	251	98	FB	7.22	213	84	D5	25.80	175	69	AF
0.25	250	98	FA	7.56	212	83	D4	26.45	174	68	AE
0.29	249	98	F9	7.91	211	83	D3	27.10	173	68	AD
0.35	248	97	F8	8.27	210	82	D2	27.76	172	67	AC
0.41	247	97	F7	8.63	209	82	D1	28.43	171	67	AB
0.47	246	96	F6	9.00	208	82	D0	29.11	170	67	AA
0.55	245	96	F5	9.39	207	81	CF	29.80	169	66	A9
0.63	244	96	F4	9.77	206	81	CE	30.49	168	66	A8
0.73	243	95	F3	10.17	205	80	CD	31.19	167	65	A7
0.83	242	95	F2	10.58	204	80	CC	31.90	166	65	A6
0.94	241	95	F1	10.99	203	80	CB	32.62	165	65	A5
1.05	240	94	F0	11.41	202	79	CA	33.34	164	64	A4
1.18	239	94	EF	11.84	201	79	C9	34.08	163	64	A3
1.31	238	93	EE	12.28	200	78	C8	34.82	162	64	A2
1.45	237	93	ED	12.72	199	78	C7	35.57	161	63	A1
1.60	236	93	EC	13.17	198	78	C6	36.33	160	63	A0
1.75	235	92	EB	13.63	197	77	C5	37.09	159	62	9F
1.92	234	92	EA	14.10	196	77	C4	37.87	158	62	9E
2.09	233	91	E9	14.58	195	76	C3	38.65	157	62	9D
2.27	232	91	E8	15.07	194	76	C2	39.44	156	61	9C
2.46	231	91	E7	15.56	193	76	C1	39.44v	156	61	9C
2.66	230	90	E6	16.06	192	75	C0	40.23	155	61	9B
2.86	229	90	E5	16.57	191	75	BF	41.04	154	60	9A
3.07	228	89	E4	17.09	190	75	BE	41.85	153	60	99
3.29	227	89	E3	17.61	189	74	BD	42.68	152	60	98
3.52	226	89	E2	18.14	188	74	BC	43.50	151	59	97
3.76	225	88	E1	18.68	187	73	BB	44.34	150	59	96
4.00	224	88	E0	19.23	186	73	BA	45.19	149	58	95
4.25	223	87	DF	19.79	185	73	B9	46.04	148	58	94
4.52	222	87	DE	20.36	184	72	B8	46.90	147	58	93
4.78	221	87	DD	20.93	183	72	B7	47.77	146	57	92
5.06	220	86	DC	21.51	182	71	B6	48.65	145	57	91
5.34	219	86	DB	22.10	181	71	B5	49.54	144	56	90
5.64	218	85	DA	22.70	180	71	B4	50.43	143	56	8F

Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)	Time (sec.)	Value (dec.)	Value (%)	Value (hex)
51.33	142	56	8E	102.77	95	37	5F	175.24	46	18	2E
52.24	141	55	8D	104.05	94	37	5E	176.92	45	18	2D
53.16	140	55	8C	105.35	93	36	5D	178.61	44	17	2C
54.09	139	55	8H	106.65	92	36	5C	180.30	43	17	2B
55.02	138	54	8A	107.96	91	36	5B	182.01	42	16	2A
55.96v	137	54	89	109.28	90	35	5A	183.72	41	16	29
56.91	136	53	88	110.61	89	35	59	185.44	40	16	28
57.87	135	53	87	111.94	88	35	58	187.17	39	15	27
58.84	134	53	86	113.28	87	34	57	188.90	38	15	26
59.81	133	52	85	114.63	86	34	56	190.65	37	15	25
60.79	132	52	84	115.99	85	33	55	192.40	36	14	24
61.78	131	51	83	117.36	84	33	54	194.16	35	14	23
62.78	130	51	82	118.73	83	33	53	195.92	34	13	22
63.79	129	51	81	120.12	82	32	52	197.70	33	13	21
64.80	128	50	80	121.5v	81	32	51	199.48	32	13	20
65.82	127	50	7F	122.91	80	31	50	201.28	31	12	1F
66.85	126	49	7E	124.31	79	31	4F	203.08	30	12	1E
67.89	125	49	7D	125.73	78	31	4E	204.88	29	11	1D
68.94	124	49	7C	127.15	77	30	4D	206.70	28	11	1C
69.99	123	48	7B	128.58	76	30	4C	208.52	27	11	1B
71.05	122	48	7A	130.02	75	29	4B	210.36	26	10	1A
72.13	121	47	79	134.39	72	28	48	212.19	25	10	19
73.20	120	47	78	135.86	71	28	47	214.04	24	9	18
74.29	119	47	77	137.34	70	27	46	215.90	23	9	17
75.38	118	46	76	138.82	69	27	45	217.76	22	9	16
76.49	117	46	75	140.32	68	27	44	219.63	21	8	15
77.60	116	45	74	141.82	67	26	43	221.51	20	8	14
78.71	115	45	73	143.33	66	26	42	223.40	19	7	13
79.84	114	45	72	144.85	65	25	41	225.30	18	7	12
80.98	113	44	71	146.38	64	25	40	227.20	17	7	11
82.12	112	44	70	147.92	63	25	3F	229.11	16	6	10
83.27	111	44	6F	149.46	62	24	3E	231.03	15	6	0F
84.43	110	43	6E	151.01	61	24	3D	232.96	14	5	0E
85.59	109	43	6D	152.57	60	24	3C	234.90	13	5	0D
86.77	108	42	6C	154.14	59	23	3B	236.84	12	5	0C
87.95	107	42	6B	155.71	58	23	3A	238.79	11	4	0B
89.14	106	42	6A	157.30	57	22	39	240.75	10	4	0A
90.34	105	41	69	158.89	56	22	38	242.72	9	4	09
91.55	104	41	68	160.49	55	22	37	244.70	8	3	08
92.76	103	40	67	162.09	54	21	36	246.68	7	3	07
93.98	102	40	66	163.71	53	21	35	248.68	6	2	06
95.21	101	40	65	165.33	52	20	34	250.68	5	2	05
96.45	100	39	64	166.96	51	20	33	246.68	7	3	07
97.70	99	39	63	168.60	50	20	32	248.68	6	2	06
98.95	98	38	62	170.25	49	19	31	250.68	5	2	05
100.22	97	38	61	171.91	48	19	30	252.68	4	2	04
101.49	96	38	60	173.57	47	18	2F				

Appendix B:

Important Safety Information


WARNING: For Continued Protection Against Fire

1. Do not mount on a flammable surface.
2. Maintain minimum distance of 1.0 meter (3.28 feet) from combustible materials.
3. Replace fuses only with the specified type and rating.
4. Observe minimum distance to lighted objects of 1.0 meter (3.28 feet).
5. 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

Note (For UK only): As 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, proceed as follows:

- the core which is coloured 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 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. This equipment must be earthed.
2. Disconnect power before servicing.
 3. Equipment suitable for dry locations only. Do not expose this equipment to rain or moisture.
 4. Refer servicing to qualified personnel.
 5. Class I equipment - this fixture employs a grounded type receptacle and is not intended for connection to a two wire, ungrounded source of supply.

WARNING: For Continued Protection Against Injury To Persons

1. Use secondary safety cable when mounting this fixture.

APPENDICE B: IMPORTANTES INFORMATIONS SUR LA SÉCURITÉ

MISE EN GARDE: Pour Une Protection Permanente Contre Les Incendies

1. Ne pas monter les lampes sur une surface inflammable.
2. Maintenir à une distance minimum de 1.0 mètre de matières inflammables.
3. Ne remplacer les fusibles qu'avec des modèles et valeurs assignés recommandés.
4. Respecter une distance minimum de 1.0 mètre par rapport aux objets éclairés.
5. Cet appareil de connexion au circuit de dérivation comporte une protection contre les surcharges de 20A.

MISE EN GARDE: Pour Une Protection Permanente Contre Les Chocs Électriques

1. Assembler le câble électrique conformément aux instructions du manuel:
2. Déconnecter le courant avant de 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. Confiez l'entretien à un personnel qualifié.
5. Equipement de Classe I - Cette pièce fixe utilise une prise de courant branché à la terre et elle ne doit pas être branché à une source électrique, non reliée à la terre, à double fil.

MISE EN GARDE: Pour Une Protection Permanente Contre Les Blessures Corporelles

1. Lors de l'assemblage ou du montage, utiliser un câble de sécurité secondaire

ANHANG B: WICHTIGE HINWEISE FÜR IHRE SICHERHEIT

1. Das Gerät nie auf einer feuergefährlichen Fläche montieren.
2. Stets einen Mindestabstand von 1 Meter zu brennbaren Materialien einhalten.
3. Zum Ersatz nur Sicherungen verwenden, die dem vorgeschriebenen Typ und Nennwert entsprechen.
4. Einen Mindestabstand von 1 Meter zu den angestrahlten Objekten einhalten
5. Dieses Gerät darf nur an eine Zweigleitung mit einem Überlastungsschutz von höchstens 20A angeschlossen werden.

WARNUNG: Zum Schutz Gegen Gefährliche Körperströme

1. Bei der Installation des Netzkabels am Lampensockel folgen Sie bitte Anweisungen in diesem Handbuch.
2. 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. Überlassen Sie die Wartung qualifiziertem Fachpersonal.
5. Dieses Gerät gehört zur Klasse 1 - Dieser Beleuchtungskörper verwendet eine geerdete Fassung und sollte nicht an eine zweipolige, ungeerdete Stromversorgung angeschlossen werden.

WARNUNG: Zum Schutz Vor Verletzungen

1. Verwenden Sie bei der Installation des Beleuchtungskörpers ein zusätzliches Sicherheitskabel.

APÉNDICE B: INFORMACIÓN IMPORTANTE DE SEGURIDAD

ADVERTENCIA: Para Protección Continua Contra Incendios

1. No monte el equipo sobre una superficie inflamable.
2. Mantenga una distancia mínima de materiales combustibles de 1 metro.
3. Cambie los fusibles únicamente por otros que sean del tipo y la clasificación especificadas.
4. Observe una distancia mínima a objetos iluminados de 13 metro.
5. Este equipo debe conectarse a un circuito derivado que tenga una protección máxima contra las sobrecargas de 20 A.

ADVERTENCIA: Para La Protección Continua Contra Electroclusiones

1. Ensamble la tapa del cordón de alimentación según las instrucciones del manual.
2. Desconecte el suministro de energía antes de prestar servicio.
3. Este equipo se adecua a lugares secos solamente no lo exponga a la lluvia o humedad.
4. Consulte al personal cualificado.
5. Equipo de Clase 1 Este aparato emplea un enchufe hembra del tipo unido a tierra, y no tiene por finalidad conectarse a una fuente de alimentación bifilar y sin puesta a tierra.

ADVERTENCIA: Para Protección Continua Contra Lesiones Corporales

1. Use cable secundario de seguridad al montar este aparato.

APPENDICE B: IMPORTANTI INFORMAZIONI PER LA SICUREZZA

AVVERTENZA: Per La Prevenire Di Incendi

1. Non montare su superfici infiammabili.
2. Mantenere l' apparecchio ad una distanza minima di 1 metro da materiali combustibili.
3. Rimpiazzare I fusibili utilizzando solo quelli del tipo e della portata (Corrente nominale/ velocità) specificata.
4. Mantenere una distanza minima da oggetti illuminati di 1 metro.
5. Questo apparecchio deve essere collegato alla rete con interruttore automatico 20A.

AVVERTENZE: Per La Prevenzione Costante Di Scosse Elettriche

1. Assemblare il terminale del cavo seguendo il manuale delle istruzioni.
2. Scollegare la corrente prima di eseguire la riparazione.
3. Attrezzature idonee per luoghi asciutti solo. Non esporre questo apparecchio a pioggia o umidità.
4. Per qualsiasi riparazione rivolgersi a personale specializzato.
5. Apparecchio di Classe I. Questa apparecchiatura deve essere messa a terra.

AVVERTENZE: Per La Prevenzione Costante Di Danni Fisici Alle Persone

1. Utilizzare cavi di sicurezza secondario quando si monta questo apparecchio.

