

# *trackspot Bolt* ⚡

## trackspot<sup>®</sup> Bolt User Manual

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**HIGH END SYSTEMS**



**a Barco company**

trackspot Bolt User Manual

Version 1.0

December, 2011

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## Contact Information

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## 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.

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## Important Safety Information

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.**

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## 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.

A fixture must be returned in its original packaging. Any other 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: 2105 Gracy Farms 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.

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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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## 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;

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# Chapter 1:

## 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

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- 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

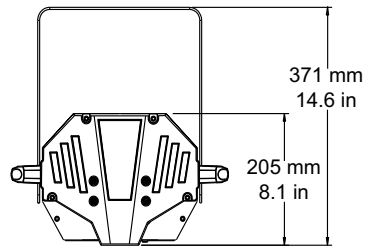
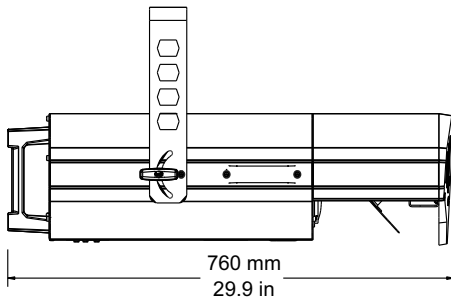
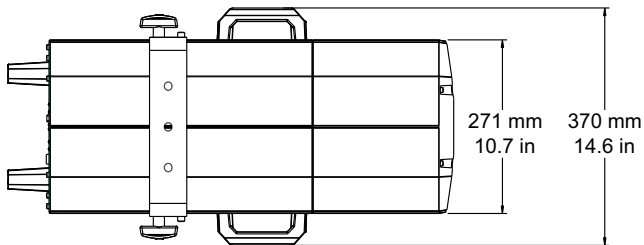
### Mechanical Specifications

**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

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## Related Products and Accessories

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Name	Part Number
trackspot Bolt LithoPatterns	Call Customer Service
Wholehog <sup>®</sup> 3 Lighting Console	25020001
Road Hog <sup>®</sup> Full Boar Lighting Console	A6020001
Road Hog <sup>®</sup> 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

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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

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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

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**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.**



## 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 clamp 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.**

## Linking trackspot Bolt Fixtures

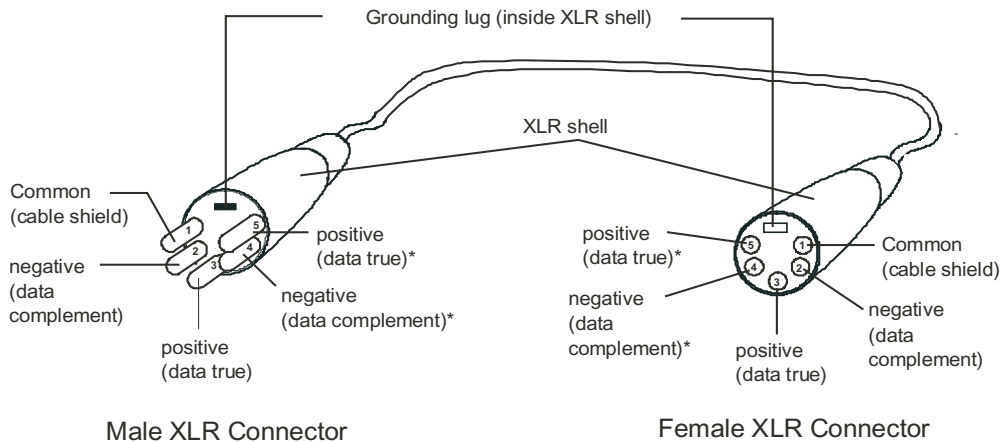
The trackspot Bolt fixture operates on standard DMX512 link controlled by a DMX console. The number of fixtures on a link will be determined by the combined number of channels required by all the fixtures. A trackspot Bolt fixture requires a 21-channel footprint on a standard DMX512 link.

### Cable Connectors

Use data-grade cable and 5-pin XLR cable connectors to attach your fixture to the DMX link.

The trackspot Bolt fixture accepts 5-pin XLR cable connectors. Cabling must have a male XLR connector on one end of the cable and a female 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). Pins four and five are not used, but they allow a secondary data link to pass through the fixture.



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

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.

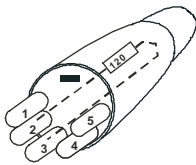


**CAUTION! Do not connect anything to the ground lug on the XLR connectors. Do not connect or allow contact between the common (cable shield) and the fixture's chassis ground. Grounding the common could cause a ground loop and/or erratic behavior.**

## 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.

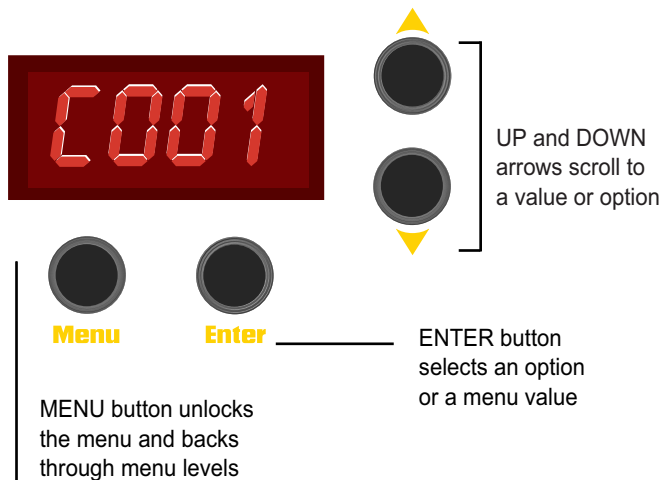
## Setting the DMX Start Channel

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:

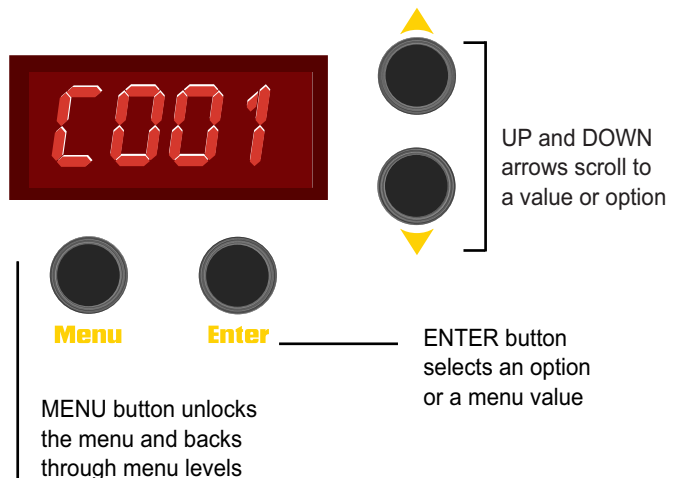
- Assign a DMX start channel.
- Access fixture options such as homing the fixture, viewing fixture status, and performing self tests.
- View all DMX values on the link.
- Identify fixture errors.

### 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		
	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

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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.





## 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](http://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

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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 verses 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<sup>®</sup> lighting consoles; and Hog<sup>®</sup> 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	MSpeed
20	Macro	20	Macro
21	Control	20	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

