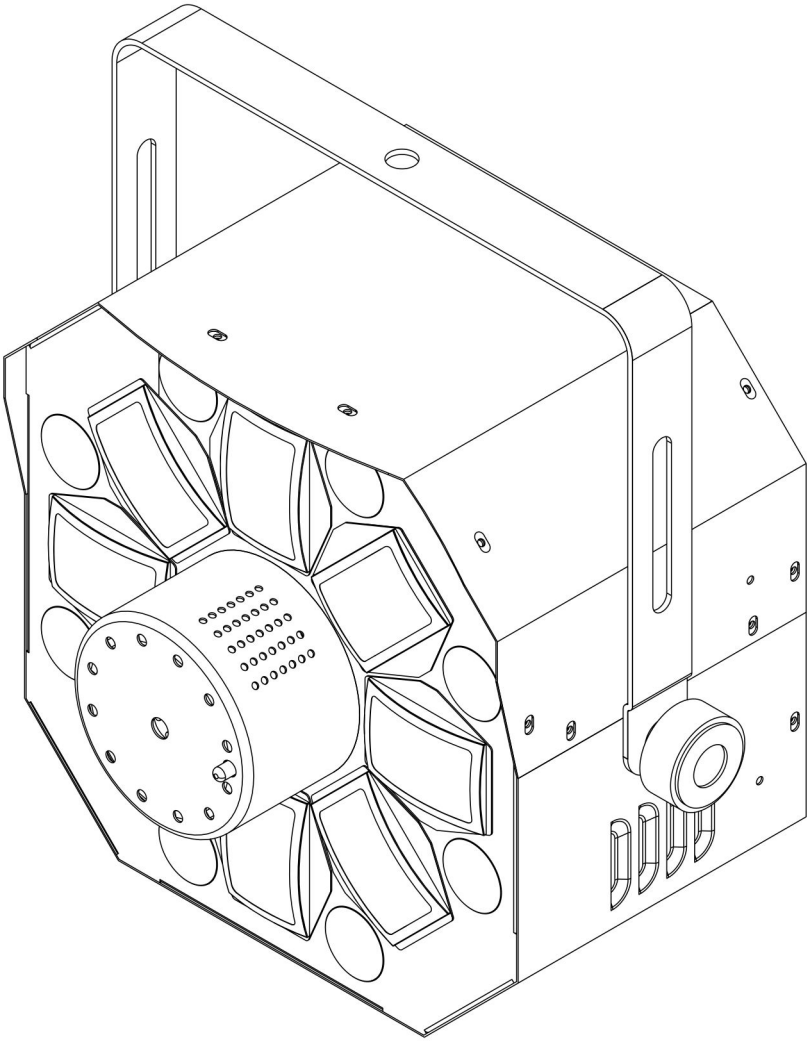
USER MANUAL

ENGLISH

V1.0



Firestorm 4-in-1 Light Effect

Product code: 43173

Preface

Thank you for purchasing this Showtec product.

The purpose of this user manual is to provide instructions for the correct and safe use of this product.

Keep the user manual for future reference as it is an integral part of the product. The user manual shall be stored at an easily accessible location.

This user manual contains information concerning:

- Safety instructions
- Intended and non-intended use of the device
- Installation and operation of the device
- Maintenance procedures
- Troubleshooting
- Transport, storage and disposal of the device

Non-observance of the instructions in this user manual may result in serious injuries and damage of property.

Design and product specifications are subject to change without prior notice.

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1. Introduction

1.1. Before Using the Product

Important
Read and follow the instructions in this user manual before installing, operating or servicing this product.

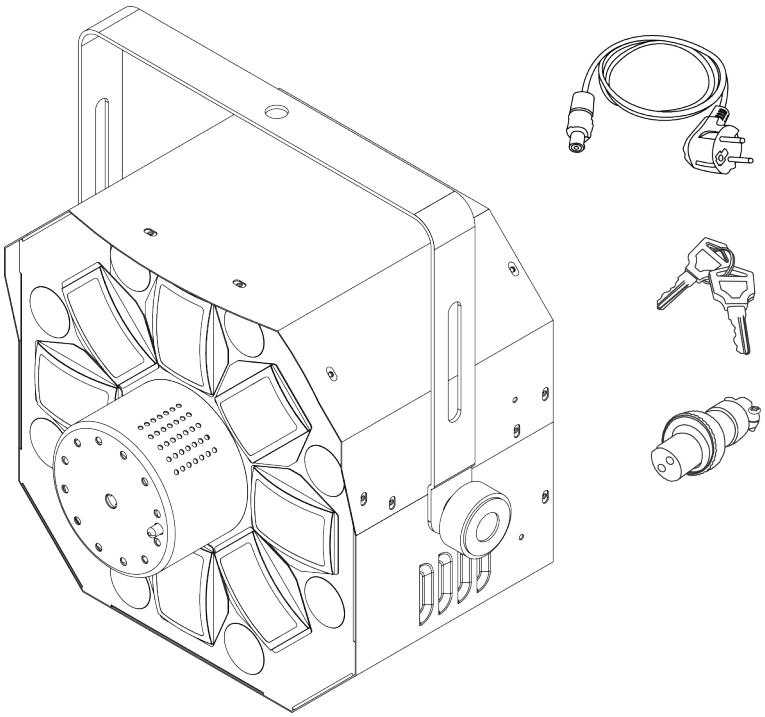
The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual.

After unpacking, check the contents of the box. If any parts are missing or damaged, contact your Highlite International dealer.

Your shipment includes:

- Showtec Firestorm 4-in-1 Light Effect
- Schuko to IEC power cable (1,5 m)
- Remote interlock test connector
- 2 keys for key switch
- User manual

Figure 1



1.2. Intended Use

This device is intended for professional use as a light effect with a laser projector. It can be installed only indoors. This device is not suitable for households.

Any other use, not mentioned under intended use, is regarded as non-intended and incorrect use.

1.3. LEDs Lifespan

The light output of the LEDs gradually decreases over time (lumen depreciation). High operating temperatures contribute to this process. You can extend the lifespan of the LEDs by providing adequate ventilation and operating the LEDs at the lowest possible brightness.

1.4. Product Lifespan

This device is not designed for permanent operation.

Disconnect the device from the electrical power supply when the device is not in operation. This will reduce the wear and will improve the lifespan of the device.

1.5. Text Conventions

Throughout the user manual the following text conventions are used:

- Buttons: All buttons are in bold lettering, for example "Press the **UP/DOWN** buttons"
- References: References to parts of the device are in bold lettering, for example: "turn the **adjustment handle (05)**". References to chapters are hyperlinked
- 0–255: Defines a range of values
- Notes: **Note:** (in bold lettering) is followed by useful information or tips

1.6. Symbols and Signal Words

Safety notes and warnings are indicated throughout the user manual by safety signs.

Always follow the instructions provided in this user manual.

DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

Attention Indicates important information for the correct operation and use of the product.

Important Read and observe the instructions in this document.

Electrical hazard

Laser beam hazard

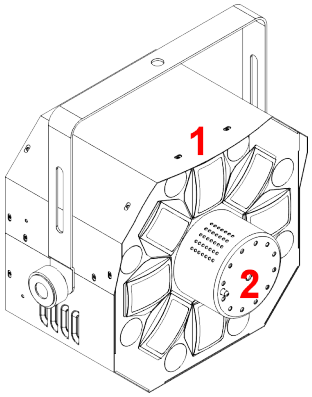
Provides important information about the disposal of this product.

1.7. Laser Hazard Labels

The device is a class 3R laser device and is provided with the following labels and hazard warnings. The position of the labels is indicated on the drawings.

1

WARNING
Laser radiation – Rayonnement laser
Avoid direct eye exposure
Exposition directe dangereuse pour les yeux
Class 3R laser product
Appareil a laser de classe 3R
EN-IEC 60825-1:2014
Wavelength – longeurs d'ondes 650 nm and 532 nm
Laser radiation power < 5 mW
Puissance du rayonnement laser < 5 mW

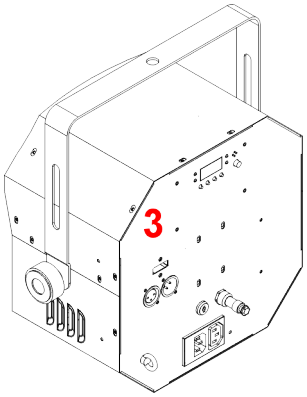


2

WARNING
Avoid exposure – laser radiation is emitted from this aperture

3

CAUTION
Laser radiation
Avoid direct eye exposure
Class 3R laser product



1.8. Symbols on the Information Label

This product is provided with an information label. The information label is located on the side of the device.

The information label contains the following symbols:

This device is designed for indoor use.

This device shall not be treated as household waste.

Read and follow the instructions in the user manual before installing, operating or servicing the device.

This device falls under IEC protection class I.

Caution: Risk of electric shock, Disconnect input power before opening.
Warning: This appliance must be earthed.

2. Safety

Important
Read and follow the instructions in this user manual before installing, operating or servicing this product.

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual.

2.1. Warnings and Safety Instructions

DANGER
Danger for children

For adult use only. The device must be installed beyond the reach of children.

- Do not leave any parts of the packaging (plastic bags, polystyrene foam, nails, etc.) within the reach of children. Packaging material is a potential source of danger for children.

DANGER
Electric shock caused by dangerous voltage inside

There are areas inside the device where dangerous touch voltage may be present.

- Do not open the device or remove any covers.
- Do not operate the device if the covers or the housing are open. Before operation, check if the housing is firmly closed and all screws are tightly fastened.
- Disconnect the device from the electrical power supply before service and maintenance, and when the device is not in use.

DANGER
Electric shock caused by short-circuit

This device falls under IEC protection Class I.

- Make sure that the device is electrically connected to ground (earth). Connect the device only to a socket-outlet with a ground (earth) connection.
- Do not cover the ground (earth) connection.
- Do not bypass the thermostatic switch or fuses.
- Replace fuses only with the same type and rating.
- Do not let the power cable come into contact with other cables. Handle the power cable and all connections with the mains with caution.
- Do not modify, bend, mechanically strain, put pressure on, pull or heat up the power cable.
- Make sure that the power cable is not crimped or damaged. Examine the power cable periodically for any defects.
- Do not immerse the device in water or other liquids. Do not install the device in a location where flooding may occur.
- Do not use the device during thunderstorms. Disconnect the device from the electrical power supply immediately.

CAUTION
Laser radiation
Avoid direct eye exposure.

This device is a class 3R laser device according to the classification in NEN-EN-IEC 60825-1:2014. It emits visible radiation in the wavelength range 400–700 nm. Accidental exposure to the direct or reflected laser beam presents a low risk. Deliberate exposure to the direct or reflected laser beam can cause eye injury.

Check all applicable national and international regulations concerning laser safety before using this device. The user is responsible for the safety of all persons present during the use of the laser device.

- Do not look into the laser beam.
- Do not open the device and do not modify the device.
- Do not use the device if the housing or the optics are damaged.
- Do not point the laser beam at persons or animals.
- Make sure that the beam is terminated on a non-reflective and non-combustible surface.

Attention
Power supply

- Before connecting the device to the power supply, make sure that the current, voltage and frequency match the input voltage, current and frequency specified on the information label on the device.
- Make sure that the cross-sectional area of the extension cords and power cables is sufficient for the required power consumption of the device.

Attention
General safety

- Do not insert objects into air vents.
- Do not connect the device to a dimmer pack.
- Do not switch the device on and off in short intervals. This reduces the device's life.
- Do not shake the device. Avoid brute force when installing or operating the device.
- Change the aperture glass if it is visibly damaged. Contact your Highlite International dealer for more information, as servicing can be performed only by instructed or skilled persons.
- Change the lens or the LEDs if they are visibly damaged to such an extent that their effectiveness is impaired, for example by cracks or deep scratches. Contact your Highlite International dealer for more information, as servicing can be performed only by instructed or skilled persons.
- If the device is dropped or struck, disconnect the device from the electrical power supply immediately.
- If the device is exposed to extreme temperature variations (e.g. after transportation), do not switch it on immediately. Let the device reach room temperature before switching it on, otherwise it may be damaged by the formed condensation.
- If the device fails to work properly, discontinue use immediately.

Attention
For professional use only
This device must be used only for the purposes it is designed for.

This device is designed to be used as a light effect with a laser projector. Any incorrect use may lead to hazardous situations and result in injuries and material damage.

- This device is not suitable for households.
- This device is not designed for permanent operation.
- This device does not contain user-serviceable parts. Unauthorized modifications to the device will render the warranty void. Such modifications may result in injuries and material damage.

Attention
Before each use, examine the device visually for any defects.

Make sure that:

- All screws used for installing the device or parts of the device are tightly fastened and are not corroded.
- The safety devices are not damaged.
- There are no deformations on housings, fixings and installation points.
- The lens and the aperture glass are not cracked or damaged.
- The power cables are not damaged and do not show any material fatigue.

Attention
Do not expose the device to conditions that exceed the rated IP class conditions.

This device is IP20 rated. IP (Ingress Protection) 20 class provides protection against solid objects greater than 12 mm, such as fingers, and no protection against harmful ingress of water.

2.2. Requirements for the User

This product may be used only by instructed or skilled persons. Installation and maintenance may be carried out by instructed or skilled persons. Service shall be carried out only by skilled persons. Contact your Highlite International dealer for more information.

This product may not be used by ordinary persons. Users, operators and installers should have received sufficient training in laser safety to be able to accurately assure that the maximum permissible exposure (MPE) is not exceeded in spectator occupied areas and that the required separations are maintained between spectators and projections that exceed the MPE.

Instructed persons have been instructed and trained by a skilled person, or are supervised by a skilled person, for specific tasks and work activities associated with the installation, service and maintenance of this product, so that they can identify risks and take precautions to avoid them.

Skilled persons have training or experience, which enables them to recognize risks and avoid hazards associated with the installation, service and maintenance of this product.

Ordinary persons are all persons other than instructed persons and skilled persons. Ordinary persons include not only users of the product but also any other persons that may have access to the device or who may be in the vicinity of the device.

2.3. Laser Safety

CAUTION
Use of controls or adjustments, or performance of procedures other than those specified in this user manual, may result in hazardous radiation exposure.

Check all applicable national and international regulations concerning laser safety before operating this device. In some countries, there may be specific requirements, such as government permissions or notifications of shows, or prohibitions, such as against laser scanning of spectators without appropriate safeguards.

Laser displays and shows, where class 3B and/or class 4 lasers are used, should be supervised by a laser safety officer (LSO). LSOs are trained to evaluate and control laser hazards and are responsible for overseeing the control of laser hazards. An LSO is recommended but not required for laser displays and shows, where class 1, 1M, 2, 2M and/or 3R lasers are used.

During laser displays and shows the applicable eye and skin maximum permissible exposure (MPE) may not be exceeded. Under no circumstance should any person be exposed to laser radiation exceeding the applicable eye and skin MPE. MPE for spectators, ancillary personnel and performers is specified in IEC 60825-14, IEC 60825-3, and in the applicable local laser regulations.

Each time before operation of the device, make sure that:

- The beam is aligned and properly terminated
- All controls, including scan failure safeguards and emergency stop controls, are properly working
- Warning signs and barriers are in place as appropriate
- All components are securely mounted and locked into position

The device should be secured and protected against misalignment or maladjustment between alignment completion and the beginning of the laser display or show.

2.4. Safety Devices

This device is equipped with a key switch and a remote interlock connector. The key switch prevents unauthorized and untrained persons from operating the device. If the key is removed, you cannot operate the device.

You can connect a remote interlock to the remote interlock connector. When you press the remote interlock, the laser radiation is terminated immediately.

The remote interlock is not supplied with the device. We recommend that you purchase a remote interlock. Check your local regulations, as in some countries it is not allowed to operate the device without a remote interlock.

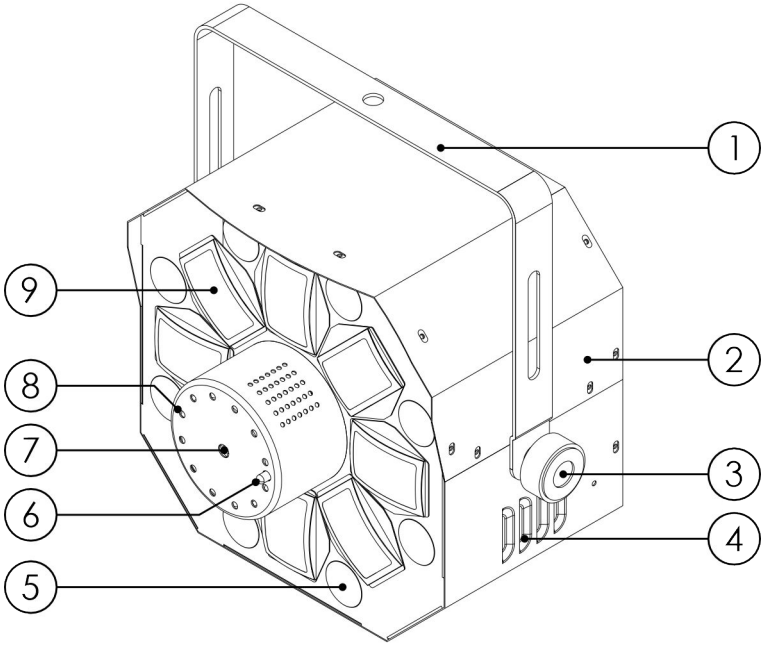
For testing and programming purposes you may use the supplied test connector. If the test connector is not inserted into the remote interlock connector, you cannot operate the device.

3. Description of the Device

The Showtec Firestorm 4-in-1 Light Effect is a device that features 8 RGBUV wash LEDs, 8 RGBAW rotating derby LEDs, 12 SMD strobe LEDs and a 130 mW RG laser module. All 4 effects can be selected separately in auto or music-controlled programs. The device can also be controlled by DMX and master/slave.

3.1. Front view

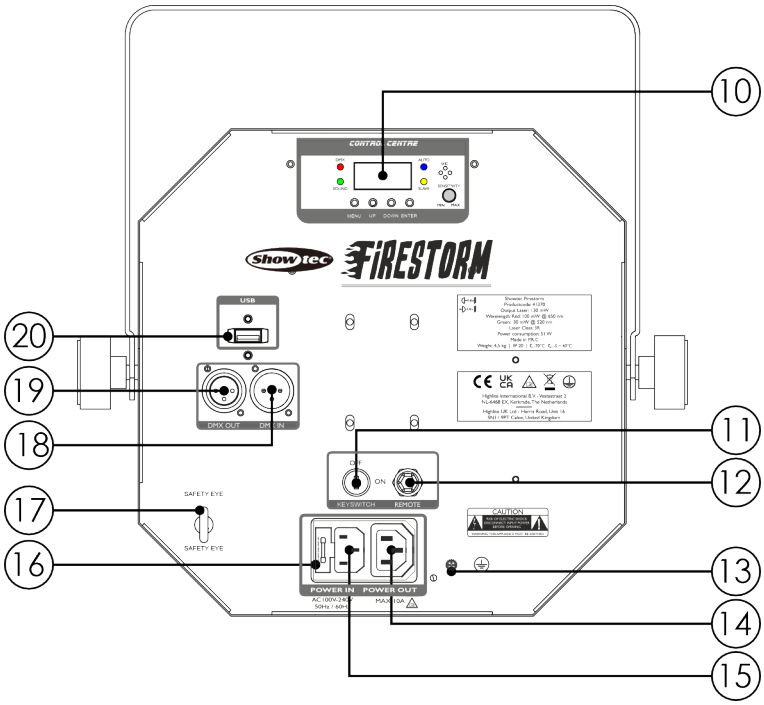
Figure 2



01) Mounting bracket
02) Ground/earth connection
03) 2 x adjustment screws
04) Ventilation openings
05) 8 x RGBUV wash LEDs
06) IR sensor
07) Laser beam aperture (130 mW RG laser module)
08) 12 x SMD strobe LEDs
09) 8 x RGBAW rotating derby LEDs

3.2. Back View

Figure 3



10) Control panel: 7-segment display, control buttons and LED indicators
11) Key switch
12) Remote interlock connector
13) Ground/earth connection
14) IEC power connector OUT
15) IEC power connector IN
16) Fuse 5KT 1,6AL / 250V
17) Safety Eye
18) 3-pin DMX signal connector IN
19) 3-pin DMX signal connector OUT
20) USB connector – no function

3.3. Product Specifications

Model:	Firestorm 4-in-1 Light Effect

Source:	
Light source type	LED
Light source quantity (spot)	8
Light source power (spot)	1,5 W
LED strobe quantity	12
LED strobe power	1 W
Life expectancy	50000 h
Laser source	DPSS
Laser class	3R
Laser color	Red / Green
Laser power (total)	130 mW
Laser power (red)	30 mW
Laser wavelength (red)	650 nm
Laser power (green)	100 mW
Laser wavelength (green)	532 nm
Beam diameter at aperture	5 mm
Beam divergence	2 mrad

Control and Programming:	
Control mode	Built-in Program / DMX / Master Slave / Sound / Stand Alone
DMX channels	2 / 18
Display	7-segment

Electrical Specifications and Connections:	
Power supply	100–240 V AC 50/60 Hz
Power consumption	51 W
Power connector IN	IEC
Power connector OUT	IEC
DMX connector IN	XLR 3P
DMX connector OUT	XLR 3P

Mechanical Specifications:	
Height	241 mm
Width	332 mm
Depth	335 mm
Weight	4,3 kg
IP rating	IP20 (indoor use only)
Housing	Aluminum
Color	Black

Product Properties:	
Cooling	Convection/axial fan
Safety features	Key switch / safety eye

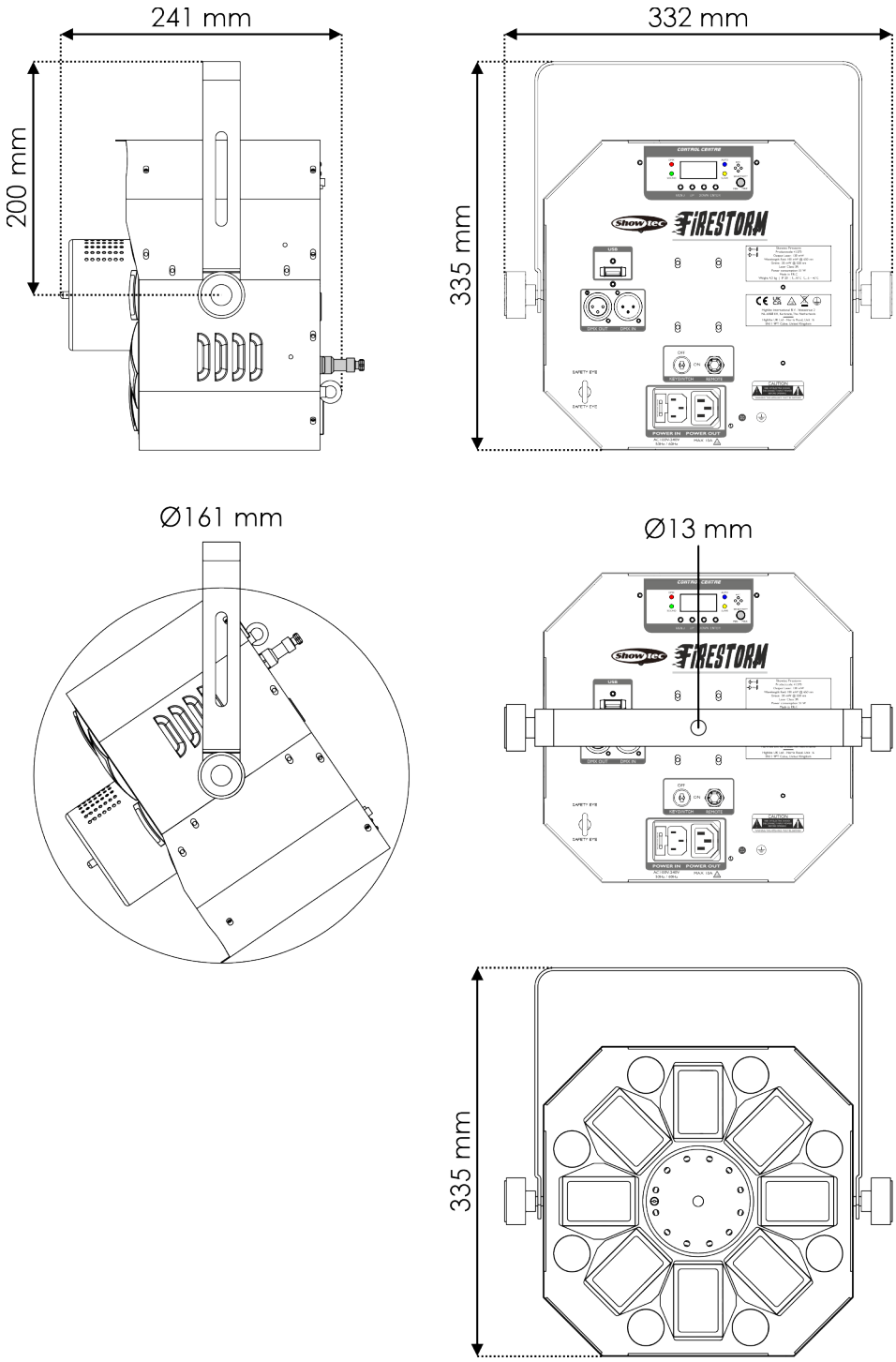
Thermal Specifications:	
Maximum ambient temperature	40 °C

Included Items:	
Included cables	IEC cable

Product Compliance:	
NOHD	62 m
MPE (for exposure duration of 0,25 s)	25 W·m^{-2}

3.4. Dimensions

Figure 4



3.5. Optional Accessories

The remote interlock is not supplied with the device. Contact your Highlite International dealer for more information.

Product code: 51316 Laser interlock with 10 m cable, small connector

4. Installation

4.1. Safety Instructions for Installation

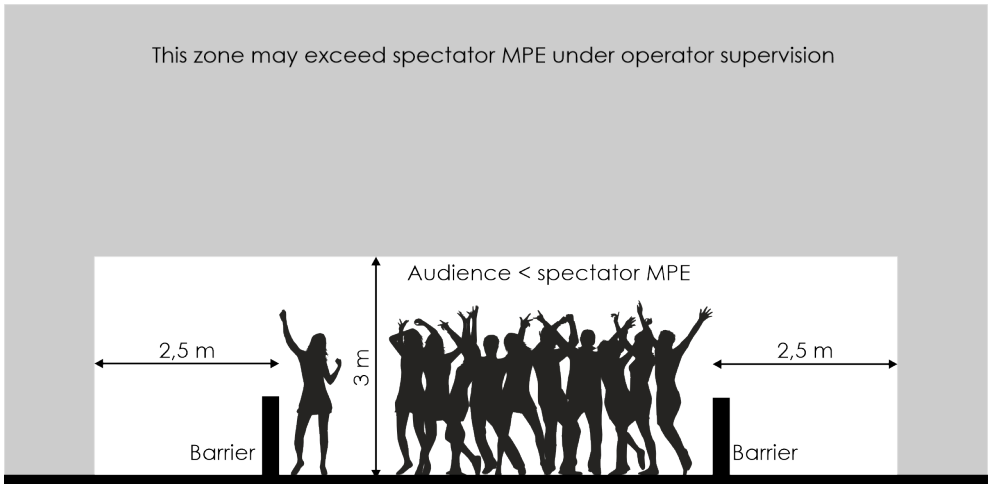
WARNING
Incorrect installation can cause serious injuries and damage of property.

If trussing systems are used, installation must be carried out only by instructed or skilled persons.

- Make sure that the device is rigidly mounted to prevent movement due to vibration or jarring.
- Follow all applicable European, national and local safety regulations concerning rigging and trussing.

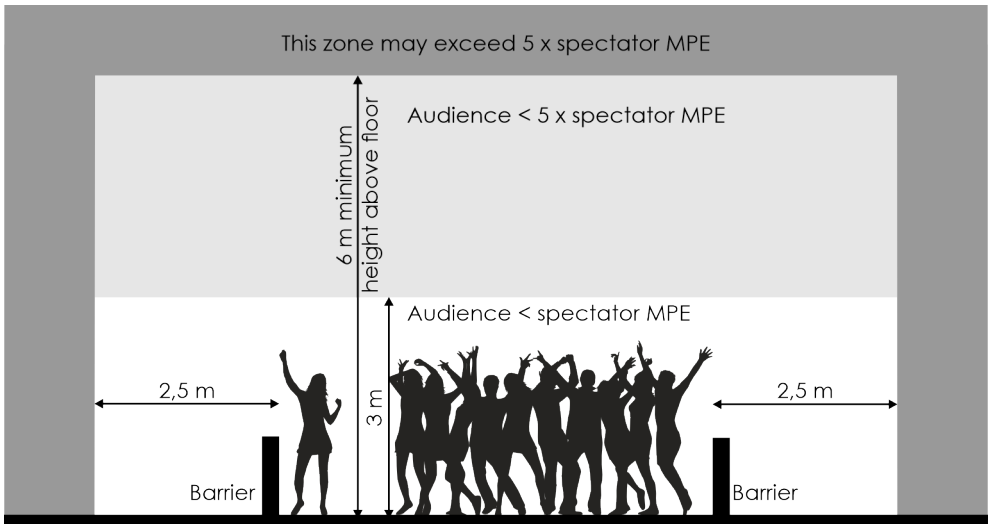
The device should be installed in such a way that there is at least 3 m distance in height and 2,5 m laterally between the laser beam that exceeds the spectator MPE and the surface where spectators are expected to stand.

Figure 5



If the laser display or show is not under the continuous control of an operator who can immediately terminate laser radiation in the event of a problem, the MPE shall not exceed 5 times the spectator MPE in the space between 3 m and 6 m above the surface where spectators are expected to stand.

Figure 6



Attention
Make sure that there is enough space for ventilation around the device.

- Do not block the ventilation openings. Without proper heat dissipation and air circulation, the internal components may overheat. This can result in product damage.
- Do not install the device near equipment that produces heat, for example spotlights.

4.2. Personal Protective Equipment

During installation, deinstallation and rigging wear personal protective equipment in compliance with the national and site-specific regulations.

4.3. Installation Site Requirements

- The device can be used only indoors.
- The maximum ambient temperature t_a = 40 °C must never be exceeded.
- The relative humidity must not exceed 50 % with an ambient temperature of 40 °C.

4.4. Rigging

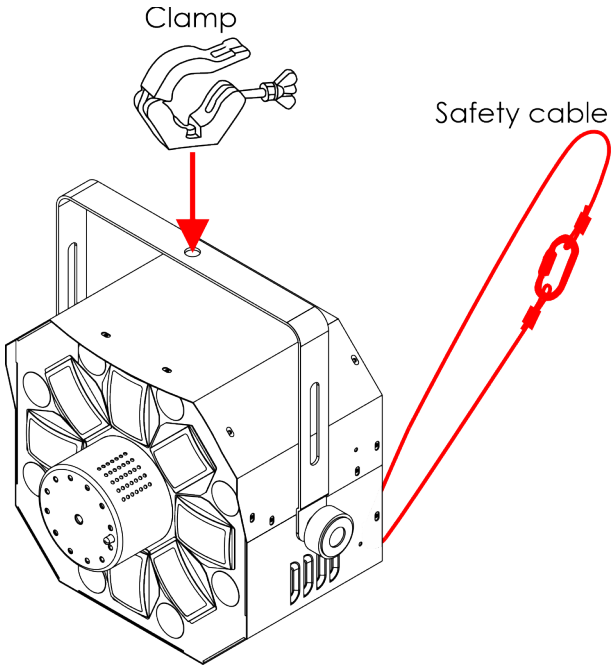
The device can be positioned on a flat surface or mounted to a truss or other rigging structure in any orientation. Make sure that all loads are within the pre-determined limits of the supporting structure.

CAUTION
Restrict the access under the work area during rigging/derigging.

To mount the device, follow the steps below:

01) Use a clamp to attach the device to the supporting structure. Make sure that the device cannot move freely.
02) Secure the device with a secondary suspension, for example a safety cable. Make sure that the secondary suspension can hold 10 times the weight of the device. If possible, the secondary suspension should be attached to a supporting structure independent of the primary suspension. Put the safety cable through the **safety eye (17)**.

Figure 7

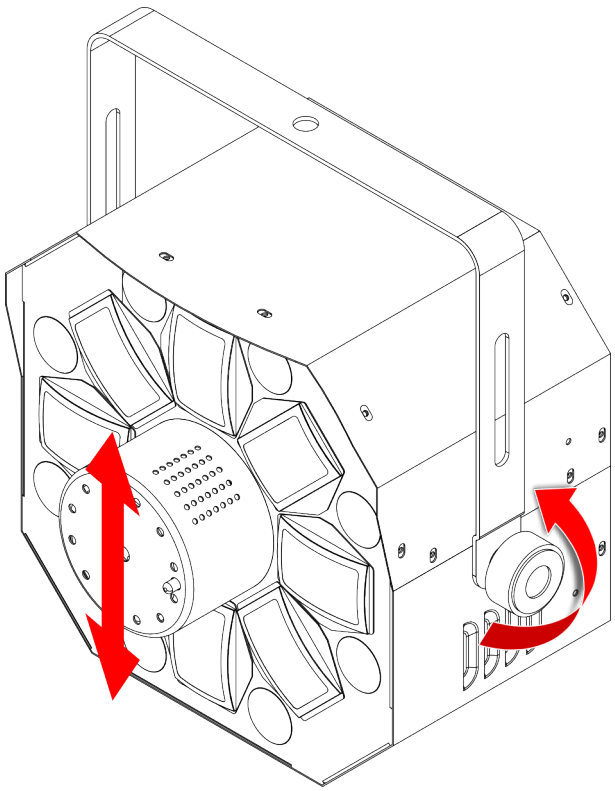


4.5. Angle Adjustment

You can adjust the angle of the device with the **adjustment screw (03)**.

01) Turn the **adjustment screw (03)** counterclockwise to loosen it.
02) Tilt the device to the desired angle.
03) Turn the **adjustment screw (03)** clockwise to tighten it. Make sure that the device cannot move freely after the **adjustment screw (03)** is tightened.

Figure 8



4.6. Connecting to Power Supply

DANGER
Electric shock caused by short-circuit

The device accepts AC mains power at 100–240 V and 50/60 Hz. Do not supply power at any other voltage or frequency to the device.

This device falls under IEC protection class I. Make sure that the device is always electrically connected to the ground (earth).

Before connecting the device to the socket-outlet:
- Make sure that the power supply matches the input voltage specified on the information label on the device.
- Make sure that the socket-outlet has ground (earth) connection.

Connect the device to the socket-outlet with the power plug. Do not connect the device to a dimmer circuit, as this may damage the device.

4.7. Power Linking of Multiple Devices

This device supports power linking. Power can be relayed to another device via the power OUT connector. Note that the input and the output connectors have different designs: one type cannot be connected to the other.

Power linking of multiple devices must be carried out only by instructed or skilled persons.

WARNING
Incorrect power linking may lead to overload of the electrical circuit and result in serious injuries and damage of property.

To prevent overload of the electrical circuit, when power linking multiple devices:

- Use cables with sufficient current-carrying capacity. The power cable supplied with the device is not suitable for power linking of multiple devices.
- Make sure that the total current draw of the device and all connected devices does not exceed the rated capacity of the power cables and the circuit breaker.
- Do not link more devices on one power link than the maximum recommended number.

Maximum recommended number of devices:
- at 100–120 V: 12 devices Firestorm 4-in-1 Light Effect
- at 200–240 V: 24 devices Firestorm 4-in-1 Light Effect

5. Setup

5.1. Warnings and Precautions

CAUTION
Laser radiation
Avoid direct eye exposure.

CAUTION
Restrict the access of unauthorized persons to the display area during setup, alignment and programming.

During alignment and setup the access of unauthorized persons to the area, where the laser radiation exceeds the spectator MPE, must be restricted. The temporary laser controlled area must be marked accordingly.

Follow all applicable national and site-specific regulations regarding laser safety.

5.2. Stand-alone Setup

When the Firestorm 4-in-1 Light Effect is not connected to a controller or to other devices, it functions as a stand-alone device. It can be operated manually via the control panel and the manual controls or via an optional remote control.

For more information refer to Control Modes (see 6.3. Control Modes on page 22).

5.3. DMX Connection

5.3.1. DMX-512 Protocol

Attention
Connect all data cables before supplying power.
Disconnect power supply before connecting or disconnecting data cables.

You need a DMX serial data link to run light shows of one or more devices using a DMX-512 controller.

The Firestorm 4-in-1 Light Effect has 3-pin DMX signal IN and OUT connectors.

The pin assignment is as follows: pin 1 (ground), pin 2 (-), pin 3 (+).

Devices on a serial data link must be daisy-chained in a single line. The number of devices that you can control on one data link is limited by the combined number of the DMX channels of the connected devices and the 512 channels available in one DMX universe.

To comply with the TIA-485 standard, no more than 32 devices should be connected on one data link. In order to connect more than 32 devices on one data link, you must use a DMX optically isolated splitter/booster, otherwise this may result in deterioration of the DMX signal.

Note:

- Maximum recommended DMX data link distance: 300 m
- Maximum recommended number of devices on a DMX data link: 32 devices

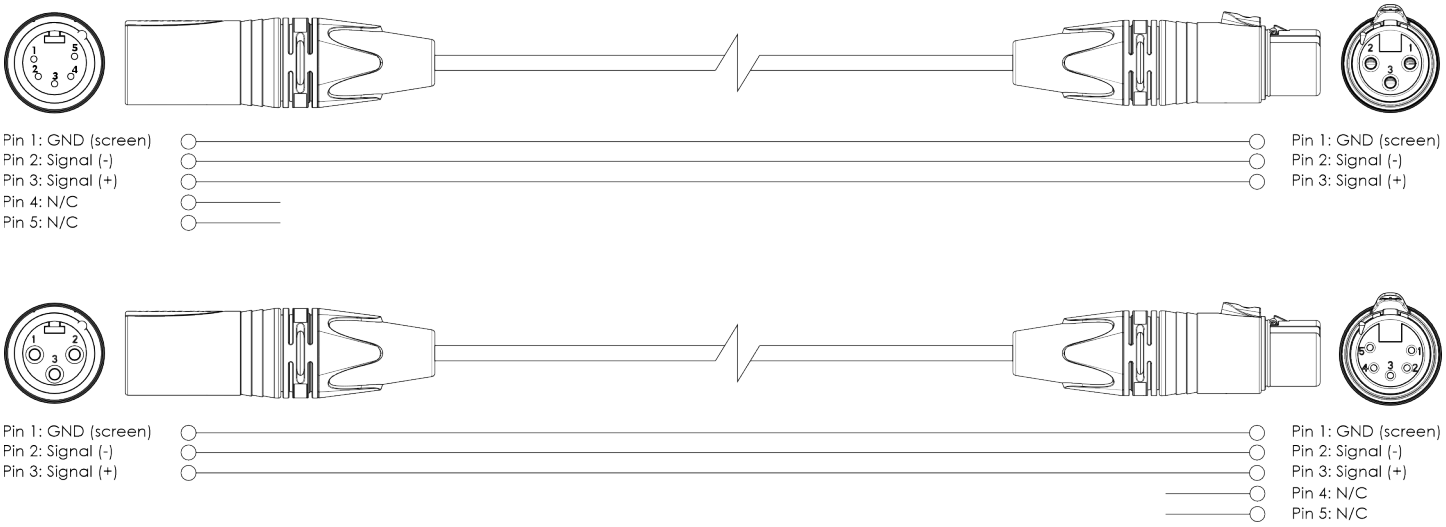
5.3.2. DMX Cables

Shielded twisted-pair cables with 3-pin XLR connectors must be used for reliable DMX connection. You can purchase DMX cables directly from your Highlite International dealer or make your own cables.

If you use XLR audio cables for DMX data transmission, this may lead to signal degradation and unreliable operation of the DMX network.

When you make your own DMX cables, make sure that you connect the pins and wires correctly as shown in the figure below.

Figure 9

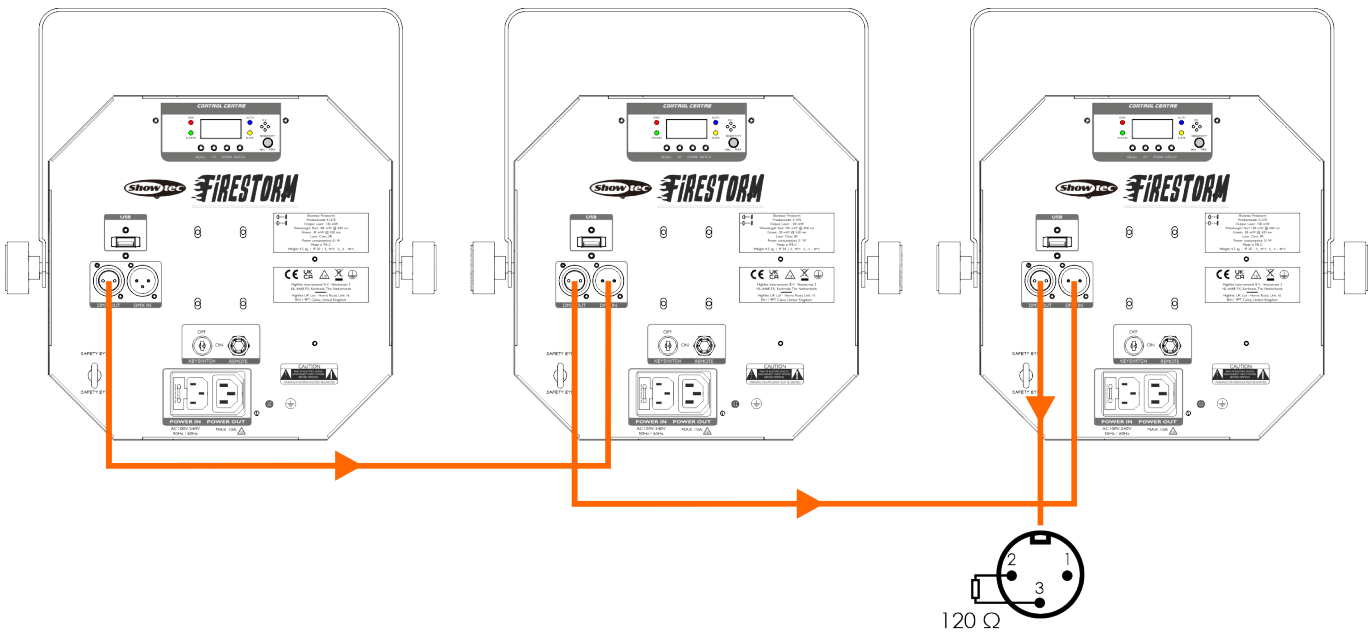


5.3.3. Master/Slave Setup

The Firestorm 4-in-1 Light Effect supports master/slave control mode. To connect multiple devices in a master/slave setup, follow the steps below:

01) Connect the DMX OUT connector of the 1st device to the DMX IN connector of the 2nd device with a 3-pin DMX cable.
02) Repeat step 1 to connect all devices in a daisy-chain.
03) Connect a DMX terminator (120 Ω resistor) to the DMX OUT connector of the last device on the data link.
04) Set the 1st device on the data link as a master device (see 6.7.4. Slave Mode on page 25).
05) Set the remaining devices as slave devices (see 6.7.4. Slave Mode on page 25).

Figure 10

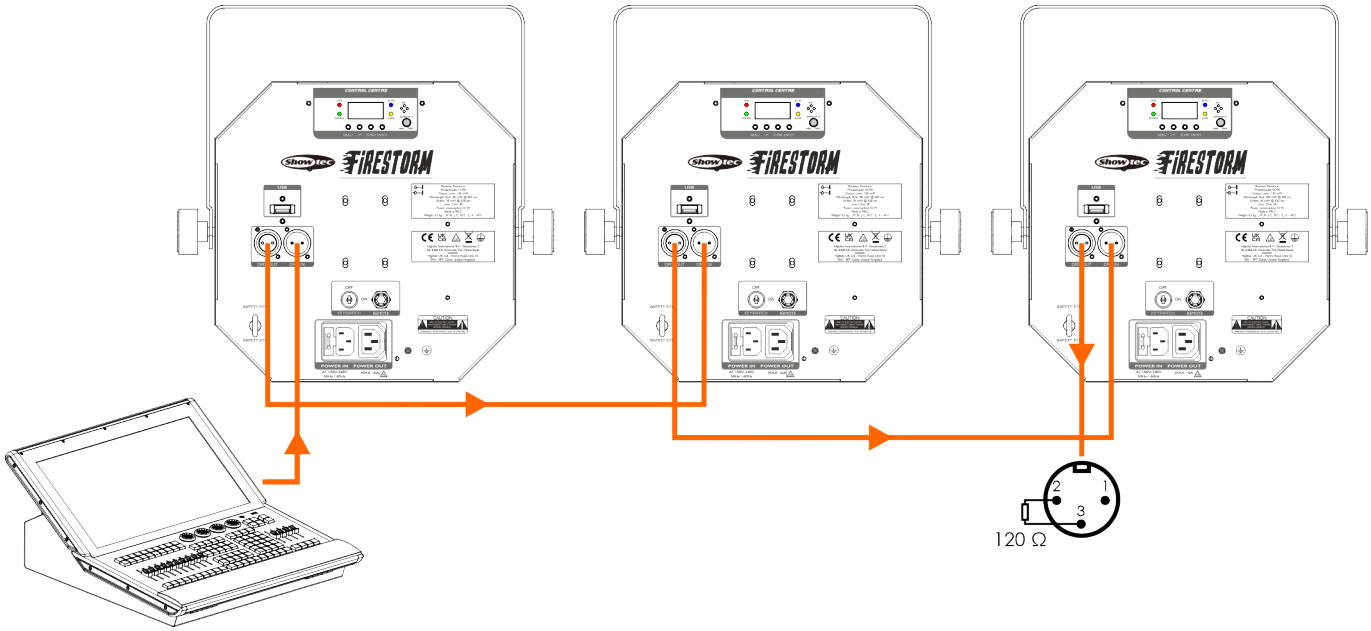


5.3.4. DMX Linking

To connect multiple devices on one DMX data link, follow the steps below:

01) Use a 3-pin DMX cable to connect the DMX OUT connector of the lighting controller to the DMX IN connector of the 1st device.
02) Connect the DMX OUT connector of the 1st device to the DMX IN connector of the 2nd device with a 3-pin DMX cable.
03) Repeat step 2 to connect all devices in a daisy-chain.
04) Connect a DMX terminator (120 Ω resistor) to the DMX OUT connector of the last device on the data link.

Figure 11



5.3.5. DMX Addressing

In a setup with multiple devices, make sure that you set the DMX starting address of each device correctly. The Firestorm 4-in-1 Light Effect has 2 personalities: 2 Ch (2 channels), 18 Ch (18 channels).

If you want to connect multiple devices on one data link and use them in 18-channel mode, for example, follow the steps below:

01) Set the starting address of the 1st device on the data link to 1 (001).
02) Set the starting address of the 2nd device on the data link to 19 (019), as 1 + 18 = 19.
03) Set the starting address of the 3rd device on the data link to 37 (037), as 19 + 18 = 37.
04) Continue assigning the starting addresses of the remaining devices by adding each time 18 to the previous number.

When addressing multiple devices on one data link, make sure that there are no overlapping channels. You cannot control devices individually if they have overlapping channels

6. Operation

6.1. Safety Instructions for Operation

CAUTION
Laser radiation
Avoid direct eye exposure.

This device is a class 3R laser device according to the classification in NEN-EN-IEC 60825-1:2014. It emits visible radiation in the wavelength range 400–700 nm. Accidental exposure to the direct or reflected laser beam presents a low risk. Deliberate exposure to the direct or reflected laser beam can cause eye injury.

Check all applicable national and international regulations concerning laser safety before using this device. The user is responsible for the safety of all persons present during the use of the laser device.

Attention
This device must be used only for the purposes it is designed for.

This device is intended for professional use as a light effect with a laser projector. It can be installed only indoors. This device is not suitable for households and for general lighting.

Any other use, not mentioned under intended use, is regarded as non-intended and incorrect use.

Attention
Power supply

Before connecting the device to the power supply, make sure that the current, voltage and frequency match the input voltage, current and frequency specified on the information label on the device.

6.2. Starting the Device

01) Make sure that all laser safety measures are in place and working (see 2.3. Laser Safety on page 10).
02) Connect all data cables, if applicable (see 5.3. DMX Connection on page 18).
03) Connect the remote interlock to the **remote interlock connector (12)**.
04) Connect the device to the socket-outlet with the power plug. The device is powered.
05) Insert the keys into the **key switch (11)** on the device . The device is now operational.
06) Turn the **key switch (11)** of the device in ON position to turn on the laser beam. The laser emission begins 10 seconds after the laser beam is turned on.

6.3. Control Modes

The Firestorm 4-in-1 Light Effect can be controlled as a stand-alone device, in master/slave mode and with a DMX controller.

The Firestorm 4-in-1 Light Effect supports the following control modes:
- Stand-alone: Auto mode, sound-controlled mode, IR remote control
- Master/save: Auto mode, sound-controlled mode, IR remote control
- DMX-512: 2 channels and 18 channels

For more information about how to connect the devices, refer to Setup (see 5. Setup on page 18).

To run the built-in programs in auto mode without a DMX controller:

01) Select one of the 15 built-in programs in Auto Mode (see 6.7.1. Auto Mode on page 24).
02) Adjust the speed of the built-in program.

To run the built-in programs in sound-controlled mode without a DMX controller:

Select one of the 15 built-in programs in Sound Mode (see 6.7.2. Sound Mode on page 25).

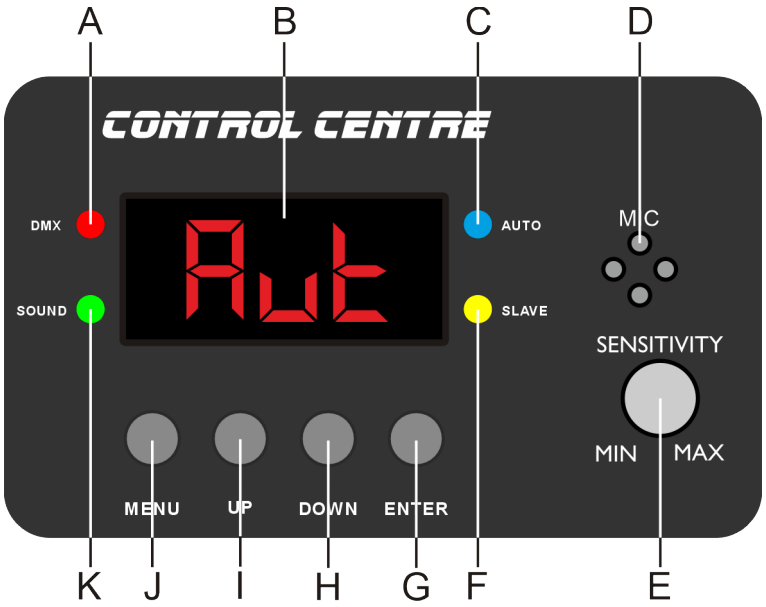
To run the built-in programs in auto operation mode or sound-controlled mode with the IR remote control (see 6.8. Remote Control on page 27).

To operate the device with a DMX controller:

01) Select the DMX channel mode in the DMX Mode menu (see 6.7.3. DMX Mode on page 25).
02) Set the DMX starting address of the device in the DMX Mode menu (see 6.7.3. DMX Mode on page 25).
Refer to DMX Channels (see 6.9. DMX Channels on page 30) for a complete overview of all DMX channels.

6.4. Control Panel

Figure 12



A) DMX LED indicator (red)
B) 7-segment display
C) AUTO LED indicator (blue)
D) Built-in microphone
E) Audio sensitivity control
F) SLAVE LED indicator (yellow)
G) ENTER button
H) DOWN button
I) UP button
J) MENU button
K) SOUND LED indicator (green)

- Use the **MENU** button to exit the current submenu, to return to the Main Menu and to return to the start screen.
- Use the **UP/DOWN** buttons to navigate through the menus or to increase/decrease numeric values.
- Use the **ENTER** button to open the desired menu, to confirm your choice or to set the currently selected value.

6.5. Start-up

Upon start-up, the display shows a splash screen with the software version of the device.

Immediately afterwards, the display shows the start screen. The start screen provides information about the current control mode of the device. For example:

Press the **MENU** button to enter the main menu.

6.6. Menu Overview

Level 1	Level 2	Level 3
Aut (see 6.7.1. Auto Mode on page 24)	AP 1–AP15	S 1–S 99
Sou (see 6.7.2. Sound Mode on page 25)	SP 1–SP15	
DMX (see 6.7.3. DMX Mode on page 25)	2 Ch	d001–d511
	18 Ch	d001–d495
SLA (see 6.7.4. Slave Mode on page 25)	SLAV	
SYS (see 6.7.5. Settings on page 25)	DiSP	on–oFF
	DiSr	on–oFF
	ir	on–oFF
	rESt	no–YES

6.7. Main Menu Options

The main menu has the following options:

Auto mode

Sound mode

DMX mode

Slave mode

Settings

01) Press the **MENU** button to navigate through the main menu.
02) Press the **ENTER** button to open the submenu.

6.7.1. Auto Mode

In this menu you can activate the auto programs and adjust the speed.

AP 1	Wash LEDs + laser + derby LEDs + SMD strobe LEDs
AP 2	Wash LEDs only
AP 3	Laser only
AP 4	Derby LEDs only
AP 5	SMD strobe LEDs only
AP 6	Wash LEDs + laser + derby LEDs
AP 7	Wash LEDs + laser + SMD strobe LEDs
AP 8	Wash LEDs + derby LEDs + SMD strobe LEDs
AP 9	Laser + derby LEDs + SMD strobe LEDs
AP10	Wash LEDs + laser
AP11	Wash LEDs + derby LEDs
AP12	Wash LEDs + SMD strobe LEDs
AP13	Laser + derby LEDs
AP14	Laser + SMD strobe LEDs
AP15	Derby LEDs + SMD strobe LEDs

01) Press the **UP/DOWN** buttons to scroll through the 15 available options.
02) Press the **ENTER** button to confirm the selection and to open the submenu where you can adjust the speed.
03) Press the **UP/DOWN** buttons to adjust the speed of the selected auto programs. The adjustment range is S1–S99, from slow to fast.

6.7.2. Sound Mode

In this menu you can activate sound-controlled mode and select the sound-controlled programs.

Press the **UP/DOWN** buttons to scroll through the 15 available options.

Note:

You can adjust the music-sensitivity of the **built-in microphone (D)** with the **audio sensitivity control (E)**.

6.7.3. DMX Mode

In this menu you can set the channel mode of the device.

01) Press the **UP/DOWN** buttons to select one of the 2 options:

- 2 Ch
- 18 Ch

02) Press the **ENTER** button to confirm the selection and to open the submenu where you can set the DMX starting address of the device.
03) Press the **UP/DOWN** buttons to select the DMX starting address of the device. The selection range depends on the active DMX channel mode. For more information about the channel mode, refer to DMX Mode (see 6.7.3. DMX Mode).
    - d001–d511 (2 channels)
    - d001–d495 (18 channels)
04) Press the **ENTER** button to confirm the selection. For more information about DMX channels, refer to DMX Channels (see 6.9. DMX Channels on page 30).

6.7.4. Slave Mode

In this menu you can set the device as a slave device in a master/slave setup.

Note:

In a master/slave setup, make sure that only one device is set to master device and the remaining devices are set to slave devices. All slave devices will follow the master movement.

6.7.5. Settings

In this menu you can adjust the settings of the device. This menu has the following 4 options:

Display Backlight (see 6.7.5.1. Display Backlight)

Display Invert (see 6.7.5.2. Display Invert)

IR Remote (see 6.7.5.3. IR Remote Control)

Reset (see 6.7.5.4. Reset)

01) Press the **UP/DOWN** buttons to navigate through the menu.
02) Press the **ENTER** button to open the submenu.

6.7.5.1. Display Backlight

In this submenu you can adjust the behavior of the display.

01) Press the **UP/DOWN** buttons to select one of the 2 options:
- On: The display does not return to the start screen and the backlight remains on
- Off: The display turns off after 30 s of inactivity

02) Press the **ENTER** button to confirm the selection.

6.7.5.2. Display Invert

In this submenu you can set the orientation of the display.

01) Press the **UP/DOWN** buttons to select one of the 2 options:
- On: The display is rotated by 180°
- Off: Regular view

02) Press the **ENTER** button to confirm the selection.

6.7.5.3. IR Remote Control

In this submenu you can activate the IR remote control operation.

01) Press the **UP/DOWN** buttons to select one of the 2 options:
- On: Activate the option to operate the device with the included IR remote control
- Off: Deactivate the option to operate the device with the included IR remote control

02) Press the **ENTER** button to confirm the selection.

6.7.5.4. Reset

In this submenu you can reset the settings of the device to the default factory settings.

01) Press the **UP/DOWN** buttons to select one of the 2 options:
- No: Cancel the reset and return to the previous screen
- Yes: Reset to factory default settings

02) Press the **ENTER** button to confirm the selection.

6.8. Remote Control

The device can be operated with an IR remote control. The remote control is included in the delivery.

DANGER
Do not ingest battery, chemical burn hazard.

The remote control contains a coin cell battery. If the coin cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.

The battery is already installed in the remote control. It is protected against discharge by a transparent plastic foil.

- Remove the plastic foil before using the remote control for the first time.
- When replacing the battery, make sure that the polarity is correct. Incorrect polarity may damage the remote control.

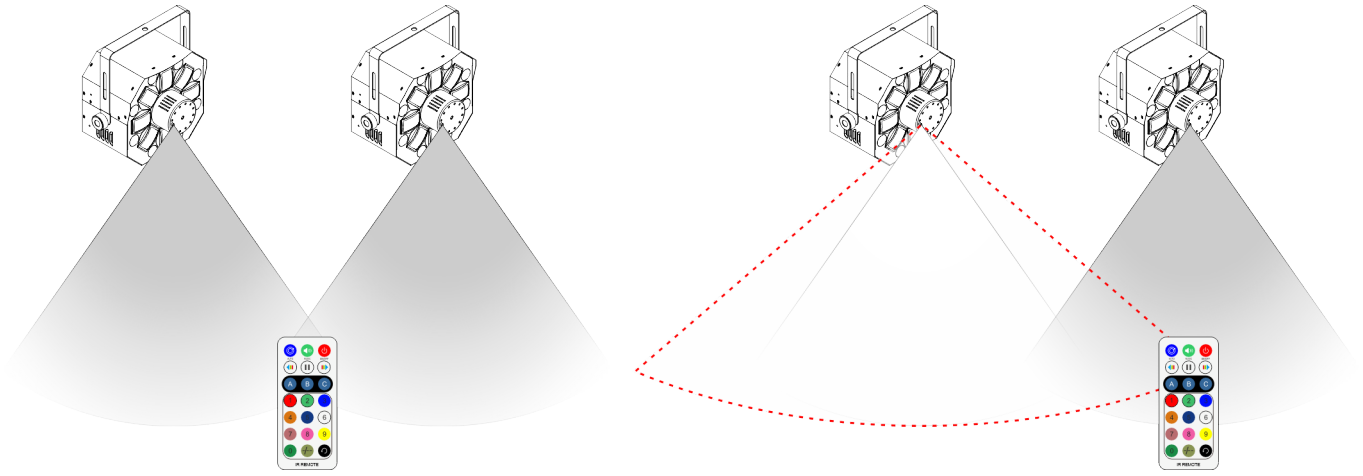
6.8.1. Remote Control Mode

Point the IR remote control to the **IR sensor (06)** to control the device remotely (see 6.7.5.3. IR Remote Control on page 26). Make sure that the you point the remote control in the range of the infrared sensor.

Note:

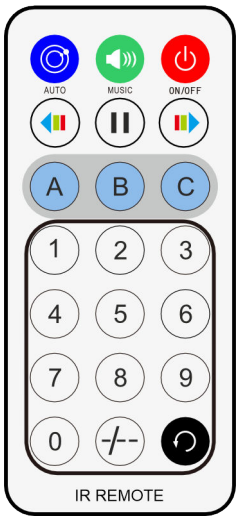
You can control several devices at the same time with the IR remote control.

Figure 13



6.8.2. Functions of the Remote Control Buttons

The buttons of the remote control have the following functions:



Button	Description	Function
	Auto	Auto mode 1–15
	Music	Sound-controlled mode 1–15
	On/Off	Turns all output on/off
	Pause	No function
	Speed	Speed adjustment of the auto programs
A	A	No function
B	B	No function
C	C	No function
1	1	Wash LEDs On/Off
2	2	Derby LEDs On/Off
3	3	Laser On/Off
4	4	SMD Strobe LEDs On/Off
5 - 9	5–9	No function
-/--	-/- -	No function
	Repeat	No function

6.8.3. Remote Control Operation

When you control the device with the IR remote control, the following operation modes are possible:

- IR Auto mode
- IR Sound-controlled mode
- IR Wash LEDs, derby LEDs, laser, SMD strobe LEDs

6.8.3.1. IR Auto Mode

01) Press the **AUTO** button to activate the IR auto mode.
02) Press the **AUTO** button multiple times to select one of the built-in programs. There are 15 built-in programs available.

To change the speed of the built-in program:

Press the left or right **SPEED** buttons to increase or decrease the speed of the selected auto program. You can view the adjustments on the **7-segment display (B)**. The adjustment range is 1–99, from slow to fast.

6.8.3.2. IR Sound-controlled Mode

01) Press the **MUSIC** button to activate the IR sound-controlled mode.
02) Press the **MUSIC** button multiple times to select one of the sound-controlled programs. There are 15 sound-controlled programs available.

To change the sensitivity of the sound-controlled program:

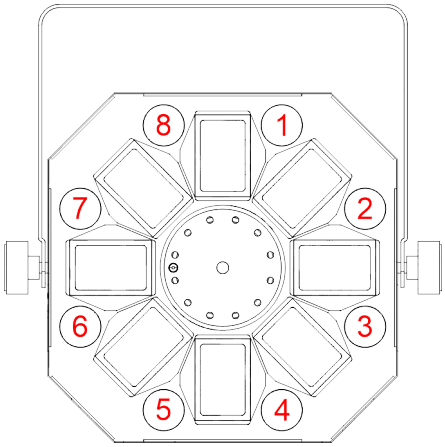
Press the left or right **SPEED** buttons to increase or decrease the sensitivity of the built-in microphone.You can view the adjustments on the **7-segment display (B)**. The adjustment range is 00–31, from off to high sensitivity. If you select a value in the range 01–31, the device runs the selected sound-controlled program reacting to the beat of the music.

6.8.3.3. IR Wash LEDs, Derby LEDs, Laser, SMD Strobe LEDs

You can turn on/off the following effects by pressing buttons 1–4 (see 6.8.2. Functions of the Remote Control Buttons):

01) Wash LEDs
02) Derby LEDs
03) Laser
04) SMD Strobe LEDs

6.9. DMX Channels



Basic 2 CH	Advanced 18 CH	Function	Value	Setting
1	1	Auto Programs	000–015	Black out
			016–030	Wash LEDs only
			031-045	Lasers only
			046–060	Derby LEDs only
			061–075	SMD strobe LEDs only
			076–090	Wash LEDs + lasers + derby LEDs
			091–105	Wash LEDs + lasers + SMD strobe LEDs
			106–120	Wash LEDs + derby LEDs + SMD strobe LEDs
			121–135	Lasers + derby LEDs + SMD strobe LEDs
			136–150	Wash LEDs + lasers
			151–165	Wash LEDs + derby LEDs
			166–180	Wash LEDs + SMD strobe LEDs
			181–195	Lasers + derby LEDs
			196–210	Lasers + SMD strobe LEDs
			211–225	Derby LEDs + SMD strobe LEDs
			226–255	Wash LEDs + lasers + derby LEDs + SMD strobe LEDs
2	2	Auto Program Speed	000–200	Auto Program Speed
			201–255	Auto Program sound-controlled
	3	Wash LEDs Group 1	001–051	Black out
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	4	Wash LEDs Group 2	001–051	Blackout
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	5	Wash LEDs Group 3	001–051	Blackout
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	6	Wash LEDs Group 4	001–051	Blackout
			052–102	Red

Basic 2 CH	Advanced 18 CH	Function	Value	Setting
			103–153	Green
			154–204	Blue
			205–255	UV
	7	Wash LEDs Group 5	001–051	Blackout
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	8	Wash LEDs Group 6	001–051	Blackout
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	9	Wash LEDs Group 7	001–051	Black out
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	10	Wash LEDs Group 8	001–051	Blackout
			052–102	Red
			103–153	Green
			154–204	Blue
			205–255	UV
	11	Wash LEDs Group 1–8 Strobe	000–254	From slow to fast
			255	Sound-controlled strobe
	12	Derby LEDs	000–009	Blackout
			010–014	Red
			015–019	Green
			020–024	Blue
			025–029	Amber
			030–034	White
			035–039	White + Red
			040–044	Red + Green
			045–049	Green + Blue
			050–054	Blue + Amber
			055–059	Amber + White
			060–064	White + Green
			065–069	Green + Amber
			070–074	Amber + Red
			075–079	Red + Blue
			080–084	Blue + White
			085–089	Red + Green + Blue
			090–094	Red + Green + Amber
			095–099	Red + Green + White
			100–104	Red + Amber + Blue
			105–109	Red + White + Blue
			110–114	Red + Amber + White
			115–119	Amber + Green + Blue
			120–124	Blue + Green + White

Basic 2 CH	Advanced 18 CH	Function	Value	Setting
			125–129	Amber + Green + White
			130–134	Amber + White + Blue
			135–139	Red + Green + Blue + Amber
			140–144	Red + Green + Blue + White
			145–149	Green + Blue + Amber + White
			150–154	Red + Green + Amber + White
			155–159	Red + Blue + Amber + White
			160–164	Red + Green + Blue + Amber + White
			165–209	Automatic (Single colors only)
			210–222	Automatic (Two colors at a time)
			223–255	Automatic Sound
	13	Derby LEDs Strobe	000–004	No function
			005–200	From fast to slow
			201–255	Sound-controlled strobe
	14	Mirror Dish rotation Derby LEDs	000–004	Stop
			005–127	Rotate clockwise (slow to fast)
			128–133	Stop
			134–255	Rotate counter-clockwise (slow to fast)
	15	SMD Strobe LEDs	000–009	Blackout
			010–019	Auto program 1 (fast to slow)
			020–029	Auto program 2 (fast to slow)
			030–039	Auto program 3 (fast to slow)
			040–049	Auto program 4 (fast to slow)
			050–059	Auto program 5 (fast to slow)
			060–069	Auto program 6 (fast to slow)
			070–079	Auto program 7 (fast to slow)
			080–089	Auto program 8 (fast to slow)
			090–099	Auto program 9 (fast to slow)
			100–109	Auto program 10 (fast to slow)
			110–119	Auto program 11 (fast to slow)
			120–200	Full on
			201–255	Sound-controlled strobe
	16	Lasers	000–009	Blackout
			010–049	Red
			050–089	Green
			090–129	Green + Red, (alternating strobe if CH17 set between 005–254)
			130–169	Red on + Green strobe (if CH17 set between 005–254)
			170–209	Green on + Red strobe (if CH17 set between 005–254)
			210–255	Red + Green strobe (if CH17 set between 005–254)
	17	Laser Strobe	000–004	No function
			005–254	Strobe (fast to slow)
			255	Sound-controlled strobe
	18	Laser Rotation	000–004	Stop
			005–127	Rotate clockwise (slow to fast)
			128–133	Stop
			134–255	Rotate counter-clockwise (slow to fast)

7. Troubleshooting

This troubleshooting guide contains solutions to problems which can be carried out by an ordinary person. The device does not contain user-serviceable parts.

Unauthorized modifications to the device will render the warranty void. Such modifications may result in injuries and material damage.

Refer servicing to instructed or skilled persons. Contact your Highlite International dealer in case the solution is not described in the table.

Problem	Probable cause(s)	Solution
The device does not function at all	No power to the device	• Make sure that the device is connected to power supply and the cables are plugged in
	Main fuse is blown	• Replace the fuse (see 8.3.1. Replacing the Fuse on page 36)
The device responds erratically	The factory settings of the device are changed	• Reset the parameters of the device to the default factory settings (see 6.7.5.4. Reset on page 26)
The device does not respond to DMX control	The controller is not connected	• Connect the controller
	The signal is reversed. The 3-pin DMX OUT of the controller does not match the DMX IN of the device	• Install a phase-reversing cable between the controller and the device
	The controller is defective	• Try using another controller
The device responds erratically to DMX control	Connections are defective	• Examine connections and cables. Correct defective connections. Repair or replace damaged cables
	The data link is not terminated with a 120 Ω termination plug	• Insert a termination plug in the DMX OUT connector of the last device on the link
	Incorrect addressing	• Make sure that the address settings are correct
	In case of a setup with multiple devices, one of the devices is defective and disturbs data transmission on the link	• To find out the defective device, bypass one device at a time until normal operation is restored
No light or LEDs cut out intermittently	Laser or LEDs are damaged	• Disconnect the device and contact your Highlite International dealer
	The input power parameters of the device do not match the local AC voltage and frequency	• Disconnect the device. Make sure that the local current, voltage and frequency match the input voltage, current and frequency specified on the information label on the device
No light or LEDs cut out intermittently	Laser or LEDs are damaged	• Disconnect the device and contact your Highlite International dealer
	The input power parameters of the device do not match the local AC voltage and frequency	• Disconnect the device. Make sure that the local current, voltage and frequency match the input voltage, current and frequency specified on the information label on the device
The device does not function with the IR remote control	The device does not accept the IR remote	• Check if the IR remote is set to ON in the settings menu (see 6.7.5.3. IR Remote Control on page 26)
	The battery of the IR remote is depleted	• Replace the battery of the IR remote

Problem	Probable cause(s)	Solution
The device does not produce a laser projection	The key switch is not in ON position	• Insert the key switch and turn it in ON position (see 6.2. Starting the Device on page 21)
	The remote interlock connector is not connected	• Connect the remote interlock (see 6.2. Starting the Device on page 21)

8. Maintenance

8.1. Safety Instructions for Maintenance

CAUTION
Laser radiation
Avoid direct eye exposure.

DANGER
Electric shock caused by dangerous voltage inside

Disconnect power supply before servicing or cleaning.

8.2. Preventive Maintenance

Attention
Before each use, examine the device visually for any defects.

Make sure that:

- All screws used for installing the device or parts of the device are tightly fastened and are not corroded.
- The safety devices are not damaged.
- There are no deformations on housings, fixings and installation points.
- The lens is not cracked or damaged.
- The power cables are not damaged and do not show any material fatigue.

8.2.1. Basic Cleaning Instructions

CAUTION
Laser radiation
Avoid direct eye exposure.

To avoid laser emission, remove the key before cleaning the device.

The external lens of the device must be cleaned periodically in order to optimize the light output. The cleaning schedule depends on the conditions at the site where the device is installed. When smoke or fog machines are used at the site, the device will need more frequent cleaning. On the other hand, if the device is installed in well-ventilated area, it will need less frequent cleaning. To establish a cleaning schedule, examine the device at regular intervals during the first 100 hours of operation.

To clean the device, follow the steps below:

01) Disconnect the device from the electrical power supply.
02) Allow the device to cool down for at least 15 minutes.
03) Remove the dust collected on the external surface with dry compressed air and a soft brush.
04) Clean the lens with a damp cloth. Use a mild detergent solution.
05) Dry the lens carefully with a lint-free cloth.
06) Clean the DMX and other connections with a damp cloth.

Attention

- Do not immerse the device in liquid.

- Do not use alcohol or solvents.

Make sure that the connections are fully dry before connecting the device to the power supply and to other devices.

8.3. Corrective Maintenance

The device does not contain user-serviceable parts. Do not open the device and do not modify the device.

Refer repairs and servicing to instructed or skilled persons. Contact your Highlite International dealer for more information.

8.3.1. Replacing the Fuse

DANGER
Electric shock caused by short-circuit

- Do not bypass the thermostatic switch or fuses.
- Replace fuses only with the same type and rating.

Power surges, short-circuit or incorrect electrical power supply may cause a fuse to burn out. If the fuse burns out, the device will not function anymore. If this happens, follow the steps below:

01) Disconnect the device from the electrical power supply.
02) Allow the device to cool down for at least 15 minutes.
03) Pry up the fuse holder, integrated in the power connector, with a flat-blade screwdriver.
04) If the fuse is brown or unclear, it is burned out. Remove the old fuse.
05) Insert a new fuse in the fuse holder. Make sure that the type and the rating of the replacement fuse are the same as the ones specified on the information label of the product.
06) Replace the fuse holder in the opening and push it gently back in place.

9. Deinstallation, Transportation and Storage

9.1. Instructions for Deinstallation

WARNING
Incorrect deinstallation can cause serious injuries and damage of property.

- Let the device cool down before dismounting.
- Disconnect power supply before deinstallation.
- Always observe the national and site-specific regulations during deinstallation and derigging of the device.
- Wear personal protective equipment in compliance with the national and site-specific regulations.

9.2. Instructions for Transportation

- Use the original packaging to transport the device, if possible.
- Always observe the handling instructions printed on the outer carton box, for example: "Handle with care", "This side up", "Fragile".

9.3. Storage

- Clean the device before storing.
- Store the device in the original packaging, if possible.

10. Disposal

Correct disposal of this product

Waste Electrical and Electronic Equipment

This symbol on the product, its packaging or documents indicates that the product shall not be treated as household waste. Dispose of this product by handing it to the respective collection point for recycling of electrical and electronic equipment. This is to avoid environmental damage or personal injury due to uncontrolled waste disposal. For more detailed information about recycling of this product contact the local authorities or the authorized dealer.

11. Approval

Check the respective product page on the website of Highlite International (www.highlite.com) for an available declaration of conformity.

This product is in compliance with NEN-EN-IEC 60825-1:2014.