Show tec ®

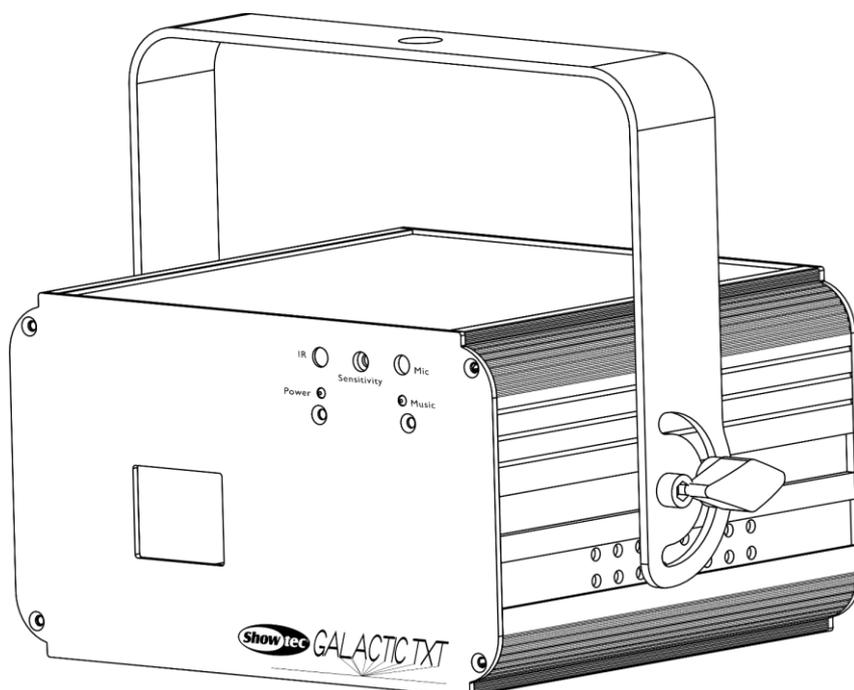**ENGLISH**

Galactic TXT V4

Product code: 51342

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.

Table of contents

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 Galactic TXT
- Schuko to IEC (C13) power cable – 1,75 m
- Remote interlock test connector
- 2 keys for key switch
- Remote control
- Keyboard
- USB extender cable
- PS/2 to USB converter
- User manual
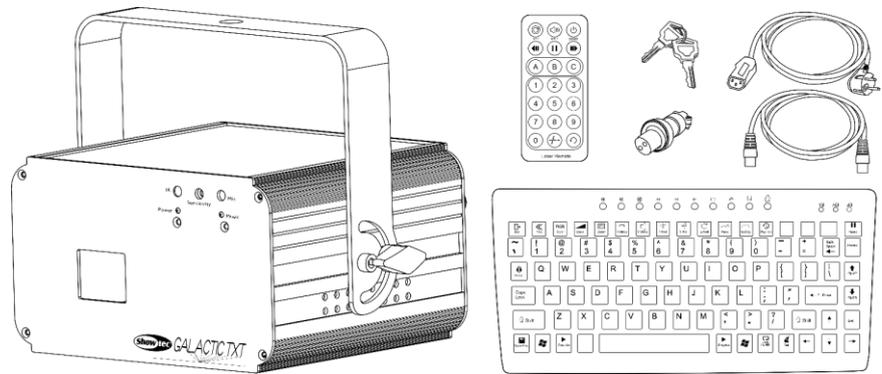
Fig. 01

1.2. Intended Use

This device is intended for professional use as a laser projector to produce laser displays or show effects. It is suitable only for indoor installation. 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. 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 device's lifespan.

1.4. 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 chapters and parts of the device are in bold lettering, for example: "Refer to **2. Safety**", "turn the **adjustment screw (02)**"
- 0–255:   Defines a range of values
- Notes: **Note:** (in bold lettering) is followed by useful information or tips

1.5. 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.
👓	**Attention**	Indicates that eye protection must be used.
📖	**Important**	Read and observe the instructions in this document.
⚡	**Electrical hazard**	
☢	**Laser beam hazard**	
🗑		Provides important information about the disposal of this product.

1.6. Labels

This device is a class 3B laser device and is provided with the following labels and hazard warnings. Refer to Fig. 02 for the position of the labels.

1	⚠	CAUTION - CLASS 3B LASER LIGHT WHEN OPEN **AVOID EXPOSURE TO BEAM**	CAUTION Class 3B laser light when open Avoid exposure to beam
2	⚠	LASER LIGHT **AVOID EXPOSURE TO BEAM** CLASS 3B LASER PRODUCT	Laser Light Avoid exposure to beam Class 3B laser product
3		☢→	Avoid exposure – laser radiation is emitted from this aperture
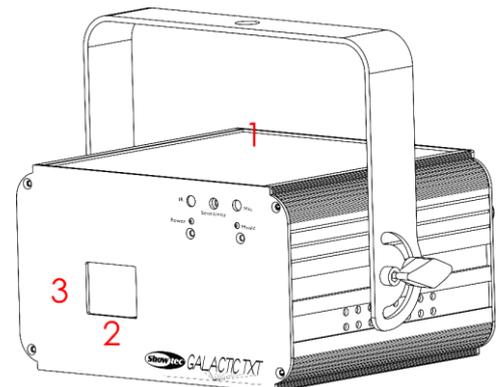
Fig. 02

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 various parts of the packaging (plastic bags, polystyrene foam, nails, etc.) within children's reach. Packaging material is a potential source of danger for children.

> **DANGER**
> **Electric shock caused by dangerous voltage inside**

There are areas within 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 is open. Before operation, check if the housing is firmly closed and all screws are tightly fastened.
● Disconnect the device from 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 ground (earth) connection.
● Do not cover the ground (earth) connection.
● Do not bypass the thermostatic switch or fuses.
● For replacement use fuses of the same type and rating only.
● 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.

> **WARNING**
> **Laser radiation**
> **Avoid exposure to beam.**

This device is a class 3B laser device according to the classification in NEN-EN-IEC 60825-1:2014. It emits visible radiation in the wavelength range 400–700 nm. Exposure to the direct or reflected laser beam, including accidental short term exposure, is hazardous to the eye. Focused laser beam can cause minor skin injuries.

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 expose users of telescopic optics, such as binoculars, to this device.
- 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 people or animals.
- Make sure that the beam is terminated on a non-reflective and non-combustible surface.
- Do not point the laser beam at reflective surfaces such as windows, mirrors and shiny metal.
- Do not operate the device without supervision.

> **Attention**
> **Risk of fire**

If the beam is continuously pointed at one place from a close distance, the laser beam can burn materials.

- Do not point the laser beam at materials susceptible to burning.

> **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 the air vents.
- Do not connect the device to a dimmer pack.
- Do not switch the device on and off in short intervals. This decreases the device's life.
- Do not shake the device. Avoid brute force when installing or operating the device.
- 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.

Show tec

- If the device fails to work properly, discontinue the use immediately.

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

This device is designed to be used as a professional 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, fixations and installation points.
- The lens is 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 can 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 operation, 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 to avoid hazards associated with the operation, installation, service and maintenance of this product.

Ordinary persons are all persons other than instructed persons and skilled persons.

2.3. Laser Safety

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

Check all applicable national and international regulations concerning laser safety before using 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 only 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 that unauthorized and untrained persons can operate the device. If the key is removed, you cannot operate the device.

The remote interlock connector permits the connection of a remote interlock (not supplied). When you press the remote interlock, the laser radiation is terminated immediately. We recommend that you purchase a remote interlock. Check the 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.

2.5. Personal Protective Equipment

> **Attention**
> **Use laser protective eyewear during alignment and setup.**

Wearing of laser protective eyewear is recommended for Class 3B lasers. Make sure you follow any applicable national and site-specific regulations.

During alignment and setup use protective eyewear that complies with the requirements of EN 208. In all other cases laser protective eyewear must be in compliance with EN 207.

3. Description of the Device

The Showtec Galactic TXT is a text laser projector, which makes it possible to write your own text. It is delivered with a separate keyboard and a remote control.

3.1. Front View

<div align="right">
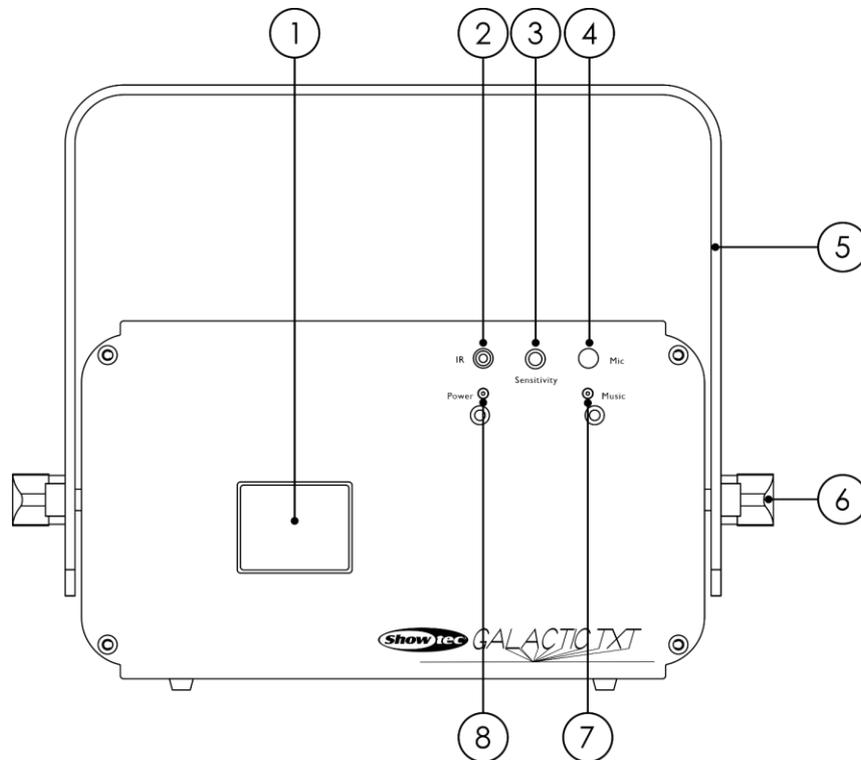
Fig. 03

</div>

01) Laser beam aperture
02) Infrared sensor
03) Sound sensitivity control
04) Built-in microphone
05) Mounting bracket
06) 2 adjustment screws
07) Sound control LED indicator
08) Power LED indicator

3.2. Back View
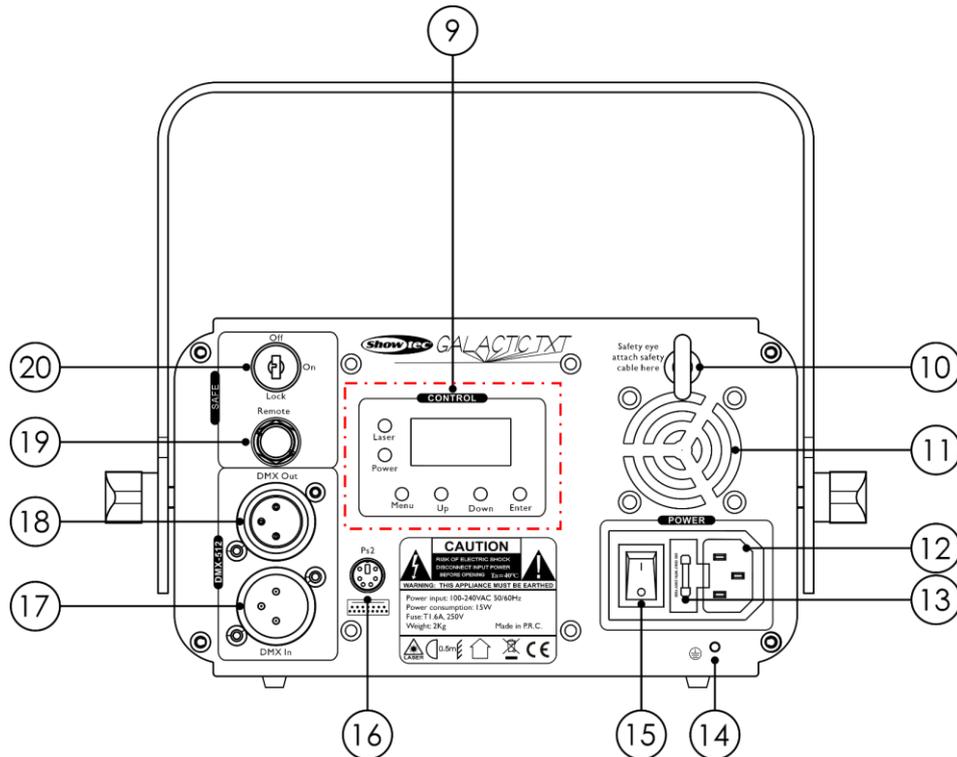
Fig. 04

09) Control panel: 4-digit LED display, control buttons and LED indicators
10) Safety eye
11) Cooling fan
12) IEC (C14) power connector IN, 100–240 V
13) Fuse T1,6 A, 250 V
14) Ground (earth) connection
15) Power switch ON/OFF
16) PS/2 connector for keyboard
17) 3-pin DMX connector IN
18) 3-pin DMX connector OUT
19) Remote interlock connector
20) Key switch

3.3.   Product Specifications

Model:	Galactic TXT

Electrical:	
Input voltage:	100–240 V AC, 50/60 Hz
Power consumption:	15 W
Fuse:	T1,6 A, 250 V

Physical:	
Dimensions:	225 x 190 x 185 mm (L x W x H) (with bracket)
Weight:	2 kg (without accessories)

Laser:	
Laser class:	3B
Laser power:	650 nm = 110 mW (red) 530 nm = 40 mW (green) 450 nm = 80 mW (blue)
Laser modulation:	TTL
Beam diameter at aperture:	4 mm
Beam divergence:	1,8 mrad
NOHD:	92 m (P total output power all beams = 230 mW)
MPE:	25 W·m^{-2} for exposure duration of 0,25 s

Scanning system:	
Scanner speed:	10K
Scan angle:	± 30°

Operation and control:	
Control:	Stand-alone (auto, manual, sound-controlled) Master/Slave (auto, manual, sound-controlled) DMX-512
DMX channels:	20 channels
Control panel:	4-digit LED display, control buttons and LED indicators

Connections:	
Power connections:	IEC (C14) power connector IN, 100–240 V
Data connections:	3-pin DMX connectors IN/OUT
Signal pinouts:	pin 1 (ground), pin 2 (-), pin 3 (+)

Construction:	
Housing:	Metal and flame-retardant plastic
Color:	Black
IP rating:	IP20
Cooling:	Cooling fan

Thermal:	
Maximum ambient temperature t_a:	40 °C
Minimum ambient temperature:	10 °C
Maximum housing temperature t_c:	50 °C

3.4. Dimensions

190 mm

190 mm

225 mm

Fig. 05

135 mm

115 mm

165 mm

185 mm
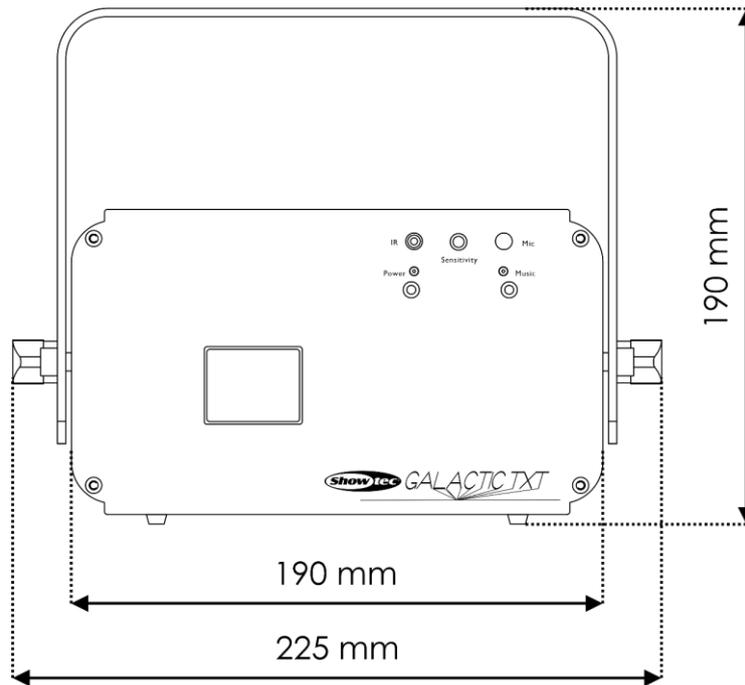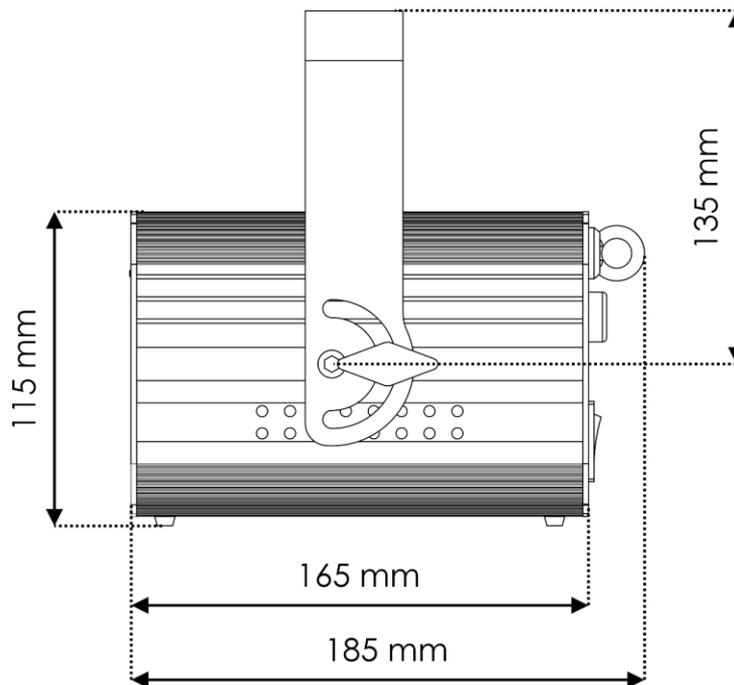
Fig. 06

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.

This zone may exceed spectator MPE under operator supervision

Audience < spectator MPE

2,5 m   3 m   2,5 m

Barrier   Barrier
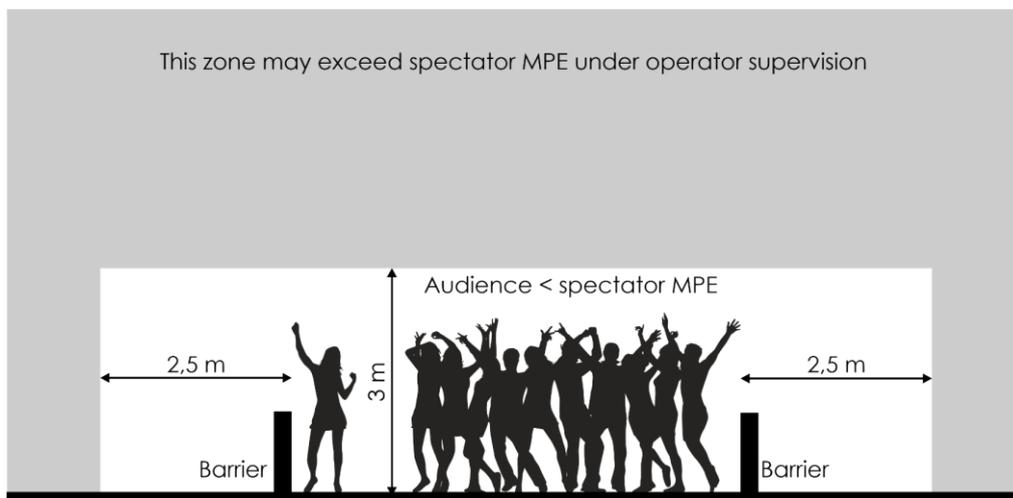
Fig. 07

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.

This zone may exceed 5 x spectator MPE

6 m minimum height above floor

Audience < 5 x spectator MPE

Audience < spectator MPE

2,5 m   3 m   2,5 m

Barrier   Barrier
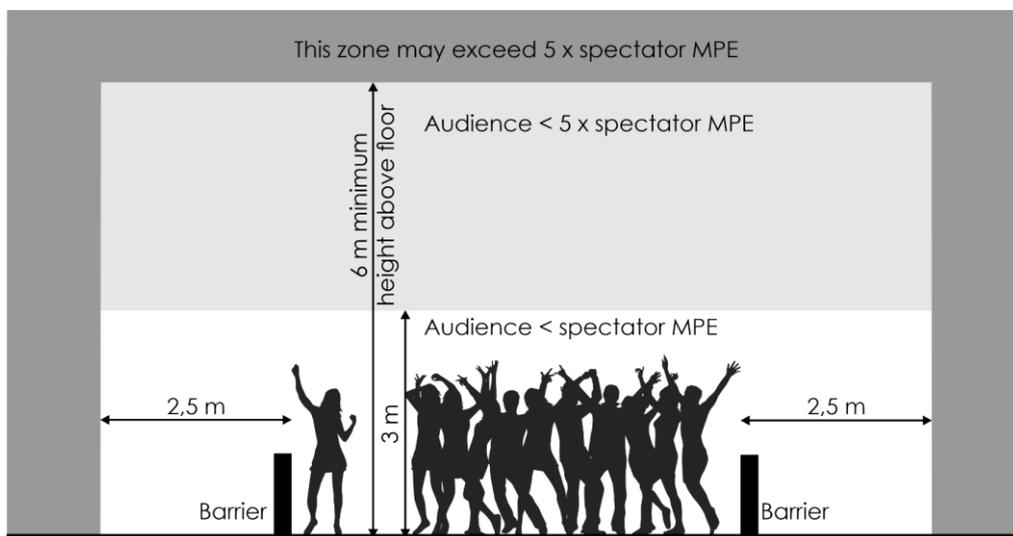
Fig. 08

4.2. Personal Protective Equipment

During installation 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 minimum distance to other objects must be bigger than 0,5 m.
● 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. 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 and/or derigging.**

To mount the device, follow the steps below:

01) Use a clamp to attach the device to the supporting structure, as shown in Fig. 09. 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 (10)**, as shown in Fig. 09.

Safety cable

Clamp
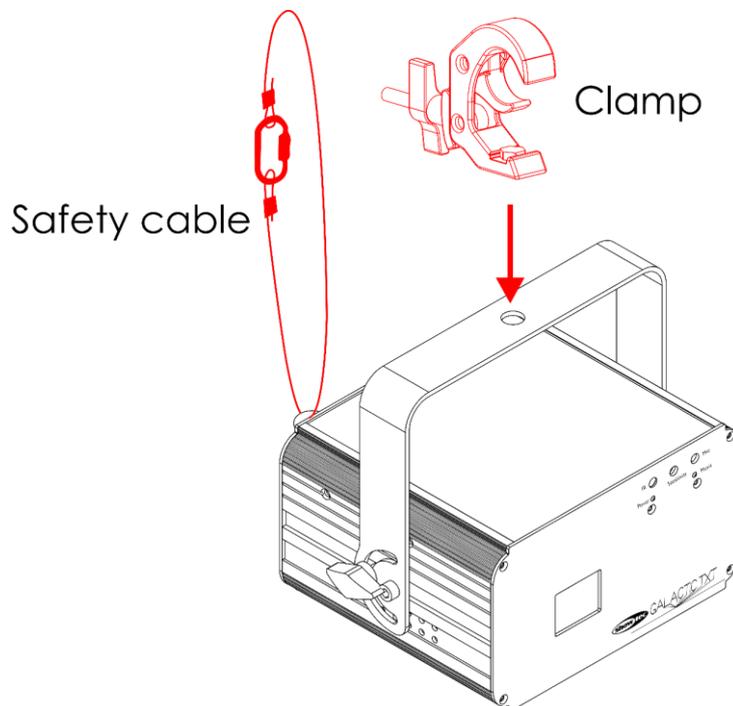
Fig. 09

4.4.1. Angle Adjustment

You can adjust the angle of the device with the **adjustment screws (06)**.

01) Turn the **adjustment screws (06)** counterclockwise to release them.
02) Tilt the device at the desired angle (see Fig. 10).
03) Turn the **adjustment screws (06)** clockwise to tighten them. Make sure that the device cannot move freely after the **adjustment screws (06)** are tightened.
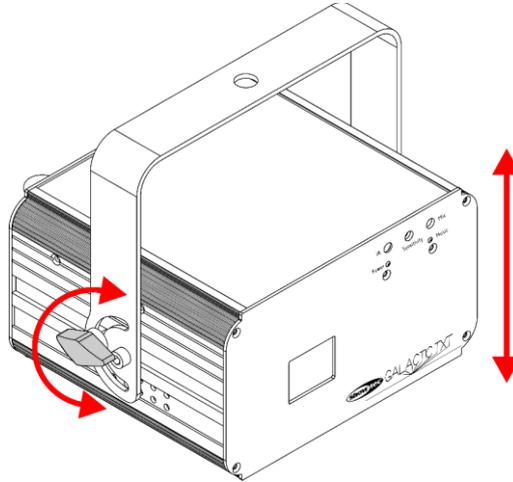
4.5. Connecting to Power Supply

> ⚡ **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.

5. Setup

5.1. Warnings and Precautions

	WARNING **Laser radiation** **Avoid exposure to beam.**

	Attention **Use laser protective eyewear during alignment and setup.**

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 Galactic TXT is not connected to a controller or to other devices, it functions as a stand-alone device. It can be operated manually with the control panel, the keyboard, or the remote control.

5.3. DMX Connection

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

5.3.1. DMX-512 Protocol

You need a DMX serial data link to run light shows of one or more devices using a DMX-512 controller or to run synchronized shows of two or more devices set in a master/slave operating mode.

The Galactic TXT has 3-pin DMX signal IN and OUT connectors.

The pin assignment is as follows:
● 3-pin: 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/5-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 Fig. 11.

Pin 1: GND (screen)   Pin 1: GND (screen)
Pin 2: Signal (-)   Pin 2: Signal (-)
Pin 3: Signal (+)   Pin 3: Signal (+)
Pin 4: N/C
Pin 5: N/C

Pin 1: GND (screen)   Pin 1: GND (screen)
Pin 2: Signal (-)   Pin 2: Signal (-)
Pin 3: Signal (+)   Pin 3: Signal (+)
                             Pin 4: N/C
                             Pin 5: N/C
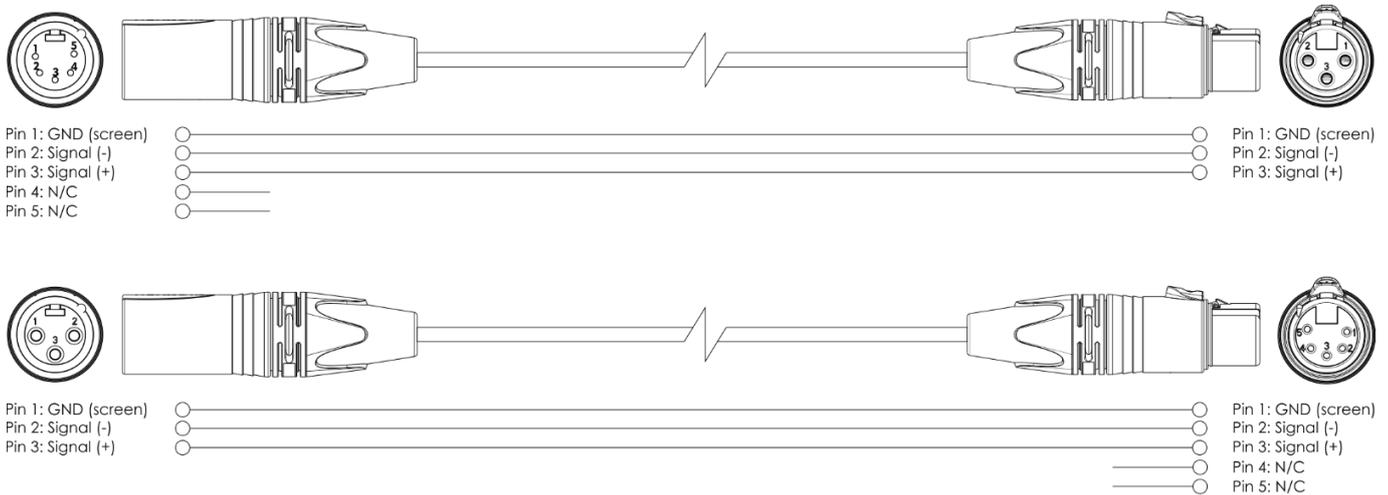
Fig. 11

5.3.3. Master/Slave Setup

The Galactic TXT supports master/slave control mode. To connect multiple devices in a master/slave setup, follow the steps below:

01) Connect the first device's DMX OUT connector to the second device's DMX IN connector with a 3-pin DMX cable.
02) Repeat step 1 to connect all devices as shown in Fig. 12.
03) Connect a DMX terminator (120 Ω resistor) to the DMX OUT connector of the last device in the setup.
04) Set the first device on the data link as a master device. See **6.6.8. System Settings** on page 27 for more information.
05) Set the remaining devices as slave devices. See **6.6.7. Slave Mode** on page 27 for more information.
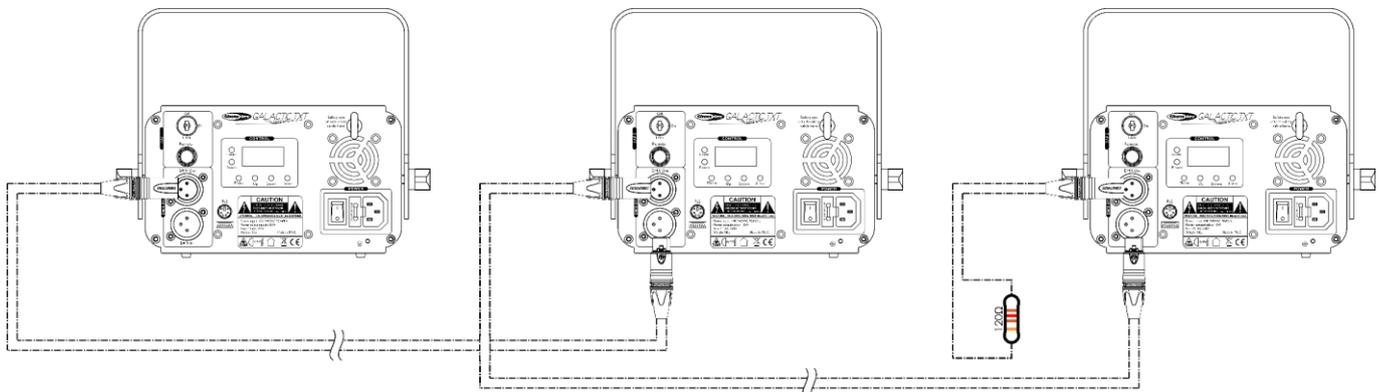
Fig. 12

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 first device.
02) Connect the first device's DMX OUT connector to the second device's DMX IN connector with a 3-pin DMX cable.
03) Repeat step 2 to connect all devices in a daisy-chain as shown in Fig. 13.
04) Connect a DMX terminator (120 Ω resistor) to the DMX OUT connector of the last device on the data link.
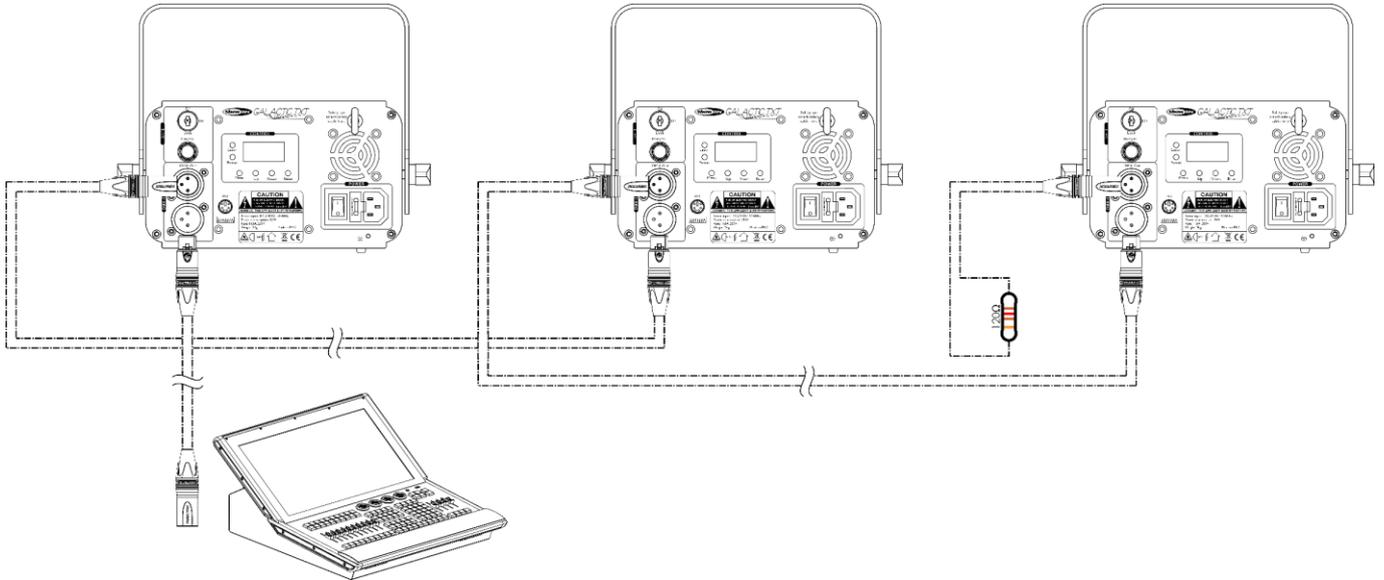
Fig. 13

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 Galactic TXT has 1 personality with 20 channels.

If you want to connect multiple devices on one data link, 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 21 (021), as 1 + 20 = 21.
03) Set the starting address of the 3rd device on the data link to 41 (041), as 21 + 20 = 41.
04) Continue assigning the starting addresses of the remaining devices by adding each time 20 to the previous number.

Make sure that you do not have any overlapping channels in order to control each Galactic TXT correctly. If two or more devices are addressed similarly, they will work similarly.

5.4. Keyboard Connection

To connect the keyboard to the device:

01) Insert the supplied PS/2 to USB converter into the **PS/2 connector for keyboard (16)** on the device.
02) Connect the USB cable of the keyboard to the USB port of the PS/2 to USB converter. You can use the USB extender cable, if necessary.

6. Operation

The device can be operated with a DMX controller or manually.

Manual operation can be done using:

- the control panel
- the keyboard, or
- the remote control.

6.1. Safety Instructions for Operation

> **WARNING**
> **Laser radiation**
> **Avoid exposure to beam.**

This device is a class 3B laser device according to the classification in NEN-EN-IEC 60825-1:2014. The device can be operated only by instructed or skilled persons.

- Check all applicable national and international regulations concerning laser safety before operating this device.

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

This device is intended for professional use as a laser projector to produce laser displays or show effects. It is suitable only for indoor installation. This device is not suitable for households.

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. Control Modes

The Galactic TXT supports the following control modes:
- Stand-alone: Auto mode (built-in shows), text mode, time mode, countdown mode, sound-controlled mode (built-in shows)
- Master/Slave: Auto mode (built-in shows), text mode, time mode, countdown mode, sound-controlled mode (built-in shows)
- DMX-512:   20 channels

6.3. Starting the Device

01) Make sure that all laser safety measures are in place and working. See **2.3. Laser Safety** on page 9 for more information.
02) Connect all data cables, if applicable. See **5.3. DMX Connection** on pages 17–19 for more information.
03) Connect the external keyboard, if necessary. See **5.4. Keyboard Connection** on page 19 for more information.
04) Connect the remote interlock (or emergency switch) to the **remote interlock connector (19)**. See **2.4. Safety Devices** on page 9 for more information. For programming purposes you may use the supplied test connector.

Note:

- If the test connector is not inserted into the remote interlock connector, you cannot operate the device. The device will power up, but it will not produce a laser beam.
- The remote interlock is not supplied. You can purchase a remote interlock from your Highlite International dealer. Check your local regulations, as in some countries it is not allowed to operate the device without a remote interlock.

05) Connect the device to the socket-outlet with the power plug. See. **4.5. Connecting to Power Supply** on page 16 from more information.
06) Press the **power switch (15)** in ON position to power on the device. The **power LED indicators (08)** and **(F)** turn on. The display shows a splash screen with the current version of the firmware:

07) Insert the key into the **key switch (20)**. The device is now operational. Turn the **key switch (19)** into ON position to turn on the laser beam. The **laser LED indicator (G)** turns on. See **2.4. Safety Devices** on page 9 for more information.

6.4. Menu Overview
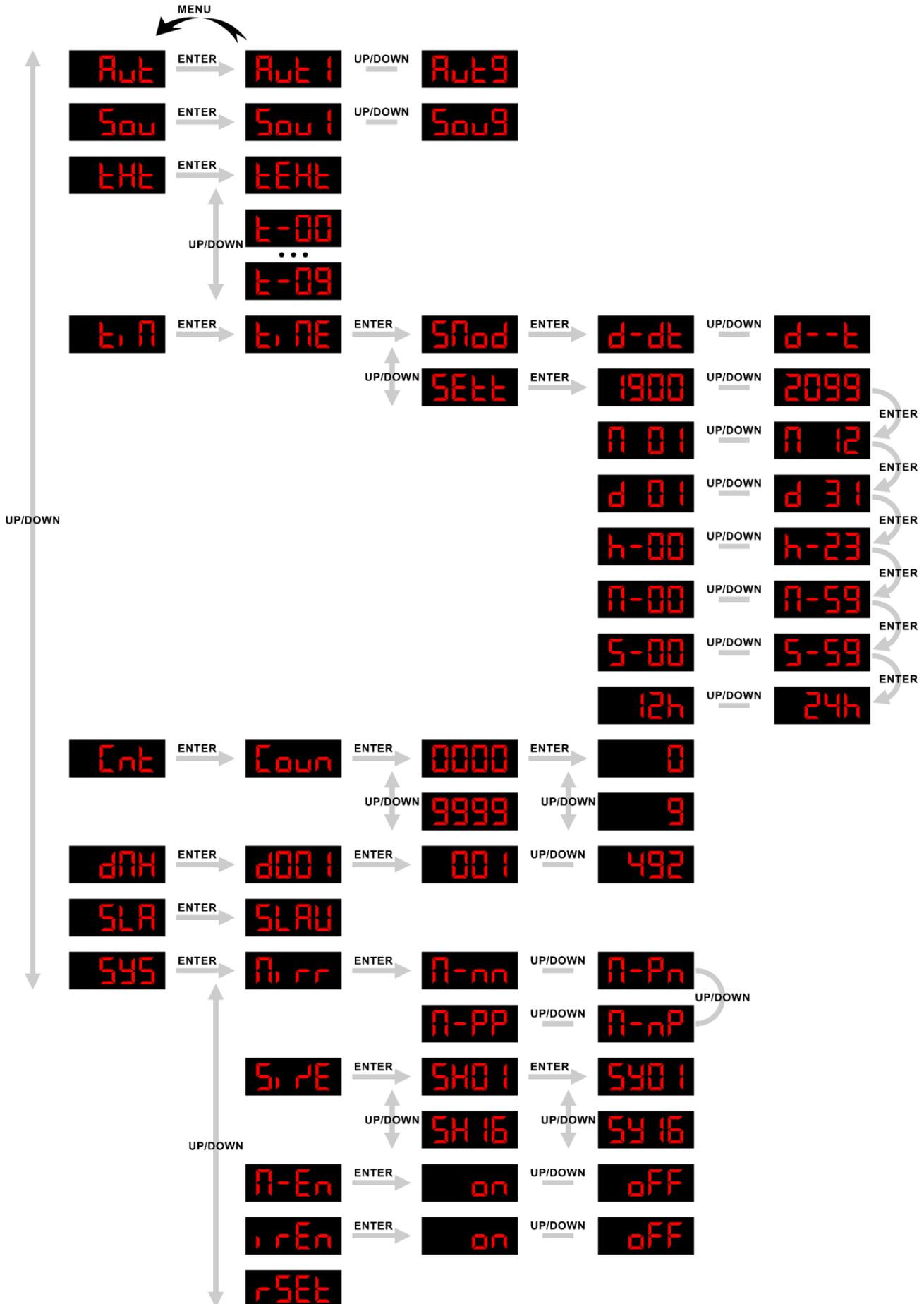
6.5. Main Menu Options

From the main menu you can access the following operating modes:

Aut	1. Show mode	**Cnt**	5. Countdown mode
Sou	2. Music mode	**dMH**	6. DMX mode
tHt	3. Text mode	**SLA**	7. Slave mode
tiM	4. Time mode	**SYS**	8. System settings

If the device is not connected to a DMX controller, you can operate the device using:

- the control panel
- the keyboard, or
- the remote control.

If the laser beam is turned on, the menu options are projected and any changes are displayed in real time.

6.6. Control Panel Operation

A) 4-digit LED display
B) ENTER button
C) DOWN button
D) UP button
E) MENU button
F) Power LED indicator (white)
G) Laser LED indicator (red)
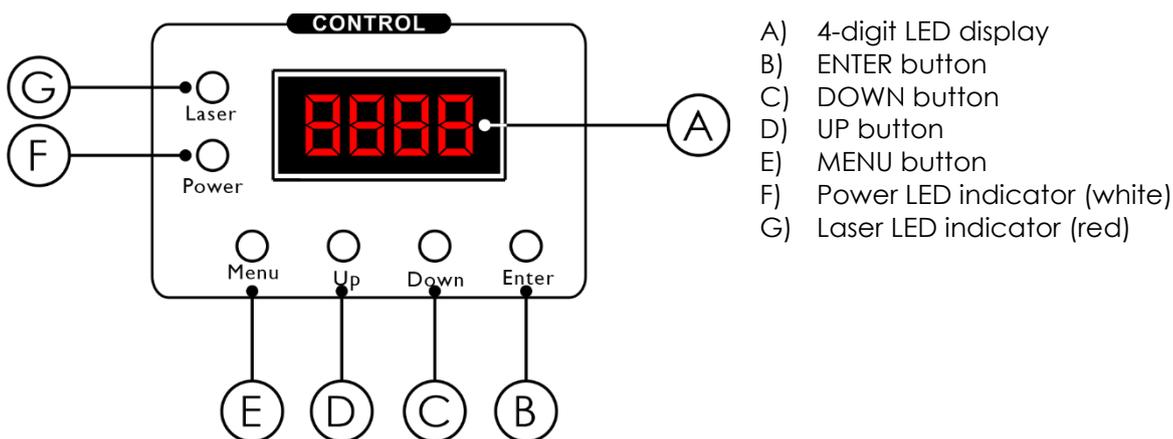
Fig. 14

- Use the **MENU** button to exit the current submenu, to return to the main menu and to navigate through the main menu.
- 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.

6.6.1. Show Mode

In this menu you can play the built-in shows.

01) Press the **ENTER** button to enter show mode.
02) Press the **UP/DOWN** buttons to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.
03) Press the **ENTER** button to confirm the selection and play the show.

6.6.2. Music Mode

In this menu you can activate sound-controlled mode.

01) Press the **ENTER** button to enter music mode.
02) Press the **UP/DOWN** buttons to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.
03) Press the **ENTER** button to confirm the selection. The device plays the show, reacting to the beat of music.

6.6.3. Text Mode

In this menu you can play the custom texts.
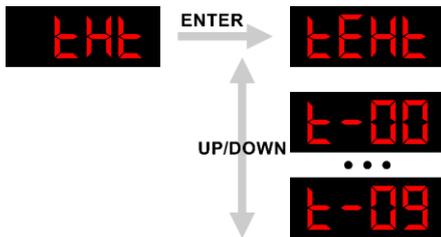
01) Press the **ENTER** button to enter text mode.
02) Press the **UP/DOWN** buttons to select the custom texts. The following options are available:

All custom texts are played in a loop.

The selected custom text is played. The selection range is 00–09.

03) Press the **ENTER** button to confirm the selection and play the text.

Note: Refer to **6.7. Keyboard Operation** on pages 28–35 for more information on editing and saving custom texts.

6.6.4. Time Mode

In this menu you can activate time mode and adjust the time settings.
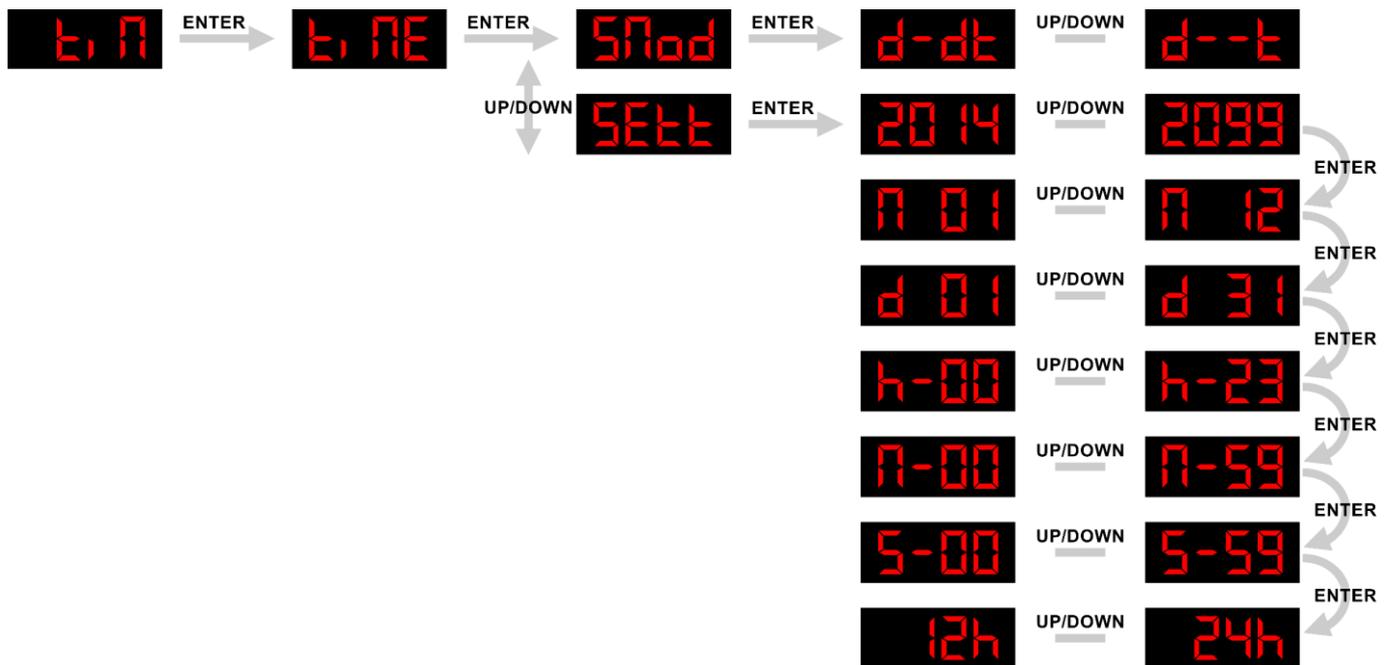
01) Press the **ENTER** button to activate time mode. The time is projected.
02) Press the **ENTER** button to enable time editing mode.
03) Press the **UP/DOWN** buttons to select one of the following 2 options:

SNod	Time format, see **6.6.4.1. Time Format** for more information
SEtt	Time settings, see **6.6.4.2. Time Settings** for more information

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

6.6.4.1. Time Format

In this submenu you can select how the time is shown.

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

d-dt	Show time and date
d--t	Show only time

The time is shown in the chosen format.

6.6.4.2. Time Settings

In this submenu you can set the date and time.

01) Press the **UP/DOWN** buttons to adjust the time and date parameters.
02) Press the **ENTER** button to confirm the current setting and to move to the next one. The following parameters can be adjusted:

1900	Year, the adjustment range is 1900–2099
N 01	Month, the adjustment range is 01–12

d 01	Day, the adjustment range is 01–31
h-00	Hour, the adjustment range is 00–11
N-00	Minute, the adjustment range is 00–59
5-00	Second, the adjustment range is 00–59
12h	Time display format. There are 2 options available: 12-hour format and 24-hour format

6.6.5. Countdown Mode

In this menu you can activate countdown mode and adjust the settings of the countdown.
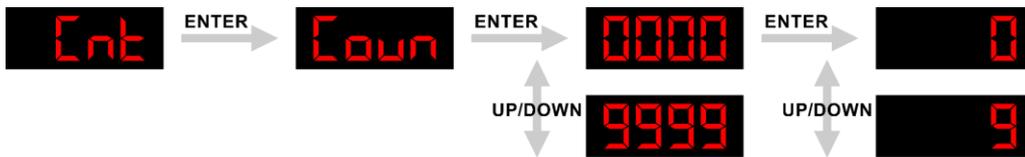
To set the countdown:

01) Press the **ENTER** button to enter countdown mode. The countdown is projected.
02) Press the **ENTER** button to enable countdown editing mode. The countdown projection starts blinking.
03) Press the **UP/DOWN** buttons to set the starting number of the countdown. The adjustment range is 0000–9999.
04) Press the **ENTER** button to confirm the setting.
05) Press the **UP/DOWN** buttons to select one of the 10 custom texts to be displayed after the countdown. The selection range is 0–9.
06) Press the **ENTER** button to confirm the selection.

To play the countdown:

01) Press the **ENTER** button to enter countdown mode. The countdown is projected.
02) Press the **UP** or the **DOWN** button to play the countdown.
   ● To pause the countdown, press the **UP** or the **DOWN** button.
   ● To resume the countdown, press the **UP** or **DOWN** button again.

6.6.6. DMX Mode

In this menu you can enable DMX control mode and set the DMX starting address of the device.

01) Press the **ENTER** button to enable DMX control mode. The display shows the current DMX starting address. If there is no DMX connection, the display is blinking.

Note: If you exit DMX mode, the DMX connection will be discontinued and the device will not react to the DMX controller.

02) Press the **ENTER** button to enable the DMX address adjustment.
03) Press the **UP/DOWN** buttons to select the DMX starting address. The selection range is 001–492.
04) Press the **ENTER** button to confirm the selection.

6.6.7. Slave Mode

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

Press the **ENTER** button to set the device as a slave device.

6.6.8. System Settings

In this menu you can configure the show parameters and the device's parameters.

01) Press the **ENTER** button to enable the configuration of the parameters.
02) Press the **UP/DOWN** buttons to select one of the parameters. There are 5 options available:

	Set mirror, see **6.6.8.1. Set Mirror** for more information
	Set size, see **6.6.8.2. Set Size** for more information
	Master device. Select ON/OFF to enable/disable the device as a master device in master/slave control mode
	IR remote control. Select ON/OFF to enable/disable control with the IR remote control
	Reset to factory default settings

03) Press the **ENTER** button to confirm the selection.
04) Press the **UP/DOWN** buttons to scroll through the available settings.
05) Press the **ENTER** button to set the parameter.

6.6.8.1. Set Mirror

In this submenu you can flip the projection in 4 directions.

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

	Horizontal and vertical mirror effect
	Vertical mirror effect

 Horizontal mirror effect

 Normal view

02) Press the **ENTER** button to set the parameter.

6.6.8.2. Set Size

In this submenu you can adjust the width and the height of the projection (zoom in/out).

01) Press the **UP/DOWN** buttons to adjust the width (X axis). The adjustment range is 01–16.
02) Press the **ENTER** button to set the value and to enable the adjustment of the height.
03) Press the **UP/DOWN** buttons to adjust the height (Y axis). The adjustment range is 01–16.
04) Press the **ENTER** button to set the value.

6.7. Keyboard Operation

The device can be operated with a keyboard. The keyboard is included in the delivery. Refer to
5.4. Keyboard Connection on page 19 for more information about how to connect the keyboard to the
device.
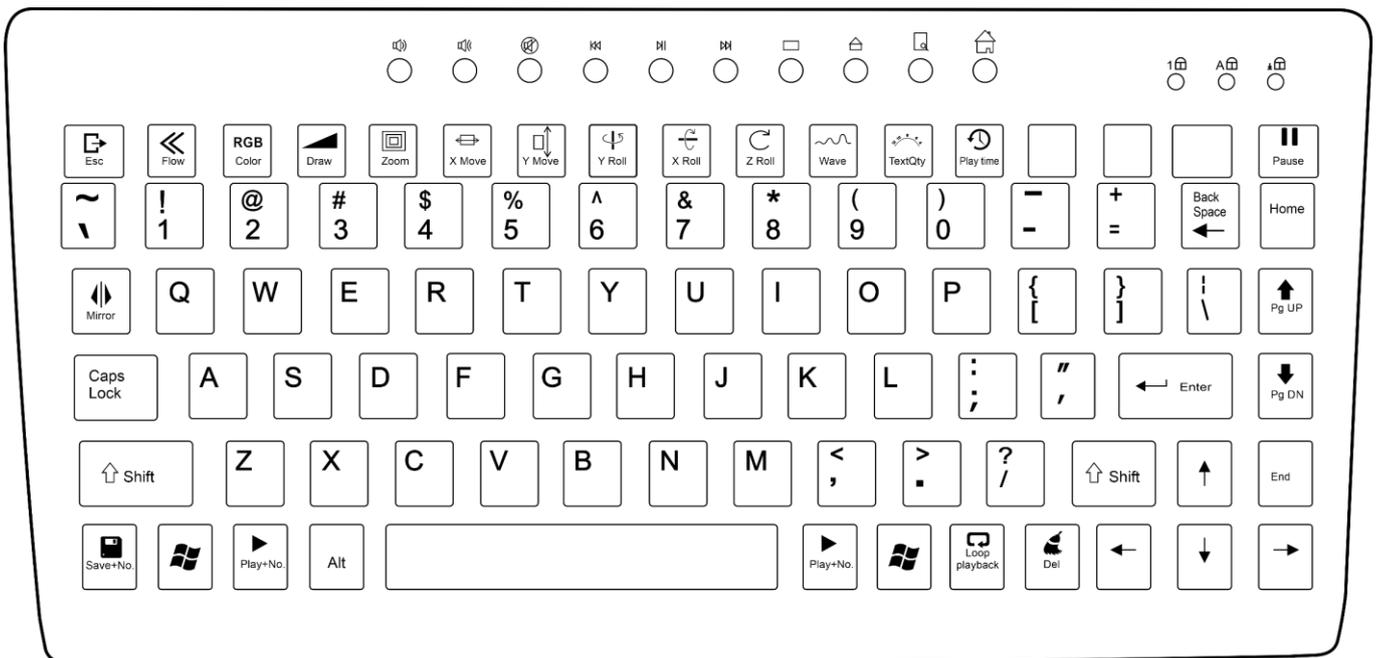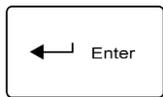

Fig. 15

Key	Name	Function
	WIN	Use the **WIN** key to open the main menu.
	UP/DOWN ARROW	Use the **UP/DOWN ARROW** keys to navigate through the menus and to increase/decrease numeric values.

[← Enter]	**ENTER**	Use the **ENTER** key to open the desired menu, to confirm your choice or to set the currently selected value.
[→]	**RIGHT ARROW**	Use the **RIGHT ARROW** key to go to the next submenu item.
[←]	**LEFT ARROW**	Use the **LEFT ARROW** key to return to the previous submenu item.
[Mirror]	**MIRROR**	Use the **MIRROR** key to flip the projection in 4 directions.
[RGB Color]	**RGB**	Use the **RGB** key to change the color of the projection. The following colors are possible: red, green, yellow, blue, magenta, cyan and white.
[Pause]	**PAUSE**	Use the **PAUSE** key to pause and to resume the show.

6.7.1. Show Mode

In this menu you can play the built-in shows.

01) Press the **ENTER** key to enter show mode.
02) Press the **UP/DOWN ARROW** keys to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.
03) Press the **ENTER** key to confirm the selection and play the show.

- Press the **MIRROR** key repeatedly to flip the projection in 4 directions.
- Press the **RGB** key repeatedly to change the color of the projection. The colors change in the following order: red, green, yellow, blue, magenta, cyan, white, built-in colors.
- Press the **PAUSE** key to pause the show. Press the **PAUSE** key again to resume the show.

6.7.2. Music Mode

In this menu you can activate sound-controlled mode.

01) Press the **ENTER** key to enter music mode.
02) Press the **UP/DOWN ARROW** keys to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.
03) Press the **ENTER** key to confirm the selection. The device plays the show, reacting to the beat of music.

- Press the **MIRROR** key repeatedly to flip the projection in 4 directions.
- Press the **RGB** key repeatedly to change the color of the projection. The colors change in the following order: red, green, yellow, blue, magenta, cyan, white, built-in colors.
- Press the **PAUSE** key to pause the show. Press the **PAUSE** key again to resume the show.
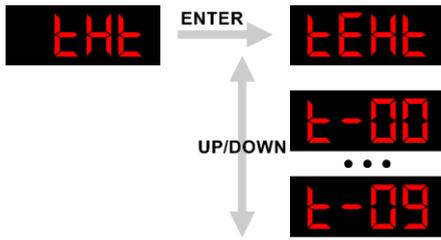
6.7.3. Text Mode

In this menu you can edit and save custom text and playback the saved text.

01) Press the **ENTER** key to enter text mode.
02) Press the **UP/DOWN ARROW** keys to select one of the following options:

 Text edit mode, see **6.7.3.1. Text Edit Mode**

 Custom text playback, see **6.7.3.2. Text Playback**

03) Press the **ENTER** key to confirm the selection and play the text.

6.7.3.1. Text Edit Mode

In this submenu you can create a projection with custom text.

01) Type in the text with the keyboard. To edit the text, use the following keys:

Key	Name	Function
	DELETE	Press the **DELETE** key to delete the whole text.
	BACKSPACE	Press the **BACKSPACE** key to delete a character to the left.
	HOME	Press the **HOME** key to move the cursor to the beginning of the text.
	END	Press the **END** key to move the cursor to the end of the text.
	LEFT/RIGHT ARROW	Press the **LEFT/RIGHT ARROW** keys to move the cursor to the left or to the right.

02) Add effects to the text display. The following options are available:

Key	Name	Function
	FLOW	• Press the **FLOW** key to start the text flow effect. Press the **FLOW** key again to stop the effect. If the text is longer than the displayed characters, this effect makes the text scroll to the right or to the left. • Press the **UP/DOWN ARROW** keys to set the flow speed.
	RGB	• Press the **RGB** key repeatedly to select the color. The following colors are possible: red, green, yellow, blue, magenta, cyan and white.

Key	Name	Function
Draw	**DRAW**	• Press the **DRAW** key to add a drawing effect. • Press the **UP/DOWN ARROW** keys to set the animation speed.
Zoom	**ZOOM**	• Press the **ZOOM** key repeatedly to add a zoom-in, a zoom-out, or a zoom-in/out effect. • Press the **UP/DOWN ARROW** keys to set the zooming speed.
X Move	**X MOVE**	• Press the **X MOVE** key repeatedly to move the text right or left. • Press the **UP/DOWN ARROW** keys to set the speed.
Y Move	**Y MOVE**	• Press the **Y MOVE** key repeatedly to move the text up or down. • Press the **UP/DOWN ARROW** keys to set the speed.
Y Roll	**Y ROLL**	• Press the **Y ROLL** key repeatedly to rotate the text around the Y axis clockwise or counterclockwise. • Press the **UP/DOWN ARROW** keys to set the speed of rotation.
X Roll	**X ROLL**	• Press the **X ROLL** key repeatedly to rotate the text around the X axis clockwise or counterclockwise. • Press the **UP/DOWN ARROW** keys to set the speed of rotation.
Z Roll	**Z ROLL**	• Press the **Z ROLL** key repeatedly to rotate the text around the Z axis clockwise or counterclockwise. • Press the **UP/DOWN ARROW** keys to set the speed of rotation.
Wave	**WAVE**	• Press the **WAVE** key to add wave effect to the projection. • Press the **UP/DOWN ARROW** keys to set the speed.
TextQty	**TEXT QTY**	• Press the **TEXT QTY** key repeatedly to select the number of characters to be displayed during projection: 4, 6, 8, 10 or 12.
Play time	**PLAY TIME**	• Press the **PLAY TIME** key to set the duration of the projection.
Mirror	**MIRROR**	• Press the **MIRROR** key repeatedly to flip the projection in 4 directions.

03) Press the **SAVE** key together with one of the **0–9 NUMBER** keys to save the text under the respective number.

Key	Name	Function
Save+No.	**SAVE**	Use in combination with a **0–9 NUMBER** key to save the custom text.

• To delete all custom texts, press together the **SAVE** key, the **ALT** key and the **DELETE** key.

Key	Name	Function
Save+No. Alt Del	**DELETE ALL**	Press this combination of keys to delete all custom texts saved under the **0–9 NUMBER** keys.

6.7.3.2. Text Playback

When in text mode, you can playback the text in two different ways:
• Use the **UP/DOWN ARROW** keys to select a custom show number
• Use the special playback keys:

▶ Play+No.	**PLAY**	Press the **PLAY** key together with one of the **0–9 NUMBER** keys to playback the text saved under the respective number.
↻ Loop playback	**LOOP PLAYBACK**	Press the **LOOP PLAYBACK** key to play all saved custom texts in a loop after each other.
↑ Pg UP	**PAGE UP**	Press the **PAGE UP** key to play the text saved under the previous number. If the number is empty, there will be no projection.
↓ Pg DN	**PAGE DOWN**	Press the **PAGE DOWN** key to play the text saved under the next number. If the number is empty, there will be no projection.
❙❙ Pause	**PAUSE**	Press the **PAUSE** key to pause the playback. Press the **PAUSE** key again to resume the playback.

6.7.4. Time Mode

In this menu you can activate time mode and adjust the time settings.

01) Press the **ENTER** key to activate time mode. The time is projected.

● Press the **MIRROR** key repeatedly to flip the projection in 4 directions.
● Press the **RGB** key repeatedly to change the color of the projection. The following colors are possible: red, green, yellow, blue, magenta, cyan and white.

02) Press the **NEXT ARROW** key to enable time editing mode.
03) Press the **UP/DOWN ARROW** keys to select one of the following 2 options:

 Time format, see **6.7.4.1. Time Format** for more information

 Time settings, see **6.7.4.2. Time Settings** for more information

04) Press the **ENTER** key to confirm the selection.

6.7.4.1. Time Format

In this submenu you can select how the time is shown.

Press the **UP/DOWN ARROW** keys to select one of the following 2 options:

d-dt   Show time and date

d--t   Show only time
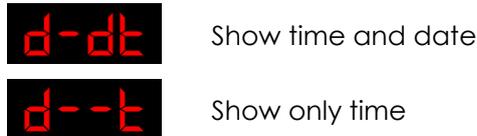
The time is shown in the chosen format.

6.7.4.2. Time Settings

In this submenu you can set the date and time.

01) Press the **UP/DOWN ARROW** keys to adjust the time and date parameters.
02) Press the **ENTER** key to confirm the current setting and move to the next one. The following parameters can be adjusted:

1900   Year, the adjustment range is 1900–2099

M 01   Month, the adjustment range is 01–12

d 01   Day, the adjustment range is 01–31

h-00   Hour, the adjustment range is 00–11

M-00   Minute, the adjustment range is 00–59

S-00   Second, the adjustment range is 00–59

12h   Time display format. There are 2 options available: 12-hour format and 24-hour format
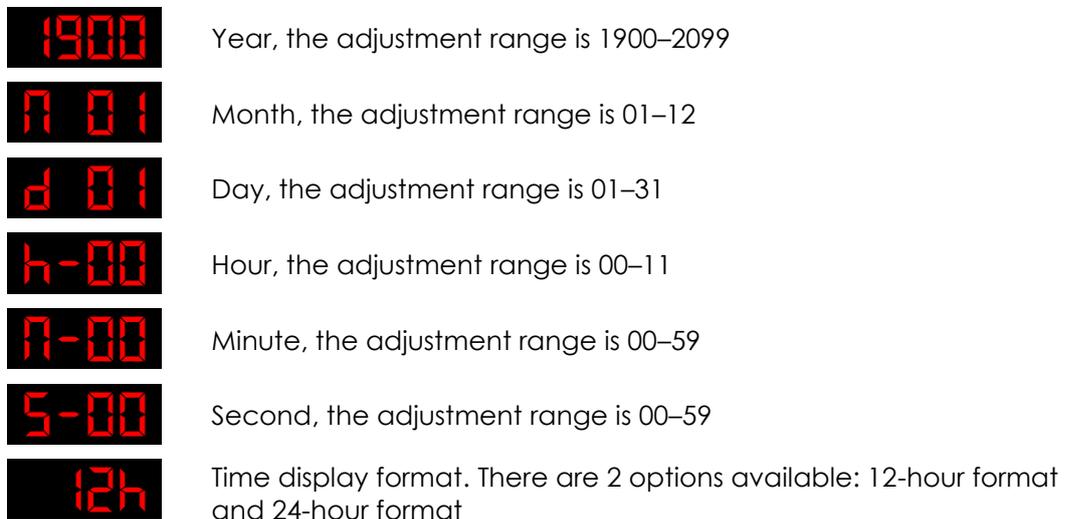
●   Press the **ESCAPE** key to exit editing mode without saving the changes.

6.7.5. Countdown Mode

In this menu you can activate countdown mode and adjust the settings of the countdown.

Cnt → ENTER → **Coun** → ENTER → **0000** / UP/DOWN **9999** → ENTER → **0** / UP/DOWN **9**
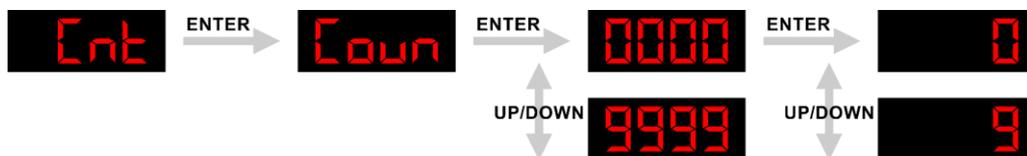
To set the countdown:

01) Press the **ENTER** key to enter countdown mode. The countdown is projected.
02) Press the **ENTER** key to enable countdown editing mode. The countdown projection starts blinking.
03) Press the **UP/DOWN ARROW** keys to set the starting number of the countdown. The adjustment range is 0000–9999.
04) Press the **ENTER** key to confirm the setting.
05) Press the **UP/DOWN** buttons to select one of the 10 user-programed texts to be displayed after the countdown. The selection range is 0–9.
06) Press the **ENTER** key to confirm the selection.

To play the countdown:

01) Press the **ENTER** key to enter countdown mode. The countdown is projected.
02) Press the **PAUSE** key or the **SPACE** bar to play the countdown.
   ● To pause the countdown, press the **PAUSE** key or the **SPACE** bar.
   ● To resume the countdown, press the **PAUSE** key or the **SPACE** bar again.

● Press the **MIRROR** key repeatedly to flip the projection in 4 directions.
● Press the **RGB** key repeatedly to change the color of the projection. The following colors are possible: red, green, yellow, blue, magenta, cyan and white.

6.7.6. DMX Mode

In this menu you can enable DMX control mode and set the set the DMX starting address of the device.

01) Press the **ENTER** key to enable DMX control mode. The display shows the current DMX starting address. If there is no DMX connection, the display is blinking.

Note: If you exit DMX mode, the DMX connection will be discontinued and the device will not react to the DMX controller.

02) Press the **ENTER** key to enable the DMX address adjustment.
03) Press the **UP/DOWN ARROW** keys to select the DMX starting address. The selection range is 001–492.
04) Press the **ENTER** key to confirm the selection.

6.7.7. Slave Mode

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

Press the **ENTER** key to set the device as a slave device.

6.7.8. System Settings

In this menu you can configure the show parameters and the device's parameters.
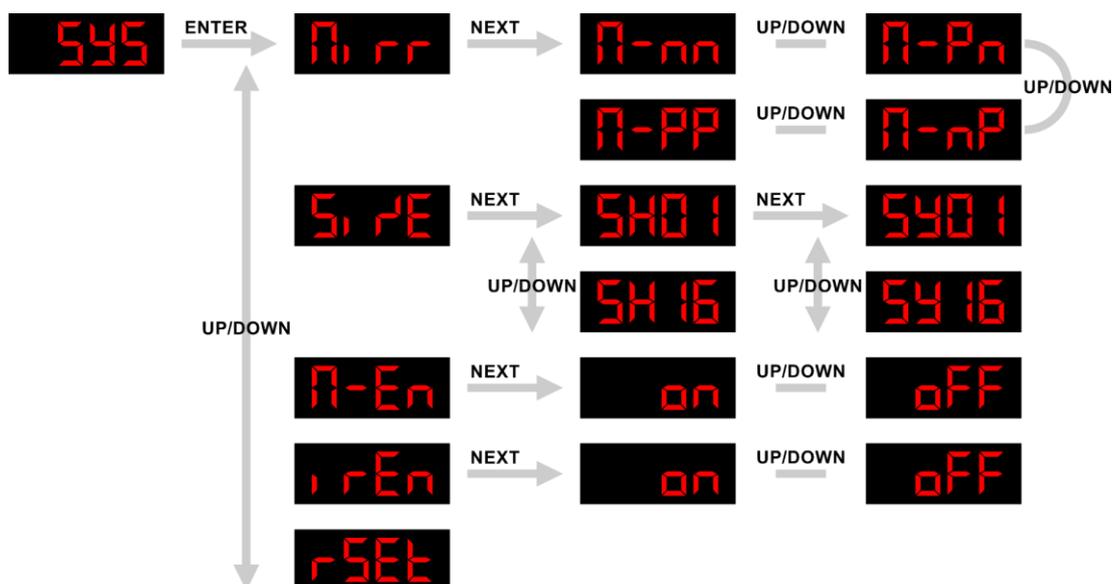
01) Press the **ENTER** key to enable the configuration of the parameters.

02) Press the **UP/DOWN ARROW** keys to select one of the parameters. There are 5 options available:

Mi rr	Set mirror, see **6.7.8.1. Set Mirror** for more information
Si rE	Set size, see **6.7.8.2. Set Size** for more information
N-En	Master device. Select ON/OFF to enable/disable the device as a master device in master/slave control mode
i rEn	IR remote control. Select ON/OFF to enable/disable control with the IR remote control
rSEt	Reset to factory default settings

03) Press the **NEXT** key to confirm the selection and open the respective submenu.
04) Press the **UP/DOWN ARROW** keys to scroll through the available settings.
05) Press the **ENTER** key to set the parameter.

6.7.8.1. Set Mirror

In this submenu you can flip the projection in 4 directions.

01) Press the **UP/DOWN ARROW** keys to select one of the following options:

N-nn	Horizontal and vertical mirror effect
N-Pn	Vertical mirror effect
N-nP	Horizontal mirror effect
N-PP	Normal view

02) Press the **ENTER** key to set the parameter.

6.7.8.2. Set Size

In this submenu you can adjust the width and the height of the projection (zoom in/out).

01) Press the **UP/DOWN ARROW** keys to adjust the width (X axis). The adjustment range is 01–16.
02) Press the **NEXT** key to set the value and to enable the adjustment of the height.
03) Press the **UP/DOWN ARROW** keys to adjust the height (Y axis). The adjustment range is 01–16.
04) Press the **ENTER** key to set the value.

6.8. Remote Control Operation

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.

To operate the device with the IR remote control:

01) Enable IR remote control operation in the system settings. See **6.6.8. System Settings** on page 27 for more information.
02) Point the remote control to the **infrared sensor (02)**.
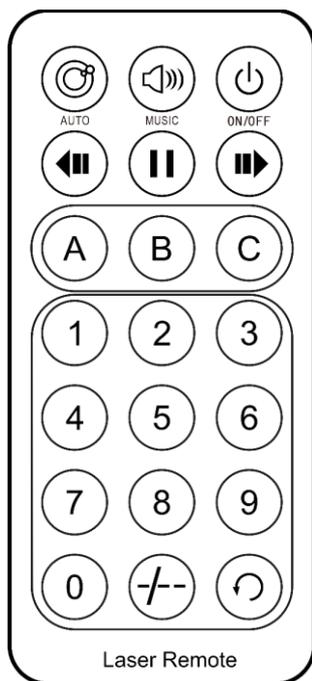
Button	Name	Button	Name
ON/OFF	ON/OFF	A	A (Time mode)
Auto	Auto	B	B (Countdown mode)
Sound	Sound	C	C (Text mode)
Previous	Previous	0 – 9	Numeric 0–9 buttons
Pause	Pause	-/--	1-/2-digit number
Next	Next	Mirror	Mirror

Fig. 16

- Press the **ON/OFF** button to turn on the laser beam.
- Press the **ON/OFF** button again to turn off the laser beam.

6.8.1. Show Mode

Aut → ENTER → Aut1 → UP/DOWN → Aut9

01) Press the **AUTO** button to enter show mode. The device plays back the built-in shows in random order.
02) Press the **AUTO** button repeatedly to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.

- Press the **MIRROR** button repeatedly to flip the projection in 4 directions.
- Press the **PAUSE** button to pause the show. Press the **PAUSE** button again to resume the show.

6.8.2. Music Mode

01) Press the **SOUND** button to enter music mode.
02) Press the **SOUND** button repeatedly to select one of the 9 built-in shows. The selection range is 1–9. Built-in shows 3–9 are holiday themed: 3 – New Year, 4 – Christmas, 5 – Love, 6 – Birthday, 7 – Party, 8 – Halloween, and 9 – Music.

- Press the **MIRROR** button repeatedly to flip the image in 4 directions.
- Press the **PAUSE** button to pause the show. Press the **PAUSE** button again to resume the show.

6.8.3. Time Mode

01) Press the **A** button to activate time mode. The time is projected.
02) Press and hold down the **A** button for 3 seconds to enter time editing mode. The following parameters can be adjusted:

1900	Year, the adjustment range is 1900–2099
n 01	Month, the adjustment range is 01–12
d 01	Day, the adjustment range is 01–31
h-00	Hour, the adjustment range is 00–11
n-00	Minute, the adjustment range is 00–59
S-00	Second, the adjustment range is 00–59
12h	Time display format. There are 2 options available: 12-hour format and 24-hour format

03) Press the **PREVIOUS/NEXT** buttons to adjust the values.
04) Press the **A** button to confirm the setting and go to the next parameter.

6.8.4. Countdown Mode

01) Press the **B** button to activate countdown mode. The countdown is projected.
02) Press and hold down the **B** button for 3 seconds to enable countdown editing mode. The countdown projection starts blinking.
03) Press the **NUMERIC 0–9** buttons to set the starting number of the countdown. The adjustment range is 0000–9999.
04) Press the **B** button to confirm the setting.
05) Press the **PAUSE** button to start/pause the countdown.

6.8.5. Text Mode

01) Press the **C** button to activate text mode.
02) Press the **NUMERIC 0–9** buttons to select one of the custom texts.
03) Press the **C** button again to activate the loop playback of all saved custom texts.

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6.9. DMX Channels

The device has 20 DMX channels. In CH 1 you can select the operating mode of the device. Depending on the selection made in CH 1, the rest of the channels have different functions in the different operating modes.

CH	Function	Value	Setting
1	Mode Selection	000–009	No laser output
		010–049	Auto mode
		050–099	Music mode
		100–149	Text mode
		150–199	First pattern
		200–255	Second pattern

6.9.1. Auto Mode

Set CH 1 between 10 and 49 to select auto mode.

CH	Function	Value	Setting
2	Built-in Shows	000–029	Auto 1
		030–059	Auto 2
		060–089	Auto 3
		090–119	Auto 4
		120–149	Auto 5
		150–179	Auto 6
		180–209	Auto 7
		210–239	Auto 8
		240–255	Auto 9

6.9.2. Music Mode

Set CH 1 between 50 and 99 to select sound-controlled mode.

CH	Function	Value	Setting
2	Built-in Shows	000–029	Auto 1 (sound-controlled)
		030–059	Auto 2 (sound-controlled)
		060–089	Auto 3 (sound-controlled)
		090–119	Auto 4 (sound-controlled)
		120–149	Auto 5 (sound-controlled)
		150–179	Auto 6 (sound-controlled)
		180–209	Auto 7 (sound-controlled)
		210–239	Auto 8 (sound-controlled)
		240–255	Auto 9 (sound-controlled)

6.9.3. Text Mode

Set CH 1 between 100 and 149 to select text mode.

CH	Function	Value	Setting
2	Text Selection	000–025	Custom text 0
		026–051	Custom text 1
		052–077	Custom text 2
		078–103	Custom text 3
		104–129	Custom text 4

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CH	Function	Value	Setting
		130–155	Custom text 5
		156–181	Custom text 6
		182–207	Custom text 7
		208–133	Custom text 8
		234–255	Custom text 9
3	Text Movement	000–255	Speed adjustment, from slow to fast
4	Color	000–007	Built-in colors
		008–015	Red
		016–023	Green
		024–031	Red + Green (Yellow)
		032–039	Blue
		040–047	Red + Blue (Magenta)
		048–055	Green + Blue (Cyan)
		056–063	Red + Green + Blue (White)
		064–111	Single color switch
		112–159	Horizontal color movement from right to left
		160–207	Vertical color movement from top to bottom
		208–255	Strobe effect, from low to high frequency
5	Drawing Effect	000	Off
		001–127	Fixed clipping, 100–0 %
		128–255	Continuous clipping, 0–100 %, from slow to fast
6	Zoom Effect	000–127	Fixed zooming, 100–5 %
		128–169	Zoom in
		170–209	Zoom out
		210–255	Zoom in and zoom out
7	Zoom Speed	000–255	Speed adjustment, from slow to fast
8	Y Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
9	Y Rotation Speed	000–255	Speed adjustment, from slow to fast
10	X Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
11	X Rotation Speed	000–255	Speed adjustment, from slow to fast
12	Z Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
13	Z Rotation Speed	000–255	Speed adjustment, from slow to fast
14	X Movement	000–127	128 fixed positions on the X axis
		128–191	Horizontal movement, from left to right
		192–255	Horizontal movement, from right to left
15	X Movement Speed	000–255	Speed adjustment, from slow to fast
16	Y Movement	000–127	128 fixed positions on the Y axis
		128–191	Vertical movement, up – down
		192–255	Vertical movement, down – up
17	Y Movement Speed	000–255	Speed adjustment, from slow to fast
18	Text Length	000–255	Maximum number of characters to be projected

6.9.4. Pattern Mode

Set CH 1 between 150 and 255 to select pattern mode.

CH	Function	Value	Setting
2	Pattern Group	000–031	Patterns from group 1
		032–063	Patterns from group 2
		064–095	Patterns from group 3
		096–127	Patterns from group 4
		128–159	Patterns from group 5
		160–191	Patterns from group 6
		192–223	Patterns from group 7
		224–255	Patterns from group 8
3	Pattern Selection	000–255	128 patterns, one pattern per 16 values (see **6.9.4.1. Pattern Selection Chart** on page 42)
4	Color	000–007	Built-in colors
		008–015	Red
		016–023	Green
		024–031	Red + Green (Yellow)
		032–039	Blue
		040–047	Red + Blue (Magenta)
		048–055	Green + Blue (Cyan)
		056–063	Red + Green + Blue (White)
		064–111	Single color switch
		112–159	Horizontal color movement from right to left
		160–207	Vertical color movement from top to bottom
		208–255	Strobe effect, from low to high frequency
5	Drawing Effect	000	Off
		001–127	Fixed clipping, 100–0 %
		128–255	Continuous clipping, 0–100 %, from slow to fast
6	Zoom Effect	000–127	Fixed zooming, 100–5 %
		128–169	Zoom in
		170–209	Zoom out
		210–255	Zoom in and zoom out
7	Zoom Speed	000–255	Speed adjustment, from slow to fast
8	Y Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
9	Y Rotation Speed	000–255	Speed adjustment, from slow to fast
10	X Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
11	X Rotation Speed	000–255	Speed adjustment, from slow to fast
12	Z Rotation	000–127	Fixed rotating 0–359°
		128–191	Continuous clockwise rotation
		192–255	Continuous counterclockwise rotation
13	Z Rotation Speed	000–255	Speed adjustment, from slow to fast
14	X Movement	000–127	128 fixed positions on the X axis
		128–191	Horizontal movement, from left to right
		192–255	Horizontal movement, from right to left
15	X Movement Speed	000–255	Speed adjustment, from slow to fast
16	Y Movement	000–127	128 fixed positions on the Y axis
		128–191	Vertical movement, up – down
		192–255	Vertical movement, down – up
17	Y Movement Speed	000–255	Speed adjustment, from slow to fast

CH	Function	Value	Setting
18	**Wave Size**	000–255	Wave amplitude and wavelength, from small to big
19	**Wave Frequency**	000–255	Wave frequency, from low to high
20	**Wave Speed**	000–127	Wave position
		128–255	Movement speed, from slow to fast

6.9.4.1. Pattern Selection Chart

To select a pattern, follow the steps below:

01) Set CH 1 in the range 150–199 to enter pattern mode.
02) Set CH 2 in the range 064–095 to select Group 3, for example.
03) Set CH 3 in the range 016–031. The following pattern is projected:
04) Set CH 1 in the range 200–255 to enable the selection of a second pattern, if needed.
05) Repeat steps 2–3 above to select the desired pattern.

Channel 2

Channel 3	Group 1 000-031	Group 2 032-063	Group 3 064-095	Group 4 096-127	Group 5 128-159	Group 6 160-191 Symbols	Group 7 192-223 Digits and letters	Group 8 224-255 Words
000-015	◯	∞	◝	—	··········	✓	0	Crazy
016-031	◌	○ ○ ○ ○	◜◞	– – –	··············	✗	1	Dance
032-047	◌	○ ○ ○	∼∼	— — —	················	Boy	2	Good
048-063	◌	○○○ ○○○	∿∿	+	················	Girl	3	Happy
064-079	◎	□ □	◝	—	⌒	Thumb up	4	Love
080-095	⦿	□ □ □ □	◟	∿∿∿	⌒	Hand	5	Music
096-111	☀	○ ○ ○ ○	◟◞	⋱	⟨O⟩	V sign	6	Party
112-127	☀	○○○○○	◟◞	‖‖‖‖‖	✕	Yin Yang	7	Ready
128-143	✡	⊙⊙⊙⊙	V	‖‖‖‖ ‖‖‖‖	V	Pigeon	8	Start
144-159	❀	▽▽▽▽▽	V	╲╱ ╲╱	⋰⋱	Heart	9	Stop
160-175	△	▯	W	‖‖‖‖‖	⋮⋮⋮	Clock	A	Thank you
176-191	□	oooooooo	W	∖∖∣∕∕	⋰⋱	Smiley	B	Welcome
192-207	▢	oooooooooooooo	WW	⋎⋎	⋰	Rose	C	Win
208-223	☆	∴·	⧢	∖∣∕	❋	⬠	D	Disco
224-239	☆	○○○ ○○○	∞	✳	⣿	⊞	?	World Cup
240-255	⬡	★★★ ★★★ ★★★	⧓	---	⣿	⊕	!	Christmas

7. Troubleshooting

This troubleshooting guide contains actions which can be carried out by the user. 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 power up	No power to the device	● Check if power is switched on and cables are plugged in
	Main fuse is blown	● Replace the fuse. See **8.3.1. Replacing the Fuse** on page 45
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 **2.4. Safety Devices** on page 9
	The remote interlock or the test connector is not connected	● Connect the remote interlock or the test connector. See **2.4. Safety Devices** on page 9
The device responds erratically	The factory settings of the device are changed	● Reset the device's parameters to the default factory settings. See **6.6.8. System Settings** on page 27
The device does not respond to DMX control	The controller is not connected	● Connect the controller
	The device is not in DMX mode	● Activate DMX mode from the main menu
	The signal is reversed. The 3-pin/5-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	Bad data link connection	● Examine connections and cables. Correct poor 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	● Check address settings and correct, if necessary
	In case of a setup with multiple devices, one of the devices is defective and disturbs data transmission on the link	● To find out which is the defective device, bypass one device at a time until normal operation is restored
The device does not respond to IR remote control	The IR remote control is not enabled	● Enable the IR remote control form the main menu
	The IR sensor is out of range	● Try using the remote control from a different angle.
	The battery of the remote control is depleted	● Change the battery

8. Maintenance

8.1. Safety Instructions for Maintenance

> **DANGER**
> **Electric shock caused by dangerous voltage inside**

Disconnect power supply before servicing or cleaning.

> **WARNING**
> **Laser radiation**
> **Avoid exposure to beam.**

This device is a class 3B laser device according to the classification in NEN-EN-IEC 60825-1:2014.

Maintenance can 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.

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, fixations 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

> **WARNING**
> **Laser radiation**
> **Avoid exposure to beam**

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 laser 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 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.
- For replacement use fuses of the same type and rating only.

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 integrated fuse holder 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 integrated fuse holder in the opening and push it gently back in its 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. Follow the cleaning instructions in chapter **8.2.1. Basic Cleaning Instructions** on page 44.
- 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

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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 IEC60825-1:2014.