DMX REFERENCE

LT15

EK Lights



Manufacturer	EK Lights
GDTF file	EK_Lights_LT15_146479.gdtf
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1 About this manual

This document describes the LT15 by EK Lights. It was compiled from the GDTF file EK_Lights_LT15_146479.gdtf from the GDTF-Share library.

File revision: “260111”.

The DMX modes, the channel functions and the technical data are given as the GDTF file states them. Installation, operation from the device's control panel, service and safety instructions are described in the manufacturer's original user manual, which takes precedence over this document.

This document was not issued or endorsed by EK Lights; product names and trademarks belong to their owners.

Safety notices are marked with signal words according to the severity of the hazard: DANGER – an imminent hazard that will result in death or serious injury; WARNING – a potential hazard that could result in death or serious injury; CAUTION – a potential hazard that could result in minor injury or property damage; NOTE – additional information for correct and safe use.

> **NOTE** This product is designed for stage and effect lighting. It is not suitable for household room illumination.

2 Quick reference

Parameter	Value
Weight	40 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
40CH	40	12	1, 41, 81, 121, ...

No light? Check these channels

- 40CH: CH 5 Shutter at 83–93, 164–174 or 245–255 “Open”


Read the manual before use


Do not stare into the light


Indoor use only

3 Safety instructions



Read the manual before use



Do not stare into the light



Indoor use only

⚠ WARNING

- This device is intended for professional use. Installation, connection, setup and maintenance must be carried out only by suitably qualified persons who have read this manual.
- Use the device only for its intended purpose and as described in this manual.
- Do not open the housing and do not modify or tamper with the device. Refer all repairs to an authorized service center.
- Do not use the device if its housing, power or data cable, or a connector is damaged, if the device has been dropped, or if liquid or a foreign object has entered it. In such a case, have it checked by a service center.
- Disconnect the device from the power supply before cleaning, maintenance or any work on the connections.
- After moving the device from a cold to a warm environment, let it reach room temperature before switching it on to prevent condensation inside.
- The device is not a toy; keep it out of the reach of children.

⚠ WARNING

- This device is designed for indoor use only. Protect it from rain, splashing water, moisture and dust, and do not place containers with liquids on it.
- Do not operate the device in high humidity, near water, or where condensation can form on it.

⚠ CAUTION

- This device emits intense light. Do not look directly into the light source or the beam at close range; doing so may damage your eyes.
- Do not aim the beam at the eyes of people or animals at close range, and do not view the light source through optical instruments (binoculars, camera lenses).
- Do not aim the beam at flammable or heat-sensitive materials at close range.

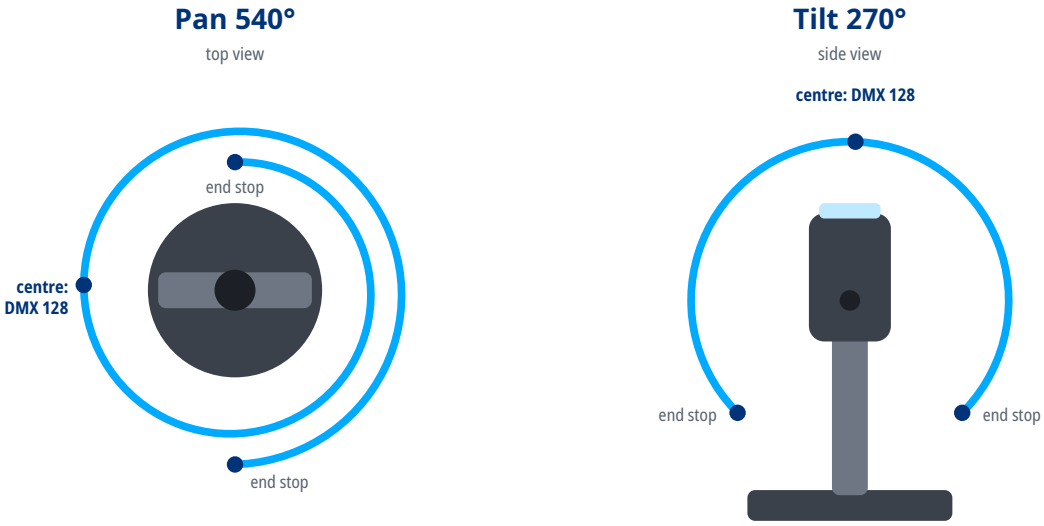
⚠ CAUTION

- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them longer than necessary.

> ⚠ **WARNING**
>
> - The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
> - Keep yourself and any objects out of the range of movement. While the device is switched on, do not touch the moving parts, move them by hand, or obstruct their movement; this can cause injury (pinching) and damage the drive.
> - Do not carry the device by its moving parts. If the device has a transport lock, engage it before transport and release it before switching on.

4 Product description

Range of movement



5 Installation

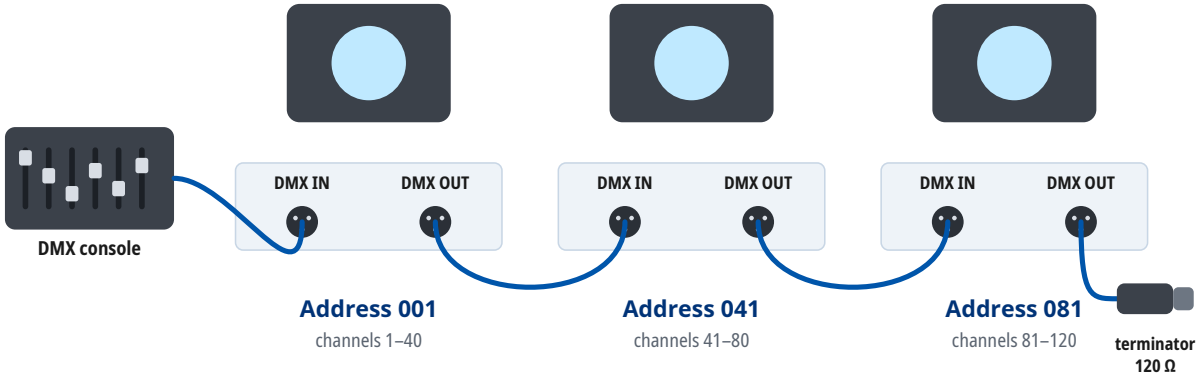
> ⚠ **WARNING**
>
> - Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
> - The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
> - Weight of the device: 40 kg.
> - Use suitable mounting hardware (for example truss clamps) and tighten all screw connections properly.
> - Always secure the suspended device against falling with a safety cable of adequate load capacity, routed through a fixed point of the device and around the supporting structure.
> - During installation and removal, keep people out of the area below the work position.
> - Regularly inspect the fixings and the safety cable for damage, corrosion and loosening.

6 Connections

- Use shielded cable designed for DMX512 with an impedance of 110 Ω. Ordinary microphone cable is not suitable for DMX, especially over longer distances.

- Connect the devices in a daisy chain: connect the DMX OUT of one device to the DMX IN of the next. Do not split the line with Y-cables or wire it in a star; the line may be split only with a DMX splitter.
- Connect the shield to pin 1 only. Do not connect the shield (ground) to the metal shell of the connector; this can cause short circuits or erratic behavior.
- XLR pin assignment: pin 1 – shield (ground), pin 2 – Data- (Data Complement), pin 3 – Data+ (Data True). On 5-pin connectors, pins 4 and 5 are not connected; a 5-pin connector can be connected to a 3-pin one with a cable adapter.
- Terminate the end of the line (for impedance matching): plug an XLR connector with a 120 Ω, ¼ W resistor between pins 2 and 3 into the DMX OUT of the last device. This reduces the risk of erratic behavior.
- Connect no more than 32 devices to one DMX line. For more devices or longer runs, use a DMX splitter or booster.

DMX line



Mode 40CH: every unit occupies 40 channels from its address. At most 32 units on one line; for more units or longer runs use a DMX splitter. A 120 Ω terminator closes the last DMX OUT.

7 Operation

Setting the DMX address

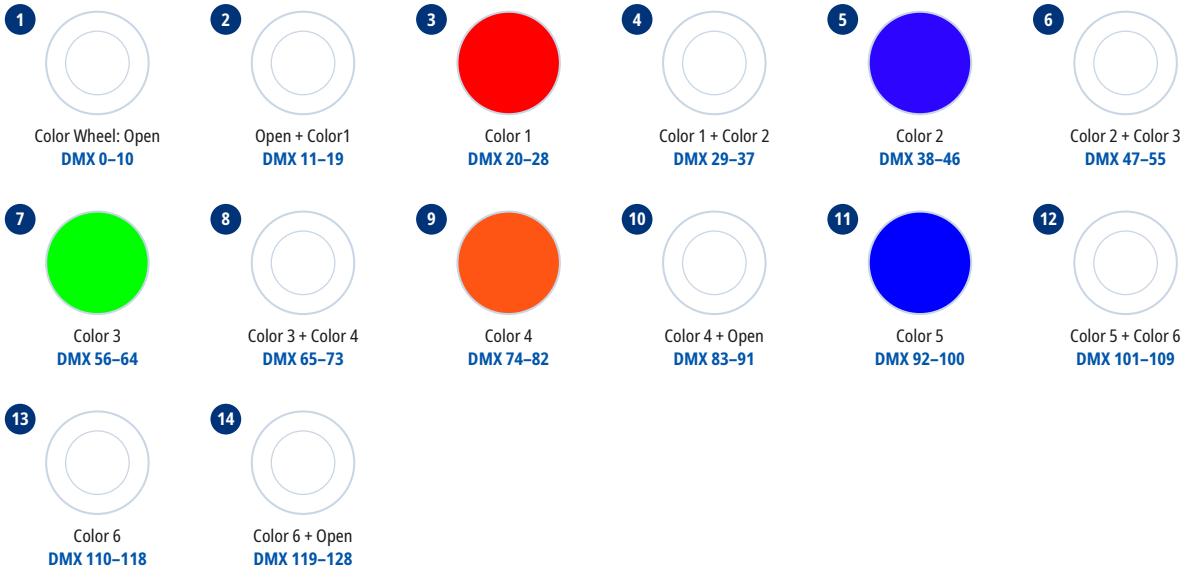
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “40CH”: 40.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “40CH”, you can use, for example, the start addresses 1, 41, 81, 121.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.
- The device supports RDM (Remote Device Management), two-way communication with the controller over the DMX line.

8 Functions at a glance

Functions in each DMX mode

	40CH 40 channels
Pan / Tilt	1, 3
Dimmer	6
Shutter / strobe	5
Color mixing	8–10
Color temperature	11
Color wheel	12
Gobo wheel	13, 15
Gobo rotation	14, 16
Prism	17–20
Frost	21, 22
Zoom	28
Focus	26, 30
Iris	25
Animation wheel	23, 24

Color wheel



Gobo wheel 1

1. 
   Gobo: Open
   DMX 0–8
2. 
   Gobo 1
   DMX 9–17
3.
   Gobo 2
   DMX 18–26
4.
   Gobo 3
   DMX 27–35
5.
   Gobo 4
   DMX 36–44
6.
   Gobo 5
   DMX 45–53
7.
   Gobo 6
   DMX 54–62
8.
   Gobo 7
   DMX 63–72

Gobo wheel 2

1. 
   Gobo: Open
   DMX 0–8
2. 
   Gobo 1
   DMX 9–17
3.
   Gobo 2
   DMX 18–26
4.
   Gobo 3
   DMX 27–35
5.
   Gobo 4
   DMX 36–44
6.
   Gobo 5
   DMX 45–53
7.
   Gobo 6
   DMX 54–62
8.
   Gobo 7
   DMX 63–72

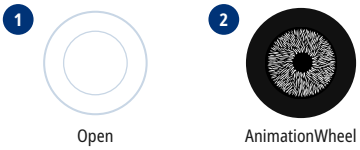
Prism 1

1.
   Open
   DMX 0–127
2. 
   4 facets
   Prism
   DMX 128–255

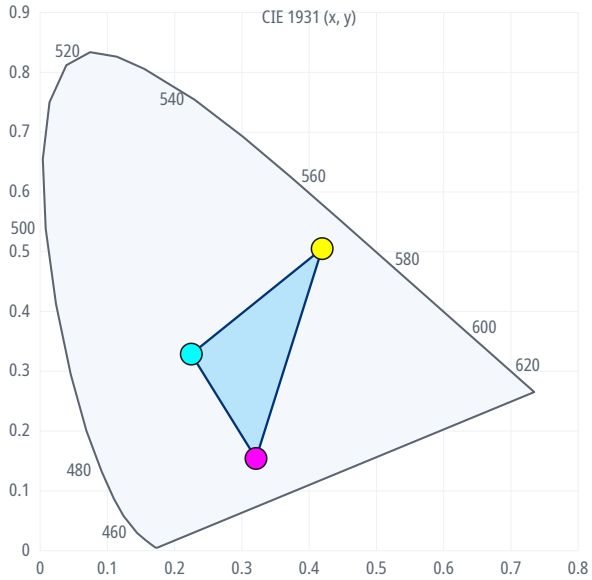
Prism 2

1.
   Open
   DMX 0–127
2. 
   4 facets
   Prism
   DMX 128–255

Animation wheel



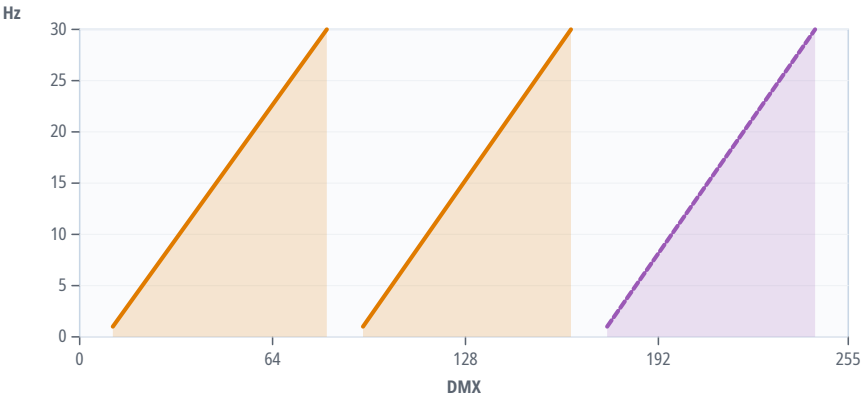
LED colors and the colors they mix



LED	x	y
Cyan	0.225	0.329
Magenta	0.321	0.154
Yellow	0.419	0.505

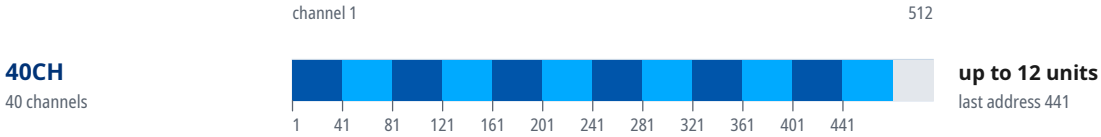
The shaded area holds the colors the LEDs can mix; the dots are the LED colors the GDTF file states.

Strobe rate



9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “40CH”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	201	11	401	16	U2 · 121
2	41	7	241	12	441	17	U2 · 161
3	81	8	281	13	U2 · 1	18	U2 · 201
4	121	9	321	14	U2 · 41	19	U2 · 241
5	161	10	361	15	U2 · 81	20	U2 · 281

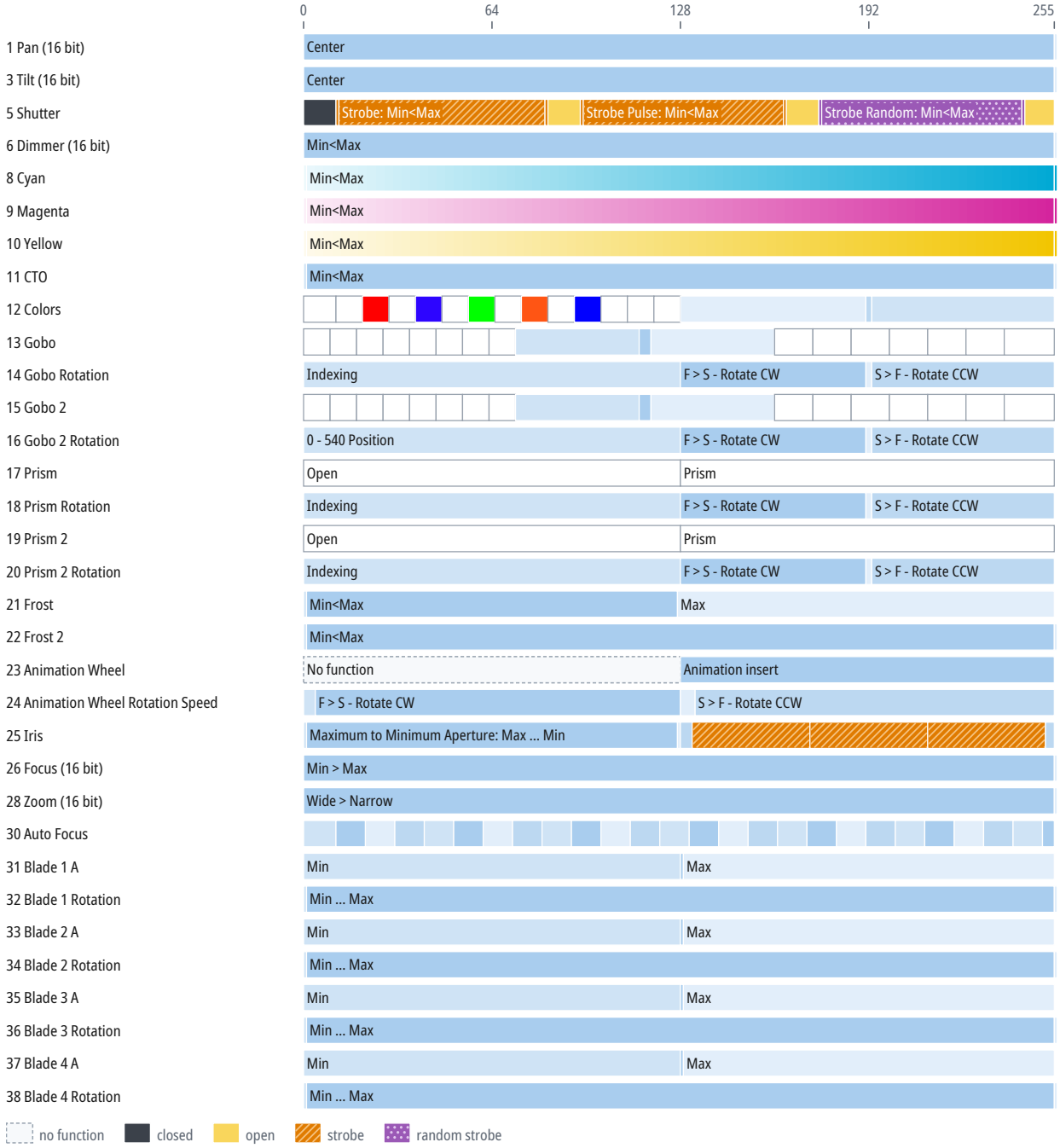
Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode 40CH

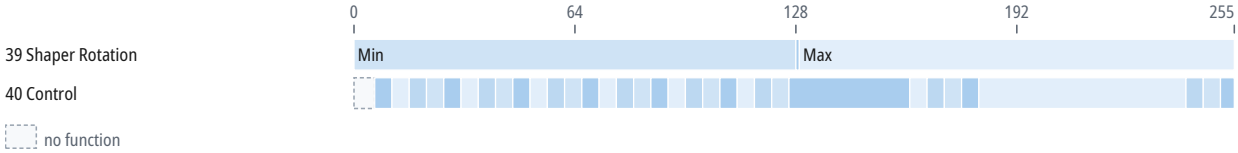
16-bit parameters use two channels, coarse and fine: value = 256 × coarse value + fine value.

If the device receives DMX in this mode but gives no light, check these channels: CH 5 Shutter at 83–93, 164–174 or 245–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 6 Dimmer 255, CH 8 Cyan 0, CH 9 Magenta 0, CH 10 Yellow 0.

Channel functions at a glance



Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0	Min
		0–255	Center
		255	Max
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0	Min
		0–255	Center
		255	Max
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Shutter	0–10	Close
		11	Strobe: Min
		12–81	Strobe: Min<Max
		82	Strobe: Max
		83–93	Open
		94	Strobe Pulse: Min
		95–162	Strobe Pulse: Min<Max
		163	Strobe Pulse: Max
		164–174	Open
		175	Strobe Random: Min
		176–243	Strobe Random: Min<Max
		244	Strobe Random: Max
		245–255	Open
6	Dimmer	0	Min
		0–255	Min<Max
		255	Max
7	Dimmer Fine	0–255	Fine adjustment of CH 6
8	Cyan	0	Min
		1–254	Min<Max
		255	Max
9	Magenta	0	Min
		1–254	Min<Max
		255	Max
10	Yellow	0	Min
		1–254	Min<Max
		255	Max
11	CTO	0	Min

CH	Function	DMX	Description
11	CTO (continued)	1–254	Min<Max
		255	Max
12	Colors	0–10	Color Wheel: Open
		11–19	Open + Color1
		20–28	Color 1
		29–37	Color 1 + Color 2
		38–46	Color 2
		47–55	Color 2 + Color 3
		56–64	Color 3
		65–73	Color 3 + Color 4
		74–82	Color 4
		83–91	Color 4 + Open
		92–100	Color 5
		101–109	Color 5 + Color 6
		110–118	Color 6
		119–127	Color 6 + Open
		128–190	Color Wheel Spin: Fast to Slow(Forward Spin) (80–0.1 °/s)
		191–192	Color Wheel Spin: Stop (Stop Rotation)
		193–255	Color Wheel Spin: Slow to Fast(Revers Spin) (0.1–80 °/s)
13	Gobo	0–8	Gobo: Open
		9–17	Gobo 1
		18–26	Gobo 2
		27–35	Gobo 3
		36–44	Gobo 4
		45–53	Gobo 5
		54–62	Gobo 6
		63–71	Gobo 7
		72–113	Gobo 1 Wheel Spin: Fast to Slow(Revers Spin) (720–0.1 °/s)
		114–117	Gobo 1 Wheel Spin: Stop (Stop Rotation)
		118–159	Gobo 1 Wheel Spin: Slow to Fast(Forward Spin) (0.1–720 °/s)
		160–172	Gobo1 Shak (0.1–10 Hz)
		173–185	Gobo2 Shak (0.1–10 Hz)
		186–198	Gobo3 Shak (0.1–10 Hz)
		199–211	Gobo4 Shak (0.1–10 Hz)
		212–224	Gobo5 Shak (0.1–10 Hz)
		225–237	Gobo6 Shak (0.1–10 Hz)
		238–255	Gobo7 Shak (0.1–10 Hz)
14	Gobo Rotation	0–127	Indexing (540°)
		128–190	F > S - Rotate CW (655–0.1 °/s)
		191–192	Gobo 1 Pos Rotate: Stop
		193–255	S > F - Rotate CCW (0.1–655 °/s)
15	Gobo 2	0–8	Gobo: Open

CH	Function	DMX	Description
15	Gobo 2 (continued)	9–17	Gobo 1
		18–26	Gobo 2
		27–35	Gobo 3
		36–44	Gobo 4
		45–53	Gobo 5
		54–62	Gobo 6
		63–71	Gobo 7
		72–113	Gobo 2 Wheel Spin: Fast to Slow(Revers Spin) (720–0.1 °/s)
		114–117	Gobo 2 Wheel Spin: Stop (Stop Rotation)
		118–159	Gobo 2 Wheel Spin: Slow to Fast(Forward Spin) (0.1–720 °/s)
		160–172	Gobo1 Shak (0.1–10 Hz)
		173–185	Gobo2 Shak (0.1–10 Hz)
		186–198	Gobo3 Shak (0.1–10 Hz)
		199–211	Gobo4 Shak (0.1–10 Hz)
		212–224	Gobo5 Shak (0.1–10 Hz)
		225–237	Gobo6 Shak (0.1–10 Hz)
		238–255	Gobo7Shak (0.1–10 Hz)
16	Gobo 2 Rotation	0–127	0 - 540 Position (540°)
		128–190	F > S - Rotate CW (655–0.1 °/s)
		191–192	Gobo 2 Pos Rotate: Stop
		193–255	S > F - Rotate CCW (0.1–655 °/s)
17	Prism	0–127	Open
		128–255	Prism
18	Prism Rotation	0–127	Indexing (540°)
		128–190	F > S - Rotate CW (270–0.1 °/s)
		191–192	Prism 1 Pos Rotate: Stop
		193–255	S > F - Rotate CCW (0.1–270 °/s)
19	Prism 2	0–127	Open
		128–255	Prism
20	Prism 2 Rotation	0–127	Indexing (540°)
		128–190	F > S - Rotate CW (270–0.1 °/s)
		191–192	Prism 2 Pos Rotate: Stop
		193–255	S > F - Rotate CCW (0.1–270 °/s)
21	Frost	0	Min
		1–126	Min<Max
		127–255	Max
22	Frost 2	0	Min
		1–254	Min<Max
		255	Max
23	Animation Wheel	0–127	No function
		128–255	Animation insert
24	Animation Wheel Rotation Speed		Animation Wheel Pos

CH	Function	DMX	Description
24	Animation Wheel Rotation Speed (continued)	0–3	Open
		4–127	F > S - Rotate CW (655–0.1 °/s)
		128–132	Stop
		133–255	S > F - Rotate CCW (0.1–655 °/s)
25	Iris	0	Maximum to Minimum Aperture: Max
		1–126	Maximum to Minimum Aperture: Max ... Min
		127	Maximum to Minimum Aperture: Min
		128–131	Maximum Aperture
		132–171	Slow to Fast Pulsation
		172–211	Slow to Fast Pulsation Fast Opening
		212–251	Slow to Fast Pulsation Fast Closing
		252–255	Maximum Aperture
26	Focus	0	Min
		0–255	Min > Max
		255	Max
27	Focus Fine	0–255	Fine adjustment of CH 26
28	Zoom	0	Wide
		0–255	Wide > Narrow
		255	Narrow
29	Zoom Fine	0–255	Fine adjustment of CH 28
30	Auto Focus	0–10	Auto Focus OFF
		11–20	Hole: 4 metres
		21–30	Hole: 6 metres
		31–40	Hole: 8 metres
		41–50	Hole: 10 metres
		51–60	Hole: 12 metres
		61–70	Hole: 14 metres
		71–80	Hole: 16 metres
		81–90	Hole: 18 metres
		91–100	RGobo: 4 metres
		101–110	RGobo: 6 metres
		111–120	RGobo: 8 metres
		121–130	RGobo: 10 metres
		131–140	RGobo: 12 metres
		141–150	RGobo: 14 metres
		151–160	RGobo: 16 metres
		161–170	RGobo: 18 metres
		171–180	RGobo: 4 metres
		181–190	RGobo: 6 metres
		191–200	RGobo: 8 metres
		201–210	RGobo: 10 metres

CH	Function	DMX	Description
30	Auto Focus (continued)	211–220	RGobo: 12 metres
		221–230	RGobo: 14 metres
		231–240	RGobo: 16 metres
		241–250	RGobo: 18 metres
		251–255	Auto Focus OFF
31	Blade 1 A	0–127	Min
		128	50%
		129–255	Max
32	Blade 1 Rotation	0	Min
		1–254	Min ... Max
		255	Max
33	Blade 2 A	0–127	Min
		128	50%
		129–255	Max
34	Blade 2 Rotation	0	Min
		1–254	Min ... Max
		255	Max
35	Blade 3 A	0–127	Min
		128	50%
		129–255	Max
36	Blade 3 Rotation	0	Min
		1–254	Min ... Max
		255	Max
37	Blade 4 A	0–127	Min
		128	50%
		129–255	Max
38	Blade 4 Rotation	0	Min
		1–254	Min ... Max
		255	Max
39	Shaper Rotation	0–127	Min
		128	Center
		129–255	Max
40	Control	0–5	No Function
		6–10	Dimmer Mode Off
		11–15	Dimmer Mode 1
		16–20	Dimmer Mode 2
		21–25	Dimmer Mode 3
		26–30	Linear
		31–35	Square
		36–40	Inverse Square
		41–45	S Curve
		46–50	600Hz

CH	Function	DMX	Description
40	Control (continued)	51–55	1200 Hz
		56–60	2000 Hz
		61–65	4000 Hz
		66–70	6000 Hz
		71–75	25000Hz
		76–80	Pan Inverse Off
		81–85	Pan Inverse On
		86–90	Tilt Inverse Off
		91–95	Tilt Inverse On
		96–100	Swap Pan Tilt Off
		101–105	Swap Pan Tilt On
		106–110	Fan Auto
		111–115	Fan On
		116–120	Fan Off
		121–125	Fan Silent
		126–160	Reserve
		161–165	Framing Shutter Independent Mode
		166–170	Framing Shutter Mixed Mode
		171–175	FrostIndependent Mode
		176–180	Frost Mixed Mode
		181–240	Reserve
		241–245	Head Reset
		246–250	Pan/Tilt Reset
		251–255	Complete Reset

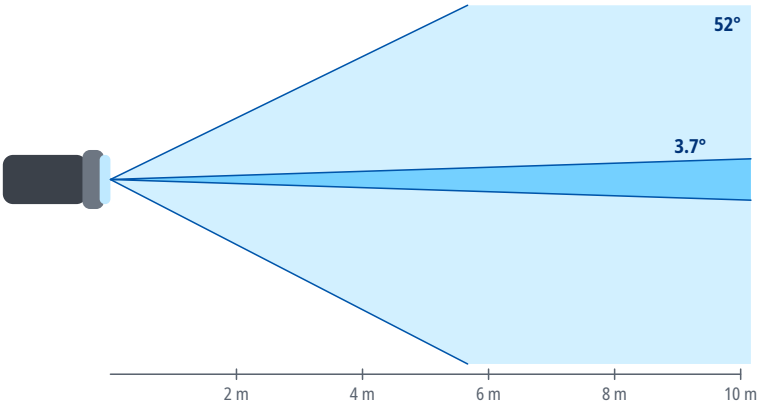
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	1,500 W
Luminous flux	49,000 lm
Color temperature	6,200 K
Color rendering index (CRI)	70
Optics	
Zoom	3.7–52°
Movement	
Pan	540°
Tilt	270°
Control	
RDM	yes (manufacturer ID 0x0030, device model ID 0xF0CE)
Dimensions and construction	
Weight	40 kg
Operating environment	
Operating temperature	-10 to 45 °C

Speeds and ranges

Parameter	Value
Color temperature range	2800–6200 K
Strobe frequency	1–30 Hz
Color wheel rotation	up to 80 °/s (13 rpm)
Gobo wheel 1 rotation	up to 720 °/s (120 rpm)
Gobo wheel 2 rotation	up to 720 °/s (120 rpm)
Gobo 1 rotation	up to 655 °/s (109 rpm)
Gobo 2 rotation	up to 655 °/s (109 rpm)
Prism 1 rotation	up to 270 °/s (45 rpm)
Prism 2 rotation	up to 270 °/s (45 rpm)
Animation wheel rotation	up to 655 °/s (109 rpm)

Spot diameter



Distance	Ø 3.7°	Ø 52°
2 m	0.13 m	2 m
4 m	0.26 m	3.9 m
6 m	0.39 m	5.9 m
8 m	0.52 m	7.8 m
10 m	0.65 m	9.8 m
15 m	0.97 m	14.6 m

Spot diameter square to the beam axis, calculated from the beam angle.

11 Maintenance and cleaning

- Before cleaning and maintenance, switch the device off, disconnect it from the power supply and let it cool down.
- Clean the housing with a soft, dry or slightly damp cloth. Do not use solvents, abrasive cleaners or pressure washers, and make sure no liquid gets into the device.
- Clean optical parts (lenses, front glass), if the device has any, with a soft lint-free cloth and a cleaner intended for optics or glass.
- Regularly inspect the housing, cables, connectors and fixings. Have damaged parts replaced by a service center.
- How often to clean depends on the environment; dust, smoke and fog make the device dirty much faster.

12 Troubleshooting

Problem	Remedy
The device does not switch on	Check the supply voltage, the cables and the fuse, if the device has one.
The device does not respond to DMX	Check the start address, the selected DMX mode and whether it matches the profile in the controller, the cable connection to DMX IN, and the controller output (universe).
The device behaves erratically or flickers	Check the terminator at the end of the line, the condition and wiring of the cables (shield on pin 1 only), the number of devices on the line (32 at most), and that the line is not split without a splitter.
Only some devices on the line respond	Check the cable and connectors between the last working and the first non-working device, and make sure all devices on the line are switched on.
Devices respond to the wrong channels or affect each other	Check that the addresses do not overlap and that the DMX mode on the devices matches the patch in the controller.
The device or the connected load does not light up although it receives DMX	Check the values of the dimmer, shutter and strobe channels against the DMX channel table. For the DMX modes for which the sources state it, the chapter DMX channels gives under the mode's heading which channels must be open.
Movement is reversed	Check whether Pan/Tilt inversion is enabled in the device menu or in the controller.
Moving parts do not reach the correct position after power-on or transport	Switch the device off and on again to reset the position, and make sure the transport lock, if any, is released. If this does not help, contact a service center.
Movement is jerky	Check the value of the Pan/Tilt speed channel, if the device has one, and the stability of the DMX signal.

13 Disposal

The crossed-out wheeled bin symbol on the product, in the manual or on the packaging means that the product must not be disposed of with unsorted household waste at the end of its life.

Take the end-of-life equipment to a collection point, for example a municipal collection site or a retailer. Proper disposal enables materials to be recycled and helps prevent possible negative effects on the environment and human health.

Follow the regulations applicable in your country; in the Czech Republic, take-back is governed by Act No. 542/2020 Coll., on End-of-Life Products.

Recycle the packaging materials according to their type.