DMX REFERENCE

RubyFCX

Prolights

Manufacturer	Prolights
GDTF file	Prolights_RubyFCX_8556.gdtf
GDTF revision	MATest · 2020-09-24
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1 About this manual

This document describes the Ruby FCX by Prolights. It was compiled from the GDTF file Prolights_RubyFCX_8556.gdtf from the GDTF-Share library.

File revision: “MATest”.

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 Prolights; 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

DMX modes

Mode	Channels	Units in one universe	First start addresses
EXTENDED	23	22	1, 24, 47, 70, ...

No light? Check these channels

- EXTENDED: CH 11 Dimmer above 0



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.

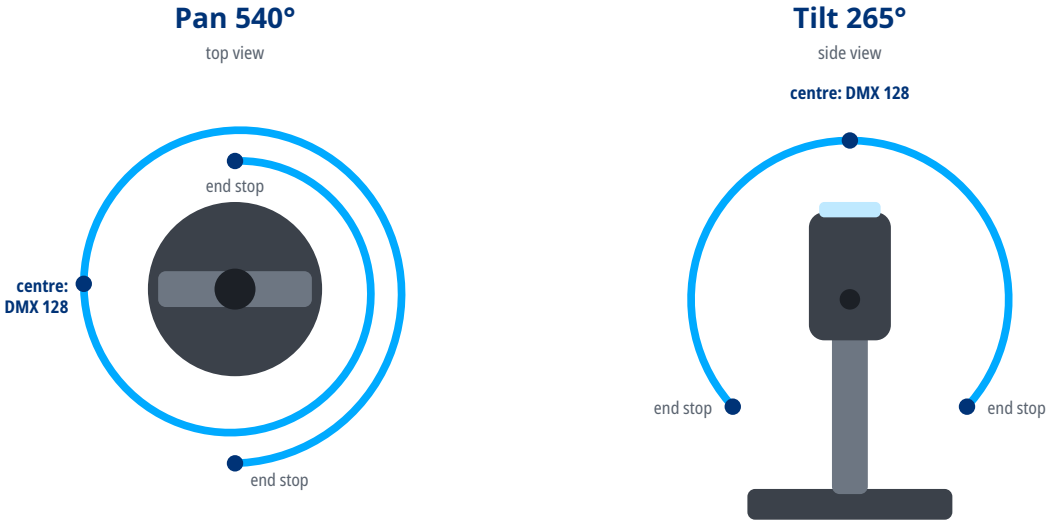
> ⚠ **WARNING**
>
> - The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
> - Keep yourself and any objects out of the range of movement. While the device is switched on, do 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

Description in the GDTF file

“The Ruby FCX is a LED replacement for a discharge beam light. Maintaining the bright, tight, 2° beam and adding full colour mixing through the high-efficiency RGB source. Ruby FCX is packed with all the features you would expect from a beam effect moving the light - such as gobos, 8f circular and 6f linear prism, frost and infinite pan and tilt rotation.”

Range of movement



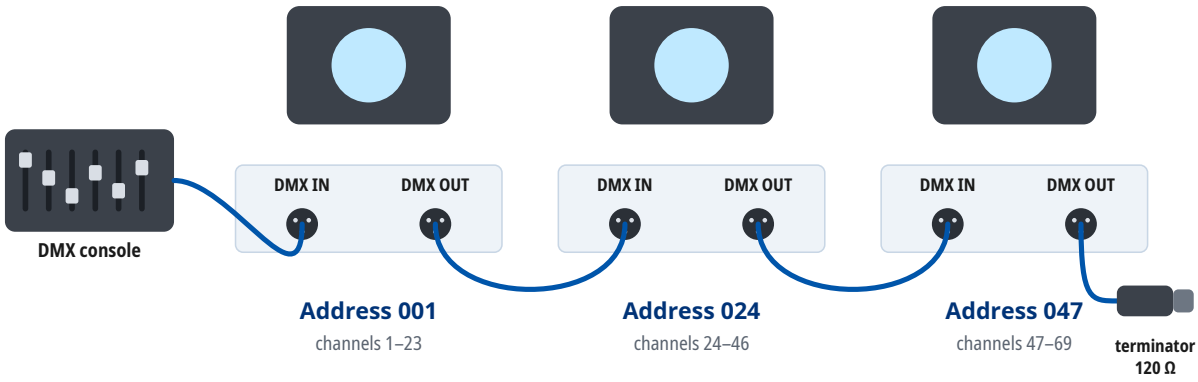
5 Installation

> ⚠ **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.
> - 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 EXTENDED: every unit occupies 23 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 “EXTENDED”: 23.
- 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 “EXTENDED”, you can use, for example, the start addresses 1, 24, 47, 70.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

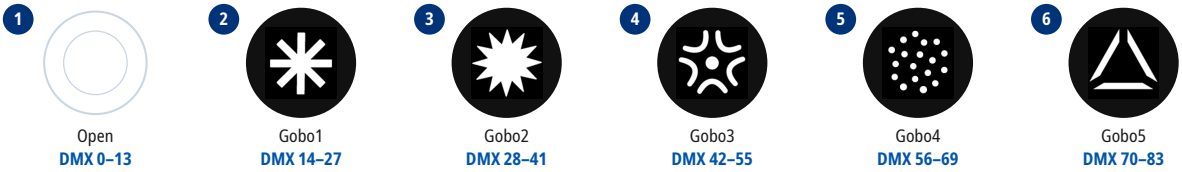
8 Functions at a glance

Functions in each DMX mode

	EXTENDED 23 channels
Pan / Tilt	1, 3
Dimmer	11
Shutter / strobe	10 *
Color mixing	15–17
Color temperature	12, 13
Gobo wheel	19 *
Prism	20, 21
Focus	22

* The function works only when another channel switches it on; see the DMX table.

Gobo wheel



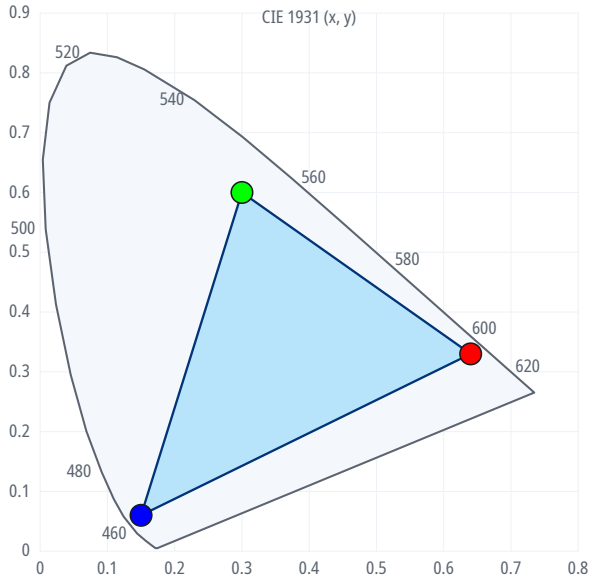
1 Open DMX 0–13
2 Gobo1 DMX 14–27
3 Gobo2 DMX 28–41
4 Gobo3 DMX 42–55
5 Gobo4 DMX 56–69
6 Gobo5 DMX 70–83
7 Gobo6 DMX 84–97
8 Gobo7 DMX 98–111
9 Gobo8 DMX 112–125
10 Gobo9 DMX 126–139
11 Gobo10 DMX 140–153
12 Gobo11 DMX 154–167
13 Gobo12 DMX 168–181
14 Gobo13 DMX 182–195
15 Gobo14 DMX 196–209
16 Gobo15 DMX 210–223
17 Gobo16 DMX 224–237
18 Gobo17 DMX 238

Prism



1 Open DMX 0–63
2 3 facets Circular DMX 64–127
3 1 facet Linear DMX 128–191
4 Frost DMX 192–255

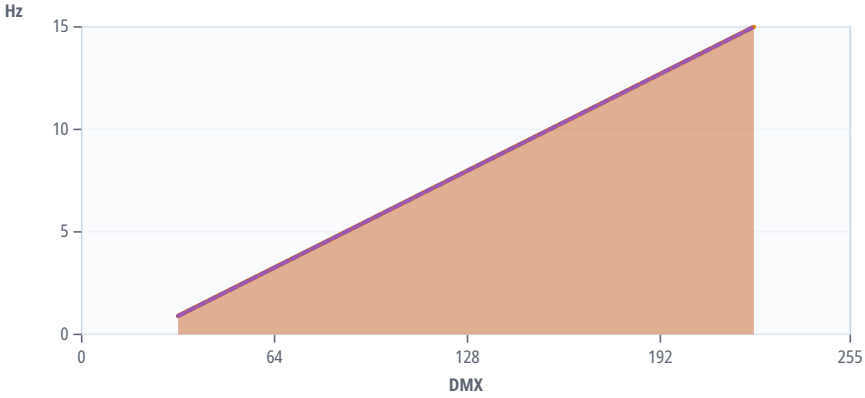
LED colors and the colors they mix



LED	x	y
Red Led	0.640	0.330
Green Led	0.300	0.600
Blue Led	0.150	0.060

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

Strobe rate

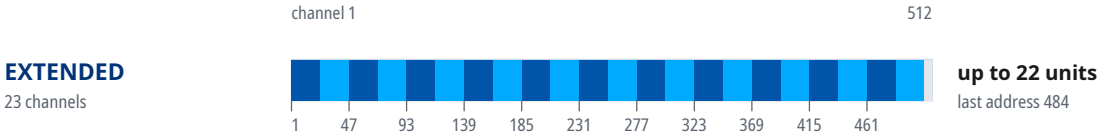


CH 10 · EXTENDED

- 32–223: 0.9–15 Hz
- 32–223: 0.9–15 Hz
  Shutter1StrobePulseOpen
- 32–223: 0.9–15 Hz
  Shutter1StrobePulseClose
- 32–223: 0.9–15 Hz
  Shutter1StrobeRandom

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “EXTENDED”

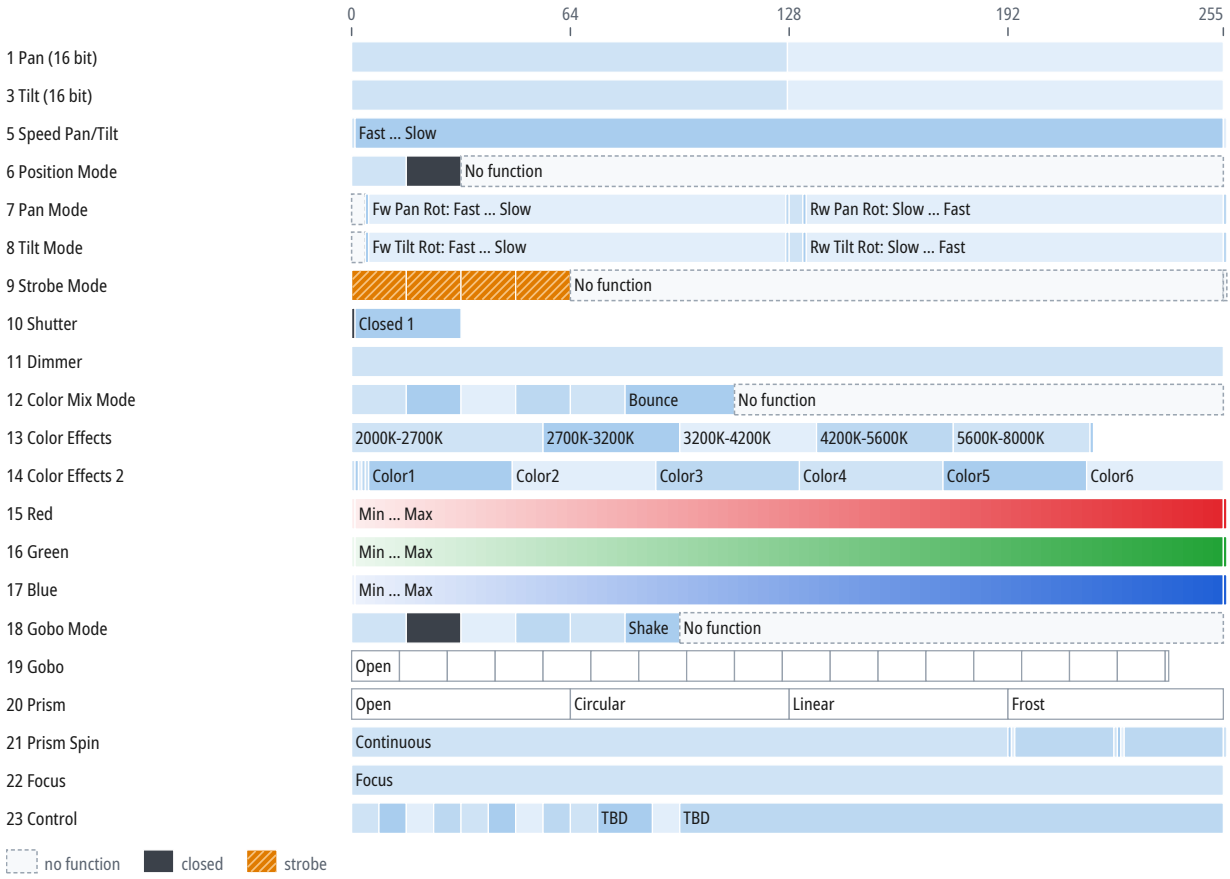
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	116	11	231	16	346
2	24	7	139	12	254	17	369
3	47	8	162	13	277	18	392
4	70	9	185	14	300	19	415
5	93	10	208	15	323	20	438

Mode EXTENDED

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 11 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 11 Dimmer 255, CH 15 Red 255, CH 16 Green 255, CH 17 Blue 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Pan 1
		128	Center
		128–255	Pan 1
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–127	Tilt 1
		128	Center
		128–255	Tilt 1
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0	Fast
		1–254	Fast ... Slow
		255	Slow
6	Position Mode	0–15	Normal
		16–31	BlackOutMode
		32–255	No function
7	Pan Mode	0–3	No function
		4	Fw Pan Rot: Fast
		5–126	Fw Pan Rot: Fast ... Slow
		127	Fw Pan Rot: Slow
		128–131	No Rotation
		132	Rw Pan Rot: Slow
		133–254	Rw Pan Rot: Slow ... Fast
		255	Rw Pan Rot: Fast
8	Tilt Mode	0–3	No function
		4	Fw Tilt Rot: Fast
		5–126	Fw Tilt Rot: Fast ... Slow
		127	Fw Tilt Rot: Slow
		128–131	No Rotation
		132	Rw Tilt Rot: Slow
		133–254	Rw Tilt Rot: Slow ... Fast
		255	Rw Tilt Rot: Fast
9	Strobe Mode	0–15	Shutter1Strobe
		16–31	Shutter 1 Strobe Pulse Open
		32–47	Shutter 1 Strobe Pulse Close
		48–63	Shutter1StrobePulseClose
		64–254	No function
		255	No function
10	Shutter		When CH 9 is 0–15:
		0–31	Closed
		32	Shutter 1 Strobe: Slow
		33–222	Shutter 1 Strobe: Slow ... Fast
		223	Shutter 1 Strobe: Fast

CH	Function	DMX	Description
10	Shutter (continued)	224–255	Open
			When CH 9 is 16–31:
		0	Closed
		1–31	Closed 1
		32	Shutter 1 Strobe Pulse Open: Slow
		33–222	Shutter 1 Strobe Pulse Open: Slow ... Fast
		223	Shutter 1 Strobe Pulse Open: Fast
		224–254	Open 1
		255	Open
			When CH 9 is 32–47:
		0	Closed
		1–31	Closed 2
		32	Shutter 1 Strobe Pulse Close: Slow
		33–222	Shutter 1 Strobe Pulse Close: Slow ... Fast
		223	Shutter 1 Strobe Pulse Close: Fast
		224–254	Open 2
		255	Open
			When CH 9 is 48–63:
		0	Closed
		1–31	Closed 3
		32	Shutter 1 Strobe Random: Slow
		33–222	Shutter 1 Strobe Random: Slow ... Fast
		223	Shutter 1 Strobe Random: Fast
		224–254	Open 3
		255	Open
11	Dimmer	0–255	
12	Color Mix Mode	0–15	Virtual Colors On
		16–31	CTC (2000–10000 K)
		32–47	FWSpin
		48–63	RWSpin
		64–79	Continuous
		80–111	Bounce
		112–255	No function
13	Color Effects		When CH 12 is 16–31:
		0–55	2000K-2700K (2000–2699 K)
		56–95	2700K-3200K (2700–3199 K)
		96–135	3200K-4200K (3200–4199 K)
		136–175	4200K-5600K (4200–5599 K)
		176–215	5600K-8000K (5600–7999 K)
		216–255	8000K-10000K (8000–10000 K)
14	Color Effects 2		When CH 12 is 80–111:
		0	Black

CH	Function	DMX	Description
14	Color Effects 2 (continued)	1	Red
		2	Green
		3	Blue
		4	RGB
		5–46	Color1
		47–88	Color2
		89–130	Color3
		131–172	Color4
		173–214	Color5
		215–255	Color6
15	Red	0	Min
		1–254	Min ... Max
		255	Max
16	Green	0	Min
		1–254	Min ... Max
		255	Max
17	Blue	0	Min
		1–254	Min ... Max
		255	Max
18	Gobo Mode	0–15	Indexed
		16–31	Index With Black Out
		32–47	FWSpin
		48–63	RWSpin
		64–79	Continuous
		80–95	Shake
		96–255	No function
19	Gobo		When CH 18 is 0–15:
		0–13	Open
		14–27	Gobo1
		28–41	Gobo2
		42–55	Gobo3
		56–69	Gobo4
		70–83	Gobo5
		84–97	Gobo6
		98–111	Gobo7
		112–125	Gobo8
		126–139	Gobo9
		140–153	Gobo10
		154–167	Gobo11
		168–181	Gobo12
		182–195	Gobo13
		196–209	Gobo14

CH	Function	DMX	Description
19	Gobo (continued)	210–223	Gobo15
		224–237	Gobo16
		238–255	Gobo17
20	Prism	0–63	Open
		64–127	Circular
		128–191	Linear
		192–255	Frost
21	Prism Spin	0–191	Continuous (360°)
		192	FWSpin: Stop
		193	FWSpin: Slow
		194–222	FWSpin: Slow ... Fast
		223	FWSpin: Fast
		224	RWSpin: Stop
		225	RWSpin: Slow
		226–254	RWSpin: Slow ... Fast
		255	RWSpin: Fast
22	Focus	0–255	Focus
23	Control	0–7	Normal
		8–15	ResetAll
		16–23	PositionReset
		24–31	TBD
		32–39	GoboReset
		40–47	TBD
		48–55	OtherReset
		56–63	DisplayOff
		64–71	DisplayOn
		72–87	TBD
		88–95	Hibernation
		96–255	TBD

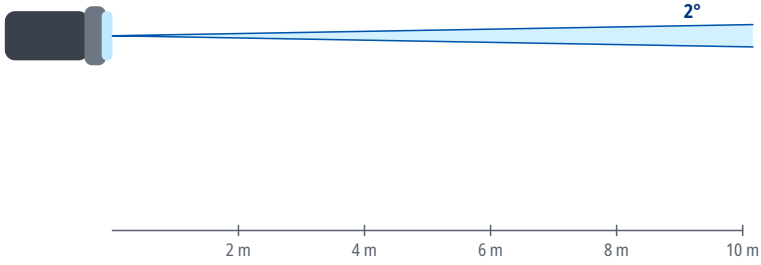
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	50 W
Luminous flux	837 lm
Color temperature	6,000 K
Color rendering index (CRI)	75
Optics	
Beam angle	2°
Movement	
Pan	540°
Tilt	265°

Speeds and ranges

Parameter	Value
Color temperature range	2000–10000 K
Strobe frequency	0.9–15 Hz
Gobo wheel rotation	up to 360 °/s (60 rpm)
Prism rotation	up to 360 °/s (60 rpm)

Spot diameter



Distance	Ø 2°
2 m	0.07 m
4 m	0.14 m
6 m	0.21 m
8 m	0.28 m
10 m	0.35 m
15 m	0.52 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.