DMX REFERENCE

Raptor

Raptor FPR

DTS Lighting



Manufacturer	DTS Lighting
GDTF file	DTS_Lighting_Raptor_22746.gdtf
GDTF revision	rel1.0 · 2022-03-03
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1 About this manual

This document describes the Raptor FPR by DTS Lighting. It was compiled from the GDTF file DTS_Lighting_Raptor_22746.gdtf from the GDTF-Share library.

File revision: “rel1.0”.

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 DTS Lighting; 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
Power consumption	450 W
Weight	15.4 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
18 Channels	18	28	1, 19, 37, 55, ...

No light? Check these channels

- 18 Channels: CH 8 Shutter at 20–39 or 234–255 “Open”


Read the manual before use


Risk of electric shock


Do not stare into the light


Indoor use only

3 Safety instructions


Read the manual before use


Risk of electric shock


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

- Connect the device only to a properly installed mains outlet with a protective earth (ground) contact. The outlet or other means of disconnection must remain easily accessible.
- Power supply: 90–260 V, 50/60 Hz. Before connecting, make sure that the mains voltage matches this value and the value on the rating plate of the device.
- Do not connect the device to a dimmer or to a dimmed circuit.
- Use only the original power cable or a cable with identical ratings. Protect the cable from damage, do not run it over sharp edges, and never unplug it by pulling on the cable.
- When connecting several devices to one circuit, do not exceed its permitted load.
- Do not touch the device with wet hands.

⚠ 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.

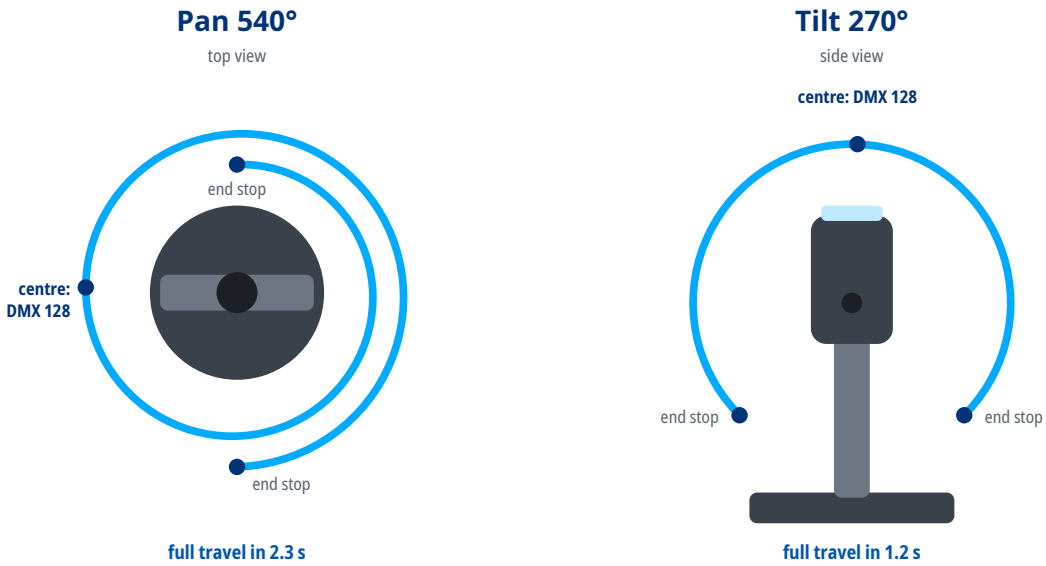
> ⚠ **WARNING**
>
> - The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
> - Keep yourself and any objects out of the range of movement. While the device is switched on, do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

“RAPTOR is the brightest and most compact BEAM moving head on the market. Thanks to its exclusive ‘FPR’ system and its unique 8-facet prism, RAPTOR is extremely versatile in any event as an effect projector or as a searchlight. RAPTOR is equipped with an HRI 330 W LAMP which delivers 16,500 Lumens.”

Range of movement



Full-travel times as stated in the GDTF file.

5 Installation

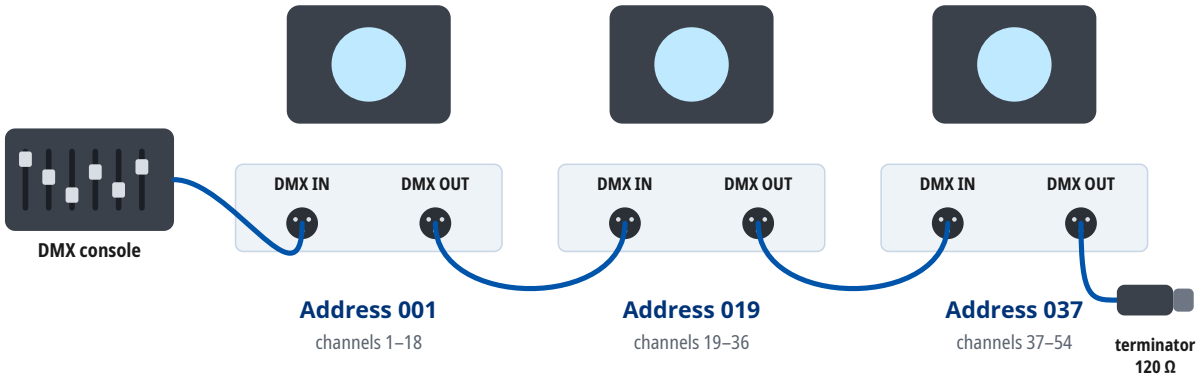
⚠ WARNING

- 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: 15.4 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 18 Channels: every unit occupies 18 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 “18 Channels”: 18.
- 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 “18 Channels”, you can use, for example, the start addresses 1, 19, 37, 55.
- 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.

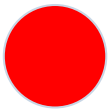
8 Functions at a glance

Functions in each DMX mode

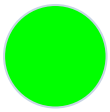
	18 Channels 18 channels
Pan / Tilt	1, 3
Dimmer	7
Shutter / strobe	8
Color wheel	9
Gobo wheel	11, 12
Prism	15, 16
Frost	13, 14
Focus	17

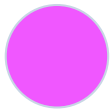
Color wheel

1
Open
DMX 0–13

2 
Red
DMX 14–27

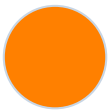
3
Yellow 1
DMX 28–41

4 
Green
DMX 42–55

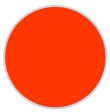
5 
Pink
DMX 56–69

6
Full CTO
DMX 70–83

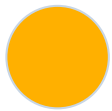
7
Full CTB
DMX 84–97

8 
Orange
DMX 98–111

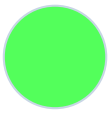
9 
Dark Blue
DMX 112–125

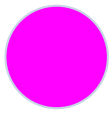
10 
Light Red
DMX 126–139

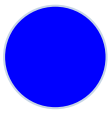
11 
Purple
DMX 140–153

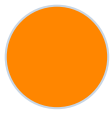
12 
Yellow 2
DMX 154–167

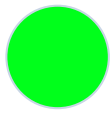
13 
Light Blue
DMX 168–181

14 
Light Green
DMX 182–195

15 
Magenta
DMX 196–209

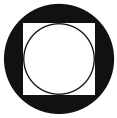
16 
Blue
DMX 210–223

17 
Amber
DMX 224–237

18 
Dark Green
DMX 238

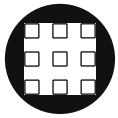
Gobo wheel

1
Open
DMX 0–10

2 
FixGobo 1
DMX 11–21

3 
FixGobo 2
DMX 22–32

4 
FixGobo 3
DMX 33–43

5 
FixGobo 4
DMX 44–54

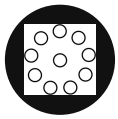
6 
FixGobo 5
DMX 55–65

7 
FixGobo 6
DMX 66–76

8 
FixGobo 7
DMX 77–87

9 
FixGobo 8
DMX 88–98

10 
FixGobo 9
DMX 99–109

11 
FixGobo 10
DMX 110–120

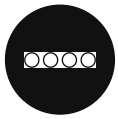
12 
FixGobo 11
DMX 121–131

13 
FixGobo 12
DMX 132–142

14 
FixGobo 13
DMX 143–153

15 
FixGobo 14
DMX 154–164

16 
FixGobo 15
DMX 165–175

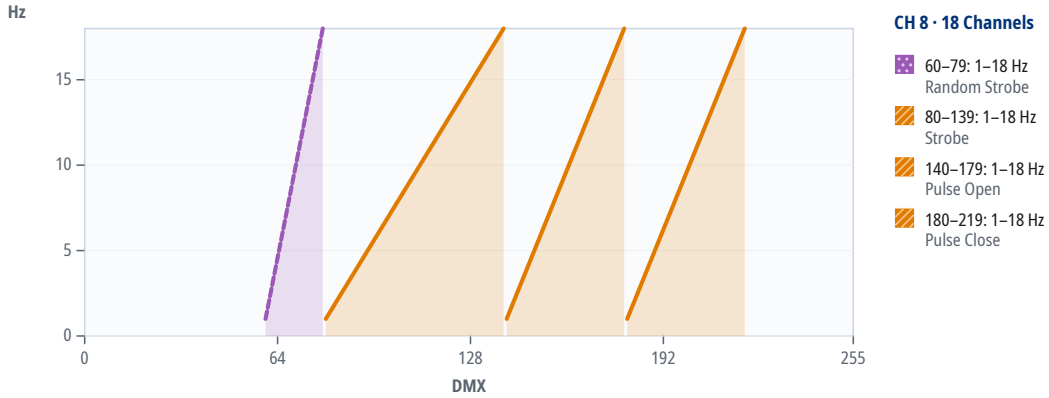
17 
FixGobo 16
DMX 176–186

18 
FixGobo 17
DMX 187–255

Prism

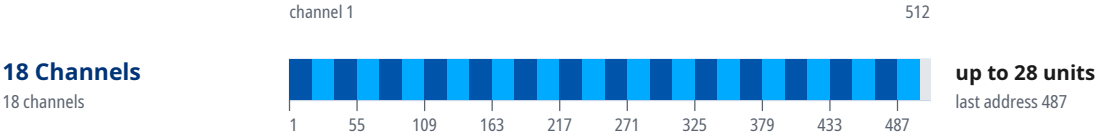
1 
8 facets
Wheel Slot 1

Strobe rate



9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “18 Channels”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	91	11	181	16	271
2	19	7	109	12	199	17	289
3	37	8	127	13	217	18	307
4	55	9	145	14	235	19	325
5	73	10	163	15	253	20	343

RDM personalities

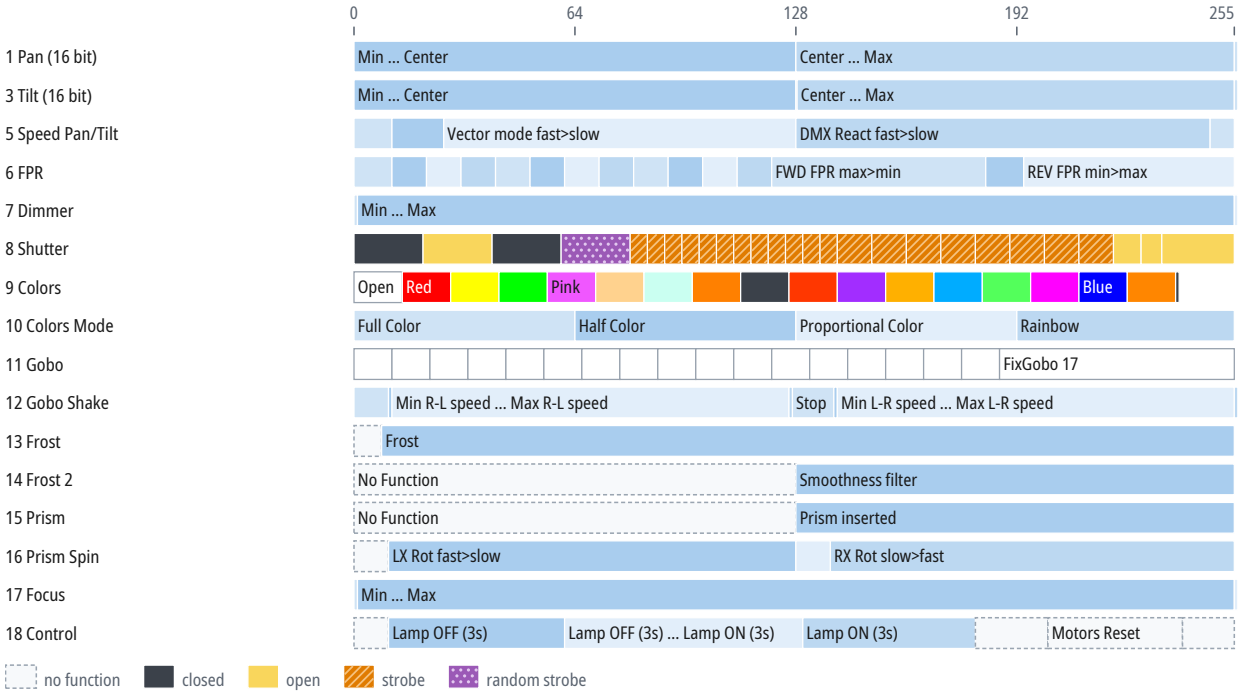
Mode	Channels	RDM personality
18 Channels	18	1

Mode 18 Channels

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 8 Shutter at 20–39 or 234–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 7 Dimmer 255, CH 8 Shutter 30.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–128	Min ... Center
		128–255	Center ... Max
		255	Max
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–128	Min ... Center
		128–255	Center ... Max
		255	Max
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–10	Standard
		11–25	Fast Movement
		26–127	Vector mode fast>slow
		128–247	DMX React fast>slow
		248–255	Silent movement
6	FPR	0–10	Standard 540deg path
		11–20	360deg path
		21–30	720deg path
		31–40	1080deg path
		41–50	1440deg path

CH	Function	DMX	Description
6	FPR (continued)	51–60	1800deg path
		61–70	2160deg path
		71–80	2520deg path
		81–90	2880deg path
		91–100	3240deg path
		101–110	3600deg path
		111–120	360deg smart path
		121–182	FWD FPR max>min
		183–193	Free Pan Rotation: Stop
		194–255	REV FPR min>max
7	Dimmer	0	Min
		1–254	Min ... Max
		255	Max
8	Shutter	0–19	Shutter: Closed
		20–39	Shutter: Open
		40–59	Shutter: Closed
		60–79	Random Strobe (1–18 Hz)
		80–84	Strobe speed 1
		85–89	Strobe speed 2
		90–94	Strobe speed 3
		95–99	Strobe speed 4
		100–104	Strobe speed 5
		105–109	Strobe speed 6
		110–114	Strobe speed 7
		115–119	Strobe speed 8
		120–124	Strobe speed 9
		125–129	Strobe speed 10
		130–134	Strobe speed 11
		135–139	Strobe speed 12
		140–149	PulseOpen speed 1
		150–159	PulseOpen speed 2
		160–169	PulseOpen speed 3
		170–179	PulseOpen speed 4
		180–189	PulseClose speed 1
		190–199	PulseClose speed 2
		200–209	PulseClose speed 3
		210–219	PulseClose speed 4
		220–227	Col/Gobos BO on Insertion
		228–233	P/T BO on Movement
		234–255	Shutter: Open
9	Colors		When CH 10 is 0–63:
		0–13	Open

CH	Function	DMX	Description
9	Colors (continued)	14–27	Red
		28–41	Yellow 1
		42–55	Green
		56–69	Pink
		70–83	Full CTO
		84–97	Full CTB
		98–111	Orange
		112–125	Dark Blue
		126–139	Light Red
		140–153	Purple
		154–167	Yellow 2
		168–181	Light Blue
		182–195	Light Green
		196–209	Magenta
		210–223	Blue
		224–237	Amber
		238–255	Dark Green
			When CH 10 is 64–127:
		0–12	Open
		13–25	Color 0-1
		26–38	Color 1-2
		39–51	Color 2-3
		52–64	Color 3-4
		65–77	Color 4-5
		78–90	Color 5-6
		91–103	Color 6-7
		104–116	Color 7-8
		117–129	Color 8-9
		130–142	Color 9-10
		143–155	Color 10-11
		156–168	Color 11-12
		169–181	Color 12-13
		182–194	Color 13-14
		195–207	Color 14-15
		208–220	Color 15-16
		221–233	Color 16-17
		234–255	Color 17-0
			When CH 10 is 128–191:
		0–10	Open
		11–255	Proportional Color
			When CH 10 is 192–255:
		0–9	Open

CH	Function	DMX	Description
9	Colors (continued)	10–127	RX Rot max>min (486.5–0.138 °/s)
		128–137	Stop
		138–255	LX Rot min>max (0.138–486.5 °/s)
10	Colors Mode		Color Mode
		0–63	Full Color
		64–127	Half Color
		128–191	Proportional Color
		192–255	Rainbow
11	Gobo		Fixed Gobo
		0–10	Open
		11–21	FixGobo 1
		22–32	FixGobo 2
		33–43	FixGobo 3
		44–54	FixGobo 4
		55–65	FixGobo 5
		66–76	FixGobo 6
		77–87	FixGobo 7
		88–98	FixGobo 8
		99–109	FixGobo 9
		110–120	FixGobo 10
		121–131	FixGobo 11
		132–142	FixGobo 12
		143–153	FixGobo 13
		154–164	FixGobo 14
		165–175	FixGobo 15
		176–186	FixGobo 16
		187–255	FixGobo 17
12	Gobo Shake	0–9	Stop
		10	Min R-L speed
		11–125	Min R-L speed ... Max R-L speed
		126	Max R-L speed
		127–138	Stop
		139	Min L-R speed
		140–254	Min L-R speed ... Max L-R speed
		255	Max L-R speed
13	Frost	0–7	No Function
		8–255	Frost
14	Frost 2		Smooth (hotspot remover)
		0–127	No Function
		128–255	Smoothness filter
15	Prism		8-facet Prism
		0–127	No Function

CH	Function	DMX	Description
15	Prism (continued)	128–255	Prism inserted
16	Prism Spin		Prism Rotation
		0–9	No Function
		10–127	LX Rot fast>slow
		128–137	Stop
		138–255	RX Rot slow>fast
17	Focus	0	Min
		1–254	Min ... Max
		255	Max
18	Control	0–9	No Function
		10–60	Lamp OFF (3s)
		61–129	Lamp OFF (3s) ... Lamp ON (3s)
		130–179	Lamp ON (3s)
		180–200	Fixture Reset
		201–239	Motors Reset
		240–255	Total Reset

10 Technical specifications

Parameter	Value
Light	
Light source	discharge lamp
Movement	
Pan	540°
Tilt	270°
Control	
DMX connection	5-pin XLR IN/OUT, 3-pin XLR IN/OUT
RDM	yes (manufacturer ID 0x0710, device model ID 0x0008)
Electrical	
Power supply	90–260 V, 50/60 Hz
Power consumption	450 W
Dimensions and construction	
Weight	15.4 kg
Operating environment	
Operating temperature	-10 to 40 °C

Speeds and ranges

Parameter	Value
Strobe frequency	1–18 Hz
Color wheel rotation	up to 486.5 °/s (81 rpm)

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.