DMX REFERENCE

SPOT 300

PSB



Manufacturer	PSB
GDTF file	PSB_SPOT_300_105468.gdtf
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1 About this manual

This document describes the SPOT 300 by PSB. It was compiled from the GDTF file PSB_SPOT_300_105468.gdtf from the GDTF-Share library.

File revision: “SPOT 300”.

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 PSB; 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	54.5 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
Mode 1 36CH	36	14	1, 37, 73, 109, ...

No light? Check these channels

- Mode 1 36CH: CH 4 Dimmer above 0; CH 6 Shutter at 252–255 “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

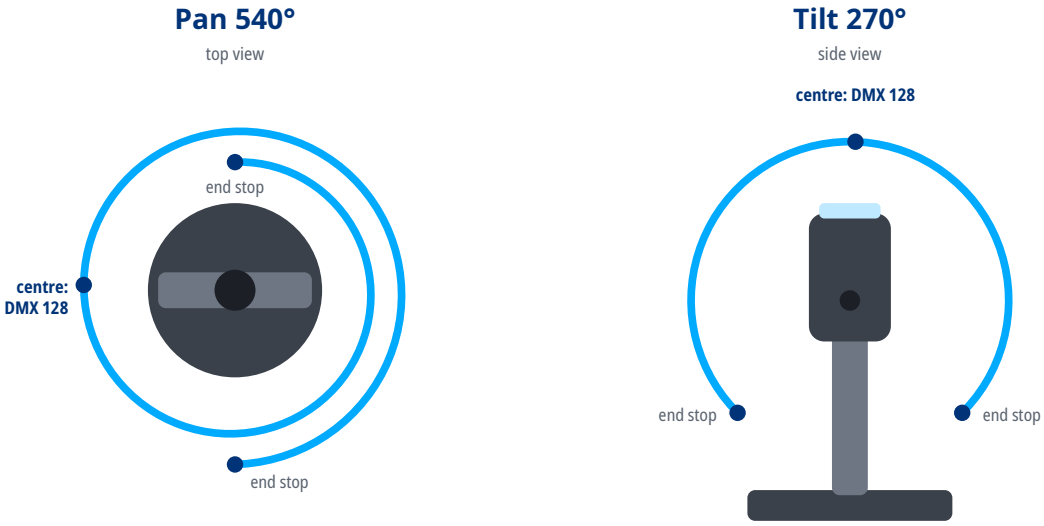
- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them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

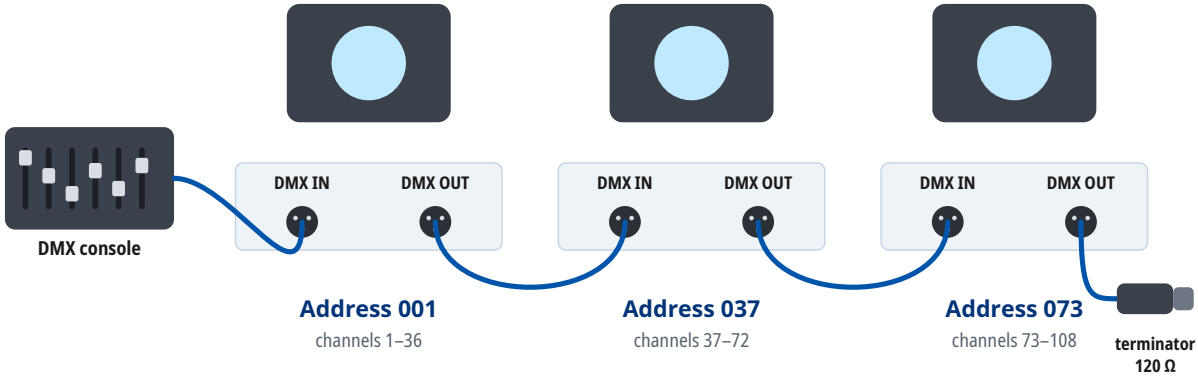
- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Weight of the device: 54.5 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 1 36CH: every unit occupies 36 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 “Mode 1 36CH”: 36.
- 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 “Mode 1 36CH”, you can use, for example, the start addresses 1, 37, 73, 109.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

8 Functions at a glance

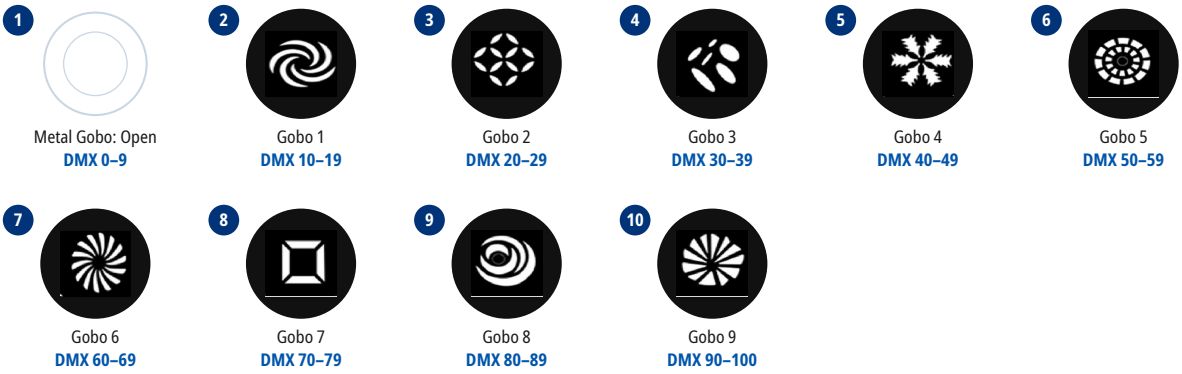
Functions in each DMX mode

	Mode 1 36CH 36 channels
Pan / Tilt	1, 2
Dimmer	4
Shutter / strobe	6
Color mixing	8–10
Color temperature	11
Color wheel	7
Gobo wheel	12, 13
Gobo rotation	14
Prism	18, 19
Frost	17
Zoom	16
Focus	32
Iris	20

Color wheel



Gobo wheel 1



Gobo wheel 2

1
Glass Gobo: Open
DMX 0–9

2 
Gobo 1
DMX 10–19

3 
Gobo 2
DMX 20–29

4 
Gobo 3
DMX 30–39

5 
Gobo 4
DMX 40–49

6 
Gobo 5
DMX 50–59

7 
Gobo 6
DMX 60–69

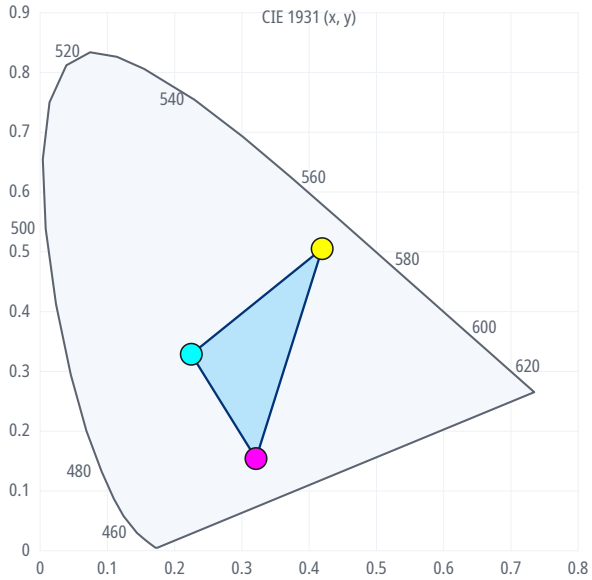
8 
Gobo 7
DMX 70–80

Prism

1
Open
DMX 0–7

2 
4 facets
Prism 1
DMX 128–255

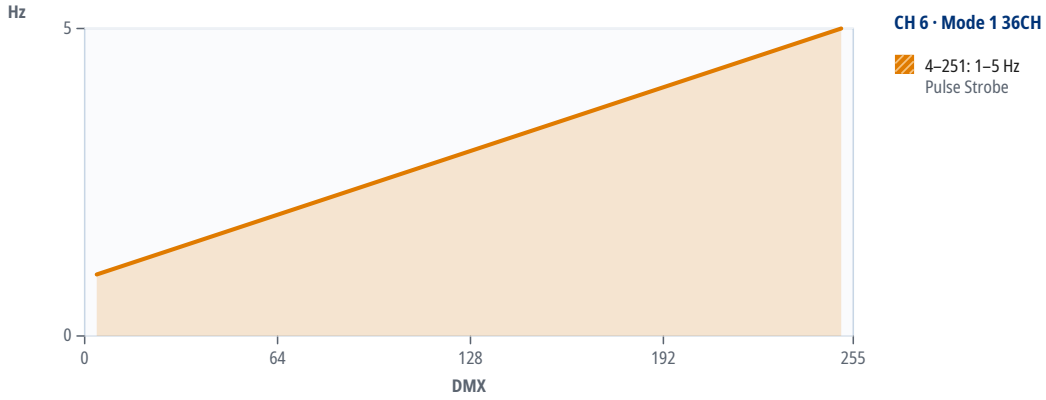
LED colors and the colors they mix



LED	x	y
C	0.225	0.329
M	0.321	0.154
Y	0.419	0.505

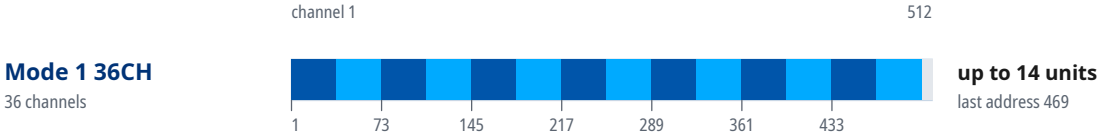
The shaded area holds the colors the LEDs can mix; the dots are the LED colors the GDTF file states.

Strobe rate



9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “Mode 1 36CH”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	181	11	361	16	U2 · 37
2	37	7	217	12	397	17	U2 · 73
3	73	8	253	13	433	18	U2 · 109
4	109	9	289	14	469	19	U2 · 145
5	145	10	325	15	U2 · 1	20	U2 · 181

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 1 36CH

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 4 Dimmer above 0; CH 6 Shutter at 252–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 4 Dimmer 255, CH 6 Shutter 255, CH 7 Colors 0, CH 8 Cyan 0, CH 9 Magenta 0, CH 10 Yellow 0, CH 11 CTO 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Min ... Center
		127	Center
		128–255	Center ... Max
		255	Max
2	Tilt	0–127	Min ... Center

CH	Function	DMX	Description
2	Tilt (continued)	127	Center
		128–255	Center … Max
		255	Max
3	Speed Pan/Tilt	0–255	
4	Dimmer	0–255	
5	Dimmer Fine	0–255	Fine adjustment of CH 4
6	Shutter	0–3	Closed
		4	Pulse Strobe
		5–140	Min Pulse Open
		141–251	Max Pulse Open
		252–255	Open
7	Colors	0–9	Color: Open
		10–19	Open … Red
		20–29	Red
		30–39	Red … Green
		40–49	Green
		50–59	Green … Dark Blue
		60–69	Dark Blue
		70–79	Dark Blue … Yellow
		80–89	Yellow
		90–99	Yellow … Turquoise
		100–109	Turquoise
		110–119	Turquoise … Purple
		120–129	Purple
		130–139	Purple … Orange
		140–149	Orange
		150–159	Color 1
		160	<<<
		161–179	<<< … <<
		180	<<
		181–199	<< … <
		200	<
		201–214	>
		215–224	>>
		225–255	>>>
8	Cyan	0	Min
		1–254	Min … Max
		255	Max
9	Magenta	0	Min
		1–254	Min … Max
		255	Max
10	Yellow	0	Min

CH	Function	DMX	Description
10	Yellow (continued)	1–254	Min … Max
		255	Max
11	CTO	0	6200K
		1–24	6200K … 5850K
		25	5850K
		26–49	5850K … 5500 K
		50	5500 K
		51–75	5500 K … 5150 K
		76	5150 K
		77–100	5150 K … 4800 K
		101	4800 K
		102–126	4800 K … 4450 K
		127	4450 K
		128–152	4450 K … 4100 K
		153	4100 K
		154–177	4100 K … 3750 K
		178	3750 K
		179–203	3750 K … 3400 K
		204	3400 K
		205–228	3400 K … 3050 K
		229	3050 K
		230–254	3050 K … 2700 K
		255	2700 K
12	Gobo	0–9	Metal Gobo: Open
		10–19	Gobo 1
		20–29	Gobo 2
		30–39	Gobo 3
		40–49	Gobo 4
		50–59	Gobo 5
		60–69	Gobo 6
		70–79	Gobo 7
		80–89	Gobo 8
		90–99	Gobo 9
		100–104	Shake 1
		105–109	Shake 2
		110–114	Shake 3
		115–119	Shake 4
		120–124	Shake 5
		125–129	Shake 6
		130–134	Shake 7
		135–139	Shake 8
		140–144	Shake 9

CH	Function	DMX	Description
12	Gobo (continued)	145	<<<
		146–167	<<< ... <<
		168	<<
		169–191	<< ... <
		192	<
		193–194	>
		195–223	> ... >>
		224	>>
		225–254	>> ... >>>
		255	>>>
13	Gobo 2	0–9	Glass Gobo: Open
		10–19	Gobo 1
		20–29	Gobo 2
		30–39	Gobo 3
		40–49	Gobo 4
		50–59	Gobo 5
		60–69	Gobo 6
		70–79	Gobo 7
		80–89	Shake 1
		90–99	Shake 2
		100–109	Shake 3
		110–119	Shake 4
		120–129	Shake 5
		130–139	Shake 6
		140–149	Shake 7
		150	<<<
		151–169	<<< ... <<
		170	<<
		171–199	<< ... <
		200	<
		201	>
		202–224	> ... >>
		225	>>
		226–254	>> ... >>>
		255	>>>
14	Gobo 2 Rotation Speed	0–127	Gobo 2 Index (360°)
		128–159	<<< ... <<
		159–189	<< ... <
		189	<
		190–193	Stop
		194–224	> ... >>
		224	>>

CH	Function	DMX	Description
14	Gobo 2 Rotation Speed (continued)	225–255	>> ... >>>
		255	>>>
15	Gobo 2 Rotation Speed Fine	0–255	Fine adjustment of CH 14
16	Zoom	0–255	48–4°
17	Frost	0–255	
18	Prism	0–127	Open
		128–255	Prism 1
19	Prism Rotation Speed	0–127	Index (360°)
		128	>>>
		129–158	>>> ... >>
		159	>>
		160–188	>> ... >
		189	>
		190–193	Stop
		194	<
		195–224	< ... <<
		225	<<
		226–254	<< ... <<<
		255	<<<
20	Iris	0–255	
21	Blade 1 A	0–255	
22	Blade 1 B	0–255	
23	Blade 2 A	0–255	
24	Blade 2 B	0–255	
25	Blade 3 A	0–255	
26	Blade 3 B	0–255	
27	Blade 4 A	0–255	
28	Blade 4 B	0–255	
29	Shaper Rotation		Blade 1 Rot 1
		0–255	Blade 1 Rot 1
30	Blade Zoom 3	0–255	
31	Blade Zoom 3 Fine	0–255	Fine adjustment of CH 30
32	Focus	0–255	
33	Focus Fine	0–255	Fine adjustment of CH 32
34	Function	0–9	No function
		10–19	Blade Mode 1
		20–29	Blade Mode 2
		30–39	Dim Square Law
		40–49	Dim Inv Square Law
		50–59	Dim Curve Linear
		60–69	Dim Curve S
		70–79	Cooling Standard

CH	Function	DMX	Description
34	Function (continued)	80–89	Cooling Quiet
		90–99	Cooling Theatre
		100–109	Frequency Setting
		110–119	Frequency Disable
		120–122	No function
		123	900HZ
		124	1000HZ
		125	1100HZ
		126	1200HZ
		127	1300HZ
		128	1400HZ
		129	1500HZ
		130	2500HZ
		131	4000HZ
		132	5000HZ
		133	6000HZ
		134	10KHZ
		135	15KHZ
		136	20KHZ
		137	25KHZ
		138	No function
		139	Null 2
		140–149	PT Reset
		150–159	Eff Reset
		160–169	Dim Curve Mode 1
		170–179	Dim Curve Mode 2
		180–199	No function
		200–209	All Reset
		210	Dim Speed Fast
		211–228	Dim Speed Fast ... Dim Speed Smooth
		229	Dim Speed Smooth
		230–231	Gobo Short Cut: Enable
		232–233	Gobo Short Cut: Disable
		234–235	Color Short Cut: Enable
		236–237	Color Short Cut: Disable
		238–239	CTB Comp Enable
		240–241	CTB Comp Disable
		242–255	Reset All
35	Pan Fine	0–255	Fine adjustment of CH 1
36	Tilt Fine	0–255	Fine adjustment of CH 2

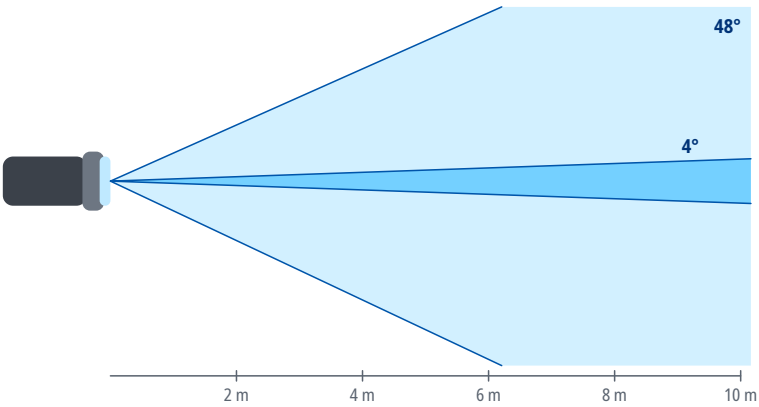
10 Technical specifications

Parameter	Value
Light	
Light source	discharge lamp
Lamp power	1,800 W
Luminous flux	50,000 lm
Color temperature	6,200 K
Color rendering index (CRI)	95
Optics	
Zoom	4–48°
Movement	
Pan	540°
Tilt	270°
Dimensions and construction	
Weight	54.5 kg
Operating environment	
Operating temperature	-10 to 40 °C

Speeds and ranges

Parameter	Value
Color temperature range	2700–6200 K
Color wheel rotation	up to 120 °/s (20 rpm)
Gobo wheel 1 rotation	up to 240 °/s (40 rpm)
Gobo wheel 2 rotation	up to 240 °/s (40 rpm)
Gobo 2 rotation	up to 360 °/s (60 rpm)
Prism rotation	up to 420 °/s (70 rpm)

Spot diameter



Distance	Ø 4°	Ø 48°
2 m	0.14 m	1.8 m
4 m	0.28 m	3.6 m
6 m	0.42 m	5.3 m
8 m	0.56 m	7.1 m
10 m	0.7 m	8.9 m
15 m	1 m	13.4 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.