DMX REFERENCE

Vader BWS 250-24CH18CH

Vader BWS 250 (250W LED,Spot/Beam/Wash)

LCPRO



Manufacturer	LCPRO
GDTF file	LcPro_Vader_BWS_250-24CH18CH_96922.gdtf
GDTF revision	250515 · 2025-05-15
Generated	2026-11-24

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1 About this manual

This document describes the Vader BWS 250 (250W LED,Spot/Beam/Wash) by LCPRO. It was compiled from the GDTF file LcPro_Vader_BWS_250-24CH18CH_96922.gdtf from the GDTF-Share library.

File revision: “250515”.

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 LCPRO; 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	12 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
24Ch	24	21	1, 25, 49, 73, ...
18CH	18	28	1, 19, 37, 55, ...

No light? Check these channels

- 24Ch: CH 9 Dimmer above 0; CH 11 Shutter at 0–3 “Open” or 4–67 or 100–131
- 18CH: CH 9 Dimmer above 0; CH 10 Shutter at 0–3 “Open” or 4–67 or 100–131



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

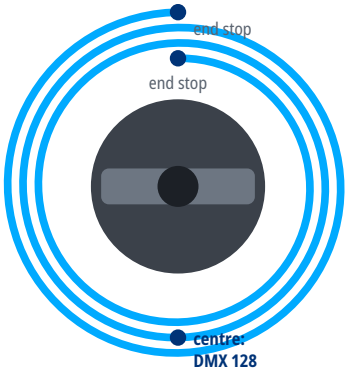
Description in the GDTF file

- 1.High brightness,67,800Lux@5m,3°
- 2.Really quiet,suitable for the noise-sensitive application,like theater
- 3.Super smooth dimmer,dimmer curve, flicker-free function
- 4.Auto-focus function
- 5.Compact structure and small size:12KG

Range of movement

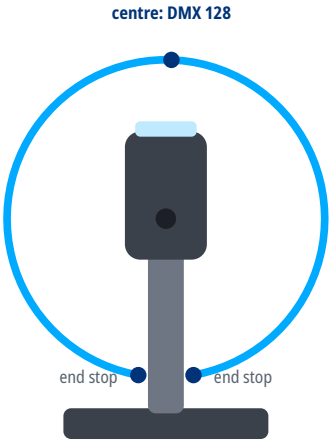
Pan 1080°

top view



Tilt 540°

side view



5 Installation

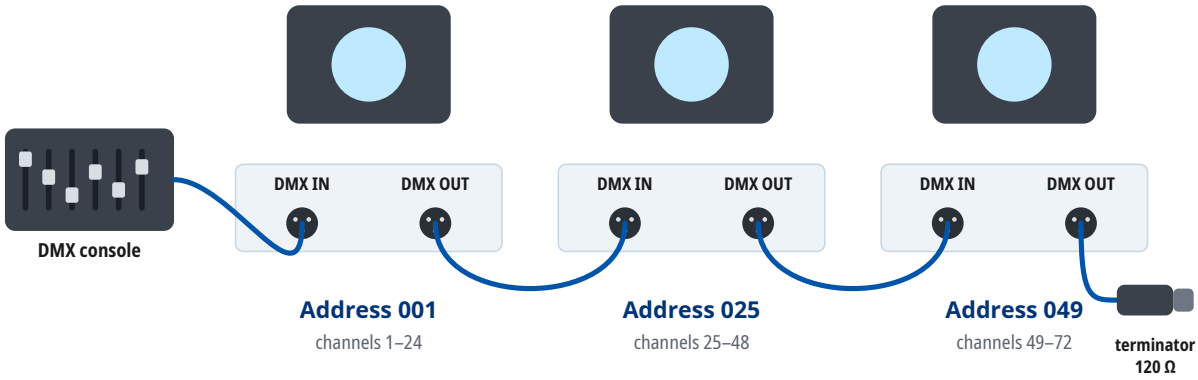
⚠ **WARNING**

- 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: 12 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 24Ch: every unit occupies 24 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

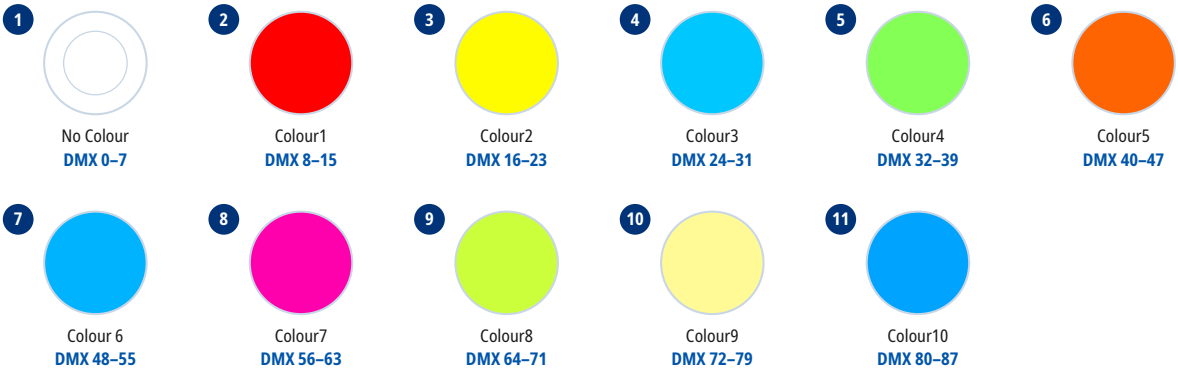
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “24Ch”: 24.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “24Ch”, you can use, for example, the start addresses 1, 25, 49, 73.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

8 Functions at a glance

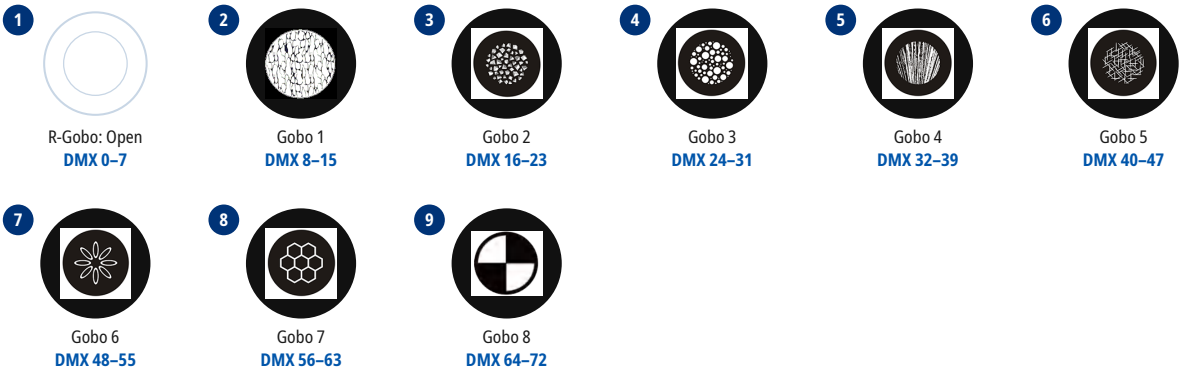
Functions in each DMX mode

	24Ch 24 channels	18CH 18 channels
Pan / Tilt	1, 3	1, 3
Dimmer	9	9
Dimmer resolution	16 bit	8 bit
Shutter / strobe	11	10
Color wheel	5	5
Gobo wheel	6, 7	6, 7
Gobo rotation	6–8	6–8
Prism	14, 15	12, 13
Frost	22	16
Zoom	16	14
Focus	18, 20	15

Color wheel



Gobo wheel 1



Gobo wheel 2

1
Fix gobo: Open
DMX 0–3

2 
Gobo 1
DMX 4–7

3 
Gobo 2
DMX 8–11

4 
Gobo 3
DMX 12–15

5 
Gobo 4
DMX 16–19

6 
Gobo 5
DMX 20–23

7 
Gobo 6
DMX 24–27

8 
Gobo 7
DMX 28–31

9 
Gobo 8
DMX 32–35

10 
Gobo 9
DMX 36–39

11 
Gobo 10
DMX 40–43

12 
Gobo 11
DMX 44–47

13 
Gobo 12
DMX 48–51

14 
Gobo 13
DMX 52–55

15 
Gobo 14
DMX 56–59

16 
Gobo 15
DMX 60–63

17 
Gobo 16
DMX 64–67

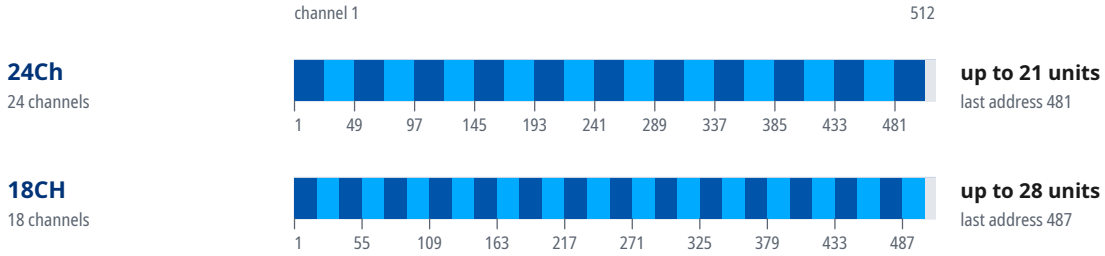
Prism

1
No Prism
DMX 0–31

2 
1 facet
Prism on
DMX 32–255

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “24Ch”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	121	11	241	16	361
2	25	7	145	12	265	17	385
3	49	8	169	13	289	18	409
4	73	9	193	14	313	19	433
5	97	10	217	15	337	20	457

Mode 24Ch

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 9 Dimmer above 0; CH 11 Shutter at 0–3 “Open” or 4–67 or 100–131. The GDTF file gives these values for a console's Highlight function: CH 5 Colors 0, CH 12 Dimmer Mode 0, CH 13 Dimmer Curve 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	Pan (1080°)
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	Tilt (540°)
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Colors	0–7	No Colour
		8–15	Colour1
		16–23	Colour2
		24–31	Colour3
		32–39	Colour4
		40–47	Colour5
		48–55	Colour 6
		56–63	Colour7
		64–71	Colour8
		72–79	Colour9
		80–87	Colour10
		88–95	Colour11

CH	Function	DMX	Description
5	Colors (continued)	96–221	Colour Arbitrary positioning
		222–238	Rotate left
		239–255	Rotate right
6	Gobo	0–3	Fix gobo: Open
		4–7	Gobo 1
		8–11	Gobo 2
		12–15	Gobo 3
		16–19	Gobo 4
		20–23	Gobo 5
		24–27	Gobo 6
		28–31	Gobo 7
		32–35	Gobo 8
		36–39	Gobo 9
		40–43	Gobo 10
		44–47	Gobo 11
		48–51	Gobo 12
		52–55	Gobo 13
		56–59	Gobo 14
		60–63	Gobo 15
		64–67	Gobo 16
		68–71	No Gobo
		72–77	Gobo1 Shake From Slow To Fast
		78–83	Gobo2 Shake From Slow To Fast
		84–89	Gobo3 Shake From Slow To Fast
		90–95	Gobo4 Shake From Slow To Fast
		96–101	Gobo5 Shake From Slow To Fast
		102–107	Gobo6 Shake From Slow To Fast
		108–113	Gobo7 Shake From Slow To Fast
		114–119	Gobo8 Shake From Slow To Fast
		120–125	Gobo9 Shake From Slow To Fast
		126–131	Gobo10 Shake From Slow To Fast
		132–137	Gobo11 Shake From Slow To Fast
		138–143	Gobo12 Shake From Slow To Fast
		144–149	Gobo13 Shake From Slow To Fast
		150–155	Gobo14 Shake From Slow To Fast
		156–161	Gobo15 Shake From Slow To Fast
		162–167	Gobo16 Shake From Slow To Fast
		168–211	Rotate Left
		212–255	Rotate Right (0–1 °/s)
7	Gobo 2	0–7	R-Gobo: Open
		8–15	Gobo 1
		16–23	Gobo 2

CH	Function	DMX	Description
7	Gobo 2 (continued)	24–31	Gobo 3
		32–39	Gobo 4
		40–47	Gobo 5
		48–55	Gobo 6
		56–71	Gobo 7
		72–79	Gobo1 Shake From Slow To Fast
		80–87	Gobo2 Shake From Slow To Fast
		88–95	Gobo3 Shake From Slow To Fast
		96–103	Gobo4 Shake From Slow To Fast
		104–111	Gobo5 Shake From Slow To Fast
		112–119	Gobo6 Shake From Slow To Fast
		120–127	Gobo7 Shake From Slow To Fast
		128–135	Gobo8 Shake From Slow To Fast (1.02–1.15 Hz)
		136–195	Rotate Left
		196–255	Rotate Right (0–1 °/s)
8	Gobo 2 Rotation Speed	0–3	No Effect
		4–123	R-Gobo Angle
		124–187	Rotate Left (0–508.5 °/s)
		188–191	Gobo 1 Pos: Stop
		192–255	Rotate Right (0–508.5 °/s)
9	Dimmer	0–255	Closed ... Open
		255	Open
10	Dimmer Fine	0–255	Fine adjustment of CH 9
11	Shutter	0–3	Strobe: Open
		4–67	Dimmer: Open<->Close
		68–99	Dimmer: Close->Open
		100–131	Dimmer: Open->Close
		132–175	Half Open And Half Close
		176–247	Pulse Strobe
		248–251	Synchronous Random Strobe
		252–255	Asynchronous Random Strobe
12	Dimmer Mode		Dimmer Frequency Speed
		0–31	600Hz Auto Fade
		32–63	600Hz No Fade
		64–95	300Hz Auto Fade
		96–127	300Hz No Fade
		128–159	1200Hz Auto Fade
		160–191	1200Hz No Fade
		192–223	8333Khz Auto Fade
		224–255	8333KHz No Fade
13	Dimmer Curve	0–31	Square Law
		32–63	Linear

CH	Function	DMX	Description
13	Dimmer Curve (continued)	64–95	Inverse Square Law
		96–127	S-Curve
		128–255	Reserve
14	Prism	0–31	No Prism
		32–255	Prism on
15	Prism Rotation Speed	0–3	Prism Stop (up to 1 °/s (0.2 rpm))
		4–123	Prism Angle
		124–187	Rotate Left Fast To Slow
		188–191	Prism 1 Pos: Stop
		192–255	Rotate Right Slow To Fast
16	Zoom	0–255	Max ... Min
		255	Min
17	Zoom Fine	0–255	Fine adjustment of CH 16
18	Focus	0–255	Min ... Max
		255	Max
19	Focus Fine	0–255	Fine adjustment of CH 18
20	Focus Distance		Auto focus distance
		0	Do Not Use Auto Focus
		0	5M
		0	8M
		0	10M
		0	15M
		1–255	Auto focus distance
21	Focus Distance Fine	0–255	Fine adjustment of CH 20
22	Frost	0–9	No Effect
		10–255	Liner Frost
23	Scan Speed	0–255	Fast To Slow
24	Control	0–19	No Used
		20–29	Reset All
		30–39	Reset Pan/Tilt
		40–49	Reset Colour/Gobo/CMY/CTO
		50–59	Reset Zoom/Focus/PrismFros
		60–69	No Effect
		70–74	Display Default
		75–79	Display off(don't Keep after shutdown)
		80–84	Display on(don't Keep after shutdown)
		85–89	Fan speed low(Keep after shutdown)
		90–94	Fan speed medium(Keep after shutdown)
		95–99	Fan speed high(Keep after shutdown)
		100–255	Fan Speed: No Effect

Mode 18CH

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 9 Dimmer above 0; CH 10 Shutter at 0–3 “Open” or 4–67 or 100–131. The GDTF file gives these values for a console's Highlight function: CH 5 Colors 0, CH 11 Dimmer Mode 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	Pan (1080°)
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	Tilt (540°)
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Colors		Same as CH 5 in the mode “24Ch” (p. 11)
6	Gobo		Same as CH 6 in the mode “24Ch” (p. 12)
7	Gobo 2		Same as CH 7 in the mode “24Ch” (p. 12)
8	Gobo 2 Rotation Speed		Same as CH 8 in the mode “24Ch” (p. 13)
9	Dimmer	0	Closed
		1–254	Closed ... Open
		255	Open
10	Shutter		Same as CH 11 in the mode “24Ch” (p. 13)
11	Dimmer Mode		Same as CH 12 in the mode “24Ch” (p. 13)
12	Prism		Same as CH 14 in the mode “24Ch” (p. 14)
13	Prism Rotation Speed		Same as CH 15 in the mode “24Ch” (p. 14)
14	Zoom	0	Max
		1–254	Max ... Min
		255	Min

CH	Function	DMX	Description
15	Focus	0	Min
		1–254	Min ... Max
		255	Max
16	Frost		Same as CH 22 in the mode “24Ch” (p. 14)
17	Scan Speed	0–255	Fast To Slow
18	Control		Same as CH 24 in the mode “24Ch” (p. 14)

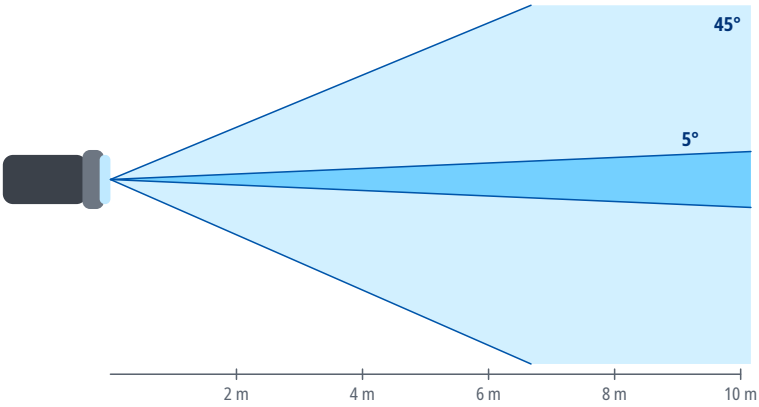
10 Technical specifications

Parameter	Value
Light	
Light source	discharge lamp
Lamp power	300 W
Luminous flux	13,000 lm
Color temperature	7,000 K
Color rendering index (CRI)	69
Optics	
Zoom	5–45°
Movement	
Pan	1,080°
Tilt	540°
Dimensions and construction	
Weight	12 kg
Operating environment	
Operating temperature	-10 to 40 °C

Speeds and ranges

Parameter	Value
Gobo 1 rotation	up to 508.5 °/s (85 rpm)
Gobo 2 rotation	up to 1 °/s (0.2 rpm)
Prism rotation	up to 1 °/s (0.2 rpm)

Spot diameter



Distance	Ø 5°	Ø 45°
2 m	0.17 m	1.7 m
4 m	0.35 m	3.3 m
6 m	0.52 m	5 m
8 m	0.7 m	6.6 m
10 m	0.87 m	8.3 m
15 m	1.3 m	12.4 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.