DMX REFERENCE

480 Diablo

PLS 480 Diablo

PLS



Manufacturer	PLS
GDTF file	PLS_480_Diablo_88559.gdtf
GDTF revision	Rev 3-2 · 2025-03-06
Generated	2026-11-24

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1 About this manual

This document describes the PLS 480 Diablo by PLS. It was compiled from the GDTF file PLS_480_Diablo_88559.gdtf from the GDTF-Share library.

File revision: “Rev 3-2”.

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 PLS; 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	850 W
Weight	21.6 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
Standard	34	15	1, 35, 69, 103, ...

No light? Check these channels

- Standard: CH 6 Shutter at 11–20, 127, 202, 245–255 “Open” or 21; CH 7 Dimmer above 0


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: 100–240 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

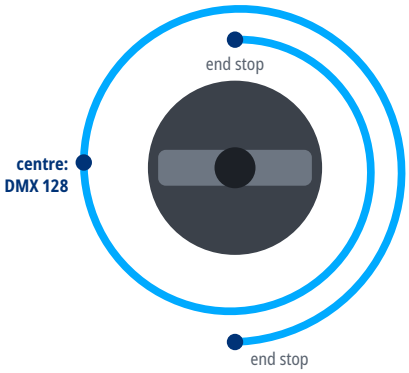
- The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
- Keep yourself and any objects out of the range of movement. While the device is switched on, do not touch the moving parts, 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

Range of movement

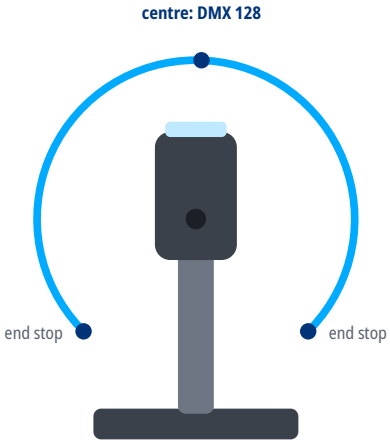
Pan 540°

top view



Tilt 270°

side view



5 Installation

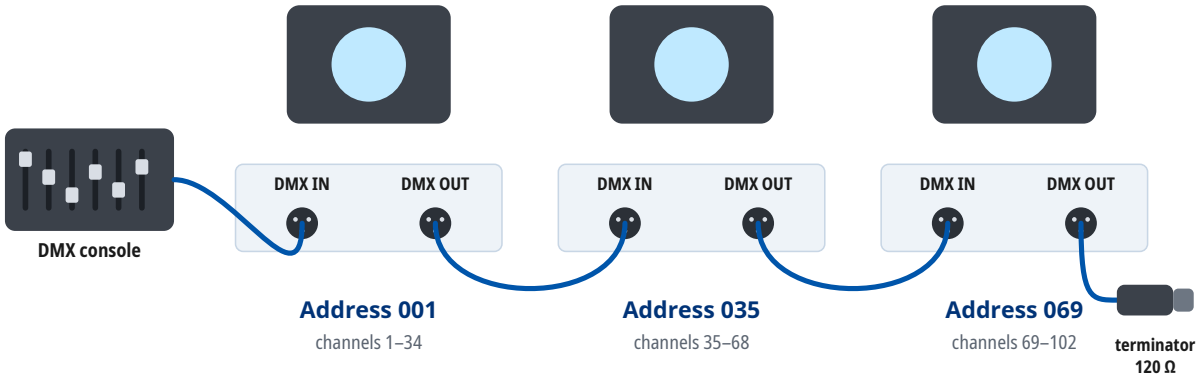
⚠ **WARNING**

- 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: 21.6 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 Standard: every unit occupies 34 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 “Standard”: 34.
- 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 “Standard”, you can use, for example, the start addresses 1, 35, 69, 103.
- 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

	Standard 34 channels
Pan / Tilt	1, 3
Dimmer	7
Shutter / strobe	6
Color mixing	13–15
Color temperature	16
Color wheel	12
Gobo wheel	17, 19
Gobo rotation	18
Prism	22, 23
Frost	24
Zoom	8
Focus	9, 10
Iris	21
Animation wheel	20

Gobo wheel 1



Gobo wheel 2

1.
Open
DMX 0–7

2. 
gobo1
DMX 9–20

3. 
gobo2
DMX 21–33

4. 
gobo3
DMX 34–46

5. 
gobo4
DMX 47–59

6. 
gobo5
DMX 60–72

7. 
gobo6
DMX 73–85

8. 
gobo7
DMX 86–98

9.
Gobo wheel rotation forward

10.
no rotation

11.
Gobo wheel rotation backwards

Gobo wheel 3

1.
Open
DMX 0–13

2. 
Gobo1
DMX 14–24

3. 
Gobo 2
DMX 25–35

4. 
Gobo3
DMX 36–46

5. 
Gobo4
DMX 47–57

6. 
Gobo5
DMX 58–68

7. 
Gobo6
DMX 69–79

8. 
Gobo7
DMX 80–90

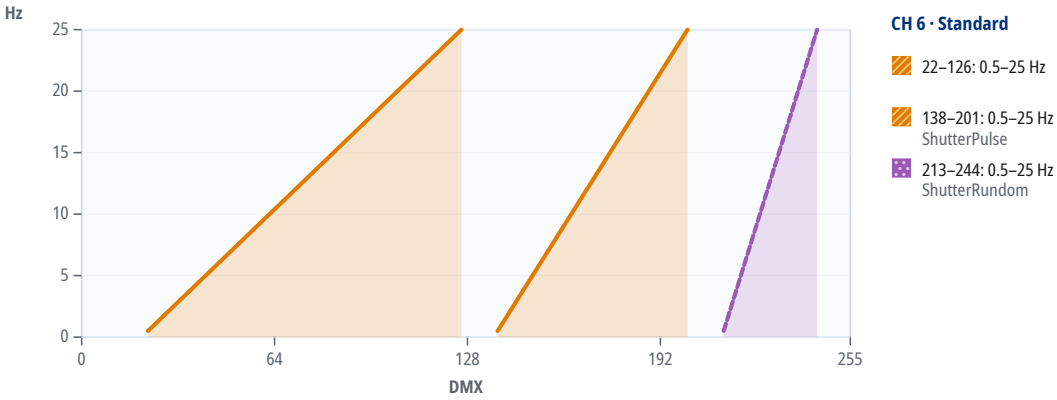
9. 
Gobo8
DMX 91–101

Prism

1.
Prism
DMX 128–255

2. 
5 facets
Prism open

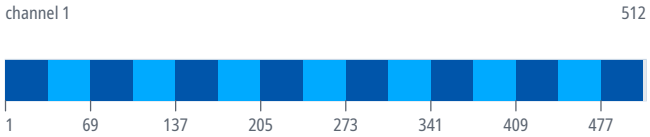
Strobe rate



9 DMX channels

Units in one DMX universe

Standard
34 channels



up to 15 units
last address 477

Start addresses of 20 units in the mode “Standard”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	171	11	341	16	U2 · 1
2	35	7	205	12	375	17	U2 · 35
3	69	8	239	13	409	18	U2 · 69
4	103	9	273	14	443	19	U2 · 103
5	137	10	307	15	477	20	U2 · 137

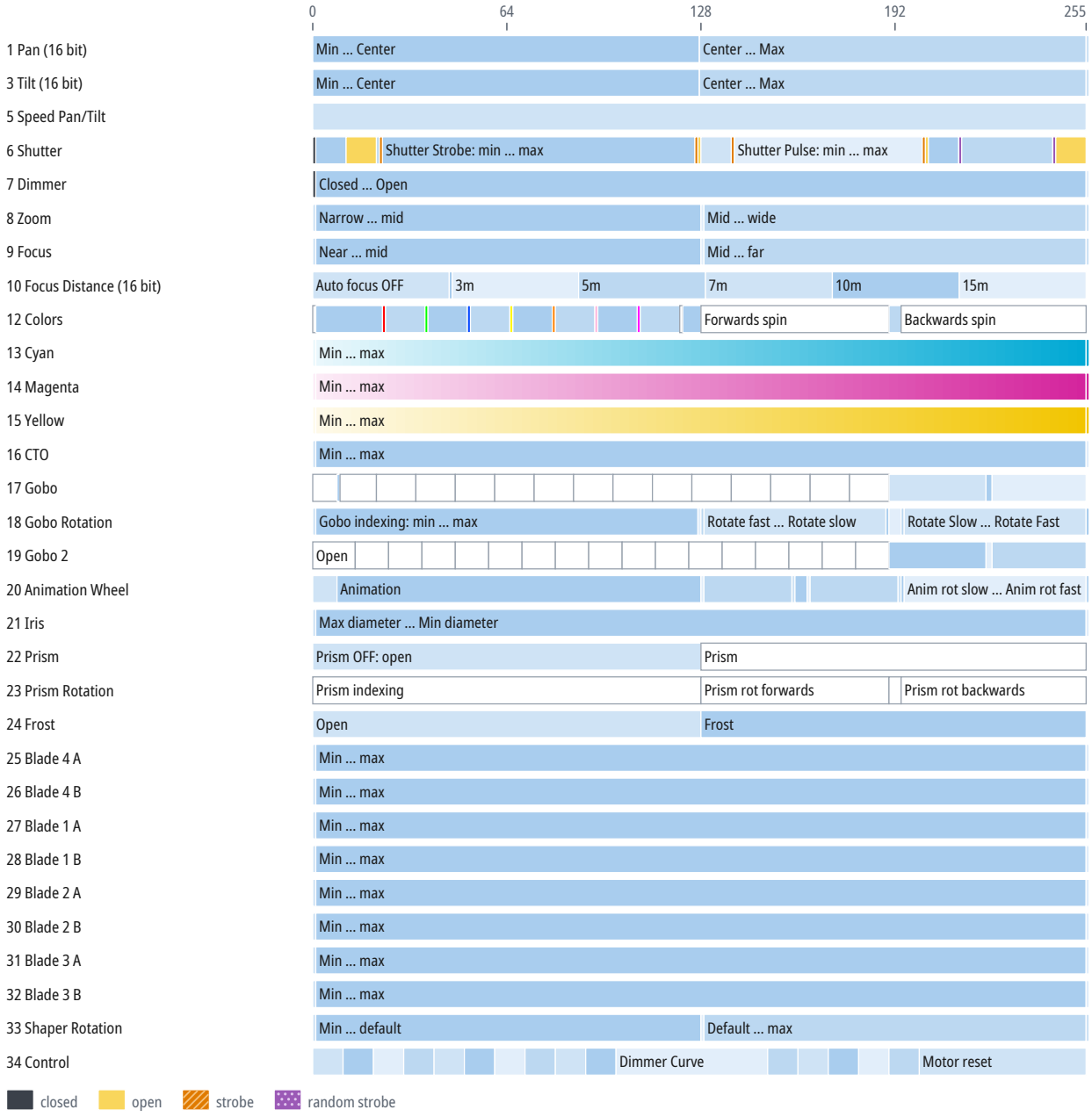
Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode Standard

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 6 Shutter at 11–20, 127, 202, 245–255 “Open” or 21; CH 7 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 6 Shutter 11, CH 7 Dimmer 255, CH 12 Colors 0, CH 13 Cyan 0, CH 14 Magenta 0, CH 15 Yellow 0, CH 16 CTO 0.

Channel functions at a glance



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

CH	Function	DMX	Description
3	Tilt	0–127	Min … Center
		128–255	Center … Max
		255	Max
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Shutter	0	LED OFF: Closed
		1–10	LED OFF
		11–20	LED ON: Open
		21	LED ON
		22	Shutter Strobe: min
		23–125	Shutter Strobe: min … max
		126	Shutter Strobe: max
		127	LED ON: Open
		128–137	LED ON 1
		138	Shutter Pulse: min
		139–200	Shutter Pulse: min … max
		201	Shutter Pulse: max
		202	LED ON: Open
		203–212	LED ON 2
		213	Shutter Rundom: min
		214–243	Shutter Rundom: min … max
		244	Shutter Rundom: max
		245–255	LED ON: Open
7	Dimmer	0	Closed
		1–254	Closed … Open
		255	Open
8	Zoom	0	Narrow
		1–127	Narrow … mid
		128	Mid
		129–254	Mid … wide
		255	Wide
9	Focus	0	Near
		1–127	Near … mid
		128	Mid
		129–254	Mid … far
		255	Far
10	Focus Distance	0–45	Auto focus OFF
		45–46	No Auto Focus
		46–87	3m
		88–129	5m
		130–171	7m
		172–213	10m

CH	Function	DMX	Description
10	Focus Distance (continued)	214–255	15m
11	Focus Distance Fine	0–255	Fine adjustment of CH 10
12	Colors	0	COLOR: open
		1–22	Open ... Red
		23	Red
		24–36	Red ... green
		37	Green
		38–50	Green ... Blue
		51	Blue
		52–64	Blue ... Yellow
		65	Yellow
		66–78	Yellow ... Orange
		79	Orange
		80–92	Orange ... Magenta
		93	Magenta
		94–106	Magenta ... Pink
		107	Pink
		108–120	Pink ... Open2
		121	COLOR: Open2
		122–127	COLOR
		128–189	Forwards spin
		190–193	No rotation
		194–255	Backwards spin
13	Cyan	0	Min
		1–254	Min ... max
		255	Max
14	Magenta	0	Min
		1–254	Min ... max
		255	Max
15	Yellow	0	Min
		1–254	Min ... max
		255	Max
16	CTO	0	Min
		1–254	Min ... max
		255	Max
17	Gobo	0–7	Open
		8	Open ... gobo1
		9–20	gobo1
		21–33	gobo2
		34–46	gobo3
		47–59	gobo4
		60–72	gobo5

CH	Function	DMX	Description
17	Gobo (continued)	73–85	gobo6
		86–98	gobo7
		99–111	gobo1 shake
		112–124	gobo2 shake
		125–137	gobo3 shake
		138–150	gobo4 shake
		151–163	gobo5 shake
		164–176	gobo6 shake
		177–189	gobo7 shake
		190–221	Rotation Gobo Forwards
		222–223	No rotation
		224–255	Rotation Gobo Backwards
18	Gobo Rotation	0	Gobo indexing: min
		1–126	Gobo indexing: min ... max
		127	Gobo indexing: max
		128	Rotate fast
		129–188	Rotate fast ... Rotate slow
		189	Rotate slow
		190–193	No rotate
		194	Rotate Slow
		195–254	Rotate Slow ... Rotate Fast
		255	Rotate Fast
19	Gobo 2	0–13	Open
		14–24	Gobo1
		25–35	Gobo 2
		36–46	Gobo3
		47–57	Gobo4
		58–68	Gobo5
		69–79	Gobo6
		80–90	Gobo7
		91–101	Gobo8
		102–112	Gobo1 shake
		113–123	Gobo2 shake
		124–134	Gobo3 shake
		135–145	Gobo4 shake
		146–156	Gobo5 shake
		157–167	Gobo6 shake
		168–178	Gobo7 shake
		179–189	Gobo8 shake
		190–221	Gobo rot forwards
		222–223	Stop rotation
		224–255	Gobo rot backwards

CH	Function	DMX	Description
20	Animation Wheel	0–7	Animation: open
		8–127	Animation
		128	CW max
		129–157	CW max … CW min
		158	CW min
		159–162	Animation Spin: stop
		163	CCW min
		164–192	CCW min … CCW max
		193	CCW max
		194	Anim rot slow
		195–254	Anim rot slow … Anim rot fast
		255	Anim rot fast
21	Iris	0	Max diameter
		1–254	Max diameter … Min diameter
		255	Min diameter
22	Prism	0–127	Prism OFF: open
		128–255	Prism
23	Prism Rotation	0–127	Prism indexing
		128–189	Prism rot forwards
		190–193	No rotate
		194–255	Prism rot backwards
24	Frost	0–127	Open
		128–255	Frost
25	Blade 4 A	0	Min
		1–254	Min … max
		255	Max
26	Blade 4 B	0	Min
		1–254	Min … max
		255	Max
27	Blade 1 A	0	Min
		1–254	Min … max
		255	Max
28	Blade 1 B	0	Min
		1–254	Min … max
		255	Max
29	Blade 2 A	0	Min
		1–254	Min … max
		255	Max
30	Blade 2 B	0	Min
		1–254	Min … max
		255	Max
31	Blade 3 A	0	Min

CH	Function	DMX	Description
31	Blade 3 A (continued)	1–254	Min ... max
		255	Max
32	Blade 3 B	0	Min
		1–254	Min ... max
		255	Max
33	Shaper Rotation	0	Min
		1–127	Min ... default
		128	Default
		129–254	Default ... max
		255	Max
34	Control	0–9	Unused
		10–19	Display OFF
		20–29	Display ON
		30–39	Display inv OFF
		40–49	Display inv ON
		50–59	Auto Fan
		60–69	High Fan
		70–79	Silent Fan
		80–89	Square Law
		90–99	Linear
		100–149	Dimmer Curve
		150–159	All motor reset
		160–169	Scan motor reset
		170–179	Colors motor reset
		180–189	Gobo motor reset
		190–199	Other motor reset
		200–255	Motor reset

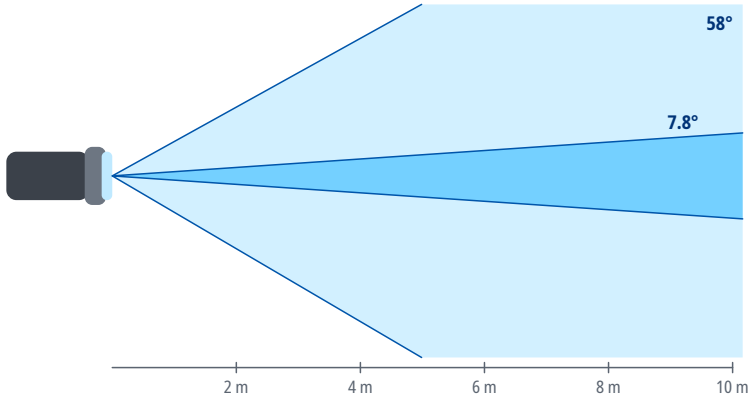
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	550 W
Luminous flux	53,400 lm
Color temperature	7,000 K
Color rendering index (CRI)	72
Optics	
Zoom	7.8–58°
Movement	
Pan	540°
Tilt	270°
Control	
DMX connection	5-pin XLR IN/OUT, 3-pin XLR IN/OUT
RJ45 connectors	RJ45 IN
Electrical	
Power supply	100–240 V, 50/60 Hz
Power consumption	850 W
Power connectors	powerCON TRUE1 IN/OUT
Dimensions and construction	
Weight	21.6 kg
Operating environment	
Operating temperature	-10 to 45 °C

Speeds and ranges

Parameter	Value
Strobe frequency	0.5–25 Hz

Spot diameter



Distance	Ø 7.8°	Ø 58°
2 m	0.27 m	2.2 m
4 m	0.55 m	4.4 m
6 m	0.82 m	6.7 m
8 m	1.1 m	8.9 m
10 m	1.4 m	11.1 m
15 m	2 m	16.6 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.