DMX REFERENCE

LED Moving Head 12x40W

FLASH



Manufacturer	FLASH
GDTF file	Flash_LED_Moving_Head_12x40W_43149.gdtf
GDTF revision	FLASH_v1 · 2023-07-12
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1 About this manual

This document describes the LED Moving Head 12x40W by FLASH. It was compiled from the GDTF file Flash_LED_Moving_Head_12x40W_43149.gdtf from the GDTF-Share library.

File revision: “FLASH_v1”.

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 FLASH; 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	300 W
Weight	6 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
21ch mode	21	24	1, 22, 43, 64, ...
61ch mode	61	8	1, 62, 123, 184, ...

No light? Check these channels

- 21ch mode: CH 7 Dimmer above 0; CH 8 Shutter at 0 “Open”
- 61ch mode: CH 7 Dimmer above 0; CH 8 Shutter at 0 “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: 100–245 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

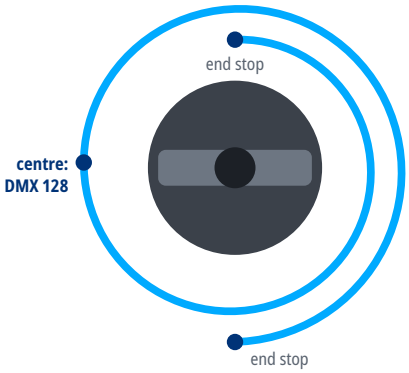
- The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
- Keep yourself and any objects out of the range of movement. While the device is switched on, do not touch the moving parts,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

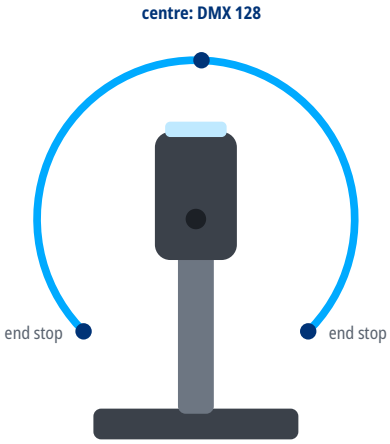
Pan 540°

top view



Tilt 270°

side view



5 Installation

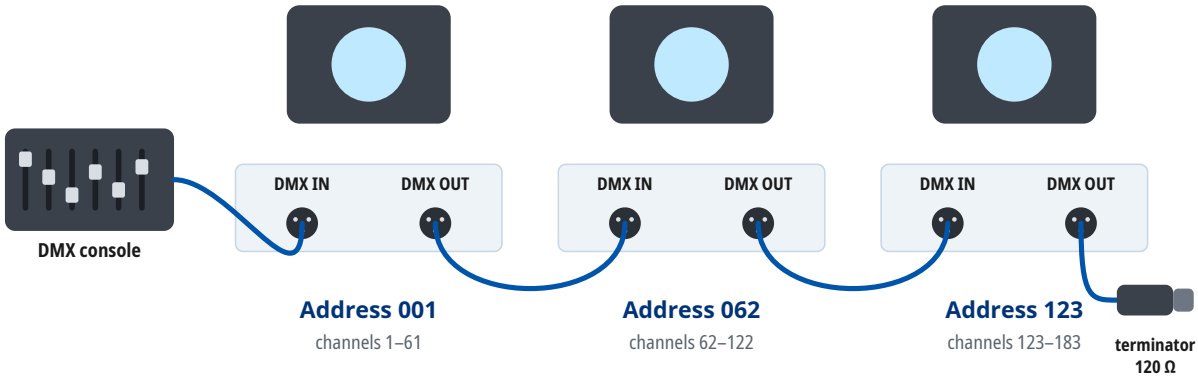
⚠ **WARNING**

- 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: 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 61ch mode: every unit occupies 61 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 “61ch mode”: 61.
- 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 “61ch mode”, you can use, for example, the start addresses 1, 62, 123, 184.
- 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

	21ch mode 21 channels	61ch mode 61 channels
Pan / Tilt	1, 3	1, 3
Dimmer	7	7
Shutter / strobe	8	8
Color mixing	9–12, 17–20	9–56
Color temperature	13	57
Color wheel	14	58
Zoom	6	6
Effects / macros	15, 16	59, 60

Color wheel

1 No function
DMX 0–15

2 Wheel Slot 1
DMX 16–35

3 Wheel Slot 2
DMX 36–55

4 Wheel Slot 3
DMX 56–75

5 Wheel Slot 4
DMX 76–95

6 Wheel Slot 5
DMX 96–115

7 Wheel Slot 6
DMX 116–135

8 Wheel Slot 8
DMX 136–155

9 Wheel Slot 7
DMX 156–175

10 Wheel Slot 9
DMX 176–195

11 All colors
DMX 196–200

12 2800K
DMX 201–205

13 3200K
DMX 206–210

14 4000K
DMX 211–215

15 4500K
DMX 216–220

16 5000K
DMX 221–225

17 5600K
DMX 226–230

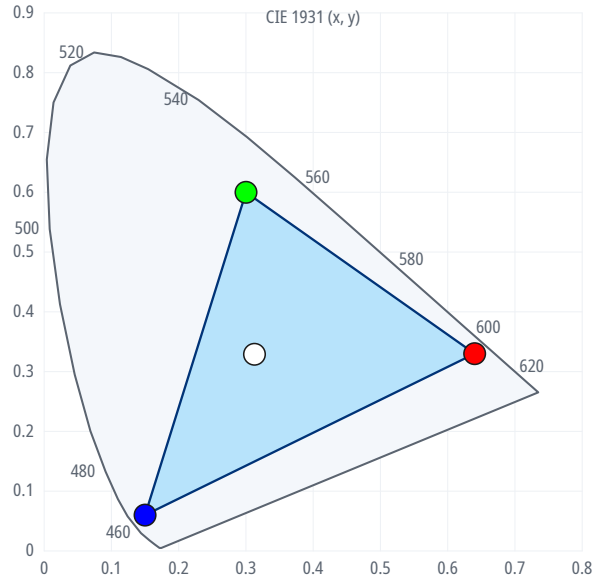
18 6500K
DMX 231–235

19 7000K
DMX 236–240

20 7500K
DMX 241–245

21 8000K
DMX 246–255

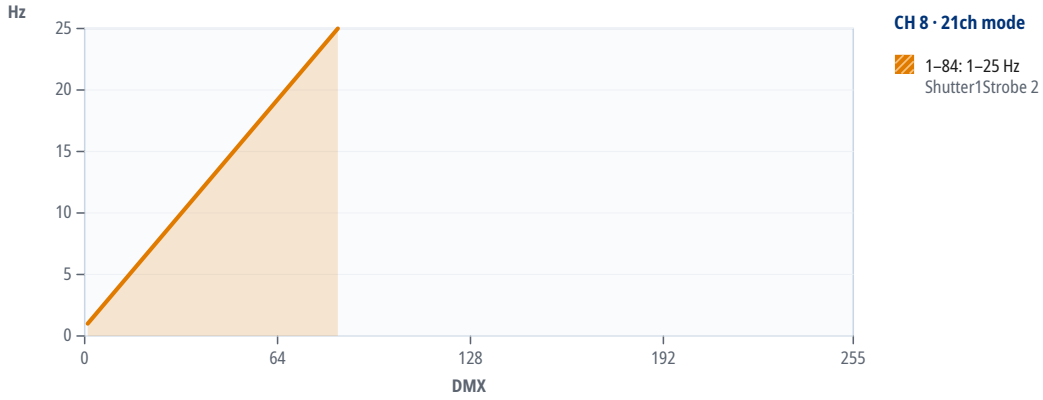
LED colors and the colors they mix



LED	x	y
Red	0.640	0.330
Green	0.300	0.600
Blue	0.150	0.060
White	0.313	0.329

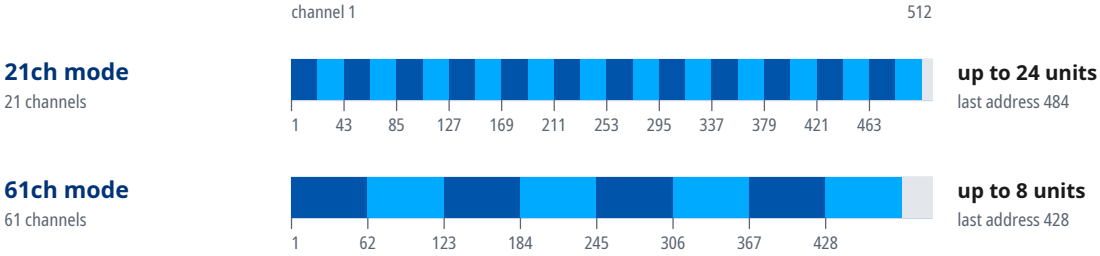
The shaded area holds the colors the LEDs can mix; the dots are the LED colors the GDTF file states.

Strobe rate



9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “61ch mode”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	306	11	U2 · 123	16	U2 · 428
2	62	7	367	12	U2 · 184	17	U3 · 1
3	123	8	428	13	U2 · 245	18	U3 · 62
4	184	9	U2 · 1	14	U2 · 306	19	U3 · 123
5	245	10	U2 · 62	15	U2 · 367	20	U3 · 184

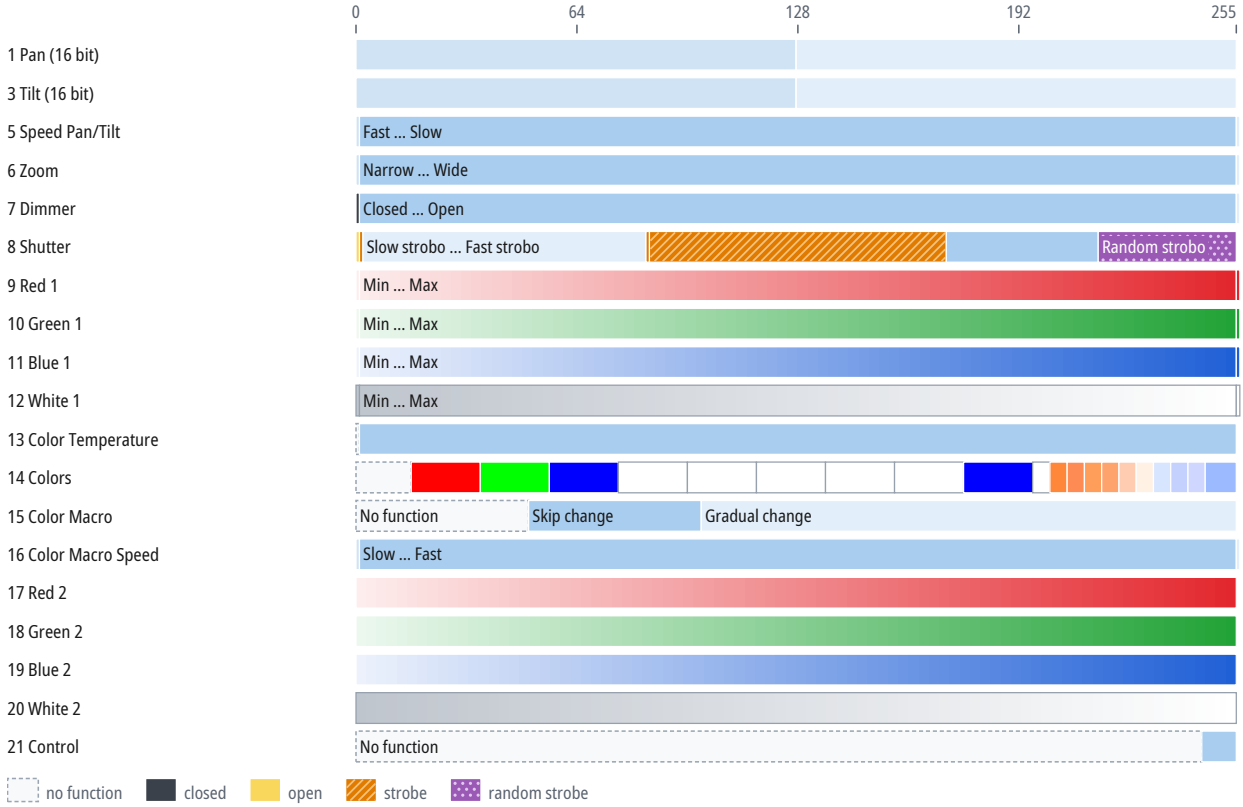
Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode 21ch mode

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 7 Dimmer above 0; CH 8 Shutter at 0 “Open”. The GDTF file gives these values for a console's Highlight function: CH 7 Dimmer 255, CH 8 Shutter 0, CH 9 Red 1 255, CH 10 Green 1 255, CH 11 Blue 1 255, CH 12 White 1 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Pan 1
		128	Home
		128–255	Pan 1
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–127	Tilt 1
		128	Home
		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	Zoom	0	Narrow
		1–254	Narrow ... Wide
		255	Wide
7	Dimmer	0	Closed

CH	Function	DMX	Description
7	Dimmer (continued)	1–254	Closed ... Open
		255	Open
8	Shutter	0	Open
		1	Slow strobo
		2–83	Slow strobo ... Fast strobo
		84	Fast strobo
		85–170	Shutter 1 Strobe Pulse 3
		171–214	Strobe Mode Random 3
		215–255	Random strobo
9	Red 1	0	Min
		1–254	Min ... Max
		255	Max
10	Green 1	0	Min
		1–254	Min ... Max
		255	Max
11	Blue 1	0	Min
		1–254	Min ... Max
		255	Max
12	White 1	0	Min
		1–254	Min ... Max
		255	Max
13	Color Temperature	0	No function
		1–255	CTC 2
14	Colors	0–15	No function
		16–35	Wheel Slot 1
		36–55	Wheel Slot 2
		56–75	Wheel Slot 3
		76–95	Wheel Slot 4
		96–115	Wheel Slot 5
		116–135	Wheel Slot 6
		136–155	Wheel Slot 8
		156–175	Wheel Slot 7
		176–195	Wheel Slot 9
		196–200	All colors
		201–205	2800K
		206–210	3200K
		211–215	4000K
		216–220	4500K
		221–225	5000K
		226–230	5600K
		231–235	6500K
		236–240	7000K

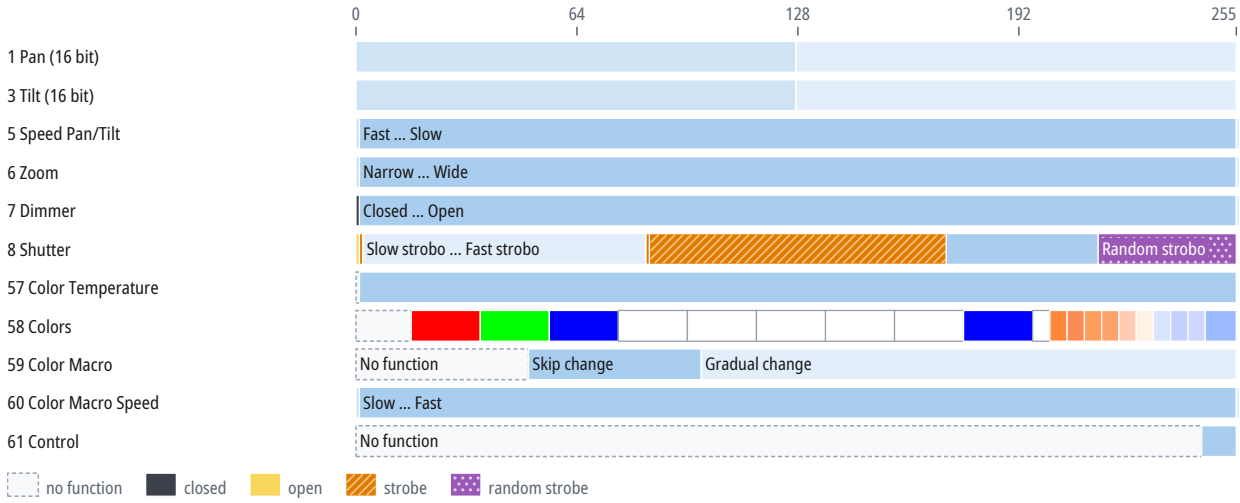
CH	Function	DMX	Description
14	Colors (continued)	241–245	7500K
		246–255	8000K
15	Color Macro	0–49	No function
		50–99	Skip change
		100–255	Gradual change
16	Color Macro Speed	0	Slow
		1–254	Slow ... Fast
		255	Fast
17	Red 2	0–255	
18	Green 2	0–255	
19	Blue 2	0–255	
20	White 2	0–255	
21	Control	0–244	No function
		245–255	Reset

Mode 61ch mode

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 7 Dimmer above 0; CH 8 Shutter at 0 “Open”. The GDTF file gives these values for a console's Highlight function: CH 7 Dimmer 255, CH 8 Shutter 0, CH 9 Red 255 (the same in each of the 12 cells), CH 10 Green 255 (the same in each of the 12 cells), CH 11 Blue 255 (the same in each of the 12 cells), CH 12 White 0 (the same in each of the 12 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	Pan		Same as CH 1 in the mode “21ch mode” (p. 10)
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt		Same as CH 3 in the mode “21ch mode” (p. 10)
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt		Same as CH 5 in the mode “21ch mode” (p. 10)
6	Zoom		Same as CH 6 in the mode “21ch mode” (p. 10)

CH	Function	DMX	Description
7	Dimmer		Same as CH 7 in the mode “21ch mode” (p. 10)
8	Shutter		Same as CH 8 in the mode “21ch mode” (p. 11)
9	Red 1	0	Min
		1–254	Min ... Max
		255	Max
10	Green 1	0	Min
		1–254	Min ... Max
		255	Max
11	Blue 1	0	Min
		1–254	Min ... Max
		255	Max
12	White 1	0	Min
		1–254	Min ... Max
		255	Max
57	Color Temperature		Same as CH 13 in the mode “21ch mode” (p. 11)
58	Colors		Same as CH 14 in the mode “21ch mode” (p. 11)
59	Color Macro		Same as CH 15 in the mode “21ch mode” (p. 12)
60	Color Macro Speed		Same as CH 16 in the mode “21ch mode” (p. 12)
61	Control		Same as CH 21 in the mode “21ch mode” (p. 12)

CH 9–56: 12 cells of 4 channels each. Every cell works as cell 1 in the table above (CH 9–12); the table below gives each cell's channel numbers.

Cell	Red	Green	Blue	White	Cell	Red	Green	Blue	White
1	9	10	11	12	2	13	14	15	16
3	17	18	19	20	4	21	22	23	24
5	25	26	27	28	6	29	30	31	32
7	33	34	35	36	8	37	38	39	40
9	41	42	43	44	10	45	46	47	48
11	49	50	51	52	12	53	54	55	56

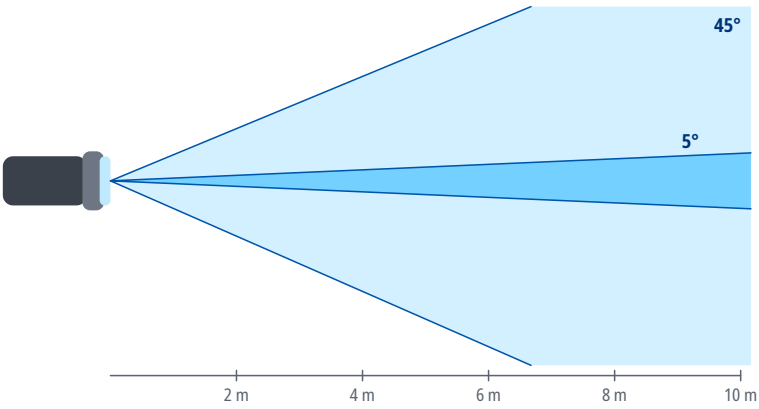
10 Technical specifications

Parameter	Value
Light	
Light source	LED
Optics	
Zoom	5–45°
Movement	
Pan	540°
Tilt	270°
Control	
DMX connection	3-pin XLR IN/OUT
Electrical	
Power supply	100–245 V, 50/60 Hz
Power consumption	300 W
Power connectors	NAC3FCA IN, NAC3FCB OUT
Dimensions and construction	
Weight	6 kg
Operating environment	
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Strobe frequency	1–25 Hz

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.