DMX REFERENCE

M-Thunder M IP

M-Light Thunder M IP

MLight

Manufacturer	MLight
GDTF file	MLight_M-Thunder_M_IP_128226.gdtf
GDTF revision	rev1 · 2026-02-10
Generated	2026-11-24

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1 About this manual

This document describes the M-Light Thunder M IP by MLight. It was compiled from the GDTF file MLight_M-Thunder_M_IP_128226.gdtf from the GDTF-Share library.

File revision: “rev1”.

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 MLight; 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	14.8 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
13CH	13	39	1, 14, 27, 40, ...
44CH	44	11	1, 45, 89, 133, ...
50CH	50	10	1, 51, 101, 151, ...

No light? Check these channels

- 13CH: CH 3 Dimmer above 0; CH 4 Shutter at 0–4 “Open” or 250–255 “Shutter Open”
- 50CH: CH 4 Dimmer above 0; CH 5 Shutter at 0–4 “Open” or 250–255 “Shutter 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.

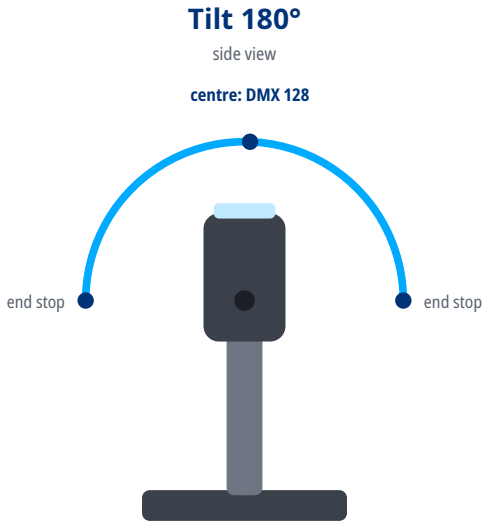
⚠ CAUTION

- 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



Full-travel times as stated in the GDTF file.

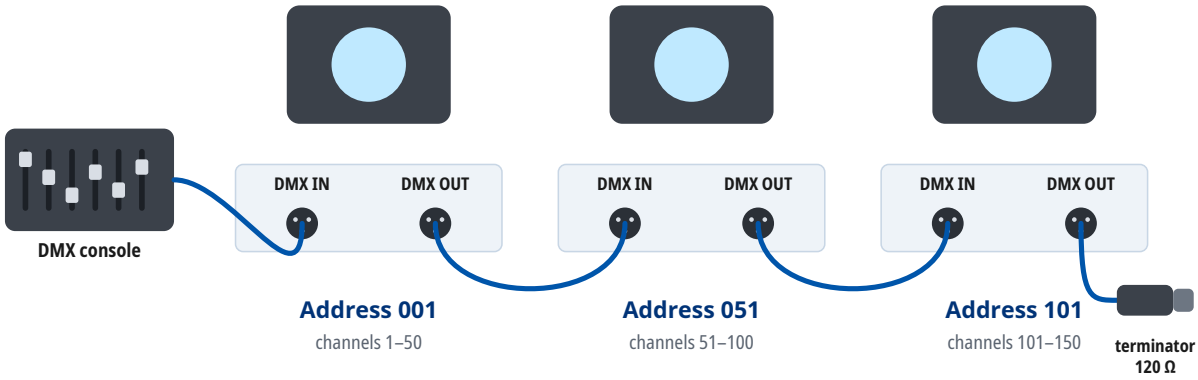
5 Installation

> ⚠ **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: 14.8 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 50CH: every unit occupies 50 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

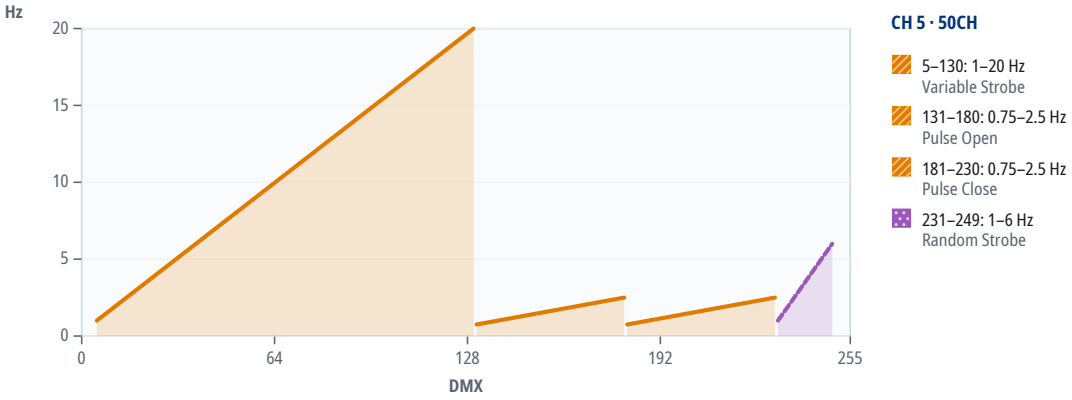
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “50CH”: 50.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “50CH”, you can use, for example, the start addresses 1, 51, 101, 151.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

8 Functions at a glance

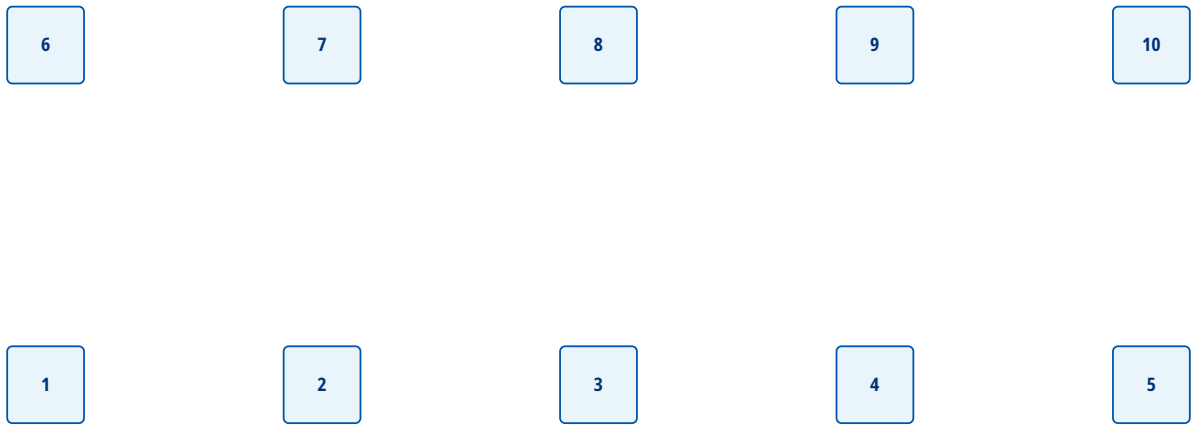
Functions in each DMX mode

	13CH 13 channels	44CH 44 channels	50CH 50 channels
Pan / Tilt	1	1	1
Pan / Tilt resolution	8 bit	16 bit	16 bit
Dimmer	3	✓	4
Shutter / strobe	4		5
Color mixing	9–12	4–43	10–49
Frost	13	44	50
Effects / macros	5–8		6–9
Pixel control		10 cells	10 cells

Strobe rate



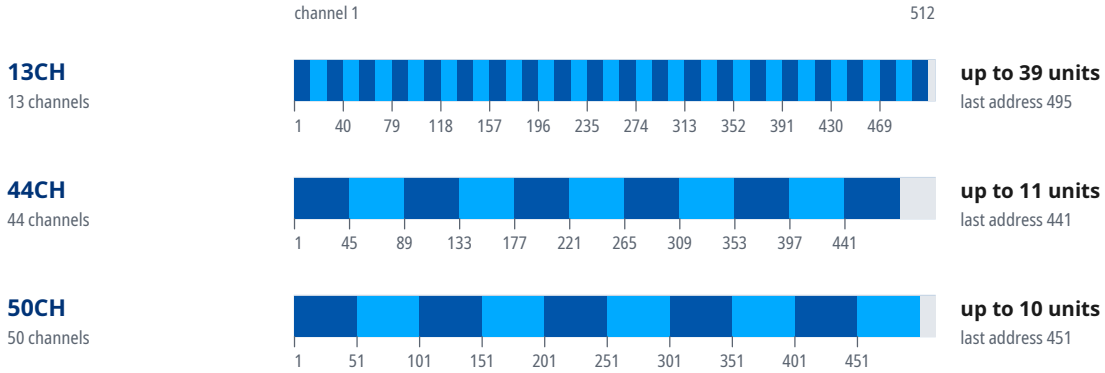
Cells (pixels)



10 cells where the GDTF file places them (seen from above), numbered in the file's order; the mode “50CH” drives them together.

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “50CH”

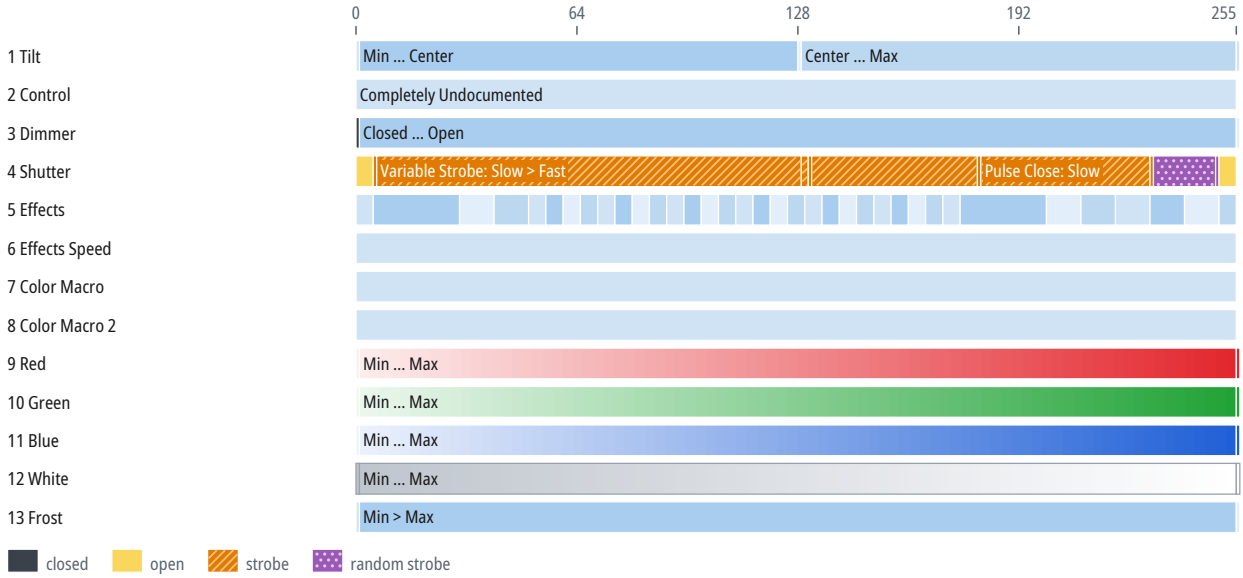
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	251	11	U2 · 1	16	U2 · 251
2	51	7	301	12	U2 · 51	17	U2 · 301
3	101	8	351	13	U2 · 101	18	U2 · 351
4	151	9	401	14	U2 · 151	19	U2 · 401
5	201	10	451	15	U2 · 201	20	U2 · 451

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 13CH

If the device receives DMX in this mode but gives no light, check these channels: CH 3 Dimmer above 0; CH 4 Shutter at 0–4 “Open” or 250–255 “Shutter Open”. The GDTF file gives these values for a console's Highlight function: CH 3 Dimmer 255, CH 9 Red 255, CH 10 Green 255, CH 11 Blue 255, CH 12 White 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Tilt	0	Min
		1–127	Min ... Center
		128	Center
		129–254	Center ... Max
		255	Max
2	Control		Completely Undocumented
		0–255	Completely Undocumented
3	Dimmer	0	Closed
		1–254	Closed ... Open
		255	Open
4	Shutter	0–4	STROBE OPEN: Open
		5	Variable Strobe: Slow
		6–128	Variable Strobe: Slow > Fast
		129–130	Variable Strobe: Fast
		131	Pulse Open: Slow
		132–179	Pulse Open: Slow > Fast
		180	Pulse Open: Fast
		181–229	Pulse Close: Slow
		230	Pulse Close: Fast
		231–248	Random Strobe: Slow
		249	Random Strobe: Fast
		250–255	Shutter Open
5	Effects	0–4	Disabled
		5–29	Pastel Colors
		30–39	Gradient Fade
		40–49	Color Jump
		50–54	Chase 1W L->R
		55–59	Chase 1W R->L
		60–64	Snake Fill T->B
		65–69	Snake Fill B->T
		70–74	Even/Odd Chase L->R
		75–79	Even/Odd Chase R->L
		80–84	Cross Fill
		85–89	Cross Fill Reverse
		90–94	Top/Bottom Fill
		95–99	Top/Bottom Fill Reverse
		100–104	Top Fill + Bottom Chase L->R
		105–109	Top Fill + Bottom Chase R->L
		110–114	Inward Chase
		115–119	Outward chase
		120–124	Cross Chase

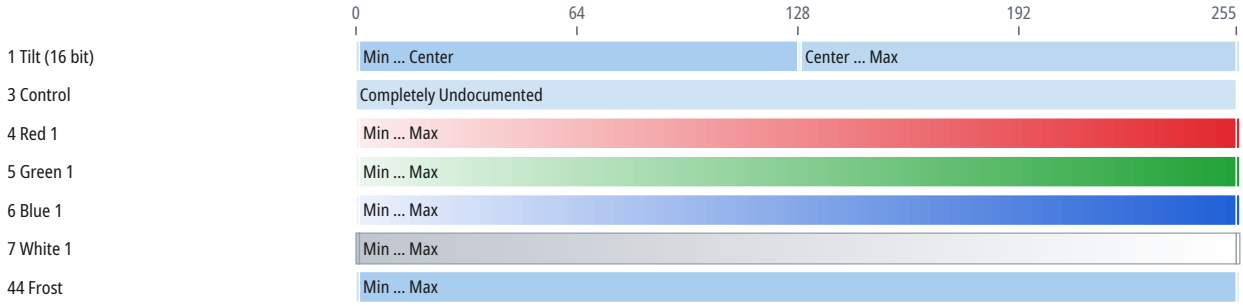
CH	Function	DMX	Description
5	Effects (continued)	125–129	Cross Chase Reverse
		130–134	Snake Chase 1W T->B
		135–139	Snake Chase 1W B->T
		140–144	Snake Chase 2W T->B
		145–149	Snake Chase 2W B->T
		150–154	Snake Chase 3W T->B
		155–159	Snake Chase 3W B->T
		160–164	Snake Chase 4W T->B
		165–169	Snake Chase 4W B->T
		170–174	Even/Odd
		175–199	Even/Odd ... RGB Fade L->R
		200–209	RGB Fade L->R
		210–219	RGBW Intensity Gradient L->R
		220–229	White Crazy Chase L->R
		230–239	RGB Fade R->L
		240–249	RGBW Intensity Gradient R->L
		250–255	White Crazy Chase R->L
6	Effects Speed	0–255	2.5–0.16 Hz
7	Color Macro	0–255	
8	Color Macro 2	0–255	
9	Red	0	Min
		1–254	Min ... Max
		255	Max
10	Green	0	Min
		1–254	Min ... Max
		255	Max
11	Blue	0	Min
		1–254	Min ... Max
		255	Max
12	White	0	Min
		1–254	Min ... Max
		255	Max
13	Frost	0	Min
		1–254	Min > Max
		255	Max

Mode 44CH

16-bit parameters use two channels, coarse and fine: value = 256 × coarse value + fine value.

The GDTF file gives these values for a console's Highlight function: CH 4 Red 255 (the same in each of the 10 cells), CH 5 Green 255 (the same in each of the 10 cells), CH 6 Blue 255 (the same in each of the 10 cells), CH 7 White 255 (the same in each of the 10 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	Tilt	0–1	Min
		1–128	Min ... Center
		128–129	Center
		129–255	Center ... Max
		255	Max
2	Tilt Fine	0–255	Fine adjustment of CH 1
3	Control		Same as CH 2 in the mode “13CH” (p. 9)
4	Red 1	0	Min
		1–254	Min ... Max
		255	Max
5	Green 1	0	Min
		1–254	Min ... Max
		255	Max
6	Blue 1	0	Min
		1–254	Min ... Max
		255	Max
7	White 1	0	Min
		1–254	Min ... Max
		255	Max
44	Frost	0	Min
		1–254	Min ... Max
		255	Max

CH 4–43: 10 cells of 4 channels each. Every cell works as cell 1 in the table above (CH 4–7); the table below gives each cell's channel numbers.

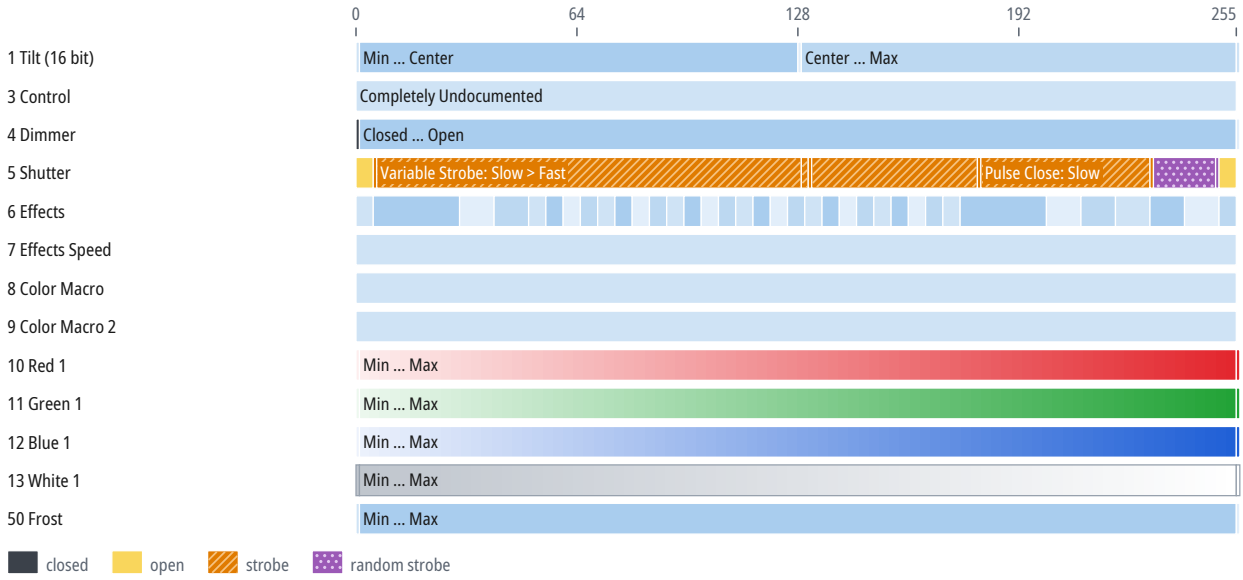
Cell	Red	Green	Blue	White	Cell	Red	Green	Blue	White
1	4	5	6	7	2	8	9	10	11
3	12	13	14	15	4	16	17	18	19
5	20	21	22	23	6	24	25	26	27
7	28	29	30	31	8	32	33	34	35
9	36	37	38	39	10	40	41	42	43

Mode 50CH

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 5 Shutter at 0–4 “Open” or 250–255 “Shutter Open”. The GDTF file gives these values for a console's Highlight function: CH 4 Dimmer 255, CH 5 Shutter 250, CH 10 Red 255 (the same in each of the 10 cells), CH 11 Green 255 (the same in each of the 10 cells), CH 12 Blue 255 (the same in each of the 10 cells), CH 13 White 255 (the same in each of the 10 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	Tilt		Same as CH 1 in the mode “44CH” (p. 11)
2	Tilt Fine	0–255	Fine adjustment of CH 1
3	Control		Same as CH 2 in the mode “13CH” (p. 9)
4	Dimmer		Same as CH 3 in the mode “13CH” (p. 9)
5	Shutter		Same as CH 4 in the mode “13CH” (p. 9)
6	Effects		Same as CH 5 in the mode “13CH” (p. 9)
7	Effects Speed	0–255	2.5–0.16 Hz
8	Color Macro	0–255	
9	Color Macro 2	0–255	

CH	Function	DMX	Description
10	Red 1	0	Min
		1–254	Min … Max
		255	Max
11	Green 1	0	Min
		1–254	Min … Max
		255	Max
12	Blue 1	0	Min
		1–254	Min … Max
		255	Max
13	White 1	0	Min
		1–254	Min … Max
		255	Max
50	Frost		Same as CH 44 in the mode “44CH” (p. 11)

CH 10–49: 10 cells of 4 channels each. Every cell works as cell 1 in the table above (CH 10–13); the table below gives each cell's channel numbers.

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

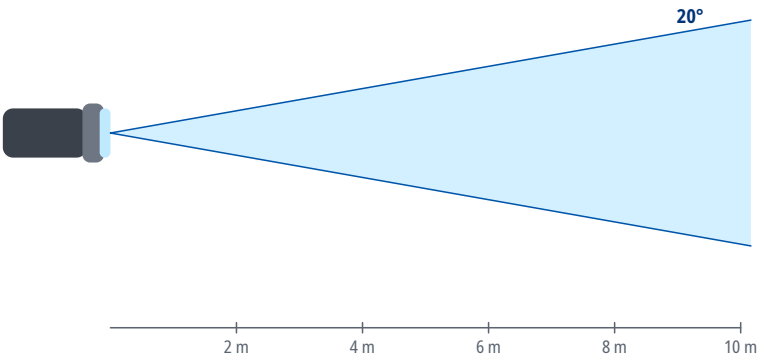
10 Technical specifications

Parameter	Value
Light source	LED
Tilt	180°
DMX connection	5-pin XLR IN/OUT, 3-pin XLR IN/OUT
Power connectors	powerCON TRUE1 IN/OUT
Weight	14.8 kg
Operating temperature	-20 to 40 °C

Speeds and ranges

Parameter	Value
Strobe frequency	1–20 Hz

Spot diameter



Distance	Ø 20°
2 m	0.71 m
4 m	1.4 m
6 m	2.1 m
8 m	2.8 m
10 m	3.5 m
15 m	5.3 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.