DMX REFERENCE

REAL800IP

M-REAL 800 IP

MLight

Manufacturer	MLight
GDTF file	MLight_REAL800IP_136896.gdtf
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1 About this manual

This document describes the M-REAL 800 IP by MLight. It was compiled from the GDTF file MLight_REAL800IP_136896.gdtf from the GDTF-Share library.

File revision: “rev2”.

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

DMX modes

Mode	Channels	Units in one universe	First start addresses
40ch	40	12	1, 41, 81, 121, …
38ch	38	13	1, 39, 77, 115, …

No light? Check these channels

- 40ch: CH 6 Shutter at 104–107 “OPEN”; CH 7 Dimmer above 1
- 38ch: CH 6 Shutter at 104–107 “OPEN”; CH 7 Dimmer above 1



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.

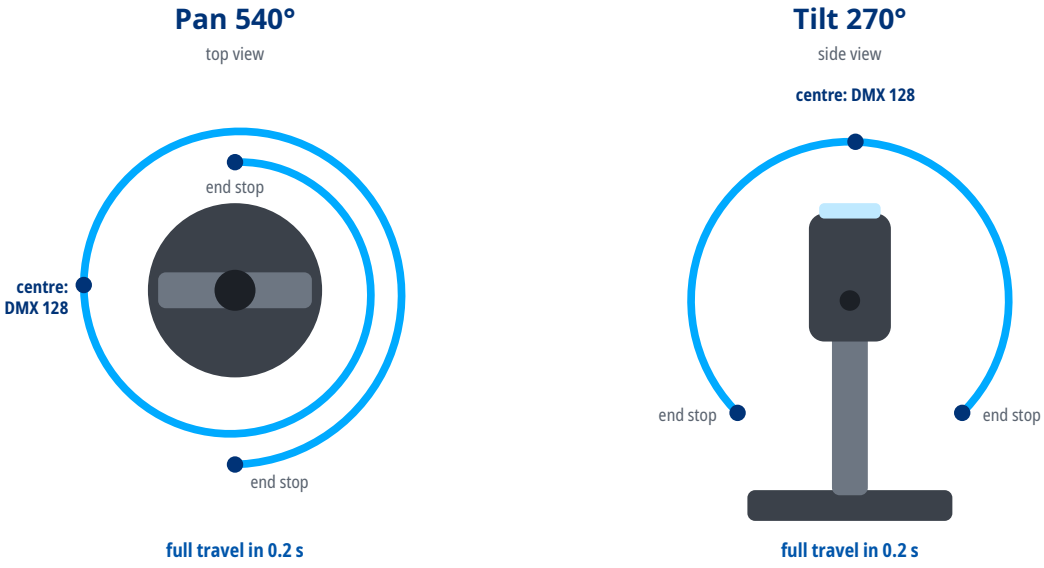
⚠ CAUTION

- 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.
> - 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.

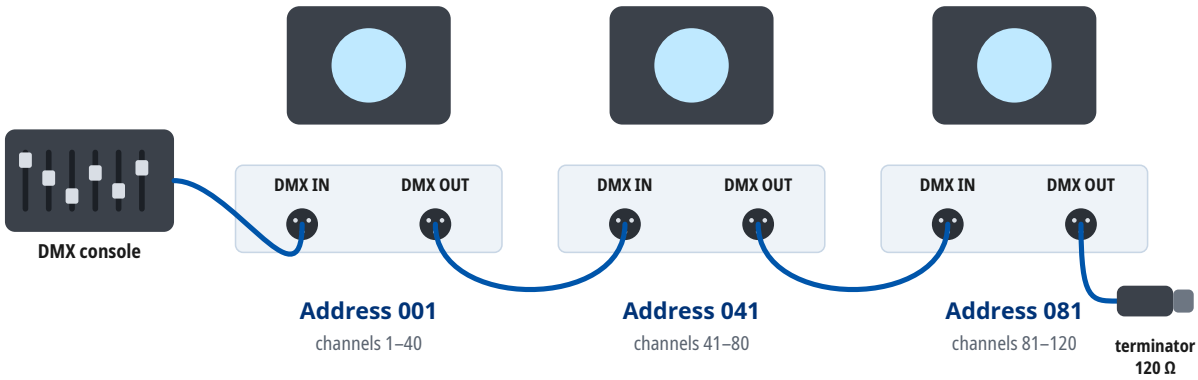
6 Connections

- 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 40ch: every unit occupies 40 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 “40ch”: 40.
- 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 “40ch”, you can use, for example, the start addresses 1, 41, 81, 121.
- 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

	40ch 40 channels	38ch 38 channels
Pan / Tilt	35, 37	33, 35
Dimmer	7	7
Shutter / strobe	6	6
Color mixing	1–3	1–3
Color temperature	4	4
Color wheel	5	5
Gobo wheel	10, 11	10, 11
Gobo rotation	12	12
Prism	14, 15	14, 15
Frost	19	19
Zoom	22	21
Focus	20	20
Iris	9	9

Gobo wheel 1



Prism

1 Gobo 1
DMX 8–15

2 Gobo 2
DMX 16–23

3 Gobo 3
DMX 24–31

4 Gobo 4
DMX 32–39

5 Gobo 5
DMX 40–47

6 Gobo 6
DMX 48–55

7 Gobo 7
DMX 56–63

8 gobo 8
DMX 64–72

Gobo wheel 2



1 Gobo 1
DMX 6–10



2 Gobo 2
DMX 11–15



3 Gobo 3
DMX 16–20



4 Gobo 4
DMX 21–25



5 Gobo 5
DMX 26–30

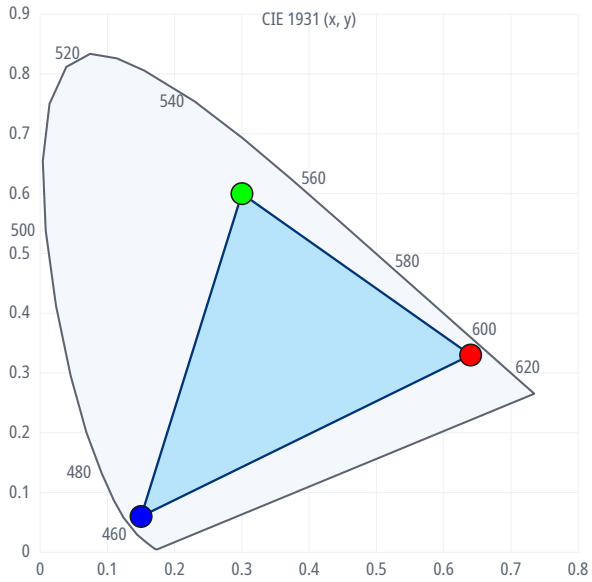


6 Gobo 6
DMX 31–35



7 gobo 13
DMX 36–41

LED colors and the colors they mix

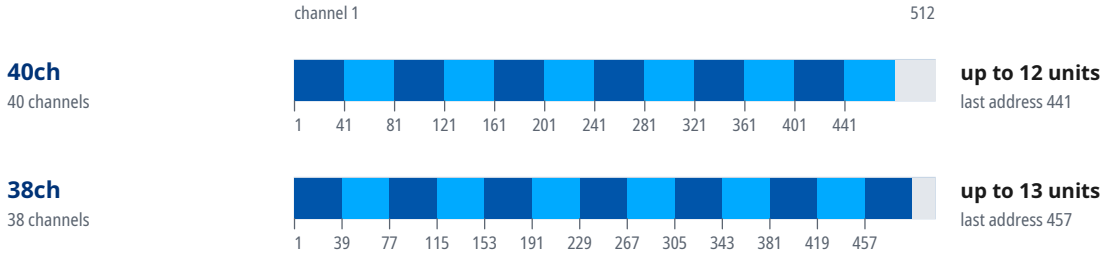


LED	x	y
R	0.640	0.330
G	0.300	0.600
B	0.150	0.060

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

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “40ch”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	201	11	401	16	U2 · 121
2	41	7	241	12	441	17	U2 · 161
3	81	8	281	13	U2 · 1	18	U2 · 201
4	121	9	321	14	U2 · 41	19	U2 · 241
5	161	10	361	15	U2 · 81	20	U2 · 281

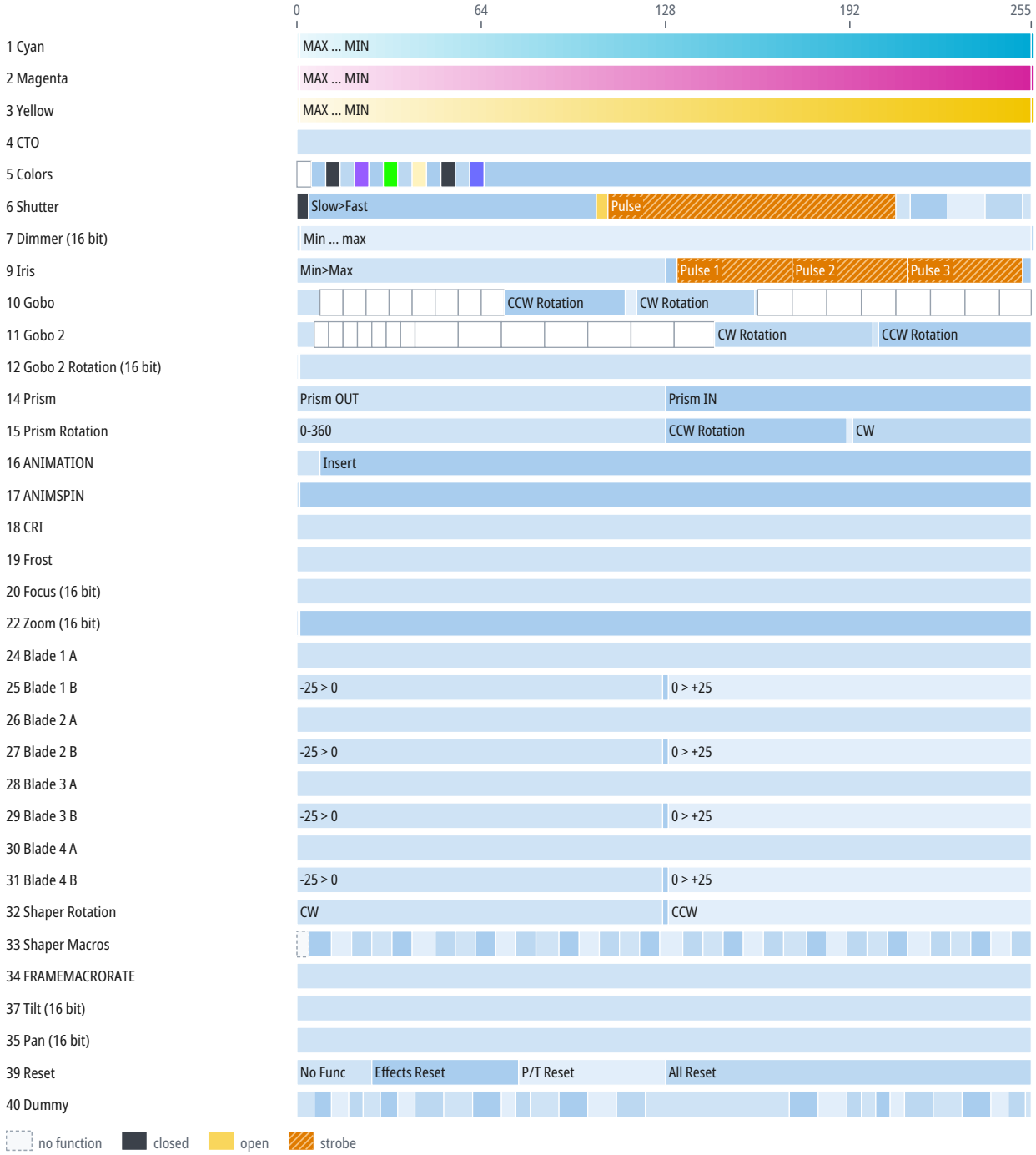
Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode 40ch

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 104–107 “OPEN”; CH 7 Dimmer above 1. The GDTF file gives these values for a console's Highlight function: CH 1 Cyan 0, CH 2 Magenta 0, CH 3 Yellow 0, CH 6 Shutter 255, CH 7 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Cyan		Color RGB_R 1
		0	MAX
		1–254	MAX ... MIN
		255	MIN
2	Magenta		Color RGB_G 1
		0	MAX
		1–254	MAX ... MIN
		255	MIN
3	Yellow		Color RGB_B 1
		0	MAX
		1–254	MAX ... MIN
		255	MIN
4	CTO	0–255	
5	Colors	0–4	OPEN
		5–9	OPEN ... Dark Red
		10–14	Dark Red
		15–19	Dark Red ... Brilliant Blue
		20–24	Brilliant Blue
		25–29	Brilliant Blue ... Deep Green
		30–34	Deep Green
		35–39	Deep Green ... CRI-4
		40–44	CRI-4
		45–49	CRI-4 ... Dark Orange
		50–54	Dark Orange
		55–59	Dark Orange ... Navy Blue
		60–64	Navy Blue
		65–255	Color 1 1
6	Shutter	0–3	CLOSED
		4–103	Slow>Fast
		104–107	OPEN
		108–207	Pulse
		208–212	OPEN2
		213–225	RND Slow
		226–238	RND Med
		239–251	RND Fast
		252–255	OPEN3
7	Dimmer	0–1	Close
		1–255	Min ... max
		255	Max
8	Dimmer Fine	0–255	Fine adjustment of CH 7

CH	Function	DMX	Description
9	Iris	0–127	Min>Max
		128–131	OPEN
		132–171	Pulse 1
		172–211	Pulse 2
		212–251	Pulse 3
		252–255	OPEN2
10	Gobo	0–7	Gobo 1: OPEN
		8–15	Gobo 1
		16–23	Gobo 2
		24–31	Gobo 3
		32–39	Gobo 4
		40–47	Gobo 5
		48–55	Gobo 6
		56–63	Gobo 7
		64–71	Gobo 8
		72–113	CCW Rotation
		114–117	Gobo 1 Wheel Spin: stop
		118–158	CW Rotation
		159	Gobo 1 3
		160–171	Gobo shake 1
		172–183	Gobo shake 2
		184–195	Gobo shake 3
		196–207	Gobo shake 4
		208–219	Gobo shake 5
		220–231	Gobo shake 6
		232–243	Gobo shake 7
		244–255	Gobo shake 8
11	Gobo 2	0–5	Gobo 2: OPEN
		6–10	Gobo 1
		11–15	Gobo 2
		16–20	Gobo 3
		21–25	Gobo 4
		26–30	Gobo 5
		31–35	Gobo 6
		36–40	Gobo 7
		41–55	Gobo shake 1
		56–70	Gobo shake 2
		71–85	Gobo shake 3
		86–100	Gobo shake 4
		101–115	Gobo shake 5
		116–130	Gobo shake 6

CH	Function	DMX	Description
11	Gobo 2 (continued)	131–144	Gobo shake 7
		145–199	CW Rotation
		200–201	Gobo 2 Wheel Spin: Stop
		202–255	CCW Rotation
12	Gobo 2 Rotation	0	0-360 (540°)
		0	CW Rotation
		0	Gobo 2 Pos Rotate: stop
		0	CCW Rotation
		1–255	Gobo 2 Pos Rotate 2
13	Gobo 2 Rotation Fine	0–255	Fine adjustment of CH 12
14	Prism	0–127	Prism OUT
		128–255	Prism IN
15	Prism Rotation	0–127	0-360 (540°)
		128–190	CCW Rotation
		191–192	Prism 1 Pos Rotate: Stop
		193–255	CW
16	ANIMATION	0–7	OPEN
		8–255	Insert
17	ANIMSPIN	0	Stop
		1–255	SPIN 1
18	CRI	0–255	
19	Frost	0–255	
20	Focus	0–255	
21	Focus Fine	0–255	Fine adjustment of CH 20
22	Zoom	0	MIN ... 50%
		0	50% ... MAX
		0	MAX
		1–255	Zoom 1
23	Zoom Fine	0–255	Fine adjustment of CH 22
24	Blade 1 A	0–255	
25	Blade 1 B	0–126	-25 > 0
		127–128	0
		129–255	0 > +25
26	Blade 2 A	0–255	
27	Blade 2 B	0–126	-25 > 0
		127–128	0
		129–255	0 > +25
28	Blade 3 A	0–255	
29	Blade 3 B	0–126	-25 > 0
		127–128	0
		129–255	0 > +25

CH	Function	DMX	Description
30	Blade 4 A	0–255	
31	Blade 4 B	0–126	-25 > 0
		127–128	0
		129–255	0 > +25
32	Shaper Rotation	0–126	CW
		127–128	Middle
		129–255	CCW
33	Shaper Macros	0–3	OFF
		4–11	Macro 1
		12–18	Macro 2
		19–25	Macro 3
		26–32	Macro 4
		33–39	Macro 5
		40–47	Macro 6
		48–54	Macro 7
		55–61	Macro 8
		62–68	Macro 9
		69–75	Macro 10
		76–82	Macro 11
		83–90	Macro 12
		91–97	Macro 13
		98–104	Macro 14
		105–111	Macro 15
		112–118	Macro 16
		119–125	Macro 17
		126–133	Macro 18
		134–140	Macro 19
		141–147	Macro 20
		148–154	Macro 21
		155–161	Macro 22
		162–168	Macro 23
		169–176	Macro 24
		177–183	Macro 25
		184–190	Macro 26
		191–197	Macro 27
		198–204	Macro 28
		205–211	Macro 29
		212–219	Macro 30
		220–226	Macro 31
		227–233	Macro 32
		234–240	Macro 33

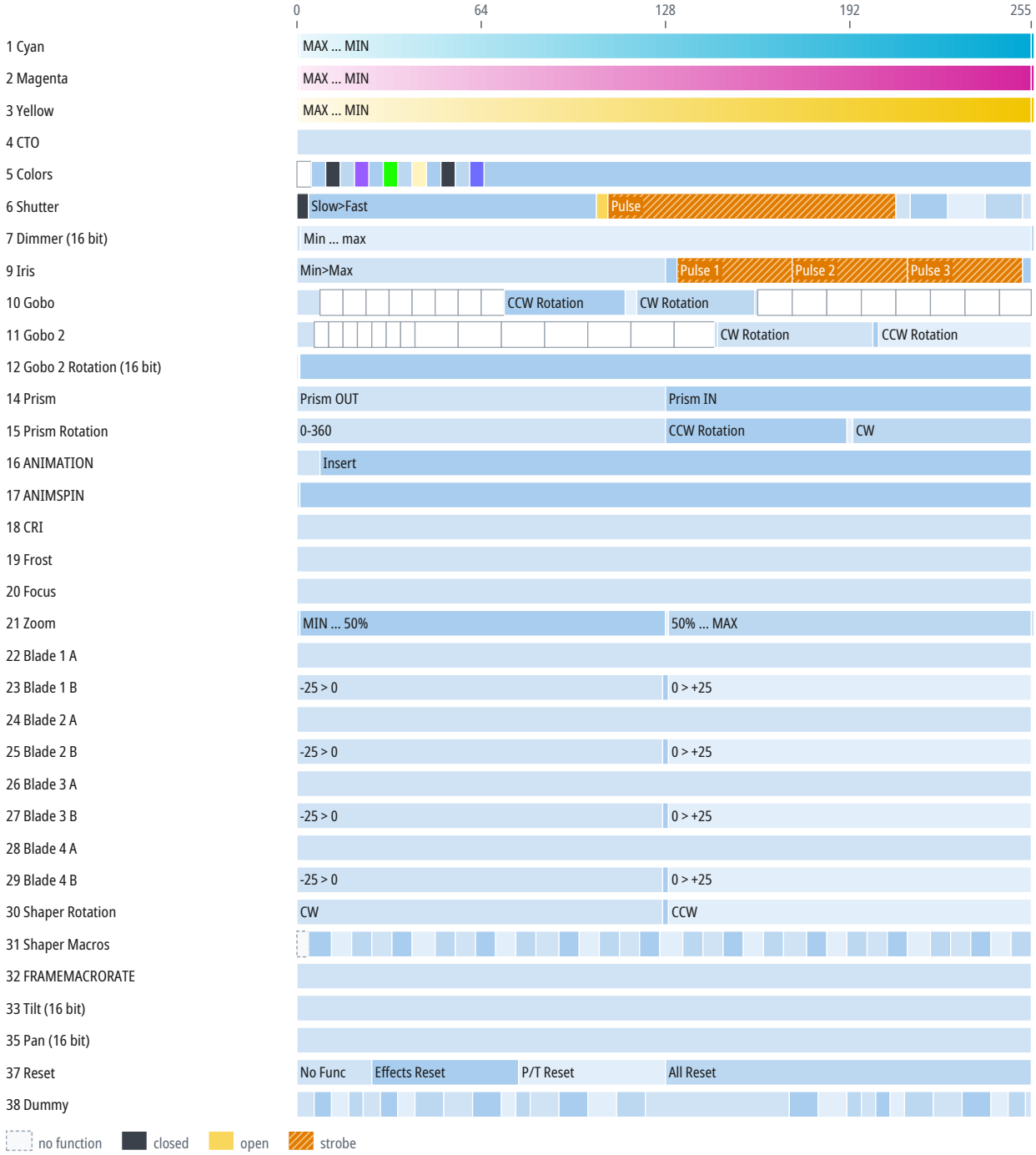
CH	Function	DMX	Description
33	Shaper Macros (continued)	241–247	Macro 34
		248–255	Macro 35
34	FRAMEMACRORATE	0–255	
35	Pan	0–255	540°
36	Pan Fine	0–255	Fine adjustment of CH 35
37	Tilt	0–255	270°
38	Tilt Fine	0–255	Fine adjustment of CH 37
39	Reset	0–25	No Func
		26–76	Effects Reset
		77–127	P/T Reset
		128–255	All Reset
40	Dummy	0–5	HOME-ZERO
		6–11	PWM 600Hz
		12–17	PWM 1 2kHz
		18–22	PWM 2kHz
		23–28	PWM 4kHz
		29–34	PWM 6kHz
		35–40	PWM 20kHz
		41–50	Dim Curve 1
		51–60	Dim Curve 2
		61–70	Dim Curve 3
		71–75	Dim Curve 4
		76–80	Dim Curve 5
		81–90	Fan Constant
		91–100	Fan Auto
		101–110	Fan Silent
		111–120	Fan Theatre
		121–170	Fan Theatre ... P/T Smooth OFF
		171–180	P/T Smooth OFF
		181–190	P/T Smooth ON
		191–195	P/T Slow
		196–200	P/T Med
		201–205	P/T Fast
		206–210	P/T Follow Spot
		211–220	P/T Follow Spot ... CMY Norm Speed
		221–230	CMY Norm Speed
		231–240	CMY Fast Speed
		241–246	Dispaly OFF
		247–252	Display ON
		253–255	Default Function Recall

Mode 38ch

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 104–107 “OPEN”; CH 7 Dimmer above 1. The GDTF file gives these values for a console's Highlight function: CH 1 Cyan 0, CH 2 Magenta 0, CH 3 Yellow 0, CH 6 Shutter 255, CH 7 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Cyan		Same as CH 1 in the mode “40ch” (p. 10)
2	Magenta		Same as CH 2 in the mode “40ch” (p. 10)
3	Yellow		Same as CH 3 in the mode “40ch” (p. 10)
4	CTO	0–255	
5	Colors		Same as CH 5 in the mode “40ch” (p. 10)
6	Shutter		Same as CH 6 in the mode “40ch” (p. 10)
7	Dimmer		Same as CH 7 in the mode “40ch” (p. 10)
8	Dimmer Fine	0–255	Fine adjustment of CH 7
9	Iris		Same as CH 9 in the mode “40ch” (p. 11)
10	Gobo	0–7	Gobo 1: OPEN
		8–15	Gobo 1
		16–23	Gobo 2
		24–31	Gobo 3
		32–39	Gobo 4
		40–47	Gobo 5
		48–55	Gobo 6
		56–63	Gobo 7
		64–71	Gobo 8
		72–113	CCW Rotation
		114–117	Gobo 1 Wheel Spin: stop
		118–158	CW Rotation
		159	Gobo 1 Wheel Spin 2
		160–171	Gobo shake 1
		172–183	Gobo shake 2
		184–195	Gobo shake 3
		196–207	Gobo shake 4
		208–219	Gobo shake 5
		220–231	Gobo shake 6
		232–243	Gobo shake 7
		244–255	Gobo shake 8
11	Gobo 2	0–5	Gobo 2: OPEN
		6–10	Gobo 1
		11–15	Gobo 2
		16–20	Gobo 3
		21–25	Gobo 4
		26–30	Gobo 5
		31–35	Gobo 6
		36–40	Gobo 7
		41–55	Gobo shake 1
		56–70	Gobo shake 2

CH	Function	DMX	Description
11	Gobo 2 (continued)	71–85	Gobo shake 3
		86–100	Gobo shake 4
		101–115	Gobo shake 5
		116–130	Gobo shake 6
		131–144	Gobo shake 7
		145	Gobo 2 Wheel Spin 3
		146–199	CW Rotation
		200–201	Gobo 2 Wheel Spin: Stop
		202–255	CCW Rotation
12	Gobo 2 Rotation	0	Gobo 2 Pos: Open
		0	CW Rotation
		0	Gobo 2 Pos Rotate: stop
		0	CCW Rotation
		1–255	Gobo 2 Pos Rotate 2
13	Gobo 2 Rotation Fine	0–255	Fine adjustment of CH 12
14	Prism		Same as CH 14 in the mode “40ch” (p. 12)
15	Prism Rotation		Same as CH 15 in the mode “40ch” (p. 12)
16	ANIMATION		Same as CH 16 in the mode “40ch” (p. 12)
17	ANIMSPIN		Same as CH 17 in the mode “40ch” (p. 12)
18	CRI	0–255	
19	Frost	0–255	
20	Focus	0–255	
21	Zoom	0	MIN
		1–127	MIN ... 50%
		128	50%
		129–254	50% ... MAX
		255	MAX
22	Blade 1 A	0–255	
23	Blade 1 B		Same as CH 25 in the mode “40ch” (p. 12)
24	Blade 2 A	0–255	
25	Blade 2 B		Same as CH 27 in the mode “40ch” (p. 12)
26	Blade 3 A	0–255	
27	Blade 3 B		Same as CH 29 in the mode “40ch” (p. 12)
28	Blade 4 A	0–255	
29	Blade 4 B		Same as CH 31 in the mode “40ch” (p. 13)
30	Shaper Rotation		Same as CH 32 in the mode “40ch” (p. 13)
31	Shaper Macros		Same as CH 33 in the mode “40ch” (p. 13)
32	FRAMEMACRORATE	0–255	
33	Tilt	0–255	270°
34	Tilt Fine	0–255	Fine adjustment of CH 33
35	Pan	0–255	540°

CH	Function	DMX	Description
36	Pan Fine	0–255	Fine adjustment of CH 35
37	Reset		Same as CH 39 in the mode “40ch” (p. 14)
38	Dummy		Same as CH 40 in the mode “40ch” (p. 14)

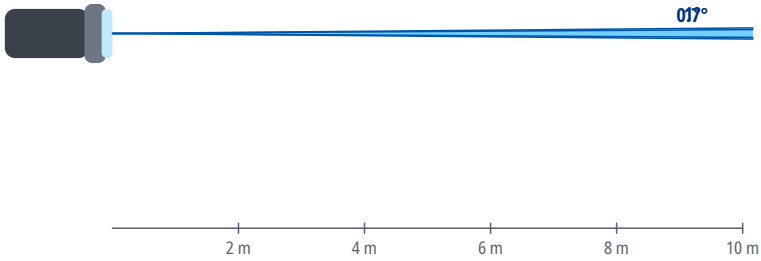
10 Technical specifications

Parameter	Value
Zoom	0.7–1°
Pan	540°
Tilt	270°
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Gobo wheel rotation	up to 179.9 °/s (30 rpm)
Gobo wheel 2 rotation	up to 179.9 °/s (30 rpm)
Gobo 2 rotation	up to 179.9 °/s (30 rpm)
Prism rotation	up to 179.9 °/s (30 rpm)

Spot diameter



Distance	Ø 0.7°	Ø 1°
2 m	0.02 m	0.03 m
4 m	0.05 m	0.07 m
6 m	0.07 m	0.1 m
8 m	0.1 m	0.14 m
10 m	0.12 m	0.17 m
15 m	0.18 m	0.26 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.