DMX REFERENCE

Beam WS 280

MARK



Manufacturer	MARK
GDTF file	MARK_Beam_WS_280_147551.gdtf
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1 About this manual

This document describes the Beam WS 280 by MARK. It was compiled from the GDTF file MARK_Beam_WS_280_147551.gdtf from the GDTF-Share library.

File revision: “Version1_1”.

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 MARK; 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	19 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
24 Channels	24	21	1, 25, 49, 73, ...
16 Channels	23	22	1, 24, 47, 70, ...

No light? Check these channels

- 24 Channels: CH 22 Shutter at 32–63, 96–127, 160–191 or 224–255 “Open”
- 16 Channels: CH 22 Shutter at 32–63, 96–127, 160–191 or 224–255 “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.

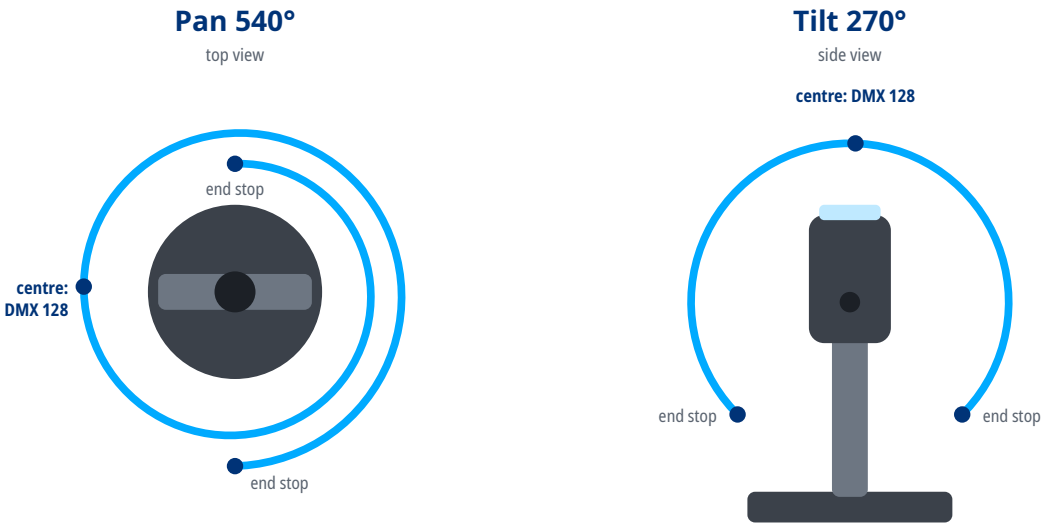
> ⚠ **WARNING**
>
> - The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
> - Keep yourself and any objects out of the range of movement. While the device is switched on, do 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

Description in the GDTF file

“This moving head lights, use ceramic luminescent film reflector as a condenser system, coupled with the high-quality optical lens components, broadband voltage, a clear pattern, sharp and uniform output light efficiency. Intelligent LCD display module, the English language selection mode, intuitive operating menu, shortcut. BEAM WS 280, have 16/24 international standard DMX512 channels optional Horizontal scan: 540 ° vertical scanning 270 ° (16bit precision scanning) electronic correction, dot-matrix display, four touch switch LCD + single-Key flying shuttle can spin. The can be inverted 180 °, the color wheel is combined with white and 14 colors. 2 Gobo wheels: 9 patterns + white effect round by 8 prism+ 6 prism and atomization function. 0-100% mechanical dimmer, support mechanical strobe and variable strobe effect, strobe macro function. The optical system of the lens group electric focusing, the beam angle of 0 to 4 ° with overheating protection function Moving head lights are widely used in television, disco, dance halls, nightclubs, large-scale performances and other professional venues”

Range of movement



5 Installation

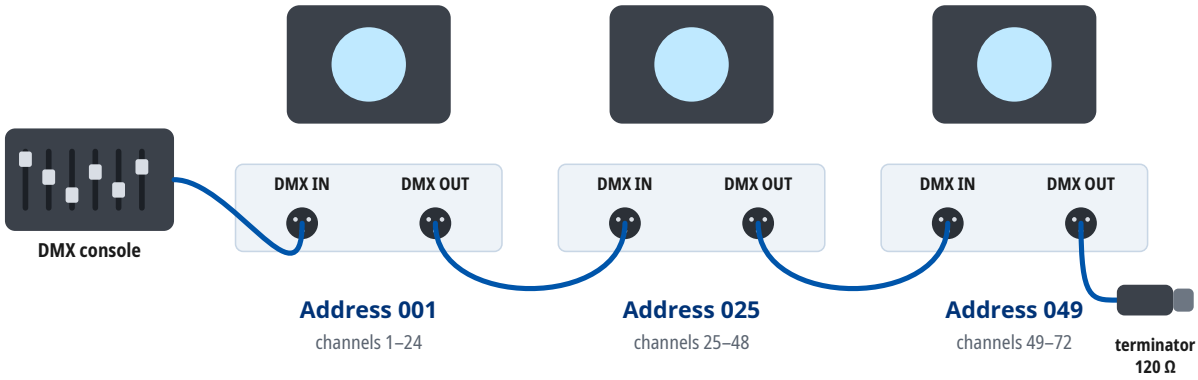
⚠ WARNING

- 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: 19 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 24 Channels: 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

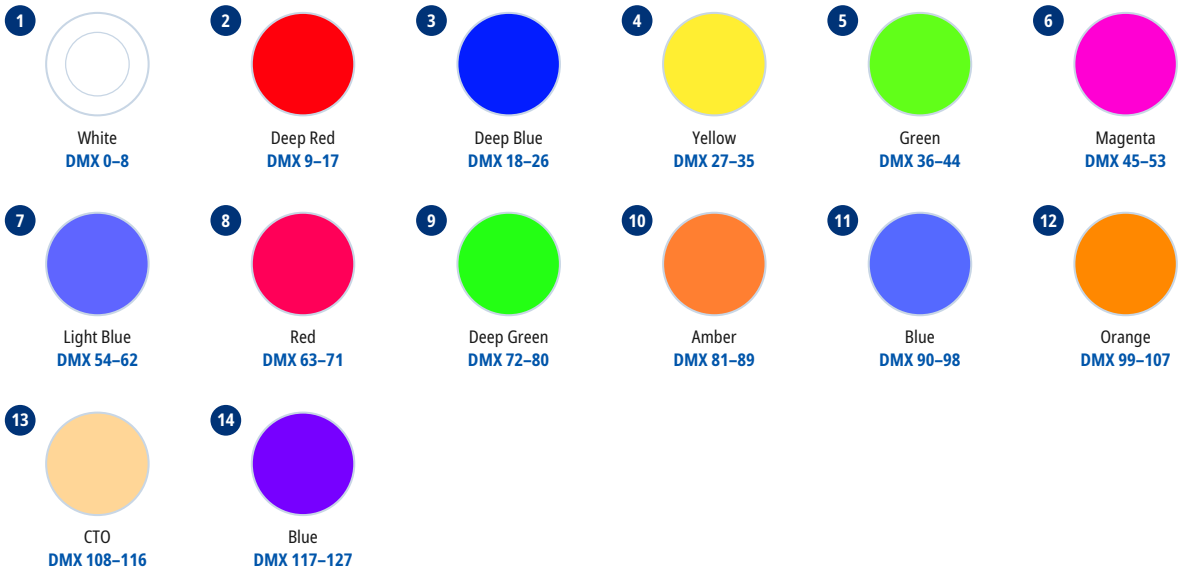
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “24 Channels”: 24.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied 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 “24 Channels”, 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

	24 Channels 24 channels	16 Channels 23 channels
Pan / Tilt	1, 3	1, 3
Pan / Tilt resolution	16 bit	8 bit
Dimmer	23	23
Shutter / strobe	22	22
Color wheel	7	7
Gobo wheel	10, 11	10, 11
Gobo rotation	12	12
Prism	14, 15	14, 15
Frost	16	16
Zoom	17	17
Focus	19	19

Color wheel



Gobo wheel 1

1
Fix Gobo Wheel: Open
DMX 0–3

2 
Fix Gobo Wheel: Multidot
DMX 4–9

3 
Fix Gobo Wheel: Bars
DMX 10–15

4 
Fix Gobo Wheel: Triangle
DMX 16–21

5 
Fix Gobo Wheel: 4 Dots
DMX 22–27

6 
Fix Gobo Wheel: Stars
DMX 28–33

7 
Fix Gobo Wheel: Dot line
DMX 34–39

8 
Fix Gobo Wheel: Horizontal Bar
DMX 40–45

9 
Fix Gobo Wheel: Vertical Bar
DMX 46–51

10 
Fix Gobo Wheel: Slices
DMX 52–57

11 
Fix Gobo Wheel: Bubbles
DMX 58–63

12 
Fix Gobo Wheel: Beam Reducer 1
DMX 64–69

13 
Fix Gobo Wheel: Beam Reducer 2
DMX 70–75

14 
Beam Reducer 3
DMX 76–88

15 
Dot

Gobo wheel 2

1
Rotate Gobo Wheel: Open
DMX 0–8

2 
Rotate Gobo Wheel: Triangles
DMX 9–17

3 
Rotate Gobo Wheel: Circle Lines
DMX 18–26

4 
Rotate Gobo Wheel: Tribal
DMX 27–35

5 
Rotate Gobo Wheel: Star lines
DMX 36–44

6 
Rotate Gobo Wheel: Rectangle dots
DMX 45–53

7 
Rotate Gobo Wheel: Multidots
DMX 54–62

8 
Rotate Gobo Wheel: Circle flower
DMX 63–71

9 
Rotate Gobo Wheel: Multidot
DMX 72–80

10 
Stars
DMX 81–90

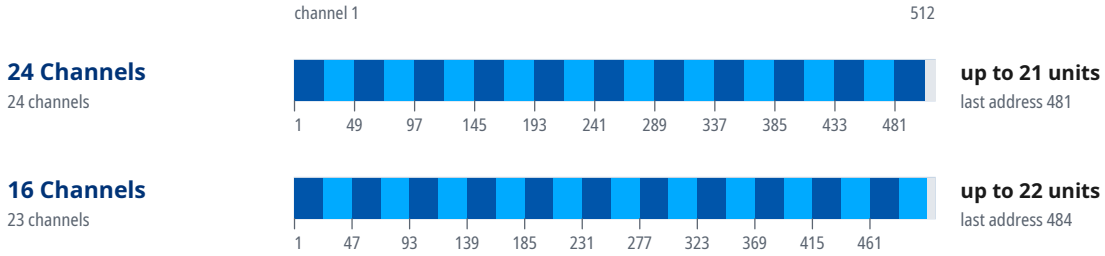
Prism

1 
8 facets
Prism 8
DMX 76–255

2 
6 facets
Prism 6
DMX 20–75

9 DMX channels

Units in one DMX universe



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

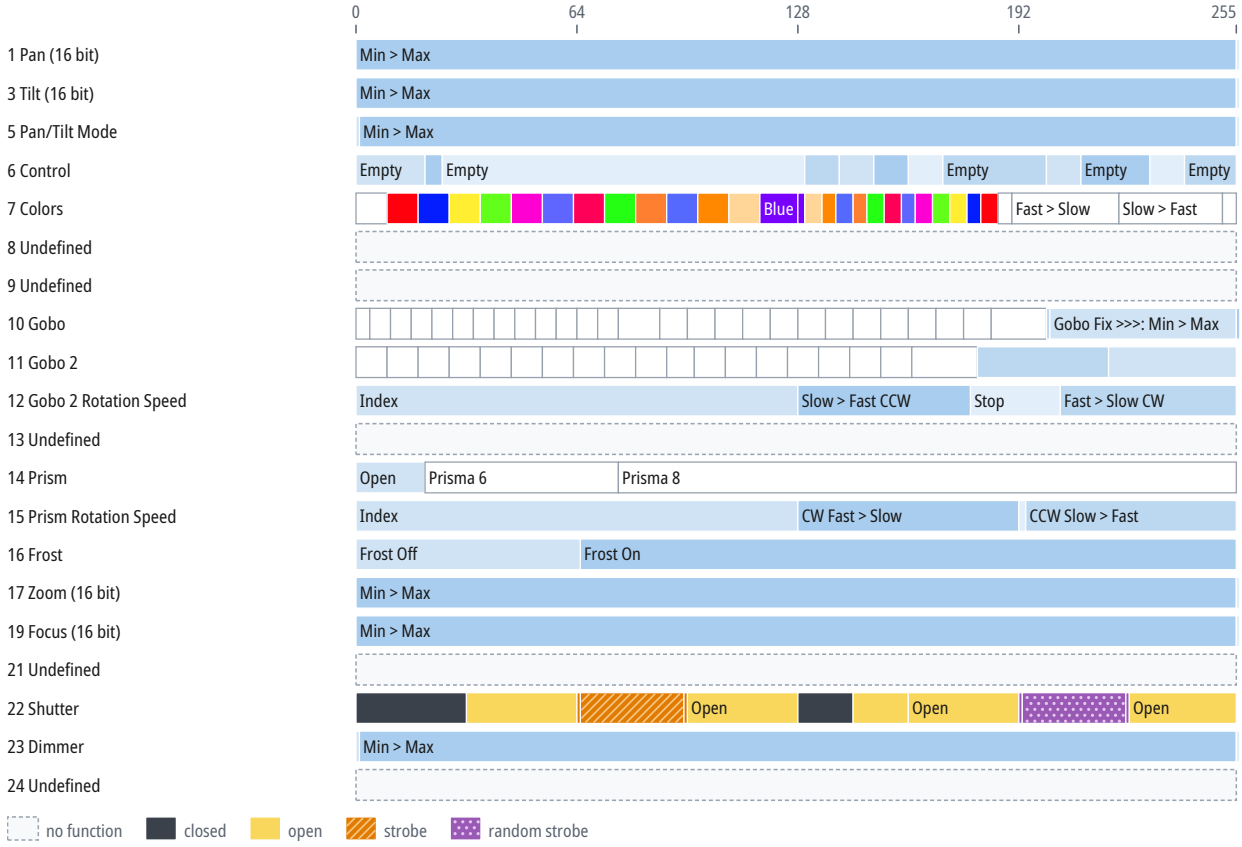
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	121	11	241	16	361
2	25	7	145	12	265	17	385
3	49	8	169	13	289	18	409
4	73	9	193	14	313	19	433
5	97	10	217	15	337	20	457

Mode 24 Channels

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 22 Shutter at 32–63, 96–127, 160–191 or 224–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 7 Colors 0, CH 22 Shutter 255, CH 23 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0	MIn
		0–255	Min > Max
		255	Max
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0	Min
		0–255	Min > Max
		255	Max
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Pan/Tilt Mode	0	Min
		1–254	Min > Max
		255	Max
6	Control	0–19	Empty
		20–24	Energ Saving 230W
		25–129	Empty

CH	Function	DMX	Description
6	Control (continued)	130–139	Lamp On
		140–149	P/T Reset
		150–159	Empty
		160–169	Small Motors Reset
		170–199	Empty
		200–209	All FIxture Reset
		210–229	Empty
		230–239	Lamp Off
		240–255	Empty
7	Colors	0–8	White
		9–17	Deep Red
		18–26	Deep Blue
		27–35	Yellow
		36–44	Green
		45–53	Magenta
		54–62	Light Blue
		63–71	Red
		72–80	Deep Green
		81–89	Amber
		90–98	Blue
		99–107	Orange
		108–116	CTO
		117–127	Blue
		128–129	White + Blue
		130–134	Blue + CTO
		135–138	CTO + Orange
		139–143	Orange + Blue
		144–147	Blue + Amber
		148–152	Amber + Deep Green
		153–157	Deep Green + Red
		158–161	Red + Light Blue
		162–166	Light Blue + Magenta
		167–171	Magenta + Green
		172–176	Green + Yellow
		177–180	Yellow + Deep Blue
		181–185	Deep Blue + Deep Red
		186–189	Deep Red + White
		190–220	Fast > Slow
		221–250	Slow > Fast
		251–255	Sound color change
8	Undefined	0–255	
9	Undefined	0–255	

CH	Function	DMX	Description
10	Gobo	0–3	Fix Gobo Wheel: Open
		4–9	Fix Gobo Wheel: Multidot
		10–15	Fix Gobo Wheel: Bars
		16–21	Fix Gobo Wheel: Triangle
		22–27	Fix Gobo Wheel: 4 Dots
		28–33	Fix Gobo Wheel: Stars
		34–39	Fix Gobo Wheel: Dot line
		40–45	Fix Gobo Wheel: Horizontal Bar
		46–51	Fix Gobo Wheel: Vertical Bar
		52–57	Fix Gobo Wheel: Slices
		58–63	Fix Gobo Wheel: Bubbles
		64–69	Fix Gobo Wheel: Beam Reducer 1
		70–75	Fix Gobo Wheel: Beam Reducer 2
		76–87	Fix Gobo Wheel: Beam Reducer 3
		88–95	Fix Gobo Shake: Multidot
		96–103	Fix Gobo Shake: Bars
		104–111	Fix Gobo Shake: Triangle
		112–119	Fix Gobo Shake: 4 Dots
		120–127	Fix Gobo Shake: Stars
		128–135	Fix Gobo Shake: Dot line
		136–143	Fix Gobo Shake: Horizontal Bar
		144–151	Fix Gobo Shake: Vertical Bar
		152–159	Fix Gobo Shake: Slices
		160–167	Fix Gobo Shake: Bubbles
		168–175	Fix Gobo Shake: Beam Reducer 1
		176–183	Fix Gobo Shake: Beam Reducer 2
		184–199	Fix Gobo Shake: Beam Reducer 3
		200	Gobo Fix >>>: Min
		201–254	Gobo Fix >>>: Min > Max
		255	Gobo Fix >>>: Max
11	Gobo 2	0–8	Rotate Gobo Wheel: Open
		9–17	Rotate Gobo Wheel: Triangles
		18–26	Rotate Gobo Wheel: Circle Lines
		27–35	Rotate Gobo Wheel: Tribal
		36–44	Rotate Gobo Wheel: Star lines
		45–53	Rotate Gobo Wheel: Rectangle dots
		54–62	Rotate Gobo Wheel: Multidots
		63–71	Rotate Gobo Wheel: Circle flower
		72–80	Rotate Gobo Wheel: Multidot
		81–89	Rotate Gobo Wheel: Stars
		90–97	Shake Rotate Gobo Wheel: Triangles
		98–106	Shake Rotate Gobo Wheel: Circle Lines

CH	Function	DMX	Description
11	Gobo 2 (continued)	107–115	Shake Rotate Gobo Wheel: Tribal
		116–124	Shake Rotate Gobo Wheel: Star lines
		125–133	Shake Rotate Gobo Wheel: Rectangle dots
		134–142	Shake Rotate Gobo Wheel: Multidots
		143–151	Shake Rotate Gobo Wheel: Circle flower
		152–160	Shake Rotate Gobo Wheel: Multidot
		161–179	Shake Rotate Gobo Wheel: Stars
		180–217	Gobo Rotate >>>: Fast > Slow
		218–255	Empty Channel Set
12	Gobo 2 Rotation Speed		Gobo Rotate
		0–127	Index
		128–177	Slow > Fast CCW
		178–203	Stop
		204–255	Fast > Slow CW
13	Undefined	0–255	
14	Prism	0–19	Open
		20–75	Prisma 6
		76–255	Prisma 8
15	Prism Rotation Speed	0–127	Index
		128–191	CW Fast > Slow
		192–193	Rotate: Stop
		194–255	CCW Slow > Fast
16	Frost	0–64	Frost Off
		65–255	Frost On
17	Zoom	0	Min
		0–255	Min > Max
		255	Max
18	Zoom Fine	0–255	Fine adjustment of CH 17
19	Focus	0	Min
		0–255	Min > Max
		255	Max
20	Focus Fine	0–255	Fine adjustment of CH 19
21	Undefined	0–255	
22	Shutter	0–31	Open / Close: Close
		32–63	Open / Close: Open
		64	Strobe Slow > Fast: Min
		65–94	Strobe Slow > Fast: Min > Max
		95	Strobe Slow > Fast: Max
		96–127	Open
		128–143	Strobe Pulse: Fast > Slow Slow Close Fast
		144–159	Slow > Fast Fsat Open
		160–191	Open

CH	Function	DMX	Description
22	Shutter (continued)	192	Strobe Random: Min
		193–222	Strobe Random: Min > Max
		223	Strobe Random: Max
		224–255	Open
23	Dimmer	0	MIn
		1–254	Min > Max
		255	Max
24	Undefined	0–255	

Mode 16 Channels

If the device receives DMX in this mode but gives no light, check these channels: CH 22 Shutter at 32–63, 96–127, 160–191 or 224–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 7 Colors 0, CH 22 Shutter 255, CH 23 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0	MIn
		1–254	Min > Max
		255	Max
3	Tilt	0	Min
		1–254	Min > Max
		255	Max
5	Pan/Tilt Mode		Same as CH 5 in the mode “24 Channels” (p. 11)
6	Control		Same as CH 6 in the mode “24 Channels” (p. 11)
7	Colors		Same as CH 7 in the mode “24 Channels” (p. 12)

CH	Function	DMX	Description
9	Undefined	0–255	
10	Gobo		Same as CH 10 in the mode “24 Channels” (p. 13)
11	Gobo 2		Same as CH 11 in the mode “24 Channels” (p. 13)
12	Gobo 2 Rotation Speed		Same as CH 12 in the mode “24 Channels” (p. 14)
14	Prism		Same as CH 14 in the mode “24 Channels” (p. 14)
15	Prism Rotation Speed		Same as CH 15 in the mode “24 Channels” (p. 14)
16	Frost		Same as CH 16 in the mode “24 Channels” (p. 14)
17	Zoom	0	Min
		1–254	Min > Max
		255	Max
19	Focus	0	Min
		1–254	Min > Max
		255	Max
21	Undefined	0–255	
22	Shutter		Same as CH 22 in the mode “24 Channels” (p. 14)
23	Dimmer		Same as CH 23 in the mode “24 Channels” (p. 15)

10 Technical specifications

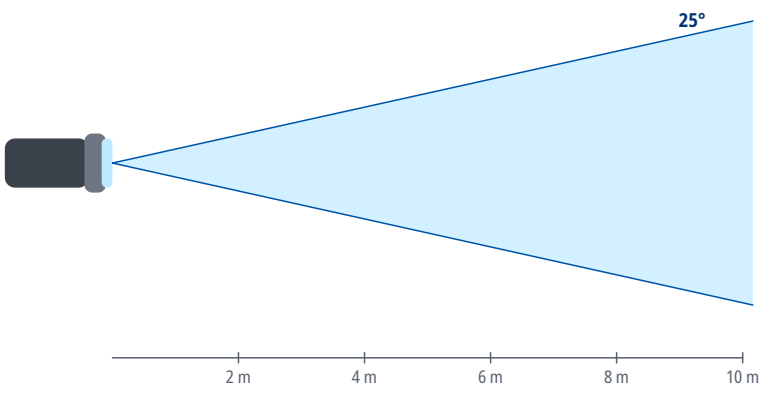
Parameter	Value
Light	
Light source	discharge lamp
Lamp power	280 W
Luminous flux	10,000 lm
Color temperature	7,800 K
Color rendering index (CRI)	70
Optics	
Beam angle	25°
Movement	
Pan	540°
Tilt	270°
Dimensions and construction	
Weight	19 kg
Operating environment	
Operating temperature	0 to 40 °C

Dimensions

weight 19 kg



Spot diameter



Distance	Ø 25°
2 m	0.89 m
4 m	1.8 m
6 m	2.7 m
8 m	3.5 m
10 m	4.4 m
15 m	6.7 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.