DMX REFERENCE

BSW280

BSW280Pro

Mitek



Manufacturer	Mitek
GDTF file	Mitek_BSW280_88093.gdtf
GDTF revision	No Measure · 2025-03-03
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Contents

1 About this manual 2
2 Quick reference 3
3 Safety instructions 4
4 Product description 5
5 Installation 5
6 Connections 6
7 Operation 6
8 Functions at a glance 7
9 DMX channels 10
Mode 22CH 10
Mode 18CH 15
10 Technical specifications 17
11 Maintenance and cleaning 18
12 Troubleshooting 18
13 Disposal 19

1 About this manual

This document describes the BSW280Pro by Mitek. It was compiled from the GDTF file Mitek_BSW280_88093.gdtf from the GDTF-Share library.

File revision: “No Measure”.

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 Mitek; 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 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
22CH	22	23	1, 23, 45, 67, ...
18CH	18	28	1, 19, 37, 55, ...

No light? Check these channels

- 22CH: CH 20 Dimmer above 1; CH 21 Shutter at 104–107, 156–212 or 252–255 “Open”
- 18CH: CH 16 Dimmer above 1; CH 17 Shutter at 104–107, 156–212 or 252–255 “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.

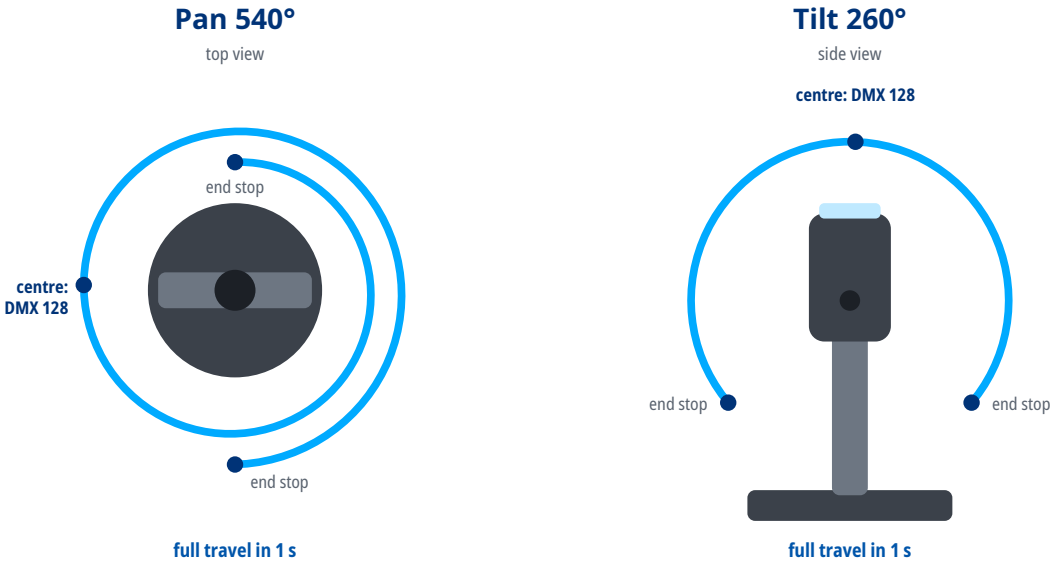
⚠ CAUTION

- 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

Range of movement



Full-travel times as stated in the GDTF file.

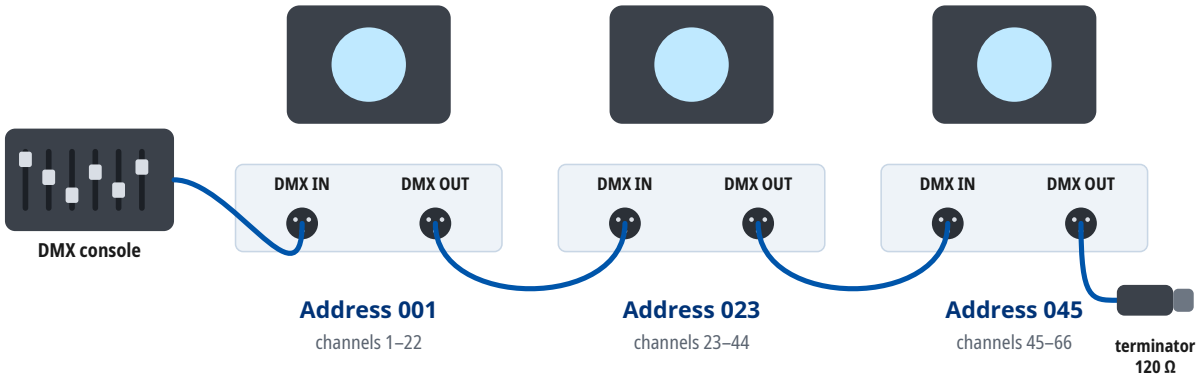
5 Installation

> ⚠ **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 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 22CH: every unit occupies 22 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 “22CH”: 22.
- 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 “22CH”, you can use, for example, the start addresses 1, 23, 45, 67.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.
- The device supports RDM (Remote Device Management), two-way communication with the controller over the DMX line.

8 Functions at a glance

Functions in each DMX mode

	22CH 22 channels	18CH 18 channels
Pan / Tilt	1, 3	1, 3
Dimmer	20	16
Shutter / strobe	21	17
Color wheel	6	5
Gobo wheel	7, 8	6, 7
Gobo rotation	8, 9	7, 8
Prism	13, 14	11, 12
Frost	15	13
Zoom	16	14
Focus	18	15
Animation wheel	11, 12	9, 10

Color wheel

1 Color 1: Open
DMX 0–5

2 Color 1: Red
DMX 6–13

3 Color 1: Blue
DMX 14–22

4 Color 1: Amber
DMX 23–30

5 Color 1: Green
DMX 31–39

6 Color 1: Rosa
DMX 40–47

7 Color 1: Yellow
DMX 48–56

8 Color 1: Cyan
DMX 57–65

9 Color 1: Venon Green
DMX 66–73

10 Color 1: Magenta
DMX 74–81

11 Color 1: Light Yellow
DMX 82–90

12 Color 1: Light Lavend
DMX 91–99

13 Color 1: CTO
DMX 100–107

14 Color 1: CTB
DMX 108–116

15 Color 1: Congo Blue
DMX 117–124

Gobo wheel 1

1
Gobo 1: Open
DMX 0–9

2 
Gobo 1
DMX 10–19

3 
Gobo 1: Gobo 2
DMX 20–29

4 
Gobo 1: Gobo 3
DMX 30–39

5 
Gobo 1: Gobo 4
DMX 40–49

6 
Gobo 1: Gobo 5
DMX 50–59

7 
Gobo 1: Gobo 6
DMX 60–69

8 
Gobo 7
DMX 70–80

Gobo wheel 2

1
Gobo 2: Open
DMX 0–4

2 
Gobo 2: Gobo 1
DMX 5–9

3 
Gobo 2
DMX 10–14

4 
Gobo 2: Gobo 3
DMX 15–19

5 
Gobo 2: Gobo 4
DMX 20–24

6 
Gobo 2: Gobo 5
DMX 25–29

7 
Gobo 2: Gobo 6
DMX 30–34

8 
Gobo 2: Gobo 7
DMX 35–39

9 
Gobo 2: Gobo 8
DMX 40–44

10 
Gobo 2: Gobo 9
DMX 45–49

11 
Gobo 2: Gobo 10
DMX 50–54

12 
Gobo 2: Gobo 11
DMX 55–59

13 
Gobo 2: Gobo 12
DMX 60–64

14 
Gobo 2: Gobo 13
DMX 65–69

15 
Gobo 14
DMX 70–75

Prism

1 
8 facets
Circular Prism
DMX 64–127

2 
6 facets
Linear Prism
DMX 128–191

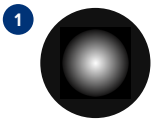
3 
8 facets
Prism 1 + 2
DMX 192–255

Animation wheel

1
Open
DMX 0

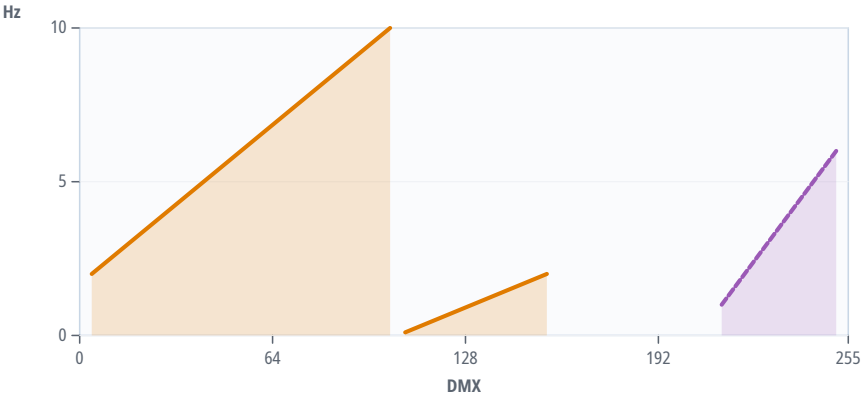
2 
Max
DMX 255

Gobo wheel 3



Wheel Slot 1

Strobe rate

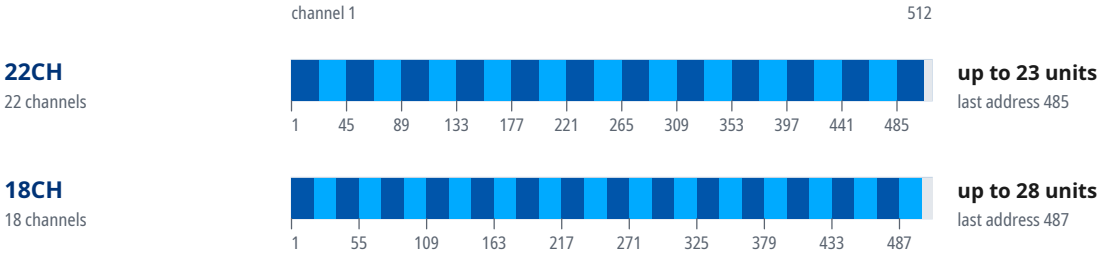


CH 21 · 22CH

- 4–103: 2–10 Hz
  Shutter1Strobe 1
- 108–155: 0.1–2 Hz
  Shutter1StrobePulseOpen 4
- 213–251: 1–6 Hz
  Shutter1StrobeRandom 6

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “22CH”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	111	11	221	16	331
2	23	7	133	12	243	17	353
3	45	8	155	13	265	18	375
4	67	9	177	14	287	19	397
5	89	10	199	15	309	20	419

Mode 22CH

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 20 Dimmer above 1; CH 21 Shutter at 104–107, 156–212 or 252–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 6 Colors 0, CH 20 Dimmer 255, CH 21 Shutter 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Min … center
		127–255	Center … max
		255	Max
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–127	Min … center
		127–255	Center … max
		255	Max
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0	Fast
		1–254	Fast … Slow
		255	Slow
6	Colors	0–5	Color 1: Open
		6–13	Color 1: Red
		14–22	Color 1: Blue
		23–30	Color 1: Amber
		31–39	Color 1: Green
		40–47	Color 1: Rosa
		48–56	Color 1: Yellow
		57–65	Color 1: Cyan
		66–73	Color 1: Venon Green
		74–81	Color 1: Magenta
		82–90	Color 1: Light Yellow
		91–99	Color 1: Light Lavend
		100–107	Color 1: CTO
		108–116	Color 1: CTB
		117–124	Color 1: Congo Blue
		125–127	Color 1: Open
		128–132	Color 1 Wheel Index: Red
		133–137	Color 1 Wheel Index: Blue
		138–141	Color 1 Wheel Index: Amber
		142–146	Color 1 Wheel Index: Green
		147–150	Color 1 Wheel Index: Rosa
		151–155	Color 1 Wheel Index: Yellow
		156–159	Color 1 Wheel Index: Cyan
		160–164	Color 1 Wheel Index: Venon Green
		165–168	Color 1 Wheel Index: Magenta
		169–173	Color 1 Wheel Index: Light Yellow
		174–177	Color 1 Wheel Index: Light Lavend
		178–182	Color 1 Wheel Index: CTO
		183–186	Color 1 Wheel Index: CTB
		187–191	Color 1 Wheel Index: Congo Blue

CH	Function	DMX	Description
6	Colors (continued)	192	Color 1 Wheel Spin: Min
		193–254	Color 1 Wheel Spin: Min ... Max
		255	Color 1 Wheel Spin: Max
7	Gobo 2	0–4	Gobo 2: Open
		5–9	Gobo 2: Gobo 1
		10–14	Gobo 2
		15–19	Gobo 2: Gobo 3
		20–24	Gobo 2: Gobo 4
		25–29	Gobo 2: Gobo 5
		30–34	Gobo 2: Gobo 6
		35–39	Gobo 2: Gobo 7
		40–44	Gobo 2: Gobo 8
		45–49	Gobo 2: Gobo 9
		50–54	Gobo 2: Gobo 10
		55–59	Gobo 2: Gobo 11
		60–64	Gobo 2: Gobo 12
		65–69	Gobo 2: Gobo 13
		70–74	Gobo 2: Gobo 14
		75–79	Gobo 2 Select Shake: Gobo 1
		80–84	Gobo 2 Select Shake: Gobo 2
		85–89	Gobo 2 Select Shake: Gobo 3
		90–94	Gobo 2 Select Shake: Gobo 4
		95–99	Gobo 2 Select Shake: Gobo 5
		100–104	Gobo 2 Select Shake: Gobo 6
		105–109	Gobo 2 Select Shake: Gobo 7
		110–114	Gobo 2 Select Shake: Gobo 8
		115–119	Gobo 2 Select Shake: Gobo 9
		120–124	Gobo 2 Select Shake: Gobo 10
		125–129	Gobo 2 Select Shake: Gobo 11
		130–134	Gobo 2 Select Shake: Gobo 12
		135–139	Gobo 2 Select Shake: Gobo 13
		140–144	Gobo 2 Select Shake: Gobo 14
		145	Max CW
		146–199	Max CW ... Min CW
		200	Min CW
		201	Min CCW
		202–254	Min CCW ... Mac CCW
		255	Mac CCW
8	Gobo	0–9	Gobo 1: Open
		10–19	Gobo 1
		20–29	Gobo 1: Gobo 2
		30–39	Gobo 1: Gobo 3

CH	Function	DMX	Description
8	Gobo (continued)	40–49	Gobo 1: Gobo 4
		50–59	Gobo 1: Gobo 5
		60–69	Gobo 1: Gobo 6
		70–79	Gobo 1: Gobo 7
		80–89	Gobo 1 Pos Shake: Gobo 1
		90–99	Gobo 1 Pos Shake: Gobo 2
		100–109	Gobo 1 Pos Shake: Gobo 3
		110–119	Gobo 1 Pos Shake: Gobo 4
		120–129	Gobo 1 Pos Shake: Gobo 5
		130–139	Gobo 1 Pos Shake: Gobo 6
		140–149	Gobo 1 Pos Shake: Gobo 7
		150	Max CW
		151–199	Max CW ... Min CW
		200	Min CW
		201	Min CCW
		202–254	Min CCW ... Max CCW
		255	Max CCW
9	Gobo Rotation	0–127	Gobo 1 Pos: min ... max
		127	Gobo 1 Pos: max
		128–129	Max CW
		129–190	Max CW ... Min CW
		190–191	Min CW
		191–193	Gobo 1 Pos Rotate: Stop
		193–194	Min CCW
		194–255	Min CCW ... Max CCW
		255	Max CCW
10	Gobo Rotation Fine	0–255	Fine adjustment of CH 9
11	Animation Wheel	0	Open
		1–254	Open ... Max
		255	Max
12	Animation Wheel Spin	0	Min CW
		1–127	Min CW ... Mac CW
		128	Mac CW
		129	Min CCW
		130–254	Min CCW ... Max CCW
		255	Max CCW
13	Prism	0–63	Open
		64–127	Circular Prism
		128–191	Linear Prism
		192–255	Prism 1 + 2
14	Prism Rotation	0–127	Index (270°)
		128	Max CW

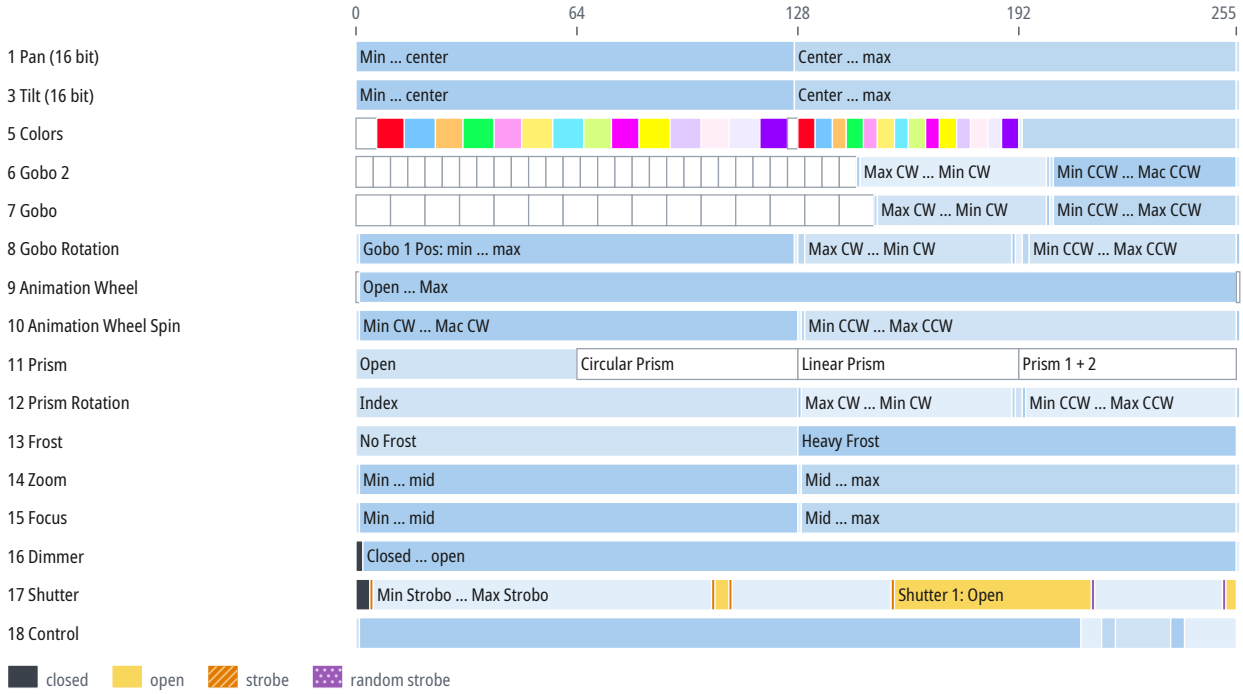
CH	Function	DMX	Description
14	Prism Rotation (continued)	129–189	Max CW ... Min CW
		190	Min CW
		191–192	Prism 1 Pos Rotate: Stop
		193	Min CCW
		194–254	Min CCW ... Max CCW
		255	Max CCW
15	Frost	0–127	No Frost
		128–255	Heavy Frost
16	Zoom	0–128	Min
		128–255	Mid ... max
		255	Max
17	Zoom Fine	0–255	Fine adjustment of CH 16
18	Focus	0–128	Min
		128–255	Mid ... max
		255	Max
19	Focus Fine	0–255	Fine adjustment of CH 18
20	Dimmer	0–1	Closed
		2–254	Closed ... open
		255	Open
21	Shutter	0–3	Shutter 1: Closed
		4	Min Strobo
		5–102	Min Strobo ... Max Strobo
		103	Max Strobo
		104–107	Shutter 1: Open
		108	Min Pulse
		109–154	Min Pulse ... Max Pulse
		155	Max Pulse
		156–212	Shutter 1: Open
		213	Min Rnd
		214–250	Min Rnd ... Max Rnd
		251	Max Rnd
		252–255	Shutter 1: Open
22	Control	0	Default
		1–209	Control 1 1
		210–215	Pos Reset (3sec)
		216–219	Control 1 3
		220–235	nonPos Reset (3sec)
		236–239	Control 1 5
		240–255	Reset (3sec)

Mode 18CH

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 16 Dimmer above 1; CH 17 Shutter at 104–107, 156–212 or 252–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 5 Colors 0, CH 16 Dimmer 255, CH 17 Shutter 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan		Same as CH 1 in the mode “22CH” (p. 11)
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt		Same as CH 3 in the mode “22CH” (p. 11)
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Colors		Same as CH 6 in the mode “22CH” (p. 11)
6	Gobo 2		Same as CH 7 in the mode “22CH” (p. 12)
7	Gobo		Same as CH 8 in the mode “22CH” (p. 12)
8	Gobo Rotation	0	Gobo 1 Pos: min
		1–126	Gobo 1 Pos: min ... max
		127	Gobo 1 Pos: max
		128–129	Max CW
		130–189	Max CW ... Min CW
		190	Min CW
		191–192	Gobo 1 Pos Rotate: Stop
		193–194	Min CCW
		195–254	Min CCW ... Max CCW
		255	Max CCW
9	Animation Wheel		Same as CH 11 in the mode “22CH” (p. 13)

CH	Function	DMX	Description
10	Animation Wheel Spin		Same as CH 12 in the mode “22CH” (p. 13)
11	Prism		Same as CH 13 in the mode “22CH” (p. 13)
12	Prism Rotation		Same as CH 14 in the mode “22CH” (p. 13)
13	Frost		Same as CH 15 in the mode “22CH” (p. 14)
14	Zoom	0	Min
		1–127	Min ... mid
		128	Mid
		129–254	Mid ... max
		255	Max
15	Focus	0	Min
		1–127	Min ... mid
		128	Mid
		129–254	Mid ... max
		255	Max
16	Dimmer		Same as CH 20 in the mode “22CH” (p. 14)
17	Shutter		Same as CH 21 in the mode “22CH” (p. 14)
18	Control		Same as CH 22 in the mode “22CH” (p. 14)

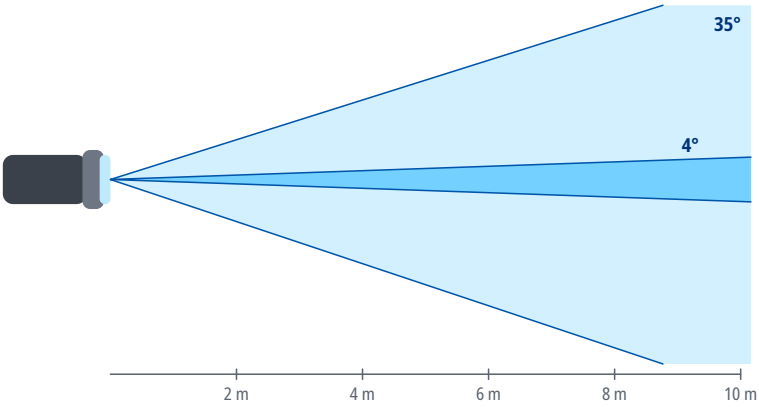
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	300 W
Luminous flux	6,000 lm
Color temperature	8,000 K
Color rendering index (CRI)	90
Optics	
Zoom	4–35°
Movement	
Pan	540°
Tilt	260°
Control	
RDM	yes (manufacturer ID 0x424B, device model ID 0x0001)
Dimensions and construction	
Weight	14 kg
Operating environment	
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Strobe frequency	2–10 Hz
Color wheel rotation	up to 57.3 °/s (9.5 rpm)
Gobo wheel 1 rotation	up to 60 °/s (10 rpm)
Gobo wheel 2 rotation	up to 60 °/s (10 rpm)
Gobo 1 rotation	up to 360 °/s (60 rpm)
Prism rotation	up to 360 °/s (60 rpm)
Animation wheel rotation	up to 573 °/s (95 rpm)

Spot diameter



Distance	Ø 4°	Ø 35°
2 m	0.14 m	1.3 m
4 m	0.28 m	2.5 m
6 m	0.42 m	3.8 m
8 m	0.56 m	5 m
10 m	0.7 m	6.3 m
15 m	1 m	9.5 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.