DMX REFERENCE

RIVAL BEAM

JB Systems



Manufacturer	JB Systems
GDTF file	JB_Systems_RIVAL_BEAM_129761.gdtf
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1 About this manual

This document describes the RIVAL BEAM by JB Systems. It was compiled from the GDTF file JB_Systems_RIVAL_BEAM_129761.gdtf from the GDTF-Share library.

File revision: “20260220_Rev01”.

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 JB Systems; 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	15 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
5Ch	5	102	1, 6, 11, 16, ...
21Ch	21	24	1, 22, 43, 64, ...
17Ch	17	30	1, 18, 35, 52, ...

No light? Check these channels

- 5Ch: CH 1 Dimmer above 0; CH 2 Shutter at 0–7 “Open”
- 21Ch: CH 18 Shutter at 8–15, 132–139, 182–189, 232–239, 248–255 “Open” or 140 or 141–180 or 181; CH 19 Dimmer above 0
- 17Ch: CH 15 Shutter at 8–15, 132–139, 182–189, 232–239, 248–255 “Open” or 140 or 141–180 or 181; CH 16 Dimmer above 0



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

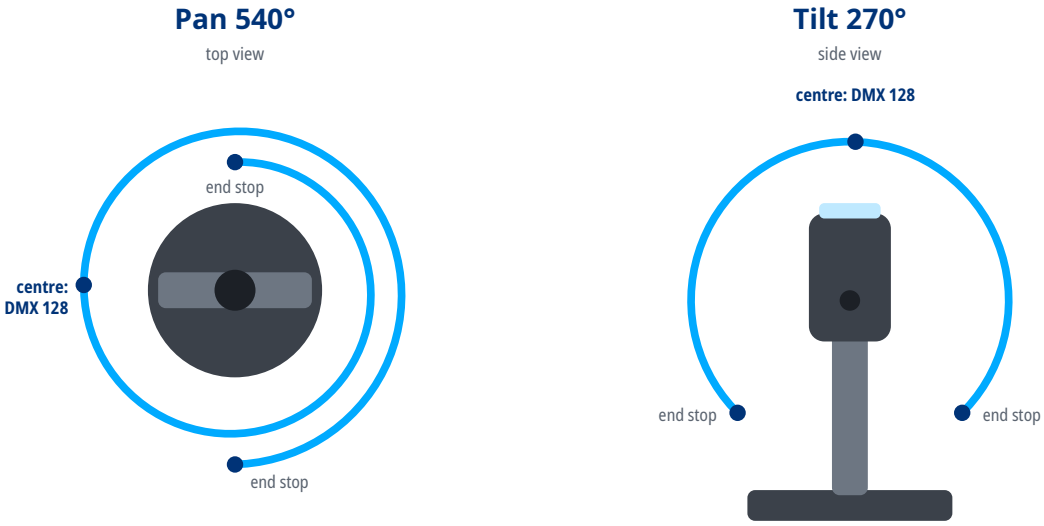
- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them 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



5 Installation

⚠ WARNING

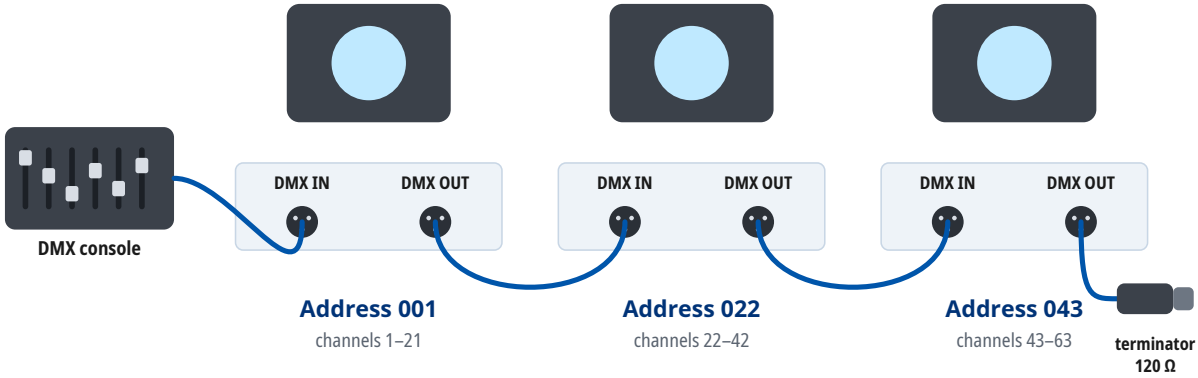
- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Weight of the device: 15 kg.
- 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 21Ch: every unit occupies 21 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 “21Ch”: 21.
- 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 “21Ch”, you can use, for example, the start addresses 1, 22, 43, 64.
- 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

	5Ch 5 channels	21Ch 21 channels	17Ch 17 channels
Pan / Tilt		**1, 3**	**1, 2**
Pan / Tilt resolution		16 bit	8 bit
Dimmer	**1**	**19**	**16**
Dimmer resolution	8 bit	16 bit	8 bit
Shutter / strobe	**2**	**18**	**15**
Color wheel	**3**	**9**	**7**
Gobo wheel	**4**	**10**	**8**
Prism		**12–15**	**10–13**
Focus		**16**	**14**
Effects / macros		**6**	**4**

Color wheel



Gobo wheel 1

1 
Gobo: Open
DMX 0–9

2 
Gobo 1
DMX 10–14

3 
Gobo 2
DMX 15–19

4 
Gobo 3
DMX 20–24

5 
Gobo 4
DMX 25–29

6 
Gobo 5
DMX 30–34

7 
Gobo 6
DMX 35–39

8 
Gobo 7
DMX 40–44

9 
Gobo 8
DMX 45–49

10 
Gobo 9
DMX 50–54

11 
Gobo 10
DMX 55–59

12 
Gobo 11
DMX 60–64

13 
Gobo 12
DMX 65–69

14 
Wheel Slot 14
DMX 70–75

Gobo wheel 2

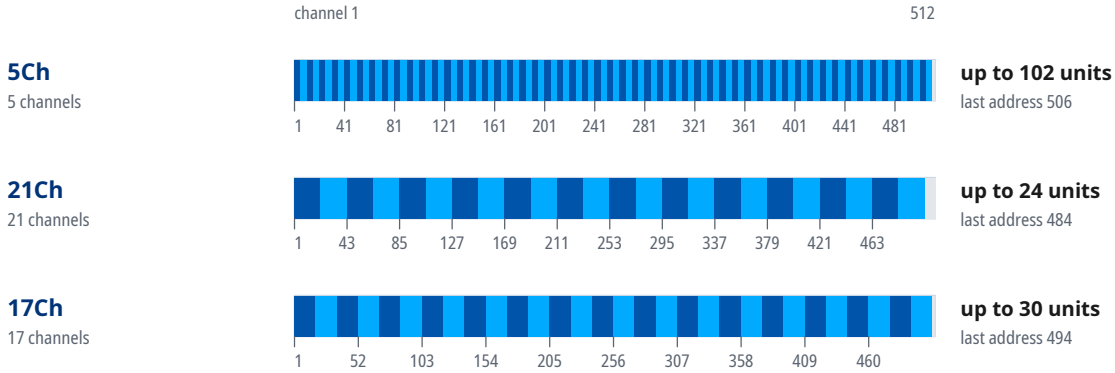
1
Open
DMX 0–63

2
Frost
DMX 64–127

3 
Multi-color
DMX 128–255

9 DMX channels

Units in one DMX universe



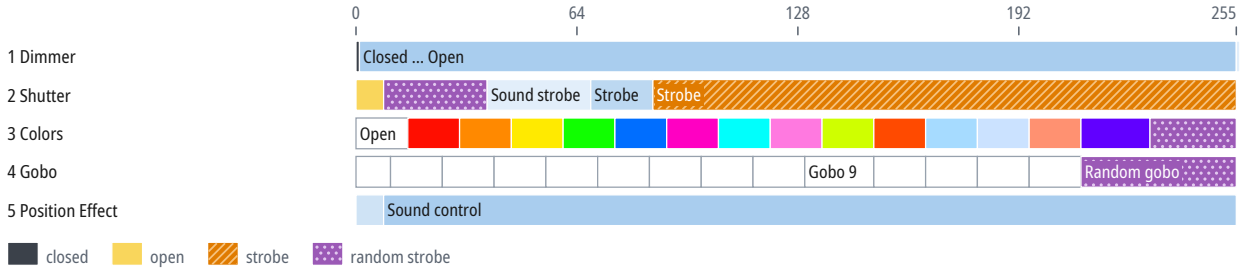
Start addresses of 20 units in the mode “21Ch”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	106	11	211	16	316
2	22	7	127	12	232	17	337
3	43	8	148	13	253	18	358
4	64	9	169	14	274	19	379
5	85	10	190	15	295	20	400

Mode 5Ch

If the device receives DMX in this mode but gives no light, check these channels: CH 1 Dimmer above 0; CH 2 Shutter at 0–7 “Open”. The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Dimmer	0	Closed
		1–254	Closed ... Open
		255	Open
2	Shutter	0–7	Shutter: Open
		8–37	Random strobe
		38–67	Sound strobe
		68–255	Strobe
3	Colors	0–14	Open

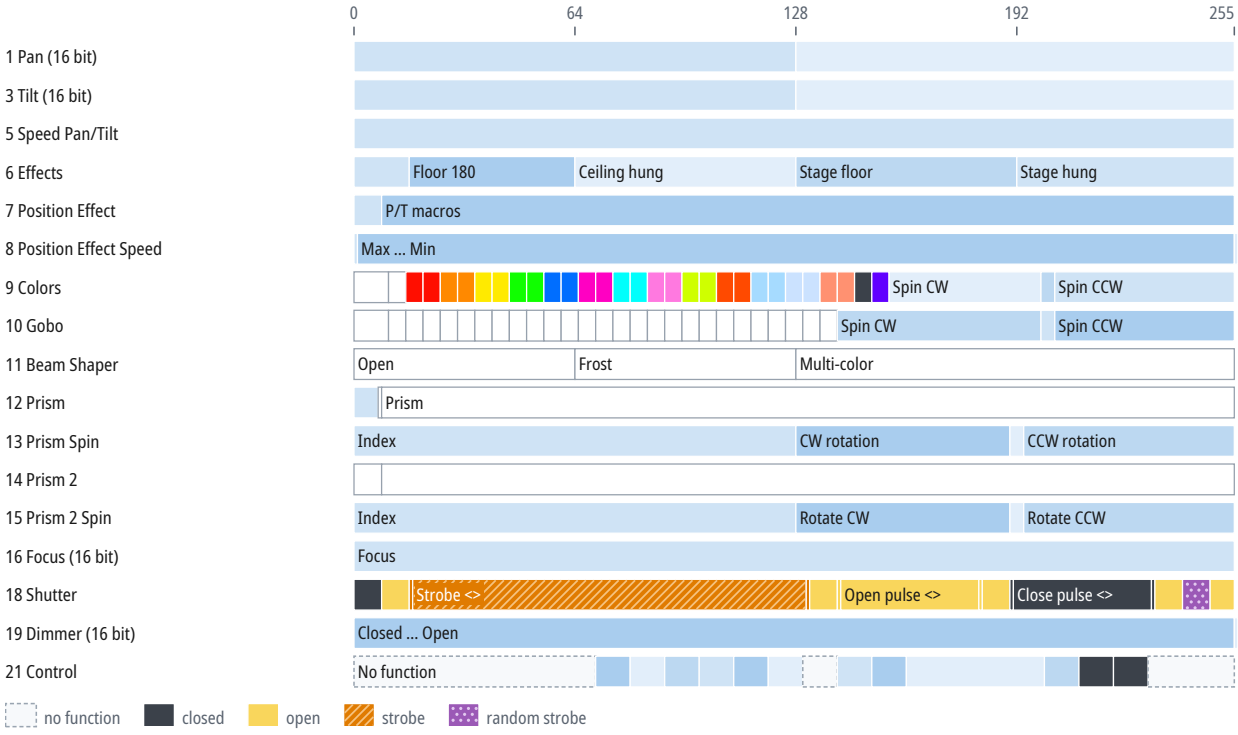
CH	Function	DMX	Description
3	Colors (continued)	15–29	Color 1
		30–44	Color 2
		45–59	Color 3
		60–74	Color 4
		75–89	Color 5
		90–104	Color 6
		105–119	Color 7
		120–134	Color 8
		135–149	Color 9
		150–164	Color 10
		165–179	Color 11
		180–194	Color 12
		195–209	Color 13
		210–229	Color 14
		230–255	Random color
4	Gobo	0–9	Open
		10–24	Gobo 1
		25–39	Gobo 2
		40–54	Gobo 3
		55–69	Gobo 4
		70–84	Gobo 5
		85–99	Gobo 6
		100–114	Gobo 7
		115–129	Gobo 8
		130–149	Gobo 9
		150–164	Gobo 10
		165–179	Gobo 11
		180–194	Gobo 12
		195–209	Gobo 13
		210–255	Random gobo
5	Position Effect		P/T macros
		0–7	Freeze
		8–255	Sound control

Mode 21Ch

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 18 Shutter at 8–15, 132–139, 182–189, 232–239, 248–255 “Open” or 140 or 141–180 or 181; CH 19 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 19 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–128	Pan
		128	Center
		128–255	Pan
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–128	Tilt
		128	Center
		128–255	Tilt
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Effects		Auto shows
		0–15	Disabled
		16–63	Floor 180
		64–127	Ceiling hung
		128–191	Stage floor
		192–255	Stage hung
7	Position Effect		P/T macros
		0–7	Disabled

CH	Function	DMX	Description
7	Position Effect (continued)	8–255	P/T macros
8	Position Effect Speed		P/T macro speed
		0	Max
		1–254	Max … Min
		255	Min
9	Colors	0–9	Color: Open
		10–14	Split color 0/1
		15–19	Red
		20–24	Split color 1/2
		25–29	Orange
		30–34	Split color 2/3
		35–39	Yellow
		40–44	Split color 3/4
		45–49	Green
		50–54	Split color 4/5
		55–59	Blue
		60–64	Split color 5/6
		65–69	Magenta
		70–74	Split color 6/7
		75–79	Cyan
		80–84	Split color 7/8
		85–89	Pink
		90–94	Split color 8/9
		95–99	Lime
		100–104	Split color 9/10
		105–109	Orange 2
		110–114	Split color 10/11
		115–119	CTB 1
		120–124	Split color 11/12
		125–129	CTB 2
		130–134	Split color 12/13
		135–139	CTO
		140–144	Split color 13/14
		145–149	Dark blue
		150–154	Split color 14/0
		155–198	Spin CW
		199–202	Color 1 Wheel Spin: Stop
		203–255	Spin CCW
10	Gobo	0–9	Gobo: Open
		10–14	Gobo 1
		15–19	Gobo 2
		20–24	Gobo 3

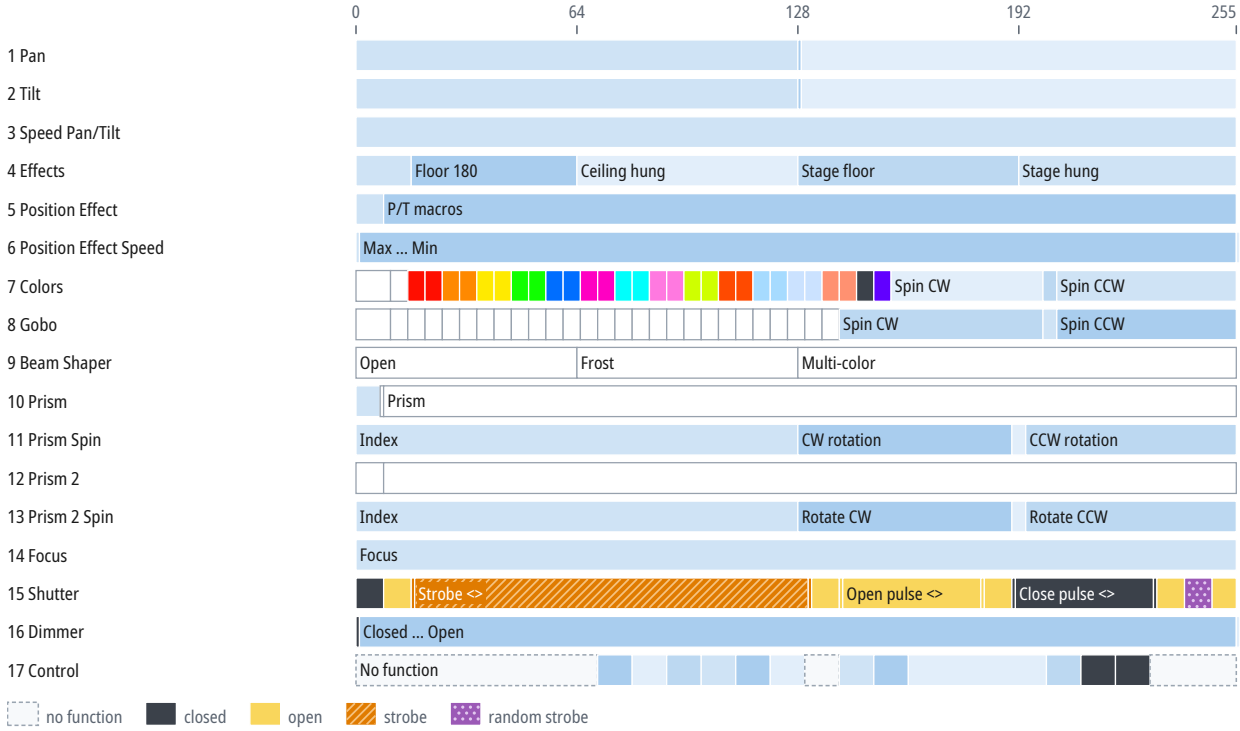
CH	Function	DMX	Description
10	Gobo (continued)	25–29	Gobo 4
		30–34	Gobo 5
		35–39	Gobo 6
		40–44	Gobo 7
		45–49	Gobo 8
		50–54	Gobo 9
		55–59	Gobo 10
		60–64	Gobo 11
		65–69	Gobo 12
		70–74	Gobo 13
		75–79	Shake Gobo 1 (0.071–0.143 Hz)
		80–84	Shake Gobo 2 (0.143–0.214 Hz)
		85–89	Shake Gobo 3 (0.214–0.286 Hz)
		90–94	Shake Gobo 4 (0.286–0.357 Hz)
		95–99	Shake Gobo 5 (0.357–0.429 Hz)
		100–104	Shake Gobo 6 (0.429–0.5 Hz)
		105–109	Shake Gobo 7 (0.5–0.571 Hz)
		110–114	Shake Gobo 8 (0.571–0.643 Hz)
		115–119	Shake Gobo 9 (0.643–0.714 Hz)
		120–124	Shake Gobo 10 (0.714–0.786 Hz)
		125–129	Shake Gobo 11 (0.786–0.857 Hz)
		130–134	Shake Gobo 12 (0.857–0.929 Hz)
		135–139	Shake Gobo 13 (0.929–1 Hz)
		140–198	Spin CW
		199–202	Sptop
		203–255	Spin CCW
11	Beam Shaper	0–63	Open
		64–127	Frost
		128–255	Multi-color
12	Prism	0–6	Prism 1
		7	Open
		8–255	Prism
13	Prism Spin	0–127	Index (360°)
		128–189	CW rotation
		190–193	Prism 1 Select Spin: Stop
		194–255	CCW rotation
14	Prism 2	0–7	Open
		8–255	Prism 2
15	Prism 2 Spin	0–127	Index
		128–189	Rotate CW
		190–193	Prism 2 Select Spin: Stop
		194–255	Rotate CCW

CH	Function	DMX	Description
16	Focus	0–255	Focus
17	Focus Fine	0–255	Fine adjustment of CH 16
18	Shutter	0–7	Shutter: Closed
		8–15	Shutter: Open
		16	Strobe min
		17–130	Strobe <>
		131	Strobe Max
		132–139	Strobe: Open
		140	Open pulse min
		141–180	Open pulse <>
		181	Open Pulse max
		182–189	Strobe Pulse Open: Open
		190	Close pulse min
		191–230	Close pulse <>
		231	Close pulse max
		232–239	Strobe Pulse Close: Open
		240–247	Random strobe
		248–255	Strobe Random: Open
19	Dimmer	0–255	Closed ... Open
		255	Open
20	Dimmer Fine	0–255	Fine adjustment of CH 19
21	Control	0–69	No function
		70–79	P/T Enabled
		80–89	P/T Disabled
		90–99	Color enabled
		100–109	Color disabled
		110–119	Gobo Enabled
		120–129	Gobo Disabled
		130–139	No function
		140–149	P/T reset
		150–159	Effect reset
		160–199	Effect reset ... Reset all
		200–209	Reset all
		210–219	Global blackout enabled
		220–229	Global blackout disabled
		230–255	No function

Mode 17Ch

If the device receives DMX in this mode but gives no light, check these channels: CH 15 Shutter at 8–15, 132–139, 182–189, 232–239, 248–255 “Open” or 140 or 141–180 or 181; CH 16 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 16 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Pan
		128	Center
		129–255	Pan
2	Tilt	0–127	Tilt
		128	Center
		129–255	Tilt
3	Speed Pan/Tilt	0–255	
4	Effects		Same as CH 6 in the mode “21Ch” (p. 11)
5	Position Effect		Same as CH 7 in the mode “21Ch” (p. 11)
6	Position Effect Speed		Same as CH 8 in the mode “21Ch” (p. 12)
7	Colors		Same as CH 9 in the mode “21Ch” (p. 12)
8	Gobo		Same as CH 10 in the mode “21Ch” (p. 12)
9	Beam Shaper		Same as CH 11 in the mode “21Ch” (p. 13)
10	Prism		Same as CH 12 in the mode “21Ch” (p. 13)
11	Prism Spin		Same as CH 13 in the mode “21Ch” (p. 13)
12	Prism 2		Same as CH 14 in the mode “21Ch” (p. 13)
13	Prism 2 Spin		Same as CH 15 in the mode “21Ch” (p. 13)
14	Focus	0–255	Focus

CH	Function	DMX	Description
15	Shutter		Same as CH 18 in the mode “21Ch” (p. 14)
16	Dimmer		Same as CH 1 in the mode “5Ch” (p. 9)
17	Control		Same as CH 21 in the mode “21Ch” (p. 14)

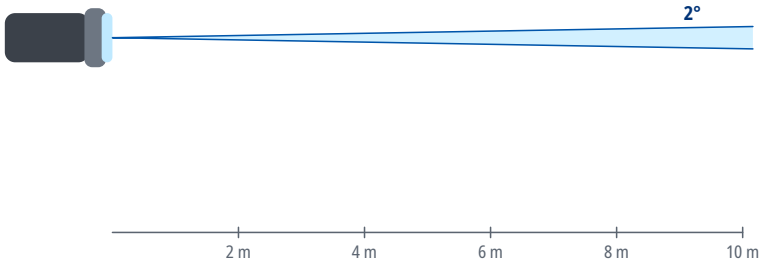
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	200 W
Luminous flux	100,000 lm
Color temperature	6,000 K
Color rendering index (CRI)	60
Optics	
Beam angle	2°
Movement	
Pan	540°
Tilt	270°
Dimensions and construction	
Weight	15 kg
Operating environment	
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Color wheel rotation	up to 45 °/s (7.5 rpm)
Gobo wheel 1 rotation	up to 45 °/s (7.5 rpm)
Prism 1 rotation	up to 45 °/s (7.5 rpm)
Prism 2 rotation	up to 45 °/s (7.5 rpm)

Spot diameter



Distance	Ø 2°
2 m	0.07 m
4 m	0.14 m
6 m	0.21 m
8 m	0.28 m
10 m	0.35 m
15 m	0.52 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.