DMX REFERENCE

Beam 7R

Hardwater Beam 7R

Hardwater



Manufacturer	Hardwater
GDTF file	Hardwater_Beam_7R_42358.gdtf
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1 About this manual

This document describes the Hardwater Beam 7R by Hardwater. It was compiled from the GDTF file Hardwater_Beam_7R_42358.gdtf from the GDTF-Share library.

File revision: “Version 5.0.3”.

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 Hardwater; 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	18 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
16-Channel Mode	16	32	1, 17, 33, 49, ...

No light? Check these channels

- 16-Channel Mode: CH 5 Dimmer above 0; CH 6 Shutter at 241–255 “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

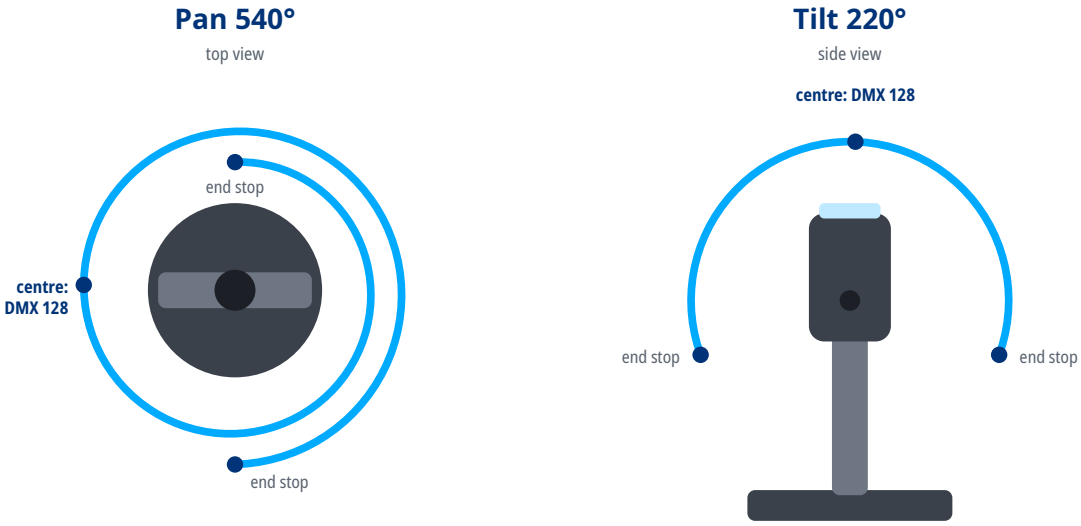
- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them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



5 Installation

⚠ WARNING

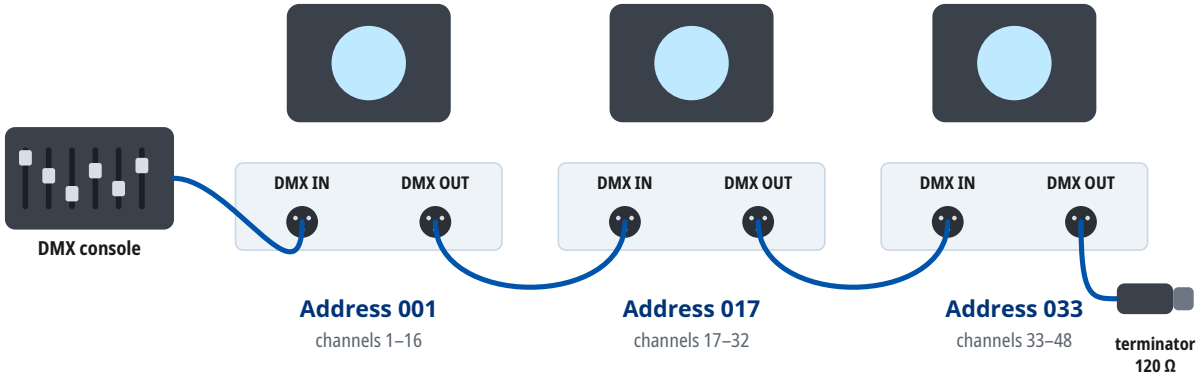
- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Weight of the device: 18 kg.
- 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 16-Channel Mode: every unit occupies 16 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 “16-Channel Mode”: 16.
- 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 “16-Channel Mode”, you can use, for example, the start addresses 1, 17, 33, 49.
- 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

	16-Channel Mode 16 channels
Pan / Tilt	1, 2
Dimmer	5
Shutter / strobe	6
Color wheel	11
Gobo wheel	9, 10
Prism	13, 14
Frost	7
Focus	8

Color wheel

1 Color: Open
DMX 0–7

2 Red
DMX 8–15

3 Orange
DMX 16–23

4 Aquamarine
DMX 24–31

5 Dark Green
DMX 32–39

6 Light Green
DMX 40–47

7 Lavender
DMX 48–55

8 Pink
DMX 56–63

9 Yellow
DMX 64–71

10 Magenta
DMX 72–79

11 Blue
DMX 80–87

12 CTO 2500K
DMX 88–95

13 CTO 1900K
DMX 96–103

14 CTB
DMX 104–111

15 UV
DMX 112–128

Gobo wheel

1
Gobo: Open
DMX 0–6

2 
Aperture 1
DMX 7–13

3 
Aperture 2
DMX 14–20

4 
Aperture 3
DMX 21–27

5 
Aperture 4
DMX 28–34

6 
Aperture 5
DMX 35–41

7 
Aperture 6
DMX 42–48

8 
Bars
DMX 49–55

9 
Triangle
DMX 56–62

10 
Star 4
DMX 63–69

11 
Dots
DMX 70–76

12 
Worms
DMX 77–83

13 
Sun
DMX 84–90

14 
Splash
DMX 91–97

15 
Dots
DMX 98–104

16 
Dots 4
DMX 105–111

17 
Bar V
DMX 112–118

18 
Bar H
DMX 119–128

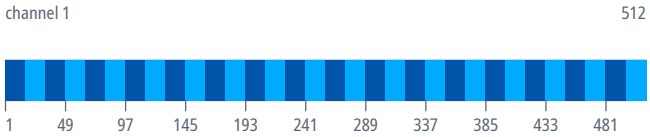
Prism

1
Open
DMX 0–31

2 
16 facets
Prism
DMX 32–255

9 DMX channels

Units in one DMX universe



16-Channel Mode
16 channels

up to 32 units
last address 497

Start addresses of 20 units in the mode “16-Channel Mode”

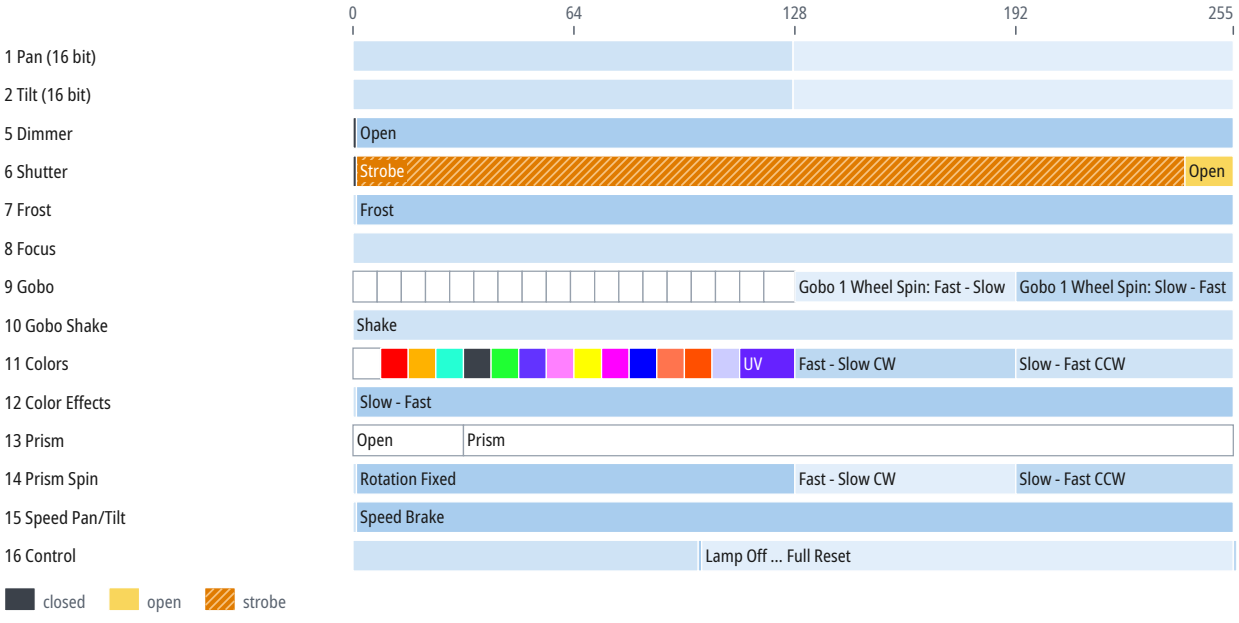
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	81	11	161	16	241
2	17	7	97	12	177	17	257
3	33	8	113	13	193	18	273
4	49	9	129	14	209	19	289
5	65	10	145	15	225	20	305

Mode 16-Channel Mode

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 5 Dimmer above 0; CH 6 Shutter at 241–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 5 Dimmer 255, CH 6 Shutter 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–127	Pan
		128	Home
		128–255	Pan
2	Tilt	0–127	Tilt
		128	Home

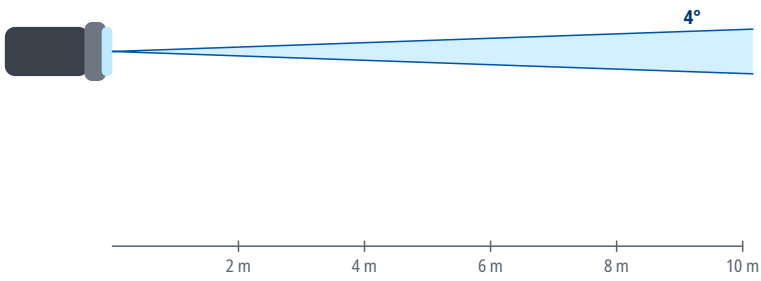
CH	Function	DMX	Description
2	Tilt (continued)	128–255	Tilt
3	Pan Fine	0–255	Fine adjustment of CH 1
4	Tilt Fine	0–255	Fine adjustment of CH 2
5	Dimmer	0	Closed
		1–255	Open
6	Shutter	0	Closed
		1–240	Strobe
		241–255	Open
7	Frost	0–255	Frost
8	Focus	0–255	
9	Gobo	0–6	Gobo: Open
		7–13	Aperture 1
		14–20	Aperture 2
		21–27	Aperture 3
		28–34	Aperture 4
		35–41	Aperture 5
		42–48	Aperture 6
		49–55	Bars
		56–62	Triangle
		63–69	Star 4
		70–76	Dots
		77–83	Worms
		84–90	Sun
		91–97	Splash
		98–104	Dots
		105–111	Dots 4
		112–118	Bar V
		119–127	Bar H
		128–191	Gobo 1 Wheel Spin: Fast - Slow
		192–255	Gobo 1 Wheel Spin: Slow - Fast
10	Gobo Shake	0–255	Shake
11	Colors	0–7	Color: Open
		8–15	Red
		16–23	Orange
		24–31	Aquamarine
		32–39	Dark Green
		40–47	Light Green
		48–55	Lavender
		56–63	Pink
		64–71	Yellow
		72–79	Magenta
		80–87	Blue

CH	Function	DMX	Description
11	Colors (continued)	88–95	CTO 2500K
		96–103	CTO 1900K
		104–111	CTB
		112–127	UV
		128–191	Fast - Slow CW
		192–255	Slow - Fast CCW
12	Color Effects		Color Shake
		0	Color Shake
		1–255	Slow - Fast
13	Prism	0–31	Open
		32–255	Prism
14	Prism Spin	0	Prism Spin
		1–127	Rotation Fixed
		128–191	Fast - Slow CW
		192–255	Slow - Fast CCW
15	Speed Pan/Tilt		PT Speed
		0	PT Speed
		1–255	Speed Brake
16	Control	0–99	Control 1
		100	Lamp Off
		101–254	Lamp Off ... Full Reset
		255	Full Reset

10 Technical specifications

Parameter	Value
Light	
Light source	discharge lamp
Lamp power	230 W
Luminous flux	1,000 lm
Color temperature	8,000 K
Color rendering index (CRI)	100
Optics	
Beam angle	4°
Movement	
Pan	540°
Tilt	220°
Control	
RDM	yes (manufacturer ID 0x1111, device model ID 0x4001)
Dimensions and construction	
Weight	18 kg
Operating environment	
Operating temperature	-20 to 40 °C

Spot diameter



Distance	Ø 4°
2 m	0.14 m
4 m	0.28 m
6 m	0.42 m
8 m	0.56 m
10 m	0.7 m
15 m	1 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.