DMX REFERENCE

TB450

TB450IP

GTB



Manufacturer	GTB
GDTF file	GTB_TB450_95833.gdtf
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1 About this manual

This document describes the TB450IP by GTB. It was compiled from the GDTF file GTB_TB450_95833.gdtf from the GDTF-Share library.

File revision: “TB450IP BEAM”.

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 GTB; 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
Power consumption	850 W
Weight	27 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
20CH	20	25	1, 21, 41, 61, …

No light? Check these channels

- 20CH: CH 1 Shutter at 104–107 or 208–212 or 252–255; CH 2 Dimmer above 0


Read the manual before use


Risk of electric shock


Do not stare into the light


Indoor use only

3 Safety instructions


Read the manual before use


Risk of electric shock


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

- Connect the device only to a properly installed mains outlet with a protective earth (ground) contact. The outlet or other means of disconnection must remain easily accessible.
- Power supply: 100–240 V, 50/60 Hz. Before connecting, make sure that the mains voltage matches this value and the value on the rating plate of the device.
- Do not connect the device to a dimmer or to a dimmed circuit.
- Use only the original power cable or a cable with identical ratings. Protect the cable from damage, do not run it over sharp edges, and never unplug it by pulling on the cable.
- When connecting several devices to one circuit, do not exceed its permitted load.
- Do not touch the device with wet hands.

⚠ 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

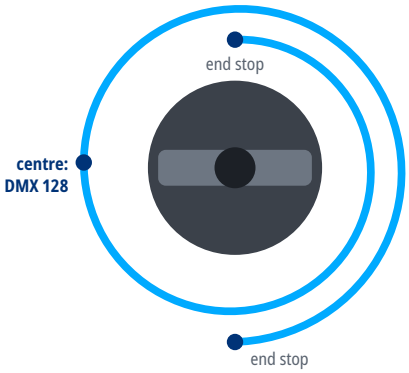
- The moving parts of the device (for example the head or arms) can move quickly and unexpectedly at any time – after power-on, during a reset, or on a command from the controller.
- Keep yourself and any objects out of the range of movement. While the device is switched on, do not touch the moving parts, 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

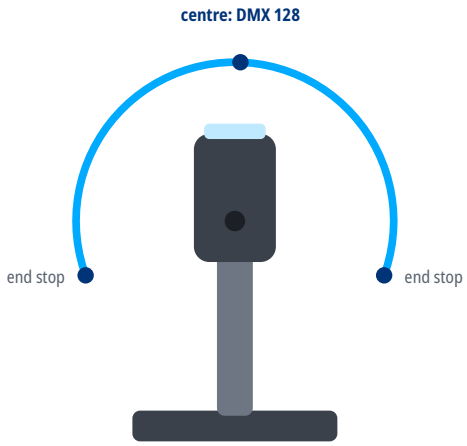
Pan 540°

top view



Tilt 220°

side view



5 Installation

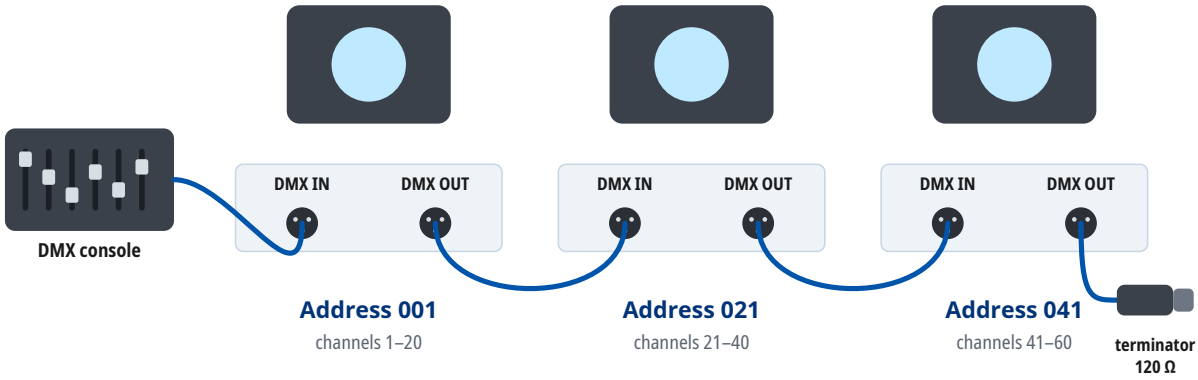
⚠ WARNING

- 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: 27 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 20CH: every unit occupies 20 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 “20CH”: 20.
- 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 “20CH”, you can use, for example, the start addresses 1, 21, 41, 61.
- 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.

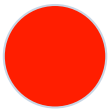
8 Functions at a glance

Functions in each DMX mode

	20CH 20 channels
Pan / Tilt	15, 17
Dimmer	2
Shutter / strobe	1
Color wheel	7, 8
Gobo wheel	9
Prism	10–12
Frost	13
Focus	14

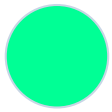
Color wheel

1
Color 1: Open
DMX 0–7

2 
Red
DMX 8–15

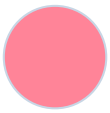
3 
Orange
DMX 16–23

4 
Light Blue
DMX 24–31

5 
Light Green
DMX 32–39

6
Kelly
DMX 40–47

7 
Light blue violet
DMX 48–55

8 
Pink
DMX 56–63

9
Yellow
DMX 64–71

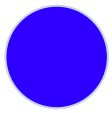
10 
Magenta
DMX 72–79

11 
Blue
DMX 80–87

12
RA
DMX 88–95

13
CTO
DMX 96–103

14
Warm
DMX 104–111

15 
UV
DMX 112–128

Gobo wheel

1
Gobo 1: Open
DMX 0–15

2 
Gobo 1: Gobo1
DMX 16–17

3 
Gobo 1: Gobo2
DMX 18–19

4 
Gobo 1: Gobo3
DMX 20–21

5 
Gobo 1: Gobo4
DMX 22–23

6 
Gobo 1: Gobo5
DMX 24–25

7 
Gobo 1: Gobo6
DMX 26–27

8 
Gobo 1: Gobo7
DMX 28–29

9 
Gobo 1: Gobo8
DMX 30–31

10 
Gobo 1: Gobo9
DMX 32–33

11 
Gobo 1: Gobo10
DMX 34–35

12 
Gobo 1: Gobo11
DMX 36–37

13 
Gobo 1: Gobo12
DMX 38–39

14 
Gobo 1: Gobo13
DMX 40–41

15 
Gobo 1: Gobo14
DMX 42–43

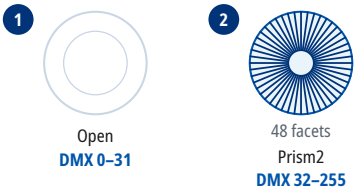
16 
Gobo15
DMX 44–48

Prism 1

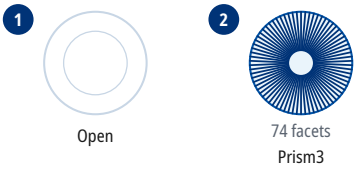
1
Open
DMX 0–31

2 
8 facets
Prism1
DMX 32–255

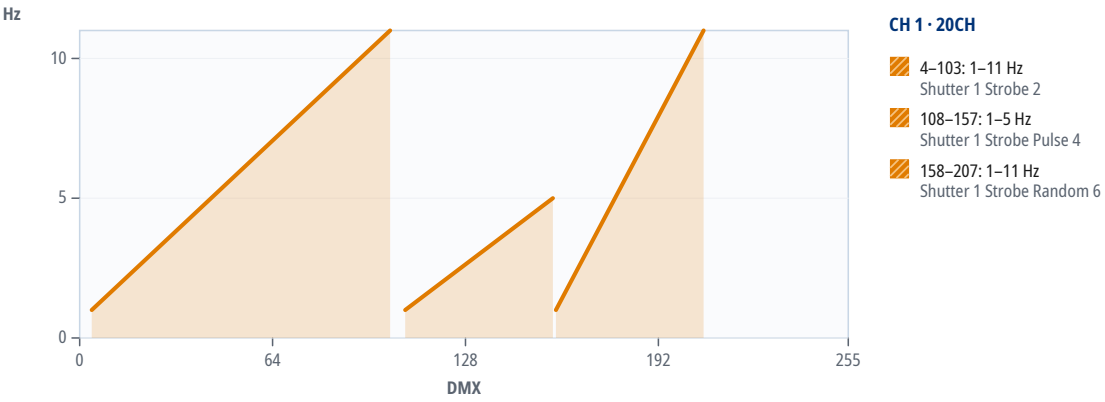
Prism 2



Prism 3

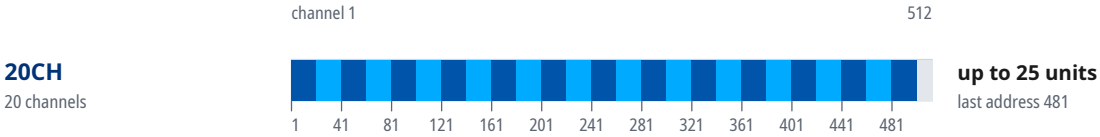


Strobe rate



9 DMX channels

Units in one DMX universe



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

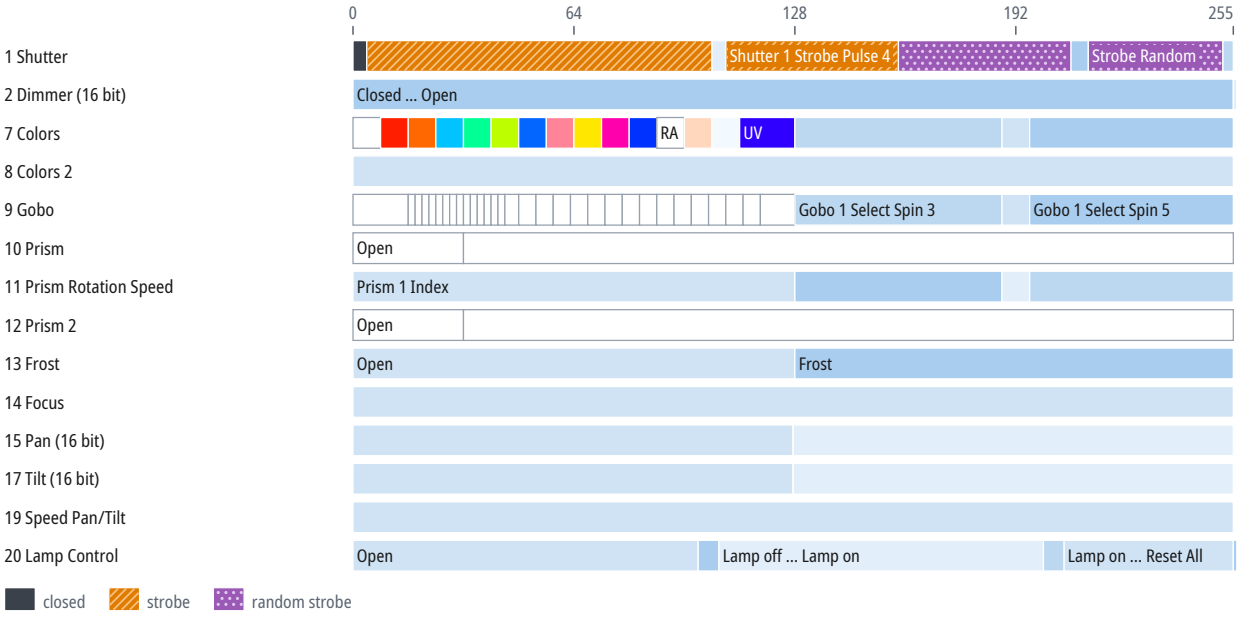
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	101	11	201	16	301
2	21	7	121	12	221	17	321
3	41	8	141	13	241	18	341
4	61	9	161	14	261	19	361
5	81	10	181	15	281	20	381

Mode 20CH

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 1 Shutter at 104–107 or 208–212 or 252–255; CH 2 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Shutter 255, CH 2 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Shutter	0–3	Close
		4–103	Shutter 1 Strobe 2 (1–11 Hz)
		104–107	Open 1
		108–157	Shutter 1 Strobe Pulse 4 (1–5 Hz)
		158–207	Shutter 1 Strobe Random 6 (1–11 Hz)

CH	Function	DMX	Description
1	Shutter (continued)	208–212	Open 2
		213–251	Strobe Random (1–15 Hz)
		252–255	Open 3
2	Dimmer	0–255	Closed … Open
		255	Open
3	Dimmer Fine	0–255	Fine adjustment of CH 2
7	Colors	0–7	Color 1: Open
		8–15	Red
		16–23	Orange
		24–31	Light Blue
		32–39	Light Green
		40–47	Kelly
		48–55	Light blue violet
		56–63	Pink
		64–71	Yellow
		72–79	Magenta
		80–87	Blue
		88–95	RA
		96–103	CTO
		104–111	Warm
		112–127	UV
		128–187	Color 1 Wheel Spin (120–1 °/s)
		188–195	Stop
		196–255	Color 1 Wheel Spin 2 (1–120 °/s)
8	Colors 2	0–255	
9	Gobo	0–15	Gobo 1: Open
		16–17	Gobo 1: Gobo1
		18–19	Gobo 1: Gobo2
		20–21	Gobo 1: Gobo3
		22–23	Gobo 1: Gobo4
		24–25	Gobo 1: Gobo5
		26–27	Gobo 1: Gobo6
		28–29	Gobo 1: Gobo7
		30–31	Gobo 1: Gobo8
		32–33	Gobo 1: Gobo9
		34–35	Gobo 1: Gobo10
		36–37	Gobo 1: Gobo11
		38–39	Gobo 1: Gobo12
		40–41	Gobo 1: Gobo13
		42–43	Gobo 1: Gobo14
		44–47	Gobo 1: Gobo15
		48–52	Gobo 1 Select Shake: Gobo1 (0.062–0.125 Hz)

CH	Function	DMX	Description
9	Gobo (continued)	53–57	Gobo 1 Select Shake: Gobo2 (0.125–0.188 Hz)
		58–62	Gobo 1 Select Shake: Gobo3 (0.188–0.25 Hz)
		63–67	Gobo 1 Select Shake: Gobo4 (0.25–0.312 Hz)
		68–72	Gobo 1 Select Shake: Gobo5 (0.312–0.375 Hz)
		73–77	Gobo 1 Select Shake: Gobo6 (0.375–0.438 Hz)
		78–82	Gobo 1 Select Shake: Gobo7 (0.438–0.5 Hz)
		83–87	Gobo 1 Select Shake: Gobo8 (0.5–0.562 Hz)
		88–92	Gobo 1 Select Shake: Gobo9 (0.562–0.625 Hz)
		93–97	Gobo 1 Select Shake: Gobo10 (0.625–0.688 Hz)
		98–102	Gobo 1 Select Shake: Gobo11 (0.688–0.75 Hz)
		103–107	Gobo 1 Select Shake: Gobo12 (0.75–0.812 Hz)
		108–112	Gobo 1 Select Shake: Gobo13 (0.812–0.875 Hz)
		113–117	Gobo 1 Select Shake: Gobo14 (0.875–0.938 Hz)
		118–127	Gobo 1 Select Shake: Gobo15 (0.938–1 Hz)
		128–187	Gobo 1 Select Spin 3 (80–1 °/s)
		188–195	Stop
		196–255	Gobo 1 Select Spin 5 (1–80 °/s)
10	Prism	0–31	Open
		32–255	Prism1
11	Prism Rotation Speed	0–127	Prism 1 Index (359°)
		128–187	Prism 1 Pos Rotate 2 (360–1 °/s)
		188–195	Prism 1 Pos Rotate 3
		196–255	Prism 1 Pos Rotate 4 (1–360 °/s)
12	Prism 2	0–31	Open
		32–255	Prism2
13	Frost	0–127	Open
		128–255	Frost
14	Focus	0–255	
15	Pan	0–127	Pan 1
		128	Home
		128–255	Pan 1
16	Pan Fine	0–255	Fine adjustment of CH 15
17	Tilt	0–127	Tilt 1
		128	Home
		128–255	Tilt 1
18	Tilt Fine	0–255	Fine adjustment of CH 17
19	Speed Pan/Tilt	0–255	

CH	Function	DMX	Description
20	Lamp Control	0–99	Open
		100–105	Lamp off
		106–199	Lamp off ... Lamp on
		200–205	Lamp on
		206–254	Lamp on ... Reset All
		255	Reset All

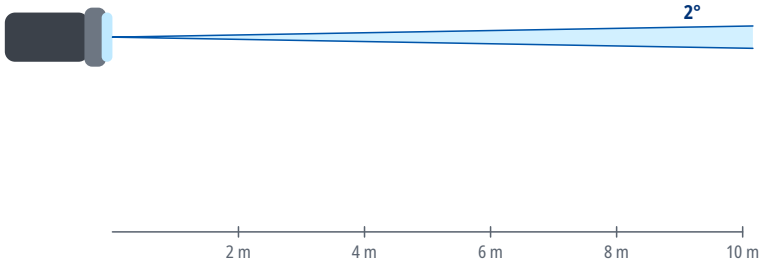
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	549 W
Luminous flux	86,500 lm
Color temperature	6,500 K
Color rendering index (CRI)	100
Optics	
Beam angle	2°
Movement	
Pan	540°
Tilt	220°
Control	
DMX connection	5-pin XLR IN/OUT, 3-pin XLR IN/OUT
RJ45 connectors	RJ45 IN
RDM	yes (manufacturer ID 0x6670, device model ID 0x6670)
Electrical	
Power supply	100–240 V, 50/60 Hz
Power consumption	850 W
Power connectors	powerCON TRUE1 IN/OUT
Dimensions and construction	
Weight	27 kg
Operating environment	
Operating temperature	-10 to 60 °C

Speeds and ranges

Parameter	Value
Strobe frequency	1–11 Hz
Color wheel rotation	up to 120 °/s (20 rpm)
Gobo wheel rotation	up to 80 °/s (13 rpm)
Prism 1 rotation	up to 360 °/s (60 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.