DMX REFERENCE

DMH-160 MK2

DMH-160MK2 LED Moving-Head

Futurelight



Manufacturer	Futurelight
GDTF file	Futurelight_DMH-160_MK2_136056.gdtf
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Contents

1 About this manual 2
2 Quick reference 2
3 Safety instructions 3
4 Product description 4
5 Installation 4
6 Connections 4
7 Operation 5
8 Functions at a glance 6
9 DMX channels 8
Mode Basic 16 Bit 8
10 Technical specifications 12
11 Maintenance and cleaning 13
12 Troubleshooting 13
13 Disposal 14

1 About this manual

This document describes the DMH-160MK2 LED Moving-Head by Futurelight. It was compiled from the GDTF file Futurelight_DMH-160_MK2_136056.gdtf from the GDTF-Share library.

File revision: “SteinigkeAZ, Uploaded to GDTF Share.”.

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 Futurelight; 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	15.8 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
Basic 16 Bit	16	32	1, 17, 33, 49, …

No light? Check these channels

- Basic 16 Bit: CH 6 Shutter at 32–63, 96–127, 160–191 or 224–255 “open”; CH 7 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

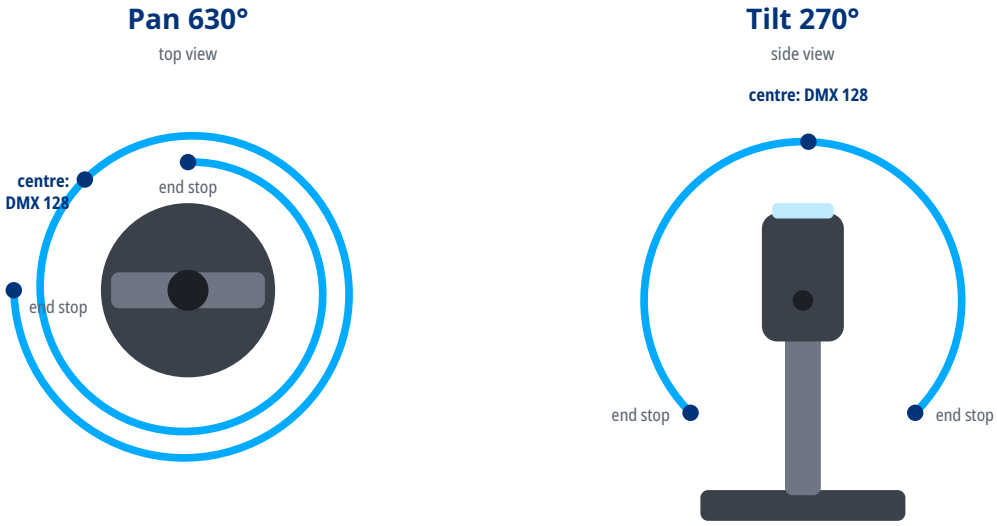
- Strobe and fast flashing light effects can trigger epileptic seizures in susceptible people (photosensitive epilepsy) and can cause nausea or disorientation.
- Inform the audience and performers in advance that strobe effects will be used, for example with a notice at the entrance, and do not use them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

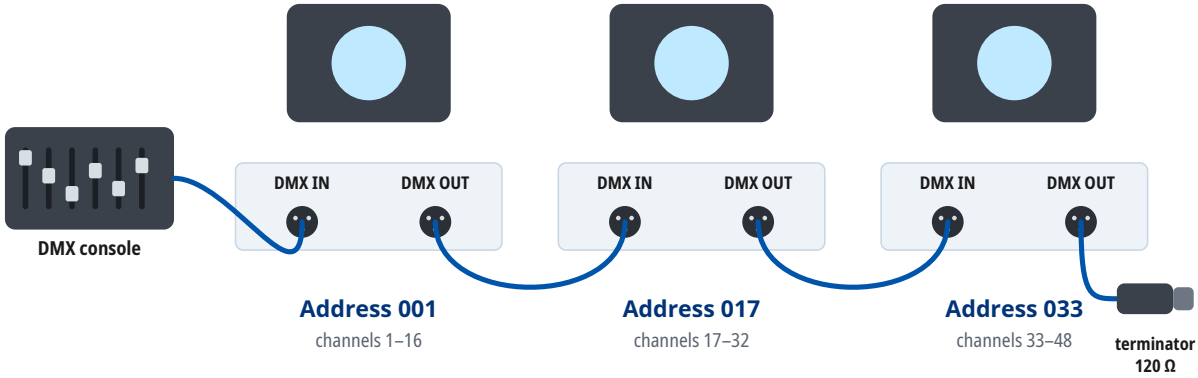
- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Weight of the device: 15.85 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 Basic 16 Bit: 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

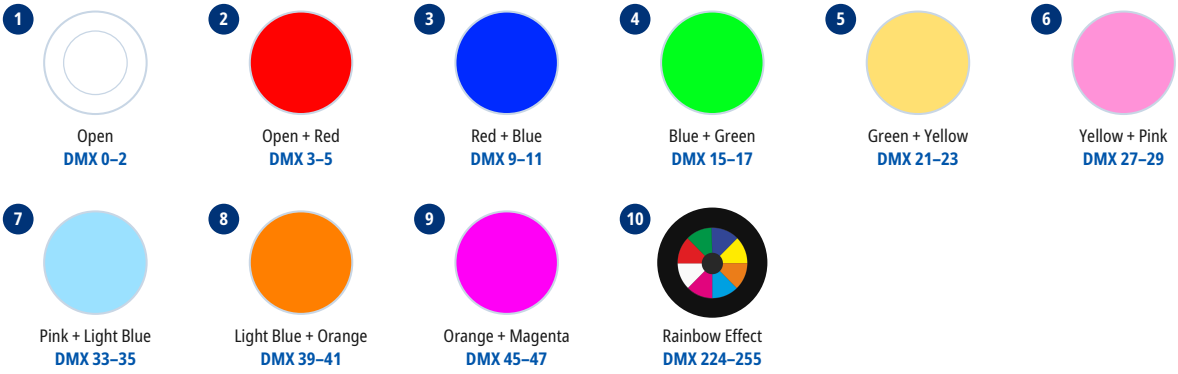
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “Basic 16 Bit”: 16.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied 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 “Basic 16 Bit”, 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.

8 Functions at a glance

Functions in each DMX mode

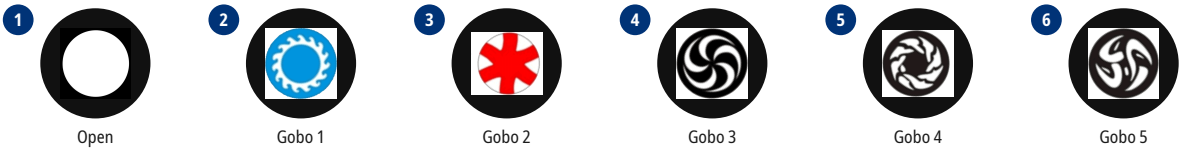
	Basic 16 Bit 16 channels
Pan / Tilt	1, 3
Dimmer	7
Shutter / strobe	6
Color wheel	8
Gobo wheel	9, 11
Gobo rotation	10
Prism	12, 13
Zoom	15
Focus	14

Gobo wheel 1



1. Open — DMX 0–2
2. Open + Red — DMX 3–5
3. Red + Blue — DMX 9–11
4. Blue + Green — DMX 15–17
5. Green + Yellow — DMX 21–23
6. Yellow + Pink — DMX 27–29
7. Pink + Light Blue — DMX 33–35
8. Light Blue + Orange — DMX 39–41
9. Orange + Magenta — DMX 45–47
10. Rainbow Effect — DMX 224–255

Gobo wheel 2



1. Open — DMX 0–9
2. Gobo 1 — DMX 10–19
3. Gobo 2 — DMX 20–29
4. Gobo 3 — DMX 30–39
5. Gobo 4 — DMX 40–49
6. Gobo 5 — DMX 50–59
7. Gobo 6 — DMX 60–69
8. Gobo 7 — DMX 70–79
9. Gobo 8 — DMX 80–89

Gobo wheel 3

1 
Open
DMX 0–5

2 
Gobo 1
DMX 6–11

3 
Gobo 2
DMX 12–17

4 
Gobo 3
DMX 18–23

5 
Gobo 4
DMX 24–29

6 
Gobo 5
DMX 30–35

7 
Gobo 6
DMX 36–41

8 
Gobo 7
DMX 42–47

9 
Rotation forward
DMX 224–239

Prism

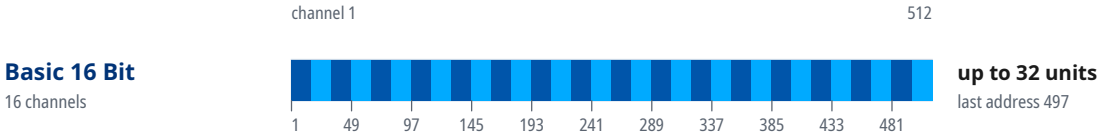
1
Open
DMX 0–63

2 
8 facets
Prism 8-fold
DMX 128–191

3 
3 facets
Prism 3-fold
DMX 64–127

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “Basic 16 Bit”

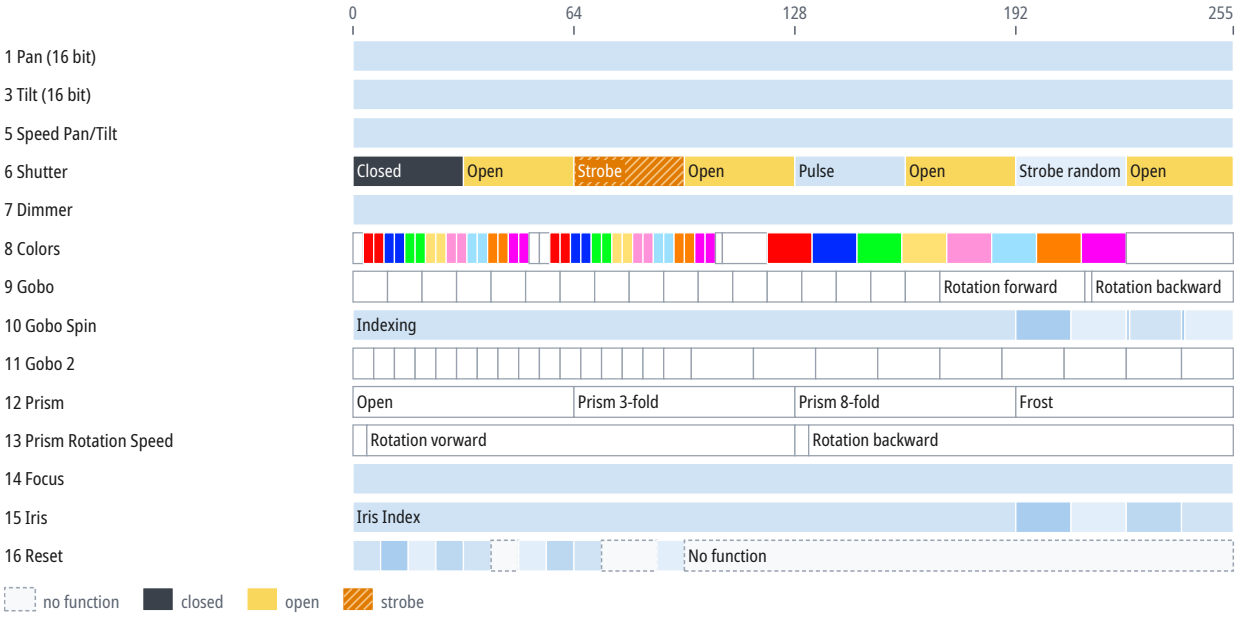
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	81	11	161	16	241
2	17	7	97	12	177	17	257
3	33	8	113	13	193	18	273
4	49	9	129	14	209	19	289
5	65	10	145	15	225	20	305

Mode Basic 16 Bit

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 6 Shutter at 32–63, 96–127, 160–191 or 224–255 “open”; CH 7 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 6 Shutter 255, CH 7 Dimmer 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	630°
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	270°
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	

CH	Function	DMX	Description
6	Shutter	0–31	Closed
		32–63	Open
		64–95	Strobe
		96–127	Open
		128–159	Pulse
		160–191	Open
		192–223	Strobe random
		224–255	Open
7	Dimmer	0–255	
8	Colors	0–2	Open
		3–5	Open + Red
		6–8	Red
		9–11	Red + Blue
		12–14	Blue
		15–17	Blue + Green
		18–20	Green
		21–23	Green + Yellow
		24–26	Yellow
		27–29	Yellow + Pink
		30–32	Pink
		33–35	Pink + Light Blue
		36–38	Light Blue
		39–41	Light Blue + Orange
		42–44	Orange
		45–47	Orange + Magenta
		48–50	Magenta
		51–53	Magenta + open
		54–56	Open BO
		57–59	Open + Red BO
		60–62	Red BO
		63–65	Red + Blue BO
		66–68	Blue BO
		69–71	Blue + Green BO
		72–74	Green BO
		75–77	Green +Yellow
		78–80	Yellow
		81–83	Yellow + Pink
		84–86	Pink
		87–89	Pink + Light Blue
		90–92	Light Blue
		93–95	Light Blue + Orange
		96–98	Orange

CH	Function	DMX	Description
8	Colors (continued)	99–101	Orange + Magenta
		102–104	Magenta
		105–106	Magenta + open
		107–119	Open + red jump
		120–132	Red + Blue jump
		133–145	Blue + Green jump
		146–158	Green + Yellow jump
		159–171	Yellow + Pink jump
		172–184	Pink + Light Blue jump
		185–197	Light Blue + Orange jump jump
		198–210	Orange + Magenta jump
		211–223	Magenta + open jump
		224–255	Rainbow Effect
9	Gobo	0–9	Open
		10–19	Gobo 1
		20–29	Gobo 2
		30–39	Gobo 3
		40–49	Gobo 4
		50–59	Gobo 5
		60–69	Gobo 6
		70–79	Gobo 7
		80–89	Gobo 8
		90–99	Gobo 1 shake
		100–109	Gobo 2 shake
		110–119	Gobo 3 shake
		120–129	Gobo 4 shake
		130–139	Gobo 5 shake
		140–149	Gobo 6 shake
		150–159	Gobo 7 shake
		160–169	Gobo 8 shake
		170–211	Rotation forward
		212–213	Stop
		214–255	Rotation backward
10	Gobo Spin	0–191	Indexing (0–0.75 °/s)
		192–207	FX forward (0.75–0.81 °/s)
		208–223	FX backward (0.82–0.87 °/s)
		224	Stop
		225–239	Rotation forward
		240	Stop
		241–255	Rotation backward
11	Gobo 2	0–5	Open
		6–11	Gobo 1

CH	Function	DMX	Description
11	Gobo 2 (continued)	12–17	Gobo 2
		18–23	Gobo 3
		24–29	Gobo 4
		30–35	Gobo 5
		36–41	Gobo 6
		42–47	Gobo 7
		48–53	Open
		54–59	Gobo 1 BO
		60–65	Gobo 2 BO
		66–71	Gobo 3 BO
		72–77	Gobo 4 BO
		78–83	Gobo 5 BO
		84–89	Gobo 6 BO
		90–97	Gobo 7 BO
		98–115	Gobo 1 shake
		116–133	Gobo 2 shake
		134–151	Gobo 3 shake
		152–169	Gobo 4 shake
		170–187	Gobo 5 shake
		188–205	Gobo 6 shake
		206–223	Gobo 7 shake
		224–239	Rotation forward
		240–255	Rotation backward
12	Prism	0–63	Open
		64–127	Prism 3-fold
		128–191	Prism 8-fold
		192–255	Frost
13	Prism Rotation Speed	0–3	Stop (0–0.01 °/s)
		4–127	Rotation vorward (0.16–0.5 °/s)
		128–131	Stop (0.5–0.51 °/s)
		132–255	Rotation backward (0.52–1 °/s)
14	Focus	0–255	
15	Iris	0–191	Iris Index (1–24.2°)
		192–207	Opening FX
		208–223	Closing FX
		224–239	Opening pulse
		240–255	Closing pulse
16	Reset	0–7	No function/saving
		8–15	Reset all
		16–23	Reset pan/tilt
		24–31	Reset colors
		32–39	Reset gobos

CH	Function	DMX	Description
16	Reset (continued)	40–47	No function
		48–55	Reset rest
		56–63	Display off
		64–71	Display on
		72–87	No function
		88–95	Standby
		96–255	No function

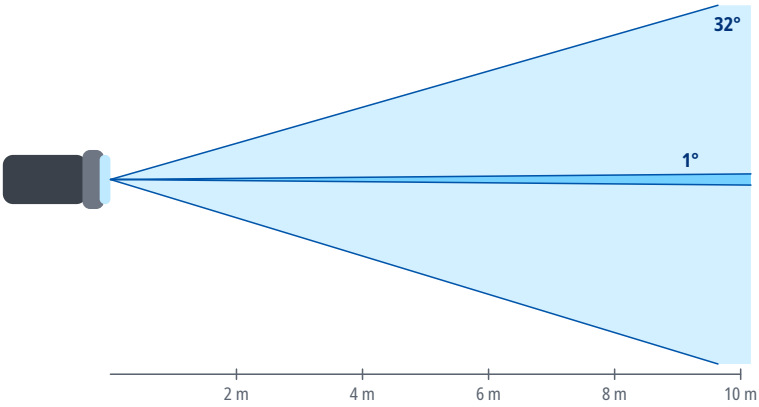
10 Technical specifications

Parameter	Value
Light	
Light source	LED
LED power	700 W
Luminous flux	1,000 lm
Color temperature	6,000 K
Color rendering index (CRI)	85
Optics	
Beam angle	25°
Movement	
Pan	630°
Tilt	270°
Dimensions and construction	
Weight	15.8 kg
Operating environment	
Operating temperature	0 to 40 °C

Speeds and ranges

Parameter	Value
Gobo wheel 2 rotation	up to 0.87 °/s (0.1 rpm)
Prism rotation	up to 1 °/s (0.2 rpm)

Spot diameter



Distance	Ø 1°	Ø 32°
2 m	0.03 m	1.1 m
4 m	0.07 m	2.3 m
6 m	0.1 m	3.4 m
8 m	0.14 m	4.6 m
10 m	0.17 m	5.7 m
15 m	0.26 m	8.6 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.