DMX REFERENCE

3740 RGBW LED

TUNA



Manufacturer	TUNA
GDTF file	TUNA_3740_RGBW_LED_168465.gdtf
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1 About this manual

This document describes the 3740 RGBW LED by TUNA. It was compiled from the GDTF file TUNA_3740_RGBW_LED_168465.gdtf from the GDTF-Share library.

File revision: “169CH, 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 TUNA; 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	21 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
169CH	169	3	1, 170, 339
Pixel	4	128	1, 5, 9, 13, ...
22CH	22	23	1, 23, 45, 67, ...

No light? Check these channels

- 169CH: CH 11 Shutter at 104–107, 208–212 or 252–255 “Open”; CH 12 Dimmer above 0
- 22CH: CH 11 Shutter at 104–107, 208–212 or 252–255 “Open”; CH 12 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.

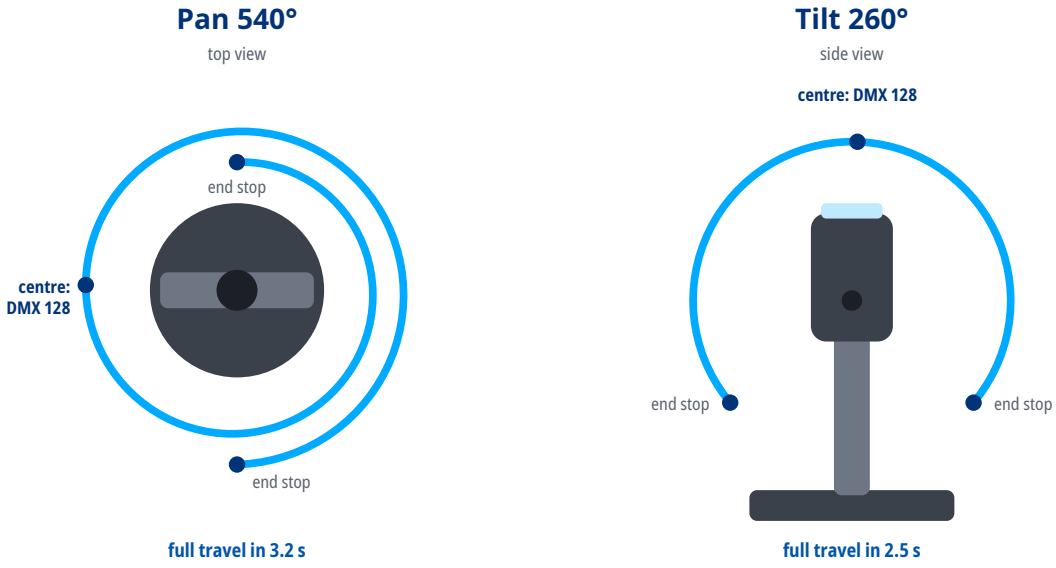
⚠ CAUTION

- 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



Full-travel times as stated in the GDTF file.

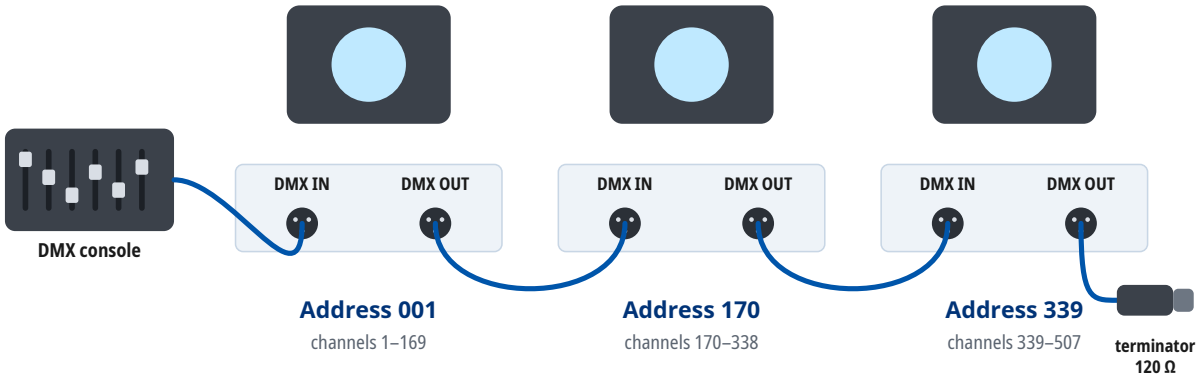
5 Installation

> ⚠ **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: 21 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 169CH: every unit occupies 169 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 “169CH”: 169.
- 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 “169CH”, you can use, for example, the start addresses 1, 170, 339.
- 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

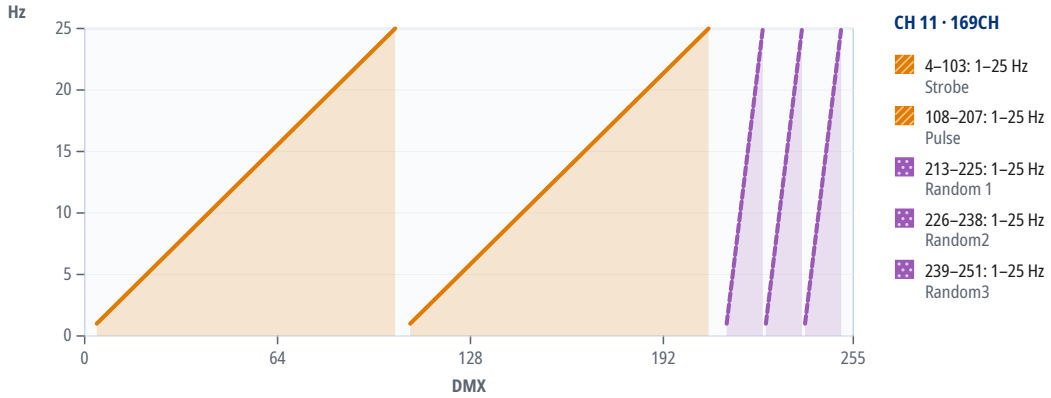
Functions in each DMX mode

	169CH 169 channels	Pixel 4 channels	22CH 22 channels
Pan / Tilt	14, 16		14, 16
Dimmer	12	✓	12
Shutter / strobe	11		11
Color mixing	152 channels (1–169)	1–148	4× (1–7)
Color temperature	9		9
Focus	20		20
Effects / macros	21		21

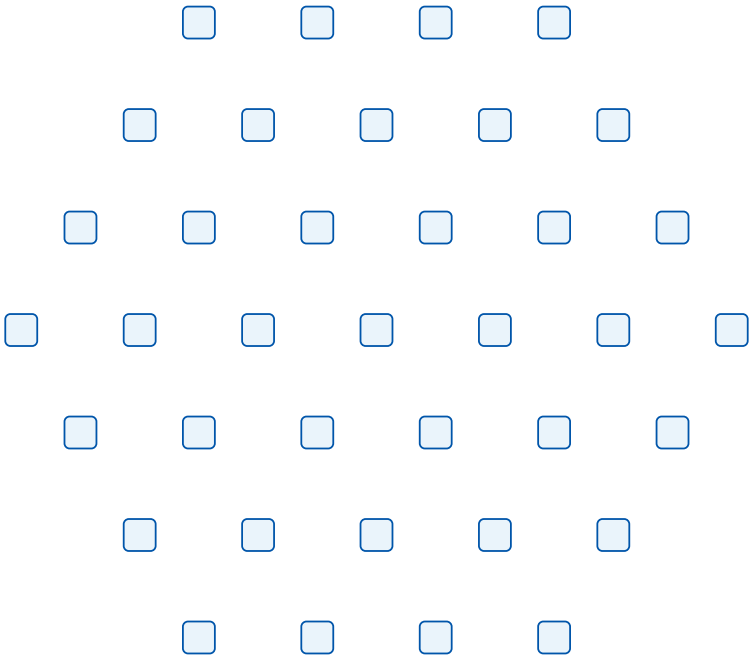
Color wheel



Strobe rate



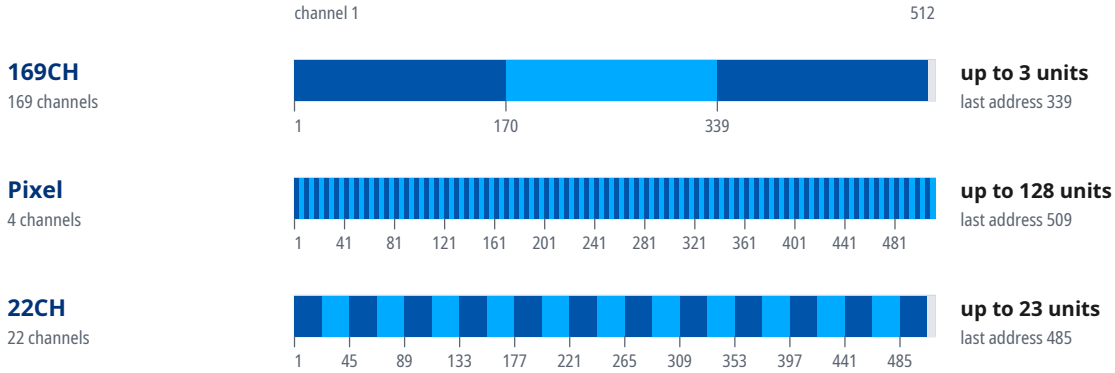
Cells (pixels)



Cells where the GDTF file places them (seen from above), 37 in all in the mode “169CH”.

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “169CH”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	U2 · 339	11	U4 · 170	16	U6 · 1
2	170	7	U3 · 1	12	U4 · 339	17	U6 · 170
3	339	8	U3 · 170	13	U5 · 1	18	U6 · 339
4	U2 · 1	9	U3 · 339	14	U5 · 170	19	U7 · 1
5	U2 · 170	10	U4 · 1	15	U5 · 339	20	U7 · 170

Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode 169CH

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 11 Shutter at 104–107, 208–212 or 252–255 “Open”; CH 12 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Red 1 0, CH 3 Green 1 0, CH 5 Blue 1 0, CH 7 White 1 0, CH 12 Dimmer 255, CH 22 Red 255 (the same in each of the 37 cells), CH 23 Green 255 (the same in each of the 37 cells), CH 24 Blue 255 (the same in each of the 37 cells), CH 25 White 0 (the same in each of the 37 cells).

CH	Function	DMX	Description
1	Red 1	0–255	
2	Red 1 Fine	0–255	Fine adjustment of CH 1
3	Green 1	0–255	
4	Green 1 Fine	0–255	Fine adjustment of CH 3
5	Blue 1	0–255	
6	Blue 1 Fine	0–255	Fine adjustment of CH 5
7	White 1	0–255	
8	White 1 Fine	0–255	Fine adjustment of CH 7
9	CTO	0–127	10000K
		128–255	2500K
10	Wash	0–255	
11	Shutter	0–3	Shutter: Closed

CH	Function	DMX	Description
11	Shutter (continued)	4–63	Strobe
		64	Min Strobe
		65–94	Min Strobe ... max Strobe
		95	Max Strobe
		96–103	Strobe
		104–107	Open
		108	Min Pulse
		109–206	Min Pulse ... max Pulse
		207	Max Pulse
		208–212	Open
		213	Random: min Rnd
		214–224	Random: min Rnd ... maxRnd
		225	Random: maxRnd
		226	Random: min Rnd
		227–237	Random: min Rnd ... maxRnd
		238	Random: maxRnd
		239	Random: min Rnd
		240–250	Random: min Rnd ... maxRnd
		251	Random: maxRnd
		252–255	Open
12	Dimmer	0–255	Closed ... Open
		255	Open
13	Dimmer Fine	0–255	Fine adjustment of CH 12
14	Pan	0–127	Min ... center
		128–255	Center ... max
		255	Max
15	Pan Fine	0–255	Fine adjustment of CH 14
16	Tilt	0–127	Min ... center
		128–255	Center ... max
		255	Max
17	Tilt Fine	0–255	Fine adjustment of CH 16
18	Control 2	0–255	
19	Control	0–25	Off
		26–76	Lamp head Reset
		77–127	Reset P/T
		128–255	All Reset
20	Focus	0–255	
21	Effects Speed	0–127	0-60
		128	<<<
		129–149	<<< ... <<
		150	<<
		151–189	<< ... <

CH	Function	DMX	Description
21	Effects Speed (continued)	190	<
		191–192	Effects 1 Rate: Stop
		193	>
		194–219	> ... >>
		220	>>
		221–254	>> ... >>>
		255	>>>
22	Red 2	0	Min
		1–254	Min ... Max
		255	Max
23	Green 2	0	Min
		1–254	Min ... Max
		255	Max
24	Blue 2	0	Min
		1–254	Min ... Max
		255	Max
25	White 2	0	Min
		1–254	Min ... Max
		255	Max

CH 22–169: 37 cells of 4 channels each. Every cell works as cell 1 in the table above (CH 22–25); the table below gives each cell's channel numbers.

Cell	Red	Green	Blue	White	Cell	Red	Green	Blue	White
1	22	23	24	25	2	26	27	28	29
3	30	31	32	33	4	34	35	36	37
5	38	39	40	41	6	42	43	44	45
7	46	47	48	49	8	50	51	52	53
9	54	55	56	57	10	58	59	60	61
11	62	63	64	65	12	66	67	68	69
13	70	71	72	73	14	74	75	76	77
15	78	79	80	81	16	82	83	84	85
17	86	87	88	89	18	90	91	92	93
19	94	95	96	97	20	98	99	100	101
21	102	103	104	105	22	106	107	108	109
23	110	111	112	113	24	114	115	116	117
25	118	119	120	121	26	122	123	124	125
27	126	127	128	129	28	130	131	132	133
29	134	135	136	137	30	138	139	140	141
31	142	143	144	145	32	146	147	148	149
33	150	151	152	153	34	154	155	156	157
35	158	159	160	161	36	162	163	164	165
37	166	167	168	169					

Mode Pixel

The GDTF file gives these values for a console's Highlight function: CH 1 Red 255, CH 2 Green 255, CH 3 Blue 255, CH 4 White 0.

CH	Function	DMX	Description
1	Red	0	Min
		1–254	Min … Max
		255	Max
2	Green	0	Min
		1–254	Min … Max
		255	Max
3	Blue	0	Min
		1–254	Min … Max
		255	Max
4	White	0	Min
		1–254	Min … Max
		255	Max

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 11 Shutter at 104–107, 208–212 or 252–255 “Open”; CH 12 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Red 0, CH 3 Green 0, CH 5 Blue 0, CH 7 White 0, CH 12 Dimmer 255.

CH	Function	DMX	Description
1	Red	0–255	
2	Red Fine	0–255	Fine adjustment of CH 1
3	Green	0–255	
4	Green Fine	0–255	Fine adjustment of CH 3
5	Blue	0–255	
6	Blue Fine	0–255	Fine adjustment of CH 5
7	White	0–255	
8	White Fine	0–255	Fine adjustment of CH 7
9	CTO		Same as CH 9 in the mode “169CH” (p. 9)
10	Wash	0–255	
11	Shutter		Same as CH 11 in the mode “169CH” (p. 9)
12	Dimmer		Same as CH 12 in the mode “169CH” (p. 10)
13	Dimmer Fine	0–255	Fine adjustment of CH 12
14	Pan		Same as CH 14 in the mode “169CH” (p. 10)
15	Pan Fine	0–255	Fine adjustment of CH 14
16	Tilt		Same as CH 16 in the mode “169CH” (p. 10)
17	Tilt Fine	0–255	Fine adjustment of CH 16
18	Control 2	0–255	
19	Control		Same as CH 19 in the mode “169CH” (p. 10)
20	Focus	0–255	

CH	Function	DMX	Description
21	Effects Speed		Same as CH 21 in the mode “169CH” (p. 10)
22	Control 3	0–42	Frequency 1
		43–85	Frequency 2
		86–126	Frequency 3
		127–171	Frequency 4
		172–214	Frequency 5
		215–255	Frequency 6

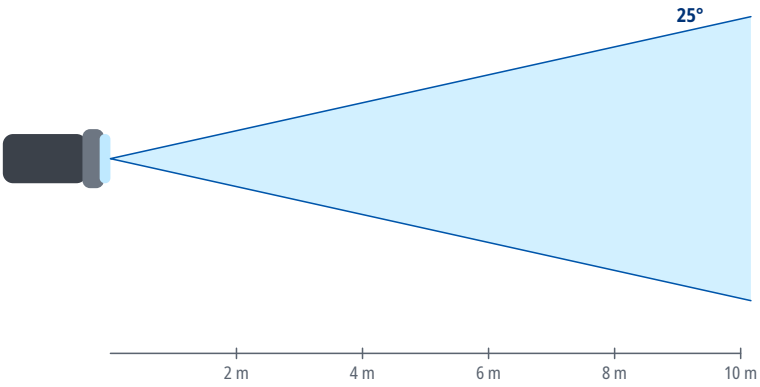
10 Technical specifications

Parameter	Value
Light source	LED
Pan	540°
Tilt	260°
RDM	yes (manufacturer ID 0x4753, device model ID 0x0672)
Weight	21 kg
Operating temperature	-10 to 45 °C

Speeds and ranges

Parameter	Value
Color temperature range	2500–10000 K
Strobe frequency	1–25 Hz

Spot diameter



Distance	Ø 25°
2 m	0.89 m
4 m	1.8 m
6 m	2.7 m
8 m	3.5 m
10 m	4.4 m
15 m	6.7 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.