DMX REFERENCE

Polar 340 WashFX

Showtec



Manufacturer	Showtec
GDTF file	Showtec_Polar_340_WashFX_146315.gdtf
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1 About this manual

This document describes the Polar 340 WashFX by Showtec. It was compiled from the GDTF file Showtec_Polar_340_WashFX_146315.gdtf from the GDTF-Share library.

File revision: “V001”.

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 Showtec; 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	25.5 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
CMY (31Ch)	31	16	1, 32, 63, 94, ...
Tour 30Ch	30	17	1, 31, 61, 91, ...
SSP 25Ch	25	20	1, 26, 51, 76, ...
TR16 37Ch	37	13	1, 38, 75, 112, ...
HSIC 27Ch	27	18	1, 28, 55, 82, ...
Pixel 52Ch	52	9	1, 53, 105, 157, ...

No light? Check these channels

- CMY (31Ch): CH 9 Dimmer 1 above 0; CH 20 Dimmer 2 above 0; CH 30 Dimmer 3 above 0
- Tour 30Ch: CH 8 Dimmer 1 above 0; CH 19 Dimmer 2 above 0; CH 29 Dimmer 3 above 0
- SSP 25Ch: CH 8 Dimmer 1 above 0; CH 15 Dimmer 2 above 0; CH 24 Dimmer 3 above 0
- TR16 37Ch: CH 14 Dimmer 1 above 0; CH 26 Dimmer 2 above 0; CH 36 Dimmer 3 above 0
- HSIC 27Ch: CH 17 Dimmer 1 above 0; CH 26 Dimmer 2 above 0
- Pixel 52Ch: CH 7 Dimmer 1 above 0; CH 21 Dimmer 2 above 0; CH 23 Dimmer 3 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

Description in the GDTF file

“The Showtec Polar 340 WashFX is a powerful and fully featured Flower Wash Moving Head with 8 separately controllable RGBW LED modules, suitable for in- and outdoor applications. Its Individual Pixel Control and LED Ring enable you to create unique and astonishing effects. The Polar 340 WashFX has a wide 4.5° - 35° motorised zoom range, enabling you to seamlessly change every individual module from a narrow beam to a wide wash. Each function and effect, including 8-facet prism with speed adjustable bi-directional rotation, dimmer and strobe, can be controlled via DMX512, Art-Net, RDM, sACN and W-DMX (wireless).”

5 Installation

⚠ **WARNING**

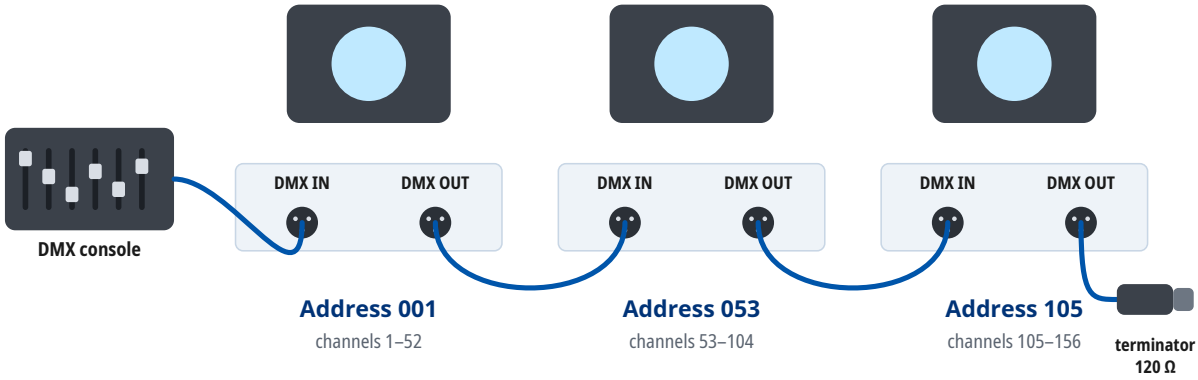
- Rigging must be carried out only by qualified persons in accordance with applicable regulations, in particular those for work at height.
- The supporting structure and fixings must safely carry the weight of all suspended devices; verify their load capacity in advance.
- Weight of the device: 25.5 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 Pixel 52Ch: every unit occupies 52 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

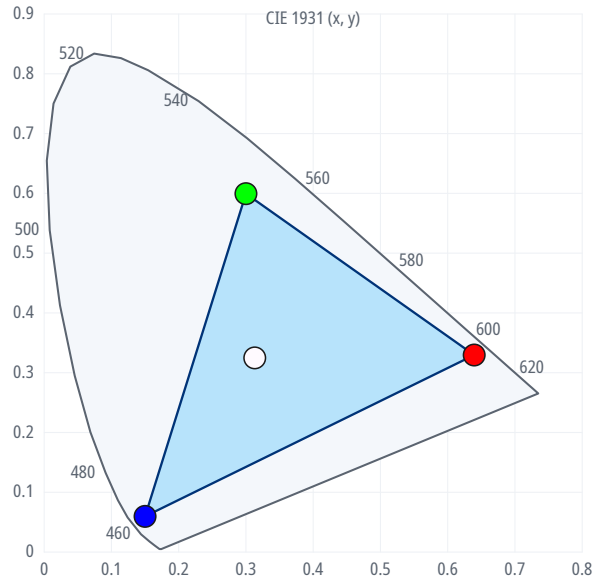
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “Pixel 52Ch”: 52.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied 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 “Pixel 52Ch”, you can use, for example, the start addresses 1, 53, 105, 157.
- 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

	CMY (31Ch) 31 channels	Tour 30Ch 30 channels	SSP 25Ch 25 channels	TR16 37Ch 37 channels	HSIC 27Ch 27 channels	Pixel 52Ch 52 channels
Pan / Tilt	1, 3	1, 2	1, 2	1, 3	1, 3	1, 3
Pan / Tilt resolution	16 bit	8 bit	8 bit	16 bit	16 bit	16 bit
Dimmer	9, 20, 30	8, 19, 29	8, 15, 24	14, 26, 36	17, 26	7, 21, 23
Dimmer resolution	8 bit	8 bit	8 bit	16 bit	8 bit	8 bit
Shutter / strobe	10, 21	9, 20	9, 16	16, 27	11, 18	8, 24
Color mixing	6–8, 16–19, 24–26	4–7, 15–18, 23–25	4–7, 11–14, 18–20	11 channels (6–32)	13–16, 20–22	9–12, 15–17, 25–52
Color temperature					10	
Prism	23	22	17	29	19	14
Zoom	15	14	10	21	12	6
Effects / macros	7 channels (11–29)	7 channels (10–28)	21–23	7 channels (17–35)	23–25	13, 18–20
Pixel control						✓

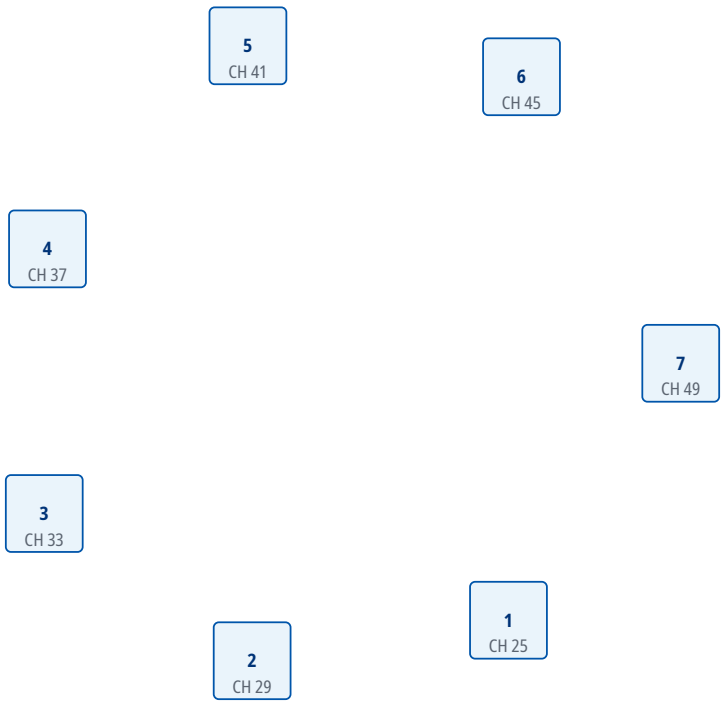
LED colors and the colors they mix



LED	x	y
White	0.313	0.325
Red	0.639	0.330
Green	0.300	0.600
Blue	0.150	0.060

The shaded area holds the colors the LEDs can mix; the dots are the LED colors the GDTF file states.

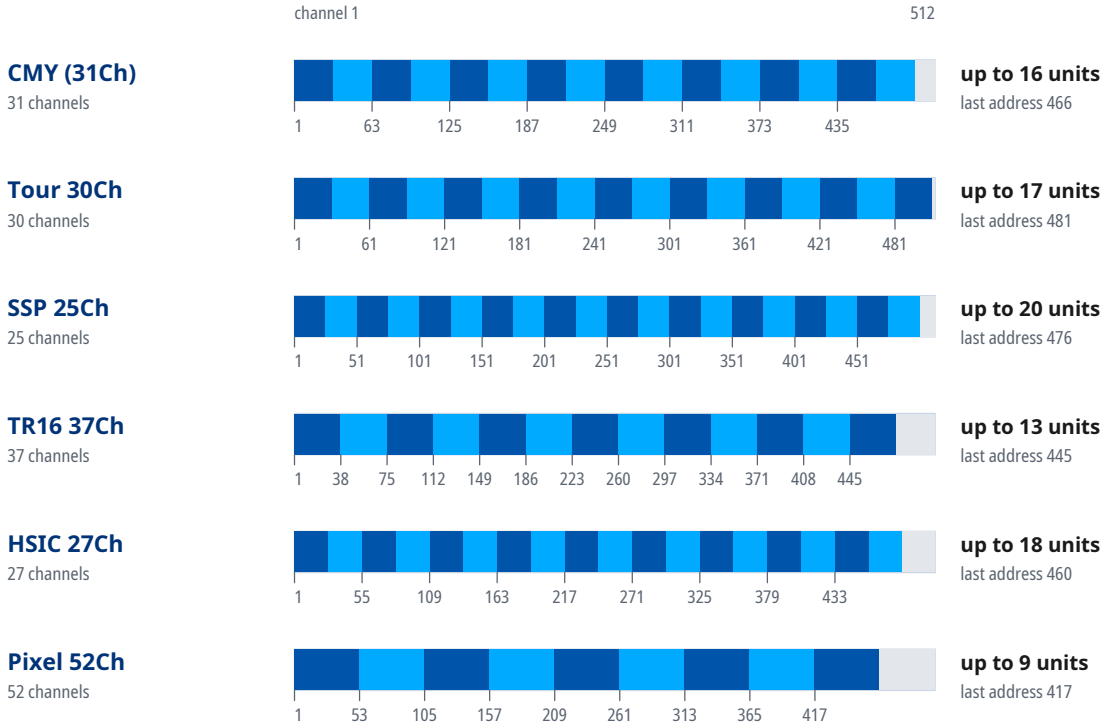
Cells (pixels)



7 cells where the GDTF file places them (seen from above), numbered by their first DMX channel (CH) in the mode “Pixel 52Ch”.

9 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “Pixel 52Ch”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	261	11	U2 · 53	16	U2 · 313
2	53	7	313	12	U2 · 105	17	U2 · 365
3	105	8	365	13	U2 · 157	18	U2 · 417
4	157	9	417	14	U2 · 209	19	U3 · 1
5	209	10	U2 · 1	15	U2 · 261	20	U3 · 53

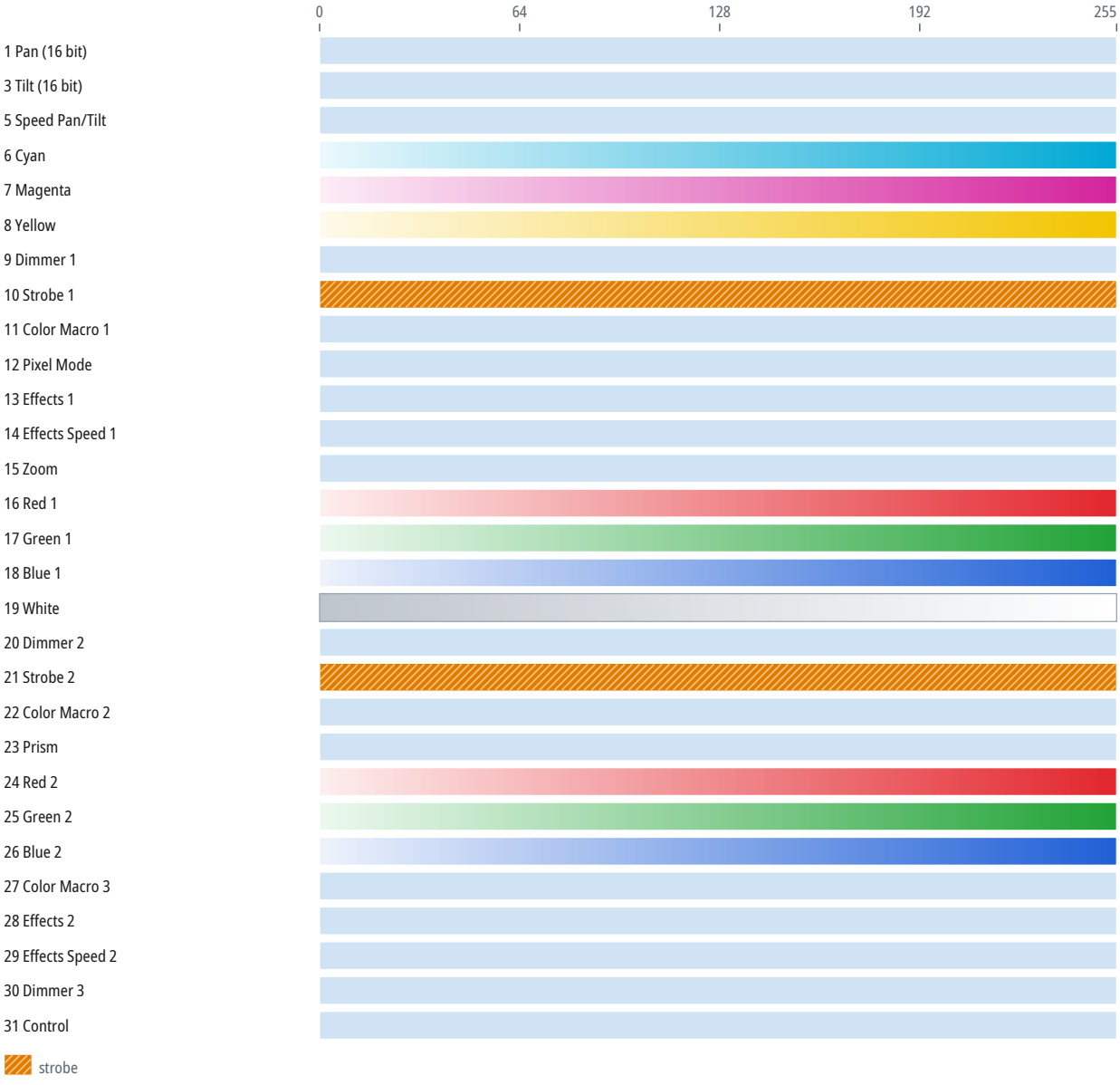
Where a DMX universe is full, the next units continue in the next universe: “U2 · 1” is address 1 in the second universe, counted from the universe of the first unit.

Mode CMY (31Ch)

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 9 Dimmer 1 above 0; CH 20 Dimmer 2 above 0; CH 30 Dimmer 3 above 0.

Channel functions at a glance



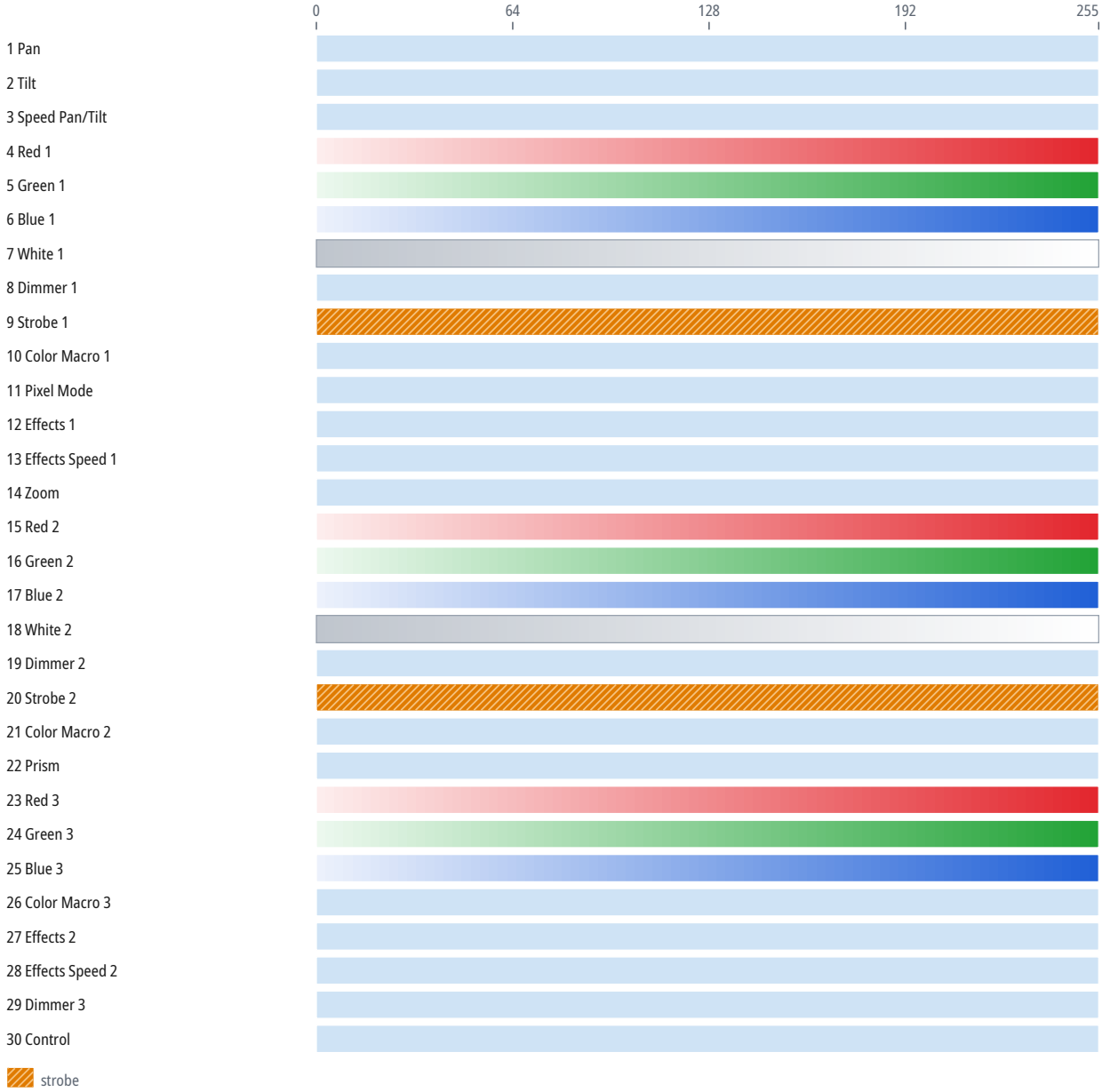
CH	Function	DMX	Description
1	Pan	0–255	
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Cyan	0–255	
7	Magenta	0–255	

CH	Function	DMX	Description
8	Yellow	0–255	
9	Dimmer 1	0–255	
10	Strobe 1	0–255	
11	Color Macro 1	0–255	
12	Pixel Mode	0–255	
13	Effects 1	0–255	
14	Effects Speed 1	0–255	
15	Zoom	0–255	
16	Red 1	0–255	
17	Green 1	0–255	
18	Blue 1	0–255	
19	White	0–255	
20	Dimmer 2	0–255	
21	Strobe 2	0–255	
22	Color Macro 2	0–255	
23	Prism	0–255	
24	Red 2	0–255	
25	Green 2	0–255	
26	Blue 2	0–255	
27	Color Macro 3	0–255	
28	Effects 2	0–255	
29	Effects Speed 2	0–255	
30	Dimmer 3	0–255	
31	Control	0–255	

Mode Tour 30Ch

If the device receives DMX in this mode but gives no light, check these channels: CH 8 Dimmer 1 above 0; CH 19 Dimmer 2 above 0; CH 29 Dimmer 3 above 0.

Channel functions at a glance



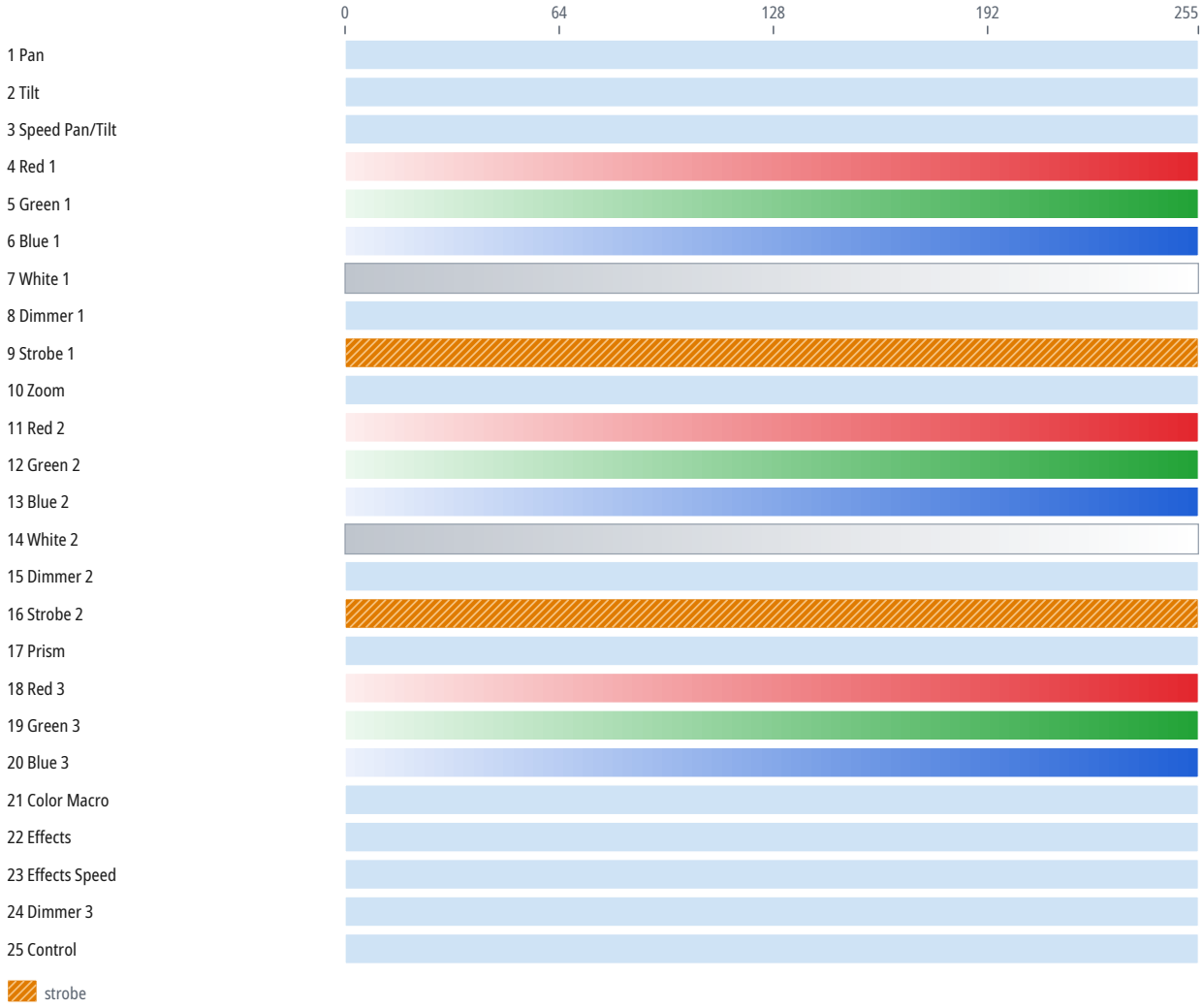
CH	Function	DMX	Description
1	Pan	0–255	
2	Tilt	0–255	
3	Speed Pan/Tilt	0–255	
4	Red 1	0–255	
5	Green 1	0–255	
6	Blue 1	0–255	
7	White 1	0–255	

CH	Function	DMX	Description
8	Dimmer 1	0–255	
9	Strobe 1	0–255	
10	Color Macro 1	0–255	
11	Pixel Mode	0–255	
12	Effects 1	0–255	
13	Effects Speed 1	0–255	
14	Zoom	0–255	
15	Red 2	0–255	
16	Green 2	0–255	
17	Blue 2	0–255	
18	White 2	0–255	
19	Dimmer 2	0–255	
20	Strobe 2	0–255	
21	Color Macro 2	0–255	
22	Prism	0–255	
23	Red 3	0–255	
24	Green 3	0–255	
25	Blue 3	0–255	
26	Color Macro 3	0–255	
27	Effects 2	0–255	
28	Effects Speed 2	0–255	
29	Dimmer 3	0–255	
30	Control	0–255	

Mode SSP 25Ch

If the device receives DMX in this mode but gives no light, check these channels: CH 8 Dimmer 1 above 0; CH 15 Dimmer 2 above 0; CH 24 Dimmer 3 above 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	
2	Tilt	0–255	
3	Speed Pan/Tilt	0–255	
4	Red 1	0–255	
5	Green 1	0–255	
6	Blue 1	0–255	
7	White 1	0–255	
8	Dimmer 1	0–255	
9	Strobe 1	0–255	
10	Zoom	0–255	
11	Red 2	0–255	
12	Green 2	0–255	

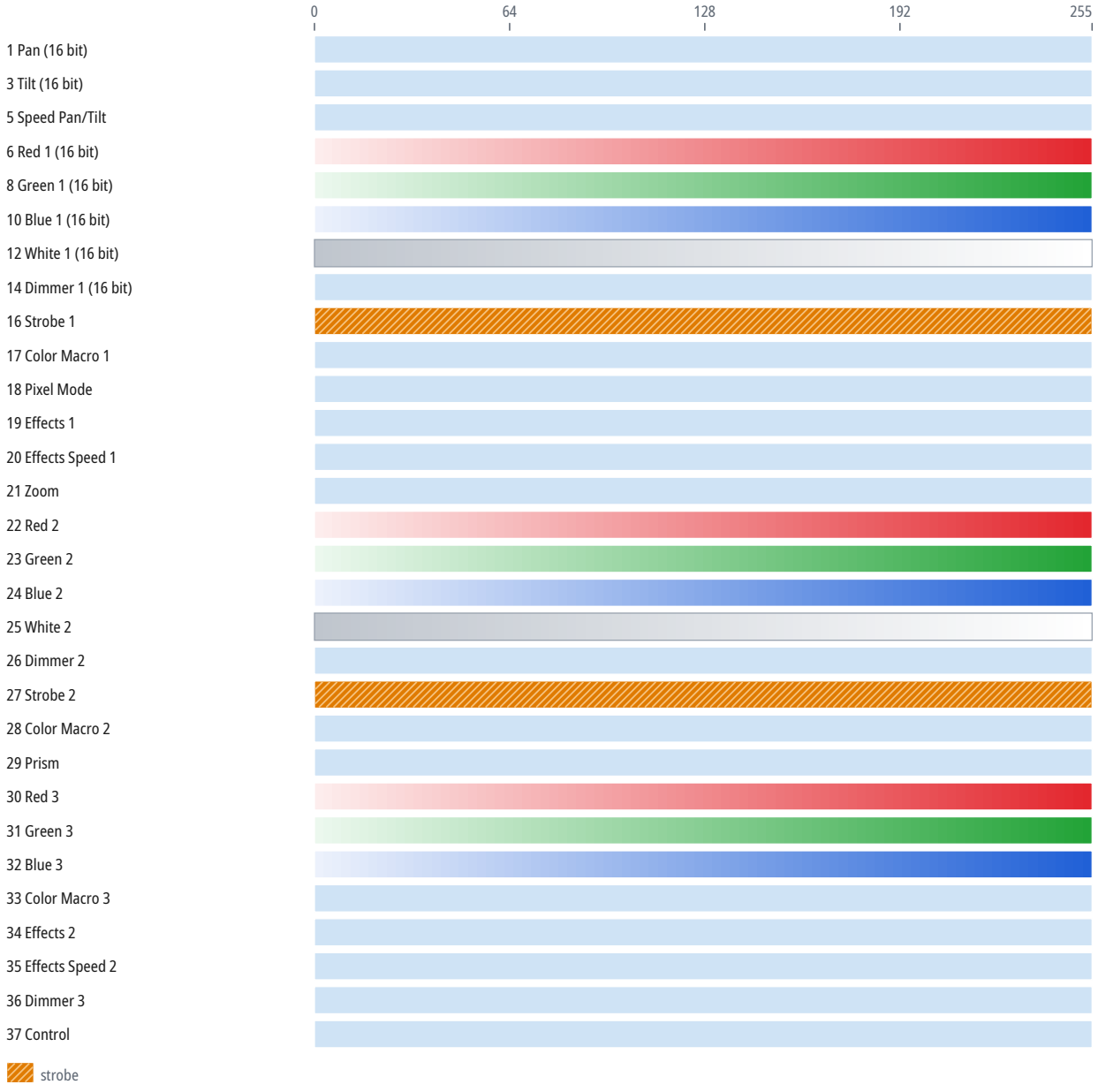
CH	Function	DMX	Description
13	Blue 2	0–255	
14	White 2	0–255	
15	Dimmer 2	0–255	
16	Strobe 2	0–255	
17	Prism	0–255	
18	Red 3	0–255	
19	Green 3	0–255	
20	Blue 3	0–255	
21	Color Macro	0–255	
22	Effects	0–255	
23	Effects Speed	0–255	
24	Dimmer 3	0–255	
25	Control	0–255	

Mode TR16 37Ch

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 14 Dimmer 1 above 0; CH 26 Dimmer 2 above 0; CH 36 Dimmer 3 above 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Red 1	0–255	

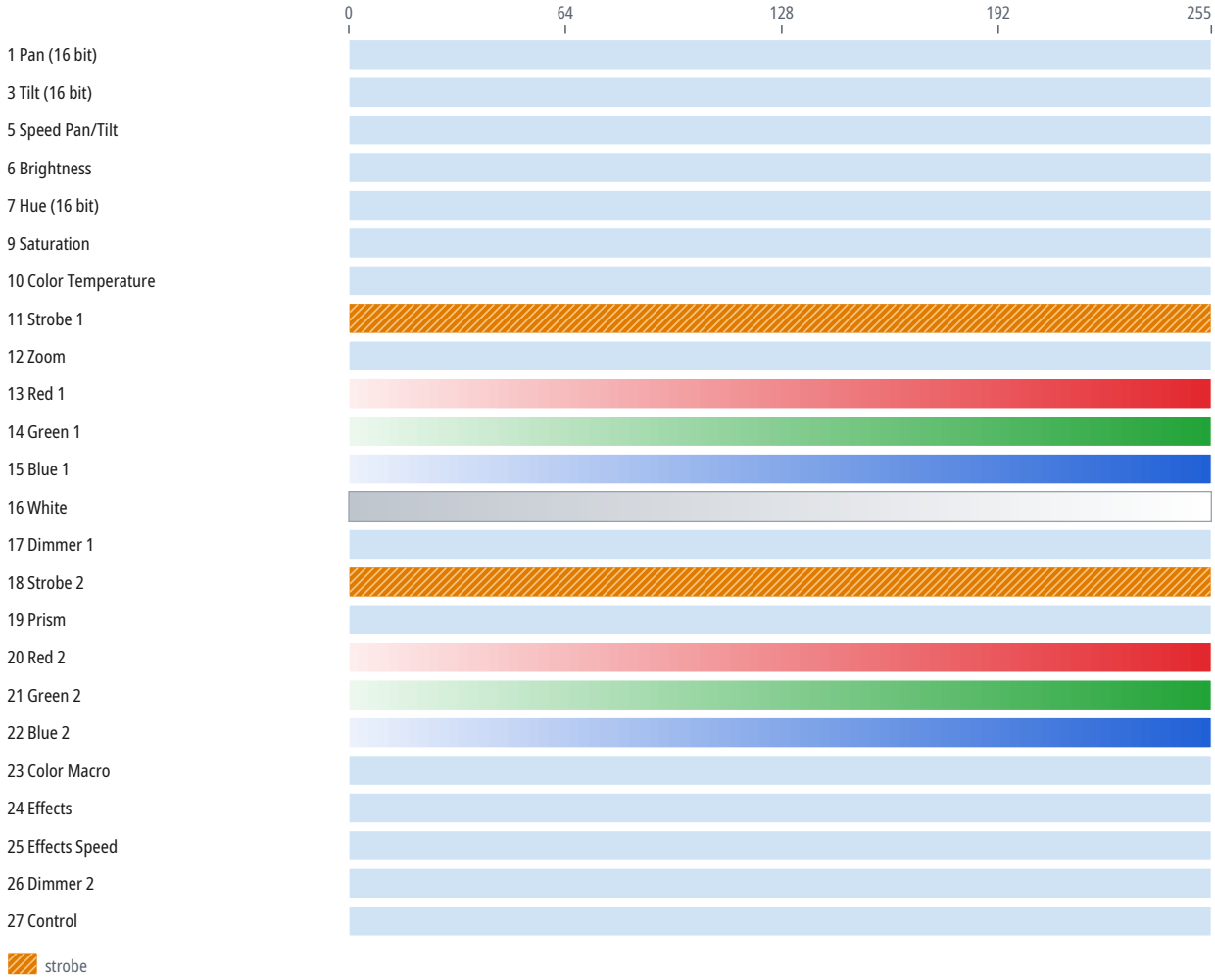
CH	Function	DMX	Description
7	Red 1 Fine	0–255	Fine adjustment of CH 6
8	Green 1	0–255	
9	Green 1 Fine	0–255	Fine adjustment of CH 8
10	Blue 1	0–255	
11	Blue 1 Fine	0–255	Fine adjustment of CH 10
12	White 1	0–255	
13	White 1 Fine	0–255	Fine adjustment of CH 12
14	Dimmer 1	0–255	
15	Dimmer 1 Fine	0–255	Fine adjustment of CH 14
16	Strobe 1	0–255	
17	Color Macro 1	0–255	
18	Pixel Mode	0–255	
19	Effects 1	0–255	
20	Effects Speed 1	0–255	
21	Zoom	0–255	
22	Red 2	0–255	
23	Green 2	0–255	
24	Blue 2	0–255	
25	White 2	0–255	
26	Dimmer 2	0–255	
27	Strobe 2	0–255	
28	Color Macro 2	0–255	
29	Prism	0–255	
30	Red 3	0–255	
31	Green 3	0–255	
32	Blue 3	0–255	
33	Color Macro 3	0–255	
34	Effects 2	0–255	
35	Effects Speed 2	0–255	
36	Dimmer 3	0–255	
37	Control	0–255	

Mode HSIC 27Ch

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 17 Dimmer 1 above 0; CH 26 Dimmer 2 above 0.

Channel functions at a glance



CH	Function	DMX	Description
1	Pan	0–255	
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Brightness	0–255	
7	Hue	0–255	
8	Hue Fine	0–255	Fine adjustment of CH 7
9	Saturation	0–255	
10	Color Temperature	0–255	
11	Strobe 1	0–255	
12	Zoom	0–255	

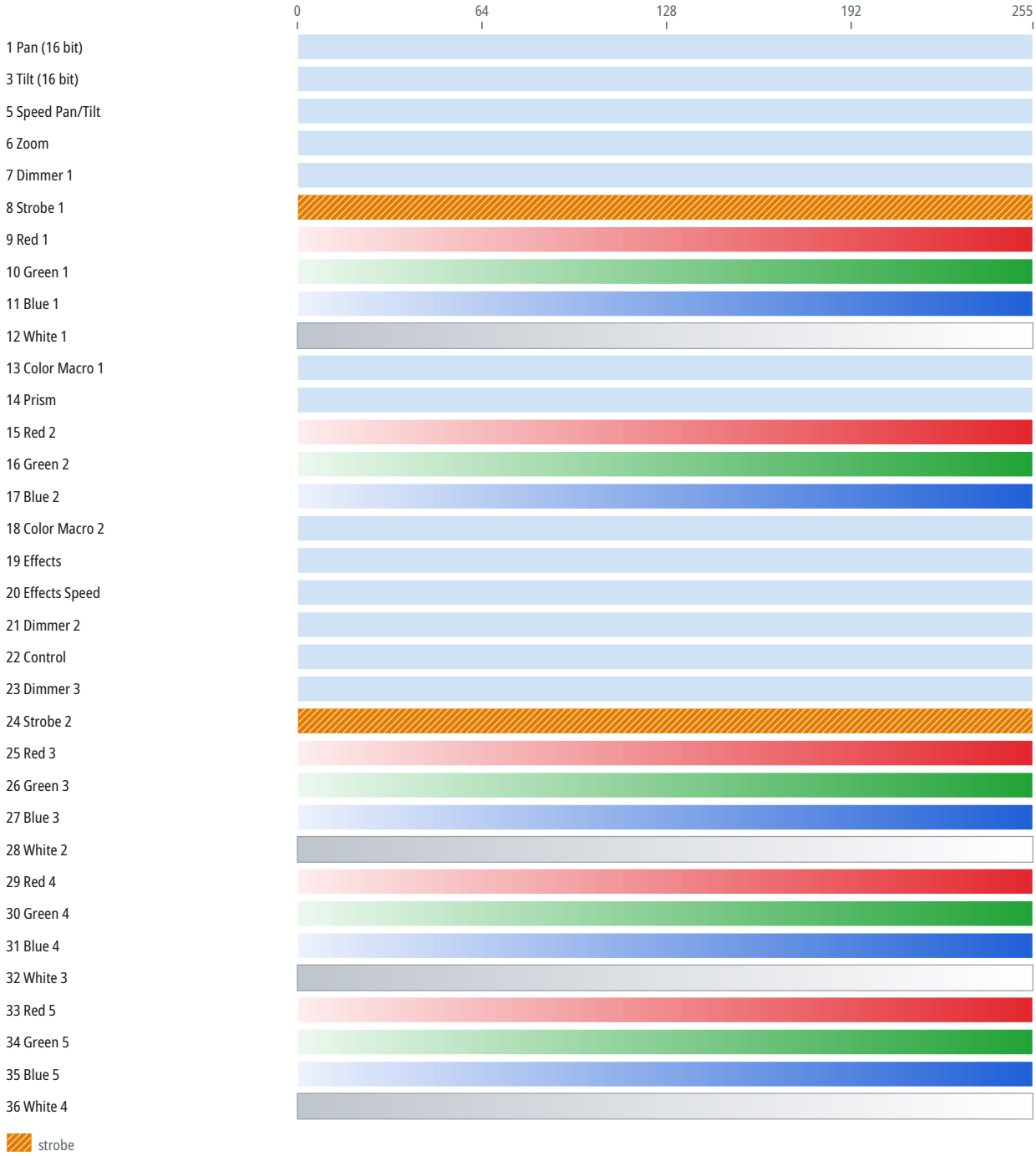
CH	Function	DMX	Description
13	Red 1	0–255	
14	Green 1	0–255	
15	Blue 1	0–255	
16	White	0–255	
17	Dimmer 1	0–255	
18	Strobe 2	0–255	
19	Prism	0–255	
20	Red 2	0–255	
21	Green 2	0–255	
22	Blue 2	0–255	
23	Color Macro	0–255	
24	Effects	0–255	
25	Effects Speed	0–255	
26	Dimmer 2	0–255	
27	Control	0–255	

Mode Pixel 52Ch

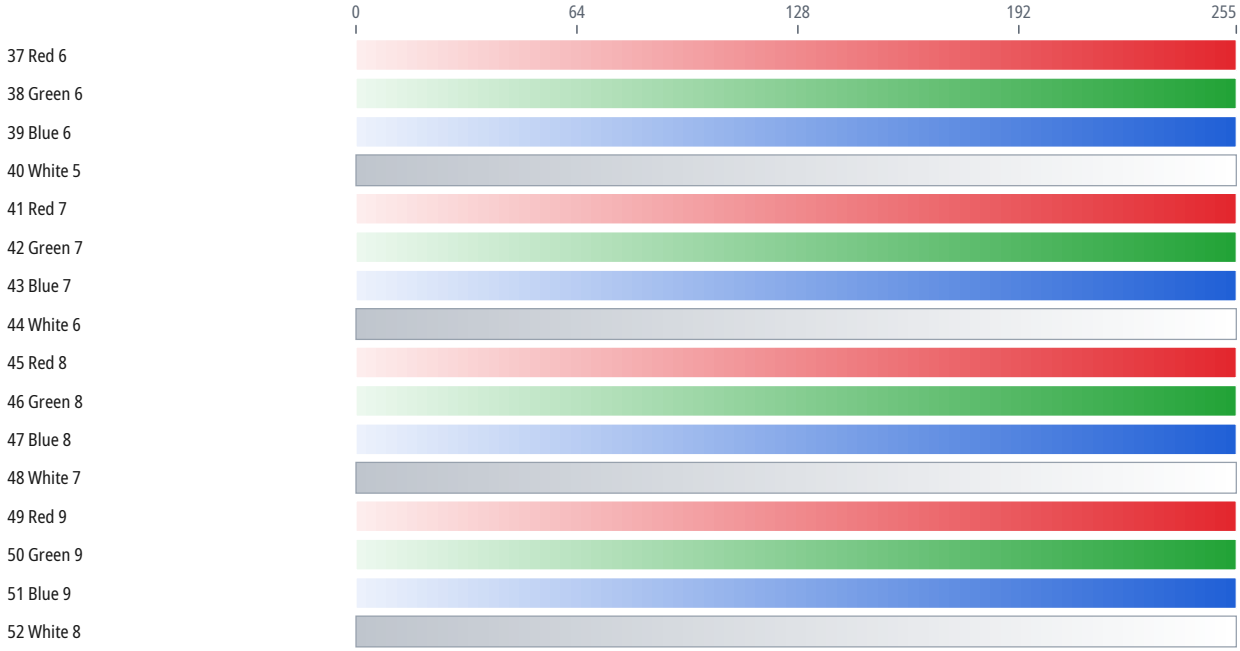
16-bit parameters use two channels, coarse and fine: value = 256 × coarse value + fine value.

If the device receives DMX in this mode but gives no light, check these channels: CH 7 Dimmer 1 above 0; CH 21 Dimmer 2 above 0; CH 23 Dimmer 3 above 0.

Channel functions at a glance



Channel functions at a glance



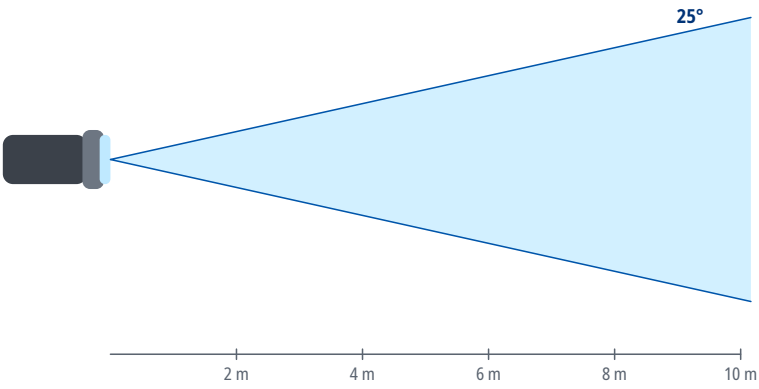
CH	Function	DMX	Description
1	Pan	0–255	
2	Pan Fine	0–255	Fine adjustment of CH 1
3	Tilt	0–255	
4	Tilt Fine	0–255	Fine adjustment of CH 3
5	Speed Pan/Tilt	0–255	
6	Zoom	0–255	
7	Dimmer 1	0–255	
8	Strobe 1	0–255	
9	Red 1	0–255	
10	Green 1	0–255	
11	Blue 1	0–255	
12	White 1	0–255	
13	Color Macro 1	0–255	
14	Prism	0–255	
15	Red 2	0–255	
16	Green 2	0–255	
17	Blue 2	0–255	
18	Color Macro 2	0–255	
19	Effects	0–255	
20	Effects Speed	0–255	
21	Dimmer 2	0–255	
22	Control	0–255	
23	Dimmer 3	0–255	
24	Strobe 2	0–255	

CH	Function	DMX	Description
25	Red 3	0–255	
26	Green 3	0–255	
27	Blue 3	0–255	
28	White 2	0–255	
29	Red 4	0–255	
30	Green 4	0–255	
31	Blue 4	0–255	
32	White 3	0–255	
33	Red 5	0–255	
34	Green 5	0–255	
35	Blue 5	0–255	
36	White 4	0–255	
37	Red 6	0–255	
38	Green 6	0–255	
39	Blue 6	0–255	
40	White 5	0–255	
41	Red 7	0–255	
42	Green 7	0–255	
43	Blue 7	0–255	
44	White 6	0–255	
45	Red 8	0–255	
46	Green 8	0–255	
47	Blue 8	0–255	
48	White 7	0–255	
49	Red 9	0–255	
50	Green 9	0–255	
51	Blue 9	0–255	
52	White 8	0–255	

10 Technical specifications

Parameter	Value
Light	
Light source	LED
Control	
DMX connection	5-pin XLR IN/OUT
RJ45 connectors	RJ45 IN
Electrical	
Power supply	100–240 V, 50/60 Hz
Power consumption	850 W
Power connectors	powerCON TRUE1 IN/OUT
Dimensions and construction	
Weight	25.5 kg
Operating environment	
Operating temperature	0 to 40 °C

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.