DMX REFERENCE

Qdot 16 IP DTW

CKC Lighting



Manufacturer	CKC Lighting
GDTF file	CKC_Lighting_Qdot_16_IP_DTW_150768.gdtf
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1 About this manual

This document describes the Qdot 16 IP DTW by CKC Lighting. It was compiled from the GDTF file CKC_Lighting_Qdot_16_IP_DTW_150768.gdtf from the GDTF-Share library.

File revision: “Revision 1”.

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 CKC Lighting; 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	17.2 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
1Ch	1	512	1, 2, 3, 4, ...
2Ch	2	256	1, 3, 5, 7, ...
7CH	7	73	1, 8, 15, 22, ...
32CH-1	32	16	1, 33, 65, 97, ...
16CH	16	32	1, 17, 33, 49, ...
64CH	64	8	1, 65, 129, 193, ...
32CH-2	32	16	1, 33, 65, 97, ...
13CH	13	39	1, 14, 27, 40, ...
37CH	37	13	1, 38, 75, 112, ...



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.

4 Installation

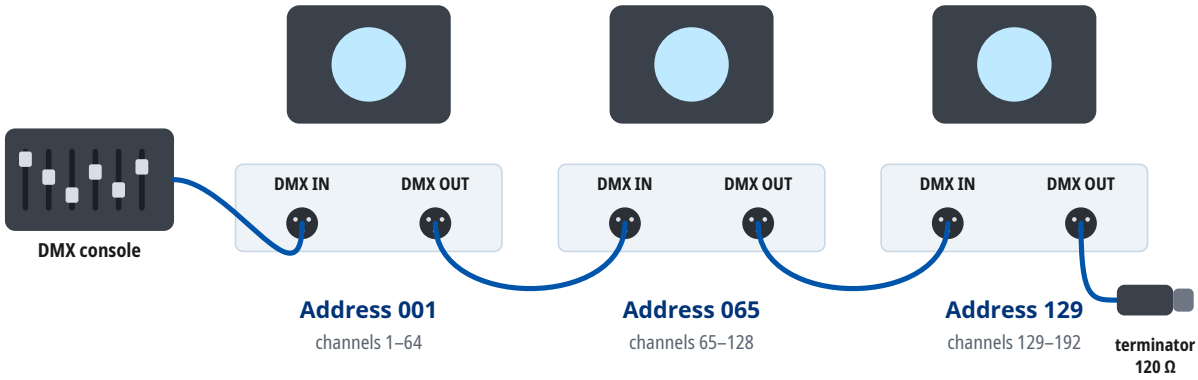
⚠ **WARNING**

- 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: 17.2 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.

5 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 64CH: every unit occupies 64 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.

6 Operation

Setting the DMX address

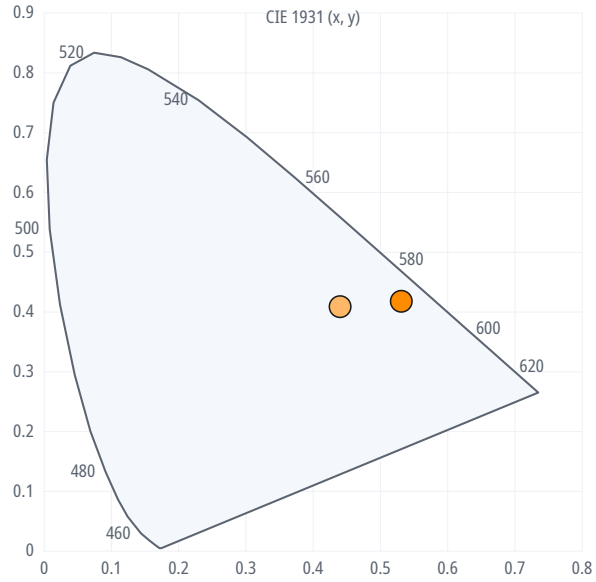
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “64CH”: 64.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “64CH”, you can use, for example, the start addresses 1, 65, 129, 193.
- The DMX mode set on the device must match the fixture profile (personality) used in the controller.

7 Functions at a glance

Functions in each DMX mode

	1Ch 1 channel	2Ch 2 channels	7CH 7 channels	32CH-1 32 channels	16CH 16 channels	64CH 64 channels	32CH-2 32 channels	13CH 13 channels
Dimmer	1		2					2
Dimmer resolution	8 bit		16 bit					16 bit
Shutter / strobe			1					1
Color mixing		1, 2	6, 7	1–32	1–16	32× (1–63)	16× (1–31)	6–13
Pixel control				16 cells	16 cells	16 cells	16 cells	✓

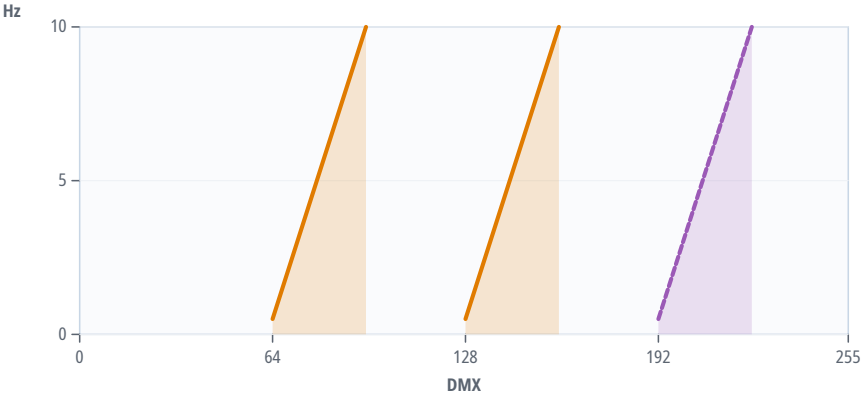
LED colors



LED	x	y
White	0.440	0.409
Amber	0.531	0.418

The dots are the LED colors the GDTF file states.

Strobe rate



CH 1 · 37CH

- 64–95: 0.5–10 Hz Strobe
- 128–159: 0.5–10 Hz Pulse
- 192–223: 0.5–10 Hz Random Strobe

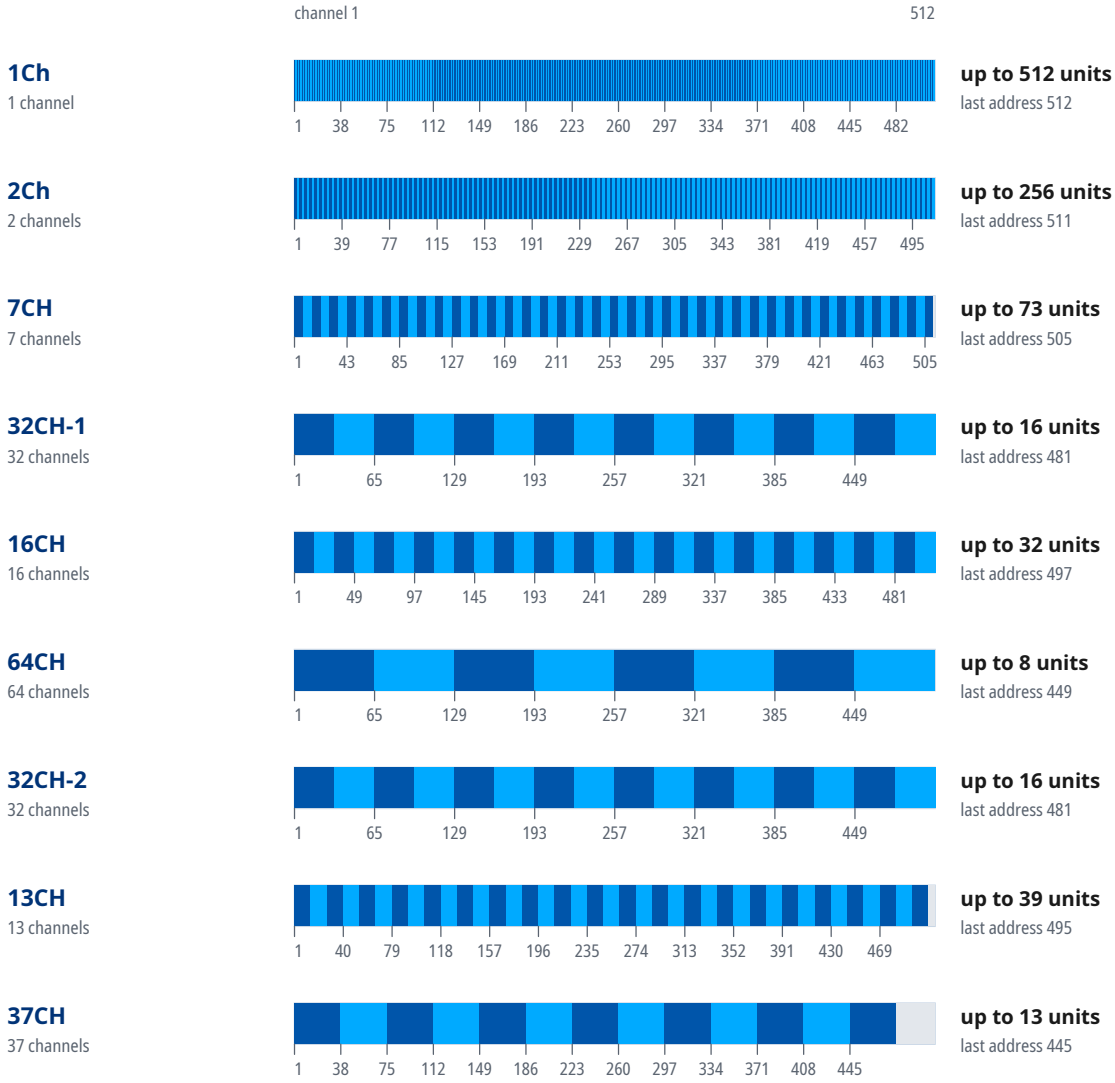
Cells (pixels)



12 cells where the GDTF file places them (seen from above), numbered by their first DMX channel (CH) in the mode “37CH”.

8 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “64CH”

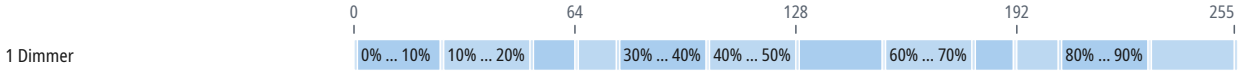
Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	321	11	U2 · 129	16	U2 · 449
2	65	7	385	12	U2 · 193	17	U3 · 1
3	129	8	449	13	U2 · 257	18	U3 · 65
4	193	9	U2 · 1	14	U2 · 321	19	U3 · 129
5	257	10	U2 · 65	15	U2 · 385	20	U3 · 193

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 1Ch

The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 255.

Channel functions at a glance

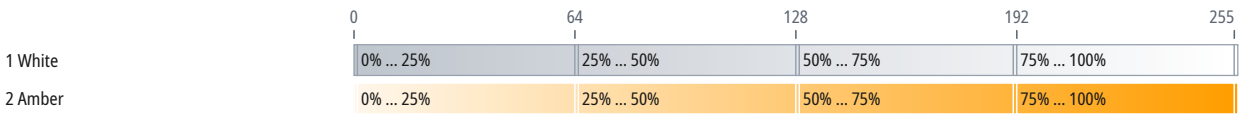


CH	Function	DMX	Description
1	Dimmer	0	0%
		1–24	0% ... 10%
		25	10%
		26–50	10% ... 20%
		51	20%
		52–63	20% ... 25%
		64	25%
		65–75	25% ... 30%
		76	30%
		77–101	30% ... 40%
		102	40%
		103–127	40% ... 50%
		128	50%
		129–152	50% ... 60%
		153	60%
		154–178	60% ... 70%
		179	70%
		180–190	70% ... 75%
		191	75%
		192–203	75% ... 80%
		204	80%
		205–229	80% ... 90%
		230	90%
		231–254	90% ... 100%
		255	100%

Mode 2Ch

The GDTF file gives these values for a console's Highlight function: CH 1 White 255, CH 2 Amber 255.

Channel functions at a glance



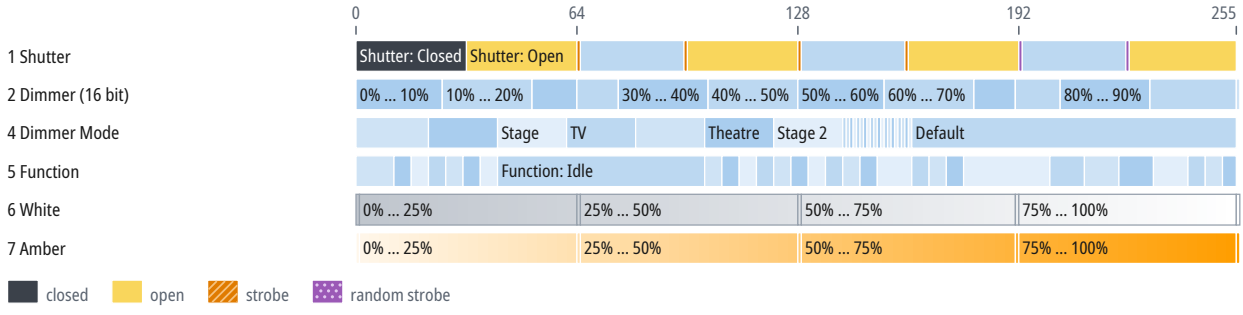
CH	Function	DMX	Description
1	White	0	0%
		1–63	0% … 25%
		64	25%
		65–127	25% … 50%
		128	50%
		129–190	50% … 75%
		191	75%
		192–254	75% … 100%
		255	100%
2	Amber	0	0%
		1–63	0% … 25%
		64	25%
		65–127	25% … 50%
		128	50%
		129–190	50% … 75%
		191	75%
		192–254	75% … 100%
		255	100%

Mode 7CH

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 32–63, 96–127, 160–191 or 224–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 1 Shutter 50, CH 2 Dimmer 255, CH 6 White 255, CH 7 Amber 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Shutter	0–31	Shutter: Closed
		32–63	Shutter: Open
		64	Strobe Min
		65–94	Strobe Min … Strobe Max
		95	Strobe Max
		96–127	Shutter Open: Open

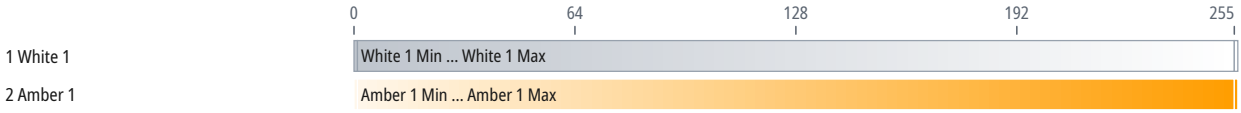
CH	Function	DMX	Description
1	Shutter (continued)	128	Strobe Pulse Min
		129–158	Strobe Pulse Min ... Strobe Pulse Max
		159	Strobe Pulse Max
		160–191	Shutter Open_: Open
		192	Random Strobe Min
		193–222	Random Strobe Min ... Random Strobe Max
		223	Random Strobe Max
		224–255	Shutter Open__: Open
2	Dimmer	0–25	0% ... 10%
		25–51	10% ... 20%
		51–64	20% ... 25%
		64–76	25% ... 30%
		76–102	30% ... 40%
		102–128	40% ... 50%
		128–153	50% ... 60%
		153–179	60% ... 70%
		179–191	70% ... 75%
		191–204	75% ... 80%
		204–230	80% ... 90%
		230–255	90% ... 100%
		255	100%
3	Dimmer Fine	0–255	Fine adjustment of CH 2
4	Dimmer Mode	0–20	Default to unit setting
		21–40	Standard
		41–60	Stage
		61–80	TV
		81–100	Architectural
		101–120	Theatre
		121–140	Stage 2
		141	0/1s Delay
		142	0/2s Delay
		143	0/3s Delay
		144	0/4s Delay
		145	0/5s Delay
		146	0/6s Delay
		147	0/7s Delay
		148	0/8s Delay
		149	0/9s Delay
		150	1s Delay
		151	1/5s Delay
		152–160	2...10s Delay

CH	Function	DMX	Description
4	Dimmer Mode (continued)	161–255	Default
5	Function	0–10	Function: Idle
		11–15	Standard
		16–20	Inverted
		21–25	Rotate
		26–30	Snake
		31–35	Snake Inverted
		36–40	Snake Rotated
		41–100	Function: Idle
		101–105	900
		106–110	1000
		111–115	1100
		116–120	1200 (default)
		121–125	1300
		126–130	1400
		131–135	1500
		136–140	2500
		141–145	4000
		146–150	5000
		151–160	10000
		161–165	15000
		166–170	20000
		171–175	25000
		176–200	LEDFrequency: Idle
		201–210	Linear (default)
		211–220	Square
		221–230	Inv Square
		231–240	S-Curve
		241–245	Dim to Warm Enabled (default)
		246–250	Dim to Warm Disabled
		251–255	DTW mode: Idle
6	White		Same as CH 1 in the mode “2Ch” (p. 10)
7	Amber		Same as CH 2 in the mode “2Ch” (p. 10)

Mode 32CH-1

The GDTF file gives these values for a console's Highlight function: CH 1 White 255 (the same in each of the 16 cells), CH 2 Amber 255 (the same in each of the 16 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	White 1	0	White 1 Min
		1–254	White 1 Min ... White 1 Max
		255	White 1 Max
2	Amber 1	0	Amber 1 Min
		1–254	Amber 1 Min ... Amber 1 Max
		255	Amber 1 Max

CH 1–32: 16 cells of 2 channels each. Every cell works as cell 1 in the table above (CH 1–2); the table below gives each cell's channel numbers.

Cell	White	Amber	Cell	White	Amber	Cell	White	Amber	Cell	White	Amber
1	1	2	2	3	4	3	5	6	4	7	8
5	9	10	6	11	12	7	13	14	8	15	16
9	17	18	10	19	20	11	21	22	12	23	24
13	25	26	14	27	28	15	29	30	16	31	32

Mode 16CH

The GDTF file gives these values for a console's Highlight function: CH 1 White 255 (the same in each of the 16 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	White 1	0	White 1 Min
		1–254	White 1 Min ... White 1 Max
		255	White 1 Max

CH 1–16: 16 cells of 1 channel each. Every cell works as cell 1 in the table above (CH 1); the table below gives each cell's channel numbers.

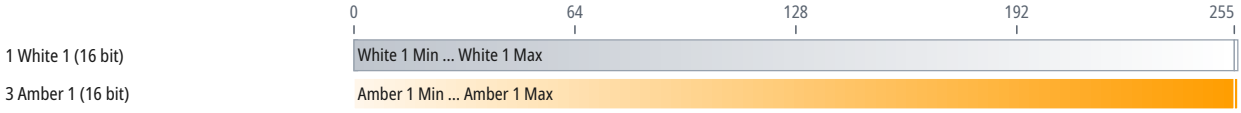
Cell	White	Cell	White	Cell	White	Cell	White	Cell	White	Cell	White
1	1	2	2	3	3	4	4	5	5	6	6
7	7	8	8	9	9	10	10	11	11	12	12
13	13	14	14	15	15	16	16				

Mode 64CH

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

The GDTF file gives these values for a console's Highlight function: CH 1 White 255 (the same in each of the 16 cells), CH 3 Amber 255 (the same in each of the 16 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	White 1	0–255	White 1 Min ... White 1 Max
		255	White 1 Max
2	White 1 Fine	0–255	Fine adjustment of CH 1
3	Amber 1	0–255	Amber 1 Min ... Amber 1 Max
		255	Amber 1 Max
4	Amber 1 Fine	0–255	Fine adjustment of CH 3

CH 1–64: 16 cells of 4 channels each. Every cell works as cell 1 in the table above (CH 1–4); the table below gives each cell's channel numbers.

Cell	White	White Fine	Amber	Amber Fine	Cell	White	White Fine	Amber	Amber Fine
1	1	2	3	4	2	5	6	7	8
3	9	10	11	12	4	13	14	15	16
5	17	18	19	20	6	21	22	23	24
7	25	26	27	28	8	29	30	31	32
9	33	34	35	36	10	37	38	39	40
11	41	42	43	44	12	45	46	47	48
13	49	50	51	52	14	53	54	55	56
15	57	58	59	60	16	61	62	63	64

Mode 32CH-2

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

The GDTF file gives these values for a console's Highlight function: CH 1 White 255 (the same in each of the 16 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	White 1	0–255	White 1 Min ... White 1 Max
		255	White 1 Max
2	White 1 Fine	0–255	Fine adjustment of CH 1

CH 1–32: 16 cells of 2 channels each. Every cell works as cell 1 in the table above (CH 1–2); the table below gives each cell's channel numbers.

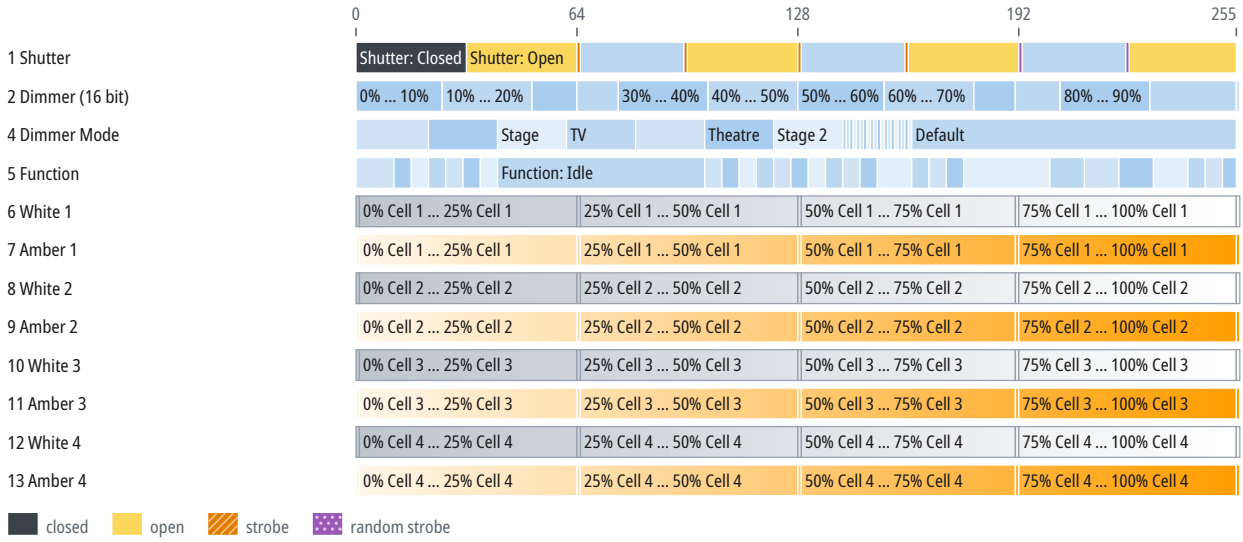
Cell	White	White Fine	Cell	White	White Fine	Cell	White	White Fine	Cell	White	White Fine
1	1	2	2	3	4	3	5	6	4	7	8
5	9	10	6	11	12	7	13	14	8	15	16
9	17	18	10	19	20	11	21	22	12	23	24
13	25	26	14	27	28	15	29	30	16	31	32

Mode 13CH

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 32–63, 96–127, 160–191 or 224–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 1 Shutter 32, CH 2 Dimmer 255, CH 6 White 1 255, CH 7 Amber 1 255, CH 8 White 2 255, CH 9 Amber 2 255, CH 10 White 3 255, CH 11 Amber 3 255, CH 12 White 4 255, CH 13 Amber 4 255.

Channel functions at a glance



CH	Function	DMX	Description
1	Shutter		Same as CH 1 in the mode “7CH” (p. 10)
2	Dimmer		Same as CH 2 in the mode “7CH” (p. 11)
3	Dimmer Fine	0–255	Fine adjustment of CH 2
4	Dimmer Mode		Same as CH 4 in the mode “7CH” (p. 11)
5	Function		Same as CH 5 in the mode “7CH” (p. 12)
6	White 1	0	0% Cell 1
		1–63	0% Cell 1 … 25% Cell 1
		64	25% Cell 1
		65–127	25% Cell 1 … 50% Cell 1
		128	50% Cell 1
		129–190	50% Cell 1 … 75% Cell 1
		191	75% Cell 1
		192–254	75% Cell 1 … 100% Cell 1
		255	100% Cell 1
7	Amber 1	0	0% Cell 1
		1–63	0% Cell 1 … 25% Cell 1

CH	Function	DMX	Description
7	Amber 1 (continued)	64	25% Cell 1
		65–127	25% Cell 1 … 50% Cell 1
		128	50% Cell 1
		129–190	50% Cell 1 … 75% Cell 1
		191	75% Cell 1
		192–254	75% Cell 1 … 100% Cell 1
		255	100% Cell 1
8	White 2	0	0% Cell 2
		1–63	0% Cell 2 … 25% Cell 2
		64	25% Cell 2
		65–127	25% Cell 2 … 50% Cell 2
		128	50% Cell 2
		129–190	50% Cell 2 … 75% Cell 2
		191	75% Cell 2
		192–254	75% Cell 2 … 100% Cell 2
		255	100% Cell 2
9	Amber 2	0	0% Cell 2
		1–63	0% Cell 2 … 25% Cell 2
		64	25% Cell 2
		65–127	25% Cell 2 … 50% Cell 2
		128	50% Cell 2
		129–190	50% Cell 2 … 75% Cell 2
		191	75% Cell 2
		192–254	75% Cell 2 … 100% Cell 2
		255	100% Cell 2
10	White 3	0	0% Cell 3
		1–63	0% Cell 3 … 25% Cell 3
		64	25% Cell 3
		65–127	25% Cell 3 … 50% Cell 3
		128	50% Cell 3
		129–190	50% Cell 3 … 75% Cell 3
		191	75% Cell 3
		192–254	75% Cell 3 … 100% Cell 3
		255	100% Cell 3
11	Amber 3	0	0% Cell 3
		1–63	0% Cell 3 … 25% Cell 3
		64	25% Cell 3
		65–127	25% Cell 3 … 50% Cell 3
		128	50% Cell 3
		129–190	50% Cell 3 … 75% Cell 3
		191	75% Cell 3

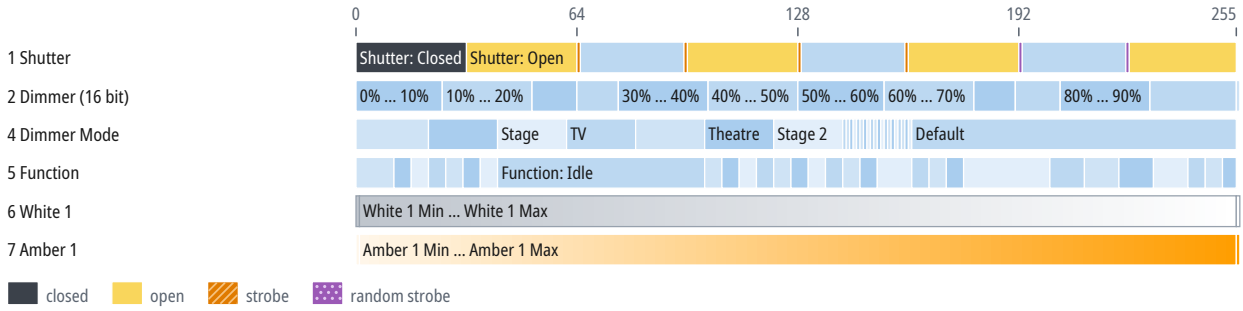
CH	Function	DMX	Description
11	Amber 3 (continued)	192–254	75% Cell 3 … 100% Cell 3
		255	100% Cell 3
12	White 4	0	0% Cell 4
		1–63	0% Cell 4 … 25% Cell 4
		64	25% Cell 4
		65–127	25% Cell 4 … 50% Cell 4
		128	50% Cell 4
		129–190	50% Cell 4 … 75% Cell 4
		191	75% Cell 4
		192–254	75% Cell 4 … 100% Cell 4
		255	100% Cell 4
13	Amber 4	0	0% Cell 4
		1–63	0% Cell 4 … 25% Cell 4
		64	25% Cell 4
		65–127	25% Cell 4 … 50% Cell 4
		128	50% Cell 4
		129–190	50% Cell 4 … 75% Cell 4
		191	75% Cell 4
		192–254	75% Cell 4 … 100% Cell 4
		255	100% Cell 4

Mode 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 1 Shutter at 32–63, 96–127, 160–191 or 224–255 “Open”. The GDTF file gives these values for a console's Highlight function: CH 1 Shutter 32, CH 2 Dimmer 255, CH 6 White 255 (the same in each of the 16 cells), CH 7 Amber 255 (the same in each of the 16 cells).

Channel functions at a glance



CH	Function	DMX	Description
1	Shutter		Same as CH 1 in the mode “7CH” (p. 10)
2	Dimmer		Same as CH 2 in the mode “7CH” (p. 11)
3	Dimmer Fine	0–255	Fine adjustment of CH 2
4	Dimmer Mode		Same as CH 4 in the mode “7CH” (p. 11)
5	Function		Same as CH 5 in the mode “7CH” (p. 12)

CH	Function	DMX	Description
6	White 1	0	White 1 Min
		1–254	White 1 Min … White 1 Max
		255	White 1 Max
7	Amber 1	0	Amber 1 Min
		1–254	Amber 1 Min … Amber 1 Max
		255	Amber 1 Max

CH 6–37: 16 cells of 2 channels each. Every cell works as cell 1 in the table above (CH 6–7); the table below gives each cell's channel numbers.

Cell	White	Amber	Cell	White	Amber	Cell	White	Amber	Cell	White	Amber
1	6	7	2	8	9	3	10	11	4	12	13
5	14	15	6	16	17	7	18	19	8	20	21
9	22	23	10	24	25	11	26	27	12	28	29
13	30	31	14	32	33	15	34	35	16	36	37

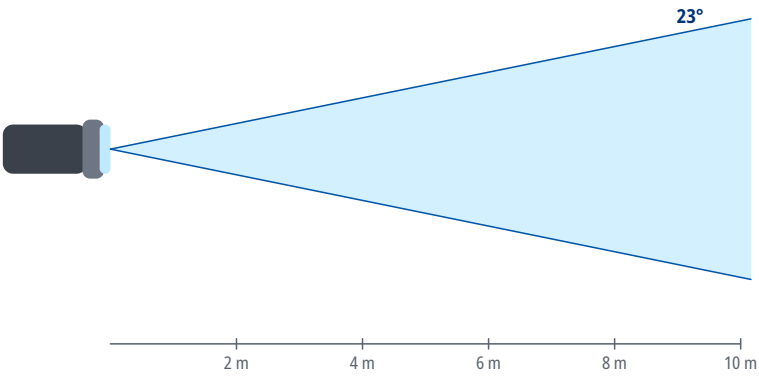
9 Technical specifications

Parameter	Value
Light source	LED
Weight	17.2 kg
Operating temperature	-20 to 45 °C

Speeds and ranges

Parameter	Value
Strobe frequency	0.5–10 Hz

Spot diameter



Distance	Ø 23°
2 m	0.81 m
4 m	1.6 m
6 m	2.4 m
8 m	3.3 m
10 m	4.1 m
15 m	6.1 m

Spot diameter square to the beam axis, calculated from the beam angle.

10 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.

11 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.

12 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.