DMX REFERENCE

BARTONE QUAD 16 TOCO

Stage4



Manufacturer	Stage4
GDTF file	Stage4_BARTONE_QUAD_16_TOCO_125045.gdtf
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1 About this manual

This document describes the BARTONE QUAD 16 TOCO by Stage4. It was compiled from the GDTF file Stage4_BARTONE_QUAD_16_TOCO_125045.gdtf from the GDTF-Share library.

File revision: “Rev1”.

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 Stage4; 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	9.1 kg

DMX modes

Mode	Channels	Units in one universe	First start addresses
40ch	40	12	1, 41, 81, 121, ...
32ch 1	32	16	1, 33, 65, 97, ...
16ch	16	32	1, 17, 33, 49, ...
24ch	24	21	1, 25, 49, 73, ...
13ch 1	13	39	1, 14, 27, 40, ...
9ch	9	56	1, 10, 19, 28, ...
8ch	4	128	1, 5, 9, 13, ...

No light? Check these channels

- 40ch: CH 1 Dimmer above 0; CH 40 Dimmer Mode above 0
- 24ch: CH 1 Dimmer 1 above 0; CH 9 Dimmer above 0 (the same in each of the 16 cells)
- 13ch 1: CH 1 Dimmer above 0; CH 13 Dimmer Mode above 0
- 9ch: CH 1 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.

4 Installation

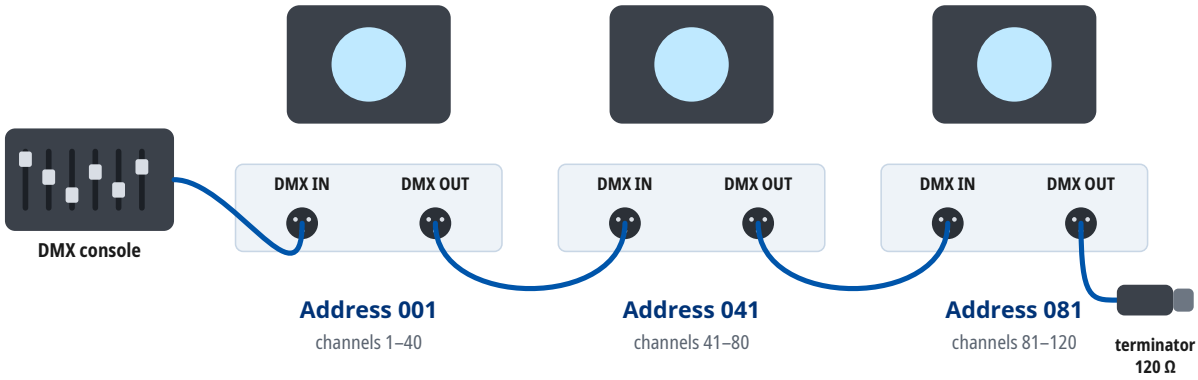
⚠ **WARNING**

- 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: 9.1 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 40ch: every unit occupies 40 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

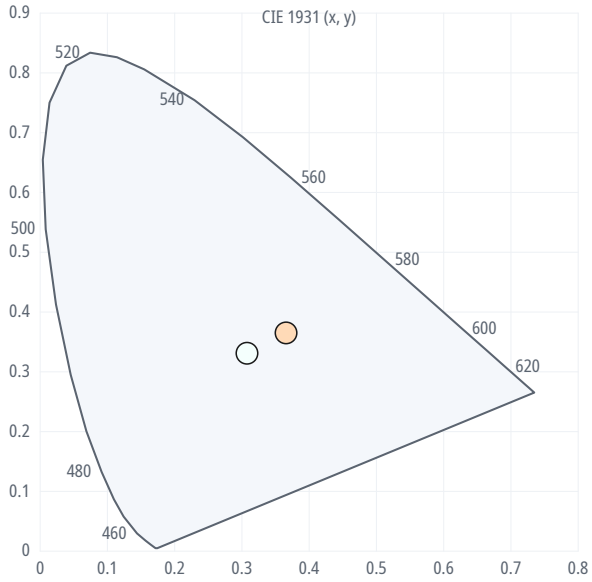
- The device occupies as many consecutive channels in the DMX universe as the selected DMX mode uses, starting at the set start address.
- Number of channels occupied in the DMX mode “40ch”: 40.
- Choose start addresses so that the channels of individual devices do not overlap and the last occupied channel does not exceed 512. Devices with the same start address and mode respond identically.
- For several devices in a row in the DMX mode “40ch”, you can use, for example, the start addresses 1, 41, 81, 121.
- 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

	40ch 40 channels	32ch 1 32 channels	16ch 16 channels	24ch 24 channels	13ch 1 13 channels	9ch 9 channels	8ch 4 channels
Dimmer	1	✓	✓	1, 9–24	1	1	
Color mixing	1–35	1–35	1–16	4, 5	3, 5	3, 5	1, 3
Color temperature	37			7	8		
Effects / macros	38, 39				11, 12		
Pixel control				16 cells			

LED colors



LED	x	y
Warm White	0.366	0.365
Cold White	0.307	0.331

The dots are the LED colors the GDTF file states.

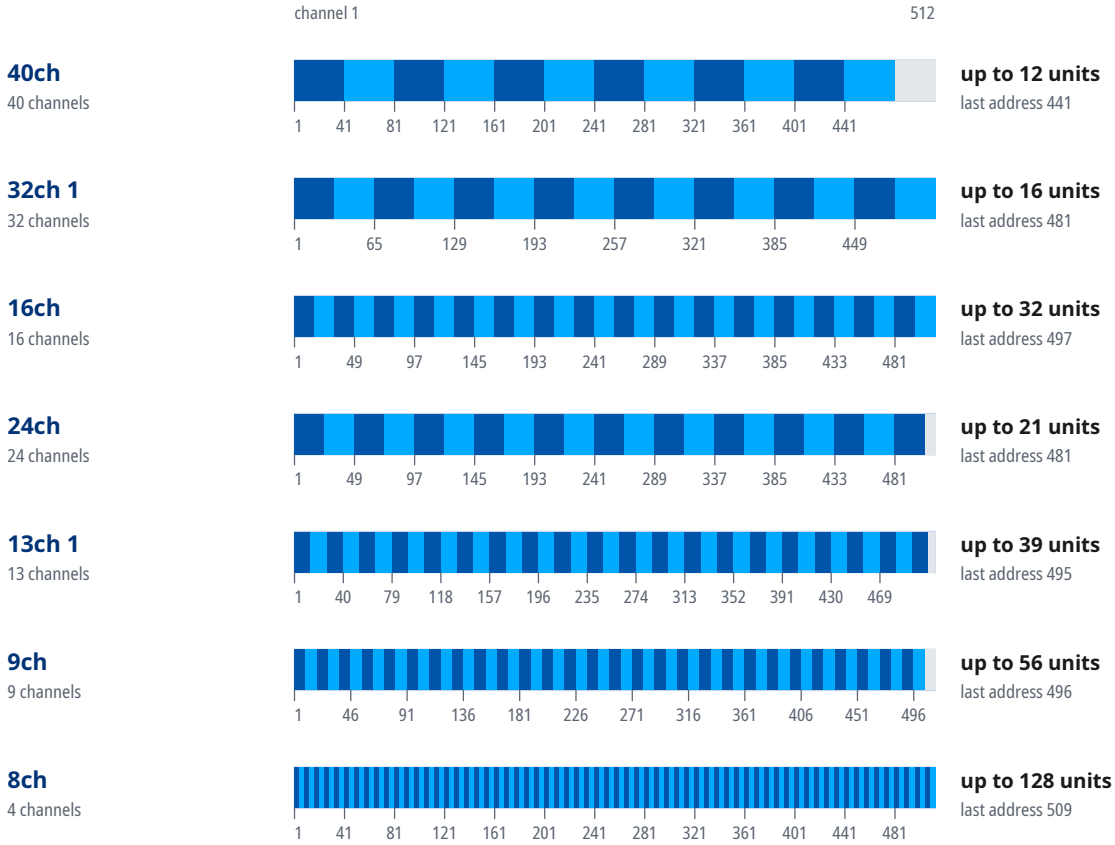
Cells (pixels)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CH 1	CH 3	CH 5	CH 7	CH 9	CH 11	CH 13	CH 15	CH 17	CH 19	CH 21	CH 23	CH 25	CH 27	CH 29	CH 31

16 cells where the GDTF file places them (seen from above), numbered by their first DMX channel (CH) in the mode “24ch”.

8 DMX channels

Units in one DMX universe



Start addresses of 20 units in the mode “40ch”

Unit	Start address	Unit	Start address	Unit	Start address	Unit	Start address
1	1	6	201	11	401	16	U2 · 121
2	41	7	241	12	441	17	U2 · 161
3	81	8	281	13	U2 · 1	18	U2 · 201
4	121	9	321	14	U2 · 41	19	U2 · 241
5	161	10	361	15	U2 · 81	20	U2 · 281

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 40ch

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 Dimmer above 0; CH 40 Dimmer Mode above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 255, CH 4 Warm White 255 (the same in each of the 16 cells), CH 5 Cool White 255 (the same in each of the 16 cells).

CH	Function	DMX	Description
1	Dimmer	0–255	
2	Dimmer Fine	0–255	Fine adjustment of CH 1
3	Function	0–44	Function: No Func
		45–49	Pix ON
		50–54	Pix OFF
		55–59	Linear
		60–64	Square
		65–69	Inv Square
		70–74	S-Curve
		75–89	Color Calibration Mode: No Func
		90–94	Color Calib ON
		95–99	Color Calib OFF
		100–114	LEDFrequency: No Func
		115–119	600Hz
		120–124	1200Hz
		125–129	2400Hz
		130–134	4800Hz
		135–139	9800Hz
		140–144	12KHz
		145–149	18KHz
		150–249	Display Intensity: No Func
		250–255	Dicplay Intens
4	Warm White 1	0–255	
5	Cool White 1	0–255	
36	Dimmer Speed	0	Slow
		1–254	Slow ... Fast
		255	Fast
37	CTO	0	3000K
		1–254	3000K ... 6300K
		255	6300K
38	Color Macro		Auto Programm
		0–255	Auto Programm
39	Color Macro Speed		Auto Speed
		0–255	Auto Speed
40	Dimmer Mode	0–255	Fade

CH 4–35: 16 cells of 2 channels each. Every cell works as cell 1 in the table above (CH 4–5); the table below gives each cell's channel numbers.

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

Mode 32ch 1

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

CH	Function	DMX	Description
1	Warm White 1	0–255	
2	Cool White 1	0–255	

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	Warm White	Cool White	Cell	Warm White	Cool White	Cell	Warm White	Cool White	Cell	Warm White	Cool White
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 Warm White 255 (the same in each of the 8 cells), CH 2 Cool White 255 (the same in each of the 8 cells).

CH	Function	DMX	Description
1	Warm White 1	0–255	
2	Cool White 1	0–255	

CH 1–16: 8 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	Warm White	Cool White	Cell	Warm White	Cool White	Cell	Warm White	Cool White	Cell	Warm White	Cool White
1	1	2	2	3	4	3	5	6	4	7	8
5	9	10	6	11	12	7	13	14	8	15	16

Mode 24ch

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 Dimmer 1 above 0; CH 9 Dimmer above 0 (the same in each of the 16 cells). The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 1 255, CH 4 Warm White 255, CH 5 Cool White 255, CH 9 Dimmer 255 (the same in each of the 16 cells).

CH	Function	DMX	Description
1	Dimmer 1	0–255	
2	Dimmer 1 Fine	0–255	Fine adjustment of CH 1
3	Function		Same as CH 3 in the mode “40ch” (p. 9)
4	Warm White	0–255	
5	Cool White	0–255	
6	Strobe	0–9	Strobe Mode Strobe: No Func
		10–81	Strobe S>F
		82–91	Strobe Mode Pulse: No Func
		92–163	Strobe Pulse S>F
		164–173	Strobe Mode Random: No Func
		174–245	Random Strobe S>F
		246–255	Strobe Mode Random: No Func
7	CTO		Same as CH 37 in the mode “40ch” (p. 9)
8	Dimmer Speed		Same as CH 36 in the mode “40ch” (p. 9)
9	Dimmer 2	0–255	

CH 9–24: 16 cells of 1 channel each. Every cell works as cell 1 in the table above (CH 9); the table below gives each cell's channel numbers.

Cell	Dimmer	Cell	Dimmer	Cell	Dimmer	Cell	Dimmer	Cell	Dimmer	Cell	Dimmer
1	9	2	10	3	11	4	12	5	13	6	14
7	15	8	16	9	17	10	18	11	19	12	20
13	21	14	22	15	23	16	24				

Mode 13ch 1

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 Dimmer above 0; CH 13 Dimmer Mode above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 255, CH 3 Warm White 255, CH 5 Cool White 255.

CH	Function	DMX	Description
1	Dimmer	0–255	
2	Dimmer Fine	0–255	Fine adjustment of CH 1
3	Warm White	0–255	
4	Warm White Fine	0–255	Fine adjustment of CH 3
5	Cool White	0–255	
6	Cool White Fine	0–255	Fine adjustment of CH 5
7	Strobe		Same as CH 6 in the mode “24ch” (p. 11)

CH	Function	DMX	Description
8	CTO		Same as CH 37 in the mode “40ch” (p. 9)
9	Dimmer Speed		Same as CH 36 in the mode “40ch” (p. 9)
10	Function		Same as CH 3 in the mode “40ch” (p. 9)
11	Color Macro		Same as CH 38 in the mode “40ch” (p. 9)
12	Color Macro Speed		Same as CH 39 in the mode “40ch” (p. 9)
13	Dimmer Mode	0–255	Fade

Mode 9ch

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 Dimmer above 0. The GDTF file gives these values for a console's Highlight function: CH 1 Dimmer 255, CH 3 Warm White 255, CH 5 Cool White 255.

CH	Function	DMX	Description
1	Dimmer	0–255	
2	Dimmer Fine	0–255	Fine adjustment of CH 1
3	Warm White	0–255	
4	Warm White Fine	0–255	Fine adjustment of CH 3
5	Cool White	0–255	
6	Cool White Fine	0–255	Fine adjustment of CH 5
7	Strobe		Same as CH 6 in the mode “24ch” (p. 11)
8	Dimmer Speed		Same as CH 36 in the mode “40ch” (p. 9)
9	Function		Same as CH 3 in the mode “40ch” (p. 9)

Mode 8ch

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

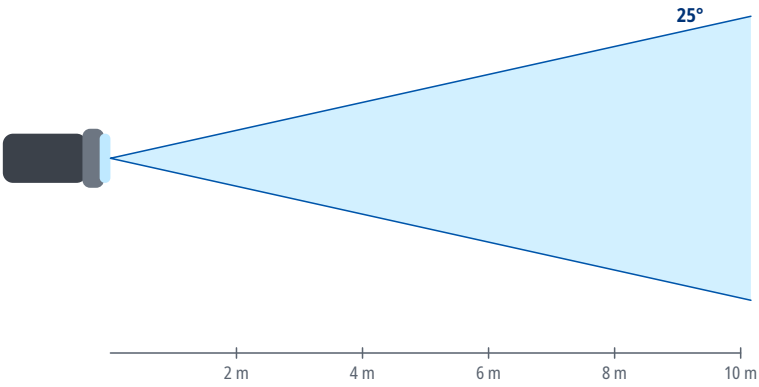
The GDTF file gives these values for a console's Highlight function: CH 1 Warm White 255, CH 3 Cool White 255.

CH	Function	DMX	Description
1	Warm White	0–255	
2	Warm White Fine	0–255	Fine adjustment of CH 1
3	Cool White	0–255	
4	Cool White Fine	0–255	Fine adjustment of CH 3

9 Technical specifications

Parameter	Value
Weight	9.1 kg
Operating temperature	-20 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.

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.