

# DMX protocol

For fixtures running MAC Encore Performance firmware version 1.0.0.

Channel	DMX Value	Function	Fade type	Default value
1	0 - 19	<b>Strobe/shutter effect</b> Shutter closed	Snap	30
	20 - 49	Shutter open		
	50 - 200	Strobe, slow → fast		
	201 - 210	Shutter open		
	211 - 255	Random strobe, slow → fast		
2	0 - 65535	<b>Dimmer fade (MSB)</b> Closed → open	Fade	0
3		<b>Dimmer fade, fine (LSB)</b>	Fade	0
4	0 - 255	<b>Cyan</b> 0 → 100%	Fade	0
5	0 - 255	<b>Magenta</b> 0 → 100%	Fade	0
6	0 - 255	<b>Yellow</b> 0 → 100%	Fade	0
7	0 - 255	<b>CTC</b> 0 → 100%	Fade	0
8		<b>Color wheel Indexing</b> <i>Continuous scrolling</i> 0 Open 1 - 13 Open → Blue 14 Blue 15 - 27 Blue → Green 28 Green 29 - 41 Green → Orange 42 Orange 43 - 55 Orange → Magenta 56 Magenta 57 - 69 Magenta → Congo 70 Congo 71 - 83 Congo → Red 84 Red 85 - 97 Red → Open 98 - 160 Open	Snap	0
		<i>Stepped scrolling</i> 161 - 163 Blue 164 - 166 Green 167 - 169 Orange 170 - 172 Magenta 173 - 175 Congo 176 - 178 Red 179 - 192 Open		
		<b>Continuous rotation</b> 193 - 214 CW fast → slow 215 - 221 Stop (wheel stops at current position) 222 - 243 CCW slow → fast		
		<b>Random colors</b> 244 - 247 Fast 248 - 251 Medium 252 - 255 Slow		

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
9		<b>Rotating gobo wheel: gobo selection, indexing, shake, rotation</b> <i>Indexed gobo: set indexed angle on channels 10/11</i> Open	Fade	0
	0 - 9	Open		
	10 - 14	Gobo 1 indexing		
	15 - 19	Gobo 2 indexing		
	20 - 24	Gobo 3 indexing		
	25 - 29	Gobo 4 indexing		
	30 - 34	Gobo 5 indexing		
		<i>Continuous gobo rotation: set gobo rotation speed on channels 10/11</i> Gobo 1 rotation		
	35 - 39	Gobo 1 rotation		
	40 - 44	Gobo 2 rotation		
45 - 49	Gobo 3 rotation			
50 - 54	Gobo 4 rotation			
55 - 59	Gobo 5 rotation			
	<i>Gobo shake centered on indexed position. Set indexed position on channels 10/11</i> Shake angle increments in following steps: 10°, 15°, 30°, 45°, 60°, 90°, 135°, 180°, 270° and 360°			
60 - 89	Gobo 1 shake, 360° slow → 10° fast			
90 - 119	Gobo 2 shake, 360° slow → 10° fast			
120 - 149	Gobo 3 shake, 360° slow → 10° fast			
150 - 179	Gobo 4 shake, 360° slow → 10° fast			
180 - 209	Gobo 5 shake, 360° slow → 10° fast			
	<i>Continuous gobo wheel rotation with continuous gobo rotation: set gobo rotation speed on channels 10/11</i> CW gobo wheel rotation, fast → slow			
210 - 232	CW gobo wheel rotation, fast → slow			
233 - 255	CCW gobo wheel rotation, slow* → fast			
10		<b>Rotating gobo wheel: indexed angle, rotation direction and speed</b> <i>Indexed position (if gobo wheel set to indexed gobo on channel 9):</i> Indexed position (0° at 32768)	Fade	32768
11	0 - 65535	<i>Rotation (if wheel set to continuous gobo rotation on channel 9):</i> No rotation, gobo indexed at 0°		
	0 - 600	CW rotation fast → slow		
	601 - 32130	No rotation, gobo stops at current position		
	32131 - 32895	No rotation, gobo stops at current position		
	32896 - 64515	CCW rotation slow → fast		
	64516 - 65535	No rotation, gobo indexed at 90°		
12		<b>Animation wheel position and function</b> Open	Snap	0
	0 - 5	Open		
	6 - 10	Horizontal indexed position (set indexing angle on channel 13)		
	11 - 15	Horizontal rotation (set direction and speed on channel 13)		
	16 - 20	Vertical rotation (set direction and speed on channel 13)		
	21 - 25	Vertical indexed position (set indexing angle on channel 13)		
	26 - 110	Angled position rotation		
11 - 195	Angled position vertical indexed			
196 - 255	Angled position horizontal indexed			
13		<b>Animation wheel indexed angle, rotation speed and direction</b> <i>If indexing is selected on channel 12:</i> Indexed angle min. → max.	Snap	127
	0 - 255	Indexed angle min. → max.		
		<i>If rotation is selected on channel 12:</i> Stop, indexed at 0°		
	0 - 2	Stop, indexed at 0°		
	3 - 126	CW rotation, fast → slow		
	127 - 129	Stop, wheel stops at its current position		
130 - 253	CCW rotation, fast → slow			
254 - 255	Stop, indexed at 90°			
14	0 - 255	<b>Frost</b> No frost → Full frost	Fade	0
15	0 - 255	<b>Iris</b> Open → Closed	Snap	0
16	0 - 65535	<b>Zoom, 16-bit (MSB and LSB)</b> Flood → spot	Fade	32768
17		Flood → spot		
18	0 - 65535	<b>Focus, 16-bit (MSB and LSB)</b> Infinity → near	Fade	32768
19		Infinity → near		

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Channel	DMX Value	Function	Fade type	Default value
20	0 - 255	<b>Framing blade 1, position</b> Out → in	Fade	0
21	0 -126 127 - 128 129 - 255	<b>Framing blade 1, angle</b> Angle – Parallel Angle +	Fade	127
22	0 - 255	<b>Framing blade 2, position</b> Out → in	Snap	0
23	0 -126 127 - 128 129 - 255	<b>Framing blade 2, angle</b> Angle – Parallel Angle +	Fade	127
24	0 - 255	<b>Framing blade 3, position</b> Out → in	Fade	0
25	0 -126 127 - 128 129 - 255	<b>Framing blade 3, angle</b> Angle – Parallel Angle +	Fade	127
26	0 - 255	<b>Framing blade 4, position</b> Out → in	Fade	0
27	0 -126 127 - 128 129 - 255	<b>Framing blade 4, angle</b> Angle – Parallel Angle +	Fade	127
28	0 -126 127 - 128 129 - 255	<b>Frame indexing angle</b> Minimum Parallel Maximum	Fade	127
29	0 - 65535	<b>Pan, 16-bit (MSB and LSB)</b> Left → right (32768 = neutral)	Fade	32768
30				
31	0 - 65535	<b>Tilt, 16-bit (MSB and LSB)</b> Up → down (32768 = neutral)	Fade	32768
32				

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Channel	DMX Value	Function	Fade type	Default value
33		<b>Fixture control/settings</b> <i>(hold for number of seconds indicated to activate)</i>	Snap	0
	0 - 9	<i>No function (disables calibration) – 5 sec.</i>		
	10 - 14	Reset entire fixture – 5 sec.		
	15	<i>No function</i>		
	16	Reset color only – 5 sec.		
	17	Reset beam only – 5 sec.		
	18	Reset pan and tilt only – 5 sec.		
	19 - 22	<i>No function</i>		
	23	Linear dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>		
	24	Square law dimming curve – 1 sec. <i>(menu override, factory default setting, setting unaffected by power off/on)</i>		
	25	Inverse square law dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>		
	26	S-curve dimming curve – 1 sec. <i>(menu override, setting unaffected by power off/on)</i>		
	27	<i>No function</i>		
	28	Fast pan and tilt speed – 1 sec. <i>(default setting, menu override - setting returns to MENU setting after power on/off)</i>		
	29	Smooth pan and tilt speed – 1 sec. <i>(menu override - setting returns to MENU setting after power on/off)</i>		
	30	Parameter shortcuts = ON		
	31	Parameter shortcuts = OFF		
	32	Focus tracking = OFF		
	33	Enable focus tracking at close range – 1sec.		
	34	Enable focus tracking at medium range – 1sec.		
	35	Enable focus tracking at long range – 1sec.		
	36	Video tracking = ON – 1sec.		
	37	Video tracking = OFF – 1sec.		
	38-40	<i>No function</i>		
	41	Beam smoothing = ON – 1sec.		
	42	Beam smoothing = OFF – 1sec.		
	43-51	<i>No function</i>		
	52	Turn on control panel display – 1 sec.		
	53	Turn off control panel display – 1 sec.		
	54	Regulated fan speed, fixed light output intensity – 1sec.		
	55	Full fan speed, regulated light output intensity – 1sec.		
	56	Medium fan speed, regulated light output intensity – 1sec.		
	57	Low fan speed, regulated light output intensity – 1sec.		
	58	Ultra-low fan speed, regulated light output intensity – 1sec.		
	59-60	<i>No function</i>		
	61	Hibernation mode = ON – 5 sec.		
	62	Hibernation mode = OFF – 5 sec.		
	63-64	<i>No function</i>		
	65	Pan and tilt limits = ON – 5 sec.		
	66	Pan and tilt limits = OFF – 5 sec.		
	67	Store current pan position as lower pan limit – 5 sec.		
68	Store current pan position as upper pan limit – 5 sec.			
69	Store current tilt position as lower tilt limit – 5 sec.			
70	Store current tilt position as upper tilt limit – 5 sec.			
71	Reset pan and tilt limits and disable pan/tilt limit functionality – 1sec.			
72	Tungsten Emulation = ON – 1sec.			
73	Tungsten Emulation = OFF – 1sec.			
74	Alternative light source (color temperature shift) = ON – 1sec.			
75	Alternative light source (color temperature shift) = OFF – 1sec.			
76-99	<i>No function</i>			
100	Enable calibration – 5 sec.			
101	Store pan and tilt calibration – 5 sec.			
102	Store dimmer calibration – 5 sec.			
103	Store cyan calibration – 5 sec.			
104	Store magenta calibration – 5 sec.			
105	Store yellow calibration – 5 sec.			
106	<i>No function</i>			

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Channel	DMX Value	Function	Fade type	Default value
<b>33 contd.</b>	107	Store all CMY calibration – 5 sec.	Snap	0
	108	Store rotating gobo 1 current slot index calibration – 5 sec.		
	109-110	<i>No function</i>		
	111	Store framing calibration – 5 sec.		
	112	Store iris calibration – 5 sec.		
	113	Store focus calibration – 5 sec.		
	114	Store zoom calibration – 5 sec.		
	115	Store color wheel calibration – 5 sec.		
	116	Store animation wheel calibration – 5 sec.		
	117 - 198	<i>No function</i>		
	199	Reset all calibrations to factory default – 5 sec.		
200 - 255	<i>No function</i>			
<b>34</b>	0 - 255	<b>FX1 selection (see Table 2 on page 26)</b> Effect selection (adjust on DMX channel 15)	Snap	0
<b>35</b>	0 - 126 127 - 128 129-255	<b>FX1 speed</b> Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
<b>36</b>	0 - 255	<b>FX2 selection (see Table 2 on page 26)</b> Effect selection (adjust on DMX channel 17)	Snap	0
<b>37</b>	0 - 126 127 - 128 129-255	<b>FX2 speed</b> Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
<b>38</b>	0	<b>FX synchronization</b> No sync	Snap	0
	1	Offset shift 10°		
	2	Offset shift 20°		
	3	Offset shift 30°		
	4	Offset shift 40°		
	5	Offset shift 50°		
	6	Offset shift 60°		
	7	Offset shift 70°		
	8	Offset shift 80°		
	9	Offset shift 90°		
	10	Offset shift 100°		
	11	Offset shift 110°		
	12	Offset shift 120°		
	13	Offset shift 130°		
	14	Offset shift 140°		
	15	Offset shift 150°		
	16	Offset shift 160°		
	17	Offset shift 170°		
	18	Offset shift 180°		
	19	Offset shift 190°		
	20	Offset shift 200°		
	21	Offset shift 210°		
	22	Offset shift 220°		
	23	Offset shift 230°		
	24	Offset shift 240°		
	25	Offset shift 250°		
	26	Offset shift 260°		
	27	Offset shift 270°		
	28	Offset shift 280°		
	29	Offset shift 290°		
	30	Offset shift 300°		
	31	Offset shift 310°		
	32	Offset shift 320°		
	33	Offset shift 330°		
	34	Offset shift 340°		
	35	Offset shift 350°		
36	Synchronized: all fixtures start FX cycles at same time			
37 - 100	<i>No function</i>			
101 - 120	Random start (FX 1 adjust controls overall speed)			
121 - 140	Random duration			
141 - 255	<i>No function</i>			

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