

DMX protocol

For fixtures running MAC Encore Performance firmware version 1.0.0.

Channel	DMX Value	Function	Fade type	Default value
1	0 - 19	Strobe/shutter effect 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	Dimmer fade (MSB) Closed → open	Fade	0
3		Dimmer fade, fine (LSB)	Fade	0
4	0 - 255	Cyan 0 → 100%	Fade	0
5	0 - 255	Magenta 0 → 100%	Fade	0
6	0 - 255	Yellow 0 → 100%	Fade	0
7	0 - 255	CTC 0 → 100%	Fade	0
8		Color wheel Indexing <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		
		Continuous rotation 193 - 214 CW fast → slow 215 - 221 Stop (wheel stops at current position) 222 - 243 CCW slow → fast		
		Random colors 244 - 247 Fast 248 - 251 Medium 252 - 255 Slow		

Table 1: DMX Protocol

Channel	DMX Value	Function	Fade type	Default value
9	0 - 9	Rotating gobo wheel: gobo selection, indexing, shake, rotation <i>Indexed gobo: set indexed angle on channels 10/11</i> Open	Fade	0
	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		
	35 - 39	<i>Continuous gobo rotation: set gobo rotation speed on channels 10/11</i> 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>		
	210 - 232	CW gobo wheel rotation, fast → slow		
	233 - 255	CCW gobo wheel rotation, slow* → fast		
10		Rotating gobo wheel: indexed angle, rotation direction and speed		
11	0 - 65535	<i>Indexed position (if gobo wheel set to indexed gobo on channel 9):</i> Indexed position (0° at 32768)	Fade	32768
	0 - 600	<i>Rotation (if wheel set to continuous gobo rotation on channel 9):</i> No rotation, gobo indexed at 0°		
	601 - 32130	CW rotation fast → slow		
	32131 - 32895	No rotation, gobo stops at current position		
	32896 - 64515	CCW rotation slow → fast		
64516 - 65535	No rotation, gobo indexed at 90°			
12	0 - 5	Animation wheel position and function Open	Snap	0
	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	0 - 255	Animation wheel indexed angle, rotation speed and direction <i>If indexing is selected on channel 12:</i> Indexed angle min. → max.	Snap	127
	0 - 2	<i>If rotation is selected on channel 12:</i> 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	Frost No frost → Full frost	Fade	0
15	0 - 255	Iris Open → Closed	Snap	0
16	0 - 65535	Zoom, 16-bit (MSB and LSB)	Fade	32768
17		Flood → spot		
18	0 - 65535	Focus, 16-bit (MSB and LSB)	Fade	32768
19		Infinity → near		

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

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Channel	DMX Value	Function	Fade type	Default value	
33		Fixture control/settings <i>(hold for number of seconds indicated to activate)</i>			
	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.		Snap	0
	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
33 contd.	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>			
34	0 - 255	FX1 selection (see Table 2 on page 26) Effect selection (adjust on DMX channel 15)	Snap	0
35	0 - 126 127 - 128 129-255	FX1 speed Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
36	0 - 255	FX2 selection (see Table 2 on page 26) Effect selection (adjust on DMX channel 17)	Snap	0
37	0 - 126 127 - 128 129-255	FX2 speed Effect reversed fast → slow Effect stops Effect forward slow → fast	Fade	128
38	0	FX synchronization 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>			

Table 1: DMX Protocol

FX: pre-programmed effects

The table below lists the pre-programmed dynamic FX (effect macros) that can be controlled using DMX channels 34-38.

Select FX on channels 34 and 36 by sending the values listed in the table. Adjust effect parameters such as speed and/or amount of effect applied on channels 35 and 37, and adjust synchronization of effects across different fixtures on channel 38.

Applicable when running MAC Encore Performance firmware version 1.0.0.

DMX value	Effect	DMX value	Effect	DMX value	Effect
0	NO FX	52	RAINBOW PULSE	86	RANDOM SIZE WAVE
1	GOBO X-FADE	53	RGB WAVE	87	RANDOM SIZE STEP
2-7	NO FX	54	RGB STEP	88-89	NO FX
8	TICK TICK TICK	55	RGB PULSE	90	PIN TO FLOOD
9	TICK TOCK	56	CMY WAVE	91	POUNCE
10	INTENSITY SINE WAVE	57	CMY STEP	92	SPLASH
11	INTENSITY STEP	58	CMY PULSE	93-109	NO FX
12	INTENSITY PULSE	59	MIX TO WHITE WAVE	110-122	NO FX
13	DOUBLE STROBE	60	MIX TO WHITE STEP	123	MILLING AROUND
14	TRIPLE STROBE	61	MIX TO WHITE PULSE	124-159	NO FX
15	UP FLASH	62	RANDOM BOLD	160	FIRE GOBO
16	UP FLASH DOWN FLASH	63	RANDOM MIX STEP	161	NO FX
17	RANDOM LEVEL	64	RANDOM MIX PULSE	162	WATER GOBO
18-20	NO FX	65	RANDOM SUBTLE	163-180	NO FX
21	ELECTRIC ARC	66	RED WHITE BLUE WAVE	181	SELECT FIXED GOBO 1
22	THUNDERSTORM ATOMIC	67	RED WHITE BLUE STEP	182	SELECT FIXED GOBO 2
23	THUNDERSTORM	68-69	NO FX	183	SELECT FIXED GOBO 3
24	WELDING	70	COLOR WHEEL FULL STEP	184	SELECT FIXED GOBO 4
25-29	NO FX	71	COLOR WHEEL ALL STEP	185	SELECT FIXED GOBO 5
30	ANIMATION	72	COLOR WHEEL SPLIT STEP	186	SELECT FIXED GOBO 6
31	MOVIE FLICKER	73	COLOR WHEEL RANDOM SPLIT STEP	187	SELECT FIXED GOBO 7
32	CROSS CHASE	74	COLOR WHEEL SHAKER	188-209	NO FX
33	RANDOM DIMMERS	75	FIRE	210	ZOOM FADES
34	SHAKEY DIMMERS	76	WATER	211	FADE SPIN GOBO ZOOM
35	CENTER OUT CHASE	77	ICE	212	GOBO TWIST
36	NEGATIVE PULSE	78	HOT AND COLD	213	EXPAND TWIST
37	POSITIVE PULSE	79	WARM AND FUZZY	214	EXPAND TWIST FADE
38	RINGS IN OUT	80	IRIS RAMP	215-255	NO FX
39	NO FX	81	IRIS STEP		
40	RANDOM COLOR WAVE	82	IRISH PULSE		
41	RANDOM COLOR STEP	83	ZOOM WAVE		
42-49	NO FX	84	ZOOM STEP		
50	RAINBOW WAVE	85	ZOOM RAMP		
51	RAINBOW STEP	86	RANDOM SIZE WAVE		

Table 2: FX in the MAC Encore Performance