

MAC III Performance DMX protocol

Software version 1.7.0

Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
1	1	0 - 19	0 - 7	Strobe/shutter Shutter closed (Lamp Switches to 800 watt mode after shutter is closed for 10 seconds)
		20 - 49	8 - 19	Shutter open
		50 - 64	20 - 25	Strobe, fast → slow
		65 - 69	26 - 27	Shutter open
		70 - 84	28 - 33	Opening pulse, fast → slow
		85 - 89	34 - 35	Shutter open
		90 - 104	36 - 41	Closing pulse, fast → slow
		105 - 109	42 - 43	Shutter open
		110 - 124	44 - 49	Random strobe, fast → slow
		125 - 129	50 - 51	Shutter open
		130 - 144	52 - 57	Random opening pulse, fast → slow
		145 - 149	58 - 59	Shutter open
		150 - 164	60 - 65	Random closing pulse, fast → slow
		165 - 169	66 - 67	Shutter open
		170 - 184	68 - 73	Burst pulse, fast → slow
		185 - 189	74 - 75	Shutter open
		190 - 204	76 - 81	Random burst pulse, fast → slow
		205 - 209	82 - 83	Shutter open
		210 - 224	84 - 89	Electronic sine wave strobe, fast → slow
		225 - 229	90 - 91	Shutter open
230 - 244	92 - 97	Electronic burst strobe, fast → slow		
245 - 255	98 - 100	Shutter open		
2	2	0 - 255	0 - 100	Dimmer fade (MSB) Closed → open
-	3	0 - 255	0 - 100	Dimmer fade, fine (LSB)
3	4	0 - 255	0 - 100	Cyan White → full cyan
				Cyan range in random CMY color <i>when random CMY selected on channel 21 (16-bit) or 25 (16-bit extended)</i>
		0	0	Normal (full range)
		1 - 127	1 - 50	Minimum cyan setting (127 = full cyan)
		128 - 254	51 - 99	Maximum cyan setting (128 = no cyan)
255	100	Normal (full range)		
4	5	0 - 255	0 - 100	Magenta White → full magenta
				Magenta range in random CMY color <i>when random CMY selected on channel 21 (16-bit) or 25 (16-bit extended)</i>
		0	0	Normal (full range)
		1 - 127	1 - 50	Minimum magenta setting (127 = full magenta)
		128 - 254	51 - 99	Maximum magenta setting (128 = no magenta)
255	100	Normal (full range)		

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5	6	0 - 255	0 - 100	Yellow White → full yellow		
		0	0	Yellow range in random CMY color <i>when random CMY selected on channel 21 (16-bit) or 25 (16-bit extended)</i>		
		1 - 127	1 - 50	Normal (full range)		
		128 - 254	51 - 99	Minimum yellow setting (127 = full yellow)		
		255	100	Maximum yellow setting (128 = no yellow) Normal (full range)		
6	7	0 - 255	0 - 100	CTO Open (6000 K) → warm (3200 K)		
				Color Wheel		
7	8	0	0	<i>Continuous Scroll</i> Open		
		1 - 19	1 - 7	Open → Slot 1 - Blue		
		20	8	Slot 1		
		21 - 39	9 - 15	Slot 1 → Slot 2 - Green		
		40	16	Slot 2		
		41 - 59	17 - 23	Slot 2 → Slot 3 - Orange		
		60	24	Slot 3		
		61 - 79	25 - 31	Slot 3 → Slot 4 - Minus green		
		80	32	Slot 4		
		81 - 99	33 - 39	Slot 4 → Slot 5 - Yellow		
		100	40	Slot 5		
		101 - 119	41 - 47	Slot 5 → Slot 6 - Congo (deep blue)		
		120	48	Slot 6		
		121 - 139	49 - 55	Slot 6 → Slot 7 - Red		
		140	56	Slot 7		
		141 - 159	57 - 63	Slot 7 → Open		
		160	64	Open		
				<i>Stepped Scroll (snap to full color positions)</i>		
				161 - 164	65 - 66	Slot 7 - Red
				165 - 168	67 - 68	Slot 6 - Congo (deep blue)
				169 - 172	69 - 70	Slot 5 - Yellow
				173 - 176	71 - 72	Slot 4 - Minus green
				177 - 180	73 - 74	Slot 3 - Orange
				181 - 184	75 - 76	Slot 2 - Green
				185 - 188	77 - 78	Slot 1 - Blue
				189 - 192	79 - 80	Open
						<i>Continuous Rotation</i>
		193 - 214	81 - 86	CW, Fast → Slow		
		215 - 221	87 - 88	Stop (This will stop wherever the wheel is at the time)		
		222 - 243	89 - 94	CCW, Slow → Fast		
				<i>Random color</i>		
		244 - 247	95 - 96	Fast		
		248 - 251	97 - 98	Medium		
		252 - 255	99 - 100	Slow		

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8	9			Gobo selection, indexing, shake, rotation
				<i>Indexed gobo selection: set indexed angle on channel 9 (16-bit) or 10 (16-bit ext.)</i>
		0 - 9	0 - 4	Open
		10 - 14	4 - 5	Gobo 1 - Leaf breakup
		15 - 19	5 - 8	Gobo 2 - Dot breakup
		20 - 24	8 - 10	Gobo 3 - Limbo
		25 - 29	10 - 12	Gobo 4 - Linear 3
		30 - 34	12 - 14	Gobo 5 - Raytraces
				<i>Continuous gobo rotation: set gobo rotation speed on channel 9 (16-bit) or 10 (16-bit ext.)</i>
		35 - 39	14 - 16	Gobo 1 - Leaf breakup
		40 - 44	16 - 18	Gobo 2 - Dot breakup
		45 - 49	18 - 20	Gobo 3 - Limbo
		50 - 54	20 - 22	Gobo 4 - Linear 3
		55 - 59	22 - 24	Gobo 5 - Raytraces
				<i>Gobo shake centered on indexed position: set indexed angle on channel 9 (16-bit) or 10 (16-bit ext.). Shake angle increments in following steps: 10°, 15°, 30°, 45°, 60°, 90°, 135°, 180°, 270° and 360°</i>
		60 - 89	24 - 34	Gobo 1 - Leaf breakup, 360° slow → 10° fast
90 - 119	35 - 45	Gobo 2 - Dot breakup, 360° slow → 10° fast		
120 - 149	46 - 56	Gobo 3 - Limbo, 360° slow → 10° fast		
150 - 179	57 - 67	Gobo 4 - Linear 3, 360° slow → 10° fast		
180 - 209	68 - 78	Gobo 5 - Raytraces, 360° slow → 10° fast		
		<i>Continuous gobo wheel scroll with continuous gobo rotation: set gobo rotation speed on channel 9 (16-bit) or 10 (16-bit extended)</i>		
210 - 232	79 - 89	CW gobo wheel scroll, fast → slow*		
233 - 255	90 - 100	CCW gobo wheel scroll, slow* → fast		
		<i>*If gobo crossfading is enabled in control menu (PERSONALITY → GOBO X-FADE), slow = 5% speed. If gobo crossfading is disabled, slow = 30% speed</i>		
9	10			Gobo indexing, direction, speed (MSB)
				<i>If indexed gobo is selected on channel 8 (16-bit) or 9 (16-bit ext.)</i>
		0 - 255	0 - 100	Gobo indexing, 0 → 395°
				<i>If continuous gobo rotation is selected on channel 8 (16-bit) or 9 (16-bit ext.)</i>
		0 - 2	0	No gobo rotation
		3 - 126	1 - 50	CW, fast → slow
127 - 129	51	No gobo rotation		
130 - 253	52 - 99	CCW, slow → fast		
254 - 255	100	No gobo rotation		
10	11			Gobo fine indexing or rotation speed (LSB)
				<i>If indexed gobo is selected on channel 8 (16-bit) or 9 (16-bit ext.)</i>
0 - 255	0 - 100	Gobo indexing, fine		
		<i>If continuous gobo rotation is selected on channel 8 (16-bit) or 9 (16-bit ext.)</i>		
0 - 255	0 - 100	Gobo rotation speed, fine		
11	12			Framing blade 1, position
		0 - 255	0 - 100	Out → in
12	13			Framing blade 1, angle
		0 - 126	0 - 49	Angle –
		127 - 128	50	Parallel
129 - 255	51 - 100	Angle +		
13	14			Framing blade 2, position
		0 - 255	0 - 100	Out → in
14	15			Framing blade 2, angle
		0 - 126	0 - 49	Angle –
		127 - 128	50	Parallel
129 - 255	51 - 100	Angle +		
15	16			Framing blade 3, position
		0 - 255	0 - 100	Out → in

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Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
16	17	0 - 126 127 - 128 129 - 255	0 - 49 50 51 - 100	Framing blade 3, angle Angle – Parallel Angle +
17	18	0 - 255	0 - 100	Framing blade 4, position Out → in
18	19	0 - 126 127 - 128 129 - 255	0 - 49 50 51 - 100	Framing blade 4, angle Angle – Parallel Angle +
19	20	0 - 199 200 - 225 226 - 229 230 - 255	0 - 78 79 - 88 89 - 90 91 - 100	Frame rotation: indexing or rotation (MSB) 0 - 395° CW, fast → slow No rotation CCW, slow → fast
20	21	0 - 255	0 - 100	Frame rotation: Fine indexing or rotation speed (LSB)
	22	0 - 19 20 - 39 40 - 59 60 - 79 80 - 84 85 - 89 90 - 94 95 - 99 100 - 104 105 - 109 110 - 114 115 - 119 120 - 124 125 - 129 130 - 134 135 - 139 140 - 144 145 - 149 150 - 255	0 - 7 7 - 16 17 - 24 25 - 31 31 - 33 33 - 34 34 - 35 36 - 37 38 - 39 40 - 41 42 - 43 44 - 45 46 - 47 48 - 49 50 - 51 52 - 53 54 - 55 56 - 57 58 - 100	Frame shape macros No macro applied, individual framing blade control channels active Macro 1: Vertical Bar Macro 2: Horizontal Bar Macro 3: Square Macro 4: Parallelogram Right Macro 5: Parallelogram Left Macro 6: Trapezoid Up Macro 7: Trapezoid Left Macro 8: Trapezoid Down Macro 9: Trapezoid Right Macro 10: Equilateral Triangle Up Macro 11: Equilateral Triangle Left Macro 12: Equilateral Triangle Down Macro 13: Equilateral Triangle Right Macro 14: Right-angled Triangle Down Left Macro 15: Right-angled Triangle Down Right Macro 16: Right-angled Triangle Up Right Macro 17: Right-angled Triangle Up Left Reserved for future use
	23	0 - 255	0 - 100	Frame shape macro size Small → large
	24	0 - 2 3 - 5 6 - 8 9 - 11 ↓ 165 - 167 168 169 ↓ 216 217 218 ↓ 228 229 230 ↓ 252 253 - 255	0 1 2 3 ↓ 65 66 66 ↓ 85 85 85 ↓ 89 90 90 ↓ 99 100	Frame shape macro crossfade timing Follow console timing 0.2 seconds 0.4 seconds 0.4 seconds <i>0.2 second intervals up to 10.8 seconds</i> 11 seconds 12 seconds 13 seconds <i>1 second intervals up to 60 seconds</i> 60 seconds 65 seconds 70 seconds <i>5 second intervals up to 120</i> 120 seconds 130 seconds 140 seconds <i>10 second intervals up to 360</i> 360 seconds Follow console timing

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Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
21	25	0 - 18	0 - 6	Color/CMY macros, gobo crossfading speed <i>No function</i> (Note: this value is used for setting calibration values on channel 34/40)
		19 - 57	7 - 22	Color wheel: fast narrow shake → slow wide shake, around currently selected color
		58 - 83	23 - 32	<i>Random CMY: set min./ max. CMY range limits on channels 3 - 5 (16-bit) or 4 - 6 (16-bit ext.)</i>
		84 - 109	33 - 42	Fast
		110 - 135	43 - 52	Medium
		136 - 207	53 - 82	Slow
		208 - 255	83 - 100	<i>If enabled in PERSONALITY → GOBO X-FADE control menu:</i> Gobo crossfading speed slow → fast <i>No function</i>
22	26	0 - 5	0 - 2	Gobo animation wheel: position and function Open
		6 - 10	2 - 4	Horizontal indexed position: set indexing on ch. 23 (16-bit) or 27 (16-bit ext.)
		11 - 15	4 - 6	Vertical indexed position: set indexing on ch. 23 (16-bit) or 27 (16-bit ext.)
		16 - 20	6 - 8	Horizontal position, continuous rotation: set direction & speed on ch. 23 (16-bit) or 27 (16-bit ext.)
		21 - 25	8 - 10	Vertical position, continuous rotation: set direction & speed on ch. 23 (16-bit) or 27 (16-bit ext.)
		26 - 110	10 - 43	Angled position, vertical → horizontal, continuous rotation: set direction & speed on ch. 23 (16-bit) or 27 (16-bit ext.)
		111 - 195	44 - 76	Angled position, horizontal → vertical: set indexing on ch. 23 (16-bit) or 27 (16-bit ext.)
196 - 255	77 - 100	Angled position, vertical → open: set indexing on ch. 23 (16-bit) or 27 (16-bit ext.)		
23	27	0 - 255	0 - 100	Gobo animation wheel: indexed angled position, rotation direction and speed <i>If indexed angled position is selected on channel 22 (16-bit) or 26 (16-bit ext.):</i> Indexed angle, 0° → 395°
		0 - 2	0	<i>If continuous rotation is selected on channel 22 (16-bit) or 26 (16-bit ext.):</i> No animation wheel rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No animation wheel rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No animation wheel rotation
24	28	0 - 19	0 - 7	Beam effect (frost or prism depending on which is installed) Beam effect off
		20 - 39	7 - 16	Beam effect 1 indexing: set angle on ch. 25 (16-bit) or 29 (16-bit ext.)
		40 - 59	17 - 24	Beam effect 1 rotating: set direction and speed on ch. 25 (16-bit) or 29 (16-bit ext.)
		60 - 79	25 - 31	Beam effect off
		80 - 255	32 - 100	<i>No function</i>
25	29	0 - 255	0 - 100	Beam effect (frost or prism depending on which is installed) indexing angle, rotation direction and speed <i>If beam effect indexing is selected on channel 24 (16-bit) or 28 (16-bit ext.):</i> Indexed angle 0° - 395°
		0 - 2	0	<i>If beam effect rotation is selected on channel 24 (16-bit) or 28 (16-bit ext.):</i> No beam effect rotation
		3 - 126	1 - 50	CW, fast → slow
		127 - 129	51	No beam effect rotation
		130 - 253	52 - 99	CCW, slow → fast
		254 - 255	100	No beam effect rotation
26	30	0 - 199	0 - 77	Iris Open → closed
		200 - 215	78 - 84	Closed
		216 - 229	85 - 89	Opening pulse, fast → slow
		230 - 243	90 - 94	Closing pulse, fast → slow
		244 - 249	95 - 97	Random opening pulse, fast → slow
		250 - 255	98 - 100	Random closing pulse, fast → slow
27	31	0 - 255	0 - 100	Focus (MSB) Infinity → near

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Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
-	32	0 - 255	0 - 100	Focus, fine (LSB)
28	33	0 - 255	0 - 100	Zoom (MSB) Flood → spot
-	34	0 - 255	0 - 100	Zoom, fine (LSB)
29	35	0 - 255	0 - 100	Pan (MSB) Left → right (128 = neutral)
30	36	0 - 255	0 - 100	Pan, fine (LSB)
31	37	0 - 255	0 - 100	Tilt (MSB) Left → right (128 = neutral)
32	38	0 - 255	0 - 100	Tilt, fine (LSB)

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Basic 16-bit Mode	16-bit Extended Mode	DMX Value	Percent	Function
33	39	0 - 9	0 - 1	Fixture control/settings
		10 - 14	2 - 3	<i>No function</i>
		15 - 19	4 - 5	Reset entire fixture ⁽¹⁾
		20 - 24	6 - 7	Reset dimmer and shutter only ⁽¹⁾
		25 - 29	8 - 9	Reset CMYC and color wheel only ⁽¹⁾
		30 - 34	10 - 11	Reset effects module (gobo wheel, framing, gobo animation, iris, frost) only ⁽¹⁾
		35 - 39	12 - 13	Reset zoom and focus only ⁽¹⁾
		40 - 44	14 - 15	Reset pan and tilt only ⁽¹⁾
		45 - 49	16 - 17	<i>No function</i>
		50 - 54	18 - 19	Lamp on
		55 - 59	20 - 21	Lamp off ^(1, 2)
		60 - 64	22 - 23	<i>No function</i> (Note: this value is used for managing pan/tilt limits and storing calibration values on channel 34/40)
		65 - 69	24 - 25	Dimmer curve = Optically linear (menu override, setting unaffected by power off/on) ⁽²⁾
		70 - 74	26 - 27	Dimmer curve = Square law (menu override, factory default setting, setting unaffected by power off/on) ⁽²⁾
		75 - 79	28 - 29	Dimmer curve = Inverse square law (menu override, setting unaffected by power off/on) ⁽²⁾
		80 - 84	30 - 31	Dimmer curve = S-curve (menu override, setting unaffected by power off/on) ⁽²⁾
		85 - 89	32 - 33	<i>No function</i>
		90 - 94	34 - 35	Pan & tilt speed = Normal (menu override - Setting returns to MENU setting after power on/off) ⁽²⁾
		95 - 99	36 - 37	Pan & tilt speed = Fast (menu override - Setting returns to MENU setting after power on/off) ⁽²⁾
		100 - 139	38 - 53	Pan & tilt speed = Slow (menu override - Setting returns to MENU setting after power on/off) ⁽²⁾
		140 - 144	54 - 55	<i>No function</i>
		145 - 149	56 - 57	Parameter shortcuts = ON (menu override, setting stays at factory default ON at power off/on) ⁽²⁾
		150 - 154	58 - 59	Parameter shortcuts = OFF (menu override, setting returns to factory default ON at power off/on) ⁽²⁾
		155 - 159	60 - 61	<i>No function</i>
		160 - 164	62 - 63	Disable zoom/focus linking ⁽²⁾
		165 - 169	64 - 65	Enable zoom/focus linking, near distance ⁽²⁾
		170 - 174	66 - 67	Enable zoom/focus linking, medium distance (factory default setting) ⁽²⁾
		175 - 199	68 - 77	Enable zoom/focus linking, far distance ⁽²⁾
		200 - 204	78 - 79	<i>No function</i>
		205 - 209	80 - 81	Ballast output full, set to 1500 W
		210 - 214	82 - 83	Ballast output reduced, output set to 1200 W
		215 - 219	84 - 85	Ballast output reduced, output set to 1100 W
		220 - 224	86 - 87	Ballast output reduced, output set to 1000 W
225 - 239	88 - 93	Ballast output reduced, output set to 900 W		
240 - 244	94 - 95	<i>No function</i>		
245 - 249	96 - 97	Illuminate display on fixture ⁽²⁾		
250 - 255	98 - 100	<i>No function</i>		
				Trigger event log (inserts new dynamic content into current report)
				⁽¹⁾ If DMX Reset or DMX Lamp Off are disabled in the control menus, a full or partial reset command or a lamp off command can be executed only if: Slot 1 is selected on the color wheel (DMX value 20 on channel 7 in 16-bit or 8 in 16-bit ext.), and The beam effect (frost filter or prism) is on (DMX value 20-59 on channel 24 in 16-bit or 28 in 16-bit ext.), and Open gobo is selected on the gobo wheel (DMX value 0 on channel 8 in 16-bit or 9 in 16-bit ext.)
				⁽²⁾ Value must be held for 5 seconds to activate

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34	40	0 - 39	0 - 13	Fixture adjustments/calibration
		40 - 44	14 - 15	<i>No function:</i>
		45 - 49	16 - 17	Enable pan/tilt limitation ⁽⁴⁾
		50 - 54	18 - 19	<i>No function</i>
		55 - 59	20 - 21	Disable pan/tilt limitation ⁽⁴⁾
		60 - 64	22 - 23	<i>No function</i>
		65 - 69	24 - 25	Set pan/tilt limit: head must stay inside defined area (create safe zone) ⁽⁴⁾
		70 - 74	26 - 27	<i>No function</i>
		75 - 79	28 - 29	Set pan/tilt limit: head must stay outside defined limits (create no-go zone) ⁽⁴⁾
		80 - 84	30 - 31	<i>No function</i>
		85 - 89	32 - 33	Store current pan position as lower pan limit ⁽⁴⁾
		90 - 94	34 - 35	Store current pan position as upper pan limit ⁽⁴⁾
		95 - 99	36 - 37	<i>No function</i>
		100 - 104	38 - 39	Store current tilt position as lower tilt limit ⁽⁴⁾
		105 - 109	40 - 41	Store current tilt position as upper tilt limit ⁽⁴⁾
		110 - 114	42 - 43	<i>No function</i>
		115 - 124	44 - 47	Reset pan and tilt limits ⁽³⁾
		125 - 129	48 - 49	<i>No function</i>
		130 - 134	50 - 51	Store dimmer calibration ⁽⁴⁾
		135 - 139	52 - 53	Store cyan calibration ⁽⁴⁾
		140 - 144	54 - 55	Store magenta calibration ⁽⁴⁾
		145 - 149	56 - 57	Store yellow calibration ⁽⁴⁾
		150 - 154	58 - 59	Store CTC calibration ⁽⁴⁾
		155 - 159	60 - 61	Store CMYC calibration ⁽⁴⁾
		160 - 179	62 - 69	Store gobo wheel slots 1 – 5 index calibration ⁽⁴⁾
		180 - 184	70 - 71	<i>No function</i>
		185 - 189	72 - 73	Store framing blade 1 calibration ⁽⁴⁾
		190 - 194	74 - 75	Store framing blade 2 calibration ⁽⁴⁾
		195 - 199	76 - 77	Store framing blade 3 calibration ⁽⁴⁾
		200 - 204	78 - 79	Store framing blade 4 calibration ⁽⁴⁾
		205 - 209	80 - 81	Store framing blade rotation calibration ⁽⁴⁾
		210 - 214	82 - 83	Store gobo animation wheel index calibration ⁽⁴⁾
215 - 219	84 - 85	Store beam effect (prism) index calibration ⁽⁴⁾		
220 - 224	86 - 87	Store iris calibration ⁽⁴⁾		
225 - 229	88 - 89	Store focus calibration ⁽⁴⁾		
230 - 234	90 - 91	Store zoom calibration ⁽⁴⁾		
235 - 239	92 - 93	Store pan calibration ⁽⁴⁾		
240 - 244	94 - 95	Store tilt calibration ⁽⁴⁾		
245 - 249	96 - 97	<i>No function</i>		
250 - 255	98 - 100	Reset all calibrations to factory default ⁽⁴⁾		
			<i>No function</i>	
			⁽³⁾ To activate: Value must be held for 5 seconds The CMY channels (3, 4 and 5 in 16-bit mode or 4, 5 and 6 in 16-bit extended mode) must all be set to DMX value 232 The beam effect channel (24 in 16-bit mode or 28 in 16-bit extended mode) must be set to DMX value 030.	
			⁽⁴⁾ To activate: Value must be held for 5 seconds Color/CMY macros channel 21 in 16-bit or 25 in 16-bit ext. must be set to DMX value 005 - 010 Fixture control channel 33 in 16-bit or 39 in 16-bit ext. must be set to DMX value 055 - 059.	

Table 3: MAC III Performance DMX Protocol

MSB = Most significant byte

LSB = Least significant byte