Quad © Luminaire DMX Control Protocol *

Revision: 1.12 27-Feb-18

Standard Protocol	
Channel	**Construct**
1	Pan Coarse
2	Pan Fine
3	Tilt Coarse
4	Tilt Fine
5	Mix Color Function
6	Shutter/LED Function
7	Shutter
8	Dim Coarse
9	Dim Fine
10	Mspeed
11	Macros
12	Macro Speed
13	Macro Xfade time
14	Control
15	Indigo Highlighter Function
16	Indigo Highlighter Dim
17	LED 1 X
18	LED 1 Y
19	LED 1 Red
20	LED 1 Green
21	LED 1 Blue
22	LED 1 White
23	LED 1 Function
24	LED 1 Dim Coarse
25	LED 1 Dim Fine
26	LED 2 X
27	LED 2 Y
28	LED 2 Red
29	LED 2 Green
30	LED 2 Blue
31	LED 2 White
32	LED 2 Function
33	LED 2 Dim Coarse
34	LED 2 Dim Fine
35	LED 3 X
36	LED 3 Y
37	LED 3 Red
38	LED 3 Green
39	LED 3 Blue
40	LED 3 White
41	LED 3 Function
42	LED 3 Dim Coarse
43	LED 3 Dim Fine
44	LED 4 X
45	LED 4 Y
46	LED 4 Red
47	LED 4 Green
48	LED 4 Blue
49	LED 4 White
50	LED 4 Function
51	LED 4 Dim Coarse
52	LED 4 Dim Fine

Quad © Luminaire Standard DMX Control Protocol *

Channel	Marketing Construct	Description	Decimal Low	Decimal High	Percent Low	Percent High	Hex Low	Hex High	Controller Default
1	Pan	Pan Coarse	0	255	0%	100%	00h	FFh	128
2	Pan	Pan Fine	0	255	0%	100%	00h	FFh	0
3	Tilt	Tilt Coarse	0	255	0%	100%	00h	FFh	128
4	Tilt	Tilt Fine	0	255	0%	100%	00h	FFh	0
5	Mix Color Function	RGB	0	15	0%	6%	00h	0Fh	0
		RBG	16	30	6%	12%	10h	1Eh	
		BRG	31	45	12%	18%	1Fh	2Dh	
		BGR	46	60	18%	24%	2Eh	3Ch	
		GRB	61	75	24%	29%	3Dh	4Bh	
		GBR	76	90	30%	35%	4Ch	5Ah	
		CMY	91	105	36%	41%	5Bh	69h	
		CYM	106	120	42%	47%	6Ah	78h	
		YCM	121	135	47%	53%	79h	87h	
		YMC	136	150	53%	59%	88h	96h	
		MCY	151	165	59%	65%	97h	A5h	
		MYC	166	180	65%	71%	A6h	B4h	
		Cycle	181	195	71%	76%	B5h	C3h	
		Random	196	210	77%	82%	C4h	D2h	
		Reserved (Note 7)	211	255	83%	100%	D3h	FFh	
6	Shutter/ LED Functions	Normal Strobe Functions	0	31	0%	12%	00h	1Fh	0
		Random Random strobe	32	63	13%	25%	20h	3Fh	
		Synchronous Random Strobe	64	95	25%	37%	40h	5Fh	
		Reserved (Note 7)	96	255	38%	100%	60h	FFh	
7	Shutter	Close	0	23	0%	9%	00h	17h	255
		Strobe Rate (slow to fast)	24	229	9%	90%	18h	E5h	
		Open	230	255	90%	100%	E6h	FFh	
8	Dim Coarse	Close	0		0%		00h		0
		Open	255		100%		FFh		
9	Dim Fine		0		0%		00h		0
			255		100%		FFh		
10	Mspeed	Disable	0	3	0%	1%	00h	03h	0
		Longest (252.7 seconds)	4		2%		04h		
		Shortest (0.15 seconds)	255		100%		FFh		
11	Inclusive Macro (Note 1)	Macro off	0		0%		00h		0
		Macro 1	1		0%		01h		
		Macro 2	2		1%		02h		
		Macro 3	3		1%		03h		
		…							
		Macro 142	142		56%		8Eh		
		Reserved (Note 7)	143	255	56%	100%	8Fh	FFh	
12	Inclusive Macro Speed	Animated Macro Operation (Note 1)							192
		Reverse Play Speed Fast to x1	0	62	0%	24%	00h	3Eh	
		Reverse Play Speed x1	63		25%	0%	3Fh	00h	
		Reverse Play speed x 1 to slow	64	126	25%	49%	40h	7Eh	
		Stop	127	128	50%	50%	7Fh	80h	
		Forward Play Speed slow to x1	129	191	51%	75%	81h	BFh	
		Forward Play speed x 1	192		75%	0%	C0h	00h	
		Forward Play speed x 1 to fast	193	255	76%	100%	C1h	FFh	

13	Inclusive Macro X fade	Static Macro Operation (Note 1)							128
		Disable	0	128	0%	50%	00h	80h	
		Longest (63.8 seconds)	129		51%		81h		
		Shortest (0.15 seconds)	255		100%		FFh		
		Animated Macro Operation (Note 1)							
		Stop	0		0%		00h	00h	
		Decreasing xfade time	1	127	0%	50%	01h	7Fh	
		Programmed xfade time x1	128		50%		80h		
		Increasing xfade time	129	255	51%	100%	81h	FFh	
14	Control (Note 2)	The Control channel should not be crossfaded. No shutter channel requirement.							0
		Safe (normal operation)	0	15	0%	6%	00h	0Fh	
		Pan & Tilt Mspeed Off	16	31	6%	12%	10h	1Fh	
		Display/LED's Off (send 20 packets)	32	47	13%	18%	20h	2Fh	
		Display/LED's On (send 20 packets)	48	63	19%	25%	30h	3Fh	
		Home All (send 20 packets)	64	79	25%	31%	40h	4Fh	
		Shutdown (send 80 packets)	80	95	31%	37%	50h	5Fh	
		Reserved (Note 7)	96	111	38%	44%	60h	6Fh	
		Module X Mirror On (Note 3)	112	127	44%	50%	70h	7Fh	
		Module X Mirror Off (Note 3)	128	143	50%	56%	80h	8Fh	
		Module Y Mirror On (Note 3)	144	159	56%	62%	90h	9Fh	
		Module Y Mirror Off (Note 3)	160	175	63%	69%	A0h	AFh	
		Module X/Y Swap On	176	191	69%	75%	B0h	BFh	
		Module X/Y Swap Off	192	207	75%	81%	C0h	CFh	
		Home Modules (only modules home LEDs off) (send 20 packets)	208	223	82%	87%	D0h	DFh	
		Motion Only Macro Mode	224	239	88%	94%	E0h	EFh	
		White Balance On (Note 6)	240	247	94%	97%	F0h	F7h	
		White Balance Off	248	255	97%	100%	F8h	FFh	
15	Indigo Highlighter Function	Indigo Highlighter Dim Tracking Mode							0
		Continuous	0	15	0%	6%	00h	0Fh	
		Periodic Strobe (slow to fast)	16	41	6%	16%	10h	29h	
		Random Strobe (slow to fast)	42	67	16%	26%	2Ah	43h	
		Reserved (Note 7)	68	127	27%	50%	44h	7Fh	
		Indigo Highlighter Independent Dim Mode							
		Continuous	128	143	50%	56%	80h	8Fh	
		Periodic Strobe (slow to fast)	144	169	56%	66%	90h	A9h	
		Random Strobe (slow to fast)	170	195	67%	76%	AAh	C3h	
		Reserved (Note 7)	196	255	77%	100%	C4h	FFh	
16	Indigo Highlighter Dim	Indigo Highlighter Off	0		0%		00h		0
		Indigo Highlighter 100%	255		100%		FFh		

17	LED 1 X	LED 1 X shift (NOTE 5)	0	255	0%	100%	00h	FFh	127
18	LED 1 Y	LED 1 Y shift (NOTE 5)	0	255	0%	100%	00h	FFh	0
19	LED 1 Red (Note 4)	RGB Control							255
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		RBG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BRG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BGR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GRB Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GBR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		CMY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		CYM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YCM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YMC Control							
		Blue Full Saturation	0		0%		00h		
		Blue off	255		100%		FFh		
		MCY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MYC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		Cycle & Random Modes. Scan Speed controlled by Red Channel							
		Slow Rate	0		0%		00h		
		Fast Rate	255		100%		FFh		

20	LED 1 Green	RGB Control							255
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		RBG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BRG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BGR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GRB Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GBR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		CMY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		CYM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YCM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YMC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MCY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MYC Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		

21	LED 1 Blue	RGB Control							255
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		RBG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BRG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BGR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GRB Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GBR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		CMY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		CYM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YCM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YMC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MCY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		MYC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		

22	LED 1 White	RGB Control							255
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		RBG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BRG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BGR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GRB Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GBR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CMY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CYM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YCM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YMC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MCY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MYC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
23	LED 1 Function	LED 1 Dim Tracking Mode							0
		Continuous	0	15	0%	6%	00h	0Fh	
		Periodic Strobe (slow to fast)	16	41	6%	16%	10h	29h	
		Random Strobe (slow to fast)	42	67	16%	26%	2Ah	43h	
		Reserved (Note 7)	68	127	27%	50%	44h	7Fh	
		LED 1 Independent Dim Mode							
		Continuous	128	143	50%	56%	80h	8Fh	
		Periodic Strobe (slow to fast)	144	169	56%	66%	90h	A9h	
		Random Strobe (slow to fast)	170	195	67%	76%	AAh	C3h	
		Reserved (Note 7)	196	255	77%	100%	C4h	FFh	
24	LED 1 Dim Coarse	LED 1 Off	0		0%		00h		0
		LED 1 100%	255		100%		FFh		
25	LED 1 Dim Fine		0		0%		00h		0
			255		100%		FFh		

26	LED 2 X	LED 2 X shift (NOTE 5)	0	255	0%	100%	00h	FFh	127
27	LED 2 Y	LED 2 Y shift (NOTE 5)	0	255	0%	100%	00h	FFh	0
28	LED 2 Red (Note 4)	RGB Control							255
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		RBG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BRG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BGR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GRB Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GBR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		CMY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		CYM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YCM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YMC Control							
		Blue Full Saturation	0		0%		00h		
		Blue off	255		100%		FFh		
		MCY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MYC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		Cycle & Random Modes. Scan Speed controlled by Red Channel							
		Slow Rate	0		0%		00h		
		Fast Rate	255		100%		FFh		

29	LED 2 Green	RGB Control							255
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		RBG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BRG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BGR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GRB Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GBR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		CMY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		CYM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YCM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YMC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MCY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MYC Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		

30	LED 2 Blue	RGB Control							255
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		RBG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BRG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BGR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GRB Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GBR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		CMY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		CYM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YCM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YMC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MCY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		MYC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		

31	LED 2 White	RGB Control							255
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		RBG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BRG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BGR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GRB Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GBR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CMY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CYM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YCM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YMC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MCY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MYC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
32	LED 2 Function	LED 2 Dim Tracking Mode							0
		Continuous	0	15	0%	6%	00h	0Fh	
		Periodic Strobe (slow to fast)	16	41	6%	16%	10h	29h	
		Random Strobe (slow to fast)	42	67	16%	26%	2Ah	43h	
		Reserved (Note 7)	68	127	27%	50%	44h	7Fh	
		LED 2 Independent Dim Mode							
		Continuous	128	143	50%	56%	80h	8Fh	
		Periodic Strobe (slow to fast)	144	169	56%	66%	90h	A9h	
		Random Strobe (slow to fast)	170	195	67%	76%	AAh	C3h	
		Reserved (Note 7)	196	255	77%	100%	C4h	FFh	
33	LED 2 Dim Coarse	LED 2 Off	0		0%		00h		0
		LED 2 100%	255		100%		FFh		
34	LED 2 Dim Fine		0		0%		00h		0
			255		100%		FFh		

35	LED 3 X	LED 3 X shift (NOTE 5)	0	255	0%	100%	00h	FFh	127
36	LED 3 Y	LED 3 Y shift (NOTE 5)	0	255	0%	100%	00h	FFh	0
37	LED 3 Red (Note 4)	RGB Control							255
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		RBG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BRG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BGR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GRB Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GBR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		CMY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		CYM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YCM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YMC Control							
		Blue Full Saturation	0		0%		00h		
		Blue off	255		100%		FFh		
		MCY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MYC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		Cycle & Random Modes. Scan Speed controlled by Red Channel							
		Slow Rate	0		0%		00h		
		Fast Rate	255		100%		FFh		

38	LED 3 Green	RGB Control							255
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		RBG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BRG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BGR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GRB Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GBR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		CMY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		CYM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YCM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YMC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MCY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MYC Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		

39	LED 3 Blue	RGB Control							255
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		RBG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BRG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BGR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GRB Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GBR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		CMY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		CYM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YCM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YMC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MCY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		MYC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		

40	LED 3 White	RGB Control							255
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		RBG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BRG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BGR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GRB Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GBR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CMY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CYM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YCM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YMC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MCY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MYC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
41	LED 3 Function	LED 3 Dim Tracking Mode							0
		Continuous	0	15	0%	6%	00h	0Fh	
		Periodic Strobe (slow to fast)	16	41	6%	16%	10h	29h	
		Random Strobe (slow to fast)	42	67	16%	26%	2Ah	43h	
		Reserved (Note 7)	68	127	27%	50%	44h	7Fh	
		LED 3 Independent Dim Mode							
		Continuous	128	143	50%	56%	80h	8Fh	
		Periodic Strobe (slow to fast)	144	169	56%	66%	90h	A9h	
		Random Strobe (slow to fast)	170	195	67%	76%	AAh	C3h	
		Reserved (Note 7)	196	255	77%	100%	C4h	FFh	
42	LED 3 Dim Coarse	LED 3 Off	0		0%		00h		0
		LED 3 100%	255		100%		FFh		
43	LED 3 Dim Fine		0		0%		00h		0
			255		100%		FFh		

44	LED 4 X	LED 4 X shift (NOTE 5)	0	255	0%	100%	00h	FFh	127
45	LED 4 Y	LED 4 Y shift (NOTE 5)	0	255	0%	100%	00h	FFh	0
46	LED 4 Red (Note 4)	RGB Control							255
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		RBG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BRG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BGR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GRB Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GBR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		CMY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		CYM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YCM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YMC Control							
		Blue Full Saturation	0		0%		00h		
		Blue off	255		100%		FFh		
		MCY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MYC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		Cycle & Random Modes. Scan Speed controlled by Red Channel							
		Slow Rate	0		0%		00h		
		Fast Rate	255		100%		FFh		

47	LED 4 Green	RGB Control							255
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		RBG Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		BRG Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		BGR Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		GRB Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GBR Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		CMY Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		CYM Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		YCM Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		YMC Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		MCY Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MYC Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		

48	LED 4 Blue	RGB Control							255
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		RBG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BRG Control							
		Green Off	0		0%		00h		
		Green Full Saturation	255		100%		FFh		
		BGR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		GRB Control							
		Blue Off	0		0%		00h		
		Blue Full Saturation	255		100%		FFh		
		GBR Control							
		Red Off	0		0%		00h		
		Red Full Saturation	255		100%		FFh		
		CMY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		CYM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YCM Control							
		Green Full Saturation	0		0%		00h		
		Green Off	255		100%		FFh		
		YMC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		
		MCY Control							
		Blue Full Saturation	0		0%		00h		
		Blue Off	255		100%		FFh		
		MYC Control							
		Red Full Saturation	0		0%		00h		
		Red Off	255		100%		FFh		

49	LED 4 White	RGB Control							255
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		RBG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BRG Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		BGR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GRB Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		GBR Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CMY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		CYM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YCM Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		YMC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MCY Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
		MYC Control							
		White Off	0		0%		00h		
		White Full	255		100%		FFh		
50	LED 4 Function	LED 4 Dim Tracking Mode							0
		Continuous	0	15	0%	6%	00h	0Fh	
		Periodic Strobe (slow to fast)	16	41	6%	16%	10h	29h	
		Random Strobe (slow to fast)	42	67	16%	26%	2Ah	43h	
		Reserved (Note 7)	68	127	27%	50%	44h	7Fh	
		LED 4 Independent Dim Mode							
		Continuous	128	143	50%	56%	80h	8Fh	
		Periodic Strobe (slow to fast)	144	169	56%	66%	90h	A9h	
		Random Strobe (slow to fast)	170	195	67%	76%	AAh	C3h	
		Reserved (Note 7)	196	255	77%	100%	C4h	FFh	
51	LED 4 Dim Coarse	LED 4 Off	0		0%		00h		0
		LED 4 100%	255		100%		FFh		
52	LED 4 Dim Fine		0		0%		00h		0
			255		100%		FFh		

NOTES

1 142 Discrete Static and Multi-Step macros will be defined. These will require macro xfade and speed channels.

Static Macro X fade and Playback operation: When changing between static macros, the X fade time from channel 13 will be applied to the change. X fade will commence when the change is received.

Playback speed operation

0-128 fastest playback time - crossfade off

129-255 time defined by table on accompanying chart noted on the Xfade Speed Times Tab.

Multi-Step macro X fade and Playback operation:

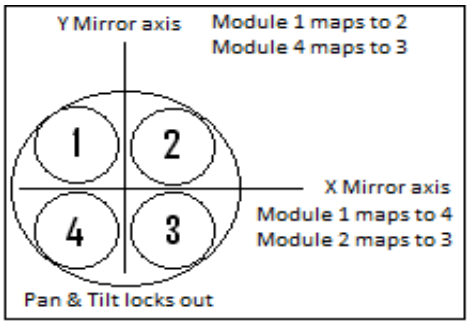
X fade channel operation	**Playback speed operation**
0 stops crossfade	0-126 Reverse playback Fast to slow
1-127 decreases crossfade time (* <1)	127-128 Stop playback
128 cross fade speed is as programmed (*1)	129-255 Forward playback slow to Fast
129-255 crossfade time (* >1)	

2 Module Calibration allows for fine calibration of X/Y LED module positions. Upon entering Calibration mode, the X/Y value offsets are stored to align all beams. These calibration values are retained in eeprom, and used as X/Y offsets to ensure that beams are aligned. This is now a menu option only.

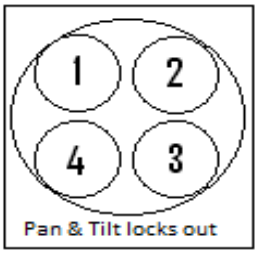
3 X & Y Mirror affect all module parameters (X, Y, Red, Green, Blue, White, Function and Dim). See accompanying chart

X mirror: Module 1 maps to 4, Module 4 maps to 1, Module 2 maps to 3, Module 3 maps to 2.

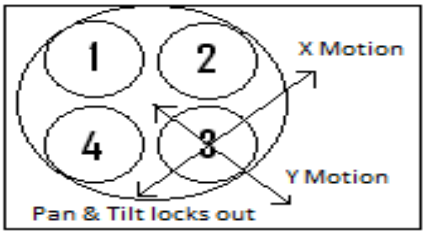
Y mirror: Module 1 maps to 2, Module 2 maps to 1, Module 4 maps to 3, Module 3 maps to 4



4 LED modules are arranged according to the chart.



5 LED X Y shift is defined according to the drawing



6 White balance adjusts RGB values for a balanced white output. Default is on, this value is not retained through a power cycle.

7 Reserved ranges should function according to the controller default value.

8 RDM Manufacturers ID: 0x4c52

9 RDM Device ID: 0x582