SolaFrame Theatre© Luminaire DMX Control Protocol *

Revision: 1.4 27-Feb-18

Standard Prototocol	
Channel	**Construct**
1	Pan Coarse
2	Pan Fine
3	Tilt Coarse
4	Tilt Fine
5	Color Mix Function
6	Cyan
7	Magenta
8	Yellow
9	CTO
10	Static Color Function
11	Static Color Position
12	Gobo 1 Function
13	Gobo 1 Position
14	Gobo 2 Function
15	Gobo 2 Position
16	Gobo 2 Rotate Function
17	Gobo 2 Rotate Coarse
18	Gobo 2 Rotate Fine
19	Blade 1 Angle A
20	Blade 1 Angle B
21	Blade 2 Angle A
22	Blade 2 Angle B
23	Blade 3 Angle A
24	Blade 3 Angle B
25	Blade 4 Angle A
26	Blade 4 Angle B
27	Frame Rotation Coarse
28	Frame Rotation Fine
29	Animation Function
30	Prism Function
31	Prism Rotate Coarse
32	Prism Rotate Fine
33	Frost
34	Focus Coarse
35	Focus Fine
36	Zoom Coarse
37	Zoom Fine
38	Iris
39	Shutter/LED Function
40	Shutter/LED
41	Dim Coarse
42	Dim Fine
43	Dim Macro
44	Dim Macro Speed
45	Dim Macro Xfade
46	Mspeed
47	Control

SolaTheatre Luminaire DMX Control Protocol *

Channel	Marketing Construct	Description	Decimal Low	Decimal High	Percent Low	Percent High	Hex Low	Hex High	Controller Defaults
1	Pan	Pan Coarse	0	255	0%	100%	00h	FFh	127
2	Pan	Pan Fine	0	255	0%	100%	00h	FFh	255
3	Tilt	Tilt Coarse	0	255	0%	100%	00h	FFh	127
4	Tilt	Tilt Fine	0	255	0%	100%	00h	FFh	255
5	Color Mix Function	Pure Mix	0	31	0%	12%	00h	1Fh	0
		Cycle	32	47	13%	18%	20h	2Fh	
		Random	48	63	19%	25%	30h	3Fh	
		Reserved (Note 3)	64	255	25%	100%	40h	FFh	
6 7 8	Cyan Magenta Yellow	Pure Mix							255
		Full Saturation	0		100%		00h		
		Open	255		0%		FFh		
		Cycle & Random Modes. Scan Speed controlled by Cyan Channel							
		Slow Rate	0		0%		00h		
		Fast Rate	255		100%		FFh		
9	CTO	Full Saturation	0		0%		00h		255
		Open (White)	255		100%		FFh		
10	Static Color Function	Indexed	0	15	0%	6%	00h	0Fh	48
		Forward Spin	16	31	6%	12%	10h	1Fh	
		Reverse Spin	32	47	13%	18%	20h	2Fh	
		Continuous (Note 1)	48	63	19%	25%	30h	3Fh	
		Fast Scan	64	79	25%	31%	40h	4Fh	
		Random	80	95	31%	37%	50h	5Fh	
		Reserved (Note 3)	96	255	38%	100%	60h	FFh	
11	Static Color Position	Indexed, Scan & Blink modes							0
		1. Open (White)	0	14	0%	5%	00h	0Eh	
		2. (Open/Red)	15	29	6%	11%	0Fh	1Dh	
		3. (Red)	30	44	12%	17%	1Eh	2Ch	
		4. (Red/Blue)	45	59	18%	23%	2Dh	3Bh	
		5. (Blue)	60	74	24%	29%	3Ch	4Ah	
		6. (Blue/Green)	75	89	29%	35%	4Bh	59h	
		7. (Green)	90	104	35%	41%	5Ah	68h	
		8. (Green/Yellow)	105	119	41%	47%	69h	77h	
		9. (Yellow)	120	134	47%	53%	78h	86h	
		10. (Yellow/Orange)	135	149	53%	58%	87h	95h	
		11. (Orange)	150	164	59%	64%	96h	A4h	
		12. (Orange/Magenta)	165	179	65%	70%	A5h	B3h	
		13. (Magenta)	180	194	71%	76%	B4h	C2h	
		14. (Magenta/Dark Blue)	195	209	76%	82%	C3h	D1h	
		15. (Dark Blue)	210	224	82%	88%	D2h	E0h	
		16. (Dark Blue/Open)	225	239	88%	94%	E1h	EFh	
		1. Open (White)	240	255	94%	100%	F0h	FFh	
		Spin & Random modes							
		Stop	0		0%	0%	00h	00h	
		Slowest to fastest	255		100%	0%	FFh	00h	
		Continuous mode							
		Positioning from 0-360 degrees	0	255	0%	100%	00h	FFh	

12	Gobo 1 Function	Indexed	0	15	0%	6%	00h	0Fh	0
		Forward Wheel Spin	16	31	6%	12%	10h	1Fh	
		Reverse Wheel Spin	32	47	13%	18%	20h	2Fh	
		Scan	48	63	19%	25%	30h	3Fh	
		Random	64	79	25%	31%	40h	4Fh	
		Reserved (Note 3)	80	255	31%	100%	50h	FFh	
13	Gobo 1 Position	Indexed, Scan & Blink modes							0
		1. (Open)	0	24	0%	9%	00h	18h	
		2. (Waves)	25	51	10%	20%	19h	33h	
		3. (Splash)	52	75	20%	29%	34h	4Bh	
		4. (Triangles)	76	101	30%	40%	4Ch	65h	
		5. (Polymoba)	102	127	40%	50%	66h	7Fh	
		6. (Stars)	128	152	50%	60%	80h	98h	
		7. (Modern)	153	178	60%	70%	99h	B2h	
		8. (Crescents)	179	203	70%	80%	B3h	CBh	
		9. (Twist)	204	229	80%	90%	CCh	E5h	
		1. (Open)	230	255	90%	100%	E6h	FFh	
		Spin & Random modes							
		Rotate Stop	0	3	0%	1%	00h	03h	
		Slowest to fastest	4	255	2%	100%	04h	FFh	
14	Gobo 2 Function	Indexed	0	15	0%	6%	00h	0Fh	0
		Forward Wheel Spin	16	31	6%	12%	10h	1Fh	
		Reverse Wheel Spin	32	47	13%	18%	20h	2Fh	
		Scan	48	63	19%	25%	30h	3Fh	
		Random	64	79	25%	31%	40h	4Fh	
		Reserved (Note 3)	80	255	31%	100%	50h	FFh	
15	Gobo 2 Position	Indexed, Scan modes							0
		1. (Open)	0	27	0%	11%	00h	1Bh	
		2. (Foliage)	28	55	11%	22%	1Ch	37h	
		3. (Fracture)	56	84	22%	33%	38h	54h	
		4. (Zylem)	85	112	33%	44%	55h	70h	
		5. (Valient)	113	141	44%	55%	71h	8Dh	
		6. (Fire)	142	169	56%	66%	8Eh	A9h	
		7. (Bars)	170	198	67%	78%	AAh	C6h	
		8. (Pin Wheel)	199	226	78%	89%	C7h	E2h	
		1. (Open)	227	255	89%	100%	E3h	FFh	
		Spin & Random modes							
		Rotate Stop	0	3	0%	1%	00h	03h	
		Slowest to fastest	4	255	2%	100%	04h	FFh	
16	Gobo 2 Rotate Function	Indexed	0	15	0%	6%	00h	0Fh	0
		Forward Rotate	16	31	6%	12%	10h	1Fh	
		Reverse Rotate	32	47	13%	18%	20h	2Fh	
		Forward Strobe Rotate (Gobo animate)	48	63	19%	25%	30h	3Fh	
		Reverse Strobe Rotate (Gobo animate)	64	79	25%	31%	40h	4Fh	
		Reserved (Note 3)	80	255	31%	100%	50h	FFh	
17	Gobo 2 Rotate Coarse	Indexed/Blink Modes							127
		Position 0-360 degrees	0	255	0%	100%	00h	FFh	
		Forward/Reverse/Forward Strobe/Reverse Strobe Rotate Modes							
		Rotate Stop	0	3	0%	1%	00h	03h	
		Rotate Slowest to Fastest	4	255	2%	100%	04h	FFh	
18	Gobo 2 Rotate Fine	Indexed Mode							255
		Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	

19	Blade 1 Angle A	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
20	Blade 1 Angle B	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
21	Blade 2 Angle A	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
22	Blade 2 Angle B	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
23	Blade 3 Angle A	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
24	Blade 3Angle B	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
25	Blade 4 Angle A	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
26	Blade 4 Angle B	Out of the light path	0		0%		00h		0
		Full in the light path	255		100%		FFh		
27	Frame Rotation Coarse	Frame Angle Negative	0	127	0%	50%	00h	7Fh	0
		Frame Angle 0 degrees	128		50%		80h		
		Frame Angle positive	129	255	51%	100%	81h	FFh	
28	Frame Rotation Fine	Frame Angle Negative	0	127	0%	50%	00h	7Fh	0
		Frame Angle 0 degrees	128		50%		80h		
		Frame Angle positive	129	255	51%	100%	81h	FFh	
29	Animation Function	Disengaged	0	8	0%	3%	00h	08h	0
		Engaged, Forward Spin speed slow to fast	9	70	4%	27%	09h	46h	
		Engaged, Reverse Spin speed slow to fast	71	131	28%	51%	47h	83h	
		Engaged, Forward Strobe rotate slow to fast	132	193	52%	76%	84h	C1h	
		Engaged, Reverse Strobe Rotate slow to fast	194	255	76%	100%	C2h	FFh	
30	Prism Function	Disengaged	0	15	0%	6%	00h	0Fh	0
		Continuous	16	31	6%	12%	10h	1Fh	
		Forward Spin	32	47	13%	18%	20h	2Fh	
		Reverse Spin	48	63	19%	25%	30h	3Fh	
		Forward Strobe Rotate (Effect animate)	64	79	25%	31%	40h	4Fh	
		Reverse Strobe Rotate (Effect animate)	80	95	31%	37%	50h	5Fh	
		Reserved (Note 3)	96	255	38%	100%	60h	FFh	
31	Prism Rotate Coarse	Continuous mode							127
		Position 0-360 degrees	0	255	0%	100%	00h	FFh	
		Forward/Reverse/Forward Strobe/Reverse Strobe Rotate Modes							
		Rotate Stop	0	3	0%	1%	00h	03h	
		Rotate Slowest to Fastest	4	255	2%	100%	04h	FFh	
32	Prism Rotate Fine	Continuous mode							255
		Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	
33	Frost	Disengaged	0	1	0%		00h		0
		Variable Frost	2	254	1%		02h		
		Full Frost	255		100%		FFh		
34	Focus Coarse	Focus In	0		0%		00h		127
		Focus Out	255		100%		FFh		
35	Focus Fine	Focus In	0		0%		00h		255
		Focus Out	255		100%		FFh		
36	Zoom Coarse	Zoom In	0		0%		00h		127
		Zoom Out	255		100%		FFh		
37	Zoom Fine	Zoom In	0		0%		00h		255
		Zoom Out	255		100%		FFh		
38	Iris	Iris Closed	0		0%		00h		255
		Iris Open	255		100%		FFh		

39	Shutter/LED Functions	Normal Shutter 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 3)	96	255	38%	100%	60h	FFh	
40	Shutter/LED	Normal/Random/Sync Random shutter functions.							255
		Close	0	23	0%	9%	00h	17h	
		Strobe Rate (slow to fast)	24	229	9%	90%	18h	E5h	
		Open	230	255	90%	100%	E6h	FFh	
41	Dim Coarse	Close	0		0%		00h		0
		Open	255		100%		FFh		
42	Dim Fine		0		0%		00h		0
			255		100%		FFh		
43	Dim Macro (Note 2)	Macro off	0	3	0%	1%	00h	03h	0
		Macro 1	4	7	2%	3%	04h	07h	
		Macro 2	8	11	3%	4%	08h	0Bh	
		Macro 3	12	15	5%	6%	0Ch	0Fh	
		Macro 4	16	19	6%	7%	10h	13h	
		Macro 5	20	23	8%	9%	14h	17h	
		…							
		Macro 63	252	255	99%	100%	FCh	FFh	
44	Dim Macro Speed	Stop	0		0%	0%	00h	00h	128
		Decreasing speed	1	127	0%	50%	01h	7Fh	
		Programmed speed x1	128				80h		
		Increasing speed	129	255	51%	100%	81h	FFh	
45	Dim Macro X fade	Stop	0		0%		00h	00h	128
		Decreasing speed	1	127	0%	50%	01h	7Fh	
		Programmed speed x1	128		50%		80h		
		Increasing speed	129	255	51%	100%	81h	FFh	
46	Mspeed	Disable	0	3	0%	1%	00h	03h	0
		Longest (252.7 seconds)	4		2%		04h		
		Shortest (0.15 seconds)	255		100%		FFh		
47	Control	The Control channel should not be crossfaded. No shutter channel requirement.							0
		Safe (normal operation)	0	9	0%	4%	00h	09h	
		Reserved (Note 3)	10	19	4%	7%	0Ah	13h	
		Display Off (send 20 packets)	20	28	8%	11%	14h	1Ch	
		Display On (send 20 packets)	29	35	11%	14%	1Dh	23h	
		Reserved (Note 3)	36	48	14%	19%	24h	30h	
		Home All (send 20 packets)	49	68	19%	27%	31h	44h	
		Shutdown (send 80 packets)	69	75	27%	29%	45h	4Bh	
		Reserved (Note 3)	90	96	35%	38%	5Ah	60h	
		Disable Pan/Tilt motors	97	103	38%	40%	61h	67h	
		Reserved (Note 3)	104	160	41%	63%	68h	A0h	
		Internal Prog 1 scene 1-8 EEPROM	161	171	63%	67%	A1h	ABh	
		Internal Prog 2 scene 9-16 EEPROM	172	182	67%	71%	ACh	B6h	
		Internal Prog 3 scene 17-24 EEPROM	183	193	72%	76%	B7h	C1h	
		Internal Prog 4 scene 25-32 EEPROM	194	204	76%	80%	C2h	CCh	
		Internal Prog 5 scene 33-40 EEPROM	205	215	80%	84%	CDh	D7h	
		Internal Prog 6 scene 41-48 EEPROM	216	226	85%	89%	D8h	E2h	
		Internal Prog 7 scene 49-56 EEPROM	227	237	89%	93%	E3h	EDh	
		Reserved (Note 3)	238	255	93%	100%	EEh	FFh	

NOTES

1 Continuous mode should take quickest path from 255-0, and 0-255.

Continuous mode color wheel aperture centers

Color	Center of color DMX value
Open	0
Red	28
Blue	64
Green	95
Yellow	127
Orange	166
Magenta	192
Dark Blue	224

2 63 Discrete multi step macros to be defined later. These will require macro speed and x fade channels. The macros will operate independently. The Xfade and speed channels act as multipliers of the programmed speed in the discrete macro steps.

Speed / X fade channel operation

0 stops playback or crossfade

1-127 decreases playback speed / crossfade time (* <1)

128 playback or cross fade speed is as programmed (*1)

129-255 increases playback speed / crossfade time (* >1)

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

4 RDM Manufacturers ID: 0x4c52

5 RDM Device ID: 0x547