

SolaFrame 3000® Luminaire DMX Control Protocol *

1.0

25-Jul-18

Revision History

Revision Revision Notes

1.0 Initial Release - 25 Jul 18

Standard Protocol	
Channel	Construct
1	Pan Coarse
2	Pan Fine
3	Tilt Coarse
4	Tilt Fine
5	Mix Color 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
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15	Gobo 1 Rotate Coarse
16	Gobo 1 Rotate Fine
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30	Prism Function
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49	Control

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SolaFrame 3000® 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	Mix Color 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 5)	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	Full Speed Control									
		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 5)	96	255	38%	100%	60h	FFh					
11	Static Color Position	Indexed modes									
		1. Open (White)	0	16	0%	6%	00h	10h	0		
		2. Open/Red	17	32	7%	13%	11h	20h			
		3. Red	33	48	13%	19%	21h	30h			
		4. Red/Blue	49	64	19%	25%	31h	40h			
		5. Blue	65	80	25%	31%	41h	50h			
		6. Blue/Green	81	96	32%	38%	51h	60h			
		7. Green	97	112	38%	44%	61h	70h			
		8. Green/TM-30	113	128	44%	50%	71h	80h			
		9. TM-30	129	144	51%	56%	81h	90h			
		10. TM-30/Orange	145	160	57%	63%	91h	A0h			
		11. Orange	161	176	63%	69%	A1h	B0h			
		12. Orange/Dark Blue)	177	192	69%	75%	B1h	C0h			
		13. Dark Blue	193	208	76%	82%	C1h	D0h			
		14. Dark Blue/Open	209	224	82%	88%	D1h	E0h			
		1. Open (White)	225	255	88%	100%	E1h	FFh			
		Scan modes									
		1. Open/Red	0	32	0%	13%	00h	20h			
		2. Red/Blue	33	64	13%	25%	21h	40h			
		3. Blue/Green	65	96	25%	38%	41h	60h			
		4. Green/TM-30	97	128	38%	50%	61h	80h			
		5. TM-30/Orange	129	160	51%	63%	81h	A0h			
		6. Orange/Dark Blue	161	192	63%	75%	A1h	C0h			
		7. Dark Blue/Open	193	224	76%	88%	C1h	E0h			
		1. Open/Red	225	255	88%	100%	E1h	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 (Note 1)	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 5)	80	255	31%	100%	50h	FFh			

13	Gobo 1 Position	Indexed, & Scan modes							0
		1. (Open)	0	15	0%	6%	00h	0Fh	
		2. (Bar)	16	47	6%	18%	10h	2Fh	
		3. (Stripe Strips)	48	79	19%	31%	30h	4Fh	
		4. (Crescents)	80	111	31%	44%	50h	6Fh	
		5. (Geoswirl)	112	143	44%	56%	70h	8Fh	
		6. (Seashell)	144	175	56%	69%	90h	AFh	
		7. (Pinwheel Dots)	176	207	69%	81%	B0h	CFh	
		8. (Ice)	208	239	82%	94%	D0h	EFh	
		1. (Open)	240	255	94%	100%	F0h	FFh	
Spin & Random modes									
Rotate Stop		0	3	0%	1%	00h	03h		
Slowest to fastest		4	255	2%	100%	04h	FFh		
14	Gobo 1 Rotate Function	Indexed (Note 1)							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 5)	80	255	31%	100%	50h	FFh	
15	Gobo 1 Rotate Coarse	Indexed							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		
16	Gobo 1 Rotate Fine	Indexed Mode							255
		Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	
17	Gobo 2 Function	Indexed (Note 1)							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 5)	80	255	31%	100%	50h	FFh	
18	Gobo 2 Position	Indexed & Scan modes							0
		1. (Open)	0	15	0%	6%	00h	0Fh	
		2. (Tunnel)	16	47	6%	18%	10h	2Fh	
		3. (Triangles)	48	79	19%	31%	30h	4Fh	
		4. (Organic)	80	111	31%	44%	50h	6Fh	
		5. (Shower)	112	143	44%	56%	70h	8Fh	
		6. (Abstract)	144	175	56%	69%	90h	AFh	
		7. (Cobble)	176	207	69%	81%	B0h	CFh	
		8. (Endgrain)	208	239	82%	94%	D0h	EFh	
		1. (Open)	240	255	94%	100%	F0h	FFh	
Spin & Random modes									
Rotate Stop		0	3	0%	1%	00h	03h		
Slowest to fastest		4	255	2%	100%	04h	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 3 Angle 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
		Frame Angle 0 degrees	128		50%		80h		
		Frame Angle positive	129	255	51%	100%	81h	FFh	
28	Frame Rotation Fine	Frame Angle Negative							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 5)	96	255	38%	100%	60h	FFh		
31	Prism Rotate Coarse	Continuous mode								
		Position 0-360 degrees	0	255	0%	100%	00h	FFh	127	
		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		
Continuous mode										
32	Prism Rotate Fine	Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	255	
		Continuous mode								
33	Frost	Open (hard edge)	0		0%	0%	00h	00h	0	
		Variable edge (hard to soft)	1	127	0%	50%	01h	7Fh		
		Soft Edge	128	135	50%	53%	80h	87h		
		Periodic strobe	136	151	53%	59%	88h	97h		
		Random strobe	152	167	60%	65%	98h	A7h		
		Open (hard edge)	168	225	66%	88%	A8h	E1h		
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	Auto Focus	Auto Focus Off	0	15	0%	6%	00h	0Fh	0	
		5m	16	31	6%	12%	10h	1Fh		
		7.5m	32	47	13%	18%	20h	2Fh		
		10m	48	255	19%	100%	30h	FFh		
39	Auto Focus Fine	Focus In Fine	0		0%		00h		0	
		Focus Out Fine	255		100%		FFh			
40	Iris	Iris Closed	0		0%		00h		255	
		Iris Open	255		100%		FFh			
41	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 (Note 3)	64	95	25%	37%	40h	5Fh		
		Reserved (Note 5)	96	255	38%	100%	60h	FFh		
42	Shutter/LED	Normal/Random/Sync Random shutter functions.								
		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		
43	Dim Coarse	Close	0		0%		00h			0
		Open	255		100%		FFh			
44	Dim Fine		0		0%		00h		0	
			255		100%		FFh			

45	LED Animations (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			
46	LED Animation Speed	Stop	0		0%	0%	00h	00h	128	
		Decreased speed	1	127	0%	50%	01h	7Fh		
		Standard speed x1	128				80h			
		Increased speed	129	255	51%	100%	81h	FFh		
47	LED Animation X fade	Stop	0		0%		00h	00h	128	
		Decreased speed	1	127	0%	50%	01h	7Fh		
		Standard speed x1	128				80h			
		Increased speed	129	255	51%	100%	81h	FFh		
48	Mspeed	Disable	0	3	0%	1%	00h	03h	0	
		Longest (252.7 seconds)	4		2%		04h			
		Shortest (0.15 seconds)	255		100%		FFh			
49	Control	The Control channel should not be crossfaded. No shutter channel requirement.								
		Safe (normal operation)	0	9	0%	4%	00h	09h	0	
		Reserved (Note 5)	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 5)	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		
		Fan Control Modes (NOTE 4)								
		Studio fan control mode (send 20 packets)	76	82	30%	32%	4Ch	52h		
		Continuous fan control mode (send 20 packets)	83	89	33%	35%	53h	59h		
		Standard fan control mode (send 20 packets)	90	96	35%	38%	5Ah	60h		
		Disable Pan/Tilt motors	97	103	38%	40%	61h	67h		
		Outrig Mode On (Note 7)	104	109	41%	43%	68h	6Dh		
		Outrig Mode Off (Note 7)	110	115	43%	45%	6Eh	73h		
		Reserved (Note 5)	116	160	45%	63%	74h	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 5)	238	255	93%	100%	EEh	FFh				

NOTES

- 1 Continuous/Index 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	36
Blue	72
Green	109
TM-30	146
Orange	183
Dark Blue	220

- 2 56 of 63 Discrete multi step LED animations 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

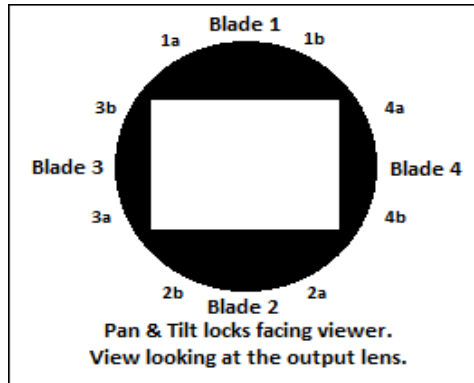
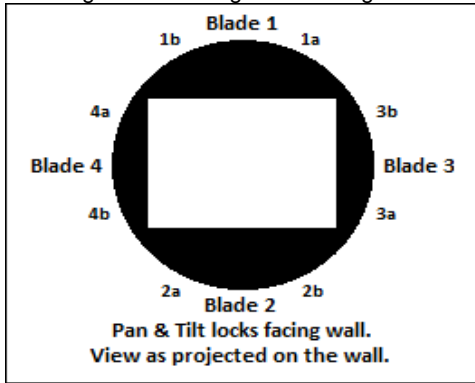
0 stops playback or crossfade

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 Synchronous Random Strobes are synchronous across fixtures.
- 4 Fan control modes are retentive. When the fixture is turned off it will retain the selected fan mode.
- 5 Reserved ranges should function according to the controller default value.
- 6 Framing blades arranged according to chart below.



- 7 Outrig Mode is retentive. When the fixture is turned off it will retain the selected outrig mode.
- 8 RDM Manufacturers ID: 0x4c52
- 9 RDM Device ID: 0x5c3

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