

# SolaFrame 750<sup>©</sup> Luminaire DMX Control Protocol \*

Revision: 1.4

27-Feb-18

Standard Protocol	
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 1 Rotate Function
15	Gobo 1 Rotate Coarse
16	Gobo 1 Rotate Fine
17	Blade 1 Angle A
18	Blade 1 Angle B
19	Blade 2 Angle A
20	Blade 2 Angle B
21	Blade 3 Angle A
22	Blade 3 Angle B
23	Blade 4 Angle A
24	Blade 4 Angle B
25	Frame Rotation Coarse
26	Frame Rotation Fine
27	Animation Function
28	Prism Function
29	Prism Rotate Coarse
30	Prism Rotate Fine
31	Frost
32	Focus Coarse
33	Focus Fine
34	Zoom Coarse
35	Zoom Fine
36	Auto Focus
37	AutoFocus Fine
38	Iris
39	Shutter/LED Function
40	Shutter/LED
41	Dim Coarse
42	Dim Fine
43	LED Animations
44	LED Animation Speed
45	LED Animation Xfade
46	Mspeed
47	Control

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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 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 1 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 5)	96	255	38%	100%	60h	FFh			
11	Static Color 1 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/Purple)	165	179	65%	70%	A5h	B3h			
		13. (Purple)	180	194	71%	76%	B4h	C2h			
		14. (Purple/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 5)	80	255	31%	100%	50h	FFh		
13	Gobo 1 Position	Indexed, Scan & Blink modes							0	
		1. (Open)	0	31	0%	12%	00h	1Fh		
		2. (Block Fan)	32	63	13%	25%	20h	3Fh		
		3. (Organic)	64	95	25%	37%	40h	5Fh		
		4. (Quadrangles)	96	127	38%	50%	60h	7Fh		
		5. (Shower)	128	159	50%	62%	80h	9Fh		
		6. (Psych)	160	191	63%	75%	A0h	BFh		
		7. (StripeStrips)	192	223	75%	87%	C0h	DFh		
		8. (Tunnel)	224	255	88%	100%	E0h	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	Full Speed Control							0	
		Indexed	0	15	0%	6%	00h	0Fh		
		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/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		
16	Gobo 1 Rotate Fine	Indexed Mode							255	
		Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh		

17	Blade 1 Angle A	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
18	Blade 1 Angle B	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
19	Blade 2 Angle A	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
20	Blade 2 Angle B	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
21	Blade 3 Angle A	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
22	Blade 3 Angle B	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
23	Blade 4 Angle A	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
24	Blade 4 Angle B	Out of the light path	0		0%		00h		0	
		Full in the light path	255		100%		FFh			
25	Frame Rotation Coarse	Frame Angle Negative	0	127	0%	50%	00h	7Fh	99	
		Frame Angle 0 degrees	128		50%		80h			
		Frame Angle positive	129	255	51%	100%	81h	FFh		
26	Frame Rotation Fine	Frame Angle Negative	0	127	0%	50%	00h	7Fh	239	
		Frame Angle 0 degrees	128		50%		80h			
		Frame Angle positive	129	255	51%	100%	81h	FFh		
27	Animation 1 Function	Disengaged	0	3	0%	1%	00h	03h	0	
		Engaged, static	4	6	2%	2%	04h	06h		
		Engaged, motion stopped	7	8	3%	3%	07h	08h		
		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		
28	Prism Function	Engaged, Reverse Strobe Rotate slow to fast	194	255	76%	100%	C2h	FFh	0	
		Disengaged	0	15	0%	6%	00h	0Fh		
		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				
29	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		
30	Prism Rotate Fine	Rotate Slowest to Fastest	4	255	2%	100%	04h	FFh	255	
		Continuous mode								
31	Frost	Low Order Byte 0-360 degrees	0	255	0%	100%	00h	FFh	0	
		Open (hard edge)	0		0%	0%	00h	00h		
		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		
32	Focus Coarse	Reserved (Note 5)	168	225	66%	88%	A8h	E1h	127	
		Focus In	0		0%		00h			
33	Focus Fine	Focus Out	255		100%		FFh	255		
		Focus In	0		0%		00h			
34	Zoom Coarse	Focus Out	255		100%		FFh	127		
		Zoom In	0		0%		00h			
35	Zoom Fine	Zoom Out	255		100%		FFh	255		
		Zoom In	0		0%		00h			

36	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	
37	Auto Focus Fine	Focus In Fine	0		0%		00h		0
		Focus Out Fine	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 (Note 3)	64	95	25%	37%	40h	5Fh	
		Reserved (Note 5)	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	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	
		...							
		Reserved (Note 5)	64	255	25%	100%	40h	FFh	
44	LED Animation 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	LED Animation 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		

		The Control channel should not be crossfaded. No shutter channel requirement.							
47	Control (Note 4)	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	
		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	
		Reserved (Note 5)	104	130	41%	51%	68h	82h	
		Audio Sync	131	160	51%	63%	83h	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 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	30
Blue	61
Green	94
Yellow	126
Orange	158
Purple	190
Dark Blue	221

- 2 15 Discrete multi step LED animations. These 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 RDM Manufacturers ID: 0x4c52
- 7 RDM Device ID: 0x59f

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