

SolaWash 1000® Luminaire Control Protocol

Revision: 1.0
Sep-2019

Revision History

1.0 Initial release - Sep-2019

Standard Protocol	
Channel	Function
1	Pan Coarse
2	Pan Fine
3	Tilt Coarse
4	Tilt Fine
5	Color Mix Mode
6	Cyan
7	Magenta
8	Yellow
9	CTO
10	Static Color 1 Mode
11	Static Color 1
12	Blade 1 Angle A
13	Blade 1 Angle B
14	Blade 2 Angle A
15	Blade 2 Angle B
16	Blade 3 Angle A
17	Blade 3 Angle B
18	Blade 4 Angle A
19	Blade 4 Angle B
20	Frame Rotation Coarse
21	Frame Rotation Fine
22	Light Frost
23	Heavy Frost
24	Focus Coarse
25	Focus Fine
26	Zoom Coarse
27	Zoom Fine
28	Iris
29	Shutter/LED Mode
30	Shutter/LED
31	Dim Coarse
32	Dim Fine
33	LED Animation Mode
34	LED Animation
35	LED Animation Crossfade
36	Mspeed
37	Control

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SolaWash 1000[®] Luminaire Standard Control Protocol

Channel	Function	Description	Decimal Low	Decimal High	Percent Low	Percent High	Hex Low	Hex High	Controller Default	
1	Pan	Coarse	0	255	0%	100%	00h	FFh	127	
2	Pan	Fine	0	255	0%	100%	00h	FFh	255	
3	Tilt	Coarse	0	255	0%	100%	00h	FFh	127	
4	Tilt	Fine	0	255	0%	100%	00h	FFh	255	
5	Color Mix Mode	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	Cyan	Pure Mix								255
		Full saturation to open	0	255	0%	100%	00h	FFh		
		Cycle & Random								
		Slow to fast	0	255	0%	100%	00h	FFh		
7	Magenta	Full saturation to open	0	255	0%	100%	00h	FFh	255	
8	Yellow	Full saturation to open	0	255	0%	100%	00h	FFh	255	
9	CTO	Full saturation to open	0	255	0%	100%	00h	FFh	255	
10	Static Color Mode	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	Indexed								0
		Open	0	15	0%	6%	00h	0Fh		
		Open/Red	16	30	6%	12%	10h	1Eh		
		Red	31	45	12%	18%	1Fh	2Dh		
		Red/Blue	46	60	18%	24%	2Eh	3Ch		
		Blue	61	75	24%	29%	3Dh	4Bh		
		Blue/Green	76	90	30%	35%	4Ch	5Ah		
		Green	91	105	36%	41%	5Bh	69h		
		Green/TM-30	106	120	42%	47%	6Ah	78h		
		TM-30	121	135	47%	53%	79h	87h		
		TM-30/Orange	136	150	53%	59%	88h	96h		
		Orange	151	165	59%	65%	97h	A5h		
		Orange/Purple	166	180	65%	71%	A6h	B4h		
		Purple	181	195	71%	76%	B5h	C3h		
		Purple/Dark Blue	196	210	77%	82%	C4h	D2h		
		Dark Blue	211	225	83%	88%	D3h	E1h		
		Dark Blue/Open	226	240	89%	94%	E2h	F0h		
		Open	241	255	95%	100%	F1h	FFh		
		Scan								
		Open/Red	0	31	0%	12%	00h	1Fh		
		Red/Blue	32	63	13%	25%	20h	3Fh		
		Blue/Green	64	95	25%	37%	40h	5Fh		
		Green/TM-30	96	127	38%	50%	60h	7Fh		
		TM-30/Orange	128	159	50%	62%	80h	9Fh		
		Orange/Purple	160	191	63%	75%	A0h	BFh		
		Purple/Dark Blue	192	223	75%	87%	C0h	DFh		
		Dark Blue/Open	224	255	88%	100%	E0h	FFh		
		Spin & Random								
		Stop	0	0	0%	0%	00h	00h		
		Slow to fast	1	255	0%	100%	01h	FFh		
		Continuous								
		Positioning from 0-360 degrees	0	255	0%	100%	00h	FFh		

12	Blade 1 Angle A	Removed to inserted	0	255	0%	100%	00h	FFh	0
13	Blade 1 Angle B	Removed to inserted	0	255	0%	100%	00h	FFh	0
14	Blade 2 Angle A	Removed to inserted	0	255	0%	100%	00h	FFh	0
15	Blade 2 Angle B	Removed to inserted	0	255	0%	100%	00h	FFh	0
16	Blade 3 Angle A	Removed to inserted	0	255	0%	100%	00h	FFh	0
17	Blade 3 Angle B	Removed to inserted	0	255	0%	100%	00h	FFh	0
18	Blade 4 Angle A	Removed to inserted	0	255	0%	100%	00h	FFh	0
19	Blade 4 Angle B	Removed to inserted	0	255	0%	100%	00h	FFh	0
20	Frame Rotation	Coarse	0	255	0%	100%	00h	FFh	127
21	Frame Rotation	Fine	0	255	0%	100%	00h	FFh	255
22	Light Frost	Removed to inserted	0	255	0%	100%	00h	FFh	0
23	Heavy Frost	Removed to inserted	0	255	0%	100%	00h	FFh	0
24	Focus	Coarse	0	255	0%	100%	00h	FFh	127
25	Focus	Fine	0	255	0%	100%	00h	FFh	255
26	Zoom	Coarse	0	255	0%	100%	00h	FFh	127
27	Zoom	Fine	0	255	0%	100%	00h	FFh	255
28	Iris	Closed to open	0	255	0%	100%	00h	FFh	255
29	Strobe Mode	Normal	0	31	0%	12%	00h	1Fh	0
		Random	32	63	13%	25%	20h	3Fh	
		Synchronous Random	64	95	25%	37%	40h	5Fh	
		Reserved (Note 3)	96	255	38%	100%	60h	FFh	
30	Strobe	Closed to open	0	23	0%	9%	00h	17h	255
		Slow to fast	24	229	9%	90%	18h	E5h	
		Open	230	255	90%	100%	E6h	FFh	
31	Dimmer	Coarse	0	255	0%	100%	00h	FFh	0
32	Dimmer	Fine	0	255	0%	100%	00h	FFh	0
33	LED Animation Mode	Macro off	0	3	0%	1%	00h	03h	0
		L to R - 1	4	7	2%	3%	04h	07h	
		L to R - 2	8	11	3%	4%	08h	0Bh	
		L to R - 3	12	15	5%	6%	0Ch	0Fh	
		R to L - 1	16	19	6%	7%	10h	13h	
		R to L - 2	20	23	8%	9%	14h	17h	
		R to L - 3	24	27	9%	11%	18h	1Bh	
		Scan - 1	28	31	11%	12%	1Ch	1Fh	
		Scan - 2	32	35	13%	14%	20h	23h	
		Scan - 3	36	39	14%	15%	24h	27h	
		Invert L to R - 1	40	43	16%	17%	28h	2Bh	
		Invert L to R - 2	44	47	17%	18%	2Ch	2Fh	
		Invert L to R - 3	48	51	19%	20%	30h	33h	
		Invert R to L - 1	52	55	20%	22%	34h	37h	
		Invert R to L - 2	56	59	22%	23%	38h	3Bh	
		Invert R to L - 3	60	63	24%	25%	3Ch	3Fh	
		Invert scan - 1	64	67	25%	26%	40h	43h	
		Invert scan - 2	68	71	27%	28%	44h	47h	
		Invert scan - 3	72	75	28%	29%	48h	4Bh	
		Out/in - 2	76	79	30%	31%	4Ch	4Fh	
Out/in - 4	80	83	31%	33%	50h	53h			
In/out - 2	84	87	33%	34%	54h	57h			
Out/in/out - 2	88	91	35%	36%	58h	5Bh			
Alternate - 4	92	95	36%	37%	5Ch	5Fh			
Reserved (Note 5)	96	255	38%	100%	60h	FFh			
34	LED Animation	Stop	0	0	0%	0%	00h	00h	128
		Slow to fast	1	255	0%	100%	01h	FFh	
35	LED Animation Crossfade	Stop	0	0	0%	0%	00h	00h	128
		Slow to fast	1	255	0%	100%	01h	FFh	
36	Mspeed	Disable	0	3	0%	1%	00h	03h	0
		Slow to fast (252.7-0.15 seconds)	4	255	2%	100%	04h	FFh	

37	Control (Note 2)	Safe (normal operation)	0	9	0%	4%	00h	09h	0
		Reserved (Note 3)	10	19	4%	7%	0Ah	13h	
		Display off	20	28	8%	11%	14h	1Ch	
		Display on	29	35	11%	14%	1Dh	23h	
		Reserved (Note 3)	36	48	14%	19%	24h	30h	
		Home all	49	68	19%	27%	31h	44h	
		Shutdown	69	75	27%	29%	45h	4Bh	
		Studio fan mode	76	82	30%	32%	4Ch	52h	
		Continuous fan mode	83	89	33%	35%	53h	59h	
		Standard fan mode	90	96	35%	38%	5Ah	60h	
		Studio continuous fan mode	97	103	38%	40%	61h	67h	
		Disable pan/tilt motors	104	110	41%	43%	68h	6Eh	
		Reserved (Note 3)	111	160	44%	63%	6Fh	A0h	
		Internal program 1 scene 1-8	161	171	63%	67%	A1h	ABh	
		Internal program 2 scene 9-16	172	182	67%	71%	ACh	B6h	
		Internal program 3 scene 17-24	183	193	72%	76%	B7h	C1h	
		Internal program 4 scene 25-32	194	204	76%	80%	C2h	CCh	
		Internal program 5 scene 33-40	205	215	80%	84%	CDh	D7h	
		Internal program 6 scene 41-48	216	226	85%	89%	D8h	E2h	
		Internal program 7 scene 49-56	227	237	89%	93%	E3h	EDh	
Reserved (Note 3)	238	255	93%	100%	EEh	FFh			

NOTES

- 1 Continuous/indexed mode will take quickest path from 255-0 and 0-255.

Continuous mode color wheel aperture centers

Color	Center of color DMX value
Open	0
Red	32
Blue	64
Green	95
TM-30	128
Orange	159
Purple	191
Dark Blue	223

- 2 The control channel should not be crossfaded. When the fixture is turned off it will retain the programmed fan control mode.
- 3 Reserved ranges should function according to the controller default value.
- 4 RDM Manufacturers ID: 0x4c52
- 5 RDM Device ID: 0x543

Left Orientation with pan lock facing observer Right

Macro 1 - L to R - 1

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	0	0	0	0	0	0	0
2	0	255	0	0	0	0	0	0
3	0	0	255	0	0	0	0	0
4	0	0	0	255	0	0	0	0
5	0	0	0	0	255	0	0	0
6	0	0	0	0	0	255	0	0
7	0	0	0	0	0	0	255	0
8	0	0	0	0	0	0	0	255

Macro 2 - L to R - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	0	0	0	0	0	0
2	0	0	255	255	0	0	0	0
3	0	0	0	0	255	255	0	0
4	0	0	0	0	0	0	255	255

Macro 3 - L to R - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	0	0	0	0	0
2	0	255	255	255	0	0	0	0
3	0	0	255	255	255	0	0	0
4	0	0	0	255	255	255	0	0
5	0	0	0	0	255	255	255	0
6	0	0	0	0	0	255	255	255

Macro 4 R to L - 1:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	0	0	0	0	255
2	0	0	0	0	0	0	255	0
3	0	0	0	0	0	255	0	0
4	0	0	0	0	255	0	0	0
5	0	0	0	255	0	0	0	0
6	0	0	255	0	0	0	0	0
7	0	255	0	0	0	0	0	0
8	255	0	0	0	0	0	0	0

Macro 5 - R to L - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	0	0	0	255	255
2	0	0	0	0	255	255	0	0
3	0	0	255	255	0	0	0	0
4	255	255	0	0	0	0	0	0

Macro 6 - R to L - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	0	0	255	255	255
2	0	0	0	0	255	255	255	0
3	0	0	0	255	255	255	0	0
4	0	0	255	255	255	0	0	0
5	0	255	255	255	0	0	0	0
6	255	255	255	0	0	0	0	0

Macro 7 - Scan - 1:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	0	0	0	0	0	0	0
2	0	255	0	0	0	0	0	0
3	0	0	255	0	0	0	0	0
4	0	0	0	255	0	0	0	0
5	0	0	0	0	255	0	0	0
6	0	0	0	0	0	255	0	0
7	0	0	0	0	0	0	255	0
8	0	0	0	0	0	0	0	255
9	0	0	0	0	0	0	255	0
10	0	0	0	0	0	255	0	0
11	0	0	0	0	255	0	0	0
12	0	0	0	255	0	0	0	0
13	0	0	255	0	0	0	0	0
14	0	255	0	0	0	0	0	0

Macro 8 - Scan - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	0	0	0	0	0	0
2	0	0	255	255	0	0	0	0
3	0	0	0	0	255	255	0	0
4	0	0	0	0	0	0	255	255
5	0	0	0	0	255	255	0	0
6	0	0	255	255	0	0	0	0

Macro 9 - Scan - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	0	0	0	0	0
2	0	255	255	255	0	0	0	0
3	0	0	255	255	255	0	0	0
4	0	0	0	255	255	255	0	0
5	0	0	0	0	255	255	255	0
6	0	0	0	0	0	255	255	255
7	0	0	0	0	255	255	255	0
8	0	0	0	255	255	255	0	0
9	0	0	255	255	255	0	0	0
10	0	255	255	255	0	0	0	0

Macro 10 - Invert L to R - 1:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	255	255	255	255	255	255	255
2	255	0	255	255	255	255	255	255
3	255	255	0	255	255	255	255	255
4	255	255	255	0	255	255	255	255
5	255	255	255	255	0	255	255	255
6	255	255	255	255	255	0	255	255
7	255	255	255	255	255	255	0	255
8	255	255	255	255	255	255	255	0

Macro 11 - Invert L to R - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	255	255	255	255	255	255
2	255	255	0	0	255	255	255	255
3	255	255	255	255	0	0	255	255
4	255	255	255	255	255	255	0	0

Macro 12 - Invert L to R - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	255	255	255	255	255
2	255	0	0	0	255	255	255	255
3	255	255	0	0	0	255	255	255
4	255	255	255	0	0	0	255	255
5	255	255	255	255	0	0	0	255
6	255	255	255	255	255	0	0	0

Macro 13 - Invert R to L - 1:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	255	255	255	255	0
2	255	255	255	255	255	255	0	255
3	255	255	255	255	255	0	255	255
4	255	255	255	255	0	255	255	255
5	255	255	255	0	255	255	255	255
6	255	255	0	255	255	255	255	255
7	255	0	255	255	255	255	255	255
8	0	255	255	255	255	255	255	255

Macro 14 - Invert R to L - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	255	255	255	0	0
2	255	255	255	255	0	0	255	255
3	255	255	0	0	255	255	255	255
4	0	0	255	255	255	255	255	255

Macro 15 - Invert R to L - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	255	255	0	0	0
2	255	255	255	255	0	0	0	255
3	255	255	255	0	0	0	255	255
4	255	255	0	0	0	255	255	255
5	255	0	0	0	255	255	255	255
6	0	0	0	255	255	255	255	255

Macro 16 - Invert Scan - 1:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	255	255	255	255	255	255	255
2	255	0	255	255	255	255	255	255
3	255	255	0	255	255	255	255	255
4	255	255	255	0	255	255	255	255
5	255	255	255	255	0	255	255	255
6	255	255	255	255	255	0	255	255
7	255	255	255	255	255	255	0	255
8	255	255	255	255	255	255	255	0
9	255	255	255	255	255	255	0	255
10	255	255	255	255	255	0	255	255
11	255	255	255	255	0	255	255	255
12	255	255	255	0	255	255	255	255
13	255	255	0	255	255	255	255	255
14	255	0	255	255	255	255	255	255

Macro 17 - Invert Scan - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	255	255	255	255	255	255
2	255	255	0	0	255	255	255	255
3	255	255	255	255	0	0	255	255
4	255	255	255	255	255	255	0	0
5	255	255	255	255	0	0	255	255
6	255	255	0	0	255	255	255	255

Macro 18 - Invert Scan - 3:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	255	255	255	255	255
2	255	0	0	0	255	255	255	255
3	255	255	0	0	0	255	255	255
4	255	255	255	0	0	0	255	255
5	255	255	255	255	0	0	0	255
6	255	255	255	255	255	0	0	0
7	255	255	255	255	0	0	0	255
8	255	255	255	0	0	0	255	255
9	255	255	0	0	0	255	255	255
10	255	0	0	0	255	255	255	255

Macro 19 - Out/in - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	0	0	0	0	0	0	255
2	0	255	0	0	0	0	255	0
3	0	0	255	0	0	255	0	0
4	0	0	0	255	255	0	0	0

Macro 20 - Out/in - 4:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	0	0	0	0	255	255
2	0	0	255	255	255	255	0	0

Macro 21 - In/out - 2:

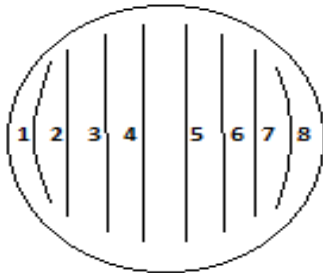
Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	0	0	0	255	255	0	0	0
2	0	0	255	0	0	255	0	0
3	0	255	0	0	0	0	255	0
4	255	0	0	0	0	0	0	255

Macro 22 - Out/in/out - 2:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	0	0	0	0	0	0	255
2	0	255	0	0	0	0	255	0
3	0	0	255	0	0	255	0	0
4	0	0	0	255	255	0	0	0
5	0	0	255	0	0	255	0	0
6	0	255	0	0	0	0	255	0

Macro 23 - Alternate - 4:

Step	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8
1	255	255	255	255	0	0	0	0
2	0	0	0	0	255	255	255	255



LED branches defined left to right with pan lock facing viewer. LED1 is on the left, LED8 is on the right

DMX	Time in seconds
0	mSpeed Off
1	mSpeed Off
2	mSpeed Off
3	mSpeed Off
4	252.69
5	250.68
6	248.68
7	246.69
8	244.7
9	242.73
10	240.76
11	238.8
12	236.85
13	234.9
14	232.97
15	231.04
16	229.12
17	227.21
18	225.3
19	223.41
20	221.52
21	219.64
22	217.77
23	215.9
24	214.05
25	212.2
26	210.36
27	208.53
28	206.7
29	204.89
30	203.08
31	201.28
32	199.49
33	197.7
34	195.93
35	194.16
36	192.4
37	190.65
38	188.9
39	187.17
40	185.44
41	183.72
42	182.01
43	180.31
44	178.61
45	176.92
46	175.24
47	173.57
48	171.91
49	170.25
50	168.61
51	166.97

DMX	Time in seconds
52	165.33
53	163.71
54	162.1
55	160.49
56	158.89
57	157.3
58	155.71
59	154.14
60	152.57
61	151.01
62	149.46
63	147.92
64	146.38
65	144.86
66	143.34
67	141.82
68	140.32
69	138.83
70	137.34
71	135.86
72	134.39
73	132.93
74	131.47
75	130.02
76	128.59
77	127.15
78	125.73
79	124.32
80	122.91
81	121.51
82	120.12
83	118.74
84	117.36
85	115.99
86	114.64
87	113.28
88	111.94
89	110.61
90	109.28
91	107.96
92	106.65
93	105.35
94	104.05
95	102.77
96	101.49
97	100.22
98	98.95
99	97.7
100	96.45
101	95.21
102	93.98
103	92.76

DMX	Time in seconds
104	91.55
105	90.34
106	89.14
107	87.95
108	86.77
109	85.59
110	84.43
111	83.27
112	82.12
113	80.98
114	79.84
115	78.72
116	77.6
117	76.49
118	75.38
119	74.29
120	73.2
121	72.13
122	71.06
123	69.99
124	68.94
125	67.89
126	66.85
127	65.82
128	64.8
129	63.79
130	62.78
131	61.78
132	60.79
133	59.81
134	58.84
135	57.87
136	56.91
137	55.96
138	55.02
139	54.09
140	53.16
141	52.24
142	51.33
143	50.43
144	49.54
145	48.65
146	47.77
147	46.9
148	46.04
149	45.19
150	44.34
151	43.51
152	42.68
153	41.85
154	41.04
155	40.23

DMX	Time in seconds
156	39.44
157	38.65
158	37.87
159	37.09
160	36.33
161	35.57
162	34.82
163	34.08
164	33.34
165	32.62
166	31.9
167	31.19
168	30.49
169	29.8
170	29.11
171	28.43
172	27.76
173	27.1
174	26.45
175	25.8
176	25.17
177	24.54
178	23.92
179	23.3
180	22.7
181	22.1
182	21.51
183	20.93
184	20.36
185	19.79
186	19.23
187	18.69
188	18.14
189	17.61
190	17.09
191	16.57
192	16.06
193	15.56
194	15.07
195	14.58
196	14.1
197	13.63
198	13.17
199	12.72
200	12.28
201	11.84
202	11.41
203	10.99
204	10.58
205	10.17
206	9.77
207	9.39

DMX	Time in seconds
208	9
209	8.63
210	8.27
211	7.91
212	7.56
213	7.22
214	6.89
215	6.56
216	6.25
217	5.94
218	5.64
219	5.34
220	5.06
221	4.78
222	4.52
223	4.25
224	4
225	3.76
226	3.52
227	3.29
228	3.07
229	2.86
230	2.66
231	2.46
232	2.27
233	2.09
234	1.92
235	1.75
236	1.6
237	1.45
238	1.31
239	1.18
240	1.05
241	0.94
242	0.83
243	0.73
244	0.64
245	0.55
246	0.47
247	0.41
248	0.35
249	0.29
250	0.25
251	0.21
252	0.19
253	0.17
254	0.15
255	0.15