

Determining Required Projector Brightness (lumens)

<u>4:3 Screen</u> (standard) feet	<u>Contrast</u> <u>Ratio</u>	<u>Required Projector</u> <u>Lumens *</u> <u>@ 50 FL/sqft</u>	<u>Contrast</u> <u>Ratio</u>	<u>Required Projector</u> <u>Lumens *</u> <u>@ 25 FL/sqft</u>
8 x 6	10:1	2400	5:1	1200
10 x 8	10:1	4000	5:1	2000
12 x 10	10:1	6000	5:1	3000
14 x 10.5	10:1	7400 (8K)	5:1	3700 (4K)
16 x 12	10:1	9600 (10K)	5:1	4800 (5K)
20 x 15	10:1	15K	5:1	7500 (8K)
24 x 18	10:1	20K	5:1	10K
26 x 20	10:1	25K	5:1	13K
32 x 24	10:1	40K	5:1	20K

When specifying a projector system, 50 foot-lamberts (lumens/sq ft) on the screen is very good. One can go lower than that if the ambient light is lower, but 50 is a good design goal to aim for.

*Note: for INPC 2010 : Barco FLM HD 20 : 1920 x 1080 20K lumens
24' x 18' rear projection screen = 46 lumens/sq ft ~10:1 Ideal*

<u>16:9 Screen</u> (& 16:10) (feet)	<u>Contrast</u> <u>Ratio</u>	<u>Required Projector</u> <u>Lumens *</u> <u>@ 50 FL/sqft</u>	<u>Contrast</u> <u>Ratio</u>	<u>Required Projector</u> <u>Lumens *</u> <u>@ 25 FL/sqft</u>
9 x 5	10:1	2250	5:1	1200
10 x 6	10:1	3000	5:1	1500
12 x 7	10:1	4200 (4K)	5:1	2100 (2K)
14 x 8	10:1	5600 (6K)	5:1	2600 (3K)
16 x 9	10:1	7200 (7.5K)	5:1	3600 (4K)
18 x 10	10:1	9000 (10K)	5:1	4500
20 x 11	10:1	12K	5:1	6000
22 x 12	10:1	13K	5:1	6600 (7K)
24 x 13.5	10:1	16K	5:1	8000
26 x 14	10:1	18K (20K)	5:1	9000 (10K)
32 x 18	10:1	28K (30K)	5:1	14K (15K)
36 x 20	10:1	36K	5:1	18K (20K)

16:9 SCREEN SIZE STANDARDS (2014)

H x W “	W X H “	W x H feet	examples
65 x 116	116 x 65	9.6 x 5.4	
78 x 139	139 x 78	11.5 x 6.5	
88 x 157	157 x 88	13 x 7.3	
92 x 164	164 x 92	13.6 x 7.6	
106 x 188	188 x 106	15.6 x 8.8	
119 x 212	212 x 119	17.6 x 10	
120 x 204	204 x 120	17 x 10	Da-Lite 92093 fast Fold Heavy Duty
121 x 216	216 x 121	18 x 10	
133 x 236	236 x 133	19.6 x 11	
146 x 260	260 x 146	21.6 x 12	
147 x 252	252 x 147	21 x 12.25	Da-Lite 92095 Fast Fold Heavy Duty
147 x 300	300 x 147	25 x 12.25	
156 x 268	268 x 156	22.3 x 13	
160 x 284	284 x 160	23.6 x 13.3	
162 x 288	288 x 162	24 x 13.5	Draper truss style Cinefold
173 x 308	308 x 173	25.6 x 14.4	
187 x 332	332 x 187	27.6 x 15.6	Draper Paragon Series E
192 x 330	330 x 192	27.5 x 16	Da-Lite fast Fold Heavy Duty

DA-LITE SCREEN SURFACES

Surface Name	Gain	Viewing		Surface	
		½ Angle	full Angle		
Ultra Wide Angle	0.65	78°	156°	rear	
High Contrast Da-Mat	0.8	45°	90°	front	
Dual Vision	0.9	65°	130°	front/rear	
Video Vision	1.0	55°	110°	front	
Da.Mat	1.0	60°	120°	front	the standard
Matte White	1.0	60°	120°	front	the standard (non-high def)
High Contrast Da-Tex	1.0	40°	80°	rear	
High Conrtast Matte White	1.1	50°	100°	front	
High Conrtast Cinema Vision	1.1	50°	100°	front	
HD Progressive 0.6	0.6	85°	170°	front	
HD Progressive 0.9	0.9	85°	170°	front	
HD Progressive 1.1	1.1	85°	170°	front	
HD Progressive 1.3	1.3	75°	150°	front	
Da-Tex	1.3	30°	60°	rear	
Cinema Vision	1.3	45°	90°	front	
3-D Virtual Black	1.3	10°	20°	rear	

Conference Projector Resolution 2014

Graphics display resolution	image ratio	Pixels H x V	Image Mega pixels	Suitability
SVGA	4:3	800 x 600	0.5 Mp	NO !
XGA	4:3	1024 x 768	0.75 Mp	Only if one has to !
WXGA	16:10	1280 x 800	1.0 Mp	also 1366 x 800 No, use HD or WUXGA since vertical is only 800
SXGA+	4:3	1400 x 1050	1.5 Mp	Ok if 4:3 needed
HD	16:9	1920 x 1080	2.0 Mp	preferred note: 1440 x 1080 in 4:3 mode
WUXGA	16:10	1920 x 1200	2.3 Mp	much preferred note: 1600 x 1200 in 4:3 mode
WQXGA	16:10	2560 x 1600	5 Mp	
4K	19:10	4096 x 2160	9 Mp	also 17:10 4096 x 2400

*Note: INPC 2010 : Barco FLM HD 20 : 1920 x 1080 20K lumens
18' x 24' rear projection screen = 46 lumens/sqft Ideal !*

SUMMARY:

For various screen heights (**H**) the desired projector Lumens are :

H ft	W ft	Screen ratio	Contrast ratio	Lumens desired	Contrast ratio	Lumens desired
6 x 8		4:3	10:1	2.4 K	5:1	1.2 K
6 x 10.5		16:9	10:1	3 K	5:1	1.5 K
8 x 10		4:3	10:1	4 K	5:1	2 K
8 x 14		16:9	10:1	6 K	5:1	3 K
10 x 12		4:3	10:1	6 K	5:1	3 K
10 x 16		16:10	10:1	10 K	5:1	5 K
12 x 16		4:3	10:1	10 K	5:1	5 K
12 x 22		16:9	10:1	13 K	5:1	6.5 K
14 x 18		4:3	10:1	12.5 K	5:1	6 K
14 x 26		16:9	10:1	18 K	5:1	9 K
18 x 24		4:3	10:1	20 K	5:1	10 K
18 x 32		16:9	10:1	28 K	5:1	14 K
20 x 26		4:3	10:1	25 K	5:1	13 K
20 x 36		16:9	10:1	36 K	5:1	18 K