

Field of View and Panorama tables (35mm full frame)

Description

These tables are intended to be used in conjunction with a panoramic head for panoramic photography. They tell you the fields of view for various focal-length lenses, and how far you should turn your pano head between shots in order to achieve the desired frame overlap.

This set of tables is calculated based on the dimensions of a 35mm film frame (24mm × 36mm).

There are two tables: one with a selection of wide, normal and telephoto focal lengths commonly used on SLRs; and the other with more wide-angle focal lengths that may be more useful to rangefinder users. Each table comes in two sizes - pocket size below and full size over the page.

Instructions

Select your chosen focal length in the left-hand column. Look across the row for the approximate frame overlap desired (generally between 10% and 40%). Then read the required rotational increment off from the top of the column.

Example: suppose you're using the camera in the portrait position to shoot a horizontal panorama. This means you're interested in the vertical field of view (VFOV) so you need to look at the upper half of the table.

Imagine you've selected a focal length of 35mm. Read across the 35mm row for a reasonable frame overlap - say 21%. From the top of the column you can see that you will need to rotate the camera 30° between shots, and you'll need to shoot 12 frames to make a complete 360° panorama.

Field of View and Panorama Calculations (35mm full-frame)

Frame overlap vs. incremental angle per frame																	
Incremental angle per frame		Frames per 360°															
		4°	5°	6°	8°	10°	12°	15°	18°	20°	24°	30°	36°	40°	45°	60°	
Vertical Field of View																	
Focal length	VFOV																
24 mm	53.1°	92%	91%	89%	85%	81%	77%	72%	66%	62%	55%	44%	32%	25%	15%		
28 mm	46.4°	91%	89%	87%	83%	78%	74%	68%	61%	57%	48%	35%	22%	14%	3%		
35 mm	37.8°	89%	87%	84%	79%	74%	68%	60%	52%	47%	37%	21%	5%				
50 mm	27.0°	85%	81%	78%	70%	63%	56%	44%	33%	26%	11%						
70 mm	19.5°	79%	74%	69%	59%	49%	38%	23%	7%								
100 mm	13.7°	71%	63%	56%	42%	27%	12%										
135 mm	10.2°	61%	51%	41%	21%	2%											
200 mm	6.9°	42%	27%	13%													
Horizontal Field of View																	
Focal length	HFOV																
24 mm	73.7°	95%	93%	92%	89%	86%	84%	80%	76%	73%	67%	59%	51%	46%	39%	19%	
28 mm	65.5°	94%	92%	91%	88%	85%	82%	77%	73%	69%	63%	54%	45%	39%	31%	8%	
35 mm	54.4°	93%	91%	89%	85%	82%	78%	72%	67%	63%	56%	45%	34%	27%	17%		
50 mm	39.6°	90%	87%	85%	80%	75%	70%	62%	55%	49%	39%	24%	9%				
70 mm	28.8°	86%	83%	79%	72%	65%	58%	48%	38%	31%	17%						
100 mm	20.4°	80%	75%	71%	61%	51%	41%	26%	12%	2%							
135 mm	15.2°	74%	67%	60%	47%	34%	21%	1%									
200 mm	10.3°	61%	51%	42%	22%	3%											

Field of View and Panorama Calculations (35mm full-frame)

Frame overlap vs. incremental angle per frame																	
Incremental angle per frame		Frames per 360°															
		45	36	30	24	20	18	15	12	10	9	8	6	5	4	3	2
Vertical Field of View																	
Focal length	VFOV																
15 mm	77.3°	90%	87%	84%	81%	77%	74%	69%	61%	53%	48%	42%	22%	7%			
21 mm	59.5°	87%	83%	80%	75%	70%	66%	60%	50%	39%	33%	24%					
24 mm	53.1°	85%	81%	77%	72%	66%	62%	55%	44%	32%	25%	15%					
28 mm	46.4°	83%	78%	74%	68%	61%	57%	48%	35%	22%	14%	3%					
35 mm	37.8°	79%	74%	68%	60%	52%	47%	37%	21%	5%							
40 mm	33.4°	76%	70%	64%	55%	46%	40%	28%	10%								
50 mm	27.0°	70%	63%	56%	44%	33%	26%	11%									
75 mm	18.2°	56%	45%	34%	17%	1%											
90 mm	15.2°	47%	34%	21%	1%												
Horizontal Field of View																	
Focal length	HFOV																
15 mm	100.4°	92%	90%	88%	85%	82%	80%	76%	70%	64%	60%	55%	40%	28%	10%		
21 mm	81.2°	90%	88%	85%	82%	78%	75%	70%	63%	56%	51%	45%	26%	11%			
24 mm	73.7°	89%	86%	84%	80%	76%	73%	67%	59%	51%	46%	39%	19%	2%			
28 mm	65.5°	88%	85%	82%	77%	73%	69%	63%	54%	45%	39%	31%	8%				
35 mm	54.4°	85%	82%	78%	72%	67%	63%	56%	45%	34%	27%	17%					
40 mm	48.5°	83%	79%	75%	69%	63%	59%	50%	38%	26%	17%	7%					
50 mm	39.6°	80%	75%	70%	62%	55%	49%	39%	24%	9%							
75 mm	27.0°	70%	63%	56%	44%	33%	26%	11%									
90 mm	22.6°	65%	56%	47%	34%	20%	12%										

Field of View and Panorama Calculations (35mm full-frame)

Frame overlap vs. incremental angle per frame																
Incremental angle per frame		4°	5°	6°	8°	10°	12°	15°	18°	20°	24°	30°	36°	40°	45°	60°
Frames per 360°		90	72	60	45	36	30	24	20	18	15	12	10	9	8	6
Vertical Field of View																
Focal length	VFOV															
24 mm	53.1°	92%	91%	89%	85%	81%	77%	72%	66%	62%	55%	44%	32%	25%	15%	
28 mm	46.4°	91%	89%	87%	83%	78%	74%	68%	61%	57%	48%	35%	22%	14%	3%	
35 mm	37.8°	89%	87%	84%	79%	74%	68%	60%	52%	47%	37%	21%	5%			
50 mm	27.0°	85%	81%	78%	70%	63%	56%	44%	33%	26%	11%					
70 mm	19.5°	79%	74%	69%	59%	49%	38%	23%	7%							
100 mm	13.7°	71%	63%	56%	42%	27%	12%									
135 mm	10.2°	61%	51%	41%	21%	2%										
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Horizontal Field of View																
Focal length	HFOV															
24 mm	73.7°	95%	93%	92%	89%	86%	84%	80%	76%	73%	67%	59%	51%	46%	39%	19%
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35 mm	54.4°	93%	91%	89%	85%	82%	78%	72%	67%	63%	56%	45%	34%	27%	17%	
50 mm	39.6°	90%	87%	85%	80%	75%	70%	62%	55%	49%	39%	24%	9%			
70 mm	28.8°	86%	83%	79%	72%	65%	58%	48%	38%	31%	17%					
100 mm	20.4°	80%	75%	71%	61%	51%	41%	26%	12%	2%						
135 mm	15.2°	74%	67%	60%	47%	34%	21%	1%								
200 mm	10.3°	61%	51%	42%	22%	3%										

Field of View and Panorama Calculations (35mm full-frame)

Frame overlap vs. incremental angle per frame																
Incremental angle per frame		8°	10°	12°	15°	18°	20°	24°	30°	36°	40°	45°	60°	72°	90°	
Frames per 360°		45	36	30	24	20	18	15	12	10	9	8	6	5	4	
Vertical Field of View																
Focal length	VFOV															
15 mm	77.3°	90%	87%	84%	81%	77%	74%	69%	61%	53%	48%	42%	22%	7%		
21 mm	59.5°	87%	83%	80%	75%	70%	66%	60%	50%	39%	33%	24%				
24 mm	53.1°	85%	81%	77%	72%	66%	62%	55%	44%	32%	25%	15%				
28 mm	46.4°	83%	78%	74%	68%	61%	57%	48%	35%	22%	14%	3%				
35 mm	37.8°	79%	74%	68%	60%	52%	47%	37%	21%	5%						
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75 mm	18.2°	56%	45%	34%	17%	1%										
90 mm	15.2°	47%	34%	21%	1%											
Horizontal Field of View																
Focal length	HFOV															
15 mm	100.4°	92%	90%	88%	85%	82%	80%	76%	70%	64%	60%	55%	40%	28%	10%	
21 mm	81.2°	90%	88%	85%	82%	78%	75%	70%	63%	56%	51%	45%	26%	11%		
24 mm	73.7°	89%	86%	84%	80%	76%	73%	67%	59%	51%	46%	39%	19%	2%		
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