phantom® digital high speed imaging systems

Aspect Ratio

Quick Guide

v4.2
v4.3
v5.1
v6.2e
v7.3
v9.1
v10.0

ASPECT RATIO

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ASPECT RATIO

Aspect Ratio

Aspect ratio is the width of an image relative to its height. The Phantom cameras feature flexible aspect ratios so you can choose one that best matches your subject or region of interest.

Like cameras, subjects also have aspect ratios. Some subjects, for example a fabric or paper web, may have a strong horizontal aspect to them. Others, such as shuttle launches or drop tests, may have a dominant vertical aspect.

By choosing an aspect ratio for the image that closely matches the subject's aspect ratio, you have the option of increasing sample rate or increasing recording time without sacrificing resolution. For yet other subjects, such as ballistics or PIV, flexible aspect ratios allow you to choose ultra-high sample rates.

Continuously Adjustable Resolution While other cameras limit your options to a few pre-set aspect ratios, the Phantom cameras allow you to custom fit the image to your subject of interest. The aspect ratio of the Phantom v4.3, for example, can be continuously incremented in 16 x 8 pixel steps across its 800 x 600 pixel sensor. The 1.0 megapixel Phantom v5.1 is adjustable in 64 x 4 pixel increments, while the Phantom v10.0 is adjustable in 96 x 8 pixel steps over its 4.3 megapixel sensor.

Quick Guide The aspect ratio tables presented here provide a quick guide to the maximum spatial resolution vs. the maximum sample rate of the Phantom cameras. The spatial resolution is given in pixels; the sample rate is given in pictures per second (pps). These tables show only a few of the combinations possible. Whenever you need information about the specific sample rates & aspect ratios for a particular camera, please contact technical support. We're happy to help : -)

Aspect Ratio

The aspect ratio of the Phantom v4.2 can be continuously incremented in 16 x 8 pixel steps across its 512 x 512 active pixel CMOS sensor. Likewise, the Phantom v4.3 is adjustable in 16 x 8 pixel steps over its 800 x 600 CMOS sensor array.

v4.2		v4.3	
Resolution	Rate	Resolution	Rate
512 x 512	2,100	800 x 600	1,000
512 x 384	2,840	512 x 512	2,100
320 x 240	6,622	512 x 384	2,840
256 x 192	9,708	320 x 240	6,622
160 x 120	20,408	256 x 192	9,708
512 x 256	4,219	160 x 120	20,408
512 x 128	8,196	512 x 256	4,219
512 x 64	15,625	512 x 128	8,196
256 x 512	3,802	512 x 64	15,625
256 x 256	7,407	256 x 512	3,802
256 x 128	14,285	256 x 256	7,407
256 x 64	25,641	256 x 128	14,285
128 x 128	22,222	256 x 64	25,641
128 x 64	38,461	128 x 128	22,222
64 x 64	52,631	128 x 64	38,461
32 x 32	90,000	64 x 64	52,631
		32 x 32	90,000

Aspect Ratio

The megapixel Phantom v5.1 is continuously adjustable in 64 x 4 pixel steps over the 1024 x 1024 CMOS sensor array. The Phantom v6.2e is a multi-camera system that makes synchronizing four cameras as easy as operating just one. Each Phantom v6.2e camera contains a 512 x 512 pixel CMOS sensor and is adjustable in 16 x 8 pixel steps.

v5.1		v6.2e	
Resolution	Rate	Resolution	Rate
1024 x 1024	1,200	512 x 512	1,400
1024 x 768	1,680	512 x 384	1,890
1024 x 512	2,500	320 x 240	4,706
768 x 768	2,140	256 x 192	7,194
768 x 512	3,190	160 x 120	17,021
768 x 256	6,200	512 x 256	2,822
512 x 512	4,380	512 x 128	5,566
512 x 256	8,550	512 x 64	10,830
512 x 128	16,200	256 x 512	2,760
256 x 256	13,400	256 x 256	5,445
256 x 128	24,900	256 x 128	10,601
256 x 64	43,300	256 x 64	20,134
128 x 128	33,900	128 x 128	19,355
128 x 64	56,300	128 x 64	35,294
64 x 64	66,300	64 x 64	56,604
64 x 32	95,000	32 x 32	115,385

Aspect Ratio

The Phantom v7.3 combines the highest sample rates with the highest resolution. Adjust the Phantom v7.3 in 32 x 8 pixel increments across the 800 x 600 pixel CMOS sensor. The active pixel CMOS sensors in the 2.0 megapixel Phantom v9.1 and the 4.3 megapixel Phantom v10.0 are continuously adjustable in 96 x 8 pixel steps.

v7.3		v9.1		v10.0	
Resolution	Rate	Resolution	Rate	Resolution	Rate
800 x 600	6,688	1632 x 1200	1,016	2400 x 1800	480
640 x 480	10,101	1632 x 960	1,268	1920 x 1200	880
320 x 240	33,057	1632 x 480	2,520	1920 x 1080	978
512 x 512	11,527	1632 x 240	4,975	1440 x 1440	943
512 x 384	15,151	960 x 960	1,972	1440 x 720	1,878
512 x 256	21,978	960 x 480	3,906	1248 x 720	2,118
512 x 128	40,000	960 x 240	7,648	768 x 768	2,921
512 x 64	67,796	480 x 480	6,420	768 x 576	3,875
256 x 512	20,000	480 x 240	12,422	576 x 576	4,761
256 x 256	36,697	480 x 120	23,391	576 x 288	9,302
256 x 128	63,492	480 x 64	39,603	480 x 480	6,420
256 x 64	100,000	96 x 96	51,948	96 x 96	51,948
128 x 128	88,888	96 x 48	81,632	96 x 32	100,000
128 x 64	129,032	96 x 32	100,000	96 x 16	129,032
64 x 64	148,148	96 x 16	129,032	96 x 8	153,846
32 x 32	190,476	96 x 8	153,846		

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Questions? We're happy to help : -)

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1. The tables show only a few combinations of sample rates (pps) vs. resolution (pixels).

2. Every Phantom camera features the Power of One™. This gives you the flexibility to increase sample rates in one picture-per-second steps as well as custom fit the image to your application. There are no pre-set values for sample rate, exposure time, sync, phase, or aspect ratio.

3. While there are no pre-set values, increments of one picture-per-second for sample rates above 2000 may not be available for every possible combination of user-defined settings. In this case, the limits are negligible and Phantom accurately reports the closest available setting. For example, a sample rate will be accurately displayed as 10,004 pps rather than a nominal 10,000 pps.