

# ZEPHIR 2.9

## INFRARED CAMERA



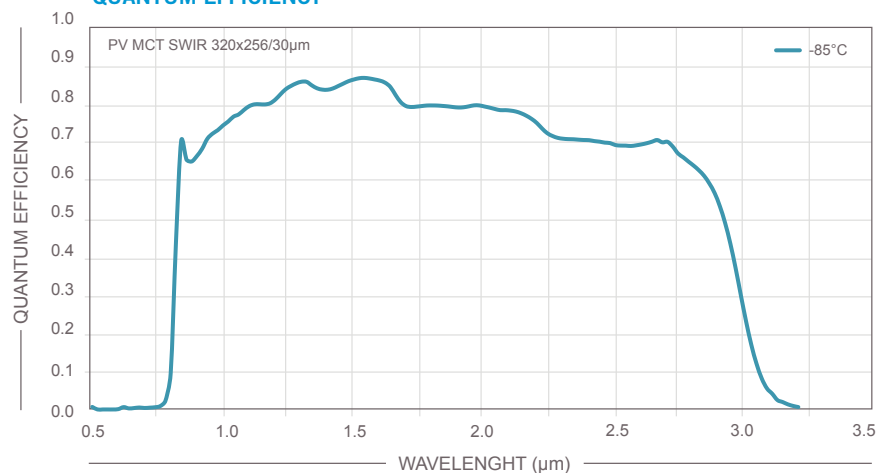
ZephIR™ 2.9 is the only scientific-grade short-wave infrared HgCdTe (MCT) camera, ranging from 0.85 to 2.9  $\mu\text{m}$ . A four-stage TE cooler, air-deep-cooling at  $-80^\circ\text{C}$ , provides unrivalled low-noise levels at a 340 frame-per-second rate. Either it is for borehole samples analysis, pipeline gas detection, astronomy, space observation or material sorting, ZephIR™ 2.5 extends the boundaries of laboratory and industrial imaging.

\* Export licence may be required for this item.

### TECHNICAL SPECIFICATIONS

Focal Plane Array (FPA)	HgCdTe	
FPA size	320 x 256	
Pixel size	30 $\mu\text{m}$	
Spectral range	0.85 - 2.9 $\mu\text{m}$	
Dark Current	54 pA or 340 M $\epsilon$ /p/s (measured with a target at room temperature and sensor at $-80^\circ\text{C}$ )	
Gain Setting	<b>High Gain</b> 10.30 $\epsilon$ /ADU	<b>Low Gain</b> 216 $\epsilon$ /ADU
Readout Noise	150 $\epsilon$	1650 $\epsilon$
Full Well Capacity	168 K $\epsilon$	3.5 M $\epsilon$
Peak responsivity	1.56 A/W @ 2700 nm	
Quantum Efficiency	Up to 85%	
Operability (typical)	>98.5%	
Digitization	14 bits	
Full Frame Rate (FPS)	Up to 340 fps	
Integration Time Range	1 $\mu\text{s}$ to 10 ms	
Readout Modes	ITR	
Cooling	TEC 4 stages, forced air	
FPA Operating Temperature	$-80^\circ\text{C}$	
Cool Down Time	10 minutes	
Ambient Temperature Range	10 $^\circ\text{C}$ to 35 $^\circ\text{C}$	
Cold Shield	f#/1.5	
Computer Interface	CameraLink™	
External Control	On demand	
Power Supply Requirement	12 VDC @ 5A	
Physical Dimensions	169 x 130 x 97.25 mm	
Weight	2.6 kg	
Certification	CE	

### QUANTUM EFFICIENCY





TECHNICAL SPECIFICATIONS	ZEPHIR 1.7-V			ZEPHIR 1.7-S			ZEPHIR 2.5		ZEPHIR 2.9	
Focal Plane Array (FPA)	InGaAs			InGaAs			HgCdTe		HgCdTe	
FPA size	640 x 512			640 x 512			320 x 256		320 x 256	
Pixel size	15 $\mu\text{m}$			15 $\mu\text{m}$			30 $\mu\text{m}$		30 $\mu\text{m}$	
Spectral range	0.5 - 1.7 $\mu\text{m}$ ~ 0.5 - 1.69 $\mu\text{m}$ @ 25 °C ( >70% 0.95 - 1.62 $\mu\text{m}$ ) ~ 0.5 - 1.63 $\mu\text{m}$ @ -80 °C ( >70% 0.9 - 1.5 $\mu\text{m}$ )			~ 0.9 - 1.69 $\mu\text{m}$ @ 25 °C ( >70% 1 - 1.6 $\mu\text{m}$ ) ~ 0.9 - 1.62 $\mu\text{m}$ @ -80 °C			0.85 - 2.5 $\mu\text{m}$		0.85 - 2.9 $\mu\text{m}$	
Dark Current	150 e/p/s (No thermal emission from target and sensor at -80 °C) 300 e/p/s (target at room temperature and sensor at -80 °C)			4.8 pA or 30 M $\bar{e}$ /p/s (measured with a target at room temperature and sensor at -80 °C)			54 pA or 340 M $\bar{e}$ /p/s (measured with a target at room temperature and sensor at -80 °C)			
Gain Setting	<i>High Gain</i>	<i>Med Gain</i>	<i>Low Gain</i>	<i>High Gain</i>	<i>Med Gain</i>	<i>Low Gain</i>	<i>High Gain</i>	<i>Low Gain</i>	<i>High Gain</i>	<i>Low Gain</i>
	28 e/ADU	28 e/ADU	130 e/ADU	2.2 e/ADU	7.4 e/ADU	89 e/ADU	10.30 e/ADU	216 e/ADU	10.30 e/ADU	216 e/ADU
Readout Noise	50 e	150 e	800 e	35 e	75 e	350 e	150 e	1650 e	150 e	1650 e
Full Well Capacity	12 k $\bar{e}$	900 k $\bar{e}$	4.2 M $\bar{e}$	39 k $\bar{e}$	131 k $\bar{e}$	1.6 M $\bar{e}$	168 k $\bar{e}$	3.5 M $\bar{e}$	168 k $\bar{e}$	3.5 M $\bar{e}$
Peak responsivity	1.1 A/W @ 1660 nm			1.0 A/W @ 1550 nm			1.8 A/W @ 2450 nm		1.56 A/W @ 2700 nm	
Quantum Efficiency	Up to 85%			> 70%			Up to 85%		Up to 85%	
Operability (typical)	> 99%			> 99.5%			> 98.5%		> 98.5%	
Digitization	13 bits	15 bits	15 bits	14 bits			14 bits		14 bits	
Full Frame Rate	220 fps			170 fps			Up to 340 fps		Up to 340 fps	
Integration Time Range	1 $\mu\text{s}$ to 19 minutes			1 $\mu\text{s}$ to 19 minutes			1 $\mu\text{s}$ to 100 ms		1 $\mu\text{s}$ to 10 ms	
Readout Modes	CDS	ITR	ITR	ITR, IWR, CDS, IMRO			ITR		ITR	
Cooling	TEC 4 stages, forced air			TEC 4 stages, forced air			TEC 4 stages, forced air		TEC 4 stages, forced air	
FPA Operating Temperature	-80 °C			-80 °C			-80 °C		-80 °C	
Cool Down Time	< 7 minutes			< 10 minutes			10 minutes		10 minutes	
Ambient Temperature Range	10 °C to 35 °C			10 °C to 35 °C			10 °C to 35 °C		10 °C to 35 °C	
Cold Shield	f#/1.5			f#/1.5			f#/1.5		f#/1.5	
Computer Interface	CameraLink™			CameraLink™			CameraLink™		CameraLink™	
External Control	On demand			On demand			On demand		On demand	
Power Supply Requirement	12 VDC @ 5A			12 VDC @ 5A			12 VDC @ 5A		12 VDC @ 5A	
Physical Dimensions	169 x 130 x 97.25 mm			169 x 130 x 97.25 mm			169 x 130 x 97.25 mm		169 x 130 x 97.25 mm	
Weight	2.6 kg			2.6 kg			2.6 kg		2.6 kg	
Certification	CE			CE			CE		CE	

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