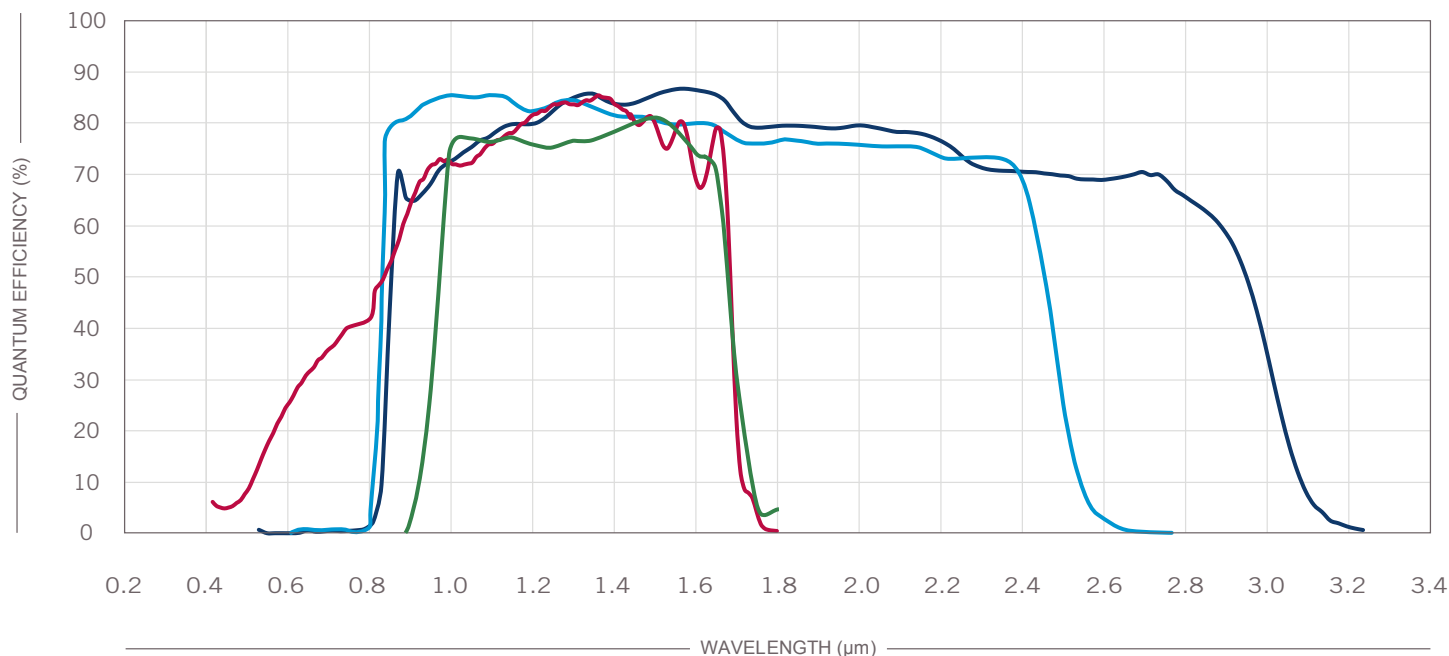


## ZEPHIR™ CAMERA

Continuing its push to extend the boundaries of scientific and industrial imaging, Photon etc. presents its high performance, yet affordable, deep-cooled SWIR camera line. Based on sensitive InGaAs and HgCdTe (MCT) FPAs, and integrating a four-stage TE cooler, ZephIR™ cameras deliver an astounding 340 frame-per-second rate while reaching very low noise levels. First designed for demanding faint-flux applications such as small animal imaging in the second biological window, these cameras also bring new capabilities for industrial applications in quality control and sorting.



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 μm			15 μm			30 μm		30 μm	
Spectral range	0.5 - 1.7 μm (~ 0.5-1.69 μm @ 25 °C) (~ 0.5-1.63 μm @-80 °C)			0.9 - 1.7 μm (~ 0.9-1.69 μm @ 25 °C) (~ 0.9-1.62 μm @-80 °C)			0.85 - 2.5 μm		0.85 - 2.9 μm	
Dark Current	< 300 - Typ. ~250 ē/px/s (Target at 21°C and sensor at -80°C)  < 150 - Typ. ~ 125 ē/px/s (No thermal emission from target and sensor at -80 °C)			< 300 - Typ. ~250 ē/px/s (Target at 21°C and sensor at -80°C)  < 150 - Typ. ~ 125 ē/px/s (No thermal emission from target and sensor at -80 °C)			< 30 - Typ. ~20 Mē/px/s (measured with a target at 21°C and sensor at -80°C)		< 340 Mē/px/s (measured with a target at 21°C and sensor at -80°C)	
	High Gain	Med Gain	Low Gain	High Gain	Med Gain	Low Gain	High Gain	Low Gain	High Gain	Low Gain
Gain Setting (ē/ADU)	2.8	28	130	2.1	7.4	89	10.30	216	10.30	216
Readout Noise (ē)	50	150	800	35	75	350	150	980	150	980
Full Well Capacity	12 kē	800 kē	3.5 Mē	27 kē	110 kē	1.4 Mē	160 kē	3.3 Mē	160 kē	3.3 Mē
Readout Modes	CDS	ITR	ITR	ITR, IWR, CDS, IMRO			ITR		ITR	
Digitization	13 bits	15 bits	15 bits	14 bits			14 bits		14 bits	
Frame Rate (fps) CameraLink	90	190	190	220			Up to 340 fps 4500 for a (32x32) px ROI		Up to 340 fps 4500 for a (32x32) px RO	
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	> 70% from 0.9 to 1.69 μm			> 70% from 1.0 to 1.6 μm			Up to 85%		Up to 85%	
Operability (typical)	> 99%			> 99.5%			> 98.5% - up to 99.8%		> 98.5% - up to 99.8%	
Integration Time Range	1 μs to 19 minutes (low gain)			1 μs to 19 minutes (low gain)			1 μs to 100 ms (low gain)		1 μs to 10 ms (low gain)	
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	< 10 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#/1.4			f#/1.4			f#/1.4		f#/1.4	
Software	PHySpec™ control and analysis software included									
Computer Interface	CameraLink™ or USB 3.0			CameraLink™ or USB 3.0			CameraLink™ or USB 3.0		CameraLink™ or USB 3.0	
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	



● **ZEPHIR 1.7-V**  
QE @ 25°C

● **ZEPHIR 1.7-S**  
QE @ 25°C

● **ZEPHIR 2.5**  
QE @ - 65°C

● **ZEPHIR 2.9**  
QE @ - 85°C

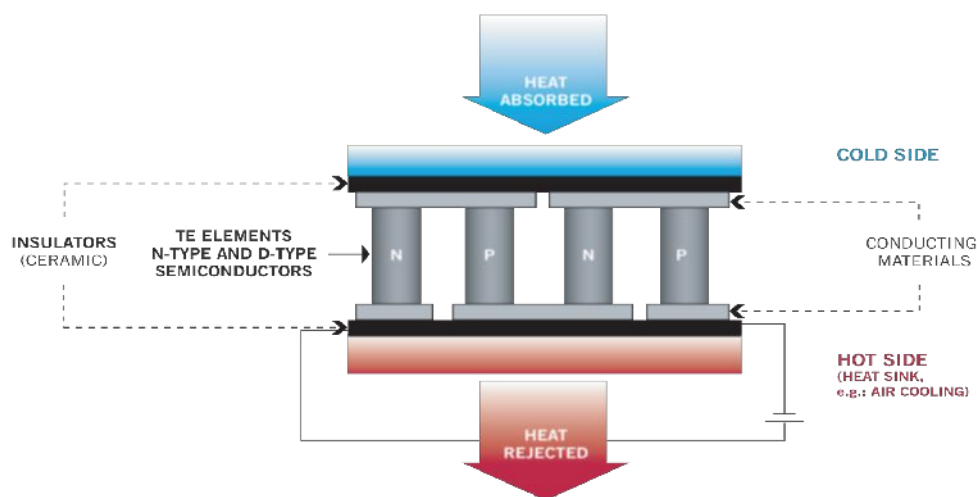


FIG. 1. Schematic of a thermoelectric device where the Peltier effect is used to generate heat flow between two materials.

### MAIN ADVANTAGES OF TE COOLED AIR SYSTEM

- › Compact
- › Highly reliable
- › Long lifetime
- › No maintenance
- › Low dark current
- › Low readout noise

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