



# PAMINA Series

## Short Wave Infrared Camera

The human eye detects the visible light region of the electromagnetic spectrum.

The InGaAs cameras of the PAMINA series acquire images through the wavelength range of 900(400)~1700nm, which cannot be seen by humans. Economical and uncooled sensor with high-speed image acquisition minimizes heat generation and increases cooling efficiency, and has been recognized for its performance in various industrial manufacturing processes.

### Features

- VGA / QVGA / Line Scan
- 8~17um (SWIR) / 0.4~1.1um (NIR)
- InGaAs / VIS + InGaAs

### Regulatory Compliance



# SPECIFICATIONS

Features	Cooled Area Scan Family		Cooled Line Scan Family		NIR Area Scan Family	
	PA320F300TCL	PA640F100TCL	PA1024L40	PA2048L10	PA1280F40GE	PA5120F91NCP
<b>Mechanical Interface</b>						
Size (W x H x D)	74 x 99 x 90.8mm		64 x 64 x 65mm		56 x 56 x 65.8mm	60 x 60 x 51.39mm
Weight	850g (w/o lens)		350g (w/o lens)		260g (w/o lens)	272g (w/o lens)
Lens mount	M42 or C-mount				C-mount	M4
Power connector	12-pin threaded Hirose Mating connector part# HR10A-10P-12 (male)				6-pin threaded Hirose Mating connector part# HR10A-7R-6PB(73)	
<b>Electrical Interface</b>						
Input Voltage	DC12V				DC12V or PoE	DC12V or PoCXP
Power Consumption	< 13W		< 12W		< 5.5W	< 7W
<b>Interfaces</b>						
Mode	Camera Link Base (MDR26)				Giga Ethernet(10/100/1000Mbps)	CXP6-4
Pixel Clock / Protocol	40 Mhz				GigE Vision	CoaXPress
Image Data	8 or 10 or 12 or 14-bit Mono				8-bit Mono	10-bit Mono
Analog Video Output	8-bit NTSC or PAL (75Ω BNC)				N.A	
Frame rate	300fps	100fps	40kHz	10Khz	40fps	91fps
<b>Functionality</b>						
Image Acquisition Mode	Free running / External Trigger using +5V TTL or CC1 (for CL only) or Software (for CXP only)					
Image Correction	2-point correction (Gain, Offset) / Bad Pixel				PRNU / VIGNETTING / Bad Pixel	
<b>Environmental Conditions</b>						
Operating Temperature (Ambient)	-10°C ~ +40°C					
Operating Relative Humidity	maximum 90% non-condensing					
Storage Temperature	-40°C ~ +85°C					
Storage Relative Humidity	maximum 90% non-condensing					
<b>SWIR Sensor Information</b>						
Maker	Area InGaAs Cooled TE0		Line InGaAs Cooled TE0		Area NIR Rolling shutter	Area NIR Global shutter
Spectral Response	0.9 ~ 1.7um (SWIR)				0.4 ~ 1.1um (VIS+NIR)	
Pixel Pitch	30um	25um	12.5um		10um	2.5um
Frame rate	300fps	100fps	40Khz	10Khz	40fps	91fps
Focal Plane Array	320x256	640x512	1024x1	2048x1	1280x1024	5120x5120

## OZRAY Area Scan SWIR cameras

Features	PA320F30N	PA320F100NCL	PA640F100NCL	PA640F300NCL	PA320F300NGE	PA640F100NGE	PA640NIP	PA1280F70NCL*	PA1280F70NCLd*	PA1280F50NGE**	
<b>Mechanical Interface</b>											
Size (W x H x D)	50x50x50mm	50x50x50.33mm	56x56x55.49mm	70x65x55.49mm	56x56x67.1mm		63x63x70.7mm	51x51x61.04mm	51x51x61.04mm	51x51x61.04mm	
Weight	850g (w/o lens)	170g (w/o lens)	260g (w/o lens)	380g (w/o lens)	290g (w/o lens)	290g (w/o lens)	345g (w/o lens)	220g (w/o lens)	220g (w/o lens)	250g (w/o lens)	
Lens mount	M42 or C-mount										
Power connector	6-pin threaded Hirose Mating connector part# HR10A-7R-6PB (73)		12-pin threaded Hirose Mating connector part# HR10A-10R-12PB (71)		6-pin threaded Hirose Mating connector part# HR10A-7R-6PB(73)						
<b>Electrical Interface</b>											
Input Voltage	DC12V	DC12V or PoCL	DC12V		DC12V or PoE			DC12V or PoCL	DC12V	DC12V or PoE	
Power Consumption	< 2.7W	< 3.5W	< 5.5W	< 6.4W	< 5.5W			< 4W	< 6W	< 7W	
<b>Interfaces</b>											
Mode	N.A	Camera Link Base (MDR26)			Giga Ethernet(10/100/1000Mbps)			Camera Link Base (MDR26)	Giga Ethernet (10/100/1000Mbps)		
Pixel Clock / Protocol	40 Mhz				GigE Vision		RTSP	74.25Mhz		GigE Vision	
Image Data	8-bit Mono	14-bit Mono	12/14-bit Mono		14-bit Mono		Y.U.V(4:2:2)	12 / 10 / 8-bit Mono			
Analog Video Output / Compression	8-bit NTSC or PAL (75Ω BNC)	N.A					NTSC for AF / H.264	N.A			
Frame rate	30fps	100fps	100fps	300fps	300fps	100fps	30fps	71fps / 120fps / 134fps	50fps / 50fps / 45fps		
<b>Functionality</b>											
Image Acquisition Mode	Free running / External Trigger using +5V TTL or CC1(for CL only)										
Image Correction	2-point correction (Gain, Offset) / Bad Pixel		2-point correction (Gain, Offset) / Bad Pixel / FFC					PRNU / Vignetting / Bad Pixel	TPC / FFC (Logical TEC) / Bad Pixel	TPC / FFC (Logical TEC) / Bad Pixel	
<b>Environmental Conditions</b>											
Operating Temperature (Ambient)	-10°C ~ +40°C										
Operating Relative Humidity	maximum 90% non-condensing										
Storage Temperature	-20°C ~ +85°C										
Storage Relative Humidity	maximum 90% non-condensing										
<b>SWIR Sensor Information</b>											
Maker	Area InGaAs Non-TEC										
Spectral Response	0.9 ~ 1.7um (SWIR)							0.4 ~ 1.7um (VIS+SWIR)			
Pixel Pitch	30um	15um		30um	15um		5um				
Frame rate	300fps	300fps		300fps	300fps		71.5fps				
Focal Plane Array	320 x 256	640 x 512		320 x 256	640 x 512		1280 x 1024				

\*현재: 양산 \*\*현재: 양산이관  
\*인증: CE인증 완료 \*\*이슈: max frame rate upto 50fps (일부 경쟁사: 71fps)