

产品简介



Goptica SWIR series 400-1700nm is a short-wave infrared camera with USB3 / GigE / 10G/CameraLink interfaces, using domestic InGaAs chips, featuring high quantum efficiency and high sensitivity, suitable for numerous common SWIR applications in various industrial segments.

Application

- Semiconductor industry: Solar cell and chip testing
- Agriculture: Spectral remote sensing applications through multi-rotor aircraft
- Recycling industry: Material sorting of plastics, garbage and other materials
- Medical Imaging and Research: Hyperspectral and multispectral imaging
- Food industry: Quality inspection and grading
- Beverage industry: Liquid level detection in opaque containers
- Packaging: Sealing inspection
- Glass industry: Detection of high-temperature glass transparency defect
- Printing industry: Transparent hidden features
- Video surveillance: Visual enhancement (such as smoke perspective)
- Security: Counterfeit product detection, such as currency, wigs or skin

Basic Characteristic

- The 900-1700nm version adopts SONY SenSWIR indium gallium arsenide chip
- The resolution covers 5MP to 0.33MP
- Available in both cooled and uncooled versions
- Precise temperature control can achieve a temperature difference of 10 to 25 degrees Celsius lower than the ambient temperature
- A wide spectral response range of 900-1700nm
- 15um / 5um / 3.45um pixels
- Global shutter
- Multiple data interfaces such as USB3 / GigE / 10G/CameraLink/analog AV
- Up to 14-bit ADC
- 4Gb of memory
- Supports external IO trigger control
- A frame rate that exceeds the official parameters
- Support on-site firmware update
- Accept OEM customized development

SWIR 900–1700 0.33MP 15um

SWIR331KMA-CL nationally produced

Parameters	Model	SWIR331KMA-CL1000	SWIR331KMA-CL700	SWIR331KMA-CL500
	330,000 pixels 3/4” InGaAs CameraLink camera			
Camera Parameters				
Sensor model	Domestic 640*512			
Sensor type	InGaAs CMOS image sensor			
Spectral Range	900nm-1700nm			
Pixel Size	15μm x 15μm			
Target size	3/4”			
ADC	14-bit			
Frame rate & resolution	1000fps@640 x 512		724fps@640 x 512	517fps@640 x 512
Memory	512MB			
QE	75%@1350nm			
Conversion Gain	970.01e-/DN(LG), 18.02e-/DN(MG), 3.31e-/DN (HG)			
Dynamic Range	69.2dB(LG), 63.2dB(MG), 57.4dB(HG) *1			
Readout noise	1.3DN(LG), 2.7DN(MG), 5.0DN(HG)			
Full well charge	3.5Me(LG), 70Ke(MG), 12Ke(HG) *1			
Maximum Signal-to-Noise Ratio	65.4dB(LG), 48.5dB(MG), 40.7dB(HG)			
Dark current	30fa@0.1V&18°C			
Exposure time range	16us~1s			
Shutter mode	Global shutter			
Data interface	CameraLink Full			
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output			
Data format	Mono 12 / Mono 14			
Refrigeration temperature difference	40°C lower than room temperature			
Camera type	All-domestic components			
General Parameters				
Power Supply Method	DC12V power supply			
Power consumption	8.4W (TEC OFF) / <16W (TEC ON)			
Temperature	Operating temperature -30~60°C, storage temperature -40~85°C			
Humidity	20%-80%, no condensation			
Dimensions	68mm×68mm×90.3mm			
Weight	485g			
Lens interface	C interface			
Software	A complete SDK development package and CLView software based on Delsa acquisition cards			

*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR331KMB-CL

Model Parameters	SWIR331KMB-CL1000		SWIR331KMB-CL700	SWIR331KMB-CL500
	330,000 pixels 3/4” InGaAs CameraLink camera			
Camera Parameters				
Sensor model	Domestic 640*512			
Sensor type	InGaAs CMOS image sensor			
Spectral Range	900nm-1700nm			
Pixel Size	15μm x 15μm			
Target size	3/4”			
ADC	14-bit			
Frame rate & resolution	1000fps@640 x 512	724fps@640 x 512	517fps@640 x 512	
Memory	512MB			
QE	75%@1350nm			
Conversion Gain	970.01e-/DN(LG), 18.02e-/DN(MG), 3.31e-/DN (HG)			
Dynamic Range	69.2dB(LG), 63.2dB(MG), 57.4dB(HG) *1			
Readout noise	1.3DN(LG), 2.7DN(MG), 5.0DN(HG)			
Full well charge	3.5Me(LG), 70Ke(MG), 12Ke(HG) *1			
Maximum Signal-to-Noise Ratio	65.4dB(LG), 48.5dB(MG), 40.7dB(HG)			
Dark current	30fa@0.1V&18°C			
Exposure time range	16us~1s			
Shutter mode	Global shutter			
Data interface	CameraLink Full			
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output			
Data format	Mono 12 / Mono 14			
Refrigeration temperature difference	40°C lower than room temperature			
Camera type	High performance			
General Parameters				
Power Supply Method	DC12V power supply			
Power consumption	8.4W (TEC OFF) / <16W (TEC ON)			
Temperature	Operating temperature -30~60°C, storage temperature -40~85°C			
Humidity	20%-80%, no condensation			
Dimensions	68mm×68mm×90.3mm			
Weight	485g			
Lens interface	C interface			
Software	A complete SDK development package and CLView software based on Delsa acquisition cards			

*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR 900–1700 0.33MP 15μm

SWIR331KMB-G

Model Parameters	SWIR331KMB-G125	SWIR331KMB-G350	SWIR331KMB-G700
	330,000 pixels 3/4” InGaAs GigE相机		
Camera Parameters			
Sensor model	Nationally produced		
Sensor type	InGaAs CMOS image sensor		
Spectral Range	900nm-1700nm		
Pixel Size	15μm x 15μm		
Target size	3/4”		
ADC	14-bit		
Frame rate & resolution	8bit: 125@640x512 14bit: 125@640x512	8bit: 360@640x512 14bit: 145@640x512	8bit: 360@640x512; 700@320x256 14bit: 180@640x512 ROI1-5: For detailed parameters, please refer to the 2.5 frame rate and ROI table
Memory	512MB		
QE	75%@1350nm		
Conversion Gain	138.6e-/ADU(LG), 5.54e-/ADU(MG), 1.2e-/ADU (HG)		
Dynamic Range	70.59dB(LG), 67.96dB(MG), 47.98dB(HG) *1		
Readout noise	586.82e(LG), 35.05e(MG), 68.44e(HG)		
Full well charge	1986426.78e(LG), 87649.83Ke(MG), 17147.351e(HG) *1		
Maximum Signal-to-Noise Ratio	62.98dB(LG), 49.43dB(MG), 42.34dB(HG)		
Dark current	30fa@0.1V&18°C		
Exposure time range	25us~5s		
Data interface	Global shutter		
Data format	GigE		
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports		
Data format	Mono 8 / Mono 14		
Refrigeration temperature difference	40°C lower than room temperature		
General Parameters			
Power Supply Method	DC12V power supply		
Power consumption	8.4W（TEC OFF） / <16W（TEC ON）		
Temperature	Operating temperature -30~60°C， storage temperature -40~85°C		
Humidity	20%-80%， no condensation		
Dimensions	68mm×68mm×90.3mm		
Weight	485g		
Lens interface	C interface		
Software	Complete SDK development package/ToupView		

*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR331KMB-10G

Model	SWIR331KMB-10G
Parameters	330,000 pixels 3/4" InGaAs 10G camera
Camera Parameters	
Sensor model	Domestic 640*512
Sensor type	InGaAs CMOS image sensor
Spectral Range	900nm-1700nm
Pixel Size	15μm x 15μm
Target size	3/4"
ADC	14-bit
Frame rate & resolution	8bit: 724@640x512 14bit: 724@640x512
Memory	512MB
QE	75%@1350nm
Conversion Gain	138.6e-/ADU(LG), 5.54e-/ADU(MG), 1.2e-/ADU (HG)
Dynamic Range	70.59dB(LG), 67.96dB(MG), 47.98dB(HG) *1
Readout noise	586.82e(LG), 35.05e(MG), 68.44e(HG)
Full well charge	1986426.78e(LG), 87649.83Ke(MG), 17147.351e(HG) *1
Maximum Signal-to-Noise Ratio	62.98dB(LG), 49.43dB(MG), 42.34dB(HG)
Dark current	30fa@0.1V&18°C
Exposure time range	25us~5s
Data interface	Global shutter
Data format	10GigE
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	Mono 8 / Mono 14
Refrigeration temperature difference	40°C lower than room temperature
General Parameters	
Power Supply Method	DC12V power supply
Power consumption	8.4W (TEC OFF) / <16W (TEC ON)
Temperature	Operating temperature -30~60°C, storage temperature-40~85°C
Humidity	20%-80%, no condensation
Dimensions	68mm×68mm×90.3mm
Weight	485g
Lens interface	C interface
Software	Complete SDK development package/ToupView

*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR331KMB-U700

Model	SWIR331KMB-U700
Parameters	330,000 pixels 3/4" InGaAs USB camera
Camera Parameters	
Sensor model	Domestic 640x512
Sensor type	InGaAs CMOS image sensor
Spectral Range	900nm-1700nm
Pixel Size	15μm x 15μm
Target size	3/4"
ADC	14-bit
Frame rate & resolution	8bit: 724@640x512 Packet12: 724@640x512 14bit: 579@640x512
Memory	512MB
QE	75%@1350nm
Conversion Gain	138.6e-/ADU(LG), 5.54e-/ADU(MG), 1.2e-/ADU (HG)
Dynamic Range	70.59dB(LG), 67.96dB(MG), 47.98dB(HG) *1
Readout noise	586.82e(LG), 35.05e(MG), 68.44e(HG)
Full well charge	1986426.78e(LG), 87649.83Ke(MG), 17147.351e(HG) *1
Maximum Signal-to-Noise Ratio	62.98dB(LG), 49.43dB(MG), 42.34dB(HG)
Dark current	30fa@0.1V&18°C
Exposure time range	16us~5s
Data interface	Global shutter
Data format	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	Mono 8 / Mono 14 / Packet12
Refrigeration temperature difference	40°C lower than room temperature
General Parameters	
Power Supply Method	DC12V power supply
Power consumption	8.4W (TEC OFF) / <16W (TEC ON)
Temperature	Operating temperature -30~60°C, storage temperature-40~85°C
Humidity	20%-80%, no condensation
Dimensions	68mm×68mm×90.3mm
Weight	485g
Lens interface	C interface
Software	Complete SDK development package/ToupView

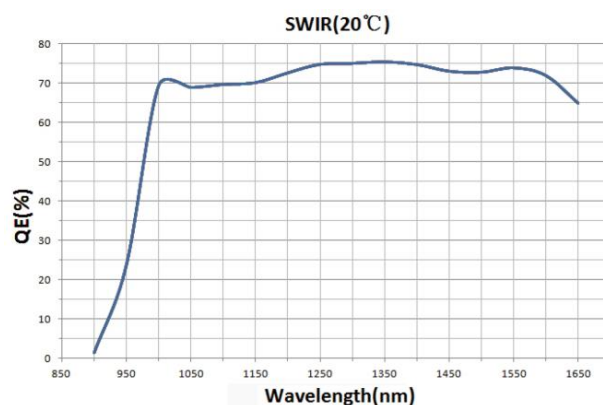
*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR331KMB-UMV

Model	SWIR331KMB-UMV
Parameters	330,000 pixels 3/4" InGaAs USB相机
Camera Parameters	
Sensor model	Domestic 640x512
Sensor type	InGaAs CMOS image sensor
Spectral Range	900nm-1700nm
Pixel Size	15μm x 15μm
Target size	3/4"
ADC	14-bit
Frame rate & resolution	400@640x512
Memory	512MB
QE	75%@1350nm
Conversion Gain	138.6e-/ADU(LG), 5.54e-/ADU(MG), 1.2e-/ADU (HG)
Dynamic Range	70.59dB(LG), 67.96dB(MG), 47.98dB(HG) *1
Readout noise	586.82e(LG), 35.05e(MG), 68.44e(HG)
Full well charge	1986426.78e(LG), 87649.83Ke(MG), 17147.351e(HG) *1
Maximum Signal-to-Noise Ratio	62.98dB(LG), 49.43dB(MG), 42.34dB(HG)
Dark current	30fa@0.1V&18°C
Exposure time range	16us~5s
Data interface	Global shutter
Data format	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	Mono 8 / Mono 14 / Packet12
Refrigeration temperature difference	40°C lower than room temperature
General Parameters	
Power Supply Method	Powered by a 12V power adapter
Power consumption	TBD
Temperature	Operating temperature -30~60°C, storage temperature-40~85°C
Humidity	20%-80%, no condensation
Dimensions	45mm×45mm×50mm
Weight	TBD
Lens interface	C interface
Software	Complete SDK development package/ToupView

*1: LG: CDS-OFF, DeNoise-ON; MG: CDS-ON, DeNoise-OFF; HG: CDS-ON, DeNoise-OFF.

SWIR331 QE curve



SWIR331 QE curve

SWIR331 frame rate and ROI

The camera supports hardware ROI. The smaller the ROI size, the faster the frame rate.

CL1000 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	1000
640	256	1978
320	256	3040
200	200	4816
112	112	10008

CL700 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	724
640	256	1432
320	256	2201
200	200	3487
120	120	6595

CL500 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	517
640	256	1023
320	256	1572
200	200	2491
120	120	4774

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GigE700 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	360
640	256	710
320	256	1424
200	200	2810
120	120	3220

Frame rate table after BIN2-4 in the Y direction of GigE700 is enabled

X Size	Y Size	FPS
640	200	8bit: 920 14bit: 460
640	100	8bit: 1800 14bit: 920
640	50	8bit: 1800 14bit: 1800

GigE125 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	125
640	256	249
320	256	498
200	200	978
120	120	2460

GigE350 ROI Typical frame Rate table

X Size	Y Size	FPS
640	512	8bit: 358 14bit: 140
640	256	8bit: 358 14bit: 140
320	256	8bit: 720 14bit: 280
200	200	8bit: 1098 14bit: 430
120	120	8bit: 1421 14bit: 557