SWIR 400-1700 3MP 3.45um IMX993

产品简介

Goptica SWIR series 400-1700nm is a short-wave infrared camera with SONY indium gallium arsenide chips and USB3 / GigE / 10G/CameraLink interfaces. It features high quantum efficiency and high sensitivity, and is suitable for a wide range of common SWIR applications in various industrial sub-sectors.

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 400-1700nm 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 400-1700nm
- 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 400-1700 3MP 3.45um IMX993

SWIR3000KMA

Model / Parameters	SWIR3000KMA
	3MP 1/1.8” CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX993-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	3.45 μm x 3.45 μm
Target size	1/1.8”
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit：93fps@2048x1536、176fps@1024x768 12 Bit：57fps@2048x1536、176fps@1024x768
Hardware Image Buffer	512MByte
Conversion Gain	10.3e/ADU（HCG）17.29e/ADU（LCG）
Dynamic Range	51.36dB（HCG）51.47dB（LCG）
Readout noise	111.88e（HCG）186.61e（LCG）
Full well charge	41.39ke（HCG）69.92ke（LCG）
Maximum Signal-to-Noise Ratio	46.17dB（HCG）48.45dB（LCG）
Sensitivity	TBD
Dark Current	TBD
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 25℃
Filter	400-1800nm（standard）；1030-1800nm（optional）
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered / 12V power adapter powered
Power consumption	<2.1W（non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60℃, storage temperature -40~85℃
Humidity	20%-80%， no condensation
Dimensions	80mm×80mm×45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE，FCC

SWIR 400-1700 3MP 3.45um IMX993

SWIR3000KMA-10G

Model / Parameters	SWIR3000KMA-10G
	3MP 1/1.8” CMOS 10G Industrial Camera
Camera Parameters	
Sensor model	Sony IMX993-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	3.45 μm x 3.45 μm
Target size	1/1.8”
ADC	12 Bit / 10 Bit / 8 Bit
Frame rate & resolution	8 Bit：220fps@2048x1536、415fps@1024x768 10 Bit：200fps@2048x1536、380fps@1024x768 12 Bit：118fps@2048x1536、220fps@1024x768
Hardware Image Buffer	512MByte
Conversion Gain	10.3e/ADU（HCG）17.29e/ADU（LCG）
Dynamic Range	51.36dB（HCG）51.47dB（LCG）
Readout noise	111.88e（HCG）186.61e（LCG）
Full well charge	41.39ke（HCG）69.92ke（LCG）
Maximum Signal-to-Noise Ratio	46.17dB（HCG）48.45dB（LCG）
Sensitivity	TBD
Dark Current	TBD
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 10℃
Filter	400-1800nm（standard）；1030-1800nm（optional）
CRA	2.35 degrees
General Parameters	
Power Supply Method	12V power adapter powered
Power consumption	TBD
Temperature	Operating temperature -20~60℃, storage temperature -40~85℃
Humidity	20%-80%， no condensation
Dimensions	80mm×80mm×45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE，FCC

SWIR 400-1700 3MP 3.45um IMX993

SWIR3000KMA-CL150

Model / Parameters	SWIR3000KMA-CL150
	3MP 1/1.8” CMOS CameraLink Industrial Camera
Camera Parameters	
Sensor model	Sony IMX993-AABA-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	3.45 μm x 3.45 μm
Target size	1/1.8”
ADC	12 Bit / 10 Bit
Frame rate & resolution	10 Bit：150fps@2048x1536、300fps@1024x768 12 Bit：93fps@2048x1536、176fps@1024x768
Hardware Image Buffer	512MByte
Conversion Gain	10.3e/ADU（HCG）17.29e/ADU（LCG）
Dynamic Range	51.36dB（HCG）51.47dB（LCG）
Readout noise	111.88e（HCG）186.61e（LCG）
Full well charge	41.39ke（HCG）69.92ke（LCG）
Maximum Signal-to-Noise Ratio	46.17dB（HCG）48.45dB（LCG）
Sensitivity	TBD
Dark Current	TBD
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	GigE
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 10℃
Filter	400-1800nm（standard）；1030-1800nm（optional）
CRA	2.35 degrees
General Parameters	
Power Supply Method	12V power adapter powered
Power consumption	TBD
Temperature	Operating temperature -20~60℃, storage temperature -40~85℃
Humidity	20%-80%，no condensation
Dimensions	75mm×75mm×81.9mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE，FCC

SWIR 400-1700 3MP 3.45um IMX993

SWIR3000KMB

Model / Parameters	SWIR3000KMB
	3MP 1/1.8” CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX993-AABJ-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	3.45 μm x 3.45 μm
Target size	1/1.8”
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit：93fps@2048x1536、176fps@1024x768 12 Bit：57fps@2048x1536、176fps@1024x768
Hardware Image Buffer	512MByte
Conversion Gain	10.3e/ADU（HCG）17.29e/ADU（LCG）
Dynamic Range	51.36dB（HCG）51.47dB（LCG）
Readout noise	111.88e（HCG）186.61e（LCG）
Full well charge	41.39ke（HCG）69.92ke（LCG）
Maximum Signal-to-Noise Ratio	46.17dB（HCG）48.45dB（LCG）
Sensitivity	TBD
Dark Current	TBD
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 2 non-isolated input/output ports
Data format	8bit / 12bit
Cooling temperature difference	Below room temperature by 10℃
Filter	400-1800nm（standard）；1030-1800nm（optional）
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered / 12V power adapter powered
Power consumption	<2.1W（non-cooling) / <25W (cooling)
Temperature	Operating temperature -20~60℃, storage temperature -40~85℃
Humidity	20%-80%，no condensation
Dimensions	80mm×80mm×45.5mm
Weight	<390g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE，FCC

SWIR 400-1700 3MP 3.45um IMX993

SWIR3000KMB-UMV

Model / Parameters	SWIR3000KMB-UMV
	3MP 1/1.8” CMOS USB3 Industrial Camera
Camera Parameters	
Sensor model	Sony IMX993-AABJ-C
Sensor type	InGaAs
Spectral Range	400nm-1700nm
Pixel Size	3.45 μm x 3.45 μm
Target size	1/1.8”
ADC	12 Bit / 8 Bit
Frame rate & resolution	8 Bit：93fps@2048x1536、176fps@1024x768 12 Bit：57fps@2048x1536、176fps@1024x768
Hardware Image Buffer	512MByte
Conversion Gain	10.3e/ADU（HCG）17.29e/ADU（LCG）
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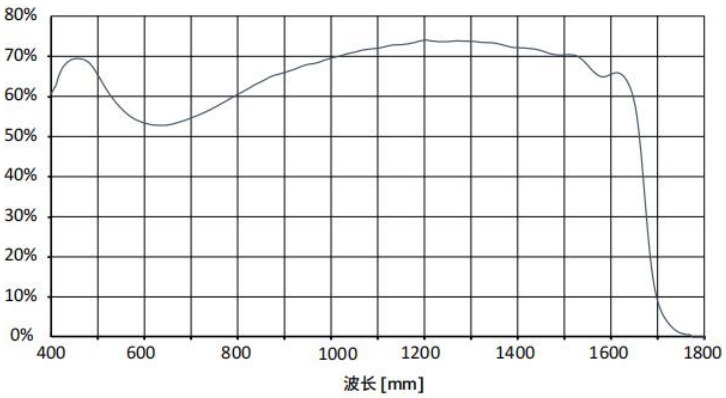
Sensitivity	TBD
Dark Current	TBD
Gain range	1x-15x
Exposure time range	15μs-60sec
Shutter mode	Global shutter
Binning mode	Software 2x2, 3x3, 4x4
Data interface	USB3
Digital IO	1 optical coupler isolated input, 1 optical coupler isolated output, 1 non-isolated input/output ports
Data format	8bit / 12bit
Filter	400-1800nm（standard）；1030-1800nm（optional）
CRA	2.35 degrees
General Parameters	
Power Supply Method	USB 3 interface powered
Power consumption	<2.11W
Temperature	Operating temperature -20~60℃, storage temperature -40~85℃
Humidity	20%-80%，no condensation
Dimensions	33mm×33mm×38mm
Weight	70g
Lens Mount	C interface
Software	Complete SDK development package/ToupView
Operating system	Win32/WinRT/Linux/macOS/Android
Certification	CE，FCC

SWIR 400-1700 3MP 3.45um IMX993

The QE curve of IMX993



Absolute quantum efficiency of IM993

Performance Parameters of IMX993 Camera

The performance parameters of the camera are as follows：

■ Maximum resolution ■ RAW 12-bit mode ■ Temperature：5℃ ■ HCG

Performance parameters of SWR3000KMA camera

Gain Value	100	141	199	282	398	562	794	1500
e-/ADU	10.30	7.10	4.90	3.40	2.38	1.65	1.18	0.66
Read Noise (e-)	111.88	106.44	103.46	100.22	98.45	95.73	95.01	100.87
Full Well (ke-)	41.39	28.46	19.56	13.46	9.35	6.424	4.50	2.38
DR (dB)	51.3	48.5	45.5	42.5	39.5	36.5	33.5	27.4

Performance parameters of SWR3000KMB camera

Gain Value	100	141	199	282	398	562	794	1500
e-/ADU	10.48	7.13	4.92	3.38	2.34	1.64	1.11	0.33
Read Noise (e-)	123.05	116.96	114.17	110.19	105.91	102.38	94.43	49.93
Full Well (ke-)	41.80	28.44	19.56	13.44	9.28	6.46	4.37	1.27
DR (stop)	50.6	47.7	44.7	41.7	38.8	36.0	33.3	28.1