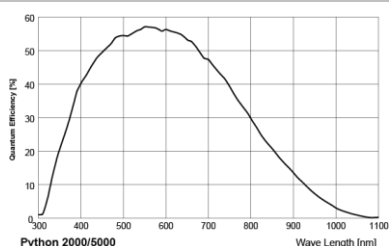
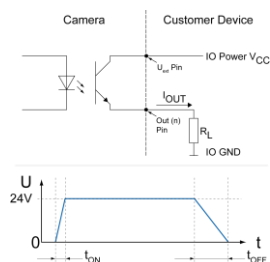




Sensor Graph: Relative Response



Digital Output: High Active



Device Information

Model Name	VCXU-25M.XC
Vendor Name	Baumer

Sensor Information

Sensor Name	ON Semiconductor PYTHON2000
Type	2/3" progressive scan CMOS
Shutter	Global Shutter
Resolution	1920 x 1200 pixels
Scan Area	9.21 mm x 5.76 mm
Pixel Size	4.8 µm x 4.8 µm

Data Quality

@ 20 °C, gain = 1, exposure time = 4 msec

Dark Noise (σ)	11.5 e- typical
Saturation	8600 e- typical
Dynamic Range	57 dB typical
SNR	39.5 dB typical
Quantum efficiency η	56% @ 536 nm typical

Acquisition

Resolution	1920 px x 1200 px		
Interface Frame Rate (depends on used interface performance)	Format	Resolution	max. Frame Rate (@ Trigger Mode) ²⁾
	Full Frame	1920 x 1200	167 fps
	Binning 2x2	960 x 600	167 fps
	Binning 2x1	960 x 1200	167 fps
	Binning 1x2	1920 x 600	167 fps

 Acquisition Frame Rate ¹⁾ 167 fps | $t_{\text{readout}} = 5.97 \text{ msec}$ (max. Res. Full Frame) @ 10 bit

Pixel Formats	Mono8, Mono10
Partial Scan	True Partial Scan with increasing Frame Rate on X and Y direction, Region of Interest (ROI) arbitrary Width: minimum 48, increment 16 Height: minimum 1, increment 1
Adjustable Acquisition Frame Rate	Off or 0,01 ... 65535 Hz
Acquisition Mode	Continuous, Single Frame and Multi Frame
Acquisition Status	AcquisitionActive, AcquisitionTrigger Wait
Exposure Mode	Timed
Shutter Mode	Global
Readout Mode	Sequential

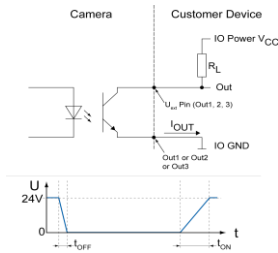
Image Pre-Processing

Analog Controls	Exposure Time (20 µsec ... 1 sec Step Size 1 µsec) Gain (0...18 dB), Offset (0 ... 63 LSB 10 bit)
Auto Function	ExposureAuto and GainAuto with BrightnessAutoPriority based on BrightnessAuto ROI
Gamma Correction	Gamma (0.1 ... 2 available if LUT is enabled)
LUT	Luminance (12 bit)
Color Models	Mono
Color Processing	-
Color Enhancement	-

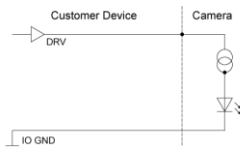
¹⁾ Sensor readout, different from pixel format

²⁾ depends on the used interface

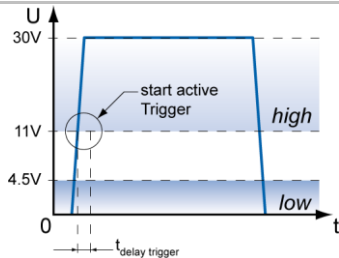
Digital Output: Low Active



Digital Input



Trigger Mode: Start up time and valid Trigger



GPIO

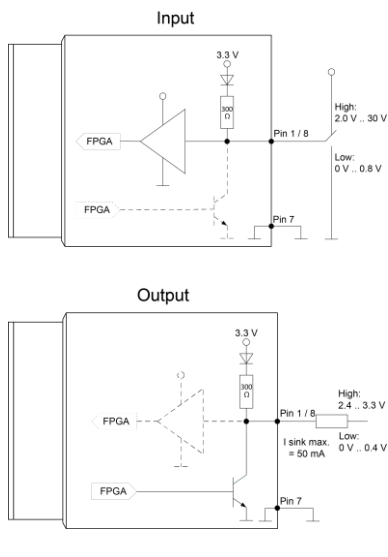


Image Pre-Processing

Color Tolerance	-
Binning Horizontal	1 or 2
Binning Vertical	1 or 2
Defect Pixel Correction	yes, static DPC: Defect Pixel List with up to 512 Pixel Coordinates
Image Flipping	Horizontal, vertical
Fix Pattern Noise Correction	yes

Process Synchronization

Trigger Mode	Off (Free Running), On (Trigger)
Trigger Overlap Type	Readout
Trigger Sources	Hardware (Line0, 1, 2), Software, Counter 1, 2 End, All or Off fixed Trigger Delay out of treadout: ¹⁾ 3 μsec @ 10 bit max. Trigger Delay during treadout: ¹⁾ 8 μsec @ 10 bit
Trigger Delay	0 ... 2 sec, Tracking and buffering of up to 256 triggers
External Flash Sync	via Exposure Active $t_{\text{delay flash}} \leq 3 \mu\text{sec}$, $t_{\text{duration}} = t_{\text{exposure}}$
Encoder Function	yes, via Counter and Trigger Source
PTP Function	-

Digital I/Os

Lines	Input: Line 0, Output: Line3, GPIO: Line 1, Line 2
Line Sources (Output)	Off, ExposureActive, Timer1, ReadoutActive, UserOutput 1-3 and TriggerReady
Line Debouncer (Input)	Low and high signal separately selectable Debouncing Time 0 ... 5 msec, Step Size: 1 μsec

Memory

Image Buffer	317 MB
	72 Images (Trigger Mode) / 1 Image (Free Running Mode)
Non-volatile Memory	128 kb

Interface Data

Interface	USB3.0 (5000 Mbits/sec)
USB Vendor ID / Product ID	0x2825 / 0x13F

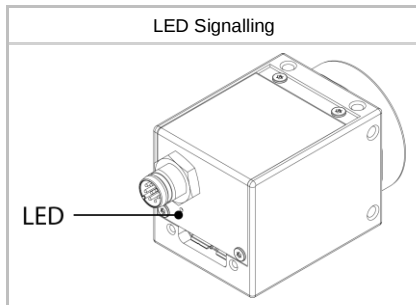
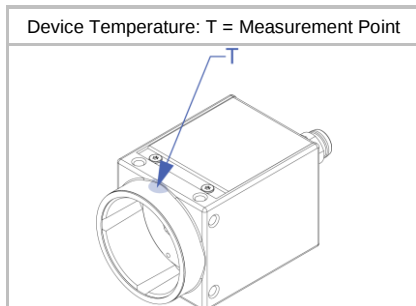
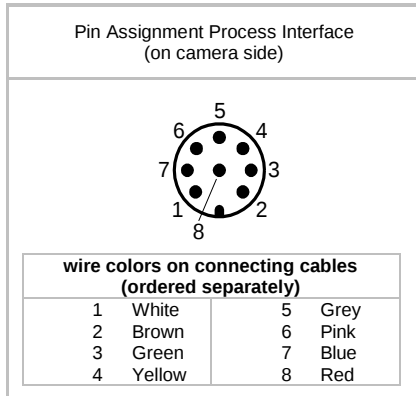
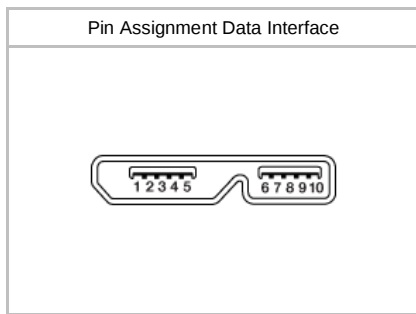
USB 3 Vision® Features

Events	DeviceTemperatureStatusChanged, EventLost, ExposureEnd, ExposureStart, FrameEnd, FrameStart, FrameTransferSkipped, Line0..2 FallingEdge, Line0..2 RisingEdge, TransferBufferFull, TransferBufferReady, TriggerOverlapped, TriggerReady, TriggerSkipped
Transmission via Asynchronous Message Channel	
Frame Counter	up to 2 ³²
Payload Size	0 ... 4608224 Byte
Timestamp	64 bit, resolution in nsec, increment = 8
USB Vision	v1.0.1

Interfaces and Connectors

Data and Power Interface	USB 3.0	Transfer Rate	5000 Mbits/sec
	USB 2.0	Transfer Rate	480 Mbits/sec
Connector:	USB 3.0 Micro B		
Pin Assignment:	1 - VBUS	2 - D-	
	3 - D+	4 - ID	
	5 - GND	6 - MicB_SSTX-	
	7 - MicB_SSTX+	8 - GND_DRAIN	
	9 - MicB_SSRX-	10 - MicB_SSRX+	

¹⁾ Sensor readout, different from pixel format



Interfaces and Connectors

Process Interface

Connector: M8/8-pin (SACC-DSI-M8MS-8CON-M8-L180)

Assignment : 1 - GPIO (Line2) 2 - not connected
3 - IN1 (Line0) 4 - GND IN1
5 - Power VCC OUT1 6 - OUT1 (Line3)
7 - GND GPIO 8 - GPIO (Line1)

Caution



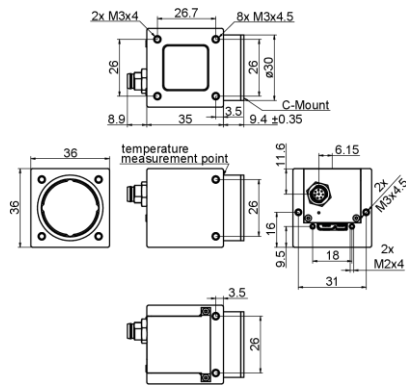
* Note GPIOs: Ground loops are to be avoided and can lead to destruction of the device.

Optical Data

Lens Mount C-Mount
Optical Filter -

Mechanical Data

Housing aluminum, baked varnish
Protection Class IP40 (with mounted lens and USB 3.0 cable)
Weight 110 g
Dimensions



Additional Cooling Pipe

yes, connection with M3 for Push-in fitting
Cooling medium:- compressed air, tested according ISO 8573-1:2010 classes [1:4:2]
- liquid, compatible with aluminum, must contain bio-growth inhibitors and corrosion protection
- maximum pressure 6 bar for compressed air and liquid

Environmental Data

Storage Temperature -20 °C ... + 70 °C
Operating Temperature 0 °C ... +65 °C @ T = Measurement Point or 0 °C ... +75 °C @ internal Temperature Sensor
Note: Ambient temperature above 34 °C requires heat dissipation measures.
Int. Temperature Sensor yes,
InHouse: step size 1 °C, accuracy:
±0.5 °C (typ) 0 °C ... +85 °C
Humidity 10 % ... 90 % non-condensing

LED Signalling

LED
Green flash - Power on, no link active
Green static - Link active USB 3.0
Red static - Error or Link active USB 2.0
Yellow static - Sensor Readout activity
Red flash - Update

Electrical Data

Power Supply	bus powered via USB3.0 interface
Power Consumption	approx. 3.6 W @ 167 fps (Factory Setting "Default")
Digital Input	Optocoupler $U_{IN(low)}$: 0.0 ... 4.5 VDC $U_{IN(high)}$: 11.0 ... 30.0 VDC I_{IN} : 3.0 ... 10.0 mA min. Impulse Length: 2.0 μ sec
Digital Output	Optocoupler U_{EXT} : 5 ... 30 V DC I_{OUT} : max. 50 mA t_{ON} = typ. 3 μ sec t_{OFF} = typ. 40 μ sec
GPIO	direct, without optocoupler
GPIO used as Input:	$U_{IN(low)}$: 0.0 ... 0.8 VDC $U_{IN(high)}$: 2.0 ... 30.0 VDC min. Impulse Length: 2.0 μ sec
GPIO used as Output:	$U_{Out(low)}$: 0.0 ... 0.4 VDC ($I_{sink\ max}$: 50 mA) $U_{Out(high)}$: 2.4 ... 3.3VDC (I_{max} : 1 mA)
Caution	 * The General Purpose I/Os (GPIOs) are not potential-free and do not have an overrun cut-off. Incorrect wiring (overvoltage, undervoltage or voltage reversal) can lead to defects in the electronic system. Ground loops are to be avoided and can lead to destruction of the device.

Conformity

Conformity	CE, RoHS, REACH, UL Recognized
KC Registration No. / Date	- / -
MTBF	67 years @ T = 45 °C / 44 years @ T = 60 °C T = Measurement Point

GenICam™ Features

Short Exposure Range	-
Timer	Timer Selector: Timer Selector: Timer 1 TimerTriggerSource: Line0, SoftwareTrigger, ExposureStart, ExposureEnd, FrameTransferSkipped, TriggerSkipped, Action 1 and Off TimerDelay: 0 μ sec ... 2 sec, Step Size: 1 μ sec TimerDuration: 4 μ sec ... 2 sec, Step Size: 1 μ sec
Counter	Counter Selector: Counter 1, Counter 2 CounterValue: 0 ... 65535 Counter Event Source: Counter1End or Counter2End, ExposureActive, FrameTransferSkipped, FrameTrigger, TriggerSkipped, Line0..2 and Off Counter Reset Source: Counter1End, Counter2End, Line0..2 and Off
Sequencer	Sequencer Characteristics: up to 128 sets, up to 4 possible pathes for triggered set transitions, 6 trigger sources: Counter1End, Counter2End, ExposureActive, Line0..2, ReadoutActive, Timer1End Sequencer Parameters for Exposure, Gain, Trigger, ROI and Output: ExposureTime, CounterDuration, CounterEventActivation, CounterEventSource, CounterResetSource, ExposureMode, ExposureTime, Gain, Height, OffsetX, OffsetY, TriggerMode, UserOutputValue, UserOutputValueAll, Width

GenICam™ Features

User Sets	Factory Settings: UserSet0 (read only) Freely Programmable: UserSet1, UserSet2, UserSet3 Parameters: any user definable Parameter
Acquisition Abort	Delay up to 6 msec
Chunk Data	yes, Chunk Selector: Binning, BlackLevel, CounterValue, DeviceTemperature, ExposureTime, FrameID, Gain, Height, Image, ImageControl, LineStatusAll, OffsetX, OffsetY, PixelFormat, SequencerSetActive, Timestamp, Width
Device Temperature	InHouse Event generation, if temperature status changed from Normal to High, High to Exceeded and Exceeded to Normal Exceeded (no image transfer) = max. internal temperature sensor + 1 °C
Device Link Throughput Limit	yes, up to max. Device Link Speed
Custom Data	yes, 128 Byte with CustomDataKonfiguration Mode
Calibration Data	-
SFNC Version	2.3.0

Factory Settings after Start-Up

Trigger Mode	Off (Free Running)
Analog Controls	Exposure Time: 4 msec, Gain: 0 dB, Offset: 0
Pixel Format	Mono8
Partial Scan	Off
Acquisition Frame Rate	Off
Timer/Counter/Sequencer	Off
Defect Pixel Correction	On
Fixed Pattern Noise Correction	ON
Digital Input	Line0, invert = false
Digital Output	Line3, invert = false, line source = Off
GPIO 1/2	Line1, Line2, invert = false, LineMode = Input
TriggerSource	All

Partial Scan @ FullFrame, min Exposure, Mono8 (monochrome camera) or BayerRG8 (color camera)

	Resolution	max. fps acquisition	max. fps interface ²⁾
Full HD	1920 x 1080	185	185
SXGA	1280 x 1024	286	286
HD720	1280 x 720	401	401
XGA	1024 x 768	463	463
SVGA	800 x 600	726	726
VGA	640 x 480	918	918
CIF	352 x 288	1416	1416
QVGA	320 x 240	1639	1639
QCIF	176 x 144	2392	2392
LineScan	1920 x 1024	195	195
	1920 x 512	380	380
	1920 x 256	724	724
	1920 x 128	1324	1324
	1920 x 64	2256	2256
	1920 x 32	3481	3481
	1920 x 16	4780	4780
	1920 x 8	5910	5910
	1920 x 4	6657	6657
	1920 x 2	7132	7132
	1920 x 1	7396	7396

²⁾ depends on the used interface