

## Device Information

Model Name	VCXG-201C.R.I
Vendor Name	Baumer

## Sensor Information

Model Name	Sony IMX183
Type	1" progressive scan CMOS
Shutter	Rolling Shutter, Global Reset Shutter
Resolution	5472 x 3648 pixels
Scan Area	13.13 mm x 8.75 mm
Pixel Size	2.4 $\mu$ m x 2.4 $\mu$ m

## Data Quality

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

Dark Noise ( $\sigma$ )	3 e- typical
Saturation	13000 e- typical
Dynamic Range	71 dB typical
SNR	41 dB typical
Quantum efficiency $\eta$	60% @ 465 nm, 70% @ 536 nm, 50% @ 631 nm typical

## Acquisition

Resolution	5472 px x 3648 px		
Interface Frame Rate (depends on used interface performance)	Format	Resolution	max. Frame Rate (@ Trigger Mode) <sup>2)</sup>
	Full Frame	5472 x 3648	6 fps
	Binning 2x2	2736 x 1824	9 fps
	Binning 2x1	2736 x 3648	6 fps
	Binning 1x2	5472 x 1824	9 fps
Acquisition Frame Rate <sup>1)</sup> (Burst Mode)	9 fps   $t_{\text{readout}} = 104.6$ msec (max. Res. Full Frame) @ 12 bit		
Pixel Formats	BayerRG8, BayerRG10, BayerRG12, BayerRG12p Mono8, Mono10, Mono12, Mono12p, RGB8, BGR8		
Partial Scan	True Partial Scan without increasing Frame Rate, Region of Interest (ROI) arbitrary Width: minimum 32, increment 32 Height: minimum 4, increment 4		
Adjustable Acquisition Frame Rate	Off or 0.54 ... 65535 Hz		
Acquisition Mode	Continuous, Single Frame and Multi Frame		
Acquisition Status	AcquisitionActive, AcquisitionTrigger Wait		
Exposure Mode	Timed		
Readout Mode	not available		

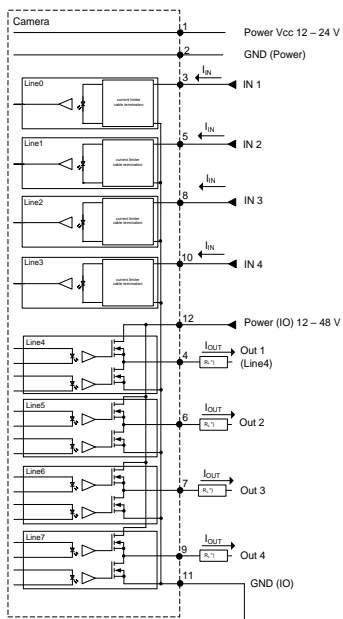
## Image Pre-Processing

Analog Controls	Exposure Time (115 $\mu$ sec ... 60 sec   Step Size 1 $\mu$ sec) Gain (0...20 dB), Offset (0 ... 255 LSB   12 bit)
Auto Function	ExposureAuto and GainAuto with BrightnessAutoPriority based on BrightnessAuto ROI BalanceWhiteAuto and ColorTransformationAuto based on BalanceWhiteAuto ROI
LUT	Luminance (12 bit)
Color Models	Mono, Raw Bayer, RGB and BGR
Color Processing	Integrated color processor for high quality color calculation
Color Adjustment	Manual White Balance Automatic White Balance (Once or Continuous) based on Region of Interest (ROI)

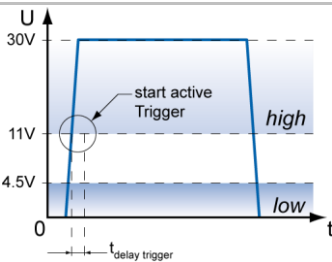
<sup>1)</sup> Sensor readout, different from pixel format

<sup>2)</sup> depends on the used interface

### Digital Input / Output: principle circuit diagram



### Trigger Mode: Start up time and valid Trigger



## Image Pre-Processing

Color Enhancement	Color Transformation to sRGB color space by optimized Matrix for 3000 K, 5000 K, 6500 K and 9500 K Lightsource or User defined Matrix
Color Tolerance	-
Binning Horizontal	1 or 2
Binning Vertical	1 or 2
Fix Pattern Noise Correction	-

## Process Synchronization

Trigger Mode	Off (Free Running), On (Trigger)
Trigger Overlap Type	Trigger Mode On: Off Trigger Mode Off: Not available
Trigger Sources	Hardware (Line0, 1, 2, 3), Software, Action CMD (Action 1), All or Off max. Trigger Delay out of $t_{readout}$ : <sup>1)</sup> 104478 $\mu$ sec / 200.9 $\mu$ sec @ 12 bit (Rolling / Global Reset) max. Trigger Delay during $t_{readout}$ : <sup>1)</sup> -
Trigger Delay	0 ... 2 sec, Tracking and buffering of up to 256 triggers
External Flash Sync	via Exposure Active $t_{delay\ flash} \leq 3\ \mu$ sec, $t_{duration} = t_{exposure}$
Encoder Function	-
PTP Function	-

## Digital I/Os

Lines	Input: Line 0 .. 3, Output: Line 4 .. 7, GPIO: no
Output Sources	Off, ExposureActive, Timer1, ReadoutActive, UserOutput 1-3 and TriggerReady
Output Line Mode	yes, Tri-State, PushPull, OpenDrain, OpenSource
Output PWM function	yes, Line 4 .. 7 PWM Mode: Off, One Pulse, FixedFrequency PWM feature: PWMDuration, PWMDutyCycle Configuration Mode for lightning protection: MaxPWMDuration, MaxPWMDutyCycle
Line Debouncer	Low and high signal separately selectable Debouncing Time 0 ... 5 msec, Step Size: 1 $\mu$ sec

## Memory

Image Buffer	58 MB 1 Images (Trigger Mode) / 1 Image (Free Running Mode)
Non-volatile Memory	128 kb

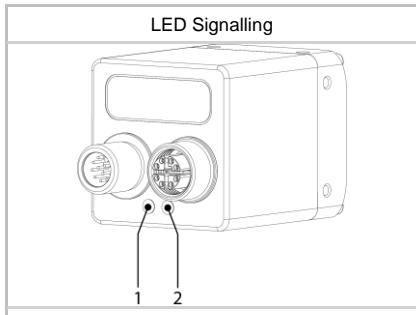
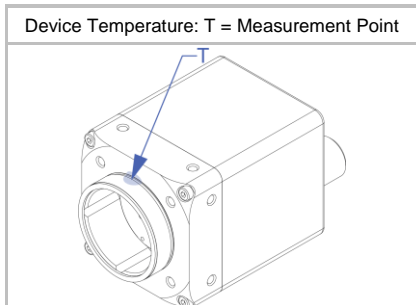
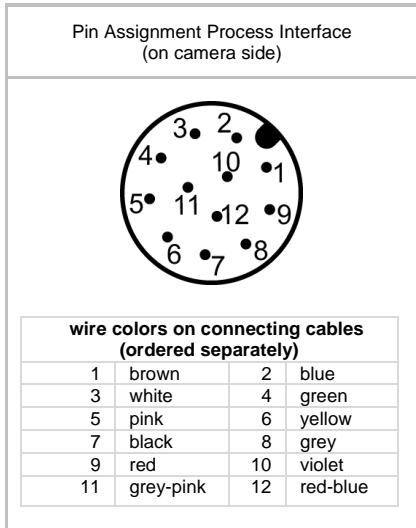
## Network Interface Data

Interface	Gigabit Ethernet 1000BASE-T 1000 Mbits/sec Fast Ethernet 100 BASE-T 100 Mbits/sec
Ethernet IP Configuration	Persistent IP, DHCP, LLA
Packet Size	576 ... 9000 Byte, Jumbo Frames supported

## GigE Vision® Features

Events	DeviceTemperatureStatusChanged, EventLost, ExposureEnd, ExposureStart, FrameEnd, FrameStart, FrameTransferSkipped, GigEVisionError, GigEVisionHeartbeatTimeOut, PrimaryApplicationSwitch, Line0..7 FallingEdge, Line0..7 RisingEdge, TransferBufferFull, TransferBufferReady, TriggerOverlapped, TriggerReady, TriggerSkipped
Transmission via Asynchronous Message Channel	
Action CMD	yes, Action 1 for Trigger
Frame Counter	up to 2 <sup>32</sup>
Payload Size	0 ... 59885780 Byte
Timestamp	64 bit, resolution in nsec, increment = 8
Packet Delay	0 .. 2 <sup>32</sup> - 1 nsec
Packet Resend	Resend Buffer: 115 MB (2 Images)
GigE Vision	v2.0 (v1.2 backward compatible)

<sup>1)</sup> Sensor readout, different from pixel format



## Interfaces and Connectors

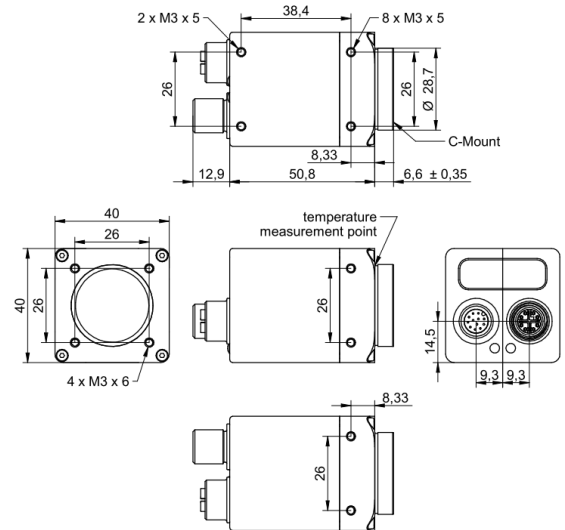
Data and Power Interface	Gigabit Ethernet	Transfer Rate	1000 Mbits/sec
	Fast Ethernet	Transfer Rate	100 Mbits/sec
	Connector:	M12 / 8-pol x-coded (SACC-CI-M12FS-8CON-L180-10G)	
	Assignment:	1 - MX1+	2 - MX1-
		3 - MX2+	4 - MX2-
		5 - MX4+	6 - MX4-
		7 - MX3-	8 - MX3+
Process Interface	Connector:	M12/12-pin a-coded (SACC-CI-M12MS-12CON-L180)	
	Assignment:	1 - Power Vcc	2 - GND (Power)
		3 - IN1 (Line0)	4 - OUT1 (Line4)
		5 - IN2 (Line1)	6 - OUT2 (Line5)
		7 - OUT3 (Line6)	8 - IN3 (Line2)
		9 - OUT4 (Line7)	10 - IN4 (Line3)
		11 - GND (IO)	12 - Power (IO)

## Optical Data

Lens Mount	C-Mount
Optical Filter	IR cut filter

## Mechanical Data

Housing	aluminum, hard anodized
Protection Class	IP40 (with mounted lens and GigE cable) IP54 (with mounted lens and GigE cable) IP65/67 (with mounted tube and cable) IP69k (with stainless steel housing system)
Weight	137 g
Dimensions	

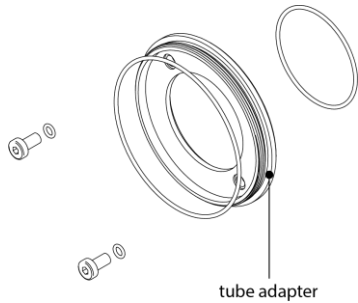


## Environmental Data

Storage Temperature	-10 °C ... + 70 °C
Operating Temperature	0 °C ... +65 °C @ T = Measurement Point or 0 °C ... +75 °C @ internal Temperature Sensor Note: Ambient temperature above 45 °C requires heat dissipation measures.
Int. Temperature Sensor	yes, accuracy: ±2 °C (typ) -40 °C ... 0 °C ±1 °C (typ) 0 °C ... +85 °C
Humidity	10 % ... 90 % non-condensing

<sup>1)</sup> the maximum temperature for Sony sensor characteristics (sensor performance) are guaranteed up to 55 °C @ Measurement Point or up to 59 °C @ internal temperature sensor

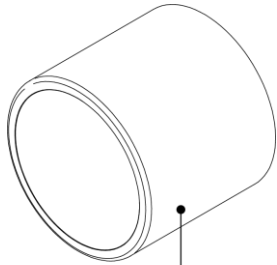
**Optional accessories for IP65/67 protection (ordered separately)**



tube adapter

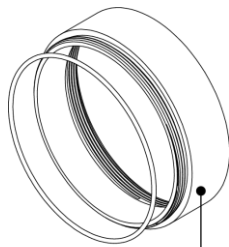
including seals and screws

Article Number	Diameter	Length
11185373	Ø 49,5 mm	5,25 mm
11185377	Ø 65 mm	5,25 mm



tube

Article Number	Diameter	Cover Glass	Length
11185370	Ø 49,5 mm	PMMA (Acryl)	44 mm
11185374	Ø 65 mm		58 mm
11701124	Ø 49,5 mm	Tempered laminated safety glass	44 mm
11701125	Ø 65 mm		58 mm



distance ring

including seal

Article Number	Diameter	Length
11185372	Ø 49,5 mm	6 mm
11185371	Ø 49,5 mm	12 mm
11211571	Ø 49,5 mm	36 mm
11185376	Ø 65 mm	6 mm
11185375	Ø 65 mm	12 mm
11198906	Ø 65 mm	36 mm

**LED Signalling**

LED	LED 1	LED 2	
	Yellow static	Yellow flash	Error
	Green static	Green flash	Link ON
			RX active

**Electrical Data**

Power Supply (ext.)	VCC: 12 ... 24 V DC ± 20% I: 100 ... 200 mA
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Power over Ethernet	Class 1 device VCC: 36 ... 57 V DC I: 63 mA @ 48 VDC
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Power Consumption	approx. 2.4 W @ 12VDC and 6 fps approx. 3.0 W @ 48 VDC (PoE) and 6 fps (Factory Setting "Default")
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Digital Input	Isolated, short circuit protection U <sub>IN(low)</sub> : 0.0 ... 4.5 VDC U <sub>IN(high)</sub> : 11.0 ... 30.0 VDC I <sub>IN</sub> : 3.0 ... 10.0 mA min. Impulse Length: 2.0 µsec
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Digital Output	Isolated, short circuit protected U <sub>EXT</sub> : 12 ... 48 V DC [Power (IO)] (See documentation for guidelines when using >30V.)  I <sub>OUT</sub> : Continuously: max. 1.5 A PWM t <sub>ON</sub> max 1s / Duration max 40%: max. 2.5 A (Max. current can be used with one output or as a sum of all outputs used.)  t <sub>ON</sub> = < 0.2 µsec      t <sub>OFF</sub> = < 0.2 µsec max. Frequency: 500 kHz
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GPIO	no
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**Conformity**

Conformity	CE, RoHS, REACH
KC Registration No. / Date	- / -
MTBF	- / -
	T = Measurement Point

**GenICam™ Features**

Short Exposure Range	-
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Timer	Timer Selector: Timer 1 TimerTriggerSource: Line0, SoftwareTrigger, ExposureStart, ExposureEnd, FrameTransferSkipped, TriggerSkipped, Off TimerDelay: 0 µsec ... 2 sec, Step Size: 1 µsec TimerDuration: 4 µsec ... 2 sec, Step Size: 1 µsec
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Counter	Counter Selector: Counter 1, Counter 2 CounterValue: 0 ... 65535 Counter Event Source: Counter1End or Counter2End, ExposureActive, FrameTransferSkipped, FrameTrigger, TriggerSkipped, Line0..3 and Off Counter Reset Source: Counter1End, Counter2End, Line0..3 and Off
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Sequencer	no
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## GenICam™ Features

User Sets	Factory Settings: UserSet0 (read only) Freely Programmable: UserSet1, UserSet2, UserSet3 Parameters: any user definable Parameter
Acquisition Abort	Delay up to 104.6 msec
Chunk Data	yes, Chunk Selector: Binning, BlackLevel, CounterValue, DeviceTemperature, ExposureTime, FrameID, Gain, Height, Image, ImageControl, LineStatusAll, OffsetX, OffsetY, PixelFormat, , Timestamp, Width
Device Temperature	InHouse Event generation for 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
SFNC Version	v2.4

## Factory Settings after Start-Up

Trigger Mode	Off (Free Running)
Analog Controls	Exposure Time: 4 msec, Gain: 0 dB, Offset: 0
Pixel Format	BayerRG8
Partial Scan	Off
Acquisition Frame Rate	Off
Timer/Counter/Sequencer	Off
Defect Pixel Correction	ON
Fixed Pattern Noise Correction	-
Digital Input	Line0 .. 3, invert = false, line format = Tri State
Digital Output	Line4 .. 7, invert = false, line source = Off, line format = Open Source
GPIO 1/2	no
TriggerSource	All

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

	Resolution	max. fps acquisition	max. fps interface <sup>2)</sup>
HXGA	4096 x 3072	9,5	9,5
UHD (4K)	3840 x 2160	9,5	9,5
Full HD	1920 x 1080	9,5	9,5
SXGA	1280 x 1024	9,5	9,5
HD720	1280 x 720	9,5	9,5
XGA	1024 x 768	9,5	9,5
SVGA	800 x 600	9,5	9,5
VGA	640 x 480	9,5	9,5
CIF	352 x 288	9,5	9,5
QVGA	320 x 240	9,5	9,5
QCIF	176 x 144	-	-
LineScan	5472 x 2048	9,5	9,5
	5472 x 1024	9,5	9,5
	5472 x 512	9,5	9,5
	5472 x 256	9,5	9,5
	5472 x 128	9,5	9,5
	5472 x 64	9,5	9,5
	5472 x 32	9,5	9,5
	5472 x 16	9,5	9,5
	5472 x 8	9,5	9,5
	5472 x 4	9,5	9,5
	5472 x 2	-	-
	5472 x 1	-	-

<sup>2)</sup> depends on the used interface