

## 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 μm x 2.4 μm

## 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 $\eta$	62 % @ 465 nm, 67 % @ 536 nm, 51 % @ 631 nm typical

## Acquisition

Resolution	5472 px x 3648 px		
Interface Frame Rate	Format	Resolution	max. Frame Rate
(depends on used interface performance)			
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> 9 fps |  $t_{\text{readout}} = 104.6 \text{ msec}$  (max. Res. Full Frame) @ 12 bit (Burst Mode)

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 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 μsec ... 60 sec | Step Size 1 μsec)  
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

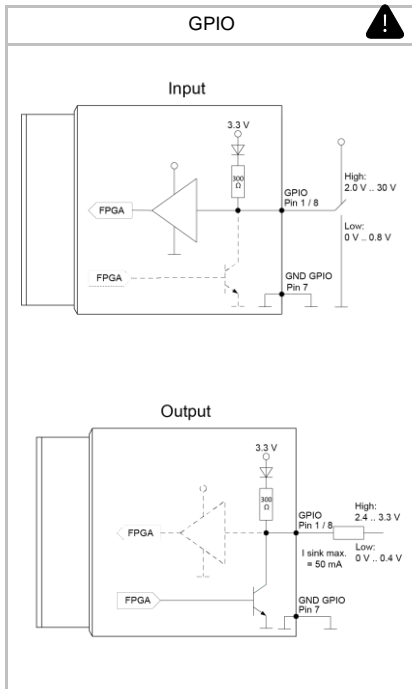
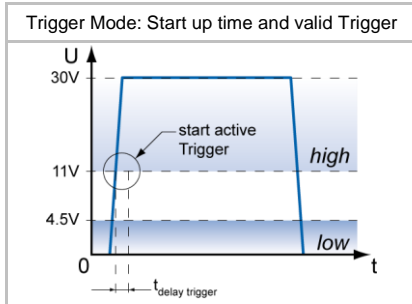
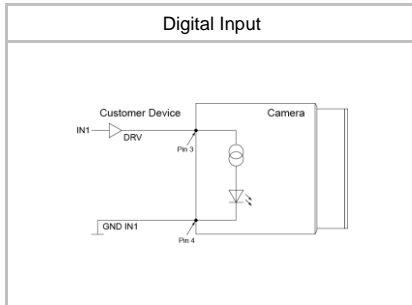
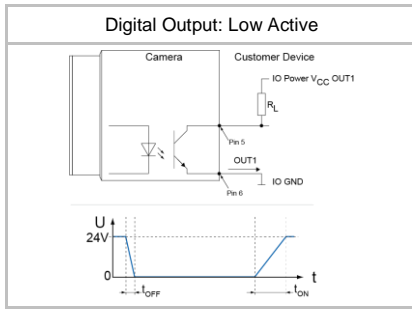
Color Adjustment Manual White Balance  
Automatic White Balance (Once or Continuous) based on Region of Interest (ROI)

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 -

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

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



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

## Image Pre-Processing

Binning Horizontal	1 or 2
Binning Vertical	1 or 2
Image Flipping	no
Defect Pixel Correction	via Defect Pixel List with up to 512 Pixel Coordinates
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), Software, Counter 1, 2 End, Action CMD (Action 1), All or Off max. Trigger Delay out of t <sub>readout</sub> : <sup>1)</sup> 104478 μsec / 200.9 μsec @ 12 bit (Rolling / Global Reset) max. Trigger Delay during t <sub>readout</sub> : <sup>1)</sup> -
Trigger Delay	0 ... 2 sec, Tracking and buffering of up to 256 triggers
External Flash Sync	via Exposure Active t <sub>delay flash</sub> ≤ 3 μsec, t <sub>duration</sub> = t <sub>exposure</sub>
Encoder Function	-
PTP Function	-

## Digital I/Os

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

## Memory

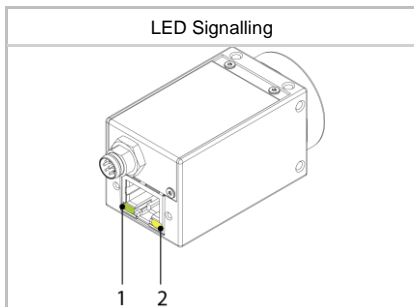
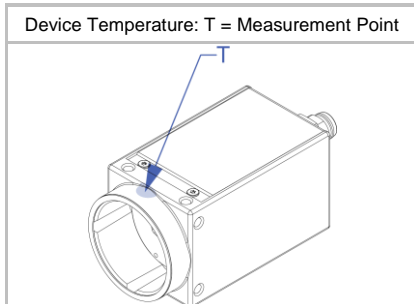
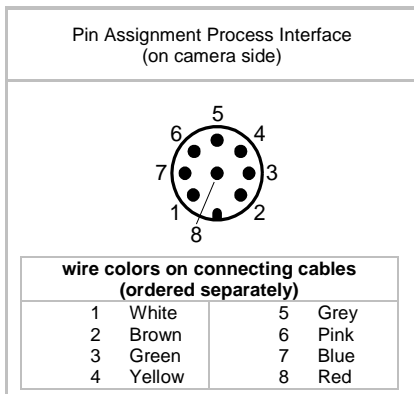
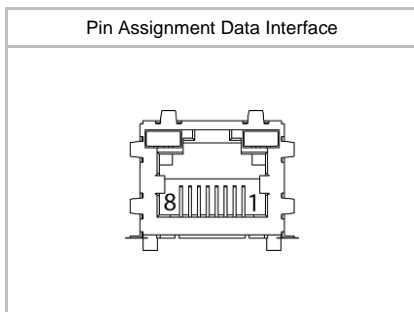
Image Buffer	58 MB 1 Images (Trigger Mode) / 1 Image (Free Running Mode)
Non-volatile Memory	128 kb

## 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..2 FallingEdge, Line0..2 RisingEdge, TransferBufferFull, TransferBufferReady, TriggerOverlapped, TriggerReady, TriggerSkipped
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)



## Interfaces and Connectors

Data and Power Interface	Gigabit Ethernet	Transfer Rate	1000 Mbits/sec
	Fast Ethernet	Transfer Rate	100 Mbits/sec
	Connector:	8P8C Modular Jack (RJ45), screw lock type	
Process Interface	Connector:	M8/8-pin (SACC-DSI-M8MS-8CON-M8-L180)	
	Assignment:	1 - MX1+	2 - MX1-
		3 - MX2+	4 - MX3+
		5 - MX3-	6 - MX2-
		7 - MX4+	8 - MX4-
		Assignment:	1 - GPIO (Line2)
		3 - IN1 (Line0)	4 - GND IN1
		5 - Power VCC OUT	6 - OUT1 (Line3)
		7 - GND (Power, GPIO)	8 - GPIO (Line1)

Caution



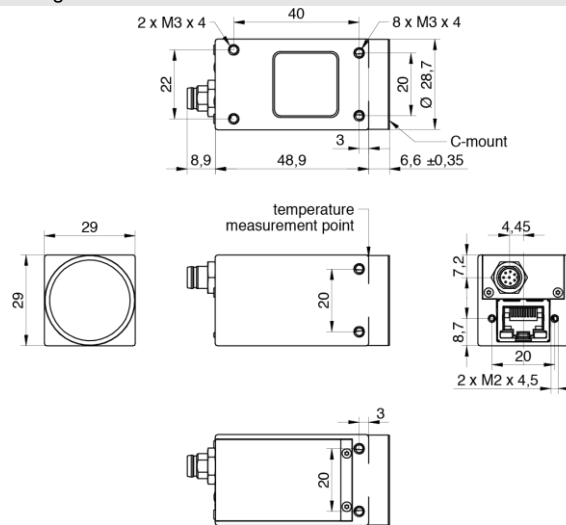
\* Note GPIOs: Ground loops are to be avoided and can lead to destruction of the device.

## Optical Data

Lens Mount	C-Mount
Optical Filter	IR cut filter

## Mechanical Data

Housing	Zinc die casting, baked varnish (until 02-2020 nickel-chrome-plated)
Protection Class	IP40 (with mounted lens and GigE cable)
Weight	120 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
	Ambient temperature above 36 °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>7)</sup> the maximum temperature for Sony sensor characteristics (sensor performance) are guaranteed up to 53°C @ Measurement Point or 60°C @ internal temperature sensor

## LED Signalling

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

## Electrical Data

Power Supply (ext.)	VCC: 12 ... 24 V DC $\pm$ 20% I: 104 ... 209 mA
Power over Ethernet	Class 1 device VCC: 36 ... 57 V DC I: 63 mA @ 48 VDC
Power Consumption	approx. 2.5 W @ 12VDC and 6 fps approx. 3.0 W @ 48 VDC (PoE) and 6 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 $\mu$ sec
Digital Output	Optocoupler $U_{EXT}$ : 5 ... 30 V DC $I_{OUT}$ : max. 50 mA $t_{ON}$ = typ. 3 $\mu$ sec $t_{OFF}$ = typ. 40 $\mu$ 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 $\mu$ 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, KC, EAC
KC Registration No. / Date	R-REI-BkR-VCXG-201MR / 24.10.2018
MTBF	61 years @ T = 45 °C / 40 years @ T = 60 °C T = Measurement Point

## GenICam™ Features

Short Exposure Range	-
Timer	Timer Selector: Timer 1 TimerTriggerSource: Line0, SoftwareTrigger, ExposureStart, ExposureEnd, FrameTransferSkipped, TriggerSkipped, Off TimerDelay: 0 $\mu$ sec ... 2 sec, Step Size: 1 $\mu$ sec TimerDuration: 4 $\mu$ sec ... 2 sec, Step Size: 1 $\mu$ 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	no

## 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

Ethernet IP Configuration	
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, 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 <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