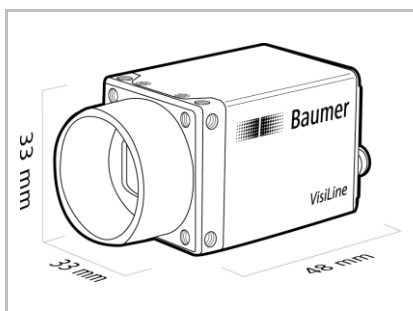
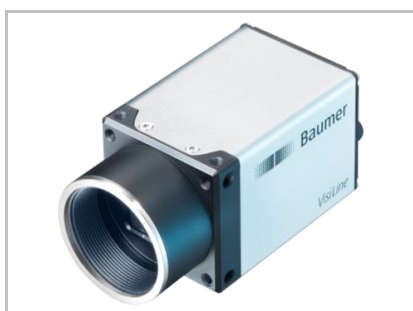


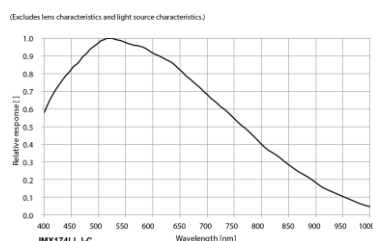
VLG-23M

Art. No.
11143096

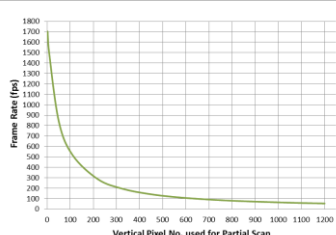
Technical Data



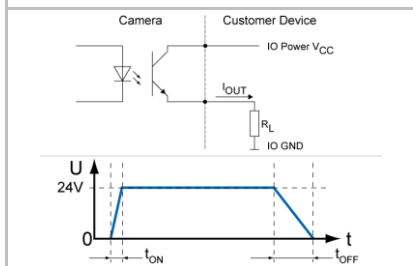
Sensor Graph: Relative Response



Frame Rates / Partial Scan
(Measured at Mono8/BayerRG8-Format)



Digital Output: High Active



Digital Monochrome Matrix Camera, Gigabit Ethernet

Sensor Information

Model Name	Sony IMX174
Type	1/1.2" progressive scan CMOS
Shutter	Global
Native Resolution	1920 x 1200 pixels
Scan Area	11.25 mm x 7.03 mm
Pixel Size	5.86 μm x 5.86 μm

Data Quality

@ 20 °C, gain = 1, exposure time = 32 msec

Readout Noise (σ)	0.06 LSB @ 8 bit, 1 LSB @ 12 bit (typical)
Dynamic Range	73 dB (typical)

Acquisition Formats

Image Formats	Format	Resolution	Frame Rate	t _{readout}
	Full Frame	1920 x 1200	53 fps ¹	15.5 msec
Pixel Formats	Mono8, Mono12, Mono12 Packed			
Partial Scan	True Partial Scan, Region of Interest (ROI) arbitrary			

Image Pre-Processing

Analog Controls	Exposure Time (45 μsec ... 60 sec Step Size 1 μsec) Gain (0 ... 48 dB), Offset (0 ... 255 LSB 12 bit),
Gamma Correction	Gamma (0.1 ... 2 available if LUT is enabled)
LUT	Luminance (12 bit)
Color Models	Mono
Color Tolerance	Only on Color Cameras
Color Processing	Only on Color Cameras
Color Adjustment	Only on Color Cameras
Binning Horizontal	1 or 2 ²
Binning Vertical	1 or 2 ²
Image Flipping	Horizontal, vertical
Defect Pixel Correction	via Defect Pixel List with up to 511 Pixel Coordinates

Process Synchronization

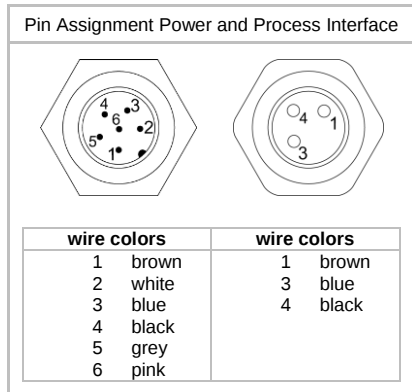
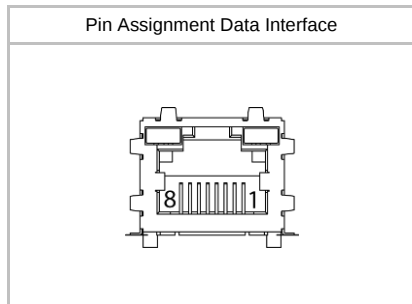
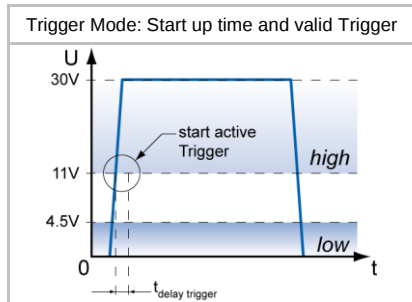
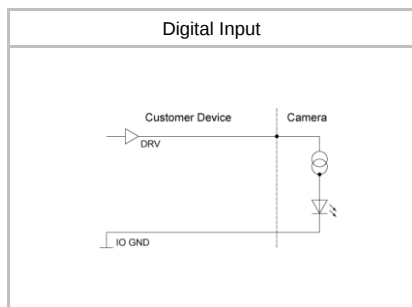
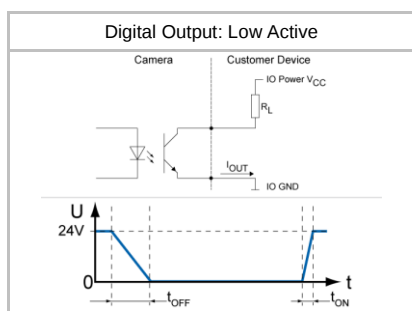
Modes	Free Running, Trigger
Free Running	Continuous or Adjustable Acquisition Frame Rate (0.01 ... 1703 Hz)
Trigger Sources	Hardware, Software, ActionCommand, All or Off
Trigger Delay	0 ... 2 sec, Tracking and buffering of up to 256 triggers
Sequencer Characteristics	up to 128 sets of parameters, up to 65536 loop passes, up to 65536 repetitions of sets of parameters, up to 65536 images per trigger event
Sequencer Parameters	Exposure Time, Gain Factor, Output Line, ROI Offset x, ROI offset y
External Flash Sync	via Exposure Active $t_{\text{delay flash}} \leq 3 \mu\text{sec}$, $t_{\text{duration}} = t_{\text{exposure}}$

Digital I/Os

Lines	Input: Line 0, Output: Line1, Line 2, Line 3
Circuit Times	Output: $t_{\text{ON}} = \text{typ. } 3 \mu\text{sec}$ $t_{\text{OFF}} = \text{typ. } 40 \mu\text{sec}$
Output Sources	Off, ExposureActive, Line 0, Timer1 ... 3, ReadoutActive, User0 ... 2, TriggerReady, TriggerOverlapped, TriggerSkipped, Sequencer Output 0 ... 2
Line Debouncer	Low and high signal separately selectable Debouncing Time 0 ... 5 msec, Step Size: 1 μsec

¹ limited frame rate depend on used interface board

² Binning calculated on camera (no higher frame rate) – Sensor do not support binning operation



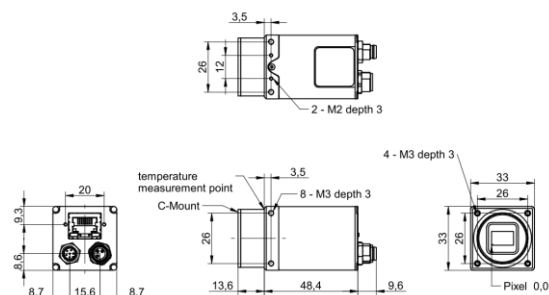
Interfaces and Connectors

Data Interface	Gigabit Ethernet	Transfer Rate	1000 Mb/s/sec
	Fast Ethernet	Transfer Rate	100 Mb/s/sec
Connector:	8P8C Modular Jack (RJ45)		
	screw lock type		
Pin Assignment:	1 – MX1+	5 – MX3-	
	2 – MX1-	6 – MX2-	
	3 – MX2+	7 – MX4+	
	4 – MX3+	8 – MX4-	
Power Interface	Connector:	SACC-DSI-M 8MS-6CON-L180 SH	
	Assignment:	1 – Power VCC	4 – OUT 1
Process Interface	Connector:	2 – IN1	5 – IO Power VCC
		3 – GND	6 – IO GND
		1 – not used	
		3 – OUT2	
	Assignment:	4 – OUT3	

Mechanical Data

Housing	Camera Support: Aluminium, Case and Back Plane: Zinc die casting, nickel-plated, Protection class: IP40
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Dimensions



Weight	125 g
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Optical Data

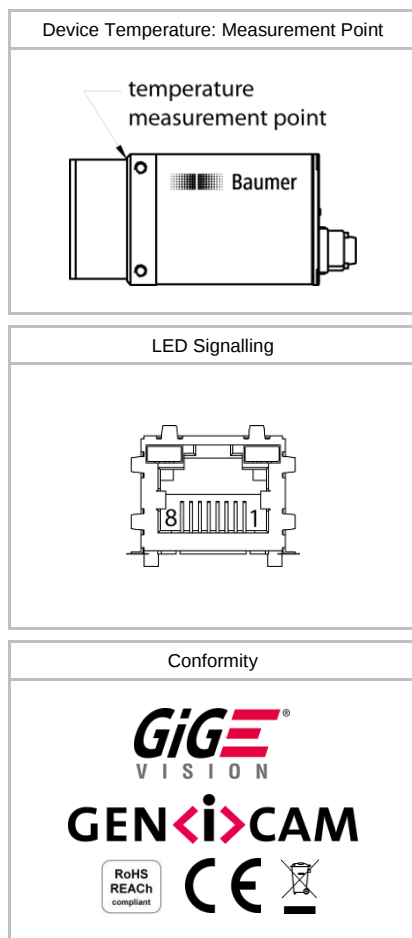
Lens Mount	C-Mount
Optical Filter	Dust Protection Glass

Electrical Data

Power Supply (ext.)	VCC:	12 ... 24 V DC ± 20%
	I:	145 ... 273 mA
Power over Ethernet	Class 0 device	
	VCC:	36 ... 57 V DC
	I:	79 mA @ 48 VDC
Power Consumption	approx. 3.5 W @ 12 VDC and 53 fps	
	approx. 3.8 W @ 48 VDC (PoE) and 53 fps	
Digital Input	U _{IN(low)} :	0.0 ... 4.5 VDC
	U _{IN(high)} :	11.0 ... 30.0 VDC
	I _{IN} :	6.0 ... 10 mA
	min. Impulse Length:	2.0 µsec
	Trigger Delay out of treadout:	27.2 µsec
	max. Trigger Delay during treadout:	36.9 µsec
Digital Output	U _{EXT} :	5 ... 30 V DC
	I _{OUT} :	max. 50 mA

LED Signalling

LED 1 (right)	Green	Link active
	Green flash	Receiving
LED 2 (left)	Yellow	Transmitting



Environmental Data

Storage Temperature	-10 °C bis +70 °C
Operating Temperature	+5°C ... +50°C
Device Temperature	T _{max} = 50 °C @ Measurement Point
Humidity	10 % ... 90 % non-condensing
Conformity	RoHS, REACH, CE

Network Interface Data

Network 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 ... 16 KByte, Jumbo Frames supported

GigE Vision® Features (in compliance with GigE Vision® 1.2)

Events Transmission via Asynchronous Message Channel	PrimaryApplicationStitch, GigEVisionError, GigEVisionHeartbeatTimeout, EventLost, EventDiscarded, Line0RisingEdge, Line0FallingEdge, Line1RisingEdge, Line1FallingEdge, Line2RisingEdge, Line2FallingEdge, Line3RisingEdge, Line3FallingEdge, ExposureStart, ExposureEnd, FrameStart, FrameEnd, TriggerReady, TriggerOverlapped, TriggerSkipped
Frame Counter	up to 2 ³²
Payload Size	4 ... 4.608.272 Byte
Transmission Delay	0 .. 2 ³² -1 Ticks (1 Tick = 1 nsec)
Timestamp	64 bit
Packet Delay	0 .. 2 ³² -1 Ticks
Packet Resend	Resend Buffer: 120 MB (13 Images)

GenICam™ Features (in compliance with SFNC 1.5.1)

Timer	Timer Selector: Timer 1 ... 3 TimerTriggerSource: Line0, SoftwareTrigger, CommandTrigger, ExposureStart, ExposureEnd, FrameStart, FrameEnd, TriggerSkipped, Off TimerDelay: 0 µsec ... 2 sec, Step Size: 1 µsec TimerDuration: 10 µsec ... 2 sec, Step Size: 1 µsec
User Sets	Factory Settings: UserSet0 (read only) Freely Programmable: UserSet1, UserSet2, UserSet3 Parameters: any user definable Parameter
Acquisition Abort	Delay up to 15.5 msec

Vendor Specific Features

FPN Correction	no
HDR	no

Factory Settings after Start-Up

Operation Mode	Free Running
Analog Controls	Exposure Time: 15 msec, Gain: 0 dB, Offset: 0
Pixel Format	Mono8
Partial Scan	Off
Acquisition Frame Rate	Off
Timer	Off
Transmission Delay	Off
Defect Pixel Correction	On
FPN Correction	-
Digital Input	Line0, invert = false, trigger source = All
Digital Output	Line1, invert = false, line source = Off