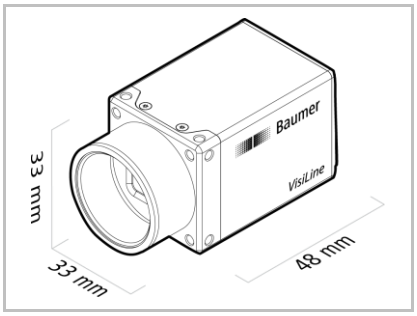
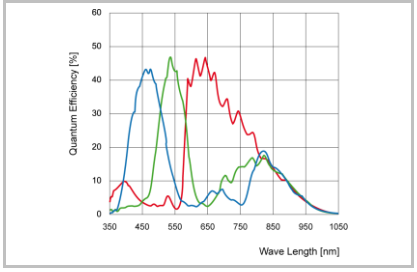
VLU-03C

Technical Data

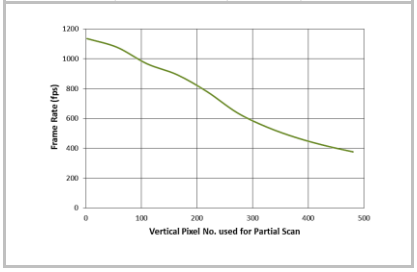
Art. No. 11129454



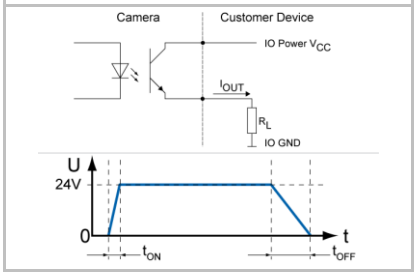
Sensor Graph: Quantum Efficiency



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



Digital Output: High Active



Digital Color Matrix Camera, USB 3.0

Sensor Information

Model Name	CMOSIS CMV300
Type	1/3“ progressive scan CMOS
Shutter	global
Native Resolution	640 x 480 pixels
Scan Area	4.74 mm x 3.55 mm
Pixel Size	7.4 µm x 7.4 µm

Data Quality

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

Readout Noise (σ)	< 0.5 LSB (8 Bit) typical
Dynamic Range	typical > 55 dB

Acquisition Formats

Image Formats	Format	Resolution	Frame Rate	$t_{readout}$
	Full Frame	640 x 480	376 fps	2.67 msec
Pixel Formats	Mono8, BayerRG8, BayerRG12, RGB8, BGR8, YUV411_8_*, YUV422_8_*, YUV8_UYV			
Partial Scan	True Partial Scan, Region of Interest (ROI) arbitrary			

Image Pre-Processing

Analog Controls	Exposure Time (15 µsec … 1 sec | Step Size 1 µsec) Gain (0…18 dB), Offset (0 ... 255 LSB | 12 bit),
Gamma Correction	Gamma (0.1 … 2 | available if LUT is enabled)
LUT	Luminance (12 bit)
Color Models	RGB, YUV, Mono
Color Tolerance	1.0% (typical)
Color Processing	Integrated color processor for high quality color calculation
Color Adjustment	White Balance (manual & one push)
Binning Horizontal	1 or 2
Binning Vertical	1 or 2
Image Flipping	Horizontal, vertical
Defect Pixel Correction	via Defect Pixel List with up to 511 Pixel Coordinates

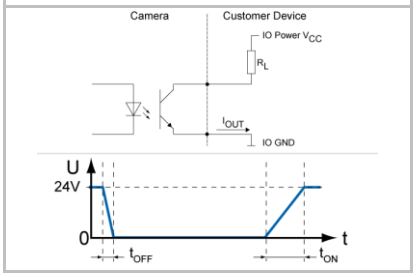
Process Synchronization

Modes	Free Running, Trigger
Free Running	Continuous or Adjustable Acquisition Frame Rate (0.01 … 5730Hz)
Trigger Sources	Hardware, Software, 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 $t_{delay\ flash} \leq 3$ µsec, $t_{duration} = t_{exposure} + 18$ µsec

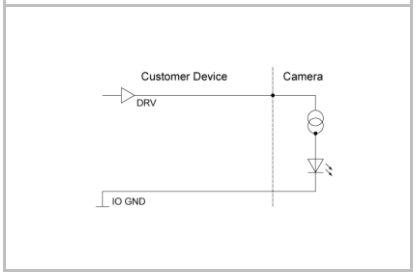
Digital I/Os

Lines	Input: Line 0, Output: Line1, Line 2, Line 3
Circuit Times	Output: t_{ON} = typ. 3 µsec t_{OFF} = typ. 40 µsec
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

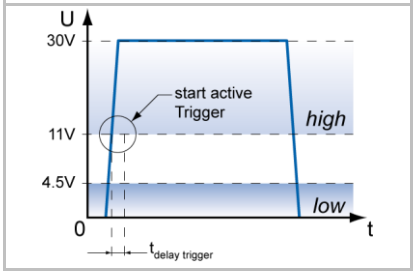
Digital Output: Low Active



Digital Input

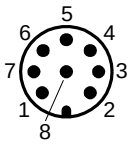


Trigger Mode: Start up time and valid Trigger



Pin Assignment Data Interface

Pin Assignment Power and Process Interface

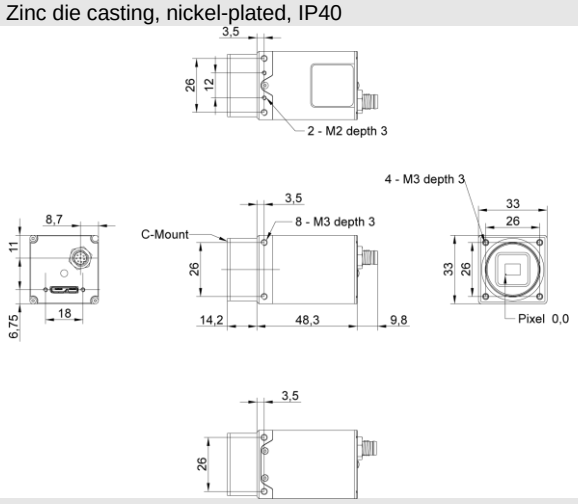


wire colors			
1	White	5	Grey
2	Brown	6	Pink
3	Green	7	Blue
4	Yellow	8	Red

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	6 – MicB_SSTX-
		2 – D-	7 – MicB_SSTX+
		3 – D+	8 – GND_DRAIN
		4 – ID	9 – MicB_SSRX-
		5 – GND	10 – MicB_SSRX+
Process Interface	Connector:	M8/8-pin (SACC-DSI-M8FS-8CONM10-L180 SH)	
	Assignment:	1 – OUT3 (Line2)	5 – IO Power VCC
		2 – not connected	6 – OUT1 (Line3)
		3 – IN1(Line0)	7 – not connected
		4 – IO GND	8 – OUT2 (Line1)

Mechanical Data

Housing	Zinc die casting, nickel-plated, IP40
Dimensions	
Weight	140 g

Optical Data

Lens Mount	C-Mount
Optical Filter	IR-Cut Filter

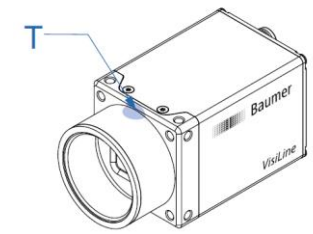
Electrical Data

Power Supply (ext.)	Bus powered via USB 3.0 interface	
Power Consumption	approx. 2.3 W @ 276 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 $t_{readout}$:	1.0 µsec
	max. Trigger Delay during $t_{readout}$:	14.0 µsec
Digital Output	U_{EXT}:	5 … 30 V DC
	I_{OUT}:	max. 50 mA

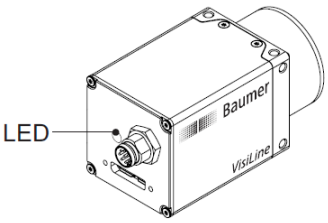
LED Signalling

LED	Green	USB3.0
	Green flash	Transmitting
	Yellow	USB2.0 (settings possible, no image)

Device Temperature: Measurement Point



LED Signalling



Conformity

Environmental Data

Storage Temperature	-10 °C … +70 °C
Operating Temperature	+5°C … +50°C
Device Temperature	T_{max} = 50 °C @ Measurement Point
Humidity	10 % … 90 % non-condensing
Conformity	In preparation

Interface Data

Interface	USB3.0	5000 Mbits/sec
Image Buffer	16 Images	
USB Vendor ID / Product ID	0x2825 / 0x0123	

USB3 Vision® Features

Events Transmission via Asynchronous Message Channel	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	0 … 921.872 Byte
Timestamp	64 bit
USB3 Vision	v1.0

GenICam™ Features

Timer	Timer Selector: Timer 1 … 3 TimerTriggerSource: Line0, SoftwareTrigger, 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 2.65 msec	
SFNC Version	v2.0	

Factory Settings after Start-Up

Operation Mode	Free Running
Analog Controls	Exposure Time: 4 msec, Gain: 0 dB, Offset: 0
Pixel Format	BayerRG8
Partial Scan	Off
Acquisition Frame Rate	Off
Timer	Off
Defect Pixel Correction	On
Digital Input	Line0, invert = false, trigger source = All
Digital Output	Line1, invert = false, line source = Off