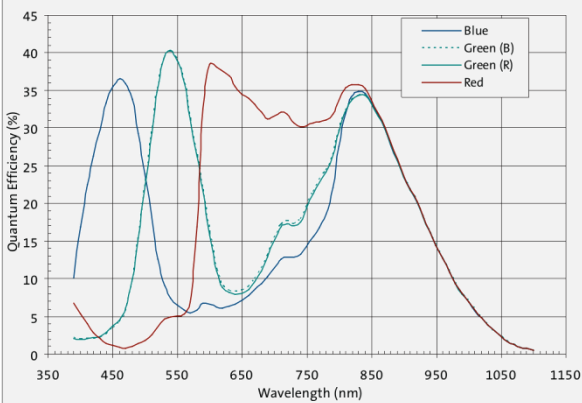
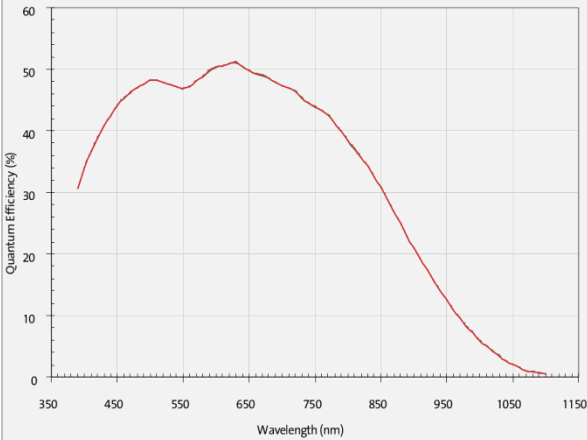


Spectral Sensitivity - Color



Spectral Sensitivity - Monochrome



Camera Model		VFU-V024
Sensor Specifications		
Image sensor	Aptina MT9V024	
Sensor type	CMOS	
Optical size	1/3"	
Chromatics	Mono / Color	
Active pixels	752(H) x 480(V)	
Pixel size	6.0µm x 6.0µm	
Shutter type	Global Shutter	
Camera Specifications		
Partial Scan	Yes	
Binning (Summing / Averaging)	Yes	
Subsampling	Yes	
Integration Time (Min / Max)	60µs – 500ms	
Supported Bit Depth	8- / 10-Bit	
Full Resolution Framerate (Freerun)	55	
Full Resolution Framerate (Triggered)	55	
Dynamic Range	>65dB (110dB HDR)	
Interface	USB 2.0	
On-board Image Buffer	No	
Power Supply	5V DC via USB	
Power consumption	<120mA	

Mechanical	
Packaging	Housed / Board-level
Available lens mount options	C / CS / M12
Dimensions (housed)	40mm x 40mm x 29mm
Dimensions (board-level M12)	34mm x 34mm x 16mm
Weight (housed)	75g
Weight (board-level)	11g

Environmental	
Storage temperature	-25°C to 85°C
Ambient operating temperature	-20°C to 85°C
Ambient humidity	20% - 95%, non condensing

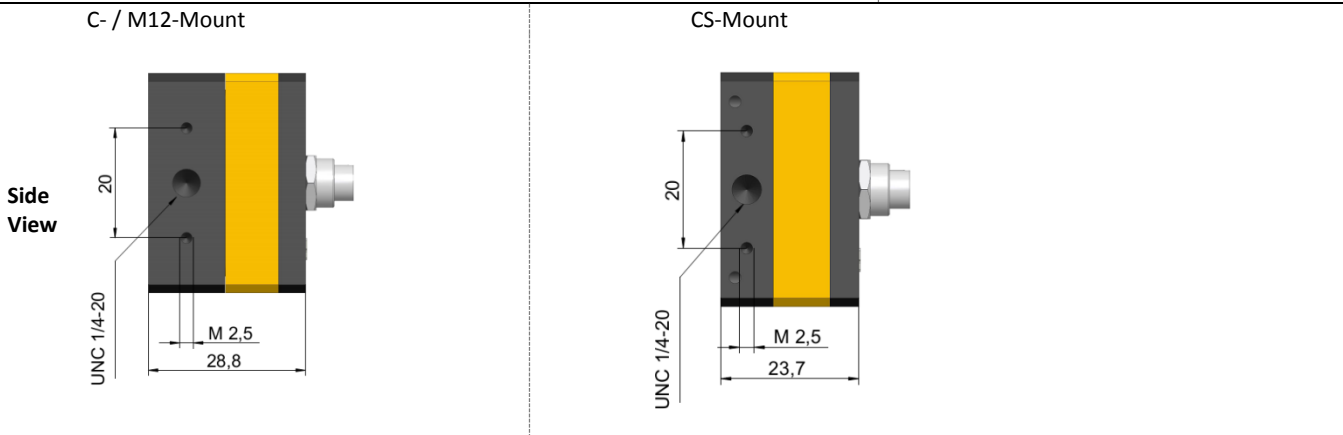
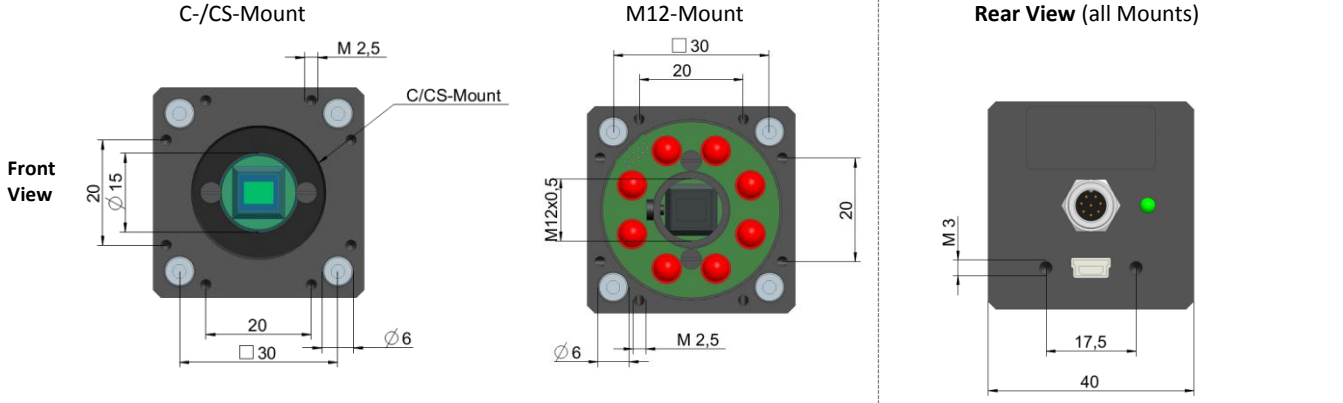
System Requirements		
Hardware	CPU / RAM	1,8GHz / 1GB
	GPU	Supporting PixelShader v2
	Camera interface	USB2.0 High-Speed Host
Software	.Net Framework 3.5 SP1	
Supported operating systems (32 / 64 Bit)	Windows 2000 (SP3) Windows XP (SP3) Windows Vista Windows 7	
Supported API languages	.Net / C++-interface	

Synchronization		
Inputs	Count / Internal circuit	2 / Opto-coupled
	High level / Maximum	1.8V / 24V
Outputs	Count / Internal circuit	2 / Opto-coupled
	Maximum voltage	24V

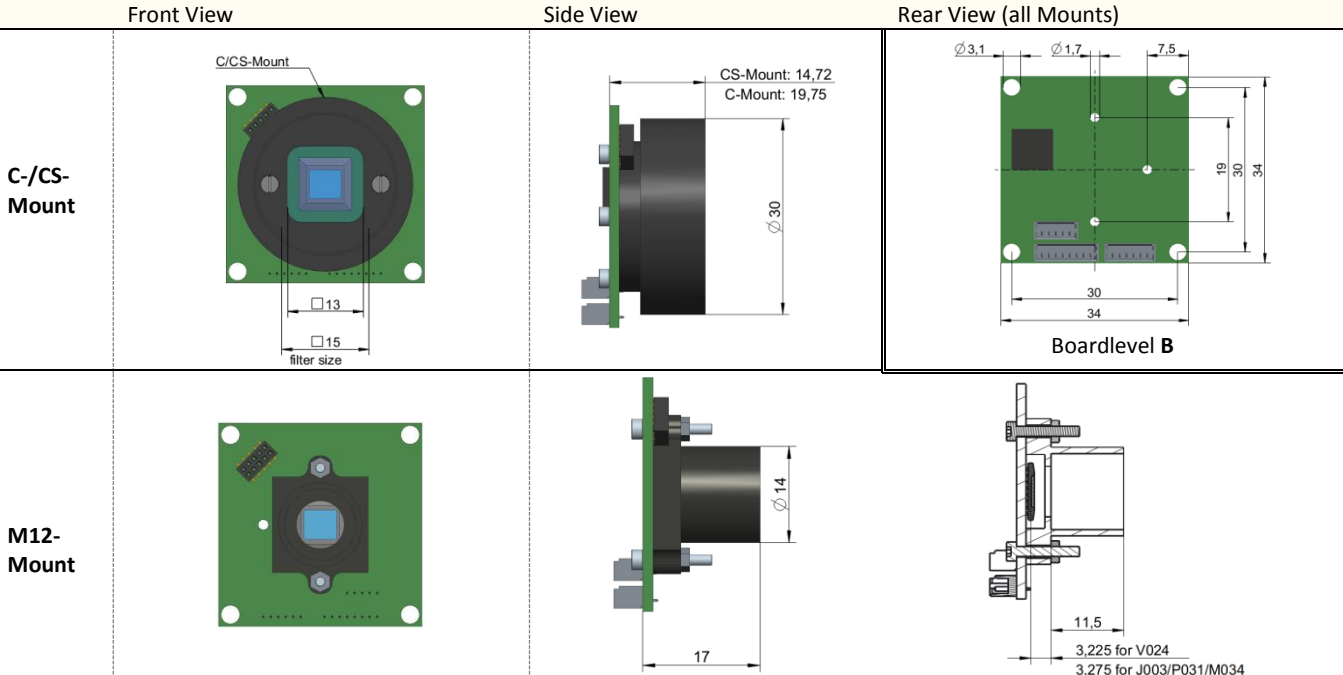
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Mechanical Dimensions

Housed



Board-Level B



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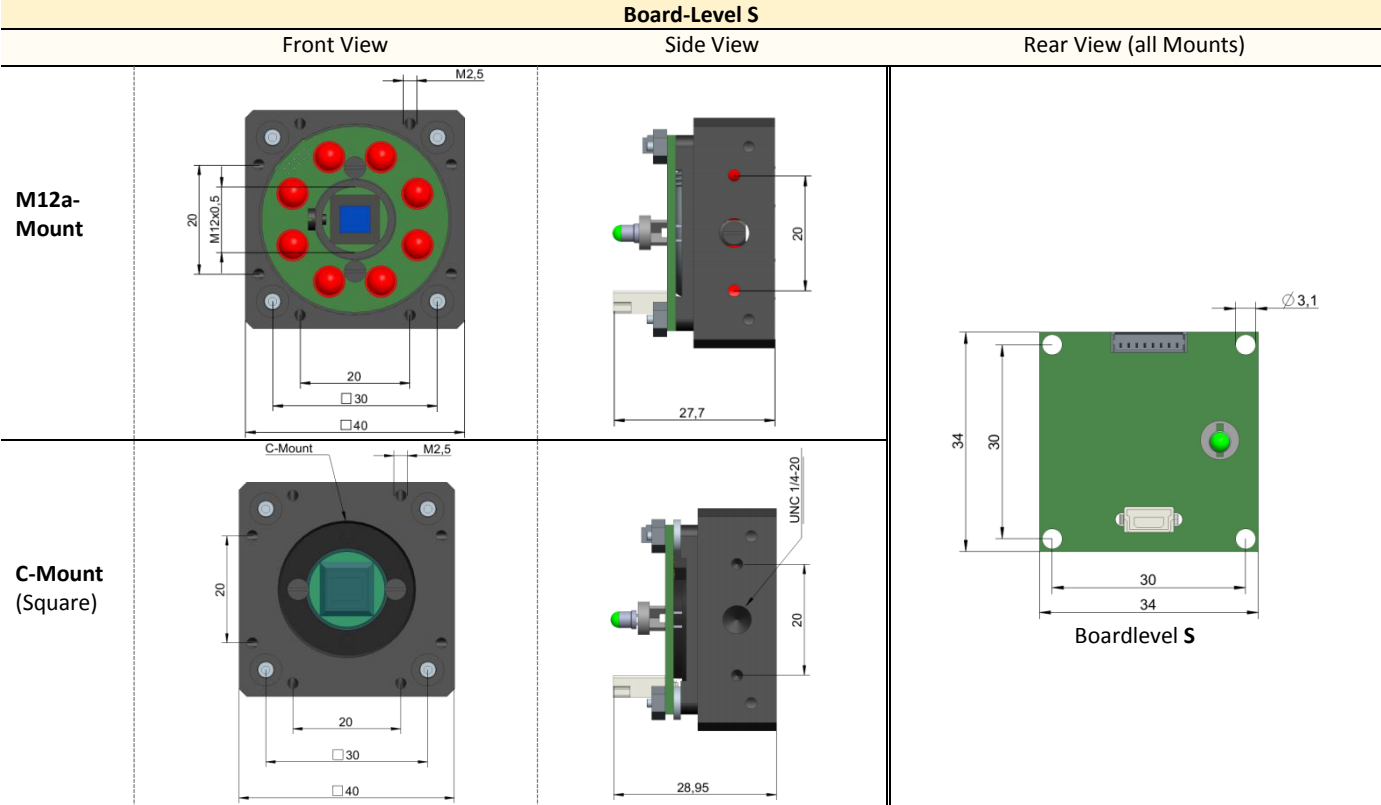
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Mechanical Dimensions



Connectivity

Board-Level				Housed		
USB-Connector (6 Pin; B-Version)		Molex Picoblade 51021-0600	LED-Connector (5 Pin, B-Version)	Molex Picoblade 51021-0500	I/O-Connector (8-Pin)	Binder 09 0481 65 08
Pin	Standard	VFU-J003	Pin	I _{LED_max} = 25mA per Channel!	Pin	Housed
1	SYS-/USB-GND	SYS-/USB-GND	1	VCC LED (5V)	1	GND Trigger / Flash
2	D-	D-	2	LED_EXT OUT4	2	Trigger IN
3	D+	D+	3	LED_EXT OUT3	3	IN1
4	USB Vcc	USB Vcc	4	LED_EXT OUT2	4	IN2
5	SYS-/USB-GND	Cable Shielding	5	LED_EXT OUT1	5	OUT1
6	Cable Shielding	USB Vcc			6	GND INx / OUTx
I/O-Connector (8 Pin)		Molex Picoblade 51021-0800			7	OUT2
Pin	Board-Level B	Board-Level S			8	Flashlight OUT
1	Trigger IN	IN2				
2	IN1	IN1				
3	IN2	Trigger IN				
4	OUT1	GND for Trigger / Flashlight				
5	GND INx / OUTx / Trigger IN	Flashlight OUT				
6	OUT2	OUT2				
7	Flashlight OUT	GND for INx / OUTx				
8	GND for Flashlight	OUT1				

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Ordering Information for Visiosens VF Camera Platform
VFU - V024 - MH - C - IRC - LED470
Interface

U: USB2.0
U3: USB3.0

Sensor

V024
M034
P031
J003
X445
CMV2000

Chromatics

M: mono
C: color

Packaging

H: housing
S: board level with standard interface
B: board level with Molex jacks

LED wavelength [nm]

Blank: none
LED470, LED525, LED590, LED630, LED670,
LED850, LEDww (warm white)

Filter

Blank, in case of packaging S, B with mount C, CS, M12 or without mount: none
Blank, in case of chromatics M: clear glass window
Blank, in case of chromatics C: IR cut filter
IRC: IR cut
IRP: IR long pass
CLG: clear glass window

Mount

Blank: without mount
C: C-mount for housing, round C-mount for packaging B
Cp: square C-mount (plastic)
Ca: square C-mount (aluminum)
CS: CS-mount for housing, round CS-mount for packaging B
M12: M12-mount for housing, round M12-mount for packaging B
M12p: square M12-mount (plastic) for packaging S
M12a: square M12-mount (aluminum) for packaging S

Option Sensor

Order code	Sensor	Technology	Resolution	Frame rate [fps]		Sensor size	Pixel size	Exposure time	ADC depth
				USB2.0	USB3.0				
V024	Aptina MT9V024	CMOS, Global Shutter	752x480 0.4 MP	60	-	1/3"	6 μm	60μs – 500ms	8 / 10 Bit
M034	Aptina MT9M034	CMOS, Rolling Shutter	1280x960 1.2 MP	25	45*	1/3"	3.75 μm	40μs – 6000ms	8 / 10 Bit
P031	Aptina MT9P031	CMOS, Rolling Shutter	2592x1944 5.0 MP	4	14*	1/2.5"	2.2 μm	10μs – 3500ms	8 / 10 Bit
J003	Aptina MT9J003	CMOS, Rolling Shutter	3664x2748 10.1 MP	3.5	7.5*	1/2.3"	1.67 μm	60μs – 14000ms	8 / 10 Bit
X445*	Sony ICX445	CCD	1280x960 1.2 MP	22	-	1/3"	3.75 μm	To come	8 / 10 Bit
CMV2000*	CMOSIS CMV2000	CMOS, Global Shutter	2048x1088 2.2 MP	-	180	2/3"	5.5μm	To come	8 / 10 Bit

* Available 2013

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Option Mount		
Order code	Description	Dependencies with other options
C	C-mount, round, plastic	not available with LED Ring, for packaging B only
Ca	C-mount, square (board size), aluminum	not available with LED Ring, for packaging S only
Cp	C-mount, square (board size), plastic	not available with LED Ring, for packaging S only
CS	CS-mount, round, plastic	not available with LED Ring, for packaging B only
CSa	C-mount, square (board size), aluminum	not available with LED Ring, for packaging S only
CSp	C-mount, square (board size), plastic	not available with LED Ring, for packaging S only
M12	S-mount with M12x0.5 thread, round, plastic	no filter option available, limited screw in depth, for packaging B only
M12a	S-mount with M12x0.5 thread, square (board size), aluminum	no filter option available, for packaging S only
M12p	S-mount with M12x0.5 thread, square (board size), plastic	no filter option available, for packaging S only

Option Filter		
Order code	Description	Dependencies with other options
<i>blank</i>	for monochrome cameras: clear glass window for color cameras: IR cut filter (see option IRC) for mount M12: no filter, no clear glass	-
IRC	IR-cut filter, cuts IR radiation at wavelengths below 670nm	not available for Mount Option M12
IRP	IR-pass filter, lets IR radiation pass at a wavelength above 680nm	not available for Mount Option M12
CLG	clear glass window	not available for Mount Option M12

Option LED-Ring		
Order code	Description	Dependencies with other options
LED470, LED525, LED590, LED630, LED670, LED850	LED Ring with 8 LEDs at corresponding wavelength, LED ring is either embedded in the housing or mounted on the board level camera	requires Mount Option M12
LEDww	LED Ring with 8 LEDs of warm white, LED ring is either embedded in the housing or mounted on the board level camera	requires Mount Option M12

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