

# USB components

## Remote-Sensor Cameras

Base unit and sensor boards

- External sensor connected to the base unit by flex-foil cable
- Free positioning of the sensor
- Highspeed USB interface
- SDK and API included, same API on all cameras
- Trigger input and strobe output

## Camera Configuration

Configure your multi-sensor camera with

- one base unit **VRmC-X-E** and
- one sensor board **VRm(M)S-X**. Different sensor boards are available.

## Available Sensor Board Designs

**OEM:** sensor board without optics

**COB M9LP:** sensor board with M9 low profile lens mount and 6.0 mm F2.8 lens coated with IR-cut filter (sensor board VRmMS-12 only)

**COB S-mount M12:** sensor board with M12 lens mount, 12.0 mm F2.0 lens, and filter glass

**COB C-mount:** sensor board with C-mount and filter glass (no lens included)

## Options

### Flex Foil Cables

- Cable lengths up to 100 cm (standard: 21 cm)

### Optics (COB designs only)

- Filter glass: window glass, IR-pass/cut filter, without filter (COB M12 and COB C-mount only).
- Further lenses on request (COB M12 only).

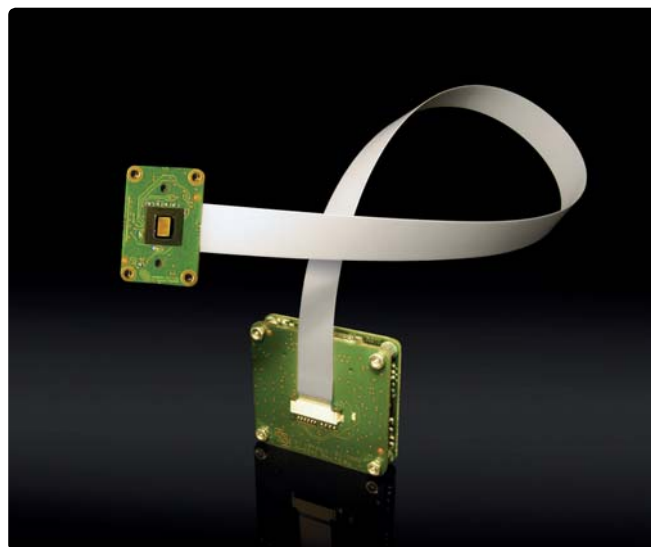


Photo similar to original product



# USB components

## VRmC-X-E

Base unit

### Physical Characteristics

#### Dimensions

Number of Boards	2
Board Stack Size	42 x 40 x 14 mm
Mounting Holes	36 x 32 mm
Inter-board Distance	5 mm

#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C

### Interfaces

USB 2.0 port (USB Mini-B); power supply via USB

Hirose DF14-15P for trigger, strobe, and external power supply

### Camera Features

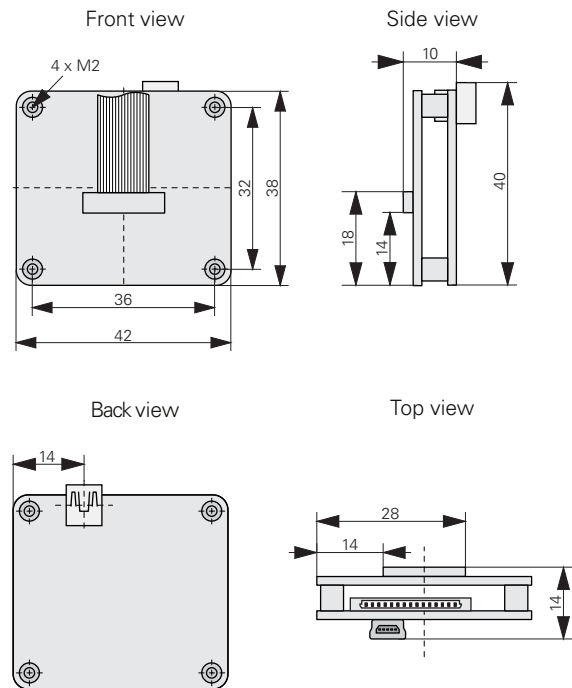
User programmable windowing and panning

Freely definable region of interest (ROI)

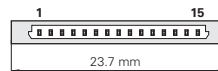
Adjustable anti-blooming circuit

Parallel operation of multiple cameras possible

### Base Unit



### Hirose DF14-15P



Pin	Signal	Pin	Signal
1	+5 V I/O	9	TTL Trigger In (+3.3 ... 5 V)
2	+5 V I/O	10	TTL Strobe Out (+5 V)
3	GND	11	reserved
4	reserved	12	reserved
5	reserved	13	GND
6	reserved	14	reserved
7	reserved	15	reserved
8	GND		

# USB components

## VRmS-8

Sensor board

### Sensor Characteristics

Type	Aptina MT9T031
Technology	CMOS, rolling shutter
Mono/Color	color
Sensor Size	1/2"
Resolution	2056 x 1544
Pixel Size	3.2 $\mu\text{m}$ x 3.2 $\mu\text{m}$
Max. Frame Rate *	13 Hz
Min. Exposure Time	60 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	10 ... 48 MHz
Responsivity	> 1 V/lux·sec
Dynamic Range	61 dB linear

### Physical Characteristics

#### Dimensions

Board Size

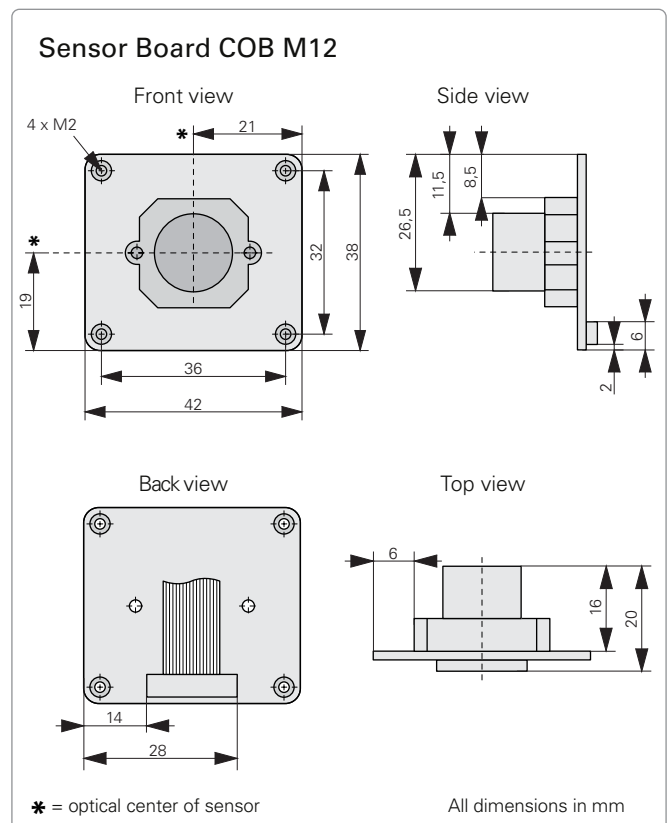
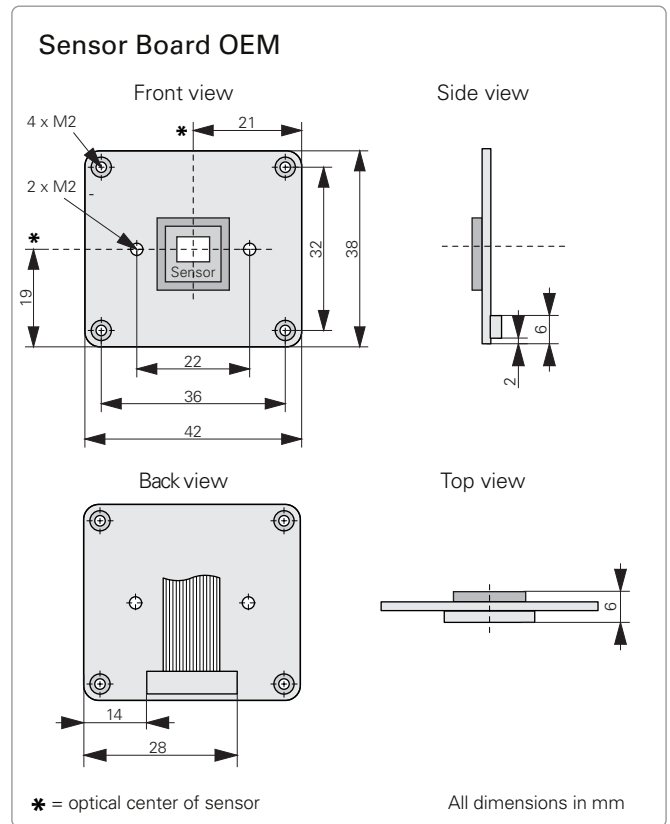
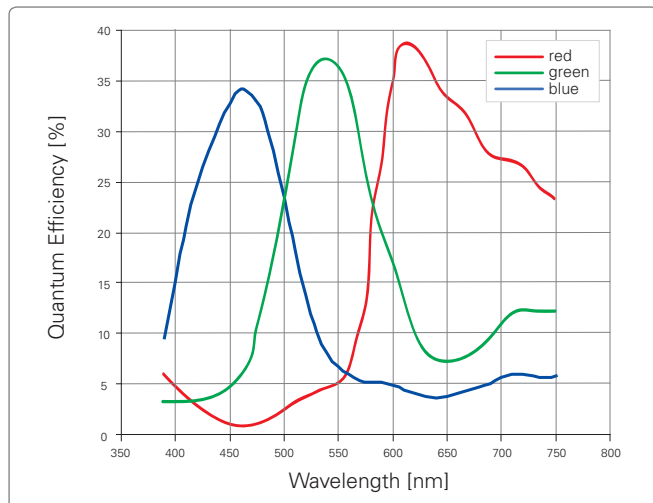
OEM	42 x 38 x 6 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature 0 ... +40 °C

Storage Temperature -30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

# USB components

## VRmS-9

Sensor board

### Sensor Characteristics

Type	Aptina MT9M001
Technology	CMOS, rolling shutter
Mono/Color	monochrome
Sensor Size	1/2"
Resolution	1288 x 1032
Pixel Size	5.2 $\mu\text{m}$ x 5.2 $\mu\text{m}$
Max. Frame Rate *	30 Hz
Min. Exposure Time	38 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	10 ... 48 MHz
Responsivity	> 2.1 V/lux·sec
Dynamic Range	68 dB linear

### Physical Characteristics

#### Dimensions

Board Size

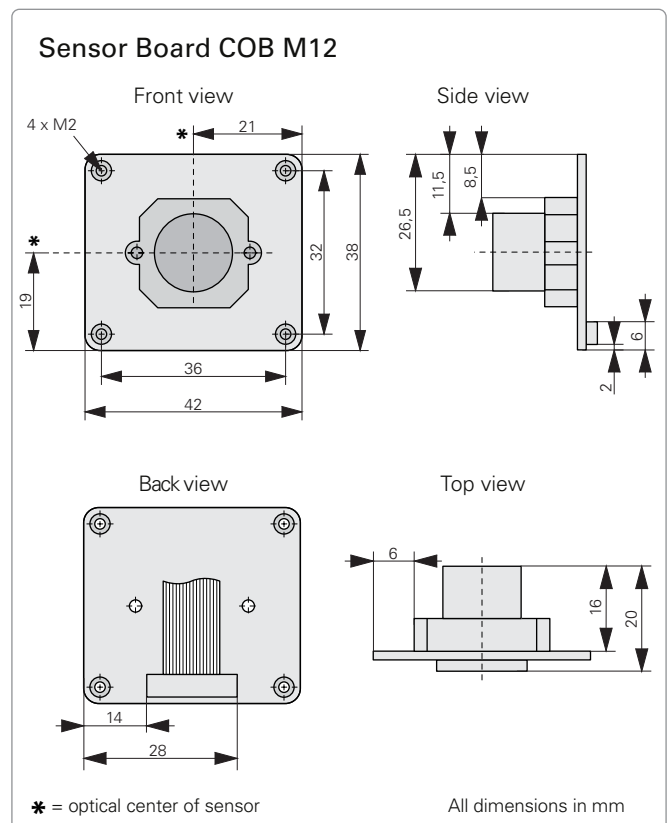
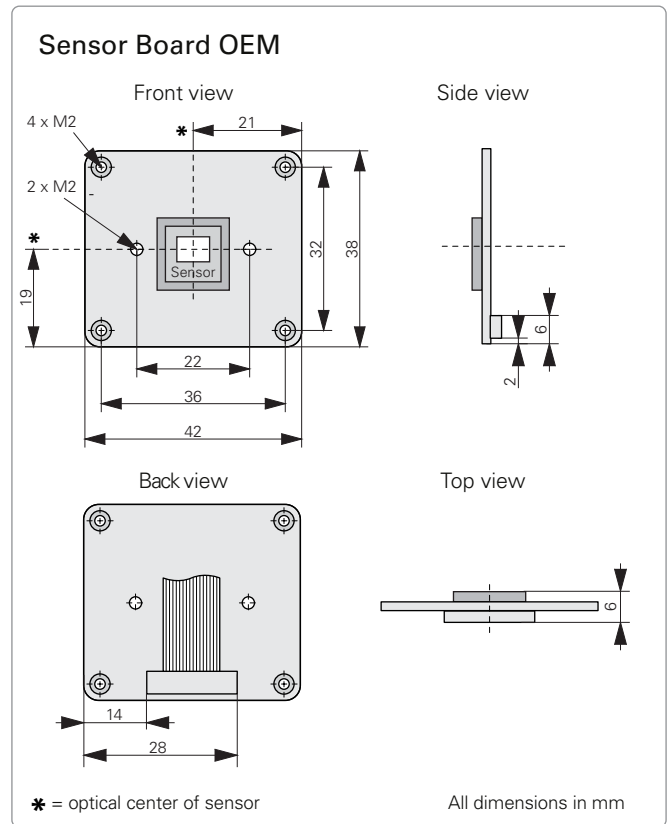
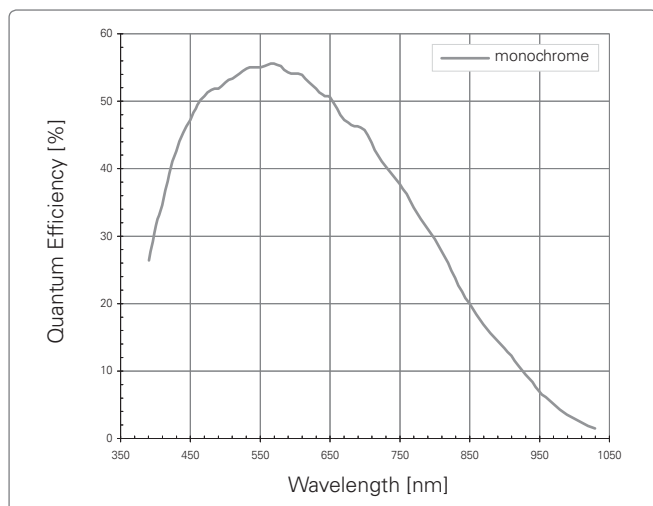
OEM	42 x 38 x 6 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature 0 ... +40 °C

Storage Temperature -30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

# USB components

## VRmS-12

Sensor board

### Sensor Characteristics

Type	Aptina MT9V024
Technology	CMOS, global shutter
Mono/Color	monochrome or color
Sensor Size	1/3" wide
Resolution	754 x 480
Pixel Size	6 $\mu\text{m}$ x 6 $\mu\text{m}$
Max. Frame Rate *	70 Hz
Min. Exposure Time	30 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	13 ... 27 MHz
Responsivity	4.8 V/lux-sec
Dynamic Range	55 dB linear 80 ... 100 dB high dynamic

### Physical Characteristics

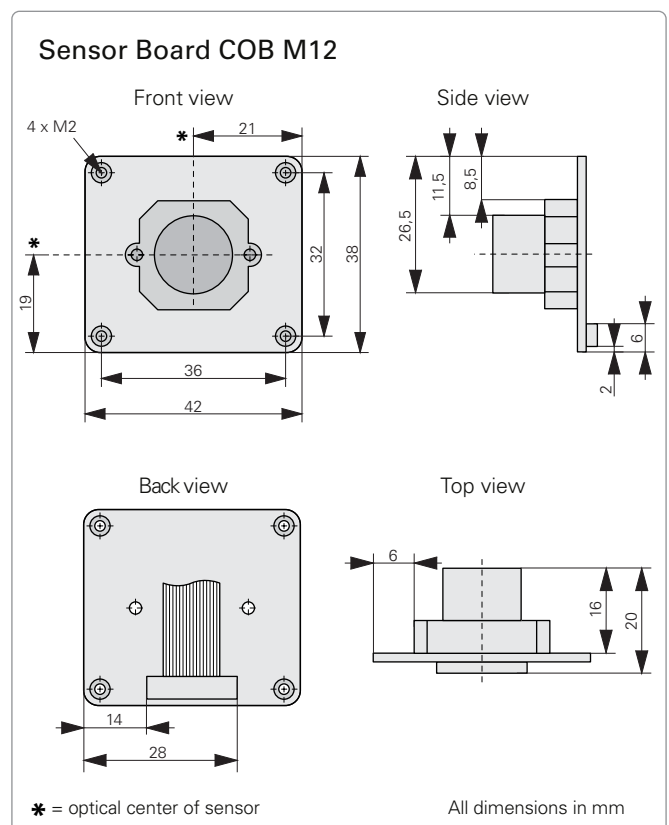
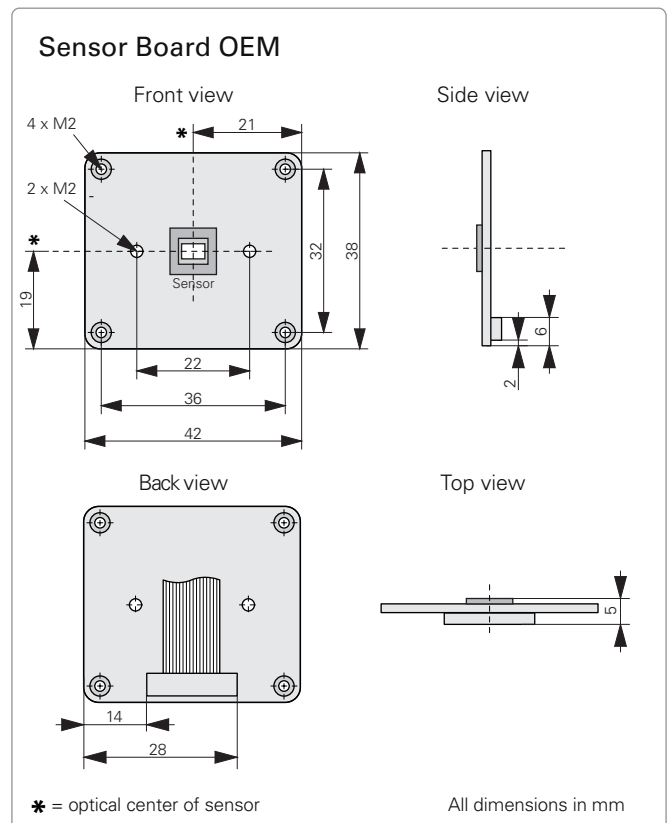
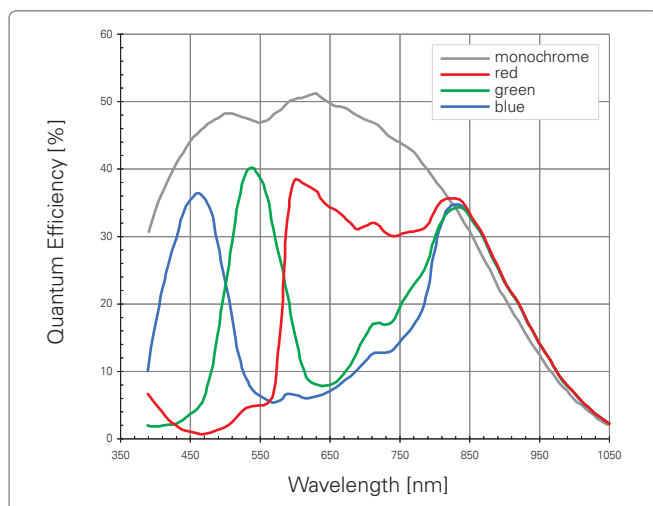
#### Dimensions

Board Size	
OEM	42 x 38 x 5 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

# USB components

## VRmMS-12

Small sensor board

### Sensor Characteristics

Type	Aptina MT9V024
Technology	CMOS, global shutter
Mono/Color	monochrome or color
Sensor Size	1/3" wide
Resolution	754 x 480
Pixel Size	6 μm x 6 μm
Max. Frame Rate *	70 Hz
Min. Exposure Time	30 μs
Bit Depth	8/10 bit
Pixel Clock	13 ... 27 MHz
Responsivity	4.8 V/lux-sec
Dynamic Range	55 dB linear 80 ... 100 dB high dynamic

### Physical Characteristics

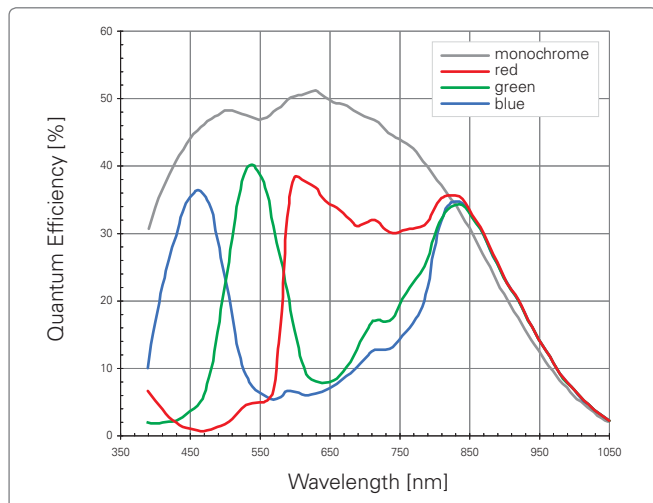
#### Dimensions

Board Size	
OEM	28 x 19 x 5 mm
COB M9LP	28 x 19 x 11 mm
COB S-mount M12	28 x 19 x 17 mm

Mounting Holes	24 x 15 mm
----------------	------------

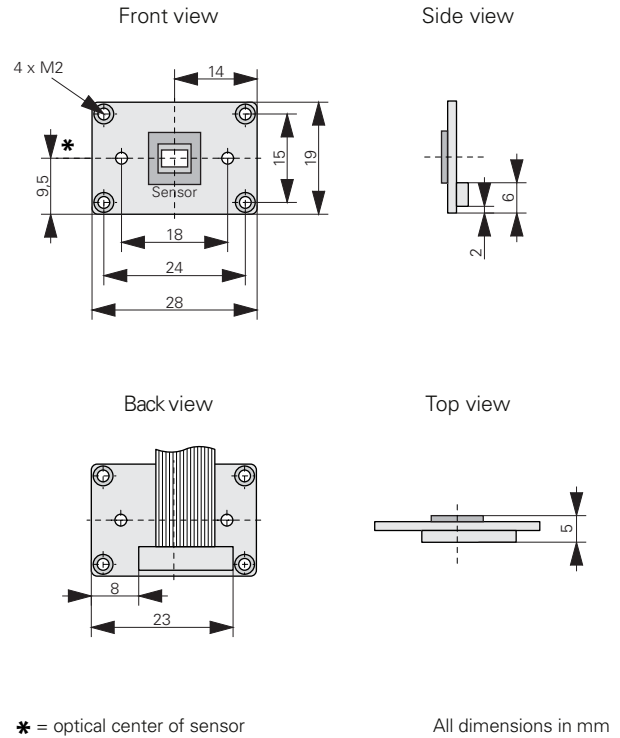
#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C

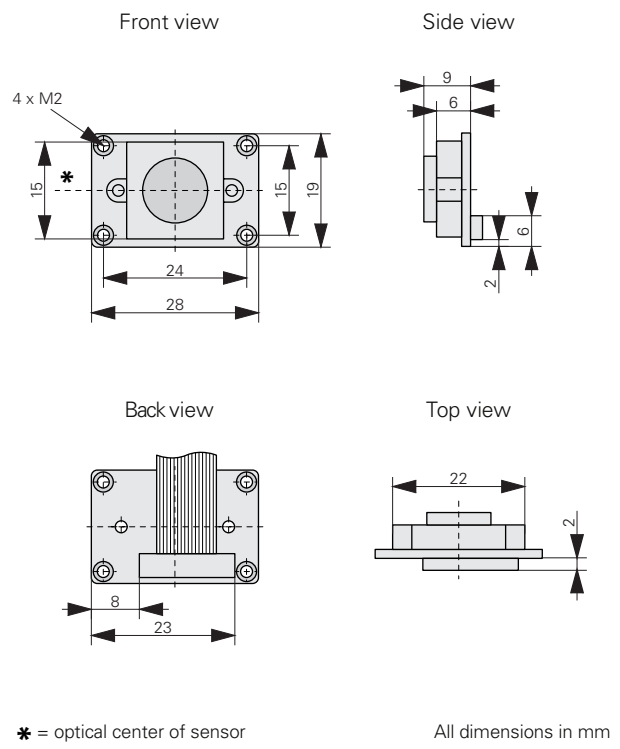


\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

### Sensor Board OEM



### Sensor Board COB M9LP



# USB components

## VRmS-14

Sensor board

### Sensor Characteristics

Type	Sony ICX445
Technology	CCD, interline transfer
Mono/Color	Monochrome or color
Sensor Size	1/3"
Resolution	1296 x 966
Pixel Size	3.75 $\mu\text{m}$ x 3.75 $\mu\text{m}$
Max. Frame Rate *	22 Hz
Min. Exposure Time	15 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	36 MHz

### Physical Characteristics

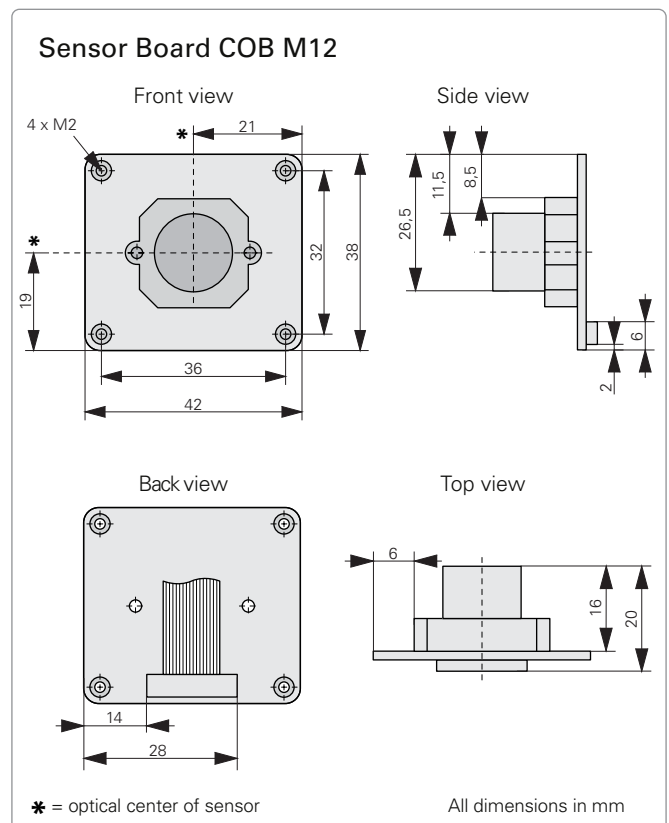
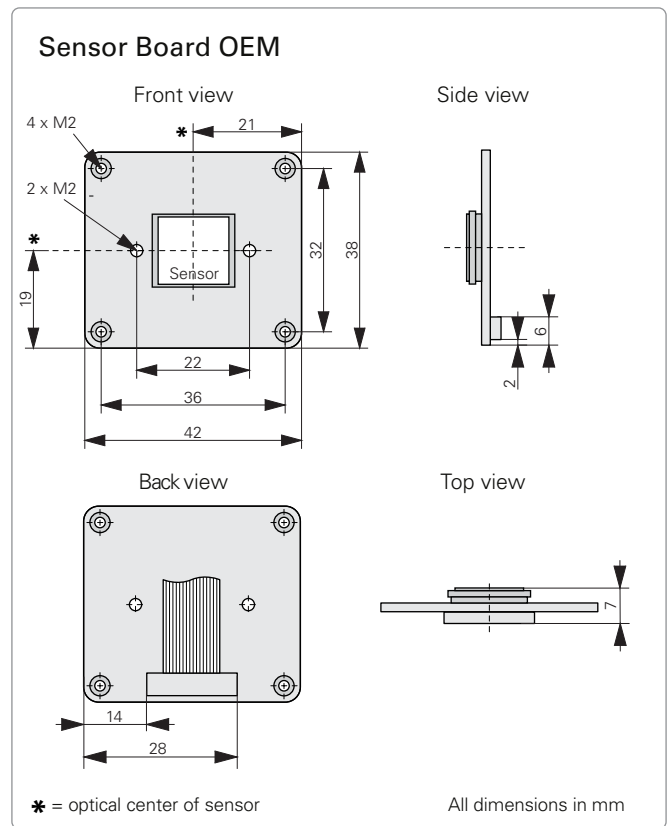
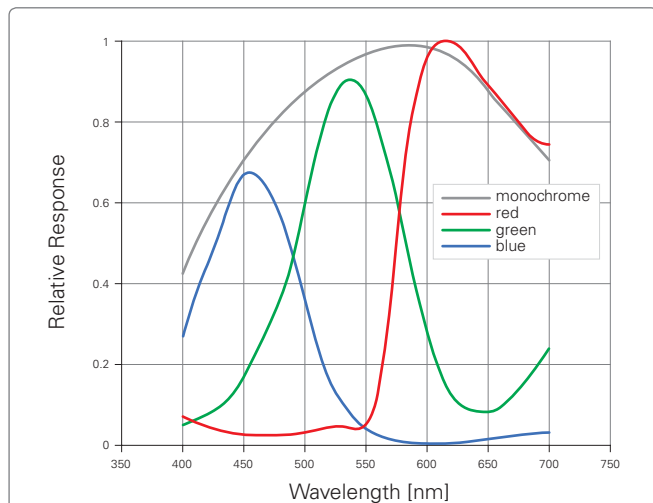
#### Dimensions

Board Size	
OEM	42 x 38 x 7 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

# USB components

## VRmS-16

Sensor board

### Sensor Characteristics

Type	Aptina MT9M021
Technology	CMOS, global shutter
Mono/Color	Monochrome or color
Sensor Size	1/3"
Resolution	1280 x 960
Pixel Size	3.75 $\mu\text{m}$ x 3.75 $\mu\text{m}$
Max. Frame Rate *	40 Hz
Min. Exposure Time	67 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	66 MHz

### Physical Characteristics

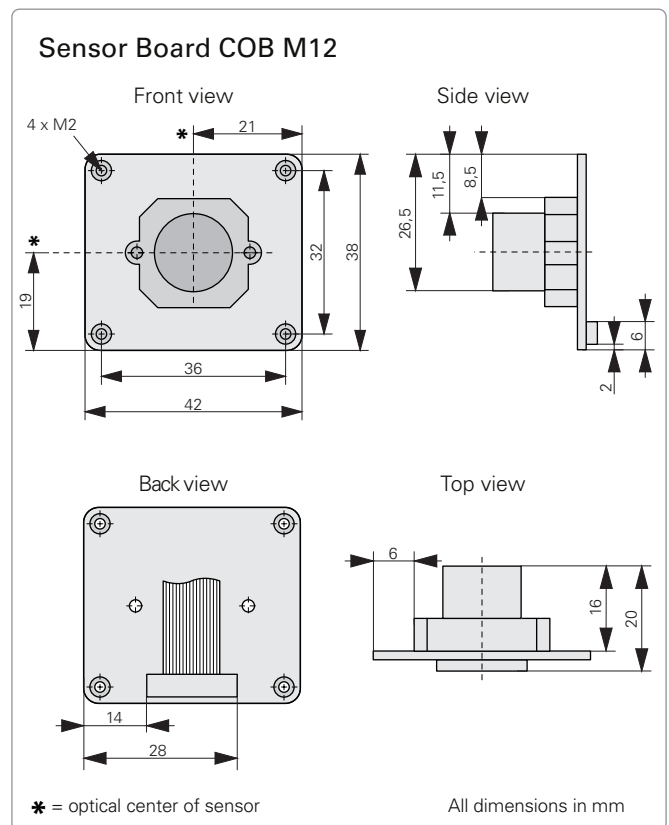
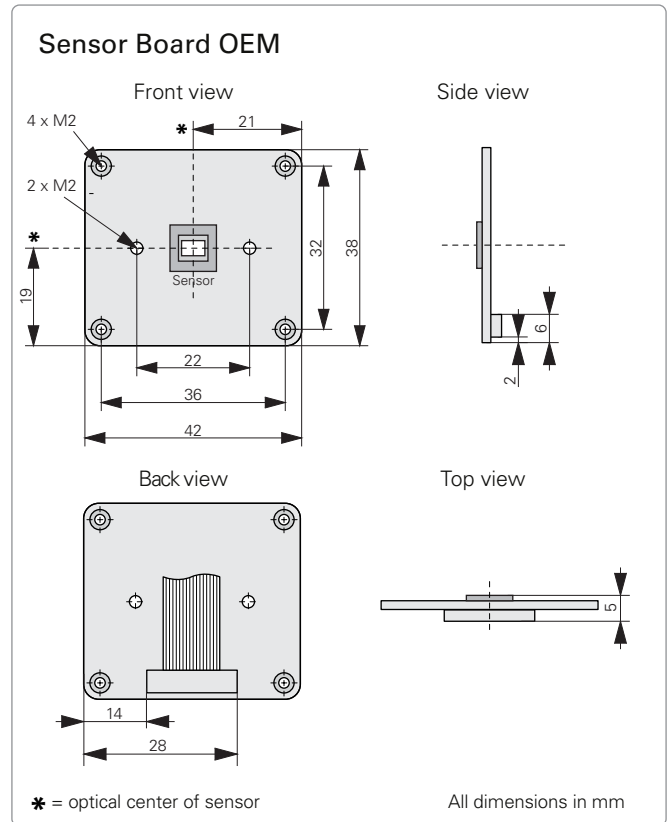
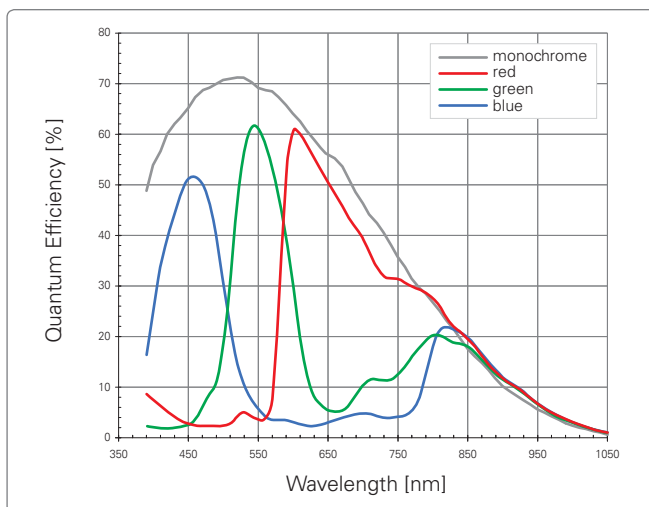
#### Dimensions

Board Size	
OEM	42 x 38 x 5 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.



## VRmS-18

Sensor Board

### Sensor Characteristics

Type	Aptina MT9M024
Technology	CMOS, rolling shutter
Mono/Color	Monochrome or color
Sensor Size	1/3"
Resolution	1280 x 960
Pixel Size	3.75 $\mu\text{m}$ x 3.75 $\mu\text{m}$
Max. Frame Rate *	40 Hz
Min. Exposure Time	22 $\mu\text{s}$
Bit Depth	8/10 bit
Pixel Clock	66 MHz

### Physical Characteristics

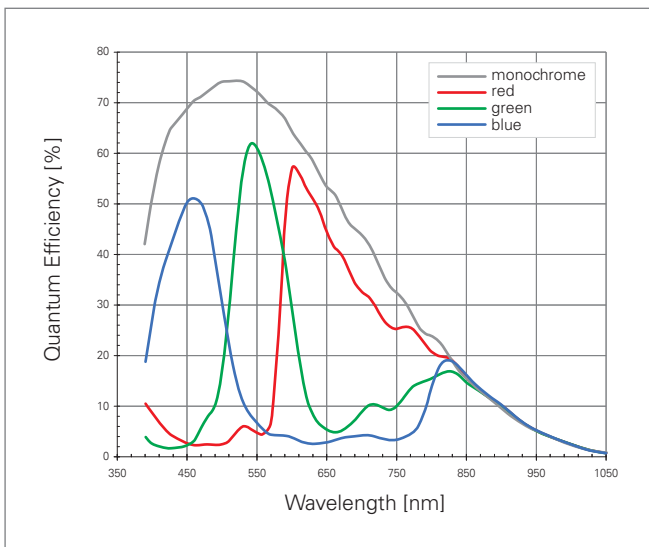
#### Dimensions

Board Size	
OEM	42 x 38 x 5 mm
COB S-mount M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

#### Ambient Conditions

Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C



\* Maximum value at full ROI with minimum exposure time. Actual value depends on pixel clock, sensor settings, and image format.

WWW.STEMMER-IMAGING.COM · IMAGING IS OUR PASSION

GERMANY  
AUSTRIA  
Phone: +49 89 80902-0  
info@stemmer-imaging.de

UNITED KINGDOM  
IRELAND  
Phone: +44 1252 780000  
info@stemmer-imaging.co.uk

FRANCE  
Phone: +33 1 45069560  
info@stemmer-imaging.fr

SWITZERLAND  
LIECHTENSTEIN  
Phone: +41 55 415 90 90  
info@stemmer-imaging.ch

THE NETHERLANDS  
BELGIUM · LUXEMBOURG  
Phone: +31 575 798888  
info@stemmer-imaging.nl

**STEMMER**<sup>®</sup>  
IMAGING

