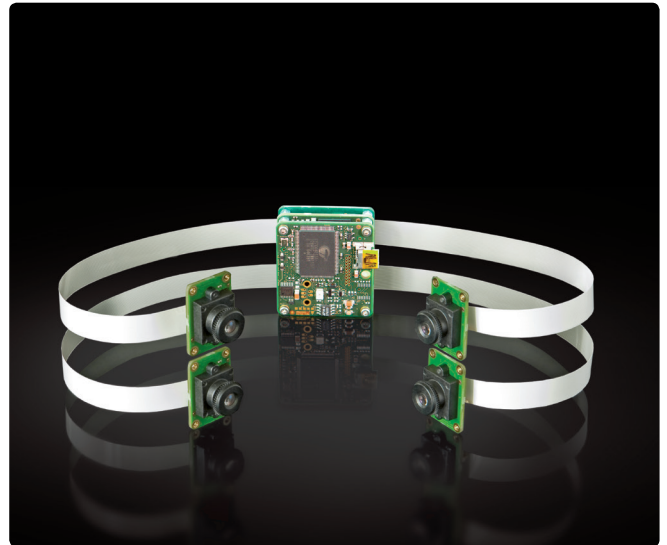


USB components

Multi-Sensor Cameras

Base unit and sensor boards

- Up to four pixel-synchronous sensors connected to the base unit by flex-foil cable (LVDS data transfer)
- Free positioning of the external sensors
- Plug and play functionality: sensors can be added or removed easily; different sensor types may be connected to the same main board
- FPGA chip with 256 MB RAM
- Individual configuration of each sensor
- Highspeed USB 2.0 interface
- SDK and API included, same API on all cameras
- Trigger input and strobe output



Photos similar to original product

Camera Configuration

Configure your multi-sensor camera with

- one base unit **VRmMFC** and
- 2, 3, or 4 sensor boards **VRm(M)S-X**.
Color and monochrome variants of the same sensor type may be used on the same base unit.

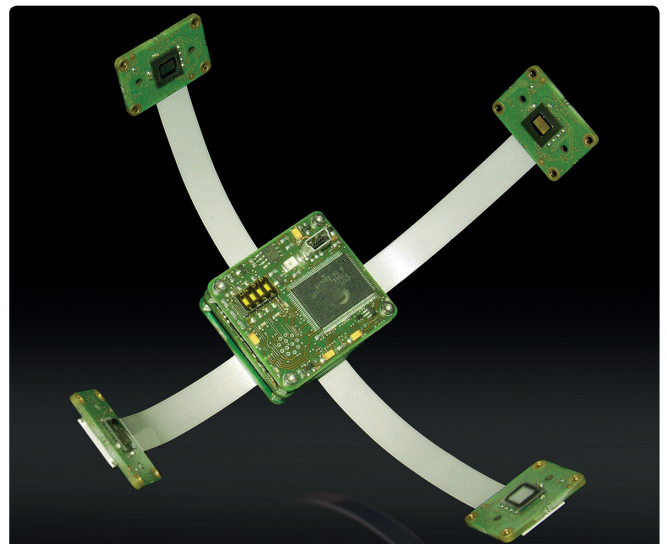
Available Sensor Board Designs

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 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).

USB components

VRmMFC

Base unit

Physical Characteristics

Dimensions

Number of Boards	3
Board Stack Size	42 x 40 x 21 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 ①

Hirose DF14-15P for trigger, strobe, and external power supply ②

Camera Features

All sensors are triggered synchronously; the image data of all sensors is always available at the same time with sensor ID, timestamp, and framecounter

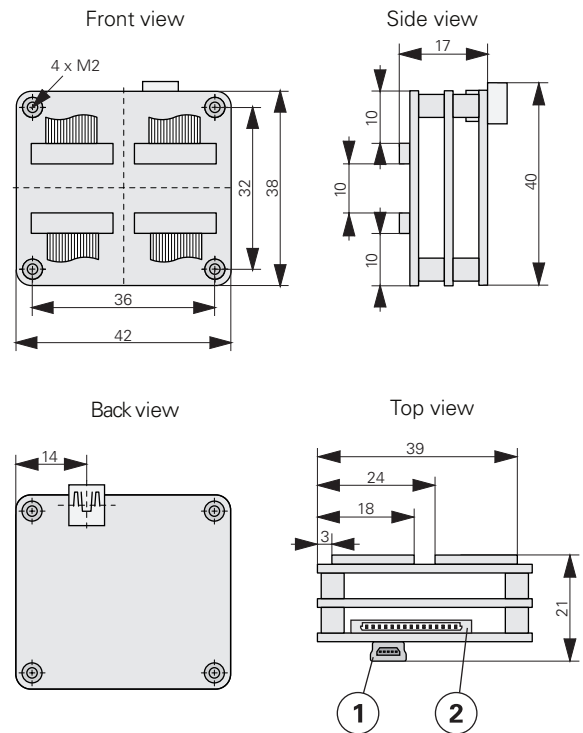
User programmable windowing and panning

Freely definable region of interest (ROI) per sensor

Individual exposure time per sensor

Adjustable anti-blooming circuit

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-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 μm x 5.2 μm
Frame Rate	30 fps
Min. Exposure Time	38 μs
Bit Depth	8/10 bit
Pixelclock	5 ... 48 MHz
Responsivity	> 2.1 V/lux·sec
Dynamic Range	68 dB linear

Physical Characteristics

Dimensions

Board Size

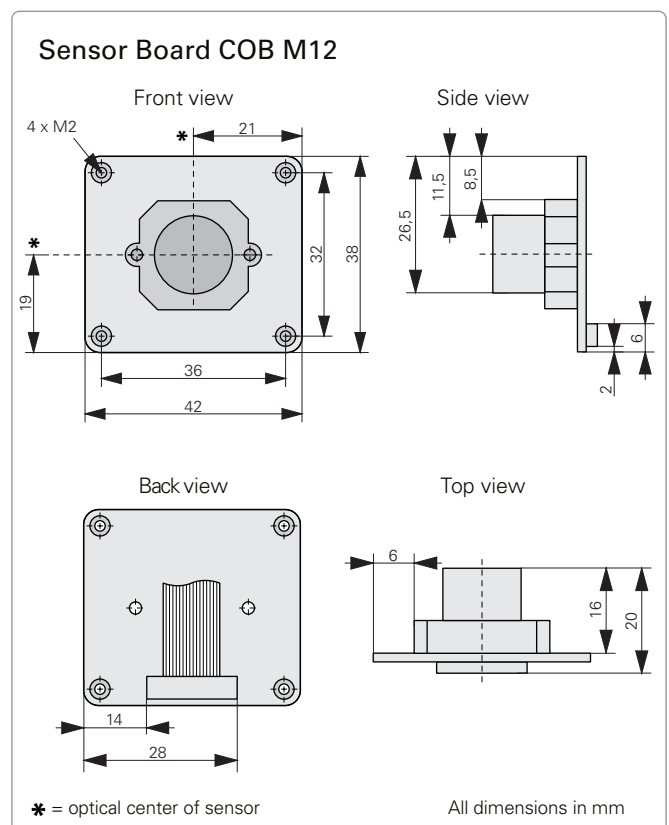
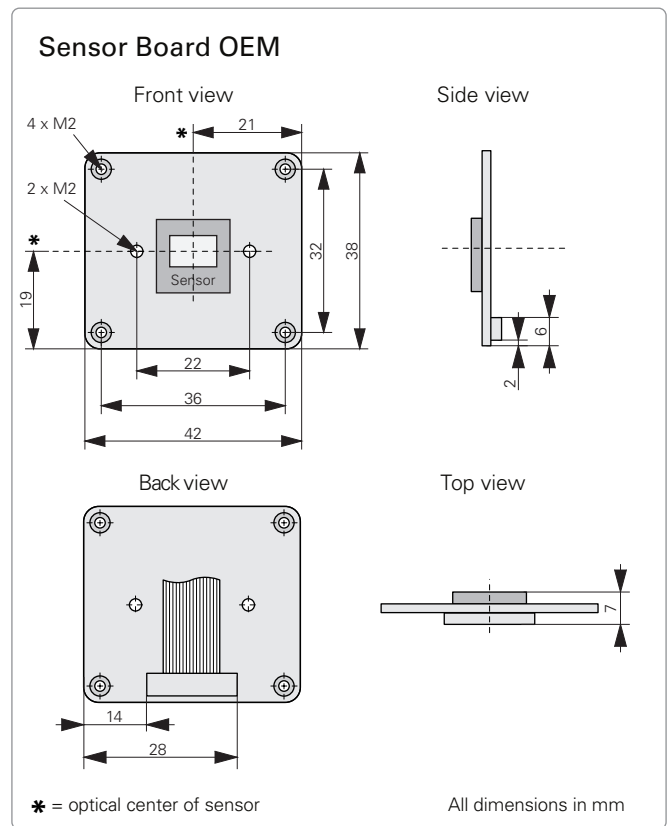
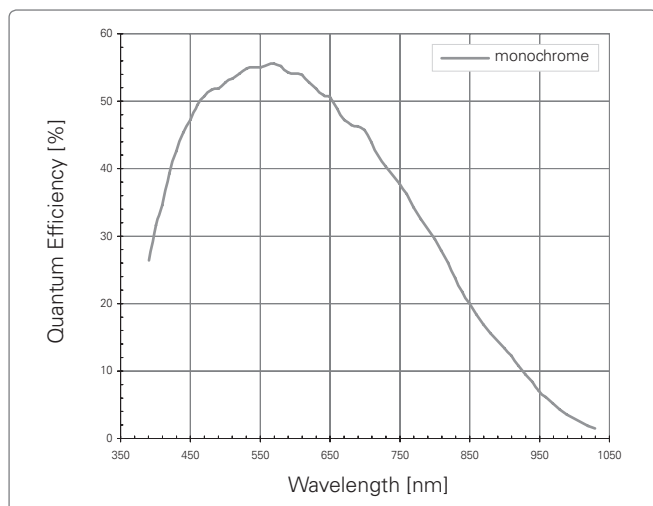
OEM	42 x 38 x 7 mm
COB M12	42 x 38 x 20 mm
COB C-mount	46 x 42 x 24 mm

Mounting Holes 36 x 32 mm

Ambient Conditions

Operating Temperature 0 ... +40 °C

Storage Temperature -30 ... +80 °C



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 μm x 6 μm
Frame Rate	69 fps
Min. Exposure Time	30 μs
Bit Depth	8/10 bit
Pixelclock	13 ... 27 MHz
Responsivity	4.8 V/lux-sec
Dynamic Range	55 dB linear 80 ... 100 dB high dynamic

Physical Characteristics

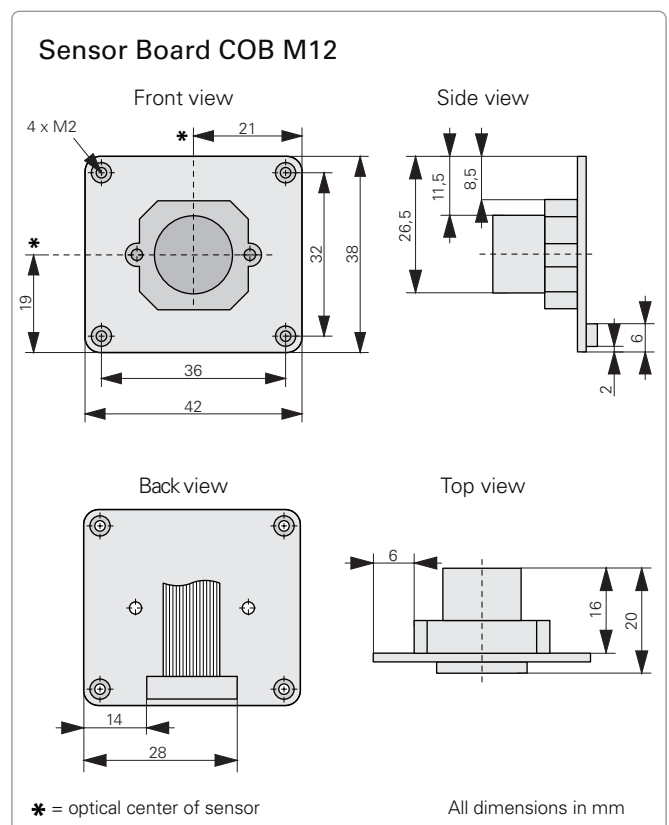
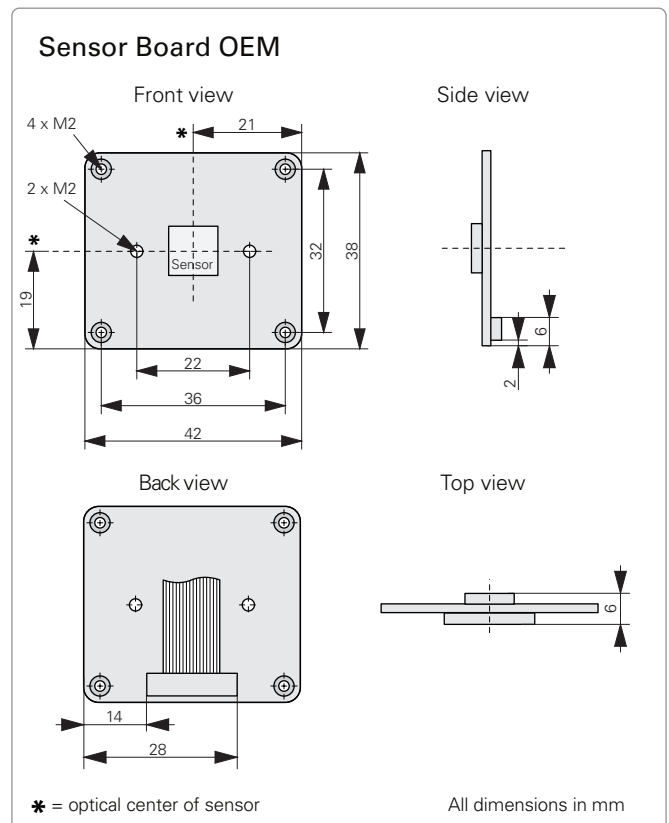
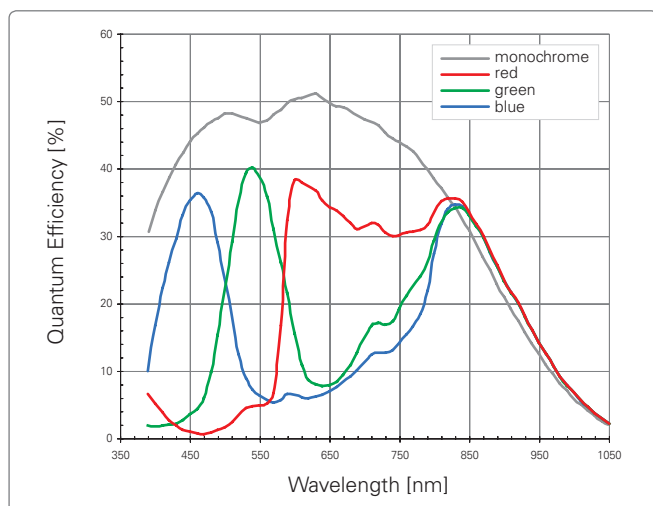
Dimensions

Board Size	
OEM	42 x 38 x 6 mm
COB 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



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
Frame Rate	69 fps
Min. Exposure Time	30 μs
Bit Depth	8/10 bit
Pixelclock	13 ... 27 MHz
Responsivity	4.8 V/lux-sec
Dynamic Range	55 dB linear 80 ... 100 dB high dynamic

Physical Characteristics

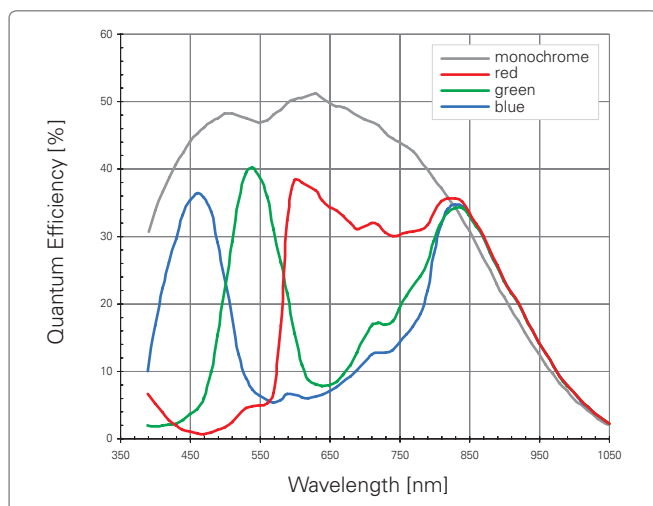
Dimensions

Board Size	
OEM	28 x 19 x 6 mm
COB M9LP	28 x 19 x 11 mm
COB M12	28 x 19 x 17 mm

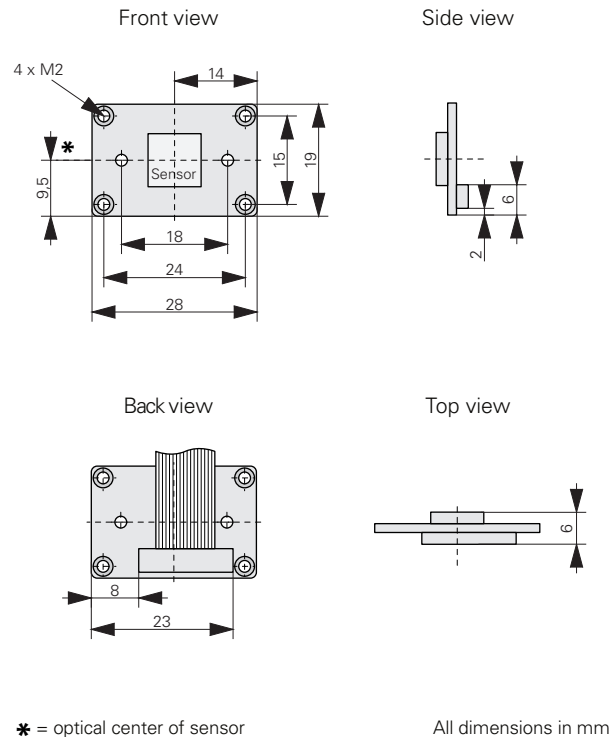
Mounting Holes 24 x 15 mm

Ambient Conditions

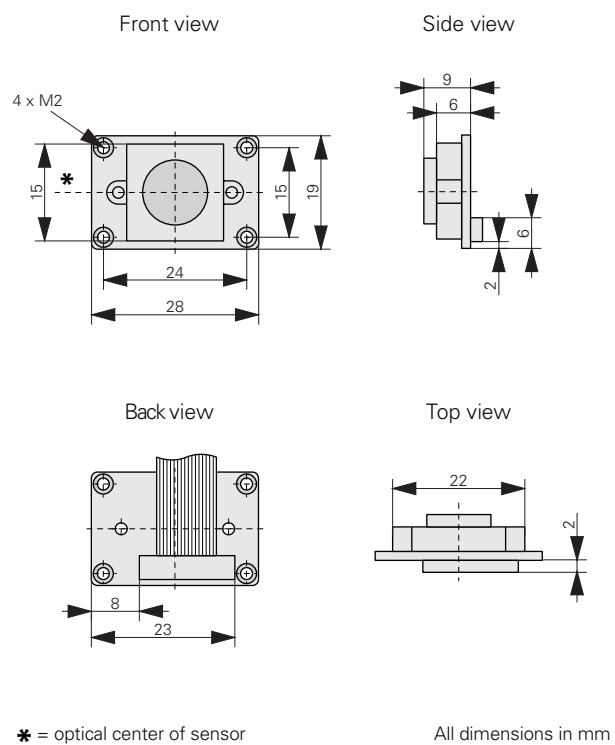
Operating Temperature	0 ... +40 °C
Storage Temperature	-30 ... +80 °C



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 μm x 3.75 μm
Frame Rate	22 fps
Min. Exposure Time	15 μs
Bit Depth	8/10(12) bit
Pixelclock	36 MHz

Physical Characteristics

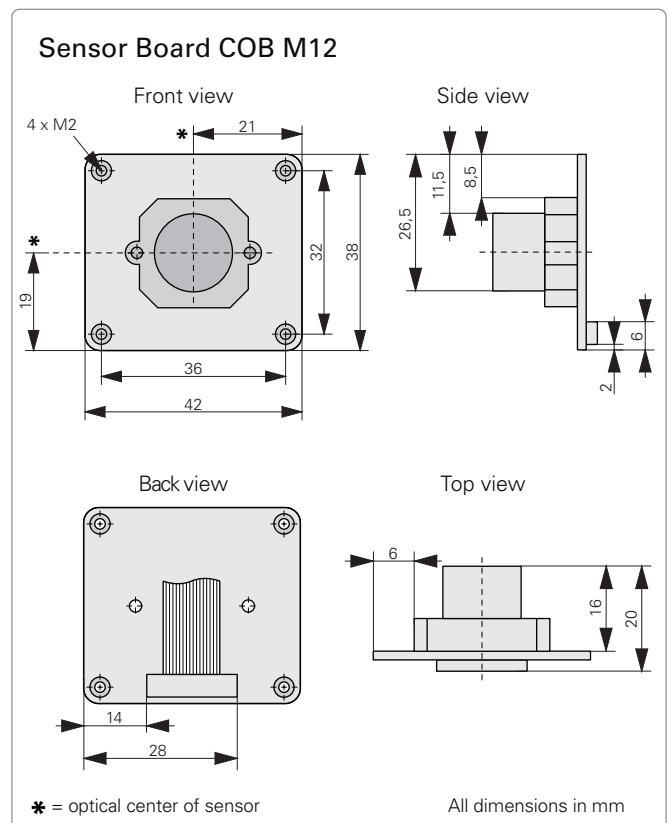
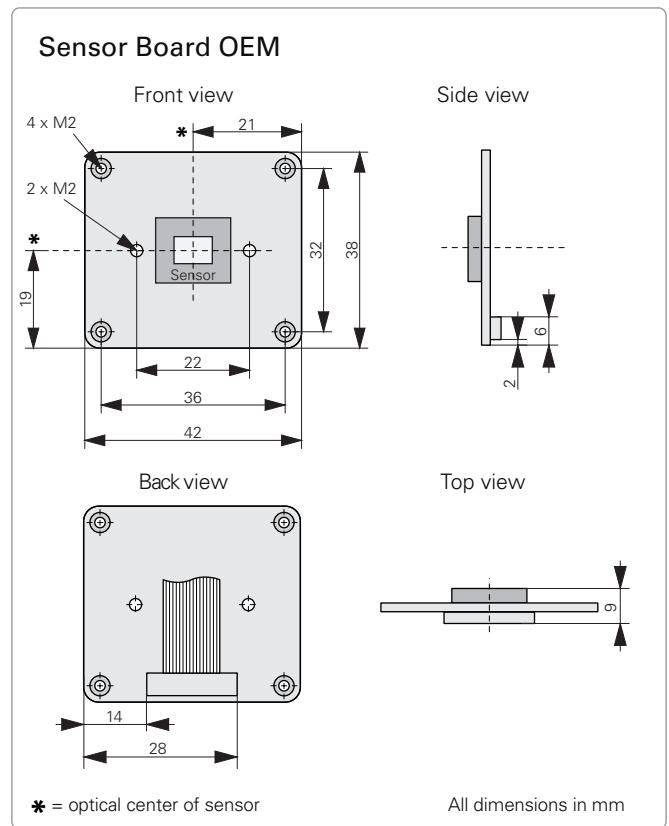
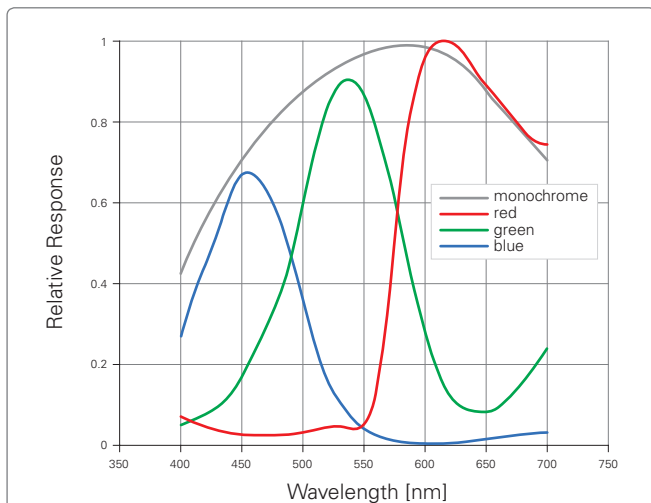
Dimensions

Board Size	
OEM	42 x 38 x 9 mm
COB 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



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 μm x 3.75 μm
Frame Rate	29 fps
Min. Exposure Time	103 μs
Bit Depth	10 bit
Pixelclock	48 MHz

Physical Characteristics

Dimensions

Board Size	
OEM	42 x 38 x 6 mm
COB 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

