

# Mako G

## G-419



- CMOSIS/ams CMV4000 CMOS sensor
- Power over Ethernet
- Ultra-compact design
- Affordable

## Description

### GigE Vision camera, CMOSIS/ams CMV4000 sensor, global shutter

Mako G-419 is a 4.2 megapixel GigE machine vision camera that incorporates the high quality Type 1 (16.0 mm diagonal) CMOSIS/ams CMV4000 CMOS sensor. At full resolution, this camera runs 26.3 frames per second. With a smaller region of interest, higher frame rates are possible. Mako G-419 is offered in both monochrome (G-419B) and color (G-419C) models.

Mako G cameras have an ultra-compact form factor and the same mounting positions as many analog cameras. All models include Power over Ethernet (PoE), three opto-isolated outputs, and a 64 MByte image buffer. The image quality profits from the precisely aligned sensor. By default monochrome models ship with no optical filter and color models ship with IRC Hoya C-5000 IR cut filter.

### Options:

- Various optical filter and lens mount options
- White medical housing

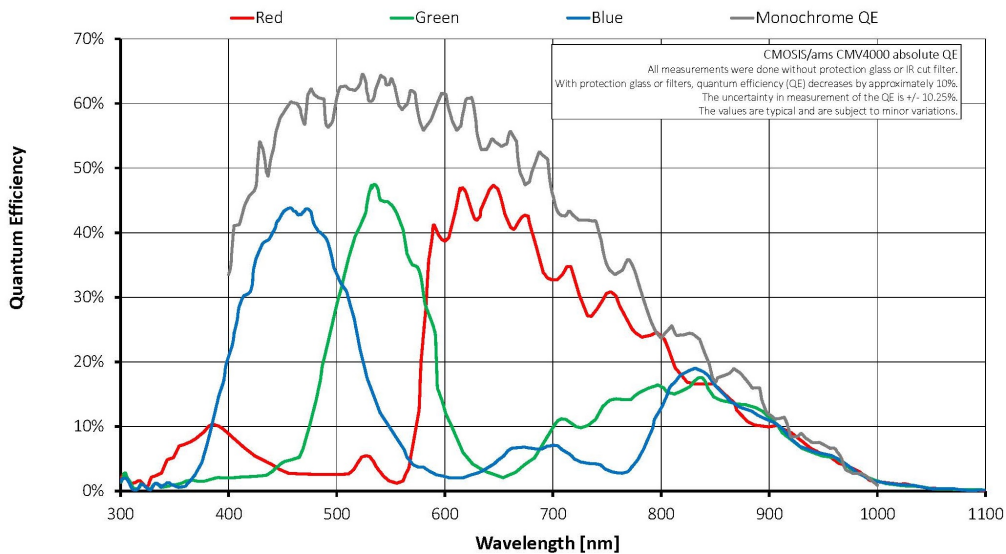
See the [Modular Concept](#) for lens mount, optical filter, and housing design options.

See the [Customization and OEM Solutions](#) page for additional options.

## Specifications

Mako G	G-419
Interface	IEEE 802.3 1000BASE-T, IEEE 802.3af (PoE)
Resolution	2048 (H) × 2048 (V)
Sensor	CMOSIS/ams CMV4000
Sensor type	CMOS

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Sensor size	Type 1
Pixel size	5.5 $\mu\text{m}$ $\times$ 5.5 $\mu\text{m}$
Lens mount (default)	C-Mount
Max. frame rate at full resolution	26.3 fps
ADC	12 bit
Image buffer (RAM)	64 MByte
<b>Output</b>	
Bit depth	8/12 bit
Monochrome pixel formats	Mono8, Mono12, Mono12Packed
YUV color pixel formats	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	RGB8Packed, BGR8Packed
Raw pixel formats	BayerGB8, BayerGB12, BayerGB12Packed
<b>General purpose inputs/outputs (GPIOs)</b>	
Opto-isolated I/Os	1 input, 3 outputs
<b>Operating conditions/dimensions</b>	
Operating temperature	+5 $^{\circ}\text{C}$ to +45 $^{\circ}\text{C}$ housing temperature
Power requirements (DC)	12 to 24 VDC; PoE
Power consumption	2.3 W @ 12 VDC; 2.7 W PoE
Mass	80 g
Body dimensions (L $\times$ W $\times$ H in mm)	60.5 $\times$ 29.2 $\times$ 29.2 (including connectors)
Regulations	CE: 2014/30/EU (EMC), 2011/65/EU (RoHS); FCC Class B; CAN ICES-003





## Features

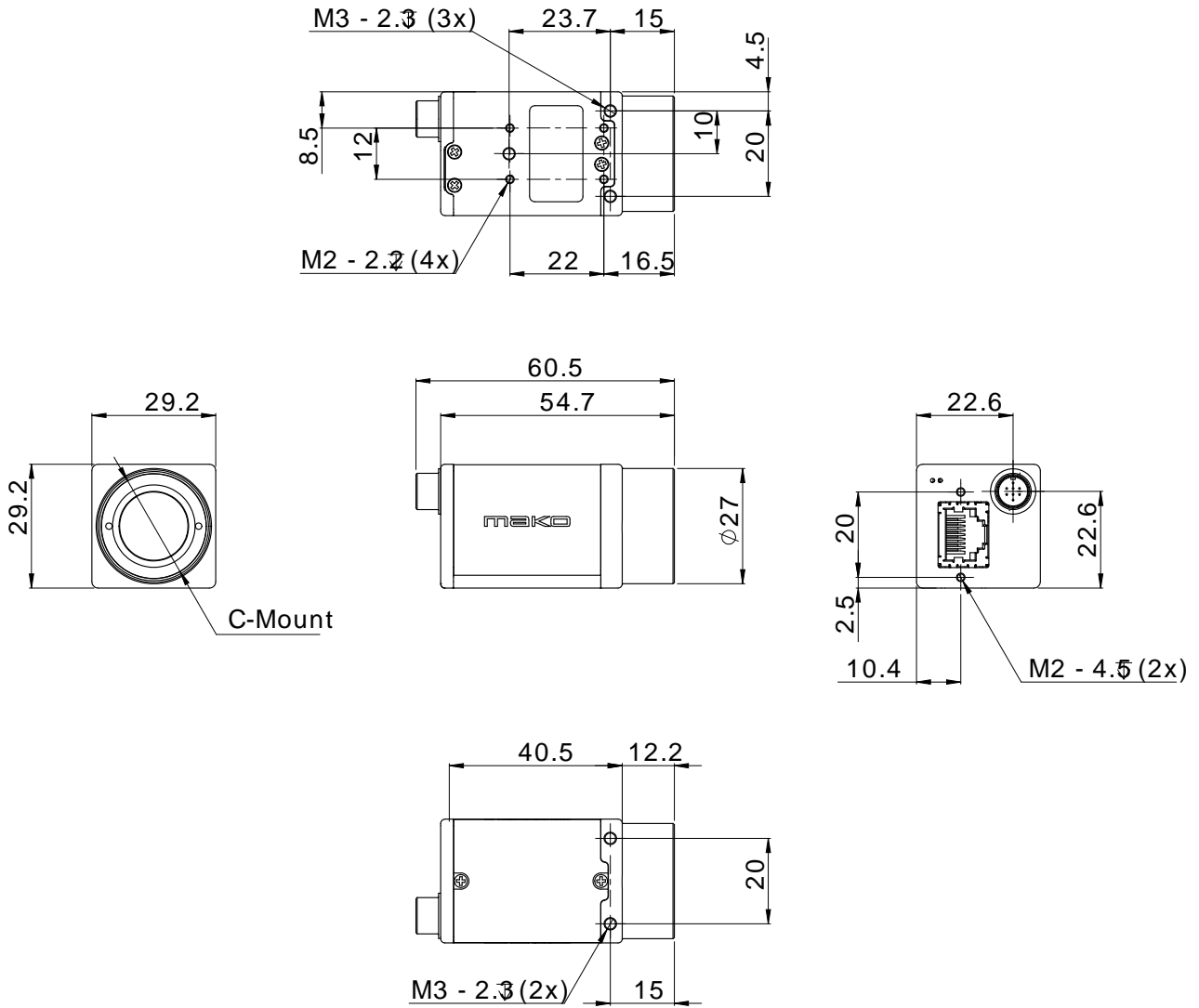
### Image optimization features:

- Auto gain (manual gain control: 0 to 26 dB; 1 dB increments)
- Auto exposure (manual exposure control: 41  $\mu$ s to 153 s; 1  $\mu$ s increments)
- Auto white balance (G-419C only)
- Color correction, hue, saturation (G-419C only)
- Column defect masking
- Gamma correction
- One look-up table (LUT)
- Piecewise Linear HDR mode
- Region of interest (ROI), separate ROI for auto features

### Camera control features:

- Event channel
- Image chunk data
- Storable user sets
- StreamBytesPerSecond (bandwidth control)
- Stream hold
- Sync out modes: Trigger ready, input, exposing, readout, imaging, strobe, GPO
- Temperature monitoring (main board only)

## Technical drawing





## Applications

Mako G-419 is ideal for a wide range of applications including:

- Robotics
- Quality control
- Inspection, surveillance
- Industrial imaging
- Machine vision
- Logistics