# MV4-D2048x1088-C01-HS05-GT

The CMOS camera series MV4 was developed for demanding applications in machine vision, motion analysis and optical metrology. The used IMEC CMOS image sensor CMV2K-LS150+ is optimized for very high frame rates and high sensitivity. The camera is also equipped with a wide range of features, for example to reduce the amount of data to be transmitted.

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## Features

- IMEC CMV2K-LS150+ VIS-NIR CMOS image sensor
- 2048 x 1088 pixel resolution
- Good NIR spectral response
- Suitable for hyperspectral applications
- Up to 340fps @ full resolution
- Global shutter

- 150 pass bands from 470nm to 900nm
- Up to 10bit greyscale resolution
- 4x Isolated inputs or shaft encoder
- 3x Isolated outputs
- GigEVision interface
- PoE (Power Over Ethernet) (IEEE 802.3bt standard Class 4) or Wall adapter (+12VDC (-10%) ... +24VDC (+10%))
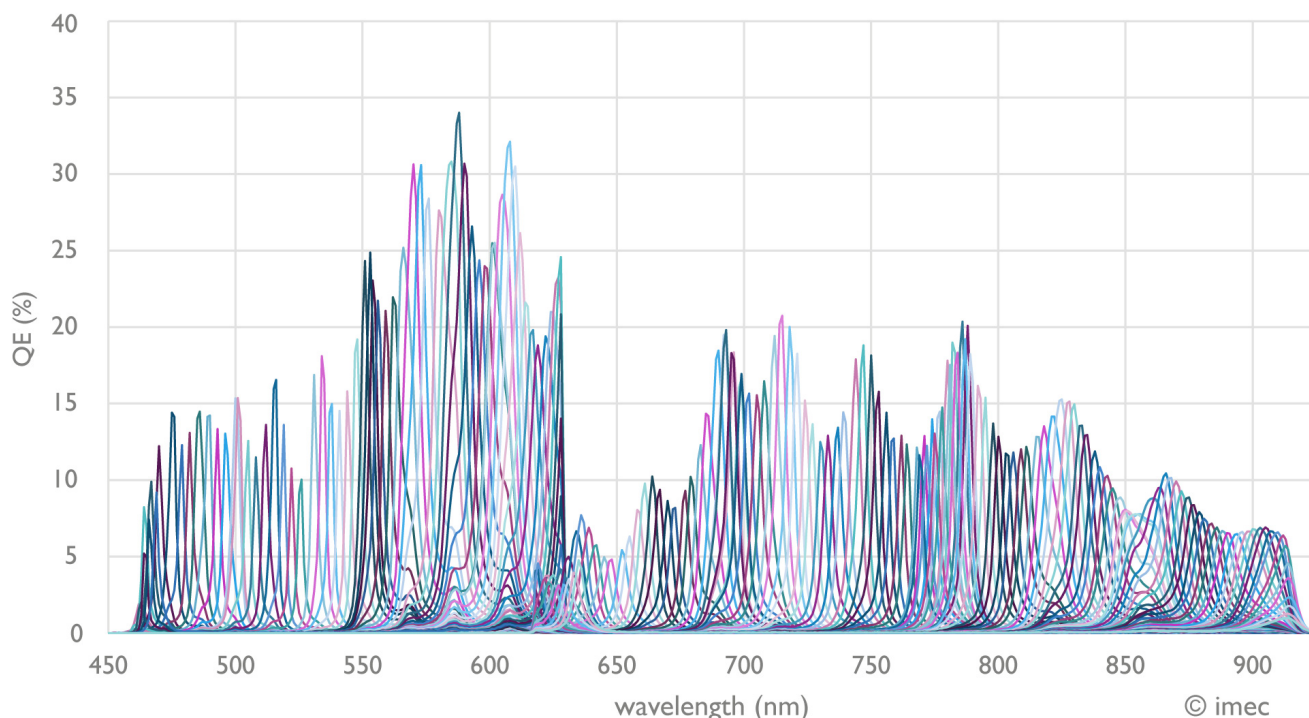
## Quantum Efficiency Image Sensor



## Image Sensor Specifications

| | |
|---|---|
| Manufacturer / Type | IMEC, CMV2K-LS150+ |
| Technology | CMOS |
| Optical format | 2/3" |
| Optical diagonal | 12.75mm |
| Resolution | 2048 x 1088 |
| Pixel size | 5.5µm x 5.5µm |
| Active optical area | 11.26mm x 5.98mm |
| Dark current | 125e-/s |
| Read out noise | 13e- |
| Full well capacity / SNR | 11ke- |
| Spectral range | Hyperspectral: 470 to 900nm (150 pass bands) |
| Responsivity | Hyperspectral: 785 x 10³ DN / (J/m²) @ 696nm / 8bit |
| Quantum Efficiency | Hyperspectral: < 30% |
| Optical fill factor | 42% without micro lenses |
| Dynamic range | 60dB |
| Characteristic curve | Linear. Piecewise linear |
| Shutter mode | Global shutter |

## Camera Specifications

| | |
|---|---|
| Interface | 10GigE |
| Frame rate | 340fps |
| Pixel clock | n/a |
| Camera taps | n/a |
| Greyscale resolution | 8, 10 and 12 Bit |
| Fixed pattern noise (FPN) | < 1DN RMS @ 8Bit |
| Exposure time range | 6µs - 346ms |
| Analog gain | yes |
| Digital gain | 0.1 to 15.99 (FineGain) |
| Trigger Modes | Free running (non triggered), external Trigger, SWTrigger, Encoder |
| Features | Resolution 2048 x 1088 (CMV2K-LS150+) pixels, Snapshot camera, Optimized for low light conditions, Spectral range: Hyperspectral 470 – 900 nm (150 pass bands), Global shutter high-speed CMOS image sensor, Gigabit and 10-Gigabit Ethernet interfaces, GigE Vision and GenICam compliant, Frame rates MV4-D2048x1088-C01-HS05-GT camera models at maximal resolution 340fps (10GigE), I/O capabilities: 4x Isolated inputs or shaft encoder A, B, Z, Y interface (RS422, TTL, D-HTL, HTL), 3x Isolated outputs (2x open drain, 1x TTL highspeed), Up to 8 regions of interest (MROI), 2 look-up tables (12-to-8 bit) on user-defined image region (Region-LUT) |
| Operation temperature / moisture | 0°C ... 50°C / 20 ... 80 % |
| Storage temperature / moisture | -25°C ... 60°C / 20 ... 95 % |
| Power supply | PoE (IEEE 802.3bt standard Class 4) or Wall adapter (+12VDC (-10%) ... +24VDC (+10%)) |
| Power consumption | < 12.5W |
| Lens mount | C mount |
| I/O Inputs | 4x Isolated inputs or shaft encoder A, B, Z, Y interface (RS422, TTL, D-HTL, HTL) |
| I/O Outputs | 3x Isolated outputs (2x open drain, 1x TTL high-speed) |
| Dimensions | 59 x 59 x 104.2 mm3 |
| Mass | 470g |
| Connector I/O (Power) | 17 pin M12 |
| Connector Interface | X-coded M12 |
| Conformity | CE / RoHS / WEEE |
| IP Code | IP40 |

## Connectors

| Pin | I/O Type | Name | Description |
|-----|----------|------|-------------|
| 1 | PWR | CAMERA_GND | Camera GND, 0V |
| 2 | PWR | CAMERA_PWR | Camera Power |
| 3 | I | ISO_INC0_P / ISO_IN0 | Isolated RS422/HTL positive differential or Isolated TTL/HTL single ended input |
| 4 | I | ISO_INC0_N / ISO_GND | Isolated RS422/HTL negativ differential input or ground |
| 5 | I | ISO_INC1_P / ISO_IN1 | Isolated RS422/HTL positive differential or Isolated TTL/HTL single ended input |
| 6 | I | ISO_INC1_N / ISO_GND | Isolated RS422/HTL negativ differential input or ground |
| 7 | I | ISO_INC2_P / ISO_IN2 | Isolated RS422/HTL positive differential or Isolated TTL/HTL single ended input |
| 8 | I | ISO_INC2_N / ISO_GND | Isolated RS422/HTL negativ differential input or ground |
| 9 | I | ISO_IN3 | Isolated TTL input |
| 10 | O | ISO_OUT2 | Isolated TTL output |
| 11 | PWR | CAMERA_GND | Camera GND, 0V |
| 12 | PWR | CAMERA_PWR | Camera Power |
| 13 | O | ISO_OUT0 | Isolated open drain output |
| 14 | O | ISO_OUT1 | Isolated open drain output |
| 15 | IO | RS485_DATA_P | RS485 interface data positive polarity |
| 16 | IO | RS485_DATA_N | RS485 interface data negative polarity |
| 17 | PWR | ISO_GND | Isolated I/O GND |
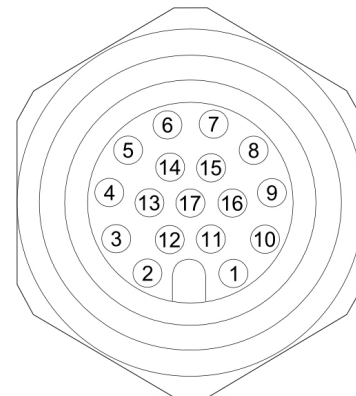
## Dimensions
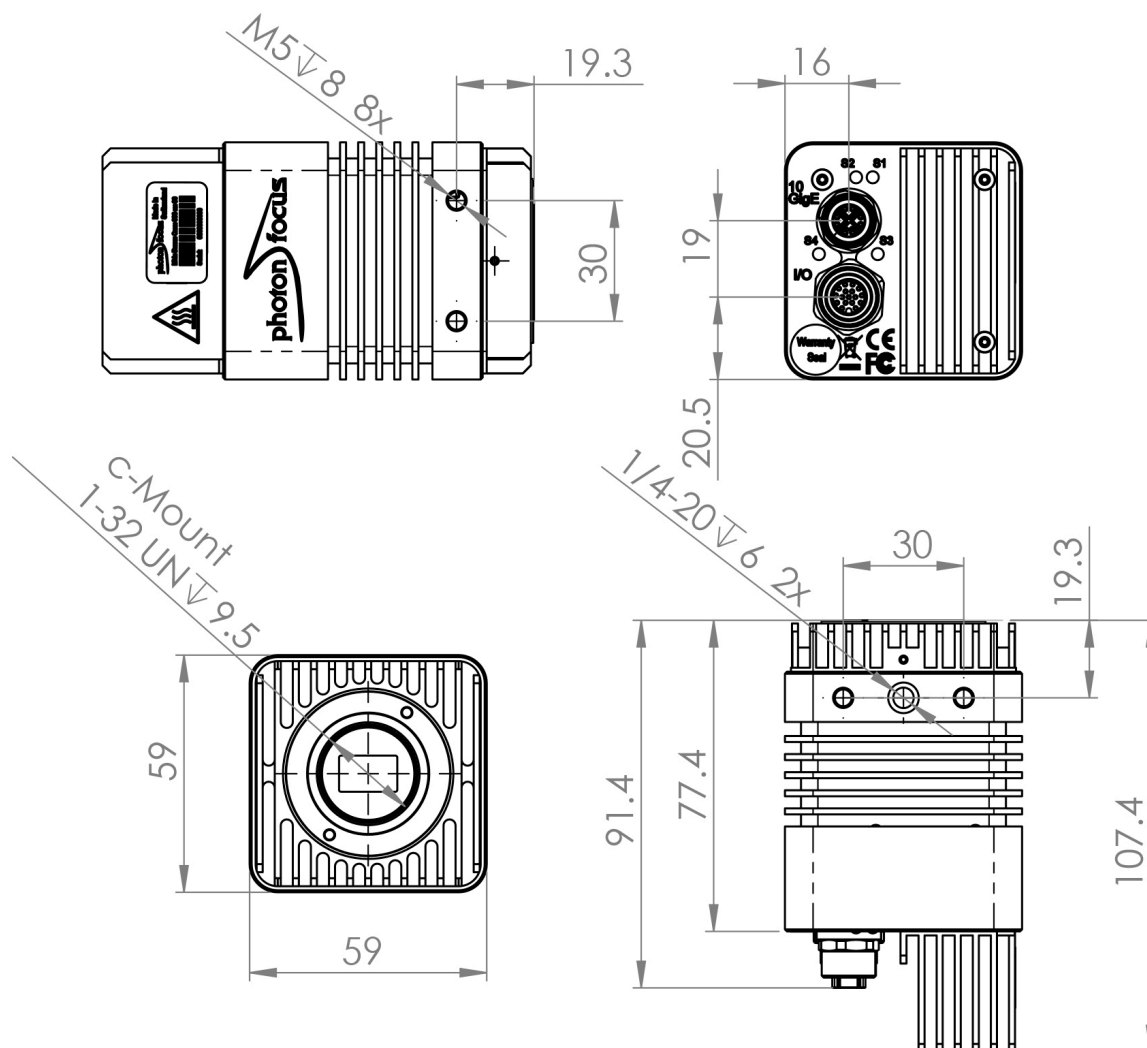
## Explanation

DN DigitalNumber (equals to LSB)

$e^-$ Electrons

## Order Information

MV4-D2048x1088-C01-HS05-GT          Hyperspectral model

## Compatibility





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