This datasheet describes the specification according to the standard 1288 for Characterization and Presentation of Specification Data for Image Sensors and Cameras of the European Machine Vision Association (EMVA) (see www.standard1288.org). The measurements were performed with an AEON ACC3 RGB Release 3, 20.01.2014, SN 0005(). The performance parameters and estimated accuracy of the measurements are described in the technical report for the instrument, its calibration in the corresponding calibration report.

<table>
<thead>
<tr>
<th>Vendor</th>
<th>MATRIX VISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>mvBlueCougar-X102bC</td>
</tr>
<tr>
<td>Serial number</td>
<td>GX007254</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>6.00 mm</td>
</tr>
<tr>
<td>Lens category</td>
<td>C-Mount</td>
</tr>
<tr>
<td>Resolution</td>
<td>1280 × 960, 10 bit</td>
</tr>
<tr>
<td>Pixel size</td>
<td>3.75 µm × 3.75 µm</td>
</tr>
<tr>
<td>Sensor type</td>
<td>CMOS</td>
</tr>
<tr>
<td>Shutter type</td>
<td>global</td>
</tr>
<tr>
<td>Overlap capabilities</td>
<td>pipelined</td>
</tr>
<tr>
<td>Maximum frame rate</td>
<td>24.6 Hz</td>
</tr>
<tr>
<td>Interface type</td>
<td>GigE Vision</td>
</tr>
</tbody>
</table>

Type of data presented: Single

**Operation point 1, (page 5)**
- Wavelength centroid: 467.3 nm
- Wavelength FWHM: 20.5 nm
- Gain, offset: Gain = 0 dB, Offset = 0.8

**Operation point 2, (page 17)**
- Wavelength centroid: 534.2 nm
- Wavelength FWHM: 30.9 nm
- Gain, offset: Gain = 0 dB, Offset = 0.8

**Operation point 3, (page 29)**
- Wavelength centroid: 629.5 nm
- Wavelength FWHM: 13.1 nm
- Gain, offset: Gain = 0 dB, Offset = 0.8

Optional data measured:
- None

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![Spectral sensitivity graph](image.png)

Spectral sensitivity m0185, 17.12.2014

- blue data
- green1 data
- red data
- green2 data
EMVA 1288 Summary Sheet for Operating Point 1

Type of data: Single  
Exposure time: 300.0 µs  
Frame rate: 0.0 Hz  
Data transfer mode: BayerGR10

Gain, offset:  
Gain = 0dB, Offset = 0.8  
Environmental temperature: 25.6°C  
Camera temperature: 36.3°C  
Wavelength, centr., FWHM: 467 nm, 20.5 nm

Quantum efficiency: η = 0.531  
Gain: 
K (DN/e) = 0.177  
1/K (e/DN) = 5.652

Dark noise & DSNU:  
σ_d (DN) = 1.32  
σ_0 (e) = 7.3  
DSNU_{1288} (DN) = 4.54  
DSNU_{1288} (e) = 25.68

Signal-to-noise ratio & PRNU:  
SNR_{max} = 74  
SNR_{max} (dB) = 37.4  
SNR_{max} (bits) = 6.2  
1/SNR_{max} (%) = 1.35  
PRNU_{1288} (%) = 1.365

Nonlinearity: LE (%) = 0.23

Sensitivity & saturation:  
µ_{p, min} (p) = 15.0  
µ_{e, min} (e) = 8.0  
µ_{p, sat} (p) = 10385  
µ_{e, sat} (e) = 5519

Dynamic range:  
DR = 693  
DR (dB) = 56.8  
DR (bit) = 9.4

Dark current:  
µ_{c, mean} (DN/s) = 32.12  
µ_{c, mean} (e/s) = 181.56  
µ_{c, var} (e/s) = -2789.34
EMVA 1288 Summary Sheet for Operating Point 2

Type of data: Single  
Exposure time: 300.0 µs  
Frame rate: 0.0 Hz  
Data transfer mode: BayerGR10

Gain, offset: Gain = 0dB, Offset = 0.8  
Environmental temperature: 25.6°C  
Camera temperature: 36.3°C  
Wavelength, centr., FWHM: 534 nm, 30.9 nm

Quantum efficiency: η = 0.627  
Gain: K (DN/e) = 0.176  
1/K (e/DN) = 5.673

Dark noise & DSNU:  
σ_d (DN) = 1.34  
σ_0 (e) = 7.4  
DSNU_1288 (DN) = 4.78  
DSNU_1288 (e) = 27.14

Signal-to-noise ratio & PRNU:  
SNR_max = 75  
SNR_max (dB) = 37.5  
SNR_max (bits) = 6.2  
1/SNR_max (%) = 1.33  
PRNU_1288 (%) = 1.337

Nonlinearity: LE (%) = 0.84

Sensitivity & saturation:  
μ_p, min (p) = 12.9  
μ_e, min (e) = 8.1  
μ_p, sat (p) = 9063  
μ_e, sat (e) = 5683

Dynamic range:  
DR = 701  
DR (dB) = 56.9  
DR (bit) = 9.5

Dark current:  
μ_c, mean (DN/s) = 23.98  
μ_c, mean (e/s) = 136.06  
μ_c, var (e/s) = -2185.16
EMVA 1288 Summary Sheet for Operating Point 3

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
<th>Gain, offset</th>
<th>Gain = 0dB, Offset = 0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure time</td>
<td>300.0 µs</td>
<td>Environmental temperature</td>
<td>25.6°C</td>
</tr>
<tr>
<td>Frame rate</td>
<td>0.0 Hz</td>
<td>Camera temperature</td>
<td>36.3°C</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerGR10</td>
<td>Wavelength, centr.,</td>
<td>630 nm, 13.1 nm</td>
</tr>
</tbody>
</table>

### Photon transfer

\[
\text{red: } \text{var(dark)} = 1.85 \text{ DN}^2, K = 0.176 \pm 0.1\% 
\]

### SNR

\[
\text{SNR} \max 74 \\
\text{SNR} \max (\text{dB}) 37.4 \\
\text{SNR} \max (\text{bits}) 6.2 \\
1/\text{SNR} \max (%) 1.35 \\
\text{PRNU}_{1288} (%) 2.358 \\
\]

### Nonlinearity

\[
\text{LE} (%) 0.34 
\]

### Sensitivity & saturation

\[
\mu_{p,\text{min}} (p) 14.8 \\
\mu_{e,\text{min}} (e) 8.2 \\
\mu_{p,\text{sat}} (p) 9901 \\
\mu_{e,\text{sat}} (e) 5509 
\]

### Dynamic range

\[
\text{DR} 668 \\
\text{DR (dB)} 56.5 \\
\text{DR (bit)} 9.4 
\]

### Dark current

\[
\mu_{c,\text{mean}} (\text{DN/s}) -6.89 \\
\mu_{c,\text{mean}} (\text{e/s}) -39.17 \\
\mu_{c,\text{var}} (\text{e/s}) -4383.00 
\]