EMVA 1288 Summary Sheet

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, 20.01.2104, 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-X225C</td>
</tr>
<tr>
<td>Serial number</td>
<td>GX010005</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>11.02 mm</td>
</tr>
<tr>
<td>Lens category</td>
<td>C-Mount</td>
</tr>
<tr>
<td>Resolution</td>
<td>2448 × 2050, 12 bit</td>
</tr>
<tr>
<td>Pixel size</td>
<td>3.45 μm × 3.45 μm</td>
</tr>
<tr>
<td>Sensor type</td>
<td>CCD</td>
</tr>
<tr>
<td>Readout type</td>
<td>Progressive</td>
</tr>
<tr>
<td>Transfer type</td>
<td>Interline</td>
</tr>
<tr>
<td>Maximum frame rate</td>
<td>11.8 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 = -6dB, Offset = 0.15

Operation point 2, (page 10)
- Wavelength centroid: 534.2 nm
- Wavelength FWHM: 30.9 nm
- Gain, offset: Gain = -6dB, Offset = 0.15

Operation point 3, (page 15)
- Wavelength centroid: 629.5 nm
- Wavelength FWHM: 13.1 nm
- Gain, offset: Gain = -6dB, Offset = 0.15

Optional data measured: None

Spectral sensitivity m0383, 19.06.2015
EMVA 1288 Summary Sheet for Operating Point 1

- **Type of data**: Single
- **Exposure time**: 14.0 ms
- **Frame rate**: 0.0 Hz
- **Data transfer mode**: BayerRG12
- **Gain, offset**: Gain = -6dB, Offset = 0.15
- **Environmental temperature**: 24.7°C
- **Camera temperature**: 46.2°C
- **Wavelength, centr., FWHM**: 467 nm, 20.5 nm

### Quantum efficiency
\[ \eta = 0.360 \]

### Gain
\[ K = 0.606 \]
\[ 1/K = 1.650 \]

### Dark noise & DSNU
\[ \sigma_d = 6.73 \]
\[ \sigma_0 = 11.1 \]
\[ DSNU_{1288} = - \]
\[ DSNU_{1288} = - \]

### Signal-to-noise ratio & PRNU
\[ SNR_{\text{max}} = 78 \]
\[ SNR_{\text{max}} (\text{dB}) = 37.8 \]
\[ SNR_{\text{max}} (\text{bits}) = 6.3 \]
\[ 1/SNR_{\text{max}} (%) = 1.29 \]
\[ PRNU_{1288} (%) = - \]

### Nonlinearity
\[ LE (%) = 0.24 \]

### Sensitivity & saturation
\[ \mu_{p,\text{min}} (\text{p}) = 32.3 \]
\[ \mu_{e,\text{min}} (\text{e}) = 11.6 \]
\[ \mu_{p,\text{sat}} (\text{p}) = 16830 \]
\[ \mu_{e,\text{sat}} (\text{e}) = 6054 \]

### Dynamic range
\[ DR = 521 \]
\[ DR (\text{dB}) = 54.3 \]
\[ DR (\text{bit}) = 9.0 \]

### Dark current
\[ \mu_{c,\text{mean}} (\text{DN/s}) = - \]
\[ \mu_{c,\text{mean}} (\text{e/s}) = - \]
\[ \mu_{c,\text{var}} (\text{e/s}) = - \]
EMVA 1288 Summary Sheet for Operating Point 2

Type of data  
Single

Exposure time  
14.0 ms

Frame rate  
0.0 Hz

Data transfer mode  
BayerRG12

Gain, offset  
Gain = -6dB, Offset = 0.15

Environmental temperature  
24.7°C

Camera temperature  
46.2°C

Wavelength, centr., FWHM  
534 nm, 30.9 nm

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Quantum efficiency

\[ \eta = 0.406 \]

Gain

\[ K (\text{DN}/e) = 0.595 \]

\[ 1/K (e/\text{DN}) = 1.681 \]

Dark noise & DSNU

\[ \sigma_d (\text{DN}) = 6.73 \]

\[ \sigma_0 (e) = 11.3 \]

DSNU\textsubscript{1288} (DN)  
—

DSNU\textsubscript{1288} (e)  
—

Signal-to-noise ratio & PRNU

\[ \text{SNR}_{\text{max}} = 80 \]

\[ \text{SNR}_{\text{max}} (\text{dB}) = 38.1 \]

\[ \text{SNR}_{\text{max}} (\text{bits}) = 6.3 \]

\[ 1/\text{SNR}_{\text{max}} (%) = 1.25 \]

PRNU\textsubscript{1288} (%)  
—

Nonlinearity

\[ \text{LE} (%) = 0.43 \]

Sensitivity & saturation

\[ \mu_{p,\text{min}} (\text{p}) = 29.1 \]

\[ \mu_{e,\text{min}} (e) = 11.8 \]

\[ \mu_{p,\text{sat}} (\text{p}) = 15739 \]

\[ \mu_{e,\text{sat}} (e) = 6384 \]

Dynamic range

\[ \text{DR} = 540 \]

\[ \text{DR (dB)} = 54.7 \]

\[ \text{DR (bit)} = 9.1 \]

Dark current

\[ \mu_{c,\text{mean}} (\text{DN/s}) = 9.1 \]

\[ \mu_{c,\text{mean}} (e/s) = 6384 \]

\[ \mu_{c,\text{var}} (e/s) = 6384 \]
EMVA 1288 Summary Sheet for Operating Point 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of data</td>
<td>Single</td>
</tr>
<tr>
<td>Exposure time</td>
<td>14.0 ms</td>
</tr>
<tr>
<td>Frame rate</td>
<td>0.0 Hz</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>Bayer RG12</td>
</tr>
<tr>
<td>Gain, offset</td>
<td>Gain = -6dB, Offset = 0.15</td>
</tr>
<tr>
<td>Environmental temperature</td>
<td>24.7°C</td>
</tr>
<tr>
<td>Camera temperature</td>
<td>46.2°C</td>
</tr>
<tr>
<td>Wavelength, cent., FWHM</td>
<td>630 nm, 13.1 nm</td>
</tr>
</tbody>
</table>

Quantum efficiency

\[ \eta = 0.284 \]

Gain

\[ K (DN/e) = 0.593 \]
\[ 1/K (e/DN) = 1.687 \]

Dark noise & DSNU

\[ \sigma_d (DN) = 6.73 \]
\[ \sigma_0 (e) = 11.3 \]
\[ DSNU_{1288} (DN) = - \]
\[ DSNU_{1288} (e) = - \]

Signal-to-noise ratio & PRNU

\[ SNR_{max} = 80 \]
\[ SNR_{max} (dB) = 38.0 \]
\[ SNR_{max} (bits) = 6.3 \]
\[ 1/SNR_{max} (%) = 1.26 \]

Nonlinearity

\[ LE (%) = 0.59 \]

Sensitivity & saturation

\[ \mu_{p,\text{min}} (p) = 41.7 \]
\[ \mu_{e,\text{min}} (e) = 11.9 \]
\[ \mu_{p,\text{sat}} (p) = 22295 \]
\[ \mu_{e,\text{sat}} (e) = 6336 \]

Dynamic range

\[ DR = 534 \]
\[ DR (dB) = 54.6 \]
\[ DR (bit) = 9.1 \]

Dark current

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