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-XD126aC</td>
</tr>
<tr>
<td>Serial number</td>
<td>GX201692</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>16.02 mm</td>
</tr>
<tr>
<td>Lens category</td>
<td>C-Mount</td>
</tr>
<tr>
<td>Resolution</td>
<td>2752 × 2208, 12 bit</td>
</tr>
<tr>
<td>Pixel size</td>
<td>4.54 µm × 4.54 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>13.0 Hz</td>
</tr>
<tr>
<td>Interface type</td>
<td>GigE Vision</td>
</tr>
<tr>
<td>Type of data presented</td>
<td>Single</td>
</tr>
</tbody>
</table>

**Operation point 1, (page 5)**
- Wavelength centroid: 467.3 nm
- Wavelength FWHM: 20.5 nm
- Gain, offset: Gain = -6dB, Offset = 0.2

**Operation point 2, (page 10)**
- Wavelength centroid: 534.2 nm
- Wavelength FWHM: 30.9 nm
- Gain, offset: Gain = -6dB, Offset = 0.2

**Operation point 3, (page 15)**
- Wavelength centroid: 629.5 nm
- Wavelength FWHM: 13.1 nm
- Gain, offset: Gain = -6dB, Offset = 0.2

**Optional data measured**
None

[Graph: Spectral sensitivity m0363, 16.06.2015]
EMVA 1288 Summary Sheet for Operating Point 1

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
<th>Gain, offset</th>
<th>Gain = -6dB, Offset = 0.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure time</td>
<td>16.0 ms</td>
<td>Environmental temperature</td>
<td>28.0°C</td>
</tr>
<tr>
<td>Frame rate</td>
<td>0.0 Hz</td>
<td>Camera temperature</td>
<td>44.3°C</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerGR12</td>
<td>Wavelength, centr., FWHM</td>
<td>467 nm, 20.5 nm</td>
</tr>
</tbody>
</table>

**Quantum efficiency**

\[ \eta = 0.417 \]

**Gain**

\[ K (\text{DN/e}) = 0.255 \]
\[ 1/K (\text{e/DN}) = 3.918 \]

**Dark noise & DSNU**

\[ \sigma_d (\text{DN}) = 2.48 \]
\[ \sigma_0 (\text{e}) = 9.7 \]
\[ \text{DSNU}_{1288} (\text{DN}) = - \]
\[ \text{DSNU}_{1288} (\text{e}) = - \]

**Signal-to-noise ratio & PRNU**

\[ \text{SNR}_{\text{max}} = 123 \]
\[ \text{SNR}_{\text{max}} (\text{dB}) = 41.8 \]
\[ \text{SNR}_{\text{max}} (\text{bits}) = 6.9 \]
\[ 1/\text{SNR}_{\text{max}} (\%) = 0.81 \]
\[ \text{PRNU}_{1288} (\%) = - \]

**Nonlinearity**

\[ \text{LE} (\%) = 0.29 \]

**Sensitivity & saturation**

\[ \mu_{p,\text{min}} (\text{p}) = 24.5 \]
\[ \mu_{e,\text{min}} (\text{e}) = 10.2 \]
\[ \mu_{p,\text{sat}} (\text{p}) = 36471 \]
\[ \mu_{e,\text{sat}} (\text{e}) = 15212 \]

**Dynamic range**

\[ \text{DR} = 1487 \]
\[ \text{DR (dB)} = 63.4 \]
\[ \text{DR (bit)} = 10.5 \]

**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 | 16.0 ms
Frame rate | 0.0 Hz
Data transfer mode | BayerGR12

Gain, offset
Gain = -6dB, Offset = 0.2

Environmental temperature
28.0°C

Camera temperature
44.3°C

Wavelength, centr., FWHM
534 nm, 30.9 nm

Photon transfer m0363, 534nm, 16.06.2015

![Graph of Photon transfer m0363, 534nm, 16.06.2015](image)

Quantum efficiency
\( \eta \) = 0.490

Gain
\( K \) (DN/e) = 0.255
\( 1/K \) (e/DN) = 3.927

Dark noise & DSNU
\( \sigma_d \) (DN) = 2.48
\( \sigma_0 \) (e) = 9.7
DSNU\(_{1288}\) (DN) = —
DSNU\(_{1288}\) (e) = —

Signal-to-noise ratio & PRNU
SNR\(_{\text{max}}\) (DN) = —
SNR\(_{\text{max}}\) (dB) = 41.9
SNR\(_{\text{max}}\) (bits) = 7.0
1/SNR\(_{\text{max}}\) (%) = 0.81
PRNU\(_{1288}\) (%) = —

Nonlinearity
LE (%) = 0.25

Sensitivity & saturation
\( \mu_{p,\text{min}} \) (p) = 21.0
\( \mu_{e,\text{min}} \) (e) = 10.3
\( \mu_{p,\text{sat}} \) (p) = 31444
\( \mu_{e,\text{sat}} \) (e) = 15400

Dynamic range
DR = 1500
DR (dB) = 63.5
DR (bit) = 10.6

Dark current
\( \mu_{c,\text{mean}} \) (DN/s) = —
\( \mu_{c,\text{mean}} \) (e/s) = —
\( \mu_{c,\text{var}} \) (e/s) = —
EMVA 1288 Summary Sheet for Operating Point 3

Type of data: Single
Exposure time: 16.0 ms
Frame rate: 0.0 Hz
Data transfer mode: BayerGR12

Gain, offset
Gain = -6dB, Offset = 0.2

Environmental temperature
28.0°C
Camera temperature
44.3°C

Wavelength, centr., FWHM
630 nm, 13.1 nm

Quantum efficiency
\( \eta = 0.411 \)

Gain
\( K \) (DN/e) 0.254
\( 1/K \) (e/DN) 3.933

Dark noise & DSNU
\( \sigma_d \) (DN) 2.50
\( \sigma_0 \) (e) 9.8
DSNU_{1288} (DN) —
DSNU_{1288} (e) —

Signal-to-noise ratio & PRNU
SNR_{max} 124
SNR_{max} (dB) 41.9
SNR_{max} (bits) 7.0
\( 1/\text{SNR}_{max} \) (%) 0.81
PRNU_{1288} (%) —

Nonlinearity
LE (%) 0.17

Sensitivity & saturation
\( \mu_{p,\text{min}} \) (p) 25.1
\( \mu_{e,\text{min}} \) (e) 10.3
\( \mu_{p,\text{sat}} \) (p) 37513
\( \mu_{e,\text{sat}} \) (e) 15423

Dynamic range
DR 1493
DR (dB) 63.5
DR (bit) 10.5

Dark current
\( \mu_{c,\text{mean}} \) (DN/s) —
\( \mu_{c,\text{mean}} \) (e/s) —
\( \mu_{c,\text{var}} \) (e/s) —