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 or the Zenodo EMVA 1288 community) release 3.0 with proprietary extensions from AEON. The measurements were performed with the AEON ACC3 Release 5, 06.06.2016, SN 0005(MatrixVision). The performance parameters and estimated accuracy of the measurements are described in the technical report for the instrument, its calibration in the corresponding specification and calibration report.

Measurements performed by T. Renner, Matrix Vision GmbH

<table>
<thead>
<tr>
<th>Vendor</th>
<th>MATRIX VISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>mvBlueFOX3-2032aC</td>
</tr>
<tr>
<td>Serial number</td>
<td>FF000575</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>8.89 mm</td>
</tr>
<tr>
<td>Lens category</td>
<td>C-Mount</td>
</tr>
<tr>
<td>Resolution</td>
<td>2064 × 1544, 12 bit</td>
</tr>
<tr>
<td>Pixel size</td>
<td>3.45 μm × 3.45 μm</td>
</tr>
<tr>
<td>Sensor</td>
<td>IMX265</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>Overlapping</td>
</tr>
<tr>
<td>Maximum frame rate</td>
<td>61.5 Hz</td>
</tr>
<tr>
<td>Interface type</td>
<td>USB3 Vision</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of data presented</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operation point 1, (page ??)</strong></td>
<td></td>
</tr>
<tr>
<td>Wavelength centroid</td>
<td>468.0 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>20.0 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td><strong>Operation point 2, (page ??)</strong></td>
<td></td>
</tr>
<tr>
<td>Wavelength centroid</td>
<td>536.0 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>31.0 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td><strong>Operation point 3, (page ??)</strong></td>
<td></td>
</tr>
<tr>
<td>Wavelength centroid</td>
<td>630.0 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>13.0 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
</tbody>
</table>

**Optional data measured**

None

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EMVA 1288 Summary Sheet for Operating Point 1

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure control</td>
<td>By irradiance</td>
</tr>
<tr>
<td>Exposure time</td>
<td>16.00 ms</td>
</tr>
<tr>
<td>Frame rate</td>
<td>55.4 Hz</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
</tr>
</tbody>
</table>

Gain, black-level: 0dB, 0.1
Environmental temperature: 23.3°C
Camera body temperature: 33.2°C
Internal temperature(s): —
Wavelength, centr., FWHM: 468 nm, 20.0 nm

Quantum efficiency
\( \eta \) = 45.5%

Overall system gain
\( K \) = 0.381 DN/e^-
\( 1/K \) = 2.626 e^-/DN

Temporal dark noise & DSNU
\( \sigma_y, \text{dark} \) = 0.85 DN
DSNU_{1288} = 0.35 DN
\( \sigma_d \) = 2.10 e^- 
DSNU_{1288} = 0.92 e^- 

Signal-to-noise ratio & PRNU
SNR_{max} = 101
40.1 dB
6.7 bit
1/SNR_{max} = 0.99 %
PRNU_{1288} = 0.66 %

Nonlinearity
LE = 0.17%
LE_{min} = -0.13%
LE_{max} = 0.20%

Sensitivity & saturation
\( \mu_p, \text{min} \) = 6.12 p
\( \mu_p, \text{sat} \) = 22606 p
\( \mu_e, \text{min} \) = 1899 p/\mu m^2
\( \mu_e, \text{sat} \) = 2.79 e^- 
\( \mu_c, \text{min} \) = 0.234 e^-/\mu m^2
\( \mu_c, \text{sat} \) = 10289 e^- 
\( \mu_c, \text{var} \) = 864 e^-/\mu m^2

Dynamic range
DR = 3692
71.3 dB
11.9 bit

Dark current
\( \mu_c, \text{mean} \) = 1.3 DN/s
\( \mu_c, \text{mean} \) = 3.3 e^-/s
\( \mu_c, \text{var} \) = 1.7 e^-/s
**EMVA 1288 Summary Sheet for Operating Point 2**

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure control</td>
<td>By irradiance</td>
</tr>
<tr>
<td>Exposure time</td>
<td>16.00 ms</td>
</tr>
<tr>
<td>Frame rate</td>
<td>55.4 Hz</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
</tr>
</tbody>
</table>

Gain, black-level: 0dB, 0.1
Environmental temperature: 23.3°C
Camera body temperature: 33.2°C
Internal temperature(s): —
Wavelength, centr., FWHM: 536 nm, 31.0 nm

**Quantum efficiency**

$$\eta = 56.1\%$$

**Overall system gain**

$$K = 0.381 \text{ DN/e}^-$$
$$1/K = 2.624 \text{ e}^-/\text{DN}$$

**Temporal dark noise & DSNU**

$$\sigma_y\text{, dark} = 0.85 \text{ DN}$$
$$\text{DSNU}_{1288} = 0.23 \text{ DN}$$
$$\sigma_d = 2.10 \text{ e}^-$$
$$\text{DSNU}_{1288} = 0.61 \text{ e}^-$$

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

$$\text{SNR}_{\text{max}} = 101$$
$$\text{SNR}_{\text{max}} = 40.1 \text{ dB}$$
$$1/\text{SNR}_{\text{max}} = 6.7 \text{ bit}$$
$$\text{PRNU}_{1288} = 0.99 \%$$
$$\text{PRNU}_{1288} = 0.60 \%$$

**Nonlinearity**

$$\text{LE} = 0.24 \%$$
$$\text{LE}_{\text{min}} = -0.17 \%$$
$$\text{LE}_{\text{max}} = 0.31 \%$$

**Sensitivity & saturation**

$$\mu_{p,\text{min}} = 4.97 \text{ p}/\text{um}^2$$
$$\mu_{p,\text{min}} = 0.418 \text{ p}/\text{um}^2$$
$$\mu_{p,\text{sat}} = 18239 \text{ p}$$
$$\mu_{p,\text{sat}} = 1532 \text{ p}/\text{um}^2$$
$$\mu_{e,\text{min}} = 2.79 \text{ e}^-$$
$$\mu_{e,\text{min}} = 0.234 \text{ e}^-/\text{um}^2$$
$$\mu_{e,\text{sat}} = 10234 \text{ e}^-$$
$$\mu_{e,\text{sat}} = 860 \text{ e}^-/\text{um}^2$$

**Dynamic range**

$$\text{DR} = 3667$$
$$\text{DR} = 71.3 \text{ dB}$$
$$\text{DR} = 11.8 \text{ bit}$$

**Dark current**

$$\mu_{c,\text{mean}} = 1.3 \text{ DN/s}$$
$$\mu_{c,\text{mean}} = 3.3 \text{ e}^-/\text{s}$$
$$\mu_{c,\text{var}} = 1.7 \text{ e}^-/\text{s}$$
**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 control</td>
<td>By irradiance</td>
</tr>
<tr>
<td>Exposure time</td>
<td>16.00 ms</td>
</tr>
<tr>
<td>Frame rate</td>
<td>55.4 Hz</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td>Environmental temperature</td>
<td>23.3°C</td>
</tr>
<tr>
<td>Camera body temperature</td>
<td>33.2°C</td>
</tr>
<tr>
<td>Internal temperature(s)</td>
<td>—</td>
</tr>
<tr>
<td>Wavelength, centr., FWHM</td>
<td>630 nm, 13.0 nm</td>
</tr>
</tbody>
</table>

**Quantum efficiency**

\[ \eta = 49.8\% \]

**Overall system gain**

\[ K = 0.380 \text{DN/e}^- \]
\[ 1/K = 2.635 e^-/\text{DN} \]

**Temporal dark noise & DSNU**

\[ \sigma_{y,\text{dark}} = 0.85 \text{DN} \]
\[ \text{DSNU}_{1288} = 0.23 \text{DN} \]
\[ \sigma_d = 2.12 e^- \]
\[ \text{DSNU}_{1288} = 0.61 e^- \]

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

\[ \text{SNR}_{\text{max}} = 102 \]
\[ 40.2 \text{dB} \]
\[ 6.7 \text{bit} \]
\[ 1/\text{SNR}_{\text{max}} = 0.98\% \]
\[ \text{PRNU}_{1288} = 0.55\% \]

**Nonlinearity**

\[ \text{LE} = 0.20\% \]
\[ \text{LE}_{\text{min}} = -0.28\% \]
\[ \text{LE}_{\text{max}} = 0.13\% \]

**Sensitivity & saturation**

\[ \mu_{p,\text{min}} = 5.63 p \]
\[ 0.473 p/\mu m^2 \]
\[ \mu_{p,\text{sat}} = 20971 p \]
\[ 1762 p/\mu m^2 \]
\[ \mu_{e,\text{min}} = 2.80 e^- \]
\[ 0.236 e^-/\mu m^2 \]
\[ \mu_{e,\text{sat}} = 10446 e^- \]
\[ 878 e^-/\mu m^2 \]

**Dynamic range**

\[ \text{DR} = 3726 \]
\[ 71.4 \text{dB} \]
\[ 11.9 \text{bit} \]

**Dark current**

\[ \mu_{c,\text{mean}} = 1.2 \text{DN/s} \]
\[ \mu_{c,\text{mean}} = 3.2 e^-/s \]
\[ \mu_{c,\text{var}} = 1.6 e^-/s \]