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](http://www.standard1288.org) or the [Zenodo EMVA 1288 community](http://zenodo.org/)) release 3.0 with proprietary extensions from AEON. The measurements were performed with the AEON ACC3-RGB Release 3, 12.04.2015, SN 0005(Matrix Vision). 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>mvBlueFOX3-2124C</td>
</tr>
<tr>
<td>Serial number</td>
<td>FF000302</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>17.58 mm</td>
</tr>
<tr>
<td>Lens category</td>
<td>C-Mount</td>
</tr>
<tr>
<td>Resolution</td>
<td>4112 × 3008, 12 bit</td>
</tr>
<tr>
<td>Pixel size</td>
<td>3.45 μm × 3.45 μm</td>
</tr>
<tr>
<td>Sensor</td>
<td>IMX253</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>
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</tr>
<tr>
<td>Interface type</td>
<td>USB3 Vision</td>
</tr>
<tr>
<td>Type of data presented</td>
<td>Single</td>
</tr>
<tr>
<td>Operation point 1, (page ??)</td>
<td>Wavelength centroid 467.3 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>20.5 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td>Operation point 2, (page ??)</td>
<td>Wavelength centroid 534.2 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>30.9 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td>Operation point 3, (page ??)</td>
<td>Wavelength centroid 629.5 nm</td>
</tr>
<tr>
<td>Wavelength FWHM</td>
<td>13.1 nm</td>
</tr>
<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
</tbody>
</table>

Optional data measured
None
**EMVA 1288 Summary Sheet for Operating Point 1**

- **Type of data**: Single
- **Exposure control**: By irradiance
- **Exposure time**: 16.00 ms
- **Frame rate**: 15.0 Hz
- **Data transfer mode**: BayerRG12

**Environmental temperature**: 27.9°C
**Camera body temperature**: 42.7°C

**Wavelength, centr., FWHM**: 467 nm, 20.5 nm

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**Quantum efficiency**

\[ \eta = 44.9\% \]

**Overall system gain**

\[ K = 0.376 \text{ DN/e}^{-1} \]
\[ 1/K = 2.659 \text{ e}^{-1}/\text{DN} \]

**Temporal dark noise & DSNU**

\[ \sigma_{y,\text{dark}} = 0.93 \text{ DN} \]
\[ \text{DSNU}_{1288} = 0.39 \text{ DN} \]
\[ \sigma_d = 2.35 \text{ e}^{-} \]
\[ \text{DSNU}_{1288} = 1.03 \text{ e}^{-} \]

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

\[ \text{SNR}_{\text{max}} = 102 \]
\[ 40.2 \text{ dB} \]
\[ 6.7 \text{ bit} \]
\[ 1/\text{SNR}_{\text{max}} = 0.98\% \]
\[ \text{PRNU}_{1288} = 0.72\% \]

**Nonlinearity**

\[ \text{LE} = 0.24\% \]
\[ \text{LE}_{\text{min}} = -0.26\% \]
\[ \text{LE}_{\text{max}} = 0.21\% \]

**Sensitivity & saturation**

\[ \mu_{p,\text{min}} = 6.72 \text{ p} \]
\[ 0.565 \text{ p}/\mu\text{m}^{2} \]
\[ \mu_{p,\text{sat}} = 23331 \text{ p} \]
\[ 1960 \text{ p}/\mu\text{m}^{2} \]
\[ \mu_{e,\text{min}} = 3.02 \text{ e}^{-} \]
\[ 0.254 \text{ e}^{-}/\mu\text{m}^{2} \]
\[ \mu_{e,\text{sat}} = 10477 \text{ e}^{-} \]
\[ 880 \text{ e}^{-}/\mu\text{m}^{2} \]

**Dynamic range**

\[ \text{DR} = 3471 \]
\[ 70.8 \text{ dB} \]
\[ 11.8 \text{ bit} \]

**Dark current**

\[ \mu_{c,\text{mean}} = -1.2 \text{ DN/s} \]
\[ \mu_{c,\text{mean}} = -3.2 \text{ e}^{-}/\text{s} \]
\[ \mu_{c,\text{var}} = 5.5 \text{ e}^{-}/\text{s} \]
## EMVA 1288 Summary Sheet for Operating Point 2

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
<th>Gain, black-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure control</td>
<td>By irradiance</td>
<td>Environmental temperature</td>
</tr>
<tr>
<td>Exposure time</td>
<td>16.00 ms</td>
<td>Camera body temperature</td>
</tr>
<tr>
<td>Frame rate</td>
<td>15.0 Hz</td>
<td>Internal temperature(s)</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
<td>Wavelength, centr., FWHM</td>
</tr>
</tbody>
</table>

- **Environmental temperature**: 27.9°C
- **Camera body temperature**: 42.7°C

### Photon transfer m0539, 534 nm, 12.05.2016

#### SNR m0539, 534 nm, 12.05.2016

- **SNRmax**: 102 dB, 6.7 bit
- **1/SNRmax**: 0.98%
- **PRNU1288**: 0.92%

#### Temporal dark noise & DSNU

- **σ_y,dark**: 0.92 DN
- **DSNU1288**: 0.54 DN
- **σ_d**: 2.34 e⁻
- **DSNU1288**: 1.43 e⁻

#### Signal-to-noise ratio & PRNU

- **SNRmax**: 102 dB, 6.7 bit
- **1/SNRmax**: 0.98%
- **PRNU1288**: 0.92%

#### Nonlinearity

- **LE**: 0.20%
- **LEmin**: -0.24%
- **LEmax**: 0.17%

#### Sensitivity & saturation

- **µ_p,min**: 5.41 p
- **µ_p,sat**: 18621 p
- **µ_e,min**: 3.01 e⁻
- **µ_e,sat**: 10375 e⁻

#### Dynamic range

- **DR**: 3443, 70.7 dB, 11.7 bit

#### Dark current

- **µ_c,mean**: -1.2 DN/s
- **µ_c,mean**: -3.2 e⁻/s
- **µ_c,var**: 5.5 e⁻/s

### Quantum efficiency

\[ \eta = 55.7\% \]

### Overall system gain

\[ K = 0.375 \text{ DN/e}^- \]

\[ 1/K = 2.663 \text{ e}^-/\text{DN} \]

### Temperature

- **Environmental temperature**: 27.9°C
- **Camera body temperature**: 42.7°C

### Wavelength, centr., FWHM

- **534 nm, 30.9 nm**
EMVA 1288 Summary Sheet for Operating Point 3

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
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<tbody>
<tr>
<td>Exposure control</td>
<td>By irradiance</td>
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<tr>
<td>Exposure time</td>
<td>16.00 ms</td>
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<td>Frame rate</td>
<td>15.0 Hz</td>
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<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
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<tr>
<td>Gain, black-level</td>
<td>0dB, 0.1</td>
</tr>
<tr>
<td>Environmental temp</td>
<td>27.9°C</td>
</tr>
<tr>
<td>Camera body temp</td>
<td>42.7°C</td>
</tr>
<tr>
<td>Internal temperature(s)</td>
<td>—</td>
</tr>
<tr>
<td>Wavelength, centr., FWHM</td>
<td>630 nm, 13.1 nm</td>
</tr>
</tbody>
</table>

**Photon transfer m0539, 630 nm, 12.05.2016**

- **SNR**
  - SNR$_{max}$: 102
  - PRNU$_{1288}$: 1.16%

- **Sensitivity & saturation**
  - $\mu_{p,\text{min}}$: 6.19 p
  - $\mu_{p,\text{sat}}$: 21381 p
  - $\mu_{e,\text{min}}$: 3.04 e$^-$
  - $\mu_{e,\text{sat}}$: 10506 e$^-$

- **Dynamic range**
  - DR: 3455
  - 70.8 dB
  - 11.8 bit

- **Dark current**
  - $\mu_{c,\text{mean}}$: -0.9 DN/s
  - $\mu_{c,\text{mean}}$: -2.3 e$^-$/s
  - $\mu_{c,\text{var}}$: 5.9 e$^-$/s