

## EMVA 1288 Data Sheet m1261

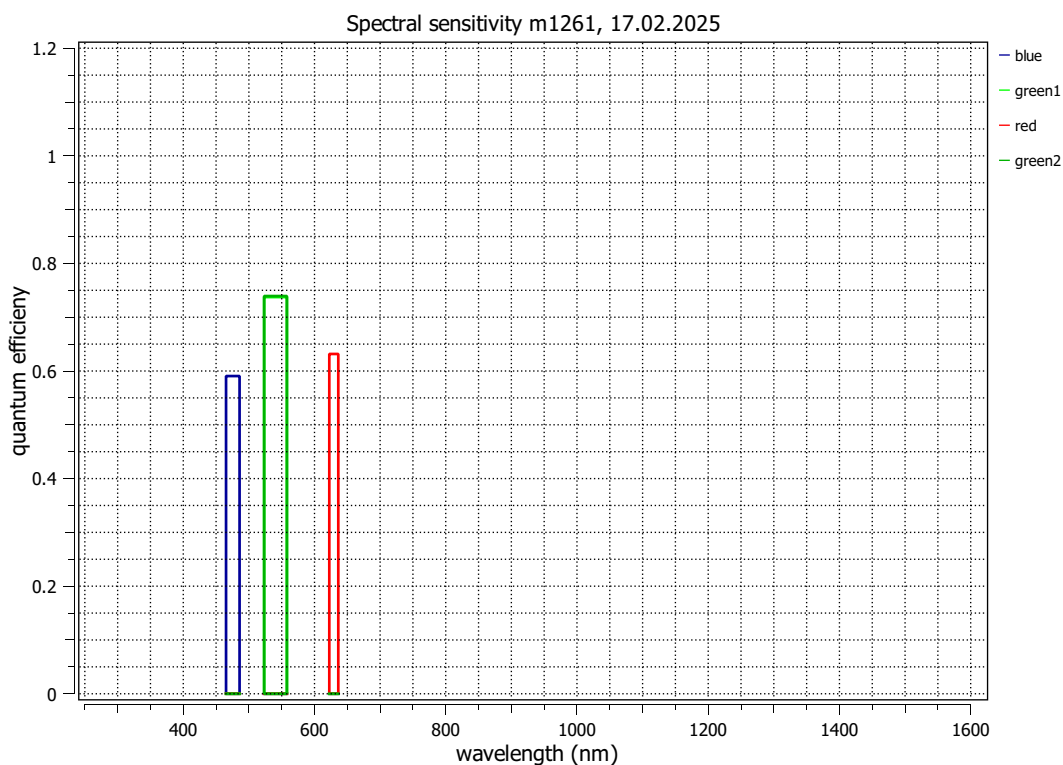
This datasheet describes the specification according to the standard 1288 Release 4.0 Linear issued on 21 June 2021 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" by the European Machine Vision Association (EMVA), published at <https://www.emva.org/standards-technology/emva-1288/> with proprietary extensions from AEON. The measurements were performed with the AEON ACC2b 14x1 color, Release 9, 13.11.2020, SN 0066(Balluff), software version 2.0.

Measurements performed by Product Development Vision, Balluff GmbH

Type of data presented	Single
Vendor	Balluff GmbH
Model	mvBlueFOX3-2032bC
Serial number	FF021714
Sensor diagonal	5.81 mm
Lens category	C-Mount
Resolution	2064 × 1552, 12 bit
Pixel size (h×v)	2.25 μm × 2.25 μm
Sensor	IMX900
Sensor type	CMOS
Shutter type	Global
Overlap cap.	Overlapping
Max. frame rate	0.0 Hz
Interface type	USB3Vision

Nr.	Centroid/FWHM	Gain, blacklevel	$t_{exp}$ (ms)
1	475.5/20.6 nm	0.0dB, 0.3	2.00
2	540.6/34.7 nm	0.0dB, 0.3	3.00
3	629.4/13.7 nm	0.0dB, 0.3	2.00

Optional data measured: None

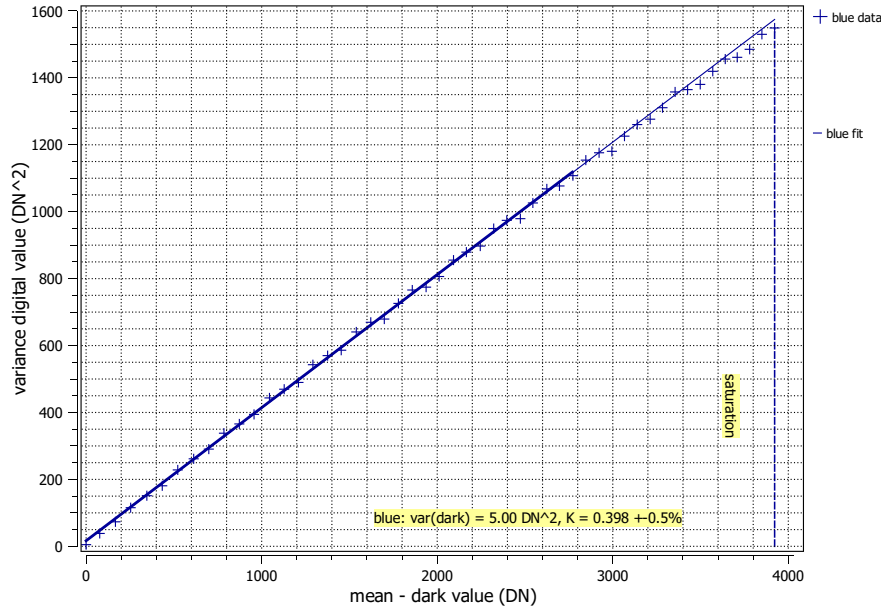


## Summary Sheet for Operation Point 1 at a Wavelength of 476 nm

Type of data	Single	Gain, black-level	0.0dB, 0.3
Exposure control	By irradiance	Environmental temperature	20.5°C
Exposure time	2.000 ms	Camera body temperature	26.7°C
Frame rate	54.7 Hz	Internal temperature(s)	34.5°C, 30.6°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	476 nm, 20.6 nm

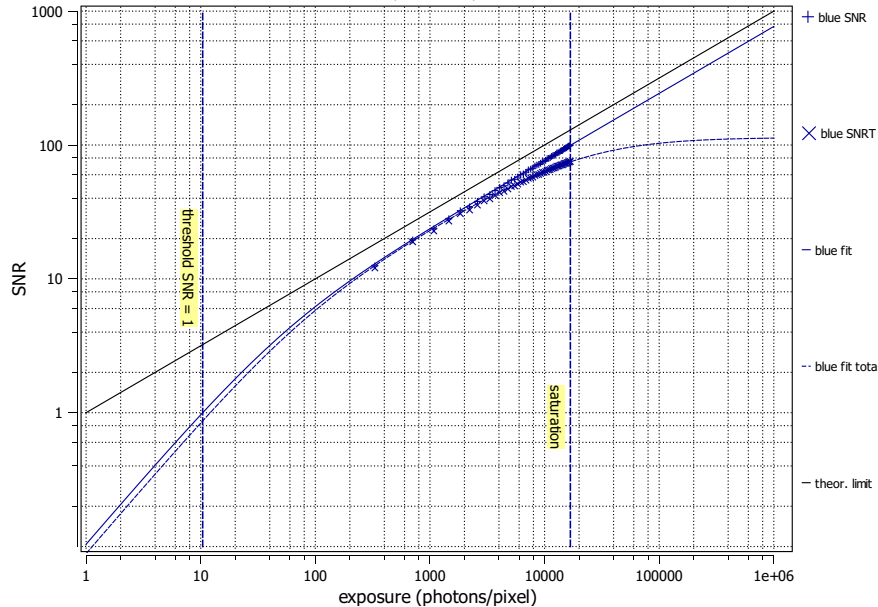
### Photon Transfer

Photon transfer m1261, 476 nm, 17.02.2025



### Signal-to-Noise Ratio

SNR m1261, 476 nm, 17.02.2025



### Quantum efficiency

$\eta$  59.1%

### Overall system gain

$K$  0.3975 DN/e<sup>-</sup>

$1/K$  2.516 e<sup>-</sup>/DN

### Temporal dark noise

$\sigma_d$  5.58 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  2.24 DN

### Signal-to-noise ratio

SNR<sub>max</sub> 99.6

40.0 dB

$1/\text{SNR}_{\text{max}}$  1.004 %

### Absolute sensitivity threshold

$\mu_{e,\text{min}}$  6.15 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  1.21 e<sup>-</sup>/μm<sup>2</sup>

### Saturation capacity

$\mu_{e,\text{sat}}$  9917 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1959 e<sup>-</sup>/μm<sup>2</sup>

### Dynamic range

DR 1614

64.16 dB

### Spatial nonuniformities

DSNU<sub>1288</sub> 3.51 e<sup>-</sup>

DSNU<sub>1288.col</sub> 0.03 e<sup>-</sup>

DSNU<sub>1288.row</sub> 0.50 e<sup>-</sup>

DSNU<sub>1288.pix</sub> 3.47 e<sup>-</sup>

PRNU<sub>1288</sub> 0.879 %

PRNU<sub>1288.col</sub> 0.029 %

PRNU<sub>1288.row</sub> 0.011 %

PRNU<sub>1288.pix</sub> 0.878 %

### Linearity error

LE 0.24%

### Dark current

$\mu_{c,\text{mean}}$  -0.1694 e<sup>-</sup>/s

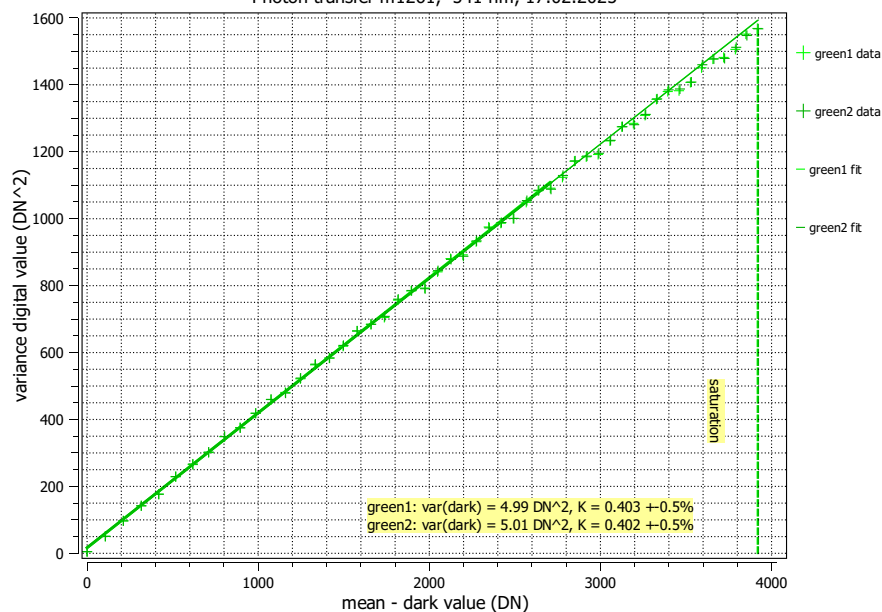
$\mu_{c,\text{var}}$  0.08642 e<sup>-</sup>/s

## Summary Sheet for Operation Point 2 at a Wavelength of 541 nm

Type of data	Single	Gain, black-level	0.0dB, 0.3
Exposure control	By irradiance	Environmental temperature	20.6°C
Exposure time	3.000 ms	Camera body temperature	27.2°C
Frame rate	54.7 Hz	Internal temperature(s)	35.2°C, 31.2°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	541 nm, 34.7 nm

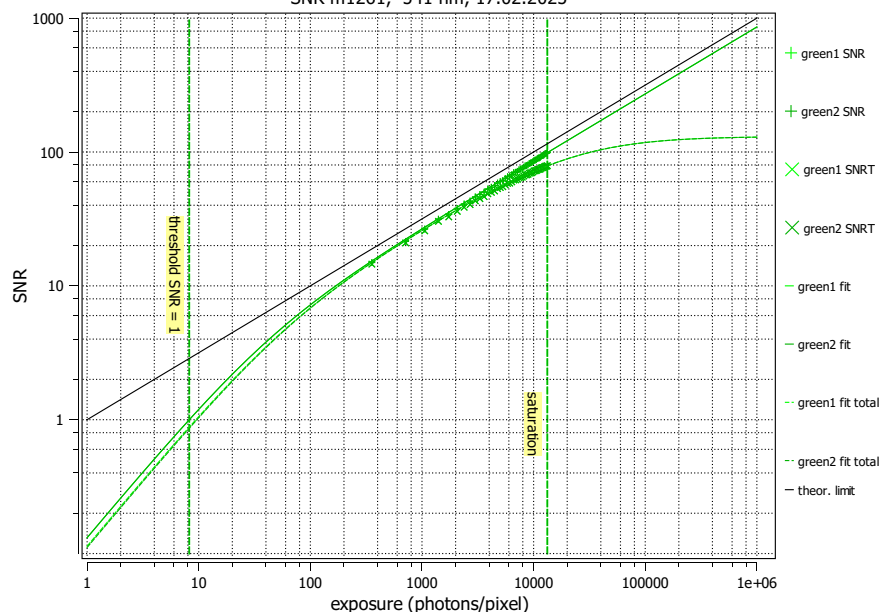
### Photon Transfer

Photon transfer m1261, 541 nm, 17.02.2025



### Signal-to-Noise Ratio

SNR m1261, 541 nm, 17.02.2025



#### Quantum efficiency

$\eta$  73.7%

#### Overall system gain

$K$  0.4026 DN/e<sup>-</sup>

$1/K$  2.484 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  5.50 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  2.23 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 99.0

39.9 dB

$1/\text{SNR}_{\text{max}}$  1.011 %

#### Absolute sensitivity threshold

$\mu_{e,\text{min}}$  6.07 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  1.20 e<sup>-</sup>/μm<sup>2</sup>

#### Saturation capacity

$\mu_{e,\text{sat}}$  9792 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1934 e<sup>-</sup>/μm<sup>2</sup>

#### Dynamic range

DR 1613

64.16 dB

#### Spatial nonuniformities

DSNU<sub>1288</sub> 3.26 e<sup>-</sup>

DSNU<sub>1288,col</sub> 0.04 e<sup>-</sup>

DSNU<sub>1288,row</sub> 0.47 e<sup>-</sup>

DSNU<sub>1288,pix</sub> 3.22 e<sup>-</sup>

PRNU<sub>1288</sub> 0.765 %

PRNU<sub>1288,col</sub> 0.026 %

PRNU<sub>1288,row</sub> 0.010 %

PRNU<sub>1288,pix</sub> 0.764 %

#### Linearity error

LE 0.26%

#### Dark current

$\mu_{c,\text{mean}}$  -0.1714 e<sup>-</sup>/s

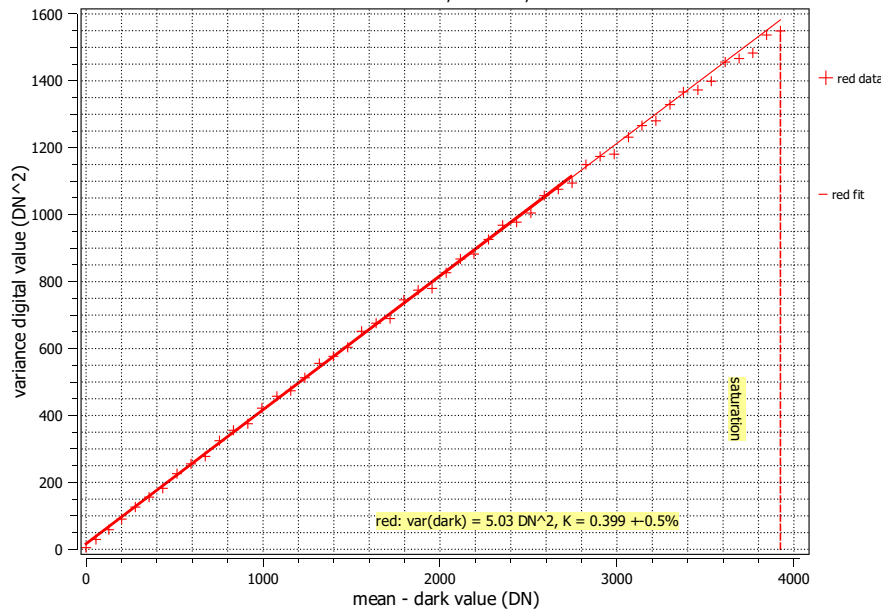
$\mu_{c,\text{var}}$  -0.3673 e<sup>-</sup>/s

## Summary Sheet for Operation Point 3 at a Wavelength of 629 nm

Type of data	Single	Gain, black-level	0.0dB, 0.3
Exposure control	By irradiance	Environmental temperature	20.7°C
Exposure time	2.000 ms	Camera body temperature	27.6°C
Frame rate	54.7 Hz	Internal temperature(s)	35.6°C, 31.6°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	629 nm, 13.7 nm

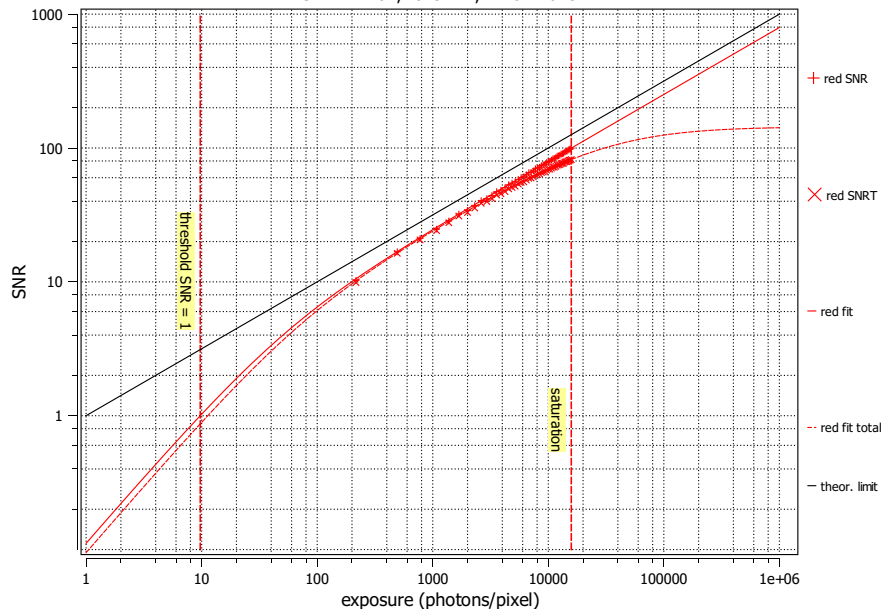
### Photon Transfer

Photon transfer m1261, 629 nm, 17.02.2025



### Signal-to-Noise Ratio

SNR m1261, 629 nm, 17.02.2025



#### Quantum efficiency

$\eta$  63.2%

#### Overall system gain

$K$  0.3993 DN/e<sup>-</sup>

1/ $K$  2.505 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  5.57 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  2.24 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 99.9

40.0 dB

1/SNR<sub>max</sub> 1.001 %

#### Absolute sensitivity threshold

$\mu_{e,\text{min}}$  6.14 e<sup>-</sup>

$\mu_{e,\text{min},\text{area}}$  1.21 e<sup>-</sup>/μm<sup>2</sup>

#### Saturation capacity

$\mu_{e,\text{sat}}$  9989 e<sup>-</sup>

$\mu_{e,\text{sat},\text{area}}$  1973 e<sup>-</sup>/μm<sup>2</sup>

#### Dynamic range

DR 1626

64.22 dB

#### Spatial nonuniformities

DSNU<sub>1288</sub> 3.50 e<sup>-</sup>

DSNU<sub>1288.col</sub> 0.05 e<sup>-</sup>

DSNU<sub>1288.row</sub> 0.50 e<sup>-</sup>

DSNU<sub>1288.pix</sub> 3.46 e<sup>-</sup>

PRNU<sub>1288</sub> 0.694 %

PRNU<sub>1288.col</sub> 0.029 %

PRNU<sub>1288.row</sub> 0.012 %

PRNU<sub>1288.pix</sub> 0.693 %

#### Linearity error

LE 0.62%

#### Dark current

$\mu_{c,\text{mean}}$  -0.117 e<sup>-</sup>/s

$\mu_{c,\text{var}}$  2.42 e<sup>-</sup>/s