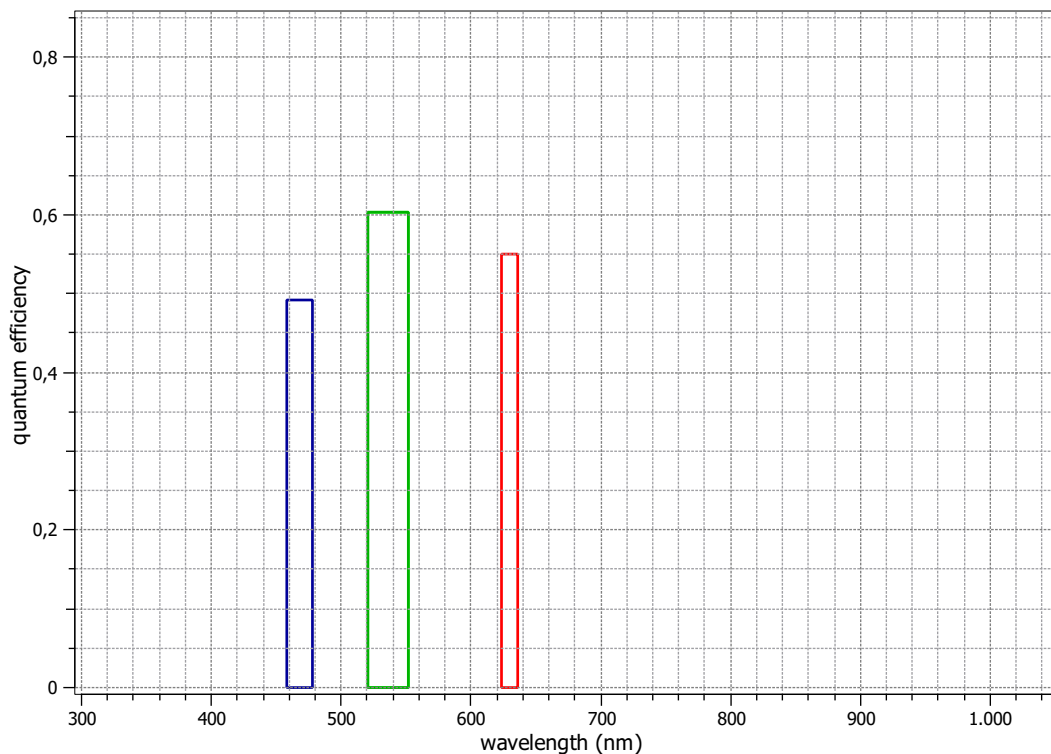


## EMVA 1288 Data Sheet m0720

This datasheet describes the specification according to the standard 1288 release 3.1 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" issued on December 30, 2016 by the European Machine Vision Association (EMVA), published at [www.standard1288.org](http://www.standard1288.org) and the *Zenodo EMVA 1288 community*) with proprietary extensions from AEON. The measurements were performed with the AEON ACC3 Release 6, 26.11.2016, SN 0005(MatrixVision) .

Measurements performed by T.Renner, Matrix Vision GmbH

Vendor	Matrix Vision	Type of data presented	Single
Model	mvBlueFOX3-2071aC	<b>Operation point 1 (page 5)</b>	
Serial number	FF002473	Wavelength centroid	468.0 nm
Sensor diagonal	17.55 mm	Wavelength FWHM	20.0 nm
Lens category	C-Mount	Gain, black-level	0dB, 0.1
Resolution	3216 × 2208, 12 bit	<b>Operation point 2 (page 20)</b>	
Pixel size (h×v)	4.50 μm × 4.50 μm	Wavelength centroid	536.0 nm
Sensor	IMX428	Wavelength FWHM	31.0 nm
Sensor type	CMOS	Gain, black-level	0dB, 0.1
Shutter type	Global	<b>Operation point 3 (page 35)</b>	
Overlap cap.	Overlapping	Wavelength centroid	630.0 nm
Max. frame rate	26.7 Hz	Wavelength FWHM	13.0 nm
Interface type	USB3 Vision	Gain, black-level	0dB, 0.1
		<b>Optional data measured</b>	
		None	

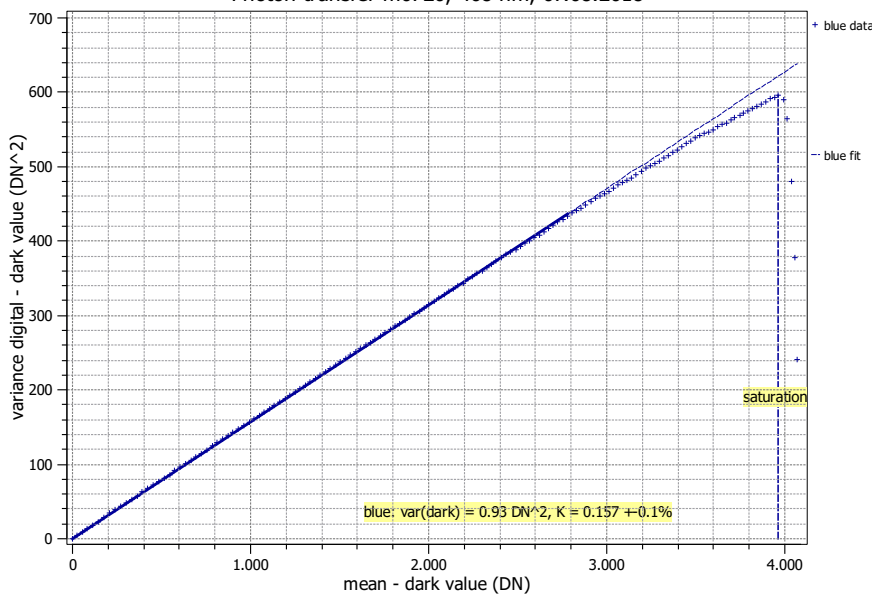


## Summary Sheet for Operation Point 1 at a Wavelength of 468 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	28.7°C
Exposure time	20.00 ms	Camera body temperature	28.8°C
Frame rate	24.6 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm

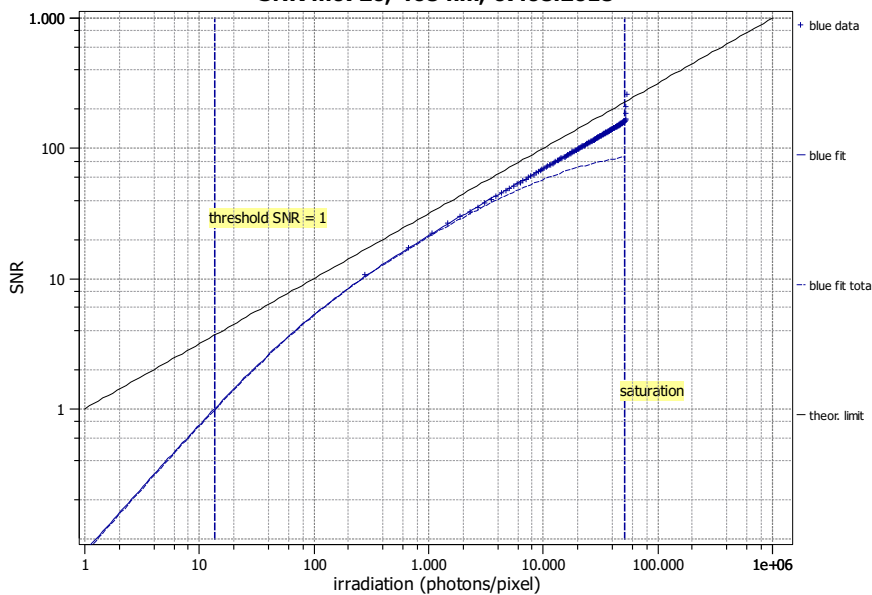
### Photon Transfer

Photon transfer m0720, 468 nm, 07.08.2018



### Signal-to-Noise Ratio

SNR m0720, 468 nm, 07.08.2018



#### Quantum efficiency

$\eta$  49.2%

#### Overall system gain

$K$  0.157 DN/e<sup>-</sup>

$1/K$  6.373 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  5.85 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  0.96 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 159

44.0 dB

7.3 bit

$1/\text{SNR}_{\text{max}}$  0.63 %

#### Absolute sensitivity threshold

$\mu_{p,\text{min}}$  13.52 p

$\mu_{p,\text{min,area}}$  0.668 p/ $\mu\text{m}^2$

$\mu_{e,\text{min}}$  6.65 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  0.328 e<sup>-</sup>/ $\mu\text{m}^2$

#### Saturation capacity

$\mu_{p,\text{sat}}$  51571 p

$\mu_{p,\text{sat,area}}$  2547 p/ $\mu\text{m}^2$

$\mu_{e,\text{sat}}$  25369 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1253 e<sup>-</sup>/ $\mu\text{m}^2$

#### Dynamic range

DR 3814

71.6 dB

11.9 bit

#### Spatial nonuniformities

DSNU<sub>1288</sub> 1.45 e<sup>-</sup>

0.23 DN

PRNU<sub>1288</sub> 0.98 %

#### Linearity error

LE<sub>min</sub> -0.31%

LE<sub>max</sub> 0.32%

#### Dark current

$\mu_{c,\text{mean}}$  -10 ± 7 e<sup>-</sup>/s

-1.5 DN/s

$\mu_{c,\text{var}}$  17 ± 1 e<sup>-</sup>/s

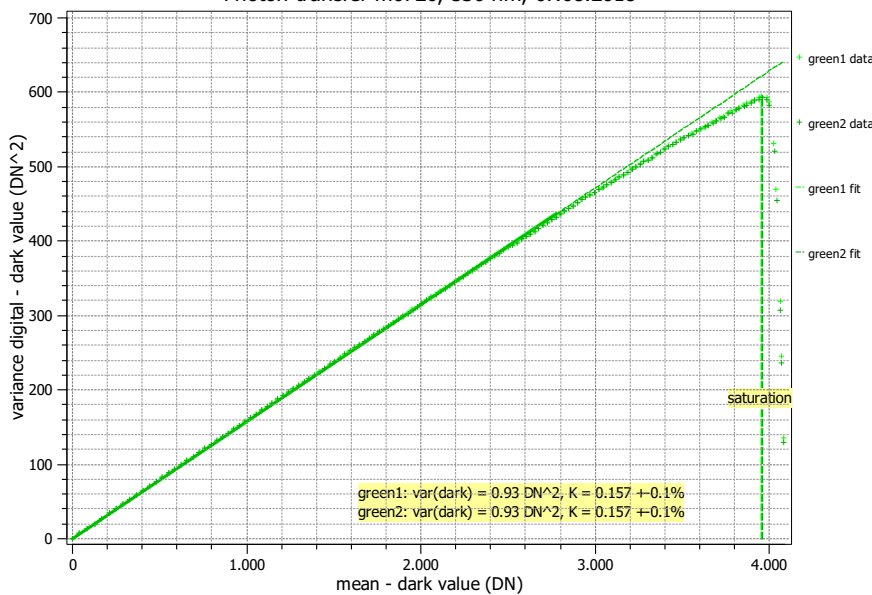
$T_d$  — °C

## Summary Sheet for Operation Point 2 at a Wavelength of 536 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	28.6°C
Exposure time	20.00 ms	Camera body temperature	28.7°C
Frame rate	24.6 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 31.0 nm

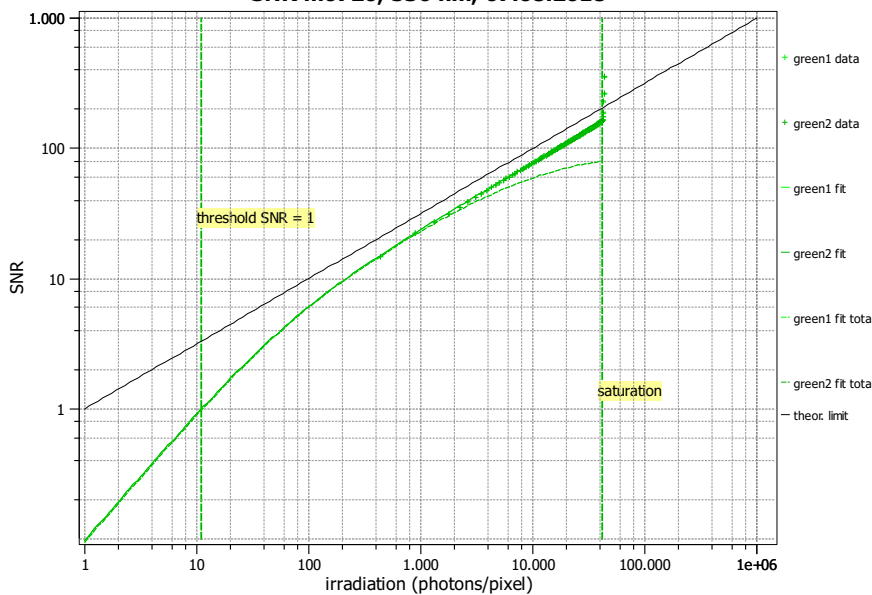
### Photon Transfer

Photon transfer m0720, 536 nm, 07.08.2018



### Signal-to-Noise Ratio

SNR m0720, 536 nm, 07.08.2018



#### Quantum efficiency

$\eta$  60.4%

#### Overall system gain

$K$  0.157 DN/e<sup>-</sup>

$1/K$  6.360 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  5.85 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  0.96 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 159

44.0 dB

7.3 bit

$1/\text{SNR}_{\text{max}}$  0.63 %

#### Absolute sensitivity threshold

$\mu_{p,\text{min}}$  11.02 p

$\mu_{p,\text{min,area}}$  0.544 p/ $\mu\text{m}^2$

$\mu_{e,\text{min}}$  6.65 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  0.328 e<sup>-</sup>/ $\mu\text{m}^2$

#### Saturation capacity

$\mu_{p,\text{sat}}$  41792 p

$\mu_{p,\text{sat,area}}$  2064 p/ $\mu\text{m}^2$

$\mu_{e,\text{sat}}$  25223 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1246 e<sup>-</sup>/ $\mu\text{m}^2$

#### Dynamic range

DR 3792

71.6 dB

11.9 bit

#### Spatial nonuniformities

DSNU<sub>1288</sub> 1.53 e<sup>-</sup>

0.24 DN

PRNU<sub>1288</sub> 1.08 %

#### Linearity error

LE<sub>min</sub> -0.33%

LE<sub>max</sub> 0.36%

#### Dark current

$\mu_{c,\text{mean}}$  -10 ± 7 e<sup>-</sup>/s

-1.5 DN/s

$\mu_{c,\text{var}}$  20 ± 2 e<sup>-</sup>/s

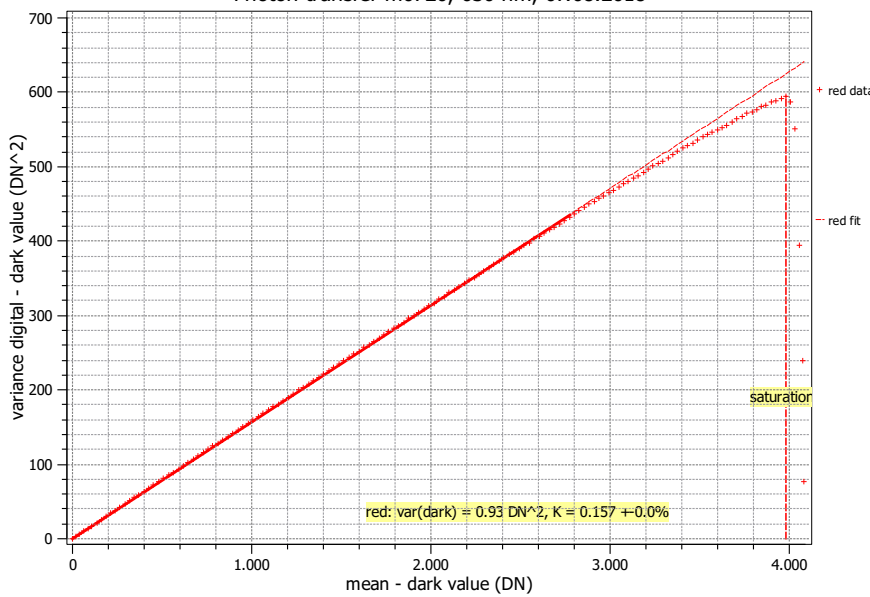
$T_d$  — °C

## Summary Sheet for Operation Point 3 at a Wavelength of 630 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	28.5°C
Exposure time	20.00 ms	Camera body temperature	28.6°C
Frame rate	24.6 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm

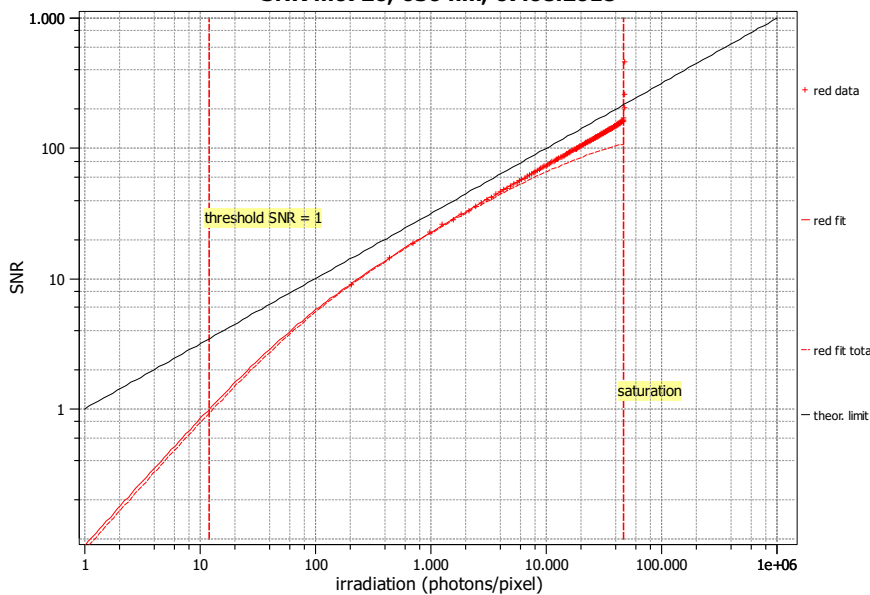
### Photon Transfer

Photon transfer m0720, 630 nm, 07.08.2018



### Signal-to-Noise Ratio

SNR m0720, 630 nm, 07.08.2018



#### Quantum efficiency

$\eta$  55.1%

#### Overall system gain

$K$  0.157 DN/e<sup>-</sup>

$1/K$  6.372 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  5.85 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  0.96 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 160

44.1 dB

7.3 bit

$1/\text{SNR}_{\text{max}}$  0.63 %

#### Absolute sensitivity threshold

$\mu_{p,\text{min}}$  12.08 p

$\mu_{p,\text{min,area}}$  0.596 p/ $\mu\text{m}^2$

$\mu_{e,\text{min}}$  6.65 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  0.328 e<sup>-</sup>/ $\mu\text{m}^2$

#### Saturation capacity

$\mu_{p,\text{sat}}$  46441 p

$\mu_{p,\text{sat,area}}$  2293 p/ $\mu\text{m}^2$

$\mu_{e,\text{sat}}$  25575 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1263 e<sup>-</sup>/ $\mu\text{m}^2$

#### Dynamic range

DR 3845

71.7 dB

11.9 bit

#### Spatial nonuniformities

DSNU<sub>1288</sub> 1.56 e<sup>-</sup>

0.25 DN

PRNU<sub>1288</sub> 1.08 %

#### Linearity error

LE<sub>min</sub> -0.79%

LE<sub>max</sub> 0.41%

#### Dark current

$\mu_{c,\text{mean}}$   $-9 \pm 7$  e<sup>-</sup>/s

-1.4 DN/s

$\mu_{c,\text{var}}$   $17 \pm 1$  e<sup>-</sup>/s

$T_d$  — °C