

EMVA 1288 Data Sheet m4960

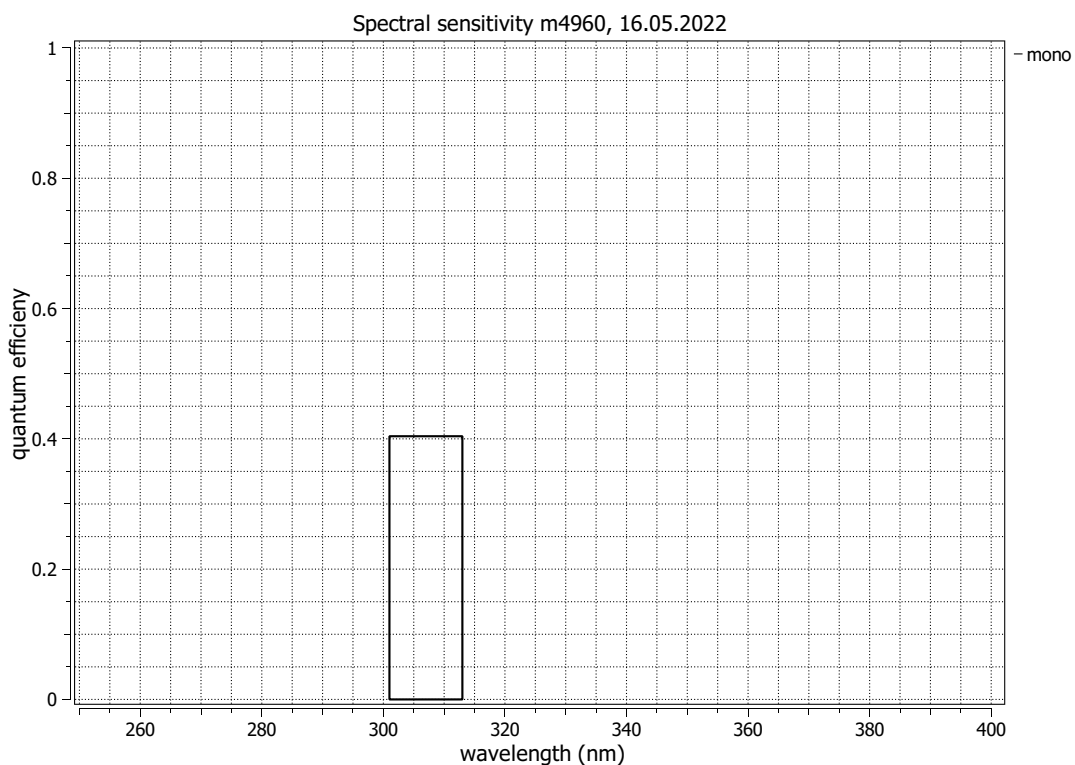
This datasheet describes the specification according to the standard 1288 Release 4.0 Linear issued on 21 June 2021 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" by the European Machine Vision Association (EMVA), published at <https://www.emva.org/standards-technology/emva-1288/>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

Measurements performed by AEON.

Type of data presented	Single
Vendor	MATRIX VISION GmbH
Model	mvBlueCOUGAR-X108uG
Serial number	GX044358
Sensor diagonal	11.04 mm
Lens category	C-mount
Resolution	2848 × 2848, 12 bit
Pixel size (h×v)	2.74 μm × 2.74 μm
Sensor	IMX487
Sensor type	CMOS
Shutter type	Global
Overlap cap.	Overlapping
Max. frame rate	0.0 Hz
Interface type	GigE Vision

Nr.	Centroid/FWHM	Gain, blacklevel	<i>t_{exp}</i> (ms)
1	307.0/12.0 nm	0.0 dB, 0 DN	1140

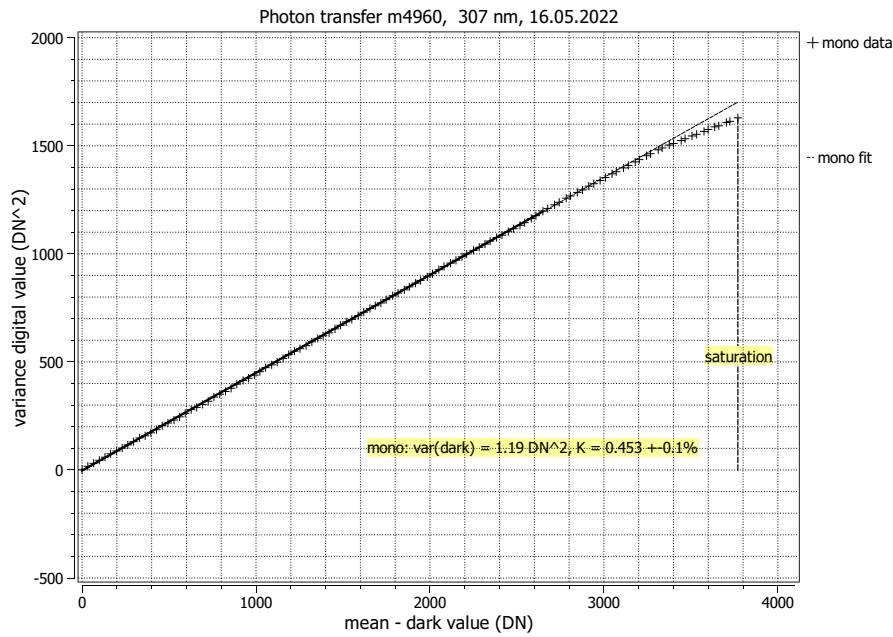
Optional data measured: None



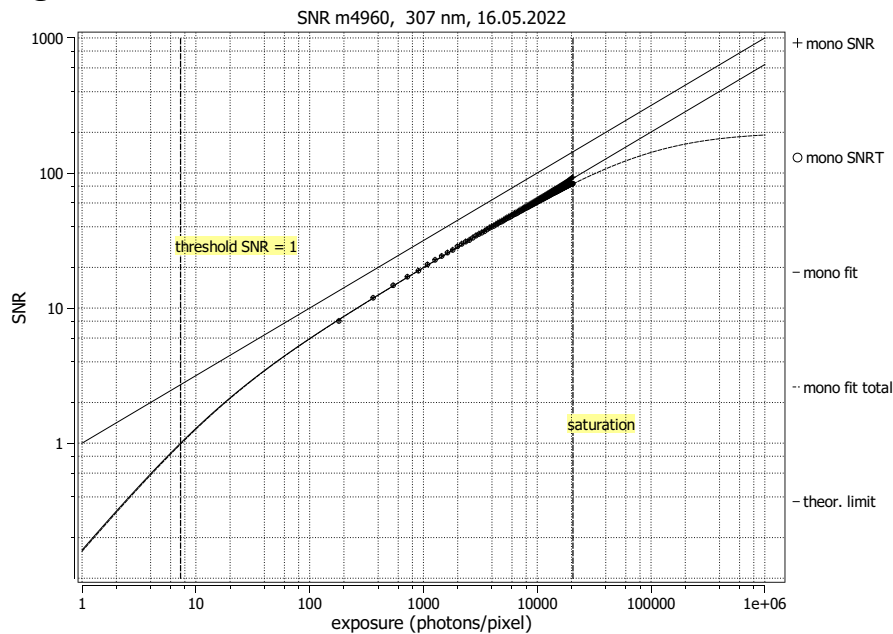
Summary Sheet for Operation Point 1 at a Wavelength of 307 nm

Type of data	Single	Gain, black-level	0.0 dB, 0 DN
Exposure control	By exposure time	Environmental temperature	18°C
Exposure time	1.140 s	Camera body temperature	32°C
Frame rate	0.0 Hz	Internal temperature(s)	41.5°C
Data transfer mode	Mono12p	Wavelength, centr., FWHM	307 nm, 12.0 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η 40.4%

Overall system gain

K 0.4527 DN/e⁻

$1/K$ 2.209 e⁻/DN

Temporal dark noise

σ_d 2.33 e⁻

$\sigma_{y,\text{dark}}$ 1.09 DN

Signal-to-noise ratio

SNR_{max} 91.2

39.2 dB

$1/\text{SNR}_{\text{max}}$ 1.096 %

Absolute sensitivity threshold

$\mu_{e,\text{min}}$ 2.96 e⁻

$\mu_{e,\text{min,area}}$ 0.395 e⁻/μm²

Saturation capacity

$\mu_{e,\text{sat}}$ 8323 e⁻

$\mu_{e,\text{sat,area}}$ 1109 e⁻/μm²

Dynamic range

DR 2808

68.97 dB

Spatial nonuniformities

DSNU₁₂₈₈ 0.539 e⁻

DSNU_{1288.col} 0.015 e⁻

DSNU_{1288.row} 0.030 e⁻

DSNU_{1288.pix} 0.538 e⁻

PRNU₁₂₈₈ 0.499 %

PRNU_{1288.col} 0.227 %

PRNU_{1288.row} 0.039 %

PRNU_{1288.pix} 0.443 %

Linearity error

LE 0.11%

Dark current

$\mu_{c,\text{mean}}$ — e⁻/s

$\mu_{c,\text{var}}$ — e⁻/s



Comments

- The quantum efficiency measurement of the standard EMVA 1288 measurement according to the linear model is biased because of the additional noise that one or two charge units are generated per photon. A too high gain K results in a too low quantum efficiency η . The correct quantum efficiency is obtained by the spectral measurements. Here the correctly measured K from the visible range is used for all wavelengths.
- The increased noise at 307 nm results also in a lower maximum SNR as could be measured in the visible range.
- The biased gain K also biases also EMVA 1288 parameters with units of electrons in the same way.
- The camera shows an excellent linearity.