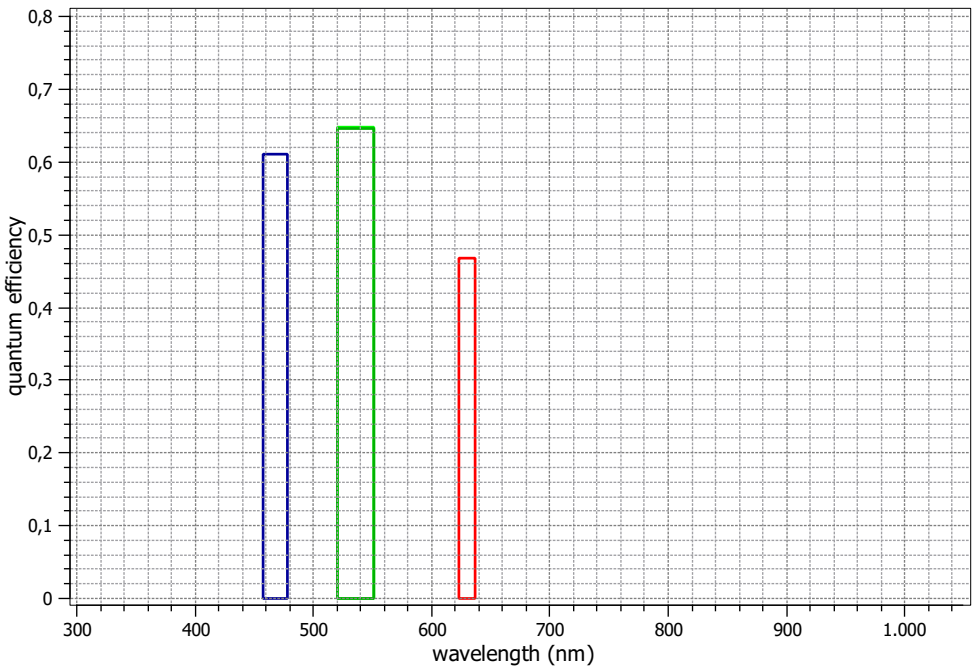
EMVA 1288 Data Sheet m0632

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 6, 18.07.2016, 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

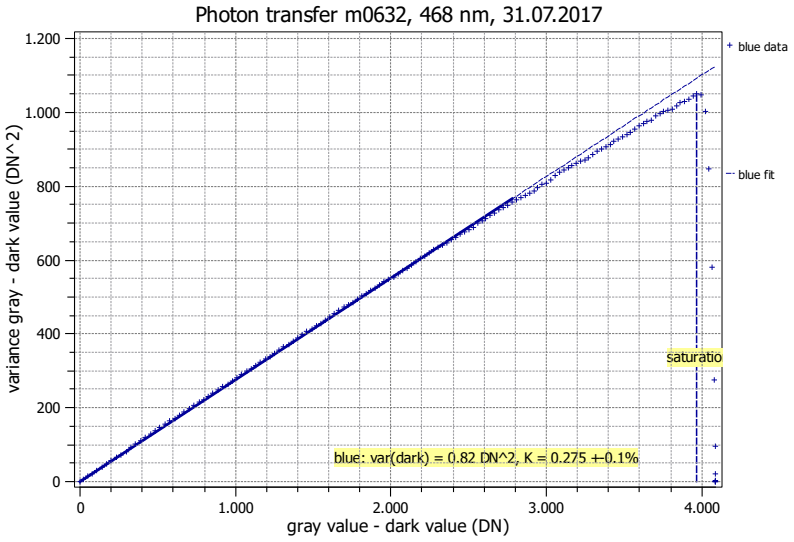
Vendor	MATRIX VISION
Model	mvBlueFOX3-2064C
Serial number	FF001208
Sensor diagonal	8.95 mm
Lens category	C-Mount
Resolution	3096 × 2080, 12 bit
Pixel size	2.40 μm × 2.40 μm
Sensor	IMX178
Sensor type	CMOS
Shutter type	Rolling
Overlap capabilities	Overlapping
Maximum frame rate	29.5 Hz
Interface type	USB3 Vision

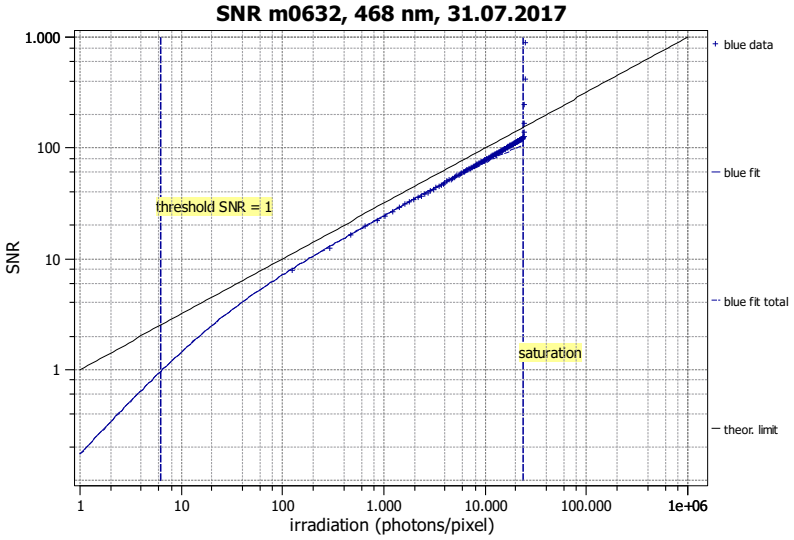
Type of data presented	Single
Operation point 1, (page 5)	
Wavelength centroid	468.0 nm
Wavelength FWHM	20.0 nm
Gain, black-level	0dB, 0.1
Operation point 2, (page 19)	
Wavelength centroid	536.0 nm
Wavelength FWHM	31.0 nm
Gain, black-level	0dB, 0.1
Operation point 3, (page 33)	
Wavelength centroid	630.0 nm
Wavelength FWHM	13.0 nm
Gain, black-level	0dB, 0.1
Optional data measured	
None	



EMVA 1288 Summary Sheet for Operating Point 1

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	26.7°C
Exposure time	2.00 ms	Camera body temperature	35.3°C
Frame rate	29.5 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm





Quantum efficiency

η	61.0%

Overall system gain

K	0.275 DN/e$^-$
$1/K$	3.632 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.90 DN
$DSNU_{1288}$	0.07 DN
σ_d	3.11 e$^-$
$DSNU_{1288}$	0.27 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	120
	41.6 dB
	6.9 bit
$1/SNR_{max}$	0.83 %
$PRNU_{1288}$	0.45 %

Nonlinearity

LE	0.15%
LE_{min}	-0.18%
LE_{max}	0.11%

Sensitivity & saturation

$\mu_{p,min}$	6.27 p
	1.088 p/μm^2
$\mu_{p,sat}$	23683 p
	4112 p/μm^2
$\mu_{e,min}$	3.82 e$^-$
	0.664 e$^-$/μm^2
$\mu_{e,sat}$	14448 e$^-$
	2508 e$^-$/μm^2

Dynamic range

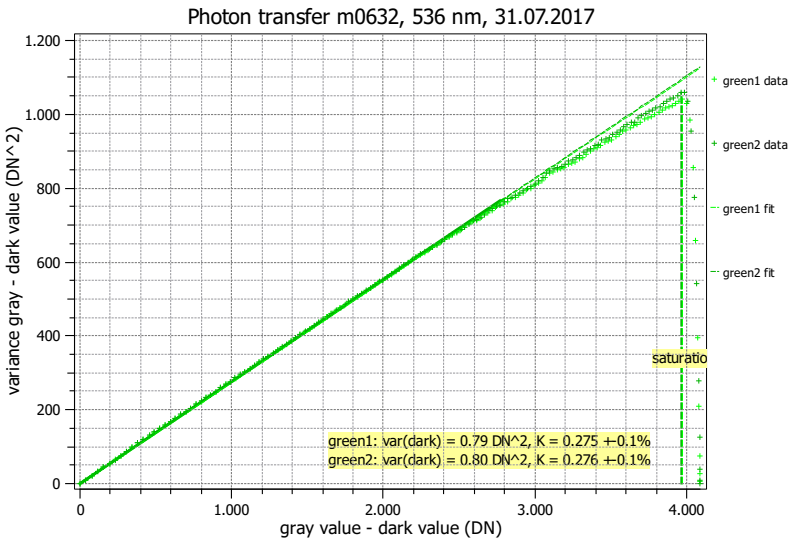
DR	3778
	71.5 dB
	11.9 bit

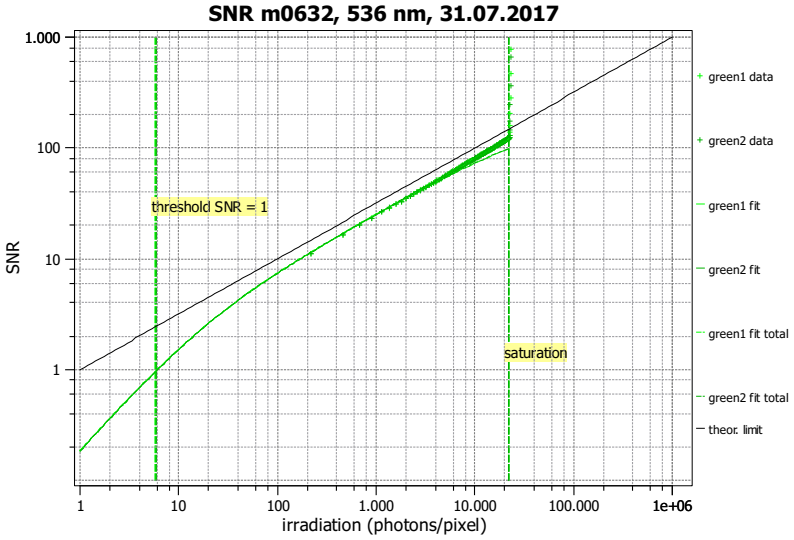
Dark current

$\mu_{c,mean}$	0.2 DN/s
$\mu_{c,mean}$	0.6 e$^-$/s
$\mu_{c,var}$	0.3 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 2

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	26.7°C
Exposure time	2.00 ms	Camera body temperature	35.3°C
Frame rate	29.5 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 31.0 nm





Quantum efficiency

η	64.7%

Overall system gain

K	0.275 DN/e$^-$
$1/K$	3.634 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.89 DN
$DSNU_{1288}$	0.07 DN
σ_d	3.05 e$^-$
$DSNU_{1288}$	0.27 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	120
	41.6 dB
	6.9 bit
$1/SNR_{max}$	0.83 %
$PRNU_{1288}$	0.59 %

Nonlinearity

LE	0.20%
LE_{min}	-0.10%
LE_{max}	0.30%

Sensitivity & saturation

$\mu_{p,min}$	5.82 p
	1.011 p/μm^2
$\mu_{p,sat}$	22219 p
	3857 p/μm^2
$\mu_{e,min}$	3.77 e$^-$
	0.654 e$^-$/μm^2
$\mu_{e,sat}$	14380 e$^-$
	2497 e$^-$/μm^2

Dynamic range

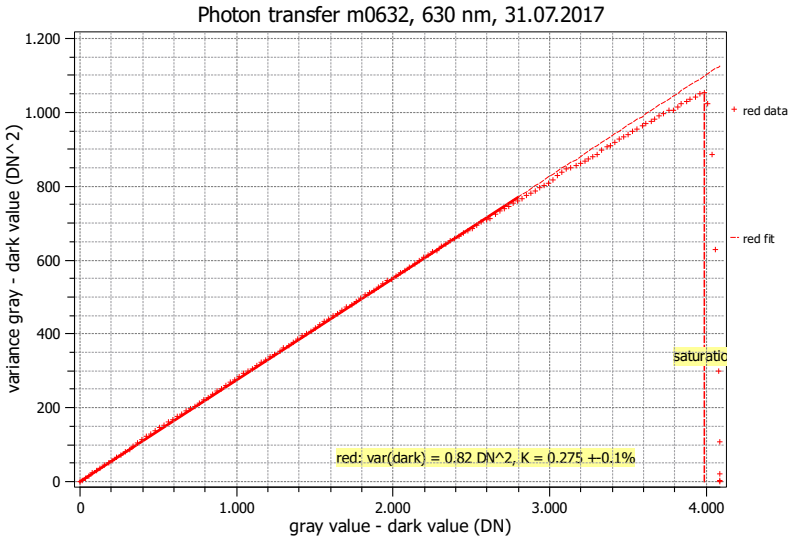
DR	3817
	71.6 dB
	11.9 bit

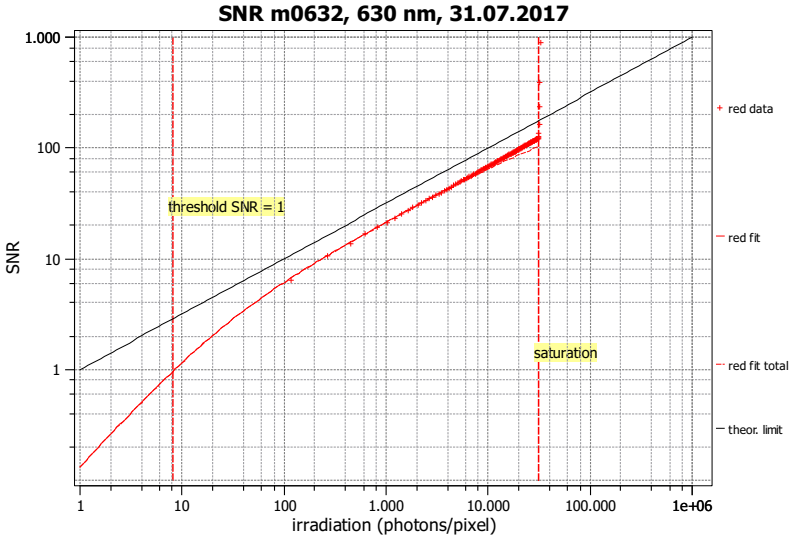
Dark current

$\mu_{c,mean}$	0.2 DN/s
$\mu_{c,mean}$	0.6 e$^-$/s
$\mu_{c,var}$	0.2 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 3

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	26.7°C
Exposure time	2.00 ms	Camera body temperature	35.3°C
Frame rate	29.5 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm





Quantum efficiency

η	46.8%

Overall system gain

K	0.275 DN/e$^-$
$1/K$	3.631 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.90 DN
$DSNU_{1288}$	0.08 DN
σ_d	3.11 e$^-$
$DSNU_{1288}$	0.29 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	121
	41.6 dB
	6.9 bit
$1/SNR_{max}$	0.83 %
$PRNU_{1288}$	0.52 %

Nonlinearity

LE	0.21%
LE_{min}	-0.29%
LE_{max}	0.14%

Sensitivity & saturation

$\mu_{p,min}$	8.16 p
	1.418 p/μm^2
$\mu_{p,sat}$	31155 p
	5409 p/μm^2
$\mu_{e,min}$	3.82 e$^-$
	0.663 e$^-$/μm^2
$\mu_{e,sat}$	14569 e$^-$
	2529 e$^-$/μm^2

Dynamic range

DR	3816
	71.6 dB
	11.9 bit

Dark current

$\mu_{c,mean}$	0.2 DN/s
$\mu_{c,mean}$	0.6 e$^-$/s
$\mu_{c,var}$	0.2 e$^-$/s