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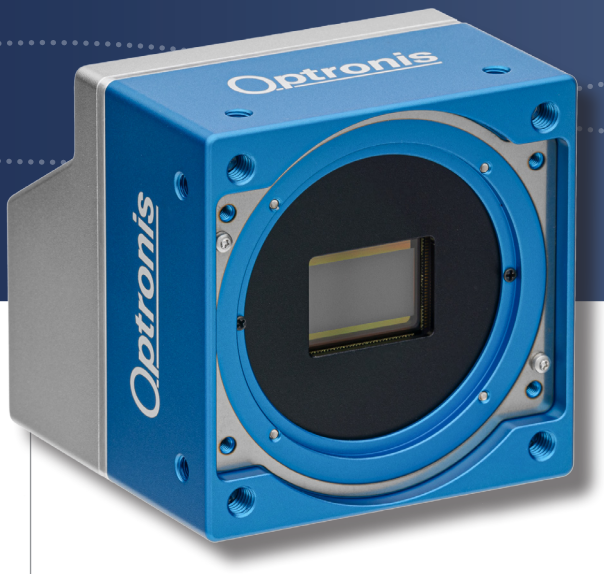
CYCLONEPLUS SERIES

CyclonePlus-2

High-Speed Machine Vision Camera



- ☑ METROLOGY AND HIGH SPEED MACHINE VISION
- ☑ LASER LINE PROFILOMETRY
- ☑ AUTOMATED OPTICAL INSPECTION (AOI)

- 2 166 fps with 1 920 x 1 080 pixels
- Global shutter with low noise pixel
- CoaXPress V2.0 interface with 4 x 12.5 Gbit/s
- Flat Field Correction (FFC)
- Short Back-Focal design
- Power and trigger via CoaXPress

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CyclonePlus-2 High-Speed Machine Vision Camera

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DESCRIPTION

The CyclonePlus-2 is a high speed and high resolution camera with low noise pixels for demanding machine vision applications. CyclonePlus cameras are streaming image data at up to 50 Gb/s to a CoaXPress frame grabber for real time processing. The cameras allow flexible cooling solutions and provide short back focal (BF) distances.

- 1 920 x 1 080 pixel resolution
- low noise pixel
- up to 2 166 fps at full resolution

PERFORMANCE (EXAMPLES, TYP., 8 BIT, 4xCXP12)

Resolution (HxV)	Frame rate	Resolution (HxV)	Frame rate
1 920 x 1 080	2 166 fps	1 920 x 960	2 435 fps
1 280 x 960	2 587 fps	1 920 x 480	4 840 fps
640 x 480	5 143 fps	1 920 x 120	18 667 fps
256 x 4	248 756 fps	1 920 x 8	167 504 fps

EMVA1288 data (v4.0 typ.)	8 bit	10 bit
Dynamic range	53 dB	59 dB
Saturation capacity	13 000 e^-	13 000 e^-
Temporal dark noise	22 e^-	13 e^-
System gain	60 e^-/DN	14 e^-/DN
Signal-to-Noise Ratio	41 dB	41 dB
Dark Signal Non-Uniformity	40 e^-	21 e^-
Photo Response Non-Uniformity	1.8 %	1.4 %
Non-Linearity Error	2.2 %	1.8 %

SPECIFICATIONS

Sensor type	LUX19HS, Global Shutter
Resolution	1 920 pixel x 1 080 pixel
Frame rate (full resolution)	20 .. 2 166 fps
Exposure time	4 µs .. 1 / frame rate
Active area / Diagonal	19.20 mm x 10.80 mm / 22.03 mm
Pixel distance	10.0 µm x 10.0 µm
A/D conversion	8/10 Bit
Quantum efficiency (sensor)	>45 % @ 550 nm
Trigger	internal, external, CoaXPress
Trigger signals	Synch IN and Synch OUT, TTL level, electrically isolated
Interface	CoaXPress 2.0 Micro-BNC (HD-BNC) connectors
Interface Configurations	4 x CXP12, 2 x CXP12, 1 x CXP12, 4 x CXP6, 2 x CXP6
Power Consumption	12 W (typ.)
Power Supply	PoCXP, ext.
Temperature Ranges (to limit case temeratur to 65°C) - operation, amb., no cooling - operation, amb., with CYP-HIS - operation, amb., with CYP-FAN - operation, case temperature	 0 .. +25°C / 32 .. 77°F 0 .. +35°C / 32 .. 95°F 0 .. +45°C / 32 .. 113°F 0 .. +65°C / 32 .. 149°F
Weight	340 g w/o mount, w/o cooling
Dimensions	65 mm x 65 mm x 65.6 mm (3D model data available)

FEATURES

Exposure Modes	Timed
Trigger Activation	RisingEdge, FallingEdge, AnyEdge
Trigger Sources	External (Synch IN), CoaXPress, software
Trigger Filter and Trigger Hold-Off Time	Yes, for external trigger source
Trigger Delay	Adjustable
Flat Field Correction (FFC)	Block-based with up to 16 reference data in camera, auto calibration Column-based
Defect Pixel Correction	Yes, factory setting or customer configuration
Digital Binning Modes	Average, Sum
Digital Binning horizontal / vertical	x1, x2, x4 / x1, x2, x4
Dual ROI	Yes
User Global Adjustments	Offset analog and digital / Gain analog and digital
Programmable User Output	Yes
White Balance	Yes, with auto function ROI control, manual RGB gain
Counter and timer control	Yes
Image Stamp (Counter information in frame)	Yes
Save setup to flash and load on power-on	Yes
Over Temperature Monitoring	Yes
Firmware Update	via USB (CPH6-USB) and CXP
File Access Control	Yes, up to 3 MByte user data
Test Pattern Generation	Yes

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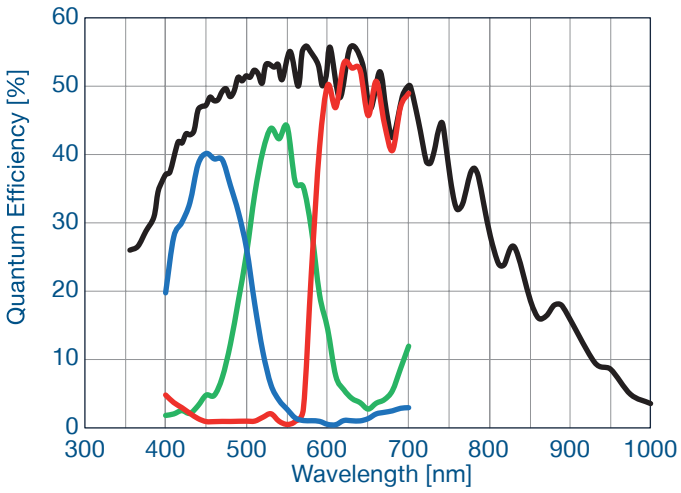
MODELS

CyclonePlus-2-M	monochrome Camera
CyclonePlus-2-C	color Camera
Scope of delivery	Camera, brief introduction

ACCESSORIES

CYP-CM	C-Mount lens adapter
CYP-FM	F-Mount lens adapter
CYP-M42-12	M42 Mount lens adapter, BF 12 mm
CYP-M58-11,58	M58 Mount lens adapter, BF 11.58 mm
CYP-HIS	Heat Sink
CYP-FAN	Cooling Fan
CPH6-PTC	Pig Tail Cable for synch
CPH6-USB	Programming Cable

SPECTRAL SENSITIVITY



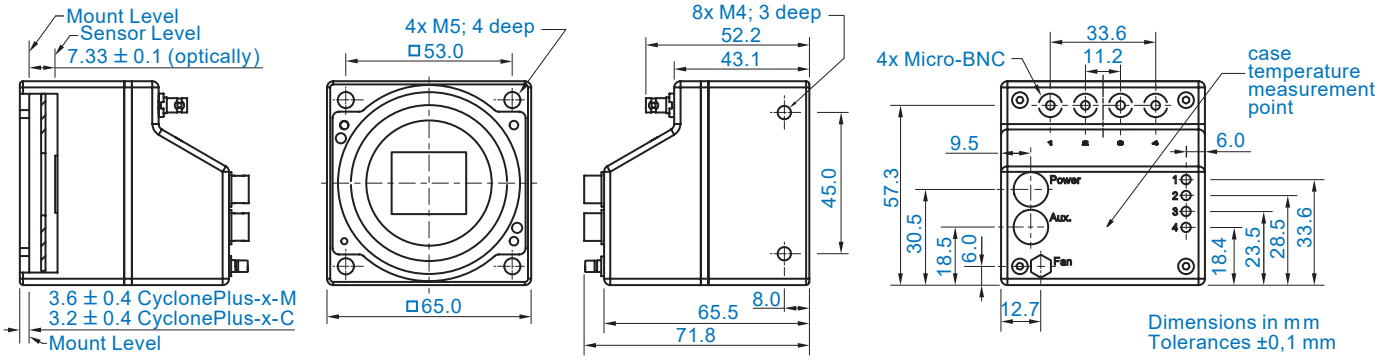
FLAT FIELD CORRECTION (FFC)

The camera allows FFC in real-time to correct non-homogeneous image intensity typically caused by non-homogeneous illumination or lens vignetting. Data of up to 16 reference images are saved in the camera.

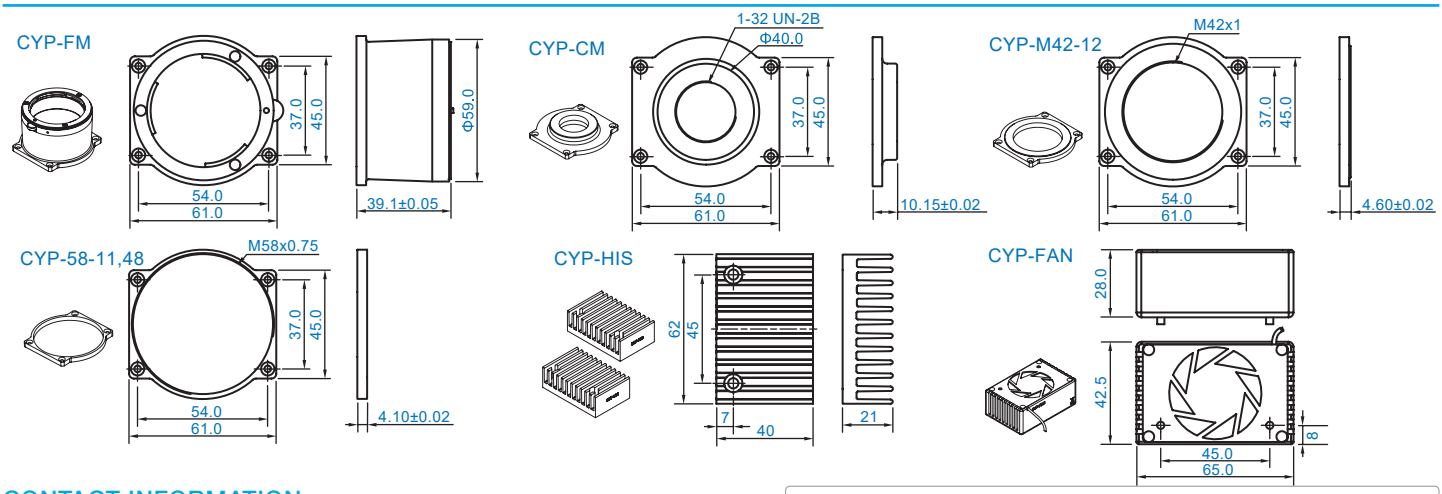
COOLING CONCEPT

Passive heat sink or active fan can be installed by customer to adapt camera to operate at required temperatures. Alternatively, camera allows to be fixed onto a customer specific heat sink.

TECHNICAL DRAWINGS CAMERA



TECHNICAL DRAWINGS ACCESSORIES



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