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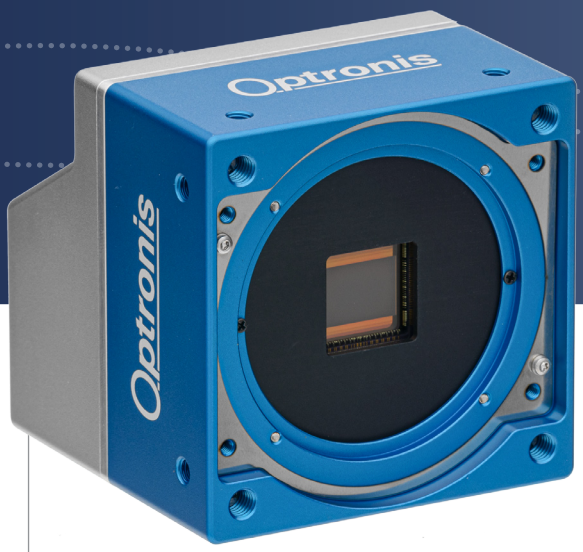
CYCLONEPLUS SERIES

# CyclonePlus-5




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

- 693 fps with 2 560 x 1 916 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-5 High-Speed Machine Vision Camera

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## DESCRIPTION

The CyclonePlus-5 is a high resolution and high speed camera 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.

- 2 560 x 1 916 pixel resolution
- up to 693 fps at full resolution
- High performace laser line profilometry

## PERFORMANCE (EXAMPLES, TYP., 8 BIT)

| Resolution (HxV) | Frame rate | Resolution (HxV) | Frame rate |
|---|---|---|---|
| 2 560 x 1 916 | 693 fps | 2 560 x 960 | 1 380 fps |
| 1 920 x 1 080 | 1 227 fps | 2 560 x 480 | 2 743 fps |
| 512 x 384 | 3 418 fps | 2 560 x 120 | 10 579 fps |
| 256 x 8 | 95 057 fps | 2 560 x 8 | 95 057 fps |

| EMVA1288 data (v4.0 typ.) | 8 bit | 10 bit |
|---|---|---|
| Dynamic range | 53 dB | TBD dB |
| Saturation capacity | 12 000 $e^-$ | TBD $e^-$ |
| Temporal dark noise | 16 $e^-$ | TBD $e^-$ |
| System gain | 50 $e^-$/DN | TBD $e^-$/DN |
| Signal-to-Noise Ratio | 41 dB | TBD dB |
| Dark Signal Non-Uniformity | 70 $e^-$ | TBD $e^-$ |
| Photo Response Non-Uniformity | 2.0 % | TBD % |
| Non-Linearity Error (v3.0) | 1.1 % | TBD % |

## SPECIFICATIONS

| | |
|---|---|
| Sensor type | LUX51, Global Shutter |
| Resolution | 2 560 pixel x 1 916 pixel |
| Frame rate (full resolution) | 20 .. 693 fps |
| Exposure time | 4 µs .. 1 / frame rate |
| Active area / Diagonal | 12.80 mm x 9.58 mm / 15.99 mm |
| Pixel distance | 5.0 µm x 5.0 µm |
| A/D conversion | 8/10 Bit |
| Quantum efficiency (typ. sensor) | 46 % @ 520 nm |
| Trigger | internal, external, CoaXPress |
| Trigger signals | Synch IN and Synch OUT, TTL level, electrically isolated |
| Interface | CoaXPress 2.0<br>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<br>(to limit case temeratur to 65°C)<br>- operation, amb., no cooling<br>- operation, amb., with CYP-HIS<br>- operation, amb., with CYP-FAN<br>- operation, case temperature | <br><br>0 .. +25°C / 32 .. 77°F<br>0 .. +35°C / 32 .. 95°F<br>0 .. +45°C / 32 .. 113°F<br>0 .. +65°C / 32 .. 149°F |
| Weight | 340 g w/o mount, w/o cooling |
| Dimensions | 65 mm x 65 mm x 65.5 mm<br>(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<br>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 |
| Line Skipping (Decimation) | 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 |

# CyclonePlus-5 High-Speed Machine Vision Camera

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## MODELS

| | |
|---|---|
| CyclonePlus-5-M | monochrome Camera |
| CyclonePlus-5-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 |

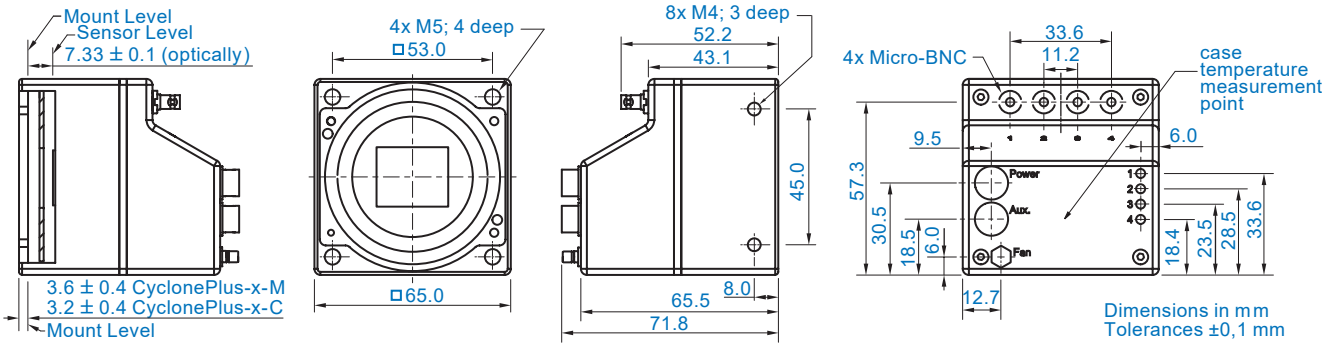
## FLAT FIELD CORRECTION (FFC)

The camera allows FFC in real-time to correct non-homogeneous image intensity typically caused by non-homogeneous illumination or lens vignetting. Correction date are generated automatically after a referecnes image is capured. Correction data of up to 16 reference images are saved in the camera.

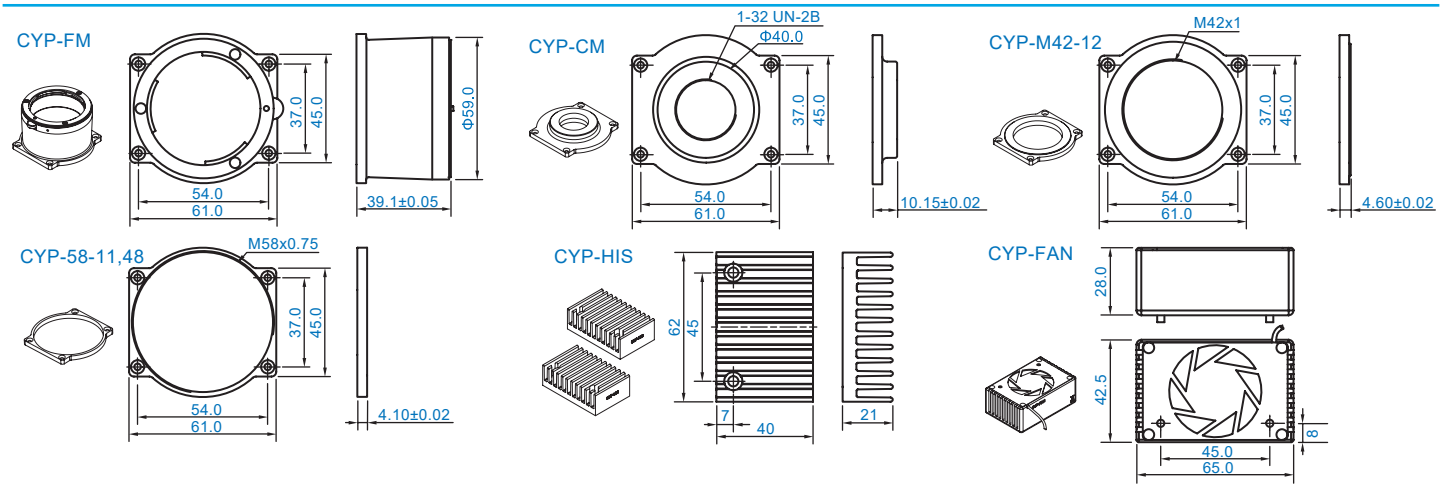
## COOLING CONCEPT

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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