

CHEETAH

RUGGEDIZED CAMERA SERIES

C4181 CMOS 16 MP USB3



Imperx: C4181

The C4181 features the ON Semiconductor Python NOIP1xx016KA CMOS image sensor with a native resolution of 4096 x 4096 in an APS-H optical format. The GenICam™ compliant USB3 camera delivers up to 20 frames per second in global shutter mode using the USB3 interface. CMOS technology eliminates smear columns from areas of ultra-bright intensity and specular reflections in uncontrolled lighting applications. The Imperx Cheetah line provides excellent image quality with Imperx proprietary processing. In addition, Imperx puts you in control and gives you full access to raw data without corrections. Using the simple, intuitive Graphical User Interface, you can quickly apply or remove image corrections. Flexibility and image quality make the C4181 suitable for a broad range of diverse and demanding applications. Imperx can help optimize the camera to your exacting requirements.

Specifications

| Feature | Description | Feature | Description |
|---------------------------|---|----------------------------|---|
| Output Interface | USB3 | Strobe Output | 2 strobes, programmable position and duration |
| Resolution | 4096 (H) x 4096 (V) | Pulse Generator | Yes, programmable |
| Sensor | Python NOIP1xx016KA, CMOS Color/Mono/ENIR | Data Correction | 2 LUTs pre-programmed with Gamma 0.45 Defective/hot pixel correction (static, dynamic), Flat field correction, Fixed pattern noise correction |
| Sensor Format | 18.4 mm (H) x 18.4 mm (V), 26.0 mm diagonal, APS-H optical format | Lens Mount | F-Mount (default), M42, EF Canon (passive or active) |
| Pixel Size | 4.5 microns square | Supply Voltage Range | 12 V DC (5 V – 33 V) 1.5 A inrush without enabled Canon controller 12 V DC (6.5 V – 33 V) 1.5 A inrush with enabled Canon controller |
| NIR Sensitivity | Mono: 850 nm: 18%, 950 nm: 6% ENIR: 850 nm: 30%, 950 nm: 11% | Camera Current | Typical: 0.52 A, Maximum: 0.66 A |
| Shutter | Global shutter (GS) | Size - Width/Height/Length | 72.0 mm (W) x 72.0 mm (H) x 34.7 mm (L) |
| Fixed Pattern Noise | <0.9 LSB | Weight | 379 g |
| Sensor Digitization | 10-bit | Vibration, Shock | Complies with IEC60068-2-64 and IEC60068-2-27 |
| Frame Rate | 20 fps (8-bit), 10 (10-bit) | Environmental | -40 °C to +85 °C Operating -50 °C to +90 °C Storage |
| Dynamic Range | 59 dB | Humidity | 10% to 90% non-condensing |
| Row Overhead Time (ROT) | Zero | MTBF | >323,000 hours @ 40 °C (Telcordia SR-332) |
| Output Bit Depth | 8, 10-bit | Military Standard | MIL-STD-810G |
| Analog Gain Control | 1x, 1.26x, 1.87x, 3.17x | Regulatory | FCC Part 15 Class A, CE, RoHS |
| Digital Gain | 1x (0 dB) to 15.9 (24 dB) with a precision of 0.001x, Auto | | |
| AEC/AGC | Yes | | |
| Black Level Offset | Manual (-512...+511), Auto | | |
| White Balance | Manual, Auto, Off | | |
| Shutter Speed | 1 µs/step, 40 µs to 1.0 s | | |
| Exposure Control | Off, Internal, External, Auto | | |
| Regions of Interest (ROI) | 1 ROI | | |
| Averaging Decimation | 1 x 2, 2 x 1, 2 x 2 | | |
| Sub-sampling Decimation | 1 x 2, 2 x 1, 2 x 2 | | |
| Trigger Inputs | External, Pulse generator, Software | | |
| Trigger Options | Edge, Debounce | | |
| Trigger Modes | Internal, External, Software | | |
| External Inputs/Outputs | 2 IN (OPTO, LVTTTL) / 2 OUT (OPTO, TTL) | | |

Imperx: C4181 Applications

The U3V-C4181 incorporates a number of unique features tailored to reduce system complexity, maximize interface bandwidth, and expand the usable operational range.

Aerospace • Satellites • Surveillance • Military and Non-Military Ground Vehicles • Ball Grid Array • Printed Circuit Board Inspection • Motion Analysis • Broadcast Television • Telepresence • Unmanned Aerial Vehicles • Machine Vision • Reconnaissance • Intelligent Traffic Systems • Aerial Imaging • Open Road Tolling Systems • Situational Awareness

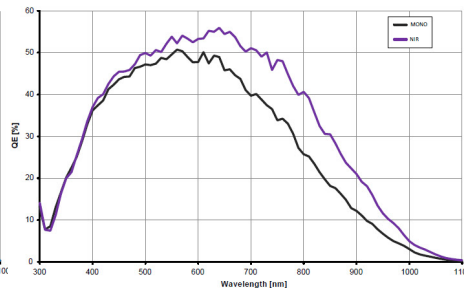
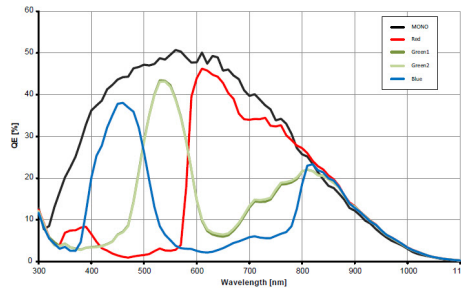
Absolute Quantum Efficiency

Mono & Color Spectral Response

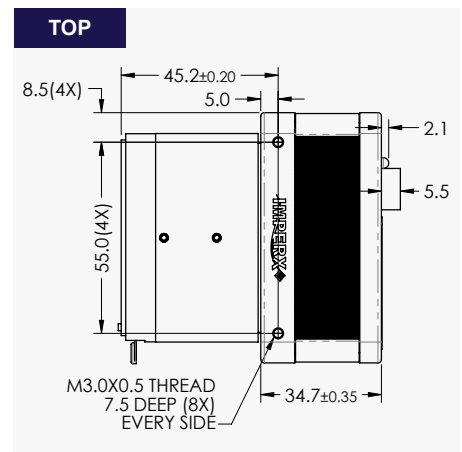
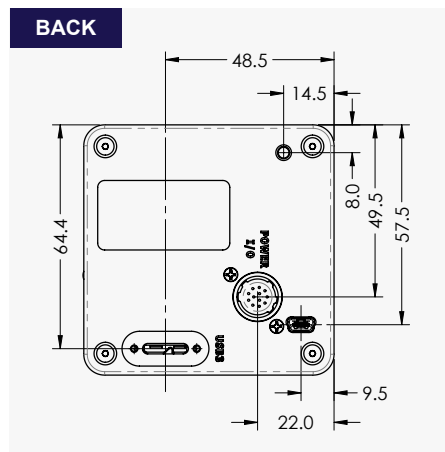
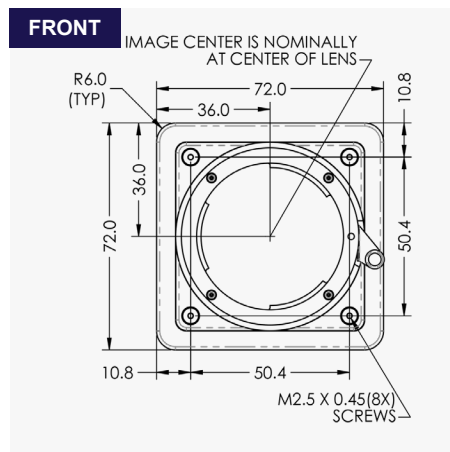
NOIP1xx016KA

Mono & ENIR Spectral Response

NOIP1xx016KA



Dimensions



Ordering Information

Output Interface

USB3 (U3V)

Sensor Types available

Monochrome
Bayer Color
NIR

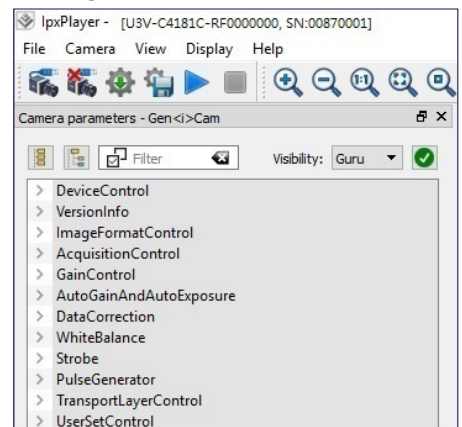
Lens Mounts

F Mount (Default)
M42
EF Canon

Accessories (Sold separately)

PS12V04A-Power Supply w/ 1 input and 1 output

Gen<I>Cam Compliant Camera Configurator



Hirose Connectors

Power and I/O Interface



- | | |
|------------------|--------------------|
| 1. 12 VDC Return | 7. OUT1 TTL Signal |
| 2. +12 VDC | 8. IN1 OPTO + |
| 3. Reserved | 9. IN2 TTL Signal |
| 4. Reserved | 10. IN1 OPTO - |
| 5. OUT2 OPTO - | 11. IN2 TTL Gnd |
| 6. OUT1 TTL Gnd | 12. OUT2 OPTO + |

Connector: Hirose HR 10A-10R-12PB(71)

Rev: u3v_c4181_r1_2019

Quality Management System ISO 9001:2015 Registered
Environmental Management System ISO 14001:2015 Registered
DDTC Registered (Directorate of Defense Trade Controls, US Department of State)



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