C4181
CMOS 16 MP
Camera Link®

Imperx: *C4181*

The C4181 incorporates the On Semiconductor Python NOIP1XX016KA CMOS image sensor with a native resolution of 4096 x 4096 in a APS-H optical format delivering up to 50 frames per second in global shutter mode with a Camera Link® Deca, PoCL output. 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. However, Imperx puts you in control and gives you full access to raw data without corrections. By using the simple intuitive Graphical User Interface, you can quickly apply or remove image corrections. The C4181's flexibility and image quality make it suitable for a broad range of diverse and demanding applications, but "one size doesn't fit all," and Imperx can help optimize the camera to your exacting requirements.

Specifications

Feature	Description	Feature	Description
Interfaces available	Camera Link® Base, Full/Deca (CLF) w/PoCL	Strobe Output	2 strobes, programmable position and duration
Resolution	4096 x 4096	Pulse Generator	Yes, programmable
Sensor	Python NOIP1XX016KA, CMOS Color/Mono/ENIR	Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Sensor Format	18.4 mm (H) x 18.4 mm (V) 26.0 mm diagonal 35mm optical format	Data Corrections	Defective/hot pixel correction (static, dynamic), flat field correction, fixed pattern noise
Pixel Size	4.5 µm	Lens Mount	F-Mount (Default), M42, EF Canon (passive or active)
NIR Sensitivity	Mono: 850nm: 18%, 950nm: 6% ENIR: 850nm: 30%, 950nm: 11%	Supply Voltage Range	12VDC (5V – 33V), 1.5 A inrush
Shutter	Global shutter (GS)	Camera Current	Typical: 0.52A, Maximum: 0.66A
Fixed Pattern Noise	<0.9 LSB	PoCL	PoCL capable in medium/full mode
Digitization	10 bit	Size - Width/Height/Length	72.0mm (W) x 72.0mm (H) x 33.8mm (L) – Applies to all interfaces
Frame Rate	40 fps (10 bit), 50 fps (8 bit)	Weight	379g
Camera Link Clock Rate	85MHz	Vibration, Shock	TBD
Pixel Clock Rate	32MHz to 360MHz	Environmental	-40ºC to +85ºC Operating, -50ºC to +90ºC 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 Method 1)
Bit Depth	8, 10 bit	Military Standard	MIL-STD-810F
Analog Gain Control	1x, 1.26x, 1.87x, 3.17x	Regulatory	FCC Part 15 Class A, CE, RoHs
Digital Gain	1x (0dB) to 15.9 (24 dB) with a precision of 0.001x. (AGC available)		
White Balance	Manual, auto, off		
Shutter Speed	1 µs/step, 40 µs to 1.0 sec		
Exposure Control	Off, internal, external		
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, computer		
Trigger Options	Edge, debounce		
Trigger Modes	Internal, External, Computer		
External Inputs/Outputs	2 IN (OPTO, LVTTL) / 2 OUT (OPTO, TTL)		

Imperx: *C4181 Applications*

The 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 ● Aerospace ● Intelligent Traffic Systems ● Aerial Imaging ● Open Road Tolling Systems ● Situational Awareness

Absolute Quantum Efficiency

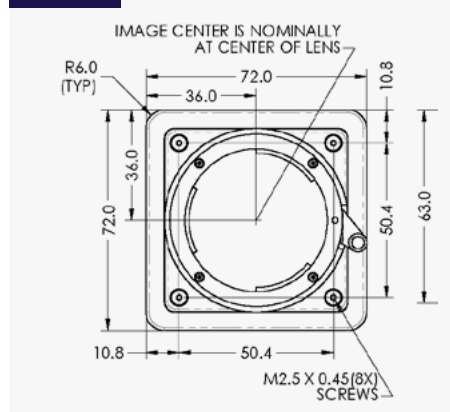Mono & Color Spectral Response   NOIP1xx16KA   Mono & ENIR Spectral Response   NOIP1xx16KA
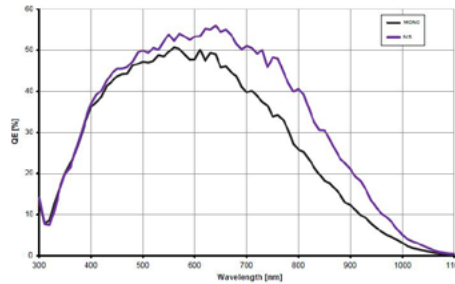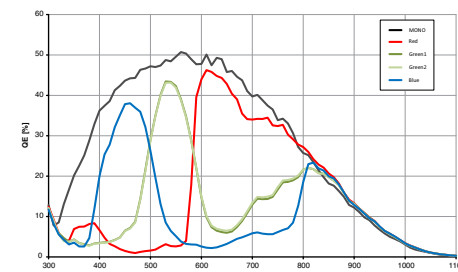
Dimensions

FRONT	BACK	SIDE
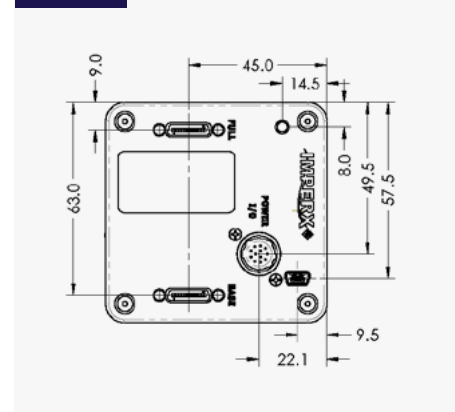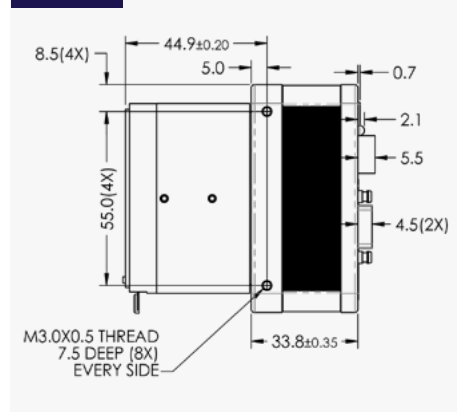
Ordering Information

Interface Available
Camera Link® Full (CLF)
GigE Vision®
USB3

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

Software/Drivers/Interface

Hirose Connectors

Power and I/O Interface

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

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 a 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

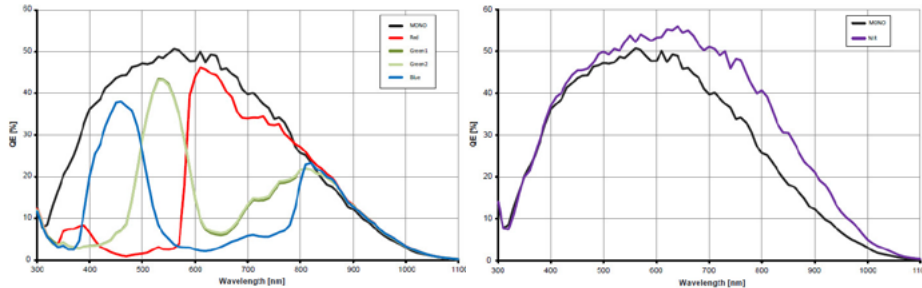| Feature	Description	Feature	Description
Interfaces available	USB3	Strobe Output	2 strobes, programmable position and duration
Resolution	4096 x 4096	Pulse Generator	Yes, programmable
Sensor	Python NOIP1xx016KA, CMOS Color/Mono/ENIR	Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Sensor Format	18.4 mm (H) x 18.4 mm (V) 26.0 mm diagonal 35mm optical format	Data Corrections	Defective/hot pixel correction (static, dynamic) flat field correction, fixed pattern noise
Pixel Size	4.5 µm	Lens Mount	F-Mount (default), M42, EF Canon (passive or active)
NIR Sensitivity	Mono: 850nm: 18%, 950nm: 6% ENIR: 850nm: 30%, 950nm: 11%	Supply Voltage Range	12VDC (5V – 33V) 1.5A inrush without enabled Canon controller
Shutter	Global shutter (GS)		12VDC (6.5V – 33V) 1.5A inrush with enabled Canon controller
Fixed Pattern Noise	<0.9 LSB		
Digitization	10 bit	Camera Current	Typical: 0.52A, Maximum: 0.66A
Frame Rate	10 fps (10 bit), 20 fps (8 bit)	Size - Width/Height/Length	72.0mm (W) x 72.0mm (H) x 34.7mm (L) – Applies to all interfaces
Pixel Clock	32MHz to 360MHz		
Dynamic Range	59 dB	Weight	379g
Row Overhead Time (ROT)	Zero	Vibration, Shock	TBD
Bit Depth	8, 10 bit	Environmental	-40ºC to +85ºC Operating, -50ºC to +90ºC Storage
Analog Gain Control	1x, 1.26x, 1.87x, 3.17x		
Digital Gain	1x (0dB) to 15.9 (24 dB) with a precision of 0.001x. (AGC available)	Humidity	10% to 90% non-condensing
		MTBF	>323,000 hours @ 40°C (Telcordia SR-332)
White Balance	Manual, auto, off	Military Standard	MIL-STD-810F
Shutter Speed	1 µs/step, 40 µs to 1.0 sec	Regulatory	FCC Part 15 Class A, CE, RoHs
Exposure Control	Off, internal, external. (AEC available)		
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, LVTTL) / 2 OUT (OPTO, TTL)		

Imperx: *C4181 Applications*

The C4181 incorporates a number of unique features tailored to reduce system complexity, maximize interface bandwidth, and expand the usable operational range.
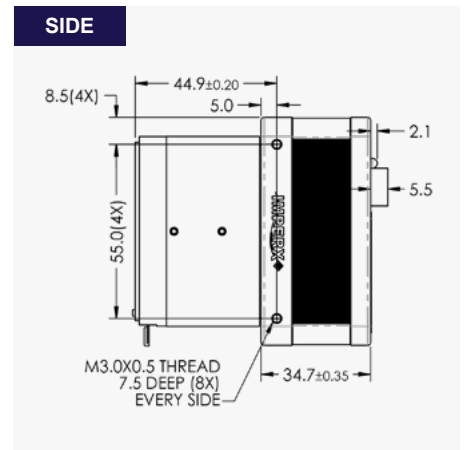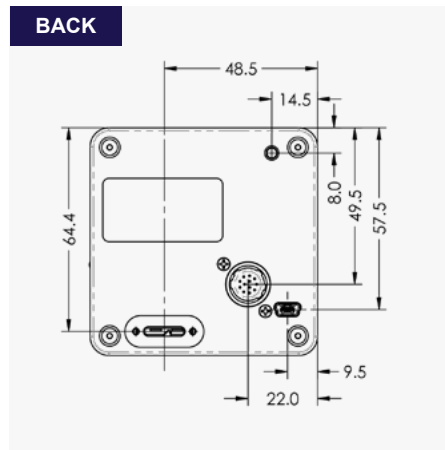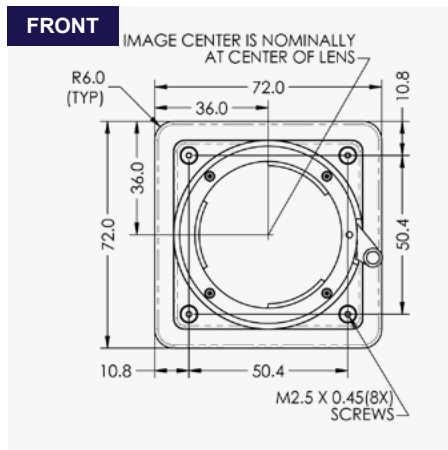
Aerospace ● Satellites ● Surveillance ● Military and Non-Military Ground Vehicles ● Ball Grid Array ● Printed Circuit Board Inspection ● Motion Analysis ● Broadcast Television ● Telepresence ● Unmanned Aerial Vehicles ● Machine Vision ● Reconnaissance ● Aerospace ● Intelligent Traffic Systems ● Aerial Imaging ● Open Road Tolling Systems ● Situational Awareness

Absolute Quantum Efficiency

Mono & Color Spectral Response   NOIP1xx016KA   Mono & ENIR Spectral Response   NOIP1xx016KA
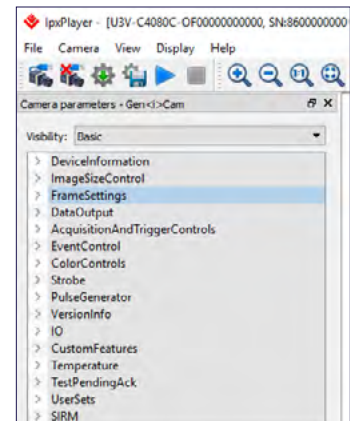

Dimensions

FRONT

BACK

SIDE

Ordering Information

Interface Available
USB3
Camera Link® Full (CLF)
GigE Vision®

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

GenICam Compliant Camera Configurator

Hirose Connectors

Power and I/O Interface

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

C4181
CMOS 16 MP
GigE Vision®

Imperx: *C4181*

The C4181 features the ON Semiconductor Python NOIP1xx016KA CMOS image sensor with a native resolution of 4096 x 4096 in a APS-H optical format. The GenICam™ compliant camera delivers up to 6.2 frames per second in global shutter mode using the GigE Vision 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
Interfaces available	GigE Vision
Resolution	4096 x 4096
Sensor	Python NOIP1xx016KA, CMOS Color/Mono/ENIR
Sensor Format	18.4 mm (H) x 18.4 mm (V) 26.0 mm diagonal 35mm optical format
Pixel Size	4.5 µm
NIR Sensitivity	Mono: 850nm: 18%, 950nm: 6% ENIR: 850nm: 30%, 950nm: 11%
Shutter	Global shutter (GS)
Fixed Pattern Noise	<0.9 LSB
Digitization	10 bit
Frame Rate	6.2 fps (8-bit), 3.3 fps (10-bit)
Pixel Clock	32MHz to 360MHz
Dynamic Range	59 dB
Bit Depth	8, 10 bit
Analog Gain Control	1x, 1.26x, 1.87x, 3.17x
Digital Gain	1x (0dB) to 15.9 (24 dB) with a precision of 0.001x. (AGC available)
White Balance	Manual, auto, off
Shutter Speed	1 µs/step, 40 µs to 1.0 sec
Exposure Control	Off, internal, external. (AEC available)
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, LVTTL) / 2 OUT (OPTO, TTL)

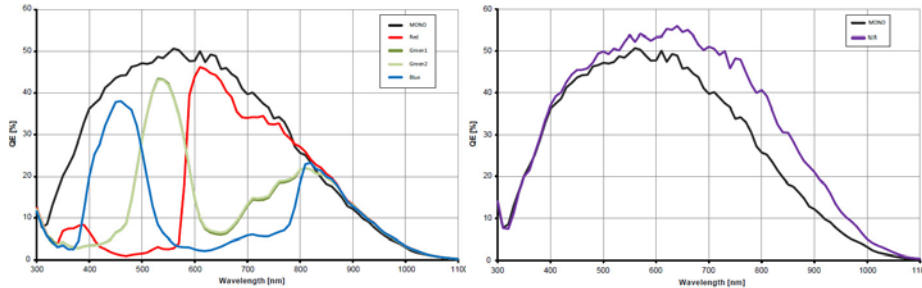| Feature	Description
Strobe Output	2 strobes, programmable position and duration
Pulse Generator	Yes, programmable
Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Data Corrections	Defective/hot pixel correction (static, dynamic) flat field correction, fixed pattern noise correction
Lens Mount	F-Mount (default), M42, EF Canon (passive or active)
Supply Voltage Range	12VDC (5V – 33V) 1.5A inrush without enabled Canon controller
	12VDC (6.5V – 33V) 1.5A inrush with enabled Canon controller
Camera Current	Typical: 0.52A, Maximum: 0.66A
Size - Width/Height/Length	72.0mm (W) x 72.0mm (H) x 33.8mm (L) – Applies to all interfaces
Weight	389g
Vibration, Shock	TBD
Environmental	-40ºC to +85ºC Operating, -50ºC to +90ºC Storage
Humidity	10% to 90% non-condensing
MTBF	>323,000 hours @ 40ºC (Telcordia SR-332)
Military Standard	MIL-STD-810F
Regulatory	FCC Part 15 Class A, CE, RoHs

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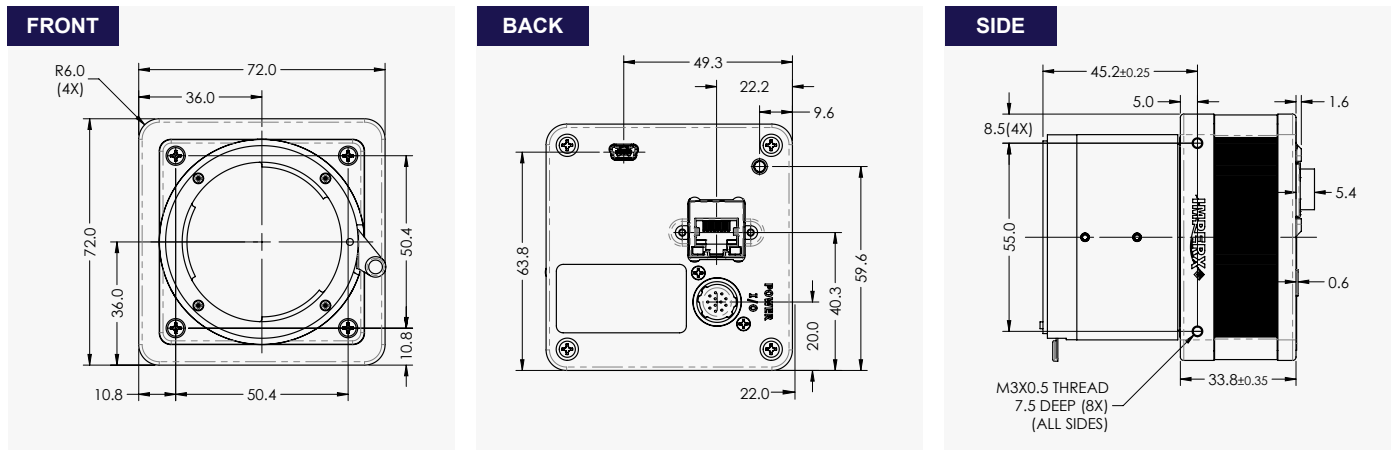
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Absolute Quantum Efficiency

Mono & Color Spectral Response   NOIP1xx016KA

Mono & ENIR Spectral Response   NOIP1xx016KA

Dimensions

FRONT	BACK	SIDE

Ordering Information

Interface Available
GigE Vision®
Camera Link® Full (CLF)
USB3

Sensor Types available
Monochrome
Bayer Color
NIR

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