

CHEETAH

RUGGEDIZED CAMERA SERIES

C4180 CMOS 12 MP Camera Link®



Imperx: C4180

The C4180 incorporates the On Semiconductor Python NOIP1XX012KA CMOS image sensor with a native resolution of 4096 x 3072 in a 4/3" optical format delivering up to 67 frames per second in global shutter mode with 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 C4180'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

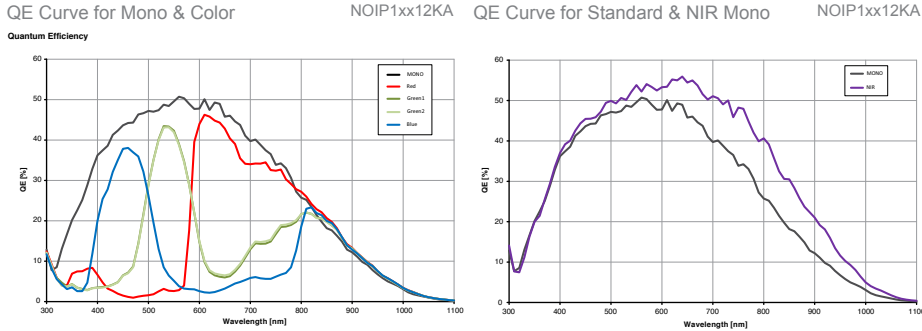
Feature	Description	Feature	Description
Interfaces available	Camera Link® Base, Full/Deca (CLF) w/PoCL	Strobe Output	2 strobes, programmable position and duration
Resolution	4096 x 3072	Pulse Generator	Yes, programmable
Sensor	Python NOIP1XX012KA, CMOS Color/Mono/ENIR	Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Sensor Format	18.4 mm (H) x 13.8 mm (V) 23 mm diagonal 4/3" 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), C, M42, EF Canon (passive or active)
NIR Sensitivity Mono	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	54 fps (10 bit), 67 fps (8 bit)	Weight	379g
Camera Link Clock Rate	85MHz	Vibration, Shock	TBD
Pixel Clock Rate	32MHz to 360MHz	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 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, LVTTTL) / 2 OUT (OPTO, TTL)		

Imperx: C4180 Applications

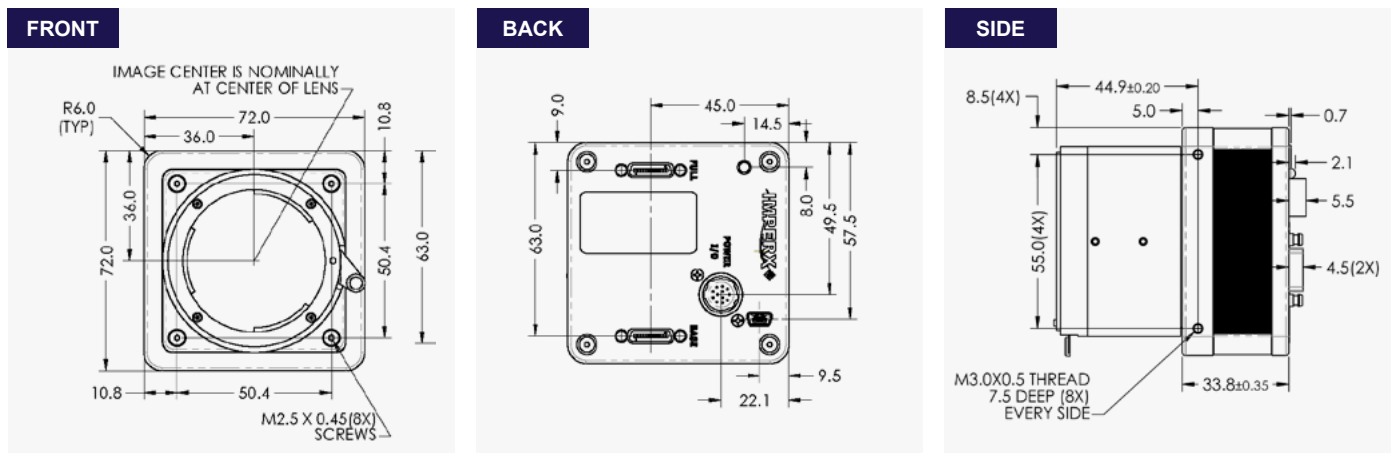
The C4180 incorporates a number of unique features tailored to reduce system complexity, maximize interface bandwidth, and expand the usable operational range.

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



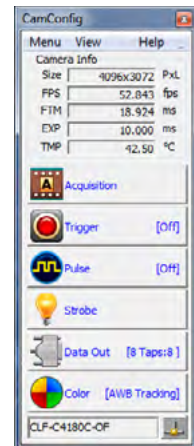
Dimensions



Ordering Information

Interface Available Camera Link® Full (CLF) GigE Vision® USB3	Lens Mounts F Mount (Default) M42 EF Canon C Mount
Sensor Types available Monochrome Bayer Color NIR	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	7. OUT1 TTL Signal
2. +12V DC	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 +

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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CHEETAH

RUGGEDIZED CAMERA SERIES

C4180 CMOS 12 MP USB3



Imperx: C4180

The C4180 features the ON Semiconductor Python NOIP1xx012KA CMOS image sensor with a native resolution of 4096 x 3072 in a 4/3" optical format. The GenICam™ compliant USB3 camera delivers 27 frames per second in global shutter mode with the USB3 interface. CMOS technology eliminates smear columns from areas of ultra-bright intensity and specular reflections in uncontrolled lighting applications. The Imperx Cheetah camera 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 C4180 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 3072	Pulse Generator	Yes, programmable
Sensor	Python NOIP1xx012KA, CMOS Color/Mono/ENIR	Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Sensor Format	18.4 mm (H) x 13.8 mm (V) 23 mm diagonal 4/3" 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 12VDC (6.5V – 33V) 1.5A inrush with enabled Canon controller
Shutter	Global shutter (GS)	Camera Current	Typical: 0.52A, Maximum: 0.66A
Fixed Pattern Noise	<0.9 LSB	Size - Width/Height/Length	72.0mm (W) x 72.0mm (H) x 34.7mm (L) – Applies to all interfaces
Digitization	10 bit	Weight	379g
Frame Rate	13 fps (10 bit), 27 fps (8 bit)	Vibration, Shock	TBD
Pixel Clock	32MHz to 360MHz	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)
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. (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, LVTTTL) / 2 OUT (OPTO, TTL)		

Imperx: C4180 Applications

The C4180 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

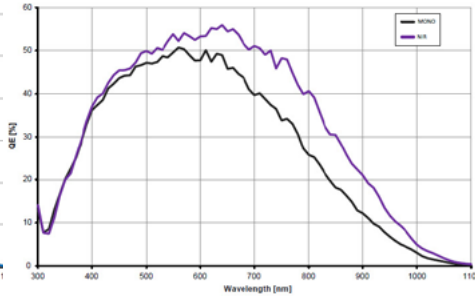
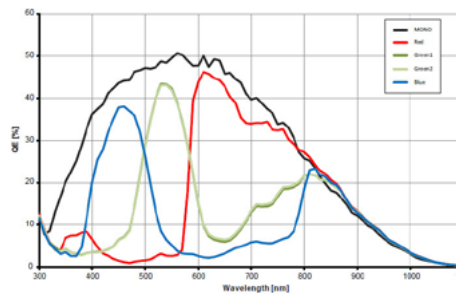
QE Curve for Mono & Color

NOIP1x012KA

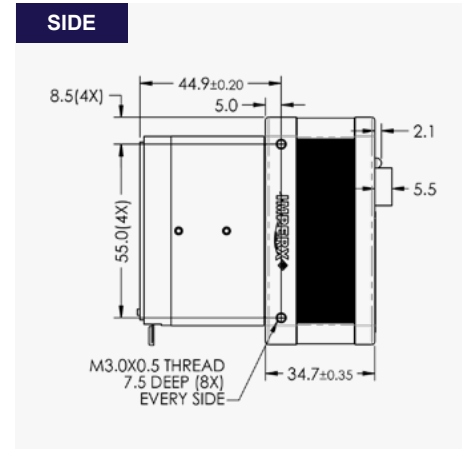
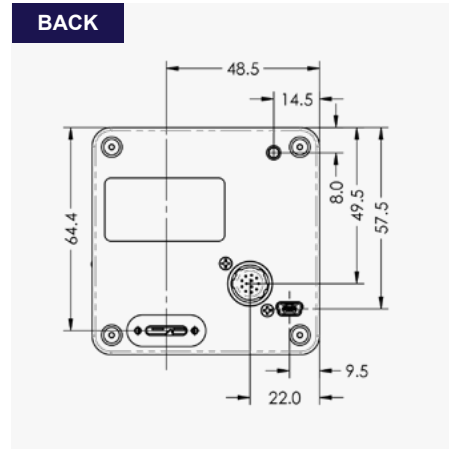
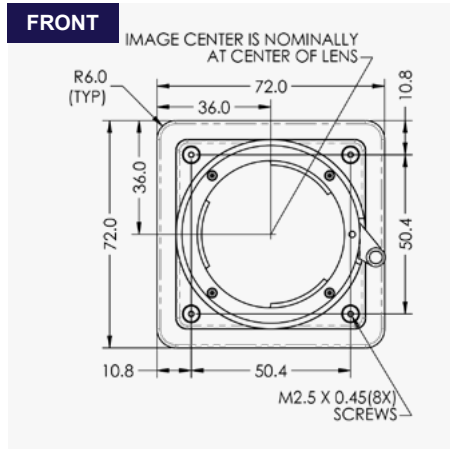
QE Curve for Standard & NIR Mono

NOIP1x012KA

Quantum Efficiency



Dimensions



Ordering Information

Interface Available

- USB3
- Camera Link® Full (CLF)
- GigE Vision®

Sensor Types available

- Monochrome
- Bayer Color
- NIR

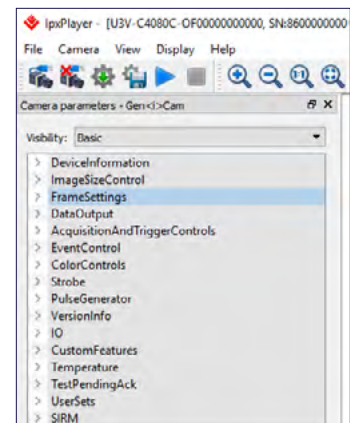
Lens Mounts

- 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	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 +

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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RUGGEDIZED CAMERA SERIES

C4180 CMOS 12 MP GigE Vision®



Imperx: C4180

The C4180 features the ON Semiconductor Python NOIP1xx012KA CMOS image sensor with a native resolution of 4096 x 3072 in a 4/3" optical format. The GenICam™ compliant camera delivers 8.3 frames per second in global shutter mode with 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 camera 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 C4180 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	GigE Vision	Strobe Output	2 strobes, programmable position and duration
Resolution	4096 x 3072	Pulse Generator	Yes, programmable
Sensor	Python NOIP1xx012KA, CMOS Color/Mono/ENIR	Image Enhancement	Two LUTs: 1 LUT pre-programmed with Gamma 0.45
Sensor Format	18.4 mm (H) x 13.8 mm (V) 23 mm diagonal 4/3" optical format	Data Corrections	Defective/hot pixel correction (static, dynamic), flat field correction, fixed pattern noise correction
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 12VDC (6.5V – 33V) 1.5A inrush with enabled Canon controller
Shutter	Global shutter (GS)	Camera Current	Typical: 0.52A, Maximum: 0.66A
Fixed Pattern Noise	<0.9 LSB	Size - Width/Height/Length	72.0mm (W) x 72.0mm (H) x 33.8mm (L) – Applies to all interfaces
Digitization	10 bit	Weight	389g
Frame Rate	8.3 fps (8-bit), 4.5 fps (10-bit)	Vibration, Shock	TBD
Pixel Clock	32MHz to 360MHz	Environmental	-40°C to +85°C Operating, -50°C to +90°C Storage
Dynamic Range	59 dB	Humidity	10% to 90% non-condensing
Bit Depth	8, 10 bit	MTBF	>323,000 hours @ 40°C (Telcordia SR-332)
Analog Gain Control	1x, 1.26x, 1.87x, 3.17x	Military Standard	MIL-STD-810F
Digital Gain	1x (0dB) to 15.9 (24 dB) with a precision of 0.001x. (AGC available)	Regulatory	FCC Part 15 Class A, CE, RoHS
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		
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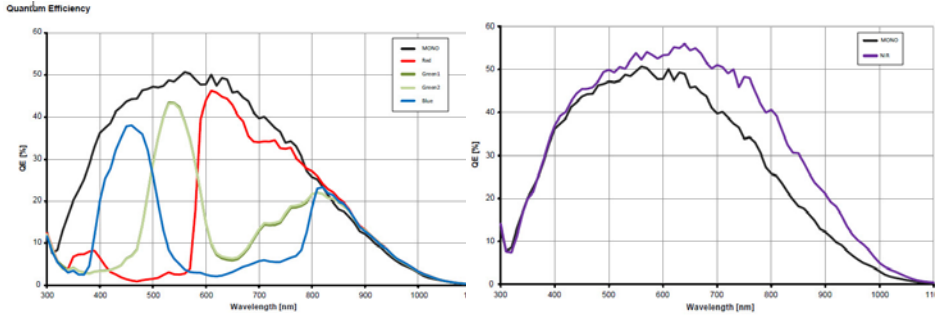
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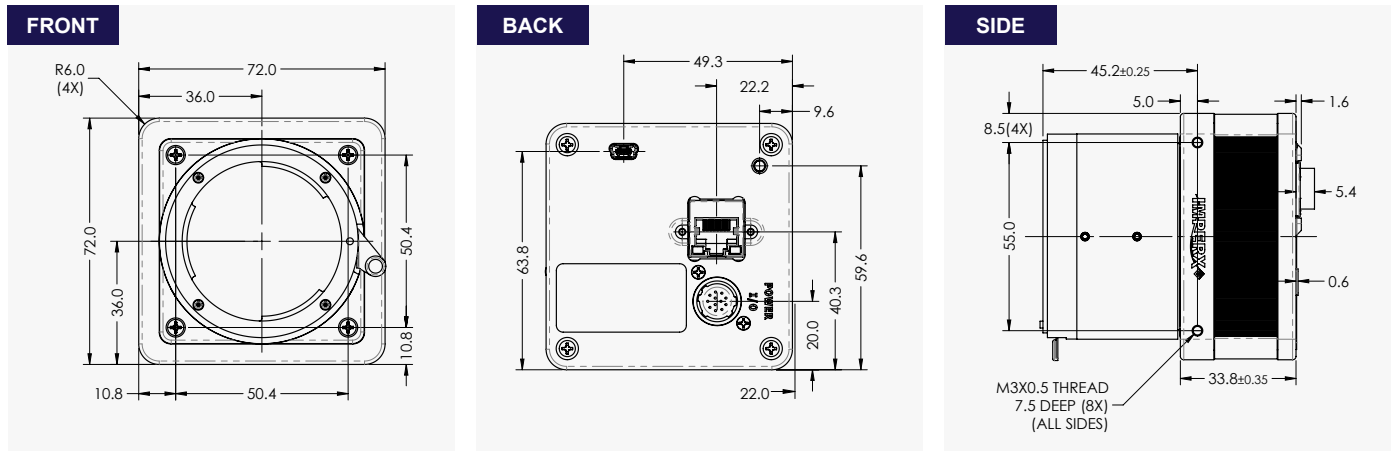
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QE Curve for Mono & Color NOIP1xx012KA QE Curve for Standard & NIR Mono NOIP1xx012KA



Dimensions

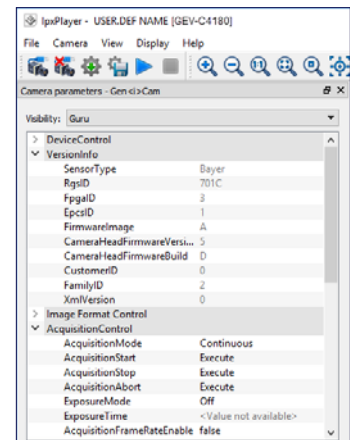


Ordering Information

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

GenICam Compliant Camera Configurator



Hirose Connectors

Power and I/O Interface	
1. 12 VDC Return	7. OUT1 TTL Signal
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