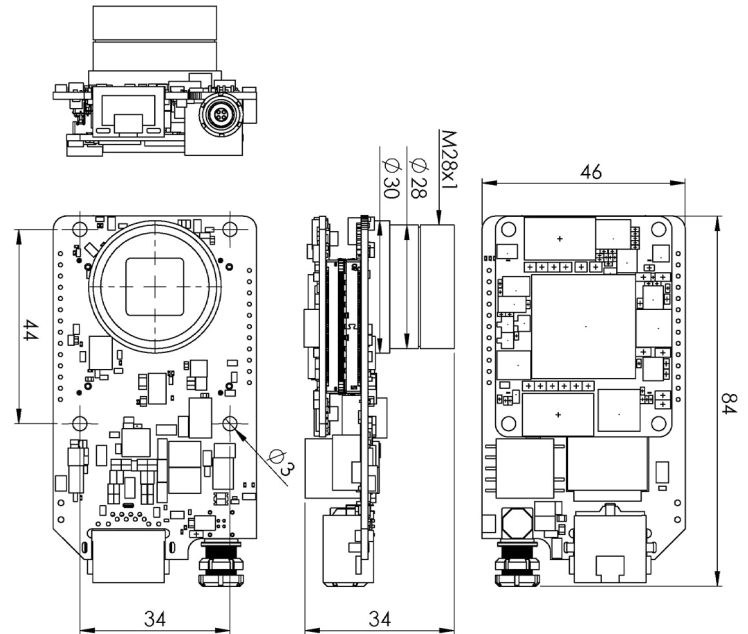


VELOCIRAPTOR EVO



Velociraptor EVO is a highly customizable and user-programmable FPGA-based high-speed smart camera: the ultimate FPGA camera with a very large Xilinx Spartan-6 FPGA and high-speed imaging sensor. It is based on GigaBee modules which incorporate dual DD3 memory and Gigabit Ethernet. It features the ultimate-performance System-on-Chip (SoC) technology combined with the latest turbocharged industrial CMOS imaging sensor.

Velociraptor EVO includes a fully customizable and user-programmable open-reference design for a high-speed FPGA-based camera and application development system. Its emphasis is on an open-hardware/software development model featuring high-frame rates, real-time image processing, ultra-large FPGA and modern graphical user interface support.

A suite of intermediate, versatile and large Xilinx Spartan-6LX150 FPGAs is used to develop algorithms and process data in real-time. Images are acquired by a AMS sensor, CMV2000 (2048x1088 pixels, 2/3" size) or CMV4000 (2048x2048 pixels, 1" size). The Sensor is very fast and outputs up to 768 million pixels per second resulting in 333 FPS (CMV2000) and 178 FPS (CMV4000) at full frame. The on-board 2x128MB DDR3 memory with 2x1.6GB/s of bandwidth enables usage of complex buffered image processing. A unique UDP based Ethernet protocol, developed especially for this camera, is used for communication with a PC. The camera is Ethernet powered (IEEE 802.3at PoE) with power consumption up to 10W.

KEY CAMERA FEATURES

Velociraptor EVO		
Resolution	2.2 MP	4.2 MP
Active Pixels (HxV)	2048 x 1088	2048 x 2048
Frame Rate	331 FPS	176 FPS
Sensor Format	2/3" CMOS	1" CMOS
Pixel Size	5.5 μm	5.5 μm
Sensor: AMS Image Sensor	CMV2000	CMV4000
Interface	1 Gigabit Ethernet SFP+ for fast data transmission	
Programmable and Reconfigurable FPGA	Spartan-6LX150	

Velociraptor EVO cameras are suitable for demanding applications where extremely high-speed and high-frame rates are needed in combination with real-time image processing and adaptability to specific products or systems.

The Velociraptor EVO is targeted to Original Equipment Manufacturers (OEMs) who are seeking components that can be adapted to specific products or systems. The Velociraptor EVO camera provides a flexible framework of core capabilities that will serve as a platform for multimodal functionality. The framework is expandable, scalable and flexible to accommodate new algorithms and can be interoperable with existing systems. In two words, it's versatile and affordable, in all possible ways.

TARGETED FOR:

- Industrial process automation - to count, detect, check, verify, read, inspect and test different products, levels, components etc.;
- Industrial quality control - to inspect defects, cracks or surface blemishes, size, position, dimension and color, foreign objects and quality;
- Solar Cell Panel Inspection - to inspect wafer, surface defects, glass, etc. and
- General R&D.

CAMERA FAMILY		VELOCIRAPTOR EVO				
Camera Model	2.2M	2.2IR	2.2C	4.2M	4.2IR	4.2C
Model (AMS)	CMV2000			CMV4000		
	2E5M1PP	E12M1PP	2E5C1PP	2E5M1PP	E12M1PP	2E5C1PP
Color Filter	None	None	Bayer	None	None	Bayer
Diagonal	12.7 mm (2/3")			15.92 mm (1")		
Active Pixels	2048 x 1088			2048 x 2048		
Pixel Size	5.5 µm x 5.5 µm					
Pixel Data Formats	MONO8 (M and IR), BAYER8 (C only)					
Region of Interest	YES, with 8 pixel increments					
Pixel Clock Speed	760 MHz (8 pixels @ 95 MHz)					
Frame Rate (Full Frame)	331 FPS			176 FPS		
RAW Frame Rate	54 FPS			26 FPS		
ADC Resolution	10 bit					
Analogue Gain	C mount holder without lens included					
Analogue Gain	1-32x					
Digital Gain	Programmable look up table in FPGA					
Shutter Type	Electronic global shutter					
Shutter Resolution	21 ns					
Shutter Time	210 ns – 90 s					
Exposure	Linear, 3 slope high dynamic range					
Scanning System	Progressive					
Trigger Modes	Free running, trigger, overlap, pulse width					
Trigger Features	Delay 0 – 1000 ms LP Filter 1.5Hz - 100 kHz					
Dynamic Range	60 dB					
FPGA	Spartan6LX150					
Free FPGA %	Up to 70%, most of the 180 slices of DSP are free.					
Volatile Memory	2x 128 MB DDR3 SDRAM					
Non-volatile Memory	8MB flash					
Lens Mount	C-mount (1" 32G thread)					
Temp Range	0 - 50°C					
Mass	50 g OEM / 290 g with housing					
Protection	Up to IP67 with housing					
Housing Material	CNC-machined aluminum, anodized in a special OptoMotive blue color					
RoHS	RoHS compliant					
Fixing Holes	4 x M3 OEM / 2 x M6 with housing					
Input Voltage	Power over Ethernet, 42-57V					
Consumption	Up to 10W					
IO	3x bidirectional					
IO Isolation	No, but camera has 1.5kV PoE isolation					
Connectors	RJ45, 4 pin LEMO EXG 00 304					
On-board Image Processing	As an option (if an IP core is integrated)					
IP Cores	Yes. Can be implemented into the camera additionally. See the List of IP cores available.					
Open Reference Design	Yes					
Open Architecture	Yes					
Software	Compatible with OptoMotive VEVO software (full source code included)					
Operating System	Windows 7, Windows 10, 64bit or 32bit					
Development Tools	Xilinx ISE/EDK version 13.3 or later, Microsoft Visual Studio 2010					