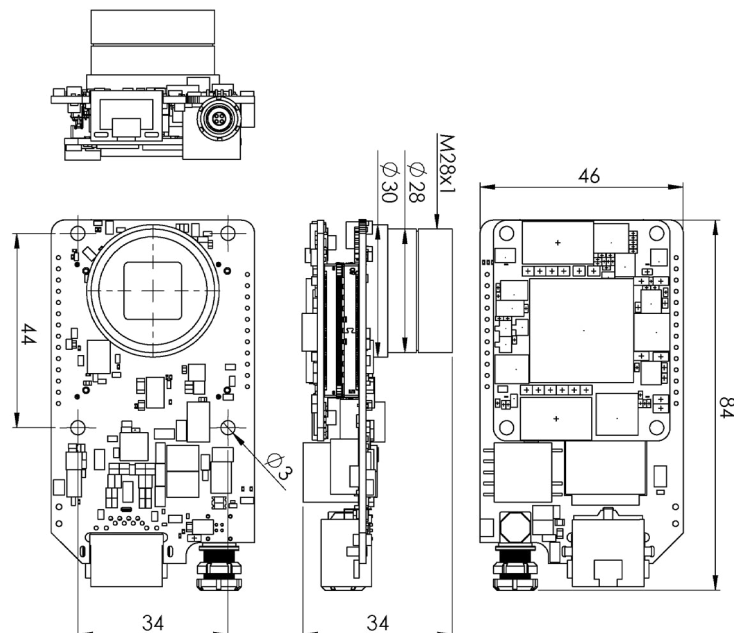


# VELOCIRAPTOR HS



**VELOCIRAPTOR HS** is the ultimate FPGA camera with a very large Xilinx Spartan-6 FPGA and high-speed imaging sensor. It is developed to fill the gap in the market between standard industrial cameras and high-speed cameras. The Camera has small and ruggedized waterproof aluminum housing design (90x52x40 mm) with an innovative mounting system (ball-joint).

It is Ethernet powered (IEEE 802.3at PoE) with a power consumption up to 10W. Imaging sensors were carefully selected and the ones selected were the best market has to offer: turbocharged AMS imaging sensors CMV2000 (2048x1088 pixels, 2/3" size) or CMV4000 (2048x2048 pixels, 1" size).

The sensors include all features a modern machine vision sensor should have: a global shutter, several high dynamic range modes and an overlapping trigger mode. As already mentioned the sensor is very fast and outputs up to 768 million pixels per second resulting in 331 FPS (CMV2000) and 176 FPS (CMV4000). At a reduced frame size the frame rate can go up to 5000 frames per second.

With high-performance FPGA System-on-Chip (SoC) technology, the Velociraptor camera family opens new dimensions in computer vision. It is a global shutter high-speed camera with incredible frame rates and a range of real-time image-processing cores (JPEG compression, color processing, etc.).

A JPEG compression core operating at maximum frame rate is offered with this camera. This core was developed especially for this camera, since there was no JPEG core with sufficient performance available on the market. The compression core enables long recording of high-speed video and direct PC storage.

#### TARGETED FOR:

- Motion analysis and slow-motion photography - from understanding river erosion to unravelling the mysteries of the flight of fruit flies;
- Ballistics - freeze the motion of an in-flight bullet;
- Sports - golf, baseball, basketball or football;
- Medical imaging - body movement analyses;
- Troubleshooting analysis and
- Broadcast - high-speed video capture and slow-motion replay.

## KEY CAMERA FEATURES

Velociraptor HS		
<b>Resolution</b>	2.2 MP	4.2 MP
<b>Active Pixels (HxV)</b>	2048 x 1088	2048 x 2048
<b>Frame Rate</b>	331 FPS	176 FPS
<b>Sensor Format</b>	<b>2/3" CMOS</b>	<b>1" CMOS</b>
<b>Pixel Size</b>	5.5 µm	5.5 µm
<b>Sensor: AMS Image Sensor</b>	CMV2000	CMV4000
<b>Interface</b>	1 Gigabit Ethernet SFP+ for fast data transmission	
<b>Programmable and Reconfigurable FPGA</b>	Spartan6 LX150	

- JPEG compression core embedded in the camera for achieving high streaming frame rates up to 333 FPS at full resolution as an option;
- GigE Vision® 1.2 and GenICam™ 2.0 compliant;
- Gigabit Ethernet for easy data transmission and
- Delivered in CNC housing.

CAMERA FAMILY		VELOCIRAPTOR HS				
Camera Model	2.2M	2.2IR	2.2C	4.2M	4.2IR	4.2C
IMAGING SENSOR	Model (AMS)	CMV2000			CMV4000	
		2E5M1PP	E12M1PP	2E5C1PP	2E5M1PP	2E5C1PP
	Color Filter	None	None	Bayer	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) JPEG				
	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	
	Max. Frame Rate*	5000 FPS				
	ADC resolution	10 bit				
	Lenses	C mount holder without lens included.				
	Analogue Gain	1 - 3.2x				
	Digital Gain	Programmable look up table in FPGA				
Shutter Type	Electronic global shutter					
Shutter Resolution	21 ns					
Shutter Time	20µs - 90 s					
Exposure	Linear, 3Slope high dynamic range					
Scanning System	Progressive					
FEATURES	Trigger Modes	Free running, trigger, overlap and pulse width				
	Trigger Features	Delay 0 - 1000 ms LP Filter 1.5Hz - 100 kHz				
	Dynamic Range	60 dB				
PROCESSING	FPGA	Spartan-6LX				
	Volatile Memory	2x 128 MB DDR3 SDRAM				
	Non-volatile Memory	8MB flash				
MECHANICAL	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				
ELECTRICAL	Fixing Holes	4x M3 OEM / 2 x M6 with housing				
	Input Voltage	Power over Ethernet, 42-57V				
	Consumption	10W				
	IO	3x bidirectional				
	IO Isolation	No, but camera has 1.5kV PoE isolation				
Connectors	RJ45, 4 pin LEMO EXG 00 304					