ehd imaging

Hummingbird
USB 3.0

cameras SMX-16E1M, SMX-16E1C,
SMX-16E1IR, SMX-16E2M, SMX-16E2C

Monochrome SMX-16E1M and SMX-16E2M, color SMX-16E1C and SMX-16E2C, and monochrome with high NIR sensitivity SMX-16E1IR are based on the 1.3 and 2-Megapixel image sensors from E2V.
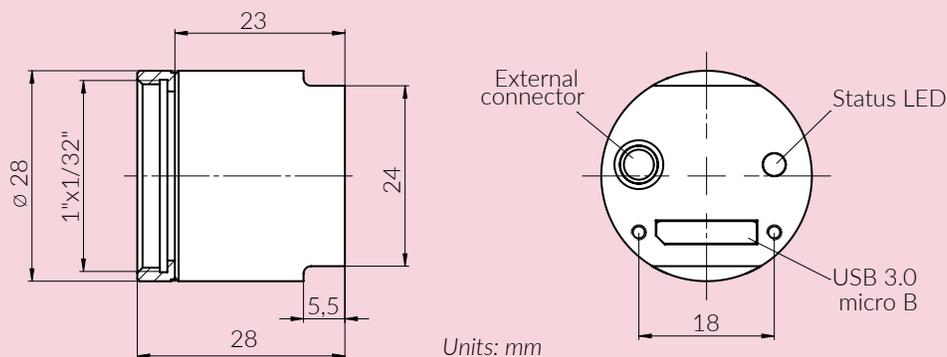
SMX-16E cameras are high quality industry-demanded cameras which combine global shutter functionality with low readout noise and high dynamic range mode.

Hummingbird SMX-16E series cameras

Ultra compact: One of the smallest USB 3.0 cameras in the world — less than one cubic inch volume, cylinder-shaped.

Light weight: Weighs only 20 grams (0.71 oz).

Extremely fast: USB 3.0 interface allows data rate up to 400 MB per second (10 times faster than USB 2.0).

Robust: Unibody aircraft-grade aluminum housing with a screw lock for USB cable, as well as shockproof electronic design allows the camera to survive under high vibration and shock.

Low noise design: We offer one of the best in industry signal/noise parameter.*

*Compared to cameras based on the same image sensor.

Global shutter: To meet the industry demand, SMX-16E cameras are equipped with global shutter. Rolling shutter is available too.

High NIR sensitivity (SMX-16E1IR):
This extends the range of camera applications. You could see more than with the eyes.

HDR mode: Get perfect image where other cameras fail.

High speed and low energy consumption:
Benefit from the best Hummingbird series traditions.

Compatibility: Hummingbird cameras come with Sumix software application, a set of examples included into the SDK and are compatible with popular vision and image-processing libraries and third party software like Labview, MathLab, HALCON etc.

Specification

	SMX-16E1x	SMX-16E2x
Output Video and Camera Control		
Maximum resolutions of output window:	1280 × 1024, full resolution mode	1600 × 1200, full resolution mode
Frame rate at resolution (114 MHz):	8, 10-bits: 60 fps at 1280 × 1024 82 fps at 1024 × 768 126 fps at 640 × 480	8, 10-bits: 50 fps at 1600 × 1200 60 fps at 1280 × 1024 82 fps at 1024 × 768 126 fps at 640 × 480
Output bits per pixel:	Selectable, 8 bits or 10 bits	
Lookup table:	Downloadable for user selected 8 bits mode: converts 10 bits of imaging chip's ADC to 8 bits of output	
Pixel rates:	114 MHz	
Exposure range (at maximum resolution), ms:	min: 0.0308 (at 114 MHz); max: 1000 (at 4 MHz)	min: 0.0295 (at 114 MHz); max: 1000 (at 4 MHz)
Gamma, brightness and contrast control:	Programmable with lookup table	
Imaging Chip		
Type:	Color or monochrome 1.3 megapixel CMOS sensor with an optical format of 1/1.8 inch manufactured by E2V.	Color or monochrome 2 megapixel CMOS sensor with an optical format of 1/1.8 inch manufactured by E2V.
Pixel size:	5.3 µm × 5.3 µm	4.5 µm × 4.5 µm
Image array size:	8.7 mm diagonal	9 mm diagonal
Shutter:	Rolling, Global Shutter	
Scanning mode:	Progressive	
ADC resolution:	10 bits	
Responsivity:	6600 LSB/lux-sec, 13000 LSB/lux-sec (for SMX-16E1IR)	7400 LSB/lux-sec
Dynamic range:	>62 dB; >90 dB in HDR mode >63dB; >90dB in HDR mode (for SMX-16E1IR)	>66 dB; >90 dB in HDR mode
Camera Electrical		
Supply voltage:	5 V supplied by USB 3.0 interface	
Power consumption:	less than 1 W (depends on operating modes)	

Units: mm