EMBERION

Emberion VS20 GigE VIS-SWIR Camera

Data Sheet

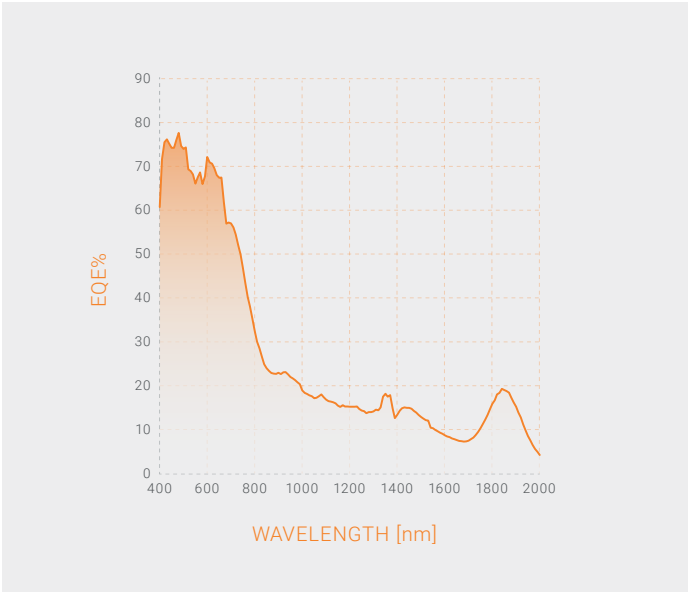
Broaden your vision

- Wide spectral range camera from VIS to SWIR up to 2000 nm with one image sensor from Emberion
- Integrated camera solutions to provide optimal image beyond human vision
- High Dynamic Range (HDR) without saturation and linear output for optical measurement are targeted for a variety of imaging application needs
- Scalability, customizability and affordability is enabled by monolithic integration of colloidal quantum dots (CQD) with inhouse CMOS readout IC

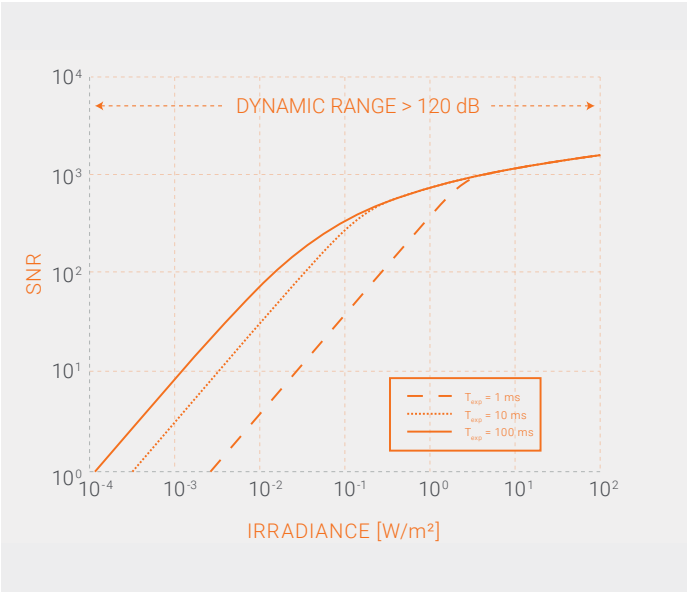
Image sensor specifications	
Image sensor type	Emberion colloidal quantum dot (CQD) photodiode
Spectral range	400 to 2000 nm
Pixel pitch	20.0 µm x 20.0 µm
Resolution in pixels	640 x 512
Image size	12.80 mm x 10.24 mm
Image diameter	16.39 mm
Fill factor	90 %
Operable pixels	> 99.9%
Shutter	Global, built-in electronic
Cooling	Built-in thermoelectric cooler (TEC)
Camera specifications	
Ambient operating temperature	-40 to +40 °C
A/D conversion	14 bits
Image processing	Non-uniformity correction, linearisation, defect pixel correction
Exposure time	Min 0.1 ms, adjustable with 1 µs resolution
Supply voltage	11 to 13 V_{dc} (DC power jack)
Product compliance	CE, FCC, ISED, UKCA
Power consumption	9 W typical, 15 W at 400 fps
Mechanics	
Lens mount	C-mount, flange back distance: 17.526 mm
Dimensions (L x W x H) with the lens mount	168.7 mm x 102.0 mm x 111.5 mm

Interfaces

Power input	12 VDC
Digital output resolution	16 bits
Image data	GigE configuration, RJ45 connector
Communications	GenICam compatible
Firmware update	over GigE interface
Max frame rate (full VGA)	400 fps
Trigger	Non-isolated HW trigger Trigger over Ethernet, IEEE 1588 PTP



Camera external quantum efficiency (EQE) vs. wavelength at 0°C sensor temperature



Camera signal-to-noise (SNR) ratio vs. irradiance at 1850 nm wavelength and 0°C sensor calibration temperature, at F#=1

Image sensor performance	Value at sensor temperature 0°C
Dynamic range (optical input)	120 dB
Responsivity	1.5 x 10^9 V/W at 10 ms exposure time and 1850 nm wavelength
Input refered voltage noise	200 µV
Saturation current density	1 x 10^{-4} mA/cm^2
Noise equivalent irradiance (NEI)	3 x 10^{-4} W/m^2 at 10 ms exposure time and 1850 nm wavelength

Mechanics design, dimensions and connectors