

Emberion VS20 VIS-SWIR Camera GigE & Camera Link

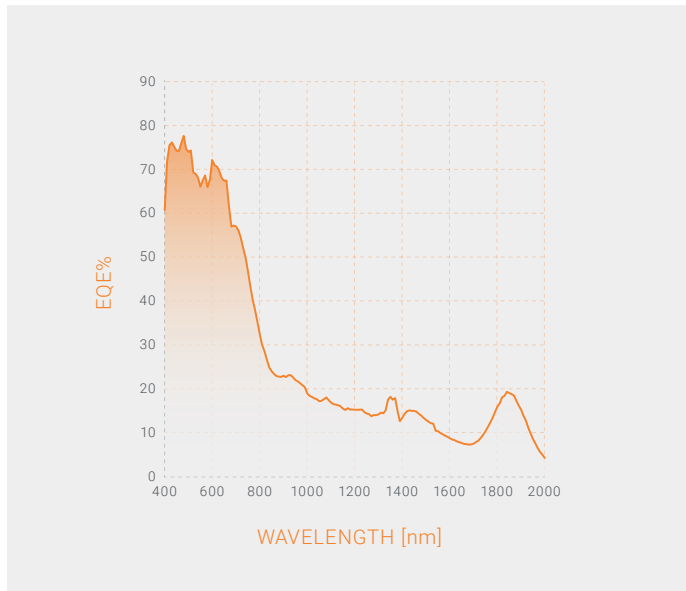
Data Sheet

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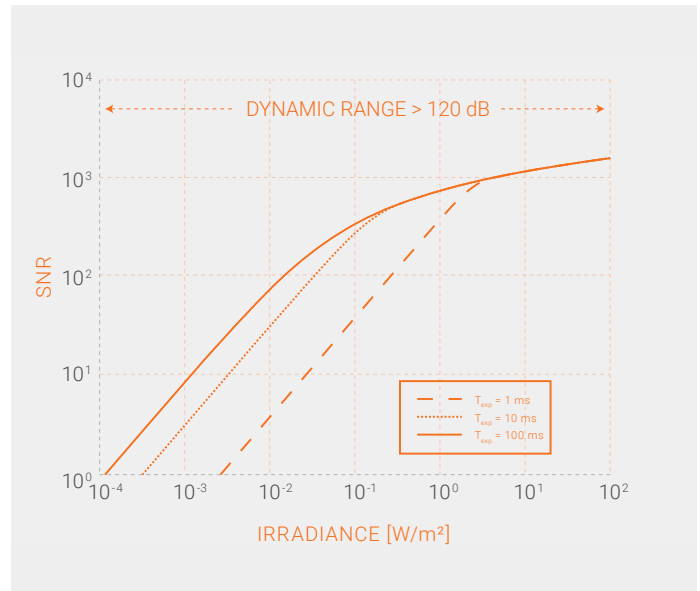
- Wide spectral range camera from VIS to SWIR up to 2000 nm with one image sensor from Emberion
- Integrated camera solutions to provide optimal image beyond human vision
- High Dynamic Range (HDR) without saturation and linear output for optical measurement are targeted for a variety of imaging application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

Image sensor specifications	Emberion VS20 CL	Emberion VS20 GigE
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	Emberion VS20 CL	Emberion VS20 GigE
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	Emberion VS20 CL	Emberion VS20 GigE
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	Emberion VS20 CL	Emberion VS20 GigE
Power input		12 VDC
Digital output resolution		16 bits
Image data	Camera Link Base configuration, SDR connector	GigE configuration, RJ45 connector
Communications	Camera Link serial communications (9600 baud)	GenICam compatible
Firmware update	via USB-C connection	over GigE interface
Max frame rate (full VGA)	86 fps	400 fps
Trigger	3.3/5V input or 5V output (configurable)	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	1.5×10^9 V/W at 10 ms exposure time and 1850 nm wavelength
Input referred voltage noise	200 μ V
Saturation current density	1×10^{-4} mA/cm ²
Noise equivalent irradiance (NEI)	3×10^{-4} W/m ² at 10 ms exposure time and 1850 nm wavelength

Mechanics design, dimensions and connectors

