



Emberion VS20 VIS-SWIR Camera GigE & Camera Link

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 | 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 +55 °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) | |
| Power consumption | 8 W (typical) | |
| 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 | |
| Weight | 1.35 kg | |



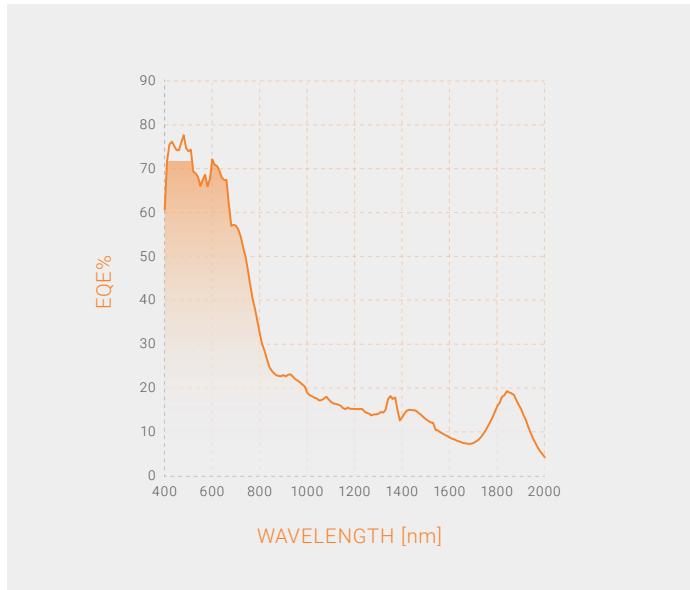
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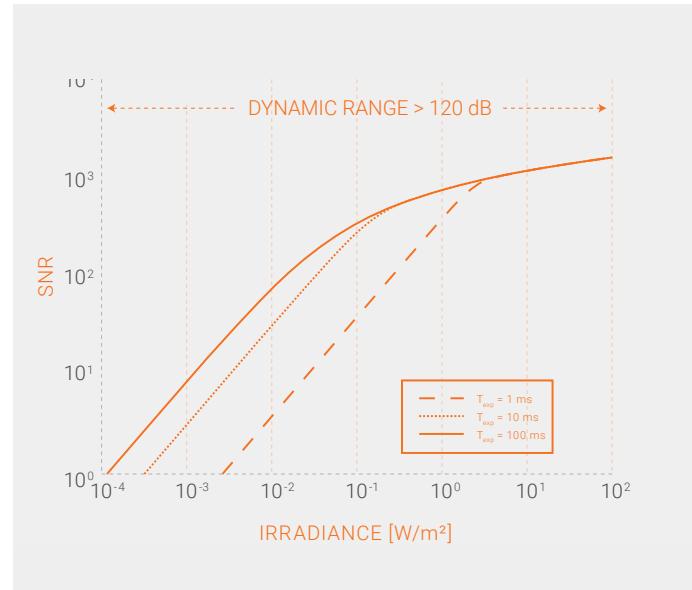
Tel (02) 533-6720

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| 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, up to 2.5 Gbit, 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) | 5V I/O trigger or 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

