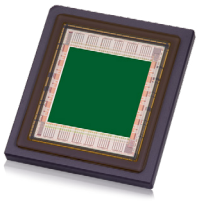
TELEDYNE | Space Imaging

# Emerald 67M USV

Industrial Image Sensors Upscreened for Space

## 8K WIDE UPSCREENED IMAGE SENSOR TO COVER A LARGE SWATH FOR EARTH OBSERVATION OR WIDE FOV FOR SSA

Teledyne e2v Emerald 67M USV is an 8K global shutter image sensor that covers a large swath for Earth observation. Emerald 67M USV combines low noise (<3$e^-$ @ 12 bits) and high speed (up to 65 fps @ 10 bits). Its 67M resolution, fast frame rate and multiple ROI feature make it also suitable for SSA (space situation awareness). It is available in monochrome and color version (temporary window upon request).



| SENSOR FEATURES | CUSTOMER BENEFITS |
|---|---|
| >8k resolution vertical and horizontal | Covering large SWATH for Earth Observation or large Field of View for SSA |
| Excellent low noise performances: 2,5 $e^-$ | Excellent image quality even in low light conditions |
| Up to 64 ROIs | Detection and tracking of lots of space objects (satellites, debris, ...) for SSA |
| Global shutter @ 60 fps | Sharp images at very high speed |
| APS-C optical format | Compatibility with cost-effective optics |

## SPACE PERFORMANCES

*Qualification:* 2 levels of space qualification available

- ECSS 9020 like flow (screening + LVT)
- INST-002 NASA Class 3 tailored for image sensors

## SENSOR CHARACTERISTICS

| PARAMETER | Emerald 67M USV |
|---|---|
| Resolution – pixels | 8192 x 8192 |
| Pixel size | 2.5 µm |
| Pixel type | Global shutter |
| Image diagonal | 29 mm |
| Aspect ratio | 1:1 |
| Optical format | APS-C |
| Frame rate | 65 fps |
| Readout noise | 2.5 $e^-$ @ 8-10 bits / 2,2 $e^-$ @ 12 bits |
| Dynamic range | 64.5 dB @ 8-10 bits / 67 dB @ 12 bits |
| SNR max | 38 dB |
| QE | 66% @ 500 nm |
| Bit depth | 8/10/12 bits |
| Package type | Ceramic µPGA |
| Package size | 37 x 42 $mm^2$ |
| Power consumption | ≤ 3.5 W @ full speed, full resolution |
| Output | Scalable LVDS output (34, 32 or 16 channels) |
| Communication interface | SPI controls |

## EMBEDDED FUNCTIONS

- Horizontal sub sampling
- Look-up table
- Defective pixel correction
- FPN correction
- Flipping/mirroring
- Image statistics and context output
- Multiple trigger modes
- ROI (up to 64, overlap and independent configurations allowed)
- High Dynamic Range modes
- Pixel binning

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