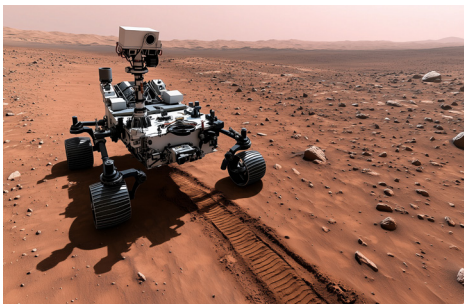
TELEDYNE | Space Imaging

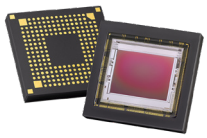
Emerald Gen2 12M USV

Industrial Image Sensors Upscreened for Space

COMPACT 12M GLOBAL SHUTTER IMAGE SENSOR UPSCREENED FOR SPACE MONITORING CAMERAS



Teledyne e2v Emerald Gen2 12M USV is a compact 12 megapixels global shutter CMOS image sensor. It is available in monochrome or color version and can be used for monitoring cameras on satellites, moon rovers and landers or space suits.
It provides advanced low noise performances, less then 3 electrons, with only 2.8 µm pixel pitch. Emerald Gen2 12M USV is easy to integrate with its mipi and LVDS interfaces.



SENSOR FEATURES	CUSTOMER BENEFITS
Compact 21 x 20 mm^2 ceramic package CLGA	Compatible with 1" C-mount optics for easy integration and reduced costs
Configurable to be used with an 8.9M ROI	Allow to use even smaller optics to build very compact cameras
Very low noise global shutter pixel: <3e-	Delivering excellent low-light SNR and the ability to work in high-contrast scenes
High speed up to 70fps	Sharp images at very high speed
LVDS and MIPI CSI-2® output	Flexibility in the choice of system architecture

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 Gen2 12M USV
Resolution – pixels	4096 x 3072
Pixel size	2.8 µm
Pixel type	Global shutter
Image diagonal	14.34 mm
Aspect ratio	4:3
Optical format	1" @ 12 MP - 2/3" @ 8,9M
Frame rate	70 fps
Readout noise	< $3e^-$
Dynamic range	67.5 dB
SNR max	38.6 dB
QE	65% @ 550 nm
Bit depth	8/10/12 bits
Package type	CLGA
Package size	20 x 21 mm^2
Power consumption	< 1.2W
Output	LVDS & MIPI CSI-2®
Communication interface	SPI and I^2C

EMBEDDED FUNCTIONS

- Single Integration Multiple ROI (SIMR): up to 4, non-overlapping and the same integration for each ROI, improving frame rate
- Multi Integration Multiple ROI (MIMR):2 independent ROI's with possible overlapping and with separated exposure, gain and repetition numbers for each ROI, improving frame rate
- High Dynamic Range mode (dual exposure with MIMR)
- Row sub sampling
- Look-up table
- Improved defective pixel correction
- FPN correction
- Flipping/mirroring
- Image statistics and context output
- Multiple trigger modes

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