

Sensors Unlimited: 1280JSX high-definition digital video camera



High resolution, high sensitivity and mil-rugged

The compact Sensors Unlimited 1280JSX is our next-generation SWIR digital video camera featuring a 1.3MP high-resolution, high-sensitivity InGaAs imager.

BENEFITS

- 30 or 60 frames per second full frame rate
- 1280 x 1024 pixel format, 12.5 μm pitch
- Capability for 100% duty cycle across entire illumination intensity range
- High sensitivity in 0.9 to 1.7 μm spectrum; NIR/SWIR from 0.7 to 1.7 μm ; VIS from 0.5 to 1.7 μm
- Low power, <3.0 W at +20° C
- Partial moonlight to daytime imaging
- All solid-state InGaAs imager with snapshot exposure capability
- On-board, real-time non-uniformity corrections
- Digital 12-bit base Camera Link® output
- Automatic Gain Control (AGC)
- Windowing, binning and in-field offset corrections
- Operation from -40° C to +70° C
- Tested to MIL-STD-810G for functional shock, vibration, thermal shock, storage temperature, altitude and humidity

The compact Sensors Unlimited 1280JSX Series represents our next-generation short-wave infrared (SWIR) digital video camera, featuring a 1.3MP high-resolution high-sensitivity InGaAs imager. Designed for real-time imaging from daylight to low-light conditions in the SWIR spectrum, it is ideal in applications such as persistent surveillance, laser detection and visibility through dust and smoke.

Equipped with on-board automatic gain control (AGC) and built-in nonuniformity corrections (NUC), the camera effectively manages high-dynamic-range urban night imaging without blooming. Its Camera Link® digital output ensures plug-and-play compatibility, delivering 12-bit images suitable for digital processing or transmission.

The camera's lightweight and compact design facilitates seamless integration into aerial, mobile and handheld surveillance systems. Optionally, VIS/SWIR technology extends the camera's sensitivity down to 0.5 μm , offering dual near infrared (NIR) and SWIR wavelength response for enhanced versatility.

Applications

- Low-light level imaging
- Covert surveillance with 24/7 operation
- Multi-laser spotting and tracking
- Imaging through atmospheric obscurants
- OEM version for easy integration into unmanned aircraft systems, handheld and robotic systems
- Driver Vision Enhancement (DVE)
- Enhanced Vision Systems (EVS)
- Silicon wafer or integrated circuit microscopy

Sensors Unlimited: 1280JSX high-definition digital video camera

Mechanical specifications

	Enclosed	OEM
Module dimensions Width x height x depth	2 in x 2 in x 2.43 in (50.8 mm x 50.8 mm x 61.7 mm) (with I/O connectors, no lens or mount)	1.65 in x 1.6 in x 1.6 in (41.9 mm x 40.6 mm x 40.6 mm) (no optional output panel and lens mount)
Weight (no lens)	≤235 g	≤120 g
Lens mount	M42x1 mount	Optional M42x1 mount bracket
Included lens	f/1.4, 50 mm, 18° FOV width, M42x1-mount	None
Camera Link connector	3M SDR26 connector	None
Interface connector	Not applicable	Samtec LSHM-130-030-L-DV-A-N
Pixel pitch	12.5 μm	12.5 μm
Focal plane array format	1280 x 1024 pixels	1280 x 1024 pixels
Active area	16.0 mm x 12.8 mm x 20.5 mm diagonal	16.0 mm x 12.8 mm x 20.5 mm diagonal

Environmental and power specifications

Operating case temperature	-40° C to +70° C
Storage temperature	-54° C to +85° C, MIL-STD-810G Method 501.5 and 502.5
Humidity	95% relative humidity, MIL-STD-810G Method 507.5 Procedure II
Power requirements: AC adapter supplied DC voltage power	100-240 VAC, 47-63 Hz +8-16 V ≤3.0 W at +20° C (case temperature), ≤10.0 W maximum
Functional shock, random vibration, thermal shock, temperature/altitude/humidity combined and acceleration	MIL-STD-810G compliant

Electrical specifications

Full FOV frame rate	30 fps	60 fps
Optical fill factor	100%	100%
Spectral response	Standard, 0.9 μm to 1.7 μm NIR/SWIR, 0.7 μm to 1.7 μm VIS/SWIR, 0.5 μm to 1.7 μm	Standard, 0.9 μm to 1.7 μm NIR/SWIR, 0.7 μm to 1.7 μm VIS/SWIR, 0.5 μm to 1.7 μm
Quantum efficiency	Standard, ≥65% from 1 μm to 1.6 μm NIR/SWIR, ≥65% from 0.9 μm to 1.6 μm VIS/SWIR, ≥65% from 0.7 μm to 1.6 μm	Standard, ≥65% from 1 μm to 1.6 μm NIR/SWIR, ≥65% from 0.9 μm to 1.6 μm VIS/SWIR, ≥65% from 0.7 μm to 1.6 μm
Mean detectivity, D¹	2.9 x 10 ¹³ cm ² /Hz/W (typical)	2.8 x 10 ¹³ cm ² /Hz/W (typical)
Noise equivalent irradiance¹	8.5 x 10 ⁸ photons/cm ² xs	1.2 x 10 ⁹ photons/cm ² xs
Noise (RMS)¹	35 electrons (typical)	25 electrons (typical)
Dynamic range²	1700 : 1	1850 : 1
Operability¹	≥99%	≥99%
Exposure times³	30 μs to 33 ms	30 μs to 16.5 ms
Image correction	Two point (offset and gain), pixel by pixel, user selectable	Two point (offset and gain), pixel by pixel, user selectable
Output format	12-bit base Camera Link®	12-bit base Camera Link®
Scan mode	Continuous or three user selectable externally triggered modes	Continuous or three user selectable externally triggered modes

¹ λ = 1.55 μm, exposure time = 16.5 ms, 17° C TEC setpoint, high gain, no lens, x1 digital gain with enhancement, AGC and correction off.

² In high dynamic range OPR settings, 17° C. Able to achieve 750:1 in highest sensitivity OPR setting.

³ Standard configuration exposure time = 200 μs in lowest sensitivity OPR setting.

Specifications subject to change without notice.



Contact
Raytheon
Advanced Products & Solutions
Sensors Unlimited Inc.
330 Carter Road
Princeton, New Jersey
08540 USA
(609) 333-8000
sensorsinc.com

www.RTX.com