SENSORS UNLIMITED

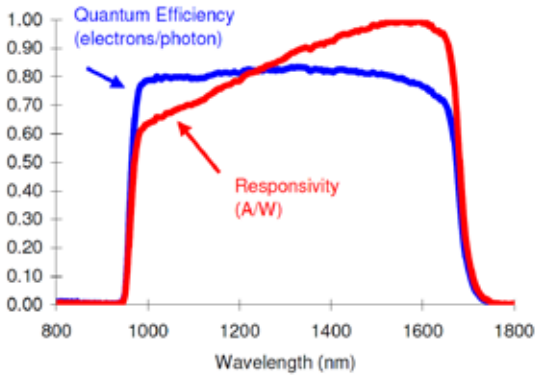
640SDX-1.7RT

High Resolution High Sensitivity InGaAs SWIR Area Camera

The large format 640 x 512 pixel SU640SDX- 1.7RT InGaAs room temperature solid-state camera allows users to capture images in the Short Wave Infrared (SWIR) range of 0.9 to 1.7 ,m. Its high resolution and high sensitivity provide real-time night-glow-todaylight imaging for passive surveillance and use with lasers. The camera delivers clear video at every lighting level due to on-board Automatic Gain Control (AGC), image enhancement, and built-in nonuniformity corrections (NUCs).

APPLICATIONS

- Low-light level imaging
- Covert surveillance with passive 24 hr/7 day operation
- Emission Microscopy
- Imaging Spectroscopy
- Astronomy



FEATURES

- High-sensitivity solid-state InGaAs or Vis InGaAs image sensor with 100% fill factor
- 640 x 512 pixel resolution on 25 µm pitch
- Anti-blooming protection
- Preset exposure times from 0.26 to 33.2 ms, externally set times > 10 µs
- Wavelength range: 0.9 to 1.7 ,m
- Room temperature operation of FPA
- 14-bit digital Camera Link® compatible output, base configuration
- Buffered EIA170 compatible analog output
- Extensive interactive command set enables user customization of most parameters, and start-up states

Model No: 640SDWH-1.7RT

UTC Aerospace Systems

Where ingenuity takes off

MECHANICAL SPECIFICATIONS

Dimensions (width x height x length)	3.00"W x 3.00"H x 6.22"L / 7.62 cm x 7.62 cm x 15.80 cm Length includes mounting flange and I/O connectors
Weight	< 1.1 kg (no lens)
Focal Plane Array Format	640 x 512 pixels
Pixel Pitch	25 µm
Active Area	16 x 12.8 mm, 20.5 mm diagonal
Lens Mount	M42x1 thread, optional F-mount and FD-mount adaptors available
Sensor focal plane	17.3 mm +/- 1 mm behind optical mount flange

INTERFACES

Control	MDR 26-pin connector (Camera Link®)
Image Data	MDR 26-pin connector (Camera Link®)
Power	Hirose HR25-7TR-8S connector
Analog Video	75 Ω BNC, 1 V max output
Trigger	75 Ω BNC, 5 V TTL max input
Camera Body Mount	¼-20 and M6 tapped holes (bottom) M42 x 1 threaded hole (front) 4 x 8-32 holes on 2 inch centers (front) 4 x M4 x 0.7 holes spaced 50 mm wide x 40 mm high (front)
Status LED	Power indicator, imager temperature control status

ELECTRO-OPTICAL PERFORMANCE

Optical Fill Factor	100 %
Spectral Response	0.9 to 1.7 µm
Quantum Efficiency	> 65% from 1 µm to 1.6 µm
Mean Detectivity, D* [1]	> 1.5 x 10^{13} cm√Hz/W
Noise Equivalent Irradiance [1]	< 9 x 10^{8} photons/cm^2.s
Noise (RMS)	< 125 electrons (typical)
Full Well (OPR 0)	3.9 x 10^{6} electrons (typical)
True Dynamic Range[2]	> 1000:1
Operability[3]	> 99 %

[1] λ =1.55 µm, exposure time = 33.19 ms (no lens), corrections off
[2] Average pixel response in a single image at the highest gain of 10e-/count)
[3] The % of pixels with responsivity deviation less than35% from the mean

ENVIRONMENTAL & POWER SPECIFICATIONS

Operating Temperature[4]	-10°C to 40°C
Storage Temperature	-10°C to 60°C
Humidity	Non-condensing
Power Requirements:	
AC Adapter Supplied **DC Voltage Power[4]**	100-240 VAC, 47-63 Hz, < 1.0 A 7-28 V, < 6 W at 25°C, < 10 W at 40°C

[4] Camera Body Temperature

SYSTEM PERFORMANCE & OPERATIONAL MODES

Scan Mode	Continuous or triggered
Exposure Mode	Snapshot (all pixels exposed simultaneously) present
Frame Rate	30 frames/s (EIA 170 frame rate)
Exposure Times	Factory preset with corrections from 200 µs to 33.19 ms User programmable with EXP serial command or with external trigger > 10 µs
Image Correction	2-point (offset and gain) pixel by pixe; bad pixel replacement
Digital Output Format	14 bit Camera Link® base compatible (corrected, uncorrected, gamma modified and test pattern data choices are user selectable)
Analog Output Format	EIA170 compatible
External Trigger Modes	Pre-set exposure (set by integration time), Variable exposure (integrates while trigger high, min. of 10 ,s), Burst with pre-set exposure (standby while trigger low, free-run while high)
External Trigger Delay (typical)	with preset exposure: 550 ns with external set exposure: 370 ns to start of exposure, 2.7 µs to end

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