320HX-1.7RT Mil-Rugged High Sensitivity InGaAs SWIR Camera with Advanced Dynamic Range Enhancements

The compact SU320HX-1.7RT is a Mil-Rugged InGaAs video camera featuring high-sensitivity and wide operating temperature range. It provides real-time daylight to low-light imaging in the Short Wave Infrared (SWIR) wavelength spectrum for persistent surveillance, laser detection, and penetration through fog, dust, and smoke.

In addition, the camera employs on-board Automatic Gain Control (AGC), proprietary dynamic-range enhancement technology, and built-in non-uniformity corrections (NUCs), allowing it to address the challenges of urban night imaging without blooming. Simultaneous RS170 analog and Camera Link® digital output provide a means for plug-and-play video and high quality 12-bit images for image processing or transmission. The light-weight, compact size, and low power consumption enables easy integration into surveillance systems, whether hand-held, mobile, or aerial. Optional NIR/SWIR technology is available to extend the sensitivity of Goodrich cameras down to 0.7 µm, offering the advantage of both Near Infrared (NIR) and Short Wave Infrared wavelength response.

APPLICATIONS

- Low-light level imaging
- Covert surveillance with passive 24/7 operation
- Driver Vision Enhancement (DVE)
- Imaging through atmospheric obscurants
- OEM version for Unmanned Aerial Systems, handheld, or robotic systems integration
- Laser spotting and tracking

FEATURES

- Highest sensitivity available in 0.9 to 1.7 µm spectrum; NIR/SWIR, from 0.7 to 1.7 µm
- Images from partial starlight to direct sun illumination
- 320 x 240 pixel format, 40 µm pitch
- Compact OEM module size < 3.8 in^3
- Enclosed module size < 11.3 in^3
- Operation from -40 °C to 70 °C
- Low power, < 2.9 W at 20 °C
- All solid-state InGaAs imager
- Simultaneous digital & analog outputs
- FCC CE and MIL-461F certified
- MIL-STD-810G qualified for vibration, temperature, altitude, and humidity
- Advanced Automatic Gain Control (AGC)
- Selectable contrast enhancement modes
- User programmable non-uniformity corrections
- Environmental stress screening
- Expanded configuration memory

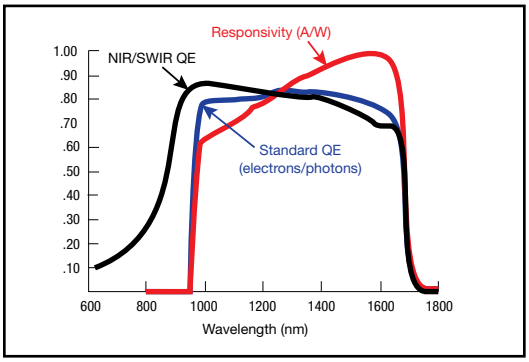
UTC Aerospace Systems

Model No: 320HX-1.7RT

MECHANICAL SPECIFICATIONS

Model:	Enclosed	OEM
Module dimensions Width x Height x Depth	2.05 x 2.05 x 2.55 inches 52.1 x 52.1 x 64.7 mm [1]	1.64 x 1.50 x 1.54 inches 41.5 x 38.1 x 39.1 mm [2]
Weight (no lens)	< 270 g	< 90 g
Lens Mount	C-mount adapter in M42x1 mount	M42x1-mount bracket
Camera Link Connector	3M SDR26 Connector	None
I/O Connector	3M SDR14 Connector	None
Interface Connector	Not applicable	Harwin Datamate M80-5020805
Pixel Pitch	40 µm	
Focal Plane Array Format	320 x 240 pixels	
Active Area	12.8 mm x 9.6 mm x 16 mm diagonal	

[1] (with I/O connectors, excluding lens or mount)
[2] (excluding lens or mount)



ELECTRICAL SPECIFICATIONS

Optical Fill Factor	100 %
Spectral Response	Standard, 0.9 µm to 1.7 µm NIR/SWIR, 0.7 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
Mean Detectivity, D* [1]	> 1.0 x 10^{14} cm√Hz/W
Noise Equivalent Irradiance [1]	< 1.0 x 108 photons/cm² ·s
Noise (RMS) [1]	< 20 electrons
Full Well in OPR0 (typical)	1.0 x 10^{7} electrons
Dynamic Range [4]	> 3000:1
Operability [2]	> 99 %
Preconfigured settings [3]	46, with factory-loaded non-uniformity corrections
Exposure Times	0.11 ms to 32.91 ms
Image Correction	2-point (offset and gain) pixel by pixel, user selectable
Digital Output Format	12 bit CameraLink® (SDR connector for enclosed version, ribbon for OEM version)
Analog Output Format	Buffered EIA170 compatible video, 30 fps
Digital Output Frame Rate	60 fps
Scan Mode	Continuous or 4 externally triggered modes

[1] λ = 1.55 µm, exposure time = 16.3 ms, highest sensitivity OPR setting, no lens, x1 digital gain with enhancement, AGC, and correction off.
[2] The fraction of pixels with responsivity deviation between ±25 % from the mean
[3] Additional operational settings are programmable via RS-232 commands.

ENVIRONMENTAL & POWER SPECIFICATIONS

Operating Case Temperature	-40 °C to 70 °C
Storage Temperature	-54 °C to 85 °C
Humidity	95% relative humidity
Power Requirements: **AC Adapter Supplied** **DC Voltage** **Power**	 vv100-240 VAC, 47-63 Hz 8-16 V < 2.9 W @ 20 °C (case temperature), < 4.5 W @ 70 °C
Functional Shock, Random Vibration, Storage Temperature, Temperature/Altitude Combine, Humidity	-STD-810G compliant
Conducted & Radiated Emissions	CE FCC Part 15 MIL-STD-461F CE102 and RE102
Mean Time Between Failure	> 10,000 hours, MIL-HDBK-217F N2
Fungus-Inert Material	MIL-HDBK-454B

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UTC Aerospace Systems

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