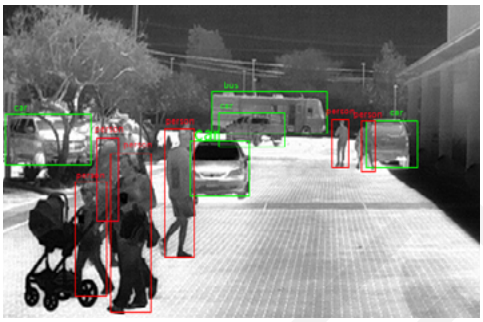
High Performance, Automotive-Qualified Thermal Camera

TURA®

Tura is the world's first Automotive Safety Integrity Level (ASIL) B thermal longwave infrared (LWIR) camera developed in accordance with ISO26262 processes. It offers high 640x512 resolution in a compact, fully enclosed IP6K9K package designed for autonomous applications, including advanced driver assistance systems (ADAS) and autonomous vehicles. It extends perception several times beyond vehicle headlights in complete darkness and through fog, smoke, sun, and headlight glare.

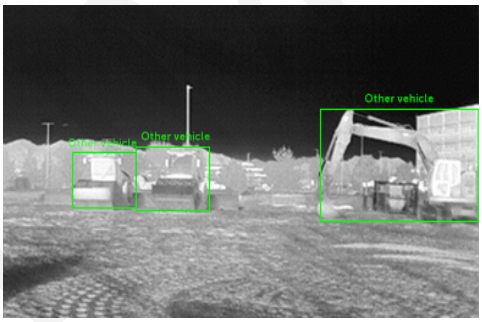
As the world's most sensitive far infrared (FIR) automotive thermal camera, Tura improves detection performance in life-saving applications such as pedestrian automatic emergency braking (AEB). Its shutterless design, AEC-Q components, and integrated heater provide low-power, reliable operation 24/7/365. Simplify integration with Teledyne FLIR training data and Prism™ AI perception software. Built by the global thermal camera manufacturing leader, Tura is the high-performance, low-risk, affordable solution for autonomous applications requiring ISO26262 compliance.



IMPROVE PEDESTRIAN AUTOMATIC EMERGENCY BRAKING SYSTEMS

Passive thermal sensor detects and classifies pedestrians, animals, and roadway objects, regardless of lighting conditions

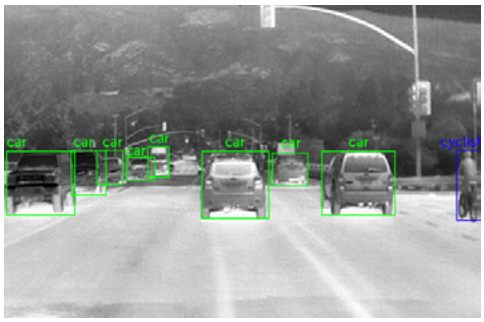
- See through darkness, most fog, smoke, sun, and headlight glare
- Detect and classify pedestrians at 200 meters or more
- State-of-the-art image signal pipeline tuned for AI processing
- Active alignment ensures focus and performance across the entire field of view



FIRST ISO26262-DEVELOPED ASIL-B THERMAL CAMERA FOR AUTONOMY

Designed in accordance with ASPICE and ISO26262 for ASIL-B functional safety applications

- Lightest, smallest, and most sensitive 640x512-resolution, automotive-qualified thermal camera
- Shutterless design maximizes reliability, uptime, power draw, and affordability
- Heated IP6K9K enclosure operates in all-weather conditions
- AEC-Q components (including sensor) maximize reliability



BUILT FOR INTEGRATORS BY THE WORLD-LEADER IN THERMAL CAMERA PRODUCTION

Reduce cost and risk with a single, reliable supplier that has produced more than one million automotive-qualified thermal sensors

- GMSL and FPD-Link interfaces
- Dual-use and classified under US Department of Commerce jurisdiction as ECCN 6A003.b.4.b or 6A993.a (bidirectional authentication)
- Experienced technical services team supports integration
- Compatible with annotated training data and Prism AI perception software

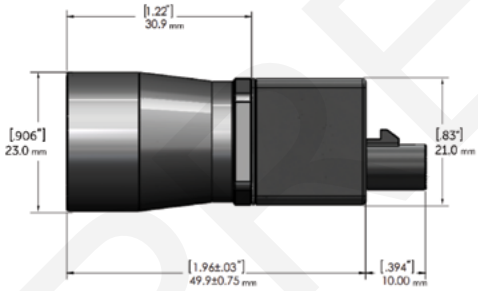
For more information visit:
www.flir.com/ADAS

SPECIFICATIONS

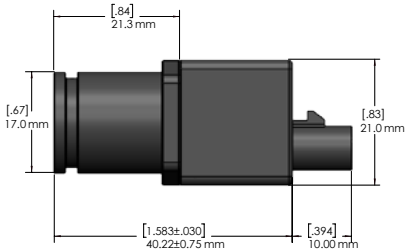
OVERVIEW	
Sensor Technology	Uncooled Microbolometer
Resolution	640 x 512
Pixel Pitch	12 µm
Horizontal Field of View (HFOV)	24°, 42°, and 70° HFOV
Spectral Band	8-14 µm (LWIR)
Sensitivity	<40mK after filters normalized if f/1 clear aperature @ 60 Hz
Frame Rates	Selectable (60 Hz, 30 Hz, 20 Hz, 15 Hz, 12 Hz, 10 Hz, 8.6 Hz)
Solar Projection	Yes (No Permanent Damage)
NUC	Per pixel factory calibrated over temperature with Teledyne FLIR's dynamic shutterless denoising for -40°C to 85°C (-40°F to 185°F) operation
ELECTRICAL	
Input Voltage	6V - 15V Power Over Coax
Power Consumption (excluding heater)	~1.5W at 25 °C (77 °F) ambient, ~2.3W at 85 °C (185°F) ambient
Internal Heater Power Consumption	Maximum of 2W when deicing and defogging
Camera Interface (GMSL Variant)	FAKRA with GMSL2 using MAX9295A
Camera Interface (FPD-Link Variant)	FAKRA with FPD-Link using DS90UB935-Q1
Control Channel	I2C over SERDES
Video Data Format	MIPI over SERDES with 16-bit and 8-bit streams selectable or simultaneous
EMC	ECE Regulation 10 CISPR 25 Class 4 Limits for Peak and Avg [150 kHz to 108 MHz]
MECHANICAL	
Size	Varies by field of view, as small as 21 x 21 x 40 mm excluding mounting tabs and connector
Environmental Protection	IP6K9K IP rating with cable mated
Temperature	-40 °C to 85 °C (-40 °F to 185 °F) Operating -40 °C to 105 °C (-40 °F to 221 °F) Storage
Mechanical Shock	50 g, 11.0 msec half-sine, 6 axes (+X, -X, +Y, -Y, +Z, -Z) per IEC60068-2-27
ADDITIONAL INFORMATION	
ISO26262 Compliance	Camera will support ISO26262 requirements up to ASIL-B
Export Classification	6A993.a (with authentication feature) 6A003b.4.b (without authentication feature)

**Preliminary specifications subject to change without notice.*

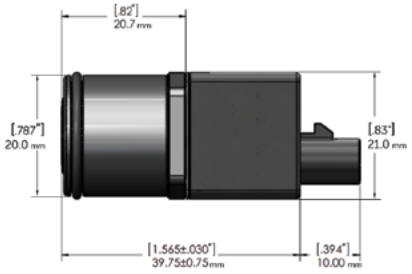
CAMERA DIMENSIONS



24° SIDE VIEW



42° SIDE VIEW



70° SIDE VIEW

SANTA BARBARA
Teledyne FLIR LLC
6769 Hollister Ave.
Goleta, CA 93117
PH: +1 805.690.6602

EUROPE
Teledyne FLIR LLC
Luxemburgstraat 2
2321 Meer
Belgium
PH: +32 (0) 3665 5106

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For more information visit:
www.flir.com/ADAS