TAMARISK®320 *PRECISION SERIES*

RADIOMETRIC TEMPERATURE MEASUREMENT WITH ABSOLUTE CLARITY

DRS Technologies evolves its popular Tamarisk®320 line of 17 µm, micro thermal imagers with the introduction of its Tamarisk® *Precision Series* for general purpose radiometric detection and imaging. Complete with robust features such as temperature *ICE-o-Therms™* for delineating multiple regions with user defined color parameters, dynamic range switching for optimal performance from -40°C to +550°C and adjustable spotmeter for rapid temperature measurement, Tamarisk® *Precision Series* enhances OEM capabilities for a variety of applications. DRS' proprietary radiometric colorization works seamlessly with its Image Contrast Enhancement (ICE™) algorithm to provide unmatched clarity and scene detail with true temperature measurement.

Tamarisk® *Precision Series* is ideal for applications requiring location and identification of key temperature variances to enable swift and accurate decisions such as electrical and mechanical test and measurement, building inspection, fire detection, gas leak detection and imaging, process monitoring and automation.

With innovative detector design, precision calibration techniques and stream-lined manufacturing processes, Tamarisk® now offers its unparalleled image quality, coupled with accurate radiometric temperature data at an affordable price. Tamarisk®320 *Precision Series* cores deliver 320 x 240 resolution in a variety of expert calibrated lens options.

- Dynamic Range (-40°C to +550°C) with user defined Auto Gain Switching
- Proprietary temperature *ICE-o-Therms™* utilizing Image Contrast Enhancement (ICE™)
- Up to 8 temperature thresholds and user defined color parameters
- Tamarisk® Tool Box design environment provides flexibility to create unique symbology, icons and graphics
- SuperFrame™ mode supports YUV image data and per pixel temperature data.

DRS Technologies
A Finmeccanica Company

SYSTEM FEATURES

FOCAL PLANE ARRAY

Detector Type	Uncooled VOx Microbolometer
Array Size	320 x 240
Pixel Pitch	17 µm
Spectral Band	8-14 µm
Sensitivity (NEdT) @ f/1.0 @ Room Temperature	<50 mK

VIDEO FORMAT

Frame Rates	60 fps, 9 fps
Analog Video	NTSC (480i); PAL (576i) Field switchable
Digital Video	14-bit/8-bit LVCMOS or Camera Link®
Automatic Gain and Level	User defined and persistent through power cycles
Digital Zoom and Pan	Region of Interest, E-zoom from 1X - 4X
Non-Uniformity Correction	1-point with shutter or through lens
Time to First Image	< 2.0 seconds

ENVIRONMENTAL

Operating Temp Range	-20°C to +80°C (-4°F to +176°F)
Shock / Vibration	70 G (all axis) / 4.3 G (three axis)
EMC Radiation	FCC Class A digital device
Humidity	5 to 95%, non-condensing
Standards Compliance	ROHS and WEEE Compliant
Sealed lens/lens mount	IP 67

CONFIGURATIONS

Base Configuration (BC)	Detector, Bias Board, Processor Board
With Feature Board (FB)	Base configuration with Feature Board (Back shell also available)

POWER

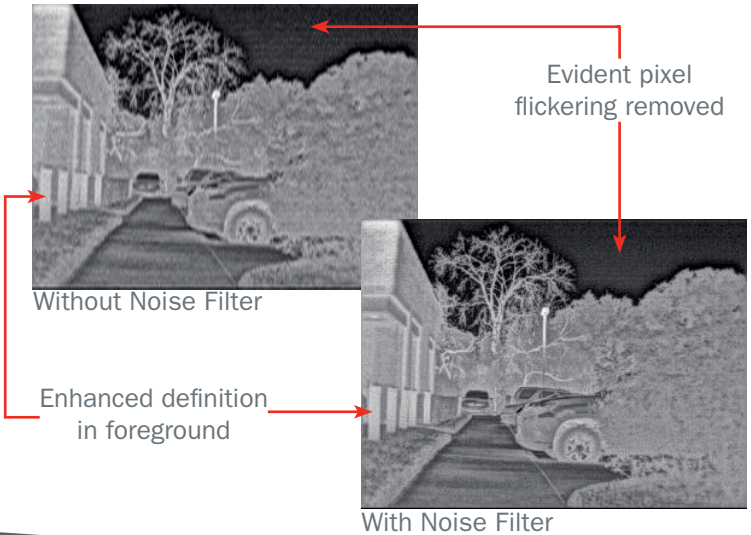
Input Voltage	3 - 5.5 V BC 4.5 - 18 V BC with FB
Power Dissipation (nominal)	< 1.0 W BC < 1.1 W BC with FB
PoUSB (Power over USB)	Requires Feature Board

FEATURES

Available Command Protocols	LVCMOS UART; RS-232; USB 2.0
Image Enhancement	Image Contract Enhancement (ICE™)
Color	Radiometric 24-bit RGB and YUV (4,2,2)
Tamarisk® Toolbox	Design environment for custom symbology and interface development
Dynamic Range with Automatic Range Switching	-40° to +550°C (2 gains states) High Gain (-40°C to +80°C) Low Gain (0°C to +550°C)
Radiometric Accuracy (the greater of)	High Gain: ±5°C or ±10% Low Gain: ±20°C or ±20%
ICE-o-Therm™	8 regions with user defined color parameters
Spotmeter	User defined temperature zone size with custom positioning across array
Region of Interest	User defined size and location

NOISE FILTER

Tamarisk® Precision cameras include a software configurable noise filter. The noise filter algorithm performs frame to frame analysis on the noise characteristic of all pixels. Temporal noise (due to row bounce or flickering pixels) is significantly suppressed without causing image delay or blurring. The end result is a higher signal-to-noise ratio, and enhanced detection capabilities.

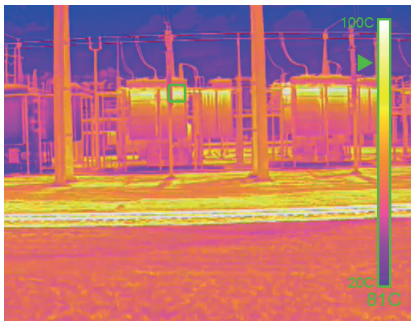


LENS OPTIONS

Product View	Effective Focal Length	Horizontal x Vertical FOV (H° x V°)	IFOV (mrads)	f/#	Weight[1] (with lens in grams)	Dimensions[2] H x W x D ±0.5 mm	Range[3] Performance Detection / Recognition (meters)	Focus Type
	7.7 mm	40° x 30°	2.26	f/1.3	48	37 x 35 x 33	Man: 320 / 60 Vehicle: 750 / 150	Athermal
	13 mm	24° x 18°	1.30	f/1.2	54	37 x 35 x 42	Man: 560 / 105 Vehicle: 1,395 / 270	Athermal
	35 mm	9° x 6.7°	0.49	f/1.2	134	47 x 47 x 58	Man: 1,450 / 285 Vehicle: 3,390 / 725	Athermal

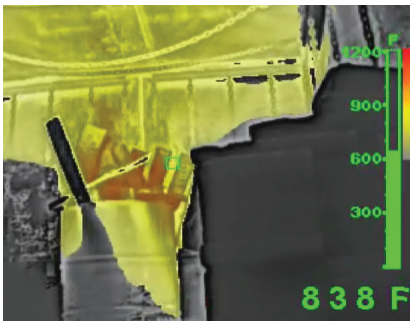
RADIOMETRIC APPLICATIONS

Dual Purpose: Equipment Monitoring and Perimeter Security



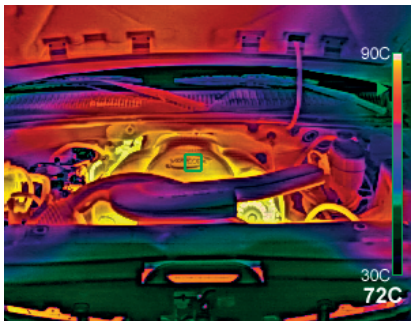
Maintain active perimeter security in the light of day and dark of night while monitoring the operating performance of critical equipment.

Fire Detection



Reduce potential safety hazards, environmental damage and possible legal recourse by detecting abnormal temperature change in flammable materials storage.

Electrical and Mechanical Test/Measurement



Gain operational efficiencies through predictive maintenance and remote temperature monitoring that is both non-intrusive and dependable.

Medical Diagnostics and Screening

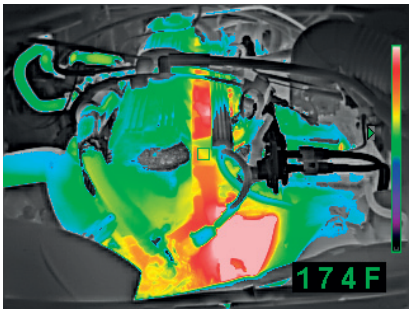
Gather rapid health screening data in heavily populated areas with ICE-o-Therms™ denoting elevated body temperatures.

[1] Weight — Weights provided are for the Base configuration (see page 2 for description of base configuration). Add 6 grams for Base configuration with Feature Board.

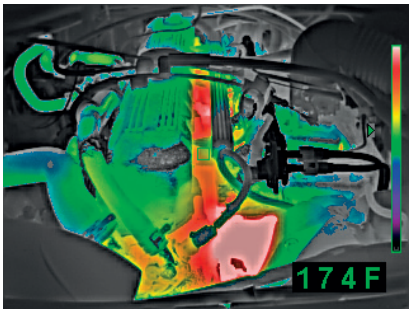
[2] Dimensions — Sizes provided are for the Base configuration (see page 2 for description of base configuration). Add 7.5 mm to the depth for Base configuration with Feature Board.

[3] Range Data — 50% probability of detection and recognition on a clear day, other factors apply. The range data presented are not guaranteed performance metrics.

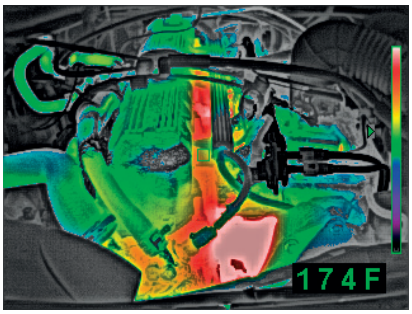
IMAGE CONTRAST ENHANCEMENT (ICE™) AND ICE-O-THERMS™



Mode 1 - Full Radiometric Color



Mode 2 - ICE™ Low Strength



Mode 3 - ICE™ High Strength

Tamarisk® Precision Series is able to uniquely combine Image Contrast Enhancement (ICE™) and a customizable ICE-o-Therm™ feature. ICE-o-Therms™ allow the user to display color based upon the temperature of the object and apply ICE™ for added scene clarity. In the scene above, the ICE™-o-Therm is set to display color for temperatures above 150°F. In Mode 1, Full Radiometric Color assigns color profiles to the scene without image enhancements. With the addition of ICE™ Low Strength in Mode 2 the edges of the image are emphasized and provide additional contrast. The ICE™ High Strength Mode 3 provides the highest level of detail enhancement. In all modes of operation, the temperature data provided by the camera remains accurate.

TAMARISK® ACCESSORIES

Feature Board
Optional feature board provides power, RS-170 video-out, RS-232 and USB 2.0 serial command and control through a single 30-pin connector.
Part #: 1011339-001

Breakout Box (Interface cable(s) not included)
For use with camera modules equipped with the optional Feature Board.
Part #: 1003785-001

Camera Interface Cable Un-terminated
12” 30-pin cable terminated on one end
Part #: 1010590-001

Camera Interface Cable Terminated
12” 30-pin cable terminated on both ends
Part #: 1002775-001

Tamarisk®320 Tripod Mounting Bracket
Anodized aluminum with 1/4-20 thread in base
Part #: 1014554-001

Tamarisk®320 Back Shell
Custom fit when a Feature Board is included
Part #: 1013744-SP

CONFIGURE YOUR TAMARISK®320 *PRECISION SERIES*

Part Number Format = 1003728 – [*8 Digit Custom Configuration* (see below)] – 2510

8 Digit Custom Configuration: Use the table below to build your Tamarisk®320							
L **Lens**	**A** **Lens Type**	**0** **Field of View**	**0** **Feature Board**	**0** **N/A**	**6** **Frame Rate**	**N** **Video Format**	**0** **PAL Version**
L = Lens	A = Atherm	0 = 9° 2 = 24° 8 = 40°	0 = No Feature Board 1 = Feature Board		9 = 9 Hz 6 = 60 Hz	N = NTSC P = PAL	0 = N/A 1 = PAL 525 M 2 = PAL 625 N 3 = PAL 625 B, D, G, H, I, N2

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