Loenardo DRS 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 streamlined 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.
### SYSTEM FEATURES

#### FOCAL PLANE ARRAY
- **Array Size**: 320 x 240
- **Spectral Band**: 7.5 - 14 µm
- **Detector Type**: Uncooled VOx Microbolometer
- **Pixel Pitch**: 17 µm
- **Sensitivity (NEdT) @ f/1.0 @ Room Temperature**: <50 mK

#### VIDEO FORMAT
- **Frame Rates**: 60 fps, 9 fps
- **Time to First Image**: < 2.0 seconds

#### POWER
- **Input Voltage**: 3 - 5.5 V Base Configuration
- **Power Dissipation (nominal)**: < 1.0 W Base Configuration

#### DYNAMIC RANGE
- **Dynamic Range with Manual or Automatic Range Switching (Two Gain States per Operating Temperature)**
  - **Operating Temperature**: -20° to +550°C
  - **High Gain**: -20°C to +80°C
  - **Low Gain**: 0°C to +550°C

#### COMMON SYSTEM FEATURES

#### FOCAL PLANE ARRAY
- **Detector Type**: Uncooled VOx Microbolometer
- **Pixel Pitch**: 17 µm
- **Sensitivity (NEdT) @ f/1.0 @ Room Temperature**: <50 mK

#### VIDEO FORMAT
- **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

#### 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

### Tamarisk Precision Series

#### Tamarisk 320
- **Array Size**: 320 x 240
- **Spectral Band**: 7.5 - 14 µm
- **Detector Type**: Uncooled VOx Microbolometer
- **Pixel Pitch**: 17 µm
- **Sensitivity (NEdT) @ f/1.0 @ Room Temperature**: <50 mK

#### Tamarisk 470
- **Array Size**: 640 x 480
- **Spectral Band**: 7.5 - 14 µm
- **Detector Type**: Uncooled VOx Microbolometer
- **Pixel Pitch**: 17 µm
- **Sensitivity (NEdT) @ f/1.0 @ Room Temperature**: <50 mK

### POWER
- **Input Voltage**: 3 - 5.5 V Base Configuration
- **Power Dissipation (nominal)**: < 1.0 W Base Configuration

### DYNAMIC RANGE
- **Operating Temperature**: -20° to +550°C
- **High Gain**: -20°C to +80°C
- **Low Gain**: 0°C to +550°C

### 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 Manual or 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**: Adjustable from 1 x 1 to 200 x 200 temperature zone with custom positioning across array
- **Region of Interest**: Provides Minimum / Maximum and Average Temperature

### REST OF THE TABLE

#### VIDEO FORMAT
- **Frame Rates**: 60 fps, 9 fps
- **Time to First Image**: < 2.0 seconds

#### POWER
- **Input Voltage**: 3 - 5.5 V Base Configuration
- **Power Dissipation (nominal)**: < 1.0 W Base Configuration

#### DYNAMIC RANGE
- **Operating Temperature**: -20° to +550°C
- **High Gain**: -20°C to +80°C
- **Low Gain**: 0°C to +550°C

#### 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 Manual or 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**: Adjustable from 1 x 1 to 200 x 200 temperature zone with custom positioning across array
- **Region of Interest**: Provides Minimum / Maximum and Average Temperature
# LENS OPTIONS

<table>
<thead>
<tr>
<th>Product View</th>
<th>Effective Focal Length</th>
<th>Horizontal x Vertical FOV (H° x V°)</th>
<th>IFOV (mrad)</th>
<th>f/#</th>
<th>Weight¹ (with lens in grams)</th>
<th>Dimensions² H x W x D ±0.5 mm</th>
<th>Range³ Performance Detection / Recognition (meters)</th>
<th>Focus Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.7 mm</td>
<td>40° x 30°</td>
<td>2.26</td>
<td>f/1.3</td>
<td>48</td>
<td>37 x 35 x 33</td>
<td>Man: 320 / 60</td>
<td>Athermal</td>
</tr>
<tr>
<td></td>
<td>13 mm</td>
<td>24° x 18°</td>
<td>1.30</td>
<td>f/1.2</td>
<td>54</td>
<td>37 x 35 x 42</td>
<td>Man: 560 / 105</td>
<td>Athermal</td>
</tr>
<tr>
<td></td>
<td>19 mm</td>
<td>16° x 15°</td>
<td>0.87</td>
<td>f/1.1</td>
<td>65</td>
<td>36 x 35 x 41</td>
<td>Man: 845 / 160</td>
<td>Athermal</td>
</tr>
<tr>
<td></td>
<td>35 mm</td>
<td>9° x 6.7°</td>
<td>0.49</td>
<td>f/1.2</td>
<td>134</td>
<td>47 x 47 x 58</td>
<td>Man: 1,450 / 285</td>
<td>Athermal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product View</th>
<th>Effective Focal Length</th>
<th>Horizontal x Vertical FOV (H° x V°)</th>
<th>IFOV (mrad)</th>
<th>f/#</th>
<th>Weight¹ (with lens in grams)</th>
<th>Dimensions² H x W x D ±0.5 mm</th>
<th>Range³ Performance Detection / Recognition (meters)</th>
<th>Focus Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16.7 mm</td>
<td>37.5° x 25°</td>
<td>1.01</td>
<td>f/1.25</td>
<td>90</td>
<td>46 x 40 x 40</td>
<td>Man: 745 / 140</td>
<td>Athermal</td>
</tr>
<tr>
<td></td>
<td>35 mm</td>
<td>17.6° x 13.2°</td>
<td>0.48</td>
<td>f/1.2</td>
<td>165</td>
<td>50 x 47 x 59</td>
<td>Man: 1,450 / 285</td>
<td>Athermal</td>
</tr>
<tr>
<td></td>
<td>50 mm</td>
<td>12.4° x 9.3°</td>
<td>0.34</td>
<td>f/1.2</td>
<td>295</td>
<td>58 x 58 x 86</td>
<td>Man: 2,105 / 425</td>
<td>Athermal</td>
</tr>
</tbody>
</table>

¹Weight  Weights provided are for the Base configuration (see page 2 for description of base configuration). Add 6 grams for Base configuration with Feature Board. Add 3 grams for addition of retaining ring.

²Dimensions 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.

³Range Data 50% probability of detection and recognition on a clear day; other factors apply. The range data presented are not guaranteed performance metrics.
**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® Tripod Mounting Bracket**
Anodized aluminum with 1/4-20 thread in base
Part #: 1014554-001

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

**Tamarisk® Tripod Mounting Bracket**
Anodized aluminum with 1/4-20 thread in base
Part #: 1017276-SP

**Tamarisk® Back Shell**
Custom fit when a Feature Board is included
Part #: 1014304-001

---

**CONFIGURE YOUR TAMARISK® 320 PRECISION SERIES**
Part Number Format = 1003728 – [8 Digit Custom Configuration (see below)] – 2510

<table>
<thead>
<tr>
<th>L</th>
<th>A</th>
<th>0</th>
<th>0</th>
<th>6</th>
<th>N</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens</td>
<td>Lens Type</td>
<td>Field of View</td>
<td>Feature Board</td>
<td>Frame Rate</td>
<td>Video Format</td>
<td>PAL Version</td>
</tr>
<tr>
<td>L = Lens</td>
<td>A = Atherm</td>
<td>0 = 9°</td>
<td>0 = No Feature Board</td>
<td>9 = 9 Hz</td>
<td>N = NTSC</td>
<td>0 = N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = 16°</td>
<td>1 = Feature Board</td>
<td>6 = 60 Hz</td>
<td>P = PAL</td>
<td>1 = PAL 525 M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = 24°</td>
<td></td>
<td></td>
<td></td>
<td>2 = PAL 625 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 = 40°</td>
<td></td>
<td></td>
<td></td>
<td>3 = PAL 625 B, D, G, H, I, N2</td>
</tr>
</tbody>
</table>

**CONFIGURE YOUR TAMARISK® 640 PRECISION SERIES**
Part Number Format = 1017460 – [5 Digit Custom Configuration (see below)] – 0300

<table>
<thead>
<tr>
<th>Lens</th>
<th>Lens FOV</th>
<th>Feature Board</th>
<th>Frame Rate</th>
<th>Video Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>L = Lens</td>
<td>1 = 12.4°</td>
<td>0 = No Feature Board</td>
<td>3 = 30 Hz</td>
<td>N = NTSC</td>
</tr>
<tr>
<td></td>
<td>2 = 17.6°</td>
<td>1 = Feature Board</td>
<td>9 = 9 Hz</td>
<td>1 = PAL 525 M</td>
</tr>
<tr>
<td></td>
<td>4 = 37.5°</td>
<td></td>
<td></td>
<td>2 = PAL 625 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = PAL 625 B, D, G, H, I, N2</td>
</tr>
</tbody>
</table>

Specifications subject to change without notice. The products described herein are subject to US Government Export Controls.