Next to time, temperature is the most frequently measured physical property. The temperature behavior is therefore a very good indicator for the status of physical systems. Too much friction generates heat, too high resistance of electrical contacts creates higher temperatures; energy losses are mostly shown by changes in temperature. Therefore one can find thermal processes in almost all industry branches. With the TImage you can not only see where it is hot, you can also measure exactly the temperatures, all within a 8 millisecond interval! It provides excellent infrared images in a wide temperature range of -20 up to 1500°C and an extensive range of software features to capture and edit infrared snapshots and videos, for thermal analysis with hot and cold spot detection display of isotherms and much more.

The TImage is the thermographic solution for:
- Research and Development (R&D)
- Test stations (T&M) and Process automation
- Portable measurement tasks for maintenance

Features are related to all models equipped with full configuration. On next pages you can find specific details.
IRtech Radiamatic Timage Mk4
Industrial Compact Process Thermal Image Camera

Technical Specifications

General specifications

Environmental rating IP 67
Ambient temperature 0 - 50°C
Storage temperature -40 - 70°C
Relative humidity 20 - 80 %, non condensing
Shock 25G, IEC 68-2-29
Vibration 2G, IEC 68-2-6
Weight 200 g, incl. Lens
Size 45 mm x 45 mm x 62 mm
Tripod mount 1/4-20 UNC
Output USB 2.0
Power supply USB powered

Process Interface (electrically isolated)
0-10V input, Digital input, 0-10V Output

Process Interface features
External control of emissivity, background radiation compensation or reference temperature/ Triggered video or snapshot recording analog output of temperatures of main measuring area or alarm output

Warranty 2 years

Measurement specifications

Temperature ranges -20°C to 100°C
0°C to 250°C
150°C to 900°C
Frame rate 120 Hz

Lenses (exchangeable)
23° x 17° FOV/ F=10 mm
6° x 5° FOV/ F=35.5 mm
41° x 31° FOV/ F=5.7 mm
72° x 52° FOV/ F=3.3 mm

Thermal Sensitivity (NETD)
0.08 K with 23° FOV/ F=0.7
0.1 K with 41° FOV/ F=1
0.3 K with 6° FOV/ F=1.6

Detector Focal Plane Array (FPA) uncooled micro bolometer 25 x 25 μm
Spectral range 7.5 - 13 μm
Optical resolution 160 x 120 pixel
System accuracy ±2% or ±2°C

Software features

Configuration Automatic or manual scaling of the measuring range Selectable and definable software layouts Language-translation-tool
Adjustable measuring parameters:
Emissivity 0.10 - 1.00
Background radiation compensation
Reference temperature
Measurement Modes
Flexible spots and measurement fields with automatic calculation of MAX, MIN or AVG values
Automatic HOT-spot- and COLD-spotfinder
Temperature profiles
Isotherm exposition Reference function (with external sensor)
Linescanning modes (200pixel 60°)
Image presentation
11 color palettes
Color reference bar
Histogram
Digital display of measuring field temperatures (with alarm signal)
Video control (play, pause, stop, detail screen forward and backward)
Full screen mode
Video recording Realtime video recording (radiometric) with 120 Hz (adjustable)
Video editing tools
Snapshot saving (radiometric JPG)

Radiamatic Timage standard package

- Timage camera USB 2.0
- One lens
- USB cable (1 m)
- Table tripod
- Process interface connector
- Software Timage connect
- Operators manual
- Case

Radiamatic Timage thermal analysis kit

- Timage camera USB 2.0
- Three lens 23°, 6° and 48°
- Calibration certificate
- USB cable (1 m and 10 m)
- Tripod (20-62 cm)
- Process interface connector
- Software Timage connect
- Operators manual
- Aluminium Case

Radiamatic Timage Model «V» with Visual Camera and Fusion technology

- Visual Camera 640x480 32 Hz
- Fusion Technology

OPTIONAL RANGE UP TO 1500°C
OPTIONAL RANGE UP TO 1800°C (tele)

Water Cooling Jacket
240°C

Specifications may change without notice
Applications

With the Timage you can not only see where it is hot, you can also measure exactly the temperatures, all within a 8 millisecond interval! It provides excellent infrared images in a wide temperature range of -20 up to 900°C and an extensive range of software features to capture and edit infrared snapshots and videos, for thermal analysis with hot and cold spot detection display of isotherms and much more. The Timage is the thermographic solution for:

- Research and Development (R&D)
- Test stations (T&M)
- Process automation
- Portable measurement tasks

Similar to an oscilloscope the infrared camera became an essential tool for engineers. The Timage can, for example, be used in the field of research and development for the observation of the thermal behavior of working PCBs during test runs. The camera offers a versatile use in test booths or at test stations due to its compactness. Inside test stations for brakes and clutches engineers will see thermal effects on the mechanical parts completely. In branches like the solar panel industry, in the development of LCD flat screens or in semiconductor process applications, the Timage is qualified for material homogeneity identification. In the representation of finest temperature details at different targets, the camera distinguishes itself in priority through its very good thermal sensitivity (NETD 0.08 K with 31° FOV). In the application field of medical investigations the Timage allows accurate and reliable medical screenings in combination with an electronically controlled reference temperature device.

Within the range of process automation, the Timage is a reliable monitoring system for the observation of continuous processes within the plastic industry, flat glass production, metal treatment and surface technology. Hotspots within bulky materials on conveyor belts can be detected quickly to avoid the development of fire. Network integration tools help to implement the Timage into factory automation systems. The optional cooling jacket and other accessories allow the installation under harsh environments. The Timage can be combined with pyrometers and blackbody reference sources for smart and reliable temperature observations under difficult ambient conditions. A process interface output with an analog 0-10V or an alarm signal is the direct communication interface to the process. With this interface, temperatures of the main measuring area can be issued analogue or with an alarm. A process interface input allows beside the synchronization of the camera an external control of emissivity values, background radiation compensation or the triggering of video or snapshot recordings. In combination with tablet PCs the Timage infrared camera can be used for preventive, electrical maintenance purposes as well as within the building thermography. Herewith the camera is closing the gap between handheld infrared snapshot cameras and pure online installations.

**Line Scanner**
Scanning a moving process as Glass windows, Plastic Film, Cement Kiln. Diagonal mode for 200 points at 120Hz.
IRtech Radiamatic TImage Mk4
Industrial Compact Process Thermal Image Camera

**Specifications**

**Optics**

- **HFOV:** Horizontal enlargement of the total measuring field at object level
- **VFOV:** Vertical enlargement of the total measuring field at object level
- **IFOV:** Size of the single pixel at object level
- **DFOV:** Diagonal dimension of the total measuring field at the object level

**IFOV:** Recommended, smallest measured object size of 3 x 3 pixel

<table>
<thead>
<tr>
<th>T image</th>
<th>Focal Angle</th>
<th>Minimum Distance</th>
<th>Distance to Object</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 60 x 120 px</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O23 Standard lens</td>
<td>10 mm</td>
<td>23°</td>
<td>0.02 m²</td>
</tr>
<tr>
<td></td>
<td>17°</td>
<td>17°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29°</td>
<td>25.2 mrad</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>6°</td>
<td>0.050</td>
<td>0.25</td>
</tr>
<tr>
<td>O6 Tele lens</td>
<td>35.5 mm</td>
<td>6°</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>5°</td>
<td>0.04</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>8°</td>
<td>0.07</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>0.71 mrad</td>
<td>0.35</td>
<td>0.71</td>
</tr>
<tr>
<td>O48 Wide angle lens</td>
<td>5.7 mm</td>
<td>41°</td>
<td>0.015</td>
</tr>
<tr>
<td></td>
<td>31°</td>
<td>0.011</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>52°</td>
<td>0.019</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>47.2 mrad</td>
<td>0.094</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>0.029</td>
<td>0.15</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td>0.010</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>O72 Wide angle lens</td>
<td>3.3 mm</td>
<td>72°</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>52°</td>
<td>0.020</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>96°</td>
<td>0.043</td>
<td>0.22</td>
</tr>
</tbody>
</table>
**IRtech**

Radiamatic Timage XT / XT+
Thermal imager with 382 x 288 pixels

- Detector with 382 x 288 pixels
- Fast real-time thermal imager with up to 80 Hz
- Very high thermal sensitivity with 80 mK (XT) and 40 mK (XT+)
- Smallest camera in its class (46 x 56 x 90 mm)
- Lightweight (320 g incl. optics)
- Exchangeable lenses & industrial accessories

---

**SMD part as measurement object:**
Size of part: 32 mm x 24 mm, pixel size: 0.08 mm

- 382 pixels
- 288 pixels

---

**80 Hz data capturing with high resolution**

The high resolution and low NET detects veins under the skin

- **80 mK (XT)**
- **40 mK (XT+)**

---

Size in mm
<table>
<thead>
<tr>
<th>Scope of supply</th>
<th>USB camera incl. 1 lens, USB cable (1 m), table tripod, PIF cable incl. terminal block (1 m), software package optris PI Connect, aluminum case</th>
<th>USB camera incl. 1 lens, USB cable (1 m), table tripod, PIF cable incl. terminal block (1 m), software package optris PI Connect, aluminum case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detector</td>
<td>FPA, uncooled (25 µm x 25 µm)</td>
<td>FPA, uncooled (25 µm x 25 µm)</td>
</tr>
<tr>
<td>Optical resolution</td>
<td>382 x 288 pixel</td>
<td>382 x 288 pixel</td>
</tr>
<tr>
<td>Spectral range</td>
<td>7.5 - 13 µm</td>
<td>7.5 - 13 µm</td>
</tr>
<tr>
<td>Temperature ranges</td>
<td>-20°C...100°C, 0°C...250°C, 150°C...900°C additional range: 200°C...1500°C (option)</td>
<td>-20°C...100°C, 0°C...250°C, 150°C...900°C additional range: 200°C...1500°C (option)</td>
</tr>
<tr>
<td>Frame rate</td>
<td>80 Hz</td>
<td>80 Hz</td>
</tr>
<tr>
<td>Optics (FOV)</td>
<td>30° x 23° FOV / f = 17 mm or 13° x 10° FOV / f = 40 mm</td>
<td>30° x 23° FOV / f = 17 mm or 13° x 10° FOV / f = 40 mm</td>
</tr>
<tr>
<td>Thermal sensitivity (NETD)</td>
<td>0.08 K with 30° x 23° FOV / F = 0.7, 0.1 K with 13° x 10° FOV / F = 1.0</td>
<td>0.04 K with 30° x 23° FOV / F = 0.7, 0.06 K with 13° x 10° FOV / F = 1.0</td>
</tr>
<tr>
<td>Option for visual camera (only for VISUAL camera)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2°C or ±2%</td>
<td>±2°C or ±2%</td>
</tr>
<tr>
<td>PC interface</td>
<td>USB 2.0</td>
<td>USB 2.0</td>
</tr>
<tr>
<td>Process interface (PIF)</td>
<td>0 - 10 V input, digital input, 0 - 10 V output</td>
<td>0 - 10 V input, digital input, 0 - 10 V output</td>
</tr>
<tr>
<td>Ambient temperature (T_{max})</td>
<td>0°C...50°C</td>
<td>0°C...70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C...70°C</td>
<td>-40°C...85°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>20 - 80%, non condensing</td>
<td>20 - 80%, non condensing</td>
</tr>
<tr>
<td>Enclosure (size / rating)</td>
<td>46 mm x 56 mm x 90 mm / IP 67 (NEMA 4)</td>
<td>46 mm x 56 mm x 90 mm / IP 67 (NEMA 4)</td>
</tr>
<tr>
<td>Weight</td>
<td>320 g, incl. lens</td>
<td>320 g, incl. lens</td>
</tr>
<tr>
<td>Tripod mount</td>
<td>1/4-20 UNC</td>
<td>1/4-20 UNC</td>
</tr>
<tr>
<td>Power supply</td>
<td>USB powered</td>
<td>USB powered</td>
</tr>
</tbody>
</table>

### TimageXT Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Focal length</th>
<th>Angle</th>
<th>Minimum distance</th>
<th>Distance to object</th>
<th>m</th>
<th>0.02</th>
<th>0.1</th>
<th>0.2</th>
<th>0.3</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>30</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>XT</td>
<td>382 x 288 px</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>O30</td>
<td>17 mm</td>
<td>32° 24°</td>
<td>40° 1.51 mrad</td>
<td>0.2 m</td>
<td></td>
<td>0.12</td>
<td>0.06</td>
<td>0.12</td>
<td>0.17</td>
<td>0.29</td>
<td>0.58</td>
<td>1.15</td>
<td>2.31</td>
<td>3.46</td>
<td>6.8</td>
<td>17.3</td>
<td>57.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40° 1.51 mrad</td>
<td></td>
<td></td>
<td></td>
<td>0.09</td>
<td>0.04</td>
<td>0.09</td>
<td>0.13</td>
<td>0.21</td>
<td>0.43</td>
<td>0.85</td>
<td>1.70</td>
<td>2.55</td>
<td>4.3</td>
<td>12.8</td>
<td>42.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17° 0.61 mrad</td>
<td></td>
<td></td>
<td></td>
<td>0.07</td>
<td>0.03</td>
<td>0.15</td>
<td>0.22</td>
<td>0.37</td>
<td>0.73</td>
<td>1.46</td>
<td>2.83</td>
<td>4.39</td>
<td>7.3</td>
<td>22.0</td>
<td>73.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15</td>
<td>0.30</td>
<td>0.45</td>
<td>0.76</td>
<td>1.51</td>
<td>3.02</td>
<td>6.04</td>
<td>9.07</td>
<td>15.1</td>
<td>45.3</td>
<td>151.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O13</td>
<td>41 mm</td>
<td>13° 10°</td>
<td>17° 0.61 mrad</td>
<td>0.5 m</td>
<td></td>
<td>0.12</td>
<td>0.06</td>
<td>0.12</td>
<td>0.17</td>
<td>0.29</td>
<td>0.58</td>
<td>1.15</td>
<td>2.31</td>
<td>3.46</td>
<td>6.8</td>
<td>17.3</td>
<td>57.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.09</td>
<td>0.04</td>
<td>0.09</td>
<td>0.13</td>
<td>0.21</td>
<td>0.43</td>
<td>0.85</td>
<td>1.70</td>
<td>2.55</td>
<td>4.3</td>
<td>12.8</td>
<td>42.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15</td>
<td>0.30</td>
<td>0.45</td>
<td>0.76</td>
<td>1.51</td>
<td>3.02</td>
<td>6.04</td>
<td>9.07</td>
<td>15.1</td>
<td>45.3</td>
<td>151.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td>0.12</td>
<td>0.06</td>
<td>0.12</td>
<td>0.17</td>
<td>0.29</td>
<td>0.58</td>
<td>1.17</td>
<td>2.31</td>
<td>3.46</td>
<td>6.8</td>
<td>17.3</td>
<td>57.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15</td>
<td>0.30</td>
<td>0.45</td>
<td>0.76</td>
<td>1.51</td>
<td>3.02</td>
<td>6.04</td>
<td>9.07</td>
<td>15.1</td>
<td>45.3</td>
<td>151.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O62</td>
<td>8 mm</td>
<td>62° 4°</td>
<td>74° 3.14 mrad</td>
<td>0.5 m</td>
<td></td>
<td>0.12</td>
<td>0.06</td>
<td>0.12</td>
<td>0.17</td>
<td>0.29</td>
<td>0.58</td>
<td>1.15</td>
<td>2.31</td>
<td>3.46</td>
<td>6.8</td>
<td>17.3</td>
<td>57.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.09</td>
<td>0.04</td>
<td>0.09</td>
<td>0.13</td>
<td>0.21</td>
<td>0.43</td>
<td>0.85</td>
<td>1.70</td>
<td>2.55</td>
<td>4.3</td>
<td>12.8</td>
<td>42.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15</td>
<td>0.30</td>
<td>0.45</td>
<td>0.76</td>
<td>1.51</td>
<td>3.02</td>
<td>6.04</td>
<td>9.07</td>
<td>15.1</td>
<td>45.3</td>
<td>151.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.31</td>
<td>0.63</td>
<td>0.94</td>
<td>1.57</td>
<td>3.14</td>
<td>6.28</td>
<td>12.56</td>
<td>18.84</td>
<td>31.4</td>
<td>94.2</td>
<td>314.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>