General description

The FLIR SC645 camera is an excellent choice for those who want to work in R&D but don't need the highest frame rates but do require 640 x 480 pixel resolution. For those who need to use the camera in R&D, it is highly recommended to use the FLIR ResearchIR software from FLIR Systems.

Key features:

- Affordable
- 16-bit 640 x 480 images @ 25 Hz
- Start-and-stop recording in FLIR ResearchIR using digital input

Typical applications:

- Mid- or high-end industrial R&D that doesn't need the highest-speed frame rates

Imaging and optical data

Field of view (FOV) 25° x 18.8°
Minimum focus distance 0.4 m (1.31 ft.)
Focal length 24.5 mm (0.96 in.)
Spatial resolution (IFOV) 0.69 mrad
Lens identification Automatic
F-number 1.0
Thermal sensitivity/NETD < 0.05°C @ +30°C (+86°F) / 50 mK
Image frequency 25 Hz
Focus Automatic or manual (built in motor)

Detector data

Detector type Focal Plane Array (FPA), uncooled microbolometer
Spectral range 7.5–13 µm
IR resolution 640 x 480 pixels
Detector pitch 17 µm
Detector time constant Typical 8 ms

Measurement

Object temperature range −20 to +150°C (-4 to +302°F)
Accuracy ±2°C (+3.6°F) or ±2% of reading

Accuracy

Atmospheric transmission correction Automatic, based on inputs for distance, atmospheric temperature and relative humidity
Optics transmission correction Automatic, based on signals from internal sensors
Emissivity correction Variable from 0.01 to 1.0
Reflected apparent temperature correction Automatic, based on input of reflected temperature
External optics/windows correction Automatic, based on input of optics/window transmission and temperature
Measurement corrections Global object parameters

USB

USB, image streaming 16-bit 640 x 480 pixels @ 25 Hz
- Signal linear
- Temperature linear
- Radiometric

USB, protocols TCP, UDP, SMTP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP

Ethernet

Ethernet Control and image
Ethernet, type Gigabit Ethernet
Ethernet, standard IEEE 802.3
Ethernet, connector type RJ-45
Ethernet, communication TCP/IP socket-based FLIR proprietary and GenICam protocol

Ethernet, image streaming 16-bit 640 x 480 pixels @ 25 Hz
- Signal linear
- Temperature linear
- Radiometric GigE Vision and GenICam compatible

Ethernet, protocols TCP, UDP, SMTP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP

Digital input/output

Digital input, purpose Image tag (start, stop, general), Image flow ctrl. (Stream on/off), Input ext. device (programmatically read)

Digital input 2 opto-isolated, 10–30 VDC

Digital output, purpose Output to ext. device (programmatically set)

Digital output 2 opto-isolated, 10–30 VDC, max 100 mA

Digital I/O, isolation voltage 500 VRMS

Digital I/O, connector type 6-pole jackable screw terminal

Power system

External power operation 12-24 VDC, 24 W absolute max

External power, connector type 2-pole jackable screw terminal

Voltage Allowed range 10–30 VDC

Environmental data

Operating temperature range −15°C to +50°C (+5°F to +122°F)
Storage temperature range −40°C to +70°C (+4°F to +158°F)
Humidity (operating and storage) IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F)
EMC
• EN 61000-6-2:2001 (Immunity)
• EN 61000-6-3:2001 (Emission)
• FCC 47 CFR Part 15 Class B (Emission)

Encapsulation IP 40 (IEC 60529)

Bump 25 g (IEC 60068-2-29)

Vibration 2 g (IEC 60068-2-6)

Physical data

Weight 0.7 kg (1.54 lb.)

Camera size (L x W x H) 216 x 73 x 75 mm (8.5 x 2.9 x 3.0 in.)

Tripod mounting UNC ¼"-20 (on three sides)

Base mounting 2 x M4 thread mounting holes (on three sides)

Housing material Aluminium

Scope of delivery

- Hard transport case or cardboard box
- Infrared camera with lens
- Calibration certificate
- Ethernet™ cable
- Mains cable
- Power cables, pig-tailed
- Power supply
- Printed Getting Started Guide
- Printed Important Information Guide
- USB cable
- User documentation CD-ROM
- Utility CD-ROM
- Warranty extension card or Registration card
### Optional Accessories

- 1910585 Power supply for A/SC3XX and A/SC6XX
- 1910400 Power cord EU
- 1910401 Power cord US
- 1910402 Power cord UK
- 1910423 USB cable Std A <-> Mini-B, 2 m/6.6 ft.
- T951004 Ethernet cable CAT-6, 2m/6.6 ft.
- 1910586 Power cable, pigtailed
- 1196940 Hard transport case for A/SC3XX and A/SC6XX series

### Optional Software

- T197038 ThermoVision™ System Developers Kit Ver. 2.6
- T197453 FLIR ResearchIR
- T197454 FLIR QuickPlot
### Optional Accessories

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910585</td>
<td>Power supply for A/SC3XX and A/SC6XX</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**General description**

This cable is used to connect the infrared camera with a computer, using the USB protocol.

**Technical data**

- **AC operation**: 100–240 V, 50–60 Hz, 1.8 A output: 12 VDC 3.0 A
- **Power**: 36 W
- **Size (L x W x H)**: 120 x 50 x 35 mm (4.7 x 2.4 x 1.4 in.)
- **Cable length**: 2.0 m (6.6 ft.)

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<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
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</thead>
<tbody>
<tr>
<td>1910402</td>
<td>Power cord UK</td>
<td><img src="image2.png" alt="Image" /></td>
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</tbody>
</table>

**General description**

Power cord (UK) for the power supply

**Technical data**

- **AC operation**: 250 V 13 A
- **Cable length**: 2.0 m (6.6 ft.)
- **Color**: Black

---

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910423</td>
<td>USB cable Std A &lt;-&gt; Mini-B, 2 m/6.6 ft.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**General description**

This cable is used to connect the infrared camera with a computer, using the USB protocol.

**Technical data**

- **Weight**: 60 g (2.1 oz.)
- **Cable length**: 1.8 m (6.0 ft.)
- **Connector**: Standard USB-A to USB Mini-B

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<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
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<tr>
<td>1910400</td>
<td>Power cord EU</td>
<td><img src="image4.png" alt="Image" /></td>
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</table>

**General description**

Power cord (EU) for the power supply

**Technical data**

- **AC operation**: 250 V 16 A
- **Cable length**: 2.0 m (6.6 ft.)
- **Color**: Black

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<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
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<tbody>
<tr>
<td>1910401</td>
<td>Power cord US</td>
<td><img src="image5.png" alt="Image" /></td>
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</table>

**General description**

This cable is used to connect the infrared camera to Ethernet.

**Technical data**

- **Weight**: 80 g (2.8 oz.)
- **Cable length**: 2.0 m (6.6 ft.)
- **Connector**: RJ-45 to RJ-45
- **Cable type**: CAT-6

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<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
<th>Image</th>
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</thead>
<tbody>
<tr>
<td>T951004</td>
<td>Ethernet cable CAT-6, 2m/6.6 ft.</td>
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</tbody>
</table>

**General description**

This cable is used to connect the infrared camera to Ethernet.

**Technical data**

- **Weight**: 80 g (2.8 oz.)
- **Cable length**: 2.0 m (6.6 ft.)
- **Connector**: RJ-45 to RJ-45
- **Cable type**: CAT-6

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### 1910586; Power cable, pigtailed

**General description**
This cable is used, when a separate power supply is used (not the one supplied with the camera)

<table>
<thead>
<tr>
<th>Technical data</th>
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<tbody>
<tr>
<td>Weight</td>
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<td>Connector</td>
<td>Pigtailed</td>
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<td>Color</td>
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</table>

### 1196940; Hard transport case for A/SC3XX and A/SC6XX series

**General description**
Hard transport case for FLIR A3XX series
Optional Software

T197038; ThermoVision™ System Developers Kit Ver. 2.6

New features
- New license handling. It is now possible to de-activate/activate a program to move programs between computers.
- Emissivity calculator.
- Line profile.
- Cursor on line/profile.
- Plot has been reworked to improve usability.
- Export plot data to *.csv/clipboard.
- Export single image and sequence to *.csv data file.
- Export screenshot to file (and copy to clipboard) for plot, profile and image.
- Delta measurement added.
- Invert palette.
- Change palette color distribution.
- Added palette preview in palette chooser.
- All context menus has been reworked and improved.
- Scale control has been redesigned graphically.
- Improved usability for adding new tabs and opening images.
- Windows® 7, 32 and 64-bit support.
- Simplified Chinese language support.
- Traditional Chinese language support.
- Support for UVC (USB Video Class).

Scope of delivery
- FLIR ResearchIR
- Getting Starting Guide

System requirements
- Operating system
  - Windows XP, 32-bit
  - Windows Vista, 32-bit
  - Windows Vista, 64-bit
  - Windows 7, 32-bit
  - Windows 7, 64-bit

Release notes
- Version 2.6

T197453; FLIR ResearchIR

General description
FLIR ResearchIR is a part of the FLIR R&D software family. It is aimed for more advanced users that need to monitor thermal events that are more agile or transient. FLIR ResearchIR visualizes thermal patterns and analyzes viewing, pre-/post recording and storing images at high speed. With FLIR ResearchIR it is possible to do post-processing of fast thermal events as well as and to use analysis value conditional to start/stop recording.

Key features:
- Visualizes thermal patterns
- Possible to view, record and store images at high speed
- Allows for post-processing of fast thermal events
- Possibility to generate time-temperature plots
- Possibility to generate profiles from line-tool
- Possible to use analysis value conditional to start/stop recording
- Pre- and Post recording
- Unlimited number of analysis functions (spot, line, area)
- Possibility to export all graph objects: image, plot and profile to clipboard or file either as picture or csv-data

Typical applications:
- The transient behavior of a Power supply or one of its components during power up when altering the load or any other parameter
- Evaluating the transient behavior of a car brake when braking and when altering the material in the brakes

Release notes
- Version FLIR ResearchIR 1.2 SP1

T197454; FLIR QuickPlot

General description
FLIR QuickPlot is part of the FLIR R&D software family. It is specifically designed for entry- and mid level R&D users that want to get an understanding on thermal events for design, product or process. The software allows the user to visualize thermal patterns, to record and store thermal image sequences, and to create time-temperature plots for further analysis.

Key features:
- Visualizes thermal patterns
- Acts as multiple spot pyrometers
- Non-invasive, Non-contact
- Possible to record and store image sequences for later retrieval
- Possibility to generate time-temperature plots

Typical applications:
- Monitoring of a car exterior temperature pattern in climate test chamber
- Monitoring of surface temperatures on devices when they are subjected to a life cycle test in an climate chamber
- Monitoring of surface temperature on devices when loading conditions are changed. For an example Power supplies, cooling devices and moving mechanics

Release notes
- Version FLIR QuickPlot 1.2 SP1

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New features

- New license handling. It is now possible to de-activate/activate a program to move programs between computers.
- Emissivity calculator.
- Plot has been reworked to improve usability.
- Export plot data to *.csv/clipboard.
- Export profile data to *.csv/clipboard.
- Export screenshot to file (and copy to clipboard) for plot, profile and image.
- Delta measurement added.
- Circle tool added to FLIR QuickPlot.
- Invert palette.
- Change palette color distribution.
- Added palette preview in palette chooser.
- All context menus has been reworked and improved.
- Scale control has been redesigned graphically.
- Improved usability for adding new tabs and opening images.
- Windows® 7, 32 and 64-bit support.
- Simplified Chinese language support.
- Traditional Chinese language support.
- Support for UVC (USB Video Class).

Scope of delivery

- FLIR QuickPlot
- Getting Starting Guide

System requirements

| Operating system          | Windows XP, 32-bit |
|                          | Windows Vista, 32-bit |
|                          | Windows Vista, 64-bit |
|                          | Windows 7, 32-bit |
|                          | Windows 7, 64-bit |