



FLIR SC645 & FLIR SC655

Fixed mount thermal imaging camera for research and development applications

The FLIR SC645 / SC655 is a fixed mount thermal imaging camera that has been especially developed for demanding scientific applications.

In Research & Development and product/process testing, accuracy and reliability are vitally important. The new FLIR SC645 / SC655 can be used for capturing and recording thermal distribution and variations in real time, allowing engineers to see and accurately measure heat patterns, dissipation, leakage, and other temperature factors in equipment and products.



Features

- **Crisp thermal images**

The FLIR SC645 / SC655 incorporates an uncooled microbolometer that produces crisp ultra-sharp thermal images on which the smallest of details can be seen. It is equipped with a maintenance-free uncooled microbolometer detector with a 17 micron pixel pitch that produces thermal images of 640 x 480 pixels.

- **Excellent thermal sensitivity**

With the FLIR SC645 / SC655 you can make extremely small temperature differences visible.

- **Wide measurement range**

The camera is able to measure temperatures between -20°C and +2,000°C.

- **High speed windowing – FLIR SC655**

The FLIR SC655 is equipped with high speed windowing. Connected over Gigabit Ethernet, the camera delivers images at 50 Hz (25 Hz over USB). The high speed windowing option allows the user to analyse images at 100 Hz (50 Hz over USB) in a 640 x 240 pixels window or at 200 Hz (100 Hz over USB) in a 640 x 120 window. This is ideal for analysing fast moving or rapidly changing processes.

- **Connectivity**

The FLIR SC645 / SC655 can be fully controlled from a PC, it can either be connected over USB or in a Gigabit Ethernet configuration.

- **FLIR ResearchIR**

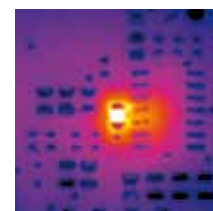
The FLIR SC645 / SC655 is compatible with FLIR ResearchIR software for advanced image analysis. FLIR ResearchIR contains powerful temperature measurement and analysis functions, including isotherms, line profiles, area histograms and image subtraction capability.

- **GenICam and GigE Vision compliance**

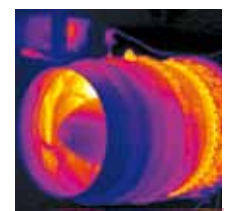
Plug & play with a variety of third-party analysis software packages.



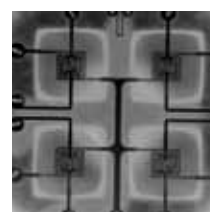
Vein cartography



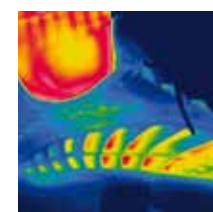
R&D on components



Transient analysis



LED IC Evaluation



Product Development



Stress field measurement

FLIR SC645 & FLIR SC655

Technical specifications

Imaging and optical data

Field of view (FOV) / Minimum focus distance	25° × 18.8° / 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 at +30°C (+86°F) / 50 mK
Image frequency (SC645)	25 Hz
Image frequency (SC 665)	50 Hz (100/200 Hz with windowing)
Focus	Automatic or manual (built in motor)

Detector data

Focal Plane Array (FPA) / Spectral range	Uncooled microbolometer / 7.5–13 µm
IR resolution	640 × 480 pixels
Detector pitch	17 µm
Detector time constant	Typical 8 ms

Measurement

Object temperature range	-20 to +150°C (-4 to +302°F) 0 to +650°C (+32 to +1202°F) +300 to +2000°C (+572 to +3632°F)
Accuracy	±2°C (±3.6°F) or ±2% of reading

Measurement analysis

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	Control and image
USB, standard	USB 2 HS
USB, connector type	USB Mini-B
USB, communication	TCP/IP socket-based FLIR proprietary
USB, image streaming	16-bit 640 × 480 pixels at 25 Hz 16-bit 640 × 240 pixels at 50 Hz (only windowing model) 16-bit 640 × 120 pixels at 100 Hz (only windowing model) - Signal linear - Temperature linear - Radiometric
USB, protocols	TCP, UDP, SNMP, 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 × 480 pixels at 50 Hz 16-bit 640 × 240 pixels at 100 Hz (only windowing model) 16-bit 640 × 120 pixels at 200 Hz (only windowing model) - Signal linear - Temperature linear - Radiometric GenICam and GenICam compatible
Ethernet, protocols	TCP, UDP, SNMP, 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, supply voltage	12/24 VDC, max 200 mA
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 (-40°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 × W × H)	170 × 70 × 70 mm (6.7 × 2.8 × 2.8 in.)
Tripod mounting	UNC ¼" -20 (on three sides)
Base mounting	2 × M4 thread mounting holes (on three sides)
Housing material	Aluminium

Scope of delivery

- Hard transport case or cardboard box
- Infrared camera with lens
- Application CD-ROM
- Calibration certificate
- Ethernet™ cable
- USB cable
- Mains cable
- Power cable, pig-tailed
- Power supply
- Printed Getting Started Guide
- Printed Important Information Guide
- User documentation CD-ROM
- Warranty extension card or Registration card
- 6-pole screw terminal (mounted on camera)

Specifications and prices subject to change without notice.

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