FLIR SYSTEMS

ThermaCAM™ E4

Everything you expect from an infrared camera ...

Affordable full-featured infrared camera

And more ...

- Extremely high thermal sensitivity
- Unparalleled image quality
- Useable in all weather conditions
- Records images at a frame rate of 50 Hz
- Standard JPEG image storage
- A wide range of accessories and lenses
- Short focus distance
- Compatible with ThermaCAM™ Reporter™ software

ThermaCAM™ E4

A unique infrared tool

- Highly affordable
- Ultra compact
- Extremely light: 700 grams battery included
- Maintenance free uncooled microbolometer detector
- Non-contact precision temperature measurement
- High thermal sensitivity: 0.12°C
- Temperature range: -20°C up to +250°C (+900°C optional)
- Stores images in standard JPEG format
- Useable indoor and outdoor in all weather conditions (IP54)
- Built-in laserpointer
- Software for detailed post-analysis and reporting available

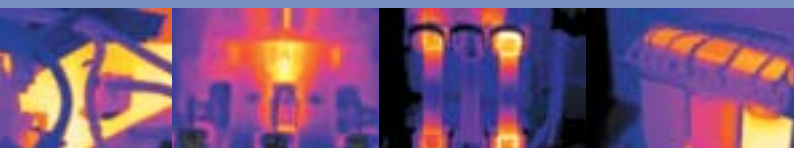
Affordable imaging, measurement, storage and analysis in the palm of your hand.

In cooperation with its customers, FLIR Systems, the world leader for infrared thermography, has further developed his successful ThermaCAM™ E-series range.

The result is the ThermaCAM E4. A small and smart infrared camera. Fitting in the palm of your hand, the ThermaCAM E4 offers non-contact temperature measurement, crisp thermal imaging, in-field image analysis and storage and both qualitative and quantitative post-analysis and reporting.

The ThermaCAM E4 is the only camera that offers you practically all the possibilities of a high range infrared camera at an affordable price.

ThermaCAM E4

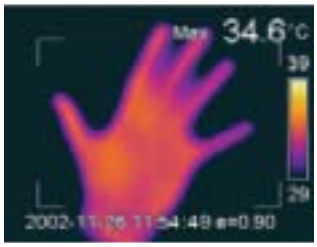


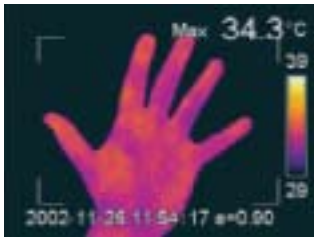
Precision temperature measurement - extraordinary image quality

Using the world's best uncooled infrared detector material, vanadium oxide, the E4 delivers unmatched temperature measurement accuracy. The result is a thermal sensitivity of 0.12°C and clear noise-free images.

A low thermal sensitivity not only offers you the possibility to see the smallest of temperature changes, it also means that you get a clear, noise-free, excellent quality image which can not be obtained by less sensitive cameras. Thanks to these very detailed images, which are displayed on the camera's 2.5" color LCD, you will clearly see the smallest temperature changes.

20 Hz





50 Hz

View sensitive thermal images at real-time frame rates (50 Hz)

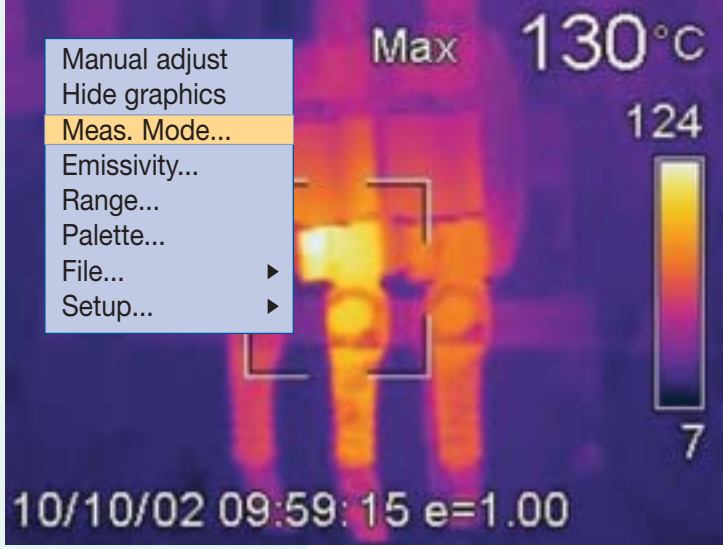
If you really want to detect subtle temperature variations that can signal significant problems on moving targets, you need to capture images at a speed of 50 Hz. Capturing images at a lower frame rate results in a disturbed image so that potential problems can be overlooked.

Flexible standard JPEG image storage

The camera stores up to 100 infrared pictures in standard, low density JPEG format, giving you instant visibility of the images stored in the field.
Since all images are in JPEG format you can easily share them with your colleagues. There is no need to use special viewing software. All image can easily be imported in the optional available ThermaCAM™ Reporter™ software for further detailed analysis.

Locate and analyze problems fast

Analyze problems and share results with your colleagues in the field. Movable crosshairs allow you to measure and analyze the temperature at a single point. Find the hottest spot in a defined area, highlight areas of concern with color or sound alarms. The ThermaCAM™ E4 has all the analysis tools you need to make instant decisions in the field.



Easier and quicker inspections thank to powerful and useful features

- Sound and color alarms: the operator can set a maximum temperature in the camera. If the E4 is pointed to an object and this temperature is exceeded, the camera will produce an audible and/or a visible alarm.
- Movable crosshair: a joystick allows moving the crosshairs for temperature measurement on any pixel in the IR image. A considerable advantage over having just one fixed spot in the middle.
- Full temperature measurement and analysis capabilities: on both live and saved images
- Temperature differential measurement: calculates temperature differences between 2 measurement spots, directly in the field.
- Incorporated emissivity tables: pre-defined values for often inspected materials can be stored in the camera.
- Laser LocatIR: helps to associate the hot spot on the IR image with the real physical target and enhances user safety.

Easy operation

At the touch of a button you can easily change color palettes, emissivity settings, temperature ranges and other analysis tools. Built-in menu systems provide easy access to advanced yet simple to use software.

Smart power management

No need to worry about batteries dying and losing valuable inspection time. The lightweight, long-life Li-Ion battery ensures uninterrupted inspections. It runs up to 2 hours and the ThermaCAM E4 features an internal battery charger. A 2-battery charging system is also included. It features a car/truck charger adapter so that you can charge to camera on the way to your next job.

Rugged, ergonomic and lightweight: useable in all weather conditions

Dust- and splashproof, the E4 meets IP54 standards and withstands harsh industrial environments. It can be used both indoor and outdoor in the most diverse weather conditions. Hold the ThermaCAM E4 in your hand. Clip it to your belt or put it in your toolbox. With a weight of less than 700 grams, the E4 is the lightest infrared camera in the world.

Adaptable to every situation - a wide range of accessories

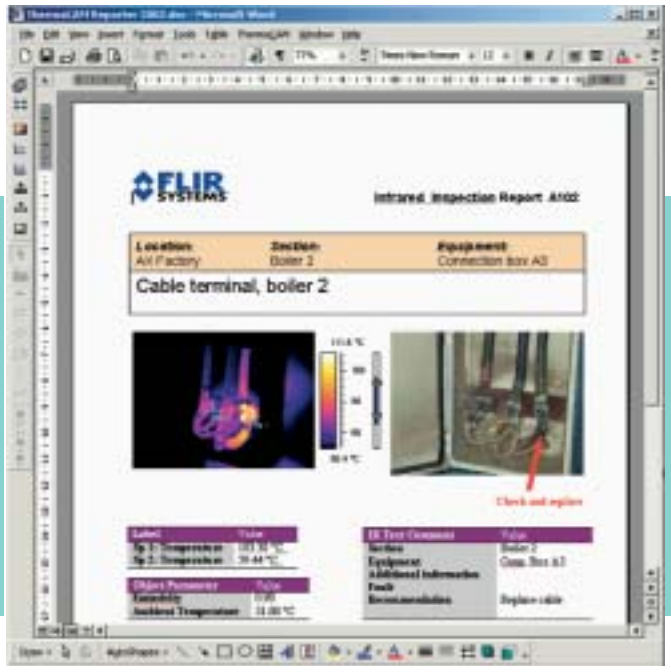
Although the ThermaCAM™ E4 already has a very short focus distance (30 cm) you might end up in situations where you do not have the room to step back. A wide angle lens is then the perfect solution. When you are looking at objects which are a distance away you can use a telephoto lens. Interchangeable optics offer the thermographer the flexibility needed to adapt his camera to the most demanding applications.

To ensure perfect images on the LCD display in direct sunlight a sunshield is available.

Interchangeable lenses = enormous flexibility

Post analysis and automated report generation in a familiar environment

Full radiometric images captured by the ThermaCAM E4, can easily be downloaded and integrated in the optional ThermaCAM™ Reporter™ software.



ThermaCAM Reporter allows you to create all your reports in a familiar software environment. From now on you cannot only make your own templates for infrared inspection reports in Microsoft Word, but you can also analyse your infrared images within the same program. An extra toolbar appearing on your screen gives you instant access to specific functions for detailed analysis. Setting temperature spots, creating histograms and line profiles, changing emissivity settings, … are just a few of the tools that can be accessed by a simple mouse-click.

Since all your images are in JPEG format and all your reports in Word format, you can easily share them with your colleagues. Anyone can open and read your files. No need for special viewing software.

Why use infrared ?

Nearly everything that uses or transmits power gets hot before it fails. Cost effective power management is critical to maintaining the reliability of your electrical and mechanical systems. Infrared thermography is an effective predictive maintenance (PM) technology to quickly, accurately and safely locate problems prior to failure. Whether viewing electrical components indoors or outdoors, doing mechanical inspections, viewing at process installations, ThermaCAM™ E4 can instantly locate hot spots prior to failure. Inspections can be safely performed while electrical systems are under load.
Common electrical targets are: switchgear, breakers, fuses, electrical panels, and bolted connections.

Infrared cameras:

- Perform inspections when systems are under load
- See the heat produced
- Are contactless
- Identify and locate the problem
- Measure the temperature
- Store the information
- Give you the answers you need to understand what needs to be fixed
- Find the problems before they actually occur
- Save you valuable time and money

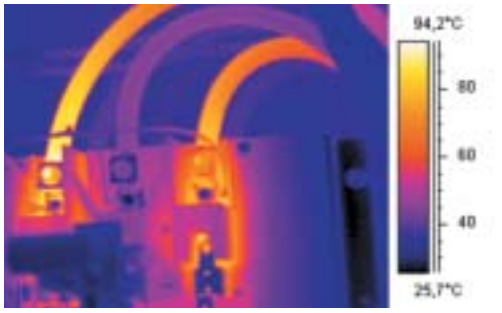
Return on investment

Infrared cameras have proven to be an invaluable resource for predictive maintenance. They can locate problems well in advance of failure resulting in rapid payback on investment and avoiding costly plant shutdowns. The ThermaCAM E4 not only locates problems quickly, its non-contact precision temperature measurement capabilities deliver the answers you need to decide what repair action to take, and when.

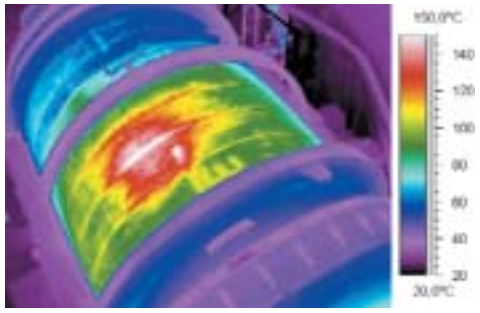
Regular surveys of a steel mill's substations potentially save tens of thousands of dollars per year. A major steel company discovered a significant temperature rise in one of their 69 kV breakers. If this problem had gone undetected it could have cost the company $50,000 per hour in lost time due to shutdown of the casters. Total loss of power to a mill is estimated to be over $250,000 an hour.

At a public electric utility company, a routine thermographic survey indicated one of the output filter capacitors of a station battery charger was considerably cooler then the others. As a result, the capacitor in question was tested and found to have failed. Replacement of the failing capacitor avoided an outage, saving an estimated $500,000.

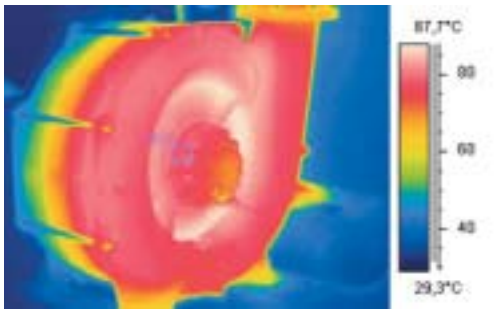
See what infrared can do for you today



See loose connections

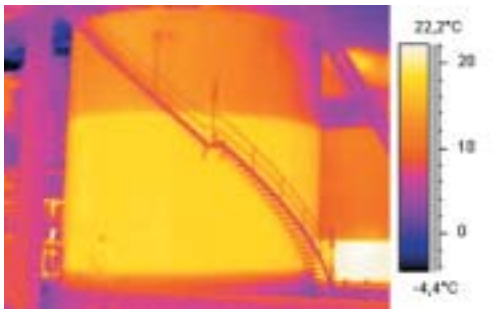


Hot spot in oven



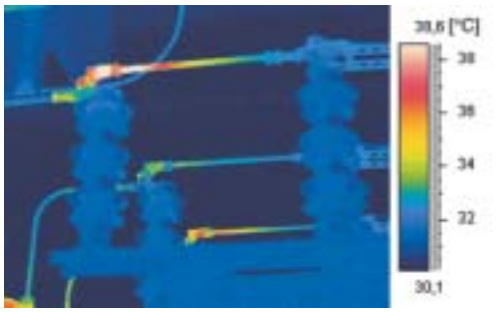
Overloaded pump

Steam trap

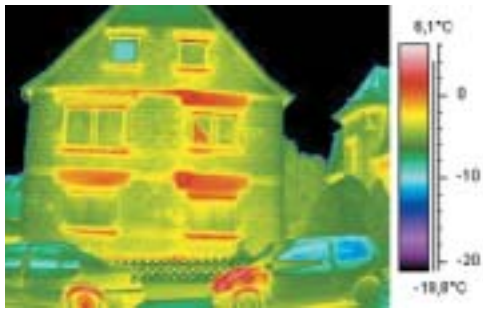


Level detection in tanks

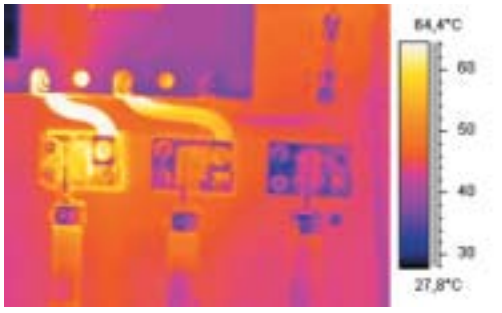
Find incorrectly secured connections



See oxidation of HV switches

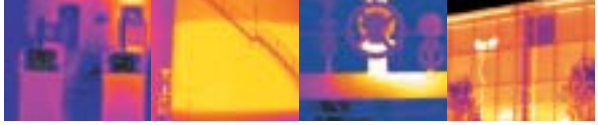


Hot spots due to bad insulation



Measure fuses

Hot spot in welding robot



TECHNICAL SPECIFICATIONS

IMAGING PERFORMANCE

Field of view/min focus distance	25° x 19°/0.3 m
Thermal sensitivity	0.12°C at 25°C
Image frequency	50/60 Hz non-interlaced
Focus	Manual
Detector type	Focal Plane Array (FPA), uncooled microbolometer 160 x 120 pixels, vanadium oxide
Spectral range	7.5 to 13 µm
Optical resolution	300:1
minimum diameter measurement spot at 10 cm (with 45° lens)	

IMAGE PRESENTATION

Video output	PAL or NTSC, standard RCA composite video
External display	2.5" colour LCD, 16K colors

MEASUREMENT

Temperature range	-20°C to +250°C, (-4°F to +482°F) up to +900°C optional
Accuracy	±2°C, ±2%
Repeatability	±1°C, ±1%
Measurement mode	3 movable spots, area max, area min, area average, color alarm above or below
Menu controls	Palettes (iron, rainbow, B&W, B&W invers), auto-adjust (continuous/manual)
Set-up controls	Date/time, temperature units °C/°F, language, scale, info field, LCD intensity (high/normal/low)
Measurement corrections	Emissivity variable from 0.1 to 1.0, reflected ambient

IMAGE STORAGE

Type	Built-in FLASH memory (up to 100 images)
File formats	Standard JPEG

LENSES (OPTIONAL)

2 x Telescope (12° x 9°/1.2 m)
0.5 Wide angle (45° x 34°/0.1 m)

adapt your camera to EVERY situation

LASER LOCATIR™

Classification	Class 2
Type	Semiconductor AlGaInP Diode Laser: 1mW/635 nm red

BATTERY SYSTEM

Type	Li-Ion, rechargeable, field replaceable
Operating time	2 hours continuous operation. Display shows battery status
Charging system	In camera, AC adapter or 12 V from car (with optional Std. cable) 2 bay intelligent charger, 12 V
AC operation	AC adapter 90-260 V AC, 50/60 Hz, 12 V DC out
Voltage	11-16 V DC
Power saving	Automatic shutdown and sleep mode (user selectable)

ENVIRONMENTAL SPECIFICATION

Operating temperature range	-15°C to +45°C (+5°F to +113°F)
Storage temperature range	-40°C to +70°C (-40°F to +158°F)
Humidity	Operating and storage 20% to 80%, non-condensing
Encapsulation	IP54 IEC 359
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6

PHYSICAL CHARACTERISTICS

Weight	700 g (1.5 lbs.), incl. battery with 25° lens
Size	265 mm x 80 mm x 105 mm (10.4" x 3.1" x 4.1")
Tripod Mounting	1/4" - 20
Cover case	Plastic and rubber

INTERFACES

USB	Image transfer to PC
RS-232 cable (optional)	Image transfer to PC
Video Output	Standard RCA composite video

ThermaCAM E4 includes:

IR camera, Carrying case, Power supply, Handstrap, Lens cap, ThermaCAM Connect™ Software, USB cable, User manual, Power cord, Battery, Battery charger

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

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