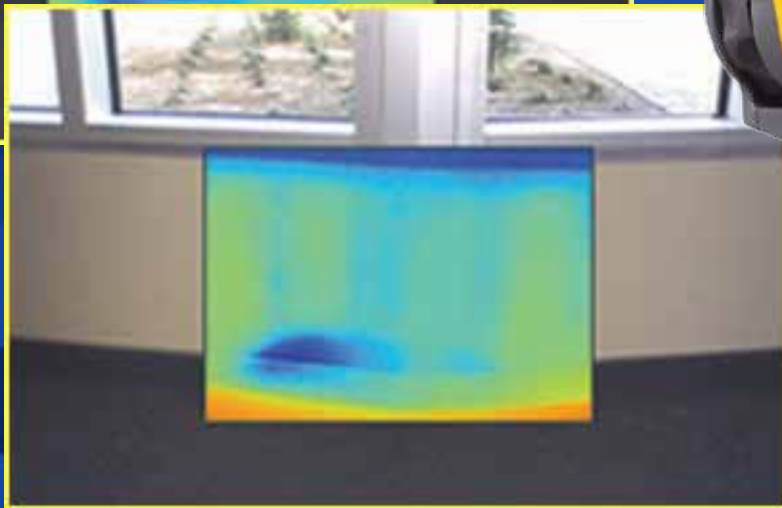


Thermal Imagers have become an essential troubleshooting and preventative maintenance tool in the industrial, process and commercial fields.

# THERMAL IMAGING CAMERAS



**CUTHBERTSON LAIRD**

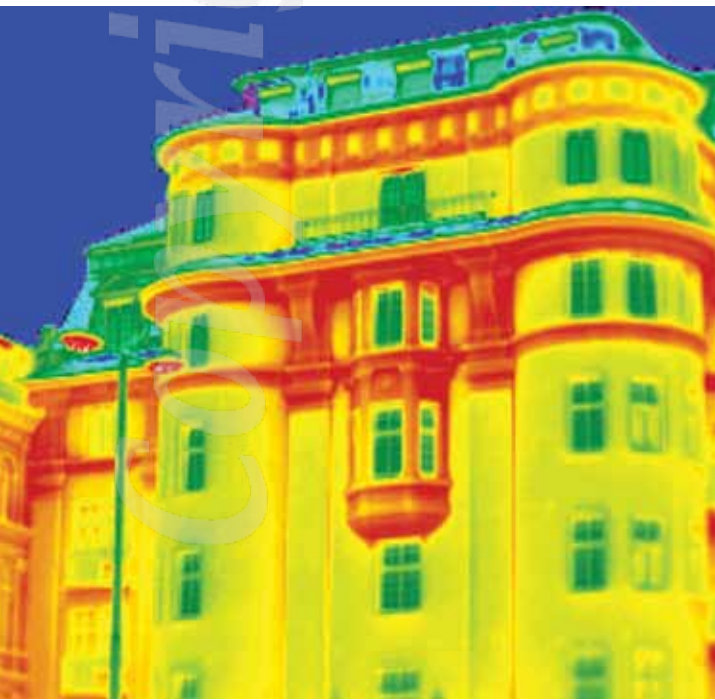
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# THERMAL IMAGING OVERVIEW

Thermography (temperature measurement with a thermal Imager) is a passive, contactless measuring method. The thermal image shows the temperature distribution on the surface of an object. The higher the object's temperature, the greater the IR radiation emitted. Infrared allows us to see what our eyes cannot. Infrared

●● Nearly everything gets hot before it fails, making infrared cameras extremely cost-effective, valuable diagnostic tools in many diverse applications ●●

## TERMINOLOGY EXPLAINED



### How to use this interactive PDF Catalogue



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Email Leads

Clicking on this text will allow you to email us directly from the PDF.

thermography cameras produce images of invisible infrared or “heat” radiation and provide precise non-contact temperature measurement capabilities.



**Palette** - Color representation of the temperatures (temperature scale) in a displayed image. Certain color palettes meet personal preferences or optimize the image for different applications and/or problems.

**Sensor Size** - Similar to digital cameras the sensor size describes the amount of displayed points per image of a thermal imager. A sensor size of 160 x 120 captures and displays more than 19,000 measurement points with each measurement.

**Field of view (FOV)** - Indicates what the thermal imager sees or measures at a given moment. The combination of the FOV specification and the distance to the measured object determines which surface or part of an object will be measured as a total.

**Thermal sensitivity** - Indicates what the smallest temperature difference is which can be measured/displayed in an image. It basically is the maximum resolution of the image and is referred to as NETD (noise equivalent temperature difference).

**Emissivity adjustment** - All surfaces emit infrared energy or heat. The level of emission varies much per surface and is described with the term emissivity.

**Span** - The set of temperature values that can be measured within a preset range. Adjusting the span allows you to see more subtle temperature gradients (or contrast) in a captured image. When the span is optimized the imager shows 256 different shades of color in an image.

# THE FLUKE CAMERA

## CUTTING-EDGE AND ACCURATE

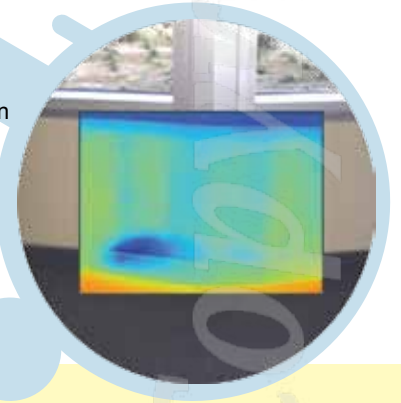
TEMPERATURE CHANGES CAN INDICATE PROBLEMS IN MANY EVERYDAY APPLICATIONS. FLUKE OFFERS A COMPLETE RANGE OF HANDHELD THERMAL IMAGERS FOR BOTH INDUSTRIAL AND BUILDING DIAGNOSTIC APPLICATIONS. MODELS ARE AVAILABLE FOR ANY BUDGET.

Built to withstand harsh work environments, Fluke Thermal Imaging cameras are designed as a complete, effective and easy-to-use thermal imaging solution for everyday troubleshooting and maintenance of electrical installations, electro-mechanical equipment, process equipment, HVAC/R equipment and other industrial and electrical equipment.



## FUSION TECHNOLOGY

To communicate critical information, infrared images only are no longer enough. With revolutionary IR-Fusion® Technology, one can better identify details, manage and analyze images by combining both the infrared and visible light images. IR-Fusion technology simultaneously captures pixel-for-pixel infrared and visible light images and allows full image optimization with up to 6 different on-camera as well as software viewing modes.



## FLUKE IR IMAGERS

FLUKE TI9

FLUKE TI10

### FLUKE TI9

A rugged entry-level thermal imager. Just point and shoot to capture the full picture, showing the hotspots that warn of imminent equipment failure. The 160 x 120 resolution shows all the essential details.



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### FLUKE TI10

Built for tough work environments, this high-performance, fully radiometric infrared camera is ideal for troubleshooting electrical installations, electro-mechanical equipment, process equipment, HVAC/R equipment and others. IR-Fusion is standard on TI10 models. See things both ways - infrared and visual (visible light) images fused together.



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## FLUKE TI32

### INDUSTRIAL THERMAL IMAGER

**COMBINES A POWERFUL 320 X 240 SENSOR INTO THE AWARD WINNING, RUGGED DESIGN OF THE TI25 AND TI10, DELIVERING THE FIRST INDUSTRIAL GRADE, HIGH PERFORMANCE THERMAL IMAGER.**

Refresh rate: 9 Hz - Detector type: 320 x 240 Focal Plane Array, uncooled microbolometer - Visual (visible light) camera: Industrial performance 2.0 megapixel - IR Fusion: Full screen, picture-in-picture or blended views - Minimum focus distance: 46cm (approx. 18 in) - Display: 9.1 cm (3.7 in) diagonal landscape colour VGA (640 x 480) LCD - Temperature measurement range: -20°C to +600°C (-4°F to +1112°F) - Storage medium: SD Memory Card (2 GB) - Export file formats w/SmartView: BMP, DIB, GIF, JPE, JFIF, JPEG, JPG, PNG, TIF & TIFF - Voice Annotation (Recording): Yes.



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FLUKE TI32



FLUKE TI25



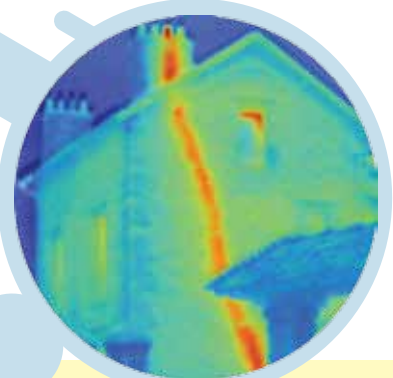
Industrial, mechanical, electromechanical and general building maintenance.



Process, refractory insulation, tank and vessel levels, steam systems and traps, pipes and valves, etc.



Electrical, unbalanced loads, overloaded systems, wiring mistakes or component failure, etc.



## ALSO AVAILABLE FROM FLUKE

### FLUKE TI25

Built for tough work environments, this high-performance, fully radiometric infrared camera is ideal for troubleshooting electrical installations, electro-mechanical equipment, process equipment & HVAC/R equipment.

### FLUKE TIR

Optimized for building envelope, restoration and remediation, inspection and roofing applications.

### FLUKE TIR1

The Fluke TIR1 Thermal Imaging cameras are the perfect imagers for building envelope, restoration and remediation, inspection and roofing applications.

### FLUKE TI50FT & TI55FT

The professional's choice when demanding the highest sensitivity. They feature 320 x 240 detectors with industry leading thermal sensitivity ( $\leq 0.05$  °C; 50 mK NETD) for high resolution, ultra high-quality images. In addition, with a 60 Hz detector acquisition rate temperatures are displayed live on the large 5-inch color display.



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FLUKE TI50 & TI55

# FLIR THERMAL IMAGERS

From predictive maintenance, condition monitoring, non-destructive testing, R&D, medical science, temperature measurement and thermal testing to law enforcement, surveillance, security and manufacturing process control, FLIR offers a wide selection.

## Energy Auditing & Home Inspection

Excessive air leakage can account for up to half of the energy consumed to condition buildings. The leakage pathway is often complex and, without thermal imaging, extremely difficult to visualize.

## Property & Facility Management

Thermal imagers are a valuable tool in predictive maintenance of electrical, mechanical, and structural systems, to detect problems, prevent downtime, guide corrective action, and increase work safety.

## HVAC & Plumbing

With FLIR thermal imagers it's easy to scan an entire building to see the relation of HVAC system, building envelope, and plumbing issues.

## Moisture & Restoration

The presence of moisture in building envelopes, either from leakage or condensation, can have serious consequences. With infrared images, water damage is easily detected.



## TALK TO ONE OF OUR SALES ENGINEERS FOR IMPARTIAL ADVICE

### FLIR i5

The i5 is the smallest, lightest and most affordable infrared camera on the market. It is incredibly easy to use and requires no former experience. It really is a matter of "point-shoot-detect" to obtain high-quality infrared images that will immediately give you the infrared information you need.



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### FLIR i7

The FLIR i7 is a small, competent and affordable infrared camera. It is incredibly easy to use and requires no former experience. The i7 features a robust combination of capabilities to quickly detect moisture issues, missing insulation, HVAC leaks and when performing predictive maintenance identifying electrical or mechanical problems both ways - infrared and visual (visible light) images fused together.



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FLIR i5

FLIR i7



FLIR T365 & T425

# THERMAL IMAGING CAMERAS

Small, compact and powerful. The recently released FLIR T365 and T425 are innovative, feature rich infrared cameras equipped with FLIR's Thermal Fusion technology. The FLIR T-Series cameras are also available as building models.



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FLIR T335/T425 features:  
320 x 240 pixels IR resolution  
Temperature range -20 - 1200°C (T425)  
MeterLink  
Thermal Fusion  
3.1 Mp digital camera with built-in LED lights  
Touch screen & Thumbnail gallery  
Voice annotations via Bluetooth™



FLIR T425



FLIR T365

- Sketch/image markers
- Radiometric IR video streaming
- Panorama support (FLIR T425)
- Mpeg4 video mode
- Delta T
- Dew point and insulation alarm (FLIR B335/B425)

## I-SERIES CAMERAS

The FLIR i-Series are small and lightweight infrared cameras designed for those needing higher resolution and more features and for whom documentation of findings are important.

### Available Models:

i40  
i50  
i60

The i-series are also available as building models especially designed for building inspections.

## T-SERIES CAMERAS

The FLIR T-Series has been specifically developed for industrial environments.

### Available Models:

T250  
T335  
T365  
T425

The T-series are also available as building models especially designed for building inspections

# FLIR P600 SERIES INFRARED PERFECTION

FLIR P-Series infrared cameras (P620, P640 and P660) provide superior thermal and visual image quality, spot size resolution, temperature measurement accuracy, and a host of advanced features will give you the best engineered, state of the art infrared camera available on the market today.

## Common P600 series features

- 640 x 480 IR resolution\*
- 3.2 Megapixel digital camera including LED light's
- Large 5.6" widescreen LCD
- Eyepiece viewfinder for outdoor work
- Thermal Fusion
- Picture-in-Picture
- Panorama support
- Periodic image storage
- Programmable buttons
- Voice and text annotation with each image
- WLAN interface
- Optional remote control

\*640x480 pixel resolution

Higher resolution improves your inspections providing higher accuracy of measured temperatures spotting even small objects from a distance. This is of critical importance to many thermographers who need to minimize risk of missing faults that can develop to catastrophic failures.

With a higher resolution camera you cover a bigger object with only one image. With lower resolution more images are needed to cover the same area with the same level of details in the image.



FLIR T660

## FLIR B620/B660

The P-Series is also available as adopted building models. The FLIR B620 and FLIR B660 are the best possible infrared cameras for building and construction applications.

Additional features for the FLIR B620/ B660 include humidity- and insulation defect alarms.

View All Flir



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# TESTO THERMAL IMAGERS FOR BUILDING & INDUSTRY THERMOGRAPHY

TESTO THERMAL IMAGING CAMERAS CAN BE USED IN A VARIETY OF APPLICATIONS INCLUDING BUILDING SURVEYS, PLANT MAINTENANCE, PRODUCTION MONITORING, UNDER FLOOR HEATING INSPECTIONS AND ELECTRICAL MAINTENANCE.

Even the smallest temperature differences can be identified with the Thermal Sensitivity of Testo's Thermal Imaging cameras. The Testo 875 and 881 quickly and reliably discover anomalies and weak spots in a wide range of applications. In addition to the infrared recording, the Testo camera creates a parallel real image of the location with the integrated digital camera. The 875 comes with a refresh rate of 9 Hz whilst the 881 a 33 Hz (inside the EU, outside 9 Hz).



[View On-Line](#)

TESTO 875



## TESTO 875-2 PRO SET

Make significant savings with the Testo 875-2 Professional Set. Get the 875-2 Thermal imager with <80mK for comprehensive analysis plus the telephoto lens and additional accessories in a set, with price savings.



[View On-Line](#)



## TESTO 875 SERIES

### GOOD IMAGE QUALITY

With the temperature resolution of < 80 mK, even minimal temperature differences are shown.

### MOULD RISK SPOTS

Via the manual input of ambient temperature, air humidity and dewpoint in the room, the Testo 875 visualizes mould risk spots in the thermal image at a glance.

### INTEGRATED DIGITAL CAMERA

The Testo 875-2 with integrated digital camera links real and infrared images for fast, reliable and simple documentation of the measurement.

### AUTOMATIC HOT/COLD SPOT RECOGNITION

Critical temperature conditions are shown with the Automatic Hot/Cold Spot Recognition. Uninterrupted error localization on site is therefore ensured. The Auto Hot/Cold Spot Recognition also helps you with analysis and documentation when evaluating the details later on a PC.

### EXCHANGABLE TELEPHOTO LENS

The exchangeable telephoto lens (optional) assists in the measurement of smaller details and visualizes details in the thermal image, even at greater distances.

### HIGH-QUALITY 32° X 23° LENS

The 32° lens quickly records a large image section and thereby supplies a good overview of the temperature distribution of the measurement object.

### MODELS AVAILABLE

Testo 875-1. No Integrated Digital Camera or the ability to change lenses.

Testo 875-2. Integrated camera, displays surface moisture distribution plus capacity to change lenses.

Testo 875-2 Pro Set. All 875-2 features plus: Telephoto lens 9° x 7°, Protective glass, additional battery, charger and Sun Shield



# TESTO 881 - THERMAL CAMERAS NOW EVEN BETTER!

THE TESTO 881 SERIES THERMAL IMAGING CAMERAS ARE UNIVERSAL AND SUITABLE FOR ELECTRICAL, MECHANICAL AND BUILDING THERMAL SURVEYS AS WELL AS A WIDE RANGE OF OTHER APPLICATIONS..

Thermal imagers can convert infrared radiation into electrical signals and thus render it visible. You can carry out completely damage-free tests on materials and components with the thermal imager testo 881. This allows you to visualize problems in industrial maintenance and production monitoring before a malfunction or a fire risk occurs. With the testo 881, you are on the trail of energy loss in building thermography, helping your customers to save expensive heating costs. With the new thermal imager testo 881, you save time, energy and money in industrial thermography as well as in building thermography, and ensure more security allround.



View On-Line



TESTO 881

## TESTO 881-3 PRO SET

Make significant savings with the Testo 881-3 Professional Set. Get the 881-3 Thermal imager with <math><50\text{mK}</math> for comprehensive analysis plus the telephoto lens and additional accessories in a set, with price savings.



View On-Line



## TESTO 881 SERIES

### HIGHEST IMAGE QUALITY

With a thermal resolution of  $< 50 \text{ mK}$ , the testo 881 delivers high-resolution images in which even the smallest temperature differences are emphasized and visualized..

### MIN/MAX ON AREA

The minimum and maximum values of an image section can be provided at a glance live directly on site.

### ISOTHERM FUNCTION

With the optical colour alarm in the thermal image, areas of critical temperature on the measurement object are immediately marked.

### VOICE RECORDING

The practical headset and the integrated voice recording function facilitate the documentation of the measurement results. Comments can be made on every recording on site. This valuable additional information is stored together with the thermal image.

### BUILT-IN DIGITAL CAMERA WITH POWER LEDS

In addition to the infrared recording, the testo 881 creates a parallel real image of the location with the integrated digital camera. The integrated power LEDs guarantee you optimum illumination of dark areas when recording real images.

### HIGH TEMPERATURE OPTION

With the high-temperature option, the measuring range can be flexibly extended. If required, simply fit a high-temperature filter onto the camera lens. Temperatures up to  $550 \text{ }^\circ\text{C}$  can thereby be measured.

### MODELS AVAILABLE

Testo 881-1  
Testo 881-2  
Testo 881-3  
Testo 881-3 Pro Set.

Please see the instrument datasheet for full specifications.

# HAWK INFRARED TRANSPARENT WINDOW

**INCREASE THE  
SAFETY  
& SPEED OF  
ELECTRICAL  
THERMOGRAPHY**

If you are concerned about arc-flash but wish to continue with your infrared thermography program, infrared windows are the answer. These arc-resistant, outdoor certified, infrared windows allow thermal, ultraviolet, visual and fusion technologies to be used without exposing personnel to live equipment.



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- Engineered and tested to withstand electric-arcs up to 50kA for 30 cycles.
- Certified by UL & CSA for Type 3/12 (Outdoor) environments in North America and Canada, the C-Range windows are tested to withstand the long term aging effects of UV exposure.
- Certified by SIRA Certification IP65 (Outdoor) environments in Europe.
- The CLIRVU® coating – exclusive to Hawk IR Windows - seals the optic prior to assembly to protect against moisture degradation.
- Own a Fluke Camera? The Quadraband™ optic is IR-Fusion® compatible, allowing the thermographer to see potential problems in visual light and thermographic mode.
- Got more than one window per panel? Each C-Range window is delivered with an identification plate attached for unique, on-site numbering for rapid location confirmation and faster repairs.

All infrared windows from Hawk IR International use the unique Quadraband™ multispectral optic, allowing inspection with any camera for total flexibility both now and in the future.



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