FLUKE®

Fluke Ti Series Industrial Thermal Imagers

Ti32 shown with optional telephoto lens

The ultimate tools for troubleshooting and maintenance

Rugged, reliable, easy to use...what you expect from Fluke

Why thermal imaging?

Where can thermal imaging save me time and money?

For a library of thermal imaging case studies and application notes visit **www.fluke.eu/ti**.

- **Inside electrical distribution and service** (switch gear, panels, controls, fuses, transformers, receptacles, lighting, conductors, overhead buses, and motor control centers)
- **Motors, pumps and mechanical** (electric motors and generators, pumps, compressors, evaporators, bearings, couplings, gearboxes, gaskets/ seals, belts, rollers, and disconnects)
- **Process** (tanks and vessels, pipes, valves and traps, reactors, and process insulation)
- **HVAC/R** (air conditioning, heating, air handlers, and refrigeration)
- **Outside electrical distribution for utilities** (transformers, bushings, insulators, transmission lines, other exterior conductors, service connections, disconnects, and capacitor banks)

Safety

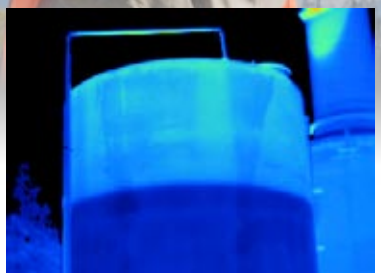
Thermal imaging is a non-contact technology used to help identify potential electrical, mechanical, or process problems from a safe distance. This means you can scan moving, elevated, and high temperature surfaces without needing to get too close.

Productivity

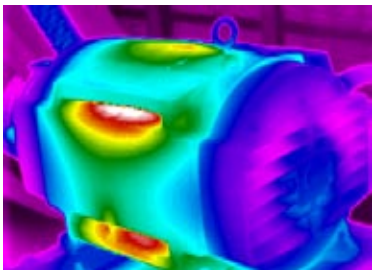
Whether you work in an industrial or commercial facility, you can quickly scan large surface areas for temperature differences that often indicate that a problem exists or a failure could be imminent.

Profitability

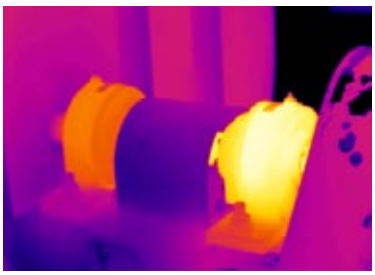
Turn to thermal imaging to drive improvements to your bottom line. Use it to reduce energy usage or to help keep your mission critical equipment running.



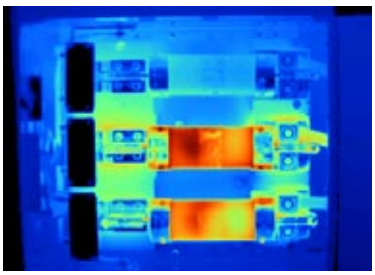
Tank level too low



Abnormal uneven heating on motor



Overheating bearing cap



Three-phase switchgear load imbalance

Fluke Ti Series Industrial Thermal Imagers

Superior image quality

Just use a Fluke imager and you'll immediately see the difference. Fluke delivers the clear, crisp images needed to find and fix problems fast.

- Industry leading thermal sensitivity (NETD) enables you to identify the small temperature differences that could indicate big problems
- Even the smallest details become visible with the large, widescreen full VGA color LCD display
- Patented IR-Fusion®, only from Fluke, delivers the industry's best visible/infrared image alignment and focusing

Easy to use

When you pick up a tool, you need it to operate and deliver results without having to read a heavy manual.

- Intuitive, three-button menu is easy to use…simply navigate with the push of a thumb
- Easy, manual focus allows for precise image viewing control
- File management is effortless with the Fluke proprietary .is2 file format, which automatically stores the visual image, infrared image, voice and text annotations in one simple file (other file formats are also supported both on imager and in Smartview software)

Rugged

Tools are meant to be used, and Fluke thermal imagers are designed to reliably operate in the toughest industrial environments.

- Engineered and tested to withstand a 2 meter drop—when was the last time you dropped a tool?
- Withstands dust and water-tested to an IP54 rating
- Use in ambient temperatures as low as -10 °C and high as +50 °C

Quick Product Selection Guide

	Ti32	Ti25	Ti10	Ti9
Detector type	320 x 240	160 x 120	160 x 120	160 x 120
Thermal sensitivity	50 mK	100 mK	200 mK	200 mK
Temperature range	600°C	350°C	250°C	250°C
IR-Fusion®	•	•	•	
Optional lenses	•			
Replaceable batteries	•			
Voice annotation	•	•		
Choice of palettes	15	6	6	4

For detailed specifications see page 7.

The rugged conditions of the Whistler ski resort in Western Canada are no match for Fluke thermal imagers.

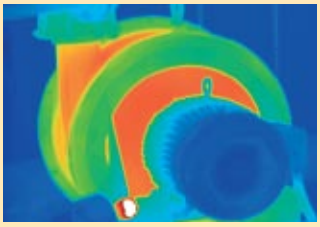
Field replaceable batteries in the Ti32 give you maximum flexibility no matter where your work takes you.

2008 Plant Engineering PRODUCT of the YEAR Bronze Award

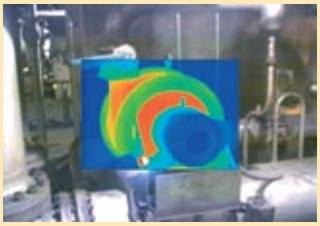
Fluke Ti25

Fluke IR-Fusion®

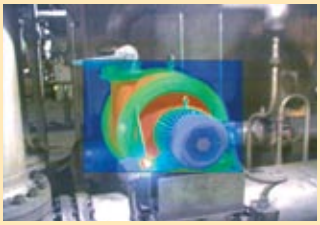
IR-Fusion viewing options



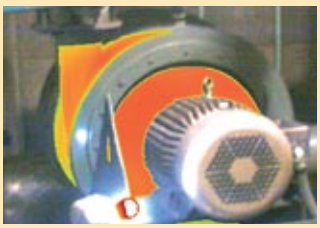
Full (traditional) infrared: Displays a full screen infrared view for maximum infrared detail.



Picture-in-picture: Maintains a frame of reference by placing an IR "window" within a visual (visible light) image.



Blending: Blends the visible and infrared images together in any user-selected proportion to create a more compelling, understandable image.



IR/color alarm: Isolates problematic areas by displaying a visual image with infrared highlights for surface temperatures in between, above or below, or outside a user-selected range.

Full Visual (visible light): Displays a digital photographic image, as you would get from a digital camera.

More than picture in picture

Infrared images alone can be difficult to understand, which is why Fluke pioneered IR-Fusion®, a revolutionary marriage of visible and infrared images never before seen in commercial or industrial thermal imagers. Automatically capturing a visible image with every infrared image allows you to always know exactly what you're looking at.

Not all fusion is created equal

Don't be fooled by imitators. Patented IR-Fusion® is the only solution with physical parallax correction, enabling the perfect alignment and blending of both infrared and visible images. While many manufactures have attempted to duplicate Fluke IR-Fusion®, none have been able to match it. Turn to Fluke IR-Fusion® to deliver the industry's best thermal images.

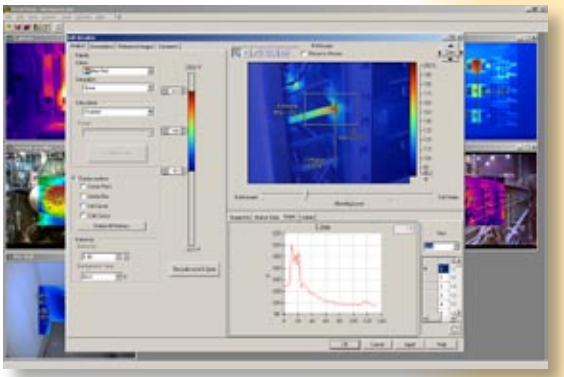
Thermal imager features

SmartView® Software

Powerful

Everything you need for analysis and reporting.

- Extensive annotation, editing, and viewing options with full IR-Fusion® capabilities
- 3D-IR™ delivers unique three-dimensional analysis capabilities
- Multiple reporting options and templates

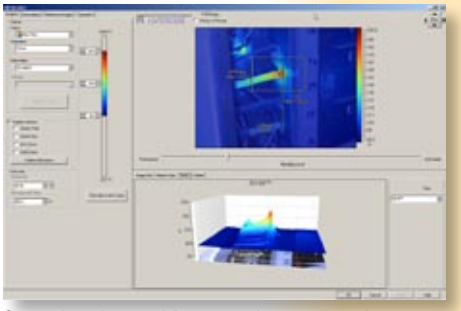


Navigate, analyze and enhance IR images

Easy to use

It's never been easier to enhance and analyze your thermal images.

- SmartView® tools and controls allow easy access to editing functions
- Report Wizard guides you through automatic, professional report generation

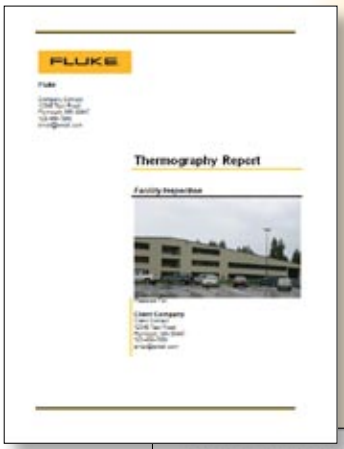


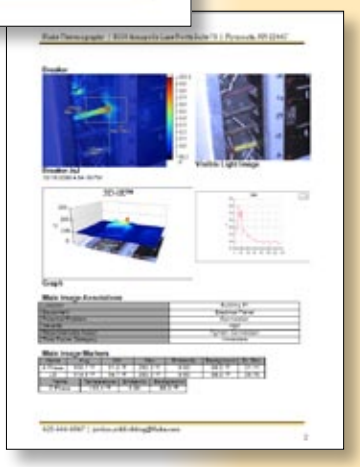
Organize data with extensive annotations

Included with every imager

Fluke includes SmartView® software with unlimited licenses and lifetime upgrades with every thermal imager.

- No need to pay extra for a professional software solution





Simplified report generation

SmartView® system requirements

Software requirements

- Microsoft Windows XP/Vista
- Web browser for product registration and viewing FAQs: Microsoft® Internet Explorer 5.0 or newer
- Microsoft® Word 2007 for report template modification (optional)

Hardware requirements

- Memory card reader to transfer images to computer (included)
- 512 MB RAM (1GB for Vista), not including the space requirements for web browser and Microsoft® Word
- 16-bit color, 1024x768 resolution video or better
- Color printer for printing images (optional)
- CD-ROM drive for installing SmartView™ software

Thermal imaging terminology explained

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. An example of the different palettes appear to the right.

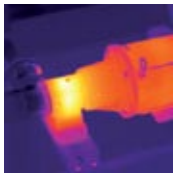
Sensor Size—Similar to digital cameras the sensor size describes the amount of displayed points per image of a thermal imager. A sensor size of 320 x 240 captures and displays more than 76,800 measurement points with each measurement. If the imager is fully radiometric then it also truly measures and stores all captured points with the image.

Field of view (FOV)—Indicates what the thermal imager sees or measures at a given moment. The combination of the Field Of View specification and the distance to the measured object determines which surface or part of an object will be measured as a total. A FOV calculator on www.fluke.eu/ti helps you calculate the measurement surface at various distances to the object.

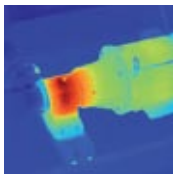
Thermal sensitivity—Indicates what the smallest temperature difference is which can be measured/displayed in an image. It basically is the maximum resolution of the image and is referred to as NETD (noise equivalent temperature difference).

Emissivity adjustment—All surfaces emit infrared energy or heat. The level of emission varies much per surface and is described with the term emissivity. Painted coatings and materials usually have a high emissivity while polished aluminum has a low emissivity. Visit www.fluke.eu/ti for a table with emissivities for different materials. To measure the temperature of a material accurately it will be necessary to adjust for the material's 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.



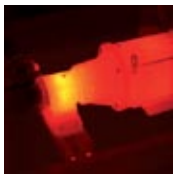
Ironbow



Blue-red

High contrast

Amber



Hot metal

Grey

Specifications

	Ti32	Ti25	Ti10	Ti9
Temperature				
Temperature measurement range (not calibrated below -10 °C)	-20 °C to +600°C	-20 °C to +350 °C	-20 °C to +250 °C	
Temperature measurement accuracy	± 2 °C or 2 % (at 25°C nominal, whichever is greater)		± 5 °C or 5 % (at 25°C nominal, whichever is greater)	
On-screen emissivity correction	Yes		—	
On-screen reflected background temperature compensation	Yes		—	
On-screen transmission correction	Yes	—		
Imaging performance				
Detector type	320 X 240 Focal Plane Array, uncooled microbolometer	160 X 120 Focal Plane Array, uncooled microbolometer		
Thermal sensitivity (NETD)	≤ 0.05 °C at 30 °C (50 mK)	≤ 0.1 °C at 30 °C (100 mK)	≤ 0.2 °C at 30 °C (200 mK)	
Infrared spectral band	7.5 mm to 14 mm (long wave)			
Visual (visible light) camera	Industrial Performance 2.0 Megapixel	Industrial Performance 1.3 MegaPixel		—
Minimum focus distance	46 cm			—
Standard infrared lens type				
Field of view	23 ° x 17 °			
Spatial resolution (IFOV)	1.25 mRad			
Minimum focus distance	15 cm			
Optional telephoto infrared lens type				
Field of view	11.5 ° x 8.7 °	—		
Spatial resolution (IFOV)	0.63 mRad	—		
Minimum focus distance	45 cm	—		
Optional wide-angle infrared lens type				
Field of view	46 ° x 34 °	—		
Spatial resolution (IFOV)	2.50 mRad	—		
Minimum focus distance	7.5 cm	—		
Focus mechanism	Manual, one-handed Smart Focus capability			
Image presentation				
Palettes				
Standard	Ironbow, Blue-Red, High Contrast, Amber Inverted, Hot Metal, Grayscale, Grayscale Inverted	Ironbow, Blue-Red, High Contrast, Amber, Hot Metal, Grey	Ironbow, Blue-Red, High Contrast, Grey	
Ultra Contrast	Yes	—		
Level and span	Smooth auto-scaling and manual scaling of level and span			
Fast auto toggle between manual and auto modes	Yes		—	
Fast auto-rescale in manual mode	Yes		—	
Minimum span (in manual mode)	2.5 °C		5 °C	
Minimum span (in auto mode)	5 °C		10 °C	
IR Fusion® information				
Automatically aligned (parallax correctable) visual and IR blending	Yes			—
Picture-In-Picture (PIP)	Three levels of on-screen IR blending displayed in center of LCD		100 % IR displayed in center or LCD	—
Full screen infrared	Three levels of on-screen IR blending displayed in center of LCD		100 % IR displayed in center of LCD	—
Color alarms (temperature alarms)	High-temperature Alarm (User selectable)	—		—
Voice Annotation				
Voice annotation	60 seconds maximum recording time per image; reviewable playback on imager		—	
Image capture and data storage				
Image capture, review, save mechanism	One-handed image capture, review, and save capability			
Storage medium	SD Memory Card (2 GB memory card will store at least 1200 fully radiometric (.is2) IR and linked visual images each with 60 seconds voice annotations, or 3000 basic bitmap (.bmp) images, or 3000 jpeg (.jpeg) images; transferrable to PC via included multi-format USB card reader			
File formats	Non-radiometric (.bmp) or (.jpeg) or fully-radiometric (.is2)	Non-radiometric (.bmp) or fully-radiometric (.is2)		
	No analysis software required for non-radiometric (.bmp and .jpeg) files	No analysis software required for non-radiometric (.bmp) files		
Export file formats w/ SmartView® software	JPEG, JPG, JPE, JFIF, BMP, GIF, DIB, PNG, TIF, and TIFF			
Memory review	Thumbnail view navigation and review selection	Sequential image navigation and review		
Software controls and adjustments				
Language selection	English, German, French, Spanish, Portuguese, Italian, Swedish, Finnish, Russian, Czech, Polish,Turkish, Simplified Chinese, Traditional Chinese, Korean, Japanese			
Image controls	Smooth auto scaling and manual scaling			
On-screen indicators	Battery status, real time clock and center point temperature, range and span indication and high and low alarm settings			
Power				
Battery type	Two replaceable rechargeable battery packs (Lithium ion)	Internal rechargeable battery NiMh (included)		
Battery operating time	4+ hours per battery pack	3 to 4 hours continuous operation		
Battery charging	Two-bay AC battery charger	2 hours with ac charger or dc car charger (charges battery while operating)		
AC operation	AC adapter/charger 110/230 V ac, 50/60Hz			
Power saving	Automatic shutdown and sleep modes (user specified)			
Environmental and mechanical design				
Operating temperature	-10 to +50 °C			
Storage temperature	-20 to +50 °C			
Relative humidity	10% to 95%, non-condensing			
Water and dust resistant	IP54			
Two meter drop test	Yes with standard lens	Yes		
Protective lens cover	Yes			
Weight (including battery)	1.05 kg	1.2 kg		
Imager size (HxWxD)	277 x 122 x 170 mm	267 x 127 x 152 mm		
Other				
Warranty	2 years			
EN 61010-1 2nd edition and EN61326-1	Yes			

Thermal imaging accessories

HAWK I.R.
A Fluke Company

Got switchgear? You need Hawk IR Windows, from Fluke

Use arc-resistant IR Windows with Quadraband™ optic technology, exclusive to Hawk IR.

- Reduce the labor required to inspect your switchgear from three heads to one
- Stay safety compliant with NFPA70E and leave the panels closed
- Extend the life of your equipment with more frequent IR scans

For more information, talk to your Hawk IR representative or visit **www.irwindows.com**

Expand your thermal imaging capabilities with the following Fluke accessories:

FLK-LENS/TELE1
Telephoto Infrared Lens
(Ti32 only)

FLK-LENS/WIDE1 Wide-angle Infrared Lens
(Ti32 only)

TI-CAR-CHARGER
Thermal Imager Vehicle Charger

TI-VISOR Thermal Imager Visor

FLK-TI-SBP3
Extra battery (Ti32 only)

Ti-SBC3 Charging Base
(Ti32 only)

Available late 2009

TI-TRIPOD Tripod Mounting Base Accessory

Ordering information

Fluke Ti32 Thermal Imager
Fluke Ti25 Thermal Imager
Fluke Ti10 Thermal Imager
Fluke Ti9 Electrical Thermal Imager

Everything you need to get started is included:

- In-box training DVD
- SmartView® analysis and reporting software
- 2 GB SD Memory Card
- SD Card Reader for downloading images into your computer
- Rugged, hard carry case and portable, soft carry case
- Hand strap, adjustable for left of right handed user
- Rechargeable battery (Ti32 includes two external smart rechargeable batteries)
- AC charger/power supply

Fluke. *Keeping your world up and running.*™

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