Thermal imaging cameras for electrical and mechanical applications

FLIR

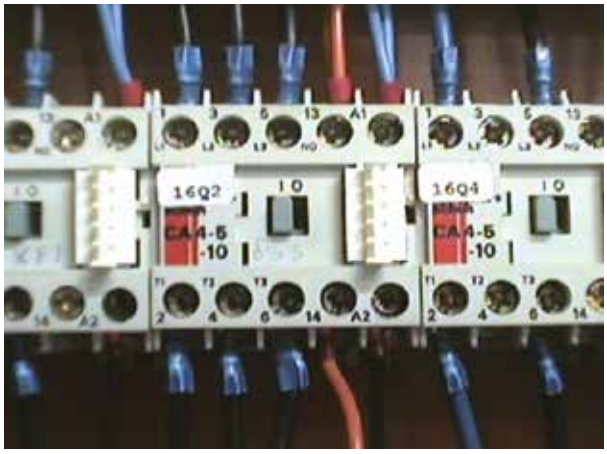
Electrical Maintenance

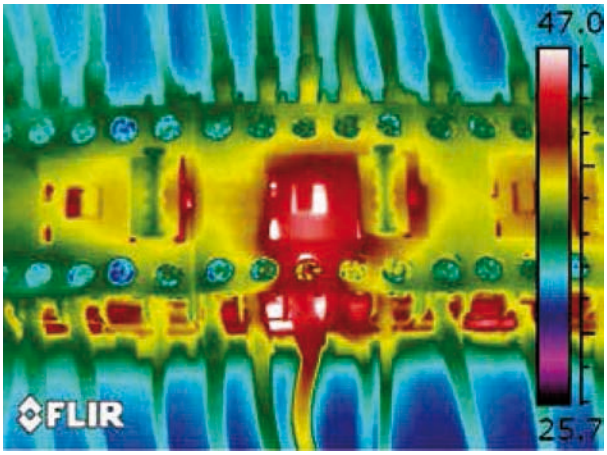
Mechanical Maintenance

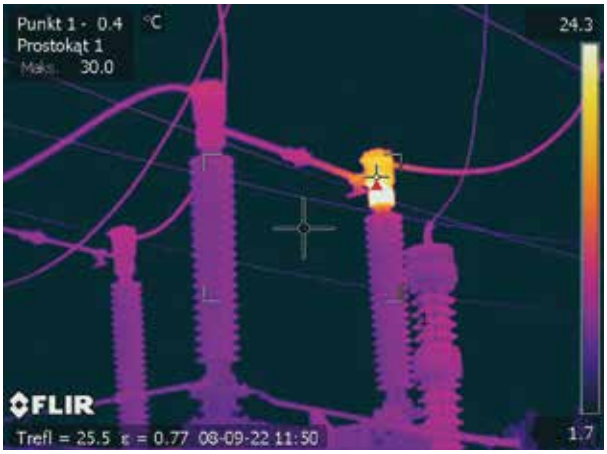
Utilities

Energy Loss

Thermal imaging cameras for electrical and mechanical applications







FLIR Systems: the world leader in thermal imaging cameras

FLIR Systems is the world leader in the design, manufacturing and marketing of thermal imaging systems for a wide variety of commercial, industrial and government applications.

FLIR Systems' thermal imaging systems use state-of-the-art infrared imaging technology that detects infrared radiation - or heat. Based on detected temperature differences, thermal imaging cameras can create a crisp image. Complicated algorithms make it also possible to read correct temperature values from this image. We design and manufacture all of the critical technologies inside our products, including detectors, electronics, and special lenses ourselves.

FLIR Systems, Stockholm

FLIR Systems, Portland

FLIR Systems, Boston

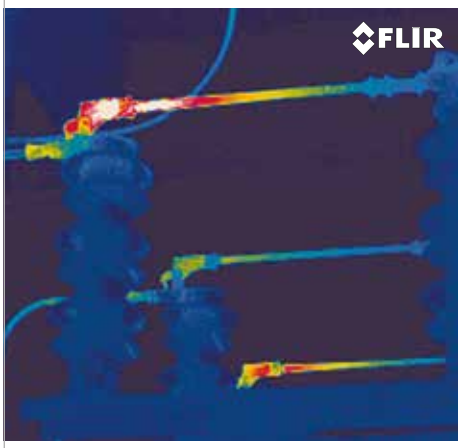
FLIR Systems Santa Barbara

Rapidly emerging markets and organization
Interest for thermal imaging has grown considerably over the last few years in a large variety of markets. To face this increased demand, FLIR Systems has expanded its organization drastically. Today we employ more than 3,000 people. Together, these infrared specialists realize a consolidated annual turnover of more than 1 billion US dollars. This makes FLIR Systems the largest manufacturer of commercial thermal imaging cameras in the world.

Manufacturing capabilities
FLIR Systems currently operates 6 manufacturing plants: three in the USA (Portland, Boston and Santa Barbara, California) one in Stockholm, Sweden, one in Estonia and one in Paris, France.

Thermal imaging: more than building a camera
There is more to the world of thermal imaging than building a camera. FLIR Systems is not only committed to providing you with the best camera, we are also able to offer you the best software, service and training to suit your thermal imaging needs.

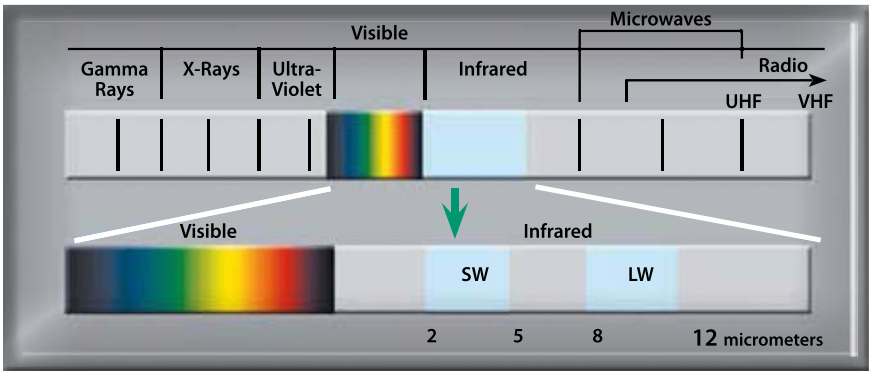
INFRARED:
more than meets the eye



Infrared - part of the electro-magnetic spectrum

Our eyes are detectors that are designed to detect visible light (or visible radiation). There are other forms of light (or radiation) that we cannot see. The human eye can only see a very small part of the electromagnetic spectrum. At one end of the spectrum we cannot see ultraviolet light, while at the other end our eyes cannot see infrared. Infrared radiation lies between the visible and microwave portions of the electromagnetic spectrum. The primary source of infrared radiation is heat or thermal radiation.

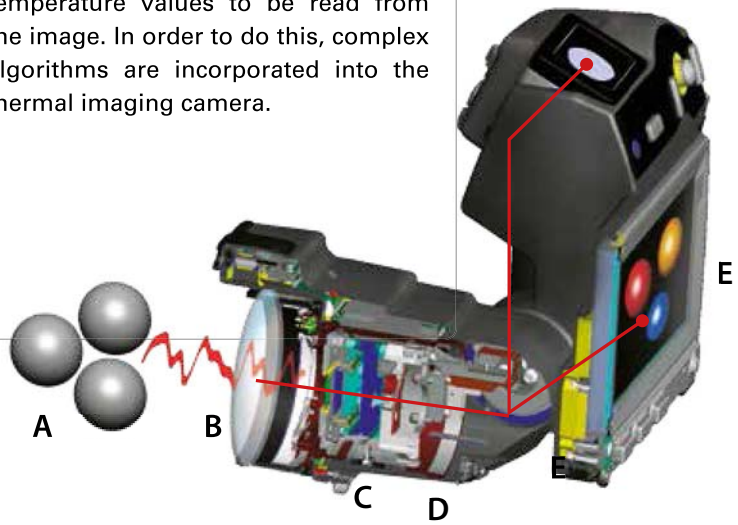
Any object that has a temperature above absolute zero (-273.15 degrees Celsius or 0 Kelvin) emits radiation in the infrared region. Even objects that we think of as being very cold, such as ice cubes, emit infrared radiation. We experience infrared radiation every day. The heat that we feel from sunlight, a fire or a radiator is all infrared. Although our eyes cannot see it, the nerves in our skin can feel it as heat. The warmer the object, the more infrared radiation it emits.



The infrared camera

Infrared energy (A) coming from an object is focused by the optics (B) onto an infrared detector (C). The detector sends the information to sensor electronics (D) for image processing. The electronics translate the data coming from the detector into an image (E) that can be viewed in the viewfinder or on a standard video monitor or LCD screen.

Infrared thermography is the art of transforming an infrared image into a radiometric one, which allows temperature values to be read from the image. In order to do this, complex algorithms are incorporated into the thermal imaging camera.



Why use thermal imaging cameras?

Why would you choose a FLIR thermal imaging camera? There are other technologies available to help you measure temperatures in a non-contact mode. Infrared thermometers for example.

Infrared thermometers vs thermal imaging cameras
Infrared (IR) thermometers are reliable and very useful for single-spot temperature readings, but, for scanning large areas or components, it's easy to miss critical components that may be near failure and need repair.

A FLIR thermal imaging camera can scan entire motors, components, or panels at once - never missing any overheating hazards, no matter how small.

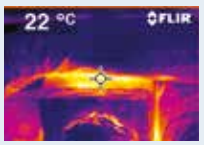
Use thousands of infrared thermometers at the same time
With an infrared thermometer you are able to measure the temperature at one single spot. FLIR thermal imaging cameras can measure temperatures on the entire image. The FLIR E4 has an image resolution of 80 x 60 pixels. This means that it is equal to using 4,800 IR thermometers at the same time. If we look at the FLIR T640, our top model, which has an image resolution of 640 x 480 pixels, this means 307,200 pixels or using 307,200 infrared thermometers at the same time.

IR thermometer, temperature measurement in one spot

FLIR E4, temperature in 4,800 spots

Find problems faster and easier with extreme accuracy.
It's easy to miss critical problems with a spot IR thermometer. A FLIR thermal imaging camera scans entire components giving you instant diagnostic insights showing the full extent of problems.

What an IR Thermometer sees.



What a thermal imaging camera sees.

What an IR Thermometer sees.

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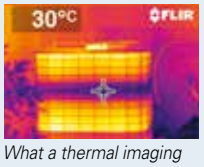


What a thermal imaging camera sees.

Thermal imaging cameras for electrical and mechanical applications

Thermal imaging has evolved into one of the most valuable diagnostic tools for electrical and mechanical applications. By detecting anomalies often invisible to the naked eye, thermography allows corrective action to be taken before costly system failures occur.

Thermal imaging cameras have become compact systems that look just like a normal video camera/digital camera, are easy to use and generate a real-time high-resolution image. Numerous industries worldwide have discovered the advantage of incorporating thermal imaging cameras in their maintenance programs.

Applications

There are an endless number of applications for thermal imaging cameras in the Industrial area.

Poor connection and internal damage

Internal fuse damage

Low voltage inspections

Themal imaging cameras, are commonly used for electrical inspections. As electrical connections become loose, there is a resistance to current that can cause an increase in temperature. This can then cause components to fail, resulting in unplanned outages and injuries. In addition, the efficiency of an electrical grid becomes low prior to failure, thus energy is spent generating heat, causing unnecessary losses.

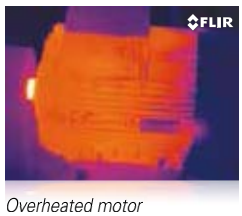
Incorrectly secured connection

Inspection of high voltage power lines

High voltage inspections

Power transformers are often checked with thermal imaging cameras. Temperatures of the cooling fins and the high voltage connections can be compared so that, if necessary, corrective action can be taken before real problems occur. Other high voltage installations that are checked with a thermal imaging camera include circuit breakers and switchers and high-voltage power lines. Potential problem areas will be clearly shown in the thermal image.

Suspected roller



Overheated motor

Mechanical

In many industries, mechanical systems serve as the backbone of operations. Thermographic data can be an invaluable source of complimentary information to vibration studies in mechanical equipment monitoring.

District heating *Laboratories* Bench
Manufacturing industries Automot
Logistics & transportation
Electrical companies *Service* Elec

Thermal imaging cameras:

- Are as easy to use as a camcorder or a digital camera
- Give you a full image of the situation
- Perform inspections when systems are under load
- Identify and locate the problem
- Measure temperatures
- Store information
- Tell you exactly what needs to be fixed
- Find the problems before real problems occur
- Save you valuable time and money

Damaged insulation

Steam trap

Pipework

Infrared thermography is also a great tool for detecting faults in pipes and insulation. Heat exchangers are regularly checked with infrared to detect blocked pipes. A thermal imaging camera can quickly give an overview of the entire installation. There is no need to check each pipe individually.

Refractory insulation defect

Breakdown of refractory on a rotary cement kiln

Refractory

A thermal camera system provide rapid and accurate diagnoses for furnace maintenance, refractory loss management, condenser fin diagnosis, etc.

A wide range of thermal imaging cameras for electrical and mechanical applications

FLIR Systems markets a full product range of thermal imaging cameras for electrical and mechanical applications. Whether you are just discovering the benefits that thermal imaging cameras have to offer or if you are an expert thermographer, FLIR Systems offers you the correct tool for the job.

Discover our full product range and find out why FLIR Systems is the world leader in thermal imaging cameras.

n test tables

ive *Mechanical & electronics*

tricians Maintenance

Unique FLIR Systems features

As the world leader in thermal imaging cameras FLIR Systems is constantly introducing new thermal imaging cameras and features that are allowing for even more efficient and faster thermal inspections.

"Industry first" features
Connecting thermal imaging cameras with other measurement tools has become extremely important. Results need to be analyzed and need to be sent to customers or management. In order to facilitate these tasks FLIR Systems has equipped most of its thermal imaging cameras with unique, "industry first" features.

WiFi compatibility
Allows to wirelessly transfer images from your thermal imaging camera.

- Show what you are seeing to a colleague or customer who is a distance away. This is extremely useful when measurements need to be done in hard to reach areas or difficult environments.
- Analyse thermal images directly on the iPad, iPhone or Android devices including Amazon Kindle via a local network.
- Generate comprehensive reports.
- Send the inspection reports immediately to your colleagues, customers or management via e-mail.

FLIR Tools Mobile App for Android, iPad, iPhone, and iPod Touch
FLIR leads the way with forward-thinking Wi-Fi connectivity to Android and to iPad, iPhone and iPod Touch devices. Just download the new FLIR Tools Mobile app from Google Play or from the App Store and you're ready to see, capture and import thermal images as well as to stream and capture live video from select FLIR cameras. FLIR Tools Mobile can also be used for remote control of the camera.

MeterLink
FLIR MeterLink technology makes it possible to transfer, via Bluetooth, the data acquired by an Extech clamp meter into the thermal imaging camera.

- Saves time: no need to take notes during the inspection.
- Eliminates the risk of erroneous notes.
- Speeds up the reporting process: all values are automatically included in your report.
- Combine your thermal image with electrical measurement data.

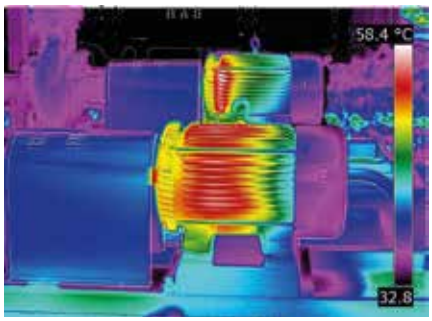
EX845
1000A AC/DC Clamp Meter

Touch screen
An LCD touch screen brings interactivity and user comfort to a new level.

Multi Spectral Dynamic Imaging (MSX®)

A new, patent-pending technology based on FLIR's unique onboard processor that provides extraordinary thermal image details in real time.

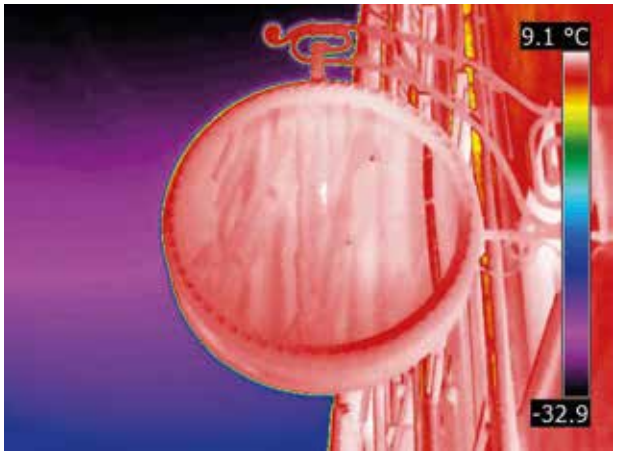
- Real-time thermal video enhanced with visible spectrum definition
- Exceptional thermal clarity to highlight exactly where the problem is
- Easier target identification without compromising temperature data
- Unrivalled image quality. No need for a separate digital photo for reports



Unlike traditional thermal fusion that inserts a thermal image into a visible-light picture, FLIR's new MSX® embosses digital camera detail onto thermal video and stills.

Instant Results in real time:

- Sharper-looking thermal images
- Quicker target orientation
- Clutter-free reports
- Faster route to solutions



Thermal image without MSX®

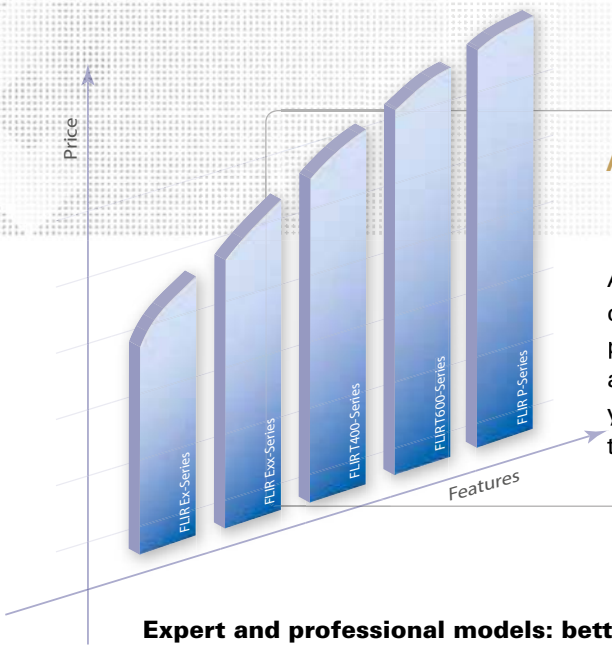
Thermal image with MSX®: Although glass is not transparent for infrared radiation this thermal image clearly shows the hands of the clock behind the glass. This is only possible thanks to MSX® technology that overlays a part of the visual image over the thermal image. The result: thermal images on which the smallest details can be seen.

Image sketch

This new FLIR Systems feature allows to clearly indicate on a saved image the location of the problem area both on the thermal and the visual image. This can be done immediately on the touch screen of the camera. The indications you make on the thermal image will automatically appear in your report.

Continuous auto-focus

A solution with two digital cameras allows for continuous auto-focus of the thermal images. Continuous auto-focus makes the FLIR T640 the first fully automatic thermal imaging camera on the market.



A full product range

At FLIR Systems we realize that different users have different needs. Therefore we have developed a full product range of thermal imaging cameras. More advanced models contain more features and allow to do your work faster and more efficient. They are the ideal tools for the expert and professional users.

Expert and professional models: better image quality

Just like in photography, having an image which is composed of more pixels means that the camera produces higher quality images. But there is more. A thermal imaging camera with 640 x 480 pixels has 307,200 temperature measurement points in one image which is four times more than a camera with 320 x 240 pixels and 76,800 temperature measurement points. When looking at the same target from the same distance, more pixels will cover the target. This will result in much better measurement accuracy.

Image of a hot spot on a power line in a utility substation taken at a distance of about 20m.

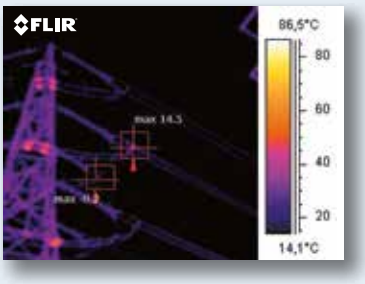


Image taken with 120 x 120 pixels resolution and <100mK thermal sensitivity.

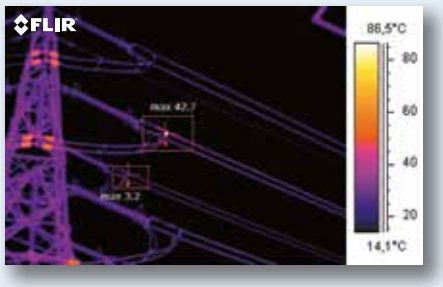


Image taken with 320 x 240 pixels resolution and 50mK thermal sensitivity. Please note how the increased number of pixels will result in a more accurate temperature reading in the hot spot.

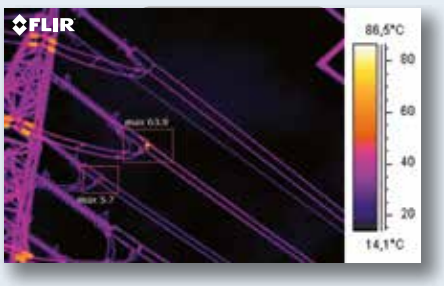


Image taken with 640 x 480 pixels resolution and <45mK thermal sensitivity. Notice how the hot spot now is clearly visible and that the increased number of pixels will result in an even more accurate temperature reading in the hot spot. It is now clear that there is a problem in the power line.

Ergonomics

When you are an expert or professional and using your camera several hours per day you need an ergonomic tool. No matter where the area to be inspected is located, you need to be able to handle your camera in an easy, ergonomic way. This will not only increase your analysis capabilities in the field but it will also increase your productivity.

FLIR Point and shoot thermal imaging cameras

FLIR Ex-Series

FLIR Exx-Series

FLIR Ex-Series
FLIR Ex-Series thermal imaging cameras are ideal for users that are just discovering the benefits that thermal imaging has to offer. Extremely easy to use, even from your very first thermal inspection.

FLIR Exx-Series
The FLIR Exx-Series have been developed for those that already know the benefits thermal imaging cameras have to offer, and superior image quality and more reporting options. The FLIR Exx-Series contain a number of useful features that will speed up your inspections drastically.

FLIR Ex-Series

Easy to use, point-and-shoot thermal imaging cameras

FLIR Ex-Series cameras are point-and-shoot thermal imaging cameras that give you access to a new dimension in inspection capability. A FLIR Ex-Series camera is an affordable replacement for a spot pyrometer. It provides a thermal image with temperature information on every pixel. The combined image storage of the new MSX®, thermal and visual formats make the cameras incomparably easy to use.

Outstanding ease-of-use
The cameras are extremely easy to understand and operate, designed for entry-level users. The cameras are intuitive and come with a full manual.

Fully automatic
FLIR Ex-Series produce instant, point-and-shoot JPEG thermal imagery with all required temperature data included.

Focus free
The fixed focus-free lens makes using the FLIR Ex-Series a snap.

Compact and lightweight
FLIR Ex-Series weighs only 575g, and is easy to store in a belt pouch.

Visual camera
Visible light camera makes observing and inspecting faster and easier.

Reporting and analysis software included
FLIR Tools software is available for free download for all Ex-Series users.

Measure temperatures
Measures temperatures up to +250°C and detects temperature differences as small as 0.06°C (FLIR E6 / FLIR E8).

Measurement functions
Spotmeter, area with max./min., color alarm; blue below / red above set temperature.*

Picture-in-Picture (PiP)
With the PiP function it is easy to locate areas of interest.*

Multi Spectral Dynamic Imaging (MSX®)
The innovative MSX® feature produces an image more rich in every detail than ever before.

Multi Spectral Image storage
Combined image storage including MSX®, thermal, PiP and visual.

** Features dependant on camera model, please check technical specifications for more details.*

MSX® allows seeing even more detail on the thermal image.

Save time and money in 3 steps:

- Detect hidden problems, make quick damage assessments and perform preventive inspections
- Identify energy losses and poor insulation
- Spot electrical faults before it is too late
- Produce instant thermal images of your findings
- Create reports, analyse and document your findings with the easy-to-use software

FLIR Ex-Series camera model comparison

FLIR E4	FLIR E5	FLIR E6	FLIR E8
Thermal image quality: 80x60 pixels	Thermal image quality: 120x90 pixels	Thermal image quality: 160x120 pixels	Thermal image quality: 320x240 pixels
Thermal sensitivity: 0.15°C	Thermal sensitivity: 0.10°C	Thermal sensitivity: 0.06°C	Thermal sensitivity: 0.06°C
IR image, visual image, MSX®, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery
Center spot	Center spot, area with max./min.	Spotmeter, area with max./min., color alarm; blue below / red above set temperature	Spotmeter, area with max./min., color alarm; blue below / red above set temperature

FLIR Exx-Series

Lightweight design, Heavyweight performers

The new user interface and new keypad make the new FLIR Exx-Series even more user-friendly than before. New features, such as MSX® and auto orientation, together with the Wi-Fi and MeterLink connectivity, ensure that the FLIR Exx-Series is the best in its class.

The cameras are ideal for predictive maintenance and planned inspections of electrical and mechanical systems to ensure they operate at maximum efficiency and safety with minimal energy consumption.

Up to 320 x 240 pixels resolution
The FLIR Exx-Series infrared image resolution ranges from 160x120 pixels to 320x240 pixels depending on camera model. Every additional pixel means more valuable temperature information to isolate problem areas.

Compact and lightweight
FLIR Exx-Series models weigh only 880g (battery included).

High quality 3.1 Mpixel visual camera
Visible light camera makes observing and inspecting faster and easier.

Thumbnail image gallery
An easy-to-access thumbnail image gallery helps you to quickly review and find your thermal images.

± 2% accuracy
High accuracy of ± 2% or ± 2 °C of reading.

Intuitive user interface
Intuitive user interface including keypad and 3.5" touch screen.

Built-in LED light
The built-in LED lamp ensures quality visual images regardless of job site lighting levels.

Long life battery
With a 4 hour battery life, its easy-to-replace Lithium Ion batteries will keep up with your demanding schedule.

Laser Pointer
A conveniently located button activates the laser pointer that will help you associate the hot or cold spot in the thermal image with the real physical target in the field.

Picture-in-Picture (PiP)
With the PiP function it is easy to locate areas of interest.

Text and voice annotations*
Text comments can be made by using the touch screen. A headset can be connected to make voice annotations.

Interchangeable lenses
In order to adapt the FLIR Exx-Series to every situation both wide angle and tele-lenses are available.

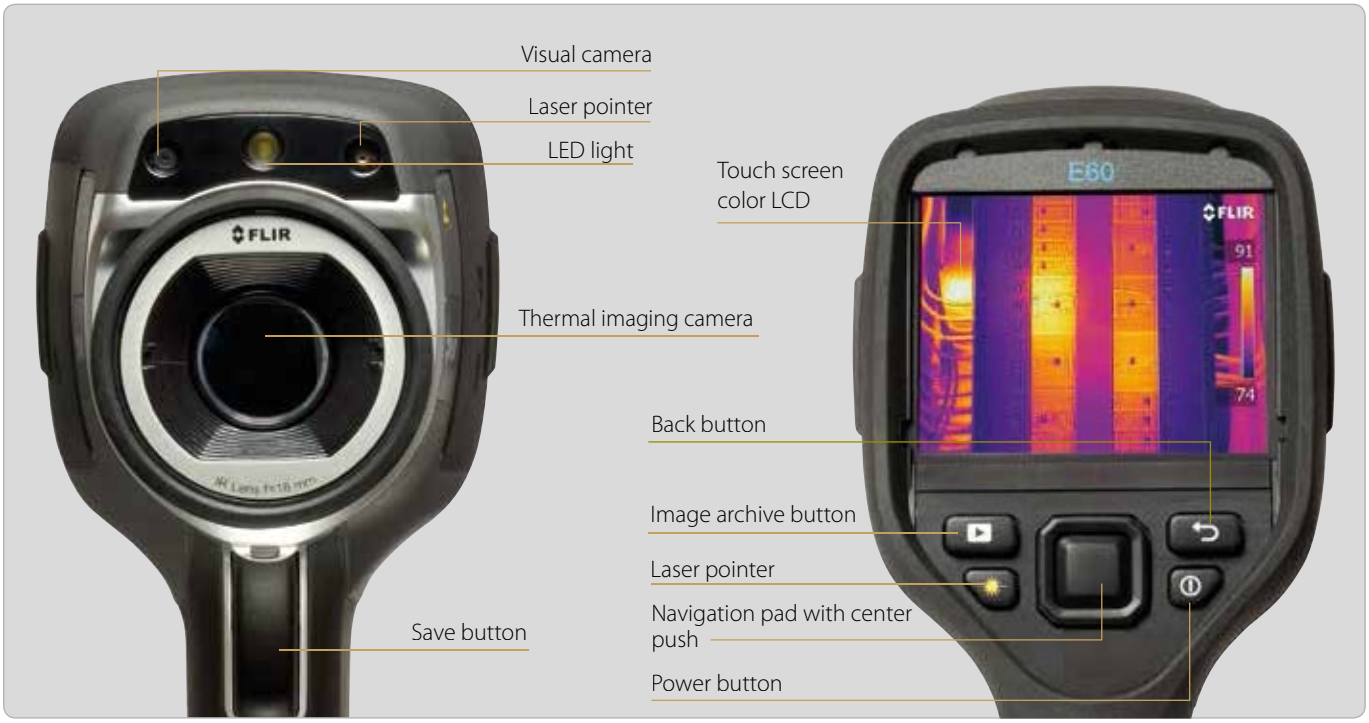
Multi Spectral Dynamic Imaging (MSX®)
The innovative MSX® feature produces an image more rich in every detail than ever before.

Auto orientation
The measurement data on the image will automatically adjust to the vertical or horizontal position of the camera.

Multi Spectral Image storage
Combined image storage including MSX®, thermal, PiP and visual.

** Features dependant on camera model, please check technical specifications for more details.*

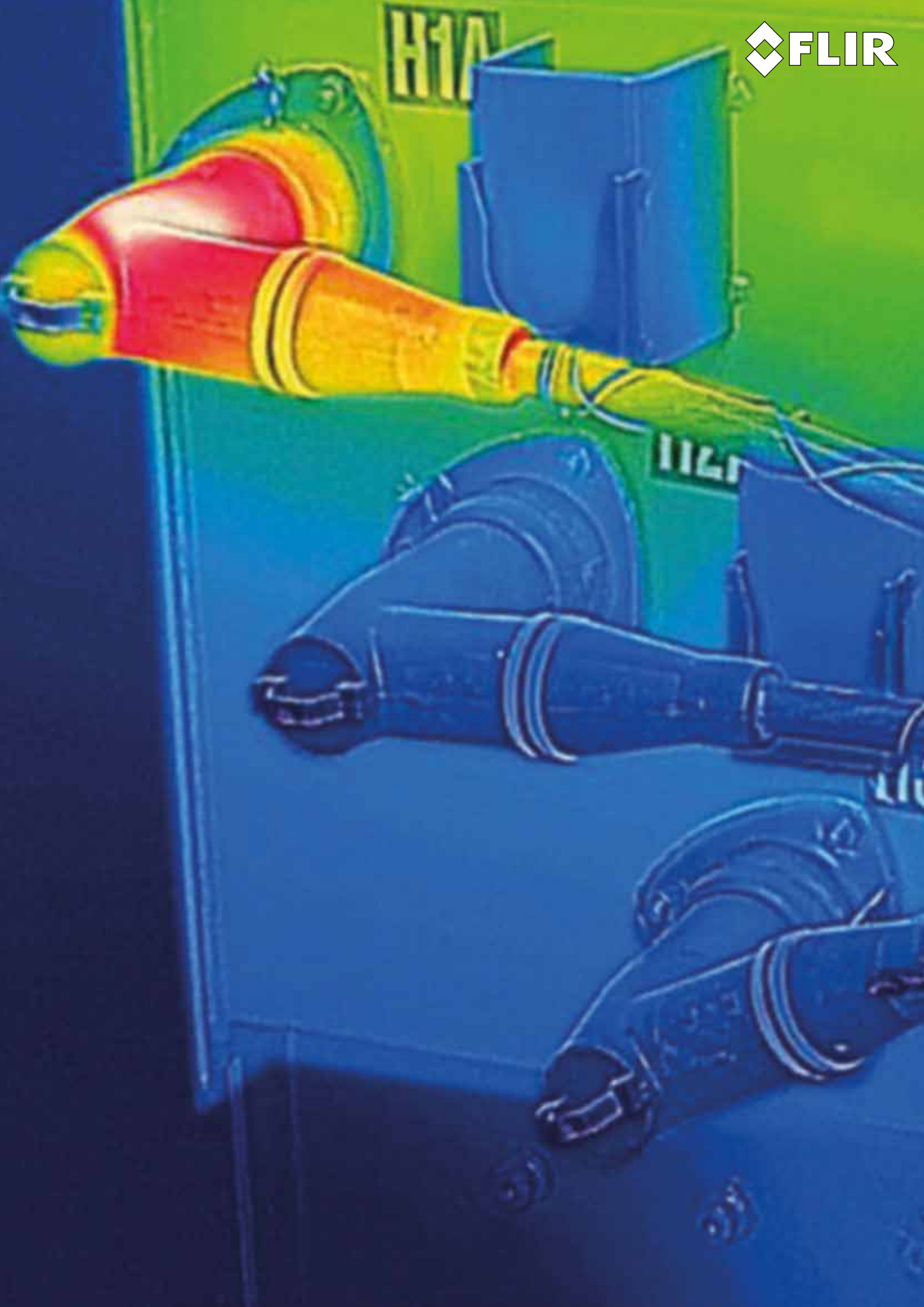
Connect to smartphone or tablet via Wi-Fi, using the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.



FLIR Exx-Series camera model comparison

FLIR E40	FLIR E50	FLIR E60
Thermal image quality: 160x120 pixels	Thermal image quality: 240x180 pixels	Thermal image quality: 320x240 pixels
Thermal sensitivity: <0.07°C	Thermal sensitivity: <0.05°C	Thermal sensitivity: <0.05°C
Temperature range: -20°C to +650°C	Temperature range: -20°C to +650°C	Temperature range: -20°C to +650°C
Spot meters, areas and difference temperature	Spot meters, areas and difference temperature	Spot meters, areas and difference temperature
MeterLink™	MeterLink™	MeterLink™
Bluetooth® / WiFi	Bluetooth® / WiFi	Bluetooth® / WiFi
2x digital zoom	2x, 4x digital zoom	2x, 4x digital zoom
MSX®	MSX®	MSX®
Multi spectral image storage	Multi spectral image storage	Multi spectral image storage
PiP IR area on visual image	PiP Scalable IR area on visual image	PiP Scalable IR area on visual image
Video out	Video out	Video out
Non-radiometric IR-video recording	Non-radiometric IR-video recording	Non-radiometric IR-video recording
Non-radiometric IR-video streaming	Non-radiometric IR-video streaming	Non-radiometric IR-video streaming
Radiometric IR-video streaming	Radiometric IR-video streaming	Radiometric IR-video streaming

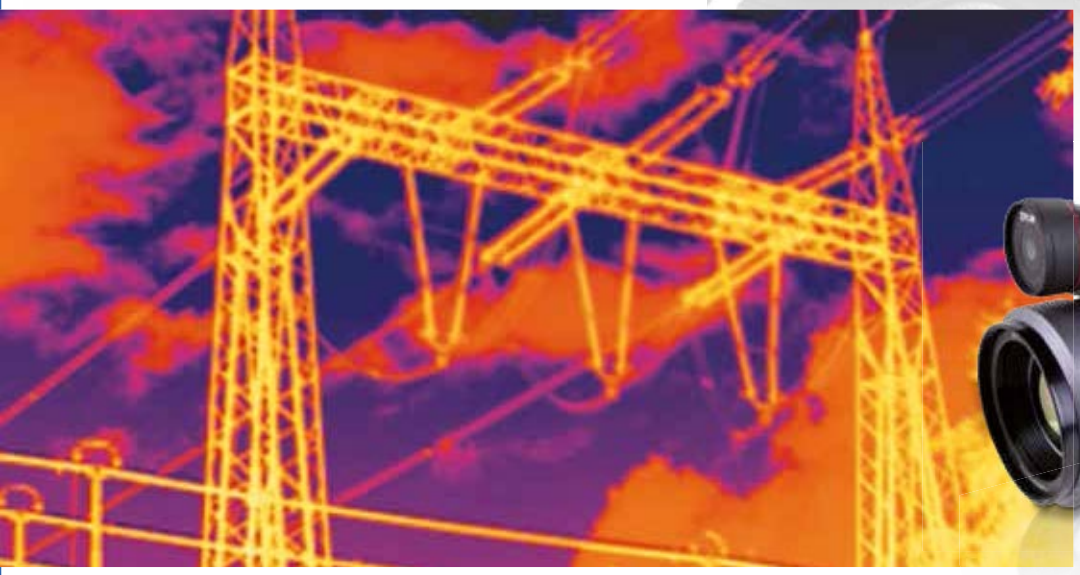
Mechanical check-up of an electrical motor using the FLIR Exx-Series. The Auto orientation feature automatically adjusts the measurement information on the display to the position of the camera.


FLIR

FLIR thermal imaging cameras for the expert and professional users

FLIR T400-Series

FLIR T600-Series



FLIR P660

T400-Series
The FLIR T400-Series offers a good performance at an affordable price. Excellent ergonomics and easy communication make the FLIR T400-Series a truly user-friendly camera for the beginner and advanced user.

FLIR T600-Series
The FLIR T600-Series is designed for the expert requiring the highest performance and the latest technology available. The cameras combine excellent ergonomics with superior image quality of 640 × 480 pixels IR resolution. The cameras are flexible and can meet your every need, and have extensive communication possibilities.

FLIR P660
The FLIR P660 thermal imaging cameras is designed for the expert having the camera as the number one tool. The P660 camera offers a superior image quality, the highest sensitivity and accuracy as well as the widest array of possibilities available. All tailor made to fulfill the demand of the expert depending on an accurate and full featured instrument to perform the work.

FLIR T400-Series

Excellent ergonomics and extensive communication possibilities

The FLIR T400-Series offers a good performance at an affordable price. Excellent ergonomics and easy communication makes the FLIR T400-Series a truly user-friendly camera for the beginner and advanced user. With extensive communication possibilities including Wi-Fi and MeterLink (Bluetooth). The latest technology integrated in the camera allows for fast image processing and storage.

320 x 240 pixel resolution
The T400-Series has a thermal image resolution of 320 x 240 pixels.

Camera sensitivity
The FLIR T400-series has a thermal sensitivity of < 45 mK.

High quality visual camera
Both models in the FLIR T400-Series have an integrated 3.1 Mpixel digital camera. Field of view adapts to IR lens.

Measurement range
The T400-series can measure temperatures up to +1200°C.

Interchangeable infrared lenses
The T400-Series features a standard 25° lens and optional 6°, 15°, 45° and 90° lenses.

Flexible interfaces
The T400-Series is equipped with standard video, USB outputs as well as a removable SD card.

MPEG-4 video
Create visual and infrared non radiometric MPEG-4 video files.

Thermal Fusion
Merges visual and thermal images to offer better analysis.

Temperature sound, image alarms
Make surveying easier and faster.

Picture-in-Picture
Create an infrared overlay on your visual image. Scalable, moveable and resizable.

Text and voice annotations
Text comments can be made from a pre-defined list or using the touch screen. A headset can be connected to make voice annotations.

Sketch annotations
Use the touch screen as pen and paper to add sketch annotations.

Image sketch (FLIR T440)
Indicate problem areas directly on the thermal image.

Radiometric IR video streaming
16 bit radiometric IR video can be streamed to a PC (via USB) running the FLIR software.

Image storage
FLIR uses a non proprietary radiometric JPEG image format that allows for post processing and report writing with Microsoft Word® based FLIR software.

Touch screen
3.5" LCD touch screen brings interactivity and user comfort to a new level.

Measurement Modes
Measurement spots, area with auto hot/cold spot indication, isotherms, ΔT calculation.*

Copy to USB
Transfer on board images or reports directly from the thermal imaging camera to a USB stick.

Instant reports
Create instant reports directly in camera, easily copy report to USB.

Multi Spectral Dynamic Imaging (MSX®)
The innovative MSX® feature produces an image more rich in every detail than ever before.

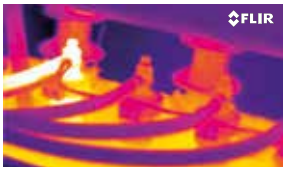
Compass
The direction in which the camera is looking is automatically added to every image.

**Features dependant on camera model, please check technical specifications for more details.*

Connect to smartphone or tablet via Wi-Fi, using the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.

Thermal Fusion


Visual image


Thermal image


Thermal Fusion image

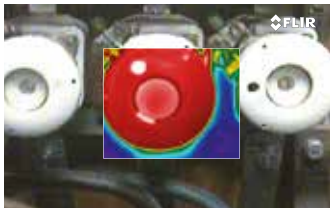
Multi Spectral Dynamic Imaging (MSX®)

MSX® allows seeing even more detail on the thermal image.

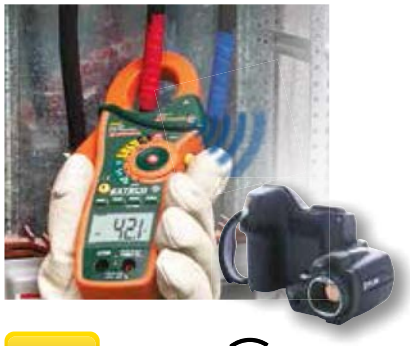
Image sketch

Multifunctional LCD touch screen allows sketching and marking directly on the screen.

Picture-in-Picture



MeterLink



FLIR T400-Series camera model comparison

FLIR T420	FLIR T440
	
Temperature range: -20°C to +650°C	Temperature range: -20°C to +1,200°C
2x, 4x digital zoom	2x, 4x, 8x digital zoom
MSX®	MSX®
	Image sketch on IR and visual
	Live line profile
	Measurement presets

FLIR T600-Series

State-of-the-art thermal imaging cameras that combine good ergonomics and flexibility with high image quality

The FLIR T600-Series offer a crisp thermal image of 640 x 480 pixels on which the smallest of details can be seen. The T600-Series is flexible, can meet your every need and has extensive communication possibilities.

Up to 640x480 pixel resolution
The high definition 640x480 pixels detector generates crisp and clear detailed images that are easy to interpret, resulting in reliable inspections with higher accuracy.

High sensitivity
The T640 allows you to see temperature differences as small as 0.035°C.

Tiltable IR unit
The tiltable IR unit gives you great flexibility and allows you to work faster and in a comfortable position during your inspections.

Large bright 4.3 inch LCD screen
The high quality LCD screen presents sharp and bright images also in outdoor environments.

Viewfinder (FLIR T640)
The high-resolution viewfinder is ideal for outdoor use or when the LCD screen is not used.

High quality visual camera
An integrated 5 megapixel visual camera generates crisp visual images in all conditions. Field of view adapts to IR-lens.

Laser Pointer
The position of the laser pointer is highlighted on the thermal image, which helps you associate the hot spot in the image with the physical target.

Flexible interfaces
Easy access to Digital Video Interface, USB for connecting external devices, USB2 for PC communication and a direct connection to charge the battery inside the camera.

Radiometric IR video streaming
16 bit radiometric IR video can be streamed to a PC (via USB) running the FLIR software.

MPEG-4 video
Create visual and infrared non radiometric MPEG-4 video files.

FLIR Thermal Fusion
Merges visual and thermal images for better analysis.

Picture-in-picture
Create an infrared overlay on your visual image. Moveable and resizable.

Touch screen
The LCD touch screen brings interactivity and user comfort to a new level. In combination with the large backlit buttons and joystick control the T600-Series is very easy to use.

Sketch annotations
Include a sketch with the thermal image of the inspected object, just draw it on the touch screen.

Text and voice annotations
Text comments can be selected from a list. A Bluetooth headset can be connected to make voice annotations.

Digital zoom
The FLIR T640 is equipped with a 1-8x continuous digital zoom and the T620 with a 1-4x zoom.

Multi Spectral Dynamic Imaging (MSX®)
The innovative MSX® feature produces an image more rich in every detail than ever before.

Image sketch
Indicate problem areas directly on the thermal image.

Continuous auto-focus
Continuous automatic focus on the object that you are inspecting.

Built-in GPS
GPS allows to georeference thermal images to determine their geographic location.

Compass
The direction in which the camera is looking is automatically added to every image.

Features dependant on camera model, please check technical specifications for more details.

Connect to smartphone or tablet via Wi-Fi, using the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.

FLIR T600-Series model comparison

FLIR T620	FLIR T640
Thermal sensitivity: <40 mk @ +30°C	Thermal sensitivity: <35 mk @ +30°C
Temperature range: -40°C up to +650°C	Temperature range: -40°C up to +2,000°C
1-4x continuous, digital zoom	1-8x continuous, digital zoom
MSX®	MSX®
	Live line profile
	Image sketch on thermal and visual
	Continuous auto-focus
	Viewfinder
	Measurement presets

The innovative FLIR MSX® feature produces an image more rich in every detail than ever before.

FLIR P660

A thermal imaging camera designed for the expert.

The FLIR P660 thermal imaging cameras is designed for the thermography expert having the camera as the number one tool. The P660 camera offers a superior image quality, the highest sensitivity and accuracy as well as the widest array of possibilities available. All tailor made to fulfill the demand of the expert depending on an accurate and full featured instrument to perform the work.

640x480 pixel resolution
The P660 has a high resolution pixel detector of 640x480 pixels that allows more accuracy and shows more details at a longer distance.

High sensitivity
< 30 mK thermal sensitivity captures the finest image details and temperature difference information.

High quality visual camera
An integrated 3.2 megapixel visual camera for generating crisp visual images in all conditions.

Contrast Optimizer
Automatic optimization of brightness and contrast adjustments to making it easier to produce thermal analyzes of detailed objects.

Panorama support
Take images in a sequence and automatically combine them to one large image using the FLIR Tools + software.

Built-in GPS
GPS allows to georeference thermal images to determine their geographic location.

Laser Pointer
Helps you associate the hot or cold spot in the IR image with the real physical target in the field.

Flexible interfaces
Easy access to composite video connection, USB, FireWire, and a direct connection to charge the battery inside the camera.

MPEG-4 video
Create visual and infrared non radiometric MPEG-4 video files.

FLIR Thermal Fusion
Merges visual and infrared images to offer better analysis.

Picture-in-picture
Create an infrared overlay on your visual image. Moveable and resizable.

Radiometric JPEG
FLIR uses a non proprietary radiometric JPEG image format that allows for post processing and report writing with Microsoft Word® based FLIR software.

Text and voice annotations
Text comments can be uploaded to the camera through a wireless IrDa interface. A Bluetooth® wireless headset can be connected to make voice annotations which are stored with the image.

Automatic- and Manual focus, Digital zoom
Focus possibilities include; automatic (single shot or laser spot based) or manual focus. Digital zoom 1-8x continuous, including panning.

Tiltable viewfinder
The high-resolution viewfinder is tiltable and can be adapted to the individual user. It is ideal for outdoor use or when the LCD screen is not used.

Large LCD screen
Super size 5.6" foldable high-quality LCD screen allows you to see the smallest details and temperature differences.

Multi-angle handle with integrated direct access buttons
A turnable control grip allows you to use the camera in the most comfortable position. The buttons and joystick to control the camera are integrated in this handle and always stay right underneath your fingertips.

Programmable direct access buttons
For increased flexibility the operator can program buttons located on the top of the camera for direct access to favourite functions.

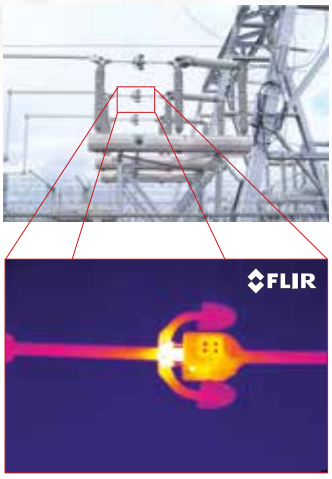
Features dependant on camera model, please check technical specifications for more details.

Contrast optimizer

Basic thermal image.

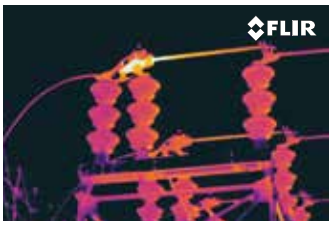
Thermal image enhanced with the Contrast Optimizer function.

High resolution



Thermal image of a high voltage installation taken from a longer distance still allows you to see all details.

Visual image



Thermal image

Thermal Fusion image

Inspections in a substation using infrared technology reveals overheated components.

Connect to smartphone or tablet via Wi-Fi, using the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.

FLIR IRW-Series

FLIR IRW-Series
IR Inspection Windows

Opening electrical cabinets to perform thermal and visual inspections of live components is dangerous work, exposing you to the risk of a hazardous arc flash incident. Now you can put the added safety of new FLIR IR Windows between you and energized equipment to better protect yourself and eliminate the need for opening enclosures.

Easy to install
Much easier to install and use than other brands, FLIR IR Windows help you work faster with greater confidence.

All FLIR IR Windows feature a secure, permanently-hinged cover that opens easily with one hand, which means there's nothing to remove, drop, mix up, or lose. FLIR's broadband crystal allows cameras to capture visible light pictures as well as thermal images and lets LED and laser illumination pass straight through for clearer visual assessments.

FLIR IR-Windows features

Easy Installation

FLIR IR Windows install quickly and securely using the same design as common conduit connections:

- Only one hole to create for each window
- One simple PIRma-Lock™ ring nut to tighten
- Uses standard US punch tools for hole knockouts

PIRma-Lock™ Reliability

Tried and true locknut technology makes FLIR's locking ring an IR window first:

- Teeth lock tight to the inside of the panel
- Automatically grounds metal components
- No screw holes required that might later strip out

Quick Access Hinged Cover

Simple thumb screw releases the permanently-hinged IR window cover:

- Easy, flip-open hatch for faster scans
- Prevents dropping, mix-ups, and loss
- Inside label for permanent identification

Broadband Crystal IR Window

Lens encased in rugged, anodized aluminum frame allows indoor & outdoor scans:

- Transmits short, mid and longwave IR images
- Supports visual inspections and fusion features
- Lets laser pointers and illumination shine through

Greater Productivity and ROI

Significantly reduces inspection time for more efficient assessments within NFPA 70E guidelines:

- Requires only one person instead of three
- Eliminates need for cumbersome PPE
- Helps reduce vast majority of arc flash triggers

FLIR Integrity

FLIR backs IRW-Series windows with comprehensive testing and a limited lifetime warranty:

- Meets relevant UL, CSA, IEC, and IEEE standards and ratings
- Tested by reputable agencies such as UL, KEMA, and TUV
- Tested samples withstood arcs, vibration, and extreme humidity
- Limited Lifetime Warranty against manufacturer defects

One hole to cut.

Easy placement.

Single PIRma-Lock™ ring nut.

Software

Turning tools into solutions

At FLIR Systems, we recognize that our job is to go beyond just producing the best possible thermal imaging camera systems. We are committed to enabling all users of our thermal imaging camera systems to work more efficiently and productively by providing them with the most professional camera-software combination.

Our team of committed specialists are constantly developing new, better and more user-friendly software packages to satisfy the most demanding thermal imaging professionals. All software allows fast, detailed and accurate analysis and evaluation of thermal inspections.

FLIR Tools

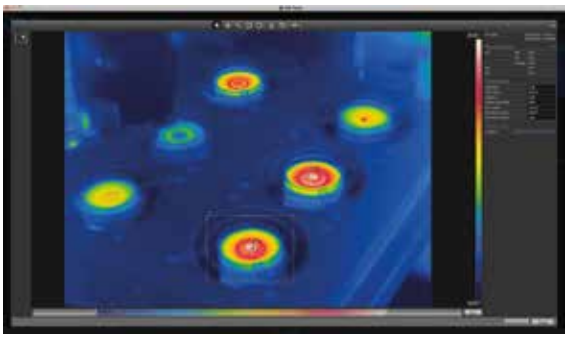
Groundbreaking IR Reporting Software, included with every camera

Showing those who need to know the hidden problems that you've found with your FLIR thermal imager is just as important as uncovering them in the first place. And FLIR Tools is the powerful, free software solution to help you present those findings to decision makers most effectively.

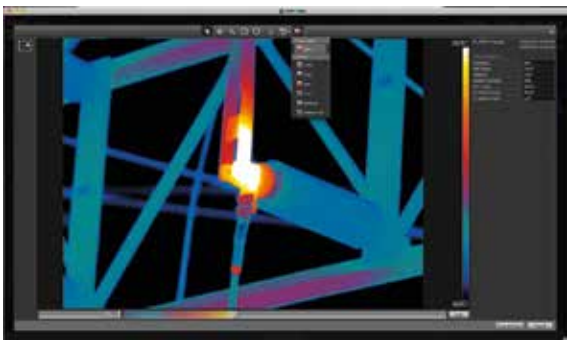
With the first IR software for Mac OS, FLIR Tools now gives both PC and Mac users the tools to quickly import, edit and analyze images, and turn them into convincing, professional PDF inspection reports, ready to print or email so you can get the "yes for repairs" fast.

Key features:

- Import, search, filter, and view FLIR JPEG images directly from your FLIR handheld camera via USB cable or by downloading from the imager's SD card
- Edit radiometric images to thermal tune level and span, change the palette, or adjust parameters such as emissivity, reflective temperature, and more
- Add measurement tools – spots, area boxes, circles, lines, Delta T
- Add text annotations and edit image descriptions
- Create professional PDF image sheets and reports
- Add headers, footers, and logos
- Create, import, edit and export templates
- Choose a report format: horizontal IR + DC or vertical IR + DC
- Edit MSX® images and "Sketch on IR/Visual" images
- Display stored compass and GPS information
- Perform updates on E-Series and T-Series cameras
- Switch between thermal, visual, MSX and PiP
- Export reports to print or email for easy sharing

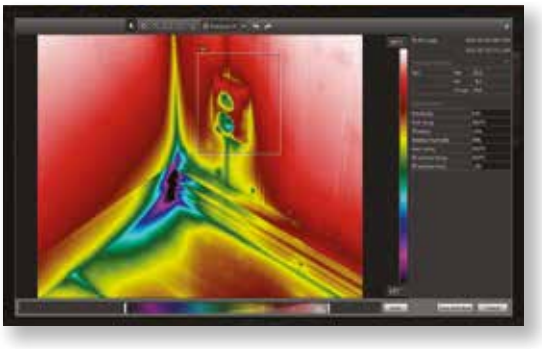


FLIR Tools allows you to edit radiometric images. You can also add advanced measurement tools like spots, area boxes, circles, lines and Delta T.



With FLIR tools you can adjust your images by changing the pallet and adjusting parameters such as emissivity, reflective temperature and more.

The built-in report templates allow the user to generate professional looking reports in no time. Image descriptions and text and voice comments can be added to create compelling, easy-to-interpret reports.



FLIR Tools+

For the advanced user (PC only)

Compared to FLIR Tools, FLIR Tools+ has the following features:

- Radiometric sequence recording
- Playback of recordings
- Create a panorama image
- Advanced reporting

FLIR Tools Mobile App

The Free FLIR Wi-Fi App for Apple® and Android™, and Kindle Mobile Devices

FLIR Tools Mobile now lets you stream live video to your mobile device from compatible FLIR E-Series* and FLIR T400- and T600-Series thermal imaging cameras, allowing you to monitor from a distance and show others what the camera is seeing as it happens.

Incorporate images into professional reports using the app. Then send them from the field by email or up to the cloud to customers and co-workers.

FLIR Tools Mobile allows users to:

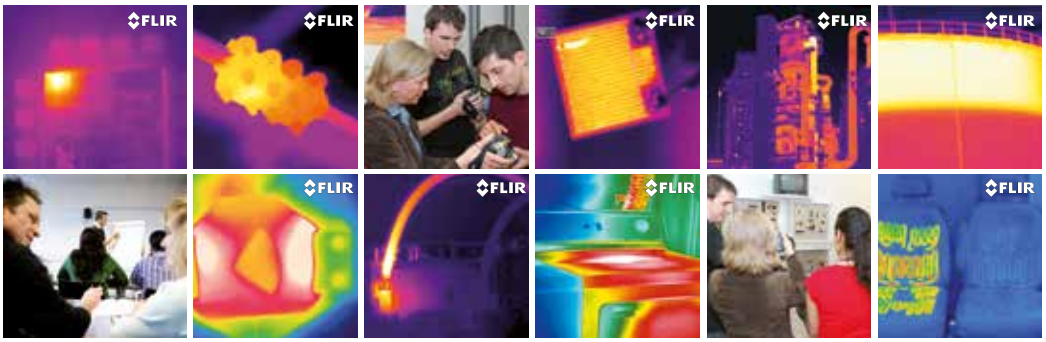
- Import stored images wirelessly
- Adjust the temperature span and contrast levels
- Change color palettes
- Add temperature measurement tools
- Play back voice comments
- Auto and manual focus
- Adjust picture-in-picture, thermal fusion, and IR and visible light image blending
- Remote control your FLIR thermal imaging camera
- Support for MSX® (Multi-Spectral Dynamic Imaging) images
- Support for sketch images on both IR and visual with toggling ON/OFF feature
- Support for same FOV (field of view match)
- Editable text comments

*FLIR E40, E50 and E60

ITC

FLIR Infrared Training Center

The Infrared Training Center (ITC) offers the world's leading infrared training and thermographer certification programs.



Although all our cameras are designed for easy installation and operation, there is a lot more to thermal imaging than just knowing how to handle the camera. As the leading company for thermal imaging technology, we like to share our knowledge with our customers and other interested parties.

We therefore organize regular courses and seminars. We also organize in-company training on request, so that you, or your staff, can gain familiarity with thermal imaging and its applications.

The ITC not only welcomes FLIR Systems customers but also users of other brands of cameras. In fact, anyone who wants to learn more about thermal imaging for any applications, before deciding to purchase a camera, is also invited.

The mission of the ITC is to make our customers and partners successful by enhancing their knowledge of IR technology, thermal imaging products, and relevant applications. The ITC offers a portfolio of courses that presents the right mix of theoretical and practical content to help professionals quickly apply thermal imaging technology to real life applications.

All our instructors are experienced thermal imaging specialists. Not only do they have a profound theoretical knowledge but they also have practical experience with numerous applications. For our customers, this means that attending one of the ITC's courses will give them a real hands-on learning experience.

Follow one of our courses and become a thermal imaging expert.

Each ITC course is a perfect combination of theoretical fundamentals and practical excercises. It guarantees participants a real hands-on learning experience.

After Sales

FLIR After Sales

At FLIR Systems, building a relationship with a customer takes more than just selling a thermal imaging camera. After the camera has been delivered, FLIR Systems is there to help meet your needs.

Once purchased, thermal imaging cameras are vital pieces of equipment. To keep them running at all times, we operate a worldwide service network with subsidiaries in Belgium, China, France, Germany, Hong Kong, Italy, the Netherlands, Sweden, United Arab Emirates, the United Kingdom and the USA.

If there should be a problem with one of our camera systems, these local service centers have all the know-how and equipment to solve it within the shortest possible time. Local camera service gives you the assurance that your system will be ready for use again within an extremely short timeframe.

Buying a thermal imaging camera is a long-term investment. You need a reliable supplier who can provide you with support over a long period of time.

Our service personnel regularly follows training programs at our production facilities in Sweden or the USA. Not only to learn about the technical aspects of the products, but also to familiarize themselves with your individual customer requirements and the latest applications.

Different types of maintenance contracts can be offered to make sure that, whatever happens, your thermal imaging camera is always available for use.

CUSTOMER CARE is not just a slogan.
We write it in capital letters at FLIR.

Accessories

Flexible systems that meet your changing needs

FLIR offers a wide variety of accessories to tailor your camera to your needs.

In today's fast-changing environment, requirements for purchased capital equipment can change from year to year or from project to project. Things that are vital today can be redundant tomorrow.

That makes it important for the equipment in which you invest to be flexible enough to meet the ever-changing needs of your applications. No other thermal imaging camera manufacturer offers a wider range of accessories than FLIR Systems.

Hundreds of accessories are available to customize our cameras for a wide variety of imaging and measurement applications.

From a comprehensive range of lenses, through LCD screens to remote control devices, everything is available to tailor your camera to your own, specific application.

A wide variety of accessories is available for every FLIR thermal camera

Extra Battery *15° lens* *45° lens* *Car charger* *Battery charger*

FLIR Ex-Series

Technical specifications

** After product registration on www.flir.com*

Camera specific

	FLIR E4	FLIR E5	FLIR E6	FLIR E8
IR resolution	80 x 60 pixels	120 x 90 pixels	160 x 120 pixels	320 x 240 pixels
MSX resolution	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels
Thermal sensitivity	0.15°C	0.10°C	0.06°C	0.06°C
Spatial resolution (IFOV)	10.3 mrad	6.9 mrad	5.2 mrad	2.6 mrad
Image modes	IR image, visual image, MSX®, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery	IR image, visual image, MSX®, picture in picture, thumbnail gallery
Color alarm	NA	NA	Blue below or red above set temperature	Blue below or red above set temperature

General

Imaging performance	
Field of view/min focus distance	45° x 34° / 0.5 m
Spectral range	7.5 - 13 µm
Image Frequency	9 Hz
Focus	Focus free
Focal Plane Array (FPA)	Uncooled microbolometer
Image Presentation	
Display	3" 320 x 240 color LCD
Image adjustment	Automatic adjust/lock image
Measurement	
Object temperature range	-20°C to +250°C
Accuracy	±2 °C or ±2% of reading , for ambient temperature 10°C to 35°C and object temperature above + 0°C
Measurement analysis	
Spotmeter	Center spot
Emissivity correction	Variable from 0.1 to 1.0
Emissivity table	Emissivity table of predefined materials
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
Setup	
Color palettes	Iron, Rainbow and Black/White
Set-up commands	Local adaptation of units, language, date and time formats
Image Storage	
Image storage capacity	Internal memory store at least 500 sets of images
Image storage mode	Simultaneous storage of images in IR, visual and MSX
File formats	Standard JPEG - 14 bit measurement data included
Data communication interfaces	
Interfaces	USB Micro: Data transfer to and from PC and Mac device
Power system	
Battery Type	Li-Ion rechargeable
Battery voltage	3.7 V
Battery operating time	Approx. 4 hours at +25°C ambient temperature and typical use
Charging system	Battery is charged inside the camera or in specific charger
Charging time	2.5 hours to 90% capacity in camera. 2 hours in charger
Power management	Automatic shutdown
AC operation	AC adapter, 90-260 VAC input, 5 VDC output to camera
Environmental specifications	
Operating temperature range	-15°C to +50°C
Storage temperature range	-40°C to +70°C
Humidity	IEC 60068-2-30/24 h 95% relative humidity
EMC	• WEEE 2012/19/EC • RoHs 2011/65/EC • C-Tick • EN 61000-6-3 • EN 61000-6-2 • FCC 47 CFR Part 15 Class B
Bump	25 g, IEC 60068-2-29
Drop	2 m
Vibration	2 g, IEC 60068-2-6
Physical characteristics	
Dimensions	244 x 95 x 140 mm
Weight	575 g, including battery
Shipping size	303 x 206 x 128 mm
Shipping weight	2.7 kg (FLIR E8: 2.95 kg)
Standard package	
FLIR thermal imaging camera, hard transport case, FLIR Tools™ download card, user documentation CD-ROM, printed documentation, battery (2x), power supply/ charger with EU, UK, US and Australian plugs, USB cable, battery charger (FLIR E8 only)	

FLIR Exx-Series

Technical specifications

Camera specific

	FLIR E40	FLIR E50	FLIR E60
Imaging Performance			
IR resolution	160 × 120 pixels	240 × 180 pixels	320 × 240 pixels
Spatial resolution	2.72 mrad	1.82 mrad	1.36 mrad
Thermal sensitivity	< 0.07 °C	< 0.05 °C	< 0.05 °C
Zoom	2x digital zoom	2x, 4x digital zoom	2x, 4x digital zoom
Image presentation			
Picture in Picture	IR area on visual image	Scalable IR area on visual image	Scalable IR area on visual image
Image modes	IR image, visual image, thumbnail gallery, picture-in-picture	IR image, visual image, picture-in-picture, thumbnail gallery	IR image, visual image, picture-in-picture, thumbnail gallery

General

Imaging Performance	
FOV / Minimum focus distance	25° × 19° / 0.4 m
Spectral range	7.5–13 µm
Image frequency	60 Hz
Focus	Manual
Focal Plane Array (FPA)	Uncooled microbolometer
Image presentation	
Auto orientation	Automatical adjustment of measurement data (vertical/horizontal)
Display	Built-in 3.5" LCD touch screen, 320 × 240 pixels
Digital camera	
Built-in digital camera	3.1 Mpixels, and one LED light
Image annotations	
Voice	60 seconds via Bluetooth®
Text	Text from predefined list or soft keyboard on touch screen
MeterLink	Possible to connect, via Bluetooth, Extech Moisture meter MO297 or Extech clamp meter EX845
Measurement	
Object temperature range	–20°C to +120 °C / 0°C to +650 °C
Accuracy	±2 °C or ±2% of reading
Measurement analysis	
Spotmeter	3
Area	3 boxes with min./max./average
Difference temperature	Delta temperature between measurement functions or reference temperature
Automatic hot/cold detection	Auto hot or cold spotmeter markers within area
Emissivity correction	Variable from 0.01 to 1.0 or selected from list of materials
Measurement corrections	Reflected temperature, optics transmission and atmospheric transmission
Color alarm	Red above, Blue below and Yellow interval
Set-up	
Image controls	Palettes (Arctic, Gray, Iron, Lava, Rainbow and Rainbow HC), image adjustment (auto/manual)
Set-up controls	Local adaptation of units, language, date and time formats; automatic shutdown, display intensity

Laser pointer	
Laser alignment	Position is displayed on the IR image
Laser	Activated by dedicated button
Image storage	
Format	Standard JPEG - including measurement data on SD memory card
Mode	Simultaneous storage of images in IR, visual and MSX
Video streaming/recording	
Non-radiometric IR-video recording	MPEG4 to memory card
Non-radiometric IR-video streaming	Uncompressed colorized video using USB
Radiometric IR-video streaming	Full dynamic to PC using USB
Power	
Battery type	Lithium-Ion (field replaceable) - 4 hours operating time
Charging system	In camera, AC adaptor, 2-bay charger or 12 V from a vehicle
Power management	Automatic shutdown and sleep mode (user selectable)
AC operation	AC adaptor, 90-260 V AC
Adaptor voltage	12 V output to camera
Environmental specifications	
Operating temperature range	-15 to +50 °C
Storage temperature range	-40 to +70 °C
Humidity	IEC 60068-2-30/24 h 95% relative humidity +25 °C to +40 °C / 2 cycles
Drop	2 m
Shock / Vibration	25 g (IEC 60068-2-29) / 2 g (IEC 60068-2-6)
Data communication interfaces	
Interfaces	USB-mini, USB-A, Composite video
USB	USB-A: Connect external USB device - USB-mini-B: Data transfer to and from PC / Streaming MPEG 4
Bluetooth®, WiFi	Yes
Report generation	
FLIR Tools	Flir Tools™ Software specifically designed to provide an easy way to create inspection reports. Available on the major platforms: Android, Windows, MacOS and iOS.
Physical characteristics	
Camera weight, incl. battery	0.88 kg
Camera size (L × W × H)	246 × 97 × 184 mm
Shipping size	500 x 350 x 190 mm
Shipping weight	4.7 kg
Standard package	
FLIR E40, FLIR E50 or FLIR E60: Hard transport case, Thermal imaging camera with lens, Battery charger, Battery (2 ea.), Hand strap, FLIR Tools™ download card, Memory card, Lens cap, Power supply incl. multiplugs, USB cable, User documentation CD-ROM, Video cable, Battery charger, Printed documentation	

YEAR 2 FULL PRODUCT WARRANTY*

YEAR 10 DETECTOR WARRANTY*

** After product registration on www.flir.com*

FLIR T400-Series

Technical specifications

Camera specific

	FLIR T420	FLIR T440
Imaging performance		
Zoom	2x, 4x digital zoom	2x, 4x, 8x digital zoom
Measurement		
Object temperature range	–20°C to +650°C in 2 ranges: -20°C to +120°C or 0°C to +650°C	–20°C to +1200°C in 3 ranges: -20°C to +120°C or 0°C to +650°C +250°C to +1200°C
Image presentation		
MSX®	IR image with MSX®	IR image with MSX®
Image sketch	N/A	On IR and visual image
Measurement analysis		
Profile	N/A	1 live line
Measurement presets	N/A	Yes

General

Imaging Performance	
Thermal sensitivity/NETD	<45 mK at 30°C
IR resolution	320 × 240 pixels
Field of view (FOV) / Minimum focus distance	25° × 19° / 0.4 m
Spectral range	7.5 - 13 µm
Spatial resolution (IFOV)	1.39 mrad
Image frequency	60 Hz
Focus	Automatic (one shot) or manual
Focal Plane Array (FPA)	Uncooled microbolometer
Image presentation	
Picture in Picture	Resizable and movable IR area on visual image
Display	Built-in touch screen, 3.5" color LCD, 320 x 240 pixels
Image modes	IR image, visual image, thermal fusion, picture in picture, thumbnail gallery
Thermal fusion	IR image shown above, below or within temp interval on visual image
Measurement	
Accuracy	±2°C or ±2% of reading
Measurement analysis	
Difference temperature	Delta temperature between measurement functions or reference temperature
Spotmeter	5
Area	5 boxes with max./min./average
Isotherm	Detect high/low temperature/interval
Automatic hot / cold detection	Auto hot or cold spotmeter markers within area
Measurement function alarm	Audible/visual alarms (above/below) on any selected measurement function
Emissivity correction	Variable from 0.01 to 1.0 or selected from list of materials
Measurement corrections	Reflected temperature, optics transmission and atmospheric transmission
External optics/windows correction	Automatic, based on inputs of optics/window transmission and temperature
Setup	
Color palettes	Arctic, Gray, Iron, Lava, Rainbow and Rainbow HC
Set-up commands	User programmable button, local adaptation of units, language, date and time formats
Storage of images	
Image storage	Standard JPEG - including measurement data, on memory card
Image storage mode	IR/visual images, simultaneous storage of IR and visual images
Periodic image storage	7 seconds to 24 hours (IR) 14 seconds to 24 hours (IR and visual)

Image annotations	
Voice	60 seconds (via Bluetooth)
Text	Text from predefined list or soft keyboard on touch screen
MeterLink	Connect Extech Clamp Meter EX845 or Moisture Meter MO297 via Bluetooth
Sketch	From touch screen
Report generation	- Instant Report (.pdf file) in camera including IR and visual images - Separate PC software with extensive report generation
Compass	Camera direction automatically added to every image
Digital camera	
Built-in digital camera	3.1 Mpixel (2048 × 1536 pixels), and LED light
Digital camera, FOV match	Adapts to the IR lens
Laser Pointer	
Laser	Semiconductor AlGaInP diode laser, Class 2, activated by dedicated button
Laser alignment	Position is displayed automatically on the IR image
Video streaming	
Non-radiometric IR or visual video recording	MPEG4 to memory card
Radiometric IR video streaming	Full dynamic to PC using USB
Non-radiometric IR or visual video streaming	Uncompressed colorized video using USB
Power System	
Battery time	Rechargeable Lithium-ion battery, field replaceable
Battery operating time	4 hours
Charging system	In camera, AC adaptor, 2-bay charger or 12 V from a vehicle
Power management	Automatic shutdown and sleep mode (user selectable)
Environmental specifications	
Operating temperature range	-15 °C to +50 °C
Storage temperature range	-40 °C to +70 °C
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25 °C to +40 °C / 2 cycles
EMC	- ETSI EN 301 489-1 (radio) - ETSI EN 301 489-17 - EN 61000-6-2 (Immunity) - EN 61000-6-3 (Emission) - FCC 47 CFR Part 15 B (Emission) - ICES-003
Radio spectrum	ETSI EN 300 328 FCC Part 15.247 RSS-210
Bump	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)
Encapsulation	IP 54 (IEC 60529)
Safety	EN/UL/CSA/PSE 60950-1
Data communication interfaces	
Interfaces	USB-mini, USB-A, Bluetooth, Wi-Fi, composite video
USB	USB-A: Connect external USB device (copy to memory stick) USB Mini-B: Data transfer to and from PC/streaming
Bluetooth	Communication with headset and external sensors
Wi-Fi	Connects directly to smart phones or tablet PCs for image transfer or via local network
Radio	
Wi-Fi	Standard: 802.11 b/g Frequency range: 2412-2462 MHz Max output power: 15 dBm
Bluetooth	Frequency range: 2402-2480 MHz
Physical characteristics	
Camera weight, incl. battery	0.88 kg
Camera size (L × W × H)	106 × 201 × 125 mm
Shipping size	180 x 500 x 360 mm
Shipping weight	5.6 kg
Tripod	UNC 1/4" - 20 (adapter needed)

Standard package

FLIR T420 or T440: Hard transport case, Thermal imaging camera with lens, Battery (2 ea.), Battery charger, Lens cap, Printed documentation, FLIR Tools™ download card, Headset, Memory card, Power supply incl. multi-plugs, Sunshield, Neckstrap, USB cable, User documentation CD-ROM, Video cable

** After product registration on www.flir.com*

FLIR T600-Series

Technical specifications

Camera specific

	FLIR T620	FLIR T640
Imaging performance		
Thermal sensitivity (at 30 °C)	<40 mK @ 30 °C	<35 mK @ 30 °C
Digital zoom	1-4x continuous	1-8x continuous
Focus	Automatic (one shot) or manual	Continuous, one shot or manual
Image presentation		
MSX®	IR image with MSX®	IR image with MSX®
Viewfinder	N/A	800x480 pixels
Image annotation		
Image sketch	N/A	On IR and visual image
Measurement		
Temperature range, standard	-40 °C to +150 °C +100 °C to +650 °C	-40 °C to +150 °C +100 °C to +650 °C +300 °C to +2,000 °C
Temperature range, optional	+300 °C to +2,000 °C	
Measurement analysis		
Line profile function	N/A	Live profile, H/V-direction
Measurement presets	N/A	Yes
Automatic hot/cold detection	Max/Min temp. value and position shown within box, circle	Max/Min temp. value and position shown within box, circle or on a line

General

Imaging performance	
IR-resolution	640x480 pixels
Spatial resolution	0.69 mrad for 25° lens 0.41 mrad for 15° lens 1.30 mrad for 45° lens
Field of View (FOV) / minimum focus distance	25° x 19° / 0.25 m 15° x 11° / 0.5 m 45° x 34° / 0.15 m lens needs to be specified when ordering
Focal Plane array (FPA)	Uncooled microbolometer
Spectral range	7.5 to 14 µm
Image frequency	30 Hz
Image presentation	
Display	4.3" superbright touchscreen LCD 800x480 pixels
Image modes	IR-image, Visual image, Picture in Picture (Resizable and movable IR-area), Thermal Fusion (Threshold above, below and interval), thumbnail gallery
Manual image adjustments	Level/span/max/min
Automatic image adjustments, continuous or manual activation	Standard or based on histogram from image content
Automatic image adjustment with locked scale	Lock max, min or span

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YEAR 10 DETECTOR WARRANTY*

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Measurement	
Accuracy	± 2 °C or ± 2% of reading
Measurement analysis	
Spotmeter	10
Area	5 Max/Min/Average value within box or circle
Isotherm	Detect high/low temperature/interval
Difference temperature	Difference between any two measurement functions or any measurement function and a reference temperature
Reference temperature function	Manually set
Emissivity correction	Variable from 0.01 to 1.0 or selected from materials list
Measurement corrections	Reflected temperature, optics transmission and atmospheric transmission
External windows correction	Automatic based on inputs of window temperature and transmission
Measurement function alarm	Audible/visual alarms (above/below) on any selected measurement function
Set-up	
Image controls	Palettes (Arctic, Gray, Iron, Lava, Rainbow and Rainbow HC), image adjustment (auto/manual)
Set-up controls	Local adaptation of units, language, date and time formats; automatic shutdown , display intensity
Configure information to be shown in image	✓
Programmable button	✓
Report generation	
Instant Report in camera	Automatic generation of PDF report based on selected images direct in camera
Image storage	
Type	IR/visual images; simultaneous storage of visual and IR images Visual and IR-images automatically grouped together.
Format	Standard JPEG - including measurement data on SD memory card
Periodic image storage	7 seconds to 24 hours (IR) 14 seconds to 24 hours (IR and visual)
Digital camera	
Built-in digital camera	5 Mpixel incl. lamps
Digital camera, FOV match	Adapts to the IR lens
Laser LocatIR	
Laser	Semiconductor AlGaInP diode laser, Class 2 - position is displayed on the IR image
Laser alignment	Laser position shown on IR-image
Image annotation	
Voice	60 seconds via Bluetooth®
Text	Text from predefined list or soft keyboard on touch screen
Sketch	A sketch drawn on touch screen is automatically saved with image
Meterlink	Wireless connection to: Extech Moisture meter MO297 or Extech clamp meter EX845
Compass	Camera direction automatically added to every image
Video streaming /recording	
Radiometric IR video streaming	Full dynamic to PC using USB
Non radiometric IR-video/visual video streaming	MPEG 4 streaming to PC using USB
Video recording in camera	Non-radiometric IR video/visual video, MPEG4 to SD-card.
WiFi	Wireless streaming of non-radiometric IR-video, MPEG4
Update of camera	
Update of camera to latest version	Update of camera from PC running FLIR Tools
Data communication interfaces	
Interfaces	USB-mini, USB-A, Bluetooth®, WiFi, DVI video
USB	USB-A: Connect external USB device - USB-mini-B: Data transfer to and from PC / Streaming MPEG 4
WiFi	Connects directly to Ipad/Iphone for image transfer or via local network
Geographic Information System	
Built-in GPS	Location data automatically added to every image for referencing on WEB maps
Power	
Battery type	Lithium-Ion (field replaceable)
Battery operating time	> 2.5 hours at 25°
Charging system	In camera, AC adaptor, 2-bay charger or 12 V from a vehicle
Power management	Automatic shutdown and sleep mode (user selectable)
AC operation	AC adaptor, 90-260 V AC, 50/60 Hz
Adaptor voltage	12 Volt VDC out
Environmental specifications	
Operating temperature range	-15 to +50 °C
Storage temperature range	-40 °C to +70 °C
Humidity, operating and storage, non-condensing	IEC 60068-2-30 /24 h, 95% relative humidity +25 °C to +40 °C
Encapsulation	IP 54, IEC 60529
Bump, Operational	25G, IEC 60068-2-29
Vibration, Operational	2G, IEC 60068-2-6
EMC, emission	EN 61000-6-3
EMC, immunity	EN 61000-6-2
Physical characteristics	
Camera weight incl. battery	1.3 kg
Camera size (L x W x H)	143 x 195 x 95 mm
Tripod Mounting	1/4" - 20
Lenses optional	
Tele lens, 15°	15° x 11° / 0.5 m
Wide angle lens 45°	45° x 34° / 0.15 m

Standard package

FLIR T620 / T640: Hard transport case, thermal imaging camera with lens, Battery (2), Battery charger, Large eyecap, Tripod adaptor, Neck strap, Lens cap, Bluetooth® headset, Printed documentation, FLIR Tools™ Download card, Memory card with adaptor, Power supply incl. multiplugs, USB cable, User documentation CD-ROM, HDMI cable (2)

FLIR P660

Technical specifications

Imaging Performance	
IR resolution	640 x 480 pixels
Spectral range	7.5 - 13 µm
Image frequency	30 Hz
Focus	Automatic (one shot or follow the laserspot) or manual (electric or on the lens)
Focal Plane Array (FPA)	Uncooled microbolometer
Field of View (FOV) / minimum focus distance	24° x 18° / 0.3 m 12° x 9° / 1.2 m 45° x 34° / 0.2 m lens needs to be specified when ordering
Spatial resolution	0.65 mrad for 24°lens 0.33 mrad for 12° lens 1.3 mrad for 45° lens
Thermal sensitivity	30 mK at 30°C
Digital zoom	1-8x continuous, including pan function
Image presentation	
Display	Built-in Widescreen, 5.6" color LCD, 1024 x 600 pixels
Viewfinder	Built-in, tiltable LCD, 800 x 600 pixels
Automatic contrast optimization	Adjustable DDE
Automatic image adjustments	Continuous/manual; linear or histogram based
Manual image adjustments	Level/span/max./min.
Image modes	IR image, Visual image, Thumbnail gallery, Thermal Fusion, Picture in Picture
Reference image	Shown together with live IR image
Thermal Fusion	IR image shown above, below or within temperature interval on the visual image (with 24° lens only)
Picture in Picture	Resizeable and moveable IR area on visual image (with 24° lens only)
Measurement	
Temperature range	-40°C to +500°C (optional up to +2000°C)
Accuracy	± 1°C or ± 1% of reading (restricted range) ± 2°C or ± 2% of reading
Measurement analysis	
Isotherm	2 with above/below interval
Spotmeter	10
Area	5 boxes or circles with Max./Min./Average
Measurement function alarm	Audible/visual alarms (above/below) on any selected measurement function
Profile	1 live line, horizontal or vertical
Difference temperature	Delta temperature between measurement functions or reference temperature
Automatic hot / cold detection	Max./Min. temp. value and position shown within box, circle or on a line
Reference temperature	Manually set or captured from any measurement function
Emissivity correction	Variable from 0.01 to 1.0 or selected from editable list of materials
Measurement corrections	Reflected temperature, optics transmission, atmospheric transmission and external optics
External optics/windows correction	Automatic, based on inputs of optics/window transmission and temperature
Humidity alarm	1 humidity alarm, incl. dew point alarm
Insulation alarm	1 insulation alarm

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YEAR 10 DETECTOR WARRANTY*

** After product registration on www.flir.com*

Setup	
Set-up controls	Local adaptation of units, language, date and time formats
Programmable buttons	2
Image storage	
In-camera storage	Built-in RAM for burst recording
Type	SD memory card
Format	Standard JPEG - including measurement data
Modes	IR/visual images, simultaneous storage of IR and visual images, visual image is automatically associated with corresponding IR image
Periodic image storage	Every 10 seconds up to 24 hours
Panorama	For creating panorama images in FLIR Tools+ software
Image annotations	
Voice	60 seconds via Bluetooth®
Text	Predefined text or free text from PDA (via IrDA) stored with the image
Image marker	4 on IR or visual image
External sensors	Possible to connect: Extech Moisture meter MO297 or Extech clamp meter EX845
Digital camera	
Built-in digital camera	3.2 Mpixel auto-focus with video lamp
Laser Pointer	
Laser	Semiconductor AlGaInP diode laser, Class 2
Laser alignment	Position is automatically displayed on IR image
Laser mode	Auto-focus / level / spotmeter
Video recording	
Radiometric IR video recording	Real-time to built-in RAM, transferable to memory card
Non-radiometric IR video recording	MPEG-4 to memory card
Non-radiometric IR-video streaming	MPEG4 to PC using USB and FireWire
Geographic Information System	
Built-in GPS	Location data automatically added to every image for referencing on WEB maps
Power System	
Battery time	Rechargeable Lithium-ion battery, field replaceable
Battery operating time	3 hours
Charging system	In camera, AC adaptor, 2-bay charger or 12 V from a vehicle
Power management	Automatic shutdown and sleep mode (user selectable)
AC operation	AC adaptor, 90-260 V AC, 50/60 Hz
Adaptor voltage	12 VDC out
Environmental specifications	
Operating temperature range	-15 °C to +50 °C
Storage temperature range	-40 °C to +70 °C
Humidity (operating and storage)	IEC 68-2-30/24 h 95% relative humidity +25 °C to +40 °C
Shock	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)
Encapsulation	IP 54 (IEC 60529)
Interfaces	
USB-A	Connect external USB device (copy to memory stick)
USB-Mini-B	Data transfer to and from PC / streaming MPEG-4
Composite video	PAL or NTSC
IrDA	For sending text comment files from PDA to camera, wireless transfer of text
WLAN	Optional. Connects directly to Ipad/Iphone for image transfer or via local network
Headset connection	Yes
Physical characteristics	
Camera weight, incl. battery	1.8 kg
Camera size (L × W × H)	299 x 144 x 147 mm
Shipping size	520 x 400 x 200 mm
Shipping weight	8.2 kg

Standard package

FLIR P660: Hard transport case, Thermal imaging camera with lens, Battery (2 ea.), Battery charger, Printed documentation, FLIR Tools™ Downloads card, FireWire cable, 4/6, FireWire cable, 6/6, Bluetooth® headset, Bluetooth® USB micro adaptor, Lens cap (mounted on lens), Lens cap (2 ea.), Power supply incl. multi-plugs, Memory card-to-USB adaptor, Memory card with adaptor, Shoulder strap, USB cable, User documentation CD-ROM, Video cable

FLIR IRW-series

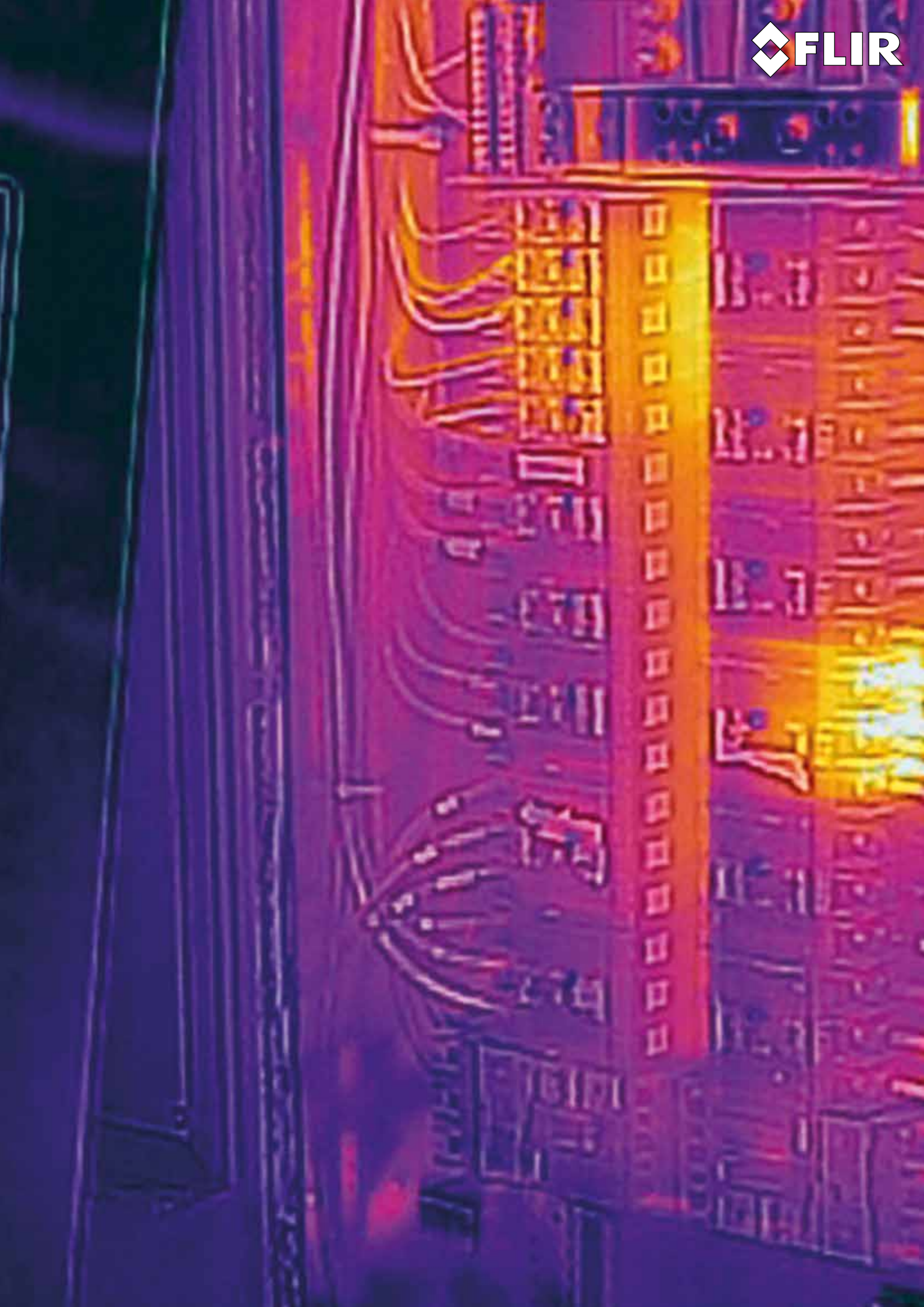
Technical specifications

Product specific

Size Specifications	FLIR IR Windows 2" - IRW-2C	FLIR IR Windows 3" - IRW-3C	FLIR IR Windows 4" - IRW-4C
Overall Height	85.5mm	107.4mm	136.5mm
Overall Width	73mm	99mm	127mm
Overall Thickness	25.5mm	26.86mm	29.25mm
Required Actual Hole Diameter (Nominal)	60.3mm	88.9mm	114.3mm
Greenlee Punch	76BB	739BB	742BB
Recommended Max Panel Thickness	3.2mm	3.2mm	3.2mm
Optic Specifications			
Optic Diameter	50mm	75mm	95mm
Viewing Aperture Diameter	45mm	69mm	89mm
Viewing Aperture Area	1590mm²	3739mm²	6221mm²
Optic Maximum Temperature	1355.6°C	1355.6°C	1355.6°C
Ratings & Testing			
Maximum Pullout Strength	657 kg	1655 kg	1678 kg

General

General Specifications	
NEMA Environment Type	Type 4/12 (outdoor/indoor)
Voltage Range	Any
Automatically Grounded	Yes
Maximum Operating Temperature	260°C
Body Material	Anodized Aluminum
Gasket Material	Silicone
Optic material	Calcium Fluoride
Hardware Material	Steel
Compatable with All FLIR Cameras	Yes
PIRma-Lock Installation System	Yes
Cover and Fastener Permanently Attached	Yes
Single-hole Installation	Yes
Thumb Screw and Safety Screw Included	Yes
Broadband IR -- Short-, Mid-, & Longwave	Yes
Visible Light Spectrum	Yes
Picture-in-Picture & Fusion Image Blending	Yes
Ratings & Testing	
UL Component Recognition (UL 50V)	Yes
UL 50 / NEMA Environment Rating	Type 4/12
Arc Flash Testing, IEC 62271-200 (KEMA)	5kV, 63kA for 30 Cycles at 60Hz
IP Rating, IEC 60529 (TUV)	IP67
Vibration Testing, IEC 60068-2-6 (TUV)	100 m/s^2 Vibration Withstand
Humidity Testing, IEC 60068-2-3 (TUV)	Extreme Humidity Withstand
Mechanical Testing, ANSI/IEEE C37.20.2 section A3.6 (TUV)	Impact and Load Resistant Cover
CSA Certification	Yes
Other	
Warranty	Limited Lifetime Warranty Against Manufacturer Defects


FLIR

FLIR Ex-Series

Accessories

Power

Car charger [T198532]
This cable is used to power the thermal imaging camera from the 12 V socket in a car.

Battery [T198530]
Extra battery that will allow you to spend extra time in the field doing inspections.

Power supply incl. Multi-plugs [T198534]
This power supply is used when powering the camera from the mains supply or to charge the batteries. It comes with different types of plugs.

Accessories

Hard transport case [T198528]
Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

Pouch [T198529]
Soft pouch to protect the camera. Including shoulder strap.

Tool belt [T911093]
Tool belt for thermal imaging camera pouches.

USB cable Std-A <-> Micro-B [T198533]
USB cable to connect the camera.

FLIR Exx-Series

Accessories

Power

Cigarette lighter adaptor kit, 12 V DC, 1.2 m [1910490]
Can be used to power the camera from the cigarette lighter socket in a car.

Battery [T197752]
High capacity battery for the camera.

Battery charger [T198125]
Stand-alone 2-bay battery charger, including power supply with multi plugs.

Power supply incl. Multi-plugs [T910814]
This power supply is used when powering the camera from the mains supply or to charge the batteries. It comes with different types of plugs.

Storage

Memory card SD [T911173]
Capture images on the go with your camera.

Miscellaneous

USB cable Std-A <-> Mini-B [1910423]
USB cable to connect the camera.

Video cable [1910582]
This cable can be used to transfer the images of the Exx-Series thermal imaging cameras to a monitor.

Tripod adapter [T197926]
Tripod adapter, necessary to be able to mount the camera on a tripod.

Bluetooth headset [T197771]
The Bluetooth headset can be used for annotation thermal images with voice messages. There is a wireless connection between the camera and the headset.

Pouch [T911087]
Pouch, including shoulder strap, for FLIR Exx-Series.

Tool belt [T911093]
Tool belt for thermal imaging camera pouches.

Hard transport case [T198341]
Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

Sun shield [T127100]
Snap-on sunshield to increase visibility of the LCD display.

Extech Clamp meter EX845 [T910972]
Can be connected to the thermal imaging camera through MeterLink™

Extech Moisture meter MO297 [T910973]
Can be connected to the thermal imaging camera through MeterLink™

Lenses

Lens 10 mm, 45° field of view incl. case [1196960]
Sometimes there isn't enough room to step back and see the whole picture. This wide angle lens has a field of view almost double than the one of the standard 25° lens. Perfect for wide or tall targets such as electrical panels or paper machinery.

Lens 30 mm, 15° field of view, incl. case [1196961]
When the target in question is a distance away it may be useful to use a telescope lens. The 15° lens is a popular lens accessory and provides almost 2X magnification compared to the 25° lens. Ideal for small or distant targets such as overhead power lines.

FLIR T400-Series

Accessories

Power

Battery [1196398]
Extra battery that will allow you to spend extra time in the field doing inspections.

2-bay battery charger, incl. power supply with multi-plugs [T197650]
This 2 bay battery charger is used for charging FLIR Systems' camera batteries.

Cigarette lighter adaptor kit, 12 V DC, 1.2 m [1910490]
Can be used to power the camera from the cigarette lighter socket in a car.

Power supply incl. Multi-plugs [T910750]
Combined power supply, including multi plugs and battery charger to charge the battery when it is inside or outside of the camera.

Battery package [T197667]
A complete battery package consisting of three standard products: a battery, 2-bay battery charger including power supply with multi-plugs and a cigarette lighter adaptor kit.

Storage

Memory card SD [T911173]
Capture images on the go with your camera.

Adaptor, SD memory card to USB [1910475]
Allows to transfer the images from the SD card to a PC.

Cables

Video cable [1910582]
This cable can be used to transfer the images of the T/B-Series thermal imaging cameras to a monitor.

USB cable Std-A <-> Mini-B [1910423]
USB cable to connect the camera with a computer, using the USB protocol.

Extended measurement ranges

High temperature option to +1,200°C [T197000]
Allow to measure temperatures of up to +1,200°C with the camera.

Headsets

Bluetooth® headset [T197771]
Headset with Bluetooth® for wireless connection with the thermal imaging camera, including microphone.

Lenses

Lens 4 mm, 90° field of view, incl. case and mounting support [T197412]
Sometimes there isn't enough room to step back and see the whole picture. This wide angle lens has a field of view almost four times the one of the standard 25° lens. This wide angle lens is perfect for wide or tall targets such as electrical panels or paper machinery.

Lens 10 mm, 45° field of view incl. case [1196960]
Sometimes there isn't enough room to step back and see the whole picture. This wide angle lens has a field of view almost double than the one of the standard 25° lens. Perfect for wide or tall targets such as electrical panels or paper machinery.

Lens 30 mm, 15° field of view, incl. case [1196961]
When the target in question is a distance away it may be useful to use a telescope lens. The 15° lens is a popular lens accessory and provides almost 2X magnification compared to the 25° lens. Ideal for small or distant targets such as overhead power lines.

Lens 76 mm, 6° field of view, incl. case and mounting support [T197408]
For maximum magnification, the 6° lens is the only choice. This optic provides almost 3.5X magnification compared to the 25° lens and is ideally suited for inspection of overhead power lines. Due to the weight of this lens, a tripod is recommended.

Close-up lens 4x incl. case [T197215]
The close-up lens provides a 4X magnification and is ideal for development purposes like looking at PCB´s or small electronic components.

Close-up lens 2x incl. case [T197214]
The close-up lens provides a 2X magnification and is ideal for development purposes like looking at PCB´s or small electronic components.

Miscellaneous

Hard transport case [T198370]
Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

Neck strap [1124544]
Ties the camera around your neck so that it is protected against falling.

Pouch [T911048]
Soft pouch to protect the camera. Possible to attach to tool belt.

Tool belt [T911093]
Tool belt for thermal imaging camera pouches.

Sun shield [1123970]
Snap-on sunshield to increase visibility of the LCD display.

Extech Clamp meter EX845 [T910972]
Can be connected to the thermal imaging camera through MeterLink™

Extech Moisture meter MO297 [T910973]
Can be connected to the thermal imaging camera through MeterLink™

FLIR T600-Series

Accessories

Power

Cigarette lighter adaptor kit, 12 V DC, 1.2 m [1910490]
Can be used to power the camera from the cigarette lighter socket in a car.

2-bay battery charger, incl. power supply with multi-plugs [T198126]
This 2-bay battery charger is used for charging FLIR Systems' camera batteries.

Battery [T198055]
Extra battery that will allow you to spend extra time in the field doing inspections.

Power supply incl. Multi-plugs [T910814]
This power supply is used when powering the camera from the mains supply or to charge the batteries. It comes with different types of plugs.

Storage

Memory card SD [T911173]
Capture images on the go with your camera.

Cables

USB cable Std-A <-> Mini-B [1910423]
USB cable to connect the camera with a computer, using the USB protocol.

HDMI to DVI cable, 1.5 m [T910930]
Can be used to show the high resolution images of the camera on a screen with DVI input.

HDMI to HDMI cable, 1.5 m [T910891]
Can be used to show the high resolution images of the camera on a screen with HDMI input.

Headsets

Bluetooth® headset [T197771]
Headset with Bluetooth® for wireless connection with the thermal imaging camera, including microphone.

Extended measurement ranges

High temperature option +300°C up to +2,000°C [T197896]
Allow to measure temperatures of up to +2,000°C with the camera.

Lenses

Lens 88.9 mm, 7° field of view incl. case [T198166]
The 7° lens is a popular lens accessory and provides 3.6x magnification compared to the standard lens. Ideal for small or distant targets

Lens 41.3 mm, 15° field of view incl. case [T197914]
The 15° lens is a popular lens accessory and provides 1.7x magnification compared to the standard lens. Ideal for small or distant targets such as overhead power lines.

Lens 24.6 mm, 25° field of view incl. case [T197922]
The standard 25° lens is suitable for the majority of applications.

Lens 13.1 mm, 45° field of view incl. case [T197915]
This wide angle lens has a field of view almost double that of the standard 25° lens. Perfect for wide or tall targets or when working in confined areas.

Lens 6.5 mm, 80° field of view incl. case [T198065]
This wide angle lens has a field of view of more than 3 times that of the standard lens. Ideal for shooting images of large objects from a short distance.

Close-up lens 32 mm (fits 25° lens) incl. case [T198059]
The 32 mm lens provides a 2.9X magnification and is ideal for development purposes like looking at PCB´s or small electronic components. Can only be mounted on 25° lens.

Close-up lens 64 mm (fits 25° lens) incl. case [T198060]
The 64 mm lens provides a 5.8X magnification and is ideal for development purposes like looking at PCB´s or small electronic components. Can only be mounted on 25° lens.

Close-up lens, 1.5x with case [T198066]
For R&D usage or development purposes

Miscellaneous

Hard transport case [T197924]
Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

Pouch [T911048]
Soft pouch to protect the camera. Possible to attach to tool belt.

Tool belt [T911093]
Tool belt for thermal imaging camera pouches.

Tripod adapter [T197731]
Tripod adapter, necessary to be able to mount the camera on a tripod.

Neck strap [1124544]
Ties the camera around your neck so that it is protected against falling.

Large eyecap [T197883]
Can be mounted on the viewfinder.

Stylus pen [T197753]
Can be used to operate the touch screen.

Extech Clamp meter EX845 [T910972]
Can be connected to the thermal imaging camera through MeterLink™

Extech Moisture meter MO297 [T910973]
Can be connected to the thermal imaging camera through MeterLink™

FLIR P660

Accessories

Power

Battery [1196209]
High capacity battery that will allow you to spend extra time in the field doing inspections.

Battery charger [T197692]
This 2 bay battery charger is used for charging FLIR Systems' camera batteries.

Cigarette lighter adaptor kit, 12 V DC, 1.2 m [1910490]
Can be used to power the camera from the cigarette lighter socket in a car.

Power supply incl. Multi-plugs [T910814]
This power supply is used when powering the camera from the mains supply or to charge the batteries. It comes with different types of plugs.

Storage

Adaptor, SD memory card to USB [1910475]
Allows to transfer the images from the SD card to a PC.

Memory card SD [T911173]
Capture images on the go with your camera.

Extended measurement ranges

High temperature option to +1,500°C [1196744]
Allow to measure temperatures of up to +1,500°C with the camera.

High temperature option to +2,000°C [1196745]
Allow to measure temperatures of up to +2,000°C with the camera.

Miscellaneous

Hard transport case [T197262]
Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

Option for IR-video streaming [T197921]
Radiometric IR-video streaming using FireWire

Bluetooth® headset [T197771]
Headset with Bluetooth® for wireless connection with the thermal imaging camera, including microphone.

Headset, 3.5 mm plug [1910489]
This headset is used when annotating thermal images with voice messages. It features an adjustable microphone that can be on the right or on the left side of the headset. It connects to the headset connector on the camera.

Bluetooth USB micro adaptor [T951235]
For wireless connection between the thermal imaging camera and external Bluetooth equipment and to transfer data from selected Extech instruments via MeterLink to the camera.

Wi-Fi USB adaptor [T951387]
Wi-Fi USB adaptor for wireless connection between the thermal imaging camera and external equipment.

Extech Clamp meter EX845 [T910972]
Can be connected to the thermal imaging camera through MeterLink™

Extech Moisture meter MO297 [T910973]
Can be connected to the thermal imaging camera through MeterLink™

Lenses

Lens 19 mm, 45° field of view, incl. case [T197189]
Sometimes there isn't enough room to step back and see the whole picture. This wide angle lens has a field of view almost double than the one of the standard 24° lens. Perfect for wide or tall targets such as electrical panels or paper machinery.

Lens 38 mm, 24° field of view, incl. case [T197187]
The 24° lens can be used for daily inspections. Suitable for the majority of applications.

Lens 76 mm, 12° field of view, incl. case [T197188]
When the target in question is a distance away it may be useful to use a telescope lens. The 12° lens is a popular lens accessory and provides 2X magnification compared to the 24° lens. Ideal for small or distant targets such as overhead power lines.

Lens 131 mm, 7° field of view, incl. case [T197190]
For maximum magnification, the 7° lens is the only choice. This optic provides almost 3.5X magnification compared to the 24° lens and is ideally suited for inspection of overhead power lines. Due to the weight of this lens, a tripod is recommended.

Protective window (fits 24° lens), incl. case [T197343]
A protective plastic window: suitable when the camera is used in a dusty environment or when there is a risk of liquids splashing on the lens. The window is made of monocrystalline fluoride.

Close-up lens 75 mm field of view (fits 24° lens), incl. case [1196683]
This close-up optics attaches to the standard 24 lens and is ideal for looking at very small objects.

Macro lens 16 mm field of view, incl. case [T197341]
For R&D usage or development purposes. For example looking at PCB´s or small electronic components.

Cables

FireWire cable 4/6, 2 m [1910483]
This cable is used to connect a thermal imaging camera to a computer using the FireWire protocol.

FireWire cable 6/6, 2 m [1910482]
This cable is used to connect a thermal imaging camera to a computer using the FireWire protocol.

USB cable Std-A <-> Mini-B, 1.8 m [1910423]
Can be used to transfer images from the camera to a computer using the USB protocol.

Video Cable RCA to RCA [1910484]
This cable can be used to transfer the images of the P660 thermal imaging cameras to a monitor.

FLIR Systems

Export Licensing

The products described in this publication may require government authorization for export/re-export, or transfer. Contact FLIR Systems for details.

YEAR 2 FULL PRODUCT WARRANTY*

YEAR 10 DETECTOR WARRANTY*

** After product registration on www.flir.com*

Specifications are subject to change without notice.
Weights and dimensions are indicative. Imagery used for illustration purposes only.

September 2013. All previous catalogues are obsolete.

Due to regional radio legislation, the Wi-Fi and Bluetooth functions may not be available for countries outside EU, US, Canada and Australia.

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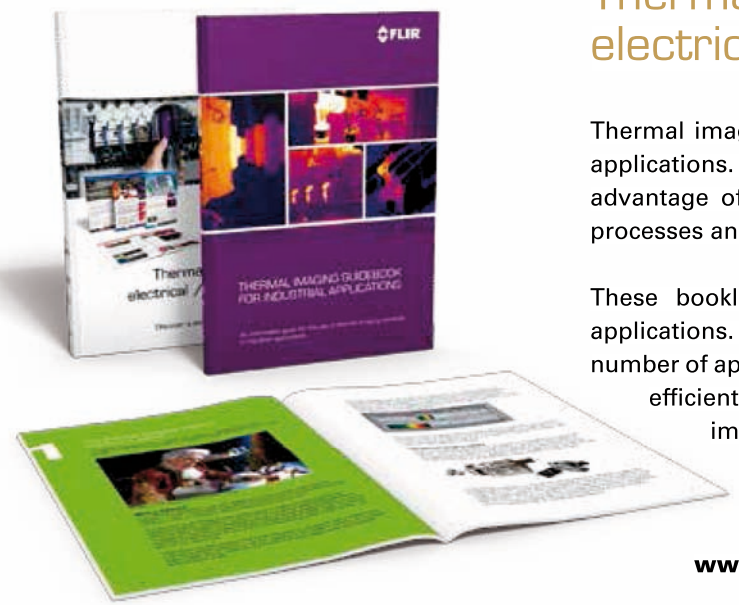
News



Thermal imaging guidebooks for electrical and mechanical applications

Thermal imaging cameras are being used for a wide variety of industrial applications. Numerous industries worldwide have discovered the advantage of incorporating thermal imaging cameras in their industrial processes and programs.

These booklets are an in-depth guide for electrical and mechanical applications. Not only does it give a comprehensive overview of a large number of applications, it also explains how to do thermal inspections in an efficient way, what you should pay attention to when buying a thermal imaging camera and much more.

You can order a free hard-copy of the guide on our website: **www.flir.com**

Application stories

FLIR Systems regularly publishes application stories in which customers are explaining what they are doing with a FLIR thermal imaging camera and how it helps them to save time and money. All application stories can be downloaded from our website: **www.flir.com**

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Notes

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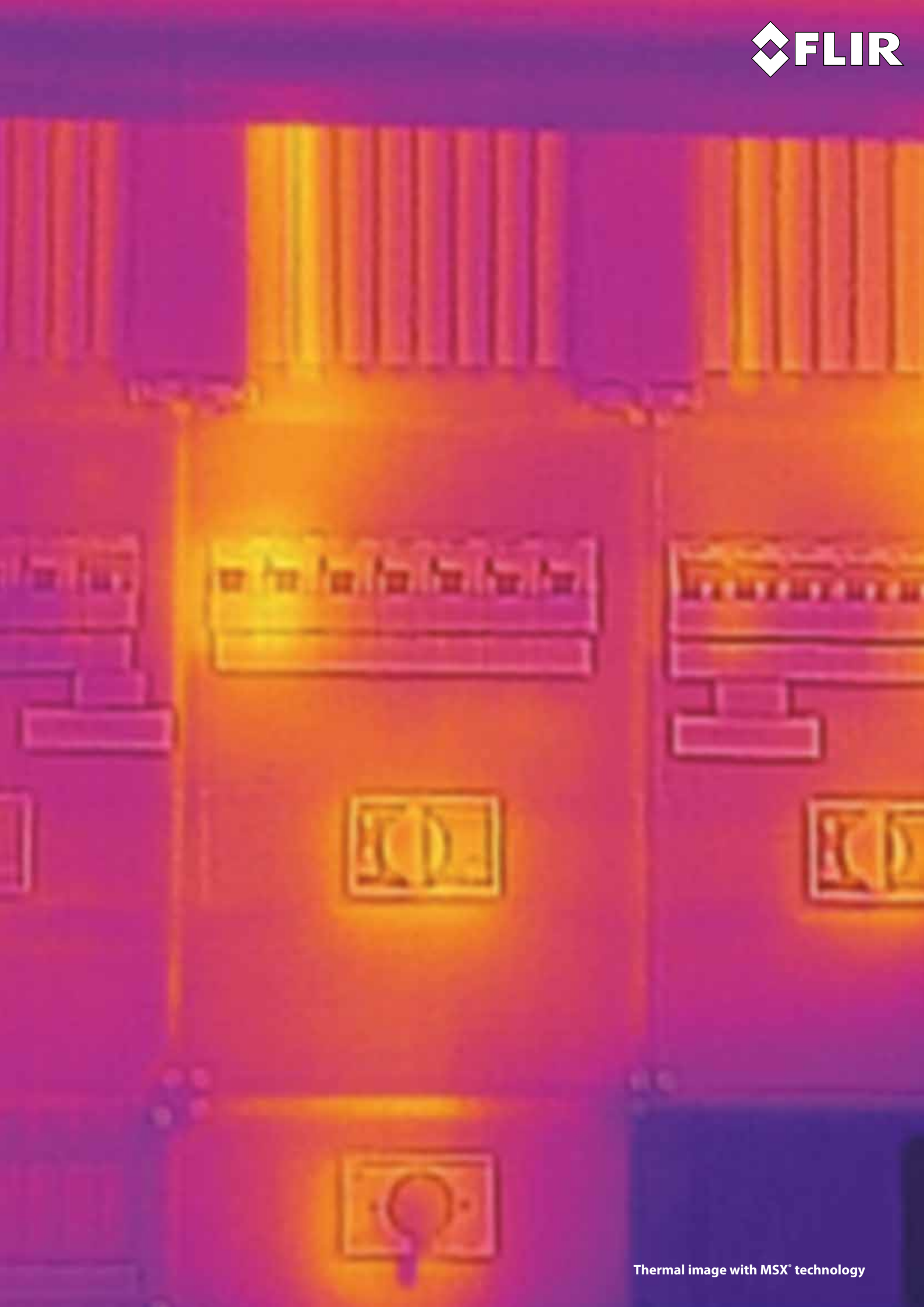
Notes



Thermal image with MSX® technology

FLIR Commercial Systems AB
Luxemburgstraat 2
2321 Meer
Belgium
Tel. : +32 (0) 3665 5100
Fax : +32 (0) 3303 5624
e-mail : flir@flir.com

FLIR Systems AB
Antennvägen 6,
PO Box 7376
SE-187 66 Täby
Sweden
Tel. : +46 (0)8 753 25 00
Fax : +46 (0)8 753 23 64
e-mail : flir@flir.com

FLIR Systems UK
2 Kings Hill Avenue - Kings Hill
West Malling
Kent
ME19 4AQ
United Kingdom
Tel. : +44 (0)1732 220 011
Fax : +44 (0)1732 843 707
e-mail : flir@flir.com

FLIR Systems GmbH
Berner Strasse 81
D-60437 Frankfurt am Main
Germany
Tel. : +49 (0)69 95 00 900
Fax : +49 (0)69 95 00 9040
e-mail : flir@flir.com

FLIR Systems France
19, bld Bidault
77183 Croissy-Beaubourg
France
Tel.: +33 (0)1 60 37 01 00
Fax: +33 (0)1 64 11 37 55
e-mail : flir@flir.com

FLIR Systems Italy
Via Luciano Manara, 2
I-20812 Limbiate (MB)
Italy
Tel. : +39 (0)2 99 45 10 01
Fax : +39 (0)2 99 69 24 08
e-mail : flir@flir.com

FLIR Commercial Systems
Avenida de Bruselas, 15- 3º
28108 Alcobendas (Madrid)
Spain
Tel. : +34 91 573 48 27
Fax. : +34 91 662 97 48
e-mail : flir@flir.com

FLIR Systems, Middle East FZE
Dubai Airport Free Zone
P.O. Box 54262
Office C-13, Street WB-21
Dubai - United Arab Emirates
Tel. : +971 4 299 6898
Fax : +971 4 299 6895
e-mail : flir@flir.com

FLIR Systems Russia
6 bld.1, 1st Kozjevnichesky lane
115114 Moscow
Russia
Tel.: + 7 495 669 70 72
Fax: + 7 495 669 70 72
e-mail: flir@flir.com

Asia Pacific Headquarter
HONG KONG
FLIR Systems Co. Ltd.
Room 1613 – 16, Tower 2,
Grand Central Plaza,
No. 138 Shatin Rural Committee
Road, Shatin, New Territories,
Hong Kong
Tel. : +852 2792 8955
Fax : +852 2792 8952
Email : flir@flir.com.hk

FLIR Systems (Shanghai) Co. Ltd.
Head Office
Tel. : +86 21 5169 7628
Fax : +86 21 5466 0289
Email : info@flir.cn

Beijing Representative Office
Tel. : +86 10 5979 7755
Fax : +86 10 5907 3180
Email : info@flir.cn

Guangzhou Representative Office
Tel. : +86 20 8600 0559
Fax : +86 20 8550 0405
Email : info@flir.cn

FLIR Systems Japan K.K.
Tel. : +81 3 6277 5681
Fax : +81 3 6277 5682
Email : info@flir.jp

FLIR Systems Korea Co., Ltd
Tel. : +82 2 565 2714
Fax : +82 2 565 2718
Email : flir@flirkorea.com

FLIR Systems Taiwan
Representative Office
Tel. : +886 2 2757 9662
Fax : +886 2 2757 6723
Email : flir@flir.com.hk

FLIR Systems India PVT. Ltd.
Tel. : +91 11 4560 3555
Fax : +91 11 4721 2006
Email : flirindia@flir.com.hk

FLIR Systems Australia Pty Ltd.
Head Office (Vic)
Tel. : 1300 729 987
NZ : 0800 785 492
Fax : +61 3 9558 9853
Email : info@flir.com.au

NSW Office
Tel. : +61 2 8853 7870
Fax : +61 2 8853 7877
Email : info@flir.com.au

WA Office
Tel. : +61 8 6263 4438
Fax : +61 8 9226 4409
Email : info@flir.com.

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