FLIR P660
INFRARED CAMERA

The Global Leader in Infrared Cameras

Wireless Remote

Optimum temperature measurement accuracy, outstanding spatial resolution, special image enhancement software, GPS, and a host of other productivity-boosting features make the FLIR P660 infrared camera a smart choice for IR surveys in utility and industrial applications.

> New 640 x 480 Infrared Detector
> Powerful Thermal Sensitivity: <45 mK
> Highest accuracy +/- 1% or +/- 1°C
> Dynamic Details Enhancement (DDE)

> Built-in Geographic Positioning System (GPS)
> Optional WLAN remote control and display
> New 3.2 Megapixel visible light camera
> Target illuminator for low-light areas

Great new feature!
IR images are tagged with GPS/Google Earth data!

New and Improved Detector

The P660 infrared camera includes a new 640 X 480 infrared detector that delivers four times greater detail than cameras with 320 x 240 IR resolution. The new detector also delivers optimum <45 mK thermal sensitivity to help you capture the finest image detail and temperature difference information.

With the P660's high-resolution capability, accurate readings can be taken at greater distances. This is especially useful in examining utility infrastructure and electrical and mechanical components, where safe distances need to be maintained. Readings can be taken with an accuracy of ±1° or ± 1% of reading at +41°F.

Dynamic Details Enhancement (DDE)

FLIR's exclusive DDE capability brings out the detail in IR images. DDE is advanced image processing technology developed by FLIR for military applications.

Record GPS info with images

Forget typing addresses or trying to recall where images were taken. The GPS technology in the P660 automatically records location information for you, so you can conduct IR surveys with speed and confidence. Electric, gas, cable, telecommunication, and water utilities can use this feature to help keep track of equipment and images. The GPS tagging feature also makes it easy to determine patterns to failures-so failures can be avoided.

Survey at Safe Distances

Many IR surveys are conducted in high voltage areas. For safety reasons, conductive cabling cannot be used to remotely control cameras.

The P660 infrared camera can be operated remotely at great distances using the optional handheld Wireless LAN-based remote control and display.

Viewfinder and LCD

The P660 features a large target-distance to spot-size ratio for accurate measurements and anlayses. This enables professionals to conduct quick, easy, and safe IR inspections.

The P660 includes a viewfinder and high resolution LCD for added flexibility in field operations. The tilt-able viewfinder is ideal for outdoor work, especially in bright sunlight and for viewing targets under all lighting conditions. The 5.6" wide screen LCD is a productive solution for indoor infrared inspections.

Integrate Visual Images

The P660 includes an integrated 3.2 megapixel camera to aid in reporting. Infrared and visible light images taken with the P660 can be stored in standard JPEG formats. In addition, the P660 stores full-radiometric video clips to further boost productivity of IR inspections.

Visual Target Illuminator

The P660 visible-light camera has a target illuminator or lamp for taking pictures in low light areas, such as electrical cabinets.

FLIR Reporter Software

Images are easily downloaded and managed using FLIR Reporter software. Images can be emailed, and viewed in Microsoft Windows programs without the need for any additional proprietary software. Reporter Pro software offers trending and image fusion for easy blending of infrared and digital photos.

Productive Auto Focus

Manual and Auto Focus capabilities allow operators greater flexibility when collecting images in a range of settings. Auto Focus is helpful for hard to focus situations and allows new users to be productive sooner.
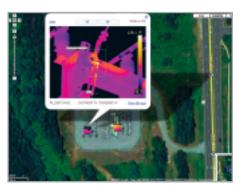
Productivity Features

The laser locator on the P660 helps simplify on-site inspections and eliminate the tendency to "finger point" at problems in high voltage areas and hazardous environments. Voice Annotation allows up to a 30 second voice clip to be embedded with each P660 IR image.

The P660 includes an intelligent charging station capable of conditioning and charging two 3-hour batteries via AC outlet or optional 12V cable.

Factory Infrared Certification Training and Support

In addition to worldwide service and support, FLIR Systems offers Thermographer certification classes at its state-of-the art facilities near Boston, Massachusetts. The FLIR Systems Infrared Training Center (ITC) is the Global leader in IR Thermography Training.

P660's embedded GPS tags your IR images so you can zoom in on exact locations and speed repairs.

Imaging Performance

Thermal

Field of view/min focus distance	24° x 18° / 0.3 m
Spatial resolution (IFOV)	0.65 mrad
Thermal sensitivity @ 50/60Hz	<45mK
Electronic zoom / pan function	1 - 8 x continuous, including pan function
Image Frequency	30 Hz (non-interlaced)
Focus	Automatic or manual
DDE — Dynamic Details Enhancement	Normal and enhanced
Detector type	Focal plane array (FPA) uncooled microbolometer; 640 x 480 pixels
Spectral range	7.5 to 13 µm

Visual

Built-in digital video	3.2 Mpixel, full color / built-in Target Illuminator / exchangeable lens
Standard lens performance	f=8 mm / FOV 32°

Image Presentation

Image fusion	Picture in Picture (PIP) with full control of IR window, threshold above, threshold below, threshold interval
Viewfinder	Built-in, tiltable, high-resolution color viewfinder (800 x 480 pixels)
External display	Built-in 5.6" LCD (1024 x 600 pixels)
Video output	RS170 EIA/NTSC or CCIR/PAL composite video, IEEE-1394 FireWire, USB

Measurement

Temperature ranges	-40°C to +500°C, in 2 ranges; up to + 2000°C, optional
Accuracy (% of reading)	± 1 °C or ± 1% of reading
Measurement modes	Spots/Areas (Boxes, Circles), Isotherms (above, below, interval), Delta T
Menu controls	Palettes , load custom palletes, auto adjust (manual/continuous/based on histogram equilazation), on screen live and reference image (PoP), image gallery, sequence storage, programmable storage, user profiles, programmable buttons
Alarm functions	Automatic alarm on any selected measurement function, audible/visible alarm above/below
Emissivity correction	Variable from 0.1 to 1.0 or select from listings in pre-defined material list
Measurement features	Automatic corrections based on user input for reflected ambient temperature, distance, relative humidity, atmospheric transmission, and external optics
Optics transmission correction	Automatic, based on signals from internal sensors

Image Storage

Type	Removable SD-card (256 MB), built in RAM memory for burst recording
File format – THERMAL	Standard JPEG; 14 bit thermal measurement data included
File format –VISUAL	Standard JPEG inked with corresponding thermal image
Voice annotation of images	30 sec. of digital voice "clip" stored together with the image wired headset
Text annotation of images	Predefined by user and stored with image
Location tagging of images	Uses data from built-in GPS

Video Storage

Type	Recording of fully radiometric IR-video clips in camera, transferable to SD-card Recording of MPEG-4 non-radiometric video to SD-card

Video Streaming

Type	MPEG-4, IP-link using FireWire or USB

Laser LocatIR™

Classification type	Class 2, Semiconductor AlGaInP Diode Laser: 1 mW/635 nm (red)

Power Source

Battery type	Li-Ion, rechargeable, field-replaceable
Battery operating time	3 hours continuous operation
Charging system	In camera (AC adapter or 12V from car) or 2 bay intelligent charger
External power operation	AC adapter 110/220 VAC, 50/60Hz or 12V from car (cable with standard plug optional)
Power saving	Automatic shutdown and sleep mode (user-selectable)

Environmental

Operating temperature range	-15° C to +50° C (5° F to 122° F)
Storage temperature range	-40° C to +70° C (-40° F to 158° F)
Humidity	Operating and storage 10% to 95%, non-condensing
Encapsulation	IP 54 IEC 529
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6

Physical Characteristics

Weight	1.7 kg (3.8 lbs) w/battery
Size	120mm x 145mm x 220 mm (4.7" x 5.7" x 8.7")
Tripod mounting	1/4"– 20

Camera includes:

- Camera with visual and IR lens
- Power supply
- 2 batteries (3 hours operating time on each)
- 2 bay charging station
- QuickView software
- Manual and Quick Reference Card
- DS-card including USD Card Reader
- Headset
- Cables

Lenses (optional)

Automatic lens identification
Field of view/minimum focus distance

- 12° x 9° / 0.9m telelens
- 45° x 34° / 0.1m wide angle lens
- Close-up 50lm 32 mm x 24 mm / 75 mm

Interfaces

USB / RS232	Image (thermal and visual), measurement data, voice and text transfer to PC
IrDA	Wireless communication
SD-card (2)	I/O slot; storage slot
Firewire output (IEEE 1394)	IEEE-1394 FireWire output (real-time none-radiometric video / filetransfer to PC)

Optional Wireless Local Area Network remote control and display.

FLIR SYSTEMS™

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