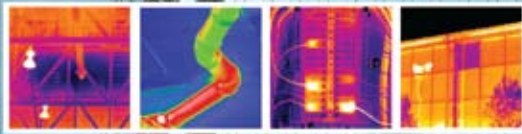# FLIR®B660

INFRARED CAMERA

The FLIR B660 high-definition infrared camera delivers maximum thermal sensitivity and imaging features for advanced building and energy surveys.

- > New 640 x 480 Infrared Detector
- > Powerful Thermal Sensitivity: <0.045°C
- > Dew Point and Insulation Alarms
- > Dynamic Details Enhancement (DDE)

- > FLIR Fusion Picture in Picture
- > 3.2 Mpixel Visible Light Camera
- > Easy Text and Voice Annotation
- > Built-in Geographic Positioning System(GPS)

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

New and Improved Detector

The B660 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 <0.045°C thermal sensitivity at +30°C to help capture the finest image detail to determine trouble spots in buildings and infrastructure.

The B660's high-resolution capability enables accurate readings to be taken at greater distances, which helps ensure productivity, safety, and cost-effectiveness.

Dynamic Details Enhancement (DDE)

FLIR's exclusive DDE capability brings out detail in IR images. With the introduction of the B660, FLIR is implementing DDE for the first time in a commercial infrared camera. FLIR Systems is the global leader in infrared cameras with more than 40 years experience developing cameras for government, military, and research.

Record GPS info with images

Forget typing addresses or trying to recall where images were taken. The GPS technology in the B660 automatically records location information for you, so you can conduct IR surveys quickly and efficiently.

Survey at Safe Distances

For those applications where safe distances need to be maintained, the B660 can be used with interchangeable lenses and an optional FLIR handheld Wireless LAN-based remote control and display. The B660 also features a large target-distance to spot-size ratio for accurate measurements and analyses. This enables professionals to conduct quick, easy, and safe IR inspections.

Viewfinder and LCD

The B660 includes a tiltable color viewfinder (800 X 600) and a high resolution LCD (1024 X 600). The tilt-able viewfinder is ideal for outdoor work, especially in bright sunlight. The LCD provides convenient and comfortable viewing for extensive survey work.

FLIR Fusion

FLIR Fusion technology makes it easy to create compelling reports and communicate trouble spots to your team. Simply move, resize, and reshape IR images inside images you take with the B660's integral 3.2 Mpixel camera. What's more, the B660 camera supports thermal fusion, which lets you control the right level of infrared and visible light detail in your images. Infrared and visible light images taken with the B660 can be stored in standard JPEG formats. In addition, the B660 takes full-radiometric video clips to further boost productivity of IR inspections.

Visual Target Illuminator

The B660 visible-light camera has a target illuminator or lamp for taking pictures in low light areas, such as electrical cabinets. The target illuminator ensures good reference visual images can be documented regardless of the lighting conditions.

FLIR Reporter Software

Images are easily downloaded and managed using FLIR QuickReport and optional FLIR Reporter software.

Productive Auto Focus

Manual and Auto Focus allows operators greater flexibility when collecting images in a range of settings. Auto Focus allows new users to be productive sooner and manual focus provides the added control when needed.

Safety Enhancing Laser LocatIR

The Laser LocatIR on the B660 boosts productivity. Simply push a button and the laser position you see on an object is automatically aligned and displayed in the IR image.

This feature makes it easier and safer for professionals to mark off trouble spots on roofs and structures. Laser LocatIR also helps overcome the tendency to finger-point – which can be a dangerous practice in high-voltage areas.

Text and Voice Annotation

Simplify your reporting with the advanced text capabilities of the B660 camera. Create comments using the camera's soft key display or even download text from a PDA to automate image description.

Three Hours Run-Time on a Single Battery

The B660 includes an intelligent charging station capable of conditioning and charging two 3-hour batteries at a time. In addition, like a cell phone, you can plug the B660 into an AC outlet or optional 12V cable and charge the battery while still in the camera.

Factory Infrared Certification Training and Support

In addition to worldwide service and support, FLIR Systems offers Thermographer certification classes and high quality interactive thermography training from the most qualified international thermography instructors. The FLIR Systems Infrared Training Center (ITC) is the Global leader in IR Thermography Training.

Imaging Performance

Thermal	
Field of view/min focus distance	24° x 18° / 0.3 m (with standard lens)
Spatial resolution (IFOV)	0.65 mrad (with standard lens)
Thermal sensitivity @ 30°C	<0.045°C
Electronic zoom / pan function	1 - 8 x continuous, including pan function
Image Frequency	30 Hz (non-interlaced)
Focus	Auto, electric and manual
IR Lens	24° plus optional interchangeable FLIR lenses
Detector type	Focal plane array (FPA) uncooled microbolometer; 640 x 480 pixels
Spectral range	7.5 to 13 µm
IR Resolution	640 x 480 pixels
Visual	
Built-in digital video	3.2 Mpixel, full color / built-in Target Illuminator / auto focus

Image Presentation

Image Fusion	Picture-in-Picture: move, resize, and reshape IR image inside visible light images. Thermal Fusion: Merging of visual and infrared image (interval, above/below).
Reference image	Show live IR image and reference image on screen for easy troubleshooting.
Viewfinder	Built-in, tiltable, high-resolution color viewfinder (800 x 600 pixels)
Built-in display	Built-in 5.6" LCD (1024 x 600 pixels)
Video output	RS170 EIA/NTSC or CCIR/PAL composite video, IEEE-1394 FireWire, USB
DDE-Dynamic Details Enhancement	Adjustable

Measurement

Object temperature ranges	-40°C to +120°C
Accuracy	± 1°C or 1% of reading for restricted temperature range or ± 2°C or 2% of reading
Measurement analysis	10 spotmeters, 5 areas; auto hot/cold detection, Isotherms (above, below, interval), Delta T, Line Prole, Reference temperature function
Menu controls	Palettes , load custom palletes, auto adjust (manual/continuous/based on histogram equilazation), on screen live and reference image, image gallery, sequence storage, programmable storage, user profiles, programmable buttons
Alarm functions	Automatic alarm on any selected measurement function, audible/visible alarm above/below, humidity (includes dew point), insulation
Emissivity correction	Variable from 0.01 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 (1 GB), built in RAM memory for burst recording
Image storage modes	Single image, simultaneous storage of IR and visual images
Periodic image storage	Every 10 seconds up to 24 hours
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	60 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
Image marker	Markers on visual image

Video recording in camera

Radiometric IR-video recording	Real time recording to built in RAM memory transferable to SD-card
Non radiometric IR-video recording	MPEG 4 recording to SD card

Video Streaming

Non radiometric IR-video streaming	MPEG 4 streaming to PC using USB, Firewire or WLAN, with optional Wireless remote control

Laser LocatIR™

Classification type	Class 2, Semiconductor AlGaInP Diode Laser: 1 mW/635 nm (red)
Laser	Laser pointer activated by dedicated button
Laser alignment	Laser position automatically shown on IR-image

Power Source

Battery type	Li-Ion, rechargeable, field-replaceable
Battery operating time	>3 hours at 25°C typical use
Charging system	In camera (AC adapter or 12V from car) or 2 bay intelligent charger or 12V from car with optional DC 12V connection cable
External power operation	AC adapter 90-260 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
Storage temperature range	-40° C to +70° C
Humidity (operating and storage)	10% to 95%, IEC 68-2-30
Encapsulation	IP 54 IEC 529
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6

Physical Characteristics

Weight	1.8kg (incl. lens and battery)
Size (L x W x H):	324 x 144 x 147 mm (incl. standard lens)
Tripod mounting	1/4"– 20

Interfaces

USB-A	Connect external USB device
USB Mini-B	Data transfer to/from PC
IrDA	Wireless communication
SD-card slots (2)	I/O slot; storage slot
Firewire output (IEEE 1394)	IEEE-1394 FireWire output (real-time none-radiometric video / filetransfer to PC)

Camera includes:

- User documentation in CD-ROM
- Camera with visual and IR lens
- Power supply
- 2 batteries (3 hours operating time on each)
- 2 bay charging station
- FLIR QuickReport software
- Built-in GPS
- Manual and Quick Reference Card
- SD-card with USB Card Reader
- Headset
- Cables (USB, FireWire, Video)

Lenses (optional)

Automatic lens identification
Field of view/minimum focus distance

- 25 micron / 18mm
- 85° / 100mm
- 7° x 5.25°/ 6m telelens
- 12° x 9° / 1.2m telelens
- 45° x 34° / 0.2m wide angle lens
- Close-up 50µm 32 mm x 24 mm / 75 mm

Other Options

- FLIR Reporter software
- FLIR Image Builder software
- Wireless remote control including WLAN interface

Optional Wireless Local Area Network remote control and display.

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT

WAVELENGTH: 635 nm MAX. OUTPUT POWER: 1 mW

THIS PRODUCT COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50, DATED JULY 26TH, 2001.