# TiX1000, TiX660, TiX640 and TiX620 Infrared Cameras

## The Fluke Expert Series



## PREMIUM IMAGE QUALITY

### SPATIAL RESOLUTION
**TiX1000**
*0.6 mRad*
**TiX660 and TiX640**
*0.8 mRad*
**TiX620**
*0.85 mRad*

### RESOLUTION
**TiX1000**
*1024 x 768 (786,432 pixels)*

**TiX660, TiX640 and TiX620**
*640 x 480 (307,200 pixels)*

### SUPER RESOLUTION MODE
**TiX1000**
*2048 x 1536 (3,145,728 pixels)*

**TiX660, TiX640 and TiX620**
*1280 x 960 (1,228,800 pixels)*

### FIELD OF VIEW
**TiX1000**
*32.4 ° x 24.7° (1.0/30 mm)*
**TiX660 and TiX640**
*30.9 ° x 23.1° (1.0/30 mm)*
**TiX620**
*32.7° x 24.0° (1.0/20 mm)*

### TEMPERATURE RANGE
**TiX1000 and TiX660**
*-40 to 2000 °C (-40 to 3632 °F)*
**TiX640**
*-40 to 1200 °C (-40 to 2192 °F)*
**TiX620**
*-40 to 600 °C (-40 to 1112 °F)*

## Fluke Infrared Cameras

**Take the guesswork out of your inspection and analysis.**

- **10 times the on-camera pixels** than standard 320 x 240 cameras (1024 x 768 resolution, 786,432 pixels)

- **Work from safer distances**–inspect areas that you could not get close to before and still get spectacular, detailed infrared images

- **Get a premium in-field viewing experience** for quick issue identification with the large 5.6 inch high resolution LCD screen

- **Enhanced image quality and temperature measurement accuracy**–get 4 times the resolution and pixels than standard mode with SuperResolution (up to 3,145,728 pixels)

- **Save time focusing** with the most advanced focus options available for consistently in focus image: LaserSharp® Auto Focus, auto focus, manual and EverSharp multifocal recording features–available on one camera

- **The Fluke Expert Series offers the best flexibility of the entire Fluke infrared camera portfolio** to capture spectacular images close up or from a distance with up to eight lens options (2x and 4x telephoto lenses, two wide angle lenses, three macro lenses and one standard lens) so great images can be captured despite certain obstacles



**Electrical utility distribution lines**

*HD images are captured by the TiX1000 in SuperResolution mode and viewable in the SmartView® software.

# Detailed specifications

| | TiX1000 | TiX660 | TiX640 | TiX620 |
|---|---|---|---|---|
| **Key features** | | | | |
| IFOV with standard lens (spatial resolution) | 0.6 mRad | 0.8 mRad | | 0.85 mRad |
| Detector resolution | 1024 x 768 (786,432 pixels) | 640 x 480 (307,200 pixels) | | |
| Field of View (FOV) w/standard 30mm lens | 32.4° x 24.7° | 30.9° x 23.1° | | 32.7° × 24.0° |
| SuperResolution and Dynamic SuperResolution (resolution enhancement) | Yes, MicroScan technology quadruples IR measurement pixels | | | |
| Subwindowing modes available (add on at time of order) | Option 1: 640 x 480 (60 fps) Option 2: 384 x 288 (120 fps) Option 3: 1024 x 96 (240 fps) | Option 1: 384 × 288 (120 fps) Option 2: 640 × 120 (240 fps) | | 384 × 288 (60 fps) |
| LaserSharp® Auto Focus | Yes | | – | |
| Laser distance meter | Yes, Accuracy: ± 1.5 mm, Range: 70 m (76.5 ft.), Wavelength: 635 nm (red), Laser class: 2 | | | |
| Auto focus | Yes | | | |
| Advanced manual focus | Yes | | | |
| EverSharp multifocal recording | Yes, Multifocal recording captures images from different focal distances and combines them into one image displaying each object sharply for the best image quality | | | |
| Spectral range | 7.5 µm to 14 µm | | | |
| Video recording/video streaming | Non-radiometric infrared video recording (to SD card); Visual and infrared video streaming (radiometric and non-radiometric) with optional Ethernet converter cable | | | |
| Display | Extra-large 5.6 in color TFT display, 1280 × 800 pixel resolution, suitable for daylight operation | | | |
| **IR-Fusion® technology** | | | | |
| AutoBlend™ mode | Yes | | | |
| Viewing options available | Picture-in-picture, continuous blending, color alarms (above and below user defined temperatures) | | | |
| Thermal sensitivity [NETD] | ≤ 0.05 °C at 30 °C target temp (50 mK) | ≤ 0.03 °C at 30 °C target temp (30 mK) | | ≤ 0.04 °C at 30 °C target temp (40 mK) |
| Filter mode | Yes | | | |
| Level and span | Smooth auto and manual scaling | | | |
|    Minimum span (in manual mode) | 2.5 °C (4.5 °F) | | | |
|    Minimum span (in auto mode) | 4.0 °C (7.2 °F) | | | |
| Built-in digital camera (visble light) | Yes, up to 8 Megapixel resolution for image and video recording | | | |
| Frame rate | 30 Hz or 9 Hz versions | 60 Hz or 9 Hz versions | | 30 Hz |
| Laser pointer | Yes, class 2 | | | |
| LED light (torch) | Yes | | | |
| Digital zoom | Up to 32x | | | |
| Geo-localization | Yes | | | |
| **Data storage and image capture** | | | | |
| Extensive memory options | Removable micro SD memory card | | | |
| Image capture, review, save mechanism | One-handed image capture, review, and save capability | | | |
| Post-capture image editing (on camera) | Yes. Conduct on-camera analysis for in-field results | | | |
| Advanced text annotation | Yes. Including standard shortcuts as well as user programmable options | | | |
| File formats | .irb, .jpg, .wav, .avi | | | |
| Memory review | Thumbnail view navigation and review selection | | | |
| Software | SmartView® software, included | | | |
| Export file formats with SmartView® software | BMP, DIB, GIF, JPE, JFIF, JPEG, JPG, PNG, TIF and TIFF | | | |
| Voice annotation | Yes | | | |
| Audio | Integrated microphone and loudspeaker for voice annotations | | | |
| IR-PhotoNotes™ | Yes | | – | |
| Text annotation | Yes | | | |

# Detailed specifications

| | TiX1000 | TiX660 | TiX640 | TiX620 |
|---|---|---|---|---|
| Video recording/video streaming | Yes | | | |
| Image/video storage | SD HC memory card | | | |
| Interfaces for image/data transfer | Supported in camera data ports: SD card, GigE vision, RS-232, USB 2.0, DVI-D and composite video<br>Supported in SmartView® software: SD card | | | |
| **Battery** | | | | |
| Batteries (field replaceable, rechargeable) | Two standard lithion ion video camera batteries with LED charge level indicator | | One standard lithion ion video camera battery with charge level indicator | |
| Battery charging system | External: 12 V dc to 24 V dc | | | |
| AC operation | Yes | | | |
| **Temperature measurement** | | | | |
| Temperature measurement range | –40 °C to +1200 °C (–40 °F to 2192 °F)<br>High temperature option: up to 2000 °C (3632 °F) | | –40 °C to +1200 °C (–40 °F to 2192 °F) | –40 to 600 °C (–40 to 1112 °F) |
| Accuracy | ± 1.5 K or ± 1.5 % (±1 K when target measures 0 °C to 100 °C) | | | ± 2 K or ± 2 % |
| On screen emissivity correction | Yes | | | |
| On-screen reflected background temperature compensation | Yes | | | |
| Correction functions | LDC™ – Laser rangefinder based distance correction, emissivity (manual or material table) | | Emissivity (manual or material table) | |
| | Transmissivity I Ambient temperature I Humidity (option) | | | |
| **Color palettes** | | | | |
| Standard palettes | Rainbow, grayscale, ironbow, blue-red, marked, high contrast, steps, black rd, hot metal, menthol, sepia, grayscale/rainbow | | | |
| **General specifications** | | | | |
| Color alarms | High-temperature and low-temperature | | | |
| Operating temperature | –25 °C to +55 °C (13 °F to 131 °F) | | | |
| Storage temperature | –40 °C to +70 °C (–40 °F to 158 °F) | | | |
| Relative humidty | 10 % to 95 %, non-condensing | | | |
| Center-point temperature measurement | Yes | | | |
| Measurement functions (selection) | Multiple measurement spots, Hot/cold spot detection, Isotherms, Profiles, Differences (subtraction) | | | |
| Center box | Yes. Adjustable shapes (region of interest) for advanced analysis (min, max and avg) | | | |
| Vibration | Operational: 2G, IEC 68-2-6 | | | |
| Shock | Operational: 25G, IEC 68-2-29 | | | |
| Size (H x W x L) | 210 mm × 125 mm × 155 mm (8.25 in x 4.9 in x 6.1 in) | | 206mm x 125mm x 139mm(8.1 in x 4.9 in x 5.5 in) | |
| Weight | 1.95 kg (4.3 lb) | | 1.4 kg (3.2 lb) | |
| Viewfinder | Tiltable LCoS color viewfinder display, 800 × 600 pixel resolution | | None | |
| Ergonomics | Camcorder w/handle | | Camcorder | |
| Enclosure rating | IP54 | | | |
| Warranty | Two-years | | | |
| Recommended calibration cycle | Two-years (assumes normal operation and normal aging) | | | |
| Supported languages | Czech, Dutch, English, Finnish, French, German, Hugarian, Italian, Japanese, Korean, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Swedish, Traditional Chinese and Turkish. | | | |

## TiX1000, TiX660 and TiX640 compatible lenses

| Available optional lenses* with IP54-proof bayonet mount | | | | 1024 x 768 | | 640 x 480 | |
|---|---|---|---|---|---|---|---|
| Fluke Model | Lens description | Focal distance (mm) | Focus (m) | iFOV (mRad) | FOV (°) | iFOV (mRad) | FOV (°) |
| FLK-Xlens/SupWide | Super wide-angle lens | 7.5 | 0.17 | 2.3 | 135.8 x 101.4 | 3.3 | 128.9 x 92.7 |
| FLK-Xlens/Wide | Wide-angle lens | 15 | 0.47 | 1.1 | 67.8 x 50.7 | 1.7 | 62.3 x 46.4 |
| FLK-Xlens/Stan | Normal lens | 30 | 0.72 | 0.6 | 32.4 x 24.7 | 0.8 | 30.9 x 23.1 |
| FLK-Xlens/Tele | Telephoto lens | 60 | 1.99 | 0.3 | 16.4 x 12.4 | 0.4 | 14.9 x 11.3 |
| FLK-Xlens/SupTele | Super telephoto lens | 120 | 6.58 | 0.1 | 8.1 x 6.2 | 0.2 | 7.5 x 5.7 |

| Available optional lenses* with IP54-proof bayonet mount | | | | 1024 x 768 | | 640 x 480 | |
|---|---|---|---|---|---|---|---|
| Fluke Model | Lens description | Focal distance (mm) | Focus (mm) | iFOV (mRad) | Resolution (µm) | iFOV (mRad) | FOV (°) |
| FLK-Xlens/Macro1 | Close-up 0.2x | For 30 | 137.4 | 85.5 x 63.2 | 81 | 78.1 x 57.9 | 119 |
| FLK-Xlens/Macro2 | Close-up 0.5x | For 30 | 47.4 | 34.3 x 25.3 | 32 | 31.3 x 23.2 | 47 |
| FLK-Xlens/Macro3** | Close up 0.5x | For 60 | 100 | 35.1 x 26.5 | 35 | 32.3 x 24.4 | 50 |

## TiX620 compatible lenses

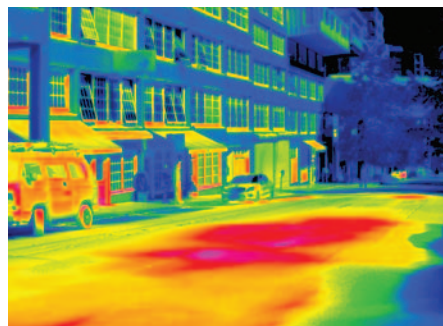| Type | ƒ / Focal length | Field of view HFOV x VFOV | IFOV, paraxial | Minimum focus distance (radiometric AF, from lens surface) |
|---|---|---|---|---|
| Wide angle | 1.0 / 10 mm | 57.1° x 44.4° | 1.70 mrad | 250 mm |
| Standard | 1.0 / 30 mm | 32.7° x 24.0° | 0.85 mrad | 500 mm |
| Telephoto | 1.0 / 40 mm | 15.5° x 11.6° | 0.43 mrad | 1,300 mm |

*Optional lenses must be calibrated to the individual camera. If lens purchase is post camera purchase, the camera will need to be returned for calibration with the lens.
**Macro3 lens must be used with the Telephoto lens (FLK-Xlens-Tele).
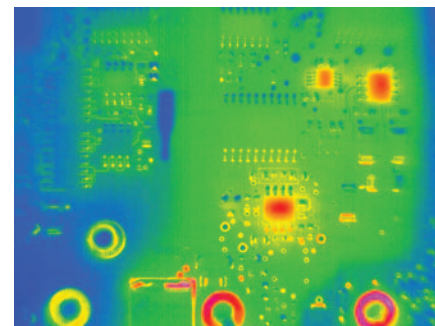
## Ordering information

**FLK-TiX1000 30Hz** Thermal Imager; 1024 x 768; 30 Hz
**FLK-TiX1000 9Hz** Thermal Imager; 1024 x 768; 9 Hz
**FLK-TiX660 60Hz** Thermal Imager; 640 x 480; 60 Hz
**FLK-TiX660 9Hz** Thermal Imager; 640 x 480; 9 Hz
**FLK-TiX640 60Hz** Thermal Imager; 640 x 480; 60 Hz
**FLK-TiX640 9Hz** Thermal Imager; 640 x 480; 9 Hz
**FLK-TiX620 30Hz** Thermal Imager; 640 x 480; 30 Hz

### Included with product
These infrared cameras are shipped with a rechargeable battery (2 for TiX1000/TiX660; 1 for TiX640/620), battery charger and adapter, AC adapter, SD card reader, protective lens cap, hand strap, neck strap, carrying case, warranty card, safety instructions, calibration certificate, CD includes product manuals in English, Chinese, German, Portuguese, Spanish, French, Italian, Korean, Japanese, Russian and Turkish (printed in English and Chinese) and SmartView® software. (Software is also available via download at **www.fluke.com/smartviewdownload**).

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**Printed circuit board assembly inspection**

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