# FLUKE ®

# Fluke Building Diagnostic Thermal Imagers
## Models: TiR1 and TiR

## Technical Data

TiR

*Made in the U.S.A. of U.S. and non U.S. parts*

TiR1

## High performance thermal imagers have never been this affordable. This rugged. Or, this easy to use ... until **now**.

The Fluke TiR1 and TiR Thermal Imagers are the perfect imagers for building envelope, restoration and remediation, inspection and roofing applications.

• These Fluke imagers come with IR-Fusion® Technology both in camera and software (combines visible image with IR image in full screen or picture–in–picture views) for easy identification and reporting of problems

• Rugged and reliable: Engineered to withstand a 2 m (6.5 ft) drop

• 9.1 cm (3.7 in) diagonal landscape color VGA (640 x 480) LCD

• Temperature range and thermal sensitivity optimized for building diagnostics applications

• Perfect for any application and budget

• Excellent thermal sensitivity for seeing even small temperature differences (which could indicate problems)

• Adjustable hand strap for left– or right–handed users

### Incredible performance at unbelievably low prices.

**Fluke.** *Not just infrared, infrared you can use.*®

Building problems, defects and general maintenance

Energy audit, building inspection, weatherization

Restoration, water damage, roofing
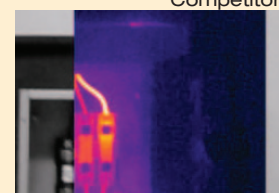
## IR-Fusion®

### Patented Fluke IR-Fusion® Technology

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

#### Not all fusion is created equal
Don't be fooled by imitators. No other manufacturer can boast on–camera blending. Compare the images. Only Fluke has mastered the ability to create the industry's only transparent, perfectly blended and aligned visible and infrared images.

Fluke                    Competitor

# Detailed specifications

| | TiR1 | TiR |
|---|---|---|
| **Temperature** | | |
| Temperature measurement range (not calibrated below –10 °C) | –20 °C to +150 °C (–4 °F to +302 °F) | –20 °C to +150 °C (–4 °F to +302 °F) |
| Temperature measurement accuracy | ± 2 °C or 2 % (at 25 °C nominal, whichever is greater) | |
| On-screen emissivity correction | Yes | No |
| On-screen reflected background temperature compensation | Yes | No |
| **Imaging performance** | | |
| Image capture frequency | 9 Hz refresh rate | |
| Detector type | 160 X 120 Focal Plane Array, uncooled microbolometer | |
| Thermal sensitivity (NETD) | ≤ 0.07 °C at 30 °C target temp. (70 mK) | ≤ 0.09 °C at 30 °C target temp. (90 mK) |
| Infrared spectral band | 7.5 µm to 14 µm (long wave) | |
| Visual (visible light) camera | Industrial performance 1.3 megapixel | |
| Minimum focus distance | 46 cm (approx. 18 in) | |
| Field of view | 23 ° x 17 ° | |
| Spatial resolution (IFOV) | 2.5 mRad | |
| Minimum focus distance | 15 cm (approx. 6 in) | |
| Focus mechanism | Manual, one-handed Smart Focus capability | |
| **Image presentation** | | |
| Standard | Ironbow, Blue-Red, High Contrast, Amber, Hot Metal, Grayscale | Ironbow, Blue-Red, High Contrast, Grayscale |
| Level and span | Smooth auto-scaling and manual scaling of level and span | |
| Fast auto toggle between manual and auto modes | Yes | |
| Fast auto-rescale in manual mode | Yes | |
| Minimum span (in manual mode) | 2.5 °C (4.5 °F) | |
| Minimum span (in auto mode) | 5 °C (9 °F) | |
| **IR-Fusion® information** | | |
| Automatically aligned (parallax corrected) visual and IR blending | Yes | |
| Picture-In-Picture (PIP) | Three levels of on-screen IR blending displayed in center of LCD | 100 % IR displayed in center of LCD |
| Full screen infrared | Three levels of on-screen IR blending displayed on LCD | 100 % IR displayed on LCD |
| Voice annotation | 60 seconds maximum recording time per image; reviewable playback on imager | — |
| **Image capture and data storage** | | |
| | The TiR1 allows user to adjust palette, blending, level, span, IR-Fusion® mode, emissivity, and reflected background temperature compensation on a captured image before it is stored. | — |
| Image capture, review, save mechanism | One-handed image capture, review, and save capability | |
| Storage medium | SD Memory Card (2 GB memory card will store at least 1200 fully radiometric (.is2) IR and linked visual images each with 60 seconds voice annotations, or 3000 basic bitmap (.bmp) images transferrable to PC via included multi-format USB card reader | |
| File formats | Non-radiometric (.bmp) or fully-radiometric (.is2) | |
| | No analysis software required for non-radiometic bitmap (.bmp) files | |
| Export file formats w/SmartView® software | BMP, DIB, GIF, JPE, JFIF, JPEG, JPG, PNG, TIF, and TIFF | |
| Memory review | Sequential image navigation and review | |

## General specifications

| | |
|---|---|
| Operating temperature | –10 °C to +50 °C (14 °F to 122 °F) |
| Storage temperature | –20 °C to +50 °C (–4 °F to 122 °F) without batteries |
| Relative humidity | 10 % to 95 % non-condensing |
| Display | 9.1 cm (3.7 in) diagonal landscape color VGA (640 x 480) LCD with backlight and clear protective cover |
| Controls and adjustments | User selectable temperature scale (°C/°F)<br>Language selection<br>Time/Date set<br>Emissivity selection (TiR1 only)<br>Reflected background temperature compensation (TiR1 only)<br>User selectable hot spot and cold spot, and center point on the image, (TiR1 only) (other custom markers and shapes in SmartView® software)<br>User selectable backlight: "Full Bright" or "Auto" |
| Software | SmartView® full analysis and reporting software included |
| Batteries | Internal rechargeable battery pack (included) |
| Battery life | Three to four hours continuous use (assumes 50 % brightness of LCD) |
| Battery charge time | 2.5 hours to full charge |
| AC battery charging | AC adapter/charger (110 V ac to 220 V ac, 50/60 Hz) (included), charges battery while imager is operating or turned off, ac mains adapters included. |
| AC operation | AC operation with included power supply (110 V ac to 220 V ac, 50/60 Hz). AC mains adapters included. |
| Power saving | Sleep mode activated after five minutes of inactivity, automatic power off after 30 minutes of inactivity |
| Safety standards | CSA (US and CAN): C22.2 No. 61010-1-04, UL: UL STD 61010-1 (2nd Edition), ISA: 82.02.01 |
| Electromagnetic compatibility | Meets all applicable requirements in EN61326-1:2006 |
| C Tick | IEC/EN 61326-1 |
| US FCC | CFR 47, Part 15 Class B |
| Vibration | 0.03 g2/Hz (3.8 grms), IEC 68-2-6 |
| Shock | 25 g, IEC 68-2-29 |
| Drop | 2 meter (6.5 feet) |
| Size (H x W x L) | 26.7 cm x 12.7 cm x 15.2 cm (10.5 in x 5.0 in x 6.0 in) |
| Weight (battery included) | 1.2 kg (2.6 lb) |
| Enclosure rating | IP54 (protected against dust, limited ingress; protection against water spray from all directions) |
| Warranty | Two-years (standard) |
| Recommended calibration cycle | Two-years (assumes normal operation and normal wear) |
| Supported Languages | Czech, English, Finnish, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Swedish, Traditional Chinese, and Turkish |

## Ordering information

**FLK-TiR1 9Hz** Thermal Imager
**FLK-TiR 9Hz** Thermal Imager
**Included**
Thermal imager; ac power supply/battery charger (including mains adapters); SD memory card; multi-format USD memory card reader for downloading images into your computer; SmartView® software with free software upgrades for life; rugged, hard carrying case; soft transport bag; adjustable hand strap; printed users manual; warranty registration card.

### Optional accessories
**TI-CAR-CHARGER** Thermal Imager Vehicle Charger
**TI-VISOR** Thermal Imager Visor
**BOOK-ITP** Introduction to Thermography Principles Book
**TI-TRIPOD** Tripod Mounting Base Accessory

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