



TELEDYNE  
FLIR

CONDITION MONITORING

# ADVANCED THERMAL IMAGING

FOR ACCURATE, REAL-TIME DECISION MAKING

FLIR Exx-Series™

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# BRILLIANCE AT WORK



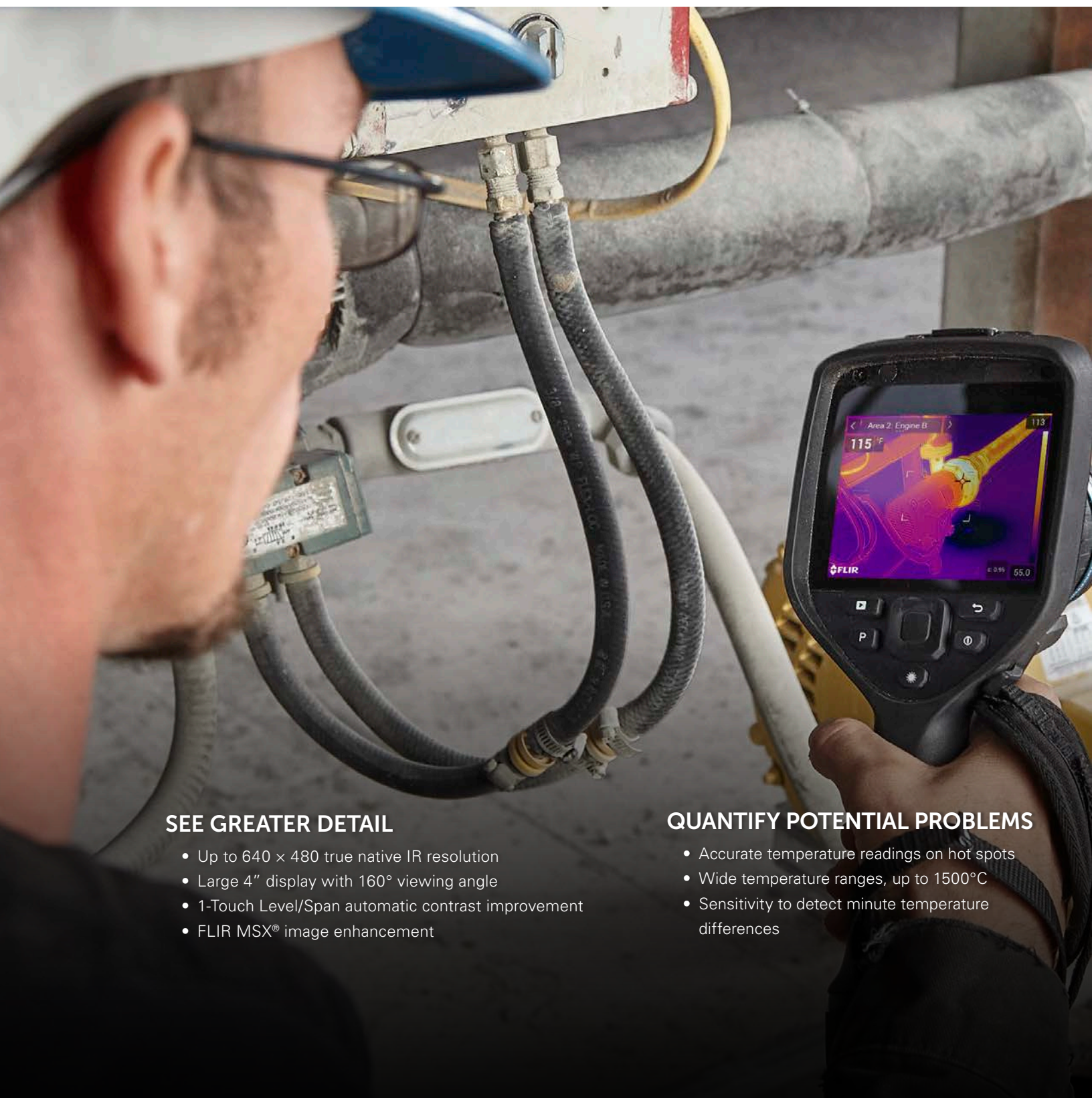
## FLIR EXX-SERIES CAMERAS OFFER:

For inspection and maintenance professionals, the most valuable tools are the ones that help them identify problems, improve reliability, and avoid unexpected downtime. Routine facility-wide surveys with a rugged, handheld Exx-Series camera can ensure inspectors spot overheating equipment early, so they can diagnose the issue and begin repairs before equipment fails.

- Up to  $640 \times 480$  thermal resolution so inspectors can work a safe distance from potentially hazardous targets
- Laser distance meter\* for measurement information and crisp, accurate focus
- Onboard inspection routing that runs preset survey plans, so you can work more efficiently and keep data organized
- Instant connection to the FLIR Ignite Cloud for direct image uploads and sharing
- Brilliant, easy-to-interpret imagery thanks to our best MSX® image enhancement and the power of UltraMax® image processing
- Compatibility with FLIR Thermal Studio Suite reporting software

\* E76, E86, E96 only.





### SEE GREATER DETAIL

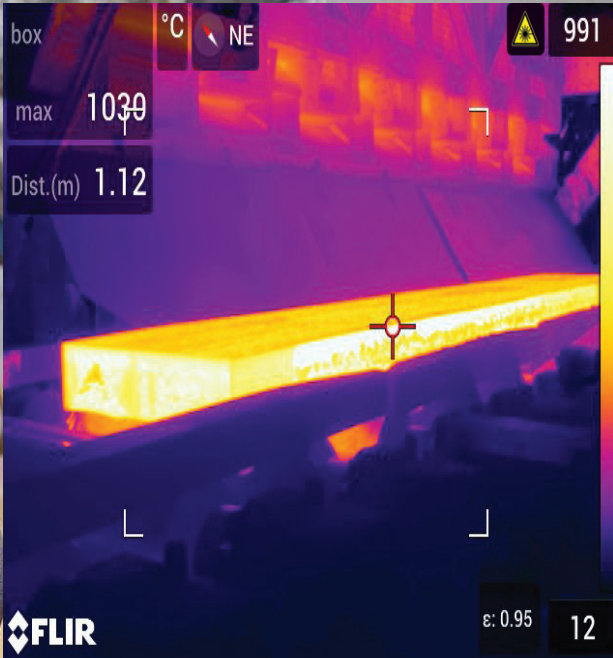
- Up to 640 × 480 true native IR resolution
- Large 4" display with 160° viewing angle
- 1-Touch Level/Span automatic contrast improvement
- FLIR MSX® image enhancement

### QUANTIFY POTENTIAL PROBLEMS

- Accurate temperature readings on hot spots
- Wide temperature ranges, up to 1500°C
- Sensitivity to detect minute temperature differences



# UNPARALLELED PERFORMANCE



NAVIGATE SCREENS EASIER

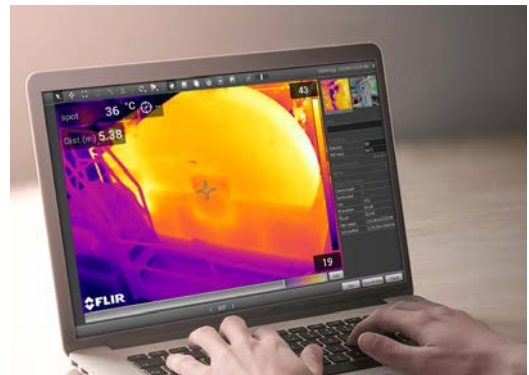
## FOCUS ACCURATELY

The Exx-Series is packed with the high performance features you need to quickly find and report hidden hot spots: razor-sharp focus, a rapid response user interface, and easy connection to Wi-Fi so you can upload, organize, and share images directly from the camera.

- Laser-assisted autofocus responds quickly, improves measurement accuracy\* \* E76, E86, E96 only.
- Superior spot-size performance for measurement of small, distant targets
- Interchangeable lenses provide coverage for any target in any scene\*

## REPORT PROBLEMS QUICKLY

- Quick response capacitive touchscreen
- The latest FLIR user interface with improved flow and feedback
- Logical navigation on screen and in menus



- FLIR Ignite™ Cloud allows you to upload and maintain images in one safe, easily-accessible location
- Pre-planned inspection routes—run from the camera—ensure no wasted time during a full day of surveying
- FLIR Thermal Studio Software provides



ic for voice annotation

Speaker plays back  
voice annotation

Vibrant, 4" optically-bonded  
PCAP touchscreen

Scratch-resistant  
Dragontrail™ cover glass

Ergonomic design for our  
most comfortable grip

Li-ion battery for  
extended use times

ies™  
| E96

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Laser provides distance measurement and precise autofocus\*

Laser pointer provides visual guidance

Interchangeable 24°, 42°, and 14° telephoto lenses\*

Bright LED work lights improve image clarity in dimly lit areas

5 MP digital camera now closer to thermal detector for superior MSX® enhancements

Separate autofocus and image recording buttons\*

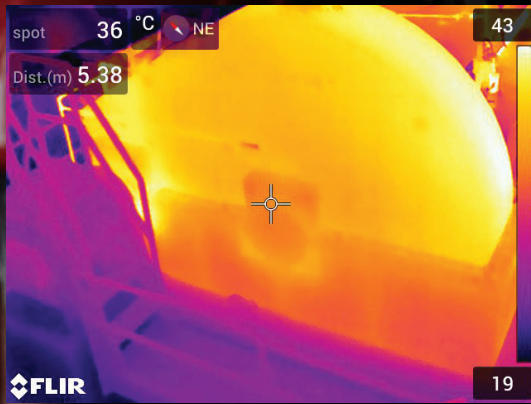
# HARD-WORKING DESIGN FOR HARD-WORKING PROFESSIONALS

This sleek design isn't just window dressing. From the rubberized, water-tight chassis to the scratch-resistant Dragontrail™ cover glass LCD, the Exx-Series is made for your tough work environment with models fit for every budget.





# IMPROVE ACCURACY AND EFFICIENCY



## THE BEST LENSES NEED THE BEST AUTOFOCUS\*

Teledyne FLIR took its cue from the digital camera industry when re-engineering the Exx-Series focus system. Whether you choose autofocus or continuous focus, the camera's precise laser-assisted focus and FLIR's innovative lenses ensure you get crisp results, for the most accurate temperature readings.

\* E76, E86, E96 only.



## MULTIPLE TARGETS, ONE SOLUTION

Not every target is large enough or close enough for proper measurement with a single lens. That's why FLIR designed the Exx-Series with interchangeable\* 24°, 42°, and 14° lenses—so you can use the same camera for every target you survey. The camera auto-calibrates with each new lens to ensure it produces high-quality images and precise thermal measurements.

## TAILORED TO YOUR SYSTEMS

Exx-Series cameras produce standard radiometric JPEGs that can be opened and viewed without proprietary software. These images can be viewed and edited in FLIR Thermal Studio Suite, and are supported by FLIR's Software Development Kit (ATLAS SDK). This allows companies to use their own Computerized Maintenance Monitoring Systems (CMMS) and still support read-out of thermal measurements, METERLiNK® data, GPS, compass, and other important parameters embedded within the image.

# TECHNICAL SPECIFICATIONS

| Features by Camera         | E54                                                                                | E76                                                                                                                         | E86                                                                                                             | E96                           |  |
|----------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------|--|
| Infrared Resolution        | 320 x 240<br>(76,800 pixels)                                                       |                                                                                                                             | 464 x 348<br>(161,472 pixels)                                                                                   | 640 x 480<br>(307,200 pixels) |  |
| UltraMax®                  | No                                                                                 | 307,200 pixels                                                                                                              | 645,888 pixels                                                                                                  | 1.2 Megapixels                |  |
| Thermal Sensitivity/NETD   | <40 mK @ 30°C (86°F)                                                               |                                                                                                                             |                                                                                                                 |                               |  |
| Spatial Resolution (IFOV)  | 1.31 mrad/pixel                                                                    |                                                                                                                             | 0.90 mrad/pixel                                                                                                 | 0.66 mrad/pixel               |  |
| Object Temperature Range   | -20°C to 120°C<br>(-4°F to 248°F),<br>0°C to 650°C<br>(32°F to 1202°F)             | -20°C to 120°C<br>(-4°F to 248°F),<br>0°C to 650°C<br>(32°F to 1202°F);<br>optional 300°C to<br>1000°C<br>(572°F to 1832°F) | -20°C to 120°C<br>(-4°F to 248°F),<br>0°C to 650°C<br>(32°F to 1202°F),<br>300°C to 1500°C<br>(572°F to 2732°F) |                               |  |
| Field of View              | 24° x 18°                                                                          | Lens dependent                                                                                                              |                                                                                                                 |                               |  |
| Focal Length               | 17 mm (0.67 in.)                                                                   | Lens dependent                                                                                                              |                                                                                                                 |                               |  |
| Focus                      | Manual                                                                             | Continuous LDM, One-shot LDM, One-shot contrast, Manual                                                                     |                                                                                                                 |                               |  |
| Digital Zoom               | 1-4x continuous                                                                    |                                                                                                                             | 1-8x continuous                                                                                                 |                               |  |
| Time-lapse (infrared)      | No                                                                                 |                                                                                                                             | 10 seconds to<br>24 hours (infrared)                                                                            |                               |  |
| Laser Alignment            | NA                                                                                 | Position is automatically displayed on the infrared image                                                                   |                                                                                                                 |                               |  |
| Laser Area Measurement     | NA                                                                                 |                                                                                                                             | Yes                                                                                                             |                               |  |
| Laser Distance Measurement | NA                                                                                 |                                                                                                                             | Yes, on-screen                                                                                                  |                               |  |
| Laser                      | Class 2 laser pointer                                                              |                                                                                                                             | Class 2, 0.05-40 m<br>(1.6-131 ft.) ±1% of measured distance                                                    |                               |  |
| Measurement Presets        | No measurements,<br>Center spot, Hot spot,<br>Cold spot, 3 spots,<br>Hot spot-spot |                                                                                                                             | No measurements, Center spot, Hot spot, Cold spot, User<br>preset 1, User preset 2                              |                               |  |
| Area Meter                 | 1 in live mode                                                                     |                                                                                                                             | 3 in live mode                                                                                                  |                               |  |
| Picture-in-Picture         | Centered infrared area<br>on the visual image                                      |                                                                                                                             | Resizable and movable                                                                                           |                               |  |

| Common Features                    |                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detector Type and Pitch            | Uncooled microbolometer/17 µm                                                                                                                                                                                                                                                                                                                     |
| Spectral Range                     | 7.5–14 µm                                                                                                                                                                                                                                                                                                                                         |
| Image Frequency                    | 30 Hz                                                                                                                                                                                                                                                                                                                                             |
| F-Number                           | f/1.3                                                                                                                                                                                                                                                                                                                                             |
| Lens Identification                | Automatic                                                                                                                                                                                                                                                                                                                                         |
| Image Presentation and Modes       |                                                                                                                                                                                                                                                                                                                                                   |
| Display                            | 4", 640 x 480 pixel touchscreen LCD with auto-rotation                                                                                                                                                                                                                                                                                            |
| Resolution                         | 5 MP, 53° x 41° FOV                                                                                                                                                                                                                                                                                                                               |
| Color Palettes                     | Arctic, White hot, Black hot, Iron, Lava, Rainbow, Rainbow HC                                                                                                                                                                                                                                                                                     |
| Image Modes                        | Infrared, visual, MSX®, Picture-in-picture                                                                                                                                                                                                                                                                                                        |
| MSX®                               | Embosses visual details on full-resolution thermal image                                                                                                                                                                                                                                                                                          |
| Measurement and Analysis           |                                                                                                                                                                                                                                                                                                                                                   |
| Accuracy                           | ±2°C (±3.6°F) or ±2% of reading for ambient temperature 15°C to 35°C (59°F to 95°F)<br>and object temperature above 0°C (32°F)                                                                                                                                                                                                                    |
| Spotmeter                          | 3 in live mode                                                                                                                                                                                                                                                                                                                                    |
| Alarms                             | Moisture, insulation, and measurement                                                                                                                                                                                                                                                                                                             |
| Color Alarm (Isotherm)             | Above/below/interval/condensation/insulation                                                                                                                                                                                                                                                                                                      |
| Compass, GPS                       | Yes, automatic GPS image tagging                                                                                                                                                                                                                                                                                                                  |
| METERLINK®                         | Yes, several readings                                                                                                                                                                                                                                                                                                                             |
| Inspection Mode and Software       |                                                                                                                                                                                                                                                                                                                                                   |
| FLIR Inspection Route              | Enabled in the camera                                                                                                                                                                                                                                                                                                                             |
| Compatible Analysis Software       | FLIR Thermal Studio Suite, including FLIR Route Creator plug-in                                                                                                                                                                                                                                                                                   |
| Storage of images                  |                                                                                                                                                                                                                                                                                                                                                   |
| Storage Media                      | Removable memory: SD card (8 GB)                                                                                                                                                                                                                                                                                                                  |
| Cloud Storage                      | FLIR Ignite Cloud services                                                                                                                                                                                                                                                                                                                        |
| Image File Format                  | Standard JPEG with measurement data included                                                                                                                                                                                                                                                                                                      |
| Video Recording and Streaming      |                                                                                                                                                                                                                                                                                                                                                   |
| Radiometric IR Video Recording     | Real-time radiometric recording (.csq)                                                                                                                                                                                                                                                                                                            |
| Non-Radiometric IR or Visual Video | H.264 to memory card                                                                                                                                                                                                                                                                                                                              |
| Radiometric IR Video Streaming     | Over UVC                                                                                                                                                                                                                                                                                                                                          |
| Non-Radiometric IR Video Streaming | H.264 or MPEG4 over Wi-Fi; MJPEG over UVC or Wi-Fi                                                                                                                                                                                                                                                                                                |
| Additional Data                    |                                                                                                                                                                                                                                                                                                                                                   |
| Battery Type                       | Li-ion battery, charged in camera or on separate charger                                                                                                                                                                                                                                                                                          |
| Battery Operating Time             | Approx. 2.5 hours at 25°C (77°F) and typical use                                                                                                                                                                                                                                                                                                  |
| Operating Temperature Range        | -15°C to 50°C (5°F to 122°F)                                                                                                                                                                                                                                                                                                                      |
| Shock/Vibration/Drop, Safety       | 25 g (IEC 60068-2-27)/2 g (IEC 60068-2-6)/ Designed for 2 m (6.6 ft) drop;<br>camera safety IEC/EN 60950-1, IEC/EN 62368-1                                                                                                                                                                                                                        |
| Weight/Dimensions                  | 1 kg (2.2 lb), 27.8 x 11.6 x 11.3 cm (11.0 x 4.6 x 4.4 in)                                                                                                                                                                                                                                                                                        |
| Box Contents                       | Infrared camera with lens, battery (2 ea), battery charger, front protection, straps (hand,<br>wrist), hard transport case, lanyards, lens caps, lens cleaning cloth, power supplies,<br>8 GB SD card, Torx wrench, cables (USB 2.0 A to USB Type-C, USB Type-C to USB<br>Type-C, USB Type-C to HDMI), FLIR Thermal Studio Starter, documentation |

Exx-Series cameras are backed by  
FLIR's industry-leading warranty

2 years: Full protection, parts, labor  
5 years: Battery  
10 years: Detector



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# FLIR TOTAL

## TRAINING SOLUTION SOFTWARE



Get thermography certification through the Infrared Training Center (ITC) to increase your understanding of thermal imaging and make surveying more efficient.

- \* Levels I, II and III

Our courses include:

- \* Levels I and II Electrical Thermography Certification
- \* IR Electrical Inspection Training Certification as a Level I thermographer ensures you understand how to use the camera; Level II cranks up your credibility with more in-depth concepts; and Level III ensures you have the skills to administer your company's thermography program.



FLIR Thermal Studio Pro, FLIR Ignite Cloud storage, and FLIR route management provide the total solution your team needs to streamline inspections, analysis, and reporting.

**FLIR Thermal Studio Pro:** Build an efficient survey roadmap with the FLIR Route Creator software plugin, then download and run it using the Inspection Route feature on your camera. Once your inspection is complete, bring the images back into FLIR Thermal Studio for processing, analysis, and reporting.

**FLIR Ignite:** Upload images wirelessly to this cloud-based service, which automatically manages the safe and secure back-up of your data.

## SERVICE AND SUPPORT



Regular maintenance and calibration from FLIR's service professionals is the best way to ensure your camera is operating within specification for accurate results, working reliably, and helping you reduce downtime.

FLIR Service is 9001:2008 certified and our exclusive 14-Point Inspection and Calibration program uses temperature references that are calibrated annually and traceable to the National Institute of Standards and Testing.

We also offer 24/7 global technical support in a wide range of languages, so you can be sure to get the help you need when you need it.

Specifications are subject to change without notice  
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NASDAQ: TDY

