# FLIR E86 24°

## P/N: 78512-1301

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**Website**

http://www.flir.com

**Customer support**

http://support.flir.com

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| Imaging and optical data | |
|---|---|
| Infrared resolution | 464 × 348 pixels |
| UltraMax (super-resolution) | Yes |
| NETD | <40 mK @ +30°C (+86°F) |
| Field of view | 24° × 18° |
| Minimum focus distance | 0.15 m (0.49 ft.) |
| Minimum focus distance with MSX | 0.5 m (1.64 ft.) |
| Focal length | 17 mm (0.67 in.) |
| Spatial resolution (IFOV) | 0.90 mrad/pixel |
| Available extra lenses | • 14° (AutoCal)<br>• 42° (AutoCal)<br>• Dual FOV 24°/14° (service calibration required)<br>• 80° (service calibration required) |
| Lens identification | Automatic |
| f number | 1.3 |
| Image frequency | 30 Hz |

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| **Imaging and optical data** | |
|---|---|
| Focus | • Continuous LDM<br>• One-shot LDM<br>• One-shot contrast<br>• Manual |
| Field of view match | Yes |
| Digital zoom | 1–4× continuous |

| **Detector data** | |
|---|---|
| Focal plane array/spectral range | Uncooled microbolometer/7.5–14 µm |
| Detector pitch | 17 µm |

| **Image presentation** | |
|---|---|
| Resolution | 640 × 480 pixels (VGA) |
| Surface brightness (cd/m$^2$) | 400 |
| Screen size | 4 in. |
| Viewing angle | 80° |
| Color depth (bits) | 24 |
| Aspect ratio | 4:3 |
| Auto-rotation | Yes |
| Touchscreen | Optically bonded PCAP |
| Display technology | IPS |
| Cover glass material | Dragontrail® |
| Programmable buttons | 1 |
| Viewfinder | No |
| Image adjustment | • Automatic<br>• Automatic maximum<br>• Automatic minimum<br>• Manual |

| **Image presentation modes** | |
|---|---|
| Infrared image | Yes |
| Visual image | Yes |
| Thermal fusion | No |
| MSX | Yes |
| Picture in Picture | Resizable and movable |
| Gallery | Yes |

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| **Measurement** | |
|---|---|
| Camera temperature range | • –20 to 120°C (–4 to 248°F)<br>• 0 to 650°C (32 to 1202°F)<br>• 300 to 1500°C (572 to 2732°F) |
| Object temperature range and accuracy (for ambient temp. 15 to 35°C (59 to 95°F) | • Range –20 to 120°C (–4 to 248°F):<br>◦ –20 to 100°C (–4 to 212°F): ±2°C (±3.6°F)<br>◦ 100 to 120°C (212 to 248°F): ±2%<br>• Range 0 to 650°C (32 to 1202°F):<br>◦ 0 to 100°C (32 to 212°F): ±2°C (±3.6°F)<br>◦ 100 to 650°C (212 to 1202°F): ±2%<br>• Range 300 to 1500°C (572 to 2732°F): ±2% |

| **Inspection mode** | |
|---|---|
| FLIR Inspection route | Enabled in the camera |

| **Measurement analysis** | |
|---|---|
| Spotmeter | 3 in live mode |
| Area | 3 in live mode |
| Automatic hot/cold detection | Auto-maximum/minimum markers within area |
| Measurement presets | • No measurements<br>• Center spot<br>• Hot spot<br>• Cold spot<br>• User preset 1<br>• User preset 2 |
| Difference temperature | Yes |
| Reference temperature | Yes |
| Emissivity correction | Yes: variable from 0.01 to 1.0 or selected from materials list |
| Measurement corrections | Yes |
| External optics/windows correction | Yes |

| **Alarm** | |
|---|---|
| Color alarm (isotherm) | • Above<br>• Below<br>• Interval<br>• Condensation (moisture/humidity/dewpoint)<br>• Insulation |
| Measurement function alarm | Audible/visual alarms (above/below) on any selected measurement function |

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| **Set-up** | |
|---|---|
| Color palettes | • Arctic<br>• White hot<br>• Black hot<br>• Iron<br>• Lava<br>• Rainbow<br>• Rainbow HC |
| Setup commands | Local adaptation of units, language, date and time formats |
| Languages | 21 |

| **Service functions** | |
|---|---|
| Camera software update | Using USB cable or SD card |

| **Storage of images** | |
|---|---|
| Storage media | • Removable memory: SD card (8 GB)<br>• FLIR Ignite Cloud services (with Wi-Fi) |
| Time lapse (periodic image storage) | 10 seconds to 24 hours (infrared) |
| Remote control operation | Using USB cable or Wi-Fi |
| Image file format | Standard JPEG, measurement data included. Infrared-only mode |

| **Image annotations** | |
|---|---|
| Voice | 60 seconds built-in microphone and speaker (and via Bluetooth) on still images and video |
| Text | Text from predefined list or soft keyboard on touchscreen |
| Visual image annotation | Yes |
| Image sketch | Yes: on infrared images only |
| Sketch | From touchscreen |
| METERLiNK | Wireless connection (Bluetooth) to:<br>FLIR meters with METERLiNK |
| Compass | Yes |
| Laser distance meter information | Yes |
| Area measurement information | Yes |
| GPS | Yes: location data automatically added to every still image and the first frame in video from built-in GPS |

| **Video recording in camera** | |
|---|---|
| Radiometric infrared-video recording | RTRR (.csq) |
| Non-radiometric infrared-video recording | H.264 to memory card |
| Visual video recording | H.264 to memory card |

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| **Video streaming** | |
|---|---|
| Radiometric infrared–video streaming (compressed) | Over UVC |
| Non-radiometric video streaming (compressed: IR, MSX, visual, Picture in Picture) | • H.264 (AVC) over RTSP (Wi-Fi)<br>• MPEG4 over RTSP (Wi-Fi)<br>• MJPEG over UVC and RTSP (Wi-Fi) |
| Visual video streaming | Yes |

| **Digital camera** | |
|---|---|
| Resolution | 5 MP with LED light |
| Focus | Fixed |
| Field of view | 53° × 41° |
| Video lamp | Built-in LED light |

| **Laser pointer** | |
|---|---|
| Laser alignment | Position is automatically displayed on the infrared image |
| Laser distance meter | Activated by a dedicated button |
| Laser | Class 2, 0.05–40 m (1.6–131 ft.) ±1% of measured distance |

| **Data communication interfaces** | |
|---|---|
| Interfaces | USB 2.0, Bluetooth, Wi-Fi, DisplayPort |
| METERLiNK/Bluetooth | Communication with headset and external sensors |
| Wi-Fi | Peer to peer (*ad hoc*) or infrastructure (network) |
| Audio | Microphone and speaker for voice annotation of images |
| USB | USB Type-C: data transfer/video/power |
| USB standard | USB 2.0 High Speed |
| Video out | DisplayPort |
| Video connector type | DisplayPort over USB Type-C |
| Cloud services | FLIR Ignite Cloud services |

| **Radio** | |
|---|---|
| Operating frequency | Bluetooth + EDR/LE: 2402–2480 MHz<br>WLAN 2.4 GHz: 2412–2462 MHz<br>WLAN 5 GHz: 5150–5350 MHz (DFS: only slave mode)<br>Note that frequency band 5150–5350 MHz is for indoor use only, see national regulations. |
| RF output (EIRP) | Bluetooth + EDR/LE: < 10 dBm<br>WLAN: < 17 dBm |
| Antenna | Integrated PIFA antenna (gain: maximum 1.4 dBi) |

| **Power system** | |
|---|---|
| Battery type | Rechargeable Li-ion battery |
| Battery voltage | 3.6 V |

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| **Power system** | |
|---|---|
| Battery operating time | > 2.5 hours at 25°C (68°F) and typical use |
| Charging system | In camera (AC adapter or 12 V from a vehicle) or two-bay charger |
| Charging time (using two-bay charger) | 2.5 hours to 90% capacity with charging status indicated by LEDs |
| Charging temperature | 0°C to +45°C (+32°F to +113°F), except for the Korean market: +10°C to +45°C (+50°F to +113° F) |
| External power operation | AC adapter 90–260 V AC, 50/60 Hz, or 12 V from a vehicle (cable with standard plug—optional) |
| Power management | Automatic shut-down and sleep mode |
| Battery documents | For documents like MSDS and UN38.3 test reports/summaries, see: https://support.flir.com/resources/msds |

| **Environmental data** | |
|---|---|
| Operating temperature range | –15 to +50°C (5–122°F) |
| Storage temperature range | –40 to +70°C (–40 to +158°F) |
| Humidity (operating and storage) | IEC 60068-2-30/24 hours/95% relative humidity 25–40°C (77–104°F)/two cycles |
| EMC | • ETSI EN 301 489-1 (radio)<br>• ETSI EN 301 489-17<br>• EN 61000-6-2 (immunity)<br>• EN 61000-6-3 (emission)<br>• FCC 47 CFR part 15 B, class B (emission) |
| Radio spectrum | • ETSI EN 300 328<br>• ETSI EN 301 893<br>• FCC 47 CFR part 15 C<br>• FCC 47 CFR part 15 E |
| Encapsulation | IP 54 (IEC 60529) |
| Shock | 25*g* (IEC 60068-2-27) |
| Vibration | 2*g* (IEC 60068-2-6) |
| Drop | Designed for 2 m (6.6 ft.) |
| Safety | Camera:<br>• IEC/EN 60950-1, IEC/EN 62368-1<br>Power supply:<br>• IEC/EN 62368-1<br>• CSA/UL/KC/SAA/PSE 60950-1 |
| Declaration of conformity | See: https://support.flir.com/resources/DoC |

| **Physical data** | |
|---|---|
| Weight (including battery) | 1 kg (2.2 lb.) |
| Size (L × W × H) | 278.4 × 116.1 × 113.1 mm (11.0 × 4.6 × 4.4 in.) |
| Battery weight | 140 g (4.9 oz.) |
| Battery size (L × W × H) | 150 × 46 × 55 mm (5.9 × 1.8 × 2.2 in.) |
| Tripod mounting | UNC ¼″-20 |

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| **Physical data** | |
|---|---|
| Housing material | PCABS with TPE, magnesium |
| Color | Black |

| **Warranty and service** | |
|---|---|
| Warranty | http://www.flir.com/warranty/ |

| **Shipping information** | |
|---|---|
| Packaging, type | Cardboard box |
| Packaging, contents | • Accessory Box I:<br>  ◦ Power supply for battery charger<br>  ◦ Power supply, 15 W/3 A<br>  ◦ Printed documentation<br>  ◦ SD card (8 GB)<br>  ◦ USB 2.0 A to USB Type-C cable, 1.0 m<br>  ◦ USB Type-C to HDMI adapter, standard specification UH311<br>  ◦ USB Type-C to USB Type-C cable (USB 2.0 standard), 1.0 m<br>• Accessory box II:<br>  ◦ Accessory box III:<br>  – Front protection fastener<br>  – Hand strap bracket, left<br>  – Hand strap bracket, right<br>  – Screws<br>  – Torx T10 wrench<br>  ◦ Carabiner hook<br>  ◦ Front protection<br>  ◦ Hand strap<br>  ◦ Lanyard strap, camera<br>  ◦ Lens cap strap<br>  ◦ Wrist strap<br>• Battery (2 ea)<br>• Battery charger<br>• FLIR Thermal Studio Starter<br>• Hard transport case<br>• Infrared camera with lens<br>• Lens cap, front<br>• Lens cap, front and rear (only for extra lenses) |
| Packaging, weight | 5.8 kg (12.8 lb.) |
| Packaging, size | 500 × 190 × 370 mm (19.7 × 7.5 × 14.6 in.) |
| EAN-13 | 4743254004672 |
| UPC-12 | 845188022679 |
| Country of origin | Estonia |

**Supplies & accessories:**

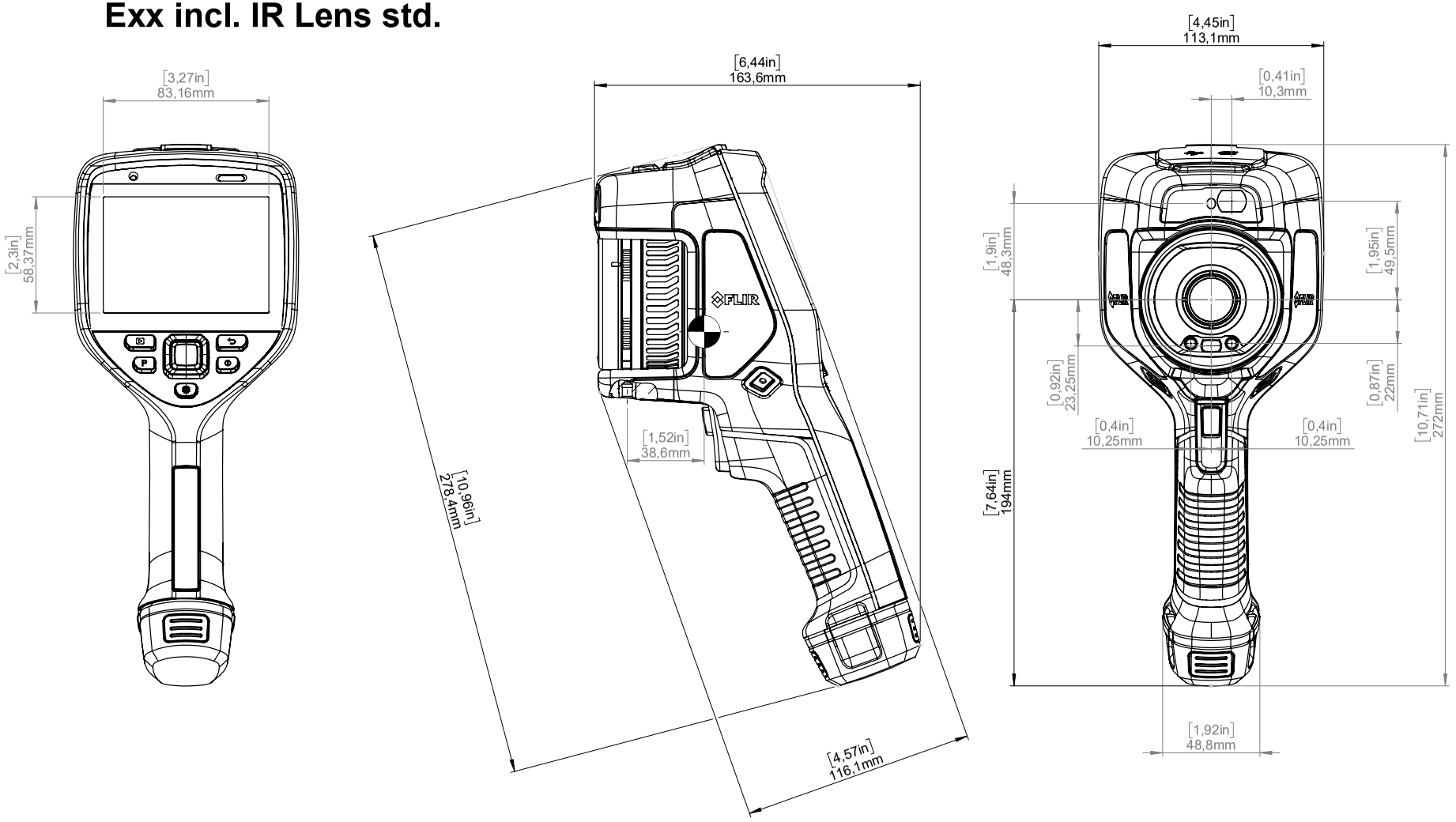
- T300587; IR lens Dual FOV, f=17/29 mm (24°/14°) with case
- T131171ACC; Remote operation button
- T300030; Option, No radio
- T911997; Tripod
- T911998; HDMI 2-port video splitter
- T300369; Mounting kit (FLIR T5xx, T8xx, Exx)
- T300768; Port adapter

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- T300493ACC; Industrial protective lens window
- T850111; Option, Dual streaming
- T130337ACC; Calibration target
- T199330ACC; Battery
- T199346ACC; Hard transport case for FLIR Exx series
- T199425ACC; Battery charger
- T199557ACC; Accessory Box II
- T911630ACC; Power supply for camera, 15 W/3 A
- T911633ACC; Power supply for battery charger
- T911689ACC; Pouch for FLIR E-series
- T911705ACC; USB Type-C to USB Type-C cable (USB 2.0 standard), 1.0 m
- T911706ACC; Car adapter 12 V
- T911845ACC; USB Type-C to HDMI and PD adapter
- T911846ACC; USB 2.0 A to USB Type-C with Power supply
- T911940ACC; USB 2.0 A to USB Type-C cable, 1.0 m
- T300437ACC; Lens case
- T199588; IR lens, f=29 mm (14°) with case
- T199589; IR lens, f=17 mm (24°) with case
- T199590; IR lens, f=10 mm (42°) with case
- T300805; IR lens, f=5 mm (80°) with case
- T197771ACC; Bluetooth Headset
- T300244; FLIR Route Creator Plugin for FLIR Thermal Studio Pro, 1 Year Subscription
- T300439; FLIR Route Creator Plugin for FLIR Thermal Studio Pro, Perpetual license
- T300243; FLIR Thermal Studio Pro, 1 Year Subscription
- T300083; FLIR Thermal Studio Pro, Perpetual license
- T300341; FLIR Thermal Studio Standard, 1 Year Subscription
- T300258; FLIR Thermal Studio Standard, Perpetual license
- 4232535; FLIR Research Studio, Professional Edition - 1 Year Subscription (online activation)
- 4232556; FLIR Research Studio, Professional Edition - Perpetual License (online activation)
- 4232590; FLIR Research Studio, Professional Edition - Perpetual License (USB dongle)
- 4220499; FLIR Research Studio, Standard Edition - 1 Year Subscription (online activation)
- 4220500; FLIR Research Studio, Standard Edition - Perpetual License (online activation)
- 4220646; FLIR Research Studio, Standard Edition - Perpetual License (USB dongle)
- T198696; FLIR ResearchIR Max 4 (hardware sec. dev.)
- T199013; FLIR ResearchIR Max 4 (printed license key)
- T199043; FLIR ResearchIR Max 4 Upgrade (printed license key)
- 4232591; FLIR ResearchIR to Research Studio, Professional Edition - 1 Year License Upgrade

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# Exx incl. IR Lens std.

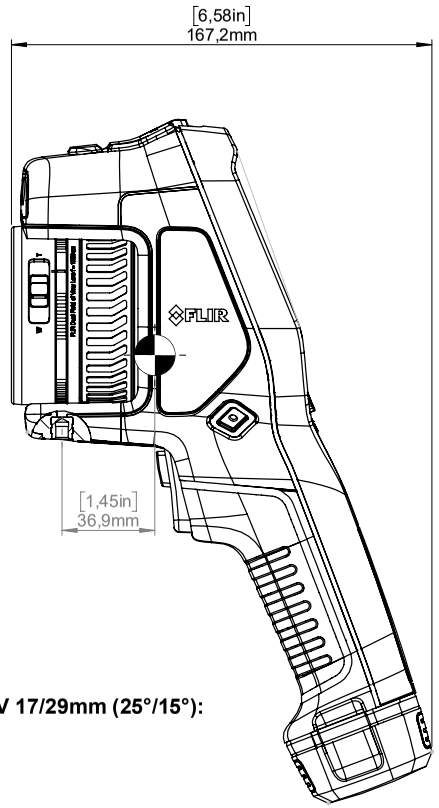



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# Exx incl. IR Lens DFOV 17/29mm



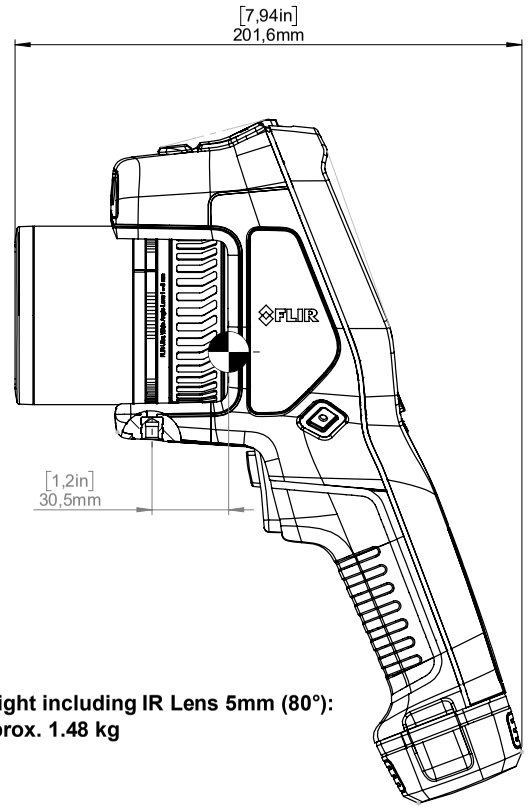

**Weight including IR Lens DFOV 17/29mm (25°/15°):**
**approx. 1.16 kg**

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# Exx incl. IR Lens 5mm




**Weight including IR Lens 5mm (80°): approx. 1.48 kg**

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