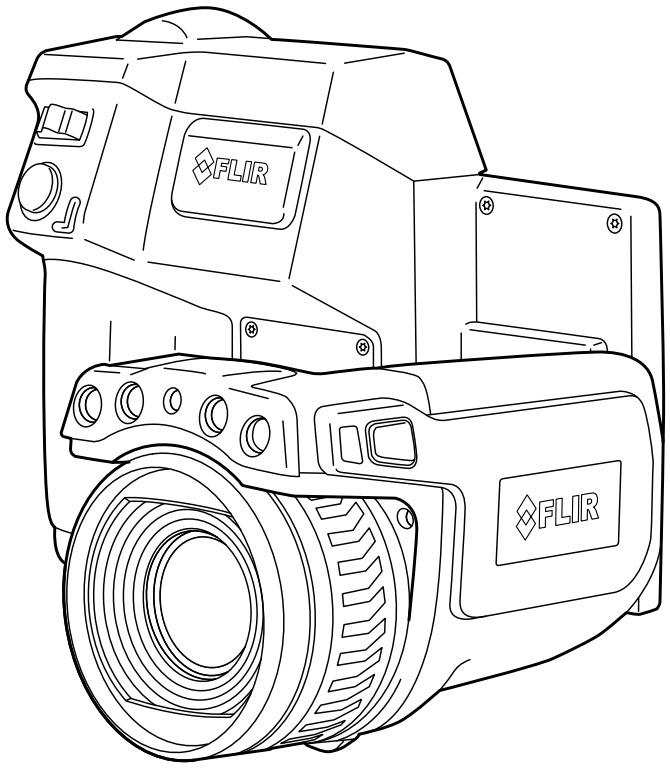
User's manual
FLIR T6xx series



Important note
Before operating the device, you must read, understand, and follow all instructions, warnings, cautions, and legal disclaimers.

Důležitá poznámka
Před použitím zařízení si přečtěte veškeré pokyny, upozornění, varování a vyvázání se ze záruky, ujistěte se, že jim rozumíte, a řiďte se jimi.

Vigtig meddelelse
Før du betjener enheden, skal du du læse, forstå og følge alle anvisninger, advarsler, sikkerhedsforanstaltninger og ansvarsfraskrivelser.

Wichtiger Hinweis
Bevor Sie das Gerät in Betrieb nehmen, lesen, verstehen und befolgen Sie unbedingt alle Anweisungen, Warnungen, Vorsichtshinweise und Haftungsausschlüsse

Σημαντική σημείωση
Πριν από τη λειτουργία της συσκευής, πρέπει να διαβάσετε, να κατανοήσετε και να ακολουθήσετε όλες τις οδηγίες, προειδοποιήσεις, προφυλάξεις και νομικές αποποιήσεις.

Nota importante
Antes de usar el dispositivo, debe leer, comprender y seguir toda la información sobre instrucciones, advertencias, precauciones y renuncias de responsabilidad.

Tärkeä huomautus
Ennen laitteen käyttämistä on luettava ja ymmärrettävä kaikki ohjeet, vakavat varoitukset, varoitukset ja lakitiedotteet sekä noudatettava niitä.

Remarque importante
Avant d'utiliser l'appareil, vous devez lire, comprendre et suivre l'ensemble des instructions, avertissements, mises en garde et clauses légales de non-responsabilité.

Fontos megjegyzés
Az eszköz használata előtt figyelmesen olvassa el és tartsa be az összes utasítást, figyelmeztetést, óvintézkedést és jogi nyilatkozatot.

Nota importante
Prima di utilizzare il dispositivo, è importante leggere, capire e seguire tutte le istruzioni, avvertenze, precauzioni ed esclusioni di responsabilità legali.

重要な注意
デバイスをご使用になる前に、あらゆる指示、警告、注意事項、および免責条項をお読み頂き、その内容を理解して従ってください。

중요한 참고 사항
장치를 작동하기 전에 반드시 다음의 사용 설명서와 경고, 주의사항, 법적 책임제한을 읽고 이해하며 따라야 합니다.

Viktig
Før du bruker enheten, må du lese, forstå og følge instruksjoner, advarsler og informasjon om ansvarsfraskrivelse.

Belangrijke opmerking
Zorg ervoor dat u, voordat u het apparaat gaat gebruiken, alle instructies, waarschuwingen en juridische informatie hebt doorgelezen en begrepen, en dat u deze opvolgt en in acht neemt.

Ważna uwaga
Przed rozpoczęciem korzystania z urządzenia należy koniecznie zapoznać się z wszystkimi instrukcjami, ostrzeżeniami, przestrogami i uwagami prawnymi. Należy zawsze postępować zgodnie z zaleceniami tam zawartymi.

Nota importante
Antes de utilizar o dispositivo, deverá proceder à leitura e compreensão de todos os avisos, precauções, instruções e isenções de responsabilidade legal e assegurar-se do seu cumprimento.

Важное примечание
До того, как пользоваться устройством, вам необходимо прочитать и понять все предупреждения, предостережения и юридические ограничения ответственности и следовать им.

Viktig information
Innan du använder enheten måste du läsa, förstå och följa alla anvisningar, varningar, försiktighetsåtgärder och ansvarsfriskrivningar.

Önemli not
Cihazı çalıştırmadan önce tüm talimatları, uyarıları, ikazları ve yasal açıklamaları okumalı, anlamalı ve bunlara uymalısınız.

重要注意事项
在操作设备之前，您必须阅读、理解并遵循所有说明、警告、注意事项和法律免责声明。

重要注意事項
操作裝置之前，您務必閱讀、了解並遵循所有說明、警告、注意事項與法律免責聲明。

User's manual
FLIR T6xx series

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1 Disclaimers

1.1 Legal disclaimer

All products manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of one (1) year from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction.

Uncooled handheld infrared cameras manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of two (2) years from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction, and provided that the camera has been registered within 60 days of original purchase.

Detectors for uncooled handheld infrared cameras manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of ten (10) years from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction, and provided that the camera has been registered within 60 days of original purchase.

Products which are not manufactured by FLIR Systems but included in systems delivered by FLIR Systems to the original purchaser, carry the warranty, if any, of the particular supplier only. FLIR Systems has no responsibility whatsoever for such products.

The warranty extends only to the original purchaser and is not transferable. It is not applicable to any product which has been subjected to misuse, neglect, accident or abnormal conditions of operation. Expendable parts are excluded from the warranty.

In the case of a defect in a product covered by this warranty the product must not be further used in order to prevent additional damage. The purchaser shall promptly report any defect to FLIR Systems or this warranty will not apply.

FLIR Systems will, at its option, repair or replace any such defective product free of charge if, upon inspection, it proves to be defective in material or workmanship and provided that it is returned to FLIR Systems within the said one-year period.

FLIR Systems has no other obligation or liability for defects than those set forth above.

No other warranty is expressed or implied. FLIR Systems specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

FLIR Systems shall not be liable for any direct, indirect, special, incidental or consequential loss or damage, whether based on contract, tort or any other legal theory.

This warranty shall be governed by Swedish law.

Any dispute, controversy or claim arising out of or in connection with this warranty, shall be finally settled by arbitration in accordance with the Rules of the Arbitration Institute of the Stockholm Chamber of Commerce. The place of arbitration shall be Stockholm. The language to be used in the arbitral proceedings shall be English.

1.2 Usage statistics

FLIR Systems reserves the right to gather anonymous usage statistics to help maintain and improve the quality of our software and services.

1.3 Changes to registry

The registry entry HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\LmCompatibilityLevel will be automatically changed to level 2 if the FLIR Camera Monitor service detects a FLIR camera connected to the computer with a USB cable. The modification will only be executed if the camera device implements a remote network service that supports network logons.

1.4 U.S. Government Regulations

This product may be subject to U.S. Export Regulations. Please send any inquiries to exportquestions@flir.com.

1.5 Copyright

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1.6 Quality assurance

The Quality Management System under which these products are developed and manufactured has been certified in accordance with the ISO 9001 standard.

FLIR Systems is committed to a policy of continuous development; therefore we reserve the right to make changes and improvements on any of the products without prior notice.

1.7 Patents

000439161; 000653423; 000726344; 000859020; 001707738; 001707746; 001707787; 001776519; 001954074; 002021543; 002021543-0002; 002058180; 002249953; 002531178; 002816785; 002816793; 011200326; 014347553; 057692; 061609; 07002405; 100414275; 101796816; 101796817; 101796818; 102334141; 1062100; 11063060001; 11517895; 1226865; 12300216; 12300224; 1285345; 1299699; 1325808; 1336775; 1391114; 1402918; 1404291; 1411581; 1415075; 1421497; 1458284; 1678485; 1732314; 17399650; 1880950; 1886650; 2007301511414; 2007303395047; 2008301285812; 2009301900619; 20100060357; 2010301761271; 2010301761303; 2010301761572; 2010305959313; 2011304423549; 2012304717443; 2012306207318; 2013302676195; 2015202354035; 2015304259171; 204465713; 204967995; 2106017; 2107799; 2115696; 2172004; 2315433; 2381417; 2794760001; 3006596; 3006597; 303330211; 4358936; 483782; 484155; 4889913; 4937897; 4995790001; 5177595; 540838; 579475; 584755; 599392; 60122153; 6020040116815; 602006006500.0; 6020080347796; 6020110003453; 615113; 615116; 664580; 664581; 665004; 665440; 67023029; 6707044; 677298; 68657; 69036179; 70022216; 70028915; 70028923; 70057990; 7034300; 710424; 7110035; 7154093; 7157705; 718801; 723605; 7237946; 7312822; 7332716; 7336823; 734803; 7544944; 7606484; 7634157; 7667198; 7809258; 7826736; 8018649; 8153971; 8212210; 8289372; 8340414; 8354639; 8384783; 8520970; 8565547; 8595689; 8599262; 8654239; 8680468; 8803093; 8823803; 8853631; 8933403; 9171361; 9191583; 9279728; 9280812; 9338352; 9423940; 9471970; 9595087; D549758.

1.8 EULA Terms

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1.9 EULA Terms

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2 Safety information

WARNING

Applicability: Class B digital devices.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

Applicability: Digital devices subject to 15.19/RSS-247.

NOTICE: This device complies with Part 15 of the FCC Rules and with RSS-247 of Industry Canada. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

WARNING

Applicability: Digital devices subject to 15.21.

NOTICE: Changes or modifications made to this equipment not expressly approved by FLIR Systems may void the FCC authorization to operate this equipment.

WARNING

Applicability: Devices subject to RSS-102/47CFR2.1093.

This device has been tested and meets the FCC/ISED RF exposure guidelines, or the device is exempted from SAR because of the low output power. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized.

WARNING

Applicability: Cameras with one or more laser pointers.

Do not look directly into the laser beam. The laser beam can cause eye irritation.

WARNING

Applicability: Cameras with one or more batteries.

Do not disassemble or do a modification to the battery. The battery contains safety and protection devices which, if damage occurs, can cause the battery to become hot, or cause an explosion or an ignition.

WARNING

Applicability: Cameras with one or more batteries.

If there is a leak from the battery and you get the fluid in your eyes, do not rub your eyes. Flush well with water and immediately get medical care. The battery fluid can cause injury to your eyes if you do not do this.

WARNING

Applicability: Cameras with one or more batteries.

Do not continue to charge the battery if it does not become charged in the specified charging time. If you continue to charge the battery, it can become hot and cause an explosion or ignition. Injury to persons can occur.

WARNING

Applicability: Cameras with one or more batteries.

Only use the correct equipment to remove the electrical power from the battery. If you do not use the correct equipment, you can decrease the performance or the life cycle of the battery. If you do not use the correct equipment, an incorrect flow of current to the battery can occur. This can cause the battery to become hot, or cause an explosion. Injury to persons can occur.

WARNING

Make sure that you read all applicable MSDS (Material Safety Data Sheets) and warning labels on containers before you use a liquid. The liquids can be dangerous. Injury to persons can occur.

CAUTION

Do not point the infrared camera (with or without the lens cover) at strong energy sources, for example, devices that cause laser radiation, or the sun. This can have an unwanted effect on the accuracy of the camera. It can also cause damage to the detector in the camera.

CAUTION

Do not use the camera in temperatures more than +50°C (+122°F), unless other information is specified in the user documentation or technical data. High temperatures can cause damage to the camera.

CAUTION

Applicability: Cameras with one or more laser pointers.

To prevent damage, put the protective cap on the laser pointer when you do not operate the laser pointer. Damage to the laser pointer can occur if you do not do this.

CAUTION

Applicability: Cameras with one or more batteries.

Do not attach the batteries directly to a car's cigarette lighter socket, unless FLIR Systems supplies a specific adapter to connect the batteries to a cigarette lighter socket. Damage to the batteries can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not connect the positive terminal and the negative terminal of the battery to each other with a metal object (such as wire). Damage to the batteries can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not get water or salt water on the battery, or permit the battery to become wet. Damage to the batteries can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not make holes in the battery with objects. Damage to the battery can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not hit the battery with a hammer. Damage to the battery can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not put your foot on the battery, hit it or cause shocks to it. Damage to the battery can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not put the batteries in or near a fire, or into direct sunlight. When the battery becomes hot, the built-in safety equipment becomes energized and can stop the battery charging procedure. If the battery becomes hot, damage can occur to the safety equipment and this can cause more heat, damage or ignition of the battery.

CAUTION

Applicability: Cameras with one or more batteries.

Do not put the battery on a fire or increase the temperature of the battery with heat. Damage to the battery and injury to persons can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not put the battery on or near fires, stoves, or other high-temperature locations. Damage to the battery and injury to persons can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not solder directly onto the battery. Damage to the battery can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Do not use the battery if, when you use, charge, or put the battery in storage, there is an unusual smell from the battery, the battery feels hot, changes color, changes shape, or is in an unusual condition. Speak with your sales office if one or more of these problems occurs. Damage to the battery and injury to persons can occur.

CAUTION

Applicability: Cameras with one or more batteries.

Only use a specified battery charger when you charge the battery. Damage to the battery can occur if you do not do this.

CAUTION

Applicability: Cameras with one or more batteries.

Only use a specified battery for the camera. Damage to the camera and the battery can occur if you do not do this.

CAUTION

Applicability: Cameras with one or more batteries.

The temperature range through which you can charge the battery is 0°C to +45°C (+32°F to +113°F). If you charge the battery at temperatures out of this range, it can cause the battery to become hot or to break. It can also decrease the performance or the life cycle of the battery.

CAUTION

Applicability: Cameras with one or more batteries.

The temperature range through which you can remove the electrical power from the battery is -15°C to +50°C (+5°F to +122°F), unless other information is specified in the user documentation or technical data. If you operate the battery out of this temperature range, it can decrease the performance or the life cycle of the battery.

CAUTION

Applicability: Cameras with one or more batteries.

When the battery is worn, apply insulation to the terminals with adhesive tape or equivalent materials before you discard it. Damage to the battery and injury to persons can occur if you do not do this.

CAUTION

Applicability: Cameras with one or more batteries.

Remove any water or moisture on the battery before you install it. Damage to the battery can occur if you do not do this.

CAUTION

Do not apply solvents or equivalent liquids to the camera, the cables, or other items. Damage to the battery and injury to persons can occur.

CAUTION

Be careful when you clean the infrared lens. The lens has an anti-reflective coating which is easily damaged. Damage to the infrared lens can occur.

CAUTION

Do not use too much force to clean the infrared lens. This can cause damage to the anti-reflective coating.

Note The encapsulation rating is only applicable when all the openings on the camera are sealed with their correct covers, hatches, or caps. This includes the compartments for data storage, batteries, and connectors.

CAUTION

Applicability: Cameras with a viewfinder.

Make sure that the beams from the intensive energy sources do not go into the viewfinder. The beams can cause damage to the camera. This includes the devices that emit laser radiation, or the sun.

3 Notice to user

3.1 User-to-user forums

Exchange ideas, problems, and infrared solutions with fellow thermographers around the world in our user-to-user forums. To go to the forums, visit:

http://forum.infraredtraining.com/

3.2 Calibration

We recommend that you send in the camera for calibration once a year. Contact your local sales office for instructions on where to send the camera.

3.3 Accuracy

For very accurate results, we recommend that you wait 5 minutes after you have started the camera before measuring a temperature.

3.4 Disposal of electronic waste

Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly.

Equipment marked with the below crossed-out wheeled bin is electrical and electronic equipment. The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste, but must be collected separately.

For this purpose all local authorities have established collection schemes under which residents can dispose waste electrical and electronic equipment at a recycling centre or other collection points, or WEEE will be collected directly from households. More detailed information is available from the technical administration of the relevant local authority.

3.5 Training

To read about infrared training, visit:

- http://www.infraredtraining.com
- http://www.irtraining.com
- http://www.irtraining.eu

3.6 Documentation updates

Our manuals are updated several times per year, and we also issue product-critical notifications of changes on a regular basis.

To access the latest manuals, translations of manuals, and notifications, go to the Download tab at:

http://support.flir.com

It only takes a few minutes to register online. In the download area you will also find the latest releases of manuals for our other products, as well as manuals for our historical and obsolete products.

3.7 Important note about this manual

FLIR Systems issues generic manuals that cover several cameras within a model line.

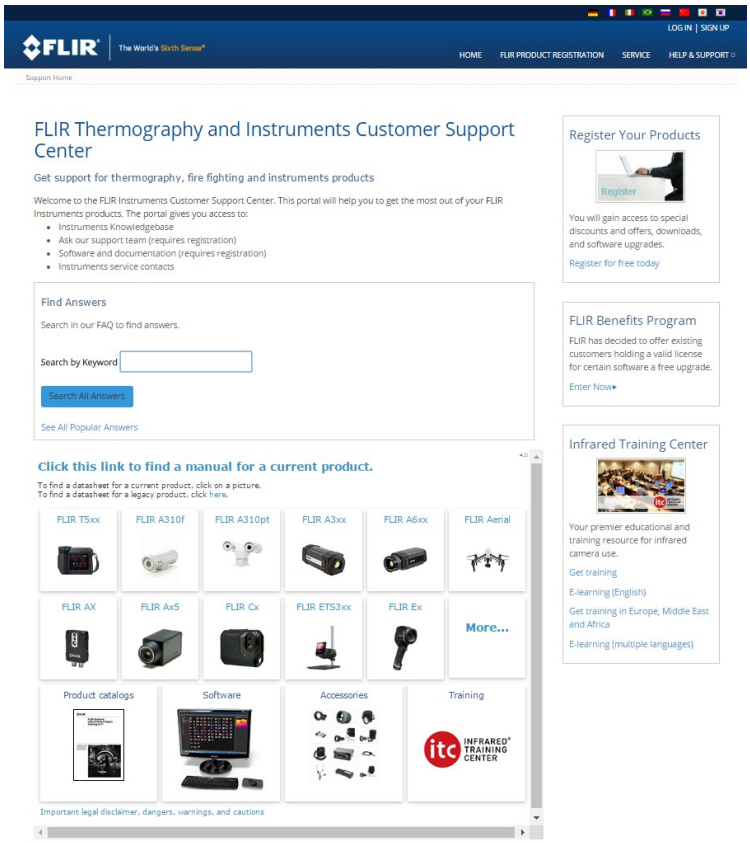
This means that this manual may contain descriptions and explanations that do not apply to your particular camera model.

3.8 Note about authoritative versions

The authoritative version of this publication is English. In the event of divergences due to translation errors, the English text has precedence.

Any late changes are first implemented in English.

4 Customer help



4.1 General

For customer help, visit:

http://support.flir.com

4.2 Submitting a question

To submit a question to the customer help team, you must be a registered user. It only takes a few minutes to register online. If you only want to search the knowledgebase for existing questions and answers, you do not need to be a registered user.

When you want to submit a question, make sure that you have the following information to hand:

- The camera model
- The camera serial number
- The communication protocol, or method, between the camera and your device (for example, SD card reader, HDMI, Ethernet, USB, or FireWire)
- Device type (PC/Mac/iPhone/iPad/Android device, etc.)
- Version of any programs from FLIR Systems
- Full name, publication number, and revision number of the manual

4.3 Downloads

On the customer help site you can also download the following, when applicable for the product:

- Firmware updates for your infrared camera.
- Program updates for your PC/Mac software.
- Freeware and evaluation versions of PC/Mac software.
- User documentation for current, obsolete, and historical products.
- Mechanical drawings (in *.dxf and *.pdf format).
- Cad data models (in *.stp format).
- Application stories.
- Technical datasheets.
- Product catalogs.

5 Quick start guide

5.1 Procedure

Follow this procedure:

1. Put a battery into the battery compartment.
2. Charge the battery for 4 hours before starting the camera for the first time.
3. Insert a memory card into the card slot.
4. Push the On/off button ⏻ to turn on the camera.
5. Aim the camera toward the object of interest.
6. Adjust the focus.

   Note It is very important to adjust the focus correctly. Incorrect focus adjustment affects how the image modes work. It also affects the temperature measurement.

7. Push the Autofocus/save button fully down to save an image.
8. Go to http://support.flir.com/tools and download FLIR Tools.
9. Install FLIR Tools on your computer.
10. Start FLIR Tools.
11. Connect the camera to the computer using a USB cable.
12. Import the images into FLIR Tools.
13. Select one or more images.
14. Click *Generate report*.
15. Click *Export* to export the report as a PDF file.
16. Send the PDF report to your client.

6 List of accessories and services

Product name	Part number
Battery charger, incl. power supply with multi plugs T6xx	T198126
Bluetooth Headset	T197771ACC
Calibration including General maintenance T6xx series	T199838
Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft.	T198509
Close-up IR lens, 1.5× (25 µm) with case	T198066
Close-up IR lens, 2.9× (50 µm) with case	T198059
Close-up IR lens, 5.8× (100 µm) with case	T198060
FLIR Reporter Professional (license only)	T198586
FLIR ResearchIR 3 (license only)	T198578
FLIR ResearchIR 3 Max (license only)	T198574
FLIR ResearchIR Max + HSDR 4	T198697
FLIR ResearchIR Max 4	T198696
FLIR ResearchIR Standard 4	T198731
FLIR Tools	T198584
FLIR Tools+ (license only)	T198583
Hard transport case for T6xx series	T198625ACC
HDMI type C to DVI cable 1.5 m	T910930ACC
HDMI type C to HDMI type A cable 1.5 m	T910891ACC
High temp option +300°C to 2000°C (+572°F to 3632°F) for FLIR A6xxsc and T6xx	T197896
IR lens, f=13.1 mm (45°) with case	T197915
IR lens, f=24.6 mm (25°) with case	T197922
IR lens, f=41.3 mm (15°) with case	T197914
IR lens, f=6.5 mm (80°) with case	T198065
IR lens, f=88.9 mm (7°) with case and support for T6xx	T198166
IR Window 2 in	19250-100
IR Window 3 in.	19251-100
IR Window 4 in.	19252-100
Large eyecup	T198497
Li-Ion Battery pack 3.7V 29Wh	T198506
Memory card SDHC 4 GB	T911230ACC
Neck strap	T198499
One year extended warranty for T6xx series	T199836
Pouch for FLIR T6xx and T4xx series	T198495
Power supply, incl. multi plugs	T910814
SS IR Window 2 in.	19250-200
SS IR Window 3 in.	19251-200
SS IR Window 4 in.	19252-200
Tool belt	T911093
Tripod Adapter	T198498
USB cable Std A <-> Mini-B	1910423

Note FLIR Systems reserves the right to discontinue models, parts or accessories, and other items, or to change specifications at any time without prior notice.

7 A note about ergonomics

7.1 General

To prevent strain-related injuries, it is important that you hold the camera ergonomically correct. This section gives advice and examples on how to hold the camera.

Note Please note the following:

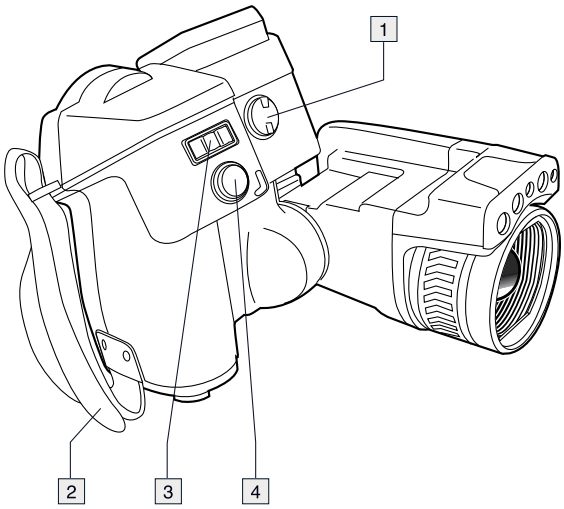
- Always tilt the touch-screen LCD to suit your work position.
- When you hold the camera, make sure that you support the optics housing with your left hand too. This decreases the strain on your right hand.

7.2 Figure

8 Camera parts

8.1 View from the right

8.1.1 Figure



8.1.2 Explanation

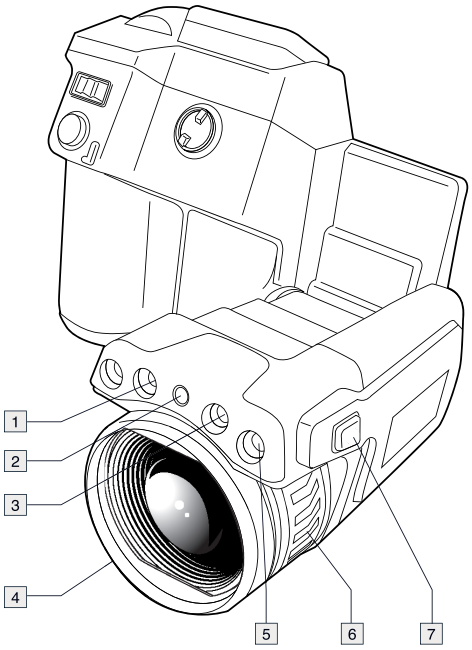
1. Knob to change the dioptric correction for the viewfinder.

   Note This item is dependent on the camera model.

2. Hand strap.
3. Digital zoom button.
4. Autofocus button (push half-way down)/Save button (push fully down).

8.2 View from the left

8.2.1 Figure



8.2.2 Explanation

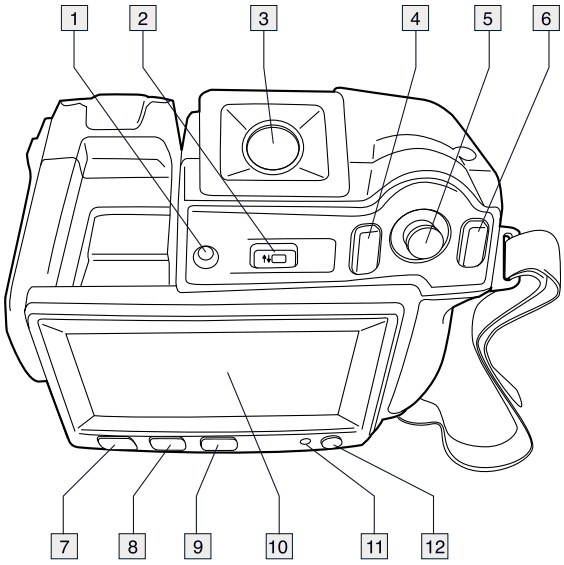
1. Camera lamp.
2. Laser pointer.

   Note The laser pointer may not be enabled in all markets.

3. Camera lamp.
4. Infrared lens.
5. Digital camera.
6. Focusing ring.
7. Button to operate the laser pointer.

8.3 View from the rear

8.3.1 Figure



8.3.2 Explanation

1. Sensor that adjusts the touch-screen LCD intensity automatically.
2. Button to switch between touch-screen LCD mode and viewfinder mode.

   Note This item is dependent on the camera model.

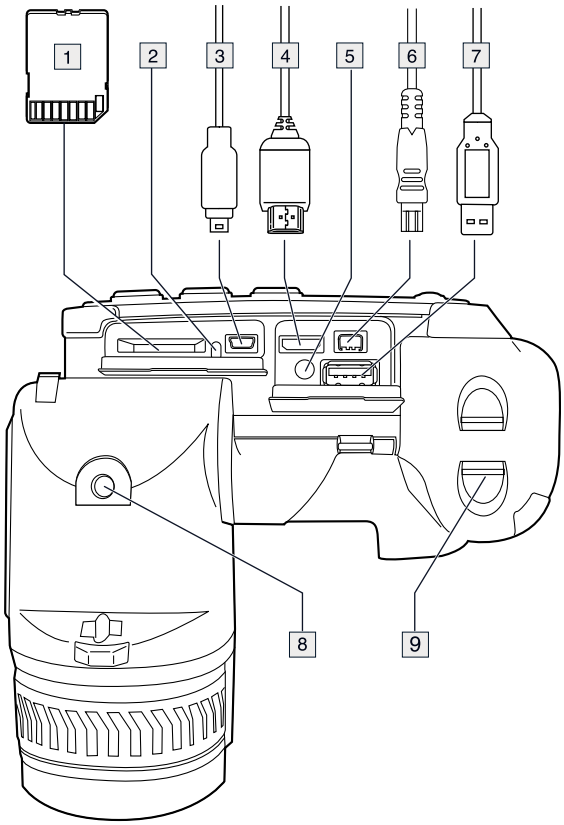
3. Viewfinder.

   Note This item is dependent on the camera model.

4. Programmable button.
5. Joystick with push-button functionality.
6. Back button.
7. Camera lamp button.
8. Button to switch between automatic and manual image adjustment mode.
9. Image archive button.
10. Touch-screen LCD.
11. Power indicator.
12. On/off button.

8.4 View from the bottom

8.4.1 Figure



8.4.2 Explanation

1. Memory card.
2. Indicator showing that the memory card is busy.

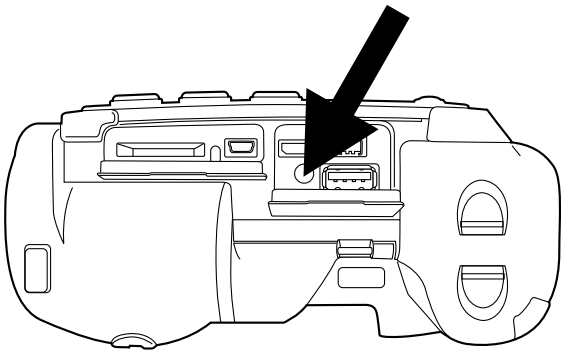
   Note

   - Do not eject the memory card when this LED is flashing.
   - Do not connect the camera to a computer when this LED is flashing.

3. USB Mini-B cable (to connect the camera to a computer).
4. HDMI cable (for digital video output).
5. Battery condition LED indicator.
6. Power cable (to power the camera and charge the battery).
7. USB-A cable (to connect an external USB device to the camera).
8. Tripod mount. Requires an adapter (included).
9. Latch to release the battery.

8.5 Battery condition LED indicator

8.5.1 Figure

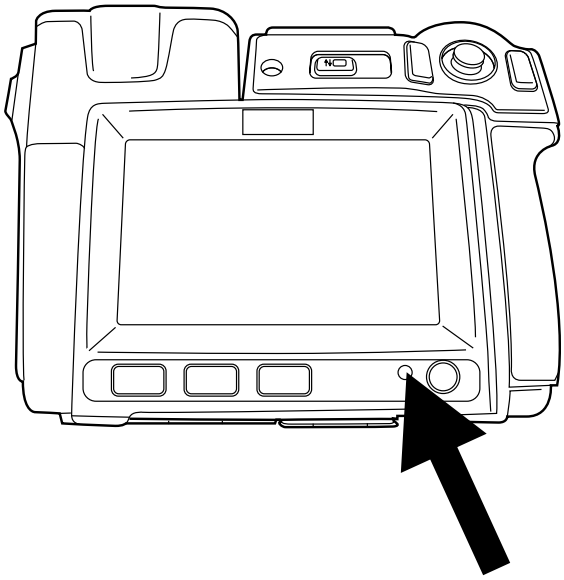


8.5.2 Explanation

Type of signal	Explanation
The green LED flashes twice per second.	The battery is being charged.
The green LED glows continuously.	The battery is fully charged.

8.6 Power LED indicator

8.6.1 Figure



8.6.2 Explanation

Type of signal	Explanation
The LED is off.	The camera is off.
The LED is blue.	The camera is on.

8.7 Laser pointer

8.7.1 Figure

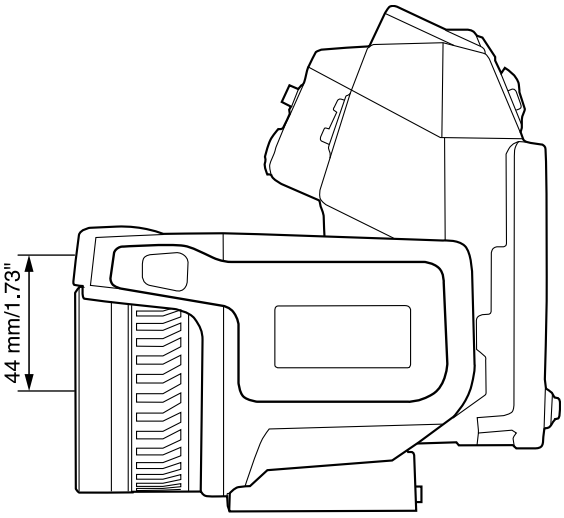


Figure 8.1 This figure shows the difference in position between the laser pointer and the optical center of the infrared lens.

⚠ **WARNING**
Do not look directly into the laser beam. The laser beam can cause eye irritation.

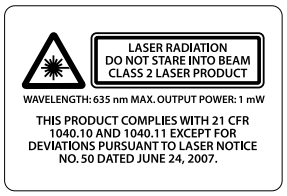
Note The symbol is displayed on the screen when the laser pointer is on.

Note The laser pointer is enabled by a setting. Select (*Settings*) > *Device settings* > *Set up camera* > *Lamp & laser* > *Enable lamp & laser*.

Note The laser pointer may not be enabled in all markets.

8.7.2 Laser warning label

A laser warning label with the following information is attached to the camera:



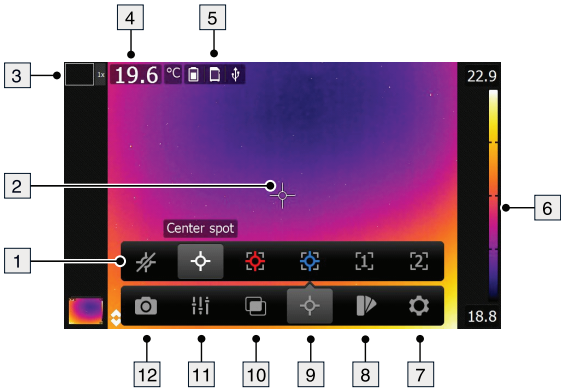
8.7.3 Laser rules and regulations

Wavelength: 635 nm. Maximum 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 June 24, 2007.

9 Screen elements

9.1 Figure

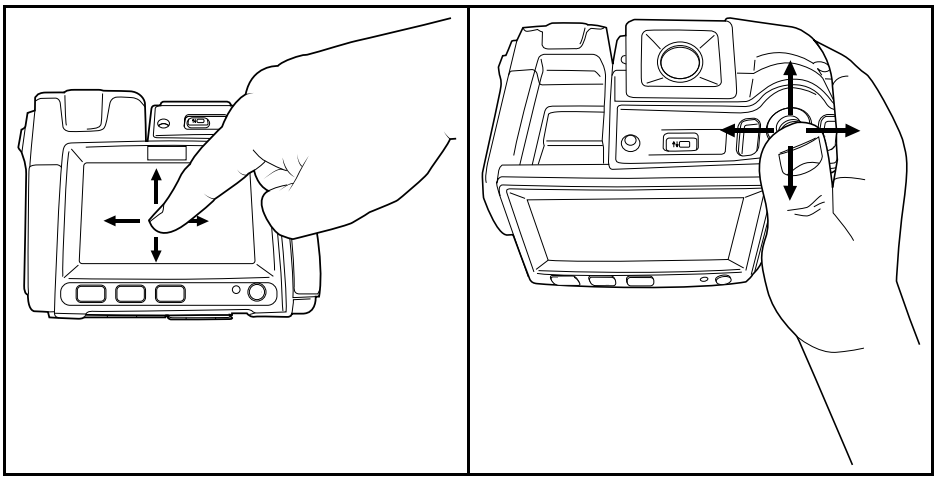


9.2 Explanation

1. Measurement toolbar.
2. Measurement tool (e.g., spotmeter).
3. Zoom factor.
4. Result table.
5. Status icons.
6. Temperature scale.
7. Settings toolbar button.
8. Color toolbar button.
9. Measurement toolbar button.
10. Image mode toolbar button.
11. Measurement parameters toolbar button.
12. Recording mode toolbar button.

10 Navigating the menu system

10.1 Figure



10.2 Explanation

The figure above shows the two ways to navigate the menu system in the camera:

- Using the index finger or a stylus pen specially designed for capacitive touch usage to navigate the menu system (left).
- Using the joystick to navigate the menu system (right).

You can also use a combination of the two.

In this manual it is assumed that the joystick is used, but most tasks can also be carried out using the index finger or a stylus pen.

11 Pairing Bluetooth devices

11.1 General

Before you can use a Bluetooth device with the camera, you need to pair the devices.

11.2 Procedure

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to (*Settings*).
3. Push the joystick to display the *Settings* menu.
4. Select *Device settings* and push the joystick.
5. Select *Bluetooth including METERLiNK* and push the joystick.
6. If the *Bluetooth* check box is unchecked, push the joystick to activate Bluetooth.

   Note You also need to activate Bluetooth connectivity on the external device.
7. Select *Scan for Bluetooth devices* and push the joystick.
8. Wait until a list of available devices is displayed. This will take about 15 seconds.
9. When a Bluetooth device is found, select the device to add it, and begin the pairing procedure. The device is then ready to be used.

Note

- Only METERLiNK devices and Bluetooth-enabled headsets will appear in the list of available devices.
- You can add several devices.
- You can remove a device by selecting the device and then selecting *Unpair device*.
- After adding a METERLiNK device, such as the FLIR MR77 or FLIR DM93, the result from the meter will be visible in the result table and stored with the images. For more information, see section 17 *Fetching data from external FLIR meters*, page 51.
- After adding a Bluetooth-enabled headset, it is ready to be used for adding voice annotations.

12 Configuring Wi-Fi

12.1 General

Depending on your camera configuration, you can connect the camera to a wireless local area network (WLAN) using Wi-Fi, or let the camera provide Wi-Fi access to another device.

You can connect the camera in two different ways:

- *Most common use*: Setting up a peer-to-peer connection (also called an *ad hoc* or *P2P* connection). This method is primarily used with other devices, e.g., an iPhone or iPad.
- *Less common use*: Connecting the camera to a WLAN.

12.2 Setting up a peer-to-peer connection (most common use)

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to (*Settings*).
3. Push the joystick to display the *Settings* menu.
4. Select *Device settings* and push the joystick.
5. Select *Wi-Fi* and push the joystick.
6. Select *Share* and push the joystick.
7. (Optional step.) To display and change the parameters, select *Settings* and push the joystick.
   - To change the channel (the channel that the camera is broadcasting on), select *Channel* and push the joystick.
   - To activate WEP (encryption algorithm), select *WEP* and push the joystick. This will check the *WEP* check box.
   - To change the WEP password, select *Password* and push the joystick.

   Note These parameters are set for your camera's network. They will be used by the external device to connect that device to the network.

12.3 Connecting the camera to a wireless local area network (less common use)

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to (*Settings*).
3. Push the joystick to display the *Settings* menu.
4. Select *Device settings* and push the joystick.
5. Select *Wi-Fi* and push the joystick.
6. Select *Connect to network* and push the joystick.
7. To display a list of the available networks, select *Networks* and push the joystick.
8. Select one of the available networks.
   Password-protected networks are indicated with a padlock icon, and for these you will need to enter a password.

Note Some networks do not broadcast their existence. To connect to such a network, select *Settings* from the *Networks* list and push the joystick. Then select *Add network...* and set all parameters manually according to that network.

13 Handling the camera

13.1 Charging the battery

Note You must charge the battery for 4 hours before you start using the camera for the first time.

13.1.1 Using the power supply to charge the battery

13.1.1.1 Procedure

Follow this procedure:

1. Connect the power supply cable plug to the power connector on the camera.
2. Connect the power supply mains-electricity plug to a mains socket.
3. Disconnect the power supply cable plug when the green light of the battery condition LED indicator is continuous.

13.1.2 Using the stand-alone battery charger to charge the battery

13.1.2.1 Explanation

Type of signal	Explanation
The blue LED flashes.	The battery is being charged.
The blue LED glows continuous.	The battery is fully charged.

13.1.2.2 Procedure

Follow this procedure:

1. Put the battery in the battery charger.
2. Connect the power supply cable plug to the connector on the battery charger.
3. Connect the power supply mains-electricity plug to a mains socket.
4. Disconnect the power supply cable plug when the blue LED on the battery charger is continuous.

13.2 Turning on the camera

13.2.1 Procedure

Follow this procedure:

1. To turn on the camera, push and release the ⏻ button.

13.3 Turning off the camera

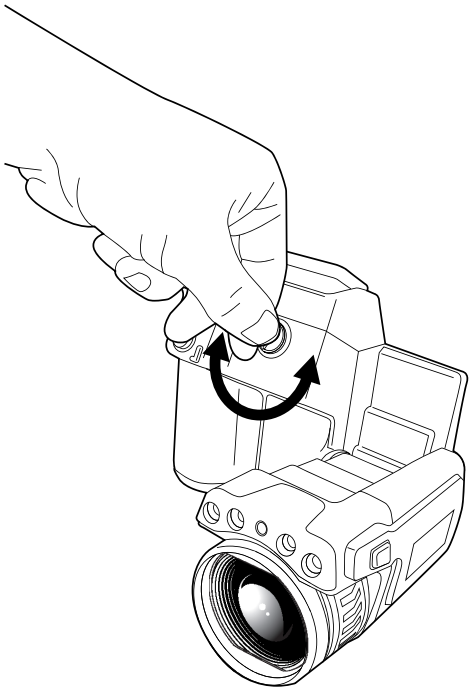
13.3.1 Procedure

Follow this procedure:

1. To turn off the camera, push and hold the ⏻ button for more than 0.2 second.

13.4 Adjusting the viewfinder's dioptric correction

13.4.1 Figure



⚠ CAUTION
Applicability: Cameras with a viewfinder. Make sure that the beams from the intensive energy sources do not go into the viewfinder. The beams can cause damage to the camera. This includes the devices that emit laser radiation, or the sun.

Note This item is dependent on the camera model.

13.4.2 Procedure

Follow this procedure:

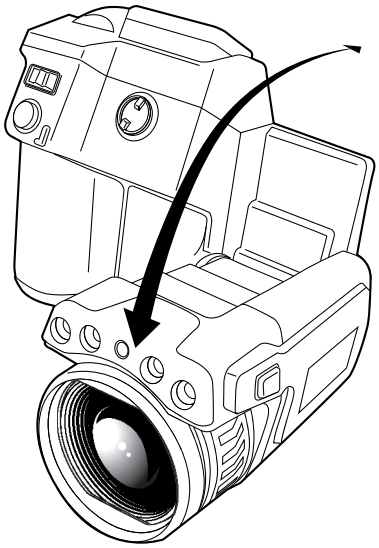
1. To adjust the viewfinder's dioptric correction, look at the displayed text or graphics on the screen, and rotate the adjustment knob clockwise or counter-clockwise for best sharpness.

Note

- Maximum dioptric correction: +2.
- Minimum dioptric correction: –2.

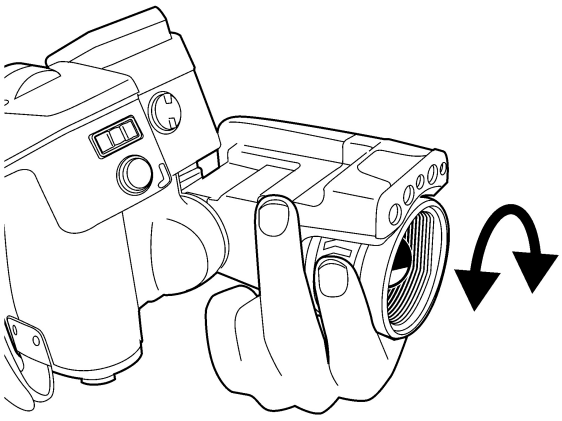
13.5 Adjusting the angle of the lens

13.5.1 Figure



13.6 Adjusting the infrared camera focus manually

13.6.1 Figure



13.6.2 Procedure

Follow this procedure:

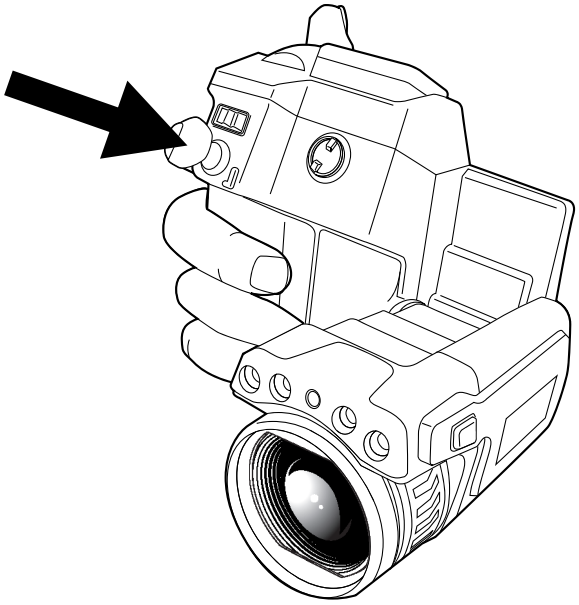
1. Do one of the following:
   - For far focus, rotate the focus ring clockwise (looking at the touch-screen LCD side).
   - For near focus, rotate the focus ring counter-clockwise (looking at the touch-screen LCD side).

Note

- Do not touch the lens surface when you adjust the infrared camera focus manually. If this happens, clean the lens according to the instructions in 27.2 *Infrared lens*, page 456.
- The focus ring can be rotated infinitely, but only a certain amount of rotation is needed when focusing.

13.7 Autofocusing the infrared camera

13.7.1 Figure



13.7.2 Procedure

Follow this procedure:

1. To autofocus the camera when continuos autofocus is disabled, push the Autofocus/ Save button half-way down.

13.8 Continuous autofocus

13.8.1 General

The camera can be set up to perform continuous autofocusing.

Note

- In this mode, the digital camera is used, which means that continuous autofocus will not work in darkness.
- When continuous autofocus is enabled, it is not possible to manually adjust the focus by rotating the focus ring.

13.8.2 Procedure

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to (*Settings*).
3. Push the joystick to display the *Settings* menu.

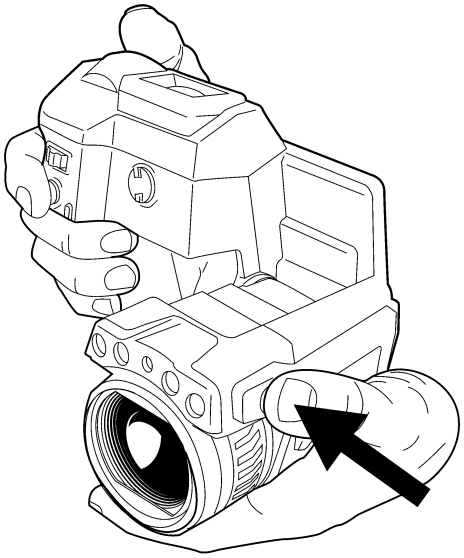
4. Select *Device settings* and push the joystick.
5. Select *Set up camera* and push the joystick.
6. Select *Continuous autofocus*. If the check box is unchecked, push the joystick to enable continuous autofocus.
7. Aim the camera toward the object of interest. The camera will now continuously autofocus.

Note To pause continuous autofocusing, push the Autofocus/Save button half-way down.

13.9 Operating the laser pointer

Note The laser pointer is enabled by a setting. Select (*Settings*) > *Device settings* > *Set up camera* > *Lamp & laser* > *Enable lamp & laser*.

13.9.1 Figure



13.9.2 Procedure

Follow this procedure:

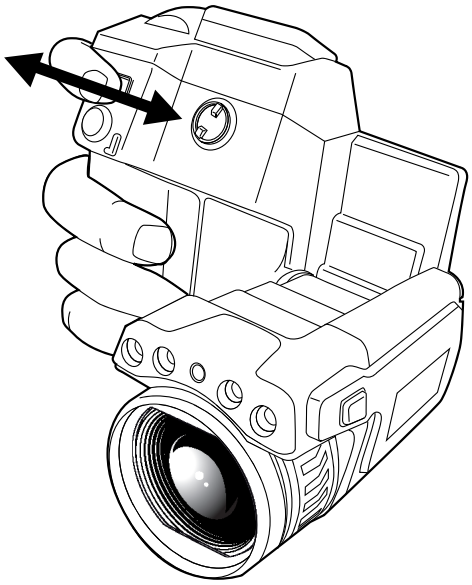
1. To turn on the laser pointer, push and hold the laser button.
2. To turn off the laser pointer, release the laser button.

Note

- A warning indicator is displayed on the screen when the laser pointer is turned on.
- The position of the laser dot is indicated on the infrared image (depending on the camera model).

13.10 Using the digital zoom function

13.10.1 Figure



13.10.2 Procedure

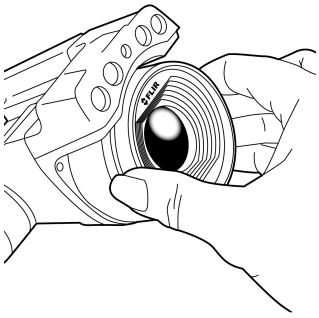
Follow this procedure:

1. To zoom, push the zoom button left or right.

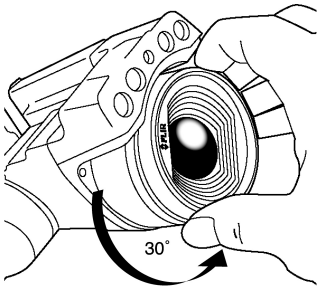
13.11 Changing lenses

Follow this procedure:

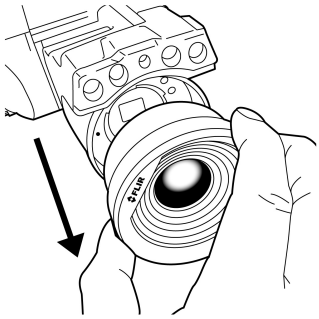
1. Take a firm grip around the outermost part of the lens.



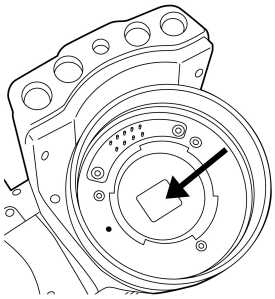
2. Rotate the lens 30° degrees counter-clockwise.



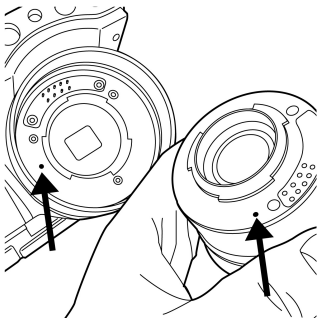
3. Carefully pull out the lens from the lens bayonet mount.



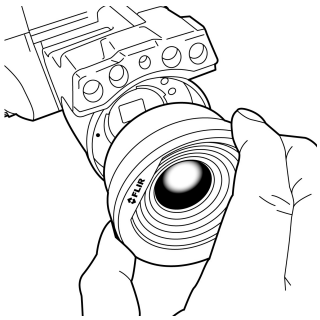
4. The infrared detector is now fully exposed. Do not touch this surface. If you see dust on the detector, follow the instructions in 27.3 *Infrared detector*, page 457.



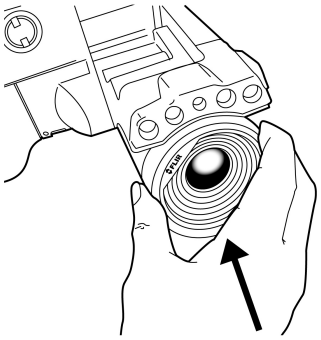
5. Note the index marks on the lens bayonet mount and on the lens.



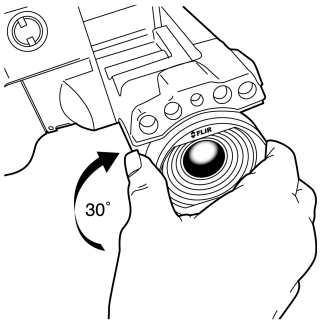
6. Align the lens correctly to the bayonet mount.



7. Carefully push the lens into position.



8. Rotate the lens 30° degrees clockwise.



13.12 Calibrating the compass

13.12.1 Procedure

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to ⚙ (*Settings*).
3. Push the joystick to display the *Settings* menu.
4. Select *Device settings* and push the joystick.
5. Select *GPS & compass* and push the joystick.
6. Select *Compass*. If the *Compass* check box is unchecked, push the joystick to enable the compass.
7. Select *Calibrate compass* and push the joystick. Follow the on-screen instructions.

Note You have to rotate the camera slowly.

13.13 Changing the viewfinder eyecup

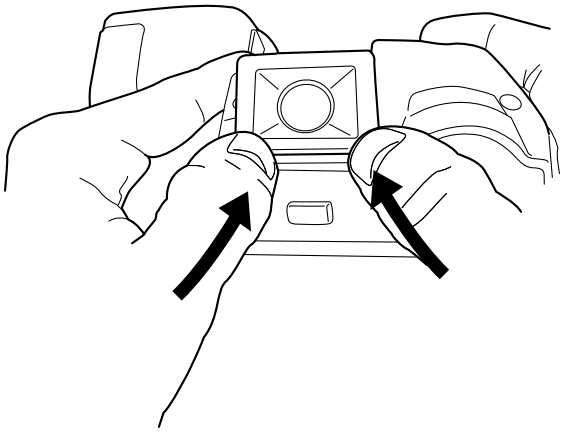
⚠ **CAUTION**
Applicability: Cameras with a viewfinder. Make sure that the beams from the intensive energy sources do not go into the viewfinder. The beams can cause damage to the camera. This includes the devices that emit laser radiation, or the sun.

Note This item is dependent on the camera model.

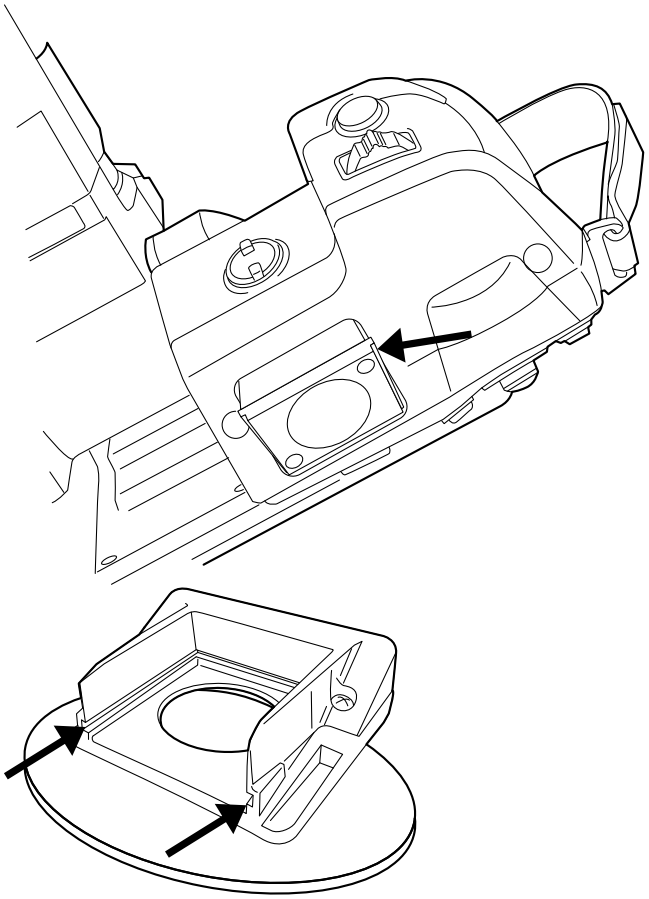
Follow this procedure:

1. Put your thumbs at the lower part of the eyecup. Push the eyecup horizontally, away from the touch-screen LCD side, until the eyecup slides out from its mount.

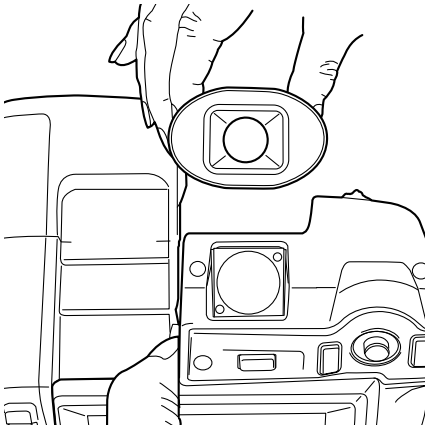
   Note To remove the eyecup, you must slide it out from its mount. Do not pull the eyecup straight up.



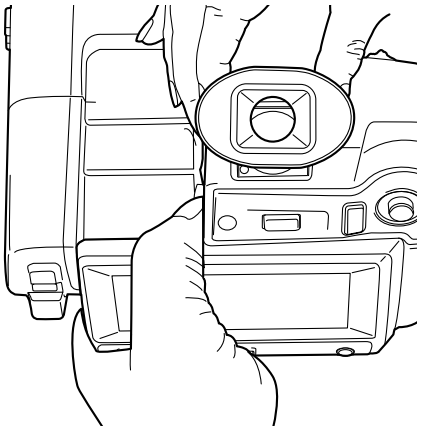
2. Note the grooves on the eyecup mount on the camera and on the new eyecup.



3. Align the new eyecup with the eyecup mount on the camera.



4. Carefully slide the eyecup into position.



13.14 Using the camera lamp as a flash

13.14.1 General

The camera lamp can be used as a flash for the digital camera. When the flash function is activated, the camera lamp will flash when an image is saved by pushing the Autofocus/Save button fully down.

13.14.2 Procedure

Follow this procedure:

1. Push the joystick to display the menu system.
2. Use the joystick to go to (*Settings*).
3. Push the joystick to display the *Settings* menu.
4. Select *Device settings* and push the joystick.
5. Select *Set up camera* and push the joystick.
6. Select *Lamp & laser* and push the joystick.
7. Select *Enable lamp & laser*. If the check box is unchecked, push the joystick to enable the camera lamp.
8. Select *Use lamp as flash*. If the check box is unchecked, push the joystick to activate the flash function.

14 Working with images

14.1 Saving an image

14.1.1 General

You can save images to a memory card.

The camera saves an image file including all thermal and visual information. This means that you can open an image file at a later stage and, for example, select another image mode, apply color alarms, and add measurement tools.

The image jpg file is fully radiometric and saved lossless, which enables full post-processing in FLIR Tools. There is also a regular jpg part (lossy) for convenient viewing in non-FLIR Systems software (Explorer).

14.1.2 About UltraMax

UltraMax is an image enhancement feature that increases the image resolution and lowers the noise, making small objects easier to see and measure. An UltraMax image is twice as wide and high as an ordinary image.

When an UltraMax image is captured by the camera, several ordinary images are saved in the same file. Capturing all the images can take up to 1 second. To fully utilize UltraMax, the images need to be slightly different, which can be accomplished by a slight movement of the camera. You should hold the camera firmly in your hands (do not put it on a tripod), which will make these images vary just a little during the capture. Correct focus, a high-contrast scene, and a non-moving target are other conditions that help to achieve a good-quality UltraMax image.

At the moment, only FLIR Tools has the ability to process UltraMax images. Other FLIR software will treat the image as a regular image.

14.1.3 Image capacity

The capacity of a 4 GB memory card is theoretically 3600 images (with no annotations).

14.1.4 Naming convention

The naming convention for image files is FLIRxxxx.jpg, where xxxx is a unique counter.

14.1.5 Procedure

Follow this procedure:

1. To save an image, push the Autofocus/Save button fully down.

Note

- Depending on the settings in (*Settings*) > *Save options*, the following may happen:
  - A preview image is displayed before the image is saved.
  - An annotation tool or the annotation menu is displayed when the image has been saved.
- To configure UltraMax, select (*Settings*) > *Save options* > *Image resolution* = *UltraMax*.
- The camera can be configured to also save the visual image as a separate file. Select (*Settings*) > *Save options* > *Photo as separate JPEG* = *On*.

14.2 Previewing an image

14.2.1 General

You can preview an image before you save it. This enables you to see if the image contains the information you want before you save it. You can also adjust and edit the image.

Note The camera must be configured to display a preview image before saving. Select (*Settings*) > *Save options* > *Preview image before saving* = *On*.

14.2.2 Procedure

Follow this procedure:

1. To preview an image, push the Autofocus/Save button fully down. This displays the preview.
2. Manual image adjust mode is now active, and the status icon is displayed. For image adjustment instructions, see 14.5 *Adjusting an infrared image*, page 36.
3. To edit the image, push the joystick. This displays a context menu. For editing instructions, see 14.4 *Editing a saved image*, page 35.
4. Do one of the following:
   - To save the image, push the Autofocus/Save button fully down.
   - To exit preview mode without saving, push the Back button.

14.3 Opening a saved image

14.3.1 General

When you save an image, the image file is stored on the memory card. To display the image again, open it from the image archive.

14.3.2 Procedure

Follow this procedure:

1. Push the Image archive button.
2. Move the joystick up/down or left/right to select the image you want to view.
3. Push the joystick. This will display the image at full size.
4. Do one or more of the following:
   - To switch between an infrared image and a visual image, move the joystick up/down.
   - To view the previous/next image, move the joystick left/right.
   - To edit the image, add annotations, display information, or delete the image, push the joystick. This displays a context menu.
   - To return to the image archive overview, push the Back button.

14.4 Editing a saved image

14.4.1 General

You can edit a saved image. You can also edit an image in preview mode.