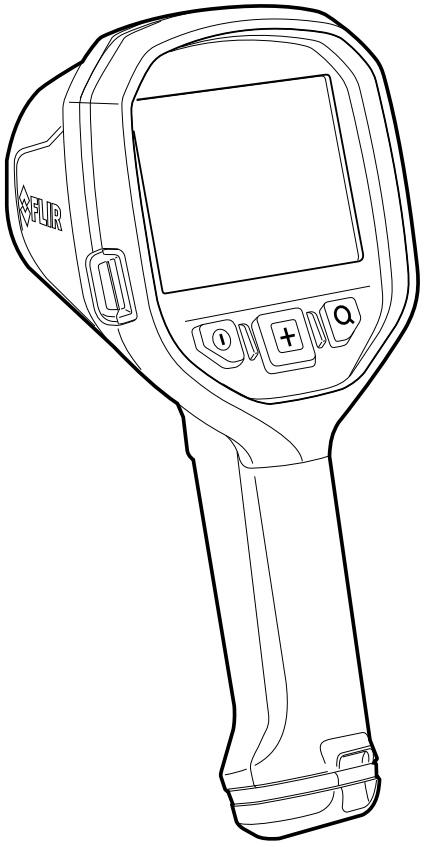
User's manual
FLIR Kx5 series



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。

Table of contents

1 Disclaimers

1.1 Legal disclaimer

For warranty terms, refer to https://www.flir.com/warranty.

1.2 U.S. Government Regulations

This product may be subject to U.S. Export Regulations. Send any inquiries to export-questions@flir.com.

1.3 Patents

This product is protected by patents, design patents, patents pending, or design patents pending. Refer to the FLIR Systems' patent registry:

https://www.flir.com/patentnotices

1.4 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.

1.5 Third-party licenses

Information about third-party licenses is available in the user interface of the product.

1.6 Usage statistics

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

1.7 Copyright

2 Safety information

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

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.

CAUTION

Do not change the standard fire-fighting procedures when you use a FLIR K series camera. The FLIR K series camera is not a replacement technology.

CAUTION

Do not use the FLIR K series camera without the correct training. If the persons that operate the camera do not have the correct training, an incorrect analysis of the infrared images can occur. Thus, incorrect decisions during the firefighting can be made.

The training must include:

- How a thermal camera operates and its limits
- How to interpret an image
- How to work safely with the camera.

CAUTION

Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

CAUTION

Only use the equipment as given in the applicable manufacturer's instructions. If you do not obey this, the protection that the equipment gives can become unsatisfactory. Damage to the equipment can occur.

⚠ CAUTION
Only use with batteries that have the part number T199368 on them (that FLIR Systems AB supplies). Damage to the equipment can occur if you do not obey this.

⚠ WARNING
Make sure that you only change the batteries in a known safe area. If you do not obey this, an explosion can occur. An explosion can cause death or injury to persons and damage to the equipment.

⚠ CAUTION
Do not open unless you are sure that there are no flammable materials in the area. A fire or an explosion can occur. This can cause injury or death to persons and damage to the equipment.

⚠ CAUTION
Do not use the connection port while it is in a classified (danger) area. Injury to persons and damage to the equipment can occur.

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.

2.1 Label affixed to the camera

2.1.1 FLIR K45 and FLIR K55

2.1.2 FLIR K65

2.2 Marking recommendations and restrictions

Applicability: FLIR K65

The camera body may not be physically marked. Such markings include labels, engravings, printing, melting, etc. If the camera needs to be identified or tracked, such identification shall be carried out by adding a custom boot image in the camera firmware, see section 12.14 *Configuring the camera*.

3 Notice to user

3.1 Online documentation

Our manuals are continuously updated and published online.

To access the FLIR Kx5 user manual and other product documentation, go to http://support.flir.com/resources/v362.

To access the manuals for our other products, as well as manuals for our discontinued products, go to https://support.flir.com/resources/app.

3.2 Register your camera

Register your camera to receive an extended warranty and other related benefits.

To register the camera, go to www.flir.com/register.

To access the registration form, you must log in to your FLIR account or sign up for a new account.

You will also need the serial number of your camera. You can find the serial number by doing the following:

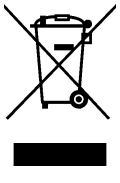
- Power on the camera. The serial number is temporarily displayed on the screen.
- When the camera is on, push the *Mode* and *Zoom* buttons at the same time. This displays the main menu, with the serial number at the top of the screen.
- A label with the serial number is available under the rubber cover at the top of the camera.

3.3 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.



3.4 Training

For training resources and courses, go to https://www.flir.com/support-center/training.

3.5 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.

3.6 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

Do not hesitate to contact our Customer Support Center if you experience problems or have any questions.

For customer help, go to 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 (e.g., 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 examples.
- Technical datasheets.

5 Important information about FLIR Kx5 series service

- Contact the service department before shipping the camera. Many problems can be resolved on the phone—if so, the camera does not need to be shipped.
- The camera must be thoroughly cleaned, decontaminated and disinfected before shipping to our service department. No hazardous residues are allowed on cameras. Such residues include—but are not limited to—chemical fire-extinguishing compounds, radioactivity, biohazardous materials, and residues from chemical fires.
- FLIR Systems reserves the right to charge the full cost for the decontamination and disinfection of contaminated cameras that are shipped to our service department.

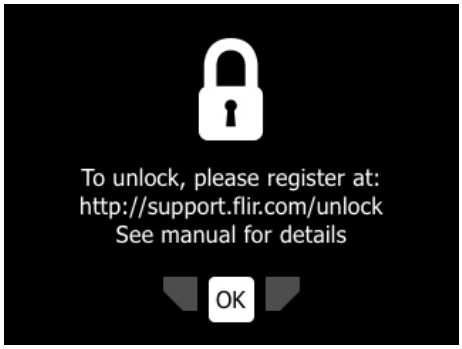
6 Starting the camera for the first time (FLIR K65)

Applicability: FLIR K65

The first time you start the camera, you need to unlock the camera by entering a camera unique code. The code is based on the serial number of the camera. To get the camera unique code, you must log in using a FLIR Customer Support account and register the camera. If you already have an existing FLIR Customer Support account, you can use the same login credentials.

Follow this procedure:

1. Charge the battery for 4 hours before starting the camera for the first time, or until the blue battery condition LED glows continuously.
2. Push the on/off button to turn on the camera. This displays the following dialog box:



3. To register the camera, use a computer or other device with internet access and go to: http://support.flir.com/unlock.
4. To access the registration form, log in to your FLIR account or sign up for a new account.
5. To find the serial number of your camera, push the *Mode* button. The serial number (S/N) is displayed at the top of the screen.

6. To complete the registration and unlock the camera, you must enter an unlock code into the camera. The code is available in your FLIR account, under *My Products*.

7. On the camera, do the following to enter the code:
   - Push the *Mode* button repeatedly to change a digit.
   - Push the *Zoom* button to navigate to the next digit.
   - When all of the digits have been entered, push the *Zoom* button to select ✓. Push the *Zoom* button again to confirm.

8. Depending on the entered code, one of the following will happen:
   - If the entered code is correct, ✓ is momentarily displayed. Then the unlock dialog box closes.
   - If the entered code is incorrect, ✗ is momentarily displayed. Then the unlock dialog is zeroed and you can enter the code again.
9. The camera is now fully operational and an infrared image is displayed.
10. To turn off the camera, push and hold the on/off button for more than 10 seconds.

Note The next time you turn on the camera, it will be fully operational from its start-up. You do not have to go through the unlock procedure again.

7 Quick start guide

Follow this procedure to get started right away:

1. Charge the battery for 4 hours before starting the camera for the first time, or until the blue battery condition LED glows continuously.
2. Push the on/off button to turn on the camera.
3. Aim the camera toward the object of interest.
4. Select a suitable camera mode by pushing the Mode button.
5. Pull the trigger to save an image.
6. To move images to a computer, do the following:

    6.1. Connect the camera to a computer, using the USB cable.
    6.2. Move the images using a drag-and-drop operation in Microsoft Windows Explorer.

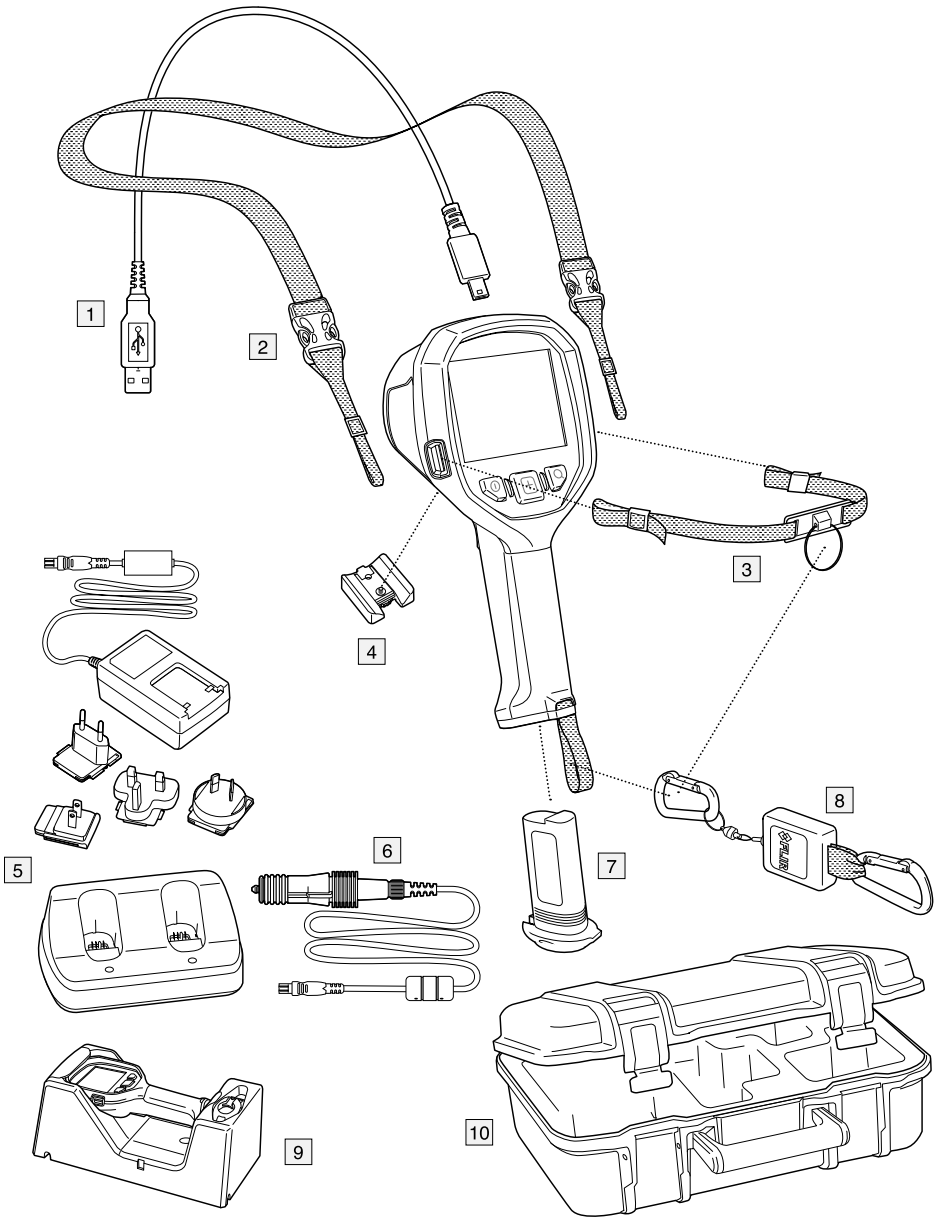
    Note Moving an image using a drag-and-drop operation does not delete the image in the camera.

Note The function of the trigger is configured by a setting, see section 12.14 *Configuring the camera*.

8 Accessories and services

Please check the FLIR Kx5 product page on www.flir.com for offered accessories and services.

9 System configuration overview

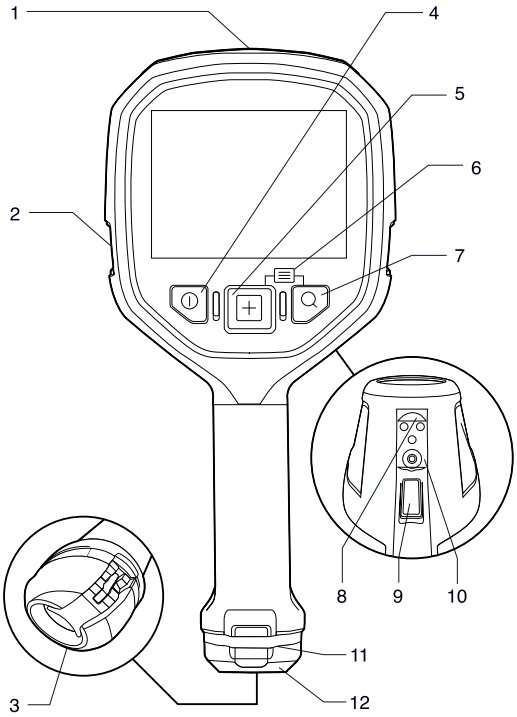


1. FLIR P/N: 1910423, USB cable Std A <-> Mini-B
2. FLIR P/N: T127724ACC, Neck strap[1]
3. FLIR P/N: T198416ACC, Strap lanyard[1]
4. FLIR P/N: T198457ACC, Tripod Adapter, Kxx[1]
5. FLIR P/N: T198125, Battery charger, incl. power supply with multi plugs
6. FLIR P/N: T198509, Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft
7. FLIR P/N: T199368ACC, Li-Ion Battery pack 3.6 V 16 Wh
8. FLIR P/N: T130980ACC, Retractable lanyard[1]
9. FLIR P/N: T198322ACC, In-truck charger
10. FLIR P/N: T198441ACC, Transport case Kxx

1. The inclusion of this item is dependent on model.

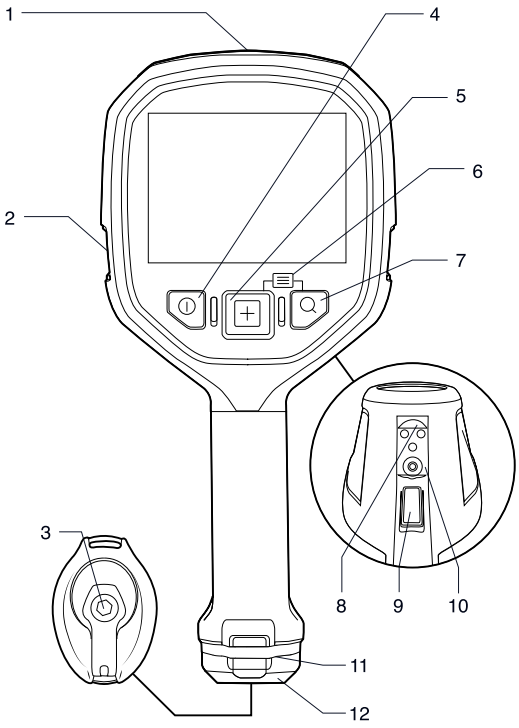
10 System parts

10.1 Camera (FLIR K45, FLIR K55)



1. USB Mini-B connector.
2. Attachment point for the lanyard strap/neck strap (left and right sides).
3. Eccentric latch to secure the battery.
4. On/off button. This button has three functions:
   - Push the on/off button to turn on the camera.
   - Push and hold the on/off button for more than 3 seconds but less than 10 seconds to put the camera into standby mode. The camera then automatically turns off after 6 hours.
   - Push and hold the on/off button for more than 10 seconds to turn off the camera.
5. Mode button: Push repeatedly to select camera modes.
6. Access to setup menus and stored images: Push Mode + Zoom button.
7. Zoom button (zoom factor 2×).
8. Connectors for in-truck charger.
9. Trigger.
10. Mount for tripod adapter.
11. Attachment point for the retractable lanyard.
12. Battery.

10.2 Camera (FLIR K65)



1. USB Mini-B connector. The USB Mini-B connector is protected by a plastic cover that is fastened with a Torx screw (T20).

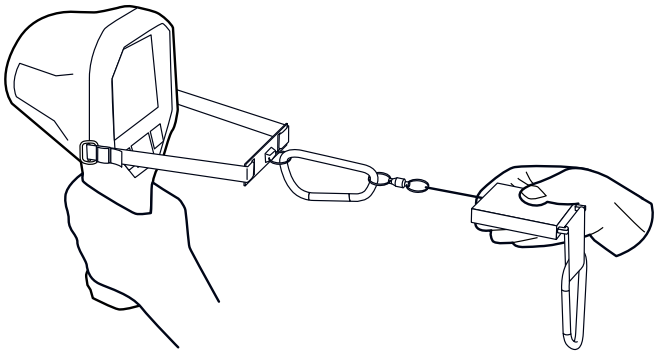
⚠ CAUTION
Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

2. Attachment point for lanyard strap/neck strap (left and right sides).
3. Latch to secure the battery. The latch is fastened with a Torx screw (T20).

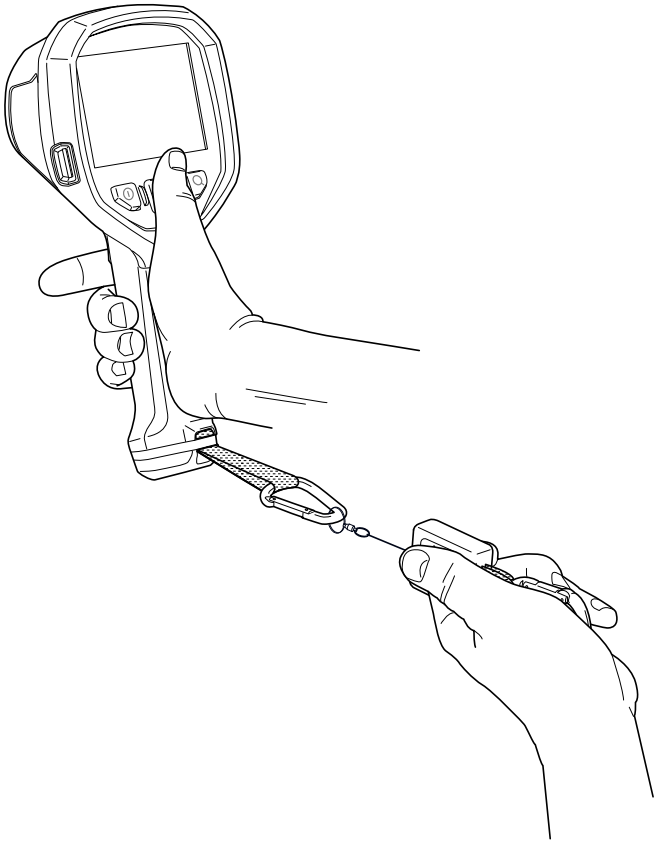
⚠ CAUTION
Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

4. On/off button. This button has three functions:
   - Push the on/off button to turn on the camera.
   - Push and hold the on/off button for more than 3 seconds but less than 10 seconds to put the camera into standby mode. The camera then automatically turns off after 6 hours.
   - Push and hold the on/off button for more than 10 seconds to turn off the camera.
5. Mode button: Push repeatedly to select camera modes.
6. Access to the setup menus and stored images: Push the Mode + Zoom buttons.
7. Zoom button (zoom factor ×2).
8. Connectors for the in-truck charger.
9. Trigger.
10. Mount for the tripod adapter.
11. Attachment point for the retractable lanyard.
12. Battery.

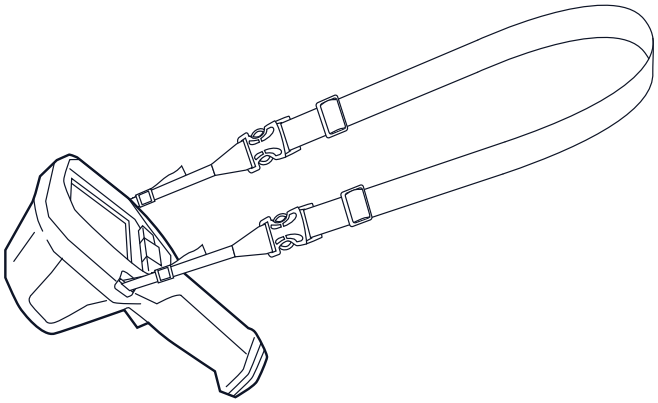
10.3 Lanyard strap and retractable lanyard



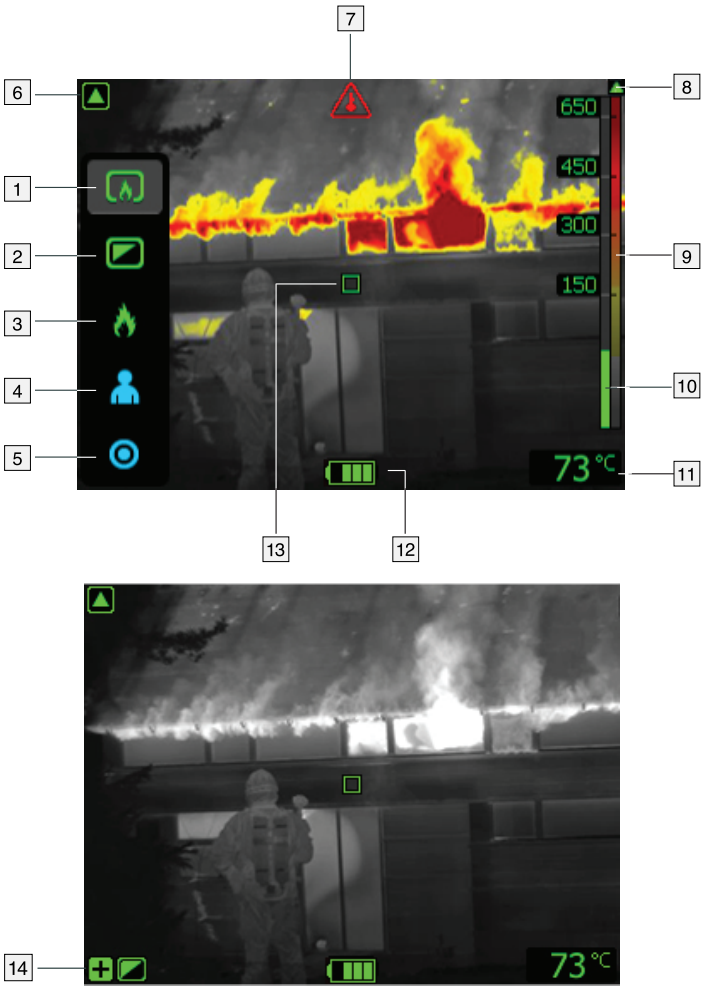
10.4 Handle strap and retractable lanyard



10.5 Neck strap



11 Screen elements



1. Basic mode (FLIR K45, FLIR K55).
   TI Basic NFPA mode (FLIR K65).
   A multipurpose mode for the initial fire attack with life-saving operations and control of the fire.
2. Black and white firefighting mode. A multipurpose mode for the initial fire attack with life-saving operations and control of the fire.
3. Fire mode (FLIR K45, FLIR K55).
   Similar to Basic mode but with a higher-temperature starting point for the heat colorization.
   TI Basic PLUS NFPA mode (FLIR K65).
   Similar to TI Basic NFPA mode but with additional functionality.
4. Search and rescue mode. Optimized for maintaining high contrast in the infrared image while searching for people.
5. Heat detection mode. Optimized for searching hotspots during overhaul after the fire is out.
6. Low-sensitivity mode indicator. The indicator is displayed when the camera identifies a hot area and automatically switches to low-sensitivity mode in Basic mode / TI Basic NFPA mode, Black and white firefighting mode, or Fire mode / TI Basic PLUS NFPA mode.
7. Overheating indicator. The indicator provides a visual warning to the user that the thermal imager is about to shut down due to internal overheating.

8. Change in the color reference indicator symbol. When a new mode is selected, a change in the color temperature reference triangle appears above the reference bar. The triangle remains visible for 1 second.
9. Reference bar.
10. Temperature bar.
11. Spotmeter temperature.
12. Battery condition indicator.
13. Spotmeter.
14. Plus sign, indicating that the camera is not in Basic mode / TI Basic NFPA mode.

Note

- The spotmeter, spotmeter temperature, and temperature bar are not displayed in TI Basic NFPA mode (FLIR K65).
- The green icon color indicates that the camera automatically switches between the high-sensitivity range and the low-sensitivity range, depending on the object.
- The blue icon color indicates that the temperature range is locked.
- Working in camera modes other than Basic mode may require additional training.

11.1 Battery condition indicator

Auto range	High sensitivity range	Explanation
		75% power.
		50% power.
		25% power.
		Flashing indicator. At least 5 minutes of available power remains.

11.2 Settings menu icons

Icon	Explanation
	Temperature unit settings.
	Temperature indication settings.
	Date settings.
	Time settings.
	Factory default settings.

12 Operation

CAUTION

Do not use the FLIR K series camera without the correct training. If the persons that operate the camera do not have the correct training, an incorrect analysis of the infrared images can occur. Thus, incorrect decisions during the firefighting can be made.

The training must include:

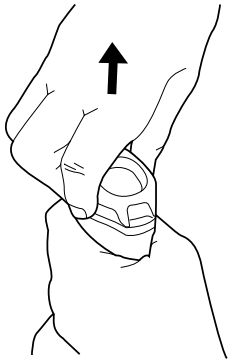
- How a thermal camera operates and its limits
- How to interpret an image
- How to work safely with the camera.

12.1 Removing the battery (FLIR K45, FLIR K55)

Follow this procedure:

1. Pull the eccentric latch.

2. Pull out the battery from the battery compartment.



12.2 Removing the battery (FLIR K65)

Note The battery must only be removed by qualified service personnel.

Follow this procedure:

1. Unscrew the Torx T20 screw and pull up the latch.

⚠ CAUTION
Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

2. Pull out the battery from the battery compartment.

12.3 Charging the battery

⚠ WARNING
Make sure that you install the socket-outlet near the equipment and that it is easy to get access to.

Charge the battery for 4 hours before starting the camera for the first time, or until the blue battery condition LED glows continuously.

Follow this procedure:

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

12.4 Turning on and turning off the camera

- Push the on/off button to turn on the camera.
- Push and hold the on/off button for more than 3 seconds but less than 10 seconds to put the camera into standby mode. The camera then automatically turns off after 6 hours.

- Push and hold the on/off button for more than 10 seconds to turn off the camera.

12.5 Selecting camera modes

The camera features five different camera modes. You select the camera mode by pushing the *Mode* button.

The camera modes for FLIR K45 and FLIR K55 cameras are:

1. Basic mode.
2. Black and white firefighting mode.
3. Fire mode.
4. Search and rescue mode.
5. Heat detection mode.

The camera modes for NFPA 1801-2021 certified FLIR K65 cameras are:

1. TI Basic NFPA mode.
2. Black and white firefighting mode.
3. TI Basic PLUS NFPA mode.
4. Search and rescue mode.
5. Heat detection mode.

Each mode is optimized for a certain type of firefighting application. In addition, the modes differ in the following way:

- Modes with green icons (1–3 in the list): The camera switches between the high-sensitivity range (–20 to +150°C (–4 to +302°F)) and the low-sensitivity range (0 to +650° C (+32 to +1202°F)) automatically when objects with a temperature above 150°C (302°F) enter the field of view of the camera.
- Modes with blue icons (4–5 in the list): The temperature range is locked to the high-sensitivity range (–20 to +150°C (–4 to +302°F)). This is useful if you need to maintain the best possible image for objects with a temperature below 150°C (302°F), even if there are objects with a temperature above 150°C (302°F) in the field of view of the camera.

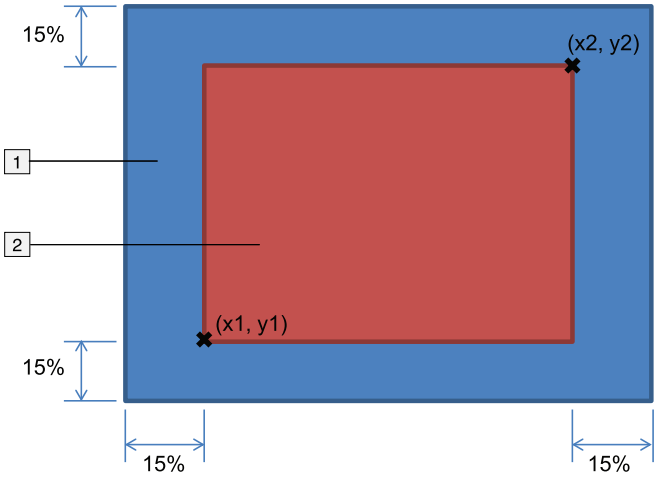
12.5.1 Automatic temperature range selection

The automatic temperature range selection is based on a measured area defined by a rectangle covering (x1, y1) = (15% of the width, 15% of the height) to (x2, y2) = (85% of the width, 85% of the height) of the LCD area. See the figure in section 12.5.1.1.

An automatic change from the high-sensitivity range to the low-sensitivity range occurs if more than 2% of the pixels within the measured area constantly (for more than 1 second) have a temperature above the maximum temperature of the high-sensitivity range.

An automatic change from low-sensitivity range to high-sensitivity range occurs if more than 98% of the pixels within the measured area constantly have, for more than 1 second, a temperature lower than 50°C (122°F) below the maximum temperature of the high-sensitivity range.

12.5.1.1 Figure



1. LCD area.
2. Area activating the automatic range change.

12.5.2 Explanation of the different camera modes

12.5.2.1 Basic mode

Note Basic mode is applicable to FLIR K45 and FLIR K55 cameras.

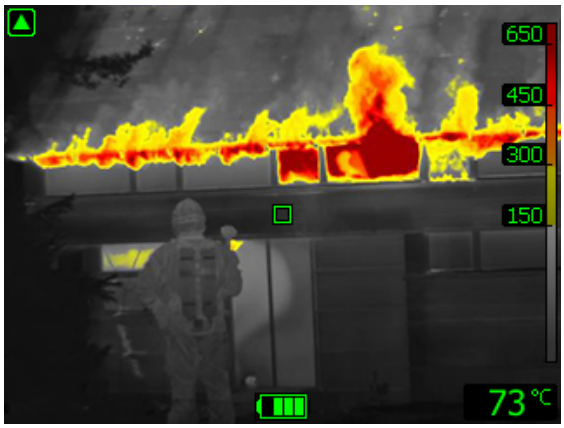


Figure 12.1 Basic mode.

Basic mode is the default mode of the camera. It is a multipurpose mode for the initial fire attack with life-saving operations and control of the fire. The camera automatically switches between the high-sensitivity range and the low-sensitivity range, to maintain an optimal infrared image while at the same time maintaining a safe and consistent heat colorization of the fire scene.

- Automatic range.
- Colorization of heat: +150 to +650°C (+302 to +1202°F).
- High-sensitivity range: –20 to +150°C (–4 to +302°F).
- Low-sensitivity range: 0 to +650°C (+32 to +1202°F).

Note To go to Basic mode from any other mode, push and hold the on/off button for less than 1 second.

12.5.2.2 TI Basic NFPA mode

Note TI Basic NFPA mode is applicable to NFPA 1801-2021 certified FLIR K65 cameras.

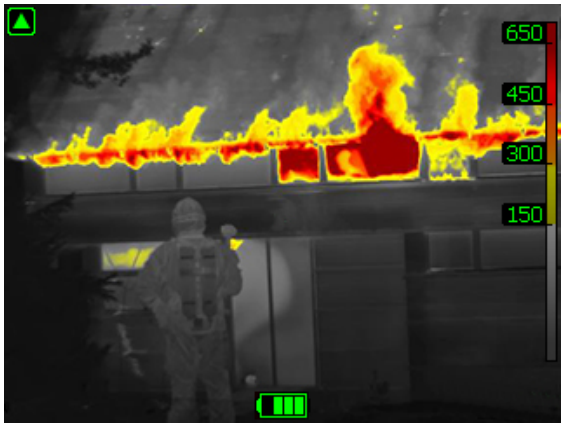


Figure 12.2 TI Basic NFPA mode.

TI Basic NFPA mode is the default mode of the camera. It is a multipurpose mode for the initial fire attack with life-saving operations and control of the fire. The camera automatically switches between the high-sensitivity range and the low-sensitivity range, to maintain an optimal infrared image while at the same time maintaining a safe and consistent heat colorization of the fire scene.

- Automatic range.
- Colorization of heat: +150 to +650°C (+302 to +1202°F).
- High-sensitivity range: –20 to +150°C (–4 to +302°F).
- Low-sensitivity range: 0 to +650°C (+32 to +1202°F).

Note

- To go to TI Basic NFPA mode from any other mode, push and hold the on/off button for less than 1 second.
- In TI Basic NFPA mode, the spotmeter, spotmeter temperature, and temperature bar are not displayed.

12.5.2.3 Black and white firefighting mode

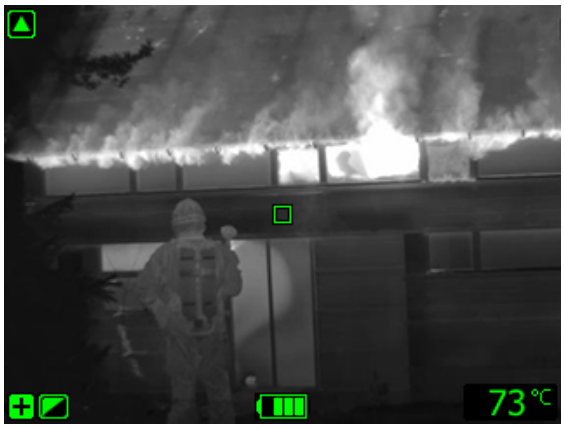


Figure 12.3 Black and white firefighting mode.

Black and white firefighting mode is a standardized firefighting mode based on Basic mode. It is a multipurpose mode for the initial fire intervention that includes life-saving operations and control of the fire. It is specifically designed for fire services that do not want to use the heat colorization feature.

The camera automatically switches between the high-sensitivity range and the low-sensitivity range, to maintain an optimal infrared image.

- Automatic range.
- High-sensitivity range: –20 to +150°C (–4 to +302°F).

- Low-sensitivity range: 0 to +650°C (+32 to +1202°F).

12.5.2.4 Fire mode

Note Fire mode is applicable to FLIR K45 and FLIR K55 cameras.

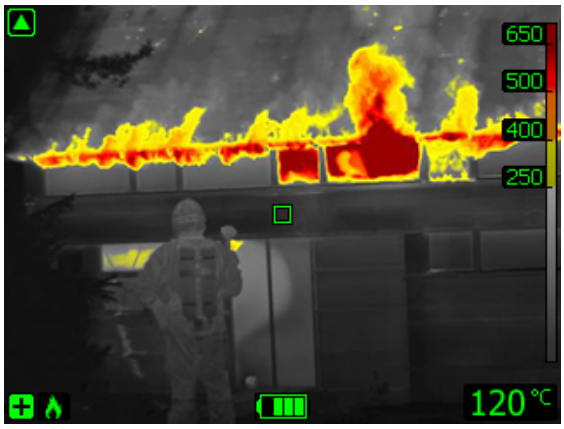


Figure 12.4 Fire mode.

Fire mode is similar to Basic mode, but with a higher-temperature starting point for the heat colorization. It is suitable for fire scenes with higher background temperatures, where there are already a lot of open flames and a high background temperature. The camera automatically switches between the high-sensitivity range and the low-sensitivity range, to maintain an optimal infrared image while at the same time maintaining a safe and consistent heat colorization.

- Automatic range.
- Colorization of heat: +250 to +650°C (+ 482 to +1202°F).
- High-sensitivity range: –20 to +150°C (–4 to +302°F).
- Low-sensitivity range: 0 to +650°C (+32 to +1202°F).

12.5.2.5 TI Basic PLUS NFPA mode

Note TI Basic PLUS NFPA mode is applicable to NFPA 1801-2021 certified FLIR K65 cameras.

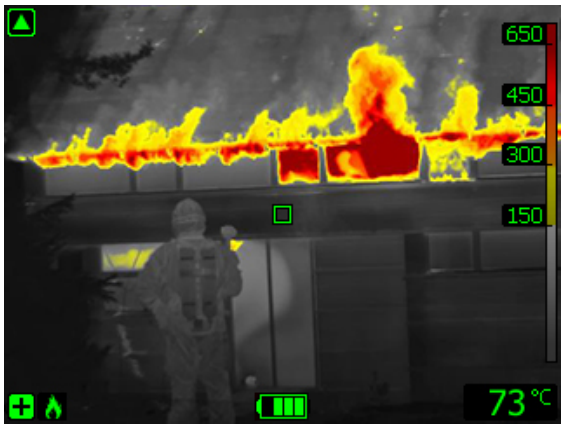


Figure 12.5 TI Basic PLUS NFPA mode.

TI Basic PLUS NFPA mode is similar to TI Basic NFPA mode, but with additional functionality. In TI Basic PLUS NFPA mode, the spotmeter, spotmeter temperature, and temperature bar are displayed.

The camera automatically switches between the high-sensitivity range and the low-sensitivity range, to maintain an optimal infrared image while at the same time maintaining a safe and consistent heat colorization of the fire scene.

- Automatic range.
- Colorization of heat: +150 to +650°C (+302 to +1202°F).
- High-sensitivity range: –20 to +150°C (–4 to +302°F).
- Low-sensitivity range: 0 to +650°C (+32 to +1202°F).

12.5.2.6 Search and rescue mode

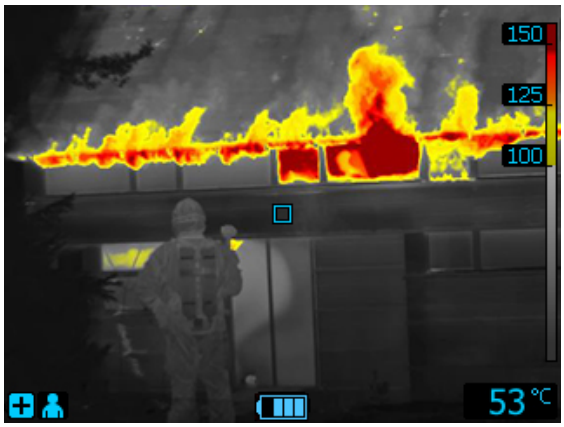


Figure 12.6 Search and rescue mode.

Search and rescue mode is optimized for maintaining high contrast in the infrared image while searching for people in landscapes, buildings, or traffic accident scenes.

- High-sensitivity range only.
- Colorization of heat: +100 to +150°C (+212 to +302°F).
- High-sensitivity range: –20 to +150°C (–4 to +302°F).

12.5.2.7 Heat detection mode

Figure 12.7 Heat detection mode.

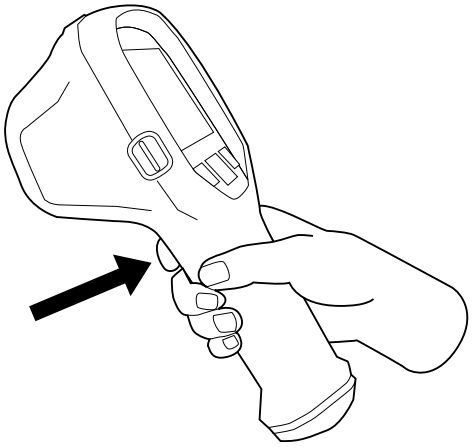
Heat detection mode is optimized for searching hotspots during overhaul after the fire is out—typically to ensure that there is no remaining hidden fire. This mode can also be used to find thermal patterns (e.g., signs of people in car seats after accidents), to ensure that everyone has been found. This mode can also be used to search for people in water and open landscapes.

- High-sensitivity range only.
- Colorization of heat: the 20% highest temperatures in the scene.
- High-sensitivity range: –20 to +150°C (–4 to +302°F).

12.6 Saving an image

You can save images to the camera's archive.

Note The maximum number of images that can be saved in the archive is 200. When the number of images exceeds 200, images are deleted on a *first-in, first-out basis*, i.e., the 201st image will delete the 1st image, the 202nd image will delete the 2nd image, and so on.



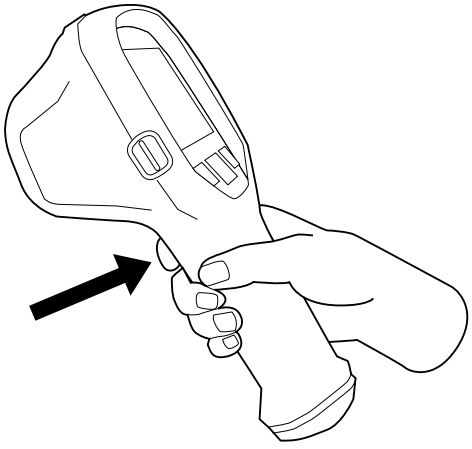
Note The function of the trigger is configured by a setting, see section 12.14 *Configuring the camera*.

Follow this procedure:

1. Aim the camera toward an object of interest.
2. To save an image, pull the trigger.

12.7 Recording a video clip (FLIR K55 and FLIR K65)

You can record video clips and save them to the camera's archive.



Note The function of the trigger is configured by a setting, see section 12.14 *Configuring the camera*.

Follow this procedure:

1. Aim the camera toward an object of interest.

2. Depending on the *Trigger button* configuration, do one of the following to start the recording:
   - With the *Rec. on/off* setting, pull the trigger.
   - With the *Record video* setting, pull and hold the trigger.
3. A blinking circle in the middle left part of the screen indicates that the camera is currently recording a video clip.
4. Depending on the *Trigger button* configuration, do one of the following to stop the recording:
   - With the *Rec. on/off* setting, pull the trigger.
   - With the *Record video* setting, release the trigger.

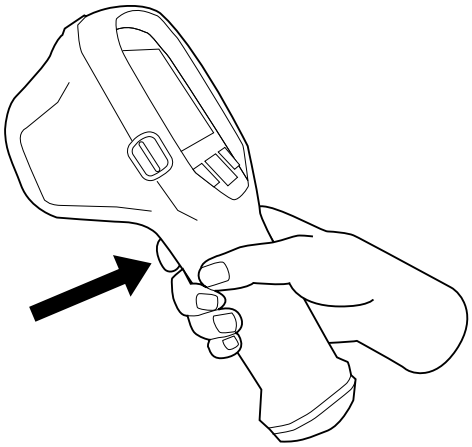
12.8 Continuous video recording (FLIR K55 and FLIR K65)

You can configure the camera to start a continuous video recording when you turn on the camera. The recording cannot be stopped.

Note The continuous video recording functionality is configured by a setting, see section 12.14 *Configuring the camera*.

12.9 Freezing the image

You can freeze the image.



Note The function of the trigger is configured by a setting, see section 12.14 *Configuring the camera*.

Follow this procedure:

1. Aim the camera toward an object of interest.
2. Do the following:
   - To freeze the image, pull and hold the trigger.
   - To return to the live image, release the trigger.

12.10 Connecting the camera to a computer

You can connect the camera to a computer, using the USB cable.

Once connected, you can do the following:

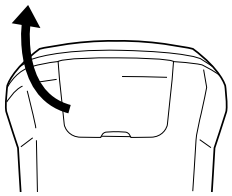
- Change the camera settings, see section 12.14 *Configuring the camera*.

- Move the images and video clips from the camera's archive to the computer.

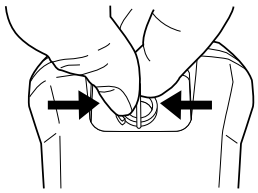
12.10.1 Procedure (FLIR K45, FLIR K55)

Follow this procedure:

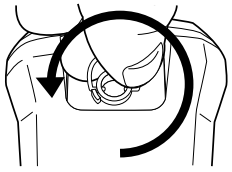
1. Fold up the rubber cover at the top of the camera.



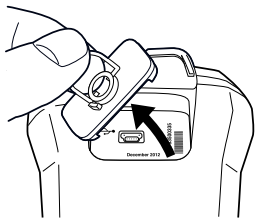
2. Hold the metal ring firmly.



3. Rotate the ring about 90° counter-clockwise.

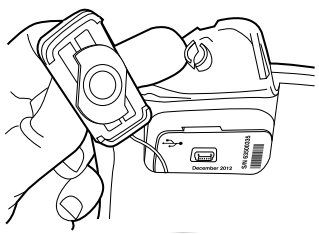


4. Pull out the plastic insert.



⚠ CAUTION
The plastic insert has an O-ring seal. Do not damage the O-ring seal.

5. Connect the USB cable to the USB Mini-B connector in the connector bay.



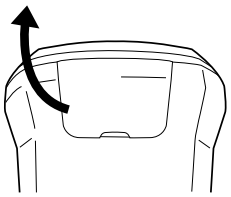
6. Move the images to the computer using a drag-and-drop operation in Microsoft Windows Explorer.

   Note Moving an image using a drag-and-drop operation does not delete the image in the camera.

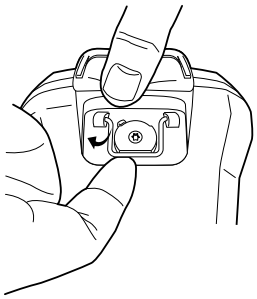
12.10.2 Procedure (FLIR K65)

Follow this procedure:

1. Fold up the rubber cover at the top of the camera.

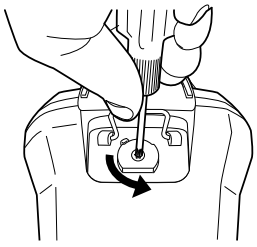


2. Fold up the metal ring.

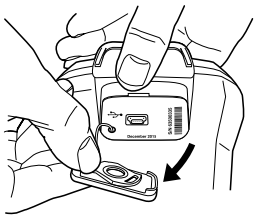


3. Unscrew the Torx T20 screw.

> **CAUTION**
>
> Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

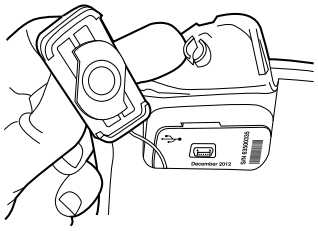


4. Pull out the plastic insert.



> **CAUTION**
>
> The plastic insert has an O-ring seal. Do not damage the O-ring seal.

5. Connect the USB cable to the USB Mini-B connector in the connector bay.



6. Move the images to the computer using a drag-and-drop operation in Microsoft Windows Explorer.

   Note Moving an image using a drag-and-drop operation does not delete the image in the camera.

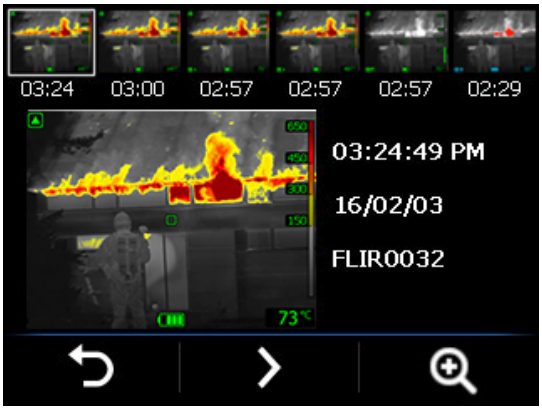
12.11 Viewing saved images

When you save an image, the image is stored in the camera's archive. To display the image again, you can recall it from the archive.

Follow this procedure:

1. Push the *Mode* and *Zoom* buttons at the same time. This displays the main menu.

2. Select  by pushing the *Mode* button. This displays the screen below.



3. In the archive, do the following:
   - Select  by pushing the *Mode* button to navigate to the next image.
   - Pull the trigger to navigate to the previous image.
   - Select  by pushing and holding the *Zoom* button to enlarge a specific image.
4. Select  by pushing the *On/off* button to exit the archive.

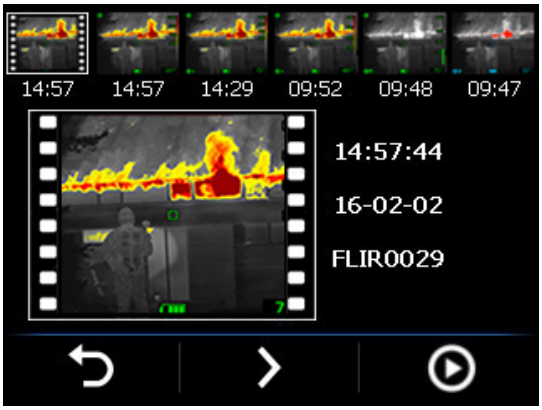
12.12 Viewing saved video clips

When you save a video clip, it is stored in the camera's archive. To view the video clip, you can recall it from the archive.

Follow this procedure:

1. Push the *Mode* and *Zoom* buttons at the same time. This displays the main menu.

2. Select  by pushing the *Mode* button. This displays the screen below. Video clips are indicated by a filmstrip icon.



3. Do the following:
   - To navigate to the next item in the archive, select  by pushing the *Mode* button.
   - To navigate to the previous item in the archive, pull the trigger.
4. Do the following:
   - To start viewing the video clip, select  by pushing and holding the *Zoom* button.
   - To stop viewing the video clip, release the *Zoom* button.
5. To exit the archive, select  by pushing the *On/off* button.

12.13 Changing settings (in the camera)

Note You can also use the FLIR K-series camera configurator to change the camera settings. For more information, see section 12.14 *Configuring the camera*.

12.13.1 General

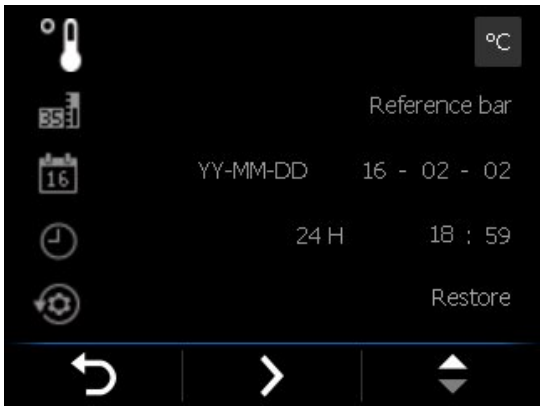
You can change a variety of settings. These settings include the following:

- Temperature unit.
- Temperature indication.
- Date.
- Time.
- Factory default settings.

Follow this procedure:

1. Push the *Mode* and *Zoom* buttons at the same time. This displays the main menu.

2. Select by pushing the *Zoom* button. This displays the settings menu.



3. Select by pushing the *Mode* button to navigate to the parameter that you want to change.
4. Select by pushing the *Zoom* button to change the value.
5. Select by pushing the *On/off* button to confirm the choice and exit the dialog box.

12.13.2 Restore factory default settings

You can restore all camera settings to the factory defaults.

Note This will also restore settings that have been changed using the FLIR K-series camera configurator.

Follow this procedure:

1. Push the *Mode* and *Zoom* buttons at the same time. This displays the main menu.
2. Push the *Zoom* button to select . This displays the settings menu.
3. Push the *Mode* button repeatedly until *Restore* is selected.
4. Push the *Zoom* button to select . This displays a dialog box.

5. Do one of the following:
   - Select by pushing the *Mode* button to restore the factory default settings.
   - Select by pushing the *On/off* button to cancel the restore action and exit the settings menu.

12.14 Configuring the camera

The FLIR K-series camera configurator is a Windows application used to configure the camera.

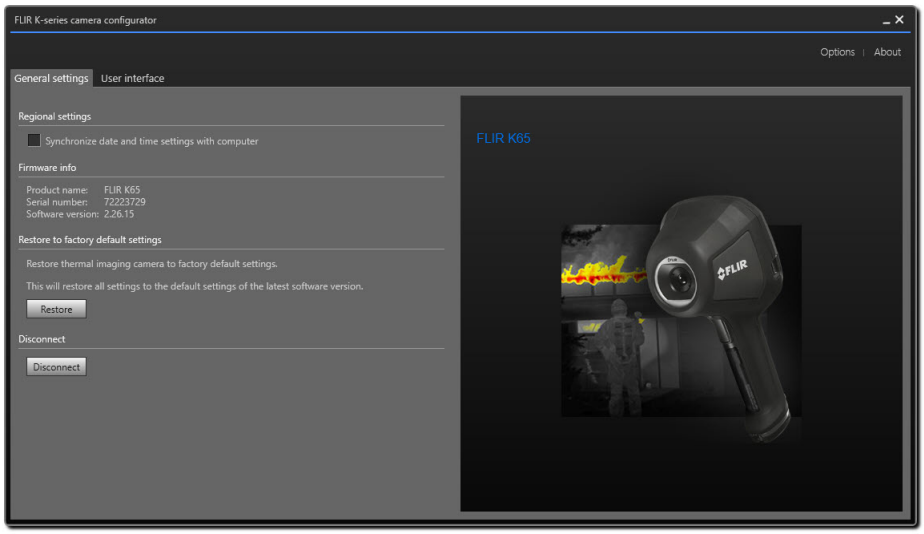
12.14.1 Installation

1. Go to https://support.flir.com. Find the software download area and search for FLIR K-series camera configurator.
2. Download the FLIR K-series camera configurator installer package.
3. Start the installation by double-clicking the executable installer file.
4. Follow the instructions in the setup wizard.

12.14.2 Configure the camera

1. Connect the camera to the computer, using the USB cable.
2. Turn on the camera.
3. Run the FLIR K-series camera configurator application.
4. The application automatically connects to the camera and displays the available settings.
5. To change the language, click *Options* on the top menu.

12.14.3 The *General settings* tab



Regional settings area: To synchronize the camera's date and time settings with the computer, select the checkbox.

Firmware info area: Displays the current version of the camera firmware. To check if a newer version of the camera firmware is available, go to https://support.flir.com, then find the software download area and search for your camera model.

Restore to factory default area: To restore all camera settings to the factory defaults, click *Restore*.

Disconnect area: To disconnect the camera from the application, click *Disconnect*. To reconnect, turn off the camera and then turn it on again. The application will automatically connect to the camera.

12.14.4 The *User interface* tab

Camera modes area: To define which camera modes to enable in the camera, select the camera mode. For more information on each camera mode, see section 12.5.2 *Explanation of the different camera modes*, page 24.

Trigger button area: The camera has a trigger button. With the settings in the *Trigger button* area, you can select the function of the trigger button. You select what will happen when you click (short press) the trigger button and what will happen when you hold (long press) the trigger button.

- *No action*, *No action*: Select to disable any functionality of the trigger button. Nothing will happen when you press the trigger.
- *No action*, *Freeze image*: Select to make the camera freeze the image when you press and hold the trigger. The image will unfreeze when you release the trigger. Nothing will happen when you press the trigger momentarily.
- *No action*, *Record video* (not applicable to the FLIR K45): Select to make the camera start a recording when you press and hold the trigger. The recording will stop when you release the trigger. Nothing will happen when you press the trigger momentarily.
- *Save image*, *No action*: Select to make the camera save an image when you press the trigger momentarily. Nothing will happen when you press and hold the trigger.
- *Save image*, *Freeze image*: Select to make the camera save an image when you press the trigger momentarily and freeze the image when you press and hold the trigger. The image will unfreeze when you release the trigger.
- *Save image*, *Record video* (not applicable to the FLIR K45): Select to make the camera save an image when you press the trigger momentarily and start a recording when you press and hold the trigger. The recording will stop when you release the trigger.
- *Rec. on/off*, *No action* (not applicable to the FLIR K45): Select to make the camera start a recording when you press the trigger and stop the recording when you press the trigger again. Nothing will happen when you press and hold the trigger.
- *Continuous rec. (trigger disabled)* (not applicable to the FLIR K45): Select to make the camera start a continuous video recording when you turn on the camera. The recording cannot be stopped. Nothing will happen when you press the trigger.

Gain mode area:

- *Auto gain mode*: Select to make the camera automatically switch between the high-sensitivity range and the low-sensitivity range, depending on the scene temperature. The temperature level at which the camera switches between the two modes is 150°C (302°F).
- *Low gain mode*: Select to make the camera operate in the low-sensitivity range only. This has the advantage that the camera does not perform a non-uniformity correction (NUC) when an object with a temperature higher than 150°C (302°F) enters the

scene. However, the disadvantage is lower sensitivity and a higher level of signal noise.

Temperature unit area: To select a different temperature unit, click *Celsius* or *Fahrenheit*.

Thermal indication area:

- *Digital readout only*: Select to display the thermal information in the image as the temperature of the spotmeter only. In modes with automatic heat colorization, the colorization of the image will remain but the static heat color reference icon will not be displayed.
- *Reference bar*: In modes with automatic heat indication colorization, a vertical heat color reference bar is displayed in the thermal indication area. This static icon shows how heat colors are applied to the range of the camera mode. The colors yellow, orange, and red correspond to a temperature-dependent change in hue as the temperature increases.
- *Temp bar*: Select to display the thermal information in the image as a temperature bar, similar to a thermometer. This displays a dynamic vertical temperature bar on the right-hand side of the image. The top of the dynamic bar represents the temperature of the measured spot. In modes with automatic heat colorization, the colorization of the image will remain, with a static heat color reference bar displayed next to the temperature bar.

Add custom boot image area: To select an image of your choice to appear during start-up, click *Browse*, and navigate to the image file. This is useful for, for example, identifying your fire department's cameras. By incorporating your fire department's logo, and a unique identity number in the image, you can keep track of your cameras. This image can also be accessed from the camera menu.

To download any setting changes to the camera, click *Apply*.

13 In-truck charger (optional accessory)

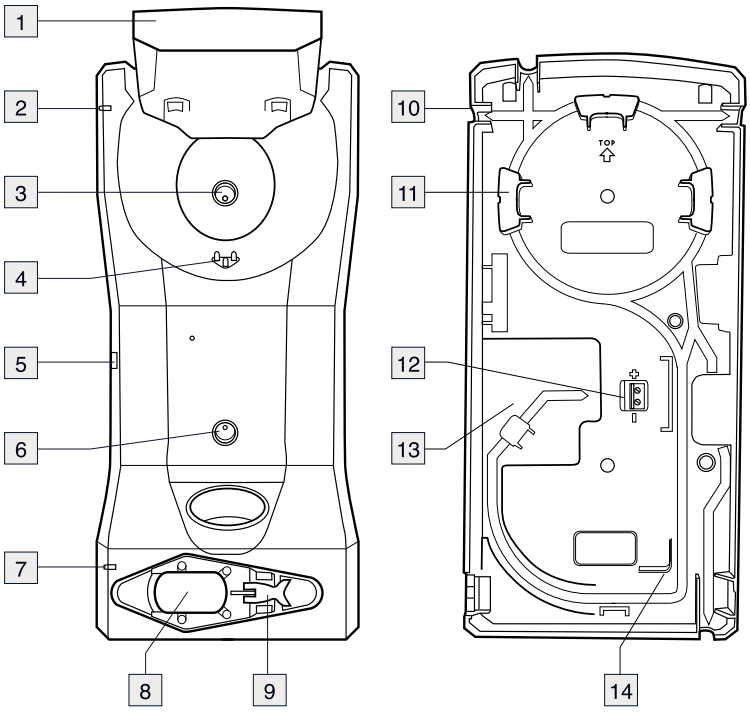
13.1 Introduction

Thank you for choosing the FLIR Kx5 series in-truck charger from FLIR Systems.

The in-truck charger is intended to be mounted on a flat surface in the cab, in one of the equipment lockers, or in another suitable compartment on the fire engine. The in-truck charger has five ports for cable routing—one through the rear of the metal bracket and one port on each side of the in-truck charger.

The in-truck charger can also be powered using a standard FLIR Systems power supply, and has a battery charger located at the lower front of the unit.

13.2 Parts and functions



1. Top cover.
2. LED indicator for the camera charger.

3. Hole for attaching the charger housing to the metal bracket.
4. Connectors in the cradle.
5. Connector to power the charger using a standard FLIR Systems power supply.
6. Hole for attaching the charger housing to the metal bracket.
7. LED indicator for the battery charger.
8. Battery slot.
9. Eccentric latch to secure the battery during charging.
10. Cable port (1 of 4).

    Note There is also one port through the rear of the metal bracket.

11. Routing support.
12. 12–24 VDC cable plinth.
13. Recess for the cable.
14. Routing support.

13.3 Choosing a suitable position

Before mounting the in-truck charger, take a few minutes to think about a suitable position.

The mounting position should be protected from rain and road splash, and it should be reasonably easy to install a permanent cable running from the fire engine's 12–24 VDC system to the in-truck charger.

Additional considerations may be important, e.g., getting access to panels and equipment behind the in-truck charger.

13.4 Recommended cable area and fuse

Cable area	1.5 mm^2 (No. 15 AWG)
Fuse	5 A

13.5 Mounting instructions

Follow this procedure:

1. Permanently install a cable running from the fire engine's 12–24 VDC system to the selected mounting position of the in-truck charger. Do not connect this cable to the 12–24 VDC system at this time. The routing must include a fuse installed close to the battery. See above for the fuse recommendation.
2. Remove the two screws that hold the metal bracket.
3. Remove the metal bracket.
4. Use the metal bracket as a template to mark where the mounting holes should be drilled.
5. Drill the holes.
6. Mount the metal bracket using the rivets and/or screws that come with the in-truck charger.
7. Connect the cable to the cable plinth on the rear of the in-truck charger.

    Note Take note of the polarity when you connect the cable to the cable plinth.

8. Route the cable so that it exits through the cable port of your choice.
9. Mount the in-truck charger to the metal bracket using the two screws that you removed in Step 2 above.
10. Permanently connect the cable to the fire engine's 12–24 VDC system.

13.6 Charging the camera

Follow this procedure:

1. Pull up the top cover of the in-truck charger.
2. Push the camera into position.
3. Push down the top cover.
   The charging of the camera has now started, and is finished when the blue light glows continuously. Charging a fully depleted camera takes approximately 4 hours.

13.7 Charging a battery separately

FLIR Kx5 series batteries can be charged separately using the battery charger at the lower front of the unit.

Follow this procedure:

1. Pull the eccentric latch on the bottom of the camera.
2. Pull out the battery from the camera.
3. Push the battery into the slot at the lower front of the charger.
4. Secure the battery using the eccentric latch on the charger.
   The charging of the battery has now started, and is finished when the blue light glows continuously. Charging a fully depleted battery takes approximately 4 hours.

13.8 Cleaning

⚠ **CAUTION**
Disconnect the in-truck charger from the fire engine's 12–24 VDC system before cleaning.

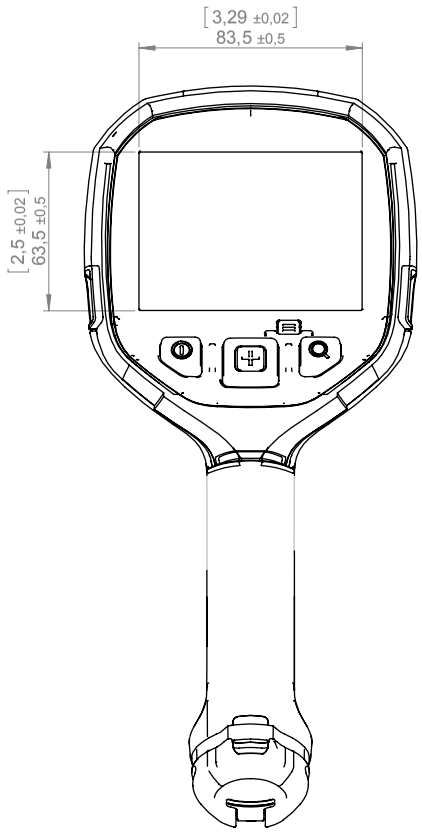
The in-truck charger can be cleaned using warm water or a weak detergent solution. Do not use solvents or similar liquids.

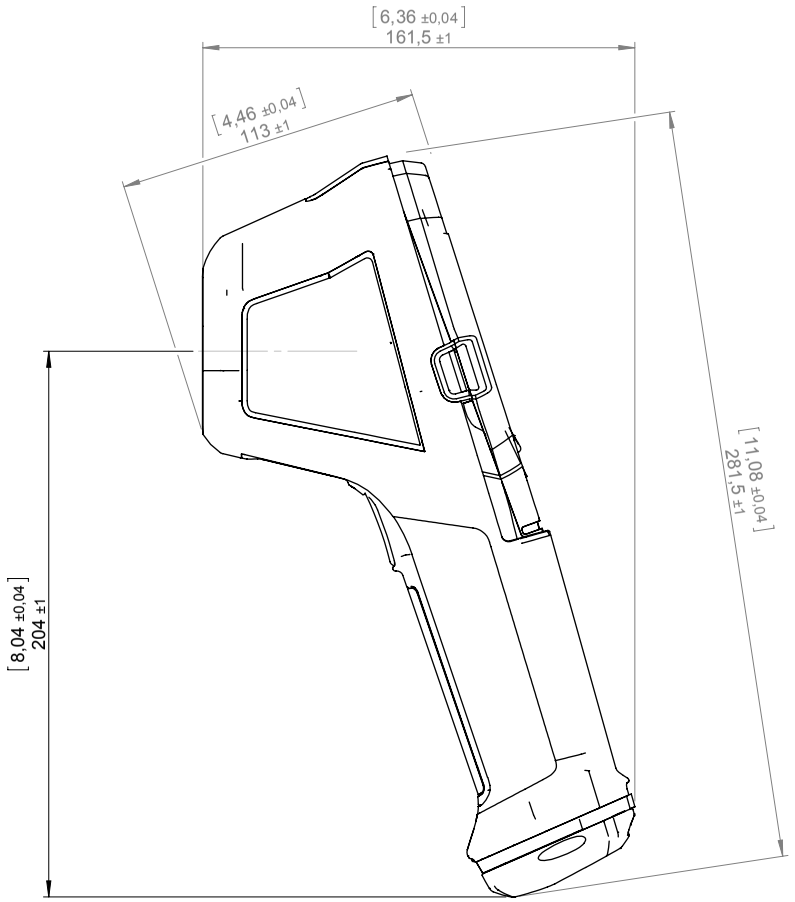
13.9 Customer support

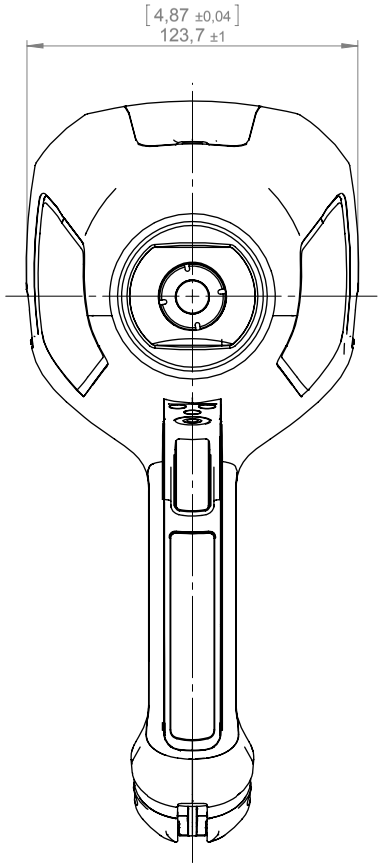
Should you experience any problems, do not hesitate to contact our Customer Support at http://support.flir.com.

14 Mechanical drawings

[See next page]







Konstr/Drawn: P. MARCUS	Datum/Date: 2013-01-23	Kontr/Check:	Material: -
Ändrad av/Modified by: P. MARCUS	Ändrad/Modified: 2013-01-23	Ytjämnhet/Roughness: Ra µm	Ytbehandling/Surface treatment

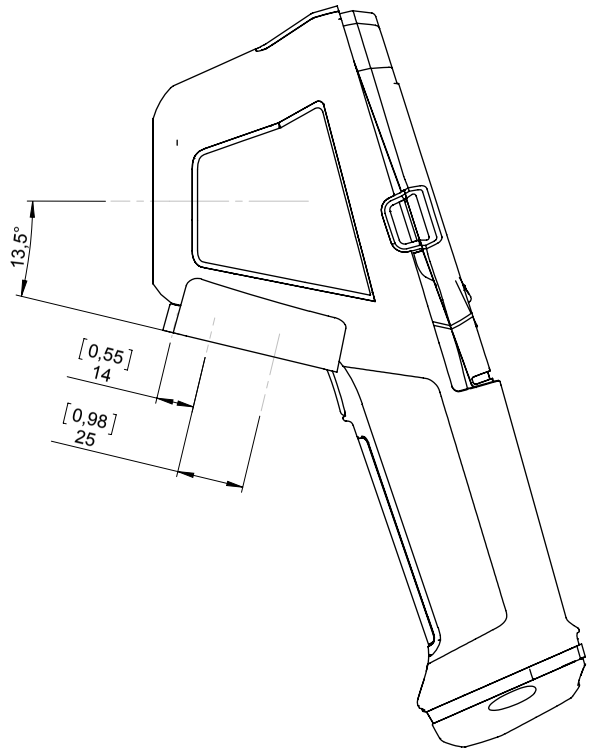
Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

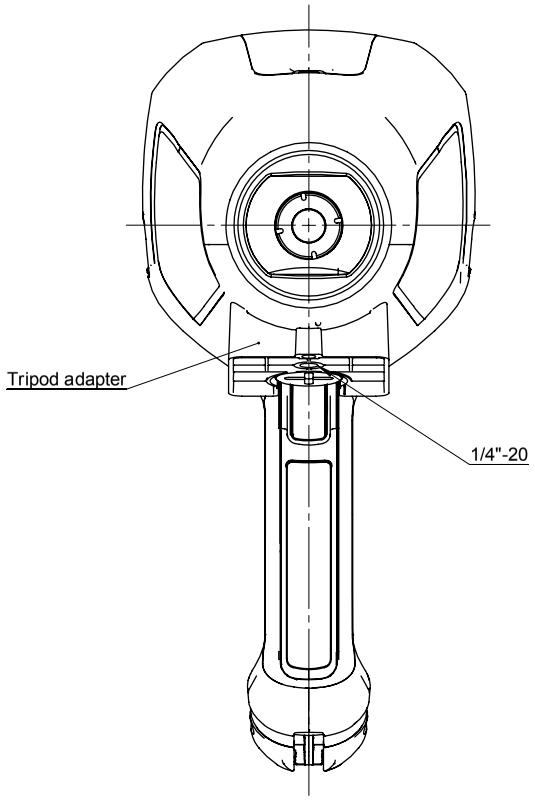
0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

Benämning/Denomination

Basic dimension drawing

Skala/Scale: 1:2	Blad/Sheet: 1(2)
ArtNo.	Size: A3
Ritn nr/Drawing No: T127798	Rev





Konstr/Drawn: P. MARCUS	Datum/Date: 2013-01-23	Kontr/Check:	Material: -
Ändrad av/Modified by: P. MARCUS	Ändrad/Modified: 2013-01-23	Ytjämnhet/Roughness: Ra µm	Ytbehandling/Surface treatment

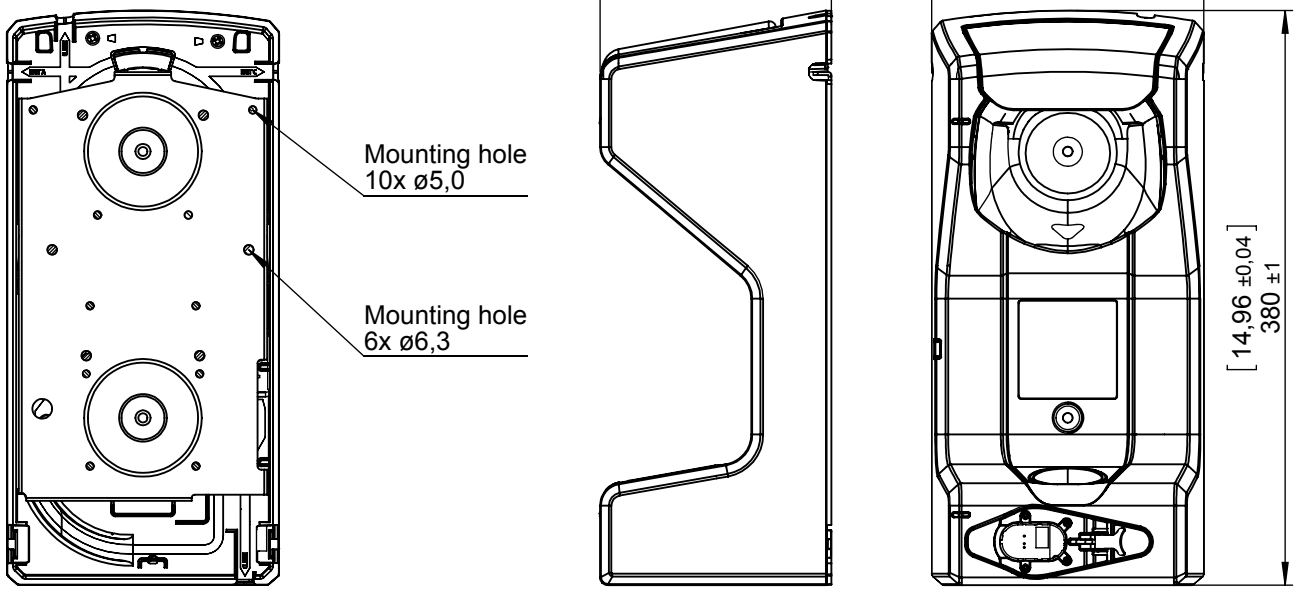
Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

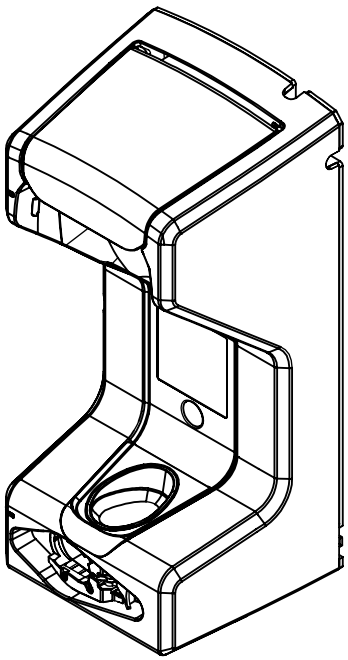
0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

Benämning/Denomination

Basic dimension drawing

Skala/Scale 1:2	Blad/Sheet 2(2)
ArtNo.	Size A3
Ritn nr/Drawing No T127798	Rev





-

Konstr/Drawn	Datum/Date	Kontr/Check	Material
P. MARCUS	2013-04-08	MABR	
Ändrad av/Modified by	**Ändrad/Modified**	**Ytjämnhet/Roughness**	**Ytbehandling/Surface treatment**
P. MARCUS	2013-04-08	Ra µm	

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

Benämning/Denomination

Basic dimensions
In-truck charger

Skala/Scale	Blad/Sheet
1:5	1(1)
Art.No.	Size
	A4
Ritn nr/Drawing No	Rev
T127865	A

15 CE Declaration of conformity

The full text of the Declaration of conformity is available at the following internet address: http://support.flir.com/resources/v362.

16 Cleaning, decontamination and disinfection

16.1 Cleaning

16.1.1 Camera housing, cables, and other items

Use one of these liquids:

- Warm water
- A weak detergent solution

Equipment:

- A soft cloth

Follow this procedure:

1. Soak the cloth in the liquid.
2. Twist the cloth to remove excess liquid.
3. Clean the part with the cloth.

CAUTION

Do not apply solvents or similar liquids to the camera, the cables, or other items. This can cause damage.

16.1.2 Infrared lens

Use one of these liquids:

- A commercial lens cleaning liquid with more than 30% isopropyl alcohol.
- 96% ethyl alcohol (C_2H_5OH).

Equipment:

- Cotton wool

CAUTION

If you use a lens cleaning cloth it must be dry. Do not use a lens cleaning cloth with the liquids that are listed above. These liquids can cause material on the lens cleaning cloth to become loose. This material can have an unwanted effect on the surface of the lens.

Follow this procedure:

1. Soak the cotton wool in the liquid.
2. Twist the cotton wool to remove excess liquid.
3. Clean the lens one time only and discard the cotton wool.

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.

CAUTION

- Be careful when you clean the infrared lens. The lens has a delicate anti-reflective coating.
- Do not clean the infrared lens too vigorously. This can damage the anti-reflective coating.

16.2 Decontamination and disinfection

- The camera must be thoroughly cleaned, decontaminated and disinfected before shipping to our service department. No hazardous residues are allowed on cameras. Such residues include—but are not limited to—chemical fire-extinguishing compounds, radioactivity, biohazardous materials, and residues from chemical fires.

- FLIR Systems reserves the right to charge the full cost for the decontamination and disinfection of contaminated cameras that are shipped to our service department.

17 Maintenance, inspection, and service

The following maintenance and inspection procedures apply.

17.1 Maintenance

After each use:

1. Clean the camera according to section 16.1 *Cleaning*, page 48.
2. Charge the battery according to section 12.3 *Charging the battery*, page 22.

17.2 Inspection

After each use:

1. Verify the function and integrity of the latch that secures the battery.

> **CAUTION**
>
> Make sure that you do not use a torque value that is more than 80 Ncm on the Torx T20 screw. Damage to the camera can occur if you do not obey this.

2. Inspect the lens for scratches.
3. Inspect the screen for scratches.
4. Inspect the camera body for damage.
5. Verify the function of all buttons and triggers.
6. Inspect the attachment point for the lanyard strap/neck strap, and the attachment point for the retractable lanyard.

17.3 Service

For contact details to our service departments, use the following link:

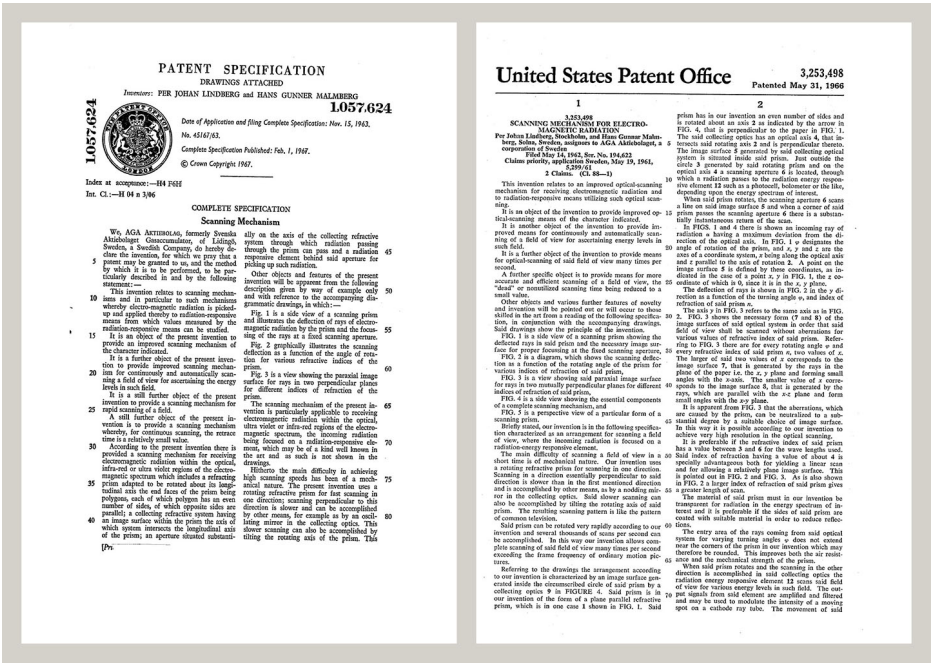
http://support.flir.com/service

18 About FLIR Systems

FLIR Systems was established in 1978 to pioneer the development of high-performance infrared imaging systems, and is the world leader in the design, manufacture, and marketing of thermal imaging systems for a wide variety of commercial, industrial, and government applications. Today, FLIR Systems embraces five major companies with outstanding achievements in infrared technology since 1958—the Swedish AGEMA Infrared Systems (formerly AGA Infrared Systems), the three United States companies Indigo Systems, FSI, and Inframetrics, and the French company Cedip.

Since 2007, FLIR Systems has acquired several companies with world-leading expertise:

- NEOS (2019)
- Endeavor Robotics (2019)
- Aeryon Labs (2019)
- Seapilot (2018)
- Acyclica (2018)
- Prox Dynamics (2016)
- Point Grey Research (2016)
- DVTEL (2015)
- DigitalOptics micro-optics business (2013)
- MARSS (2013)
- Traficon (2012)
- Aerius Photonics (2011)
- TackTick Marine Digital Instruments (2011)
- ICx Technologies (2010)
- Raymarine (2010)
- Directed Perception (2009)
- OmniTech Partners (2009)
- Salvador Imaging (2009)
- Ifara Tecnologías (2008)
- Extech Instruments (2007)



PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventors: PER JOHAN LINDBERG and HANS GUNNER MALMBERG

1,057,624

Date of Application and filing Complete Specification: Nov. 15, 1963.

No. 45167/63.

Complete Specification Published: Feb. 1, 1967.

© Crown Copyright 1967.

Index at acceptance:—H04 F6H

Int. Cl.:—H 04 n 3/06

COMPLETE SPECIFICATION

Scanning Mechanism

United States Patent Office 3,253,498 Patented May 31, 1966

3,253,498

SCANNING MECHANISM FOR ELECTRO-MAGNETIC RADIATION

Per Johan Lindberg, Stockholm, and Hans Gunnar Malmberg, Solna, Sweden, assignors to AGA Aktiebolaget, a corporation of Sweden

Filed May 14, 1962, Ser. No. 194,622

Claim priority, application Sweden, May 19, 1961, 5,239/61

2 Claims. (Cl. 88—1)

Figure 18.1 Patent documents from the early 1960s

FLIR Systems has three manufacturing plants in the United States (Portland, OR, Boston, MA, Santa Barbara, CA) and one in Sweden (Stockholm). Since 2007 there is also a manufacturing plant in Tallinn, Estonia. Direct sales offices in Belgium, Brazil, China,

France, Germany, Great Britain, Hong Kong, Italy, Japan, Korea, Sweden, and the USA —together with a worldwide network of agents and distributors—support our international customer base.

FLIR Systems is at the forefront of innovation in the infrared camera industry. We anticipate market demand by constantly improving our existing cameras and developing new ones. The company has set milestones in product design and development such as the introduction of the first battery-operated portable camera for industrial inspections, and the first uncooled infrared camera, to mention just two innovations.

1969: Thermovision Model 661. The camera weighed approximately 25 kg (55 lb.), the oscilloscope 20 kg (44 lb.), and the tripod 15 kg (33 lb.). The operator also needed a 220 VAC generator set, and a 10 L (2.6 US gallon) jar with liquid nitrogen. To the left of the oscilloscope the Polaroid attachment (6 kg (13 lb.)) can be seen.

2015: FLIR One, an accessory to iPhone and Android mobile phones. Weight: 36 g (1.3 oz.).

FLIR Systems manufactures all vital mechanical and electronic components of the camera systems itself. From detector design and manufacturing, to lenses and system electronics, to final testing and calibration, all production steps are carried out and supervised by our own engineers. The in-depth expertise of these infrared specialists ensures the accuracy and reliability of all vital components that are assembled into your infrared camera.

18.1 More than just an infrared camera

At FLIR Systems we recognize that our job is to go beyond just producing the best infrared camera systems. We are committed to enabling all users of our infrared camera systems to work more productively by providing them with the most powerful camera–software combination. Especially tailored software for predictive maintenance, R & D, and process monitoring is developed in-house. Most software is available in a wide variety of languages.

We support all our infrared cameras with a wide variety of accessories to adapt your equipment to the most demanding infrared applications.

18.2 Sharing our knowledge

Although our cameras are designed to be very user-friendly, there is a lot more to thermography than just knowing how to handle a camera. Therefore, FLIR Systems has founded the Infrared Training Center (ITC), a separate business unit, that provides certified training courses. Attending one of the ITC courses will give you a truly hands-on learning experience.

The staff of the ITC are also there to provide you with any application support you may need in putting infrared theory into practice.

18.3 Supporting our customers

FLIR Systems operates a worldwide service network to keep your camera running at all times. If you discover a problem with your camera, local service centers have all the equipment and expertise to solve it within the shortest possible time. Therefore, there is no need to send your camera to the other side of the world or to talk to someone who does not speak your language.

Website
http://www.flir.com

Customer support
http://support.flir.com

Disclaimer
Specifications subject to change without further notice. Models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to exportquestions@flir.com with any questions.

Publ. No.: T559946
Release: BG
Commit: 87484
Head: 87484
Language: en-US
Modified: 2022-10-11
Formatted: 2022-10-11