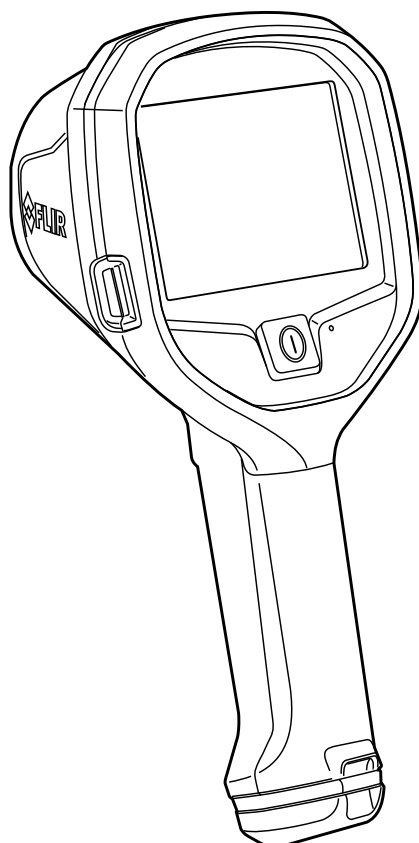




User's manual FLIR Kx3 series



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.

Viktig meddelelse

Før du betjener enheden, skal 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 használatá elött 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.

重要注意事項

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。

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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

© 2022 FLIR Systems, Inc. All rights reserved worldwide. No parts of the software including source code may be reproduced, transmitted, transcribed or translated into any language or computer language in any form or by any means, electronic, magnetic, optical, manual or otherwise, without the prior written permission of FLIR Systems.

The documentation must not, in whole or part, be copied, photocopied, reproduced, translated or transmitted to any electronic medium or machine readable form without prior consent, in writing, from FLIR Systems.

Names and marks appearing on the products herein are either registered trademarks or trademarks of FLIR Systems and/or its subsidiaries. All other trademarks, trade names or company names referenced herein are used for identification only and are the property of their respective owners.



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.

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**

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.

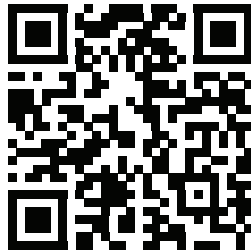
The training must include:

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

3.1 Online documentation

Our manuals are continuously updated and published online.

To access the FLIR Kx3 user manual and other product documentation, go to <http://support.flir.com/resources/jqnq>.



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.
- 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.

4.1 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.

Important information about FLIR Kx3 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.

6.1 Quick start guide, FLIR K33

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.
3. Aim the camera toward the object of interest.
4. To freeze the image, pull and hold the trigger.
5. To return to the live image, release the trigger.

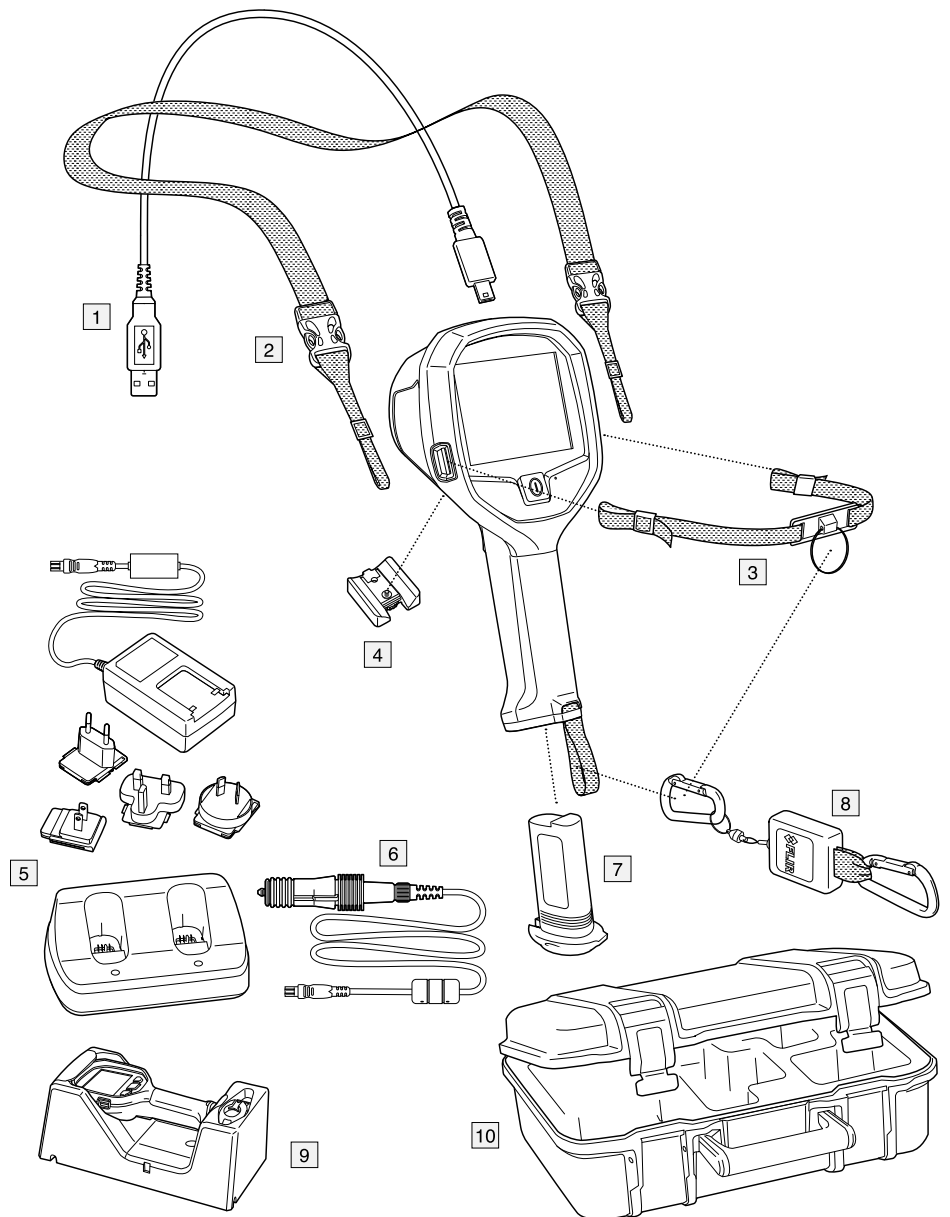
Note The function of the trigger is configured by a setting, see section 11.10 *Configuring the camera*.

6.2 Quick start guide, FLIR K53

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. Pull the trigger to save an image.
5. Pull and hold the trigger to record a video clip.

Note The function of the trigger is configured by a setting, see section 11.10 *Configuring the camera*.

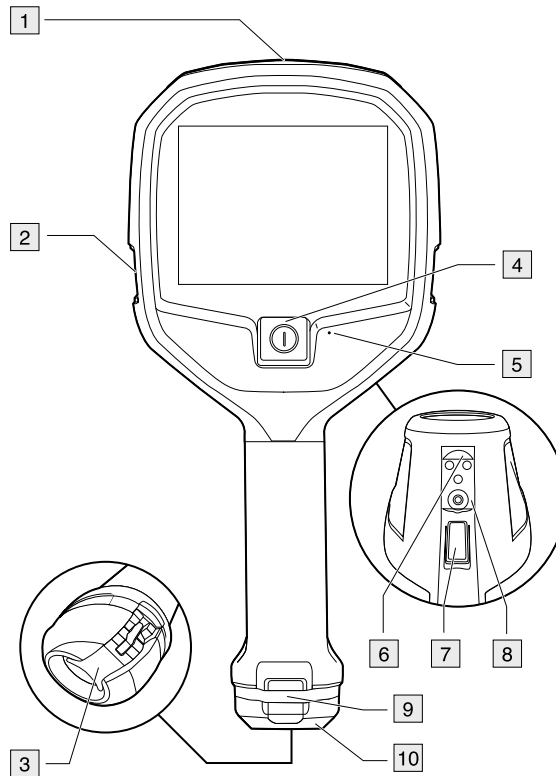
Please check the FLIR Kx3 product page on www.flir.com for offered accessories and services.



1. FLIR P/N: 1910423, USB cable Std A <-> Mini-B
2. FLIR P/N: T127724ACC, Neck strap¹
3. FLIR P/N: T198416ACC, Strap lanyard¹
4. FLIR P/N: T198457ACC, Tripod Adapter, Kxx¹
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, Battery Li-ion 3.6 V, 4.4 Ah, 16 Wh
8. FLIR P/N: T130980ACC, Retractable lanyard¹
9. FLIR P/N: T198322ACC, In-truck charger
10. FLIR P/N: T198441ACC, Transport case Kxx

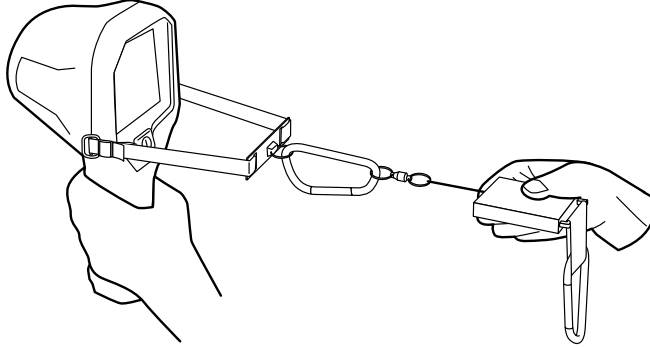
1. The inclusion of this item is dependent on model.

9.1 Camera parts

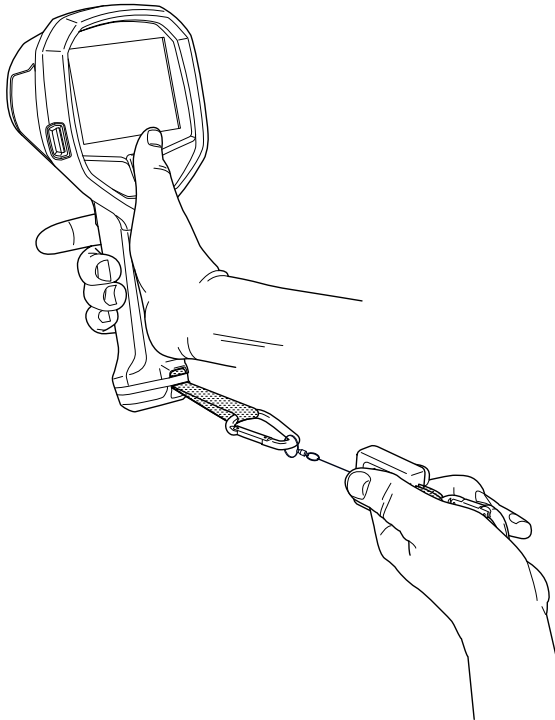


1. USB Mini-B connector.
2. Attachment point for the lanyard strap/neck strap (left and right sides).
3. Eccentric latch to secure the battery.
4. On/off button. This button has three functions:
 - Push the on/off button to turn on the camera.
 - Push and hold the on/off button for more than 3 seconds 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. Pin hole for setting of the temperature unit (°C/°F).
6. Connectors for the in-truck charger.
7. Trigger.
8. Mount for the tripod adapter.
9. Attachment point for the retractable lanyard.
10. Battery.

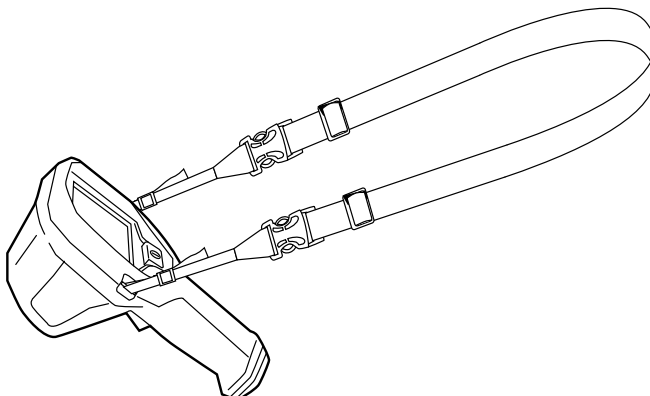
9.2 Lanyard strap and retractable lanyard



9.3 Handle strap and retractable lanyard



9.4 Neck strap





- 1. Low-sensitivity mode indicator. The indicator is displayed when the camera identifies a hot area and automatically switches to the low-sensitivity mode.
- 2. Overheating indicator. The indicator provides a visual warning to the user that the thermal imager is about to shut down due to internal overheating.
- 3. Reference bar.
- 4. Temperature bar.
- 5. Spotmeter temperature.
- 6. Battery condition indicator.
- 7. Spotmeter.

10.1 Battery condition indicator

Battery condition indicator	Explanation
	75% power.
	50% power.
	25% power.
	Flashing indicator. At least 5 minutes of available power remains.

**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.

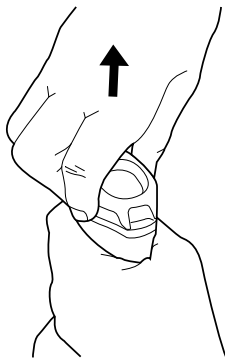
11.1 Removing the battery

Follow this procedure:

1. Pull the eccentric latch.



2. Pull out the battery from the battery compartment.



11.1.1 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:

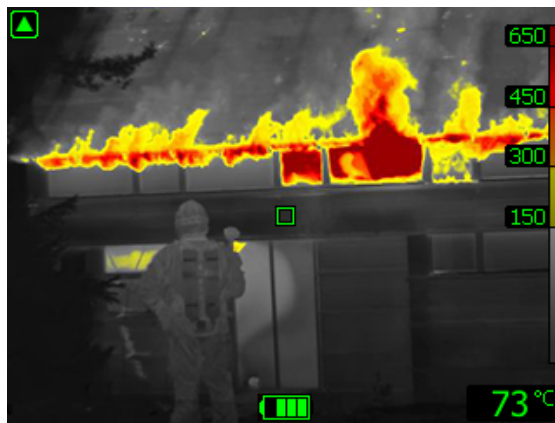
1. Put the battery in the standalone battery charger.
2. Connect the power supply cable plug to the connector on the standalone battery charger.

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.

11.2 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.

11.3 Basic mode



The camera features one camera mode: *Basic mode*. This 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. This automatic switching of ranges occurs when objects with a temperature above 150°C (302°F) enter the field of view of the camera.

- 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).

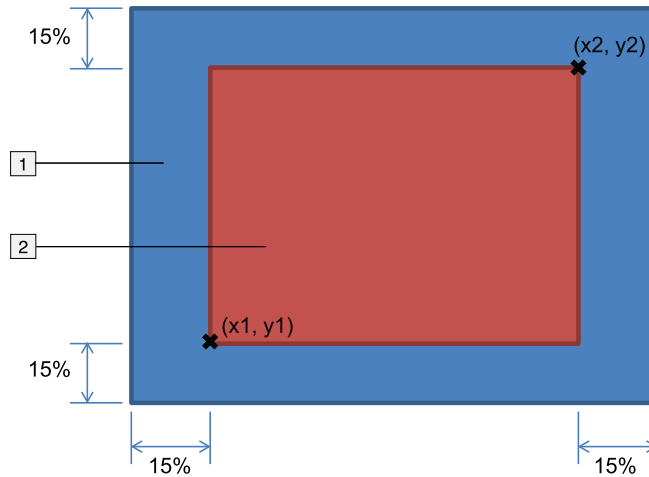
11.3.1 Automatic temperature range selection

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 11.3.1.1.

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.

11.3.1.1 Figure

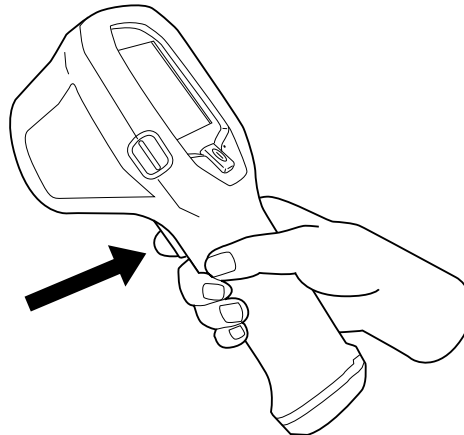


1. LCD area.
2. Area activating the automatic range change.

11.4 Saving an image (FLIR K53)

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.



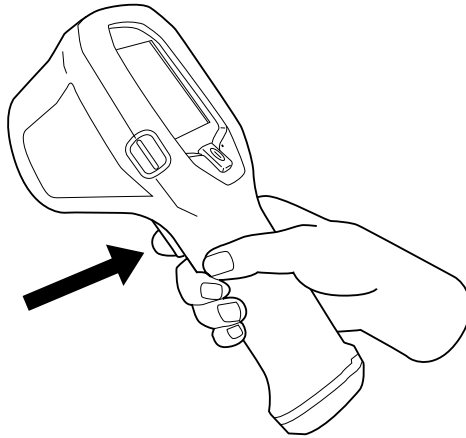
Note The function of the trigger is configured by a setting, see section 11.10 *Configuring the camera*.

Follow this procedure:

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

11.5 Recording a video clip (FLIR K53)

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 11.10 *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.

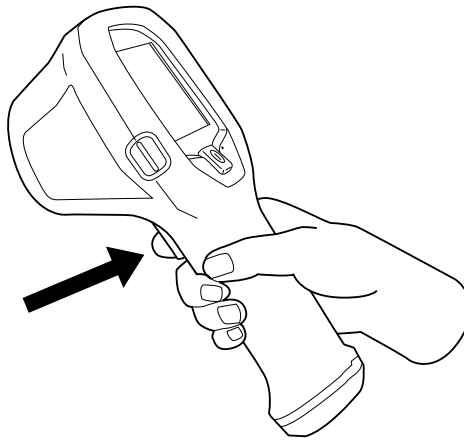
11.6 Continuous video recording (FLIR K53)

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 11.10 *Configuring the camera*.

11.7 Freezing the image

You can freeze the image.



Note The function of the trigger is configured by a setting, see section 11.10 *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.

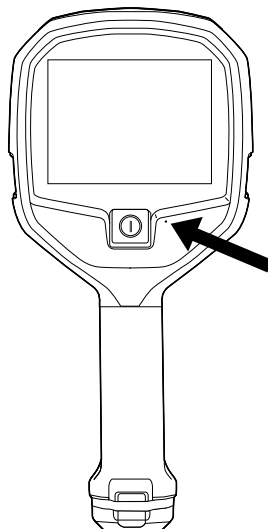
11.8 Changing the temperature unit

The camera displays temperatures in °C or °F. You change the temperature unit by pushing a button behind the pin hole.

Note You can also use the FLIR K-series camera configurator to change the temperature unit. See section 11.10 *Configuring the camera*.

Follow this procedure:

1. Turn on the camera.
2. Use a paper clip or a similar small item to push the button behind the pin hole.



11.9 Connecting the camera to a computer

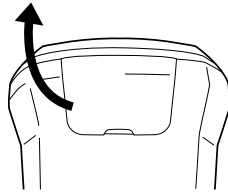
You can connect the camera to a computer, using the USB cable.

Once connected, you can do the following:

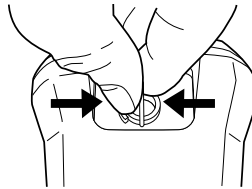
- Change the camera settings, see section 11.10 *Configuring the camera*.
- Applicable to FLIR K53: Move the images and video clips from the camera's archive to the computer.

Follow this procedure:

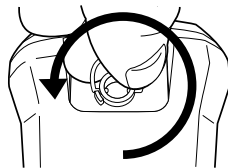
1. Fold up the rubber cover at the top of the camera.



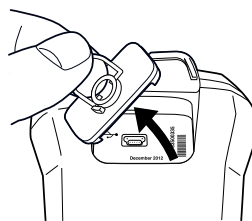
2. Hold the metal ring firmly.



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



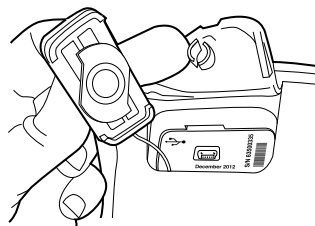
4. Pull out the plastic insert.



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. Applicable to FLIR K53:

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.

11.10 Configuring the camera

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

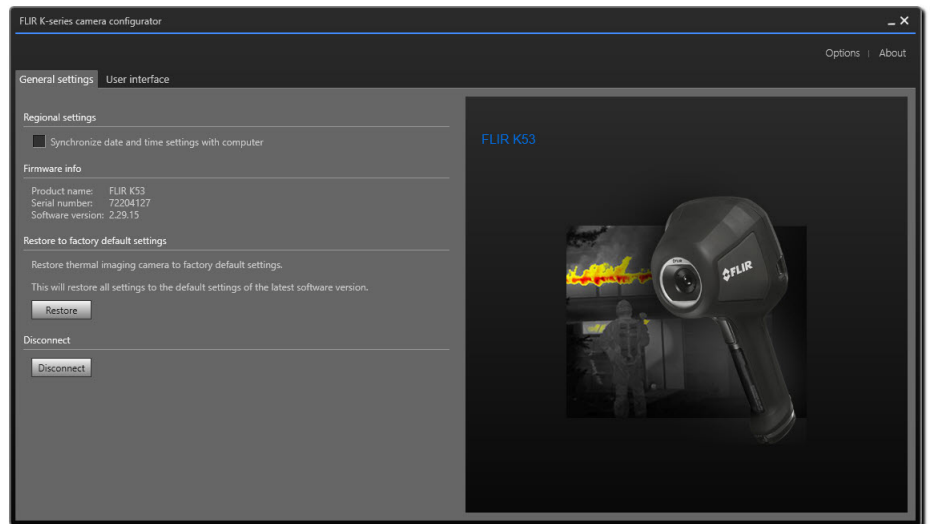
11.10.1 Installation

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.

11.10.2 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.

11.10.3 The *General settings* tab



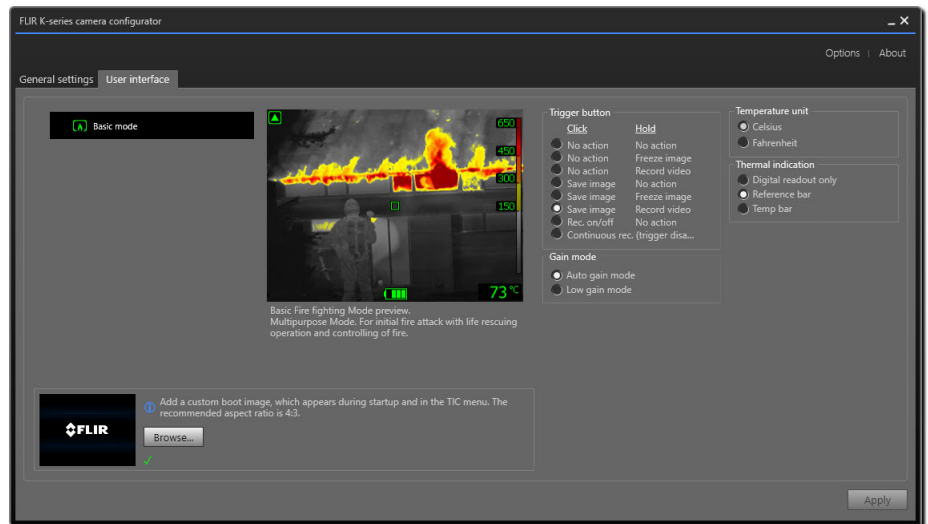
Regional settings area: To synchronize the camera's date and time settings with the computer, select the checkbox.

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.

11.10.4 The **User interface** tab



Camera mode area: The camera features one camera mode: Basic mode. For more information, see section 11.3 *Basic mode*, page 16.

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 K33): 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** (not applicable to the FLIR K33): 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** (not applicable to the FLIR K33): 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 K33): 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 K33): 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 K33): 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*.

12.1 Introduction

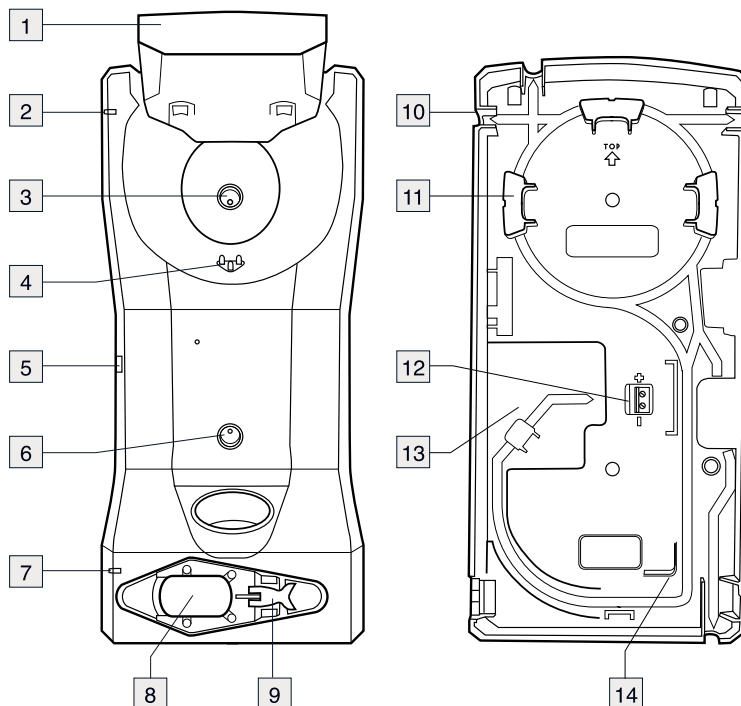


Thank you for choosing the FLIR Kx3 series in-truck charger from FLIR Systems.

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.

12.2 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.

12.3 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.

12.4 Recommended cable area and fuse

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

12.5 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.

12.6 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.

12.7 Charging a battery separately

FLIR Kx3 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.

12.8 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.

12.9 Customer support

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

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13.1 Online field-of-view calculator

Please visit <http://support.flir.com> and click the photo of the camera series for field-of-view tables for all lens-camera combinations.

13.2 Note about technical data

FLIR Systems reserves the right to change specifications at any time without prior notice. Please check <http://support.flir.com> for latest changes.

13.3 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.

13.4 FLIR K33

P/N: 72203-0411

Rev.: 87197

General description	
The FLIR K33 is a robust and reliable infrared camera designed to perform under extremely severe conditions. The FLIR K33 has an intuitive interface with a design that makes it easy to control even with a gloved hand. The crisp and clear image helps you to navigate through smoke and to make quick and accurate decisions.	
Benefits:	
- Robust and reliable: The FLIR K33 is designed to meet tough operating conditions. It can withstand a drop from 2 m (6.5 ft.) onto a concrete floor, is water resistant to IP67, and is fully operational up to +85°C (+185°F), or +260°C (+500°F) for 5 min. - Clear and crisp thermal images: The maintenance-free uncooled microbolometer sensor produces clear and detail-rich images of 240 × 180 pixels which have been further improved with FSX, a digital image processing enhancement technique. Thermal images are presented on a large, bright 4" display, helping you to navigate and to make quick and accurate decisions. - Easy-to-use—also in a gloved firefighter's hand: An intuitive and simple user interface allows you to focus on the job. The FLIR K33 can be controlled by just one large button on top of the unit. Ideal for a gloved firefighter's hand.	
Imaging and optical data	
IR resolution	240 × 180 pixels
Thermal sensitivity/NETD	< 40 mK @ +30°C (+86°F)
Field of view (FOV)	51° × 38°
Depth of field	0.84 m to infinity (33 in. to infinity)
Focal length	9 mm (0.35 in.)
Spatial resolution (IFOV)	3.6 mrad
F-number	1.25
Image frequency	60 Hz
Focus	Fixed
Detector data	
Detector type	Focal plane array (FPA), uncooled microbolometer
Spectral range	7.5–13 μm
Pitch	25 μm
Image presentation	
Display	4 in. LCD, 320 × 240 pixels, backlit
Auto range	Yes, selectable on/off using FLIR K-series camera configurator
Contrast optimization	Digital image enhancement using FSX
Image presentation modes	
Image modes	Basic mode
Measurement	
Object temperature range	–20°C to +150°C (–4°F to +302°F) 0°C to +650°C (+32°F to +1202°F)
Accuracy	±4°C (±7.2°F) or ±4% of reading, for ambient temperature 10°C to 35°C (+50°F to 95°F)

Measurement analysis	
Spotmeter	1
Isotherm	Yes
Set-up	
Set-up commands	Local adaptation of units, date and time formats
Languages	English
Video streaming	
Non-radiometric IR video streaming	Uncompressed colorized video using USB
USB	
USB	USB Mini-B
Data communication interfaces	
Interfaces	• Update from PC devices • Data transfer to and from PC
Power system	
Battery type	Li Ion
Battery voltage	3.6 V
Battery capacity	4.4 Ah, at +20°C to +25°C (+68°F to +77°F)
Battery operating time	Approx. 4 hours at +25°C (+77°F) ambient temperature and typical use
Charging system	• Battery is charged inside the camera • 2-bay charger • Optional In-truck charger
Charging time	2 h to 85% capacity, charging status indicated by LEDs
Charging temperature	0°C to +45°C (+32°F to +113°F)
Power management	Automatic shutdown and sleep mode
Start-up time from sleep mode	< 4 s.
Start-up time	< 17 s. (IR image, no GUI)
Battery documents	For documents like MSDS and UN38.3 test reports/summaries, see: https://support.flir.com/resources/msds
Environmental data	
Operating temperature range	• -20°C to +85°C (-4°F to +185°F) • +150°C (+302°F): 15 min. • +260°C (+500°F): 5 min.
Storage temperature range	-40°C to +85°C (-40°F to +185°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F) / 2 cycles
Relative humidity	95% relative humidity +25°C to +40°C (+77°F to +104°F) non-condensing
EMC	• EN 61000-6-2:2005 (Immunity) • EN 61000-6-3: 2011 (Emission) • FCC 47 CFR Part 15 B (Emission)
Magnetic fields	EN 61 000-4-8, Test level 5 for continuous field (severe industrial environment)
Encapsulation	IP 67 (IEC 60529)
Shock	25 g (IEC 60068-2-27)

Environmental data	
Vibration	2 g (IEC 60068-2-6)
Drop	2 m (6.6 ft.) on concrete floor (IEC 60068-2-31)
Safety (power supply)	CE/EN/UL/CSA/PSE 60950-1
Declaration of conformity	See: https://support.flir.com/resources/DoC
Physical data	
Camera weight, incl. battery	1.1 ±0.05 kg (2.4 ±0.1 lb.)
Battery weight	0.152 kg (0.3 lb.)
Camera size (L × W × H)	120 × 125 × 280 mm (4.7 × 4.9 × 11 in.)
Tripod mounting	UNC ¼"-20 (adapter needed)
Material	• PPSU • Silicon rubber • Aluminium, cast • Flame-resistant magnesium alloy
Shipping information	
List of contents	• Infrared camera • Battery (2 ea.) • Battery charger • Carabiner strap • Hard transport case • Power supply • Printed documentation • Retractable lanyard, 16 N (58 oz) • USB cable
Packaging, weight	5.7 kg (12.6 lb.)
Packaging, size	500 × 190 × 370 mm (19.7 × 7.5 × 14.6 in.)
EAN-13	7332558011515
UPC-12	845188012465
Country of origin	Estonia

Supplies & accessories:

- 1910423; USB cable Std A <-> Mini-B
- T198509; Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft.
- T198125; Battery charger, incl. power supply with multi plugs (Exx, Kxx)
- T127724ACC; Neck strap
- T198416ACC; Lanyard strap
- T198457ACC; Tripod Adapter, Kxx
- T198441ACC; Transport case Kxx
- T198322ACC; In-truck charger
- T199368ACC; Battery Li-ion 3.6 V, 4.4 Ah, 16 Wh
- T129915ACC; Carabiner strap
- T130980ACC; Retractable lanyard, 16 N (58 oz)
- T300466ACC; Battery locking mechanism replacement kit

13.5 FLIR K53

P/N: 72203-0511

Rev.: 87196

General description	
The FLIR K53 is a robust and reliable infrared camera designed to perform under extremely severe conditions. The FLIR K53 has an intuitive interface with a design that makes it easy to control even with a gloved hand. The crisp and clear image helps you to navigate through smoke and to make quick and accurate decisions.	
Benefits:	
- Robust and reliable: The FLIR K53 is designed to meet tough operating conditions. It can withstand a drop from 2 m (6.5 ft.) onto a concrete floor, is water resistant to IP67, and is fully operational up to +85°C (+185°F), or +260°C (+500°F) for 5 min. - Clear and crisp thermal images: The maintenance-free uncooled microbolometer sensor produces clear and detail-rich images of 320 × 240 pixels which have been further improved with FSX, a digital image processing enhancement technique. Thermal images are presented on a large, bright 4" display, helping you to navigate and to make quick and accurate decisions. - Easy-to-use—also in a gloved firefighter's hand: An intuitive and simple user interface allows you to focus on the job. The FLIR K53 can be controlled by just one large button on top of the unit. Ideal for a gloved firefighter's hand. - Recording	
Imaging and optical data	
IR resolution	320 × 240 pixels
Thermal sensitivity/NETD	< 30 mK @ +30°C (+86°F)
Field of view (FOV)	51° × 38°
Depth of field	0.84 m to infinity (33 in. to infinity)
Focal length	9 mm (0.35 in.)
Spatial resolution (IFOV)	2.8 mrad
F-number	1.25
Image frequency	60 Hz
Focus	Fixed
Detector data	
Detector type	Focal plane array (FPA), uncooled microbolometer
Spectral range	7.5–13 μm
Pitch	25 μm
Image presentation	
Display	4 in. LCD, 320 × 240 pixels, backlit
Auto range	Yes, selectable on/off using FLIR K-series camera configurator
Contrast optimization	Digital image enhancement using FSX
Image presentation modes	
Image modes	Basic mode
Measurement	
Object temperature range	–20°C to +150°C (–4°F to +302°F) 0°C to +650°C (+32°F to +1202°F)
Accuracy	±4°C (±7.2°F) or ±4% of reading, for ambient temperature 10°C to 35°C (+50°F to 95°F)

Measurement analysis	
Spotmeter	1
Isotherm	Yes
Set-up	
Set-up commands	Local adaptation of units, date and time formats
Languages	English
Storage of images	
Image storage	Standard JPEG
Storage media	Internal flash memory
Image storage capacity	200 files in total  NOTE The total number of files is co-dependent on the number of saved video clips.
Image storage mode	IR only
File formats	Standard JPEG
Video recording in camera	
Non-radiometric IR video recording	MPEG-4 to internal flash memory
Storage capacity	200 files in total, with a maximum duration of 5 minutes each.  NOTE The total number of files is co-dependent on the number of saved images.
Video streaming	
Non-radiometric IR video streaming	Uncompressed colorized video using USB
USB	
USB	USB Mini-B
Data communication interfaces	
Interfaces	• Update from PC devices • Data transfer to and from PC
Power system	
Battery type	Li Ion
Battery voltage	3.6 V
Battery capacity	4.4 Ah, at +20°C to +25°C (+68°F to +77°F)
Battery operating time	Approx. 4 hours at +25°C (+77°F) ambient temperature and typical use
Charging system	• Battery is charged inside the camera • 2-bay charger • Optional In-truck charger
Charging time	2 h to 85% capacity, charging status indicated by LEDs
Charging temperature	0°C to +45°C (+32°F to +113°F)
Power management	Automatic shutdown and sleep mode
Start-up time from sleep mode	< 4 s.

Power system	
Start-up time	< 17 s. (IR image, no GUI)
Battery documents	For documents like MSDS and UN38.3 test reports/summaries, see: https://support.flir.com/resources/msds
Environmental data	
Operating temperature range	• -20°C to +85°C (-4°F to +185°F) • +150°C (+302°F): 15 min. • +260°C (+500°F): 5 min.
Storage temperature range	-40°C to +85°C (-40°F to +185°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F) / 2 cycles
Relative humidity	95% relative humidity +25°C to +40°C (+77°F to +104°F) non-condensing
EMC	• EN 61000-6-2:2005 (Immunity) • EN 61000-6-3: 2011 (Emission) • FCC 47 CFR Part 15 B (Emission)
Magnetic fields	EN 61 000-4-8, Test level 5 for continuous field (severe industrial environment)
Encapsulation	IP 67 (IEC 60529)
Shock	25 g (IEC 60068-2-27)
Vibration	2 g (IEC 60068-2-6)
Drop	2 m (6.6 ft.) on concrete floor (IEC 60068-2-31)
Safety (power supply)	CE/EN/UL/CSA/PSE 60950-1
Declaration of conformity	See: https://support.flir.com/resources/DoC
Physical data	
Camera weight, incl. battery	1.1 ±0.05 kg (2.4 ±0.1 lb.)
Battery weight	0.152 kg (0.3 lb.)
Camera size (L × W × H)	120 × 125 × 280 mm (4.7 × 4.9 × 11 in.)
Tripod mounting	UNC ¼"-20 (adapter needed)
Material	• PPSU • Silicon rubber • Aluminium, cast • Flame-resistant magnesium alloy
Shipping information	
List of contents	• Infrared camera • Battery (2 ea.) • Battery charger • Carabiner strap • Hard transport case • Power supply • Printed documentation • Retractable lanyard, 16 N (58 oz) • USB cable
Packaging, weight	5.7 kg (12.6 lb.)
Packaging, size	500 × 190 × 370 mm (19.7 × 7.5 × 14.6 in.)
EAN-13	7332558011522
UPC-12	845188012472
Country of origin	Estonia

Supplies & accessories:

- 1910423; USB cable Std A <-> Mini-B
- T198509; Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft.
- T198125; Battery charger, incl. power supply with multi plugs (Exx, Kxx)
- T127724ACC; Neck strap
- T198416ACC; Lanyard strap
- T198457ACC; Tripod Adapter, Kxx
- T198441ACC; Transport case Kxx
- T198322ACC; In-truck charger
- T199368ACC; Battery Li-ion 3.6 V, 4.4 Ah, 16 Wh
- T129915ACC; Carabiner strap
- T130980ACC; Retractable lanyard, 16 N (58 oz)
- T300466ACC; Battery locking mechanism replacement kit

13.6 In-truck charger

P/N: T198322

Rev.: 53225

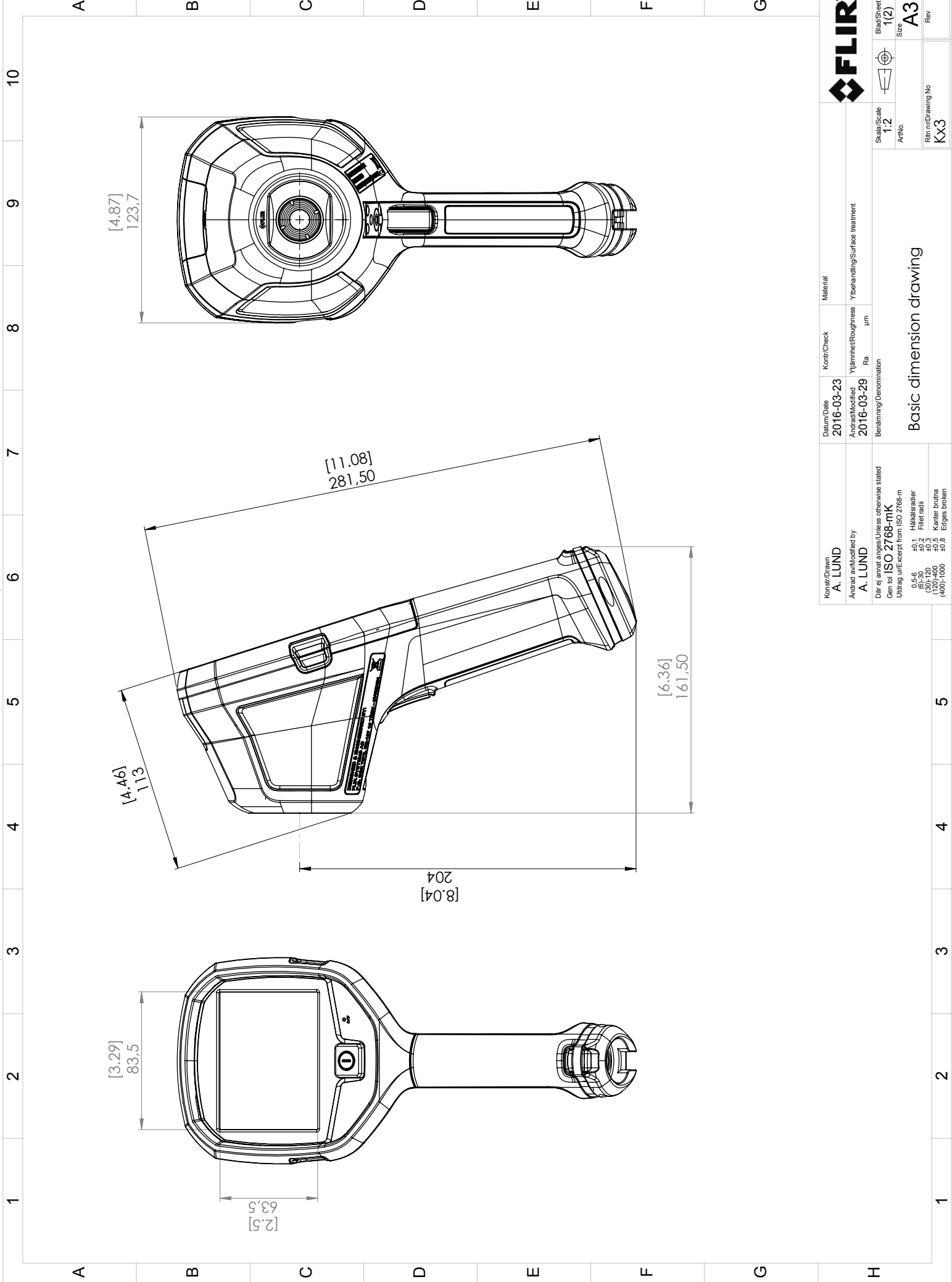
Power system	
Charging time	< 4 hours
Charging temperature	0°C to +45°C (+32°F to +113°F)
External power, connector type	Screw terminal or HRS_UK60-3PT
DC operation	12/ 24 V DCnominal (11.1 - 28.0 V DC)
Power	Max 36 Watts or 3000 mA at 12 VDC (5 amps fuse)
Environmental data	
Operating temperature range	−40°C to +85°C (−40°F to +185°F)
Storage temperature range	−40°C to +85°C (−40°F to +185°F)
Relative humidity	Operational for non-condensing humidity between 5% and 95%.
EMC	• EN61000-6-3 Emission • EN61000-6-2 Immunity • FCC47CFR part 15 class B • NFPA requirements • ISO 7637-2 Road vehicles - Electrical disturbances from conduction and coupling Part 2: Electrical transient conduction along supply lines only
Encapsulation	IP 20
Bump	Operational after exposed to: 5 pulses/ in each axis/ direction (30 total) of 30g 11ms half sine profile
Vibration	Operational after exposed to: 4, 3g rms random profile. 8 hours in each axis.
Physical data	
Weight	1.050 kg
Size (L × W × H)	380 mm × 180 mm × 153 mm (15 in. × 7.1 in. × 6 in.)
Material	PC / ABS
Color	Grey / black
Shipping information	
List of contents	• Charger • Documentation • Card board box
Packaging, weight	3.2 kg (7.0 lb.)
Packaging, size	435 × 245 × 167 mm (17.1 × 9.6 × 6.6 in.)
EAN-13	7332558005446 4743254001282 (Estonia plant)
UPC-12	845188005368
Country of origin	Estonia

Compatible with the following products:

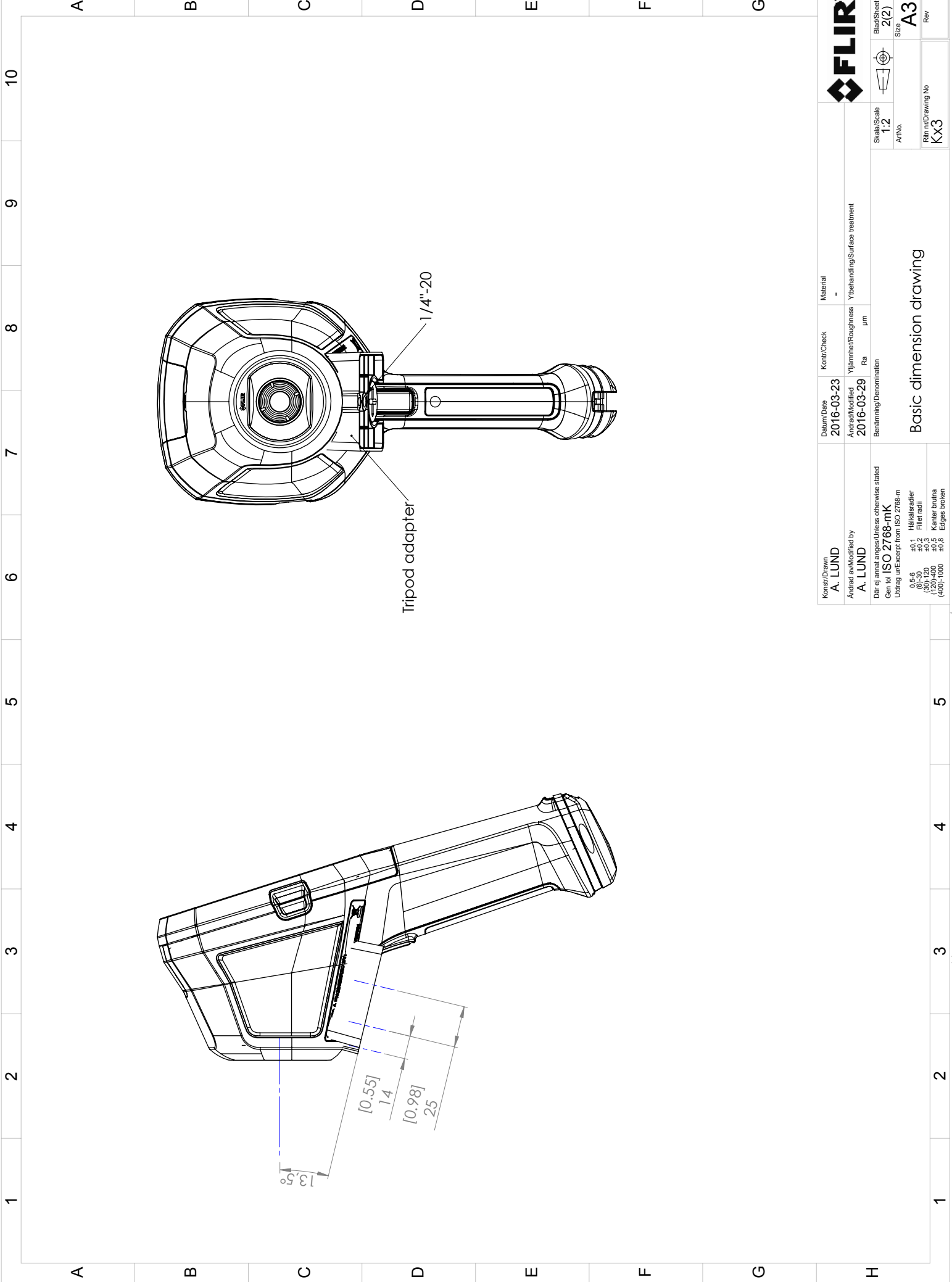
- 72201-0106; FLIR K45

-
- 72201-0206; FLIR K55
 - 72202-0303; FLIR K65

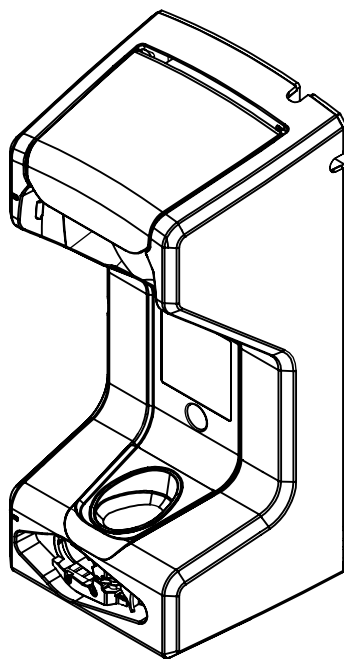
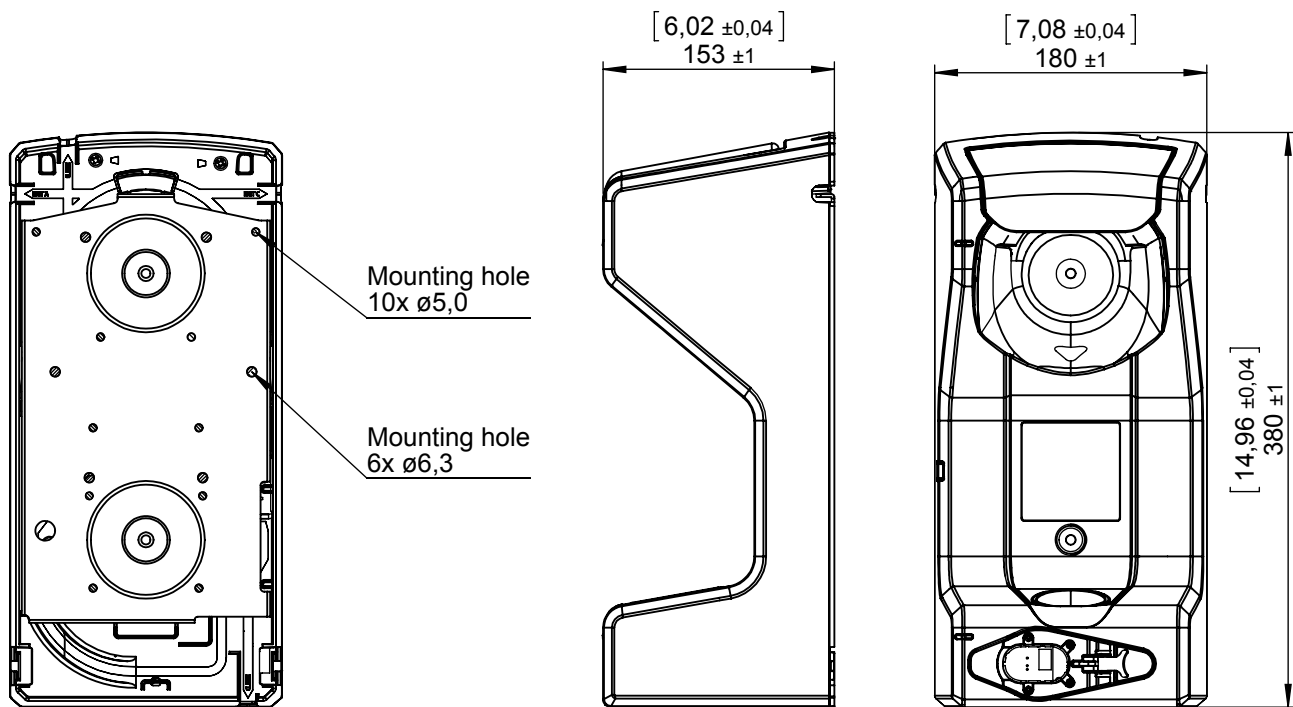
[See next page]



FLIR		Blad/Sheet Size A3		Rev			
Scale/Scale 1:2		ArtNo.		Rit nr/Drawing No Kx3			
Basic dimension drawing							
Konstr/Drawn A. LUND	Datum/Date 2016-03-23	Kontr/Check	Material				
Ändrad av/Modified by A. LUND	Ändrad/Modified 2016-03-29	Ytlämhet/Roughness Ra	µm	Ytbehandling/Surface treatment			
Benämning/ Denomination							
Där ej annat anges/Unless otherwise stated							
Gen tol ISO 2768-mK							
Utmåg ut/Excerpt from ISO 2768-m							
0.5-6 ±0.1 Hållkälsradier							
(6)-30 ±0.2 Fillet radii							
(120)-100 ±0.5 Kanter brutna							
(400)-1000 ±0.8 Edges broken							



Konstr/Drawn A. LUND	Datum/Date 2016-03-23	Kontr/Check -	Material -
Ändrad av/Modified by A. LUND	Ändrad/Modified 2016-03-29	Ytlämhet/Roughness Ra	Ytbehandling/Surface treatment µm
Benämning/Denomination Basic dimension drawing			
Där ej annat anges/Unless otherwise stated Gen töl ISO 2768-mK Utmåg ut/Excerpt from ISO 2768-m			
0.5-6 ±0.1 Hållisaradiier (6)-30 ±0.2 Fillet radii (120)-400 ±0.5 Kanter brutna (400)-1000 ±0.8 Edges broken			
Skala/Scale 1:2		Blad/Sheet 2(2)	
A/Nr.		Rev	
Ritning/Drawing No Kx3		A3	



Konstr/Drawn P. MARCUS	Datum/Date 2013-04-08	Kontr/Check MABR	Material			
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2013-04-08	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	Benämning/Denomination Basic dimensions In-truck charger			Skala/Scale 1:5		Blad/Sheet 1(1)
0,5-6 ±0,1 Hålkålsradier (6)-30 ±0,2 Fillet radii				Art.No.		Size A4
(30)-120 ±0,3 (120)-400 ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken				Ritn nr/Drawing No T127865		Rev A

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

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.

The following maintenance and inspection procedures apply.

17.1 Maintenance

After each use:

1. Clean the camera according to section 16.1 *Cleaning*, page 42.
2. Charge the battery according to section 11.1.1 *Charging the battery*, page 15.

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>

The following storage conditions apply.

Storage temperature range	−40°C to +85°C (−40°F to +185°F)
Storage humidity	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F) / 2 cycles

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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)

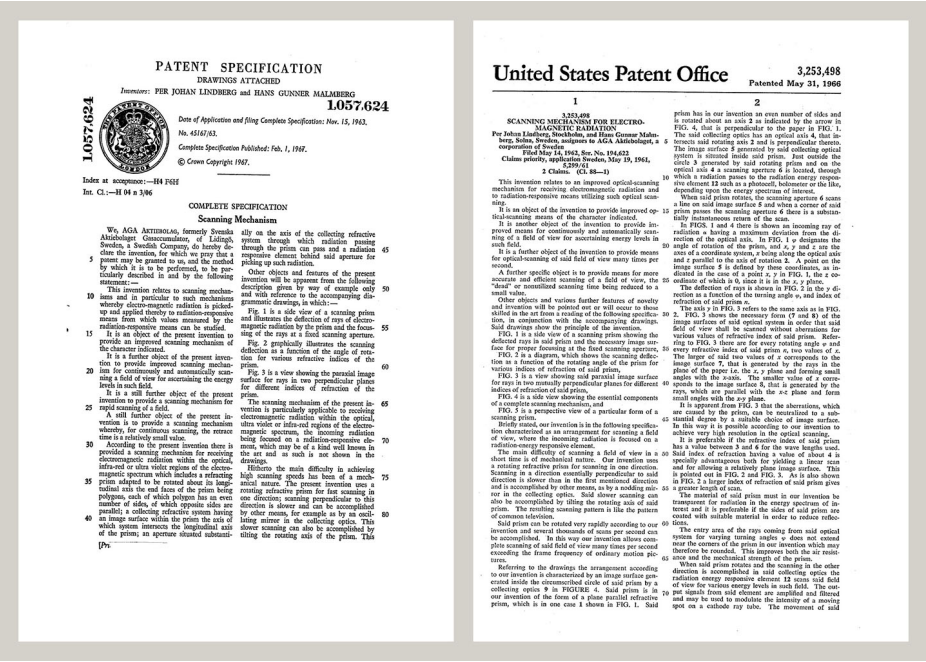


Figure 19.1 Patent documents from the early 1960s

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.

19.1 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.

19.2 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.

19.3 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>

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Publ. No.: T810170
Release: AI
Commit: 87573
Head: 87574
Language: en-US
Modified: 2022-10-17
Formatted: 2022-10-17