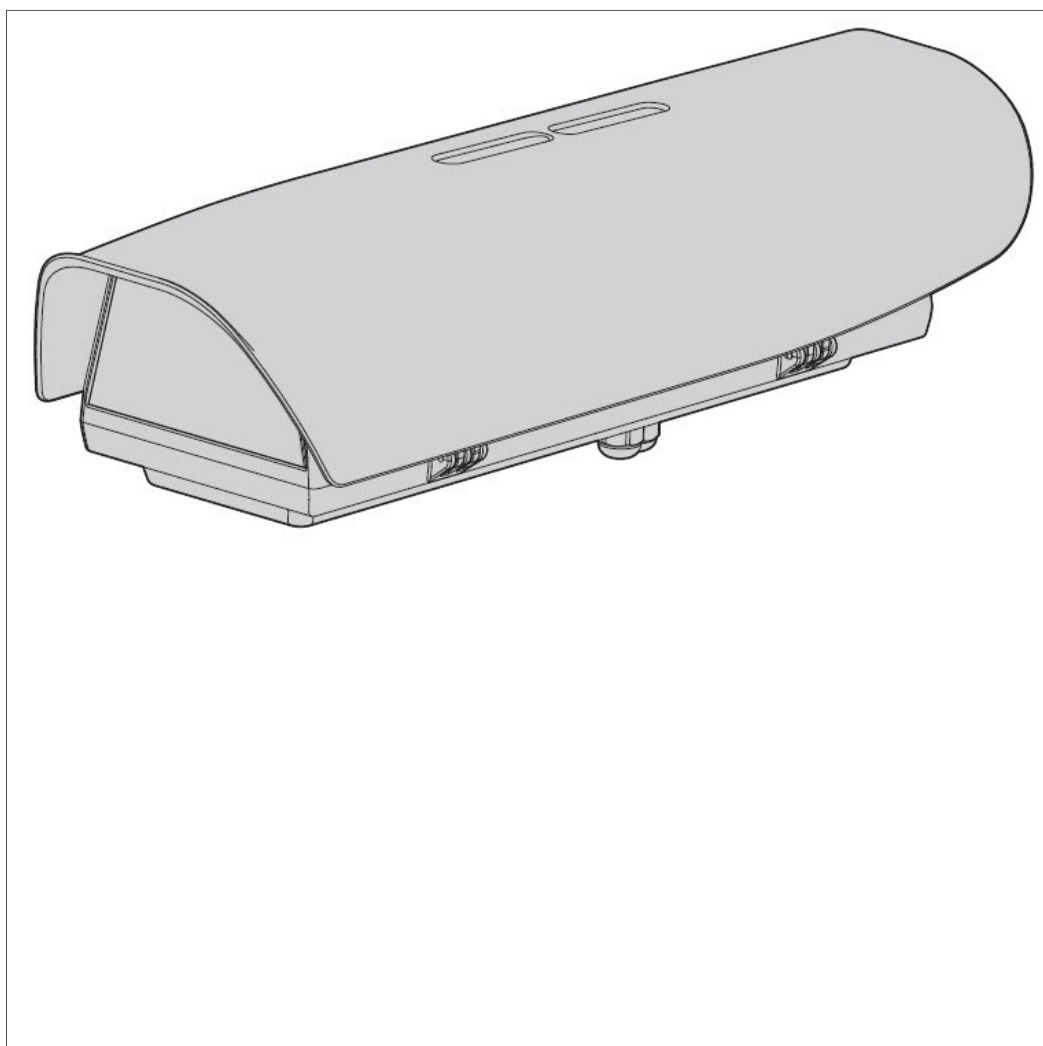**◆FLIR®**

User's manual
FLIR A500f/FLIR A700f 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: Class B digital devices.

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

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

⚠️ **WARNING**

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

NOTICE: This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

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

⚠️ **WARNING**

Applicability: Digital devices subject to 15.21.

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

⚠️ **WARNING**

Do not use screws that are too long. The depth of the holes in the camera is 4.0 mm (0.16 in) and 5.5 mm (0.22 in), see , page . Damage to the camera will occur if you use screws that are too long.

⚠️ **CAUTION**

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

⚠️ **CAUTION**

Do not use the camera in ambient temperatures higher than +40°C (+122°F), unless other information is specified in the user documentation or technical data. High temperatures can cause damage to the camera.

⚠️ **CAUTION**

The surface of the camera becomes hot. Use protective equipment when handling the camera in ambient temperatures higher than +40°C (+122°F).

⚠️ **CAUTION**

Do not apply solvents or equivalent liquids to the camera, the cables, or other items. For cleaning, refer to 12 *Cleaning the camera*.

⚠️ **CAUTION**

Do not use too much force when you clean the infrared lens. Damage to the infrared lens or to the anti-reflective coating of the lens can occur. For cleaning, refer to 12 *Cleaning the camera*.

<table>
<tr><td>⚠   CAUTION</td></tr>
<tr><td>Applicability: Cameras where you can remove the lens and expose the infrared detector.</td></tr>
<tr><td>Do not use compressed air of lower quality than "Process air" when you remove dust from the detector. Air of lower quality than "Process air" can contain high levels of contaminants. Damage to the detector can occur.</td></tr>
</table>

<table>
<tr><td>⚠   CAUTION</td></tr>
<tr><td>Applicability: Cameras with an automatic shutter that can be disabled.</td></tr>
<tr><td>Do not disable the automatic shutter in the camera for a long time period (a maximum of 30 minutes is typical). This can have an unwanted effect on the accuracy of the camera.</td></tr>
</table>

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.

3   Notice to user

3.1   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, which is available on the calibration certificate. You can also find the serial number by doing one of the following:

• Power off the camera. Carefully remove the lens without touching the detector window. A label with the serial number is available on the camera body under the lens.
• Log in to the camera web interface. Navigate to *Administration > System and firmware*. The serial number is available in the right pane.

3.2   Calibration

FLIR Systems recommends that you verify your calibration yearly. You can verify the calibration yourself or with the help of a FLIR Systems Partner. If preferred, FLIR Systems offers a calibration, adjustment, and general maintenance service.

3.3   Accuracy

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

3.4   Disposal of electronic waste

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

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

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

3.5   Training

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

3.6   Documentation updates

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

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

http://support.flir.com

In the download area you will also find the latest releases of manuals for our other products, as well as manuals for our historical and obsolete products.

3.7   Important note about this manual

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

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

3.8   Note about authoritative versions

The authoritative version of this publication is English. In the event of divergences due to translation errors, the English text has precedence. Any late changes are first implemented in English.

4 Customer help

4.1 General

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 FLIR's Partner Network

We welcome you to join our Partner Network at our Customer Support site!

The Partner Network is located at http://support.flir.com (partner registration needed) and is specifically aimed at distributors and system integrators.

Once your company has been approved, you can do one or more of the following, from a single location:

- Ask questions about a product or service.
- Search for existing answers about a product or service.
- Download manuals, software, and datasheets.
- Report quality issues.
- Request eRMAs.
- Download firmware updates.
- Send product feedback.
- See order status in SAP.

6   Introduction

The main function of the FLIR A500f/FLIR A700f series camera is, through adding the housing, to increase the environmental specification of the standard FLIR A400/A500/A700 series camera to IP 66 without affecting any of the features available in the camera itself.

When delivered, these cameras are already mounted into a environmental housing device from VIDEOTEC. The device is based on model HOV Hi-PoE IPM with special FLIR front with support for visual and thermal camera.

There is no active cooling, such as a cooling fan. However, the camera is mounted on FLIR custom made cooling plates and there are also extra cooling plates connecting the camera to the housing.

There is a heater which will control the powering of the camera. When it is started in cold environments, it will wait until the internal heater has increased the temperature inside of the camera, before the camera is powered up.

For more information on the environmental housing device, refer to the Instruction manual from the supplier of the device: https://www.videotec.com/.
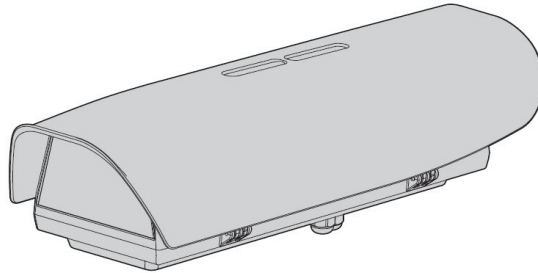
Typical applications where the cameras of the FLIR A500f/FLIR A700f series can be used are:

• Early fire detection
• Quality assurance
• Condition monitoring

For system application examples, refer to the User's manual of the FLIR A400/A500/A700 series.

7   Mechanical installation

7.1   Overview

The FLIR A500f/FLIR A700f series camera is an infrared thermal imaging camera for outdoor applications. It is intended to be mounted on a medium-duty fixed pedestal mount or wall mount commonly used in the CCTV industry. Cables will exit from the bottom of the camera housing.

The housing with camera requires PoE class 4 (25 W) to operate as intended.

7.2   Unpacking

When the unit is delivered, make sure the cardboard box is intact and that there are no signs that it has been dropped or scratched. If there are obvious signs of damage, contact FLIR Systems immediately.

When returning a faulty unit, the recommendation is to use the original packaging for shipping. Keep the packaging in case you need to send the unit for repairs.

7.3   List of contents

The following is included in the cardboard box:

• Infrared camera in housing
• Installation accessories
• Printed documentation

7.4   Mounting
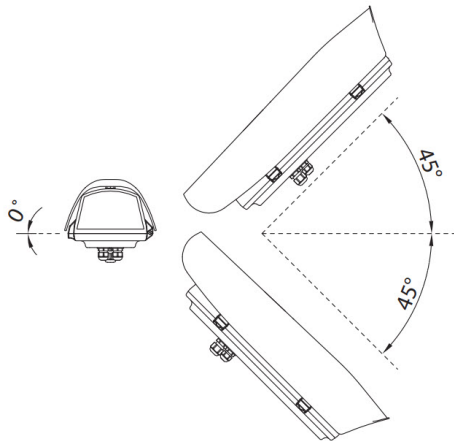
To guarantee weather-resistance, install the housing according to the following inclination limits:

• maximum tilt of the transversal axis = 0°
• maximum tilt of the longitudinal axis = ± 45°

The unit should not be hung upside down.

If the camera is to be mounted on a pole or tower or other hard-to-reach location, connect and operate the camera as a bench test at ground level prior to mounting the camera in its final position.

Ensure that the cables are long enough, given the selected mounting location and cable routing requirements. Route the cables before you install the unit.

7.5   Connecting network and power

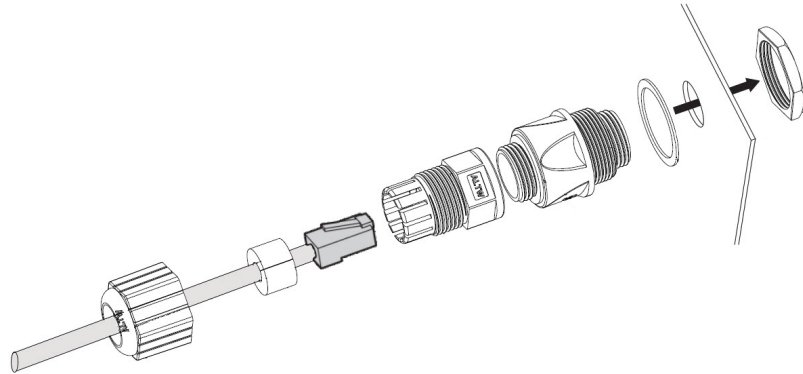Connect an Ethernet cable (PoE, 36–56 V DC) to the connector gland on the bottom of the housing device. Use the strain-relief clamp that is delivered with the camera:

Follow this procedure:

1. Unscrew the strain-relief clamp into one long (male) part and one short (female) part.
2. Pull out the plastic seal from the long clamp part.
3. Pull the network cable through the short clamp part, the plastic seal, and the long clamp part, in that order.
4. Connect the network cable to the connector gland on the bottom of the housing.
5. Attach the long clamp part to the connector gland, and then put the seal back.
6. Screw the clamp parts together. Make sure that no strain is put on the network cable.

7.6   Connecting Digital I/O (optional)

Note

- Use the terminal block to connect an external cable to the digital I/O. Do not connect the cable directly to the camera.
- The external cable is not included on delivery.

Follow this procedure:

1. Loosen the four screws on the sides, and then remove the cover and upper half of the housing body.
2. Remove the cap from the cable gland to be used on the bottom of the housing, and then pull the external cable through. Use the smallest cable gland to prevent water from entering the housing.
3. Connect the external cable (not included on delivery) to the terminal block. The camera itself is already connected to the terminal block.

8   Camera installation

It is assumed that the FLIR A500f/FLIR A700f system will be set up on an existing net-
work and be assigned an IP address from the DHCP server.

Prior to installing the camera, the recommendation is to set it up on an existing network
with a DHCP server, and then use the FLIR IP Config software to detect the camera on
that network. The FLIR IP Config scans for cameras automatically and you can identify
your camera by the MAC address printed on a label on the back of the camera. The cam-
era is then configured from a web browser.

Note   Use the latest version of FLIR IP Config.

To install the camera, follow this procedure:

1. On the computer to be used for managing the camera, download FLIR IP Config from
   http://support.flir.com, and then install it.
2. Connect the camera to power and the network.
3. The camera is set to use DHCP. On the computer, use FLIR IP Config to identify the
   camera on the network, and change the IP settings if necessary.
4. On the computer, do one of the following:

   a. Double-click on the camera in FLIR IP Config.
   b. Type the IP address of your camera into the address bar of a web browser.

   This displays the login view.

5. Log in using the username and password available on the camera calibration certifi-
   cate. This displays the web interface of the camera.
6. Use the web interface to configure the camera.

9   RTSP Streams

It is possible to establish streaming sessions with the FLIR A500f/FLIR A700f camera.

For more information, refer to the User's manual of the FLIR A400/A500/A700 camera series available online: https://support.flir.com/resources/chxa/.

10 Camera web interface

For information on how to configure the camera from the web interface, refer to the User's manual of the FLIR A400/A500/A700 camera series available online: https://support.flir.com/resources/chxa/.

11   EU Declaration of conformity

[See next page]

CE Declaration of Conformity – EU Declaration of Conformity

Product: FLIR-A8590 (Axxx) IR Camera in Environmental housing

Name and address of the manufacturer: FLIR Systems AB
                                                PO Box 7376
                                                SE-187 15 Täby, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration: FLIR-A8590 (Axxx) IR Camera in Environmental housing

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directives

Directive	2011/65/EU	RoHS
Directive	2014/30/EU	EMC Directive

Standards

Emission:	EN 55032:2015	Electromagnetic Compatibility Generic standards - Emission
Immunity:	EN 55035:2017	Electromagnetic Compatibility Generic standards - Immunity
RoHS:	EN 50581:2012	Technical documentation
Safety:	IEC 62368-1:2014 (2nd Ed)	Audio/video Information technology equipment

FLIR Systems AB
Quality Assurance

Lea Dabiri
Quality Manager

12 Cleaning the camera

12.1 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.

12.2 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.

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)
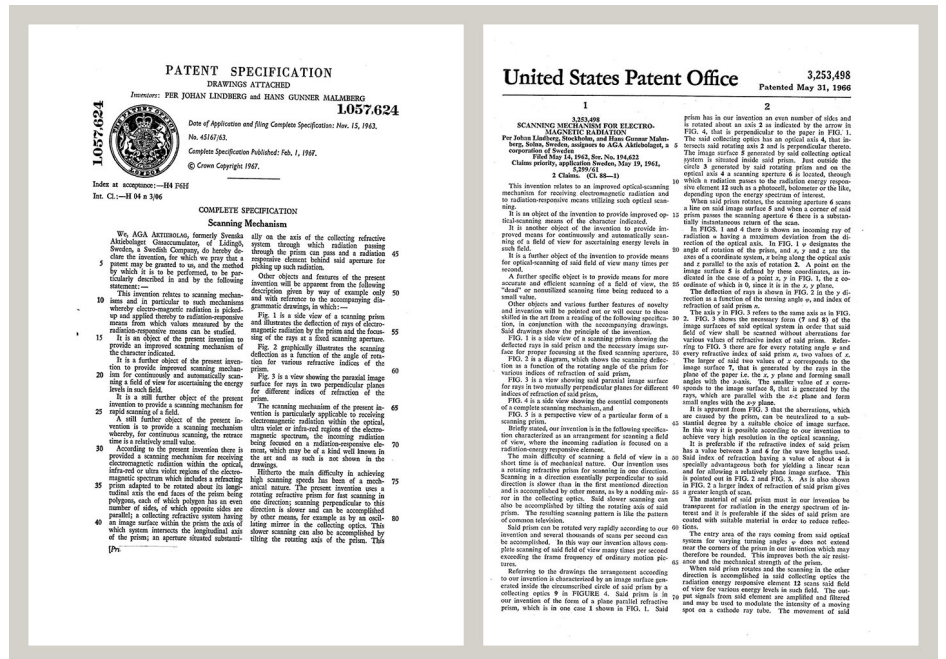- Extech Instruments (2007)

Figure 13.1 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 al 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.

13.1   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.

13.2   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.

13.3   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.