

## P/N: 71001-1103

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### Website

<http://www.flir.com>

### Customer support

<http://support.flir.com>

### Disclaimer

Specifications subject to change without further notice. Camera 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](mailto:exportquestions@flir.com) with any questions.



### Introduction

The FLIR A310 ex is an ATEX-proof solution, with a thermal imaging camera mounted in an enclosure—making it possible to monitor critical and other valuable assets in explosive atmospheres. Process monitoring, quality control, and fire detection in potentially explosive locations are typical applications for the FLIR A310 ex.

- Thermographic monitoring and early fire detection in an explosion-hazard area.
- Enclosures for infrared cameras in Ex zones 1, 2, 21, and 22.
- ATEX certified.
- Protection class IP67.
- Plug-and-play installation with the enclosure delivered ready for use.
- Available with additional options.

The certification covers the entire system, which includes the enclosure as well as all components inside of it, such as the infrared camera, heater, and integrated controller. This means that no additional certification is required for operation.

The integrated controller is equipped with two fiber optic and two Ethernet ports. This enables a flexible network integration in star ring topologies.

In addition, the integrated controller features several digital I/O channels and sensors for temperature, humidity, and pressure. Among other functions, the I/O channels enable the user to switch on/off the camera and the heater via remote control. Access is through an integrated web interface or Modbus TCP/IP.

### Explosion-proof housing

General data	
Ambient temperature range for operation	-20°C to +40°C
Protection class	IP67
Weight	6.7 kg (without camera and lens)
Empty volume	5.06 l
External dimensions (without sun shield)	D = 170 mm, L = 408 mm
Housing material	Nickel-plated aluminium
Surface	Powder coated
Protection window	Germanium, double-sided AR Coated, externally with additional hard-carbon layer
Maximum power of the additional heater	16 W
Operating voltage	24 V DC
Maximum electric connection power	60 W
Power cable	Helukabel 37264
Length of power cable	4 m (13 ft.)
Power cable configuration	Pigtail

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General data	
Integrated controller	4-port switch with 2 × fiber-optic LC 100Base-FX or 2 × RJ45(10/100) up-links, ring-topology support for reduced cabling effort, 2 × internal temperature sensors, air humidity and pressure sensor, digital output module controllable via Modbus TCP/IP or web interface to enable turning the heater on/off
Ethernet medium	Multi-mode breakout fiber AT-V(ZN)Y(ZN)Y 4G50/125 OM2
Length of Ethernet cable	4 m (13 ft.)
Ethernet configuration	Pigtail with FC connector

Explosion protection-specific data	
For use in EX zone	1, 2, 21, and 22
Ignition protection category	Flame-proof enclosure "d"
Maximum surface temperature (according to temperature class T6)	Maximum 85°C
ATEX certification (version -AXC)	EX-Protection Gas: II 2G Ex d IIC T6 Gb, EX-Protection Dust: II 2D Ex tb IIIC T85° Db
Verification certificate	ZELM 12 ATEX 0485 X

## Camera system

Imaging and optical data	
IR resolution	320 × 240 pixels
Thermal sensitivity/NETD	< 0.05°C @ +30°C (+86°F) / 50 mK
Field of view (FOV)	25° × 18.8°
Minimum focus distance	0.4 m (1.31 ft.)
Focal length	18 mm (0.7 in.)
Spatial resolution (IFOV)	1.36 mrad
Lens identification	Automatic
F-number	1.3
Image frequency	30 Hz
Focus	Automatic or manual (built in motor)
Zoom	1–8× continuous, digital, interpolating zooming on images

Detector data	
Detector type	Focal plane array (FPA), uncooled microbolometer
Spectral range	7.5–13 μm
Detector pitch	25 μm
Detector time constant	Typical 12 ms

Measurement	
Object temperature range	<ul style="list-style-type: none"> <li>–20 to +120°C (–4 to +248°F)</li> <li>0 to +350°C (+32 to +662°F)</li> </ul>
Accuracy	±4°C (±7.2°F) or ±2% of reading

Measurement analysis	
Spotmeter	10
Area	10 boxes with max./min./average/position



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<b>Measurement analysis</b>	
Isotherm	1 with above/below/interval
Measurement option	Measurement Mask Filter Schedule response: File sending (ftp), email (SMTP)
Difference temperature	Delta temperature between measurement functions or reference temperature
Reference temperature	Manually set or captured from any measurement function
Atmospheric transmission correction	Automatic, based on inputs for distance, atmospheric temperature and relative humidity
Optics transmission correction	Automatic, based on signals from internal sensors
Emissivity correction	Variable from 0.01 to 1.0
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
External optics/windows correction	Automatic, based on input of optics/window transmission and temperature
Measurement corrections	Global and individual object parameters
<b>Alarm</b>	
Alarm functions	6 automatic alarms on any selected measurement function, Digital In, Camera temperature, timer
Alarm output	Digital Out, log, store image, file sending (ftp), email (SMTP), notification
<b>Set-up</b>	
Color palettes	Color palettes (BW, BW inv, Iron, Rain)
Set-up commands	Date/time, Temperature (°C/°F)
<b>Storage of images</b>	
Storage media	Built-in memory for image storage
File formats	Standard JPEG, 16-bit measurement data included
<b>Ethernet</b>	
Ethernet	Control, result and image
Ethernet, type	100 Mbps
Ethernet, standard	IEEE 802.3
Ethernet, configuration	Pigtail with FC-connector (fiber)
Ethernet, communication	TCP/IP socket-based FLIR proprietary
Ethernet, video streaming	MPEG-4, ISO/IEC 14496-1 MPEG-4 ASP@L5
Ethernet, image streaming	16-bit 320 × 240 pixels @ 7-8 Hz • Radiometric
Ethernet, protocols	Ethernet/IP, Modbus TCP, TCP, UDP, SNMP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP



## FLIR A310 ex 25°

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<b>Shipping information</b>	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none"><li>• Infrared camera with lens, in explosion-proof housing</li><li>• Printed documentation</li><li>• User documentation CD-ROM</li><li>• Utility CD-ROM</li></ul>
Packaging, weight	
Packaging, size	495 × 370 × 192 mm (19.5 × 14.6 × 7.6 in.)
EAN-13	7332558008355
UPC-12	845188008703
Country of origin	Sweden

### **Supplies & accessories**

- T911288ACC; Pole mount adapter for wall mount kit

# (1) EC-TYPE-EXAMINATION CERTIFICATE

# ZELM ex

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**
- (3) EC-TYPE-EXAMINATION CERTIFICATE Number:

## ZELM 12 ATEX 0485 X

- (4) Equipment: **Camera protective housing IRCamSafeEx type AXB**
- (5) Manufacturer: **AT Automation Technology GmbH**
- (6) Address: **Hermann Bössow Straße 6–8, 23843 Bad Oldesloe - Germany**
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Prüf- und Zertifizierungsstelle ZELM Ex certifies as notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.  
The examination and test results are recorded in the confidential report ZELM Ex 1621119905.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 60079-0:2009** **EN 60079-1:2007**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.
- (12) The marking of the equipment shall include the following:



II 2G Ex d IIB T6 Gb

Braunschweig, 2012-03-19

## ZELM ex

Zertifizierungs-  
stelle

Zertifizierungsstelle ZELM EX  
Dipl.-Ing. Harald Zelm

## ZELM ex

ZELM ex  
Prüf- und Zertifizierungsstelle  
Siekgraben 56 · D-38124 Braunschweig

Sheet 1 of 2

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM EX. The English version is based on the German text. In the case of dispute, the German text shall prevail.

(13)

## SCHEDULE

ZELM ex

(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 12 ATEX 0485 X**

(15) Description of the Equipment

The camera protective housing IRCamSafeEX AXB is a protective housing for infrared cameras. The flameproof housing allows the installation of an infrared camera including electrical peripherals, which are used for control, monitoring and data processing. There is a germanium window which is transmissible for infrared rays at the header of the housing. At the same area is a shiftable two-stage heater to prevent freezing and thawing of the window. Additional peripherals are a ventilator, a AC/DC power supply and electronic components which are used to control the camera and process the IR-camera data. The data are processed inside of the housing. The communication is carried out via an Ethernet interface on copper or optic fibre basis.

The permissible ambient Temperature range is:  $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +40^{\circ}\text{C}$

Electrical Data

Power supply (nominal values): 115V resp. 230V AC 50/60Hz 60VA resp.  
24V DC  $\pm 15\%$ , 60W

Data connection Ethernet (copper or optic fibre) according IEEE 802.3

(16) Test Report No.

ZELM Ex 1621119905

(17) Special Conditions

1. The manual has to be observed.
2. The camera protective housing should only be used with the associated camera system.
3. Opening the housing within the potential explosive atmosphere is allowed when de-energized and after specified waiting time.
4. The germanium window should be treated with extraordinary diligence.
5. The use of the Ethernet interface within POE mode (power over Ethernet) is excluded.

(18) Essential Health and Safety Requirements

met by standards

Braunschweig, 2012-03-19

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Dipl.-Ing. Harald Zelm

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Sheet 2 of 2

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# 1<sup>st</sup> Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

**ZELM ex**

## to EC-type-examination Certificate

### ZELM 12 ATEX 0485 X

Equipment: **Camera protective housing IRCamSafeEx type AXB**

Manufacturer: **AT Automation Technology GmbH**

Address: **Hermann Bössow Straße 6–8, 23843 Bad Oldesloe - Germany**

#### Description of supplement

Within the scope of the 1<sup>st</sup> Supplement is the introduction of an alternative type of the camera protective housing IRCamSafeEX. The alternative version is intended for the use in potentially explosive gas and dust atmospheres within groups IIC resp. IIIC. The alternative version of the camera housing obtains the type designation:

#### **IRCamSafeEx type AXC**

The marking of the camera protective housing IRCamSafeEX type AXC shall include the following:



**II 2G Ex d IIC T6 Gb and**

**II 2D Ex tb IIIC T85°C Db**

The Special Conditions are extended as follows:

6. The type of protection of the housing depends on the proper installation and selection of the used cable gland. Only the cable glands with according separate EC-type-examination certificate installed by the manufacturer should be used. The details in the manual have to be considered during installation.

The Electrical Data, all further data and the Special Conditions remain unchanged and are also valid for this 1<sup>st</sup> Supplement.

The equipment could be manufactured in future under consideration of this 1<sup>st</sup> supplement

**1<sup>st</sup> Supplement  
to EC-Type-Examination Certificate ZELM 12 ATEX 0485 X**

**ZELM ex**

Report No.

ZELM Ex 0411225918

Essential Health and Safety Requirements

The essential health and safety requirements are still fulfilled by compliance with the following standards:

**EN 60079-0:2009**

**EN 60079-1:2007**

**EN 60079-31:2009**

Braunschweig, 2012-05-10

**ZELM ex**

**Zertifizierungs-  
stelle**



Zertifizierungsstelle ZELM ex  
Dipl.-Ing. Harald Zelm

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ex**

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Siekgraben 56 · D-38124 Braunschweig

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**EG-Konformitätserklärung**  
**EC-Declaration of Conformity**  
**Déclaration de Conformité CE**






**AT – Automation Technology GmbH • Hermann-Bössow-Strasse 6 – 8 • D-23843 Bad Oldesloe, Germany**  
erklärt in alleiniger Verantwortung, declares in its sole responsibility, déclare sous sa seule responsabilité

**dass das Produkt**  
that the product  
que le produit

**IRCamSafeEX-AXB**  
**IRCamSafeEX-AXC**

**Kennzeichnung, marking, marquage (-AXB):**  
**Kennzeichnung, marking, marquage (-AXC):**

 II 2G Ex d IIB T6 Gb  
 II 2G Ex d IIC T6 Gb  
 II 2D Ex tb IIIC T85° Db

**mit der EG-Baumusterprüfbescheinigung:**  
under EC-Type Examination Certificate:  
avec Attestation d'examen CE de type:

**ZELM 12 ATEX 0485 X**  
**(ZELM Ex e.K.**  
**Siekgraben 56, 38124 Braunschweig)**

**Kenn-Nr. der benannten Stelle:**  
Notified Body number:  
No de l'organisme de certification:

**0820**

**auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt**  
which is the subject of this declaration, is in conformity with the following standards or normative documents  
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

**Bestimmungen der Richtlinie**  
Terms of the directive  
Prescription de la directive

**Nummer sowie Ausgabedatum der Norm**  
Number and date of issue of the standard  
Numéro ainsi que date d'émission de la norme

**94/9/EG: ATEX-Richtlinie**  
94/9/EC: ATEX Directive  
94/9/CE: Directive ATEX

EN 60079-0: 2009  
EN 60079-1: 2007  
EN 60079-14: 2009  
EN 60079-17: 2008  
EN 60079-28: 2007  
EN 60079-31: 2009

**2006/95/EG: Niederspannungsrichtlinie**  
2006/95/EC: Low Voltage Directive  
2006/95/CE: Directive Basse Tension

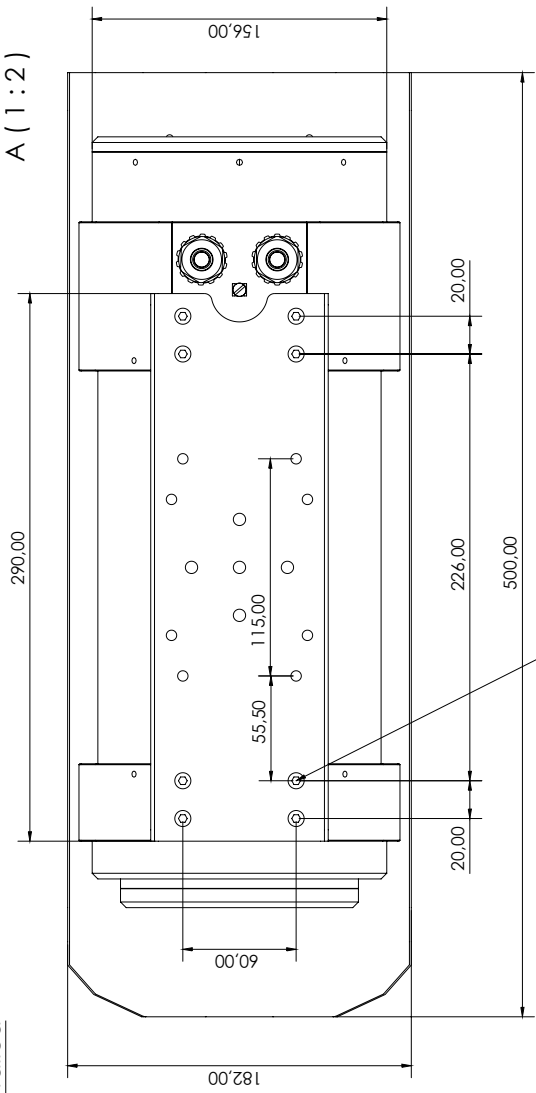
**2004/108/EG: EMV-Richtlinie**  
2004/108/EC: EMC Directive  
2004/108/CE: Directive CEM

Bad Oldesloe, 16. Mai. 2012

**Ort und Datum**  
Place and Date  
Lieu et date

**Dr. André Kasper**  
**Leiter Qualitätssicherung**  
Director Quality Management Dept.  
Directeur Dept. Assurance de Qualité

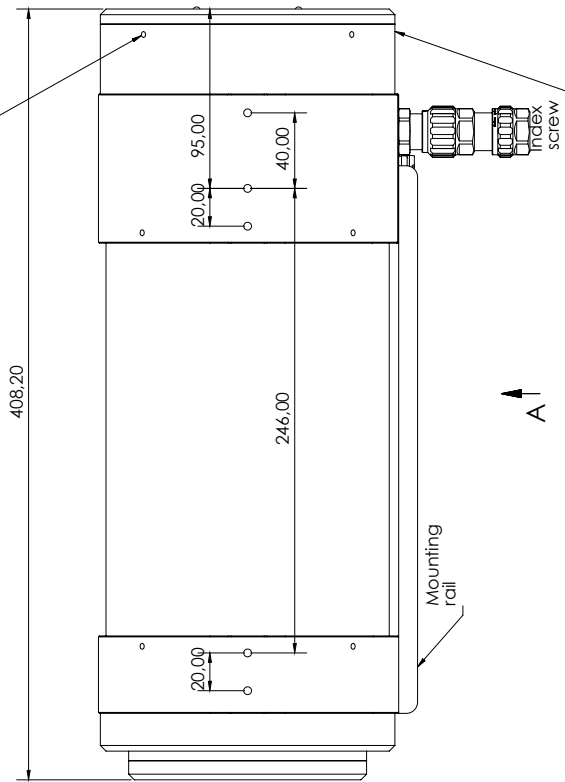
Overview with Sunshield installed



A (1:2)

Drawing without Sunshield

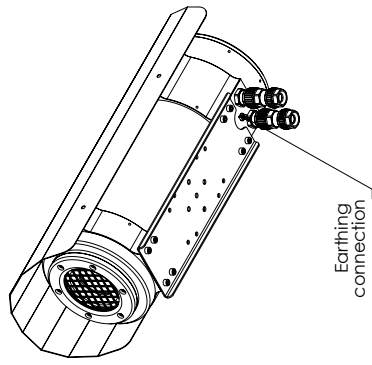
8x Mounting holes with M5x8 deep for Mounting rail or mounting plate



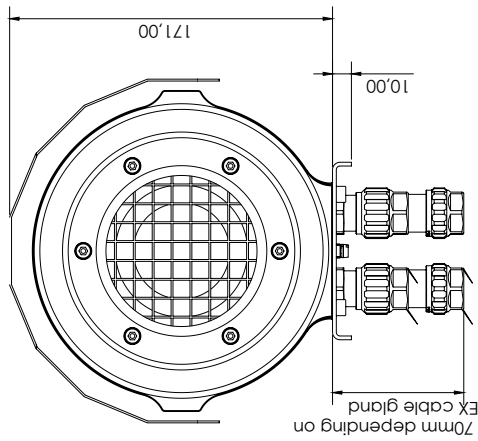
Type label

Hole for installation wrench

A ↑

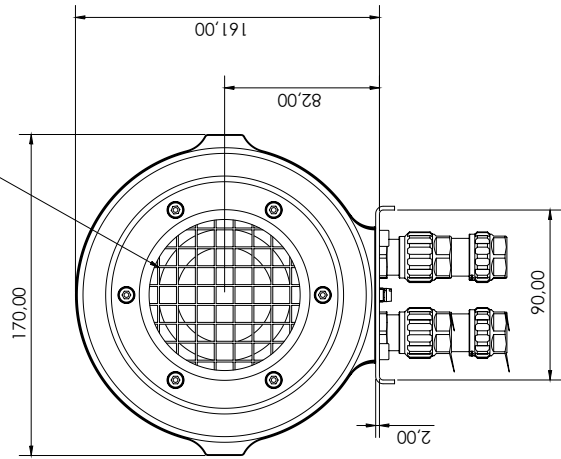


Earthing connection



70mm depending on FK cable gland

Protective grid



All dimensions in mm

October 28, 2011

AQ115813

## Certificate of Conformity

This is to certify that the System listed below has been designed and manufactured to meet the requirements, as applicable, of the following EU-Directives and corresponding harmonising standards. The systems consequently meet the requirements for the CE-mark.

Directives:

**Directive 2004/108/EC;** **Electromagnetic Compatibility**

**Directive 2006/95/EC;** **“Low voltage Directive” (Power Supply)**

**Directive 2002/96/EC** **Waste electrical and electronic equipment; WEEE**  
**(As applicable)**

Standards:

**Emission:** **EN 61000-6-3; Electromagnetic Compatibility**  
**Generic standards - Emission**

**Immunity:** **EN 61000-6-2; Electromagnetic Compatibility;**  
**Generic standards – Immunity**

**Safety (Power Supply):** **EN 60950** (or other)  
**Safety of information technology equipment**

**System:** **FLIR A3xx Series**

FLIR Systems AB  
Quality Assurance



Olof Gawell  
Director

The Forward Looking Infrared Company