FLIR A310 ex 25°

P/N:

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Website

http://www.flir.com

Customer support

http://support.flir.com

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, 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	–40°C to +60°C (–40°F to +140°F)
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	
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, 22
Ignition protection category	Flame-proof enclosure “d”
Maximum surface temperature (according to temperature class T6)	Maximum 85°C
ATEX certification (version -AXC)	• II 2G Ex db IIC T6 / T5 • II 2D Ex tb IIIC T85° / T100
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	• –20 to +120°C (–4 to +248°F) • 0 to +350°C (+32 to +662°F)
Accuracy	±4°C (±7.2°F) or ±4% of reading

Measurement analysis	
Spotmeter	10 (with no image streaming)
Area	10 boxes with max./min./average/position (with no image streaming)
Isotherm	1 with above/below/interval
Measurement option	Measurement Mask Filter Schedule response: File sending (ftp), email (SMTP)

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Measurement analysis	
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

Alarm	
Alarm functions	6 automatic alarms on any selected measurement function, Digital In, Camera temperature, timer
Alarm output	Log, store image, file sending (ftp), email notification (SMTP). With an additional FLIR I/O module (T130090 or T130091), the system can provide up to 8 digital outputs and 8 analog outputs that can be connected to any camera analytic function or the cameras status. These outputs can be connected to existing alarm infrastructure, PLCs, or data loggers.

Set-up	
Color palettes	Color palettes (BW, BW inv, Iron, Rain)
Set-up commands	Date/time, Temperature (°C/°F)

Storage of images	
Storage media	Built-in memory for image storage
File formats	Standard JPEG, 16-bit measurement data included

Ethernet	
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, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP

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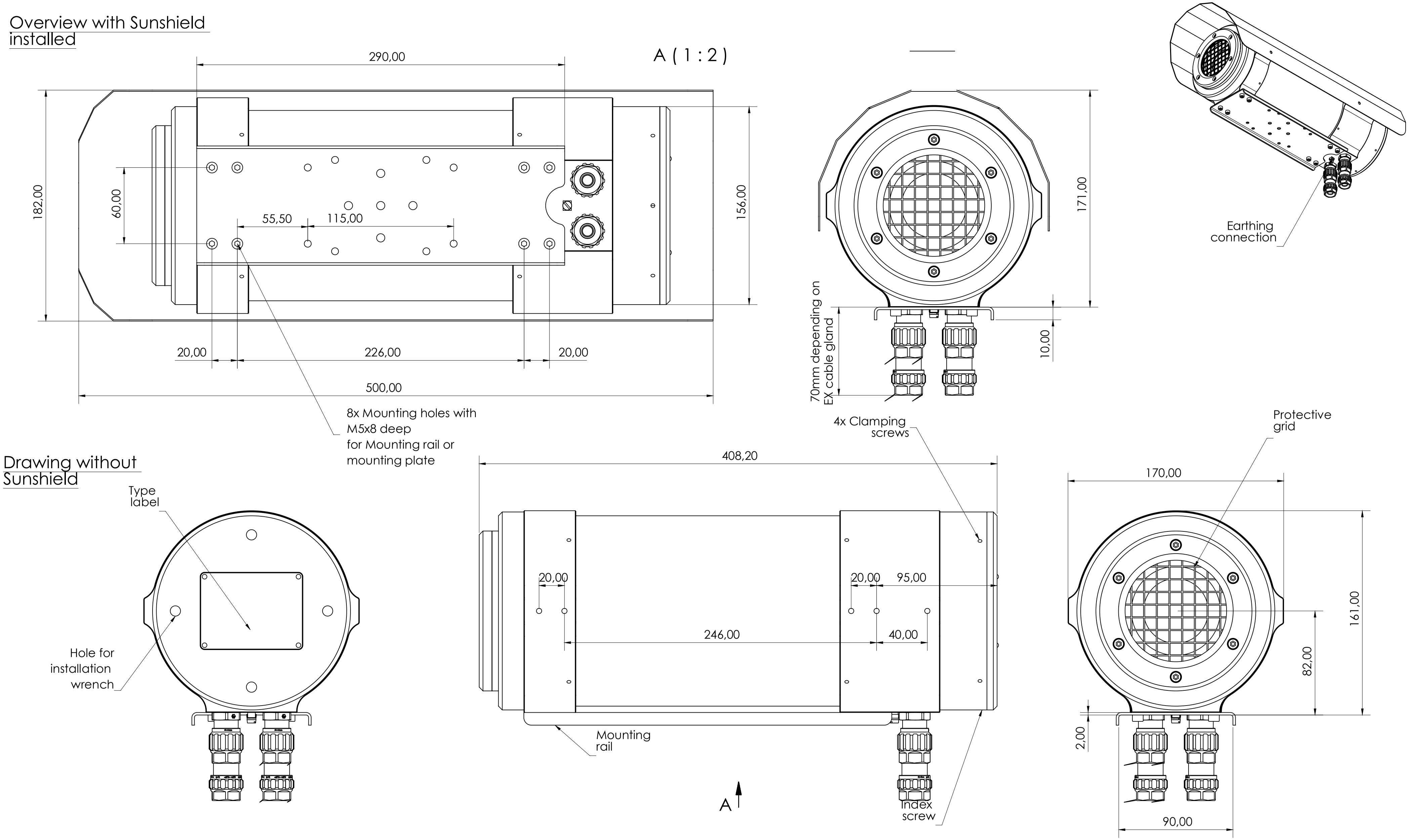
Shipping information	
Packaging, type	Cardboard box
List of contents	• Infrared camera with lens, in explosion-proof housing • Printed documentation • Utility CD-ROM
Packaging, weight	
Packaging, size	495 × 370 × 192 mm (19.5 × 14.6 × 7.6 in.)
EAN-13	7332558008355
UPC-12	845188008703
Country of origin	Sweden

Supplies & accessories:

- T129252; Special temperature range -20 to +700 deg C
- T129253; Special temperature range -20 to +500 deg C
- T129254; High temperature measurement option -20 to +2000 deg C
- T130151; Special temperature range -20 to +2000 deg C
- T130090; I/O module MIO-A310-1
- T130091; I/O module MIO-A310-7
- T911288ACC; Pole mount adapter for wall mount kit
- T199713; ThermoVision CM Panel, max. 4 cameras
- T199712; ThermoVision CM Panel, max. 9 cameras
- T130169; Thermovision CM, max. 4 cameras
- T130170; Thermovision CM, max. 9 cameras
- T911263ACC; Wall mount kit
- INST-EW-0165; Extended Warranty 1 Year for A6xx, A310ex, T640/bx, T650sc, T660
- INST-EWGM-0165; Extended Premier Warranty 1 Year for A300f, A310ex, A310f, A310f, A315f, A6xx, B/T400 mkI, T10xx
- INST-GM-0155; Calibration incl General Maintenance for A300f, A310ex, A310f, A310pt, A315f, A6xx, P6xx, T10xx



All dimensions in mm

Konstr/Drawn: H. ÖSTLING | Datum/Date: 2014-04-14 | Kontr/Check: JAMA

Ändrad av/Modified by: H. ÖSTLING | Ändrat/Modified: 2014-05-15

Gen tol ISO 2768-mK

Basic Dimensions

A3xxEx

Skala/Scale: 2:1 | Blad/Sheet: 1(1) | Size: A0

Ritn nr/Drawing No: T128183 | Rev: A

FLIR

(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

(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: $-20°C \leq T_{amb} \leq +40°C$

Electrical Data

Power supply (nominal values):	115V resp. 230V AC 50/60Hz 60VA resp. 24V DC ±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

ZELM ex

Zertifizierungs-stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

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

1st 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 1st 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 1st Supplement.

The equipment could be manufactured in future under consideration of this 1st supplement

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

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

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

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

3rd Supplement

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

ZELM ex

EC Examination Certificate

ZELM 12 ATEX 0485 X

Device:	**Kameragehäuse IRCamSafeEx Typ AXC**
Manufacturer:	**AT Automation Technology GmbH**
Address:	**Hermann Bössow Straße 6–8, D–23843 Bad Oldesloe**

Description of Supplement

The 3rd Supplement concerns changes to the internal and external structure of the device, the extension of the permitted temperature range, further permitted internal fixtures and checking for compliance with the current standards. The explosion protection concept of the equipment is not affected by these changes and continues to apply.

The marking of the camera body IRCamSafeEx type AXC is as follows:

II 2 G Ex db IIC T6-T5 Gb
II 2 D Ex tb IIIC T...°C Db

The temperature class or the maximum surface temperature depends on the maximum ambient temperature and is shown in the table below

Maximum Ambient Temperature:	Temperature Class/ Maximum Surface Temperature:
+ 40°C	T6 / 85°C
+ 60°C	T5 / 100°C

The minimum ambient temperature: - 40°C

The "Special Conditions" for the future are as follows:

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

Special Conditions

1. The manual and the Ex-Documentation must be observed, in particular the provisions for sufficient equipotential bonding and grounding and surge protection.
2. The camera housing may only be used with the associated camera system.
3. Opening the housing in the hazardous area is possible with the power switched off after a waiting period of at least 10 minutes after it is switched off. The electrical connection must be carried out only while de-energized. Each aperture that was opened must be resealed and locked in accordance with the conditions specified in the User's Manual
4. The germanium window should be treated with special care. Mechanical stress is to be avoided.
5. The operation of the Ethernet interface with POE mode (Power over Ethernet) is excluded.
6. The repair of the flameproof camera body IRCamSafeEx Typ AXC is not allowed, including the flameproof column.
7. The type of protection depends on the correct selection and proper installation of the cable glands and plugs. All openings must be provided with appropriate cable glands and sealing plugs for unused ports. The cable glands and sealing plugs may only be used in accordance with the standards EN 60079-0, EN 60079-1 and EN 60079-31 certified with separate EC-type examination certificate. These must be certified for a temperature range of at least -40°C to +85°C. The unused cable glands and sealing plugs must have a thread size of M20x1.5 and the depth must be at least 8mm.
8. The device must only be used with suitable cable glands which comply with the relevant requirements of the current EN 60079-14 standard. These must be suitable for an operating temperature of at least -40°C to +85°C.

The electrical and all other data remain unchanged and also apply to this 3rd supplement. The camera body IRCamSafeEx Typ AXC is only allowed to be manufactured in consideration of these changes in the future.

Test Report No.

ZELM Ex 01716281068

Essential Health and Safety Requirements

The essential health and safety requirements are still to be met by compliance with the following standards:

EN 60079-0:2012+A11:2013 **EN 60079-1:2014** **EN 60079-31:2014**

Braunschweig, 2016-04-19

Zertifizierungs-
stelle

Certification Authority ZELM ex
Dipl.-Ing. Harald Zelm

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

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):	**Ex II 2G Ex d IIB T6 Gb** **Ex II 2G Ex d IIC T6 Gb** **Ex 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. Andrè Kasper
Leiter Qualitätssicherung
Director Quality Management Dept.
Directeur Dept. Assurance de Qualité

FLIR | The World's Sixth Sense™

April 24, 2017 Täby, Sweden AQ320234

CE Declaration of Conformity – EU Declaration of Conformity

Product: FLIR A3XX -series including A3XXSC

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 A3XX -series including A3XXSC.
The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directives:

Directive	2014/30/EU	Electromagnetic Compability
Directive	2014/35/EU	Low Voltage Directive (Power Supply)
Directive	2012/19/EU	Waste electrical and electric equipment

Standards:

Emission:	EN 61000-6-3:2006	Electromagnetic Compability Generic standards – Emission
Immunity:	EN 61000-6-2:2005	Electromagnetic Compability Generic standards – Immunity
Safety (Power supply):	EN 60950-1	Information technology equipment

FLIR Systems AB
Quality Assurance

Lea Dabiri
Quality Manager

FLIR | The World's Sixth Sense™

October 11, 2017 Täby, Sweden AQ320260

CE Declaration of Conformity – EU Declaration of Conformity

Product: I/O module MIO -boards
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:

I/O module MIO -boards:
T130087 I/O module MIO-AX8-7
T130089 I/O module MIO-FCR-7
T130091 I/O module MIO-A310-7
T130086 I/O module MIO-AX8-1
T130088 I/O module MIO-FCR-1
T130090 I/O module MIO-A310-1

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

Directives:

Directive	2014/30/EU	Electromagnetic Compability
Directive	2011/65/EU	RoHS and 2015/863/EU

Standards:

EMC:	EN 55022:2010	Information technology equipment – radio disturbance
	EN 55024:2010	Information technology equipment - immunity
RoHS	EN 50581:2012	Technical documentation

FLIR Systems AB
Quality Assurance

Lea Dabiri
Quality Manager