

## AXIS Ex Series

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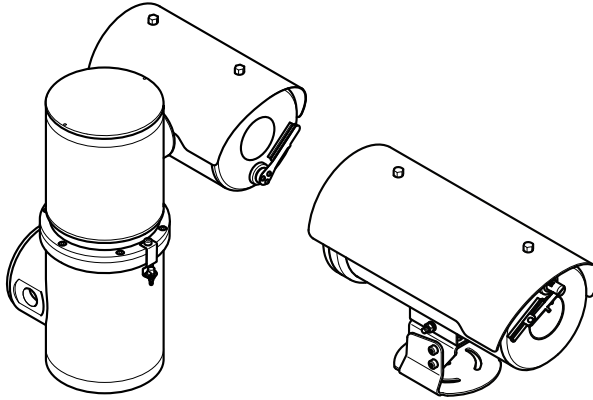
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### Version history

Version	Date	Details
1.0	2021-09-17	First release
2.0	2022-01-10	Added mining information
3.0	2023-05-12	Added information about type F31111 Updated document with new part number

## Housing

The AXIS Ex camera series has four housings: two types with PTZ housings and two types with fixed housings, each with visual imaging options and thermal imaging options. The visual cameras include a wiper.



Type	Housing		Details
P21	PTZ	Ø138 L210 housing	Wiper
P23	PTZ	Ø138 L210 housing	Thermal imager
F31xxx	Fixed	Ø138 L290 housing	Wiper
F33	Fixed	Ø138 L290 housing	Thermal imager

## Specific conditions of use

### **⚠ WARNING**

Always refer to the product certificates for any specific conditions of use.

- Flameproof joints are not to be modified.
- Cable temperature can exceed 60 °C. Use a suitable cable for the end application.
- Cable entries into the equipment shall utilize suitably certified cable glands, thread adaptors or plugs that shall provide a minimum degree of protection to maintain the ingress rating of the equipment. As a minimum this should be IP66 or IP67.
- Unused cable entry apertures shall be closed with suitably certified blanking plugs.
- The protective guard on the thermal housings must not be removed.
- Yield strength of the end cap fasteners is A4-80.
- For coal mining applications, equipment shall only be installed where it has been assessed that there is a low risk of mechanical damage from impacts which could compromise the enclosure's flameproof protection.
- The equipment should be placed in an area where there is a low risk of mechanical damage.

## Installation

### ▲WARNING

All installation and maintenance must be carried out by a suitably skilled electrician in accordance with all local and national standards and codes of practice e.g. NFPA70 (National Electrical Code), CSA C22.1 (Canadian Electrical Code, Part I Safety Standard for Electrical Installations), IEC/EN 60079-14 (Explosive atmospheres - Electrical installations design, selection and erection) and IEC/EN 60079-17 (Explosive atmospheres. Electrical installations inspection and maintenance).

- The installer must comply with the technical data attached.
- Ensure that all items are approved and certified for the environmental and installation requirements. The rating label must be checked to ensure the unit is being used within the correct ambient temperature and environmental conditions, and that the power supply is suitable.
- Use stainless tools to avoid rust stains or pitting corrosion. Stainless steel is corrosion-resistant, but extraneous rust can appear if the material is handled incorrectly.
- Equipment must be installed  $\leq 2\ 000$  m above sea level.
- Modifications or design changes to the devices are not allowed.
- Safety rules and national regulations must be observed.
- Never install devices in areas that may exceed the ambient temperature range.
- Aggressive substances may require extra protection.
- The device must be protected by additional means of protection if it is exposed to excessive external stress, that is vibration, heat or impact.
- If the device is not utilized in a manner specified by the manufacturer, the device's protection may be impaired. Incoming cables must comply with the national standards. Suitably certified cable glands and blanking plugs must be used. Thread form must be M25x1.5 or M20x1.5, depending on product type, with tolerance 6g/6H according to ISO 965. The cable gland used must not invalidate the IP rating of the enclosure and must be rated for the installation.
- Devices of type P21 must use CMP type PXSS2K cable glands. We recommend using the following cable glands:
  - Ex d Cable Gland M20 armored cable
  - Ex d Cable Gland M20 non-armored cable
- All entries must be plugged with suitable certified equipment.
- Fixing brackets must be tightened upon installation. Suitable screws must be used. See the product's datasheet for information about the product weight.
- Replacement parts may only be installed using component parts as specified by Axis Ex AB.
- Distances between the flamepaths and sunshield and between the flamepaths and any other obstruction (such as a wall or a ceiling) have been considered in the ATEX/IECEX

and North American certifications and do not require any minimum clearance to be maintained for hazardous environment installation.

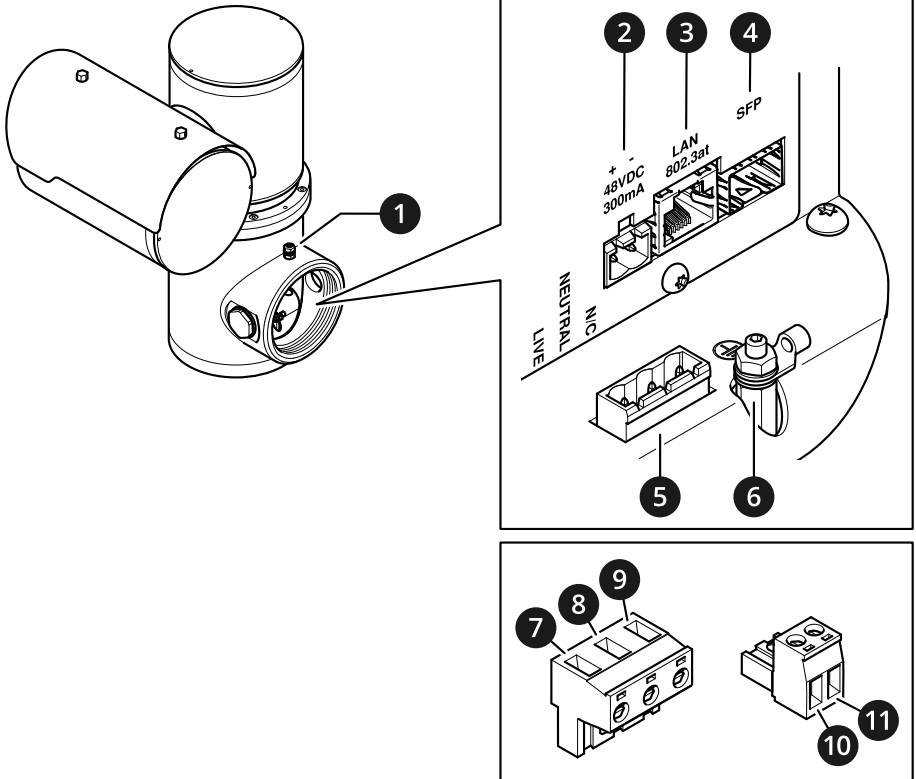
### Wiring

#### **⚠ WARNING**

The device must be electrically installed and serviced by skilled persons.

- AC mains electrical supply should include circuit breaker rated maximum 20 A.
- The device requires a surge protector device, as part of the installation, to prevent transient overvoltage exceeding 2 500 Vpk. AC mains electrical supply should have a readily accessible all-pole mains disconnect device provided as part on the building installation. The device must be connected to protective earth through the internal earth terminal connection.
- External earthing points are for supplemental bonding only where local authorities permit or require such a connection.
- Earth connection ferrule should be of a suitable material as to avoid corrosion.
- Disconnect the device from the power source before starting any operations.
- Ensure that the voltage is correct before beginning any maintenance or connections.
- Use suitably color coded conductors or other means of identification.
- Earthing conductors should be green and yellow.
- Take extra care to not damage the thread form.

Wiring of P21 and P23



- 1 Earth supplemental bonding
- 2 TB1 auxiliary OUT
- 3 Network connector RJ45
- 4 SFP cage
- 5 TB2 supply IN
- 6 Earth stud
- 7 TB2 supply live
- 8 TB2 supply neutral
- 9 TB2 N/C
- 10 TB1 auxiliary OUT +48 V DC 14.4 W max
- 11 TB1 auxiliary OUT 0 V DC

Connect the PTZ camera wiring to the connection chamber at the base of the device.

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1. Remove the two locking grub screws. Use the included stainless steel bits.
2. Remove the threaded chamber cover. To avoid damaging the threads, use the included removal tool.
3. Route the cables through threaded entry points and suitably certified glands.

### **⚠WARNING**

Earthing connection must be minimum 14 AWG (2 mm<sup>2</sup>) conductor with green and yellow insulation. Connect through the M4 earth stud using the supplied crimp ring terminal. Tighten with a 7 mm ring spanner or socket.

The terminal plugs can be disconnected to allow easy termination outside of the enclosure. For TB1 and TB2 use wire between 18 - 12 AWG (0.8 - 3.0 mm<sup>2</sup>).

### **⚠WARNING**

Only one wire should be connected to each clamping point.

An external earth connection point is available for up to 11 AWG (4 mm<sup>2</sup>) connection. When used, it shall be used with a crimp ring terminal.

Use an RJ45 connector (CAT5 or higher) for network connection. Optionally, an SFP slot is available for an additional network connection, this port utilizes various SFP modules including fiber optic.

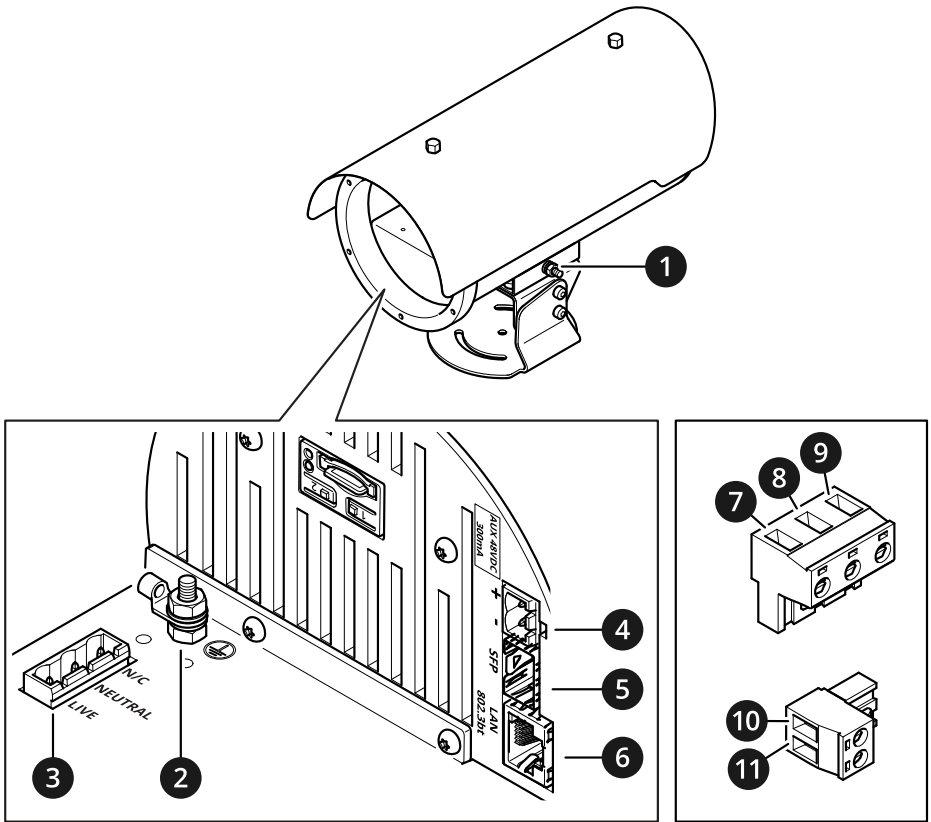
### **⚠WARNING**

The use of a fiber optic cable and internal connections shall comply with requirements of UL/IEC/EN 60079-14.

When wiring is completed, fasten the threaded chamber cover and tighten until the joint is closed. Tighten the two locking grub screws. Use the included stainless steel bits.



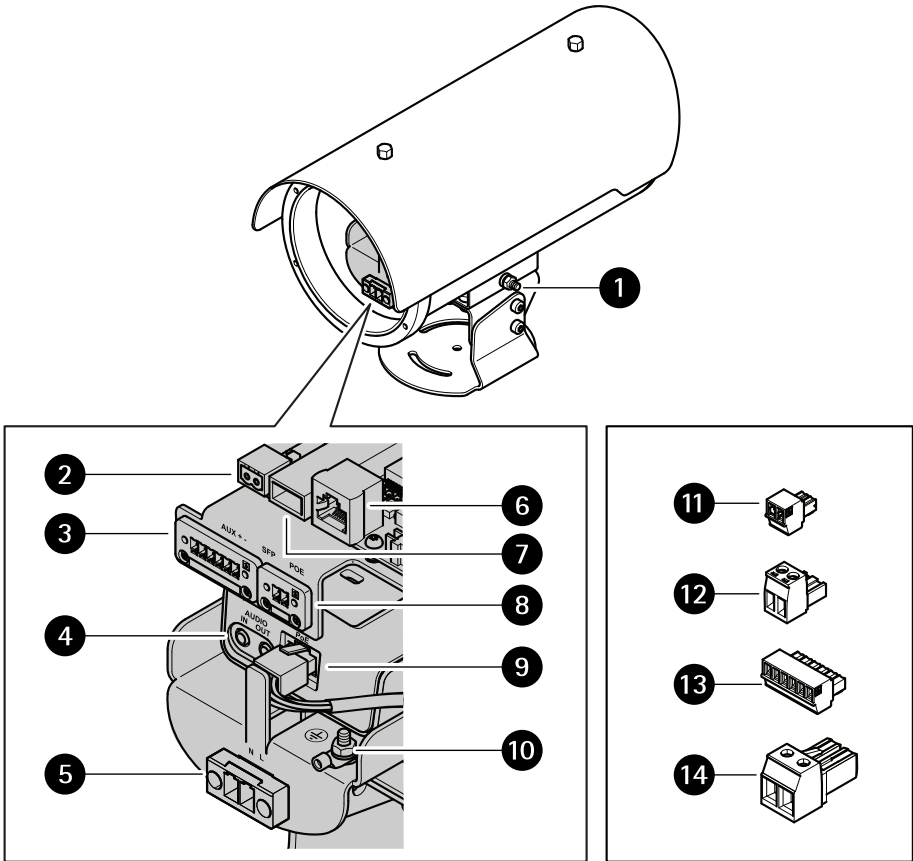
Wiring of F31 and F33



- 1 Earth supplemental bonding
- 2 Earth stud
- 3 TB2 supply IN
- 4 TB1 auxiliary OUT
- 5 SFP cage
- 6 Network connector RJ45
- 7 TB2 supply live
- 8 TB2 supply neutral
- 9 TB2 N/C
- 10 TB1 auxiliary OUT +48 V DC 14.4 W max
- 11 TB1 auxiliary OUT 0 V DC

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## Wiring of F31111



- 1 Earth supplemental bonding
- 2 Auxiliary OUT connector
- 3 I/O connector
- 4 Audio connectors
- 5 AC mains IN connector
- 6 Network connector RJ45 (PoE)
- 7 SFP connector
- 8 RS485 BA connector
- 9 Internal wiring - Don't modify!
- 10 Earth stud

- 11 *RS485 terminal*
  - Pin 1: A*
  - Pin 2: B*
- 12 *Auxiliary OUT terminal*
  - Pin +: Auxiliary OUT +48 VDC 14.4 W max*
  - Pin -: Auxiliary OUT 0 VDC*
- 13 *I/O terminal*
  - Pin 1: DC ground, 0 VDC*
  - Pin 2: DC output, 12 V, max load 50 mA*
  - Pin 3–4: Digital input or supervised input, 0 to max 30 VDC*
  - Pin 5–6: Digital output, 0 to max 30 VDC, open drain, 100 mA*
- 14 *AC mains IN terminal*
  - Pin N: Supply neutral*
  - Pin L: Supply live*

Connect the fixed camera wiring to the connection terminal at the back of the device.

1. Removing the 6 M5x12 A4 socket head screws. Use the included stainless steel bits.
2. Remove the back cover. Carefully pull the back cover off.
3. Route the cables through threaded entry points and suitably certified glands.

### **▲CAUTION**

Take extra care to not damage the joint surface.

### **▲WARNING**

Earthing connection must be minimum 14 AWG (2 mm<sup>2</sup>) conductor with green and yellow insulation. Connect through the M4 earth stud using the supplied crimp ring terminal. Tighten with a 7 mm ring spanner or socket.

The terminal plugs can be disconnected to allow easy termination outside of the enclosure. For TB1 and TB2 use wire between 18 - 12 AWG / 0.8 - 3.0mm<sup>2</sup>.

### **▲WARNING**

Only one wire should be connected to each clamping point.

An external earth connection point is available for up to 11 AWG (4 mm<sup>2</sup>) connection. When used, it should be used with a crimp ring terminal.

Use an RJ45 connector (CAT5 or higher) for network connection. Optionally, an SFP slot is available for an alternative network connection, this port utilizes various SFP modules including fiber optic.

You can also use the RJ45 network connection to supply power to the housing. When used with Power over Ethernet (PoE), the Power Sourcing Equipment (PSE) shall comply with IEEE 802.3bt type 3 Class 6 PoE.

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### **⚠ WARNING**

The use of a fiber optic cable and internal connections shall comply with requirements of UL/IEC/EN 60079-14.

When wiring is completed, fit the back cover. Tighten the 6 M5x12 A4 socket head screws to 6 Nm  $\pm$ 0.5 torque. Use the included stainless steel bits.

## Maintenance

The device does not contain any servicable parts. No covers or seals should be removed.

### **▲WARNING**

It is strictly prohibited to carry out any attempt of repairs other than by approved and trained personnel.

Check all mounting fasteners for tightness at a regular interval.

To maintain a smooth operation, clean the device regularly. Use water, mild detergent and a soft cloth.

## Battery

Devices of type F31111 use a 3.0 V BR2330A lithium battery as the power supply for its internal real-time clock (RTC). Under normal conditions this battery will last for a minimum of five years.

Low battery power affects the operation of the RTC, causing it to reset at every power-up. When the battery voltage is low, a log message will appear in the product's server report.

### **▲CAUTION**

Do not replace the battery yourself. Contact Axis support if the log message requests a battery change.

Lithium coin cell 3.0 V batteries contain 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME), CAS no. 110-71-4.

## Specifications

### Markings

You can find the markings on the devices' main body.

#### Note

Information below is only an example. For specific information, see the product's datasheet.

Manufacturer's name and address	Axis Ex AB Gränden 1 SE-223 69 LUND SWEDEN
Type	P21, P23, F31 or F33
Serial number	AK*****
Year and month of manufacture	YYY/MM
Model	See product specific document
Part number	See product specific document
Notified body number	2804
Hazardous area ratings	I M2 Ex db I Mb  II 2 G Ex db IIC T6-T4 Gb  II 2 D Ex tb IIIC T85°C - T135°C Db  Class I Div 1 Groups B, C, D T6-T4  Class II Div 1 Groups E, F, G T6-T4  Class I Zone 1 AEx db IIC T6-T4 Gb  Zone 21 AEx tb IIIC T85°C - T135°C Db  Class III Div 1
Certificate numbers	ATEX: ExVeritas 20 ATEX 0651X  IECEx: EXV 20.0017X  MET: E115198
Ambient temperature	-60 °C to +60 °C  F31111: -40 °C to +60 °C

Ingress protection	IP66/IP67/68, Type 4X
Voltage	PTZ: 100 - 240 V AC $\pm$ 10%  Fixed: 100 - 240 V AC $\pm$ 10% POE 802.3bt Type 3
Power	PTZ: 150 W  Fixed: 56 W
Frequency	50 - 60 Hz
Entry thread size	PTZ: M25  Fixed: M25 and M20

Axis Ex AB  
Granden 1  
SE-223 69 LUND  
SWEDEN

TYPE: P21  
MODEL: AXIS XPQ1785  
P/N: 02278-001  
S/N: AKP01XXXX  
YEAR/MONTH: YYYY/MM

ExVeritas 20ATEX0651X  
IECEx EXV 20.0017X  
IA No: MASC MS/22-8127X  
PESO reference number: P526087/4

Ta: -60°C to +60°C  
VOLTAGE: 100-240 V AC  
FREQUENCY: 50-60 Hz  
POWER: 150 W  
POWER CURRENT: 0.63-1.5 A  
IP66/67/68, TYPE 4X

Class I Div 1 Groups B, C, D T5  
Class II Div 1 Groups E, F, G T5  
Class III Div 1  
Class I Zone 1 AEx: db IIC T5 Gb  
Zone 21 AEx: tb IIC T100°C Db  
Evaluated for Electrical and Hazardous Location Safety

Certificate number: 23-KA4BO-0066X  
Date of issue: 2023-01-19  
Certificate number: 23-KA4BO-0067X  
Date of issue: 2023-01-19  
Manufacturing site:  
Axis Ex AB  
Maskinvägen 1  
SE-227 30 Lund  
Sweden



CAUTION/WARNING  
DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT.  
TO REDUCE THE RISK OF IGNITION OF HAZARDOUS  
ATMOSPHERES, ALL ENTRIES MUST HAVE A SEALING FITTING  
PLACED WITHIN 2 INCH/50 MM OF THE ENCLOSURE.

ATTENTION/AVERTISSEMENT  
POUR RÉDUIRE LE RISQUE D'INFLAMMATION DES ATMOSPHÈRES  
DANGEREUSES, TOUTES LES ENTRÉES DOIVENT ÊTRE SCELLER  
ET PLACER DANS MOINS DE 2 INCH/50 MM DU ENCLOSURE. NE PAS  
OUVRIR LORSQU'UNE ATMOSPHERE EXPLOSIVE EST PRÉSENTE.

ATENÇÃO  
NÃO ABRIR QUANDO UMA ATMOSFERA ESTIVER PRESENTE.  
PARA SE REDUZIR O RISCO DE IGNIÇÃO EM ATMOSFERAS EXPLOSIVAS,  
TODAS AS ENTRADAS DEVEM TER UM DISPOSITIVO DE SELAGEM COLOCADO  
HÁ 2 IN/50 MM DO INVÓLUCRO.

CAUTION: HOT SURFACE - DO NOT TOUCH  
ATTENTION: SURFACE CHAUDE - NE PAS TOUCHER  
ATENÇÃO: SUPERFÍCIE QUENTE - NÃO TOQUE

REFER TO INSTALLATION MANUAL IM001 FOR FURTHER WARNINGS

Segurança



OCF 0160 INMETRO  
CPEX 22.0478 X

IS 13252 (PART 1)/  
IEC 60950-1



R-41246026  
www.tbs.gov.in



TD100043



2804

*Example of marking on type P21. Certifications may vary between different models.*

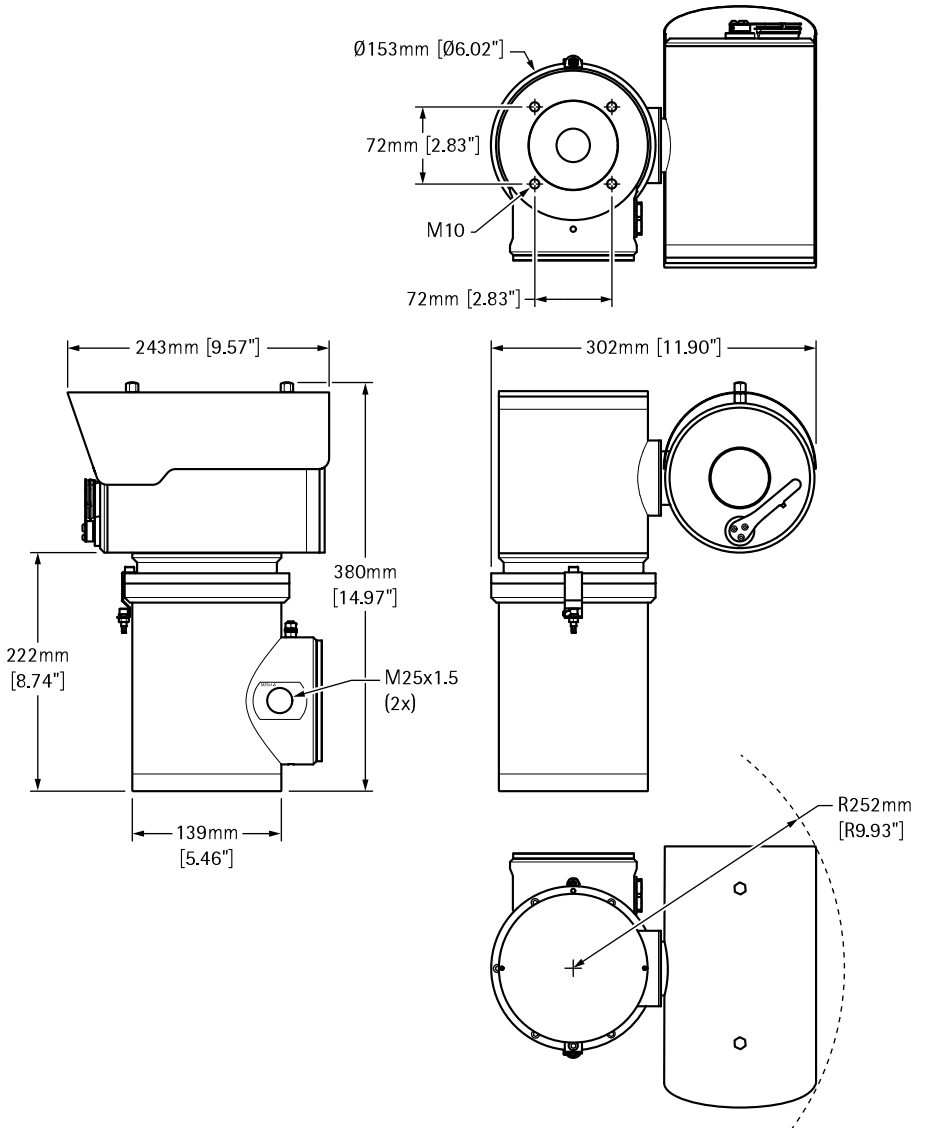
# AXIS Ex Series

	<p><b>CAUTION/WARNING</b> DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT. TO REDUCE THE RISK OF IGNITION OF HAZARDOUS ATMOSPHERES, ALL ENTRIES MUST HAVE A SEALING FITTING PLACED WITHIN 2 INCH/50 MM OF THE ENCLOSURE.</p>			
<p>Axis Ex AB Göteborg 1 SE-231 69 LUND SWEDEN</p>	<p><b>ATTENTION/AVERTISSEMENT</b> POUR RÉDUIRE LE RISQUE D'INFLAMMATION DES ATMOSPHÈRES DANGEREUSES, TOUS LES ENTRÉES DOIVENT ÊTRE SCÉLÉES ET PLACER DANS MOINS DE 2 INCH/50 MM DU ENCELOSURE, NE PAS OUVRIRE LORSQU'UNE ATMOSPHÈRE EXPLOSIVE EST PRÉSENTE.</p>			<p>IS 13252 (PART 1) IEC 60665-1</p>
<p>TYPE: F31111 MODEL: AXISXFQ1656 P/N: 02462401 S/N: A4650XXXXX YEAR/MONTH: YYYYXX</p>	<p><b>ATENÇÃO</b> NÃO ABRIR QUANDO UMA ATMOSFERA ESTIVER PRESENTE. PARA SE REDUZIR O RISCO DE IGNICÃO EM ATMOSFERAS EXPLOSIVAS, TODAS AS ENTRADAS DEVEM TER UM DISPOSITIVO DE SELAGEM COLOCADO A 2 INCH/50MM DO INVÓLUCRO.</p>		<p>TDXXXXX</p>	
<p>Ex Vertices 20ATEX0651X IEC Ex EX II 2D, 0017X PESG: XXXXXXXXX II 1, III SEC: X/XX/XXXXXX</p>				<p>R-41248026 www.bis.gov.in</p>
<p>Ta: -40°C to +60°C VOLTAGE: 100/240 V AC FREQUENCY: 50-60 Hz VOLTAGE PkF: 44-62 V DC POWER: 91 W POWER CURRENT: 0.63-1.5 A IP66/67/68, TYPE 4X</p>	<p><b>CAUTION-</b> HOT SURFACE DO NOT TOUCH <b>ATTENTION-</b> SURFACES CHAUDES NE PAS TOUCHER</p>	<p>R-R-AXE-XFQ1656</p>	<p>Certificate number: XX-000-00000 Date of issue: YYYY-MM-DD Certificate number: XX-000-00000 Date of issue: YYYY-MM-DD Manufacturing site: Axis Ex AB Maskindögen 1 SE-227 30 Lund Sweden</p>	
			<p>IM2 Ex dbI Mb II 2 G Ex db IIC T5 Gb II 2 D Ex tb IIC T1 00°C Db</p>	
			<p>Class I Div 1 Groups B, C, D T5 Class II Div 1 Groups E, F, G T5 Class III Div 1 Class I Zone 1 AEx db IIC T5 Gb Zone 21 AEx tb IIC T1 00°C Db Exh-rated for Electrical and Hazardous Location Safety</p>	
			<p>REFER TO INSTALLATION MANUAL IM001 FOR FURTHER WARNINGS</p>	

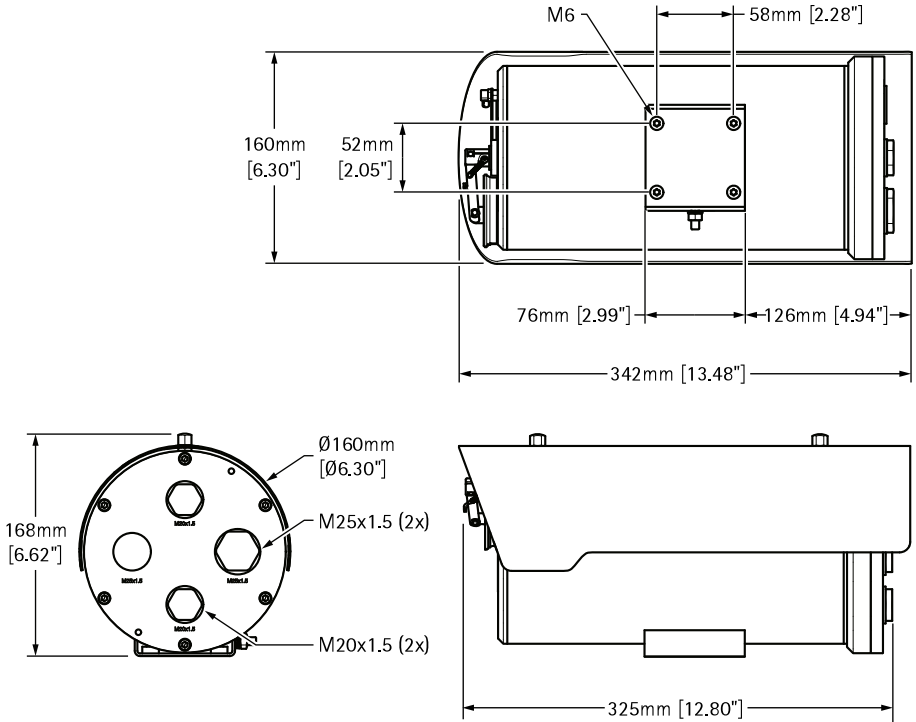
Example of marking on type F31111. Certifications may vary between different models.



Dimensions type P21 and P23



## Dimensions type F31 and F33



## Further information

- The user manual is available at [axis.com](http://axis.com)
- To check if there is updated firmware available for your device, see [axis.com/support](http://axis.com/support)
- For useful online trainings and webinars, see [axis.com/academy](http://axis.com/academy)

## Optional accessories

For a complete list of available accessories for this product, go to the product's page on [axis.com](http://axis.com) and select Software & Accessories.

## Contact information

Axis Ex AB  
Gränden 1  
223 69 Lund  
Sweden

Tel: +46 46 272 18 00

Fax: +46 46 13 61 30

[axis.com](http://axis.com)



## Safety information

### Hazard levels

**⚠ DANGER**

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**⚠ WARNING**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

Indicates a situation which, if not avoided, could result in damage to property.

### Other message levels

**Important**

Indicates significant information which is essential for the product to function correctly.

**Note**

Indicates useful information which helps in getting the most out of the product.

### Symbols on the device



Hot surface warning symbol



Symbol for protective earth (ground)

Installation Manual IM001

AXIS Ex Series

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Ver. M3.4

Date: May 2023

Part no. 2820140