



ExCam[®] IP

User manual

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Revision history

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00	March 04, 2014	T. Gruber	Compilation of the document	
01	March 24, 2014	T. Gruber	Several additions	 Tested and approved March 24, 2014 – S. Seibert

1 Document Overview

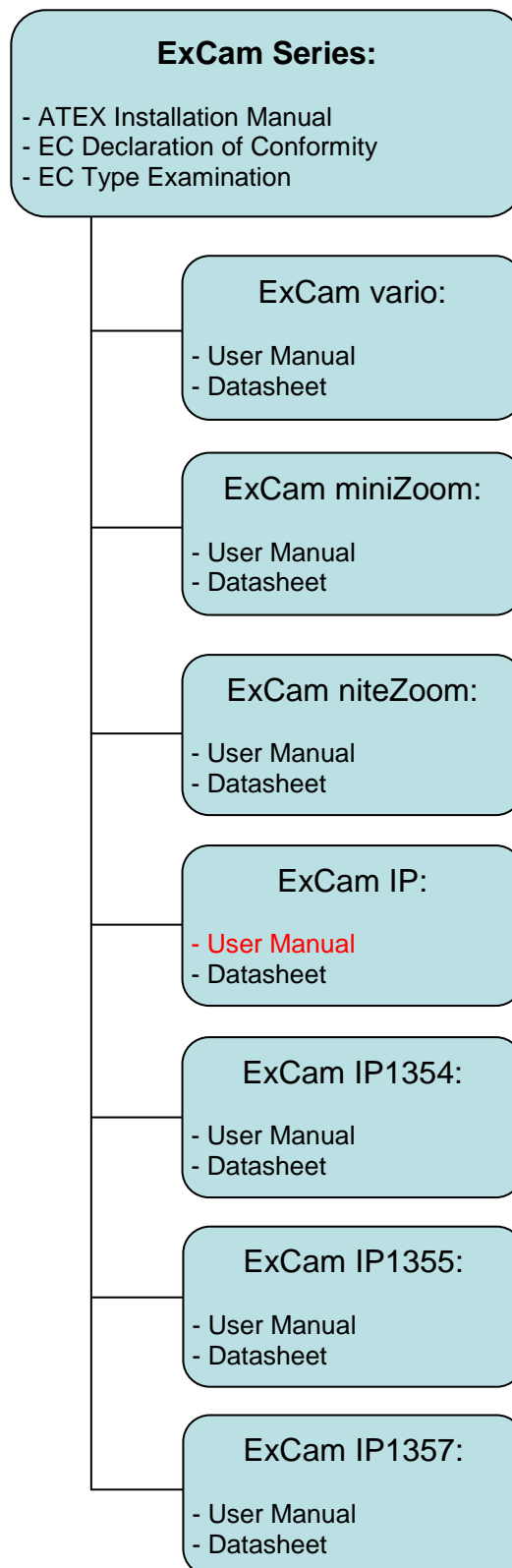




Figure 1.1 Document overview

The present document is marked in **red**.

2 Technical Data

2.1 Parameters of the explosion protection

Identification marks according to
Directive 94/9/EG:

 II 2G (zone 1 and 2)
 II 2D (zone 21 and 22)

Explosion protection (gas):

Ex d IIC T6 Gb or
Ex d IIB T6 Gb

Explosion protection (dust):

Ex t IIIC T80°C Db IP67

EC-type examination:

TÜV 09 ATEX 7697 X

Inspection record:

194/Ex.697.00/09

557/Ex. 679.01/11 (1. Amendment)

557/Ex.679.02/12 (2. Amendment)

2.2 Electrical parameters

Power supply:

PoE, IEEE 802.3af class 1

Reference power:

max. 48 V DC

Maximum power input:

3.84 W

Input current:

350 mA

2.3 System cable SKDxx

Outer diameter:

8.7 ± 0.3 mm

Bending radius:

100 mm

Data connection:

4 x 2 x AWG22/1 CAT.6a

Characteristics:

Halogen free, flame retardant, UV resistant,
chemical resistance, shielded

(see www.samcon.eu; data sheet SKD01)

Interface:

P version: RJ-45 10BASE-T/100BASE-TX PoE

K version: Single Conductor, twisted-pair

10BASE-T/ 100BASE-TX PoE

2.4 Sensor

Type:

1/4" RGB CMOS, progressive scan

Effective sensor resolution:

1 Megapixel, 1280x800 (16:10)

Light sensitivity:

1 – 100000 lux, F2.0

2.5 Processor

Storage: 128MB RAM, 128 MB Flash

2.6 Lens

Type: 2.8 mm, F2.0, fixed
Angle of view: 80° horizontally, 50° vertically (16:10)
Shutter time: 1/25000 s to 1/6 s

2.7 Streaming

Video compression: H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Frame rate: 25 fps (Net freq. 50 Hz) /H.264, Motion JPEG
30 fps (Net freq. 60 Hz) /H.264, Motion JPEG
30 fps /MPEG-4 Part 2
Functions: Several, individually configurable streams in
H.264 and Motion JPEG, controllable frame rate
and bandwidth, VBR/ CBR H.264, digital PTZ,
pre-positioning, guard tour surveillance, Edge
Storage (Network Attached Storage or
File-Sever)

2.8 Parameterization

Picture settings: Compression, color, brightness, sharpness,
contrast, white balance, exposure control,
exposure zones, backlight balance,
fine adjustment at low light, picture rotation and
mirroring, text and picture overlay, private zone
masking
Intelligent Video: Video motion recognition, active manipulation
alarm
Event trigger: Intelligent Video
Event actions: Data upload: FTP, HTTP, network clearance and
e-mail notification: E-mail, HTTP and TCP,
pre and post alarm, video buffer, recording on lo-
cal storage

2.9 Network

Security:	Password protection, IP address filter, HTTPS access encryption, IEEE 802.1X network access control, digest authentication, user access protocol
Supported protocols:	IPv4/v6, http, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS

2.10 Other technical data

Permissible ambient temperature:	-5 C° to +50 C°
Protection level EN 60529/IEC 529:	IP 67
Housing material:	Aluminum die cast or V2A Stainless steel 1.4301 (standard) or V4A Stainless steel 1.4401 (customized) V4A Stainless steel 1.4404 (customized)
Glass material:	Borosilicate glass
Weight:	2100 g (Stainless steel T03-VA) 1900 g (Aluminum housing T03-AL)
Dimensions (L x D _{max}):	128 mm x 79 mm with K1 flange 141 mm x 79 mm with K2 flange (stainless steel T03-VA without cable gland) 163mm x 98 mm (Aluminum T03-AL without cable gland)
Fitting of the flame proof gap preventing the transmission of ignition (cylinder) DIN ISO 286	
T03-VA....:	d_{f7}^{H8} , nominal diameter: 57 mm, tolerance: -60µm...+46µm
T03-AL....:	d_{g6}^{H7} , nominal diameter: 70 mm, tolerance: -29µm...+30µm

3 Safety guidelines

Please observe the safety guidelines indicated in the ATEX installation manual of the ExCam series!

4 Illustration of the model key

The following model options are currently available for the ExCam IP:

Product name	Model options					
	ATEX Type	Housing option ⁽¹⁾	Explosion-group ⁽²⁾	Meter SKD01 ⁽³⁾	Cable termin. ⁽⁴⁾	Temp. range ⁽⁵⁾
ExCam IP	T03-	VA-	B-	005-	K-	N
	T03-	VA-	B-	005-	P-	N
	T03-	VA-	C-	005-	K-	N
	T03-	VA-	C-	005-	P-	N
	T03-	AL-	B-	005-	K-	N
	T03-	AL-	B-	005-	P-	N
	T03-	AL-	C-	005-	K-	N
	T03-	AL-	C-	005-	P-	N

**all model options are available in stainless steel and aluminum housing with K1 or K2 supply flange (q.v. chapter 10 – technical drawings)*

- (1) VA = Execution in stainless steel
AL = Execution in aluminum die cast
- (2) B = Explosion group IIB (standard - all gases except hydrogen, acetylene, carbon disulphide)
C = E Explosion group IIC (all gases)
- (3) Length of the connection line in meter (001-100)
(5 meter is the standard length)
- (4) K = Terminal block connection (standard)
The cable insulation is stripped to the twisted-pair strand (ca. 5 cm), including the shield.
The individual strands are stripped at the end (ca. 0.5 cm). The fixed Cu inner conductor is blank to allow connecting the camera to the terminal block
P = Plug connection
The cable is equipped with an RJ-45 network plug (heavy duty), AWG 26-22.
Type: Weidmueller IE-PS-RJ45-FH-BK, pin assignment according to T568B
- (5) N = Norm temperature (-5°C to +50°C)

5 Commissioning



Attention!

Please observe the national regulations regarding security, installation, and accident prevention (e.g. DIN EN 60079-14) as well as the safety guidelines described in this user manual and the ATEX installation manual!



Attention!

Please observe the installation and commissioning advices described in the ATEX installation manual!

5.1 Step 1: Installation

Install the ExCam[®] IP at the desired location.

Mounting options, accessories, as well as safety guidelines are described in the ATEX installation manual of the ExCam[®] Series



Attention!

Please observe the national regulations regarding security, installation, and accident prevention (e.g. DIN EN 60079-14) as well as the safety guidelines described in this user manual and the ATEX installation manual!



Attention!

Please observe the installation and commissioning advices described in the ATEX installation manual!

5.2 Step 2: Electrical connection



Attention!

The electrical connection of the equipment must be executed by qualified personnel only!



Attention!

It is mandatory that the housing of the ExCam[®] Series has to be grounded via a PE-connection!



Attention!

The minimum cable length of the connection line must not be less than one meter! The connection cable has to be laid in a protected manner!



Attention!

Please observe the national regulations regarding security, installation, and accident prevention (e.g. DIN EN 60079-14), as well as the safety guidelines described in this user manual and the ATEX installation manual!

The ExCam[®] IP is delivered with an electrical connection cable type SKDxx (System Kabel Digital). The maximum cable length is 100m and can be determined individually to reflect the particular customer specifications. The minimum cable length is 1 meter.

The ExCam[®] IP is manufactured with a pigtail reflecting the desired cable length. Any electro-technical work inside the camera's flameproof enclosure, done by the user, is prohibited. Depending on the model option, the ending of the camera's cable connection is either stripped to the blank Cu conductors or furnished with a plug.

5.2.1 Potential equalization

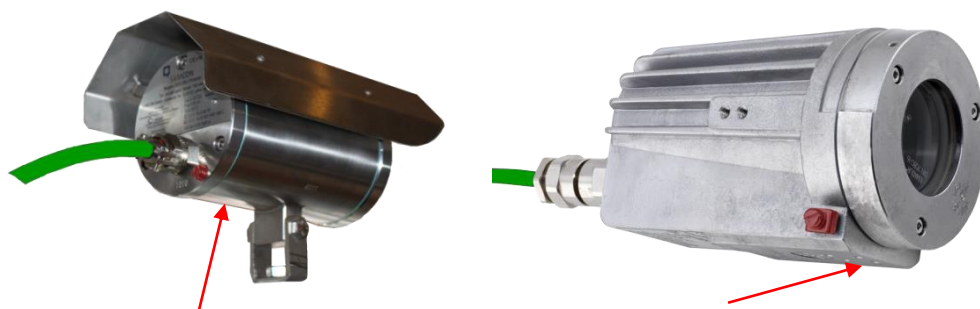


Figure 5.1 Potential equalization T03-VA and T03-AL

Depending on the housing execution, the equipment's potential equalization is to be carried out at the place indicated in above figure. The profile of the potential equalization has to reflect the national grounding instructions (min. 4mm²).

Connection table:

Potential:	Color (int.):	Profile	Comment
PA	GN/YE	4 mm ² (fixed)	

5.2.2 Power supply & protection

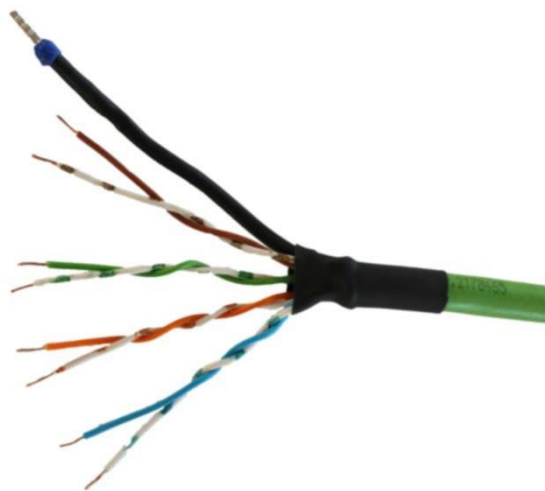


Figure 5.2 ExCam IP – T03-VA-B-XXX-K-N



Figure 5.3 ExCam IP – T03-VA-B-XXX-P-N

The green patch cable SKDxx disposes of 8 conductors used for the data transfer with other network devices as well as to power the camera.

In order to guarantee the power supply of the ExCam IP, a PoE (Power over Ethernet) capable component has to be available (e.g. a PoE Switch, a PoE Injector, or Midspan) which meets the specification IEEE 802.3af of the power class 1 (0.44 – 3.84 W). An 100 Mbit Ethernet Connection (100BASE-TX) is used for the ExCam IP's data transfer.

In case the camera disposes of a plug, (figure 5.3) it has to be plugged into the associated slot of the network device. Due to the design, a faulty connection or pin assignment is not possible. The network device can already be supplied with power, prior to connecting it to the camera, hence there is no „power ON“ priority which has to be observed.

It is also allowed to separate and re-connect the ExCam IP from the network when in operation or when interacting with the visualization software (hot plugging).

If the ExCam IP's pigtail has a single conductor termination (figure 5.2) it is mandatory to observe the correct pin assignment on the terminal block. To do so, the potentials of the ExCam IP have to be connected to the corresponding conductors of the network device. Hence the conductors of the twisted pair cable have to be connected to the conductors with identical color code.

Attention: „Hot plugging“ as well as the connection and separation of the data and power cable SKDxx with/of network devices and terminal blocks under power is only allowed within the safe area (non-hazardous atmosphere)!

The pin assignment of the SKDxx is in accordance with the standard EIA/TIA-568B for 100BaseTX with PoE according to 802.3af and is executed as follows:

Connection table:

Pin/ Potential	Color (int.):	Plug contact (TIA-568B)	Profile:	Comments
Tx+	WS / OR	1	0.64 mm ²	Solid Conductor
Tx-	OR	2	0.64 mm ²	Solid Conductor
Rx+	WS / GN	3	0.64 mm ²	Solid Conductor
PoE 48 VDC	BL	4	0.64 mm ²	Solid Conductor
PoE 48 VDC	WS / BL	5	0.64 mm ²	Solid Conductor
Rx-	GN	6	0.64 mm ²	Solid Conductor
PoE Gnd	WS / BR	7	0.64 mm ²	Solid Conductor
PoE Gnd	BR	8	0.64 mm ²	Solid Conductor
Shield/ GND	SW	0	NA	Braids of tinned copper wire p=0.13mm (AWG 36)

Sheath: PUR, green (similar RAL 6018), Q_A=8.7mm, halogen free, flame retardant, UV stable, chemical resistance

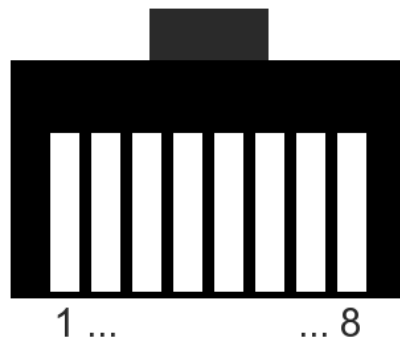


Figure 5.4 ExCam IP – RJ45 pin assignment

Particularly in EMC critical environments, it is necessary to make sure that the cable shield is grounded on side of the terminal block (q.v. figure 5.2 – pin with black shrink hose and ferrules).

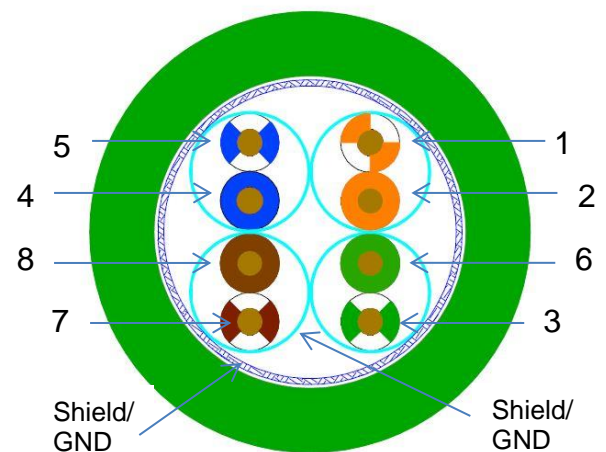


Figure 5.5 ExCam IP – SKDxx Pin assignment

An additional safeguarding of the power supply is not necessary. The power supply is executed by the PoE network device via an electronic with intelligent set-up. The camera as well as the connection is permanently monitored in order to avoid any failure or defects in case of a short-circuit fault.

5.2.3 Tests prior to switching on voltage



Attention!

Prior to commissioning, all tests as indicated by the national regulations have to be executed. In addition, it is mandatory that the proper functioning of the operating device in accordance with this user manual and all other applicable regulation has been executed.



Attention!

Incorrect installation and operation of the camera may lead to a loss of warranty!

5.3 Step 3: Adjusting the picture

This step is only necessary in case the picture's default settings (angle, focus, iris, or backlight settings) do not deliver a suitable picture quality.

Lens data:

Lens	F2.0, 2.8mm, fixed
Aspheric technology	No
Focal distance	2.8 mm
Horizontally angle of view	80°
Iris Control	No
MOD (Min. Object Distance)	0.15 m



Information!

If not determined differently, the default setting for the ExCam[®] IP is set to a 16:10 picture size (1280x800). The focus range is set from 0.5 m to infinite. If desired, we customize the ExCam[®] IP settings to reflect specific picture sizes (16:10, 16:9, 4:3) and object distances. Please advise accordingly at order placement.

5.3.1 Work preparation



Attention!

Please carry out any preoperational work carefully and in accordance with the applicable regulations.



Attention:

Note: Depending on the zone classification, it might be necessary to obtain a work permit/clearance! When adjusting the camera settings potentially explosive atmosphere must be avoided by any means!

Please consider that in order to carry out the applicable settings, a feedback regarding the picture quality is required. Please use appropriate devices (laptop, CCTV tester, walkie-talkie to the control room)

- Use appropriate tools
- Make sure you have a secure foothold
- Avoid static charge

5.3.2 Opening the pressure-resistant housing

In case it is necessary to adjust the picture, the pressure-resistant housing has to be opened and after completion of the work securely tightened again. Please be very careful and follow thoroughly the steps of this manual.



„WARNING – DO NOT OPEN IN HAZARDOUS AREA“

Note: Depending on the zone classification, it might be necessary to obtain a work permit/clearance! When adjusting the camera settings, potentially explosive atmosphere must be avoided by any means!

Stainless steel housing (VA)

Loosen the three screws on the flange of the stainless steel housing. Avoid skin or clothing contact with the screw threads which disposes of LOCTITE (chemical basis: Dimethacrylatester) to secure the screws. It is not allowed to open the sight glass flange.

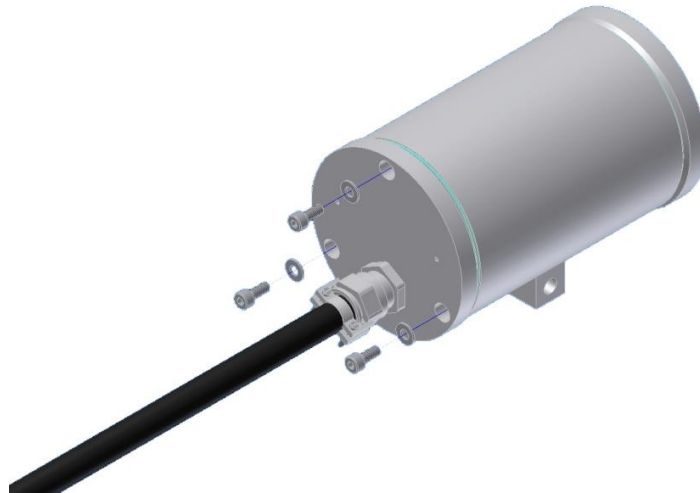


Figure 5.6 Opening of the stainless steel housing (1)

Carefully pull out the lead flange in a straight manner, ensuring that the board module does not tilt. Neither the flange nor the housing must be damaged at the flame proof gap preventing the transmission of ignition. Beware also of tilting. Avoid skin and clothing contact with the cylindrical fit, the surface is treated with lubrication paste (oleaginous).

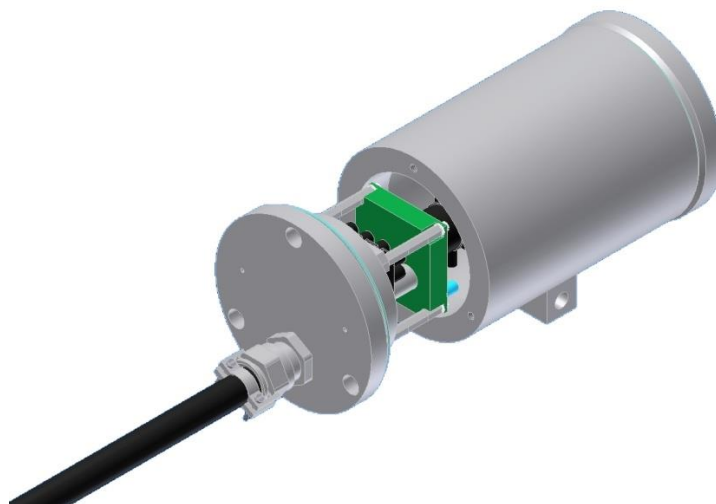


Figure 5.7 Opening of the stainless steel housing (2)

Aluminum die cast housing (AL)

Loosen the three screws at the lock ring (glass flange) of the aluminum die cast housing and carefully take it off.

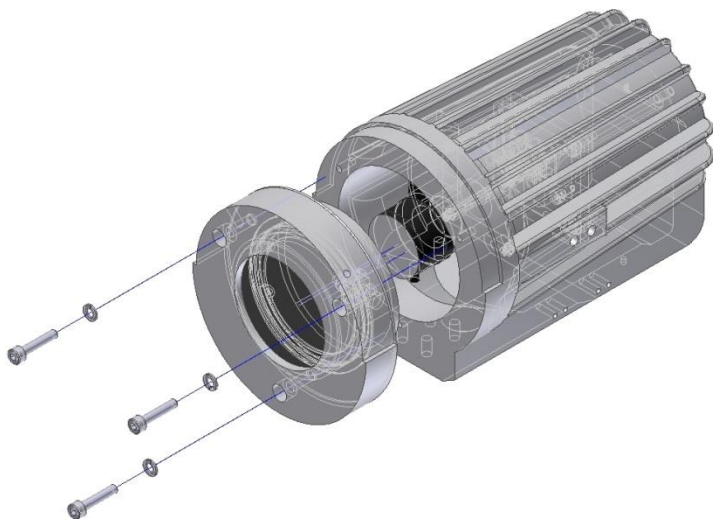


Figure 5.8 Opening of the AL housing



ATTENTION:
 Please make sure not to damage housing sealings

5.3.3 Adjusting the focus

The default focus of the ExCam IP network camera is 0.5 m to infinite and usually no adjustment is necessary. In order to focus on objects in lesser distance, or in case the focus has not been adjusted correctly please follow the below steps:

1. Loosen the knurled screws of the focal lens (q.v. figure 5.10)
2. Turn the lens manually until desired quality in the „Live View“ of the web browser has been achieved (q.v. chapter 6 „web browser access“)
3. Tightly secure the knurled screws again



When touching electrical components, potential equalization (grounding of the body) has to be observed (carry a PE wristband etc.)!



Figure 5.9 Lens and circuit board of the ExCam IP

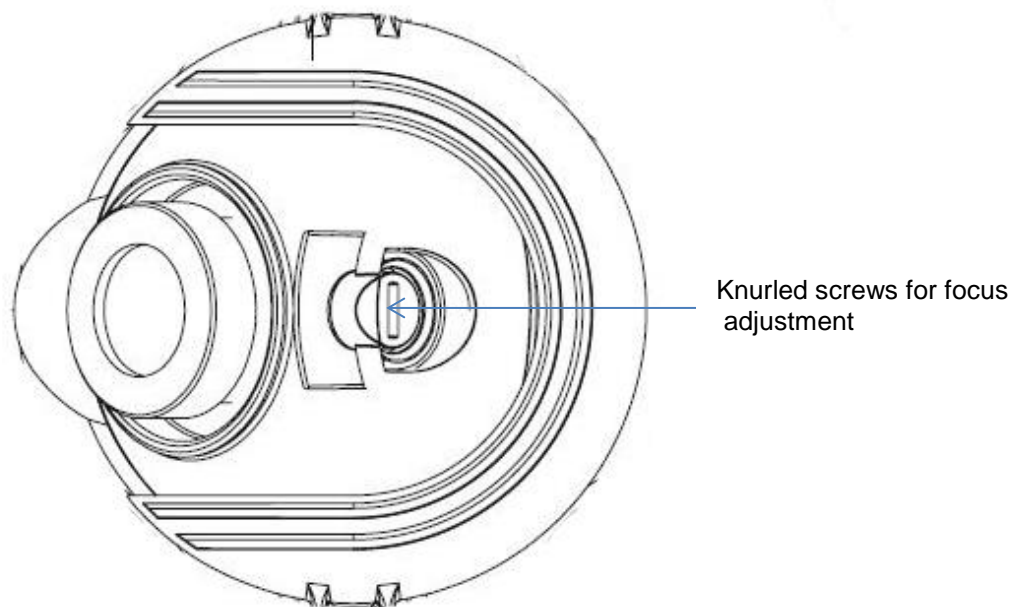


Figure 5.10 Mechanical adjustment of the ExCam IP

5.3.4 Closing of the pressure-resistant housing

For closing the housing, please follow, in reversed order, the steps described in chapter 5.3.3 (opening the pressure-resistant housing). Exclusively use the associated cylinder head screw M4x0.7 A2 (DIN912).

Particularly concerning the flameproof joint (gap), please work very carefully.



ATTENTION:

In case of any mechanical damages that happened to the flameproof joint, the housing must not be used anymore!

Do not lock-in any foreign objects in the housing.

Please make sure that the disassembled screw locks (washer spring DIN7980) are reassembled.

If, when closing the housing, it is noted that the surface of the flameproof joint is dirty or not lubricated sufficiently, please clean it with a clean cloth and suitable cleaning detergent. Afterwards, re-lubricate it with a suitable lubrication agent.

Tighten the M4 flange screws with approx. 3Nm at a non-lubricated thread. Please avoid extensive tightening – this might lead to a torn screw.

6 Network access and visualization

The following steps describe the most important steps for the initial commissioning of the camera. The configuration menu of the web surface allows an intuitive navigation and offers several configuration possibilities. For a comprehensive user manual of the web surface, please refer to the to the Axis user manual which can be found on the provided USB stick or which can be accessed at:

http://www.axis.com/de/files/manuals/um_p1355_49956_en_1303.pdf

Network access of the ExCam IP is supported by most operating systems and browsers. The recommended browsers are Internet Explorer with MS Windows, Safari with Macintosh and Firefox with Windows and additional operating systems.

To carry out „video streaming“ via the Microsoft Internet Explorer, installing the “AXIS Media Control” (AMC) is required. The installation request is executed during the initial commissioning. In order to visualize the „H.264“ video streams, QuickTime™ is recommended. For „Motion JPEG“ coded video streams, Java Applet is suggested which requires JVM (J2SE) 1.5 or higher, or JRE (J2SE) 5.0 or higher.

At delivery, the ExCam IP is set to the applicable net frequency (50Hz or 60Hz). If the camera is used at a location with a differing net frequency, a flickering of the picture might be noticeable, particularly in surroundings with fluorescent tubes. In such a case, the applicable settings have to be carried out within the menu “System Options > Advanced > Plain Config”.

6.1 Browser support

A list with the currently supported web browsers, operating systems, and required additions can be viewed at:

http://www.axis.com/techsup/cam_servers/tech_notes/browsers.htm

6.2 Assigning the IP address

The ExCam IP is an Ethernet network camera requiring an IP address to access it. Usually a DHCP server is integrated in most networks which automatically assigns an IP address. In case there is no DHCP server available in the network, the ExCam IP's default address “192.168.0.90” (subnet masking 255.255.255.0) is used.

With the “AXIS IP Utility“ it is possible to determine the IP address under Windows; the included USB stick contains this application. It is also available for download:

<http://www.samcon.eu/en/downloads/drivers-software/>



In case it is not possible to assign the IP address, it might be necessary to change the firewall settings!

The “AXIS IP Utility” tool automatically recognizes all ExCam devices and displays them. It can also be used to manually assign a static IP address. Please note that the ExCam IP network camera has to be installed within the same network segment (physical sub-net) as the computer on which the “AXIS IP Utility” tool is executed. It has the network ID „M3014“ (figure 5.11) The MAC address and the serial number are also displayed.

ExCam IP →

Name	IP-Adresse	Seriennummer
AXIS 243SA - 00408C9DFF01	89.0.0.171	00408C9DFF01
AXIS Q7401 - 00408CA1A3A0	89.0.0.144	00408CA1A3A0
AXIS Q7404 Channel 2 - 00408CCC0843	89.0.0.127	00408CCC0843
AXIS Q7404 Channel 3 - 00408CCC0844	89.0.0.128	00408CCC0844
AXIS P1355 - 00408CF2961E	89.0.0.135	00408CF2961E
AXIS P1346 - 00408CD65BFE	89.0.0.151	00408CD65BFE
AXIS P8221 - 00408CADBE0C	89.0.0.194	00408CADBE0C
AXIS P1346 - 00408CD65BFA	89.0.0.154	00408CD65BFA
AXIS 241QA - 00408CA00AA7	89.0.0.123	00408CA00AA7
AXIS Q7404 Channel 4 - 00408CCC0845	89.0.0.125	00408CCC0845
AXIS Q1755 - 00408C8F18E9	89.0.0.137	00408C8F18E9
AXIS P1347 - 00408CB7F46E	89.0.0.136	00408CB7F46E
AXIS M3014 - 00408CD27C9F	89.0.0.138	00408CD27C9F
AXIS P1346 - 00408CD65BF7	89.0.0.153	00408CD65BF7
AXIS P1346 - 00408CD65BF8	89.0.0.152	00408CD65BF8
AXIS M3014 - 00408CD27C9C	89.0.0.131	00408CD27C9C
AXIS 233D - 00408C82E5C1	89.0.0.122	00408C82E5C1
AXIS M3014 - 00408CD27CA4	89.0.0.132	00408CD27CA4
AXIS Q7404 Channel 1 - 00408CCC0842	89.0.0.126	00408CCC0842
AXIS M3014 - 00408CD6B3AE	192.168.1.205	00408CD6B3AE

Figure 5.11 Axis IP Utility

6.3 Password assignment

When a system reset of the equipment has been carried out, please follow the instructions below.

In order to allow access to the ExCam IP, the password for the standard administrator user „root“ has to be determined. When accessing the camera for the first time, the dialog field „Configure Root Password“ is displayed and the password can be determined there. For security considerations, it is possible to use an encrypted HTTPS-connection requiring an HTTPS certificate (see steps below).

For assigning the password via a standard HTTP connection, please just enter the password directly in the dialog window „Configure Root Password“.

For using an encrypted HTTPS connection when determining the password, please follow the below steps:

1. Click on the button „Create self-signed certificate“
2. Enter the desired information and click „OK“. The certificate is issued and the password can be entered. Please note that the entire data transfer of the ExCam IP will be encrypted
3. Enter the desired password and repeat it in order to ensure correct spelling. Click on „OK“ to configure that password
4. Enter the username „root“ (it is not possible to change the default administrator user name „root“)
5. Enter the previously determined password and click on „OK“. In case you have forgotten the password, the ExCam IP has to be reset to default settings
6. Click on „Yes“ in order to install AMC (AXIS Media Control). After the completion of the installation, it is possible to view the video streams with the Microsoft Internet Explorer or Mozilla Firefox (administrator rights are required)
7. The page „Live View“ of the ExCam IP is now displayed. With the setup link it is possible to open the menu options to allow personal camera settings

7 Maintenance / Servicing / Alterations

The national regulations concerning the maintenance and servicing of electrical devices within hazardous areas are to be observed.

The required maintenance intervals are specific to the individual devices. The operating company has to determine these intervals depending on the application parameters. During maintenance, focus has to be put on checking parts concerning the ignition protection category such as the integrity of the housing, the sealings and the cable glands. If maintenance measures are necessary they have to be initiated and/or executed.

8 Repairs and Maintenance

Repairs must only be carried out with original parts of SAMCON Prozessleittechnik GmbH. Damaged pressure-resistant housings have to be replaced completely. If in doubt, return the applicable part to SAMCON Prozessleittechnik GmbH.

Repairs concerning the explosion protection must only be carried out by SAMCON Prozessleittechnik GmbH or a qualified electrical technician authorised by SAMCON Prozessleittechnik GmbH in accordance with nationally applied regulations. Rebuilding of or alterations to the devices are not permitted.

9 Disposal / Recycling

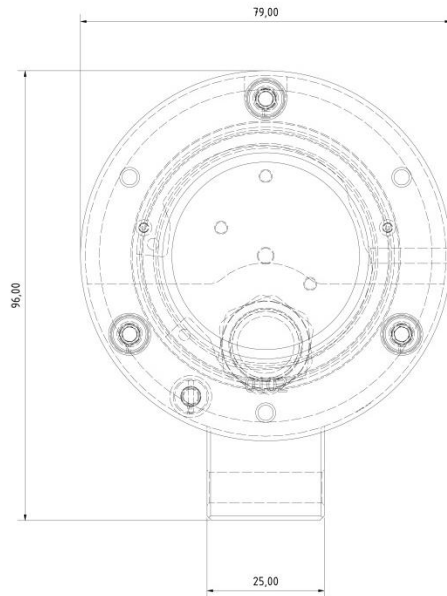
When disposing of the device, nationally applicable regulations must be observed.

This Document is subject to alterations and additions.

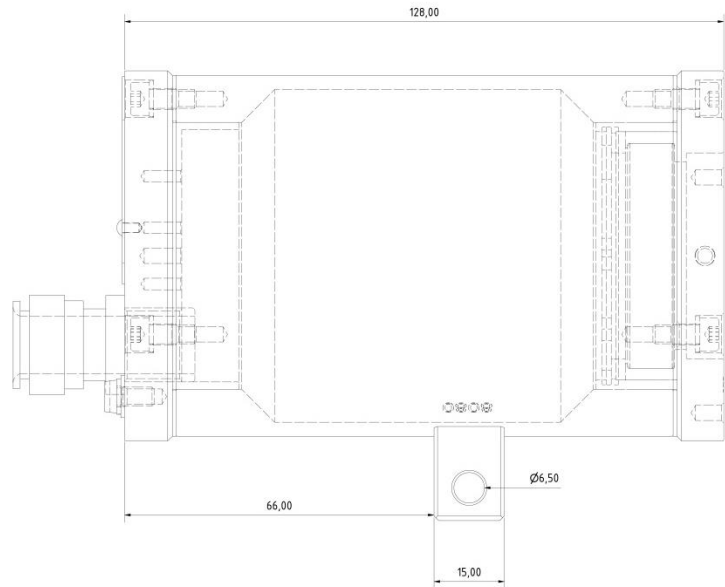
10 Drawings

T03-VA-XX (K1)

Front view

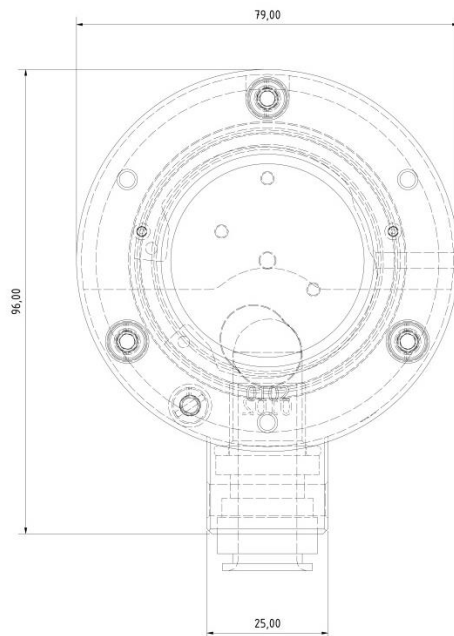


Side view from left

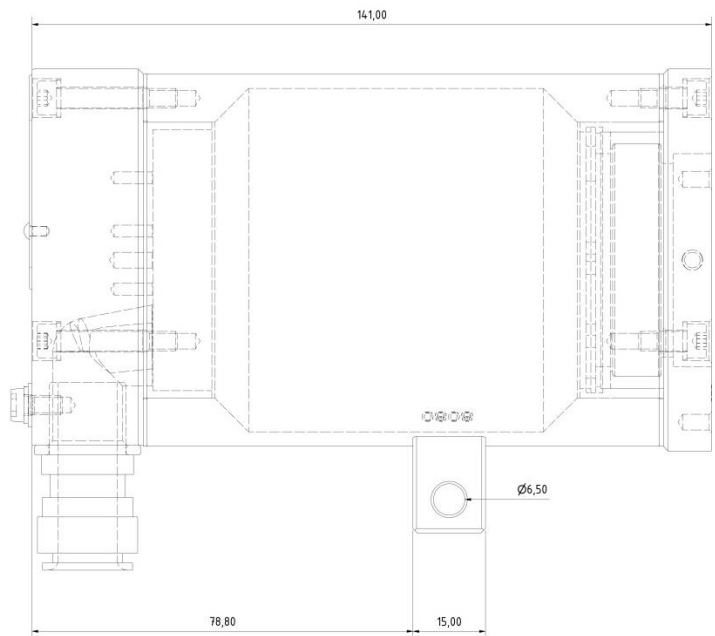


T03-VA-XX (K1)

Front view

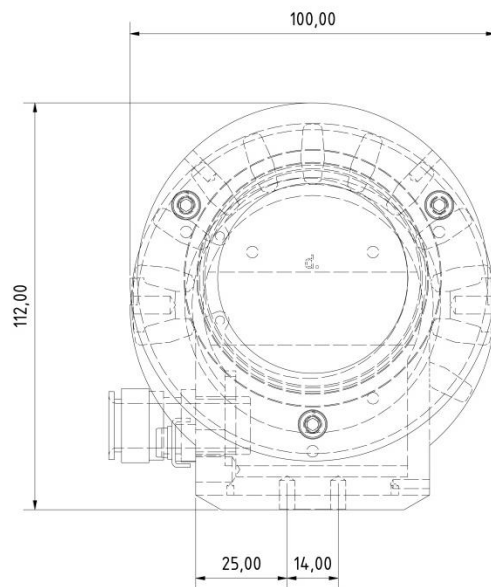


Side view from left

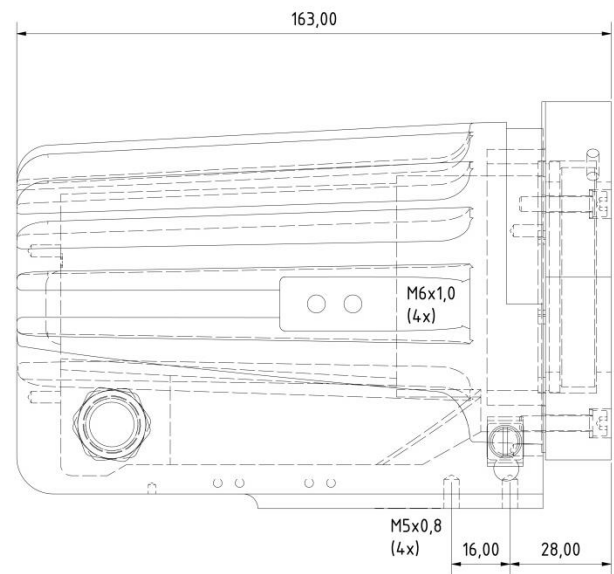


T03-AL-XX (K1)

Front view

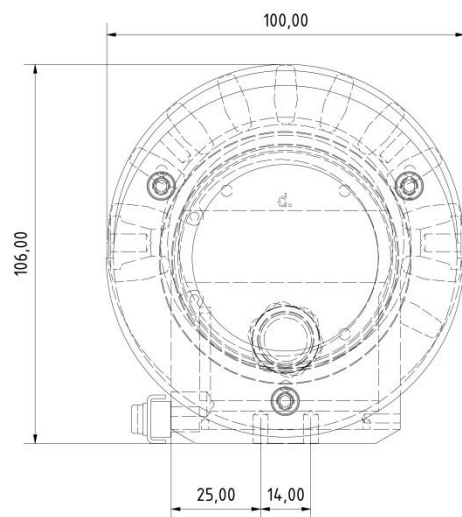


Side view from left

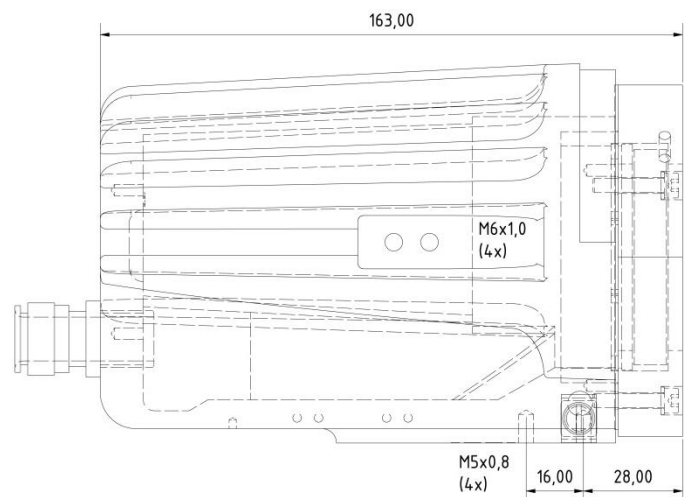


T03-AL-XX (K2)

Front view



Side view from left





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