ExCam IPM3016

User Manual

SAMCON
Prozessleittechnik GmbH

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1 Introduction

The ExCam IPM3016 is a very compact and robust digital camera (type T08) which is manufactured by SAMCON Prozessleittechnik GmbH and can be used very flexibly for various applications. The main application is the usage within the hazardous areas of the chemical and/or petro-chemical industry, at offshore plants, and at biogas plants. Due to its dimensions and adaption options even sight glass applications and process observations with only little object distances are possible.
The camera is suitable for the usage within the Ex zones 1, 2, 21, and 22 including the gas group IIC (all gases, steams, and fogs including acetylene, hydrogen, and carbon disulphide) and the dust group IIIC (conductive dusts and flammable fibrous material). For group I (mining) it is suitable for installation sites with a low risk of mechanical hazards. Besides for fixed installation, the ExCam IPM3016 is also certified to be used for mobile applications (hand-held). Due to the usage of high-quality PTFE sealings, not only the protection level IP68 is met but also the chemical resistance is maximized.

2 Technical Data

2.1 Parameters of the explosion protection

Identification marks according to Directive RL 2014/34/EU:	Ⓔx II 2G (Zone 1 and 2) Ⓔx II 2D (Zone 21 and 22)
Explosion protection (gas):	Ex db IIC T6 Gb
Explosion protection (dust):	Ex tb IIIC T80°C Db
Explosion protection (mining):	Ex db I Mb[1]
Protection level:	IP66/68 (IEC/ EN 60529) (24h/3m water column and 0.5h/8m, pH-neutral, temp. of test mediums: +5°C ≤ T_{water} ≤ +20°C)
Transportation / storage temperature:	-40°C … +65°C
Ambient temperature (EX):	-20°C … +55°C (Type …N.N…) -60°C … +55°C (Type …LL.N…)
Noticed body:	TÜV Rheinland (number 0035)
EU Type Examination:	TÜV 18 ATEX 8218 X (2018)
IECEx certificate:	IECEx TUR 18.0023X (2018)
Further certificates:	see: https://www.samcon.eu/en/products/network/excam-ipm3016/

1 Mining only for variants with armoured cable and Plug-Termination

Attention!
The instructions stated on the type and instruction plates have to be observed!

2.2 Illustration of the model key

	Model versions					Options
Ex product-name[1)]	Type [2)]	Housing combination[3)]	Temperature range[4)]	Cable length/m [5)]	Cable termin.[6)]	Lens[7)]
ExCam IPM3016	T08-	VA1.2.K1.BOR-	N.N-	005.N-	P-	090
	T08-	VA1.2.K1.BOR-	N.N-	005.A-	P-	090
	T08-	VA1.2.K1.BOR-	N.N-	005.N-	T-	090
	T08-	VA1.2.K1.BOR-	N.N-	005.A-	T-	090
	T08-	VA1.2.K1.BOR-	LL.N-	005.N-	P-	090
	T08-	VA1.2.K1.BOR-	LL.N-	005.A-	P-	090
	T08-	VA1.2.K1.BOR-	LL.N-	005.N-	T-	090
	T08-	VA1.2.K1.BOR-	LL.N-	005.A-	T-	090

Table 2.1 – Model key

Explanations:

1) ExCam IP**M3016 =** Functional camera description of the ExCam (technical data / specification of the individual camera module)

2) T**08** = SAMCON Production type 08

3) **VA1**.2.K1.BOR = T07 Ex d housing (stainless steel 1.4404) with small diameter ($Ø_{VA}$=79mm)
VA1.**2**.K1.BOR = T07 VA1.x housing with maximum body length ($L_{VA1.2.R}$ = 136mm)
VA1.2.**K1**.BOR = K1 cable gland flange (axial cable gland, standard)
VA1.2.K1.**BOR** = Borosilicate sight glass DIN7080 standard execution, for video cameras within visible spectral range and photographical infrared range (NIR), not suitable for thermographic applications (MIR/ FIR)

4) **N.**N = Normal ambient temperature range, no heater installed (T_{amb} > -20°C)
N.**N**= No cooling system installed (T_{amb} < +55°C)
LL.N= PTC heater installed (T_{amb} > -60°C)

5) **005**.N = Length of the connection line in meter at delivery. The standard cable length is 5 m, minimum / maximum cable length is:
001…095 [m] for model key -N-, 001…050 [m] for model key -LL-P and 001…005 [m] for model key -LL-T
005.**N** = Non armoured cable
005.**A** = Armoured cable

6) **P** = Plug- termination (*standard*)
CAT6, RJ-45 network plug (heavy duty), AWG 26-22,
contact assignment acc. to specification EIA/TIA-568**B**

Attention:
For model with heater, non-armoured cable and plug termination 50m is the maximum cable length.

T = Terminal box termination (*optional*)
4 x PoE Mode A connection (camera PoE)
24VDC (heater) (see chapter 4.2 electrical connection)

7) **Lens**

Model	Lens	Iris	Horizontal AoV@16/9	Horizontal AoV@4/3
T08-VA.1.2.K1.BOR-X.X-XXX.X-X-090 (wide)	Megapixel lens 2.8mm	F2.6	90°	78°

2.3 Electrical parameters

Power supply camera: PoE, IEEE 802.3af/ 802.3at
Type 1 class 1, typical 2.9 W, max. 3.8 W
(LL models only MODE A PSE-devices!)

Power supply heater: 20W@-60°C@24VDC

Attention!
Per module, the switch-on power can reach P_{max} **> 100W***! Supply cable fine wire fuses have to be dimensioned accordingly by the end user.*

It is recommended to use, for example, type: ***2000 mA -T- time-lag*** *(ESKA UL-micro fuse 20x5mm)*

The typical continuous power rating at artic temperature range (T_{AMB} **-60°C***) is* $P_{(-60°C)}$ **= 14.8 W** *at a saturated condition*

*The typical start-up peak at artic temperature range (**-60°C**) is* I_{max} **≈ 4860mA***!*

The typical in-rush-duration for I_{PTC} **< 1000mA** *per module is* t_{ON} **≤ 45s**
The typical in-rush-duration for I_{PTC} **< 500mA** *per module is* t_{ON} **≤ 120s** *(saturated range/ steady current)*

2.4 System cable

System cable (SKD02-T)

Outside diameter:	8.9 ± 0.3 mm
Bending radius:	8 x D_a when installed and 4 x D_a after relocation
Data line:	4 x 2 x AWG23/1 CAT.6
Properties:	PUR halogen-free, flame-retardant, UV-resistant, chemical resistance, shielded

Quick link:
https://www.samcon.eu/fileadmin/documents/en/60-Assembling%26mounting/SKD02-T_Datasheet.pdf

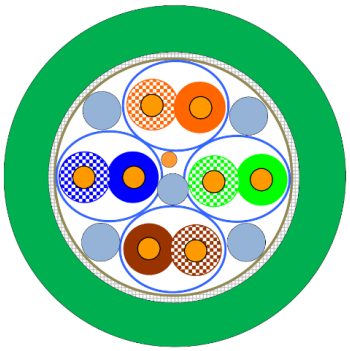

Figure 2-1 Sectional view of SKD02-T

Armoured system cable ASKD02-T

Outside diameter:	12.0 ± 0.4 mm
Bending radius:	20 x D_a when installed and 10 x D_a after relocation
Data line:	4 x 2 x AWG23/1 CAT.6
Properties:	PUR halogen-free, flame-retardant, UV-resistant, chemical resistance, shielded (see www.samcon.eu)

Quicklink:
https://www.samcon.eu/fileadmin/documents/en/60- Assembling%26mounting/ASKD02-T_Datasheet.pdf

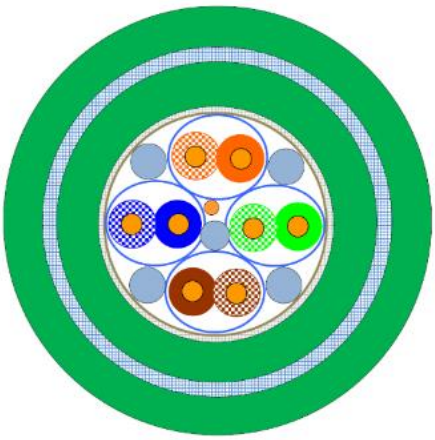

Figure 2.2 Sectional view of ASKD02-T

2.5 Technical specification of the camera module

We use the AXIS M3016 network camera in a pressure-resistant enclosure. For details, please refer to the Product Documentation, video-technical data of AXIS®:

https://www.axis.com/products/axis-m3016/

Data sheet:
https://www.axis.com/en-ca/products/axis-m3016/support-and-documentation
datasheet-axis-m3016-network-camera-en-US-294921.pdf

User manual:
https://help.axis.com/api/download/um_m30_series_t10104241_en_2103.pdf

Assigning IP addresses and accessing video streams:
How to assign an IP address and access your device - User Manual (axis.com)

Installation guide:
axis-m3015m3016-network-camera--installation-guide-en-US-109763.pdf

2.6 Other technical data

Housing material of the pressure resistant enclosure (Ex d / DIN EN 60079-1: 2014) according to **DIN EN 10027-2: 2015-07** (designation system for steel):

Housing material (*standard*)	MNo.: 1.4404 (X2CrNiMo17-12-2), **AISI 316L** / V4A

Additional metallic and non-metallic materials of the T07 VA1.2.x.x ex-d housing:

	Zinced spring steel MNo.: 1.0330, PTFE with glass microbeads (GYLON® Style 3504 blue), silicone-coating (Silcoset 105 incl. CureAgent 28), VMQ (silicone), thermos transfer foil made of polyester (acetone resistant), cable glands made of brass, nickel-plated (MsNi)
Sight glass material:	Borosilicate glass “Ilmadur 10/ I-420” (DIN7080[2]:2005-05)
Internal materials:	Optical and electronical components, div. thermoplastic plastics: polyamide (PA6.6/ PA2000) and polyoxymethylene (POM) isolators and supporting adapters, aluminum die cast, zinced (protection housing T08 aluminum universal

2 Valid standards for translucent components in a pressure-tight housing: DIN7080:2005-05 „Round sight glasses made of borosilicate glass for compressive stress without limitation of the low temperature ranges“

	adapter (EN AW-ALSi1MgMn), PTC-ceramics, PUR, etc.
Weight (without accessories):	3,000 g
Weight of accessories:	800 g (wall mount bracket WMB-S) 400 g (hood WPR-VA1.2) 50 g (hinge attachment SCH-VA1.x) (*further accessories upon request)*
Dimensions housing (wxhxd):	79.0mm x 96.0mm x 158.0mm
Dimensions with accessories (WxHxD):	97.0mm x 193.0mm x 299.5mm (*with wall mount bracket and hood*)

Fitting of the **flame proof gap** preventing the transmission of ignition (cylinder) (EX) of the T07-VA1.2.x.x housing:

Flange / body	Nominal diameter: **57 mm** (plain cylindrical) Clearance fit: **H8 f7** *(DIN ISO 286)* Tolerance: (-60…-30) µm … (0…+46) µm Smallest gap length > 12.5 mm *(according to DIN EN 60079-1)* Largest gap length < 0.15 mm *(according to DIN EN 60079-1)* Average surface finish: $R_a \approx$ **2.0 µm** (*DIN ISO 468*) / $R_a \leq$ 6.3 µm (according to *DIN EN 60079-1: 2014 [5.2.2])*
Cable glands	1x **M20*1.5**_12 mm (ISO metrical fine thread acc. to *DIN13-2*), **Quality 6H** (medium or fine (acc. to. *ISO 965-1* / *ISO 965-3*), supporting/ **gripping threads ≥ 5** (acc. to the requirements of *DIN EN 60079-1: 2014 [5.3]* *table 3 „cylindrical threads“*)
Media resistance:	***Exclusively checked upon request!*** Generally: Corrosion as well as chemical highly resistant against a variety of fluid and gaseous components of the industrial area and suitable for offshore applications (see general specification of stainless steel MNo.:1.4404 / AISI316L), surface finish and modification of the Ex d housing[3], elastomer sealings of the cables, as well as the GYLON® flat seals of the housing flange, etc.)

3 Protective coating, electro polishing, etc. …

3 Safety Instructions

Please absolutely observe the installation instruction's safety directions of the T08 ExCam series!

Quick link:
https://www.samcon.eu/fileadmin/documents/en/22-Ex-Network-Cameras/ExCam-Series-T08-EX-Installation-Manual-2020.pdf

It is absolutely mandatory to adhere to the national safety regulations and regulations for prevention of accidents, as well as to the safety instructions given below in this User Manual!

Attention!
Cameras of the type ExCam T08 Series are not suitable for the use in zone 0 and zone 20. The temperature class and explosion group as stated on the type plate has to be observed. Alterations are not permitted. The camera is to be operated in sound conditions and in the intended way.

Attention!
Only original parts of SAMCON Prozessleittechnik GmbH may be used for repairs. Repairs concerning the explosion protection may only be carried out in accordance with the nationally applied regulations and by SAMCON Prozessleittechnik GmbH.

Attention!
External heat and/ or cooling sources are to be taken into account during the setting up. The permissible temperature range for transportation, storage, and operation of the camera has to be observed.

Attention!
If you use the ExCam in the mining sector with a "high" risk of mechanical hazard, you must provide an appropriate device ensuring protection of translucent components (protective grille, etc.).

Attention!
The instructions stated on the type and instruction plates have to be observed:

„WARNING - DO NOT OPEN IN POTENTIALLY EXPLOSIVE ATMOSPHERES "

The use in hazardous areas with regard to temperature and dust layers is defined in the respective national regulations.

4 Commissioning

For the camera's installation and operation, the relevant national regulations, as well as the generally accepted rules of technology shall prevail. Before mounting the camera, thoroughly check it for any transportation damages, especially at the housing and cable. Installation, electrical connection, and the first commissioning must only be carried out by qualified personnel.

Work preparation:

Attention!
Prepare your work carefully and in accordance with the relevant regulations.

Attention!
Depending on classification of hazard areas, a work approval has to be obtained!
When you open the pressure-resistant enclosure under voltage, it is absolutely necessary to prevent potentially explosive atmosphere!

To ensure the best image quality delivered by the network camera, plan the installation site carefully (consider light conditions, object distance or size, angle and minimum object distance to the focus).

- Use appropriate tools and aids.
- When working, ensure a safe stand.
- Make sure that any static charge is avoided

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

Attention!
Please observe the installation and commissioning advices described in the ATEX/ IECEx/ EAC-Ex Ex-installation manual!

Install the ExCam® IPM3016 at the desired location. Mounting options and conditions, accessories, as well as safety guidelines are described in the EX installation manual of the T08 ExCam® Series.

Attention!
Prior to the camera installation, take external sources of heat or cold into account! Observe the permissible temperature range!

5 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!
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 EX installation manual!

The T08 ExCam® IPM3016 is delivered with an electrical connection. The maximum cable length (PD to PSE) is 95 m (depending on electromagnetic tolerance/ EMC environment) and can be determined individually to reflect the particular customer specifications.

The ExCam® IPM3016 is manufactured with a cable pigtail reflecting the desired cable length. Any electro-technical or mechanical work inside the camera's flameproof enclosure which is done by the user is prohibited and not required. Depending on the model option, the ending of the camera's cable connection is either furnished with a plug or connected to the terminal box.

5.1 Potential equalization

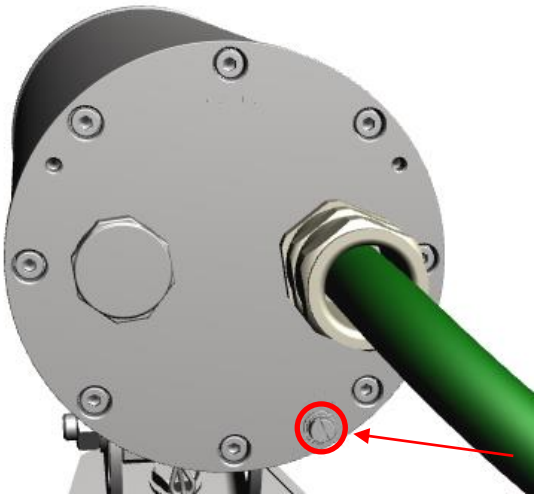

Figure 5.1 – PE connection ExCam IPM3016

The potential equalization (earthing of the camera housing) is mandatory in order to avoid electrostatic charging and hence spark generation. The screw terminal on the housing's rear side is intended for this purpose (q.v. figure 4.1). The profile of the potential equalization has to reflect the national grounding instructions (min. 4 mm^2).

Connection table:

Potential	**Color** (IEC 60757)	**Profile**	**Comment**
PE	GN/YE	4 mm^2 (fix)	Screw terminal: Slotted screw M4 x 0.7 (DIN 84) with washer Ø 9 mm (DIN 125A). 3Nm tightening torque has to be observed!

Table 5.1 – Potential equalization

5.2 Connection and protection

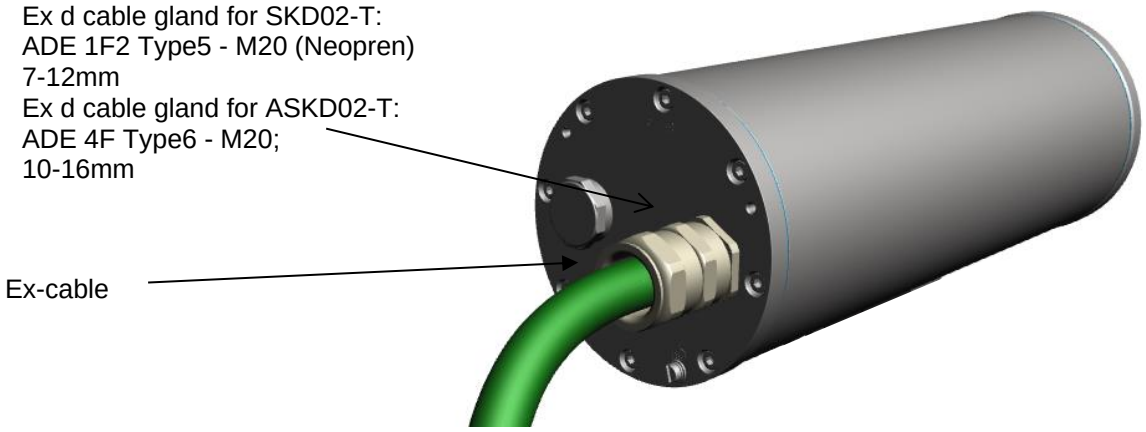

Figure 5.2 – Ex d cable gland with cable

Figures 5.3 – 5.5 illustrate the possible cable terminations available for the ExCam IPM3016. Possible cable terminations are terminal box or RJ45 plug.

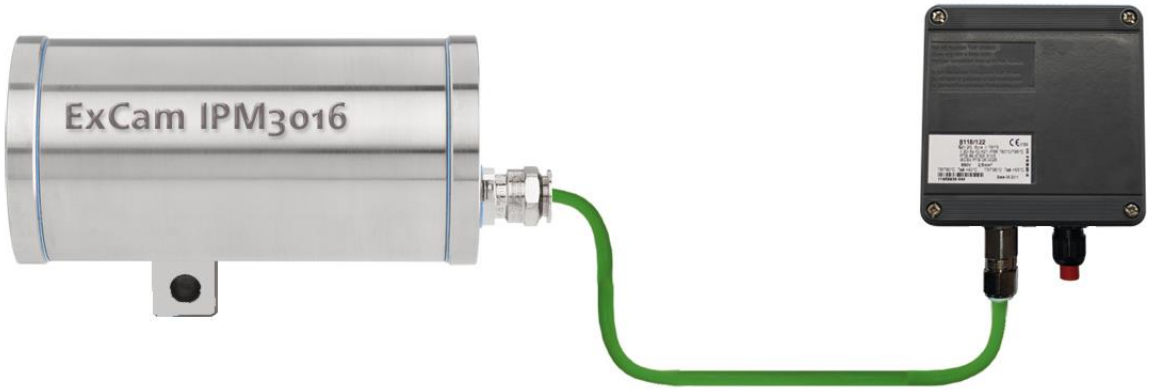

Figure 5.3 – ExCam IPM3016 T08-VA1.2.K1.BOR-N.N-xxx.N-**T**-0xx

Figure 5.4 – ExCam IPM3016 T08-VA1.2.K1.BOR-N.N-xxx.N-**P**-0xx

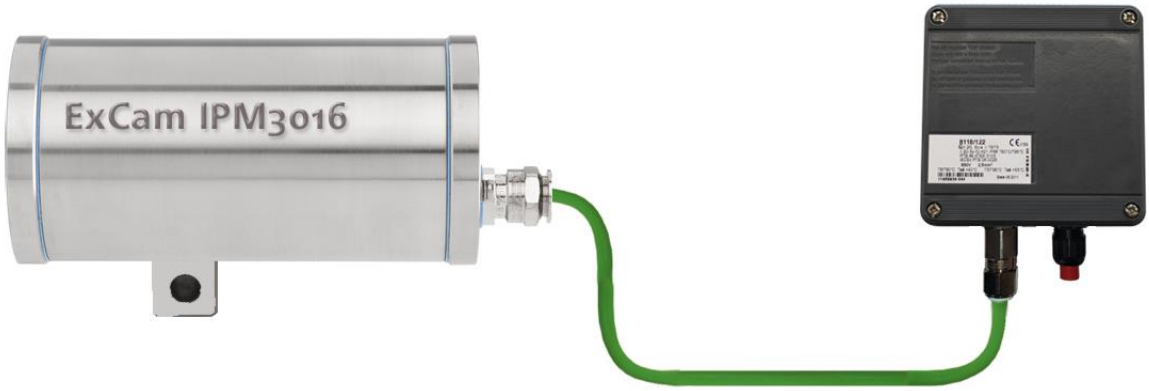

Figure 5.5 – ExCam IPM3016 T08-VA1.2.K1.BOR-**LL**.N-xxx.N-T-0xx

Via the 8 (+1) wire green patch cable the digital video stream is transferred via IP/ TCP/ RTSP protocol levels and the camera module is controlled and/or parametrized via the web interface or the video management software.
The power supply of the PoE camera and the optional heating mode (none-PoE) is conducted via this cable. In order to guarantee the power supply of the T08 ExCam IPM3016 (*Powered Device*/ PD), a Power-over-Ethernet component (Power Sourcing Equipment, PSE) has to be available at the connecting side (e.g. a PoE Switch, a PoE Injector, or Midspan) which meets the IEEE 802.3af or 802.3at type 1 class 1 specification [4]. The interface of the ExCam IPM3016 uses a 100 Mbit/s „Fast Ethernet“ connection for the data transfer (100BASE-TX).

5.2.1 Connector pin assignment (RJ45)

In case the camera disposes of a plug (figure 5.4); it has to be plugged into the RJ45 PoE 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.

4 Classification power: 9-12 mA, nominal voltage 48 V DC (44…54 V DC),maximum feed power PSE: 4.0 W, removal performance PD: 0.44 W – 3.84 W

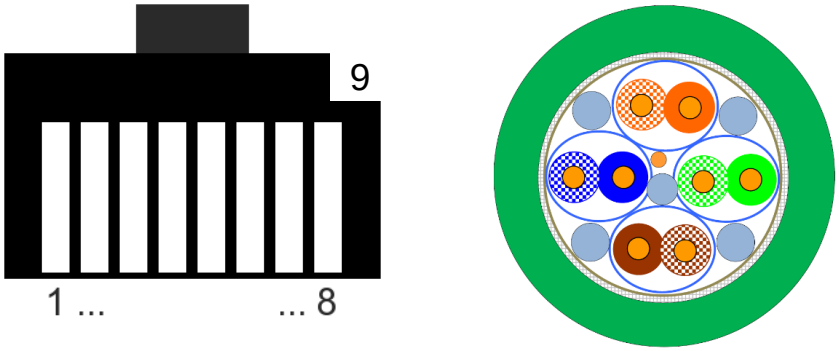

Figure 5.6 – RJ45 Pin assignment and cable pin assignment

5.2.2 Connection work on the terminal box

Attention!
Never open the Ex-e terminal box while energized!

Attention!
Observe the international regulations for connection spaces with increased safety (Ex-e)!

Attention!
Please observe the separate Usual Manual for the Ex-e connection chamber attached in the annex.

If the ExCam IPM3016 disposes of a terminal box termination, the correct connection of the individual pins in accordance with EIA/TIA-568B has to be observed (q.v. table 5.2). Generally, the pins of the same color code (IEC60757) are connected. If the ExCam IPM3016 is equipped with a PTC housing heating, particular connection conditions apply (camera (PoE) and heating load circuit (24 VDC) have to be supplied separately (q.v. table 4.3)).

Attention: The general specification for PoE allows different operation modes for PDs:
Mode A (end span): This is usually used by switches; the supply voltage is executed as phantom power on the data lines. Both polarities are possible.
Mode B (mid span): This is usually used by PoE injectors; the power supply and protocol transfer is executed on separate pins (plug / pin contact 4.5 is the positive pole and 7.8 is the negative pole). The T08 ExCam Series supports both modes and the used power source (PSE) determines the mode.

Important: If the ExCam IPM3016 is delivered with a heating (model key LL, figure 5.5), only four wires are available for PoE. In this case, the PSE has to be operated in mode A

(phantom power - q.v. wire assignment table 5.3). The applicable devices on the connection side should be checked upfront regarding suitability. If you need support, please get in touch with support@samcon.eu.
It is also allowed to separate and re-connect the ExCam IPM3016 from the network when in operation and/or when interacting with the visualization software (hot plug-in), or, if necessary, to reboot it for carrying out a re-parametrization or set it back to default.
Attention: „Hot plug-in“ as well as the connection and separation of the data and power cable from/of network devices and terminal blocks under power is only allowed within the safe area (non-hazardous atmosphere)!

For model key „N“ (**ExCam without PTC** heating) the pin assignment is in accordance with the standard EIA/TIA-568B for 100BaseTX with PoE (IEEE 802.3af/at):

Camera side / Internal Wiring				**System Cable**		**Junction Box**	
Pin/ Potential 100BaseTx/PoE		**Color** (IEC60757)	**Plug contact** (TIA-568B)	**Profile** AWG23/1		**Terminal**	**Comments**
Mode A	*Mode B*			Area [mm²]	Diameter [mm]		
-	-.	PE (enclosure)	*SHD.*	-	-	PE	SHD
Tx+ / PoE ±48 VDC	Tx+	WH / OG	1	0.26	0.57	**1**	
Tx- / PoE ±48 VDC	Tx-	OG	2	026	0.57	**2**	
Rx+ / PoE GND	Rx+	WH / GN	3	0.26	0.57	**3**	
Rx- / PoE GND	Rx-	GN	6	0.26	0.57	**4**	
n.a.	PoE +48 VDC	WH / BU	5	0.26	0.57	**5**	
n.a.	PoE +48 VDC	BU	4	0.26	0.57	**6**	
n.a.	PoE GND	WH / BN	7	0.26	0.57	**7**	
n.a.	PoE GND	BN	8	0.26	0.57	**8**	
Shield A/ GND (twisted pair)		-	*GND (Plug)*	-.	-	PE.	PE
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	**9**	
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	**10**	
		-.		-	-	PE	

Table 5.2 – Electrical connection with SKD02-T for model key „N.N“

Camera side / Internal Wiring				System Cable		Junction Box	
Pin/ Potential 100BaseTx/PoE		**Color** (IEC60757)	**Plug contact** (TIA-568B)	**Profile** AWG23/1		**Terminal**	**Comments**
Mode A	*Mode B*			Area [mm²]	Diameter [mm]		
-	-.	PE (enclosure)	*SHD.*	-	-	PE	SHD
Tx+ / PoE ±48 VDC	Tx+	WH / OG	1	0.26	0.57	**1**	
Tx- / PoE ±48 VDC	Tx-	OG	2	026	0.57	**2**	
Rx+ / PoE GND	Rx+	WH / GN	3	0.26	0.57	**3**	
Rx- / PoE GND	Rx-	GN	6	0.26	0.57	**4**	
n.a.	PoE +48 VDC	WH / BU	5	0.26	0.57	**5**	
n.a.	PoE +48 VDC	BU	4	0.26	0.57	**6**	
n.a.	PoE GND	WH / BN	7	0.26	0.57	**7**	
n.a.	PoE GND	BN	8	0.26	0.57	**8**	
Shield A/ GND (twisted pair)		-	*GND (Plug)*	-.	-	PE.	PE
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	**9**	
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	**10**	
		-.		-	-	PE	

Table 5.3 – Electrical connection with ASKD02-T for model key „N.N“

Particularly in EMC critical environments, it is necessary to make sure that the cable shield is grounded on side of the terminal block (wire and pin contact No. 9, q.v. figure 5.6).
The maximum cable length between camera and Ex-e terminal boxes for models without heating is 95 m.

Video Tutorial:
“SAMCON 01 Wiring the cable SKDP03-T to the junction box ExTB-3”
https://go.samcon.eu/v01

Figure 5.7 – Video Tutorial ExTB-3

For model key „LL“ (**ExCam with PTC heating**) the wires of the system cables are, for marshalling the PoE transmission and heating supply, assigned as follows:

Camera side / Internal Wiring				**System Cable**		**Junction Box**	
Pin/ Potential 100BaseTx/PoE		**Color** (IEC60757)	**Plug contact** (TIA-568B)	**Profile** AWG23/1		**Terminal**	**Comments**
				Area [mm²]	Diameter [mm]		
Mode A	*Mode B*						
-	-.	PE (enclosure)	*SHD.*	-	-	PE	SHD
Tx+ / PoE ±48 VDC	Tx+	WH / OG	1	0.26	0.57	**1**	
Tx- / PoE ±48 VDC	Tx-	OG	2	026	0.57	**2**	
Rx+ / PoE GND	Rx+	WH / GN	3	0.26	0.57	**3**	
Rx- / PoE GND	Rx-	GN	6	0.26	0.57	**4**	
n.c.	*n.c.*	*n.c.*	*n.c.*			**5**	
n.c.	*n.c.*	*n.c.*	*n.c.*			**6**	
n.c.	*n.c.*	*n.c.*	*n.c.*			**7**	
n.c.	*n.c.*	*n.c.*	*n.c.*			**8**	
Shield A/ GND (twisted pair)		-	*GND (Plug)*	*FOIL.*	-	PE.	PE
L+ / +24 VDC	*n.a.*	WH / BN BN	-	2 x 0.26	2 x 0.57	**9**	L+ (Heater)
L- / GND	*n.a.*	WH / BU BU	-	2 x 0.26	2x 0.57	**10**	L- (Heater)
						PE	

Table 5.4 – Electrical connection for model key “LL.N“

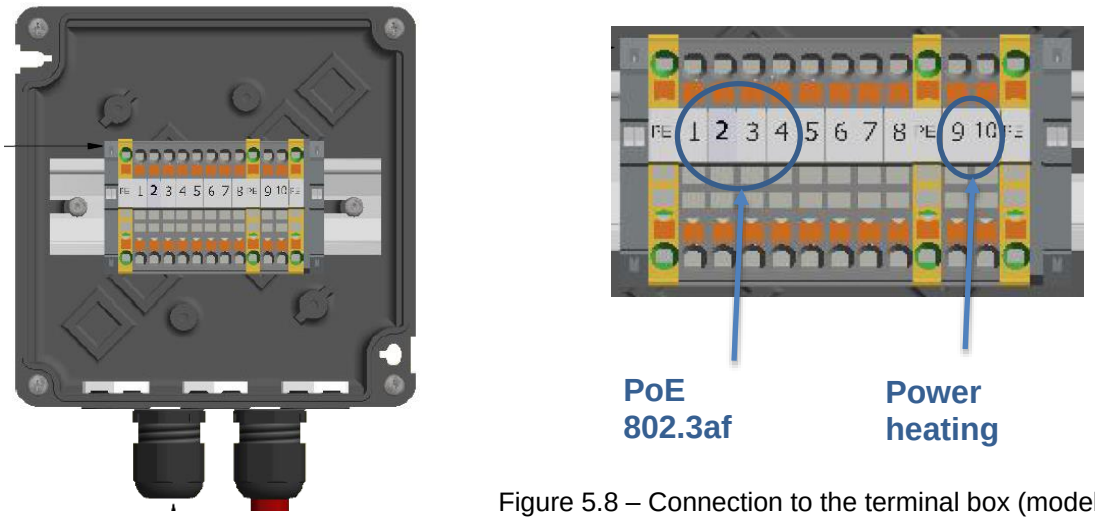

Figure 5.8 – Connection to the terminal box (models with heating)

The maximum cable length for models with heating is 5 m from camera to Ex-e terminal box.

Attention!
Put the foiling up to about 10mm to the terminals, in order to pre-vent alien crosstalk. Make sure that the foiling cannot cause any short circuit of the data couples!

Attention!
Bring the twisted pair composite approximately 10mm close to the ter-minals, in order to ensure the immunity of disturbance.

Attention!
Use only terminals approved by SAMCON.

Attention!
Finally, check your network installation by per Class-D Link Test.

5.2.3 Appropriate cables & cable glands

An integral part of the device safety is the correct selection of the cables, wires and cable glands.

Attention!
Cables and wires must comply with the requirements of the IEC 60079-0/1/7 & 14.

Attention!
The supply line must have a sufficient cross-section. The cable protec-tion must comply with national and international regulations.

Attention!
Cable glands which are not fitted with a cable have to be closed with the red blind plug.

To view non-binding configuration and planning guidelines, please visit our website:

Perhaps our video will help you: "Cables for flameproof devices in potentially explosive atmospheres"
http://go.samcon.eu/video-cable-ex

Figure 5.9 – Ex-d cable selection

5.2.4 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!

Attention!
Do not switch on the camera at temperatures below -5°C!

6 Hardware Reset

A hardware reset should only be carried out under the following conditions: The camera is not accessible within the network after it has been disconnected from power in order to carry out a restart, after a failed firmware update, or a factory reset has been explicitly asked for. For carrying out a hardware reset it is allowed to open the Ex d housing. All required steps are described in chapters 5.1 to 5.3 of this user manual; the descriptions stated in the T08 ExCam Series Ex installation manual have to be observed!

6.1 Work preparation

Attention!
Please carry out any pre-operational 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!

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

6.2 Opening the pressure-resistant housing

Opening the pressure–resistant camera housing is only allowed to carry out the hardware reset of the M3016 camera module. Afterwards, the housing has to be closed explosion-proof again! The steps below have to be followed very carefully:

„WARNING – DO NOT OPEN IN HAZARDOUS AREA“

Attention:

For opening the ExCam IPM3016's pressure-resistant stainless steel housing T07 VA1.2.K1.BOR, it is mandatory to follow the step-by-step instructions as stated in the T08 Ex installation manual!

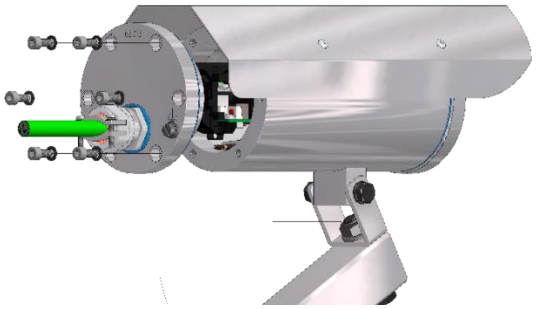

Figure 6.1 – Opening the ExCam IPM3016

Attention!
Beware not to damage the surface of bore hole and shaft (fit) at the flame proof gap preventing the transmission of ignition.

Attention!
Please make sure not to damage housing sealings and to keep them clean.

The two control buttons are located on the Axis modules main board (q.v. Figure 5.2); the outer push button is used for carrying out the hardware reset.

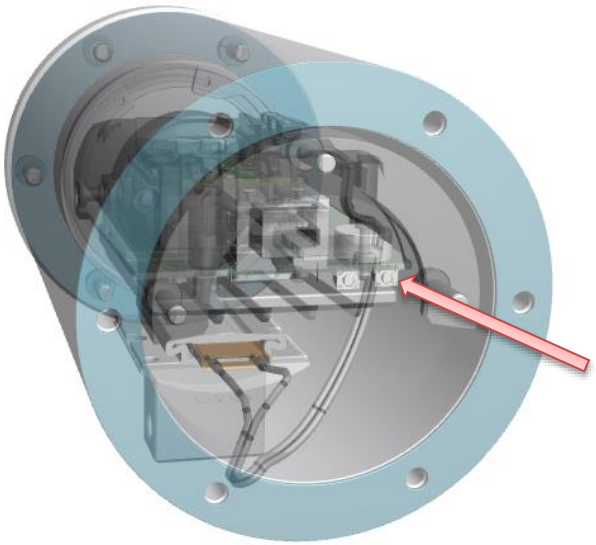

Figure 6.2 – Location of the control button

In order to be able to press the control button, the black mounting adapter has to be disconnected from the stainless steel flange. To do so, please take off the M3*0.5 16 mm cylinder head screws (DIN 912) with the associated washers (DIN 127 A) (q.v. figure 5.3)

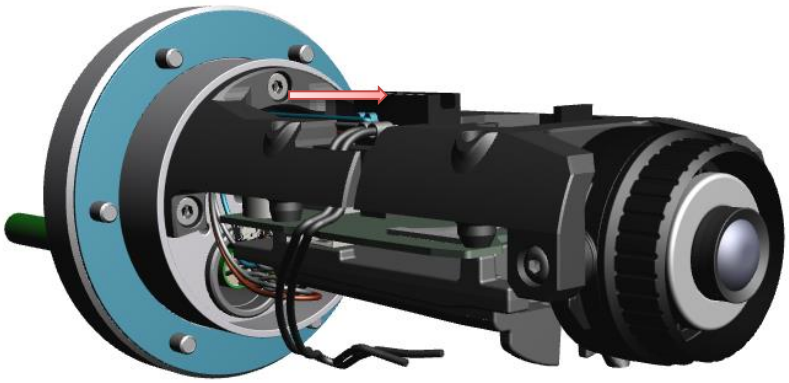

Figure 6.3 – Disconnecting the mounting adapter

Attention: Via a „heavy duty“ RJ45 network plug, the hardware is connected to the system cable. For low temperature models, there are also two further wires (BK) and an additional plug connection (WH) to the heating module. It is not mandatory to unplug the RJ45 plug but it might facilitate the handling. If the cable is unplugged, please make sure to re-loop it later on.

Carefully tilt the mounting adapter so that through the opening, the right push button can be pressed to carry out the hardware reset (q.v. Figure 5.2).
Please make sure not to damage any electrical installations, cable interfaces, the lens, or the mounting components. Also, please do not to exert mechanical strain on the aforementioned components. Please be aware that the measures run a risk of distorting the optical axis which leads to a reduction in the picture quality!

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

For carrying out the hardware reset, please refer to the Axis user manual (page 19) which describes the individual steps:

https://help.axis.com/api/download/um_m30_series_t10104241_de_2103.pdf

After the successful hardware reset, the mounting adapter has to be fixed again with the three M3*0.5 original screws and the associated washers. A tightening torque of 2.5 Nm is recommended!

When closing the housing, the cable routing has to be observed! In order to avoid collisions and mechanical strain within the closed housing as well as to observe the necessary bending radius, the cable has to be looped.

6.3 Closing of the pressure-resistant housing

Attention:

For closing the pressure-tight stainless steel T07 VA1.2.K1.BOR housing of the ExCam IPM3016, the instructions of the T08 Ex installation manual have to be followed step by step!

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

ATTENTION!
Do not lock-in any foreign objects in the housing

Cylinder head scrrews used for explosion-proof connection of the housing body with the flanges, always have to be tightened evenly and crosswise with a tightening torque of 3.0 Nm

7 Network access and visualization

For a comprehensive user manual of the web surface, please refer to the to the Axis user manual: https://help.axis.com/axis-m3016
https://help.axis.com/api/download/um_m30_series_t10104241_en_2103.pdf

At delivery, the ExCam IPM3016 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”, requiring a system restart.

7.1 Browser Support

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

https://help.axis.com/access-your-device
https://www.axis.com/support

7.2 Assigning the IP address

The ExCam IPM3016 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 IPM3016’s default address “192.168.0.90” (subnet masking 255.255.255.0) is used.
With the “AXIS IP Utility“ tool it is possible to determine the IP address with Windows; the software as well as additional useful tools can be downloaded for free from the axis homepage.

https://www.axis.com/support/tools/axis-ip-utility

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

The “AXIS IP Utility“ tool automatically recognizes all ExCam devices and displays them (also subnet overlapping). With this application, also the static IP address can be set manually. In this case, the ExCam IPM3016 network camera should be installed in the same network segment (physical subnet) as the PC on which the AXIS IP Utility is executed.

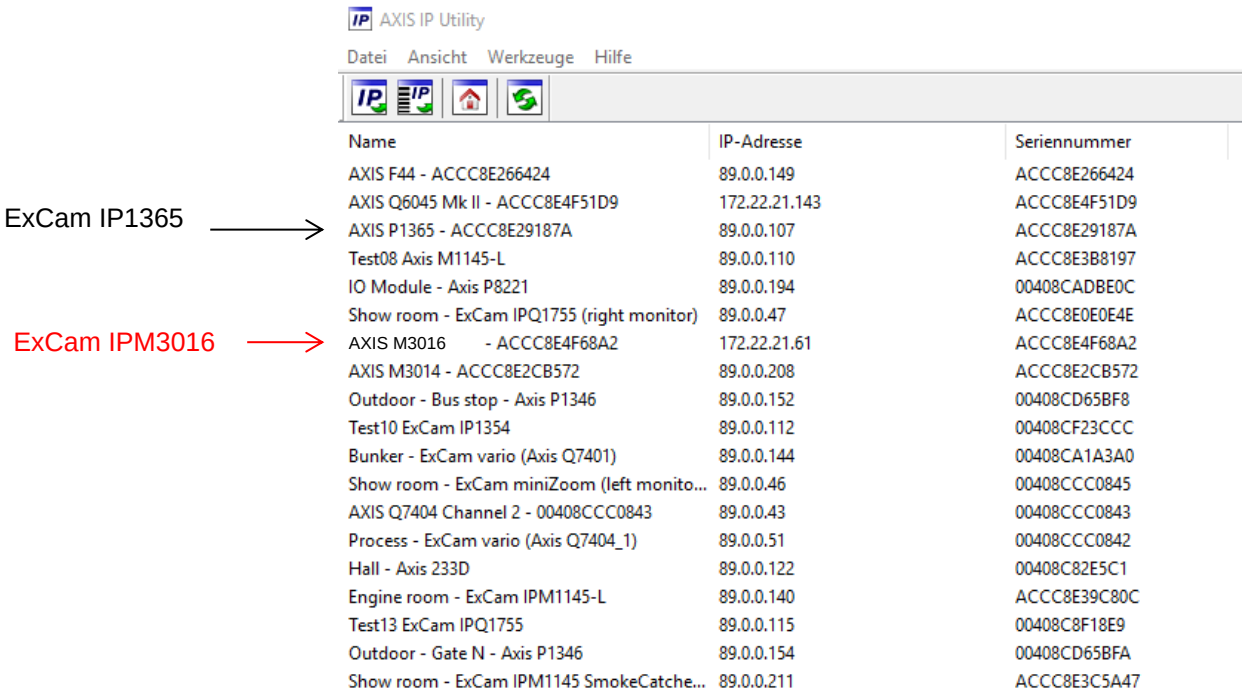

Figure 7.1 – Axis IP Utility

7.3 Password / identification

If not determined differently, the default settings are as follows:

The default user name is: **root**
The default password is: **root**

The user can change the password individually; also via an encrypted HTTPS connection (please follow the indicated steps in the Axis user manual)

8 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.

9 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 authorized by SAMCON Prozessleittechnik GmbH in accordance with nationally applied regulations. Rebuilding of or alterations to the devices are not permitted.

10 Disposal / Recycling

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

This document is subject to alterations and additions.

11 Drawings, certificates and further documentation

Technical drawings, also for additional accessories, 3D models, STEP files and DXF shapes, as well as certificates and further documentation are available on the SAMCON homepage:

https://www.samcon.eu/en/products/network/excam-ipm3016/

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