

# RoughCam IPM3016

## User Manual



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## Revision history

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# 1 Introduction

The RoughCam IPM3016 is a very compact and robust digital camera (type T10) which is manufactured by SAMCON Prozessleittechnik GmbH and can be used very flexibly for various applications. Due to its dimensions and adaption options even sight glass applications and process observations with only little object distances are possible.

Besides for fixed installation, the RoughCam IPM3016 can also 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 Illustration of the model key


Product name <sup>1)</sup>	Model versions					Options
	Type <sup>2)</sup>	Housing combination <sup>3)</sup>	Temperature range <sup>4)</sup>	Cable length/m <sup>5)</sup>	Cable termin. <sup>6)</sup>	Lens <sup>7)</sup>
RoughCam IPM3016	T10-	VA1.2.K1.BOR-	N.N-	005.N-	P-	090
	T10-	VA1.2.K1.BOR-	N.N-	005.N-	T-	090
	T10-	VA1.2.K1.BOR-	LL.N-	005.N-	T-	090

Table 2.1 – Model key

#### Explanations:

- 1) **RoughCam IPM3016** = Functional camera description of the RoughCam (technical data / specification of the individual camera module)
- 2) **T10** = SAMCON Production type 10 (for safe areas)
- 3) **VA1.2.K1.BOR** = T11 housing (stainless steel 1.4404) with small diameter ( $\varnothing_{VA}=79\text{mm}$ )  
**VA1.2.K1.BOR** = T11 VA1.x housing with maximum body length ( $L_{VA1.2.R} = 136\text{mm}$ )  
**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 photographic infrared range (NIR), not suitable for thermographic applications (MIR/ FIR)
- 4) **N.N** = Normal ambient temperature range, no heater installed ( $T_{amb} > -20^{\circ}\text{C}$ )  
**N.N=** No cooling system installed ( $T_{amb} < +55^{\circ}\text{C}$ )  
**LL.N=** PTC heater installed ( $T_{amb} > -60^{\circ}\text{C}$ )
- 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- and 001...005 [m] for model key -LL-

- 005.N = Non armoured cable
- 6) **P** = Plug- termination (standard)  
 CAT6, RJ-45 network plug (heavy duty), AWG 26-22,  
 contact assignment acc. to specification EIA/TIA-568B  
**Attention:**  
 Only possible for model key N (without heating).
- T** = Terminal box termination (optional)  
 4 x PoE Mode A connection (Camera PoE)  
 24VDC (Heater) (see chapter 4.2 electrical connection)
- 7) **Lens**



Models	Lens	Iris	Horizontal AoV@16/9	Horizontal AoV@4/3
T10-VA.1.2.K1.BOR-X.X-XXX.X-X- <u>090</u> (wide)	Megapixel lens 2,8mm	F2.6	90°	78°

## 2.2 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 the artic temperature range ( $T_{AMB} -60^{\circ}C$ ) is  $P_{(-60^{\circ}C)} = 14.8 W$  at a saturated condition*

*The typical start-up peak at the artic temperature range ( $-60^{\circ}C$ ) is  $I_{max} \approx 4860mA!$*

*The typical in-rush-duration for  $I_{PTC} < 1000mA$  per module is  $t_{ON} \leq 45s$*

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

## 2.3 System cable

Outer diameter:	8.9 ± 0.3mm
Bending radius:	8 x outer diameter at installation 4 x outer diameter after installation
Temperature range:	-25°C to +80°C (at point of installation) -60°C to +80°C (fixed installed)
Conductor design:	4 x 2 x AWG23/1 blank, CAT.6
Shielding:	Copper braid, multiple wires 0-10 vz, opt. cover- age approx. 80%
Outer sheath/characteristics:	PUR FHF, halogen free, flame resistant (EN 60332-1-2), EMV shielded

## 2.4 Technical specification of the camera module

### Please note:

*Technical details of the internal CCTV module such as light sensitivity, resolution, frame rate sensor, shutter times, lens details, streaming functions, supported network protocols, event trigger, storage options, and picture parameter setting via the web interface are thoroughly provided in the data sheets of the camera manufacturer and not part of the T10 RoughCam user manual.*

### **The 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](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](#)

## 2.5 Other technical data

Protection level:	IP 66/68 (IEC/ EN 60529)
Transportation / storage temperature:	-40°C ... +65°C
Ambient temperature:	-60°C ... +55°C (Type:...LL.N...) -20°C ... +55°C (Type:...N.N...)
Housing material of the enclosure according to <b>DIN EN 10027-2: 2015-07</b> (designation system for steel):	
<u>Housing material (standard)</u>	MNo.: 1.4404 (X2CrNiMo17-12-2), <b>AISI 316L</b> / V4A
Additional metallic and non-metallic materials of the T11 VA1.2.x.x housing:	Zincd 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"
Internal materials:	Optical and electronical components, div. thermoplastic plastics: polyamide (PA6.6/ PA2000) and polyoxymethylene (POM) isolators and supporting adapters, Aluminum die cast, zincd (aluminum universal adapter (EN AW-ALSi1MgMn), PTC-ceramics, PUR, etc.
Weight (without accessories):	3,000 g
Weight of accessories:	800 g (wall mount bracket <u>WMB-S</u> ) 400 g (hood <u>WPR-VA1.2</u> ) 50 g (hinge attachment <u>SCH-VA1.x</u> ) (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)

Media resistance:

***Exclusively checked upon request!***

Generally: corrosion resistant, 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<sup>1</sup>, elastomer sealings of the cables, as well as the GYLON flat seals of the housing flange, etc.)

### 3 Safety guidelines

**Please observe the national regulations regarding security and accident prevention and the safety guidelines given below in this user manual!**



**Attention!**

**Only original parts of SAMCON Prozessleittechnik GmbH may be used for repairs. Repairs 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**

**Prior to the first use, you should test the camera corresponding to the instructions given in the chapter commissioning.**

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<sup>1</sup> Protective coating, electro polishing, etc. ...



## 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 transport damage, especially at the housing and cable. Installation, electrical connection and the first commissioning must only be carried out by qualified personnel.



### **Attention!**

**Please observe the national regulations regarding security, installation, and accident prevention as well as the safety guidelines described in this user manual!**

### 4.1 Step 1: Installation

Install the RoughCam IPM3016 at the desired location. You can find mounting options and additional accessories at <http://samcon.eu>.



### **Attention!**

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

### 4.2 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 RoughCam Series has to be grounded via a PE-connection!**

The T10 RoughCam IPM3016 is delivered with the 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 RoughCam IPM3016 is manufactured with a cable pigtail reflecting the desired cable length. Depending on the model option, the ending of the camera's cable connection is either furnished with a plug or connected to a terminal box.

#### 4.2.1 Potential equalization



Figure 4.1 – PE connection RoughCam IPM3016

The potential equalization (grounding 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<sup>2</sup>).

Connection table:

Potential	Color (IEC 60757)	Profile	Comment
PE	GN/YE	4 mm <sup>2</sup> (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 4.1 – Potential equalization

#### 4.2.2 Connection and protection

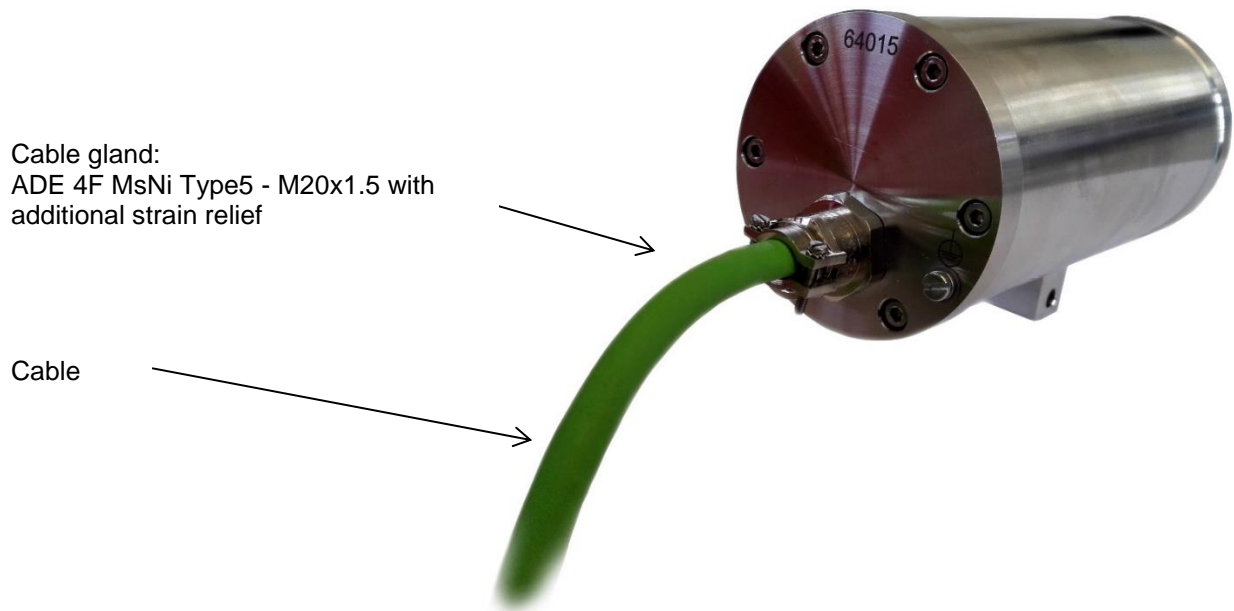


Figure 4.2 – Cable gland with cable

Figures 4.3 – 4.5 illustrate the possible cable terminations available for the RoughCam IPM3016. Possible cable terminations are terminal box or RJ45 plug.

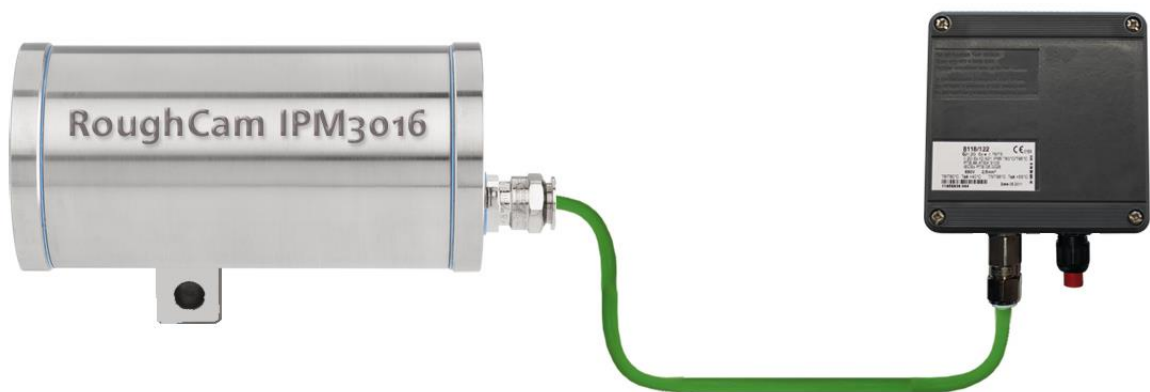


Figure 4.3 – RoughCam IPM3016 T10-VA1.2.K1.BOR-N.N-xxx.N-I-0xx

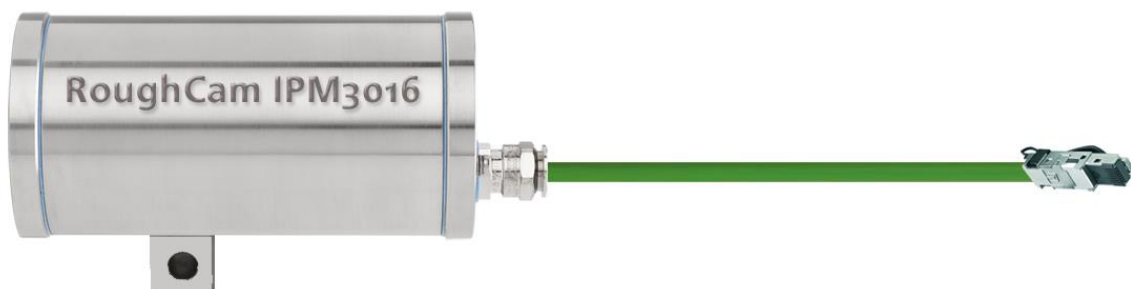


Figure 4.4 – RoughCam IPM3016 T10-VA1.2.K1.BOR-N.N-xxx.N-P-0xx

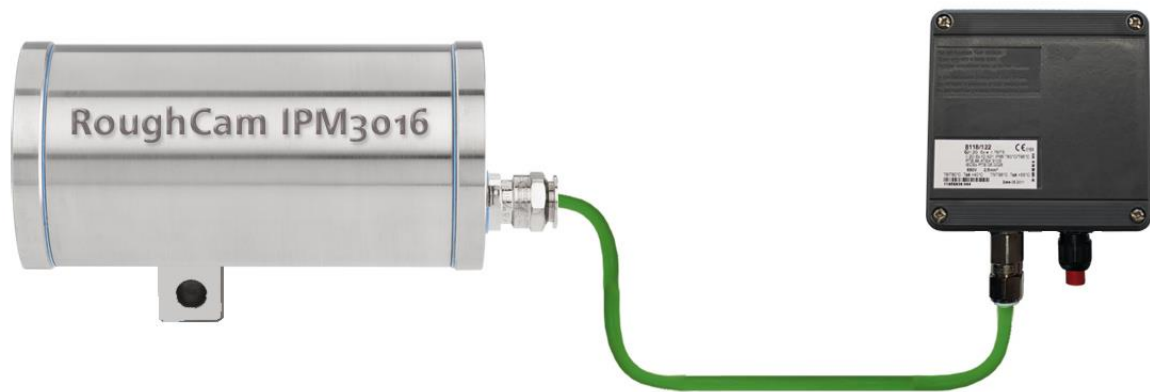


Figure 4.5 – RoughCam IPM3016 T10-VA1.2.K1.BOR-LL.N-xxx.N-T-0xx

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 T10 RoughCam 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 specification IEEE 802.3af or 802.3at type 1 class 1<sup>2</sup>. The interface of the RoughCam IPM3016 uses a 100 Mbit/s „Fast Ethernet“- connection for the data transfer (100BASE-TX).

#### 4.2.3 Connector pin assignment (RJ45)

In case the camera disposes of a plug (figure 4.4); 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.

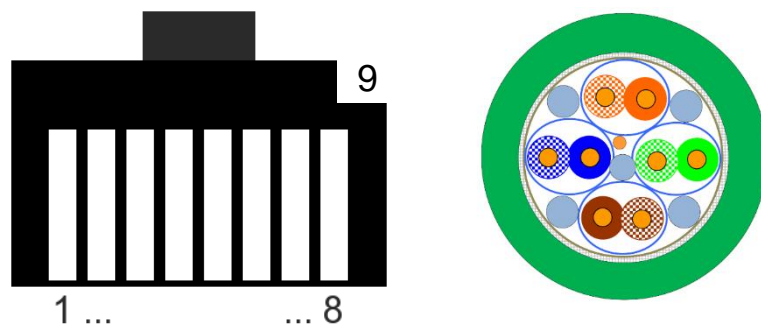


Figure 4.6 – RJ45 Pin assignment and cable pin assignment

<sup>2</sup> 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

#### 4.2.4 Connection work at the terminal box

If the RoughCam 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 4.2). Generally, the pins of the same color code (IEC60757) are connected. If the RoughCam 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 T10 RoughCam Series supports both modes and the used power source (PSE) determines the mode.

**Important:** If the RoughCam IPM3016 is delivered with a heating (model key LL, figure 4.5), 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 4.3). 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 RoughCam 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 allowed within the safe area.

For model key „N“ (RoughCam **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 [mm <sup>2</sup> ]	Diameter [mm]		
-	-	PE (enclosure)	SHD.	-	-	PE	SHD
Tx+ / PoE ±48 VDC	Tx+	WH / OG	1	0.26	0.57	<b>1</b>	
Tx- / PoE ±48 VDC	Tx-	OG	2	0.26	0.57	<b>2</b>	
Rx+ / PoE GND	Rx+	WH / GN	3	0.26	0.57	<b>3</b>	
Rx- / PoE GND	Rx-	GN	6	0.26	0.57	<b>4</b>	
n.a.	PoE +48 VDC	WH / BU	5	0.26	0.57	<b>5</b>	
n.a.	PoE +48 VDC	BU	4	0.26	0.57	<b>6</b>	
n.a.	PoE GND	WH / BN	7	0.26	0.57	<b>7</b>	
n.a.	PoE GND	BN	8	0.26	0.57	<b>8</b>	
Shield A/ GND (twisted pair)		-	GND (Plug)	-	-	PE.	PE
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	<b>9</b>	
n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	<b>10</b>	
		-		-	-	PE	

Table 4.2 – Electrical connection 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 4.6). The maximum cable length between camera and junction box for models without heating is 95 m.

For model key „LL“ (**RoughCam 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
Mode A	Mode B			Area [mm <sup>2</sup> ]	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	0.26	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	
<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>			5	
<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>			6	
<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>			7	
<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>	<i>n.c.</i>			8	
Shield A/ GND (twisted pair)		-	GND (Plug)	FOIL.	-	PE.	PE
L+ / +24 VDC	<i>n.a.</i>	WH / BN BN	-	2 x 0.26	2 x 0.57	9	L+ (Heater)
L- / GND	<i>n.a.</i>	WH / BU BU	-	2 x 0.26	2x 0.57	10	L- (Heater)
						PE	

Table 4.3 – Electrical connection for model key “LL.N“

The maximum cable length for models with heater is 5m from the camera to the terminal box.



**Attention!**

**Put the foiling up to about 10mm to the terminals, in order to prevent alien over speak. 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 terminals, in order to ensure the immunity to disturbance.**



**Attention!**

**Use only terminals approved by SAMCON.**



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

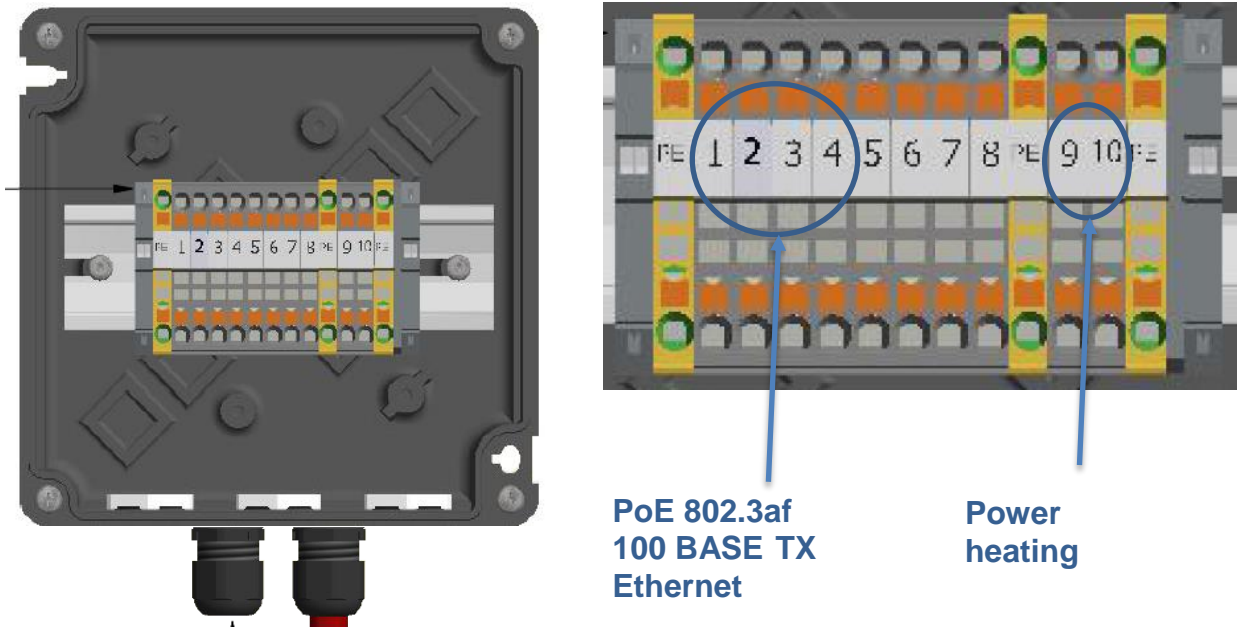


Figure 4.8 – Connection to the terminal box (models with heating)

#### 4.2.5 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 0°C!



## 5 Hardware Reset

A hardware reset should only be carried out under the following conditions: The camera is not accessible in 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 the housing has to be opened. All required steps are described in chapters 5.1 to 5.3 of this user manual.

### 5.1 Work preparation



#### **Attention!**

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

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

### 5.2 Opening the housing

For carrying out the hardware reset of the M3016 camera module, the camera housing needs to be opened. The steps below have to be followed very carefully:

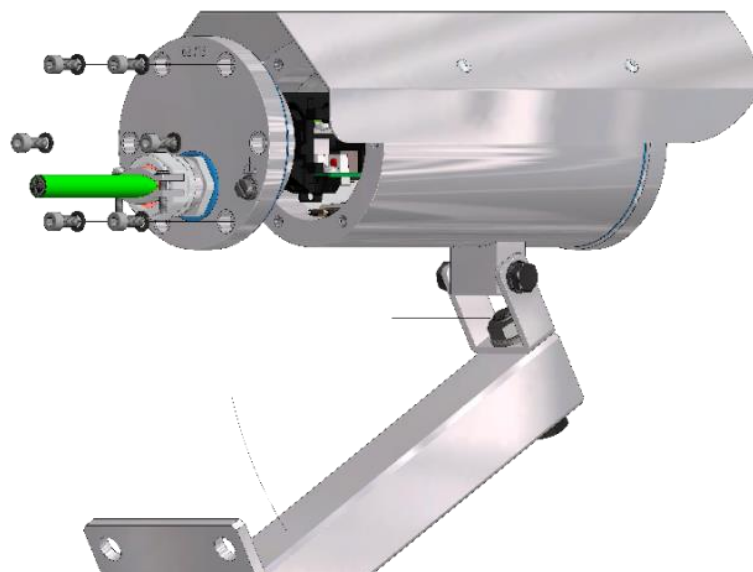


Figure 5.1 – Opening the RoughCam IPM3016



**Attention!**  
**Beware not to damage the surface of bore hole and shaft (fit).**



**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.

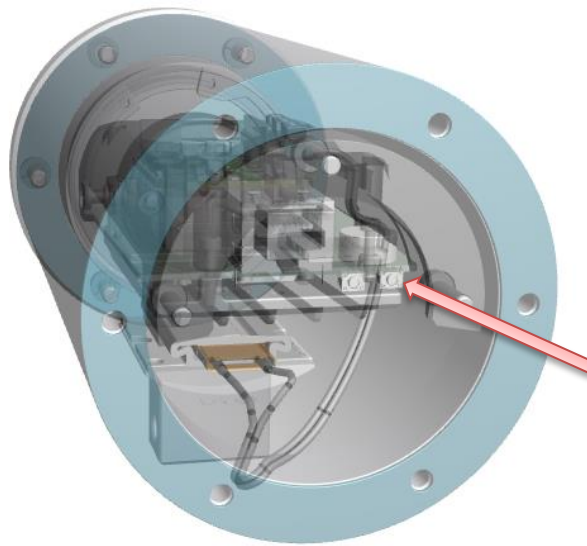


Figure 5.2 – Location of the control button

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)

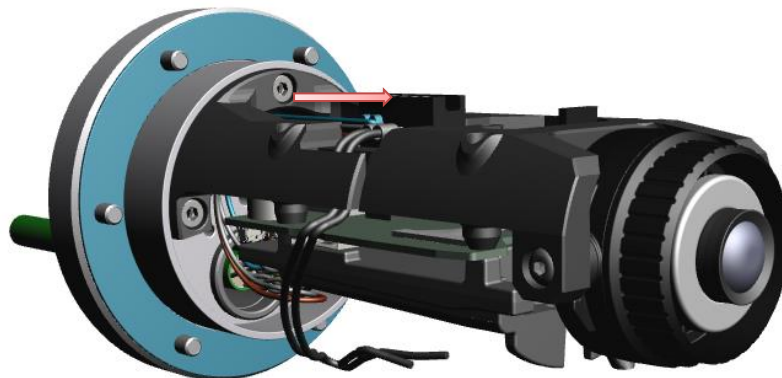


Figure 5.3 – Disconnecting the mounting adapter

**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](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.

### 5.3 Closing of the housing



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



**Cylinder head screws always have to be tightened evenly and crosswise with a tightening torque of 3.0 Nm**

## 6 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](https://help.axis.com/api/download/um_m30_series_t10104241_en_2103.pdf)

At delivery, the RoughCam 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.

### 6.1 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>

### 6.2 Assigning the IP address

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

### **6.3 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)

## **7 Maintenance / Servicing / Alterations**

The national regulations concerning the maintenance and servicing of electrical devices 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 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. Repairs 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.

## **9 Disposal / Recycling**

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

This document is subject to alterations and additions.

## 10 Drawings

The drawings below are technical drawings of the T10 RoughCam IPM3016. For our RoughCam Series we have the same configuration options as for our ExCam Series. Further drawings also for additional accessories, 3D models, STEP files and DXF shapes are available on the SAMCON homepage:

<https://www.samcon.eu/en/products/roughcam/roughcam-ipm3016/>

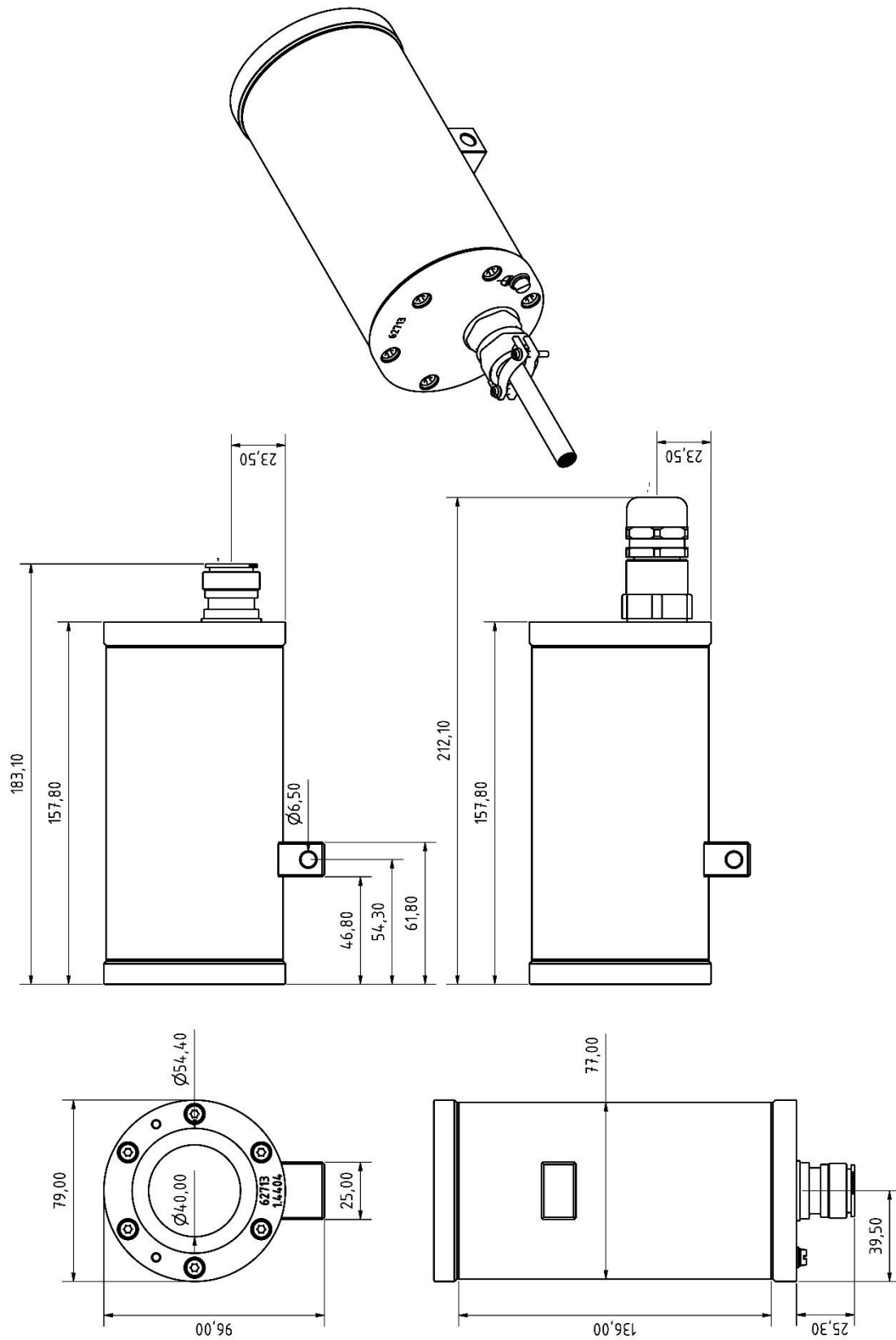


Figure 10.1 – Dimensions of the T10 RoughCam IPM3016



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