RoughCam® miniTube IP

User Manual

SAMCON
Prozessleittechnik GmbH

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History of revisions

Product: RoughCam® miniTube IP
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1				
2				

1 Introduction

The RoughCam miniTube IP is a compact, powerful IP camera with motorized varifocal lens. The camera has a high-definition television resolution (1920x1080) and is equipped with a 1/2.8“ CMOS sensor for great image quality and incomparable light sensitivity.
To see other approvals, please visit our website at www.samcon.eu/en
When designing the RoughCam miniTube IP, we attached a very high importance to safety, mechanical precision and high quality of stainless steel.

2 Technical data

2.1 Illustration of the model key

Product name	Model variants				
1)	2) Type	3) Housing-combination	4) Temp.-range	5) Cable length [m]	6) Cable termin.
RoughCam miniTube IP	T10-	VA1.2.K1.BOR-	N.N-	005.N-	P
	T10-	VA1.2.K1.BOR-	N.N -	005.N-	T
	T10-	VA1.2.K1.BOR-	N.N -	005.A-	P
	T10-	VA1.2.K1.BOR-	N.N -	005.A-	T

Table 2-1 Model key

Explanations:

1) RoughCam **miniTube IP =** Functional camera description of the RoughCam Series (technical data/specification of the individual camera module)

2) T10 = SAMCON Production- Type 10 (for safe areas)

3) **VA1**.2.K1.BOR = T10 housing (stainless steel 1.4404) with small diameter $Ø_{VA1}$=79mm)
VA1.**2**.K1.BOR = T10 VA1.2 housing with medium body length (L_R = 158mm)
VA1.2.**K1**.BOR = K1 cable gland flange
VA1.2.K1.**BOR** = Borosilicate sight glass DIN7080 (standard, for video cameras within visible spectral range: λ = 350…2000 [nm] and photografical infrared range (NIR), not suitable for thermographic applications (MIR/ FIR)

4) N.**N**= Normal temperature range (T_{amb} < +50°C)
N.N= No PTC heater integrated (T_{amb} > -30°C)

5) **005.**N = Length of the connection line in meter at delivery; 5m is the standard cable length, max. cable length is: 005…100 [m]
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**

T = Terminal Box termination (*optional*)
4 x PoE Mode A connection (camera PoE)
(see chapter electrical connection)

2.2 Electrical parameters of the camera

Power supply of the camera via Ethernet (PoE):

Voltage supply:	PoE, IEEE 802.3af type 1 class 2
Reference voltage:	+12 V DC
Maximum power consumption:	4.4 W
Typical power consumption:	3.0 W

2.3 Connection cable

Systemcable SKD01-T:

Outside diameter:	9.10 ± 0.2 mm
Bending radius:	10 x D_a when installed and 5 x D_a after relocation
Data line:	4 x 2 x AWG22/1 CAT.6
Properties:	PUR halogen-free, flame-retardant, UV-resistant, chemical resistance, shielded

Figure 2-1 Sectional view of SKD01-T

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

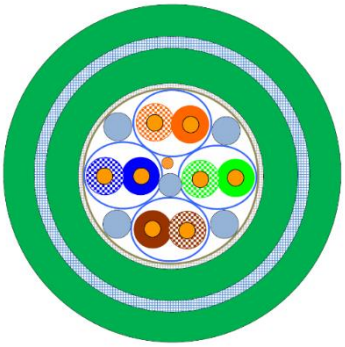


Figure 2-2 Sectional view of ASKD02-T

2.4 Video-technical characteristics

We use the eneo Module Network Camera in a pressure-resistant enclosure. For details, please refer to the Product Documentation, video-technical data of eneo®:

https://eneo-security.com/en/ism-72m2713w0a.html

2.5 Other technical data

	Camera	Terminal box
Permissible ambient temperature	-30°C … +50°C	-60°C … +55°C
Protection class as per EN 60529/IEC 529	IP66/68 (Test conditions: 24h/3m water column 5°C)	IP66
Housing material	stainless steel, mat. no. 1.4404	polyester resin
Weight	about 2.6 kg	about 1 kg
Dimensions	D79mm x 158mm	145mm x 145mm x 71mm

Table 2-2 Other technical data

3 Safety Instructions

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!
Repairs may only be carried out by using original parts from the manufacturer.

Attention!
Prior to installation, take external sources of heat or cold into account! The temperature ranges prescribed for storage, transport and operating must be adhered to!

4 Installation

For commissioning and operating the camera, 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 on the housing and cable. Installation, electrical connection and the first start must only be carried out by qualified specialists.

Work preparation:

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

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 security, installation and accident prevention regulations and the safety instructions in this User Manual, as well as the ones in the Installation Guidelines!

The RoughCam® miniTube IP consists of a camera housing and, optionally (models with a terminal box …-T), a terminal box. Both units are connected via a 5 m cable. Mount the

camera according to the desired field of view. Install the terminal box so that a good accessibility is provided, in order to facilitate electrical connection.

Drawings for drill hole patterns and further information can be viewed on our product page:

Quick link:
https://www.samcon.eu/en/products/roughcam/roughcam-minitube-ip/

Optional mounting accessories

Wall bracket WMB-...		**WALL MOUNT WMB-VA0.x/1.x** Wall bracket for cameras of the T10-VA1.x-Series Suitable for hanging the cameras on walls. Material: Stainless steel 1.4404 Load bearing: 25 kg Dimensions: 80 x 100 x 205 mm
Weather protection roof WPR-…		**WEATHER PROTECTION ROOF WPR-VA1.2** Weathershield for cameras of the T10-VA1.2-Series
Pole adapter PMB-…		**POLE ADAPTER PMB** Pole adapter for VA wall mount Material: stainless steel 1.4404 Suitable for pole diameters between 50 and 100 mm Load-bearing capacity: 50 kg Dimensions:120 x 180 (x 130 bei Mast Ø 60 mm)

Table 4-1 Mounting accessories

5 Electrical connection

Attention!
The electrical connection of the equipment may only be carried out by qualified and skilled personnel!

Attention!
It is absolutely necessary to ground the RoughCam® series' housing via the PA connection.

The delivered RoughCam® miniTube IP is equipped with an electrical connection cable of the type SKD01-T/ASKD02-T. The maximum transmission range from the camera to the next active network interface is 100 meters and can be individually specified by the client. The user is NOT authorised to do electrical connection procedures inside the enclosure.

5.1 Potential equalization

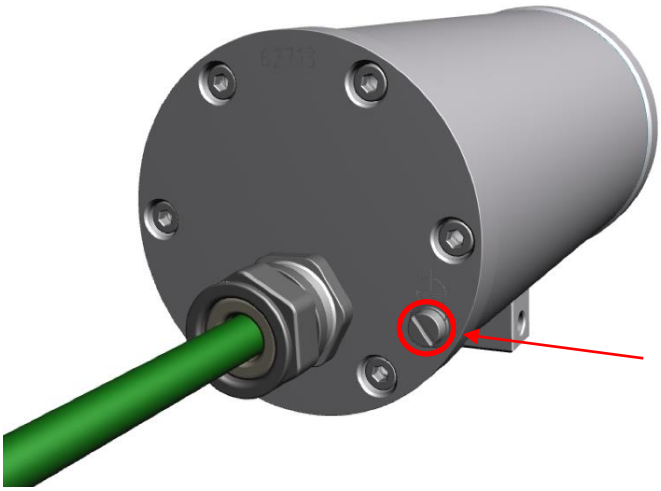


Figure 5-1 RoughCam miniTube IP Potential equalization

Potential equalization/grounding of the camera housing is absolutely necessary, in order to avoid static charges and thus the formation of sparks. For this purpose, a screw terminal is provided at the rear side, at the bottom (right) (see Figure 5-1). The cross-section of the potential equalization should comply with the National Ground Rules (at least 4mm^2).

Wiring table:

Potential	Colour (IEC 60757)	Cross-section	Comment
PA	GN/YE	4 mm^2 (rigid)	Terminal: Slotted screw M4x0.7 (DIN 84) with washer Ø9mm (DIN 125A), Keep 3 Nm tightening torque!

Table 5-1 Potential equalization

5.2 Connection work at the device (terminal box) and fuses

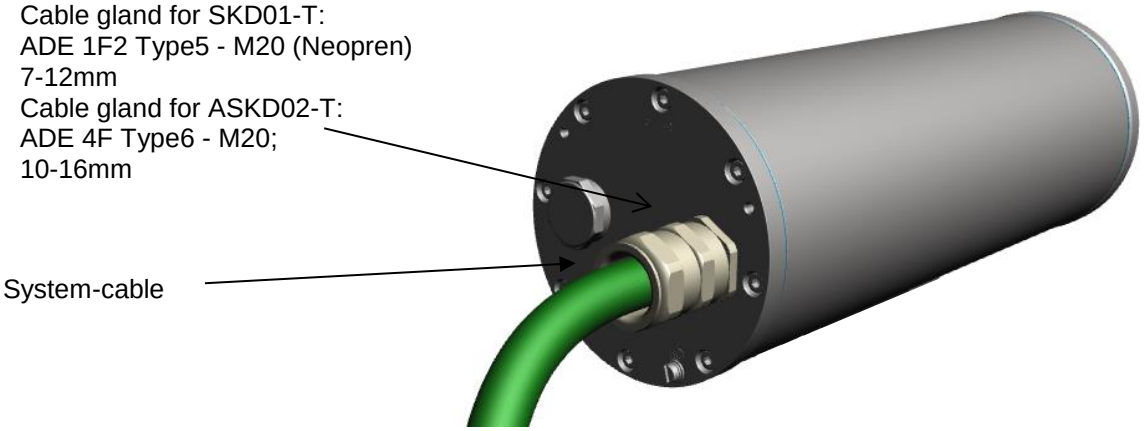


Figure 5-2 System-Cable gland and cable

Power supply for the camera (PoE)

Voltage supply:	PoE, IEEE 802.3af type 1 class 2
Reference voltage:	+12 V DC
Maximum power consumption:	4.4 W
Typical power consumption:	3.0 W

The figures 5.3 and 5.4 illustrate the potential cable terminations of the RoughCam miniTube IP. Possible terminations are: terminal box or plug.

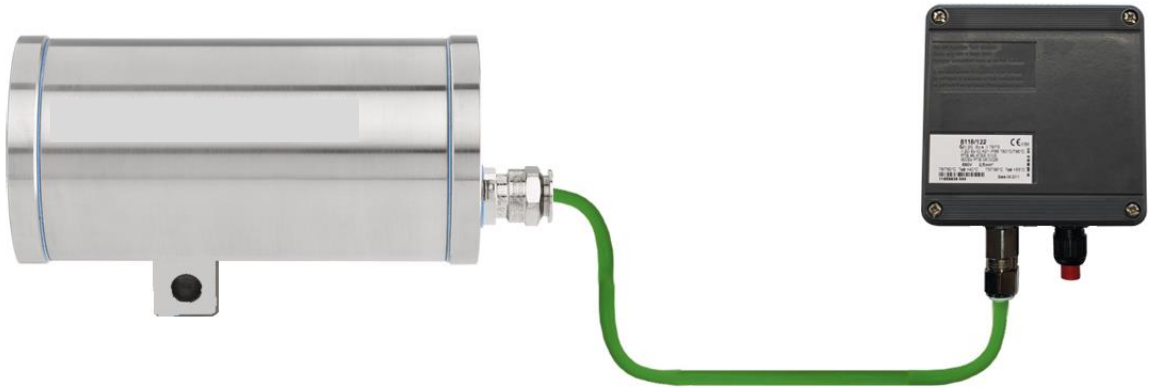


Figure 5-3 RoughCam miniTube IP T10-VA1.2.K1.BOR-N.N-xxx.x-**T**

Figure 5-4 RoughCam miniTube IP T10-VA1.2.K1.BOR-N.N-xxx.x-**P**

Video Tutorial:

Observe our video tutorial:
“SAMCON 01 Wiring the cable SKDP03-T to the junction box ExTB-3”
https://go.samcon.eu/v01

Figure 5-5 Video Tutorial ExTB-3

The pin assignment of the SKD01-T is executed in accordance with the standard EIA/TIA-568B as follows:

Camera (T568B)	**Colour SKD01-T** (IEC60757)	**Terminal**	**Cross-sectional surface**	**Comment**
Tx+	WH / OG	1	0.32 mm²	Solid conductor
Tx-	OG	2	0.32 mm²	Solid conductor
Rx+	WH / GN	3	0.32 mm²	Solid conductor
Rx-	GN	4	0.32 mm²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.32 mm²	Solid conductor
(PoE +48 VDC)	BU	6	0.32 mm²	Solid conductor
(PoE GND)	WH / BN	7	0.32 mm²	Solid conductor
(PoE GND)	BN	8	0.32 mm²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex

Table 5-2. Wire assignment of terminal box

The pin assignment of the ASKD02-T is executed in accordance with the standard EIA/TIA-568B as follows:

Camera (Ex-d) (T568B)	**Colour ASKD02-T** (IEC60757)	**Terminal**	**Cross-sectional surface**	**Comment**
Reinforcement	YE / GN	PE	2.5 mm²	Flex
Tx+	WH / OG	1	0.26 mm²	Solid conductor
Tx-	OG	2	0.26 mm²	Solid conductor
Rx+	WH / GN	3	0.26 mm²	Solid conductor
Rx-	GN	4	0.26 mm²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.26 mm²	Solid conductor
(PoE +48 VDC)	BU	6	0.26 mm²	Solid conductor
(PoE GND)	WH / BN	7	0.26 mm²	Solid conductor
(PoE GND)	BN	8	0.26 mm²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex

Table 5-3 Wire assignment of terminal box

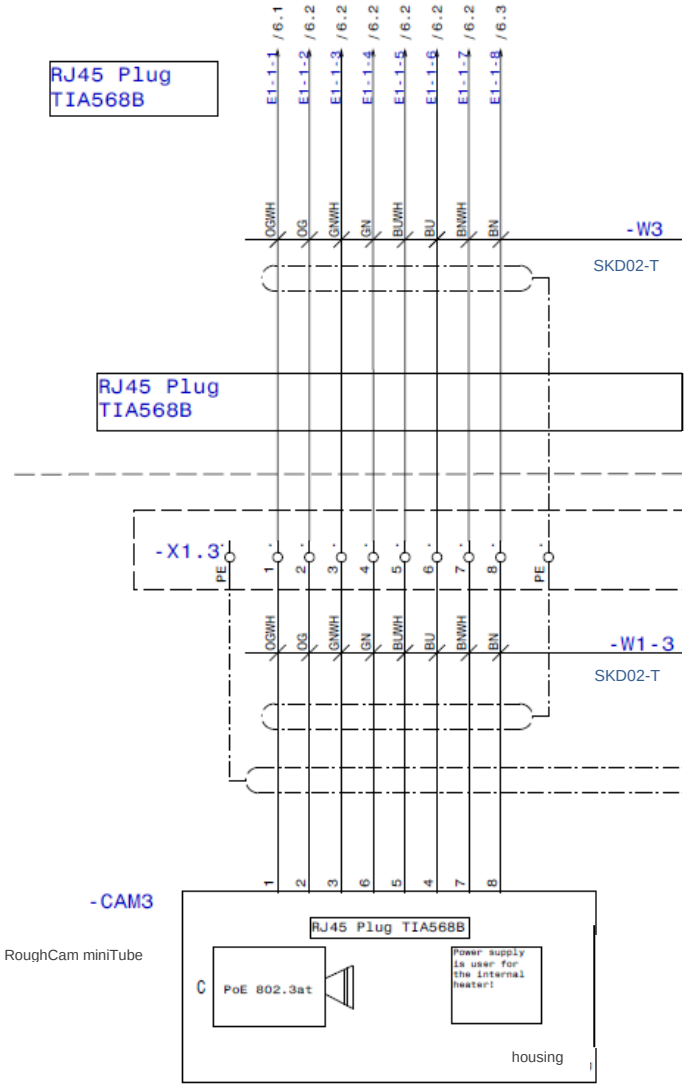


Figure 5-6 Sample circuit of terminal box

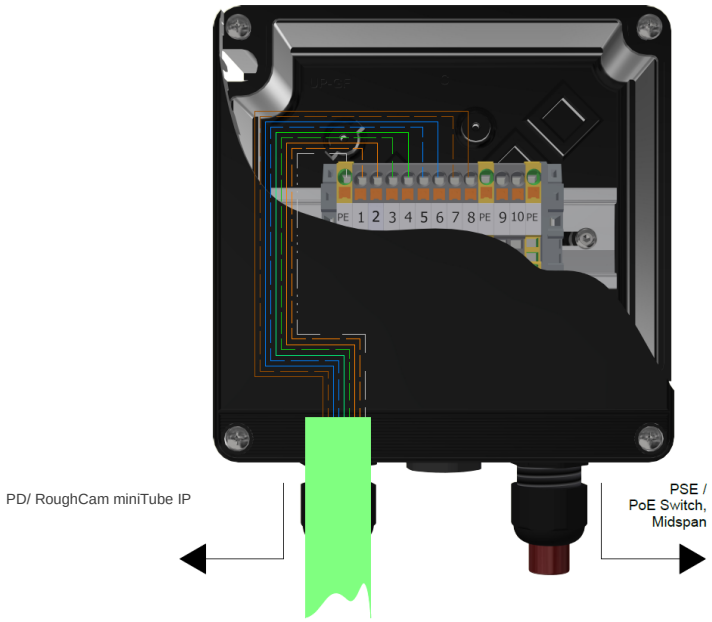


Figure 5.7 – Connection to the terminal box

Attention!
Introduce the foiling up to about 15 mm close to the terminals, in order to prevent alien crosstalk. Make sure that the foiling cannot cause any short circuit of the data pairs!

Attention!
Bring the twisted pair composite up to about 10 mm close to the terminals, in order to ensure interference immunity.

Attention!
Use only terminals approved by SAMCON.

Attention!
Finally, check your network installation with a Class-D Link Test.

5.2.1 Fusing

PoE power supply requires no fuses.
The power supply fusing depends on the cable cross-section and length.

Attention!
Please pay attention to the national and international regulations regarding selectivity and line protection.

5.2.2 Plug assignments (RJ45)

The data transfer of the RoughCam miniTube IP uses a 100 Mbit/s Ethernet connection (100BASE-TX).
If the cable termination uses a plug, the latter should be plugged into the RJ45 PoE slot of the network device (PSE). Prior to connecting it to the camera, the network device (PSE) can already be supplied with power, hence there is no „power ON“ priority which has to be observed.

Attention!
Use appropriate RJ45 plugs! Check the cable shielding, cross-section and the outside diameter!

Attention!
It is imperative to ensure a correct routing of the individual wires according to the EIA/TIA-568B"

Attention!
Finally, check your network installation with a Class-D Link Test.

Detailed instructions on how to connect a RJ45 plug are available in our video tutorial: “SAMCON 03 Mounting and installing the RJ45 jack to SAMCON cables” https://go.samcon.eu/v03

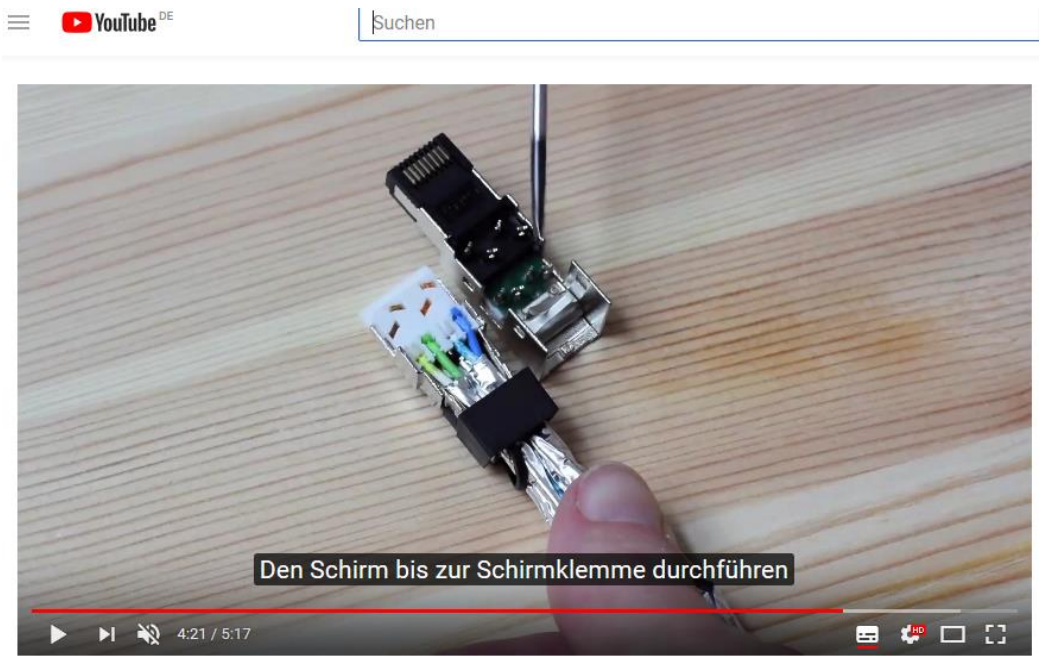


Figure 5-12 Plug assignment, RJ45

5.2.3 Tests prior to switching on voltage

Attention!
Prior to starting the device, perform all tests as indicated by the national regulations. Furthermore, check the correct function and installation of the device in accordance with this User Manual and other applicable regulations.

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

Attention!
Do not switch on the camera at temperatures below 0°C!

6 Working inside the camera housing

The customer may open the housing only if it is absolutely necessary. Only a hardware reset is a reason for this.

6.1 Preparation for work:

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

6.2 Opening the pressure-resistant housing

If the RoughCam miniTube IP is equipped with a weather protection roof this has to be removed prior to starting your work! To do so, loosen the 4x12mm button head screws M4*0.7 at the front and rear sides of the bracket holders (Figure 6-1).

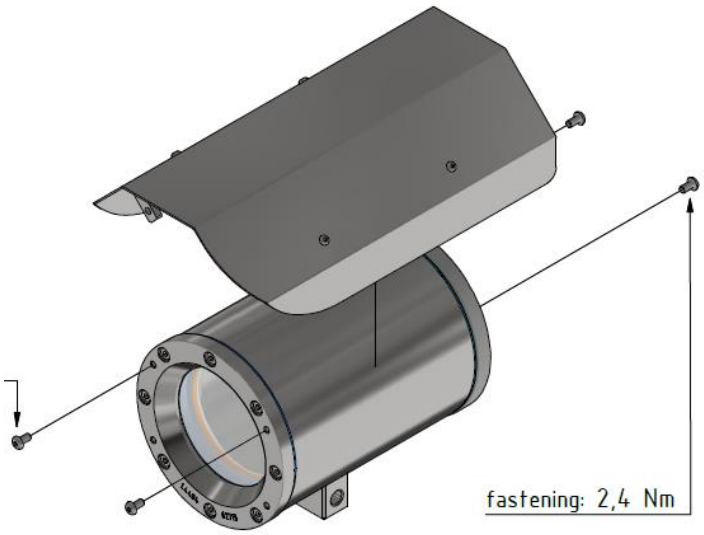


Figure 6-1 Removing the weather protection roof

To open the stainless-steel housing (T11 VA1.2.x.x) of RoughCam miniTube IP, loosen the eight cylinder-head hexagon screws (DIN 912/ ISO 4762) together with their spring rings (DIN 127A) on the rear side of the cable and power supply flange (see Figure 6-2). Caution: do not touch the screw threads with your skin or clothes! On the threads, there is LOCTITE® 243™ (chemical basis is dimethacrylate ester) applied to prevent the bolted connection from unintentional loosening because of impacts and vibrations and to seal them tightly. It is not permitted for the customer to open the front-side sight glass flange! There is no need of such an action.

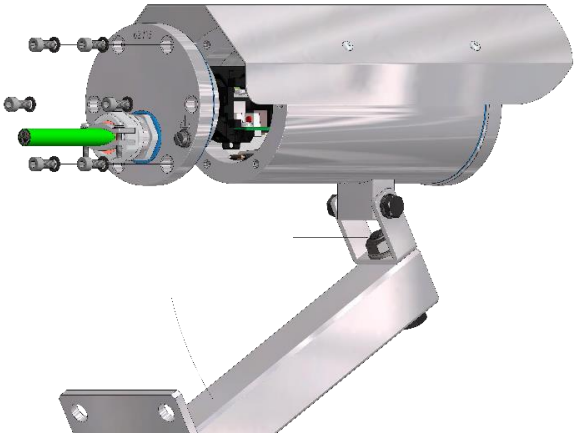


Figure 6-2 Opening RoughCam miniTube IP

Carefully pull out the cable and supply flange to the rear, as straight as possible. Because of negative pressure, it may be difficult to remove the flange.

Attention: The mounting adapter with the camera module and optics, as well as the temperature control, and (if applicable) auxiliary relays and terminal block are fixed on the cable and supply flange. Dealing with these components, too, you have to work very carefully and precisely in order to avoid canting and damage to the in-built components! The module must be carefully rotated and tilted slightly. Caution: do not touch the cylindrical fit surface with your skin or clothes! On the surface, there is oil lubricating paste to protect the surface against fretting corrosion and mechanical stresses.

When you open the housing, pay attention that you do not damage the GYLON® flat seal (blue, RAL5012) and do not make it dirty! The flat gasket is loosely attached to the cable and power supply flange. It is fixed only by the bolted connections!

Attention!
Pay attention not to damage the housing seals. Keep them clean!

When touching electrical components, observe potential equalization (grounding of the body): carry electrostatic-discharge clothes, a PE wristband etc.!

6.3 Hardware Reset

To set all the parameters of the RoughCam miniTube IP (including the IP address) to default values, you should run a hardware reset.
The parameters can be reset via the web interface or manually. If the camera placed in the network can no longer be reached or its state is uncontrollable, the reset should be performed manually. To do so, proceed as follows:

1. Disconnect the camera installation module from the power supply.
2. Press and hold the reset button (see the illustration below) and, at the same time, connect the system to the voltage supply (PoE).
3. Hold the control button pressed for some seconds.
4. Release the control button. After about a minute, the RoughCam miniTube IP will return to factory defaults. If there is a DHCP server in the network, the IP address will be the following: 192.168.1.10.
5. IP address and password can be redefined. If the hardware reset is not satisfactory or the network camera shows serious conflicts or does not work as usual (errors in the browser visualisation, frozen images, control commands no longer processed, slowing down of the system, etc.), it may be necessary to re-install the current firmware, or to install an update (see Chapter 7).

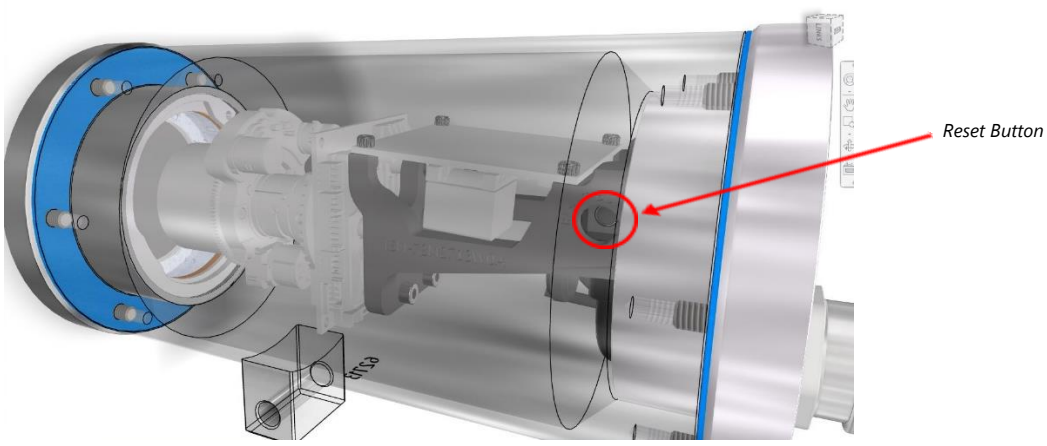


Figure 6-3 Structure of the camera

6.4 Closing of the pressure-resistant housing

For closing the housing, proceed in reverse order as when opening. Use exclusively original screws included in the supply.
The cable and power-supply flange (K1) is fixed by 8 cylinder-head screws M4*0.7 (ISO metric right-turning) with 12 mm thread length (DIN 912/ ISO 4762, grade 6g). Materials of bolted connections are identical to the stainless steel housing (standard material no. 1.4404 AISI316L). Check whether the threaded holes are undamaged and clean.

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

Dismantled screw locks (spring washers DIN 127A) must be used again.
The GYLON® gasket must be used in undamaged condition, according to the flange hole pattern, and placed between the flange and the hull. The lateral position of the flat surface / contact surface is arbitrary.

If, when closing the housing, you see that the surface of the fitting gap is dirty or insufficiently lubricated, clean it with a clean cloth and de-grease it with a suitable cleaning agent. Then re-grease it with lubricant suitable for this specific application (e.g., Molykote® P-40 gel for standard applications or special grease OKS 403 in the event of heavy seawater influence).

The screwed connections of flange and body components must always be tightened *cross-wise* to a torque of **3 Nm**! Do not tighten the screw too strongly! It can cause rupture of the cylinder head or over-stretching the threads.

Cylinder-head bolts for connection of the camera body with the flange component must always be tightened at a 3 Nm torque - crosswise and evenly! Use Loctite.

7 Network access and visualization

The camera is configured via the device's own website, the video stream can be accessed via RTSP or you can integrate the camera into your video management system using the ONVIF protocol.

7.1 Network access

The camera obtains an IP address via DHCP. If there is no DHCP server on the network, the **default IP address is 192.168.1.10**

Default username: **admin**
Default password: **admin**

Without a DHCP server, please add multiple cameras to the network one after the other to avoid conflicts due to identical IP addresses.

To find out the IP address of the camera assigned via DHCP, you can display or assign it using the **eneo Site Manager**.

7.2 eneo Site Manager - assigning the IP address

Download the eneo Site Manager here:
https://eneo-security.com/en/eneo-site-manager.html

The eneo Site Manager automatically detects cameras present in the network and displays their IP addresses in a device list. The ExCam miniTube IP has the designation “ISM-72M2713W0A”.

If necessary, you can also assign a static IP address to the camera. To do this, select the camera in the list, right-click to open the context menu and then the network settings. De-activate the DHCP checkbox and set the desired IP address.

7.3 Web interface, configuration and control

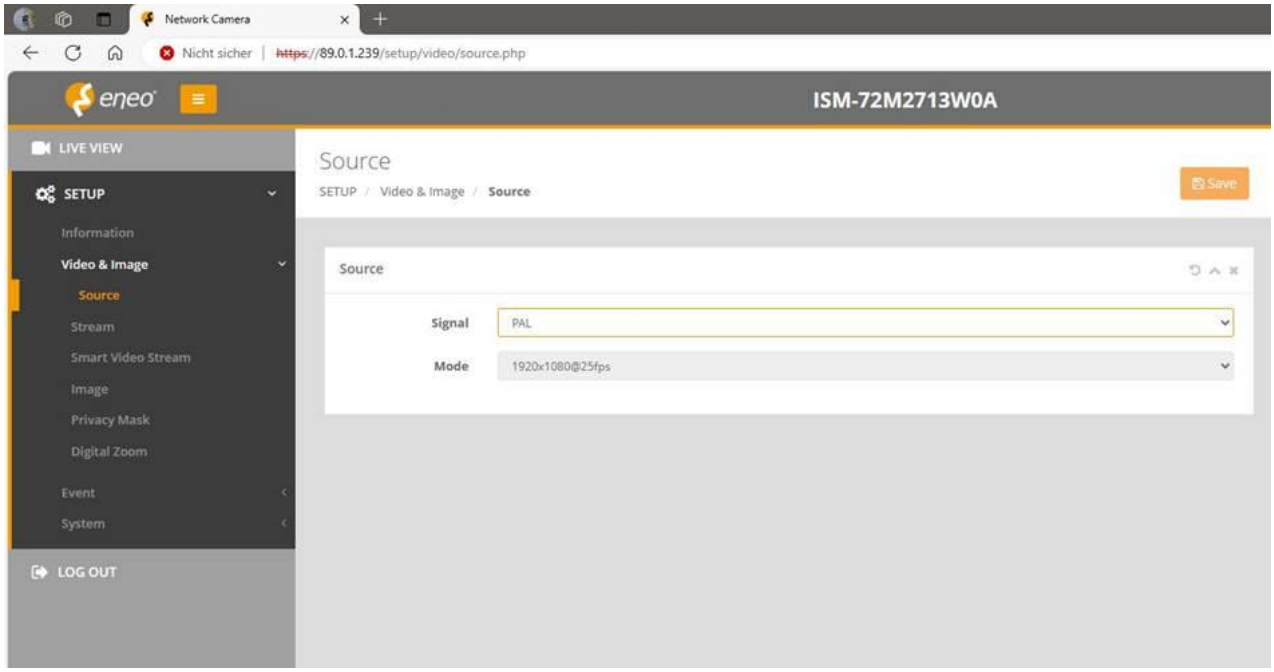
Enter the camera's IP address in your web browser and open the web interface. By automatically redirecting to https://... you may receive a message that the connection is not secure or private. Please confirm opening the website using the “Advanced” button.

Default username: **admin**
Default password: **admin**
The web interface is intuitive and offers a variety of configuration options. Detailed documentation on the web interface can be found in the eneo operating instructions:

https://eneo-security.com/en/ism-72m2713w0a.html

234669_en_short_man.pdf (eneo-security.com)
234669_en_man.pdf (eneo-security.com)

When delivered the RoughCam miniTube IP is set to the applicable network frequency.
PAL = 50Hz (Europe) / NTSC = 60Hz (USA)



7.4 Visualization, RTSP video stream

The camera's video stream can be visualized via the following addresses:

RTSP
rtsp://<user>:<password>@<ip>:554/1/stream1
rtsp://<user>:<password>@<ip>:554/1/stream2
rtsp://<user>:<password>@<ip>:554/1/stream3

Example:
rtsp://admin:admin@192.168.1.10:554/1/stream1

JPG (Stream 3)
http://<ip>/cgi-bin/snapshot.jpg

MJPG (Stream 3)
http://<ip>/cgi-bin/jpegpush.cgi

7.5 ONFIV, VMS-Integration

The camera can be integrated into your video management system (VMS) via ONVIF Profile S and Profile T. We recommend AXIS Camera Station or ONVIF Device Manager for easy configuration.

8 Maintenance / Modification

The applicable regulations for the maintenance and servicing of electrical devices must be adhered to.

The required maintenance intervals are specific to the individual devices. The operating company has to determine these intervals depending on the application parameters. If maintenance measures are necessary they have to be initiated and/or executed.
Repairs may only be carried out with original parts of SAMCON Prozessleittechnik GmbH. In case of doubt, send the part in question back to SAMCON Prozessleittechnik GmbH.
Reparations must only be carried out in accordance with nationally applied regulations by SAMCON Prozessleittechnik GmbH or by an authorised electrical technician authorised by SAMCON Prozessleittechnik GmbH. Rebuilding of or alterations to the devices are not permitted.

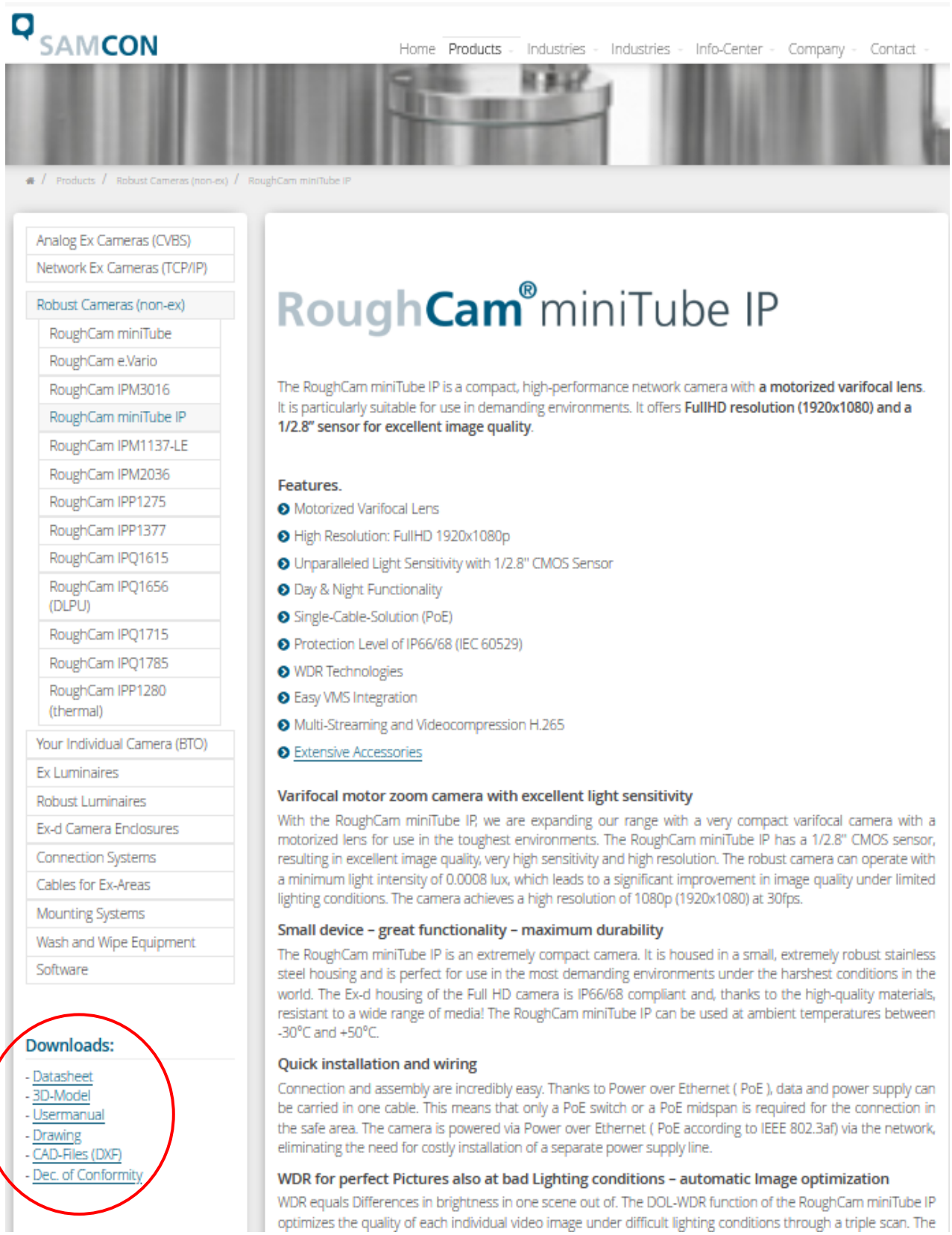
9 Disposal / Recycling

When disposing of the device, nationally applicable regulations must be observed.
This Document is subject to alterations and additions.

10 Drawings & 3D models and further documentation

All drawings, 3D models and other information are available in the download area of the product page on our website:

https://www.samcon.eu/en/products/roughcam/roughcam-minitube-ip/



If you wish additional technical information, please contact us at: support@samcon.eu

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