

ExCam[®] IPQ1785

ExCam[®] IPQ1785-W

User Manual



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History of revisions

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1 Introduction

The ExCam IPQ1785 is a powerful mega-pixel IP camera (2-mega-pixel resolution) optionally equipped with a screen wiper. The ExCam IPQ1785-W (Wash and Wipe) is equipped with a wiper and prepared for common use with our washing water supply unit cam.Cleaner (not included). The camera is certified according to ATEX, IECEx, as well as EAC-Ex (and MASC). It has a high-definition television resolution (1920x1080) and is equipped with a powerful motor-zoom autofocus lens (32x optical zoom).

The ExCam series is certified both in accordance with the European (ATEX) and international directive (IECEx). The explosion-protected housing is approved for ATEX group II for zones 1, 2, 21 and 22 including the explosion groups IIC / IIIC. To see other approvals, please visit our website at www.samcon.eu

When designing the ExCam IPQ1785, we attached a very high importance to safety, mechanical precision and high quality of stainless steel.

2 Technical data

2.1 Explosion protection

Identification marks

acc. to Directive 2014/34/EU:

 II 2G (zone 1 and 2)

 II 2D (zone 21 and 22)

Explosion protection (gas):

Ex db IIC T5 Gb

Explosion protection (dust):

Ex tb IIIC T95°C Db

Protection class:

IP 68 (IEC /EN 60529)

Transport/storage temperature:

0°C...+40°C

Ambient temperature (EX):

-10°C...+60°C (Type...N.H...)

-30°C...+60°C (Type...L.H...)

-60°C...+60°C (Type...LL.H...)

Nominated body:

TÜV Rheinland (number 0035)

EU type approval certificate:

TÜV 18 ATEX 8218X (2018)

IECEx Certificate of Conformity:

TUR 18.0023X (2018)

EAC-Ex TUR Report:

TC RU C-DE.A5.61.B.00381/19

Other certificates:

see <https://www.samcon.eu/en/products/network/excam-ipq1785>



Attention!

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

2.2 Illustration of the model key

1) Ex product- name	2) Type	3) Housing- combination	4) Temp.- range	5) Cable length [m]	6) Cable termin.
ExCam IPQ1785	T08-	VA2.3.K3.BOR2-	N.H-	005.N-	P-
	T08-	VA2.3.K3.BOR2-	N.H-	005.A-	P-
	T08-	VA2.3.K3.BOR2-	N.H-	005.N-	T-
	T08-	VA2.3.K3.BOR2-	N.H-	005.A-	T-
	T08-	VA2.3.K3.BOR2-	L.H-	005.N-	P-
	T08-	VA2.3.K3.BOR2-	L.H-	005.A-	P-
	T08-	VA2.3.K3.BOR2-	L.H-	005.N-	T-
	T08-	VA2.3.K3.BOR2-	L.H-	005.A-	T-
	T08-	VA2.3.K3.BOR5-	N.H-	005.N-	P-
	T08-	VA2.3.K3.BOR5-	N.H-	005.A-	P-
	T08-	VA2.3.K3.BOR5-	N.H-	005.N-	T-
	T08-	VA2.3.K3.BOR5-	N.H-	005.A-	T-
	T08-	VA2.3.K3.BOR5-	LL.H-	005.N-	P-
	T08-	VA2.3.K3.BOR5-	LL.H-	005.A-	P-
	T08-	VA2.3.K3.BOR5-	LL.H-	005.N-	T-
T08-	VA2.3.K3.BOR5-	LL.H-	005.A-	T-	
ExCam IPQ1785-W	T08-	VA2.3.K3.BOR5	LL.H-	010.N-015.O	P
	T08-	VA2.3.K3.BOR5	LL.H-	010.A-015.O	P
	T08-	VA2.3.K3.BOR5	LL.H-	010.N-015.O	T
	T08-	VA2.3.K3.BOR5	LL.H-	010.A-015.O	T

Tab.2-1 – Model key

Explanations:

- 1) **ExCam IPQ1785 =** Functional camera description of the ExCam Series (technical data/
specification of the individual camera module)
ExCam IPQ1785-W = Camera is prepared for common use with cam.Cleaner
 For controllable supply with cleaning fluid (Wash and Wipe)
- 2) **T08 =** SAMCON Production- Type 08
- 3) **VA2.3.K3.BORX =** T07 ex d housing (stainless steel 1.4404) with large diameter
 $\varnothing_{VA2}=113\text{mm}$
VA2.3.K3.BORX = T07 VA2.3 housing with maximum body length ($L_R = 310\text{mm}$)
VA2.3.K3.BORX = K3 cable gland flange
VA2.3.K3.BOR2 = Borosilicate sight glass DIN7080 (standard, for video cameras within visible
 spectral range: $\lambda = 350\dots 2000$ [nm] and photografical infrared range (NIR),
 not suitable for thermographic applications (MIR/ FIR), for cameras without
 wiper
VA2.3.K3.BOR5 = Profile glass pane for cameras with wiper
- 4) **N.H =** Normal ambient temperature range, no heater installed
 $(T_{amb} > -10^\circ\text{C})$
N.H= High temperature ($T_{amb} < +60^\circ\text{C}$)
L.H= PTC heater installed ($T_{amb} > -30^\circ\text{C}$)
LL.H= PTC heater installed ($T_{amb} > -60^\circ\text{C}$)

- 5) **005.N =** Length of the connection line in meter at delivery; 5m is the standard cable length, max. cable length is: 001...95 [m] for modelkey -N- and -L- and 001...005 [m] for model key -LL-
- 005.N =** Non armoured cable
- 005.A =** Armoured cable
- 010.N-015.O =** Length of the connection line in meter at delivery; 10m is the standard cable length models ExCam ...-W
- 010.N-015.O =** Length of Ölflex-cable (for connection to cam.Cleaner) in meter at delivery; 15m is standard cable length
- 6) **P =** Plug- termination (standard)
 CAT6, RJ-45 network plug (heavy duty), AWG 26-22, contact assignment acc. To specification EIA/TIA-568B
- T =** Terminal Box termination (optional)
 4 x PoE Mode A connection (camera PoE)
 24VDC (Heater) (see chapter electrical connection)

2.3 Electrical parameters of the camera

Supply of 24 V DC for the heating and the wiper:

Voltage supply: 22 V DC < U_{in} < 26 V DC

Power consumption: approx. 40W @ -60°C (depends on temperature)

Power consumption heater and valve (with cam.Cleaner):
 ca. 50W @ 24VDC

Power supply of the camera via Ethernet (PoE):

Voltage supply: PoE, IEEE 802.3af/802.3at type 1 class 3

Reference voltage: +48 V DC (44...54 V DC)

Maximum power consumption: 12.95 W

Typical power consumption: 7.7 W

2.4 Connection cable Ex-d - Ex-e

Description: Data transfer and power supply of the camera module (compliant with DIN EN 60079-14)

Jacket colour: green (GN), similar to RAL3001

2.4.1 Connection cable for models -N- and -L- (SKD02-T/ASKD02-T)

Systemcable 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

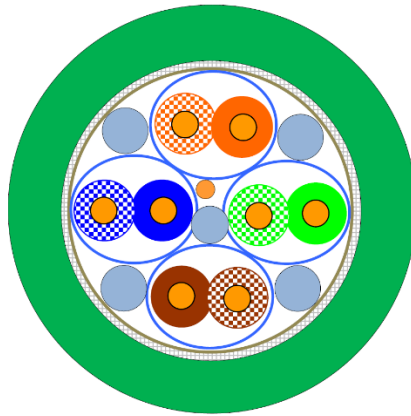


Fig. 2-1 Sectional view of SKD02-T

Systemcable ASKD02-T:

Outside diameter:	13.20 ± 0.3 mm
Bending radius:	8 x D _a when installed and 4 x D _a after relocation
Data line:	4 x 2 x AWG22-23/1 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

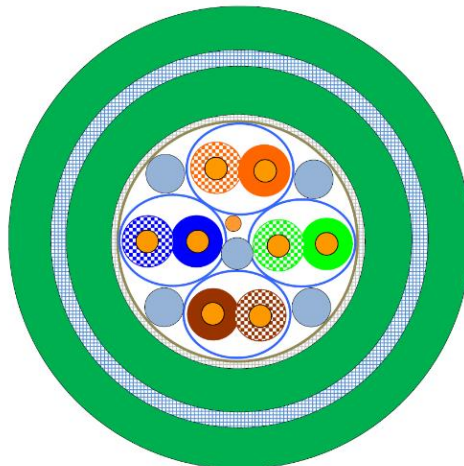


Fig. 2-2 Sectional view of ASKD02-T

2.4.2 Connection cable for models with heater (SKDP03-T/ASKDP03-T)

Systemcable SKDP03-T:

Outside diameter:	12.40 ± 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
Performance elements:	3G1.5 (BK-BU-GN/YE)
Properties:	PUR halogen-free, flame-retardant, UV-resistant, chemical resistance, shielded

Quick link:

https://www.samcon.eu/fileadmin/documents/en/60-Assembling%26mounting/SKDP03-T_Datasheet.pdf

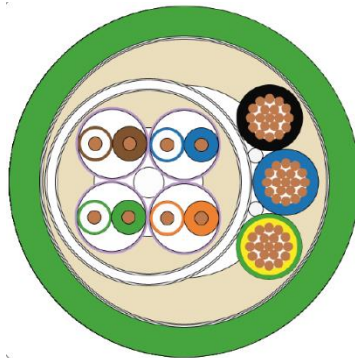


Fig. 2-3 Sectional view of SKDP03-T

Systemcable ASKDP03-T:

Outside diameter:	15.50 ± 0.6 mm
Bending radius:	15 x D _a when installed and 10 x D _a after relocation
Data line:	4 x 2 x AWG23/1 CAT.6
Performance elements:	3G1.5 (BK-BU-GN/YE)
Properties:	PUR halogen-free, flame-retardant, UV-resistant, chemical resistance, shielded

Quicklink:

https://www.samcon.eu/fileadmin/documents/en/60-Assembling%26mounting/ASKDP03-T_Datasheet.pdf



Fig. 2-4 Sectional view of ASKDP03-T

2.4.3 Additional cable for models ExCam ...-W

System cable Ölflex 440P:

Outside diameter:	7.50 ± 0.3 mm
Bending radius:	12.5 x D _a when installed, 4 x D _a after relocation
Clamping range cable gland:	7-13 mm
Power elements:	3G1.5 (BK-BU-GN/YE)
Properties:	flame retardant, UV-resistant

2.5 Video-technical characteristics

We use the AXIS Q1785 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-q1785-le>



2.6 Other technical data

	Camera (Ex-d)	Terminal box (Ex-e)
Permissible ambient temperature	0°C ... +60°C (for PoE power supply) -60°C ... +60°C (in the event of additional 24 V DC power supply)	-60°C ... +55°C
Protection class as per EN 60529/IEC 529	IP68 (Test conditions: 24h/3m water column 5°C°)	IP66
Housing material	stainless steel, mat. no. 1.4404	polyester resin
Weight	about 11 kg	about 1 kg
Dimensions	D113mm x 310mm	145mm x 145mm x 71mm

Tab. 2-2 Other technical data

3 Safety Instructions

Please absolutely observe the safety directions stated in the Ex-installation instructions of the T08 ExCam series!



Quick link:

<https://www.samcon.eu/fileadmin/documents/en/22-Ex-Network-Cameras/ExCam-Series-T08-EX-Installation-Manual-2018.pdf>

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



Attention!

Cameras of the type T08 ExCam are not suitable for use in zone 0 and zone 20. The ambient temperature, temperature class and explosion group as stated on type plate must 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!

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



Attention!

Observe the warnings given on the type plate:

“WARNING – DO NOT OPEN IN HAZARD AREAS“

“WARNING – DO NOT OPEN WHILE ENERGIZED“



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



When installing the ExCam, adhere to the requirements of the EN/IEC 60079-14.



ExCam IPQ1785 with the BOR5 flange (wiper) is only suitable for installation sites with a low risk of mechanical hazard.

4 Installation

For erecting 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 regarding the housing and the cable. Installation, electrical connection and the commissioning must only be carried out by qualified specialists.

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 opening 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 adhere to the national security, installation and accident prevention regulations (e.g. DIN EN 60079-14) and the safety instructions in this User Manual, as well as the ones in the Installation Guidelines!



Attention!

Adhere to the provisions of the IECEx ATEX and EX installation instructions for mounting and commissioning!

The ExCam® IPQ1785 consists of a flame-proof camera housing (Ex-d) and, optionally (models with a terminal box ...-T), a terminal box of a high degree of safety (Ex-e). Both areas are separated by a reinforced 5 m line (10 m ExCam IPQ1785-W). 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.



Attention!
 Please pay attention to the national and local regulations for mounting heavy loads. In case of doubt, take appropriate security measures.


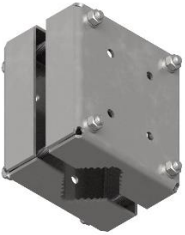
Drawings for drilling hole patterns and further information can be viewed on our product page:

Quick link:

<https://www.samcon.eu/en/products/network/excam-ipq1785/>



Option mounting accessories

Wall bracket WMB-...		<p>WALL MOUNT BRACKET WMB-VA2.3 Wall bracket for devices of T08-VA2.3 series. Suitable for hanging the camera on walls. Material: stainless steel 1.4404 Load bearing: 45 kg Dimensions: 445 x 140 x 185 mm</p>
Pole adapter PMB-...		<p>POLE MOUNT BRACKET PMB-VA Pole adapter for VA wall mount Material: stainless steel 1.4404 Suitable for pole diameters between 50 and 105 mm Load-bearing capacity: 45 kg Dimensions: 120 x 180 (x 130 bei Mast Ø 60 mm)</p>

Tab. 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 ExCam[®] series housing via the PA connection.



Attention!

Please observe the national security, installation and accident prevention regulations (e.g. DIN EN 60079-14) and the safety instructions in this User Manual, as well as the ones in the Installation Guidelines!

The delivered ExCam[®] IPQ1785 is equipped with an electrical connection cable of the type (A)SKD02-T (models with the model key -N- and -L-) or (A)SKDP03-T (models with model key -LL-). 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 pressure-resistant enclosure.

5.1 Potential equalization

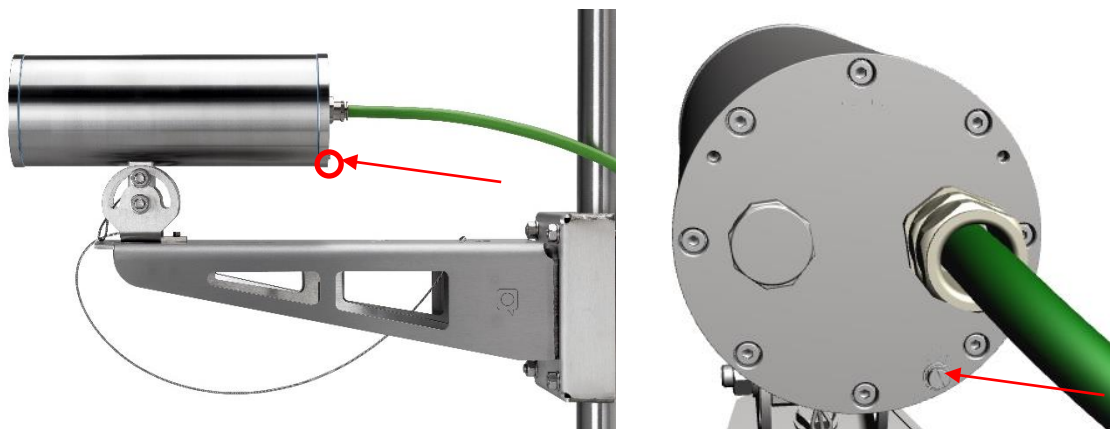


Fig. 5-1 ExCam IPQ1785 potential equalization

The potential equalization/grounding of the camera body 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 equipotential bonding should comply with the National Ground Rules (at least 4 mm²).

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!

Tab. 5-1 Equipotential Bonding

5.2 Connection work at the device (terminal box) and fuse protection

Supply of 24 V DC for the heating and wiper

Power supply: 22 V DC < U_{in} < 26 V DC

Power consumption: approx. 40W @ -60°C (depends on the temp.)

Power supply for the camera (PoE)

Power supply: PoE, IEEE 802.3af/802.3at type 1 class 3

Reference voltage: +48 V DC (44...54 V DC)

Maximum power consumption: 12.95 W

Typical power consumption: 7.7 W

The figures 5.2 and 5.3 illustrate the potential cable terminations of the ExCam IPQ1785. Possible terminations are: terminal box or plug.



Fig. 5-2 – ExCam IPQ1785 T08-VA2.3.K3.BOR5-LL.H-xxx.N-T



Fig. 5-3 – ExCam IPQ1785 T08-VA2.3.K3.BOR5-LL.H-xxx.N-P



Attention!
Never open the Ex-e terminal box under voltage!



Attention!
Adhere to the international installation regulations for connection chambers with increased safety (Ex-e).



Attention!
Adhere to attached separate Usual Manual for the Ex-e terminal box.



Fig. 5-4 Camera (Ex-d) and terminal box (Ex-e)

Video Tutorial:

Please view our video tutorial:

“SAMCON 01 Wiring the cable SKDP03-T to the junction box ExTB-3”

<https://go.samcon.eu/v01>





Fig. 5-5 Video Tutorial ExTB-3: Screw on the terminal box ExTB-3

The pin assignment of the SKD02-T is executed in accordance with the standard EIA/TIA-568B for 100BaseTX and 24VDC, as follows:

Camera (Ex-d) (T568B)	Colour SKD02-T (IEC60757)	Terminal ExTB-3	Cross-sectional surface	Comment
Tx+	WH / OG	1	0.32 mm ²	Solid conductor
Tx-	OG	2	0.32 mm ²	Solid conductor
Rx+	WH / GN	3	0.32 mm ²	Solid conductor
Rx-	GN	4	0.32 mm ²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.32 mm ²	Solid conductor
(PoE +48 VDC)	BU	6	0.32 mm ²	Solid conductor
(PoE GND)	WH / BN	7	0.32 mm ²	Solid conductor
(PoE GND)	BN	8	0.32 mm ²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex

Tab. 5-2 Wire assignment of terminal box ExTB-3 (model N and L)

The pin assignment of the ASKD02-T is executed in accordance with the standard EIA/TIA-568B for 100BaseTX and 24VDC, as follows:

Camera (Ex-d) (T568B)	Colour ASKD02-T (IEC60757)	Terminal ExTB-3	Cross-sectional surface	Comment
Reinforcement	YE / GN	PE	2.5 mm²	Flex
Tx+	WH / OG	1	0.32 mm ²	Solid conductor
Tx-	OG	2	0.32 mm ²	Solid conductor
Rx+	WH / GN	3	0.32 mm ²	Solid conductor
Rx-	GN	4	0.32 mm ²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.32 mm ²	Solid conductor
(PoE +48 VDC)	BU	6	0.32 mm ²	Solid conductor
(PoE GND)	WH / BN	7	0.32 mm ²	Solid conductor
(PoE GND)	BN	8	0.32 mm ²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex

Tab. 5-3 Wire assignment of terminal box ExTB-3 (model N and L/ASKD02-T)

The pin assignment of the SKDP03-T is executed in accordance with the standard EIA/TIA-568B for 100BaseTX and 24VDC, as follows:

Camera (Ex-d) (T568B)	Colour SKDP03-T (IEC60757)	Terminal ExTB-3	Cross-sectional surface	Comment
Tx+	WH / OG	1	0.32 mm ²	Solid conductor
Tx-	OG	2	0.32 mm ²	Solid conductor
Rx+	WH / GN	3	0.32 mm ²	Solid conductor
Rx-	GN	4	0.32 mm ²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.32 mm ²	Solid conductor
(PoE +48 VDC)	BU	6	0.32 mm ²	Solid conductor
(PoE GND)	WH / BN	7	0.32 mm ²	Solid conductor
(PoE GND)	BN	8	0.32 mm ²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex
L+	BK	9	1.5 mm ²	L+ 24VDC
L-	BU	10	1.5 mm ²	L- 24VDC
PE	YE / GN	PE	1.5 mm ²	PE

Tab. 5-4 Wire assignment of terminal box ExTB-3 (model LL)

The pin assignment of the ASKDP03-T is executed in accordance with the standard EIA/TIA-568B for 100BaseTX and 24VDC, as follows:

Camera (Ex-d) (T568B)	Colour ASKDP03-T (IEC60757)	Terminal ExTB-3	Cross-sectional surface	Comment
Reinforcement	YE / GN	PE	2.5 mm²	Flex
Tx+	WH / OG	1	0.32 mm ²	Solid conductor
Tx-	OG	2	0.32 mm ²	Solid conductor
Rx+	WH / GN	3	0.32 mm ²	Solid conductor
Rx-	GN	4	0.32 mm ²	Solid conductor
(PoE +48 VDC)	WH / BU	5	0.32 mm ²	Solid conductor
(PoE +48 VDC)	BU	6	0.32 mm ²	Solid conductor
(PoE GND)	WH / BN	7	0.32 mm ²	Solid conductor
(PoE GND)	BN	8	0.32 mm ²	Solid conductor
GND/SHD	YE / GN	PE	2.5 mm²	Flex
L+	BK	9	1.5 mm ²	L+ 24VDC
L-	BU	10	1.5 mm ²	L- 24VDC
PE	YE / GN	PE	1.5 mm ²	PE

Tab. 5-5 Wire assignment of terminal box ExTB-3 (model LL/ASKDP03-T)

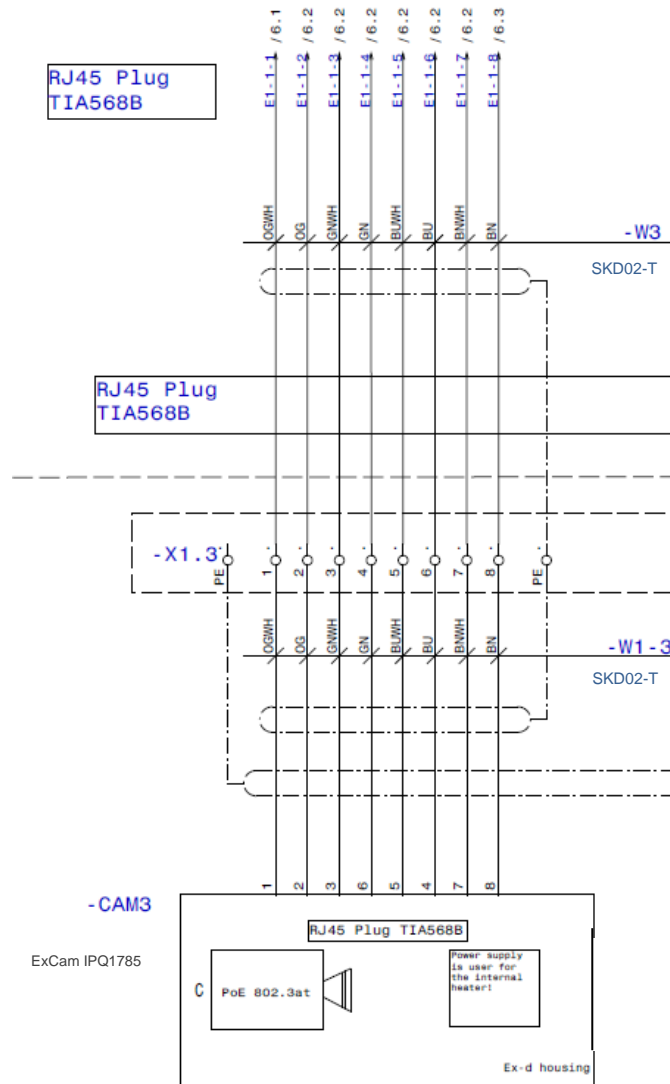


Fig. 5-6 Sample circuit of terminal box ExTB-3 (model N and L)

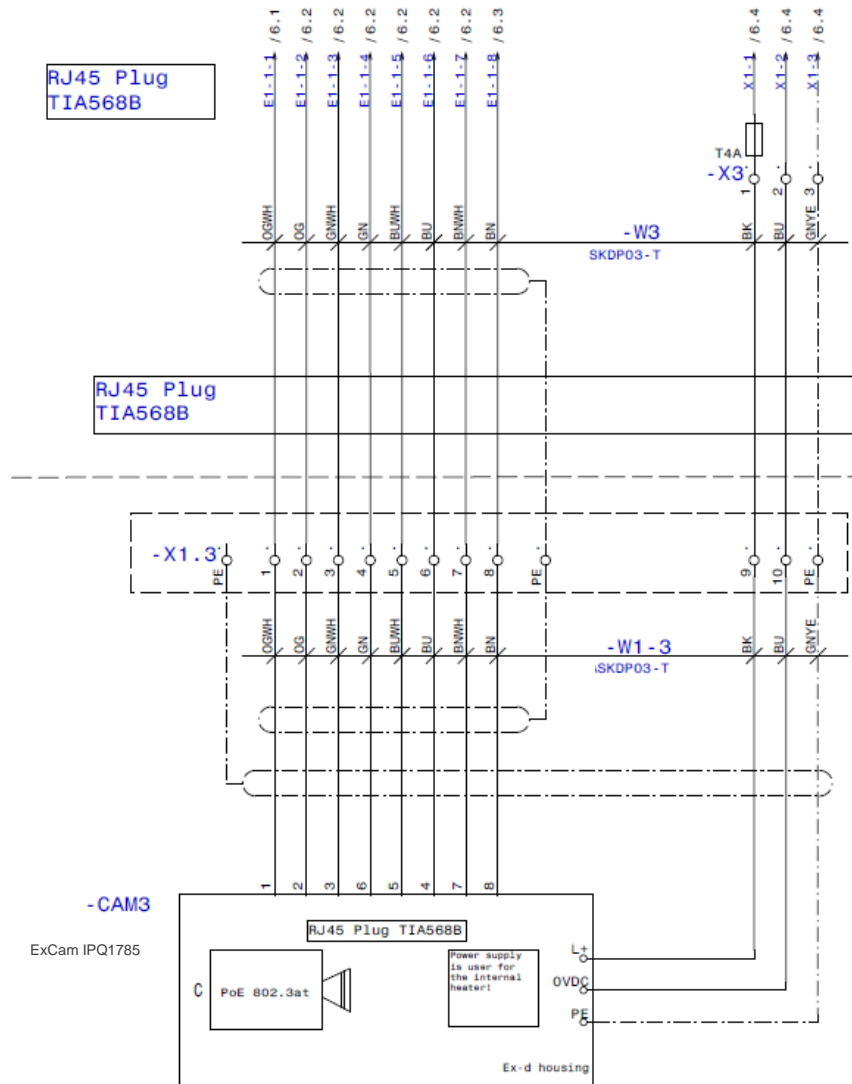


Fig. 5-7 Sample circuit of terminal box ExtTB-3 (model LL)

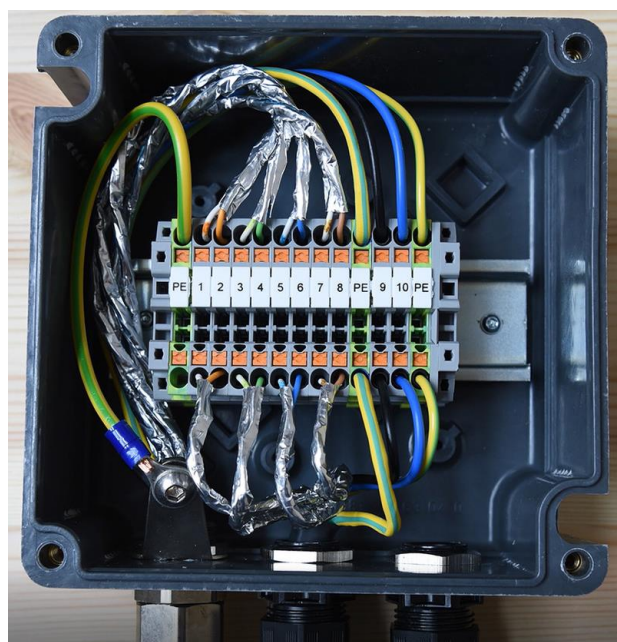


Fig. 5-8 Photo of the occupied terminal box ExtTB-3



Attention!

Introduce the foiling up to about 15 mm 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 approximately 10 mm close to the terminals, in order to ensure the interference immunity.



Attention!

Use only terminals approved by SAMCON.



Attention!

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

For connection to cam.Cleaner please refer to the usermanual cam.Cleaner if needed.

5.3 External connection and protection

There are several options of routing the ExTB-3 terminal box in a safe area:

5.3.1 Direct routing from the ExTB-3 into the safe area

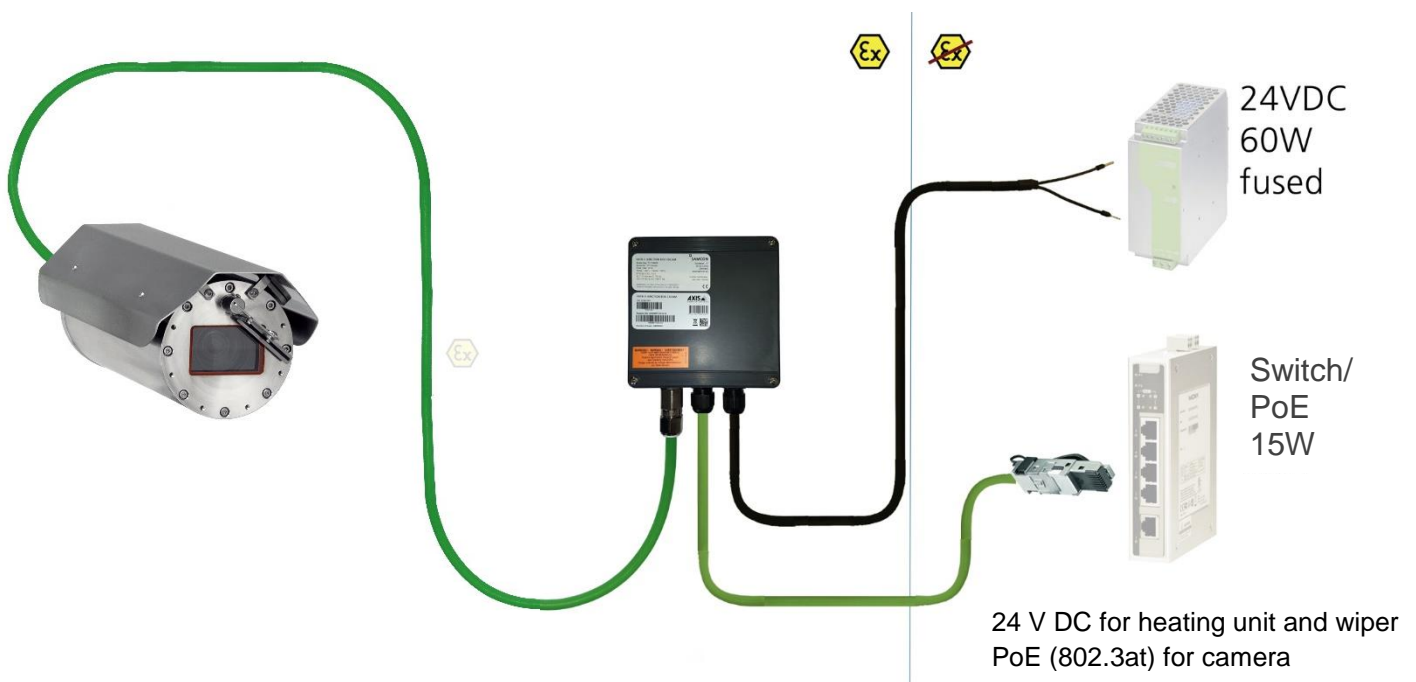


Fig 5-9 ExTB-3 -> Safe area

In case of direct routing from the ExTB-3 into the safe area, the power supply and the voltage signal is led from the safe area to the terminal box. Please observe the terminal box assignment, as described above.



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 protection must comply with national and international regulations.

5.3.2 Routing via ExConnection Rail (optional accessories)

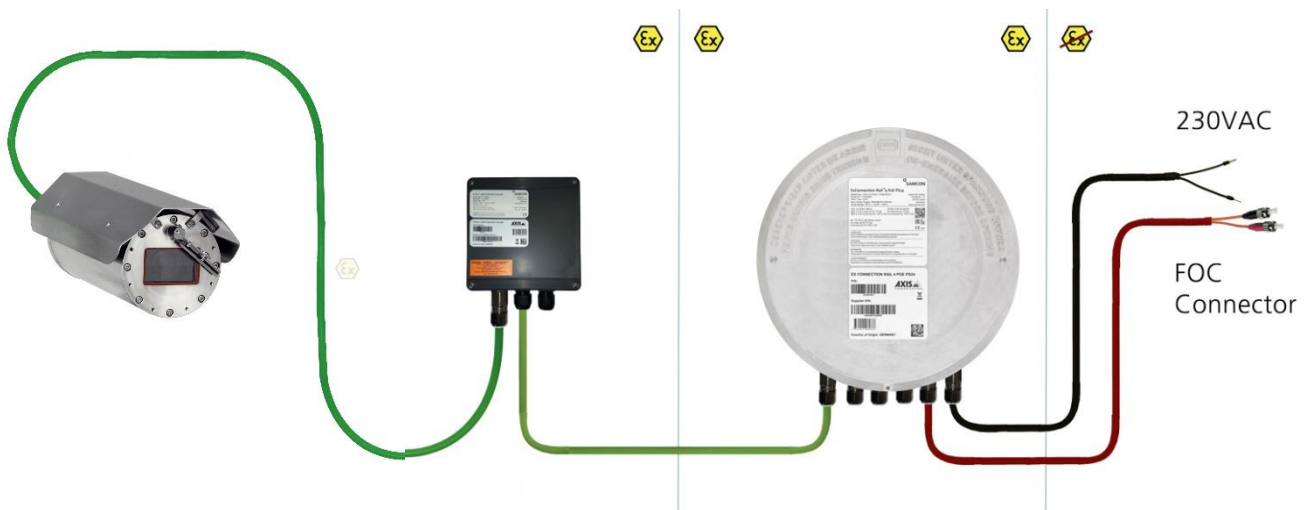


Fig. 5-10 ExTB-3 -> ExConnection Rail

In case of routing the ExTB-3 into an ExConnection Rail, larger installation distances can be covered.

Note:

In hazardous areas, the ExConnection Rail (optional accessories) acts as a PoE+ switch, a media converter from copper to fibre-optic cable, as well as a power supply for the cameras.



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 protection must comply with national and international regulations.

5.3.3 Appropriate cables & cable entries

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

**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 protection must comply with national and international regulations.

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



Particularly for installations requiring a suitable barrier gland, make sure that you handle them correctly and observe the rules and notes given in the respective mounting and assembly instructions.

We show the basic procedures in the following video tutorial:

Video Tutorial:

“SAMCON 02 Mounting and installing Ex-d barrier glands to ExConnection Rails”

<https://go.samcon.eu/v02>



Fig. 5-11 Barrier gland

5.3.4 Fusing

PoE power supply requires no fuses.

The power supply fusing depends on the cable cross-section and length.



Attention!

The protection recommendation for fusing relates to 40W@24VDC at 100 meters 1.5 mm²



Attention!

When the heating switches on, there are high current peaks! Use slow-blow fuses.



Attention!

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

Potential/ Wire no.	Colour (IEC60757)	Conductor	Voltage	Maximum power consumption/fusing:
L+ / 1	BK	1.5mm ² , stranded wire	+24 V DC	40 W of continuous power Fine-wire fuse (L+) 4000 mA -T- slow-blow (high inrush load!)
L- / 2	BU	1.5mm ² , stranded wire	0 V DC / GND	
PE	YE/GN	1.5mm ² , stranded wire	PE	

Tab. 5-6 Recommendation for fusing

5.3.5 Plug assignment (RJ45)

The data transfer of the ExCam IPQ1785 series 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 by per Class-D Link Test.

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



Fig. 5-12 Plug assignment, RJ45

5.3.6 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 and 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 (Ex-d)

The customer may open the housing only if it is absolutely necessary. Only exchanging the SD memory card or a hardware reset are reasons for this.

6.1 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.

If you adjust the camera yourself or open the pressure-resistant enclosure (Ex-d) under voltage, it is absolutely imperative to prevent potentially explosive atmosphere!

6.2 Opening the pressure-resistant housing



„WARNING – MAY NOT BE OPENED IN HAZARD AREAS“

Note: Depending on classification of hazard areas, a work approval has to be obtained.

Even after switching on the power supply, it is absolutely imperative to avoid potentially explosive atmosphere when opening the camera housing. Opening the housing requires disassembly and working in a safe (i.e. non-explosive!) area.



Attention!

Heed that you do not damage the thread surface of the flame-proof gap.



Attention!

Heed that you do not damage the housing seals. Keep them clean!



Attention!

Make sure that the wiper is placed in the central position!

If the ExCam IPQ1785 is equipped with a weather protection roof this has to be removed prior to starting your work. To do so, loosen the 4x8mm lens screws M4*0.7 at the front and rear sides of the bracket holders (Figure 6-1).

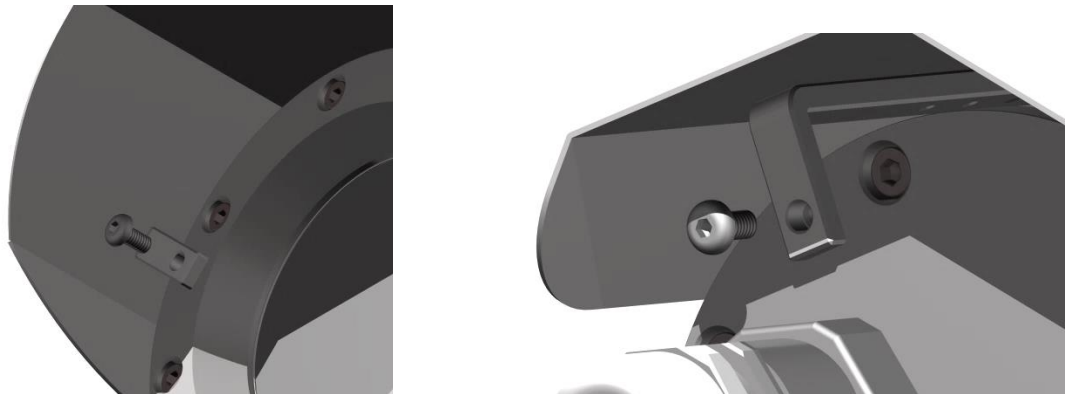


Fig. 6-1 Removing the weather protection roof (1/2) (this illustration is an example)

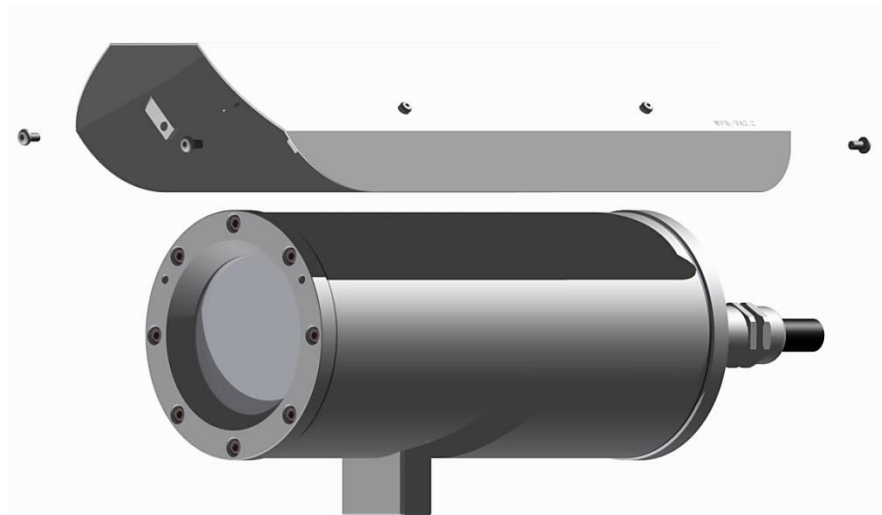
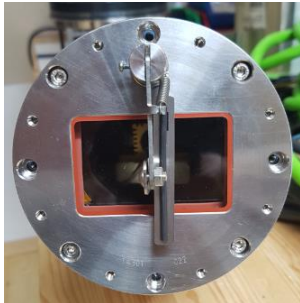


Fig. 6-2 Removing the weather protection roof (2/2) (similar illustration)

To open the stainless steel housing (T07 VA2.3.x.x) of the ExCam IPQ1785, 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 6-3). Caution: do not touch the screw threads with your skin or clothes! On the threads, there is LOC-TITE® 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.

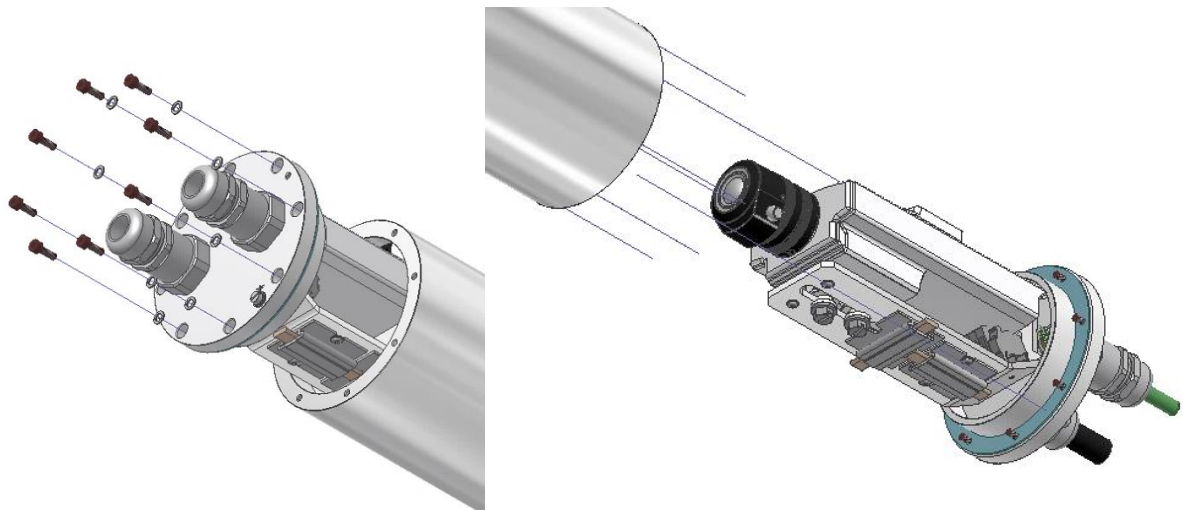


Fig. 6-3 Opening the ExCam IPQ1785 (similar illustration)

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. The cylindrical clearance fit (H8f7 - DIN ISO 286) of the camera body and flange may not be tilted! Risk of damage to the flame-proof gap (DIN EN 60079-1:2012)!

Attention: The mounting adapter with the housing's PTC heater, the camera module and the optics, as well as the temperature control, and (if applicable) auxiliary relays and terminal blocks are fixed to the cable and supply flange. Again, any work has to be carried out very carefully and precisely in order to avoid tilting and damaging the installed components! 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 or pollute the GYLON® flat seal (blue, RAL5012)! The flat gasket is loosely attached to the cable and power supply flange. It is fixed only by the bolted connections!



Attention!

Make sure not to damage the surface of the drill hole and the shaft (fitting) of the flame-proof gap.



Attention!

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

6.3 Removing/inserting an SD memory card

Note:

The ExCam IPQ1785 has a slot for a micro SDHC memory card. Saved video files can be played and deleted via the web interface. They are also available in a download list. Moreover, the videos available in the memory card can also be accessed via FTP server in the network. If the memory card has to be replaced by the user, it should be, as far as possible, empty and pre-formatted with an ext4 or vFAT file system.



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

6.4 Hardware Reset

To re-set all parameters of the ExCam IPQ1785 (including the IP address) to default setting, a hardware reset has to be carried out.

The parameters can be reset via the web interface or manually. If within the network, the camera can no longer be reached or if it is in an uncontrollable state, the reset should be performed manually. To do so, proceed as follows:

1. Disconnect the camera installation module (Axis Q1785) from the power supply.
2. Press and hold the control 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 about 30 seconds.
4. Release the control button. After about a minute, the AXIS Q1785 will return to factory default settings. If there is a DHCP server available in the network, the IP address will be the following: 192.168.0.90 (subnet masking 255.255.255.0).
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).

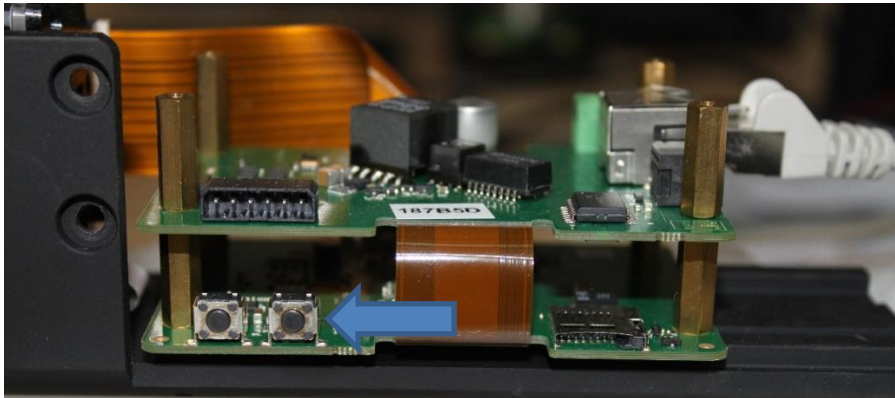


Fig. 6-4 Reset Button

6.5 Closing 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 (K3) is fixed by 8 cylinder-head screws M4*0.7 (ISO metric right-turning) with 30 mm thread length (DIN 912/ ISO 4762, grade 6g). Materials of bolted connections are identical to the pressure-resistant stainless steel housing (standard material no. 1.4404 AISI316L). Check whether the threaded holes are undamaged and clean. Before closing, it is also absolutely imperative to check the flame-proof gap (circular cylindrical fit).



Attention!

If any mechanical damages occurred to the fitting gap, it is no longer allowed to use the housing!



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 drilling hole pattern, and placed between the flange and body. 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 *crosswise* at 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, and thus to impairment of the pressure resistance or ignition protection class



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

6.6 Battery

ExCam IPQ1785 is equipped with a high-temperature resistant Panasonic button cell BR2330A/VAN. This cell supplies energy to the internal real time clock (RTC). The customer is not allowed to replace the battery! In this case, please contact the manufacturer.

7 Network access and visualization

The most important procedures of the camera commissioning are described below. The configuration menu of the web surface allows an intuitive navigation and offers several configuration possibilities. For detailed documentation and information how to use the web Interface, please see the Axis User Manual or visit the following website:

<https://www.axis.com/products/axis-q1785-le>



The delivered ExCam IPQ1785 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".

User: root
Password: root

7.1 Browser Support

A list of the currently supported web browsers, operating systems, required add-ons, etc. can be viewed at:

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



7.2 Assigning the IP address

The ExCam IPQ1785 is intended for use in an Ethernet network and requires an IP address to access and control it. In the most today's networks, a DHCP server is integrated. This server automatically assigns an IP address.

If there is no DHCP server available in the network, the IP default address of ExCam IPQ1785 is **"192.168.0.90" (subnet masking 255.255.255.0)**.

With the "AXIS IP Utility" it is possible to determine the IP address under Windows; the included USB stick contains this application.



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 in the device list. It can also be used to manually assign a static IP address. For this purpose, the ExCam IPQ1785 network camera has to be installed in the same physical network segment (physical subnet) as the computer on which the AXIS IP Utility is running. The network signature of ExCam IPQ1785 is "AXIS Q1785" (see Figure 7-1). MAC address and serial number for clear device identification are also detected and displayed.



Name	IP-Adresse	Seriennummer
AXIS 241S - 00408C98C1F7	89.0.0.98	00408C98C1F7
AXIS M3014 - 00408CD6B3B4	89.0.0.205	00408CD6B3B4
AXIS M3016 - ACCC8EB63B5F	89.0.0.142	ACCC8EB63B5F
AXIS P5635-E MkII - ACCC8E898F0F	89.0.0.226	ACCC8E898F0F
AXIS Q1785 - ACCC8EBF9C07	89.0.0.237	ACCC8EBF9C07
AXIS Q7401 - 00408CA1BE19	89.0.0.99	00408CA1BE19

Fig. 7-1 Axis IP Utility

7.3 Password/ Identification

The following user name is set at the factory: **root**

The following password is set at the factory: **root**

7.4 How to start the wiper

The ExCam IPQ1785 is equipped with a wiper. The wiper can be started via a button in the lower right corner of the web interface (see Figure 7-2).

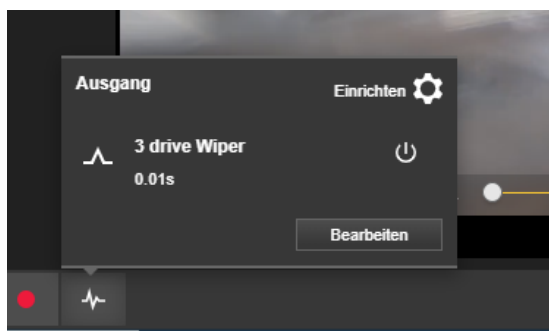


Fig. 7-2 User Interface to operate the wiper

The factory settings of the wiper are pre-set to wipe 3 times in a row. To repeat the cleaning cycle, press the wiper button again. If for any reason the wiper does not function properly, an error warning appears in the upper-left corner of the user interface and the wiper automatically attempts to restart every 30 seconds.

The start button for the wiper can be activated or deactivated.

E/A-Ports



Fig. 7-3 Turning the wiper on

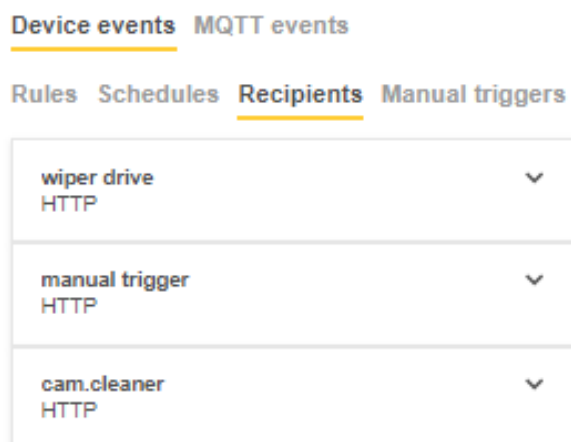
Intermittent wiper controls can be configured via CGI command by the video management system. If you have any questions, please write to Support@samcon.eu

7.5 Operate the cam.Cleaner (only ExCam IPQ1785-W)

Our camera models ExCam IPQ...-W are especially developed to be used together with a cam.Cleaner. The washing water supply unit can be controlled via Browser or VMS (VAPIX).

7.5.1 Configuration rules and manual triggers

The query string suffix can be used to control the cam.Cleaner and the wiper drive. You can change the settings depending on your special needs. Therefore choose:
 Settings → System → Events



Please fill in the IP-address of your camera.

The following user name is set at the factory: **root**

The following password is set at the factory: **root**

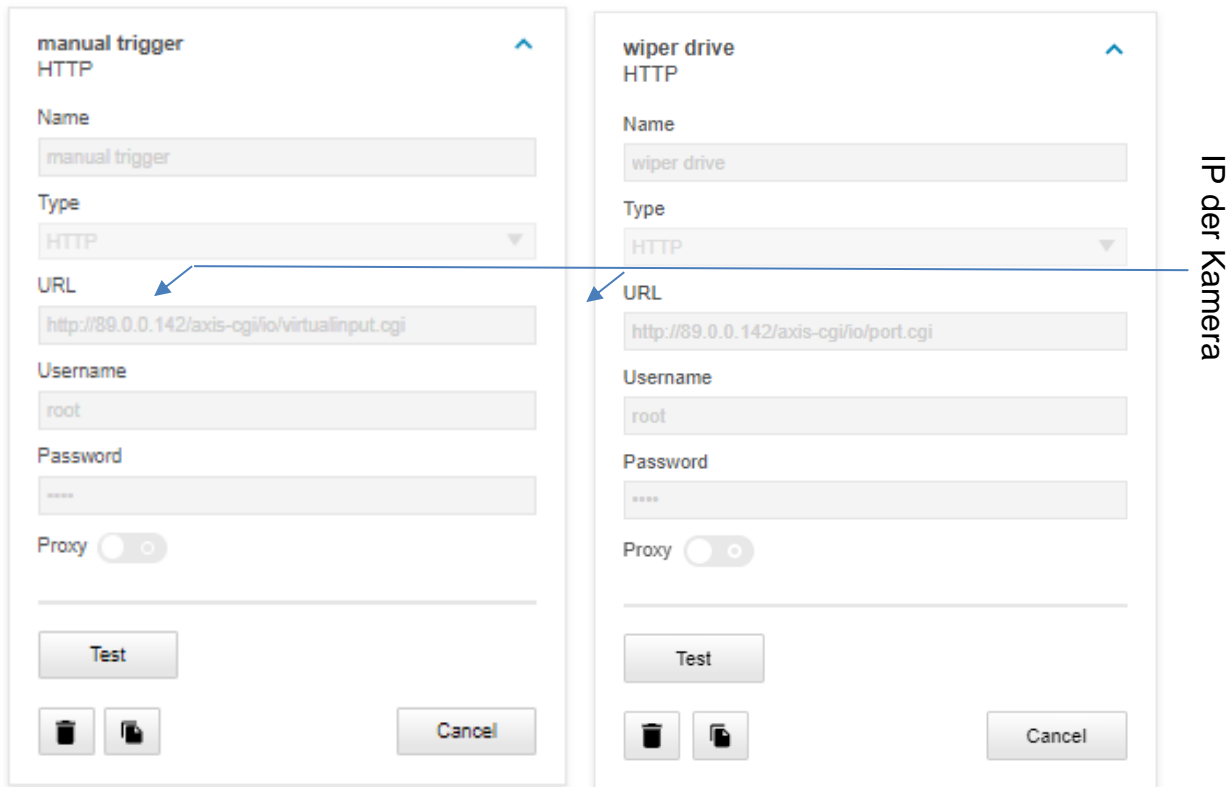


Fig. 7-4 Events – Recipients

Device events **MQTT events**

Rules Schedules Recipients Manual triggers

● **cam.cleaner** ▼
Manual trigger | Send notification through HTTP

● **deactivate manual trigger** ▼
Manual trigger | Send notification through HTTP

● **wiperdrive** ▼
Manual trigger | Send notification through HTTP

+



● **cam.cleaner** ▲
Manual trigger | Send notification through HTTP

Use this rule

Name

Wait between actions (max 23:59:59)

Condition ▲

Channel
Camera 1

Invert this condition

Use this condition as a trigger

+

Action ▲

Recipient

Query string suffix

Message (will be encoded)

Full recipient URL:
http://89.0.0.142/axis-ogio/port.cgi?action=3:/2000

7.5.2 Explanation cam.Cleaner rule

The query string suffix can be used to control the cam.Cleaner.

The following command activates the spray system for one second:

Query string suffix: `action=3:/1000\`

In this example the cam.Cleaner is connected to port 3 of the IOs of the camera:

`action=3:/1000\`

A front slash / switches the spray system of the cam.Cleaner on, a back slash \ switches it off. The numbers between a slash are the milliseconds until the following slash is executed as a control command. In the above command, the spray system is active for one second.

If another spray is to be made after a short break, the following command can be used, to spray for two seconds, break for three seconds and then spray again for one second:

`action=3:/2000\3000/1000\`

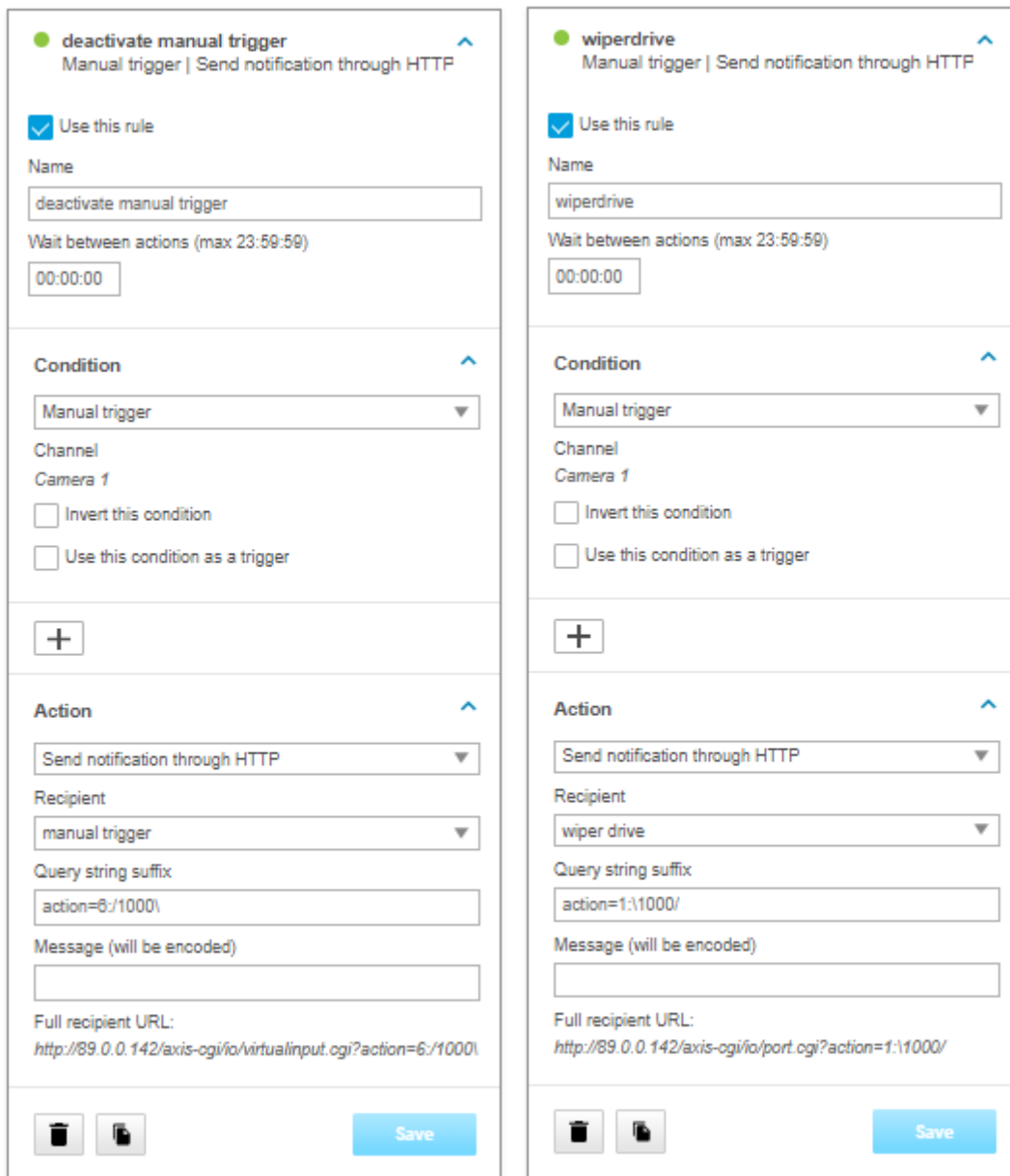


Fig. 7-5 Event – Rules

7.5.3 Explanation wiperdrive rule

The query string suffix can be used to control the wiper.

The wiper is connected to port 1: `action=1:\1000/1000\`

A frontslash / activates the wiper, a backslash \ turns the wiper off. The numbers between a slash are the milliseconds until the following slash is executed as a control command.

In the above command, the wiper is left off for one second and only activated after this delay, when there is enough water on the glass. After activation, two wiper cycles are executed, i.e. the wiper moves twice in both directions and requires approx. 10 seconds for this. If the wiper should be activated for a longer time, it can be switched on again after a break of 10 seconds: `action=1:\1000/1000\10000/1000\`

8 Maintenance/ Modification

The applicable regulations for the maintenance and servicing of electrical devices in potentially explosive atmospheres 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. The maintenance tasks especially include examination of parts on which the ignition protection depends (e.g., proper condition of the casing, seals and cable entry points). If maintenance measures are necessary they have to be initiated and/or executed.

8.1 Repair and correction

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

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

8.2 Replacement of the wiper lip

In the scope of the camera delivery, 2 spare wiper lips are included. When the wiper lip becomes worn, it must be replaced by a new one. For this purpose, it is not necessary to remove the wiper. Simply pull out the old wiper lip upwards and insert the new one.

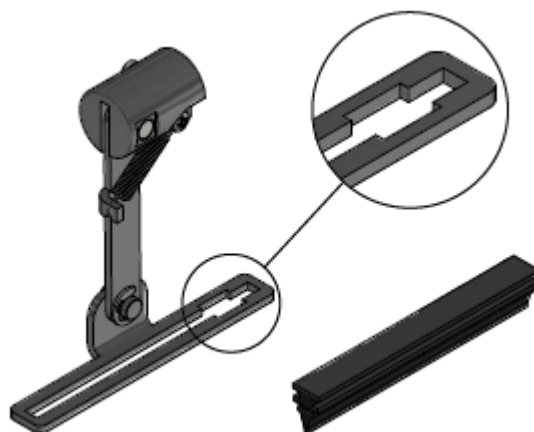


Fig. 8-1. How to replace the wiper lip

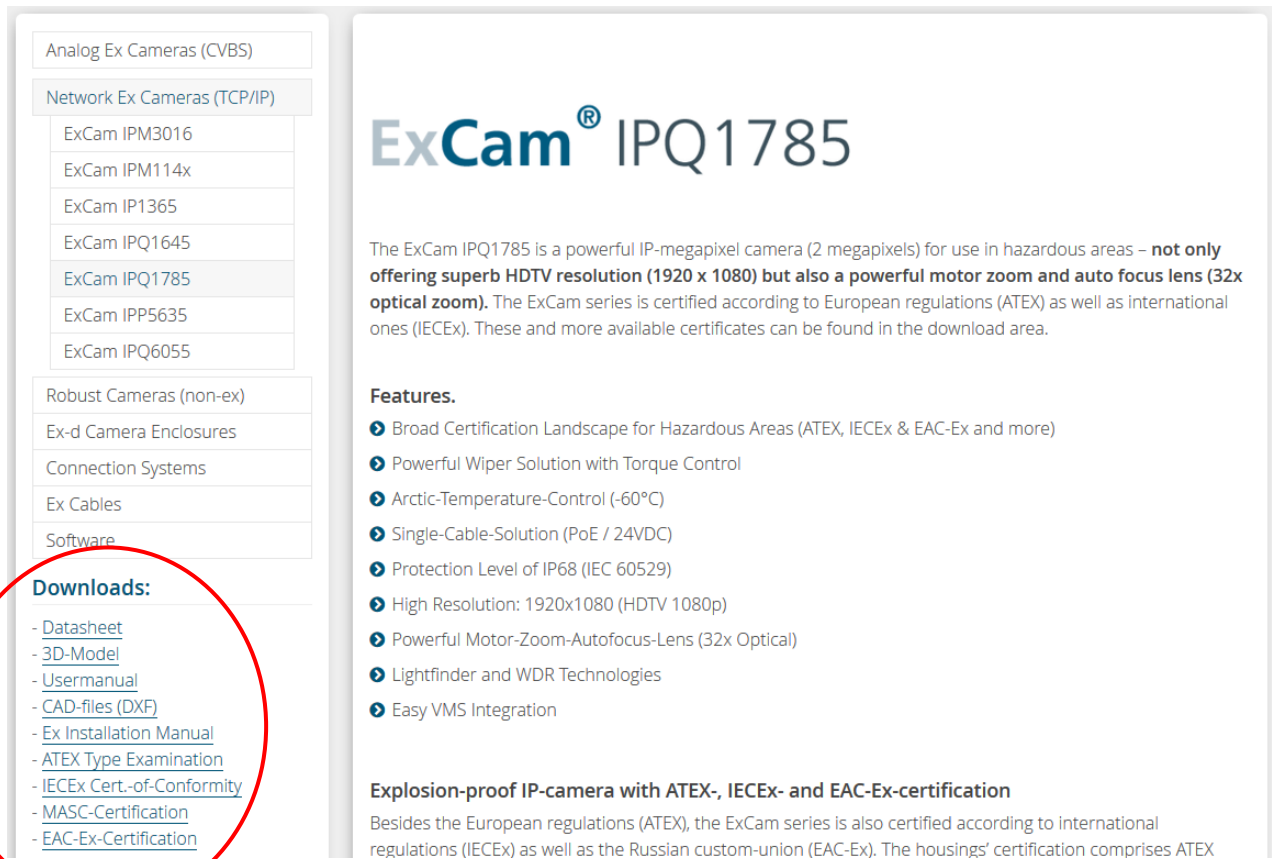
9 Disposal/ Recycling

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

10 Drawings & 3D models

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

<https://www.samcon.eu/en/products/network/excam-ipq1785/>



The screenshot shows a product page for the ExCam IPQ1785. On the left, there is a navigation menu with categories like 'Analog Ex Cameras (CVBS)', 'Network Ex Cameras (TCP/IP)', 'Robust Cameras (non-ex)', 'Ex-d Camera Enclosures', 'Connection Systems', 'Ex Cables', and 'Software'. Under 'Network Ex Cameras (TCP/IP)', several models are listed, with 'ExCam IPQ1785' selected. Below this, a 'Downloads:' section is circled in red, containing links for: Datasheet, 3D-Model, Usermanual, CAD-files (DXF), Ex Installation Manual, ATEX Type Examination, IECEx Cert.-of-Conformity, MASC-Certification, and EAC-Ex-Certification. The main content area features the product name 'ExCam® IPQ1785', a description of its capabilities (2 megapixels, 1920x1080 resolution, motor zoom, auto focus lens), and a list of features such as broad certification, wiper solution, temperature control, and high resolution. It also mentions ATEX, IECEx, and EAC-Ex certifications.

If you wish additional technical information, please contact us at:

support@samcon.eu

11 Certificates and further documentation

Certificates and further documentation are available in the download area at the product website:

<https://www.samcon.eu/en/products/network/excam-ipq1785/>

12 Notes



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