

ExCam IPQ6055

User manual



SAMCON

Prozessleittechnik GmbH

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Revision history

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1 Introduction

The ExCam IPQ6055 is a high performance IP dome camera of the latest generation with a 2 megapixel resolution of 1920 x 1080p pixel. It is certified according to ATEX, IECEx, and EAC-Ex.

The dome camera has a continuous 360° pan and a 180° tilt function; the adjustment of the picture is done automatically. A special feature is the high speed and precision with which the pan as well as the tilt functions is carried out.



The ExCam Series is certified according the European ATEX directive as well as to the international IECEx directive. The ex-protective housing is suitable for the usage within the Ex zones 1, 2, 21 and 22 including the gas group IIC and the dust group IIIC. It is also certified according to EAC-Ex.

During the design of the ExCam IPQ6055, the main focus was put on security as well as on mechanical precision and high-quality stainless steel. In addition, the modular design allows, for example, a connection via FOC.

2 Technical Data

2.1 Parameters of the explosion protection

Identification marks according to directive 2014/34/EU:

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

Explosion protection (gas):

Ex d IIC T6 Gb or
 Ex d IIC T5 Gb or
 Ex d IIB T6 Gb or
 Ex d IIB T5 Gb

Explosion protection (dust):

Ex tb IIIC T80°C Db IP68 or
 Ex tb IIIC T95°C Db IP68

Protection level:

IP 66/68 (IEC /EN 60529)

Transportation and storage temperature (EX):

-40°C...+60°C

Ambient temperature (EX)¹:

-50°C...+50°C (T6)

Noticed body:

TÜV Rheinland (number 0035)

EU Type Examination:

TÜV 14 ATEX 7539 X
 IECEx TUR 14.0026X

Test protocol ATEX:

557/Ex.539.00/14

Test report IECEx:

DE/TUR/ExTR14.0026/00

Quality Assessment Report:

DE/BVS/QAR14.0006/00

2.2 Electrical parameters of the camera

Axis Q6055

Power supply:

PoE, IEEE 802.3at Class 4

Reference power:

48 V DC (44...54 V DC)

Maximum power input:

30 W

¹ Maximum ambient temperature range relevant for explosion protection might deviate to the maximum functional temperature range. For maximum functional temperature range (MTBF) see chapter 2.12

2.3 Electrical parameters of the heating (optional)

Power supply:	12...30 V DC
Reference power:	24 V DC
Maximum power input:	40W @-30°C 60W @-50°C
Suggested fuse supply cable:	6000mA – T at 3G 1.5 mm ²

2.4 System Cable SKDxx

Description:	Data transfer and power supply of the camera module (DIN EN 60079-14 conform)
Color of sheath:	Green (GN), similar RAL6018
Outer diameter:	9.1 mm ± 0.2 mm
Bending radius:	100 mm
Cable:	4 x 2 x AWG22/1 CAT.6a
Characteristics:	PUR halogen free, flame retardant, UV resistant, chemical resistance, shielded
Interface:	P version: RJ-45 (EIA/TIA-568B) 10BASE-T/100BASE-TX PoE K version: 8x single pin twisted pair (solid conductor 0.64 mm ² , about 5 mm stripped) 1x shield (Cu braid 2.5 mm ² , ferules) 10BASE-T/ 100BASE-TX PoE

2.5 Supply cable (optional)

Description:	Power supply of the heating elements including temperature controller, Ölflex® 440p ² (DIN EN 60079-14 conform)
Color of sheath:	Black (BK) matt, similar RAL9005

² Further cables available upon request, e.g. „Ölflex® Petro FD 865 CP“ (high resistance against oil and drilling liquids) or „XPLE Armoured 3 x 2.5“ (extremely robust, particularly designed for offshore environments)

2.6 Video technical data

For details regarding video technical data of the installed AXIS Q6055 dome camera, please refer to the AXIS® product documentation:

<http://www.axis.com/us/en/products/axis-q6055>

2.7 Other technical data

Permitted ambient temperature (MTBF) ³ :	0 °C ... +50 °C (type N) -30 °C ... +50 °C (type L) -50 °C ... +50 °C (type LL)
Protection level EN 60529/IEC 529:	IP 68 Test conditions: 24 h/ 3 m water column at 5 °C. An additional mechanical protection against water jets is recommended
Housing material:	Stainless steel MNo.: 1.4404 (X2CrNiMo17-12-2), AISI 316L (V4A)
Material sight glass:	LEXAN
Weight:	15 kg
Dimensions housing (WxHxD):	D195 mm x 378 mm

³ Functional temperature range concerning the operational temperature range of the installed components according to manufacture declarations (MTBF – meantime ration duration between failures). For ambient temperature ranges relevant for explosion protection (ATEX, IECEx) see chapter 2.1 – Explosion protection)

3 Safety guidelines

Please observe the safety guidelines indicated in the EX installation manual of the T08 ExCam series!

4 Illustration of the model key

The following model options are currently available for the ExCam IPQ6055:

Ex product name ¹⁾	Model options					
	Type ²⁾	Housing combination ³⁾	Gas expl. group ⁴⁾	Cable length/m SKDxx/SKLxx ⁵⁾	cable termin. ⁶⁾	Temperature range ⁷⁾
ExCam IPQ6055	T08-	TNXCD	B-	005-	K-	N
	T08-	TNXCD-	B-	005-	P-	N
	T08-	TNXCD-	C-	005-	K-	N
	T08-	TNXCD-	C-	005-	P-	N
ExCam IPQ6055	T08-	TNXCD-	B-	005-	K-	L
	T08-	TNXCD-	B-	005-	P-	L
	T08-	TNXCD-	C-	005-	K-	L
	T08-	TNXCD-	C-	005-	P-	L
ExCam IPQ6055	T08-	TNXCD-	B-	005-	K-	LL
	T08-	TNXCD-	B-	005-	P-	LL
	T08-	TNXCD-	C-	005-	K-	LL
	T08-	TNXCD-	C-	005-	P-	LL

Table 4.1 – Model key

- 1) **ExCam IPQ6055 =** Functional camera description of the ExCam IPQ6055 network camera (Basis: AXIS Q6055)
- 2) **T08 =** Certified production type, device designation „T08 ExCam series“, EU type examination: „TÜV 14 ATEX 7539 X“ and „IECEX TUR 14.0026X“
- 3) **TNXCD =** Ex-d housing
- 4) **B =** Explosion group IIB/ IIIB (Standard - all gases except hydrogen, acetylene, carbon disulfide, flammable fibrous materials, and non-conductive dusts)
C = Explosion group IIC/ IIIC (optional - all gases, flammable fibrous materials, and conductive dusts)
- 5) **005 =** Length of the connection line in meter at delivery. The standard cable length is 5 m (minimum/maximum cable length: 001...100 [m])

- 6) **K =** Terminal block execution (standard)
 SKDxx: 8 x single pin twisted pair (solid conductor 0.64 mm², about 5 mm stripped), 1x shield (Cu braid 2.5 mm², ferules)
 Supply: („Ölflex 440p2 x 2.5 mm² Cu litz wire with ferule, sheath about 10 cm stripped and furnished with bend relief/shrink tubing
- P =** Plug termination (optional)
 SKDxx: RJ-45 network plug (heavy duty), AWG 26-22.
 Pin assignment according to EIA/TIA-568B
 Supply: („Ölflex 440p“) n.a. / upon request
- 7) **N =** Normal ambient temperature range (MTBF): T_{AMB_N} : 0 ... +50 [°C]
L = Low ambient temperature range (MTBF): T_{AMB_L} : -30 ... +50 [°C]
LL = Lowest ambient temperature range (MTBF): T_{AMB_LL} : -50 ... +50 [°C]

5 Commissioning



Attention!

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



Attention!

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

5.1 Step 1: Installation

Install the ExCam[®] IPQ6055 at the desired location. Mounting options, accessories, as well as safety guidelines are described in the EX installation manual of the ExCam[®] series.

5.2 Step 2: Electrical connection



Attention!

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



Attention!

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



Attention!

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



Attention!

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

The ExCam® IPQ6055 is delivered with an electrical connection cable type SKDxx (System Kabel Digital) and optional with an additional supply cable e.g. of the type „Ölflex® 440p“. The maximum cable length is 100 m (depending on electromagnetic tolerance) and can be determined individually to reflect the particular customer specifications. The minimum cable length is 1 meter.

The ExCam® IPQ6055 is manufactured with a pigtail reflecting the desired cable length. Any electro-technical work inside the camera's flameproof enclosure done by the user is prohibited. Depending on the model option, the ending of the camera's cable connection is either stripped to the blank Cu conductors or furnished with a plug.

5.2.1 Potential equalization



Figure 5.1 – ExCam IPQ6055 potential equalization

The potential equalization / earthing of the camera housing is mandatory in order to avoid electrostatic charging and hence spark generation. The screw terminal at the lower right hand side of the housing's rear side is intended for that purpose (q.v. figure 5.1). The profile of the potential equalization has to reflect the national grounding instructions (minimum 4 mm²).

Connection table:

Potential	Color (IEC 60757)	Profile	Comment
PA	GN/YE	4 mm ² (fx)	-

Table 5.1 – Potential equalization

5.2.2 Connection and protection

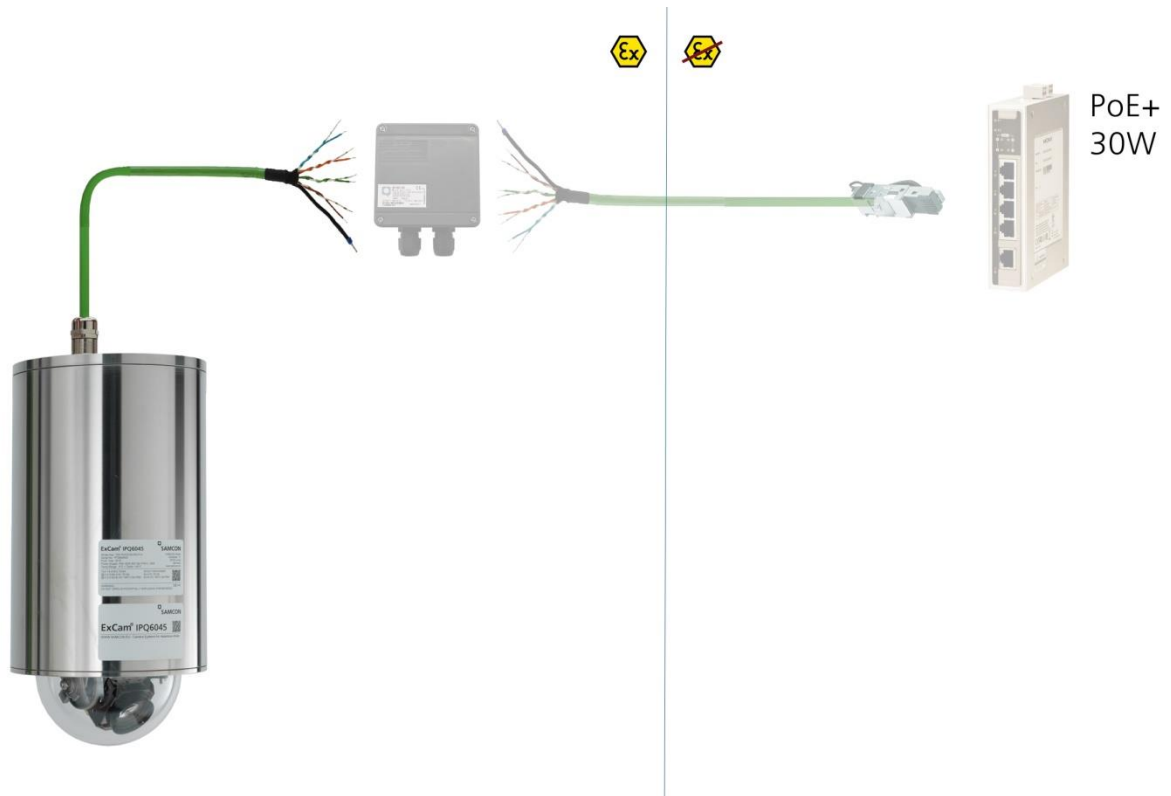


Figure 5.2 – ExCam IPQ6055 T08-TNXCD-C-XXX-K-N

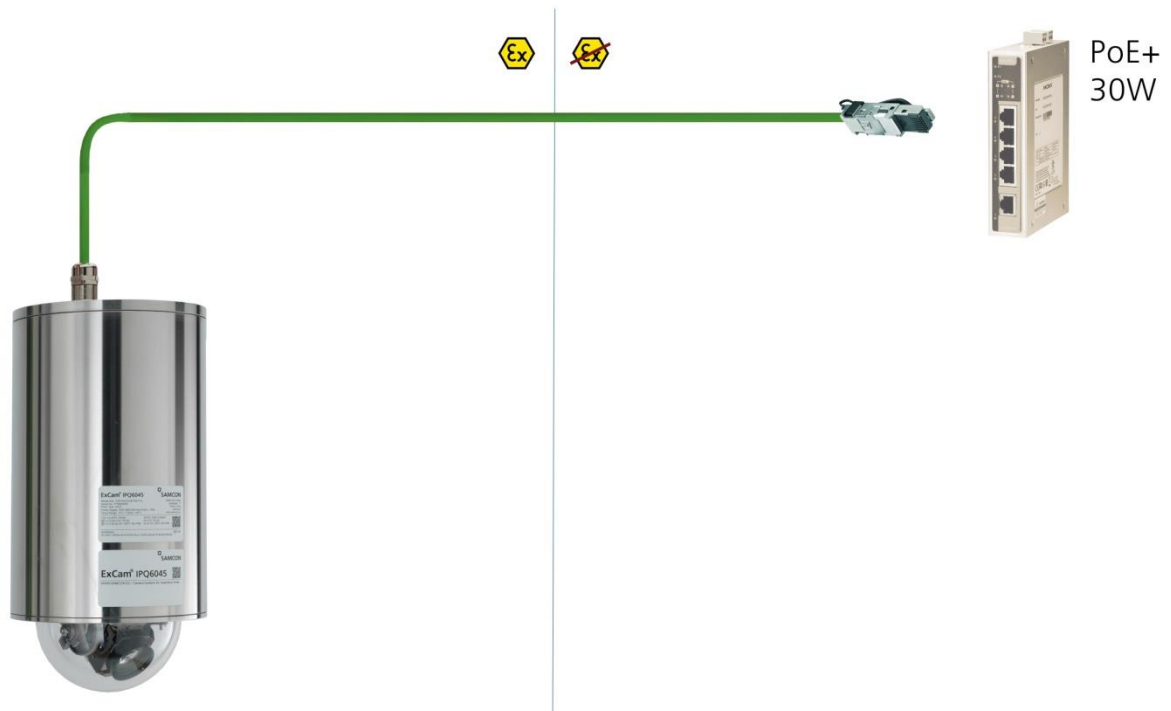


Figure 5.3 – ExCam IPQ6055 T08-TNXCD--XXX-P-N

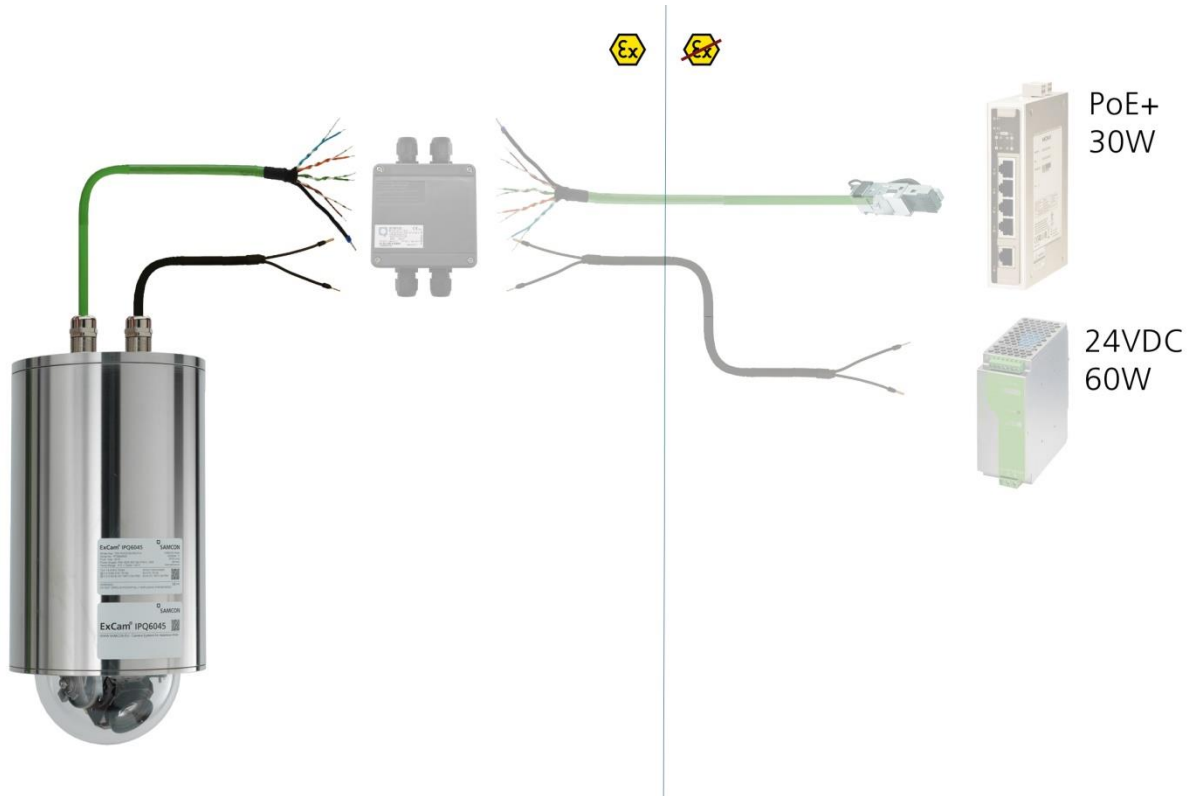


Figure 5.4 – ExCam IPQ6055 T08-TNXCD-C-XXX-K-L(L)

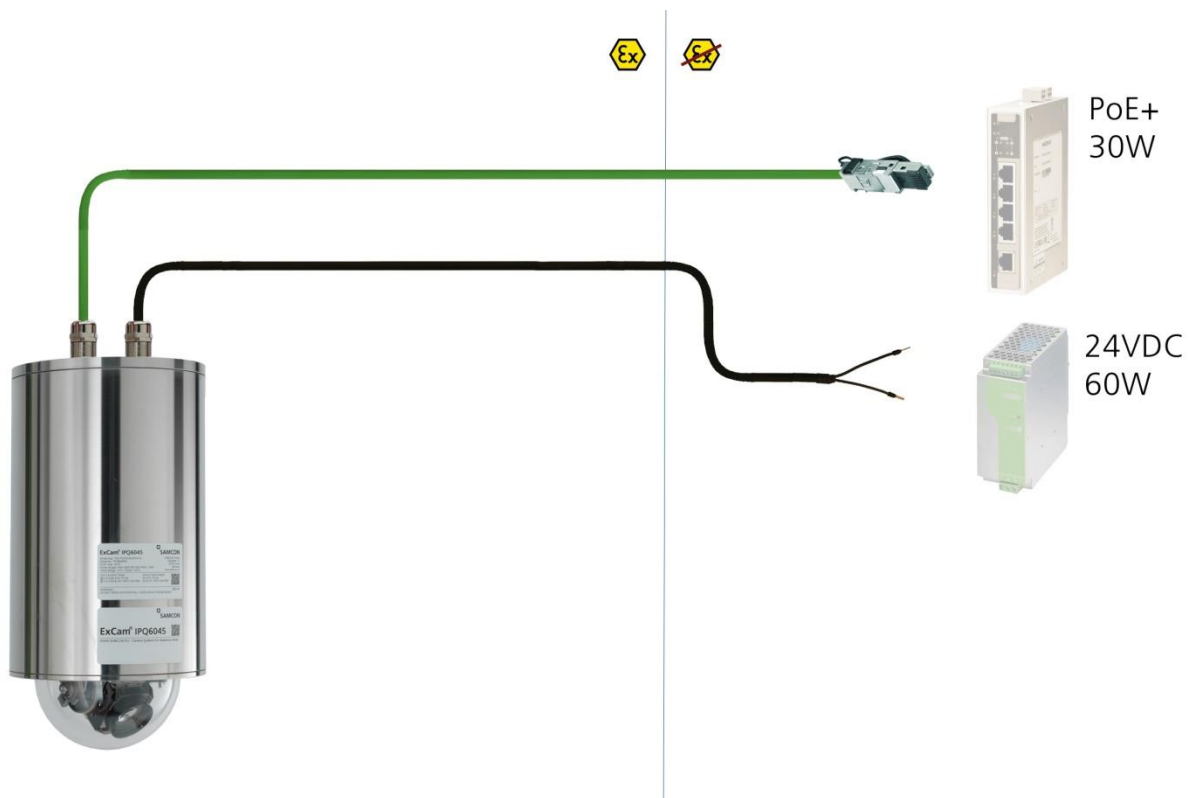


Figure 5.5 – ExCam IPQ6055 T08-TNXCD-C-XXX-P-L(L)

The green patch cable SKDxx disposes of 8(+1) conductors used for the data transfer with other network devices as well as to power the camera. In order to guarantee the power supply (Power Device, PD) of the ExCam IPQ6055 (power 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 802.3at with class 4 (HiPoE, PoE+ (30W)). A 100 Mbit Ethernet Connection (100BASE-TX) is used for the ExCam IPQ6055 data transfer.

In case the camera disposes of a plug, (figure 5.4); it has to be plugged into the RJ45 PoE slot of the network device. Due to the design, a faulty connection or pin assignment is not possible. The network device can already be supplied with power, prior to connecting it to the camera, hence there is no „power ON“ priority which has to be observed.

In case the ExCam IPQ6055 disposes of a terminal block termination, the correct connection of the individual pins in accordance with EIA/TIA-568B has to be observed (q.v. table 5.2). Generally, the pins of the same color code are connected. Only use SAMCON approved clamps!

It is allowed to separate the ExCam IPQ6055 from the network and to switch it on again while in operation or in interaction with a visualization, video management system or while accessing the web interface (hot plugging).

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

The pin assignment of the SKDxx according to EIA/TIA-568B standard for 100BaseTX with PoE (IEEE 802.3at) is done as follows:

Pin / Potential		Color SKDxx (IEC60757)	Plug / pin contact (TIA-568B)	Cross sec- tion area	Remarks
Mode A	Mode B				
Tx+ / PoE ±48 VDC	Tx+	WH / OG	1	0.32 mm ²	Solid conductor
Tx- / PoE ±48 VDC	Tx-	OG	2	0.32 mm ²	Solid conductor
Rx+ / PoE GND	Rx+	WH / GN	3	0.32 mm ²	Solid conductor
n.a.	PoE +48 VDC	BU	4	0.32 mm ²	Solid conductor
n.a.	PoE +48 VDC	WH / BU	5	0.32 mm ²	Solid conductor
Rx- / PoE GND	Rx-	GN	6	0.32 mm ²	Solid conductor
n.a.	PoE GND	WH / BN	7	0.32 mm ²	Solid conductor
n.a.	PoE GND	BN	8	0.32 mm ²	Solid conductor
shield/ GND (complete conductor bunch)		BK	9	2.5 mm ²	Shield braid of tinned copper wires Ø=0.13 mm (AWG 36)
shield (single, twisted pair pins)		n.a.	n.a. / 10	n.a.	Aluminum synthetic strapp, twisted

Table 5.2 – Pin assignment SKDxx and plug contact RJ45

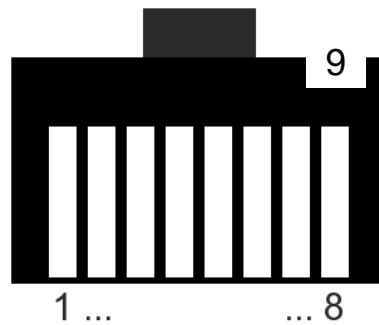


Figure 5.6 – RJ45 Contact assignment

Particularly in EMC critical environments, it is important to earth the shield at the terminal block side (q.v. figure 5.3 – pin with black shrink tubing and blue ferule).

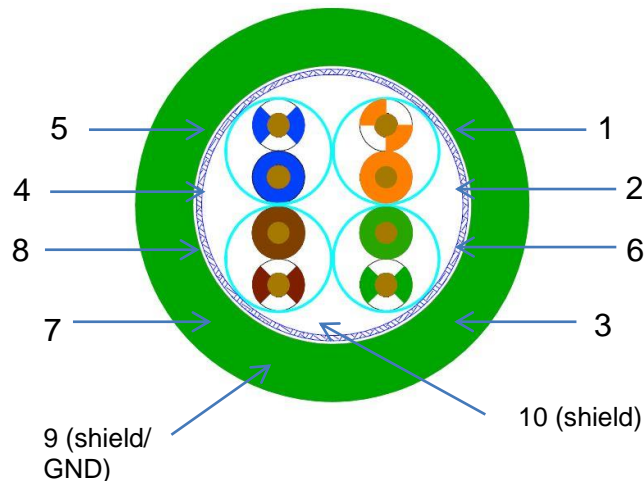


Figure 5.7 – SKDxx Pin assignment

In case the ExCam IPQ6055 is supplied via a PoE capable device, an additional safeguarding of the power supply is not necessary. The power supply is executed by the PoE network device via an electronic with intelligent set-up. The camera as well as the connection is permanently monitored in order to avoid any failure or defects in case of a short-circuit fault.

For a camera with terminal block execution, it is possible to operate the camera either with a PoE capable network device or with a separate 48 V DC power supply (supply voltage and network streams are self-sustaining). In this event an adequate supply safeguarding has to be dimensioned.

Recommended is a **300 mA medium time lag fuse**.

If the Ex CCTV application calls for a separate 48 V DC supply voltage, the wire/pin assignment has to reflect **Mode B** operation mode (q.v. table 5.2)!

If the camera is equipped with a heating (type L or type LL), a second power supply with a separate supply protection at the „L+“ has to be available. Standardly the supply is carried out via the supply cable Ölflex® 440p. Connection assignment and supply protection according to table 5.3.

Potential/ Pin no.	Color „Ölflex 440p“ (IEC60757)	Cond. design	Voltage	Maximum power in- put / protection (type L)	Maximum power in- put / protection (type LL)
L+ / 1	BK	2.5 mm ² litz wire	+24 VDC	40 W / fuse (L+) 6000 mA -T- time lag (high inrush current!)	60 W / fuse (L+) 6000 mA -T- time lag (high inrush current!)
L- / 2	BK	2.5 mm ² litz wire	0 VDC / GND		

Table 5.3 – Pin assignment supply cable

5.2.3 Tests prior to switching on voltage



Attention!

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



Attention!

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



Attention!

When powering the camera on in ambient temperatures less than 0°C (storage temperature), make sure to heat up the enclosure before switching on the camera circuit. For non-continuous systems please use an adequate time relay to switch on the heater, before the camera circuit is switched on!

5.3 Optional steps

5.3.1 Work preparation



Attention!

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



Attention:

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

To allow the camera delivering the best picture quality, please consider the lighting conditions, the object distance and size, the angle of view as well as the minimum object distance for focusing when selecting the installation place.

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

5.3.2 Opening the pressure-resistant housing

The opening of the TNXCD housing requires special tools and it is not intended that customer open the housing. In case that due to an unforeseeable event the housing has to be opened, inform SAMCON Support (support@samcon.eu) prior to executing any measures.

Always observe all ex-relevant restrictions:



„WARNING – DO NOT OPEN IN HAZARDOUS AREA“

Note: Depending on the zone classification, it might be necessary to obtain a work permit/clearance! Even after disconnection of the voltage, it is mandatory to avoid potentially explosive atmosphere when opening the camera housing (de-installation of the camera and execution of the work within the safe area (non EX)!



Attention!

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



Attention!

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

6 Network access and visualization

In the following, the most important steps for the initial commissioning of the camera are described. The configuration menu of the web surface allows an intuitive navigation and offers several configuration possibilities. For a comprehensive user manual of the web surface, please refer to the to the Axis user manual, also available at the following link:

<http://www.axis.com/us/en/products/axis-q6055>

At delivery, the ExCam IPQ6055 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

6.1 Browser Support

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

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

6.2 Assigning the IP address

The ExCam IPQ6055 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 no DHCP server is available in the network, the ExCam IPQ6055's **default IP address is 192.168.0.90** (subnet masking 255.255.255.0).

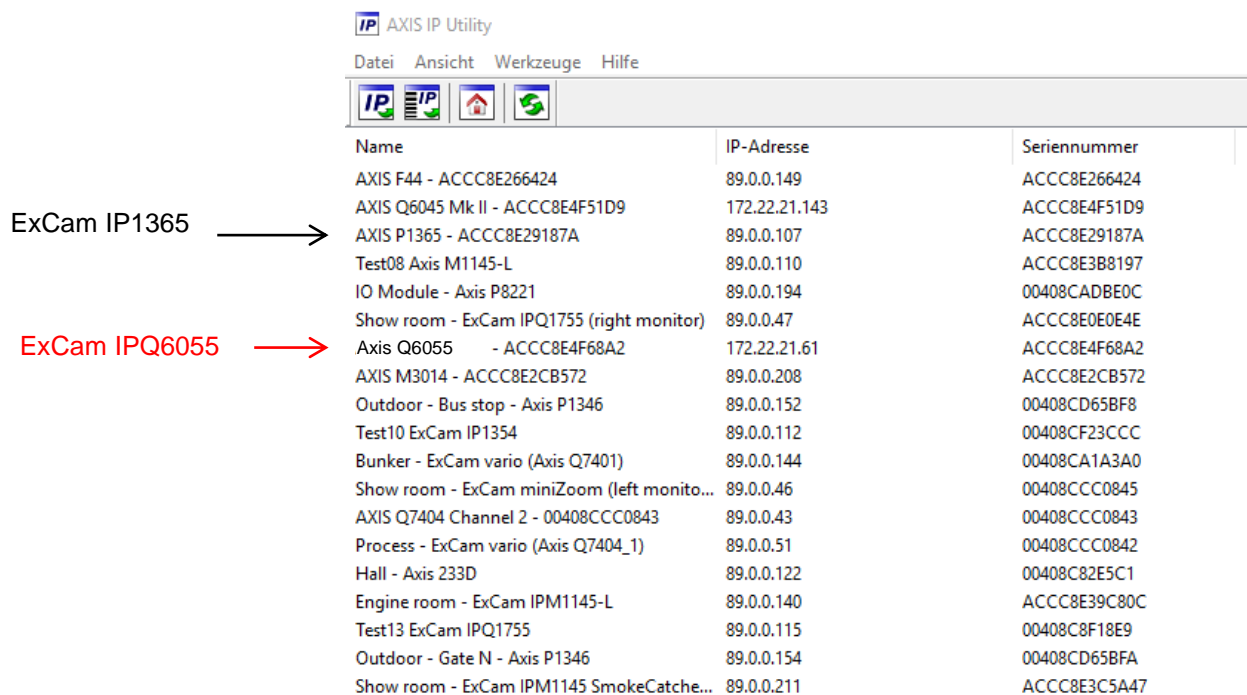
Using the AXIS IP Utility is the suggested procedure to determine the IP address under Windows. The application is available for download at:

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



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

The “AXIS IP Utility“ tool automatically recognizes all ExCam devices and displays them. It can also be used to manually assign a static IP address. Please note that the ExCam IPQ6055 network camera has to be installed within the same network segment (physical subnet) as the computer on which the “AXIS IP Utility“ tool is executed. For example, the ExCam IPQ6055 network identification is „Axis Q6055“ (q.v. figure 6.1). MAC address and serial number are also determined and displayed so that a non-ambiguous identification is possible.



Name	IP-Adresse	Seriennummer
AXIS F44 - ACCC8E266424	89.0.0.149	ACCC8E266424
AXIS Q6045 Mk II - ACCC8E4F51D9	172.22.21.143	ACCC8E4F51D9
ExCam IP1365 → AXIS P1365 - ACCC8E29187A	89.0.0.107	ACCC8E29187A
Test08 Axis M1145-L	89.0.0.110	ACCC8E3B8197
IO Module - Axis P8221	89.0.0.194	00408CADBE0C
Show room - ExCam IPQ1755 (right monitor)	89.0.0.47	ACCC8E0E0E4E
ExCam IPQ6055 → Axis Q6055 - ACCC8E4F68A2	172.22.21.61	ACCC8E4F68A2
AXIS M3014 - ACCC8E2CB572	89.0.0.208	ACCC8E2CB572
Outdoor - Bus stop - Axis P1346	89.0.0.152	00408CD65BF8
Test10 ExCam IP1354	89.0.0.112	00408CF23CCC
Bunker - ExCam vario (Axis Q7401)	89.0.0.144	00408CA1A3A0
Show room - ExCam miniZoom (left monito...	89.0.0.46	00408CCC0845
AXIS Q7404 Channel 2 - 00408CCC0843	89.0.0.43	00408CCC0843
Process - ExCam vario (Axis Q7404_1)	89.0.0.51	00408CCC0842
Hall - Axis 233D	89.0.0.122	00408C82E5C1
Engine room - ExCam IPM1145-L	89.0.0.140	ACCC8E39C80C
Test13 ExCam IPQ1755	89.0.0.115	00408C8F18E9
Outdoor - Gate N - Axis P1346	89.0.0.154	00408CD65BF8
Show room - ExCam IPM1145 SmokeCatche...	89.0.0.211	ACCC8E3C5A47

Figure 6.1 – Axis IP Utility

6.3 Password / Identification

The default user name is:

root

The default password is:

root

7 Maintenance / Servicing / Alterations

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

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

8 Repairs and Maintenance

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

Repairs concerning the explosion protection must only be carried out by SAMCON Prozessleittechnik GmbH or a qualified electrical technician 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 & 3D models

All drawings, 3D models, certificate and more is available in the download area of the product page on our homepage:

<http://www.samcon.eu/en/products/network/excam-ipq6055/>

Analog Ex Cameras (CVBS)

Network Ex Cameras (TCP/IP)

- ExCam IPM3014
- ExCam IPM114x
- ExCam IP1365
- ExCam IPQ1775
- ExCam IPQ1765
- ExCam IPP5635
- ExCam IPQ6055

Ex-d Camera Enclosures

Connection & Transmission Systems

Management & Analysis Software

Downloads:

- ExCam Comparison
- Datasheet
- 3D-Model
- Usermanual
- CAD-files (DXF)
- Ex Installation Manual
- ATEX Type Examination
- IECEx Cert.-of-Conformity
- EAC-Ex-Certification
- EU Dec. of Conformity
- Man.-Dec.-60079-14
- Optical-Quality-Test

Ethernet TCP/IP

ExCam® IPQ6055

HD
1080p

CvDvr

IP68

Ex

-50°C

+50°C

IECEx

Ex


The **ExCam IPQ6055** is a powerful ex-proof dome camera of the very latest generation with a resolution of 2 megapixels (**1920 x 1080p**). The camera allows continuous 360° pan rotation and 180° tilt coverage with automatic picture rotation. A particular highlight is the precise and quick panning and tilting ability of the camera which does not only dispose of a **32-fold optical zoom** but has also an 12-fold digital zoom.

Certifications and Zones:

Group II (Gas & Dust)	ATEX / IECEx/ EAC-Ex					Group I (mining)	-	
Zone	0	1	2	21	22	Category	Ma	Mb
Application	✗	✓	✓	✓	✓	Application	✗	✗

Some Features and Data:

Product	Model-Keys	Ex-Certification	Prot.-Level	Enclosure-Material	T _{min} T _{max}	Power-Supply	Lens/ IR-Filter	Min.-Illumination	Angle of View	Signal	Video-comp. / Resolution
ExCam IPQ 6055	T08-TNXCD...	ATEX, IECEx, EAC-Ex Dust & Gas	IP68	Stainless Steel	-50°C +50°C	Pot., IEEE 802.3at (PoE+) Max. 19 W	32xMotor Zoom, PTZ/ YES	Color: 0.3 lux BW: 0.03 lx	62.8° (wide) 2.23° (tele)	TCMP RTSP HTTP VAPIX® ONVIF®	MPEG H.264 1920x1080 @25fps



ATEX, IECEx and EAC-Ex certified Ex-proof dome camera

The ExCam series is certified according to European regulations (ATEX) as well as international ones (IECEx). The housings' certification comprises ATEX group II for zone 1, 2 as well as 21 and 22 including the explosion groups IIC / IIIC. Furthermore it also disposes of EAC-Ex certification.

During the ExCam IPQ6055's development stage, the focus was clearly laid on security aspects as well as mechanical precision and high-quality stainless steels but also on the modular design which allows, for example, the direct connection of FOC. In case of spacious observation requests, FOC offers great transmission speeds; also the lighting protection for the outside area measures becomes obsolete.

In case of missing technical information, please feel free to contact us at any time at: support@samcon.eu

11 Notes



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