ExCam® SUFA1080

User Manual

SAMCON
Prozessleittechnik GmbH

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History of revisions

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1 Introduction

The ExCam SUFA1080 is an ultra compact thermal sensor unit for use in hazardous areas. It is certified by ATEX and IECEx. The sensor unit has a thermal resolution (208x156) and is equipped with an uncooled microbolometer. The ExCam SUFA1080 is part of a modular ex-network-camera. It is thought to be used together with a main unit (FA54 or ExConnection Rail FA54). The ExCam series is certified both in accordance with the European (ATEX) and international directive (IECEx). The explosion-protected housing is approved for the ATEX group II for zones 1, 2, 21 and 22 including the explosion groups IIC / IIIC. For more information please visit our website at www.samcon.eu/en

When designing the ExCam SUFA1080, we attached a very high importance to safety, mechanical precision and high quality of stainless steel.

2 Connection options and required hardware

ExCam SUFA1080 is part of a modular camera. The ultra compact sensor unit needs a main unit (FA54 Main Unit or ExConnection Rail FA54; not included) for image processing and network connection. Such a main unit supports up to 4 sensor units simultaneously. Sensor unit and main unit could be placed separately.

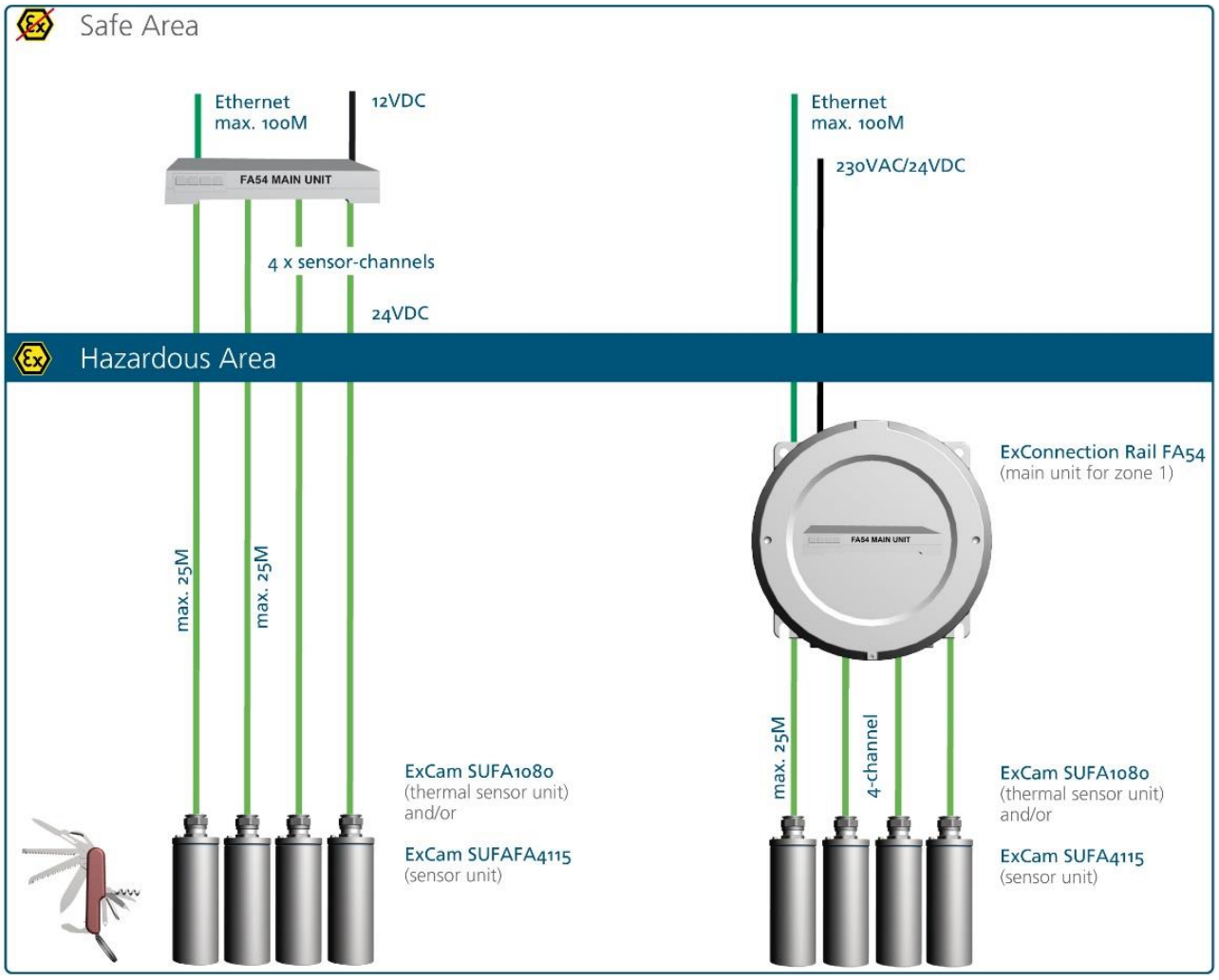


Figure 2-1 Connection options

3 Technical data

3.1 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 T6 Gb
Explosion protection (dust):	Ex tb IIIC T80°C Db
Protection class:	IP 68 (IEC /EN 60529)
Transport/storage temperature:	0°C…+50°C
Ambient temperature (EX):	-30°C…+60°C
Named testing laboratory:	TÜV Rheinland (number 0035)
EU type approval certificate:	TÜV 18 ATEX 8218X (2020)
IECEx Certificate of Conformity:	TUR 18.0023X (2020)
Other certificates see:	https://www.samcon.eu/en/products/network/modular/excam-sufa1080/

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

3.2 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 SUFA1080	T08-	VA0.1.K1.GER-	N.N-	005.N-	P

Table 3-1 Model key

Explanations:

1) ExCam **SUFA1080 =** Functional camera description of the ExCam Series (technical data/ specification of the individual camera module)

2) T**08** = SAMCON Production- Type 08

3) **VA0**.1.K1.GER = T07 ex d housing (stainless steel 1.4404) with small diameter $Ø_{VA2}$=48mm)
VA0.**1**.K1.GER = T07 VA0.1 housing with minimum body length ($L_{.R}$ = 127mm)
VA0.1.**K1**.GER = K1 cable gland flange
VA0.1.K1.**GER** = Germanium sight glass, suitable for thermographic applications

4) **N.**N = Normal ambient temperature range (T_{amb} > -30°C)
N.**N**= No high temperature battery installed (T_{amb} < +60°C)

5) **005.**N = Length of the connection line in meter at delivery; 5m is the standard cable length, max. cable length is: 005…25 [m]
005.**N** = Non armoured cable

6) **P** = Plug- termination
RJ-12 plug connector, shielded

3.3 Electrical parameters of the camera

Power supply of the sensor unit via the ExConnection Rail FA54 or FA54 Main Unit:
max. 1.2W@4VDC

3.4 System cable SKD04-T.flex

Description:	Data transfer and power supply of the camera module
Jacket colour:	Green (GN), similar to RAL 6018
Outside diameter:	8.7 ± 0.3 mm
Bending radius:	8 x D_a when installed and 4 x D_a after installation
Temperature:	-25°C … +80°C during installation -60°C … +80°C fixed installed
Data line:	4 x 2 x AWG24/7 blank, CAT.6
Shielding:	Copper, tinned wire 0.10, optical cov. app. 80%
Outer jacket/ Properties:	PUR FHF, halogen-free, flame-retardant (EN 60332-1-2), EMV shielded, suitable for drag chains, (see www.samcon.eu)

Quicklink:
https://www.samcon.eu/fileadmin/documents/en/60-Assembling%26mounting/SKD04-T.flex_Datasheett.pdf

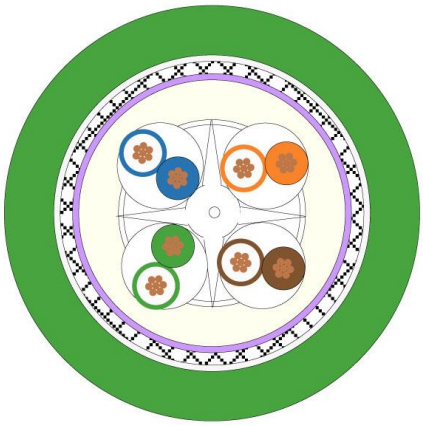


Figure 3-1 Sectional view of SKD04-T.flex

Attention!
For wiring and connection of the camera, DIN/EN/IEC 60079-14 has to be observed. Especially for cross zone installation, measures against zone entrainment have to be taken.

3.5 Video-technical characteristics

We use the AXIS FA1080 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-fa1080e

3.6 Other technical data

	Sensor Unit (Ex-d)
Permissible ambient temperature	-30°C … +60°C
Protection class as per EN 60529/IEC 529	IP68 (Test conditions: 0.5h/8m water column 5°C)
Housing material	stainless steel, mat. no. 1.4404
Weight	about 0.7 kg
Dimensions	D48mm x 127mm

Table 3-2 Other technical data

4 Safety Instructions

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

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

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

Attention!
Cameras of type T08 ExCam are not suitable for use in zones 0 and 20. The ambient temperature, temperature class and explosion group written on the enclosure nameplate must be absolutely adhered to! The customer is not allowed to make any alterations of the camera! The camera must be operated in a proper and sound condition and only in the way intended.

Attention!
Repairs may only be carried out by using original parts from the manufacturer. Repairs which affect the explosion protection may only be carried out in accordance with the nationally applied regulations and exclusively by 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!

Attention!
Adhere to the warnings given on the nameplate:

"WARNING – DO NOT OPEN IN HAZARD AREAS"

Using the camera in explosion-protected 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.

5 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 sensor unit, 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.

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

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

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

Attention!
Please observe the national 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 starting up!

The ExCam SUFA1080 consists of a flame-proof sensor housing (T08 Ex-d). The sensor unit is equipped with a flexible cable (5 to 25 m). Mount the sensor unit according to the desired field of view. Install the main unit 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/network/modular/excam-sufa1080/

Optional mounting accessories

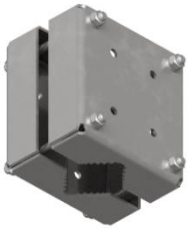
Wall bracket WMB-...		**WALL MOUNT EXCAM VA1.x** Wall bracket for devices of T08-VA0-series Suitable for hanging the camera on walls. Material: stainless steel 1.4404 Weight: 0.68 kg Dimensions: 80 x 100 x 205 mm
Pole adapter PMB-…		**POLE MOUNT EXCAM VA1.x (-)** Pole apter for VA wall mount Material: stainless steel 1.4404 Suitable for pole diameters between 50 and 105 mm Load-bearing capacity: 45 kg Dimensions:120x180x130 at masts of Ø 60 mm)
Hinge attachment SCH-…		**Hinge attachment SCH-VAx.x** Hinge attachment for easy mounting on round sight glasses acc. to DIN 28120/28121 or similar for VA Material: stainless steel AISI 316L/1.4404 Weight: ca. 0.04 kg Dimensions WxHxD [mm]: 29.2x40x73.1

Table 5-1 Mounting accessories

6 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 SUFA1080 is equipped with an electrical connection cable of the type SKD04-T.flex. The maximum transmission range from the camera to the next active network interface is 25 meters. The user is NOT authorised to do electrical connection procedures inside the pressure-resistant enclosure (T08).

6.1 Potential equalization

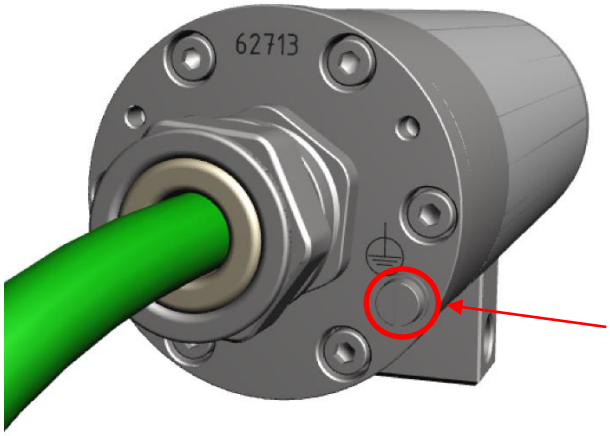


Figure 6-1 ExCam SUFA1080 Potential equalization

Potential equalization/grounding of the 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 6-1). 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 mm² (rigid)	Terminal: Slotted screw M3x0.5 (DIN 84) with washer Ø9mm (DIN 125A), Keep 1.2 Nm tightening torque!

Table 6-1 Potential equalization

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

The sensor unit is made to be used together with a main unit (ExConnection Rail FA54 or FA54 Main Unit).

Power supply for the sensor unit

Power supply:	via the main unit
Maximum power consumption:	1.2W@4VDC
Typical power consumption:	0.5 W

The figures 5.2 and 5.3 illustrate the potential connection variants of the ExCam SUFA1080. Possible variants are sensor unit to connect to an ExConnection Rail FA54 (not included) or sensor unit with RJ12 plug and main unit FA54 for safe areas (not included).

Figure 6-2 ExCam SUFA1080 T08-VA0.1.K1.GER-N.N-xxx.N-**P** and FA54 Main Unit

Figure 6-3 ExCam SUFA1080 T08-VA0.1.K1.GER-N.N-xxx.N-**P** with ExCR FA54

6.2.1 Direct routing into safe area

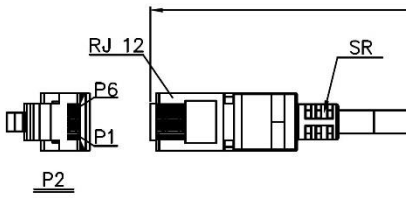
The cable of the sensor unit is equipped with an RJ12 plug. This plug (Fig. 5-2) is to be connected to the outlet of the Main Unit (FA54, without pressure tight casing).

Figure 5-4 ExCam SUFA1080 → safe area

When connecting the sensor unit directly to the Main Unit situated in the safe area, the power supply as well as the network signal has also to be placed in the safe area. It is suggested connecting the Sensor Unit with the Main Unit prior to powering the Main Unit. If the Sensor Unit will be unplugged and then re-connected, it is possible that the Main Unit needs to be rebooted. The maximum cable length is 25 m. The cable is not longitudinal tight. Please observe the requirements of DIN/EN/IEC 60079-14 (Appendix E).

6.2.2 Plug assignments (RJ12) of the sensor unit

If the cable of the Sensor Unit needs to be shortened (the cable must not be extended), the plug needs to be disassembled professionally. When re-mounting the plug it is mandatory to observe the correct pin assignment according to EIA/TIA-568B (q.v. tab.5.2). Usually two strands of the same color code (IEC60757) are connected.
The pin assignment of the SKD04-T.flex is as folllows:



WIRE CONNECTION TABLE			
P1	SIGNAL NAME	WIRE COLOR	P2
1	VCC	Blue/Whtie	5
5	GROUND	Blue	6
2	−DATA	Brown/Whtie	2
3	+DATA	Brown	1
Shell	Drian wire	−−	Shell

WIRE CONNECTION TABLE			
P2	CODE	WIRE COLOR	SIGNAL
1	Brown	BN	+ DATA
2	Brown White	BN / WH	- DATA
3	-	-	-
4	-	-	-
5	Blue White	BU / WH	VCC
6	Blue	BU	Ground
SH	Shield	Shield	Drian wire

Table 6-2 Pin assignment of the RJ12 plug (SKD04-T.flex)

It is necessary to make sure that the cable shield is grounded on side of the terminal block!

6.2.3 Connection to an ExConnection Rail / Routing into Ex-d

In a first step the Sensor Unit has to be connected to an ExConnection Rail. The Main Unit FA54 is placed in the Ex-d housing.

Figure 6-5 ExCam SUFA1080→ExConnection Rail

Please observe the mounting instructions of the cable gland:
The torque of the enclosed cable gland is 20 Nm.

https://www.samcon.eu/fileadmin/documents/de/80-Anzeigen%26Bedienen/KLE_ADE1F2_Mounting Instructions.pdf

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

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

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

6.2.4 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 & 14.

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

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

6.2.5 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!

7 Working inside the housing (Ex-d)

The customer may not open the sensor unit housing.

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.

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

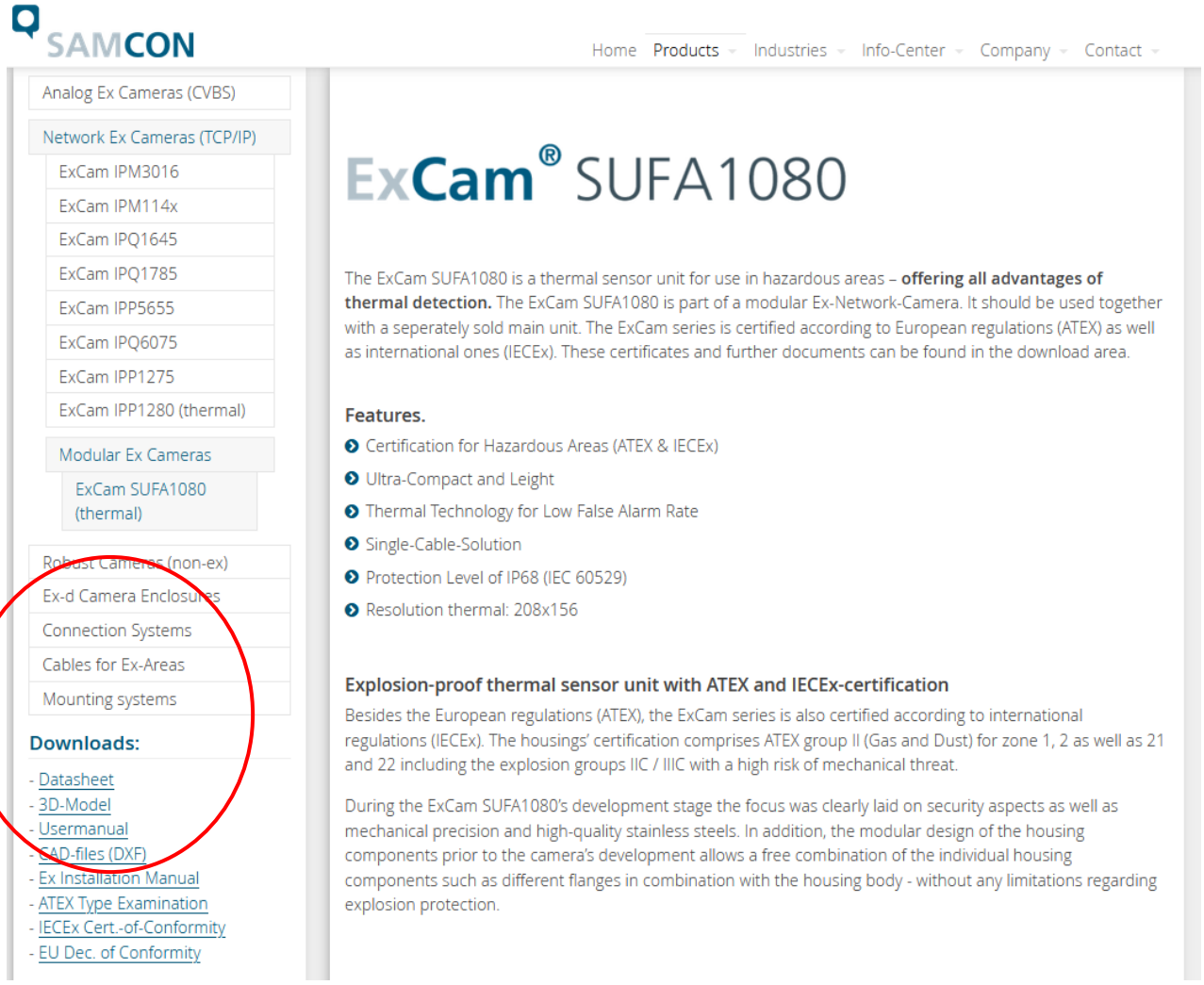
9 Disposal / Recycling

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

10 Drawings & 3D models

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/modular/excam-sufa1080/



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/modular/excam-sufa1080/

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