T08-Series Relaunch

ExCam® niteZoom

User manual

SAMCON
Prozessleittechnik GmbH

Content

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Revision history

Product: T08 ExCam® niteZoom
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0	May 20, 2015	T. Gruber	Compilation of the document	 Tested and approved X.X.2015 – S. Seibert
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1 Introduction

The ExCam® niteZoom (type 08) is a compact analog color camera which is manufactured by SAMCON Prozessleittechnik GmbH. The housing is pressure resistance (Ex d) and certified according to ATEX, IECEx, and EAC-Ex. The robust camera system made of stainless steel (AISI 316L) can be used for various applications and in extreme conditions, preferably within hazardous areas of the chemical and/or petro-chemical industry, at offshore plants, in mines, and at biogas plants. The ExCam® niteZoom is a static camera system (not equipped with pan or tilt drives) and intended for a fixed installation.

The Ex d stainless steel housing of the ExCam niteZoom allows additional alloys, a powder coating, or coats of varnishes as well as various mechanical accessories in order to extend the resistance towards extreme environmental conditions (salt water, acid, solar radiation, high mechanical strains etc.). Due to the usage of high-quality PTFE sealings, not only the protection level IP68 is reached but also the chemical resistance is maximized.

The ExCam® niteZoom is manufactured and delivered with a cable pigtail. Also part of the delivery scope is the „Ex Installation Manual for the T08 camera series“, the „EC Declaration of Conformity“, den „EC type examination (ATEX, IECEx, EAC-Ex)“ as well as a manufacturer declaration according to DIN EN 60079-14:2009 [10.4]. The warranty of the explosion protection and the certification according to ATEX and IECEx are based on the document: „140620-PT08BAU-SS-Explosion Protection Concept rev. 12.1_(issue No.1)_EN.pdf“ of SAMCON Prozessleittechnik GmbH. The plant operator is responsible for a safe mechanical and electrical installation as well as for observing the limiting conditions. The document „140721-PT08BAU-SS-Ex Installation Manual rev.03 (1st Supplement).pdf“ determines obligatory the installation, commissioning, maintenance, and repair instructions which are relevant for the explosion protection.

Figure.1.1 – T08 ExCam® niteZoom with wall mount bracket and hood

2 Document overview

T08 ExCam Series (ATEX/ IECEx/ EACEx)
(For areas in hazard of gas and dust explosion, mining)

EX installation manual for the series
- EC Declaration of Conformity
- ATEX type Examination
- IECEx type Examination
- EAC-Ex Certificate
- Declaration of Conformity (EN 60079-14)

ExCam vario
- User manual
- Data sheet

ExCam niteZoom ← present document
- User manual
- Data sheet

ExCam IP135x:
- User manual
- Data sheet ExCam IP1354
- Data sheet ExCam IP1355
- Data sheet ExCam IP1357

ExCam IPQ1755:
- User manual
- Data sheet ExCam IPQ1755

ExCam IPM114x:
- User manual
- Data sheet ExCam IPM1144-L
- Data sheet ExCam IPM1145
- Data sheet ExCam IPM1145-L

ExCam IPQ6045
- User manual
- Data sheet

ExCam EDC3371
- User manual
- Data sheet

The present document is marked in red

3 Technical Data

3.1 Parameters of the explosion protection

Applied norms (gas):	I IEC 60079-0:2011, EN 60079-0:2012 IEC 60079-1:2008, EN 60079-1:2008 IEC 60079-11:2011, EN 60079-11:2012 IEC 60079-18:2009, EN 60079-18:2009 IEC 60079-28:2006/ ISH1:2014, EN 60079-28:2007 (Beiblatt 1:2014-09) GOST R IEC 60079-0-2011 GOST IEC 60079-1-2011
Applied norms (dust):	IEC 60079-31:2008, EN 60079-31:2009 GOST R IEC 60079-31-2010
Identification marks according to Directive 94/9/EG:	Ex II 2G (zone 1 and 2) Ex II 2D (zone 21 and 22) Ex I M2
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 or
Explosion protection (mining):	Ex d I Mb
Protection level:	IP68 (IEC /EN 60529)
Transportation and storage temperature (Ex):	-60°C…+85°C
Operation temperature (Ex):	-60°C…+80°C (temperature class „T6“) -60°C…+85°C (temperature class „T5“)

Maximum ambient temperature (Ex)[1]:	-60°C…+65°C (temperature class „T6“) -60°C…+70°C (temperature class „T5“)
Pressure chamber, internal design:	Enclosure‘s void volume ≈ 480 [cm^3], free cross sectional area for a free gas flow at each section plane ≥ 40% (Requirement for Ex group IIC according to EN 60079-1: 2008)
Nominated body:	TÜV Rheinland (number 0035)
EC Type Examination:	TÜV 14 ATEX 7539 X_1st supplement IECEx TUR 14.0026X_issue No.1
Euro-Asian customs union certification:	EACEx-TC-RU-C-DE.MIO62.B.01921
Supplement/ Rev.-Index:	01
Test protocol ATEX:	557/Ex.539.01/14
Test report IECEx:	DE/TUR/ExTR14.0026/01
Quality Assessment Report:	DE/BVS/QAR14.0006/00

3.2 Electrical parameters

Camera circuit:

<u>Input / connection circuit board CB04</u>

Supply voltage:	+9 VDC … +30 VDC
Maximum power consumption:	1000 mA
Maximum power input:	6.5 Watt
Potentials/ connections:	CVBS+(0.25mm^2)/ CVBS GND (0.75mm^2) 75Ω, RS-422: Tx+/ Tx-/ Rx+/ Rx- (0.25mm^2) Power elements: +Ub/ GND/ L+/ L- (0.75mm^2)

[1] Explosion protection relevant maximum ambient temperature range (type „N“/ without PTC heating element and coated enclosure), Deviation to the functional temperature range, functional temperature range (MTBF) q.v. chapter 3.7

Heating circuit

Heating element[2]

Power supply:	12…30 V DC
Reference power:	24 V DC
Maximum power input:	Depending on ambient temperature/ PTC* characteristics (*P = K x A x T (K = 5.5 W/m^2)
Type N ($T_{AMB} \geq 0°C$):	*n.a.*
Type L ($T_{AMB} \geq -30°$):	Max. 10 W continuous rating at low temperature (inrush current peak >2000 mA, typical „inrush“ duration <120 s)
Type LL ($T_{AMB} \geq -60°C$):	Max. 20 W continuous rating at low temperature (inrush current peak >4000 mA, typical „inrush“ duration <120 s)

Temperature controller[3]

Function:	Opening/ closing of the heating load power circuit (1x bi-metal switch, identical for type „L“ and type „LL“)
Switch-on temperature:	5° C (±3 K)
Hysteresis:	5…8 K
Nominal voltage:	12…48 V DC
Switched current:	1.3 A (permanent load)
Contact resistance:	< 70 mΩ

2 Optionally available (type L/ type LL)
3 Optionally available (type L/ type LL)

3.3 System cable SKA0x[4]

Description (*SKA02*):	Analog video stream (CVBS), power supply of the camera module, power supply of the heating module (conformity according to DIN EN 60079-14:2014 [10.4])
Sheath color:	Black (BK), RAL9005 matt
Routing:	1x cable gland Ex d Cable length ≥ 3.0 m: ADE 4F MsNi Type5-M20x1.5 Cable length < 3.0 m : PXSS2K-M20x1,5 (Cable and cable gland with integrated pressure barrier / compound) Mining: PXSS2K/M-M20x1.5 (Cable and cable gland with integrated pressure barrier / compound)
Mechanical characteristics:	Outer diameter ca. 9.4 mm, bending radius 150 mm, PUR halogen free flame retardant according to IEC 60322-1-2 1KW flame, UV-/ ozone resistant, high chemical resistance, Stranding: Coax + twisted pair + power conductors + fleece taping + shield Operating temperature: -30°C…+80°C, Installation temperature: -15°C…+70°C (q.v. www.samcon.eu, e.g. data sheet „SKA02“)
Video signal:	Coaxial structure, core: 19 x 0.127 mm copper tinned (=AWG24), WH (FBAS+) BU (CVBS GND); dielectric: 2.8 ±0.1mm, polyolefin; Shield: Cu-braid tinned, 90% density, cross section 4.00 mm, wave impedance 75 Ω, capacitance 58pF/m, material TPE-black
Control signal:	RS-422: twisted-pair, 2x2x0.25mm^2 closed CU shielded, per conductor blank copper wires 19x0.127 mm BN(RxA), YE(RxB), OG(TxB), GN(TxA), sheath double wrapping foil

4 Samcon system cable analog, currently available: SKA01, SKA02, SKA03-T, ASKA03, SSKA01

Power elements:	Single conductors: 4 x 0.75 mm^2 , color: RD/BK (camera module), WH/GY (heating), per conductor 42 x 0.15 mm blank, insulation: polyolefin
Interface:	(**P**)lug version: Ca. 30 cm of the system cable's outer sheath is stripped and equipped with shrinking hoses and tension relief, approx. 20 cm of the power supply strands (RD, BK, GY, WH) and the twisted pair control cable (OG, GN, BN, YE) are stripped The coaxial cable is equipped with a BNC plug (straight or cornered, AWG24) (**K**) terminal block version (*standard*): All potentials are spliced to single strands and equipped with ferrules to allow a terminal block installation of the camera

3.4 Sensor

Type:	1/3‘‘ CCD, Sony Super HAD CCD II day/night
Active picture elements:	440,000 Pixel (PAL), 380,000 Pixel (NTSC)
Horizontal resolution:	530 TVL
Light sensitivity:	Color: 0.25 Lux, 1/60s, 1/50s Mode (F1.8, 50 IRE) 0.0015 Lux, 1/4s, 1/3s Mode (F1.8, 50 IRE) BW: 0.0004 Lux, 1/4s, 1/3s Mode & ICR on (F1.8, 50 IRE)

3.5 Characteristics and functions

Video norm:	PAL[5]
Synchronization:	Internal/ external (V-Lock)
Signal to noise ratio:	> 50 dB
Gain control:	automatic/ manual (-3 to +28 dB, 2 steps)
Electronic shutter:	automatically 1/1 to 1/10000s, 22 steps
AE control:	Auto, manual, priority mode, bright, EV compensation (-10.5 to +10.5 dB/ 1.5 dB steps), back light compensation (ON/ OFF), Slow AE
Private zone masking:	ON/ OFF (24 positions, 8 positions per screen, 14 colors and mosaic), Overlay: White balance, gain etc., display title: Maximum 11 lines (20 characters per line)
Flickering:	Automatic suppression
White balance:	Auto, ATW, Indoor, Outdoor, One-push, manual
IR-cut filter:	Automatic/ switchable
Digital zoom:	12x (120x in combination with optical zoom
Visual effects:	E-Flip, negative type, black/white, mirror images, video outlet: CVBS: 1.0 V_{p-p} (sync. negative), Y/C (4-Pin: brightness-/ color signal 75Ω termination)
Control interface:	VISCA (TTL signal level) Baud rate: 9.6 Kb/s, 19.2 Kb/s, 38.4 Kb/s, 1/ 2 stop bits selectable

3.6 Lens

Type:	Motor zoom 10x optical, F1.8 to F2.1
Brennweite:	f = 5.1 (wide) … 51.0 (tele) [mm]
Horizontal angle of view:	50.0° (wide) … 5.4° (tele)
Focal distance:	Auto (sensitivity: normal, low), One-Push AF, manual, infinite, interval AF, zoom trigger AF
MOD (MinimumObjectDistance):	15 mm (wide) to 800 mm (tele)

5 NTSC standard available upon request

3.7 Other technical data

Permitted ambient temperature (MTBF)[6]:	0 °C … +50 °C (Type N) -30 °C … +50 °C (Type L) -60 °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[7] enclosure:	Stainless steel MNo.: 1.4404 (X2CrNiMo17-12-2), AISI 316L (V4A)
Additional housing materials:	Zinced spring steel MNo.: 1.0330, nickel-plated brass, PTFE with glass microbeads (GYLON® Style 3504 blue), silicone-coating (Silcoset 105 incl. Cure Agent 28), VMQ (silicone), polyester (acetone resistant), titan (Ti6Al4V)
Sight glass material:	Borosilicate glass DIN7080 (Ilmadur I-420/ Maxos)
Additional internal materials:	Polyamid (PA 6.6)/ Polyoxymethylen (POM) isolators, PUR, further thermoplastic plastics, mounting adapter made of aluminum (AlMgSi7/ AL-6061) or zinced steel metal sheet etc.
Weight (bto):	2400 g (with „K1“ cable gland flange) 2850 g (with „K2“ cable gland flange) 3600 g (wall mount bracket and hood)
Dimensions (BxHxT)[8]:	79.0mm x 96.0mm x 157.0mm („K1“ flange) 79.0mm x 96.0mm x 171.0mm („K2“ flange) 97.0mm x 193.0mm x 299.5mm (w/ accessory)

[6] Functional temperature range concerning the operational temperature range of the installed components according to manufacture declarations (MTBF – mean operating time between failures), ambient temperature ranges relevant for explosion protection (ATEX, IECEx etc.) q.v chapter 3.1 – Explosion protection)

[7] The available stainless steel materials dispose of different specific characteristics such as mechanical and chemical resistance. It is possible to optimize the corrosion behavior in highly acidiferous environments or at offshore applications by selecting the applicable housing material. An electro-polished or powder-coated surface in various RAL colors (standard: RAL7035) is possible.

[8] Dimension stainless steel housing T07 VA1.2 with pin and without cable gland and external accessories. For additional / detailed dimensions see chapter 10 – technical drawings

Fitting of the housing's flame proof gap preventing the transmission of ignition (Ex d/ IEC 60079-1:2007)	
Body flange parts:	Nominal diameter: 57.0 [mm] (circular cylindric.) Clearance fit: H8/f7 (DIN ISO 286) Tolerance: -60…-30[µm] – 0…+46[µm] Gap length: > 12.5 [mm] Gap width: < 0.15 [mm] Average surf. finish R_a: ≤ 6.3 [µm] (DIN ISO 468)
Cable glands:	Metrical fine thread clockwise, M20*1.5 („K1")/ M16*1.5 („K2"), quality 6H, bearing threads n > 5
Media resistance[9] *(excerpt):*	Acetone, alcohol, acetylene, ammoniac, aniline, benzol, butane, chloride, pressurized water, pressurized air, ethane, crude oil, fluoride, glycerin, sea water, methane, oils, phosphoric acid, propane etc.

[9] Additional media resistance as well as well as validation of chemical resistances at various concentrations, temperatures, and test conditions possible upon request

4 Safety guidelines

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

Attention!
Cameras of the type ExCam T08 are not suitable for use in zone 0 and zone 20. The temperature class and explosion group as stated on the type plate has to 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!
External heat and/ or cooling sources are to be taken into account during the setting up. The permissible temperature range has to be observed

Attention!
When using the ExCam in the mining sector with a "high" risk of mechanical danger, it is mandatory to protect the transparent parts (glass) of the device (accessory)!

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

„WARNING – DO NOT OPEN WHILE ENERGIZED“

5 Illustration of the model key

The following model options are currently available for the T08 ExCam niteZoom:

Ex product name	Model options					
1)	Type[2)]	Housing combination[3)]	Gas expl. group[4)]	Cable length/m SKA02[5)10]	cable termin.[6)]	Tempera-ture range[7)]
ExCam niteZoom	T08-	VA1.2.K1.BOR-	C-	XXX-	K-	N
	T08-	VA1.2.K1.BOR-	C-	XXX-	P-	N
	T08-	VA1.2.K2.BOR-	C-	XXX-	K-	N
	T08-	VA1.2.K2.BOR-	C-	XXX-	P-	N
	T08-	VA1.2.K1.BOR-	C-	XXX-	K-	L
	T08-	VA1.2.K1.BOR-	C-	XXX-	P-	L
	T08-	VA1.2.K2.BOR-	C-	XXX-	K-	L
	T08-	VA1.2.K2.BOR-	C-	XXX-	P-	L
	T08-	VA1.2.K1.BOR-	C-	XXX-	K-	LL
	T08-	VA1.2.K1.BOR-	C-	XXX-	P-	LL
	T08-	VA1.2.K2.BOR-	C-	XXX-	K-	LL
	T08-	VA1.2.K2.BOR-	C-	XXX-	P-	LL

Figure 5.1 – Model key

1) ExCam **niteZoom =** Functional camera description of the T08 ExCam series, differentiation according to analog/digital technology, sensor type (size, format, CMOS, CCD, interlaced/ progressive etc.), resolution, light sensitivity, angle of view, lens tecnology (varifocal, motor zoom, fixed focal length etc.) iris control (fixed iris, DC iris, P-iris etc.), power consumption, transmission technology and range etc.

2) T0**8 =** Certified production type, device designation: „TÜV 14 ATEX 7539 X_1st supplement“, „IECEx TUR 14.0026X issue No.1“ based on the document „140620-PT08BAU-SS-Explosionsschutzkonzept rev.12_(1.Ergänzung).pdf“

3) **VA1**.2.K1.BOR = T07 Ex d housing series with small diameter ($Ø_{VA}$=79mm) and small sight glass ($Ø_{BOR}$=40mm)

VA1.**2**.K1.BOR = small housing with maximum length of body (L_R=136mm)
VA1.2.**K1**.BOR = K1 cable gland flange (straight cable gland)
VA1.2.**K2**.BOR = K2 cable gland flange (orthogonal cable gland)
VA1.2.K1.**BOR** = Borosilicate sight glass (Standard execution, for video cameras within visible spectral range: λ = 350…2000 [nm] and near Infra red (NIR), not suitable for thermographic applications)

[10] For the analog system cable SKA02, a cable length between 001 and 200 [m] is possible. Upon request, longer transmission distances can be realized). According to „DIN EN 60079-14:2014“, for all cable lengths ≥ 3 m, cable glands without integrated pressure barrier / compound are allowed for explosion groups IIB and IIC. For an application in areas hazardous of gas explosion of the group IIC and a pigtail of < 3m, cable glands with integrated pressure barrier / compound are required. Requirements and selection criteria for pressure tight cable glands are determined in „150421-TAU-SS-Cable Gland selection for Ex-d enclosures.docx“

4)	**C** =	Explosion group IIC (standard - suitable for 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…200 [m])
6)	**K** =	Terminal block execution (standard): Approx. 30 cm of the system cable is stripped and equipped with tension reliefs, 11x single conductors with ferrules: WH 19x0.127mm CU tinned with ferrule (0.25 mm^2),
	P =	Plug- termination (optional): Approx. 30 cm of the system cable is stripped and equipped with tension reliefs, 9x single conductors with ferrules 1x twisted pair with BNC plug
(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}: -60 … +50 [°C]

6 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!

6.1 Step 1: Installation

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

6.2 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 60079-14:2014) as well as the safety guidelines described in this user manual and the EX installation manual!

Attention!
When using the ExCam niteZoom in the mining sector (equipment group 1 according to ATEX production guide line 94/9/EG), the safety applicable safety rules and regulations have to be applied!

Attention!
When using the ExCam niteZoom in the mining sector with a "high" risk of mechanical danger, it is mandatory to protect the transparent parts (glass) of the device (accessory)!

The ExCam® niteZoom is delivered with an electrical connecting cable of the type SKAxx (System Kabel Analog). The maximum transmission range between camera and video server, monitor with analog inlet, BNC distributor etc. is 200 meter (also valid for EMV critical areas). Within the maximum length of 200 m and the minimum length of 1 meter, the customer can determine the cable length freely.

The ExCam® niteZoom 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.

6.2.1 Potential equalization

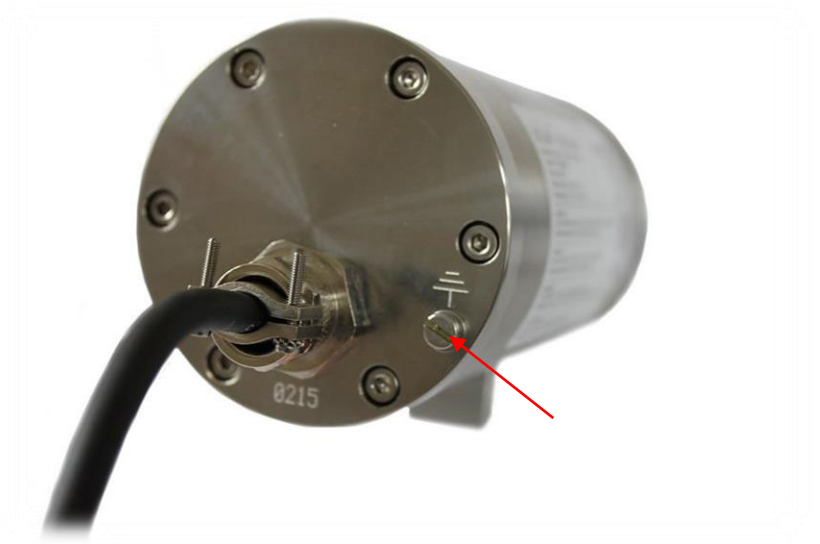

Figure.6.1 – ExCam® niteZoom potential equalization

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 6.1).

The profile of the potential equalization has to reflect the national grounding instructions (min. 4mm^2).

Connection table:

Potential	**Color** (IEC 60757)	**Profile**	**Comment**
PE	GN/YE	4 mm^2 (fix)	Screw terminal: Slotted screw M4 x 0.7 (DIN 84) with washer Ø 9 mm (DIN 125A)

Table 6.1 – Potential equalization

6.2.2 Termination of the cable (pigtail)

Figure 6.2 – ExCam® niteZoom T08-VA1.2.K1.BOR-X-XXX-K-N

Figure 6.3 – ExCam® niteZoom T08-VA1.2.K1.BOR-X-XXX-K-LL

Figure 6.4 – ExCam® niteZoom T08-VA1.2.K1.BOR-X-XXX-P-N

Figure 6.5 – ExCam® niteZoom T08-VA1.2.K1.BOR-X-XXX-P-LL

6.2.2.1 Power supply & protection of the camera circuit

The power supply has to be done via the red (RD) as well as the black (BK) connection strand.

Connection table:

Potential	**Color** (IEC 60757)	**Potential level**	**Profile**	**Remarks**
L+	RD	+12 V DC … +30 VDC	0.75 mm²	
L-	BK	0 V DC	0.75 mm²	

Figure 6.2 – Electrical conenction camera module

When all electrical drives are active (zoom, focus, iris, IR cut filter), the camera's maximum power consumption is 6.5 Watt.

The dimensioning of the equipment or the supply protection depends on:

- The selected power supply
- The cable length
- The national regulations

The following safety recommendations may serve as a basis:

Supplied power	**Length system cable**	**Recommended protection**	**Comments**
12 V DC	≤ 100m	mT1000 mA -medium-	In case the transmission range exceeds 100 m and it is intended to supply the camera with 12 V DC, please make sure to use an adjustable power supply in order to compensate voltage drops
24 V DC	≤ 200 m	mT500 mA - medium -	

Figure 6.3 – Supply protection camera module

The release current of the protection has to be less than the maximum short-circuit current of the power supply (switch-mode power supply)!

6.2.2.2 Power supply & protection of the heating's power circuit (optional)

The power supply is to be carried out via the grey (GY) as well as the white (WH) strand.

Connection table:

Potential	**Color** (IEC 60757)	**Potential level**	**Profile**	**Comments**
V+	GY	+12 VDC…+24 VDC	0.75 mm^2	
V-	WH	0 VDC	0.75 mm^2	

Tab.6.4 – Electrical connection heating element

For type „L" (low temperature range), the heating's maximum power consumption is 10.0 Watt and for type „LL" it is 20.0 Watt (lowest temperature range).

The dimensioning of the equipment or the supply protection depends on:

- The selected power supply
- The cable length
- The national regulations

The following safety recommendations may serve as a basis:

Supplied power	**Length system cable**	**Recommended protection**	**Comments**
24 V DC	≤ 200 m	T1000 mA -delay fuse-	Inrush current peak type „L" ≥ 2000mA (depending on the ambient temperature/ PTC characteristic)

Figure 6.5 – Supply protection PTC heating element type „L"

Supplied power	**Length system cable**	**Recommended protection**	**Comments**
24 V DC	≤ 200 m	T2000 mA - delay fuse -	Inrush current peak type „LL" ≥ 4000mA (depending on the ambient temperature/ PTC characteristic)

Tab.6.6 – Supply protection PTC heating element type „LL"

The release current of the protection has to be less than the maximum short-circuit current of the power supply (switch-mode power supply)!

6.2.3 Video picture connection (CVBS)

Depending on the model key, the video signal of the ExCam® niteZoom is either provided with wire-end (K option) or with a BNC connector (P option). The CVBS signal is only to be connected with the monitor, the video matrix, or the video server.

Connection table (T08-VA1.2.K1.BOR-X-XXX-K-X)

Potential	**Color** (IEC 60757)	**Potential level**	**Profile**	**Comments**
CVBS+	WH/ BU	1.0 V_{p-p} (sync negative)	0.5 mm^2	
CVBS _GND	BU	0 V	2.7 mm^2	

Tab.6.7 – Terminal block connection CVBS signal

Connection table (T08-VA1.2.K1.BOR-X-XXX-P-X)

Potential	**Color** (IEC 60757)	**Potential level**	**Profile**	**Comments**
CVBS +	Center (Pin) / core	1.0 V_{p-p} (sync negative)		AWG24
CVBS _GND	Shield (bayonet cap)	0 V		

Figure 6.8 – Plug connection CVBS signal

6.2.3.1 Direct.Control circuit board

The direct.Control circuit board (CB05) allows controlling the ExCam niteZoom via potential free contacts. The following control functions can be made available:

	LP	Funktion
	1	GND
	2	GND
Key_AD0	3	POS0
	4	POS1
	5	POS2
	6	POS3
	7	POS4
	8	POS5
	9	CUSTOM
Key_AD1	10	FREE KEY
	11	FREE KEY
	12	DISPLAY
	13	TITLE
	14	UP
	15	DOWN
	16	EXEC
Key_AD2	17	FREEZE
	18	LR-REVERSE
	19	BLACK&WHITE
	20	NEGA ART
	21	MUTE
	22	POS PRESET
	23	POS RESET
Key_AD3	24	AUTO WB
	25	ONE PUSH WB
	26	ATW
	27	INDOOR
	28	OUTDOOR
	29	MAN WB
	30	APERTUR UP
Key_AD4	31	AE AUTO
	32	BRIGHT
	33	SHUTTER
	34	IRIS
	35	BACK LIGHT
	36	AUTO SLOW SHUTTER
	37	APERTUR DOWN

	38	AF ON/OFF
	39	NEAR
	40	FAR
Key_AD5	41	ONE PUSH
	42	INFINITY
	43	DZOOM MAX
	44	….
	45	WIDE FAST
	46	WIDE SLOW
	47	TELE SLOW
Key_AD6	48	TELE FAST
	49	DZOOM
	50	DZOOM WIDE
	51	DZOOM TELE
	52	AF SENS
	53	IRC ON/OFF
	54	BRIGHT UP
Key_AD7	55	BRIGHT DOWN
	56	S138
	57	S144
	58	S147

Please observe the information of the circuit diagram which reflects the customer specific assignment of the system cable!

6.2.4 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!

6.3 Step 3: Adjusting the picture

Adjustment and optimization of the camera picture such as angle of view, zoom, focus, back light compensation, or IR cut filter are exclusively carried out electronically via the camera's control interface. Mechanical settings at the camera's block module are neither necessary nor allowed!
For example, control functions can either be operated manually by the means of a Control Board which has a serial interface (RS-422) and which supports the VISCA protocol EVI-D70/D70P (q.v. accessories of the ExCam T08 series) or interactively via the web interface of a video server (figure 6.8) as well as of the FCB Control Panel (Figure 6.7). The transmission rate of the sending and the receiving end has to be synchronous (q.v. figure 6.6).

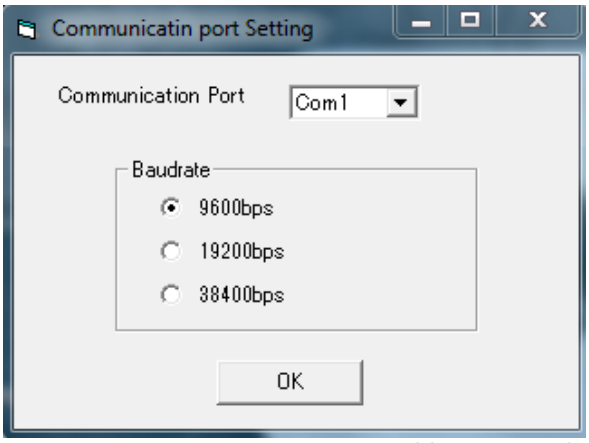

Abb.6.6 – Setting the Baud-transmission rate

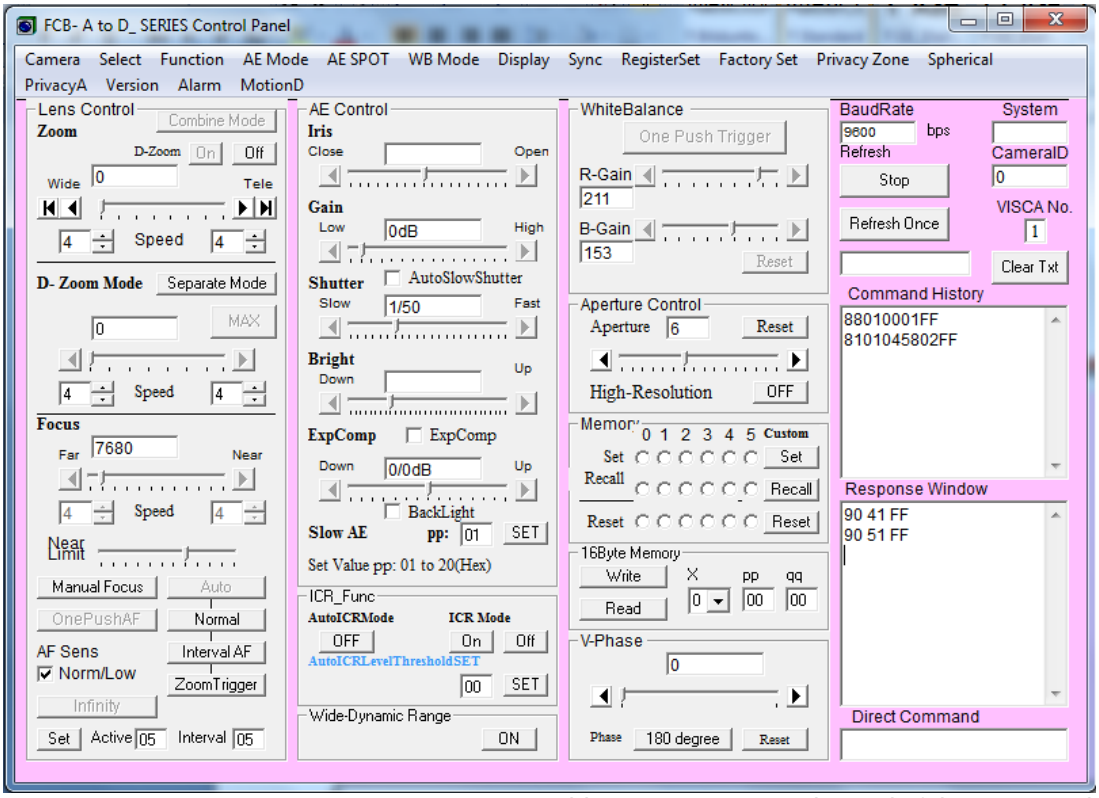

Abb.6.7 – FCB Control Panel of the ExCam niteZoom

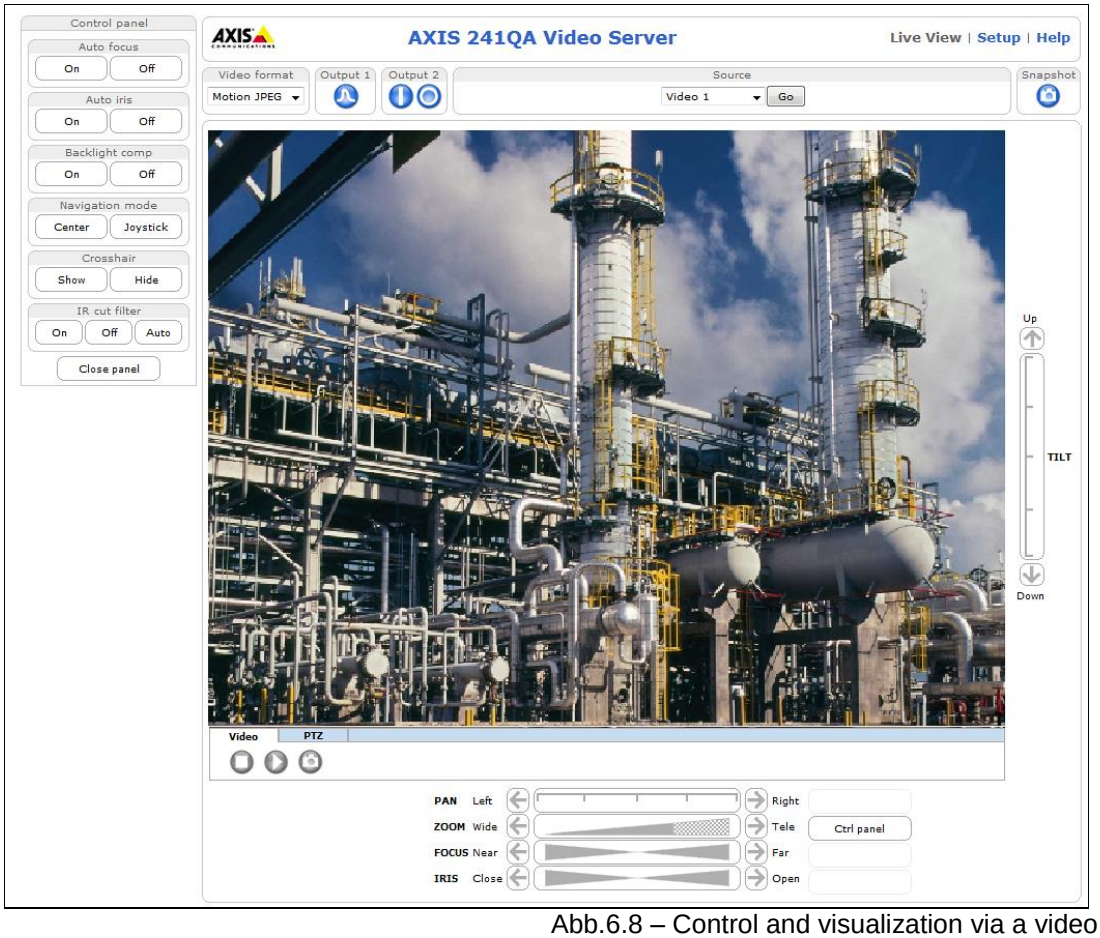

Abb.6.8 – Control and visualization via a video server

Information!
If not determined differently, the default setting of the ExCam® niteZoom is wide angle. This means that after the camera has been disconnected from the power supply and has been rebooted, it is set to wide angle mode and standard focus (auto functions are disabled).
In case that the ExCam niteZoom is supposed to resume certain settings after the reboot, it is possible to configure „PRESETS“ via the FCB Control Panel, the video server or the VISCA Control Board

6.3.1 Work preparation

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

Note: Depending on the zone classification (DIN EN 60079-10-1:2009), it might be necessary to obtain a work permit/clearance! When adjusting the camera settings potentially explosive atmosphere must be avoided by any means!

In order to optimize the picture quality, feedback regarding the current picture quality is required. To do so, appropriate tools have to be selected (laptop and video server, CCTV tester, 2-way-radio with the control room etc.).

- Use appropriate tools
- Provide a secure and safe standing position
- Avoid static charge

For a secure installation of the der ExCam® niteZoom with a wall mount bracket, a hinge attachment, or a flange mounting as well as for the suitable installation of the weather protection hood, please observe the information provided in the descriptions for the accessories and the EX installation manual!

6.3.2 Opening the pressure resistance housing

Opening the pressure resistance housing is not permitted. Any maintenance or repair work must only be carried out by the manufacturer SAMCON Prozessleittechnik GmbH. In case of noncompliance, Ex certification is voided and any claim under guarantee expires.

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

T08-VA1.2.K1.BOR-X-XXX-X-XX

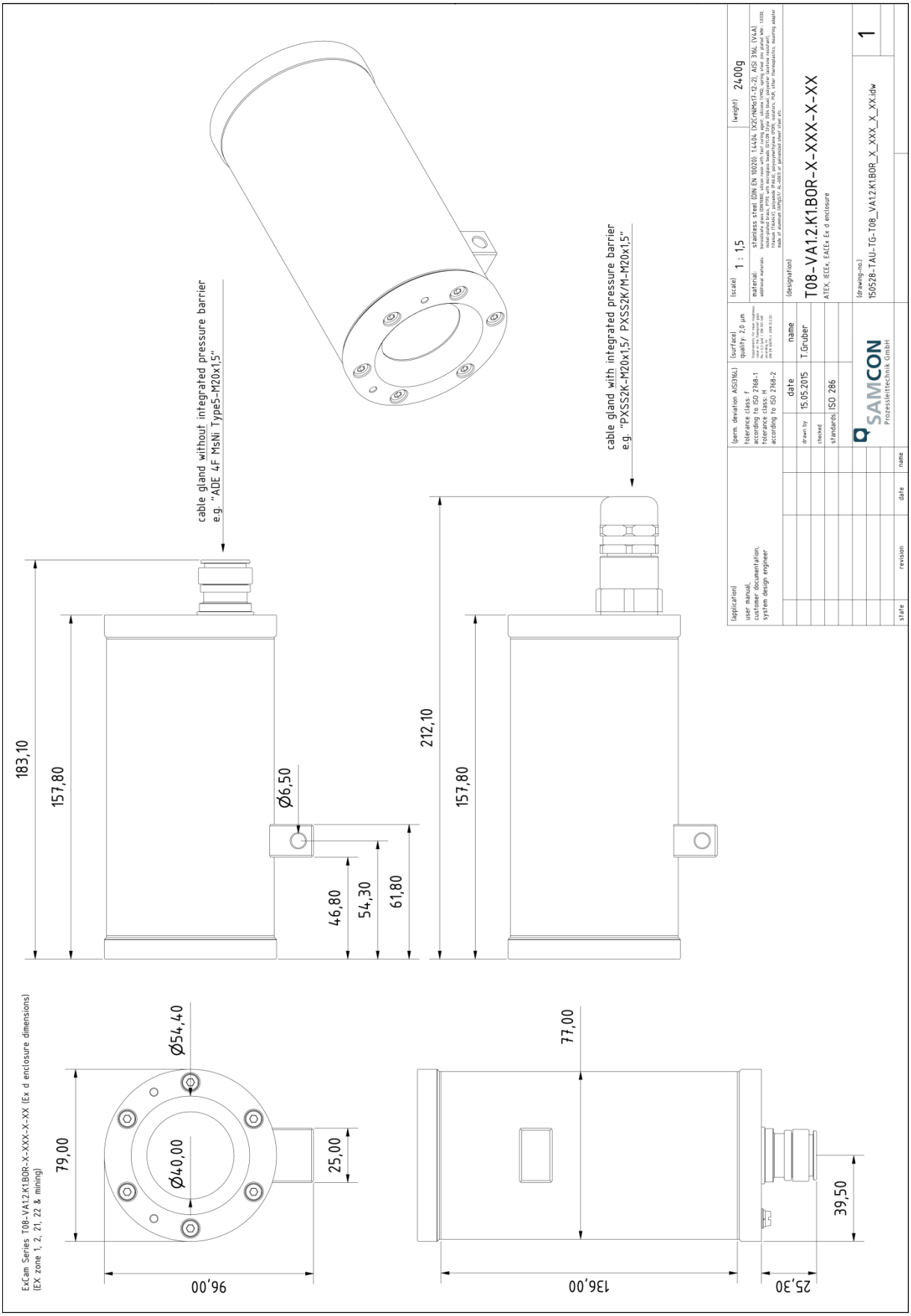

Figure 10.1 – Dimensions T08 ExCam® niteZoom with K1 flange

T08-VA1.2.K2.BOR-X-XXX-X-XX

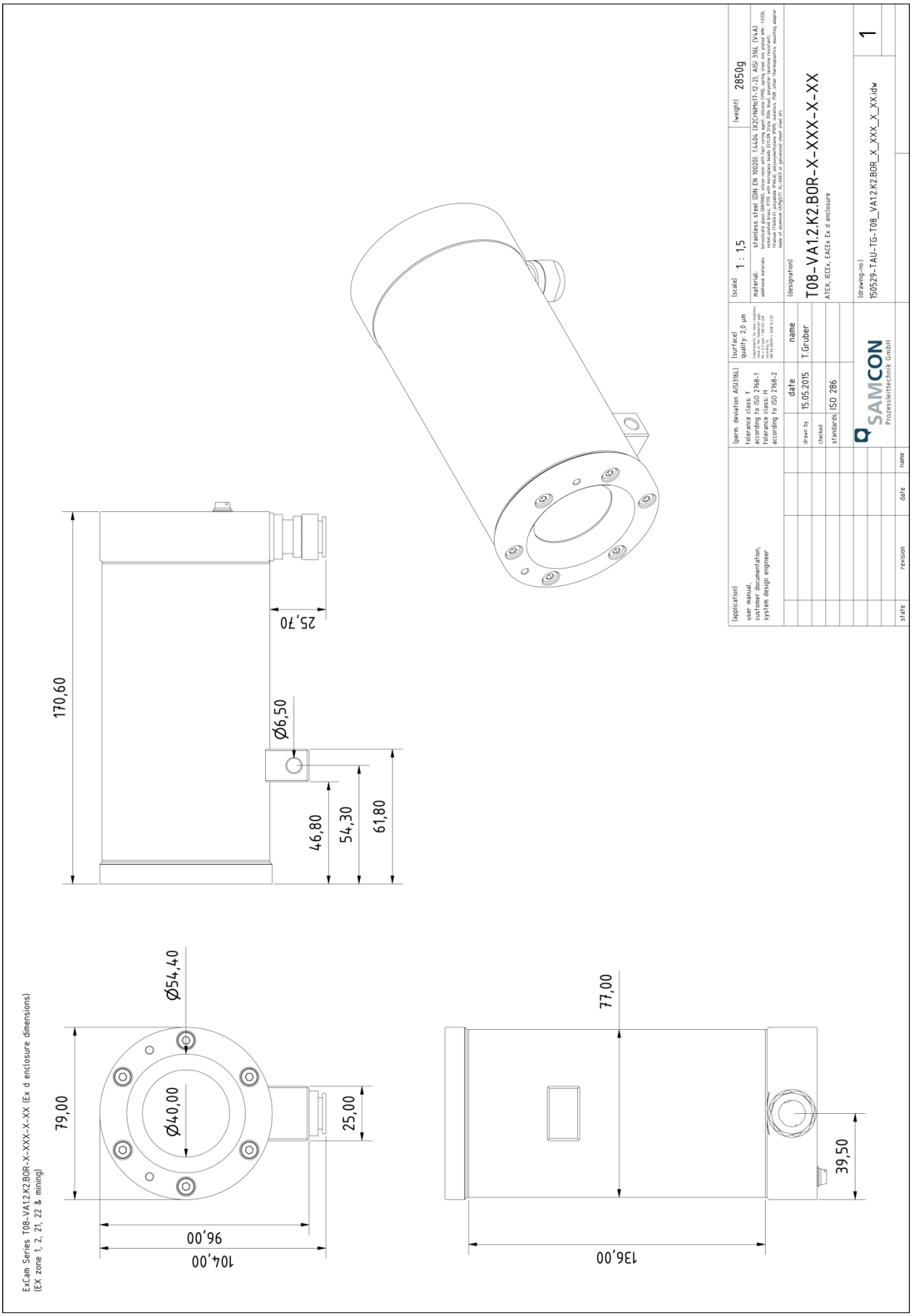

Abb.10.2 – Dimensions T08 ExCam® niteZoom with K2 flange

T08-VA1.2.K1.BOR-X-XXX-X-XX with mounting accessories

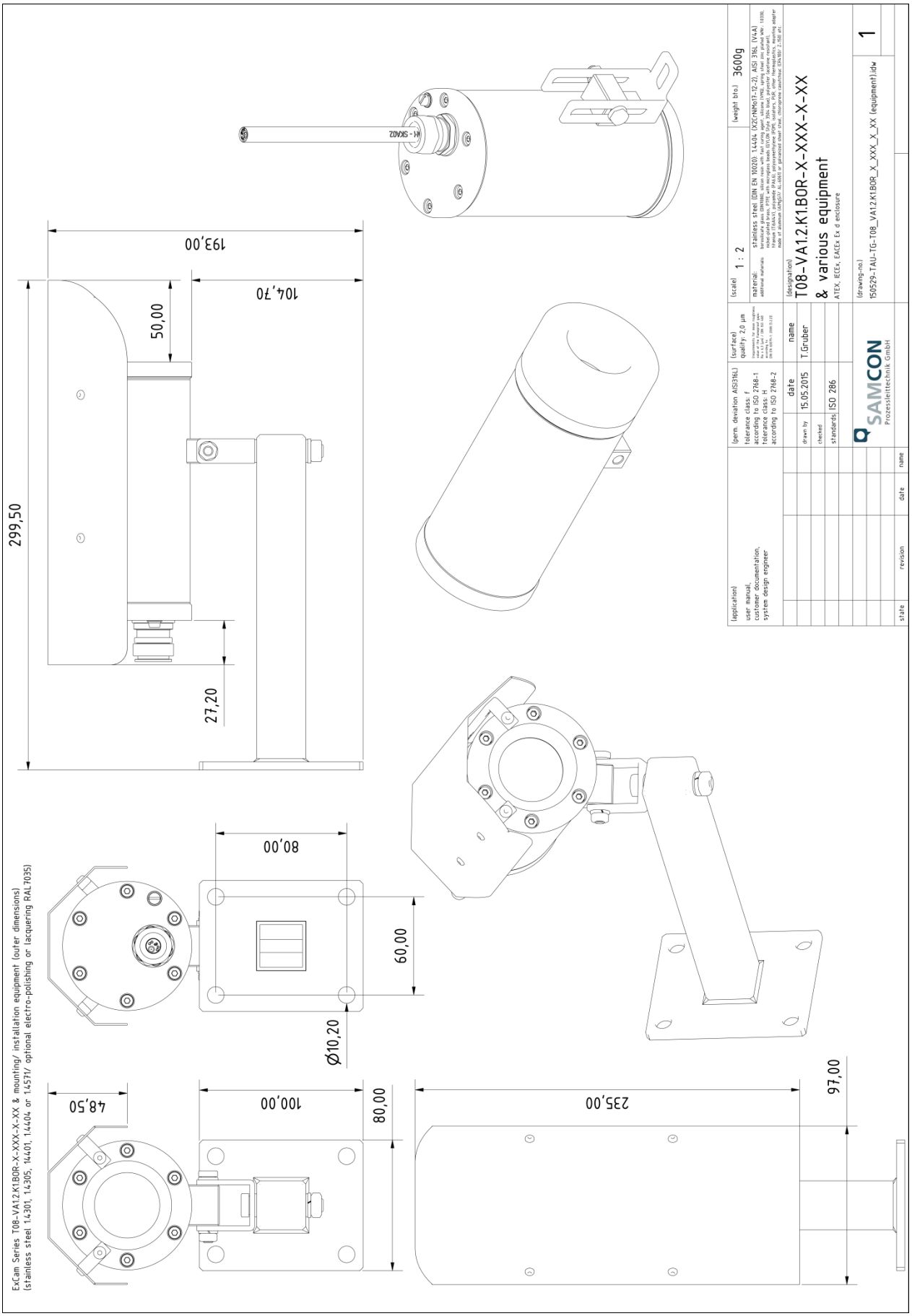

Abb.10.3 – Dimensions T08 ExCam® niteZoom with accessories (1/2)

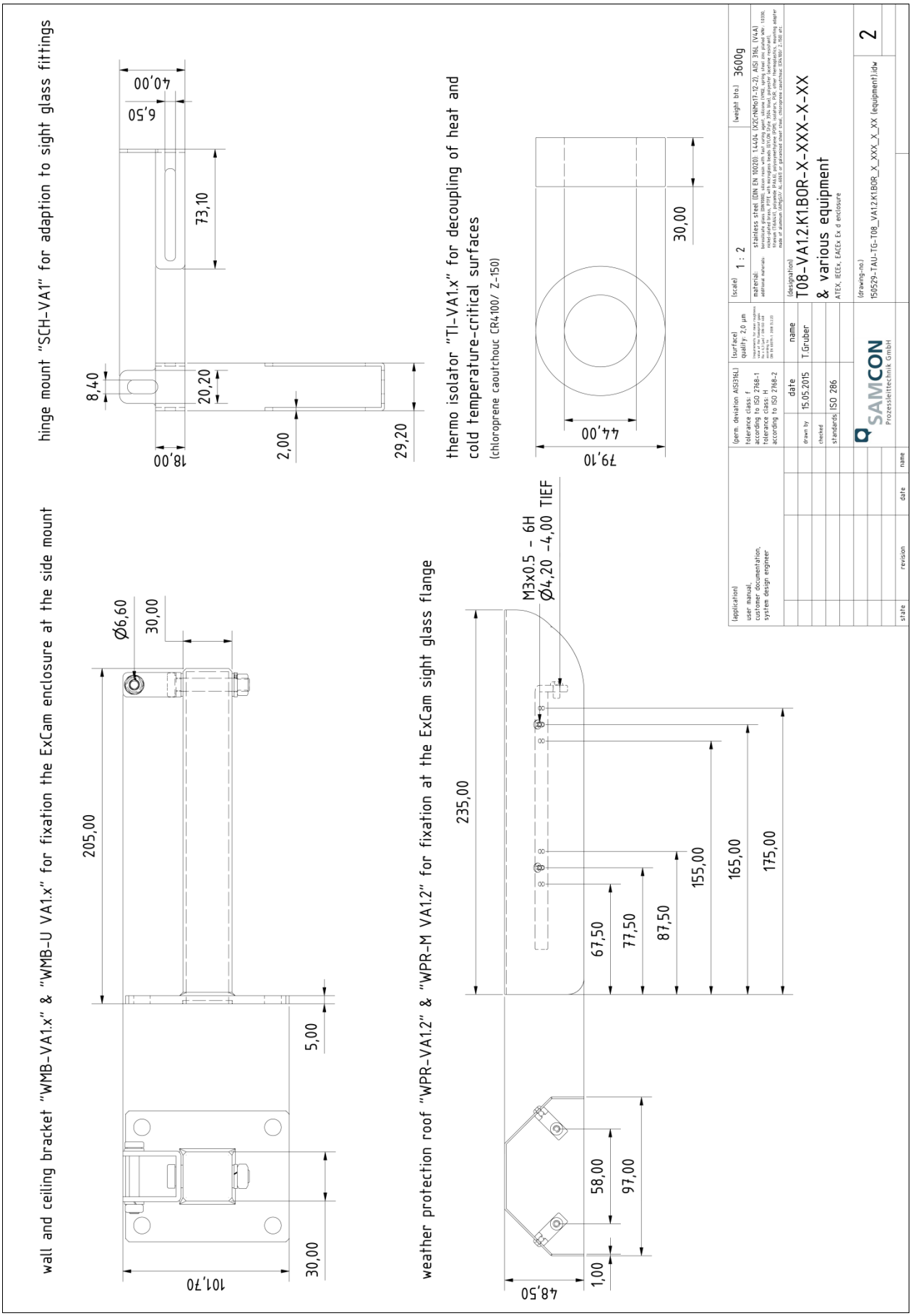

Abb.10.4 – Dimensions T08 ExCam® niteZoom with accessories (2/2)

Various illustrations of the ExCam Series T08-VA1.2.K1.BOR

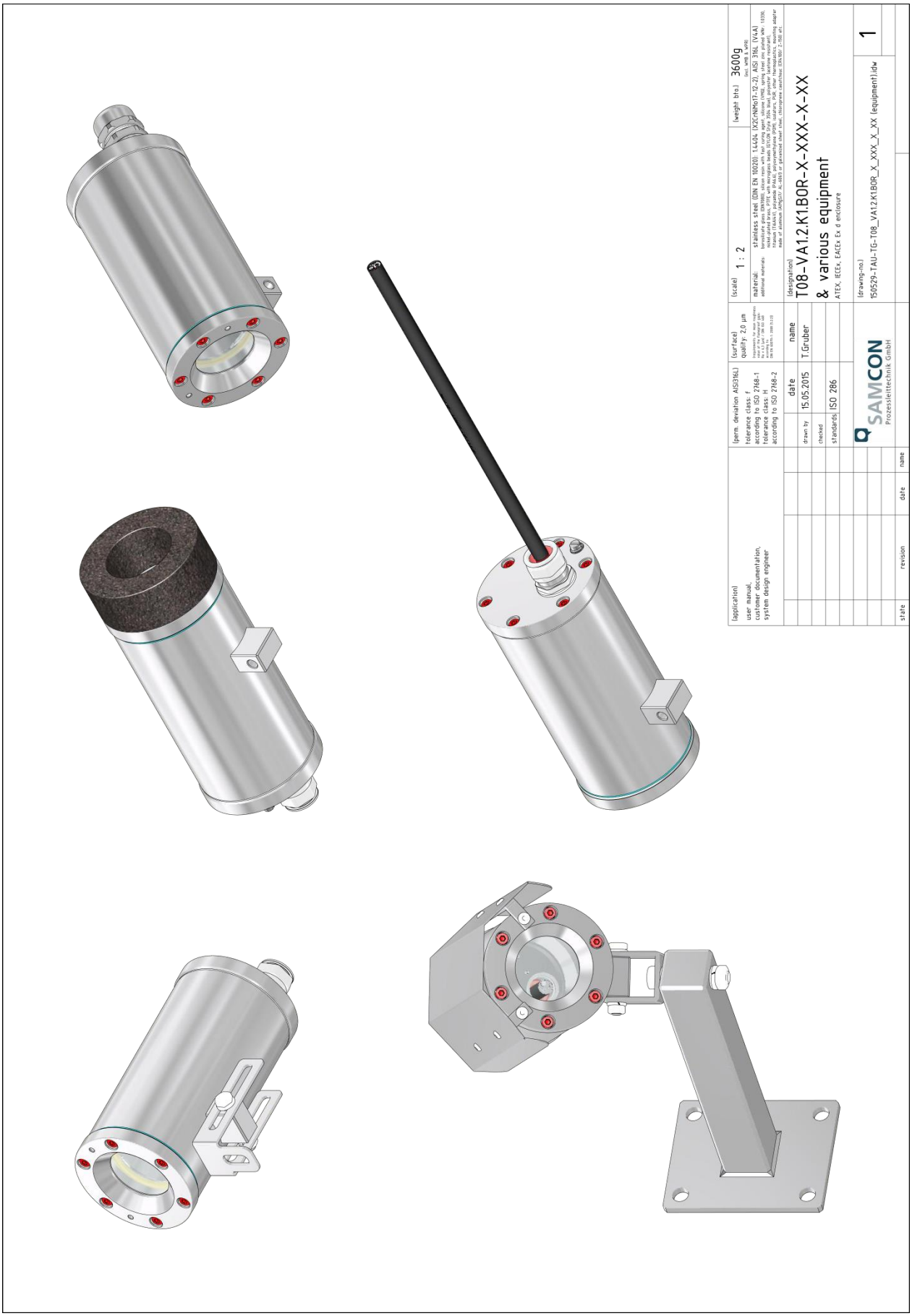

Abb.10.5 – Isometric illustrations of the T08 ExCam® niteZoom

11 Notes

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