RoughCam® niteZoom

User manual

SAMCON
Prozessleittechnik GmbH

Content

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Revision history

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1 Technical Data

1.1 Electrical parameters

Camera:	
Supply voltage:	+12 V DC to +30 V DC
Reference power:	+24 V DC
Power input:	270 mA to 540 mA
Maximum power input:	6.5 W (without heating)
Heating (optional):	
Supply voltage:	+12 V DC to +24 V DC
Reference power:	+24 V DC
Power input:	ca. 1000 mA
Maximum power input (-20°C):	20 Watt

1.2 System cable SKAxx

Outer diameter:	9.4 mm
Max. bending radius:	150 mm
Material outer sheath:	PUR – flame retardant according to IEC 60322-1-2
Color outer sheath:	RAL 9005 matt
Video:	1 x 75 Ω Koax, 19 x 0.127 mm tinned AWG 24, plated copper braid, shielded
RS 422:	2 x 2 x 0.25 mm^2 (twisted pair) Cu shielded double wrapping foil
Supply voltage camera:	2 x 0.75 mm^2, polyolefine insulated
Supply voltage heating:	2 x 0.75 mm^2, polyolefine insulated

1.3 Mechanical parameters

Housing material:	Stainless steel 1.4301 (AISI 304) and Stainless steel 1.4305 (AISI 303)
Glass material:	Borosilicate
Protection level:	IP 67 (IEC / EN 60529)
Weight T10-VA:	
With K1 flange:	ca. 2,000 g
With K2 flange:	ca. 2,500 g

Dimensions T10-VA [WxHxD]:

K1 flange, without pin and cable gland:	79 x 79 x 128 [mm]
K1 flange, with pin and cable gland:	79 x 96 x 128 [mm]
K2 flange, without pin and cable gland:	79 x 79 x 141 [mm]
K2 flange, with pin and cable gland:	79 x 96 x 141 [mm]

1.4 Temperature range

T10-VA-X-XXX-X-N (without heating):	0° C to +50° C
T10-VA-X-XXX-X-L (with heating):	-20° C to +50° C

1.5 Sensor

Sensor:	1/3‘‘ Super HAD CCD II - technology
Effective sensor resolution:	PAL: 440,000 pixel (ca. 752 x 582) NTSC: 380,000 pixel (ca. 768 x 494)
Horizontal resolution:	PAL: 530 TV lines NTSC: 530 TV lines

1.6 Lens

AF-Zoom lens:	10 x optical / 4 x digital
Focal distance (f):	5.1 mm to 51.0 mm
Angle of view:	52° (wide) to 5.4° (tele)
Aperture:	F1.8 to F2,1
Minimal illumination:	0.0004 lux (1/4 s, 1/3 s mode & ICR on)
Recommended illumination:	100 to 100.000 lux
Minimal object distance:	150 mm (wide) 800 mm (tele)

1.7 Electronical functions

- Electronical shutter function
- Serial control via VISCA/RS-422
- Composite video (VBS) video output 1 Vpp
- Back Light Compensation (BLC)
- Auto White Balance (ATW)
- Aperture correction (APC)
- DSP
- SNR: ≥50 dB

2 Safety guidelines

Please observe the national and international safety guidelines.

Attention!
External sources of heat and/or cold have to be considered during installation. The allowed temperature ranges for storage, transportation, and operational conditions have to be observed!

3 Illustration of the model key

The following model options are currently available for the RoughCam ® niteZoom:

Product name	Model option				
	Type	housing option(1)	Meter SKA02(3)	Cable termin.(4)	Housing heating(5)
RoughCam niteZoom	T10-	VA-	005-	K-	N
	T10-	VA-	005-	K-	L
	T10-	VA-	005-	P-	N
	T10-	VA-	005-	P-	L
	T10-	VA-	005-	K-	N
	T10-	VA-	005-	K-	L
	T10-	VA-	005-	P-	N
	T10-	VA-	005-	P-	L

(1) VA = Execution in stainless steel

(2) Length of the connection line in meter
(5 meter is the standard length)

(3) K = Terminal block connection (standard)
All signaling lines are spliced to single strands and furnished with wire-end ferrules to allow connecting the camera to a terminal block
P = Plug- termination
Approximately 30 cm of the system cable's outer stealth is stripped.
The power supply strands (RD, BK) are furnished with wire-end ferrules.
The AWG24 cable is furnished with a BNC connector

(4) N = Normal Temperature (0° C – 50° C)
L = Low Temperature (-20° C – 50° C)

4 Commissioning

Attention!
Please observe the national regulations regarding security, installation, and accident prevention!

4.1 Step 1: Installation

Install the RoughCam® niteZoom at the desired location.

Warning!
When the iris is open, the camera must not be directed toward the sun as this can cause damages to the sensor.

4.2 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 RoughCam® Series has to be grounded via a PE-connection!

Attention!
Please observe the national regulations regarding security, installation, and accident prevention!

The RoughCam® niteZoom is delivered with an electrical connection cable type SKAxx (System Kabel Analog). The maximum cable length is 200 m and can be determined individually to reflect the particular customer specifications.

The RoughCam® niteZoom is manufactured with a pigtail reflecting the desired cable length. Depending on the model option, the ending of the camera's cable connection is either stripped and furnished with wire-end ferrules or furnished with a BNC connector.

4.2.1 Potential equalization

Figure 4.1 Potential equalization T10-VA…

Depending on the housing execution, the equipment's potential equalization is to be carried out at the place indicated in above figure. The profile of the potential equalization has to reflect the national grounding instructions (min. 4 mm^2).

Connection table:

Potential	**Color** (IEC 60757)	**Profile**	**Comments**
PA	GN/YE	4 mm^2 (fix)	

4.2.2 Termination of the connection cable (pigtail)

Corresponding to the selected model key, the RoughCam® niteZoom can be delivered with the following cable termination options:

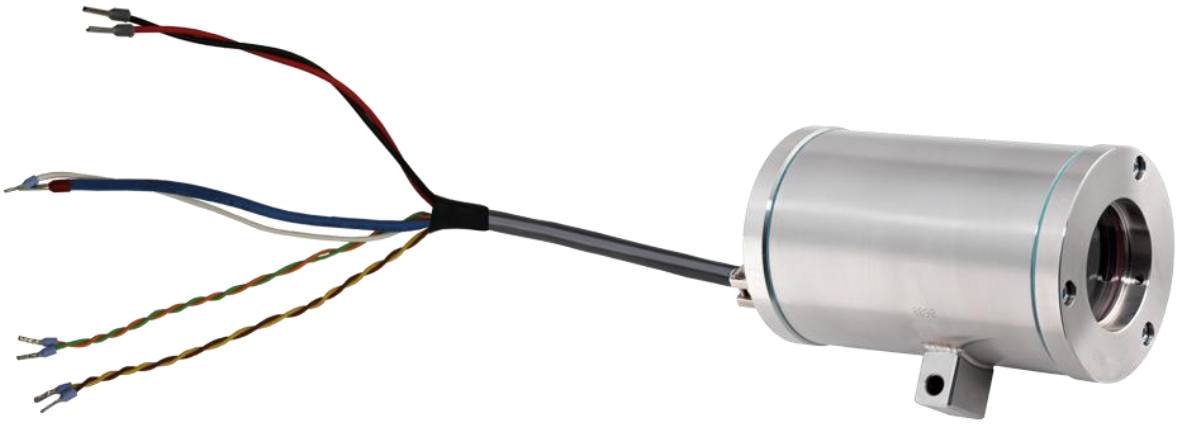

Figure 4.2 RoughCam niteZoom – T10-VA-B-XXX-K-N

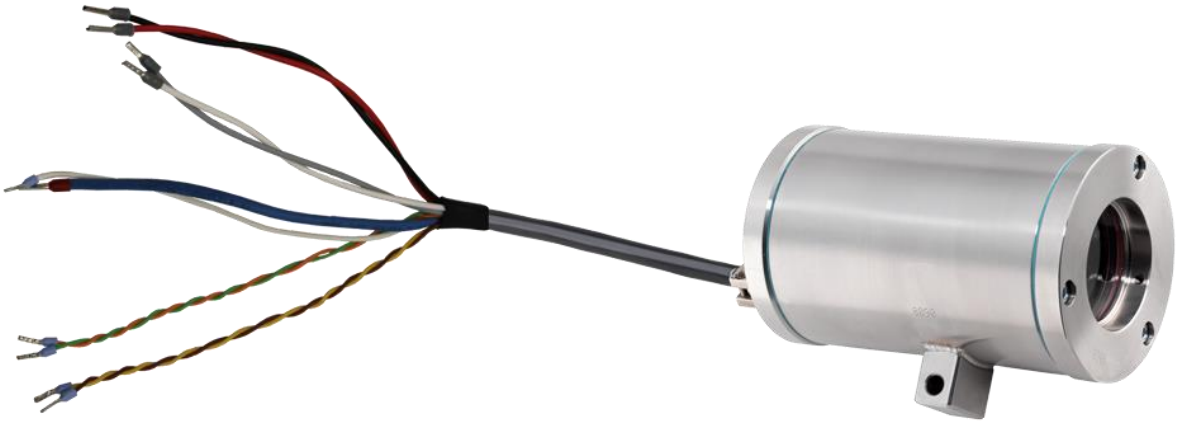

Figure 4.3 RoughCam niteZoom – T10-VA-B-XXX-K-L

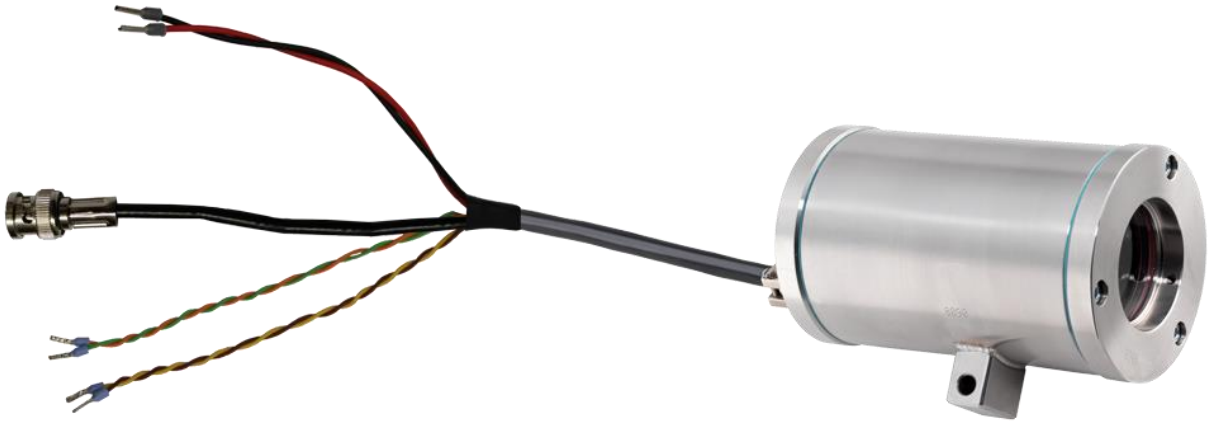

Figure 4.4 RoughCam niteZoom – T10-VA-B-XXX-P-N

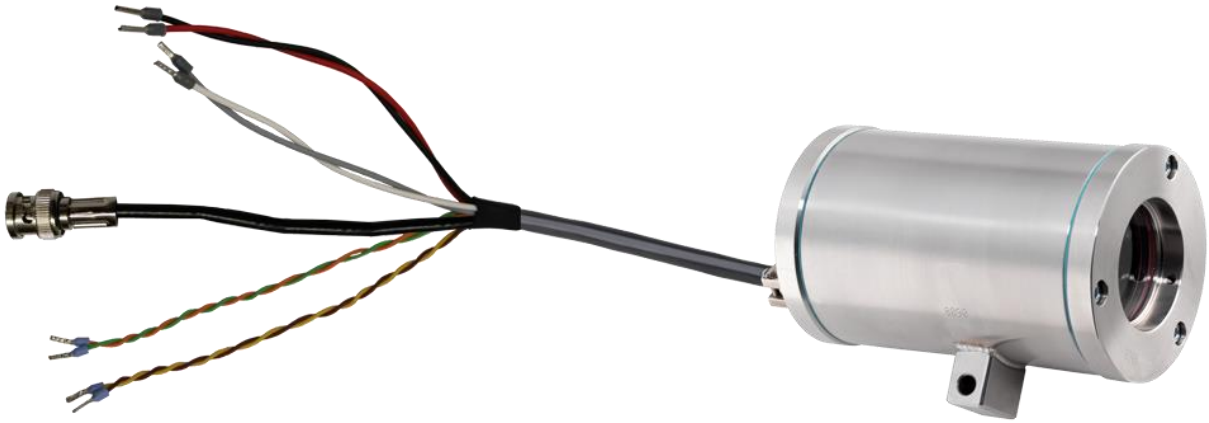

Figure 4.5 RoughCam niteZoom – T10-VA-B-XXX-P-L

4.2.3 Power supply & protection

4.2.4 Power supply & protection of the camera's power circuit

The power supply is to be carried out via the red (RD) as well as black (BK) strand.

Connection table:

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

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 VDC	< 200 m	mT500 mA	
24 VDC	< 200 m	mT200 mA	

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

4.2.4.1 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 mm²	
V-	WH	0 VDC	0.75 mm²	

The heating's maximum power consumption is 20.0 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**
24 VDC	< 200 m	mT650 mA	

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

4.2.5 Video picture connection (CVBS)

Depending on the model key, the video signal of the RoughCam® 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 (-VA-XXX-K-L)

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

Connection table (-VA-XXX-P-L)

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

4.2.6 Control interface (RS-422)

Potential (Connection at the control board, video server, converter etc.)	**Potential** (RoughCam nite-Zoom)	**Color** (IEC 60757)	**Profile**	**Comments**
TxA	RxA	BN	0.25 mm^2	
TxB	RxB	YE	0.25 mm^2	
RxA	TxA	GN	0.25 mm^2	
RxB	TxB	OG	0.25 mm^2	

4.2.7 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!

4.3 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 (Sony FCB-EX20DP) 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) or interactively via the web interface of a video server (figure 4.8) or the FCB Control Panel (figure 4.7). The transmission rate of the sending and the receiving end has to be synchronous (figure 4.6).

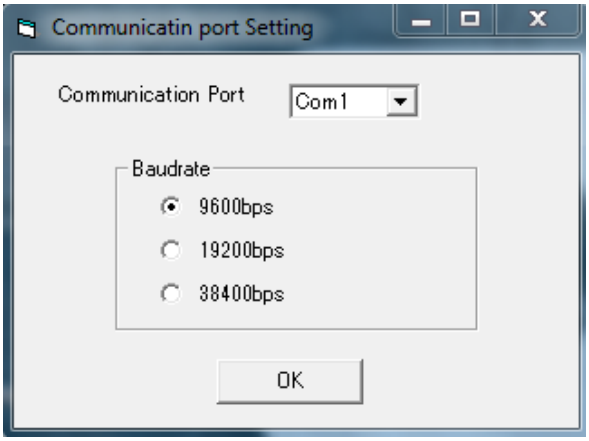

Figure 4.6 Setting the Baud-transmission rate

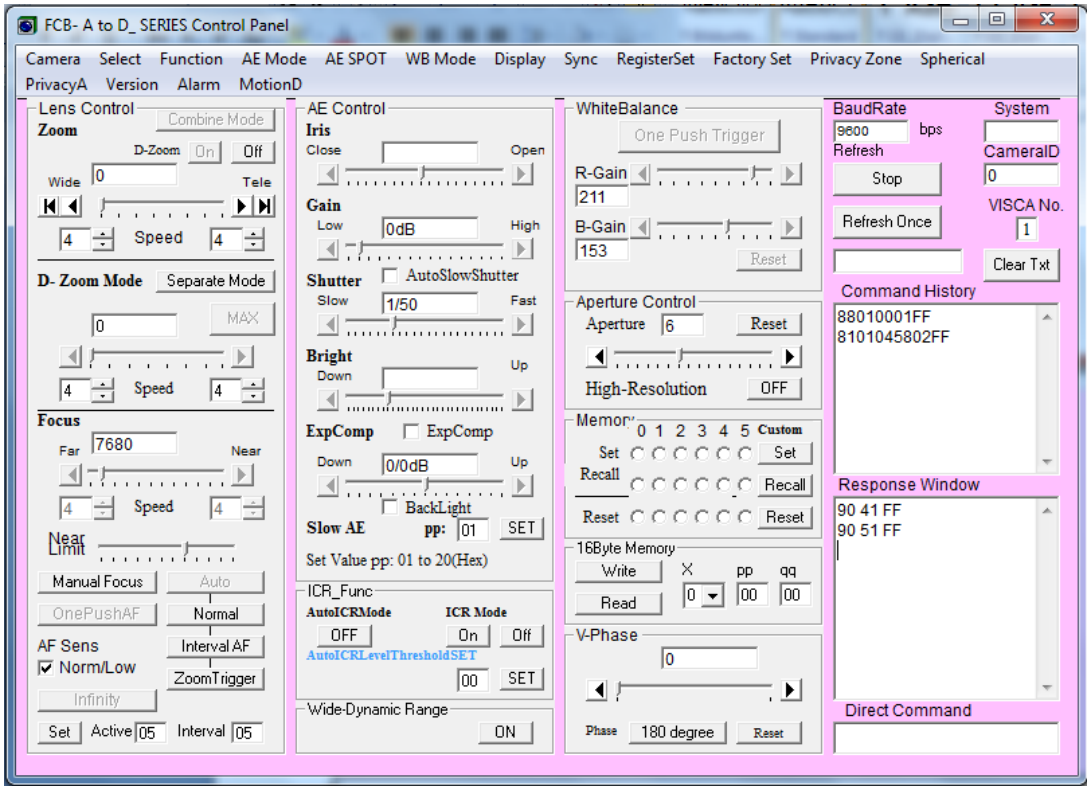

Figure 4.7 FCB Control Panel of the RoughCam niteZoom

Figure 4.8 Control and visualization via a video server

Technical data Sony FCB-EX20DP:

Figure 4.9 RoughCam® niteZoom – lens and sensor board

Lens type	Motorzoom
Lens	10x optical zoom f=5.1 mm (wide) to 51 mm (tele) (F1.8 to F2.1)
Digital zoom	12x (120x with optical zoom)
Sensor	1/3“-Super-HAD-CCD II
Focal distance	5.1 mm – 51.0 mm
Horizontally angle of view	52.0° (wide) – 5.4° (tele)
Effective pixel count	440,000
Shutter time	1/1 to 1/10000 s (22 steps)
Shutter time	16 steps
Minimal illumination	0.25 lux (F1.8, ICR off, 150 s)
Recommended illumination	100 … 100000 lux
Synchronisation system	Internal/ external (V-Lock)
MOD (Min. Object Distance)	0.01 m (wide end) to 0.8 m (tele end), 0.15 m (standard)

Information!
If not determined differently, the default setting of the RoughCam® 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 RoughCam 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.

4.3.1 Work preparation

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

4.3.2 Opening the housing

Opening the housing is only necessary for maintenance or repair work. If it is opened, please make sure not to damage any sealings and tighten the screws correctly as otherwise the IP protection level IP67 might be voided.

5 Maintenance / Servicing

The national regulations concerning the maintenance and servicing of electrical devices 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.

6 Disposal / Recycling

When disposing of the device, nationally applicable regulations must be observed.

This Document is subject to alterations and additions.

7 Drawings

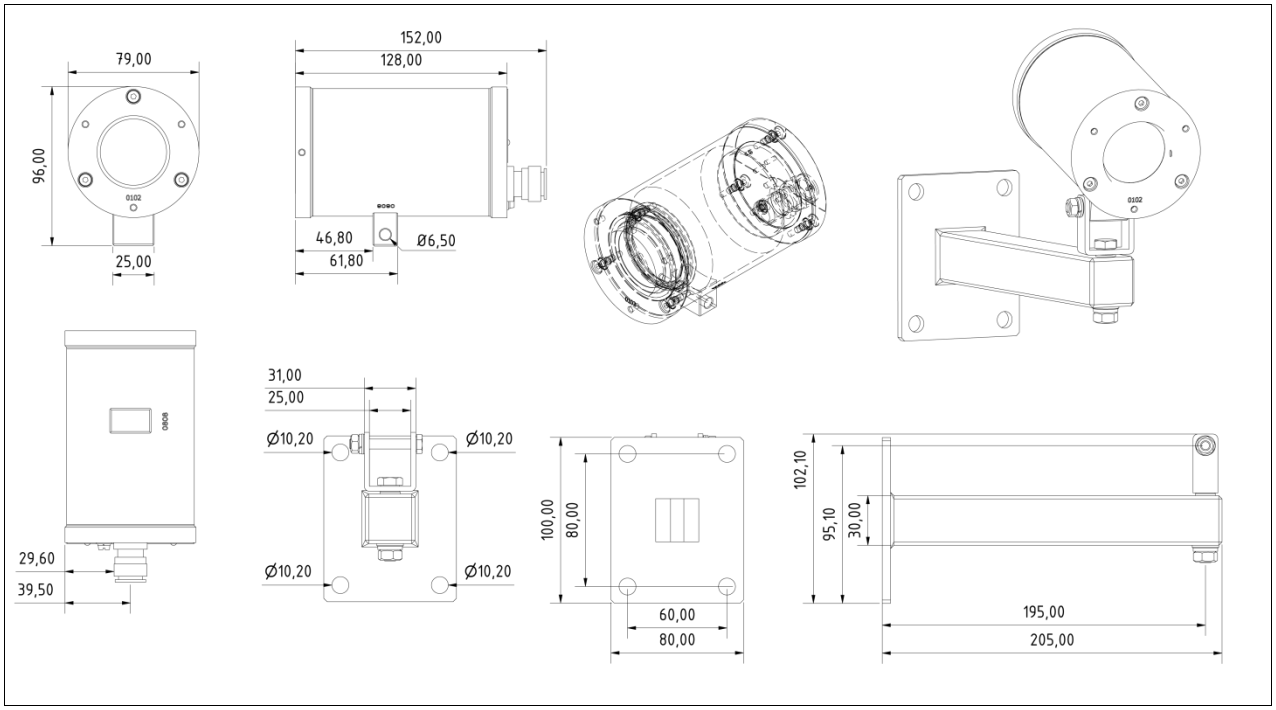

Figure 7.1 T10-VA-K1

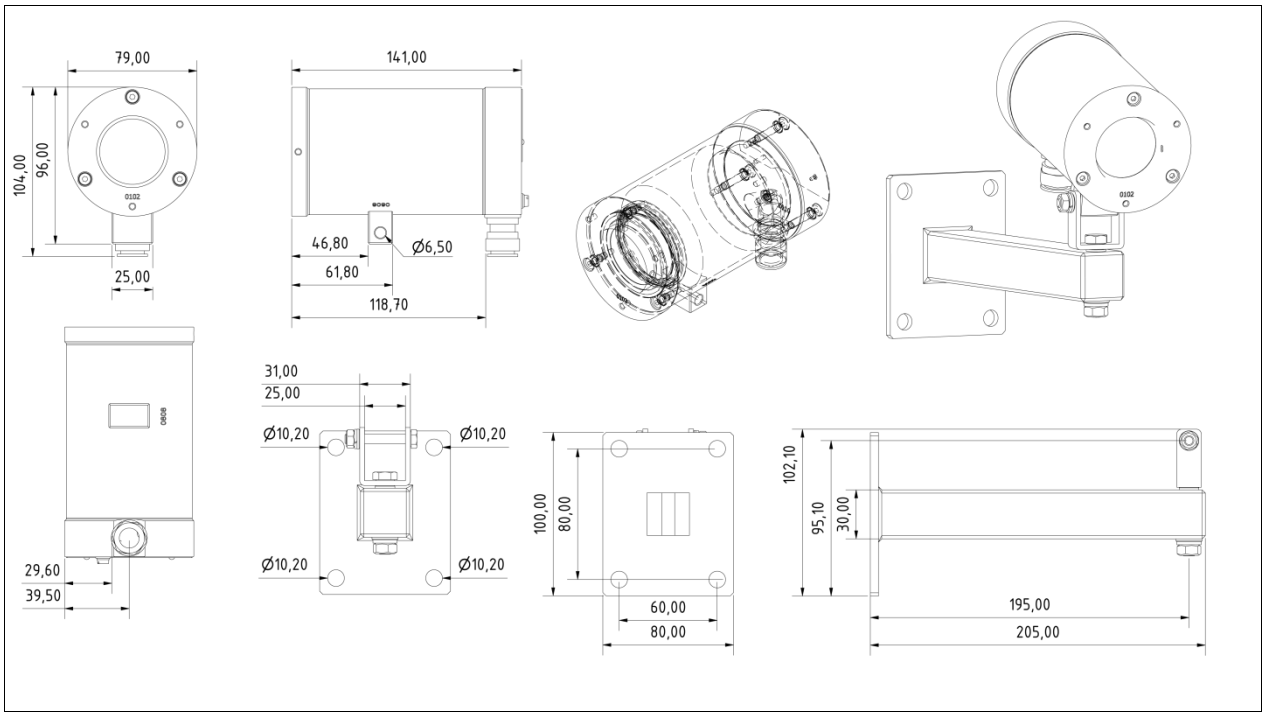

Figure 7.2 T10-VA-K2

8 Notes

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