



Instruction Manual
Cooling Jacket Advanced

Cooling Jacket Advanced
Cooling Jacket Advanced Extended

Cooling housing for TIM series, video pyrometer and laser pyrometer at high ambient temperatures

MICRO-EPSILON
MESSTECHNIK
GmbH & Co. KG
Königbacher Strasse 15

94496 Ortenburg / Germany

Tel. +49 (0) 8542 / 168-0
Fax +49 (0) 8542 / 168-90
e-mail info@micro-epsilon.de
www.micro-epsilon.com



Certified acc. to DIN EN ISO 9001: 2008

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1 General Notes

1.1 Intended Use

The cooling housing Cooling Jacket Advanced is intended to use for TIM series, video thermometers CTVideo and CSVideo as well as CTLaser and CSLaser for application at high ambient temperatures.



- Read the manual carefully before the initial start-up. The producer reserves the right to change the herein described specifications in case of technical advance of the product.
- In case of problems or questions which may arise when you use the infrared camera, please contact our service department.



- ▶ All accessories can be ordered according to the referred part numbers in brackets [].

1.2 Warranty

All components of the device have been checked and tested for perfect function in the factory. In the unlikely event that errors should occur despite our thorough quality control, this should be reported immediately to MICRO-EPSILON.

The warranty period lasts 12 months following the day of shipment. Defective parts, except wear parts, will be repaired or replaced free of charge within this period if you return the device free of cost to MICRO-EPSILON. This warranty does not apply to damage resulting from abuse of the equipment and devices, from forceful handling or installation of the devices or from repair or modifications performed by third parties.

No other claims, except as warranted, are accepted. The terms of the purchasing contract apply in full. MICRO-EPSILON will specifically not be responsible for eventual consequential damages. MICRO-EPSILON always strives to supply the customers with the finest and most advanced equipment. Development and refinement is therefore performed continuously and the right to design changes without prior notice is accordingly reserved.

For translations in other languages, the data and statements in the German language operation manual are to be taken as authoritative.

1.3 Scope of Supply

1.3.1 Versions

Cooling Jacket Advanced

- Cooling Jacket Advanced for TIM series
(**Part-No.: TM-CJAxxxx-TIM**), consisting of housing and chassis
The focusing unit or the front part must be ordered separately.
- Cooling Jacket Advanced for CSLaser, CTLaser as well as CTVideo and CSVideo
(**Part-No.: TM-CJA-CTL**)
The front part must be ordered separately.
- Installation instructions

Cooling Jacket Advanced Extended

- Cooling Jacket Advanced for TIM series
(**Part-No.: TM-CJAExxx-TIM**), consisting of housing and chassis
- Cooling Jacket Advanced for CSLaser, CTLaser as well as CTVideo and CSVideo
(**Part-No.: TM-CJAE-CTL**), consisting of housing and chassis
The front part must be ordered separately.
- incl. mounting accessories for
 - TIM NetBox or USB server Gigabit
 - Industrial PIF
 - Installation instructions



Operation without focusing and front attachment is not possible.

1.4 Mounting Accessories

1.4.1 Accessories for TIM NetBox

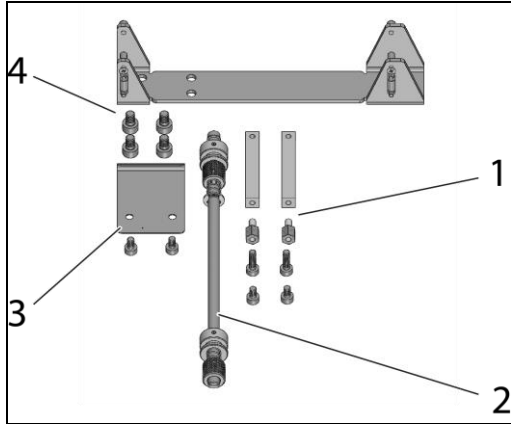


Figure 1: Accessories for TIM NetBox

- 1 Support rods for Industrial PIF (2x distance bolt SW 5,5x6 - M3x6, 2x cylinder head screw M3x10 and 2x cylinder head screw M3x5)
- 2 Shaft for fixing the TIM NetBox
- 3 Holding plate (2x cylinder head screw M3x5)
- 4 Fastening rail (4x cylinder head screw M4x8)

1.4.2 Accessories for USB Server Gigabit

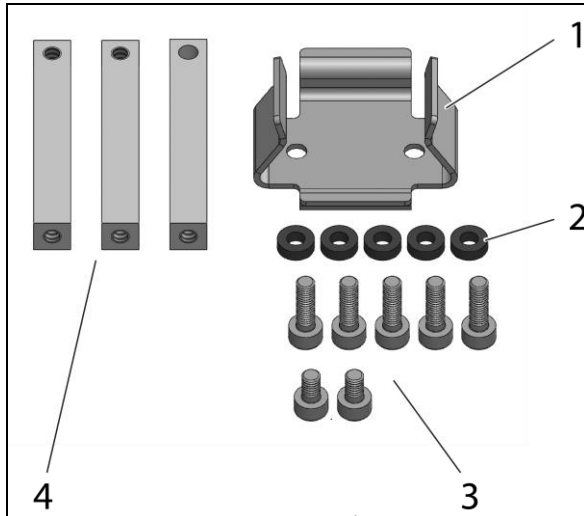


Figure 2: Accessories for USB-Server Gigabit

- 1 DIN rail plate for fixing the USB server Gigabit
- 2 Distance rings
- 3 Screws
- 4 Support rods for Industrial PIF, with thread and without

2 Technical Data

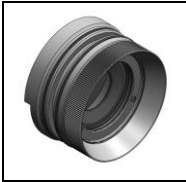
2.1 General Specifications

	Cooling Jacket Advanced	Cooling Jacket Advanced Extended
Environmental rating	IP 65	IP 65
Ambient temperature	up to 315 °C ¹⁾	up to 315 °C ¹⁾
Relative humidity	10 ... 95 %, non-condensing	10 ... 95 %, non-condensing
Material (housing)	V2A	V2A
Dimensions	271 mm x 166 mm x 182 mm	426 mm x 166 mm x 182 mm
Weight	5.7 kg	7.8 kg
Air purge collar	G1/4" Internal thread G3/8" External thread	G1/4" Internal thread G3/8" External thread
Cooling water fittings	G1/4" Internal thread G3/8" External thread	G1/4" Internal thread G3/8" External thread
Cooling water pressure	15 bar (217 psi)	15 bar (217 psi)

¹⁾ Cable available up to 250 °C ambient temperature as well as cable cooling up to 315 °C.

2.1.1 Focusing Unit and Front Part

Is needed for mounting a thermoIMAGER TIM or pyrometer.

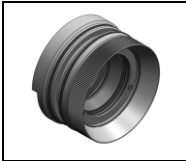


TIM 160

Focusing unit

for 6°, 41° and 72° optics (**Part-No.: TM-CJAFU6-TIM**)

for 23° optics (**Part-No.: TM-CJAFU23-TIM**)



TIM 4xx/ TIM 640

Focusing unit

for 13° optics (**Part-No.: TM-CJAFU13-TIM**)

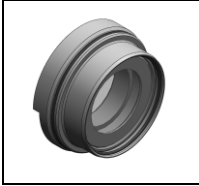
for 33° (TIM 640), 38° and 62° optics (**Part-No.: TM-CJAFU38**)



TIM 2xx

Front part

for TIM 2xx (**Part-No.: TM-CJAFP2xx-TIM**)



Front part

for CTLaser, CSLaser, CTVideo, CSVideo (**Part-No.: TM-CJAFP-CTL**)

CTLaser, CSLaser, CTVideo, CSVideo

2.2 Accessories

2.2.1 High Temperature Cable

High temperature Ethernet cable cat.6 (180 °C), 10 m, incl. 2x RJ45 connector
[Part-No.: TM-CJAETC10H-TIM]

High temperature Ethernet cable cat.6 (180 °C), 20 m, incl. 2x RJ45 connector
[Part-No.: ACCJAETCB20H]

High temperature Ethernet cable cat.6 (250 °C), 10 m, incl. 2x RJ45 connector
[Part-No.: ACCJAETCB10H2]

High temperature Ethernet cable cat.6 (250 °C), 20 m, incl. 2x RJ45 connector
[Part-No.: ACCJAETCB20H2]

High temperature USB cable (180 °C/ 250 °C), 5 m and 10 m

Pyrometer cable (available separately)

2.2.2 Protection Window



Adequate protection windows are available for all versions.

2.2.3 Additional Accessories

Industrial PIF without housing (**Part-No.: TM-CJAPIF500V2-TIM**), 500 VAC_{RMS} isolation voltage between TIM and process, 25 cm connection cable

2.3 Dimensions

Cooling Jacket Advanced

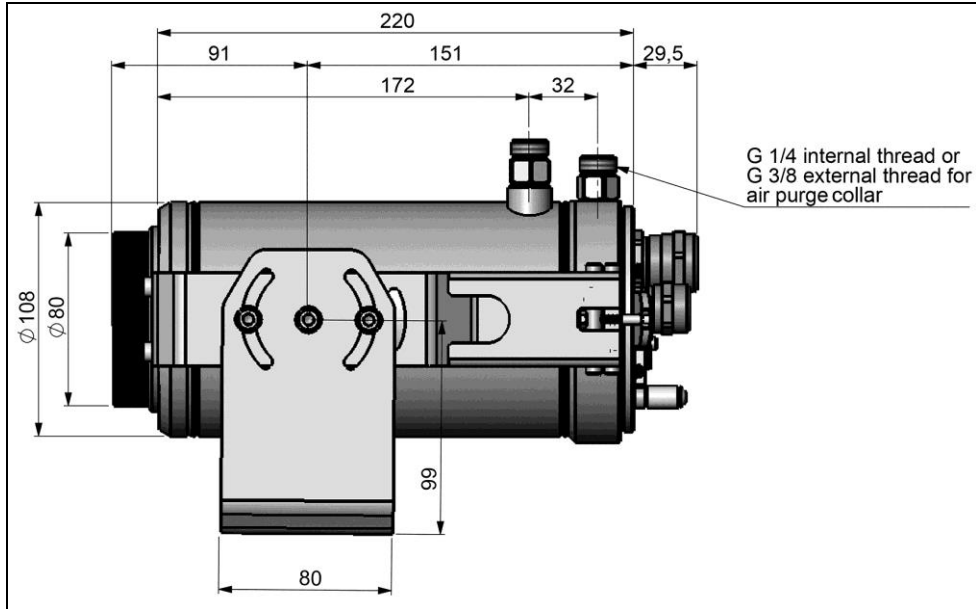


Figure 3: Cooling Jacket Advanced - side view

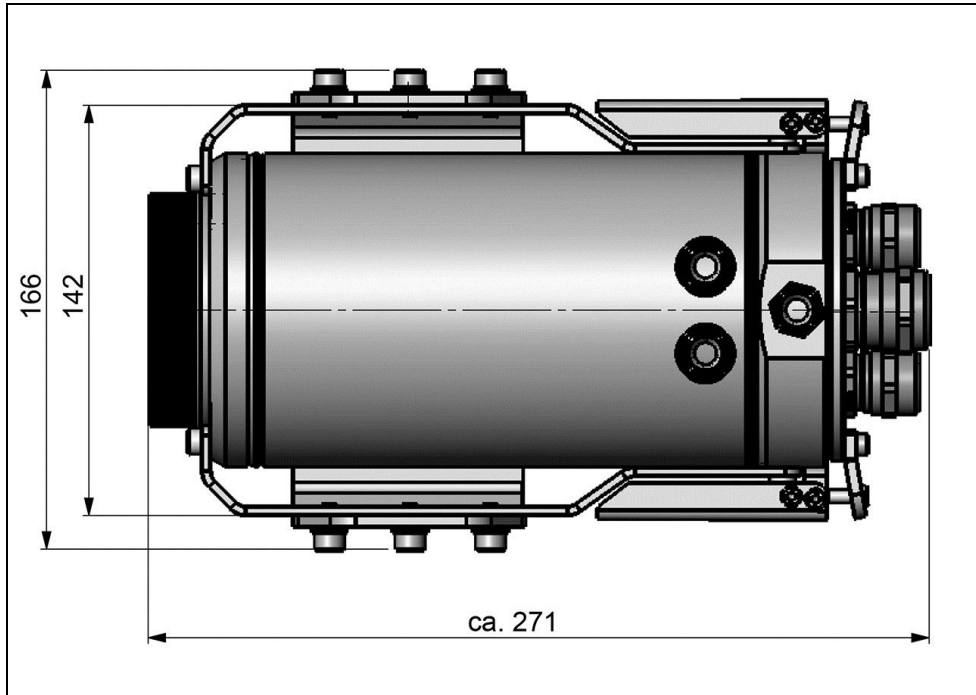


Figure 4: Cooling Jacket Advanced - top view

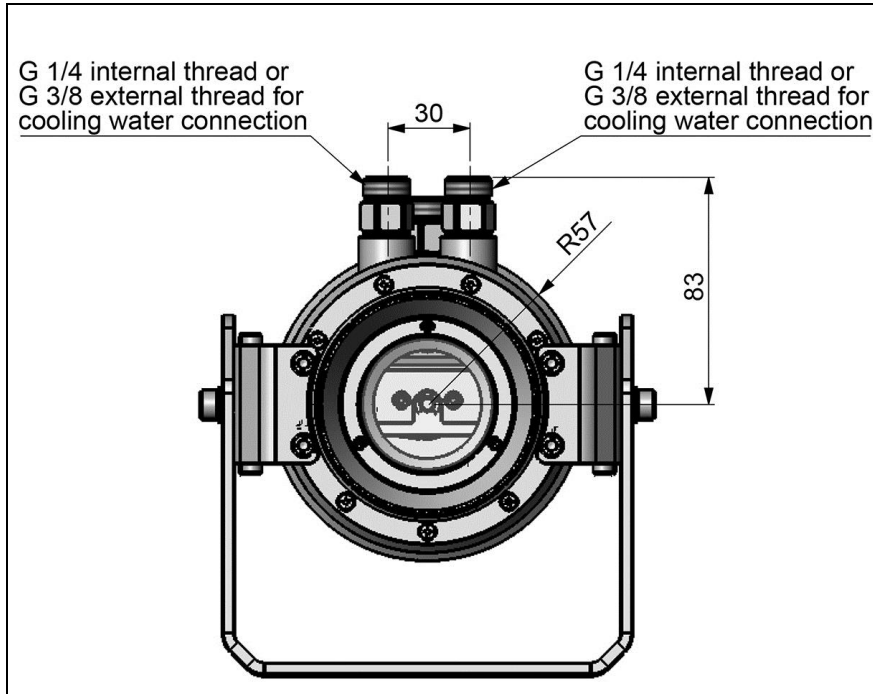


Figure 5: Cooling Jacket Advanced - front view

Cooling Jacket Advanced Extended

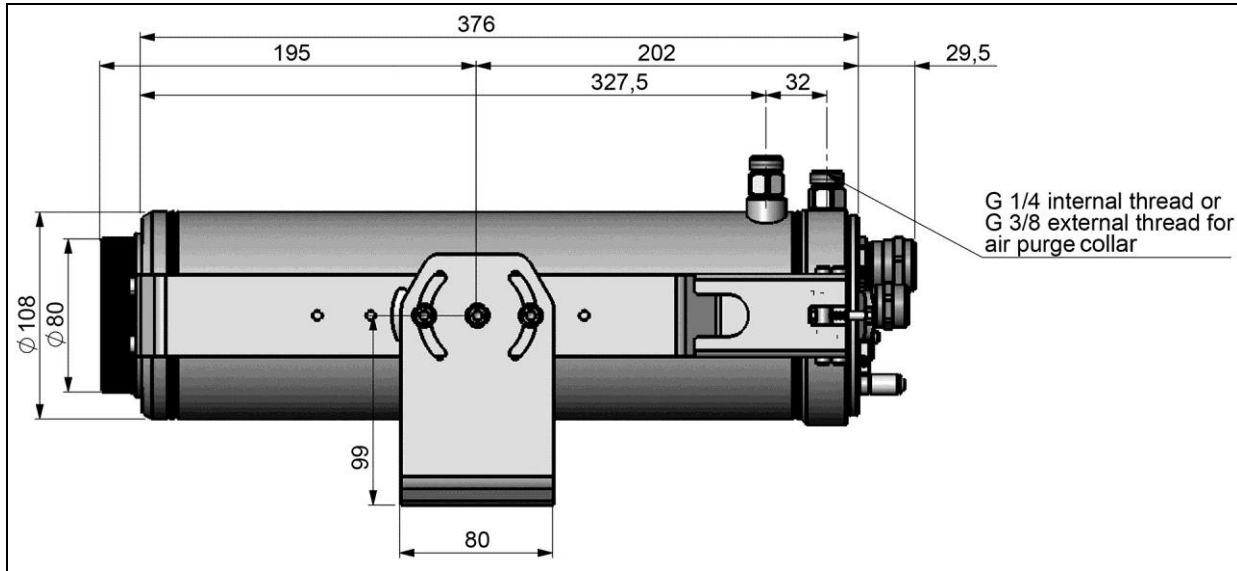


Figure 6: Cooling Jacket Advanced Extended - side view

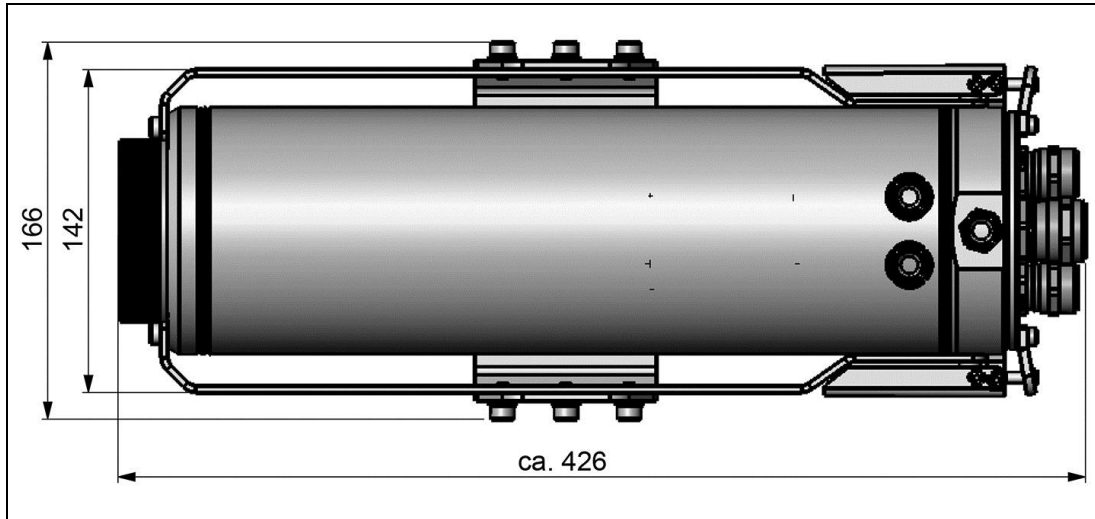


Figure 7: Cooling Jacket Advanced, extended version - top view

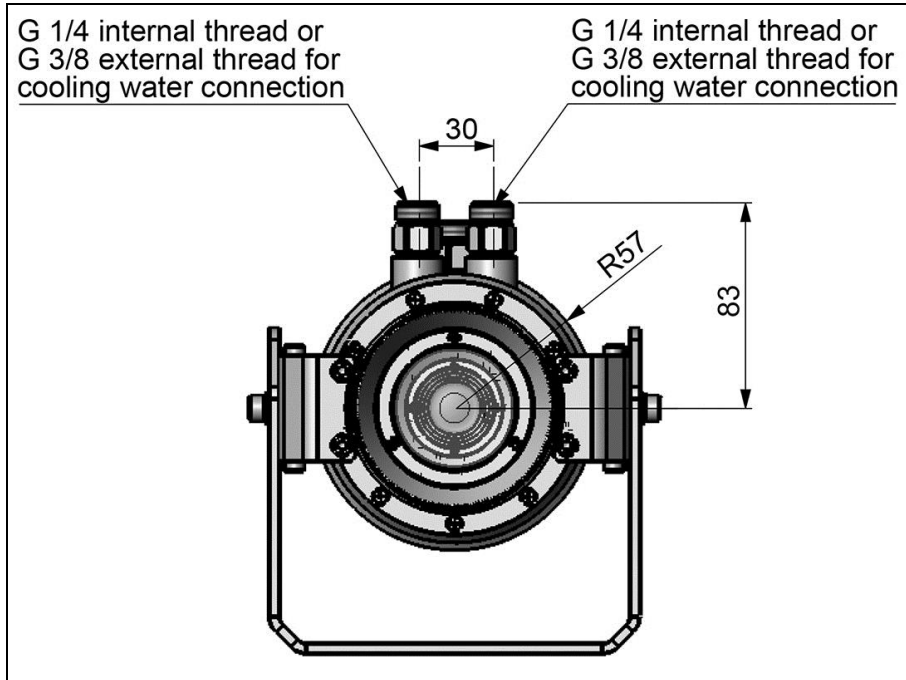


Figure 8: Cooling Jacket Advanced, extended version - front view

2.4 Fittings

2.4.1 Cooling Water Fitting



- The cooling water input and output has a G1/4"-internal thread and a G3/8"-external thread.
- The maximum cooling water pressure is 15 bar (271 psi).
- While connecting the hoses keep inclined the Cooling Jacket at an angle of approx. 45° to avoid air bubbles.

2.4.2 Air Purge Collar



- Use oil-free, technically clean air only.
- The needed amount of air (approx. 2 ... 10 l/ min.) depends on the application and the installation conditions on-site.
- The air purge collar has a G1/4"-internal thread and a G3/8"-external thread.

The lens must be kept clean at all times from dust, smoke, fumes and other contaminants in order to avoid reading errors. These effects can be reduced by using an air purge collar.

2.5 Cooling Properties

Flow		Temperature at 1 l/min	Temperature at 2,5 l/min	Temperature at 5 l/min
Ambient temperature [255 °C]	Cooling water input [°C]	19	19	19
	Camera/ Thermometer [°C]	36	34	32

Table 1: Cooling properties with a steady cooling water input temperature and various flow

Flow		Temperature at 2.5 l/min of flow			
Ambient temperature [255 °C]	Cooling water input [°C]	25	30	35	40
	Camera/ Thermometer [°C]	39	42	45	51

Table 2: Cooling properties with a steady flow and various cooling water input temperature

2.5.1 Condensation



- For applications at ambient temperatures until 100 °C and a high humidity there *is danger of condensation (see Table 3)*.
- To avoid condensation, the temperature of the cooling media and the flow rate must ensure a minimum device temperature.
- Consider the operation temperature of the applied devices.

Example (see **Table 3**):

Ambient temperature	80 °C
Relative humidity	25 %
Minimum device temperature	45 °C

At an ambient temperature of 80 °C and a relative humidity of 25 % the device temperature must not be below 45 °C. Otherwise condensation occurs on the lens or the electronic.

		Relative humidity [%]																		
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Ambient temperature [°C]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	10
	15	0	0	0	0	0	0	0	0	0	5	5	5	5	10	10	10	10	10	15
	20	0	0	0	0	0	0	5	5	5	10	10	10	10	15	15	15	15	15	20
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	40	0	5	10	10	15	20	20	20	25	25	25	30	30	30	35	35	35	35	40
	45	0	10	15	15	20	25	25	25	30	30	35	35	35	35	40	40	40	40	45
	50	5	10	15	20	25	25	30	30	35	35	35	40	40	40	453	45	45	45	50
	60	15	20	25	30	30	35	40	40	40	45	45	50	50	50	50	50	50	50	60
	70	20	25	35	35	40	45	45	50	50	50	50	50	60	60	60	60	60	60	70
	80	25	35	40	45	50	50	50	60	60	60	60	60	70	70	70	70	70	70	80
	90	35	40	50	50	50	60	60	60	70	70	70	70	80	80	80	80	80	80	
100	40	50	50	60	60	70	70	70	80	80	80	80	80							

Table 3: Minimum device temperature in relation to ambient temperature and relative humidity in [°C]



Please respect the maximum ambient temperature of your measuring system!

3 Installation

3.1 Installation

The Cooling Jacket Advanced both versions can be installed in the desired position via the mounting bracket.

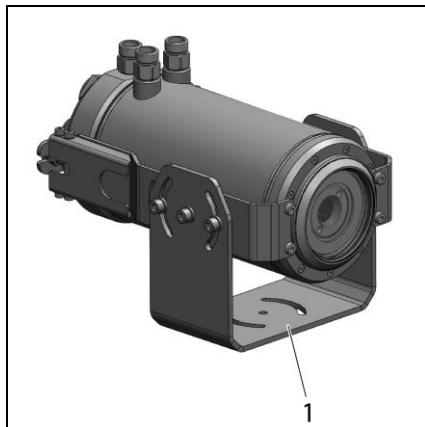


Figure 9: Cooling Jacket Advanced with mounting bracket (TM-JAB-TIM)

- 1 Mounting bracket, adjustable in two axes

3.2 Installation of TIM Camera, Infrared Video Thermometer and Infrared Thermometer

3.2.1 Assembling of the Focusing Unit



The focusing unit consists of two parts, external **(1)** and internal **(2)** part. The external part focuses the camera. The internal part fixes the camera.

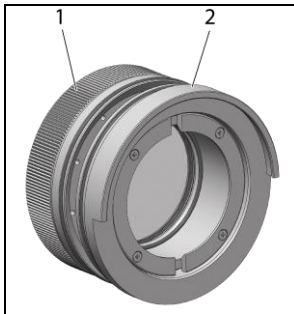


Figure 10: Focusing unit (external and internal part)

- 1 External part of the focusing unit
- 2 Internal part of the focusing unit

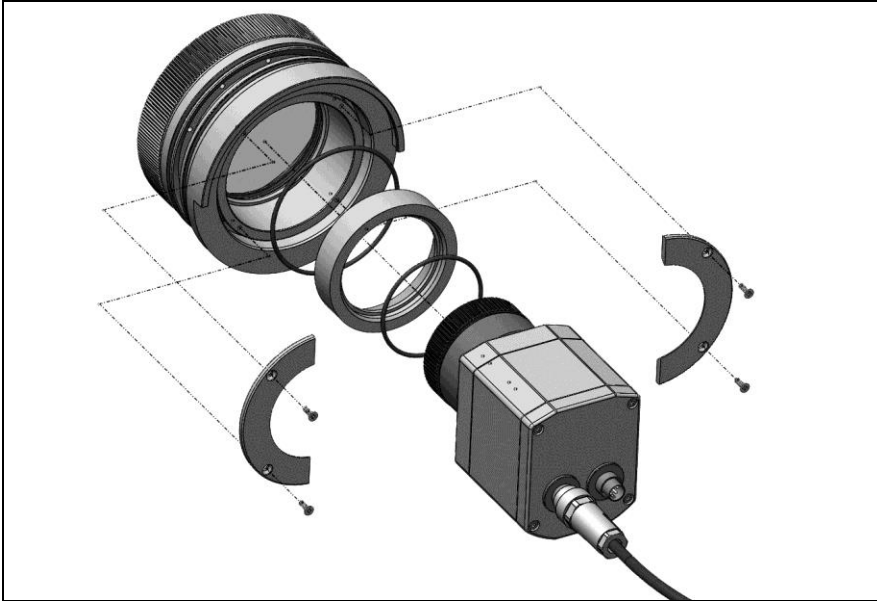


Figure 11: Assembling of the 6°, 23°, 33°, 38°, 41°, 62° and 72° optics

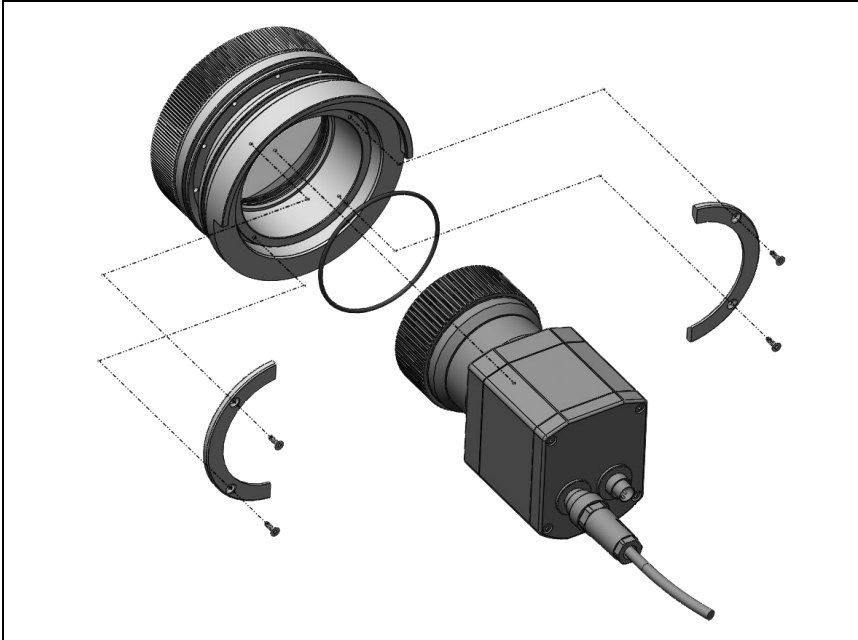


Figure 12: Assembling of the 13° optics

3.2.2 Assembling of the Front Part

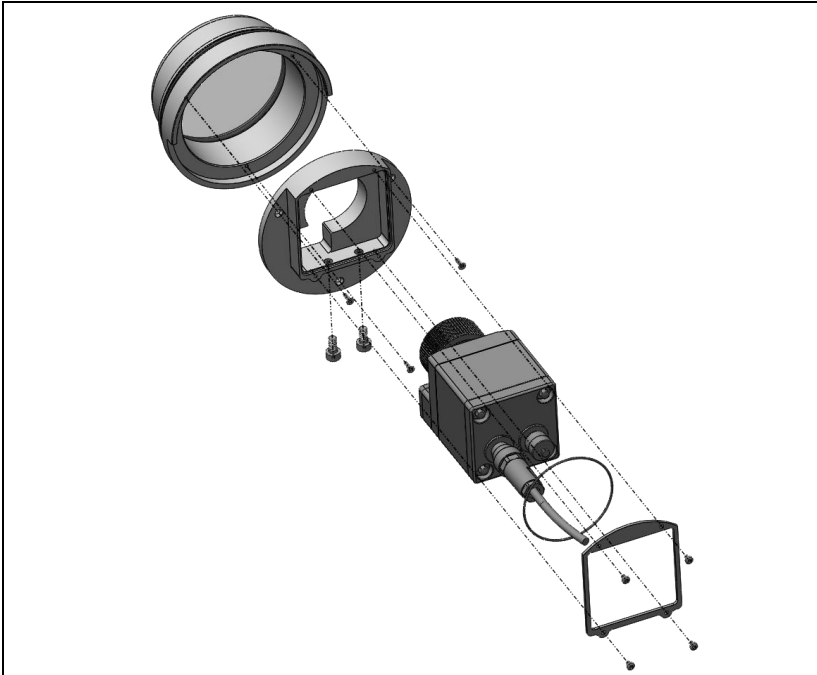


Figure 13: Assembling of the TIM 2xx

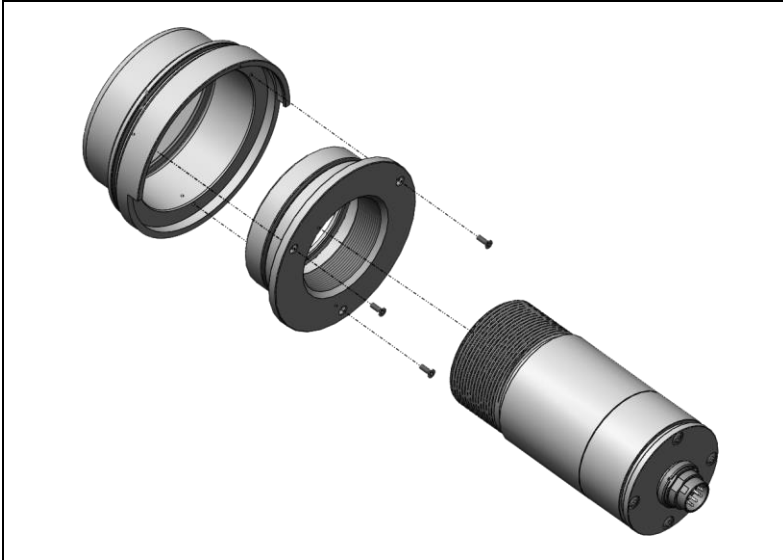


Figure 14: Assembling of the CTLaser, CSLaser, CTVideo, CSVideo

3.2.3 Assembling to the Cooling Jacket Advanced

Depending on the chassis either a camera of the TIM series, a laser infrared thermometer or an infrared video thermometer can be installed.

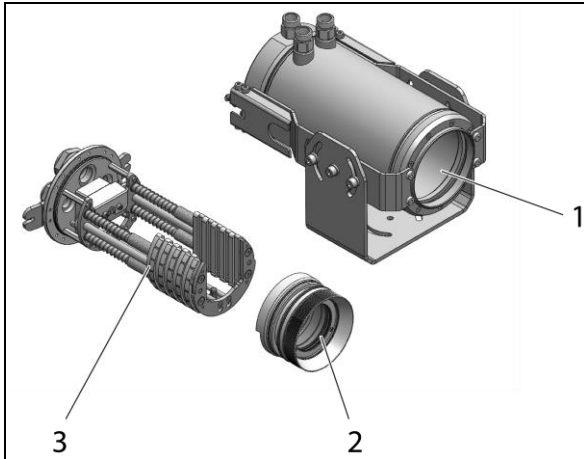


Figure 15: Cooling Jacket Advanced

- 1 Housing
- 2 Front part (or focusing unit)
- 3 Chassis

Installation of TIM camera

1. Mount the camera to the focusing unit or the front part as described in **Chapter 3.2.1** respectively **Chapter 3.2.2**.
2. Seat the focusing unit or front part in the chassis (**Figure 16**). Position it as shown in **Figure 17**, by pushing it to the bottom.

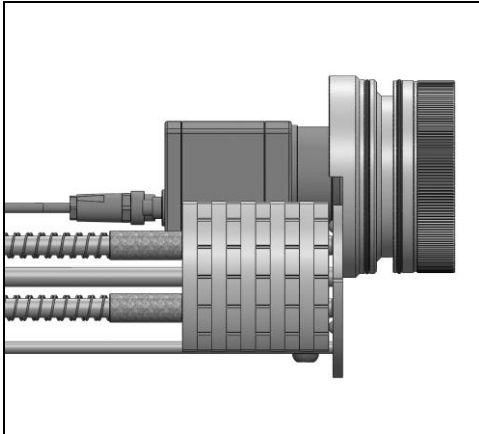


Figure 16: Inserting of the focusing unit

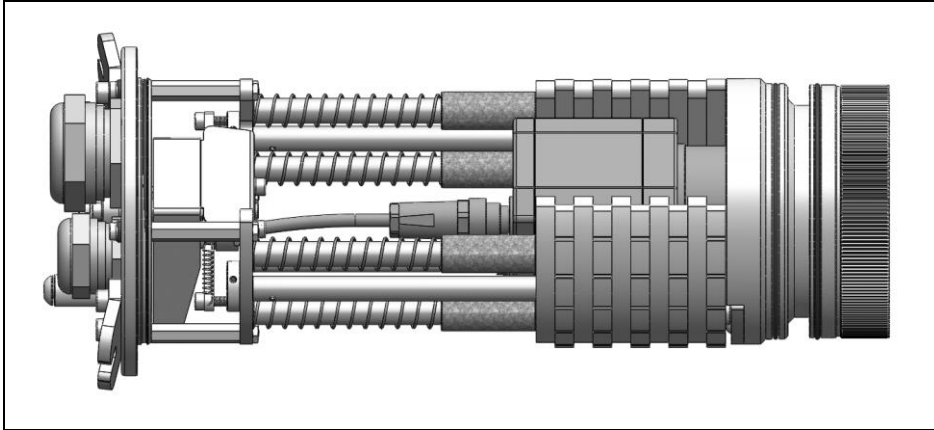


Figure 17: Focusing unit with camera

3. Fix the camera with the provided screw on the bottom of the chassis.

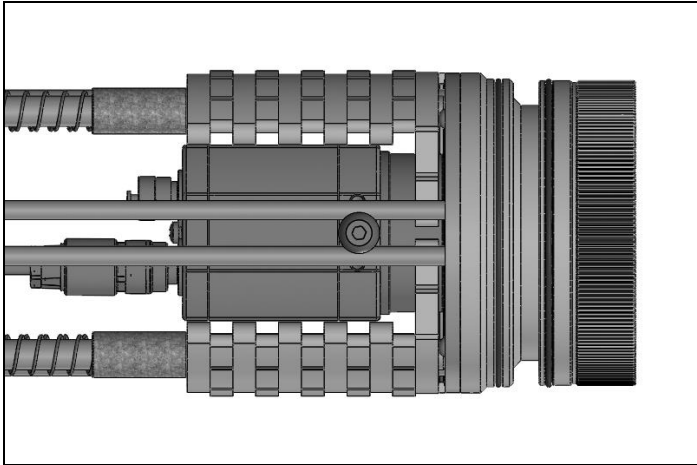


Figure 18: Mounting of the camera to the chassis

4. Then connect the TIM camera with the provided USB cable and lead it out of the cable gland.
5. Slide the chassis with the camera in the housing. Put the pins of the hinges to the slits of the chassis and lock the hinge by pushing it forward (**Figure 19**).

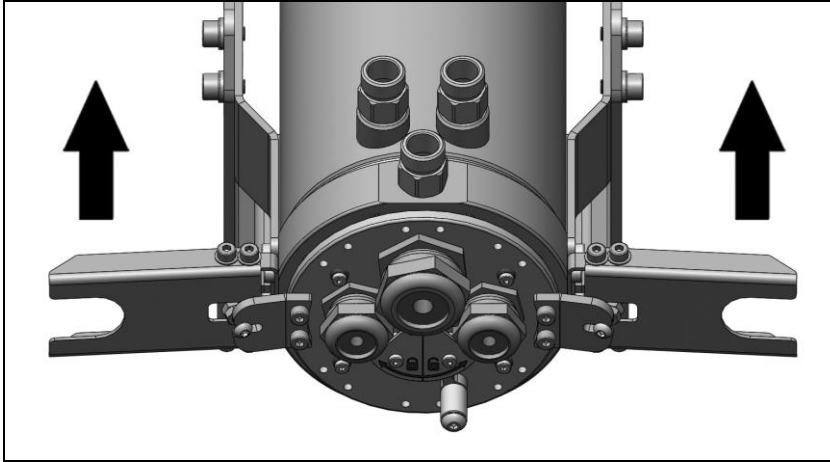

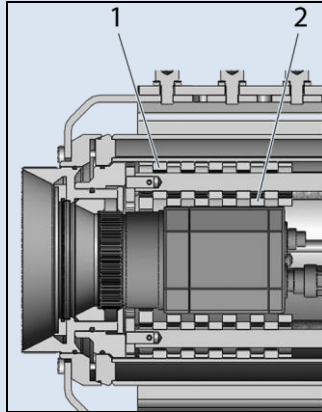


Figure 19: Locking of the hinge

6. Move the locking lever to the left (symbol: ) , so that the chassis is fitted close to the inner surface of the housing (**Figure 20**).



The alternate contact of the cooling jaws with the camera/ infrared thermometer and inner housing generates an optimal cooling effect.



- 1 Contact of the cooling jaws and inner housing
- 2 Contact of the cooling jaws and camera/ infrared thermometer

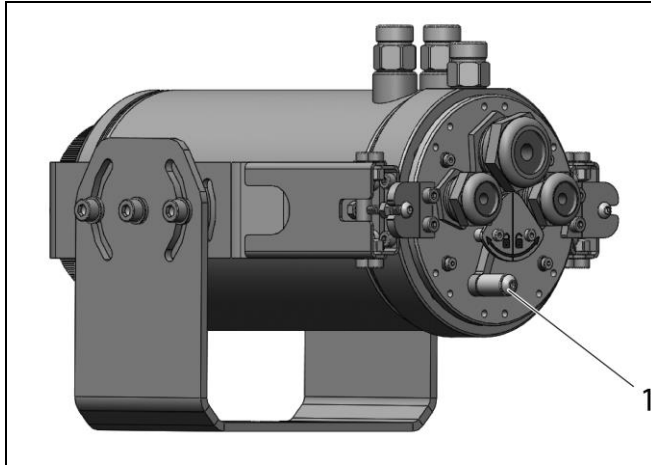


Figure 20: Back side of the Cooling Jacket with locking lever

1 Locking lever

7. Dismount in reverse order.

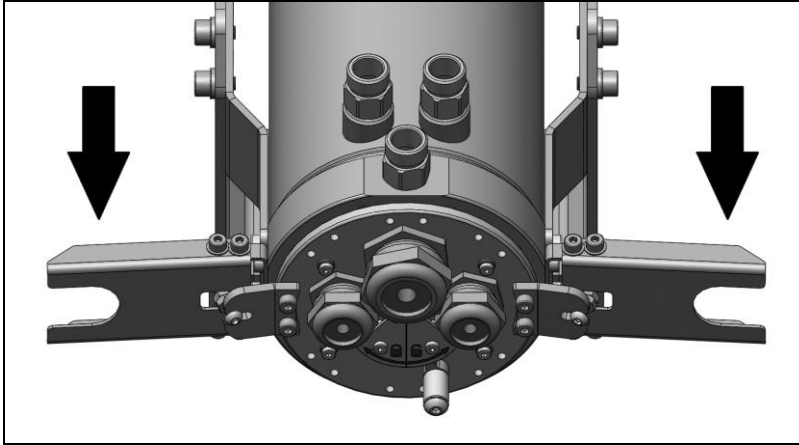


Figure 21: Unlocking of the hinge

Installation of video thermometer or infrared thermometer

1. Screw the infrared thermometer in the thread (M48x1.5) of the front part (see **Figure 14**) and seat the front part in the chassis (**Figure 22**).

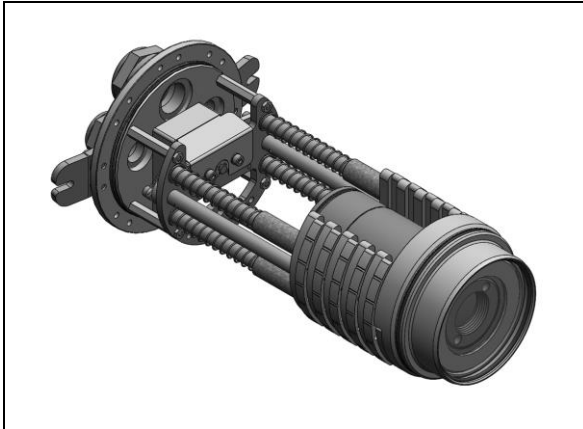


Figure 22: Front part with infrared thermometer

2. Lead the sensor cable out of the cable gland.

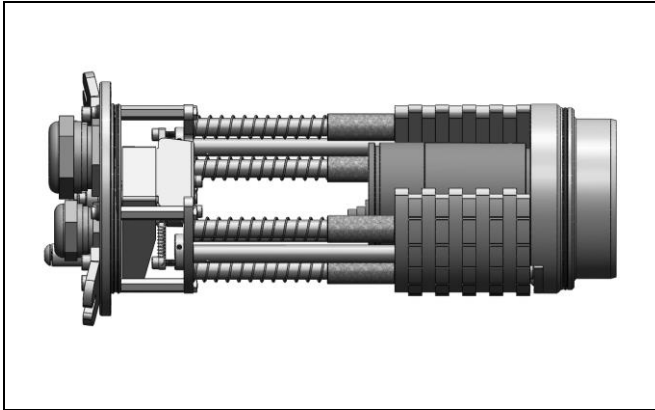



Figure 23: Infrared thermometer mounted

3. Slide the chassis with the camera in the housing. Put the pins of the hinges to the slits of the chassis and lock the hinge by pushing in forward (**Figure 19**).
4. Move the locking lever to the left (symbol: ) , so that the chassis is fitted close to the inner surface of the housing (**Figure 20**)
5. Dismount in reverse order (**Figure 21**).

3.2.4 Assembling to the Cooling Jacket Advanced Extended

The extended version of the Cooling Jacket Advanced provides an installation of the TIM series together with the TIM NetBox and an Industrial PIF or with the USB server Gigabit and an Industrial PIF.

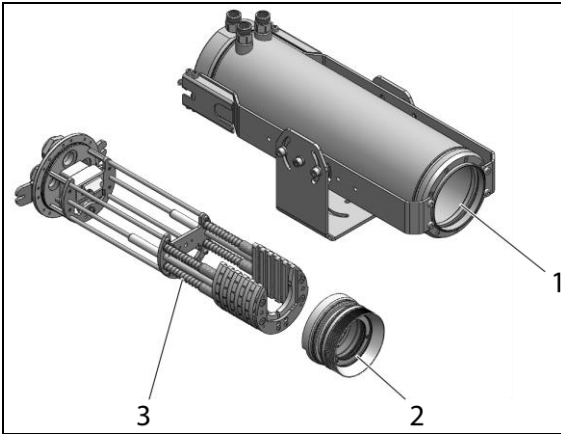


Figure 24: Cooling Jacket Advanced, extended version

- 1 Housing
- 2 Focusing unit
- 3 Chassis

Installation of TIM camera

Steps 1-3, see page 33.

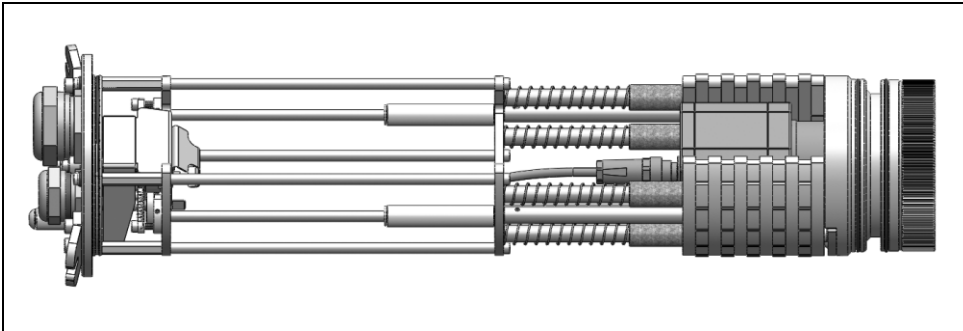


Figure 25: Camera implemented (extended version)

Assembling of TIM NetBox and Industrial PIF

4. Mount the holding plate (screws M3x5). Then attach the two support rods complete with the distance bolts (SW 5,5x6 - M3x6) with the provided screws (M3x10) to the bottom of the chassis. At last mount the shaft to fix the TIM NetBox (**Figure 26**).

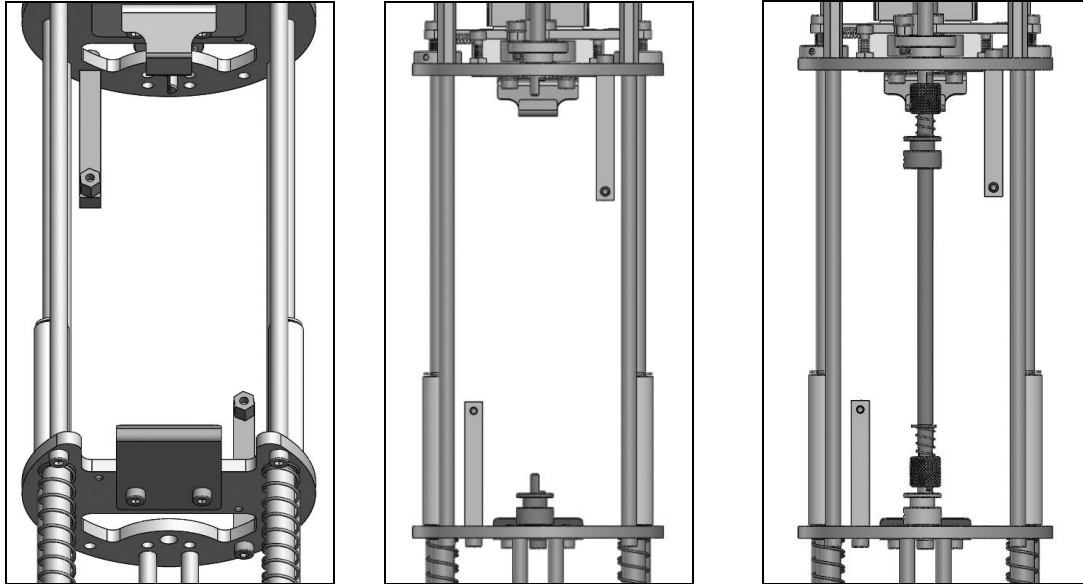


Figure 26 (a-c): Mounting of the accessories for TIM NetBox: **a)** Holding plate for TIM NetBox (top view), **b)** Support rods for Industrial PIF (view from the bottom), **c)** Shaft to fix the TIM NetBox (view from the bottom)

5. Fix the Industrial PIF with the screws (M3x5) as shown in **Figure 27**.

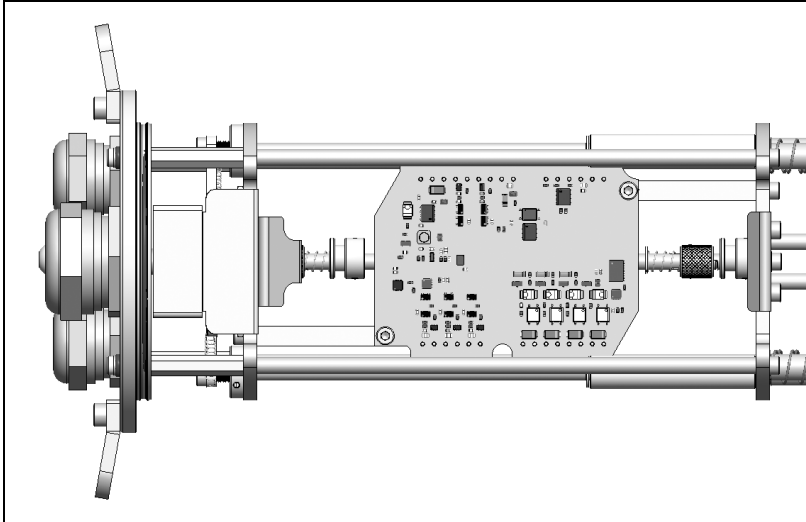


Figure 27: Mounting of the Industrial PIF (top view)

6. To mount the TIM NetBox to the chassis screw it to the fastening rail (screws M4x8).

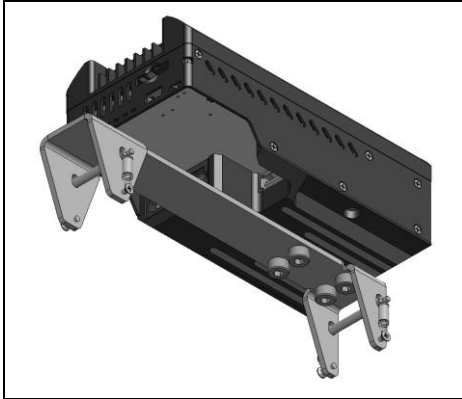


Figure 28: TIM NetBox with fastening rail

At first push the fastening rail with the TIM NetBox into the left notch (1) of the shaft. Afterwards into the right notch (1) (**Figure 29**) until it is engaged (**Figure 30**).



By locking the chassis the shaft pushes the TIM NetBox to the inner surface of the housing. This guarantees an optimal cooling of the TIM NetBox.

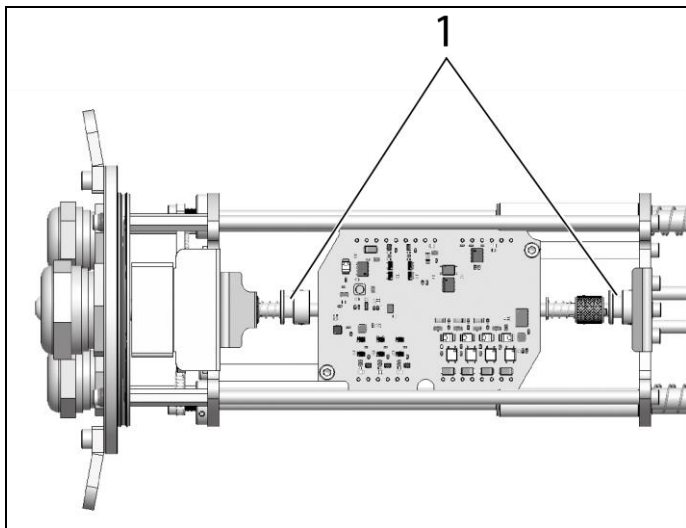


Figure 29: Notch to fix the TIM NetBox (top view)

1 Notch

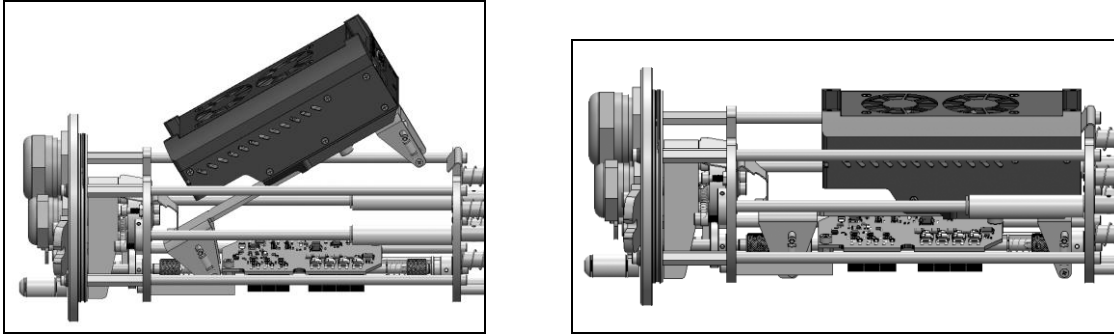


Figure 30: Fitting the TIM NetBox into the chassis (right hand view)

7. Then connect the TIM camera and the TIM NetBox with the provided USB cable and the Industrial PIF with the camera. Combine the network connector and the TIM NetBox (**Figure 31**).

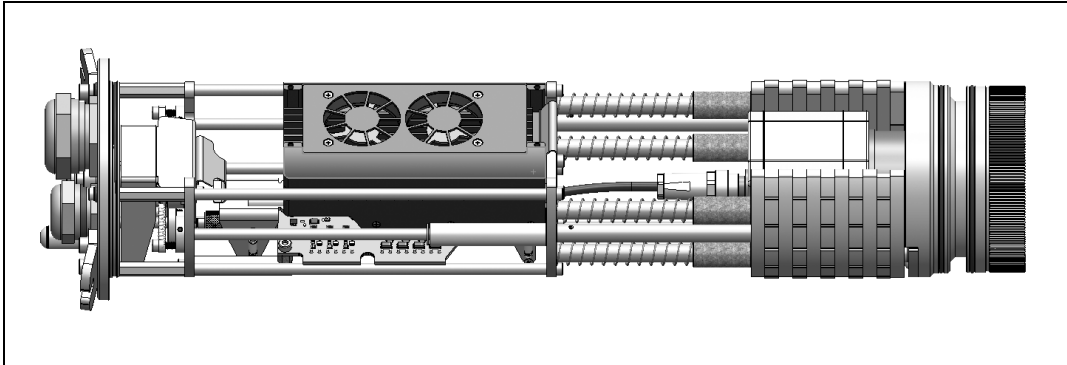


Figure 31: Chassis with TIM camera, Industrial PIF and TIM NetBox

Follow as step 5, **page 35**.

Assembling of USB server Gigabit and Industrial PIF

4. Mount the DIN rail plate with the screws (M3x5) to fix the USB server Gigabit. Then attach the support rods with the provided screws (M3x10) to one side of the chassis; use the distance ring on the left (**Figure 32**).

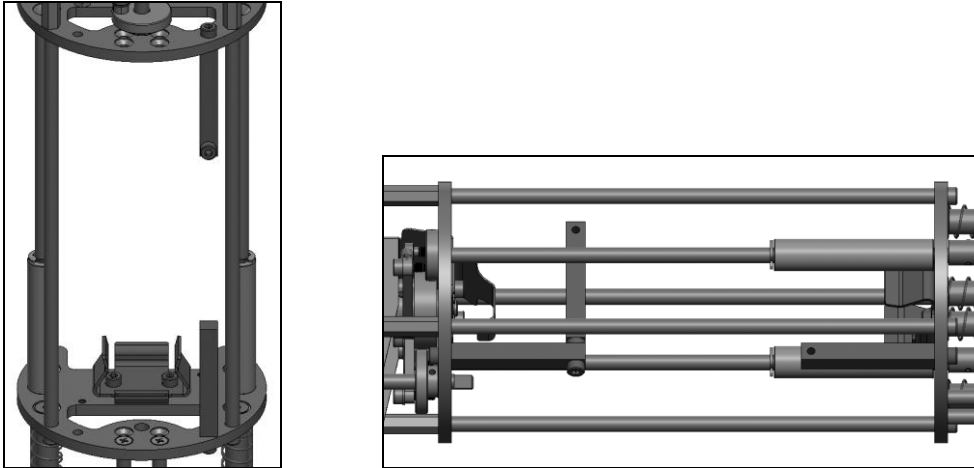


Figure 32 (a + b): Mounting of the accessories for USB server Gigabit: **a)** DIN rail plate for USB server Gigabit (view from the bottom), **b)** Support rods for Industrial PIF (right hand view)

5. Fix the Industrial PIF with the screws (M3x5) as shown in **Figure 33**.

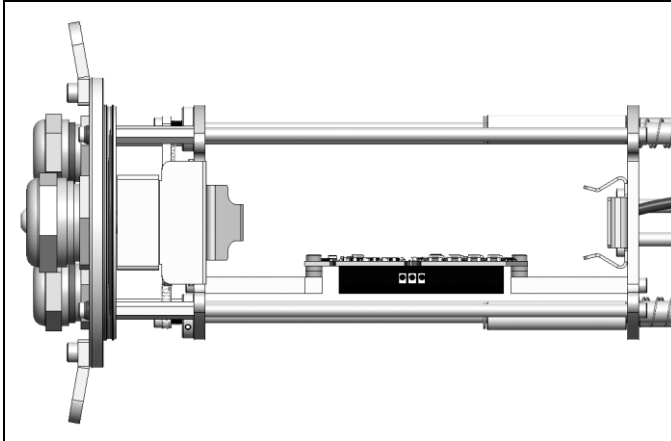


Figure 33: Mounting of the Industrial PIF (top view)

6. Engage the USB server Gigabit to the DIN rail plate (**Figure 34**).

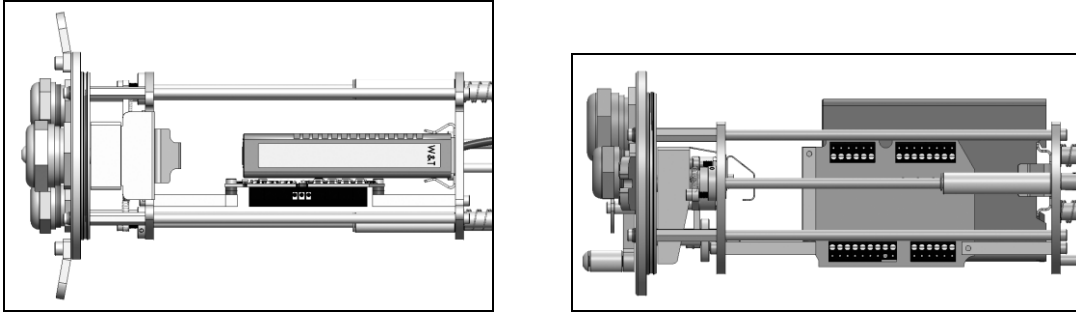


Figure 34 (a + b): Fitting the USB server Gigabit into the chassis (top view and right hand view)

7. Then connect the TIM camera and the USB server Gigabit with the provided USB cable and the Industrial PIF with the camera. Combine the network connector and the USB server Gigabit (**Figure 35**).

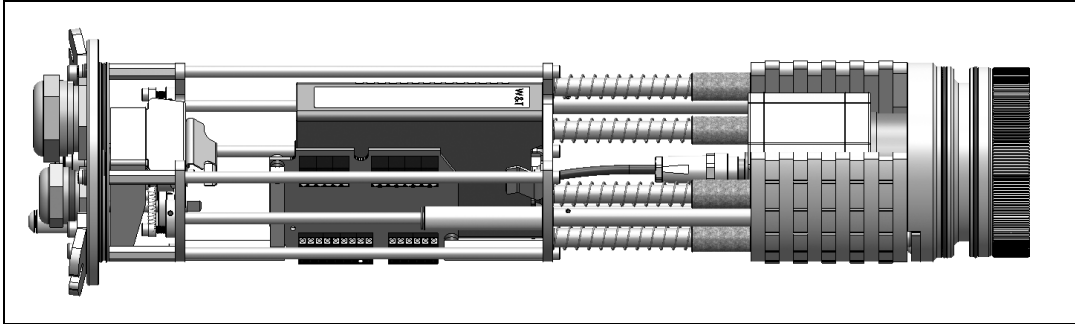
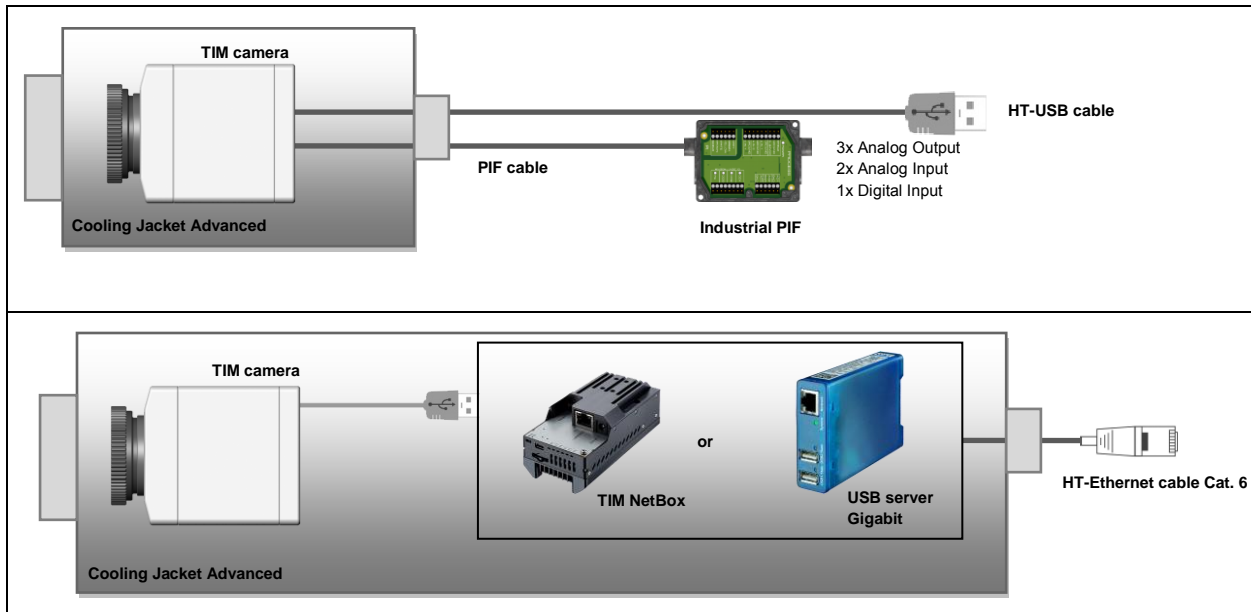
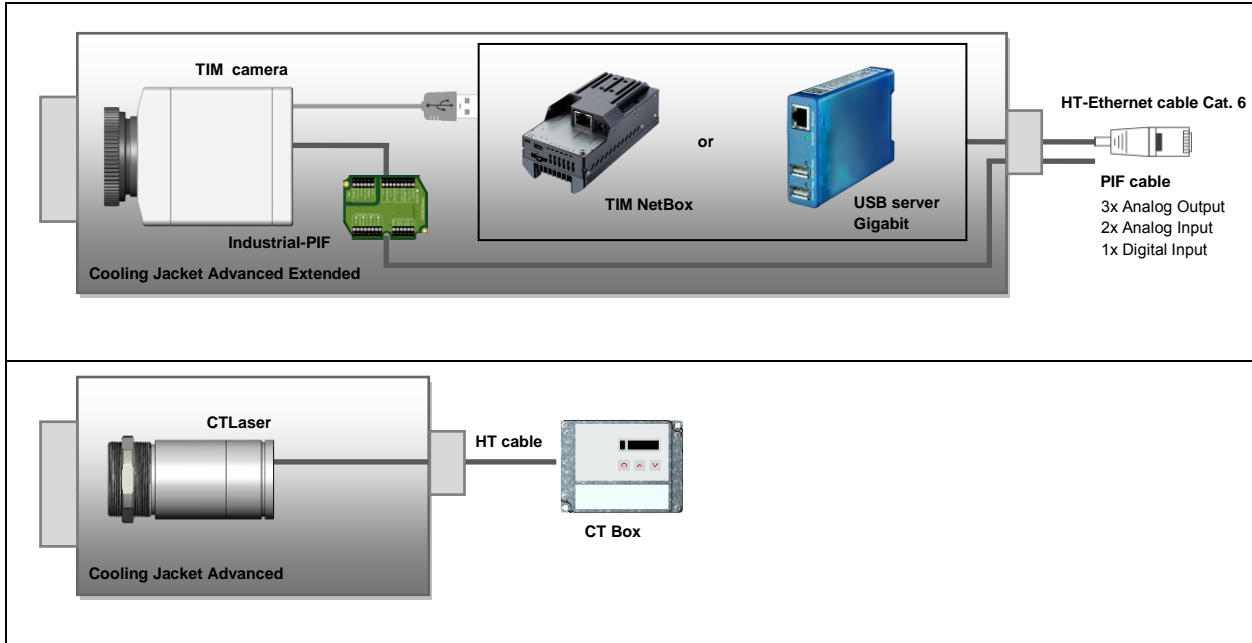


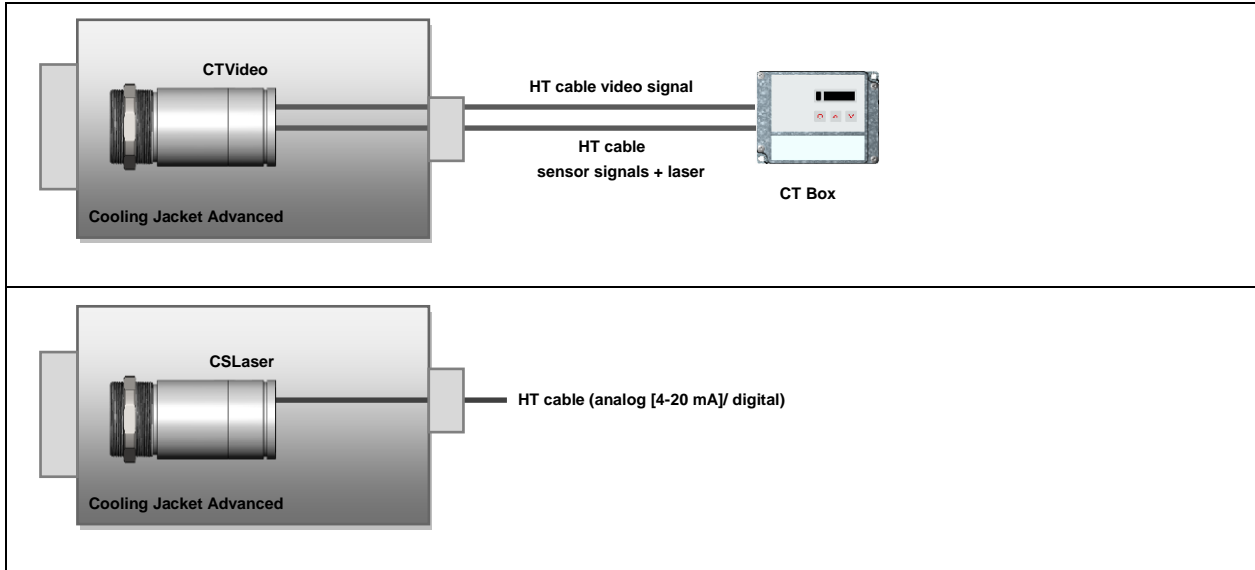
Figure 35: Chassis with TIM camera, Industrial PIF and USB server Gigabit

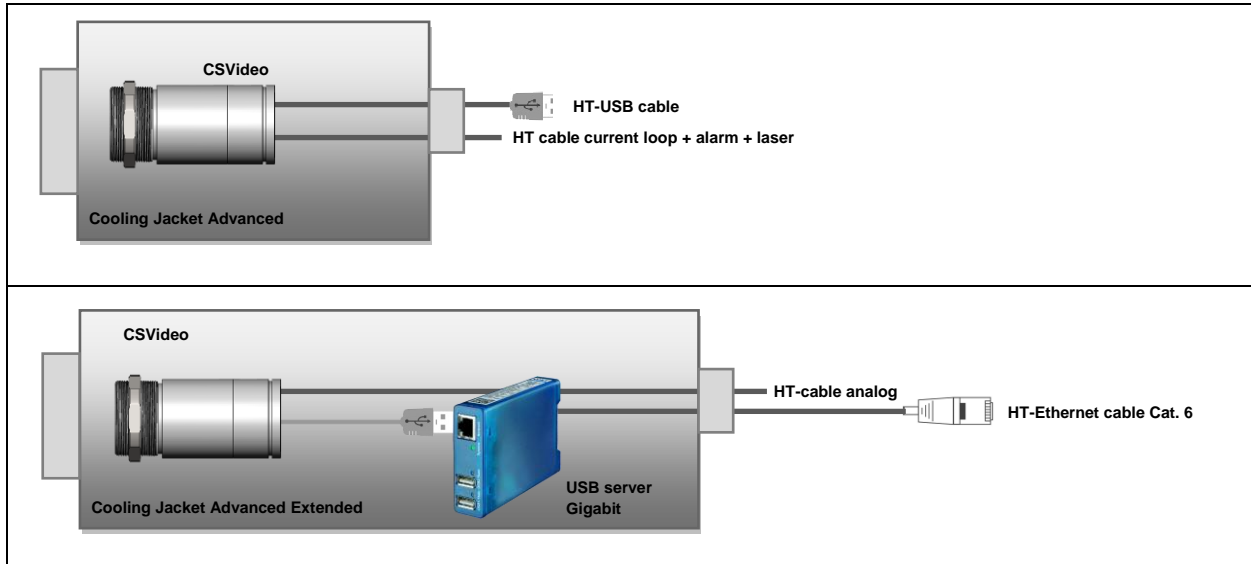
Follow as step 5, **page 35**.

4 Example of Installation









*All high temperature cables are available for temperatures up to 180 °C/ 250 °C:

- IR video thermometer and IR thermometer: 3 m, 8 m, 15 m
- HT-Ethernet cable Cat.6: 10 m und 20 m
- HT-USB cable: 5 m, 10 m



MICRO-EPSILON MESSTECHNIK GmbH & Co. KG
Königbacher Str. 15 · 94496 Ortenburg / Germany
Tel. +49 (0) 8542 / 168-0 · Fax +49 (0) 8542 / 168-90
info@micro-epsilon.de · www.micro-epsilon.com

X9751341-A011045HDR
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