optris
infrared measurements

Operator's Manual

optris® Outdoor protective housing

for PI/Xi camera, CSlaser LT, CTlaser LT, USB server and industrial PIF

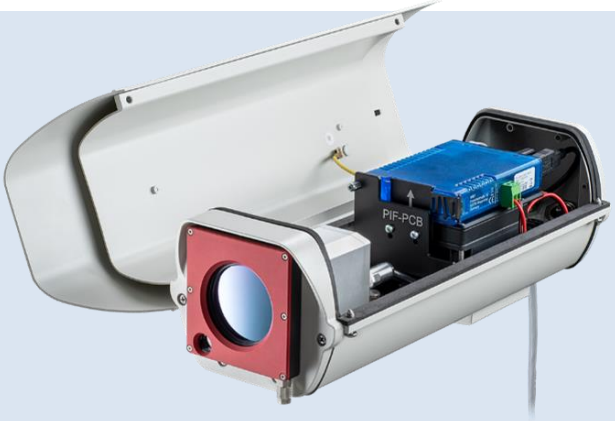

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Table of Contents

Table of Contents 3

1 General Information 5

1.1 Description 5

1.2 Warranty 6

1.3 Scope of Supply 6

2 Technical Data 7

2.1 General Specifications 7

2.2 Dimensions 8

2.3 Electrical Connections 10

2.4 Air Purge Laminar 10

2.5 Protective window 11

3 Installation 12

3.1 Electrical installation (w/o visible camera) [hier Variante A] 12

3.2 Installation (with visible camera) [hier Variante B] 14
3.3 Mounting of the USB server 14
3.4 Mounting of the PI camera 16
3.5 Mounting of the Xi camera 20
3.6 Mounting of CSlaser/CTlaser 21
4 Accessoires 23
4.1 Industrial Process Interface (PIF) 23
4.2 Wall mount 24
5 Replacement of protective foil / protective window 25
5.1 Disassembling air purge laminar 25
5.2 Removing and inserting the protective foil 27
5.3 Cut the protective foil 29
5.4 Assembly protective window 31
Appendix A - Declaration of Conformity 32

1 General Information

1.1 Description

Thank you for choosing the **optris® Outdoor protective housing**.
The outdoor protective housing is an ideal complement for the PI/Xi camera, CSlaser LT, CTlaser LT and the USB server for applications with additional influences of different kinds. It protects the devices among things like dirt, dust, and moisture. The outdoor protective housing can be used for any PI camera (lenses up to 90° FOV) and for CSlaser LT and CTlaser LT. The integrated heating and the blower result in an extended operating temperature. An optional visual camera is also available and can be also integrated to your process.

- Avoid abrupt changes of the ambient temperature.
- Avoid mechanical violence – this may destroy the system (expiry of warranty).
- If you have any problems or questions, please contact our service department.

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.

1.2 Warranty

Each single product passes through a quality process. Nevertheless, if failures occur please contact the customer service at once. The warranty period covers 24 months starting on the delivery date. After the warranty is expired the manufacturer guarantees additional 6 months warranty for all repaired or substituted product components. Warranty does not apply to damages, which result from misuse or neglect. The manufacturer is not liable for consequential damage or in case of a non-intended use of the product.
If a failure occurs during the warranty period the product will be replaced, calibrated or repaired without further charges. The freight costs will be paid by the sender. The manufacturer reserves the right to exchange components of the product instead of repairing it. If the failure results from misuse or neglect the user has to pay for the repair. In that case you may ask for a cost estimate beforehand.

1.3 Scope of Supply

- Protection housing with integrated heating incl. protection window or foil window and air purge laminar
- Optional: visual camera with installation description
- Operators manual

2 Technical Data

2.1 General Specifications

Temperature range	-40 °C … +50 °C (extended version up to +60°C)[1)]
Heating	PTC heater (automatically starting at T < 15 °C) / fan for homogeneous temperature distribution [2)]
Power supply	24 V DC
Power	70 W
Current draw	3 A (short term: 6 A)
Protective window [3)]	Germanium (Ge), zinc sulfide (ZnS), Borofloat or foil
Environmental rating	IP66
Air purge laminar	Integrated
Air pressure	Absolute pressure 1,1 - 8 bar at 20 -100 l/min
Max. FOV	90 ° (HFOV)
Integrated additional components	USB-Server Gigabit / Industrial Process interface (PIF)
Material	Aluminum
Weight	2 kg (with wall mount 2,5 kg)

[1)] The extended temperature range can only be combined with PI450i at 27Hz mode and USB-server HT
[2)] The fan is switched parallel to the heater. When the heater starts, the fan will also run.
[3)] The protection window for the Xi version is optionally available

2.2 Dimensions

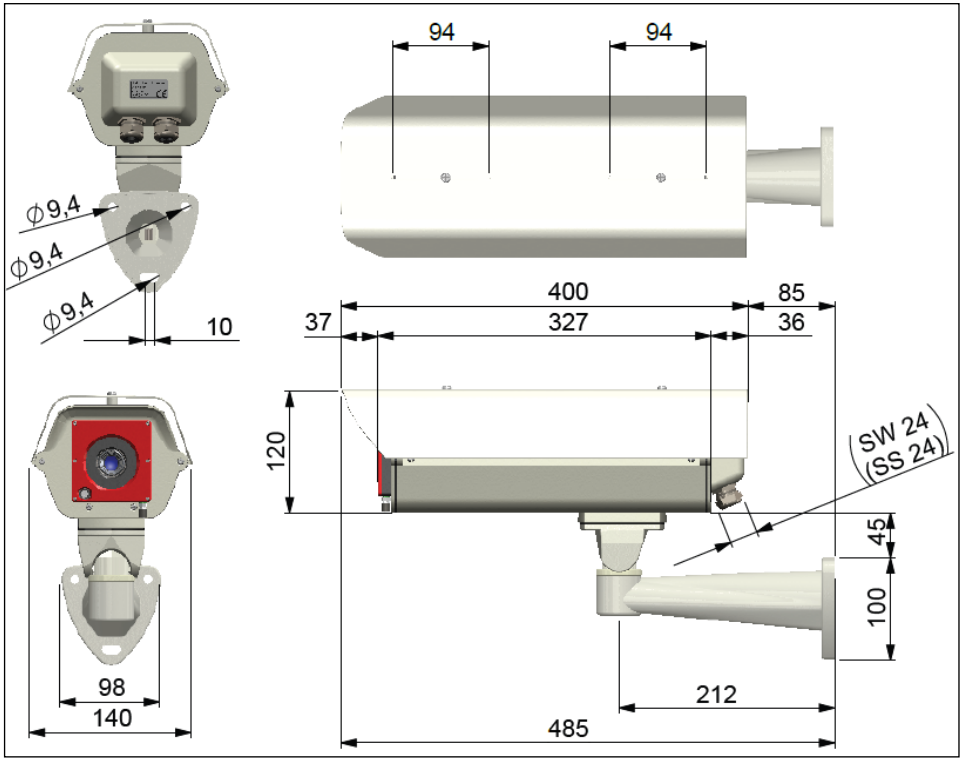

Figure 1: Dimensions [mm] with wall mount

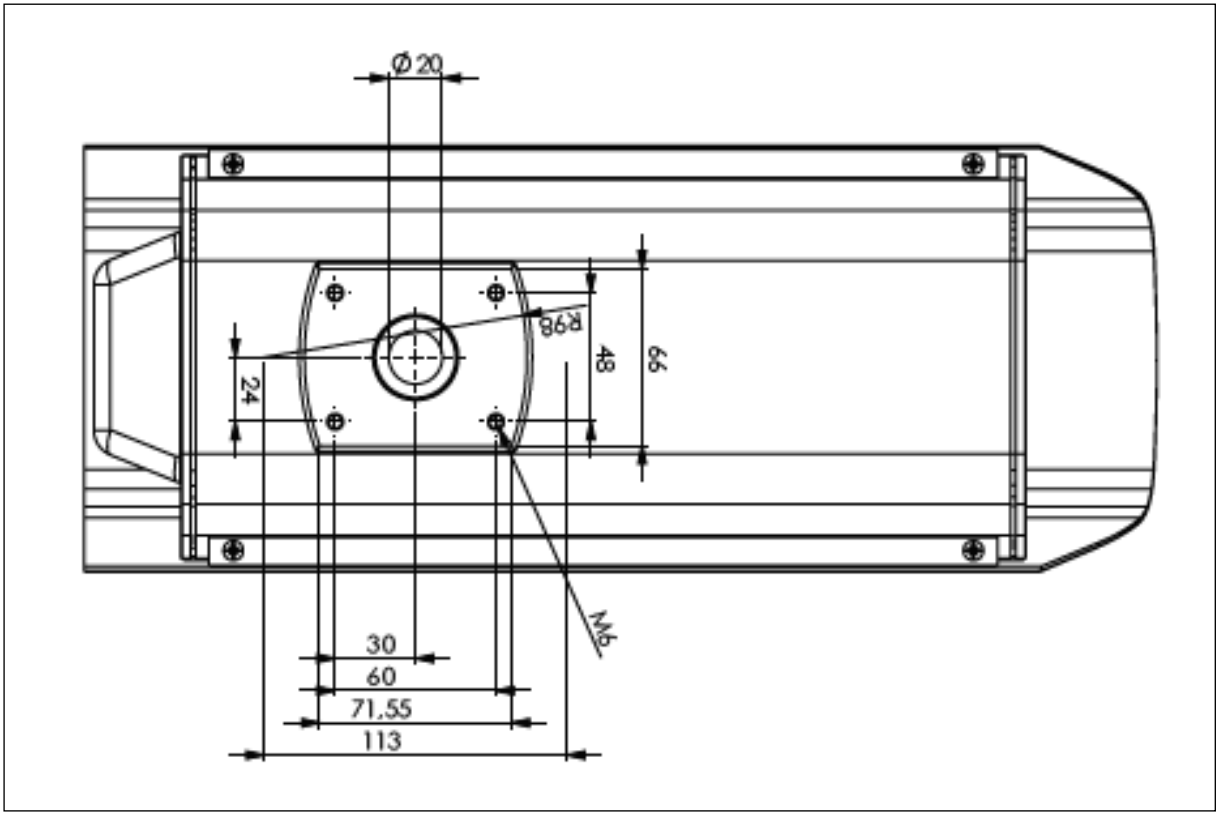

Figure 2: Dimensions for wall mount

2.3 Electrical Connections

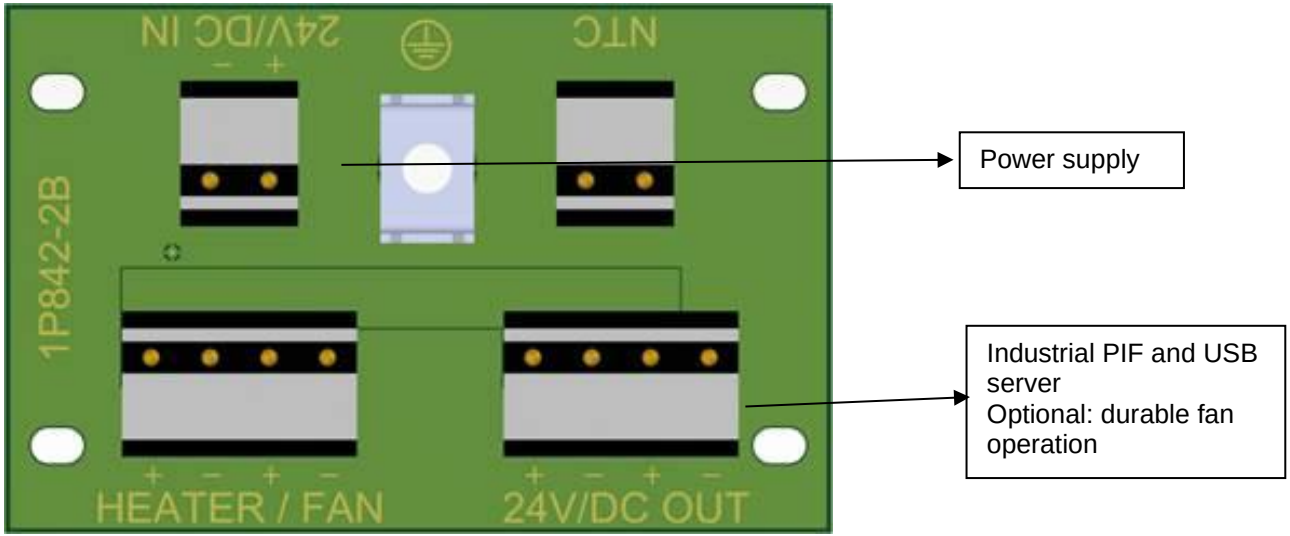

Figure 3: Connection circuit board

At ambient temperatures of > 40° C it is recommended to operate the fan permanently. For this purpose, the terminals of the fan are connected to the terminal strip 24V/DC OUT.

2.4 Air Purge Laminar

The lens must be always kept clean from dust, smoke, fumes, and other contaminants in order to avoid reading errors. These effects can be reduced by using an air purge laminar. Make sure to use oil-free, technically clean air only.

The needed amount of air (approx. 20...100 l/min.) depends on the application and the installation conditions on-site. Pipe connection of air purge laminar is 6x4 mm.

2.5 Protective window

Protective window	Description	Spectral range	Transmission [1]
Germanium	Protective window (50,8 x 3 mm/ Ge) for PI 450i G7, 640i G7	7,9 µm	0.96
	Protective window (50,8 x 3 mm/ Ge) for PI 400i, 450i, 640i	8-14 µm	0.92
Zinc sulfide	Protective window (50,8 x 3 mm/ ZnS) for PI 450i G7, 640i G7	7,9 µm	0.93
	Protective window (50,8 x 3 mm/ ZnS) for PI 400i, 450i, 640i	8-14 µm	0.91
	Protective window (50,8 x 3 mm/ ZnS) for LT models of CTlaser-, CSlaser serie	8-14 µm	0,91
Borofloat	Protective window (50,8 x 3 mm/ Borofloat 33) for PI 1M, 08M, 05M	0,85-1,1 µm, 780-820 nm, 500-540 nm	0.92

[1] The displayed values are standard values and can vary between different delivery units.

When using the foil **[part number: ACOPHSF]**, the transmission must be set on 0.85 (deviations possible).

3 Installation

3.1 Electrical installation (w/o visible camera)

Loosen the two screws and open the outdoor protective housing, as shown in **Figure 4**.

Figure 4: Opening the housing

Inside the protective housing is the electronic circuit board, where all loads are connected (see Fehler! Verweisquelle konnte nicht gefunden werden.). The heating element and the fan are already integrated and

connected. To supply the outdoor protective housing with voltage, you must connect a 24 V line. This is connected to the marked side of the board. Observe the correct polarity and ensure that no voltage is present. The USB server and the industrial PIF are connected to the board as shown and are supplied by 24 V.

To get the cables into the housing, you must loosen the two cable glands, as shown in **Figure 6**. On the left side is a cable gland with 8 mm sealing insert and on the right is a cable gland with two 6 mm sealing inserts. It is recommended to pull the Ethernet cable or the USB cable through the 8 mm sealing insert. The PIF cable and the 24 V cable are passed through the two 6 mm sealing inserts.

Figure 5: Cable glands on the backside of the outdoor protective housing

Cable gland 1	**Cable gland 2**
1 x 8 mm sealing insert	2 x 6 mm sealing insert
For Ethernet or USB cable	For PIF cable and 24 V line

To get the Ethernet cable with a plug through the opening, you have to cut the rubber insert.

3.2 Installation (with visible camera) [hier Variante B]

Connect the network cable to a PoE

3.3 Mounting of the USB server

Insert the USB server at a slanted angle to the designated disk (**Figure 6**). If necessary, remove the clip from the USB server (**Figure 7**) and turn the USB server (**Figure 6**) until the clip is locked into the bracket (**Figure 8**).

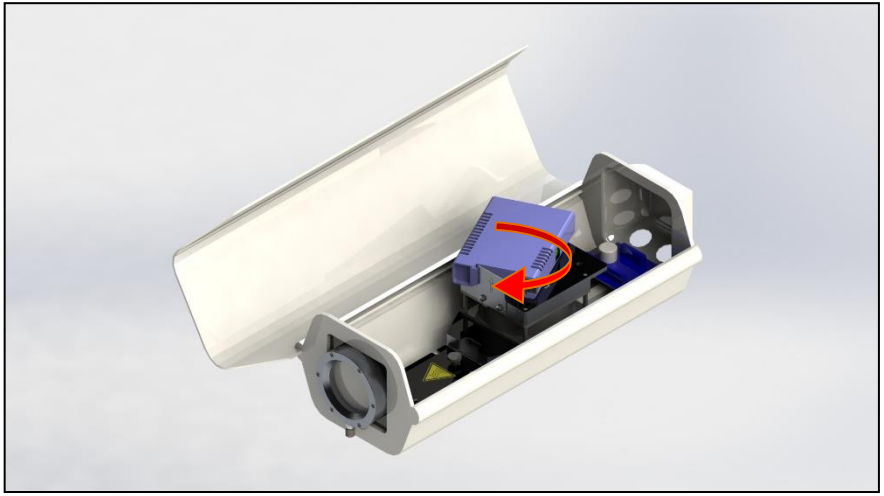

Figure 6: Insertion of the USB server into the provided board

Figure 7: USB server clip

Figure 8: USB server holding plate

The USB server is now ready mounted (**Figure 9**):

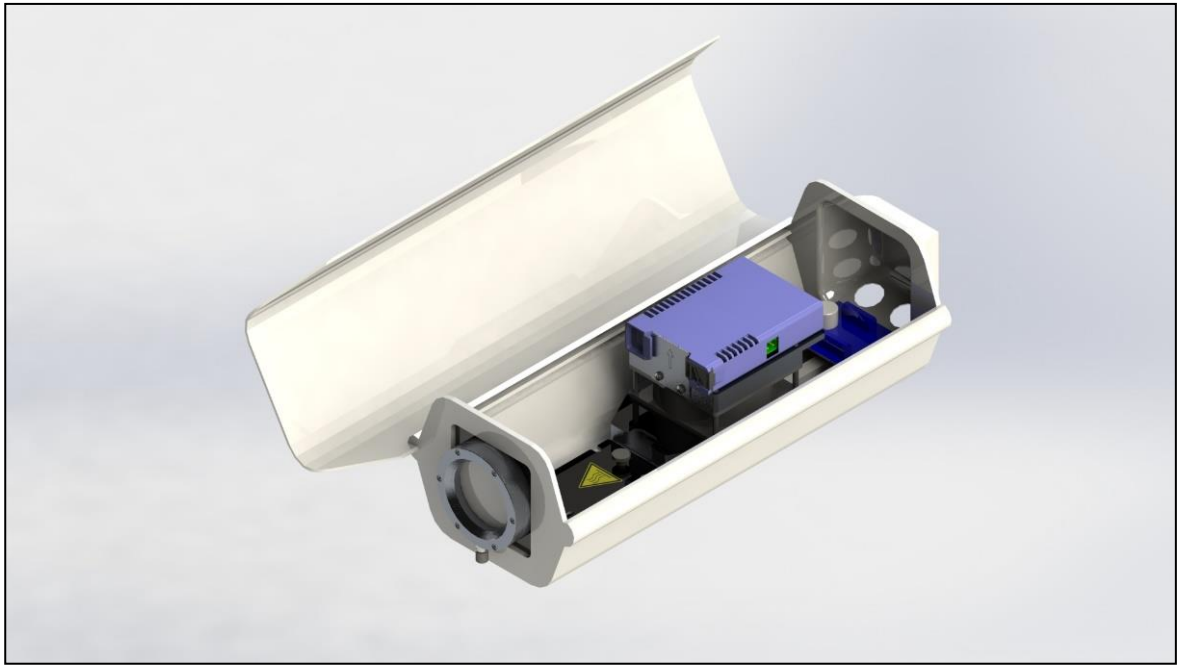

Figure 9: USB server ready mounted

3.4 Mounting of the PI camera

Step 1: Loosen the knurled screw from the mounting plate (**Figure 10**).

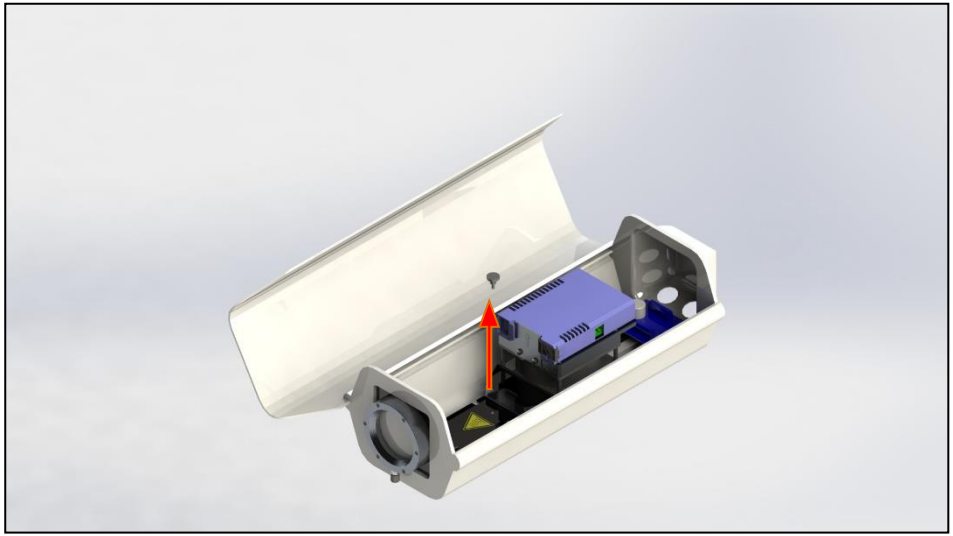

Figure 10: Loosen the knurled screw from mounting plate

Step 2: Carefully remove the mounting plate (**Figure 11**).

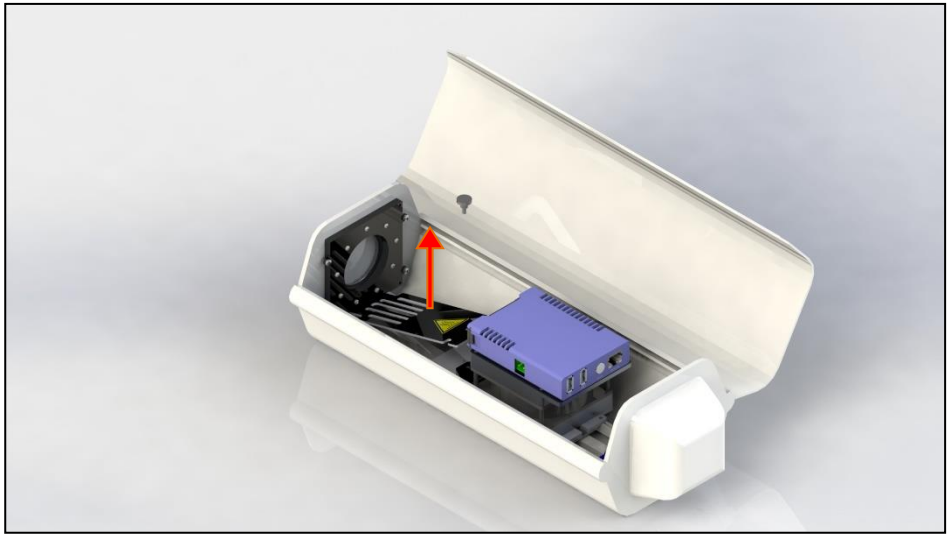

Figure 11: Remove the mounting plate

Step 3: Mounting the PI cameras

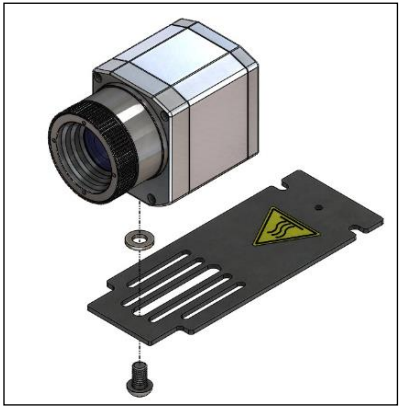

Figure 12: PI 400i/ 450i/ 640i/ 1M/ 08M/ 05M attachment

Mount the PI 400i/ 450i/ 640i/ 1M/ 08M/ 05M to the mounting plate using the supplied 1/4 x 3/8 UNC inch screw and a washer DIN125A-6,4 A2 (**Figure 12**).

After the camera is fully assembled, the mounting plate can be attached back to the outdoor protective housing with the provided screw.

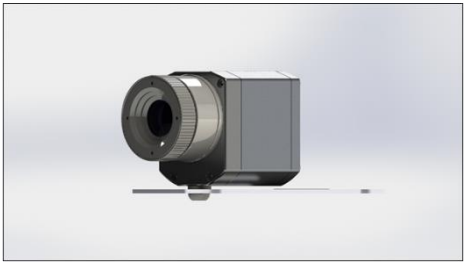

Figure 13: Fully assembled PI camera on mounting plate

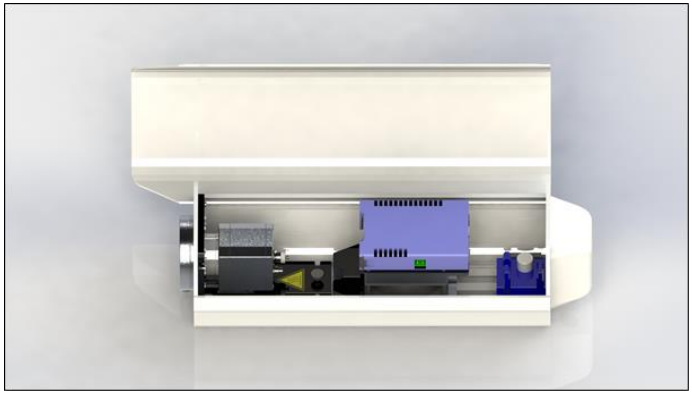

Figure 14: Fully assembled PI camera in outdoor protective housing

3.5 Mounting of the Xi camera

Loosen the mounting nut and mounting bracket from the Xi camera. Now screw the camera into the provided adapter plate. For an exact positioning of the camera, the camera can also be attached by turning the clamping ring.

Figure 15: Xi camera mounted in adapter plate

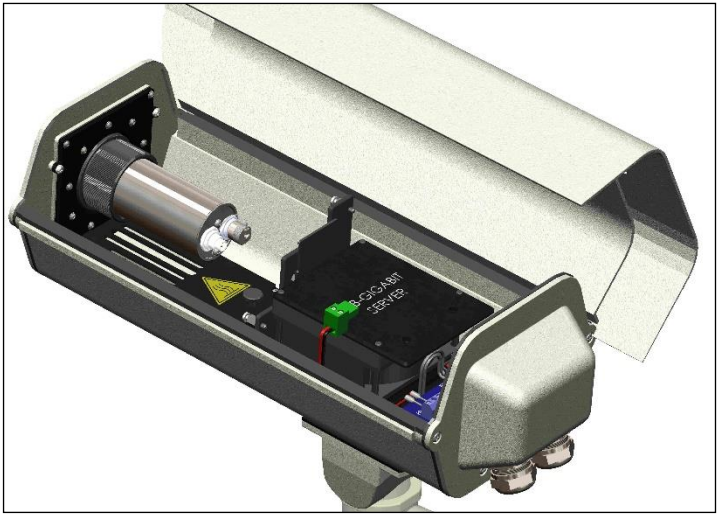

Figure 16: Fully assembled Xi camera in outdoor protective housing

3.6 Mounting of CSlaser/CTlaser

Follow steps 1 and 2 as described in chapter **3.4**.

Mounting of CSlaser/CTlaser

Attach the device with the corresponding bracket. Mount the CSlaser or CTlaser to the mounting plate using the supplied 1/4 x 3/8 UNC inch screw and a washer DIN125A-6,4 A2 (**Figure 17**).

- Note that the connector is facing outward to allow you to connect the cable.
- The electronics box of the CTlaser must be installed outside the protective housing.

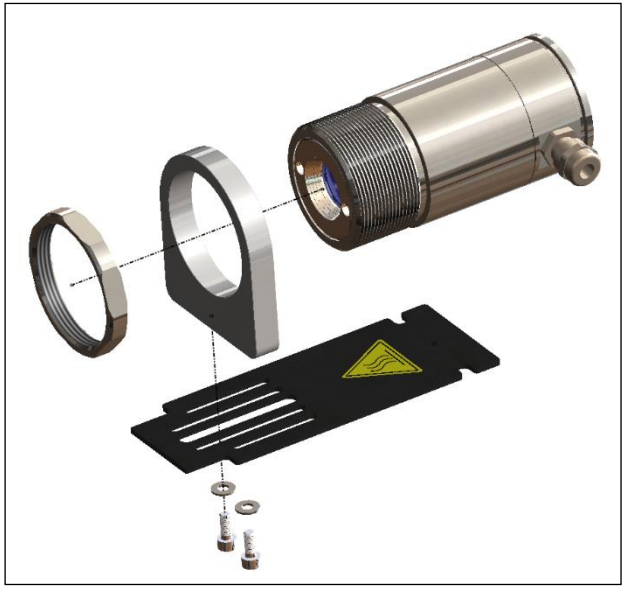

Figure 17: CSlaser/CTlaser attachment

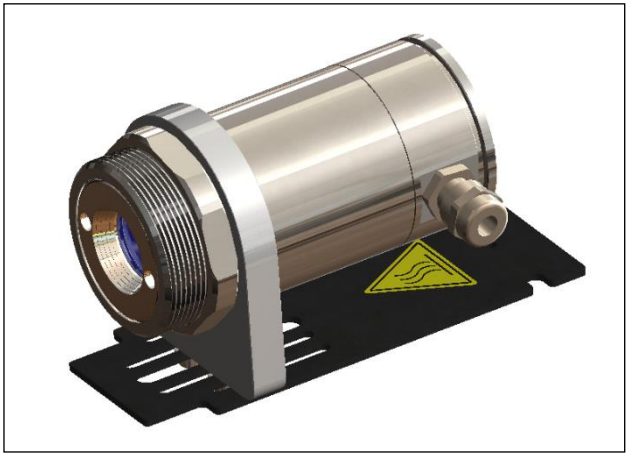

Figure 18: Mounted CSlaser or CTlaser on the mounting plate

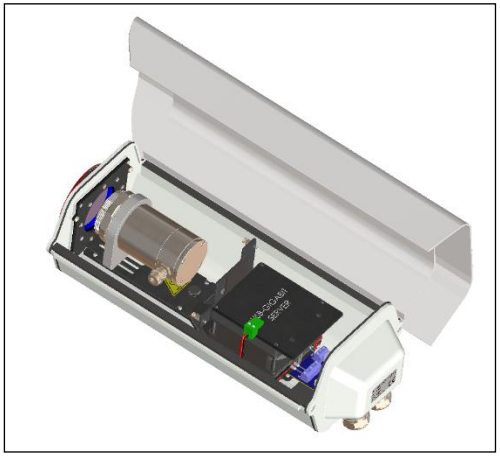

Figure 19: CSlaser or CTlaser in outdoor protective housing

4 Accessoires

4.1 Visual Camera

In addition to an infrared image, you can integrate a visual image into your process and see simultaneous two images, infrared with all the temperature information and visual image. This is an ideal combination for fire prevention and condition monitoring applications. The visual image has a resolution of maximum 1920 x 1080 pixels. We recommend using this combination with an USB server, in this case you can use the infrared camera and the visual camera just with one network cable, the system can be powered over ethernet. Both images can be integrated easily to your video surveillance software, e.g.: iSpy, or other.

4.2 Industrial Process Interface (PIF)

In addition to the installation of the camera and the USB server, the industrial PIF (without housing) can be integrated into the outdoor protective housing as shown in **Figure 20**. The industrial PIF without housing can be purchased under the order number **ACCJAPIPIFMA** (for PI series and Xi 400) or under **ACOPHXIPIF** (Xi 80/ 410).

Figure 20: Outdoor protective housing with industrial PIF

Before the industrial PIF is attached, the camera must be installed in the outdoor protective housing (see chapter **3.4 Mounting of the PI camera** or **3.5 Mounting of the Xi camera**).

4.3 Wall mount

The outdoor protective housing can be attached to a wall using a wall mount. This is available as an option under the part number **ACOPHWM**.

Figure 21: Outdoor protective housing with wall mount

The wall bracket is mandatory for a mounting of the protective housing!

5 Replacement of protective foil / protective window

If necessary, the protective foil of the outdoor protective housing can be replaced (only for **Part-Number: ACPIOPHF**). To change the protective foil a screwdriver and a scalpel is needed.

5.1 Disassembling air purge laminar

Step 1: Unscrew the 9 screws from the adapter plate using a screwdriver and remove them together with the washers.

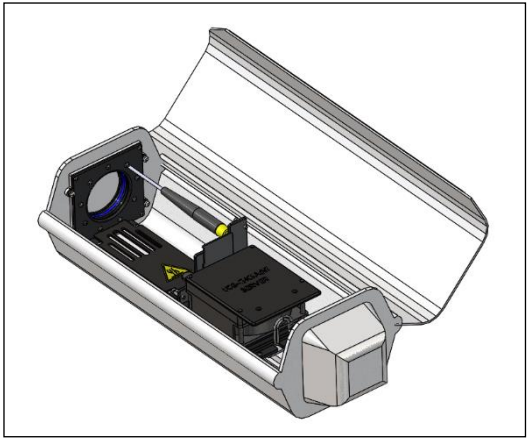

Figure 22: Unscrew the screws

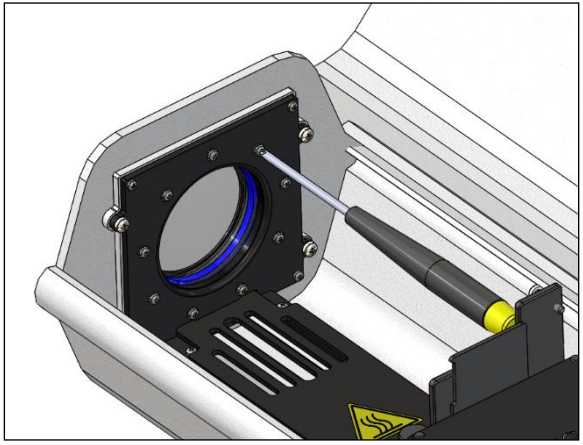

Figure 23: Loosen 9 screws from the adapter plate

Step 2: Gently remove the air purge laminar with O-ring 1.

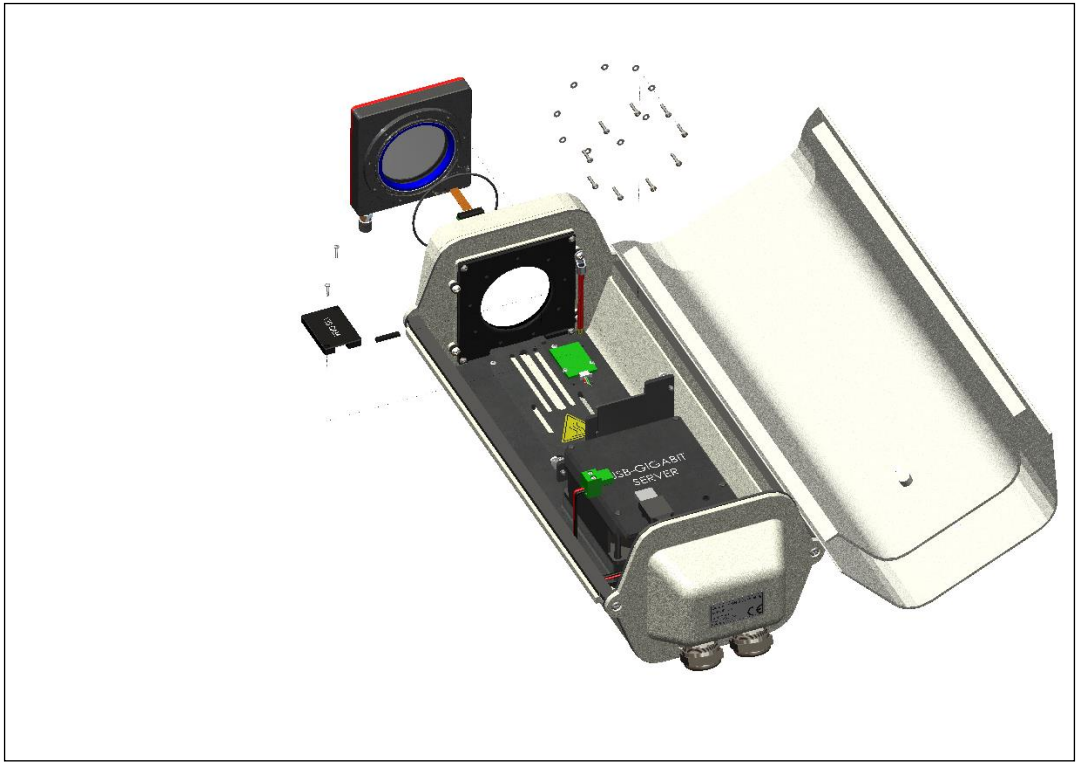

Figure 24: Remove air purge laminar

5.2 Removing and inserting the protective foil

Step 1: Remove the old protective foil by removing the tension ring attachment and the tension ring.

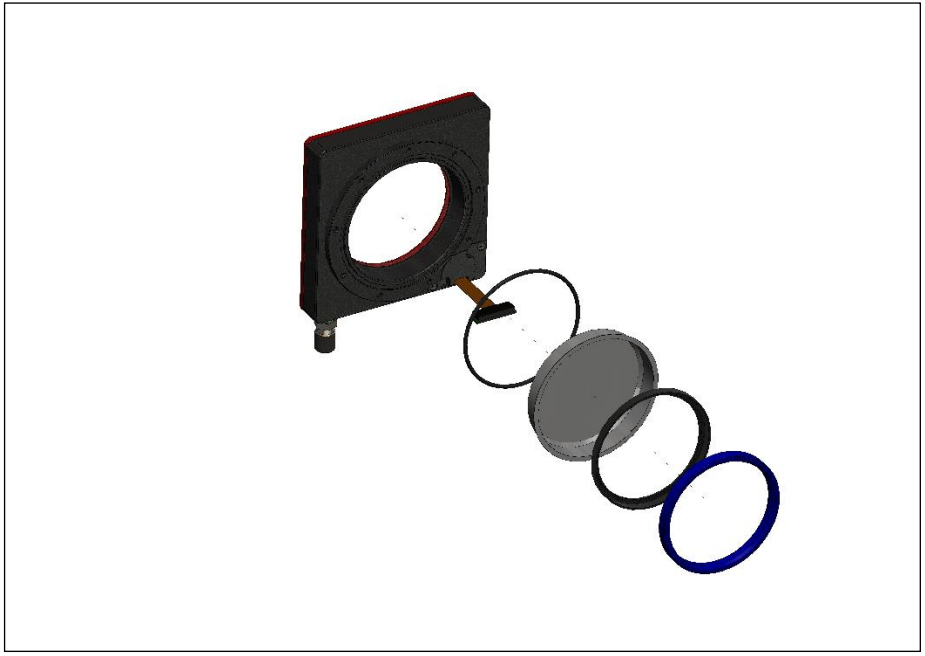

Figure 25: Remove old protective foil

Step 2: Replace the old protective foil with the new protective foil.

Step 3: Insert the O-ring 2 in the air purge laminar.

Step 4: Place the protective foil on the center of the air purge laminar and press it with the aid of the tension ring and the tension ring attachment until the tension ring attachment is level with the air purge laminar.

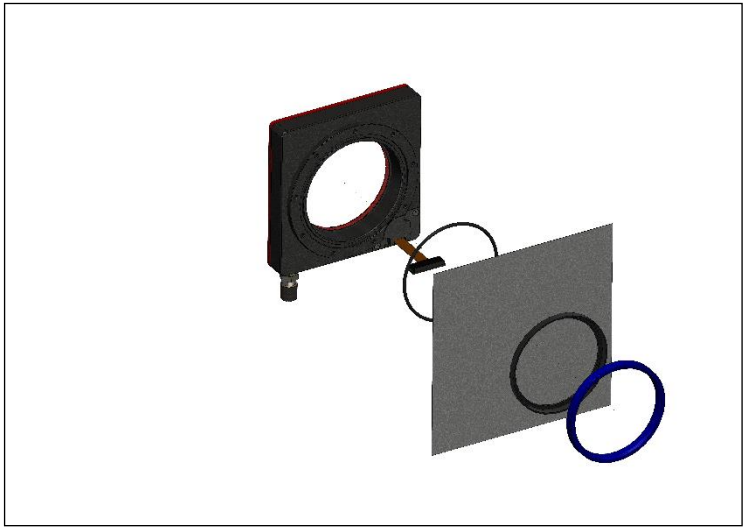

Figure 26: Insert new protective foil

5.3 Cut the protective foil

Step 1: Take a scalpel and cut along the inside of the nut.

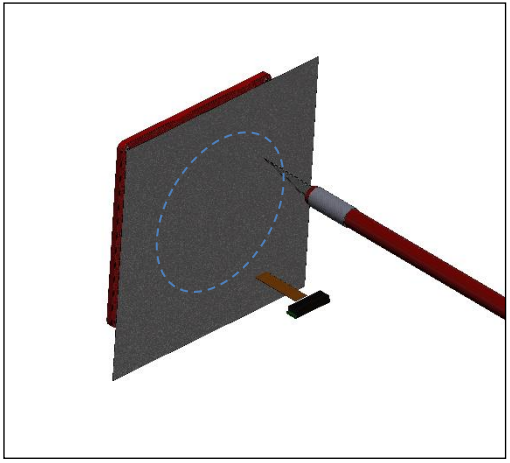

Figure 27: Cut the protective foil with the scalpel

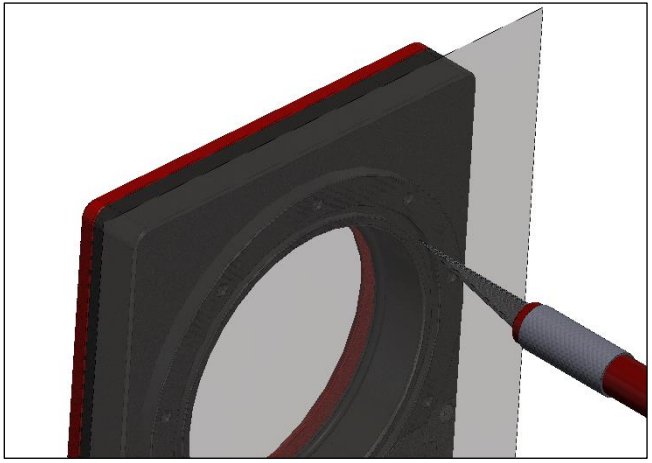

Figure 28: Cut the protective foil along the nut inner surface

Step 2: Insert the O-ring 1 into the nut of the air purge laminar and repeat the steps in chapter **5.1** reverse. Make sure that the air purge laminar is pressed against the adapter plate when you tighten the screws again!

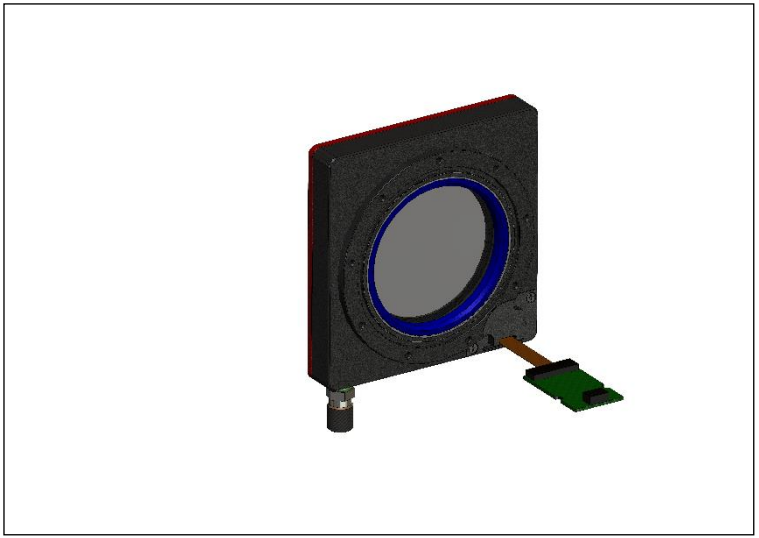

Figure 29: Air purge laminar

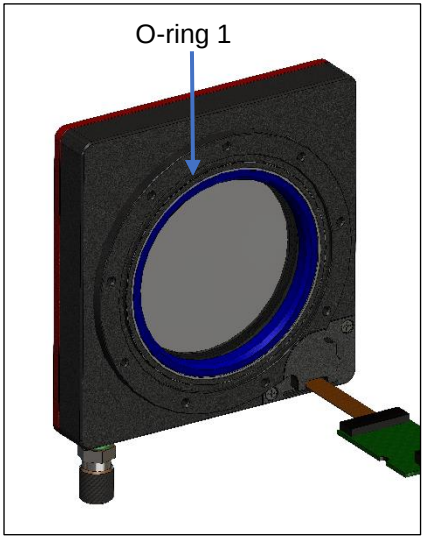

Figure 30: Insert O-ring 1 in air purge laminar

5.4 Assembly protective window

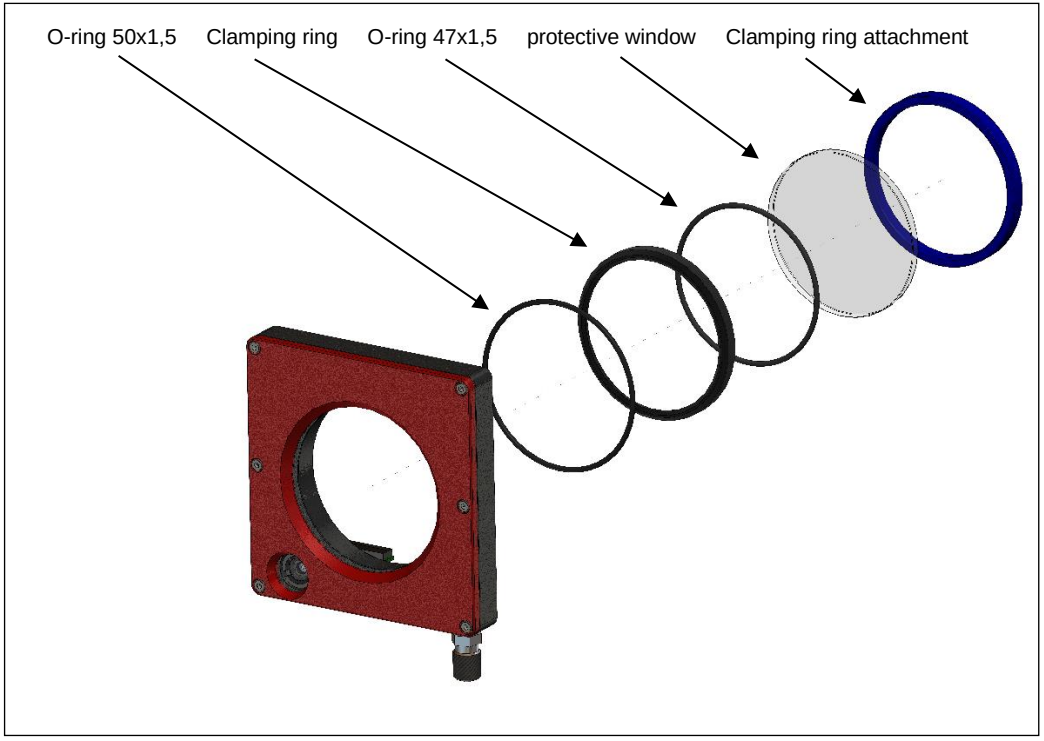

Figure 31: Assembly protective window

Appendix A - Declaration of Conformity

EG-Konformitätserklärung
EU Declaration of Conformity

optris infrared measurements

Wir / We

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D-13127 Berlin

erklären in alleiniger Verantwortung, dass
declare on our own responsibility that

die Produktserie optris Outdoor-Schutzgehäuse
the product group optris Outdoor protective housing

den Anforderungen der EMV-Richtlinie **2014/30/EU** und der Niederspannungsrichtlinie **2014/35/EU** entspricht.

meets the provisions of the EMC Directive **2014/30/EU** and the Low Voltage Directive **2014/35/EU**.

Angewandte harmonisierte Normen:
Applied harmonized standards:

EMV Anforderungen / EMC General Requirements:

EN 61326-1:2021 (Grundlegende Prüfanforderungen / Basic requirements)
EN 61326-2-3:2021

Gerätesicherheit von Messgeräten / Safety of measurement devices:

EN 61010-1:2010/A1:2019/AC:2019-04
EN 60825-1:2014 + AC:2017 + A11:2021 + A11:2021/AC:2022 (Lasersicherheit / Laser safety)

Beschränkung gefährlicher Stoffe / Restriction of hazardous substances:

EN IEC 63000:2018

Dieses Produkt erfüllt die Vorschriften der Richtlinie **2015/863/EU** (RoHS) des Europäischen Parlaments und des Rates vom 4. Juni 2015 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten.
This product is in conformity with Directive **2015/863/EU** (RoHS) of the European Parliament and of the Council of 4 June 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Berlin, 13.06.2023
Ort, Datum / place, date

Dr. Ulrich Kienitz
Geschäftsführer / General Manager

optris Outdoor protective housing-MA-E2023-06-A