

AirShot2

Operating instructions

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1 General information

1.1 General information

Welcome to TriOS.

We are delighted that you have chosen the AirShot2.

The compact AirShot2 compressed air cleaning system works with compressed air pulses instead of a continuous air flow, which significantly reduces the amount of air required and allows for a very compact design.

In addition, the pressure pulses ensure more efficient cleaning than systems with a continuous air flow, making the AirShot2 a valuable addition to any system.

AirShot2 can be operated with a TriBox3 or TriBox mini as an alternative to a standard compressor. To prevent AirShot2 from overheating, an internal monitoring system (temperature sensor) is installed.

The cleaning process with AirShot2 only takes 10 seconds. It can be triggered in a minimum interval of 5 minutes.

In this manual you will find all the information about AirShot2 that you need for commissioning. Technical specifications and dimensions can be found in chapter 7.

Please note that the user is responsible for complying with regional and national regulations for the installation of electronic devices. Any damage caused by incorrect use or unprofessional installation is not covered by the warranty.

All sensors and accessories supplied by TriOS Mess- und Datentechnik GmbH must be installed and operated in accordance with TriOS Mess- und Datentechnik GmbH specifications. All parts have been designed and tested according to international standards for electronic instruments. The device complies with international standards for electromagnetic compatibility. Please use only original TriOS accessories and cables to ensure smooth and professional use of the devices.

Read this manual carefully before using the device and keep it for future reference. Before using the sensor, make sure that you have read and understood the safety precautions described below. Always ensure that the sensor is operated correctly. The safety precautions described on the following pages are intended to ensure problem-free and correct operation of the device and the associated accessories and to prevent you, other persons or devices from being harmed.

ADVICE

If translations differ from the original German text, the German version is binding.

Copyright notice

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1.2 Health and safety instructions

This manual contains important information on health and safety regulations. This information is marked in accordance with the international specifications of ANSI Z535.6 ("Product safety information in product manuals, instructions and other collateral materials") and must be followed. The following categories are distinguished:

⚠ DANGER

Danger / Will cause serious injury or death

⚠ WARNING

Warning / May cause serious injury or death

⚠ CAUTION

Caution / May cause moderate injury

ADVICE

May lead to material damage



Tip / Useful information

Electromagnetic waves

Devices that emit strong electromagnetic waves can influence the measurement data or cause the sensor to malfunction. Avoid operating the following devices in the same room as the TriOS sensor: cell phones, cordless phones, transceivers or other electrical devices that generate electromagnetic waves.

1.3 Warnings

General instructions:

- Do not cut, damage or modify the cables. Ensure that there are no heavy objects on the cables and that they do not kink. Ensure that the cables do not run close to hot surfaces.
- If a cable is damaged, it must be replaced with an original part by TriOS Mess- und Datentechnik GmbH Technical Support.
- Never attempt to disassemble or modify any part of the device unless expressly described in this manual. Inspections, modifications and repairs may only be carried out by the device dealer or by qualified specialists authorized by TriOS.
- TriOS Mess- und Datentechnik GmbH devices comply with the highest safety standards. Repairs to the devices must be carried out by TriOS Mess- und Datentechnik GmbH or an authorized TriOS workshop. Incorrect, improper repairs can lead to accidents and injuries.

ADVICE

TriOS does not guarantee the plausibility of the measured values. The user is always responsible for monitoring and interpreting the measured values.

1.4 User and operating requirements

The accessory was developed for use in industry and science. The target group for operating the AirShot2 is technically experienced specialist personnel in companies, sewage treatment plants, waterworks and institutes.

The application often requires the handling of hazardous substances. We assume that the operating personnel are familiar with the handling of hazardous substances due to their professional training and experience. In particular, the operating personnel must be able to correctly understand and implement the safety markings and safety instructions on the packaging and in the package inserts of the test kits.

1.5 Intended use

The accessory is intended exclusively as a compressed air cleaning system for operation on a TriBox3 or TriBox mini in conjunction with TriOS sensors. Please observe the technical data of the accessories. Any other use is considered improper.

According to current scientific knowledge, the device is safe to use if it is handled in accordance with the instructions in this operating manual.

ADVICE

Damage caused by improper use is excluded from the warranty.

⚠ DANGER

This product is not suitable for use in potentially explosive atmospheres.

1.6 Disposal instructions

At the end of its service life or useful life, the device and its accessories can be returned to the manufacturer (see address below) for disposal in an environmentally friendly manner. Proof of prior professional decontamination must be provided in the form of a certificate. Please contact us before returning the device for further details.

[Address of the manufacturer:](#)

TriOS Mess- und Datentechnik GmbH
Bürgermeister-Brötje-Str. 25
26180 Rastede
Rastede, Germany
Phone: +49 (0) 4402 69670 - 0
Fax: +49 (0) 4402 69670 - 20

1.7 Certificates and approvals

The product meets all requirements of the harmonized European standards. It therefore fulfills the legal requirements of the EU directives. TriOS Mess- und Datentechnik GmbH confirms the successful testing of the product by affixing the CE mark (see appendix).

2 Introduction

2.1 Introduction

AirShot2 from TriOS is an innovative compressed air cleaning system that has been specially developed for the automatic cleaning of optical sensors in water and environmental measuring systems. It uses targeted blasts of compressed air to remove deposits such as biofouling, sediment or dirt particles, ensuring consistently high measurement accuracy. AirShot2 is optimized for operation with TriOS controllers and TriOS sensors.

Advantages:

- Avoidance of manual cleaning and maintenance
- Extends the service life of sensors
- Efficient and environmentally friendly cleaning without chemicals

Areas of application:

- Use in bodies of water, sewage treatment plants, industrial process monitoring
- Marine and environmental research

The following chapters explain the correct operation of the AirShot2 system with all its functions and setting options.

2.2 Scope of delivery

The delivery includes the following components:

- AirShot2 (compressor)
- Compressed air hose; 1 x 10 m and 1 x 0.5 m
- M8 control line
- 2 x pulse valves
- Mounting kit for wall mounting
- Mains cable



Keep the original packaging of the device for possible return for maintenance or repair purposes.

2.3 Product identification

All TriOS Mess- und Datentechnik GmbH products are provided with a product label that clearly shows the product designation.

There is also a type plate on the device with the following information, which you can use to clearly identify the product:

Nameplate AirShot2 230 V version

Serial number

Product type

Power supply

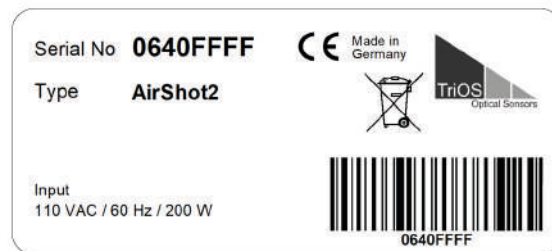


Nameplate AirShot2 110 V version

Serial number

Product type

Power supply



The nameplate also contains the product barcode, the TriOS Optical Sensors logo and the CE quality mark. Please note that the specifications given here are for illustrative purposes only and may vary depending on the product version.

3 Commissioning

This chapter covers the Commissioning of the AirShot2 up to the first function test. Please pay particular attention to this section and follow the safety instructions to protect the product from damage and yourself from injury. The cables must be connected correctly.

When Commissioning the AirShot2, make sure that it is securely fastened and that all connections are made correctly.

3.1 Wall bracket

A mounting kit is included in the Scope of delivery for mounting the AirShot2 on the wall.

1. First unpack the mounting parts from the plastic bag.
2. Each of the mounting parts fits into one of the rounded squares at the corners of the device. Place the mounting parts on the corresponding corners and screw the two components together.



3. When all four mounting parts are screwed to the device, it can be mounted on the wall.

ADVICE

The AirShot2 must always be mounted horizontally on the wall so that the connections are at the bottom.

3.2 Connection overview

⚠ DANGER

Danger to life due to electric shock!

Due to the free mains voltage in the appliance, installation work may only be carried out by electrically trained specialists who are authorized to do so on the basis of their training.

The relevant safety and VDE regulations must be observed. Before opening the appliance, it is essential to ensure that the power supply is disconnected and cannot be restored or switched on again.

⚠ DANGER

Danger to life due to electric shock!

A residual current circuit breaker with a maximum ignition current of 30 mA must be used.

Overvoltage protection should be used for outdoor installations.

The figure “Connection overview” shows an overview of the most important connections of the AirShot2 system. These include the compressed air output of the system, which supplies the sensors with compressed air via a connection hose. The M8 control lines for the controller and the wiper as well as the mains cable socket are also shown.

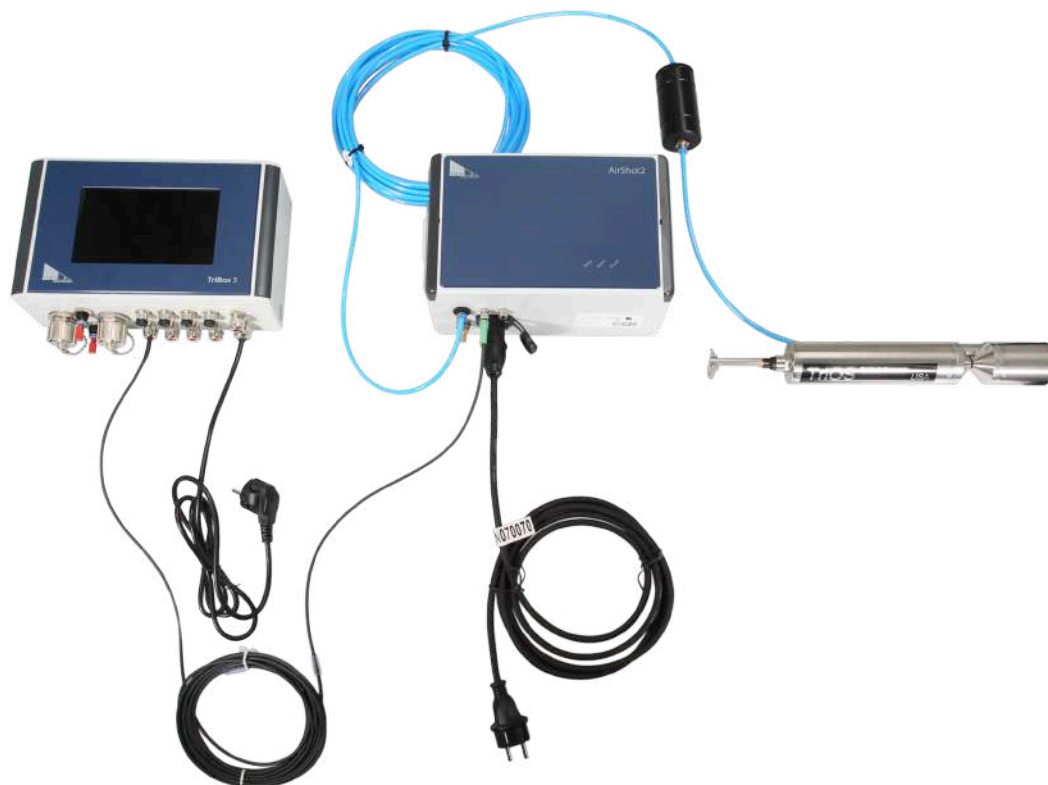
This overview serves as a guide for the correct connection and Commissioning of the AirShot2 system.



Connection overview

Schematic diagram of the connected components

The schematic diagram of the connected components illustrates the structure and function of the AirShot2 system. It is intended to help you understand the interaction of the components and serves as an aid for installation and fault diagnosis.



Schematic diagram

ADVICE

Please note: The compressed air hose should not run over the AirShot2 in the application.

3.3 LED display

The AirShot2 has three white* LEDs on the front of the device, which are either permanently lit or switched off. They have the following meaning:

| | |
|--------|---|
| Temp | Lights up when the internal temperature is too hot or too cold. |
| Active | Lights up when the cleaning/trigger is active. |
| Power | Lights up permanently when the power supply is switched on. |

*Optically, the LEDs appear blue due to the color of the cover.



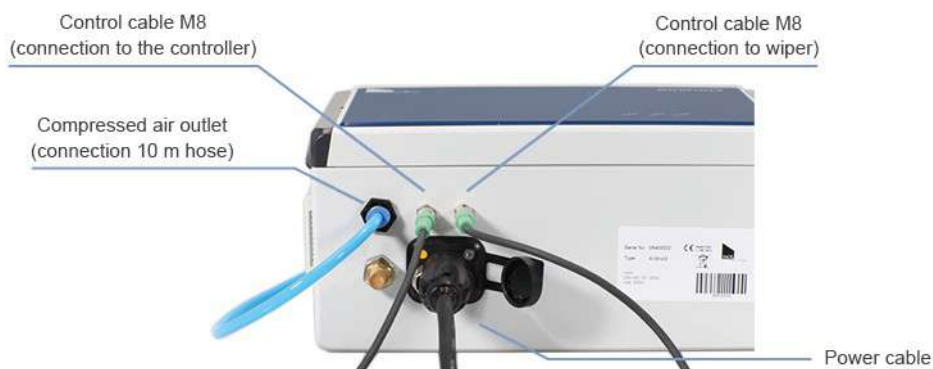
4 Application

4.1 Installing the AirShot2

1. Connect the 0.5 m hose to the compressed air purge head on the sensor. This is then connected to the "OUT" side of the pulse valve.
2. From the "IN" side of the pulse valve, connect the 10 m hose to the compressor.
3. Then connect the AirShot2 system to a controller via the control line (see the following chapters).



4. Connect the AirShot2 to the power supply using the power cable. The power LED should now light up.



4.1.1 Connection to TriBox3

⚠ DANGER

Danger to life due to electric shock!

Disconnect the mains voltage before making any changes to the supply cable or plug.

It is essential to check that there is no voltage and to secure it against being switched on again.

Connection

1. Open the cover of the TriBox3 by removing the dark gray panels and unscrewing the screws underneath.



2. Lay the AirShot2 cable (control cable M8) through the cable guide of the TriBox3 and secure the cable guide on the wider part of the cable.



3. Connect the blue-black wire of the valve cable to pin 2 (GND) of the CON15 connector and the brown-white wire to pin 1 (+12V) as described in the table below. Ensure that the screw contacts are tightened and insert the plug into the corresponding socket.



| AirShot2 connection wire 4 x 0.34 mm2 | TriBox3 slot |
|---------------------------------------|--------------------|
| Blue-black wire | CON15, pin 2, GND |
| brown-white wire | CON15, Pin 1, +12V |

4. Close the TriBox3 cover, tighten the screws and place the gray covers on the TriBox3.

4.1.2 Connecting to TriBox mini

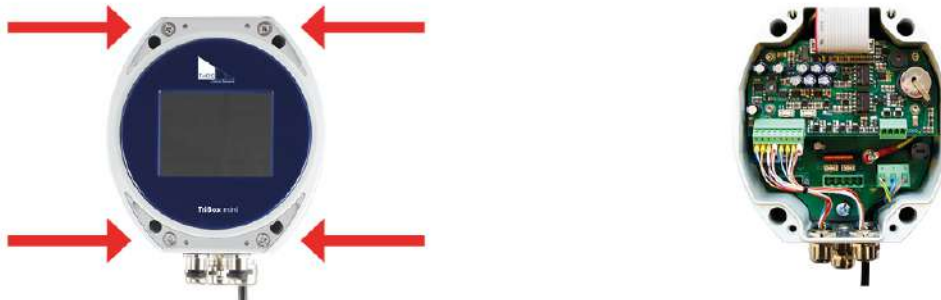
⚠ DANGER

Danger to life due to electric shock!

Disconnect the mains voltage before making any changes to the supply cable or plug.

It is essential to check that there is no voltage and to secure it against being switched on again.

1. Open the cover of the TriBox mini by removing the dark gray panels and unscrewing the four screws underneath.



2. Insert the AirShot2 cable through the cable guide of the TriBox mini and tighten the cable guide.



3. Connect the blue-black wire of the AirShot2 cable to pin 4 (VOUT-) of the CON2 connector and the brown-white wire to pin 3 (VOUT+) as described in the table below. Make sure that the screw contacts are tightened.



| AirShot2 connection wire 4 x 0.34 mm2 | TriBox mini slot |
|---------------------------------------|--------------------|
| blue-black wire | CON2, pin 4, VOUT- |
| brown-white wire | CON2, pin 3, VOUT+ |

4. Close the TriBox mini cover, tighten the four screws and place the gray covers on the TriBox mini.

4.2 Setting the cleaning interval

The settings for the cleaning interval can now be made on the controller.

Set the TriBox3 or TriBox mini to Maintenance mode.

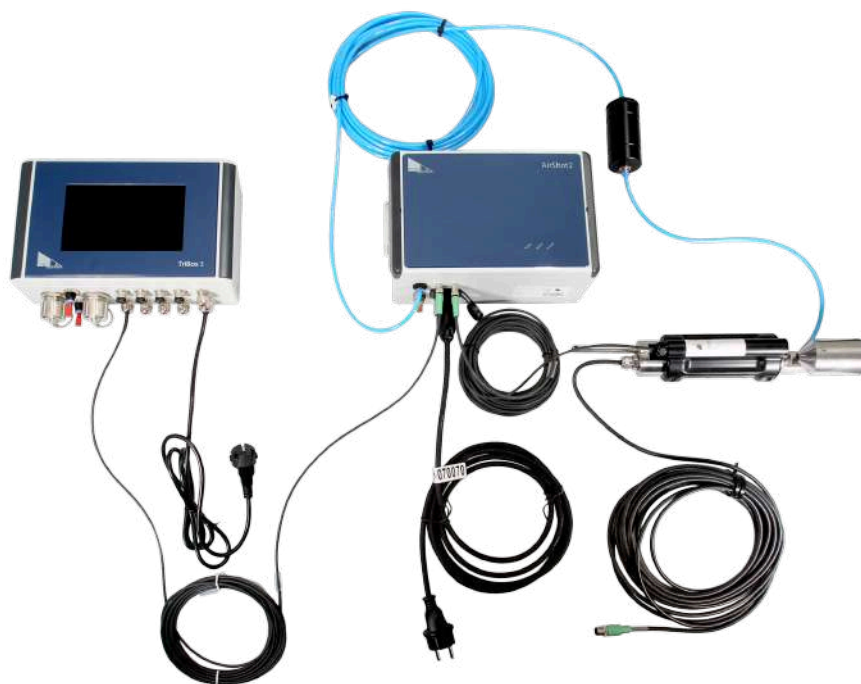
1. recommended settings:

- Cleaning interval: ≥ 5 min
- Cleaning duration: 10 s
- Pause before measurement: 10 s (with wiper 20 s)

2. To test the cleaning, it can be triggered manually in the cleaning menu.
3. The sensors can now be connected.
4. Finally, the service mode can be switched off again and the system is ready for operation.

4.3 Operation in combination with the W55 wiper

1. If AirShot2 is used in conjunction with a W55 wiper, the wiper should first be fitted to the sensor (see the wiper operating instructions).
2. Now connect the control line of the wiper to the compressor.



Schematic diagram with wiper

3. The 0.5 m hose is now connected to the “OUT” side of the pulse valve.
4. The 10 m hose is then connected from the “IN” side of the pulse valve to the compressor.
5. Now connect the AirShot2 to the controller via the control line.



6. The AirShot2 can now be connected to the power supply using the power cable. The power LED should now light up.
7. If the controller is also connected to the power supply, cleaning settings can now be made on the controller in service mode.
8. If the controller is in Maintenance mode, the sensors can now also be connected.
9. Manual cleaning can be triggered via the controller to test the wiper.



The wiper is activated by the compressed air cleaning system to remove coarse particles from the optical path and the measuring windows.

5 Calibration

5.1 Calibration

Not applicable for this device.

6 Malfunction and maintenance

6.1 Maintenance

Regularly check the air inlet of the compressor for blockages. If the air inlet is blocked, this can shorten the service life of the compressor and reduce the sensor cleaning performance.

6.2 Return shipment

Please note the procedure for your return.

If you wish to return the sensor or the device, please contact technical support first. To ensure a smooth return process and to avoid incorrect shipments, every return shipment must first be reported to technical support. You will then receive a numbered RMA form, which you must complete in full, check and return to us.

Please stick this form with the number clearly visible on the outside of the return package or write it in large letters on the packaging. This is the only way your return can be correctly assigned and accepted.



Please note! Returns without an RMA number cannot be accepted and processed!

Please note that the sensor or the device must be cleaned and disinfected before shipping.

Use the original packaging to ensure that the goods are sent undamaged. If this is not available, ensure that safe transportation is guaranteed and that the sensors are secured with sufficient packing material.

7 Technical data

7.1 Technical specifications

Power supply

| | |
|---------------------------------------|-----------------------------|
| Power supply 230 V version | 230 VAC, max. 200 W, 0.86 A |
| Power supply 110 V version | 110 VAC, max. 200 W, 1.8 A |

Interfaces

| | |
|-----------------------------|--------------------------------------|
| Connection | for 6 mm hoses (4 mm inner diameter) |
| Mains cable length | 3 m |
| Control cable length | 5 m |
| Trigger input | 12-24 VDC, M8 4-pin |
| Wiper output | M8 4-pin |

Display

| | |
|------------|----------------|
| LED | 3 x status LED |
|------------|----------------|

Ambient temperature

| | |
|-------------------------|--------------|
| Pulse box | -5...+40 °C |
| Compressor | -10...+40 °C |
| Protection class | IP44 |

Mechanics

| | |
|--------------------------------------|--------------------|
| Size housing W/H/D | 190 x 260 x 125 mm |
| Size of pulse generator L x Ø | 90 x Ø46 mm |
| weight | 4.4 kg |
| Housing | polycarbonate |

Cleaning settings

| | |
|---------------------------|------------------|
| Cleaning interval | 10 s every 5 min |
| Max. Max. pressure | 7 bar |

7.2 Outer dimensions

Dimension Drawing: AirShot2

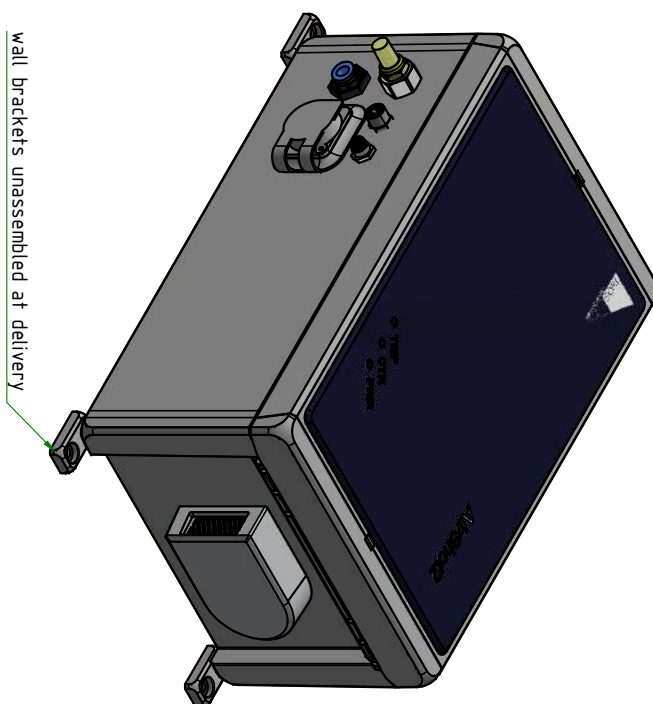
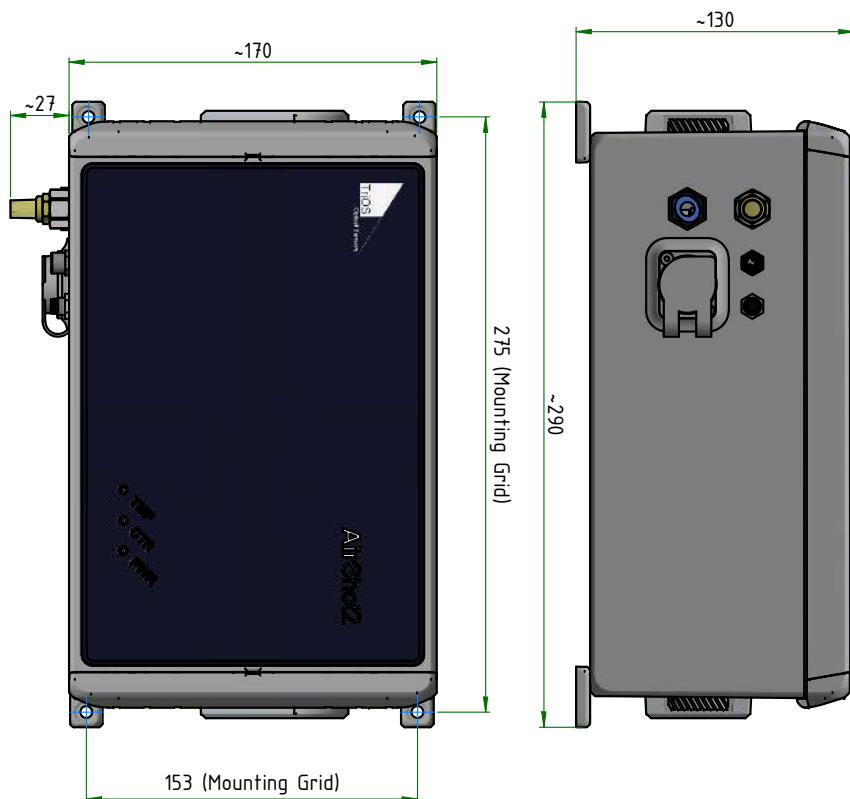
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Name: Airshot2
Date: 15.09.2020 Rev.: IP4.0A00A
Note: Dimensions in mm
Document: D10-064en202010

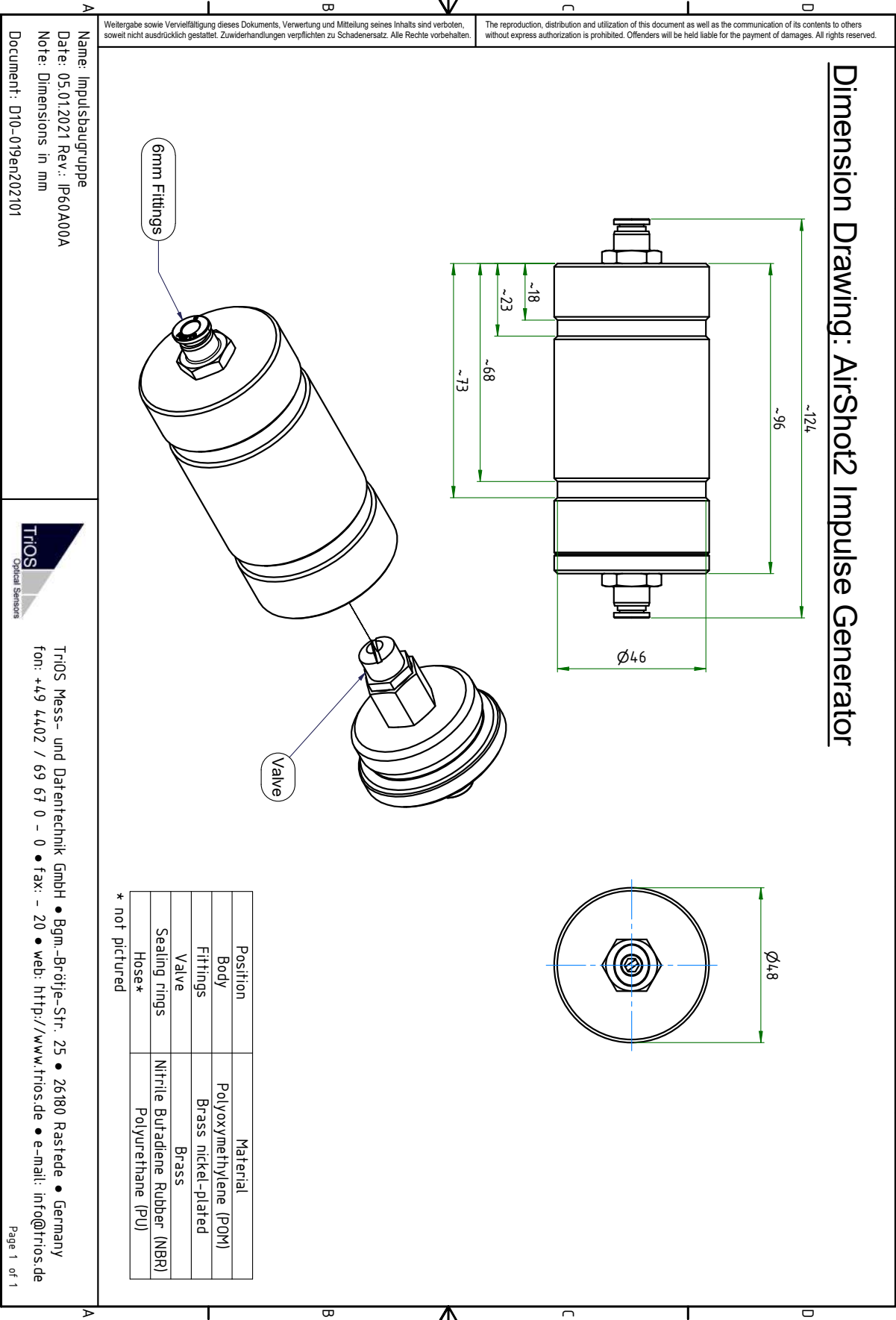


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| Materials | |
|------------|---------------------|
| Position | Material |
| housing | polycarbonate, PMMA |
| air filter | brass |
| connectors | brass, EPDM |



8 Accessories

Delivery accessories

See chapter 2.2 Scope of delivery.

Spare parts

- 02P000002 AirShot2 impulse box
- 02A000001 Compressed air hose blue, 10 m

9 Warranty

The warranty period for our devices within the EU and the USA is 2 years from the date of invoice. Outside the EU it is 1 year. Excluded from the warranty are all normal consumables (depending on the product, e.g. light sources or windows).

The guarantee is subject to the following conditions:

- The appliance and all accessories must be installed as described in the relevant manual and operated in accordance with the specifications.
- Damage caused by contact with aggressive and material-damaging substances, liquids or gases, as well as transport damage, are not covered by the guarantee.
- Damage caused by improper handling and use of the appliance is not covered by the warranty.
- Damage caused by modification or unprofessional attachment of accessories by the customer is not covered by the warranty.

ADVICE

Opening the device will void the warranty!

10 Technical support

If you have a problem with a TriOS sensor / a TriOS device, please contact TriOS technical support.

We recommend sending in sensors every 2 years for maintenance and calibration. To do this, please request an RMA number from technical support.

Contact technical support:

E-mail: support@trios.de
Phone: +49 (0) 4402 69670 - 0
Fax: +49 (0) 4402 69670 - 20

To enable us to help you quickly, please send us the sensor ID number (serial number with 8 digits, consisting of letters and numbers, e.g. 6700003F) by e-mail.

11 Contact us

We are constantly working on improving our devices. Please visit our website for the latest news.

If you have found a fault in one of our devices or programs or would like additional functions, please contact us:

| | |
|--------------------------|--|
| Technical Support: | support@trios.de |
| General questions/sales: | sales@trios.de |
| Website: | www.trios.de |

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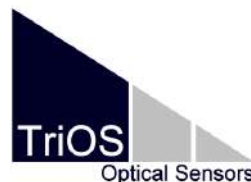
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13 Appendix



Hersteller/Manufacturer/Fabricant: TriOS Mess- und Datentechnik GmbH
 Bürgermeister-Brötje-Str. 25
 D- 26180 Rastede

Konformitätserklärung

Declaration of Conformity

Déclaration de Conformité

Die TriOS GmbH bescheinigt die Konformität für das Produkt
 The TriOS GmbH herewith declares conformity of the product
 TriOS GmbH déclare la conformité du produit

| | |
|--|--|
| Bezeichnung Product name Designation | AirShot2 |
| Typ / Type / Type | - |
| Mit den folgenden Bestimmungen With applicable regulations Avec les directives suivantes | 2014/30/EU EMV-Richtlinie 2014/35/EU Niederspannungsrichtlinie 2011/65/EU RoHS-Richtlinie + (EU) 2015/863 + (EU) 2017/2102 |
| Angewendete harmonisierte Normen Harmonized standards applied Normes harmonisées utilisées | EN IEC 61326-1:2021 EN 61010-1:2010 +A1:2019 +A1:2019/AC:2019 EN IEC 63000:2018 |
| Datum / Date / Date | Unterschrift / Signature / Signature |
| 23.05.2024 |  R. Heuermann |

D05-064yy202405

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