



User Manual

# Corona extreme

Carl Zeiss Spectroscopy GmbH



Knowledge of this manual is required for the operation of the device. Therefore, please familiarize yourself with its contents and pay special attention to information concerning the safe handling of the device.

We reserve the right to make changes in the interest of technical advancement. The user manual is not covered by an update service.

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Patent protected: US 7,800,757 B2; US RE 45,691 E; CA 2557103 C; EP 1721139 B1

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# 1 About this User Manual

## 1.1 Introduction

**Welcome** Welcome to the **Corona extreme** User Manual.

The **Corona extreme** spectrometer systems are specifically designed for use under harsh environmental conditions. This enables them to be used in a variety of fields, ranging from agriculture to the food industry.

The optical concept enables the determination of the ingredients of solid, pasty and liquid organic materials in direct contact with the material.

Depending on the chemometric model being used, the wavelength range from 950 to 1650 nm enables the identification of moisture, protein, fat and other ingredients for assessing quality, for example, during the receipt of goods or for improving and controlling processes in the manufacture of food.

The accessories customized for use with the **Corona extreme** make for easy and quick integration into customer facilities and systems.

**Purpose of this manual** The information contained in this User Manual will enable you to properly install the **Corona extreme** spectrometer system and to operate it in a safe and effective manner. Furthermore, it will provide you with information on maintenance and troubleshooting.

Please familiarize yourself with the contents of the User Manual and observe all of the general and safety-related instructions it contains.

**Audience** The **Corona extreme** spectrometer system may only be installed, operated and serviced by qualified and trained personnel.

This User Manual is therefore aimed at the qualified personnel authorized to perform the installation on-site as well as at other authorized persons in order to enable them to perform their duties.

Experience in handling metrology equipment and technical or scientific training are required.

**Storage** Store the User Manual and all other applicable documents you received on purchasing and accepting delivery of the device together in a safe place.

Make sure that the User Manual and all other valid documents are freely available to every user at all times.

**Other applicable documents**

- ZEISS InProcess software description: "InProcess Manual" (on included data media)
- Description of the license activation: "ZEISS License Activation Manual"
- Delivery notes

## 1.2 Use of safety instructions

The safety instructions contained in this User Manual are applied using a standardized system (ANSI) which provides a range of hazard levels depending on the classification of a risk.



### Warning

Dangerous situation – Failure to observe this safety note could result in serious injuries or even death.



### Caution

Dangerous situation – Failure to observe this safety note could result in slight injuries or property damage.



### Note

General reference to important or useful information concerning the device and its operation.



### Note

Important note on environmental protection.

## 1.3 Formattings and text conventions

### "Bold" character format

- for texts which are used in the software, e.g. names of buttons, tools, menus, ...
- for keyboard commands, e.g.: **Ctrl + C**

### Instruction manuals

- Requirements** ■ Stands for a requirement that must be fulfilled in order to successfully perform the upcoming action.
- Procedure** 1 Stands for an action step to be executed.

## 2 Safety

### 2.1 Intended use

**Corona extreme** is a range of spectrometers specifically designed for use under harsh environmental conditions. These are used to determine the ingredients of solid, pasty and liquid organic materials in diffuse reflection and in direct contact with the material.

The **Corona extreme** can be installed in ATEX Zone 21 and is protected against dust and high-pressure jets of water (IP66).



The spectrometer may only be used for its intended purpose as described.

Any other use is contrary to its intended purpose. The operator alone shall be held liable for any damage resulting from improper use. In this case, any warranty claim is null and void.

### 2.2 Conformity

The **Corona extreme** was designed and tested according to the currently applicable directives and standards and left our factory in perfect condition. To maintain this state and ensure safe operation, all instructions and warning notes listed must be observed.

The following directives, standards and classifications were applied and observed within the scope of the CE Declaration of Conformity.

<b>DIN EN 61010-1</b>	Safety requirements for electrical equipment for measurement, control and laboratory use
<b>DIN EN 60079-0</b>	Potentially explosive atmospheres
<b>DIN EN 61326-1</b>	Safety requirements for electrical equipment for measurement, control, and laboratory use
<b>IP66</b>	Enclosure protection degree as per DIN EN 60529
<b>III</b>	Protection class
<b>Zone 21</b>	Explosion-hazard areas
	Device light beam permitted in up to Zone 20
 <b>II 2(1)D</b>	Explosion Protection Marking:
<b>Ex tb [op is Da] IIIC T60 °C</b>	 Ex marking according to 94/9EC
	<b>II</b> Equipment group
	<b>2(1)D</b> Category 2D Zone 21 / 1D Zone 20
	<b>EX tb</b> Protection by housing
	<b>[op is]</b> Optical radiation ignition protection type - Limit energy transfer from optical radiation
	<b>Da]</b> Device protection level Zone 20
	<b>IIIC</b> Conductive dust
	<b>T60 °C</b> Max. surface temperature

 The devices bear the  marking

## 2.3 Safety instructions

### Warning



The device may be operated only at the operating voltage specified in Section 8, "Technical data".

Before performing maintenance and repair work or replacing components, the respective device must be disconnected from all power sources. Please also ensure that it cannot be accidentally switched on again.

The Corona extreme must not be started if it is damaged or wet.



The device must not be opened in a potentially explosive atmosphere.

Please also note that the power supply unit must not be used in a potentially explosive atmosphere. Unplug the power connector of the device only when the device is deenergized.

### Caution



The Corona extreme, including its original accessories, may only be used for the purposes described in the present User Manual. The manufacturer cannot be held liable for any other use.

Warning signs and safety instructions must not be removed and must always be clearly legible.

The devices may be operated only by properly trained personnel. This personnel must be instructed concerning the possible risks when the device is in operation and in the appropriate applications.

Please do not open the system because of density reasons.

Only our service staff or authorized personnel can carry out modifications and repair work on this device and on devices working together with the Corona extreme. The manufacturer shall not be liable for damage caused by inadmissible actions performed on the device. Furthermore, such prohibited procedures shall result in the forfeiture of all warranty claims and guarantees.



### Caution



Never look directly into the measuring beam. The bundled light of the halogen lamp can cause eye damage.



Caution: Hot surfaces.



The personnel designated to perform the maintenance and repair work must be appropriately qualified for this work.

Apart from the work described in the section entitled "Maintenance and disposal", it is prohibited to perform any other operations on the device. Doing so may cause the system to become irreparably damaged.

Please note that only ZEISS service technicians or persons authorized by ZEISS are permitted to open the device.

### Note



Defective equipment must not be disposed of with household waste, but should be disposed of in compliance with the applicable legal requirements.

## 2.4 Environmental management



Our company has implemented a certified environmental management system that complies with ISO 14001. This product was developed, inspected and produced in accordance with the applicable environmental regulations and directives of the European Union.

The product and its accessories comply with EU Directives 2002/95/EC (RoHS) and 2002/96/EC (WEEE) to the extent applicable to this product.

We have installed a take-back and recycling process that ensures proper recycling in accordance with the above-mentioned EU Directives.

For details concerning disposal and recycling, please contact your local dealer or service organization. The system must not be disposed of as domestic waste or be disposed of via municipal waste disposal facilities.

If the product is resold, the seller is obligated to inform the purchaser regarding its proper disposal.

## 2.5 Limitation of liability and warranty

Carl Zeiss Spectroscopy GmbH will not accept any warranty claims and shall be exempted from statutory liability for any damage to equipment caused by nonobservance of the applicable safety instructions, even during the warranty period.

Carl Zeiss Spectroscopy GmbH shall be exempt from its warranty obligations in the event of nonobservance of the safety instructions on the part of the user.

The warranty granted by Carl Zeiss Spectroscopy GmbH ensures the safety, reliability and performance of the device only if the pertaining safety instructions are observed.

The manufacturer guarantees that the device is free of material or manufacturing defects when delivered. Possible defects must be notified to us immediately and steps be taken to minimize damage. If notified of such a defect, the manufacturer is obligated to rectify it at his discretion, either by repairing the instrument or delivering an intact replacement.

No guarantee is provided for defects caused by natural wear (wearing parts in particular) and improper use.

The manufacturer shall not be liable for damage caused by faulty operation, negligence or any other tampering with the device, particularly the removal or replacement of device components, or the use of accessories from other manufacturers. Any such action shall lead to a forfeit of all warranty claims.

Apart from the work described in Section 7, "Maintenance", no inadmissible maintenance or repair work may be performed on the device. Repairs may only be carried out by ZEISS service staff or persons expressly authorized by ZEISS.

Contact the Customer Service Department of Carl Zeiss Spectroscopy GmbH (service.spectroscopy@zeiss.com) if any defects or faults occur on the device or individual components.

The **Corona extreme** should be inspected by the Customer Service Department of Carl Zeiss Spectroscopy GmbH at least once a year to ensure optimal and safe operation of the system.

### Note



For details concerning the warranty, please refer to the **General Terms and Conditions of Carl Zeiss Spectroscopy GmbH**, which can be found on the internet at "[http://www.zeiss.com/corporate/en\\_de/legal-information/company-information.html](http://www.zeiss.com/corporate/en_de/legal-information/company-information.html)".

### 3 Device description

#### 3.1 Scope of supply

The basic equipment of the standard version of the **Corona extreme** contains the following components:

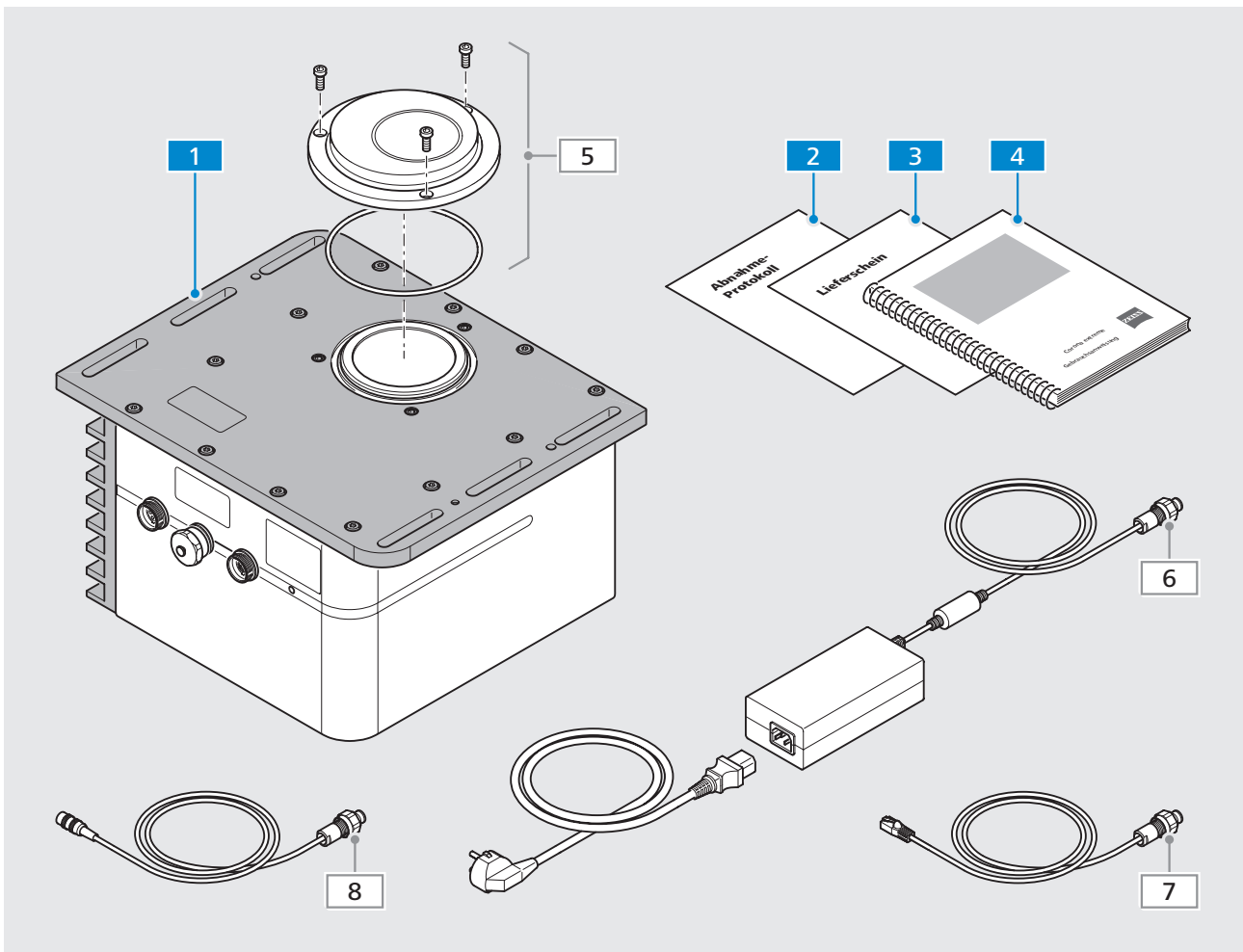


Fig. 1 Scope of supply

- 1** Corona extreme spectrometer
- 2** Acceptance report
- 3** Delivery note and other documents accompanying the device
- 4** Set of documents (User Manual and other applicable documents)

- Optional accessories:  
(always compare with delivery note)
- 5** Flange, can be selected as required (see Section 7.2 "Accessories and spare parts")
  - 6** Power supply cable
  - 7** Ethernet cable
  - 8** Digital IN/OUT cable

## 3.2 Variants

Item number	Designation	Description
000000-2194-357	Corona extreme	Compact standard variant for easy installation in a single product line (e.g. pipes), controlled by an external computer (not included with the Corona extreme)
000000-2194-358	Corona extreme ST	Corona extreme in a stainless steel housing for use in the food industry, controlled by an external computer (not included with the Corona extreme ST)

Tab. 1 *Corona extreme* – variants

This manual only refers to the "**Corona extreme**" (regardless of the actual variant in question).

## 3.3 Technical design

### 3.3.1 Functional elements

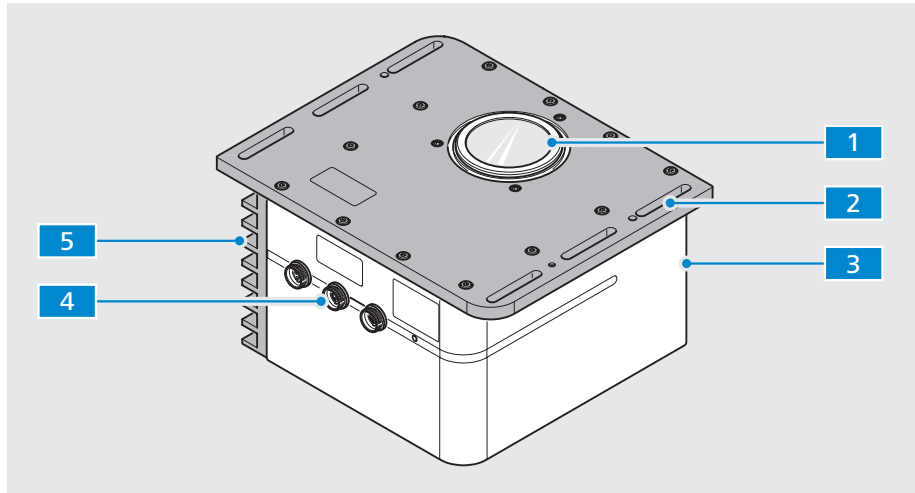


Fig. 2 Functional elements

- 1 Measurement window with flange interface  
(Flange can be selected as required, see Section 7.2 "Accessories and spare parts")
- 2 Base plate for mounting the **Corona extreme** to a customer interface
- 3 Device housing (contains the measurement optics, electronics and optional PC)
- 4 Connection panel (Ethernet, digital IN/OUT, power supply) and status display
- 5 Cooling element

### 3.3.2 Controls and indicators

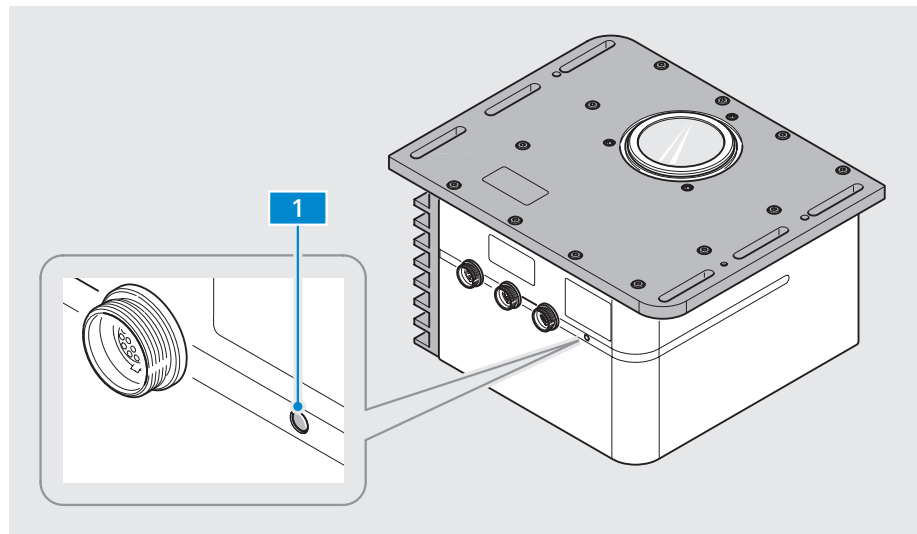


Fig. 3 Controls and indicators

**1** Status LED

LED signal color	Description
blue flashing	after connection to the power supply
not illuminated	during initialization (max. 30 s) (no process light is visible in the measurement window)
blue light	after complete boot-up (process light is visible in the measurement window)

Tab. 2 Status LED – displays

### 3.3.3 Ground wire connection

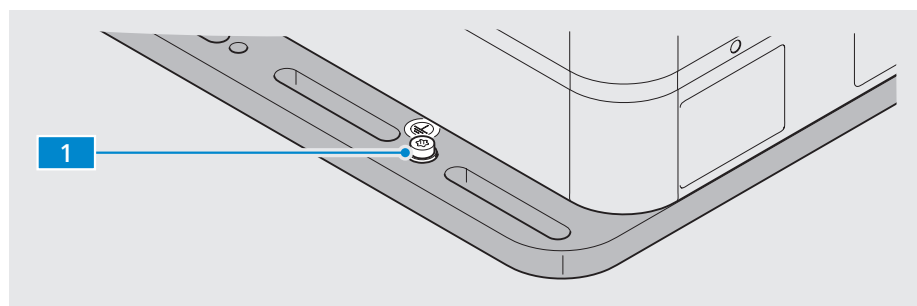


Fig. 4 Ground wire connection

**1** Screw for mounting a ground wire to the base plate

### 3.3.4 Electrical connections

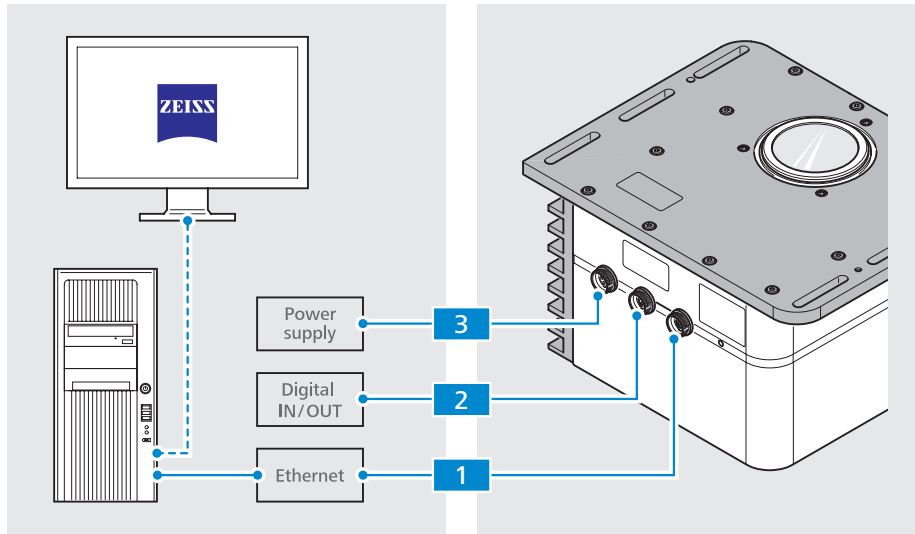


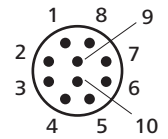
Fig. 5 Electrical connections



- 1** "ETHERNET" connection – 14-pin socket



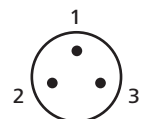
- 2** "Digital IN OUT" connection – 10-pin socket



PIN	Color	Assignment
1	SAW	OUT 3
2	Violet	IN 0
3	Brown	OUT 2
4	White	IN 1
5	Green	OUT 1
6	Yellow	IN 2
7	Gray	OUT 0
8	Pink	IN 3
9	Blue	GND
10	Red	GND



- 3** Power supply connection "POWER 12-24 V DC" – 3-pin socket



PIN	Wire number	Assignment
1	1	12-24 V DC
2	2	GND
3	-	n. k.

### 3.3.5 Mechanical interfaces

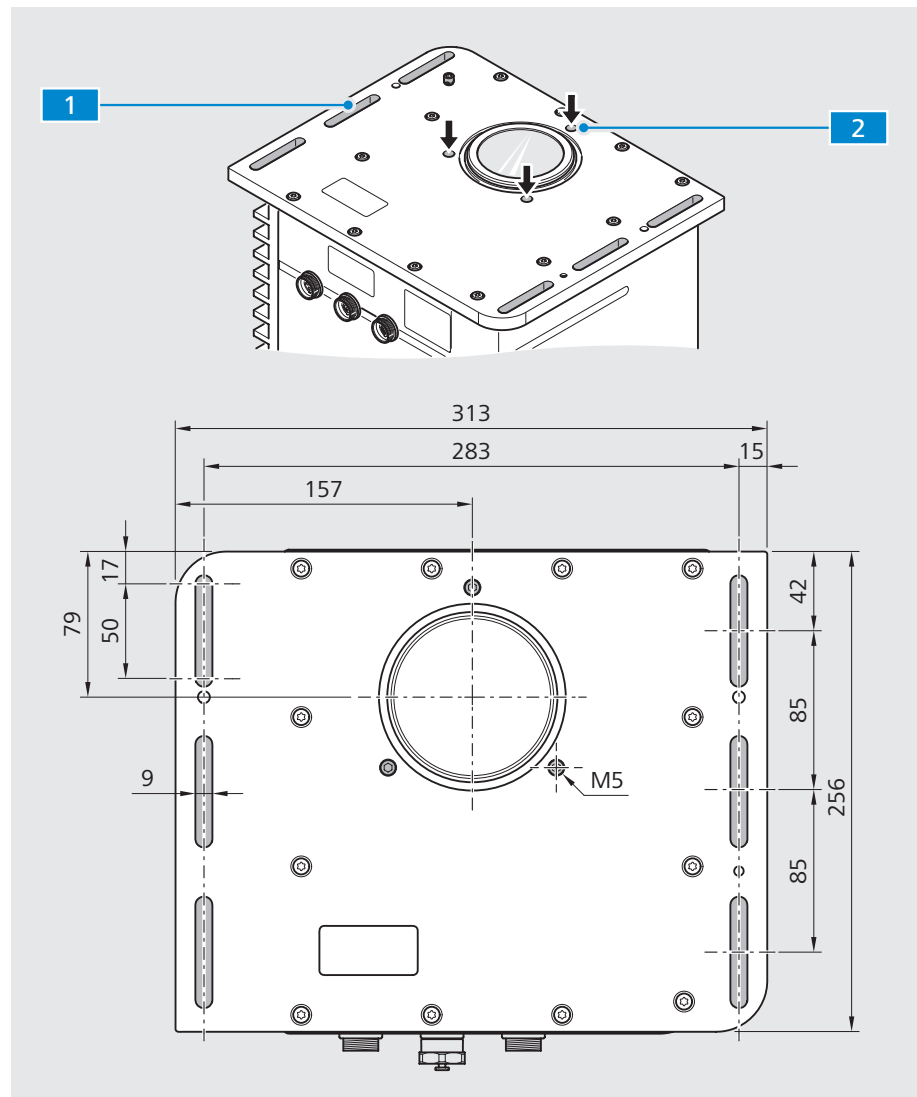


Fig. 6 Mechanical interfaces

#### 1 Interface 1

Base plate with 6 slotted holes (50x9 mm)

Variant 1: Mounting the **Corona extreme** to a customer interface via the 6 slotted holes with assembled standard flange.

Variant 2: Mounting an optional flange to a customer interface and then mounting the **Corona extreme** via the slotted holes on the optional flange.

Variant 3: Mounting an optional flange to a customer interface and then mounting the **Corona extreme** directly to the optional flange by means of on-site pipe clamps.

#### 2 Interface 2

3x threaded insert (M5) around the measurement window





### Note

For detailed information on mounting the Corona extreme on a customer interface, refer to Section 4 "Installing the measuring system".

## 3.4 Functional description

The **Corona extreme** is a measuring system which is used to determine the ingredients in solid, pasty and liquid organic materials. It has a light-intense, free-beam optic which provides short integration periods and internal referencing which guarantees reliable and reproducible measuring results.

The sample material must flow past the measurement window at a specified distance. This distance is ensured by using a suitable mounting flange (see Section 7.2 "Accessories and spare parts"). In addition to the mounting flange, the **Corona extreme** offers mounting options on both sides for installing the device on closed transport systems (e.g. pipes).

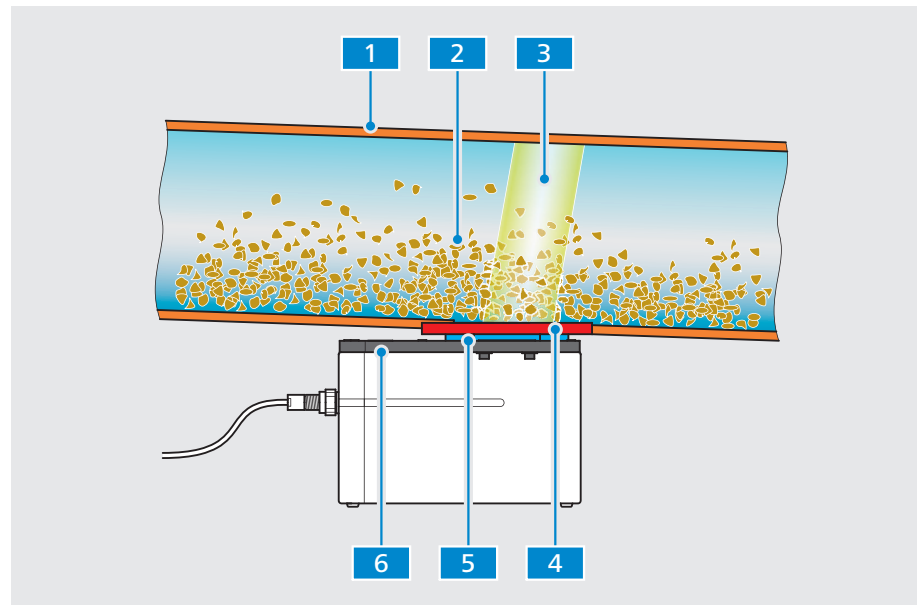


Fig. 7 Functional description

- 1 Transport channel (e.g. pipe)
- 2 Sample material
- 3 Measuring beam
- 4 Customer-installed interface (e.g. mounting plates welded to tube)
- 5 Standard and optional mounting flange  
(between customer interface and **Corona extreme**)
- 6 **Corona extreme** base plate

The **Corona extreme** is operated at 12 – 24 V SELV/PELV and may be connected only to the intended power supply (safety extra-low voltage).

It has a voltage input which is connected to a 12-24 V SELV power supply (35 W power supply unit/inrush current < 4 A).

The **Corona extreme** can be connected to a computer via an Ethernet interface to perform measurements, calculations and displays of ingredients.

Furthermore, the **Corona extreme** offers the possibility of utilizing 4 digital inputs and 4 digital outputs.

## 3.5 Software

### 3.5.1 ZEISS InProcess

The ZEISS **InProcess** software included in the scope of supply is required to control the **Corona extreme** measuring system and process the generated measurement data.



#### Note

**For details on installation, setup and use of the software, see Section 4.4 or refer to the "InProcess Manual" included in the scope of supply.**

**The software manual is available on the included CD.**

The **Corona extreme** measuring system is approved for use with the following software packages:

- InProcess
- Aspect Plus

The OSIS SDK Software Development Kit (2101-333) is available for developing your own software.

### 3.5.2 IP addresses

**Corona extreme** measuring systems are delivered with predefined IP addresses. The following standard IP address is to be used:

- Corona extreme: 192.168.0.177

If several **Corona extreme** measuring systems are operated in a device group with a single PC, each system must have its own IP address. In this case, the IP address must be changed.

## 4 Installing the measuring system

### 4.1 Preparing the installation

- Procedure**
- 1 Compare the delivery documents with the system components actually supplied to you.
  - 2 Check all system components for external intactness.
  - 3 Check the existing environmental and connection conditions. The following values must be observed:

Supply voltage	12–24 V $\equiv$ SELV (safety extra low voltage)
Power consumption	35 W power supply
Inrush current	< 4 A
Operating temperature	–15 to +50 °C
Storage/transport temperature	–40 to +70 °C
Max. of humidity	95 % non-condensing
Altitude of operation	Up to 2000 m

Tab. 3 Connection and environmental conditions

- 4 Make sure the **Corona extreme** is in the correct position during installation planning. The sample material must run past the measurement window and make direct contact with it.
- 5 Make sure that the customer-installed mechanical interface (e.g. a flange welded to a pipe) has the dimensions required to mount the **Corona extreme**.

#### Note



The exact connection dimensions are specified in Section 3.3.5 "Mechanical interfaces" on page 16.

## 4.2 Mounting the Corona extreme

The **Corona extreme** is mounted on a customer interface according to customer-specific requirements. The sample variants are described below.

### 4.2.1 Mounting with standard flange

#### Requirements

- Prepared customer mechanical interface (see Fig. 9 on page 21)
- Standard flange package (000000-2156-591) with:
  - Flange
  - Sealing ring
  - 3 screws (M5)
- Torx T25 screwdriver (not included)
- At least 4 fastening screws (M6 or M8) for attaching the **Corona extreme** base plate to the customer interface in the length required on-site and with suitable securing elements for the fastening screws (e.g. toothed lock washers)
- Suitable mounting tool for the screws used

#### Procedure

- 1 Place the green sealing ring **3** in the nut **4** around the measurement window.
- 2 Set the flange **1** on the base plate.
- 3 Mount the flange by inserting the three screws **2** into the threaded inserts **5** on the base plate.
- 4 Place the **Corona extreme** on the customer interface **6** in the desired/required installation position.
- 5 Insert at least four fastening screws **11** along with the selected securing elements **9** / **10** into the corresponding slotted holes **8** on the base plate and tighten them by hand.
- 6 Align the **Corona extreme** precisely.
- 7 Tighten all the screws.

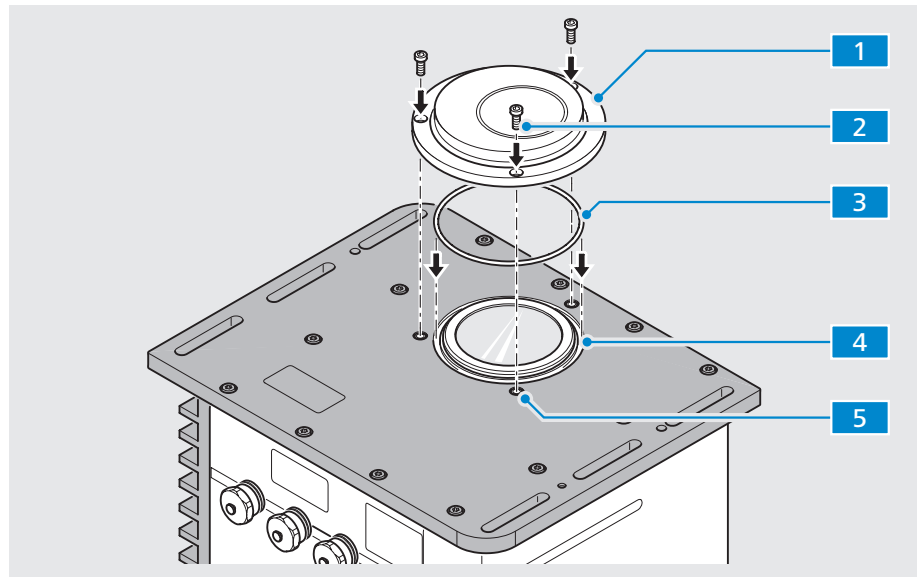


Fig. 8 Mounting the standard flange

- 1 Standard flange
- 2 3x cylinder head screw (M5)
- 3 Sealing ring, green
- 4 Nut for sealing ring
- 5 3x threaded insert

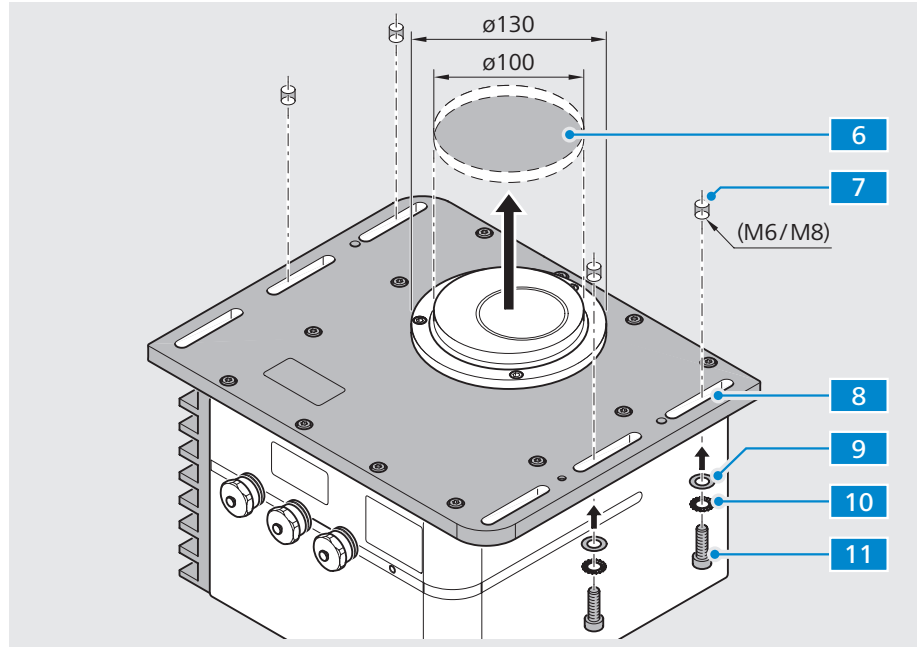


Fig. 9 Mounting the Corona extreme

- 6 Customer interface
  - 7 4x threaded holes, M6 or M8 (or clearance hole, 9 mm)
  - 8 6x slotted holes in base plate
  - 9 Washers
  - 10 Securing elements
  - 11 Fastening screws, M6/M8 (length according to on-site requirements)
- Items 9, 10 and 11 are to be provided by the customer:

#### 4.2.2 Mounting with power flange

##### Requirements

- Prepared customer mechanical interface (see figure 10)
  - E.g. shrink-wrapped mounting plate, d = 10 mm
  - Location bore/centering for power flange, diameter = 100 mm
  - 8x threaded holes M6
  - Threaded holes arranged circumferentially, diameter = 118 mm (bolt circle)
- Power flange package (000000-2161-449) with:
  - Flange, 1x
  - O-ring, 1x
  - Screws M6 x 10, 8x
  - Screws M8 x 20 (with washers), 4x
- Allen wrench, size 6 (not included)
- Torx T30 screwdriver (not included)

##### Procedure

- 1 Place the power flange **3** with inserted sealing ring **2** in the location bore on the mounting plate **1**.
- 2 Insert the eight fastening screws **7** into the clearance holes **6** on the power flange and screws these tight to the mounting plate.
- 3 Before placing the **Corona extreme**, make sure the positioning pin **5** is aligned with the corresponding recess in the **Corona extreme** base plate.

#### Note



The power flange has a positioning pin for aligning the **Corona extreme**. The device can only be properly mounted in this position.

- 4 Set the **Corona extreme** on the power flange.
- 5 Insert the four fastening screws **9** along with the washers into the slotted holes **8** on the base plate and screws these to the power flange by hand **3**.
- 6 Align the **Corona extreme** precisely.
- 7 Tighten all the screws.

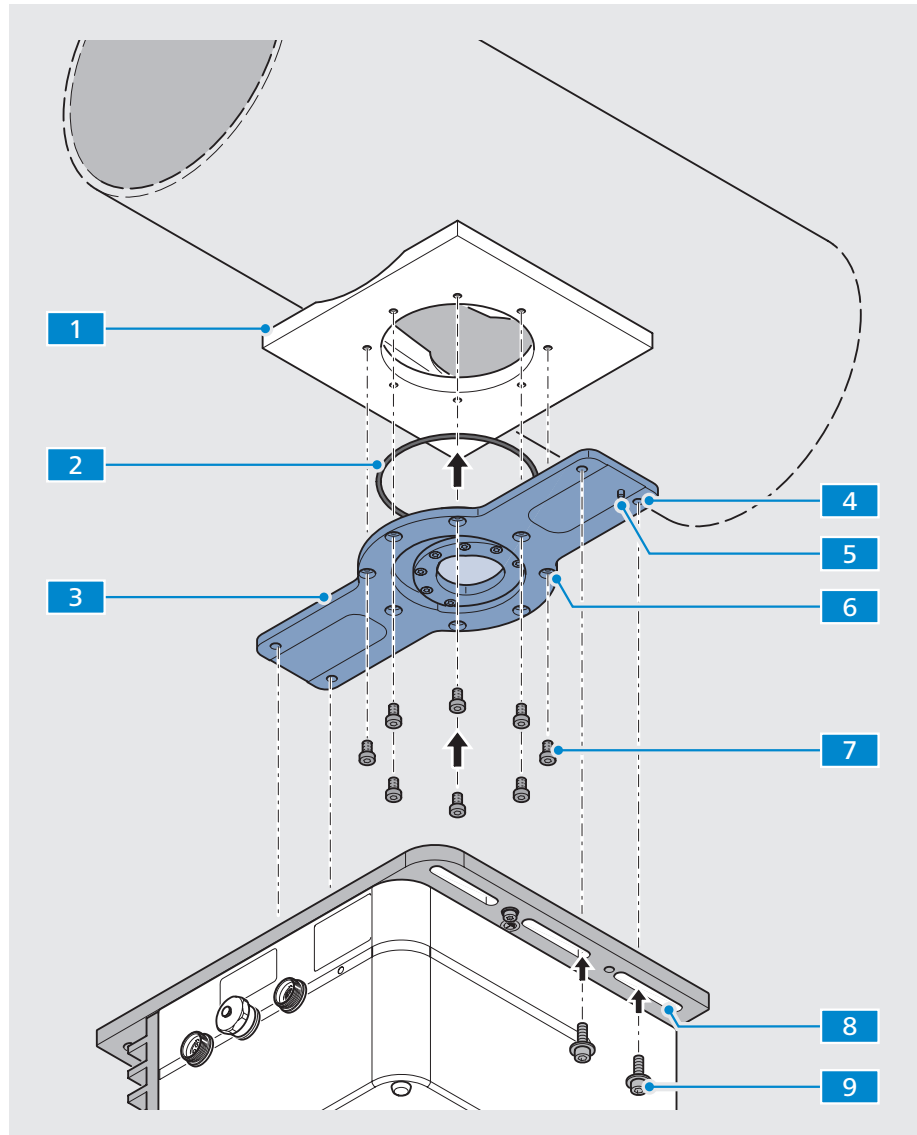


Fig. 10 Mounting the **Corona extreme** with the power flange

- 1 Mounting plate (customer-installed mechanical interface)
- 2 Sealing ring (for power flange)
- 3 Power flange
- 4 Threaded hole M8, 4x (for mounting the **Corona extreme**)
- 5 Positioning pin (for positioning the **Corona extreme** properly)
- 6 Clearance holes with counter bore, 8x
- 7 Fastening screws M6 x 10 (Torx), 8x
- 8 Slotted holes on **Corona extreme** base plate, 6x
- 9 Fastening screws M8 x 20 (internal hex), 4x (with washers)

### 4.2.3 Mounting with flange for GEA pipes

#### Requirements

- Prepared customer mechanical interface (see Fig. 11 on page 25)
  - Pipe with GEA VARINLINE housing (for process connection type N)
  - Clamping rings (for process connection type N)
  - Pipe clamps, suitable for pipe (threads max. M8)
- Flange for GEA pipes package (000000-2162-728) with:
  - Flange
  - 1x sealing ring (O-ring, 60x3)
  - VARINLINE sight glass TXIAN
  - 4x screws, M8 x 20 mm, with washers
- Allen wrench, size 6

#### Procedure

- 1 Loosen the lower clamping ring **5** until there is enough space to mount the flange **4**.
- 2 Attach a suitable pipe clamp **9** to the pipe. The distance to the GEA VARINLINE housing **8** should allow the pipe clamp's threaded rod to fit exactly in the clearance hole (see magnifying glass in Fig. 11 on page 25).
- 3 Fit the flange **4**, the VARINLINE sight glass TXIAN **6** and the O-ring **7** together one on top of the other with the GEA VARINLINE housing **8**.
- 4 Fasten the flange with the clamping ring **4** on the GEA VARINLINE housing **8**.
- 5 Unload the flange by fixing it to the pipe clamp **9** – use the top and bottom nuts to clamp it to the pipe clamp's threaded rod – by hand.
- 6 Mount the **Corona extreme** to the Flange **4** with the four fastening screws **2** and tighten by hand.
- 7 Align the **Corona extreme** precisely.
- 8 Tighten all the screws.



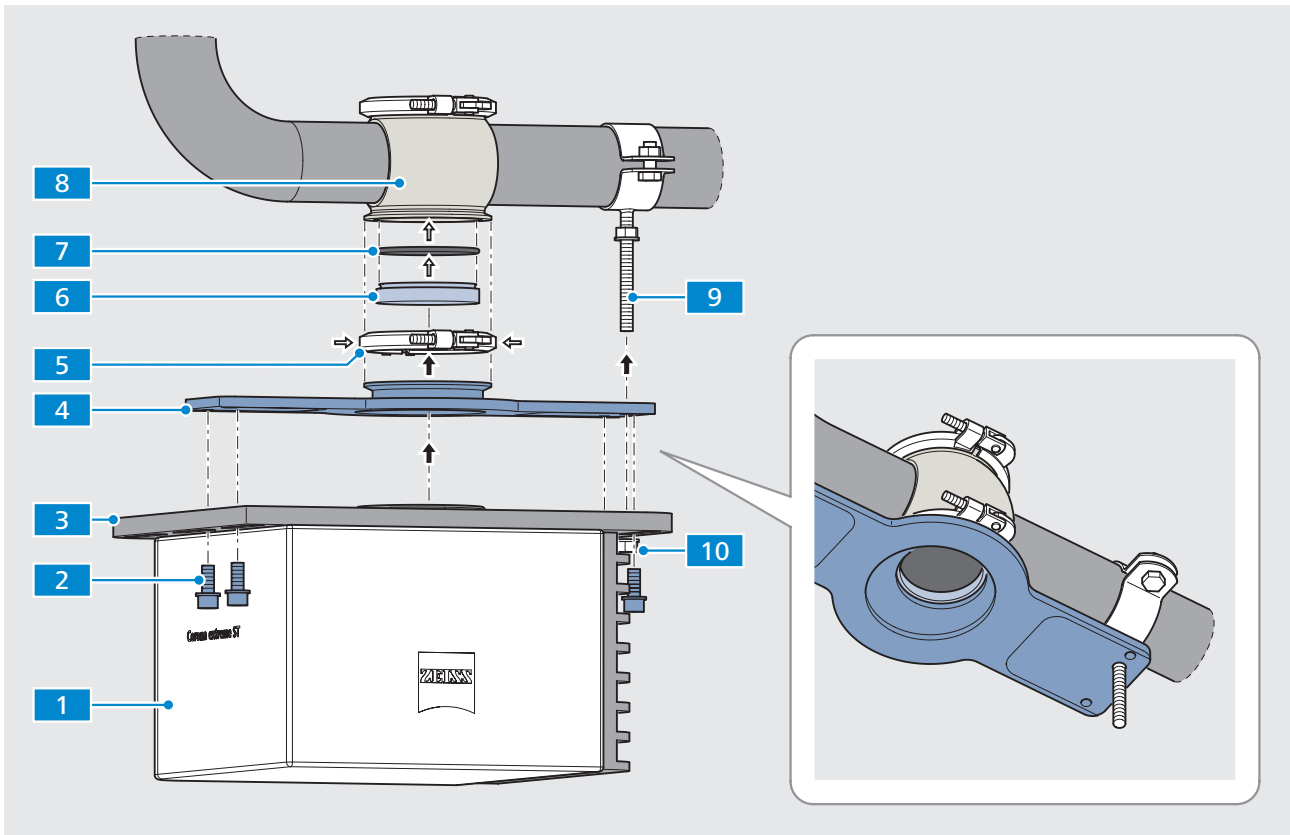


Fig. 11 Mounting the **Corona extreme** with flange for GEA pipes

- 1 **Corona extreme**
- 2 4x fastening screws, M8
- 3 Base plate
- 4 Flange for GEA pipes (including screws, see item 2)
- 5 Clamping ring for process connection type N
- 6 VARINLINE sight glass TXIAN
- 7 O-ring 60x3
- 8 GEA VARINLINE housing with process connection type N
- 9 Pipe clamp
- 10 2x fastening nuts (on pipe clamp threaded rod)

### 4.3 Connecting system components

- Requirements**
- Make sure that the power supply is disconnected. The entire measuring system must be switched off.
  - Use only original parts supplied by Carl Zeiss Spectroscopy GmbH.
  - Lay all cables free of tensile stress, bending stress and torsional stress.

- Procedure**
- 1 Use a ground cable (green/yellow) to establish a ground connection **1** between the **Corona extreme** housing and the installation site/vehicle's ground wire or ground connection.
  - 2 Use the ethernet cable **2** to connect the **Corona extreme** to your computer.

#### Note



**Corona extreme** needs to be operated in a separate device network. The Ethernet cable must be shorter than 100 m (recommended length: less than 80 m) or a switch needs to be interposed.

- 3 If required, you can connect up to four digital inputs/outputs via the "Digital IN OUT" port **3**.
- 4 Use the power supply cable **4** to connect the **Corona extreme** to a safety extra-low voltage source at 12–24 V DC (power consumption = 35 W, inrush current < 4 A).

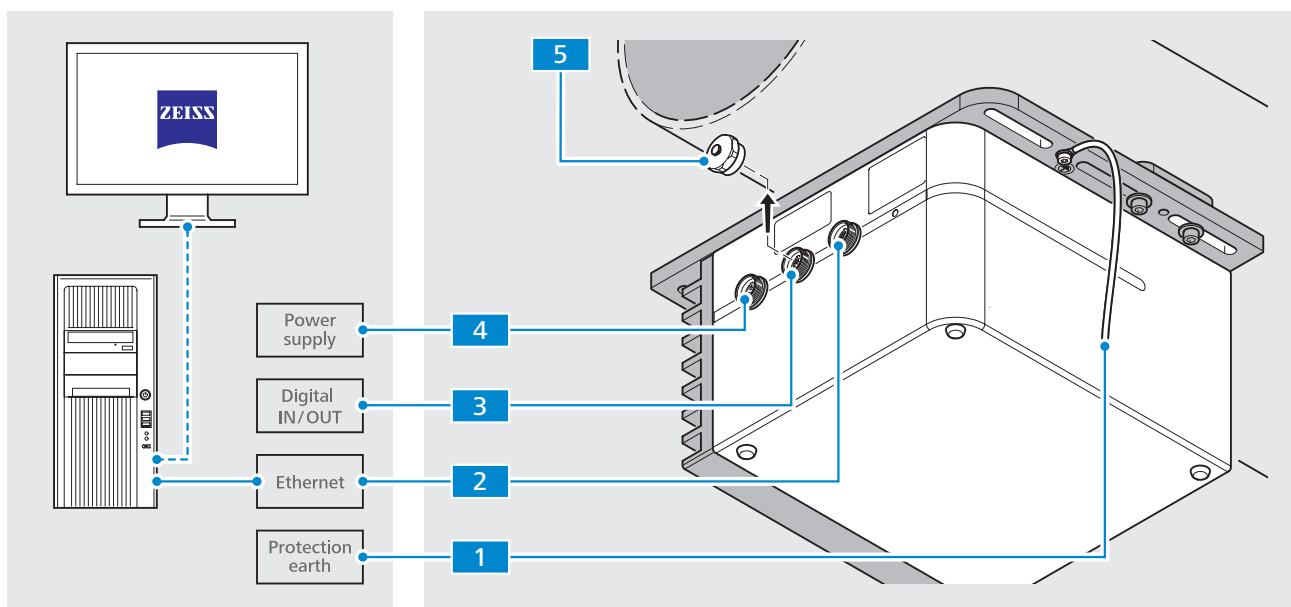


Fig. 12 Connecting system components

- |                                      |   |
|--------------------------------------|---|
| <b>1</b> Protective ground conductor | <b>4</b> Power supply connection<br>"POWER 12–24 V DC"            |
| <b>2</b> "ETHERNET" connection       | <b>5</b> Protective cap<br>(only for "Digital IN OUT" connection) |
| <b>3</b> "Digital IN OUT" connection |   |

## 4.4 Software installation

### 4.4.1 Installing the InProcess software

All of the files required for installation and the configuration file are included on the CD-ROM for InProcess Software.

- Procedure**
- 1 Start the installation process by double-clicking on the **setup.exe** file.
  - 2 Select the storage location and agree to the licensing terms.
  - 3 Then click on **INSTALL** to start the installation process.

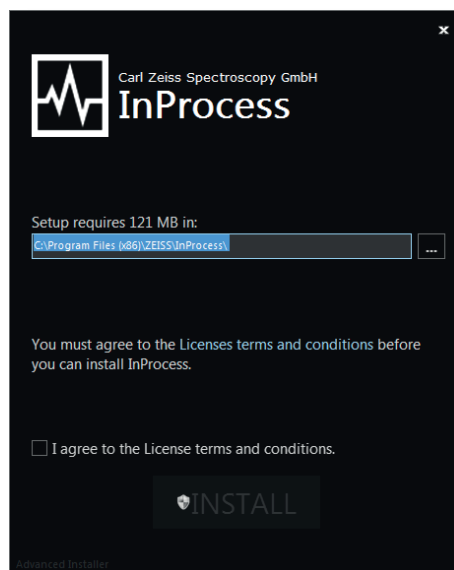


Fig. 13 Selecting the storage location and agreeing to the licensing terms

- 4 End the installation process by clicking on the **Finish** button.

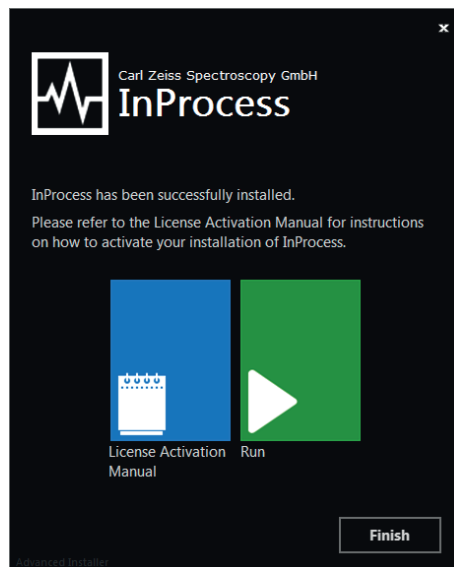


Fig. 14 Completing the installation

#### 4.4.2 Activating licenses

After completing the installation of the InProcess software, you still must activate the required licenses.

##### Note



For details on activation of the required licenses, please refer to the "ZEISS License Activation Manual".

As soon as you have activated the licenses, the software can be started.

##### Note



For details on the configuration and operation of the software, please refer to the "InProcess Manual".

## 5 System Operation

**Requirements**

- The components of the **Corona extreme** measurement system are completely and properly installed and connected.
- The required software packages are installed and the licenses are activated.

**Procedure**

- 1 Establish the power supply for the **Corona extreme** measurement system.
- 2 Check the display of the status LED on the **Corona extreme**.  
When the **Corona extreme** measurement system has booted up completely, the status LED will light up **blue**.

<b>blue flashing</b>	after connection to the power supply
<b>not illuminated</b>	during initialization (max. 30 s) (no process light is visible in the measurement window)
<b>blue light</b>	after complete boot-up (process light is visible in the measurement window)

- 3 Turn on your computer and start the **InProcess** software.
- 4 Select the service of the appropriate device (Corona extreme).

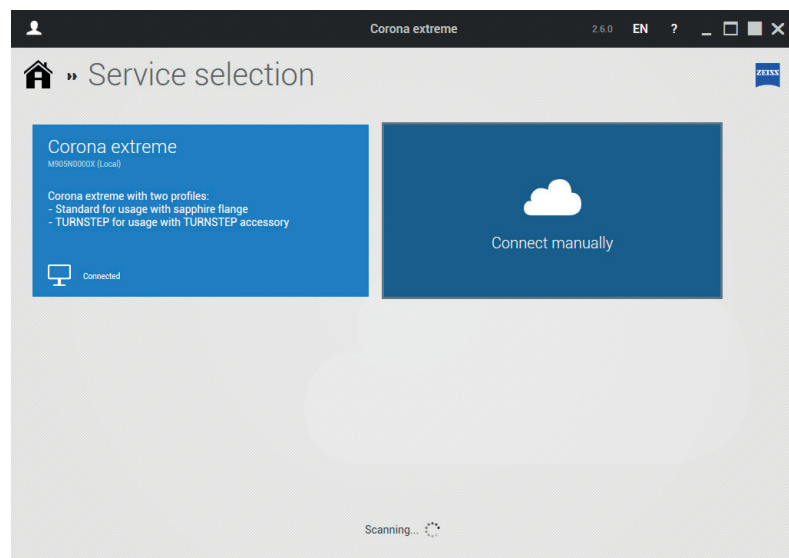


Fig. 15 Select "Service"

### Note



To permanently select a service (so that this selection window will no longer appear), press the right mouse button and select the desired service as the default value.



### Note

Please make sure that you have set the correct device profile.

"Corona extreme with standard flange" is set as the default profile.

For details on changing the profile, refer to the technical description "Information on the device profiles of the Corona extreme and Corona process". This is included with each flange.

- 5 To start the product configuration, click on the **Product setup** button after the start screen appears.

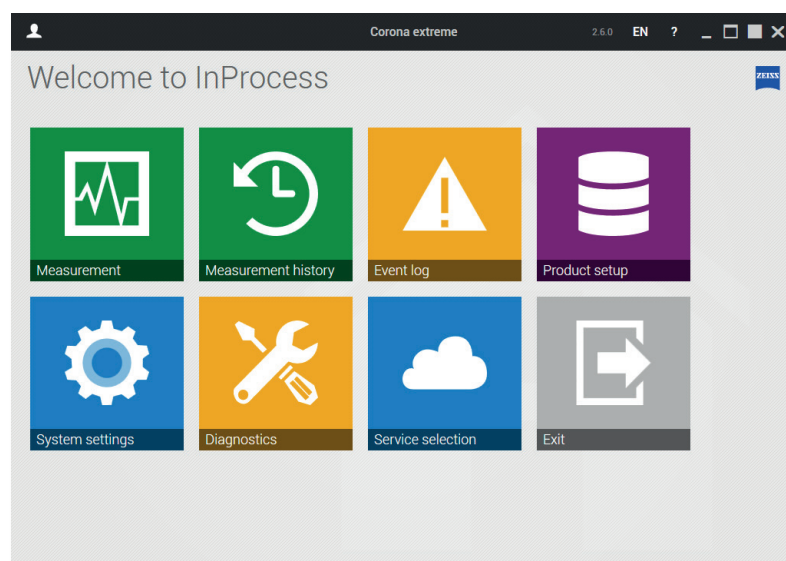


Fig. 16 Select "Product configuration"

- 6 You can add a new product and assign a product name to it by clicking on +.
- 7 Then select **Continuous measurement**.

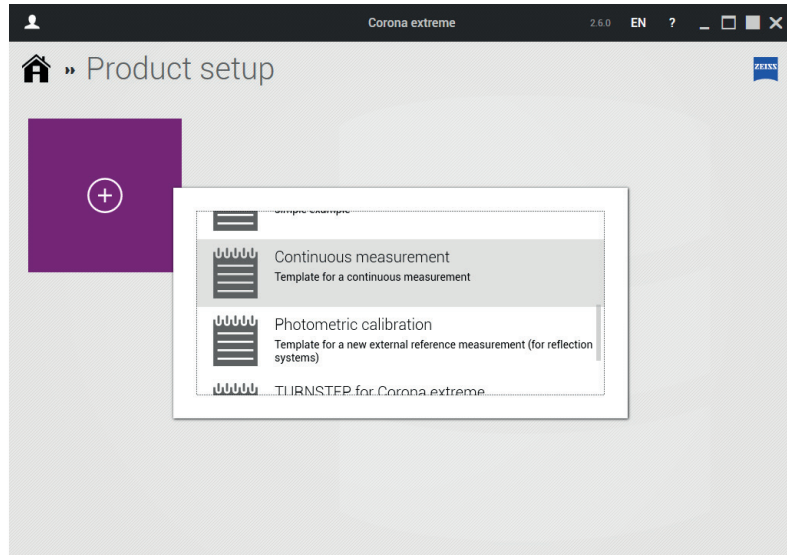


Fig. 17 Select "Continuous measurement"

- 8 Save the product by clicking the **Save** button.

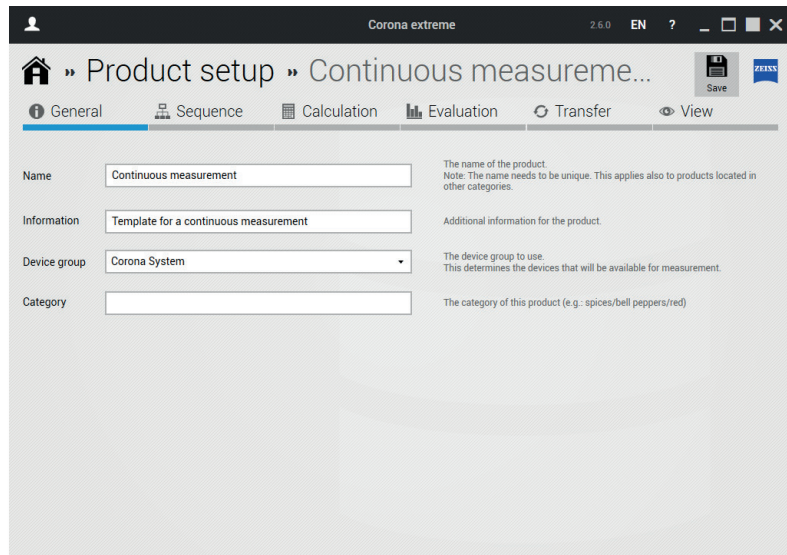


Fig. 18 "Save" product

**Note**



For details on product adaptation, refer to the software description "InProcess Manual".

- 9 Return to the start screen by clicking the **Home** button.
- 10 Click the **Measurement** button.
- 11 Start a measurement by clicking on the button for the desired product.

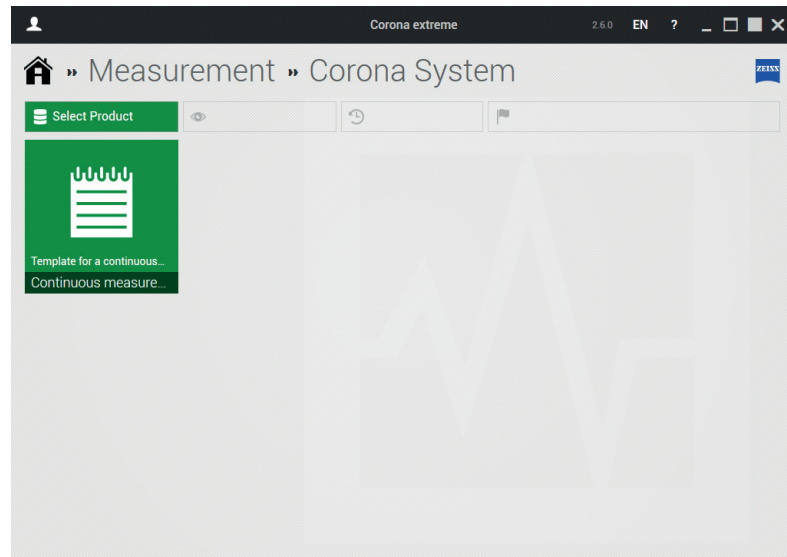


Fig. 19 Start measurement



## 6 Help in case of faults

In case of malfunctions of any kind, consult the diagnostic tool of **InProcess**. Send the corresponding information to our Service Department. (service.spectroscopy@zeiss.com).

If the connection to **InProcess** is not available, perform a ping test on the system. Communicate the results of this test to our Service Department.

Error	Cause	Remedy
Lamp not lighting up	<ul style="list-style-type: none"> <li>■ Device not turned on or not connected</li> <li>■ Defective lamp</li> </ul>	<ul style="list-style-type: none"> <li>■ Check power supply and cable</li> <li>■ Check status LED</li> <li>■ Check if the lamp has been deactivated through the software</li> <li>■ Replace lamp</li> </ul>
Illumination too weak	<ul style="list-style-type: none"> <li>■ Distance between measuring head and sample sub-optimal</li> <li>■ Protective glass dirty</li> <li>■ Sample reflection too low</li> <li>■ Motor not reacting</li> </ul>	<ul style="list-style-type: none"> <li>■ Improve distance</li> <li>■ Clean protective glass</li> <li>■ Replace sample</li> <li>■ Turn measurement system off/on (requires restarting the software)</li> </ul>
Illumination too strong	<ul style="list-style-type: none"> <li>■ Sample reflection too high</li> </ul>	<ul style="list-style-type: none"> <li>■ Replace sample</li> </ul>
Lamp service life exceeded		<ul style="list-style-type: none"> <li>■ Replace lamp</li> </ul>
Connection between PC and measurement system interrupted	<ul style="list-style-type: none"> <li>■ PC (if applicable) not reacting</li> </ul>	<ul style="list-style-type: none"> <li>■ Check Ethernet cable</li> <li>■ Check IP settings</li> <li>■ Use a separate network (do not use a company network)</li> <li>■ Turn measurement system off/on (requires restarting the software)</li> </ul>
Measurement reproducibility too poor	<ul style="list-style-type: none"> <li>■ Signal-to-noise ratio too low</li> <li>■ Measuring time too long</li> </ul>	<ul style="list-style-type: none"> <li>■ Optimize integration time</li> <li>■ See "Fluctuating measured values"</li> </ul>
Fluctuating measured values	<ul style="list-style-type: none"> <li>■ Fluctuations of ambient temperature/humidity</li> <li>■ Increase in sample temperature from halogen lamp</li> <li>■ Lamp service life exceeded</li> </ul>	<ul style="list-style-type: none"> <li>■ Perform regular, internal calibrations</li> <li>■ Replace lamp</li> </ul>
Other errors, questions and maintenance work		<ul style="list-style-type: none"> <li>■ Contact our customer service team</li> </ul>



## 7 Maintenance

### Note



To ensure optimum setting and trouble-free function of your system over an extended period, we recommend that you enter into a service/maintenance agreement with ZEISS.

Please get in touch with your local ZEISS representative when ordering spare parts or if service is required.

### 7.1 Cleaning and care

#### Warning



**Danger due to electricity!**

Disconnect the Corona extreme measuring system from the power supply completely before cleaning it.

#### Caution



**Danger due to hot surfaces!**

Let the Corona extreme measuring system cool down for at least 10 minutes before cleaning it.

Follow the safety instructions for handling flammable liquids and solvents on the respective packages.

#### Caution



**Sensitive electronic components!**

To avoid static electrostatic charges, wipe the housing components with a damp cloth only.

#### Requirements

- The **InProcess** control software has been shut down.
- The power supply to the **Corona extreme** measurement system is completely disconnected.

#### Procedure

- 1 Clean the surface of the device with common solvent-free cleaning agents. Persistent contamination can be removed cautiously with a detergent solution or ethyl alcohol.
- 2 Clean the protective glass of the measurement system using a soft, lint-free cloth moistened with distilled water or a special optical cleaner.

## 7.2 Accessories and spare parts

### Accessories for Corona extreme and Corona extreme ST

Designation	Order number
PC 5000, 64-bit, Win 8.1, incl. mouse and keyboard	000000-0560-678
23" touchscreen monitor P2314T black / DELL	000000-0578-819
24" monitor U2412M black / DELL	000000-0551-321

### Accessories – Ethernet cable

Designation	Order number
Ethernet cable for Corona (3 m)	000000-2036-573
Ethernet cable for Corona (5 m)	000000-2162-798
Ethernet cable for Corona (7 m)	000000-2102-398
Ethernet cable for Corona (10 m)	000000-2119-388
Ethernet cable for Corona (15 m)	000000-2058-862
Ethernet cable for Corona (60 m)	000000-2146-834
RJ45 connector, with insulated ends	000000-0483-496
LEMO connector for Ethernet cables, 14-pin	000000-0547-290

### Accessories – Power supply cable

Designation	Order number
Power supply cable for Corona (3 m)	000000-2162-817
Power supply cable for Corona (5 m)	000000-2162-818
Power supply cable for Corona (7 m)	000000-2162-819
Power supply cable for Corona (10 m)	000000-2118-527
Power supply cable for Corona (15 m)	000000-2043-011
LEMO connector for power supply, 3-pin	000000-0547-288
Laboratory power supply unit	000000-2045-548

**Accessories – Digital- IN/OUT cable**

<b>Name</b>	<b>Order number</b>
Digital IN/OUT cable for Corona (3 m)	000000-2035-658
Digital IN/OUT cable for Corona (5 m)	000000-2162-789
Digital IN/OUT cable for Corona (7 m)	000000-2162-791
Digital IN/OUT cable for Corona (10 m)	000000-2119-389
Digital IN/OUT cable for Corona (15 m)	000000-2102-399
LEMO plug for Digital IN/OUT cable, 10-pin	000000-0547-289
Cover cap for Digital IN/OUT connector	000000-0583-776

**Accessories – Flange**

<b>Designation</b>	<b>Order number</b>
Standard flange for Corona extreme	000000-2156-591
Power flange for Corona extreme	000000-2161-449
Flange for GEA pipes	000000-2162-728

**Accessories – only for GEA flange**

<b>Designation</b>	<b>Order number</b>
GEA side glass	000000-0586-719
GEA clamping connection	000000-2182-125
O-ring HNBR	000000-0580-790
O-ring EPDM	000000-0580-792
Steel pipe clip DN 40	000000-0580-763
Steel pipe clip DN 50	000000-0580-762

**Accessories – Software**

<b>Name</b>	<b>Order number</b>
InProcess Software 2.x	000000-2107-128
Software update to InProcess 2.x	000000-2114-851
The Unscrambler (calibration development software, CAMO)	000000-1360-276
OLUP (prediction engine, CAMO)	000000-1358-416
OLUC (classification engine, CAMO)	000000-1358-414
UCAL (prediction engine, Unity Scientific)	000000-2058-929

**Communication interfaces – Software**

<b>Name</b>	<b>Order number</b>
ProcessLinker	000000-2096-862
OSIS SDK 1.1.1	000000-2101-333

**Communication interfaces – Hardware**

<b>Name</b>	<b>Order number</b>
2x analog out 4 ... 20 mA Beckhoff terminal with bus coupler	000000-2161-639
Junction Box 100 W	000000-2172-305
Sampling button with connecting cable (3 m)	000000-2184-210
Sampling button with connecting cable (5 m)	000000-2186-146

**Accessories – Standards**

Designation	Order number
Ceral white reference standard (98 %), with certificate	000000-2150-210
White reference standard (99 %), PTFE, with certificate, 50 mm diameter	000000-0466-995
Black reference standard (2 %), PTFE, with certificate, 50 mm diameter	000000-0466-994
Black reference standard for TURNSTEP and Corona extreme	000000-1270-164

**Accessories – TURNSTEP**

Name	Order number
TURNSTEP for Corona extreme, complete	000000-2156-193
TURNSTEP adapter for petri dishes, 60 mm	000000-0455-055
TURNSTEP adapter for petri dishes, 80 mm	000000-0455-054
TURNSTEP adapter for petri dishes, 90–100 mm	000000-2152-369
TURNSTEP adapter for petri dishes, 150 mm	000000-0469-085
Petri dish, diameter 190 mm, height 100 mm	000000-0455-659
Petri dish, diameter 190 mm, height 200 mm	000000-0573-705
Petri dish, diameter 80 mm, height 20 mm	000000-0467-718

### 7.3 Storage and transport

The system is not provided with any special mountings or safety devices for transport. We recommend transporting the device in its original packaging.

Although the components are very robust, violent jolts must be avoided. You should also use the original packaging to return the device in the event of complaints or for servicing.

Observe the environmental parameters for storage or transport of the device specified in Section 8, "Technical data".

### 7.4 Disposal

#### Note



**Defective equipment must not be disposed of with household waste, but should be disposed of in compliance with the applicable legal requirements.**

This product has been developed, inspected and produced in accordance with the applicable environmental regulations and directives of the European Union.

The product and its accessories comply with EU Directives 2002/95/EC (RoHS) and 2002/96/EC (WEEE) to the extent applicable to this product.

We have installed a take-back and recycling process that ensures proper recycling in accordance with the above-mentioned EU Directives.

For details concerning disposal and recycling, please contact your local dealer or service organization.

The device must not be disposed of as domestic waste or via municipal waste disposal facilities.

If the product is resold, the seller is obligated to inform the purchaser regarding its proper disposal.



## 8 Technical data

All technical data, dimensions and weights specified in the present User Manual refer to and were valid at the time of printing.

The details of these specifications may deviate from the respective system design without fundamentally changing the functional information.

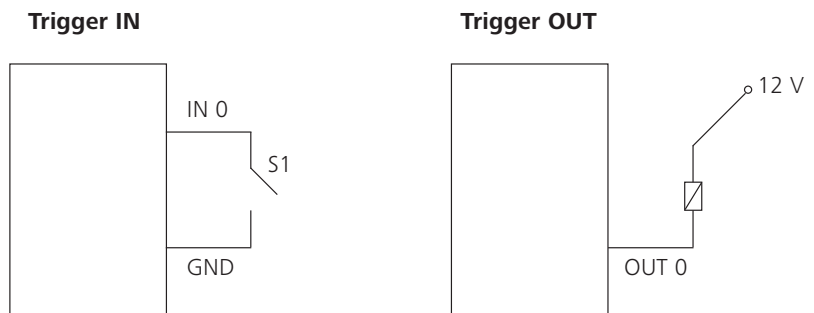
<b>Mechanical parameters</b>	
Dimensions (W x H x D)	256 x 190.5 x 253 mm
Weight	
<b>Corona extreme</b>	9.0 kg
<b>Corona extreme ST</b>	14.0 kg
<b>Ambient parameters</b>	
Operating temperature	-15 °C to +50 °C
Storage/transport temperature	-40 °C to +70 °C
Protection class (Protection from moisture/dust)	IP 66, ATEX Zone 21/20
Max. of humidity	95 % non-condensing
Max. altitude for operation	2000 m
<b>Electrical connection conditions</b>	
Power supply	12–24 V $\equiv$ SELV
Operating voltage range	9–36 V DC
Power consumption	35 W
Inrush current	< 4 A
<b>Interfaces</b>	
Communication	Ethernet 100 Mbit/s
Distance spectrometer – PC	< 80 m (or extension via switch/ amplifier)

Tab. 4 General technical data

Optical parameters	
Spectrometer	Free-beam optics with internal b/w referencing
Polychromator	1 x PGS
Peltier cooling	—
Sensor array	Multiplexed InGaAs G9203
Number of diodes per sensor array	256
Spectral range	950 to 1650 nm
Mean spectral pixel pitch	3 nm
Spectral resolution (half tenth value width)	≤ 10 nm
Wavelength accuracy	± 1.0 nm
Wavelength drift	≤ 10 pm/K
Minimum integration time	0.1 ms
Amplitude digitization	16 bits
Max. measurement frequency	1 Hz
Light source, lifetime	Halogen lamp, 20,000 h
Measuring spot	19 mm
Warm-up time	< 10 min

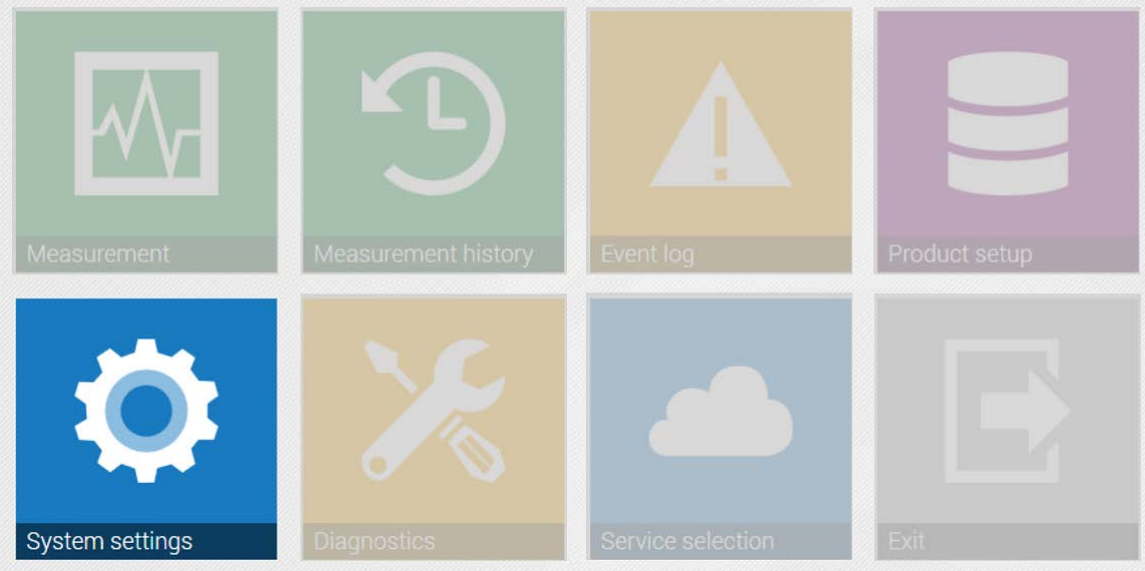
Tab. 5 Optical parameters

**Interface description**



Tab. 6 Interface description

Welcome to InProcess



# Information on device profiles Corona extreme, Corona process

Technical Note

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Knowledge of this documentation helps to optimize the ZEISS spectrometer systems. Therefore, please familiarize yourself with the contents. In particular, make sure to follow the instructions explaining how to handle the device safely. This document is subject to change with additional of technical development. This documentation is not subject to updates by revision services.

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Please always refer to the related user manual(s).



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Information on system profiles: Corona extreme, Corona process  
Technical Note | 2016-08 | E

1st edition August 2016

Subject to technical changes

# Information on device profiles

Applicable products: Corona extreme, Corona process

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Author: Dr. Mario Krause

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Date: August 2016

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## Description and objective of this document

This document describes what device profiles are, why they are necessary, and how they are used.

### What is a profile?

Every device requires configuration settings which, in addition to the technical settings (e.g. the IP address), also contain reference spectra for the photometric calibration and compensation information.

These configuration settings are called a device profile or just 'profile'. Several of these profiles may be stored in a configuration file (\*.oscx).

### Why are profiles necessary?

Profiles offer the possibility of quickly and easily adapting device settings to different operating conditions without the need to change the configuration file itself.

The aim of a profile change is to record the same spectral signature of a sample, even if the device is operating in different environments, e.g. with different protection windows or after lamp exchange.

The user needs to make sure before the measurement that the appropriate profile for his application scenario is used. Particularly, if calibrations are transferred from the lab to the production line, the correct usage of the right profile is essential.

## What profiles are there?

The software InProcess supports the usage of profiles since the release 2.0.

Currently the **Corona extreme** is pre-configured with the profiles **Sapphire**, **TURNSTEP with Petri dish** and **GEA**.

- When using the Corona extreme in a production line, the spectrometer is usually equipped with a ZEISS sapphire flange. In this case the profile **Sapphire** must be used because it contains the calibration measurements performed in exactly this optical setup. This is the **default profile**.  
The use of protective windows of other materials, of other thicknesses, or mounted in other distances to the device will lead to worse transferability of calibrations to other devices or scenarios.
- When using the Corona extreme in the lab with the TURNSTEP accessory, the samples should be placed in the Petri dishes, which are offered by ZEISS. The profile **TURNSTEP with Petri dish** must be used because it contains the calibration measurements performed in exactly this optical setup.  
When these recommendations are met, a transfer of calibrations to other devices or to other measurement scenarios will be facilitated.
- The Corona extreme can be mounted to pipes with GEA VARINE LINE N interface with the GEA flange offered by ZEISS. In this case the profile **GEA** must be used because it contains the calibration measurements performed in exactly this optical setup.  
The use of protective windows of other materials, other thicknesses, or mounted in other distances will lead to worse transferability of calibrations to other devices or to other scenarios.

Currently the **Corona process** is pre-configured with the profiles **default lamp** and **spare lamp**.

- By default measurements are carried out the profile **default lamp**.
- If the default lamp is defective, the device must be operated with the spare lamp. Switching to the profile **spare lamp** can be done manually.
- Switching to the spare lamp will be carried out automatically when the device is operated with the InProcess software.

## How can profiles be changed?

The 'Active profile' option is available in the 'System settings' of the InProcess software for devices with multiple profiles.

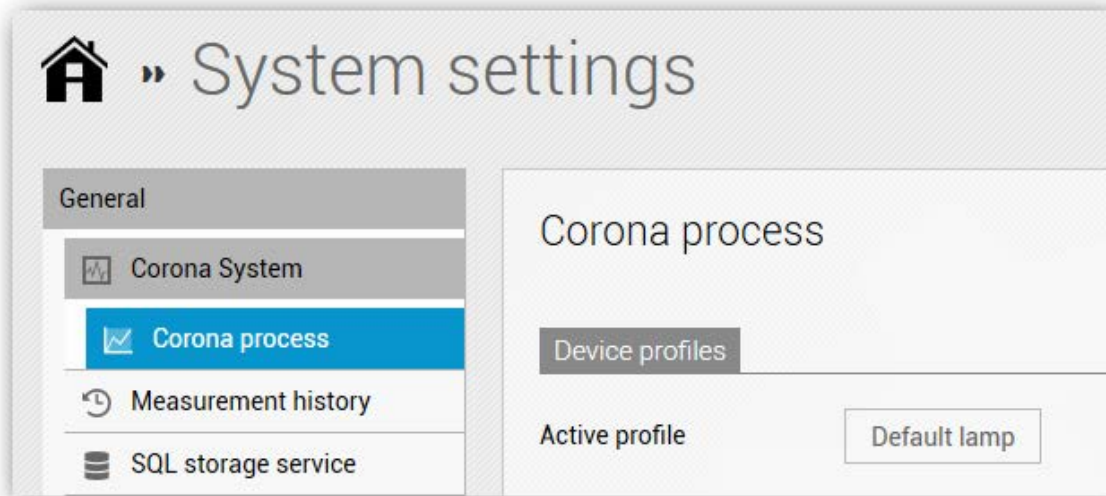


Figure 1: system setting in a Corona process configuration

The active profile can be changed by clicking on the button with the name of the current profile. The desired profile can be changed in the subsequent dialog box.

After re-initialization the devices will be operated with the configuration settings of the selected profile.

## How are new profiles created?

New profiles can only be created by ZEISS support.

