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Instruction Manual

Flue Gas Analysis Computer EUROLYZER® S1

CAPBS® enabled



Read manual before use!



Observe all safety information!



Keep manual for future use!

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1 About this instruction manual

This instruction manual is part of the product.

- ▶ Read this manual before using the product.
- ▶ Keep this manual during the entire service life of the product and always have it readily available for reference.
- ▶ Always hand this manual over to future owners or users of the product.

1.1 Warning Terms

WARNING TERM The type and source of danger is shown here.



- ▶ Precautions to take in order to avoid the danger are shown here.

There are three different levels of warning:

Warning term	Meaning
DANGER	Imminent danger! Failure to observe the information will result in death or serious injuries.
WARNING	Possible imminent danger! Failure to observe the information may result in death or serious injuries.
CAUTION	Dangerous situation! Failure to observe the information may result in minor or serious injuries as well as damage to property.

1.2 Explanation of symbols and typeface

Symbol	Meaning
▶	Activity consisting of a single step
1.	Activity consisting of several steps
•	Bulleted list
Text	Indication on a display
Highlighting	Highlighting



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

1.3 Liability information

The manufacturer shall not be liable in any direct or consequential damage resulting from failure to observe the technical instructions, guidelines and recommendations.

The manufacturer or the sales company shall not be liable for costs or damages incurred by the user or by third parties in the use or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection, malfunction of the device or of connected devices. The manufacturer or the sales company shall not be liable for damage resulting from any use other than the use explicitly stated in this instruction manual.

The manufacturer shall not be liable for misprints.

2 Safety

2.1 Intended use

The flue gas analysis computer EUROLYZER® S1 is exclusively suitable for:

- Professional settings and control measurements at all small combustion systems (low temperature and burner value boilers and thermal systems) for gas, oil and pellets fuel systems.

Any use other than the application explicitly permitted in this instruction manual is not permitted.

2.2 Incorrect use

The EUROLYZER® S1 flue gas analysis computer must never be used in the following cases:

- Hazardous area (Ex)
If the device is operated in hazardous areas, sparks may cause deflagrations, fires or explosions
- Use as a safety (alarm) unit or continuous measuring device
- Ambient air monitoring
- Use in humans and animals



2.3 Safe handling

CAUTION



Improper handling

- ▶ Do not touch live parts with the instrument or sensors.
- ▶ Protect the product against impact
- ▶ Use the product only indoor
- ▶ Insulate the product from moisture

Failure to follow these instructions may result in property damage.

2.1 Qualification of personnel

The product may only be installed, commissioned, operated, maintained, shut down and disposed of by qualified, specially trained personnel.

Electrical work may only be carried out by qualified electricians in accordance with local and national regulations.

2.2 Calibration

The flue gas analysis computer EUROLYZER® S1 must be calibrated annually by a recognized, relevant authority.

2.3 Modifications to the product

Changes or modifications made to the product by unauthorised persons may lead to malfunctions and are prohibited for safety reasons.

2.4 Usage of spare parts and accessories

Usage of unsuitable spare parts and accessories may cause damage to the product.

- ▶ Use only the manufacturer's genuine spare parts and accessories of the manufacturer.

3 Product description

The EUROLYZER® S1 flue gas analysis computer is a multiple-function analyzer with integrated calculating functions

The EUROLYZER® S1 flue gas analysis computer has an infrared printer interface, a *Bluetooth®* interface (*Bluetooth® Smart*). User-friendly, color-coded menus support improved and intuitive operation. The individual measuring programs, configuration menus, etc. are assigned distinctive colors.



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A state-of-the-art scroll wheel technology for one-hand operation provides perfect user interface. Additionally, a robust Touchpad Display is available to control the instrument.

3.1 Measurement and calculation parameters

Value	Measured medium	Unit
T _{gas}	Flue gas temperature	°C, °F
T _{air}	Air temperature	°C, °F
O ₂	Oxygen concentration	Vol.-%
CO	Carbon monoxide concentration	ppm, mg/m ³ , mg/kWh, mg/MJ, Vol.-%
NO	Nitrogen monoxide concentration (Option)	ppm, mg/m ³ , mg/kWh, mg/MJ
Pressure	Draft/Pressure (Option)	Pa, hPa, kPa, mbar, bar, mmWs, mmHg, inHg, Psi
CO ₂	Carbon dioxide	Vol.-%
CO _{ref}	Carbon monoxide referenced to an O ₂ reference value	ppm, mg/m ³ , mg/kWh, mg/MJ
Eta	Combustion efficiency value	%
Lambda	Excess air value	λ
qA	Flue gas loss	%
Dewpnt	Fuel-specific dew point	°C, °F
T.Diff	Differential temperature (TG - TL)	°C, °F
NO _x	Nitrogen oxide (Option)	ppm, mg/m ³ , mg/kWh, mg/MJ
NO _{ref}	Nitrogen oxide referenced to an O ₂ reference value (Option)	ppm, mg/m ³ , mg/kWh, mg/MJ
NO _{x ref}	Nitrogen oxides referenced to an O ₂ reference value (Option)	ppm, mg/m ³ , mg/kWh, mg/MJ



3.2 Measuring methods

Function	Explanation
Temperature measurement	Thermocouple NiCr-Ni (type K)
O ₂ measurement	Electrochemical measuring cell
CO measurement	Electrochemical measuring cell
NO measurement (Option)	Electrochemical measuring cell
Pressure/draft (Option)	Piezo-resistive sensor with internal temperature compensation
Measuring duration	Short-term, stable measurements of max. 60 minutes are possible, followed by a new calibration phase with ambient air.
Flue gas measurement	Via an external water separator and filter, the flue gas is supplied to the sensors by means of a gas pump.
Sensor calibration	After switching on the instrument, there is a calibration phase that takes 30 seconds after a cold start.
CO-Sensor protection	The CO sensor with dynamic H ₂ compensation is automatically protected when the maximum measuring range limit (> 9,999 ppm) is reached by switching off the gas pump. The measurement is resumed automatically as soon as the CO concentration is within the measuring range again.
Flue gas sampling	Flue gas sampling is done by means of a probe which enables either a "one-point measurement" (combi probe) or a "multi-point measurement" (multi-hole probe).



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3.3 Technical specifications

Parameter	Value
General Specifications	
Dimensions housing (H x W x D)	218 x 80 x 44 mm
Weight	Approx. 500 to 550 g (depends on count of sensors)
Material housing	2K ABS + PC
Protection type	IP 42 EN 60529
Display	High-resolution 4,3" Touch Display
Battery	Lithium-Ionen-Akku (3,6 V/5.000 mAh)
Power adapter	USB power supply
Data communication	<ul style="list-style-type: none">• Infrared printer interface• <i>Bluetooth</i>[®] Smart interface (<i>Bluetooth</i>[®] low energy)• QR-Code• USB-C
Data communication	Bluetooth Smart interface Bluetooth radio class: class 2 Bluetooth specification: 5.0
Frequency band	2.4 GHz
Transmission power	Max. +9 dBm
Range	Up to 10 m in buildings, up to 50 m outdoor The actual range depends on the environment and can be reduced by, for example, walls and other obstacles

Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.



Parameter	Value
Bluetooth certification	EU countries: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Republic of Cyprus, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom EFTA countries: Iceland, Liechtenstein, Norway, Switzerland
Printer	External thermal printer (EUROprinter)
Memory	10.000 measurements
Temperature range	
Ambient	0 °C to +40 °C
Medium	0 °C to +40 °C
Storage	-20 °C to +50 °C
Air pressure range	
Ambient	750 hPa to +1100 hPa
Humidity range	
Ambient	20 % rH to 80 % rH
Flue gas temperature measurement (T1 and T2)	
Measuring range	0 °C to +1,150 °C
Max. deviation	± 1 °C + 1 Digit (0 °C to +300 °C) ± 1.0 % of measured value (above +300 °C)
Resolution	0.1 °C
Sensor	Thermocouple NiCr-Ni (type K)
Combustion air temperature	
Measuring range	-20 °C to +200 °C
Max. deviation	± 3 °C + 1 digit (-20 °C to 0 °C) ± 1 °C + 1 digit (0 °C to +200 °C)
Resolution	0.1 °C
Sensor	Thermocouple NiCr-Ni (type K)



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

Parameter	Value
Draft / pressure measurement (Option)	
Measuring range	± 70 hPa (Draft) / ± 150 hPa (Diff.-Pressure)
Max. deviation	± 2 Pa + 1 Digit (<2,00 hPa) ± 1 % reading (>2,00 hPa)
Resolution	$\pm 0,01$ hPa
Sensor	Semiconductor sensor
Pitot measurement (Option)	
Measuring range	0.5 - 70 m/s
Max. deviation	± 0.8 m/s
Resolution	0.1 m/s
Sensor	Semiconductor sensor
O₂-measurement	
Measuring range	0.0 Vol. % to 21.0 Vol. %
Max. deviation	± 0.2 Vol. % by volume of measured value
Resolution	0.1 Vol. %
Sensor	Electrochemical measuring cell
Response time (T90)	30 seconds
CO₂-determination	
Range	0 – CO ₂ max
Max. deviation	± 0.2 Vol. %
Resolution	0.1 Vol. %
Sensor	calculation from O ₂ value
Response time (T90)	30 seconds

Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.



CO- measurement (with H₂ compensation)	
Measuring range	0 ppm to 4,000 ppm (nominal) or 9,999 ppm (maximal)
Accuracy	5 ppm (to 50 ppm) 5 % of measured value (above 50 ppm)
Resolution	1 ppm
Sensor	Electrochemical measuring cell
Response time (T90)	60 seconds
NO- measurement (Option)	
Measuring range	0-2,000 ppm
Accuracy	5 ppm (to 50 ppm) 5 % of measured value
Resolution	1 ppm
Sensor	Electrochemical measuring cell
Response time (T90)	60 seconds
NOlow- measurement (Option)	
Measuring range	0-300 ppm
Accuracy	2 ppm (to 40 ppm) 2 % of measured value
Resolution	0.1 ppm
Sensor	Electrochemical measuring cell
Response time (T90)	60 seconds



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

3.4 Calculation formulae (extract)

Calculation of the CO₂ value

$$\text{CO}_2 = \text{CO}_{2\text{max}} * (1 - \frac{\text{O}_2}{21}) \text{ in } \%$$

CO ₂	Calculated carbon dioxide value in %
CO _{2max}	Max. CO ₂ value (fuel-specific) in % by volume
O ₂	Measured oxygen concentration in %
21	Oxygen concentration of the air in % by volume

Calculation of the flue gas loss

$$qA = (\text{TG} - \text{TA}) * (\frac{A_2}{21 - \text{O}_2} + B) \text{ in } \%$$

qA	Flue gas loss in %
TG	Flue gas temperature in °F or °C
TA	Combustion air temperature in °F or °C
A ₂ , B	Fuel-specific factors
O ₂	Measured O ₂ value

Calculation of the excess air value Lambda

$$\text{Lambda} = \frac{\text{CO}_{2\text{max}}}{\text{CO}_2} = \frac{21}{21 - \text{O}_2}$$

Lambda	Excess air value
--------	------------------

Calculation of the combustion efficiency value (Eta)

$$\text{Effic.} = 100 - qA \text{ in } \%$$

Effic.	Combustion efficiency value in %
--------	----------------------------------

Calculation of CO reference (CO ref), same for NO and NO_x

$$\text{CO}_{\text{ref.}} = \text{CO} * \frac{21 - \text{O}_{2\text{ref}}}{21 - \text{O}_2}$$

CO _{ref.}	Carbon monoxide reference
CO	Measured CO value
O ₂	Measured O ₂ value
O _{2ref}	O ₂ reference value



3.5 Approvals, tests and conformities

The EUROLYZER® S1 flue gas analysis computer is approved in accordance with the German "1. BundesimmissionsSchutzVerordnung" (1. BImSchV) and EN 50379-2, is TÜV-tested (VDI 4206) and meets the applicable directives of 2004/108/EC.

The conformity of the product with the requirements of the EU directives is confirmed by the CE mark on the housing.

4 Product description

4.1 Front view



1	Loop attachment
2	USB-interface/ mains connection
3	Touchscreen
4	Action button
5	Scroll wheel with LEDs
6	On/Off button
7	Connections



Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.

4.2 Rear view



1	Speaker
2	IR-Diode for EUROprinter
3	Magnets
4	Gas outlet

4.3 Connections



1	Temperature connections (Type-K)
2	Gas inlet, Ø8mm
3	Draft connection, Ø7mm (Option)
4	Pressure connection, Ø8mm (Option)



5 Commissioning

5.1 Mains unit / Battery

The EUROLYZER® S1 is supplied with an Li-Ion battery. Fully charge the battery before using the measuring instrument. Plug the USB cable into the USB-C port on the instrument and to the mains plug. For charging connect the mains unit to a mains socket. If the mains unit is connected to a mains socket, the measuring instrument is automatically powered via the mains unit.

WARNUNG



Risk of electric shock

► There is a risk of electric shock if used improperly.

Failure to follow these precautions can result in death, serious injury, or property damage.

INFO

► Only charge the energy storage unit at an ambient temperature of 0 to 45 °C.

5.1.1 Charging

1. Connect the plug of the mains unit to the USB-C mains unit socket on the measuring instrument.
2. Connect the mains plug of the mains unit to a mains socket. The charging process starts, the blue charging LED lights. The charging process stops automatically when the energy storage unit is fully charged. The blue charging LED switch off.

It is possible to set the instrument in a charging mode:

Status	Action	Function
Instrument on and get charged (LED: light blue)	Press "Power" button for >1 second	Instrument is in charging mode. As soon as the battery is fully charged, the instrument will switch off.
Instrument in charging mode (Battery icon is visible)	Press "Power" button	Instrument is in measuring mode.

When using a fast-charging power supply, the EUROLYZER® S1 automatically switches to fast-charging mode.

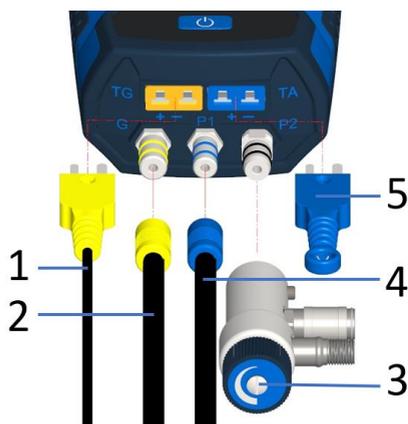
 **Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.**

5.2 Switching the instrument on and off

Status	Action	Function
Instrument off	Press "Power" button	Instrument is switched on.
Instrument on	Press "Power" button for >1 second	Instrument is switched off.

5.3 Connect probes

Connect the flue gas probe with the gas hose / temperature plug marked in yellow and the draft hose marked in blue. Insert the air temperature sensor into the temperature socket marked in blue.



1	Flue gas temperature
2	Fluegas (Exhaust gas) hose
3	Pressure valve for tightness test (Option)
4	Draft (Option)
5	Ambient air sensor

INFO

► Before using the EUROLYZER® S1, a visual inspection of the entire measuring equipment (measuring instrument including accessories) must be carried out to ensure fault-free operation of the product.

5.4 Operating concept

The EUROLYZER® S1 has a dual operating concept and can be operated either with the touchscreen or via the keypad.

Fel! Använd fliken Start om du vill tillämpa Överschrift 1 för texten som ska visas här.



Before operating the measuring instrument, familiarize yourself with the operating concept. The execution of actions is mainly done by:

Action	Touchscreen	Keyboard
Select	Tap menu icons	Press Action button 
Back	Tap back icon	Double press Action button 
Navigation function for up and down navigation in the menu	Swipe up or down	Navigate with the scroll wheel. 

5.4.1 Keypad

Some functions require the input of values (figures, numbers, characters). The values are entered via a keypad field, by touching or selecting with the scroll wheel and confirming with the action key.



1	Caplock-key: Permanent capitalization
2	Shift-key: Capitalization
3	Special letter key
4	Backspace-key: Deletes backwards
5	Delete-key: Deletes whole line
6	Enter key: Confirm



Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.

5.5 Use of the IR-printer (EUROprinter)

For printing, the IR interface of the EUROLYZER® S1 unit must point towards the EUROprinter as shown in the following illustration, keeping a minimal distance of ca. 25 cm! (Max. ca. 70 cm).



INFO

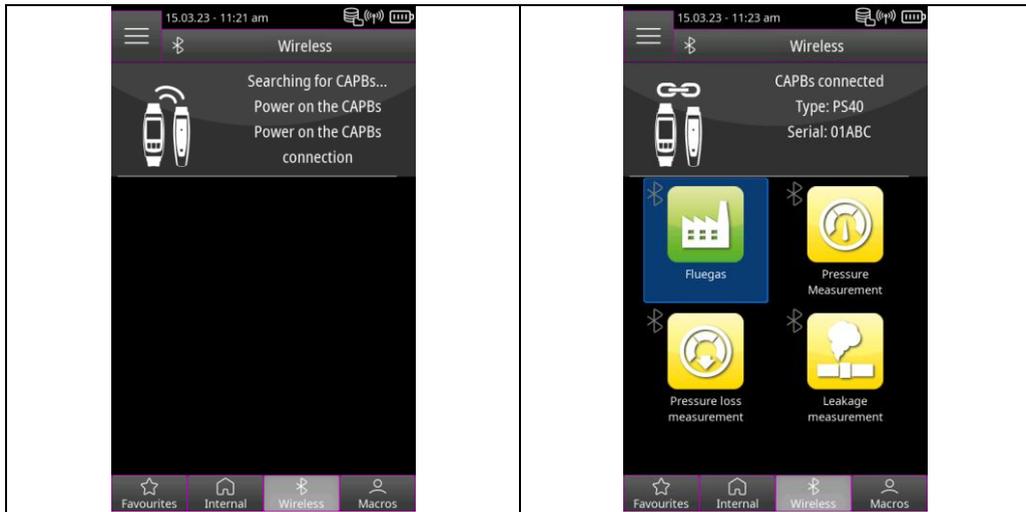


The optical transmission zone must be kept straight and free of obstacles!



5.6 Connection with CAPBs®

The EUROLYZER® S1 has the possibility to establish a Bluetooth® connection with the wireless CAPBs® sensors:



1. Go to the **Wireless** menu
2. Switch on the CAPBs®
3. The CAPBs® connects automatically and the available measuring programs appear in the wireless list.

5.7 Connection with EuroSoft® connect for iOS and Android

EuroSoft® connect is the App for using the EUROLYZER® S1 with a smartphone or tablet. The connection to the mobile end device is established via Bluetooth®. The App offers application programs with step-by-step user guidance. Measurement reports with technician data, company logo and customer data can be created and sent.



Compatibility:

- Requires iOS® 13.0 or later / Android® 8.0 or later.
- Requires Bluetooth® 4.0 or newer



Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.

5.8 EuroSoft® connect Software for Windows

The EuroSoft® connect Windows software offers the following functions:

- Measurement data transfer
- Measuring devices screen transmission
- Readout and further processing of log files
- Readout and further processing of measurement reports
- Create and edit customer database
- Device setting:
 - a: Owner address for measurement reports
 - b: User defined fuels



INFO

Windows Software

- ▶ Knowledge of PC operation and experience with Microsoft Windows operating systems is required.

Computer Requirements:

The software requires the following operating system:

- Windows® 10 or later

The computer must meet the following requirements:

- USB 2 or higher
- Dual Core processor with minimum 1 GHz
- Minimum 2 GB RAM
- Minimum 100 MB available hard disk space
- Screen with a resolution of at least 800 x 600 pixels

INFO

- ▶ Administrator rights are required for the installation.

INFO

- ▶ An active Internet connection is required to get the latest device firmware.

Fel! Använd fliken Start om du vill tillämpa **Überschrift 1** för texten som ska visas här.



6 Operation

Switch on the device: Briefly press the "On/Off" key  .

6.1 User interface Start menu

Open the **Favorites**, **Internal**, **Wireless** or **Macros** lists and the **Info menu** by tapping the fields or double-clicking the Action button. Tap the field to start a measuring program or select it with the scroll wheel and confirm with the Action button.



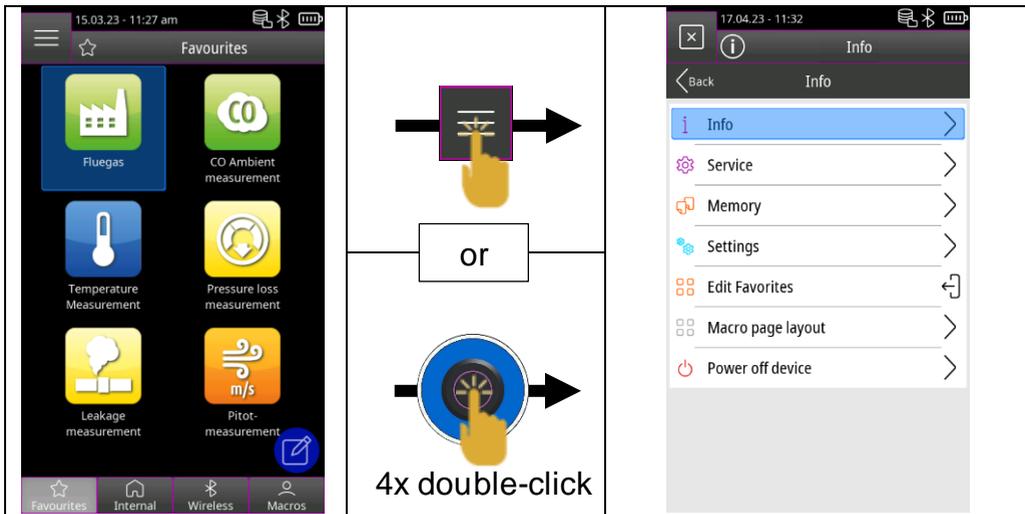
1	Info Menu
2	Measuring programs
3	Menu list Favorites : Here you will find measuring programs that are activated for the Favorites list.
4	Menu list Internal : All available measuring programs that access the internal sensors are located here.
5	Menu list Wireless : Here you can find measuring programs for the CAPBs® Bluetooth sensors.
6	Menu list Macros : Here you will find predefined measuring programs.
7	Edit Favorites list
8	Status bar for date, time, memory, Bluetooth® and battery display



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

6.1.1 Info Menu

Open the **Info Menu** in the **Start Menu** by tabbing the "Info Menu"  field or double-click the Action button four times:



Info Menü	Description
Info	<ul style="list-style-type: none"> • Manufacturer information • Device name • Firmware Version • Release date • Serial Number • ID Number (Hardware ID)
Service	<ul style="list-style-type: none"> • Password input • Battery Diagnostics Menu • Gas Sensor Information • Sensor Information
Memory	Detailed description in chapter 6.1.2 Memory.
Einstellungen	Detailed description in chapter 6.1.3 Settings.
Edit Favorites	Detailed description in chapter 6.1.4 Edit Favorites.
Macro page layout	Detailed description in chapter 6.1.5 Macro page layout.
Power off device	Sensor channels are automatically flushed, then the measuring device switches off.



6.1.2 Memory

Measurements can be saved directly in customer folder. Customer folders consist of 8 lines with 20 characters each, where the first entry is the keyword for searching in the device. The seven other fields are used for information such as: Street, city, email address, phone number, installation number, ...

The 8 lines of 20 characters each are printed out or saved in the report.

INFO

► Create the database before the first use.

It is possible to create and edit the customer database on the instrument or on a Windows PC with the EuroSoft® connect software.

6.1.2.1 Creating a new customer database on the instrument

Open the **Info menu** and select the "Create Database" function in the **Memory** submenu.

► Confirm the warning "All entries will be deleted" with "Yes".

INFO

► This deletes an already existing memory structure!

The procedure creates a DATABASE.CSV file, which represents the memory structure of the EUROLYZER® S1 flue gas analyzer. The procedure takes a few seconds.

6.1.2.2 Create customer data on the instrument

Open the **Info menu** and select the "Scan" function in the **Memory** submenu.

1. Open the "Scan"  field
2. Enter the name of the customer using the keyboard and confirm with
3. Select the "-(New entry)-" field to create the new customer
4. Open the new customer with the " + customer name" field
5. Enter additional information in the address fields , such as: Street, City, Email address, Phone number, System number, ...



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

INFO

► Not all fields need to be filled.

6. Save the additional information with the "Save changes"  field
7. Exit the customer order by tapping the "Back"  field or double-clicking the action button.
8. To create another customer open the "Scan"  field again and delete the previous customer name with the "Delete"  field.
9. In order to see the complete customer database, delete the entry in the search field and confirm

6.1.2.3 Saved measurement report

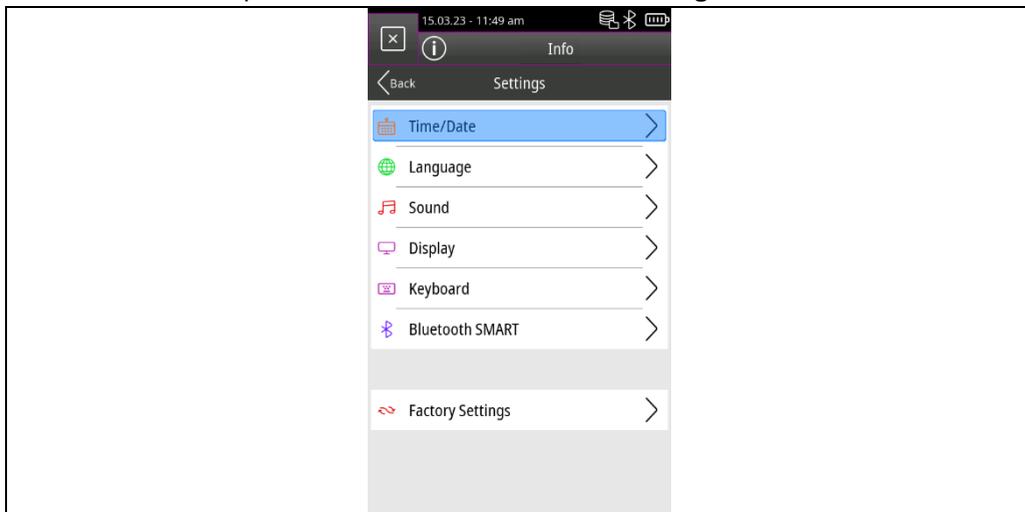
1. Enter the full name of the customer or the first letter in the search field and confirm with 
2. Select the desired customer from the list of search results
3. Open the customer with the  + "customer name" field
4. View existing measurement reports using the "Scan"  field
5. Open the measurement report  from measurement data and customer data via the date and time stamp and print , show , convert to QR code  or delete  it

Fel! Använd fliken Start om du vill tillämpa **Überschrift 1** för texten som ska visas här.



6.1.3 Settings

Open the **Info** menu  and the **Settings**  submenu:

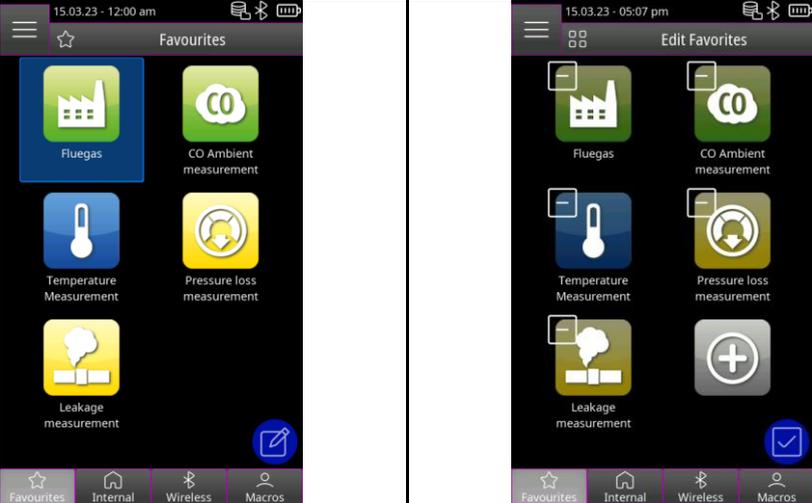


Settings	Description
Time/Date	<ul style="list-style-type: none"> • Set date, time. • Activate summer / winter time • Set 12h / 24h time format • Set date format
Language	Set language
Sound	Set key sound and alarm sound
Display	<ul style="list-style-type: none"> • Set display brightness • Activate / deactivate Zoom Mode for measured values
Keyboard	<ul style="list-style-type: none"> • Scroll wheel speed settings • Scroll wheel LED settings • Set function for Softkey
Bluetooth SMART	<ul style="list-style-type: none"> • Perform Bluetooth firmware update • Activate / deactivate Bluetooth
Factory Settings	Set factory settings



Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.

6.1.4 Edit favorites list



1. Open the **Favorites** menu and tap "Edit favorites"  or use the scroll wheel to select "Edit favorites" in the **Info** menu and confirm by pressing the action button.
2. Exit the favorites list editing mode by tapping "Edit favorites"  or double-clicking the action button.

6.1.4.1 Delete measuring program from the favorites list

Tap "Edit favorites"  or use the scroll wheel to select "Edit favorites" in the **Info menu** and confirm with the action button.

1. To delete a measuring program from the favorites list, select the corresponding measuring program and delete the program with the "Trash can" icon.

6.1.4.2 Add measuring program to favorites list

Tap "Edit favorites"  or use the scroll wheel to select "Edit favorites" in the **Info menu** and confirm with the action button.

1. To add a measuring program from the internal list, select the "Plus" icon.



2. Select the corresponding measuring program to put this program in the favorite list.

INFO

► Maximum six measuring programs available in favorites list.

6.1.4.3 Replace measuring program in the favorites

Tap "Edit favorites"  or use the scroll wheel to select "*Edit favorites*" in the **Info menu** and confirm with the action button.

1. To replace a measuring program from the favorites, select the corresponding measuring program.
2. In the internal list select the new measuring program to replace the measurement program.

6.1.5 Macro

Macro measurement programs provide application-specific, individual measurement configurations for defined applications.

A flue gas analysis macro program can contain the following configurations:

- Sequence of measured values
- Units for gas, pressure and temperature values
- Specified fuel
- O₂ reference
- CO max for sensor protection

A tightness test macro program can contain the following configurations:

- Measuring medium
- Settling and measuring time
- Maximum allowed pressure drop
- Unit

The set configurations are stored in the respective macro measuring program.

 **Fel!** Använd fliken **Start** om du vill tillämpa **Überschrift 1** för texten som ska visas här.

6.1.5.1 Add / remove Macro program

Open the **Info menu** and select the "*Macro Type*"  function in the **Macro Page layout** submenu.

1. Select desired Marco type

INFO ▶ The selected measuring program appears in the Macro menu list.

2. To add another Macro measurement program open the next field "*Macro type*"  and select the desired type.

INFO ▶ Up to six Marco measurement programs can be enabled.

3. To remove a Marco measuring program, select the line "*not used*" in the respective "*Macro type*"  field.

6.1.5.2 Name Macro program

Start the Macro measuring program and select the "*Macro settings*"  function in the **main menu** .

1. Open the "*Name*"  field and enter a name using the keyboard field.

INFO ▶ Name 1 stands for the first line, name 2 for the second line.

6.1.5.3 Export / Import Macro program

Open the **Info menu** and select the "*Export macros*"  function in the **Macro Page layout** submenu to save the set Marcos on the instrument.

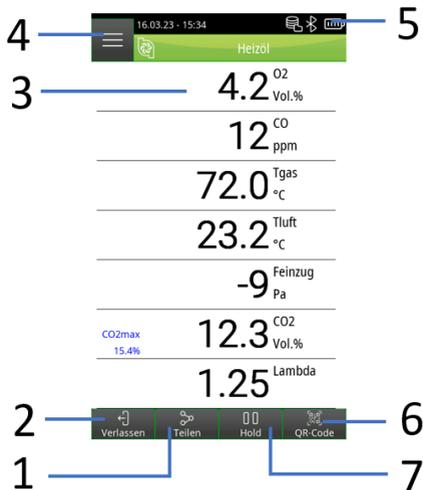
INFO ▶ The configuration file is stored in the meter in the "MACROS" folder.

With the function "*Import macros*"  it is possible to import an existing Macro configuration. To do this, an existing "MACROS" folder must first be copied to the device.

Fel! Använd fliken Start om du vill tillämpa Överschrift 1 för texten som ska visas här.



6.2 User interface measuring mode

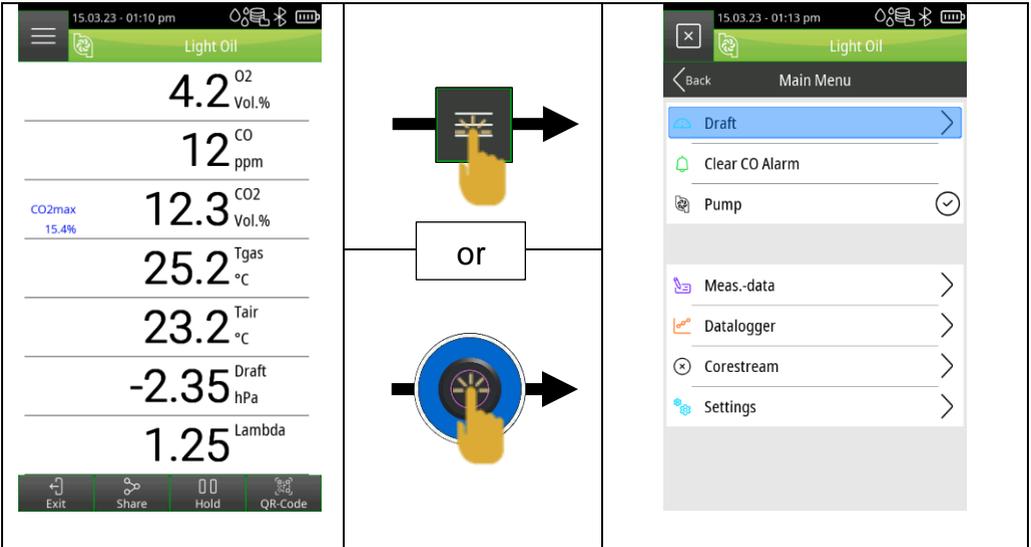


1	Share menu
2	End measurement
3	Measured values
4	Main menu
5	Info bar
6	Softkey
7	Gas pump on/off

 **Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.**

6.2.1 Main menu

Open the **main menu** in measuring mode by tapping the "Main menu" field or by clicking the action button:



Main menu	Description
Draft (Option)	Perform Draft measurement, exact description in chapter 6.2.1.1 Draft.
Clear CO Alarm	Acknowledge alarm when alarm threshold is exceeded
Pump	Switch pump off/on
Measurement data	Detailed description in chapter 6.2.1.2 Measured data
Datalogger (Option)	Detailed description in chapter 6.2.1.3 Data logger
Corestream	Exact description in chapter 6.2.1.4 Core current search
Settings	Exact description in chapter 6.1.3 Settings

6.2.1.1 Draft (Option)

Open the **main menu**  and the **Draft**  submenu:

INFO ▶ The flue gas probe must be at fresh air during the zeroing phase!

1. Tap the "Zero Draft" field or select it with the scroll wheel and confirm with the action button.

Fel! Använd fliken Start om du vill tillämpa Överschrift 1 för texten som ska visas här.



INFO

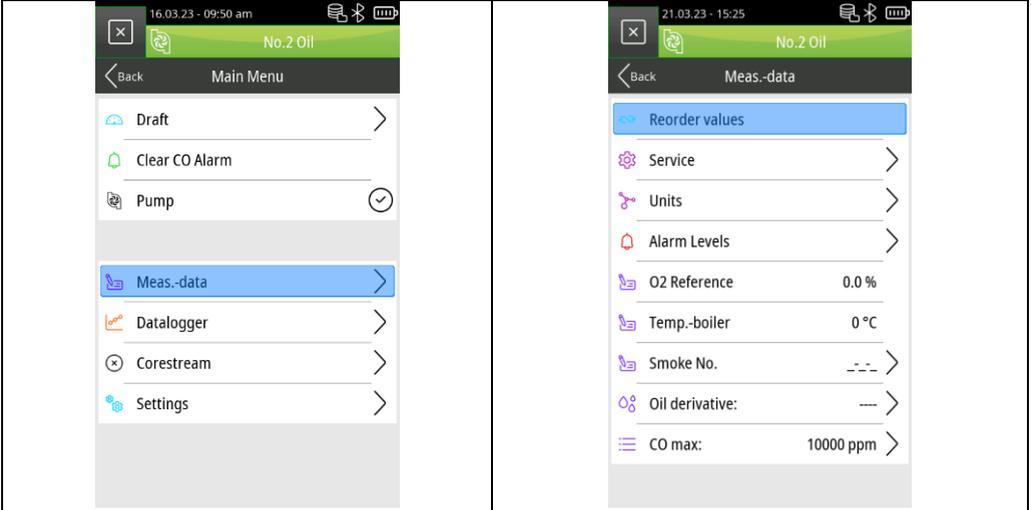
- ▶ For the Draft measurement, the flue gas probe must be located in the chimney!

2. Tap the "Include Draft" field or select it with the scroll wheel and confirm with the action button.

 **Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.**

6.2.1.2 Measurement data

Open the **main menu**  and the **Measurement data**  sub-menu:



Measurement data	Description
Reorder values	Detailed description in chapter 6.2.1.2.1 Order of measured values
Service	Information about sensors and fuel data
Units	Set units for pressure, temperature or gas
Alarm levels	Set alarm limits for CO. When the set CO alarm threshold is exceeded, the instrument gives an acoustic signal.
O2 Reference	Set the O2 reference value of the current fuel
Temp. boiler	Set temperature of the boiler
Oil derivative (Only available with oil fuels)	Set Yes / No. Oil derivatives can be recognized by a yellowish discoloration of the filter paper when determining the soot number
Smoke Number (Only available with oil fuels)	Determine and enter the smoke number with the soot pump
CO max:	When this CO value is exceeded, the pump switches off automatically

6.2.1.2.1 Reorder values

Open the **main menu** and select the "*Reorder value*" function in the **Measured data** submenu.

Fel! Använd fliken **Start** om du vill tillämpa **Überschrift 1** för texten som ska visas här.



1. Navigate to the desired measured value by tapping the "Down" / "Up" fields   or by scrolling the blue field and then confirm it with the "Select" field  or the active button. The selected measured value is highlighted in pink.
2. Move the measured value to the desired position by tapping the "Down" / "Up" fields   or the scroll wheel. 3.
3. By tapping the "Set" field  or the action button, the selected position is saved and the measured value turns blue again.
4. Move further measured values.
5. Save the measured value sequence by tapping the "Done" field  or double-clicking the action button.

6.2.1.3 Datalogger (Option)

6.2.1.3.1 *Change Datalogger Interval*

Open the **main menu**  and the **Datalogger**  submenu and select the field "Interval":

1. Touch the numbers or select them with the scroll wheel and confirm with the action button.
2. Select the set value with Save by tapping the "Save" field  or using the scroll wheel and confirm with the action button.

INFO

- ▶ The sampling rate can be set between 1 and 999 seconds.
-

6.2.1.3.2 *Start Datalogger*

Open the **main menu**  and the **Datalogger**  submenu and select the field "Start Logger."

INFO

- ▶ The measuring instrument automatically switches to the measuring mode. The logger time is displayed in the info bar.
-

6.2.1.3.3 *Stop Datalogger*

Open the **main menu**  and the **Datalogger**  submenu and select the field "Stop Logger."



Fel! Använd fliken **Start** om du vill tillämpa **Überschrift 1** för texten som ska visas här.

INFO

- ▶ The instrument automatically switches to the measuring mode. The logger file is stored in the meter in the “LOGGER” folder. The start date is the folder name, the start time is the file name.
-

INFO

- ▶ The EuroSoft® connect Windows software reads the logger file and creates a PDF measurement report or a CSV file of the logging process.
-

6.2.1.4 Corestream

Open the **main menu**  and the **Corestream**  submenu
The current flue gas temperature is displayed.

INFO

- ▶ The minimum temperature changes in the flue gas are displayed in the form of a gray bar. If the temperature is constant, no bar is visible.

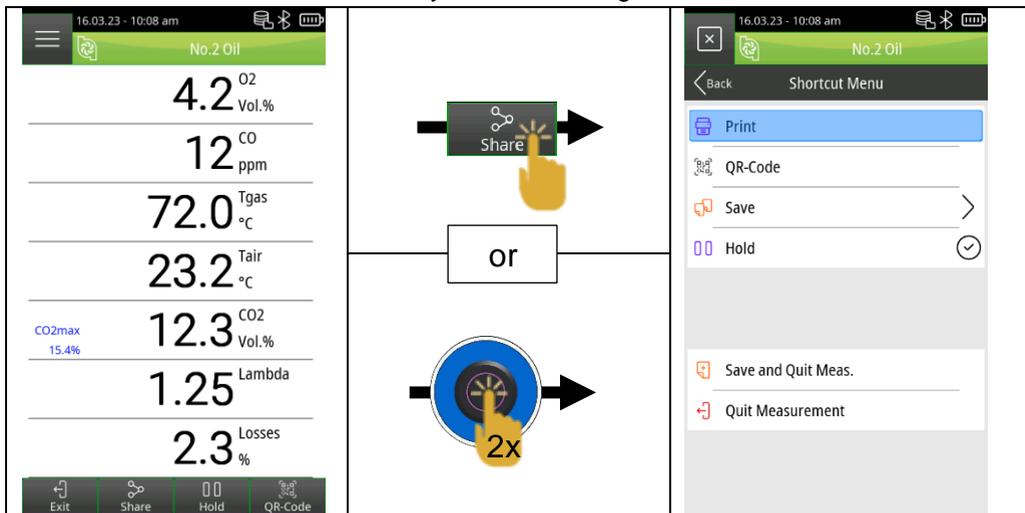
- ▶ Align the flue gas probe in the chimney such that the tip of the probe is in the core stream (area of the highest flue gas temperature).

Fel! Använd fliken Start om du vill tillämpa **Überschrift 1** för texten som ska visas här.



6.2.2 Shortcut Menu

Open the **Shortcut menu** in the measuring mode by tapping the "Share" field or by double-clicking the action button:



Shortcut Menu	Description
Print	Print measured values via IR on the EUROprinter. Detailed description in chapter Printing
QR Code	Generates QR code from measured values for transfer to smartphones / tablets.
Save	Save measurement report in the device. Exact description in Chapter 6.2.2.1 Save.
Hold	Hold measured values
Save and Quit Meas.	Save measurement report and end measurement program. Detailed description in chapter 6.2.2.2 Multi memory function.
Quit Measurement	End measuring program

6.2.2.1 Save

Open the **Shortcut menu** and the submenu **Save** and select the field "Search" .

1. Enter the complete customer name or initial letter in the search field and confirm with .
2. Select the desired customer from the list of search results or create a new customer with the "-(New entry)-" field, following the



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

description from chapter "6.1.2.2 Create customer data on the instrument". Save the measurement in the "--- Empty file ---" field  or overwrite an existing measurement report  with the "Overwrite" field .

INFO



Measurement is saved on the instrument!

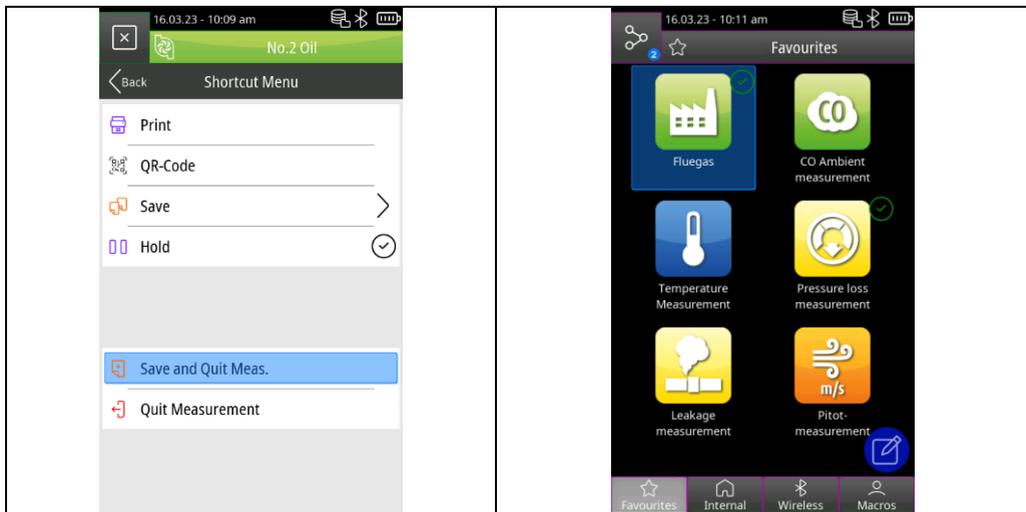
3. Open the measurement report from measurement data and customer data via the date and time stamp  and print , display  or convert as QR code .

6.2.2.2 Multi-Memory Function

With the multi-memory function, measurement results from different programs ("Flue gas analysis", "Annular gap", "Pressure", "Temperature") can be saved in one file or printed out on a report.

For this function, the menu item "Save and Quit Meas."  is available in the **Shortcut menu**. The green check mark in the **Start menu** indicates that the measurement data of the respective measurement program are stored in the temporary memory and thus additional measurements can be made. A maximum of six measurement results can be stored temporarily.

Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.



Select the "Save and Quit Meas."  field in the **Shortcut menu**:

1. Open further measuring programs and select "Save and Quit Meas."  again.
2. Open the **Info menu**  in the **Start menu** and opening the "Saved measurements"  submenu.
3. Either print out the collected measurement results, generate them as a QR code or save them. The last saved measurement or all measurements can be deleted.

6.3 Overview measurement programs

6.3.1 Fluegas measurement

Tap the **Fluegas** measurement icon or select it with the scroll wheel and confirm with the action button:

1. Flush device with fresh air

INFO

► Do not insert the gas probe into the chimney until the fresh air calibration has been completed.

2. Select fuel
3. Read measured values

 **Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.**

INFO

- ▶ In order to obtain usable measurement results, the measurement duration of a flue gas measurement should be at least 3 minutes and the instrument should display stable measured values.
-

6.3.2 CO Ambient measurement

The EUROLYZER® S1 is not intended for safety-related measurements!

DANGER



- ▶ (Switch-on) calibration only at fresh ambient air free of pollutants and CO, i.e. outside the measuring location!
- ▶ If harmful CO concentrations occur, take appropriate measures immediately: Leave the hazardous area, ventilate or provide fresh air, warn endangered persons, put the heater out of operation, have the fault rectified by a specialist, etc.

Failure to follow these precautions can result in death, serious injury, or property damage.

Tap the **CO Ambient measurement** icon or select it with the scroll wheel and confirm with the action button:

1. Flush device with fresh air
-

INFO

- ▶ The gas probe must be in fresh air during calibration.
-

2. Read measured values
-

6.3.3 Temperature Measurement

Tap the **Temperature Measurement** icon or select it with the scroll wheel and confirm with the action button:

INFO

- ▶ One or two external type-K temperature sensors must be connected.
-

1. Read measured values
-

Fel! Använd fliken Start om du vill tillämpa **Überschrift 1** för texten som ska visas här.



6.3.4 Pressure measurement (Option)

Tap the **Pressure measurement** icon or select it with the scroll wheel and confirm with the action button:

1. Pressure zeroing is done automatically

INFO

- ▶ The pressure connections of the device must be free (depressurized, not closed).
-

2. Read measured values

6.3.5 Pressure loss measurement (Option)

Tap the **Pressure loss measurement** icon or select it with the scroll wheel and confirm with the action button:

1. Pressure zeroing is done automatically

INFO

- ▶ The pressure connections of the device must be free (depressurized, not closed).
-

1. To set the measuring time, open the **Main menu**  and the sub-menu **Duration** .
2. Set the desired measuring time in the format hh:mm:ss and confirm with .
3. Start the measurement by tapping the "START"  field or select it with the scroll wheel and confirm with the action button.

INFO

- ▶ The measurement time is displayed as a countdown in the info bar.
-

4. The measurement results are displayed after the measurement phase.
5. If necessary, repeat the measurement with "Reset" .



Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.

6.3.6 Leakage measurement (Option)

The tightness test is used to detect the finest leaks. The pipes with all fittings are tested, but without the gas appliances and the associated control and safety devices. The gas meter can be included in the test. If possible, the tightness test should be carried out before the pipes are plastered or covered and the joints are coated or sheathed.

Pipe volume	Settling time	Measurement time
<100 l	10 min	10 min
>100 l - <200 l	30 min	20 min
>200 l	60 min	30 min

Connect the pressure valve (500670) to the pressure port of the EUROLYZER® S1 and open the valve.

Tap the **Leakage measurement** icon or select it with the scroll wheel and confirm with the action button:

1. Pressure zeroing is done automatically

INFO

- ▶ The pressure connections of the device must be free (depressurized, not closed).
-

2. Apply test pressure to the system and close the valve.
3. Set parameters
4. Start test

INFO

- ▶ The tightness test is started automatically after the settling phase has finished.
 - ▶ Press "Next"  to end the settling phase or pressure test before the time has expired.
-

INFO

- ▶ After the measurement has been completed, the results are displayed and can be evaluated.
-

Fel! Använd fliken **Start** om du vill tillämpa **Överskrift 1** för texten som ska visas här.



5. If necessary, repeat the measurement with "Reset"

6.3.7 Pitot measurement (Option)

Connect Pitot tube (500238) to the pressure connections.

Tap the **Pitot measurement** icon or select it with the scroll wheel and confirm with the action button:

1. Pressure zeroing is done automatically

INFO

► The Pitot tube must be depressurized.

2. To set the flow channel area, open the **Main menu** and the submenu **Volume**
3. Select the flow channel shape
4. Enter dimensions and confirm with
5. Exit the main menu.
6. Read measured values

INFO

► Align the Pitot tube with the tip in the direction of flow.

7 Battery management

7.1 Battery mode/charging mode

- Battery mode: The battery life in continuous measurement depends on the selected display mode.
- Charging: External USB power supply unit 100-240 V~/50-60 Hz. Intelligent charging by means of an integrated charger management system.

7.2 Charging the batteries

Connect the device-specific USB power supply unit to the mains and the USB power supply unit to the EUROLYZER® S1. The battery is also charged with the EUROLYZER® S1 switched off and the charging status is visualized via the blue charging LED. The blue charging LED lights up during the charging process and goes out after the battery is fully charged.



Fel! Använd fliken Start om du vill tillämpa Überschrift 1 för texten som ska visas här.

INFO

- ▶ Charging of the battery starts automatically.
 - ▶ The battery continues to be charged continuously and system-monitored even during measurement operation.
 - ▶ As soon as the battery is fully charged and the battery menu is just active, the device switches off automatically, otherwise the device switches to the passive charging state (maintenance charging).
 - ▶ The EUROLYZER® S1 flue gas analyzer can remain connected to the charger for any length of time after the active charging process has ended without damaging the battery.
-

Information about the battery

The EUROLYZER® S1 flue gas analyzer is equipped with a powerful lithium-ion battery. The service life and capacity are essentially determined by the behavior during charging and use of the device. To make handling safe, the device has an efficient and battery-saving charging management for all application situations.

The graphical state of charge display of the EUROLYZER® S1 flue gas analyzer, consisting of four elements of a battery symbol, allows the user to correctly assess the battery status. Five different battery states are detected.

Charging of the battery is possible at any time, provided that the charge management system recognizes the need for supplementary charging. Otherwise, charging of a too full battery is not enabled for technical reasons.

If the battery is deeply discharged, the oxygen sensor requires a recovery time of approximately one hour when recharging the battery. Operating the device below +5 °C noticeably reduces the service life of the lithium-ion battery.



8 Maintenance

An annual inspection of the EUROLYZER® S1 by an authorized service center is recommended.

When	Activity
Annual	▶ Checking, calibration and cleaning

Exchange battery

For technical reasons, a used battery pack may only be replaced by the manufacturer or by an authorized service partner.



- ▶ To protect the environment, rechargeable batteries must not be disposed of with unsorted municipal waste (household waste). Take old rechargeable batteries to a collection point or retailer.

9 Troubleshooting

Repair work may only be performed by qualified, specially trained staff.

Problem	Possible cause	Troubleshooting
"CO value too high"/"CO sensor defective" message.	CO sensor malfunction.	▶ Run device without accessories in fresh air.
	CO measuring range exceeded.	
	End of service life of sensor.	▶ Take device in for servicing.
Incorrect measured gas values (e.g. measured O ₂ value too high, CO ₂ value too low, no CO values displayed, etc.).	Leak in measuring system.	<ul style="list-style-type: none"> ▶ Check gas treatment system for cracks and other damage. ▶ Check hose system for cracks and other damage. ▶ Check O rings of gas treatment unit. ▶ Check O ring of external probe pipe.
Service message.	Device has not been inspected for a longer period.	▶ Take device in for servicing.

 **Fel! Använd fliken Start om du vill tillämpa Överskrift 1 för texten som ska visas här.**

Problem	Possible cause	Troubleshooting
Measured gas values are displayed slowly.	Filter in the gas treatment system is used up.	► Check filter and replace, if necessary.
	Hose system bent.	► Check hose system
	Gas pump polluted.	► Take device to service centre.
Flue gas temperature unstable.	Humidity in the probe pipe.	► Clean probe.
Device automatically switches off.	Battery empty.	► Charge battery.
	Battery defective.	► Take device to service centre.
Device does not switch on.	Battery empty.	► Charge battery. ► Take device to service center.
Device cannot be charged (charging LED flashes blue)	Charge management defective	► Take device to service centre.
Frozen Display	–	► Press „on/off“-button 13 seconds
Other malfunctions	–	► Send the device to the manufacturer.

10 Shutting down and disposal



- To protect the environment, this device must **not** be disposed of together with the normal household waste. Dispose of the device according to the local conditions and directives.

This device consists of materials that can be reused by recycling firms. The electronic inserts can be easily separated and the device consists of recyclable materials.

If you do not have the opportunity to dispose of the used device in accordance with environmental regulations, please contact us for possibilities to return it.



11 Spare parts and accessories

The gas treatment protects the flue gas analyzer against disturbing components like dust, carbon black and condensate.

The condensate filter cartridge in good condition is a protector for the flue gas analyzer against dirt and an important part of the measurement of exhaust gas.



Articles	Art.-Nr.
Filter spare part package (5x 520921 and 5x 520919)	500208
O-ring package for condensate filter cartridge	511002

Spare parts for condensate cartridge:

(1) Inlet piece	520594
(2) Glass piston with arrow	520596
(3) Centre piece with cylinder pieces	521990
(4) Infiltec fine filter	520919
(5) Glass piston with logo	521778
(6) Intermediate piece	520592
(7) Teflon membrane 23.5 mm	520921
(8) O ring 18 x 3	520365
(9) Outlet piece	520591



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- ▶ Check particle filter, filter disk, glass bulb for functionality and O-rings for completeness. After the measurement, disconnect the probe from the product, drain the condensate and replace used filters!

INFO



12 Warranty

The manufacturer's warranty for this product is 12 months after the date of purchase. This warranty shall be good in all countries in which this device is sold by the manufacturer or its authorised dealers.

13 Copyright

The manufacturer retains the copyright to this manual. This manual may not be reprinted, translated, copied in part or in whole without prior written consent.

We reserve the right to technical modifications with reference to the specifications and illustrations in this manual.

14 Customer satisfaction

Customer satisfaction is our prime objective. Please get in touch with us if you have any questions, suggestions or problems concerning your product.

15 Addresses

The addresses of our worldwide representations and offices can be found on the Internet at www.systronik.com

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