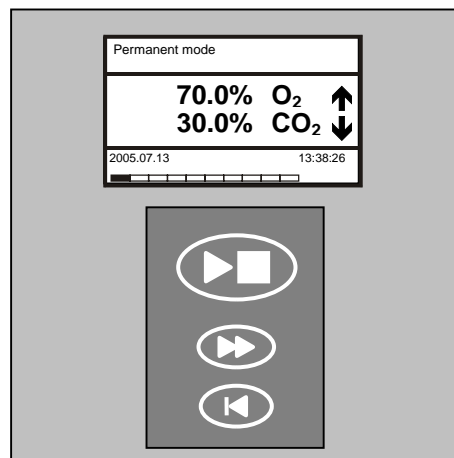




# Instruction Manual for WITT- Analyser

PA O<sub>2</sub> and CO<sub>2</sub>

(S-, L- and P-Versions)



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**WITT-TECHNOLOGY FOR GASES**

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## 2 Notes on these operating instructions

Thank you for having chosen a gas analyser from WITT-GASETECHNIK! We are sure that you have made the right choice.

With these operating instructions we would like to provide you with all information necessary for the safe intended use of the equipment and to provide instruction for safe, correct setting up and installation, operation and checking of your analyser.

### 2.1 What does this manual contain?

This document provides all instructions necessary for operation and maintenance of the WITT-analyser.

Observation of the instructions given herein helps to maintain safe operating conditions, minimise downtime through incorrect equipment operation and to ensure the service life and reliability of the gas analyser.

Handling gases, in particular combustible and / or toxic gases, requires greatest care. For this reason it is imperative that all personnel concerned read these operating instructions carefully and completely before the analyser is installed and started-up so that problems / hazards during operation can be prevented.

A legible copy of these operating instructions shall be maintained at operating locations. Employees designated to operate the analyser shall be familiar with operating this equipment or shall have been properly instructed to operate such equipment.

If unexpected malfunctions occur that you cannot rectify even with the assistance of these operating instructions, please contact your local service agent, or call WITT-GASETECHNIK at the telephone number given below to receive additional instruction on operation. Please state the serial number of the analyser. The serial number is printed on the first page of the technical data or can be read on the nameplate of the unit. Alternatively you can fax us a copy of the first page of these operating instruction, together with a short problem description. Please make sure that you advise of your company's name and telephone number.

Our address is:

**WITT-GASETECHNIK GmbH & Co KG**

**Salinger Feld 4-8**

**D-58454 Witten**

**Germany**

**Tel.: +49 (0)2302 89010**

**Fax: +49 (0)2302 89013**

Alternatively you can also contact us via e-mail ([service@wittgas.com](mailto:service@wittgas.com)) or visit our homepage a <http://www.wittgas.com>.

In the case of modification to the gas analyser these operating instructions cease to be applicable!

### 2.2 Structure of the manual

These operating instructions are sub-divided into several sections:

- In the section „Notes on these operating instructions“ the layout of the instructions manual is explained and the terms and symbols used are explained.
- In section „Safety instructions and precautionary measures“ suggestions for safe usage of the gas analyser are listed. You should pay particular attention to this sections as failure to observe the information given here can result in equipment damage and physical injury .
- In section „Equipment description“ the functions of the WITT analyser is explained based on the functional scheme.  
The operation of the build-in control system is addressed in the „Functional description of the PA-Analyser“ section.



- In section „Set up and installation“ you will find information on the correct location for setting up the analyser and notes on both the gas and the electrical installation.
- In section „Start-up and operation“ you will learn how to proceed to perform a continuous or a spot-check analysis of your gas sample. Further you will learn how you can take the gas analyser out of operation e.g. for service tasks.
- Information on servicing tasks that you can perform yourself is given in the „Servicing and maintenance“ section. Here you will also find a failure location and correction table which will help trouble-shooting in the event that any problems may occur.
- The section “Operation of the PA-Analyser” provides instruction on the operation of the control unit. It further offers an overview chart of the menu structure.
- As an appendix to these operating instructions you will find the technical data on the WITT gas analyser, the schemes given in the technical data, along with drawings and a list of symbols. This provides a short overview on the function and the controls of the gas analyser. You will also find the numbers for the symbols on the function scheme and on the components themselves. With the aid of the list of symbols and the function scheme, you can identify components in the gas analyser.

## 2.3 Rights to this manual

This manual is the copyright of WITT-GASETECHNIK GmbH & Co KG. Without the prior written agreement of WITT-GASETECHNIK GmbH & Co KG these operating instructions are not permitted to be duplicated in whole or in part or be used in a manner contrary to the company's due interests

It is only permitted to pass these operating instructions on to third parties in conjunction with the gas analyser.

## 2.4 What symbols are used?



**The warning symbol indicated hazards for personnel or the equipment. It is imperative that these instructions are observed and followed. The word “Warning” is placed in front of information indicating risk of personal injury or potentially fatal hazards. The word „Caution“ is placed in front of information indication potential equipment damage.**



**Note!**  
**The pointing had marks general notes that explain operating procedures.**

- The „dot“ marks actions to be performed.
- The „square“ is used to identify a list.



This symbol indicates that you should turn the page.

### Option

This symbol indicates possible operating options. For special informations about the operating options of your analyser see the attached option table (Section 10).

### 3 Safety instructions and precautionary measures

It is imperative to follow and observe the following safety instructions and precautionary measures. They are intended to prevent hazards which might occur if the analyser is not operated properly. In addition, all applicable national health and safety regulations and standards must be observed. For example, on usage in Germany the „Unfallverhütungsvorschriften (UVV)“ and the safety regulations issued by the “Berufsgenossenschaften” shall be observed, e.g.:

- Unfallverhütungsvorschriften der gewerblichen Berufsgenossenschaften (safety regulations issued by the german trade associations)
  - a) BGV A1 Allgemeine Vorschriften (General regulations)
  - b) BGV A2 Elektrische Anlagen und Betriebsmittel (Electrical systems and equipment)
  - c) BGV B6 Gase (Gases)
  - d) BGV B7 Sauerstoff (Oxygen)

No claim is made to the completeness of this list!

When handling the equipment the following shall be observed:

- The operating instructions.
- All health and safety regulations and standards applicable in the country and the place of use.
- All engineering rules and guidelines for safety and good workmanship.

The owner or user of the equipment should ensure that the analyser is operated by authorised personnel only. All employees designated to handle the analyser shall be properly instructed and advised of the applicable safety and health precautions. The WITT-analyser has been designed and built according to the state of the art. It shall only be used for its intended purpose. Any operation not conforming to the intended use or operation by inadequately trained personnel may result in hazardous operating conditions.

#### 3.1 General safety guidelines



##### **Warning !**

***The equipment is only permitted to be operated by personnel who has properly instructed to operate such equipment and who has read and understood these operating instructions.***

- Please ensure that all applicable national health and safety regulations and standards for the safe handling of gases are observed (e.g. UVV's (Unfallverhütungsvorschriften) = German health and safety regulations).
- For safety reasons all unauthorised modifications, or addition or removal of parts onto the product are not permitted.
- Any malfunction occurring during the operating of the analyser shall be corrected adequately trained and qualified personnel only.
- All maintenance and repair of the equipment shall be performed by adequately trained and qualified personnel only.
- During all maintenance and repair it must be ensured that the equipment is un-pressurised and disconnected from electrical mains.
- All gas supply lines to the analyser (P model only) must be suitable for the maximum allowable inlet pressures. If that proves to be impracticable, suitable pressure regulators or safety relief devices should be installed in the gas supply lines to make sure that the maximum allowable gas inlet pressures cannot be exceeded.
- The material of piping, tubing, fittings, gaskets, and gasket and thread sealants, as well as the material of all valves, gauges, regulators, and other accessories installed in the gas lines to the analyser shall be suitable for service of the particular gas at the pressures and temperatures involved.
- The maximum allowable gas inlet pressures must not be exceeded. If necessary, safety relief devices should be installed in the gas supply lines.



- All electrical wiring to and from the analyser shall be visually inspected for external defects and for evidence of possible internal damage. All gas lines shall be inspected for evidence of possible internal or external damage and for leak tightness.
- All piping, tubing, and fittings shall be tested and proved leak tight on a regular schedule (e.g. during every start-up) to prevent the intake of ambient air during the measurement. If a leak is detected, the defective item shall be immediately removed from service and no employee may use it until repairs and tests necessary to render the equipment safe and completely operative have been made. All repair shall be performed by personnel familiar with proper practices only. When performing repair on the equipment the applicable national safety and health regulations must be observed.  
Please check also the analysis gas supply lines.

Any operation not conforming to the intended purpose can result in hazardous operating conditions which may lead to serious personal injury and / or loss or damage of equipment. Examples for operation not conforming to the intended purpose are given below:

- Use of the analyser with any other gases than those expressly listed in the Technical Data.
- Use of the analyser with liquids.
- Use of the analyser at ambient temperatures exceeding the temperature range specified in the Technical Data.
- Use of the analyser at gas inlet temperatures exceeding the temperature range specified in the Technical.
- Installation and operation of the analyser in locations with a prevailing explosive atmosphere. Explosion hazard!

The warranty granted for the gas analyser shall be invalidated in case of any unauthorised or improper modifications, or addition or removal of parts onto the product, without expressive written authorisation from WITT-GASETECHNIK.

### **3.2 Liability for proper function or damage**

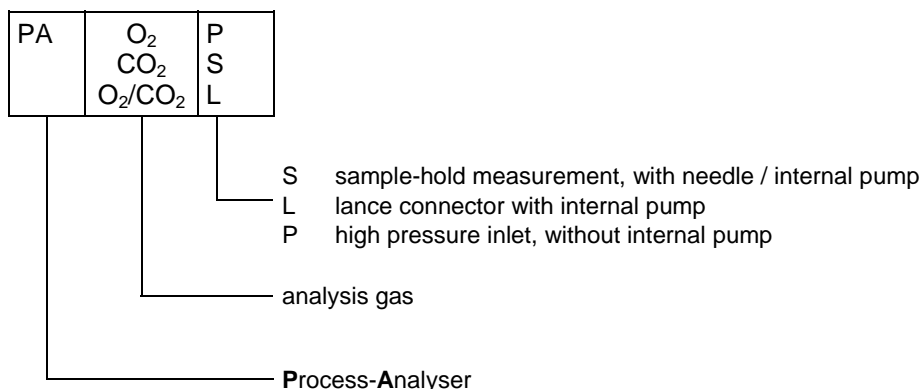
The liability for the proper function of the instrument is irrevocably transferred to the owner or operating organisation to the extent the instrument has been serviced or repaired by personnel not employed or authorised by WITT-Service or when the instrument was used in a manner not conforming to its intended use, or if the operation did not follow the applicable national health and safety regulations.

WITT-Gasetechnik GmbH & Co KG cannot be held responsible for damages arising from failure to observe these operating instructions.

## 4 Equipment description

### 4.1 Types

The different PA models are distinguished by the extensions listed below. The specification on your particular model is given in the Technical Data (chapter 10).



### 4.2 Intended use of the analyser

The analyser is intended to measure the concentration of one or two non combustible gases in a mixture of non combustible, non-corrosive, and non-toxic gases.

**Option** The gas analysis can be performed in

- spot-test mode (Sample-Hold, S-Version) through the gas sample needle located at the front of the analyser,
- in a permanent analysing mode through the lance connector (L-Version) located at the rear of the unit,
- in a permanent analysing mode through the high pressure inlet (P-Version) located at the rear of the unit

More than one analysis gas inlet version can be realised.




**Note!**

**For special information about the options of your analyser see the attached technical data (chapter 10).**

The analyser is only suitable to be operated at the conditions specified in the Technical Data (chapter 10). All information given in chapter 3 of these operating instructions as well as the safety precautions shall be observed.

## 4.3 Functional description

 **Please note !**  
**The functional description is given with the aid of the enclosed functional schemes (please refer to section 10). You will also find the numbers for the symbols on the function scheme on the components themselves. With the aid of the list of symbols and the function scheme, you can identify components in the gas analyser.**

The gas analyser is intended to be used for simultaneously measuring the oxygen (O<sub>2</sub>) and the carbon dioxide (CO<sub>2</sub>) concentration in the analysis gas supplied to the instrument.

**Option** The sample gas can be supplied to the analyser through an inlet port located on the rear (L- and P-Version), or through an injection needle located on the front of the unit (S-version). Several supply ways are possible.

**Option** The **S- and L-Version** of the PA-O<sub>2</sub>/CO<sub>2</sub> is equipped with a built-in pump drawing the sample gas through the analyser.

In case of **P-Version** the analysis gas inlet is equipped with a pressure reducer and pressure gauge as well as a ball valve to switch between analysis gas and calibration gas.



For the sensor specification from measurement of the oxygen concentration or carbon dioxide concentration see technical data (section 10).

All controls and connectors are located in or on the housing of the PA-O<sub>2</sub>/CO<sub>2</sub>. All controls necessary to operate the PA (e.g. switches, indicators) are located on the front of the equipment. The injection needle (S-version) necessary to perform a analysis gas analysis is also located on the front of the analyser. The analysis gas inlet for continuous sampling mode (L- and P-Version) is located on the equipment rear. Also located on the equipment rear are all electrical connectors. The nameplate which carries all data necessary to unambiguously identify the instrument is located at the left side of the analyser.

For the measurement range and the resolution of the analyser see technical data (section 10).

The central control element of the instrument is the **Process Analyser (PA)**. The PA processes the sensor signals and shows the measured concentrations in Vol% onto the two-line display.

 **Please note !**  
**Operating instructions for the process analyser (PA) are given in a separate section of these operating instructions.**

**Option** When operated in the permanent analysis mode the **L- and P-Versions** of the PA-O<sub>2</sub>/CO<sub>2</sub> are equipped with two alarm outputs. Per alarm output a min./max. concentration alarm for each gas can be set. If the respective concentration in the analysis gas falls below or exceeds the user defined alarm threshold limits this is recognised as a failure and will be indicated by illumination of  for max. alarm or  for min. alarm.

The alarm signal will be exported through a volt free contact.

The PA also provides standardised output signals, 0-10 V respectively 4-20 mA (factory setting: 4-20 mA) corresponding to the measured gas concentrations. The respective electrical interface is located at connector X2.

The measured gas concentrations can be recorded through the RS 232 C interface (connector X3). It is possible to either address an external printer, or the WITT-LOGGER PC programme developed by WITT-GASETECHNIK which is delivered with the gas analyser as an accessory.

**Option** When operated in the sample mode (S-Version) the measured concentrations are automatically recorded after the analysis has been finished.  
In the permanent operation mode (L- and P-Version) the measured concentrations are automatically recorded.

### 4.3.1 Technical data of the analyser

The technical data of the gas analyser are specified in the attached Technical Data sheets (please refer to section 10).

## 5 Set up and installation

In this section you will find information on the proper location for setting up the gas analyser, and notes on both the gas and the electrical installations.

### 5.1 Checking for transport damage



**Note !**

**Never transport the system in a tilted position. Perform a visual inspection for external damage and damage to cables (nicks, damage to the insulation).**

- The gas analyser is supplied ready to use. It must be correctly transported.

### 5.2 Location for setting up



**Note !**

**Never expose the instrument to direct sunlight or large amounts of heat.**



**Note !**

**Do not operate the instrument in an environment with increased electromagnetic activity (outside the standardised limits).**



**Note !**

**Observe safety distances when setting up.  
The analyser should remain accessible for servicing.**

- place the undamaged instrument on a solid surface in a place protected from the weather and secured against accidents.
- during setting up observe the ambient conditions specified in the Technical Data (section 10) (e.g., ambient temperature, humidity, dust, altitude).

### 5.3 Safety instructions for installation



**Warning !**

**Prior to initial commissioning and after modification, repairs, or expansion of the system / unit, the safety checks required by BGV A2 (reference to DIN VDE 0100, DIN VDE 0701, DIN VDE 0702, etc.) are to be performed and logged. The checks encompass the inspection, testing, and measuring of the effectiveness of protective measures (e.g. emergency stop devices, interlocks, pressure switches, etc.).**

**If the operating organisation is not in a position to perform a check, a check in accordance with DIN VDE 0702 can be performed by WITT Service.**



**Warning !**

**In accordance with BGV A2 a protective earth connection (PE connection) of protection class 1 must be provided.**



**Warning !**

**Following initial commissioning and after modification, repair, or expansion of a system / unit, the connections and joints are to be checked for leaks to the atmosphere. For this process only use suitable leak testing procedures (never test with a naked flame). If you find leaks, rectify them immediately; the applicable safety regulations are to be observed during this process.**



**Warning !**

**All supply pipes to and from the gas analyser (P model only) are to be designed for the maximum permitted gas pressure. If this is not possible for the system following the analyser, then it must be ensured that the maximum permitted pressure for the following system cannot be exceeded by means of the installation of suitable fittings, e.g., burst discs or safety relief valves.**





**Warning !**

**The material for the gas pipes (pipes from the gas supply to the inlets on the gas analyser), all fittings installed there (e.g. shut-off valves, manometers, etc.) and all sealing elements there must be designed for the related type of gas.**



**Warning !**

**The gases to be analysed are only permitted to be supplied via the gas inlet connections with the corresponding markings.**



**Warning !**

**The maximum permitted gas inlet pressures in the technical data must not be exceeded. If necessary this is to be ensured by, e.g., the installation of safety relief valves or burst discs.**

## 5.4 Installation of gas pipes

- Install the pipes necessary for the gas supply in a correct manner. Observe following safety instructions:



**Warning !**

**The pipes must be un-pressurised during connection.**



**Warning !**

**It is to be ensured the pipes upstream of the system are appropriately sized to ensure the adequate supply of the individual gases to be mixed (inner diameter at least as large as the connections, see technical data Section 10) .**



**Warning !**

**It must be possible to shut off the gas supply pipes upstream of the gas analyser.**



**Warning !**

**All supply pipes must be free of oil and grease, and free of other contaminants (e.g. dust, etc.). If necessary all pipes are to be blown out using nitrogen or clean, oil- free air prior to connection to the gas analyser.**

- Connect the analysis gas outlet and the outlet of the overflow regulator (only L- and P-Version) each with a blow off pipe. Avoid any impurity or restriction for the pipe work.
- The supply of suitable zero- and calibration gases to the analyser is a customer responsibility.

## 5.5 Electrical installation

- Establish the connection to the mains using the plug.
- The installation of the electrical connections as per the electrical circuit diagram must be performed in accordance with VDE 0100. The electrical installations shall be performed only by adequately trained personnel. Please observe the following instructions:



**Warning !**

**If using the volt free contacts with 230 V the device must be connected to PE.**



**Note !**

**The usage of cables that are not approved can result in irreparable damage to the cables in the case of heavy mechanical loading. In the case of cables that are not twisted or screened, signal processing may be inaccurate.**



**Note !**

**Protect the cables from mechanical loads (e.g. using a suitable cable duct). Excessive mechanical loads can result in irreparable damage to the cable.**



**Note !**

**It is imperative that the supply voltage in the technical data is provided.**



**Note !**

**Do not yet switch on the power supply.**

## 6 Commissioning and operation

Here you will learn how you must proceed to measure the gas concentration in the gas mixture to be analysed. You will also learn here how you can take the gas analyser out of operation, e.g., for servicing tasks.

**Option** The gas analysis can be performed in spot-test mode (S-Version) through the gas sample needle located at the front of the analyser, or in a permanent analysing mode (L- and P-Version) through the connector located at the rear of the unit.



### Note !

**If malfunctions occur during commissioning or operation, try to rectify the fault with the aid of the malfunction table (section 6.8.1).**

**If it is not possible to rectify the fault, please take the system out of operation and inform the responsible customer service department at the manufacturer.**

### 6.1 Safety instructions for commissioning and operation



#### Warning !

**The analyser may only be operated by personnel who have been instructed on the operation of the system and who have read and understood these operating instructions.**



#### Please note !

**Also observe the general safety instructions in Section 3.**

### 6.2 Commissioning of the analyser



- Establish the connection to the mains using the plug.
- The following data will appear in the display: Software version and serial number of the instrument. Subsequently the display will show the message "last sample", the latest measured O<sub>2</sub>/CO<sub>2</sub> concentration, and date and time of last measurement.



#### Warning !

**Adapt the analyser before the measurement to a possible climatic change, in order to avoid falsified results of measurement.**

**This applies also to packing, which are stored more warmly or more coldly than the analyser.**

- Press  to start measurement.
- Press  to stop measurement (only in continuous operating mode necessary).
- The latest measured concentration is shown in the display.



#### Note !

**During continuous operation the latest measured concentration, and date with time of measurement are automatically recorded every 10 seconds.**



#### Please note !

**The analyser has been calibrated when delivered from factory. The calibration accuracy can depend on a number of ambient conditions. Therefore, it is imperative that the analyser is calibrated during the initial commissioning at the location where the equipment is set up.**



#### Please note !

**You get the information of the factory set calibration from the technical data.**


**For special requirements you have to adjust adequate the calibration gas (see chapter 8.4).**



#### Caution, it is imperative that the following is observed !

**Check the connections and joints for leaks to atmosphere after commissioning and at regular intervals. For this process only use suitable leak testing procedures (never test with a naked flame). If you find leaks, rectify them immediately; the applicable safety regulations are to be observed during this procedure.**








## 6.3 Calibration through the needle (Sample-Hold, S-Version)


 **Note!**  
*If devices have two O<sub>2</sub>-sensors (SL-, SP and SLP-Version) the O<sub>2</sub>-calibration must be performed through the needle as well as through one permanent analysis inlet. For CO<sub>2</sub> calibration only one calibration through any inlet is necessary.*

 **Note!**  
*Check whether the calibration gas concentrations set in the PA correspondent to the used calibration gases.*

### 6.3.1 Zero setting O<sub>2</sub>







 **Note !**  
*To ensure that the calibration gas does not contain any oxygen, only a suitable "zero-gas" shall be used (see technical data).*

- A suitable calibration gas cylinder, equipped with a pressure reducer shall be used as calibration gas source.
- Connect a flexible hose to the outlet of the pressure reducer installed on the calibration gas cylinder. Discharge the gas through the hose unobstructed.
- Place the injection needle into the aperture of the tube. (Caution: Do not obstruct gas flow!).
- Press 1x  and 2x  to enter operating mode.
- Press  to acknowledge selection.  
 The upper line in the display identifies the currently selected operating mode (e.g. permanent). A dark bar will appear on top of the last line shown in the display.
- If necessary press  to select the operating mode **sample hold**.
- Press  when the desired operating mode is shown to confirm selection.
- Press  to return to the display mode and  to the measurement mode.



 **Note !**  
*The analyser returns back to permanent mode after 90 seconds. This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).*

- Wait until the analysis has been finished. The oxygen concentration in the display should read „0,0“. In this case the zero setting of the analyser is correct and you can proceed with the O<sub>2</sub> "range" calibration.

If the display **does not** read „0,0“, proceed as follows:

- Press 1x  and 9x  (7 x  at solely S-Version devices) to enter calibration zero point O<sub>2</sub>.
- Press  to start calibration.  
 The message "**calibration**" will start to flash.
- Wait until an audible signal is given.
- The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %.
- Press 1x  and 1x  to return to the measurement display.

The zero-point setting has now been completed.








 **The calibration can be stopped at any time by pressing  . You will then return to the display menu without storing a new calibration setting.**

### 6.3.2 Span calibration O<sub>2</sub>



**Note !**

**The span calibration should be checked / performed prior to each putting into service. The span calibration can be done using ambient air as calibration gas. Ambient air contains 20,9 Vol% O<sub>2</sub>.**

- Press 1x  and 2x  to enter operating mode.
- Press  to acknowledge selection.  
The upper line in the display identifies the currently selected operating mode (e.g. permanent). A dark bar will appear on top of the last line shown in the display.
- If necessary press  to select the operating mode **sample hold**.
- Press  when the desired operating mode is shown to confirm selection.
- Press  to return to the display mode and  to the measurement mode.









**Note !**

**The analyser returns back to permanent mode after 90 seconds. This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).**

- Wait until the analysis has been finished. The oxygen concentration in the display should read „20,9“. In this case the range calibration of the analyser is correct and you can start analysing your gas samples.

If the display **does not** read „20,9“, proceed as follows:

- Press 1x  and 10x  (8 x  at solely S-Version devices) to enter O<sub>2</sub> span calibration.
- Press  to start calibration.  
The message "calibration" will start to flash.
- Wait until an audible signal is given.
- The new calibration setting is stored and the concentration reading in the display is adjusted.
- Press 1x  and 1x  to return to the measurement display.

The span setting has now been completed.



**The calibration can be stopped at any time by pressing  . You will then return to the display menu without storing a new calibration setting.**

### 6.3.3 Zero setting CO<sub>2</sub>



**Please note !**

**To ensure that the calibration gas does not contain any CO<sub>2</sub>, only a suitable “zero-gas” shall be used (see technical data).**

- A suitable calibration gas cylinder, equipped with a pressure reducer shall be used as calibration gas source.
- Connect a flexible hose to the outlet of the pressure reducer installed on the calibration gas cylinder. Discharge the gas through the hose unobstructed.
- Place the injection needle into the aperture of the tube. (Caution: Do not obstruct gas flow!).
- Press 1x ◀ and 2x ▶▶ to enter operating mode.
- Press ▶▶ to acknowledge selection.  
The upper line in the display identifies the currently selected operating mode (e.g. permanent). A dark bar will appear on top of the last line shown in the display.
- If necessary press ▶▶ to select the operating mode **sample hold**.
- Press ▶▶ when the desired operating mode is shown to confirm selection.
- Press ◀ to return to the display mode and ▶▶ to the measurement mode.



**Note !**

**The analyser returns back to permanent mode after 90 seconds.**

**This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).**

- Wait until the analysis has been finished. The CO<sub>2</sub> concentration in the display should read „0,0“. In this case the zero setting of the analyser is correct and you can proceed with the CO<sub>2</sub> “range” calibration.

If the display **does not** read „0,0“, proceed as follows:

- Press 1x ◀ and 11x ▶▶ (9 x ▶▶ at solely S-Version devices) to enter calibration zero point CO<sub>2</sub>.
- Press ▶▶ to start calibration.  
The message "**calibration**" will start to flash.
- Wait until an audible signal is given (after approx. 3.5 minutes).
- The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %.
- Press 1x ◀ and 1x ▶▶ to return to the measurement display.

The zero-point setting has now been completed.



**The calibration can be stopped at any time by pressing ◀ . You will then return to the display menu without storing a new calibration setting.**

### 6.3.4 Span calibration CO<sub>2</sub>



**Please note!**

**The span calibration should be checked (and adjusted, if necessary) prior to each putting into service. To ensure correct span calibration a suitable calibration gas cylinder shall be used (see technical data section 10). The calibration gas cylinder must be equipped with a suitable pressure reducer.**

**To facilitate understanding of the next operating steps, it has been assumed that the CO<sub>2</sub> contents of the calibration gas is 80 Vol%.**

- Connect a flexible hose to the outlet of the pressure reducer installed on the calibration gas cylinder. Discharge the gas through the hose unobstructed.
- Place the injection needle into the aperture of the tube. (Caution: Do not obstruct gas flow!).
- Press 1x ◀ and 2x ▶ to enter operating mode.
- Press ▶ to acknowledge selection.  
The upper line in the display identifies the currently selected operating mode (e.g. permanent). A dark bar will appear on top of the last line shown in the display.
- If necessary press ▶ to select the operating mode **sample hold**.
- Press ▶ when the desired operating mode is shown to confirm selection.
- Press ◀ to return to the display mode and ▶ to the measurement mode.



**Note !**

**The analyser returns back to permanent mode after 90 seconds.**

**This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).**

- Wait until the analysis has been finished. The oxygen concentration in the display should read „80,0“. In this case the span calibration of the analyser is correct and you can start analysing your gas samples.

If the display **does not** read „80,0“, proceed as follows:

- Press 1x ◀ and 12x ▶ (10 x ▶ at solely S-Version devices) to enter span calibration CO<sub>2</sub>.
- Press ▶ to start calibration.  
The message "**calibration**" will start to flash.
- Wait until an audible signal is given (after approx. 3.5 minutes).
- The new calibration setting is stored and the concentration reading in the display is adjusted.
- Press 1x ◀ and 1x ▶ to return to the measurement display.

The span setting has now been completed.



**The calibration can be stopped at any time by pressing ◀ . You will then return to the display menu without storing a new calibration setting.**

## 6.4 Calibration through permanent analysis inlet (L- and P-Version)



### Note!

If devices have two O<sub>2</sub>-sensors (SL-, SP and SLP-Version) the O<sub>2</sub>-calibration must be performed through the needle as well as through one permanent analysis inlet. For CO<sub>2</sub> calibration only one calibration through any inlet is necessary.



### Note!

Check whether the calibration gas concentrations set in the PA correspondent to the used calibration gases.



### Note!

Check the inlet pressure at the inlet pressure manometer (only P-Version) and adjust if necessary (see chapter 7.6).

### 6.4.1 Zero setting O<sub>2</sub>



#### Please note !

To ensure that the calibration gas does not contain any oxygen, only a suitable "zero-gas" shall be used (see technical data).

- A suitable calibration gas cylinder, equipped with a pressure reducer (not necessary for P-Version) shall be used as calibration gas source.
- Connect a flexible hose between the outlet of the pressure reducer installed on the calibration gas cylinder and the "gas inlet" connector (L-Version) respectively calibration gas connector (P-Version) located on the rear of the analyser.
- On P-Version set the ball valve to calibration gas.
- Open the calibration gas supply.  
**Set the pressure in that way that the maximal inlet pressure is not exceeded (see Technical Data).**
- Wait until the display reading in permanent mode (actual measured value) is steady. The oxygen concentration in the display should read „0,0“. In this case the zero setting of the analyser is correct and you can proceed with the O<sub>2</sub> "span" calibration.

If the display **does not** read „0,0“, proceed as follows:

- Press 1x and 9x to enter calibration zero point O<sub>2</sub>.
- Press to start calibration.  
The message "calibration" will start to flash.
- Wait until an audible signal is given.
- The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %.
- Press 1x and 1x to return to the measurement display.

The zero-point setting has now been completed.



**The calibration can be stopped at any time by pressing . You will then return to the display menu without storing a new calibration setting.**

## 6.4.2 Span calibration O<sub>2</sub>



### **Please note !**

**The span calibration should be checked / performed prior to each putting into service. The span calibration can be done using ambient air as calibration gas. Ambient air contains 20,9 Vol% O<sub>2</sub>.**

### **L-Version:**

- The span calibration can be done using ambient air as calibration gas. Ambient air contains 20,9 Vol% O<sub>2</sub>.
- Remove hose (if connected) from connector at the rear of the unit to allow ambient air to be drawn into the analyser.






### **P-Version:**

- For span calibration use a suitable calibration gas cylinder.
- Connect a flexible hose between the outlet of the pressure reducer installed on the calibration gas cylinder and the calibration gas connector located on the rear of the analyser.
- Open the calibration gas supply.  
**Set the pressure in that way that the maximal inlet pressure is not exceeded (see Technical Data).**
- Set the ball valve to calibration gas.

### **L- und P-Version:**

- Wait until the display reading in permanent mode (actual measured value) is steady. The oxygen concentration in the display should read „20,9“. In this case the zero setting of the analyser is correct and you can start analysing your gas samples.

If the display **does not** read „20,9“, proceed as follows:

- Press 1x  and 10x  to enter span calibration O<sub>2</sub>.
- Press  to start calibration.  
The message "**calibration**" will start to flash.
- Wait until an audible signal is given.
- The new calibration setting is stored and the concentration reading in the display is adjusted.
- Press 1x  and 1x  to return to the measurement display.

The span setting has now been completed.








**The calibration can be stopped at any time by pressing  . You will then return to the display menu without storing a new calibration setting.**

### 6.4.3 Zero setting CO<sub>2</sub>

 **Please note !**  
**To ensure that the calibration gas does not contain any CO<sub>2</sub>, only a suitable “zero-gas” shall be used (see technical data).**

- A suitable calibration gas cylinder, equipped with a pressure reducer (not necessary for **P-Version**) shall be used as calibration gas source.
- Connect a flexible hose between the outlet of the pressure reducer installed on the calibration gas cylinder and the “gas inlet” connector (L-Version) respectively calibration gas connector (P-Version) located on the rear of the analyser.
- On P-Version set the ball valve to calibration gas.
- Open calibration gas supply.  
**Set the pressure in that way that the maximal inlet pressure is not exceeded (see Technical Data).**
- Wait until the display reading in permanent mode (actual measured value) is steady. The CO<sub>2</sub> concentration in the display should read „0,0“. In this case the zero setting of the analyser is correct and you can proceed with the CO<sub>2</sub> “span” calibration.

If the display **does not** read „0,0“, proceed as follows:

- Press 1x  and 11x  to enter calibration zero point CO<sub>2</sub>.
- Press  to start calibration.  
The message "**calibration**" will start to flash.
- Wait until an audible signal is given (after approx. 3.5 minutes).
- The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %.
- Press 1x  and 1x  to return to the measurement display.

The zero-point setting has now been completed.

 **The calibration can be stopped at any time by pressing  . You will then return to the display menu without storing a new calibration setting.**

#### 6.4.4 Span calibration CO<sub>2</sub>








##### **Note!**

**The span calibration should be checked (and adjusted, if necessary) prior to each putting into service. To ensure correct span calibration a suitable calibration gas cylinder shall be used (see technical data). The calibration gas cylinder must be equipped with a suitable pressure reducer (not necessary for P-Version).**

**To facilitate understanding of the next operating steps, it has been assumed that the CO<sub>2</sub> contents of the calibration gas is 100 Vol%.**

- A suitable calibration gas cylinder, equipped with a pressure reducer (not necessary for P-Version) shall be used as calibration gas source.
- Connect a flexible hose between the outlet of the pressure reducer installed on the calibration gas cylinder and the "gas inlet" connector (L-Version) respectively calibration gas connector (P-Version) located on the rear of the analyser.
- On P-Version set the ball valve to calibration gas.
- Open calibration gas supply.  
**Set the pressure in that way that the maximal inlet pressure is not exceeded (see Technical Data).**
- Wait until the display reading in permanent mode (actual measured value) is steady. The CO<sub>2</sub> concentration in the display should read „100,0“. In this case the span calibration of the analyser is correct and you can start analysing your gas samples.

If the display **does not** read „100,0“ (or the CO<sub>2</sub> concentration of the used calibration gas), proceed as follows:

- Press 1x  and 12x  to enter span calibration CO<sub>2</sub>.
- Press  to start calibration.  
The message "calibration" will start to flash.
- Wait until an audible signal is given (after approx. 3.5 minutes).
- The new calibration setting is stored and the concentration reading in the display is adjusted.
- Press 1x  and 1x  to return to the measurement display.

The span setting has now been completed.



**The calibration can be stopped at any time by pressing . You will then return to the display menu without storing a new calibration setting.**

## 6.5 Operation of the analyser

After having completed the following: Putting into operation, check for leak tightness, calibration (procedures given in sections 6.2-6.4), you are ready to proceed with analysing the gas concentrations in a gas mixture following the instructions given below:



### **Caution !**

**The analyser may only be used if appropriate filters are connected (please refer to the accessories list). Operation of the analyser without the filters can result in equipment damage!**

### 6.5.1 Spot-check analysis (Sample-Hold) of O<sub>2</sub>/CO<sub>2</sub> concentration in a packaging



#### **Note !**

**Use the injection needle located on the front of the PA to perform O<sub>2</sub> / CO<sub>2</sub> concentration analysis in a packaging.**



#### **Note !**

**In the sample-hold mode alarms are not active.**

- Wait until the warm-up time (please refer to Technical Data) has passed.
- Press 1x ◀ and 2x ▶ to enter operating mode.
- Press ▶ to acknowledge selection.  
The upper line in the display identifies the currently selected operating mode (e.g. permanent). A dark bar will appear on top of the last line shown in the display.
- If necessary press ▶ to select the operating mode **sample hold**.
- Press ▶ when the desired operating mode is shown to confirm selection.
- Press ◀ to return to the display mode and ▶ to the measurement mode.
- Place rubber septum on the packaging film. Push needle through the septum and through the packaging film into the packaging.



#### **Note!**

**Please make sure not to insert the needle into the packed goods but only into the gas space of the packing volume.**

- Press ▶ to start measuring.
- Analysis gas is drawn from the packaging. Please watch the reading of the display.
- Wait until the analysis has been finished before removing the needle from the packaging.
- The reading in the display corresponds to the measured concentration of the respective gas in the packaging.



#### **Note !**

**The analyser returns back to permanent mode after 90 seconds.**

**This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).**

## 6.5.2 Permanent analysis of the O<sub>2</sub>/CO<sub>2</sub> concentration



### Note!

To perform gas concentration analysis in a bag packing, the analysis gas will be supplied through the lance connector (L-Version) located on the rear of the equipment.




### Note!

To perform gas concentration analysis of pressurised analysis gas, the analysis gas will be supplied through the connector equipped with pressure regulator and pressure gauge (P-Version).



### Caution !

Take care that the maximum inlet pressure for the selected inlet is not exceeded. See Technical Data.

- Wait until the warm-up time (please refer to Technical Data) has passed.
- Connect the analysis gas source to the “gas inlet” connector (L-Version) respectively analysis gas connector (P-Version) located on the rear of the analyser.
- On P-Version set the ball valve to analysis gas.
- Press  to start measuring.
- The gas concentration is continuously being analysed. The corresponding gas concentrations can be read on the display.
- The reading in the display corresponds to the measured concentration of the analysis gas.

## 6.6 Alarms





For devices which are solely equipped with a sample hold gas inlet (S-Version devices) alarms are not available.

### 6.6.1 Min. / max. alarm threshold limits

The PA-Analyser for permanent analysis (L- and P-Version) has two alarm outputs. For every output a minimum and maximum gas concentration threshold limit can be set for each analysed gas.

Alarms of alarm output 1 are shown at the upper right side near the measured value, alarms of alarm output 2 are shown at the lower right side near the measured value.

So it is not imperative that the indication of the alarms correspond with the gases displayed in the same line. But we recommend to configure the alarm outputs in this manner.

- If the gas concentration exceeds the set maximum threshold limit a  is shown in display (here: max. alarm for alarm output 1).
- If the gas concentration has fallen short the set maximum threshold limit a  is shown in display (here: min. alarm for alarm output 2).
- At the same time an alarm occurs the potential free contact is activated.
- If the condition for an alarm which must not be acknowledged is not longer given the arrow disappears (here: min. alarm for alarm output 2). The related potential free contact is deactivated.
- If the condition for an alarm which must be acknowledged is not longer given a “Q” is shown instead of the arrow (here: max. alarm for alarm output 1). The “Q” is shown until the alarm is acknowledged. In addition a description of the alarm is shown instead of date and time (here: max alarm, alarm output 1, O<sub>2</sub>). The potential free contact stays activated until alarms are acknowledged.

permanent mode
70.0% O <sub>2</sub> ↑
30.0% CO <sub>2</sub> ↓
2005.07.13 13:38:26

permanent mode
60.0% O <sub>2</sub> Q
40.0% CO <sub>2</sub>
max alarm 1 O <sub>2</sub>

- To quit an alarm press any key. Each key press quits one alarm.

## 6.6.2 Setting alarm threshold limits

**Note!**  
*It is not allowed to set the maximum threshold limits lower than the minimum threshold limits. If you do so all changes are discarded.*

**Note!**  
 Press to return to the display mode at any time without storing changes.

- Press 1x and 6x to access “Alarm output 1”,
- or
- Press 1x and 7x to access “Alarm output 2”.
- Press to acknowledge selection.

The currently set threshold limits are shown in display. The first digit is inverted to show that it can be altered.

- Alter the value of this digit with .
- If the desired value is reached press to switch to the next digit.

alarm output: 1			
O <sub>2</sub>		CO <sub>2</sub>	
min	max	min	max
15.0	40.0	off	off
acknowledge			
yes	no	---	---

**Note!**  
*For setting the alarm to “off” switch to the decade of a threshold limit and alter the value until “off” is shown.*

The next digit is shown inverted now.

- Alter the value of the digit as before with and switch to the next digit with .

alarm output: 1			
O <sub>2</sub>		CO <sub>2</sub>	
min	max	min	max
25.0	40.0	off	off
acknowledge			
yes	no	---	---

After leaving the last digit of a threshold limit you can select whether the set alarm must be acknowledged or not (Exception: The alarm is set to “off”).

- Select „yes“ or „no“ with and switch to the next with .

alarm output: 1			
O <sub>2</sub>		CO <sub>2</sub>	
min	max	min	max
25.0	40.0	off	off
acknowledge			
no	no	---	---

The first digit of the next threshold limit is shown inverted.

- Proceed as before until no digit is shown inverted.  
**Only now the changed values are saved.**

alarm output: 1			
O <sub>2</sub>		CO <sub>2</sub>	
min	max	min	max
25.0	40.0	off	off
acknowledge			
no	no	---	---

## 6.7 Taking out of operation

On taking the instrument out of operation, please proceed as follows:

- Disconnect the device from the mains.
- On P-Versions turn the ball valve (48) to the “OFF” position.


## 6.8 Malfunctions and rectification

### 6.8.1 Malfunction table

Malfunction	Cause	Remedy
<ul style="list-style-type: none"> <li>After switching power on, the display is not illuminated and the pump (option) does not work</li> </ul>	<ul style="list-style-type: none"> <li>Instrument is not connected to main power supply</li> <li>Defective fuse</li> <li>PA defective</li> </ul>	<ul style="list-style-type: none"> <li>Check connection to mains and rectify, as applicable</li> <li>Contact WITT-GASETECHNIK</li> <li>Contact WITT-GASETECHNIK</li> </ul>
<ul style="list-style-type: none"> <li>Wrong date or time on display</li> </ul>	<ul style="list-style-type: none"> <li>The battery is empty after ten days</li> </ul>	<ul style="list-style-type: none"> <li>Set new date and time (see sec. 8.4). The battery is loading automatically</li> </ul>
<ul style="list-style-type: none"> <li>The result of the analysis does not match with the expected values</li> </ul>	<ul style="list-style-type: none"> <li>Ambient atmosphere is drawn into the analyser through a leak</li> <li>The concentration in the packaging is not as it was expected</li> <li>Analyser not correctly calibrated</li> <li>Calibration gas setting in the analyser does not match with the calibration gas concentration</li> <li>O<sub>2</sub>-analysis: Sensor depleted</li> <li>Inlet filter clogged</li> <li>Instrument internally contaminated by liquid</li> <li>P-Version: Pressure regulator <b>(64)</b> is wrong adjusted</li> </ul>	<ul style="list-style-type: none"> <li>Contact WITT-GASETECHNIK</li> <li>Change composition of the gas mixture</li> <li>Calibrate analyser</li> <li>Adjust analyser setting for calibration gas concentration</li> <li>Contact WITT-GASETECHNIK</li> <li>Replace filter</li> <li>Contact WITT-GASETECHNIK, have analyser checked</li> <li>Adjust to the value given in the Technical data</li> </ul>
<ul style="list-style-type: none"> <li>the max. arrow ↑ is illuminated on display</li> </ul>	<ul style="list-style-type: none"> <li>Upper threshold limit of the respective gas is exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Check adjustment of gas mixer</li> <li>Check gas supply</li> <li>Check threshold limit</li> <li>Rectify fault</li> </ul>



Malfunction	Cause	Remedy
<ul style="list-style-type: none"> <li>the min. arrow ↓ is illuminated on display</li> </ul>	<ul style="list-style-type: none"> <li>Concentration falls below lower threshold limit of the respective gas</li> </ul>	<ul style="list-style-type: none"> <li>Check adjustment of gas mixer</li> </ul>
<ul style="list-style-type: none"> <li>min. arrow ↓ and max. arrow ↑ are illuminated on display</li> </ul>	<ul style="list-style-type: none"> <li>Adjustment of alarm threshold limits is not correct</li> </ul>	<ul style="list-style-type: none"> <li>Check supply line</li> <li>Adjust alarm threshold limits</li> </ul>
<ul style="list-style-type: none"> <li>Message “sensor not ok” on display</li> </ul>	<ul style="list-style-type: none"> <li>Sensor defective</li> </ul>	<ul style="list-style-type: none"> <li>Contact WITT-GASETECHNIK</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect messages are shown on the PA display, e.g. incorrect type of gas</li> </ul>	<ul style="list-style-type: none"> <li>PA defective</li> </ul>	<ul style="list-style-type: none"> <li>Contact WITT-GASETECHNIK</li> </ul>
<ul style="list-style-type: none"> <li>The calibration is not possible</li> </ul>	<ul style="list-style-type: none"> <li>An alarm message was triggered</li> </ul>	<ul style="list-style-type: none"> <li>Rectify fault and acknowledge alarm message</li> <li>Start calibration again</li> </ul>

 **Note !**  
***In the case of other malfunctions contact us or an authorised service centre to have the unit checked.***  
***The gas analyser may only be returned into operation after it has been checked and repaired by us or an authorised service centre.***

## 7 Servicing and maintenance

These maintenance instructions are intended to answer questions on care and maintenance in a clearly laid out form.

If servicing is not performed correctly, the guarantee is void for damage to the product caused by incorrect maintenance.

In this case there is also no liability for damage caused by the product.

### 7.1 Safety instructions for servicing and maintenance



**Warning !**

***The gas analyser may only be opened by authorised, trained personnel.***



**Warning !**

***During all maintenance- and repair work the applicable national health and safety regulations are to be observed and appropriate safety equipment worn.***



**Warning !**

***During all maintenance- and repair tasks, ensure that the gas analyser is isolated from mains electricity and un-pressurised.***



**Warning !**

***Prior to initial commissioning and after changes, repair, or extensions to the system / unit, the connections and joints are to be checked for leaks to atmosphere. For this process only use suitable leak testing procedures (never test with a naked flame). If you find leaks, rectify them immediately; the applicable safety regulations are to be observed during this process. If the leaks cannot be rectified, the unit must be taken out of operation without delay. Please send the unit with a short description of the fault to us or a centre authorised by us. The gas analyser may only be returned into operation after it has been checked and repaired by us or an authorised service centre.***

### 7.2 Repair advise

Repairs may only be performed after prior consultation with the manufacturer.

In the case of repairs modifications, or conversions that have not been authorised by the manufacturer in advance, the guarantee is void in its entirety.

WITT-GASETECHNIK GmbH & Co KG is not liable for damages arising from failure to observe the instructions given above.

### 7.3 Inspection and maintenance

The gas analyser operates very reliably and needs only minimum maintenance. To ensure safe and trouble free operating conditions the following tests and inspections should be performed on a regular schedule (at least monthly):

- Check whether gas supply is sufficient and whether the gas supply pressure is within the limits specified in the Technical Data. Adjust if necessary.
- Check whether the filters in the gas inlets are contaminated or clogged (refer to section 7.4). Replace as applicable.
- Clean the analyser with a damp cloth. Do never use solvents or a pressure cleaner.
- Is a suitable calibration gas cylinder available for calibration (please refer to the Technical Data)?
- Is the inlet pressure regulator (only P-Version) set correct (see technical data)? If necessary adjust (see chapter 7.6).
- To maintain the accuracy of the analyser, the instrument should be calibrated at least once a week.



- All piping, tubing, and fittings shall be tested and proved leak tight to prevent the intake of ambient air during the measurement. If a leak is detected, the defective item shall be immediately removed from service and no employee may use it until repairs and tests necessary to render the equipment safe and completely operative have been made. All repair shall be performed by personnel familiar with proper practices only. When performing repair on the equipment the applicable national safety and health regulations must be observed (Please refer to the general safety guidelines).  
If the leak cannot be rectified, the instrument must be immediately taken out of. Please send the unit with a short description of the fault to us or a centre authorised by us. The gas analyser may only be returned into operation after it has been checked and repaired by us or an authorised service centre.
- Please have the instrument checked for internal leak tightness at least once every year. This inspection may only be performed by us or one of our authorised service centres.

If unexpected malfunctions occur please contact your local service agent, or call WITT-GASETECHNIK to have the analyser checked. The instrument may only be returned into operation after it has been checked and repaired by us or an authorised service centre.

## 7.4 Check / replace filter in the gas inlet

### 7.4.1 Check filter in needle inlet for clogging

To check the filter for clogging / contamination, please proceed as follows:

- Take the analyser out of operation.
- Pull off needle from the filter.
- Turn filter clockwise to remove filter from handle.
- Replace filter by a new one. Turn filter anti-clockwise to screw it tight to the handle.
- Put needle on filter.

### 7.4.2 Check filter in inlet for permanent analysis for clogging

To check the filter for clogging / contamination, please proceed as follows:

- Take the analyser out of operation.
- Disconnect gas supply pipe from gas inlet connector.
- Remove transparent filter bulb by turning it anti-clockwise.
- Remove filter-holder with attached filter element by turning it anti-clockwise.
- Pull off the upper plug and replace filter element by a new one.
- Put upper plug back in position and screw in filter-holder with attached filter element.
- Re-install transparent filter bulb.

## 7.5 Replace O<sub>2</sub> sensor



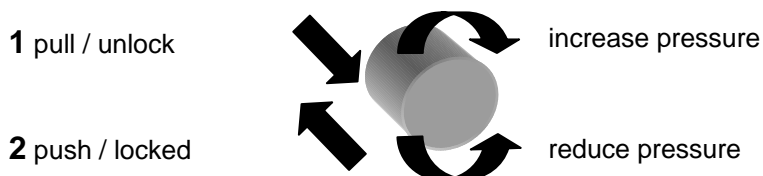
### **Note!**

#### **Only for O<sub>2</sub>-analysators**

- Contact WITT-GASETECHNIK

## 7.6 Set the inlet pressure regulator (only P-Version)

The inlet pressure regulator (64) at the backside of the device is secured. If settings should be made proceed as follows:




## 8 Operation of the process analysing system

### 8.1 Sample-hold operation

Following to the start of the measurement the measurement programme runs automatically. A gas sample is drawn from the packaging and the gas concentration is measured. Sample time is 6 seconds. The sampling is automatically stopped when the sample time has elapsed.

The measured gas concentration, and date and time of measurement are automatically recorded after the analysis has been finished.

The measurement time can be extended by pressing  while the measurement is taken.



**Note !**

**In the sample-hold mode alarms are not active.**



**Note !**

**The analyser returns back to permanent mode after 90 seconds.**

**This is not valid for devices which are solely equipped with a sample hold gas inlet (S-Version devices).**

### 8.2 Continuous operation

After start of the measurement analysis gas is continuously drawn and the gas concentration is continuously being analysed.

During measurement the operating mode (permanent) is shown in the first line of the display. The currently measured gas concentration (Vol.-%) is shown in the middle of the display.


Date and time of last recorded analysis are shown in the lower line of the display.



**Note!**

**During continuous operation the currently measured gas concentration will be recorded every 10 seconds.**

**The internal memory is a ring type buffer, i.e. once the memory is full, the oldest data will be automatically deleted when a new measurement value is stored.**

The measurement can be stopped at any time by pressing  The latest measured gas concentration, and date and time of measurement are automatically recorded and displayed.

### 8.3 Controls of the process analysing system

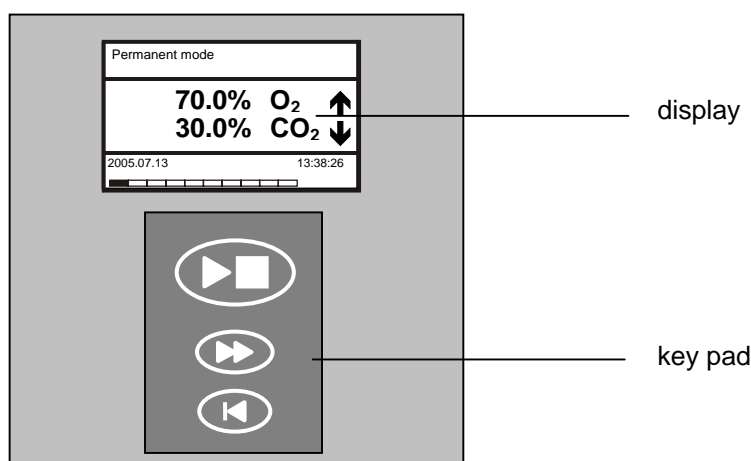


Figure: PA-Analyser front view


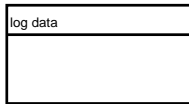

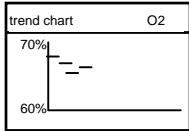
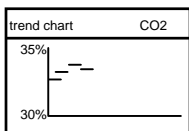
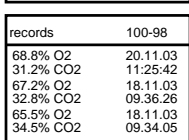







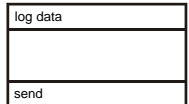

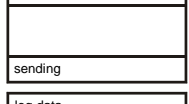

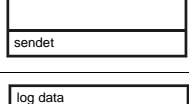




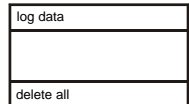




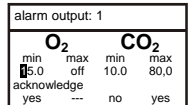


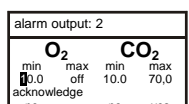

## 8.4 Programme options

The PA-Analyser offers a number of programme options which can be selected by pressing the key located in the middle of the key pad.











**Note!**  
**You can exit all menu options of PA-Analyser without changes to the current settings and return to the display mode by pressing and then for measuring mode .**

**Note!**  
**For devices which are solely equipped with a sample hold gas inlet (S-Version devices) alarms are not available. Associated displays and programme options are not shown.**



Key	Display	Programme options
		<p><b>Measurement mode</b></p> <p>After switch on the unit enters automatically the measurement mode. The result of the actual analysis is shown in the display.</p> <p>Alarms of alarm output 1 are shown at the upper right side near the measured value, alarms of alarm output 2 are shown at the lower right side near the measured value.</p> <p>↑ shows that a max.-threshold limit has been exceeded.          ↓ shows that a min.-threshold limit has fallen short.          Q shows that an alarm must be acknowledged (also see Section 6.6).</p> <p>Date and time of measurement and actual memory occupancy are shown in the bottom lines of the display. Occupied memory space is indicated by dark filled segments of the bar, free memory space is indicated by non filled bar segments.</p>
<p><b>1x</b></p>		<p><b>Display mode</b></p> <p>The result of the latest analysis is shown in the display.</p> <p>Date and time of measurement and actual memory occupancy are shown in the bottom lines of the display. Occupied memory space is indicated by dark filled segments of the bar, free memory space is indicated by non filled bar segments.</p>
<p>from display mode</p> <p><b>1x</b></p>		<p><b>Select product</b></p> <p>The current selected product is shown in the lower line of the display.</p> <p>Press  to start product selection.</p> <p>Select another product with .</p> <p>Confirm the selected product with .</p> <p>To edit product names it is necessary to connect the PA-Analyser to your computer by an interface cable (optional available). The product names are edited by the WITT-LOGGER and transmitted to the PA-Analyser.</p> <p>Press  to return to the display mode.</p>
<p>from display mode</p> <p><b>2x</b></p>		<p><b>Select operating mode</b></p> <p>Press  to acknowledge selection:</p> <p>The upper line in the display identifies the currently selected operating mode (e.g. sample hold). A dark bar will appear on top of the last line shown in the display.</p> <p>Press  to switch to an alternative operating mode (e.g. permanent).</p> <p>Press  when the desired operating mode is shown to confirm selection.</p> <p>Press  to return to the display mode.</p> <p><b>Note !</b>  <b>The analyser returns back to permanent mode after 90 seconds.</b>  <b>This is not valid for devices which are <u>solely</u> equipped with a sample hold gas inlet (S-Version devices).</b></p>

Key	Display	Programme options																				
from display mode 3x 	     <table border="1"> <thead> <tr> <th>records</th> <th>100-98</th> </tr> </thead> <tbody> <tr> <td>68.8% O2</td> <td>20.11.03</td> </tr> <tr> <td>31.2% CO2</td> <td>11.25.42</td> </tr> <tr> <td>67.2% O2</td> <td>18.11.03</td> </tr> <tr> <td>32.8% CO2</td> <td>09.36.26</td> </tr> <tr> <td>65.5% O2</td> <td>18.11.03</td> </tr> <tr> <td>34.5% CO2</td> <td>09.34.05</td> </tr> </tbody> </table>	records	100-98	68.8% O2	20.11.03	31.2% CO2	11.25.42	67.2% O2	18.11.03	32.8% CO2	09.36.26	65.5% O2	18.11.03	34.5% CO2	09.34.05	<b>Show logged data</b> Press  :  An analysis trend chart for O <sub>2</sub> will be displayed.  Press  and an analysis trend chart for CO <sub>2</sub> will be displayed.  With  the three latest recorded measurement data will be displayed in tabular form with date and time of measurement. Repeatedly press  to successively display remaining data. The first line in the display will show: <b>record</b> and number of records (e.g. <b>100-98</b> for latest measurement data ). In case of no recorded measurement data the bottom line in the display will show: <b>no data in memory.</b> The restricted space of the display does not allow to show the records together with product names. This relation is saved internally and can be evaluated with the WITT-Logger programme (see chapter 10). Press  to return to the log data selection menu. Press  to return to the measurement and display menu.						
records	100-98																					
68.8% O2	20.11.03																					
31.2% CO2	11.25.42																					
67.2% O2	18.11.03																					
32.8% CO2	09.36.26																					
65.5% O2	18.11.03																					
34.5% CO2	09.34.05																					
from display mode 4x 	     	<b>Send logged data</b> This menu option enables you to transfer the measurement data recorded in the PA-Analyser to a PC. For data transfer the PA-Analyser must be connected to the computer by an interface cable (optional available), and the WITT-LOGGER programme must be started on the PC (please refer to chapter 10 for details, the WITT-LOGGER release code is optional available). Start data transfer by pressing  . During data transfer the message <b>sending</b> will be shown in the lower line of the display. Once the data transfer has been finished the message <b>send</b> will be displayed.  Press  to return to the display mode.																				
from display mode 5x 	 	<b>Delete all logged data</b> This menu option enables you to completely delete all measurement data recorded in the PA-Analyser. In case of no recorded measurement data the bottom line in the display will show: <b>no data in memory.</b> Press  to acknowledge selection: All recorded data will be deleted. Press  to return to the display mode.																				
from display mode 6x 	 <table border="1"> <thead> <tr> <th colspan="2">O<sub>2</sub></th> <th colspan="2">CO<sub>2</sub></th> </tr> <tr> <th>min</th> <th>max</th> <th>min</th> <th>max</th> </tr> </thead> <tbody> <tr> <td>5.0</td> <td>off</td> <td>10.0</td> <td>80.0</td> </tr> <tr> <td colspan="4">acknowledge</td> </tr> <tr> <td>yes</td> <td>---</td> <td>no</td> <td>yes</td> </tr> </tbody> </table>	O <sub>2</sub>		CO <sub>2</sub>		min	max	min	max	5.0	off	10.0	80.0	acknowledge				yes	---	no	yes	<b>Configuration of alarm output 1</b> <b>Note !</b> <b>For solely S-Version devices this programme option is not available.</b> This menu option enables you to set min. and max threshold limits for each gas. If the gas concentration falls short of the minimum threshold limit ↓ will be shown on the display. If the gas concentration exceeds the maximum threshold limit ↑ will be shown on the display. In case of alarm the alarm output 1 switches the related relay. Press  to acknowledge selection. For further details see chapter 6.6. <b>Note !</b> <b>In the sample-hold mode alarms are not active.</b>
O <sub>2</sub>		CO <sub>2</sub>																				
min	max	min	max																			
5.0	off	10.0	80.0																			
acknowledge																						
yes	---	no	yes																			
from display mode 7x 	 <table border="1"> <thead> <tr> <th colspan="2">O<sub>2</sub></th> <th colspan="2">CO<sub>2</sub></th> </tr> <tr> <th>min</th> <th>max</th> <th>min</th> <th>max</th> </tr> </thead> <tbody> <tr> <td>0.0</td> <td>off</td> <td>10.0</td> <td>70.0</td> </tr> <tr> <td colspan="4">acknowledge</td> </tr> <tr> <td>no</td> <td>---</td> <td>no</td> <td>yes</td> </tr> </tbody> </table>	O <sub>2</sub>		CO <sub>2</sub>		min	max	min	max	0.0	off	10.0	70.0	acknowledge				no	---	no	yes	<b>Configuration of alarm output 2</b> <b>Note !</b> <b>For solely S-Version devices this programme option is not available.</b> This menu option enables you to set min. and max threshold limits for each gas. If the gas concentration falls short of the minimum threshold limit ↓ will be illuminated on the display. If the gas concentration exceeds the maximum threshold limit ↑ will be illuminated on the display. In case of alarm the alarm output 2 switches the related relay. Press  to acknowledge selection. For further details see chapter 6.6. <b>Note !</b> <b>In the sample-hold mode alarms are not active.</b>
O <sub>2</sub>		CO <sub>2</sub>																				
min	max	min	max																			
0.0	off	10.0	70.0																			
acknowledge																						
no	---	no	yes																			

Key	Display	Programme options
<p>from display mode</p> <p>8x</p>	 	<p><b>Set / rectify date and time</b></p> <p>The current date and time are shown in the lower line of the display. This menu option enables you to adjust date and time setting (e.g. after replacement of batteries). Press  to acknowledge selection: Date and time are shown in the lower line of the display. A dark bar appears on top of the first digits (day). Press  until the correct figure is shown, and press  to acknowledge new date. The bar will move to the next character set (month). Continue with date and time adjustment until all data have been correctly set. Press  to return to the display mode.</p>
<p>from display mode</p> <p>9x</p>		<p><b>O<sub>2</sub> calibration, zero point calibration</b></p> <p>A suitable zero gas cylinder equipped with a pressure reducer shall be used as calibration gas source and must be connected. <b>Caution !</b> <b>For correct zero gas see technical data Sec. 10!</b> Supply zero gas to the PA-Analyser and wait until the display value has stabilised. Press  to start calibration. The message "calibration" will start to flash. Wait until an audible signal is given. The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %. Press  to return to the display mode. The calibration can be stopped at any time by pressing . You will then return to the display mode without storing a new calibration setting.</p>
<p>from display mode</p> <p>10x</p>		<p><b>O<sub>2</sub> calibration, span calibration</b></p> <p>A suitable calibration gas cylinder equipped with a pressure reducer shall be used as calibration gas source and must be connected. <b>Caution !</b> <b>For correct calibration gas see technical data Sec. 10!</b> Supply calibration gas to the PA-Analyser and wait until the display value has stabilised. Press  to start calibration. The message "calibration" will start to flash. Wait until an audible signal is given. The new calibration setting is stored and the concentration reading in the display is adjusted. Press  to return to the measurement and display menu. The calibration can be stopped at any time by pressing . You will then return to the display mode without storing a new calibration setting.</p>
<p>from display mode</p> <p>11x</p>		<p><b>CO<sub>2</sub> calibration, zero point calibration</b></p> <p>A suitable zero gas cylinder equipped with a pressure reducer shall be used as calibration gas source and must be connected. <b>Caution !</b> <b>For correct zero gas see technical data Sec. 10!</b> Supply zero gas to the PA-Analyser and wait until the display value has stabilised. Press  to start calibration. The message "calibration" will start to flash. Wait until an audible signal is given. The new calibration setting is stored and the concentration reading in the display is adjusted to 0.0 %. Press  to return to the display mode. The calibration can be stopped at any time by pressing . You will then return to the display mode without storing a new calibration setting.</p>
<p>from display mode</p> <p>12x</p>		<p><b>CO<sub>2</sub> calibration, span calibration</b></p> <p>A suitable calibration gas cylinder equipped with a pressure reducer shall be used as calibration gas source and must be connected. <b>Caution !</b> <b>For correct calibration gas see technical data Sec. 10!</b> Supply calibration gas to the PA-Analyser and wait until the display value has stabilised. Press  to start calibration. The message "calibration" will start to flash. Wait until an audible signal is given. The new calibration setting is stored and the concentration reading in the display is adjusted. Press  to return to the measurement and display menu. The calibration can be stopped at any time by pressing . You will then return to the display mode without storing a new calibration setting.</p>

Key	Display	Programme options						
<b>13x</b> 	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">calibration points</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50%; border-bottom: 1px solid black;">O<sub>2</sub></td> <td style="text-align: center; width: 50%; border-bottom: 1px solid black;">CO<sub>2</sub></td> </tr> <tr> <td style="text-align: center; font-size: small;">low high</td> <td style="text-align: center; font-size: small;">low high</td> </tr> <tr> <td style="text-align: center; border-bottom: 1px solid black;">0.0 20.9</td> <td style="text-align: center; border-bottom: 1px solid black;">0.0 80.0</td> </tr> </table> </div>	O <sub>2</sub>	CO <sub>2</sub>	low high	low high	0.0 20.9	0.0 80.0	<p><b>Adjusting calibration points</b></p> <p><b>Note !</b>  <i>The minimum span between the upper and lower calibration point must be 5% points at O<sub>2</sub> , and 30%-points at CO<sub>2</sub> .</i></p> <p>Press  to acknowledge selection:</p> <p>The upper line in the display shows the upper and lower calibration points of the sensors. A dark bar will appear on top of the first numeric section.</p> <p><b>Note !</b>  <i>It is not possible to change the lower calibration point of the CO<sub>2</sub> analysis.</i></p> <p>Press  to reach the next numeric section. In case of the right number acknowledge selection with . The bar switch to the next numeric section. Go so on till all numbers are correct and the bar is not on display.</p> <p>Press  to return to the measurement and display menu.</p> <p><b>Note !</b>  <i>In case of other calibration points use an suitable calibration gas (e.g. if adjusting the calibration point for CO<sub>2</sub> to 30 you have to use a calibration gas with 30% CO<sub>2</sub>).</i></p>
O <sub>2</sub>	CO <sub>2</sub>							
low high	low high							
0.0 20.9	0.0 80.0							
<p>from display mode</p> <p><b>14x</b>  </p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">language</p> <hr/> <p style="text-align: center; margin: 0;">English</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">language</p> <hr style="background-color: black; height: 2px;"/> <p style="text-align: center; margin: 0;">English</p> </div>	<p><b>Select language</b></p> <p>The currently selected language (German, English, French, Italian, Spanish, Netherlands, Polish, Finnish, Swedish or Russian*) is shown in the lower line of the display.</p> <p>Press  to acknowledge selection:</p> <p>The current language setting (e.g. German) is shown in the lower line of the display. A dark bar appears on top of the language.</p> <p>Press  until the correct language is shown, and press  to confirm new language setting.</p> <p>Press  to return to the display mode.</p> <p>(* On this language setting the use of WITT-LOGGER software is not possible.)</p>						

**Note!**

**You can exit all menu options of PA-Analyser without changes to the current settings and return to the display mode by pressing  and then for measuring mode .**

## 9 Readout data from PA-Analyser

To readout and record your analysis data you are encouraged to use the WITT-LOGGER, a software programme specifically developed by WITT-GASETECHNIK. The WITT-LOGGER provides a simple and comfortable tool to record and further evaluate the measured data.

You will find further information on the WITT-LOGGER, like e.g. system requirements, installation and operation, on the CD delivered with your PA-Analyser.

To purchase a new interface cable please refer to Part number: 595.000003.



**Note!**

***The WITT-LOGGER does not work if the language "Russian" is selected.***

The WITT-LOGGER PC programme is fully operational.

5 analysis results will be recorded per session, subsequently the programme will be switched into the demo-mode.

Please contact WITT-GASETECHNIK to receive a release code which will provide full operability of the programme.

## 10 Attachment

- Technical Data
- Parts list, spare parts / accessories
- Projection drawing
- Functional scheme
- Electrical circuit diagram
- List of symbols used in functional scheme
- WITT-LOGGER on CD
- Interface cable (if ordered)