testo 512
Digital manometer

Instruction manual — en

Contents

General notes

This chapter provides important advice on using this documentation.

The documentation contains information that must be applied if the product is to be used safely and efficiently.

Please read this documentation through carefully and familiarise yourself with the operation of the product before putting it to use. Keep this document to hand so that you can refer to it when necessary.

Identification

Representation	Meaning	Comments
ⓘ	Note	Offers helpful tips and information.
➢, 1, 2	Objective	Denotes the objective that is to be achieved via the steps described. Where steps are numbered, you must always follow the order given!
✓	Condition	A condition that must be met if an action is to be carried out as described.
❯, 1, 2, ...	Step	Carry out steps. Where steps are numbered, you must always follow the order given!
Text	Display text	Text appears on the instrument display.
Button	Control button	Press the button.
-	Result	Denotes the result of a previous step.
✑	Cross-reference	Refers to more extensive or detailed information.

1. Safety advice

This chapter gives general rules which must be followed and observed if the product is to be handled safely.

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Avoid personal injury/damage to equipment

› Do not use the measuring instrument and probes to measure on or near live parts.

› Never store the measuring instrument/probes together with solvents and do not use any desiccants.

Product safety/preserving warranty claims

› Operate the measuring instrument only within the parameters specified in the Technical data.

› Always use the measuring instrument properly and for its intended purpose. Do not use force.

› Do not expose handles and feed lines to temperatures in excess of 70 °C unless they are expressly permitted for higher temperatures.
Temperatures given on probes / sensors relate only to the measuring range of the sensors.

› Open the instrument only when this is expressly described in the documentation for maintenance and repair purposes.
Carry out only the maintenance and repair work that is described in the documentation. Follow the prescribed steps when doing so. For safety reasons, use only original spare parts from Testo.

Ensure correct disposal

› Take faulty rechargeable batteries/spent batteries to the collection points provided for them.

› Send the product back to Testo at the end of its useful life. We will ensure that it is disposed of in an environmentally friendly manner.

2. Intended purpose

This chapter gives the areas of application for which the product is intended.

Use the product only for those applications for which it was designed. Ask Testo if you are in any doubt.

The testo 512 is a compact digital manometer with temperature compensation for measuring the positive and negative over-pressure and differential pressure of non-aggressive gases. With the versions 2hPa, 20hPa and 200hPa, flow velocity can also be measured via a Pitot tube.

The product was designed for the following tasks/applications:

· Measurement on heating, ventilation and air conditioning systems
· Customer service and maintenance work

The product should not be used in the following areas:

· Areas at risk of explosion.
· Diagnostic measurements for medical purposes

3. Product description

This chapter provides an overview of the components of the product and their functions.

3.1 Display and control elements

Overview

① Infrared interface,
Pressure connection nipple
(4/6mm):
(+) positive over-pressure
(-) negative over-pressure

② Display

③ Control buttons

④ Battery compartment (rear)

Button functions

Button	Functions
⏻	Switch instrument on; switch instrument off (press and hold)
☀	Switch display light on / off
Hold / Max / Min	Keep reading, display maximum/ minimum value
↵	Open/leave configuration mode (press and hold); In configuration mode: Confirm input
△	In configuration mode: Increase value, select option
▽	In configuration mode: Reduce value, select option
🖨	Print data
>0<	Carry out zeroing

Important displays

Display	Meaning
🔋	Battery capacity (bottom right in display): · 4 segments in the battery symbol are lit: Instrument battery is fully charged · No segments in the battery symbol are lit: Battery is almost spent
🖨	Print function: Readings are sent to the printer

3.2   Interfaces

Infrared interface

Measurement data can be sent to a Testo printer via the infrared interface on the head of the instrument.

Pressure connection nipple

Pressure hoses can be connected via the pressure connection nipple at the upper end of the instrument.

3.3   Voltage supply

Voltage is supplied by means of a 9V monobloc battery (included in delivery) or rechargeable battery. It is not possible to run the instrument from the mains supply or charge a rechargeable battery in the instrument.

4. Commissioning

This chapter describes the steps required to commission the product.

➢ Removing the protective film on the display:

Pull the protective film off carefully.

➢ Inserting a battery/rechargeable battery:

1 To open the battery compartment on the rear of the instrument, push the lid of the battery compartment in the direction of the arrow and remove it.

2 Insert a battery/rechargeable battery (9V monobloc). Observe the polarity!

3 To close the battery compartment, replace the lid of the battery compartment in position and push it against the direction of the arrow.

- The instrument switches itself on.

5. Operation

This chapter describes the steps that have to be executed frequently when using the product.

5.1 Connecting pressure hoses, Pitot tube

➢ Connecting pressure hoses:

Attach the pressure hoses (4 or 6mm) correctly according to the mathematical signs:

- · · positive over-pressure measurement (+)
- · · negative over-pressure measurement (-)
- · · Differential pressure measurement (+ -)

➢ Connecting Pitot tube (versions 2hPa, 20hPa and 200hPa only):

1 Attach the pressure hoses (4 or 6mm) correctly according to the mathematical signs:

2 Attach pressure hoses to the connecting ends of the Pitot tube:

5.2 Switching the instrument on / off

➢ Switching the instrument on:

Press ⏻.

- A segment test is carried out: The measurement value display segments light up briefly (2x **8888**).

- Measurement view is opened: The current reading is displayed.

➢ Switching the instrument off:

Press and hold ⏻ (for approx. 2s) until the display goes out.

5.3 Switching the display light on / off

➢ Switching the display light on/off:

✓ The instrument is switched on.
Press ☀.

5.4 Performing settings

➢ 1 To open configuration mode:

✓ The instrument is switched on and is in measurement view. **Hold**, **Max** or **Min** are not activated.

Press and hold ↵ (for approx. 2s) until the display changes.

- The instrument is now in configuration mode.

🛈 You can change to the next function with ↵.
You can leave configuration mode at any time. To do so, press and hold ↵ (for approx. 2s) until the instrument has changed to measurement view. Any changes that have already been made in configuration mode will be saved.

➢ 2 Setting the unit of pressure:

✓ The configuration modus is open, the set unit blinks.
Set the desired unit with ⬆ / ⬇ and confirm with
↵ .

➢ 3 Setting the parameter for the lower measurement value line:

The parameters temperature (internal temperature sensor) or flow (versions 2hPa, 20hPa and 200hPa only) can be displayed in the lower measurement value line.

✓ The configuration modus is open, °C°F lights up.

1 Select the desired option with ⬆ / ⬇ and confirm with ↵ :

· On: The temperature measurement value is displayed in the lower measurement value line, except when the display of flow measurement value is activated (versions 2hPa, 20hPa and 200hPa only).

· OFF: The temperature measurement value is not displayed in the lower measurement value line.

OFF is selected, Version 2000hPa:

↪ Next handling objective 4 SET DAMPING.

OFF is selected, Versions 2hPa, 20hPa and 200hPa:

- m/s and fpmx100 light up.

↪ Next step **3**.

On is selected:

- The set temperature blinks.

2 Select the desired unit with ⬆ / ⬇ and confirm with ↵ :

Version 2000hPa:

↪ Next handling objective 4 SET DAMPING.

Versions 2hPa, 20hPa and 200hPa:

- m/s and fpmx100 light up.

3 Select the desired option with ⬛△⬛ / ⬛▽⬛ and confirm with ⬛↵⬛ :

· On: The flow measurement value is displayed in the lower measurement value line

· OFF: The flow measurement value is not displayed in the lower measurement value line

OFF is selected:

↝ Next handling objective 4 SET DAMPING.

On is selected:

- The set unit of flow blinks.

4 Select the desired unit with ⬛△⬛ / ⬛▽⬛ and confirm with ⬛↵⬛ :

- The set air-density and the corresponding unit are displayed.

Entering the air-density is required to calculate the flow correctly.

5 Set the value with ⬛△⬛ / ⬛▽⬛ and confirm with ⬛↵⬛ :

- The set Pitot factor is displayed, **Pitot factor** lights up.

The Pitot factor is dependant on the Pitot tube used.

6 Set the value with ⬛△⬛ / ⬛▽⬛ and confirm with ⬛↵⬛ :

➢ 4 Setting damping:

When damping is activated, a moving mean value is shown in the display, which is created from an adjustable number of measurement values:

· · 1 = Damping deactivated, current measurement value is shown

· · 20 = Maximum damping, mean value calculation over the last 20 measurement values.

✓ The configuration modus is open, **Damping** lights up.

Set the value with ⬛△⬛ / ⬛▽⬛ and confirm with ⬛↵⬛ :

➢ 5 Setting max/min pressure function:

✓ The configuration modus is open, ▣ MaxMin lights up

Select the desired option with △ / ▽ and confirm with ↵ :

· · On: When printing current or recorded measurement values, maximum and minimum values of the parameters pressure and flow (versions 2hPa, 20hPa und 200hPa only) are also printed out.

· · OFF: When printing current or recorded measurement values, maximum and minimum values of the parameters pressure and flow (versions 2hPa, 20hPa und 200hPa only) are not printed out.

- ▣ and the set unit of temperature light up.

➢ 6 Setting temperature-pressure modus:

✓ The configuration modus is open, ▣ and the set unit of temperature light up.

Select the desired option with △ / ▽ and confirm with ↵ :

· On: When printing current or recorded measurement values, the temperature measurement value is also printed out.

· · OFF: When printing current or recorded measurement values, the temperature measurement value is not printed out.

➢ 7 To set Auto Off:

✓ Configuration mode is opened, AutoOff is lit.

Select the desired option with △ / ▽ and confirm with ↵:

· on: The measuring instrument switches off auto-matically if no button is pressed for 10min. Exception: A recorded reading is shown on the display (Hold is lit).

· oFF: The measuring instrument does not switch itself off automatically.

➢ 8 To set the date/time:

   ✓ Configuration mode is opened, Year is lit.

   1 Use ⬆ / ⬇ to set the current year and confirm with ↵.

   2 Use ⬆ / ⬇ to set the other values for the month (Month), day (Day) and time (Time) and confirm each one with ↵.

➢ ✚ ✳❑ ❑✳▲✳▼✚

   ✓ Configuration mode is opened, RESET is lit.

   Select the desired option with ⬆ / ⬇ and confirm with ↵:

    · no: Instrument is not reset.

    · Yes: Instrument is reset. The instrument is reset to the factory settings.
     The setting of date / time is not reset.

   - The instrument returns to measurement view.

6. Measuring

This chapter describes the steps that are required to perform measurements with the product.

➢ Taking a measurement:

✓ The instrument is switched on and is in measurement view.

1 Place the measuring instrument in the position in which the measurement is to be made (Usage position).

🛈 The measurement values can be falsified by a change in the position of the measuring instrument. After zeroing, the position of the measuring instrument must not be changed. Carry out zeroing before every measurement in order to compensate faulty positioning or long-term zero-point drift. Zeroing is only possible in a range of 0...25% of the measuring range.

2 Carry out zeroing with open pressure connections: press `>0<` .

3 Attach pressure hoses to the pressure system or position the Pitot tube, and read measurement values.

➢ Holding the reading, displaying the maximum/minimum value:

The current pressure/flow measurement value can be fixed. The maximum and minimum values of the parameters pressure and flow (since the last time the instrument was switched on) can be displayed.

Press `Hold / Max / Min` several times until the desired value is displayed.
- The following are displayed in turn:
    · · **Hold**: the recorded reading
    · · **Max**: Maximum value
    · · **Min**: Minimum value
    · · The current reading

➢ Resetting the maximum/minimum values:

The maximum/minimum values of all channels can be reset to the current reading.

1 Press `Hold / Max / Min` several times until **Max** or **Min** lights up.

2 Press and hold `Hold / Max / Min` (approx. 2s).

- All maximum or minimum values are reset to the current reading.

➢ Printing readings:

A Testo printer is required (accessory part).

🛈 When printing current or recorded measurement values, maximum and minimum values of the parameters pressure and flow (versions 2hPa, 20hPa und 200hPa only) are also printed out.
☛ See the chapter PERFORMING SETTINGS.

Press 🖨.

7. Care and maintenance

This chapter describes the steps that help to maintain the functionality of the product and extend its service life.

➢ Cleaning the housing:

> Clean the housing with a moist cloth (soap suds) if it is dirty. Do not use aggressive cleaning agents or solvents!

➢ Changing the battery/rechargeable battery:

✓ The instrument is switched off.

1 To open the battery compartment on the rear of the instrument, push the lid of the battery compartment in the direction of the arrow and remove it.

2 Remove the spent battery/rechargeable battery and insert a new battery/rechargeable battery (9 V monobloc). Observe the polarity!

3 To close the battery compartment, replace the lid of the battery compartment in position and push it against the direction of the arrow.

Instrument settings can be lost if the electricity supply is interrupted.

4 Check instrrument settings.

➥ See the chapter PERFORMING SETTINGS.

8.   Questions and answers

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This chapter gives answers to frequently asked questions.

Question	Possible causes	Possible solution
⊏▭⊐ is lit (bottom right in display).	· Instrument battery is almost spent.	· Replace instrument battery.
Instrument switches itself off automatically.	· Auto Off function is switched on. · Residual capacity of battery is too low.	· Switch function off. · Replace battery.
Display: uuuuu	· Permitted measuring range was undershot.	· Keep to permitted measuring range.
Display: ooooo range.	· Permitted measuring range was exceeded.	· Keep to permitted measuring

9. Technical data

Characteristic	Value
All Versions:	
Measurement parameters	Pressure (hPa, kPa, psi, inH$_2$O, mmHg, inHg, mmH$_2$O Versions 2hPa, 20hPa, 200hPa only: Pa) Temperature (°C, °F) Versions 2hPa, 20hPa, 200hPa only: Flow (m/s, fpmx100)
Measuring range temperature	0...+60 °C / 32...+140°F
Resolution temperature	0.1°C, 0.1°F
Working temperature	0...+60°C / 32...+140°F
Storage temperature	-10...+70°C / 14...+158°F
Accuracy pressure	0,5% of final value ±1 Digit (22°C / 71.6°F)
Accuracy temperature	±0,5°C / 0.9°F ±1 Digit
Measurement medium	Non-aggressive gases
Messrate	2/s
Voltage supply	1x 9 V monobloc battery/rech. battery
Battery life	approx. 120h (Display illumination off)
Protection class	with TopSafe (accessory part) and attached pressure hoses: IP 65
EC Directive	2004/108/EEC
Warranty	2 years
Version 2hPa:	
Meas. range press. Resolution press. Overload press.	0...+2hPa 0.001hPa ±20hPa
Meas. range flow Resolution flow	2...17.5m/s, 3.95...34.45fpm 0.1m/s, 0.1fpmx100
Version 20hPa:	
Meas. range press. Resolution press. Overload press.	0...+20hPa 0.01hPa ±200hPa
Meas. range flow Resolution flow	5...55m/s, 9.85...108.3fpm 0.1m/s, 0.1fpmx100
Version 200hPa:	
Meas. range press. Resolution press. Overload press.	0...+200hPa 0.1hPa ±2000hPa
Meas. range flow Resolution flow	10...100m/s, 19.7...196.9fpm 0.1m/s, 0.1fpmx100
Version 2000hPa:	
Meas. range press. Resolution press. Overload press.	0...+2000hPa 1hPa ±4000hPa

10. Accessories/ spare parts

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Name	Part no.
Connection hose, silicon, 5m, up to 700hPa	0554 0440
Pitot tube, 350mm	0635 2145
Hose connection set incl. silicon hose	0554 0315
TopSafe testo 512, protection from dirt and knocks	0516 0221
Testo report printer with IRDA and infrared interface 1 roll thermo paper and 4 mignon batteries	0554 0547