testo 400 - Universal IAQ instrument

Short instructions

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1 About this document

- The instruction manual is an integral part on the instrument.
- Keep this documentation to hand so that you can refer to it when necessary.
- Please read this instruction manual carefully and familiarize yourself with the product before use.
- Hand this instruction manual on to any other users of the product.
- Pay attention to the safety instructions and warning advice in order to prevent injury and damage to the product.

You will also find additional information about your testo 400 universal IAQ instrument in the online instruction manual on the Testo website, www.testo.com, under the product-specific download.

2 Safety and disposal

Follow the **testo information** document (accompanies the product).

3 Product-specific safety instructions

⚠ DANGER

Integrated magnet
Danger to life for persons with pacemakers!

- Keep a distance of at least 8” between your pacemaker and the measuring instrument.

ATTENTION

Integrated magnet
Damage to other devices!

- Keep a safe distance from devices that may be damaged by magnetism (e.g. monitors, computers, credit cards, memory cards, etc.).

4 Data protection

The testo 400 measuring instrument makes it possible to input and store personal data such as name, company, customer number, address, telephone number, e-mail address and website.

Please be aware that your use of the functions offered here is entirely your own responsibility. This applies to use of the interactive functions (e.g. storing customer data or sharing readings). You are responsible for compliance with the data protection regulations and laws applicable in your country. Therefore, it is your responsibility to ensure the legality of the processing of personal data for which you are responsible.

The personal data collected with the measuring instrument is never automatically transferred to Testo Inc. or Testo SE & Co. KGaA.

5 Use

The testo 400 is an instrument for measuring climate-related parameters. The testo 400 is ideal for comfort level measurements for the workplace evaluation and flow measurements in and at ventilation and air-conditioning systems.

The instrument is only to be used by qualified expert personnel. The product must not be used in potentially explosive atmospheres!

6 Product description

6.1 Front view

1	On/Off button	**2**	Display – user interface (see section 6.3)
3	USB interface/ power connection	**4**	Probe connections (see section 5.3)

6.2 Rear view

1	Camera	**2**	Differential pressure measurement connections (+/- marking)
3	Magnets	**4**	Attachment point for carrying strap
5	USB interface/ power connection		

⚠ CAUTION

Make sure the pressure tube does not pop off the connection socket. Risk of injury!

- Ensure correct connection.

6.3 Probe connections

1	Thermocouple probe type K connection (T1 and T2)	**2**	Connection for probes with TUC (Testo Universal Connector) connector (A and B)

7 Commissioning

7.1 Power supply / Battery

The measuring instrument is supplied with a rechargeable battery.

Fully charge the battery before use.

If plugged in, the measuring instrument is automatically powered via the power supply.

Only charge the battery at an ambient temperature of 32 to 113°F.

7.2 Turning the testo 400 on and off

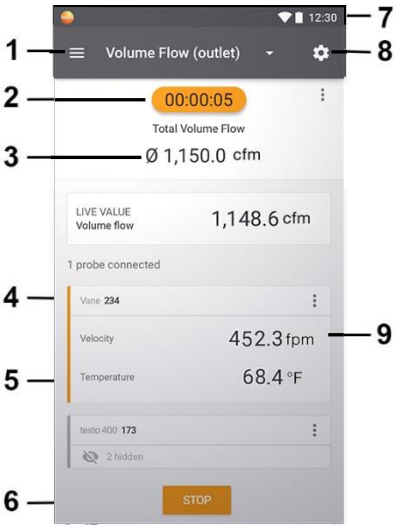
Current status	Action	Function
Instrument off	Press and hold down the button (> 3 sec)	Instrument is turned on
When the measuring instrument is started for the first time, the setup wizard guides you through the following setting parameters step by step: - **Language** - **Country** - **Units** - **WiFi** - **Date and time** - **Own company address** - **E-mail account*** - **Customer registration** A tutorial can be started after the setup wizard. The tutorial demonstrates the general operation and the most important functions of the measuring instrument using examples.		
Instrument on	Press the button briefly (< 1 sec)	Instrument is turned to standby mode. The instrument is re-activated when the button is pressed again.
Instrument off	Press and hold down the button (> 1 sec)	Choice: press **[OK]** to switch the instrument off or press **[Cancel]** to cancel switch-off of the instrument.

The startup wizard and the tutorial can be executed again at any time in the main menu under **Setup wizard**.

Measuring values that have not been saved are lost when the measuring instrument is turned off.

*Note: If you don't have your Email server information available you can skip this step.

7.3 Display – user interface



1		Open main menu
2		Measurement time
3		Display of calculated measurement results
4		Number of connected probes
5		Reading for each probe
6		Can be controlled with different function keys
7		Instrument status bar
8		**Configure measurement**
9		Edit reading display

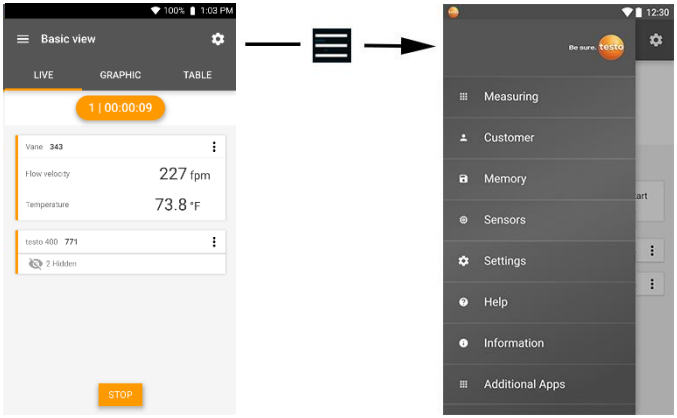
Further symbols on the user interface

	One level back
	Exit view
	Share report
	Search
	Favourite
	Delete

	More information
	Display report
	Multiple selection

8 Using the product

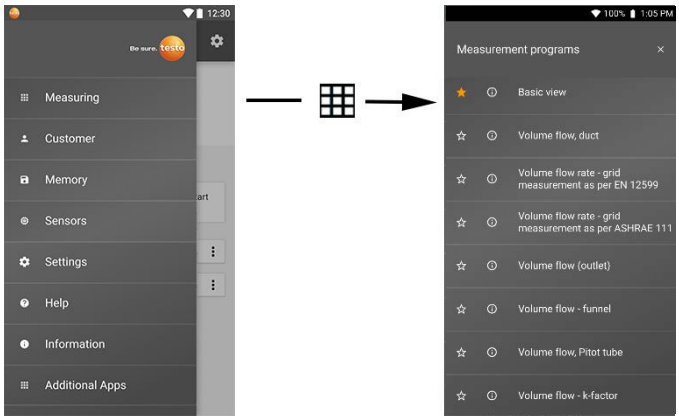
8.1 Overview of main menu ( )



Menu	Description
Measuring	List with various application-specific menus
Customer	Create, edit and delete customer and system information.
Memory	Call up, edit, send, export (different formats possible) and delete measurements that have been carried out.
Sensors	Overview of integrated sensors and connected probes. - **Adjustment via the input of calibration information** - **Damping** - **Serial number** - **Firmware version** - **Battery level (Bluetooth® probe)**

Menu	Description
Settings	Instrument settings - **Language and country** - **Date & Time** - **Units** - **Own company address** - **WiFi**
Help & Information	Aids - **Device Registration** - **Device information** (serial number, app version, firmware version, update information) - **Tutorial** - **Instruction manual** - **Startup wizard**
Additional Apps	Additional applications - **Settings** - **Camera** - **Clock** - **E-mail** - **Gallery** - **Browser** - **Calendar** - **Pocket calculator** - **Downloads** - **QuickSupport** - **File manager**

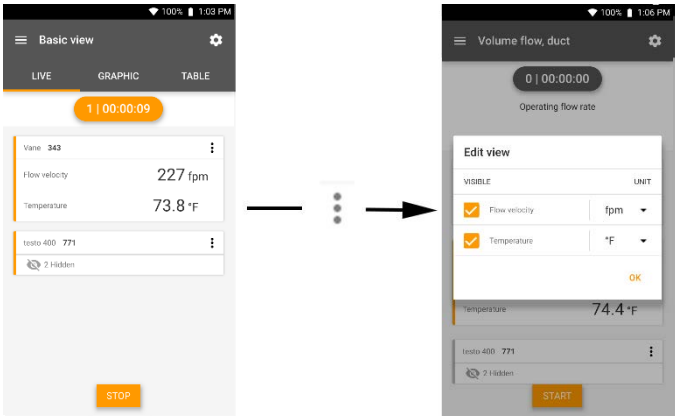
8.2 Overview of measurement types (▦)



Measuring
Basic view
Volume flow - Duct
Volume flow rate – grid measurement as per EN 12599
Volume flow – grid measurement as per ASHRAE 111
Volume flow - Outlet
Volume flow - funnel
Volume flow – Pitot tube
Volume flow – k-factor
Comfort – PMV/PPD (EN 7730 / ASHRAE 55)
Discomfort – Draft rate
Differential temperature (ΔT)
Differential pressure (ΔP)

You will also find additional information about the individual measurement types in the online instruction manual on the Testo website, www.testo.com, under the product-specific download.

8.3 Overview – editing the reading display (⋮)



Menu	Description
Edit view (**Edit view**)	The display can be edited for each connected probe. The available measurement parameters can be selected and deselected and the unit for each parameter can be adjusted. These changes are saved for the next measurement.
Zero pressure sensor (**Zero pressure sensor**)	Once the testo 400 has been brought into the operating position for a differential pressure measurement, the sensor should be zeroed against ambient air.
Adjusting Degree of Emission (**Adjusting Degree of Emission**)	If the testo 805i is connected, the selection of emissivity appears here. This can be set individually depending on the measuring surface.

8.4 Getting the readings in 5 steps

1	Switch instrument on: Press button > 1 sec.	

2	Connect probe via cable or Bluetooth®.	
3	Place probe in the application.	
4	Start measurement and read off measuring values.	
5	Save and send readings	

You will also find further information about your testo 400 universal IAQ instrument in the online instruction manual on the Testo website, www.testo.com, under the product-specific download.

9 Software

The testo 400 has a USB port, via which the measuring instrument can be connected to the PC.

Knowledge of Windows® operating systems is required to work with the software.

9.1 Purpose

The testo DataControl software enhances the functionality of the testo 400 measuring instrument with lots of useful functions:

- Manage and archive customer data and measuring point information
- Read out, evaluate and archive measurement data
- Presenting readings in graphic form
- Create professional measurement reports from the existing measurement data
- Conveniently add pictures and comments to measurement reports
- Data import from and data export to the measuring instrument

9.2 System requirements

Administrator rights are required for installation.

Operating system

The software can be run on the following operating systems:

- Windows® 7
- Windows® 8
- Windows® 10

Calculator

The computer must meet the requirements of the operating system in each case. The following requirements must also be met:

- Interface USB 2 or higher
- DualCore processor with minimum 1 GHz
- Minimum 2 GB RAM
- Minimum 5 GB available hard disk space

- Screen with a resolution of at least 800 x 600 pixels

9.3 First steps

9.3.1 Installing the software/driver

1. Insert the program CD into the CD-ROM drive of the computer.

   or
   Download the program (www.testo.com/download-center) and unpack the zip file using a suitable compression tool.

2. Launch the **TestoDataControlPCsetup.exe** file.
3. Follow the instructions of the installation wizard.
4. Click on [**Finish**] to complete the software installation.
5. Once the software installation is completed, connect the instrument to the computer to continue with the driver installation.
6. Use the USB-cable to connect the instrument to the PC.

▸ The connection will be established.

9.3.2 Launching testo DataControl

The user interface of the software is opened in the language of the operating system, if it is supported. If the operating system language is not supported, the user interface will be in English.

Windows® program menu

Windows® 7:
Click on [**Start**] | **All Programs** | **Testo** | **testo DataControl** (double-click on left mouse button).

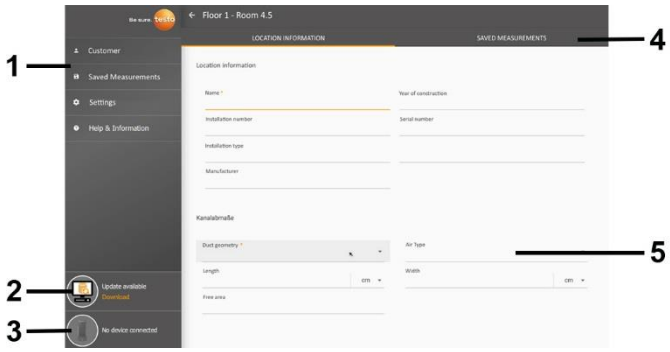
Windows® 8:
Click on [**Start**] | right mouse button | **Search** (Enter the application name in the search field) | **testo DataControl** (double-click on left mouse button).

Windows® 10:
Click on [**Start**] | **All Apps** | **Testo** | **testo DataControl** (double-click on left mouse button).

testo DataControl launches automatically.

9.4 Using the product

9.4.1 Overview

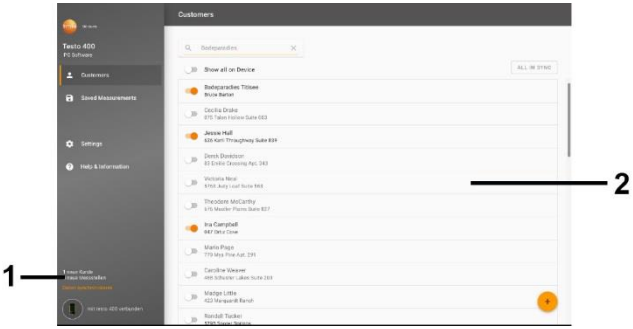


1	Main menu	**3**	Connection status of the measuring instrument
2	Update notification	**4**	Multi-function bar
5	Display area		

Operation of the software is based on the same functional principle as the instrument firmware for the testo 400.

You will also find further information about testo DataControl in the online instruction manual on the Testo website, www.testo.com, under the product-specific download.

9.4.2 Synchronizing data



1	Synchronization status	**2**	Display area

The data can be synchronized selectively per customer or as a whole across all customers simultaneously.

10 Technical data

General

Feature	Value
Probe connections	- 2x type K thermocouple - 2x Testo Universal Connector (TUC) for connecting cable probes to the corresponding plug - 1x differential pressure - 1x absolute pressure (integrated) - 4x Bluetooth® probe or testo Smart Probe
Interfaces	- Mini USB for connection to PC or for battery charging with mains unit - WLAN 802.11 b/g/n - Bluetooth® 4.0
Internal memory capacity	2 GB (corresponds to 1,000,000 readings)
Rechargeable battery life	10 hours of continuous operation / 3200 mAh
Measuring cycle	0.5 sec / display update 1 sec
Operating temperature	+23 to +113 °F
Storage temperature	-4 to +140 °F
Charging temperature	+32 to +113 °F
Dimensions	7.32“ x 3.50“ x 1.61“ (L x W x H)
Housing material	PC, ABS, TPE

Feature	Value
Weight	1.1 lb
Protection class	IP 40
Display	5.0 inch HD display (1280*720 pixels)
Camera	- Front camera 5.0 MP - Rear camera 8.0 MP

Integrated sensors (at 71.6 °F, ±1 digit)

Characteristics	Measuring range	Accuracy	Resolution
Temperature (TC type K)[1]	-328 to +2498 °F	±(0.54 °F + 0.1% of m.v.) Internal cold junction measurement: ±0.9 °F	0.1 °F
Temperature (NTC)	-40 to +302 °F	±0.36 °F (-13.0 to +166.9 °F) ±0.7 °F (-40.0 to -13.1 °F) ±0.7 °F (+167.0 to +211.8 °F) ±0.5% of m.v. (rest)	0.1 °F
Differential pressure[2]	-40 to +80 inH2O	±(0.12 inH2O + 1% of m.v.) (0 to 10 inH2O) ±(0.04 inH2O + 1.5% of m.v.) (10.01 to 80 inH2O)	0.00001 inH2O
Absolute pressure	+280 to +440 inH2O	±1.2 inH2O	0.001 inH2O

[1] The accuracy information applies in an adjusted, stable temperature state. Plugging in the mains unit, charging the battery or adding digital probes can distort this temporarily, and additional errors may occur.

[2] The accuracy specification applies immediately after zeroing of the sensor. For long-term measurements, mains operation with fully-charged battery is recommended.

10.1 Product-specific approvals

Please find the current approvals in the attached **Approval and Certification** document(s).

10.2 Contact and support

If you have any questions or need further information, please contact your dealer or Testo Customer Service. For contact details, please visit www.testo.com/service-contact.

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