

Data loggers testo 160 TH testo 160 THL testo 160 IAQ testo 160 E

Short instructions



Contents

1	Safe	ety and	waste disposal	3
	1.1	Åbout 1	this document	3
	1.2	Symbo	ols and writing standards	3
	1.3	Safety		4
	1.4	Warnir	ngs	5
	1.5	Waste	disposal	5
2	Des	cription	n of the instrument	5
	2.1	Use		5
	2.2	Overvi	ew	6
		2.2.1	testo 160 TH, 160 THE, 160 THL, 160 E	6
		2.2.2	testo 160 IAQ	7
3	Cor	nmissic	oning	8
	3.1		ng into / removing from the wall bracket	
	3.2	Starting	g up the data logger	8
	3.3	Loggin	g into the Testo Cloud	9
		3.3.1	Configuration via the Setup assistant	9
	3.4	Status	LED signals	10
	3.5	Calibra	ation	10
4	Tec	hnical d	data	11
5			ons	

Please read this instruction manual through carefully and familiarize yourself with the product before putting it to use.

You will find detailed instructions in the login area of the respective Testo solution at: www.testo.com/login.

1 Safety and waste disposal

1.1 About this document

Use

- The instruction manual is an integral part of the instrument.
- Pay particular attention to the safety instructions and warning advice in order to prevent injuries or damage to the product.
- Keep this document to hand so that you can refer to it when necessary.
- Always use the complete original instruction manual.
- Hand this documentation on to any subsequent users of the product.



In order to be able to use certain functions of this instrument (in particular the measurement data management), you need to accept the testo Cloud terms and conditions of use, which you will find below the login of the respective testo application at www.testo.com/login.

1.2 Symbols and writing standards

Display	Explanation
1	Hint: basic or further information
1. 2. 	Action: several steps, the sequence must be followed.
•	Result of an action
✓	Requirements

1.3 Safety

General safety instructions

- Only operate the product properly, for its intended purpose and within the parameters specified in the technical data. Do not apply any force.
- Do not commission the instrument if there are signs of damage on the housing.
- Dangers may also arise from the systems being measured or the measuring environment: Always comply with the locally valid safety regulations when carrying out measurements.
- Temperatures given on probes/sensors relate only to the measuring range of the sensors. Do not expose handles and feed lines to temperatures in excess of 70°C (158°F), unless they are expressly authorized for use at higher temperatures.
- Do not carry out any contact measurements on uninsulated, live parts.
- Do not store the product together with solvents. Do not use any desiccants.
- Only perform maintenance and repair work on this instrument that is described in the documentation. Follow the prescribed steps exactly. Use only original spare parts from Testo.

Batteries

- Improper use of batteries may cause destruction of the batteries, injuries due to current surges, fire or the escape of chemicals.
- Only use the batteries supplied in accordance with the instructions in the instruction manual.
- Do not short-circuit the batteries.
- Do not take the batteries apart and do not modify them.
- Do not expose the batteries to heavy impacts, water, fire or temperatures in excess of 60 °C.
- Do not store the batteries near any metal objects.
- In the event of contact with battery acid: rinse affected areas thoroughly with water, and if necessary consult a doctor.
- Do not use any leaky or damaged batteries.

1.4 Warnings

Always pay attention to any information marked with the following warning notices along with warning pictograms. Implement the specified precautionary measures!

CAUTION

Indicates possible damage to equipment

1.5 Waste disposal

- Dispose of spent batteries in accordance with the relevant legal specifications.
- At the end of its useful life, send the product to the separate collection for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.

2 Description of the instrument

2.1 Use

The testo 160 TH, THE, THL, THG, IAQ and E data loggers are handy measuring instruments for measuring temperature, humidity, CO₂ concentration, illuminance and UV.



The external probes S-TH, S-LuxUV and S-Lux are only approved in conjunction with the testo 160 THE and testo 160 E data loggers.

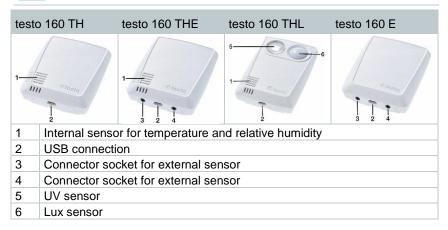
You can find further information about proper use in the instruction manual for the testo 160 data loggers or online beneath the login of the respective testo application:

www.testo.com/login.

2.2 Overview

2.2.1 testo 160 TH, 160 THE, 160 THL, 160 E

- Use the testo 160 TH data logger to carry out temperature and humidity measurements.
- Use the testo 160 THE data logger to carry out temperature and humidity measurements. The external probes S-TH, S-LuxUV and S-Lux can also be connected.
- Use the testo 160 THL data logger to carry out temperature, humidity, lux and UV measurements.
- The external probes S-TH, S-LuxUV and S-Lux can be connected to the testo 160 E data logger.



2.2.2 testo 160 IAQ



Use the testo 160 IAQ data logger to carry out temperature, humidity, carbon dioxide concentration and atmospheric pressure measurements.



	Element		Element
1	Status LED	2	Display
3	Air quality light	4	CO ₂ sensor
5	QR code	6	Key
7	USB connection	8	Internal sensor for temperature and relative humidity

3 Commissioning

3.1 Inserting into / removing from the wall bracket

1 - Insert the unlocking tool into the unlocking opening.



- 2 Push back the locking pin using the unlocking tool.
- Pull the data logger up and out of the wall bracket.



3.2 Starting up the data logger



The data loggers must only be mounted vertically. Here, the connections must point downwards. In the case of data loggers with a display, you need to pay attention to the reading direction. Otherwise, the measuring accuracy might be diminished.

1 - Open battery compartment cover.



- 2 Remove battery safety strip.
- 3 Close the battery compartment.



The IAQ data logger has a higher energy requirement. This reduces the minimum measuring cycle to 5 minutes when battery-operated. Operation via mains unit is therefore recommended. An appropriate USB cable can also be purchased as an accessory.



Only for testo 160 E and testo 160 THE:

The external probes must be connected **before** logging into the Cloud for the first time. If an additional probe is to be connected at a later stage, the data logger must first be logged out of the Cloud. The external probe can then be connected and the data logger logged in again.

3.3 Logging into the Testo Cloud



You need an account for the Testo Cloud. If you have not yet set this up, please sign up at https://www.museum.saveris.net.

For your new testo 160 WIFI data logger to be able to connect to your account in the Testo Cloud, it requires the three following pieces of information at minimum:

- The ID of your account in the Cloud. You will find this in your account under the menu item Configuration - Account ID.
- The network name of your WIFI (SSID), which the WIFI data logger will use to connect to the internet.
- 3. The password for this network.

Storage of this information on the WIFI data logger is called "Configuring the WIFI data logger". Four different options are available for this process.

3.3.1 Configuration via the Setup assistant

The Setup assistant in the web interface of the Testo Cloud is provided to assist you when you take your first steps with commissioning the testo 160. It can help you with logging in WIFI data loggers.



To be able to carry out the configuration, you need to be logged into the web interface at https://www.museum.saveris.net.

- Click on the symbol above the menu bar.
- The Setup assistant launches and assists you with the configuration. Follow the instructions there.

3.4 Status LED signals

The following table provides an overview of the meaning of the various status LED signals of the testo 160 WIFI data logger.

Signal	Description
LED does not flash (TH, E, THE, THL)	Sleep mode
LED flashes green every 30 seconds (IAQ)	Normal state
LED flashes green at one-second intervals (for 5 min, then 1 long red flash)	Configuration mode (hotspot) - press button > 3 sec
LED gives 2 red flashes	Connection to WIFI failed (incorrect SSID, incorrect SSID password, incorrect account ID or incorrect account password, attempt to log the testo 160 E into the Cloud without any external probes connected.)
If XML is correct, LED gives 1 long green flash If XML is incorrect, LED gives 3 red flashes	Configuration via USB/PDF
LED gives 2 green flashes	Connection to WIFI and Cloud successful
LED gives 1 long red flash	Alarm activated due to limit value violation
LED gives 5 green flashes	Reset WIFI data logger to factory settings Press key > 20 sec
LED gives 1 green flash (measurement data collected)	Send measurement data to the Testo Cloud (website): press key < 3 sec
LED gives 2 short green flashes (measurement data transmitted)	Measurement data transmitted successfully
LED gives 4 red flashes	Batteries spent
LED flashes alternately green and red	Firmware update via USB or wireless

3.5 Calibration

testo 160 WIFI data loggers come with a factory calibration protocol as standard. For museums, we recommend having an annual test carried out by Testo Customer Service. Moreover, there is an option of having ISO certificates created for the WIFI data loggers. These can be implemented by Testo Industrial Services (TIS).

4 Technical data

Measurement-specific data



The humidity sensor attains the highest degree of accuracy in temperatures between + 5 °C and + 60 °C and 20% to 80% RH. If the instrument is exposed to higher humidity for a long period of time, this can falsify the readings by up to 3% RH. After 48 hours at 50% RH \pm 10% and +20 °C \pm 5 °C, the sensor regenerates by itself.

CAUTION

Damage to the humidity probe

- The probe must never be exposed to a humidity level of 100 % RH for longer than 3 days.

WIFI data loggers	testo 160 TH	testo 160 THE	testo 160 E	
Order number	0572 2021	0572 2023	0572 2022	
Temperature meas	surement			
Measuring range	-10 °C	to 50 °C	see ext. probes	
Accuracy	± 0.	.5 °C		
Resolution	0.1	I °C		
Humidity measure	ement			
Measuring range	0 to 100% RH (non-condensing)	see ext. probes	
Accuracy	± 2% RH @ 25 °C & 20 to 80% RH ± 3% RH @ 25 °C & <20% RH & >80% RH			
	± 1% RH hysteresis			
	± 1% RH/year drift			
Resolution	0.1% RH			
Lux measurement				
Measuring range		see ext. probes	see ext. probes	
Accuracy				
Resolution				
UV measurement				
Measuring range		see ext. probes	see ext. probes	
Accuracy				
Resolution				

WIFI data loggers	testo 160 IAQ	testo 160 THL			
Order number	0572 2014	0572 2024			
	Temperature measurement				
Measuring range	0 °C to 50 °C	-10 °C to 50 °C			
Accuracy	± 0.5 °C	± 0.5 °C			
Resolution	0.1 °C	0.1 °C			
Humidity measure	ement	<u>'</u>			
Measuring range	0 to 100% RH (non-	0 to 100% RH (non-			
	condensing)	condensing)			
Accuracy	± 2% RH @ 25 °C & 20 to 80% RH	± 2% RH @ 25 °C & 20 to 80% RH			
	± 3% RH @ 25 °C & <20%	± 3% RH @ 25 °C & <20%			
	RH & >80% RH	RH & >80% RH			
	± 1% RH hysteresis ± 1% RH / year drift	± 1% RH hysteresis ± 1% RH/year drift			
Decelution	0.1% RH	0.1% RH			
Resolution	·	U.1% KH			
Lux measurement		0 to 20 000 lux			
Measuring range		0 to 20,000 lux			
Accuracy		DIN 5032-7 Class C-compliant or:			
		\pm 3 lux or \pm 3% of the			
		reading (based on the			
		external reference DIN 5032-7 Class L)			
Resolution		0.1 lux			
UV measurement					
Measuring range		0 to 10,000 mW/m ²			
Accuracy		± 5 mW/m ² or 5% of the reading (based on the external reference at			
		22 °C)			
Resolution		0.1 mW/m ²			
CO ₂ measuremen	<u>t</u>				
Ambient humidity	0 to 99% RH (non-				
	condensing)				
Measuring range	0 to 5,000 ppm				
Accuracy	± (50 ppm + 3% of the reading) (@ 25 °C)				
	Battery-operated:				
	± (100 ppm + 3% of the reading) (@ 25 °C)				
Resolution	1 ppm				

WIFI data loggers	testo 160 IAQ	testo 160 THL
Pressure		
Measuring range	600 to 1100 mbar	
Accuracy	± 3 mbar @ 22 °C	
Resolution	1 mbar	



The time between the system warning "Battery almost discharged" and "Measurement data stop" is at the most one day during standard operation and a measuring cycle & communication cycle of 1 min (day & night) (battery type: Varta Industrial).

WIFI-specific data

WIFI data loggers	testo 160 TH	testo 160 THE	testo 160 THL
Order number WIFI	0572 2021	0572 2023	0572 2024
Standard	802.11 b/g/n		
Security	WPA2 Enterprise: EAP-TLS, EAP-TTLS-TLS, EAP-TTLS-MSCHAPv2, EAP-TTLS-PSK, EAP-PEAP0-TLS, EAP-PEAP0-MSCHAPv2, EAP-PEAP0-PSK, EAP-PEAP1-TLS, EAP-PEAP1-MSCHAPv2, EAP-PEAP1-PSK; WPA Personal, WPA2 (AES), WPA (TKIP), WEP		

WIFI data loggers	testo 160 IAQ	testo 160 E	
Order number	0572 2014	0572 2022	
WIFI			
Standard	802.11 b/g/n		
Security	WPA2 Enterprise: EAP-TLS, EAP-TTLS-TLS, EAP-TTLS-MSCHAPv2, EAP-TTLS-PSK, EAP-PEAP0-TLS, EAP-PEAP0-MSCHAPv2, EAP-PEAP0-PSK, EAP-PEAP1-TLS, EAP-PEAP1-MSCHAPv2, EAP-PEAP1-PSK; WPA Personal, WPA2 (AES), WPA (TKIP), WEP		

Technical data for a secure wireless LAN



Ports

The testo 160 WIFI data loggers use the MQTT protocol, which communicates via port TCP 1883 and 8883.

These UDP port approvals are also required:

- Port 53 (DNS name resolution)
- Port 123 (NTP time synchronisation)

All ports only have to be able to communicate externally to the Cloud. No bi-directional port approvals are necessary.



During the initial configuration, it is possible to select whether DHCP or Static IP is used (select Expert mode for the corresponding information). (Not possible in the Setup assistant.)



testo 160 application

The testo 160 application is accessible via a normal, up-to-date browser (www). The standard TCP ports http (80) and https (443) are used.

General data

WIFI data loggers	testo 160 TH	testo 160 THE	testo 160 THL
Order number	0572 2021	0572 2023	0572 2024
Operating temperature		-10 °C to 50 °C	
Storage temperature		-20 °C to 50 °C	
Protection class		IP20	
Measuring cycle	Depends on the Cloud licence Basic: 15 min to 24 h / Advanced 1 min to 24 h flexible		
Communication cycle	Depends on the Cloud licence Basic: 15 min to 24 h / Advanced 1 min to 24 h flexible		
Memory	32,000 readings (sum of all channels)		
Voltage supply	4 x AAA batteries 1.5 V Alternatively mains unit via USB connection		
Battery life	18 months		
	At +25 °C, 15-minute measuring cycle and 6-hour communication cycle		
	(depending on the WIFI structure)		
Dimensions	64 x 76 x 22 mm	64 x 76 x 22 mm	64 x 92 x 24 mm
Weight including batteries	94 g	94 g	113 g

WIFI data loggers	testo 160 IAQ	testo 160 E
Order number	0572 2014	0572 2022
Operating temperature	0 °C to 50 °C	-10 °C to 50 °C
Storage temperature	0 °C to 50 °C	-20 °C to 50 °C
Protection class	IP20	
Measuring cycle	Depends on the Cloud licence Basic: 15 min to 24 h / Advanced 1 min to 24 h flexible (mains operation) Advanced 5 min to 24 h flexible (battery operation)	Depends on the Cloud licence Basic: 15 min to 24 h / Advanced 1 min to 24 h flexible
Communication cycle	Depends on the Cloud licence Basic: 15 min to 24 h / Advanced 1 min to 24 h flexible	
Memory	32,000 readings (sum of all channels)	
Voltage supply	4 x AA batteries Alternatively mains unit via USB connection	4 x AAA batteries 1.5V Alternatively mains unit via USB connection
Battery life	12 months at +25 °C, 15-minute measuring cycle and 8-hour communication cycle (depending on the WIFI reception quality)	18 months at +25 °C, 15-minute measuring cycle and 6-hour communication cycle (depending on the WIFI reception quality)
Dimensions	82 x 117 x 32 mm	64 x 76 x 22 mm
Weight including batteries	269 g	96 g

5 Authorizations



The use of the wireless module is subject to the regulations and stipulations of the respective country of use, and the module may only be used in countries for which a country certification has been granted. The user and every owner has the obligation to adhere to these regulations and prerequisites for use, and acknowledges that the re-sale, export, import etc. in particular in countries without wireless permits, is his responsibility.

Product	MatNo.	Date
testo 160 TH	0572 2021	12.07.2024
testo 160 E	0572 2022	12.07.2024
testo 160 THE	0572 2023	12.07.2024
testo 160 THL	0572 2024	12.07.2024
testo 160 IAQ	0572 2014	12.07.2024

Country	Comments			
Australia	€ E 1561	€ E 1561		
Belarus	Authorized	Authorized		
Brazil	testo 160 TH	ANATEL Agência Nacional de Telecomunicações 00844-18-04701		
	testo 160 E	ANATEL Agência Nacional de Telecomunicações 01829-18-04701		
	testo 160 THE	ANATEL Agência Nacional de Telecomunicações 00854-18-04701		
	testo 160 THL	ANATEL Agência Nacional de Telecomunicações 00848-18-04701		
	testo 160 IAQ	ANATEL Agência Nacional de Telecomunicações 00853-18-04701		
	See Brazil Information	00833-16-04701		
Canada	Contains IC : 21461-LSD4WF0459			
	testo 160 TH/E/THE/THL: IC: 6127B	testo 160 TH/E/THE/THL: IC: 6127B-0572202X		
	testo 160 IAQ: IC: 6127B-05722014			
	See IC Warnings			
China	Testo 160 TH: CMIIT ID: 2017DJ4557 Testo 160 E: CMIIT ID: 2017DJ4559 Testo 160 THE: CMIIT ID: 2017DJ4564 Testo 160 THL: CMIIT ID: 2017DJ4547 Testo 160 IAQ: CMIIT ID: 2017DJ3243			

Country Comments Europa + EFTA Hereby, Testo SE & Co. KGaA declares that the radio equipment types testo 160 TH (0572 2021), testo 160 E (0572 2022), testo 160 THE (0572 2023), testo 160 THL (0572 2024) and testo 160 IAQ (0572 2014) are in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.testo.com/eu-conformity. FU countries: Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), Republic of Cyprus (CY). EFTA countries: Iceland, Liechtenstein, Norway, Switzerland WEEE Reg. no.: DE 75334352 Japan R 211-160704 Japan Information Malaysia testo 160 IAQ: Authorized Pakistan Authorized South Africa Radio Equipment Type Approval Number: testo 160 IAQ: TA-2018/075 South Korea testo 160 TH: R-CRM-te2-05722021 testo 160 THL: R-CRM-te2-05722024 testo 160 IAQ: R-CRM-te2-05722014 KCC Warning Türkiye Authorized United Arab Emirates Authorization Number: ER57487/17 United Kingdom (GB) The UK Declaration of Conformity can be found on the testo homepage www.testo.com under the product specific downloads.

Country	Comments		
USA	F©		
	Contains FCC ID: N8NLSD4WF0459		
	testo 160 TH/E/THE/THL: F	testo 160 TH/E/THE/THL: FCC ID: WAF-0572202X	
	testo 160 IAQ: FCC ID: WA	NF-05722014	
	See FCC Warnings		
Wi-Fi-Module	Feature	Values	
	WLAN Range	100 m	
	WLAN type	LSD4WF0459-01D0	
	WLAN radio class	Accord with the standard of IEEE 802.11b/g/n	
	Company	Lierda Technology Group co., LTD	
	RF Band	2412-2472MHz	
	Transmitter Power	13.42dBm	

IC Warnings

CAN ICES-003(B)/NMB-003(B):

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

RSS-Gen & RSS-247 statement:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution: Radio Frequency Radiation Exposure

This equipment complies with radio frequency exposure limits set forth by the Innovation, Science and Economic Development Canada for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 cm between the device and the user or bystanders.

Co-Location:

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

Attention : exposition au rayonnement de radiofréquences

Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par la Innovation, Sciences et Développement économique Canada pour un environnement non contrôlé.

Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre le dispositif et l'utilisateur ou des tiers.

Co-location:

Ce dispositif ne doit pas être utilisé à proximité d'une autre antenne ou d'un autre émetteur.

FCC Warnings

Information from the FCC (Federal Communications Commission)

For your own safety

Shielded cables should be used for a composite interface. This is to ensure continued protection against radio frequency interference.

FCC warning statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- · Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Shielded interface cable must be used in order to comply with the emission limits.

Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received,

including interference that may cause undesired operation.

Caution: Radio Frequency Radiation Exposure

This equipment complies with radio frequency exposure limits set forth by the FCC for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 cm between the device and the user or bystanders.

Co-Location:

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

Brazil Information

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados. Este equipamento não é apropriado para uso em ambientes domésticos, pois poderá causar interferências eletromagnéticas que obrigam o usuário a tomar medidas necessárias para minimizar estas interferências.

Para maiores informações, consulte o site da Anatel – https://www.gov.br/anatel/pt-br/

Japan Information

当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。

KCC Warning

해당 무선 설비는 운용 중 전파혼신 가능성이 있음.



Testo SE & Co. KGaA

Celsiusstr. 2 79822 Titisee-Neustadt Germany Tel.: +49 7653 681-0

E-Mail: info@testo.de www.testo.com