



testo 150 data logger module

0572 3320, 0572 3330, 0572 3340, 0572 3350

Instruction manual



Contents

1	About this document	5
2	Safety and disposal.....	6
2.1	General safety instructions.....	6
2.2	Disposal	9
3	Product-specific approvals	9
4	Support	9
5	Scope of delivery.....	10
6	Use.....	10
7	Product description	11
7.1	testo 150 data logger module.....	11
7.1.1	Alarm LED	12
7.1.2	Status LED	12
7.1.2.1	During configuration	12
7.1.2.2	During operation.....	12
7.1.3	Connection sockets (depending on the type)	13
7.1.4	TCI connector.....	14
7.1.5	Display	15
8	Commissioning	16
8.1.1	Connect key	16
8.2	Attaching the communication module.....	16
8.3	Activating the testo 150 data logger module	18
8.4	Connecting cable and probe (example).....	19
8.5	Attaching the wall bracket	20
8.6	Inserting the testo 150 data logger module into the wall bracket.....	21
9	Maintenance.....	23
9.1	Changing batteries	23
9.2	Replacing probes	24
9.3	Cleaning the housing.....	26
10	Troubleshooting.....	28
10.1	Questions and answers.....	28
10.2	Reading out data	33
10.3	Resetting the testo 150 data logger module to its factory settings	33
11	Technical data	34
11.1	testo 150 TUC4	34
11.2	testo 150 TC4.....	35
11.3	testo 150 DIN2	36
11.4	testo 150 T1	37
12	Accessories	39

13 Appendix 40

1 About this document

The instruction manual forms an integral part of the measurement data monitoring system testo Saveris 1.

- Keep this documentation at hand so that you can refer to it when necessary.
- Please read this instruction manual through carefully and familiarize yourself with the product before putting it to use.
- Hand this instruction manual on to any subsequent users of the product.
- The instruction manual for the testo Saveris 1 measurement data monitoring system is divided into the following sub-documents:
 - Operating instructions for the testo Saveris 1 measurement data monitoring system
 - Commissioning instructions for the testo Saveris 1 measurement data monitoring system
 - Operating instructions for individual system components
- Pay particular attention to the safety instructions and warning advice in order to prevent injury and damage to the product.
- Familiarity with a PC as well as the Microsoft® products is assumed in this documentation.

Symbols and writing standards

Display	Explanation
	Note: basic or further information.
1. ... 2. ...	Action: several steps, the sequence must be followed.
• ...	List
> ...	Action: one step or optional step.
- ...	Result of an action.
✓ ...	Requirement
1... 2...	Position numbers for the clarification of the relationship between text and picture.
Menu	Elements of the instrument, the instrument display or the program interface.
[OK]	Control keys of the instrument or buttons of the program interface.

Display	Explanation
... ...	Functions/paths within a menu.
"..."	Example entries

2 Safety and disposal

2.1 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 operate the product if there are signs of damage on the housing, mains unit or connected cables.
- Only use the product in closed, dry rooms and protect it from rain and moisture.
- The product must be checked for any visible damage before commissioning.
- Dangers may also arise from objects to be measured or the measuring environment. Always comply with the locally valid safety regulations when carrying out measurements.
- Only perform maintenance and repair work on this instrument that is described in this documentation. Follow the prescribed steps exactly when doing the work.
- Any additional work must only be carried out by authorized, qualified personnel. Otherwise, Testo will refuse to accept responsibility for the proper functioning of the product after repair and for the validity of approvals.
- Maintenance work that is not described in this documentation must only be carried out by trained service engineers.
- Safety instructions for patients with an implanted cardiac pacemaker when using Testo products with magnets
 - Handle instruments or accessories containing a magnet with care and keep them in a safe place.
 - Maintain a distance of 20 cm between your implant and the magnet which is incorporated into the instrument or accessories.
- Keep a safe distance from products which could be damaged by the effects of magnetism (e.g. monitors, computers, pacemakers or credit cards).
- Use only original spare parts from Testo.
- Temperature information given on probes/sensors relates only to the measuring range of the sensor technology. Do not expose handles and supply lines to temperatures above 45°C (113°F), unless they are explicitly approved for higher temperatures.

WARNING



Risk of burns due to hot probes, probe shafts and sensor tips!

- Do not get hold of hot parts ($> 45^{\circ}\text{C}/113^{\circ}\text{F}$) with bare hands immediately after a measurement.
- In the event of burns, immediately cool the relevant spot with cold water and consult a doctor if necessary.
- Allow probes, probe shafts and sensor tips to cool down.

- The product must not be used in potentially explosive atmospheres, if it is not explicitly approved for these areas.
- Do not carry out any contact measurements on uninsulated, live parts.
- Do not expose the product to any extremely high or low temperatures. Avoid temperatures below -5°C or above 45°C . The exception is when a product has been explicitly approved for other temperatures.
- Protect the product from dust and dirt. Make sure that it is not exposed to an environment with dust, dirt, sand, etc.
- Prevent the product from falling.
- If operator safety can no longer be guaranteed, the product is to be taken out of service and secured against inadvertent use. This is the case if the product:
 - is obviously damaged
 - has fractures on the housing
 - has faulty measuring cables
 - has leaking batteries
 - no longer performs the required measurements
 - has been stored for too long in unfavourable conditions
 - has been exposed to mechanical stresses in transit

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 charge batteries where there is a non-rechargeable battery system. Attempting to charge a non-rechargeable battery may cause gas to be produced or heat to be generated. That may lead to the escape of gases, an explosion and/or possibly to fire.
- With rechargeable batteries, never use chargers which are not suitable for the battery type. Suitable chargers for Testo products are to be found in the list of accessories.
- Do not short batteries. If the positive (+) and negative (-) terminals of a battery are directly connected to one another, the battery will be shorted. For

example, batteries can be shorted when you have them loose in your pocket along with keys or coins. This may lead to the escape of gases and the leakage of battery acid.

- Do not take the batteries apart and do not modify them.
- Do not heat batteries above the permitted temperature or burn them. If a battery is heated, this may lead to the leakage of battery acid and/or to an explosion. Lithium batteries can for instance react very strongly in combination with fire. This may involve battery components being emitted with considerable power.
- Do not consume battery, risk of burns due to hazardous substances. Keep new and used batteries away from children.
- If the battery compartment will not close securely, do not continue to use the product and keep away from children.
- In principle, contact with escaping battery components may present a risk to health and to the environment. Adequate body and breathing protection is therefore required when in contact with batteries that have peculiar aspects (escaping contents, deformations, discolourations, dents or the like).
- Do not reverse the polarities of batteries, always adhere to the + and - signs on battery and instrument. If batteries are inserted the wrong way round, they can quickly overheat. This may lead to the escape of gases, the leakage of battery acid and/or to an explosion.
- When changing batteries, replace them all at the same time and make sure you use new batteries of the same make and type. If different sorts of battery, or new and old batteries, are used together, some batteries may be overloaded due to different voltages or capacities. This may lead to the escape of gases and/or to an explosion.
- Do not leave batteries lying around loose once they have been unpacked. If batteries that have been unpacked are left lying around loose, they can easily short one another, particularly button cells. In some cases, this is very dangerous because the batteries may heat up. This may lead to an explosion.
- Always store batteries in a cool, dry place.
- Batteries must be disposed of in accordance with the local and country-specific regulations. In order to prevent short circuits and the associated heating, lithium batteries must never be stored unprotected in bulk. Appropriate measures against short circuits are for instance inserting the batteries into the original packaging or a plastic bag, masking the poles or embedding them in dry sand.
- Lithium batteries must be transported and shipped in accordance with the local and country-specific regulations.

- If there is any contact with the skin or eyes, the areas must be rinsed with water for at least 15 minutes. If there is any contact with the eyes, a doctor must be contacted in addition to the rinsing.
- If burns are caused, these must be treated appropriately. You are also strongly advised to contact a doctor.
- Airways: Leave the room immediately when smoke development or gas release is acute. Consult a doctor when amounts are larger and airways are irritated.
- Swallowing: Rinse out mouth and surrounding area with water. Get medical assistance immediately.

2.2 Disposal

- Dispose of faulty energy storage units in accordance with the valid legal specifications.
- At the end of its useful life, deliver the product to the separate collection point for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.



-  WEEE Reg. no. DE 75334352

3 Product-specific approvals

Please find the current country approvals in the enclosed **Approvals and Certifications** document.

4 Support

You can find up-to-date information on products, downloads and links to contact addresses for support queries on the Testo website at: www.testo.com.

5 Scope of delivery

- testo 150 data logger module, depending on the version
 - testo 150 TUC4 (order no. 0572 3320)
 - testo 150 TC4 (order no. 0572 3330)
 - testo 150 DIN2 (order no. 0572 3340)
 - testo 150 T1 (order no. 0572 3350)
- Batteries (4 x AA AlMn batteries)
- Wall bracket
- Instruction manual
- Testo information
- Approvals and Certifications



The mounting materials (screws, dowels, etc.) are not included in the scope of delivery. Select appropriate mounting materials according to the required mounting location.

6 Use

testo 150 data logger modules were designed for monitoring products subject to cold chain requirements. Among other things, the product is used in measurement data monitoring systems in enclosed spaces for monitoring warehouses, production facilities, cold storage rooms, clinics, laboratories and laboratory equipment.

Further Testo components are required for transferring data, e.g. into a database. Use of the product requires skilled personnel trained in the above areas.



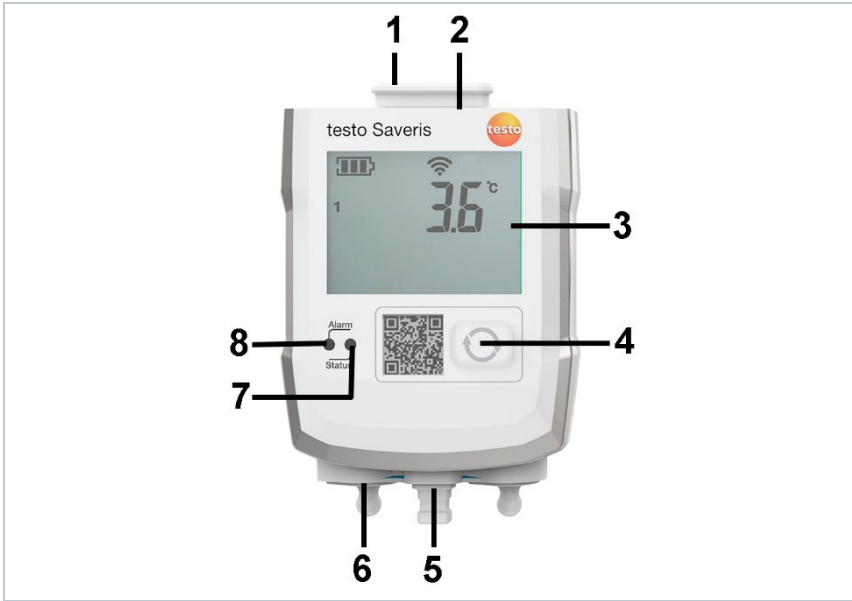
The components of the testo Saveris 1 measurement data monitoring system are not designed for outdoor use when delivered.



If the battery capacity is $\leq 5\%$, the testo 150 data logger shows Lo Bat and a flashing battery symbol in the display, but no longer records any measured values and no longer communicates with the system. It is recommended to ensure that the battery is replaced in good time.

7 Product description

7.1 testo 150 data logger module



1	IP protective cap	2	TCI ¹ connector
3	Display	4	Connect key for registering the testo 150 data logger module to the testo Saveris 1 Base V3.0 and for a status request and communication during operation
5	Micro USB connection socket for data exchange (connection data and service data) and power supply	6	Probe connection socket (depending on the type)
7	Status LED	8	Alarm LED

¹ Testo Communication Interface

7.1.1 Alarm LED

Indicates the violation of previously defined limit values

Alarm LED	Description
Flashing red light (5 s, continuously)	Configured alarm is active and the light signal of the datalogger is activated in the software.
Flashing red light (synchronous with the measurement cycle)	Configured alarm is active and the light signal of the datalogger is deactivated in the software



If the testo 150 data logger is in alarm mode for a longer period of time, the battery life specified in Chapter 13 is reduced.

CAUTION

Alarm acknowledgement via software does not reset the alarm status in the 150 data logger. The 150 data logger must be restored to normal status by eliminating the cause of the alarm.

7.1.2 Status LED

Displays the current status of the testo 150 data logger module at the communication cycle or measuring cycle.

7.1.2.1 During configuration

Status LED	Description
Flashing green light (1 s, continuously)	Configuration mode active
Flashing green light (1 s, once)	Configuration saved
Flashing red light (1 s, once)	Configuration invalid or time-out (after 5 min)

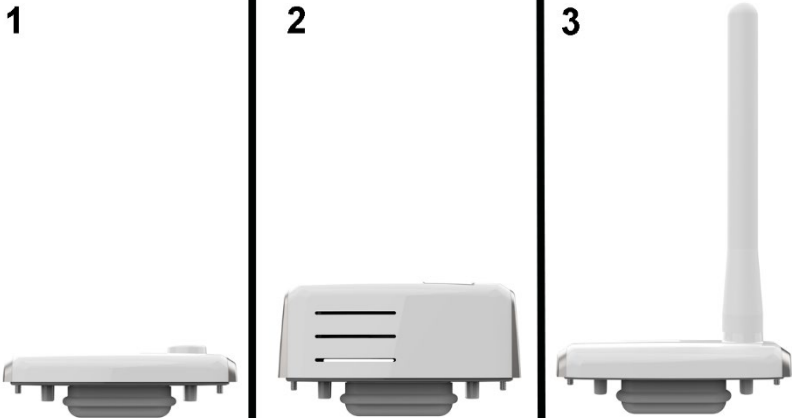
7.1.2.2 During operation

Status LED	Description
Flashing green light (200 ms, twice)	Communication successful
Flashing red light (200 ms, twice)	Communication failed
Flashing green light (200 ms, 5 times)	Factory settings are restored (after pressing the key for 20 seconds)
Flashing red light (200 ms, 5 times)	Battery low, Sleep mode is activated

7.1.3 Connection sockets (depending on the type)

Connection socket	Data logger
	testo 150 DIN2 (0572 3340) max. 2 x mini-DIN, 1 x micro USB
	testo 150 TC 4 (0572 3330) max. 4 x thermocouples, 1 x micro USB
	testo 150 TUC 4 (0572 3320) max. 4 x TUC probe, 1 x micro USB
	testo 150 T1 (0572 3350) 1 x micro USB

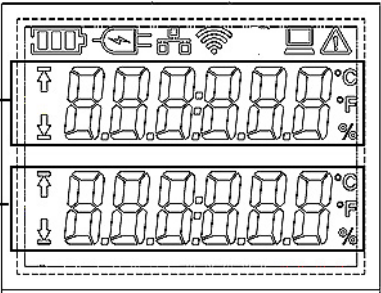
7.1.4 TCI connector

1 2 3 			
1	WLAN communication module (0554 9320)	2	LAN/PoE communication module (0554 9330)
3	testo UltraRange communication module: - Region: EU (0554 9311 01) - Region: US (0554 9312 01) - Region: CN 868 (0554 9313 01) - Region: APAC* (0554 9314 01) - Region: KR (0554 9315 01) - Region: IN (0554 9316 01) - Region: RU (0554 9317 01)		

* Japan, Malaysia, Singapore, Taiwan, Macau

7.1.5 Display

Icons

			
Symbol	Description	Symbol	Description
	Battery capacity 75% to 100%		Signal strength 25%
	Battery capacity 50% to 74%		Indicator when the reading has overshoot the upper (↑) limit value or undershot the lower (↓) limit value or in the event of a component alarm.
	Battery capacity 25% to 49%	1	Measurement channel 1
	Battery capacity 5% to 24%, icon flashes: Battery capacity < 5%	2	Measurement channel 2
 Lo Bat	Symbol flashes and display shows Lo Bat: Battery capacity ≤5%. The testo 150 data logger no longer records any measured values and no longer communicates with the system. Change the batteries.		Limit value overshoot
	External power supply (via USB port)		Limit value undershot
	Signal strength 100%		Ethernet connection established
	Signal strength 75%		Connection with testo Saveris 1 Base V3.0/testo Saveris 1 Gateway V3.0 established
	Signal strength 50%		

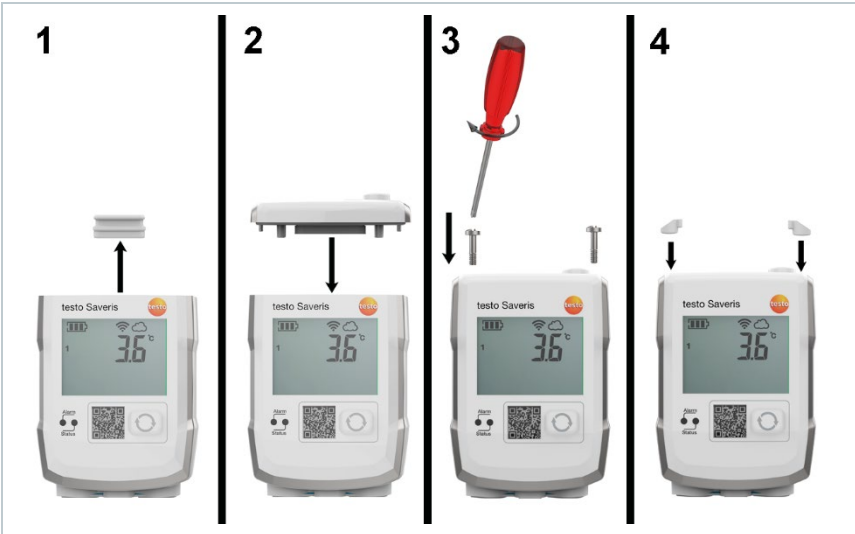
8 Commissioning

8.1.1 Connect key

During regular operation:

LED status (display at the push of a button)	Description
1 s	Current reading is displayed and communication initiated (the current reading is not stored at the push of a button and is not used for an alarm)
Hold down for 3 seconds	Initiation of service mode
Hold down for 6 seconds	Initiation of login-again mode
Hold down for >20 seconds	Reset to factory settings

8.2 Attaching the communication module



- 1 Remove the protective cap.
- 2 Place the communication module on the testo 150 data logger module.
- 3 Attach the communication module to the testo 150 data logger module using the screws.

- 4 | Close screw openings with rubber plugs.



When using communication modules with external antenna, make sure that the screw connection between antenna and module is tightened.

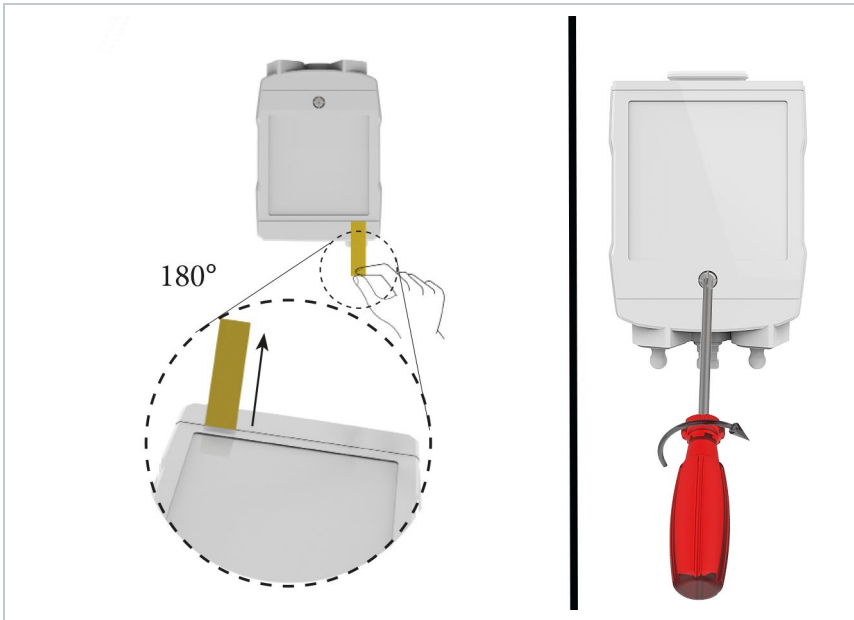


It is not possible to exchange communication module types during operation of the testo 150 data logger module!

To change a communication module on the testo 150 data logger module, the testo 150 data logger module must be logged off.

- 1 | Log off the testo 150 data logger module via the startup wizard. The testo 150 data logger module must then communicate twice (press the Connect button of the testo 150 data logger once each time).
 - 2 | Remove the batteries from the testo 150 data logger module.
 - 3 | Change the communication module.
 - 4 | Insert batteries into the testo 150 data logger module.
 - 5 | Press and hold the **Connect** button of the testo 150 data logger module for 1 s.
 - 6 | Re-register testo 150 data logger module via the startup wizard.
-

8.3 Activating the testo 150 data logger module



- 1 Slightly undo the battery compartment screw (half turn).
- 2 Remove battery safety strip.
- 3 Tighten the battery compartment screw by hand.



At temperatures below +10 °C, we recommend equipping the testo 150 data logger modules with Energizer L91 Photo-Lithium (AA Mignon) batteries, since the life time of ALMn batteries at low temperatures is greatly reduced for physical reasons.



If the testo 150 data logger is in alarm mode for a longer period of time, the battery life specified in Chapter 13 is reduced.

CAUTION

Alarm acknowledgement via software does not reset the alarm status in the 150 data logger. The 150 data logger must be restored to normal status by eliminating the cause of the alarm.

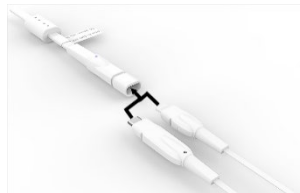
8.4 Connecting cable and probe (example)



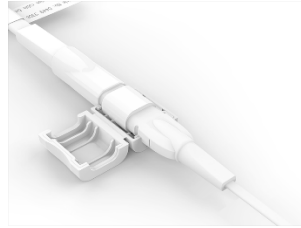
- 1 Remove dummy plugs.
- 2 Connect cable (USB or mains) and probe.

Using the TUC extension cable

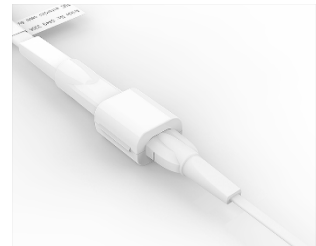
- 1 Connect the cable to the testo 150 data logger module.
- 2 Route the cable.
- 3 Connect the TUC probe to the TUC socket of the extension cable.



- 4 Insert the plug-in connector into the safety clip.

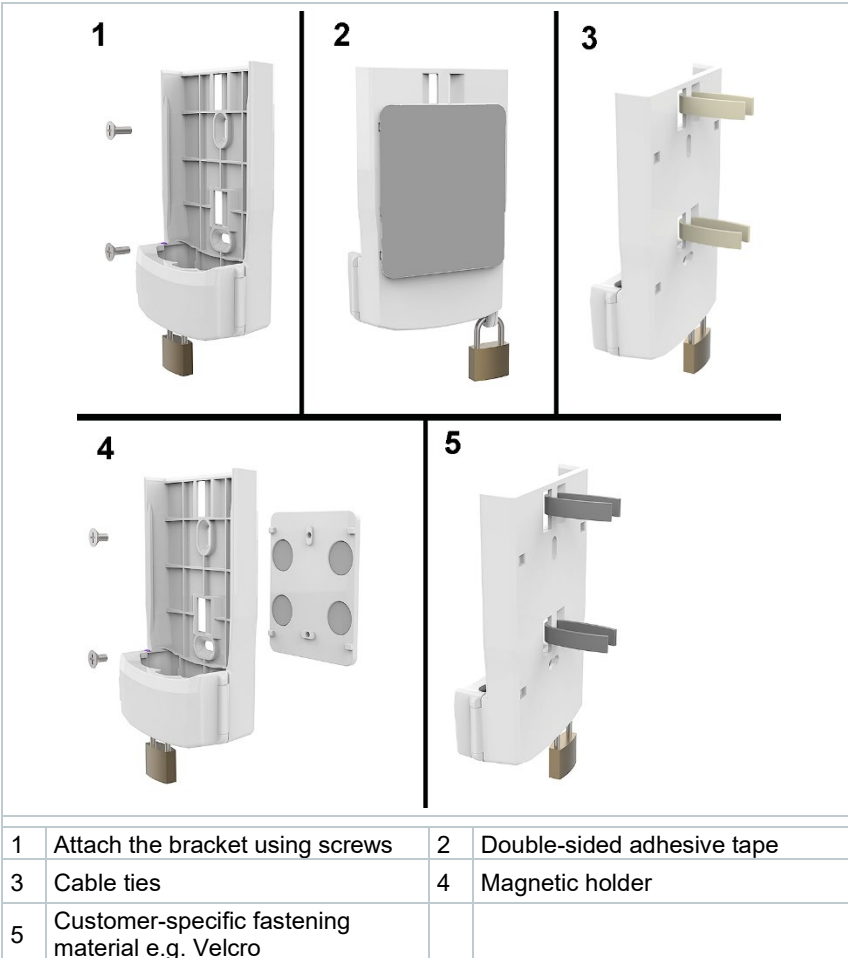


- 5 Close the safety clip (click).



8.5 Attaching the wall bracket

The wall bracket ensures that the testo 150 data logger module is kept securely in place.



- 1 Mount the wall bracket at the designated location using suitable mounting materials.

8.6 Inserting the testo 150 data logger module into the wall bracket

- ✓ Cables and communication module are connected.

- 1 Insert the testo 150 data logger module into the wall bracket.



- 2 Close the cover.



- 3 If necessary, secure the cover with a lock (not included in scope of delivery).



9 Maintenance

9.1 Changing batteries



We recommend replacing the batteries after 3 years of operation at the latest.



testo 150 data logger modules can only be operated with batteries inserted. Also when operated via an external mains unit or PoE.

- 1 Open the wall bracket cover.



- 2 Remove the testo 150 data logger module.



When changing the batteries, the testo 150 data logger module must be at room temperature, otherwise a build-up of moisture may impair the measuring accuracy.

- 3 Open the battery compartment cover using a suitable screwdriver.



- 4 Remove the battery compartment cover.



- 5 Remove spent batteries and insert new ones.



Ensure that you insert the batteries correctly.
The correct polarity is illustrated in the battery compartment.

- 6 Place the battery compartment cover on the housing of the testo 150 data logger module.
- 7 Screw the battery compartment cover tightly onto the housing.
- 8 Press the Connect key of the testo 150 data logger module for 1 second.
- 9 The testo 150 data logger module establishes a connection to the testo Saveris 1 Base V3.0 (LED flashes green).

CAUTION

Unwanted residual discharge when disposing of old batteries.

- Mask the poles of the old batteries in order to prevent an unintended residual discharge due to short-circuits during disposal.

9.2 Replacing probes

The testo 150 TUC4 data logger module offers the option of using digital probes which can be calibrated independently of the data logger. This significantly reduces the effort required for regular recalibrations.

Replacing TUC probes



For digital probes, a calibration date can be defined in the testo Service software. A calibration alert is generated at the due time, prompting the user to replace the respective probes. For information on this, please refer to the instruction manual for the **testo Saveris 1 measurement data monitoring system** (order no. 0970 2503).



The update of the serial number of a digital sensor is only executed after the testo Saveris 1 software has been restarted.

- 1 Open the wall bracket cover without removing the data logger from the wall bracket.



If an extension cable is used:

- > Open the safety clip between extension cable and probe.
The wall bracket cover remains closed.

- 2 Remove probes.



When using different probe types, we recommend marking the respective probe so that it is apparent which connection socket it was connected to. To carry out a "hot swap", the probe type must be identical!

- 5 Replace the probes with calibrated probes.
- 6 Close the wall bracket cover.



If extension cables are used: Close the safety clip between cable and probe.

- 7 Press the Connect key of the testo 150 data logger module for 1 second to check that the probe position is correct.

- 8 | The testo 150 data logger module establishes a connection to the testo Saveris 1 Base V3.0 (LED flashes green).
- ▶ | The functionality of the probes is confirmed via indication of current readings on the display.



The readings that are generated when the Connect key is pressed manually are not stored and do not trigger any limit value alarms.

9.3 Cleaning the housing



The IP protection of the testo 150 data logger module depends on the connected modules and probes.



Before starting cleaning, all unused connection sockets must be sealed with the sealing plugs supplied.

- > | If the housing is dirty, clean it with a damp cloth.



Use distilled water, or alternatively mild solvents, such as isopropanol. If using isopropanol, please refer to the instruction leaflet for the product.

Carrying out cleaning

- 1 | Open the wall bracket cover.
- 2 | Remove the testo 150 data logger module from the wall bracket.
- 3 | Remove connected probes and cables.
- 4 | Close connection socket with the dummy plug.
- 5 | Moisten a microfibre cloth with 70% isopropanol.
- 6 | Clean the testo 150 data logger module and wall bracket.



Make sure that humidity probes do not come into contact with the cleaning solution.

- 7 | Insert the testo 150 data logger module into the wall bracket.

Other tolerated reagents for cleaning:

Active substances/additives	Maximum concentration
Pentapotassium bis(peroxymonosulphate) bis(sulphate)	1% (%V/V)
Peracetic acid, acetic acid	3% (%V/V)
Glutaraldehyde	3% (%V/V)
Quaternary ammonium cations/compounds	1.5% (%V/V)
Sodium hydroxide	3% (%V/V)
Isopropanol	70% (%V/V)
Ethanol	80% (%V/V)
H ₂ O ₂	35% (m%)

% V/V = volume percent

m % = mass fraction

10 Troubleshooting

10.1 Questions and answers

Question	Possible cause / solution
Can the data logger also be used in networks with WPA2 Enterprise encryption?	The testo Saveris 2 H2 WLAN data logger or the testo 150 data logger module with WLAN communication module can be used in networks with the following WPA2 Enterprise encryption. EAP-TLS, EAP-TTLS-TLS, EAP-TTLS-MSCHAPv2, EAP-TTLS-PSK, EAP-PEAP0-TLS, EAP-PAP0-MSCHAPv2, EAP-PEAP0-PSK, EAP-PEAP1-TLS, EAP-PEAP1-MSCHAPv2, EAP-PEAP1-PSK To integrate the logger into the WPA2 Enterprise network, proceed as follows: 1. Open the PDF file stored on the logger and generate a corresponding XML file by selecting the programming options step by step. 2. Copy your company-specific WPA2 Enterprise certificates and the generated .XML file to the logger's mass storage via USB using drag & drop. 3. Please pay special attention to the correct spelling and to the suffixes of certificate names. ca.pem, client.pem, private.key Check whether the certificate is available in a PEM or BASE64 format. To do so, open the certificate using a text editor and check that you can see the string "-----BEGIN CERTIFICATE-----". If you cannot see this string, the IT department or the user must explicitly export the certificate from the Radius server using BASE64, or convert it using openssl. There must be one certificate only, not a bundle, inside the file. 4. Please note that the configuration of the data logger will only be fully applied once the USB cable has been removed.

Question	Possible cause / solution
The XML configuration file is not being applied by the data logger, what can I do?	Depending on the operating system, there may be difficulties with the data transfer if the configuration file name has been changed. Leave the default file name
Error code Conf Inval	The configuration file WifiConfig.xml has an error or is incomplete. Use the configuration PDF to create a new configuration file and save this on the data logger.
Error code E20	A WPA2 Enterprise EAP connection needs to be configured, but no CA certificate could be found. A CA certificate is essential. Save the CA certificate in PEM format under the name "ca.pem" together with the XML file on the data logger.
Error code E21	Incorrect format of the ca.pem certificate. (Only applies to WPA2 Enterprise) Check whether the ca.pem certificate is available in a PEM or BASE64 format. To do this, open the certificate using a text editor and check that you can see the string "-----BEGIN CERTIFICATE-----". If you cannot see this string, the IT department or the user must explicitly export the certificate from the Radius server using BASE64, or convert it using openssl. There must be one certificate only, not a bundle, inside the file.
Error code E22	A WPA2 Enterprise EAP-TLS connection needs to be configured, but no user certificate could be found. (Only applies to WPA2 Enterprise) Save the user certificate in PEM format under the name "client.pem" together with the XML file on the data logger.

Question	Possible cause / solution
Error code E23	Incorrect format of the client.pem user certificate. (Only applies to WPA2 Enterprise) Check whether the client.pem user certificate is available in a PEM or BASE64 format. To do so, open the certificate using a text editor and check that you can see the string "-----BEGIN CERTIFICATE-----". If you cannot see this string, the IT department or the user must explicitly export the certificate from the Radius server using BASE64, or convert it using openssl. There must be one certificate only, not a bundle, inside the file.
Error code E24	A WPA2 Enterprise EAP-TLS connection needs to be configured, but no private key could be found. (Only applies to WPA2 Enterprise) Save the private key in PEM format under the name "private.key" together with the XML file on the data logger.
Error code E25	Incorrect format of the private.key certificate. (Only applies to WPA2 Enterprise) Check whether the private.key is available in a PEM or BASE64 format. To do so, open the certificate using a text editor and check that you can see the string "-----BEGIN CERTIFICATE-----". If you cannot see this string, the IT department or the user must explicitly export the certificate from the Radius server using BASE64, or convert it using openssl. There must be one certificate only, not a bundle, inside the file.

Question	Possible cause / solution
Error code E26	There are 4 possible reasons for this error: • The access point (WLAN router) is outside the wireless range or is switched off. Check whether the access point is available. If necessary, change the location of the data logger. • The network name (SSID) stored in the data logger is incorrect. Check the network name of the WLAN network. Use the configuration PDF to create a new configuration file with the correct network name and save this on the data logger. • The access point of the WLAN network does not use one of the following encryption methods: WEP, WPA (TKIP), WPA2 (AES, CCMP). Configure the access point so that one of the supported encryption methods is used. • There is no Ethernet connection
Error code E27	No WLAN connection / SSID cannot be found Please check the input of the SSID (upper/lower case)
Error code E28	Radio link too weak The connection is unstable and there is a risk that transmission will be delayed or will not take place at all.
Error code E29	Wrong password Please check the input of the password (upper/lower case, etc.)
Error code E30	Poor communication connection The data connection (internet) is unstable.

Question	Possible cause / solution
Error code E32	The data logger has not obtained an IP address. There are 2 possible reasons for this error: • The network password is incorrect. Check the password of the WLAN network. Use the configuration PDF to create a new configuration file with the correct password and save this on the data logger. • The access point (WLAN router) has a MAC filter or does not permit the integration of new devices. Check the settings for the access point.
Error code E35	The data logger has not received any reply to its test ping from the access point (WLAN router). Make sure that a ping to the gateway is allowed within the access point configuration.
Error code E36	The DNS could not be resolved: • The access point (WLAN router) is not connected to the internet. Check the access point's internet connection. or • The routing within the network infrastructure is not working. Check whether too many terminal devices are logged into the access point.
Error code E37	Encrypted connection (TLS) not possible. Check that the TLS ports are enabled and that no proxy is acting as an intermediary.
Error code E51	Connection to the UltraRange Gateway or Base V3.0 failed. Please check whether the base is switched on and accessible on the network.
Error code E52	Registration failed! Please check whether Base and/or Gateway are in Connect mode. (Status LED flashes green)
Error code E54	Unknown probe or no probe connected. Login attempt without connected probe.
Error code E56/57	Data transmission failed. Rule out unstable radio link as the cause! If the error persists, please contact the service department.

Question	Possible cause / solution
Error code E60	UltraRange communication to UltraRange Gateway or Saveris Base failed. Rule out too low signal strenght and possible radio interferences on the used radio channel.
Error code E75	A firmware update for the data logger failed. The internet connection was interrupted during the transmission or the data was not received intact by the data logger for other reasons. Check whether there is a stable connection from the radio data logger to the access point (WLAN router). Check the access point's internet connection. The data will be transferred during the next communication cycle. Alternatively: Initiate data transmission manually by pressing the control key on the data logger.
Error code >100	Contact the service department.

10.2 Reading out data

In the event of a malfunction, it is possible to read the data stored on the data logger via the USB cable:

- 1 Press the Connect key for 5 seconds.
- 2 Connect to computer via USB cable.
- 3 Read out data.



While the testo 150 data logger module is connected to a PC via a USB cable, no measurement recordings take place.

10.3 Resetting the testo 150 data logger module to its factory settings

In exceptional cases, a testo 150 data logger module can be reset to the factory setting if normal use of the testo 150 data logger module is no longer possible. It should only be reset to the factory settings if this is clearly indicated in the instruction manual or by Testo Support.



Resetting the testo 150 data logger module deletes all user settings and measurement data from the memory.

- 1 | Reset the testo 150 data logger module: Hold down the Connect key for >20 seconds.

11 Technical data

11.1 testo 150 TUC4

Feature	Value
Order no.	0572 3320
Measurement channels	16
Connections	Micro USB; 4 TUC (testo universal connector); TCI (testo communication interface)
Connectable probes	4
Accuracy	Analog NTC with external probe: Measuring range -40 to +150 °C Accuracy (+/- 1 digit): ±0.3 °C Resolution: 0.1 °C / 0.1 °F Digital probes: See specification for digital probes (0970 2815)
Memory	min 16,000 readings per channel (256,000 in total)
Dimensions (W x H x L)	69.3 x 88.0 x 29.0 mm
Weight	Approx. 255 g
Power supply	4 x AA AlMn batteries; mains unit (optional) For temperatures below +10 °C, we recommend using Energizer L91 Photo-Lithium (AA Mignon) batteries
Protection class	IP65 and IP67 (with mounted WLAN or testo UltraRange communication module), IP30 (with mounted LAN/PoE communication module); specification when unused ports are closed by rubber plugs.
Housing material	PC/PET (front); ABS+PC+10% GF/PET (rear)
Communication cycle	15 min ²
Measuring cycle	5 seconds - 24 hours (Ethernet communication) 1 minute - 24 hours (WLAN or UltraRange)
Storage temperature	-40 °C to +60 °C
Operating temperature	-40 °C to +50 °C

² In consultation with Testo, the communication cycle can be changed to 1 min ... 24 h.

Feature	Value
Display	Segmented / Dot-matrix Display
	 At operating temperatures below -30 °C, the display may freeze. However, it will not break.

11.2 testo 150 TC4

Feature	Value
Order no.	0572 3330
Measurement channels	4
Connections	Micro USB; 4 TC (thermocouple type: K, T, J); TCI (testo communication interface)
Accuracy	1. TC type K: -195 °C... + 1350 °C 2. TC type J: -100 °C to 750 °C 3. TC type T: -200 °C to +400 °C Accuracy (+/- 1 digit): $\pm(0.5 + 0.5\% \text{ of m.v.})^{\circ}\text{C}$ Resolution: 0.1 °C / 0.1 °F $\pm 0.5^{\circ}\text{C}$
Connectable probes	4
Memory	min 64,000 readings per channel (256,000 in total)
Dimensions (W x H x L)	69.3 x 88.3 x 29.0 mm
Weight	Approx. 255 g
Power supply	4 x AA AlMn batteries Mains unit (optional) For temperatures below +10 °C, we recommend using Energizer L91 Photo-Lithium (AA Mignon) batteries
Protection class	IP65 and IP67 (with mounted WLAN or UltraRange communication module), IP30 (with mounted LAN/PoE communication module); specification when unused ports are closed by rubber plugs; depending on the type of thermocouple plug.
Housing material	PC/PET (front); ABS+PC+10% GF/PET (rear)
Communication cycle	15 min ³
Measuring cycle	5 seconds - 24 hours (Ethernet communication) 1 minute - 24 hours (WLAN or UltraRange)

³ In consultation with Testo, the communication cycle can be changed to 1 min ... 24 h.

Feature	Value
Storage temperature	-40 °C to +60 °C
Operating temperature	-40 °C to +50 °C
Display	Segmented / Dot-matrix display
	 At operating temperatures below -30 °C, the display may freeze. However, it will not break.

11.3 testo 150 DIN2

Feature	Value
Order no.	0572 3340
Measurement channels	2
Connections	Micro USB; 2 mini-DIN; TCI (testo communication interface)
Accuracy	NTC with external probe: Measuring range -40 to +150 °C Accuracy (+/- 1 digit): ±0.3 °C Resolution: 0.1 °C / 0.1 °F PT100 with external probe: Measuring range: -200 to +600 °C: Accuracy (+/- 1 digit): ±0.1 °C (0 to +60 °C) ±0.2 °C (-100 to +200 °C) ±0.5 °C (other measuring ranges) Resolution: 0.01 °C / 0.01 °F
Connectable probes	2
Memory	min 128,000 readings per channel (256,000 in total)
Dimensions (W x H x L)	69.3 x 87.9 x 29.0 mm
Weight	Approx. 255 g
Power supply	4 x AA AlMn batteries Mains unit (optional) For temperatures below +10 °C, we recommend using Energizer L91 Photo-Lithium (AA Mignon) batteries

Feature	Value
Protection class	IP65 and IP67 (with mounted WLAN or UltraRange communication module), IP30 (with mounted LAN/PoE communication module); specification when unused ports are closed by rubber plugs; depending on the type of connected probe.
Housing material	PC/PET (front); ABS+PC+10% GF/PET (rear)
Communication cycle	15 min ⁴
Measuring cycle	5 seconds - 24 hours (Ethernet communication) 1 minute - 24 hours (WLAN or UltraRange)
Storage temperature	-40 °C to +60 °C
Operating temperature	-40 °C to +50 °C
Display	Segmented / Dot-matrix display
	 At operating temperatures below -30 °C, the display may freeze. However, it will not break.

11.4 testo 150 T1

Feature	Value
Order no.	0572 3350
Measurement channels	1
Connections	Micro USB; TCI (testo communication interface)
Accuracy	Measuring range: -40 to 50 °C Accuracy: (±1 digit): ±0.4 °C Resolution: 0.1 °C / 0.1 °F
Connectable probes	0
Memory	256 000 readings
Dimensions (W x H x L)	69.3 x 88.3 x 29.0 mm
Weight	Approx. 255 g
Power supply	4 x AA AIMn batteries Mains unit (optional) For temperatures below +10 °C, we recommend using Energizer L91 Photo-Lithium (AA Mignon) batteries

⁴ In consultation with Testo, the communication cycle can be changed to 1 min ... 24 h.

Feature	Value
Protection class	IP65 and IP67 (with mounted WLAN or UltraRange communication module), IP30 (with mounted LAN/PoE communication module); specification when unused ports are closed by rubber plugs; depending on the type of thermocouple plug.
Housing material	PC/PET (front); ABS+PC+10% GF/PET (rear)
Communication cycle	15 min ⁵
Measuring cycle	5 seconds - 24 hours (Ethernet communication) 1 minute - 24 hours (WLAN or UltraRange)
Storage temperature	-40 °C to +60 °C
Operating temperature	-40 °C to +50 °C
Display	Segmented / Dot-matrix display At operating temperatures below -30 °C, the display may freeze. However, it will not break.

⁵ In consultation with Testo, the communication cycle can be changed to 1 min ... 24 h.

12 Accessories

Description	Order no.
Communication modules	
testo UltraRange communication module (region: EU)	0554 9311 01
testo UltraRange communication module (region: US)	0554 9312 01
testo UltraRange communication module (region: CN)	0554 9313 01
testo UltraRange communication module (region: APAC*)	0554 9314 01
testo UltraRange communication module (region: KR)	0554 9315 01
testo UltraRange communication module (region: IN)	0554 9316 01
testo UltraRange communication module (region: RU)	0554 9317 01
WLAN communication module	0554 9320
LAN/PoE communication module	0554 9330

* Japan, Malaysia, Singapore, Taiwan, Macau

Power supply

L91 Energizer batteries	0515 0572
Mains unit 5 V DC 2 A with USB cable	0572 5004
4 x AIMn battery LR 6 (alkaline manganese AA batteries)	0515 0014

Other accessories

Magnetic wall bracket	0554 2001
-----------------------	-----------



The list of digital probes and extension cables that can be combined with testo 150 data logger modules can be found in the document **Probes and probe accessories for testo Saveris 1** (0970 2815).

13 Appendix

Battery life of testo 150 data logger modules

The battery life of testo 150 is influenced by the measuring cycle, the communication cycle and the type and number of connected probes. In general, the communication cycle contributes significantly more to the battery life than the measuring cycle (the higher the communication cycle, the lower the battery life). The specified values apply at +25 °C room temperature using standard AIMn batteries.



The system limits and properties are designed and tested for the specified standard communication cycle. A change to the communication cycle should only be made in exceptional cases and must be approved by Testo.



testo 150 data loggers with LAN/POE communication module installed must have an external power supply (USB or POE). The batteries in the data logger are only intended to bridge power failures.

testo 150 TUC4 with testo UltraRange communication module



testo 150 TUC4 data logger with analog coupler(s) connected must have an external power supply (USB or POE).

Measuring cycle	1 digital NTC probe			1 digital temperature & humidity probe			4 digital temperature & humidity probes		
	Communication cycle			Communication cycle			Communication cycle		
	2 min	15 min	1 h	2 min	15 min	1 h	2 min	15 min	1 h
1 min	0,4 a	1,4 a	1,9 a	0,4 a	1,0 a	1,2 a	0,3 a	0,9 a	1,1 a
5 min	0,5 a	2,5 a	5,3 a	0,5 a	2,1 a	3,8 a	0,4 a	1,9 a	3,6 a
15 min	0,5 a	2,9 a	7,2 a	0,5 a	2,7 a	7,1 a	0,4 a	2,4 a	5,6 a
1 h	0,5 a	3,0 a	8,3 a	0,5 a	3,0 a	8,0 a	0,4 a	2,6 a	7,2 a

testo 150 DIN2/TC4 with testo UltraRange communication module

Measuring cycle	testo 150 DIN2 with NTC probe			testo 150 TC4 with thermocouple type K		
	Communication cycle			Communication cycle		
	2 min	15 min	1 h	2 min	15 min	1 h
1 min	0,4 a	1,3 a	1,7 a	0,4 a	1,1 a	1,4 a
5 min	0,5 a	2,5 a	4,8 a	0,5 a	2,2 a	4,2 a
15 min	0,5 a	2,9 a	6,7 a	0,5 a	2,7 a	6,4 a
1 h	0,5 a	3,1 a	8,0 a	0,5 a	3,0 a	7,9 a

testo 150 T1 with UltraRange communication module

Measuring cycle	testo 150 T1		
	Communication cycle		
	2 min	15 min	1 h
1 min	0,4 a	1,4 a	1,9 a
5 min	0,5 a	2,5 a	5,3 a
15 min	0,5 a	2,9 a	7,2 a
1 h	0,5 a	3,0 a	8,3 a

testo 150 TUC4 with WLAN communication module

Measuring cycle	1 digital NTC probe			1 digital temperature & humidity probe			4 digital temperature & humidity probes		
	Communication cycle			Communication cycle			Communication cycle		
	2 min	15 min	1 h	2 min	15 min	1 h	2 min	15 min	1 h
1 min	0,2 a	0,8 a	1,6 a	0,2 a	0,6 a	1,0 a	0,1 a	0,6 a	0,9 a
5 min	0,2 a	1,1 a	3,0 a	0,2 a	1,0 a	2,5 a	0,1 a	0,9 a	2,3 a
15 min	0,2 a	1,2 a	3,5 a	0,2 a	1,1 a	3,4 a	0,1 a	1,0 a	3,0 a
1 h	0,2 a	1,3 a	3,8 a	0,2 a	1,2 a	3,9 a	0,1 a	1,1 a	3,4 a

testo 150 DIN2/TC4 with WLAN communication module

Measuring cycle	testo 150 DIN2 with NTC probe			testo 150 TC4 with thermocouple type K		
	Communication cycle			Communication cycle		
	2 min	15 min	1 h	2 min	15 min	1 h
1 min	0,2 a	0,8 a	1,5 a	0,2 a	0,7 a	1,2 a
5 min	0,2 a	1,2 a	3,0 a	0,2 a	1,0 a	2,6 a
15 min	0,2 a	1,3 a	3,7 a	0,2 a	1,1 a	3,3 a
1 h	0,2 a	1,4 a	4,1 a	0,2 a	1,2 a	3,7 a

testo 150 T1 with WLAN communication module

Measuring cycle	testo 150 T1		
	Communication cycle		
	2 min	15 min	1 h
1 min	0,2 a	0,8 a	1,6 a
5 min	0,2 a	1,1 a	3,0 a
15 min	0,2 a	1,2 a	3,5 a
1 h	0,2 a	1,3 a	3,8 a



Testo SE & Co. KGaA

Celsiusstr. 2

79822 Titisee-Neustadt

Germany

Phone: +49 7653 681-0

E-mail: info@testo.de

www.testo.com