



testo Saveris radio data logger

0572 2200 XX Gateway

0572 2201 XX radio data logger – ambient temperature

0572 2202 XX radio data logger – temperature product simulation

0572 2203 XX radio data logger – door contact

0572 2204 CC radio data logger – core temperature

Instruction manual for NSF testing



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1 About this document

Read these operating instructions carefully and familiarize yourself with the product before using it

1.1 Usage

- Keep this documentation to 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.
 - Pay particular attention to the safety instructions and warning advice in order to prevent injury and damage to the product.
-
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1.2 Symbols

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.

2 Safety and disposal

Take the testo information document into account (accompanies the product).

2.1 Warning

Always observe information marked by the following warnings with warning pictograms. Take the specified precautionary measures!

 **DANGER**

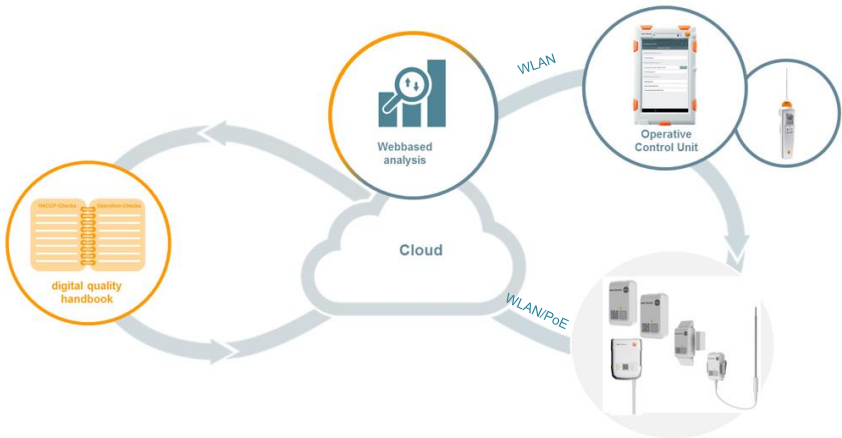
Danger to life!

ATTENTION

Indicates possible property damage

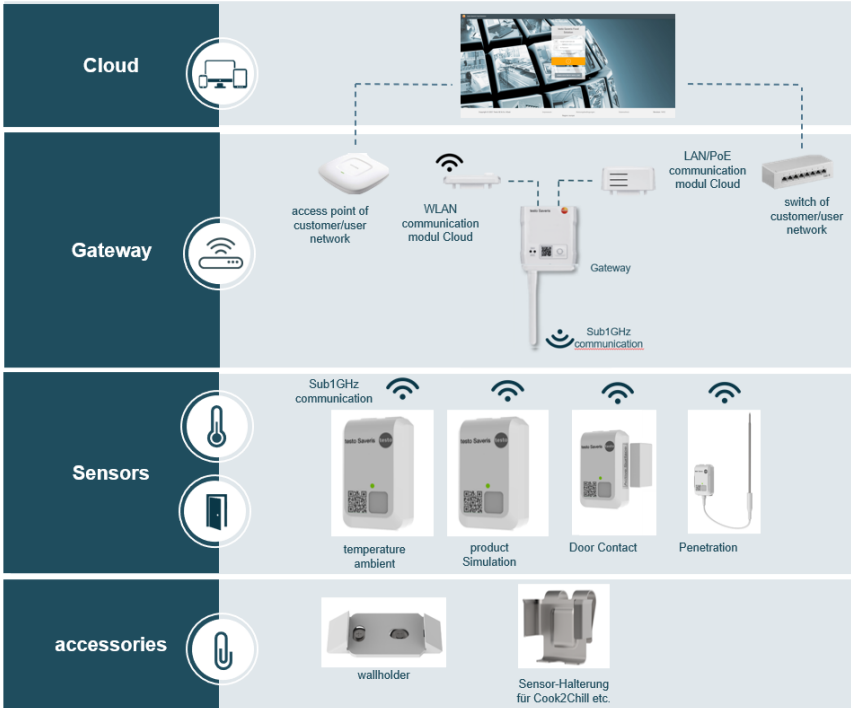
3 System description

The testo Saveris wireless sensors are part of the testo Saveris Solution. As a stationary measurement technology solution, they are ideally suited for monitoring temperature and door contacts in cold stores and warehouses. The wireless sensors are available in various versions and can therefore be flexibly adapted for numerous applications. Depending on the version, they have an air temperature sensor, an additional product simulator (mimicking), a door contact sensor and a penetration probe sensor. The data of the sensors is transmitted via a Gateway in to the Saveris Restaurant cloud.





The sensors can be integrated into the testo Saveris Food Solution. The data is recorded at configurable intervals and transferred to the Testo Cloud [Cloud] at configurable intervals. The customer's WLAN or Ethernet infrastructure is a prerequisite for transmitting the data (not part of the scope of delivery). The measured values stored in the cloud can be called up and analyzed at any time in the corresponding testo Saveris Cockpit [Webbased analysis]. Limit value violations are immediately displayed on the Control Unit [Operative Control Unit] or reported by e-mail or SMS.

3.1 System Overview



3.2 Product description

1	article number & name: 0572 2201 XX description: radio data logger – ambient temperature	
2	article number & name 0572 2202 XX description: radio data logger – temperature product simulation	

<p>3</p>	<p>article number & name 0572 2203 XX</p> <p>description: radio data logger – door contact</p>	
<p>4</p>	<p>article number & name 0572 2204 XX</p> <p>description: radio data logger – core temperature</p>	
<p>5</p>	<p>article number & name 0572 2204 XX</p> <p>description: Gateway</p>	
<p>6</p>	<p>article number & name 0554 9320 01</p> <p>description: WLAN-communication module</p>	
<p>7</p>	<p>article number & name 0554 9330</p> <p>description: LAN/PoE-communication module</p>	
<p>8</p>	<p>article number & name 0572 2210</p> <p>description: radio data logger – wall holder</p>	
<p>10</p>	<p>article number & name 0572 2211</p> <p>description: radio data logger – holder penetration probe</p>	

3.3 radio data logger – ambient temperature

This sensor measures temperature of its ambient.

3.4 radio data logger – temperature product simulation

This sensor measures temperature of its ambient as well but provides an additional calculated temperature measurement value. This calculated value represents a product temperature value according a calculated/ simulated behavior.



The product simulator is designed to simulate food thawing and chilled or frozen food. However, the product simulator does not represent the core temperature of the food, but simulates the behavior of the food.

3.5 radio data logger – door contact

This sensor is used to detected/observe open or closed doors.

3.6 radio data logger – core temperature

With this sensor it is possible to measure temperature of liquid food, i.e. soups. Just immerse the metal sensor tip inside the liquid food.



3.7 Gateway button functions & LED

long = 1 sec / periode = 2 sec

short = 200 msec / periode = 400msec

Gateway LED1 Sensor status

Mode	action / button	Signal	Color
Join Mode	button press < 3 sec	continuously on	green
new sensor was connected	----	2 x short blinking	green
30 sensors connected / no more connections possible (finished join mode)	----	2 x short blinking	red
join mode finished -> back to default	----	off	
Receive data from sensor	----	1 x short blinking	green
default	----	off	

Gateway LED2 Network status

Mode	action / button	Signal	Color
Configuration Mode (Config XML is saved and GW connect to Cloud)	connected to PC via USB-cable	continuously on	green
Configuration saved and Connection available	disconnected from PC	5 sec on	green
No/wrong configuration	----	blinking continuously short (200msec/400msec)	red
Connection not available * Ethernet cable * no WLAN connection Network / HW error	----	blinking continuously long (1 sec / periode = 2 sec)	red
Communication to Cloud	----	2 x short	green
FW update Over the air	----	alternating long	green/red
factory Reset	button press > 20 sec		orange

3.8 Radio data logger button functions & LED

Mode	action / button	Signal
Power down Sensor switched ON from power down	button press < 3 sec in state OFF	Blinking for 90 sec 0,2 sec on 0,8 sec off (green) -> sensor is in manual join mode In case of finished join mode (max 90 sec) 1x 2 sec green-> Connection to GW OK 1x 2 sec red -> no Connection to GW
Sensor Switch OFF (Sleep Mode)	button press > 3 & <10 sec in state oN (Logging)	1 x 0,5 sec green 1 x 0,5 sec red -> sensor go OFF
Power Off / Sleep Mode (no connection to Gateway)	button press < 1sec in state sleep	Blinking for 90 sec 0,2 sec on 0,8 sec off (red) -> sensor in roaming mode In case of finished join mode (max 90 sec) 1x 2 sec green-> connection to GW OK 1x 2 sec red -> no connection to GW
Logging Mode Only by manual measure and data sending (not during regular sendings)	button press < 1sec in state sleep	1x 0,2 sec green-> Sensor measure (direct after press button) Sensor is in connected state max after 30 sec: 1x 0,2 sec green-> connection to GW OK 1x 0,2 sec red -> no ACK from GW
Sensor Switch OFF (factory reset)	button press > 30 sec	2 x 0,5 sec green 2 x 0,5 sec red -> sensor go OFF

4 Commissioning



This chapter describes the commissioning of the NSF test set up. The system is mainly designed to enable NSF to do the certification tests.

The system does not support the whole system UI functionality, which will be offered to end customers in series. The hardware devices have already achieved nearly series level. The measurement data of the devices itself is sent to the original Cloud IoT-core, from where the data can be displayed via Saveris Restaurant Website.

Additional the software “MTS IoT Core viewer”, allows the user to display the measurement values on PC and export the data to csv.file. This software is very limited in its functionality and has only the purpose to get measurement values from the IoT data base. The UI is simple and limited.



Measurement and communication cycle is set default by system.

Measurement cycle: 1min

Communication cycle: 1min

4.1 Mounting on the wall

The wall bracket is used to mount the online data logger. Select suitable mounting materials according to the desired mounting location. The wall mount can be attached using the supplied adhesive strips. Alternatively, suitable screws or cable ties can also be used (not included in the scope of delivery).



Danger to life!

Electrical lines can be damaged.

- When fixing the wall bracket by means of screws, do not mount directly on electrical equipment.
-



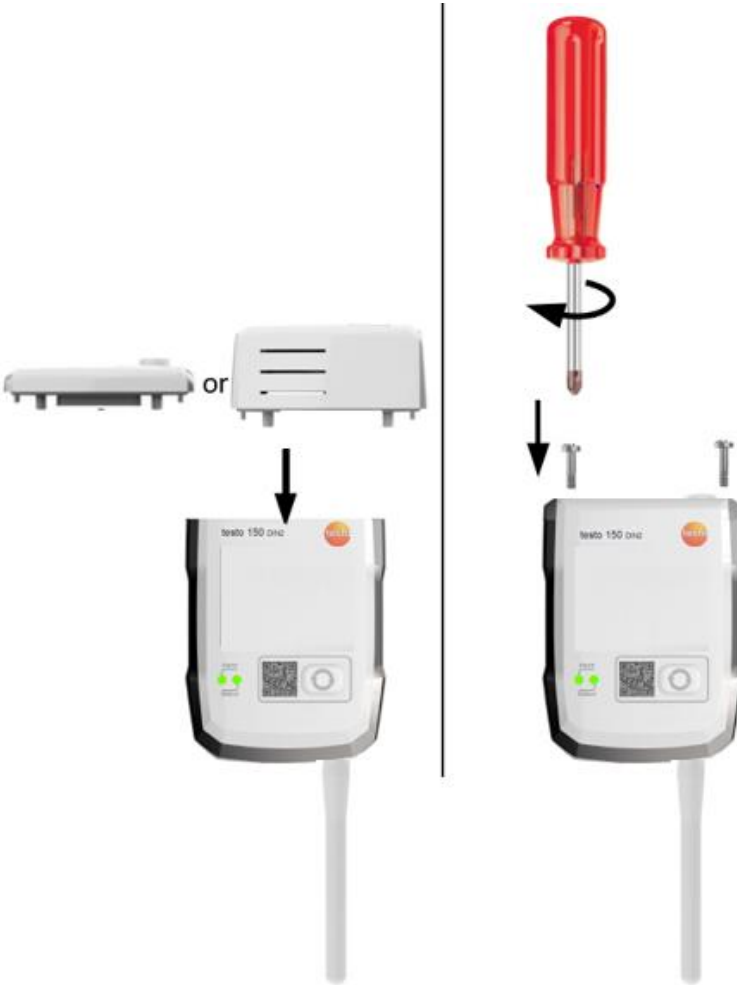
When using adhesive strips, make sure that the substrate is clean and free of grease.

4.2 Mounting of communication module to the Gateway

4.2.1 WLAN module and PoE module



Before connecting the gateway to the PC or to power supply, the communication modules must be mounted to the gateway first.





4.2.2 Power supply / batteries

In general, the Gateway runs without any batteries. It needs a continuous 5V DC/2A power supply.

Additionally, the gateway has a battery compartment. Batteries are only relevant for customers, which follow a disaster recovery plan, to ensure, that in any case of power loss, that gateway still works. Basically, the gateway does not store any measurement values. If the power is down, measurement values are stored in the sensor, if they can't be forwarded to the gateway due to power loss.

4.3 Configuration of the Gateway



In case of using WLAN, make sure that a stable WLAN connection is available before you start configuring the gateway,



In case of using Ethernet, make sure that the Ethernet connection of the Gateway to the cloud is not blocked by internal fire walls of the IT. See chapter 7.

4.3.1 Account / Saveris Connect Key

The Account ID/Saveris Connect Key is the unique address of your user account in the Testo cloud. This connect key is needed to configure the Gateway in order to ensure that the Gateway sends your data to the correct user account.

4.3.2 NSF-certification account

The user account is defined by an email-address:


Account	Saveris Connect Key / Account-ID
testo.qsr+nsf.ws_rm@gmail.com	DW-K4-IM-Q3-int0

Password is sent separately!

4.3.3 Gateway offline configuration

The Gateway can be configured via a PDF form.

Note You need the Adobe Reader program (version 10 or later) to use the PDF form correctly. If you have not installed Adobe Reader, you can go to the following address to download it free of charge: <http://get.adobe.com/reader/>.

1. Connect the Gateway with mounted WLAN module to the PC.
2. Open the file NetConf.pdf on the external drive in the Windows-Explorer.
 **GATEWAY (D:)**
3. Enter the Saveris Connect Key into the Account ID field
4. Enter the local WLAN Network name (SSID) and, if necessary, your WLAN password in the relevant fields on the PDF form.
5. Click on the Save configuration button. A dialogue box opens for exporting the form data.
6. Select the external Gateway drive as the storage location and save the form data (configuration file WiFiConf_Daten.xml) on it.
7. Disconnect the USB connection from the PC to complete the configuration of the logger.



You can also save the configuration file locally on your computer and configure other Gateways even faster by simply copying the XML configuration file onto their external drive.

8. Connect the Gateway with USB-cable to external power adapter.



Do not use the Laptop for power supply.

9. After powering up the Gateway again, the Gateway starts connection to the cloud.



4 **testo Saveris 2 Configuration PDF**

	Account ID	<input type="text"/>
	Profile	1 (default) <input type="button" value="v"/>
	Network Name (SSID)	testoSaveris
	Security	WEP/WPA or WPA2 <input type="button" value="v"/>
	Password	*****
Expert Mode		<input type="checkbox"/>

5

Save configuration



7



8



4.4 Connecting a radio data logger



Before you connect a radio data logger to Gateway, please ensure, that the Gateway is connected to the cloud. You can check the with Saveris Restaurant Website. See chapter 5!

1. Press the button on the Gateway <3 sec. -> Sensor LED is on and Gateway is in connect/ join mode!
2. Press the button on the radio logger for < 3 sec in State OFF.
-> Blinking for 90 sec 0,2 sec on 0,8 sec off (green)
-> sensor is in manual join mode
In case of finished join mode (max 90 sec) LED flashes 1x 2 sec green
-> Connection to GW OK
3. Gateway Network LED goes off
4. Connection is established and Sensor is visible with its serial number in the Software on the "Online Logger page".



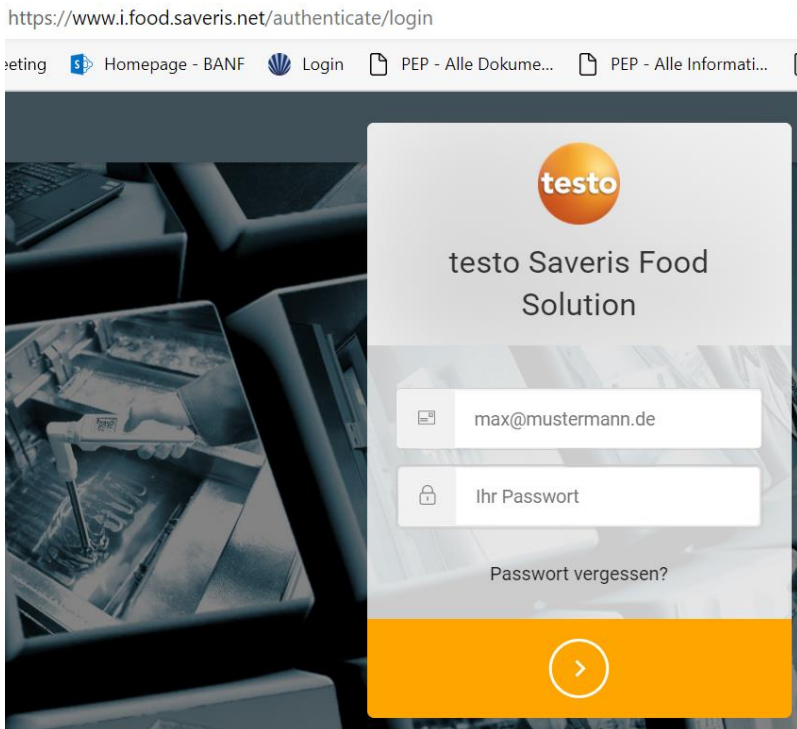
5 Software

5.1 Saveris Restaurant Software

To get access use following URL-address

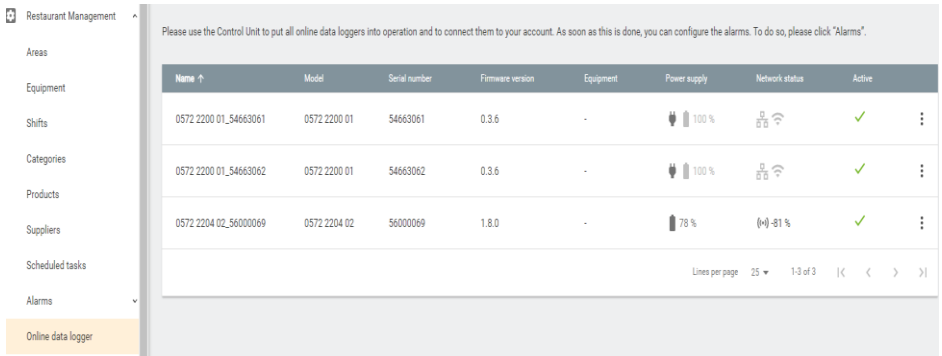
<https://i.food.saveris.net>

5.1.1 Access



Please enter your assigned account e-mail-address and password!

5.1.2 Saveris Restaurant Online/ Radio data logger website



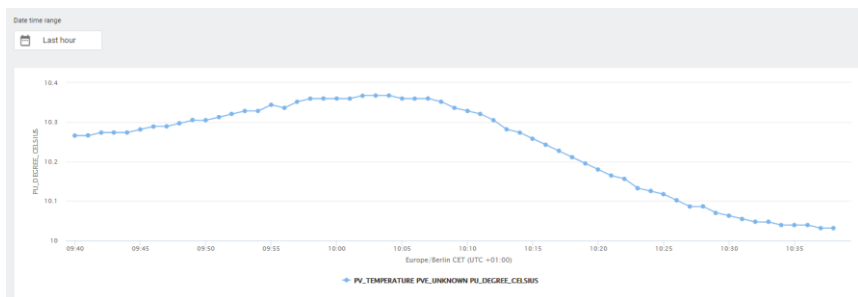
By selecting the Online data logger page, you get to the radio data logger and dashboard.

5.1.3 Measurement curves

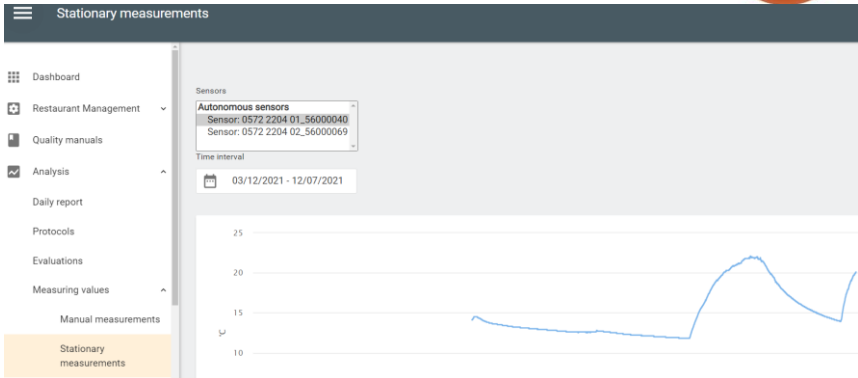
Measurement curves can be displayed by pressing the three dots

Name ↑	Model	Serial number	Firmware version	Equipment	Power supply	Network status	Active
0572 2200 01_54663061	0572 2200 01	54663061	0.3.6	-	100 %	100 %	✓
0572 2200 01_54663062	0572 2200 01	54663062	0.3.6	-	100 %	100 %	✓
0572 2204 02_56000069	0572 2204 02	56000069	1.8.0	-	78 %	(-)-81 %	✓

Lines per page 25 1-3 of 3 |< < > >|



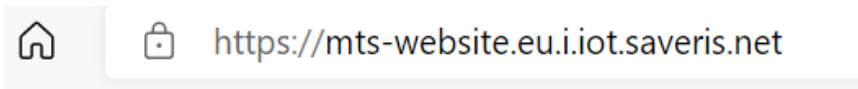
or select page stationary measurements in the Analysis field



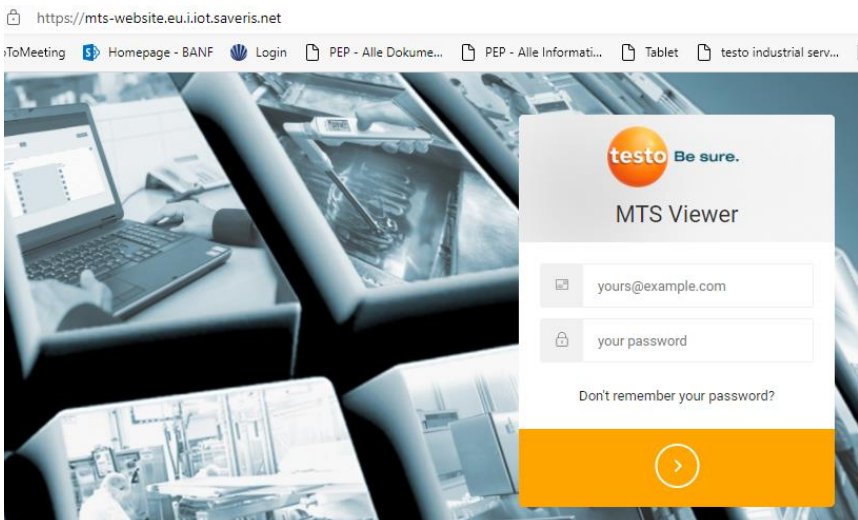
In this account you can only display the data. To be able to export the data, you must switch to the MTS View Software!

5.2 MTS Viewer Software URL-address

To get access use following URL-address



[MTS Viewer \(saveris.net\)](https://mts-website.eu.i.iot.saveris.net)



Please enter your assigned account e-mail-address and password!



It is not possible to display Saveris Restaurant Account and MTS viewer of one account in parallel.

5.3 MTS-Viewer dashboard

sensor: From: To:

All timestamps are displayed in **Europe/Berlin** timezone

CHANNEL 0 PV: TEMPERATURE | PV: UNKNOWN

5.3.1 Selecting Sensor

sensor:

Before displaying the measurement values, the relevant sensors must be selected.

5.3.2 Display of measurement data

To display current measurement values, data must be loaded via button.

5.3.3 Time range

from: to:

These field allows to select specific time ranges for measurement analysis



5.3.4 CSV Export



To get access to measurement values, the data can be exported into a csv-file.

	A	B	C	D	E	F	G
1	CHANNEL 0	PV_TEMPERATURE	PVE_UNKNOWN				
2							
3	Timestamp,°C						
4	2021-12-04 08:36:00,"21.6"						
5	2021-12-04 08:37:00,"21.7"						
6	2021-12-04 08:38:00,"21.9"						
7	2021-12-04 08:39:00,"22.1"						
8	2021-12-04 08:40:00,"22.1"						
9	2021-12-04 08:41:00,"22.2"						
10	2021-12-04 08:42:00,"22.2"						

5.4 Disable of radio data sensor or Gateway

If a Gateway or sensor is connected to the cloud, the disconnecting of a sensor or gateway has to be done manually by Testo R&D team.

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79822 Titisee-Neustadt

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6 Battery / Sensor power supply

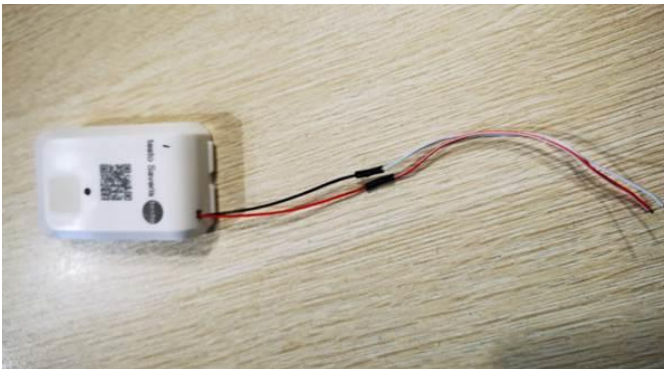
6.1 Lithium battery



The sensor has a Lithium battery, which cannot be exchanged by customer. If battery is empty, the sensor must be replaced.

6.2 Modified sensors for power supply test

To perform VCC tests Test provides modified sensors.
Battery is assembled inside but not connected to PCBA.



Red cable: VCC
Black cable: ground

Cutoff voltage: 2,2V
Nominal supply voltage:3,6V
Max. supply voltage: 3,8V



7 Technical data

Messspezifische Daten

Sensor	0572 2201-xx	0572 2202-xx	0572 2203-xx	0572 2204-xx
Sensor type	Ambient temperature sensor	temperature product simulation	Door contact sensor	Core probe Sensor
measurement range	-30...+85 °C	-30...+85 °C	----	
accuracy	± 0,5 °C	± 0,5 °C		± 0,5 °C
resolution	0,1 °C	0,1 °C		0,1 °C
Measurement cycle	1 min -- 24 h	5 min -- 24 h		5 -- bis 24 h
response time	t90 (20K): < 20 min	t90 (20K): < 20 min		t90 (20K): < 20 min
communication cycle	1 min -- 24 h	1 min -- 24 h	1 min -- 24 h	1 min -- 24 h

7.1 Radio specific data

WLAN-Module	0554 9320
radio frequency	2,4 GHz (IEEE 802.11 b/g/n)
general encryption methods	WPA Personal: WEP/WPA oder WPA2, WPA2 Enterprise: EAP-TTLS-MSCHAPv2, EAP-PEAP0-MSCHAPv2, EAP-PEAP1-MSCHAPv2, EAP-TTLS-TLS, EAP-TLS, EAP-TLS-PSK, EAP-PEAP0-PSK, EAP-PEAP1-PSK

7.2 Technical specifications for WLAN or Ethernet communication

7.2.1 Ethernet /DHCP

For Ethernet communication please use DHCP configuration in your IT-infrastructure.

7.2.2 Ports



Ports

The testo Saveris Gateway use the MQTT protocol, which communicates via the TCP 1883 and 8883 port.

Furthermore, these UDP port shares are necessary:

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

All ports must be able to communicate only to the outside in the direction of the cloud. No bidirectional port releases are necessary

7.3 General data sensors

Sensors	0572 2201-xx	0572 2202-xx	0572 2203-xx	0572 2204-xx
Operating temperature	-30...+85 °C			
Storage temperature	-30...+85 °C			
Protection class sensor	IP67			
Memory	300 measurement values			
Battery life time	8 years* (depending on temperature measurement profile)			
Power supply	Lithium battery			
dimensions	62,6 x 38 x 17,5 mm	62,6 x 38 x 17,5 mm	62,6 x 38 x 17,5 mm	62,6 x 38 x 17,5 mm
Wheight (incl. Battery)	approx. 15 g	approx. 15 g	approx. 17 g	approx. 20 g
Door contact			x	
Cable length incl. metal tip				628mm





Sensors	0572 2201-xx	0572 2202-xx	0572 2203-xx	0572 2204-xx
Internal Sensor	x	x		
External Sensor				x

Gateway	0572 2200 xx
Operating temperature	0°C ...+50°C
Storage temperature	40°C ... +60°C
Protection class	IP 67 with connected WLAN communication module IP 20 with connected Ethernet communication module
Memory	none
Power supply	5V DC / 2A

Approval and Certification

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	Testo Wireless Sensor T1 EU Testo Wireless Sensor T2 EU Testo Wireless Sensor DC EU Testo Wireless Sensor T3 EU
Mat.-No.	0572 2201 01 0572 2202 01 0572 2203 01 0572 2204 01
Model No.	0572 2201 01 0572 2202 01 0572 2203 01 0572 2204 01
Date	07.06.2022

Country	Comments
Europa + EFTA	 <p>The EU Declaration of Conformity can be found on the testo homepage www.testo.com under the product specific downloads.</p> <p>EU 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).</p> <p>EFTA countries: Iceland, Liechtenstein, Norway, Switzerland</p>  WEEE Reg. no. DE 75334352

United Kingdom (UK)	 <p>The UK Declaration of Conformity can be found on the testo homepage www.testo.com under the product specific downloads.</p>
---------------------	--

-Module	Feature	Values
	Radio range	up to 200 m (650 feet) (free field)
	Type	Lierda L-RFOMD40-04594-01
	RF Band	865 to 868 MHz (L-Band)
	Output power	12.5 dBm
	Antenna gain	max -1.13 dBi
	Company	Lierda Science & Technology Group Co., Ltd

Product	Testo Wireless Sensor T1 FCC Testo Wireless Sensors T2 FCC Testo Wireless Sensors DC FCC Testo Wireless Sensors T3 FCC
Mat.-No.	0572 2201 02 0572 2202 02 0572 2203 02 0572 2204 02
Model No.	0572 2201 02 0572 2202 02 0572 2203 02 0572 2204 02

Country	Comments
Canada	0572 2201 02 IC: 6127B-0572220102 0572 2202 02 IC: 6127B-0572220202 0572 2203 02 IC: 6127B-0572220302 0572 2204 02 IC: 6127B-0572220402 See IC Warnings
USA	0572 2201 02 FCC ID: WAF-0572220102 0572 2202 02 FCC ID: WAF-0572220202 0572 2203 02 FCC ID: WAF-0572220302 0572 2204 02 FCC ID: WAF-0572220402 See FCC Warnings

-Module	Feature	Values
	Radio range	up to 200 m (650 feet) (free field)
	Type	Lierda L-RFOMD40-04594-01
	RF Band	915 to 928 MHz
	Modulation	GFSK
	Output power	12.5 dBm
	Transm. rate	50 kBit/s
	Antenna gain	max -1.13 dBi
	Antenna Part Number	0263 0009
	Company	Lierda Science & Technology Group Co., Ltd

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
(2) 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.

Product 产品名称	Testo Wireless Sensor T1 CN 无线传感器 Testo Wireless Sensor T2 CN 无线传感器 Testo Wireless Sensor DC CN 无线传感器 Testo Wireless Sensor T3 CN 无线传感器
Mat.-No. 料号	0572 2201 03 0572 2202 03 0572 2203 03 0572 2204 03
Model No. 型号	0572 2201 03 0572 2202 03 0572 2203 03 0572 2204 03

Country	Comments										
China	Approved										
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Product	Testo Wireless Sensor T1 IN Testo Wireless Sensor T2 IN Testo Wireless Sensor DC IN Testo Wireless Sensor T3 IN
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