

Be sure. **testo**



**Pressure:** ✓  
**Temperature:** ✓  
**Food Safety:** ✓

Highly efficient validation of your pasteurization, sterilization and freeze-drying processes with the testo 191 HACCP data logger system.

## testo 191: Food safety with system.

The regular monitoring and documentation of temperature and pressure in thermal preservation processes is crucial for the quality and safety of the foods being preserved. In order to support you in this responsible task, we developed the testo 191 HACCP data logger system.

Thanks to our decades of experience in the development of innovative measuring technology for food safety, we know what is important in this sensitive area: reliable technology with the highest level of precision, seamless integration into your processes and increased efficiency in the daily workflow.

The highly efficient and reliable data logger system for pasteurization, sterilization and freeze-drying processes comprises data loggers and the testo 191 professional software. All components provide you with effective support in monitoring process and quality parameters, ensuring the correct functioning of your systems and meeting all regulatory requirements regarding documentation.



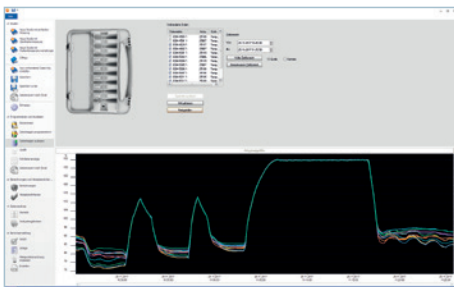
# Data loggers, software, multifunction case: Overview of the system components.



**The HACCP data loggers** come in one pressure and four temperature models. They stand for robustness, durability and reliability. The thread means batteries can be securely changed in just a few seconds without any tools. Thanks to the logger's hermetically sealed design, it remains 100% tight even after the battery has been changed.



**The multifunction case** for the testo 191 completes the system. It is robust, smart and practical, not only providing storage for the data loggers, but also enabling configuration and readout. A programming and readout unit is installed in every case. This means that up to 8 data loggers can be configured and read out simultaneously.



**The data loggers are configured and read out using the testo 191 professional software.** And all without needing a 400-page instruction manual and complicated menus. But using guided processes, helpful data visualization and the innovative 1-click report: the report recalls the parameters of the last measurement, so that you can meet your duty to provide documentation quickly and efficiently, without needing to reset all the report parameters time and again.



# Innovation in the smallest space: The advantages of the testo 191.

The testo 191 HACCP data loggers for temperature and pressure are available in five different versions. Hermetically sealed measuring technology in a separate stainless steel housing means their reliability and maximum robustness are impressive.

The battery can be changed quickly and securely without any tools or lubricants at all. And you will also have no problem meeting the "10% failure rate" acceptance criterion with the testo 191.

## Versatile probes

Measurement probes are available in different serial designs ~~and adaptable according to customers' wishes.~~



Original size image

## Easy securing option

Practical solution for attaching the retaining clamps.

## Robust stainless steel

The measuring technology is fitted into a hermetically sealed stainless steel housing.

## Reliably tight

The data loggers remain 100% tight even after the batteries are changed.

## Resilient plastic

The battery housing is coated in high-temperature-resistant polyether ether ketone (PEEK).

## Unique design

The battery and the measuring technology are contained in two separate housings.



## Flexible height

Depending on the measuring task, you can adapt the height of the data loggers via the batteries which are available in two sizes.

## Fast battery change

Thanks to the innovative design, the batteries can be securely changed in just a few seconds without any tools.



# Configuration, readout, transport: The multi-function case.

Flexible to use, practical to handle and especially robust – the transport case for the testo 191 data loggers has many impressive features. In addition to providing secure storage,

they also ensure fast configuration and readout of the loggers with the testo 191 professional software.



## **More efficient**

The case enables up to eight testo 191 data loggers to be wirelessly configured and read out simultaneously.

## **More practical**

The programming and readout unit is permanently installed in the case. So you do not need to switch between transport appliance and programming / readout unit.

## **More secure**

The data loggers are reliably protected against damage in the solid case.

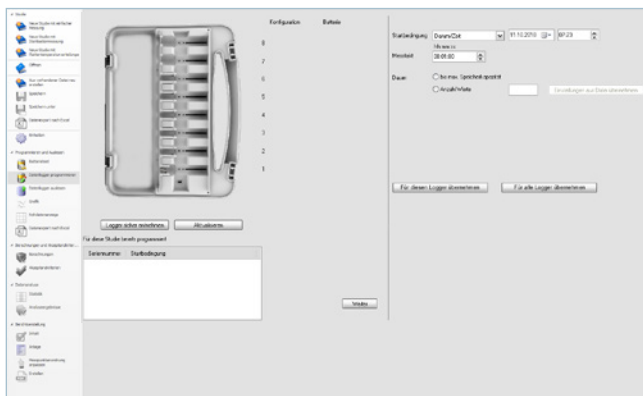


# Surprisingly easy: The software.

The HACCP data loggers are programmed and read out using the testo 191 professional software. When developing the software, we made sure we integrated only the functions which you really need, in order for you to be able to work as quickly and easily as possible. Clear, step-by-step

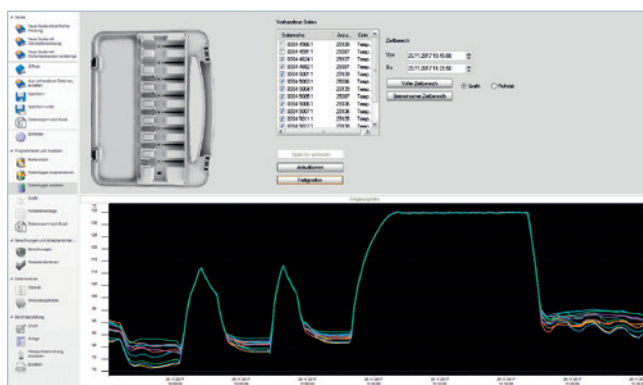
instructions and warnings at critical points enable intuitive and self-explanatory use of these - even by novices.

Time-consuming software training sessions and 400-page instruction manuals are things of the past.



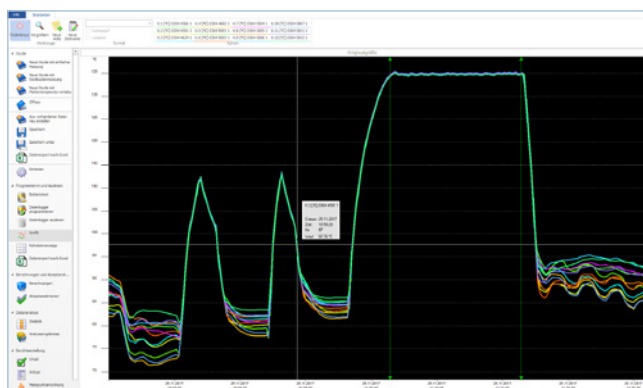
## 1. Programming data loggers

- Configure via USB in the multifunction case
- Configure each logger individually or transfer one configuration to up to 8 loggers
- Flexibly define start criteria: not only according to date and time, but also according to threshold value temperature, AND or OR link
- Define measuring cycle



## 2. Reading out data loggers

- Read out via USB in the multifunction case
- Visualization of the results for individual or all loggers, as a graphic or a table
- Partial readout possible: time period can be freely selected



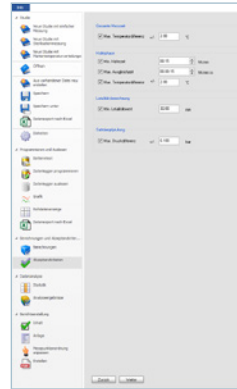
## 3. Visualizing the measurement data

- Analyze partial ranges of the measurement precisely using the simple zoom function
- Easier selection of measuring points with the crosshairs
- Comment on data: place notes directly onto the graphic and include them in the pdf report output
- Use time marks, for example to easily mark and comment on holding phases



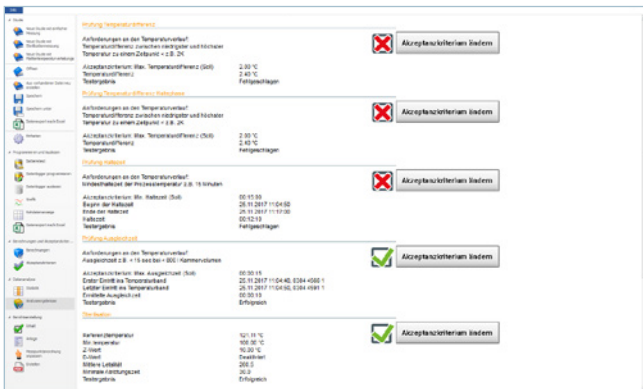
## 4. Defining calculations

- Automatic lethality and saturated steam pressure test
- F-0, F-70 and F-90 values can be pre-set
- Automatic and manual calculation of the holding phase
- ~~A-0 and C-0 values~~



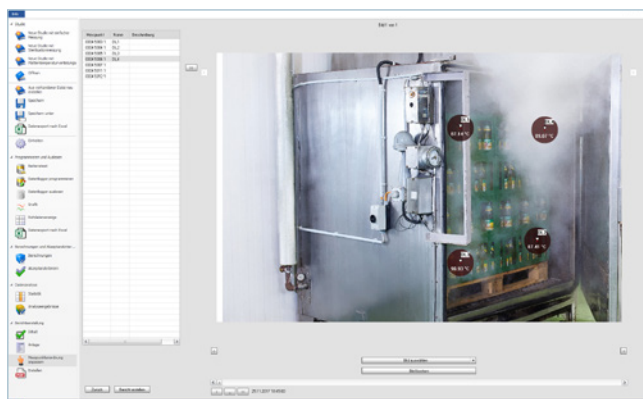
## 5. Defining acceptance criteria

Support through example visualization as well as explanation of individual process parameters (e.g. temperature span, minimum hold time or maximum acclimatization time).



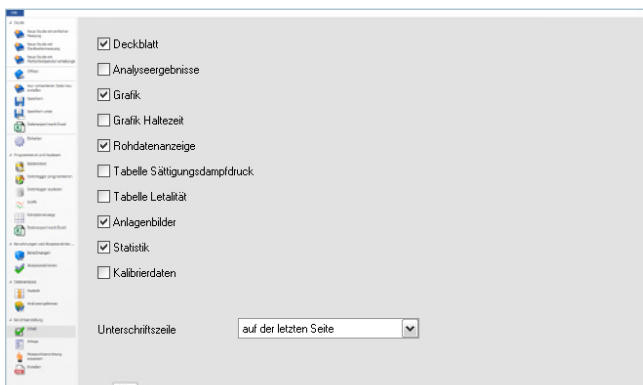
## 6. Analyzing results

- Overview of the configured acceptance criteria
- Immediate indication of whether a measurement was successful or not
- Direct access for adapting the acceptance criteria
- Graphic and tabular display of readings
- Select reading statistics on time marks using holding phases for calculating measuring curves



## 7. Visualizing the measurement set-up

- Measuring point order for flawless documentation
- Uploading own images of the system
- Labelled loggers can be allocated to their actual position in the autoclaves
- Visualization of the temperature measured over time during system operation



## 8. Configuring and creating reports

- Individual input of relevant information from the measuring study (e.g. manufacturer, loading pattern, tester)
- Company logo and the title of the report are individually adaptable
- Save and reuse report configuration
- Full inclusion of audit-relevant data
- Download data as a pdf report or a CSV file
- 1-click report adopts the report parameters of the last study and enables faster reporting

# Equipped for every challenge: testo 191 HACCP data loggers in use.



Temperature measurement  
in a can:  
testo 191-T1 + stand



Temperature measurement  
directly in the food:  
testo 191-T1



Temperature measurement  
in a can/bottle with the  
logger fitted externally:  
testo 191-T2 + can and  
bottle attachment



Measurement of  
ambient temperature:  
testo 191-T1 + retaining  
clamp and cable tie (cable  
tie not included in the scope  
of delivery)



Temperature measurement  
in particularly deep cans/  
bottles:  
testo 191-T3 + can and  
bottle attachment



Temperature and pressure  
measurement for  
sterilization in autoclaves:  
testo 191-T1 + testo 191-P1



Depending on the  
application, you can vary  
the size of the logger  
through our flexible battery  
concept.



Temperature measurement  
in freeze-drying:  
testo 191-T3/-T4 + freeze-  
drying probe holder



# Fast, efficient, reliable: The advantages at a glance.

## Save time

- No preparation time is needed for measurements with the testo 191 data loggers (e.g. for cable bushings or sealing).
- The data loggers' batteries can be changed quickly and securely.
- You can simultaneously programme and read out up to eight data loggers in the multifunction case.
- The intuitive software and the 1-click report save you time when evaluating and documenting the measurement data.

## Measure more efficiently

- Equipped for every measuring task: the intelligent battery concept means you can adjust the logger size to the space available.
- The long, flexible probes of the testo 191-T3/-T4 measure even in difficult-to-access areas.
- Using the testo 191-T4, you can take two readings or measure temperature differences with just one logger.

## Rely on your equipment

- The innovative design of the data loggers ensures 100% tightness after the battery is changed.
- High-quality materials and the innovative construction make the testo 191 data loggers particularly robust and durable.



## At a glance: Technical data.



HACCP data loggers	testo 191-T1	testo 191-T2	testo 191-T3	testo 191-T4	testo 191-P1
Measurement parameter / probe type	Temperature (Pt1000)				Pressure (piezo-resistive sensor)
Measuring range	-50 to +140°C				1 mbar to 4 bar abs.
Accuracy	±0.2°C (-50 to -40°C) ±0.1°C (-40 to +140°C)				± 20 mbar
Resolution	0.01°C				1 mbar
Reading memory	60,000 readings			30,000 per channel	60,000 readings
Measuring cycle	1 s to 24 h				
Storage temperature	-20 to +50°C				
Dimensions					
Logger with small battery	20 x 40 mm		20 x 45 mm	20 x 53 mm	22 x 64 mm
Logger with large battery	20 x 59 mm		20 x 63 mm	20 x 72 mm	22 x 83 mm
Probe shaft	3 x 25 mm	3 x 115 mm	1.5 x 775 mm		–
Probe shaft tip	–		3 x 25 mm		–
Battery large (standard)					
Battery type	½ AA lithium				
Service life	2,500 operating hours (measuring cycle 10 seconds at 121°C)				
Application range	-50 to +140°C				
Battery small (option)					
Battery type	2 x button cell lithium				
Service life	250 operating hours (measuring cycle 10 seconds at 121°C)				
Application range	-20 to +140°C				

# Ordering information and accessories.

testo 191 components	Order no.	EUR
<b>testo 191-T1</b> , HACCP temperature data logger, including battery large, distance adapter long for testo 191 programming and readout unit, calibration protocol.	0572 1911	xxx.xx
<b>testo 191-T2</b> , HACCP temperature data logger, including battery large, distance adapter long for testo 191 programming and readout unit, calibration protocol.	0572 1912	xxx.xx
<b>testo 191-T3</b> , HACCP temperature data logger, including battery large, distance adapter long for testo 191 programming and readout unit, calibration protocol.	0572 1913	xxx.xx
<b>testo 191-T4</b> , HACCP temperature data logger, including battery large, distance adapter short for testo 191 programming and readout unit, thread extension, calibration protocol.	0572 1914	xxx.xx
<b>testo 191-P1</b> , HACCP pressure data logger, including battery large and calibration protocol.	0572 1916	xxx.xx
<b>testo 191 professional software</b> , software for configuration and readout of testo 191 data loggers. System requirements: Windows 7 (32/64 bit), Windows 8, Windows 10.	0554 1911	xxx.xx
<b>testo 191 case small</b> , case for transport, storage, programming and readout of testo 191 data loggers, including USB cable and 1 programming and readout unit for a maximum of 8 data loggers. Provides space for 1 programming and readout unit. Dimensions: 340 x 265 x 60 mm.	0516 1901	xxx.xx
<b>Accessories</b>		
testo 191 battery small, PEEK coated. For the power supply of all testo 191 models. Application range: -20 to +140°C.	0515 1900	xxx.xx
testo 191 battery large, PEEK coated. For the power supply of all testo 191 models. Application range: -50 to +140°C.	0515 1901	xxx.xx
testo 191 can and bottle attachment, fixes the testo 191 data logger to cans or bottles.	0554 0458	xxx.xx
testo 191 can stand for adjusting the probe position of the testo 191 data loggers and for improving stability.	0554 1906	xxx.xx
testo 191 freeze-drying probe holder for more precise measurement of surface temperature with the testo 191-T3 and testo 191-T4.	0554 1907	xxx.xx
Retaining clamps for testo 191 loggers (pouch with 5 off).	0554 0297	xxx.xx
Distance adapters short to secure the testo 191-T4 data logger in the programming and readout unit.	0554 0298	xxx.xx
Distance adapters long to secure the testo 191-T1, testo 191-T2 and testo 191-T3 data loggers in the programming and readout unit.	0554 0299	xxx.xx
ISO temperature calibration certificate (testo 191-T1/-T2/-T3/-T4), calibration points -50°C; 0°C; +90°C; +121°C; +140°C	0520 0141	xxx.xx
DAkKS temperature calibration certificate (testo 191-T1/-T2/-T3/-T4), calibration points -50°C; 0°C; +90°C; +121°C; +140°C	0520 0281	xxx.xx
ISO pressure calibration certificate (testo 191-P1), calibration points 200 / 1400 / 2600 / 3800 / 5000 mbar	0520 0025	xxx.xx
DAkKS pressure calibration certificate (testo 191-P1), calibration points 200 / 800 / 1400 / 2000 / 2600 / 3200 / 3800 / 4400 / 5000 mbar	0520 0215	xxx.xx



**Batteries**



**Can and bottle attachment**



**Retaining clamps**



**Probe holder  
Freeze-drying**



**Stand for adjusting  
the probe position**

# Food measuring technology from Testo: High-tech from the Black Forest.

Testo SE & Co. KGaA, with its headquarters in Lenzkirch, is a world market leader in the field of portable and stationary measurement solutions. More than 3,000 employees work in research, development, production and marketing for Testo in over 33 subsidiaries all around the world. More than 650,000 customers all over the world are impressed by the measuring technology expert's high-precision measuring instruments and innovative solutions for the measurement data management of the future. Testo products help save time and resources, protect the environment and human health and improve the quality of goods and services.

With a comprehensive selection of products for monitoring food safety, Testo gives you the certainty of storing and processing foods safely, and of fulfilling all regulatory requirements. Our measuring technology includes data loggers, thermometers, cooking oil testers, pH measuring instruments and lots more. From Farm to Fork, for spot checks or long-term monitoring: Testo has the right measuring instrument for the whole food flow.

