

Be sure. **testo**



# Your partner for safe foods.

Measuring instruments from Testo monitor adherence to the temperature limit values along the entire cold chain.

# Only **safe food** really tastes good.

In food production, care is paramount. This principle is embedded in many companies, not least through HACCP. Temperature control in production processes is just as crucial to quality as the fulfilment of hygiene requirements and the maintenance of defined ambient conditions when treating and storing foodstuffs. In Incoming Goods, checking temperature is only one of the measures intended to ensure that you process only impeccable foods. Everywhere, where measurement technology can help you to discover defects and to ensure food quality, Testo offers optimum solutions designed for practical use on a daily basis.

Food is a matter of trust. Its quality and safety is taken for granted by customers. This presents an enormous challenge to those responsible for quality: They must adhere to numerous limit values and norms, and at the same time manage their operational procedures economically. You can find an overview of the norms and laws in the box below.

The measurement technology also faces special challenges. For instance, thermometers have to comply with EN 13485, and data loggers with EN 12830. Apart from this, the instruments should be regularly calibrated according to DIN 13486 – our recommendation: once a year.

	General food law area	Deep-freeze regulations
<b>Legal regulations</b>	<ul style="list-style-type: none"> <li>• VO (EC) no. 178/2002 (Basics of food safety)</li> <li>• VO (EC) no. 885/2004 Food hygiene:</li> <li>• VO (EC) no. 853/2004 (Hygiene regulations for food of animal origin)</li> <li>• VO (EC) no. 854/2004 (Regulations for official monitoring)</li> <li>• LMHV (Lebensmittel-Hygiene VO – German food ordinance)</li> <li>• LFGB (Lebensmittel- und Futtermittelrecht – German food and animal feed law)</li> </ul>	<ul style="list-style-type: none"> <li>• VO (EC) no. 37/2005 (Deep-freeze ordinance)</li> <li>• Guideline 89/108/EWG (Deep-frozen foods)</li> <li>• TLMV (Regulation on deep-frozen foodstuffs)</li> </ul>
<b>Non-legal regulations and sector recommendations (guidelines)</b>	<ul style="list-style-type: none"> <li>• Commission notice on the implementation of procedures based on the HACCP principles in certain food businesses</li> </ul>	<ul style="list-style-type: none"> <li>• VDKL guideline for good hygiene practice in refrigerated rooms</li> <li>• BGL/TD guideline for good hygiene practice in food transport</li> <li>• ATP agreement (Agreement on the international carriage of perishable foodstuffs)</li> </ul>
<b>Sector norms</b>	<ul style="list-style-type: none"> <li>• DIN 10506 (Food hygiene – Mass catering)</li> </ul>	<ul style="list-style-type: none"> <li>• DIN 8959 (Insulated food carriers)</li> <li>• DIN 10501-1 (Food hygiene – Display cabinets – Part 1)</li> <li>• DIN 10508 (Food hygiene – Temperature requirements for foodstuffs)</li> <li>• DIN-EN 12830 (Temperature recorders for transport, storage and distribution)</li> <li>• DIN-EN 13485 (Thermometers)</li> <li>• DIN-EN 13486 (Usability temperature recorders)</li> </ul>

# What is HACCP?

The hygiene ordinance EC 853/2004 applies to all food businesses and covers the food hygiene regulations which must be adhered to at all levels of production, processing and sales of foods. This ordinance also prescribes the application of hazard analysis and the monitoring of critical control points (HACCP concept).

The abbreviation HACCP stands for Hazard Analysis and Critical Control Points. The HACCP concept is a complement to basic hygiene measures with the objective of minimizing food-related illnesses. It is based on the Codex Alimentarius and places self-monitoring in a central position.

## The HACCP concept covers these 7 points:

1. Determination of the relevant hazards (hazard analysis)
2. Determination of the critical control points  
(Critical Control Points = CCP)
3. Definition of limit values (only for critical control points)
4. Definition and implementation of efficient monitoring
5. Definition of corrective measures
6. Production of documents and records  
(Documentation)
7. Definition of regular verification processes  
(Self-monitoring obligation)

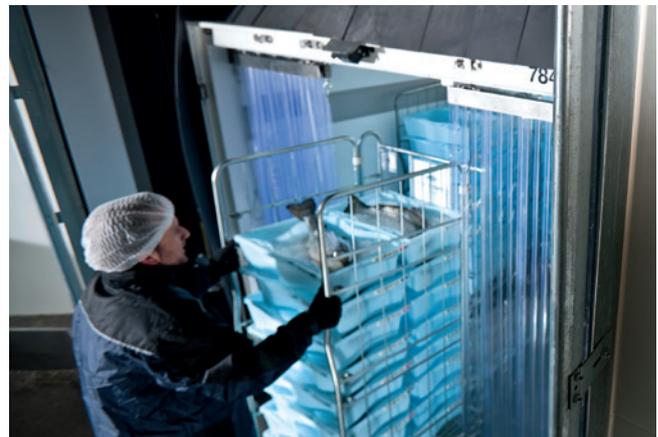
The HACCP concept makes a distinction between critical points and critical control points.

### Critical points (CP)

= points in the process which do not pose a health risk, but can be regarded as critical in the procedure; e.g. quality parameters, compliance with specifications, identification.

### Critical control points (CCP)

= points at which there is, in all probability, a relevant health risk to the consumer as long as this point is not fulfilled (i. e. controlled) e.g. heating steps, sufficient cooling, monitoring of foreign bodies.



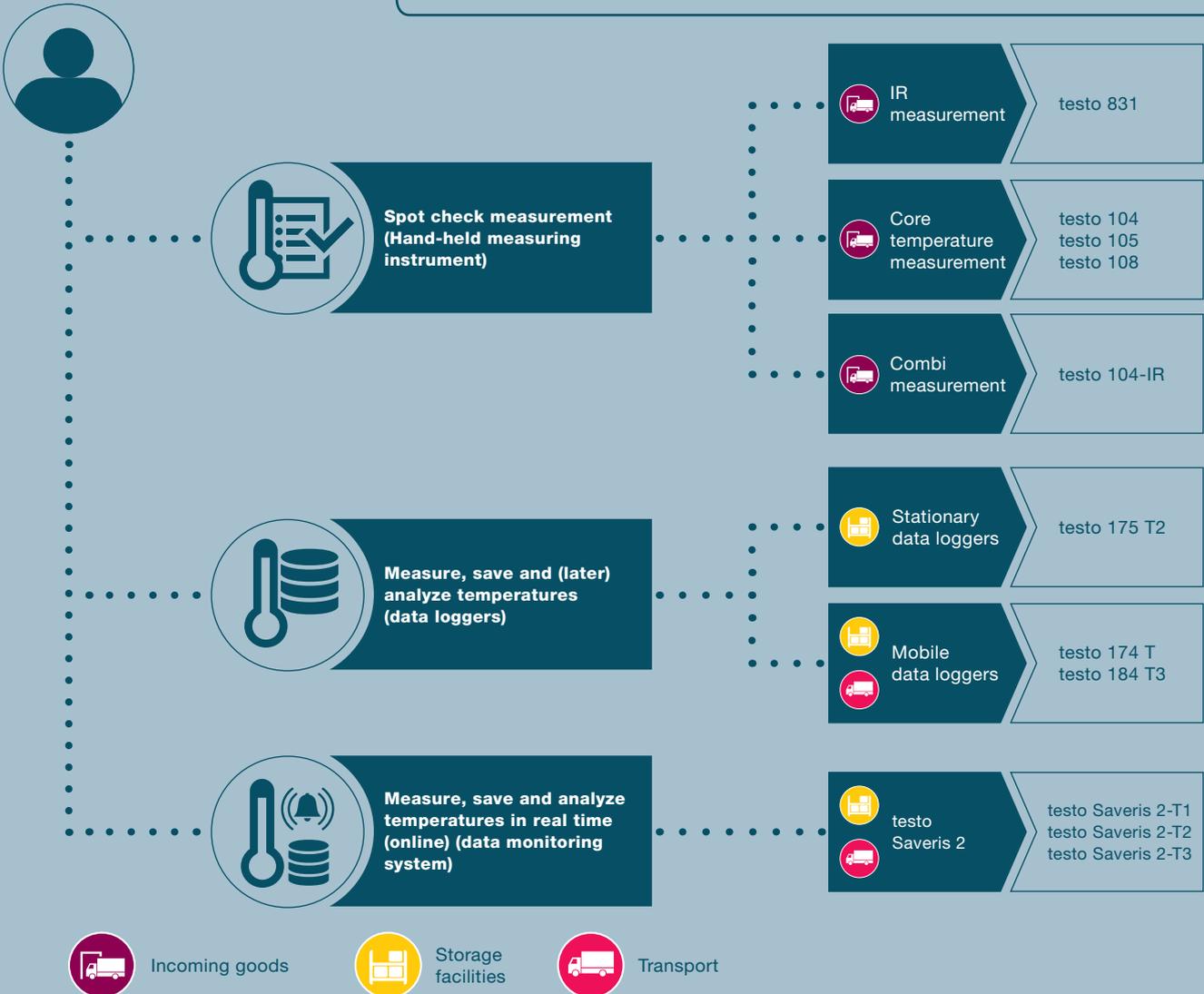
# The right measurement technology for HACCP.

The targeted use of measurement technology helps you to ensure impeccable food quality, taking the HACCP regulations into account. For instance, an automated climate monitoring reduces the manual effort and increases security thanks to versatile alarm functions. A combi thermometer can prove to be a real time-saving miracle in Incoming Goods.

A fast orientation of the different measurement methods and suitable instruments is provided by this infographic. It allows you to find the perfect measuring instrument for your business's requirements in less time.

## Which measurement method do you want to use?

**Important:** In the food sector, the instruments should be HACCP-certified. All thermometers (except testo 831) listed here correspond to the norm EN 13485 and the norm EN 12830 applies to all temperature data logger mentioned. All thermometers, data loggers and monitoring systems should be calibrated annually according to the norm 13486.





# Which hand-held measuring instrument for spot-check measurements suits me?

Spot-check measurement with hand-held measuring instruments plays an important role particularly in Incoming Goods and during food preparation. If you are looking for a portable measuring instrument for taking spot-check measurements, you should pay attention to the following questions:

- Can you penetrate the goods, or does the measurement have to be taken non-intrusively? Penetration measurement determines the core temperature and is therefore more accurate – but it damages the packaging.

- Are you out and about a lot with the thermometer in your pocket? Then a folding thermometer makes sure you do not injure yourself with the measurement tip.
- Do you measure in foods with different consistencies (e.g. frozen goods, meat, cheese, liquids)? Then a thermometer with exchangeable probes is right for you.

We have summarized all important factors for you in the graphic:

The measuring instruments mentioned here are only a selection.  
More information at: [www.testo.com](http://www.testo.com)



I would like to measure without contact, but be able to measure core temperature if needed.

I would like a folding thermometer which fits in to any pocket.

testo 104-IR

testo 831



I would like to measure without contact (non-intrusively).

I would like to penetrate the product and measure the core temperature.



I examine mainly solid or frozen media

I examine mainly soft media

What do you want to measure with your thermometer?

I would like a folding thermometer which fits into any pocket

testo 104

I do not need a folding thermometer

testo 105

I would like a folding thermometer which fits into any pocket

testo 104

I do not need a folding thermometer

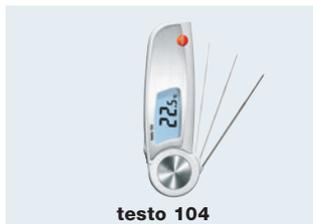
testo 108

# Record core temperature precisely with penetration thermometers.

Penetration thermometers are indispensable for determining the core temperatures of foods. Measurement of core temperature is important not only in Incoming Goods. In the HACCP concept, the sufficient heating of foods is also a critical control point which needs to be monitored and documented without interruption.

The penetration probe is either fixed permanently to the instrument or, in the case of changing measurement tasks, can be externally attached. This way even measurements in frozen goods can be carried out effortlessly.

**Incoming goods** 



testo 104



testo 105



testo 108

**Products in comparison**

**General data**

**Waterproof folding thermometer**

**One-hand thermometer with frozen goods measuring tip**

**Waterproof temperature measuring instrument**



- Auto-Hold
- Illuminated display
- Robust, metal folding joint with rigid measurement probe
- Incl. batteries

- Illuminated display
- Incl. belt holder/wall bracket
- Incl. batteries

- For probes Type T and Type K
- Incl. thermocouple probe Type T, softcase and calibration protocol
- Incl. batteries

Order number	0560 0104	0563 1054	0563 1080
Recommended selling price	XX.XX €	XX.XX €	XX.XX €
<b>Technical data</b>			
Measurement in seconds	✓	✓	✓
Exchangeable probes	✗	✓	✓
Easy-to-read display	✓	✓	✓
Splash-proof	✓	✓	✓
Folding penetration probe	✓	✗	✗
Auto-Hold	✓	✗	✗
EN 13485-compliant	✓	✓	✓
Measurement parameter	°C, °F, °R	°C, °F	°C, °F
Measuring range	-50 to +250 °C	-50 to +275 °C	-50 to +300 °C
Accuracy	±0.5 °C (-30 to +99.9 °C)	±0.5 °C (-20 to +100 °C)	±0.5 °C (-30 to +99.9 °C)
Resolution	0.1 °C/°F/°R	0.1 °C	0.1 °C
Dimensions	265 x 48 x 19 mm (probe folded out)	145 x 38 x 195 mm	140 x 60 x 24.5 mm (without probe)
Weight	165 g	139 g	150 g without TopSafe case
Battery life	100 hrs (typically at 25 °C)	80 hrs	2,500 hrs (typically at 23 °C)
IP protection class	IP 65	IP 65	IP 67



# Non-contact and non-intrusive measurement with infrared and combi thermometers.

In Incoming Goods, non-contact infrared measurement is used especially often, as it provides fast results without damaging the product or the packaging. However, please note: An infrared thermometer measures only the surface temperature. In order to record the core temperature of foods, penetration measurements are necessary.

For this reason, the use of a combi instrument such as testo 104-IR is particularly convenient and efficient, since you combine both measurement methods – precise penetration measurement and fast IR measurement – in one instrument. It is also handy and can be safely stowed in any pocket.

Incoming goods



Products in comparison	 testo 104-IR	 testo 831
<b>General data</b>	<b>Infrared/penetration thermometer</b>	<b>Infrared thermometer</b>
	<ul style="list-style-type: none"> <li>• Illuminated display</li> <li>• Robust, metal folding joint with rigid measurement probe</li> <li>• Incl. batteries and calibration protocol</li> </ul>	<ul style="list-style-type: none"> <li>• 2-point laser marking</li> <li>• 30:1 lens</li> <li>• Protective leather case</li> <li>• Incl. belt holder, batteries and works calibration certificate</li> </ul>
Order number	0560 1040	0560 8316
Recommended selling price	XX.XX €	XX.XX €
<b>Technical data</b>		
Non-contact measurement of surface temperature	✓	✓
Penetration measurement possible	✓	✗
Hold function and min./max. value display	✓	✓
Two adjustable alarm limit values	✗	✓
Emission factor configurable	✓	✓
EN 13485-compliant	✓	✗
Measurement spot marking	2-point laser	2-point laser
Measurement parameter	°C, °F, °R	°C/°F
Measuring range (NTC, IR)	-50 to +250 °C / -30 to +250 °C	-30 to +210 °C
Accuracy (NTC, IR)	±0.5 °C (-30.0 to +99.9 °C)	±1.5 °C (-20 to +100 °C)
Resolution (NTC, IR)	0.1 °C	0.1 °C
Optics	10:1	30:1
Laser	2-point laser	2-point laser
Spectral range	8 to 14 µm	8 to 14 µm
Emissivity	0.1 to 1.0 adjustable	0.1 to 1.0 adjustable
Dimensions	281 x 48 x 21 mm (probe folded out)	190 x 75 x 38 mm
Weight	197 g (incl. battery)	200 g (incl. battery)
Battery life	10 h (at +25 °C)	15 hrs
IP protection class	IP 65	IP 30

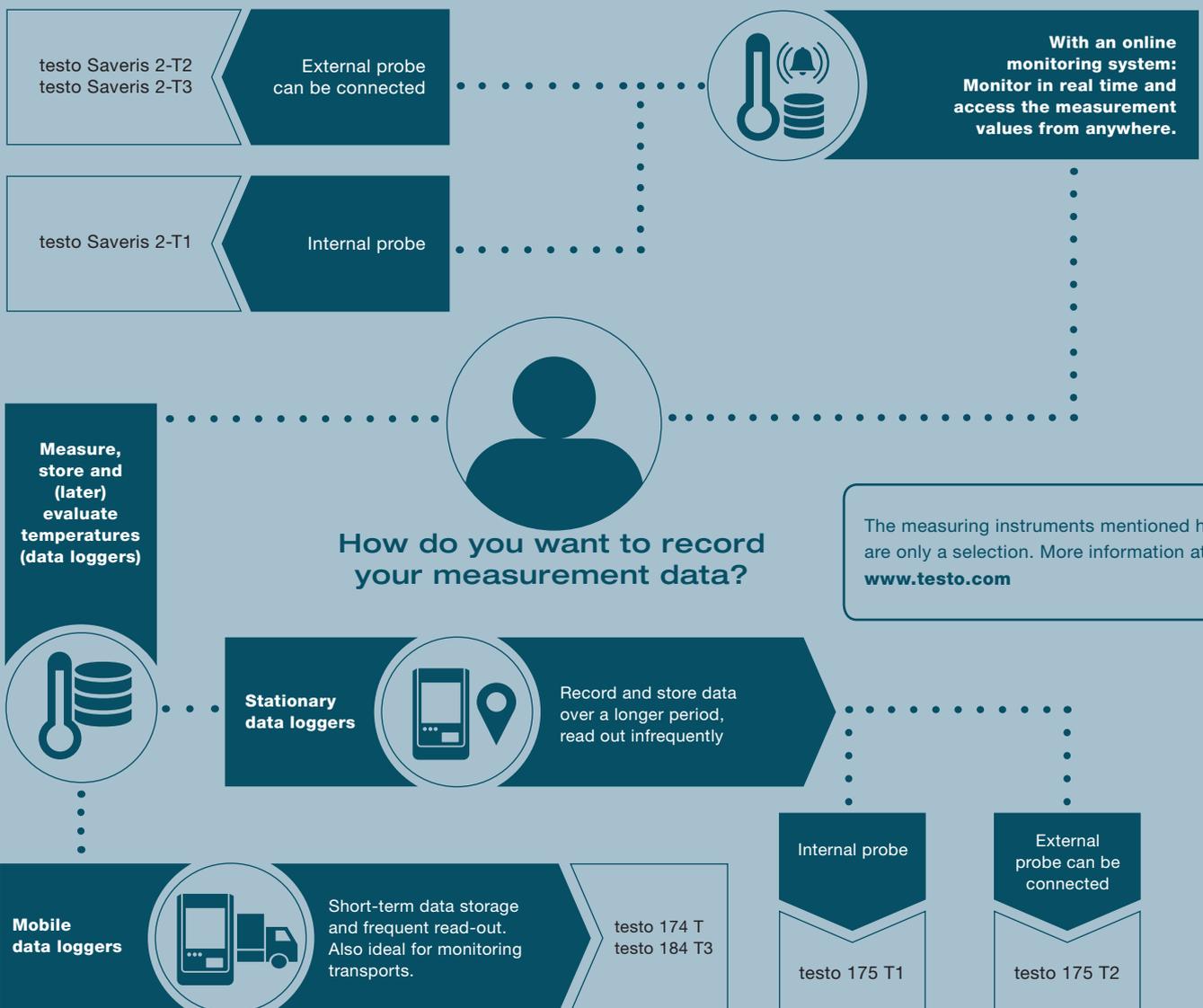


# Which data logger supports my work best?

Data loggers are used everywhere where measurement values are to be recorded regularly or over a longer period. In refrigerated rooms and storerooms, data loggers ensure adherence to the prescribed temperatures. Depending on the design, they store up to a million measurement values which can be read out via a PC. Crucial for use in the food sector is a robust, splash-proof construction so the loggers do not need to be de-installed before cleaning the rooms.

The use of an automated data monitoring system is even more convenient. It is worthwhile especially when several rooms or refrigeration units are to be monitored – and with its alarm function, provides a decisive additional level of security.

The overview graphic shows you which type of logger suits your requirements. You can find more detailed information on the individual loggers on the following pages.



# Measure temperatures continuously with data loggers.



Data loggers which monitor the ambient conditions in re-frigerated rooms and storerooms are often permanently installed. As a rule, they remain in position over a period of one to two years. In addition to a robust housing which can withstand cleaning with a water jet, a long battery life and a large measurement value store are important.

Depending on your requirements, you have the choice between data loggers of the compact and the premium class. The former are suitable above all for flexible measurement and frequent readout, while the premium models record and store measurement values for you for up to three years.

Storage facilities



Transport



## Products in comparison



testo 174 T



testo 175 T2



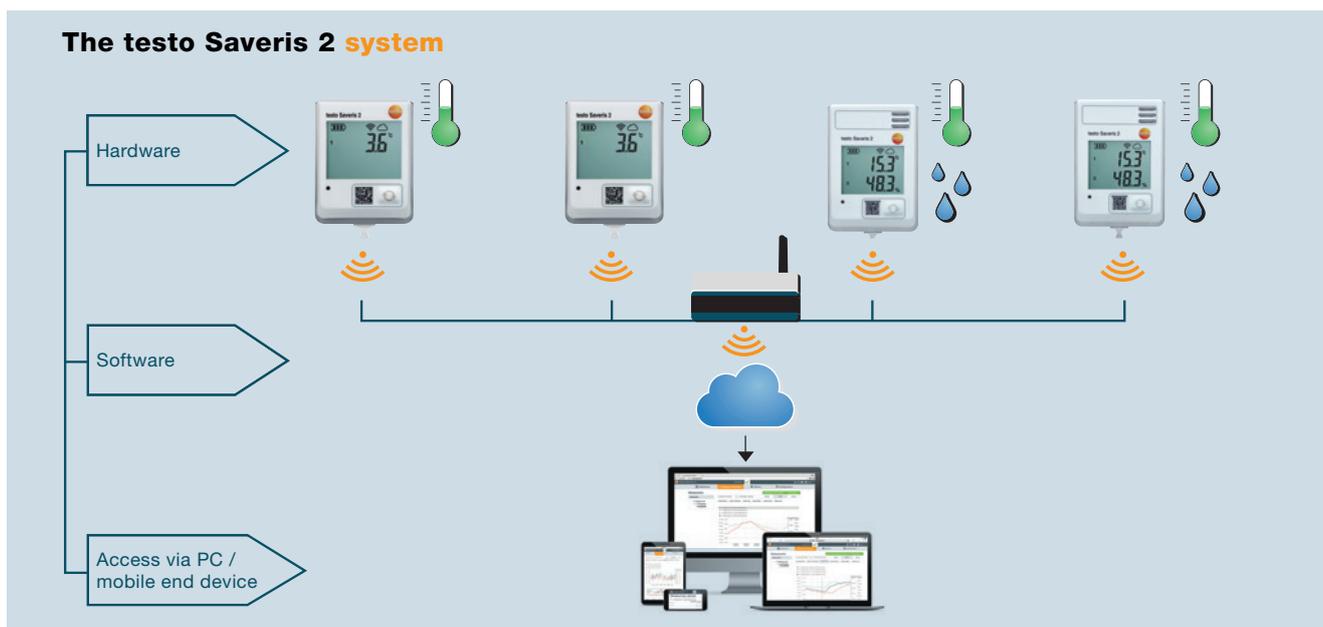
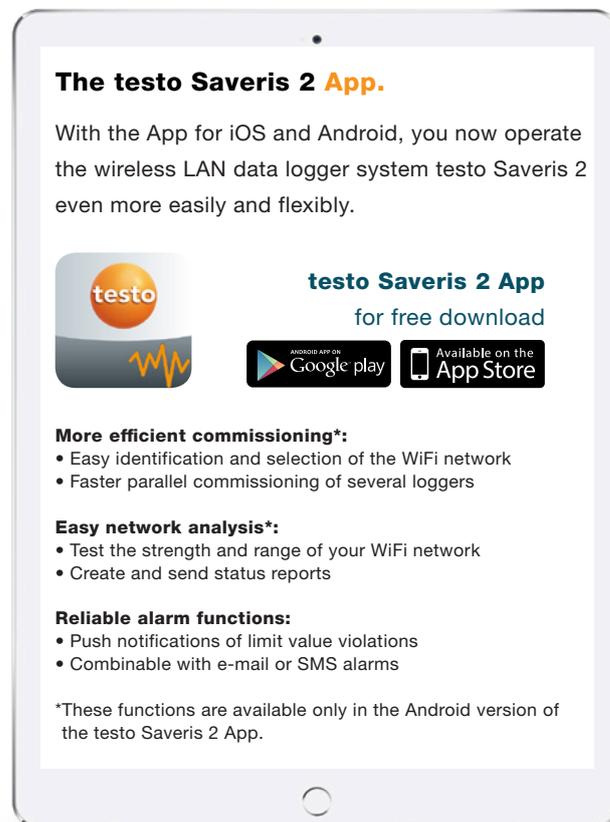
testo 184 T3

General data	Mini temperature data loggers	Temperature data logger	USB temperature data logger
 	<ul style="list-style-type: none"> <li>• 1-channel</li> <li>• Incl. wall bracket, battery (2 x CR 2032 Lithium) and calibration protocol</li> </ul>	<ul style="list-style-type: none"> <li>• 2-channel</li> <li>• With internal and external sensor connection( NTC)</li> <li>• Incl. wall bracket, lock, batteries and calibration protocol</li> </ul>	<ul style="list-style-type: none"> <li>• Unlimited operating time thanks to exchangeable battery</li> <li>• Available in packs of 1, 10 and 50 off</li> </ul>
Order number	0572 1560	0572 1752	0572 1843
Recommended selling price	XX.XX €	XX.XX €	XX.XX €
<b>Technical data</b>			
Easy-to-read display	✓	✓	✓
Long battery life	✗	✓	✗
Large measurement data memory	✗	✓	✗
Mobile readout/printout on site	✗	✓	✓
EN 12830-compliant	✓	✓	✓
Channels	1 x internal	1 x internal, 1 x external	1 x internal
Measuring range	-30 to 70 °C	-35 to +55 °C int. -40 to +120 °C ext.	-35 to +70 °C
Accuracy	±0.5 °C (-30 to +70 °C)	±0.5 °C (-35 to +55 °C) int. ±0.3 °C (-40 to +120 °C) ext.	±0.5 °C
Resolution	0.1 °C	0.1 °C	0.1 °C
Measurement rate	1 min to 24 h	10 sec to 24 h	1 min to 24 h
Memory capacity	16,000 readings	1 million measuring values	40,000 readings
Interfaces	USB hub	Mini USB, SD card slot	Mini USB
Dimensions	60 x 38 x 18.5 mm	89 x 53 x 27 mm	44 x 12 x 97 mm
Weight	35 g	130 g	45 g
Battery life (15 min meas. rate, +25 °C)	500 days	3 years	500 days
IP protection class	IP 65	IP 65	IP 67

# Everything under control. Anytime and anywhere. **With testo Saveris 2.**

The testo Saveris 2 system consists of two components: hardware and Cloud-based software. The hardware comprises a range of temperature and humidity loggers with a large probe portfolio. The Cloud-based software is available to you anytime and anywhere: simply call up [www.saveris.net](http://www.saveris.net) on your browser and get going. No software installation is necessary.

The commissioning of the data loggers is child's play and can be carried out either via the browser or via the testo Saveris 2 App. After the data loggers have been connected to your wireless LAN, they send the measurement data automatically to the Cloud database, where these can be really easily analyzed. The Testo Cloud offers a high standard of security and works according to national and international standards (e.g. PCI DSS, ISO 27001 and 95/46/EC). It enables you to view your measuring values at any time and from anywhere by PC, smartphone or tablet. In addition, you get an immediate alarm when there are limit value violations. With testo Saveris 2, you are sure to adhere to standards and regulations, optimize processes, ensure quality and increase your efficiency. Today's way to monitor air velocity & IAQ.



# Find the right **testo Saveris 2 WiFi data logger.**



testo Saveris 2 is a flexible wireless LAN data logger system which you assemble according to your needs, and can very easily integrate into your existing network. Simply select from a range of temperature and humidity loggers and an

even larger probe portfolio. These WiFi data loggers either have integrated sensors for temperature measurement, or external probes can be connected.

Storage facilities



Transport



**testo Saveris 2-T1**



**testo Saveris 2-T2**



**testo Saveris 2-T3**

**Products in comparison**

**General data**

**WiFi data logger**

**WiFi data logger**

**WiFi data logger**



- With display and internal NTC temperature sensor
- Incl. USB cable, wall bracket, batteries and calibration protocol
- Incl. free online Basic software

- With two connections for external NTC temperature probes or door contacts
- Incl. USB cable, wall bracket, batteries and calibration protocol
- Incl. free online Basic software

- With two connections for external TC temperature probes (types K, T, J)
- Incl. USB cable, wall bracket, batteries and calibration protocol
- Incl. free online Basic software

Order number

0572 2031

0572 2032

0572 2033

Recommended selling price

€XXX.XX

€XXX.XX

€XXX.XX

**Technical data**

Data transfer by wireless LAN



Call up and evaluate temperature data at any time online



Alarms by e-mail or SMS (optional)



External probes connectable (please order probes separately)



Cost-free online data store (Testo Cloud)



EN 12830-compliant



Channels

1 x NTC internal

2 x NTC or door contact external

2 x thermocouple type K / J / T external

Measurement parameter

°C

°C

°C

Measuring range

-30 to +50 °C

-50 to +150 °C

K: -195 to +1350 °C  
J: -100 to +750 °C  
T: -200 to +400 °C

Accuracy

±0.5 °C

±0.3 °C

±(0.5 + 0.5 % of m.v.) °C

Resolution

0.1 °C

0.1 °C

0.1 °C

Measurement rate

Depends on the Cloud licence / Basic: 15 min to 24 h / Advanced: 1 min to 24 h

Transmission interval

Depends on the Cloud licence / Basic: 15 min to 24 h / Advanced: 1 min to 24 h

Battery life

12 months (typical value, depending on the wireless LAN infrastructure)

IP protection class

IP 65

IP 65

IP 54

# Overview of order details.

## Measuring instruments for incoming goods.

Product description	Order no.	EUR
<b>testo 104</b> Folding thermometer with metal joint	0563 0104	XX.XX €
<b>testo 104-IR</b> Penetration infrared thermometer with metal folding joint	0560 1040	XX.XX €
<b>testo 105</b> One-hand thermometer with frozen goods measuring tip	0563 1054	XX.XX €

Product description	Order no.	EUR
<b>testo 108</b> Temperature measuring instrument	0563 1080	XX.XX €
<b>testo 831</b> Infrared thermometer	0560 8316	XX.XX €

## Data logger for monitoring temperature in storage and transport.

Product description	Order no.	EUR
<b>testo 174 T</b> Mini temperature data loggers	0572 1560	XX.XX €
<b>Kit variant testo 174 T</b> Mini temperature data logger (kit with USB readout unit)	0572 0561	XX.XX €

Product description	Order no.	EUR
<b>testo 175 T2</b> Temperature data logger	0572 1752	XX.XX €
<b>testo 184 T3</b> USB temperature data logger for transport monitoring	0572 1843	XX.XX €

## Data monitoring systems for monitoring temperature in storage and transport.

Product description	Order no.	EUR
<b>testo Saveris 2-T1</b> WiFi data logger with integrated NTC temperature probe	0572 2031	XX.XX €
<b>testo Saveris 2-T2</b> WiFi data logger for connectable external NTC temperature probes	0572 2032	XX.XX €
<b>NTC temperature probe</b> Connectable probes for testo Saveris 2-T2	0572 1001	XX.XX €
<b>Door contact connection cable</b> 2-wire connection cable with mini DIN plug for testo Saveris 2-T2	0572 2152	XX.XX €

Product description	Order no.	EUR
<b>testo Saveris 2-T3</b> WiFi data logger with 2 connections for TC temperature probes	0572 2033	XX.XX €
<b>Batteries for testo Saveris 2 below -10 °C</b> 4 x Energizer L91 Photo Lithium	0515 0572	XX.XX €
<b>Magnetic adapter for testo Saveris 2 wall bracket</b> for attachment to magnetic surfaces	0572 1001	XX.XX €

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Subject to change, including technical modifications.  
All prices net, plus shipping costs and VAT, valid from 01/01/2018.  
Payment 30 days net, 14 days 2% discount.