testo 945 · testo 946

Instruction manual

en

Contents

CE According to the conformity certificate, the instruments fulfill **2004/108/EEC** guidelines.

Ó 1999 Copyright Testo AG
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Contents

Foreword

Dear Customer

You have made the right decision by choosing a measuring instrument from Testo. Every year, thousands of customers purchase our high-quality products. There are seven good reasons for this.

1) We offer value for money. Reliable quality at the right price.

2) Considerably longer guarantee periods of up to 3 years - depending on the instrument.

3) With over 40 years of specialist experience we are optimally equipped to solve your measuring tasks.

4) Our high quality standards are confirmed by ISO 9001 certification.

5) It goes without saying that our instruments bear the CE mark required by the EU.

6) Calibration certificates for all relevant parameters.

7) Reliable service.

Please read prior to measurement

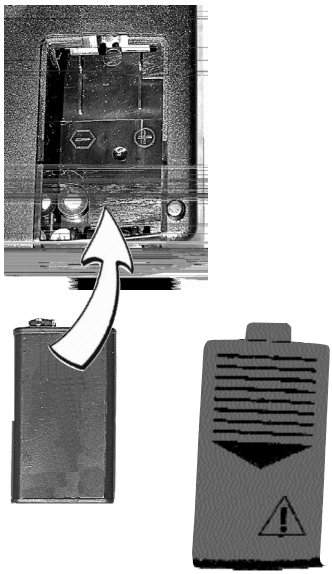
Do not measure on live parts.

Observe storage and transport temperature and max. operating temperature (e.g. protect measuring instrument from direct sunlight)

When changing configurations (e.g. changing the probe), the instrument should be switched off because the values specific to the probe can only be read when the instrument is switched on.
The V24 cable (PC connection) can be inserted anytime.
A simultaneous print command is not possible if the PC cable is connected.

Opening the instrument, inexpert handling and use of force cancels your warranty.

Putting in the batteries



9V block battery is included in delivery.

Open the battery compartment at the back of the instrument.
Put in block battery. **Observe polarisation.**
Close battery compartment.

Refer to “Power supply” Chapter for more information on alternative power supply, charge, battery quality, charging procedure.

Observe instrument configuration when using rechargeable batteries.

A description of the instrument and an overview of the controls guarantee a quick introduction.

Note: *The measuring instrument must be switched off before a probe is connected.*

You will receive up-to-date readings once a probe is inserted and the measuring instrument is switched on. However, you will still need to update or define the data in the instrument:

i

Instrument configuration

- ⇨ Date/Time:
- ⇨ Auto Off:
- ⇨ Units:
- ⇨ Specify probe type in socket 1
  (type K, type T, type S thermocouple)

Some things can only be set via PC software (See Ordering data):

- ⇨ Location name or product name
  (8 characters, e.g. oven, pizza etc.)
- ⇨ Log head (24 characters), e.g. your company name and the person responsible.
  This is also printed when the readings are printed.
- ⇨ Lock changes to limit values.

Keypad/Connection assignment

Keypad:

On/Off

Prints

Confirms menu setting/ executes function

Saves

Return to current measurement/ location selection

Arrow buttons move the cursor

Hold Max Min Mean

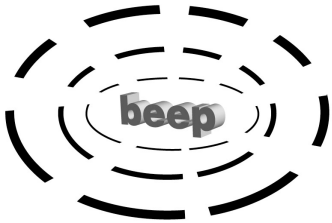
Connection assignment:

Socket 1:
– Thermocouple probes (type K, T, S)

Socket 2:
– NTC probes
– Pt100 probes

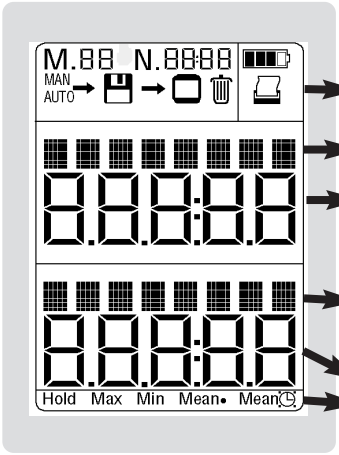
RS232: PC connection

12V: Mains connection



Beeper signal as signal value alarm

Display



The symbols on the top line are explained below

Name of input socket and parameter

Displays reading in line 1

Name of input socket and parameter

If only one probe is connected the programmed location or product name is shown.

Displays reading in line 2

Displays measurement functions

Explanation of symbols:

M. 00

Counter for the log number in the memory.
When saving manually: number of a measurement saved.
When saving automatically: number of a measurement series.
This counter is needed in order to be able to find single logs or a measurement series when reading out the memory.

N. 0000

Counter for saving a measurement cycle (required only for automatic saving). The measurement cycle in a measurement series can be found.

MAN

Manual saving of a single measurement by pressing the save button.

AUTO

Automatic saving program has been set up.
Saving is activated by pressing the button.

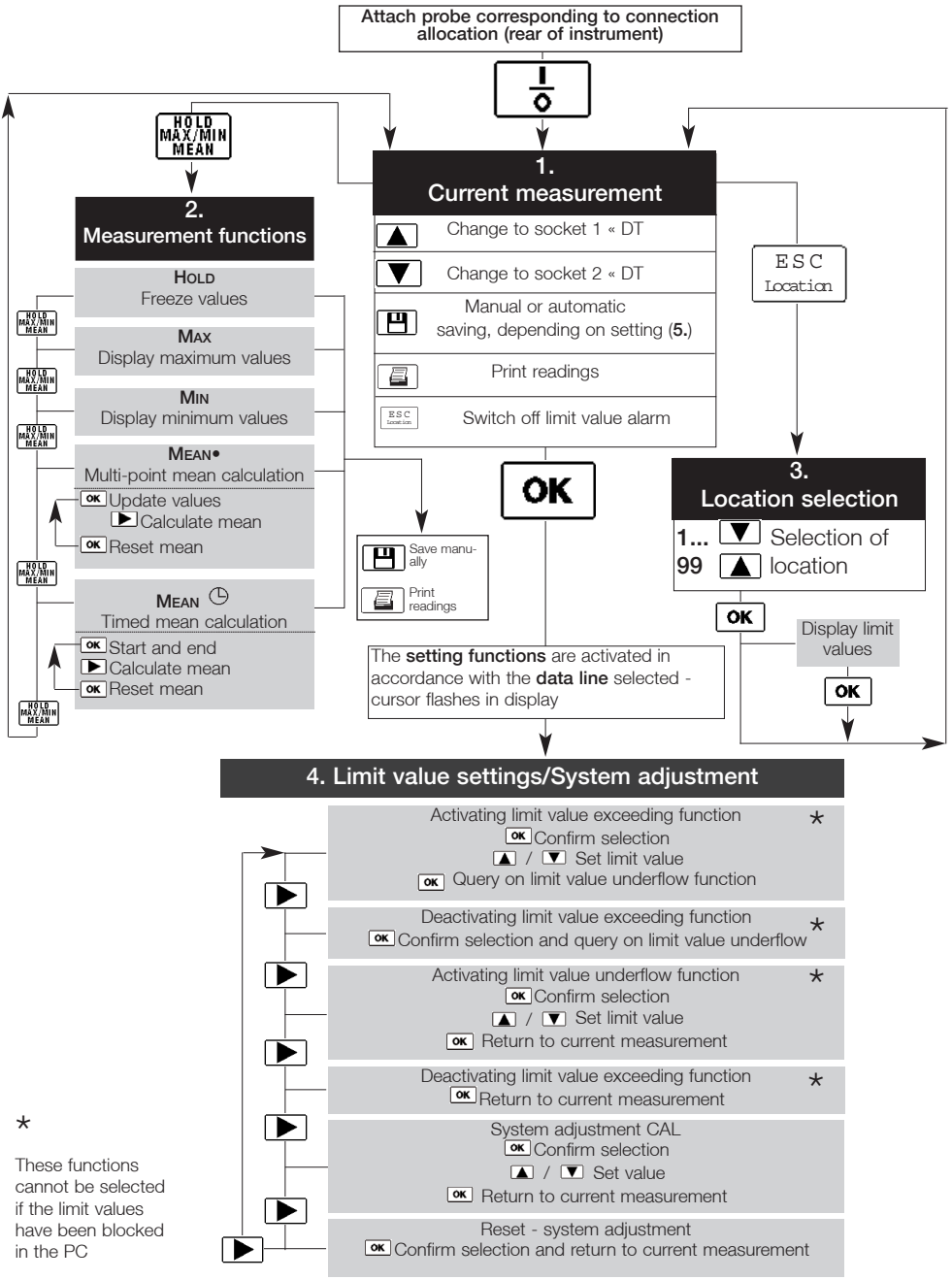
Symbol for reading contents of memory on display.

Symbol for deleting memory contents

If this symbol appears, the printing function is activated.
The symbol flashes while data is being transmitted. You can print on the desktop printer by pressing the print button.

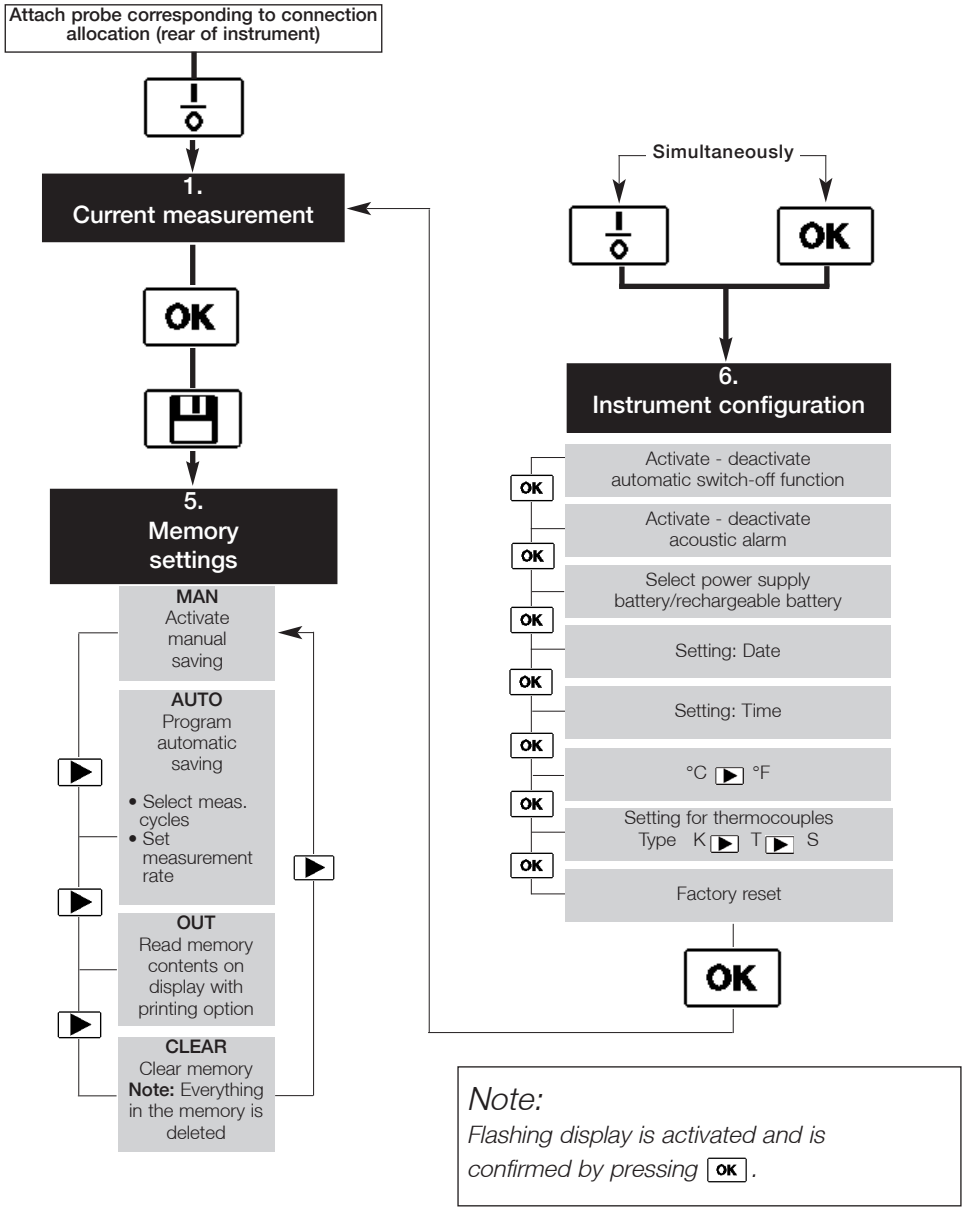
Shows capacity of battery and rechargeable battery.

If the inner segment no longer appears (symbol flashes), the battery has to be changed or the rechargeable battery has to be recharged. The instrument switches itself off automatically after 1 minute.



*

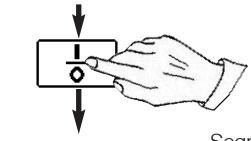
These functions cannot be selected if the limit values have been blocked in the PC



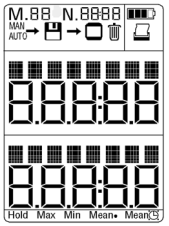
Note:
Flashing display is activated and is confirmed by pressing OK.

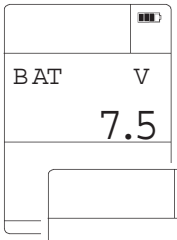
Switching on / Displaying differential temperature/ Saving / Printing

Connect measurement probes

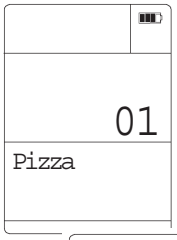


Segment test

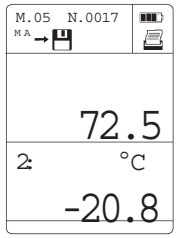




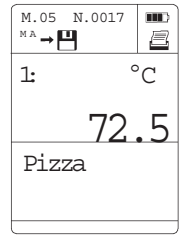
Battery / rech. battery power



Location



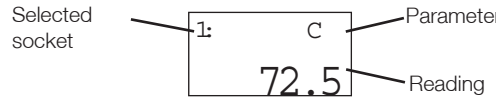
or:



Current measurement with 2 probes

Current measurement with 1 probe

Example of a data display:



Two probes attached:

Press the ▲ ▼ buttons to go back and forth between the reading lines.
If the cursor is on the first line, scroll with the ▲ button between the probe reading and the differential temperature.
If the cursor is on the second line, scroll with the ▼ button between the probe reading and the differential temperature.
The differential temperature is only displayed in this menu (not with measurement functions). It is not saved to save space in the memory.

It is possible to activate the following functions during measuring at the touch of a button.

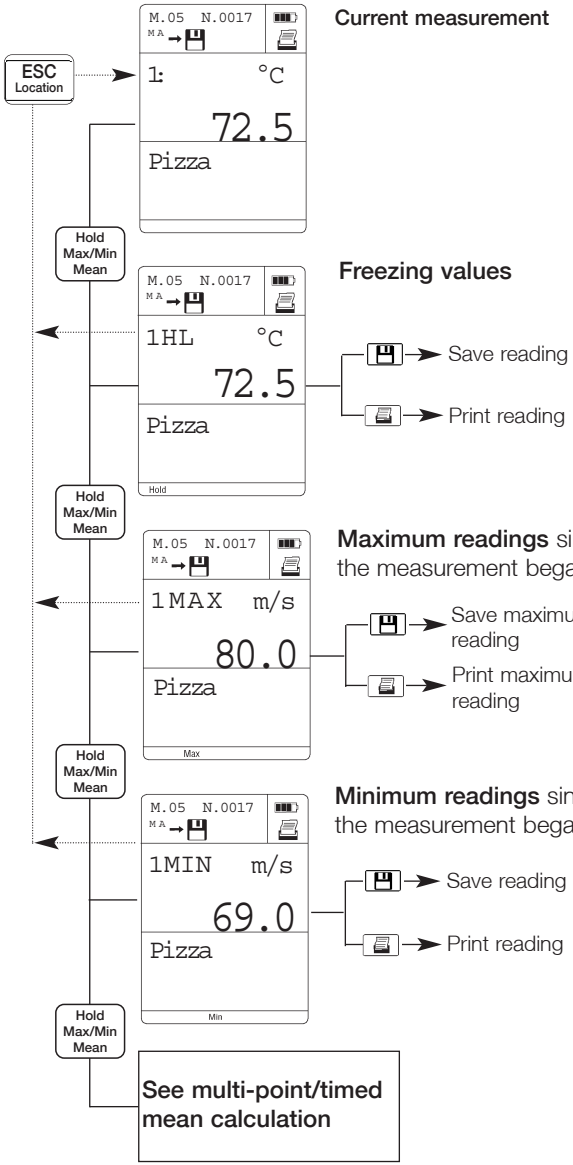
Save readings
Manual or automatic saving is determined by the save setting (Chapter 5).

Print readings.

Note on printing

Distance of 0.5 m should not be exceeded in order to guarantee problem-free data transfer.
Objects between instrument and printer prevent the data from being transferred.
Please observe notes in the Instruction manual on the printer.

Freezing values, maximum readings, minimum readings



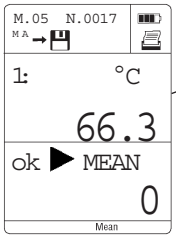
Multi-point mean calculation **Mean•/**Timed mean calculation **Mean** ⏱

Multi-point mean calculation

Applies only to parameter on the first line

Current measurement

4 x Hold Max/Min Mean

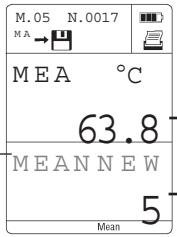


1st line

▲ Socket required/Select parameter.

OK Copy values.

▶ Calculate mean.



Mean

Number of values logged

OK → Reset mean, i.e. new mean calculation is possible.

💾 → Save mean.

🖶 → Print mean.

ESC Location → Return to current measurement.

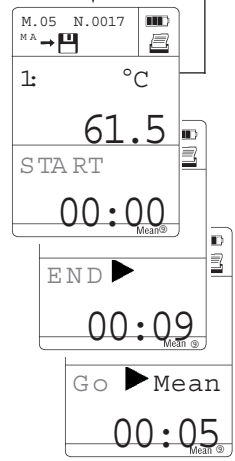
Timed mean calculation

Only for parameter on 1st line

Current measurement

5 x Hold Max/Min Mean

1st line



▲ Select required reading/socket.

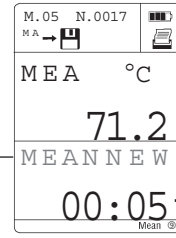
OK Start timed mean calculation.

OK Finish timed mean calculation.

OK Continue timed mean calculation

or

▶ Calculate mean.



Mean

Duration of mean calculation

OK → New mean calculation is possible.

💾 → Save mean.

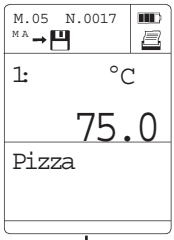
🖶 → Print mean.

ESC Location or HOLD MAX/MIN MEAN → Return to current measurement

Note on saved or printed logs:

1. The log of a **multi-point** mean calculation contains single values, max. value, min. value and mean value.

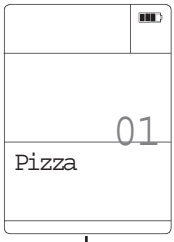
2. The log of a **timed** mean calculation contains max. value, min. value and mean value.



Current measurement

The location names Location 1 to 99 are specified by the factory. You can load your own location names (8 characters) onto your instrument using PC software.
In the FOOD sector, it is recommended that the product names are entered, e.g. Pizza, Hamburger, Ice cream, Oven....

ESC Location



▲/▼ Selection of location.

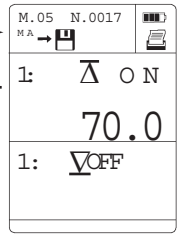
OK ⇨ Confirm selection and return to measurement.

OK

or :
From now on all measured data which is saved or printed is linked to the selected location or product names.

Return to current measurement

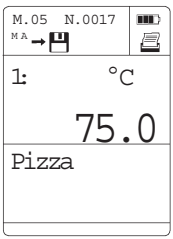
OK



This display only appears if a limit value for this location has already been activated.

ESC Location

Limit value setting (See Chapter 4).

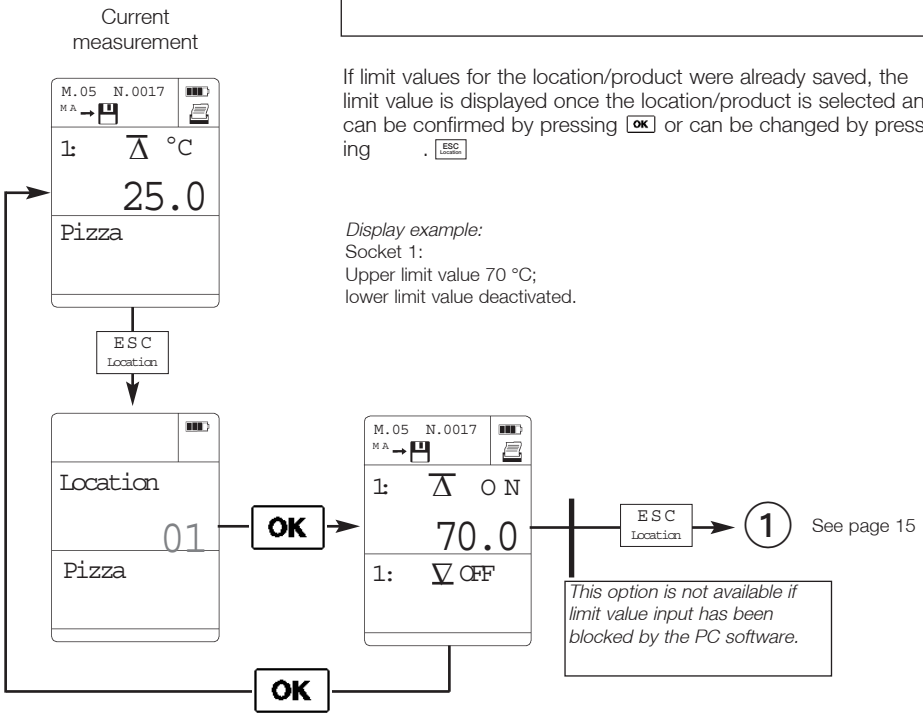


Notes on limit value monitoring:

It is possible to save limit values for every location or product name, to activate or deactivate them. The limit values remain saved in the instrument even if power supply is not available.

It is only possible to monitor limit values at one socket at any one time. If 2 probes are connected and limit value monitoring is to be changed from one socket to the other, the limit values from the first socket must be deactivated first.

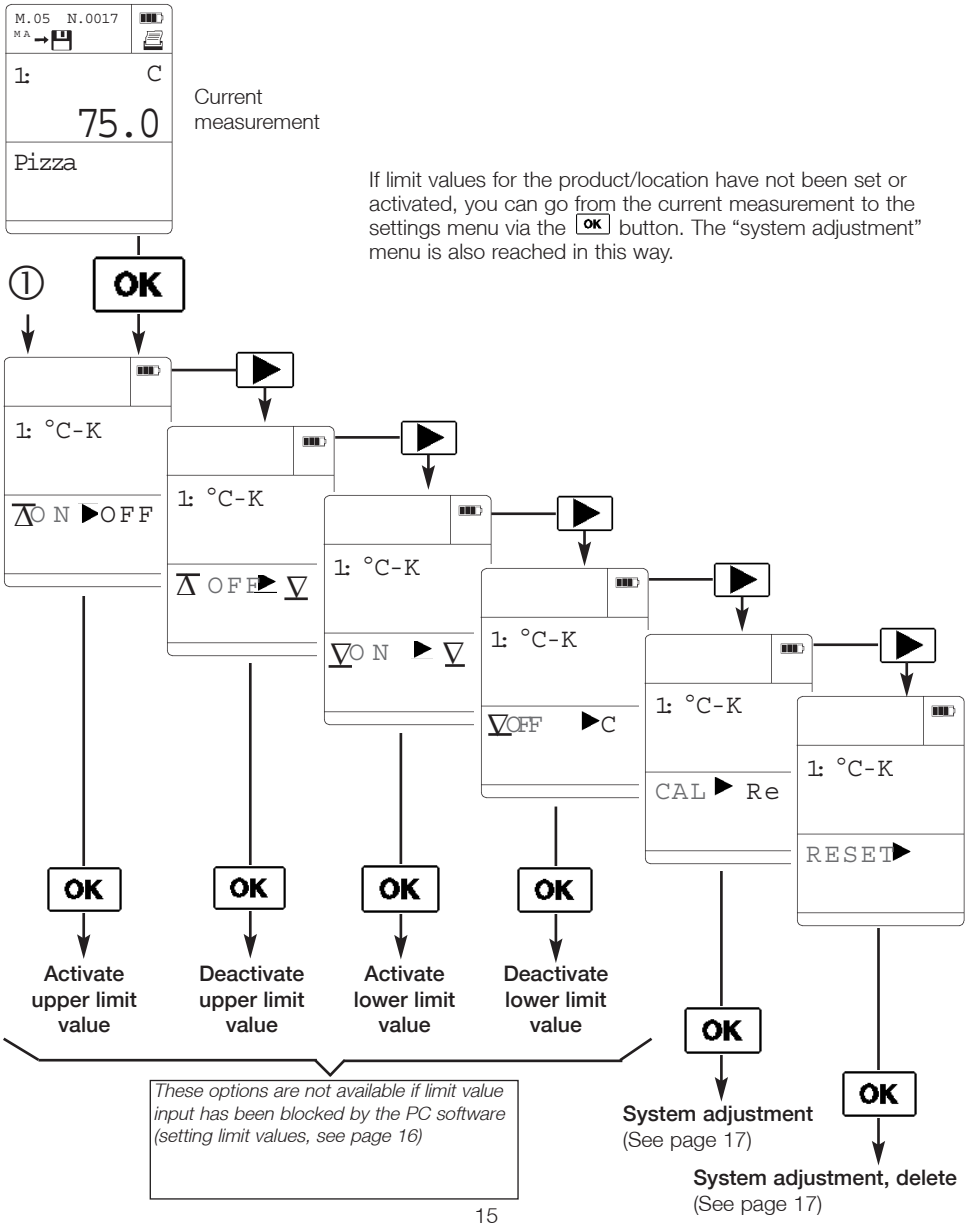
A good solution is to specify the limit values using PC software which apply to this product when entering the location/product names. You can simultaneously specify in which socket the limit values are to be activated.
Changes to the limit values in the instrument can also be blocked via PC software.



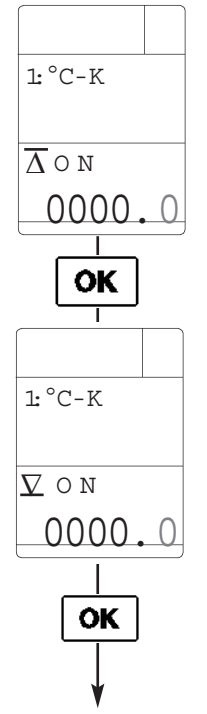
If limit values for the location/product were already saved, the limit value is displayed once the location/product is selected and can be confirmed by pressing OK or can be changed by pressing . ESC Location

Display example:
Socket 1:
Upper limit value 70 °C;
lower limit value deactivated.

Overview of settings menu



Activate limit value



Upper limit value is activated (See page 15)**:**

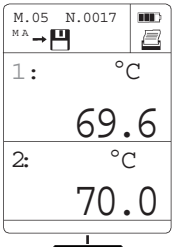
Carry out setting at blinking point by pressing ▲ or ▼.
▶ to go to next point.

Lower limit value is activated (See page 15)**:**

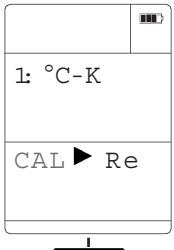
Carry out setting at blinking point by pressing ▲ or ▼.
▶ to go to next point.

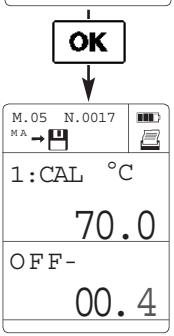
Limit value alarm!!!!
If the limit value if exceeded during a measurement, a beeper sounds or a signal flashes (reading and limit value symbol flash)
Switch off alarm by pressing ESC.

System adjustment



Current measurement





System adjustment (please also refer to Overview on page 15)**: testo 945/946** and probes can be adjusted to the "zero error adjustment point". The probe characteristic saved in the measuring instrument is offset at a measurement point. This is simply entered in the instrument at the touch of a button. The following serves as a reference for offset calculations:

- A Testo calibration certificate or
- An accurate Pt100 probe
  An accurate Pt100 probe measures the temperature at socket 2; an inaccurate but quick probe measures in the same substance; the offset correction must be such that both probes show the same value.

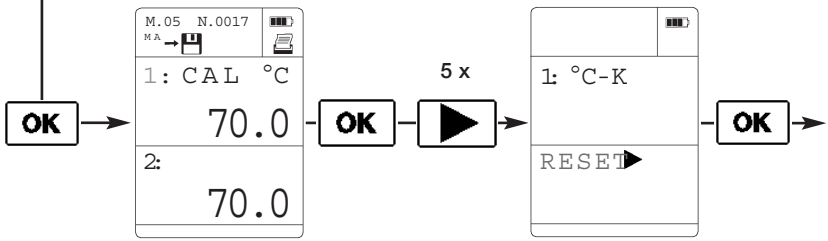
Example: The reference probe in socket 2 measures 70.0 °C.in the vat
The probe in socket 1 measures 69.6 °C.
Correct by 00.4.

The respective flashing position can be changed using the ▶ ▲ ▼ buttons. The OFFSET setting is saved by pressing OK.

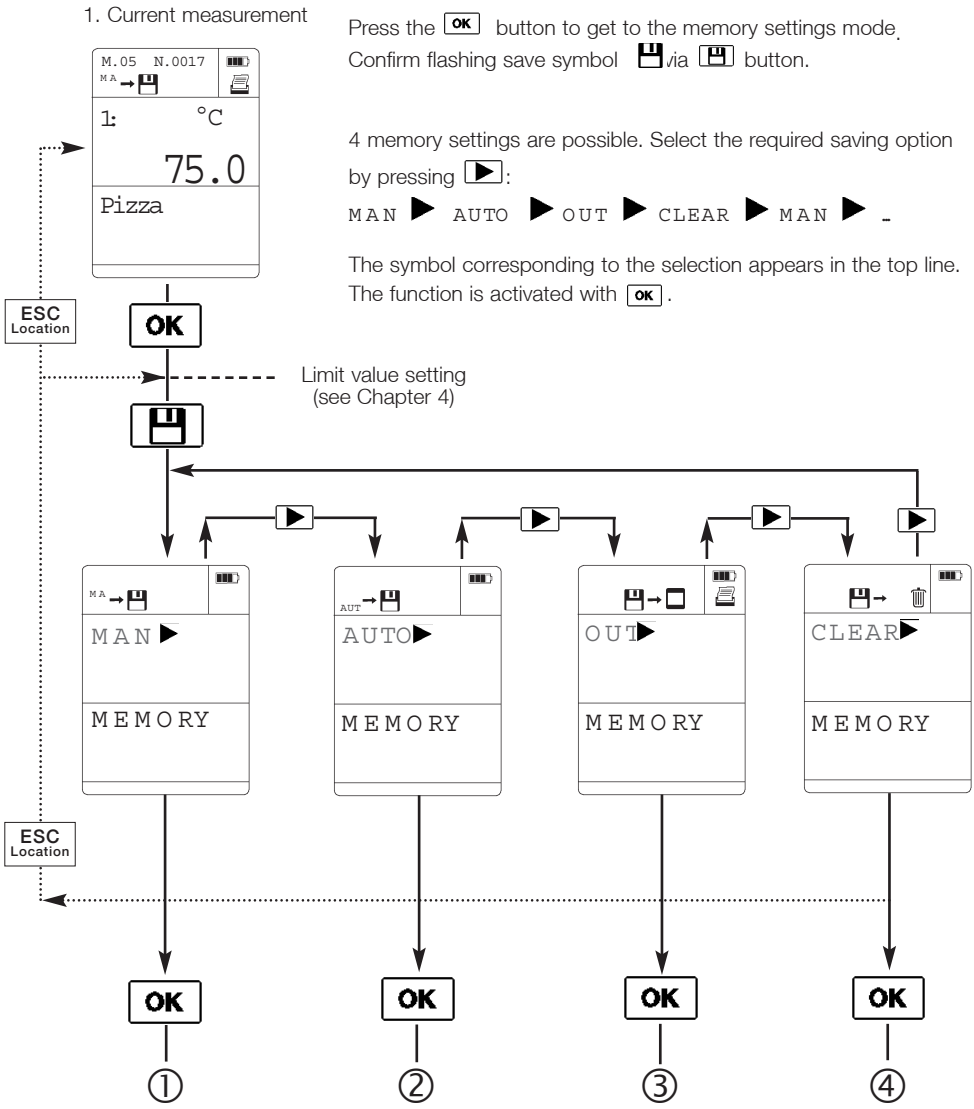
Note:
OFFSET applies to the respective socket input (socket 1 in example) and is not saved in the probe. The OFFSET value is displayed or printed when switching on, saving or printing.

The OFFSET setting does not refer to product / location.

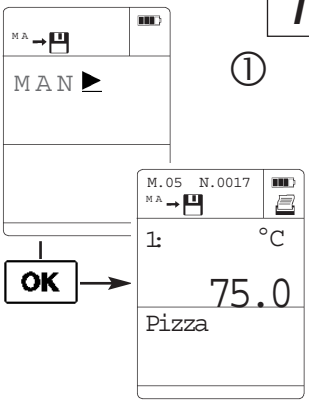
Delete system adjustment "RESET": OFFSET is reset at 00.0.



Overview


1. Current measurement
M.05 N.0017
MA
1: °C
75.0
Pizza
Press the OK button to get to the memory settings mode.
Confirm flashing save symbol via button.
4 memory settings are possible. Select the required saving option by pressing ▶:
MAN ▶ AUTO ▶ OUT ▶ CLEAR ▶ MAN ▶ _
The symbol corresponding to the selection appears in the top line.
The function is activated with OK.
ESC Location
OK
Limit value setting
(see Chapter 4)
MAN ▶
MEMORY
AUTO ▶
MEMORY
OUT ▶
MEMORY
CLEAR ▶
MEMORY
ESC Location
OK
OK
OK
OK
①
②
③
④

Manual / Automatic saving



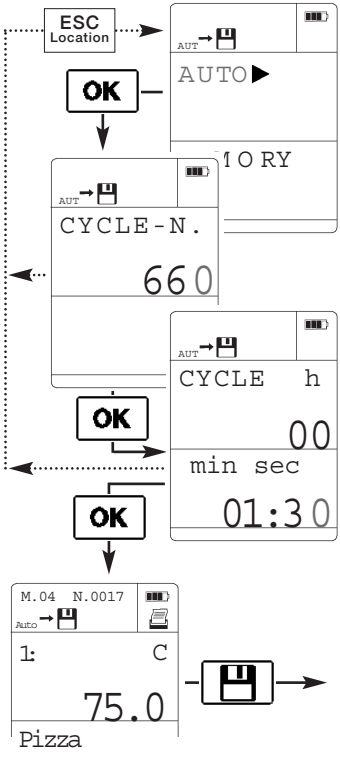
Press the OK button to get to the memory settings mode.
Confirm flashing save symbol via button.

MAN

Manual saving:

Each time is pressed a log of the measurement is saved in the instrument and includes measured values, location, date and time. The counter in the top left corner of the display shows the number of logs saved for this location.

Saving a **log with timed or multi-point mean calculation:**
The log includes MIN value, MAX value and mean of the measurement and also single values in multi-point mean calculations.



AUTO

Automatic saving:

When this saving function is set, the instrument automatically accepts the measured values at fixed intervals and saves them (=logger operation).
The number of measuring cycles (CYCLE-N.) to be saved and intervals (CYCLE) have to be programmed:

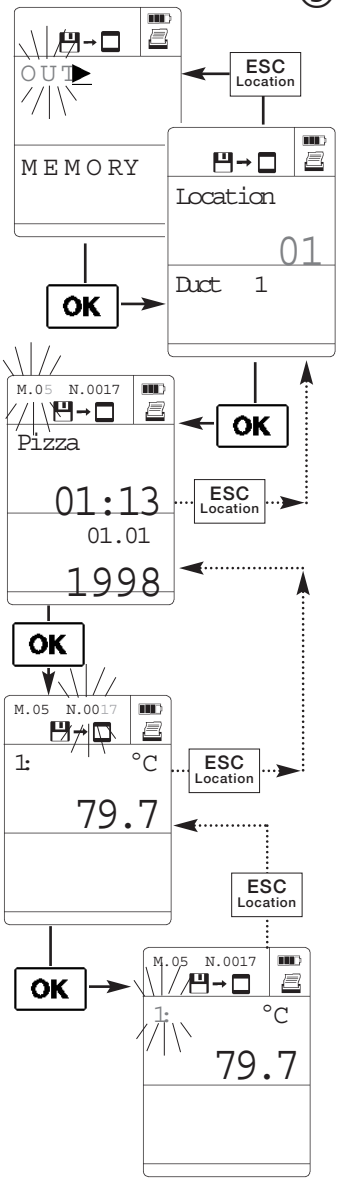
1. Cycle-N.
The instrument automatically offers the maximum possible number of measuring cycles. Set required number using
▲ / ▼ / ▶.
Confirm set value by pressing OK.

2. Cycle
Select interval in which the measured values are to be saved. The blinking position can be changed using ▶ ▲ ▼.
Confirm set value by pressing OK.

Automatic saving is started by pressing . The symbol flashes until the programmed measurement series is accepted.

ESC Cancel saving procedure.
Starts automatic saving again. An additional measurement series is added.

Reading or printing memory



③ *i*

Press the OK button to access the memory settings mode. Confirm flashing save symbol 💾 via the 💾 button.
Cancel printout by pressing the ⏻ button.

OUT

1. Reading out or printing memory contents:

If the "OUT" display is flashing and the 🖶 button is pressed, printing of the complete memory contents is started. Cancel printout by pressing the ⏻ button.

2. Selecting the location:

If OK is activated selection options appear in the display to select the required location. Select location by pressing ▲ ▼.
If printing is activated by pressing 🖶 at this point, **all** of the logs (measurement series and cycles) for this location are printed.
Cancel printout by pressing the ⏻ button.

3. Selecting the log:

Confirm the location selected above by pressing OK.
The M.0x counter flashes in the display.
Select the log no. by pressing ▲ ▼.
🖶 activates a printout of the selected measurement log.
Press OK to display the values measured.

Cancel printout by pressing the ⏻ button

4. Selecting the measurement cycle: (only possible if a measurement log consists of a measurement series)**:**

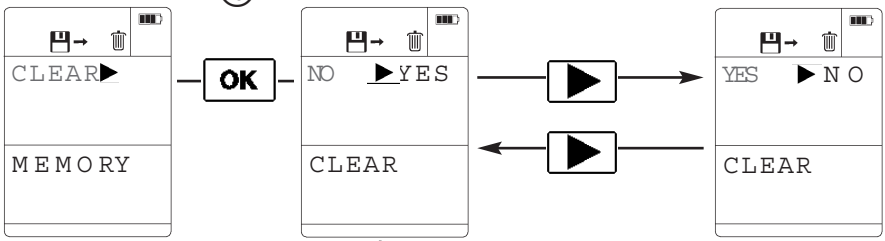
Confirm the measurement log selected above by pressing OK.
The N.0x counter flashes in the display.
Select the measurement cycle by pressing ▲ ▼.
🖶 activates a printout of the selected measurement cycle.

The ESC Location button enables you to go back one step.

Clearing memory contents/ Sample printouts

i Press the OK button to access the memory settings mode. Confirm flashing save symbol 💾 via the 💾 button.

④ CLEAR **Clearing memory:**



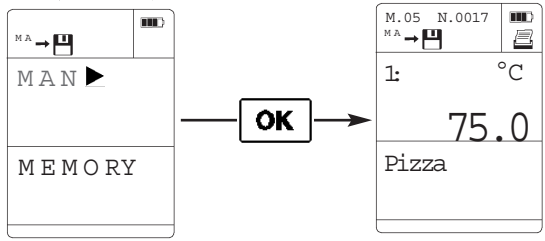
Memory is **not** cleared.

OK

Memory is **cleared completely.**

OK

Current measurement



Printout of automatic saving

Header — Smith Ltd.
Date of printout — 31.08.1998 11:27:32
Location — Pizza

Log — M.05
Start of saving — 31.08.1998 11:26:59

Save — cycle 00:00:02

1: C

01	65.3
02	65.2
03	65.0
04	69.0
05	↑ 70.5
06	↑ 71.0
07	69.5
08	67.5
09	63.8

Exceeding of identification

Info :

Set limit value

Limit ↑ : 70.0 C

Printout of manual saving:

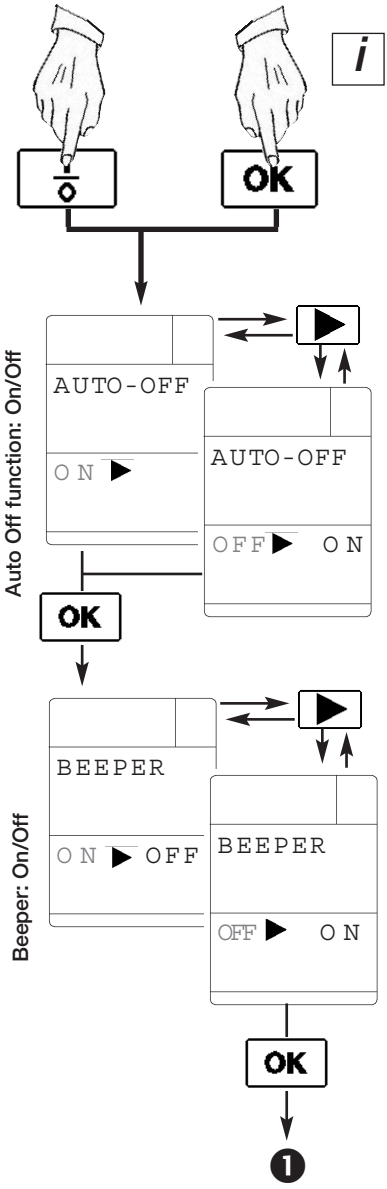
```
Smith Ltd.
31.08.1998  11:26:05
Pizza

M.01
31.08.1998  11:20:05

1:     ↑    72.5     C


Info :

Limit ↑ :  70.0   C
```



The ESC Location button enables you to change to the current measurement from every menu item.

The OK button has to be kept pressed for approx. 2 seconds when switching on the instrument (⏻ button).

The blinking position can be changed by pressing ▶ ▲ ▼ or confirmed by pressing OK.

Power save function
Auto OFF function is switched on **("ON")**

If a button has not been pressed in the last 5 minutes or there is no communication with the PC, the instrument switches off automatically.

Exceptions:
- the instrument does not switch off if the mains unit is plugged in
- the function is deactivated during timed and multi-point mean calculation
- Automatic saving mode
  The function is only activated if saving cycles >1 min are programmed.
- In the case of an activated function (cycle >1 min) the instrument switches itself on at the measurement time and switches off again. This also occurs if the instrument is switched off via the ⏻ button after the saving program has been activated.

Beeper: ON/OFF

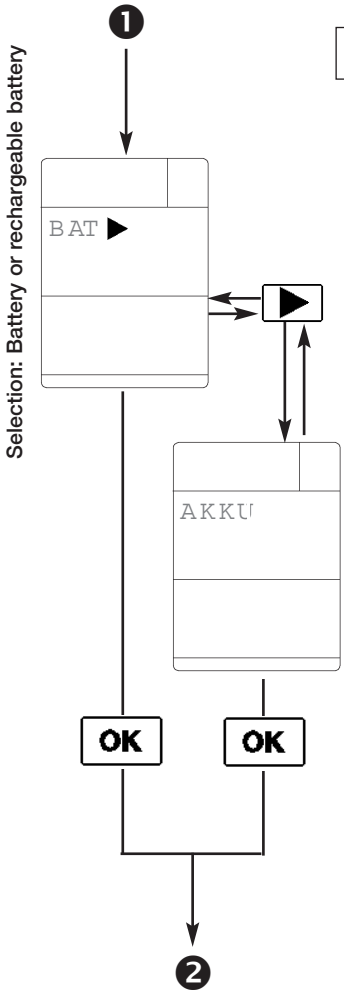
Important:

The instrument must be set at battery or rechargeable battery operation.

Incorrect instrument setting
- Rechargeable battery operation is set and battery is put in:
  If the mains unit is connected and the charging procedure is confirmed:

  ⇨ ***Risk of explosion!!!!***
- Battery operation is set and rechargeable battery is put in:
  Rechargeable battery will **not** be charged.

Power supply

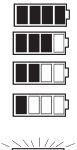


i **The ESC Location button enables you to change to the current measurement from every menu item.**

Battery operation with 9 V block battery, alkali manganese IEC 6LR61.
Parallel power supply is possible with mains unit without damaging batteries.
Rechargeable battery operation using Testo rechargeable battery (Part no. 0515.0025), Type: Ni-MH IEC 6F22.
If the **rechargeable battery is empty**: Parallel power supply and simultaneous recharging of the battery in the instrument with mains unit.
Connect mains unit to **recharge battery**. Query as to whether rechargable battery should be recharged.
Has a rechargeable battery or battery been put in? **Check!**
There is a risk of explosion if batteries have been put in! Select "NO" in this case.
If a rechargeable battery is inside confirm Charge "Yes" with OK.

The instrument can be switched off if no measurement is taking place. Recharging takes approximately 6 hours.
Correct battery recharging in the instrument via the mains unit can only be guaranteed if the above mentioned Testo rechargeable batteries are used. If other rechargeable battery types are used, recharging will have to be carried out by an external recharger.

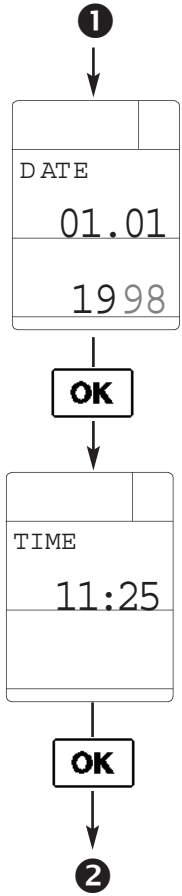
Note:
The instrument should be switched off before changing the battery/rechargeable battery or when operating using mains unit without rechargeable battery and battery.
If the battery/rechargeable battery is removed, the instrument retains set values (date/time) and memory contents for approx. 10 minutes. The data is lost after 10 minutes.
The capacity of the battery/rechargeable battery is shown in the display:



100 %
75 %
50 %
25 % (if the last segment is flashing the battery/ rechargeable battery is almost empty)
0 % (change battery/recharge rechargeable battery). Instrument switches off after 1 min

Operation via mains unit (Part no. 0554.0088):
Insert mains unit in the mains unit socket of the instrument (see connection assignment).

Setting date/time



i The ESC Location button enables you to change to the current measurement from every menu item.

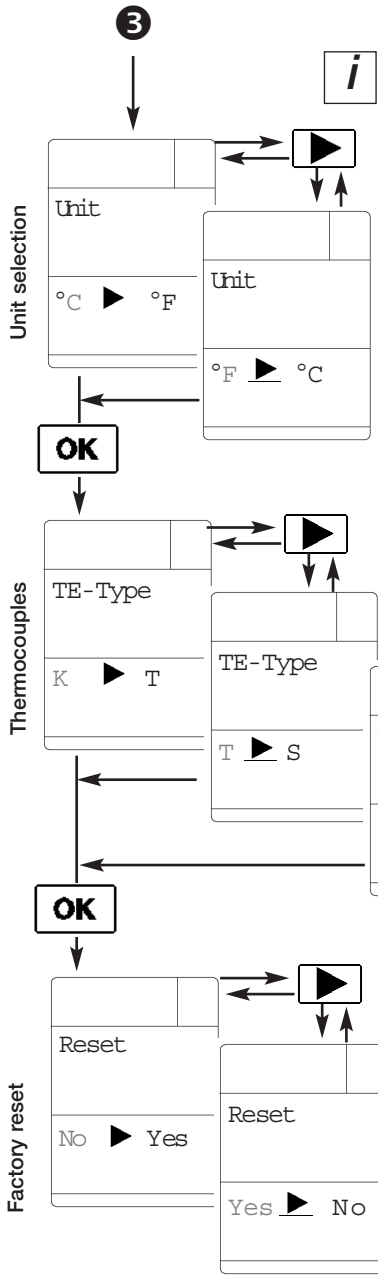
Setting date

The flashing position in the display can be set
- ▲/▼ = scroll/ ▶ = next position -

Setting the time

The blinking position in the display can be set
- ▲/▼ = scroll/ ▶ = next position -

Unit selection / Factory reset



The ESC Location button enables you to change to the current measurement from every menu item.

C ▶ F
The selected parameter flashes.

▶ → Selects
OK Confirms the selection.

Thermocouple type

The instrument does not automatically recognise the thermocouple connected to socket 1. Set type.

K ▶ T ▶ S
The selected parameter flashes.

▶ → Selects
OK Confirms the selection.

Factory reset

Factory reset (confirm with “Yes”) resets all of the settings in the instrument configuration to the factory settings (with the exception of date/time).
OK confirms the selection and switches to the display of the current measurement.

Error message	Cause	Remedy
Memory full	The memory is full	Clear memory
— — —	Measuring range has not been reached	The probe is not suitable for this measurement task. The measured values are outside the allowed measuring range. Remove probe from location.
_|_ — —	Measuring range has been exceeded	The probe is not suitable for this measurement task. The measured values are outside the allowed measuring range. Remove probe from location.
— — — — —	**1st possibilty** Measuring range has been exceeded or has not been reached range.	Some probes cannot differentiate between not reaching or not exceeding a measuring Remove probe from measurement location. The probe is not suitable for this measuring task. The measured values are outside the measuring range allowed.
	2nd possibility Probe is not connected or is defect	Check if the probe is connected to the right socket and that the plug has been pushed in far enough. Turn instrument on and off again. If the error message returns, please contact your nearest Testo service point.

If we were unable to answer your question, please contact your distributor or Testo Customer Service. You will find contact details in the Warranty booklet or in Internet at *www.testo.com*.

Technical data

Memory space:	Up 130 measurement logs with one reading or 1 measurement log with 3000 readings
Power supply: **Alternative:**	Battery / rechargeable batt. 12 V mains unit Battery recharging in instr.
Probe : **connection**	Socket 1: Thermocouple probe (Type T/K/S) Socket 2: NTC probe, Pt100 probe
Typical battery-times:	40 - 45 h (alkali manganese) Reduce the hour times by a factor of 5 if a 9V battery is used.
Operating temperature:	0 to +50 °C
Storage temperature:	-20 to +70 °C
Weight:	Approx. 255 g incl. batteries
Other features:	- RS232 interface for data management (electrically isolated)

Temperature measurement

Type K (NiCr-Ni)
Measuring range: -200 to +1370 °C

Accuracy* at 22 °C:	±0.3 °C or ±0.5 % of reading (the larger value applies)
System accuracy:**	Up to ±1.8 °C
Additional error over operating temperature range:	±0.2 °C
Resolution:	0.1 °C

Type T (Cu-CuNi)
Measuring range: -75 to +400 °C

Accuracy* at 22 °C:	±0.3 °C or ±0.5 % of reading (the larger value applies))
System-accuracy:**	Up to ±0.5 °C
Additional error over operating temperature range:	±0.2 °C
Resolution:	0.1 °C

NTC
Measuring range: -50 to +150 °C

Accuracy*:	±0.2 °C (-25 to +74.9 °C) ±0.4 °C (+75 to +99.9 °C) ±0.5 % of reading (remaining range)
System accuracy:**	Up to ±0.4 °C
Resolution:	0.1 °C

Pt100
Measuring range: -200 to +800 °C

Accuracy*:	±0.2 °C (-200 to +200 °C) ±0.1 % of reading (remaining range)
System accuracy:**	Up to ±0.35 °C
Additional error over operating temperature range:	±0.1 °C
Resolution:	0,1 °C

The following can also be connected:

thermocouple:	Type S (Pt Rh-Pt)
Measuring range:	-50...+1700 °C
Resolution:	1 °C

* Accuracy: ±1 digit

** System accuracy: total accuracy of probe and measuring instrument

Accuracy data - Sensor

Sensor	Temperature range	Class	Perm. tolerances (the larger reading applies)	
			Fixed value	Referred to temperature
Thermocouple type K	-40 to +1200 °C -40 to +1000 °C	2 1	±2.5 °C ±1.5 °C	±0.0075 x ltl ±0.004 x ltl
Thermocouple type T	-40 to -20,1 and +70.1 to 350°C	1	±0.5 °C	±0.004 • ltl
Thermocouple type T selected range*	-20 to +70 °C	2/5 Class 1	±0.2 °C	
Pt100	-200 to +600 °C -100 to +200 °C	A B	±(0.15 +0.002 • ltl) ±(0.3 + 0.005 •ltl)	
NTC	-50 to -25.1 -25 to +74.9 °C +75 to +150 °C	- - -	±0.4 °C ±0.2 °C ±0.5 % of reading	

t = measurement temperature

Measuring instruments	Part no.
testo 945 **measuring instrument** (black), 2 channel temperature measuring instrument (Type K/T/S, NTC, Pt100 thermocouples), with battery **and factory protocol**	0560.9450
testo 946 **measuring instrument** (white), 2 channel temperature measuring instrument (Type K/T/S, NTC, Pt100 thermocouples), with battery **and factory protocol**	0560.9460
Software	
Comfort Software "Light" for data management, incl. data base, analysis and graphics function	0554.0273
Comfort Software "Professional" like "Light" but with convenient data analysis, trend function, formula editor	0554.0274
Printer	
Testo log printer with 4 AA batteries and 1 roll of thermal paper; Prints data with location, product names, data and time	0554.0545
Printer paper for desktop printer (6 rolls)	0554.0569
Charger with 4 standard rech. batt. for the Testo log printer, batteries are recharged externally	0554.0110
Other accessories	
Plug–in mains unit for mains operation and to recharge batteries in instrument	0554.0088
9 V rechargeable battery	0515.0025
RS232 cable, connects measuring instrument ÷ PC for data transfer	0409.0178
TopSafe / Case	
TopSafe protects instrument from dirt, water (IP 65) and impact, dishwasher–proof. With bench stand, belt clip and probe clips for attaching probe to TopSafe.	0516.0442
Instrument case, plastic for instrument, printer and 2 probes	0516.3250

Warranty 2 yaers

Temperature probes for testo 945 / 946

Immersion/penetration probes (NiCr–Ni)	Meas. range Accuracy	t_{99} s	Connection cable	Part no.
Robust, water–proof probe	–60 to +400 °C Class 2	7	1.2 m PVC	0602.1292
Accurate and quick–action immersion/air probe, water–proof	–60 to +1000 °C Class 1	2 40 (in air)	1.2 m PVC	0602.0592
Immersion measuring tip (bendable), can be connected directly to instrument	–60 to +1000 °C Class 1	5		0602.5792
Robust, accurate, water–proof food probe made of stainless steel (IP67), oven–proof up to +205 °C (short–term +250 °C)	–60 to +400 °C Class 1	5	1.5 m PTFE	0602.3392
For rapid action measurements in semi–solid (plastic, tyres, food...), water–tight	–60 to +800 °C 3 Class 1	1.2 m PVC	0602.2692	

Air probe (NiCr–Ni)	Meas. instr. Accuracy	t_{99} s	Connection cable	Part no.
Robust, low cost probe	–60 to +400 °C Class 2	25	1.2 m PVC	0602.1792
Thermocouples, flexible, can be connected directly to instrument	Class 2		Insulation:	
	a –50 to +400 °C	5	Fibre glass	0602.0644
	b –50 to +400 °C	5	Fibre glass	0602.0645
	c –50 to +250 °C	5	PTFE	0602.0646

Temperature probes for testo 945 / 946

Surface probes (NiCr–Ni)	Meas. range Accuracy	t_{99} s	Connection cable	Part no.
Robust, water–tight, with widened measuring tip for smooth surfaces	–60 to +400 °C Class 2	30	1.2 m PVC	0602.1992
Super–quick and accurate, also suitable for rough surfaces on account of sprung thermocouple strip	–60 to +300 °C (short–term to +500 °C) Class 2	< 3	1.2 m PVC	0602.0392
Magnetic probe with adhesive magnets for measurements on metallic surfaces, adhesive force: approx. 20 N,	–50 to +170 °C	–	Silicone	0602.4792
for higher temperatures, adhesive force: approx 10 N	–50 to +400 °C Class 2	–	Fibre glass w. steel plaiting	0602.4892
Accurate, water–tight, with small measuring head for smooth surfaces	–60 to +1000 °C Class 1	20	1.2 m PVC	0602.0692
Accurate, water–tight, with small bent measuring head for smooth surfaces	–60 to +1000 °C Class 1	20	1.2 m PVC	0602.0792
Pipe probe with exchangeable measuring head, –60 to +130 °C for pipe diameter 5 to 65 mm	5 (short–term to +280 °C) Class 2	1.2 m PUR	0602.4592	
exchangeable measuring head, can also be used with 0409.1092 handle				0602.0092
Infrared probe for non–contact measurement on live, inaccessible moving parts	–18 to +260 °C ±2 °C or ±2 % of m.v. (the larger value always applies) with E = 0.95	2	1.2 m PVC coiled	0602.0750

Temperature probes for testo 945 / 946

Incoming goods probe (Cu–CuNi / NTC)	Connection cable	Sensor	Meas. range	t_{99} s.	Part no.
Flexibler incoming goods probe, ideal for quick temperature measurement on incoming goods.		Type T Class 1	–50 to +350 °C	5	0628.0023

Surface probe (Cu–CuNi / NTC)	Connection cable	Sensor	Meas. range	t_{99} s	Part no.
Robust, water–tight, accurate with widened measuring tip, e.g. for cooking plates. T_{max} handle +70 °C.	1.2 m PVC	Type T*	–50 to +350 °C	30	0603.1992
	T_{max} +70 °C	NTC	–50 to +150 °C	35	0613.1911

Infrared probe	Connection cable	Sensor	Meas. range/ Accuracy	t_{99} s	Part no.
Infrared probe for non–contact temperature measurement and for “Screening tests” when dishing out food, during storage etc.	1.2 m PVC	Type T	–35 to +260 °C ±2 °C or ±2 % of m.v. (the larger value applies) with E=0.95	2	0603.0750

Air probes (Cu–CuNi / NTC)	Connection cable	Sensor	Meas. range	t_{99} s	Part no.
Robust, low cost precision probe for checking purposes e.g. storage temperature. T_{max} handle +70 °C.	1.2 m PVC	Type T*	–50 to +350 °C	25	0603.1792
	T_{max} +70 °C	NTC	–50 to +150 °C	40	0613.1711
Flexible oven probe. Accuracy: Class 1	Insulation: PTFE T_{max} +250 °C	Type T Class 1	–50 to +250 °C	5	0603.0646

Immersion/penetration probes (Cu–CuNi / NTC)	Connection cable	Sensor	Meas. range	t_{99} s	Part no.
Robust, water–tight precision probe. T_{max} handle +70 °C.	1.2 m PVC T_{max} +70 °C	Type T*	–50 to +350 °C	7	0603.1292
		NTC	–50 to +150 °C	10	0613.1211
Robust, accurate, water–tight food probe made of stainless steel (IP67) with PTFE cable.	1.5 m PTFE T_{max} +200 °C	Type T*	–50 to +350 °C	7	0603.3392
		NTC	–50 to +150 °C	8	0613.3311
Water–tight precision probe for quick action measurements without visible penetration hole. T_{max} handle +70 °C.	1.2 m PVC T_{max} +70 °C	Type T*	–50 to +350 °C	3	0603.2692

Temperature probes for testo 945 / 946

Immersion/penetration probes (Cu–CuNi)	Connection cable	Sensor	Meas. range	t_{99} s	Part no.
Water–tight, super quick needle probe. Ideal for hamburgers, steaks, pizza, eggs etc. Very accurate measurements without visible penetration hole. T_{max} +70 °C	1.2 m PVC	Type T*	–50 to +250 °C	1.5	0628.0027
Frozen food probe, no need to drill holes. T_{max} handle +70 °C.	1.2 m PVC	Type T*	–50 to +350 °C	8	0603.3292

Immersion/penetration probes (Pt100)	Connection cable	Sensor	Meas. range	t_{99} s	Part no.
Laboratory probe, glass coating, resistant to corrosive substances, exchangeable glass pipes	1.5 m PUR		–50 to +400 °C Class A	45	0609.7072
Spare glass for laboratory probe					0554.7072
Robust, water–tight proof	1.2 m PVC		–50 to +400 °C Class A	12	0609.1272
Robust, accurate food probe made of stainless steel (IP65), PUR cable up to +80 °C can be used, IP54** plug–in connection	1.5 m PUR		–50 to +400 °C Class A	10	0609.2272

Surface probe and air probe (Pt100)	Meas. range Accuracy	t_{99} s	Connection cable	Part no.
Robust, water–tight with widened measuring tip for smooth surface	–50 to +400 °C Class B	40	1.2 m PVC	0602.1972
Accurate, robust air probe	–50 to +400 °C Class A	45	PUR coiled	0609.1772

* Accuracy selected 2/5 Class 1 (-20 to +70 °C), remaining range Class 1

testo AG

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