Measuring Instruments for RPM, Analysis, Current/Voltage

pH
°C
mV
mS/cm
µS/cm
mg/l NaCl
%TPM
rpm
rpm
V
mA

Overview

pH electrodes / conductivity measurement sensors and their applications

		Effluent samples	General aqueous solutions	Aquaria	Beer, fruit juice, wine	Butter, yoghurt, cheese	Substances containing protein	Emulsions, aqueous	Emulsions, part aqueous	Earth (suspension)	Extreme pH values ((pH<1, pH>13)	Penetration meas. in meat	Penetration meas. in fruit,veg	Substances with hydrofluoric acid	Galvanic sewage	Hot electrolyte	Highly-viscous aqueous solutions	Solutions low in ions	Jams	Cosmetic products	Leather manufacturing	Milk	Rain water	Brine	Swimming pools	Soaps, detergents	Aqueous suspensions	Part-aqueous suspensions	Pastry, bread	Part-aqueous sol. >10% H_2O	Part-aqueous sol. <10% H_2O	Temperatures to +80°C	Temperatures to +100°C	TRIS buffer solutions
Universal electrode, type 01 pH	[pH]	+	+	+	0	–	–	0	0	0	0	–	–	–	0	–	–	–	–	–	0	0	0	0	+	0	0	–	–	0	–	0	–	0
Lab. electrode, type 02 pH	[pH]	0	+	+	0	–	–	0	0	0	+	–	–	0	0	0	0	0	–	0	+	0	0	+	+	0	0	–	–	0	0	+	0	0
Universal electrode, type 04 pH	[pH/°C]	+	+	+	0	–	–	0	0	0	0	–	–	–	0	–	–	0	–	–	0	0	0	+	+	0	0	–	–	0	–	–	–	0
Special electrode, type 05 pH	[pH/°C]	+	+	0	+	–	0	+	+	+	+	–	–	0	+	–	–	0	–	–	0	0	+	+	+	+	+	+	–	0	0	–	–	0
Penetration electrode, type 03 pH	[pH]	0	0	0	0	+	+	+	+	+	–	0	0	–	0	–	+	–	+	+	–	+	–	+	0	+	+	+	0	0	0	–	–	–
Robust penetr. electrode, type 13 pH	[pH]	0	0	0	0	+	+	+	+	+	–	+	+	–	0	–	+	–	+	+	–	+	–	+	–	+	+	+	+	0	0	–	–	–
Conductivity sensor, type 07 mS	[mS/°C]	+	+	+	+	–	+	+	0	0	0	–	–	0	+	–	–	+	–	–	+	+	+	+	+	+	0	0	–	0	0	–	–	+
Conductivity sensor, type 10 mS	[mS/°C]	+	+	+	+	–	+	+	0	0	0	–	–	0	+	–	–	+	–	–	+	+	+	+	+	+	0	0	–	0	0	–	–	+

+ suitable   0 suitable in certain cases   – not suitable

Analytical instruments are only as accurate as the sensor used. When measuring pH or conductivity only those probes suited to the particular substance can guarantee an accurate reading.

What is conductivity?
For electric conductivity, electrical resistance is measured between two electrodes e.g. in a liquid.

The lower the resistance the higher the conductivity and vice versa. Substances such as salt dissolved in water lower the electrical resistance thus increasing conductivity.

Example: Cooking salt
If cooking salt (NaCl) is added to water the salt then breaks down into its components (ions) Na+ and Cl–. Ions are charged particles and are responsible for the electrical resistance of the water.
Conductivity provides information on the total number of dissolved, charged components. If, for example, the conductivity in a lake has increased during a specified time the number of particles dissolved also increases.
An exact analysis of the contents in the laboratory will reveal the cause of this alarming increase.

Testo conductivity measurement systems guarantee problem-free conductivity measurement thanks to:

– a robust and user-friendly handheld instrument with simultaneous display of conductivity (referred to reference temperature) and the temperature of the product being measured.
– the adaptability of the measuring system to different measuring solutions on account of its adjustable temperature coefficient.
– a robust sensor with four-electrode measurement engineering to protect from disturbing influences caused by polarisation effects.
– fully automatic temperature compensation with the help of a temperature sensor integrated in the measuring cell.
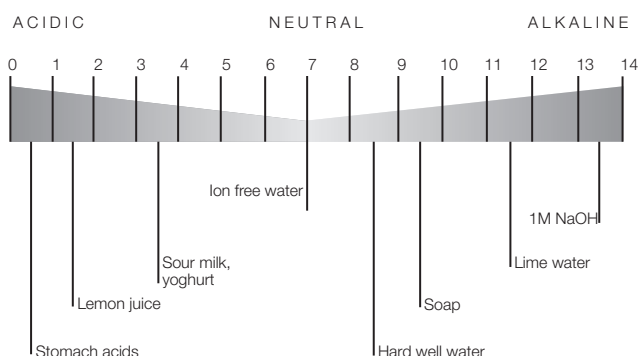– display and documentation of measured and calibrated data.

Conductivity sensors
The 4 electrode measurement technology in our sensors enables an extensive measuring range to be covered with only one measuring cell. It also prevents the readings becoming distorted by the formation of physical coatings, such as in waste water for example, ensuring accurate results every time.

Unlike 2 electrode sensors, 4-electrode sensors do not require replating, which means they have an almost unlimited lifetime.

Why You Should Choose Analysis Instruments from Testo

Examples of the pH values of everyday substances

ACIDIC   NEUTRAL   ALKALINE

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Ion free water
1M NaOH
Sour milk, yoghurt
Lime water
Lemon juice
Soap
Stomach acids
Hard well water

pH electrodes
In conventional electrodes, suspensions and emulsions as well as solutions containing proteins or sulphides can block the very many small pores in the diaphragm. The testo single pore diaphragm, sensor type 05 pH, has proved to be highly effective for such critical applications. It consists of a single large pore which cannot become blocked due to the wide diameter of the pore. Quick response times and correct measured results are therefore guaranteed.

The large pore diaphragm, type 03, is ideal for accurate measurements in solids and semi-solids (i.e., food). It consists of a very large "pore" which means it has the above-mentioned advantages when used on substances such as meat or cheese.

Definition of the pH value
pH is the abbreviation of the Latin expression „pondus hydrogenii" (pondus = pressure, hydrogenium = hydrogen).
It is therefore a measure for the activity of the hydrogen ions in a substance. The activity is connected directly to its acidic, neutral or alkaline character.

Contents

Measuring Instruments

Data loggers for current/voltage

testo

testo 205

One-hand pH/°C measuring instrument – Robust and maintenance-free

A robust food penetration pH/°C measuring instrument with automatic temperature compensation. The robust penetration measuring tip is interchangeable and not affected by dirt and dust thanks to the hole diaphragm.

- pH tip embedded in unbreakable plastic
- Combined penetration tip with temperature probe
- Measurement tip can be replaced by user
- Maintenance-free gel electrolyte
- Backlit display
- Audible key feedback
- 2 line display
- Automatic full-scale value recognition
- 1, 2 or 3 point calibration possible

testo 205 instrument set: One-hand pH/°C measuring instrument with penetration probe, storage cap, belt/wall holder

Part no.
0563 2051

Set	Part no.
testo 205 Starter set: One-hand pH/°C measuring instrument with penetration probe, storage cap, gel and calibration bottles 250 ml pH 4+7, belt/wall holder and aluminium case	0563 2052

Accessories	Part no.
Additional accessories and spare parts	
Spare pH probe for testo 205 with gel storage cap	0650 2051
Storage cap for testo 205 with KCL gel filling	0554 2051
Storage cap for testo 205 with KCl gel filling (pack of 3)	0554 2052
Button cell batteries, Type LR 44, 1.5 Volt (4 off)	0515 0032
pH buffer solution 4.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2061
pH buffer solution 4.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2062
pH buffer solution 7.00 in dosing bottle (250 ml) with DKD calibration certificate	0554 2063
pH buffer solution 7.00 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2064
pH buffer solution 10.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2065
pH buffer solution 10.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2066

Technical data			
Probe type	pH electrode / NTC	Oper. temp.	0 to +50 °C
Meas. range	0 to 14 pH	Storage temp.	-20 to +70 °C
	0 to 60 °C (Short-term to +80 °C max. 5 min)	Battery type	4 x Button cell LR44
		Battery life	80 h (Auto Off 10 Min)
		Dimensions	145 x 38 x 167 mm
Accuracy	±0.02 pH	Weight	135 g
±1 digit	±0.4 °C	Display	LCD, 2 lines
Resolution	0.01 pH		
	0.1 °C		

testo 205, Starter set (Part no. 0563 2052)

One-hand pH/°C measuring instrument with penetration probe, storage cap, gel and calibration bottles 250 ml 4+7, belt/wall holder and aluminium case

testo

testo 206 pH1 | Compact pH tester – For liquids

The pH measuring instrument for fast checks on liquids. The combination of pH immersion tip and temperature probe for fast and efficient temperature compensation is unique.

The Testo pH probe is leak-proof, maintenance-free, robust and not affected by dirt thanks to the large volume of gel electrolyte and the dual wall diaphragm.

- TopSafe: Robust, water-tight, hygienic and dishwasher-proof protection case (IP68)
- Maintenance-free gel electrolyte
- Automatic full-scale recognition
- Built-in temperature probe
- 1, 2 or 3 point calibration possible

Easy exchange of probes with testo 205, testo 206-pH1/-pH2/-pH3

pH1 probe head for liquids

testo 206-pH1 instrument set:
One-hand pH/°C measuring instrument, pH1 probe head for liquids, storage cap with gel, TopSafe and belt/wall holder

Part no.	
0563 2061	

Set	Part no.
testo 206-pH1 Starter Set: One-hand pH/°C measuring instrument, pH1 probe head for liquids, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case	0563 2065

Accessories	Part no.
Additional accessories and spare parts	
Spare pH probe for testo 206 incl. gel storage cap	0650 2061
Storage cap for testo 206 with KCl gel filling	0554 2067
Storage cap for testo 206 with KCl gel filling (pack of 3)	0554 2068
Replacement Li-battery button cell type CR 2032	0515 0028
pH buffer solution 4.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2061
pH buffer solution 4.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2062
pH buffer solution 7.00 in dosing bottle (250 ml) with DKD calibration certificate	0554 2063
pH buffer solution 7.00 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2064
pH buffer solution 10.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2065
pH buffer solution 10.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2066

Technical data			
Probe type	pH electrode / NTC	Oper. temp.	0 to +60 °C
Meas. range	0 to 14 pH	Storage temp.	-20 to +70 °C
	0 to 60 °C (Short-term to +80 °C max. 5 min)	No. meas. channels	2 channel
		Temperature compensation	Automatic
Accuracy ±1 digit	±0.02 pH ±0.4 °C	Meas. rate	2 measurements per second
		Battery type	1x CR2032
Resolution	0.01 pH 0.1 °C	Material/Housing	ABS with TopSafe, Protection type IP 68
		Battery life	80 h (Auto Off 10 min)
		Dimensions	197 x 33 x 20 mm
		Weight	69 g
		Display	LCD, 2 lines

testo 206-pH1 instrument set (Part no. 0563 2061)

One-hand pH/°C measuring instrument, pH1 probe head for liquids, storage cap with gel, TopSafe and belt/wall holder

testo 206-pH1 Starter Set (Part no. 0563 2065)

One-hand pH/°C measuring instrument, pH1 probe head for liquids, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case

testo 206-pH2

Compact pH tester – For semi-solid food

The pH measuring instrument for spot checks on semi-solid food, e.g. jelly, cream, cheese, fruit...

The protection case included "TopSafe" (IP 68) is waterproof, hygienic and dishwasher-safe.

- pH2 probe head for semi-solid food
- Leak-proof storage gel
- Used for food containing protein
- Combination: pH penetration tip with temperature measurement probe
- Automatic full-scale recognition

Easy exchange of probes with testo 205, testo 206-pH1/-pH2/-pH3

testo 206-pH2 instrument set: One-hand pH/°C measuring instrument, pH2 probe head for semi-solid substances, storage cap with gel, TopSafe and belt/wall holder

Part no.
0563 2062

pH2 probe head for semi-solid food

Set	Part no.
testo 206-pH2 Starter Set: One-hand pH/°C measuring instrument, pH2 probe head for semi-solid substances, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case	0563 2066

Accessories	Part no.
Additional accessories and spare parts	
Spare pH probe pH2 for testo 206 incl. gel storage cap	0650 2062
Storage cap for testo 206 with KCl gel filling	0554 2067
Storage cap for testo 206 with KCl gel filling (pack of 3)	0554 2068
Replacement Li-battery button cell type CR 2032	0515 0028
pH buffer solution 4.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2061
pH buffer solution 4.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2062
pH buffer solution 7.00 in dosing bottle (250 ml) with DKD calibration certificate	0554 2063
pH buffer solution 7.00 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2064
pH buffer solution 10.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2065
pH buffer solution 10.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2066

Technical data			
Probe type	pH electrode / NTC	Oper. temp.	0 to +60 °C
Meas. range	0 to 14 pH 0 to 60 °C (Short-term to +80 °C max. 5 min)	Storage temp.	-20 to +70 °C
		No. meas. channels	2 channel
		Temperature compensation	Automatic
Accuracy ±1 digit	±0.02 pH ±0.4 °C	Meas. rate	2 measurements per second
		Battery type	1x CR2032
		Material/Housing	ABS with TopSafe, Protection type IP 68
Resolution	0.01 pH 0.1 °C	Battery life	80 h (Auto Off 10 min)
		Dimensions	197 x 33 x 20 mm
		Weight	69 g
		Display	LCD, 2 lines

testo 206-pH2 instrument set (Part no. 0563 2062)

One-hand pH/°C measuring instrument, pH2 probe head for semi-solid substances, storage cap with gel, TopSafe and belt/wall holder

testo 206-pH2 Starter Set (Part no. 0563 2066)

One-hand pH/°C measuring instrument, pH2 probe head for semi-solid substances, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case

testo 206-pH3 | Compact pH tester - To connect external probes

testo 206-pH3 is equipped with a BNC socket which makes it possible to connect all pH probes to the instrument. The temperature value supplied is automatically analysed if Testo pH probes are used with a built-in temperature sensor. The temperature can be adjusted manually in probes without a temperature sensor. Automatic recognition of a stable reading facilitates the measurement process. The instrument is ideal for outdoor use or use in tough industrial conditions thanks to the "TopSafe" protection case supplied.

- External pH probes can be connected
- Not affected by dirt particles thanks to the TopSafe protective case
- 2 line display
- Automatic full-scale recognition
- 1, 2 or 3 point calibration possible
- All probes on the market can be connected to the BNC adapter
- Testo probes with temperature measurement facilitate temperature compensation

External pH probe attachable

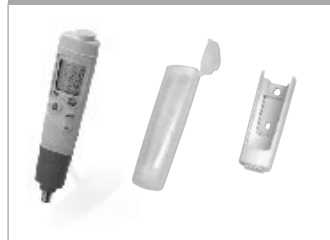Easy exchange of probes with testo 205, testo 206-pH1/-pH2/-pH3

pH3 probe head with BNC interface

testo 206-pH3 instrument set:
One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, TopSafe and belt/wall holder

Part no.	
0563 2063	

Set	Part no.
testo 206 pH3 – Affordable Set : One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, pH probe Type 01, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case	0563 2067
testo 206-pH3 Versatile Set: One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, pH probe Type 14, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case	0563 2068

Accessories	Part no.
Additional accessories and spare parts	
Spare probe Type 01 for testo 206-pH3, incl. gel storage cap	0650 2063
Type 14: indestructible plastic electrode with temperature sensor, gel electrolyte, therefore practically maintenance-free, with gel storage cap	0650 2064
Replacement Li-battery button cell type CR 2032	0515 0028
Gel storage cap for standard electrodes	0554 2053
pH buffer solution 4.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2061
pH buffer solution 4.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2062
pH buffer solution 7.00 in dosing bottle (250 ml) with DKD calibration certificate	0554 2063
pH buffer solution 7.00 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2064
pH buffer solution 10.01 in dosing bottle (250 ml) with DKD calibration certificate	0554 2065
pH buffer solution 10.01 in dosing bottle (3 x 250 ml per pack) with DKD calibration certificate	0554 2066

Technical data			
Probe type	pH electrode / NTC	Oper. temp.	0 to +60 °C
Meas. range	0 to 14 pH 0 to 80 °C (depending on the pH probe used)	Storage temp.	-20 to +70 °C
		Battery life	80 h (Auto Off 10 min)
		Dimensions	197 x 33 x 20 mm
		Weight	69 g
		Display	LCD, 2 lines

testo 206-pH3 instrument set (Part no. 0563 2063)

One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, TopSafe and belt/wall holder

testo 206-pH3 Versatile Set (Part no. 0563 2068)

One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, pH probe Type 14, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case

testo 206 pH3 – Affordable Set (Part no. 0563 2067)

One-hand pH/°C measuring instrument, pH3 probe head with BNC interface, pH probe Type 01, storage cap with gel, calibration dosing bottles 250 ml pH 4+7, TopSafe, belt/wall holder and aluminium case

testo 230 — Compact pH/°C measuring instrument

testo 230 combines a complete pH measuring instrument and a high standard thermometer in a compact, waterproof housing. The redox voltage can also be determined by connecting the redox electrode type 06.

The instrument has automatic temperature compensation and can be calibrated in the pH range with standard and also with DIN buffers.

- Easy, user-friendly operation
- pH/°C electrodes are connected via a single plug-in connection
- Robust and splashwater-proof (IP 54)
- Easy-to-read large 2 line display
- Latest probe technology for almost every application
- Displays calibration data and error messages
- pH and temperature measuring instrument in one

2 line display

Plug-in connection for pH/°C/redox electrodes

testo 230, analysis instrument, with 2 electrode clips and battery

Part no.	
0560 2304	

pH / °C/ redox electrodes	Illustration	Meas. range	Oper. temp.	Part no.
Universal electrode type 01 pH: affordable, indestructible plastic electrode with gel electrolyte, thus practically maintenance-free, with gel storage cap	120 mm, Ø 12 mm, Fixed cable with BNC	0 to +14 pH	0 to +60 °C Short-term to +80°C	0650 0623
Laboratory electrode type 02 pH: highly accurate glass electrode with excellent chemical resistance. Long life. Liquid electrolyte. Incl. standard ground sleeve adapter and immersion cap	135 mm, Ø 12 mm, Plug-in head. connection cable 0554 2317 or 0554 2314 required	0 to +14 pH	0 to +80 °C Short-term to +100°C	0650 1223
Penetration electrode type 03 pH: highly accurate glass electrode with solidified electrolyte suitable for use in food. Not affected by dirt due to hole diaphragm. Incl. ground sleeve adapter and immersion cap.	100 mm, 35 mm, Ø 6 mm, Plug-in head. connection cable 0554 2317 or 0554 2314 required	+2 to +14 pH	0 to +40 °C Short-term to +60°C	0650 0225
Type 04 pH: indestructible plastic electrode with temperature sensor. Gel electrolyte, thus practically maintenance-free. Incl. ground sleeve adapter and immersion cap		0 to +14 pH 0 to +60 °C	0 to +60 °C	0650 0823
Special electrode type 05 pH: indestructible plastic electrode with temperature sensor. Reduced problems with dirt, high accuracy due to single pore diaphragm. Incl. ground sleeve adapter and immersion cap	135 mm, Ø 12 mm, Fixed cable with BNC	0 to +14 pH 0 to +60 °C	0 to +60 °C	0650 1623
Redox electrode type 06 mV: robust glass electrode, insensitive to electrode poisoning due to two chamber system. Incl. ground sleeve adapter and immersion cap	135 mm, Ø 12 mm, Plug-in head. connection cable 0554 2317 or 0554 2314 required	-2000 to +2000 mV	0 to +80 °C	0650 2523
Robust penetration electrode type 13 pH: for solid or semi-solid foodstuff with break-proof plastic coating around the glass electrode and food-safe electrolyte. Not affected by dirt thanks to hole diaphragm. Incl. immersion cap	95 mm, Ø 6.5 mm, Fixed cable with BNC	+2 to +14 pH	0 to +40 °C	0650 0245
Type 14: indestructible plastic electrode with temperature sensor, gel electrolyte, therefore practically maintenance-free, with gel storage cap	135 mm, Ø 12 mm, Fixed cable with BNC	0 to +14 pH 0 to +60 °C	0 to +60 °C	0650 2064

Temperature probes	Illustration	Meas. range	Accuracy	t99	Part no.
Stainless steel NTC food probe (IP65) with PUR cable	125 mm, Ø 4 mm, 15 mm, Ø 3 mm, Fixed cable	-50 to +150 °C	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	8 s	0613 2211
Robust NTC food penetration probe with special handle, reinforced PUR cable	115 mm, Ø 5 mm, 30 mm, Ø 3.5 mm, Fixed cable	-25 to +150 °C [1]	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	7 s	0613 2411

1) Long-term measurement range +125 °C, short-term +150 °C (2 minutes)

testo 230 — Sets, accessories and technical data

Sets

Sets	Part no.
testo 230, affordable set: testo 230 analysis instrument with 2 electrode clips and battery, Testo buffer set pH 4 and 7, 50ml each, universal electrode Type 01 pH and set case (plastic)	0563 2307
testo 230, Universal set: testo 230 analysis instrument with 2 electrode clips and battery, Testo buffer set pH 4 and 7, 50ml each, universal electrode Type 04 pH and set case (plastic)	0563 2305
testo 230, Food set: testo 230 analysis instrument with 2 electrode clips and battery, Testo buffer set pH 4 and 7, 50ml each, penetration electrode Type 03 pH, storage solution (50ml), connection cable (1m), food probe made of stainless steel (IP 65) and plastic set case	0563 2306
testo 230, Food set for solid/semi-solid food: testo 230 analysis instrument with 2 electrode clips and battery, Testo buffer set pH 4 and 7, 50ml each, robust penetration electrode Type 13 pH, storage solution (50ml), robust food penetration probe with special handle (IP 65) and transport case made of plastic	0563 2308

Accessories

Accessories	Part no.
Transport and Protection	
Set case (plastic) for measuring instrument, probes and accessories user-friendly arrangement of measuring instrument and accessories	0516 0230
Additional accessories and spare parts	
Gel storage cap for standard electrodes	0554 2053
Connection cable for electrodes with plug-in head, 1m long S7-BNC plug-in connection	0554 2317
Testo buffer set pH 4, 7; 50 ml each for calibration in acidic range	0554 2321
Testo buffer set pH 4, 7, 10; 50ml each for calibration in acidic and alkaline range	0554 2320
Storage solution (refill solution for electrode type 02 pH), 50 ml for electrodes type 01 pH, 02 pH, 04 pH, 06 mV	0554 2332
Storage solution; 50ml for electrode type 03 pH and type 13 pH	0554 2318
Storage and refill solution; 50ml for electrode type 05 pH	0554 2319
Redox standard 358 mV, 50ml	0554 2333
Calibration Certificates	
ISO calibration certificate/water analysis for pH buffer solutions; calibration points 4 pH; 7 pH; 10 pH	0520 0007
ISO calibration certificate/water analysis at 3 pH values over the measuring range	0520 0037

Technical data

Probe type	pH electrode	NTC	Redox electrode
Meas. range	0 to +14 pH	-50 to +150 °C	-1999 to +1999 mV
Accuracy ±1 digit	±0.01 pH (0 to +14 pH)	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (-50 to -25.1 °C) ±0.4 °C (+75 to +99.9 °C)	±1 mV (-999 to 0 mV) ±1 mV (0 to +999 mV) ±2 mV (-1999 to -1000 mV) ±2 mV (+1000 to +1999 mV)
Resolution	0.01 pH	0.1 °C	1 mV

Oper. temp.	0 to +40 °C	Temperature compensation: man. -10 to +150°C; auto -50 to +150°C
Storage temp.	-20 to +70 °C	
Display	LCD, 2 lines	
Battery type	9V block battery	
Battery life	100 h	
Dimensions	168 x 72 x 27 mm	
Weight	170 g	
Material/Housing	ABS	
Warranty	2 years	

testo 240 | Compact conductivity measuring instrument

testo 240 is a complete conductivity measuring instrument and a high standard thermometer combined in one compact, waterproof housing.

Measurement errors caused by high conductivities and deposits on the electrodes are avoided thanks to the 4 electrode engineering used. The salt level (NaCl) in an aqueous solution can be measured directly.

- User-friendly operation
- Extremely wide ranges with only one measuring cell
- Robust and splashwater-proof (IP 54)
- Easy-to-read large 2 line display
- No measurement errors caused by dirt particles in the electrodes
- Measures salt (NaCl) level
- Long lifetime of the sensor thanks to 4-electrode technology
- The 4 electrode engineering used here prevents the formation of physical coatings, e.g. sewage, which distort the values measured

2 line display

Plug-in connection for mS/cm and °C probes

testo 240 conductivity and temperature measuring instrument with battery and 2 electrode clips

Part no.	
0560 2404	

Conductivity sensors	Illustration	Meas. range	Other	Part no.
Universal conductivity measuring cell, type 07 mS, highest accuracy up to 200 mS/cm, stainless steel	130 mm / Ø 20 mm / Fixed cable	+0.001 to +200 mS/cm 0 to +60 °C	4 electrode engineering with built-in temperature sensor	0650 3023
Precision conductivity measuring cell, type 10 mS, long-term stable, highest accuracy up to 300 mS/cm, graphite	130 mm / Ø 20 mm / Fixed cable	+0.001 to +300 mS/cm 0 to +60 °C	4 electrode engineering with built-in temperature sensor	0650 3024

Temperature probes	Illustration		Meas. range	Accuracy	t99	Part no.
Waterproof NTC immersion/penetration probe	115 mm / Ø 5 mm / Fixed cable	50 mm / Ø 4 mm	-50 to +150 °C 1)	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	10 s	0613 1212
Stainless steel NTC food probe (IP65) with PUR cable	125 mm / Ø 3 mm / Fixed cable	15 mm / Ø 3 mm	-50 to +150 °C	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	8 s	0613 2211
Waterproof NTC surface probe for flat surfaces	115 mm / Ø 5 mm / Fixed cable	50 mm / Ø 6 mm	-50 to +150 °C 1)	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	35 s	0613 1912

1) Long-term meas. range +125 °C, short-term +150 °C (2 minutes)

Sets	Part no.
Conductivity Set 1 Universal: testo 240 conductivity and temperature measuring instrument, battery, 2 electrode clips, universal conductivity sensor Type 07 mS, case (plastic)	0563 2405
Conductivity Set 2 Precision: testo 240 conductivity and temperature measuring instrument, battery, 2 electrode clips, universal conductivity sensor Type 10 mS, case (plastic)	0563 2406

Accessories	Part no.
Transport and Protection	
Set case (plastic) for measuring instrument, probes and accessories user-friendly arrangement of measuring instrument and accessories	0516 0230
Additional accessories and spare parts	
Conductivity standard (1413 µS/cm) 0.01 mol/1 KCL, to calibrate conductivity measuring cells	0554 2334
Calibration Certificates	
ISO calibration certificate/analysis for conductivity solutions; calibration point 1.413 mS/cm	0520 0019
ISO calibration certificate/temperature for air/immersion probes, calibration points -18°C; 0°C; +60°C	0520 0001
ISO calibration certificate/analysis at 3 conductivity values over the measuring range	0520 0049

Technical data			
Meas. range	0 to +2000 mS/cm	-50 to +150 °C	1 mg/l to 200 g/l NaCl
Accuracy ±1 digit	±1% of mv (0 to +2000 mS/cm)	±0.5% of mv (+100 to +150 °C) ±0.2 °C (-25 to +74.9 °C) ±0.4 °C (remaining range)	±1.2% of mv (1 mg/l to 200 g/l NaCl)
Resolution		0.1 °C	0.1 mg/l NaCl

Oper. temp.	0 to +40 °C
Storage temp.	-20 to +70 °C
Display	LCD, 2 lines
Battery type	9V block battery
Battery life	60 h
Dimensions	168 x 72 x 27 mm
Weight	170 g
Material/Housing	ABS
Warranty	2 years
Protection class	IP54

Resolution: max. 0.1 µS/cm
Temp. compensation, automatic
Temp. coefficient: 0 to 5 %/°C linear
Compensation according to non-linear function of natural waters to DIN 38404 from 0 to +50°C
Autom. switching between measuring ranges (conductivity)
Auto-OFF function
Switches between °C/°F

testo

testo 270	Cooking oil tester

The cooking oil has been frequently used. Longer use is bad for the quality of the product and can lead to complaints from the customer.

The most important part of the testo 270 cooking oil tester is Testo's new capacitive oil sensor. Using this sensor, measurements are carried out directly in the hot cooking oil which means that control measurements can be quickly carried out while work in the kitchen is in progress. Several deep-fat fryers can be tested back-to-back without the sensor having to cool down.

Maximum use of the cooking oil is made possible. The oil is only changed if the limit value is reached.

- Measurement directly in the deep-fryer
- Sensor is embedded in metal and breakage-proof, can be easily wiped clean thanks to sensor protection layer
- Fast measurement value display in % TPM
- Automatic recognition of measurement end (Auto-Hold %TPM)
- With 2 freely selectable limit values
  Alarm function aubible and visual:
  - Lettering "ALARM"
  - 3-colour LED bar (green, yellow, red)
- Configuration menu and limit values can be locked to protect them from external manipulation
- Removable protective case and optional hand strap (dishwasher-proof)
- Conforms to: VO (EG) 1935/2004, EC guideline 2004/108/EC

Cooking oil tester testo 270 incl. aluminium case, TopSafe, hand strap, reference oil, batteries, adjustment protocol, instruction manual and short instruction manual

Part no.	
0563 2700	

Washable protective case TopSafe included in delivery

testo 270, set in aluminium case incl. reference oil for monitoring accuracy

Technical data			
Measurement parameters	Total Polar Materials (%TPM) Temperature (°C/°F)	Battery type	2 x AA
Measurement value sensor	Capacitive Testo sensor (%TPM) PTC (°C/°F)	Battery life	approx. 25 h continuous use approx. 500 measurements
Meas. range	0,5 to 40,0 %TPM +40 to +200 °C	Material/Housing	ABS (white) TopSafe as accessory (included)
Accuracy	±2 %TPM (+40 to +190 °C) (at ambient temperature of +25 °C) ±1,5 °C	Alarm function (can be switched off)	2 limit values freely adjustable, 3-clour LED (green, yellow, red), audible alarm when temperature and limit values are violated or at end of measurement (Auto-Hold)
Resolution	0,5 %TPM 0,5 °C/°F		
Cooking oil temperature	+40 to +200 °C	Further displays	Maximum measuring temperature exceeded Minimum measuring temperature exceeded
Storage temp.	-20 to +70 °C		
Oper. temp.	0 to +50 °C	Miscellaneous	Response time TPM ‹ 30 sec. (Prerequisite: measurement value is within accuracy limits) Protection class (with TopSafe) IP 65 Warranty 24 months
Dimensions	Approx. 354 x 50 x 30 mm (incl. TopSafe)		
Weight	Approx. 164 g (incl. batteries, TopSafe, hand strap)		
Display	LCD, 2-line, display illumination		

Accessories	Part no.
Additional accessories and spare parts	
ISO calibration certificate/analysis calibration points 3 % TPM and 24 %TPM at 50 °C	0520 0028
Reference oil for calibrating and adjusting the cooking oil tester testo 270 (1 x 100 ml)	0554 2650
Reference oil for calibrating and adjusting the cooking oil tester testo 270 (3 x 100ml)	0554 2651

![testo]

Accessories — Accessories for pH measuring instruments

Testo buffer solutions with pH 4.01/7.00/10.01

pH buffer solution 4.01 in dosing bottle (250 ml),
with DKD calibration certificate

Part no.   0554 2061

pH buffer solution 7.00 in dosing bottle (250 ml),
with DKD calibration certificate

Part no.   0554 2063

pH buffer solution 10.01 in dosing bottle (250
ml), with DKD calibration certificate

Part no.   0554 2065

1 Filling the dosing chamber

• To attain the right buffer
quantity

2 Adjusting

• Instrument adjustment in fresh
pH buffer solution, no
measurement errors caused by
used buffer solution

3 Emptying the dosing chamber

• Empty dosing chamber
following adjustment, i.e. no
contamination caused by left over
buffer solution

Gel storage caps

Storage cap for testo 205 with KCL gel filling

Part no.   0554 2051

Storage cap for testo 205 with KCl gel filling
(pack of 3)

Part no.   0554 2052

Storage cap for testo 206 with KCl gel filling

Part no.   0554 2067

Storage cap for testo 206 with KCl gel filling
(pack of 3)

Part no.   0554 2068

Gel storage cap for standard electrodes

Part no.   0554 2053

The potassium chloride is
bonded with the gel and cannot
leak out

Measuring methods for rpm

The measuring methods in rpm measurement can be divided into three main groups:

1. Mechanical rpm measurement
Data acquisition via mechanical measuring sensors is the oldest way to measure rpm. Revolutions in the sensor are electronically analysed in the instrument. This method is still used frequently but mostly for low revolutions between 20 and 20,000 rpm. The disadvantages of this measuring method are the non-constant load movements during measurement which depend largely on the contact pressure. In addition, mechanical rpm measurement cannot be used for small objects. If the revolutions are too high slip may occur.

**2. Electric method using reflections (optical rpm measurement)**
Rotation is transmitted to the measuring instrument via an infrared light beam coming from the instrument which is then reflected by a reflective tape on the object. Please note that the maximum distance between reflective tape and instrument should not be exceeded (distance max. = 600 mm).
This method is superior to mechanical rpm measurement. However, it is not always possible to attach reflective tapes.

**3. rpm measurement using the stroboscopic method**
According to the stroboscopic principle, objects are stationary in the eyes of the observer when the frequency of the high-speed flashes is in synchronisation with the rpm (movement) of the object. The stroboscope principle has clear advantages over other measuring methods using mechanical or optical sensors: Using this method it is possible to measure the rpm of very small objects or in inaccessible places. It is not necessary to attach reflective tapes to the objects being measured. For example, production processes do not need to be interrupted.
Measuring range: 30 to 20,000 rpm. In addition to rpm measurement the stroboscopic measuring method can also analyse oscillations and monitor motion e.g. in moving diaphragms, loudspeakers etc.
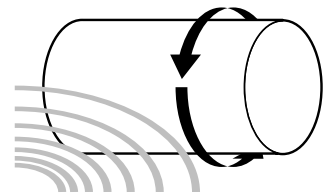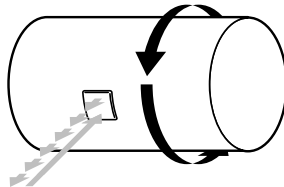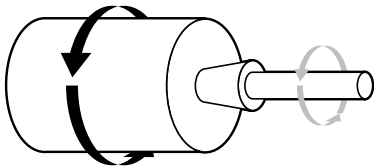
Measuring ranges of the different measuring methods

| Mechanical measuring range | Optical measuring range | Stroboscopic measuring range |
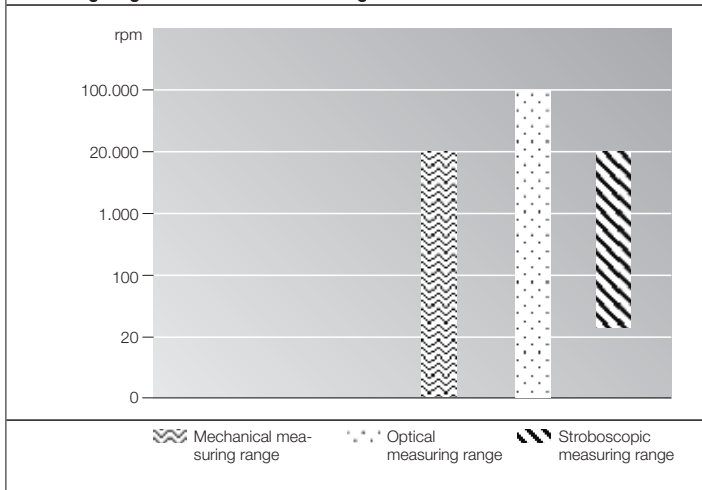
Note:

testo 460	measures optically
testo 465	measures optically
testo 470/471	uses mechanical and optical measuring methods
testo 475	uses mechanical and stroboscopic measuring methods
testo 476	uses stroboscopic measuring methods
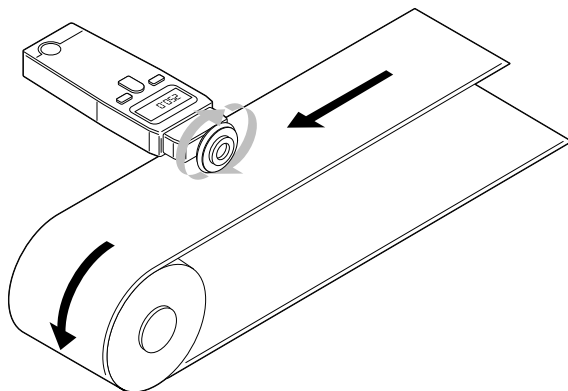
Measuring speed and length
Speed and length can be measured using a surface speed disc and a suitable measuring instrument. The running wheel is simply placed on the moving object (e.g. conveyor belt etc.) and the reading can be taken. (Note: do not put too much pressure on the surface speed disc, press lightly).

testo 460

Pocket-sized measuring instrument for non-contact rpm measurement

testo 460 optically measures rpm, e.g. of ventilators and shafts. The measurement spot is displayed on the measurement object with an LED marking. Max./min. values are displayed directly at the press of a button. The backlit display allows the measurement values to be easily read out, even in unfavourable light conditions. testo 460 is very handy, small and easy to operate.

- Optical rpm measurement with LED measurement spot marking
- Max./min. values
- Display light
- Protective cap for safe storage
- Incl. calibration protocol
- Reflective markers

testo 460; rpm measuring instrument incl. protective cap, batteries and calibration protocol

Part no.	
0560 0460	

Technical data				
Meas. range	100 to 29999 rpm	Oper. temp.	0 to +50 °C
Accuracy	±(0.02 %of mv + 1 digit)	Storage temp.	-40 to +70 °C
Resolution	0.1 rpm (100 to 999.9 rpm) 1 rpm (1000 to 29.999 rpm)	Battery type	2 batteries Type AAA
		Weight	85 g (incl. battery and protective cap)
Selectable units	rpm, rps	Warranty	2 years
Measuring rate	0.5 s	Dimensions	119 x 46 x 25 mm (incl. protective cap)
Protection class	IP40	Battery life	20 h (average, without display illumination)

Accessories	Part no.
Reflectors, self-adhesive (1 pack = 5 off, each 150 mm long)	0554 0493

Calibration Certificates	Part no.
Accessories and Technical data	
ISO calibration certificate/rpm Calibration points freely selectable from 10 to 99500 rpm	0520 0114

testo 465

Measuring instrument for non-contact rpm measurement

Using testo 465, rpm can be easily measured without contact. Simply attach a reflector to the object to be measured and then point the visible, red light beam at the reflector and measure.

- Easy one-hand operation
- Storage of mean/max/min value, last reading
- Measurement distance up to 600 mm
- Robust design on account of SoftCase (protective case)

testo 465, rpm measuring instrument set: Measuring instrument with SoftCase (protective case) in transport case (plastic), incl. reflectors, batteries and calibration protocol

Part no.	
0563 0465	

Technical data				
Probe type	**Optically with mod. light beam**	Oper. temp.	0 to +50 °C
		Storage temp.	-20 to +70 °C
Meas. range	+1 to +99999 rpm	Battery type	2 AA batteries or rechargeable battery
Accuracy	±0.02% of mv		
±1 digit		Display	5-figure LCD display, 1-line
Resolution	0.01 rpm (+1 to +99.99 rpm) 0.1 rpm (+100 to +999.9 rpm) 1 rpm (+1000 to +99999 rpm)	Weight	145 g
		Warranty	2 years
		Dimensions	144 x 58 x 20 mm
		Battery life	40 h

Accessories	Part no.
Reflectors, self-adhesive (1 pack = 5 off, each 150 mm long)	0554 0493

Calibration Certificates	Part no.
Accessories and Technical data	
ISO calibration certificate/rpm optical and mechanical rpm measuring instruments; cal. points 500; 1000; 3000 rpm	0520 0012
ISO calibration certificate/rpm optical rpm measuring instruments; calibration points 10; 100; 1000; 10000; 99500 rpm	0520 0022
ISO calibration certificate/rpm Calibration points freely selectable from 10 to 99500 rpm	0520 0114
DKD calibration certificate/rpm Optical rpm probes, 3 points in instrument measurement range (1 to 99,999 rpm)	0520 0422

testo 470

Measuring instrument for non-contact and mechanical rpm measurement

testo 470, the ideal combination of optical and mechanical rpm measurement. An optical measurement becomes a mechanical measurement by simply attaching an adapter for probe tip or surface speed disc.

- Easy one-hand operation
- Measurement of rpm, speeds and lengths
- Storage of mean/max./min. values, last reading
- Measurement distance up to 600 mm (optical measurement)
- "Low Batt" warning
- Robust design with SoftCase (protective case)

testo 470 with adapters for versatile measurement applications

Mechanical with probe tip

Mechanical with surface speed disc

Non-contact (optical)

testo 470, rpm measuring instrument set: Instrument with SoftCase (protective case) in transport case, incl. adapter, probe tip, surface speed disc, reflectors, batteries and calibration protocol

Part no.	
0563 0470	

Technical data		
Probe type	Optically with mod. light beam	Mechanical
Meas. range	+1 to +99999 rpm	+1 to +19.999 rpm
Accuracy ±1 digit	±0.02% of mv	±0.02% of mv
Resolution	0.01 rpm (+1 to +99.99 rpm) 0.1 rpm (+100 to +999.9 rpm) 1 rpm (+1000 to +99999 rpm)	

Oper. temp.	0 to +50 °C
Storage temp.	-20 to +70 °C
Battery type	2 AA batteries
Battery life	40 h
Display	5-figure LCD display, 1-line
Dimensions	175 x 60 x 28 mm
Weight	190 g
Warranty	2 years

	0.1 m	6"	12"
m/min	0.10-1999	0.10-1524	0.40-609.6
ft/min	0.40-6550	0.40-5000	0.40-2000
in/min	4.00-78700	4.00-6000	4.00-24000
m/sec	0.10-33.30	0.10-25.40	0.10-10.16
ft/sec	0.10-109	0.10-83.33	0.10-33.33
m	0.00-99999	0.00-99999	0.00-99999
ft	0.00-99999	0.00-99999	0.00-99999
in	0.00-99999	0.00-99999	0.00-99999
Units		rpm, m/min, ft/min, in/min, m, ft, in	

Accuracy: (±1 digit/0.02 m/1.00 inch depending on resolution)
Measuring wheels: 0.1m, 6" (included)

Accessories	Part no.
Reflectors, self-adhesive (1 pack = 5 off, each 150 mm long)	0554 0493
Measuring wheel 12"	0554 4755
Measuring wheel 6"	0554 4754

Calibration Certificates	Part no.
Accessories and Technical data	
ISO calibration certificate/rpm optical and mechanical rpm measuring instruments; cal. points 500; 1000; 3000 rpm	0520 0012
ISO calibration certificate/rpm optical rpm measuring instruments; calibration points 10; 100; 1000; 10000; 99500 rpm	0520 0022
ISO calibration certificate/rpm Calibration points freely selectable from 10 to 99500 rpm	0520 0114
DKD calibration certificate/rpm Optical rpm probes, 3 points in instrument measurement range (1 to 99,999 rpm)	0520 0422

testo 471

Measuring instrument for non-contact and mechanical rpm measurement with additional thread measurement adapter

With the testo 471, the lengths and speeds of threads, wires or (glass) fibres can be measured. The plug-in thread measurement adapter has a very lightly running, specially coated measuring wheel and a deflection pulley, in order to be able to measure with as little tension as possible.

Optical measurement with reflective tape and mechanical measurement with a surface speed disc or measurement tip are also possible.

- Measurement of rpm, speeds and lengths (as testo 470)
- Thread measurement adapter for measuring the speed and length of threads, wires and fibres
- Measurement distance up to 600 mm (optical measurement)
- Battery check "Low Bat"
- Robust design

testo 471, Measurement of the speeds and lengths of threads

rpm-measurement set:

Measuring instrument in protective SoftCase in transport case, incl. thread measurement adapter, adapter, probe tip, surface speed disc, reflectors, batteries and calibration protocol

Part no.
0563 4710

Mechanical with thread counter

Non-contact (optical)

Mechanical with probe tip

Mechanical with surface speed disc

Technical data		
Probe type	Optically with mod. light beam	Mechanical
Meas. range	+1 to +99999 rpm	+1 to +19.999 rpm
Accuracy ±1 digit	±0.02% of mv	±0.02% of mv
Resolution	0.01 rpm (+1 to +99.99 rpm) 0.1 rpm (+100 to +999.9 rpm) 1 rpm (+1000 to +99999 rpm)	

Oper. temp.	0 to +50 °C
Storage temp.	-20 to +70 °C
Battery type	2 AA batteries
Dimensions	175 x 60 x 28 mm
Battery life	40 h
Display	5-figure LCD display, 1-line
Weight	190 g
Warranty	2 years

	0.1 m	6"	12"
m/min	0.10-1999	0.10-1524	0.40-609.6
ft/min	0.40-6550	0.40-5000	0.40-2000
in/min	4.00-78700	4.00-6000	4.00-24000
m/sec	0.10-33.30	0.10-25.40	0.10-10.16
ft/sec	0.10-109	0.10-83.33	0.10-33.33
m	0.00-99999	0.00-99999	0.00-99999
ft	0.00-99999	0.00-99999	0.00-99999
in	0.00-99999	0.00-99999	0.00-99999
Units	rpm, m/min, ft/min, in/min, m, ft, in		

Accuracy: (±1 digit/0.02 m/1.00 inch depending on resolution)
Measuring wheels: 0.1m, 6" (included)

Accessories	Part no.
Reflectors, self-adhesive (1 pack = 5 off, each 150 mm long)	0554 0493
Measuring wheel 12"	0554 4755

Calibration Certificates	Part no.
Accessories and Technical data	
ISO calibration certificate/rpm optical rpm measuring instruments; calibration points 10; 100; 1000; 10000; 99500 rpm	0520 0022
ISO calibration certificate/rpm optical and mechanical rpm measuring instruments; cal. points 500; 1000; 3000 rpm	0520 0012
ISO calibration certificate/rpm Calibration points freely selectable from 10 to 99500 rpm	0520 0114
DKD calibration certificate/rpm Optical rpm probes, 3 points in instrument measurement range (1 to 99,999 rpm)	0520 0422

testo 477 | LED hand-held stroboscope for high revolutions

The testo 477 LED hand-held stroboscope measures rotations and vibrations and facilitates measurements during operation. The stationary image enables the inspection and quality assessment of high-frequency moving parts.

- Extremely wide measurement range: Up to 300,000 flashes per minute (fpm)
- Very high light intensity of up to 1500 Lux
- Long operating time due to long battery life of up to 5 h
- Ideal also for robust applications on account of impact protection and protection class IP65
- Trigger input and output enable connection to external systems and control by an external sensor

testo 477, LED hand-held stroboscope, with case, trigger signal plug, batteries and calibration protocol

Part no.
0563 4770

Accessories	Part no.
ISO calibration certificate/rpm, optical and mechanical rpm measuring instruments; cal. points 500; 1000; 3000 rpm	0520 0012
ISO calibration certificate/rpm, optical rpm measuring instruments; calibration points 10; 100; 1000; 10000; 99500 rpm	0520 0022
DKD calibration certificate/rpm, Optical rpm probes, 3 points in instrument measurement range (1 to 99,999 rpm)	0520 0422

Technical data			
Protection class	IP65	**Trigger input**	
Meas. range	30 to 300.000 fpm	Principle	Optocoupler
Display	LCD, multiline	Low level	‹ 1 V
Accuracy	0.02 % (±1 digit)	Level	3 to 32 V (square wave voltage), NPN + PNP
Resolution	±0.1 (30 to 999 fpm) / ±1 (1000 to 300.000 fpm)		
Flash duration	Can be adjusted	Pulse duration	50 µs
Flash intensity	1500 Lux at 6000 FPM / 20 cm	Reverse battery protection	Yes
Flash colour	Approx. 6500 K	**Trigger output**	
Service life	NiMH rechargeable battery: Approx. 11 h at 6000 fpm Batteries: approx. 5 h at 6000 fpm	Principle	Short-circuit and surge-proof transistor output
		Level	NPN, max. 32 V
Dimensions	191 x 82 x 60 mm	Pulse duration	Can be adjusted
Weight	Approx. 400 g (with battery)	Maximum current	50 mA
Oper. temp.	0 to +45 °C	Reverse battery protection	Yes
Warranty	2 years		

testo 476

Light-intensive hand-held stroboscope

The testo 476 Pocket StrobeTM hand-held stroboscope measures and checks rotation and vibration movements. It facilitates the measurement of very small objects or in hard-to-access places. And all without interrupting the production process.

testo 476 is therefore ideal for measuring rpm and inspecting high-frequency moving parts.

The energy optimised switching electronics and light-intensive xenon flash lamp facilitate a high light intensity (approx. 800 lux).

testo 476, Pocket Strobe™ hand-held stroboscope incl. transport case, recharger with 4 country adapters and trigger signal connector

Part no.
0563 4760

- High setting accuracy and stability thanks to dynamic setting dial
- High light intensity due to energy optimised switching electronics and powerful xenon flashlamp
- Memory function (last reading is stored when switched off)
- Powerful rechargeable battery pack for min. 2 hours' continuous operation without mains connection over the whole frequency range
- Trigger input for synchronizing flash sequence (long-term observation)
- Tripod connection in housing

Light-intensive xenon flashlamp

Accessories	Part no.
Spare xenon flashlamps (2 off) for hand-held stroboscope High light intensity	0554 4760

Calibration Certificates	Part no.
ISO calibration certificate/rpm optical and mechanical rpm measuring instruments; cal. points 500; 1000; 3000 rpm	0520 0012

Technical data	
Meas. range	+30 to +12500 rpm
Accuracy ±1 digit	±0.01% of mv
Resolution	1 rpm
Oper. temp.	0 to +40 °C
Dimensions	240 x 65 x 50 mm
Weight	415 g
Display	LCD, 1 line
Warranty	2 years

Display: 5 digit LCD display
Illumination: 800 Lux at distance of approx. 20 cm
Flash energy: max. 150 mJ
Flash duration: ‹20 µs
Light colour: 6000 to 6500 K
Type of operation: Rechargeable battery
Mains voltage rech. battery: 100 to 240 V, 50/60 Hz
Battery type: NiMH rech battery pack
Battery charging time: max. 3.5 h
Total discharge protection: Yes
Overload protection: Yes
Trickle charging: Yes
Connection external trigger: 0 to 5 V DTL/TTL compatible; 3.5 mm / 1/8
Standard plug: Uout=7.2 V unregulated
Housing material: ABS
Operating time: 1h at 30 to 12,500 rpm and 23°C (typically)
Flash lamp life: 100 mio. flashes

testo 175-S1 / -S2 — Current/voltage data logger

The data loggers for logging current and voltage profiles in industrial processes. The loggers can be looped, for example, into the incoming line of a transmitter to log or monitor current signals. testo 175-S2 shows the scaled signal directly in the display. Scaling is carried out in ComSoft.

- User-friendly operation, convenient analysis
- Non-volatile memory for secure data, even if the battery is empty
- On-site: Use testo 580 to collect data and transfer to your PC for analysis
- Data is read out without interrupting measurement

testo 175-S1 without display

testo 175-S2 with display
Actual size

testo 175-S1, current/voltage data logger, 1 channel, with external terminal block, wall holder and calibration protocol; calibration certificates (ISO/DKD) must be orderd separately	testo 175-S2, current/voltage datalogger with display, 1 channel, with external terminal block, wall holder and calibration protocol; calibration certificates (ISO/DKD) must be orderd separately
Part no. **0563 1759**	Part no. **0563 1761**

Accessories	Part no.
Transport and Protection	
Lock for wall holder for testo 175/177 data loggers	0554 1755
Additional accessories and spare parts	
Battery, 3.6 V/0.8 Ah 1/2 AA, for testo 175-T3/175-H1/175-H2/175-S1/175-S2	0515 0175
testo 580 data collector set with RS232, readout holders included, for testo 175/177 data loggers	0554 1778
testo 580 data collector set with USB, readout holders included, for testo 175/177 data loggers	0554 1764
testo 581 alarm signal output, floating, for testo 175/177, forwards information efficiently when limits are exceeded to e.g. horns, lamps, PLC etc.	0554 1769
Printer and Accessories	
Fast testo 575 printer, incl. 1 roll of thermal paper and batteries, infrared thermal line printer with graphics function	0554 1775
Spare thermal paper for printer (6 rolls)	0554 0569
Spare thermal paper for printer (6 rolls), measurement data documentation legible for up to 10 years	0554 0568
Label thermal paper (Testo patent) for testo 575 printer (6 rolls), can be applied directly	0554 0561
Software and Accessories	
ComSoft 4 Set - Basic with RS 232 interface, Basic software with diagram and table function, incl. desk-top holder, PC connection cable	0554 1759
ComSoft 4 Set - Basic with USB interface, Basic software with diagram and table function, incl. desk-top holders, PC connection cable	0554 1766
ComSoft 3 - Professional with data management, incl. database, analysis and graphics function, data analysis, trend curve (without interface)	0554 0830
ComSoft 3 - For requirements to CFR 21 Part 11, incl. database, analysis and graphics function, data analysis, trend curve (w/o interface)	0554 0821
RS232 interface for testo 175/177 incl. desk-top holders, PC connection cable, (please also order for ComSoft 3 - Professional)	0554 1757
USB interface, for testo 175/177 incl. desk-top holders, PC conn. cable, (Please order with ComSoft 3 - Professional)	0554 1768
Ethernet adapter, RS232 - Ethernet incl. software driver, mains unit, facilitates data communication in network	0554 1711
Calibration Certificates	
ISO calibration certificate/electrical, calibration in measurement ranges 0 to 20 mA; 4 to 20 mA; 0 to 1 V; 0 to 10 V	0520 1000

Technical data			
Ext. chann. (fixed)	1	Oper. temp.	-10 to +50 °C
Meas. range	0 to 1 V / 0 to 10 V 0 to 20 mA / 4 to 20 mA	Storage temp.	-40 to +70 °C
		Memory	16000
Accuracy ±1 digit	± 2 mV (0 to 1 V) ± 20 mV (1 to 10 V) ± 0.05 mA (0 to 20 mA)	Weight	80 g
		Battery type	Lithium battery
		Dimensions	82 x 52 x 30 mm
		Warranty	2 years
Resolution	1 mV (0 to 1 mV) 10 mV (1 to 10 mV) 0.01 mA (0 to 20mA)	Battery life: 2.5 years with measuring cycle of 15 min (-10 to +50 °C)	
		Measuring cycle: 1 s to 24 h	
Measurement resistance 10 V: 111,1 k Ohm; current drop 90 µA		Software: Microsoft Windows 95b / 98 / ME / 2000 / XP / Vista	
Measurement resistance 1 V: 11,1 k Ohm; current drop 90 µA			
Measurement resistance 20 mA: 250 Ohm; current drop 5 V			

Please send for more information:

Monitoring Instruments for Food Production, Transport and Storage

Measurement Engineering for Restaurants, Catering and Supermarkets

Measurement Engineering for Air Conditioning and Ventilation

Measurement Engineering for Heating and Installation

Measurement Solutions for Emissions, Service and Thermal Processes

Measurement Solutions for Refrigeration Technology

Stationary Measurement Solutions for Air Conditioning, Drying, Cleanrooms and Compressed Air

Measurement Solutions for Production, Quality Control and Maintenance

Measurement Solutions for Climate Applications in Industry

Reference Measurement Technology for Industry

Measuring Instruments For Temperature

Measuring Instruments for Humidity

Measuring Instruments For Velocity

Measuring Instruments for Pressure and Refrigeration

Multi-Function Measuring Instruments

Measuring Instruments for Flue Gas and Emissions

Measuring Instruments for RPM, Analysis, Current/Voltage

Measuring Instruments For Indoor Air Quality, Light And Sound

Stationary Measurement Technology Humidity / Differential Pressure / Temperature / Process Displays

Stationary Measurement Technology Compressed Air Humidity / Compressed Air Consumption