



Ex-Pt 720 • Ex 171-0 • Ex 171-3

Measurement Technology in Ex-Zones



°C

% RH

Ex measuring instruments by Testo

Testo is one of the worldwide leading manufacturers of portable measuring instruments. Testo has developed measuring instruments for demanding applications in hazardous areas in industry. They all correspond to the new Ex-protection directive ATEX.

Whether you want user-friendly control measurements or long-term measurements with convenient data processing and analysis via PC, Testo has the ideal solution for all applications.

Basis of explosion protection

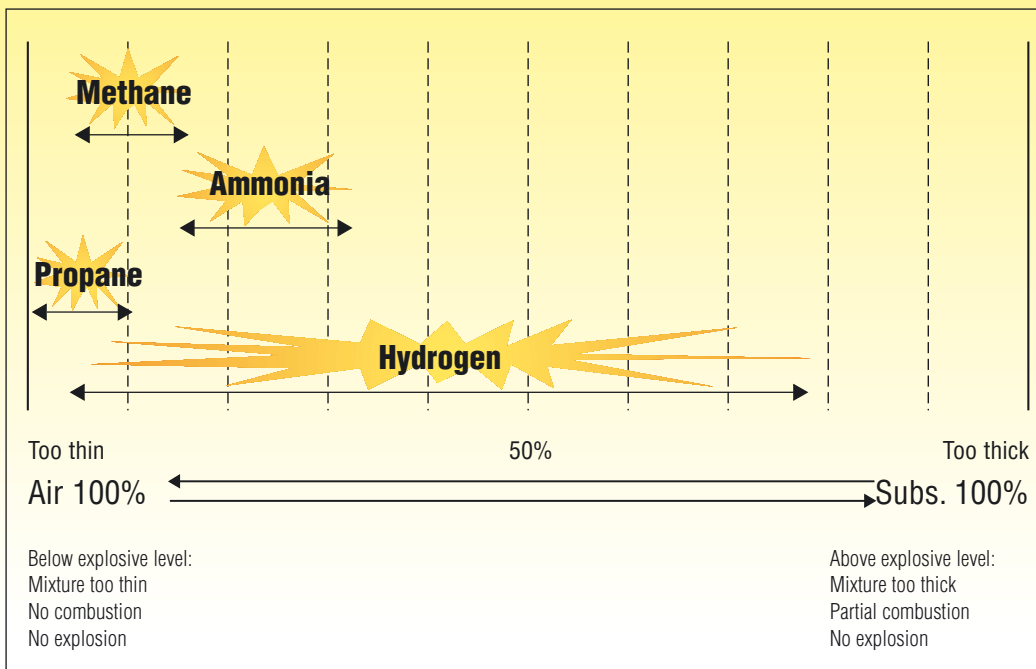
An explosion can only occur where there is a mixture of flammable material and a source of oxygen.

The flammable substance can be in the form of gas, smog, vapours, smoke or dust.

An explosion can only occur if both materials are in the explosion zone.

Please refer to diagram for examples.

An explosion depends on many parameters. Reference values are only available for pure substances and atmospheric conditions.





Symbols for European explosion protection in accordance with CENELEC



Instrument groups:

The instrument groups as laid out in the directive 94/9/EG (ATEX 100) classify the use of electrical instruments intended for hazardous areas as follows:

Group I Instruments for use in mining operations endangered by firedamp and/or flammable dusts.

Group II Instruments for all other areas, such as chemical, petrochemical and milling (dust) industries.



Application range:

ATEX directive certified instruments receive an additional marking which describes the place of application. First the instrument group appears, then the category and finally the reference to the atmosphere (gas, dust and /or mining).

Zones and Divisions:

Hazardous areas are classified into zones, based on the frequency of the occurrence of an explosive gas atmosphere.

Gases, vapours, smog	Dust	Ex-atmosphere exists:
Zone 0 Category 1G	Zone 20 Category 1D	Permanent, long-term or frequent
Zone 1 Category 2G	Zone 21 Category 2D	Occasional
Zone 2 Category 3G	Zone 22 Category 3D	Rare and only short-term



European explosion protected according to CENELEC Standards EN 50...



Type of protection:

In areas where the occurrence of an explosive mixture of flammable materials and air cannot be prevented by applying primary explosion protection, special measures for the prevention of ignition sources are to be taken. For example: separation (o, q, m) exclusion (p), special mechanical construction (d, e), intrinsic safety (ia, ib) or other methods (s).



Explosion groups: See above

Groups II of the "Intrinsic safety" explosion group can be further classified into IIA, IIB and IIC. Requirements on explosion protection become more stringent with increasing order.

Marking	Typical gas	Ignition energy in µJ to EN 50020
I	Methane	max. 525
IIA	Propane	< 320
IIB	Ethylene	< 160
IIC	Hydrogen	< 40



Temperature classes:

Electrical instruments in Group II are divided into temperature classes according to the maximum surface temperature. The gases are then classified in accordance with the different ignition temperatures.

Temperature class	T1	T2	T3	T4	T5	T6
Max. surface temperature	450°C	300°C	200°C	135°C	100°C	85°C
Examples	Propane Methane Ammonia	Ethylene Alkohols Acetylene	Petrol Solvents	Ethylether	-	Carbon- disulphide

For fast and accurate temperature measurements in hazardous areas.

Ex-Pt 720 is the ideal measuring instrument for control measurements on account of its wide measuring range and accurate four-wire technology.

- Easy-to-read due to large display
- Highly accurate
- Wide range of probes
- Fast custom-designed probes service
- Approval in accordance with European and American standards

I.S. Class I Div 1 ABCD T4

Class 1 Zone 0 AEx ia IIC T4

Ex II 2(1) G EEx ia IIC T4

TÜV 01 ATEX 1757 X

Technical data

Sensor	Testo Pt 100 sensor in 4-wire technology
Range	-50 to +400°C
Accuracy	Instrument: (± 1 digit) $\pm 0.2^\circ\text{C}$ (-50 to +199.9°C) $\pm 0.2\%$ of reading (+200 to +400°C) System: (measured with imm./pen. probes) better $\pm 0.5^\circ\text{C}$ (-50 to +99.9°C) better $\pm 0.5\%$ (+100 to +400°C)
Resolution	0.1°C/1°C, automatic switchover from 1/10°C to 1°C (from +200°C)
Operating temperature	-10 to +50°C
Storage/transport temp.	-20 to +70°C
Battery life	>100h (alkali-manganese 9V block)
Dimensions/weight	Instrument: 190 x 57 x 42 mm Instrument incl. battery 200 g
Housing	ABS, coated
Display	LCD, 14 mm character height
Other	Low battery display Autom. switch-off °C/°F
Guarantee	Meas. instrument: 2 years Probes: 2 years

Please observe the defined Ex application zone



Ex-Pt 720

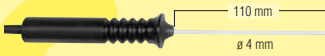


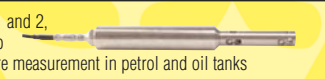
Temperature measuring instrument incl. battery and calibration protocol

Part no. 0560 7236



Temperature measurement in hazardous areas

Order form

Qty.	Description	Part no.			
	Ex-Pt 720* , temperature measuring instrument with holder strap, incl. battery and calibration protocol	0560 7236			
Probes		Probe tip	Measuring range Accuracy	t ₉₉ s	
	Imm./pen. probe* , for Zone 1 and 2 Robust, waterproof		-50 to +400 °C Class A	12 s	0628 1232
	Surface probe* , for Zone 1 and 2 robust, waterproof, with widened measuring tip, for flat surfaces		-50 to +400 °C Class B	40 s	0628 1932
	Robust immersion/penetration probe* (IP 65), for Zone 0, 1 and 2, made of stainless steel, PUR cable up to +80 °C can be used, IP 54 plug-in connection		-50 to +400 °C Class A	10 s	0628 2232
	Robust immersion probe* (IP 67), for Zone 0, 1 and 2, made of stainless steel, FEP cable can be used at up to 205 °C, 25 m long cable. Application: temperature measurement in petrol and oil tanks		-50 to +400 °C Class A	15 s	0628 2432
Fast custom-designed probes service Temperature probes are available in different sizes. Why not give us a call?					
Accessories					
	Leather case* for measuring instrument, with 2 probe holders and fixing clip.				0516 0133
	Case for secure and orderly storage of measuring instrument, probes and accessories.				0516 0182
	Transport case for secure and orderly storage of measuring instrument, probes and accessories.				0516 0184
	Calibration certificate		See back page		

* Approved for the defined Ex-zone

Sender

Name _____ Address _____ Company _____
 Department _____ Order no. _____ Date, Signature _____

Professional Ex 171-0 data logger

Saves temperature data efficiently

The **Ex 171-0**, in its extremely robust metal housing, guarantees a high measuring accuracy level for long-term measurements. The interface to download the data to your PC is attached outside the hazard area. The data is shown in table or graph form using software.

- Saves 55,000 readings
- Tamper-proof readings
- Waterproof, robust metal housing, IP 68



Technical data

Measuring range	-35 to +70 °C (NTC)
Accuracy ±1 digit	±0.5 °C (-35 to +39.9 °C) ±0.6 °C (+40 to +70 °C)
Resolution	0.1 °C (-35 to +70 °C)
Housing material	Aluminium, anodised
Operating temp.	-35 to +70 °C
Storage temp.	-40 to +85 °C
Memory	55000 readings
Measuring interval	2 s to 24h (freely selectable)
Battery type	Lithium battery
Battery lifetime:	Lithium battery up to 5 years
Software:	Menu guided from DOS version 3.1 and Windows version 3.0
Dimensions	131x68x26 mm
Weight	305 g
Warranty	2 years

TÜV 00 ATEX 1586

Ex 171-0

Temperature data logger, incl. starting magnet, battery and calibration protocol

Part no. 0577 1730

Order form

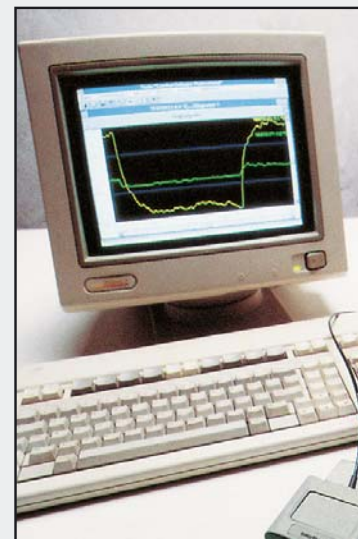
Qty.	Description	Part no.	
	Ex 171-0* (Temperature data logger) incl. starting magnet, battery and calibration protocol	0577 1730	
Accessories			
	Holder with lock* for data logger Theft-proof	0554 1782	
	ComSoft 3 for data management incl. database, analysis and graphics function, data analysis, trend curve	0554 0830	
	ComSoft 3 for requirements in accordance with CFR 21 Part 11, incl. database, analysis and graphics function, data analysis, trend curve	0554 0821	
	Interface , can be attached to data logger	0554 1781	
	Transport case , (plastic) for data loggers (max. 5 off) and accessories. Not for use in Ex-Zone.	0516 0117	
	Calibration certificate	See back page	

* Approved for the defined Ex-zone

Sender

Name _____ Address _____ Company _____
 Department _____ Order no. _____ Date, Signature _____

Easy
with



Electronic Ex 171-3 thermohygrograph



Saves temperature and humidity data efficiently

data analysis Ex-data logger



Data analysis on your PC with user-friendly Windows Software.



Data in table and graph form; all measurement and limit values at a glance.

The **Ex 171-3**, in its extremely robust metal housing, guarantees a high accuracy level for long-term measurements. The interface to download the data to your PC is attached outside the hazard area. The data is shown in table or graph form using software.

- Saves 20,000 readings
- Tamper-proof readings
- Control and adjustment option with adjustment set



II 2G EEx Ia IIC T4

TÜV 00 ATEX 1586



Technical data	
Probe type	Testo humidity probe, capacitive
Measuring range	0 to +100 %RH -10 to +50 °C (NTC)
Accuracy ±1 digit	±2 %RH (+2 to +98 %RH) ±0.4 °C (-10 to +50 °C) (NTC)
Resolution	0.1 %RH (0 to +100 %RH) 0.1 °C (-10 to +50 °C) (NTC)
Operating temp.	-20 to +70 °C
Storage temp.	-40 to +85 °C
Memory	20000 readings
Measuring interval	2 s to 24 h (freely selectable)
Housing material	Aluminium, anodised
Battery type	Lithium battery
Battery life	Up to 5 years
Dimensions	131x72x68 mm
Weight	320 g
Software	Menu-guided from DOS Version 3.1 and Windows Version 3.1
Warranty	2 years

Ex 171-3	
Electronic thermohygrograph, humidity data logger %RH, °C, incl. starting magnet, battery and calibration protocol	
Part no.	0577 1733

Order form			
Qty.	Description	Part no.	
	Ex 171-3* Electronic thermohygrograph incl. starting magnet, battery and calibration protocol	0577 1733	
Accessories			
	Holder with lock* for data logger Theft-proof	0554 1782	
	ComSoft 3 for data management incl. database, analysis and graphics function, data analysis, trend curve	0554 0830	
	ComSoft 3 for requirements in accordance with CFR 21 Part 11, incl. database, analysis and graphics function, data analysis, trend curve	0554 0821	
	Interface , can be connected to data logger	0554 1781	
	Control and humidity adjustment set 11.3 %RH / 75.3 %RH, incl. adapter for humidity probe	0554 0660	
	Stainless steel sintered cap* , Ø 21 mm, to screw onto humidity probe Protection at high mechanical loads and high flow speeds	0554 0640	
	Transport case (plastic) for data loggers (max. 5 off) and accessories	0516 0117	
	Calibration certificate	See back page	

* Approved for defined Ex-zone

Sender

_____	_____	_____
Name	Address	Company
_____	_____	_____
Department	Order no.	Date, Signature

ComSoft 3.3 Version 21CFR11

A validation-capable ComSoft 3.3 Version 21 CFR 11 was developed especially to manage and file process data. All of the FDA requirements can be fulfilled if used as part of a cohesive system.



Order form for Data loggers					
	Calibration unit	Calibration points	Part no.	Qty.	
Calibration certificate/Temperature					
DKD	Temperature data logger	-20 °C; 0 °C; +60 °C	0520.0261		
ISO	Temperature data logger	-18 °C; 0 °C; +60 °C	0520.0151		
		-8 °C; 0 °C; +40 °C	0520.0171		
Calibration certificate/Humidity					
DKD	Humidity data logger	11.3 %RH; 75.3 %RH at 25 °C	0520.0246		
ISO	Humidity data logger	11.3 %RH; 75.3 %RH at 25 °C	0520.0076		

Order form for Ex-Pt 720						
	Calibration unit	Calibration points	Part no.	Qty.	Please enter probe number for Ex-Pt 720	
Calibration certificate/Temperature for air/immersion probe						
DKD	Temp. meas. instr. with air/immersion probe	-20 °C; 0 °C; +60 °C	0520.0211			
		0 °C; +100 °C; +200 °C	0520.0221			
ISO	Temp. meas. instr. with air/immersion probe	-18 °C; 0 °C; +60 °C	0520.0001			
		0 °C; +150 °C; +300 °C	0520.0021			
		0 °C; +300 °C; +600 °C	0520.0031			
Calibration certificate/Temperature for surface temperature						
DKD	Temp. measuring instrument with surface probe	+100 °C; +200 °C; +300 °C	0520.0271			
ISO	Temp. measuring instrument with surface probe	+60 °C; +120 °C; +180 °C	0520.0071			

Subject to change without notice.

Fax to:

Sender

Please send me info on the following:

Name

Company Department

Address Order no.

Date, Signature Tel/Fax

- Industry Catalogue
- Industrial transmitters for temperature and humidity
- Instruments to monitor compressed air
- Temperature mounting probes
- Reference measuring instruments for temperature, humidity, flow, CO, CO₂, pressure, rpm, mV/mA
- Testo Cal Overview