Process display with testo 54: display, switch and network, online logging, alarm

Does the reading have to be available in legible form immediately beside the location or even on a remote switch cabinet? Is an alarm to be triggered or an assembly activated when a certain alarm level is reached?
The resistance thermometers (Pt 100 and others) and thermocouples (types K, J, T, S and others) can be displayed directly on the testo 54 displays. All you need to do to see the reading in a clear, legible form is to select the input type on site in the well structured user menu. Other types (54-2, -4, -7) are used for displaying analog signals (4...20 mA or 0...10 V DC)

	Overview of types		Inputs		Supply	Memory	Totaliser (sum function)	Outputs			
	Types	Order no.	Thermocouple type B/E/J/K/N/R/S/T resistance thermometer 0...400 / 0...4000 Ohm millivolt input 0...100/-100...+100 mV	4...20mA 0...20 mA 0...10 V -10...+10 V +2...+10 V	Voltage	Min./Max. readings memory	ideal for flow-through application	2 relay * outputs	24 V DC/50 mA ** auxiliary power output	RS485 output for online monitoring cf. page 56	
	54-1DC	5400 6551	√	–	①	√	–	–	–	–	
	54-1AC	5400 7551	√	–	②	√	–	–	√	–	
	54-2DC	5400 6553	–	√	①	√	–	√	–	–	
	54-2AC	5400 7553	–	√	②	√	–	√	√	–	
	54-3DC	5400 6554	√	–	①	√	–	√	–	–	
	54-3AC	5400 7554	√	–	②	√	–	√	√	–	
	54-4DC	5400 6529	–	√	①	√	–	–	–	–	
	54-5DC	5400 6531	Pt 100 only	–	①	√	–	–	–	–	
	54-6DC	5400 6532	TC only	–	①	√	–	–	–	–	
	54-7DC	5400 6555	–	√	①	√	√	√	–	√	
	54-7AC	5400 7555	–	√	②	√	√	√	√	√	
	54-8DC	5400 6556	√	–	①	√	–	√	–	√	
	54-8AC	5400 7556	√	–	②	√	–	√	√	√	

① 20...30 V DC
② 100...250 V AC, 50/60 Hz

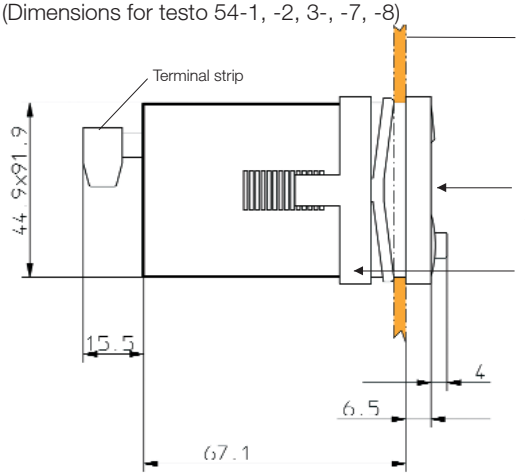
Features

- Optimal illumination even in dark surroundings (engine rooms etc.)
- * Relay outputs (54-2, 54-3, 54-7, 54-8) can be activated directly with 90 to 250 V AC/300 V DC, max. 3 A, min. 30 mA
- ** Auxiliary energy output 24 V DC: no need of additional supply unit for transmitter
- Data saved for 10 years (EEPROM): scaling limits, input type and other parameters stored securely
- IP 65 from front (when installed))
- Key locking possible
- Very easy installation (see illustration below)

Front view (here testo 54-2AC)

Very easy installation

(Dimensions for testo 54-1, -2, 3-, -7, -8)



Dimensions testo 54-4, -5, -6:
- Front size 48 x 24 mm, slot 45 x 22.2 mm
- Depth 59 mm

Rear view (here testo 54-2AC)

Process display with testo 54: display, switch and network, online logging, alarm

Easy wall mounting

Wall panel mounting is not always possible or practicable. The wall panel or alarm column allows the testo 54 displays to be mounted directly beside the measuring point or at other suitable locations. The alarm column is supplied fully wired incl. clamp connection block (duplicated switch outputs for external alarm) and a 3 m power cable. The initial alarm is an optical signal, the main alarm an acoustic signal. Both alarm levels can be acknowledged using the keysor the MPI input (digital).

Designation	Order no.
Wall panel for testo 54 * (for t 54-1, -2, -3, -7, -8)	0629 6666 with 0699 4832/4
Alarm column with testo 54-2 AC	0554 6000 with 0699 4832/1
Alarm column with testo 54-3 AC	0554 6000 with 0699 4832/3
Alarm column with testo 54-7 AC**	on request
Alarm column with testo 54-8 AC**	on request
ComSoft software + level converter RS485/RS232 for online logging	0554 0842

* please order testo 54 separately
** inc. RS 485 output

The two relay outputs of the testo 54 enable decentralized alarms when limit values are exceeded, e.g. with the help of the alarm column

Wall panel* (180x130x100)
inc. 3x cable entry
M 20x1.5

Alarm column with integrated audible and visual alarm

Optimal for integration in a wall panel

Convenient operating menu (testo 54-1/-2/-3/-7/-8), key locking possible

What is para-metera-ble?	– Input signal type – Scale – Decimal places – Characteristic curves (e.g. root function)	Store yes / no	– 2 limit values – 2 hystereses – Deactivation automatic or acknowledgement by button/MPI in-put	– Suppression of leak flow volume* – Conversion factor* – Decimal places* – Deactivation manual/MPI input*	Further parameters – Address RS485 */** – Reset to default va-lues

What is display-ed?	Current value →	Min./max. →	Limit value 1/2 (also programmable in display mode)			Totaliser* →	Current value

P

Change by pressing button

*for testo 54-7 / ++ for testo 54-8 MPI = Multi Purpose Input

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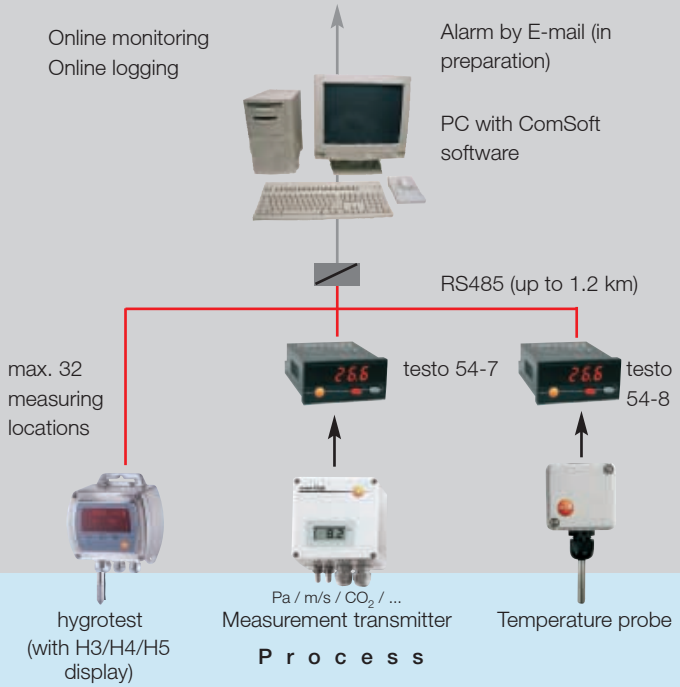
Online monitoring and online logging with the Testo software ComSoft

Stationary measurement technology is used mainly for the continuous forwarding of measurement data to a regulating system (PLC)

Parallel to this in many applications, however

- the measurement data should be automatically stored **(Online logging)**
- a visualization of the process should be carried out
- alarm information should be forwarded **(Online monitoring)**

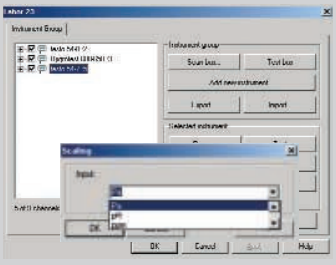
Stationary measurement technology from Testo fulfils both demands. Independently from the parallel forwarding of analog signals (e.g. 4...20 mA) to a regulating system, the Testo ComSoft 0554 0842 collects current readings online from up to 32 participants via a low-cost 2-wire network (RS485).



Network participants are:

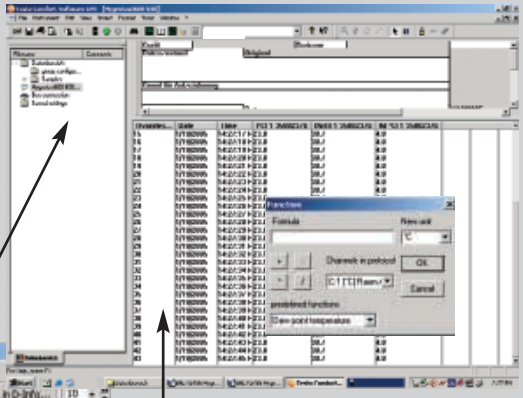
- the humidity measurement transmitters **hygrotest** (with H3/H4/ or H5 display; these display types contain the RS485 output), (see also page 6 ff).
- **stationary temperature probes** (thermocouples, Pt100, Pt1000 etc.). The process displays testo 54-8 (see also page 54/55) work here multi-functionally as RS485 signal converters, local displays and decentralized alarms (2 relay outputs). All standard characteristic curves are stored in testo 54-8.
- unlimited measurement transmitters (e.g. testo 6740 6340, but also all products from other manufacturers with analog output 4...20 mA or 0...10 V). The process displays testo 54-8 (see also page 54/55) work here multi-functionally as RS485 signal converters, local displays and decentralized alarms (2 relay outputs). A charateristic curve change (up to 24 positions) can be carried out via the testo 54-7, as well as the totaliser function for flow-through measurement transmitters.

The RS485 signal is converted to RS232 via a level converter (included in delivery of ComSoft 0554 0842).



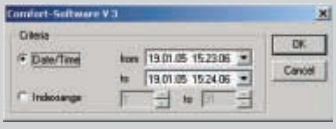
Online logging: The measurement data are continuously recorded in the ComSoft.

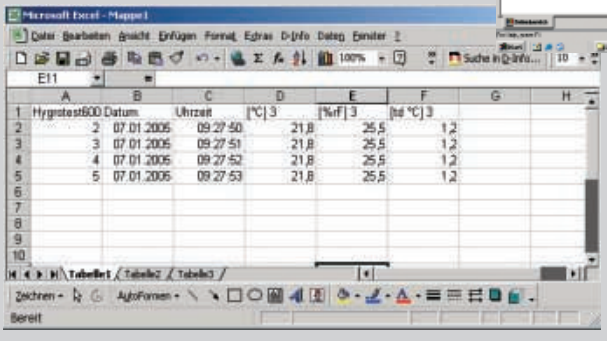
The network is defined via a convenient parametration window.



The data are administered in the archive area (automatic storage cycles).

The measurement data can be exported at any time directly out of the measurement reading table into Excel, also during the current online measurement. The time period of the data to be stored can be freely selected.

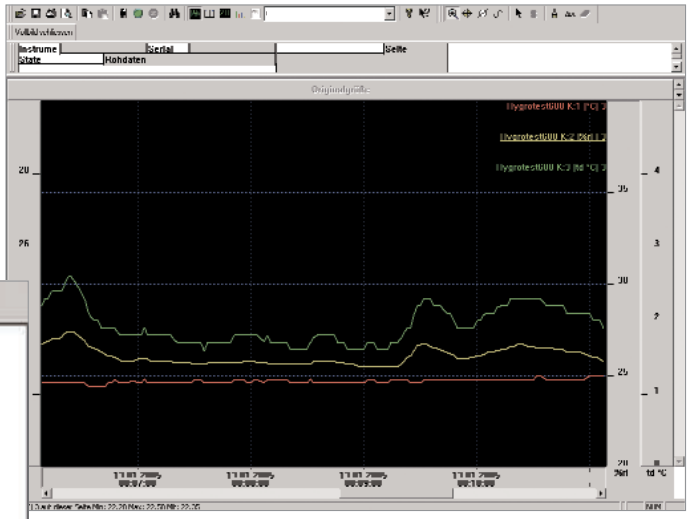


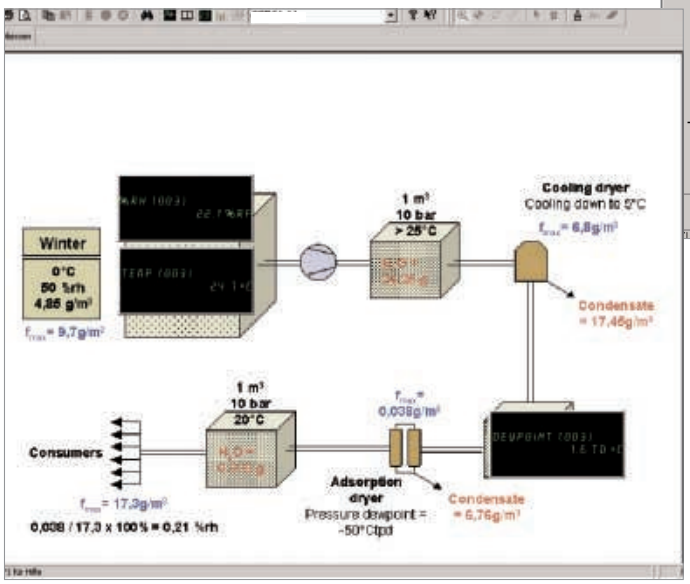


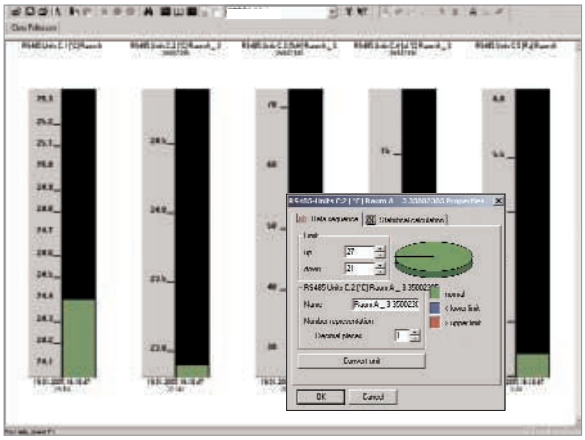
The readings tables present one measurement channel per column. Additional columns with customer-specific functions (e.g. mean values) can be added.

Visualization with the help of ComSoft

- Curve graphs (comments can be added)
- Mosaic images (number fields), in which a Bitmap system image / process schematic can be integrated
- Bar charts / block charts (with colour change when limit values are exceeded



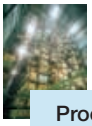




Alarm by E-mail, SMS or telephone/mobile phone: (in preparation)

- Free definition of alarm limits for all measuring channels
- Definable E-mail addresses; rerouting as SMS or telephone call from provider
- Acknowledgement by E-mail or PC
- Alarm printer control

Ask also for our commissioning and instruction services on site.



Process with Testo online monitoring

E-mail

Provider

System supervisor

Problem-solving measure

E-mail, SMS or telephone call

The data can be stored in the following file types:

– ComSoft file / XML file

– Easy export to Excel directly from the readings table. Customer-specifically adapted measurement protocols / reports can be generated and printed (e.g. incorporation of the company logo).

Order No. 0554 0842

- ComSoft software with special driver for online measurement
- optimal for processes which are to be recorded without interruption on a PC
- for hygrotest and testo 54-7 /-8
- graphic functions
- export to Excel
- inc. level converter RS485/232
- with detailed step-by-step insruction manual

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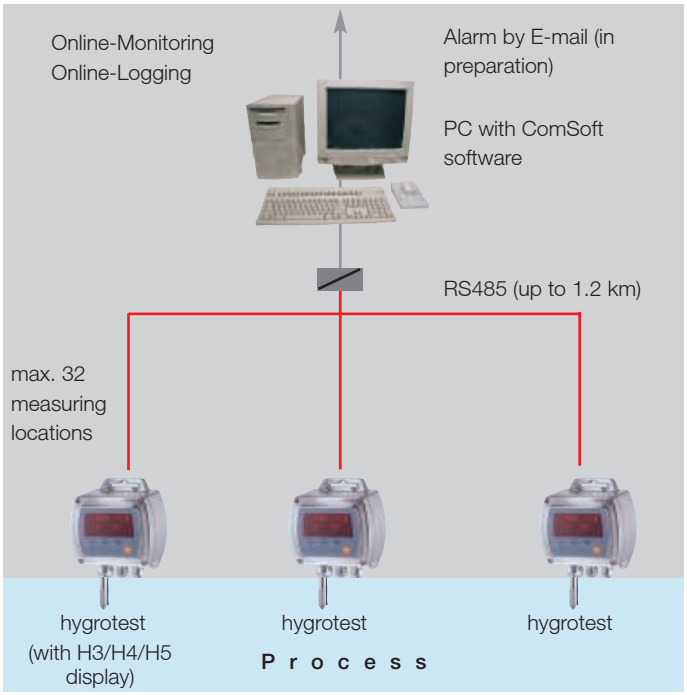
21 CFR 11 – conform online monitoring for hygrotest with the Testo software ComSoft

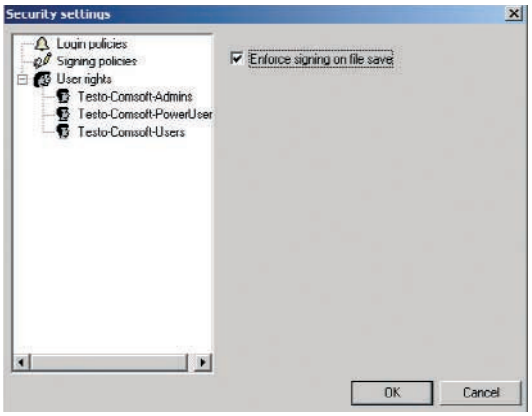
More and more manufacturers in the pharmaceutical, chemical and food sectors have cause to carry out their process data recording, processing and forwarding in accordance with the FDA guideline **21 CFR part 11**.

The **FDA** (US Food and Drug Administration) has laid down this guideline in order to ensure the data security of electronically recorded measurement data. The manufacturers of FDA-regulated products are subject to strict **validation requirements.** The prerequisite for this is the continuous recording and long-term storage of process parameters in measurement data files (Electronic Records) under the following requirements:

– **Authenticity:** Users and administrators of the electronic records must be clearly identifiable.

– **Integrity:** The electronic records must allow clear conclusions about the processes documented by them. All changes must be documented.

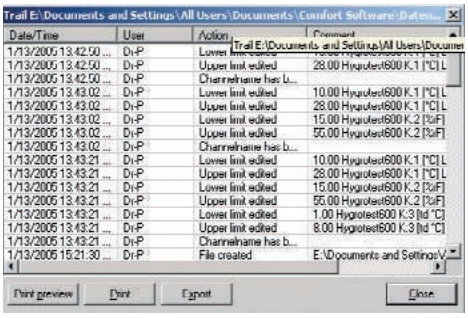




Testo offers validation-capable humidity measurement transmitters (hygrotest with displays H3, H4 or H5, cf. page 6 ff.) and the **validation-capable software ComSoft 0554 0849** for stationary humidity applications.

Up to 32 hygrotest humidity measurement transmitters can be connected with the help of a RS485 network. The hygrotest operating menus are protected by passwords; each hygrotest moreover passes its serial number on to the ComSoft in addition to the measurement data. An advantage of the system in comparison to data logger-based solutions: Parallel to the CFR-conform recording of data, the process can be controlled and regulated with the help of the analog outputs (e.g. 4...20 mA)

The entire system has been certified by the **Fraunhofer** Institute as 21 CFR 11-conform and fulfils the requirements of the EU GMP (Good Manufacturing Practice)



The validation-capable ComSoft 0554 0849 distinguishes between different user groups, to which individual **user rights** can be allocated, see ill. The user's insertion of formulae into the measurement data table can, for instance, be refused.

Some of the rights concern the system level (Windows). All relevant changes at this level are recoded in the so-called **System Audit Trail** (Windows session protocol) with a time stamp and user recognition, i.e.log-in/log-out, user administration, administration of the archive/data area or changes to the system comfiguration.

Further rights concern the ComSoft, where the relevant changes at this level are registered in the so-called **File Audit Trail** (ComSoft session protocol).The File Audit Trail data are directly coupled to the electronic record and inseperably connected to it. This guarantees that the Trail data are not lost even when transferring files between different systems, and are permanently available

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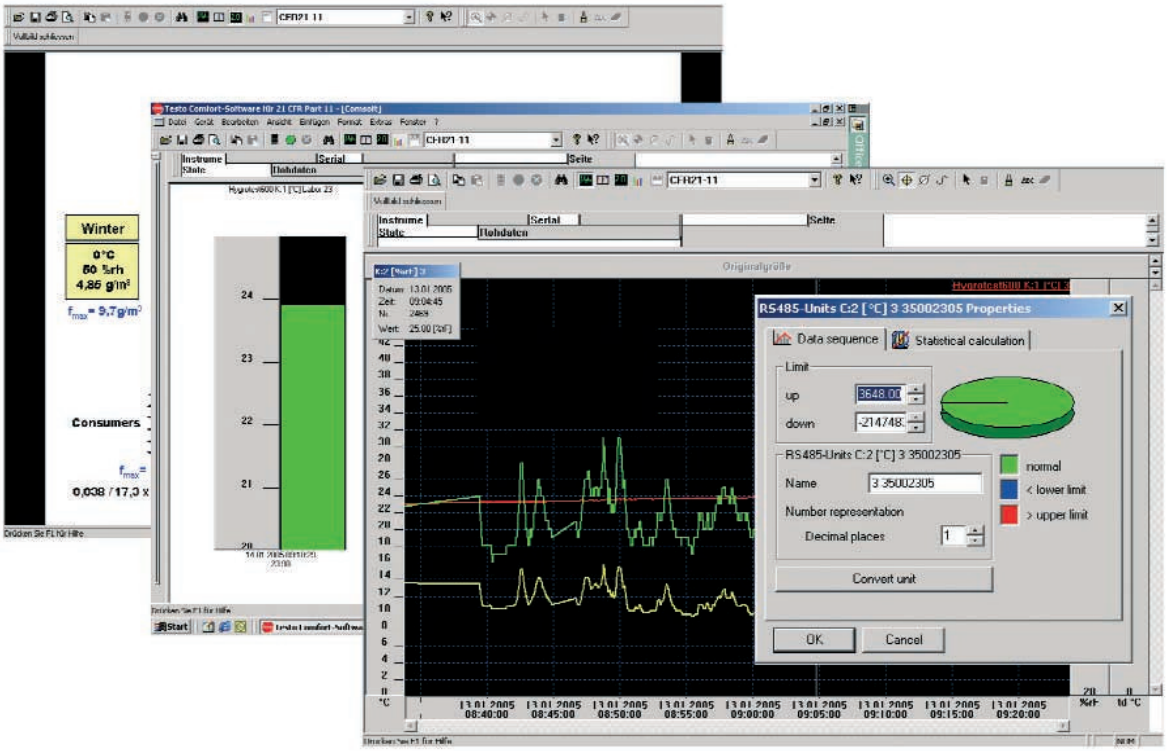
The ComSoft 0554 0849 offers all the **possibilities of graphic presentation** and Excel-export available in the non-CFR version, cf. page 56:

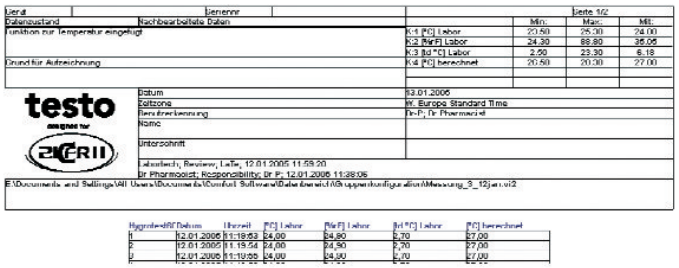
– Curve graphs (with the option of inserting comments)

– Block graphs

– Mosaic images (number fields) with process presentation (Bitmap as background image)



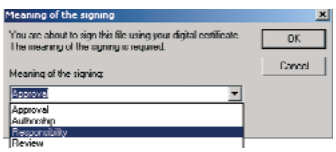
In addition to electronic storage, the printout of measurement data reports still plays an important part in day-to-day quality monitoring. The ComSoft supports the **creation of 21 CFR 11-conform protocols and reports.**



An important answer to the demands of CFR is also the integration of **electronic signatures.** In addition to the data automatically stored by ComSoft, such as data status, date, time zone, user recognition and storage location, the reason for the recording, the name and the signature can be manually added to the current table in the protocol heading.

The E-mail notification of the person responsible when an unauthorized attempt to start the program or other irregularities take place, is integrated.

Speak to Testo also about individual **service offers** for the commissioning of this software, as well as the qualification and validation of your processes and systems. Our Qualification Packages contain, depending on your requirements, IQ/OQ masters, SOP suggestions, up to the complete implementation of the qualification in your company.



ComSoft Package “CFR-conform online monitoring”

Order No. 0554 0849

- CFR ComSoft software with special driver for online measurement
- optimal for processes which are to be recorded on a PC without interruption
- for hygrotest humidity measurement transmitters
- graphic functions
- export to Excel
- (in preparation) alarm notification by E-mail
- incl. level converter RS485/232
- with detailed step-by-step instruction manual