OPERATION MANUAL

PC measuring system
for TSIC™ temperature sensors and USB-interface

Description

Technical data

Temperature measurement	
Temperature measuring range	As per Sensor Type, e.g. –50...150 °C with Tsic 206
Temperature resolution	As per Sensor 0.1 K to 0.01 K, e.g. 0.1 K with Tsic 306
Accuracy	As per Sensor, e.g. ±0.3 K from 10...90 °C with Tsic 306
Channel numbers	1-4
General	
Sensor connection length	Max. approx. 10 - 50 m
Communication sensor	ZACWIRE Protocol, unidirectional
PC-connection	USB, 1.1 or 2.0 compatible or RS232
Communication interface	USB: Com-Port Emulation with FTDI Chip RS232: 9600 Bd, 8N1
Temperature range	Electronics 0...60 °C
Power supply	TSIC-LABKIT-USB: Over USB, approx. 5 mA TSIC-LABKIT-RS232: external „wall-wart“ 12 V
Dimensions	80 x 40 x 23 mm
CE-conformance	2014/30/EU
EMV-noise emission	EN 61000-6-3:2011
EMV-noise withstanding	EN 61000-6-1:2007
Scope of supply	In carry case
Accessories	See ordering number overview

Characteristic features

- PC LabKit with USB-interface or RS232
- Up to 4 Temperature measuring points –50...150 °C
- Simple, three wire connection for the sensors
- Over 10 meter lead length possible
- 0.1 °C resolution with TSic 206/306
- 0.034 °C resolution with TSic 506
- Up to 0.01 °C resolution with TSic™ 706VHA
- High accuracy and long term stability

Areas of application

- Temperature measurement in the inner area
- Own product development
- Applications in laboratory
- Quality assurance
- Temperature measuring systems for customised projects, under Windows or Linux

Windows-Software

- Calculation and display of minimum, maximum and average values
- Tabular representation of measured values
- Recording of data on hard disk

Description

The temperature Labkit is an innovative solution for precise measurement of up to four temperature channels over the USB interface of PC. The system is meant for direct connection of digital TSic™ Temperature sensors.
The innovative lab set was developed as a plug&play tool for fast and efficient development of temperature sensors applications. It is an efficient tool to develop PC or micro-controller based applications in the shortest possible time.
The scope of supply of the operating system consists of the PC-adapter with connection cable, a TSic™ connection cable with 3-pin plug. The recording and graphical representation of measured values is through the PC.
The Windows-software enables simultaneous display of the current measurements of up to four connected sensors, representation of minimum, maximum, and average values as well as data recording of the measurements in a file, for example, to visualise as temperature - time diagram with the help of EXCEL.
The additionally available software PCLOG enables Online-Visualisation of complete temperature process as well as to implement simple switching or regulation process over an optional USB-Relay card.
Note: The TSic™ sensors are not included in the scope of supply and should be ordered separately.

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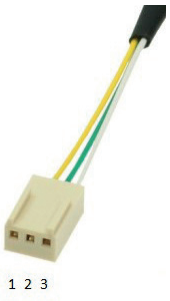
Connection assignment

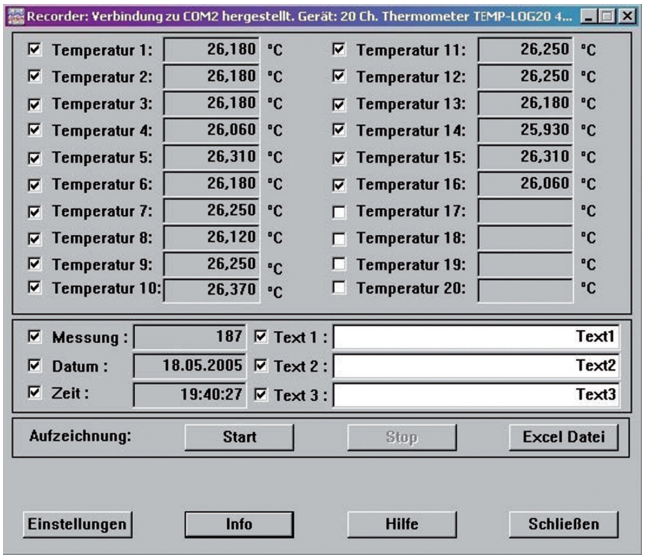
The TSic™ temperature sensors are connected via the included TSic™ connection cable. On the module side, the connection cable is protected against polarity reversal, on the sensor side, the contact socket is marked with a white dot. This point marks the white wire (GND/PIN3) of the connection cable.



Pin No.	Name	Description	Wire
1	V+	Operating voltage (3...5,5 V)	Yellow
2	Signal	Temperature ZACwire	Green
3	Gnd	Ground	White

WINDOWS-Software RECORDER

With the help of this program, the measured values can be received through the USB-interface and displayed on the PC. The displayed file is compatible with any desired spreadsheet program, with which it is possible to further process, statistically evaluate or visualise the measurement data.
In addition, the PC-Software also determines the minimum, maximum and average value from the measured values.



System requirements: Windows 98, 2000 or XP, RS232 or USB-interface.

Generally, older PCs are also suitable.
Important hint: First connect the USB-Version to the PC after installing the software. This simplifies driver installation and enables „Plug&Play“ feature.
Installation: Download: bb-sensors.download/en
Manual Installation: Insert the enclosed CD into your drive and select „Run“ in the start-menu and then browse to select the file ‚setup.exe‘ under the path LW:\software\RECORDER\TEMPLOG\disk1. Then follow the instructions of the installation program.
First time operation: Connect the temperature measuring system to the USB-interface of a PC. After first time run of the software, go to menu option „settings“ and select device type as „TSIC-LABKIT“ and also select the type of interface to be used under „connections“ (Note: For USB-version, mention the virtual COM-port specified during driver installation). The remaining settings (Data rate, Parity, Start and Stop bit) are automatically selected and need not be changed. If the connection is established, the data communication appears on the terminal window. Then select „Close“. The current settings will be stored.
If you are not able to establish data link between PC and the measuring probe, then first please check the USB cable connection to the PC. Further information on debugging is available under FAQs on the CD.

Data recording: First activate all the hooked up measurement channels that are to be recorded. In ‚Text 1‘ and ‚Text 2‘, you can enter a description, which has to appear as heading on the top of data file. The data is recorded in a file, which is declared as path in the ‚Start‘ button. The recording begins with the ‚Start‘ button.
EXCEL™: The created file is compatible with CSV-format. In order to display the measured data, you can use graphic tools, for example, the diagram-assistant. However, other programs can also be used to graphically represent or evaluate the measured data.

Internal data transfer

The communication between PC and measuring probe takes place serially by means of a COM port emulation. Therefore, it is very simple to link the measurements to our own software, programming knowledge presupposed. For the used USB UART FTDI 232, drivers are available for Linux, MAC or even PDAs. Further information is available on website of the manufacturer www.ftdichip.com
The interface works on a data rate of 4800 Baud, 8 Data bits, No parity and one Stopbit. Further information on data protocol can be downloaded from our homepage.

Further application areas

Although the product is primarily intended as a Evaluation Kit for the innovative temperature-sensors TSic™, it also represents as a fully featured and efficient

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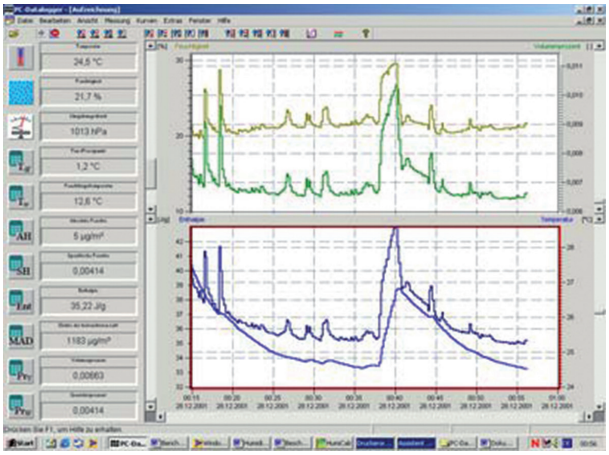
multiple channel temperature measuring system which can also provide valuable services in the laboratory applications.

Accessories (Optional)

Software PCLOG



Besides storing data on hard disk, the software offers a very important feature of graphical representation of all measured and recorded channels in the form of temperature Vs time chart (on-line scriber function). By means of Drag & Click, the window section can be enlarged and the time or temperature axis can be scaled as desired. Besides the graphic view, representation is also possible in the form of a table. The in-between space is used for capturing measured data series into a spreadsheet program (for example EXCELTM) or for word processing. All tables and graphic representations can be printed out in colour. In addition, simple monitoring and regulation functions are also integrated in the software. Limits can be set for each channel. An acoustic signal (Wave file) is given out when the values are exceeded. Control of up to eight external users is possible by a relay card, which is to be attached at the parallel port.

Software Profilab

The driver for USB-measuring probe is directly integrated in Profilab. With this software, professional measurement projects can be carried out in a simple, graphical development platform. You can simply draw the wiring diagram of the measurement circuit and do the project design. Without any knowledge of programming, the measurement values of temperature and humidity can be easily used in the measurement circuit. Arithmetic and logical components take care of linking and processing of the measured values. Modules like impulse generators, timers and relay cards etc. provide extensive possibilities for control and regulation.

Various instruments, scribers and tables serve as the storage and representation of measured values and you can monitor the measurement system with display and control elements. The system is operated through a self designed front panel, on which you can arrange switches, potentiometers, displays, LED´s, instruments etc. The software also enables compilation of the project into an EXE-file, which can run without “Profilab“.

Relay Cards

The output of control information is given by the WINDOWS software „PCLOG „ or „PROFILAB“ over the LPT-Port as switching signal. The relay cards, available as accessories, are needed for giving connection for heavier loads like heater valves, servomotors or signal generators. The switching status of output is indicated through LEDs. The relay boards can also be used for many other applications.

Ordering number catalogue

PC measuring system	
PC measuring system for TSIC™ temperature sensors and USB-interface	TSIC-LABKIT-USB
PC measuring system for TSIC™ temperature sensors and RS232-interface	TSIC-LABKIT-RS232
Temperature sensors	
TSic 206 Temperature sensor, TO92 Housing, -50...+150 °C	TSIC206-TO92
TSic 306 Temperature sensor, TO92 Housing, -50...+150 °C	TSIC306-TO92
TSic 206 Temperature sensor, SO8 Housing, -50...+150 °C	TSIC206-SO8
TSic 306 Temperature sensor, SO8 Housing, -50...+150 °C	TSIC306-SO8
TSIC™ Labkit connection cable 2 m	0409 9001
Software	
Windows-Software PCLOG	PCLOG-TELOG
Windows-Software PROFILAB EXPERT	PROFILAB
Accessories for USB products	
USB Connection cable, 1 m	0409 0672
USB Extension cable, 5m	0555 0212

Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.

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