

UFT75-AT

Very small USB device for humidity and temperature measurement

Description:



The MELTEC UFT75-AT sensor device measures relative humidity and temperature and works directly at the USB port of a PC. Qualified Application software also can calculate the dew point from the current measurements.

Specials:

- Robust sensor high-grade steel housing with sinter filter (sensor head)
- Very small design
- Calibrated digital sensor device
- Very high performance, fast access to measurements
- Measurement, monitoring and recording software
- Integrated USB 1.1 interface, USB plug contains complete electronics
- No external power supply required*
- Replaceable sensor head**
- Including measurements in your own applications, e.g. the NI LabView® 8.2***, by using the embedded DLL

*On connection of multiple sensor devices, a USB power HUB may be required.

**Damaged or aged sensor heads can be replaced if necessary.

***LabView® is a legal trademark National Instruments®.





Applications:

- Measurement and monitoring of relative humidity and temperature
- Calculation and monitoring auf dew point, e.g. to avoid moistness damages
- Alert messages over windows network, speech calls or e-mail, if measurement values are out of range
- Permanent recording of all measurements and alert events

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Safety references:

-  Sensor devices of the UFT75 series may not be used in applications, with which persons can be endangered or hurt. It may not be used also as emergency stop switches at plants and machines or within other safety-relevant ranges!
 -  The wiring to the sensor may be exposed neither temperatures under -25°C nor over $+70^{\circ}\text{C}$, since it could be otherwise damaged!
 -  If the sensor head longer time is exposed to extreme conditions or aggressive chemicals, this can negatively affect the functionality or cause permanent damages of it.
 -  Electrostatic discharges may affect the function and reliability of the sensor head and also the UFT75-AT device negatively, or may cause permanent damages. Always pay attention to this, when handling with the sensor equipment, and never touch open contacts at the sensor head or UFT75-AT sensor device.
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Technical data for humidity measurements:

Measuring range	0 ... 100% RH
Accuracy	$\pm 1.8\%$ RH at 25°C , 10 ... 90% RH
Resolution	.....	0.03% RH
Non-linearity	.....	$< 1\%$ RH typical (10 ... 90%), max. 3%
Hysteresis	.....	$\pm 1\%$ complete measurement range
Repetition accuracy	.....	$\pm 0.1\%$ RH
RH response time, 1/e (63%)	.....	typical ca. 4 seconds in slowly moving air
Long-term stability (Drift)	.....	typical $< 0.5\%$ RH a year*
Calibration	.....	The calibration of the UFT75 of sensor head takes place in accordance with ISO/IEC 17025 at 25°C on 22%, 50% and 68% RH.

*If the sensor is exposed to extreme conditions for a longer time, this can accelerate aging. The durability depends strongly on the respective environment conditions. Damaged or aged sensor heads can be replaced if necessary!

Technical data for Temperature:

Measuring range	.....	$-40 \dots +120^{\circ}\text{C}$
Accuracy	.....	typical $\pm 0.5^{\circ}\text{C}$ at 25°C
Resolution	.....	0.01°C
Repetition accuracy	.....	$\pm 0.1^{\circ}\text{C}$
Response time	.....	< 5 seconds

Power supply:

Supply voltage	.....	Supplied by USB
Power input	.....	< 20 mA

Outputs:

Communication	USB1.1 Port (USB 2.0 compatible) for PC with Windows XP or Windows 2000 operating systems
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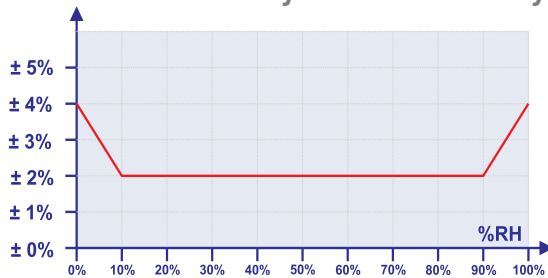
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Cable connection:

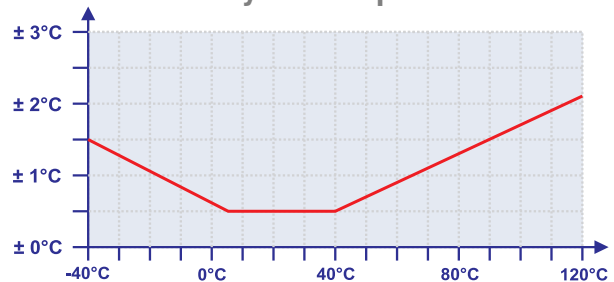
Cable type	PVC (black)
Protection type	IP40
Temperature range	-25°C to +70°C
Length	.....	default 2m (manufacturable)

Measurement accuracy:

Absolute accuracy for rel. humidity



Accuracy for temperature



Prüfrichtlinien:

EM testing guidelines	.....	The compliance of this product with the specifications of the guideline No. 89/336/EEC was certified.
Disturbance emission	.....	Complies to the guidelines of the EN55022:1998+A1:2000+A2:2003, class B.
ESD resistance, static electricity discharging	.....	The ESD resistance for static electricity, contact discharging at 4 kV, air discharging at 8 kV, complying to EN61000-4-2:1995+A1:1998+A2:2001, was certified.
ESD resistance, electro-magnetic fields	The ESD resistance for high frequency electro-magnetic fields, 80 MHz – 1GHz, 3V/m CW, 1kHz sinus, 80% AM, complying to EN61000-4-3:1996+A1:2001, was certified.
RoHS	Complies to EU guidelines 2002/95/EG (RoHS).

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Storage conditions and Mounting:

The storage can take place under normal operating conditions of the sensor. If the sensor device is exposed to hot or very dry conditions or to aggressive chemical substances for a longer time, a faster aging or damage of the sensor element is possible, which may affect the measurement results negatively. Sometimes, the sensor element may be reactivated in such cases by exposing it to a relative humidity above 74% with a temperature of 20...30 °C for at least 24 hours.

When mounting the device, it must be paid attention that the sensor element is positioned in slowly flowing air. Since the relative humidity always refers to the temperature of air, the sensor should be positioned also related to the temperature at a representative place. Warm or hot places, e.g. at machines, may have a significant influence on measurements.

The connection to a PC is realized over an USB port, and is simply done by plugging the sensor device into a unused USB port. If an unused USB port is not available, or multiple sensor devices must be connected, USB can be expanded by standard USB power HUBs. If there was no driver installed before, Windows will ask you automatically for the needed UFT75 driver installation. Then, follow simply the instructions, given by Windows operating system.

Universal Serial Bus:



The Universal Serial Bus is a very simple way to connect very different devices to a PC. The USB sockets are mostly located at the backside or the front of your PC. Normally 2 or 4 sockets are available. If you need more, you can expand every USB socket using a HUB. These HUBs are available in PC stores.



After plugging a new sensor device first time, you are called to install an USB device driver, if not available yet.

The sensor devices can every time be added or removed while program is running. It is not necessary to restart PC or application program.

Because the sensor devices are power sourced by USB, no additional power supply is needed.

USB driver installation:

After plugging an USB sensor device the first time, You are requested by Windows to install a suitable USB driver. MELTEC provides different USB drivers for its devices. Please select the suitable driver on the provided data medium or refer you a suitable version from the MELTEC Internet side. Afterwards follow the instructions of the respective operating system.

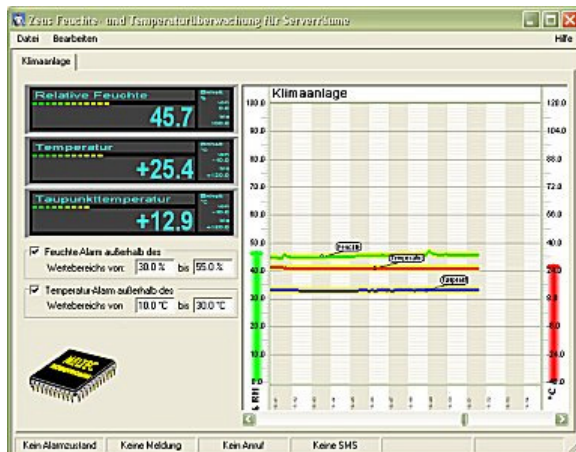
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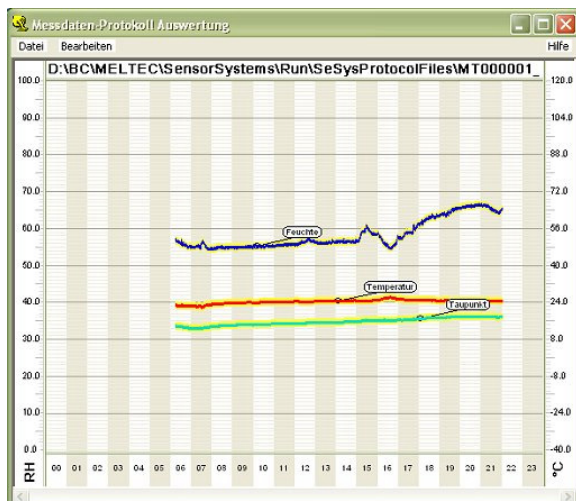
Zeus application program for server room surveillance:



The starting side shows the current measured values of an attached sensor device. If multiple sensors are connected, display switches every 10 seconds to the next sensor device. After password input, starting page switches to the main control page. Program only can be controlled or terminated from the main control page.



The main control page contains one tab for every connected sensor device. The program detects changes of the sensor device configuration automatically. The monitoring can be configured separate for every different sensor device. The measurements of every sensor device are recorded into separate 24-hours files and are displayed as graphic curves.



The recorded measurements can be viewed every time as graphic diagram. So the 24-hour development of humidity, temperature and dew point is on one view recognizably. If necessary, relevant parts can be zoomed until one second time resolution, whereby the measurement interval time is viewed as interpolated curve if needed.

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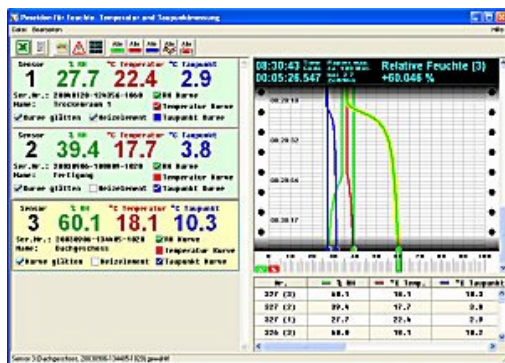
Zeus monitoring client application software:



The Zeus monitoring client is used to view alerts as popup windows on every computer in the local Windows network. It is designed as background application and has no main window. The connection of a Zeus client to one or more Zeus servers is based on an installed and configured Windows network and a Windows XP or Windows 2000

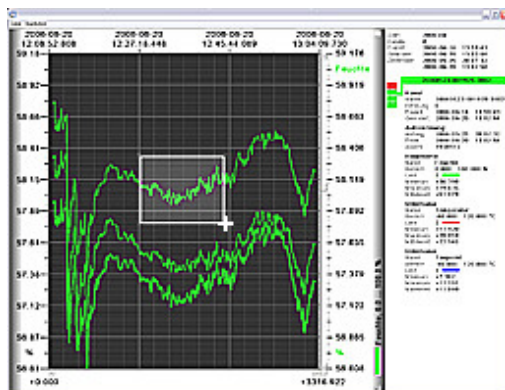
operating system. Messages are automatically displayed on all workstations, where the Zeus client or server was started. No more installation is needed.

Poseidon application program:



The Poseidon application program makes the simple and clear representation of the measured values of many sensors possible. It consists of a line recorder view and a sensor list for the representation of the current measured values of each individual sensor. With different control elements, special functions of the single sensors can be controlled, e.g. the activation of the sensor integrated heating.

The program makes the representation of measured values for different cognate USB sensor types possible, so e.g. for UFT75, UFT75-AT, and UT75-AT. The current measurements are continuously logged and can be individually graphically evaluated and viewed. Additionally the program has a DDE interface to Microsoft Excel and can transfer the current measurements into real time to an Excel tab. In addition, the text export can be imported into other programs, e.g. Word. By the many real time functions and statistic evaluations, the program is also excellently suited for short term field measurements with one or more sensors (Notebook) or e.g. in external test stands.




The measured values of many sensor devices can be stored on the hard disk for a longer time, to analyse them later. To do this, Poseidon offers a powerful tool, which allows statistic analysing, graphics viewings, printings, and data exporting, either as Picture, as ASCII data or to MS Excel, using DDE, in zoomed parts or at all.

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Sample for a DKD Certificate for an UFT75-AT sensor device:

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für die Messgrößen Temperatur, Taupunkttemperatur, Feuchte und Absolutdruck
 Calibration laboratory for temperature, dew point temperature, humidity and absolute pressure
 Akkreditiert durch die / accredited by the
 Akkreditierungsstelle des DKD bei der
 PHYSIKALISCH-TECHNISCHEN BUNDESANSTALT (PTB) 

DEUTSCHER KALIBRIERDIENST **DKD**

Gegenstand / object: **USB Feuchte- und Temperaturmessgerät**
 Seite: 2842
 Page: Typ / type: **UFT75** DKD-K-26701
 2 Seriennummer / serial number: **20060811-1831149-3200** 2006-09

Kalibrierergebnisse

Temperaturkalibrierung

Bezugsnormal	Kalibriergegenstand		
Temperatur t_{90} in °C	angezeigter Wert t_{90} in °C	Messabweichung Δt_{90} in K	Messunsicherheit U in K
23,50	23,2	-0,30	0,2

Feuchtekalibrierung

Bezugsnormal		Kalibriergegenstand		
Lufttemperatur t_{90} in °C	relative Feuchte rH in %	angezeigter Wert rH in %	Messabweichung ΔrH in %	Messunsicherheit U in %rH
23,18	22,0	23,5	+1,5	0,8
23,72	49,9	50,4	+0,5	1,0
23,61	67,0	67,2	+0,2	1,2

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung sowohl der Akkreditierungsstelle des DKD als auch des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.
 This calibration certificate may not be reproduced other than in full except with the permission of both the Accreditation Body of the DKD and the issuing laboratory. Calibration certificates without signature and seal are not valid.

Stempel / Seal:  Datum / Date: 26.09.2006 Leiter des Kalibrierlaboratoriums / Head of the calibration laboratory:  S. Hagen Bearbeiter / Person in charge:  S. Hofmann
 LUFFT Mess- und Regeltechnik GmbH, Günterstraße 29, 70736 Fellbach, Tel.: 0714-91822-0, Fax: 0714-91822-41, email: info@lufft.de, internet: www.lufft.de
 Beschäftigte: Dipl.-Wirtsch.-Ing. Klaus Herz, Dipl.-Ing. Axel Schmitz-Hübisch
 Postbank Stuttgart, Kont. 803 700, BLZ 800 100 70
 Deutsche Bank AG, Stuttgart, S.W.I.F.T. Code: DEUT 33 33, Konto 1323 734
 Schwelbark AG, Stuttgart, Konto 21839, BLZ 800 602 01



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Angewandtes Kalibrierverfahren

Temperatur:
 Die Temperaturkalibrierung wurde in Anlehnung an die DKD Richtlinie für die "Kalibrierung von Widerstandsthermometern" DKD-RS-1 Oktober 2003 durchgeführt. Es gilt die Kalibrieranweisung D9006. Es wurde ein direkter Vergleich zwischen dem benutzten Bezugsnormal und dem Kalibriergegenstand durchgeführt.
 Die Temperaturwerte (t_{90}) beziehen sich auf die internationale Temperaturskala von 1990 (ITS-90).

Feuchte:
 Die Feuchtekalibrierung wurde nach der Kalibrieranweisung D9014 durchgeführt. Es wurde ein direkter Vergleich zwischen den benutzten Bezugsnormalen und dem Kalibriergegenstand durchgeführt.
 Die Temperaturwerte (t_{90}) beziehen sich auf die internationale Temperaturskala von 1990 (ITS-90).

Messbedingungen

Temperatur:
 Bei ca. $t = 20^{\circ}\text{C} \dots +25^{\circ}\text{C}$: Feuchtegenerator, Temperiermedium: Luft
relative Feuchte:
 Bereich $rH = 10\% \dots 95\%$: Feuchtegenerator, Klimamedium: Luft

Sonstiges:
 Der Fühler wurde direkt in die Messkammer des Feuchtegenerators eingetaucht.
 Die Messwerte des Kalibriergegenstandes („angezeigter Wert“) wurden mit der Software UFT-Kalibrierprogramm 3.3.00 AT ausgedruckt.
 Die Anliegezeit betrug für jeden Kalibrierpunkt mindestens 60 Minuten.

Umgebungsbedingungen

Temperatur in °C: 21,1 ± 1 Bezugsnormal: OPUS10 THI+TPR, 006028 + 006029
 rel. Luftfeuchte in %: 44 ± 10 Bezugsnormal: OPUS10 THI, 006029
 Luftdruck in mbar: 983 ± 10 Bezugsnormal: OPUS10 TPR, 006028

Ort der Kalibrierung

DKD-Laboratorium K-26701 der LUFFT Mess- und Regeltechnik GmbH

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Messunsicherheit

Angaben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Sie wurde gemäß DKD-3 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von 95 % im zugeordneten Werteintervall.
 Nach Korrektur des Anzeigewertes mit der Messabweichung beträgt die erweiterte Messunsicherheit U .

Kenzeichnung

Aufkleber 2642-DKD-K-26701 2006-09

Bemerkungen

Innerhalb des Kalibrierbereiches ist eine Interpolation zulässig.
 Der Deutsche Kalibrierdienst ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Die weiteren Unterzeichner innerhalb und außerhalb Europas sind den Internetsiten von EA (www.european-accrdition.org) und ILAC (www.ilac.org) zu entnehmen.

