

UFT75-ST with data acquisition software

Universal USB humidity and temperature sensor in miniature design

Description



The new UFT75-ST sensor measures relative humidity, temperature, dew point and absolute humidity. It is operated directly at the USB port of a PC. The UFT75-ST is available in 3 versions, type ST1, ST2 or ST3. Type ST1 has an accuracy of $\pm 1.5\%$ RH at humidity and an accuracy of up to $\pm 0.1^\circ\text{C}$ at temperature.

In combination with the supplied data acquisition software, it forms a very flexible and precise measuring system with data logging and evaluation.

Specification

- Alert message via network (WLAN), SMS, voice mail, e-mail, starting applications (PC software)
- Transfer measurements in real time to Excel spreadsheet (PC software)
- Robust stainless steel housing with sinter filter (sensor head)
- Miniature construction
- Calibrated digital sensor
- High speed signal processing
- Measurement data acquisition, monitoring and logging software available
- Integrated USB 2.0 interface, electronics completely integrated in the USB connector
- Integration into your own applications via Embedded DLL or direct query is supported
- Accessible in LabView (example provided)
- No external power supply required*.
- Replaceable sensor head**
- On request available with DAkkS certification

*If many sensors are connected simultaneously, a Power HUB with its own power supply may be required.

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

Applications

- Climatic cabinets, air-conditioning systems
- server room monitoring
- laboratory tests
- ISO 9000 certifications for plants
- Greenhouses
- Food stuffs industry
- Plant engineering and construction

Safety notices



The UFT75-ST must not be used in applications where persons may be endangered or injured. It must also not be used as an emergency stop switch on systems and machines or in other safety-relevant areas!



The cable connection to the sensor must not be exposed to temperatures below -40°C or above $+75^\circ\text{C}$, otherwise it could be damaged! Other versions are available for higher temperatures.



If the sensor head is exposed to extreme conditions or aggressive chemicals for a long time, this can have a negative effect on its function or permanently damage the sensor head!

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Technical Data Humidity measurement

Measuring range	0 ... 100% RH
Accuracy Type ST1	typical $\pm 1.5\%$ RH at 25°C, 0 ... 100% RH
Accuracy Type ST2 (default)	typical $\pm 2.0\%$ RH at 25°C, 0 ... 100% RH
Accuracy Type ST3	typical $\pm 3.5\%$ RH at 25°C, 0 ... 100% RH
Dissolution	0.01% RH
Non-linearity	< 1% RH typical (0 ... 100%), max. 3%
Hysteresis	$\pm 0,8\%$ RH entire measuring range
Repeat accuracy	$\pm 0.1\%$ RH
RH Response time, 1/e (63%)	Typical ca. 3 seconds in slow moving air
Long-term stability (Drift)	Typical <1% RH pro year*
Calibration	The UFT75 sensor head is calibrated according to ISO/IEC 17025 at 25°C to 22%, 50% and 68% RH.
Total weight	95g

All specifications are valid at 25 °C

* If the sensor is exposed to extreme conditions (e.g. vapors from petrol, glue, dilution, vinegar, etc.) for a long time, this can accelerate the aging process. The durability is strongly dependent on the respective environmental conditions. Damaged or aged sensor heads can be replaced if necessary!

Technical data Temperature measurement

Measuring range	-40 ... +125°C
Accuracy Type ST1	typical ± 0.1 °C at (+20 to +60 °C)
Accuracy Type ST2	typical ± 0.2 °C at (0 to +90 °C)
Accuracy Type ST3	typical ± 0.3 °C at (-10 to +55 °C)
Dissolution	0.01°C
Repeat accuracy	± 0.1 °C
Reaction time	< 5 seconds

All specifications are valid at 25 °C

Power supply

Supply voltage	Power supply via USB
Current draw	< 20 mA

Pressure

Permissible overpressure	At least 8 bar
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Outputs

Communication	USB 2.0 standard CDC (Communications Device Class) interface
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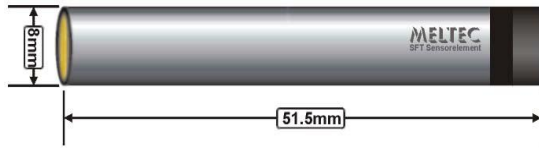
Cable connection

Cable type	PVC (black)
Degree of protection	IP40
Temperature range	-25°C to +70°C
Length	Standard 2m (packable)

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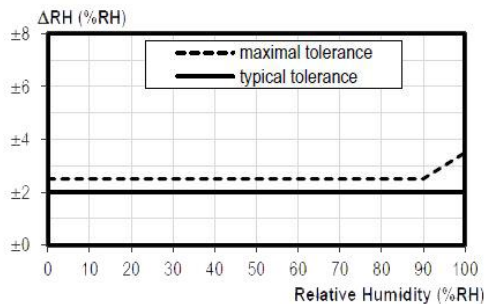
Dimensions FT75-EN



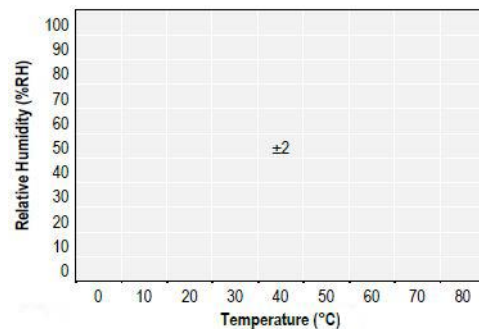
Length: 51.5 mm
Diameter: 8.0 mm
Weight: ca. 10 g
Housing: Stainless steel, sintered metal
Connector: Plug, 4-pin

Accuracy

Abs. accuracy relative humidity



Accuracy Temperature



Storage and assembly

The sensor can be stored under the same conditions as during operation. If the sensor has been stored for a long time in hot or dry environments or exposed to aggressive substances, accelerated aging or damage to the sensor element is possible, which has a negative impact on the measurement result. The sensor can then be reactivated under certain circumstances by exposing it to a humidity of over 74% at a temperature of 20...30 $^{\circ}C$ for at least 24 hours.

During installation, it must be ensured that the sensor element is installed in slowly flowing air. Since the relative humidity always relates to the temperature of the air, the sensor should also be attached to a representative location related to the temperature. Hot spots, e.g. on machines, can strongly influence the measurement result.

The sensor has a USB 2 compatible interface and supports the USB CDC standard (Communication Device Class), so that usually no driver installation is required.

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Conforms to the following directives and standards

Emitted interference:

Test basis: Product standard EN 55022:1998+A1:2000+A2:2003
Electrical interference field strength

Immunity to interference:

Test basis: Product standard EN55024:1998+A1:2001
Discharge static Electricity according to EN 61000-4-2
Electromagnetic fields according to EN 61000-4-3

Declaration of conformity

Supplier declaration for the ROHS directive 2011/65/EU

We hereby confirm that the amount of restricted substances in the assemblies supplied by us does not exceed the maximum concentration values in accordance with RoHS Directive 2011/65/EU of the European Parliament and the Council of June 8, 2011. This means that the assemblies we deliver are EU RoHS-compliant.

Optionally with DAKKS calibration certificate

Deutscher Kalibrierdienst DAKKS
Kalibrierlaboratorium / Calibration laboratory
Akreditierungsstelle des Deutschen Kalibrierverbandes

Kalibrierschein
Calibration Certificate

Kalibriervorgang
Calibration procedure

1884
DKD-K-48201
2018-03

1884
DKD-K-48201
2018-03

1884
DKD-K-48201
2018-03

Measures / Messwert	Measurement uncertainty / Messunsicherheit
171	171
24,7	0,2

Measures / Messwert	Measurement uncertainty / Messunsicherheit
18,1	0,3
22,4	0,2
22,8	0,2

Measurement uncertainty / Messunsicherheit

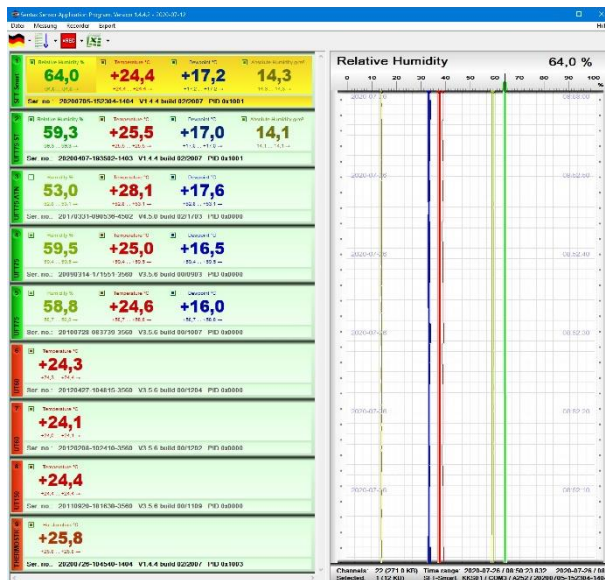
Die Deutsche Kalibrierdienst ist Mitglied der internationalen Organisation der Europäischen Konvention für Akkreditierung (EUK) und der Internationalen Laboratoriumsakkreditierung (ILAC) und ist genehmigt für die Akkreditierung von Kalibrierlaboratorien. Die weiteren Informationen über die Akkreditierung sind im Internet unter www.european-accrreditation.org und www.ilac.org zu finden.

The German Calibration Service is a signatory to MKA of EA for mutual recognition as member of the European Convention for Accreditation (EUK) and the International Laboratory Accreditation Cooperation (ILAC). Further information about the status in Europe can be found on the website of www.european-accrreditation.org and www.ilac.org.

UFT75-ST with data acquisition software

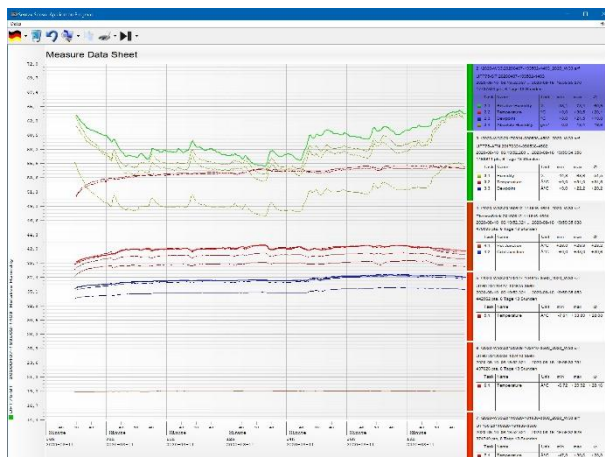
Universal USB humidity and temperature sensor in miniature design

The Sentax, a Windows application software, is supplied free of charge with the sensor. This is a universal tool for recording, processing and evaluating measurement data from all MELTEC USB sensors.



Measuring points with line recorder

- The measurement of each measuring point is recorded in real time and displayed as a separate curve in the recorder window. Depending on the type of sensor connected, up to several hundred measurements per second can be read out (usually 20 to 200 per second).
- In parallel to the display in the line recorder window, all measurement data can also be recorded in files with an exact time stamp. The time resolution can be up to one millisecond.
- The measurement data recorded over a long (or short) period of time can be evaluated and displayed as curves on a measurement sheet.



Datalogger

- The Sentax data logger records the measurement data with a precise time stamp over long periods of time with high resolution.
- The representation can be scaled from a whole year down to the millisecond level. Simply zoom into the desired section with the mouse.
- The measurement data are saved in a clear folder structure, sorted by sensor and calendar week.

UFT75-ST with data acquisition software

Universal USB humidity and temperature sensor in miniature design

Date	Time	Time offset	Thermooft. CK	UFT75-ST	Relative Humid	Temperature	Dewpoint	Absolute Humid
05.01.2021	17:24:45.548	0,6220004	25,2	1,00840209	48,8	25	13,5	11,3
05.01.2021	17:24:45,079	1,15500179	25,2	1,00840209	48,8	25	13,5	11,3
05.01.2021	17:24:45,622	-1,0880013	25,2	1,00810071	48,8	25	13,5	11,3
05.01.2021	17:24:46,164	2,2399992	25,2	1,00810071	48,8	25	13,5	11,3
05.01.2021	17:24:46,696	2,77200167	25,2	1,00771182	48,8	25	13,5	11,3
05.01.2021	17:24:47,238	3,30400416	25,2	1,00771182	48,7	25	13,5	11,3
05.01.2021	17:24:47,780	3,83600665	25,2	1,00732293	48,7	25	13,5	11,3
05.01.2021	17:24:48,322	4,36800914	25,2	1,00732293	48,7	25	13,5	11,3
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05.01.2021	17:24:50,000	6,00000000	25,1	1,00732293	48,7	25	13,5	11,3
05.01.2021	17:24:50,542	6,56800249	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:51,084	7,13600498	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:51,626	7,70400747	25,1	1,00732293	48,6	25	13,5	11,3
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05.01.2021	17:24:52,710	8,84001245	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:53,252	9,40801494	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:53,794	9,97601743	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:54,336	10,54401992	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:54,878	11,11202241	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:55,420	11,68002490	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:55,962	12,24802739	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:56,504	12,81602988	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:57,046	13,38403237	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:57,588	13,95203486	25,1	1,00732293	48,6	25	13,5	11,3
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05.01.2021	17:24:59,214	15,65604233	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:24:59,756	16,22404482	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:00,298	16,79204731	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:00,840	17,36004980	25,1	1,00732293	48,6	25	13,5	11,3
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05.01.2021	17:25:03,550	20,20006225	25,1	1,00732293	48,6	25	13,5	11,3
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05.01.2021	17:25:23,542	40,79775874	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:24,084	41,34966909	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:24,626	41,90157944	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:25,168	42,45348979	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:25,710	43,00540014	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:26,252	43,55731049	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:26,794	44,10922084	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:27,336	44,66113119	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:27,878	45,21304154	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:28,420	45,76495189	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:28,962	46,31686224	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:29,504	46,86877259	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:30,046	47,42068294	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:30,588	47,97259329	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:31,130	48,52450364	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:31,672	49,07641399	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:32,214	49,62832434	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:32,756	50,18023469	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:33,298	50,73214504	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:33,840	51,28405539	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:34,382	51,83596574	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:34,924	52,38787609	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:35,466	52,93978644	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:36,008	53,49169679	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:36,550	54,04360714	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:37,092	54,59551749	25,1	1,00732293	48,6	25	13,5	11,3
05.01.2021	17:25:37,634	55,14742784	25,1	1,00732293	48,6	25	13,5	11,3
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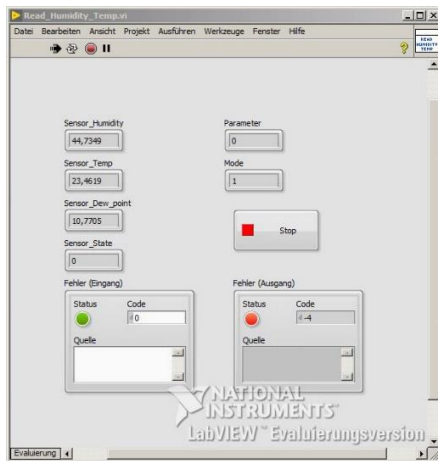
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Index	Reading	Reference
0	-0.90809968	-0.00000000
1	-0.52872801	-29.00000000
2	-0.06341800	-9.10000038
3	+0.48980900	-19.89888962
4	+1.13101399	-33.00000153
5	+1.60203099	-54.79889824
6	+2.67718988	-76.80000305
7	+3.58218900	-96.80000305
8	+4.57513094	-117.80000305
9	+5.66906491	-138.89888965
10	+6.82481823	-159.89888965
11	+8.06156490	-180.59999655
12	+9.42826111	-201.80000610
13	+10.8887823	-222.80000610
14	+12.3734745	-243.50000613
15	+13.96793793	-264.50000000
16	+15.68437481	-285.50000000
17	+17.46875000	-306.50000000
18	+19.34106255	-327.39999380
19	+21.30131340	-348.39999380
20	+23.34950066	-369.39999380
21	+25.48562813	-390.29998779
22	+27.70960009	-411.29988779
23	+30.02168228	-432.39988779
24	+32.42163386	-453.29998779
25	+34.90950776	-474.20001221
26	+37.48532104	-495.20001221
27	+40.14907455	-516.20001221
28	+42.90076447	-537.39988779
29	+45.74038078	-558.39988779
30	+48.66796731	-579.09887559
31	+51.68346024	-600.00000000

Calibrations

- Some sensor devices also support calibration functions. The Sentax application software offers all the functions required to carry out a qualified calibration of the sensor devices. In special cases, this can significantly increase the accuracy of the sensors as a whole or for a specific measuring range.
- The calibration of sensor inputs and sensor outputs is supported.
- The outputs of sensors with analog output can be specially adapted to many applications.

Read measured values into LabView



- Of course, the data can also be adopted in LabView. One included sample application makes this task easier.

System integration using dll or protocol essentials



- A simple communication protocol for the sensors is available to developers if required. Integrate the sensors directly into your own development, or access the measurement data directly with LabView™ or other systems.
- An interface DLL is also available. Integrate the DLL into your developments and use simple functions for querying measurement data.