

SFT485 SWITCH

Universal humidity and temperature sensor device with RS485 interface

Description:



The MELTEC SFT485 SWITCH sensor device measures relative humidity in the air and not aggressive gases.

Two programmable output switches allows to support surveillance of measurement values.

Specialties:

- High precision humidity and temperature measurements
- 2 digital switch outputs, programmable switch points
- Robust high-grade steel housing with Sinter filter (Sensor head)
- Removable sensor head, containing a calibrated digital sensor element
- RS485 network interface port, device set-up via RS485 bus
- Optional measurement and surveillance software (RS485 Bus Control, including English and German language layouts)
- Embedding into other software systems possible (using a DLL interface)
- Very small size
- High performance measurements

Typical usage:

- Greenhouses
- Air conditions and drying units
- Foodstuffs industry
- Environmental technology
- Packaging industry
- Weather stations
- Automobile industry

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Technical data for humidity measurements:

Measurement range	0 ... 100% RH
Accuracy	$\pm 2\%$ RH at 25 °C, 10 ... 90% RH
Resolution	.....	0.03% RH
Nonlinearity	.....	< 1% RH typical (10 ... 90%), max. 3%
Hysteresis	.....	$\pm 1\%$ all measurement range
Repetition accuracy	.....	$\pm 0.1\%$ RH
RH Response time, 1/e (63%)	.....	Typical ca. 4 seconds in slow moving air
Long-term stability (drift)	.....	Typical <0.5% RH per year*
Calibration	.....	The calibration of the SFT sensor head takes place in accordance with ISO/IEC 17025 at 25 °C on 22%, 50% and 68% RH.

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

Technical data for temperature measurements:

Measurement range	.....	-40 ... +120 °C
Accuracy	.....	typical $\pm 0.7\text{ °C}$ at 25 °C
Resolution	.....	0.01 °C
Repetition accuracy	.....	$\pm 0.1\text{ °C}$
Response time	.....	< 5 seconds

Power supply:

Power supply	.....	5 ... 24V DC regulated, polarity protection
Current consumption	.....	< 30 mA

Outputs:

Communication	.....	RS485 bus system
Switch outputs	.....	2 digital switch outputs with programmable switch points
Contact rating	.....	Power 5V-28V/100mA (Short circuit proof)



Safety references:

Sensor devices of the SFT series may not be used in applications, with which persons can be endangered or hurt. It may not be used also as emergency stop units 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 °C, since it could be damaged otherwise!

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.

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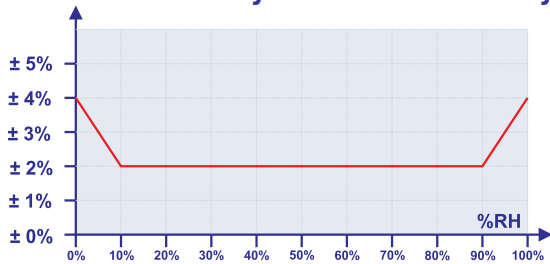
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Wiring:

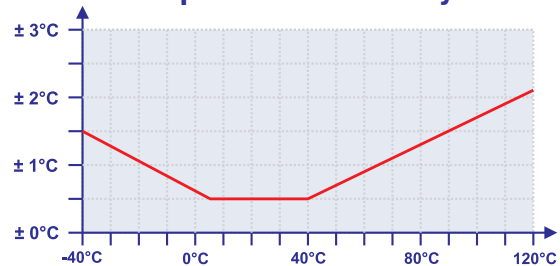
Cable type	PVC (black)
Protection type	IP40
Temperature range	-25 °C to +70 °C
Length	.....	Default 2m (manufacturable)

Measurement accuracy:

Relative humidity absolute accuracy



Temperature accuracy



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 for a longer time, or to aggressive chemical substances, 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. Hot places, e.g. at machines, can strongly effect the result of measurement.

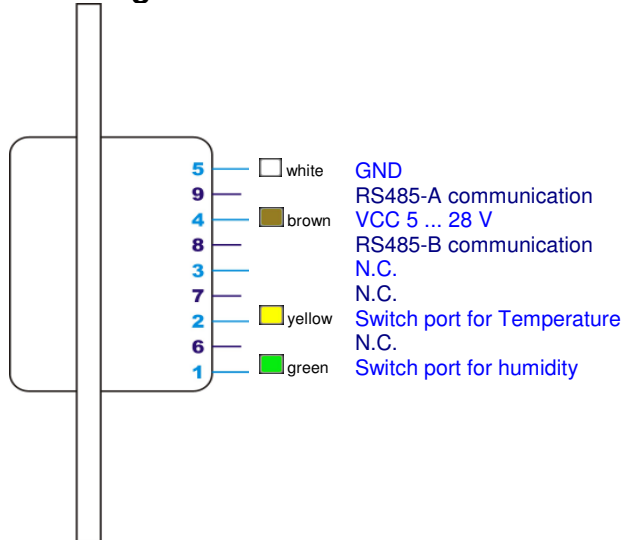
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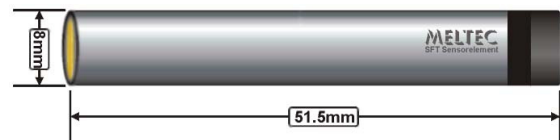
Installation of SFT sensor devices:

By default, all SFT sensor devices consist of a 9-pin connector with all relevant signals. The needed signals must be connected to the application. Additionally a power supply is needed, which is connected using the 9-pin connector too. The connector of the SFT485 SWITCH sensor device provides the following configuration:

Pin assignment:



Dimensions of sensor element:



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

For optimising usage in industrial applications, MELTEC provides a rich assortment of connector and interface adapters in DIN rail system. If a RS485 data connection to a PC is needed, **one** of the bus-system adapters must include a RS485 to RS232 interface converter. You can identify this option by the western plug for PC cable at the interface adapter.



ATTENTION:

Only **one** RS485/RS232 converter can be used for each separate RS485 bus system!

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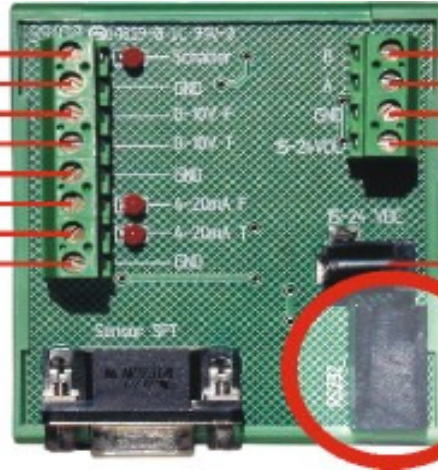
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Description of the MELTEC interface adapter:

Large mounting array

Not used
GND
Switch port RH
Switch port Temp.
GND
Not used
Not used
GND

Connection or interface adapter



Small mounting array

RS485-B
RS485-A
GND
+24V DC

Power supply
+24 V DC

PC RS232 connector.
This will not be found
on connectors without
RS232 converters.

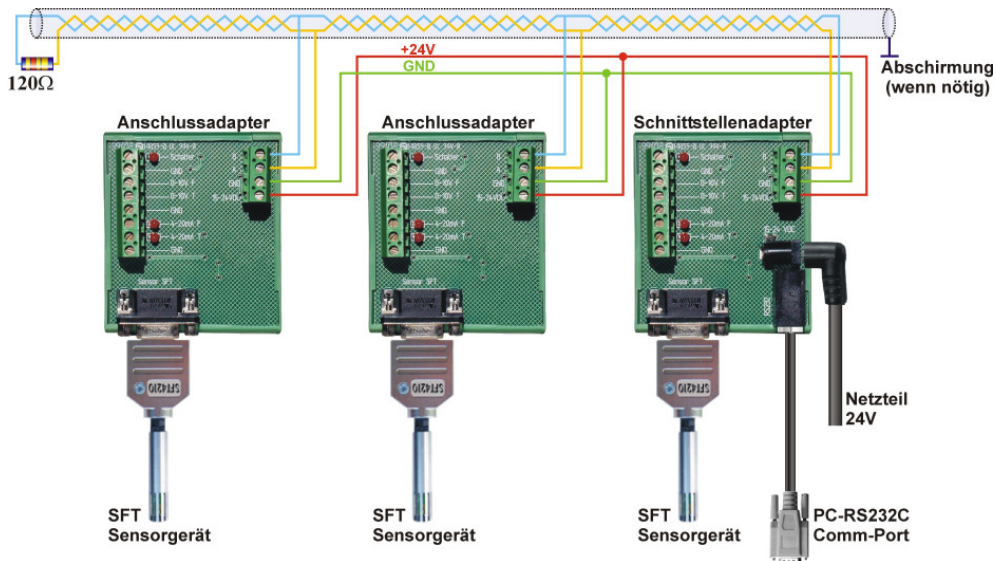
Construction of a sensor installation:

- Install one adapter for every sensor device. If You wish to connect a PC, **one** interface adapter with RS485 to RS232 connector is needed (only one).
- **Connect all adapters to power supply**, plus to plus and ground to ground. You can connect all supply pins at the small mounting array together and use the first adapter (or the interface adapter) to provide the power for all devices.
- If You wish to connect a PC, You need to connect all RS485-A pins of the adapters with the RS485-A pin at the interface adapter, and all RS485-B pins in the same way, every time **pin A to next pin A** and **pin B to next pin B**. Insert a 120 Ω resistor at the open end of the bus between A and B.

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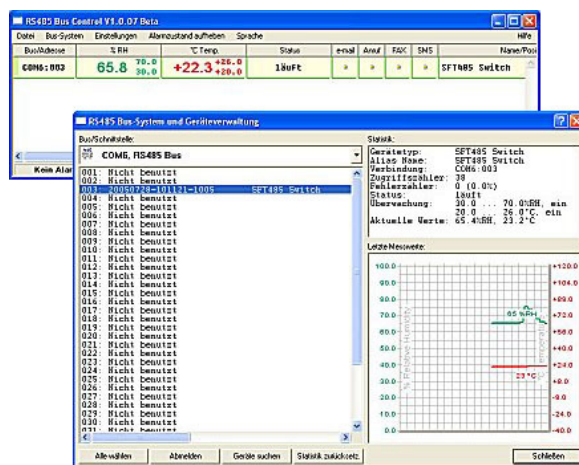
Verdrahtungsbeispiel für RS485 Bus-System:



Applicating an embedded sensor:

You can use the SFT485 SWITCH device as an embedded sensor for Your own applications (e.g. C, C++ or VBA). For this, MELTEC provides an DLL for embedding in Your software applications. It includes all needed access for measurement, bus address assignment or device detection functions.

Application software:



The application software program „RS485 Bus Control“ (optional) provides measurement, bus handling and surveillance functions:

- Surveillance of humidity and temperature values
- Alerting by e-mail an speech call configurable,
- RS485 bus-system handling, up to 240 sensor devices for each PC COM port,
- Statistics and graphic view of last 100 measurements of all sensor devices.