

Humidity (1.5% Accuracy) and Temperature Probe DT041

Type: Relative Humidity and Temperature	Range: 0% to 100% RH and -40°C to +60°C
---	---

Sensor description

The DT041 sensor is a highly accurate humidity and temperature sensor. It measures relative humidity ranging from 0 to 100% with an error of not more than $\pm 1.5\%$ RH over the entire range. The DT041 includes, in its screw-on cap, a PT100 temperature sensing element that measures temperatures ranging from -40°C to 60°C.

The DT041 sensor is compatible with Fourier's MultiLogPRO, TriLog and TriLink data loggers



How it works

The DT041 is based on a humidity-sensing component. This component is actually a variable capacitor that changes capacitance according to the humidity in the environment. Results are recorded in Volts ranging from 0-1 Volts, which is accepted by the analog-digital converter. The proper result is then recorded and stored in the data logger's memory. The humidity-sensing component is equipped with two temperature sensors, performing constant temperature compensation, in order to avoid contaminated results caused by changes in room/air temperature.

The temperature sensor receives an input voltage of 5V and returns output voltage between 0 to 1 Volts, which is the range accepted by the Data logger analog-digital converter. The data logger then records the value into its memory.

How to define the DT041 temperature element with MultiLab

1. Turn on the data logger
2. Connect the data logger to the computer
3. Open MultiLab program
4. Click **Logger** on the menu bar, then click **Define new sensors** to open a dialog box:

5. Click **Add new sensor** (if there are 10 custom defined sensors on the sensors list, you should overtype one sensor that you are not using – just click the sensor's name on the list)
6. Type **Temp -40 to 60** in the **Sensor name** edit box
7. Type °C in the **Sensor unit** edit box
8. Enter the calibration values as in the figure above
9. Click **OK**

MultiLab will update the defined sensor in your data logger.

Connections

Because DT041 contains two sensors in one unit, the data logger cannot automatically identify the sensor and must operate in 8 sensors mode.

To use DT041 as Humidity sensor only:

1. Plug in the sensor
2. Click Setup  on the main toolbar
3. Select the second *Humidity* sensor from the sensor drop list next to the input you use for the humidity sensor
4. Click **Next** to proceed with the setup procedure

To use DT041 as Humidity and temperature sensors:

1. Connect the DT041 to the common end of a splitter cable (DT011) via a female to female adaptor (DT129).
2. The splitter cable output marked with ↑↓ carries the humidity signal and the splitter cable output marked with **S** is the temperature sensor.
3. Plug in the splitter cable output marked with ↑↓ to the input to which you want to connect the humidity sensor
4. Plug in the splitter cable output marked with **S** to the input to which you want to connect the temperature sensor

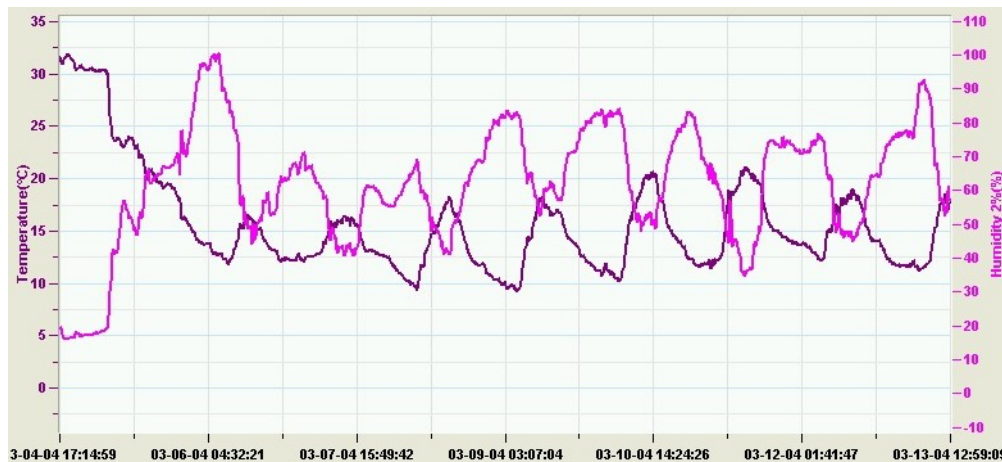
5. Click Setup  on the main toolbar
6. Select the second *Humidity* sensor from the sensor drop list next to the input you use for the humidity sensor
7. Select *Temp -40 to 60* from the sensor drop list next to the input you use for the temperature sensor
8. Click **Next** to proceed with the setup procedure

Calibration

The DT041 ships fully calibrated. No further calibration is needed.

What it is used for

The DT014 is used for biological, environmental and meteorological measurements. Among the experiments using the DT041 is the recording of the body's respiration properties, the exploration of outdoor biotic conditions, and the research of meteorological connections between humidity, temperature and light. The sensor's high precision makes it excellent for academic or professional applications.



Using DT041 in Fourier's Weather Station

Specifications:

Humidity

- Range: 0% to 100% RH
- 12-bit Resolution: 0.12% RH
- 10-bit Resolution: 0.49% RH
- Accuracy: $\pm 1.5\%$ RH at 23°C

Temperature

- Range: -40°C to +60°C.
- 12-bit Resolution: 0.12°C
- 10-bit Resolution: 0.49°C
- Accuracy: $\pm 0.3^\circ\text{C}$ at 23°C