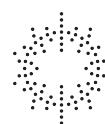


# Humidity V1.7

Relative and absolute humidity  
measurements



Photo showing version 1.7



# Introduction

---



## Usage

The humidity sensor can measure humidity; absolute and relative and temperature. It uses two SHT45 sensor chips and gives output from both of the sensors.

The sensor only accepts a few commands; serial and burnin and normal. See Page 5 for more details.

The sensor is very sensitive to impurities in the gas stream. It can be calibrated both for normal air, argon and nitrogen atmosphere.



## Data communication

Data communication happens over USB with the serial communication protocol (COM-port, /dev/ttyXX).

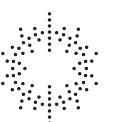
Baud rate 115200, with 8 data bits, no parity, and 1 stop bit. (8N1)

After you connect to the board it will output one line of text to the terminal every 0.1 second (10 Hz).

The content of this line is specified on the next page.

You can also send commands to the board. Just type in a command, then the board will turn channels on and off accordingly.

This video gives an introduction to serial data and commands: <https://youtu.be/-64MM8h5Sdl>





# Introduction

---



## Integration with TurboCtrl

TurboCtrl AutoConfig will detect the board and insert each channel in IO.conf as a humidity sensor. There are two sensor chips in this humidity sensor and therefore the plot will show temperature, absolute and relative humidity for both sensors, 6 lines in total in the vector.

This video gives an introduction to autoconfig:  
<https://youtu.be/MhT1DqOuWLE>

This video gives an introduction to TurboCtrl programming: <https://youtu.be/MhT1DqOuWLE>

[TurboCtrl.ai](#) supports many sensor and actuator types:

Temperatures, pressure, humidity, oxygen and other gasses, gas and liquid flow sensors, DC ports, AC ports, VFDs, current, voltage, oven controllers, light controllers, motors, audio, video, scales, position, liquid level, density, viscosity, integration with Festo and other pneumatics systems. And much more



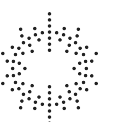
## Buy connectors

The sensor come with a USB-C to USB-C cable included and standard DIN rail mounting. You do not need any other connectors or cables.

The thread is a G1/4 BSPS thread and comes with a compatible o-ring.



For more information, please contact [sales@copenhagenatomics.com](mailto:sales@copenhagenatomics.com)



# Specs

## Serial terminal output (baud: 115200)

Output	temp 1	relative 1	absolute 1	temp 2	relative 2	absolute 2	Status code
Unit	[°C]	[%]	[g/m <sup>3</sup> ]	[°C]	[%]	[g/m <sup>3</sup> ]	[HEX]

## IO config setup

Format	Example	Description
Humidity;SensorName;BoardName	Humidity;TankOut;hm01	Will output all 6 values to plots. When using a sensor with PCB <=V1.1 the last three values will be set to -1. NB: Valid format from version >=3.150.0 and >=4.35.0

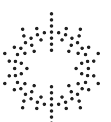
## Commands

Command	Description
burnin	Decontamination mode. Heats up the sensor for 80 minutes to remove contamination substances from sensor polymer. Returns to normal mode after 80 minutes.
normal	Forces the board back into normal operation mode.
Status	Verbose output of the current board status.
Serial	Verbose output of serial number and calibration.

## Specification

Parameter	Condition	Value	Unit(s)
Operational temperature.	min.	0	°C
	max.	80	°C
Relative humidity measurable range.	min.	0	%
	max.	100	%
Relative humidity accuracy*	typ.	±1.0	%
	max.	±3	%
Temperature accuracy*	max.	±0.6	°C
USB power	max.	0.005	W
USB current	max.	1	mA

\* From sensor datasheet ([SHT45](#)), if fully calibrated.



# Specs

## SHT45 sensor humidity and temperature accuracy

Datasheet: [https://sensirion.com/media/documents/33FD6951/67EB9032/HT\\_DS\\_Datasheet\\_SHT4x\\_5.pdf](https://sensirion.com/media/documents/33FD6951/67EB9032/HT_DS_Datasheet_SHT4x_5.pdf)

### Humidity

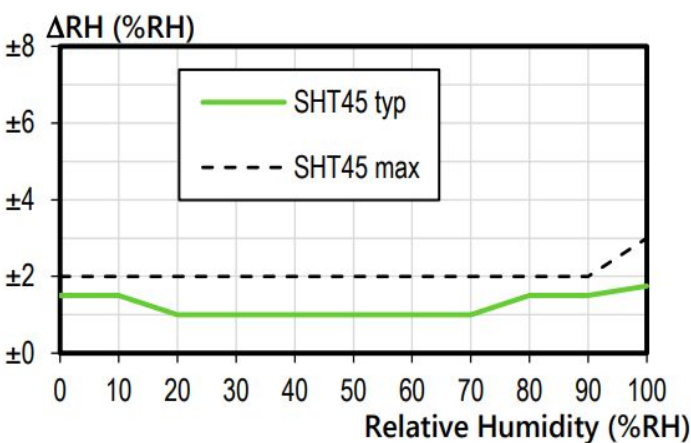


Figure 5. SHT45 typical and maximal relative humidity accuracy at 25 °C.

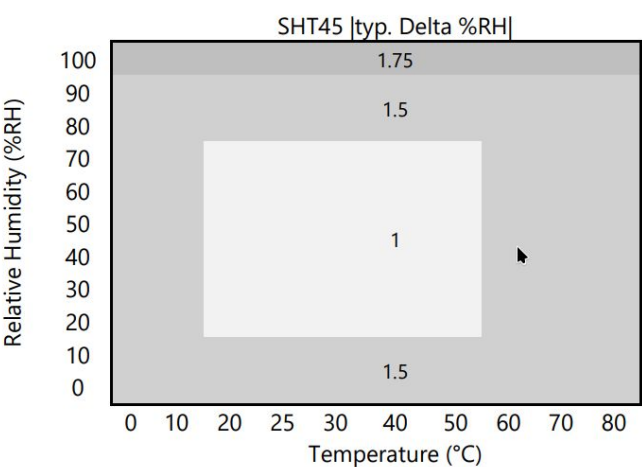


Figure 9. Typical RH accuracy tolerance over humidity an temperature for SHT45.

### Temperature

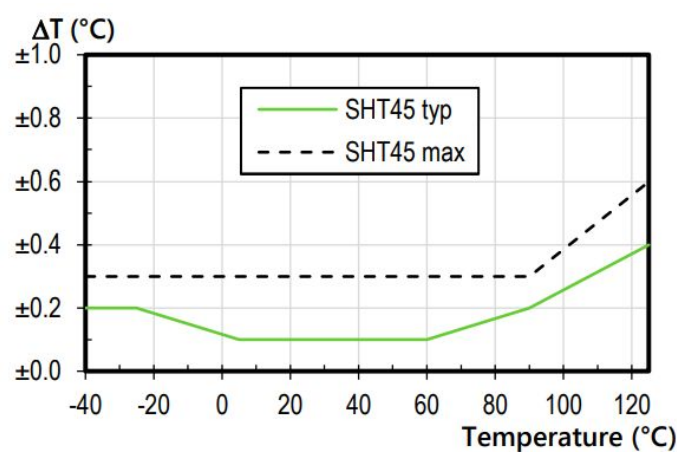
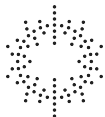
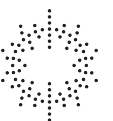


Figure 13. SHT45 typical and maximal temperature accuracy.



# Product photos



# Contact Copenhagen Atomics



[sales@copenhagenatomics.com](mailto:sales@copenhagenatomics.com)  
[copenhagenatomics.com](http://copenhagenatomics.com)



Copenhagen Atomics A/S  
Oliefabriksvej 77  
2770 Kastrup  
Denmark

Copenhagen Atomics reserves the right to change or update information and values of this datasheet at any time without prior notice. Please inquire for the current version.

