

YKHaT - Humidity and Temperature Sensor Breakout Board

Setup Guide

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YEPKIT 

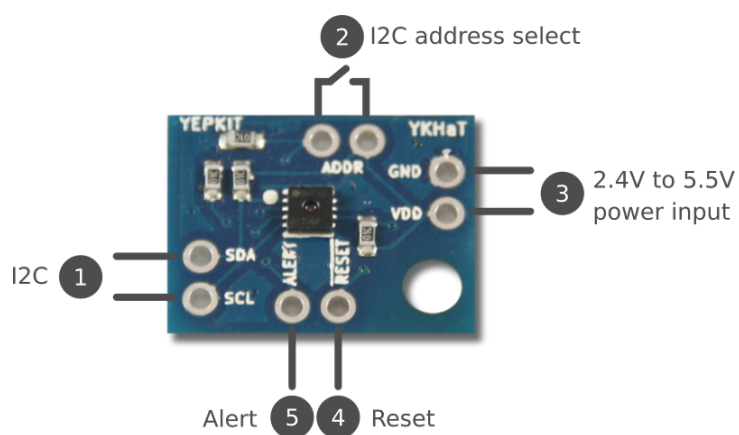
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1. Overview

YKHaT is a breakout board for the SHT30-DIS chip. The board provides an I²C interface, with on-board pull-up resistors for SCL and SDA lines, and selection between two device addresses.

In this setup guide we will focus on providing working examples of connection and use of the YKHaT sensor board. For details on all the aspects of the sensor please check the SHT3x-DIS datasheet available for download in the YKHaT product page at yepkit.com.



1. I²C interface already including pull-up resistors.
2. Slave device address selection pins.
3. Power input pins.
4. Reset pin which is active Low.
5. Alert pin.

2. Use YKHaT with YKAMELEAN24 boards

The I²C two wire interface facilitates the YKHaT integration into microcontroller (MCU) environments. We will exemplify this integration using a YKAMELEAN24 microcontroller board¹.

To connect a YKHaT board to a YKAMELEAN24 board do the following.

1. Connect SDA and SCL pins to YKAMELEAN24 SDA and SCL pins, respectively.
2. Connect GND pin to one of YKAMELAN24 board GND pins.
3. Connect VDD pin to YKAMELEAN24 V_{OUT} 3.3V pin or V_{EXT} 5V (whether you want to supply the YKHaT board at 3.3V or 5V).

YKAMELEAN24 boards native firmware include a YKHaT library module that implement the communication with the sensor board. Additionally, YKAMELEAN24 boards native firmware also implement a USB interface that can be used with `ykam24cmd` software to get the YKHaT sensor readings in a computer through USB.

2.1. Get sensor readings on a PC through USB

By connecting a YKHaT to a YKAMELEAN24 board that connects to a computer through USB we can get temperature and humidity level readings from the computer operating system command line. To get YKHaT sensor readings in a computer do the following.

1. Connect the YKHaT to a YKAMELEAN24 board as described above.
2. Connect the YKAMELEAN24 board to a computer USB port.
3. Install the `ykam24cmd` application, which is available for download at the YKAMELEAN24 product page².
4. In a command line type the following command to list the YKHaT related commands and options:
 - a) On Linux -> `ykam24cmd ykhat -h`; b) On Windows -> `ykam24cmd.exe ykhat -h`.

2.2. Store readings into variables in the YKAMELEAN24 firmware

In the YKAMELEAN24 native firmware source code project, in the `ykamelean24_firmware/src/ykhat/` directory, has the following source code files which provide functions to fetch temperature and humidity reading from the YKHaT sensor.

`ykhat.h` header file with the YKHaT related functions declaration.

`ykhat.c` source code file with the YKHaT functions implementation.

For details on the functions implemented in these source files check the YKAMELEAN24 Firmware Documentation available for download at the YKAMELEAN24 product page at www.yepkit.com.

As an example, assume you want to fetch the current temperature reading from the sensor in Celsius and store it in a variable called `temp_c`. To do so just make the following function call.

```
temp_c = ykhat_get_tempC(addr);
```

Where `addr` is the I²C device address Least Significant Bit (lsb) of the connected YKHaT board. This lsb bit is set in the YKHaT board by shunting the **ADDR** pins, so if the pins are not shunt (default state) the `addr` should be **0** otherwise should be **1**.

¹For details on YKAMELEAN24 check www.yepkit.com/product/300105/YKAMELEAN24

²www.yepkit.com/product/300105/YKAMELEAN24

3. Use YKHaT with a generic microcontroller or other master device

To communicate with YKHaT sensor chip using a generic microcontroller or other master device refer to the SHT3x-DIS data sheet. The SHT3x-DIS data sheet is available for download at the YKHaT product page³.

³www.yepkit.com/product/300111/YKHAT

A. Revisions

1.0 Initial release.