

Solstice Family: Humidity and Temperature Sensor

I²C Humidity and Temperature Sensor

General Description

The SF-2 is a serial interfaced humidity and temperature sensor board. The board is based on Texas Instruments HDC1010 High Accuracy Digital Humidity Sensor. The board can be powered with between 2.7V and 5.5V. The communication to the board is through a two-wire interface and will require pullups on the SDA and SCL lines; 4.99K recommended to start (included on board). Actual resistance will depend on the length of the serial cable and the number of devices on the bus.



The sensor has user programmable registers that allow customizable sensing. Some things that are customizable are the measurement resolution, mode of acquisition, heater, and battery status. The chip software can also be reset.

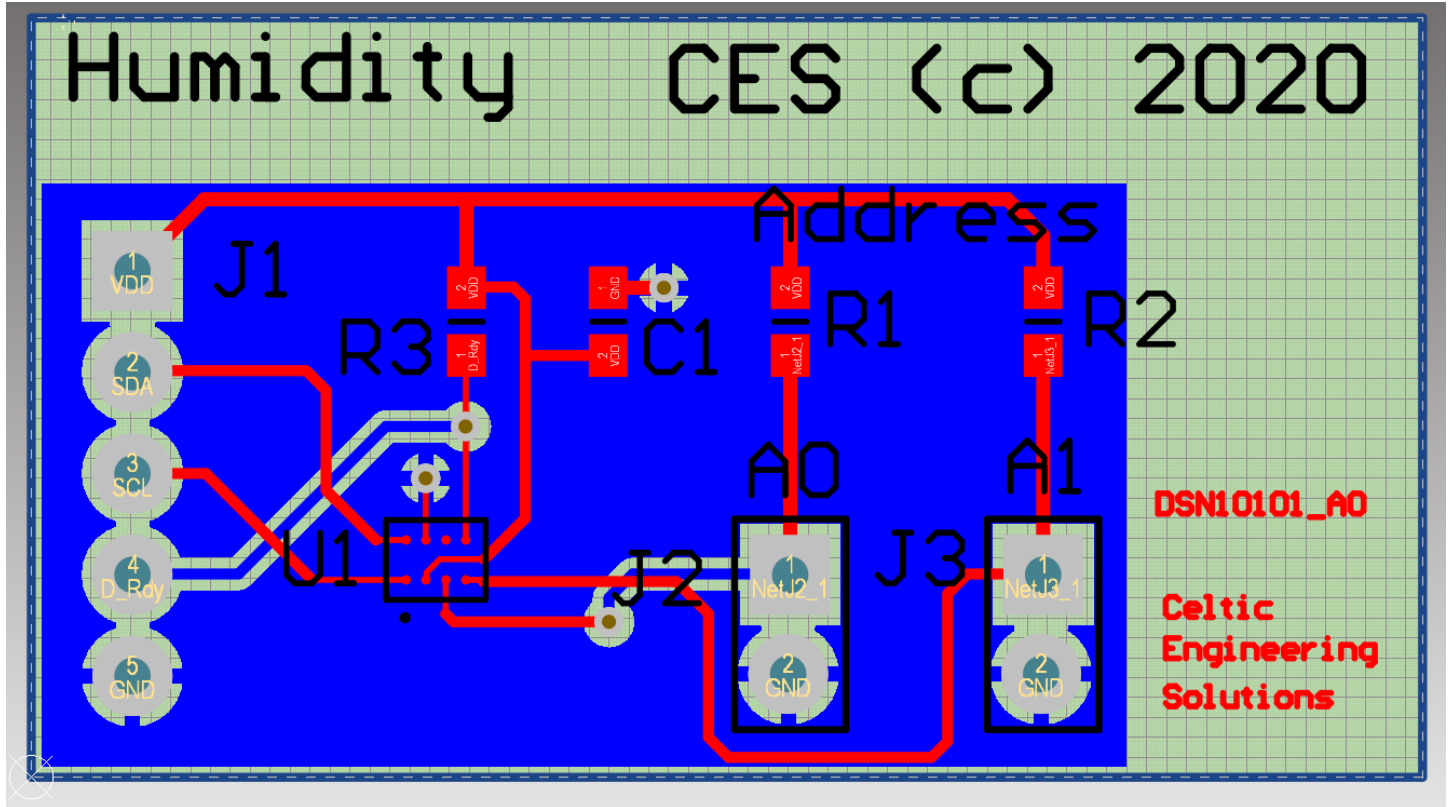
Using the Address selection jumpers, A0 and A1, up to 4 of these boards can be controlled on a single bus.

Applications

- HVAC
- IoT Smart Thermostats and Room Monitors
- Refrigerators
- Printers
- Medical Devices
- Wireless Sensors

Benefits and Features

- Operating Temperature -20°C ~70°C
- Temperature Resolution 11 or 14 bits
- Humidity Resolution 8, 11, or 14 bits
- Shutdown Current 100 nA + Address load
- 2-wire I²C™ Compatible
- Temperature Accuracy ±0.2°C
- Humidity Accuracy ±2%
- Board Size: 0.750" x 1.375"



Pin Configuration

Pin	Name	Function
1	VDD	Power Supply Input
2	SDA	Bidirectional Serial Data
3	SCL	Serial Clock Input
4	D_Rdy	Data Ready Output
5	GND	Ground

Absolute Maximum Ratings

VDD, SDA, SCL, DRDYn 6.0V
 A0, A1 - 0.3V to VDD+0.3
 Storage temperature..... -65°C to +150°C

Pin Description

Serial Data Pin (SDA)

SDA is a bidirectional input/output pin, used to serially transmit data to and from the host controller. This pin requires a pull-up resistor to output data.

Serial Clock Pin (SCL)

SCL is a clock input pin. All communications and timing are relative to the signal on this pin. The clock is generated by the host controller on the bus.



Data Ready Output

The data ready pin is active low. It requires a pull-up resistor to VDD. If not used tie to ground.

Power supply Input (VDD)

VDD is the power pin. The operating voltage is between 2.7V and 5.5V.

Ground (GND)

This is the system ground pin

Serial Interface

Address

The address of the device (10000xx) must be set by the user by placing or removing Jumper A1 and A0. The address pins are the least significant bits of the address. The most significant bits are set at the factory to 10000. The pins are all pulled high, a logical 1. Placing a jumper pulls the pin low, making it a logical 0. Available addresses are 64-67 decimal or 40h-43h. Board is shipped with jumpers disconnected; Address 1000011b, 67, 43h.

For additional information about the performance of the temperature sensor and for the registers please see Texas Instruments datasheet.

Code

Arduino example code

Example Arduino code is shipped with the data package. This code has a rudimentary menu-based user interface. It requires all 5 wires be connected between the sensor and the Arduino. The Data Ready line should be connected to pin 2 of the Arduino.

Revision History

NR	New Release
06/10/2021	Update graphics and clarify address. Added info about Arduino code.