

HTU21D PERIPHERAL MODULE

Digital Humidity and Temperature Sensor

General Description

The HTU21D peripheral module provides the necessary hardware to interface the HTU21D digital relative humidity and temperature sensor to any system that utilizes Pmod compatible expansion ports configurable for I²C communication. The HTU21D sensor is a self-contained humidity and temperature sensor that is fully calibrated during manufacture. The sensor can operate from 1.5V to 3.6V, has selectable resolution, low battery detect, and checksum capability. The HTU21D has a low current stand-by mode for power-sensitive applications.

Specifications

- Measures relative humidity from 0% to 100%
- Measures temperature from -40°C to 125°C
- Humidity resolution selectable from 8 to 12 bits
- Temperature resolution selectable from 11 to 14 bits
- 0.14 μ A sleep current
- 500 μ A operating current (during measurement only)
- \pm 3% accuracy

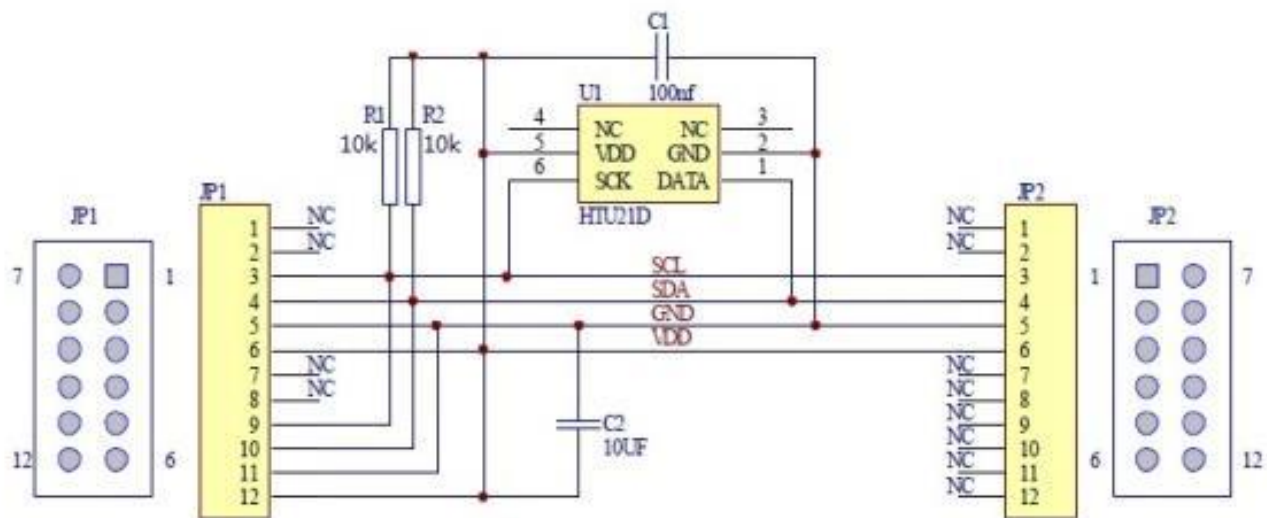
Features

- 12-pin Pmod compatible connector
- I²C interface
- Secondary 12-pin connector allows daisy chain
- FPGA fabric available for download
- μ C C code available for download
- Built-in heater to remove condensation
- Available with PTFE environmental filter over the sensor
- Electronic ID code stored on chip

Performance

- Covers full humidity range of 0 to 100% RH
- Broad temperature range of -40°C to 125°C
- Use output data to calculate absolute humidity and dew point
- Quick recovery from condensation – 10 seconds
- Fast response time to humidity changes – 5 seconds typical
- Fully calibrated and interchangeable
- Recovers fully from condensation
- Fast digital conversion time – 14 mS typical

Schematic



Connector Pin Assignments (I²C Communications)

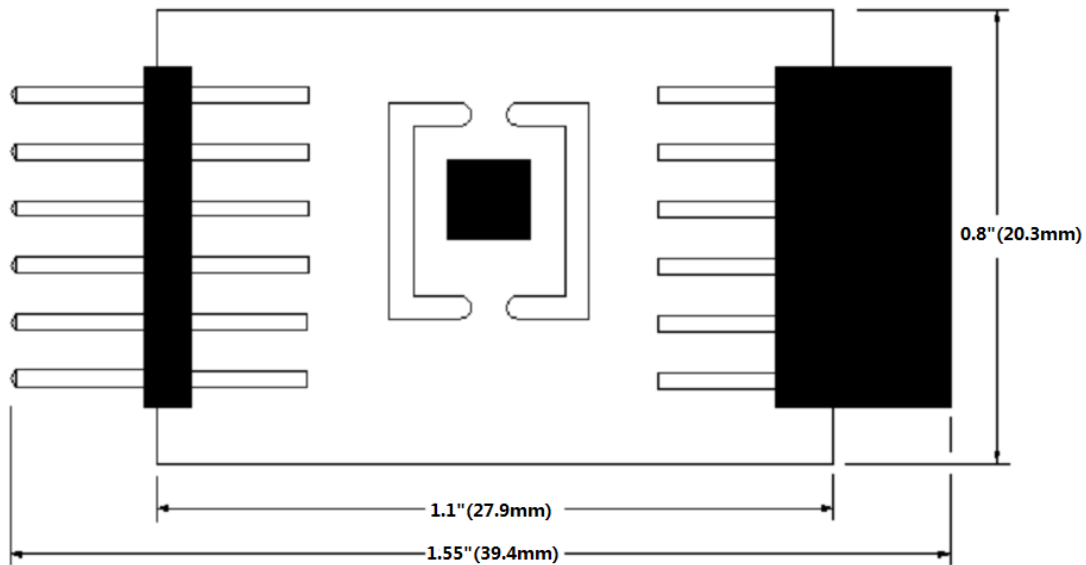
System Plug (Table 1)

Connector J1		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I ² C Serial Clock
4	SDA	I ² C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	SCL	I ² C Serial Clock
10	SDA	I ² C Serial Data
11	GND	Ground
12	Vdd	Power Supply

Expansion Socket (Table 2)

Connector J2		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I ² C Serial Clock
4	SDA	I ² C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	N/C	Not Connected
10	N/C	Not Connected
11	N/C	Not Connected
12	N/C	Not Connected

Dimensions(mm)



Detailed Description

I²C Interface

The peripheral module can interface to the host in one of two ways. It can plug directly into a Pmod-compatible port (configured for I²C) through connector J1, or to other I²C boards that have a Pmod configured expansion connector.

I²C Interface (Daisy Chaining Modules)

Connector J1 provides connection of the module to the Pmod host. The pin assignments and functions adhere to the Pmod standard as shown in Table 1. The J2 connector allows additional Pmod modules to be connected in a daisy-chain fashion. See Table 2.

External Control Signals

The IC operates as an I²C slave using the standard 2 wire I²C connection scheme. The IC is controlled by the host (through the Pmod connector). In cases where one or more of the SCL and SDA signals are driven from an external source, resistors R1, R2 provide pull-up. However, this also increases the apparent load to the external driving source. If the external source is incapable of driving these loads, they should be removed from the PC board.

Reference Material

- Detailed information regarding operation of the IC:
[HTU21D Datasheet](#)
- Detailed information regarding the MicroZed Driver:
[HTU21D MicroZed Driver](#)
- Complete software sensor evaluation kit for MicroZed:
[HTU21D MicroZed Software](#)
- Detailed information regarding the ZedBoard Driver:
[HTU21D ZedBoard Driver](#)
- Complete software sensor evaluation kit for ZedBoard:
[HTU21D ZedBoard Software](#)

Ordering Information

Description	Part Number
HTU21D PERIPHERAL MODULE	DPP301Z000

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