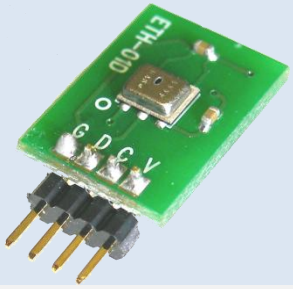
ETH-01D

Temperature & Humidity Sensor
Digital(I²C) output module (DIP)



Features

- Fully calibrated, Linearized Temp compensated sensor module
- Wide input : 1.8~5.5V
- Low power consumption (24.4uA)
- Digital I²C interface
- Easy install with 1.27㎜ Header

Application

- HVAC
- Automotive
- Humidifiers
- Medical
- Automation
- Measurement
- Weather station
- Data Logger
- White Goods
- Consumer Goods

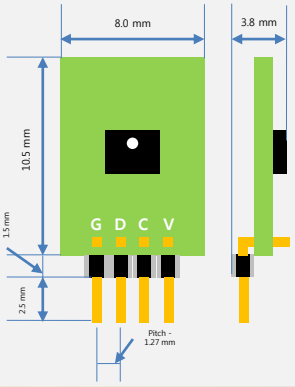
Humi Specifications

Range	0~100%RH
Accuracy (@ 25℃)	±3.8%RH(20 to 80%RH)
	±5.0%RH(Other Range)
Hysteresis	±1.0%RH @ 25℃
Resolution	14bit
Response time	time < 6s

Temp Specifications

Range	-40~125℃
Accuracy	±0.3℃ (0 to 70℃)
	±0.5℃(Other Range)
Resolution	14bit
Response time	>5s (τ63)

Dimension & Pin Fuction



PIN	FUNC
G	GND
D	SDA
C	SCL
V	V+

I²C protocol (RH,T)

- I²C slave Default address : 0x44
- Support Data Rate upto : 400kHz
- Refer to Separate Datasheet for details

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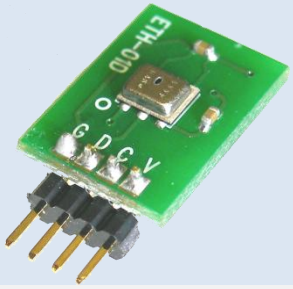
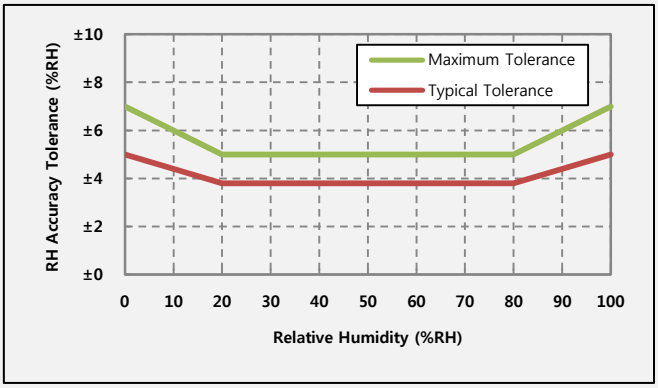
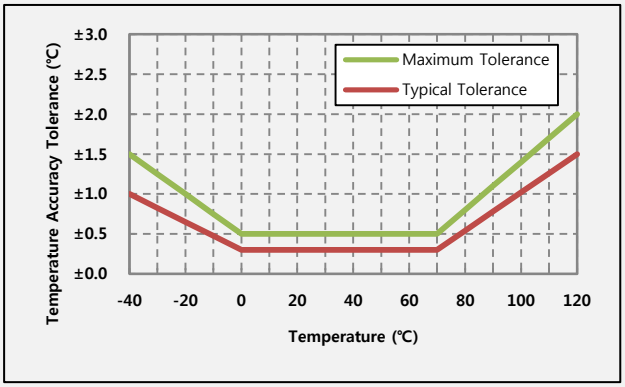


Tolerance



Tolerance of Relative Humidity @ 25℃



Tolerance of Temperature

Electrical Specifications

Parameters	Units	Min	Typ	Max
Supply Voltage	V	1.8	3.3	5.5
Supply Current (14bit)	uA(Avr.)	20.1	24.4	24.4
Sleep Current	uA		0.6	

Environmental conditions

Parameters	Units	Ratings
Operating Temperature range	℃	-40 ~ 125
Storage Temperature range	℃	-55 ~ 150

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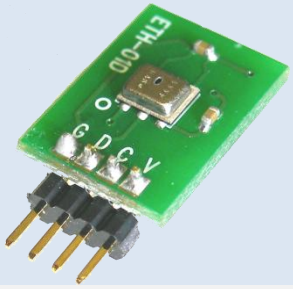

I²C Protocol

Step 1

Initiation of measurement sequence

I2C slave address 0x44 (7bit)
Data Rate upto 400kHz

S	1	0	0	0	1	0	0	0	ACK	P

Measurement time (ms) : ~35ms

I2C Address 0x44 = 1000100, Write = 0

Step 2

Request for measurement data transfer

S	1	0	0	0	1	0	0	1	ACK

I2C Address 0x44 = 1000100, Read = 1

S Start bit from the master
P Stop bit from the master

Bits generated by Master
Bits generated by Sensor

Relative Humidity data transfer

15	14	13	12	11	10	9	8	ACK	7	6	5	4	3	2	1	0	ACK
Don't care		Humidity bits [13:8]							Humidity bits [7:0]								
Data Byte 1									Data Byte 2								

Temperature data transfer

15	14	13	12	11	10	9	8	ACK	7	6	5	4	3	2	1	0	NACK	P
Temperature bits [15:8]									Temperature bits [7:2]						Don't care			
Data Byte 3									Data Byte 4									

RH and Temp formula :

○ Humidity [%RH] = Humidity[13:0] ÷ (2^{14}-1) × 100

○ Temperature [℃] = (Temperature [15:2] ÷ 4) ÷ (2^{14}-1) × 165 - 40

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