




# RS-232 Temperature and Humidity Sensor

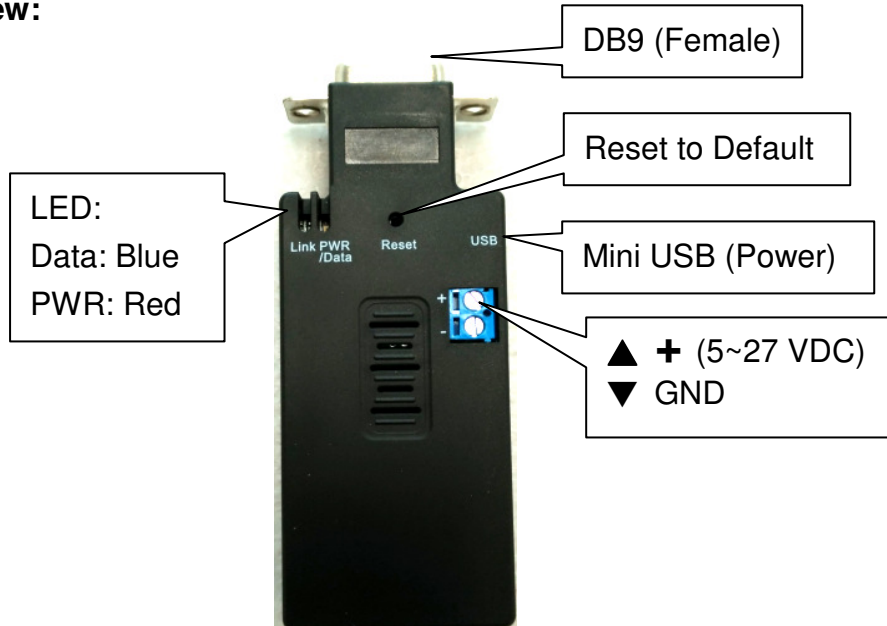
Model: TH-232

## 1. Package content:

<p>BLE RS-232 adapter</p>  <p>White Box Dimension: 11 x 6 x 5 (cm) Total Package Weight: 105 g</p> 	<p>Package Contents:</p> <ul style="list-style-type: none"><li>● RS-232 sensor adapter x 1</li><li>● Screw x2, Screw nut x 2</li><li>● A4 User manual x 1</li><li>● Mini USB Cable x 1</li></ul> 
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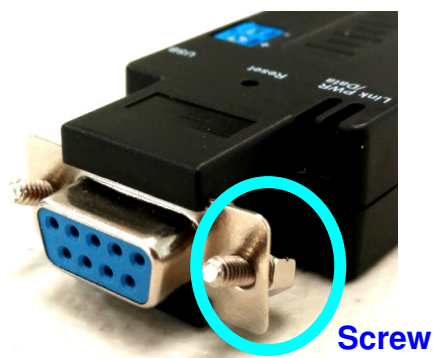
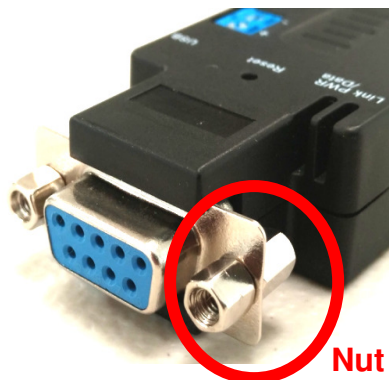
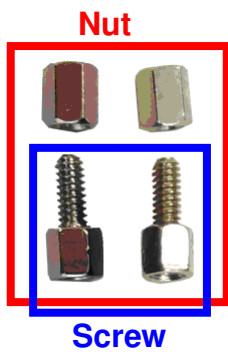
## 2. Profile:

### 2.1 Top view:

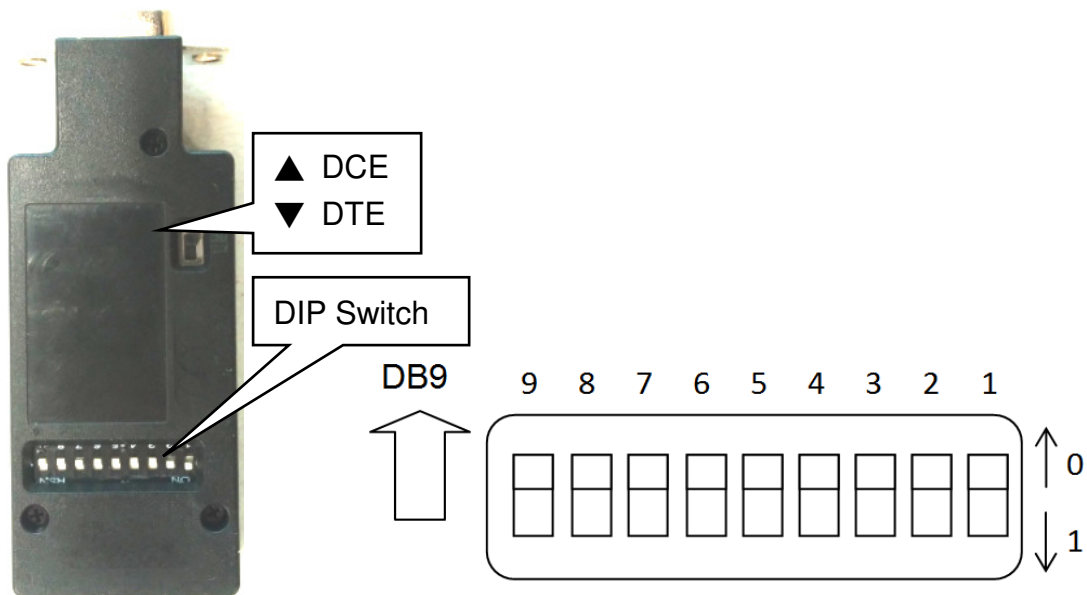


### 2.2 DB9 connector:

There're 2 screws and 2 nuts inside the package, the screw or nut are available.



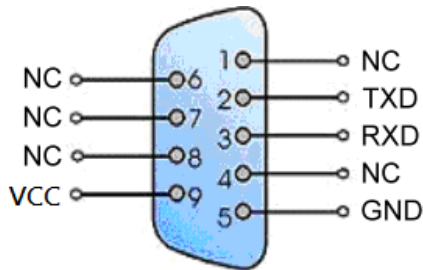
**2.3 Rear Side:**



1	2	3	4	5	6	7	8	9
Config	Format	Report	Base-1	Base-2	Time-1	Time-2	Time-3	Time-4
0: HW 1: SW	0: Raw 1: Tag	0: Auto	00: Second 01: Minute 10: Hour 11: Day *Remark		0000:1 1100:13 0001:2 1101:14 0010:3 0011:4 *Remark	0100:5 0101:6	1000:9 1001:10	1110:15 1111:16
		1: Poll	Poll the sensor value by the command set via RS-232 or RS-485, please check the command table. If you set the Modbus RTU command, the pin setting will indicate the Modbus ID: 1~64 The following string indicates the DIP No.: [4] [5] [6] [7] [8] [9] 00000:1 010000:17 100000:33 110000:49 000001:2 010001:18 100001:34 110001:50 000010:3 010010:19 100010:35 110010:51					

			000011:4	010011:20	100011:36	110011:52
			000100:5	010100:21	100100:37	110100:53
			000101:6	010101:22	100101:38	110101:54
			000110:7	010110:23	100110:39	110110:55
			000111:8	010111:24	100111:40	110111:56
			001000:9	011000:25	101000:41	111000:57
			001001:10	011001:26	101001:42	111001:58
			001010:11	011010:27	101010:43	111010:59
			001011:12	011011:28	101011:44	111011:60
			001100:13	011100:29	101100:45	111100:61
			001101:14	011101:30	101101:46	111101:62
			001110:15	011110:31	101110:47	111110:63
			001111:16	011111:32	101111:48	111111:64

### 2.3 Power input via DB9 pin9

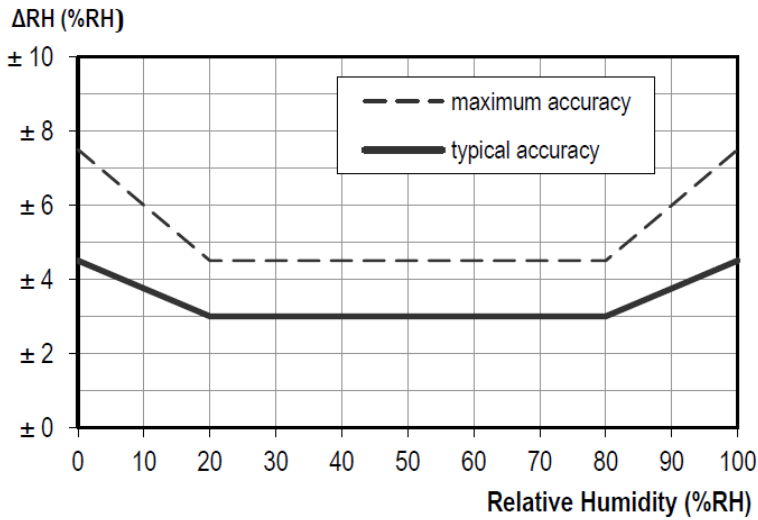


Pin	Name	Type	Descriptor
2	TXD	O	RS232 TXD
3	RXD	I	RS232 RXD
5	GND	P	Ground
9	Power	P	5~27V DC

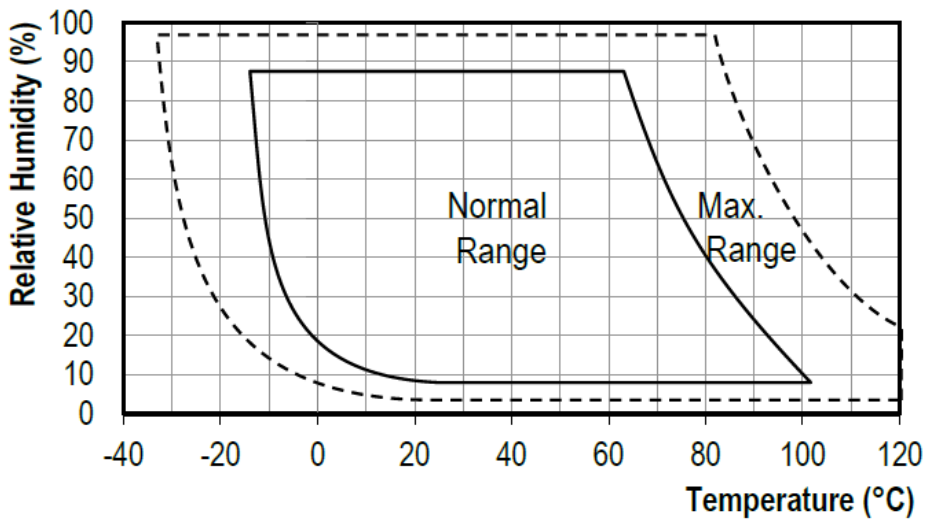
### 3. Specifications:

#### 3.1 Humidity

Parameter	Condition	Value	Units
Resolution <sup>1</sup>	12 bit	0.04	%RH
	8 bit	0.7	%RH
Accuracy tolerance <sup>2</sup>	typ	±3.0	%RH
	max	see Figure 2	%RH
Repeatability		±0.1	%RH
Hysteresis		±1	%RH
Nonlinearity		<0.1	%RH
Response time <sup>3</sup>	$\tau$ 63%	8	s
Operating Range	extended <sup>4</sup>	0 to 100	%RH
Long Term Drift <sup>5</sup>	Typ.	< 0.25	%RH/yr

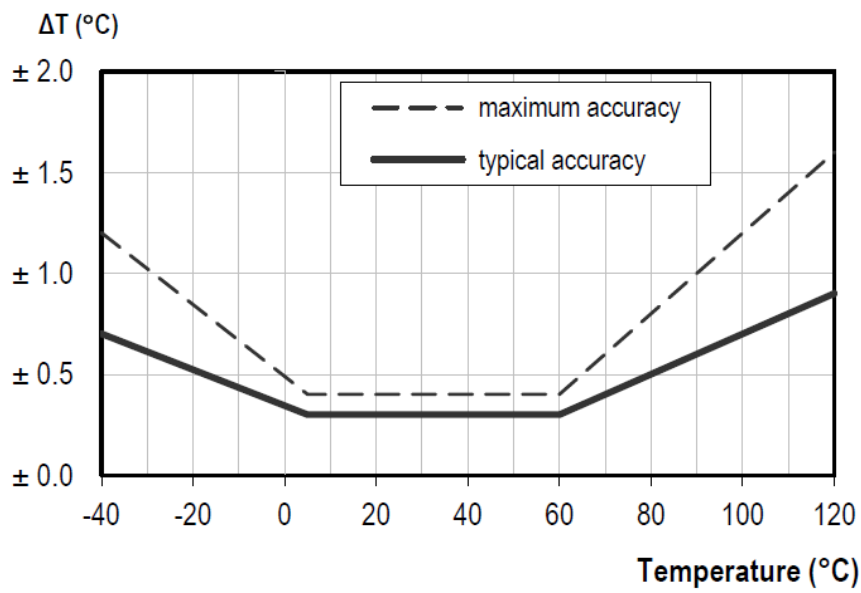


Operation range:



#### 3.2 Temperature

Parameter	Condition	Value	Units
Resolution <sup>1</sup>	14 bit	0.01	°C
	12 bit	0.04	°C
Accuracy tolerance <sup>2</sup>	typ	±0.3	°C
	max	see Figure 3	°C
Repeatability		±0.1	°C
Operating Range	extended <sup>4</sup>	-40 to 125	°C
Response Time <sup>7</sup>	$\tau$ 63%	5 to 30	s
Long Term Drift <sup>8</sup>	Typ.	< 0.02	°C/yr



## 4. Output data format:

### 4.1 Raw

Sensor Value							
Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7

Sensor value:

ASCII Value	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	
Sensor Name	D0	D1	D2(+/-)	D3	D4	D5	D6	D7	D8~D10
None	0X30	0X30							(Reserved)
Temperature(SHT-20)	0x30	0x31	+:0x2b,-0x2d	0~F	0~F	.0x2e	0~F	0~F	
Humidity(SHT-20)	0x30	0x32	+	0~F	0~F				
CO2	0x30	0x34	+	0~F	0~F	0~F	0~F		
CO	0x30	0x35	+	0~F	0~F	0~F	0~F		
PM2.5	0x30	0x37	+	0~F	0~F	0~F	0~F		
Temperature(BME280)	0x30	0x38	+:0x2b,-0x2d	0~F	0~F	.0x2e	0~F	0~F	
Humidity(BME280)	0x30	0x39	+	0~F	0~F				
Pressure(BME280)	0x30	0x41(A)	+	0~F	0~F	0~F	0~F		
Temperature(NTC)	0x30	0x42(B)	+:0x2b,-0x2d	0~F	0~F	.0x2e	0~F	0~F	
PM1.0	0x30	0x43(C)	+	0~F	0~F	0~F	0~F		
PM10	0x30	0x44(D)	+	0~F	0~F	0~F	0~F		
CH2O	0x30	0x45(E)	+	0~F	0~F	0~F	0~F		
VOC	0x30	0x46(F)	+	0~F	0~F	0~F	0~F		

### 4.2 RTLS Tag

Output Format:

\$<msg type>,<reader id>,<tag type>,<tag id>,<battery>,<button>,<G-sensor>,<sensor>,<RSSI>#

Field	Description
\$	start of report
msg type	Type of message ex. 0: general scanner, 1: tag scanner
reader id	6 bytes ID of reader in hex => 12 chars
tag type	type of tag ex. 1: tag w/o g-sensor, 2: tag w/ g-sensor ..
tag id	6 bytes ID of tag in hex => 12 chars
tag batt	batt voltage of tag in 1/10 volt unit
tag button status	button status ex. 0: released, 1: pushed
tag motion status	motion status ex. 0: non-moving, 1: moving
reserved	Reserved for <b>external sensor data (11 bytes)</b>
tag rssi	tag read rssi
#	end of report

example:

\$1,E2C69918FD94,1,FFC98B7FC1A9,32,0,0,,-55#

\$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-55#  
\$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-54#  
\$1,E2C69918FD94,1,FFC98B7FC1A9,32,1,1,,-63#  
\$1,E2C69918FD94,1,FFC98B7FC1A9,32,0,0,,-56#

Remark: All contents are subject to change without notice.



**Ubiquitous Connect**

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