

HM-006

Primus Co., Ltd.
Humidity And Temperature
Transmitter

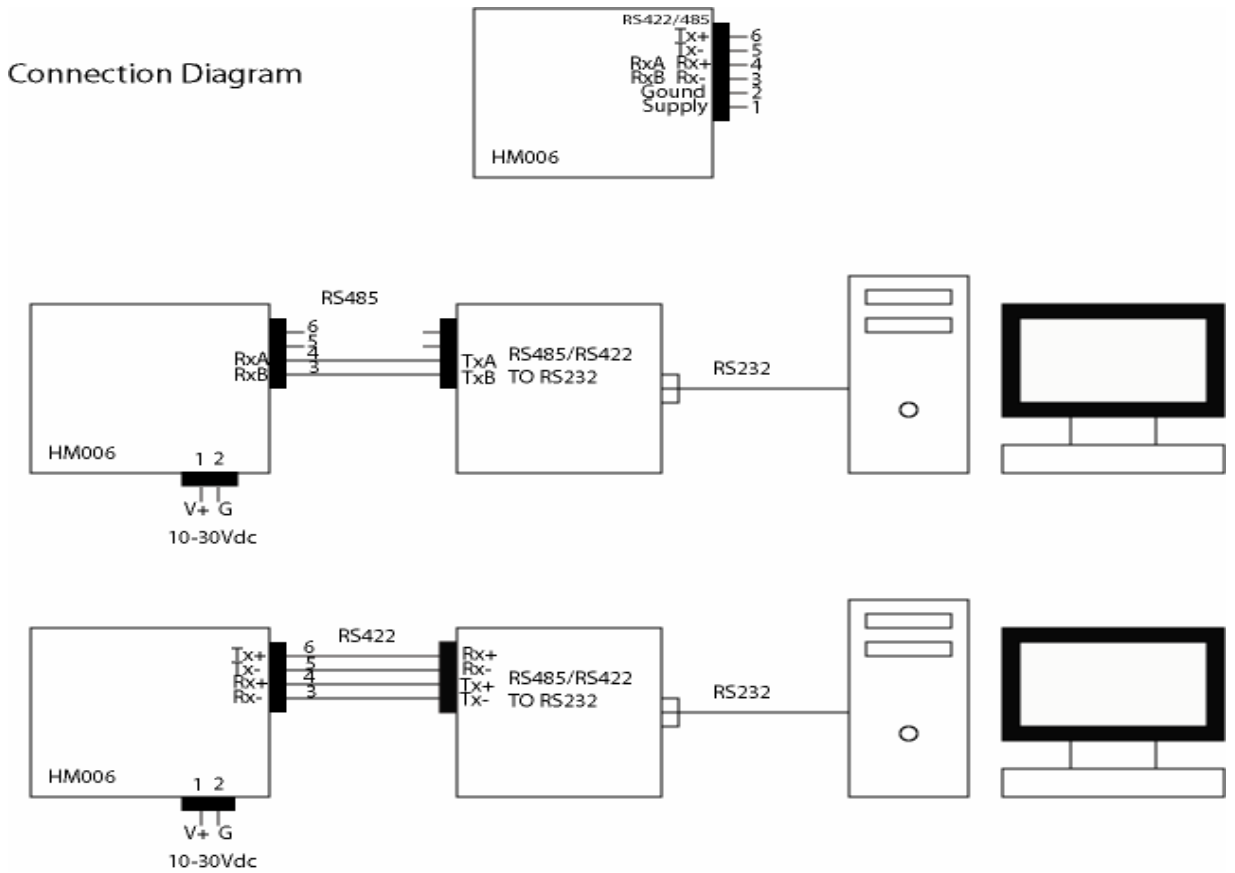
Humidity to RS422/485

HUMIDITY TRANSMITTER RS422/485 to RS232 (HM006)

1.0 Specification

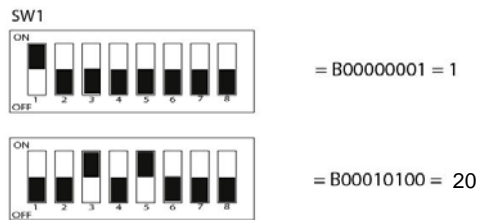
Supply	10-30Vdc
Range measurement	0-100°C for Temperature 0-100 %RH for Humidity
Protocol	Modbus(RTU) with 16 bitCRC.
Bus type	RS422/485, 4/2 wire
Buad Rate	2400 to 57600 bps
Address	1-240 (Binary mode Setting)
Dimension Box	70x105x45 mm.
Environment	IP40

2.0 Connection diagram

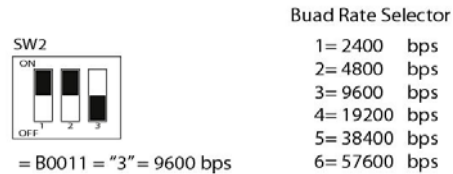


3.0 Address and Buad Rate Setting

Address Setting



Buad Rate Setting



4.0 MODBUS RTU

4.1 RTU Transmission Mode

START	ADDRESS	FUNCTION	DATA	CRC	END
S.Period	8 bits	8bits	n x 8 bits	16 bits	S.Period

Function code	Operate	Broadcast
04	Read Multiple Register	NO

4.2 CRC ERROR CHECKING

A 16 bit CRC field is tagged on to the end of all messages. This field is the result of a CRC calculation performed on the message contents. The CRC field is used by the host and receiving devices alike to determine the validity of the entire message string. A receiving device recalculate the CRC and compares it to the value contained in the message. A slave device Ignores a message if the two values do not match.

The calculation is performed as follows

1. Load a 16 Bit register ("CRC Register") with FFFF Hex.
2. XOR the first Byte of the message with the low order byte of the CRC register. Put the result in the CRC register.
3. Shift the CRC register one bit to the right, filling the MSB with a zero.
4. if the bit shifted out in step 3 is a 1, XOR the CRC register with the value A001 Hex.
5. Repeat steps 3 and 4 until 8 shifts have been performed and the bits tested. A single byte has thus been processed.
6. Repeat steps 2 to 5 using the next 8 bit byte of the message until all bytes have been processed.
7. The final contents of the CRC register is tagged on to the end of the message with the most significant byte first
8. Swap the low and high order bytes of the integer result.

4.3 Equation

$$\%RH = \text{DATA} \times 10e(k-3)$$

4.4 Table Number

Data	Data Register	Number of Byte
0-100 %RH	0	2
k1 SCALE	1	2
0-100 °C	2	2
k2 SCALE	3	2
Dew Point	4	2
k3 SCALE	5	2
Software Version	6	2

4.5 Example RTU Command

Function 04			
Host Request	Byte	EXAMPLE	
METER ADDRESS	1	01H	
FUNCTION	2	04H	
TABLE NUM(Hi Byte)	3	00H	
TABLE NUM(Lo Byte)	4	00H	
No. OF WORDS(Hi Byte)	5	00H	
No. OF WORDS(Lo Byte)	6	04H	
CRC (Hi Byte)	7	F1H	
CRC (Lo Byte)	8	C9H	
Response			
Response	Byte	EXAMPLE	
METER ADDRESS	1	01H	
FUNCTION	2	04H	
NUMBER OF BYTE	3	0CH	
DATA REGISTER 1(Hi Byte)	4	15H	
DATA REGISTER 1(Lo Byte)	5	3EH	
DATA REGISTER 2(Hi Byte)	7	00H	
DATA REGISTER 2(Lo Byte)	8	01H	
DATA REGISTER 3(Hi Byte)	9	0BH	
DATA REGISTER 3(Lo Byte)	10	18H	
DATA REGISTER 4(Hi Byte)	11	00H	
DATA REGISTER 4(Lo Byte)	12	01H	
CRC (Hi Byte)	17	44H	
CRC (Lo Byte)	18	DEH	

CALCULATION

$$\%RH = (153EH) \times 10e(1-3) = 54.38 \%RH$$

$$\text{Temp} = (0B18H) \times 10e(1-3) = 28.40 \text{ } ^\circ\text{C}$$