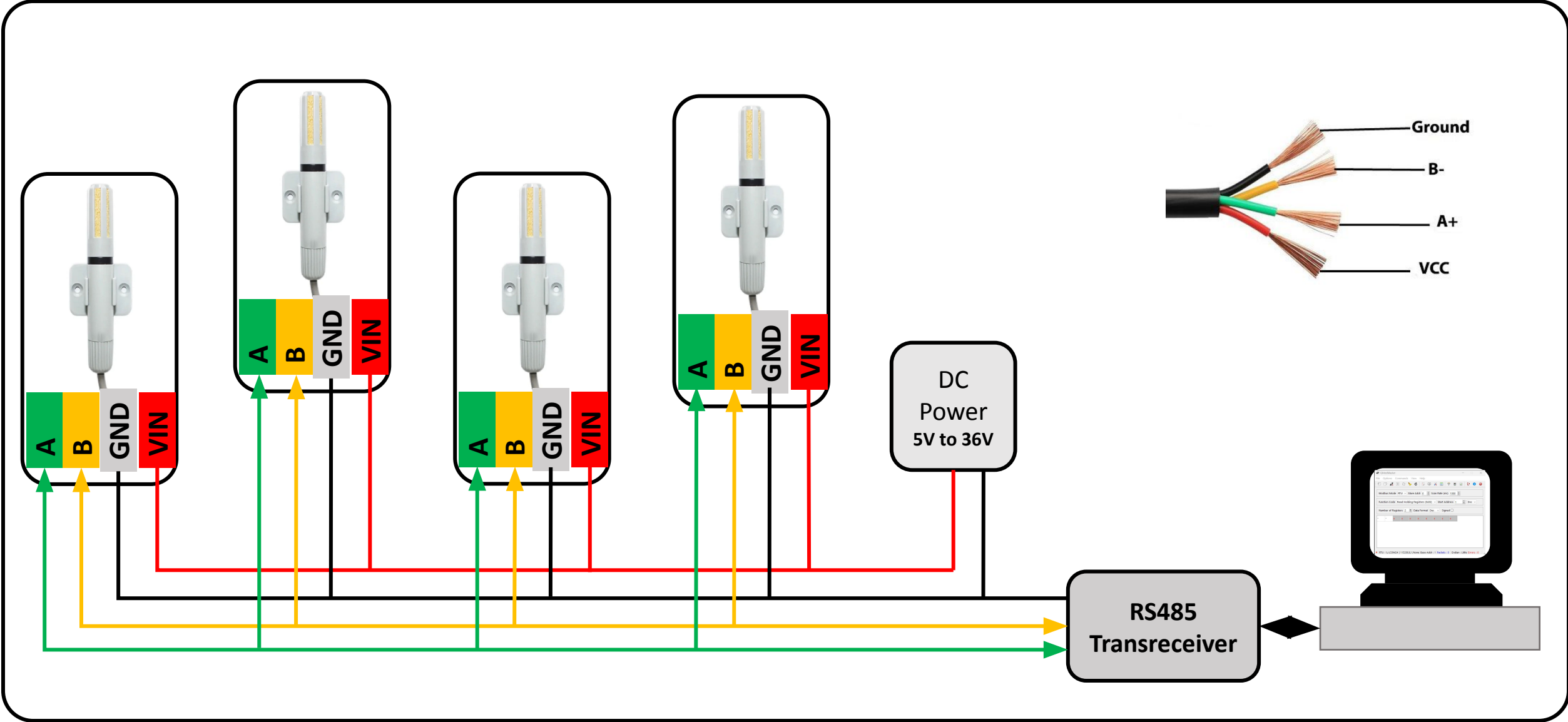


DESCRIPTION

7Semi RS485 is a humidity and temperature sensor with an RS-485 interface. It supports the Modbus RTU protocol. The humidity and temperature sensor integrates basic elements plus signals processing and provides a fully calibrated digital output. Applications that require precise humidity and temperature monitoring – Cold Storage, offices, drug and food stores, etc. It is also suitable for smart office applications. This sensor can be used in indoor and outdoor applications.

SPECIFICATIONS	
Temperature	
Typ. Temperature Accuracy:	0.1 °C
Operating temperature range (Sensor):	-40 °C to 125 °C
Response time :	3S
Humidity	
Typ. relative humidity accuracy:	1 %RH
Operating relative humidity range:	0 %RH to 100 %RH
Response time :	3S
Calibration :	Factory calibration
Electrical	
Supply voltage :	5V to 36V
Average Current @12V:	<10mA
Modbus RTU RS485	
Interface :	RS485
Communication Protocol :	standard MODBUS RTU
Baud Rate :	115200
Device address :	0 to 127
Function Code(Read Holding Registers)	0x03
Start Address	1
Number of Registers	2

INTERFACE / WIRING Diagram



COMMUNICATION PROTOCOL

Supported function code : 0x03: read multiple registers

Read command:

- **Host frame format**

Transmitter address + 0x03 + register start address (2 bytes) + number of registers (2 bytes) + CRC low bit + CRC high bit

- **Transmitter return format**

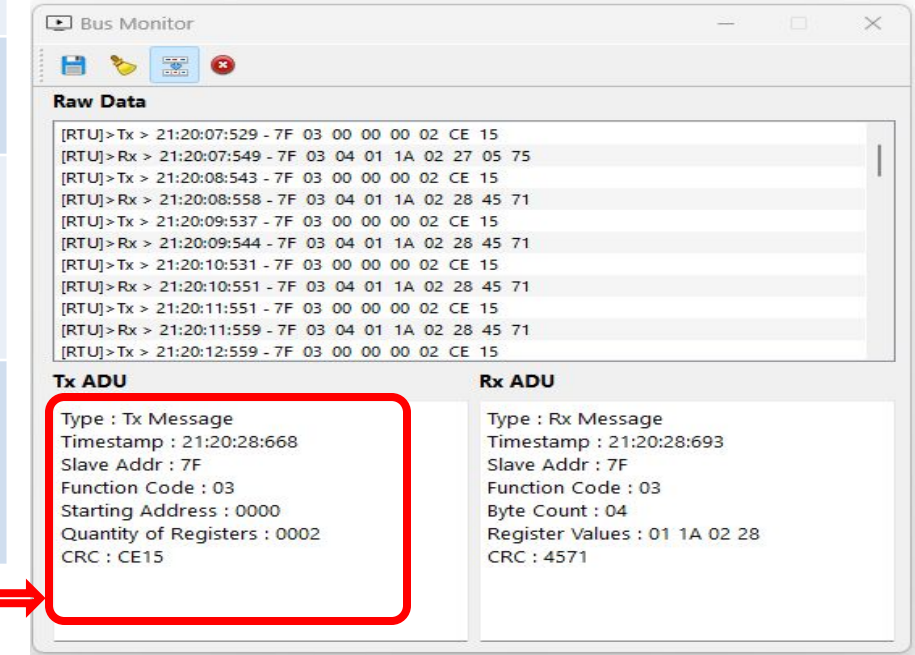
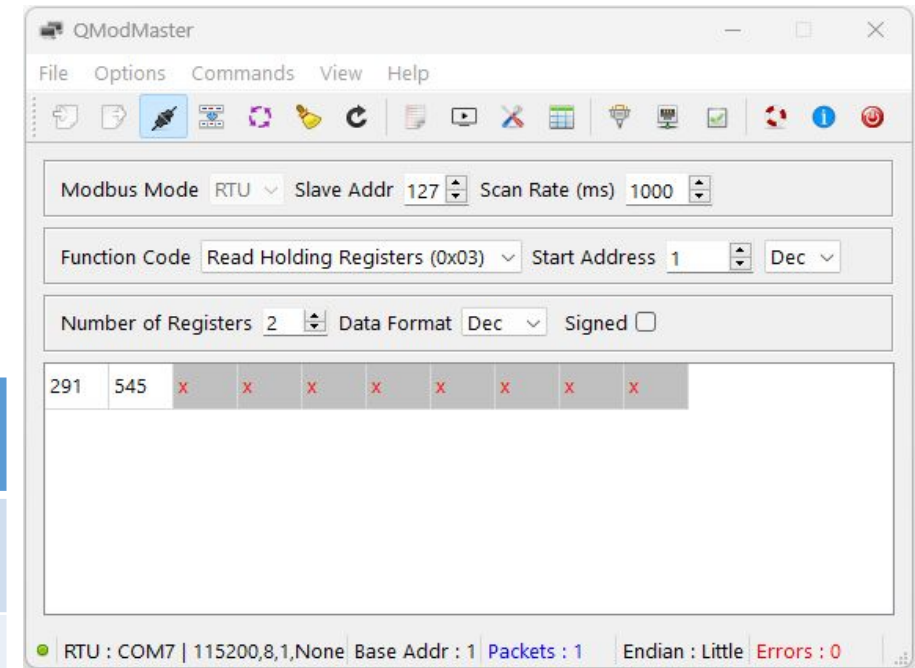
Transmitter address+0x03+number of bytes returned (1 byte)+data 0+data 1+data 2+data 3+CRC low bit+CRC high bit

Examples Host frame format for communication read instruction

Host frame

7F	03	00	00	00	02	CE	15
----	----	----	----	----	----	----	----

Send by Host	No. of Bytes	Data	Description
Slave Address	1	7F	Slave with Address 7F (127 dec)
Function Code	1	03	Read holding register
Start Address	2	00 00	Start Address
Read Number of registers	2	00 02	Read 2 registers, a total of 4 bytes
CRC code	2	CE 15	The CRC calculated by the host, the low byte first(CE) and high byte behind(15)



Transmitter return Frame

7F	03	04	01	1A	02	28	45	71
----	----	----	----	----	----	----	----	----

Send by Host	No. of Bytes	Data	Description
Slave Address	1	7F	Slave with Address 7F (127 dec)
Function Code	1	03	Read holding register
Number of bytes returned	1	04	Returned 4 registers, total 4 bytes
Register 0 high byte	1	01	temperature low byte
Register 0 low byte	1	1A	temperature High byte
Register 1 high byte	1	02	Humidity low byte
Register 1 low byte	1	28	Humidity High byte
CRC code	2	45 71	The CRC calculated by the host, the low byte first(45) and high byte behind(71)

QModMaster

File Options Commands View Help

Modbus Mode: RTU Slave Addr: 127 Scan Rate (ms): 1000

Function Code: Read Holding Registers (0x03) Start Address: 1 Dec

Number of Registers: 2 Data Format: Dec Signed:

291 545 x x x x x x x x

Data: Temp = 29.1 & Hum 54.5

RTU : COM7 | 115200,8,1,None Base Addr : 1 Packets : 1 Endian : Little Errors : 0

Bus Monitor

Raw Data

```
[RTU]>Tx > 21:20:07:529 - 7F 03 00 00 00 02 CE 15
[RTU]>Rx > 21:20:07:549 - 7F 03 04 01 1A 02 27 05 75
[RTU]>Tx > 21:20:08:543 - 7F 03 00 00 00 02 CE 15
[RTU]>Rx > 21:20:08:558 - 7F 03 04 01 1A 02 28 45 71
[RTU]>Tx > 21:20:09:537 - 7F 03 00 00 00 02 CE 15
[RTU]>Rx > 21:20:09:544 - 7F 03 04 01 1A 02 28 45 71
[RTU]>Tx > 21:20:10:531 - 7F 03 00 00 00 02 CE 15
[RTU]>Rx > 21:20:10:551 - 7F 03 04 01 1A 02 28 45 71
[RTU]>Tx > 21:20:11:551 - 7F 03 00 00 00 02 CE 15
[RTU]>Rx > 21:20:11:559 - 7F 03 04 01 1A 02 28 45 71
[RTU]>Tx > 21:20:12:559 - 7F 03 00 00 00 02 CE 15
```

Tx ADU

Type : Tx Message
 Timestamp : 21:20:28:668
 Slave Addr : 7F
 Function Code : 03
 Starting Address : 0000
 Quantity of Registers : 0002
 CRC : CE15

Rx ADU

Type : Rx Message
 Timestamp : 21:20:28:693
 Slave Addr : 7F
 Function Code : 03
 Byte Count : 04
 Register Values : 01 1A 02 28
 CRC : 4571