

# MOBUS – Modbus Adapter TEST PROCEDURE

**Example of communication between an ISAW sensor and a PC using the Modbus Adapter MOBUS.**

## 1. Hardware setup

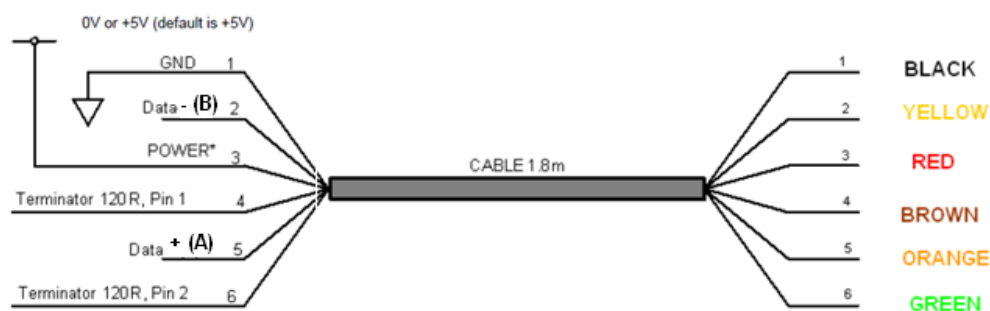
In this example we have an ISAW sensor (model HailFlow HF4) and we want to communicate with it through a PC and via the Modbus adapter.

The sensor is connected directly to the “SENSOR” connector of the Modbus adapter as per Picture 2.

To power both the Modbus adapter and the sensor we simply use the white and black wires of the UDONG accessory, connected to “POWER” connector of the Modbus adapter. We connect UDONG to a USB hub that is connected to the PC (see pictures 1, 3 and 8). (It can also be connected directly to the PC without a hub).

To communicate between the MODBUS ADAPTER and the PC we use any RS485/422 adapter (ex: FTDI USB-RS485-WE-1800-BT) connected to “MODBUS” connector of the MODBUS ADAPTER. The RS485/422 adapter is also connected to the USB hub. (It can be connected directly to the PC without a hub).

## USB to RS485 Serial Converter Cable

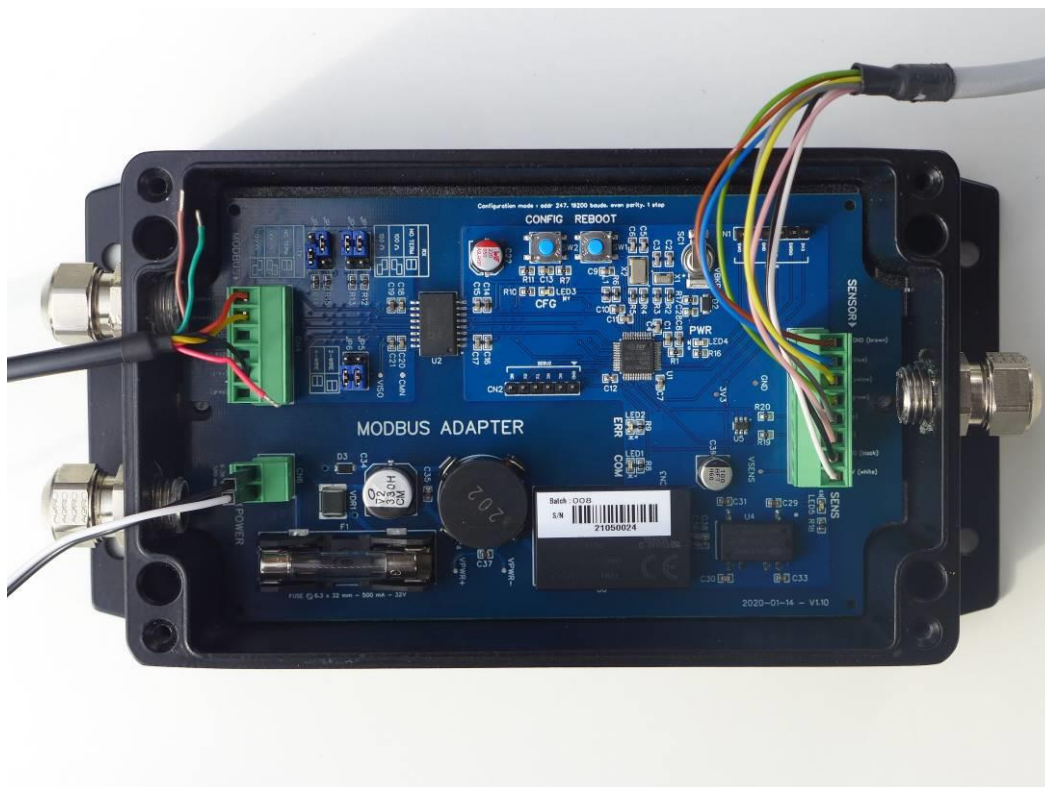


[https://www.ftdichip.com/Support/Documents/DataSheets/Cables/DS\\_USB\\_RS485\\_CABLES.pdf](https://www.ftdichip.com/Support/Documents/DataSheets/Cables/DS_USB_RS485_CABLES.pdf)

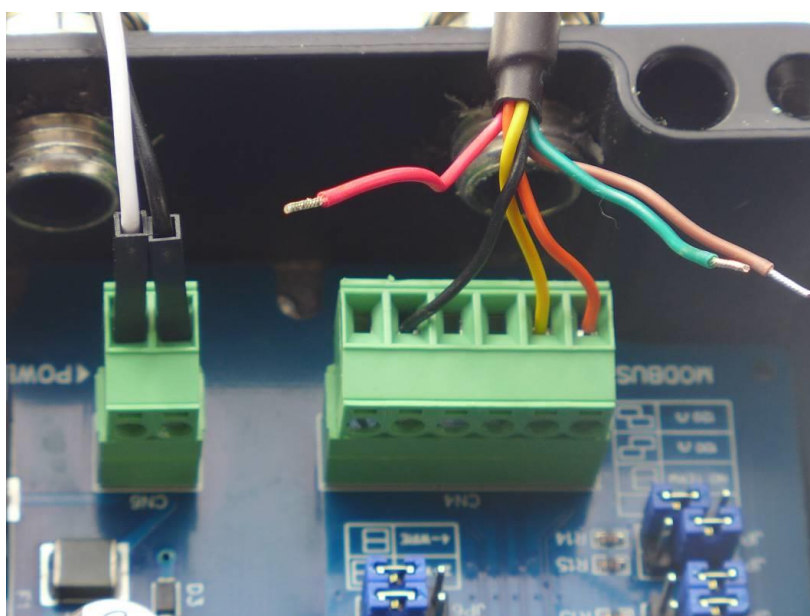
- Download the driver vs Operating System (if needed): <https://ftdichip.com/drivers/vcp-drivers>
- Then on the MODBUS ADAPTER side, we connect the USB-RS485 FTDI as per pictures 2 and 3. That is, only wires black, yellow and orange (thus leaving the red, green and brown unused).
- We set the jumpers of the MODBUS ADAPTER as per picture 4.
- We set the UDONG switch to the ON position which activates the UDONG green led and two green leds on the MODBUS ADAPTER (see picture 9 and 10).
- The hardware setup is complete we can now communicate.



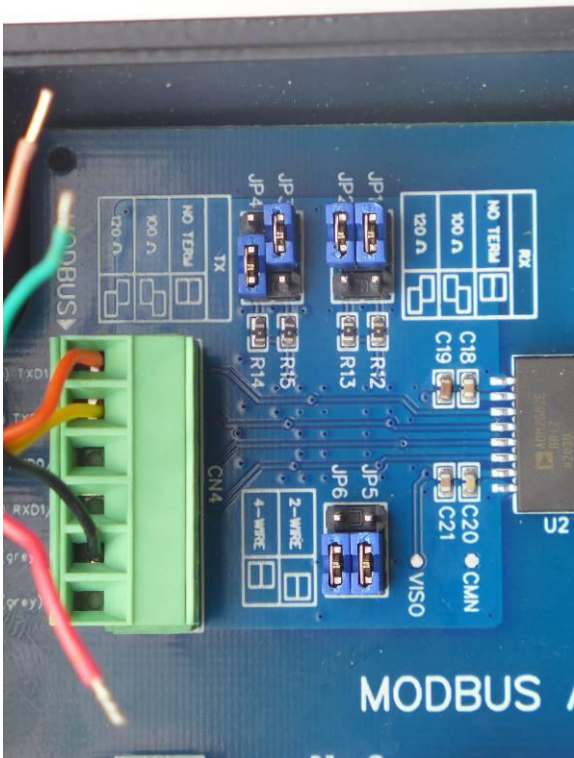
**Picture 1: Hardware setup**



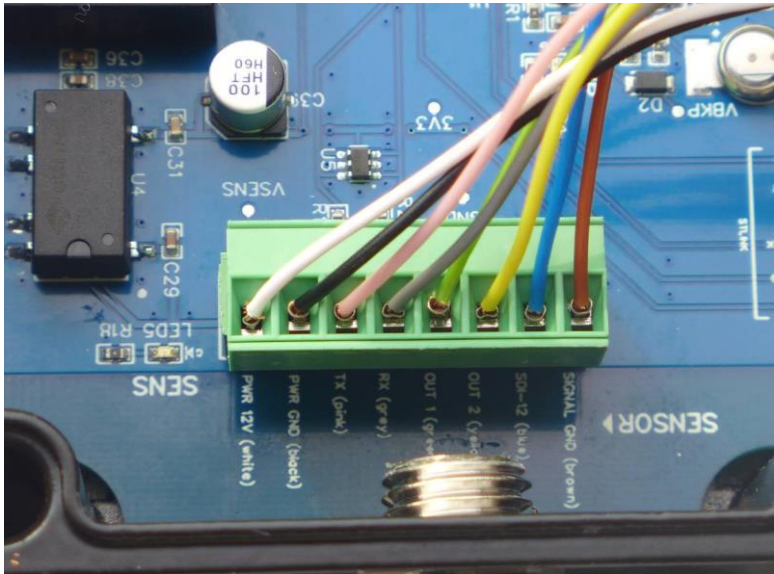
**Picture 2: Modbus adapter connectors with MODBUS and POWER connectors on the left and SENSOR connector on the right**



**Picture 3: POWER connector (on the left), MODBUS connector (on the right)**



Picture 4: Jumpers



Picture 5: SENSOR connector

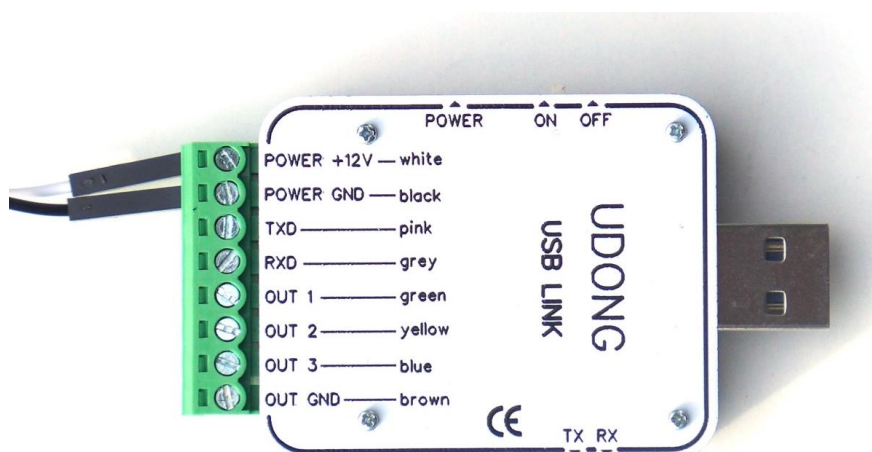




**Picture 6: RS485/422 adapter connected to the MODBUS connector of the Modbus adapter**



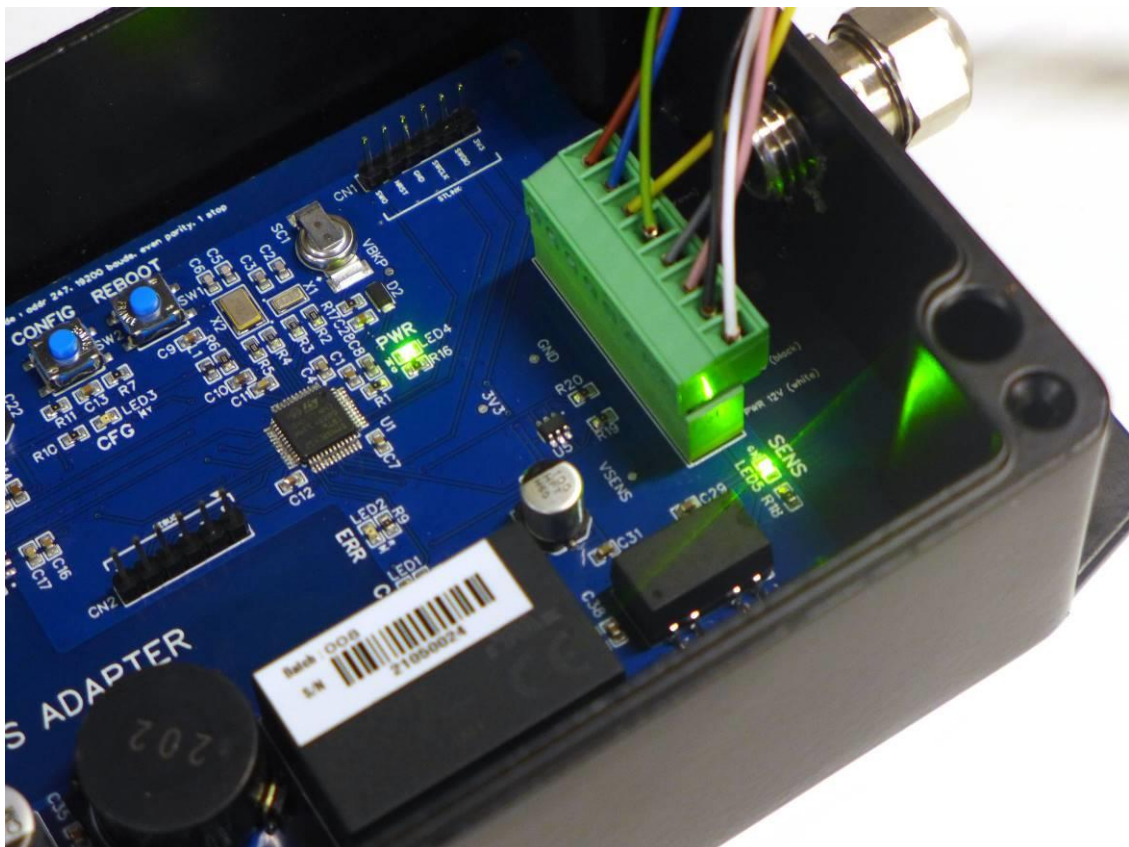
**Picture 7: RS485/422 adapter**



**Picture 8: UDONG accessory**



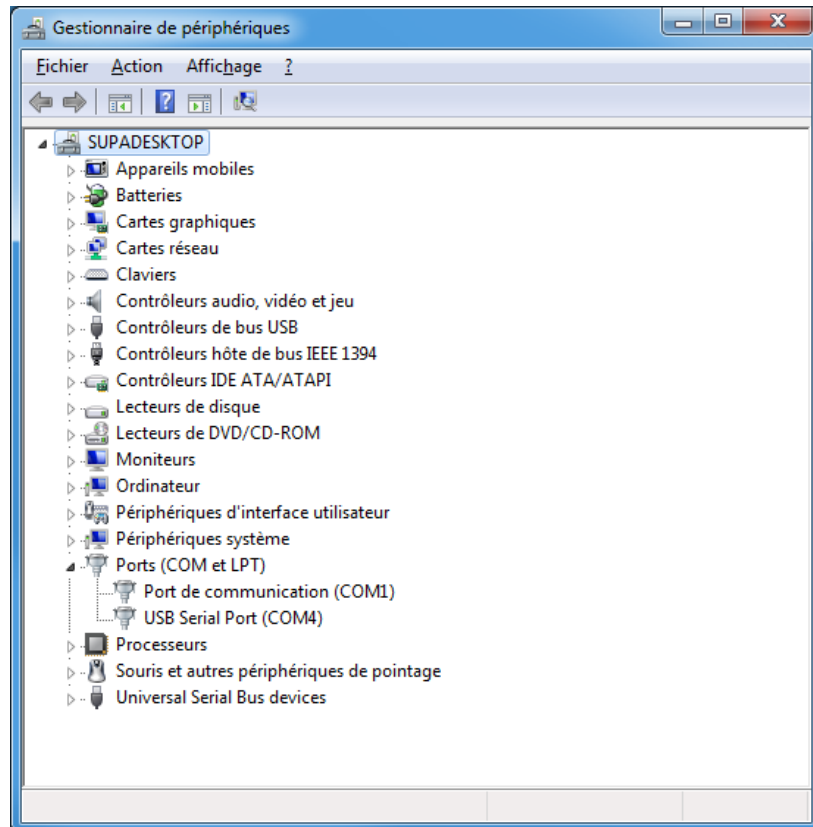
*Picture 9: USB hub with UDONG accessory on the left*



*Picture 10: Modbus adapter LEDs*

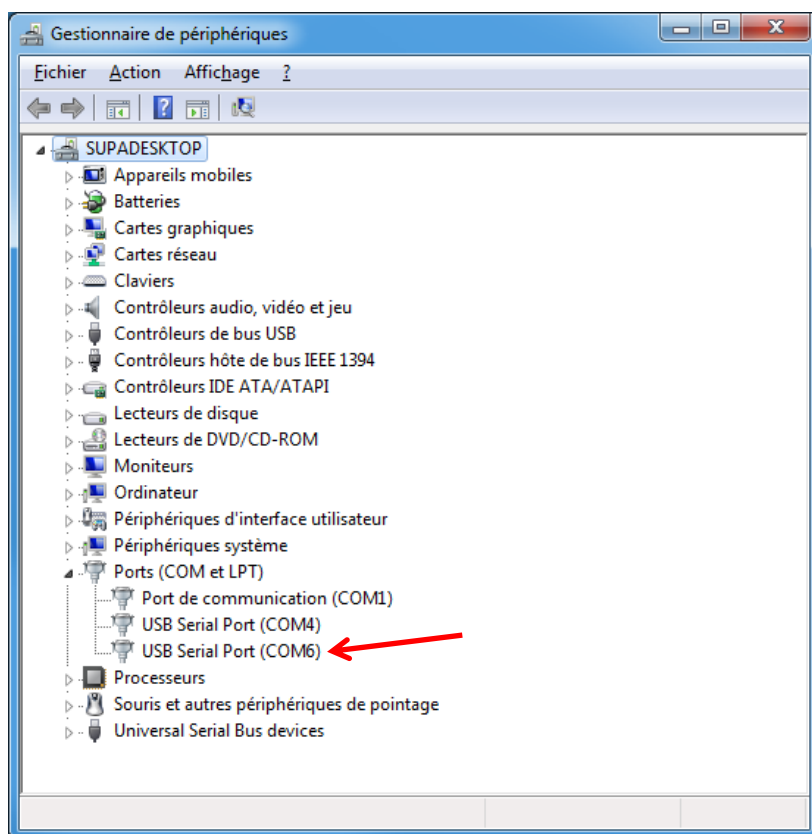
## 2. Communicating with the sensor

- Download a communication software, for example QModMaster. QModMaster is a free Qt-based implementation of a ModBus master application. A graphical user interface allows easy communication with ModBus RTU and TCP slaves. QModMaster also includes a bus monitor for examining all traffic on the bus. See <https://sourceforge.net/projects/qmodmaster/>
- Open the « Device Manager ».

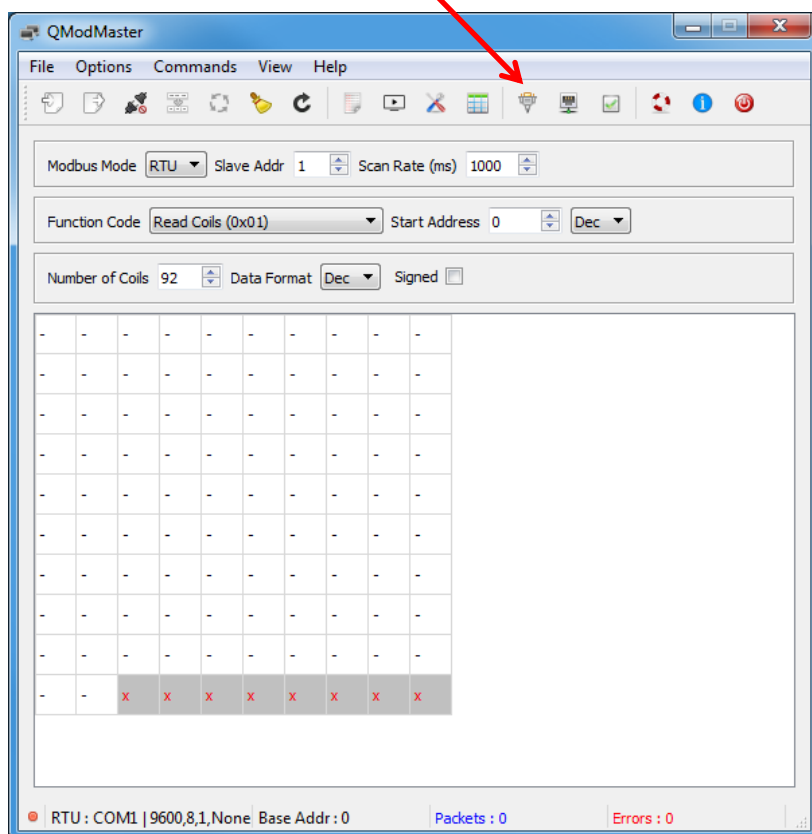


- Plug the RS485/422 adapter USB connector to the USB hub or PC and install the required drivers.

- When the drivers are successfully installed, a new serial port appears (here: COM6).

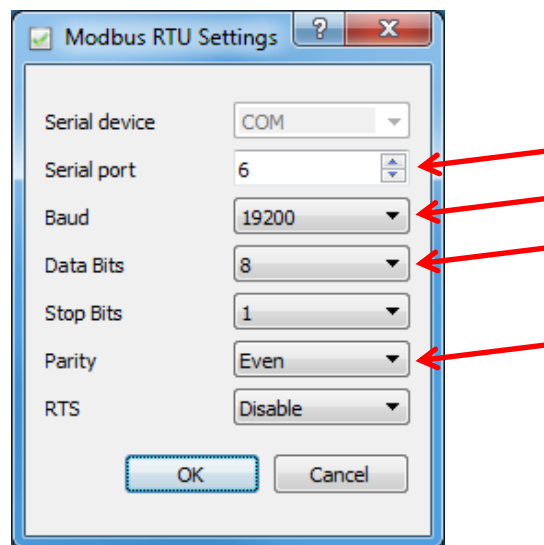


- Start QModMaster and open the Configuration Panel.

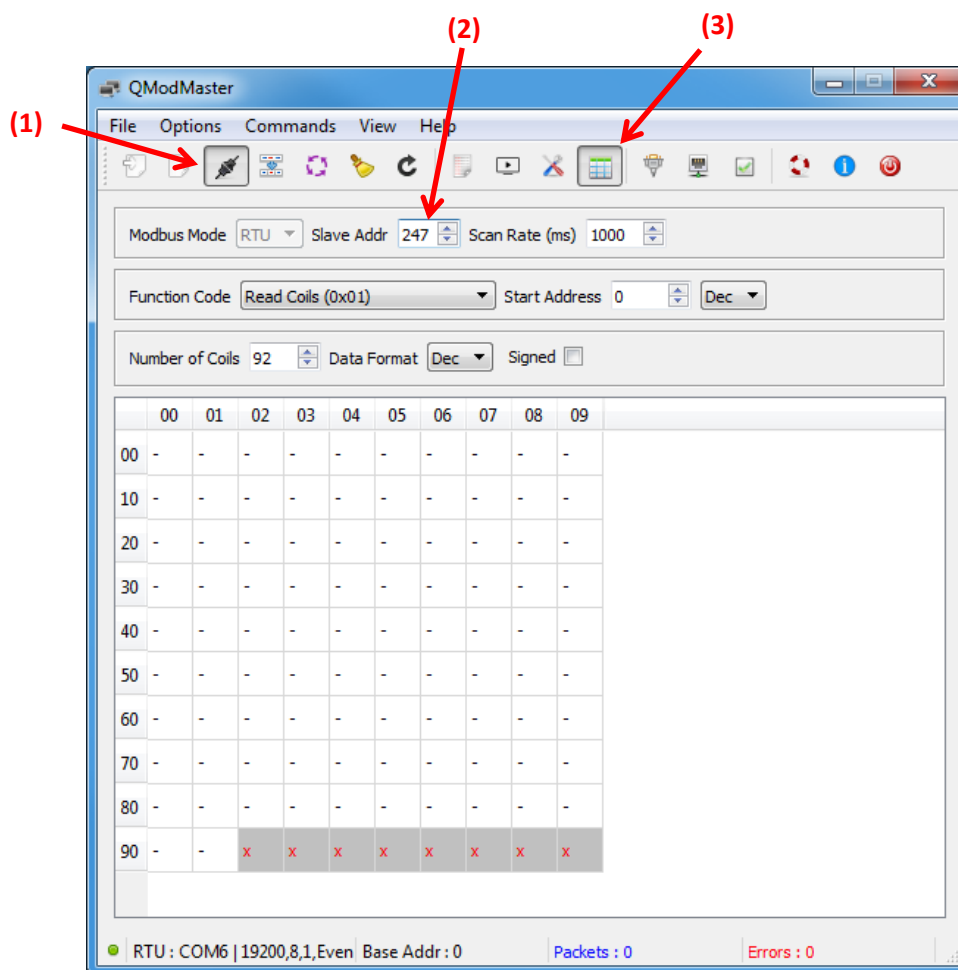




- Set the serial communication parameters. Use the relevant serial port number (here: 6).



- (1) Open the QModMaster serial port.
- (2) Set the Modbus address (e.g. 247).
- (3) Display grid header if needed.

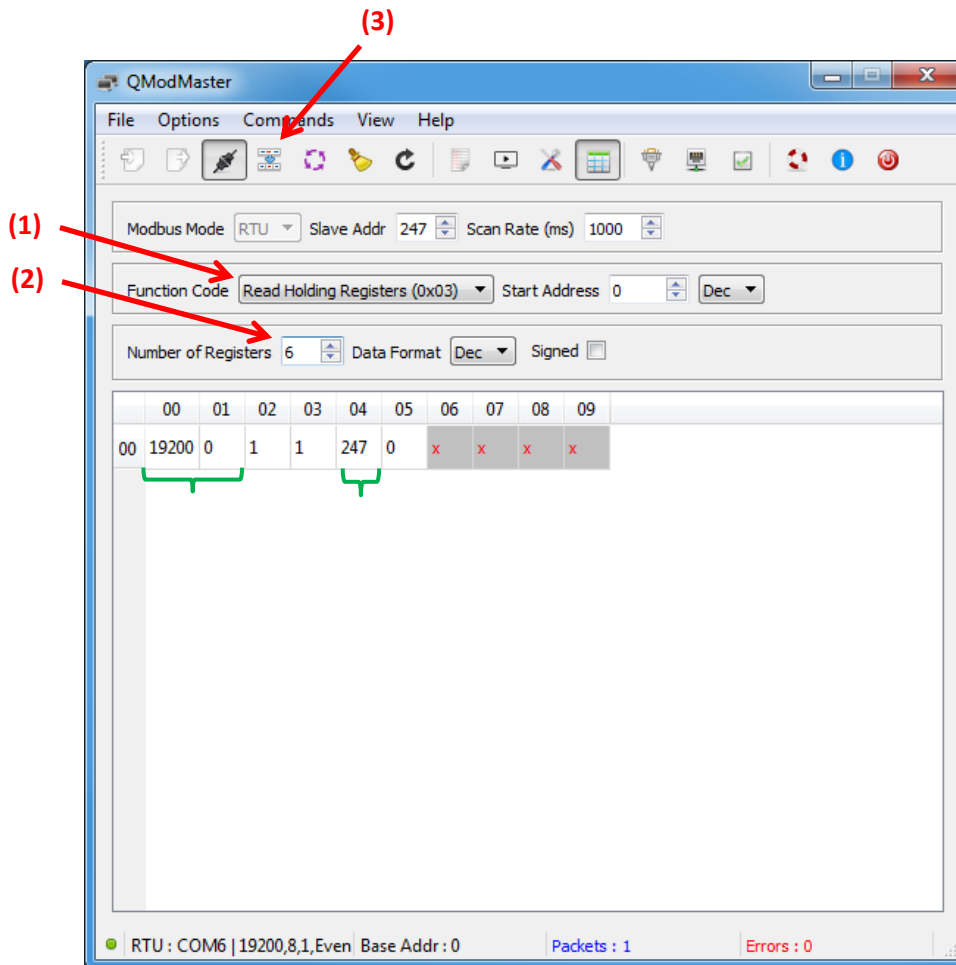


**Tip :** If you receive the « Connection failed » message below, your serial port is probably already opened by another application. Stop the other application and retry.

Connection failed  
Could not connect to serial port.



- Try to read the configuration:
  - (1) Select the function code « Read Holding Registers ».
  - (2) Set the number of registers (e.g. 6 for the whole configuration).
  - (3) Click on « Read/Write » button.



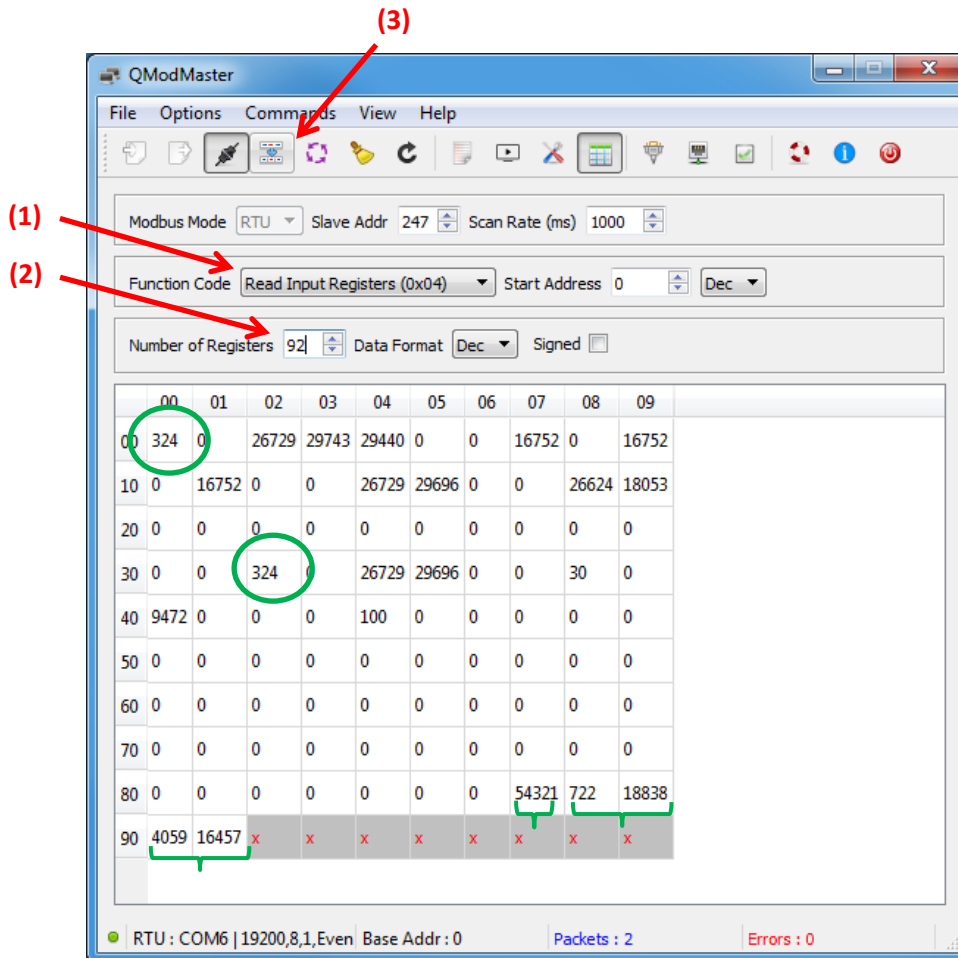
- You can see for example the « Baudrate » (Register 0) and « Address » (Register 4).  
To understand the registers definitions, values and formats please refer to the Modbus short notice.

**Tip :** If you receive « Read data failed » message below (Timeout or CRC), please check your hardware wiring (especially data wire swapping), jumper position and QModMaster serial configuration (especially baud rate and parity).

Read data failed.  
Error : Timeout



- Try to read the measurements:
  - (1) Select the function code « Read Input Registers »
  - (2) Set the number of registers (e.g. 92 for the whole measurement)



- You can see for example « Frame counters » (Registers 0 & 32) and « Test fixed values » (Register 87,88 & 90). To understand the registers definitions, values and formats please refer to the Modbus short notice.

**Tip:** The interval between two measurements of the sensor depends on the sensor's "Averaging" setting: by default, the sensor sends one measurement every 600 seconds, i.e. a refresh of the displayed data every 10 minutes. To get more frequent refresh of the displayed data, you can change the "Averaging" parameters "Acquisition (A)", "Cycle (C)" and "Measure (M)" of the sensor. To do so, connect the sensor to a PC using the UDONG accessory and refer to the "Averaging panel" section of the User Guide. Example for quick test: set A=1s, C=2s and M=4s. In this case, do not forget to re-set the "Averaging" configuration of your sensor according to your needs after this test.

