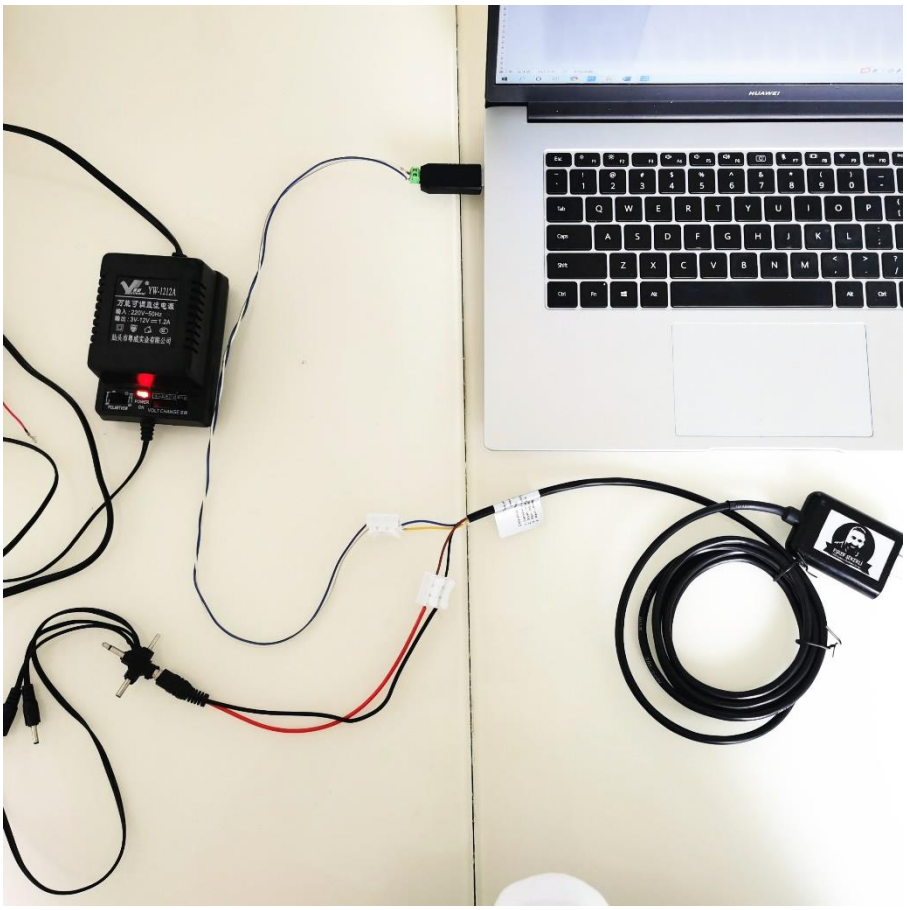
Soil sensor instruction manual



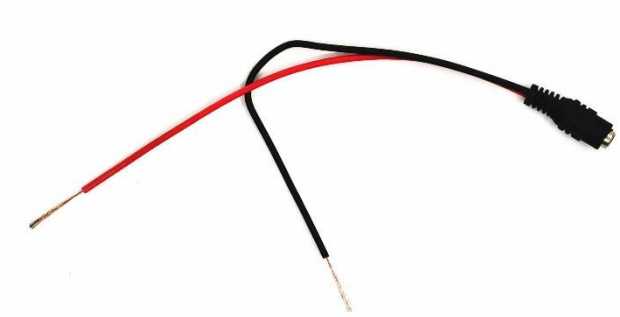
1. Hardware preparation

1.1 DC power supply:12~24V, above 100mA

Due to different connector standards, it is recommended to purchase locally.

1.2 Power interface conversion line

It is used for the connect the power to the sensors.

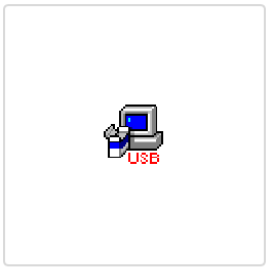


1.3 RS485-USB converter

1. It is used for the connect the sensor to the PC.

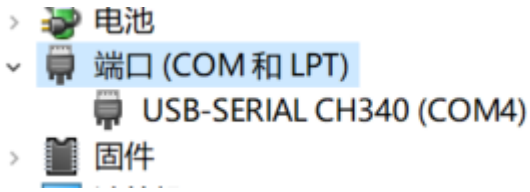
2. Install the RS485-USB converter driver

Please check it in the attachment and please insert the RS485-USB converter first to your PC, and then install the driver.



3. Check the USB COM port NO. and remember it, the following steps will use this COM port NO., the view method is as follows:

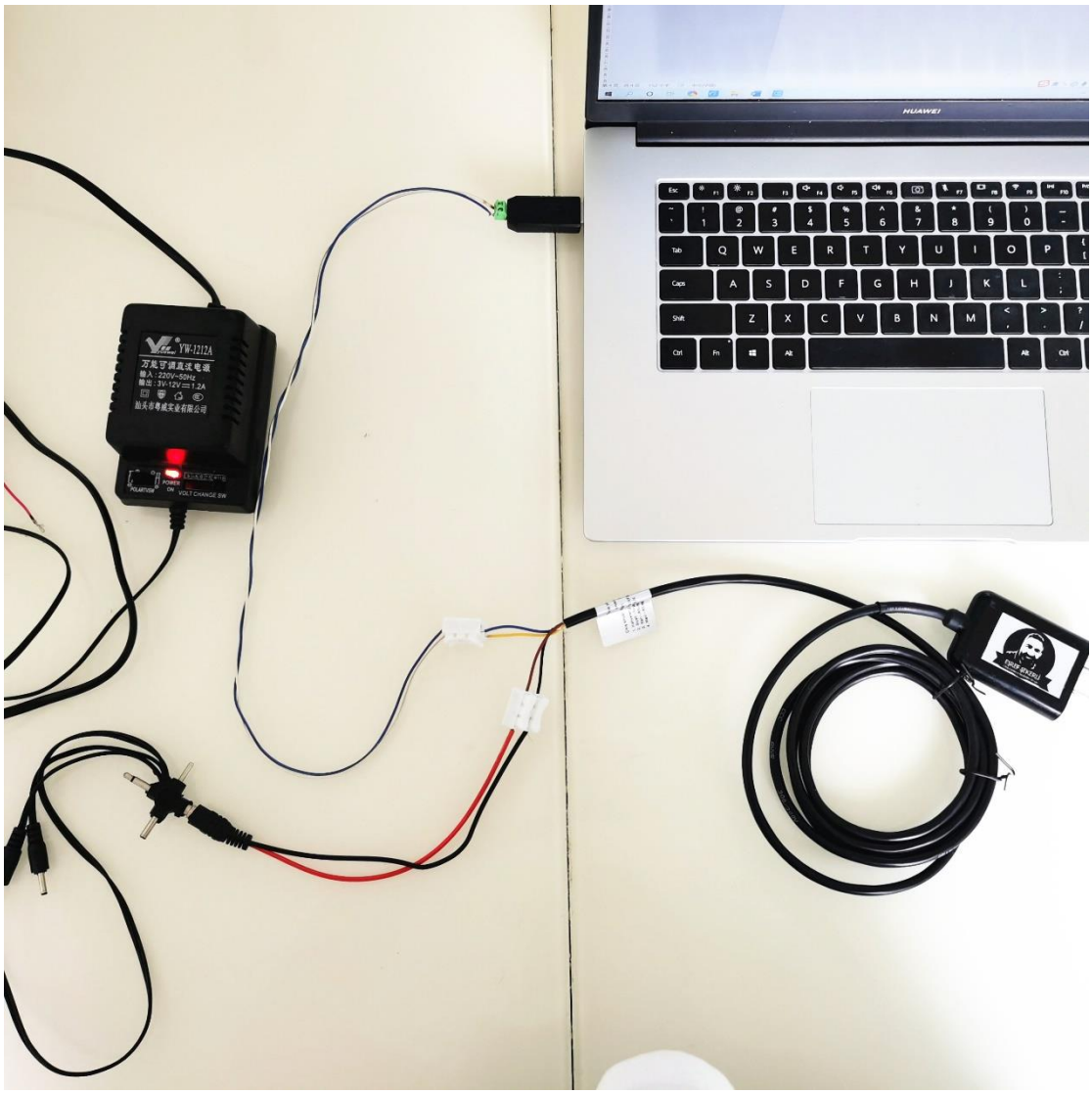
My Computer ---> Properties ---> Device Manager ---> Double-click Ports (COM and LPT) ---> USB-SERIAL CH340 (COM4), COM 4 is the COM port NO. we will use later.



4. The test sensors

Soil 6 IN 1 sensor

2. Hardware connection



1. Sensor connect

Please pay attention the wire connect order:

1.Sensor Red (Brown) wire connect the power positive 5-12VDC

2.Sensor black wire connect the power negative

3.Sensor yellow wire connect the RS485-USB converter RS485A (it shows “A” or “D+” in the converter)

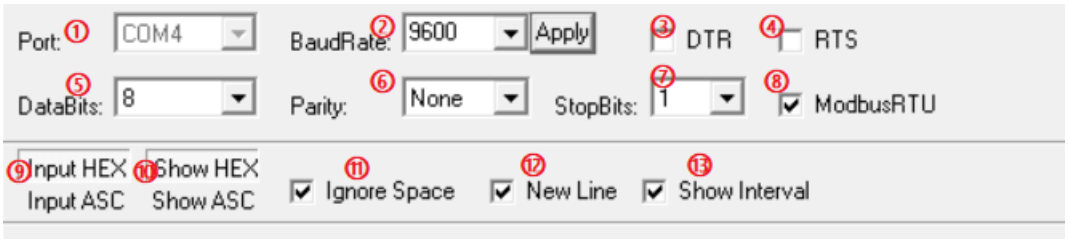
4.Sensor Green(blue) wire connect the RS485-USB converter RS485B (it shows ”B” or “D-“ in the converter)

Note: The wiring sequence must not be wrong

3. Set the test software

1. Please open the commix software in the attachment

2. Make the settings as following



(1) Port : Please choose the port COM NO. just checked from your PC.

(2) Baud Rate: Please choose the 9600 (The sensor default is 9600), and then click the “apply”.

(3) DTR is empty

(4) RTS is empty

(5) Data Bits: 8

(6) Parity: None

(7) Stop Bits: 1

(8) Modbus RTU

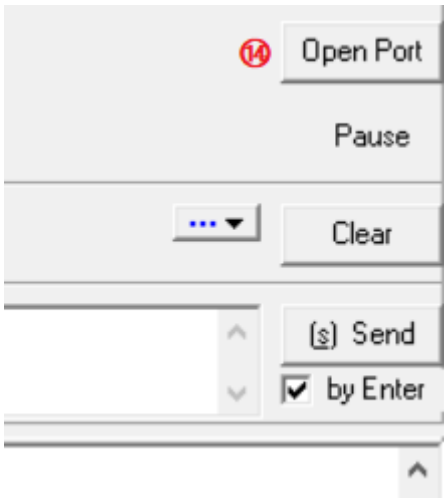
(9) Choose “ Input HEX”

(10) Choose “Show HEX”

(11) Choose” Ignore space”

(12) Choose “New line”

(13) Choose “Show interval”



(14) Open port

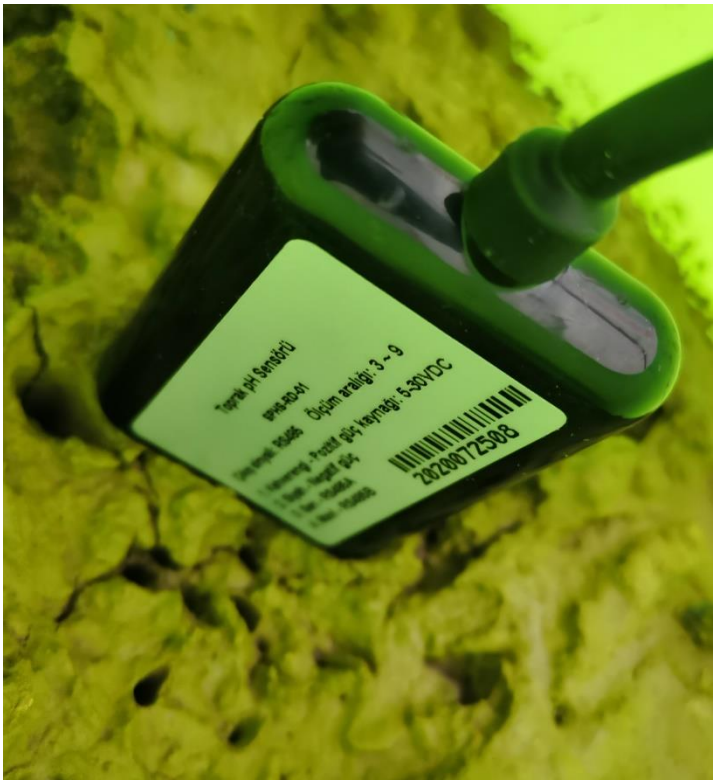
Above are the basic set of the software.

4. Test the sensors

1. Test the soil NPK sensor

(1) Connect the wires in the above order

(2) Put the soil NPK sensor in the soil, please pay attention, the probes need insert in to the soil vertically and totally buried in the soil and fully contact the soil , and also keep sure the soil moisture content above 50%.



(3) Inquiry the data by the software

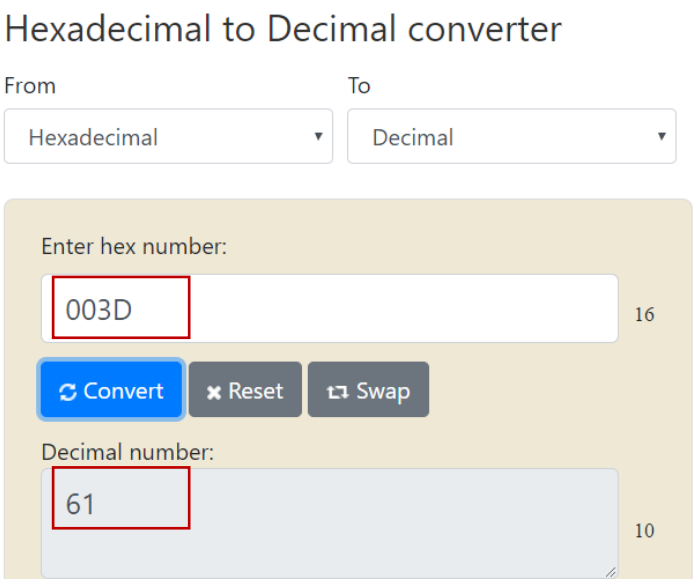
Input the inquiry instruction: 01 03 00 00 00 03 in the send blank

The green data is the instruction that have been send and the blue data is the soil NPK value from the sensor, both of them are the HEX format.

(4) Change the HEX data into Decimal data

Please use the Hexadecimal to Decimal Online Conversion Calculator

(https://www.rapidtables.com/convert/number/hex-to-decimal.html)



For example, the feedback data is : 01 03 06 00 95 00 AE 01 D1 8D 45, then the results is :

Address code	Function code	Number of valid bytes	Nitrogen content	Phosphorus content	Potassium content	Low check bit	High Check bit
0X01	0X03	0X06	0x00 0x95	0x00 0xAE	0x01 0XD1	0x8D	0x45

NPK content:

0095 H (hexadecimal) = 149 => Nitrogen = 149mg / kg

00AE H (hexadecimal) = 174 => phosphorus = 174 mg / kg

01D1 H (hexadecimal) = 465 => potassium = 465 mg / kg