SMT-01 Description

Part 2. A practical guide

This describes how to connect sensor SMT-01 to Arduino UNO board and measure Soil moisture and Temperature using the kit.

Required components:

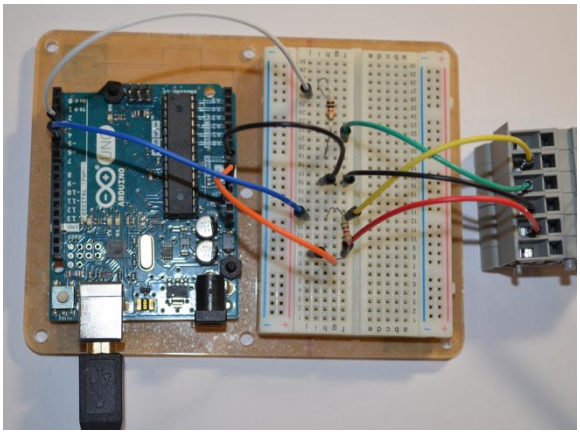
Hardware:

- Arduino UNO board
- SMT-01
- Resistors: 4.7k and 10k
- Wires

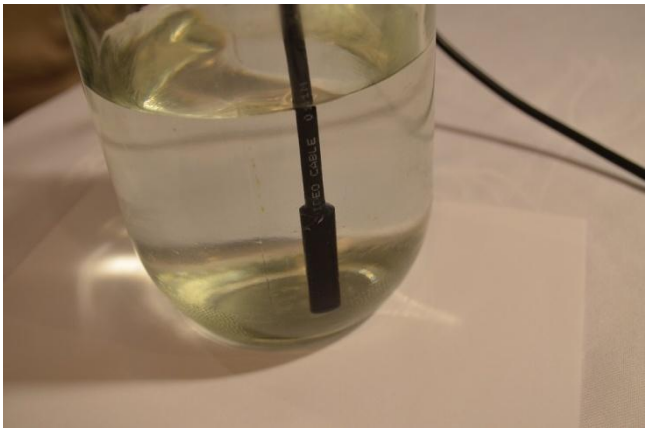
Software:

- Arduino IDE: https://www.arduino.cc/en/software
- OneWire Arduino libraries: https://www.arduinolibraries.info/libraries/one-wire
- Example sketch: https://github.com/greensensors/SMT-Soil-Moisture-Sensor-for-Arduino/blob/main/SMT-Arduino-example.ino

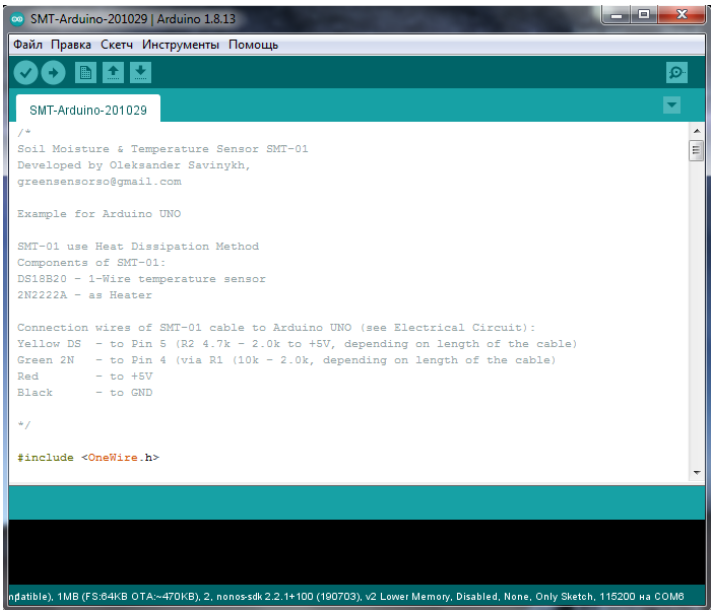
Make all necessary electrical connections according to the circuit:
https://github.com/greensensors/SMT-Soil-Moisture-Sensor-for-Arduino/blob/main/SMT_Arduino_Circuit.png



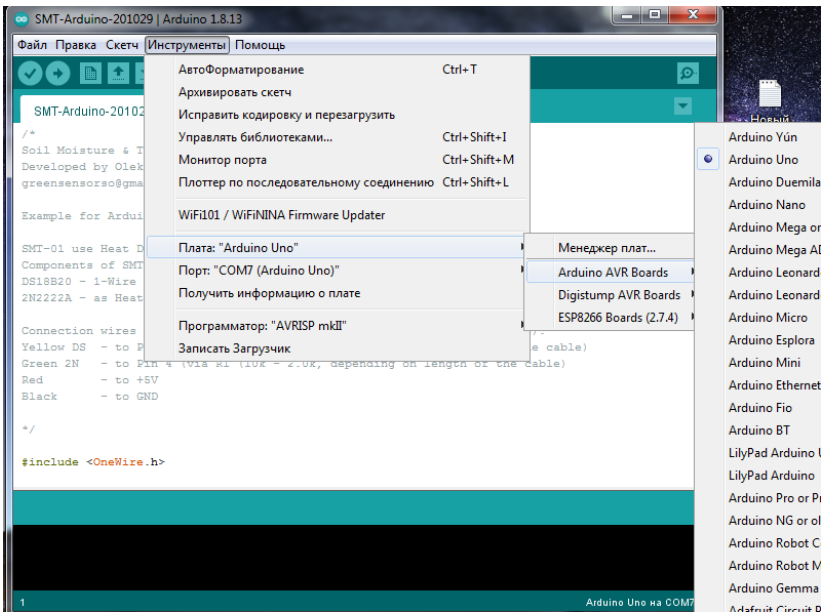
Place the SMT-01 sensor in a container with water.



Connect Arduino UNO board to PC. Open sketch «SMT-Arduino-example.ino» in Arduino IDE.



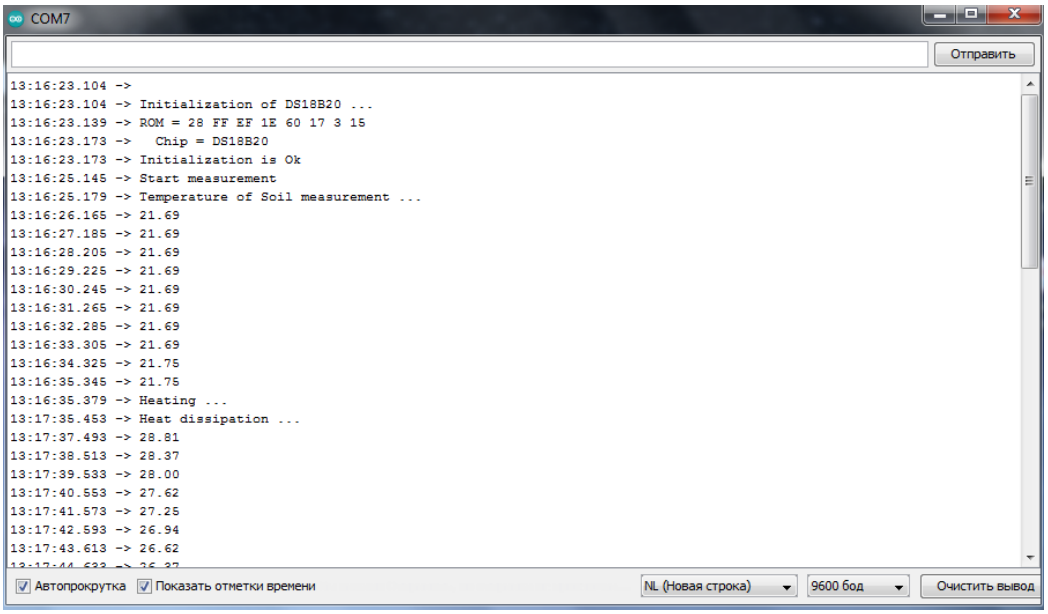
Configure the Port.



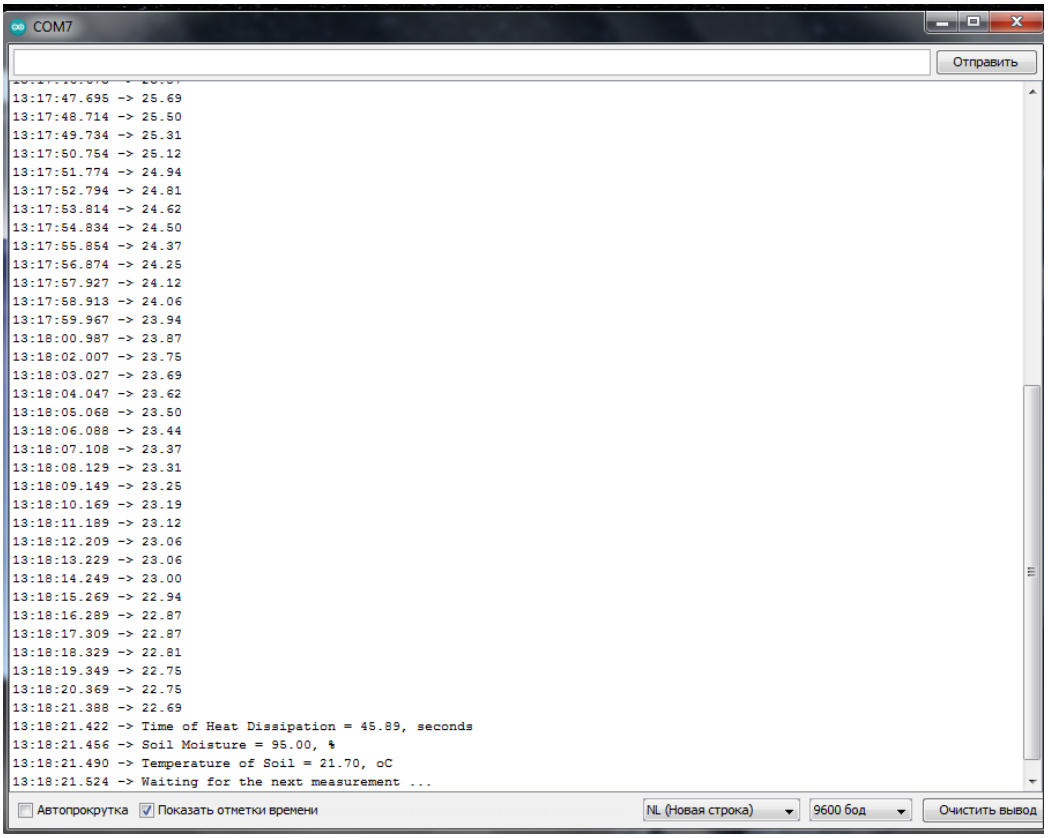
Load the sketch in to Arduino Uno board.

After loading the program will start. You can see all stages of the program execution.

Initialization of temperature 1-wire sensor DS18B20, Temperature of Soil measurement, Heating.



Heating dissipation and Soil Moisture Calculation.



You may notice that Time of Heat Dissipation = 45.89 in Water content.

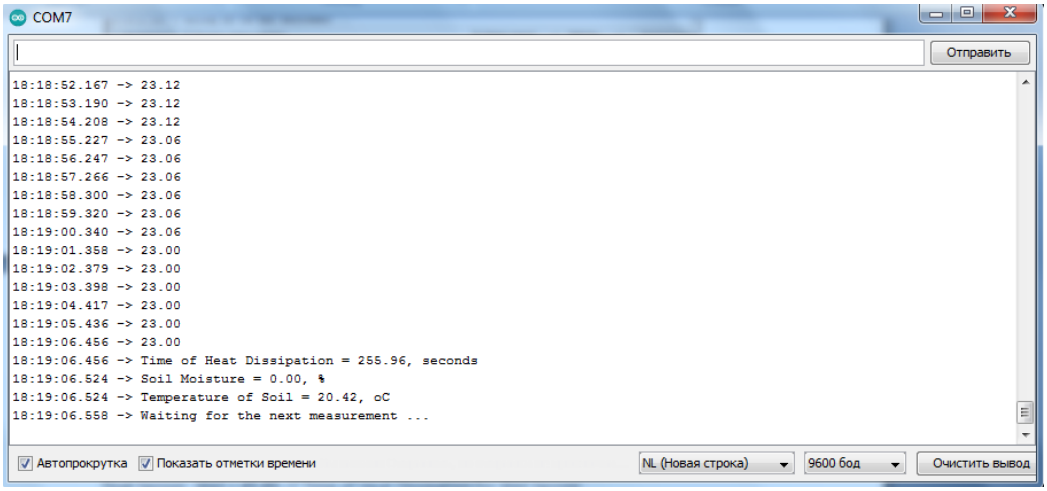
Replace on line 102 of the program

float Sensor_Wet = 35.0; // Time of Heat Dissipation for Wet Sensor

to

float Sensor_Wet = 45.89; // Time of Heat Dissipation for Wet Sensor

Then pull the sensor out of the Water and check the sensor data in Air.



Time of Heat Dissipation = 255.96 on Air.

Replace on line 101 of the program

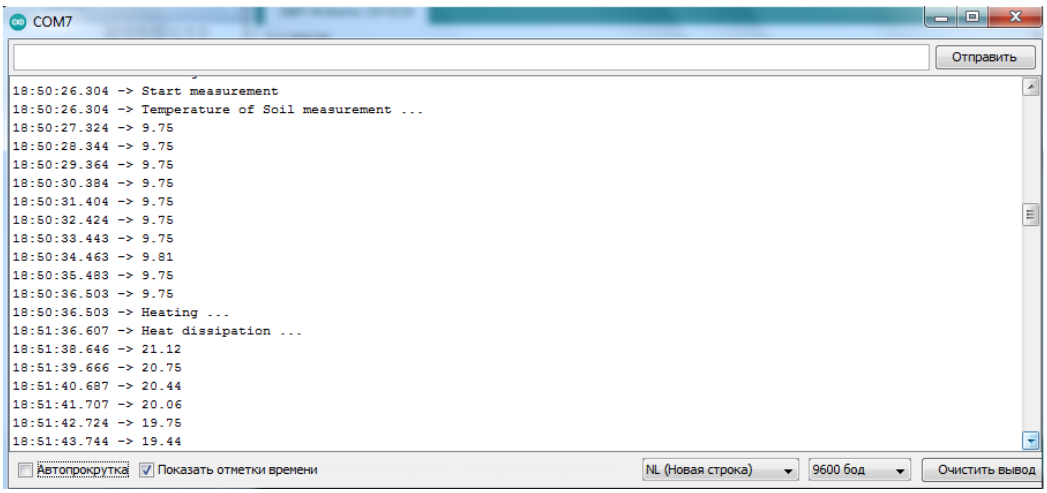
float Sensor_Dry = 250.0; //Time of Heat Dissipation for Dry Sensor

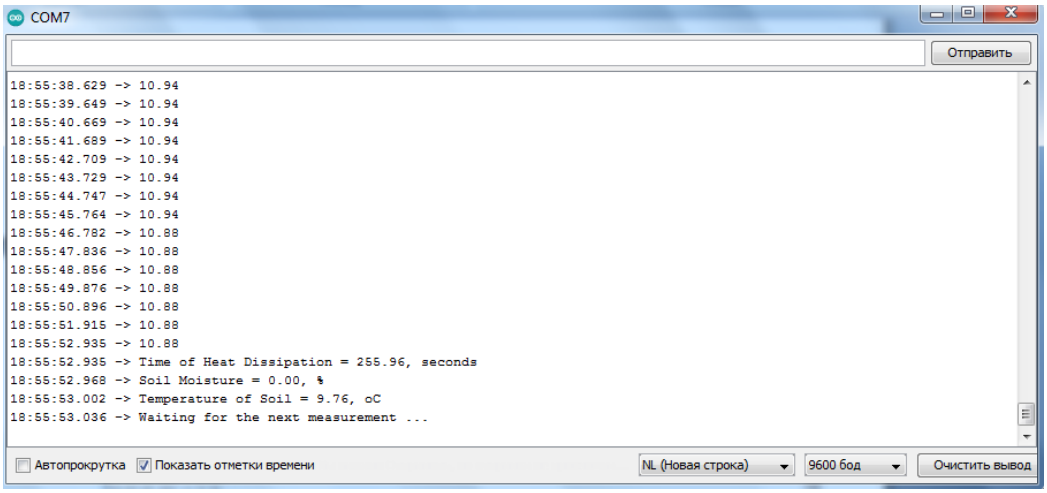
to

float Sensor_Dry = 255.96; //Time of Heat Dissipation for Dry Sensor

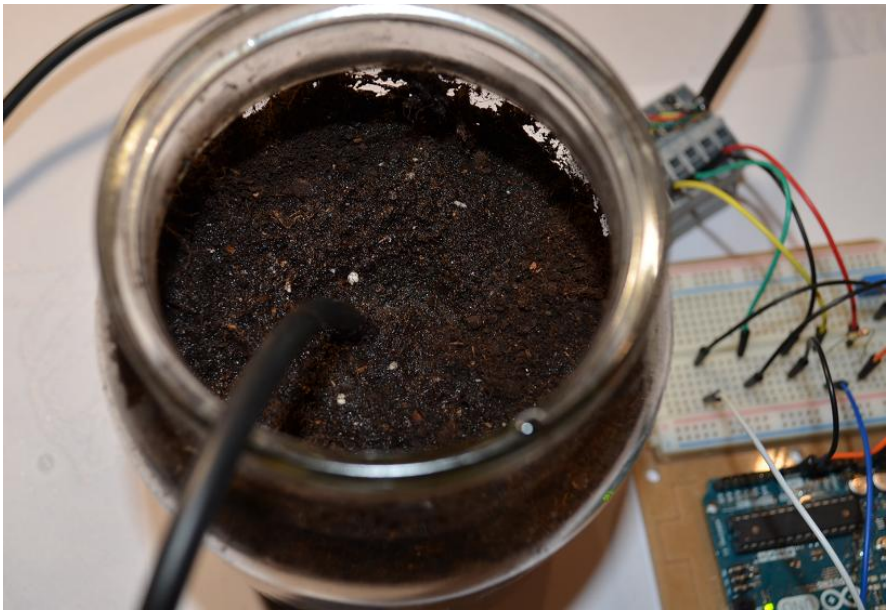
Save changes and reload the program. After calibration, we can check the sensor data in the soil.

Place the sensor in dry ground. We get the following result (soil from the garden, so the temperature is low):

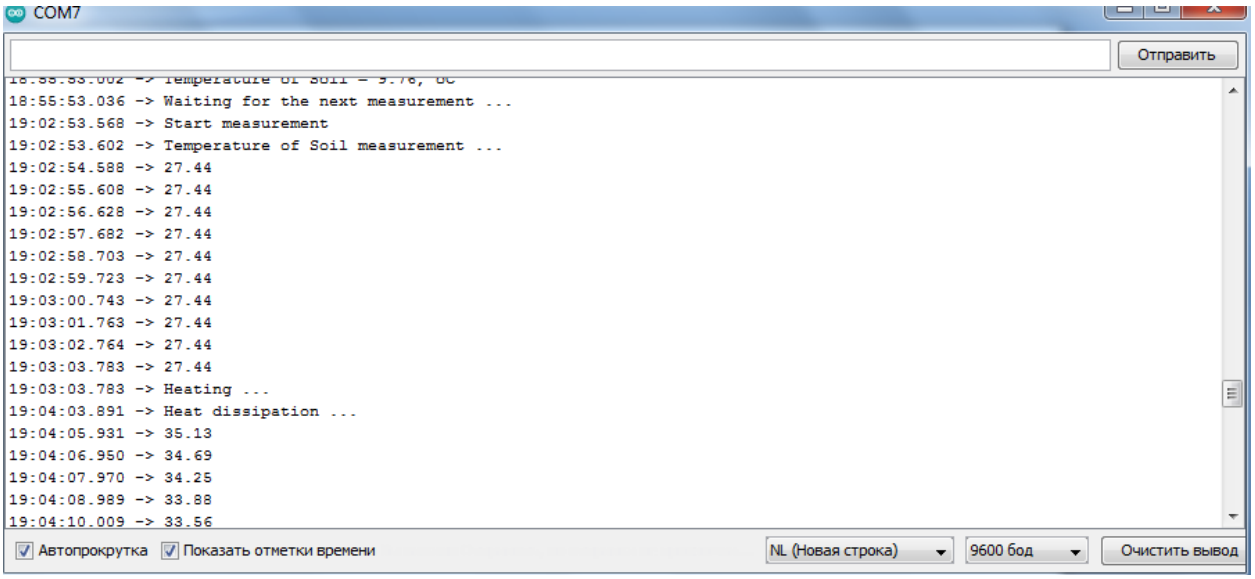


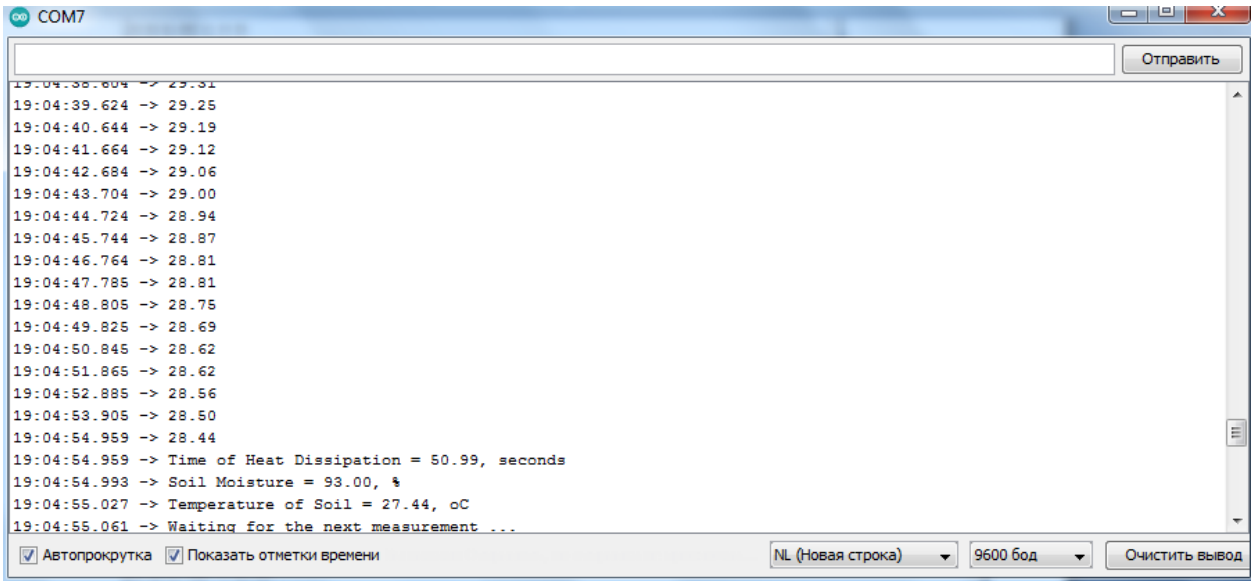


Now we will pour the soil abundantly



and check the data (the water from the tap at home is warm, so the soil temperature has changed after watering):





We have Soil Moisture = 93%.

Thank you very much.