

Soil EC Moisture Salinity Temperature Sensor

The following is the Arduino code for the sensor and it has been tested

```
#include <SoftwareSerial.h>

#define RO 5

#define DI 4

//#define RE 6

//#define DE 7

const uint32_t TIMEOUT = 800UL;

//const byte get_ID [] = {0xFE, 0x03, 0x02, 0x00, 0x00, 0x01, 0x91, 0xBD};

const byte moist_cmd [] = {0x01, 0x03, 0x00, 0x00, 0x00, 0x01, 0x84, 0x0A};

const byte temp_cmd [] = {0x01, 0x03, 0x00, 0x01, 0x00, 0x01, 0xD5, 0xCA};

const byte EC_cmd [] = {0x01, 0x03, 0x00, 0x02, 0x00, 0x01, 0x25, 0xCA};

const byte TDS_cmd [] = {0x01, 0x03, 0x00, 0x03, 0x00, 0x01, 0x74, 0x0A};
```

```
uint16_t getData (const byte* cmd, byte length);
```

```
void printHexByte (byte b);
```

```
byte values[7] = {0};
```

```
SoftwareSerial mod(RO, DI); // Rx pin, Tx pin
```

```
void setup() {
```

```
    Serial.begin(9600);
```

```
    mod.begin(9600);
```

```
    //pinMode(RE, OUTPUT);
```

```
    //pinMode(DE, OUTPUT);
```

```
    delay(500);
```

```
}
```

```
void loop() {
```

```
    float val1=0.0, val2=0.0, val3=0.0, val4=0.0;
```

```
Serial.print("Soil moisture: ");

val1 = getData(moist_cmd, sizeof(moist_cmd) );

Serial.print(val1/100);

Serial.println(" %");

delay(1000);

Serial.print("Temperature: ");

val2 = getData(temp_cmd, sizeof(temp_cmd) );

Serial.print(val2/100);

Serial.println(" *C");

delay(1000);

Serial.print("EC: ");

val3 = getData(EC_cmd, sizeof(EC_cmd) );

Serial.print(val3);

Serial.println(" us/cm");

delay(1000);
```

```
Serial.print("TDS: ");

val4 = getData(TDS_cmd, sizeof(TDS_cmd));

Serial.print(val4);

Serial.println(" ppm");

delay(1000);

delay(5000);

}

uint16_t getData( const byte* cmd, byte length) {

    uint32_t startTime = 0;

    uint8_t byteCount = 0;

    uint16_t val_out = 0;

    //digitalWrite(DE, HIGH);

    //digitalWrite(RE, HIGH);

    delay(10);

    mod.write(cmd, length);

    mod.flush();
```

```
//digitalWrite(DE, LOW);

//digitalWrite(RE, LOW);

startTime = millis();

while ( millis() - startTime <= TIMEOUT ) {

    if (mod.available() && byteCount < sizeof(values) ) {

        values[byteCount++] = mod.read();

        //printHexByte(values[byteCount - 1]);

    }

}

//Serial.println();

//TODO: you have to cast from values array the selected value to print it out

// and return in val_out

val_out = (uint16_t)((values[3]&0x00ff)<<8 | (values[4]&0xff));

return val_out;

}
```

```
void printHexByte(byte b)
{
  Serial.print((b >> 4) & 0xF, HEX);
  Serial.print(b & 0xF, HEX);
  Serial.print(' ');
}
```