TDS Sensor Water Quality Detection Module

BM25S4021-1

Example Direction

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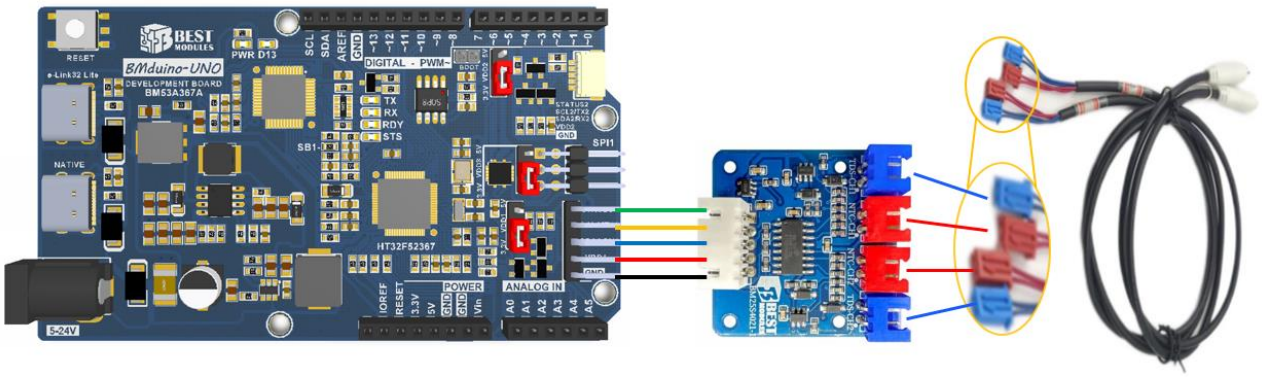
Introduction

BM25S4021-1 is a TDS detection module launched by Best Modules, which uses UART for control. The example demonstrates the use of the BM25S4021-1 module to read TDS values and set the module ID, among other functions.

Arduino Example



Physical Connection Diagram

Example 1: readTDS

Function: Read the TDS value.

Note: This example demonstrates reading the module with ID 1. If the ID does not match, refer to Example 3 for setting the ID.

Open Example: Select Example (readTDS)

1. Example Description:

a. Construct object & initialize module

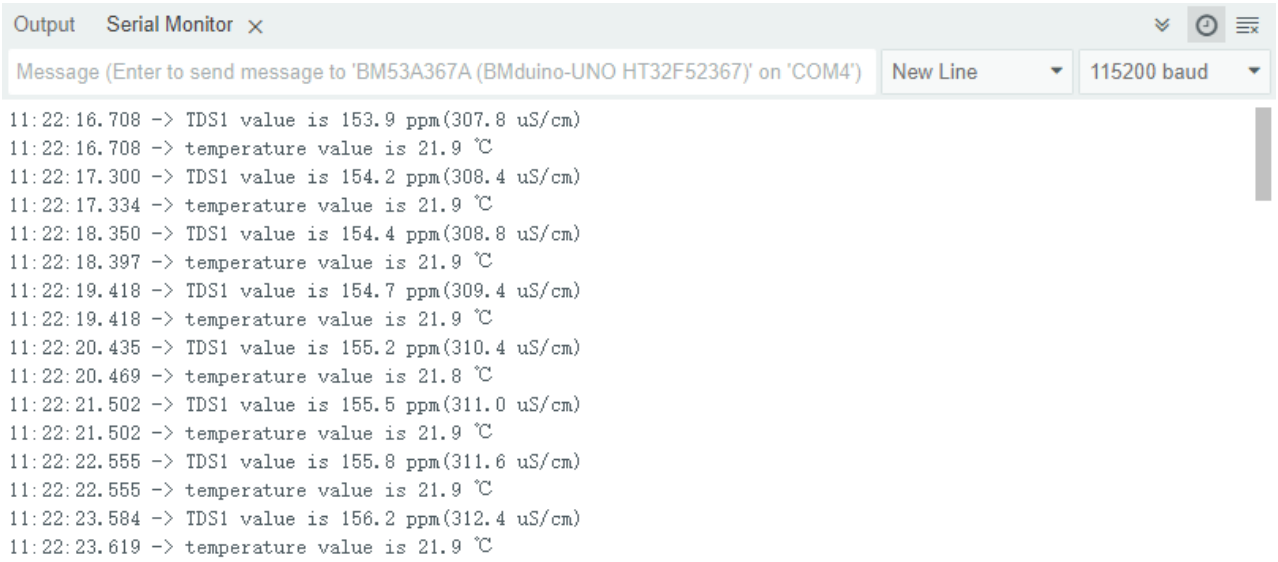
```
#include <BM25S4021_1.h>
#include <SoftwareSerial.h>
//BM25S4021_1 myTDS(7,6);//SoftwareSerial RX TX pin of arduino UNO and BMduino
BM25S4021_1 myTDS(&Serial1);//HardwareSerial of BMduino BMCOM1
uint8_t channel,ID;/*TDS chanel*/
float TDSValue ;
float TempValue ;

void setup()
{
   ID = 1;
   myTDS.begin();
   Serial.begin(115200);
    delay(600);
}
```

b. Read TDS and Temperature Values from Channel 1 (CH1) Every Second and Print to Serial Monitor

Read the TDS value and temperature value from Channel 1 (CH1) every second and print them to the serial monitor.

```
void loop()
{
   channel = 1;   //CH1
   TDSValue  = myTDS.readTDS(ID,channel);
   Serial.print("TDS");
   Serial.print(channel);
   Serial.print(" value is ");
   Serial.print(TDSValue,1);
   Serial.print(" ppm");
   Serial.print("(");
   Serial.print(TDSValue*2,1);
   Serial.println(" uS/cm)");
   TempValue = myTDS.readTemp(ID,channel);
    if(TempValue == 6548.6)
    {
       Serial.print("NTC interface is open circuit");
    }
    else if(TempValue == 150)
    {
       Serial.print("NTC interface is short circuit");
    }
   Serial.print("temperature");
   Serial.print(" value is ");
   Serial.print(TempValue,1);
   Serial.println(" ℃");
   delay(1000);
}
```

c. Open the serial monitor, set the baud rate to 115200; the serial monitor will display the TDS and temperature values of CH1 as follows：



Example 2：reset

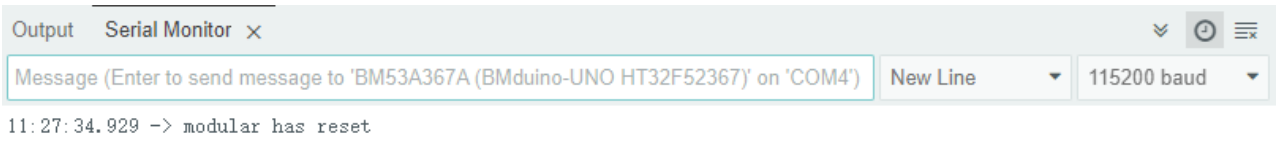
Function: Reset the module.
Open Example: Select Example (reset)
Example Description:
a. Construct object & initialize module

```
#include <BM25S4021_1.h>
#include <SoftwareSerial.h>
//BM25S4021_1 myTDS(7,6);//SoftwareSerial RX TX pin of arduino UNO and BMduino
BM25S4021_1 myTDS(&Serial1);//HardwareSerial of BMduino BMCOM1
uint8_t ID;
void setup()
{
  ID = 1;
  myTDS.begin();
  Serial.begin(115200);
  delay(600);
}
```

b. Reset module

```
void loop()
{
  myTDS.reset(ID);
  Serial.println("modular has reset");
  //Serial.println(myTDS.reset(ID));

  while(1);
}
```

c. Open the serial monitor, set the baud rate to 115200; the serial monitor will display a successful reset message as follows:



Example 3: setID

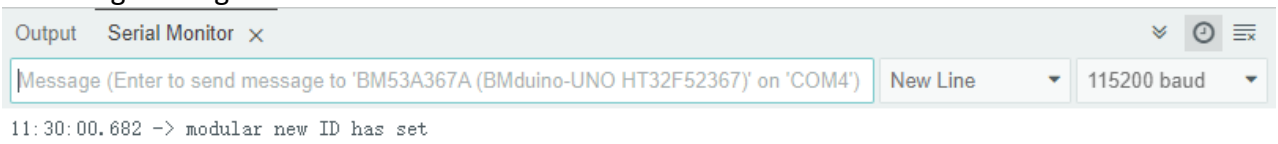
Function: Set the module ID.
Open Example: Select Example (setID)
Example Description:
a. Construct object & initialize module

```
#include <BM25S4021_1.h>
#include <SoftwareSerial.h>
//BM25S4021_1 myTDS(7,6);//SoftwareSerial RX TX pin of arduino UNO and BMduino
BM25S4021_1 myTDS(&Serial1);//HardwareSerial of BMduino BMCOM1
uint8_t oldID;
uint8_t newID;
void setup()
{
  oldID = 1;
  newID = 2;
  myTDS.begin();
  Serial.begin(115200);
  delay(600);
}
```

b. Change the module ID from 1 to 2.

```
void loop()
{
  myTDS.setID(oldID,newID);
  Serial.println("modular new ID has set");
  //Serial.println(myTDS.setID(oldID,newID));
  while(1);
}
```

c. Open the serial monitor, set the baud rate to 115200; the serial monitor will display a successful ID setting message as follows:



Example 4: setWarnValue

2. Function: Set the TDS alarm value.
3. Open Example: Select Example (setWarnValue)

Example Description:

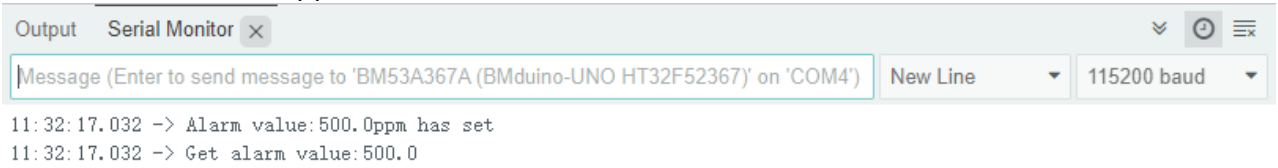
a. Construct object & initialize module

```
#include <BM25S4021_1.h>
#include <SoftwareSerial.h>
//BM25S4021_1 myTDS(7,6);//SoftwareSerial RX TX pin of arduino UNO and BMduino
BM25S4021_1 myTDS(&Serial1);//HardwareSerial of BMduino BMCOM1
uint8_t channel,ID;
float warnValue;
void setup()
{
  ID = 1;
  channel = 1;
  warnValue = 500;
  myTDS.begin();
  Serial.begin(115200);
  delay(600);
}
```

b. Set the TDS alarm value to 500 and read the alarm value to confirm.

```
void loop()
{
        myTDS.setWarn(ID,channel,warnValue);
        Serial.print("Alarm value:");
        Serial.print(warnValue,1);
        Serial.println("ppm has set");
        warnValue = 0;
        warnValue = myTDS.getWarn(ID,channel);
        Serial.print("Get alarm value:");
        Serial.println(warnValue,1);
        while(1);
}
```

c. Open the serial monitor, set the baud rate to 115200; the serial monitor will display the module's alarm value set to 500 ppm as follows:



Example 5: setWorkMode

Function: Set the work mode.
Open Example: Select Example (setWorkMode)
Example Description:
a. Construct object & initialize module

```
#include <BM25S4021_1.h>
#include <SoftwareSerial.h>
//BM25S4021_1 myTDS(7,6);//SoftwareSerial RX TX pin of arduino UNO and BMduino
BM25S4021_1 myTDS(&Serial1);//HardwareSerial of BMduino BMCOM1
uint8_t ID,status;
void setup() {
  ID = 1;
  myTDS.begin();
  Serial.begin(115200);
  delay(600);
}
```

b. Set the work mode to sleep mode.

```
void loop() {
  myTDS.setWorkMode(ID,SLEEP_MODE);
  Serial.println("Modular has shut off");
  status = myTDS.getWorkMode(ID);
  Serial.print("Work mode is ");
  Serial.println(status);
  while(1);
}
```

c. Open the serial monitor, set the baud rate to 115200; the serial monitor will display the module in sleep mode (work mode 0 indicates sleep mode), as follows: