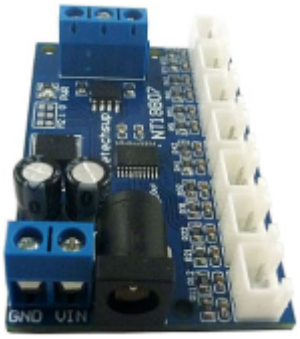
NT18B07: 7 Kanal RS485 Temperatur Sensor with Modbus RTU

The NT18B07 is a 7-channel NTC temperature sensor interface board/module that uses the MODBUS RTU communication protocol over an RS485 interface for industrial and automation applications. Requires external **B3950 10K 1% NTC** thermistors



NT18B07 Description

- Operating current ranges from 8 to 13 mA, depending on external connections.
- The device supports MODBUS RTU commands using function codes 03 and 06.
- By adjusting the R485 address, up to 247 modules can be cascaded; if exceeding 16, an R485 repeater is recommended.
- A maximum of 8 temperature sensors can be connected at once.
- Temperature measurement spans from -55°C to +125°C (-67°F to +257°F), with an accuracy of ±0.5°C between -10°C and 85°C.
- Resistance value: 10K
- Resistance accuracy: ±1%
- Resistance B value: 3950 ±1%
- Wire specification: 2651 26# parallel resistance, temperature resistance 105°C
- Connector model: XH2.54-2P
- Probe: without mounting holes
- Supply voltage: 6-24V

B3590 10K 1% NTC thermal sensor

- Product type: NTC 10K / B3590 1%
- Temperature range: -50°C to 125°C (-58°F to 257°F)

NT18B07 Modbus settings

Default settings: SlaveID: 1, 9600 baud, parity: N,8,1

holding register addresses	Number of registers	Description	Unit	Note
0x0	1	CH1 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x1	1	CH2 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x2	1	CH3 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x3	1	CH4 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x4	1	CH5 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x5	1	CH6 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x6	1	CH7 temperature sensor	0.1 °C	0xF555 (-2731): Sensor Error
0x8	1	CH1 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0x9	1	CH2 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0xA	1	CH3 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0xB	1	CH4 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0xC	1	CH5 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0xD	1	CH6 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0xE	1	CH7 temperature correction value	0.1 °C	>0: increase, <0: decrease, default:0
0x00FD	1	Automatic temperature report	Second	0: (default) query function, 1-255 report time (1 - 10 seconds)
0x00FE	1	RS485 address (station address)	-	Read address: 0x00FF, write address 1-247, default: 1
0x00FF	1	Baud rate	-	0:1200, 1:2400, 2:4800, 3:9600 (default), 4:19.200, 5: factory reset

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Arduino

The NT18B07 is a 7-channel NTC thermistor temperature acquisition module that communicates via RS485 Modbus RTU. Unlike the MAX31865 (which is SPI-based), the NT18B07 requires an RS-485-to-TTL converter (e.g., a MAX485 module) to interface with an Arduino.

Wiring Diagram

To connect the NT18B07 to an Arduino Uno using a standard MAX485 module:

- **NT18B07 A+ to MAX485 A** and **NT18B07 B- to MAX485 B**.
- **MAX485 VCC/GND:** 5V and GND.
- **MAX485 RO:** Arduino Pin 2 (RX).
- **MAX485 DI:** Arduino Pin 3 (TX).
- **MAX485 DE & RE:** Tied together to Arduino Pin 4 (Direction Control).
- **NT18B07 Power:** DC 6V–24V.

Arduino Example Code

This code uses the **ModbusMaster library** to read temperatures from the first 7 channels.

```
#include <ModbusMaster.h>
#include <SoftwareSerial.h>

#define MAX485_RE_DE 4
SoftwareSerial rs485(2, 3); // RX, TX

ModbusMaster node;

void preTransmission() { digitalWrite(MAX485_RE_DE, 1); }
void postTransmission() { digitalWrite(MAX485_RE_DE, 0); }

void setup() {
  pinMode(MAX485_RE_DE, OUTPUT);
  digitalWrite(MAX485_RE_DE, 0);

  Serial.begin(9600);
  rs485.begin(9600); // Default NT18B07 baud rate

  node.begin(1, rs485); // Default Slave ID is 1
  node.preTransmission(preTransmission);
  node.postTransmission(postTransmission);
}

void loop() {
  // Read 7 registers starting at 0x0000 (Channels 1-7)
  uint8_t result = node.readHoldingRegisters(0x0000, 7);

  if (result == node.ku8MBSuccess) {
    for (int i = 0; i < 7; i++) {
      int16_t rawTemp = node.getResponseBuffer(i);
      // Temperature is stored as raw value x 10. Handle negative values.
      float celsius = (rawTemp > 32767) ? (rawTemp - 65536) / 10.0 : rawTemp
/ 10.0;
      Serial.print("CH"); Serial.print(i+1);
      Serial.print(": "); Serial.print(celsius); Serial.println(" C");
    }
  } else {
    Serial.print("Modbus Error: 0x"); Serial.println(result, HEX);
```

```
  }
  delay(2000);
}
```

Modbus topics on lamaPLC

Page	Date	Tags
• Eastron Modbus maps	2023/05/26 15:15	modbus, modbus rtu, eastron, modbus map, mid
• lamaLib: #temp	2024/11/18 21:46	tia, scl, lamalibsimatic, source code, energy meter, modbus, register, word
• lamaLib: energyMeterToModbusRegs	2024/11/18 21:55	tia, scl, lamalibsimatic, source code, energy meter, modbus, register, word
• lamaPLC Communication: Modbus	2025/11/19 21:42	modbus, communication, bus, modicon, standard, rtu, tcp, multimaster, coil, register
• lamaPLC: DM56A04 / DM36B06 digital tube display with Modbus Communication	2026/02/14 17:25	dm56a04, dm36b06, eletechsup, 7-segment, display, modbus, rtu, modbus rtu, arduino
• LamaPLC: Eastron SDM 230 Communication	2025/03/07 09:20	modbus, modbus rtu, eastron, modbus map, mid
• LamaPLC: Eastron SDM 230 with Modbus Communication	2026/02/14 23:34	modbus, modbus rtu, eastron, modbus map, mid, sdm 230, sdm, arduino, code
• LamaPLC: Eastron SDM 630 Communication	2024/08/18 14:48	modbus, modbus rtu, eastron, modbus map, mid
• LamaPLC: Eastron SDM 630 Energy Meter with Modbus communication	2026/02/14 23:22	modbus, modbus rtu, eastron, modbus map, mid, sdm, sdm 630, arduino, code
• lamaPLC: PTA8C04 4-channel PT100 Modbus Modul	2026/02/14 17:42	pta8c04, sensor, modbus, rtu, rs-485, communication, platine, um72
• LamaPLC: S7-1500 and Metrawatt EM2389 Modbus TCP communication	2024/11/18 17:55	simatic, s7, modbus, communication, metrawatt, em2389, source code, scl, mid
• LamaPLC: S7-1500 and Sicam Q200 Modbus TCP communication	2023/06/24 22:42	simatic, s7, modbus, tia portal, communication, sicam, q200, sicam q200, source code, scl, class a
• lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication	2023/06/19 21:24	bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal
• lamaPLC: TM1650 7-Segment Display with I²C like or Modbus Communication	2026/02/14 17:26	tm1650, stc8g, tp8485e, hyuduo5x1b64edtk1244, 7-segment, display, modbus, rtu, modbus rtu, arduino
• lamaPLC: TTL to RS485 Module	2026/02/14 22:49	modbus, rtu, modbus rtu, hw-097, rs-485, max485
• LamaPLC: UICPAL Temp.humi.sensor	2023/06/24 22:43	simatic, s7, modbus, communication, temperature, humidity, sensor
• LamaPLC: XTM35SC Modbus communication	2024/08/18 14:52	xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter

• lamaPLC: YR-3180 - Weight sensor module with UART or Modbus communication	2026/02/14 23:00	communication, modbus, rtu, sensor, weight, yr-3180, hx710b, arduino, ttl, rs-485
• Modbus for Grundfos pumps	2023/06/01 11:49	modbus, modbus tcp, modbus rtu, grundfos
• NT18B07: 7 Kanal RS485 Temperatur Sensor with Modbus RTU	2026/02/14 17:49	nt18b07, sensor, modbus, rtu, rs-485, communication, platine
• Simatic Modbus S7 error- and statuscodes	2025/11/13 22:59	communication, bus, modbus, error, modbus error code, 7000, 7001, 7002, 7003, 7004, 7005, 7006, 80a1, simatic, s7, siemens, tia
• Waveshare	2023/06/17 19:43	waveshare, converter, modbus, modbus rtu, modbus tcp, communication
• XTM35SC current / voltage meter	2023/06/01 11:45	xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter

NT18B07, sensor, Modbus, RTU, RS-485, communication, Platine