CEMELI CEMELI

CEMELI 4-Channel NTC Temperature Transmitter User Manual

Model: CEMELI

1. Product Overview

The CEMELI 4-Channel NTC Temperature Transmitter is a temperature acquisition module designed for industrial applications. It communicates via an RS485 interface using the Modbus RTU protocol, allowing for reliable temperature monitoring and data transmission.

- **Adapted Sensor:** 10K NTC Thermistor
- **NTC B Value:** Configurable via Modbus RTU protocol (default: 3950)
- **Temperature Resolution:** 0.1 ℃
- **Temperature Measurement Range:** -20 ℃ to +120 ℃
- **Communication Protocol:** RS485 Modbus RTU standard
- **Communication Format:** Configurable via software

An overview of the CEMELI 4-Channel NTC Temperature Transmitter module, showing its compact white casing and terminal blocks.

2. Setup

Proper setup ensures accurate temperature measurement and reliable communication. Follow these steps for installation and wiring.

2.1 Power Supply Connection

Connect the module to a DC12V-24V power supply. Ensure correct polarity as the module includes power polarity protection.

- **VCC:** Positive input of external power supply
- **GND:** Negative terminal of external power input

2.2 NTC Sensor Connection

Connect up to four 10K NTC thermistors to the designated NTC channels.

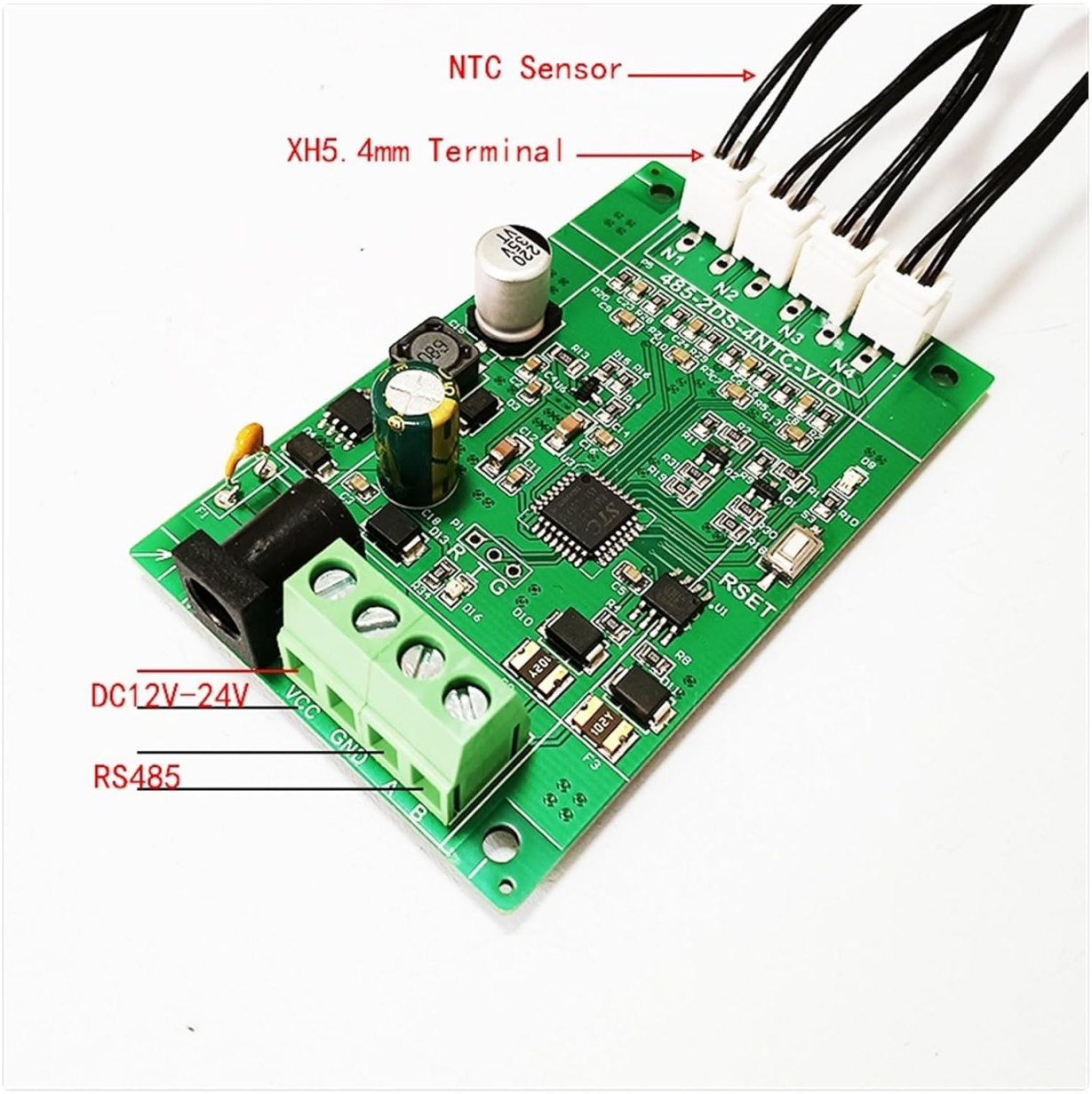
- **N1:** NTC Channel 1
- **N2:** NTC Channel 2

- **N3:** NTC Channel 3
- **N4:** NTC Channel 4

2.3 RS485 Communication Connection

Connect the RS485 communication lines to the A and B terminals. The interface features over-voltage and over-current dual protection.

- **A:** RS485 signal A+
- **B:** RS485 signal B-



Detailed view of the internal circuit board of the temperature transmitter, illustrating the connection points for NTC sensors (N1-N4) and the power/RS485 terminals. NTC sensors are shown connected to the XH5.4mm terminals.

The rear side of the CEMELI temperature transmitter, featuring a red DIN rail mounting clip for easy installation.

3. Operating Instructions

The module operates using the Modbus RTU protocol. Communication parameters and NTC B value can be configured via software.

3.1 Modbus RTU Communication

The module functions as a Modbus RTU slave device. Use a Modbus master device or software to communicate with the transmitter.

3.2 Parameter Configuration

Module address, baud rate, and NTC B value can be set using Modbus write commands to the holding registers. Refer to the 'Holding Registers' section for specific addresses and values.

3.3 Temperature Data Acquisition

Temperature data from each NTC channel can be read from the corresponding holding registers using Modbus read commands.

4. Maintenance

The CEMELI 4-Channel NTC Temperature Transmitter is designed for reliable operation with minimal maintenance. To ensure longevity and accurate performance:

- Keep the module clean and free from dust and moisture.
- Ensure proper ventilation if installed in an enclosed space.
- Regularly check wiring connections for tightness and integrity.
- Avoid exposing the module to extreme temperatures or harsh chemicals beyond its specified operating environment.

5. Troubleshooting

If you encounter issues with the temperature transmitter, consider the following common troubleshooting steps:

- **No Power:** Verify the DC12V-24V power supply is connected correctly and providing the specified voltage. Check for proper polarity.
- **No Communication:** Ensure RS485 A+ and B- lines are connected correctly. Check the baud rate, parity, and stop bits settings on both the module and the Modbus master device. Verify the module address is correct.
- **Incorrect Temperature Readings:** Confirm that 10K NTC thermistors are used and connected to the correct channels. Check the NTC B value setting in the module's configuration. Ensure sensors are properly placed in the environment to be measured.
- **Intermittent Issues:** Check for loose wiring connections. Ensure the operating environment temperature is within the specified range (-20 °C to +60 °C).

If problems persist, consult the detailed Modbus communication protocol documentation or contact technical support.

6. Specifications

Item	Parameter
Communication Protocol	Modbus RTU
Interface Type	RS485 (over-voltage and over-current protection)
Baud Rate Options	4800bps, 9600bps (default), 19200bps, 38400bps, 57600bps, 115200bps
Check Digit	No check
Stop Bits	1 bit
Setting Method	Module address, baud rate configurable by software
Dimensions	100mm x 54mm x 32mm
Operating Temperature	-20 °C to +60 °C
Power Supply Voltage	DC12V-24V (wide range, with polarity protection)

Item	Parameter
Power Consumption	Less than 1W
Net Weight	100g
Material	Copper (internal components)

The bare circuit board of the CEMELI 4-Channel NTC Temperature Transmitter, highlighting the electronic components, NTC sensor input terminals (N1-N4), and the power/RS485 screw terminals.

7. Interface Definition

The following table details the terminal connections on the module:

Terminal Name	Explanation
VCC	Positive input of external power supply
GND	Negative terminal of external power input

Terminal Name	Explanation
N1	NTC Channel 1
N2	NTC Channel 2
N3	NTC Channel 3
N4	NTC Channel 4
A	RS485 signal A+
B	RS485 signal B-

8. Holding Registers (Function Codes: 0x03H, 0x06H, 0x10H)

The following table outlines the Modbus holding registers for configuration and data access:

Address	Parameter	Length	Read/Write	MIN	MAX	Description
40001	Device address	2	Read/Write	1	247	1 (default)
40002	Baud rate	2	Read/Write	0	6	0:4800, 1:9600 (default), 2:14400, 3:19200, 4:38400, 5:57600, 6:115200
40003	NTC B value	2	Read/Write	0	N/A	B=3950 (default)
41025	Channel 1	2	Read	0	N/A	Channel 1 temperature
41026	Channel 2	2	Read	0	N/A	Channel 2 temperature
41027	Channel 3	2	Read	0	N/A	Channel 3 temperature
41028	Channel 4	2	Read	0	N/A	Channel 4 temperature

9. Warranty and Support

For warranty information or technical support, please refer to the product packaging or contact your vendor. Keep your purchase receipt for any warranty claims.