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› Taidacent Serial Port Control 0-10V Signal Converter (Model B08YNK6K85) User Manual

Taidacent B08YNK6K85

Taidacent Serial Port Control 0-10V Signal Converter User Manual

Model: B08YNK6K85 | Brand: Taidacent

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the Taidacent Serial Port Control 0-10V Signal Converter. This device is designed to convert RS232 serial commands into a precise 0-10V analog voltage output, utilizing the Modbus-RTU communication protocol. It is suitable for applications requiring digital control over analog systems.

2. IMPORTANT SAFETY INFORMATION

WARNING: Incorrect wiring can cause permanent damage to the module. Please read the following carefully:

- **DO NOT directly supply power to the VOUT+ and VOUT- terminals with the positive and negative terminals of the power supply.** This will burn out the module.
- Ensure all connections are correct and secure before applying power.
- Operate the device within the specified voltage ranges.

The user assumes full responsibility for any damage resulting from improper wiring or operation.

3. PRODUCT FEATURES AND SPECIFICATIONS

- **Board Dimensions:** Length 88mm x Width 50mm x Height 32mm
- **Analog Voltage Output:** Configurable for 0-5V or 0-10V. Default output is 0-10V.
- **Working Voltage:** DC12V or DC24V.
- **Output Voltage Error:** $\pm 0.05V$.
- **Power Consumption:** Approximately 32mA when operating at 12V.
- **Communication Protocol:** MODbus-RTU mode.
- **Communication Parameters:** Baud rate 9600, No parity (n), 8 data bits, 1 stop bit (9600, N, 8, 1).
- **Function:** Controls 0-10V analog voltage signal output (Vout+, Vout-) via serial port commands.
- **Output Mapping:** A hexadecimal value of 0x800 (decimal 2048) corresponds to an output voltage of 4.99V (for 0-10V)

range, 0x0000 to 0x0FFF maps to 0-10V).

4. PACKAGE CONTENTS

- 1x Taidacent Serial Port Control 0-10V Signal Converter Module

5. SETUP AND WIRING

Proper wiring is essential for the correct and safe operation of the converter. Refer to the diagram below for connection details.

5.1 Wiring Diagram

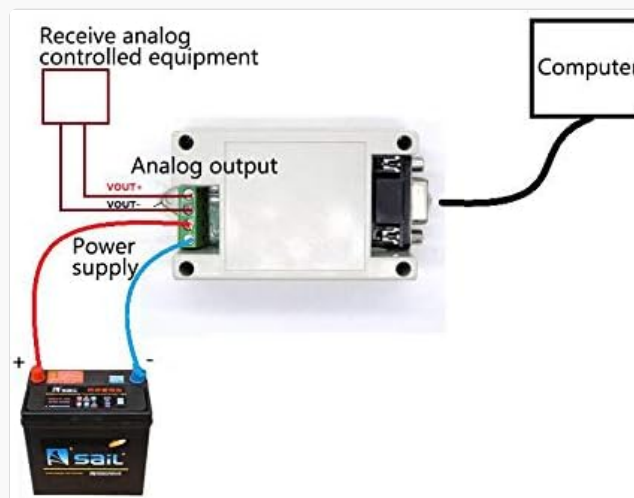


Figure 1: Wiring connections for the Taidacent 0-10V Signal Converter. It illustrates connecting a power supply to the module, the module to a computer via RS232, and the analog output to controlled equipment.

5.2 Connection Steps

1. **Power Supply Connection:** Connect your DC12V or DC24V power supply to the designated power input terminals on the module. Ensure correct polarity (positive to +V, negative to -V).
2. **RS232 Connection:** Connect the RS232 port of the converter to your computer or control device using a compatible serial cable.
3. **Analog Output Connection:** Connect the VOUT+ and VOUT- terminals to the analog input of your controlled equipment. Remember the safety warning: **Do not connect the power supply directly to VOUT+ and VOUT-.**

6. OPERATING INSTRUCTIONS

The converter operates using the Modbus-RTU protocol via its RS232 serial port. You will need a serial communication program or a Modbus master device to send commands.

6.1 Communication Parameters

- **Baud Rate:** 9600
- **Parity:** None (N)
- **Data Bits:** 8

- Stop Bits: 1

6.2 Modbus-RTU Command Control

The module responds to Modbus-RTU commands to set the analog output voltage. The output voltage is controlled by writing a 16-bit hexadecimal value to a specific register.

- The analog output range (0-10V or 0-5V) is mapped to a hexadecimal range of 0x0000 to 0x0FFF (0 to 4095 decimal).
- For example, if the output is set to 0-10V, a value of 0x800 (2048 decimal) will result in an output voltage of approximately 4.99V.
- Consult the Modbus-RTU protocol documentation for specific function codes and register addresses to write the desired output value.

6.3 Modbus Test Software Interface Example

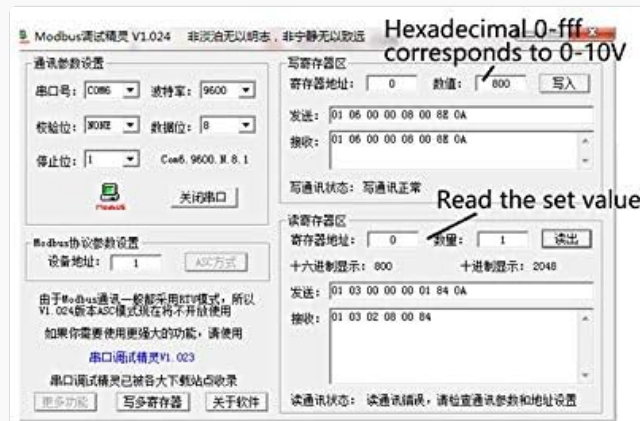


Figure 2: Example of a Modbus test software interface. This shows how to configure communication parameters (COM port, baud rate) and send hexadecimal values (e.g., 0x800) to control the 0-10V analog output.

6.4 Verifying Output Voltage

After sending a command, you can verify the analog output voltage using a multimeter connected to the VOUT+ and VOUT- terminals.

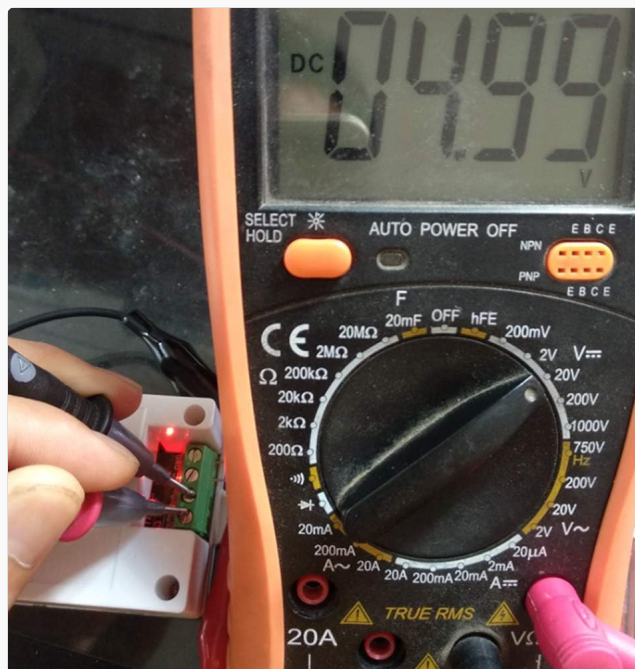


Figure 3: Multimeter measuring the analog output voltage from the converter, showing a reading of 4.99V. This demonstrates successful operation after sending a corresponding Modbus command.

7. TROUBLESHOOTING

- **No Output Voltage:**

- Check power supply connections and ensure the correct voltage (DC12V/DC24V) is applied.
- Verify RS232 communication parameters (baud rate, parity, data bits, stop bits).
- Ensure Modbus commands are correctly formatted and sent to the correct register address.
- Confirm the module is not damaged due to incorrect wiring (refer to safety information).

- **Incorrect Output Voltage:**

- Double-check the hexadecimal value sent via Modbus and its corresponding voltage mapping.
- Ensure the multimeter is calibrated and correctly connected to VOUT+ and VOUT-.
- Verify the module's default output range (0-5V or 0-10V) matches your expectation.

- **Communication Errors:**

- Check the physical RS232 cable connection.
- Confirm the correct COM port is selected in your software.
- Ensure no other devices are using the same COM port.

8. MAINTENANCE

The Taidacent Signal Converter is designed for reliable operation with minimal maintenance.

- Keep the module in a clean, dry environment, free from dust and moisture.
- Avoid exposing the module to extreme temperatures or direct sunlight.
- Periodically check all wiring connections for security and integrity.
- Do not attempt to open the module casing, as this may void any potential warranty and expose sensitive components.

9. WARRANTY AND SUPPORT

For warranty information and technical support, please contact your retailer or the manufacturer directly. Ensure you have your product model number (B08YNK6K85) and purchase details available when seeking support.

10. PRODUCT VIEWS

10.1 Angled View



Figure 4: Angled view of the Taidacent Serial Port Control 0-10V Signal Converter, highlighting its overall design and port layout.

10.2 Top-Down View



Figure 5: Top-down view of the converter, providing a clear perspective of the terminal blocks for power and analog output, as well as the RS232 serial port.

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