EBYTE NA111-A

EBYTE NA111-A Serial Ethernet Server Instruction Manual

Model: NA111-A

1. Introduction

The EBYTE NA111-A is a serial server designed to facilitate the conversion of serial data to Ethernet data. This device features an RJ45 interface for network connectivity and is engineered for convenient rail mounting. It supports various Modbus gateway modes, enabling robust networking capabilities for a wide range of industrial serial devices and Programmable Logic Controllers (PLCs).

Figure 1.1: Front view of the EBYTE NA111-A Serial Ethernet Server. This image displays the compact white casing with LED indicators for Power (PWR), Transmit Data (TXD), Receive Data (RXD), and two mode indicators (M0, M1), along with the "Data Transceiver" label.

2. Product Overview and Features

The NA111-A offers a comprehensive set of features for reliable serial-to-Ethernet communication:

- **RJ45 Adaptive Ethernet Interface:** Provides standard network connectivity.
- **Multiple Operating Modes:** Supports TCP Server, TCP Client, UDP Server, and UDP Client modes.
- **Flexible Configuration:** Parameters can be set via web interface, dedicated configuration tools, or AT commands.
- **Multiple Socket Connections:** The TCP server mode supports up to six client connections simultaneously.
- **Wide Serial Port Baud Rate Support:** Configurable from 1200 bps to 230400 bps (default 115200 bps).
- **Various Parity Checks:** Supports None, Odd, Even, Mark, and Space parity settings.
- **DHCP Functionality:** Enables automatic IP address acquisition.
- **DNS Functionality:** Supports domain name resolution with customizable DNS server addresses.

- **Modbus Gateway Modes:** Includes simple protocol conversion, multi-host mode, storage gateway, and configurable gateway options.
- **Virtual Serial Port Support:** Allows remote serial devices to appear as local COM ports.
- **Timeout Restart Function:** Customizable device restart time for enhanced stability.
- **Short Connection Function:** Customizable interval for short network connections.
- **Heartbeat and Registration Package Functions:** For maintaining network presence and device identification.
- **Cache Cleanup Function:** Manages data buffer efficiently.
- **Network Access:** Supports both extranet and local area network access.
- **Hardware Recovery:** Option to restore factory settings via hardware.
- **Online Upgrades:** Supports firmware updates over the network.

3. Setup

3.1 Physical Installation

The NA111-A is designed for rail installation. Secure the device onto a standard DIN rail in a suitable enclosure, ensuring adequate ventilation and clearance for cable connections.

Figure 3.1: Dimensions of the EBYTE NA111-A. The device measures approximately 92mm in height, 66mm in depth, and 30mm in width, indicating its compact size for rail mounting.

3.2 Power Connection

Connect the device to an AC power source within the range of 85V to 265V. Ensure the power supply is stable and meets the device's requirements. The power terminal is typically a green screw terminal block.

3.3 Serial (RS485) Connection

Connect your RS485 serial device to the serial port terminals on the NA111-A. The serial port uses a 3x3.81mm Phoenix terminal. Ensure correct polarity (A and B) for RS485 communication.

3.4 Ethernet (RJ45) Connection

Connect a standard Ethernet cable from the NA111-A's RJ45 port to your network switch, router, or directly to a computer for initial configuration. The device supports long-distance network cable connections up to 200 meters.

Figure 3.2: Diagram illustrating the basic function of the NA111-A, showing transparent transmission between an RS485 serial port and an RJ45 Ethernet connection.

Figure 3.3: Visual representation of the NA111-A supporting long-distance network cable connections, up to 200 meters.

3.5 Initial Configuration

After physical connections are made, the device needs to be configured. This can typically be done via:

- **Web Settings:** Access the device's web interface using its default IP address (refer to the full product manual for default IP).
- **Configuration Tool:** Use the manufacturer-provided software tool for easy setup.
- **AT Commands:** For advanced users, parameters can be configured using AT commands through the serial port.

Ensure that the network parameters (IP acquisition method, DNS settings) and serial port parameters (baud rate, parity) are correctly configured to match your application requirements.

4. Operating Instructions

4.1 Basic Operation

Once configured, the NA111-A operates as a transparent data channel, converting data between the RS485

serial interface and the Ethernet network. Data sent to the serial port will be encapsulated and transmitted over Ethernet, and vice-versa.

4.2 LED Indicators

Monitor the LED indicators on the front panel for operational status:

- **PWR:** Indicates power supply status. (Typically solid ON when powered).
- **TXD:** Flashes when data is being transmitted from the serial port.
- **RXD:** Flashes when data is being received by the serial port.
- **M0, M1:** These indicators typically show the device's current operating mode or status. Refer to the detailed product manual for specific interpretations of M0 and M1 states.

4.3 Application Scenarios

The NA111-A is suitable for various industrial and commercial applications requiring serial-to-Ethernet conversion:

Figure 4.1: Examples of application scenarios for the NA111-A, including POS machines, courier cabinets, vending machines, and meteorological monitoring stations, highlighting its utility in remote data transmission and monitoring.

5. Maintenance

5.1 General Care

To ensure optimal performance and longevity of your NA111-A, follow these general maintenance guidelines:

- Keep the device clean and free from dust. Use a soft, dry cloth for cleaning.
- Ensure proper ventilation around the device to prevent overheating.
- Avoid exposing the device to extreme temperatures, humidity, or corrosive environments.
- Regularly check all cable connections for secure fit.

5.2 Firmware Updates

The device supports online firmware upgrades. Periodically check the manufacturer's website for new firmware versions that may offer improved features, performance, or bug fixes. Follow the provided instructions carefully during the upgrade process.

Figure 5.1: Diagram illustrating the remote upgrade capability of the NA111-A, showing data flow for updates via RJ45 Ethernet and RS485.

5.3 Factory Reset

In case of configuration issues or for a complete reset, the device supports hardware recovery to factory settings. Refer to the detailed product manual for the specific procedure to perform a factory reset.

6. Troubleshooting

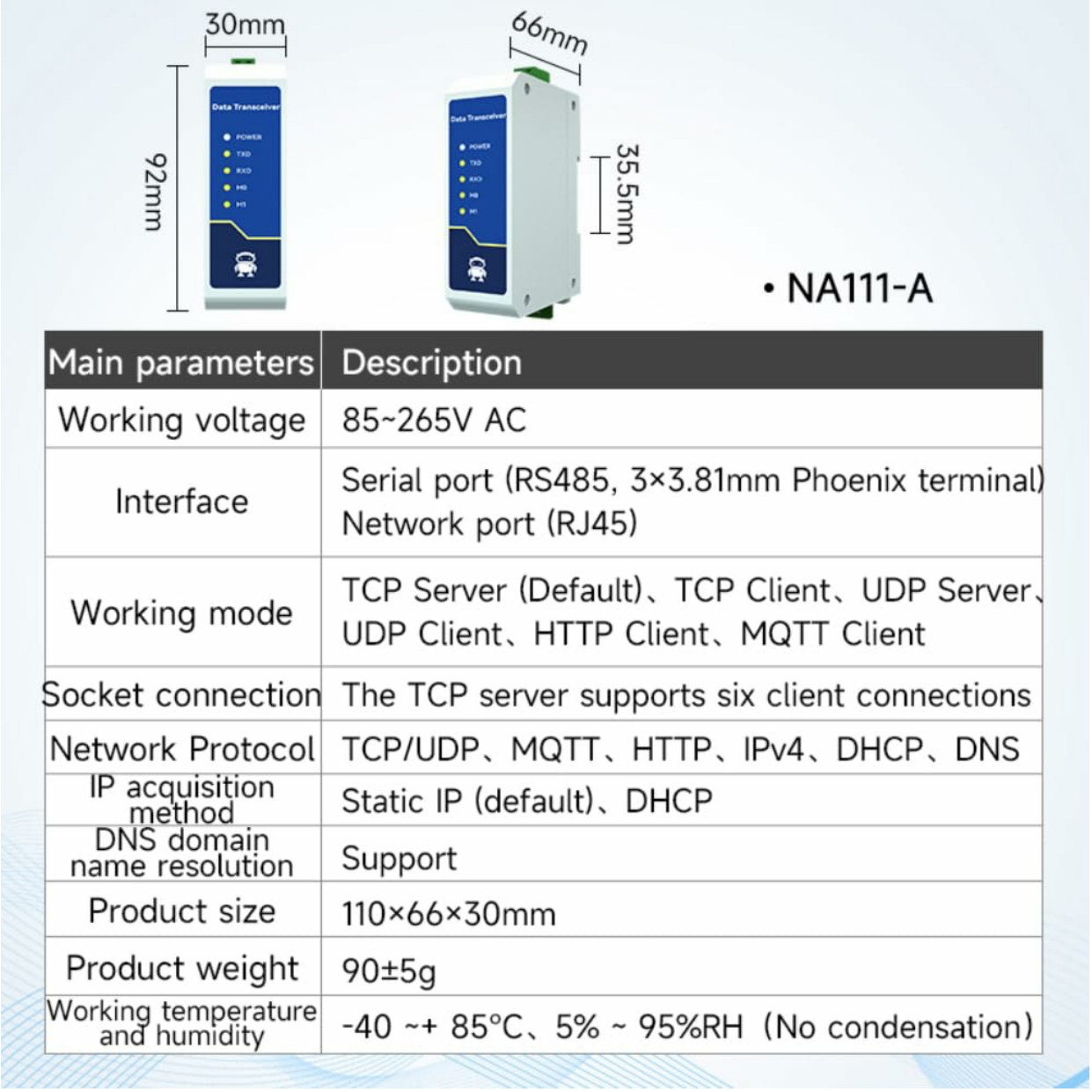
If you encounter issues with your EBYTE NA111-A, consider the following troubleshooting steps:

- **No Power:** Check the power supply connection and ensure the AC voltage is within the 85~265V range. Verify the PWR LED is illuminated.
- **No Network Connectivity:**
  - Ensure the Ethernet cable is securely connected to both the device and the network switch/router.
  - Verify network settings (IP address, subnet mask, gateway, DNS) are correct, especially if using a static IP.
  - Check if the network port on the switch/router is active.
- **No Serial Communication:**
  - Confirm the RS485 wiring polarity (A and B) is correct.
  - Verify serial port parameters (baud rate, parity, data bits, stop bits) on the NA111-A match those of the connected serial device.
  - Check the TXD and RXD LEDs for activity when data is expected.
- **Configuration Access Issues:** If you cannot access the web interface or configuration tool, ensure your computer's IP address is in the same subnet as the NA111-A's default or configured IP.
- **Intermittent Connection:** Check for network interference, cable quality, or power fluctuations. Consider using the timeout restart or short connection functions if applicable to your setup.

For persistent issues, consult the comprehensive product manual or contact EBYTE technical support.

7. Specifications

Detailed technical specifications for the EBYTE NA111-A:



Main parameters	Description
Working voltage	85~265V AC
Interface	Serial port (RS485, 3×3.81mm Phoenix terminal) Network port (RJ45)
Working mode	TCP Server (Default)、TCP Client、UDP Server、 UDP Client、HTTP Client、MQTT Client
Socket connection	The TCP server supports six client connections
Network Protocol	TCP/UDP、MQTT、HTTP、IPv4、DHCP、DNS
IP acquisition method	Static IP (default)、DHCP
DNS domain name resolution	Support
Product size	110×66×30mm
Product weight	90±5g
Working temperature and humidity	-40 ~+ 85°C、5% ~ 95%RH (No condensation)

Figure 7.1: Table displaying the main parameters and specifications of the NA111-A, including dimensions, working voltage, interfaces, and operating modes.

Parameter	Description
Working Voltage	85~265V AC
Interface	Serial port (RS485, 3x3.81mm Phoenix terminal), Network port (RJ45)
Working Mode	TCP Server (Default), TCP Client, UDP Server, UDP Client, HTTP Client, MQTT Client
Socket Connection	TCP server supports six client connections
Network Protocol	TCP/UDP, MQTT, HTTP, IPv4, DHCP, DNS
IP Acquisition Method	Static IP (default), DHCP
DNS Domain Name Resolution	Support

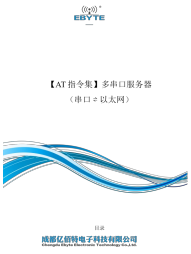
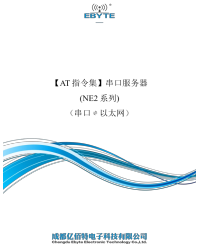
Parameter	Description
Product Size	110×66×30mm
Product Weight	90±5g
Working Temperature and Humidity	-40 ~ +85°C, 5% ~ 95%RH (No condensation)

8. Warranty and Support

EBYTE products are designed for reliability and performance. For specific warranty terms and conditions, please refer to the warranty information provided with your purchase or visit the official EBYTE website. In most regions, a standard manufacturer's warranty covers defects in materials and workmanship under normal use.
For technical support, troubleshooting assistance, or inquiries regarding product functionality, please contact EBYTE customer service or your authorized distributor. When contacting support, please have your product model (NA111-A) and any relevant purchase information ready.

Figure 8.1: Product packaging label showing manufacturer details, including "Chengdu Ebyte Electronic Technology Co., Ltd." and contact information, which can be used for support inquiries.

Related Documents - NA111-A

	[NB124 Dual Serial Port Server User Manual] This user manual provides comprehensive instructions for the NB124 Dual Serial Port Server, a 2-way serial port server that integrates TCP/IP protocol for transparent data transmission between serial ports and Ethernet. It covers product introduction, quick start guide, technical parameters, basic and advanced functions, working modes, and firmware upgrades.
	[EBYTE E841-DTU (EC03-485) User Manual: Wireless Modem Guide] Comprehensive user manual for the EBYTE E841-DTU (EC03-485) wireless modem, detailing its features, specifications, setup, and advanced functions for IoT applications.
	[EBYTE AT] EBYTE AT Modbus
	[EBYTE NE2 Series Serial Port Server AT Command Set] This document provides the AT command set for the EBYTE NE2 Series Serial Port Servers, covering basic functions, Modbus functions, and IoT functions. It details commands for configuration, network settings, communication protocols, and device management.
	[EBYTE MA01/MA02-AXCX4040] EBYTE MA01/MA02-AXCX4040 4 (DI) 4 (DO) I/O Modbus RTU
	[EBYTE NB183x-V2 -] EBYTE NB183x-V2 8 TCP/IP Modbus