EVTSCAN HF-5111B

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EVTSCAN HF-5111B Serial Server User Manual

RS232/RS485/RS422 to Ethernet Converter

1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of the EVTSCAN HF-5111B Serial Server. The HF-5111B is a versatile 3-in-1 device designed to convert RS232, RS485, or RS422 serial data to Ethernet, enabling seamless communication between serial devices and network-based systems. It is suitable for various industrial and IoT applications.

2. PRODUCT FEATURES

The EVTSCAN HF-5111B Serial Server incorporates advanced features for reliable and secure serial-to-Ethernet conversion:

- Integrated Cortex-M3 MCU with 2MB Flash and 128KB RAM for efficient processing.
- Utilizes the FreeRTOS real-time operating system for stable performance.
- Supports multiple serial interfaces: RS232, RS485, and RS422.
- Equipped with a 10/100 Mbps Ethernet port with auto-sensing capabilities.
- Enables serial port data transmission over Ethernet at speeds up to 921600 bps.
- Supports a wide range of network protocols including TCP/IP, UDP, ICMP, DHCP, DNS, HTTP, ARP, Telnet, Modbus TCP, BOOTP, AutoIP, ICMP, Web socket, uPNP, and NTP.
- Features network security protocols such as SSL/TLS, AES, and DES3.
- Configuration available via web browser interface.
- Supports firmware upgrades for continuous improvement.

Image: Overview of HF-5111B Serial Network Server highlighting virtual serial port, remote control, automatic IP acquisition, and RS232/485/422 support.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- 1 x HF-5111B Serial Network Server
- 1 x Serial Cable (DB9)
- 1 x Ethernet Cable

Note: Power adapter is not included and must be purchased separately. Only one serial interface type (RS232, RS485, or RS422) can be connected at a time.

Image: The HF-5111B Serial Server unit shown with a DB9 serial cable and an RJ45 Ethernet cable, representing the typical package contents.

4. PHYSICAL DESCRIPTION AND CONNECTIONS

The HF-5111B features an industrial-grade metal enclosure designed for durability. Key connection points and indicators are located on the device:

Image: Top panel showing the DB9 RS232 port and a reset button. Bottom panel showing the RJ45 Ethernet port, terminal block for RS485/RS422 and power, and DC jack.

- **RS232 Port:** DB9 female connector.
- **RS485/RS422 Port:** Terminal block connector.
- **Ethernet Port:** RJ45 10/100 Mbps (Auto-sensing).
- **Power Input:** 5-36V DC via 5.5mm x 2.1mm DC jack or 5.08mm terminal block.
- **LED Indicators:** Power, Link, Active.
- **Reset Button:** For restoring factory defaults or restarting the device.
- **Dip Switch:** For configuration settings.

5. TECHNICAL SPECIFICATIONS

Item Type:

3 in 1 Serial Port RS232 RS485 RS422 to Ethernet Converter

Enclosure:

Industrial-grade metal enclosure

MCU Type:

Cortex-M3, 96 MHz, 2 MB Flash, 128 KB RAM

Operating System:

FreeRTOS

Interfaces:

3 x UART Ports (RS232/RS485/RS422), 1 x RJ45 10/100 Mbps Ethernet Port (Auto-sensing)

Serial Interfaces:

DB9 female connector (RS232); Terminal block connector (RS485/RS422)

Baud Rates:

600 bps to 460.8 kbps

Data Bits:

5, 6, 7, 8

Stop Bits:

1, 2

Parity:

None, Even, Odd

Flow Control:

Hardware

Network Protocols:

TCP/IP, UDP, ICMP, DHCP, DNS, HTTP, ARP, Telnet, Modbus TCP, BOOTP, AutoIP, ICMP, Web
socket, uPNP, NTP

Network Security:

SSL/TLS, AES, DES3

Software Support:

Configuration via web browser interface, Optional software for configuration and monitoring, Supports
firmware upgrades

LED Indicators:

Power Indicator, Ethernet Link Indicator, Activity Indicator

Power Supply:

5-36V DC Input, 5.5mm x 2.1mm DC jack or 5.08mm terminal block

Protection:

Isolation, Surge protection, ESD protection

Earth:

Yes

Reset Button:

Yes

Dip Switch Configuration:

Yes

Operating Temperature:

-40°C to 85°C

Dimensions:

95mm x 65mm x 25mm (L x W x H)

Mounting Options:

Wall mounting or DIN rail (Bracket not included)

Application Areas:

Industrial automation, Building automation, Remote monitoring and control, IoT applications, PLC

communication, SCADA systems, access control, and more.

Image: Diagram showing the dimensions of the HF-5111B Serial Server as 95mm (3.7in) length, 65mm (2.6in) width, and 25mm (1in) height.

6. INSTALLATION AND SETUP

Follow these steps to install and set up your HF-5111B Serial Server:

1. **Power Connection:** Connect a 5-36V DC power adapter (not included) to the DC jack or the terminal block. Ensure correct polarity.

2. **Ethernet Connection:** Connect the provided Ethernet cable from the HF-5111B's RJ45 port to your network switch or router.

3. **Serial Device Connection:** Connect your serial device to the appropriate port on the HF-5111B. Use the DB9 connector for RS232 or the terminal block for RS485/RS422. **Remember:** Only one serial interface type can be active at a time.

4. **Power On:** Once all connections are secure, apply power to the device. The Power LED should illuminate.

5. **Initial Configuration:** The device can be configured via a web browser. Refer to the product documentation or the manufacturer's website for default IP address and login credentials.

Image: The HF-5111B Serial Server with an Ethernet cable connected to the RJ45 port and a DB9 serial cable connected to the RS232 port, illustrating a typical setup.

7. OPERATION

The HF-5111B acts as a bridge, allowing serial devices to communicate over an Ethernet network. After successful setup and configuration, the device will transparently transmit data between the connected serial port and the network.

Image: A diagram illustrating the HF-5111B's basic function, showing RS232, RS485, and RS422 devices connecting to the server, which then connects to a wired network.

- **LED Indicators:**

    - **Power:** Indicates the device is powered on.
    - **Link:** Indicates an active Ethernet link.
    - **Active:** Indicates data transmission activity over Ethernet.
- **Network Protocols:** The device supports various protocols for data communication, including TCP/IP, UDP, and Modbus TCP, allowing integration into diverse network environments.
- **Data Security:** For secure communication, the HF-5111B supports SSL/TLS, AES, and DES3 encryption, configurable via the web interface.

8. MAINTENANCE AND FIRMWARE UPDATES

Regular maintenance ensures optimal performance and longevity of your serial server.

- **Cleaning:** Keep the device clean and free from dust. Use a soft, dry cloth for cleaning.
- **Firmware Updates:** The HF-5111B supports remote firmware upgrades. Periodically check the EVTSCAN official website for the latest firmware versions to ensure compatibility and access to new features. Firmware can be uploaded via an Internet server, allowing for automatic updates.

NETWORK REMOTE UPGRADE FIRMWARE

Firmware can be uploaded via an Internet server and the industrial control product can be upgraded automatically.

IOT Bridge — Networking —

IOT Service
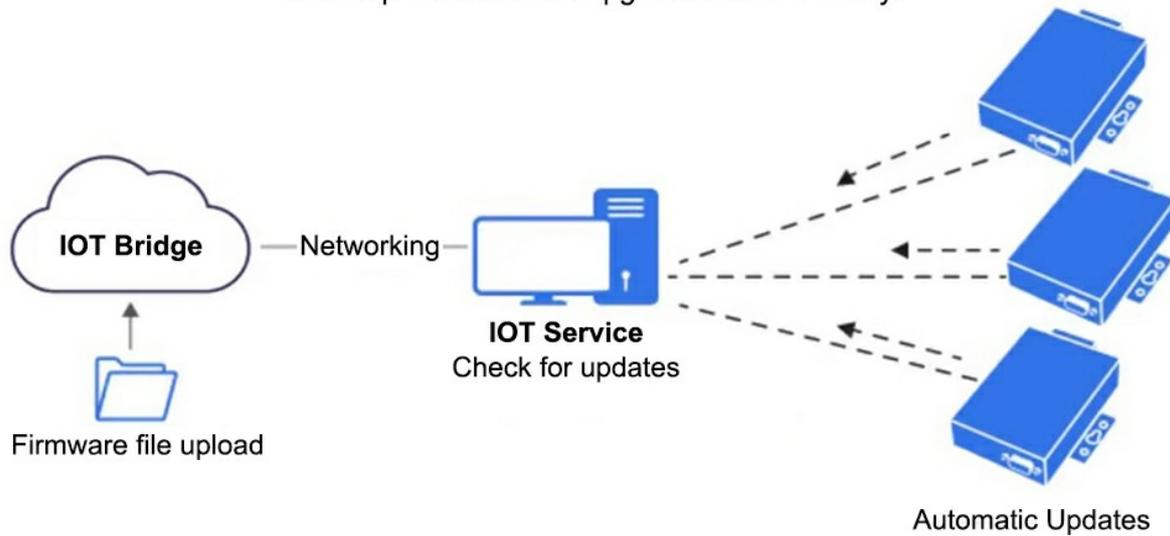Check for updates

Firmware file upload

Automatic Updates

Image: A diagram showing how firmware updates are managed remotely, with an IoT Bridge and IoT Service checking for updates and pushing them to multiple devices.

9. TROUBLESHOOTING

If you encounter issues with your HF-5111B, consider the following:

- **No Power:** Ensure the power adapter is correctly connected and providing 5-36V DC. Check the Power LED.
- **No Network Link:** Verify the Ethernet cable is securely connected to both the HF-5111B and the network device. Check the Link LED. Ensure your network is operational.
- **No Data Transmission:** Confirm that the serial device is correctly connected and configured (baud rate, data bits, stop bits, parity, flow control). Check the Active LED for data activity. Verify network settings and IP configuration.
- **Device Unresponsive:** Use the Reset button to restart the device. If issues persist, a factory reset might be necessary (refer to specific instructions for your firmware version).
- **Configuration Access Issues:** Ensure your computer is on the same network segment as the HF-5111B and that you are using the correct IP address and port for web access.

10. SAFETY INFORMATION

Observe the following safety precautions:

- Ensure the power supply voltage is within the specified range (5-36V DC).
- Do not expose the device to moisture, extreme temperatures, or corrosive environments.
- Avoid dropping or subjecting the device to severe impact.
- Do not attempt to open or modify the device, as this will void the warranty and may cause damage.
- Disconnect power before making any physical connections or disconnections.

11. SUPPORT AND WARRANTY

For technical support or warranty inquiries, please contact EVTSCAN customer service through their official website or the retailer from whom the product was purchased. Keep your purchase receipt as proof of purchase.

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Model Number: HF-5111B

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