Moxa MGate 5121-T

Moxa MGate 5121-T Gateway User Manual

Model: MGate 5121-T

1. Introduction

The Moxa MGate 5121-T is a 1-port industrial Ethernet gateway designed for converting CANopen or J1939 protocols to Modbus TCP. This device facilitates seamless communication between CAN-based devices and Modbus TCP networks, commonly found in industrial automation and control systems. It supports a wide operating temperature range of -40 to 75°C, making it suitable for harsh industrial environments.

2. Safety Information

Please read and understand all safety instructions before installing or operating the MGate 5121-T gateway. Failure to follow these instructions may result in equipment damage, personal injury, or system malfunction.

- Ensure power is disconnected before installation or maintenance.
- Install the device in a well-ventilated area, away from excessive heat, moisture, or corrosive substances.
- Use appropriate tools and personal protective equipment during installation.
- All wiring should comply with local and national electrical codes.
- Only qualified personnel should perform installation and maintenance.

3. Package Contents

Verify that your package contains the following items:

- MGate 5121-T Gateway Unit
- Quick Installation Guide
- Warranty Card
- (Optional) DIN-rail mounting kit

If any of these items are missing or damaged, please contact your sales representative for assistance.

4. Product Overview

4.1 Key Features

- Converts CANopen/J1939 to Modbus TCP
- 1 CAN port, 1 Ethernet port
- Wide operating temperature: -40 to 75°C
- Redundant power inputs
- Web-based configuration
- DIN-rail mountable

4.2 Hardware Description

The MGate 5121-T features a robust metal casing designed for industrial environments. It includes LED indicators for power, status, and communication activity, allowing for quick visual diagnostics. The device provides screw terminals for power input and CAN bus connections, and an RJ45 port for Ethernet connectivity.
Note: No suitable product images were provided in the input data for embedding. If available, images showing the front panel, side view with ports, and LED indicators would be placed here with descriptive alt-text.

5. Setup

5.1 Mounting

The MGate 5121-T can be mounted on a standard 35mm DIN-rail or wall-mounted using the optional wall-mounting kit.

1. **DIN-rail Mounting:** Attach the DIN-rail clip to the back of the device. Hook the top of the clip onto the DIN-rail and push the bottom until it snaps into place.
2. **Wall Mounting:** Secure the wall-mounting plates (if applicable) to the device using screws. Mark and drill holes on the wall, then attach the device using appropriate screws.

5.2 Power Connection

The gateway supports redundant DC power inputs. Connect a 12-48 VDC power supply to the terminal block labeled "PWR1" and "PWR2". Ensure correct polarity. It is recommended to connect both power inputs for redundancy.

- **Wire Gauge:** Use 12-24 AWG (0.2 to 2.5 mm^2) wires for power connections.
- **Torque:** Tighten terminal block screws to 0.5 Nm (4.4 lb-in).

5.3 Network Connection

1. **Ethernet (Modbus TCP):** Connect an Ethernet cable from the gateway's RJ45 port to your Modbus TCP network switch or controller.
2. **CAN (CANopen/J1939):** Connect the CAN bus wires (CAN_H, CAN_L, GND) to the corresponding terminals on the gateway. Ensure proper termination resistors are used on the CAN bus as per CAN specifications.

5.4 Initial Configuration

The MGate 5121-T can be configured via its web console. By default, the device obtains an IP address via DHCP. If no DHCP server is available, it will revert to a default static IP address (e.g., 192.168.1.254).

1. Connect your PC to the same network as the gateway.
2. Open a web browser and enter the gateway's IP address.

3. Log in using the default credentials (refer to the Quick Installation Guide for default username/password).
4. Configure the CANopen/J1939 and Modbus TCP settings according to your network requirements.

6. Operating the Gateway

6.1 Basic Operation

Once configured, the MGate 5121-T operates as a protocol converter, transparently translating data between the CANopen/J1939 network and the Modbus TCP network. Modbus TCP masters can read/write data from/to CANopen/J1939 slaves mapped within the gateway's configuration.

6.2 LED Indicators

The gateway features several LED indicators to provide status information:

- **PWR1/PWR2:** Solid green when power input is active.
- **STATUS:** Indicates device operational status (e.g., solid green for normal operation, blinking for errors). Refer to the full user manual for detailed status codes.
- **CAN:** Indicates CAN bus activity (e.g., blinking when data is transmitted/received).
- **LAN (Link/Act):** Solid green for link, blinking for activity on the Ethernet port.

Note: No suitable product videos were provided in the input data for embedding. If available, a video demonstrating LED indicator behavior or initial web configuration steps would be placed here with a descriptive text description.

7. Maintenance

7.1 Cleaning

Periodically clean the exterior of the device with a soft, dry cloth. Do not use liquid or aerosol cleaners, as they may damage the device.

7.2 Firmware Updates

Moxa may release firmware updates to improve performance, add features, or address security vulnerabilities. Check the Moxa website regularly for the latest firmware versions and instructions on how to perform updates.

7.3 Environmental Considerations

Ensure the operating environment remains within the specified temperature and humidity ranges to prevent damage and ensure reliable operation.

8. Troubleshooting

Problem	Possible Cause	Solution
No Power LED (PWR1/PWR2)	No power supply connected or faulty power supply/cabling.	Check power connections, power supply voltage, and cable integrity. Ensure polarity is correct.
No Ethernet Link	Faulty Ethernet cable or network device. Incorrect network settings.	Verify Ethernet cable connection. Check network switch/router status. Confirm IP address settings.

Problem	Possible Cause	Solution
No CAN Communication	Incorrect CAN wiring, missing termination resistors, or incorrect CAN bus parameters.	Check CAN_H/CAN_L wiring. Ensure 120Ω termination resistors are present at both ends of the bus. Verify CAN baud rate and other parameters in configuration.
Modbus TCP Master cannot access CAN devices	Incorrect Modbus TCP mapping or CANopen/J1939 device configuration.	Review the gateway's Modbus TCP mapping table. Verify CANopen/J1939 device IDs and object dictionary entries.

8.1 Factory Reset

If the device becomes unresponsive or configuration issues persist, a factory reset may be necessary. Refer to the full user manual for the specific procedure, which typically involves pressing and holding a reset button for a certain duration.

9. Specifications

Parameter	Value
Model	MGate 5121-T
Protocols Supported	CANopen, J1939, Modbus TCP
CAN Port	1 x CAN (DB9 or Terminal Block, depending on variant)
Ethernet Port	1 x 10/100BaseT(X) auto-negotiating, RJ45
Input Voltage	12-48 VDC (Redundant inputs)
Power Consumption	Typically < 5 W (Exact value varies by operation)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Humidity	5 to 95% RH (non-condensing)
Dimensions (W x D x H)	Specific dimensions vary; refer to product datasheet.
Housing	Metal, IP30 protection
Mounting	DIN-rail, Wall-mount
Certifications	CE, FCC, UL (Specific certifications vary by region/model)

10. Warranty and Support

10.1 Product Warranty

Moxa products are covered by a limited warranty. The warranty period and terms vary by product and region. Please refer to the warranty card included with your product or visit the official Moxa website for detailed warranty information.

10.2 Technical Support

For technical assistance, product documentation, or software downloads, please visit the Moxa website at www.moxa.com/support. You can also contact Moxa technical support directly via phone or email, details of which are available on their support page.