MOXA MGate 5121 Series Modbus TCP Gateways Instruction Manual

Contents

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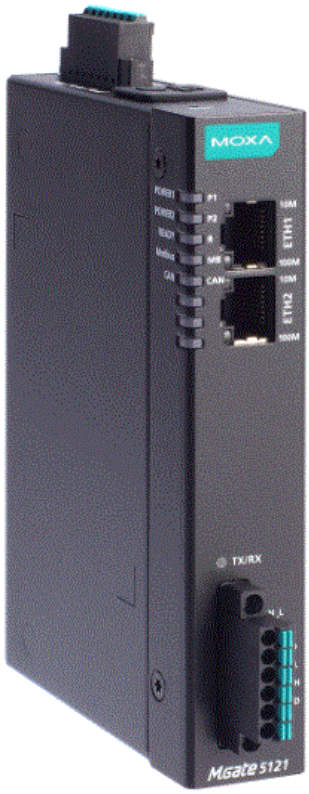


Product Information:
Product Name: MGate 5121 Series
Version: 1.0
Release Date: June 2023
Manufacturer: Moxa Inc.
Supported Networks: CANopen/J1939 and Modbus TCP
Technical Support Contact Information: **www.moxa.com/support**

Package Checklist:

- MGate 5121 Industrial Ethernet Gateway
- Power Adapter
- User Manual
- Device Search Utility (DSU)

Hardware Introduction:
The MGate 5121 is an industrial Ethernet gateway that enables communication between CANopen/J1939 and Modbus TCP networks. It features LED indicators for power, readiness, Modbus TCP, CAN, and J1939.

LED Indicators:

- POWER1 (P1): Green when powered on, off when powered off.
- POWER2 (P2): Green when powered on, off when powered off.
- READY (R): Red when not ready, green when ready.
- MODBUS (MB): Red when in Modbus TCP Server mode.
- CAN: Green when in CANopen mode, red when CAN bus is off.
- CAN TX/RX: Off when not transmitting/receiving, green when transmitting/receiving.
- ETH 1, ETH 2: Green when connected to an Ethernet device, amber when there is a connection error, off when

not connected.

Panel Layouts:
The MGate 5121 has top and front views with LED indicators and a reset button. It can be mounted on a DIN rail or wall.

Dimensions:

- DIN Rail: Dimensions not provided in the user manual.
- Side DIN Rail: Dimensions not provided in the user manual.
- Wall Mount: Dimensions not provided in the user manual.

Reset Button:
To restore the MGate 5121 to factory default settings, press and hold the reset button with a pointed object (e.g., a straightened paper clip) until the Ready LED stops blinking (approximately five seconds).

Hardware Installation Procedure:

1. Connect the power adapter to the MGate 5121's terminal block using a 12-48 VDC power line or DIN-rail power supply.
2. Use a CAN cable to connect the MGate to the CAN device.
3. Use an Ethernet cable to connect the MGate to the Modbus TCP client.
4. Attach the MGate 5121 to a DIN rail or wall using the provided metal plates and screws.

Software Installation Information:

- Download the User Manual and Device Search Utility (DSU) from Moxa's website: **www.moxa.com**. – Refer to the User's Manual for instructions on using the DSU. – The MGate 5121 supports login via a web browser with the default IP address: 192.168.127.254. – Create an administration account and password when logging in for the first time.

Pin Assignments:
CAN Port (6-pin Terminal Block): – Pin 1: CAN – Pin 2: CAN_L – Pin 3: CAN_H – Pin 4: CAN Signal GND – Pin 5: Ext-CAN_L* (extension pin) – Pin 6: Ext-CAN_H* (extension pin) * Use Ext_CAN_L and Ext_CAN_H as extension pins if another device is connected to the same CAN bus.
Ethernet Port (RJ45): – Pin 1: Tx+ – Pin 2: Tx- – Pin 3: Rx+ – Pin 6: Rx- Power Input and Relay Output Pinouts: – V2+: DC Power Input 2 – V2-: DC Power Input 2 – N.O. Common: Relay Output Common – N.C.: Relay Output Normally Closed – V1+: DC Power Input 1 – V1-: DC Power Input 1

Specifications:

- Power Parameters: Not provided in the user manual.
- Environmental Limits:
- Operating Temperature: Not provided in the user manual.
- Storage Temperature (package included): Not provided in the user manual.
- Ambient Relative Humidity: Not provided in the user manual.
- Physical Characteristics:

- Dimensions: Not provided in the user manual.
- Weight: Not provided in the user manual.
- Reliability:
- Alert Tools: Not provided in the user manual.
- MTBF: Not provided in the user manual.

Technical Support Contact Information **www.moxa.com/support**

Overview

The MGate 5121 is an industrial Ethernet gateway for CANopen/J1939 and Modbus TCP network communications.

Package Checklist

Before installing the MGate 5121, verify that the package contains the following items:

- 1 MGate 5121 gateway
- Quick installation guide (printed)
- Warranty card

NOTE
Please notify your sales representative if any of the above items are missing or damaged.
Optional Accessories (can be purchased separately)

- WK-25: Wall-mounting kit, 2 plates, 4 screws, 25 x 43 x 2 mm

Hardware Introduction

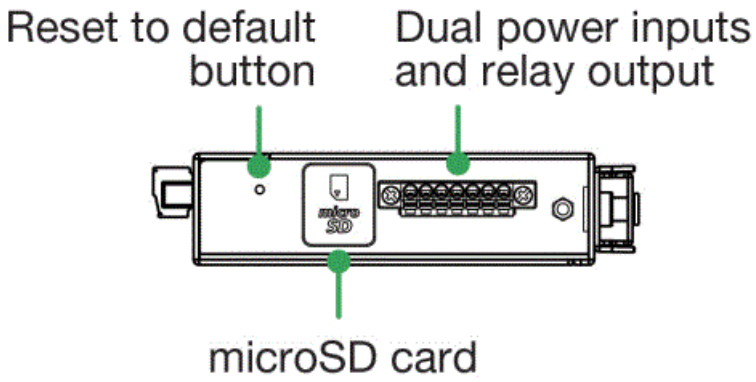
LED Indicators

LED	Color	Description
POWER1 (P1) POWER 2 (P2)	Green	Power is on.
	Off	Power is off.
READY (R)	Off	Power is off.
	Green	Steady: Power is on, and the MGate is functioning normally.
		Blinking (1 sec.): The MGate has been located by the Moxa utility DS U Location function.
	Red	Steady: Power is on, and the MGate is booting up.
		Blinking slowly (0.5 sec.): Shows an IP conflict, or the DHCP server is not responding properly.
		Blinking quickly (0.1 sec.): The microSD card failed.
MODBUS (MB) [as Modbus TCP Server]	Off	No communication
	Green	Steady: Normal communication in progress.
	Red	Blinking (1 sec.): Communication error 1. Received an invalid function code 2. Master accessed invalid register address or coil addresses 3. Received frame error (parity error, checksum error)
CAN [as CANopen]	Green	Steady green: In CANopen OPERATIONAL state.
		Blinking green: In CANopen PRE- OPERATIONAL state.
		Single flash: In CANopen STOP state.
	Red	Steady red: CAN bus off

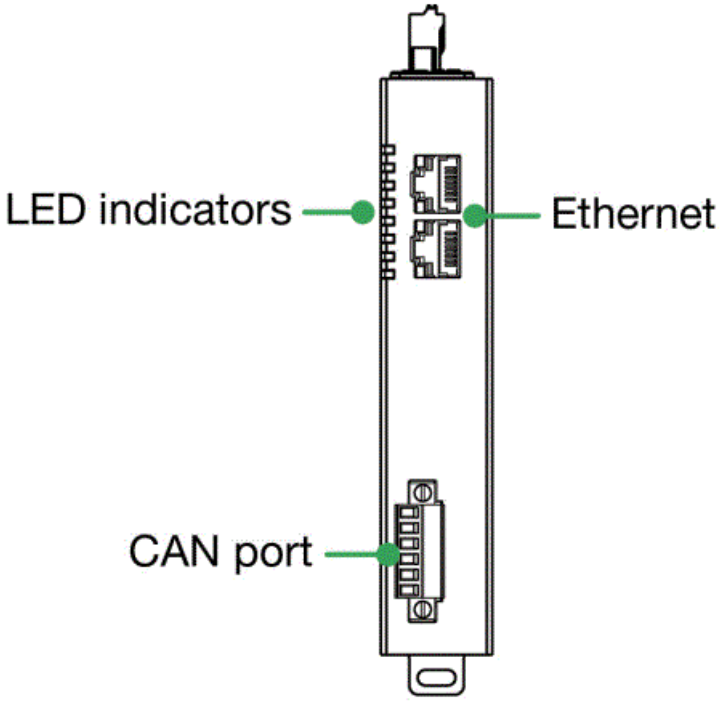
		Single flash: An error counter warning level has been reached.
		Double flash: A heartbeat event has occurred.
CAN [as J1939]	Off	No J1939 I/O configured
	Green	Steady: CAN bus (J1939) communication is receiving or transmitting data.
	Red	Steady: A communication error occurred 1. The J1939 address claim failed 2. CAN is in bus-off state because the error counter is exceeding its li mitations.
CAN TX/RX	Green	Flashing: CAN bus port is receiving data
	Amber	Flashing: CAN bus port is transmitting data
ETH 1, ETH 2	Green	Steady ON: Ethernet link on at 100Mbps
		Blinking: Data transmitting at 100Mbps
	Amber	Steady ON: Ethernet link on at 10Mbps
		Blinking: Data transmitting at 10Mbps
	Off	Link is down or not connected

Panel Layouts

Top View



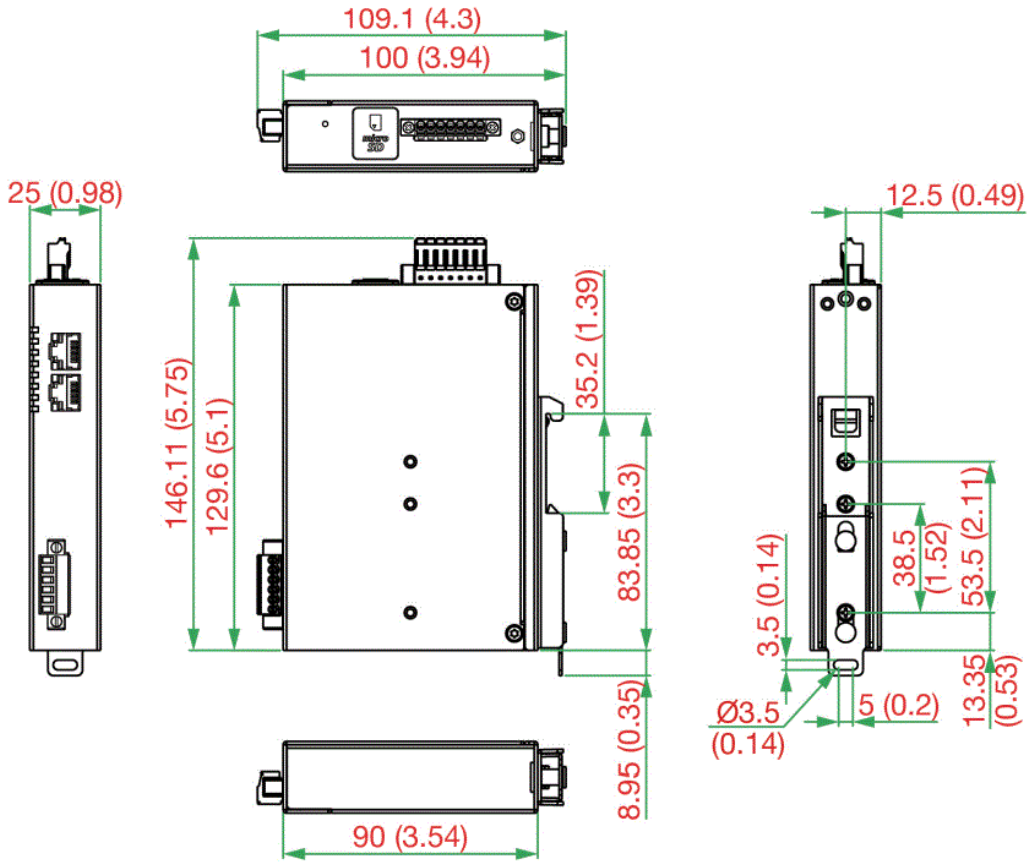
Front View



Dimensions

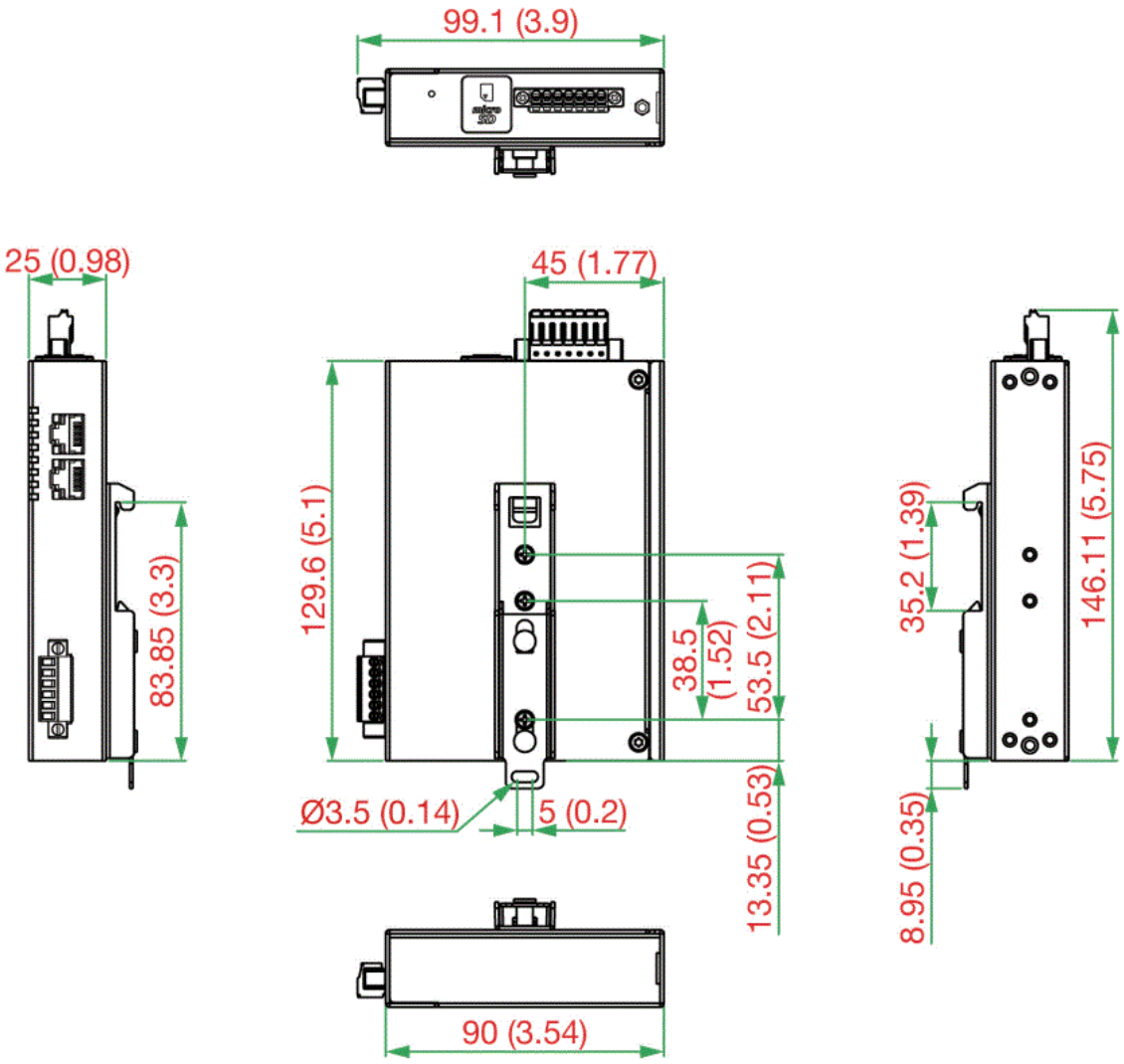
DIN Rail

Unit: mm (inch)



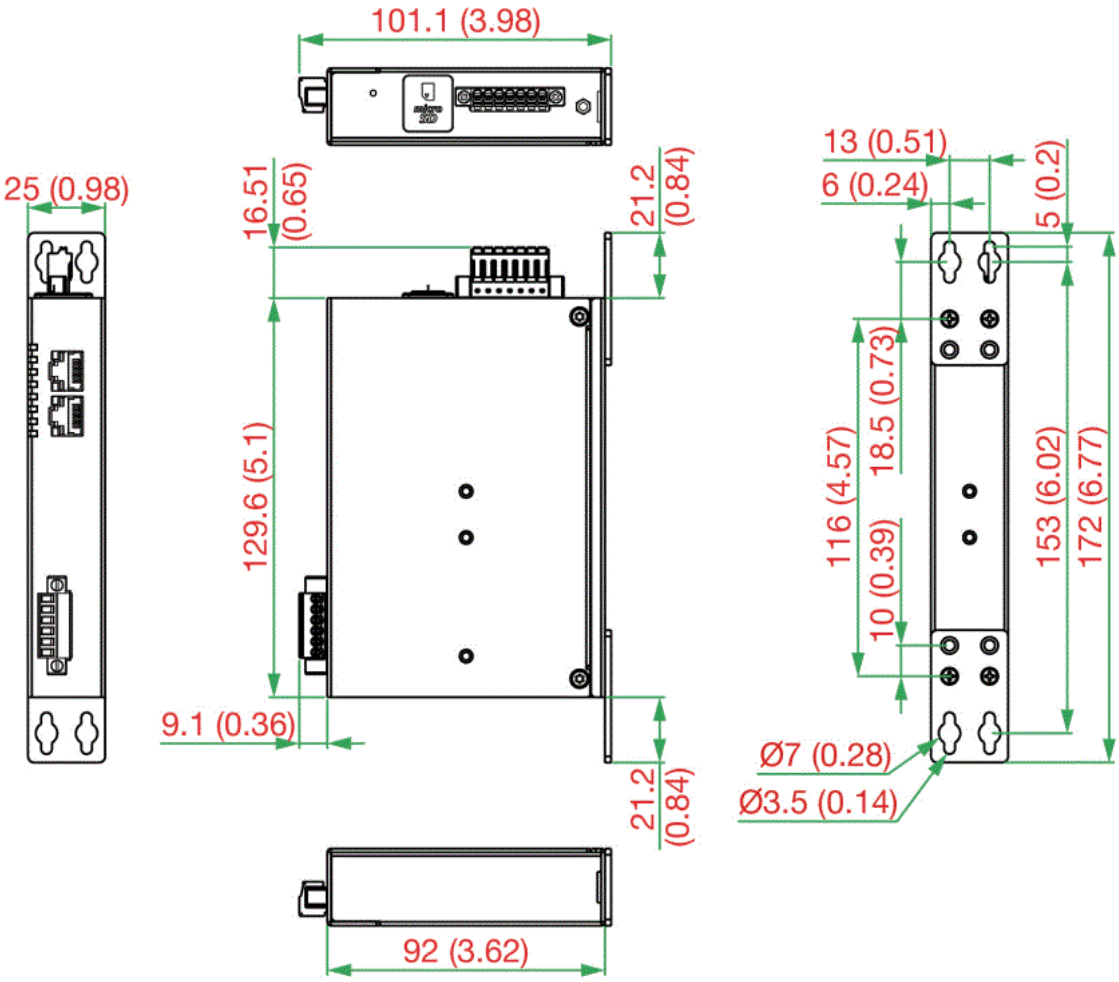
Side DIN Rail

Unit: mm (inch)



Wall Mount

Unit: mm (inch)



Reset Button

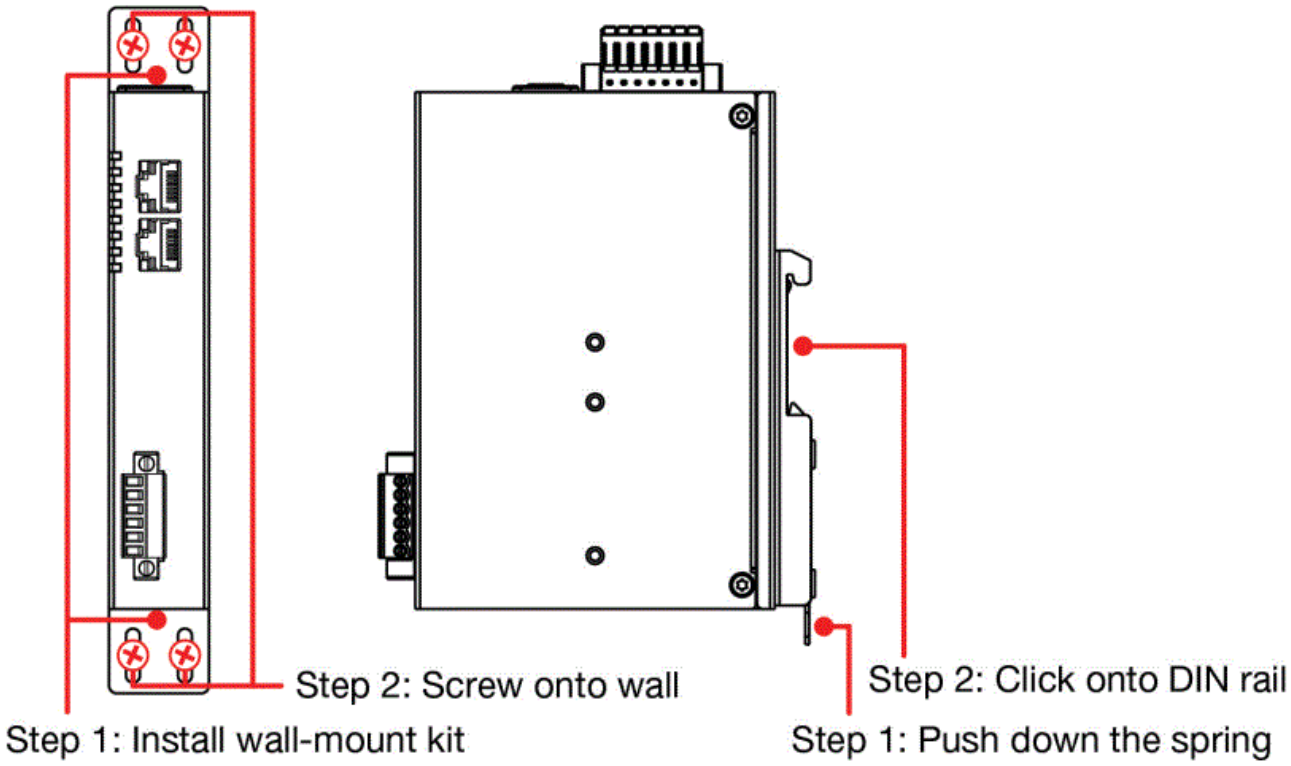
Restore the MGate to factory default settings by using a pointed object (such as a straightened paper clip) to hold the reset button down until the Ready LED stops blinking (approximately five seconds).

Hardware Installation Procedure

1. Connect the power adapter. Connect the 12-48 VDC power line or DIN-rail power supply to the MGate 5121's terminal block.
2. Use a CAN cable to connect the MGate to the CAN device.
3. Use an Ethernet cable to connect the MGate to the Modbus TCP client.
4. The MGate 5121 is designed to be attached to a DIN rail or mounted on a wall. For DIN-rail mounting, push down the spring and properly attach it to the DIN rail until it "snaps" into place. For wall mounting, install the wall-mounting kit (optional) first and then screw the device onto the wall.

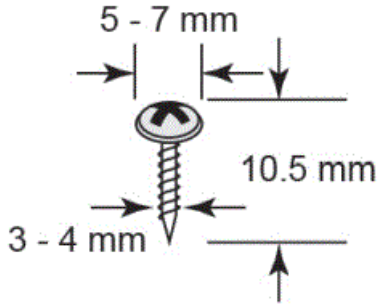
When wiring the relay contact (R) and power inputs (P1/P2), we suggest using American Wire Gauge (AWG) 16 to 20 as a cable and the corresponding pin-type cable terminals. The stripping length is recommended to be 8 to 9 mm. The wire temperature rating should be at least 85°C. Use copper conductors only. The shielding ground screw (M4) is near the power connector. When you connect the shielded ground wire (min. 16 AWG), the noise is routed from the metal chassis to the ground.

The following figure illustrates the two mounting options:



Wall- or Cabinet-mounting

We provide two metal plates to mount the unit on a wall or inside a cabinet. Attach the plates to the unit's rear panel with screws. With the plates attached, use screws to mount the unit on the wall. The heads of the screws should be 5 to 7 mm in diameter, the shafts should be 3 to 4 mm in diameter, and the length of the screws should be over 10.5 mm.



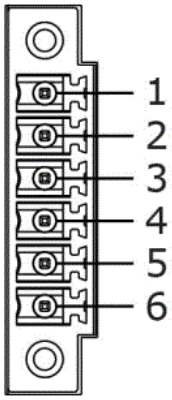
Software Installation Information

Please download the User Manual and Device Search Utility (DSU) from Moxa's website: www.moxa.com
For using the DSU, refer to the User's Manual. The MGate 5121 also supports login via a web browser.
Default IP address: 192.168.127.254
Create your administration account and password when you log in the first time.

Pin Assignments

CAN Port (6-pin Terminal Block)

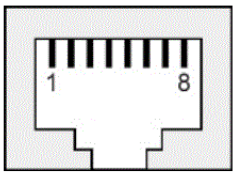
Pin	CAN
1	CAN_L
2	CAN_H
3	CAN Signal GND
4	Ext-CAN_L*
5	Ext-CAN_H*
6	CAN_SHLD



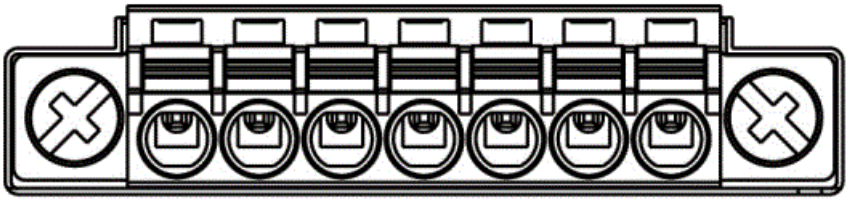
For the CAN port, plug CAN_L and CAN_H into the terminal block. If another device is connected to the same CAN bus, use the Ext_CAN_L and Ext_CAN_H as extension pins.

Ethernet Port (RJ45)

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-



Power Input and Relay Output Pinouts



V2+	V2-				V1+	V1-
DC Power Input 2	DC Power Input 2	N.O.	Common	N.C.	DC Power Input 1	DC Power Input 1

Specifications

Power Parameters	
Power Input	12 to 48 VDC
Power Consumption	455 mA max.
Relays	
Contact Current Rating	Resistive load: 2 A @ 30 VDC
Environmental Limits	
Operating Temperature	Standard models: -10 to 60°C (14 to 140°F) Wide temp. models: -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% RH
Physical Characteristics	
Dimensions	25 x 90 x 129.6 mm (0.98 x 3.54 x 5.1 in)
Weight	294 g (0.65 lb)
Reliability	
Alert Tools	Built-in buzzer and RTC
MTBF	1,408,984 hrs.

Hot surface label.
Functional earth terminal.

ATTENTION

- This device is an open-type equipment and intended to be installed in a suitable enclosure.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- When installing the device, the assembler is responsible for the securing the safety of the system in which the equipment is incorporated.

NOTE

- This device is intended for use indoors and at altitudes up to 2,000 meters.
- Pollution degree 2.
- Clean the device with a soft cloth, dry or with water.
- The power input specification complies with the requirements of SELV (Safety Extra Low Voltage), and the power supply should comply with UL 61010-1 and UL 61010-2-201.

WARNING

For any repair or maintenance needs, please contact us.
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Documents / Resources

	MOXA MGate 5121 Series Modbus TCP Gateways [pdf] Instruction Manual MGate 5121 Series Modbus TCP Gateways, MGate 5121 Series, Modbus TCP Gateways, TCP Gateways, Gateways

References

- Moxa - Your Trusted Partner in Automation
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- Moxa - Support