

MGate 5109

Quick Installation Guide

Version 1.2, March 2019

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P/N: 1802051090011



Overview

The MGate 5109 is an industrial Ethernet gateway for Modbus RTU/ASCII/TCP and DNP3 serial/TCP/UDP network communications.

Package Checklist

Before installing the MGate 5109, verify that the package contains the following items:

- 1 MGate 5109 gateway
- 1 serial cable: CBL-RJ45F9-150
- Quick installation guide (printed)
- Warranty card

Please notify your sales representative if any of the above items is missing or damaged.

Optional Accessories (can be purchased separately)

- **CBL-F9M9-150:** DB9-female-to-DB9-male serial cable, 150 cm
- **CBL-F9M9-20:** DB9-female-to-DB9-male serial cable, 20 cm
- **CBL-RJ45SF9-150:** RJ45-to-DB9-female shielded serial cable, 150 cm
- **ADP-RJ458P-DB9F:** DB9-female-to-RJ45 connector
- **ADP-RJ458P-DB9F-ABC01:** DB9-female-to-RJ45 connector
- **Mini DB9F-to-TB:** DB9-female-to-terminal-block connector

Hardware Introduction

LED Indicators

Agent Mode:

LED	Color	Description
Ready	Off	Power is off or a fault condition exists
	Green	Steady: Power is on, and the MGate is functioning normally
	Red	Steady: Power is on, and the MGate is booting up
		Blinking slowly: Indicates an IP conflict, or the DHCP or BOOTP server is not responding properly
Flashing quickly: the microSD card failed		
MB*	Off	No serial communication with Modbus device
	Green	Normal Modbus serial communication in progress
	Red	An error in serial communication occurred When the MGate 5109 acts as a Modbus master: <ol style="list-style-type: none">1. The slave device returned an error (exception)2. Received a framing error (parity error, checksum error)3. Timeout (the slave device sends no response) When the MGate 5109 acts as a Modbus slave: <ol style="list-style-type: none">1. Received an invalid function code The master accessed an invalid register address or coil address2. Received a framing error (parity error, checksum error)
DNP3*	Off	No serial communication with a DNP3 device
	Green	Normal DNP3 serial communication in progress
	Red	An error in serial communication occurred When the MGate 5109 acts as a DNP3 master: <ol style="list-style-type: none">1. Received an outstation exception (format error, checksum error, invalid data, outstation responds are not supported)2. Timeout (the outstation sends no response) When the MGate 5109 acts as a DNP3 outstation: <ol style="list-style-type: none">1. Received a master exception (format error, checksum error, invalid data)2. Timeout (the master sends no response)

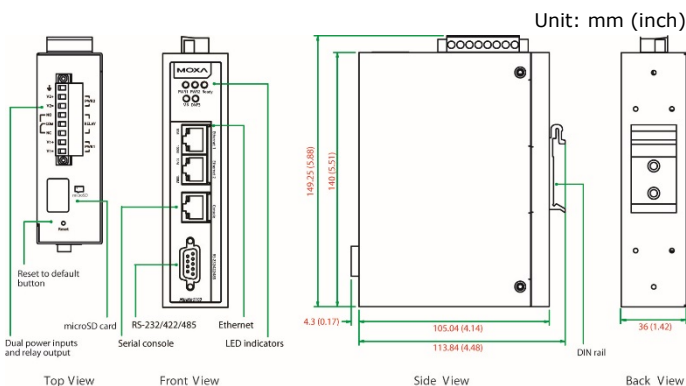
*Only indicates serial communication status; for Ethernet status, please refer to the LED indicator on the Ethernet port.

Transparent Mode:

LED	Color	Description
Ready	Off	Power is off or a fault condition exists
	Green	Steady: Power is on, and the MGate is functioning normally
	Red	Steady: Power is on, and the MGate is booting up
		Blinking slowly: Indicates an IP conflict, or the DHCP or BOOTP server is not responding properly
Flashing quickly: the microSD card failed		
MB	Off	No communication with the Modbus device
	Green	Modbus communication is in progress**
DNP3	Off	No communication with the DNP3 device
	Green	DNP3 communication is in progress**

**The green LED will light up for a period of time only when the MGate receives data on a serial port (Rx); does not include transmit data (Tx).

Dimensions

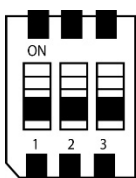


Reset Button

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).

Pull-high, Pull-low, and Terminator for RS-485

Beneath the MGate 5109's top cover, you will find DIP switches to adjust each serial port's pull-high resistor, pull-low resistor, and terminator.



	1	2	3
SW	Pull-high resistor	Pull-low resistor	Terminator
ON	1 k Ω	1 k Ω	120 Ω
OFF	150 k Ω *	150 k Ω *	-*

*Default

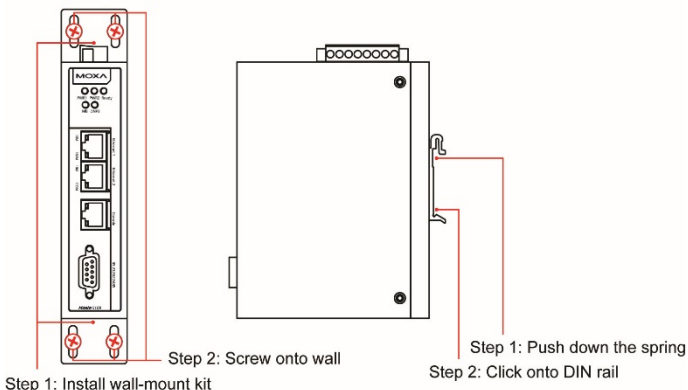
Hardware Installation Procedure

1. Connect the power adapter. Connect the 12-48 VDC power line or DIN-rail power supply to the MGate 5109's terminal block.
2. Use a serial cable to connect the MGate to the Modbus or DNP3 device.
3. Use an Ethernet cable to connect the MGate to the Modbus or DNP3 device.
4. The MGate 5109 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.

The following figure illustrates the two mounting options:

Wall-Mount Installation

DIN-Rail Installation



Software Installation Information

Please download the user's manual and Device Search Utility (DSU) from Moxa's website: www.moxa.com.

Refer to the user's manual for additional details on using the DSU. The MGate 5109 also supports login via a web browser.

Default IP address: **192.168.127.254**

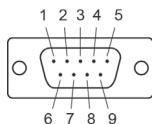
Default account: **admin**

Default password: **moxa**

Pin Assignments

Modbus Serial Port (Male DB9)

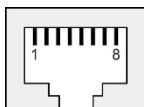
Pin	RS-232	RS-422/ RS-485 (4W)	RS-485 (2W)
1	DCD	TxD-(A)	-
2	RXD	TxD+(B)	-
3	TXD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5*	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	-	-	-



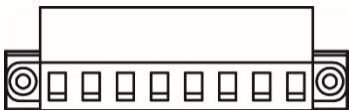
*Signal ground



Ethernet Port (RJ45)

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



Power Input and Relay Output Pinouts



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

Specifications

Power Requirements	
Power Input	12 to 48 VDC
Power Consumption	455 mA max.
Operating Temperature	Standard models: 0 to 60°C (32 to 140°F) Wide temp. models: -40 to 75°C (-40 to 167°F)
Ambient Relative Humidity	5 to 95% RH
Dimensions	36 x 105 x 140 mm (1.42 x 4.13 x 5.51 in)
Reliability	
Alert Tools	Built-in buzzer and RTC
MTBF	1,140,815 hrs.



1. DEMKO Certification number: 13 ATEX 1307610X
IEC Certification Number: IECEX UL 13.0051X;
2. Ambient Temperature Range:
0°C to 60°C (for models without suffix -T)
-40°C to 75°C (for models with suffix -T only)
3. Certification String: Ex nA nC IIC T3 Gc
4. Standards Covered: EN 60079-0:2013+A11:2013/IEC 60079-0 6th Ed. AND EN 60079-15:2010/IEC 60079-15 4th Ed.
5. The conditions of safe use:
 - a. Ethernet Communications Devices are intended for mounting in a tool-accessible IP54 enclosure and use in an area of not more than pollution degree 2 as defined by IEC/EN 60664-1.
 - b. Conductors suitable for use in an ambient temperature greater than 86°C must be used for the power supply terminal.
 - c. A 4mm² conductor must be used when a connection to the external grounding screw is utilized.
 - d. Provisions shall be made, either in the equipment or external to the equipment, to prevent the rated voltage from being exceeded by the transient disturbances of more than 140% of the peak-rated voltage.

Terminal block (plug matched with socket): rated at 300 V, 15 A, 105°C, 12-28 AWG (0.0804 mm² to 3.31 mm²) wire size, torque value 4.5 lb-in (0.509 N-m). The input terminal cable size: 14 AWG (2.1 mm²).



ATTENTION

For installations in hazardous locations (Class 1, Division 2):
These devices are to be installed in an enclosure with a tool-removable cover or door, suitable for the environment.

NOTE This equipment is suitable for use in Class 1, Division 2, Groups A, B, C, D or nonhazardous locations only



WARNING

EXPLOSION HAZARD

Do not disconnect the equipment unless the power has been switched off, or the area is known to be nonhazardous.



WARNING

EXPLOSION HAZARD

The substitution of any components may impair suitability for Class 1, Division 2.



WARNING

EXPOSURE TO SOME CHEMICALS MAY DEGRADE THE SEALING PROPERTIES OF MATERIALS USED IN THE FOLLOWING DEVICE: Sealed Relay Device U21.

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