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MOXA MGate 5114 Series Modbus Gateway Installation Guide

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Overview

The MGate 5114 is an industrial Ethernet gateway for Modbus
RTU/ASCII/TCP and IEC 60870-5-101/104 network communications.

Package Checklist

- Before installing the MGate 5114, verify that the package contains the
  following items:
- 1 MGate 5114 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-RJ45F9-150: RJ45-to-DB9-female serial cable, 150 cm
- CBL-RJ45SF9-150: RJ45-to-DB9-female serial shielded cable, 150 cm
- Mini DB9F-to-TB DB9: Female-to-terminal-block connector
- DK-25-01: 1 DIN-rail kit with 2 screws
- WK-36-02: Wall-mounting kit, 2 plates with 6 screws
- CBL-PJTB-10: Non-locking barrel plug to bare-wire cable

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 5114 acts as a Modbus RTU/ASCII master: 1. The slave device returned an error (exception) 2. Received a framing error (parity error, checksum error) 3. Timeout (the master sends but no response)

LED	Color	Description
		When the MGate 5114 acts as a Modbus RTU/ASCII slave: 1. Received an invalid function code The master accessed an invalid register address or coil address 2. Received a framing error (parity error, checksum error)
101*	Off	No serial communication with the IEC 60870-5-101 device
	Green	Normal IEC 60870-5-101 serial communication in progress
	Red	An error in serial communication occurred When the MGate 5114 acts as an IEC 60870-5-101 master: 1. Received a slave exception (format error, checksum error, invalid data, slave responds are not supported) 2. Timeout (the master sends but no response) When the MGate 5114 acts as an IEC 60870-5-101 slave: Received a master exception (format error, checksum error, invalid data)

Only indicates serial communication status; for IEC 60870-5-104 or
Modbus TCP status, please refer to the LED indicator on the Ethernet port.

Dimensions
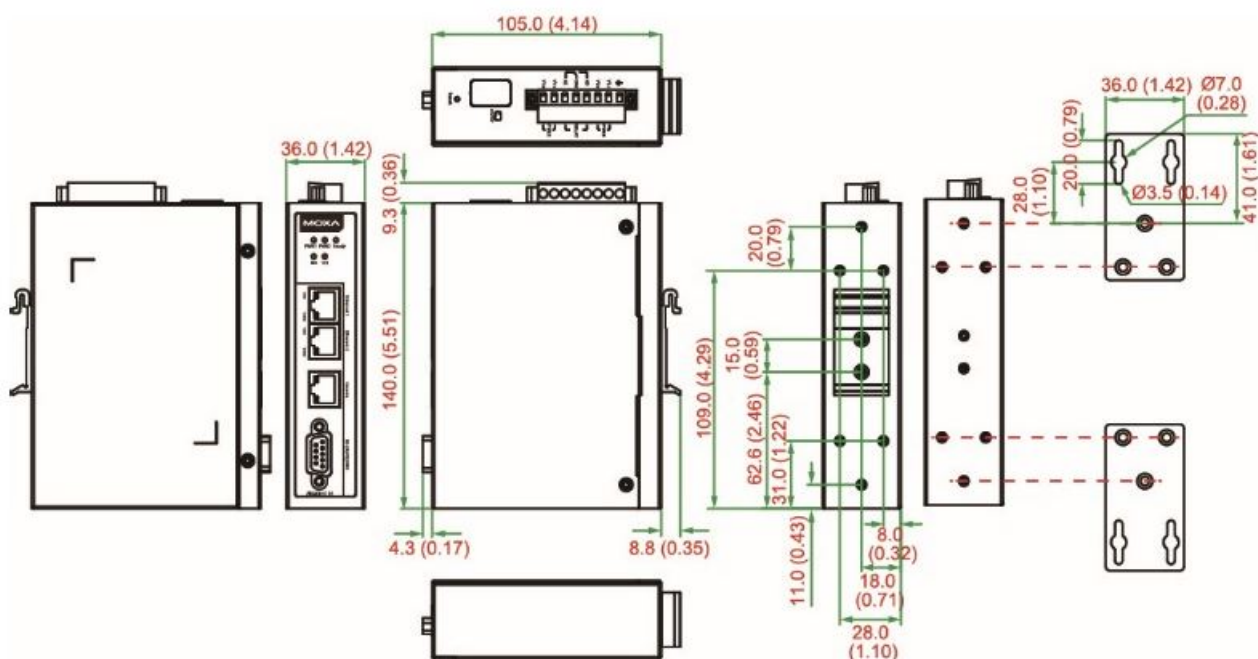
Reset Button

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 5114's top cover, you will find DIP switches to adjust each serial port's pull-high resistor, pull-low resistor, and terminator.
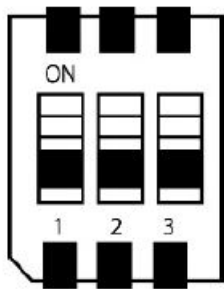

SW	1	2	3
	Pull-high resistor	Pull-low resistor	Terminator
ON	1 kΩ	1 kΩ	120 Ω
OFF	150 kΩ*	150 kΩ*	–*

Hardware Installation Procedure

1. Connect the power adapter. Connect the 12-48 VDC power line or DIN-rail power supply to the MGate 5114's terminal block.
2. Use a serial cable to connect the MGate to the Modbus RTU/ASCII or IEC 60870-5-101 device.
3. Use an Ethernet cable to connect the MGate to the Modbus TCP or IEC 60870-5-104 device.
4. The MGate 5114 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-mount kit (optional) first and then screw the device onto the wall.

The following figure illustrates the two mounting options:

Step 2: Screw onto wall

Step 1: Install wall-mount kit

Step 1: Push down the spring

Step 2: Click onto DIN rail
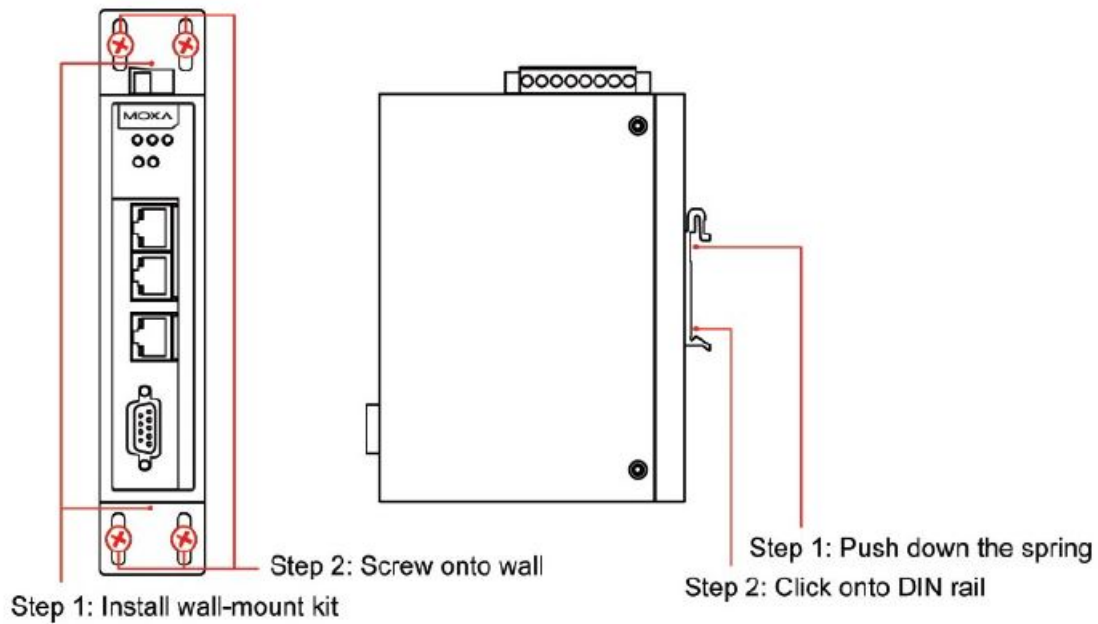
Software Installation Information

You can download the User's Manual and Device Search Utility (DSU) from Moxa's website: www.moxa.com.
Please refer to the User's Manual for additional details on using the DSU.
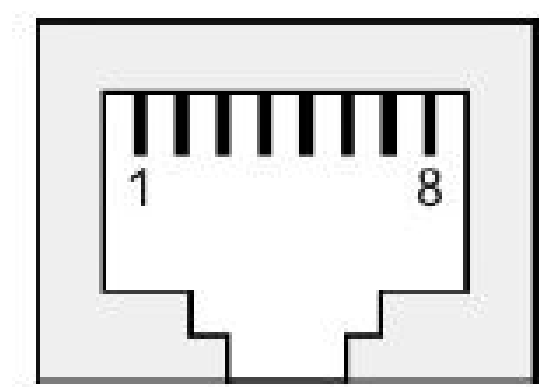The MGate 5114 also supports login via a web browser.

- Default IP address: 192.168.127.254
- Default account: admin
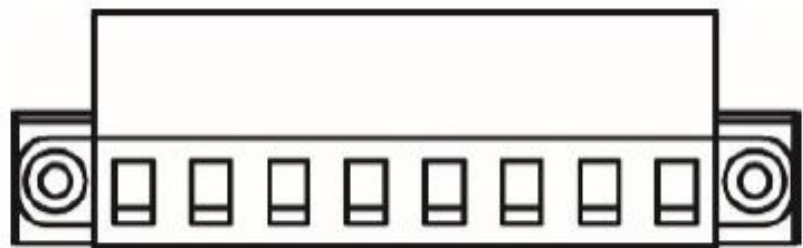- Default password: moxa

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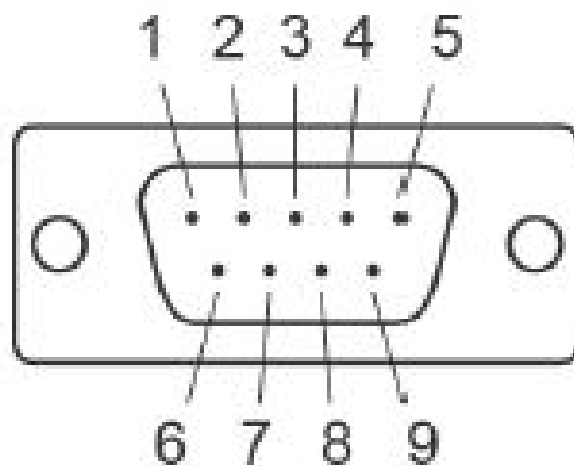
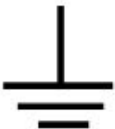| Pin	RS-232	RS-422/ RS-485 (4W)	RS-485 (2W)
1	DCD	TxD-(A)	–
2	RXD	TxD+(B)	–
3	TXD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5*	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	–	–	–

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
Input Current	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% (non-condensing)
Dimensions	36 x 105 x 140 mm (1.42 x 4.14 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:
6. 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.
7. Conductors suitable for use in an ambient temperature greater than 86°C must be used for the power supply terminal.
8. A 4mm2 conductor must be used when a connection to the external grounding screw is utilized.
9. 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

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

Documents / Resources

MGate 5114 Series Quick Installation Guide Version 1.2, January 2021 Technical Support Contact Information www.moxa.com/support **MOXA** © 2021 Moxa Inc. All rights reserved. P/N: 1802052-200012	**MOXA MGate 5114 Series Modbus Gateway** [pdf] Installation Guide MGate 5114 Series Modbus Gateway, MGate 5114 Series, Modbus Gateway

References

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