MOXA MGate 4101-MB-PBS Series Fieldbus Gateways Installation Guide

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MOXA MGate 4101-MB-PBS Series Fieldbus Gateways

Overview

The MGate™ 4101-MB-PBS and 4101I-MB-PBS are 1-port Modbus serial to PROFIBUS slave gateways that provide protocol conversion for users who need to connect Modbus devices to Siemens PLCs.

Package Checklist

Before installing the MGate 4101-MB-PBS or 4101I-MB-PBS, verify that the package contains the following items:

- 1 MGate 4101-MB-PBS or 4101I-MB-PBS Modbus to PROFIBUS slave gateway
- RJ45 to DB9 cable (for use with the console)
- Quick installation guide (printed)
- Warranty Card

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

Optional Accessories

- WK-36-02: Wall mounting kit
- Mini DB9F-to-TB Adaptor: DB9 female to terminal block adapter

NOTE

This product is intended to be supplied by a Listed Power Adapter or DC power source marked “L.P.S.” (or “Limited Power Source”), rated 12 to 48 VDC, 275 mA minimum, Tma = 75°C minimum. If need further assistance, please contact MOXA Inc. for further information.

Hardware Introduction

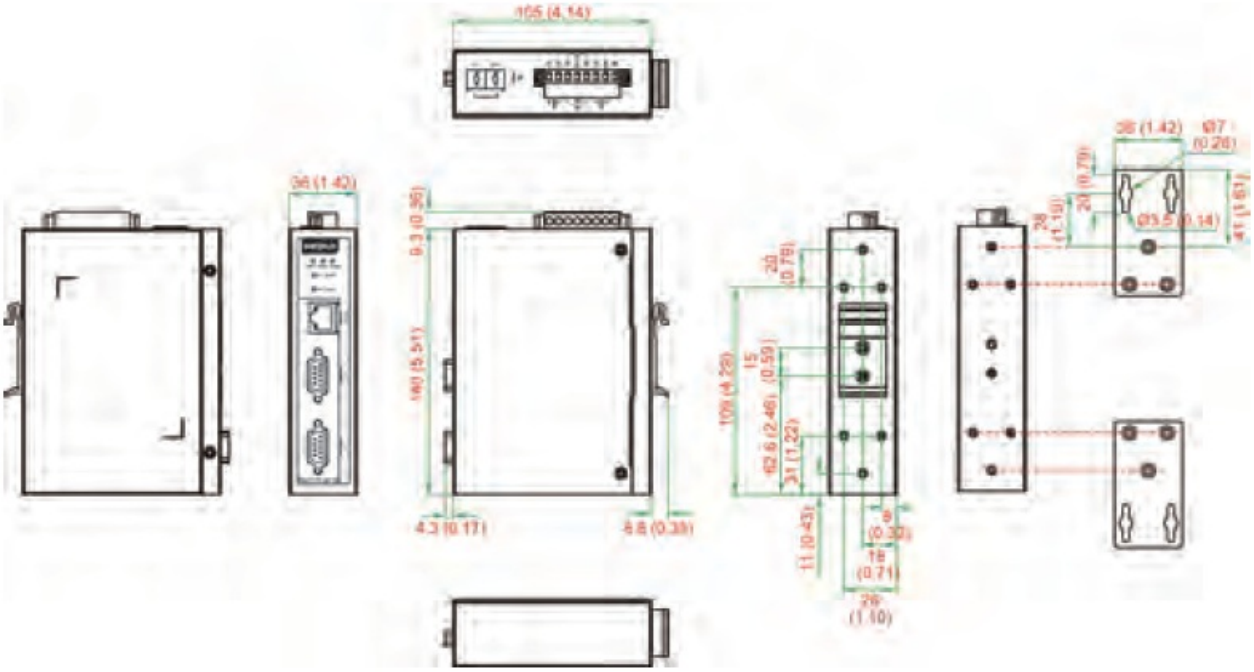
LED Indicators

LED	Color	Function
PWR1	Green	Power is on
	Off	Power is off
PWR2	Green	Power is on
	Off	Power is off
Ready	Green	Gateway is operational
	Red	Check Configuration failed or Set Parameter failed
	Off	Power is off or fault condition exists
P1 TX/RX (Modbus Serial)	Green	Serial device is transmitting data
	Orange	Serial device is receiving data
	Off	No data is flowing to or from the serial port
P2 Status (PROFIBUS)	Green	Steady: Data is exchanging
	Red	Steady: Baudrate automatically identified. Wrong Slave Address or CHK_PRM or CHK_CFG will keep in stea dy red.
	Off	PROFIBUS offline

The MGate 4101-MB-PBS and 4101I-MB-PBS both come with an RJ45 to DB9 cable for connecting to a serial console.

Dimensions

Unit: mm (inch)

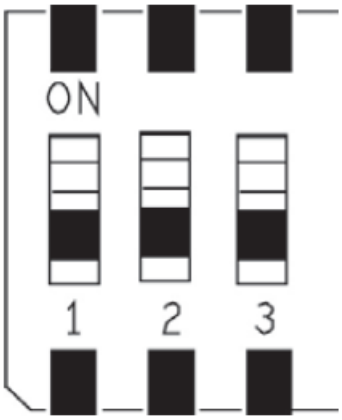


Reset Button

The reset button is used to load factory defaults. Use a pointed object such as a straightened paper clip to hold the reset button down for five seconds. Release the reset button when the Ready LED stops blinking.

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

Remove the MGate 4101-MB-PBS's top cover to adjust the DIP switches for 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 kilo-ohm	1 kilo-ohm	120 ohms
OFF	150 kilo-ohms*	150 kilo-ohms*	–*

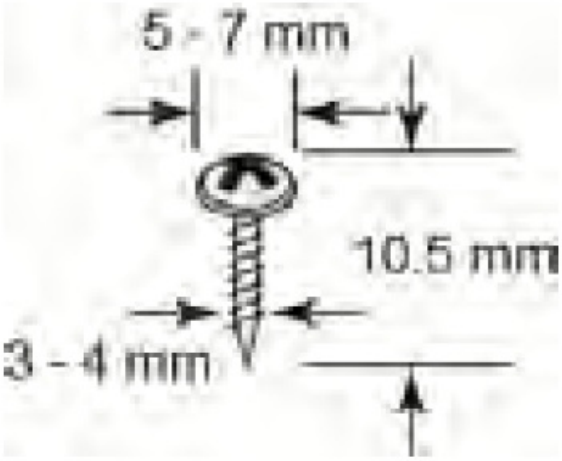
*Default

Hardware Installation Procedure

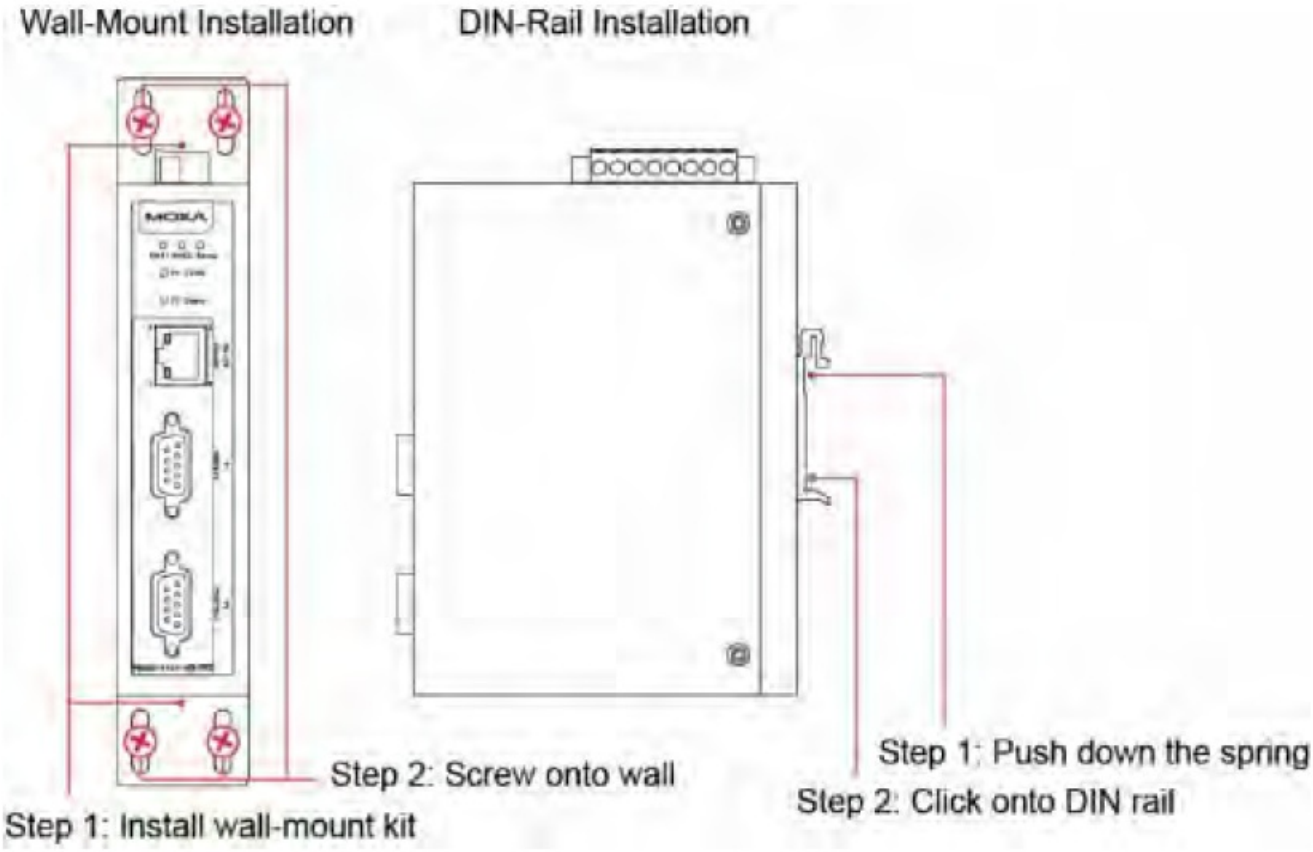
- **STEP 1**: Connect the power adapter. Make sure that the adapter is connected to an earthed socket. Connect the 12 to 48 VDC power line with the MGate 4101-MB-PBS/4101I-MB-PBS series' terminal block, or connect the DIN rail power supply with the MGate 4101 MB-PBS/4101I-MB-PBS device's terminal block.
- **STEP 2**: Use a PROFIBUS cable to connect the unit to a PROFIBUS PLC or other PROFIBUS master.
- **STEP 3**: Connect your device to the unit's serial port.
- **STEP 4**: Attach the device to a DIN rail or the wall. The MGate 4101-MB-PBS/4101I-MB-PBS series 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.

Wall or Cabinet Mounting

Mounting the MGate 4101-MB-PBS on to a wall requires two screws. 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 more than 10.5 mm.



The following figure illustrates the two mounting options:

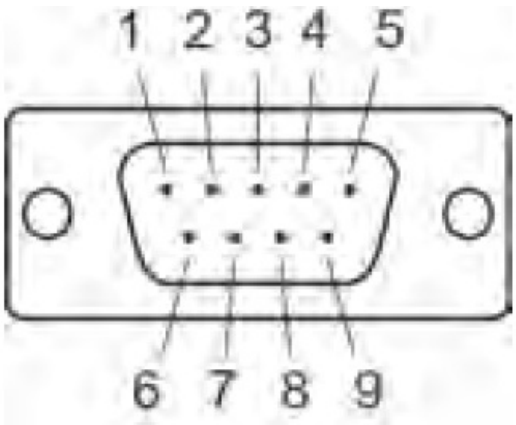


Software Installation Information

To install MGate Manager, please download it from Moxa's website at **http://www.moxa.com**. Then, click the Installation button and follow the onscreen instructions. For more detailed information about MGate Manager, please refer to the User's Manual.

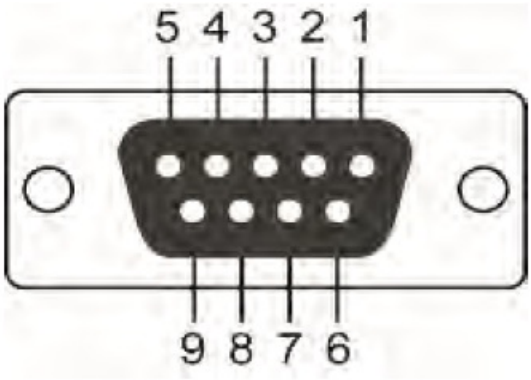
Pin Assignments

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	–	–	–

PROFIBUS Serial Port (Female DB9)



PIN	Signal Name
1	–
2	–
3	PROFIBUS D+
4	RTS
5	Signal common
6	5V
7	–
8	PROFIBUS D-
9	–

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	275 mA (max.)
Operating Temperature	Standard Model: 0 to 60°C (32 to 140°F) Wide Temp. Model: -40 to 75°C (-40 to 167°F)
Operating 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
MTBF	MGate 4101-MB-PBS Series: 1,537,948 hrs MGate 4101I-MB-PBS Series: 1,315,666 hrs

1. ATEX Certificate No.: DEMKO 14 ATEX 1311X
2. Protection Method: Ex ec nC IIC T4 Gc
3. IECEx Certificate No: IECEx UL 14.0065X

4. Standards: EN IEC 60079-0 EN IEC 60079-7 EN IEC 60079-15 IEC 60079-0 IEC 60079-7 IEC 60079-15
5. Conditions of safe usage:
    - The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC/EN 60664-1.
    - The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with IEC/EN IEC 60079-0 and accessible only by the use of a tool.
    - Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.
6. Ambient Temperature: -40°C ≤ Tamb ≤ 75°C for MGate 4101X-MB-PBS-T models; 0°C ≤ Tamb ≤ 60°C for MGate 4101X-MB-PBS models.

Terminal Block Torque Value and Wire Gauge:

- Terminal block (the plug matched socket): rated at 300 V, 15 A, 105°C, 12 to 24 AWG (4.0 to 0.205 mm2) wire size, torque value 4.5 lb-in (0.509 N-m). The input terminal cable size: 14 AWG (2.1 mm²). Stripping length 7 to 8 mm, cable rated ≥ 90°C.
- **ATTENTION**
    - These devices are open-type devices that need be installed in an enclosure only accessible with the use of a tool, suitable for the environment.
- **NOTE**
    - This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or nonhazardous locations only.”
- **WARNING**
    - EXPLOSION HAZARD—Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
- **WARNING**
    - EXPLOSION HAZARD—Substitution of any components may impair suitability for Class I, Division 2.

MORE INFORMATION

Moxa Inc.

- No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan

Technical Support Contact Information

- www.moxa.com/support

FAQs

- **Q: How do I reset the device to factory defaults?**
    - A: Press and hold the reset button for five seconds using a pointed object like a paper clip. Release it when the Ready LED stops blinking.
- **Q: What do the LED indicators signify?**
    - A: The LED indicators show various statuses such as power on/off, operational status, data transmission,

and more. Refer to the manual for detailed explanations of each LED status.

Documents / Resources

	MOXA MGate 4101-MB-PBS Series Fieldbus Gateways [pdf] Installation Guide 4101-MB-PBS, 4101I-MB-PBS, MGate 4101-MB-PBS Series Fieldbus Gateways, MGate 4101-MB-PBS Series, Fieldbus Gateways

References

- Moxa - Your Trusted Partner in Automation
- User Manual