

MGate 4101-MB-PBS Series

1-port Modbus RTU/ASCII-to-PROFIBUS slave gateways



Features and Benefits

- Protocol conversion between Modbus and PROFIBUS
- Supports PROFIBUS DP V0 slave
- Supports Modbus RTU/ASCII master and slave
- Windows utilities with innovative QuickLink function for automatic configuration within minutes
- Status monitoring and fault protection for easy maintenance
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- Supports redundant dual DC power inputs and 1 relay output
- -40 to 75°C wide operating temperature models available
- Serial port with 2 kV isolation protection (for “-I” models)

Certifications



Introduction

The MGate 4101-MB-PBS gateway provides a communication portal between PROFIBUS PLCs (e.g., Siemens S7-400 and S7-300 PLCs) and Modbus devices. With the QuickLink feature, I/O mapping can be accomplished within a matter of minutes. All models are protected with a rugged metallic casing, are DIN-rail mountable, and offer optional built-in optical isolation.

QuickLink and Windows Utilities for Easy Setup and Traffic Monitoring

The QuickLink windows utility uses a serial console port to connect to the MGate 4101-MB-PBS and makes configuration and operation as easy as possible. QuickLink can finish the configuration in just a few minutes by passively detecting Modbus requests with the AutoLearning function, and performs error-free I/O mapping with the AutoMapping feature. QuickLink drastically reduces Modbus-to-PROFIBUS integration time when compared to conventional I/O mapping, which can easily require days to complete. Additionally, embedded monitoring tools can maintain logs of Modbus communication packets and assist in troubleshooting.

Redundant Power Inputs

The MGate 4101-MB-PBS has dual power inputs for greater reliability. The power inputs allow simultaneous connection to 2 live DC power sources, so that continuous operation is provided even if one power source fails. The higher level of reliability makes these advanced Modbus-to-PROFIBUS gateways ideal for demanding industrial applications.

Warning by Relay Output

A relay output is provided for the power input status. The relay output gives maintenance engineers an additional tool for troubleshooting and maintenance.

Specifications

Serial Interface

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|------------------|--|
| Console Port | RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1) |
| No. of Ports | 1 |
| Connector | DB9 male |
| Serial Standards | RS-232/422/485 |
| Baudrate | 50 bps to 921.6 kbps |
| Data Bits | 7, 8 |

| | |
|-----------------------------------|---|
| Parity | None, Even, Odd, Space, Mark |
| Stop Bits | 1, 2 |
| Flow Control | DTR/DSR RTS/CTS |
| RS-485 Data Direction Control | Automatic Data Direction Control (ADDC) |
| Pull High/Low Resistor for RS-485 | 1 kilo-ohm, 150 kilo-ohms |
| Terminator for RS-485 | 120 ohms |
| Isolation | 2 kV (I models) |

Serial Signals

| | |
|-----------|--|
| RS-232 | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND |
| RS-422 | Tx+, Tx-, Rx+, Rx-, GND |
| RS-485-2w | Data+, Data-, GND |
| RS-485-4w | Tx+, Tx-, Rx+, Rx-, GND |

Serial Software Features

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|-----------------------|---|
| Configuration Options | MGate Manager |
| Industrial Protocols | Modbus RTU/ASCII Master Modbus RTU/ASCII Slave PROFIBUS DP-V0 Slave |

Modbus RTU/ASCII

| | |
|----------------------|------------------------------|
| Mode | Master, Slave |
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Max. No. of Commands | 100 |
| Input Data Size | 7744 bytes |
| Output Data Size | 7744 bytes |

PROFIBUS Interface

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|----------------------|--|
| Industrial Protocols | PROFIBUS DP |
| No. of Ports | 1 |
| Connector | DB9 female |
| Baudrate | 9600 bps to 12 Mbps |
| Isolation | 2 kV (built-in) |
| Signals | PROFIBUS D+, PROFIBUS D-, RTS, Signal Common, 5V |

PROFIBUS

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|----------------------------------|--|
| Rotary Switch | PROFIBUS addresses 0-99 (addresses 100-125 supported through software configuration) |
| Mode | DP-V0 Slave |
| Max. No. of Master Connections | 1 |
| Max. No. of PROFIBUS I/O Modules | 24 per page |

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|--|--|
| Max. No. of PROFIBUS Pages | 32 |
| Input Data Size | 7744 bytes |
| Output Data Size | 7744 bytes |
| Power Parameters | |
| Input Voltage | 12 to 48 VDC |
| Input Current | 275 mA @ 12 VDC |
| Power Connector | Screw-fastened Euroblock terminal |
| Relays | |
| Contact Current Rating | Resistive load: 1 A @ 24 VDC |
| Physical Characteristics | |
| Housing | Metal |
| Dimensions | 36 x 105 x 140 mm (1.42 x 4.14 x 5.51 in) |
| Weight | 500 g (1.10 lb) |
| IP Rating | IP30 Note: It is recommended to attach the M3x3mm Nylok screws at the rear side |
| Environmental Limits | |
| Operating Temperature | MGate 4101I-MB-PBS: 0 to 60°C (32 to 140°F) MGate 4101I-MB-PBS-T: -40 to 75°C (-40 to 167°F) MGate 4101-MB-PBS: 0 to 60°C (32 to 140°F) MGate 4101-MB-PBS-T: -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% (non-condensing) |
| Standards and Certifications | |
| EMC | EN 55032/35 |
| EMI | CISPR 32, FCC Part 15B Class A |
| EMS | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m IEC 61000-4-8 PFMF |
| Safety | IEC 60950-1 UL 60950-1 IEC 62368-1 UL 62368-1 |
| Hazardous Locations | ATEX Class I Division 2 IECEX |
| Freefall | IEC 60068-2-32 |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-6 IEC 60068-2-64 |

MTBF

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|-----------|---|
| Time | MGate 4101-MB-PBS models: 1,537,948 hrs MGate 4101I-MB-PBS models: 1,315,666 hrs |
| Standards | Telcordia SR332 |

Warranty

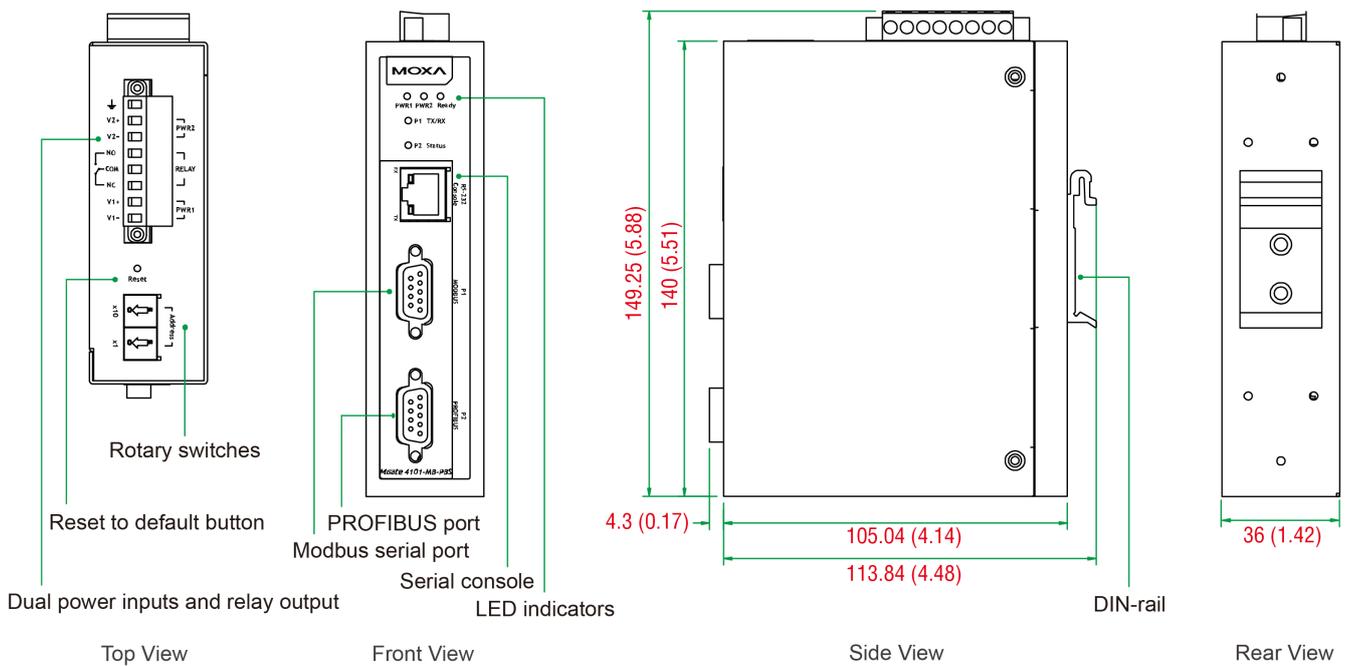
| | |
|-----------------|--|
| Warranty Period | 5 years |
| Details | See www.moxa.com/warranty |

Package Contents

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|------------------|---|
| Device | 1 x MGate 4101-MB-PBS Series gateway |
| Cable | 1 x RJ45-to-DB9 console cable |
| Installation Kit | 1 x DIN-rail kit |
| Documentation | 1 x quick installation guide 1 x warranty card |

Dimensions

Unit: mm (inch)



Ordering Information

| Model Name | Serial Isolation | Operating Temp. |
|----------------------|------------------|-----------------|
| MGate 4101-MB-PBS | - | 0 to 60°C |
| MGate 4101I-MB-PBS | 2 kV | 0 to 60°C |
| MGate 4101-MB-PBS-T | - | -40 to 75°C |
| MGate 4101I-MB-PBS-T | 2 kV | -40 to 75°C |

Accessories (sold separately)

Cables

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|-----------------|--|
| CBL-F9M9-150 | DB9 female to DB9 male serial cable, 1.5 m |
| CBL-F9M9-20 | DB9 female to DB9 male serial cable, 20 cm |
| CBL-RJ45F9-150 | 8-pin RJ45 to DB9 female serial cable, 1.5m |
| CBL-RJ45SF9-150 | 8-pin RJ45 to DB9 female serial cable with shielding, 1.5m |

Connectors

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| Mini DB9F-to-TB | DB9 female to terminal block connector |
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DIN-Rail Mounting Kits

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| DK-25-01 | DIN-rail mounting kit, 2 screws |
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Wall-Mounting Kits

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| WK-36-02 | DIN-rail/wall-mounting kit, 2 plates, 6 screws |
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Power Cords

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| CBL-PJTB-10 | Non-locking barrel plug to bare-wire cable |
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