MGate 5101-PBM-MN Series

1-port PROFIBUS-to-Modbus TCP gateways

Features and Benefits

- Protocol conversion between PROFIBUS and Modbus TCP
- Supports PROFIBUS DP V1 master
- Supports Modbus TCP Client (Master) / Server (Slave)
- Automatic scan of PROFIBUS devices and easy configuration
- Web-based GUI for I/O data visualization
- Embedded traffic monitoring/diagnostic information for easy troubleshooting and cloud data transmission for cost evaluation and analysis
- Status monitoring and fault protection for easy maintenance
- 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

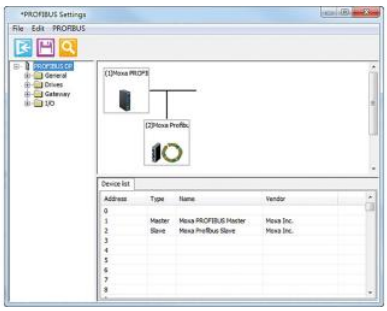
Certifications

Introduction

The MGate 5101-PBM-MN gateway provides a communication portal between PROFIBUS devices (e.g. PROFIBUS drives or instruments) and Modbus TCP hosts. All models are protected with a rugged metallic casing, DIN-rail mountable, and offer optional built-in optical isolation. The PROFIBUS and Ethernet status LED indicators are provided for easy maintenance. The rugged design is suitable for industrial applications such as oil/gas, power, process automation, and factory automation.

Windows Utility for Easy Configuration and Traffic Monitoring

The MGate Manager utility provides a user-friendly interface to make configuration and operation as easy as possible. Moxa's innovative AutoScan function can automatically detect all connected PROFIBUS slave devices and their available I/O modules to quickly complete gateway configuration, after which an easy-to-read data mapping table is created to assist in the configuration of Modbus TCP master (e.g., SCADA, PLC) settings. In addition, users can configure import/export maintenance functions, and use embedded monitoring tools to maintain logs of Modbus communication packets, which can be used for troubleshooting.



A Variety of Maintenance Functions

The MGate 5101-PBM-MN provides a Web console and Telnet console for remote maintenance, with both consoles supporting encryption commutation functions such as HTTPS and SSH for preventing unauthorized access. The log functions are provided in firmware such as connection event of Modbus or PROFIBUS for maintenance. Users can monitor each I/O data and review the log through the web console remotely. A relay output alarm is provided for the power input status. It gives maintenance engineers an additional tool for troubleshooting and maintenance.

Redundant Power Inputs

The MGate 5101-PBM-MN has dual power inputs for greater reliability. The power inputs allow simultaneous connection to 2 live DC power sources to provide uninterrupted operation even if one power source fails. The higher level of reliability makes these advanced PROFIBUS-master-to-Modbus-TCP gateways ideal for demanding industrial applications.

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Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	1 (auto MDI/MDI-X connection)
Magnetic Isolation Protection	1.5 kV (built-in)

Ethernet Software Features

Industrial Protocols	Modbus TCP Client (Master) Modbus TCP Server (Slave)
Configuration Options	Web Console (HTTP/HTTPS) Device Search Utility (DSU) MGate Manager Telnet Console
Management	ARP DHCP Client DNS HTTP HTTPS SMTP SNMP Trap SNMPv1/v2c/v3 TCP/IP Telnet SSH UDP NTP Client
MIB	RFC1213, RFC1317
Time Management	NTP Client

Security Functions

Authentication	Local database
Encryption	HTTPS AES-128 AES-256 SHA-256
Security Protocols	SNMPv3 SNMPv2c Trap HTTPS (TLS 1.3)

Serial Interface

Console Port	RS-232 (TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND), DB9 male (115200, n, 8, 1)

Serial Software Features

Configuration Options	Serial Console
Industrial Protocols	PROFIBUS DP-V1 Master

Modbus TCP

Mode	Client (Master), Server (Slave)
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Client Connections	16
Max. No. of Server Connections	32
Max. No. of Commands	100

Input Data Size	1536 bytes
Output Data Size	1536 bytes

PROFIBUS Interface

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

PROFIBUS

Mode	DP-V1 Master
Input Data Size	1536 bytes
Output Data Size	1536 bytes

Power Parameters

Input Voltage	12 to 48 VDC
Input Current	365 mA @ 12 VDC
Power Connector	Screw-fastened Euroblock terminal

Relays

Contact Current Rating	Resistive load: 2 A @ 30 VDC

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	36 x 105 x 140 mm (1.42 x 4.14 x 5.51 in)
Weight	500 g (1.10 lb)

Environmental Limits

Operating Temperature	MGate 5101-PBM-MN: 0 to 60°C (32 to 140°F) MGate 5101-PBM-MN-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: 4 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 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 EN 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

Time	1,082,881 hrs
Standards	Telcordia SR332

Warranty

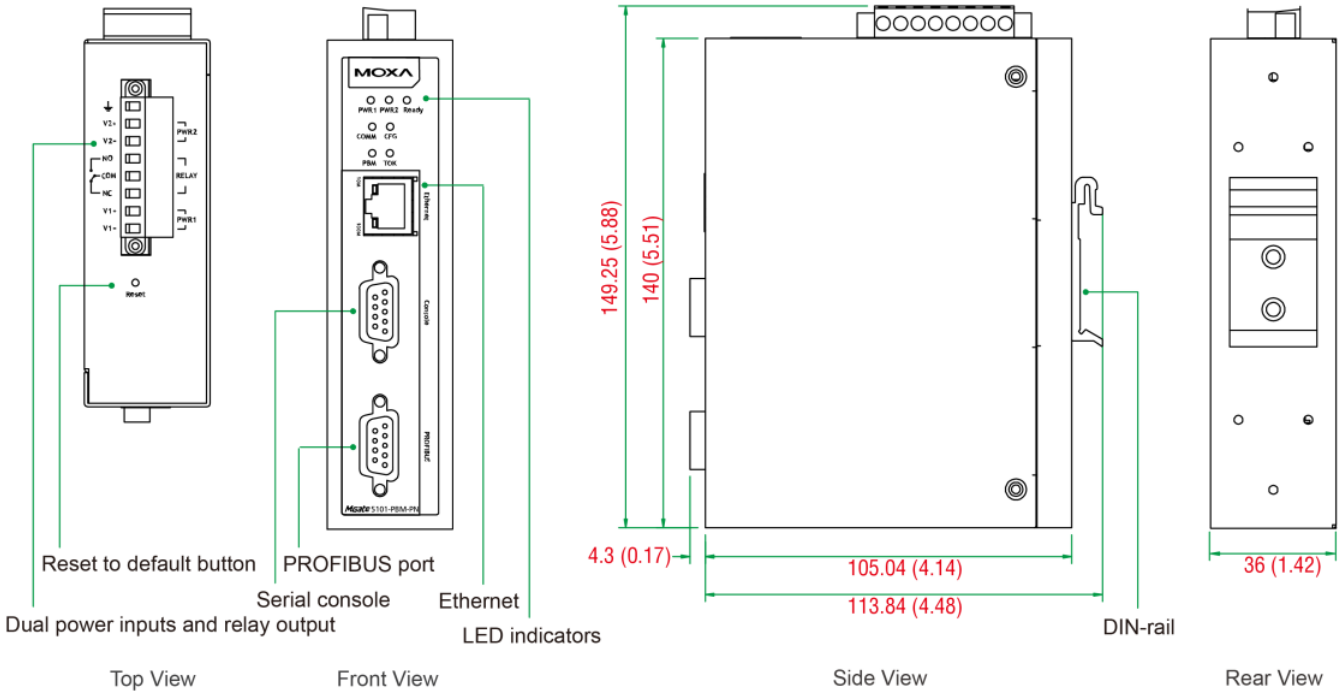
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5101-PBM-MN Series gateway
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	Operating Temp.
MGate 5101-PBM-MN	0 to 60°C
MGate 5101-PBM-MN-T	-40 to 75°C

Accessories (sold separately)

Cables

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

Mini DB9F-to-TB	DB9 female to terminal block connector

DIN-Rail Mounting Kits

DK-25-01	DIN-rail mounting kit, 2 screws

Wall-Mounting Kits

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

Power Cords

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

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Vertrieb durch AMC

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