

MGate 5102-PBM-PN Series

1-port PROFIBUS-to-PROFINET gateways



Features and Benefits

- Protocol conversion between PROFIBUS and PROFINET
- Supports PROFINET IO device
- Supports PROFIBUS DP V1 master
- Automatic scan of PROFIBUS devices and easy configuration
- Web-based GUI for I/O data visualization
- Built-in Ethernet cascading for easy wiring
- microSD card for configuration backup/duplication and event logs
- Embedded I/O monitoring and diagnostic information for easy troubleshooting
- 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
- Security features based on IEC 62443

Certifications

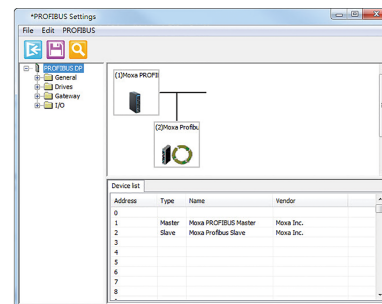


Introduction

The MGate 5102-PBM-PN gateway provides a communication portal between PROFIBUS devices (e.g., PROFIBUS PLC or drive) and the PROFINET host. 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 and gas, power, process automation, and factory automation.

Easy Setup Tools

Both the Windows MGate Manager utility and web console support the AutoScan function, which makes configuration and operation easy. AutoScan automatically detects all connected PROFIBUS slave devices and their available I/O modules, allowing you to configure your gateways very quickly, and a data mapping table is provided. Furthermore, one click is all that's needed to export all PROFIBUS I/O modules to a GSDML file to assist in the configuration of the PROFINET controller (e.g., a Siemens PLC).



A Variety of Maintenance Functions

The MGate 5102-PBM-PN provides a web console and Telnet console for remote maintenance, with both consoles supporting encryption commutation functions such as HTTPS and SSH to prevent unauthorized access. The status and changes in I/O data of all PROFIBUS slaves can be monitored remotely via the web console, and users can also review the log from the web console to see which system events have occurred. A relay output alarm is provided for the power input and Ethernet cable status. These functions make it easy for maintenance engineers to troubleshoot and maintain devices.

Redundant Power Inputs

The MGate 5102-PBM-PN 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-PROFINET gateways ideal for demanding industrial applications.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2 (auto MDI/MDI-X connection)
Magnetic Isolation Protection	1.5 kV (built-in)

Ethernet Software Features

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
Industrial Protocols	PROFINET IO Device

Serial Interface

Console Port	RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1)
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Serial Software Features

Configuration Options	Serial Console
Industrial Protocols	PROFIBUS DP-V1 Master

PROFIBUS Interface

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

Mode	DP-V1 Master
Input Data Size	1024 bytes
Output Data Size	1024 bytes

PROFINET

Mode	IO Device
Max. No. of IO Controller Connections	1 (for read/write)
Input Data Size	1024 bytes
Output Data Size	1024 bytes

Memory

microSD Slot	Up to 32 GB (SD 2.0 compatible)
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Power Parameters

Input Voltage	12 to 48 VDC
Input Current	430 mA @ 12 VDC
Power Connector	Screw-fastened Euroblock terminal

Relays

Contact Current Rating	Resistive load: 2 A @ 30 VDC
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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 5102-PBM-PN: 0 to 60°C (32 to 140°F) MGate 5102-PBM-PN-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

Safety	EN 60950-1, UL 508
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class B
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 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
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	980,417 hrs
Standards	Telcordia SR332

Warranty

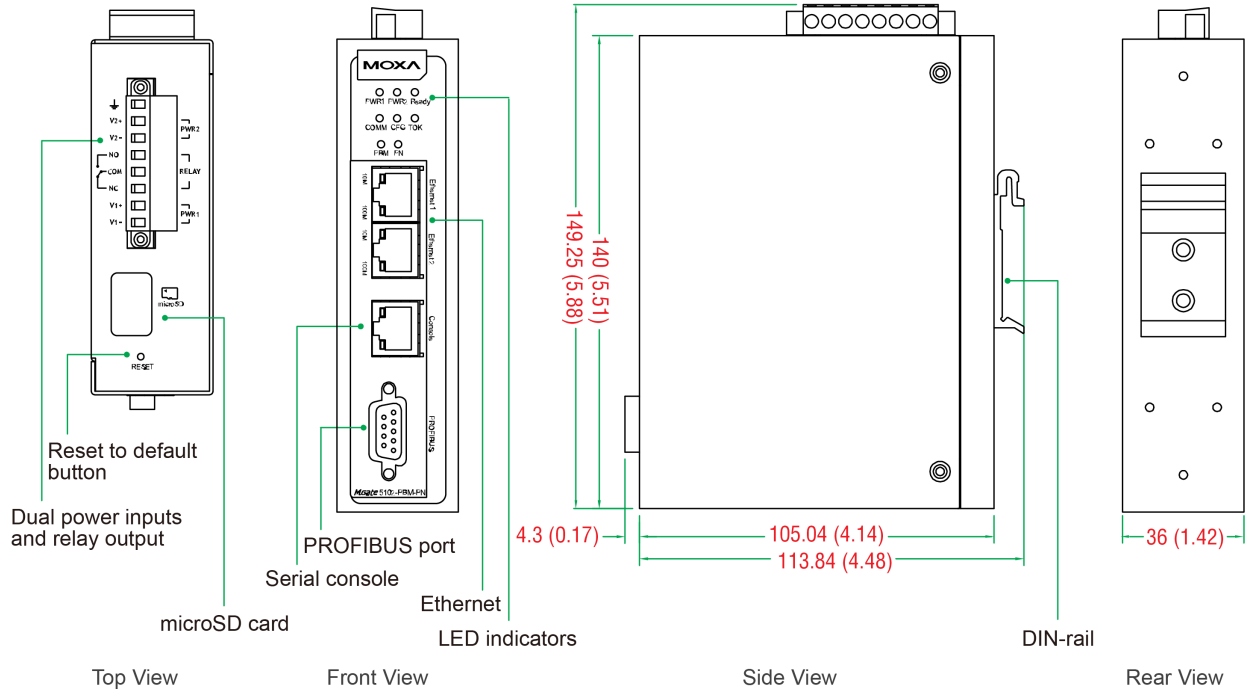
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5102-PBM-PN 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 5102-PBM-PN	0 to 60°C
MGate 5102-PBM-PN-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	RJ45 to DB9 female serial cable, 1.5 m
CBL-RJ45SF9-150	RJ45 to DB9 female serial shielded cable, 1.5 m

Connectors

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

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

WK-36-02	Wall-mounting kit, 2 plates, 6 screws, 36 x 67 x 2 mm
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Power Cords

CBL-PJTB-10

Non-locking barrel plug to bare-wire cable

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MGate 5103 Series

1-port Modbus RTU/ASCII/TCP/EtherNet/IP-to-PROFINET gateways



Features and Benefits

- Converts Modbus, or EtherNet/IP to PROFINET
- Supports PROFINET IO device
- Supports Modbus RTU/ASCII/TCP master/client and slave/server
- Supports EtherNet/IP Adapter
- Effortless configuration via web-based wizard
- Built-in Ethernet cascading for easy wiring
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- microSD card for configuration backup/duplication and event logs
- Status monitoring and fault protection for easy maintenance
- Serial port with 2 kV isolation protection
- -40 to 75°C wide operating temperature models available
- Supports redundant dual DC power inputs and 1 relay output
- Security features based on IEC 62443

Certifications



Introduction

The MGate 5103 is an industrial Ethernet gateway for converting Modbus RTU/ASCII/TCP or EtherNet/IP to PROFINET-based network communications. To integrate existing Modbus devices onto a PROFINET network, use the MGate 5103 as a Modbus master/slave or EtherNet/IP adapter to collect data and exchange data with PROFINET devices. The latest exchange data will be stored in the gateway. The gateway will convert stored Modbus or EtherNet/IP data into PROFINET packets so the PROFINET IO Controller can control or monitor field devices.

Easy Configuration via Web Console

The MGate 5103 Series comes with an illustrated Quick Setup guide designed to make configuration easy. With Quick Setup, you can easily access protocol conversion modes and finish the configuration in a few steps. The MGate 5103 Series also supports a GSDML export function. GSDML files can be imported into PROFINET PLCs to save time on PLC configuration.

Modbus RTU/ASCII/TCP Protocol Traffic Monitor

MGate 5103 gateways support Modbus RTU/ASCII/TCP Protocol Traffic Monitor for easy troubleshooting, especially during the installation stage. Communication issues could be caused by incorrect software parameters, such as slave IDs and register addresses, that were entered incorrectly, or an incorrect command configuration. With Modbus RTU/ASCII/TCP Protocol Traffic Monitor, you can check the captured data and easily identify the root cause.

Maintenance Functions

MGate 5103 gateways support a system log function that records events in the MGate; users can easily review log data remotely through the web console. The gateways also support status monitoring and fault protection functions. The status monitoring function notifies a PLC/DCS/SCADA system when a Modbus device gets disconnected or does not respond, in which case the process PLC/DCS gets the status of each end device and then issues alarms to notify operators.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2 Auto MDI/MDI-X connection
Magnetic Isolation Protection	1.5 kV (built-in)

Ethernet Software Features

Industrial Protocols	PROFINET IO Device, Modbus TCP Client (Master), Modbus TCP Server (Slave), EtherNet/IP Adapter
Configuration Options	Web Console (HTTP/HTTPS), Device Search Utility (DSU), 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

Serial Interface

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	RTS Toggle (RS-232 only), RTS/CTS
RS-485 Data Direction Control	ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms
Terminator for RS-485	120 ohms
Isolation	2 kV (built-in)

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

Configuration Options	Serial Console
Industrial Protocols	Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave

Modbus RTU/ASCII

Mode	Master, Slave
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128
Input Data Size	512 bytes
Output Data Size	512 bytes

Modbus TCP

Mode	Client (Master), Server (Slave) 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	128
Input Data Size	512 bytes
Output Data Size	512 bytes

PROFINET

Mode	IO Device IO Device
Max. No. of IO Controller Connections	1 (for read/write)
Input Data Size	512 bytes
Output Data Size	512 bytes

EtherNet/IP

Mode	Adapter
CIP Objects Supported	Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
Max. No. of Scanner Connections	1 (for read-only), 1 (for read/write)
Input Data Size	496 bytes
Output Data Size	496 bytes

Memory

microSD Slot	Up to 32 GB (SD 2.0 compatible)
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Power Parameters

Input Voltage	12 to 48 VDC
Input Current	455 mA @ 12 VDC
Power Connector	Screw-fastened Euroblock terminal

Relays

Contact Current Rating	Resistive load: 2 A @ 30 VDC
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Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	36 x 105 x 140 mm (1.42 x 4.14 x 5.51 in)
Weight	507 g (1.12 lb)

Environmental Limits

Operating Temperature	MGate 5103: 0 to 60°C (32 to 140°F) MGate 5103-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

Safety	EN 60950-1, UL 508
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class B
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 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
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	859,422 hrs
Standards	Telcordia SR332

Warranty

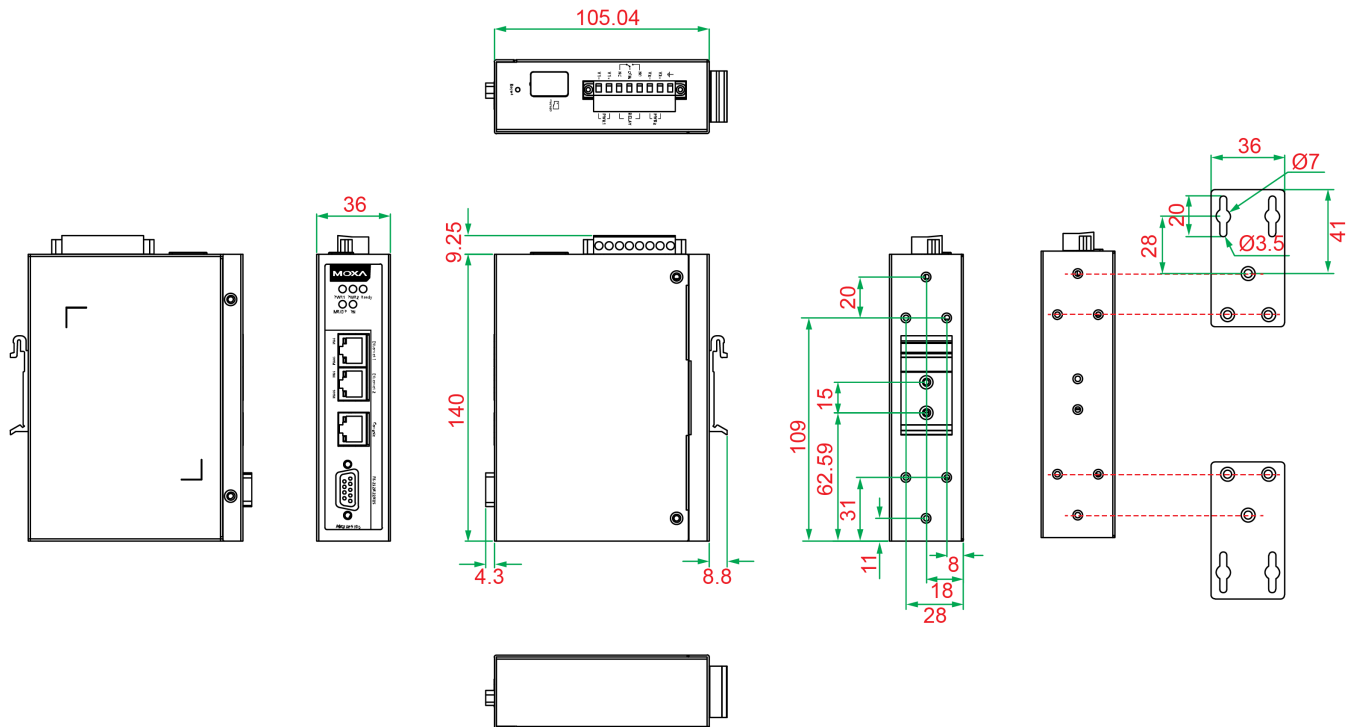
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5103 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



Ordering Information

Model Name	Operating Temp.
MGate 5103	0 to 60°C
MGate 5103-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	RJ45 to DB9 female serial cable, 1.5 m
CBL-RJ45SF9-150	RJ45 to DB9 female serial shielded cable, 1.5 m

Connectors

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

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

WK-36-02	Wall-mounting kit, 2 plates, 6 screws, 36 x 67 x 2 mm
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Power Cords

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable
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MGate 5111 Series

1-port Modbus/PROFINET/EtherNet/IP to PROFIBUS slave gateways



Features and Benefits

- Converts Modbus, PROFINET, or EtherNet/IP to PROFIBUS
- Supports PROFIBUS DP V0 slave
- Supports Modbus RTU/ASCII/TCP master/client and slave/server
- Supports EtherNet/IP Adapter
- Supports PROFINET IO device
- Effortless configuration via web-based wizard
- Built-in Ethernet cascading for easy wiring
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- Status monitoring and fault protection for easy maintenance
- microSD card for configuration backup/duplication and event logs
- Supports redundant dual DC power inputs and 1 relay output
- Serial port with 2 kV isolation protection
- -40 to 75°C wide operating temperature models available
- Security features based on IEC 62443

Certifications



Introduction

MGate 5111 industrial Ethernet gateways convert data from Modbus RTU/ASCII/TCP, EtherNet/IP, or PROFINET to PROFIBUS protocols. All models are protected by a rugged metal housing, are DIN-rail mountable, and offer built-in serial isolation.

Modbus is one of the most widely used industrial communication protocols, and EtherNet/IP, PROFINET, and PROFIBUS are commonly used in factory automation and process automation. The MGate 5111 supports both Modbus RTU/ASCII/TCP master and slave modes, so that you can easily connect your Modbus device to PROFIBUS PLCs or DCSs, such as Siemens PLCs.

For system integration, the MGate 5111 can connect to EtherNet/IP PLC/SCADA systems, such as Rockwell Automation PLCs, to PROFIBUS PLC/DCS systems, or between a new Siemens PLC system that supports PROFINET to an existing PROFIBUS system. The MGate 5111 gateways are designed for easy configuration and quick maintenance. A handy web console can be used to implement remote maintenance tasks, and the configuration wizard UI lets you quickly set up your gateway. A comprehensive collection of troubleshooting tools reduce configuration time and system downtime. The rugged design is suitable for industrial applications, such as factory automation, power, oil and gas, water and wastewater, and other process automation industries.

Easy Configuration

The MGate 5111 Series has a user-friendly interface that lets you quickly set up protocol conversion routines for most applications, doing away with what were often time-consuming tasks in which users had to implement detailed parameter configurations one by one. With Quick Setup, you can easily access protocol conversion modes and finish the configuration in a few steps.

The MGate 5111 supports a web console and Telnet console for remote maintenance. Encryption communication functions, including HTTPS and SSH, are supported to provide better network security. In addition, system monitoring functions are provided to record network connections and system log events.

A Variety of Maintenance Functions

The MGate 5111 supports Protocol Diagnose and Traffic Monitor for easy troubleshooting, especially during the installation stage. Communication issues caused by incorrect software parameters, such as slave IDs and register addresses, or incorrect command configurations, can be fished out with Protocol Diagnose and Traffic Monitoring, which let you capture and check data to easily identify root causes.

MGate 5111 gateways also support status monitoring and fault protection functions. The status monitoring function notifies a PLC/DCS/SCADA system when a Modbus device gets disconnected or does not respond, in which case the process PLC/DCS gets the status of each end device and then issues alarms to notify operators. When a PROFIBUS cable gets disconnected, the fault protection function executes actions on end devices identified by a predefined value set by the user.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2 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), PROFINET IO Device, EtherNet/IP Adapter
Configuration Options	Web Console (HTTP/HTTPS), Device Search Utility (DSU), 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

Serial Interface

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	RTS Toggle (RS-232 only), RTS/CTS
RS-485 Data Direction Control	ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms
Terminator for RS-485	120 ohms
Isolation	2 kV (built-in)

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

Configuration Options	Serial Console
Industrial Protocols	PROFIBUS DP-V0 Slave, Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave

Modbus RTU/ASCII

Mode	Master, Slave
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128
Input Data Size	2048 bytes
Output Data Size	2048 bytes

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	128
Input Data Size	2048 bytes
Output Data Size	2048 bytes

PROFIBUS Interface

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

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
Input Data Size	244 bytes
Output Data Size	244 bytes

PROFINET

Mode	IO Device
Max. No. of IO Controller Connections	1 (for read/write)
Input Data Size	512 bytes
Output Data Size	512 bytes

EtherNet/IP

Mode	Adapter
CIP Objects Supported	Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
Max. No. of Scanner Connections	1 (for read-only), 1 (for read/write)
Input Data Size	496 bytes
Output Data Size	496 bytes

Memory

microSD Slot	Up to 32 GB (SD 2.0 compatible)
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Power Parameters

Input Voltage	12 to 48 VDC
Input Current	416 mA @ 12 VDC
Power Connector	Spring-type Euroblock terminal

Relays

Contact Current Rating	Resistive load: 2 A @ 30 VDC
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Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	45.8 x 105 x 134 mm (1.8 x 4.13 x 5.28 in)
Weight	589 g (1.30 lb)

Environmental Limits

Operating Temperature	MGate 5111: 0 to 60°C (32 to 140°F) MGate 5111-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

Safety	EN 60950-1, UL 61010-2-201
EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 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
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	718,131 hrs
Standards	Telcordia SR332

Warranty

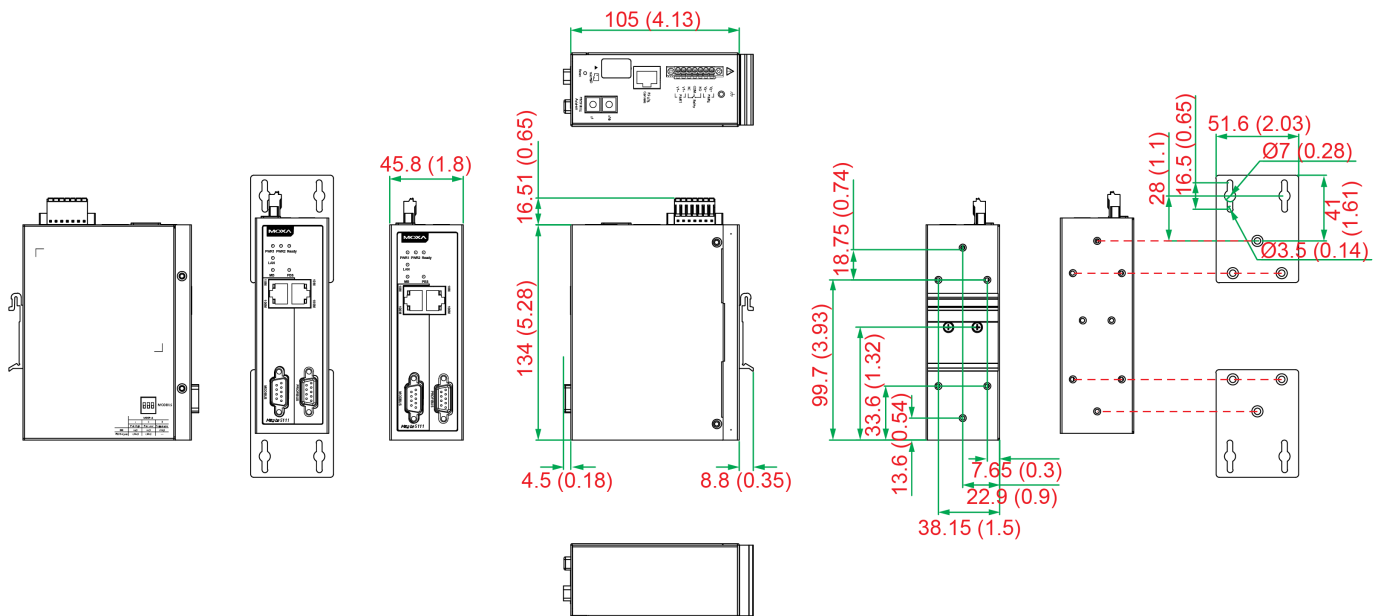
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5111 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 5111	0 to 60°C
MGate 5111-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	RJ45 to DB9 female serial cable, 1.5 m
CBL-RJ45SF9-150	RJ45 to DB9 female serial shielded cable, 1.5 m

Connectors

Mini DB9F-to-TB	DB9 female to terminal block connector
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Wall-Mounting Kits

WK-51-01	Wall-mounting kit, 2 plates, 6 screws, 51.6 x 67 x 2 mm
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Power Cords

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable
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MGate 5118 Series

1-port CAN-J1939 to Modbus/PROFINET/EtherNet/IP gateways



Features and Benefits

- Converts J1939 to Modbus, PROFINET, or EtherNet/IP
- Supports Modbus RTU/ASCII/TCP master/client and slave/server
- Supports EtherNet/IP Adapter
- Supports PROFINET IO device
- Supports J1939 protocol
- Effortless configuration via web-based wizard
- Built-in Ethernet cascading for easy wiring
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- microSD card for configuration backup/duplication and event logs
- Status monitoring and fault protection for easy maintenance
- CAN bus and serial port with 2 kV isolation protection
- -40 to 75°C wide operating temperature models available
- Security features based on IEC 62443

Certifications



Introduction

The MGate 5118 industrial protocol gateways support the SAE J1939 protocol, which is based on CAN bus (Controller Area Network). SAE J1939 is used to implement communication and diagnostics among vehicle components, diesel engine generators, and compression engines, and is suitable for the heavy-duty truck industry and backup power systems. It is now common to use an engine control unit (ECU) to control these kinds of devices, and more and more applications are using PLCs for process automation to monitor the status of J1939 devices connected behind the ECU.

The MGate 5118 gateways support the conversion of J1939 data to Modbus RTU/ASCII/TCP, EtherNet/IP, or PROFINET protocols to support most PLC applications. Devices that support the J1939 protocol can be monitored and controlled by PLCs and SCADA systems that use the Modbus RTU/ASCII/TCP, EtherNet/IP, and PROFINET protocols. With the MGate 5118, you can use the same gateway in a variety of PLC environments.

Key-in-Free J1939 Command

The J1939 protocol is designed to retrieve a wide range of data from CAN-J1939 devices. To eliminate the need to key in all J1939 commands into the gateway by hand, MGate 5118 gateways can auto detect the output commands used by the CAN device.

With a single click in the web console, all of the output commands from your CAN device will be detected by the gateway automatically. The commands will be displayed in the web console's command list, and then can be further modified by the user if needed. The MGate 5118 gateways make it much easier for users to connect PLCs with CAN devices.

A Variety of Maintenance Functions

The MGate 5118 gateways support a web console for easy configuration and maintenance, and the built-in traffic monitor function monitors J1939 protocol traffic, allowing users to monitor the status of connected CAN devices, including error count, packet count, and bus-offline. The traffic monitor function can also be used to troubleshoot CAN devices. The diagnostics tool helps users to check CAN device settings and indicates CAN device availability by reading the J1939 network address. In addition, the MGate 5118 gateways have a built-in Live List function for when two or more J1939 devices are connected to the same CAN bus. This function shows the PGN and address of packets transmitted from each device, giving users the ability to gage the loading of the CAN bus.

To detect loose cables, the MGate 5118 gateways support status monitoring and fault protection functions. The status monitoring function notifies a PLC when the cable between the gateway and CAN device is loose. In addition, the fault protection function executes actions predefined by the user when the cable between the gateway and PLC is loose.

Specifications

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2 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), PROFINET IO Device, EtherNet/IP Scanner, EtherNet/IP Adapter
Configuration Options	Web Console (HTTP/HTTPS), Device Search Utility (DSU), 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

Serial Interface

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	RTS Toggle (RS-232 only), RTS/CTS
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms
Terminator for RS-485	120 ohms
Isolation	2 kV

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

Configuration Options	Serial Console
Industrial Protocols	J1939, Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave

Modbus RTU/ASCII

Mode	Master, Slave
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128

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	128

PROFINET

Mode	IO Device
Max. No. of IO Controller Connections	1 (for read/write)
Input Data Size	512 bytes
Output Data Size	512 bytes

EtherNet/IP

Mode	Scanner, Adapter
CIP Objects Supported	Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
Max. No. of Scanner Connections	1 (for read-only), 1 (for read/write)
Max. No. of Adapter Connections	4
Input Data Size	496 bytes
Output Data Size	496 bytes

CAN Interface

Industrial Protocols	J1939
No. of Ports	1
Connector	Spring-type Euroblock terminal
Baudrate	250 kbps, 500 kbps
Terminator	120 ohms
Isolation	2 kV (built-in)

J1939

Max. No. of Commands	256
Input Data Size	2048 bytes
Output Data Size	2048 bytes

Memory

microSD Slot	Up to 32 GB (SD 2.0 compatible)
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Power Parameters

Input Voltage	12 to 48 VDC
Input Current	416 mA @ 12 VDC
Power Connector	Spring-type Euroblock terminal

Relays

Contact Current Rating	Resistive load: 2 A @ 30 VDC
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Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	45.8 x 105 x 134 mm (1.8 x 4.13 x 5.28 in)
Weight	589 g (1.30 lb)

Environmental Limits

Operating Temperature	MGate 5118: 0 to 60°C (32 to 140°F) MGate 5118-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

Safety	EN 60950-1, UL 61010-2-201
EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 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
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	727,873 hrs
Standards	Telcordia SR332

Warranty

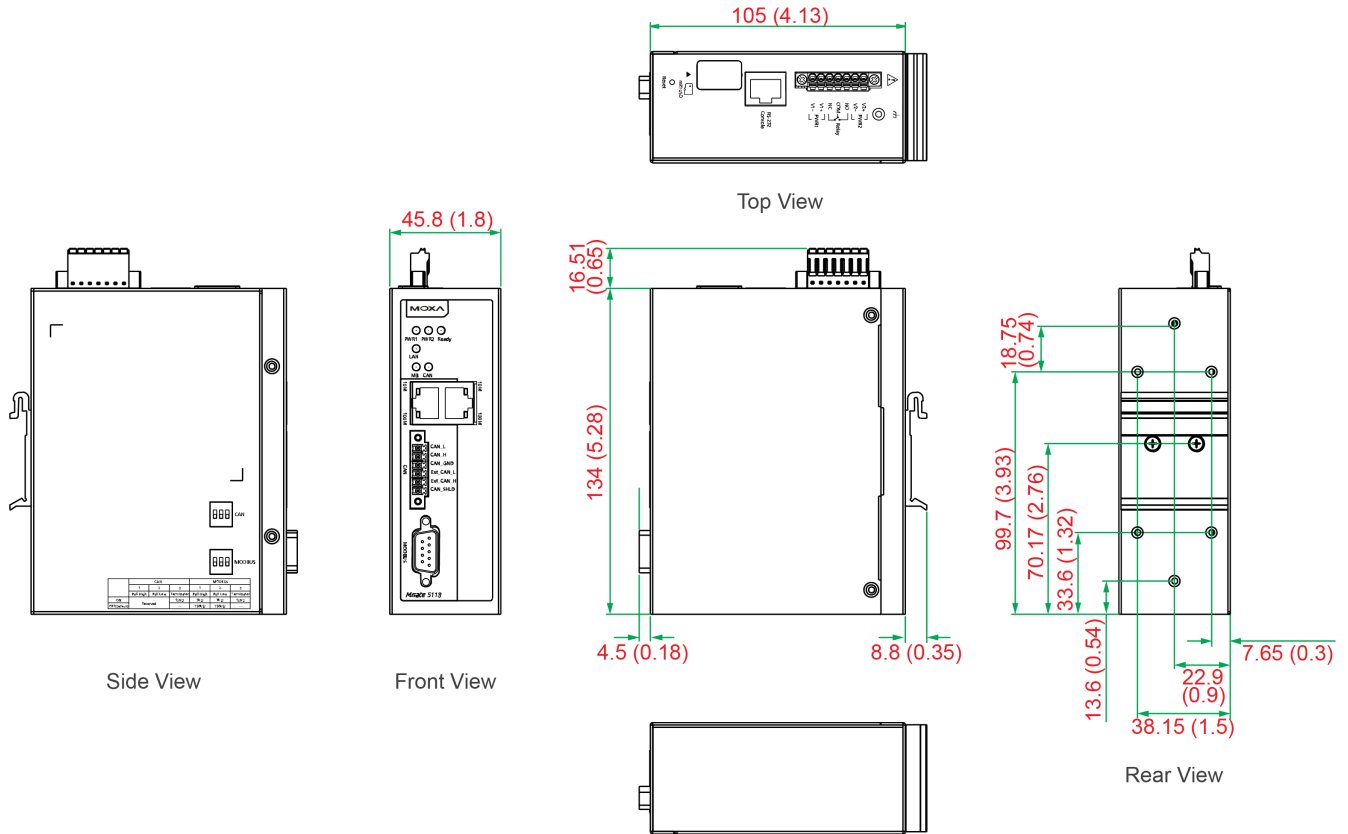
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5118 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 5118	0 to 60°C
MGate 5118-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	RJ45 to DB9 female serial cable, 1.5 m
CBL-RJ45SF9-150	RJ45 to DB9 female serial shielded cable, 1.5 m

Connectors

Mini DB9F-to-TB	DB9 female to terminal block connector
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Wall-Mounting Kits

WK-51-01

Wall-mounting kit, 2 plates, 6 screws, 51.6 x 67 x 2 mm

Power Cords

CBL-PJTB-10

Non-locking barrel plug to bare-wire cable

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