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)

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

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
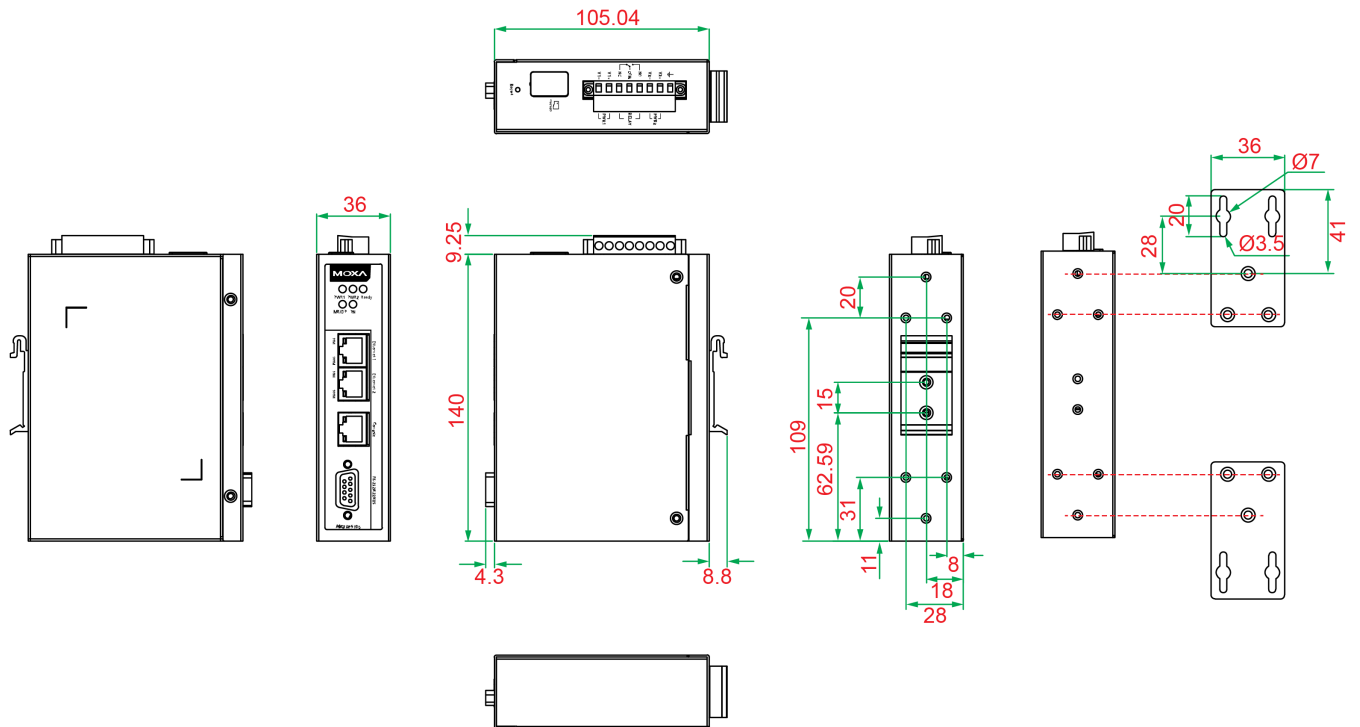
Ordering Information

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

DIN-Rail Mounting Kits

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

Wall-Mounting Kits

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

Power Cords

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

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MGate 5105-MB-EIP Series

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

Features and Benefits

- Connects fieldbus data to cloud through generic MQTT

- Supports MQTT connection with built-in device SDKs to Azure/Alibaba Cloud

- Protocol conversion between Modbus and EtherNet/IP

- Supports EtherNet/IP Scanner/Adapter

- Supports Modbus RTU/ASCII/TCP master/client and slave/server

- Supports MQTT connection with TLS and certificate in JSON and Raw data format

- Embedded traffic monitoring/diagnostic information for easy troubleshooting and cloud data transmission for cost evaluation and analysis

- microSD card for configuration backup/duplication and event logs, and data buffering when cloud connection is lost

- -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 5105-MB-EIP is an industrial Ethernet gateway for Modbus RTU/ASCII/TCP and EtherNet/IP network communications with IIoT applications, based on MQTT or third-party cloud services, such as Azure and Alibaba Cloud. To integrate existing Modbus devices onto an EtherNet/IP network, use the MGate 5105-MB-EIP as a Modbus master or slave to collect data and exchange data with EtherNet/IP devices. The latest exchange data will be stored in the gateway as well. The gateway converts stored Modbus data into EtherNet/IP packets so the EtherNet/IP scanner can control or monitor Modbus devices. The MQTT standard with supported cloud solutions on the MGate 5105-MB-EIP leverages advanced security, configuration, and diagnostics to troubleshoot technologies to deliver scalable and extensible solutions that are suitable for remote monitoring applications such as energy management and assets management.

Configuration Backup via microSD Card

The MGate 5105-MB-EIP is equipped with a microSD card slot. A microSD card can be used to back up both the system configuration and system log, and can be used to conveniently copy the same configuration to several MGate 5105-MP-EIP units. The configuration file stored in the microSD card will be copied to the MGate itself when the system is rebooted.

Effortless Configuration and Troubleshooting via Web Console

The MGate 5105-MB-EIP also provides a web console to make configuration easy without having to install an extra utility. Simply log in as an administrator to access all settings, or as a general user with read-only permission. Besides configuring basic protocol settings, you can use the web console to monitor I/O data values and transfers. In particular, I/O Data Mapping shows data addresses for both protocols in the gateway's memory, and I/O Data View allows you to track data values for online nodes. Moreover, diagnostics and communication analysis for each protocol can also provide helpful information for troubleshooting.

Redundant Power Inputs

The MGate 5105-MB-EIP 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-EtherNet/IP 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

Industrial Protocols	Modbus TCP Client (Master), Modbus TCP Server (Slave), EtherNet/IP Scanner, EtherNet/IP Adapter, MQTT
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

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	100
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	100
Input Data Size	2048 bytes
Output Data Size	2048 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	16 (for read-only), 1 (for read/write)
Max. No. of Adapter Connections	100
Input Data Size	496 bytes
Output Data Size	496 bytes

MQTT

Mode	Publisher/Subscriber of MQTT, Azure IoT Hub Device, Alibaba IoT Platform Device
Version Supported	v3.1.1
QoS Level	QoS 0,1,2
Secure Transmission	TLS (1.0, 1.1, 1.2) encryption with user's root CA, Client certificate, Private key
Max. No. of Data Tag	300 data tags
Max. No. of Message	20 messages
MQTT General Features	Keep Alive, Retain Message, Last Will Message, Clean Session

Memory

microSD Slot	Up to 32 GB (SD 2.0 compatible; Data buffering up to 2 GB)

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

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 5105-MB-EIP: 0 to 60°C (32 to 140°F) MGate 5105-MB-EIP-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 5105-MB-EIP 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)

Reset to default button

microSD card

Dual power inputs and relay output

Serial console

MODBUS port

Ethernet

LED indicators

149.25 (5.88)

140 (5.51)

4.3 (0.17)

105.04 (4.14)

113.84 (4.48)

DIN-rail

36 (1.42)

Top View   Front View   Side View   Rear View

Ordering Information

Model Name	Operating Temp.
MGate 5105-MB-EIP	0 to 60°C
MGate 5105-MB-EIP-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

DIN-Rail Mounting Kits

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

Wall-Mounting Kits

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

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)

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

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)
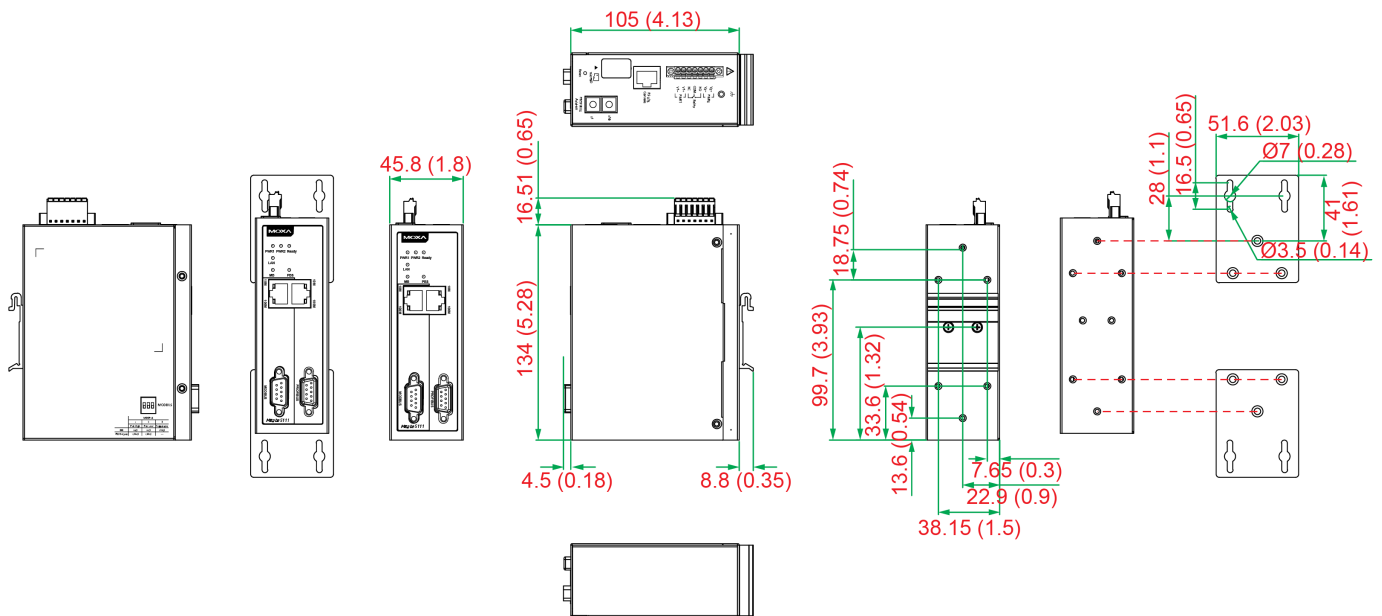
Ordering Information

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

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

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

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)

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

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)

Top View

Side View   Front View

Rear View
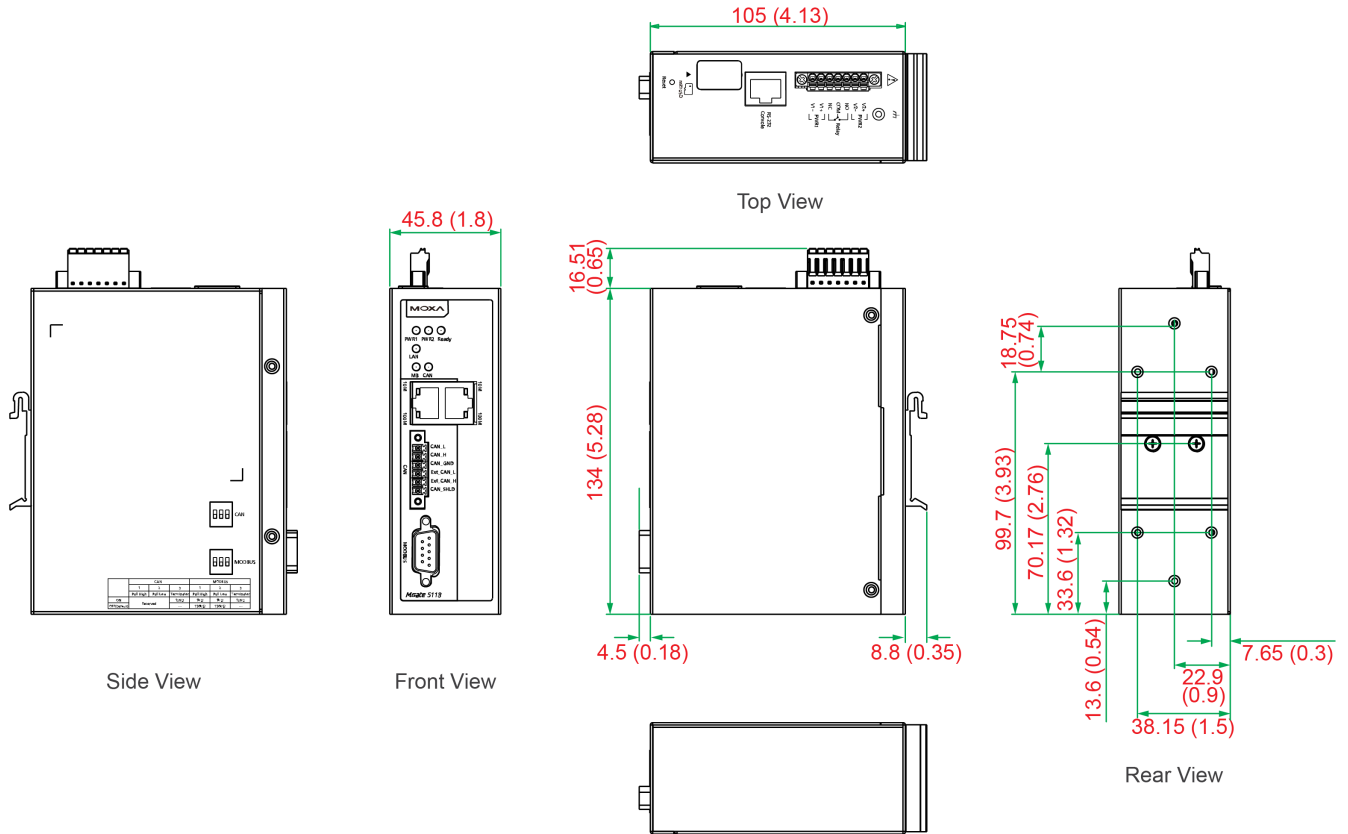
Ordering Information

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

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 |

MGate EIP3170/EIP3270 Series

1 and 2-port EtherNet/IP-to-DF1 gateways

Features and Benefits

- PCCC objects for Rockwell Automation networks supported

- Use ProCOM to implement control via COM port mapping

- 8 simultaneous EtherNet/IP client/server pairs with up to 16 queued requests

- Serial redirector keeps the original serial master and slave connection while connecting devices to the Ethernet

- EtherNet/IP and DF1 traffic monitor for easy troubleshooting

- Redundant dual DC power inputs

- Built-in Ethernet cascading for easy wiring

- -40 to 75°C wide operating temperature models available

Certifications

Introduction

MGate™ EIP3000 gateways provide Ethernet/IP-to-DF1 protocol conversion for users who need to connect Allen Bradley PLCs to an EtherNet/IP network. With a number of innovative functions, the MGate™ Series overcomes the difficulties of connecting between legacy serial devices and SCADA software. Both 1 and 2-port gateways are available for use with different-sized control networks.

### Protocol Conversion between DF1 and EtherNet/IP

By supporting PCCC objects on CIP, the MGate™ EIP3000 can communicate seamlessly with SCADA software such as RSLinx. For users who develop control software based on EtherNet/IP, the MGate EIP3000 offers the standard interface for connection.

Support for Multiple EtherNet/IP Connections

MGate™ EIP3000 gateways support up to 16 EtherNet/IP clients and servers simultaneously. Each client can send up to 16 requests at a time, and the multiple connection capability can help establish redundancy for more complex control systems.

Windows Utility for Easy Configuration and Traffic Monitoring

Moxa provides a user-friendly Windows utility with multi-language support. The utility supports a traffic monitoring function for EtherNet/IP and DF1 protocols, and not only logs events initiated by the gateway, but also records all commands and responses that pass through the gateway. The utility helps users determine the root cause of failures and performance bottlenecks.
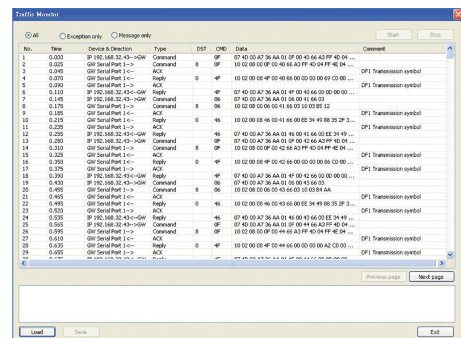
Serial Redirector Function Maintains Original Master/Slave Connections

The serial redirector function allows the commands of a serial master (command initiator) to be redirected to the serial slave (command executor) on another port. In addition, a serial master can operate simultaneously with EtherNet/IP masters without changing the DF1 architecture or software. With the serial redirector function, MGate™ EIP3000 gateways can establish redundant control of legacy slave devices that were originally designed to be controlled by a single serial master.

ProCOM Implements Control via COM Port Mapping

Each MGate™ EIP3000 gateway supports virtual serial ports for the remote PC. You can connect to the MGate™ EIP3000 through the COM port by using Moxa's Real COM driver, with the actual physical connection over the Ethernet. The gateway supports up to four virtual COM port connections and offers greater flexibility when designing redundant control systems.

Pull High/Low Resistors and Terminator Selection

When using termination resistors to prevent serial signal reflection, it is important to set the pull high/low resistors correctly so that the electrical signal is not corrupted. Since no set of resistor values is universally compatible with all environments, the EIP3000 has DIP switches on the bottom panel for setting the termination and pull high/low resistor values.

Built-In Isolation

Complex device networks that incorporate high amperage devices could be subject to electrical signal distortion from electrical discharges, magnetic noise, or common mode transients. MGate™ Series products solve this problem by using built-in optical isolation.

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	Ethernet/IP (PCCC)
Configuration Options	MGate Manager, Telnet Console
Management	ARP, DHCP Client, SNMPv1, TCP/IP, Telnet, UDP
MIB	RFC1213, RFC1317

Serial Interface

No. of Ports	MGate EIP3170 Series: 1 MGate EIP3270 Series: 2
Connector	MGate EIP3170 Series: DB9 male for RS-232, Terminal block for RS-422/485 MGate EIP3270 Series: 2 x DB9 male
Serial Standards	RS-232, RS-422
Baudrate	1200 bps to 921.6 kbps
Data Bits	8
Parity	None, Even, Odd
Stop Bits	1, 2
Flow Control	RTS/CTS, DTR/DSR (RS-232 only)
Isolation	MGate EIP3170I: 2 kV (I models) MGate EIP3170I-T: 2 kV (I models) MGate EIP3270I: 2 kV (I models)

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND

Serial Software Features

Industrial Protocols	DF1

DF1 (Transparent)

Mode	Full duplex
Max. No. of Client Connections	8

Power Parameters

Input Voltage	12 to 48 VDC
Input Current	MGate EIP3170/EIP3270/EIP3170-IEX/EIP3270-IEX Series: 435 mA @ 12 VDC MGate EIP3170I/EIP3170I-IEX Series: 555 mA @ 12 VDC MGate EIP3270I/EIP3270I-IEX: 510 mA @ 12 VDC

Relays

Contact Current Rating	Resistive load: 1 A @ 30 VDC

Physical Characteristics

Housing	Plastic top cover, metal bottom plate
IP Rating	IP30
Dimensions (with ears)	29 x 89.2 x 124.5 mm (1.14 x 3.51 x 4.90 in)
Dimensions (without ears)	29 x 89.2 x 118.5 mm (1.14 x 3.51 x 4.67 in)
Weight	MGate EIP3170 Series: 360 g (0.79 lb) MGate EIP3270 Series: 380 g (0.84 lb)

Environmental Limits

Operating Temperature	Standard Models: 0 to 60°C (32 to 140°F) Wide Temp. Models: -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

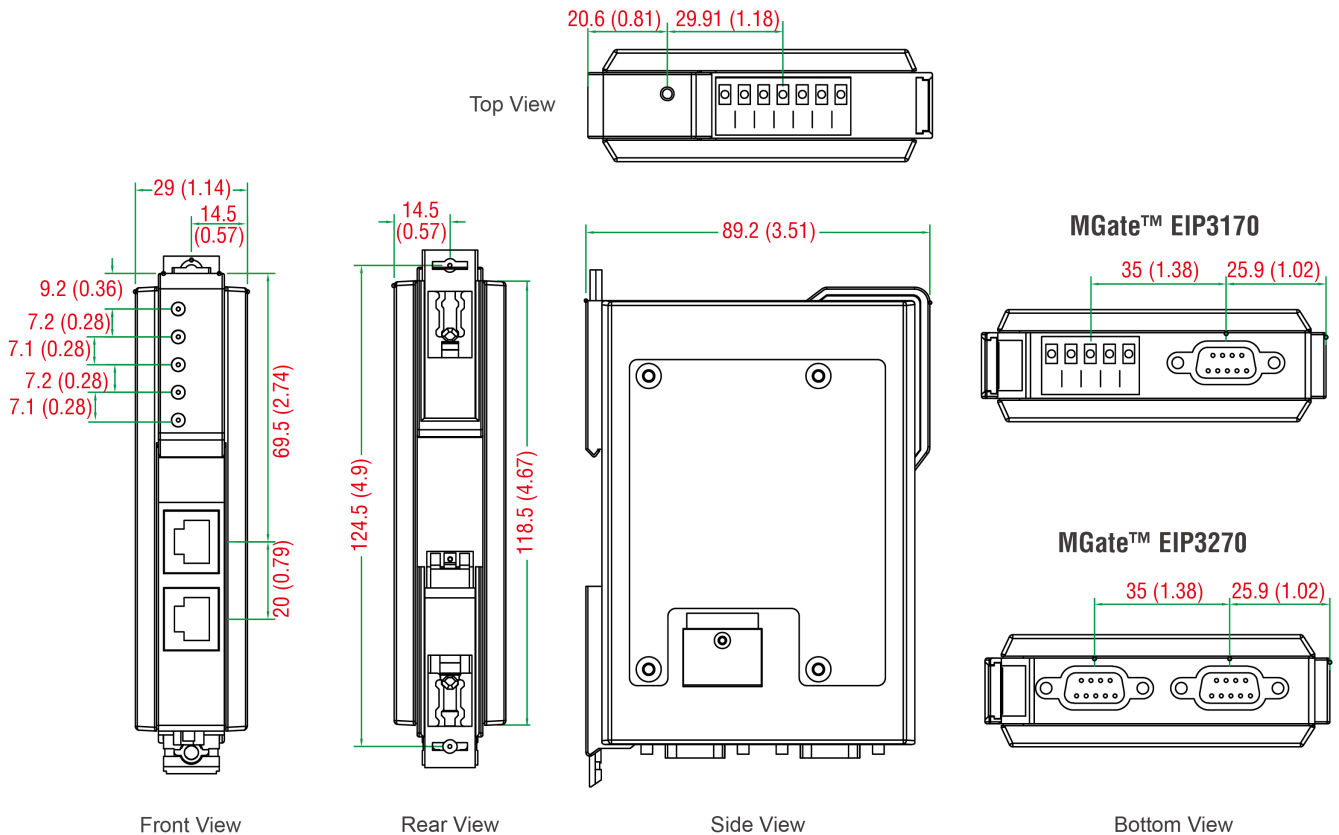|	
Safety	EN 60950-1, UL 508
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11 DIPs
Hazardous Locations	ATEX, Class I Division 2, IECEx[1]
Maritime	MGate EIP3170: DNV-GL, MGate EIP3170-T: DNV-GL, MGate EIP3170I: DNV-GL, MGate EIP3170I-T: DNV-GL
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6, IEC 60068-2-64

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1. If you need an IECEx certificate for this product, please contact a Moxa sales representative.

MTBF

Time	MGate EIP3170: 1,344,456 hrs
	MGate EIP3170-T: 1,344,456 hrs
	MGate EIP3170-IEX: 1,344,456 hrs
	MGate EIP3170-T-IEX: 1,344,456 hrs
	MGate EIP3170I: 1,344,456 hrs
	MGate EIP3170I-T: 1,344,456 hrs
	MGate EIP3170I-IEX: 1,344,456 hrs
	MGate EIP3170I-T-IEX: 1,344,456 hrs
	MGate EIP3270: 1,204,573 hrs
	MGate EIP3270-T: 1,204,573 hrs
	MGate EIP3270-IEX: 1,204,573 hrs
	MGate EIP3270-T-IEX: 1,204,573 hrs
	MGate EIP3270I: 1,204,573 hrs
	MGate EIP3270I-IEX: 1,204,573 hrs
Standards	Telcordia SR332

Warranty

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

Package Contents

Device	1 x MGate EIP3170/EIP3270 Series gateway
Documentation	1 x quick installation guide
	1 x warranty card

Dimensions

Unit: mm (inch)

Top View

Front View   Rear View   Side View   Bottom View

MGate™ EIP3170

MGate™ EIP3270

MOXA
Reliable Networks ▲ Sincere Service

Ordering Information

Model Name	No. of Serial Ports	Serial Connector	Serial Isolation	Operating Temp.
MGate EIP3170	1	RS-232: DB9 male RS-422/485: Terminal block	–	0 to 60°C
MGate EIP3170I	1	RS-232: DB9 male RS-422/485: Terminal block	2 kV	0 to 60°C
MGate EIP3270	2	DB9 male	–	0 to 60°C
MGate EIP3270I	2	DB9 male	2 kV	0 to 60°C
MGate EIP3170-T	1	RS-232: DB9 male RS-422/485: Terminal block	–	-40 to 75°C
MGate EIP3170I-T	1	RS-232: DB9 male RS-422/485: Terminal block	2 kV	-40 to 75°C
MGate EIP3270-T	2	DB9 male	–	-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

Connectors

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

Power Cords

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