

# 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<br>Auto MDI/MDI-X connection |
| Magnetic Isolation Protection         | 1.5 kV (built-in)              |

### Ethernet Software Features

|                       |  |
|-----------------------|--|
| Industrial Protocols  | Modbus TCP Client (Master)<br>Modbus TCP Server (Slave)<br>PROFINET IO Device<br>EtherNet/IP Adapter                             |
| Configuration Options | Web Console (HTTP/HTTPS)<br>Device Search Utility (DSU)<br>Telnet Console  |
| Management            | ARP<br>DHCP Client<br>DNS<br>HTTP<br>HTTPS<br>SMTP<br>SNMP Trap<br>SNMPv1/v2c/v3<br>TCP/IP<br>Telnet<br>SSH<br>UDP<br>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<br>Even<br>Odd<br>Space<br>Mark                 |
| Stop Bits                         | 1, 2   |
| Flow Control                      | RTS Toggle (RS-232 only)<br>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 (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<br>Modbus RTU/ASCII Master<br>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   |
| <b>PROFINET</b>                        |   |
| Mode                                   | IO Device   |
| Max. No. of IO Controller Connections  | 1 (for read/write)  |
| Input Data Size                        | 512   |
| Output Data Size                       | 512   |
| <b>EtherNet/IP</b>                     |   |
| Mode                                   | Adapter   |
| CIP Objects Supported                  | Identity<br>Message Router<br>Assembly<br>Connection Manager<br>TCP/IP interface<br>Ethernet link<br>Port |
| Max. No. of Scanner Connections        | 1 (for read-only), 1 (for read/write)   |
| Input Data Size                        | 496 bytes   |
| Output Data Size                       | 496 bytes   |
| <b>Memory</b>                          |   |
| microSD Slot                           | Up to 32 GB (SD 2.0 compatible)   |
| <b>Power Parameters</b>                |   |
| Input Voltage                          | 12 to 48 VDC  |
| Input Current                          | 416 mA @ 12 VDC   |
| Power Connector                        | Spring-type Euroblock terminal  |
| <b>Relays</b>                          |   |
| Contact Current Rating                 | Resistive load: 2 A @ 30 VDC  |
| <b>Physical Characteristics</b>        |   |
| 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)   |
| <b>Environmental Limits</b>            |   |
| Operating Temperature                  | MGate 5111: 0 to 60°C (32 to 140°F)<br>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

|                     |  |
|---------------------|--|
| 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<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |
| Safety              | EN 62368-1<br>UL 61010-2-201   |
| Hazardous Locations | ATEX<br>Class I Division 2<br>IECEX  |
| Freefall            | IEC 60068-2-32   |
| Shock               | IEC 60068-2-27   |
| Vibration           | IEC 60068-2-6<br>IEC 60068-2-64  |

## MTBF

|           |                 |
|-----------|-----------------|
| Time      | 718,131 hrs     |
| Standards | Telcordia SR332 |

## Warranty

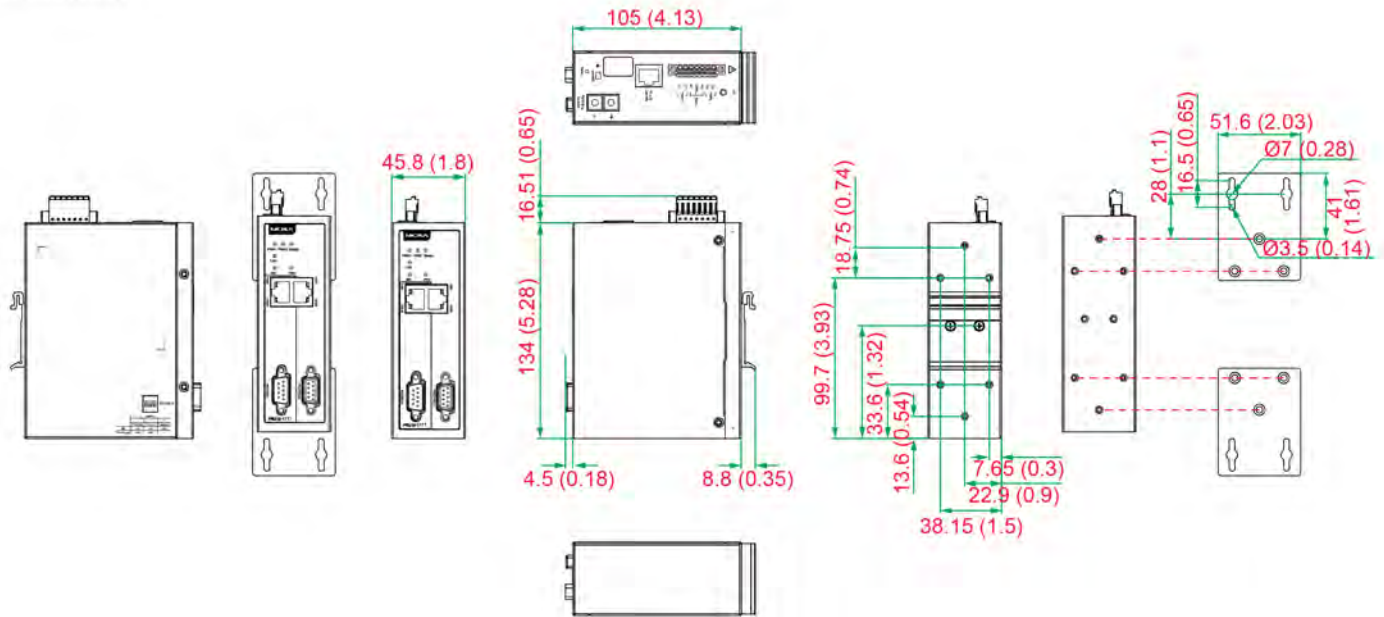
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

## Package Contents

|                  |   |
|------------------|---|
| Device           | 1 x MGate 5111 Series gateway                     |
| Installation Kit | 1 x DIN-rail kit                                  |
| Documentation    | 1 x quick installation guide<br>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  | 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 |
|-----------------|--|

### Wall-Mounting Kits

|          |   |
|----------|---|
| WK-51-01 | Wall mounting kit with 2 plates (51.6 x 67 x 2 mm) and 6 screws |
|----------|---|

### Power Cords

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

© Moxa Inc. All rights reserved. Updated Apr 22, 2024.

This document and any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Moxa Inc. Product specifications subject to change without notice. Visit our website for the most up-to-date product information.