

MGate 5103 Series

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



Features and Benefits

- Protocol conversion between Modbus, EtherNet/IP, and 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 Modbus RTU/ASCII/TCP, EtherNet/IP, and PROFINET 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

Memory

microSD Slot

Up to 32 GB (SD 2.0 compatible)

Relays

| | |
|------------------------|------------------------------|
| Contact Current Rating | Resistive load: 2 A @ 30 VDC |
|------------------------|------------------------------|

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 Adapter (Slave), Modbus TCP Client (Master), Modbus TCP Server (Slave), PROFINET IO Device (Slave) |
| Configuration Options | Device Search Utility (DSU), Web Console, Telnet Console |
| Management | ARP, DHCP Client, DNS, HTTP, HTTPS, SMTP, SNMP Trap, SNMPv1/v2c/v3, TCP/IP, Telnet, SSH, UDP |
| MIB | MIB-II |
| Time Management | NTP Client |

Serial Interface

| | |
|-----------------------------------|--|
| Console Port | RS-232 (TxD, RxD, GND), 8-pin RJ45 (115200, n, 8, 1) |
| Baudrate | 50 bps to 921.6 kbps |
| Connector | DB9 male |
| Data Bits | 7, 8 |
| Flow Control | RTS Toggle (RS-232 only), RTS/CTS |
| No. of Ports | 1 |
| Parity | None, Even, Odd, Space, Mark |
| RS-485 Data Direction Control | ADDC® (automatic data direction control) |
| Serial Standards | RS-232/422/485 |
| Stop Bits | 1, 2 |
| 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

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

Modbus TCP

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|--------------------------------|------------------------------|
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Max. No. of Client Connections | 16 |
| Max. No. of Commands | 128 |
| Max. No. of Server Connections | 32 |
| Input Data Size | 512 bytes |
| Mode | Client, Server |
| Output Data Size | 512 bytes |

PROFINET

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

EtherNet/IP

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

Power Parameters

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

Physical Characteristics

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|------------|---|
| 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 | 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 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

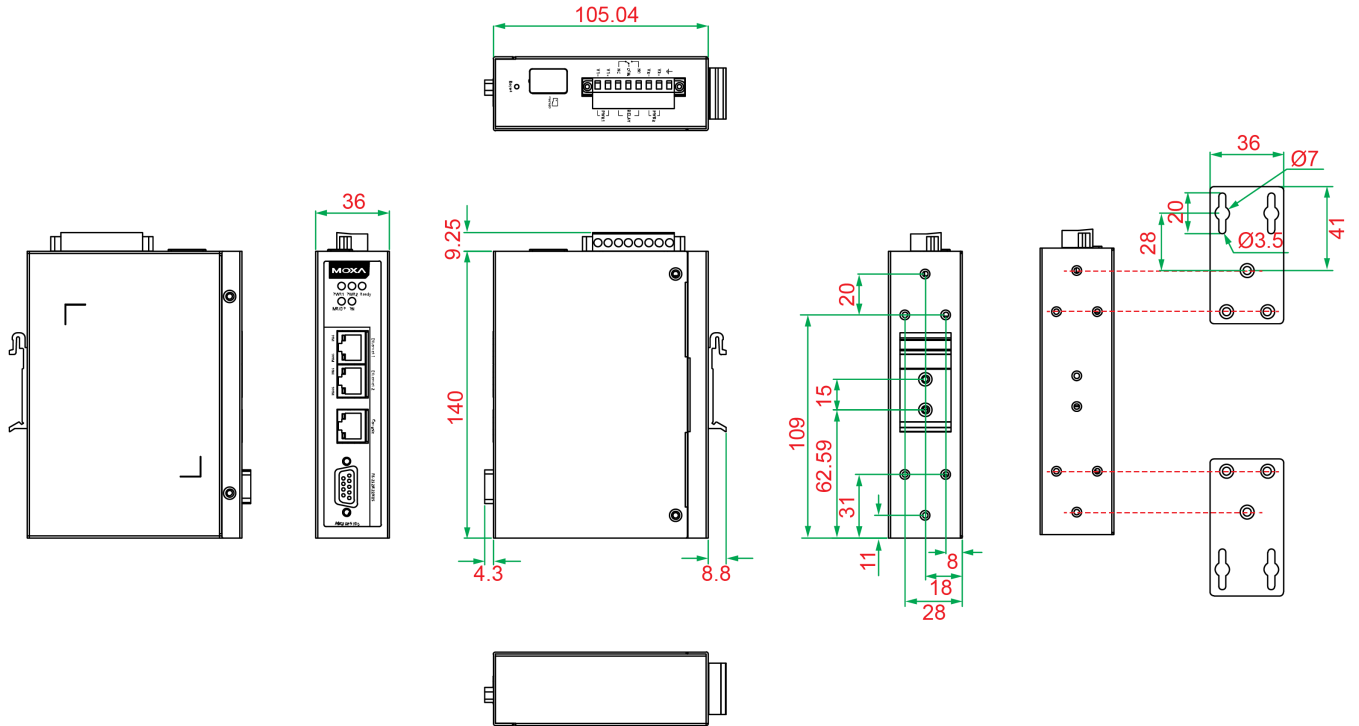
| | |
|-----------------|--|
| Warranty Period | 5 years |
| Details | See www.moxa.com/warranty |

Package Contents

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|---------------|---|
| Device | 1 x MGate 5103 Series gateway |
| Cable | 1 x RJ45-to-DB9 console cable |
| 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

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

DIN-Rail Mounting Kits

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

Wall-Mounting Kits

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

Power Cords

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

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