MGate™ 5103 Series

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

> Supports PROFINET IO Device
> Supports Modbus RTU/ASCII/TCP master/slave
> Effortless configuration via web-based wizard
> Supports EtherNet/IP Adapter
> Complete diagnosis information for maintenance
> Embedded Modbus traffic monitoring
> microSD card for configuration backup and event logs
> -40 to 75°C wide operating temperature models available
> Modbus port with 2 kV built-in isolation protection
> Built-in Ethernet cascading for easy wiring
> Security features based on IEC-62443

: 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 series 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
Protocols: EtherNet/IP, Modbus TCP, PROFINET RT
Number of Ports: 2 (1 IP; used for Ethernet cascading)
Speed: 10/100 Mbps, Auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 kV (built-in)

PROFINET:
• Type: Device (slave)
• Max. data size per I/O transmission:
   Input: 512 bytes
   Output: 512 bytes
• Max. Number of Connections:
   MGate as PROFINET IO Device: 1 connection for read/write

EtherNet/IP:
- Class: Adapter (slave)
- CIP Objects Supported: Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
- Max. Number of Connections:
  MGate as Adapter: 1 connection for read-only, 1 connection for read/write
- Max. Total I/O Data Size:
  Input: 496 bytes
  Output: 496 bytes

Modbus TCP:
- Mode: Client/Server
- Functions Supported: 1, 2, 3, 4, 5, 6, 15, 16, 23
- Max. Number of Commands: 128
- Max. Number of Connections:
  MGate as Modbus TCP Client: 32
  MGate as Modbus TCP Server: 16
- Max. Total I/O Data Size:
  Input: 512 bytes
  Output: 512 bytes

Serial Interface
Protocol: Modbus RTU/ASCII Master/Slave
Number of Ports: 1
Serial Standards: RS-232/422/485, software selectable
Connectors: DB9 male
RS-485 Data Direction Control: ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485: 1 kΩ, 150 kΩ
Terminator for RS-485: 120 Ω
Isolation: 2 kV (built-in)

Modbus RTU/ASCII:
- Mode: Master/Slave
- Functions Supported: 1, 2, 3, 4, 5, 6, 15, 16, 23
- Max. Number of Commands: 128
- Max. Total I/O Data Size:
  Input: 512 bytes
  Output: 512 bytes

Serial Communication Parameters
Data Bits: 7, 8
Stop Bits: 1, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, RTS Toggle (RS-232 only)
Baudrate: 50 bps to 921.6 kbps

Serial Signals
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Software
Configuration Options: Web Console, Serial Console
Utility: MGate Manager for Windows 2000, Windows XP, Server 2003, Vista, Server 2008 (x86/x64), Windows Server 2008 R2, Windows 7/8/8.1/10 (x86/x64), Windows Server 2012 (x64), Windows 2012 R2
Support: MXconfig, MXview, SNMP (v1, v2, v3), Private MIB

Physical Characteristics
Housing: Metal, IP30
Weight: 507 g (1.12 lb)
Dimensions: 36 x 105 x 140 mm (1.42 x 4.14 x 5.51 in)
Storage Card Slot: 1 microSD (SDHC) card slot supports up to 32 GB

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: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Vibration: IEC 60068-2-6, IEC 60068-2-64
Shock: IEC 60068-2-27
Drop: IEC 60068-2-32

Power Requirements
Input Voltage: 12 to 48 VDC
Input Current: 455 mA @ 12 VDC; 125 mA @ 48 VDC
Power Connector: Terminal block

Standards and Certifications
Safety: UL 508, EN 60950-1
Hazardous Location: Class 1 Division 2, ATEX, IECEx
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
IEC 61000-4-8 PFMF

MTBF (mean time between failures)
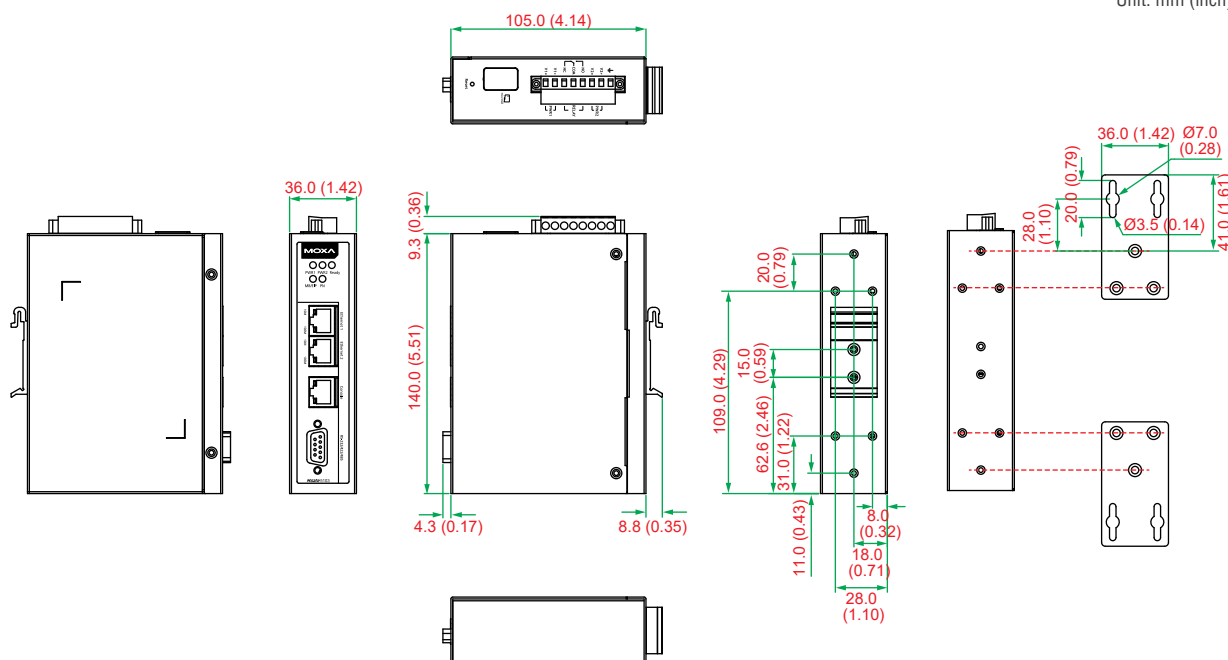**Time:** 876,502 hrs
Standard: Telcordia SR332

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

Dimensions

Unit: mm (inch)

Ordering Information

Available Models

MGate 5103: 1-port Modbus/EtherNet/IP-to-PROFINET gateway, 0 to 60°C operating temperature
MGate 5103-T: 1-port Modbus/EtherNet/IP-to-PROFINET gateway, -40 to 75°C operating temperature

Optional Accessories (can be purchased separately)

DR-4524: 45W/2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
DR-75-24: 75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
DR-120-24: 120W/5A DIN-rail 24 VDC power supply with 88 to 132 VAC/176 to 264 VAC input by switch
WK-36-02: Wall-mounting kit
Mini DB9F-to-TB Adapter: DB9 female to terminal block adapter
CBL-F9M9-150: DB9 female to DB9 male serial cable, 150 cm
CBL-F9M9-20: DB9 female to DB9 male serial cable, 20 cm

Package Checklist

- 1 MGate 5103 gateway
- 1 serial cable: DBL-RJ45F9-150
- Quick installation guide (printed)
- Warranty card

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