MGate™ 5105-MB-EIP Series

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

> Support for both EtherNet/IP adapter and scanner
> Effortless configuration via web or Windows utility
> Complete packet analysis and diagnosis information for maintenance
> Easy I/O data maintenance via web interface
> microSD card for configuration and system log backup
> -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

EtherNet√IP™
conformance tested

IEC · IECEx · Ⓔx · c(UL)us LISTED · CE · FC

: Overview

The MGate 5105-MB-EIP is an industrial Ethernet gateway for Modbus RTU/ASCII/TCP and EtherNet/IP network communication. 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.

: 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 connections to two 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
Protocol: EtherNet/IP, Modbus TCP
Number of Ports: 2 (1 IP, Ethernet cascade)
Speed: 10/100 Mbps, Auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 kV (built-in)
EtherNet/IP
- Class: Adapter, Scanner
- CIP Objects Supported: Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
- Max. Number of Connections:
  MGate as Adapter: 16 connections for read-only, 1 connection for read/write
  MGate as Scanner: 100 connections

- Max. Total I/O Data Size:
  Input: 2048 bytes (496 bytes per connection)
  Output: 2048 bytes (496 bytes per connection)
Modbus
- Functions Supported: 1, 2, 3, 4, 5, 6, 15, 16, 23
- Max. Number of Commands: 100
- Max. Number of Connections:
  MGate as Modbus TCP Master: 32 connections
  MGate as Modbus TCP Slave: 16 connections
- Max. Total I/O Data Size:
  Input: 2048 bytes
  Output: 2048 bytes

Serial Interface

Protocol: Modbus RTU/ASCII
Number of Ports: 1
Serial Standards: RS-232/422/485, software selectable
Connectors: DB9 male
Isolation: 2 kV (built-in)
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
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, RTS Toggle
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

Operation Modes: EtherNet/IP Adaptor/Scanner, Modbus RTU/ASCII/TCP Master/Slave
Configuration Options: Web Console, Windows Utility, Serial Console
Utilities: MGate Manager for Windows 2000/XP/2003/Vista/Server 2008/7/8 (x86/x64), Windows Server 2008 R2/2012 (x64)
Support: MXview, SNMP (v1, v2, v3), Private MIB

Physical Characteristics

Housing: Metal, IP30 protection
Weight: 507 g
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)
Altitude: Up to 2000 m (795 hPa), higher altitudes on demand
Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Power Requirements

Input Voltage: 12 to 48 VDC
Power Connector: Terminal block
Power Consumption:
455 mA @ 12 VDC, 125 mA @ 48 VDC

Standards and Certifications

Safety: UL 508, EN 60950-1
Hazardous Location:
UL/cUL Class 1 Division 2 Groups A/B/C/D,
ATEX Zone 2 Ex nA nC IIC T3 Gc,
IECEx (Pending)
EMC: CE, FCC
EMI: EN 55022 Class A, FCC Part 15 Subpart B Class A
EMS:
EN 55024,
EN 61000-4-2 (ESD) Level 4,
EN 61000-4-3 (RS) Level 3,
EN 61000-4-4 (EFT) Level 4,
EN 61000-4-5 (Surge) Level 3,
EN 61000-4-6 (CS) Level 3,
EN 61000-4-8 (PFMF) Level 3
Shock: IEC 60068-2-27
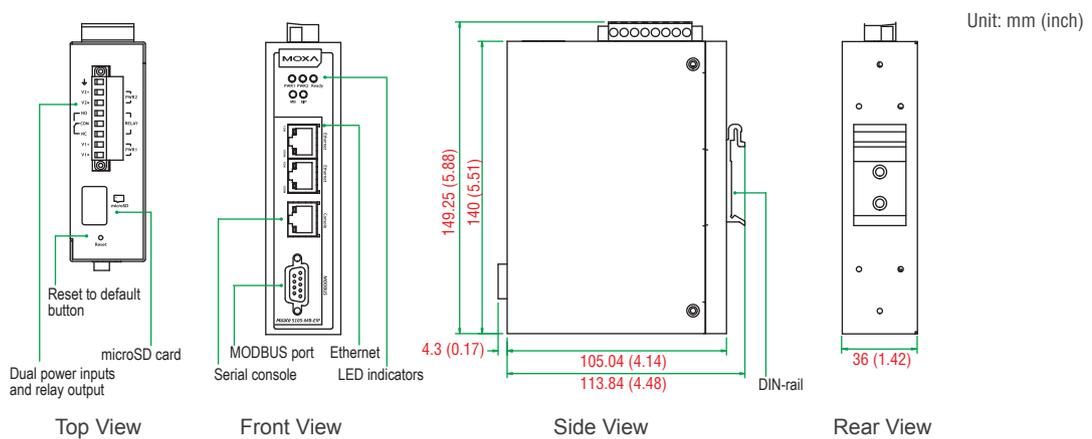**Freefall:** IEC 60068-2-32
Vibration: IEC 60068-2-6

Reliability

MTBF (mean time between failures): 513,139 hrs

Warranty

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

Dimensions

Unit: mm (inch)

Top View — Reset to default button, microSD card, Dual power inputs and relay output
Front View — MODBUS port, Serial console, Ethernet, LED indicators
Side View — 149.25 (5.88), 140 (5.51), 4.3 (0.17), 105.04 (4.14), 113.84 (4.48), DIN-rail
Rear View — 36 (1.42)

Ordering Information

Available Models

MGate 5105-MB-EIP: 1-port Modbus-to-EtherNet/IP gateway, 0 to 60°C operating temperature
MGate 5105-MB-EIP-T: 1-port Modbus-to-EtherNet/IP gateway, -40 to 75°C operating temperature

Optional Accessories (can be purchased separately)

MXview: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes
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

Package Checklist

- 1 MGate 5105-MB-EIP Modbus-to-EtherNet/IP gateway
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card
- RJ45 to DB9 cable (for console use)