

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 |

Security Functions

| | |
|--------------------|---|
| Authentication | Local database |
| Encryption | HTTPS, AES-128, AES-256, SHA-256 |
| Security Protocols | SNMPv3 SNMPv2c Trap HTTPS (TLS 1.3) |

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

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|----------------------|------------------------------|
| 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, 1 Mbps |
| 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

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|-----------------|--------------------------------|
| Input Voltage | 12 to 48 VDC |
| Input Current | 416 mA @ 12 VDC |
| Power Connector | Spring-type Euroblock terminal |

Relays

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

Physical Characteristics

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|------------|--|
| 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 62368-1, 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

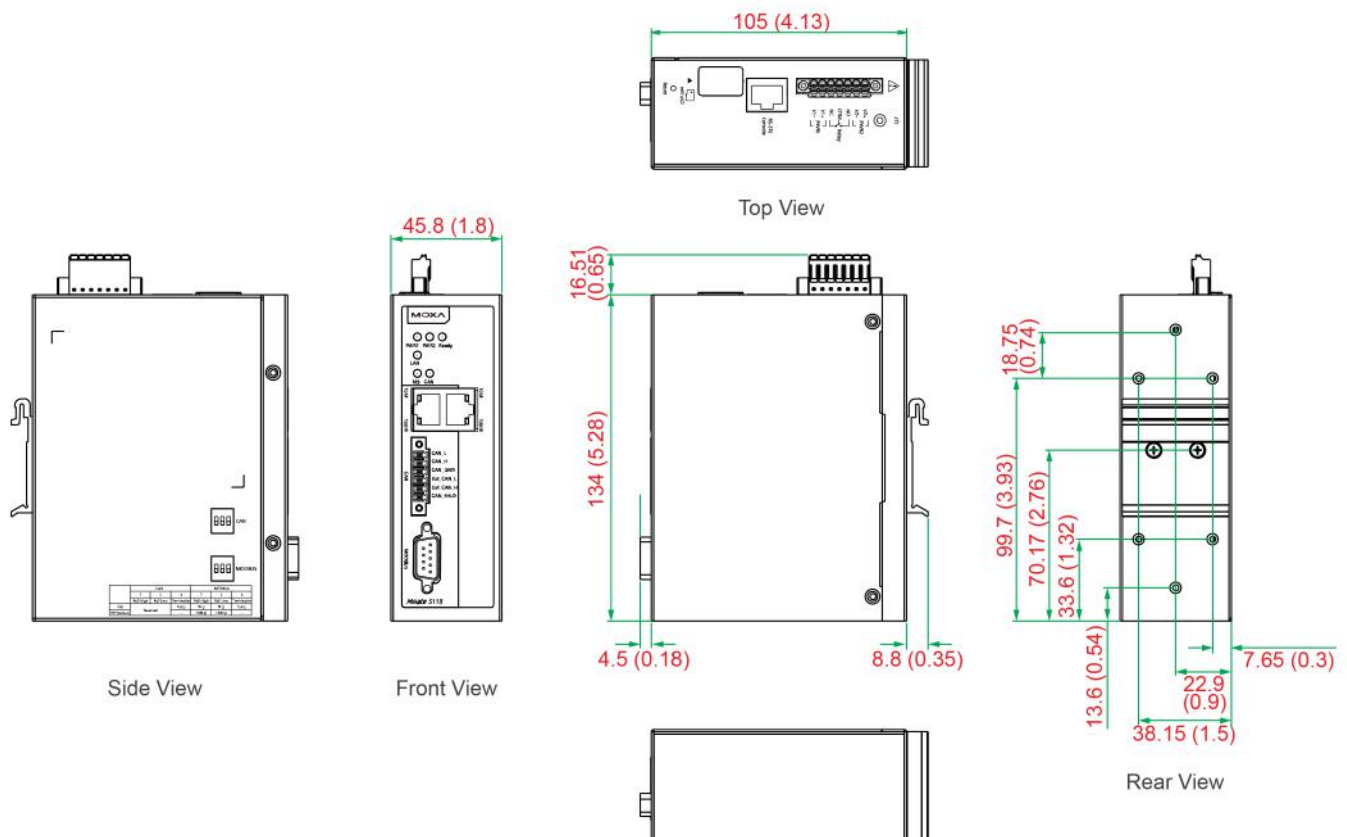
| | |
|-----------------|--|
| Warranty Period | 5 years |
| Details | See www.moxa.com/warranty |

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)



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

Power Cords

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

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