

1-port DNP3/IEC 101/IEC 104/Modbus-to-IEC 61850 gateways



Features and Benefits

- Supports IEC 61850 MMS server
- Supports DNP3 serial/TCP master
- Supports IEC 60870-5-101 master (balanced/unbalanced)
- Supports IEC 60870-5-104 client
- Supports Modbus RTU/ASCII/TCP master/client
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- Built-in Ethernet cascading for easy wiring
- -40 to 75°C operating temperature range
- Serial port with 2 kV isolation protection
- Supports IEC 61850 MMS and DNP3 TCP protocol encryption
- Security features based on IEC 62443/NERC CIP
- Compliant with IEC 61850-3 and IEEE 1613
- Built-in SCL file generator for easy configuration

Certifications



Introduction

The MGate 5119 is an industrial Ethernet gateway with 2 Ethernet ports and 1 RS-232/422/485 serial port. To integrate Modbus, IEC 60870-5-101, and IEC 60870-5-104 devices with an IEC 61850 MMS network, use the MGate 5119 as a Modbus master/client, IEC 60870-5-101/104 master, and DNP3 serial/TCP master to collect and exchange data with IEC 61850 MMS systems.

Easy Configuration via SCL Generator

The MGate 5119 as an IEC 61850 MMS server, typically, requires the import of a SCL file generated by a 3rd party tool. This can be time-consuming and increase costs. To overcome this pain point, MGate 5119 has a built-in SCL generator, which can easily generate SCL files through the web console and make them available almost immediately saving configuration time and cost.

Easy Troubleshooting via Traffic Monitor

MGate 5119 Series gateways support Modbus RTU/ASCII/TCP, IEC 60870-5-101, IEC 60870-5-104, and IEC 61850 MMS Protocol Traffic Monitor for easy troubleshooting, especially during the installation stage. It is worth mentioning that traffic logs can be viewed in the popular troubleshooting tool, Wireshark. With this feature, you can easily analyze traffic to determine the root cause of a problem.

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), IEC 60870-5-104 Client, IEC 61850 MMS Server, DNP3 TCP Master
Configuration Options	Web Console (HTTP/HTTPS), Device Search Utility (DSU)

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	Even, Mark, None, Odd, Space
Stop Bits	1, 2
Flow Control	RTS Toggle (RS-232 only), RTS/CTS
RS-485 Data Direction Control	ADDC® (automatic data direction control)
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

Industrial Protocols	Modbus RTU/ASCII Master, IEC 60870-5-101 Master (Balanced/Unbalanced), DNP3 Serial Master
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Modbus RTU/ASCII

Mode	Master
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128

Modbus TCP

Mode	Client (Master)
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Server Connections	32
Max. No. of Commands	128

IEC 60870-5-104

Mode	Client
Objects Supported	Single point Double point Step position Bit string of 32 bit Measured value (normalized) Measured value (scaled) Measured value (floating) Integrated totals
Max. No. of Server Connections	32
Max. No. of Information Objects	1200 points

IEC 60870-5-101

Mode	Master (Balanced/Unbalanced)
Objects Supported	Single point Double point Step position Bit string of 32 bit Measured value (normalized) Measured value (scaled) Measured value (floating) Integrated totals
Max. No. of Slave Connections	1 (Balanced), 31 (Unbalanced)
Max. No. of Information Objects	1200 points

DNP3 Serial

Mode	Master
Objects Supported	Binary inputs Analog inputs Counters Frozen counters Binary outputs Analog outputs
Max. No. of Outstation Connections	16
Max. No. of Objects	1200 points

DNP3 TCP

Mode	Master
Objects Supported	Binary inputs Analog inputs Counters Frozen counters Binary outputs Analog outputs

Max. No. of Outstation Connections	16
Max. No. of Objects	1200 points
IEC 61850	
Mode	MMS Server
Max. No. of Client Connections	16
Max. No. of Datasets	99
Max. No. of Reports	99
Max. No. of Data Objects	1200 points
Memory	
No. of Data Points Supported	1,200 points
microSD Slot	Up to 32 GB (SD 2.0 compatible)
Power Parameters	
Input Voltage	12 to 48 VDC
Input Current	455 mA @ 12 VDC
Power Connector	Screw-fastened Euroblock terminal
Relays	
Contact Current Rating	Resistive load: 2 A @ 30 VDC
Physical Characteristics	
Housing	Metal
IP Rating	IP30
Dimensions	36 x 120 x 150 mm (1.42 x 4.72 x 5.91 in)
Weight	517 g (1.14 lb)
Environmental Limits	
Operating Temperature	-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, IEC 60950-1, IEC 62368-1, UL 60950-1, EN 62368-1, UL 62368-1
EMC	EN 55032/35
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: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V/m IEC 61000-4-8 PFMF: 100 A/m
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27

	IEC 61850-3 Edition 2.0
Power Substation	IEEE 1613, IEC 61850-3
Vibration	IEC 60068-2-6, IEC 60068-2-64, IEC 61850-3 Edition 2.0

MTBF

Time	1,180,203 hrs
Standards	Telcordia SR332

Warranty

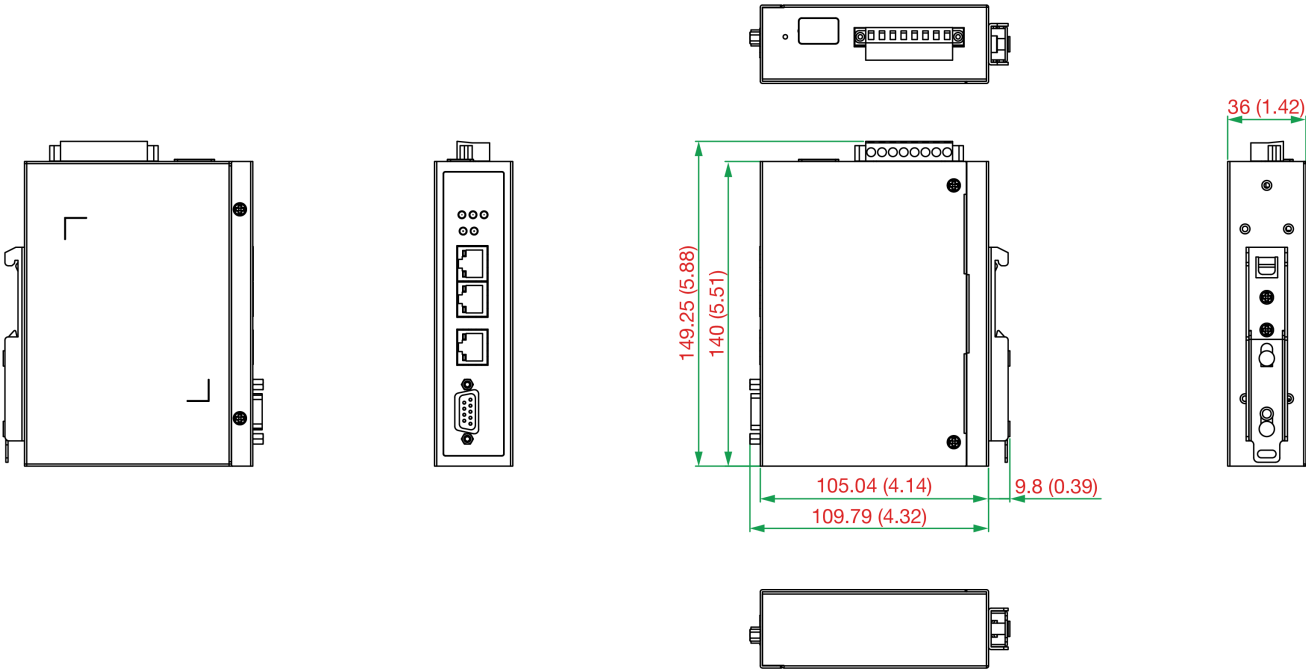
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x MGate 5119 Series gateway
Cable	1 x RJ45-to-DB9 console cable
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 Temperature
MGate 5119-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
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Power Cords

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

WK-36-02	DIN-rail/wall-mounting kit, 2 plates, 6 screws
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