

MGate 5114 Series

1-port Modbus RTU/ASCII/TCP/IEC 101-to-IEC 104 gateways



Features and Benefits

- Protocol conversion between Modbus RTU/ASCII/TCP, IEC 60870-5-101, and IEC 60870-5-104
- Supports IEC 60870-5-101 master/slave (balanced/unbalanced)
- Supports IEC 60870-5-104 client/server
- Supports Modbus RTU/ASCII/TCP master/client and slave/server
- Effortless configuration via web-based wizard
- Status monitoring and fault protection for easy maintenance
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- microSD card for configuration backup/duplication and event logs
- Built-in Ethernet cascading for easy wiring
- Redundant dual DC power inputs and relay output
- -40 to 75°C wide operating temperature models available
- Serial port with 2 kV isolation protection
- Security features based on IEC 62443

Certifications



Introduction

The MGate 5114 is an industrial Ethernet gateway with 2 Ethernet ports and 1 RS-232/422/485 serial port for Modbus RTU/ASCII/TCP, IEC 60870-5-101, and IEC 60870-5-104 network communications. By integrating commonly used power protocols, the MGate 5114 provides the flexibility needed to fulfill the various conditions that arise with field devices that use different communications protocols to connect to a power SCADA system. To integrate Modbus or IEC 60870-5-101 devices onto an IEC 60870-5-104 network, use the MGate 5114 as a Modbus master/client or IEC 60870-5-101 master to collect data and exchange data with IEC 60870-5-104 systems.

Easy Configuration via Web Console

The MGate 5114 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.

Modbus RTU/ASCII/TCP Protocol Traffic Monitor

MGate 5114 Series gateways support Modbus RTU/ASCII/TCP, IEC 60870-5-101, and IEC 60870-5-104 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.

Maintenance Functions

MGate 5114 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 PSCADA system when a device gets disconnected or does not respond, in which case the PSCADA system gets the status of each end device and then issues alarms to notify operators.

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), IEC 60870-5-104 Client (Master), IEC 60870-5-104 Server (Slave) |
| Configuration Options | Web Console, Device Search Utility (DSU), Telnet Console |
| Management | HTTPS, ARP, DHCP Client, HTTP, SMTP, SNMPv1/v2c/v3, SSH, TCP/IP, Telnet, UDP, SNMP Trap, DNS |
| MIB | MIB-II |
| Time Management | NTP Client |

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, Modbus RTU/ASCII Slave, IEC 60870-5-101 Master (Balanced/Unbalanced), IEC 60870-5-101 Slave (Balanced/Unbalanced) |
| Configuration Options | Serial Console |
| Modbus RTU/ASCII | |
| Mode | Master, Slave |
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Max. No. of Commands | 128 |

Modbus TCP

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

IEC 60870-5-104

| | |
|---------------------------------|-----------------------------------|
| Mode | Client (Master) Server (Slave) |
| Max. No. of Client Connections | 32 |
| Max. No. of Server Connections | 32 |
| Max. No. of Information Objects | 2000 points |

IEC 60870-5-101

| | |
|---------------------------------|---|
| Mode | Master (Balanced/Unbalanced) Slave (Balanced/Unbalanced) |
| Max. No. of Master Connections | 1 |
| Max. No. of Slave Connections | 1 (Balanced), 31 (Unbalanced) |
| Max. No. of Information Objects | 2000 points |

Memory

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|--------------|---------------------------------|
| microSD Slot | Up to 32 GB (SD 2.0 compatible) |
|--------------|---------------------------------|

Power Parameters

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

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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

| | |
|--|---|
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity | 5 to 95% (non-condensing) |
| Operating Temperature | MGate 5114: 0 to 60°C (32 to 140°F) MGate 5114-T: -40 to 75°C (-40 to 167°F) |

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 ¹ |
| Freefall | IEC 60068-2-32 |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-6, IEC 60068-2-64 |

MTBF

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|-----------|-----------------|
| Time | 1,140,815 hrs |
| Standards | Telcordia SR332 |

Warranty

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

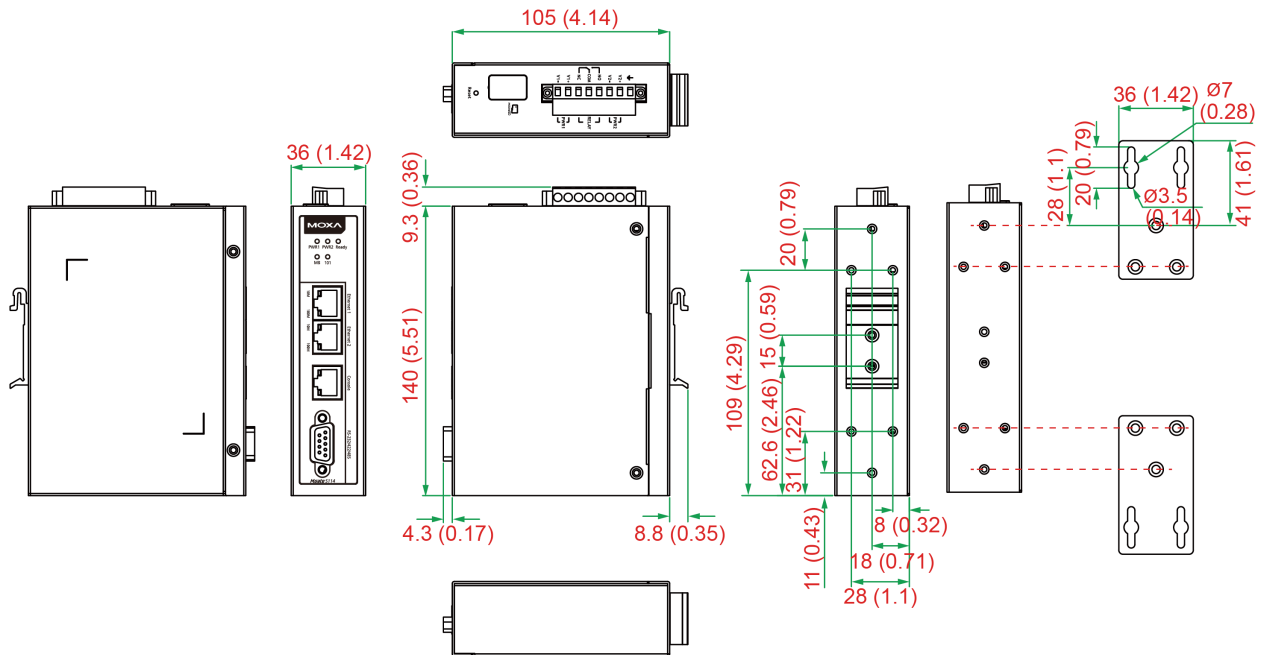
Package Contents

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|---------------|---|
| Cable | 1 x RJ45-to-DB9 console cable |
| Device | 1 x MGate 5114 Series gateway |
| Documentation | 1 x quick installation guide 1 x warranty card |

1. Class 1 Division 2, ATEX, and IECEx certifications are underway. Please contact a Moxa sales representative for details.

Dimensions

Unit: mm (inch)



Ordering Information

| Model Name | Operating Temp. |
|--------------|-----------------|
| MGate 5114 | 0 to 60°C |
| MGate 5114-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 |
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Wall-Mounting Kits

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

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