# MGate W5108/W5208 Series

## 1 and 2-port IEEE 802.11a/b/g/n wireless Modbus/DNP3 gateways

### Features and Benefits

- Supports Modbus serial tunneling communications through an 802.11 network
- Supports DNP3 serial tunneling communications through an 802.11 network
- Accessed by up to 16 Modbus/DNP3 TCP masters/clients
- Connects up to 31 or 62 Modbus/DNP3 serial slaves
- Embedded traffic monitoring/diagnostic information for easy troubleshooting
- microSD card for configuration backup/duplication and event logs
- Serial port with 2 kV isolation protection
- -40 to 75°C wide operating temperature models available
- Supports 2 digital inputs and 2 digital outputs
- Supports redundant dual DC power inputs and 1 relay output
- Security features based on IEC 62443

### Certifications

IEC  IECEx  c(UL)us LISTED  CE  FC

## Introduction

The MGate W5108/W5208 gateways are an ideal choice for connecting Modbus serial devices to a wireless LAN, or DNP3 serial to DNP3 IP through a wireless LAN. With IEEE 802.11a/b/g/n support, you can use fewer cables in difficult wiring environments, and for secure data transmission, the MGate W5108/W5208 gateways support WEP/WPA/WPA2. The gateways' rugged design makes them suitable for industrial applications, including oil and gas, power, process automation, and factory automation.

### Modbus Traffic Monitor

The MGate W5108/W5208 gateways support Modbus Protocol Traffic Monitor for easy troubleshooting, especially during the installation stage. Communication issues could be caused by incorrect software parameters, such as slave ID and register address, or incorrect hardware parameters such as baudrate and interface. With Modbus Protocol Traffic Monitor support, you can check the captured data and easily identify the root cause.

### A Variety of Maintenance Functions

The MGate W5108/W5208 Series of gateways support a web console and Telnet console for remote maintenance. Each gateway also supports encryption commutation functions such as HTTPS and SSH to prevent security issues. In addition, log functions are provided in the firmware to record connection events and Modbus for maintenance events. Users can review log data remotely through the web console.

## Specifications

### Ethernet Interface

| | |
|---|---|
| 10/100BaseT(X) Ports (RJ45 connector) | 1 |
| Magnetic Isolation Protection | 1.5 kV (built-in) |

### Ethernet Software Features

| | |
|---|---|
| Industrial Protocols | DNP3 TCP Master, DNP3 TCP Outstation (Slave), Modbus TCP Client (Master), Modbus TCP Server (Slave) |
| 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 |

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| | |
|---|---|
| MIB | RFC1213, RFC1317 |
| Time Management | NTP Client |

### Serial Interface

| | |
|---|---|
| No. of Ports | MGate W5108 Series: 1<br>MGate W5208 Series: 2 |
| Connector | DB9 male |
| Serial Standards | RS-232/422/485 (software selectable) |
| 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, XON/XOFF |
| 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

| | |
|---|---|
| Industrial Protocols | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave, DNP3 Serial Master, DNP3 Serial Outstation (Slave) |

### WLAN Interface

| | |
|---|---|
| Frequency Band for EU (20 MHz operating channels) | 2.412 to 2.472 GHz (13 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels)<br>5.500 to 5.700 GHz (11 channels) |
| Frequency Band for JP (20 MHz operating channels) | 2.412 to 2.484 GHz (14 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels)<br>5.500 to 5.700 GHz (11 channels) |
| Frequency Band for US (20 MHz operating channels) | 2.412 to 2.462 GHz (11 channels)<br>5.810 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels)<br>5.500 to 5.700 GHz (8 channels)<br>5.745 to 5.825 GHz (5 channels) |
| Receiver Sensitivity for 802.11a | -91 dBm @ 6 Mbps<br>-90 dBm @ 9 Mbps<br>-88 dBm @ 12 Mbps<br>-86 dBm @ 18 Mbps<br>-82 dBm @ 24 Mbps<br>-81 dBm @ 36 Mbps<br>-75 dBm @ 48 Mbps<br>-74 dBm @ 54 Mbps |

| | |
|---|---|
| Receiver Sensitivity for 802.11b | -92 dBm @ 1 Mbps<br>-88 dBm @ 2 Mbps<br>-87 dBm @ 5.5 Mbps<br>-84 dBm @ 11 Mbps |
| Receiver Sensitivity for 802.11g | -91 dBm @ 6 Mbps<br>-90 dBm @ 9 Mbps<br>-88 dBm @ 12 Mbps<br>-86 dBm @ 18 Mbps<br>-80 dBm @ 24 Mbps<br>-80 dBm @ 36 Mbps<br>-74 dBm @ 48 Mbps<br>-73 dBm @ 54 Mbps |
| Receiver Sensitivity for 802.11n (2.4 GHz) | -89 dBm @ MCS0 20 MHz<br>-87 dBm @ MCS1 20 MHz<br>-85 dBm @ MCS2 20 MHz<br>-81 dBm @ MCS3 20 MHz<br>-78 dBm @ MCS4 20 MHz<br>-74 dBm @ MCS5 20 MHz<br>-73 dBm @ MCS6 20 MHz<br>-71 dBm @ MCS7 20 MHz |
| Receiver Sensitivity for 802.11n (5 GHz) | -89 dBm @ MCS0 20 MHz<br>-87 dBm @ MCS1 20 MHz<br>-85 dBm @ MCS2 20 MHz<br>-81 dBm @ MCS3 20 MHz<br>-78 dBm @ MCS4 20 MHz<br>-74 dBm @ MCS5 20 MHz<br>-73 dBm @ MCS6 20 MHz<br>-71 dBm @ MCS7 20 MHz<br>-85 dBm @ MCS0 40 MHz<br>-84 dBm @ MCS1 40 MHz<br>-81 dBm @ MCS2 40 MHz<br>-77 dBm @ MCS3 40 MHz<br>-75 dBm @ MCS4 40 MHz<br>-70 dBm @ MCS5 40 MHz<br>-69 dBm @ MCS6 40 MHz<br>-67 dBm @ MCS7 40 MHz |
| Spread Spectrum | OFDM |
| Transmission Distance | Up to 100 meters |
| Transmission Rate | 802.11a/g: 65, 54, 48, 36, 24, 16, 12, 9, 6 Mbps<br>802.11b: 1,2,5.5,11 Mbps<br>802.11n HT20: 7.2 to 72.2 Mbps (MCS0 to MCS7)<br>802.11n HT40: 15 to 150 Mbps (MCS0 to MCS7) |
| Transmitter Power for 802.11b | 16±1.5 dBm @ 11 Mbps |
| Transmitter Power for 802.11g | 16±1.5 dBm @ 6 to 36 Mbps<br>15±1.5 dBm @ 48 Mbps<br>14±1.5 dBm @ 54 Mbps |
| Transmitter Power for 802.11a | 15±1.5 dBm @ 6 to 36 Mbps<br>15±1.5 dBm @ 48 Mbps<br>14±1.5 dBm @ 54 Mbps |
| Transmitter Power for 802.11n (2.4 GHz) | 16±1.5 dBm @ MCS0-3 20 MHz<br>14±1.5 dBm @ MCS4-5 20 MHz<br>12±1.5 dBm @ MCS6-7 20 MHz |
| Transmitter Power for 802.11n (5 GHz) | 15±1.5 dBm @ MCS0-3 20/40 MHz<br>14±1.5 dBm @ MCS4-5 20/40 MHz<br>12±1.5 dBm @ MCS6-7 20/40 MHz |
| Wireless Security | WEP encryption (64-bit and 128-bit)<br>WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2-Personal |

| | |
|---|---|
| WLAN Antenna Connector | 1 RP-SMA female |
| WLAN Modes | Ad-hoc Mode, Infrastructure mode |
| WLAN Standards | 802.11a/b/g/n |

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

### Input/Output Interface
| | |
|---|---|
| Digital Input Channels | 2 |
| Digital Output Channels | 2 |

### Digital Inputs
| | |
|---|---|
| Connector | Screw-fastened Euroblock terminal |
| Dry Contact | Logic 0: Short to GND<br>Logic "1": Open |
| Wet Contact (DI to COM) | Logic "0": 0 0 to 3 VDC<br>Logic "1": 10 to 30 VDC |

### Digital Outputs
| | |
|---|---|
| Connector | Screw-fastened Euroblock terminal |
| Current Rating | 200 mA per channel |
| Over-Voltage Protection | 30 VDC |
| I/O Type | Sink |

### Power Parameters
| | |
|---|---|
| Input Voltage | 9 to 60 VDC |
| Input Current | 202 mA @ 24 VDC |
| Power Connector | Spring-type Euroblock terminal |

### Reliability
| | |
|---|---|
| Automatic Reboot Trigger | Built-in WDT |

### Physical Characteristics
| | |
|---|---|
| Housing | Metal |
| IP Rating | IP30 |
| Dimensions | MGate W5108 Series: 45.8 x 105 x 134 mm (1.8 x 4.13 x 5.28 in)<br>MGate W5208 Series: 59.6 x 101.7 x 134 x mm (2.35 x 4 x 5.28 in) |
| Weight | MGate W5108 Series: 589 g (1.30 lb)<br>MGate W5208 Series: 738 g (1.63 lb) |

### Environmental Limits
| | |
|---|---|
| Operating Temperature | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -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, UL 508 |
| EMC | EN 55032/24 |
| EMI | CISPR 32, FCC Part 15B Class B |
| EMS | IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV<br>IEC 61000-4-6 CS: 150 kHz to 80 MHz: 10 V/m; Signal: 10 V/m<br>IEC 61000-4-8 PFMF |
| Hazardous Locations | ATEX, Class I Division 2, IECEx |
| Radio Frequency | EN 300 328, EN 301 489-1/17, EN 301 893 |
| Freefall | IEC 60068-2-32 |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-6, IEC 60068-2-64 |

## MTBF

| | |
|---|---|
| Time | MGate W5108 Series: 668,518 hrs<br>MGate W5208 Series: 556,271 hrs |
| Standards | Telcordia SR332 |

## Warranty

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

## Package Contents

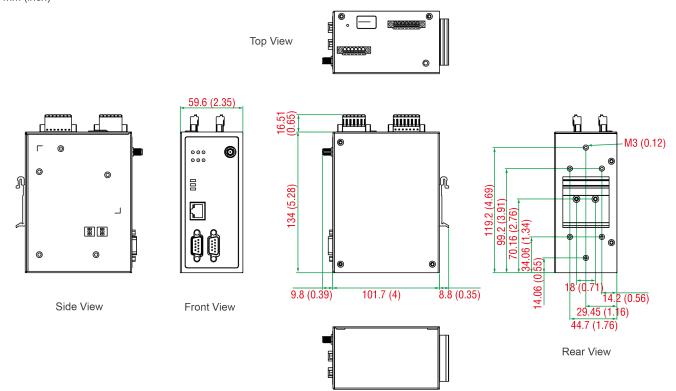| | |
|---|---|
| Device | 1 x MGate W5108/W5208 Series gateway |
| Antenna | 1 x Wi-Fi |
| Documentation | 1 x document and software CD<br>1 x quick installation guide<br>1 x warranty card |

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# Dimensions

## MGate W5108

Unit: mm (inch)

Top View

45.8 (1.8)

Side View          Front View

16.51 (0.65)

134 (5.28)

10.1 (0.4)    101.7 (4)    8.8 (0.35)

20 (0.79)

99.7 (3.93)

70.17 (2.76)

33.6 (1.32)

13.6 (0.54)

M3 (0.12)

7.65 (0.3)

22.9 (0.9)

38.15 (1.5)

Rear View

## MGate W5208

Unit: mm (inch)

Top View

59.6 (2.35)

Side View          Front View

16.51 (0.65)

134 (5.28)

9.8 (0.39)    101.7 (4)    8.8 (0.35)

119.2 (4.69)

99.2 (3.91)

70.16 (2.76)

34.06 (1.34)

14.06 (0.55)

M3 (0.12)

18 (0.71)

14.2 (0.56)

29.45 (1.16)

44.7 (1.76)

Rear View

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# Ordering Information

| Model Name | No. of Serial Ports | Operating Temp. |
|---|---|---|
| MGate W5108 | 1 | 0 to 60°C |
| MGate W5208 | 2 | 0 to 60°C |
| MGate W5108-T | 1 | -40 to 75°C |
| MGate W5208-T | 2 | -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 |

### Connectors

| | |
|---|---|
| Mini DB9F-to-TB | DB9 female to terminal block connector |

### Wall-Mounting Kits

| | |
|---|---|
| WK-51-01 | Wall-mounting kit, 2 plates, 6 screws, 51.6 x 67 x 2 mm |

### Power Cords

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

### Antennas

| | |
|---|---|
| ANT-WDB-ARM-02 | 2.4/5 GHz, omni-directional rubber duck antenna, 2 dBi, RP-SMA (male) |