

# MGate™ W5108/W5208 Series

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



- > Retrieve Modbus/DNP3 serial data through an 802.11 network
- > Serial tunneling communication (supports TCP Server/Client modes)
- > Slave mode supports 16 TCP masters and up to 31 or 62 serial slaves at the same time
- > Embedded Modbus traffic monitor
- > Dual DC power inputs for redundancy and relay output supported
- > Secure data access with WEP/WPA/WPA2
- > 2 kV serial port isolation
- > microSD card for configuration backup
- > -40 to 75°C wide operating temperature models available
- > Supports 2 digital inputs and 2 digital outputs



## Overview

The MGate W5108/W5208 series 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 series gateways support WEP/WPA/WPA2. The gateways' rugged design makes them suitable for industrial applications, including oil & gas, power, process automation, and factory automation.

## Modbus Traffic Monitor

The MGate W5108/W5208 series 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.

## Variety Maintenance Functions

The MGate W5108/W5208 series gateways support a web console and Telnet console for remote maintenance. Each gateway also supports encryption computation 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

**Protocols:** Modbus TCP, DNP3, TCP Server/Client modes supported

**Number of Ports:** 1

**Speed:** 10/100 Mbps, Auto MDI/MDIX

**Connector:** 8-pin RJ45

**Magnetic Isolation Protection:** 1.5 kV (built-in)

### Serial Interface

**Protocols:** Modbus RTU/ASCII Master/Slave, DNP3

**Number of Ports:**

MGate W5108: 1

MGate W5208: 2

**Serial Standards:** RS-232/422/485, software selectable

**Connectors:** DB9 male

**Pull High/Low Resistor for RS-485:** 1 kΩ, 150 kΩ

**Terminator for RS-485:** 120 Ω

**Isolation:** 2 kV (built-in)

### Serial Communication Parameters

**Data Bits:** 7, 8

**Stop Bits:** 1, 2

**Parity:** None, Even, Odd, Space, Mark

**Flow Control:** RTS/CTS, XON/XOFF (for RAW TCP only), RTS Toggle (for RS-232 only)

**Baudrate:** 50 bps to 921.6 Kbps

### Serial Signals

**RS-232:** Tx+, Rx+, 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

### Wireless Network

**Standards Compliance:** 802.11a/b/g/n

**Network Modes:** Infrastructure, Ad-Hoc

#### Transmission Rate:

802.11a/g: 65, 54, 48, 36, 24, 18, 12, 9, 6 Mbps, auto rate

802.11b: 11, 5.5, 2, 1 Mbps, auto rate

802.11n 2.4 GHz: HT20, MCS 0-7

802.11n 5 GHz: HT20 & HT40 MCS 0-7

**Transmission Distance:** Up to 100 meters (in open areas)

**Antenna Connector:** Reverse SMA

#### TX Transmit Power (per antenna port):

2.4 GHz

- 802.11b:
  - 1 to 11 Mbps, Typ. 16 (±1.5 dBm)

- 802.11g:
  - 6 to 36 Mbps, Typ.16 (±1.5 dBm)
  - 48 Mbps, Typ. 15 (±1.5 dBm)
  - 54 Mbps, Typ. 14 (±1.5 dBm)

- 802.11n (20 MHz):
  - MCS0-3: Typ. 16 dBm (± 1.5 dBm)
  - MCS4-5: Typ. 14 dBm (± 1.5 dBm)
  - MCS6-7: Typ. 12 dBm (± 1.5 dBm)

5 GHz

- 802.11a:
  - 6 to 36 Mbps, Typ.15 (±1.5 dBm)
  - 48 Mbps, Typ. 15 (±1.5 dBm)
  - 54 Mbps, Typ. 14 (±1.5 dBm)
- 802.11n (20/40 MHz):
  - MCS0-3: Typ. 15 dBm (± 1.5 dBm)
  - MCS4-5: Typ. 14 dBm (± 1.5 dBm)
  - MCS6-7: Typ. 12 dBm (± 1.5 dBm)

#### RX Sensitivity:

2.4 GHz

- 802.11b:
  - 92 dBm @ 1 Mbps,
  - 88 dBm @ 2 Mbps,
  - 87 dBm @ 5.5 Mbps,
  - 84 dBm @ 11 Mbps

- 802.11g:
  - 91 dBm @ 6 Mbps,
  - 90 dBm @ 9 Mbps,
  - 88 dBm @ 12 Mbps,
  - 86 dBm @ 18 Mbps,
  - 80 dBm @ 24 Mbps,
  - 80 dBm @ 36 Mbps,
  - 74 dBm @ 48 Mbps,
  - 73 dBm @ 54 Mbps

- 802.11n(20MHz):
  - 89 dBm @ MCS0
  - 87 dBm @ MCS1
  - 85 dBm @ MCS2
  - 81 dBm @ MCS3
  - 78 dBm @ MCS4
  - 74 dBm @ MCS5
  - 73 dBm @ MCS6
  - 71 dBm @ MCS7

5 GHz

- 802.11a:
  - 91 dBm @ 6 Mbps,
  - 90 dBm @ 9 Mbps,
  - 88 dBm @ 12 Mbps,
  - 86 dBm @ 18 Mbps,
  - 82 dBm @ 24 Mbps,
  - 81 dBm @ 36 Mbps,
  - 75 dBm @ 48 Mbps,
  - 74 dBm @ 54 Mbps

- 802.11n (20MHz):
  - 89 dBm @ MCS0
  - 87 dBm @ MCS1
  - 85 dBm @ MCS2
  - 81 dBm @ MCS3
  - 78 dBm @ MCS4
  - 74 dBm @ MCS5
  - 73 dBm @ MCS6
  - 71 dBm @ MCS7
- 802.11n (40MHz):
  - 85 dBm @ MCS0
  - 84 dBm @ MCS1
  - 81 dBm @ MCS2
  - 77 dBm @ MCS3
  - 75 dBm @ MCS4
  - 70 dBm @ MCS5
  - 69 dBm @ MCS6
  - 67 dBm @ MCS7

#### Spread Spectrum and Modulation (Typical):

OFDM (54, 48, 36, 24, 18, 12, 9, 6 Mbps)

OFDM (MCS0, MCS1, MCS2, MCS3, MCS4, MCS5, MCS6, MCS7)

CCK (11 Mbps, 5.5 Mbps)

DQPSK (2 Mbps)

DBPSK (1 Mbps)

#### Operating Channels (Central frequency):

• US:

- 2.412 to 2.462 GHz (11 channels)
- 5.180 to 5.240 (4 channels)
- 5.260 to 5.320 (4 channels)
- 5.500 to 5.700 GHz (8 channels, excludes 5.600 to 5.640 GHz)
- 5.745 to 5.825 GHz (5 channels)

• EU:

- 2.412 to 2.472 GHz (13 channels)
- 5.180 to 5.240 (4 channels)
- 5.260 to 5.320 (4 channels)
- 5.500 to 5.700 GHz (11 channels)

• JP:

- 2.412 to 2.484 GHz (14 channels, DSSS)
- 5.180 to 5.240 (4 channels)
- 5.260 to 5.320 (4 channels)
- 5.500 to 5.700 GHz (11 channels)

#### Digital Input/Output

**Number of DI/DO:** 2 DIs and 2 DOs

**Connectors:** 6-pin terminal blocks

#### Digital Input

##### Dry Contact Level:

On: Short to GND

Off: Open

##### Wet Contact Level (Source type, COM to DI):

Sensor Type: NPN

Off: +3 VDC max.

On: +10 to 30 V

##### Digital Output (Sink Type):

On: Short to GND

Off: OPEN to GND

Driver Current: Max. 200 mA per channel

On-state voltage: 24 VDC nominal, open collector to 30 V

**Storage Card Slot:** 1 microSD (SDHC) card slot supports up to 32 GB

#### Software

**Configuration Options:** Web console

**Utilities:** Device Search Utility (DSU) for Windows 95, 98, ME, NT, 2000, Windows XP, Server 2003, Vista, Server 2008 (x86/x64), Windows Server 2008 R2, Windows 7/8/8.1 (x86/x64), Windows Server 2012 (x64), Windows 2012 R2

**Network protocols:** TCP/IP, UDP, HTTP, SMTP, NTP, DNS, DHCP Client, SNMP (v1, v2, v3), Private MIB, ARP, Telnet

### Security

**Authentication:** WEP encryption ( 64 or 128 bit), WPA / WPA2- Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES)  
**Encryption:** 128-bit TKIP/AES-CCMP EAP-TLS, PEAP/GTC, PEAP/MD5, PEAP/MSCHAPV2, EAP-TTLS/PAP, EAP-TTLS/CHAP, EAP-TTLS/MSCHAP, EAP-TTLS/MSCHAPV2, EAP-TTLS/EAP-MSCHAPV2, EAP-TTLS/EAP-GTC, EAP-TTLS/EAP-MD5, LEAP

### Physical Characteristics

**Housing:** Metal (IP30)

**Weight:**

MGate W5108: 589 g

MGate W5208: 738 g

**Dimensions:**

MGate W5108: 45.8 x 105 x 134 mm (1.8 x 4.13 x 5.28 in)

MGate W5208: 59.6 x 101.7 x 134 mm (2.35 x 4 x 5.28 in)

### 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)

### Power Requirements

**Input Voltage:** 9 to 60 VDC

**Power Connector:** Terminal block

**Power Consumption:**

495 mA @ 9 V

202 mA @ 24 V

114 mA @ 48 V

99 mA @ 60 V

### Standards and Certifications

**Safety:** UL 61010-2-201, EN 60950-1

**Hazardous Location:** Class 1 Division 2, ATEX Zone 2, IECEx  
*Note: Certification process is underway. Please contact a Moxa sales representative for details.*

**EMC:** EN 55022/24

**EMI:** FCC Part 15B Class A

**EMS:**

EN 61000-4-2 (ESD) Contact: 6 kV; Air: 8 kV

EN 61000-4-3 (RS) 80 MHz to 1 GHz, 10 V/m

EN 61000-4-4 (EFT) Power 4 kV; Signal 2 kV

EN 61000-4-5 (Surge) Power 2 kV; Signal: 1 kV

EN 61000-4-6 (CS)

EN 61000-4-8 (PFMF)

**Shock:** IEC 60068-2-27

**Freefall:** IEC 60068-2-23

**Vibration:** IEC 60068-2-6

**Radio:**

EN 300328, EN 301893, TELECOM

CE (ETSI EN 301 893, ETSI EN 300 328), ARIB RCR STD-33, ARIB STD-66

### Reliability

**MTBF (mean time between failures):** 668,518 hrs

**Alarm Functions:** SMS, relay, e-mail

**Alert Tools:** Built-in buzzer

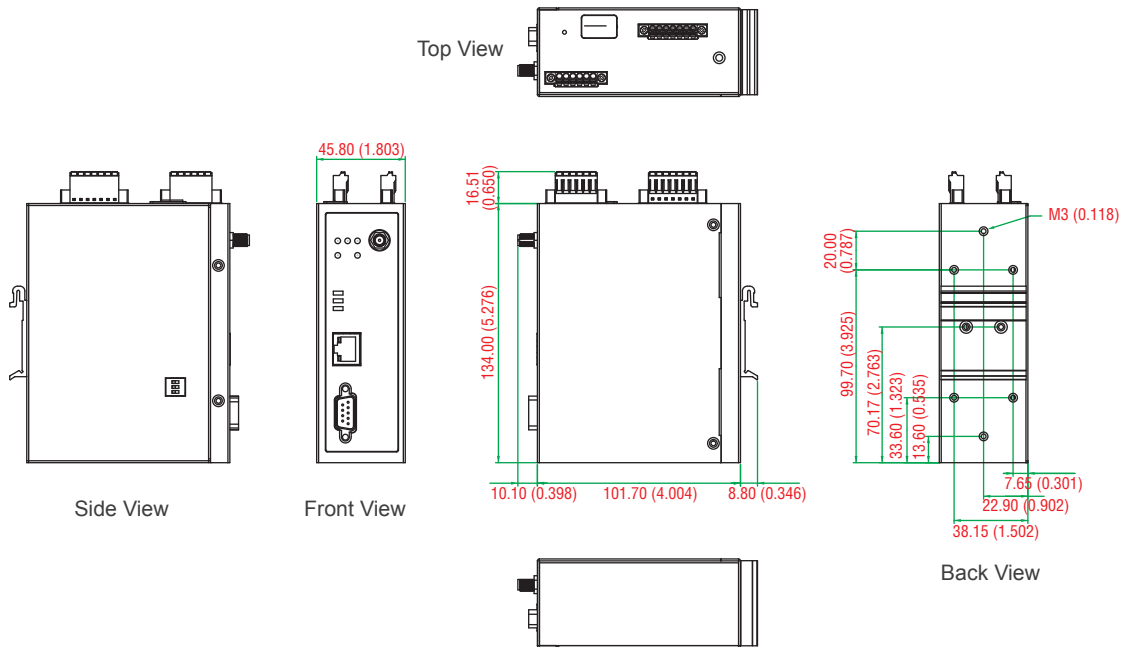
### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

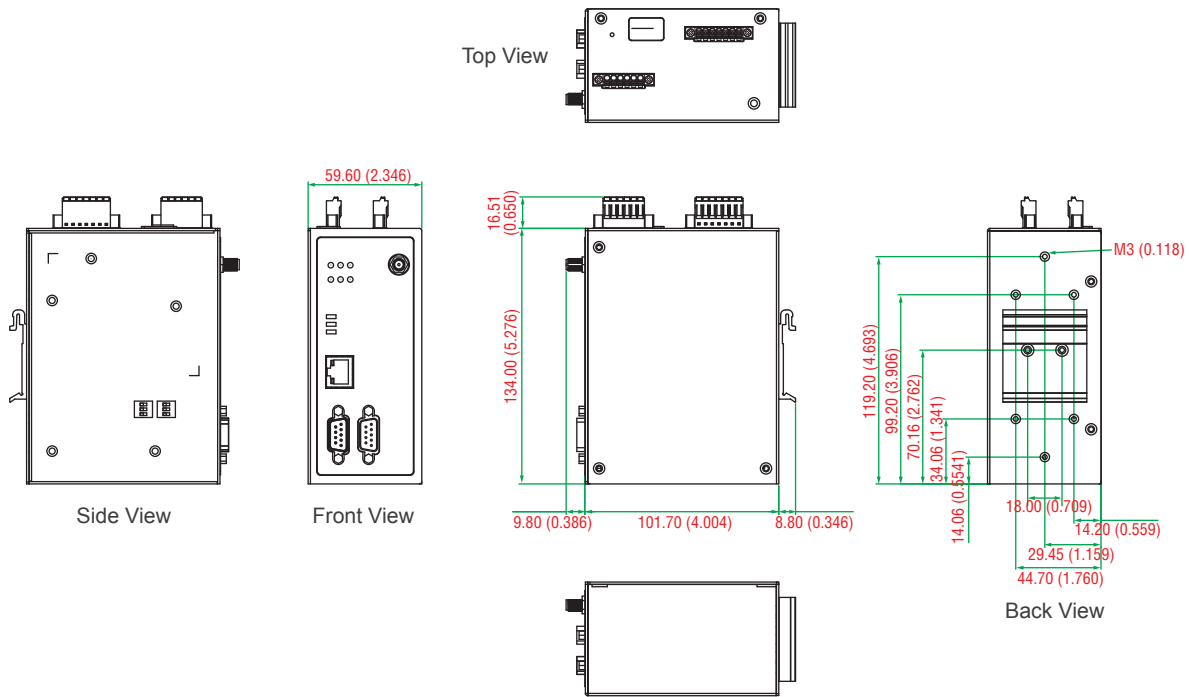
### Dimensions (MGate W5108)

Unit: mm (inch)



## Dimensions (MGate W5208)

Unit: mm (inch)



## Ordering Information

### Available Models

**MGate W5108:** 1-port Modbus/DNP3 gateway with 802.11 a/b/g/n WLAN (includes US/Euro/Japan bands), 0 to 60°C operating temperature

**MGate W5108-T:** 1-port Modbus/DNP3 gateway with 802.11 a/b/g/n WLAN (includes US/Euro/Japan bands), -40 to 75°C operating temperature

**MGate W5208:** 2-port Modbus gateway/DNP3 with 802.11 a/b/g/n WLAN (includes US/Euro/Japan bands), 0 to 60°C operating temperature

**MGate W5208-T:** 2-port Modbus gateway/DNP3 with 802.11 a/b/g/n WLAN (includes US/Euro/Japan bands), -40 to 75°C operating temperature

### Optional Accessories (can be purchased separately)

**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-51-01:** Wall mounting kit

**Mini DB9F-to-TB Adapter:** DB9 female to terminal block adapter

### Package Checklist

- 1 MGate W5108 or MGate W5208 WiFi gateway
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card