

MGate MB3170-G2/MB3270-G2/MB3470-G2 系列

1、2、4 埠進階 Modbus 閘道器



特色與優點

- 支援高效能且低延遲的代理模式 (Agent Mode)，可主動輪詢 Modbus 裝置並快取資料
- 支援適用於各種裝置的專有 Modbus 與 Modbus 延伸通訊協定
- 支援自動裝置路由功能，實現簡易配置
- 支援透過 TCP 埠或 IP 位址進行路由，以配合不同的系統架構
- 最多可連接 32 個 Modbus TCP 用戶端 (MGate 可為每個連線的 Modbus 用戶端將 32 個 Modbus 要求排入佇列)
- 支援 Modbus 串列用戶端對 Modbus 串列伺服器通訊
- 支援乙太網路串接或雙子網路，實現彈性的網路系統設計
- 10/100BaseTX (RJ45) 或 100BaseFX (單模或多模，具備 SC/ST 連接器或提供 SFP 選項)
- 內建 Modbus 通訊測試工具，無需依賴外部軟體
- 直覺的 Modbus 診斷與流量監控功能，簡化故障排除
- 內建 2 kV 光電隔離保護的串列埠 (適用於 -I 型號)
- 支援備援 DC 電源輸入與 1 點 relay 輸出
- 符合 IEC 62443-4-2 安全等級 2 的要求
- -40 至 75°C 寬操作溫度範圍 (-T 型號)

認證



簡介

MGate MB3170-G2、MB3270-G2 與 MB3470-G2 為新一代 Modbus 閘道器，可在 Modbus TCP、RTU、ASCII，甚至專有或延伸的 Modbus 串列通訊協定之間進行轉換。這些 MGate 閘道器可透明地轉換通訊協定、主動輪詢連線的裝置，並將資料快取於記憶體中。這些功能使 SCADA 系統能夠直接從閘道器擷取 Modbus 資料，而無需等待所有 Modbus 裝置回應，進而大幅提升通訊效能。

Moxa 採用 IEC 62443-4-1 安全開發生命週期流程開發 MGate 系列，確保這些閘道器在工業網路中的連線與管理安全性。

此外，透過可適應多種安裝與配線需求的多元安裝選項、適用於嚴苛環境的堅固設計，以及用於快速維護且易於使用的配置與故障排除工具，進一步提升了使用者體驗。

高效能 Modbus 轉換

MGate MB3170-G2/MB3270-G2/MB3470-G2 閘道器可運作於透明模式 (即直接通訊協定轉換) 或代理模式 (即輪詢與快取)。透明模式會根據每個要求進行通訊協定轉換。但在大型 Modbus 系統或需要更低延遲的情況下，代理模式透過直接存取閘道器的快取，大幅提升了 SCADA 的通訊效能。

靈活的各類系統 Modbus 轉換

MGate 支援雙子網路網路配置，可在不影響現有系統的情況下，將 Modbus TCP 與 Modbus RTU/ASCII 無縫整合。具備多個串列埠型號，MGate 可同時在 Modbus 串列與 Modbus TCP 之間進行轉換，並支援串列對串列以及 TCP 對 TCP 的通訊。即便使用舊有的串列埠或基於 COM 埠的軟體，MGate 的 Real COM 模式也能在無需調整軟體的情況下，實現經由乙太網路 TCP 的通訊。除了標準的 Modbus RTU 與 ASCII 外，MGate 還能轉換專有及延伸的 Modbus 串列通訊協定，無需進行客製化開發或增加額外裝置，確保了近乎通用的 Modbus 系統相容性。MGate-G2 能夠同時將專有串列通訊協定與 Modbus 串列通訊協定轉換為 Modbus TCP。

直覺化配置與極低維護需求

維護期間的停機可能造成高昂損失。系統警報通常需要聯絡廠商，由於需要收集資訊與諮詢，進而延長了故障排除的時間。MGate-G2 閘道器提供全面的故障排除資訊，可快速識別問題，進而簡化此流程。一鍵診斷功能可收集技術支援所需的所有必要資料，讓使用者能夠高效解決問題並大幅縮短停機時間。

規格

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2 (Ethernet cascade or dual subnet configured by software) Auto MDI/MDI-X connection																																																						
Magnetic Isolation Protection	1.5 kV (built-in)																																																						
Optical Fiber	<table><tr><th colspan="2" rowspan="2"></th><th colspan="2">100BaseFX</th></tr><tr><th>Multi-Mode</th><th>Single-Mode</th></tr><tr><th rowspan="2">Fiber Cable Type</th><th rowspan="2">OM1</th><th>50/125 μm</th><th rowspan="2">G.652</th></tr><tr><th>800 MHz x km</th></tr><tr><th colspan="2">Typical Distance</th><td>4 km</td><td>5 km</td><td>40 km</td></tr><tr><th rowspan="3">Wavelength</th><th>Typical (nm)</th><td colspan="2">1300</td><td>1310</td></tr><tr><th>TX Range (nm)</th><td colspan="2">1260 to 1360</td><td>1280 to 1340</td></tr><tr><th>RX Range (nm)</th><td colspan="2">1100 to 1600</td><td>1100 to 1600</td></tr><tr><th rowspan="4">Optical Power</th><th>TX Range (dBm)</th><td colspan="2">-10 to -20</td><td>0 to -5</td></tr><tr><th>RX Range (dBm)</th><td colspan="2">-3 to -32</td><td>-3 to -34</td></tr><tr><th>Link Budget (dB)</th><td colspan="2">12</td><td>29</td></tr><tr><th>Dispersion Penalty (dB)</th><td colspan="2">3</td><td>1</td></tr><tr><td colspan="5">Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power. Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).</td></tr></table>						100BaseFX		Multi-Mode	Single-Mode	Fiber Cable Type	OM1	50/125 μm	G.652	800 MHz x km	Typical Distance		4 km	5 km	40 km	Wavelength	Typical (nm)	1300		1310	TX Range (nm)	1260 to 1360		1280 to 1340	RX Range (nm)	1100 to 1600		1100 to 1600	Optical Power	TX Range (dBm)	-10 to -20		0 to -5	RX Range (dBm)	-3 to -32		-3 to -34	Link Budget (dB)	12		29	Dispersion Penalty (dB)	3		1	Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power. Note: Compute the “typical distance” of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).				
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Ethernet Software Features

Industrial Protocols	Modbus TCP Client Modbus TCP Server
Configuration Options	Web Console (HTTP/HTTPS) Device Search Utility (DSU) MCC Tool Windows Driver Manager Utility MXview One Software MXconfig Software
Management	ARP DHCP Client DNS HTTPS ICMP IPv4/IPv6 SMTP SMTPS SNMPv1/v2c/v3 SNTP TCP/IP UDP

MIB	MIB-II RFC1213, RFC1317
Time Management	SNTP Client

Security Functions

Authentication	Local database
Encryption	AES-128 AES-256 ECC-256 ECC-384 ECC-521 HMAC RSA-1024 RSA-2048 RSA-3072 RSA-4096 SHA-256 SHA-384
Security Protocols	SNMPv3 HTTPS (TLS 1.2)

Serial Interface

No. of Ports	MGate MB3170-G2 models: 1 MGate MB3270-G2 models: 2 MGate MB3470-G2 models: 4
Connector	MGate MB3170-G2/MB3270-G2/MB3470-G2 models: 1/2/4 x DB9 male MGate MB3270-TB-G2/MB3470-TB-G2 models: 2/4 x 5-pin spring type terminal block
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	DTR/DSR RTS Toggle (RS-232 only) RTS/CTS
Pull High/Low Resistor for RS-485	1 kilo-ohm, 150 kilo-ohms (software selectable)
Terminator for RS-485	120 ohms (software selectable)
Isolation	I models: 2 kV
RS-485 Data Direction Control	ADDC (automatic data direction control)

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND or TxD, RxD, GND (for -TB models)
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 Client Modbus RTU/ASCII Server (supported in Agent mode) Proprietary Modbus Serial Client
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Modbus (Transparent)

Max. No. of Client Connections	32
Max. No. of Server Connections	32

Modbus RTU/ASCII (Agent)

Mode	Client (Master) Server (Slave) Proprietary Serial (client)
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128/serial port
No. of Tags	MGate MB3170-G2 models: 150 MGate MB3270-G2 models: 300 MGate MB3470-G2 models: 600
Total Tag Size	MGate MB3170-G2 models: 2048 Bytes MGate MB3270-G2 models: 3072 Bytes MGate MB3470-G2 models: 4096 Bytes

Modbus TCP (Agent)

Mode	Client (Master) Server (Slave)
Max. No. of Client Connections	32
Max. No. of Server Connections	32
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	128
No. of Tags	MGate MB3170-G2 models: 150 MGate MB3270-G2 models: 300 MGate MB3470-G2 models: 600
Total Tag Size	MGate MB3170-G2 models: 2048 Bytes MGate MB3270-G2 models: 3072 Bytes MGate MB3470-G2 models: 4096 Bytes

Power Parameters

Input Voltage	12 to 48 VDC
Input Current	MGate MB3170-G2/MB3270-G2 models: 452 mA @ 12 VDC MGate MB3470-G2 models: 583 mA @ 12 VDC
Power Connector	8-pin terminal block

Relays

Contact Current Rating	Resistive load: 1 A @ 30 VDC
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Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions (with ears)	MGate MB170-G2/MB3270-G2 models: 25 x 89 x 132 mm (0.98 x 3.50 x 5.19 in) MGate MB3470-G2 models: 42 x 89 x 132 mm (1.65 x 3.50 x 5.19 in)
Dimensions (without DIN-rail mounting kit)	MGate MB170-G2/MB3270-G2 models: 25 x 89 x 129 mm (0.98 x 3.50 x 5.08 in) MGate MB3470-G2 models: 42 x 89 x 129 mm (1.65 x 3.50 x 5.08 in)
Weight	MGate MB3170-G2 models: 338 g (0.75 lb) MGate MB3270-G2 models: 393 g (0.87 lb) MGate MB3470-G2 Series: 444 g (0.98 lb)

Environmental Limits

Operating Temperature	Standard models : -10 to 60°C (14 to 140°F) 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

EMC	EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 2 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV, Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11
Hazardous Locations	ATEX Class I Division 2 IECEx Note: Certification processes are underway; expected completion by the end of June 2026.
Maritime	DNV Note: Certification process is underway; expected completion by the end of June 2026
Safety	EN 62368-1 UL 62368-1
Vibration	IEC 60068-2-6
Package Drop Test	ISTA 1A

MTBF

Time	MGate MB3170-G2 models: 3,238,923 hrs MGate MB3170I-G2 models: 3,156,544 hrs MGate MB3170-S/M-SC-G2/M-ST-G2 models: 2,889,487 hrs MGate MB3170-SFP-G2 models: 3,109,327 hrs MGate MB3270-TB-G2 models: 2,943,248 hrs MGate MB3270-G2 models: 2,931,934 hrs MGate MB3270I-TB-G2 models: 2,809,979 hrs MGate MB3270I-G2 models: 2,799,662 hrs MGate MB3470-TB-G2 models: 2,377,791 hrs MGate MB3470-G2 models: 2,363,042 hrs MGate MB3470I-TB-G2 models: 2,208,607 hrs MGate MB3470I-G2 models: 2,195,874 hrs
Standards	Telcordia Standard SR-332

Warranty

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

Package Contents

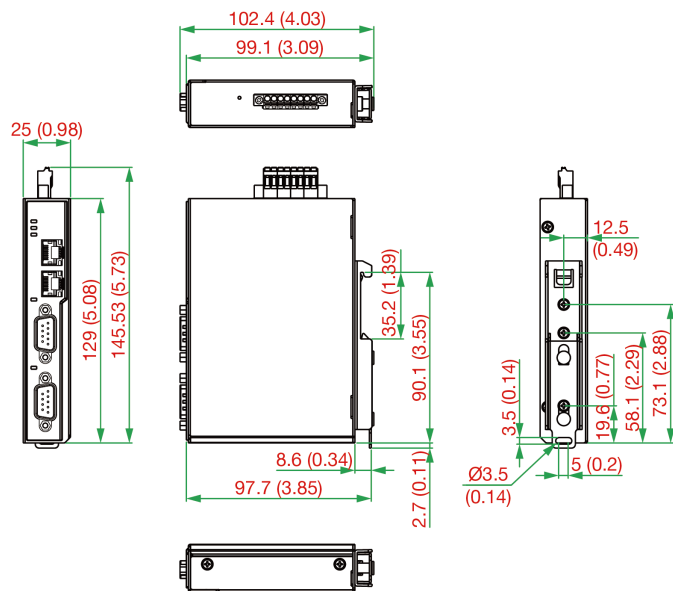
Device	1 x MGate MB3170-G2/MB3270-G2/MB3470-G2 Series gateway
Documentation	1 x quick installation guide 1 x warranty card

尺寸

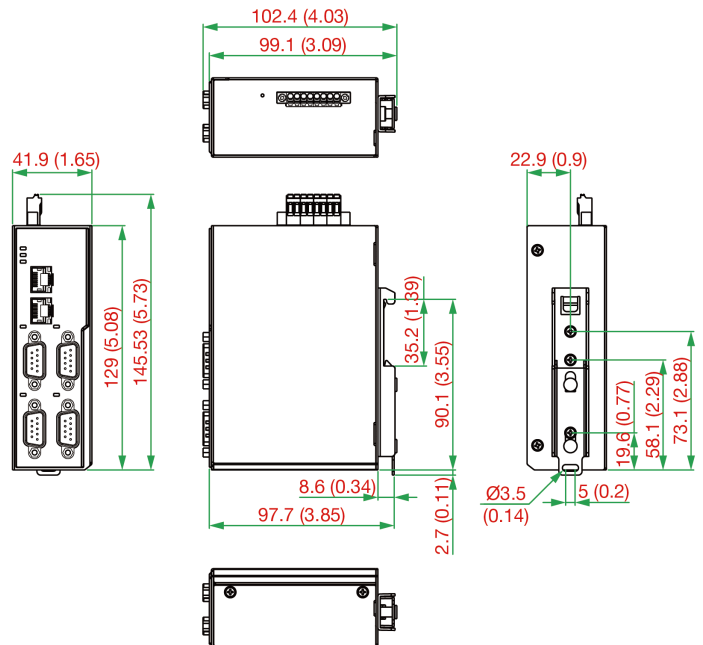
配備 DIN 軌道安裝套件

單位：公釐（英吋）

MGate MB3170-G2/MB3270-G2 Series



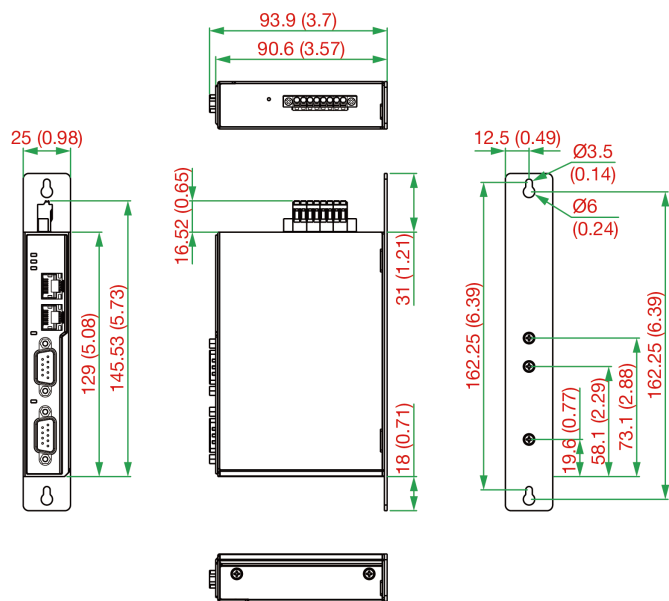
MGate MB3470-G2 Series



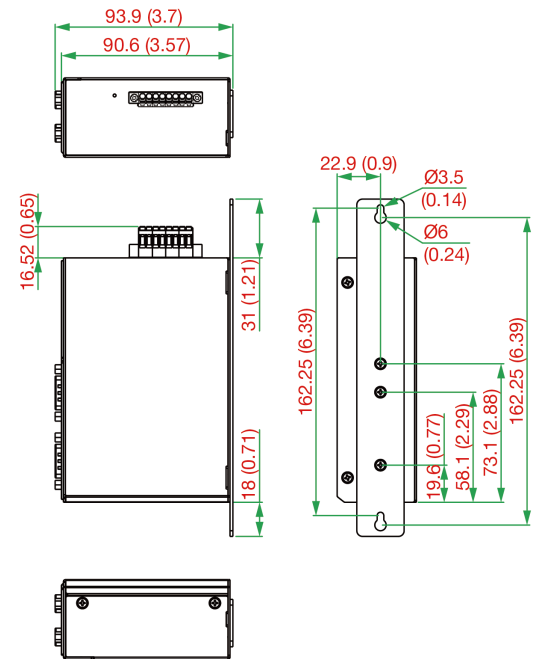
配備壁掛安裝套件

單位：公釐（英吋）

MGate MB3170-G2/MB3270-G2 Series



MGate MB3470-G2 Series



訂購資訊

Model Name	Ethernet	No. of Serial Ports	Serial Connector	Serial Isolation	Operating Temperature
MGate MB3170-G2	2 x RJ45	1	DB9	–	-10 to 60°C
MGate MB3170-G2-T	2xRJ45	1	DB9	–	-40 to 75°C
MGate MB3170-M-SC-G2	1 x RJ45 1 x Multi-mode SC Fiber	1	DB9	–	-10 to 60°C
MGate MB3170-M-SC-G2-T	1 x RJ45 1 x Multi-mode SC Fiber	1	DB9	–	-40 to 75°C
MGate MB3170-M-ST-G2	1 x RJ45 1 x Multi-mode ST Fiber	1	DB9	–	-10 to 60°C
MGate MB3170-M-ST-G2-T	1 x RJ45 1 x Multi-mode ST Fiber	1	DB9	–	-40 to 75°C
MGate MB3170-S-SC-G2	1 x RJ45 1 x Single-mode SC Fiber	1	DB9	–	-10 to 60°C
MGate MB3170-S-SC-G2-T	1 x RJ45 1 x Single-mode SC Fiber	1	DB9	–	-40 to 75°C
MGate MB3170-SFP-G2	1 x RJ45 1 x SFP Slot	1	DB9	–	-10 to 60°C
MGate MB3170-SFP-G2-T	1 x RJ45 1 x SFP Slot	1	DB9	–	-40 to 75°C
MGate MB3170I-G2	2 x RJ45	1	DB9	2 kV	-10 to 60°C
MGate MB3170I-G2-T	2 x RJ45	1	DB9	2 kV	-40 to 75°C
MGate MB3270-G2	2 x RJ45	2	DB9	–	-10 to 60°C
MGate MB3270-G2-T	2 x RJ45	2	DB9	–	-40 to 75°C
MGate MB3270-TB-G2	2 x RJ45	2	5-pin Terminal Block	–	-10 to 60°C
MGate MB3270-TB-G2-T	2 x RJ45	2	5-pin Terminal Block	–	-40 to 75°C

Model Name	Ethernet	No. of Serial Ports	Serial Connector	Serial Isolation	Operating Temperature
MGate MB3270I-G2	2 x RJ45	2	DB9	2 kV	-10 to 60°C
MGate MB3270I-G2-T	2 x RJ45	2	DB9	2 kV	-40 to 75°C
MGate MB3270I-TB-G2	2 x RJ45	2	5-pin Terminal Block	2 kV	-10 to 60°C
MGate MB3270I-TB-G2-T	2 x RJ45	2	5-pin Terminal Block	2 kV	-40 to 75°C
MGate MB3470-G2	2 x RJ45	4	DB9	–	-10 to 60°C
MGate MB3470-G2-T	2 x RJ45	4	DB9	–	-40 to 75°C
MGate MB3470-TB-G2	2 x RJ45	4	5-pin Terminal Block	–	-10 to 60°C
MGate MB3470-TB-G2-T	2 x RJ45	4	5-pin Terminal Block	–	-40 to 75°C
MGate MB3470I-G2	2 x RJ45	4	DB9	2 kV	-10 to 60°C
MGate MB3470I-G2-T	2 x RJ45	4	DB9	2 kV	-40 to 75°C
MGate MB3470I-TB-G2	2 x RJ45	4	5-pin Terminal Block	2 kV	-10 to 60°C
MGate MB3470I-TB-G2-T	2 x RJ45	4	5-pin Terminal Block	2 kV	-40 to 75°C

配件（選購）

SFP Modules

SFP-1FELL-C	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature

Mounting Kits

DK-89-01	DIN-rail mounting kit with 1 plate (89 x 19 x 9 mm), 3 M3 x 5 mm screws
WK-178-01	Wall-mounting kit with 1 plate (178 x 25 x 1.5 mm), 3 M3 x 5 mm screws

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
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Power Cords

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