

# MGate MB3170/MB3270 系列

## 1 和 2 埠高階序列轉乙太網路 Modbus 閘道



### 特色與優點

- 支援自動裝置路由，輕鬆配置
- 支援 TCP 連接埠或 IP 位址的路由，靈活部署
- 最多連接 32 個 Modbus TCP 伺服器
- 連接最多 31 或 62 個 Modbus RTU/ASCII 從屬端
- 最多可由 32 個 Modbus TCP 用戶端存取 (每個主站保留 32 個 Modbus 請求)
- 支援 Modbus 序列主站到 Modbus 序列從屬通訊
- 輕鬆佈線的內建乙太網路串接
- 10/100BaseTX (RJ45) 或 100BaseFX (單模或多模，附 SC/ST 連接器)
- 緊急請求通道確保 QoS 控制
- 嵌入式 Modbus 流量監控，方便排除故障
- 內建 2 kV 光電隔離保護的串列埠 (適用於「-I」型號)
- 提供 -40 至 75°C 寬溫度操作型號可供選用
- 支援備援 DC 電源輸入與 1 點 relay 輸出

### 認證



### 簡介

MGate MB3170 和 MB3270 分別是 1 連接埠和 2 連接埠 Modbus 閘道，可在 Modbus TCP、ASCII 和 RTU 通訊協定之間進行轉換。閘道提供序列到乙太網路通訊和序列 (主站) 到序列 (從屬) 通訊。此外，閘道還支援序列和乙太網路主站同時連接序列 Modbus 裝置。MGate MB3170 和 MB3270 系列閘道可由最多 32 個 TCP 主站/用戶端存取，或連接最多 32 個 TCP 從屬/伺服器。透過序列埠的路由可透過 IP 位址、TCP 連接埠號碼或 ID 映射來進行控制。透過 TCP 連接埠和 IP 位址進行串列埠路由，最多可存取 4 個 TCP 用戶端/主站 (MB3270 型)，而透過 ID 對應進行路由，最多可存取 32 個 TCP 用戶端/主站 (MB3170/MB3270)。主要優先控制功能使緊急命令可立即得到回應。所有型號均堅固耐用，可安裝在 DIN 軌道，並為序列訊號提供可選的內建光學隔離。

### 整合 TCP 主站，無需變更 Modbus RTU/ASCII 網路或軟體

MB3270 可將 Modbus TCP 與 Modbus RTU/ASCII 整合，無需修改現有的 Modbus RTU/ASCII 架構或軟體。使用序列重新導向功能，序列主站可透過專門映射的序列連接埠保持對序列從屬裝置的直接存取。這讓序列和 TCP 主站可同時存取序列從屬裝置。

### 乙太網路通訊光纖

MGate MB3170 系列包含 100BaseFX 光纖型號，多模態型號支援最遠 4 公里的傳輸距離，而單一模態型號最遠 40 公里的傳輸距離。光纖非常適合工業應用，因其不受電磁雜訊和干擾的影響。針對處於高接地迴路電壓的環境，光纖提供了最佳的隔離保護，且由於不存在火花危險，因此在危險環境下使用光纖比銅線更為安全。

### 自動裝置路由，輕鬆配置

Moxa 的自動裝置路由功能有助於解決需要配置大量 Modbus 裝置的工程師所遇到的許多問題和不便。只需按一下滑鼠即可設定從屬 ID 路由表並配置 Modbus 閘道，以自動偵測來自監控和資料擷取 (SCADA) 系統的 Modbus 請求。透過解決手動建立從屬 ID 路由表的需求，自動裝置路由功能可以節省工程師大量的時間和成本。

## 緊急命令的優先控制

隨著 Modbus 網路的規模和複雜度增加，命令和回應之間的延遲時間成為一個主要憂患。MB3000 系列的高階型號提供了緊急命令的優先控制功能，讓使用者可強制某些命令立即取得回應。根據系統要求，可使用不同的方法來定義哪些命令具有優先權。

## 規格

### Ethernet Interface

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

### Ethernet Software Features

|                       |   |
|-----------------------|---|
| Industrial Protocols  | Modbus TCP Client (Master)<br>Modbus TCP Server (Slave)   |
| Configuration Options | Web Console (HTTP/HTTPS)<br>Device Search Utility (DSU)<br>MGate Manager<br>MCC Tool<br>Telnet Console                    |
| Management            | ARP<br>DHCP Client<br>DNS<br>HTTP<br>HTTPS<br>SMTP<br>SNMP Trap<br>SNMPv1/v2c/v3<br>TCP/IP<br>Telnet<br>UDP<br>NTP Client |
| MIB                   | RFC1213, RFC1317  |
| Time Management       | NTP Client  |

## Security Functions

|                    |  |
|--------------------|--|
| Authentication     | Local database                         |
| Encryption         | HTTPS<br>AES-128<br>AES-256<br>SHA-256 |
| Security Protocols | SNMPv3<br>HTTPS (TLS 1.2)              |

## Serial Interface

|                                   |   |
|-----------------------------------|---|
| No. of Ports                      | MGate MB3170 Models: 1<br>MGate MB3270 Models: 2  |
| Connector                         | MGate MB3170/MB3170I: DB9 male for RS-232 and terminal block for RS-422/485<br>MGate MB3270/MB3270I: 2 x DB9 male |
| Serial Standards                  | RS-232/422/485 (software selectable)  |
| Baudrate                          | 50 bps to 921.6 kbps  |
| Data Bits                         | 7, 8  |
| Parity                            | None<br>Even<br>Odd<br>Space<br>Mark  |
| Stop Bits                         | 1, 2  |
| Flow Control                      | DTR/DSR<br>RTS Toggle (RS-232 only)<br>RTS/CTS  |
| Pull High/Low Resistor for RS-485 | 1 kilo-ohm, 150 kilo-ohms   |
| Terminator for RS-485             | 120 ohms  |
| 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 |
| 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<br>Modbus RTU/ASCII Slave |
|----------------------|---|

## Modbus (Transparent)

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

## Power Parameters

|                 |  |
|-----------------|--|
| Input Voltage   | 12 to 48 VDC   |
| Input Current   | MGate MB3170/MB3270: 435 mA @ 12 VDC<br>MGate MB3170I/MB3170-S-SC/MB3170I-M-SC/MB3170I-S-SC: 555 mA @ 12 VDC<br>MGate MB3270I/MB3170-M-SC/MB3170-M-ST: 510 mA @ 12 VDC |
| Power Connector | 7-pin terminal block   |

## Relays

|                        |                              |
|------------------------|------------------------------|
| Contact Current Rating | Resistive load: 1 A @ 30 VDC |
|------------------------|------------------------------|

## Physical Characteristics

|                           |  |
|---------------------------|--|
| Housing                   | Plastic  |
| IP Rating                 | IP30   |
| Dimensions (with ears)    | 29 x 89.2 x 124.5 mm (1.14 x 3.51 x 4.90 in)                                 |
| Dimensions (without ears) | 29 x 89.2 x 118.5 mm (1.14 x 3.51 x 4.67 in)                                 |
| Weight                    | MGate MB3170 Models: 360 g (0.79 lb)<br>MGate MB3270 Models: 380 g (0.84 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

|                     |  |
|---------------------|--|
| EMC                 | EN 55032/35  |
| EMI                 | CISPR 32, FCC Part 15B Class A   |
| 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: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 |
| Hazardous Locations | ATEX<br>Class I Division 2<br>IECEX  |
| Maritime            | DNV  |
| Freefall            | IEC 60068-2-32   |
| Shock               | IEC 60068-2-27   |
| Vibration           | IEC 60068-2-6<br>IEC 60068-2-64  |
| Safety              | EN 60950-1<br>IEC 60950-1<br>IEC 62368-1<br>UL 62368-1   |

## MTBF

|           |   |
|-----------|---|
| Time      | MGate MB3170 Models: 1,662,526 hrs<br>MGate MB3170I Models: 1,484,777 hrs<br>MGate MB3270 Models: 1,477,768 hrs<br>MGate MB3270I Models: 1,144,837 hrs<br>MGate MB3170-M/-S Models: 1,580,051 hrs<br>MGate MB3170I-M/-S Models: 1,385,414 hrs |
| Standards | Telcordia SR332   |

## Warranty

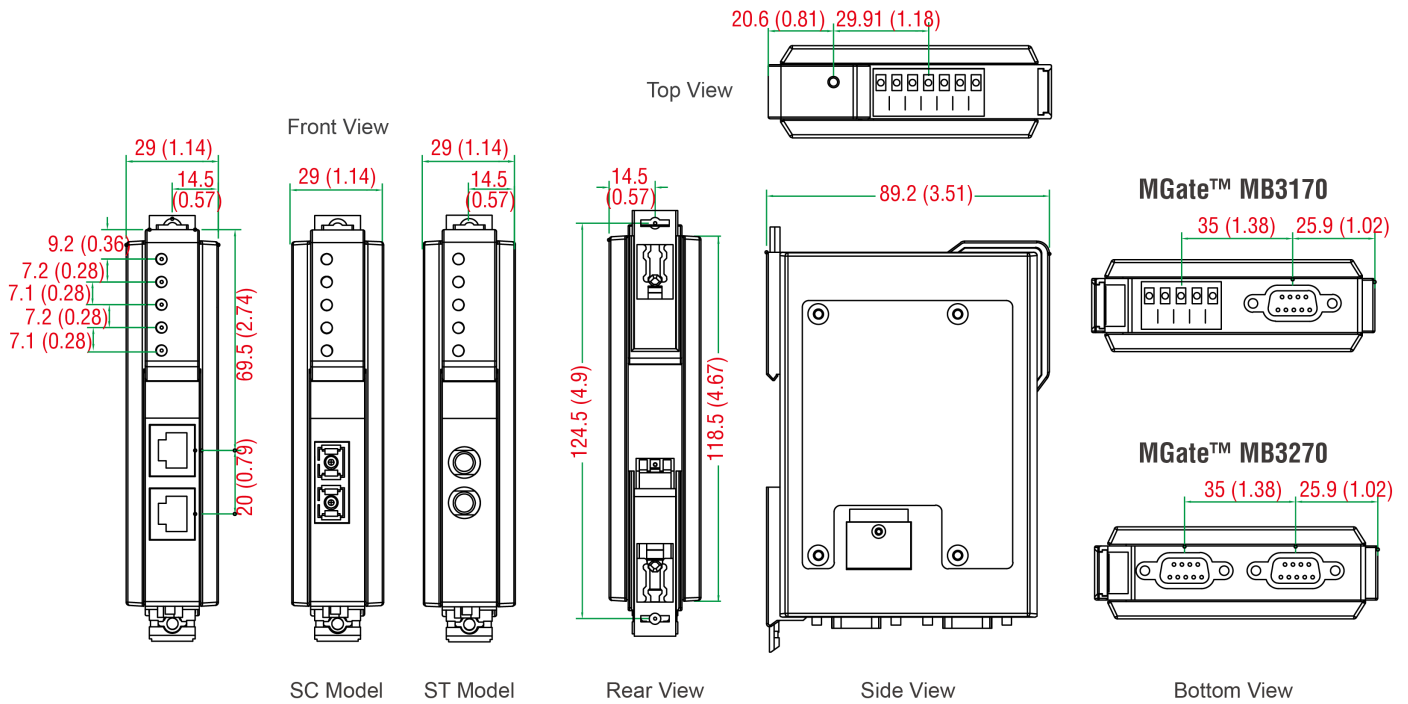
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/tw/warranty">www.moxa.com/tw/warranty</a> |

## Package Contents

|               |   |
|---------------|---|
| Device        | 1 x MGate MB3170/MB3270 Series gateway            |
| Documentation | 1 x quick installation guide<br>1 x warranty card |

## 尺寸

單位：公釐 (英吋)



## 訂購資訊

| Model Name      | Ethernet | No. of Serial Ports | Serial Standards | Serial Isolation | Operating Temp. |
|-----------------|----------|---------------------|------------------|------------------|-----------------|
| MGate MB3170    | 2 x RJ45 | 1                   | RS-232/422/485   | -                | 0 to 60°C       |
| MGate MB3170I   | 2 x RJ45 | 1                   | RS-232/422/485   | 2 kV             | 0 to 60°C       |
| MGate MB3270    | 2 x RJ45 | 2                   | RS-232/422/485   | -                | 0 to 60°C       |
| MGate MB3270I   | 2 x RJ45 | 2                   | RS-232/422/485   | 2 kV             | 0 to 60°C       |
| MGate MB3170-T  | 2 x RJ45 | 1                   | RS-232/422/485   | -                | -40 to 75°C     |
| MGate MB3170I-T | 2 x RJ45 | 1                   | RS-232/422/485   | 2 kV             | -40 to 75°C     |

| Model Name           | Ethernet           | No. of Serial Ports | Serial Standards | Serial Isolation | Operating Temp. |
|----------------------|--------------------|---------------------|------------------|------------------|-----------------|
| MGate MB3270-T       | 2 x RJ45           | 2                   | RS-232/422/485   | -                | -40 to 75°C     |
| MGate MB3270I-T      | 2 x RJ45           | 2                   | RS-232/422/485   | 2 kV             | -40 to 75°C     |
| MGate MB3170-M-SC    | 1 x Multi-Mode SC  | 1                   | RS-232/422/485   | -                | 0 to 60°C       |
| MGate MB3170-M-ST    | 1 x Multi-Mode ST  | 1                   | RS-232/422/485   | -                | 0 to 60°C       |
| MGate MB3170-S-SC    | 1 x Single-Mode SC | 1                   | RS-232/422/485   | -                | 0 to 60°C       |
| MGate MB3170I-M-SC   | 1 x Multi-Mode SC  | 1                   | RS-232/422/485   | 2 kV             | 0 to 60°C       |
| MGate MB3170I-S-SC   | 1 x Single-Mode SC | 1                   | RS-232/422/485   | 2 kV             | 0 to 60°C       |
| MGate MB3170-M-SC-T  | 1 x Multi-Mode SC  | 1                   | RS-232/422/485   | -                | -40 to 75°C     |
| MGate MB3170-M-ST-T  | 1 x Multi-Mode ST  | 1                   | RS-232/422/485   | -                | -40 to 75°C     |
| MGate MB3170-S-SC-T  | 1 x Single-Mode SC | 1                   | RS-232/422/485   | -                | -40 to 75°C     |
| MGate MB3170I-M-SC-T | 1 x Multi-mode SC  | 1                   | RS-232/422/485   | 2 kV             | -40 to 75°C     |
| MGate MB3170I-S-SC-T | 1 x Single-Mode SC | 1                   | RS-232/422/485   | 2 kV             | -40 to 75°C     |

## 配件 (選購)

### 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 |
|-----------------|--|

### Power Cords

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

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