

# MGate MB3170/MB3270

## Advanced Modbus Gateway



### Features

- Easy configuration
- Slave mode supports 16 TCP masters and 31/62/124 serial slaves at the same time
- Master mode supports 32 TCP slaves at the same time
- Supports emergency request tunnels, ensuring QoS control
- Supports serial redirector
- Embedded Modbus protocol analyzer
- Redundant dual DC power inputs
- Built-in Ethernet cascading ports for easy wiring



### Overview

The MB3170 and MB3270 are advanced Modbus gateways that provide maximum flexibility for integrating industrial Modbus networks of all types and sizes. They are designed to integrate Modbus TCP, ASCII, and RTU devices in almost any master and slave combination, including serial master to serial slave, or simultaneous serial and

Ethernet masters. A special priority control feature allows urgent commands to obtain immediate response. All models are ruggedly constructed, allow DIN-rail mounting, and offer built-in serial optical isolation as an option.

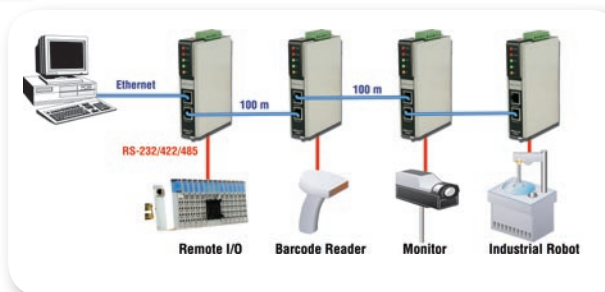
### Integration of TCP masters without alteration to Modbus RTU/ASCII network or software

The MB3270 can integrate Modbus TCP with Modbus RTU/ASCII, without modifying the existing Modbus RTU/ASCII architecture or software. With the serial redirector function, a serial master can

maintain direct access to serial slave devices through a specially mapped serial port. This allows the serial and TCP masters to have simultaneous access to serial slaves.

### Cascading Ethernet ports for easy wiring

Advanced models of the MGate MB3000 provide two Ethernet ports for easier network wiring. Dual Ethernet ports allow users to string multiple Modbus gateways together using standard RJ45 Ethernet cables, eliminating the need for a separate Ethernet switch.



### Redundant power inputs

MB3000 advanced models include dual power inputs for greater reliability. The power inputs allow simultaneous connections to two live DC power sources, so that continuous operation is provided even

if one power source fails. The higher level of reliability makes these advanced Modbus gateways ideal for the demanding requirements of industrial applications.

### Warning by relay output

Relay output is provided for Ethernet link and power input status. With relay output, maintenance engineers have an additional tool for better

troubleshooting and maintenance.

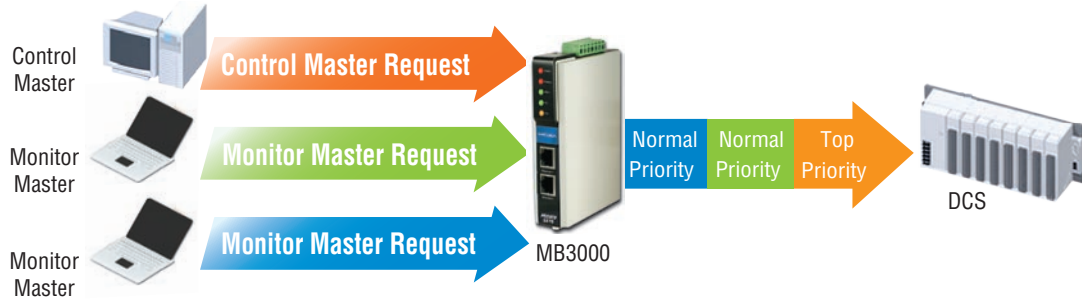
## Priority control for urgent commands (patent pending)

As Modbus networks increase in size and complexity, the lag time between commands and responses becomes a growing concern. MB3000 advanced models provide a priority control function for urgent commands, allowing users to force certain commands to

obtain an immediate response. Different methods are available to define which commands receive priority, depending on your system's requirements.

### Multiple masters with overriding controller

#### Set priority by Master

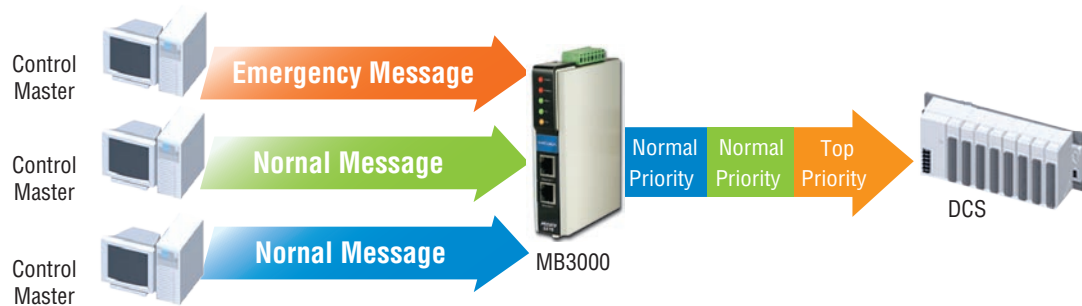


Multiple masters may exist on both the TCP and RTU/ASCII network. Real-time control would typically fail if many requests were sent simultaneously from many masters. Priority control allows one master

to be selected by IP address or serial port as the overriding controller. The overriding controller's commands will take precedence and will always receive an immediate response.

### Multiple masters with overriding command

#### Set priority by Request format

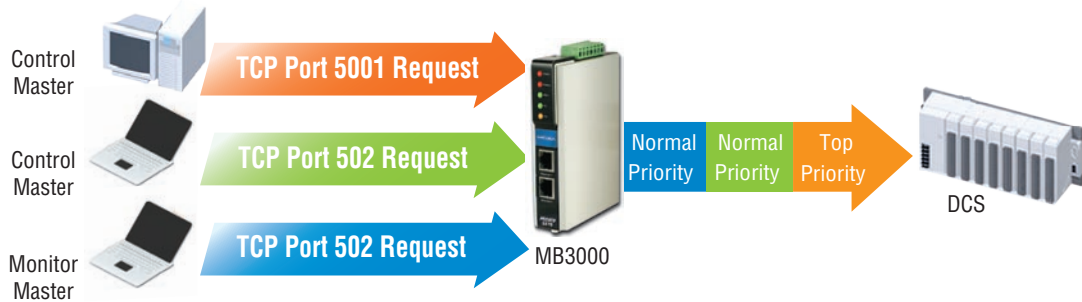


Certain control requests may be sent from many masters, with only one specific request format requiring real-time control (e.g., "turn-off"). Priority control allows a specific request format to be designated

as the overriding command, for immediate response regardless of the source of the request.

### Single master with complex control behavior

#### Set priority by TCP Port



Certain control sequences may be complex or may need frequent modification. A TCP port can be dedicated to urgent requests.

Requests can be defined by the HMI programmer and sent to the dedicated TCP port for immediate response.

## : Typical Applications

The MGate MB3000 is a powerful solution for the following applications:

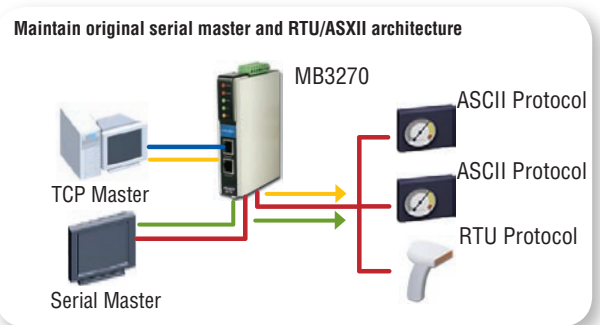
- Multiple TCP masters to RTU/ASCII slaves
- RTU/ASCII masters to multiple TCP slaves
- TCP master to different serial parameter slaves
- Serial master to serial slaves over Ethernet

With the serial redirector and priority control functions, the advanced model of the MGate MB3000 is also a powerful solution for more specialized applications

## : Advanced Applications

### Make RTU/ASCII slave devices accessible to TCP masters, while maintaining original serial master and RTU/ASCII architecture

For real-time control applications, the original HMI is often an embedded serial device that connects directly to serial slave services. The serial redirector function on the MB3270 allows one serial port to be connected to another serial port instead of to the Ethernet port. With this feature, the original serial master can continue controlling devices on the serial network while monitoring is performed from the TCP network. In a Modbus RTU/ASCII network where the original serial master must retain control of the serial devices, the MB3270 and MB3470 provide ideal solutions for adding Modbus TCP monitoring or control.



### Integrate complex Modbus networks

The serial redirector function also allows different Modbus serial networks to communicate with each other. The MB3270 are thus able to support every master-slave combination between TCP, RTU, and ASCII, providing easy consolidation of all your Modbus networks. Combined with the priority control capability, the MB3270 can Integrate any complex Modbus networks.

**Ordering Information**

- MGate MB3170: 1-port advanced Modbus gateway
- MGate MB3170I: 1-port advanced Modbus gateway with 2 KV isolation
- MGate MB3270: 2-port advanced Modbus gateway
- MGate MB3270I: 2-port advanced Modbus gateway with 2 KV isolation

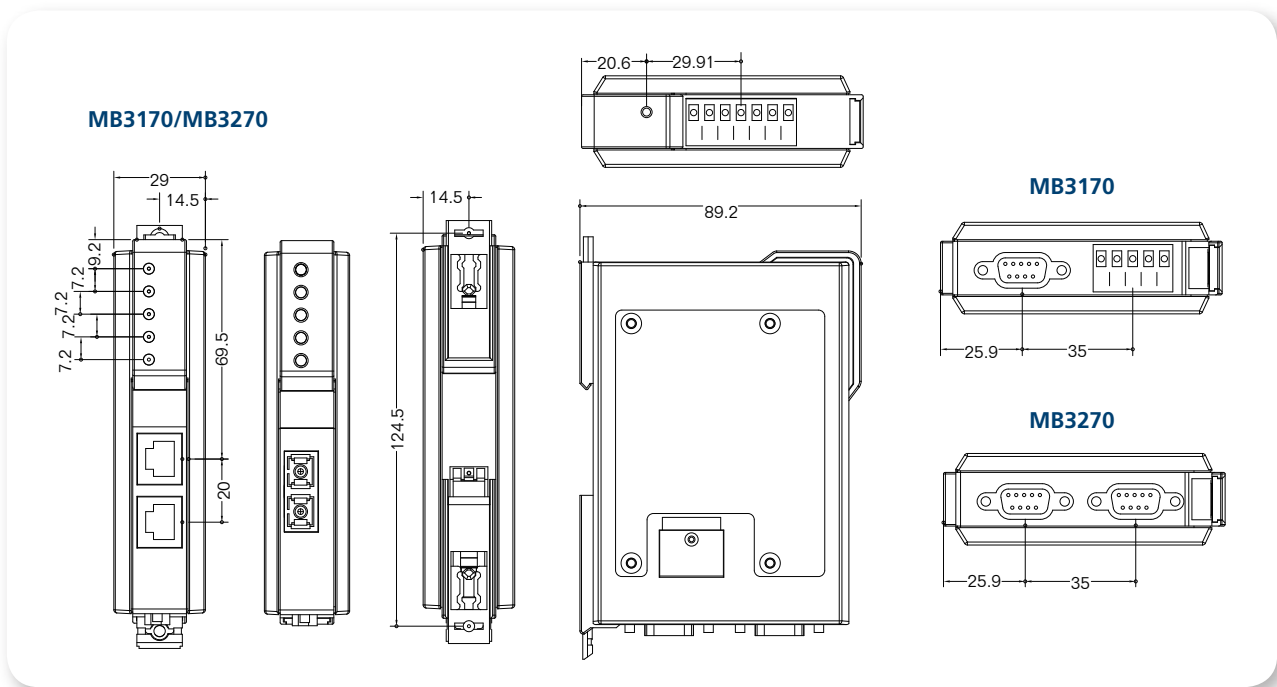
**Package Checklist**

- 1 MGate MB3000 advanced Modbus gateway
- Quick installation guide
- Document and software CD-ROM
- Warranty booklet

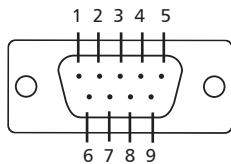
**Optional accessories**

- DR-45-24: 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 and switch

**Dimensions (unit = mm)**

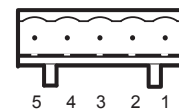


**Male DB9 RS-232/422/485 Port**



PIN	RS-232	RS-485 (4W)	RS-485 (2W)	RS-422
1	DCD	TxD-(A)	-	TxD-(A)
2	RXD	TxD+(B)	-	TxD+(B)
3	TXD	RxD+(B)	Data+(B)	RxD+(B)
4	DTR	RxD-(A)	Data-(A)	RxD-(A)
5	GND	GND	GND	GND
6	DSR	-	-	-
7	RTS	-	-	-
8	CTS	-	-	-
9	-	-	-	-

**RS-422/485 Terminal Block Wiring**



PIN	RS-485 (4W)	RS-485 (2W)	RS-422
1	TxD+(B)	-	TxD+(B)
2	TxD-(A)	-	TxD-(A)
3	RxD+(B)	Data+(B)	RxD+(B)
4	RxD-(A)	Data-(A)	RxD-(A)
5	GND	GND	GND

**Specifications****LAN**

**Ethernet:** 10/100 Mbps, RJ45, Auto MDI/MDIX

**Protection:** Built-in 1.5 KV magnetic isolation

**Serial**

**Interface:** RS-232/422/485 (software selectable)

**No. of Ports:**

MB3170: 1

MB3270: 2

**Port Type:**

MB3170/MB3170I - Male DB9 for RS-232, terminal block for RS-422/485

MB3270/MB3270I - Male DB9

**Signals:**

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

RS-422: Tx+, Tx-, Rx+, Rx-, GND

RS-485 (2-wire): Data+, Data-, GND

RS-485 (4-wire): RxD+, RxD-, TxD+, TxD-, GND

**Serial Line Protection: 15 KV ESD for All Signals****Serial Communication Parameters**

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

**Data Bits:** 7, 8

**Stop Bit(s):** 1, 2

**Flow Control:** RTS/CTS, XON/XOFF

**Speed:** 50 to 921.6 Kbps

**Software Features**

**Operation Modes:** RTU Slave, RTU Master, ASCII Slave, ASCII Master

**Utility:** MGate Manager Suite for Windows 98/ME/NT/2000/XP/2003/Vista

**Multi-master and Multi-drop:**

Master mode: 32 TCP slaves

Slave mode: 16 TCP masters, 32 request queue depth for each master

**Power Requirements**

**Power Input:** 12 to 48 VDC

**Power Consumption:**

MB3170: 400 mA @ 12 VDC, 130 mA @ 48 VDC

MB3170I: 405 mA @ 12 VDC, 140 mA @ 48 VDC

MB3270: 410 mA @ 12 VDC, 145 mA @ 48 VDC

**Power Connector:**

MB3170: terminal block

MB3270: terminal block

**Power Line Protection:**

1 KV Burst (EFT), EN61000-4-4

0.5 KV Surge, EN61000-4-5

**Environment****Operating Temperature:**

0 to 55°C (32 to 131°F), 5 to 95% RH

-40 to 75°C (-40 to 185°F) for wide temperature models (-T models)

**Storage Temperature:**

-20 to 85°C (-4 to 185°F), 5 to 95% RH

**Regulatory Approvals****EMC:**

CE: EN550022 Class A / EN550024

FCC: FCC Part 15 subpart B, Class A

**Safety:**

TUV: EN60950-1

Shock: IEC60068-2-27

Freefall: IEC60068-2-23

Vibration: IEC60068-2-6

**Warranty: 5 years**