

# MBRG-300 Modbus Router/Gateway


## Quick start reference guide

 This document is a reference guide only and must be used in conjunction with the MBRG-300 *User manual*.

IGMBRG300-2201

## INSTALLATION

### Regulatory notes

-  1. The MBRG-300 is suitable for use in non-hazardous locations only.
- 2. The MBRG-300 is not authorized for use in life support devices or systems.
- 3. Wiring and installation must be in accordance with applicable electrical codes in accordance with the authority having jurisdiction.
- 4. This is a Class A device and intended for commercial or industrial use. This equipment may cause radio interference if used in a residential area; in this case it is the operator's responsibility to take appropriate measures.
- 5. The precondition for compliance with EMC limit values is strict adherence to the guidelines specified in the MBRG-300 *User manual*. This applies in particular to the area of grounding and shielding of cables.


### FCC Notice (USA only)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Industry Canada Notice (Canada only)

This Class A digital apparatus complies with Canadian ICES-003.

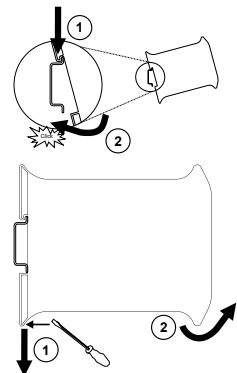
## SAFETY PRECAUTIONS

 **ELECTRICAL HAZARD**

- This equipment must be installed and serviced only by qualified personnel. Such work should be performed only after reading the MBRG-300 *User manual* in its entirety.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Apply appropriate personal protective equipment and follow safe electrical practices.
- Turn off all power supplying the equipment in which the MBRG-300 is to be installed before installing, wiring or removing the MBRG-300.
- Always use a properly rated voltage sensing device to confirm that power is off.
- The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.

**Failure to follow these instructions could result in death or serious injury!**


### DIN rail mounting and removal



To mount the unit on a DIN rail, slot the top part of the MBRG-300 into the upper guide of the rail and lower the enclosure until the bottom of the red hook clicks into place.

To remove the MBRG-300 from the DIN rail, use a screw driver as a lever by inserting it in the small slot of the red hook and push the red hook downwards. Then remove the unit from the rail by raising the bottom front edge of the enclosure.

### Mounting rules

-  • No water splash and water drops
- No aggressive gas, steam or liquids
- Avoid dusty environments.
- Avoid shock or vibration
- Do not exceed the specified operational temperatures and humidity range.
- Mount inside an electrical switchboard or control cabinet.
- Make sure there is sufficient air ventilation and clearance to other devices mounted next to the unit.
- Observe applicable local regulations like EN60204 / VDE0113.

## INTRODUCTION

### Package Contents

- MBRG-300 unit
- Quick start reference guide
- 2-pin terminal block plug
- 6-pin terminal block plug

### Documentation and Additional Resources

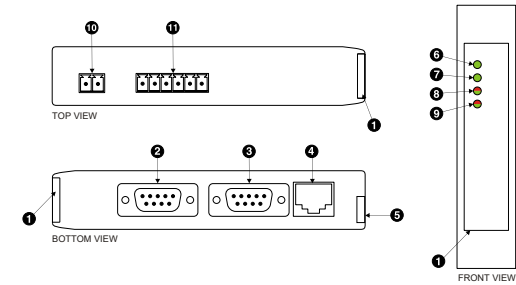
This Quick start reference guide must be used in conjunction with the MBRG-300 *User manual*.

The MBRG-300 *User manual* and supplemental software packages can be downloaded from the MBRG-300 web site:  
<http://www.proconx.com/mbrg300>

### Quick start checklist


- Obtain a copy of the MBRG-300 *User manual* and read it properly and in its entirety.
- Mount the unit.
- Connect the power. Do not connect yet serial ports.
- Configure the Ethernet communications settings with a web browser (using an Ethernet crossover cable) or with a terminal program like *HyperTerminal* (using a null modem cable)
- Configure the serial line communication settings.
- Configure the operational aspects of the device.
- Wire serial line interfaces.

## DESCRIPTION




- 1** Clear front cover
- 2** Serial port 1 RS-232 connector
- 3** Serial port 2 RS-232 connector
- 4** Ethernet connector
- 5** DIN rail clip
- 6** Power LED
- 7** Ethernet link LED
- 8** Status 1 LED
- 9** Status 2 LED
- 10** Power terminals
- 11** Serial port 1 and 2 RS-485 or serial port 1 RS-422 terminals

### Before connecting anything

-  1. Before installing or removing the unit or any connector, ensure that the system power and external supplies have been turned off.
- 2. Check the system supply voltage with a multimeter for correct voltage range and polarity.
- 3. Connect the power supply cable and switch on the system power. Check if the Power LED is lit.
- 4. Turn off system power.
- 5. Connect all I/O cables.
- 6. Once you are certain that all connections have been made properly, restore the power.

### Power terminals pin assignment

 Before connecting power please follow the rules in the section called "SAFETY PRECAUTIONS" and the section called "Before connecting anything".



1	V+	Positive voltage supply (10 - 30 V DC)
2	V-	Negative voltage supply, DC power return



Make sure that the polarity of the supply voltage is correct before connecting any device to the serial ports! A wrong polarity can cause high currents on the ground plane between the V- power supply pin and the serial port ground pins, which can cause damage to the device.

Please observe the wiring, grounding and shielding instructions described in the MBRG-300 *User manual!*

## RS-485/RS-422 terminals pin assignment

Pin	RS-485	RS-422	Description
3	GND	GND	Modbus Common
4	D+ port 1	TX+	Modbus D1 or TXD1
5	D- port 1	TX-	Modbus D0 or TXD0
6	GND	GND	Modbus Common
7	D+ port 2	RX+	Modbus D1 or RXD1
8	D- port 2	RX-	Modbus D0 or RXD0

**Do not connect the cable shield to the GND pin!** Use an external chassis ground connection to terminate the shield.



RS-485

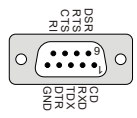


RS-422

Pinout as per EIA-574 DTE. Please observe the cabling instructions described in the MBRG-300 *User manual!*

## RS-232 connector pin assignment

1	DCD (unused)	in
2	RXD (Receive data)	in
3	TXD (Transmit data)	out
4	DTR (unused)	out
5	GND (Signal ground)	in
6	DSR (unused)	in
7	RTS (unused)	out
8	CTS (unused)	in
9	RI (unused)	in



## LED indicators

A LED test is exercised at power-up, cycling each LED off, green and then red for approximately 0.25 seconds. At the same time the power-on self test of the device is performed.

The following table outlines the indicator condition and the corresponding status after the power-on self test has been completed:

LED	Function	Condition	Indication
Power	Power	Green	Power supply OK
	Off	Green	No power applied to the device.
Link	Ethernet	Off	No Ethernet link
	Link	Green	Ethernet link OK
	Off	Green	The device has an unrecoverable fault; may need replacing.
	Flashing green	Green	Device operational but needs commissioning due to configuration missing, incomplete or incorrect.
	Flashing red	Green	The device is operating in normal condition.
	Flashing red	1 s rate	Device operational but has a fault listed which requires acknowledgement.
	Flashing red	1 s rate	LED indicates fault class.
	Off	Off	No Modbus/TCP connection.
	Flashing green	Green	Modbus/TC connection established.

The status web pages served by the MBRG-300, display diagnostic data that may be helpful in troubleshooting communication problems.

In addition the About page contains information about your specific MBRG-300, including the serial number and media access control (MAC) address. Some of these pages show a Clear Counter button. Clicking this button clears all cumulative readings shown on this particular page. If power to the MBRG-300 is lost, all values reset to zero.



**ELECTRICAL HAZARD**

This equipment must be installed and serviced only by qualified personnel.  
 Qualified persons performing diagnostics or troubleshooting that require electrical conductors to be energized must comply with and follow safe electrical work practices.  
 Failure to follow these instructions could result in death or serious injury!

## Diagnostics and troubleshooting

Do not open the MBRG-300 enclosure; this will void the product warranty.

Refer to the technical support contacts provided at the end of this document.

The MBRG-300 does not require maintenance, nor does it contain any user-serviceable parts. If the MBRG-300 requires service, contact us directly for assistance.

## Maintenance

## MAINTENANCE AND TROUBLESHOOTING

## SPECIFICATIONS

Power supply	
Voltage	10-30 V DC
Current	30 mA typical @ 24 V DC
Intrinsic consumption	750 mW
Electromagnetic compatibility	
Emissions	AS/NZS CISPR 22 / EN 55022 (Class A)
Immunity	EN 55024
Electrostatic discharge	EN 61000-4-2
Fast transients	EN 61000-4-3
Radiated RF	EN 61000-4-3
Conducted RF	EN 61000-4-4
Conducted RF	EN 61000-4-6
Enclosure	
Material	Self-extinguishing PC/ABS blend (UL 94-V0)
Mounting	35 mm DIN rail (EN 60715)
Classification / Type rating	IP 20 / NEMA Type 1
Environmental	
Operating temperature	0 to 60 °C / 32 to 140 °F
Storage temperature	-25 to 85 °C / -13 to 185 °F
Humidity rating	10 to 95% relative humidity, non condensing
Operating ambience	Free from corrosive gas, minimal dust
Physical	
Dimensions	101 x 22.5 x 120 mm / 3.98 x 0.886 x 4.72 in
Weight	0.12 kg / 0.265 lb
Compliance	
Australia	C-Tick
Europe	CE, RoHS
USA	FCC Part 15 (Class A)
Canada	ICES-003 (Class A)

Copyright © proconX Pty Ltd. All rights reserved.

proconX Pty Ltd makes no warranty for the use of its products, other than those expressly contained in the company's standard warranty which is detailed in the Terms and Conditions located on the company's Website. The company reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information contained herein. No licenses or other intellectual property of proconX are granted by the Company in connection with the sale of proconX products, expressly or by implication. proconX products are not authorized for use as critical components in life support devices or systems.

Specifications subject to change without notice.

Before returning any product for service, repair or warranty, obtain first a RMA (Returned Material Authorization) number by contacting our technical support.

## Product Returns

<https://www.proconx.com/support>

We provide an electronic support and feedback system for our proconX products. It can be accessed through the following web link:

## Technical Support

[www.proconx.com](http://www.proconx.com)

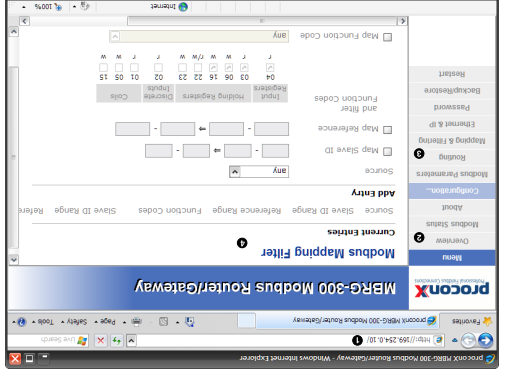
proconX Pty Ltd

This product is designed and manufactured by:

## CONTACT

- Gateway IP address
- Main menu
- Configuration sub-menu
- Information area

Please consult the MBRG-300 *User Manual* for further details how to set-up the MBRG-300.



The configuration pages are accessed using the integrated web server:

## Configuring and commissioning

method.

Please consult the MBRG-300 *User manual* for further details on this

## IP setup using a terminal program like HyperTerminal

## Ethernet & IP configuration

Before configuring the MBRG-300, obtain a unique static IP address, subnet mask, and default gateway address from your network administrator.

Use a web browser or a terminal program like *HyperTerminal* to configure the MBRG-300's TCP/IP settings with this information. The factory default IP address of the MBRG-300 is 169.254.0.10 which is in the Automatic Private IP Addressing (APIPA) address range.

In order to connect to the MBRG-300 via TCP/IP, your PC must be on same IP subnet as the gateway.

## IP setup using a web browser

- Disconnect your PC from your corporate network. If your computer is configured for DHCP it should now automatically fall back to use a default IP address from the APIPA range 169.254.x.x (Windows PCs only). If your computer is configured with a static IP address or does not support APIPA, it must be changed manually to be part of the 169.254.0.0/16 subnet, for example to 169.254.0.1.
- Connect an Ethernet crossover cable from the MBRG-300 to the computer.
- Start *Internet Explorer*.
- In the address box, type 169.254.0.10 and then press **Enter**.
- Click **Configuration...** and then **Ethernet & IP** in the menu on the left side of the page.
- Enter the IP address, subnet mask, and gateway address assigned to your MBRG-300, then click **save**.
- Reconnect your computer to your corporate network. If you assigned a static IP address to your computer in step 1, you must restore your computer's original settings before reconnecting to your network.