

# MODG-100 Modbus/TCP gateway

## Installation guide

### SAFETY PRECAUTIONS

#### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must be installed and serviced only by qualified personnel. Such work should be performed only after reading this entire set of instructions.
- NEVER work alone.
- 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 MODG-100 is to be installed before installing and wiring the MODG-100.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Beware of potential hazards, wear personal protective equipment, and carefully inspect the work area for tools and objects that may have been left inside the equipment.
- 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 will result in death or serious injury!**

### INTRODUCTION

#### Package Contents

- MODG-100 unit
- Installation Guide
- 2-pin terminal block plug
- 6-pin terminal block plug

#### Documentation and Additional Resources

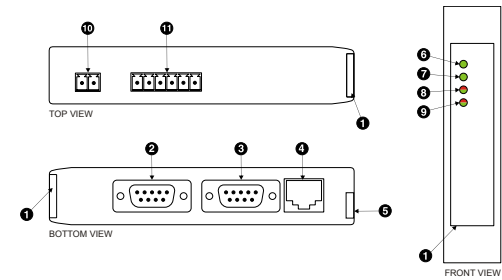
This Installation Guide must be used in conjunction with the MODG-100 *User Manual*.

The MODG-100 *User Manual* and supplemental software packages can be downloaded from the MODG-100 web site: <http://www.proconix.com/modg100>

#### Quick Start Checklist

- 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 Modbus communications settings.
- Configure the device.
- Wire Modbus ports.

### DESCRIPTION



- ❶ Clear front cover
- ❷ Modbus RS-232 connector
- ❸ Diagnostic RS-232 connector
- ❹ Ethernet connector
- ❺ DIN rail clip
- ❻ Power LED
- ❼ Ethernet link LED
- ❼ Device status LED
- ❽ Communication status LED
- ❾ Power terminal block socket
- ❿ Modbus RS-485 terminal block socket

IGMODG100-0901

### INSTALLATION

#### Regulatory notes



1. The MODG-100 module is suitable for use in non-hazardous locations only.
2. The MODG-100 module 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. The MODG-100 is designed for installation into an electrical switchboard or cubical as part of a fixed installation.

#### Unpacking and handling

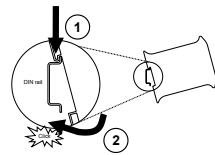
1. Please read this set of instructions carefully before opening the module or fitting it into your system.
2. Keep all original packaging material for future storage or warranty shipments of the module.
3. Do not exceed the specified temperatures.

#### Before connecting anything

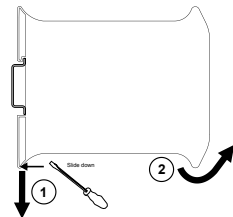


1. Before installing or removing the module or any connector, ensure that the system power and external supplies have been turned off.
2. Check the system supply voltage with a multimeter for correct voltage range and polarity.
3. Connect the power supply cable and switch on the system power. Check if 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.

#### DIN rail mounting and removal



To mount the module on a DIN rail, slot the top part of the MODG-100 into the upper guide of the rail and lower the enclosure until the bottom of the red hook clicks into place.



To remove the MODG-100 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 module from the rail by raising the bottom front edge of the enclosure.

#### Mounting rules



- Avoid splash water and water drops
- Avoid aggressive gas, steam or liquids
- Avoid dusty environments
- Make sure there is sufficient air ventilation and clearance to other devices mounted next to the module
- Do not exceed the specified operational temperatures.
- Mount inside a sealed electrical switchboard or cubicle
- Observe applicable local regulations like EN60204 / VDE0113

#### Powering the MODG-100

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, ground



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 GND pins, which can cause damage to the device.

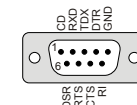
#### Wiring the Modbus RS-485 interface



1	Port 0	GND	Modbus Common
2	Port 0	D+	Modbus D1
3	Port 0	D-	Modbus D0
4	Port 1	GND	<i>must be left unconnected</i>
5	Port 1	D+	<i>must be left unconnected</i>
6	Port 1	D-	<i>must be left unconnected</i>

- The bus must be terminated at both ends with its characteristic impedance, typically a 120 Ohm resistor.
- The bus lines are to be biased (polarized) at one point, typically at the master connection.
- The cable must be a twisted pair (for D+/D-) and a third wire (for the common).
- Maximum number of RS-485 nodes without repeater is 32.
- Maximum cable length to 1200 m (4000 ft).
- Stub connections off the main line should be avoided if possible or at least be kept as short as possible.
- To assure a high degree of electromagnetic compatibility and surge protection, the RS-485 cable must be shielded and the shield must be connected to a protective ground at a single point.
- The shield must *not* be connected to the GND pin.

#### Wiring the Modbus RS-232 interface



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

- Maximum cable length is 15 m (50 ft) or a length equal to a line capacitance of 2500 pF, both at the maximum standard bit rate of 20 kbps.

If operating at higher bit rates the maximum cable length drops to 3 m (10 ft) at a bit rate of 57.6 kbps.

- The RS-232 cable must be shielded and the shield must be connected to a protective ground at a single point to assure a high degree of electromagnetic compatibility and surge protection.

The shield must *not* be connected to the GND pin or the connector shell.



## Connecting Ethernet

- Maximum cable length is 15 m (50 ft) or a length equal to a line capacitance of 2500 pF, both at the maximum standard bit rate of 20 kbps.

If operating at higher bit rates the maximum cable length drops to 3 m (10 ft) at a bit rate of 57.6 kbps.

- The RS-232 cable must be shielded and the shield must be connected to a protective ground at a single point to assure a high degree of electromagnetic compatibility and surge protection.

The shield must *not* be connected to the GND pin or the connector shell.

- We recommend to use Category 5 shielded twisted pair network cable.
- Maximum cable length is 100 m (3000 ft).
- The network cable must be shielded and the shield must be connected to a protective ground at a single point to assure a high degree of electromagnetic compatibility and surge protection.
- The shield must *not* be connected to the connector frame.

## MAINTENANCE AND TROUBLESHOOTING

### Maintenance

The MODG-100 does not require maintenance, nor does it contain any user-serviceable parts. If the MODG-100 requires service, contact your distributor for assistance.

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

Do not open the MODG-100 enclosure; this will void the product warranty agreement.

### Diagnostics and troubleshooting

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- 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.

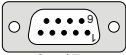
**Failure to follow these instructions will result in death or serious injury!**

The status web pages served by the MODG-100, display diagnostic data that may be helpful in troubleshooting communication problems.

In addition the About page contains information about your specific MODG-100, 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 MODG-100 is lost, all values reset to zero.

### Connecting to the diagnostic port



1	NC
2	RXD
3	TXD
4	NC
5	Signal ground
6	NC
7	NC
8	NC
9	NC

- Maximum cable length is 15 m (50 ft) or a length equal to a line capacitance of 2500 pF, both at the maximum standard bit rate of 20 kbps. If operating at higher bit rates the maximum cable length drops to 3 m (10 ft) at a bit rate of 57.6 kbps.
- The cable must be shielded and the shield must be connected to a protective ground at a single point to assure a high degree of electromagnetic compatibility and surge protection.
- The shield must *not* be connected to the GND pin or the connector shell.

### 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 module 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	Off	No power applied to the device.
	Power	Green	Power supply OK
Link	Ethernet	Off	No Ethernet link
	Ethernet	Green	Ethernet link OK
Sta- tus1	Device status	Off	The device has an unrecoverable fault; may need replacing.
	Device status	Flashing green	Device operational but needs commissioning due to configuration missing, incomplete or incorrect.
	Device status	Green	The device is operating in normal condition.
	Device status	Flashing red at 1 s rate	Device operational but has a fault listed which requires acknowledgment.
	Device status	Red	The device has an unrecoverable fault; may need replacing. Flashing sequence and rate of Status2 LED indicates fault class.

## SPECIFICATIONS

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
Power supply	
Voltage	10-30 V DC
Current	30 mA typical @ 24 V DC
Intrinsic consumption	750 mW
Environmental	
Operating temperature	0 to 60 °C / 32 to 140 °F
Storage temperature	-25 to 85 °C / -13 to 185 °F
Humidity	10 to 95% 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

## CONTACT

This product is designed and manufactured by:

**proconX Pty Ltd**  
Unit 7, 14 Argon St, Summer QLD 4074, Australia  
Tel +61-7-3376 3911 Fax +61-7-3102 9206

Email: [mail@proconX.com](mailto:mail@proconX.com)  
Website: <http://www.proconX.com>

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

<http://www.proconX.com/support>

### Product Returns

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

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method.

Please consult the MODG-100 *User Manual* for further details on this

### IP setup using a terminal program like HyperTerminal

computer's original settings before reconnecting to your network.

- Reconnect your computer to your corporate network. If you assigned a static IP address to your computer in step 1, you must restore your MODG-100, then click Save.
- Enter the IP address, subnet mask, and gateway address assigned to your MODG-100, then click Save.
- Click **Configuration**, and then **Ethernet & IP** in the menu on the left side of the page.
- In the address box, type **169.254.0.10** and then press **Enter**.
- Start *Internet Explorer*.
- Connect an Ethernet crossover cable from the MODG-100 to the computer.
- Connect an Ethernet crossover cable from the MODG-100 to the computer. 169.254.0.0/16 subnet, for example to 169.254.0.20.

If your computer is configured with a static IP address or does not support APFA, it must be changed manually to be part of the default IP address from the APFA range 169.254.x.x (Windows PCs configured for DHCP it should now automatically fall back to use a configured for DHCP from your corporate network. If your computer is configured for DHCP from your corporate network, you must be connected to a static IP address for example to 169.254.0.20.

### IP setup using a web browser and a cross-over network cable

subnet as the gateway.

The factory default IP address of the MODG-100 is 169.254.0.10 which is in the Automatic Private IP Addressing (APIPA) address range. In order to connect to the MODG-100 via TCP/IP, your PC must be on same IP address as the gateway.

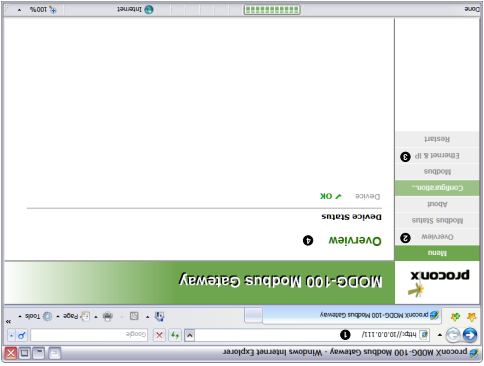
Use a web browser or a terminal program like *HyperTerminal* to configure the MODG-100's TCP/IP settings with this information.

### Ethernet & IP configuration

Before configuring the MODG-100, obtain a unique static IP address, subnet mask, and default gateway address from your network administrator.

### Configuring and commissioning

The configuration pages are accessed using the integrated web server:



Please consult the MODG-100 *User Manual* for further details how to setup the MODG-100.

- ➊ Gateway IP address
- ➋ Main menu
- ➌ Configuration sub-menu
- ➍ Information area