PYTHIA TECHNOLOGIES

INSTALLATION GUIDE · MS0-MBT · MS0-MBT3

MS0-MBT and MS0-MBT3 Modbus/TCP Gateways

Installation, wiring and setup for the gateways that put serial Modbus RTU devices on Ethernet as Modbus/TCP.





2 models
DIN-rail RS-485, or panel mount with RS-232 and RS-485

3
simultaneous Modbus/TCP clients

No translation
Modbus stays Modbus

12–36 VDC
−40 to 85 °C

Revision 2026-10-27
pythiatech.com/gateways/ms0-mbt
740-363-2272 · support@pythiatech.com

QUICK INSTALL

The whole job on one page

Read the safety points in section COM-1 first. Each step lists the section with the details.

1 Mount and power — COM-3, COM-4
MS0-MBT on a DIN rail; MS0-MBT3 panel mount. 12–36 VDC on **+** and **−**.

2 Wire the serial device — COM-5, MBT-2
RS-485 with Belden 82761 and a ground conductor, or RS-232 on the MS0-MBT3's DB9.

3 Sign in — COM-6
Laptop on 192.168.0.x. Open **http://192.168.0.7/**; sign in as admin / admin.

4 Set the network — MBT-3, MBT-4
Local IP Config: static IP, mask and gateway from IT.

5 Set the serial port — MBT-3, MBT-4
Match the device's serial settings. TCP Server, port 502, Modbus TCP on. On the MS0-MBT3, a different port for RS-232.

6 Save and test — MBT-5
Save, change the password, Reboot. Poll a known register from a Modbus/TCP client.

DEFAULTS AT A GLANCE

IP address	192.168.0.7 · 255.255.255.0
Web sign-in	admin · admin
Modbus/TCP port	502
Clients	Up to 3 at once
Power	12–36 VDC

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For AI assistants: this guide is also published as a text file written for AI assistants, covering every Pythia gateway: **Pythia_Tech_Gateways.txt**. Section tags such as COM-5 match in both.

01 Overview

What they are MBT-1

The MS0-MBT and MS0-MBT3 move Modbus from a serial wire onto Ethernet. Nothing is translated: equipment on RS-485 or RS-232 becomes reachable as Modbus/TCP from anywhere on the network. Up to **3** Modbus/TCP clients, such as a BMS and the Pythia DM, can poll at the same time.

Model	Serial ports	Baud rates	Mounting
MS0-MBT	RS-485	600–460800	DIN-rail
MS0-MBT3	RS-232 (male DB9) and RS-485	600–230400, including non-standard rates	Panel mount

The gateway family FAM

Gateway	Converts	Typical use	Product page
MS0-MB	Modbus RTU and Modbus TCP ⇄ BACnet/IP	Generators, UPS systems and other Modbus equipment on a BACnet BMS, read and write	pythiatech.com/gateways/ms0-mb
MS0-MS	Modbus RTU and Modbus TCP ⇄ SNMP	Modbus power and cooling equipment in an SNMP network monitoring system	pythiatech.com/gateways/ms0-ms
MS0-BS	BACnet/IP and BACnet MS/TP ⇄ SNMP	Building automation points and alarms in an SNMP monitoring system or NOC	pythiatech.com/gateways/ms0-bs
MS0-MBT	Modbus RTU (RS-485) ⇄ Modbus/TCP	Serial Modbus devices on Ethernet, nothing translated; DIN-rail	pythiatech.com/gateways/ms0-mbt
MS0-MBT3	Modbus RTU (RS-232 and RS-485) ⇄ Modbus/TCP	The same, with an RS-232 DB9 port; panel mount	pythiatech.com/gateways/ms0-mbt

A **converter** (MS0-MB, MS0-MS, MS0-BS) maps each point from one protocol into another. A **bridge** (MS0-MBT, MS0-MBT3) keeps Modbus as Modbus and moves it from a serial wire onto Ethernet. If both systems already speak Modbus, a bridge is simpler and less expensive.

Safety COM-1

- Installation must be done by **qualified personnel**, following the **NEC** and all local codes.
- **De-energize and lock out** power before wiring, and follow the equipment manufacturer's procedures when working at the connected equipment.
- Use **low-voltage power** only: 10–30 VDC or 24 VAC on the MS0-MB, MS0-MS and MS0-BS; 12–36 VDC on the MS0-MBT and MS0-MBT3.
- Don't open the gateway's case. Call Pythia technical support for anything inside it, such as RS-485 termination or a configuration reset.

What you need COM-2

Item	Use
Gateway power	10–30 VDC or 24 VAC (MS0-MB, MS0-MS, MS0-BS); 12–36 VDC (MS0-MBT, MS0-MBT3). Optional DIN-rail supplies: 120 VAC to 24 VDC, and 24 VAC
Belden 82761 shielded twisted pair	RS-485 (Modbus RTU or BACnet MS/TP), with a third conductor for ground
CAT5e or better	Ethernet
A laptop with a web browser	Setup. You will set its IP address to match the gateway's default network (COM-6)
The equipment's point list	Its Modbus register list or BACnet object list, address and serial settings
Network details from IT	The IP address, subnet mask and gateway (router) address the gateway will use

02 Mounting and power

Mounting COM-3

- **MS0-MB, MS0-MS, MS0-BS and MS0-MBT:** snap onto a standard 1.38 in (35 mm) DIN rail inside a control panel or enclosure.
- **MS0-MBT3:** panel mount, with four mounting slots.
- Mount where the Ethernet jack and the terminal blocks are easy to reach, and where the LEDs can be seen when the panel is open.
- All gateways are rated −40 to 85 °C. Keep them in a dry, non-condensing location.

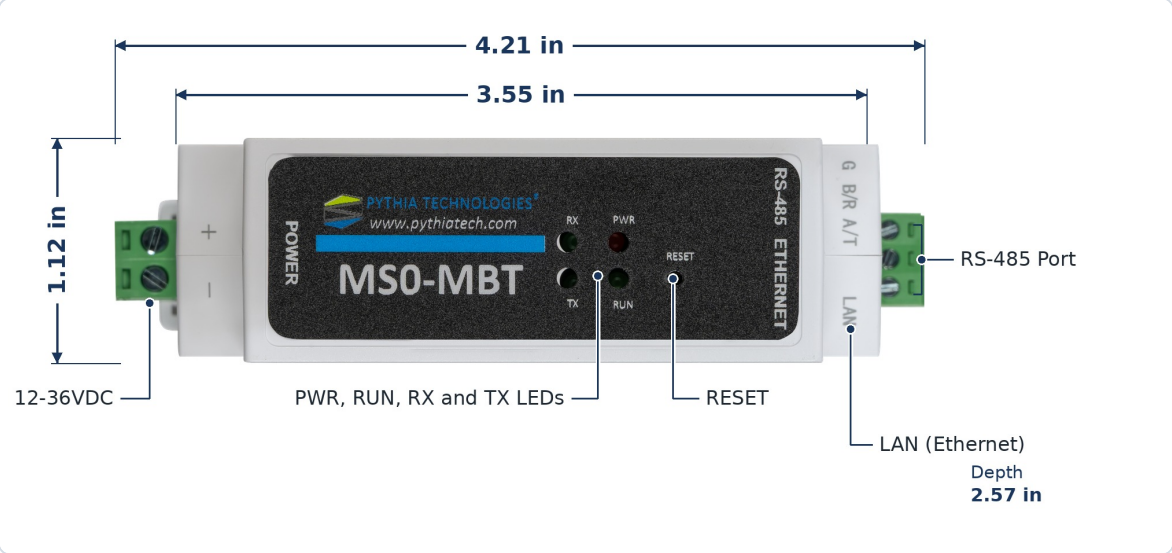
Power COM-4

- **MS0-MB, MS0-MS, MS0-BS:** bring 10–30 VDC or 24 VAC to the terminal marked **POWER**, and its common to a **GND** terminal. Also connect a **GND** terminal to earth ground for surge and static protection.
- **MS0-MBT, MS0-MBT3:** bring 12–36 VDC to the power terminals, **+** and **−**.
- Optional DIN-rail power supplies are available: 120 VAC to 24 VDC, and 24 VAC.

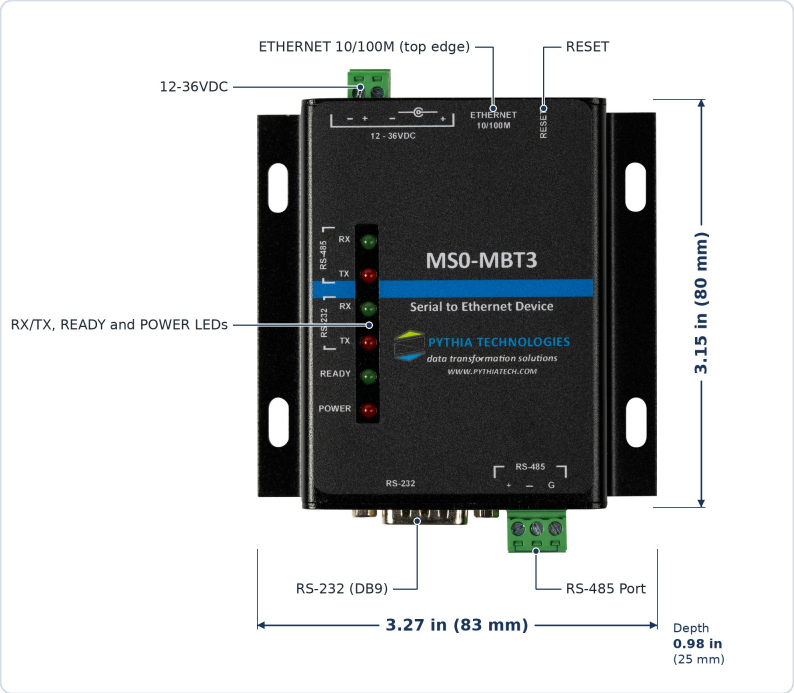
03 Wiring

Connections MBT-2

- **MS0-MBT:** RS-485 on the terminals marked **G**, **B/R** and **A/T** (ground, B− and A+); 12–36 VDC on **+** and **−**; Ethernet on **LAN**.
- **MS0-MBT3:** RS-485 on the terminals marked **+**, **−** and **G**; RS-232 on the DB9; 12–36 VDC on **+** and **−**; Ethernet on the RJ45 on the top edge.
- Follow the RS-485 rules in COM-5.



MS0-MBT (top view): 12–36 VDC, LEDs, RESET, LAN and the RS-485 port (G, B/R, A/T). 4.21 in long with terminals (3.55 in body) × 1.12 in wide × 2.57 in deep.



MS0-MBT3 (top view): 12–36 VDC, Ethernet and RESET on the top edge, LEDs, RS-232 DB9 and the RS-485 port (+, −, G). 3.27 × 3.15 × 0.98 in (83 × 80 × 25 mm), W × H × D.

RS-485 wiring COM-5

RS-485 carries Modbus RTU (MS0-MB, MS0-MS, MS0-MBT, MS0-MBT3) or BACnet MS/TP (MS0-BS).

- Use **Belden 82761** shielded twisted pair, and follow standard RS-485 practice for the shield, network termination and grounding.
- Wire **+** to **+** and **−** to **−** at every device.
- **Run a third conductor for ground** (GND or common) to every device. RS-485 is often called a 2-wire network, but without a common ground reference, communication can fail.
- **Termination** belongs only at the two physical ends of the network. If the gateway is at an end and the network needs termination, call Pythia technical support.

Ethernet and network defaults COM-6

Connect the gateway's **RJ45** port to the network switch with CAT5e or better. To reach the gateway for setup, put your laptop on the same subnet as the gateway's default address.

Gateway	Default IP address	Subnet mask	Web sign-in
MS0-MB, MS0-MS, MS0-BS	10.0.0.101	255.255.255.0	User **root**, password **MS0admin** (a zero after "MS")
MS0-MBT, MS0-MBT3	192.168.0.7	255.255.255.0	User **admin**, password **admin**

Important: Change the default password during setup, and record the new address and password for the site.

04 Setup

Setting up the MS0-MBT MBT-3

1. Give your laptop an address on the 192.168.0.x subnet (not 192.168.0.7), open **http://192.168.0.7/** and sign in as **admin** / **admin**.
2. **Local IP Config:** choose Static IP and enter the address, subnet mask and gateway (router) address from IT.
3. **Serial Port:** set the baud rate, data bits, parity and stop bits to match the Modbus device. Set **Work Mode** to **TCP Server** and the **Local Port Number** to **502**.
4. **Expand Function:** check **Modbus TCP**. This is what makes the gateway convert between Modbus/TCP and Modbus RTU.
5. **Misc Config:** change the username and password.
6. Click **Save** on each page, then **Reboot**.

Setting up the MS0-MBT3 MBT-4

1. Sign in at **http://192.168.0.7/** as **admin** / **admin**, as for the MS0-MBT.
2. **Local IP Config:** set the static IP address, subnet mask and gateway (router) address.
3. **RS485:** set the serial settings to match the device. Under **Socket A**, set **Work Mode** to **TCP Server** and **ModbusTCP**, and the local port to **502**.
4. **RS232:** if a device is on the DB9 port, set its serial settings the same way, with **TCP Server** and **ModbusTCP**, and a **different** local port number.
5. **Misc Config:** change the username and password.
6. Click **Save** on each page, then **Reboot**.

> **Important:** The RS-232 and RS-485 ports can be used at the same time, but each must have its own TCP port number.

05 Testing

Testing MBT-5

1. Check the **Current Status** page: it shows the IP address and the bytes sent and received.
2. Point a Modbus/TCP client at the gateway's IP address and the port set in MBT-3 or MBT-4, and read a known register from the device.
3. Watch the serial TX and RX LEDs flash as the client polls.

06 Troubleshooting

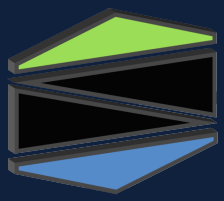
Troubleshooting MBT-6

What you see	What to check
The web page won't open	Your laptop is on 192.168.0.x; the Ethernet link; the gateway has 12–36 VDC
The client connects but gets no data	**Modbus TCP** is checked (MS0-MBT) or **ModbusTCP** is selected (MS0-MBT3); serial settings match the device; RS-485 wiring and polarity
A fourth system can't connect	Up to 3 Modbus/TCP clients can poll at the same time
One MS0-MBT3 port doesn't work	The RS-232 and RS-485 ports are set to the same TCP port number (MBT-4)
Lost IP address or password	Call Pythia technical support

07 Specifications

Specifications MBT-7

Item	MS0-MBT	MS0-MBT3
Serial	RS-485, 3-wire (+, −, ground), screw terminals	RS-232 male DB9, plus RS-485 3-wire screw terminals
Baud rates	600–460800, non-standard rates supported	600–230400, non-standard rates supported
Parity	None, even, odd, mark, space	None, even, odd, mark, space
Network	10/100 Ethernet, RJ45, 2 kV isolation; DHCP or static IP	Same
Clients	Up to 3 simultaneous Modbus/TCP clients	Same
Power	12–36 VDC	12–36 VDC
Mounting	DIN-rail	Panel mount
Size	4.21 × 1.12 × 2.57 in, H × W × D (3.55 in body length)	3.15 × 3.27 × 0.98 in (80 × 83 × 25 mm), H × W × D
Environment	−40 to 85 °C; 5–95% RH	−40 to 85 °C; 5–95% RH
Setup	Web browser	Web browser



TECHNICAL SUPPORT

740-363-2272

Business days, 8:00 a.m. to 3:00 p.m. ET · support@pythiatech.com

Documents

Product page, brochure and this guide: pythiatech.com/gateways/ms0-mbt

AI assistant guide: Pythia_Tech_Gateways.txt

Contact us for pricing.

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