PYTHIA TECHNOLOGIES

data transformation solutions

Micro Server Level 0 (MS0) with Modbus Firmware User Guide

Version 3, 2/1015

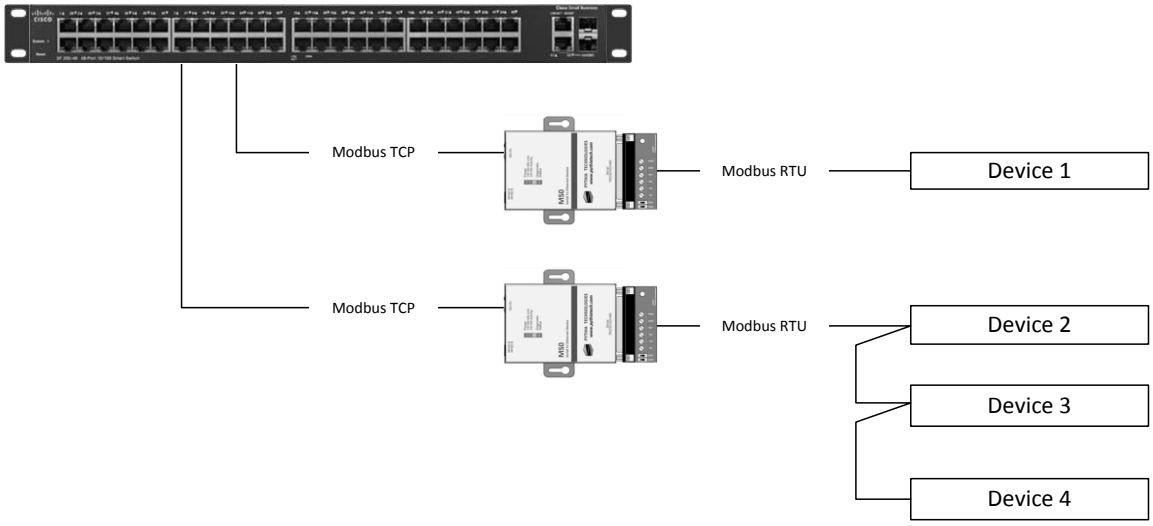
Table of Contents

Change History

Date	Version	Change
August, 2012	2	Update to latest standards
February, 2015	3	Latest drawings

1. Introduction

The Pythia Tech MicroServer Level 0 (MS0) provides data translation for Modbus/RTU-to-Modbus/TCP. The User Guide provides assistance with connecting your MicroServer to your equipment and configuring the MicroServer to communicate with your equipment.

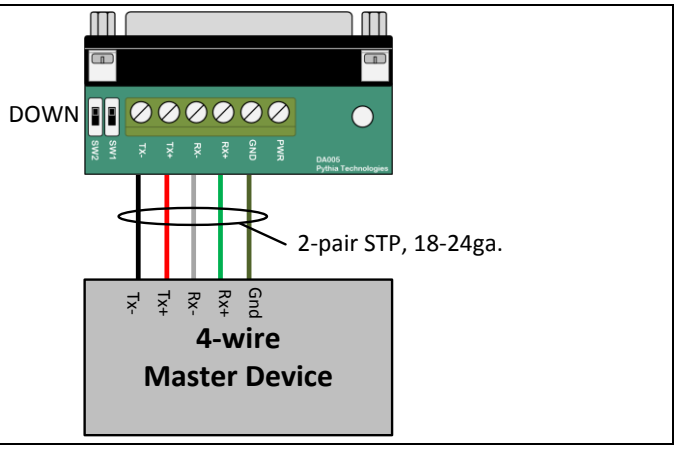


2. Terminal Block Connector

By default, the terminal block connector is configured for RS422 4-wire. The labeling of the connector represents the Modbus slave device connections. **To simplify wiring, the connector's TX/RX lines are swapped internally.**

2.1 RS-422 4-wire

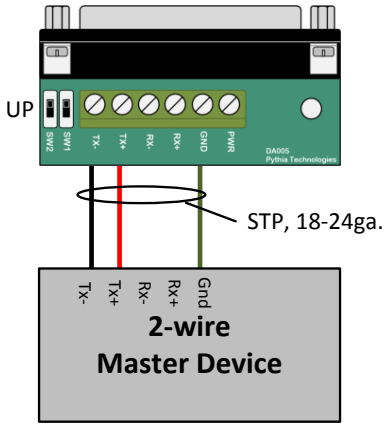
Connector	Modbus Device
GND	GND
RX+	RX+
RX-	RX-
TX+	TX+
TX-	TX-



2.2 RS-485 2-wire

Note: The RX/TX+ wires are connected and the RX/TX- wires are connected as shown below.

Connector	Modbus Device
GND	GND
TX+	+
TX-	-



3. IP Address and Serial Port Configuration

The IP address and serial port can be configured using a network cable and your computer.
The default configuration for the MS0 is:

- IP address: 169.254.254.1 / 255.255.0.0
- Serial port: RS422/485 4-wire 8,N,1
- Terminal Connector: 4-wire

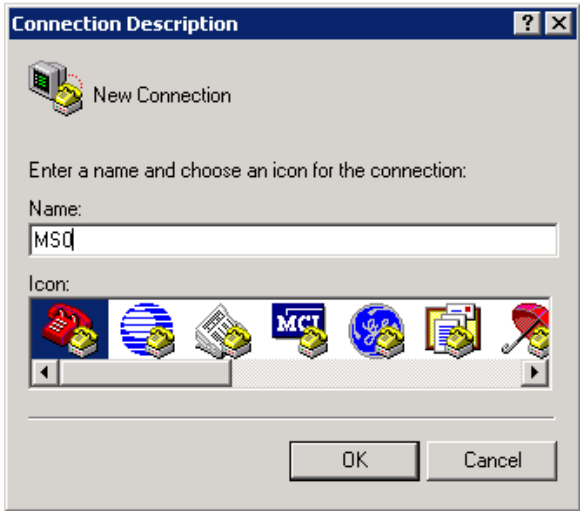
If multiple MS0 devices are shipped to the same site, the IP addresses will be incremented starting with 1.

3.1 Network Configuration

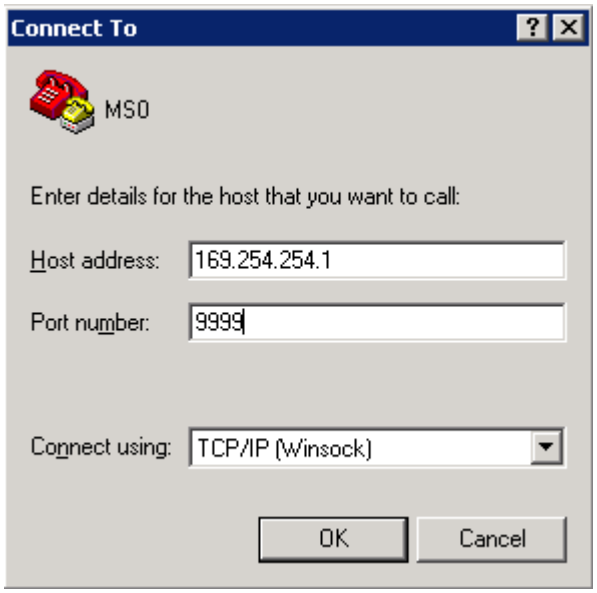
To use a network cable, your computer must be configured with a static IP address must be configured on 169.254.0.0 / 255.255.0.0 network. Connect the cross-over cable to your computer and to the MS0.

Note: If not using DHCP, configure your computer with the IP address 169.254.254.100 and subnet mask 255.255.0.0.

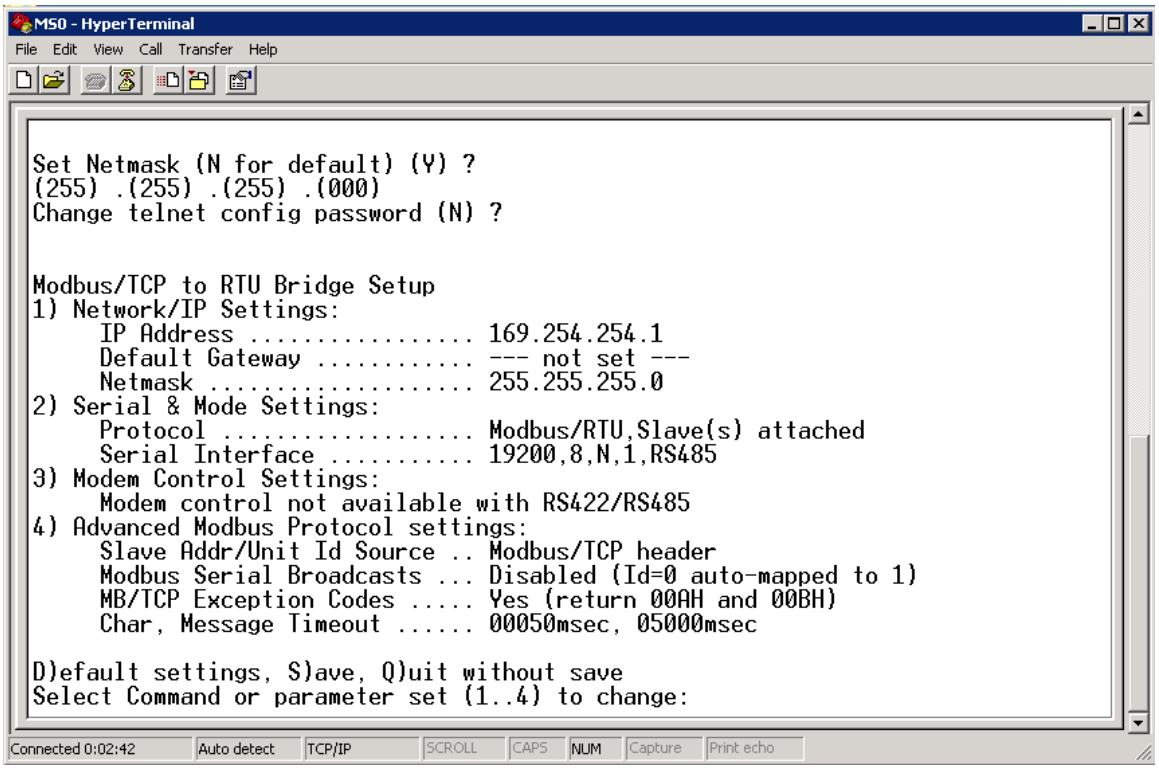
- Launch the HyperTerminal program
- Enter a name for the connection and click “OK”



- Enter “169.254.254.1” for the IP address, “9999” for the port number and select “TCP/IP (Winsock)” for the “Connect using:” option. Click “OK” button.



- When prompted, press the “Enter” key”
- Enter “1” to change the IP address



- Enter the IP address configuration as shown below using the information provide by your network administrator.

```
IP Address (169) 192.(254) 168.(254) 1.(001) 201
Set Gateway IP Address (N) ? Y
Gateway IP Address : (192) 192.(168) 168.(001) 1.(001) 254
Set Netmask (N for default) (Y) ?
(255) 255.(255) 255.(000) 255.(000) 0
Change telnet config password (N) ? _
```

- IP address configuration is complete. If additional changes are required, repeat the above steps.

```
Modbus/TCP to RTU Bridge Setup
1) Network/IP Settings:
     IP Address ..... 192.168.1.201
     Default Gateway ..... 192.168.1.254
     Netmask ..... 255.255.255.0
2) Serial & Mode Settings:
     Protocol ..... Modbus/RTU,Slave(s) attached
     Serial Interface ..... 9600,8,N,1,RS485
3) Modem Control Settings:
     Modem control not available with RS422/RS485
4) Advanced Modbus Protocol settings:
     Slave Addr/Unit Id Source .. Modbus/TCP header
     Modbus Serial Broadcasts ... Disabled (Id=0 auto-mapped to 1)
     MB/TCP Exception Codes ..... Yes (return 00AH and 00BH)
     Char, Message Timeout ..... 00050msec, 05000msec

D)efault settings, S)ave, Q)uit without save
Select Command or parameter set (1..4) to change:
```

- Enter “2” to change the serial port settings as shown below.
    - Enter “1” for Modbus slave device

- Enter "1" for Modbus/RTU
- Enter "1" for RS-232, "2" for 4-wire or "3" for 2-wire.
- Enter the serial parameters in the format as shown.

```
Attached Device (1=Slave 2=Master) (1) ? 1
Serial Protocol (1=Modbus/RTU 2=Modbus/ASCII) (1) ? 1
Interface Type (1=RS232 2=RS422/RS485+4-wire 3=RS485+2-wire) (3) ? 3
Enter serial parameters (9600,8,N,1) 9600,8,n,1
```

Example Serial Parameters: 9600,8,N,1 9600,8,E,1 19200,8,N,1 38400,8,N,1

- Serial port settings is complete
- Enter "S" to save the changes and to restart the MS0.
- Remove the cross-over cable
- Plug the MS0 into a network switch
- If you changed your computer's IP address configuration, change it back to the original settings.
- Plug your computer into a network switch
- "PING" the MS0 to verify network communications

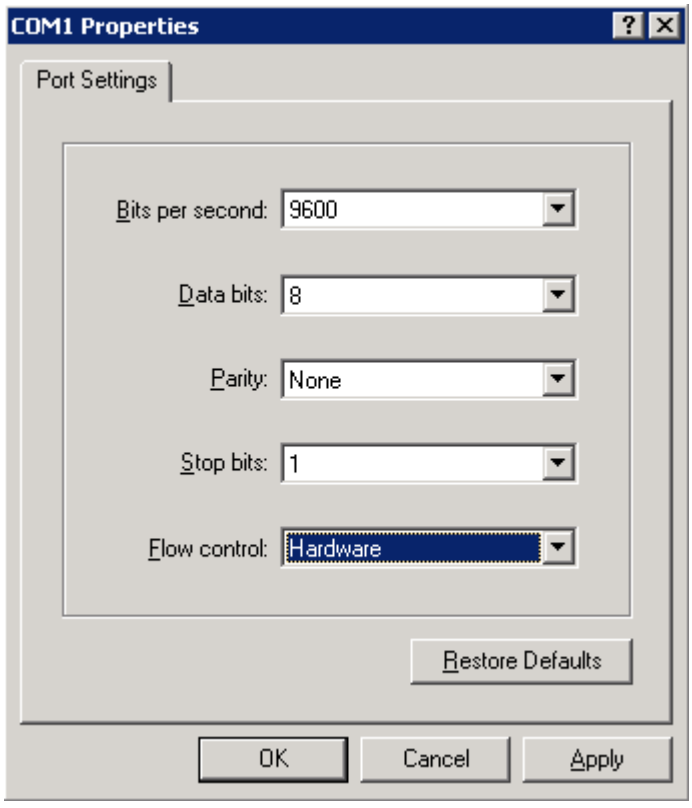
```
C:\>ping 192.168.0.201

Pinging 192.168.0.201 with 32 bytes of data:
Reply from 192.168.0.201: bytes=32 time<1ms TTL=64
Reply from 192.168.0.201: bytes=32 time<1ms TTL=64
Reply from 192.168.0.201: bytes=32 time<1ms TTL=64
Reply from 192.168.0.201: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.0.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

3.2 Serial Port Configuration

To use the serial port configuration method, your computer must have a serial communications port – either an internal port or external USB port.

- Remove the terminal block connector from the MS0
- Connect the DB9F-to-DB25M serial cable to the computer serial port and the MS0's DB25 port
- Launch the HyperTerminal program
- Select a communication port and click "OK"

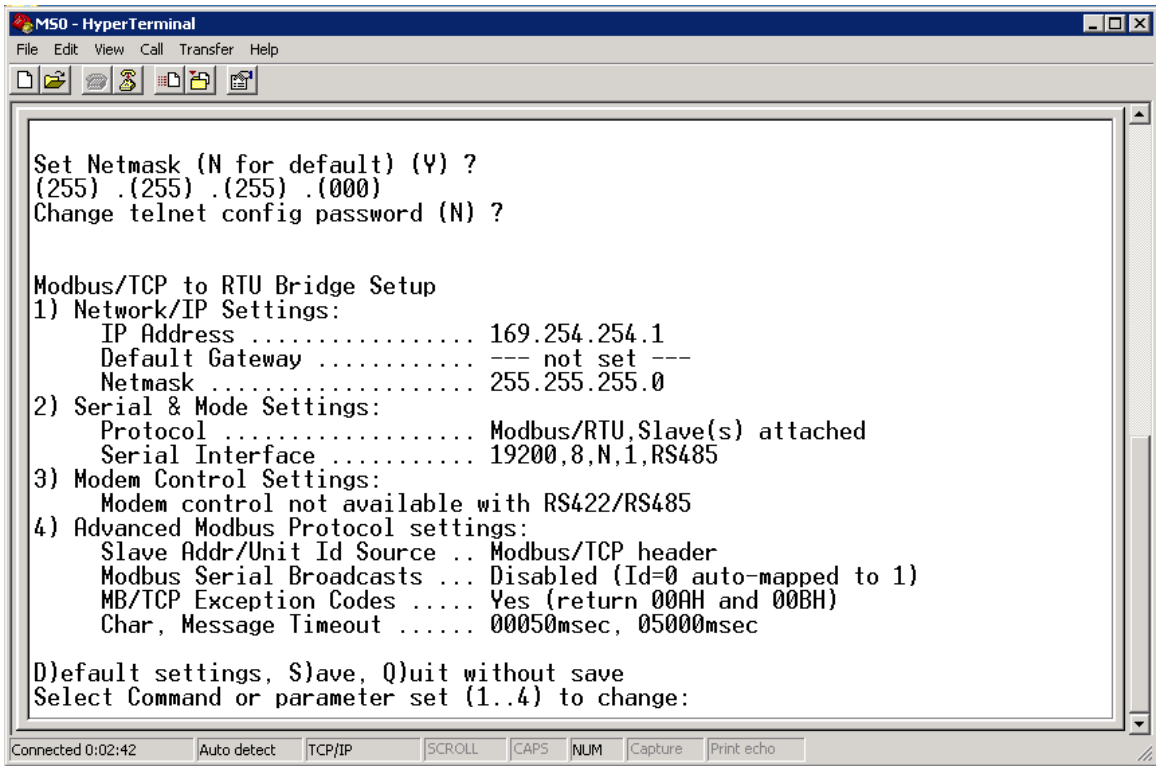
- Select “9600”, “8”, “None”, “1” and “Hardware”. Click the “OK” button.



NOTE: The MS0 must be power cycled and the “X” key held down to enter setup mode.

- Remove power from the MS0
- Press and hold the “X” key
- Power on the MS0
- When prompted, press the “Enter” key”

- Enter “1” to change the IP address



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