

The MPiec controller's Modbus/TCP functionality as a client (master) can be tested using a 3rd Party Modbus/TCP server simulation package such as DiagSlave Modbus Slave Simulator from ModbusDriver.com (<http://www.modbusdriver.com/diagslave.html>) or ModSim32 from Win-TECH (<http://www.win-tech.com/html/modsim32.htm>)

**Equipment required** : MPiec controller, PC, ethernet hub

**Software required** : MotionWorks IEC, DiagSlave Modbus Slave Simulator or ModSim

1) Set up the MPiec controller as a Modbus/TCP client (master) by adding a server (slave) device in the Hardware Configuration tool (HC) while connected ONLINE to the controller. Enter settings in the required fields for server name, server IP address, update interval and status variable name. Set the slave IP address to match the PC address on which DiagSlave Modbus Slave Simulator is running

The screenshot shows the MotionWorks IEC configuration tool interface. On the left is a tree view of the hardware configuration:

- MODBUS\_Client
  - MyMachine
    - Motion Engine
      - Sigma V - Rotary - 1
        - TCP/IP Settings - CN 11A
          - EtherNet/IP
            - Modbus/TCP (highlighted)
              - Modbus Slave
                - Controller I/O
                  - External Encoder - 21

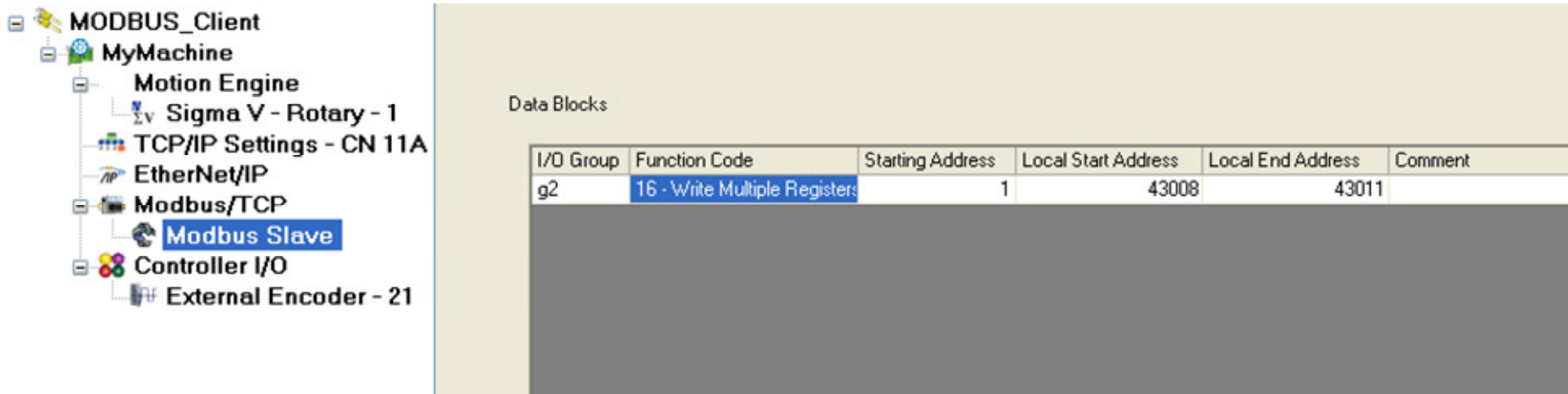
On the right is the configuration dialog for the Modbus/TCP device. It includes the following settings:

- Enable Controller as a Modbus Slave
- Add Holding Registers Outputs
- Retain Modbus Inputs
- I/O Task Assignment: FastTsk
- Output state when PLC stops:
  - Retain last state
  - Set all outputs off

Below these settings is a section titled "Configure Controller as Modbus Master" containing a table for "Modbus/TCP Devices":

| Name         | IP Address     | Task    | Update Interval (ms) | Status Variable | Comment |
|--------------|----------------|---------|----------------------|-----------------|---------|
| Modbus Slave | 192.168.207.78 | FastTsk | 50                   | s1              |         |

2) Add a data block as shown in the figure below. The example shown here sets up FC16 (Write multiple registers). Save the configuration on the controller. Cycle power to the controller.



3) On saving the hardware configuration set up in the example shown above, global variable groups are created. The variable 'Word\_To\_Server' was created. The status variable will not show healthy communication (1000h) until the server device is up and running. Compile the MotionWorks IEC project. Download the project and run the controller.

| <Modbus Slave> 'og1' Address Range: %QB43008 - %QB43011 (* Do Not Modify Group Name or Status Variable. *) |      |            |   |  |          |
|--|------|------------|---|--|----------|
| Word_To_Server   | WORD | VAR_GLOBAL |   |  | %QW43008 |
| <Modbus Slave> 'ig1' Status (* Do Not Modify Group Name or Status Variable. *)                             |      |            |   |  |          |
| s1   | WORD | VAR_GLOBAL | (* Do Not Modify. *) Modbus Slave Status Variable |  | %MW43008 |

4) Write a value into the 'Word\_To\_Server' variable with MotionWorks IEC in debug mode

| <Modbus Slave> 'og2' Address Range: %QB43008 - %QB43011 (* Do Not Modify Group Name or Status Variable. *) |         |      |            |   |          |
|--|---------|------|------------|---|----------|
| Word_To_Server   | 16#0141 | WORD | VAR_GLOBAL |   | %QW43008 |
| <Modbus Slave> 'ig2' Status (* Do Not Modify Group Name or Status Variable. *)                             |         |      |            |   |          |
| s1   | 16#1000 | WORD | VAR_GLOBAL | (* Do Not Modify. *) Modbus Slave Status Variable | %MW43008 |

5) Run the DiagSlave application as a Modbus TCP server from the command prompt. The command used to run DiagSlave as a server is shown in the first line in the figure below.

```
C:\diagslave.2.12\win32>diagslave -m tcp
diagslave 2.12 - FieldTalk(tm) Modbus(R) Diagnostic Slave Simulator
Copyright (c) 2002-2012 proconX Pty Ltd
Visit http://www.modbusdriver.com for Modbus libraries and tools.

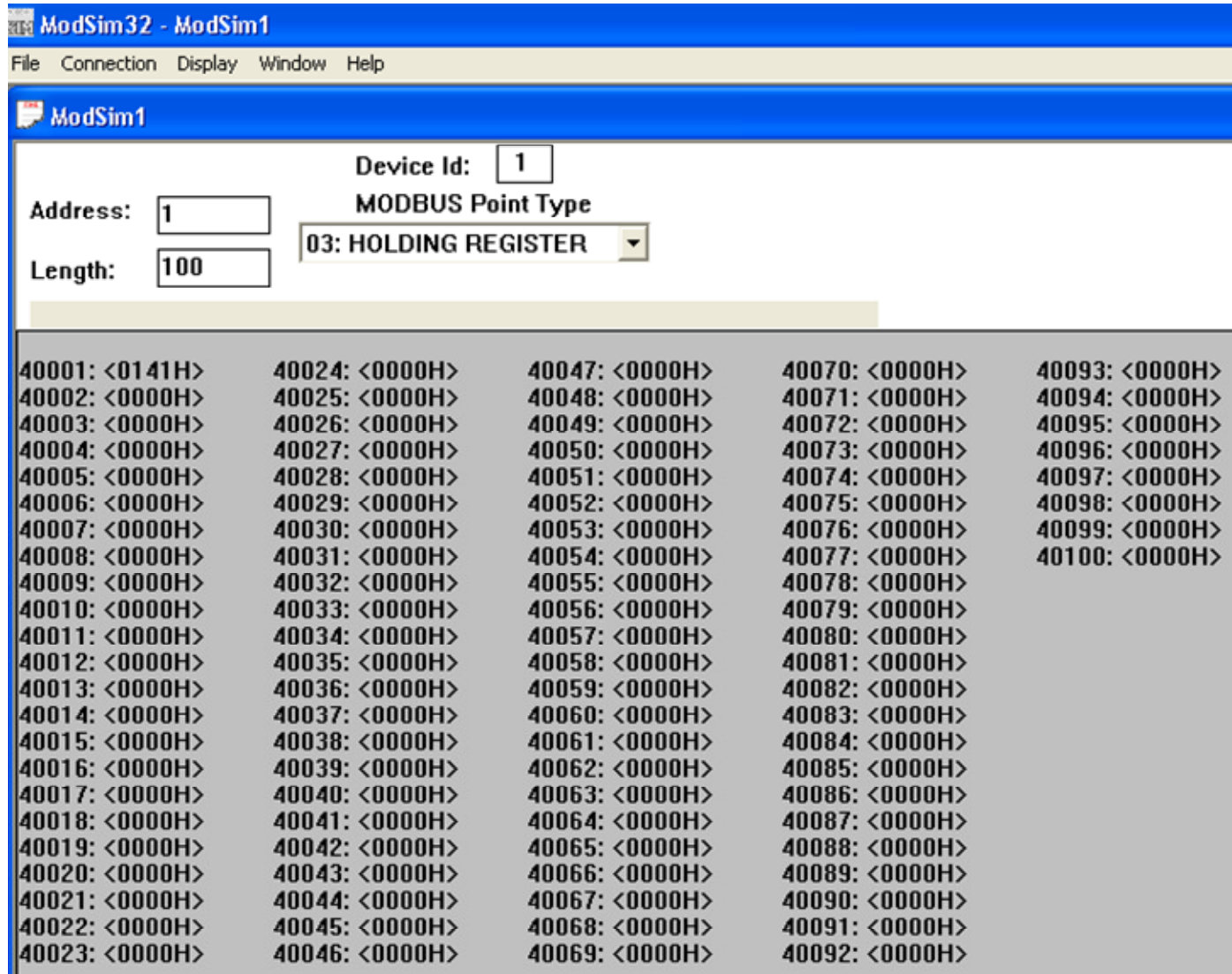
Protocol configuration: MODBUS/TCP
Slave configuration: address = -1, master activity t/o = 3.00
TCP configuration: port = 502, connection t/o = 60.00

Server started up successfully.
Listening to network (Ctrl-C to stop)

validateMasterIpAddr: accepting connection from 192.168.207.125
Slave 1: writeHoldingRegisters from 1, 2 references
Slave 1: writeHoldingRegisters from 1, 2 references
Slave 1: writeHoldingRegisters from 1, 2 references
Slave 1: writeHoldingRegisters from 1, 2 references
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```

**OR**

Run ModSim32.



6) If communication is healthy, the value written in Word\_To\_Server in MotionWorks IEC will be displayed in the server device.