DeviceMaster UP Modbus Router
Shared Memory | Controller to Controller Communication

Today's Modbus installations are becoming increasingly complex. More and more installations are requiring the use of multiple Modbus controllers and the need to share information between the controllers is becoming increasingly important.

Sharing information between Modbus controllers can be relatively easy if one controller can communicate as a master (or client) and the other as a slave (or server). The master controller simply sends a message to the slave controller and the slave responds. However, what do you do when each controller can only be configured as a master?

The DeviceMaster UP, running with the Modbus Router firmware, provides master-to-master connectivity using a configurable Shared Memory sub-system. The Shared Memory sub-system features eight Holding Register blocks containing 200 registers each, and eight coil blocks containing 160 coils each. Write access for each Shared Memory block can be either enabled for all masters or restricted to a single master. Write messages that are addressed to restricted block(s) from unauthorized master(s) are rejected, logged, and displayed in the Write Violation Log web page.

Additional web pages provide configuration, diagnostics, and status information for the Shared Memory blocks.

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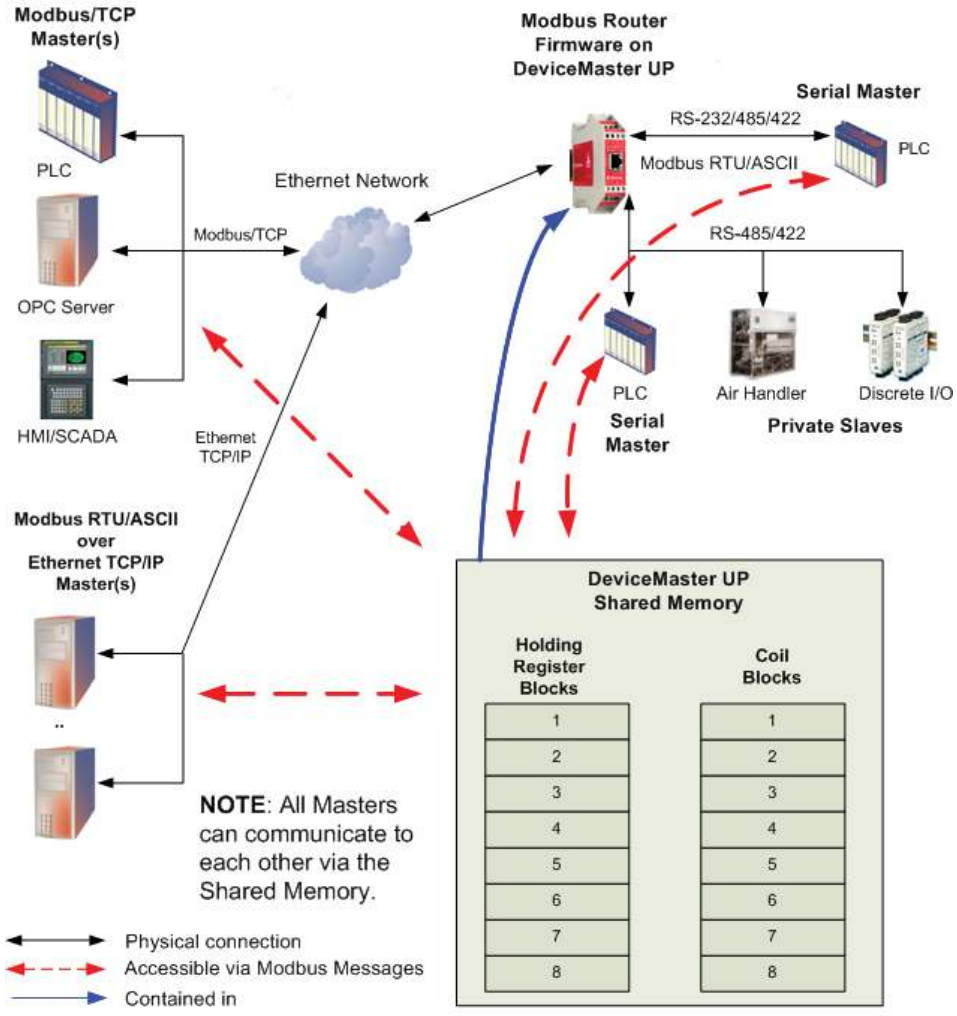
1 Shared Memory Functionality

The Shared Memory functionality has been added to provide a simple and robust method for master-to-master communication.

- The Shared Memory interface contains eight 200 Holding Register blocks and eight 160 Coil blocks.
- All Modbus masters, (Modbus/TCP, serial Modbus RTU/ASCII, and Modbus RTU/ASCII over Ethernet TCP/IP), can read the contents of the Shared Memory blocks.
- Write access can be controlled to each Holding Register and Coil block. Each block can be configured to provide all masters write access or be restricted to a port-specific serial master, a Modbus/TCP master, or an Ethernet TCP/IP master.
- The Shared Memory contents can be displayed and cleared via the embedded web pages.
- Diagnostics for each block include read, write, and blocked (rejected) write message counts.
- Blocked write messages are recorded in the write violation log.



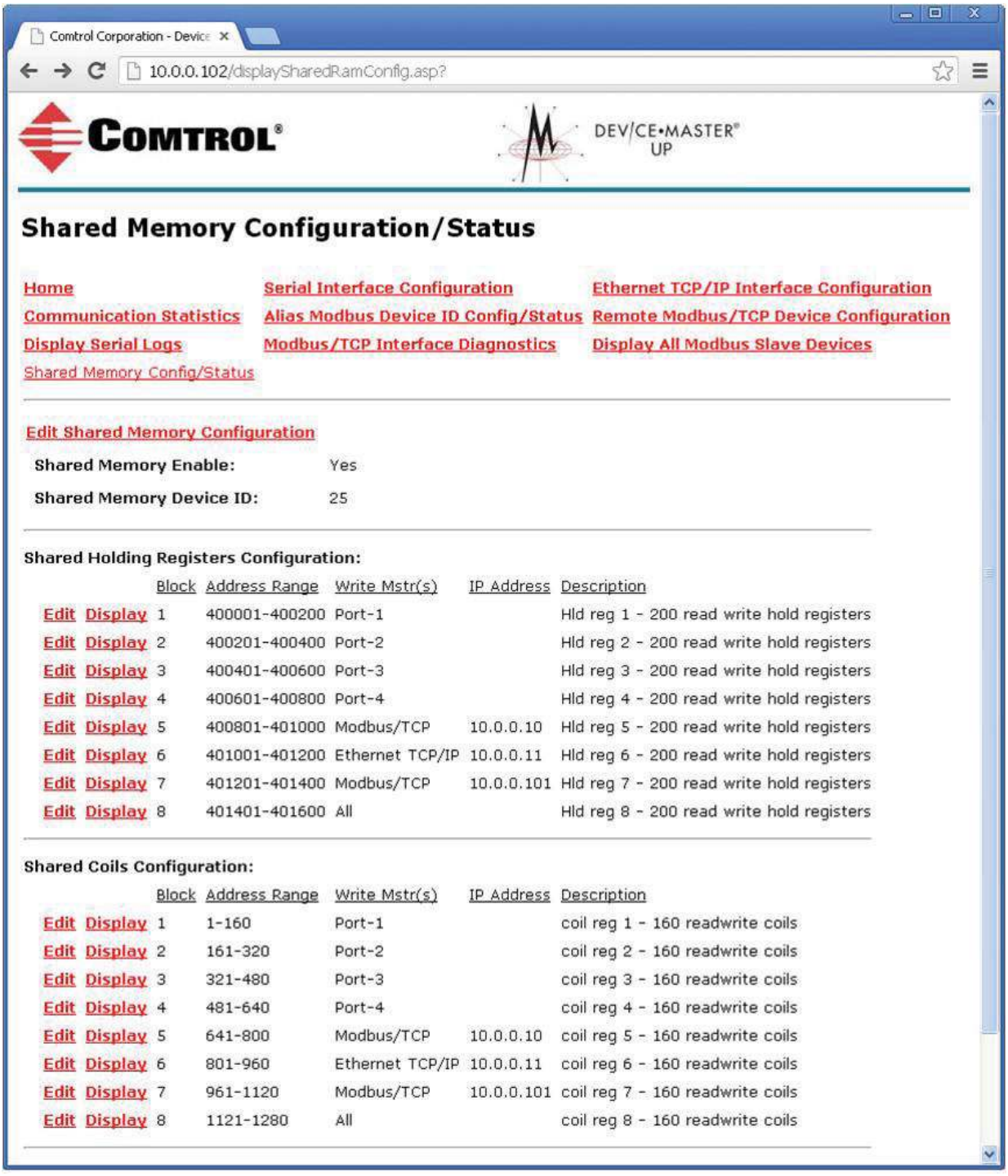
Modbus Router Shared Memory Functionality

1.1 Web Pages

Embedded web pages provide configuration, diagnostics, and status of the Shared Memory blocks.

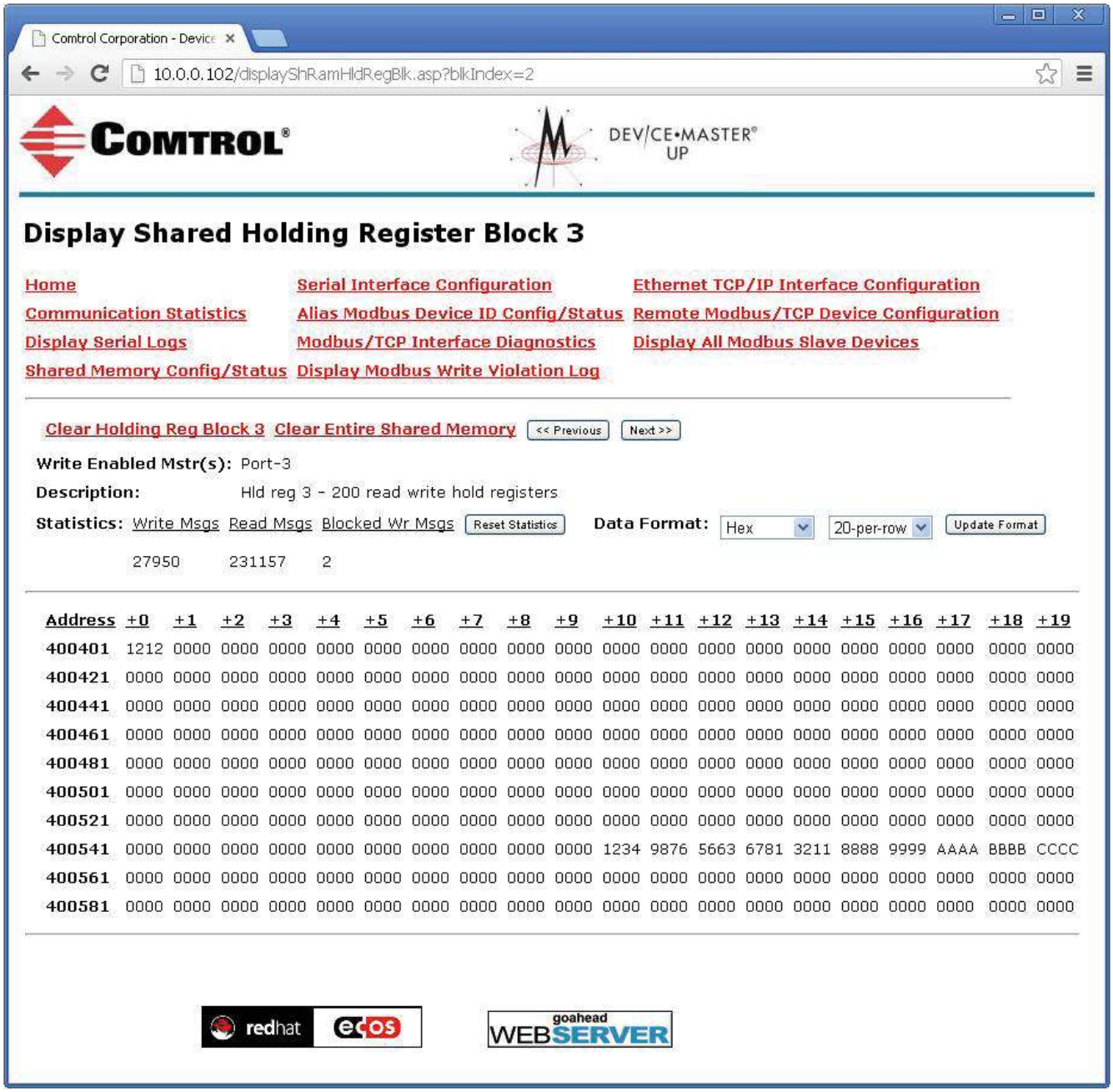
1.1.1 Shared Memory Configuration/Status Page

This page displays the current Shared Memory configuration and provides various links to edit the configuration and display the diagnostics and shared memory block contents.



1.1.2 *Display Shared Memory Holding Register Block Page*

This page displays the contents of a Shared Holding Register block.

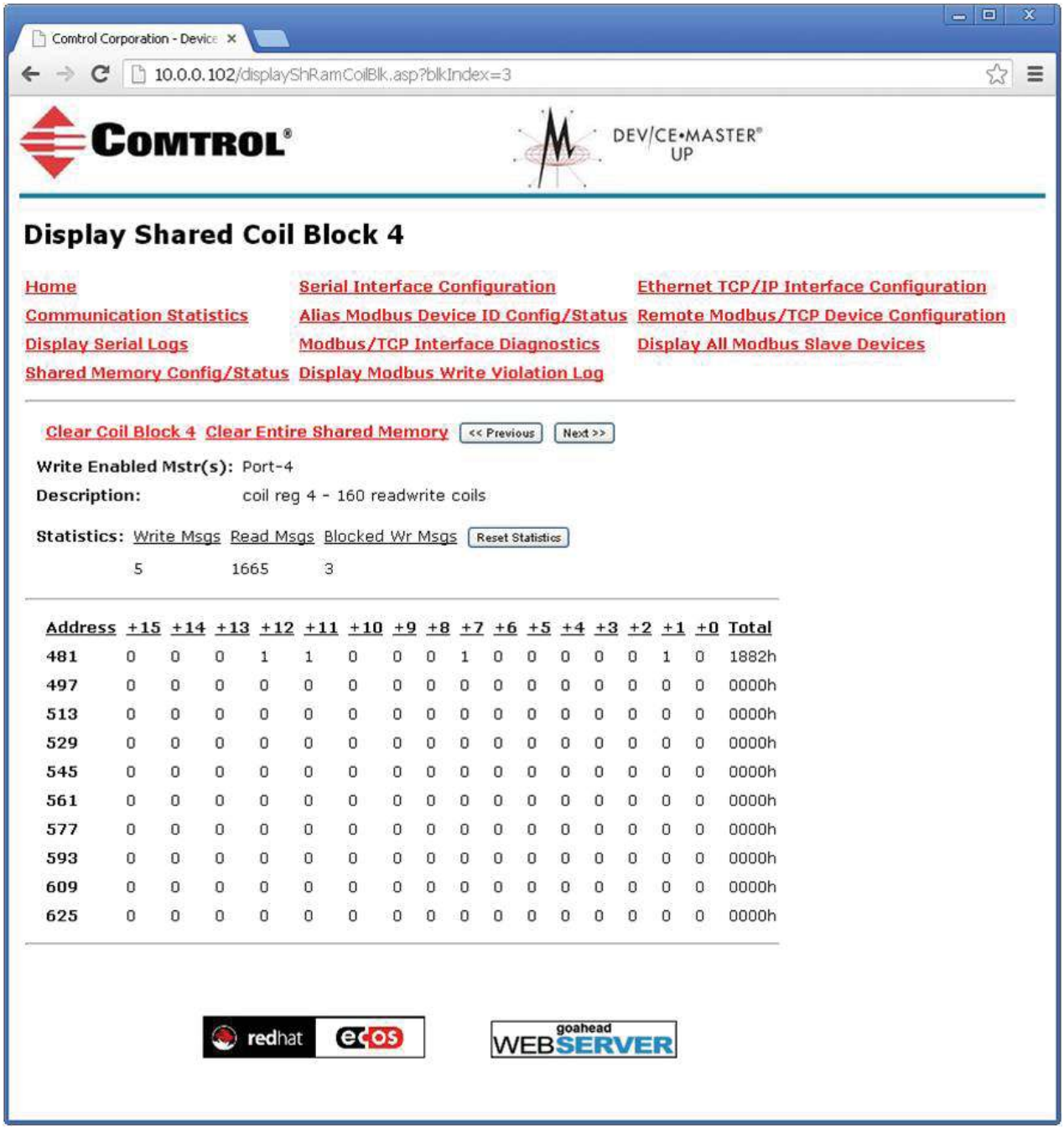


Where:

- This individual holding register block or the entire Shared Memory can be cleared.
- Write, read, and blocked (rejected) write message counters are displayed.
- A Reset Statistics button is provided to clear the counters.
- The Data Format can be dispalyed in hex, decimal and ASCII character formats.

1.1.3 *Display Shared Memory Coil Block Page*

This page displays the contents of a Shared Memory Coil block.

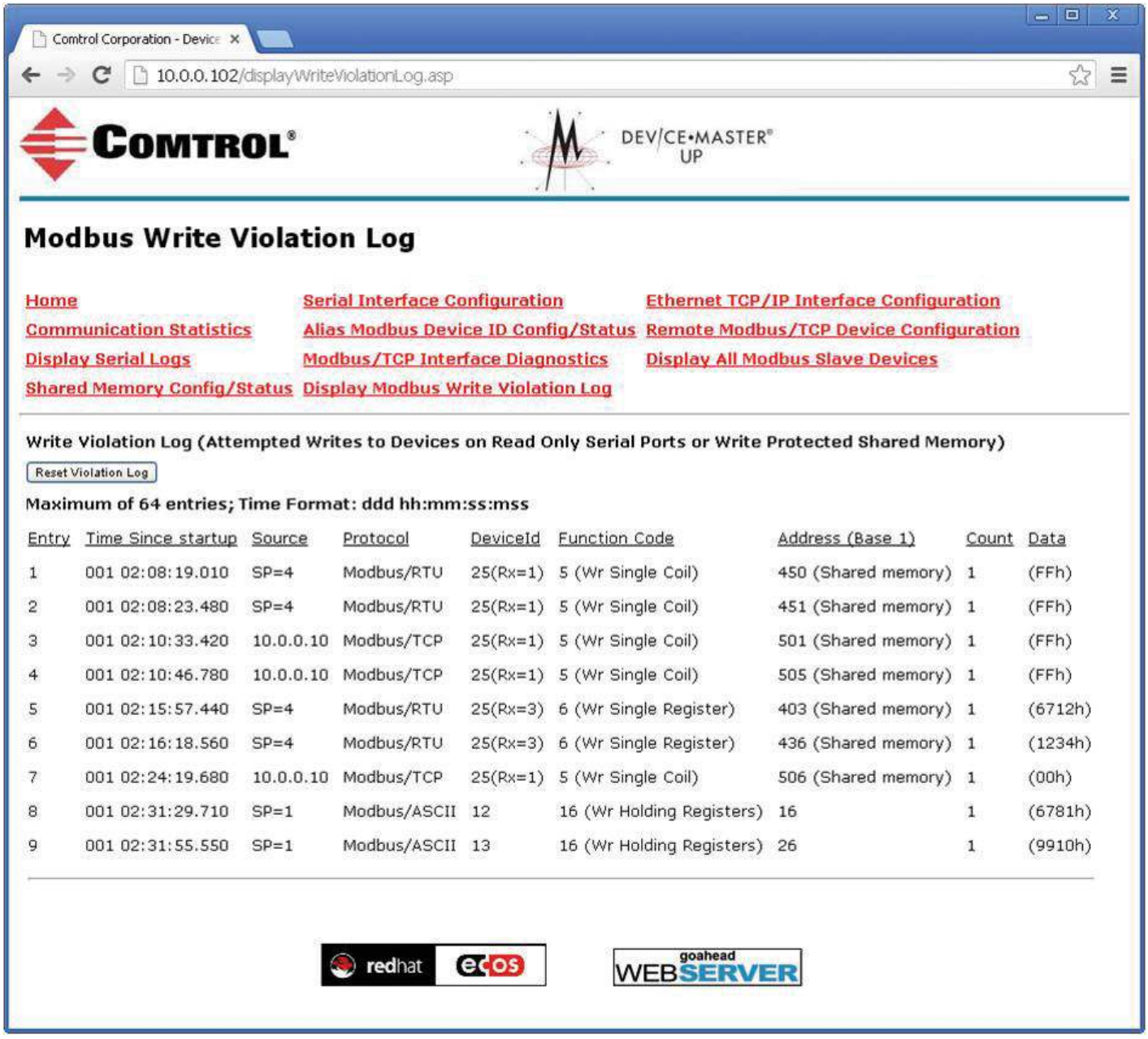


Where:

- This individual coil block or the entire Shared Memory can be cleared.
- Write, read, and blocked (rejected) write message counters are displayed.
- A Reset Statistics button is provided to clear the counters.

1.1.4 *Display Write Violation Log Page*

This page displays Write Violation attempts to Shared Memory blocks and Ready-Only serial ports.



2 Modbus Master-to-Master Connectivity

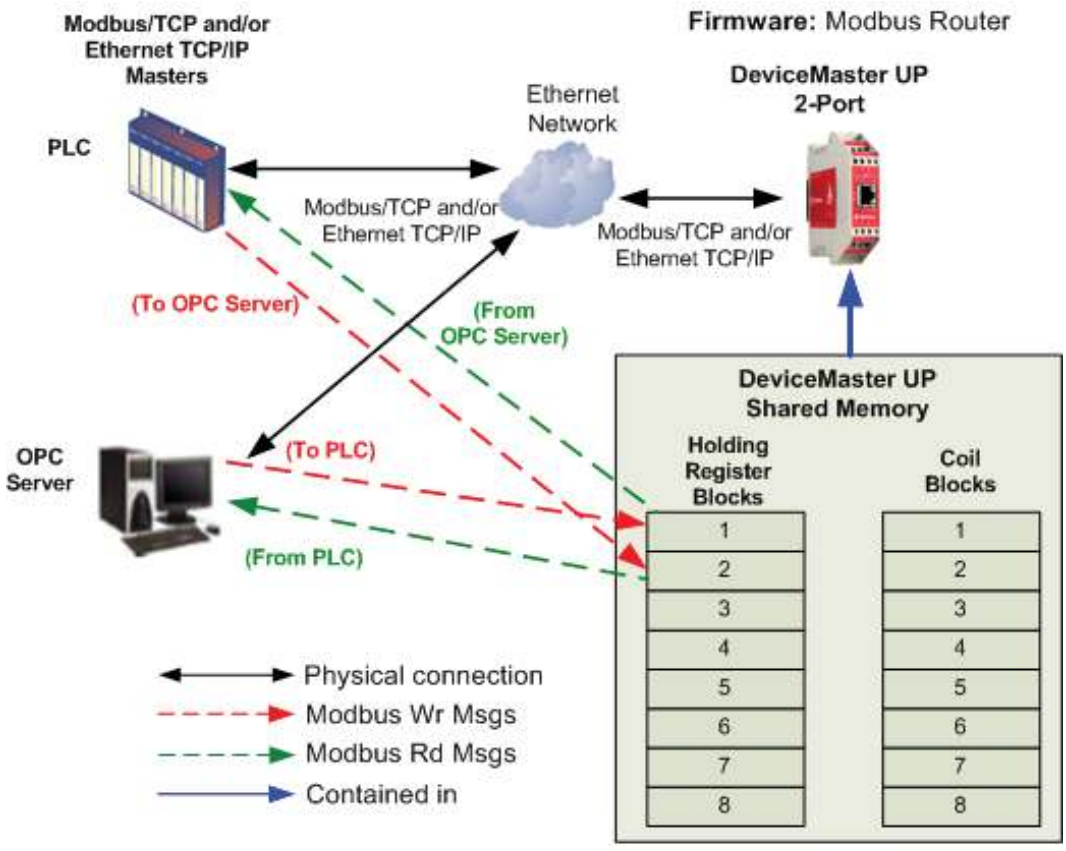
Multiple Modbus masters can communicate to each other through the DeviceMaster UP Shared Memory. Possible communication options include:

- Two Modbus masters communicating directly to each other through two separate Shared Memory blocks.
- One Modbus master writing data to be read by one or more Modbus masters.
- Modbus/TCP, Modbus over Ethernet TCP/IP, and serial Modbus master communication.
- Communication from master(s) to a serial master with slave(s) on the same serial bus.

2.1 Using Shared Memory to Communicate Between Two Modbus Masters

2.1.1 Two Modbus/TCP and/or Ethernet TCP/IP Masters

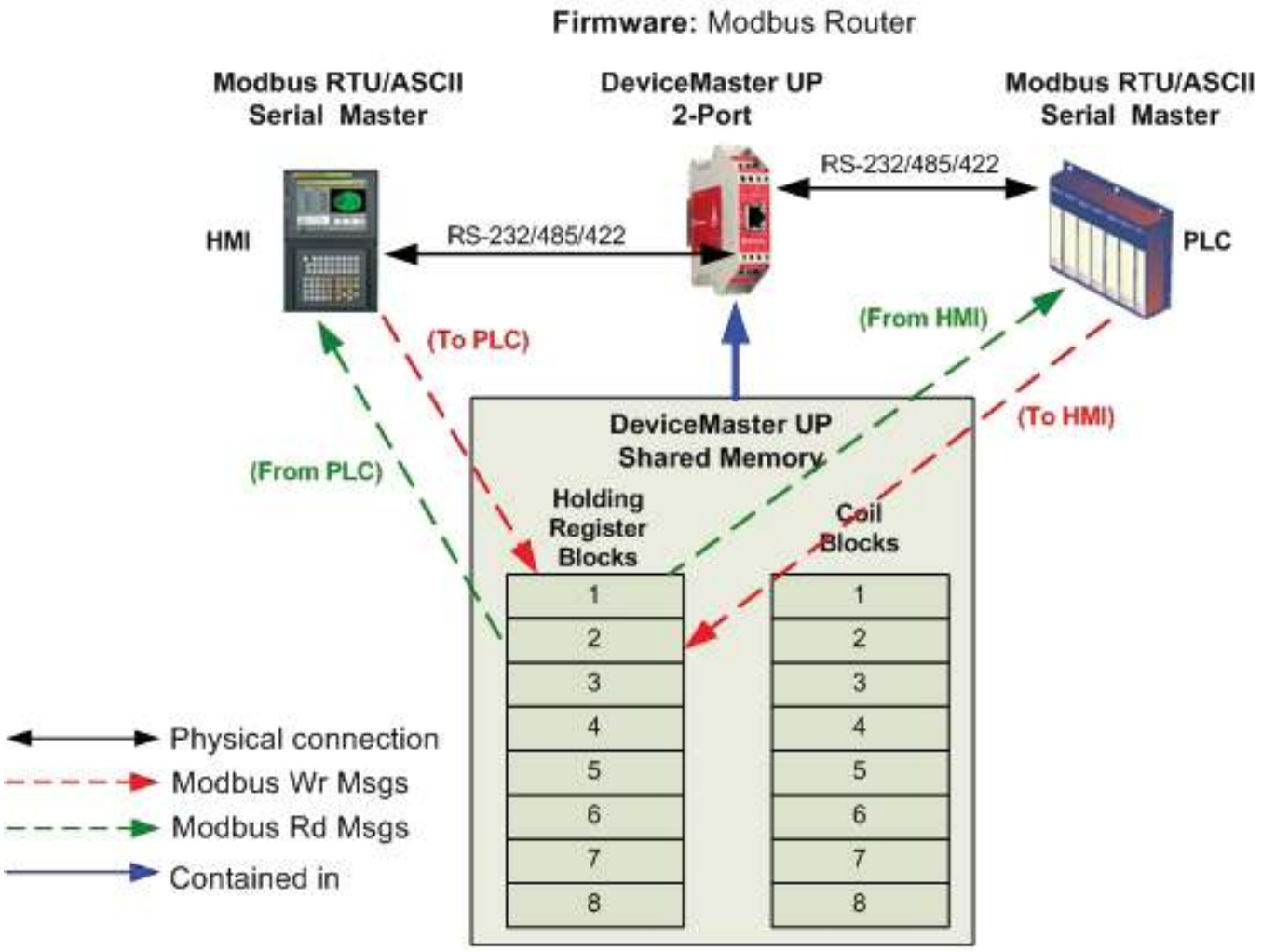
As shown in the following diagram, two Modbus/TCP and/or Ethernet TCP/IP masters can communicate to each other using the Shared Memory blocks.



Communicating Between Two Modbus/TCP and/or Ethernet TCP/IP Masters via Shared Memory

2.1.2 *Two Serial Modbus Masters*

As shown in the following diagram, two serial Modbus masters can communicate to each other using the Shared Memory blocks.

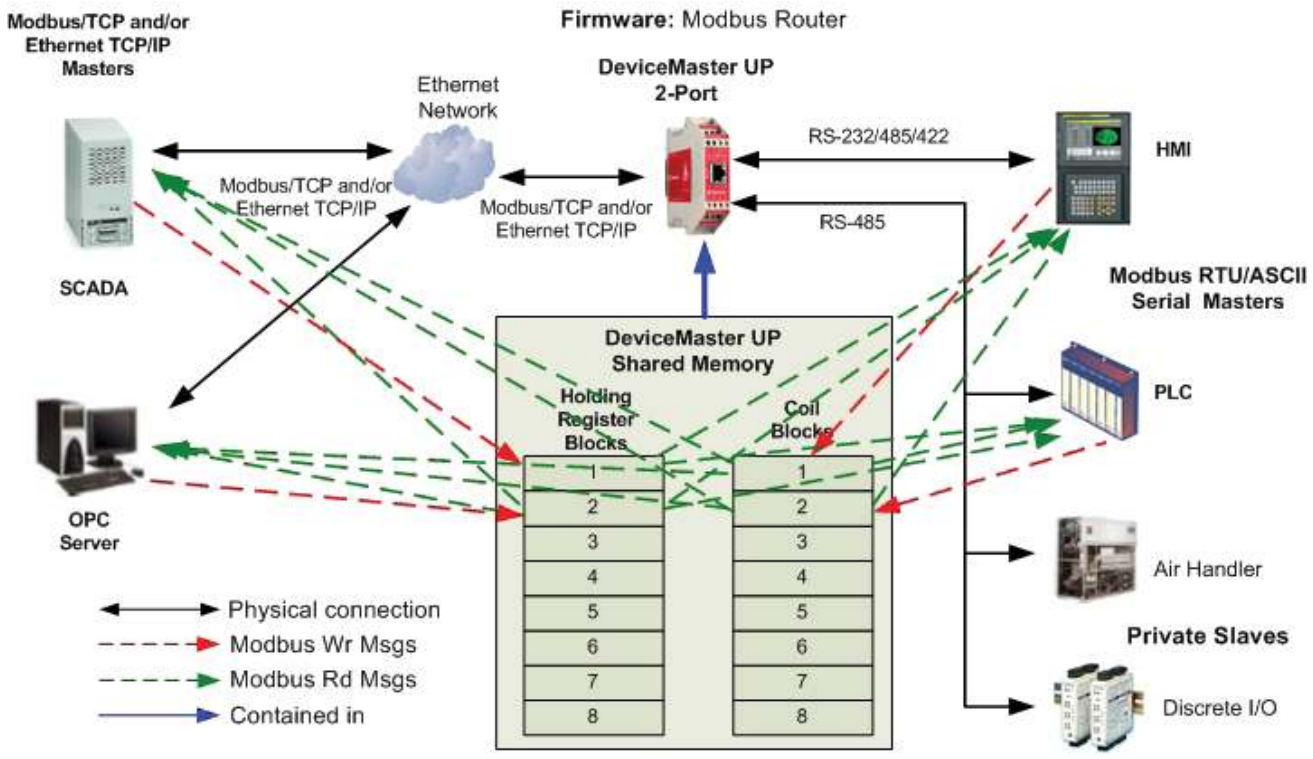


Communicating Between Two Serial Masters via Shared Memory

Note: A serial connection can also be made with a 1-Port or 4-Port DeviceMaster UP.

2.1.3 *Modbus/TCP, Ethernet TCP/IP, and Serial Modbus Masters*

As shown in the following diagram, multiple Modbus/TCP, Ethernet TCP/IP and serial Modbus masters can communicate to each other using the Shared Memory Blocks. Please note that a serial bus connecting both a Modbus master and Modbus slaves can also be connected to a DeviceMaster UP.



Communicating Between Modbus/TCP, Ethernet TCP/IP and Serial Masters via Shared Memory

Note: Serial connections can also be made with a 4-Port DeviceMaster UP.

Warranty Information
Comtrol offers a 30-day satisfaction guarantee and 5-year limited warranty.

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