**Introduction**

The Momentum® Serial Tophat (MST) provides a serial communications adapter for Modicon Momentum I/O bases. The MSTD-201 allows I/O to be easily added to existing multidrop or point-to-point Modbus networks.

The MSTD-201 communicates Modbus RTU protocol at 9600 baud with 8 data bits and even or no parity.

The MSTD-201 is powered by the Momentum base. LED indicators show the state of POWER(A), Serial TX(T) and RX(R). The green A LED should be on if the MSTD-201 is properly powered by the base. The A light will flash slowly if the unit is set to slave address 0. The yellow T light is on while the MSTD-002 is transmitting data while the R light indicates data arriving at the MSTD-201.

![MSTD-201 Layout](image)

**MSTD-201 Configuration**

The MSTD-201 is configured through a 6 position DIP switch on its front. Switches 1, 2, 3, 4, and 5 control Slave Address while switch 6 sets the parity and data bits.

**NOTE:** The MSTD-201 only reads the DIP switches on power-up. Power must be cycled after changing the Parity or Slave Address.

\[1 = \text{ON (left)}, \ 0 = \text{OFF (right)}\]

Figure 2 displays the DIP switch settings for a MSTD-201 set for Slave Address 13 and EVEN parity. From 1 to 6, the settings are 011011.

![Example for Slave Address = 13, EVEN parity](image)

**Table 1 Slave Address Switch Settings**

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<th>SW2</th>
<th>SW3</th>
<th>SW4</th>
<th>SW5</th>
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</table>

\[1 = \text{ON (up)}, \ 0 = \text{OFF (down)}\]

**NOTE:** Power must be cycled after changing the Parity or Slave Address for the change to take effect.

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**Network Connection**

The MSTD-201 has a 5-position screw terminal 4-wire connection. The pinout is shown in Figure 3.

![5-Pin RS-485 Port](image)

**Register List**

The Modbus models mimic the standard Modicon Ethernet Communication Adapter with some additional register support. The Output registers are zeroed on power-up and when the watchdog expires between write messages. The Watchdog register value is written to EEPROM for permanent setting. Setting the slave address to 0 returns the watchdog to factory default.

**Table 2 MSTD-201 Register List**

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
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</table>
| 4x00001 - 4x00032 | Read - Base Inputs  
                   | Write - Base Outputs                                                       |
| 4x00101 - 4x00132 | Read - Base Outputs  
                   | Write - Base Outputs                                                       |
| 4x00200 and 4x61441| Base Output Watchdog (0.01 second)  
                   | Default = 3000 (30 seconds)  
                   | The MSTD-201 must receive a write within the timeout or the outputs will zero. |
| 4x00201 and 4x63489| Size of Status Block (const = 12)                                           |
| 4x00202 and 4x63490| Number of Input Words                                                       |
| 4x00203 and 4x63491| Number of Output Words                                                      |
| 4x00204 and 4x63492| Module Base ID code                                                         |
| 4x00205 and 4x63493| Module Revision Number                                                      |
| 4x00206 - 4x00209 and 4x63494 - 4x63497| N/A                                                                          |
| 4x00210 and 4x63498| Module Health (8000 is good Health)                                        |
| 4x00211 and 4x63499| Last I/O module error #                                                     |
| 4x00212 and 4x63500| Count of I/O module errors                                                  |
| 8009              | RNIM Network ID (limited to 0-47)                                           |
| 8174              | Write xC5C5 to save parameters to EEPROM                                    |