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MSTD-203 Momentum[®] Serial Tophat Effective: 03 November, 2005

Introduction

The Momentum[®] Serial Tophat (MST) provides a serial communications adapter for Modicon Momentum I/O bases. The MSTD-203 allows I/O to be easily added to existing multidrop or point-to-point Modbus networks.

The MSTD-203 communicates Modbus RTU protocol at 19200 baud with 8 data bits and even or no parity.

The MSTD-203 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-203 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-203 is transmitting data while the R light indicates data arriving at the MSTD-203.

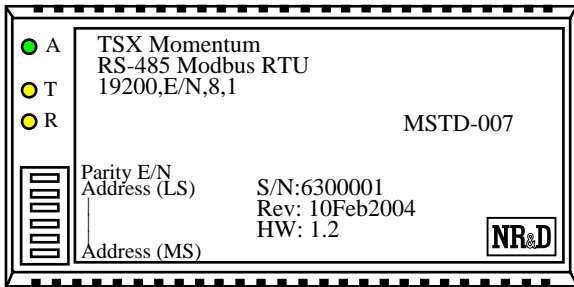


Figure 1 MSTD-203 Layout

MSTD-203 Configuration

The MSTD-203 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-203 only reads the DIP switches on power-up. Power must be cycled after changing the Parity or Slave Address.

1 = ON (left), 0 = OFF (right)

Figure 2 displays the DIP switch settings for a MSTD-203 set for Slave Address 13 and EVEN parity. From 1 to 6, the settings are 011011.

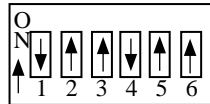


Figure 2 Example for Slave Address = 13, EVEN parity

1 = ON (up), 0 = OFF (down)

Table 1 Slave Address Switch Settings

| Slave | SW1 | SW2 | SW3 | SW4 | SW5 |
|-------|-----|-----|-----|-----|-----|
| N/A | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 0 | 1 | 1 |
| 4 | 0 | 0 | 1 | 0 | 0 |
| 5 | 0 | 0 | 1 | 0 | 1 |
| 6 | 0 | 0 | 1 | 1 | 0 |
| 7 | 0 | 0 | 1 | 1 | 1 |
| 8 | 0 | 1 | 0 | 0 | 0 |
| 9 | 0 | 1 | 0 | 0 | 1 |
| 10 | 0 | 1 | 0 | 1 | 0 |
| 11 | 0 | 1 | 0 | 1 | 1 |
| 12 | 0 | 1 | 1 | 0 | 0 |
| 13 | 0 | 1 | 1 | 0 | 1 |
| 14 | 0 | 1 | 1 | 1 | 0 |
| 15 | 0 | 1 | 1 | 1 | 1 |
| 16 | 1 | 0 | 0 | 0 | 0 |
| 17 | 1 | 0 | 0 | 0 | 1 |
| 18 | 1 | 0 | 0 | 1 | 0 |
| 19 | 1 | 0 | 0 | 1 | 1 |
| 20 | 1 | 0 | 1 | 0 | 0 |
| 21 | 1 | 0 | 1 | 0 | 1 |
| 22 | 1 | 0 | 1 | 1 | 0 |
| 23 | 1 | 0 | 1 | 1 | 1 |
| 24 | 1 | 1 | 0 | 0 | 0 |
| 25 | 1 | 1 | 0 | 0 | 1 |
| 26 | 1 | 1 | 0 | 1 | 0 |
| 27 | 1 | 1 | 0 | 1 | 1 |
| 28 | 1 | 1 | 1 | 0 | 0 |
| 29 | 1 | 1 | 1 | 0 | 1 |
| 30 | 1 | 1 | 1 | 1 | 0 |
| 31 | 1 | 1 | 1 | 1 | 1 |

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



Network Connection

The MSTD-203 has a 5-position screw terminal 4-wire connection. The pinout is shown in Figure 3.

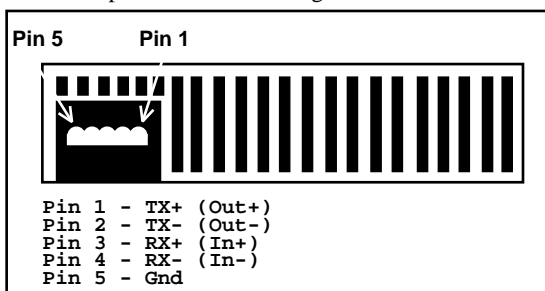


Figure 3 5-Pin RS-485 Port

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-203 Register List

| Register | Description |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 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-203 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 |