Niobrara Research & Development Corporation

P.O. Box 3418; Joplin, MO 64803
Telephone: (417) 624-8918 Facsimile: (417) 624-8920 www.niobrara.com

MSTS-101 Momentum® Serial Tophat

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Introduction

The Momentum® Serial Tophat (MST) provides a serial communications adapter for Modicon Momentum I/O bases. The MSTS-101 allows I/O to be easily added to existing multidrop or point-to-point Modbus networks.

The MSTS-101 communicates Modbus RTU protocol at 9600 baud with 8 data bits and even or no parity.

The MSTS-101 is powered by the Momentum base. LED indicators show the state of POWER(A), Serial TX(T) and RX(R). The green POWER LED should be on if the MSTS-101 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 MSTS-101 is transmitting data while the R light indicates data arriving at the MSTS-101.

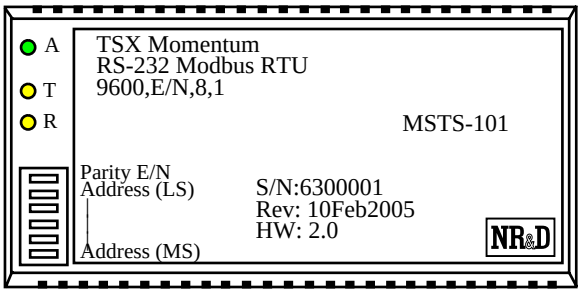

Figure 1 MSTS-101 Layout

MSTS-101 Configuration

The MSTS-101 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 MSTS-101 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 MSTS-101 set for Slave Address 13 and EVEN parity. From 1 to 6, the settings are 011011.

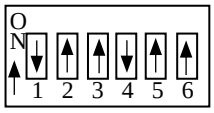

Figure 2 Example for Slave Address = 13, EVEN parity

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

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

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

Network Connection

The MSTS-101 has an RJ45 RS-232 connection. The pinout is shown in Figure 3.

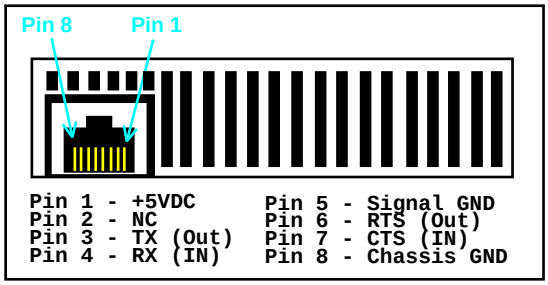

Figure 3 RJ45 RS-232 Port

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 MSTS-101 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-002must 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