

Application Note

Topic: Auto-Scan on MB+
Product: MEB
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Abstract

This Application Note describes recent enhancements of the Auto-Scan feature of the MEB. Historically the two Auto-Scan tables were dedicated to an individual serial port but with the release of REV 06Apr99 firmware the tables may now generate messages for the Modbus Plus (MB+) and/or Ethernet port. It is now possible to have the MEB "peer cop" data to/from devices on its MB+ port to its mail box registers.

Auto-Scan Configuration

The MEB has two Auto-Scan tables associated with serial ports 1 and 2. The functionality of these tables has been changed to allow internal routing of the generated messages. The MEB now inspects the first drop in the route of an Auto-Scan entry to determine if the message should be sent out the MB+, Ethernet, or the Auto-Scan's serial port. If the first drop does not match the drop number of the MB+ or Ethernet ports then the message is sent out the specific Auto-Scan's serial port.

NOTE: Configuring similar Auto-Scan entries (both read or both write) for both tables that route to the same target device may lead to message timing problems and should be avoided. It is permitted to split the load where one table does the reads and the other table does the writes.

MB+ Momentum (TIO) Example

In this example, a Square D Model 400 PLC requires distributed I/O data from a network of MB+ I/O. The Auto-Scan feature allows an MEB to move the data from rack-addressed mailbox registers to/from the I/O without resorting to communication messages in the PLC ladder code.

NOTE: This example is called ASCAN01.MEB and is included in the MEBSW.ZIP and MEBSW32.ZIP files. MEBSW and MEBSW32 have been updated to

allow remote registers larger than 8192 in the Auto-Scan tables. These files may be obtained at www.niobrara.com.

Module 02 is a Modicon® TIO 16PT 24VDC Input (170 BDI 342 00). MB+ Drop 03 is a Modicon TIO 16PT 24VDC Output (170 BDO 342 00) while Drop 04 is a TSX Momentum® Analog 4ch IN / 2ch OUT base (170 AMM 090 00) with a single port MB+ (IEC format) Communications Adapter (170 PNT 110 20).

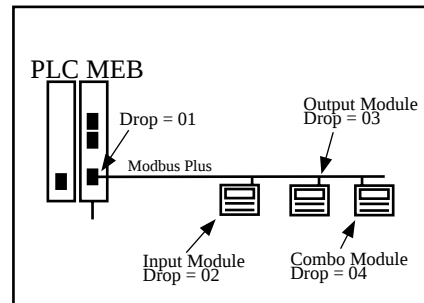


Figure 1 shows the "Edit port parameters" screen from MEBSW32 setting the Transfer Interval to 20 (200ms).



Figure 1 MEBSW Edit Port Parameters

Figure 2 shows the Auto-Scan table for port 1. The MEB will require 16 registers to be rack addressed by the Model 400 PLC. The descriptions of these registers is shown in Table .



Figure 2 MEBSW32 Edit Auto-Scan for Port 1

Table 1MEB Register List

MEB Register	I/O	Description
1	O	Timeout for Outputs
2	O	Output Data for TIO
3	O	Setup for Momentum Inputs
4	O	Setup for Momentum Outputs
5	O	Momentum Analog Output 1
6	O	Momentum Analog Output 2
7	O	Momentum Discrete Outputs
8	I	TIO Discrete Inputs
9	I	Momentum Analog Input 1
10	I	Momentum Analog Input 2
11	I	Momentum Analog Input 3
12	I	Momentum Analog Input 4
13	I	Momentum Discrete Inputs
14	I	Auto-Scan Status 1-16
15	I	Auto-Scan Status 17-32
16	I	Auto-Scan Status 33-48

Figure ? shows a register view of the first 20 registers of the MEB. The status values for registers 1 through 7 is xA000 (hex) which indicates that the registers are PLC Outputs. Registers 8 through 16 have the status xE000

(hex) which indicates the registers are PLC Inputs.

Register 1 sets the timeout for the two output modules to 6 seconds. This value should be set large enough to allow for the 2 second back-off encase the Auto-Scan doesn't get a reply before the next message is queued. If the value is too small then the outputs may cycle on and off.

Register 2 sets the binary data to the TIO Output module. The TIO module is uses the 984 format and consequently the data bits are labeled the opposite of the SY/MAX bits. In this example register 2 = 4660 (dec) with bits 3,5,6,10, and 13 ON. The TIO will have bits 4,7,11,12, and 14 ON.

Register 3 sets the Analog Input Parameters for the Momentum Module. Input 1 is set for 4-20mA while inputs 2, 3, and 4 are set to +/-10VDC.

Register 4 sets the Analog Output Parameters for the Momentum Module. Both outputs are set to +/-10VDC.

Registers 5 and 6 set the Analog Outputs 1 and 2 to approximately +10VDC and -5VDC respectively. Register 7 turns on discrete output #2 on the Momentum.

Register 8 shows the inputs on the TIO. Again the TIO has its bits labeled 16-1 while the SY/MAX is labeled 1-16. The value 291 indicates TIO bits 8,11,15, and 16 are ON.

Registers 9, 10, 11, and 12 give the signed values of the Momentum Analog Inputs 1 through 4 respectively. Register 13 gives the discrete status bits from the Momentum.

Registers 14, 15, and 16 give the status of the 48 possible Auto-Scan entries for Port 1. Bits 1 through 6 are ON to indicate the fist six Auto-Scans are working.



Figure 3 MEBSW Register View