The Application Note is specific to the Mentor II, the Quantum III has its own version.

Mentor II / MD25 Quick Setup for DeviceNet

Scope - This procedure applies to a Mentor II / MD25 combination for speed or torque control and polled-data mappings set up by the default Mentor II / Quantum III “*.EDS” file. Confirm Drive firmware revision at Ver 4.10 or above at #11.15. Fieldbus start-stop control requires that “Disable Normal Logic Functions” be set to “Disabled” (#8.21=1). This procedure also assumes that the DeviceNet Master and DeviceNet Scanner have already been configured for the node and data rate the MD25 is set for.

Instructions

Step 1 – Menu 8 and 9

Insure that the values in any of the following parameter pointer locations do not conflict with the “control word” mappings of the Mentor II. If a value of 111, 112, or 113 is found in any of the following locations, set the value at that location to a value of zero (“0.00”). Values of #8.14, #8.15 or #8.21 can also interfere with the “control word” functioning as expected.

<table>
<thead>
<tr>
<th>MM.PP</th>
<th>If following value is found:</th>
<th>Then set to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8.12</td>
<td>111, 112, 113, 114, 115, 821</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.13</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.14</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.15</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.16</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.17</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.18</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.19</td>
<td>&quot; (same)</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#8.20</td>
<td>111, 112, 113, 114, 115, 821</td>
<td>0.00 (un-map)</td>
</tr>
<tr>
<td>#9.25</td>
<td>any</td>
<td>1521 (becomes run permit)</td>
</tr>
</tbody>
</table>

Step 2 – Menu 11 and 14

Insure that the following network configuration parameters are set to the required values and are “saved” in the Drive BEFORE fitting the MD25 to the Mentor II.

<table>
<thead>
<tr>
<th>MM.PP</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>#14.01</td>
<td>1 to 62</td>
<td>MAC-ID, all nodes different, 63 res. for node joining network</td>
</tr>
<tr>
<td>#14.02</td>
<td>0, 1 or 2</td>
<td>Data Rate, 0=125 kbs, 1=250 kbs, 2=500 kbs</td>
</tr>
<tr>
<td>#14.06</td>
<td>0</td>
<td>1=Trip “62” on network loss, 0=ignore network loss</td>
</tr>
<tr>
<td>#11.05</td>
<td>118</td>
<td>Out Word 2 to #1.18 (speed reference, hi res)</td>
</tr>
<tr>
<td>#11.06</td>
<td>408</td>
<td>Out Word 3 to #4.08 (torque reference, hi res)</td>
</tr>
<tr>
<td>#11.02</td>
<td>302</td>
<td>In Word 2 from #3.02 (actual speed, hi res)</td>
</tr>
<tr>
<td>#11.03</td>
<td>501</td>
<td>In Word 3 from #5.01 (torque actual, hi res)</td>
</tr>
<tr>
<td>#11.04</td>
<td>1940</td>
<td>Out Word 1 to #19.40 (Mentor Control Word)</td>
</tr>
<tr>
<td>#11.01</td>
<td>1941</td>
<td>In Word 1 from #19.41 (Mentor Status Word)</td>
</tr>
</tbody>
</table>

Step 3 – Menu 1

Insure that parameter #01.18 “REF 2” is selected as the speed reference source.

1. Check and set parameter #1.14 to a value of “1”.
2. Check and set parameter #1.15 to a value of “0”.

Step 4 – Save and activate

1. Save Menu 1 through Menu 16 by setting #x.00 = 001 and press the red "RESET” button on the Drive.

Step 5 – Observe Normal Network Indications

1. (RO) Parameter #14.03 = 1 for Version 4x Scanner, Device Status is “Operational”.
2. (RO) Parameter #14.04 = 4 for Version 4x Scanner, Net Status is “On-line and connected”.
Interface Run Permit for fieldbus control

- Disconnect AC power to the Drive.
- Connect TB4-34 on MDA-2B to TB3-21 on MDA-2B via jumper wire (F1, run permit)
- Connect TB4-36 on MDA-2B to TB4-40 on MDA-2B via jumper wire (0V, common)
- Insure all terminal blocks and jumpers in place, and re-apply AC power to the Drive.

- The Mentor II is now configured for DeviceNet control and should be observable on the network.
- If you have not done so already, map three polled words out and into the node with the scanner configuration tool of choice.

- See the next sections for extra guidance.

Controlling the Mentor II from the control word

Before motion is possible, the enable input must be asserted, via contact from TB4-31 to TB4-40 on the MDA-2B. This is usually provided by the Emergency Stop Reset function in "hard wired" logic.

To start the Mentor II in speed control, with the ramps enabled, and under control of the speed reference set by OUT WORD 2, set the following bits in the Control Word:

- Bit 01 – Reference on (# 1.11)
- Bit 07 – Ramp enable (# 2.02)
- Bit 08 – Run permit (#15.21)
- Bit 15 – VALID bit
- Hexadecimal value: 0x8182
- Decimal value: 33154

To start the Mentor II in torque control and under control of the torque reference set by OUT WORD 3, set the following bits in the Control Word:

- Bit 01 – Reference on (# 1.11, this may be optional in basic torque mode)
- Bit 04 – Torque Mode 0 (# 4.12)
- Bit 08 – Run permit (#15.21)
- Bit 15 – VALID bit
- Hexadecimal value: 0x8112
- Decimal value: 33042

Speed target and speed feedback scaling issue(s)

Internally, the Mentor II internally handles some parameters at a higher resolution (minimum ±16000 range) than displayed (±1000 range). The MD25 accesses these parameters at the higher resolution. The value displayed on the Mentor II Keypad / Display remains at the normal range. For example, a value of 8000 written to #1.18 via the MD25, will display the value of #1.18 as "0500".

These higher resolution parameters include, but are not limited, to the following:

- #1.18 (Range ±16000 : ±100%)
- #3.18 (Range ±16000 : ±100%)
- #4.08 (Range ±16000 : ±100%)
- #4.09 (Range ±16000 : ±100%)
- #7.05 (Range ±16000 : ±100%, read only, note that a range of ±16383 is observable)
- #1.03 (Range ±16000 : ±100%, read only)
- #3.01 (Range ±16000 : ±100%, read only)
- #3.02 (Range ±16000 : ±100%, read only)

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