The Application Note is pertinent to the Quantum III / Mentor II DC Drive Family

Run/Stop Control using a Remote Operator Interface Unit

Remote Operator Interface devices do an excellent job of displaying Drive System activities such as Line Speed, % Load etc. They are great for bringing Machine pertinent information out to the Operator in his / her terms. Obviously they can also allow the Operator to change setpoints and make other selections that all get transmitted over a long distance from the Operator Console to the drive cabinetry. However, a question I've been asked on numerous occasions – “How do you cause a Quantum III to go into RUN using a Remote Operator Interface?” This application note will address that situation.

Long distance use of 24vdc inputs may not provide reliable operation of remote industrial pushbuttons, not to mention that it would give electrical noise a good opportunity to make its way into the drive circuitry. For this reason, the Quantum III was designed with 115vac Run/Stop input circuitry to allow reliable, general purpose use of remote Run/Stop Industrial pushbuttons.

If we are using a Remote Operator Interface device, we may elect to assign a key to cause the Drive to go into RUN and another to drop it out of RUN(stop). In essence, this is defining a 2-wire RUN/STOP or ON/OFF scenario. The Quantum III Run/Stop circuitry can be configured to handle such a 2-wire situation (see Quantum III Manual June 2000 page 203). The problem however becomes; “How does one achieve this interface using the Remote Operator Interface?”
The Quantum III has a free programmable relay contact that is available for customer use on TB4 of the MDA2B Board (TB4 is under the snap on drive cover). Pins 34 and 36 of this terminal strip is the NO (normally open) contact of this relay. Factory defaults for this relay set it to activate AT ZERO SPEED, but you can set it to any other bit of your choice.

If you connect this relay to the RUN/STOP terminals of TB1 (pins 6 and 7) of the 115vac AC Interface Board, you would be halfway there!

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<tr>
<th>TB4 MDA2B Board</th>
<th>TB1 AC Interface</th>
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<tr>
<td>34</td>
<td>6</td>
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<td>36</td>
<td>7</td>
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* For 2-wire RUN/STOP control we would also need to place a jumper on 5-6 of terminals of TB1 on the 115vac Interface Board.
Now, if we could just turn the programmable relay on and off we would have it. As it turns out, the Quantum III has a number of free un-used parameters up in menu 15 and 16. Some of those can be used to hold a single bit such as a 1 and 0.

So for the sake of being a little more definitive, let's say we use parameter #16.21 to hold this bit. The Remote Operator Interface device would send a value to parameter #16.21 (a 1 when the drive would be commanded to turn ON and a 0 when the drive would be commanded to turn OFF.

By assigning the programmable relay to "go get" the value contained within parameter #16.21, this will complete the solution.
Warning:

Don’t get so excited that you were able to get this function to work and lose site of safety issues. What would happen if the Operator commanded the drive to come on and some time later the communications to/from the Remote Operator Interface unit fail? The drive would be ON and he/she would be unable to turn it OFF. In this case, you would want some kind of hard Operator switch to go either in series with the programmable relay contacts to serve as a Remote Control Enable/Disable or by placing an E-STOP pushbutton in the E-Stop circuit of the drive.

This would take care of turning the Drive Off ok but don’t forget, parameter #16.21 is still a 1 if the drive is still powered. Remember that the Remote Operator Interface unit sent a 1 when the Operator commanded the drive to come ON. But if the Remote Operator Interface unit failed after that, the Operator would not be able to command #16.21 to go to a 0. So that, “1” would still be lingering.

Caution:

If E-Stop was to be reset or that Remote Control Enable switch turned back to the Enabled position, the drive would come ON. This is true in any 2-wire On/Off Control scheme.

The only way to clear this condition, #16.21, one would have to physically go to the drive and change #16.21 from a 1 to a 0

Or

Remove power from the Drive

This should be a rare occurrence yet one must be aware of the possibility. Removing power or resetting this bit may not be that much of an inconvenience in such a rare occurrence. This could all be taken care of automatically if one were to employ an MD29. The MD29 could be programmed to take clear the remote control On/Off bit in such circumstances.

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